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CARTRIDGE VALVE INTRODUCTION

Cartridge valves are compact and economical components that can be used for directional, pressure, or flow control in systems from 0.4 L/min [0.1 US gal/min] up to 400 l/min [100 gpm], and for pressures up to 350 bar [5000 psi]. By combining standard cartridge valves almost any hydraulic circuit can be easily created. Using cartridge valves in a custom manifold, a designer can create a hydraulic integrated circuit (HIC) that provides a compact package for hydraulic control with reduced plumbing, easier installation, easier service, and fewer leak points than traditional hydraulic systems.

Each valve has several key ratings, specifications, and settings:

- Each Comatrol cartridge valve fits a Comatrol standard **cavity**. These cavities are designed around SAE or metric standard o-ring straight thread ports. In many cases these cavities are interchangeable with cavities used by other manufacturers. See catalog sheets for details.

The National Fluid Power Association (NFPA) and International Standards Organization (ISO) are developing a standard, NFPA T3.5.31M-19XX, that will define an industry-wide set of standard cavities. Comatrol will manufacture cartridge valves for NFPA cavities upon formal approval of the standard.

- The **pressure rating** is based on NFPA fatigue test standards and a burst test at least 3:1 safety factor.
- The **flow rating** is based on the flow at a pressure drop of 7 bar [100 psi] for directional valves or a pressure rise or drop of 7 bar [100 psi] for pressure relief and reducing valves, with 32 mm²/s (cSt) [151 SUS] fluid. Note that for many valves this flow can be exceeded if the penalties of higher pressure drop and the associated heat generation are acceptable. The exceptions to this are solenoid-operated spool-type directional valves and proportional flow control valves where the flow ratings indicate a performance limit.
- The **solenoid voltage** is a nominal value. All solenoid valves are designed to operate at 85% of nominal voltage with full rated flow and pressure and at an ambient temperature of 60 °C [140 °F].
- Pressure settings for check, relief, reducing, sequence, and motion control valves, commonly referred to as the **crack pressure**, are set at a flow rate of 0.95 L/min [0.25 gpm] through the valve.
- **Leakage** is generally measured at rated pressure limits or in the case of relief and motion control valves at 70-80% of crack pressure setting, with 32 mm²/s (cSt) [151 SUS] fluid. See individual catalog sheets for details.
- **Temperature ratings** vary by model and options. Seal materials provide ranges of -40 °C to 100 °C [-40° F to 212 °F] (buna-n or polyurethane) or -26 °C to 204 °C [-15 °F to 400 °F] (viton). The recommended minimum fluid viscosity is 12 mm²/s (cSt) [66 SUS] which will override the maximum seal temperature limit for most fluids. Solenoid valves are rated for 60 °C [140 °F] maximum *ambient* temperature for continuous duty. Consult factory for extreme applications.

FLUIDS

Ratings and performance data for cartridge valves are based on operating with premium hydraulic fluids containing oxidation, rust, and foam inhibitors.

These premium fluids include premium turbine oils, API CD engine oils per SAE J183, M2C33F or G automatic transmission fluids (ATF), Dexron II (ATF) meeting Allison C-3 or Caterpillar TO-2 requirements, and certain specialty agriculture tractor fluids. For further information see Comatrol publication **520L0463**, *Hydraulic Fluids and Lubricants*, and publication **520L0465**, *Biodegradable Hydraulic Fluids Applications*.

ⓘ CAUTION
 Never mix hydraulic fluids.

Product performance will generally be within catalog limits with fluids meeting the recommended viscosity limits shown below.

Product can be operated at viscosities outside the recommended limits, however performance may be greatly degraded. Extreme conditions must be evaluated by the user to determine acceptability of product performance.

Contact your Comatrol representative for more information regarding fluids.

FILTRATION

It is imperative that only clean oil be used with cartridge valves to maintain valve operation and prevent premature wear. System filtration capable of controlling the fluid cleanliness to the limits shown below is required.

The selection of filters depends on a number of factors including the contamination ingress rate and the desired maintenance interval. Filters are selected to meet the below requirements using rating parameters of efficiency and capacity.

Filter efficiency may be measured using a Beta (β) ratio.* A filter with a β -ratio within the range of $\beta_{10}=10$ is typically required.

Since each system is unique, the filtration requirement for that system will be unique and must be determined by test in each case. It is essential that monitoring of prototypes and evaluation of components and performance throughout the test program be the final criteria for judging the adequacy of the filtration system. For further information see Comatrol publication **520L467**, *Design Guidelines for Hydraulic Fluid Cleanliness Applications*.

Fluid specifications

Product	Cleanliness (per ISO 4406, 1999)	Recommended Viscosity limits mm ² /sec (cSt) [SUS]	Absolute Viscosity limits mm ² /sec (cSt) [SUS]
Proportional valves	18/17/13 or better	12-54 [66-250]	12-400 [66-1854]
Other spool valves	20/18/14 or better		
All other valves	20/19/14 or better		

* Filter β_x ratio is a measure of filter efficiency defined by ISO 4572. It is defined as the ratio of the number of particles greater than a given size (x) upstream of the filter to the number of particles greater than the same size downstream of the filter. The β_x ratio applies to a specific particle size, measured in microns.

STANDARD PRESSURE SETTINGS

The tables below detail coding for standard pressure settings. Use these tables for reference when filling in valve ordering options for valves with selectable pressure settings. Use the table on this page for valves that specify pressure in psi—typically those beginning with the letters CP. Use the table on the next page for valves that specify pressure in bar—typically those that do not begin with the letters CP.

Standard settings for valves set in psi

Crack Pressure (Code x 10 = psi)	Crack Pressure, psi [bar]
001	10 psi [0.69 bar]
002	20 psi [1.38 bar]
003	30 psi [2.07 bar]
004	40 psi [2.76 bar]
005	50 psi [3.45 bar]
006	60 psi [4.14 bar]
007	70 psi [4.83 bar]
008	80 psi [5.52 bar]
009	90 psi [6.21 bar]
010	100 psi [6.9 bar]
012	120 psi [8.28 bar]
014	140 psi [9.66 bar]
015	150 psi [10.34 bar]
016	160 psi [11.0 bar]
018	180 psi [12.4 bar]
020	200 psi [13.8 bar]
022	220 psi [15.2 bar]
024	240 psi [16.6 bar]
025	250 psi [17.2 bar]
026	260 psi [17.9 bar]
028	280 psi [19.3 bar]
030	300 psi [20.7 bar]
035	350 psi [24.1 bar]
040	400 psi [27.6 bar]
045	450 psi [31.0 bar]
050	500 psi [34.5 bar]
060	600 psi [41.4 bar]
070	700 psi [48.3 bar]
080	800 psi [55.2 bar]
090	900 psi [62.1 bar]
100	1000 psi [69.0 bar]
110	1100 psi [75.9 bar]
120	1200 psi [82.8 bar]
130	1300 psi [89.7 bar]
140	1400 psi [96.6 bar]

Crack Pressure (Code x 10 = psi)	Crack Pressure, psi [bar]
150	1500 psi [103 bar]
160	1600 psi [110 bar]
170	1700 psi [117 bar]
180	1800 psi [124 bar]
190	1900 psi [131 bar]
200	2000 psi [138 bar]
210	2100 psi [145 bar]
220	2200 psi [152 bar]
230	2300 psi [159 bar]
240	2400 psi [166 bar]
250	2500 psi [172 bar]
260	2600 psi [179 bar]
270	2700 psi [186 bar]
280	2800 psi [193 bar]
290	2900 psi [200 bar]
300	3000 psi [207 bar]
320	3200 psi [221 bar]
340	3400 psi [234 bar]
350	3500 psi [241 bar]
360	3600 psi [248 bar]
380	3800 psi [262 bar]
400	4000 psi [276 bar]
420	4200 psi [290 bar]
440	4400 psi [303 bar]
460	4600 psi [317 bar]
480	4800 psi [331 bar]
500	5000 psi [345 bar]
520	5200 psi [359 bar]
540	5400 psi [372 bar]
560	5600 psi [386 bar]
580	5800 psi [400 bar]
600	6000 psi [414 bar]
XXX	Pressure code stamped on valve; Pressure not set

STANDARD PRESSURE SETTINGS (continued)

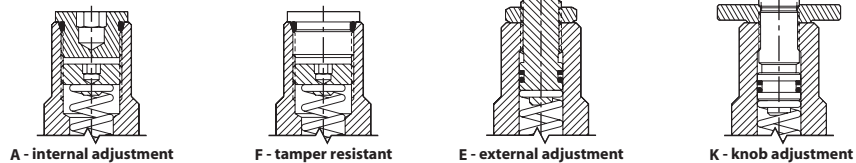
Standard settings for valves set in bar

Crack Pressure Code (bar)	Crack Pressure, bar [psi]
10	10 bar [145 psi]
15	15 bar [218 psi]
20	20 bar [290 psi]
25	25 bar [363 psi]
30	30 bar [435 psi]
35	35 bar [508 psi]
40	40 bar [580 psi]
45	45 bar [653 psi]
50	50 bar [725 psi]
55	55 bar [798 psi]
60	60 bar [870 psi]
65	65 bar [943 psi]
70	70 bar [1015 psi]
75	75 bar [1088 psi]
80	80 bar [1160 psi]
85	85 bar [1233 psi]
90	90 bar [1305 psi]
95	95 bar [1378 psi]
100	100 bar [1450 psi]
105	105 bar [1523 psi]
110	110 bar [1595 psi]
120	120 bar [1740 psi]
130	130 bar [1885 psi]

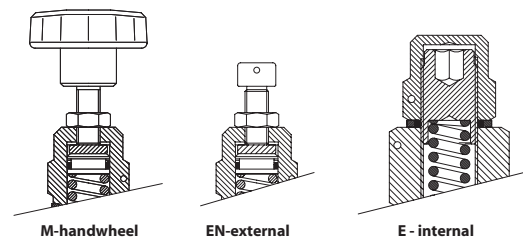
Crack Pressure Code (bar)	Crack Pressure, bar [psi]
140	140 bar [2030 psi]
150	150 bar [2175 psi]
160	160 bar [2320 psi]
170	170 bar [2465 psi]
180	180 bar [2610 psi]
190	190 bar [2755 psi]
200	200 bar [2900 psi]
210	210 bar [3045 psi]
220	220 bar [3190 psi]
230	230 bar [3335 psi]
240	240 bar [3480 psi]
250	250 bar [3625 psi]
260	260 bar [3770 psi]
270	270 bar [3915 psi]
280	280 bar [4060 psi]
290	290 bar [4205 psi]
300	300 bar [4350 psi]
310	310 bar [4495 psi]
320	320 bar [4640 psi]
330	330 bar [4785 psi]
340	340 bar [4930 psi]
350	350 bar [5075 psi]
XXX	Pressure code stamped on valve; Pressure not set

MECHANICAL VALVE ADJUSTMENT OPTIONS

Adjustment options - CP valves



Adjustment options - other valves



P104 912E

INSPECT THE VALVE BLOCK

Refer to specific pages within this catalog to ensure proper port identification for cartridge functions. Inspect the valve cavity to be sure it is free of burrs, chips or other contamination.

PREPARE CARTRIDGE FOR INSERTION INTO THE BLOCK

Check the cartridge to ensure it is free of external contamination, and the O-rings and back-up rings are intact. Dip the cartridge in clean oil to the top of the threads to lubricate the O-rings.

ASSEMBLY

Insert and screw the cartridge into its cavity by hand. It should turn easily up to the top O-ring. If it does not turn easily, the cavity has been machined improperly and the body should not be used.

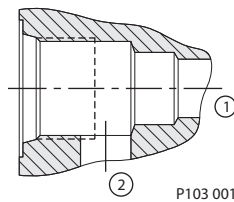
Torque all cartridges per specification shown on catalog sheet. Torque all coil nuts to 5-8 N·m [4-6 lbf·ft] unless otherwise specified.

TEST

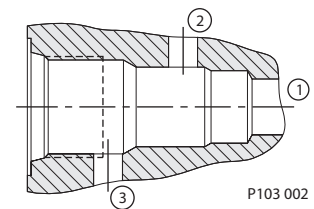
Test the entire system to ensure that the cartridges are performing correctly and to check for leaks.

CAVITY PORT IDENTIFICATION

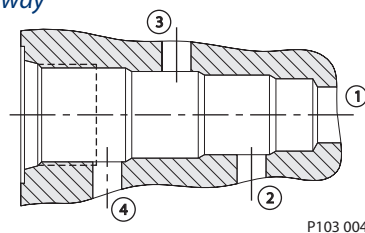
Cavity 2 way



Cavity 3 way



Cavity 4 way

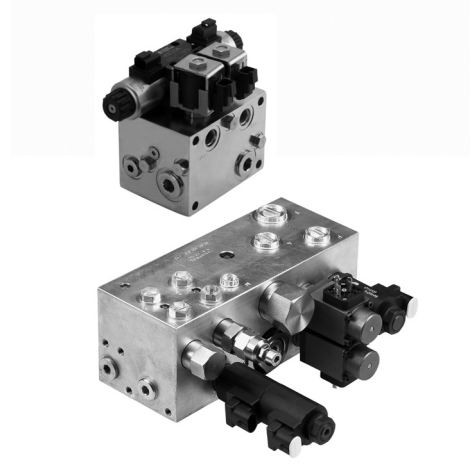


DESCRIPTION

Cartridge valves can be installed in custom designed manifolds to create a **Hydraulic Integrated Circuit (HIC)**. HICs provide many advantages over traditional hydraulic control systems:

- HICs are compact packages that simplify machine plumbing.
- Costs for fittings, tubes, hoses, and seals are dramatically reduced.
- Installation costs are dramatically reduced.
- Leak points are eliminated.
- Service time and costs are dramatically reduced. Components can be replaced without disturbing machine plumbing.
- HICs can be centralized on a machine or strategically located. Using a custom HIC provides the designer unlimited flexibility to optimize machines for assembly, plumbing, wiring, service, and weight distribution.

Hydraulic integrated circuits



F102 018

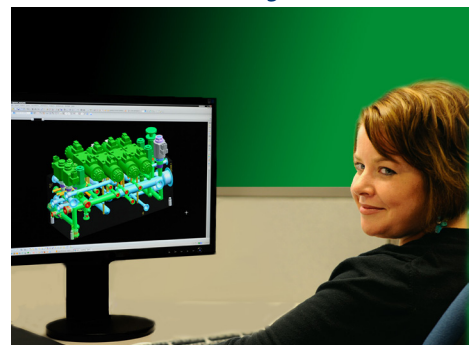
Comatrol designs and manufactures the highest quality custom HICs in the world.

DESIGN CAPABILITIES

A custom HIC can be designed to your circuit requirements. Contact your Comatrol representative for circuit design consultation.

- Manifolds are designed using the most advanced 3-D solid modeling CAD software.
- Advanced quality planning concepts are used throughout the design stage including product and process failure mode and effects analysis and design for manufacturability. A pre-production approval process is followed and initial sample inspection reports are used for first production pieces. Statistical process control is used to control critical features. Control plans and gauge reliability and repeatability programs are used to ensure continued quality.
- Industry-leading rapid prototyping is available to support your test program requirements. Most prototype manifolds can be delivered to meet your schedule requirements.

State of the art CAD design



F102 019

**PRODUCTION
 CAPABILITIES**

- Manifolds are machined from 6061-T6 or 2011 aluminum (for pressures to 210 bar [3,000 psi]), high strength aluminum (pressures up to 240 bar [3,500 psi]), or ductile iron (pressures to 480 bar [7,000 psi]).
- State-of-the art flexible CNC machining centers are used to maintain the highest quality standards.
- All manifolds go through extensive deburring and cleaning operations.
- Aluminum manifolds can be finished with clear or color anodizing on request for added cleanliness, enhanced corrosion resistance, and improved appearance.
- Steel and ductile iron manifolds are zinc plated.

HIC Assembly



F102.001

Clear plastic training aid




P103.228


- HICs are 100% tested on automated computerized test stands. Performance requirements and test specifications are often unique for each custom HIC and are agreed to by Comatrol and the customer prior to production.
 - HICs can be supplied with hydraulic fittings installed on request.
 - HICs can be supplied with custom electrical wire harnesses on request. These can be designed for HICs with two or more solenoids to provide the end-user with a one-point electrical connection to reduce assembly time and eliminate potential wiring mistakes.
- All HICs are identified with a Comatrol part number and manufacturing date code. HICs can be identified with customer specified part numbers, logos, etc., on request.

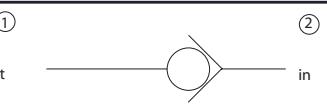
Cartridge Valves Technical Information

Check Valves

Quick Reference

Cartridge	Model No.	Cavity	Description	Flow*	Pressure	Page
	CV04-NB	CP04-2	Check Valve, Ball Type, Normal Direction	3 l/min [1 US gal/min]	207 bar [3000 psi]	02.6
	CV08-NB	SDC08-2		30 l/min [8 US gal/min]	310 bar [4500 psi]	02.7
	CV10-NB	SDC10-2		83 l/min [22 US gal/min]	207 bar [3000 psi]	02.8

Cartridge	Model No.	Cavity	Description	Flow*	Pressure	Page
	CV08-NP	SDC08-2	Check Valve, Poppet Type, Normal Direction	30 l/min [8 US gal/min]	310 bar [4500 psi]	02.9
	CV10-NP	SDC10-2		85 l/min [22 US gal/min]	300 bar [4350 psi]	02.10
	CP100-3	SDC10-2		115 l/min [30 US gal/min]	350 bar [5000 psi]	02.11
	CP102-1	SDC16-2		210 l/min [55 US gal/min]	210 bar [3000 psi]	02.12
	CP103-1	SDC20-2		380 l/min [100 US gal/min]	210 bar [3000 psi]	02.13

Cartridge	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP104-2	CP04-2	Check Valve, Reverse Direction	3 l/min [1 US gal/min]	210 bar [3000 psi]	02.14


Check valves
Quick reference


* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.


Cartridge Valves Technical Information

Check Valves

Quick Reference

Cartridge	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP108-2	SDC08-2	Check Valve, Reverse Direction	20 l/min [5 US gal/min]	350 bar [5000 psi]	02.15
	CP100-2	SDC10-2		50 l/min [13 US gal/min]	350 bar [5000 psi]	02.16
	CP101-2	CP12-2		75 l/min [20 US gal/min]	350 bar [5000 psi]	02.17
	CP102-2	SDC16-2		150 l/min [40 US gal/min]	350 bar [5000 psi]	02.18
	CP103-2	SDC20-2		265 l/min [70 US gal/min]	350 bar [5000 psi]	02.19

Slip-in	Model No.	Cavity	Description	Flow*	Pressure	Page
	3C50-01	FC-144	Check Valve, Slip-in	70 l/min [19 US gal/min]	210 bar [3000 psi]	02.20
	3C60-01	FC-144		70 l/min [19 US gal/min]	140 bar [2000 psi]	02.21
	3C80-01	FC-304		190 l/min [50 US gal/min]	140 210 bar [2000 psi]	02.22
	3C90-01	FC-304		190 l/min [50 US gal/min]	210 bar [3000 psi]	02.23


Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	3C11-01	none	Check Valve, In-line, Female Port	20 l/min [5 US gal/min]	350 bar [5000 psi]	02.24
	RS 06	none		30 l/min [8 US gal/min]	350 bar [5000 psi]	02.25
	3C12-01	none		35 l/min [9 US gal/min]	350 bar [5000 psi]	02.26
	RS 10	none		60 l/min [16 US gal/min]	350 bar [5000 psi]	02.27
	3C13-01	none		70 l/min [19 US gal/min]	350 bar [5000 psi]	02.28
	3C14-01	none		95 l/min [25 US gal/min]	350 bar [5000 psi]	02.29
	RS 13	none		100 l/min [26 US gal/min]	315 bar [4500 psi]	02.30
	RS 19	none		140 l/min [37 US gal/min]	280 bar [4000 psi]	02.31
	3C15-01	none		150 l/min [40 US gal/min]	350 bar [5000 psi]	02.32
	RS 25	none		200 l/min [53 US gal/min]	245 bar [3500 psi]	02.33
	3C16-01	none		230 l/min [61 US gal/min]	350 bar [5000 psi]	02.34

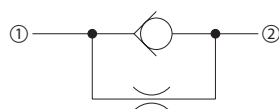
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Cartridge Valves Technical Information

Check Valves

Quick Reference

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	3CM11-01	none	Check Valve, In-line, Male Port	20 l/min [5 US gal/min]	350 bar [5000 psi]	02.35
	3CM12-01	none		35 l/min [9 US gal/min]	350 bar [5000 psi]	02.36
	3CM13-01	none		70 l/min [19 US gal/min]	350 bar [5000 psi]	02.37
	3CM14-01	none		95 l/min [25 US gal/min]	350 bar [5000 psi]	02.38
	3CM15-01	none		150 l/min [40 US gal/min]	350 bar [5000 psi]	02.39
	3CM16-01	none		230 l/min [61 US gal/min]	350 bar [5000 psi]	02.40

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	2RN11-01	none	Check Valve, In-line, Female Port, with Orifice	20 l/min [5 US gal/min]	350 bar [5000 psi]	02.41

Check valves
Quick reference

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

BASIC OPERATION

Check valves allow free flow in one direction and block flow in the opposite direction.

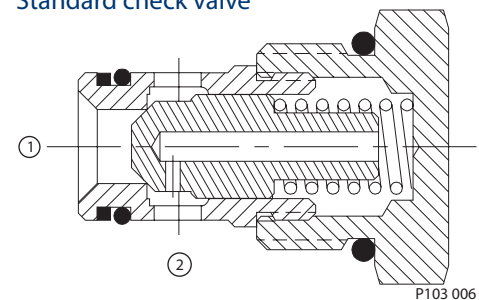
Check valves



STANDARD CHECK VALVES

Standard check valves, suitable for most applications, have fully guided poppets which always block flow from 2 to 1. They are spring biased closed until sufficient pressure is applied at 1 to open flow to 2. This pressure is commonly called the crack pressure. Several crack pressures are available for each model. Consult check valves section for details. This valve is also available with an integral orifice for free flow in one direction and controlled flow (speed) in the opposite direction.

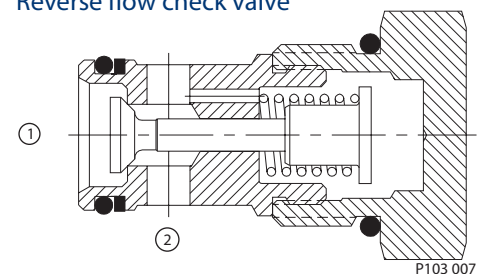
Standard check valve



REVERSE FLOW CHECK VALVES

Reverse flow check valves, useful for higher pressure applications or where housing or size constraints require this flow path are also available. These valves have guided poppets that block flow from 1 to 2 and are spring biased closed until sufficient pressure is applied at 2 to open flow to 1.

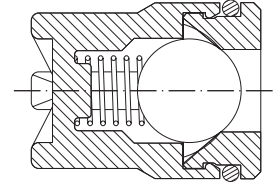
Reverse flow check valve



SLIP-IN CHECK VALVES

Slip-in style check valves are cartridges that drop into small cavities and are retained by SAE plugs or by other cartridge valves. They are ideal for use in manifolds where space savings is critical. Versions of these valves with Delrin® seats are also available for applications requiring extremely low leakage.

Slip-in check valve

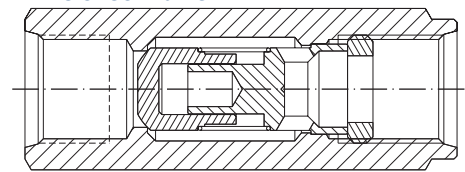


P103 008

INLINE CHECK VALVES

Also available are in-line check valves, which can be used to simplify machine plumbing.

Inline check valve



P103 009

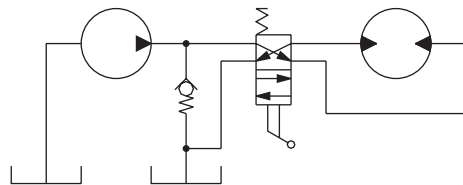
APPLICATIONS

Check valves have many common

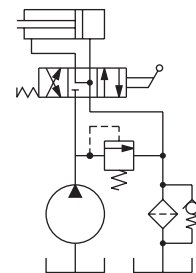
applications including:

- Low pressure relief valve
- Bypass for filter elements
- Logic for load-sensing circuits
- Anti-cavitation or make-up
- Load holding (refer to Motion Control Valves for more information)

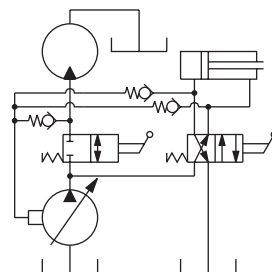
Low pressure relief valve



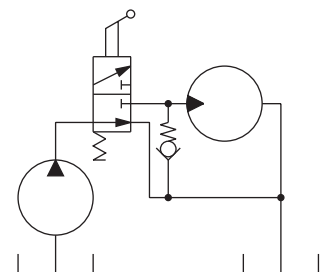
Bypass for filter elements



Logic for load-sensing circuits



Anti-cavitation



P103 010

Cartridge Valves Technical Information

Check Valves

Cartridge

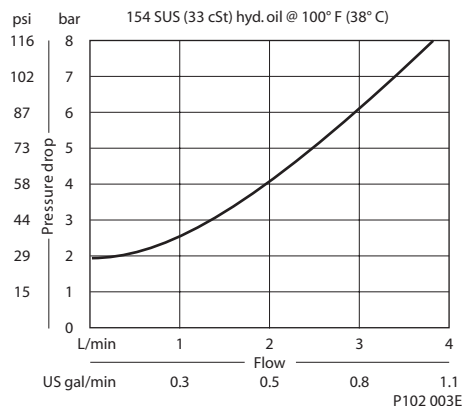
CV04-NB

OPERATION

This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 001E

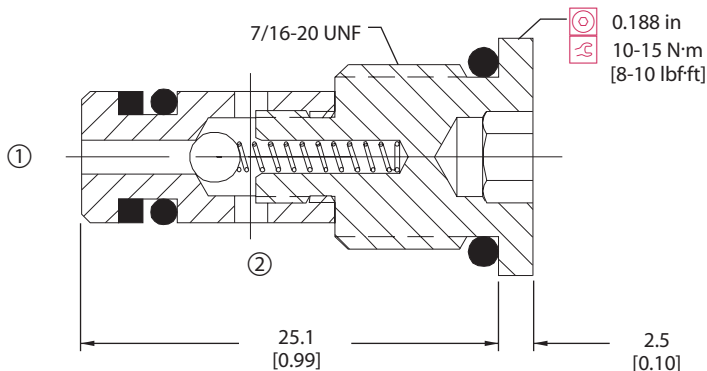
Specifications

Rated pressure	207 bar [3000 psi]
Rated flow at 7 bar [100 psi]	3 l/min [1 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.01 kg [0.03 lb]
Cavity	CP04-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 000E

ORDERING INFORMATION

CV04-NB-0.3-B-00

Crack Pressure
 0.3 = 0.3 bar [5 psi]
 1.7 = 1.7 bar [25 psi]

Housing and ports
 00 = NoHousing
 4S = Al, #4 SAE
 2B = Al, 1/4 BSP

Housing Part #
 No Housing
 CP04-2-4S
 CP04-2-2B

Seals
 B = Buna-N
 V = Viton

Seal Kit
 120077
 11019554

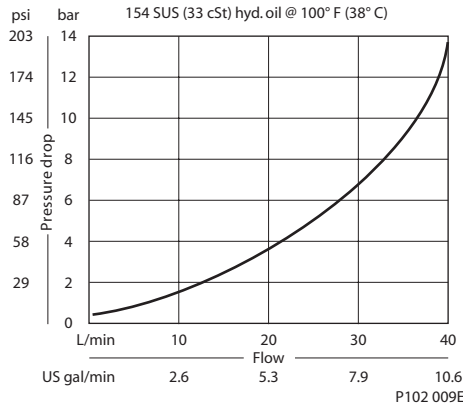
P108 388E

OPERATION

This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 001E

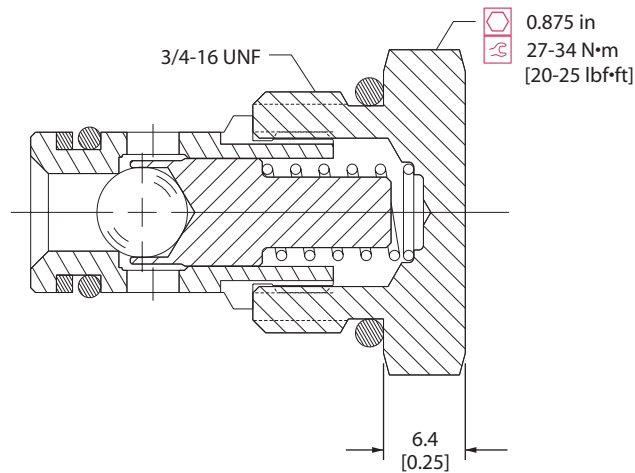
Specifications

Rated pressure	310 bar [4500 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.05 kg [0.11 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 556

ORDERING INFORMATION

CV08-NB-0.3-B-00

Crack Pressure
 0.3 = 0.3 bar [5 psi]
 0.7 = 0.7 bar [10 psi]
 1 = 1.0 bar [15 psi]
 2 = 2.0 bar [30 psi]
 5 = 5.0 bar [65 psi]
 7 = 7.0 bar [100 psi]

Housing and ports
 00 = No Housing
 DG-2B = Al, 1/4 BSP
 DG-3B = Al, 3/8 BSP
 4S = Al, #4 SAE
 6S = Al, #6 SAE

Housing Part #
 No Housing
 SDC08-2-DG-2B
 SDC08-2-DG-3B
 CP08-2-4S
 CP08-2-6S

Seals
 B = Buna-N
 V = Viton

Seal Kit
 120221
 120222

P108 389E

Cartridge Valves Technical Information

Check Valves

Cartridge

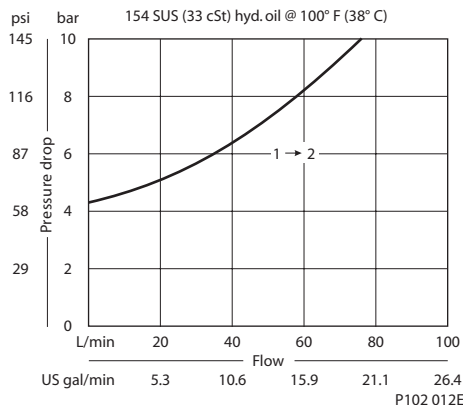
CV10-NB

OPERATION

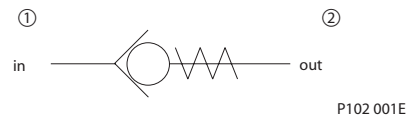
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



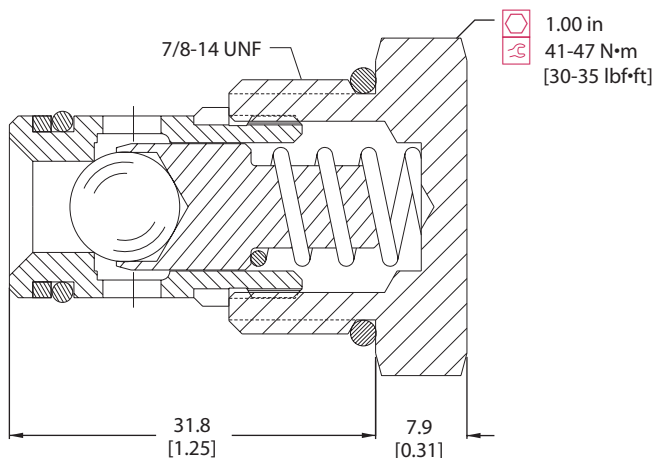
Specifications

Rated pressure	207 bar [3000 psi]
Rated flow at 7 bar [100 psi]	83 l/min [22 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.08 kg [0.17 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 558

ORDERING INFORMATION

CV10-NB-0.3-B-00

Crack Pressure

- 0.3 = 0.3 bar [5 psi]
- 1 = 1.0 bar [15 psi]
- 2 = 2.0 bar [30 psi]
- 5 = 5.0 bar [65 psi]
- 7 = 7.0 bar [100 psi]
- 10 = 10.3 bar [150 psi]

Housing and ports

- 00 = No Housing
- DG-3B = Al, 3/8 BSP
- DG-4B = Al, 1/2 BSP
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE

Housing Part #

- No Housing
- SDC10-2-DG-3B
- SDC10-2-DG-4B
- CP10-2-6S
- CP10-2-8S

Seals

- B = Buna-N
- V = Viton

Seal Kit

- 120015
- 120016

P108 390E

Cartridge Valves Technical Information

Check Valves

Cartridge

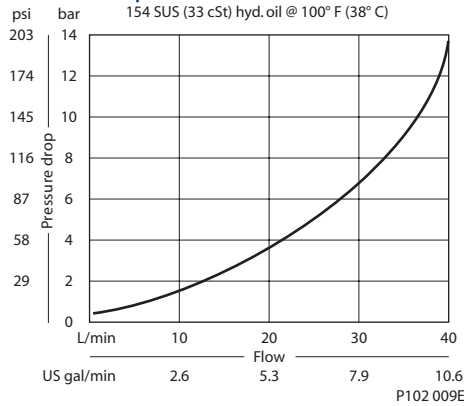
CV08-NP

OPERATION

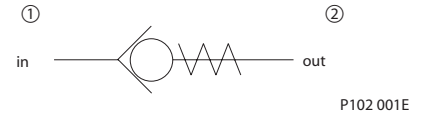
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



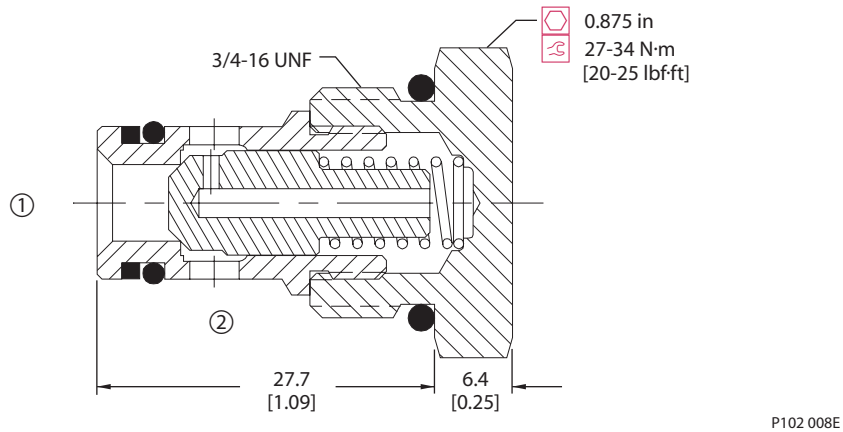
Specifications

Rated pressure	310 bar [4500 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.05 kg [0.11 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CV08-NP-0.3-B-4S

Crack Pressure

- 0.3 = 0.3 bar [5 psi]
- 0.7 = 0.7 bar [10 psi]
- 1 = 1.0 bar [15 psi]
- 2 = 2.0 bar [30 psi]
- 5 = 5.0 bar [65 psi]
- 7 = 7.0 bar [100 psi]

Housing and ports

- 00 = No Housing
- DG2B = Al, 1/4 BSP
- DG3B = Al, 3/8 BSP
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- Other housings available

Housing P/N

- No Housing
- SDC08-2-DG-2B
- SDC08-2-DG-3B
- CP08-2-4S
- CP08-2-6S

Seals

- B = Buna N 120221
- V = Viton 120222

Seal kit

- B = Buna N 120221
- V = Viton 120222

P103 651E

Cartridge Valves Technical Information

Check Valves

Cartridge

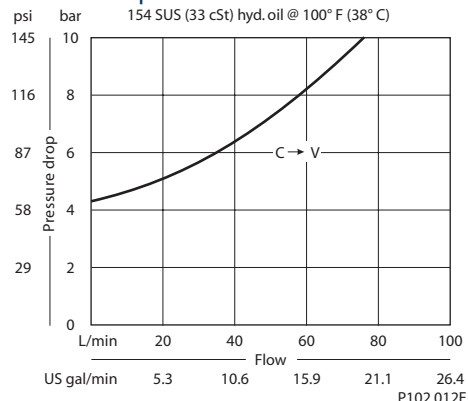
CV10-NP

OPERATION

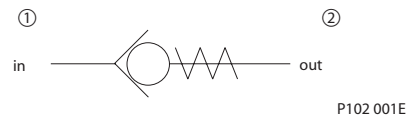
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



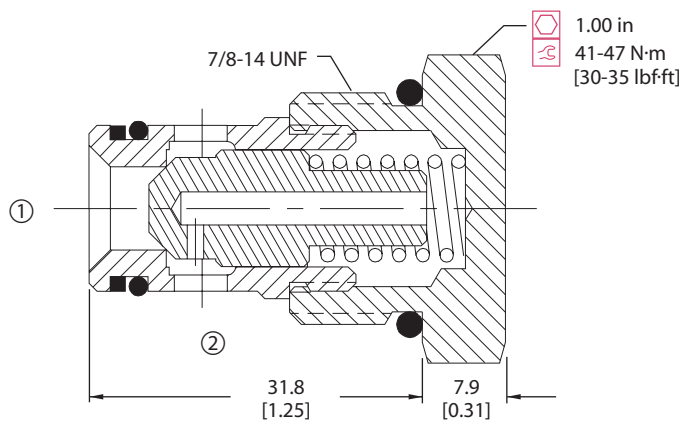
Specifications

Rated pressure	300 bar [4350 psi]
Rated flow at 7 bar [100 psi]	85 l/min [22 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.08 kg [0.18 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CV10-NP-5-B-6S

Crack Pressure

- 0.3 = 0.3 bar [5 psi]
- 1 = 1.0 bar [15 psi]
- 2 = 2.0 bar [30 psi]
- 5 = 5.0 bar [65 psi]
- 7 = 7.0 bar [100 psi]
- 10 = 10 bar [145 psi]

Housing and ports

- 00 = No Housing
- DG3B = Al, 3/8 BSP
- DG4B = Al, 1/2 BSP
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- Other housings available

Housing P/N

- No Housing
- SDC10-2-DG-3B
- SDC10-2-DG-4B
- CP10-2-6S
- CP10-2-8S

Seals

- Seal kit
- B = Buna N 120015
- V = Viton 120016

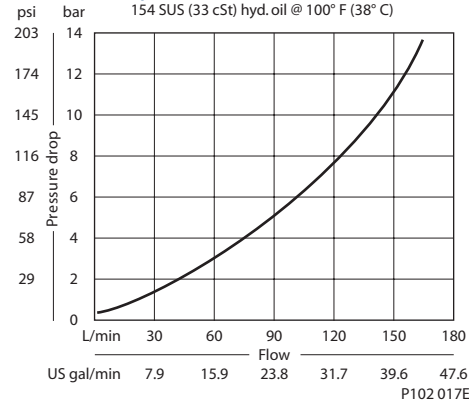
P103 650E

OPERATION

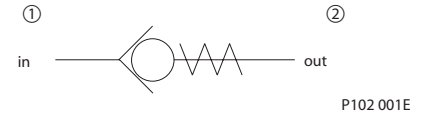
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



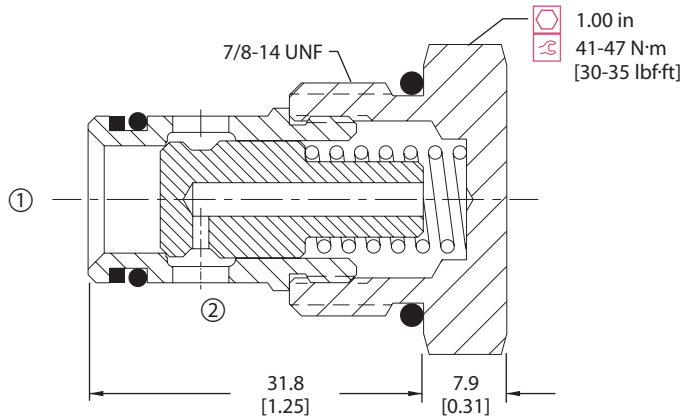
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Leakage	6 drops/min @ 207 bar [3000 psi]
Weight	0.08 kg [0.17 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP100-3-B-8S-005

Housing and ports
 0 = No Housing
 DG3B = Al, 3/8 BSP
 DG4B = Al, 1/2 BSP
 6S = Al, #6 SAE
 8S = Al, #8 SAE
 Other housings available

Housing P/N
 No Housing
 SDC10-2-DG-3B
 SDC10-2-DG-4B
 CP10-2-6S
 CP10-2-8S

Crack pressure
 005 = 0.34 bar [5 psi]
 015 = 1.0 bar [15 psi]
 040 = 2.8 bar [40 psi]
 065 = 4.5 bar [65 psi]

Seals
 B = Buna-N
 V = Viton

Seal kit
 120015
 120016

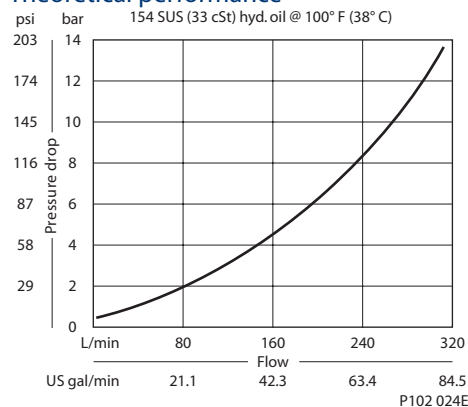
P102 171E

OPERATION

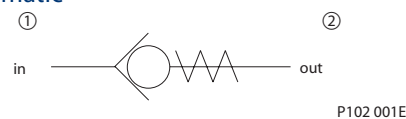
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



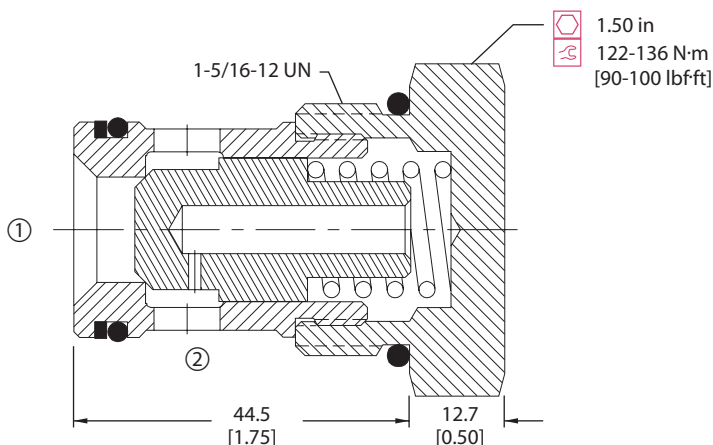
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	210 l/min [55 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.26 kg [0.57 lb]
Cavity	SDC16-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 023E

ORDERING INFORMATION

CP102-1-B-16S-005

Housing and ports
 0 = No Housing
 DG6B = Al, 3/4 BSP
 DG8B = Al, 1 BSP
 12S = Al, #12 SAE
 16S = Al, #16 SAE
 Other housings available

Seals Seal kit
 B = Buna-N 120019
 V = Viton 120020

Housing P/N
 No Housing
 SDC16-2-DG-6B
 SDC16-2-DG-8B
 CP16-2-12S
 CP16-2-16S

Crack pressure

005 = 0.34 bar [5 psi]
 015 = 1.0 bar [15 psi]
 030 = 2.1 bar [30 psi]
 040 = 2.8 bar [40 psi]
 065 = 4.5 bar [65 psi]
 100 = 6.9 bar [100 psi]

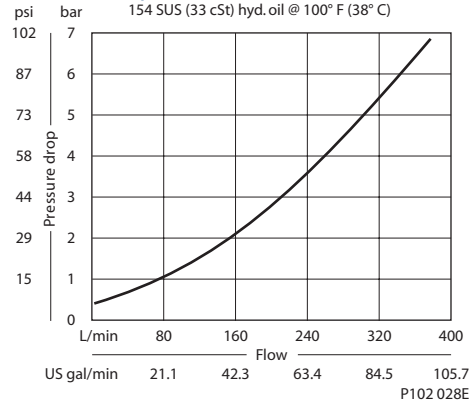
P102 186E

OPERATION

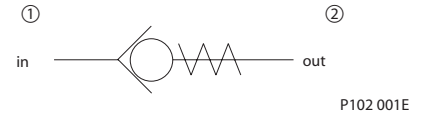
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



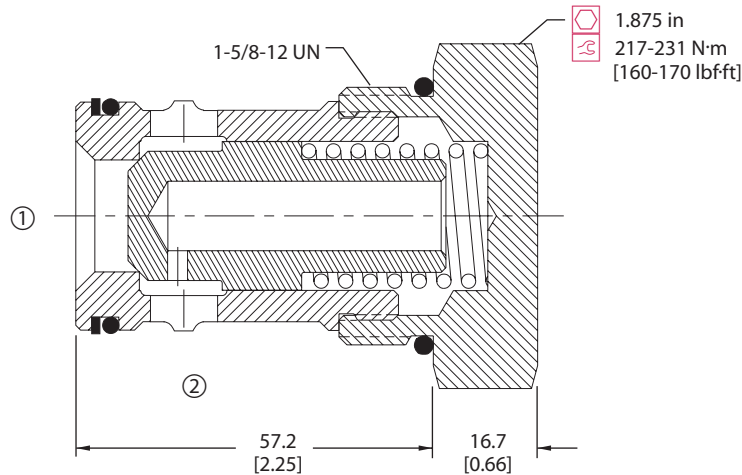
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	380 l/min [100 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.54 kg [1.20 lb]
Cavity	SDC20-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP103-1-B-20S-005

Housing and ports	Housing P/N	Crack pressure
0 = No Housing	No Housing	005 = 0.34 bar [5 psi]
8B = Al, 1 BSP	CP20-2-8B	015 = 1.0 bar [15 psi]
10B = Al, 1-1/4 BSP	CP20-2-10B	065 = 4.5 bar [65 psi]
16S = Al, #16 SAE	CP20-2-16S	
20S = Al, #20 SAE	CP20-2-20S	
Other housings available		
Seals	Seal kit	
B = Buna-N	120011	
V = Viton	120012	

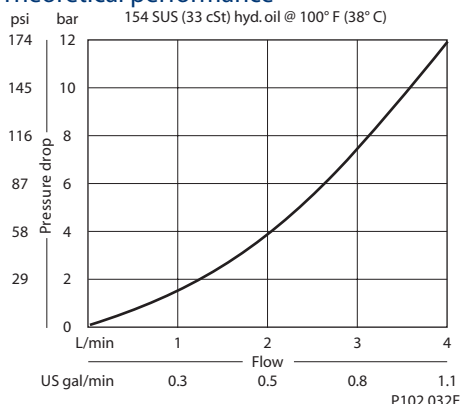
P102 194E

OPERATION

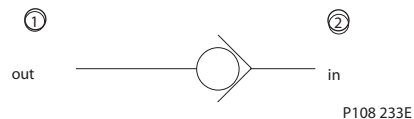
This valve allows free flow from 2 to 1 and blocks flow from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



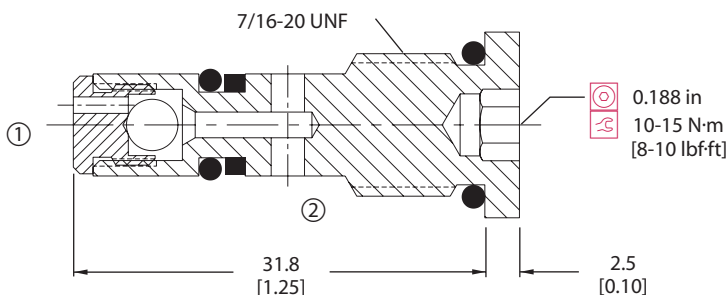
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	3 l/min [1 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.01 kg [0.03 lb]
Cavity	CP04-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP104-2-B-4S

Housing and ports

- 0 = No Housing
- 2B = Al, 1/4 BSP
- 4S = Al, #4 SAE
- Other housings available

Housing P/N

- No Housing
- CP04-3-2B
- CP04-2-4S

Seals

- B = Buna-N
 - V = Viton
- Seal kit
 120077
 11019554

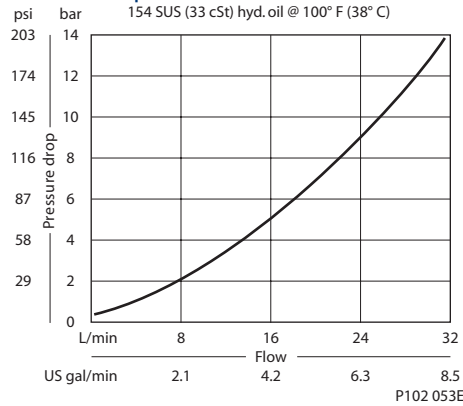
P102 147

OPERATION

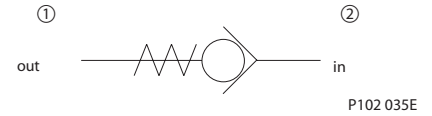
This valve allows free flow from 2 to 1 and blocks flow from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



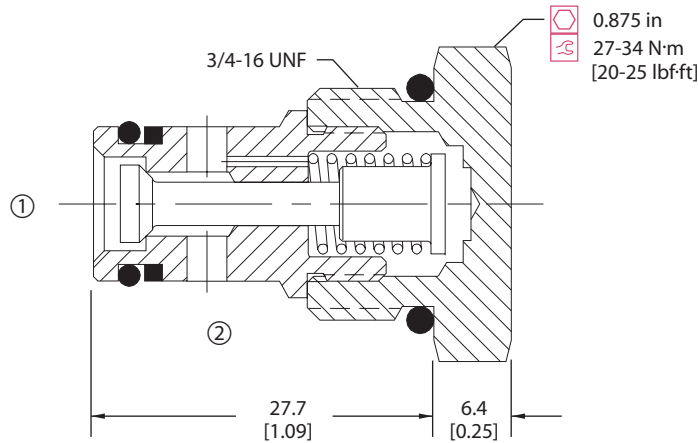
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Leakage	6 drops/min @ 207 bar [3000 psi]
Weight	0.05 kg [0.11 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 052E

ORDERING INFORMATION

CP108-2-B-6S-005

Housing and ports

- 0 = No Housing
- DG2B = Al, 1/4 BSP
- DG3B = Al, 3/8 BSP
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- Other housings available

Housing P/N

- No Housing
- SDC08-2-DG-2B
- SDC08-2-DG-3B
- CP8-2-4S
- CP8-2-6S

Crack pressure

- 005 = 0.34 bar [5 psi]
- 015 = 1.0 bar [15 psi]
- 030 = 2.1 bar [30 psi]
- 050 = 3.4 bar [50 psi]
- 065 = 4.5 bar [65 psi]
- 100 = 6.9 bar [100 psi]

Seals

- B = Buna-N
 - V = Viton
- Seal kit
 120221
 120222

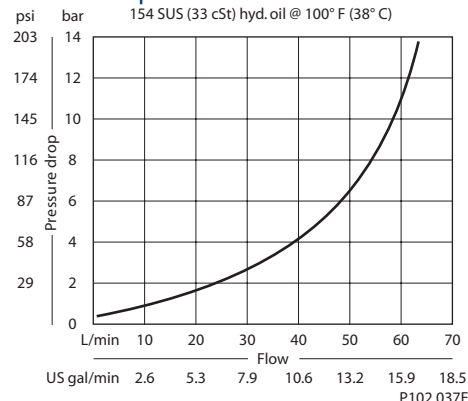
P102 156E

OPERATION

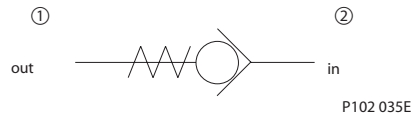
This valve allows free flow from 2 to 1 and blocks flow from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



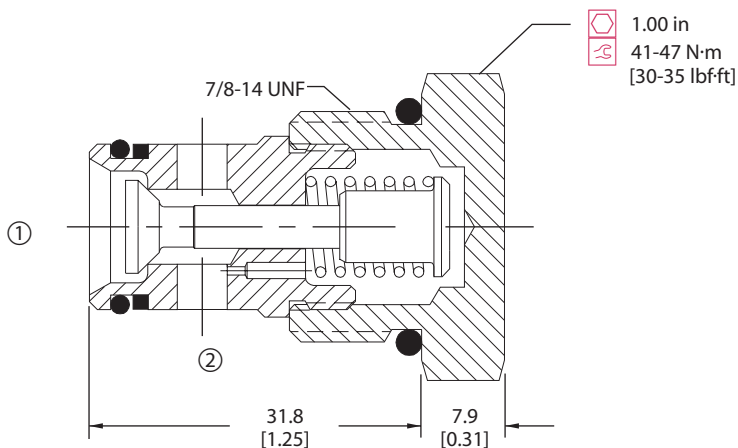
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Leakage	6 drops/min @ 207 bar [3000 psi]
Weight	0.08 kg [0.17 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP100-2-B-8S-005

Housing and ports

- 0 = No Housing
- DG3B = Al, 3/8 BSP
- DG4B = Al, 1/2 BSP
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- Other housings available

Housing P/N

- No Housing
- SDC10-2-DG-3B
- SDC10-2-DG-4B
- CP10-2-6S
- CP10-2-8S

Crack pressure

- 005 = 0.34 bar [5 psi]
- 015 = 1.0 bar [15 psi]
- 030 = 2.1 bar [30 psi]
- 050 = 3.4 bar [50 psi]
- 065 = 4.5 bar [65 psi]
- 100 = 6.9 bar [100 psi]

Seals

- B = Buna-N Seal kit 120015
- V = Viton Seal kit 120016

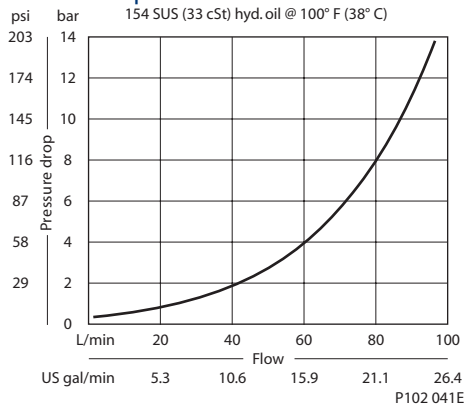
P102 166E

OPERATION

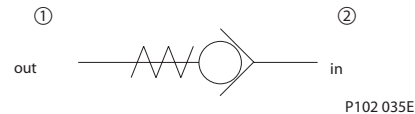
This valve allows free flow from 2 to 1 and blocks flow from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



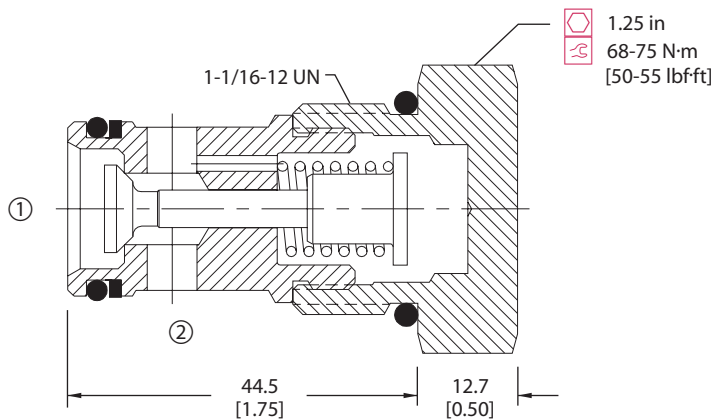
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	75 l/min [20 US gal/min]
Leakage	6 drops/min @ 207 bar [3000 psi]
Weight	0.18 kg [0.40 lb]
Cavity	CP12-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 040E

ORDERING INFORMATION

CP101-2-B-12S-005

Housing and ports

- 0 = No Housing
- 4B = Al, 1/2 BSP
- 6B = Al, 3/4 BSP
- 10S = Al, #10 SAE
- 12S = Al, #12 SAE
- Other housings available

Housing P/N

- No Housing
- CP12-2-4B
- CP12-2-6B
- CP12-2-10S
- CP12-2-12S

Crack pressure

- 005 = 0.34 bar [5 psi]
- 015 = 1.0 bar [15 psi]
- 030 = 2.1 bar [30 psi]
- 065 = 4.5 bar [65 psi]
- 100 = 6.9 bar [100 psi]

Seals

- B = Buna-N
 - V = Viton
- Seal kit
 120017
 120018

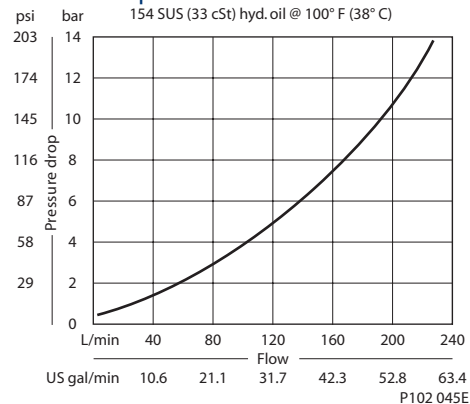
P102 181E

OPERATION

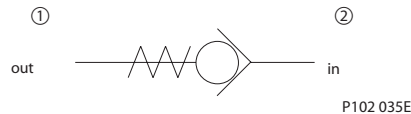
This valve allows free flow from 2 to 1 and blocks flow from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



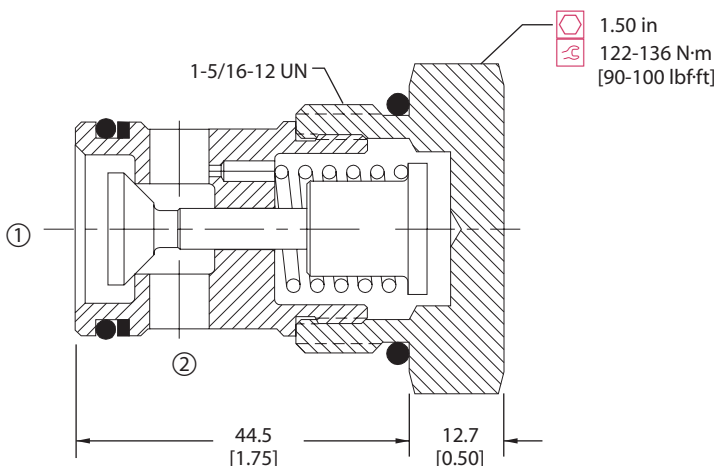
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	150 l/min [40 US gal/min]
Leakage	6 drops/min @ 207 bar [3000 psi]
Weight	0.26 kg [0.57 lb]
Cavity	SDC16-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 044E

ORDERING INFORMATION

CP102-2-B-16S-005

Housing and ports
0 = No Housing
HG-6B = Al, 3/4 BSP
HG-8B = Al, 1 BSP
12S = Al, #12 SAE
16S = Al, #16 SAE
Other housings available

Housing P/N
No Housing
SDC16-2-HG-6B
SDC16-2-HG-8B
CP16-2-12S
CP16-2-16S

Crack pressure

005 = 0.34 bar [5 psi]
015 = 1.0 bar [15 psi]
030 = 2.1 bar [30 psi]
050 = 3.4 bar [50 psi]
065 = 4.5 bar [65 psi]
100 = 6.9 bar [100 psi]

Seals
B = Buna-N
V = Viton
Seal kit
120019
120020

P102 190E

Cartridge Valves Technical Information

Check Valves

Cartridge

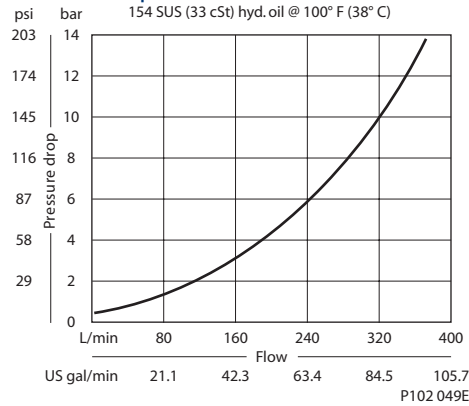
CP103-2

OPERATION

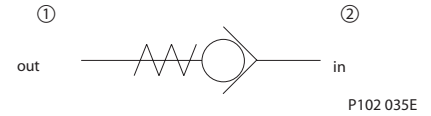
This valve allows free flow from 2 to 1 and blocks flow from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



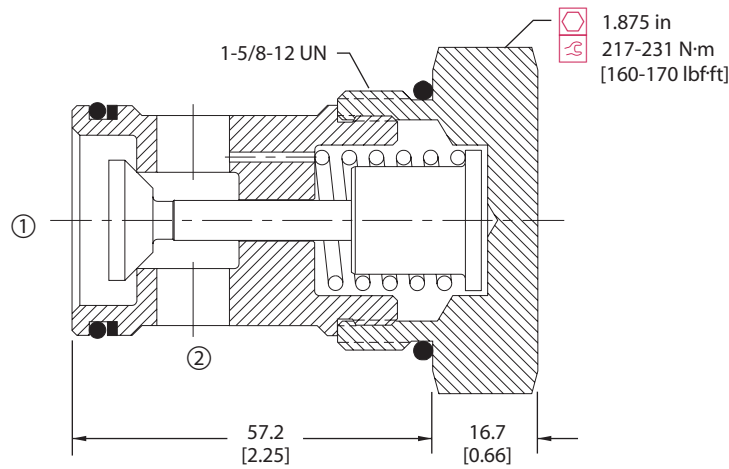
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Leakage	6 drops/min @ 207 bar [3000 psi]
Weight	0.54 kg [1.20 lb]
Cavity	SDC20-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP103-2-B-20S-005

Housing and ports

0 = No Housing
 8B = Al, 1 BSP
 10B = Al, 1-1/4 BSP
 16S = Al, #16 SAE
 20S = Al, #20 SAE
 Other housings available

Housing P/N

No Housing
 CP20-2-8B
 CP20-2-10B
 CP20-2-16S
 CP20-2-20S

Crack pressure

005 = 0.34 bar [5 psi]
 015 = 1.0 bar [15 psi]
 030 = 2.1 bar [30 psi]
 050 = 3.4 bar [50 psi]
 065 = 4.5 bar [65 psi]
 100 = 6.9 bar [100 psi]

Seals

Code Seal kit
 B = Buna-N 120011
 V = Viton 120012

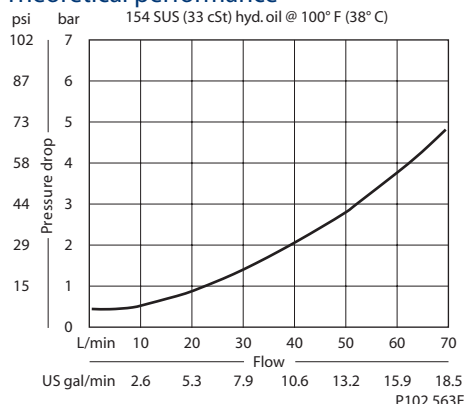
P102 142E

OPERATION

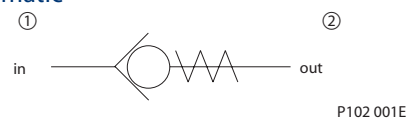
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



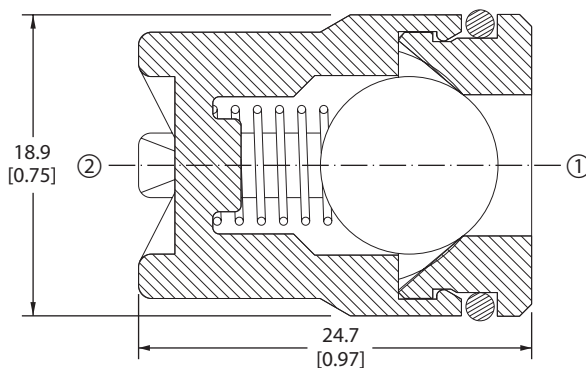
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	70 l/min [19 US gal/min]
Leakage	15 drops/min @ rated pressure
Weight	0.03 kg [0.07 lb]
Cavity	FC-144

DIMENSIONS

mm [in]

Cross-sectional view



P102 550

ORDERING INFORMATION

3C50-01-B-0-005

Crack pressure
 005 = 0.34 bar [5 psi]

Housing and ports
 0 = No Housing

Seals
 B = Buna-N
 V = Viton

Seal kit
 720399
 720420

P102 552E

Cartridge Valves Technical Information

Check Valves

Slip-in

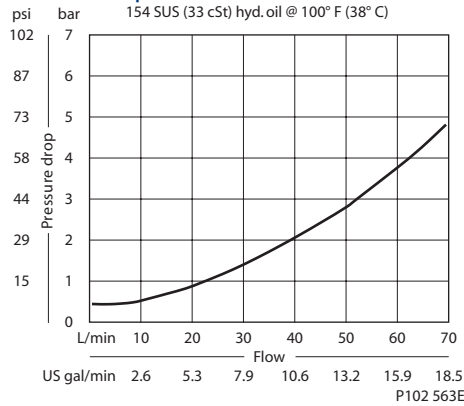
3C60-01

OPERATION

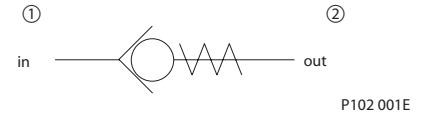
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1. Valve uses a Delrin® seat for low leakage

SPECIFICATIONS

Theoretical performance



Schematic



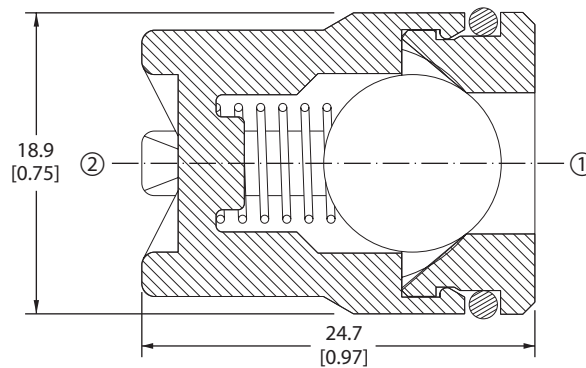
Specifications

Rated pressure	140 bar [2000 psi]
Rated flow at 7 bar [100 psi]	70 l/min [19 US gal/min]
Leakage	6 drops/min @ rated pressure
Weight	0.01 kg [0.02 lb]
Cavity	FC-144

DIMENSIONS

mm [in]

Cross-sectional view



P102 550

ORDERING INFORMATION

3C60-01-B-0-005

Crack pressure
 005 = 0.34 bar [5 psi]

Housing and ports
 0 = No Housing

Seals
 B = Buna-N
 V = Viton

Seal kit
 720399
 720420

P102 551E

Cartridge Valves Technical Information

Check Valves

Slip-in

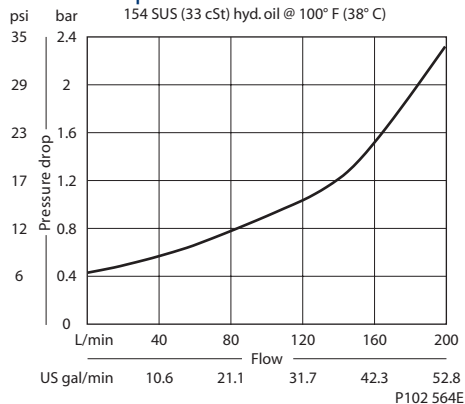
3C80-01

OPERATION

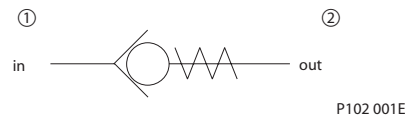
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1. Valve uses a Delrin® seat for low leakage.

SPECIFICATIONS

Theoretical performance



Schematic



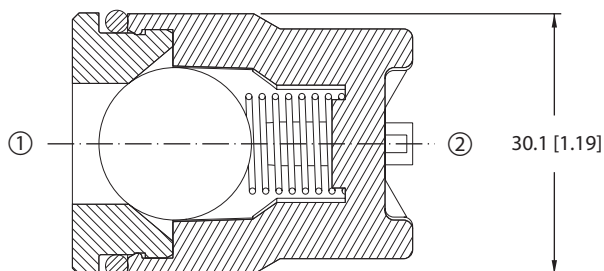
Specifications

Rated pressure	140 bar [2000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	6 drops/min @ rated pressure
Weight	0.04 kg [0.09 lb]
Cavity	FC-304

DIMENSIONS

mm [in]

Cross-sectional view



P102 553E

ORDERING INFORMATION

3C80-01-B-0-005

Cracking pressure
 005 = 0.34 bar [5 psi]
 025 = 1.7 bar [25 psi]

Housing and ports
 00 = No Housing

Seals
 B = Buna-N Seal kit 720607
 V = Viton Seal kit 720601

P102 554E

Cartridge Valves Technical Information

Check Valves

Slip-in

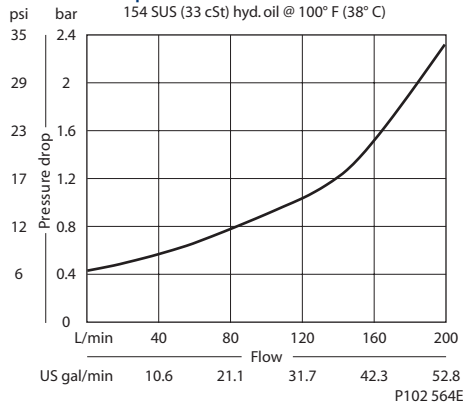
3C90-01

OPERATION

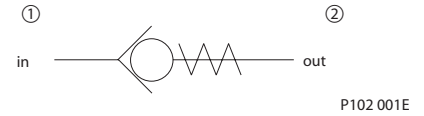
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



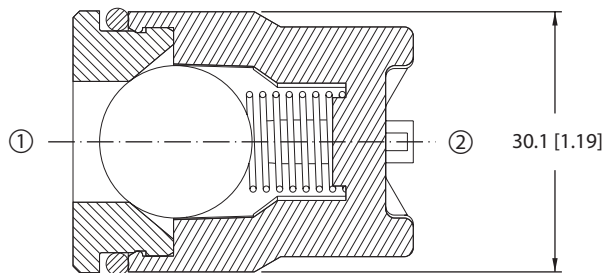
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	15 drops/min @ rated pressure
Weight	0.05 kg [0.11 lb]
Cavity	FC-304

DIMENSIONS

mm [in]

Cross-sectional view



P102 553E

ORDERING INFORMATION

3C90-01-B-0-005

Crack pressure
 005 = 0.34 bar [5 psi]

Housing and ports
 0 = No Housing

Seals
 B = Buna-N Seal kit 720607
 V = Viton Seal kit 720601

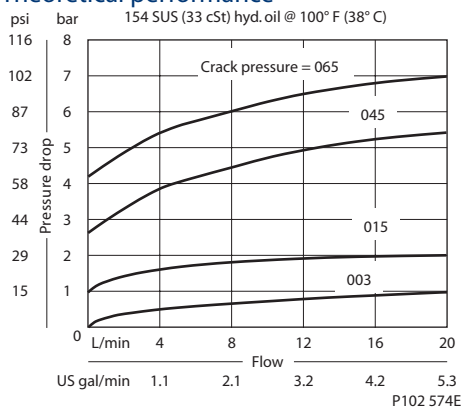
P102 555E

OPERATION

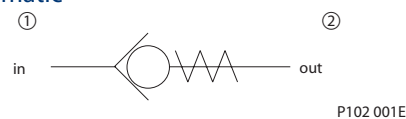
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



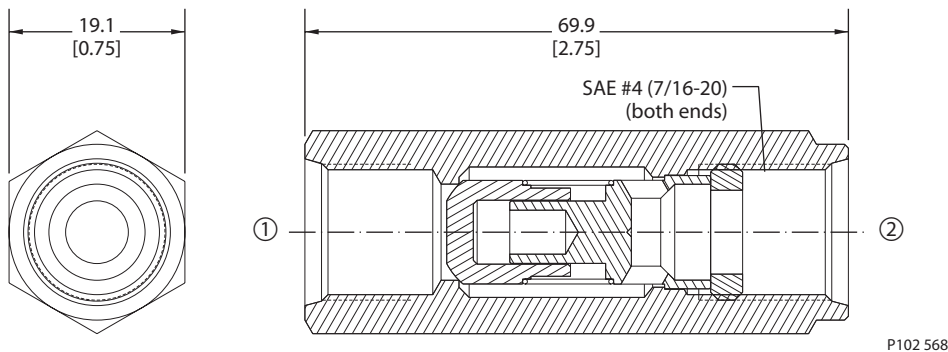
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	0.11 kg [0.24 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

3C11-01-4S-65

Crack pressure
 3 = 0.2 bar [3 psi]
 15 = 1.0 bar [15 psi]
 45 = 3.1 bar [45 psi]
 65 = 4.5 bar [65 psi]

Port sizes
 4S = SAE #4

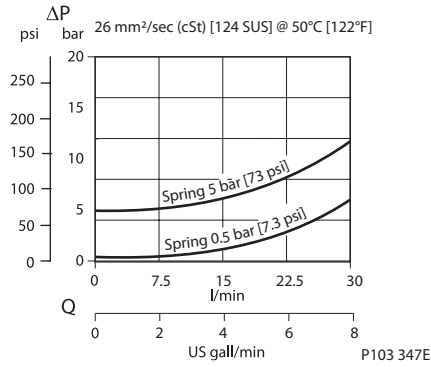
P102 580E

OPERATION

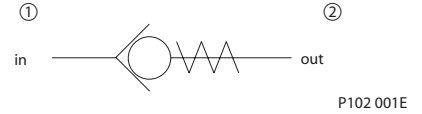
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



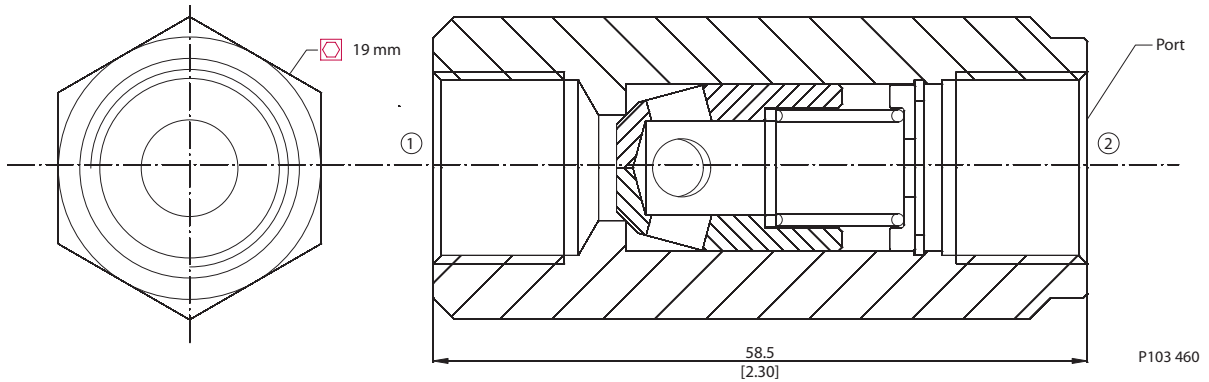
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Weight	0.08 kg [0.18 lb]
Cavity	none

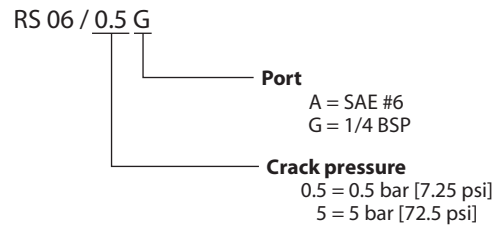
DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION



P103 348E

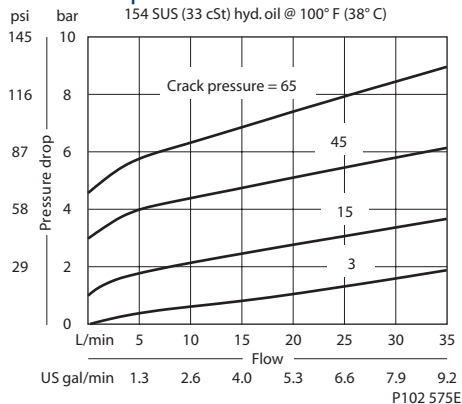
Check valves
RS 06

OPERATION

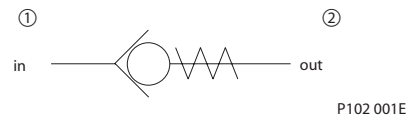
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



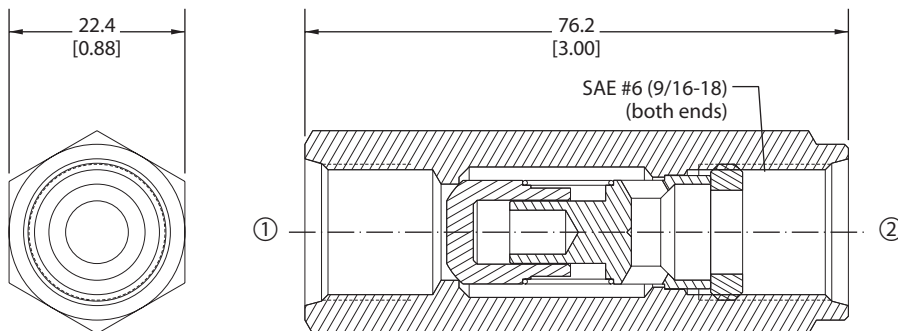
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	0.17 kg [0.37 lb]
Cavity	none

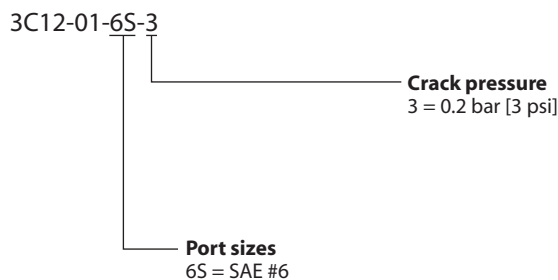
DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION



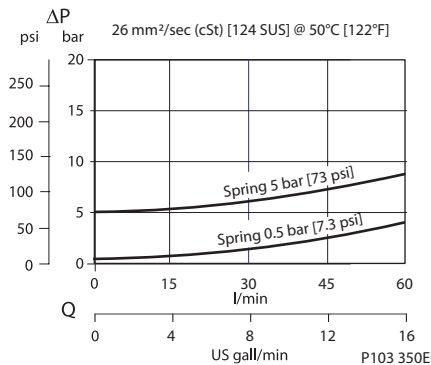
P102 581E

OPERATION

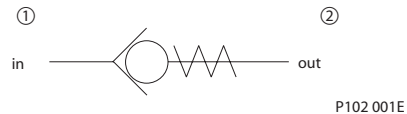
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



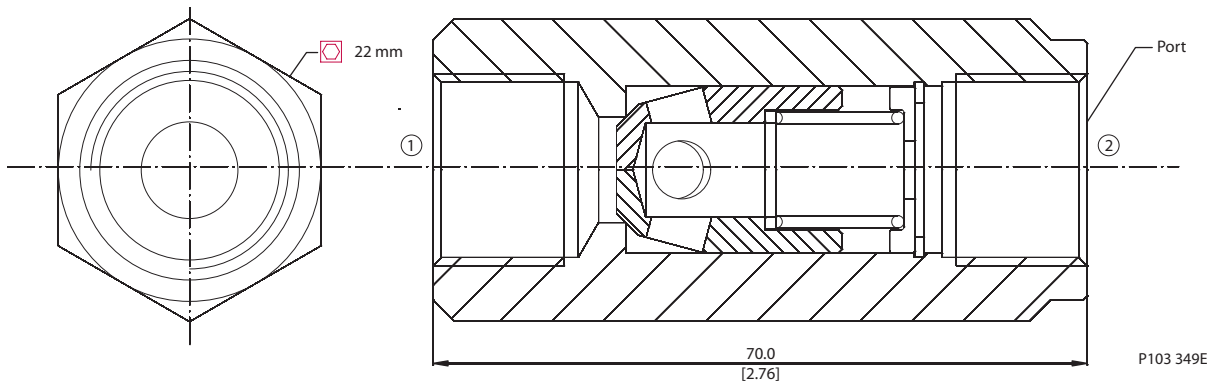
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	60 l/min [16 US gal/min]
Weight	0.13 kg [0.29 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

RS 10 / 5 - G

Port
 G = 3/8 BSP

Crack Pressure
 0.5 = 0.5 bar [7 psi]
 5 = 5 bar [73 psi]

P103 351E

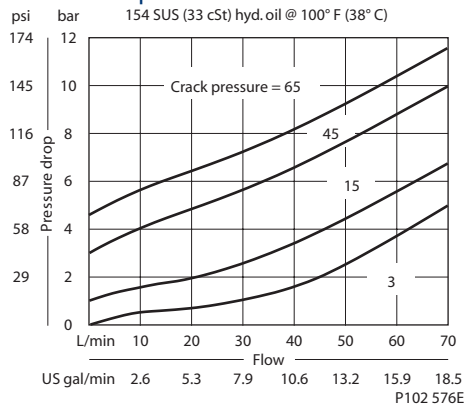
Check valves
RS 10

OPERATION

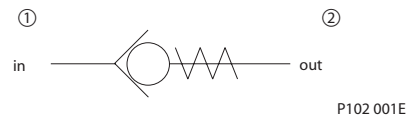
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



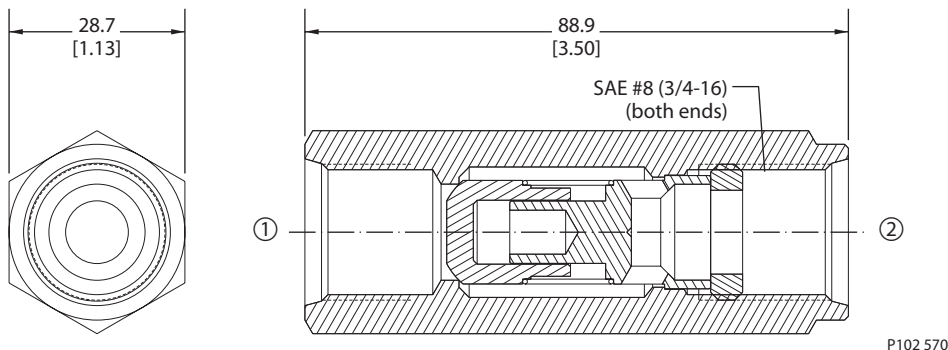
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	70 l/min [19 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	0.31 kg [0.68 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

3C13-01-8S-3

Crack pressure
 3 = 0.2 bar [3 psi]
 15 = 1.0 bar [15 psi]
 45 = 3.1 bar [45 psi]
 65 = 4.5 bar [65 psi]

Port sizes
 8S = SAE #8

P102 582E

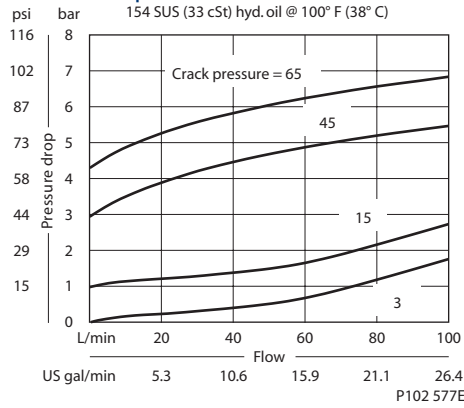
Cartridge Valves Technical Information
 Check Valves
 In-line
 3C14-01

OPERATION

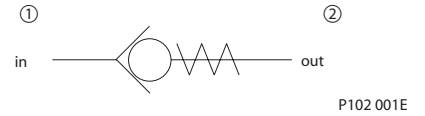
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



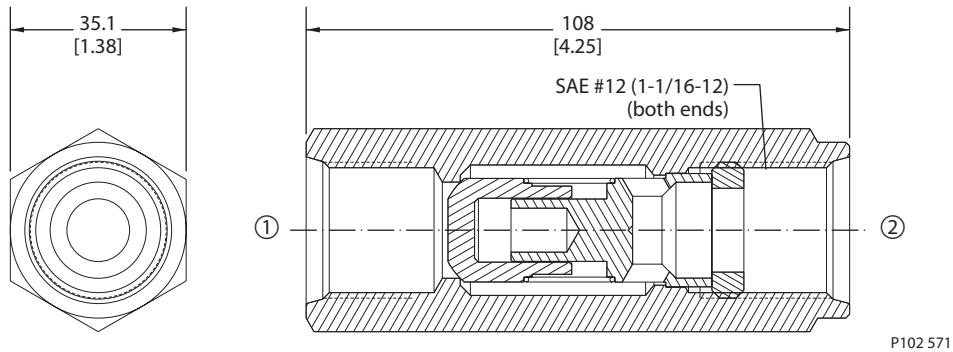
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	95 l/min [25 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	0.54 kg [1.19 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

3C14-01-12S-3

Crack pressure
 3 = 0.2 bar [3 psi]
 15 = 1.0 bar [15 psi]
 45 = 3.1 bar [45 psi]
 65 = 4.5 bar [65 psi]

Port sizes
 12S = SAE #12

P102 583E

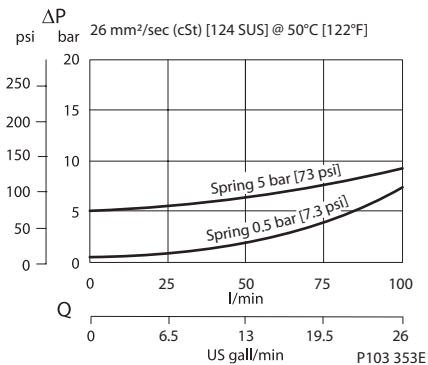
Check valves
3C14-01

OPERATION

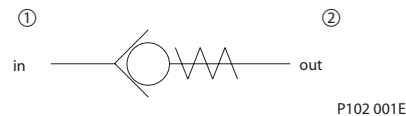
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



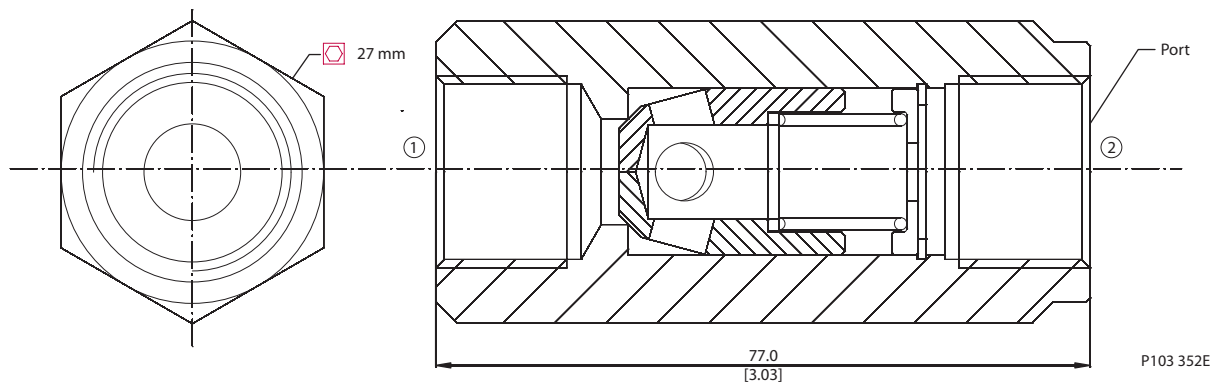
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	100 l/min [26 US gal/min]
Weight	0.21 kg [0.46 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

RS 13 / 0.5 - G

Ports
G = 1/2 BSP

Crack Pressure
0.5 = 0.5 bar [7 psi]
5 = 5 bar [73 psi]

P103 354E

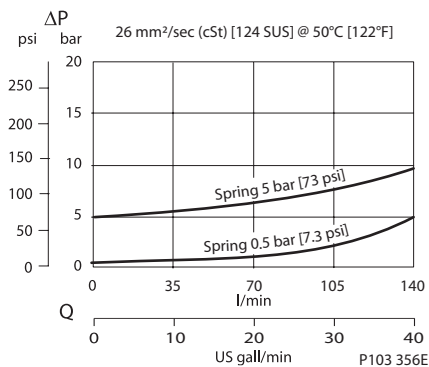
Check valves
RS 13

OPERATION

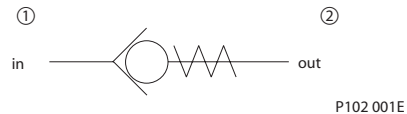
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



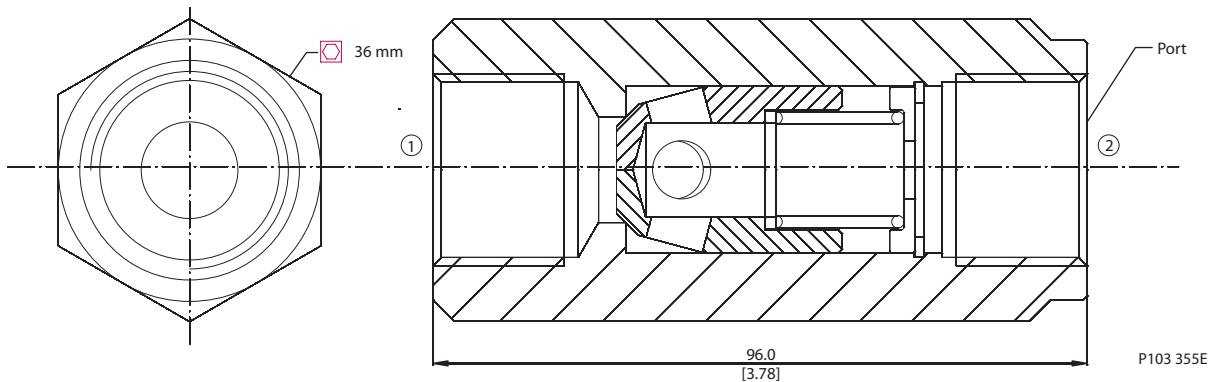
Specifications

Rated pressure	280 bar [4000 psi]
Rated flow at 7 bar [100 psi]	140 l/min [37 US gal/min]
Weight	0.43 kg [0.95 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

RS 19 / 0.5 - G

Ports

A = SAE #12
 G = 3/4 BSP

Crack Pressure

0.5 = 0.5 bar [7 psi]
 5 = 5 bar [73 psi]

P103 357E

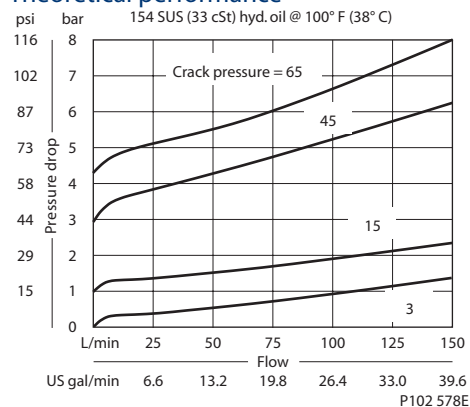
Check valves
RS 19

OPERATION

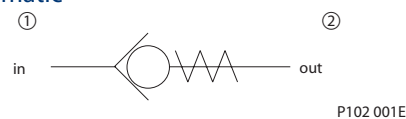
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



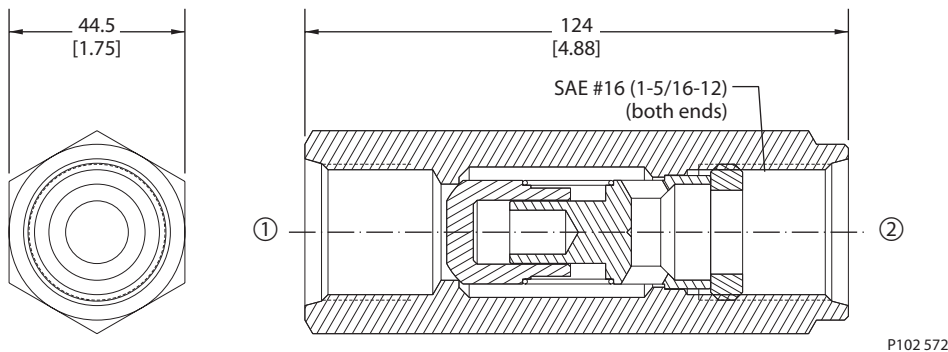
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	150 l/min [40 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	1.00 kg [2.20 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

3C15-01-16S-45

Crack pressure
 3 = 0.2 bar [3 psi]
 15 = 1.0 bar [15 psi]
 45 = 3.1 bar [45 psi]
 65 = 4.5 bar [65 psi]

Port sizes
 16S = SAE #16

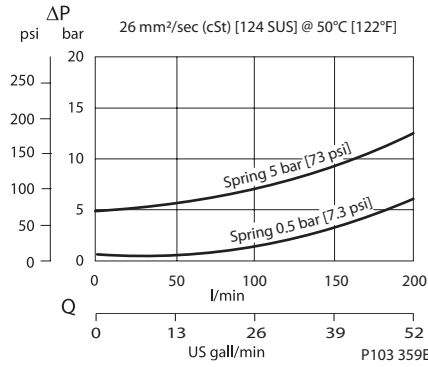
P102 584E

OPERATION

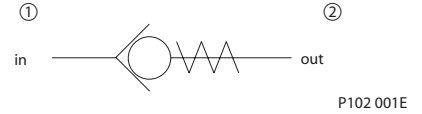
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



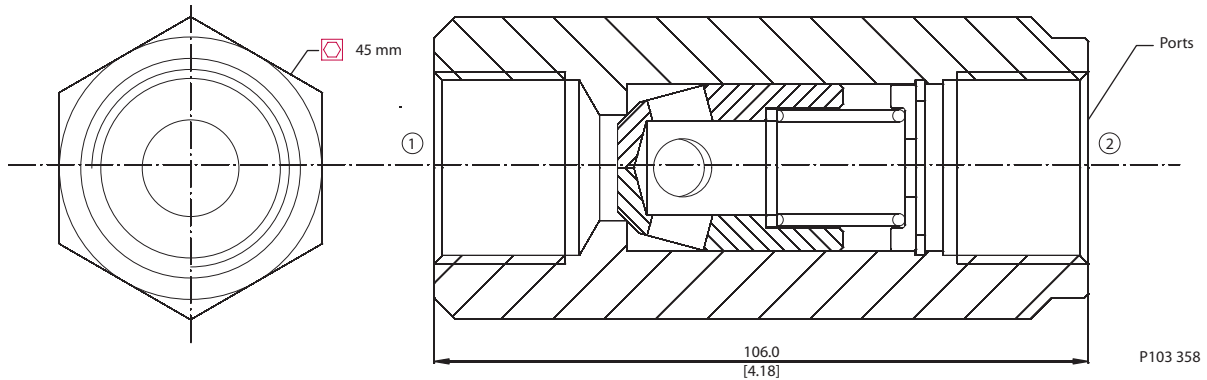
Specifications

Rated pressure	245 bar [3500 psi]
Rated flow at 7 bar [100 psi]	200 l/min [53 US gal/min]
Weight	0.88 kg [1.94 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

RS 25 / 0.5 - G

Ports
 A = SAE #16
 G=1 BSP

Crack Pressure
 0.5 = 0.5 bar [7 psi]
 5 = 5 bar [73 psi]

P103 360E

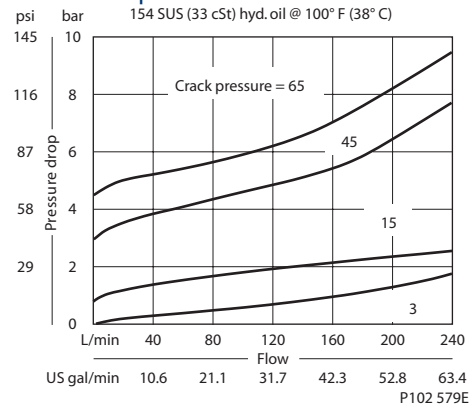
Check valves
RS 25

OPERATION

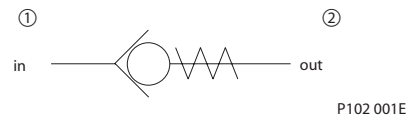
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



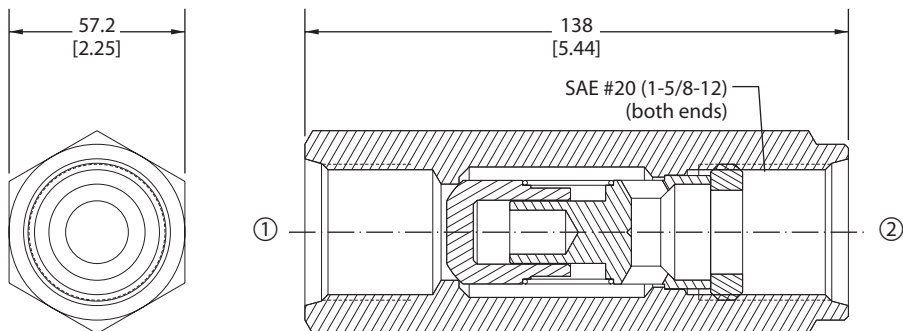
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	230 l/min [61 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	1.91 kg [4.21 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

3C16-01-20S-3

Crack pressure

- 3 = 0.2 bar [3 psi]
- 15 = 1.0 bar [15 psi]
- 45 = 3.1 bar [45 psi]
- 65 = 4.5 bar [65 psi]

Port sizes

20S = SAE #20

P102 585E

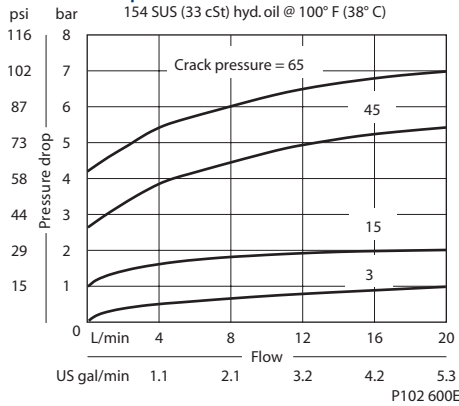
Check valves
3C16-01

OPERATION

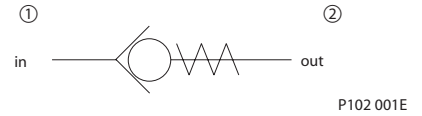
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



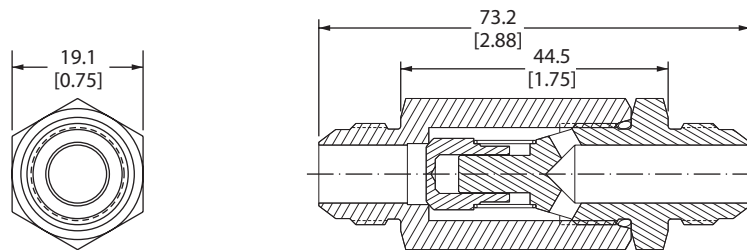
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	0.09 kg [0.20 lb]
Cavity	none

DIMENSIONS

mm [in]

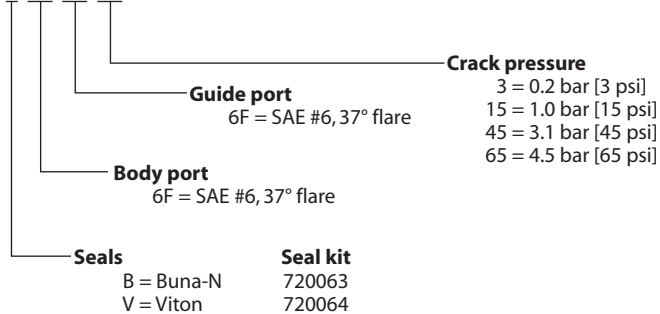
Cross-sectional view



P102 594

ORDERING INFORMATION

3CM11-01-B-6F-6F-03



P102 606E

Check valves
3CM11-01

Cartridge Valves Technical Information

Check Valves

In-line

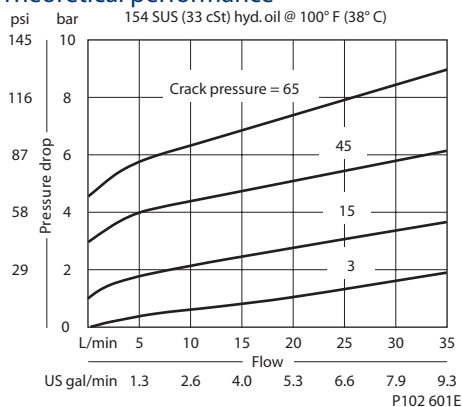
3CM12-01

OPERATION

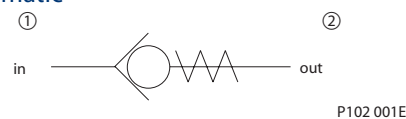
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



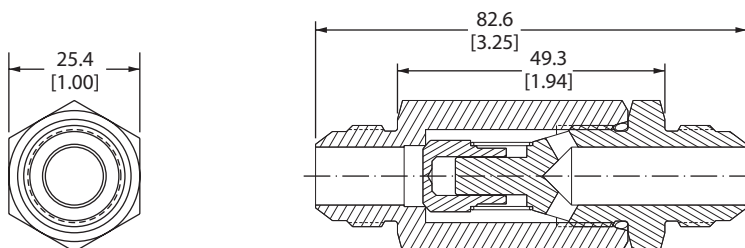
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	0.23 kg [0.51 lb]
Cavity	none

DIMENSIONS

mm [in]

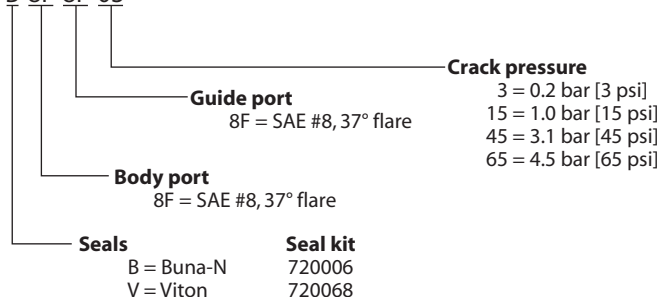
Cross-sectional view



P102 595

ORDERING INFORMATION

3CM12-01-B-8F-8F-03



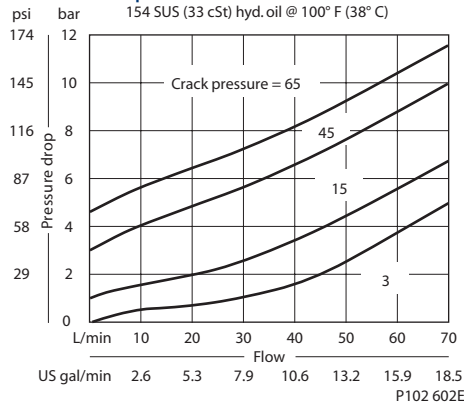
P102 607E

OPERATION

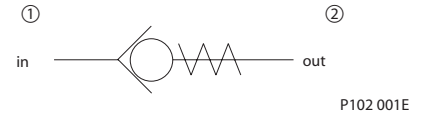
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



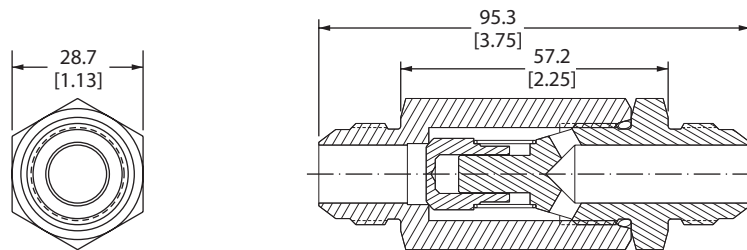
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	70 l/min [19 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	0.28 kg [0.62 lb]
Cavity	none

DIMENSIONS

mm [in]

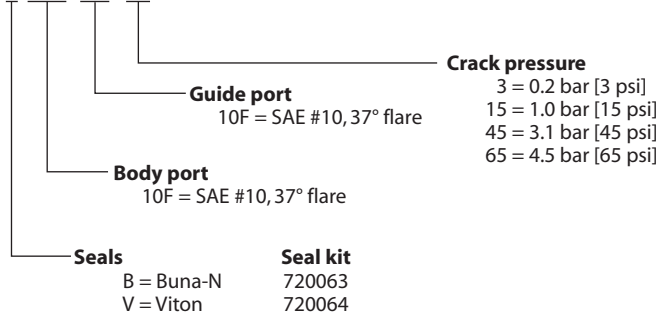
Cross-sectional view



P102 596

ORDERING INFORMATION

3CM13-01-B-10F-10F-03



P102 608E

Check valves
3CM13-01

Cartridge Valves Technical Information

Check Valves

In-line

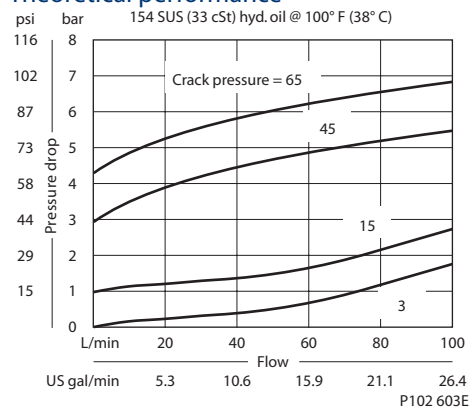
3CM14-01

OPERATION

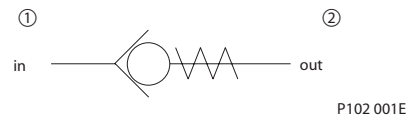
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



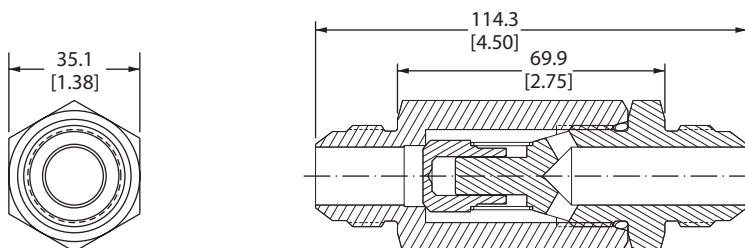
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	95 l/min [25 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	0.51 kg [1.12 lb]
Cavity	none

DIMENSIONS

mm [in]

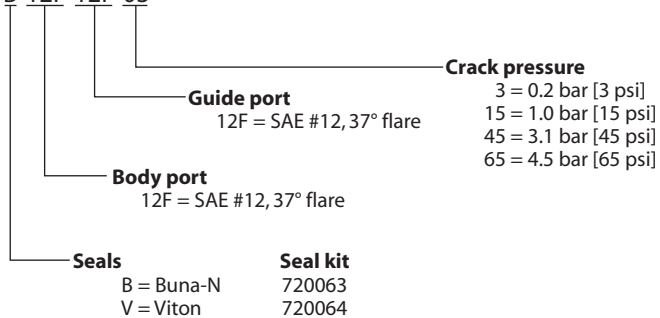
Cross-sectional view



P102 597

ORDERING INFORMATION

3CM14-01-B-12F-12F-03



P102 609E

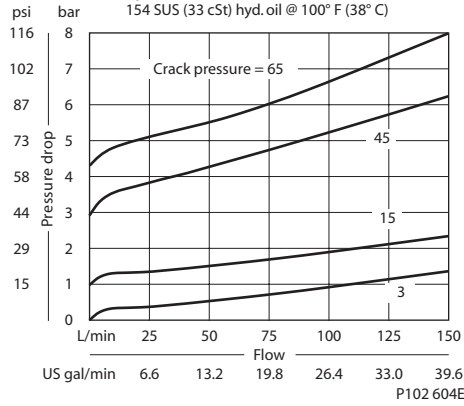
Cartridge Valves Technical Information
 Check Valves
 In-line
 3CM15-01

OPERATION

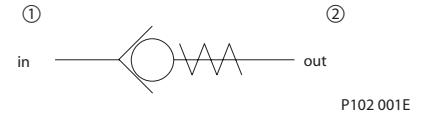
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



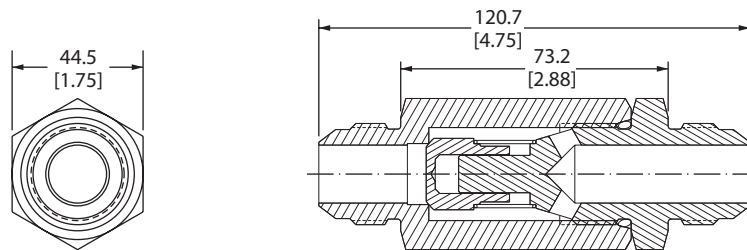
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	150 l/min [40 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	0.85 kg [1.87 lb]
Cavity	none

DIMENSIONS

mm [in]

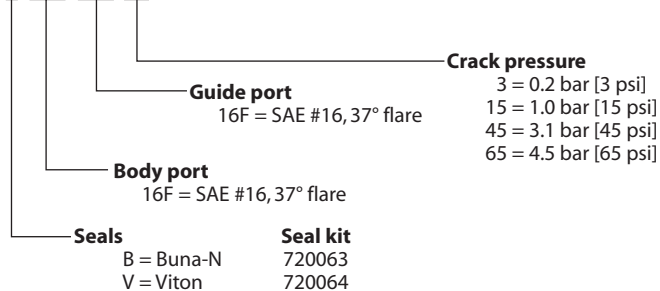
Cross-sectional view



P102 598

ORDERING INFORMATION

3CM15-01-B-16F-16F-03



P102 610E

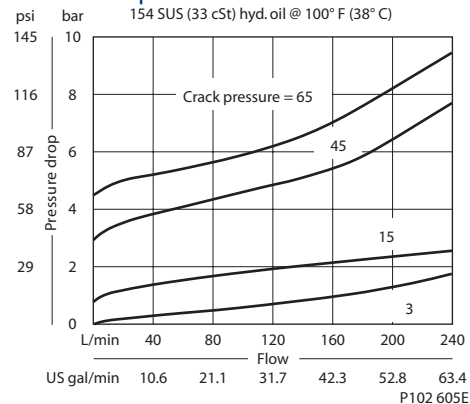
Check valves
3CM15-01

OPERATION

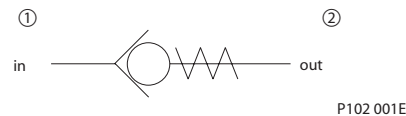
This valve allows free flow from 1 to 2 and blocks flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



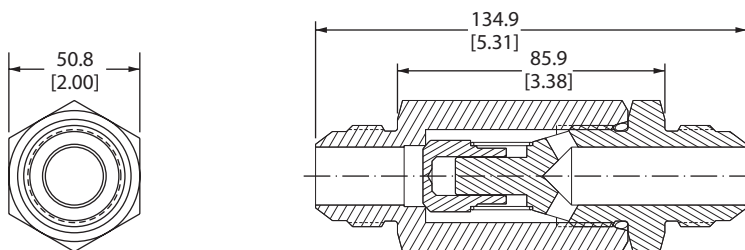
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	230 l/min [61 US gal/min]
Leakage	5 drops/min @ Rated pressure
Weight	1.47 kg [3.24 lb]
Cavity	none

DIMENSIONS

mm [in]

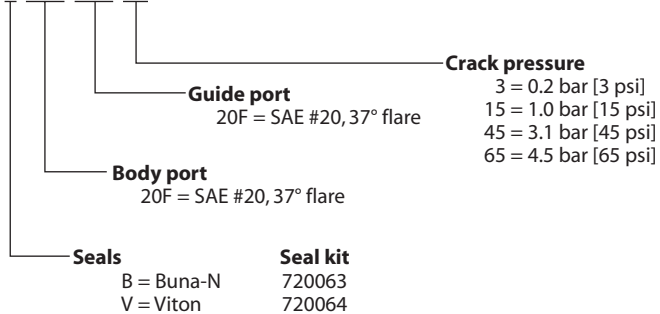
Cross-sectional view



P102 599

ORDERING INFORMATION

3CM16-01-B-20F-20F-03



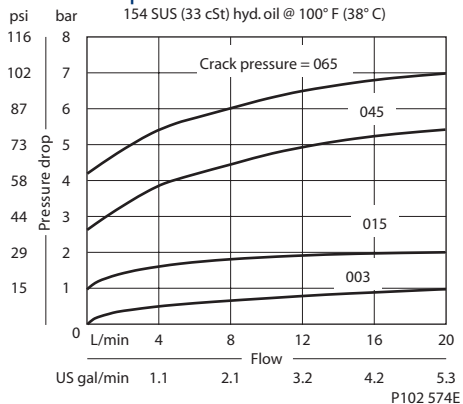
P102 611E

OPERATION

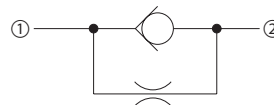
This valve allows free flow from 1 to 2 and restricted flow from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 592

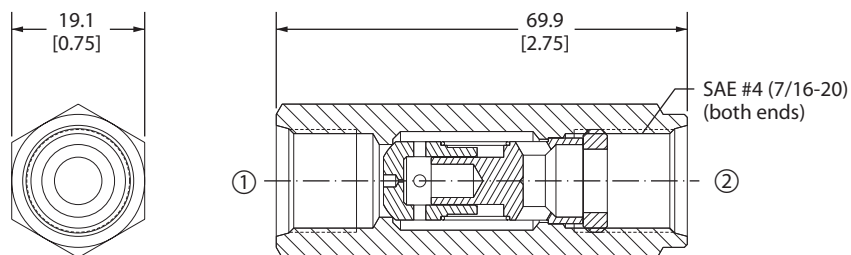
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.11 kg [0.24 lb]
Cavity	none

DIMENSIONS

mm [in]

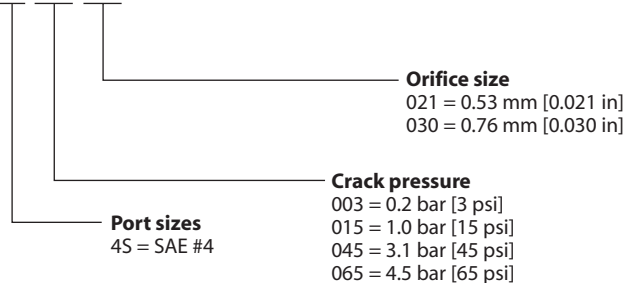
Cross-sectional view



P102 591E

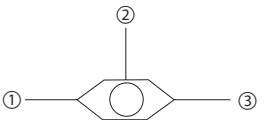
ORDERING INFORMATION

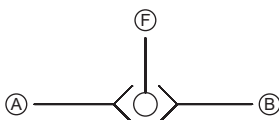
2RN11-01-4S-003-021

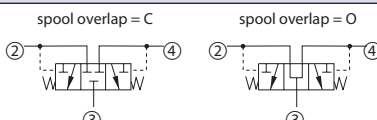


P102 593E

Check valves
 2RN11-01

Cartridge	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP124-1	CP04-3	Load Shuttle Valves, Normal direction	4 l/min [1 US gal/min]	210 bar [3000 psi]	03.4
	CP128-1	SDC08-3		10 l/min [3 US gal/min]	210 bar [3000 psi]	03.5
	SV 04	NCS04/3		15 l/min [4 US gal/min]	315 bar [4500 psi]	03.6
	CP120-4	SDC10-3		25 l/min [7 US gal/min]	330 bar [4800 psi]	03.7
	SV 06	NCS06/3		60 l/min [16 US gal/min]	315 bar [4500 psi]	03.8

In-line	Model No.	Cavity	Description	Flow*	Pressure	Page
	VS 06	none	Load shuttle Valve, In-line	35 l/min [9 US gal/min]	350 bar [5075 psi]	03.9
	VS 10	none		45 l/min [12 US gal/min]	350 bar [5075 psi]	03.10

Hot oil shuttle	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP720-3	SDC10-4	Hot Oil Shuttle	25 l/min [7 US gal/min]	350 bar [5000 psi]	03.11
	CP721-3	CP12-3M		90 l/min [24 US gal/min]	350 bar [5000 psi]	03.12

Shuttle valves
Quick reference

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

OVERVIEW

There are two types of shuttle valves -- load shuttle valves and hot oil shuttle valves.

Shuttle valves

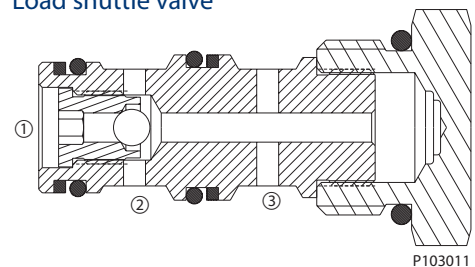


LOAD SHUTTLE VALVE

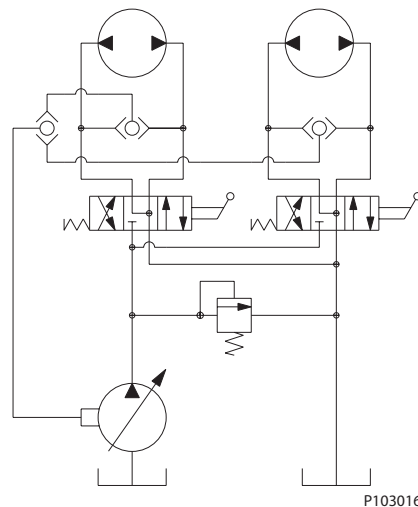
A load shuttle valve communicates the higher of two inlet pressures at 1 and 3 to the outlet at 2. A steel ball is used to seal the lower pressure. Load shuttles have several common applications including:

- Logic for load sensing circuits
- Bi-directional motor brake release valve

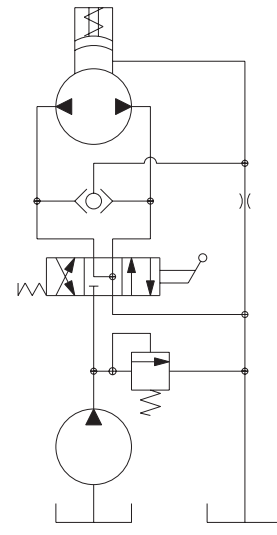
Load shuttle valve



Load sensing circuit



Bi-directional motor brake release valve

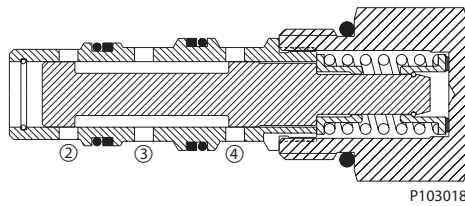


HOT OIL SHUTTLE VALVE

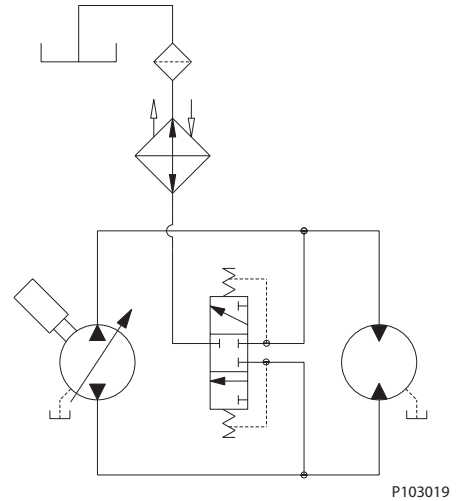
Hot oil shuttles are spool-type valves that use internal piloting at 2 and 4 to direct oil from the lower of the two input pressures to the outlet at 3.

A common application for a hot oil shuttle is diverting fluid from the low pressure side of a closed-circuit hydrostatic loop for cooling and/or filtering.

Hot oil shuttle valve



Closed-circuit hydrostatic loop



Cartridge Valves Technical Information

Shuttle Valves

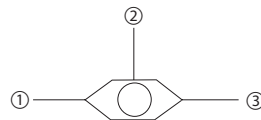
Cartridge

CP124-1

OPERATION

This valve senses the higher of the two input pressures at ports 1 and 3 and routes it to the output port 2.

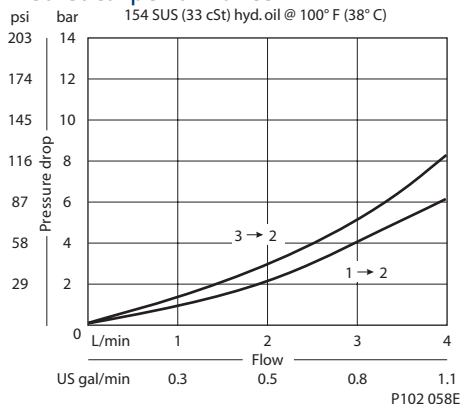
Schematic



P102 056E

SPECIFICATIONS

Theoretical performance



P102 058E

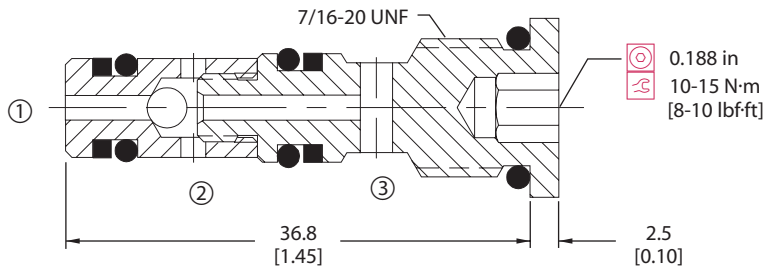
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	4 l/min [1 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.02 kg [0.04 lb]
Cavity	CP04-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 057E

ORDERING INFORMATION

CP124 - 1 - B - 4S

Seals
 B = Buna-N
 V = Viton

Seal kit
 120111
 120282

Housing and ports
 0 = No Housing
 2B = AL, 1/4 BSP
 4S = AL, #4 SAE
 Other housings available

Housing P/N
 No Housing
 CP04-3-2B
 CP04-3-4S

P102 138E

Cartridge Valves Technical Information

Shuttle Valves

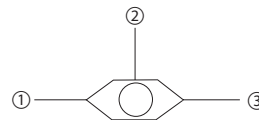
Cartridge

CP128-1

OPERATION

This valve senses the higher of the two input pressures at ports 1 and 3 and routes it to the output port 2.

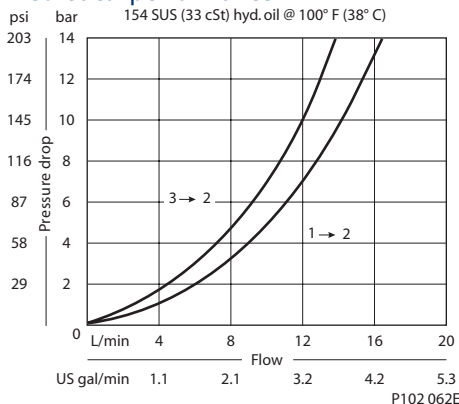
Schematic



P102 056E

SPECIFICATIONS

Theoretical performance



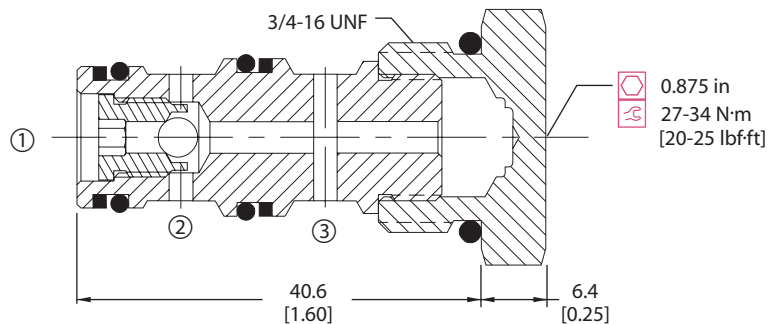
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.06 kg [0.14 lb]
Cavity	SDC08-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 061E

ORDERING INFORMATION

CP128 - 1 - B - 4S

Seals		Housing and ports	Housing P/N
B = Buna-N	Seal kit 120238	0 = No Housing	No Housing
V = Viton	Seal kit 120239	SE2B = AL, 1/4 BSP	SDC08-3-SE-2B
		SE3B = AL, 3/8 BSP	SDC08-3-SE-3B
		4S = AL, #4 SAE	CP08-3-4S
		6S = AL, #6 SAE	CP08-3-6S
		Other housings available	

P102 109E

Cartridge Valves Technical Information

Shuttle Valves

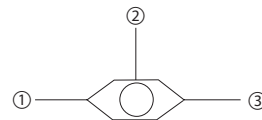
Cartridge

SV 04

OPERATION

This valve senses the higher of two input pressures at 1 and 3, and routes it to the output 2.

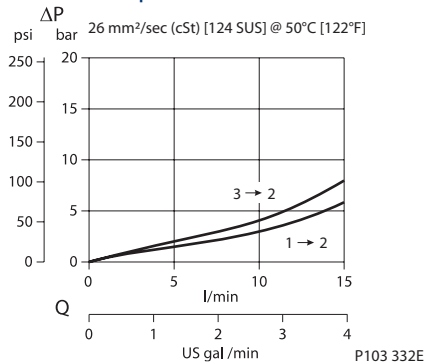
Schematic



P102 056E

SPECIFICATIONS

Theoretical performance



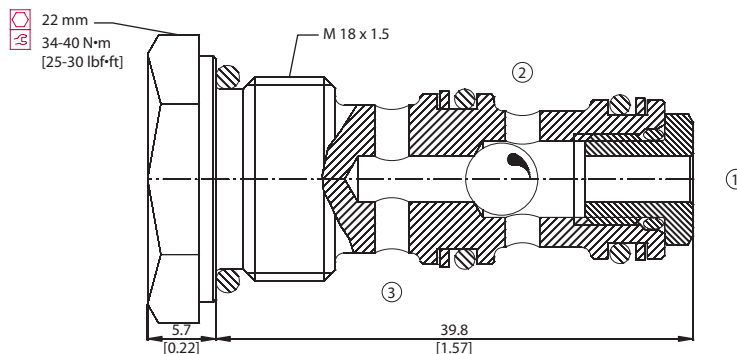
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	15 l/min [4 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.07 kg [0.15 lb]
Cavity	NCS04/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 331

ORDERING INFORMATION

SV 04 - 00 - V

Housing and ports

00 = No Housing
SE1/4 = AL, 1/4 BSP
SE4S = AL, #4 SAE
SE6S = AL, #6 SAE
Other housings available

Housing P/N

No Housing
NCS04/3-SE-1/4
NCS04/3-SE-4S
NCS04/3-SE-6S

Seals

Omit = Buna-N
V = Viton

Seal kit

230000160
230000450

P103333E

Cartridge Valves Technical Information

Shuttle Valves

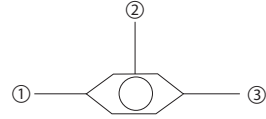
Cartridge

CP120-4

OPERATION

This valve senses the higher of two input pressures at 1 and 3, and routes it to the output 2.

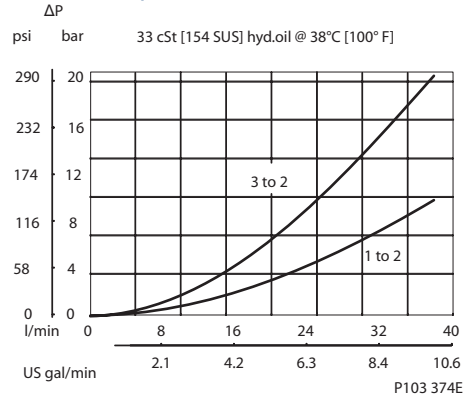
Schematic



P102 056E

SPECIFICATIONS

Theoretical performance



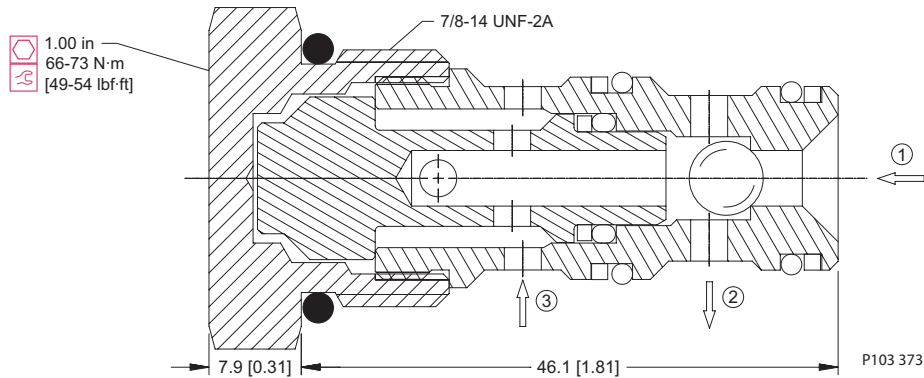
Specifications

Rated pressure	330 bar [4800 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Leakage	6 drops/min @
Weight	0.10 kg [0.22 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP120-4-B-8S

Seals

B = Buna-N
V = Viton

Seal kit
120240
11043064

Housing and ports

00 = No Housing
SE3B = AL, 3/8 BSP
SE4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

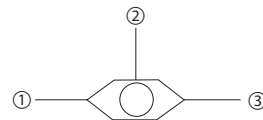
No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

P103 375E

OPERATION

This valve senses the higher of two input pressures at 1 and 3, and routes it to the output 2.

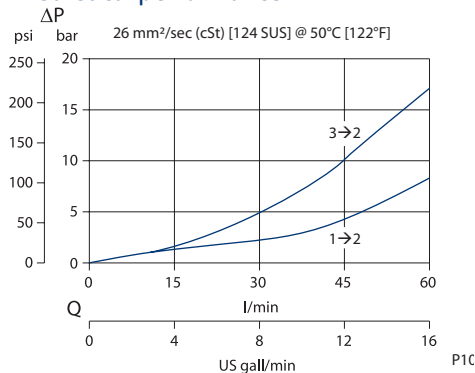
Schematic



P102 056E

SPECIFICATIONS

Theoretical performance

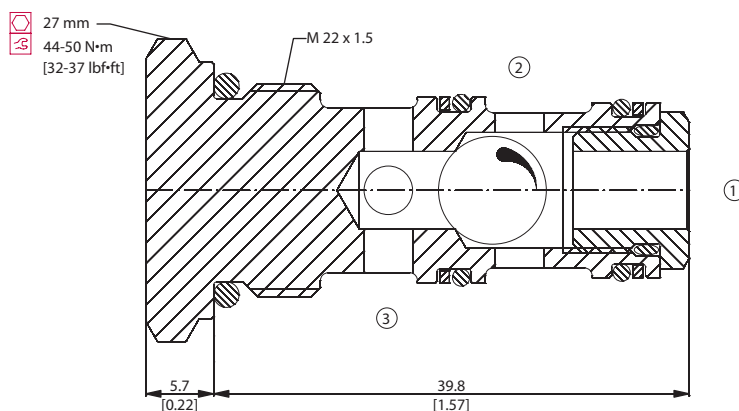


Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.11 kg [0.24 lb]
Cavity	NCS06/3

DIMENSIONS
mm [in]

Cross-sectional view



P103 366

ORDERING INFORMATION

SV 06 - SE3/8 - V

Housing and ports
 00 = No Housing
 SE3/8 = AL, 3/8 BSP
 SE1/2 = AL, 1/2 BSP
 SE6S = AL, #6 SAE
 SE8S = AL, #8 SAE
 Other housings available

Housing P/N
 No Housing
 NCS06/3-SE3/8
 NCS06/3-SE1/2
 NCS06/3-SE-6S
 NCS06/3-SE-8S

Seals
 V = Viton
 Omit = Buna-N

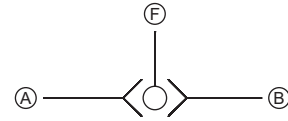
Seal Kit
 230000110
 230000070

P103 368E

OPERATION

This valve senses the higher of the two input pressures and routes it to the output port.

Schematic

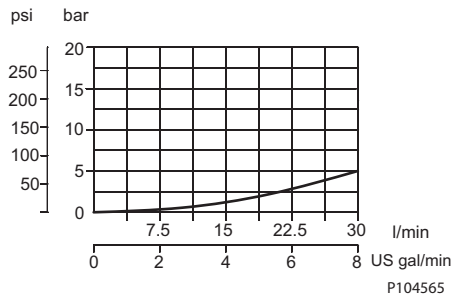


P104 559

SPECIFICATIONS

Theoretical performance

Pressure drop
 26 cSt [121 SUS] hyd.oil at 50°C [122 °F]
 Free flow from A⇒F or B⇒F

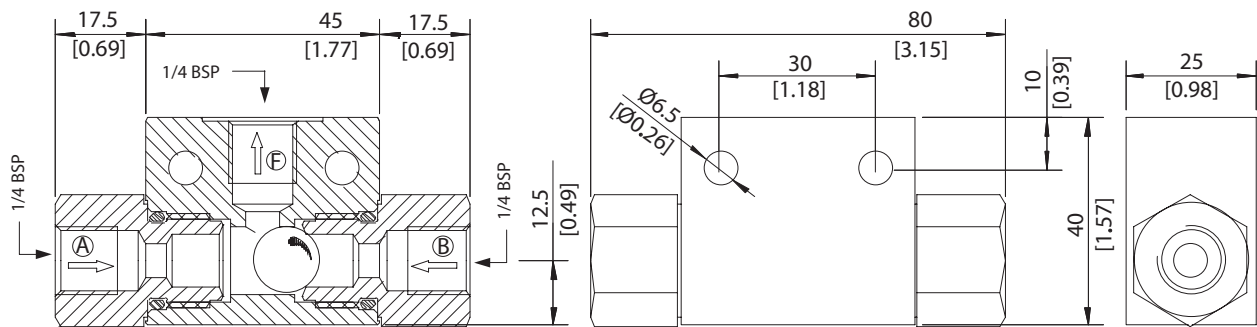


Specifications

Rated pressure	350 bar [5075 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.22 kg [0.49 lb]
Cavity	none

DIMENSIONS
 mm [in]

Cross-sectional view



P104 564

ORDERING INFORMATION

VS 06-G-V

SEALS
 Omit = Buna
 V = Viton

P104 560E

Shuttle valves
 VS 06

Cartridge Valves Technical Information

Shuttle Valves

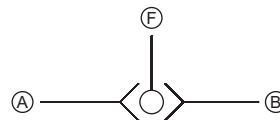
In-line

VS 10

OPERATION

This valve senses the higher of two input pressures and routes it to the output port.

Schematic

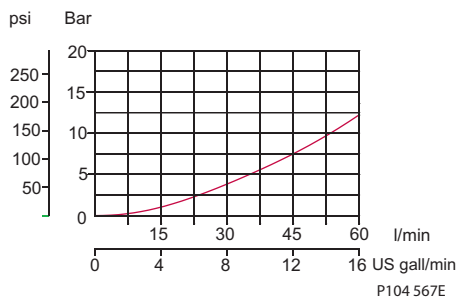


P104 559

SPECIFICATIONS

Theoretical performance

Pressure drop
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]
Free flow from A⇒F or B⇒F



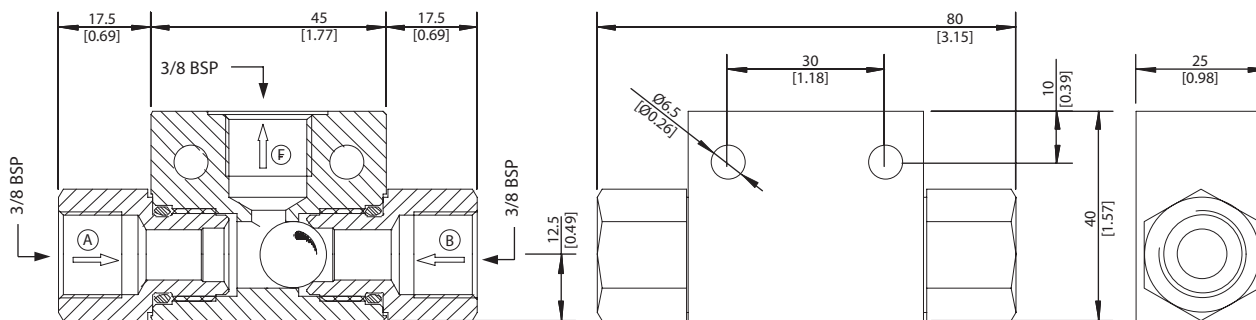
Specifications

Rated pressure	350 bar [5075 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.19 kg [0.42 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



P104 566

ORDERING INFORMATION

VS 10-G-V

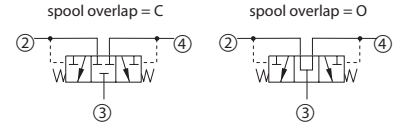
SEALS
Omit = Buna
V = Viton

P104 562E

OPERATION

This valve has an internally piloted spool that directs flow from the lower pressure inlet, 2 or 4, to the output at 3.

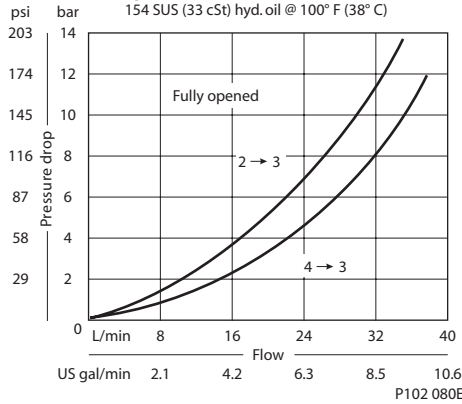
Schematic



P102 078E

SPECIFICATIONS

Theoretical performance

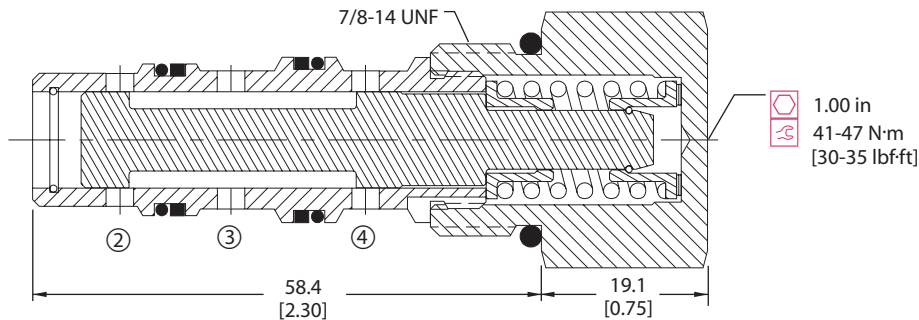


Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ 207 bar [3000 psi]
Weight	0.15 kg [0.34 lb]
Cavity	SDC10-4

DIMENSIONS
mm [in]

Cross-sectional view



P102 079E

ORDERING INFORMATION

CP720 - 3 - B - 8S - 080 - C

Seals
B = Buna-N
V = Viton

Seal kit
11032943
11032944

Housing and ports
0 = No Housing
L3B = AL, 3/8 BSP
L4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N
No Housing
SDC10-4-L-3B
SDC10-4-L-4B
CP10-4-6S-X1
CP10-4-8S-X1

Spool overlap
O = Open
C = Closed

Shift pressure
bar [psi]
050 = 3.4 [50]
080 = 5.5 [80]

P102 126E

Shuttle valves
CP720-3

Cartridge Valves Technical Information

Shuttle Valves

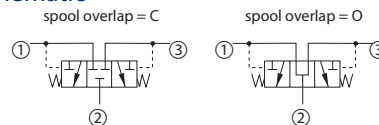
Hot Oil Shuttle

CP721-3

OPERATION

This valve has an internally piloted spool that directs flow from the lower pressure inlet, 1 or 3, to the output at 2.

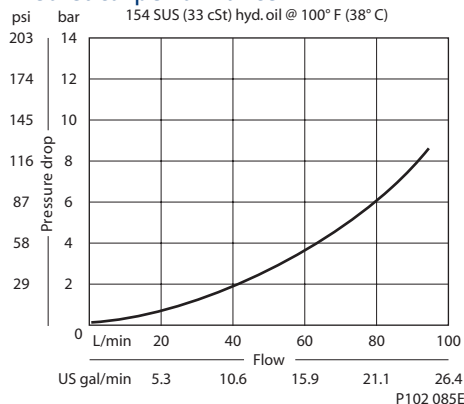
Schematic



P102 083E

SPECIFICATIONS

Theoretical performance



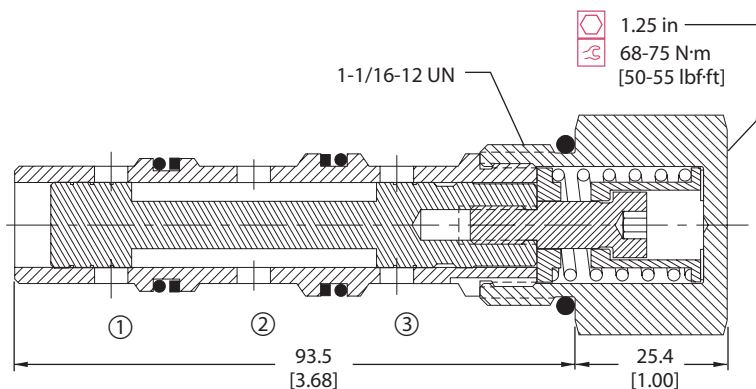
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	90 l/min [24 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ 207 bar [3000 psi]
Weight	0.34 kg [0.75 lb]
Cavity	CP12-3M

DIMENSIONS

mm [in]

Cross-sectional view



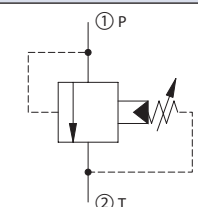
P102 084E

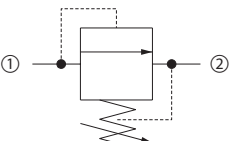
ORDERING INFORMATION

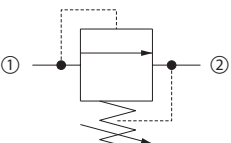
CP721 - 3 - B - 12S - 100 - C

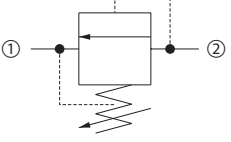
Seals	Seal kit	Spool overlap
B = Buna-N	120098	O = Open
V = Viton	120099	C = Closed
Housing and ports	Housing P/N	Shift pressure
0 = No Housing	No Housing	bar [psi]
4B = AL, 1/2 BSP	CP12-3M-4B	025 = 1.6 [25]
6B = AL, 3/4 BSP	CP12-3M-6B	050 = 3.4 [50]
10S = AL, #10 SAE	CP12-3M-10S	100 = 6.9 [100]
12S = AL, #12 SAE	CP12-3M-12S	
Other housings available		

P102 106E

Thermal Relief	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP208-4	SDC08-2	Relief Valve, Thermal Relief, Poppet Type	1.1 l/min [0.3 US gal/ min]	415 bar [6000 psi]	04.6

Direct Acting	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP208-3	SDC08-2	Relief Valve, Direct Acting, Poppet Type	30 l/min [8 US gal/min]	250 bar [3600 psi]	04.7
	CP200-3	SDC10-2		40 l/min [11 US gal/min]	250 bar [3600 psi]	04.8

Direct Acting	Model No.	Cavity	Description	Flow*	Pressure	Page
	RV08-DR	SDC08-2	Relief Valve, Direct Acting, Dampening, Poppet Type	30 l/min [8 US gal/min]	250 bar [3600 psi]	04.9
	VEN 06	NCS06/2		40 l/min [11 US gal/min]	250 bar [3600 psi]	04.10
	VME 06	VME 06		40 l/min [11 US gal/min]	315 bar [4500 psi]	04.11
	VME 07	VME 07		50 l/min [13 US gal/min]	315 bar [4500 psi]	04.12
	VME 08	VME 08		80 l/min [21 US gal/min]	315 bar [4500 psi]	04.13

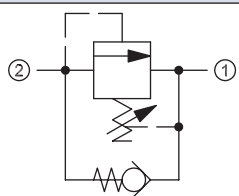
Differential Area	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP200-2	SDC10-2	Relief Valve, Differential Area, Poppet Type,	40 l/min [11 US gal/min]	350 bar [5000 psi]	04.14
	CP208-1	SDC08-2		40 l/min [11 US gal/min]	250 bar [3600 psi]	04.15
	CP200-1	SDC10-2		75 l/min [20 US gal/min]	250 bar [3600 psi]	04.16
	CP201-1	CP12-2		150 l/min [40 US gal/min]	250 bar [3600 psi]	04.17

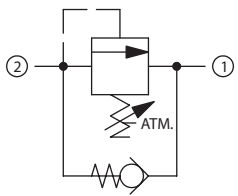
Direct Acting	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP210-1	SDC10-2	Relief Valve, Direct Acting,	45 l/min [12 US gal/min]	210 bar [3000 psi]	04.18
	CP211-1	CP12-2	Spool Type,	75 l/min [20 US gal/min]	40 bar [600 psi]	04.19

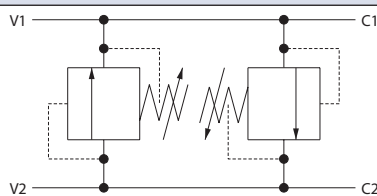
Pilot Operated	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP210-2	SDC10-2	Relief Valve, Pilot Operated,	115 l/min [30 US gal/min]	350 bar [5000 psi]	04.20
	CP211-2	CP12-2	Spool Type	190 l/min [50 US gal/min]	350 bar [5000 psi]	04.21

Pilot Operated	Model No.	Cavity	Description	Flow*	Pressure	Page
	RV10-POP	SDC10-2	Relief Valve, Pilot Operated, Poppet Type	120 l/min [32 US gal/min]	250 bar [3625 psi]	04.22

Bi-Directional	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP200-7	SDC10-2	Relief Valve, Bi-directional	40 l/min [11 US gal/min]	250 bar [3600 psi]	04.23

Differential Area	Model No.	Cavity	Description	Flow*	Pressure	Page
	VSB 06-EN	NCS06/2	Relief Valve, Differential Area,	80 l/min [21 US gal/min]	350 bar [5000 psi]	04.24
	VSB 12-EN	NCS12/2	Poppet Type with Reverse Free Flow Check	140 l/min [37 US gal/min]	350 bar [5000 psi]	04.25

Differential Area	Model No.	Cavity	Description	Flow*	Pressure	Page
	VSB 06-CN	NCS06/2	Relief Valve, Differential Area,	80 l/min [21 US gal/min]	350 bar [5000 psi]	04.26
	VSB 12-CN	NCS12/2	Poppet Type with Reverse Free Flow Check, Atmospheric Venting	140 l/min [37 US gal/min]	350 bar [5000 psi]	04.27

Cross-Over	Model No.	Cavity	Description	Flow*	Pressure	Page
	VA-E 06	none	Relief Valve, Cross-Over, Catalog HIC	40 l/min [11 US gal/min]	210 bar [3045 psi]	04.28
	CP220-1	none		75 l/min [20 US gal/min]	250 bar [3600 psi]	04.29
	CP221-1	none		190 l/min [50 US gal/min]	250 bar [3600 psi]	04.30

APPLICATIONS

Relief valves are used as pressure limiting devices to protect hydraulic systems and components. They are available in direct-acting poppet, differential area poppet, bi-directional poppet, and pilot-operated spool types.

Relief valves



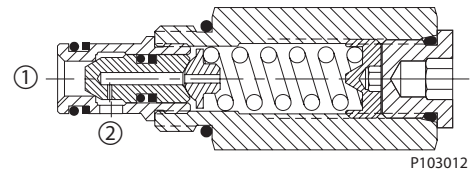
F102 012

OPERATION

Direct-acting poppet

The direct-acting poppet blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the spring-opposed poppet from its seat. This pressure is commonly known as the crack pressure. The valve will remain open until the pressure drops to a level allowing the spring to close the valve. This pressure is known as the re-seat pressure and is typically 70-80% of the crack pressure. The difference between crack and re-seat pressure is commonly referred to as hysteresis.

Direct acting poppet relief valve

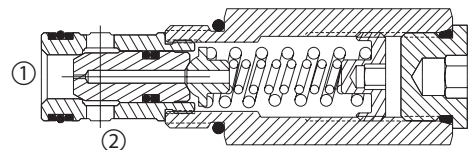


P103012

Differential-area poppet

The differential area poppet operates in the same manner except flow is blocked from 2 to 1 until sufficient pressure is present at 2 to force the spring-opposed poppet from its seat.

Differential area poppet relief valve



P103013

Advantages of direct-acting poppet and differential area poppet relief valves are:

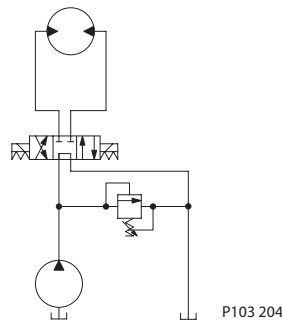
- Fast response
- Contamination tolerant
- Low leakage
- Low cost

**OPERATION
 (continued)**

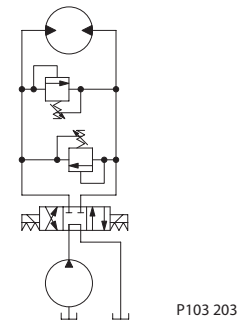
Because of these features some common applications for direct-acting and differential area poppet relief valves are:

- Main system relief valve if flow is relatively constant, or as a safety relief valve for “spike clipping” to protect components from overpressure
- Work port cross-over relief to protect a cylinder or motor from overpressure

System Relief Valve



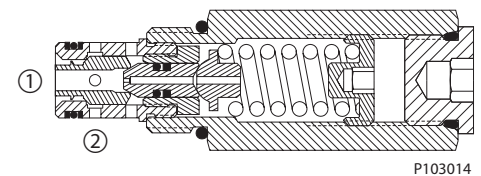
Work Port Cross-Relief Valves



Bi-directional poppet

The bi-directional poppet is a dual cross-over relief in a single cartridge. When pressure at 1 exceeds the nominal setting, the lower poppet acts as a direct-acting relief valve and opens flow from 1 to 2. When pressure at 2 exceeds the nominal setting, the upper poppet acts as a differential area relief valve and opens flow from 2 to 1. Note that the valve is designed so that the crack pressure is the same in either direction

Bi-directional poppet relief valve

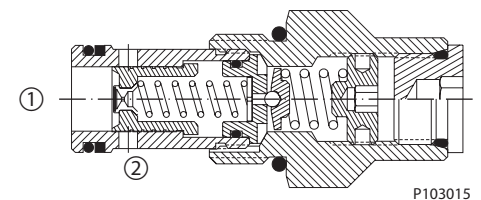


A common application for a bi-directional relief valve is as a work port cross-over relief where one bi-directional valve can replace two direct-acting valves.

Pilot operated spool

The pilot operated spool blocks flow from 1 to 2 until sufficient pressure is present at 1 to force the pilot poppet off its seat. This creates a pressure differential across the spool that causes the spool to shift and open flow from 1 to 2.

Pilot operated spool relief valve



Advantages of pilot-operated relief valves are:

- Smooth, stable response
- High flow and high pressure capability
- Precise pressure control with varying flow rates. Low pressure rise
- Low hysteresis

A common application for pilot-operated relief valves is as a main system relief where high pressure or flow capability and/or extremely precise pressure control is required.

Cartridge Valves Technical Information

Relief Valves

Thermal Relief

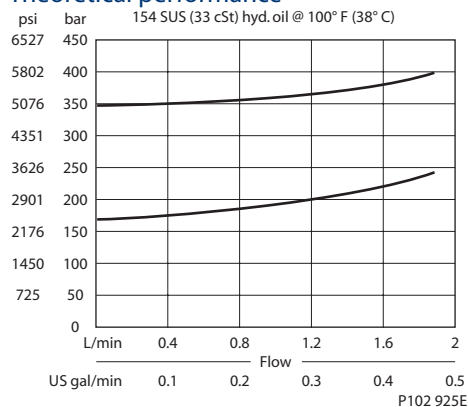
CP208-4

OPERATION

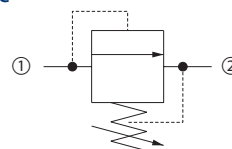
This is a direct-acting poppet type thermal relief valve that relieves from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P102 628

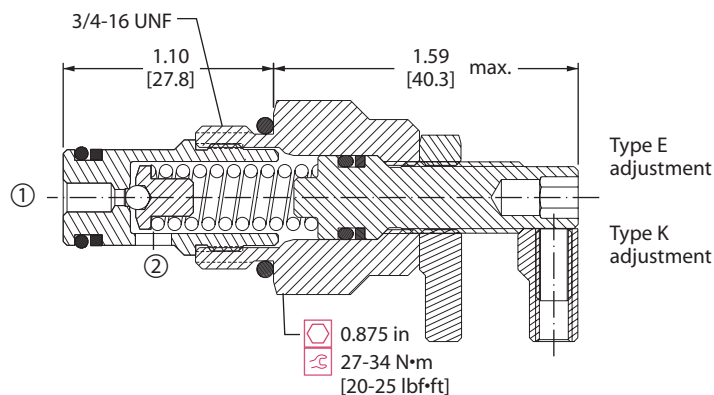
Specifications

Rated pressure	415 bar [6000 psi]
Rated flow	1.1 l/min [0.3 US gal/min]
Leakage	10 drops/min @ 80% of pressure setting
Weight	0.23 kg [0.50 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 612E

ORDERING INFORMATION

CP208-4-B-4S-E-C-300

Seals

B = Buna-N
 V = Viton

Seal kits

120221
 120222

Crack pressure

Code x 10 = psi
 Example: 300 = 3000 psi

Housing and ports

0 = No Housing
 DG2B = Al, 1/4 BSP
 DG3B = Al, 3/8 BSP
 4S = Al, #4 SAE
 6S = Al, #6 SAE
 Other housings available

Housing P/N

No Housing
 SDC08-2-DG-2B
 SDC08-2-DG-3B
 CP08-2-4S
 CP08-2-6S

Adjustment ranges

	bar	psi
A =	2-103	[30-1500]
Standard	207	[1000]
B =	7-207	[100-3000]
Standard	103	[1500]
C =	69-414	[1000-6000]
Standard	207	[3000]

Adjustment options

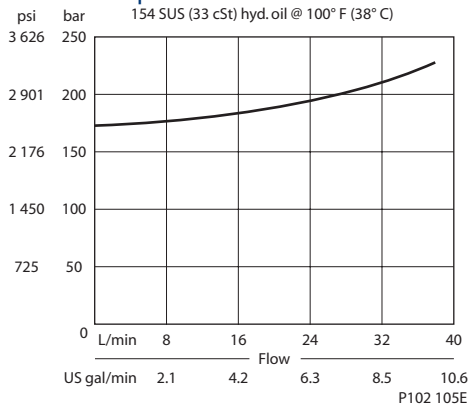
E = External
 K = Knob

OPERATION

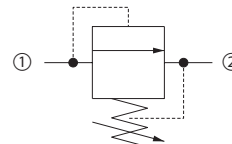
This is a direct-acting poppet type relief valve that relieves from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P102 628

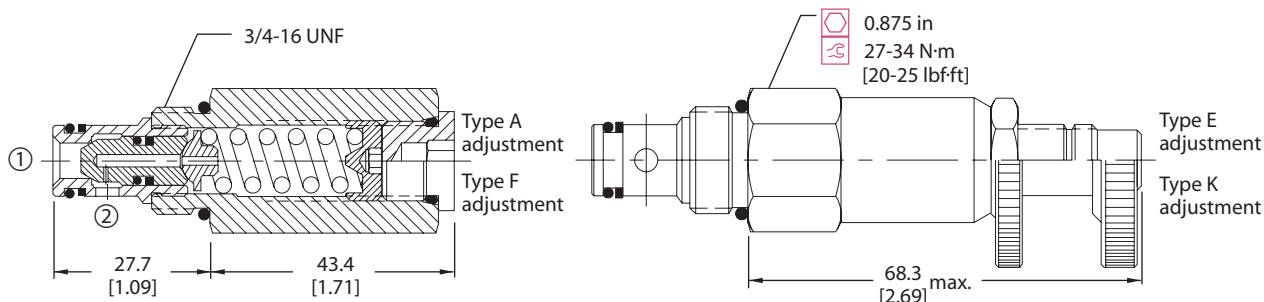
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	30 l/min [8 US gal/min]
Leakage	10 drops/min @ 80% of pressure setting
Weight	0.15 kg [0.32 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 104E

ORDERING INFORMATION

CP208 - 3 - B - 6S - A - C - 150

Seals
 B = Buna-N
 V = Viton

Housing and ports
 0 = No Housing
 DG2B = Al, 1/4 BSP
 DG3B = Al, 3/8 BSP
 4S = Al, #4 SAE
 6S = Al, #6 SAE
 Other housings available

Adjustment option
 A = Internal
 E = External
 F = Tamper resistant
 K = Knob

Seal Kit
 120221
 120222

Housing P/N
 No Housing
 SDC08-2-DG-2B
 SDC08-2-DG-3B
 CP08-2-4S
 CP08-2-6S

Crack pressure
 Code x 10 = psi
 Example: 150 = 1500 psi

Pressure range

	bar	[psi]
A =	7-69	[100-1000]
Standard	28	[400]
B =	14-138	[200-2000]
Standard	69	[1000]
C =	35-248	[500-3600]
Standard	103	[1500]

P102 107E

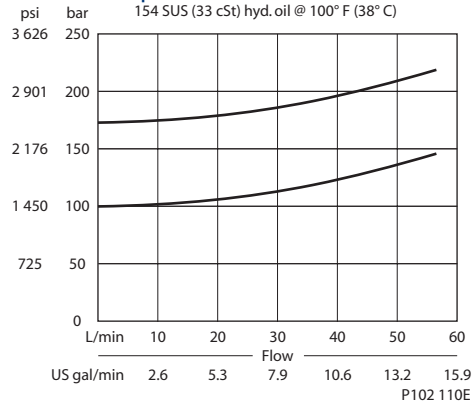
Relief valves
 CP208-3

OPERATION

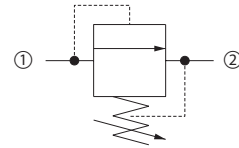
This is a direct-acting poppet type relief valve that relieves from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P102 628

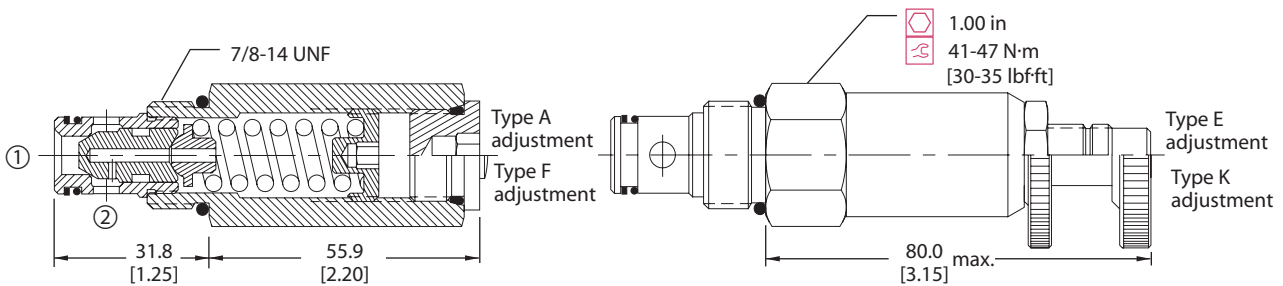
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	40 l/min [11 US gal/min]
Leakage	10 drops/min @ 80% of pressure setting
Weight	0.21 kg [0.47 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 108E

ORDERING INFORMATION

CP200 - 3 - B - 6S - A - C - 150

- Seals**
 - B = Buna-N
 - V = Viton
- Housing and ports**
 - 0 = No Housing
 - DG3B = Al, 3/8 BSP
 - DG4B = Al, 1/2 BSP
 - 6S = Al, #6 SAE
 - 8S = Al, #8 SAE
 - Other housings available
- Adjustment option**
 - A = Internal
 - E = External
 - F = Tamper resistant
 - K = Knob
- Seal kit**
 - 120015
 - 120016
- Housing P/N**
 - No Housing
 - SDC10-2-DG-3B
 - SDC10-2-DG-4B
 - CP10-2-6S
 - CP10-2-8S
- Crack pressure**
 - Code x 10 = psi
 - Example: 150 = 1500 psi
- Pressure range**

	bar	[psi]
A = Standard	7-69	[100-1000]
B = Standard	28	[400]
C = Standard	17-172	[250-2500]
	69	[1000]
	41-248	[600-3600]
Standard	103	[1500]

P102 111E

Cartridge Valves Technical Information

Relief Valves

Direct Acting

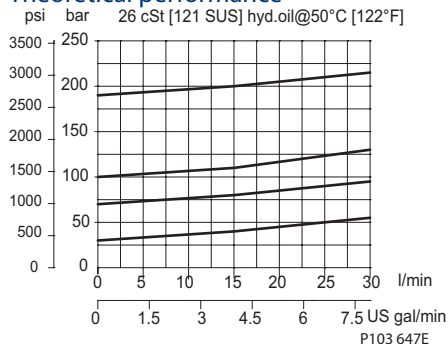
RV08-DR

OPERATION

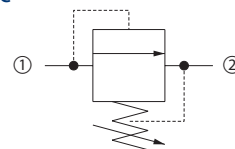
This is a direct-acting, poppet-type relief valve that relieves from 1 to 2. It features a highly damped poppet for smooth and stable response.

SPECIFICATIONS

Theoretical performance



Schematic



P102 628

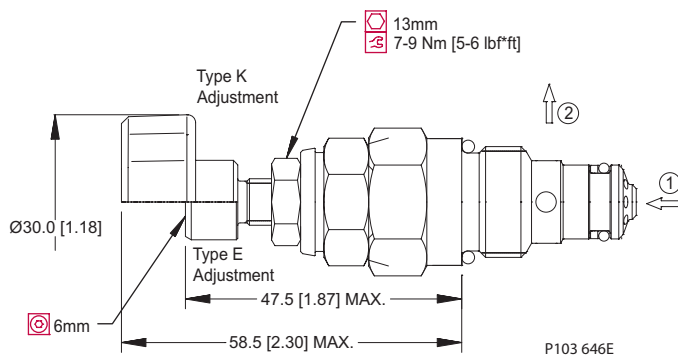
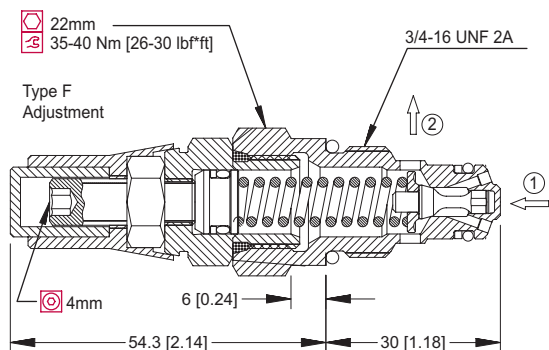
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	30 l/min [8 US gal/min]
Leakage	10 drops/min @ 80% of pressure setting
Weight	0.10 kg [0.22 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



P103 646E

ORDERING INFORMATION

RV08-DR-1-E-XXX-B-4S

Pressure range

- 1 = 20-80 Bar [290-1150 psi]
- 2 = 35-160 Bar [500-2300 psi]
- 3 = 60-250 Bar [870-3600 psi]

Adjustment option

- E = External
- F = Tamper resistant
- K = Knob

Crack pressure

- Code = Setting in Bar
- XXX = No specific setting

Housing and ports

- 00 = No Housing
- DG2B = Al, 1/4 BSP
- DG3B = Al, 3/8 BSP
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- Other housings available

Housing P/N

- No Housing
- SDC08-2-DG-2B
- SDC08-2-DG-3B
- CP08-2-4S
- CP08-2-6S

Seals

- B = Buna-N
- V = Viton

- Seal Kit
- 354000119
- 354000219

P103 648E

Cartridge Valves Technical Information

Relief Valves

Direct Acting

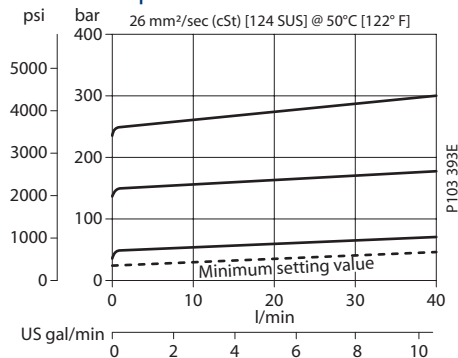
VEN 06

OPERATION

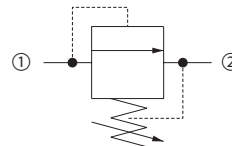
This is a direct-acting, poppet-type relief valve that relieves from 1 to 2. It features a highly damped poppet for smooth and stable response.

SPECIFICATIONS

Theoretical performance



Schematic



P102 628

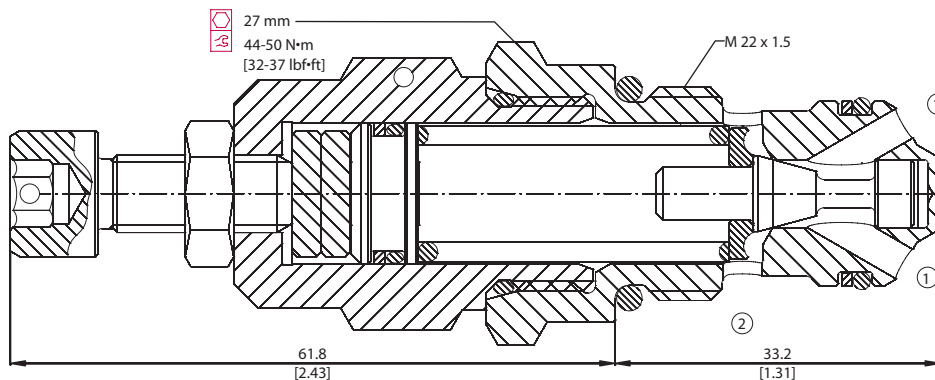
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow	40 l/min [11 US gal/min]
Weight	0.20 kg [0.44 lb]
Cavity	NCS06/2

DIMENSIONS

mm [in]

Cross-sectional view



P103 392

ORDERING INFORMATION

VEN 06 - M - 1 - DG3/8 - V - XXX

Type of adjustment

EN = External screw
M = Handwheel

Setting range

1 = 20 - 80 bar [290 - 1160 psi]
2 = 35 - 160 bar [508 - 2321 psi]
3 = 70 - 315 bar [1015 - 4569 psi]

Seals

V = Viton seals
Omit = Buna-N

Seal kit

230000380
230000060

Housing and ports

0 = No Housing
DG3/8 = AL, 3/8 BSP
DG1/2 = AL, 1/2 BSP
DG6S = AL, #6 SAE
DG8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
NCS06/2-DG-3/8
NCS06/2-DG-1/2
NCS06/2-DG-6S
NCS06/2-DG-8S

To order this valve with a specific factory setting, contact your Comatrol representative

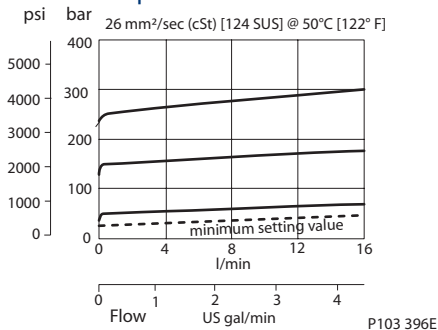
P103 394E

OPERATION

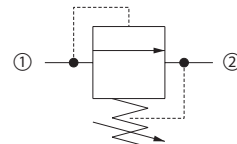
This is a direct-acting, poppet-type relief valve that relieves from 1 to 2. It features a highly damped poppet for smooth and stable response.

SPECIFICATIONS

Theoretical performance



Schematic



P102 628

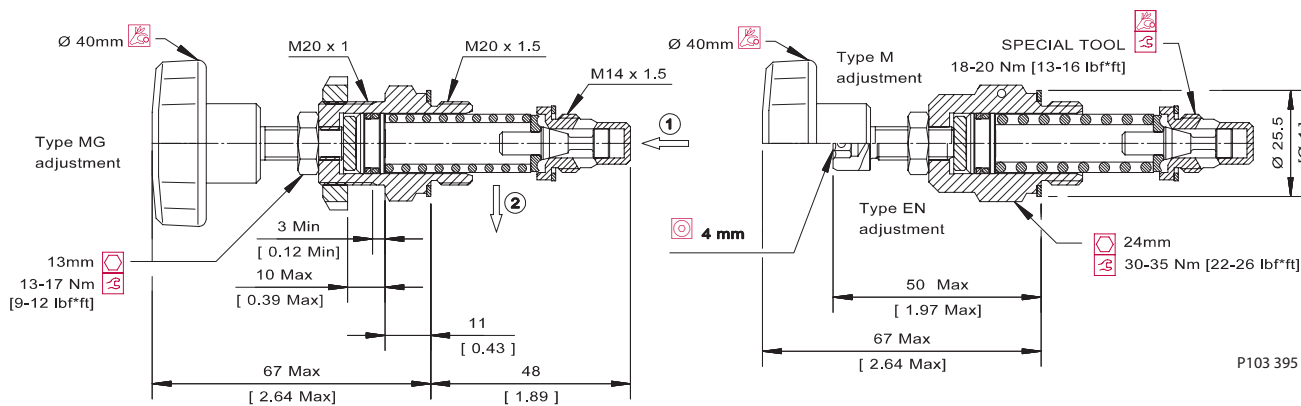
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow	40 l/min [11 US gal/min]
Weight	0.13 kg [0.29 lb]
Cavity	VME06

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VME 06 - EN - 2 - DG3/8 - V - XXX

Adjustment

- EN = External screw
- M = Handwheel
- MG = Handwheel (panel mounted)

Setting range

- 1 = 25 - 70 bar [363-1015 psi]
- 2 = 35 - 170 bar [508-2466 psi]
- 3 = 70 - 315 bar [1015-4569 psi]

Housing and ports

- 00 = No Housing
- DG3/8 = AI, 3/8 BSP
- DG6S = AI, #6 SAE
- Other housings available

Seals
V = Viton seals
Omit = Buna-N

Housing P/N

- No Housing
- VME06-DG-3/8
- VME06-DG-6S

To order this valve with a specific factory setting, contact your Comatrol representative

P103 397E

Relief valves
VME 06

Cartridge Valves Technical Information

Relief Valves

Direct Acting

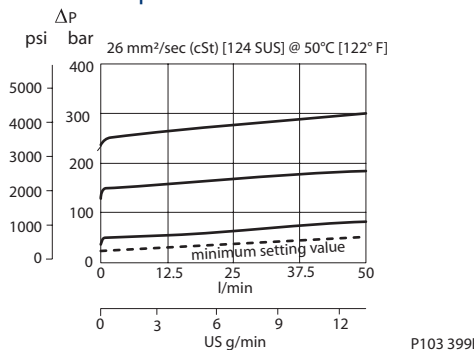
VME 07

OPERATION

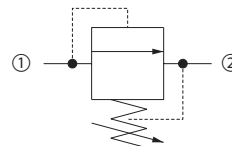
This is a direct-acting, poppet-type relief valve that relieves from 1 to 2. It features a highly damped poppet for smooth and stable response.

SPECIFICATIONS

Theoretical performance



Schematic



P102 628

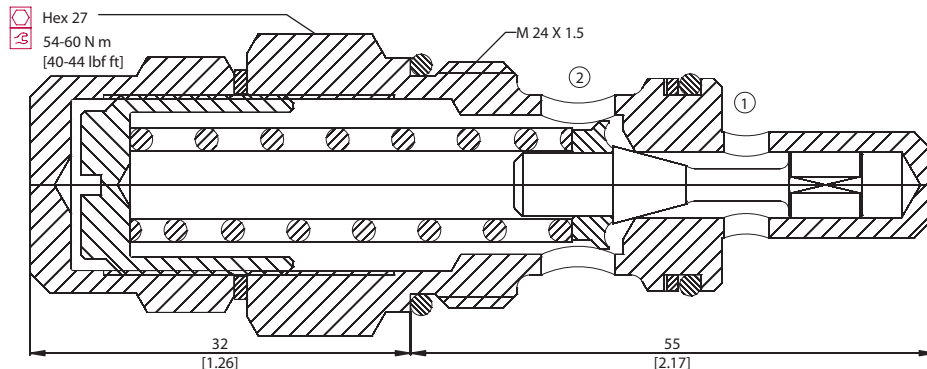
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow	50 l/min [13 US gal/min]
Weight	0.20 kg [0.44 lb]
Cavity	VME07

DIMENSIONS

mm [in]

Cross-sectional view



P103 398

ORDERING INFORMATION

VME 07 - E - 2 - DG1/2 - V - XXX

Adjustment	E = Internal screw M = Handwheel	Seals	V = Viton Omit = Buna-N	Seal kit Consult factory
Setting range	1 = 25 - 80 bar [363-1160 psi] 2 = 35 - 180 bar [508-2611 psi] 3 = 70 - 315 bar [1015-4569 psi]	Housing and ports	00 = No Housing DG1/2 = Al, 1/2 BSP DG8S = Al, #8 SAE Other housings available	Housing P/N No Housing VME07-DG-1/2 VME07-DG-8S

To order this valve with a specific factory setting, contact your Comatrol representative.

P103 400E

Cartridge Valves Technical Information

Relief Valves

Direct Acting

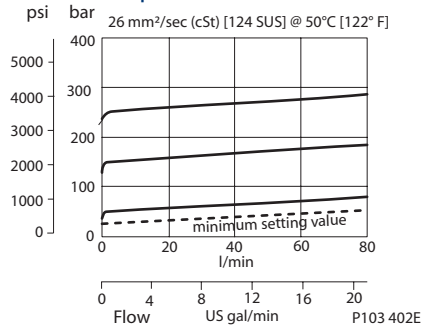
VME 08

OPERATION

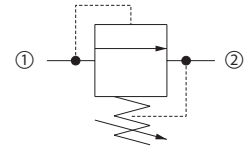
This is a direct-acting, poppet-type relief valve that relieves from 1 to 2. It features a highly damped poppet for smooth and stable response.

SPECIFICATIONS

Theoretical performance



Schematic



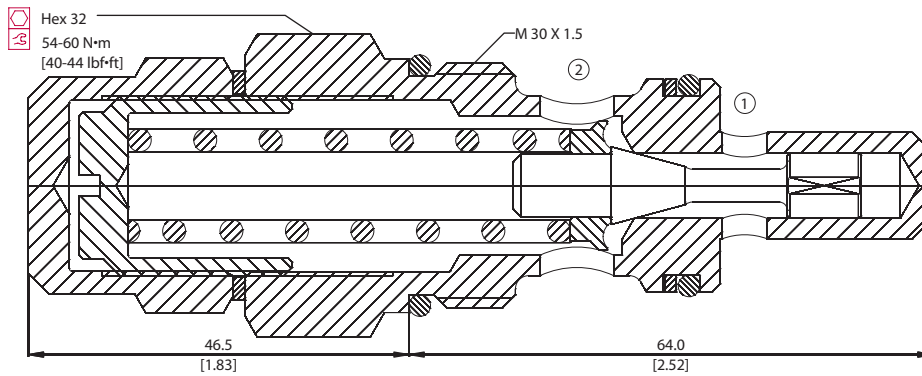
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow	80 l/min [21 US gal/min]
Weight	0.35 kg [0.77 lb]
Cavity	VME08

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VME 08 - E - 2 - DG3/4 - V - XXX		
Adjustment		Seals
E = Internal screw		V = Viton
M = Handwheel		Omit = Buna-N
Setting range		Housing and ports
1 = 25 - 80 bar [363-1160 psi]		00 = No Housing
2 = 35 - 160 bar [508-2321 psi]		DG3/4 = Al, 3/4 BSP
3 = 70 - 315 bar [1015-4569 psi]		DG12S = Al, #12 SAE
		Other housings available
		Housing P/N
		No Housing
		VME08-DG-3/4
		VME08-DG-12S

To order this valve with a specific factory setting, contact your Comatrol representative

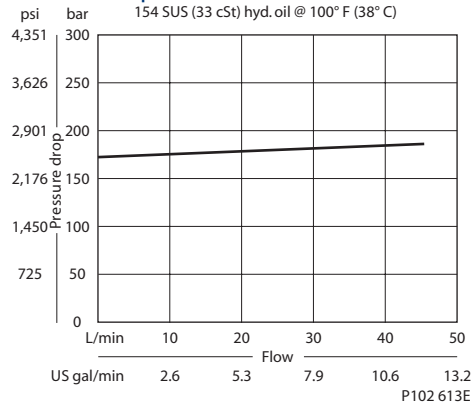
P103 403E

OPERATION

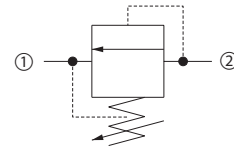
This is a direct acting differential area poppet type relief valve that relieves from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 627

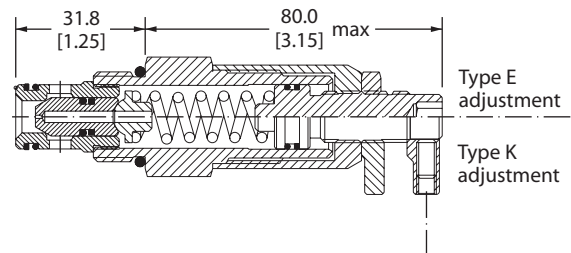
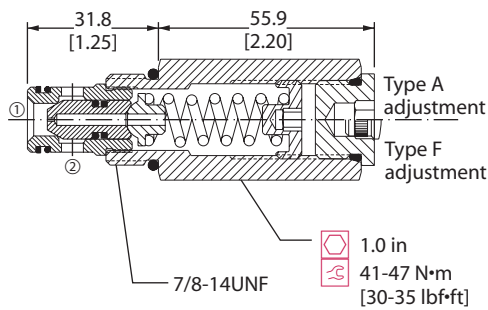
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	40 l/min [11 US gal/min]
Leakage	10 drops/min @ 80% of crack pressure
Weight	0.21 kg [0.46 lb]
Cavity	SDC10-2

DIMENSIONS

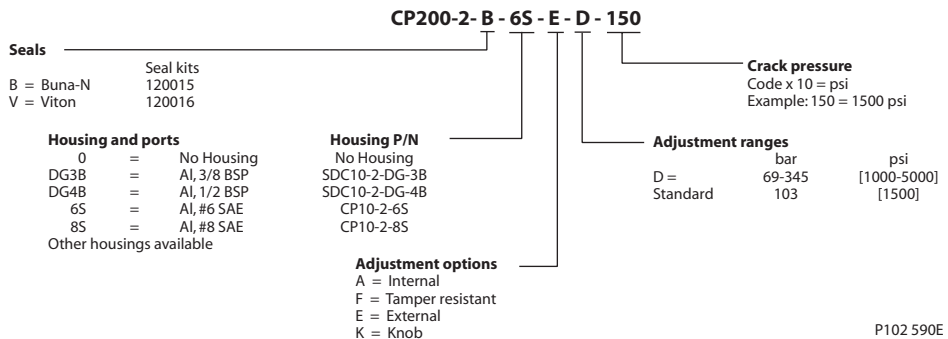
mm [in]

Cross-sectional view



P102 589E

ORDERING INFORMATION



Relief valves
 CP200-2

Cartridge Valves Technical Information

Relief Valves

Differential Area

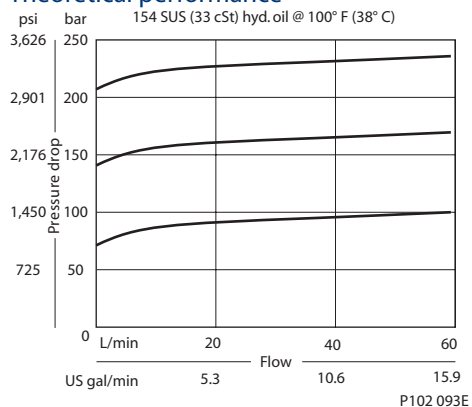
CP208-1

OPERATION

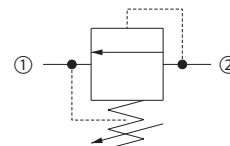
This is a direct acting differential area poppet type relief valve that relieves from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 627

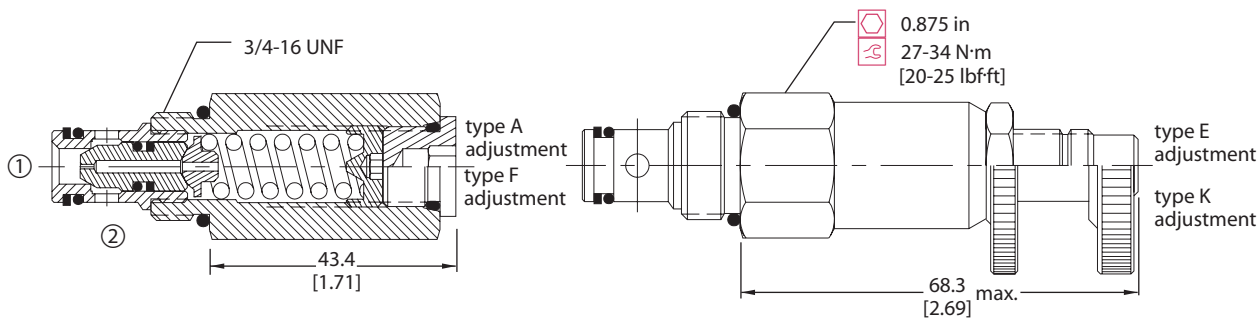
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	40 l/min [11 US gal/min]
Leakage	10 drops/min @ 80% of pressure setting
Weight	0.15 kg [0.32 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 092E

ORDERING INFORMATION

Seals
B = Buna-N
V = Viton

Housing and ports
0 = No Housing
DG2B = Al, 1/4 BSP
DG3B = Al, 3/8 BSP
4S = Al, #4 SAE
6S = Al, #6 SAE
Other housings available

Adjustment option
A = Internal
E = External
F = Tamper resistant
K = Knob

Seal Kit
120221
120222

Housing P/N
No Housing
SDC08-2-DG-2B
SDC08-2-DG-3B
CP08-2-4S
CP08-2-6S

CP208 - 1 - B - 6S - A - C - 150 - XXX

Crack pressure
Code x 10 = psi
Example: 150 = 1500 psi

Pressure range

A	=	7-69	[100-1000]
Standard		28	[400]
B	=	14-138	[200-2000]
Standard		69	[1000]
C	=	35-248	[500-3600]
Standard		103	[1500]

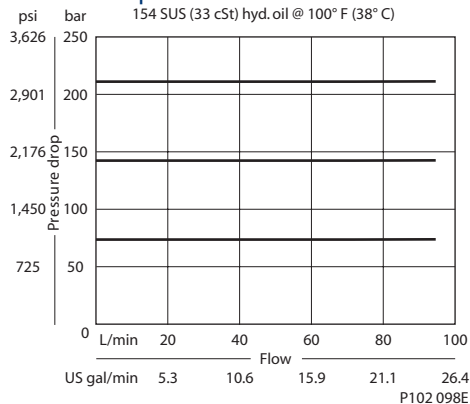
P102 095E

OPERATION

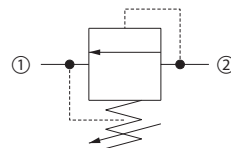
This is a direct acting differential area poppet type relief valve that relieves from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 627

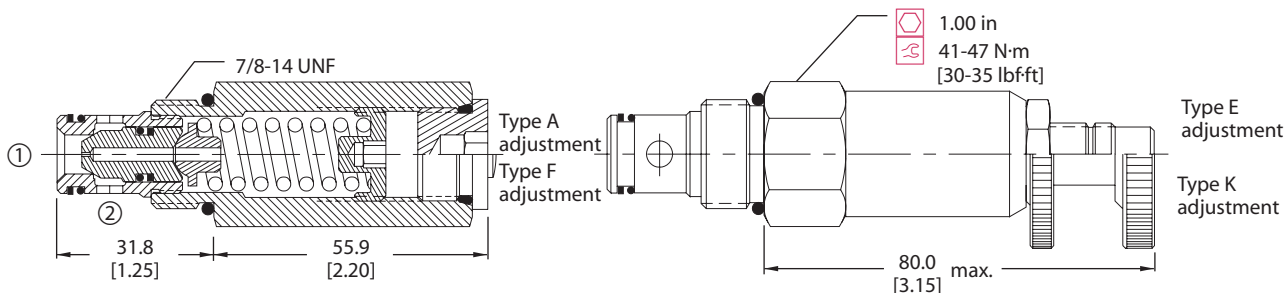
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	75 l/min [20 US gal/min]
Leakage	10 drops/min @ 80% of pressure setting
Weight	0.21 kg [0.46 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP200 - 1 - B - 8S - A - C - 150

Seals
 B = Buna-N
 V = Viton

Housing and ports
 0 = No Housing
 DG3B = Al, 3/8 BSP
 DG4B = Al, 1/2 BSP
 6S = Al, #6 SAE
 8S = Al, #8 SAE
 Other housings available

Adjustment option
 A = Internal
 E = External
 F = Tamper resistant
 K = Knob

Seal kit
 120015
 120016

Housing P/N
 No Housing
 SDC10-2-DG-3B
 SDC10-2-DG-4B
 SDC10-2-6S
 SDC10-2-8S

Crack pressure
 Code x 10 = psi
 Example: 150 = 1500 psi

Pressure range

A	7-55	[100-800]
Standard	28	[400]
B	17-138	[250-2000]
Standard	69	[1000]
C	41-248	[600-3600]
Standard	103	[1500]

P102 099E

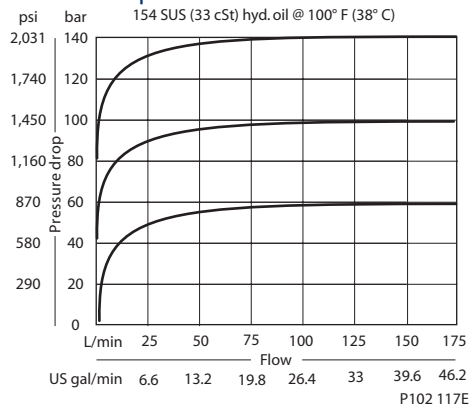
Relief valves
CP200-1

OPERATION

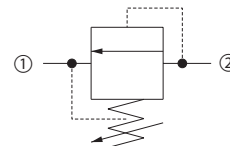
This is a direct acting differential area poppet type relief valve that relieves from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 627

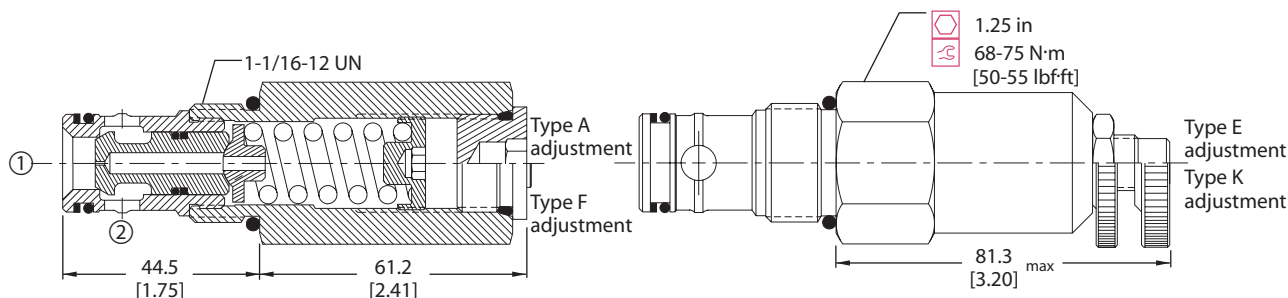
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	150 l/min [40 US gal/min]
Leakage	10 drops/min @ 80% of pressure setting
Weight	0.42 kg [0.92 lb]
Cavity	CP12-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 100E

ORDERING INFORMATION

CP201 - 1 - B - 12S - A - C - 150

Seals	B = Buna-N V = Viton	Seal kit	120017 120018	Crack pressure	Code x 10 = psi Example: 150 = 1500 psi
Housing and ports	0 = No Housing 4B = Al, 1/2 BSP 6B = Al, 3/4 BSP 10S = Al, #10 SAE 12S = Al, #12 SAE Other housings available	Housing P/N	No Housing CP12-2-4B CP12-2-6B CP12-2-10S CP12-2-12S	Pressure range	bar [psi]
Adjustment option	A = Internal E = External F = Tamper resistant K = Knob			A = 7-69 [100-1000] Standard 28 [400] B = 17-172 [250-2500] Standard 69 [1000] C = 35-248 [500-3600] Standard 103 [1500]	

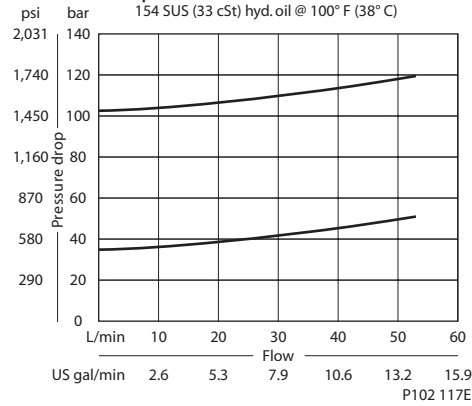
P102 103E

OPERATION

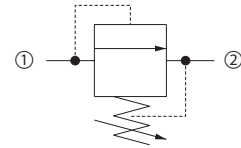
This is a direct acting spool-type relief valve that relieves from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P102 628

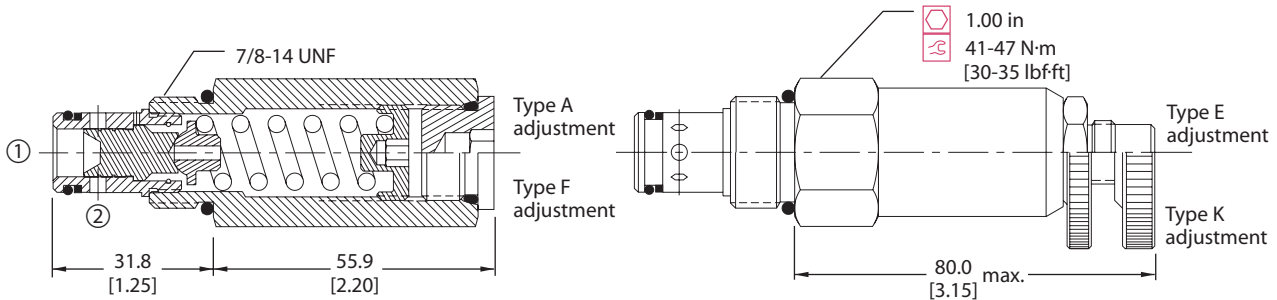
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow	45 l/min [12 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ 80% of pressure setting
Weight	0.22 kg [0.48 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 116E

ORDERING INFORMATION

CP210 - 1 - B - 6S - A - C - 075

Seals B = Buna-N V = Viton	Seal kit 120015 120016	Housing P/N No Housing SDC10-2-DG-3B SDC10-2-DG-4B CP10-2-6S CP10-2-8S	Crack pressure Code x 10 = psi Example: 075 = 750 psi
Housing and ports 0 = No Housing DG3B = AI, 3/8 BSP DG4B = AI, 1/2 BSP 6S = AI, #6 SAE 8S = AI, #8 SAE Other housings available	Adjustment option A = Internal E = External F = Tamper resistant K = Knob	Pressure range	

	bar	[psi]
A =	3.4-28	[50-400]
Standard	17	[250]
B =	5.5-55	[80-800]
Standard	28	[400]
C =	6.9-97	[100-1400]
Standard	52	[750]
D =	34-166	[500-2400]
Standard	103	[1500]

P102 119E

Relief Valves
CP210-1

Cartridge Valves Technical Information

Relief Valves

Direct Acting

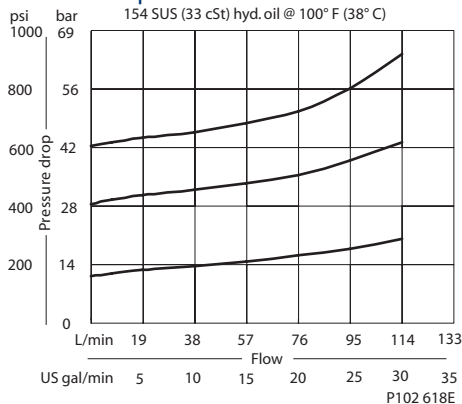
CP211-1

OPERATION

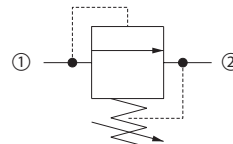
This is a direct acting spool-type relief valve that relieves from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P102 628

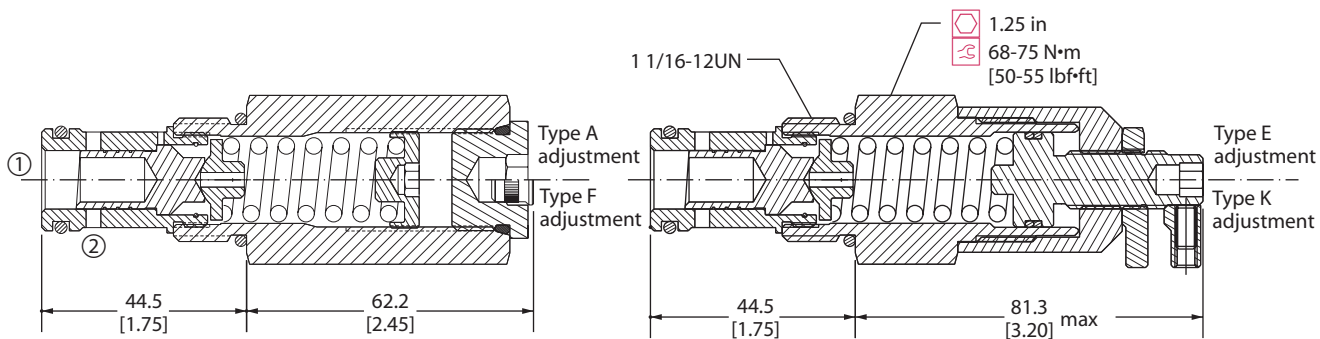
Specifications

Rated pressure	40 bar [600 psi]
Rated flow	75 l/min [20 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ 80% of pressure setting
Weight	0.41 kg [0.90 lb]
Cavity	CP12-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP211-1-B-10S-A-C-040

Pressure range	Crack pressure
A = 0-10 bar [0-150 psi]	Code x 10 = psi
B = 3.4-34 bar [50-400 psi]	Example: 040 = 400 psi
C = 5.2-41 bar [80-600 psi]	
Housing and ports	Adjustment option
0 = No Housing	A = Internal
4B = Al, 1/2 BSP	E = External
6B = Al, 3/4 BSP	F = Tamper resistant
10S = Al, #10 SAE	K = Knob
12S = Al, #12 SAE	
Other housings available	
Housing P/N	Seals
No Housing	B = Buna-N
CP12-2-4B	V = Viton
CP12-2-6B	
CP12-2-10S	Seal kit
CP12-2-12S	120017
	120018

P102 617E

Relief valves
CP211-1

Cartridge Valves Technical Information

Relief Valves

Pilot Operated

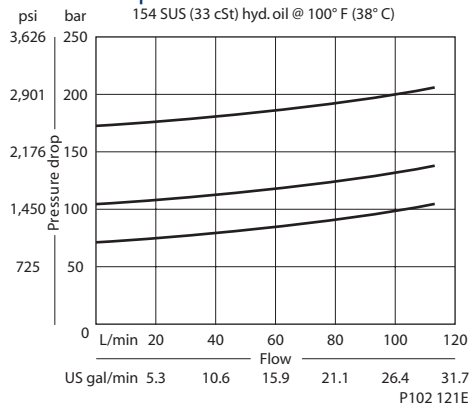
CP210-2

OPERATION

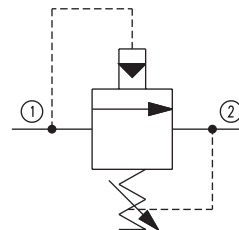
This is a pilot operated spool type relief valve that relieves pressure from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



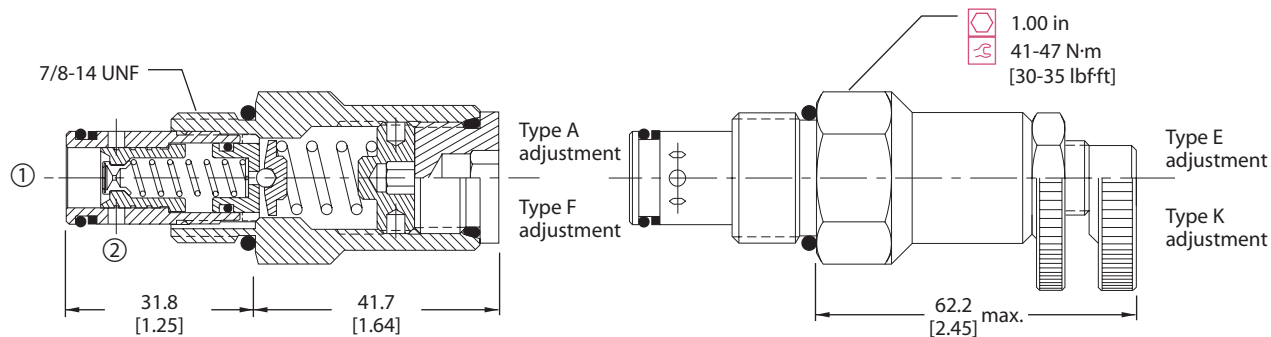
P102 629

Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	115 l/min [30 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ 207 bar [3000 psi]
Weight	0.18 kg [0.40 lb]
Cavity	SDC10-2

DIMENSIONS

Cross-sectional view



P102 120E

ORDERING INFORMATION

CP210 - 2 - B - 6S - A - C - 150

Seals	B = Buna-N V = Viton	Seal kit	120015 120016
Housing and ports	0 = No Housing DG3B = Al, 3/8 BSP DG4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available	Housing P/N	No Housing SDC10-2-DG-3B SDC10-2-DG-4B CP10-2-6S CP10-2-8S
Adjustment option	A = Internal E = External F = Tamper resistant K = Knob	Crack pressure	Code x 10 = psi Example: 150 = 1500 psi
		Pressure range	bar [psi]
		A =	14-69 [200-800]
		Standard	28 [400]
		B =	14-103 [200-1500]
		Standard	69 [1000]
		C =	28-207 [400-3000]
		Standard	103 [1500]
		D =	28-345 [400-5000]
		Standard	103 [1500]

P102 123E

Cartridge Valves Technical Information

Relief Valves

Pilot Operated

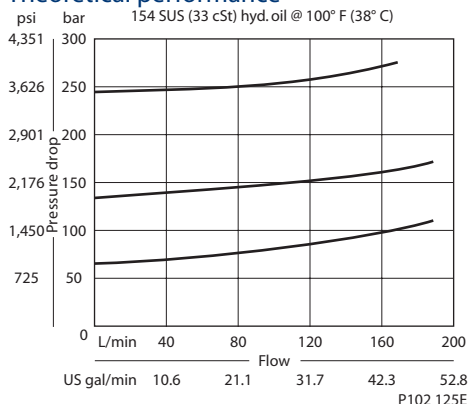
CP211-2

OPERATION

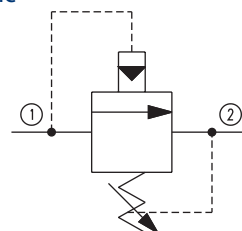
This valve relieves from 1 to 2 and is a pilot operated spool type relief.

SPECIFICATIONS

Theoretical performance



Schematic



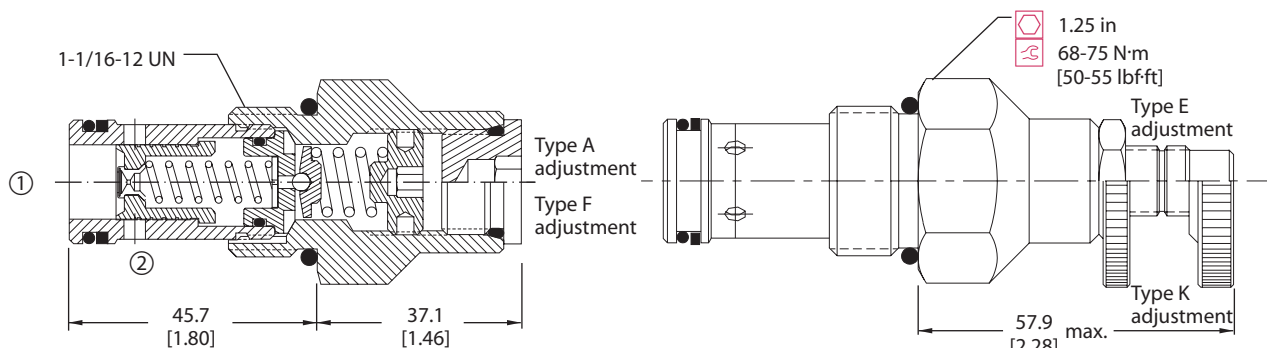
P102 629

Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ 207 bar [3000 psi]
Weight	0.17 kg [0.37 lb]
Cavity	CP12-2

DIMENSIONS

Cross-sectional view



P102 124E

ORDERING INFORMATION

CP211 - 2 - B - 12S - A - C - 150

Seals	B = Buna-N V = Viton	Seal kit	120017 120018	Crack pressure	Code x 10 = psi Example: 150 = 1500 psi
Housing and ports	0 = No Housing 4B = Al, 1/2 BSP 6B = Al, 3/4 BSP 10S = Al, #10 SAE 12S = Al, #12 SAE Other housings available	Housing P/N	No Housing CP12-2-4B CP12-2-6B CP12-2-10S CP12-2-12S	Pressure range	bar [psi]
Adjustment option	A = Internal E = External F = Tamper resistant K = Knob			A = 14-69 [200-800] Standard 28 [400] B = 14-103 [300-1500] Standard 69 [1000] C = 28-207 [400-3000] Standard 103 [1500] D = 28-345 [400-5000] Standard 103 [1500]	

P102 127E

Relief valves
CP211-2

Cartridge Valves Technical Information

Relief Valves

Pilot Operated

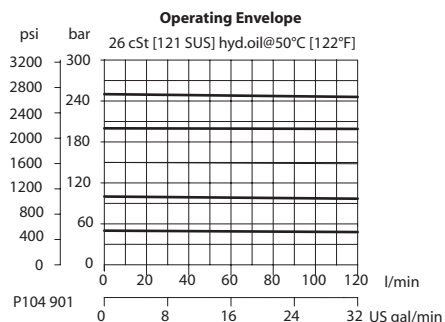
RV10-POP

OPERATION

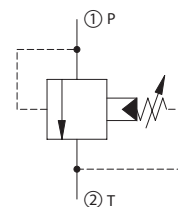
This is a pilot-operated poppet type relief valve that relieves pressure from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



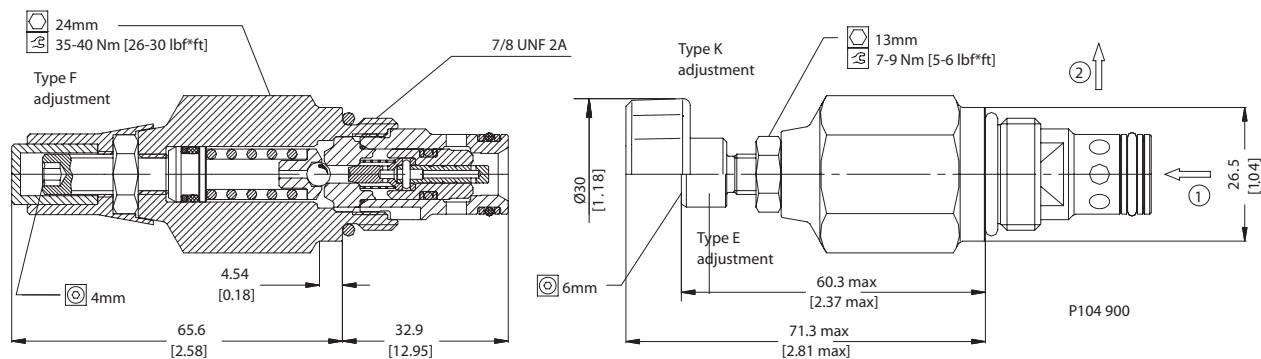
P104 899

Specifications

Rated pressure	250 bar [3625 psi]
Rated flow	120 l/min [32 US gal/min]
Leakage	6 drops/min @ 80% of pressure setting
Weight	0.22 kg [0.49 lb]
Cavity	SDC10-2

DIMENSIONS

Cross-sectional view



ORDERING INFORMATION

RV10 - POP - 3 - E - XXX - B - 00

Pressure Range
 } = 25-250 Bar [360-3600 psi]

Adjustment option
 } = External adjustment
 } = Tamper resistant
 < = Knob adjustment

Cracking pressure
 Code = Std. setting in bar:
 100 = 100 Bar [1500 psi]
 XXX = No specific setting

Body and Ports
 Omit = Cartridge only
 6S = Al, #6 SAE
 8S = Al, #8 SAE
 DG3B = Al, 3/8 BSP
 DG4B = Al, 1/2 BSP
 Other housing available

Seals
 B = Buna-N seals 354004019
 V = Viton seals 354003419

Body Nomenclature
 No Body
 CP10-2-6S
 CP10-2-8S
 SDC10-2-DG3B
 SDC10-2-DG4B

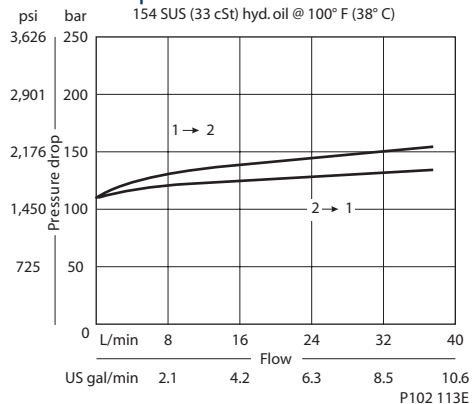
P104 902

OPERATION

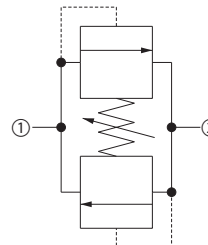
This is a bi-directional relief valve that relieves pressure from 1 to 2 and from 2 to 1.

SPECIFICATIONS

Theoretical performance



Schematic

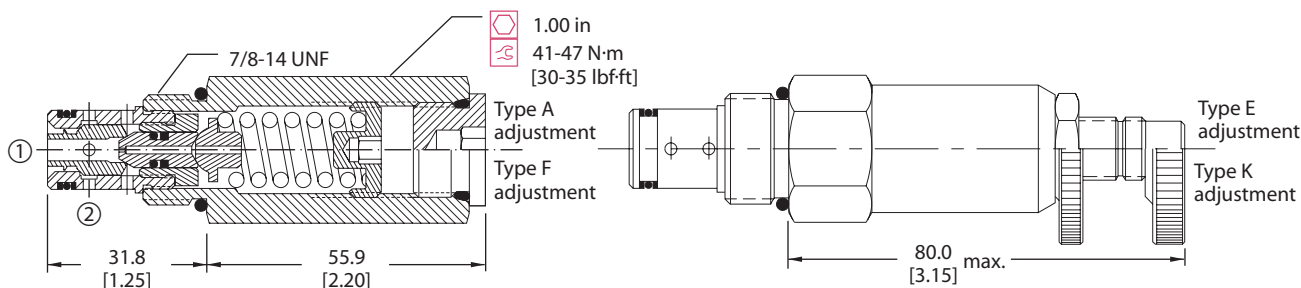


Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	40 l/min [11 US gal/min]
Leakage	5 cm ³ /min [0.3 in ³ /min] @ 80% of pressure setting
Weight	0.20 kg [0.43 lb]
Cavity	SDC10-2

DIMENSIONS

Cross-sectional view



ORDERING INFORMATION

CP200 - 7 - B - 8S - A - C - 150

Seals	B = Buna-N V = Viton	Seal kit 120073 120074	Crack pressure Code x 10 = psi Example: 150 = 1500 psi
Housing and ports	0 = No Housing DG3B = Al, 3/8 BSP DG4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available	Housing P/N No Housing SDC10-2-DG-3B SDC10-2-DG-4B CP10-2-6S CP10-2-8S	Pressure range
Adjustment option	A = Internal E = External F = Tamper resistant K = Knob		bar [psi] A = 7-41 [100-600] Standard 28 [400] B = 17-138 [250-2000] Standard 69 [1000] C = 41-248 [600-3600] Standard 103 [1500]

P102 115E

Relief valves
 CP2100-7

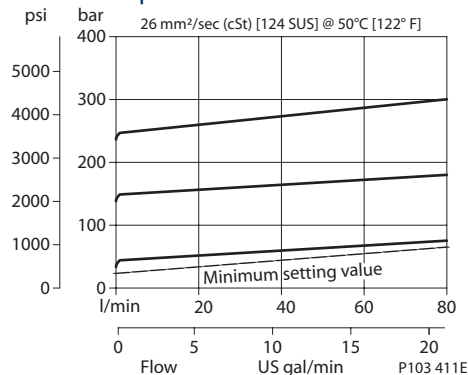
Cartridge Valves Technical Information
Relief Valves
Differential Area
VSB 06-EN

OPERATION

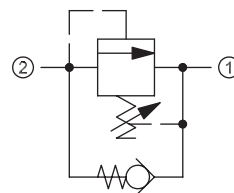
This is a direct-acting, differential area, poppet-type relief valve that relieves from 2 to 1 with an integral free-flow check from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P103 524

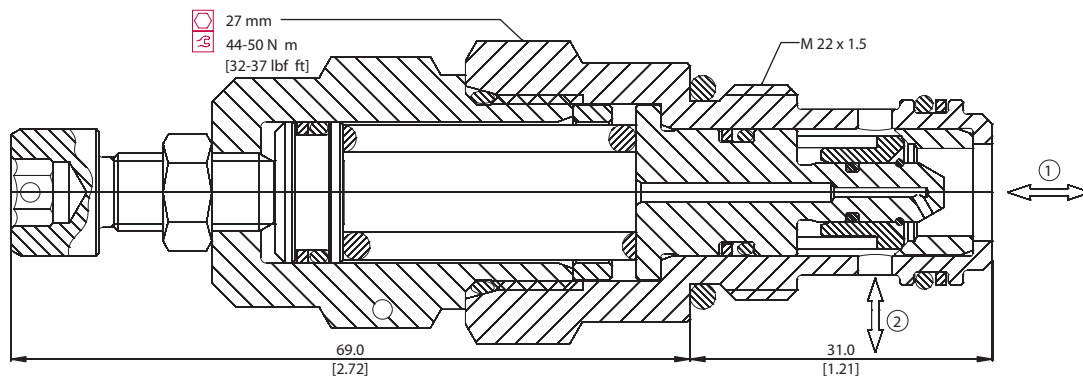
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	80 l/min [21 US gal/min]
Weight	0.22 kg [0.49 lb]
Cavity	NCS06/2

DIMENSIONS

mm [in]

Cross-sectional view



P103 413

ORDERING INFORMATION

VSB 06-EN - 1 - 00 - V - XXX

Setting range

- 1 = 20 - 80 bar [363 - 2031 psi]
- 2 = 70 - 210 bar [1015 - 3046 psi]
- 3 = 105 - 350 bar [1523 - 5076 psi]

Seals
V = Viton
Omit = Buna-N

Seal Kit
230000380
230000060

Housing and ports
00 = No Housing
DG3/8 = AL, 3/8 BSP
DG1/2 = AL, 1/2 BSP
DG6S = AL, #6 SAE
DG8S = AL, #8 SAE
Other housings available

Housing P/N
No Housing
NCS06/2-DG-3/8
NCS06/2-DG-1/2
NCS06/2-DG-6S
NCS06/2-DG-8S

To order this valve with a specific factory setting, contact your Comatrol representative

P103 414E

Cartridge Valves Technical Information

Relief Valves

Differential Area

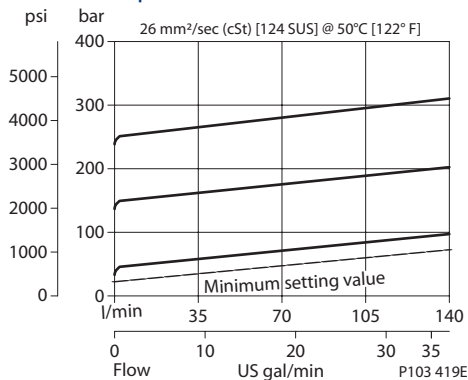
VSB 12-EN

OPERATION

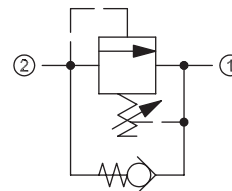
This is a direct-acting, differential area, poppet-type relief valve that relieves from 2 to 1 with an integral free-flow check from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



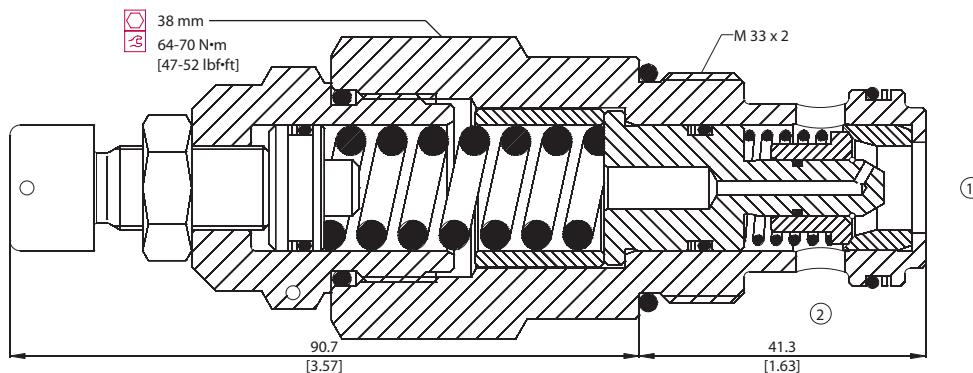
P103 524

Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	140 l/min [37 US gal/min]
Weight	0.60 kg [1.32 lb]
Cavity	NCS12/2

DIMENSIONS

Cross-sectional view



P103 421

ORDERING INFORMATION

VSB 12-EN - 1 - 00 - V - XXX

Setting range

- 1 = 25 - 170 bar [363 - 2466 psi]
- 2 = 70 - 270 bar [1015 - 3916 psi]
- 3 = 105 - 350 bar [1523 - 5076 psi]

Seals

- V = Viton
- Omit = Buna-N

Seal Kit

- 230000470
- 230000120

Housing and ports

- 00 = No Housing
- DG1/2 = AL, 1/2 BSP
- DG3/4 = AL, 3/4 BSP
- DG8S = AL, #8 SAE
- DG12S = AL, #12 SAE
- Other housings available

Housing P/N

- No Housing
- NCS12/2-DG-1/2
- NCS12/2-DG-3/4
- NCS12/2-DG-8S
- NCS12/2-DG-12S

P103 422E

Relief valves
VSB 12-EN

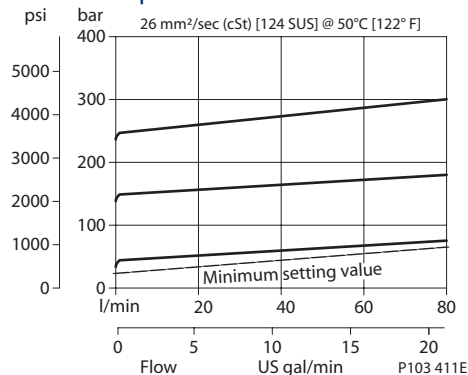
Cartridge Valves Technical Information
 Relief Valves
 Differential Area
 VSB 06-CN

OPERATION

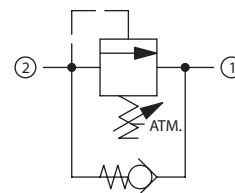
This is a direct-acting, differential area, atmospherically-vented, poppet-type relief valve that relieves from 2 to 1 with an integral free-flow check from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P1

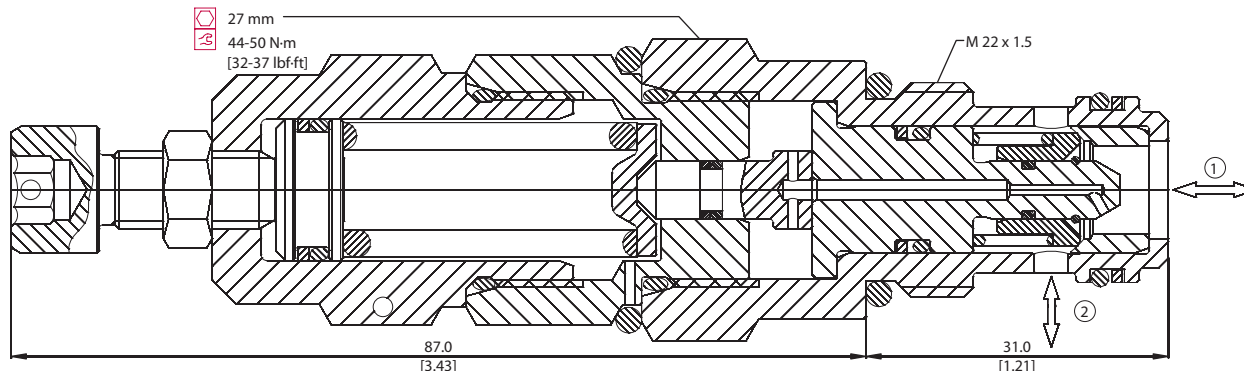
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	80 l/min [21 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	NCS06/2

DIMENSIONS

mm [in]

Cross-sectional view



P103 410

ORDERING INFORMATION

VSB 06-CN - 1 - 00 - V - XXX

Setting range

- 1 = 25 - 140 bar [363 - 2031 psi]
- 2 = 70 - 210 bar [1015 - 3046 psi]
- 3 = 105 - 350 bar [1523 - 5076 psi]

Seals

- V = Viton
- Omit = Buna-N

Seal Kit

- 230000380
- 230000060

Housing and ports

- 00 = No Housing
- DG3B = AL, 3/8 BSP
- DG4B = AL, 1/2 BSP
- DG6S = AL, #6 SAE
- DG8S = AL, #8 SAE
- Other housings available

Housing P/N

- No Housing
- NCS06/2-DG-3/8
- NCS06/2-DG-1/2
- NCS06/2-DG-6S
- NCS06/2-DG-8S

To order this valve with a specific factory setting, contact your Comatrol representative

P103 412E

Cartridge Valves Technical Information

Relief Valves

Differential Area

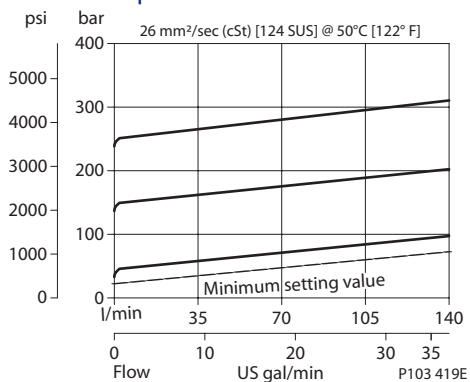
VSB 12-CN

OPERATION

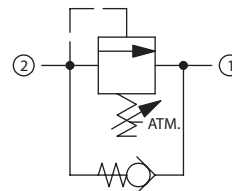
This is a direct-acting, differential area, atmospherically-vented, poppet-type relief valve that relieves from 2 to 1 with an integral free-flow check from 1 to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P1

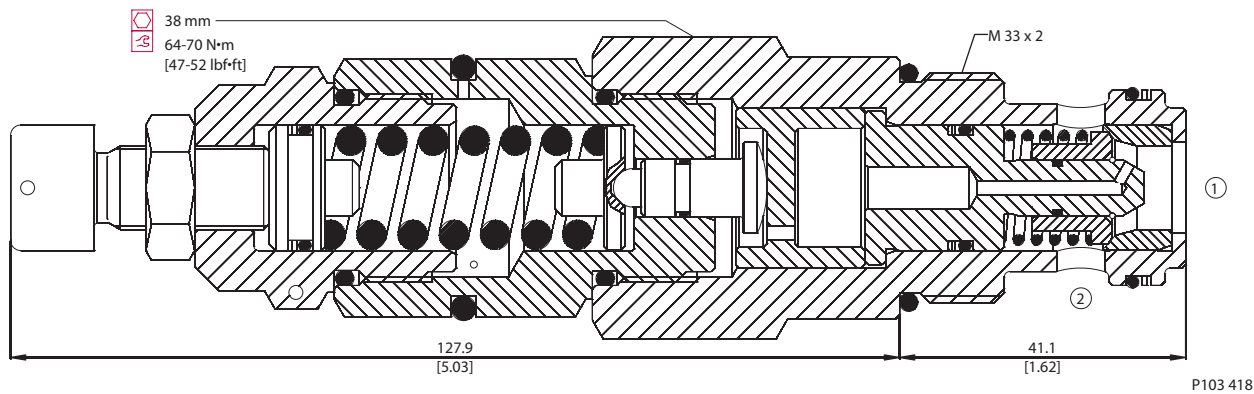
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	140 l/min [37 US gal/min]
Weight	0.75 kg [1.65 lb]
Cavity	NCS12/2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VSB 12-CN - 1 - 00 - V - XXX

Setting range

- 1 = 25 - 170 bar [363 - 2466 psi]
- 2 = 70 - 270 bar [1015 - 3916 psi]
- 3 = 105 - 350 bar [1523 - 5076 psi]

To order this valve with a specific factory setting, contact your Comatrol representative

Seals

- V = Viton
- Omit = Buna-N

Seal Kit

- 230000470
- 230000120

Housing and ports

- 00 = No Housing
- DG1/2 = AL, 1/2 BSP
- DG3/4 = AL, 3/4 BSP
- DG8S = AL, #8 SAE
- DG12S = AL, #12 SAE
- Other housings available

Housing P/N

- No Housing
- NCS12/2-DG-1/2
- NCS12/2-DG-3/4
- NCS12/2-DG-8S
- NCS12/2-DG-12S

P103 420E

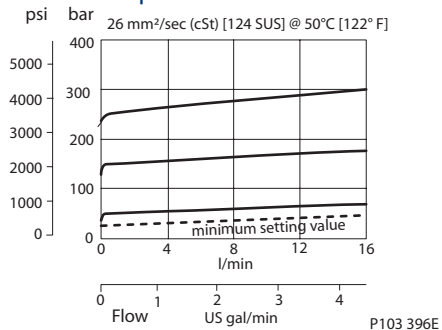
Relief valves
VSB 12-CN

OPERATION

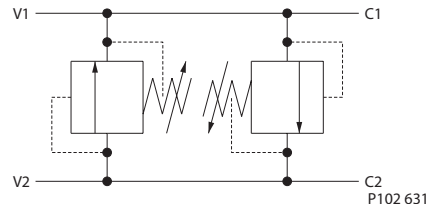
This valve is an inline cross relief. It uses two **VME 06** direct-acting relief valves.

SPECIFICATIONS

Theoretical performance



Schematic



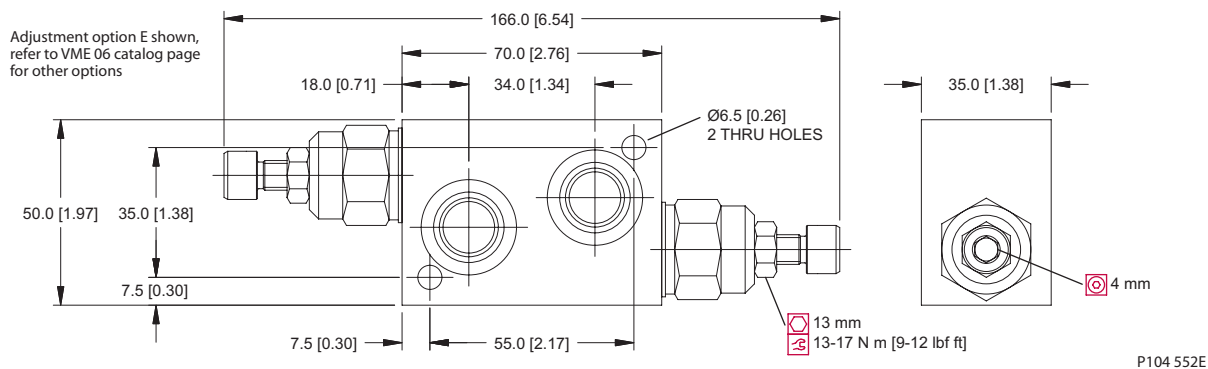
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow	40 l/min [11 US gal/min]
Weight	1.11 kg [2.45 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VA-E 06 - EN - 2 - LG - V - XXX

Adjustment option
 EN = External screw
 M = Handwheel

Setting range
 1 = 25 - 70 bar [360 - 1000 psi]
 2 = 35 - 170 bar [510 - 2500 psi]
 3 = 70 - 315 bar [1000 - 4500 psi]

Seals
 V = Viton
 Omit = Buna-N

Seal kit
 Consult factory
 Consult factory

Housing and ports
 LG = AL, 3/8 BSP

To order this valve with a specific factory setting, contact your Comatrol representative

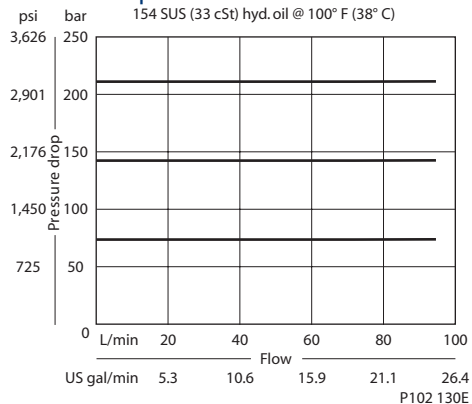
P104 553E

OPERATION

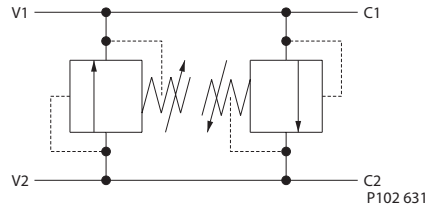
This valve is an inline cross relief. It uses two CP200-1 differential area relief valves.

SPECIFICATIONS

Theoretical performance



Schematic



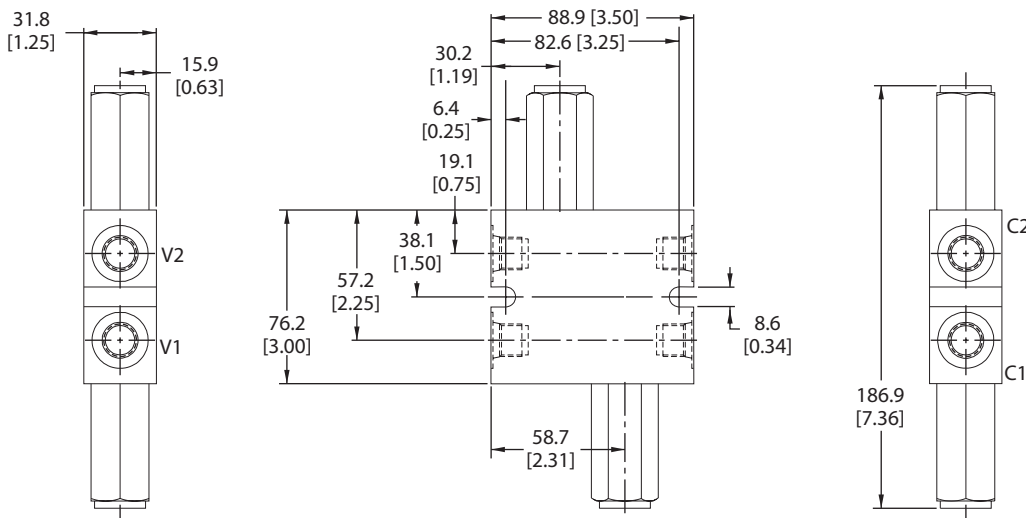
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	75 l/min [20 US gal/min]
Weight	0.82 kg [1.80 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



P102 129

ORDERING INFORMATION

CP220 - 1 - 8S - B-0-A-C-150

Housing and ports

3B	=	Al, 3/8 BSP	221743
4B	=	Al, 1/2 BSP	221744
6S	=	Al, #6 SAE	220216
8S	=	Al, #8 SAE	220217

Other housings available

Housing P/N

221743
221744
220216
220217

Seals

B	=	Buna-N
V	=	Viton

Seal kit
 120072
 120161

Adjustment option

A	=	Internal
E	=	External
F	=	Tamper resistant
K	=	Knob

Crack pressure

Code x 10 = psi
 Example: 150 = 1500 psi

Pressure range

	bar	[psi]
A	=	7-55 [100-800]
Standard	=	28 [400]
B	=	17-138 [250-2000]
Standard	=	69 [1000]
C	=	41-248 [600-3600]
Standard	=	103 [1500]

P102 131E

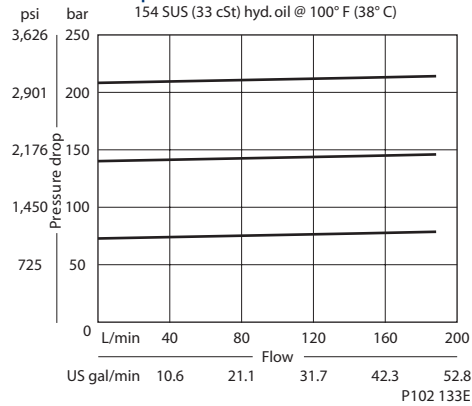
Relief valves
 CP220-1

OPERATION

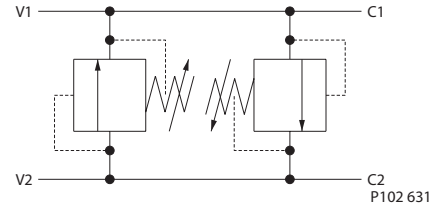
This valve is an inline cross relief. It uses two CP201-1 differential area relief valves.

SPECIFICATIONS

Theoretical performance



Schematic



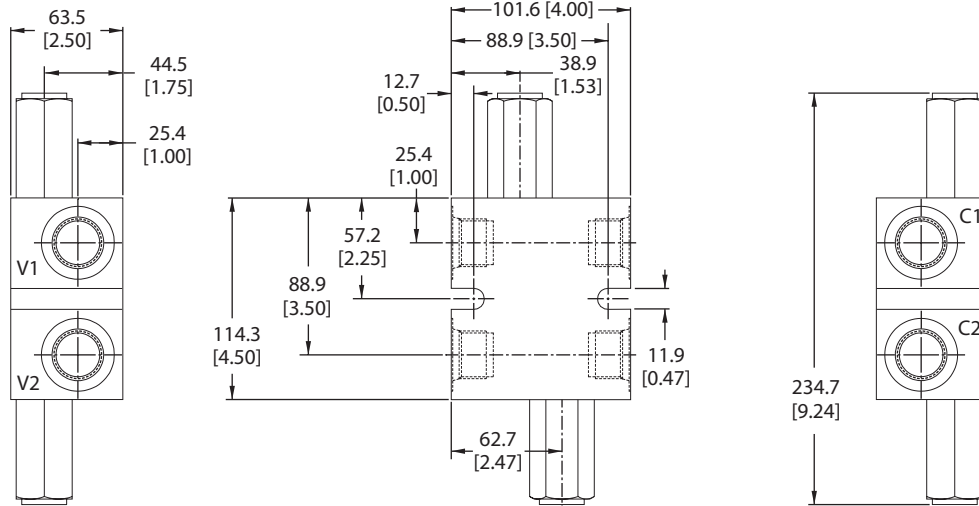
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	190 l/min [50 US gal/min]
Weight	2.25 kg [4.95 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



P102 132

ORDERING INFORMATION

CP221 - 1 - 16S - B - 0 - A - C - 150

Housing and ports

- 12S = AL, #12 SAE
- 16S = AL, #16 SAE
- 6B = AL, 3/4 BSP
- 8B = AL, 1 BSP

Housing P/N

- 220223
- 220222
- 221742
- 221690

Cracking pressure

Code x 10 = psi
 Example: 150 = 1500 psi

Seals

- B = Buna-N
- V = Viton

Seal kit

- 120162
- 120163

Pressure range

	bar	[psi]
A =	7-69	[100-1000]
Standard	28	[400]
B =	17-172	[250-2500]
Standard	69	[1000]
C =	41-248	[500-3600]
Standard	103	[1500]

Adjustment option

- A = Internal
- E = External
- F = Tamper resistant
- K = Knob

P102 134E

Pressure Reducing, Non-Relieving	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP230-2	SDC10-3	Pressure Reducing, Non-Relieving,	40 l/min [10 US gal/min]	210 bar [3000 psi]	05.4
	PRC 06	NCS06/3	Direct Acting	40 l/min [10 US gal/min]	315 bar [4500 psi]	05.5

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP230-1	SDC10-3	Pressure Reducing, Relieving, Direct Acting	40 l/min [10 US gal/min]	210 bar [3000 psi]	05.6

Pressure Reducing, Relieving	Model No.	Cavity	Description	Flow*	Pressure	Page
	PRR10-PVG	SDC10-3	Pressure Reducing, Relieving, Direct Acting, Designed for PVG Actuators	40 l/min [10 US gal/min]	210 bar [3000 psi]	05.7

Pressure Reducing, Non-Relieving	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP230-4	SDC10-3	Pressure Reducing, Non-Relieving,	40 l/min [10 US gal/min]	350 bar [5000 psi]	05.8
	PPRC 06	NCS06/3	Pilot Operated	40 l/min [10 US gal/min]	315 bar [4500 psi]	05.9

Pressure Reducing, Relieving	Model No.	Cavity	Description	Flow*	Pressure	Page
	PRMP 064	SDC10-3	Pressure Reducing, Relieving,	40 l/min [10 US gal/min]	315 bar [4500 psi]	05.10
	CP231-3	CP12-3S	Pilot Operated	115 l/min [30 US gal/min]	350 bar [5000 psi]	05.11

Pressure Reducing, Relieving	Model No.	Cavity	Description	Flow*	Pressure	Page
	PRR10-DRD	SDC10-4	Pressure Reducing, Relieving, Direct Acting with Dampening Port	38 l/min [10 US gal/min]	207 bar [3000 psi]	05.12

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

PRESSURE REDUCING VALVES

Pressure reducing valves are pressure limiting devices that limit pressure in one portion of a circuit while leaving system pressure unaffected. They are available in direct-acting and pilot-operated types and as pressure reducing/relieving valves or as pressure reducing valves only.

Pressure reducing valves



F102 010

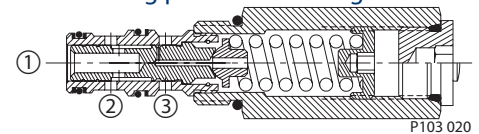
DIRECT ACTING PRESSURE REDUCING / RELIEVING VALVES

Direct-acting pressure reducing/relieving valves allow flow to pass from 2 to 1 until the pressure at 1 reaches the predetermined setting, at which point the spool shifts to restrict input flow from 2 (reducing mode) or to open flow from 1 to 3 (relieving mode) as needed to maintain the regulated pressure at 1.

Advantages of direct-acting pressure reducing valves are:

- Fast response
- Economical

Direct acting pressure reducing valve



A typical application for direct-acting pressure reducing valves is for pressure control in systems requiring two or more different pressure settings. These valves are best suited for low flow applications such as hydraulic brake or motor shift.

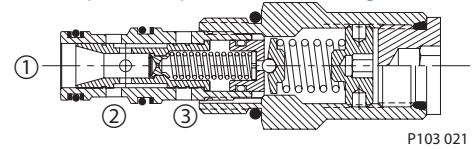
**PILOT-OPERATED
PRESSURE REDUCING /
RELIEVING VALVES**

Pilot-operated pressure reducing/relieving valves operate similarly to direct-acting pressure reducing/relieving valves -- the spool allows flow to pass from 2 to 1 until the pressure at 1 reaches the predetermined setting and forces the pilot poppet off its seat. This creates a pressure differential across the spool that causes the spool to shift and maintain regulated pressure at 1 in the same manner as the direct-acting pressure reducing/relieving valve.

Advantages of pilot-operated relief valves are:

- Smooth, stable response
- High pressure capability
- Precise pressure control with varying flow rates

Pilot-operated pressure reducing valve



A typical application for pilot-operated pressure reducing valves is for pressure control in systems requiring two or more different pressure settings where high pressure capability and/or extremely precise pressure control is required.

Cartridge Valves Technical Information

Pressure Reducing Valves

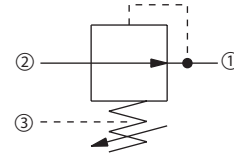
Pressure Reducing, Non-Relieving

CP230-2

OPERATION

This is a direct-acting pressure-reducing (non-relieving) valve.

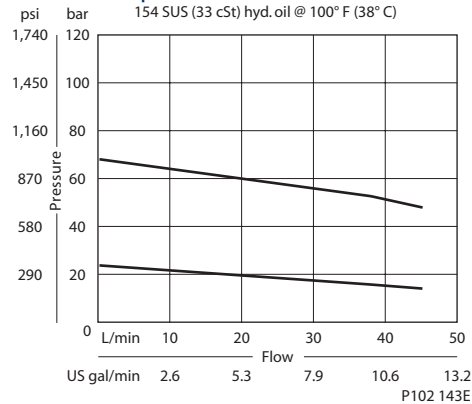
Schematic



P102 140E

SPECIFICATIONS

Theoretical performance



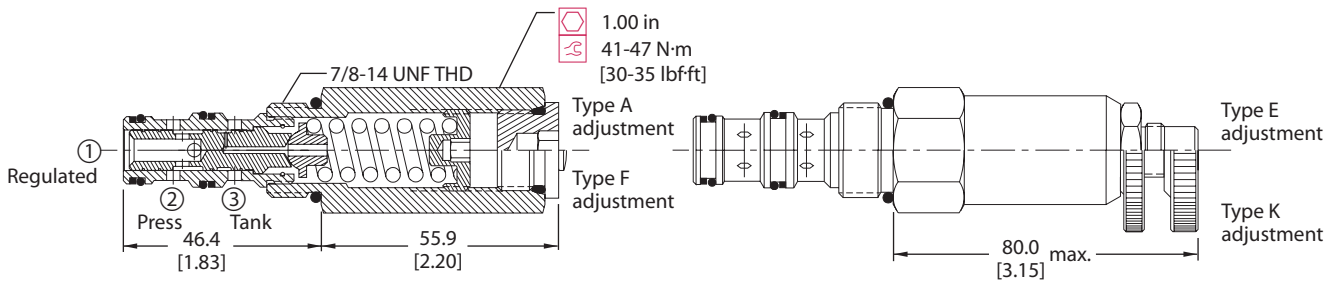
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [10 US gal/min]
Weight	0.25 kg [0.56 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 141E

ORDERING INFORMATION

CP230 - 2 - B - 6S - A - C - 100

Seals

B = Buna-N
V = Viton

Seal kit

120027
120028

Housing and ports

0 = No Housing
SE3B = Al, 3/8 BSP
SE4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

Adjustment option

A = Internal
E = External
F = Tamper resistant
K = Knob

Crack pressure

Code x 10 = psi
Example: 100 = 1000 psi

Pressure range

	bar	[psi]
A	4-28	[50-400]
Std. setting	17	[250]
B	5-55	[75-800]
Std. setting	28	[400]
C	7-97	[100-1400]
Std. setting	69	[1000]
D	34-166	[500-2400]
Std. setting	103	[1500]

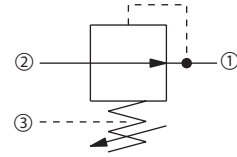
P102 144E

Cartridge Valves Technical Information
Pressure Reducing Valves
Pressure Reducing, Non-Relieving
PRC 06

OPERATION

This is a direct-acting pressure reducing (non-relieving) valve.

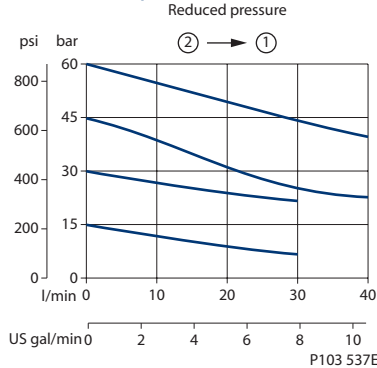
Schematic



P102 140E

SPECIFICATIONS

Theoretical performance



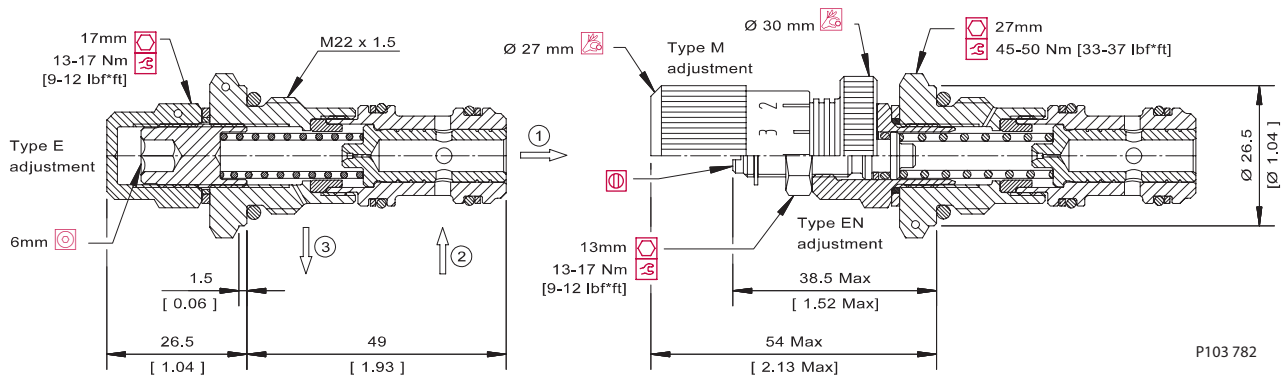
Specifications

Rated pressure	315 bar [4500 psi]
Rated Flow	40 l/min [10 US gal/min]
Weight	0.14 kg [0.31 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PRC 06 - EN - 1 - 00 - V

Type of adjustment

E = Internal screw
EN = External screw
M = Handwheel

Setting range

.5 = 1-10 bar [14.5-145 psi]
1 = 10 - 25 bar [145-363 psi]
2 = 25-80 bar [363-1160 psi]

Seals

V = Viton
B = Buna-N

Housing and ports

00 = No Housing
SE3/8 = AL, 3/8 BSP
SE1/2 = AL, 1/2 BSP
SE6S = AL, #6 SAE
SE8S = AL, #8 SAE
Other housings available

Seal kit

230000110
230000070

Housing P/N

No Housing
NCS06/3-SE-3/8
NCS06/3-SE-1/2
NCS06/3-SE-6S
NCS06/3-SE-8S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative P103 784E

Cartridge Valves Technical Information

Pressure Reducing Valves

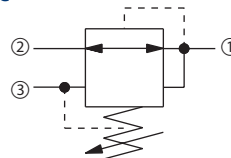
Pressure Reducing, Relieving

CP230-1

OPERATION

This is a direct-acting pressure reducing/relieving valve.

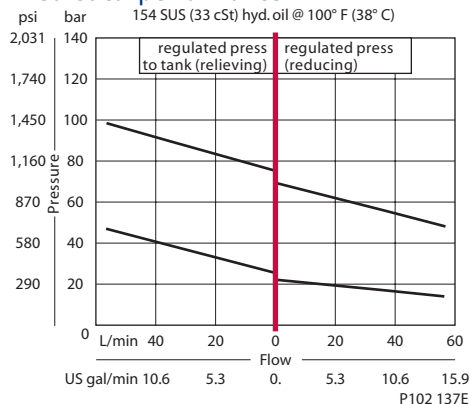
Schematic



P102 135E

SPECIFICATIONS

Theoretical performance



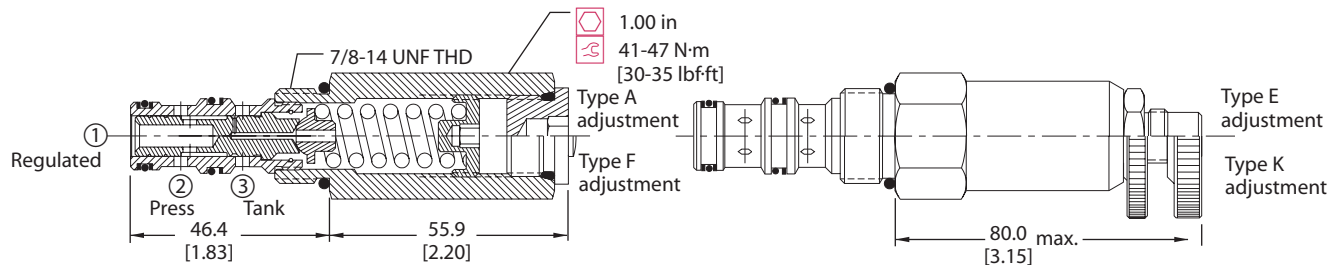
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [10 US gal/min]
Weight	0.23 kg [0.51 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP230 - 1 - B - 6S - A - C - 100

Seals B = Buna-N V = Viton	Seal kit 120570 120571	Housing P/N No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S	Pressure setting Code x 10psi (0.69 bar) Example: 100 = 1000 psi (70 bar)
Housing and ports 0 = No Housing SE3B = Al, 3/8 BSP SE4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available	Adjustment option A = Internal E = External F = Tamper resistant K = Knob	Pressure range	
		A = 4-28 bar [50-400] [psi] Std. setting 17 [250]	
		B = 5-55 bar [75-800] [psi] Std. setting 28 [400]	
		C = 7-97 bar [100-1400] [psi] Std. setting 69 [1000]	
		D = 34-166 bar [500-2400] [psi] Std. setting 103 [1500]	

P102 139E

Cartridge Valves Technical Information

Pressure Reducing Valves

Pressure Reducing, Relieving

PRR10-PVG

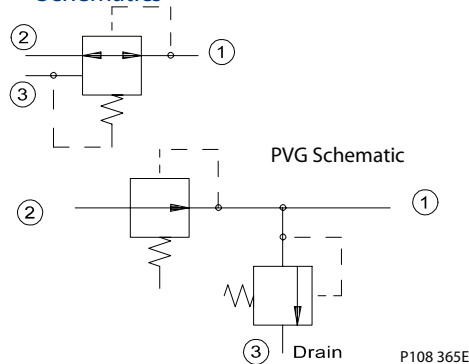
OPERATION

This is a direct-acting pressure reducing/relieving valve, designed for PVG actuators.

SPECIFICATIONS

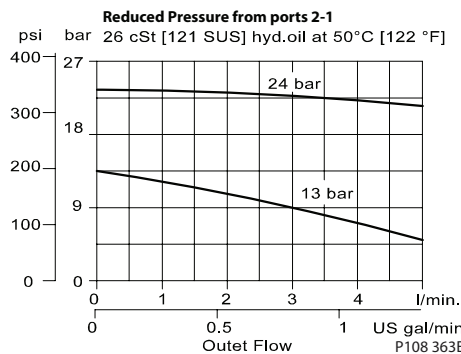
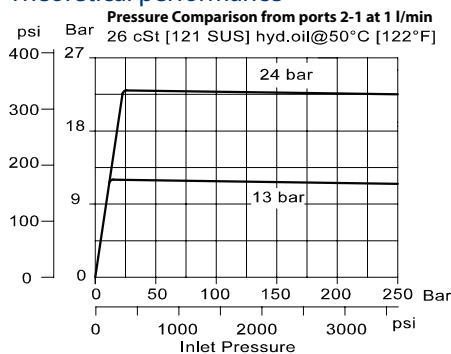
Max. pressure in port 2	210 bar [3000 psi]
Maximum flow	5 l/min [1.3 US gal/min]
Cartridge Weight	0.23 kg [0.51 lb]
Cavity	SDC10-3

Schematics

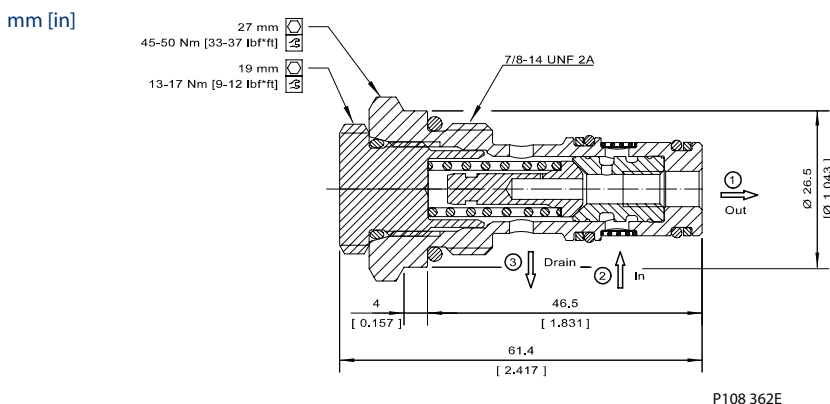


DIMENSIONS

Theoretical performance



Cross-sectional view



ORDERING INFORMATION

PRR10-PVG-E-13-B-F-00

Pressure setting: _____

E13 = 13 Bar for Electrical (PVE)
 H24 = 24 Bar for Hydraulic (PVH) or High Current (PVHC)

Body and ports
 00 = Cartridge only
 6S = Al, #6 SAE
 8S = Al, #8 SAE
 SE3B = Al, 3/8 BSP
 SE4B = Al, 1/2 BSP
 Other housings available

Body Nomenclature
 No Body
 CP10-3-6S
 CP10-3-8S
 SDC10-3-SE3B
 SDC10-3-SE4B

F = FILTER 300um
 (Omit if not required)

SEALS
 B = Buna
 V = Viton

SEAL KIT
 230000650
 354001019

P108 364E

Pressure reducing valves
 PRR10-PVG

Cartridge Valves Technical Information

Pressure Reducing Valves

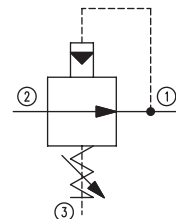
Pressure Reducing, Non-Relieving

CP230-4

OPERATION

This is a pilot-operated pressure-reducing (non-relieving) valve.

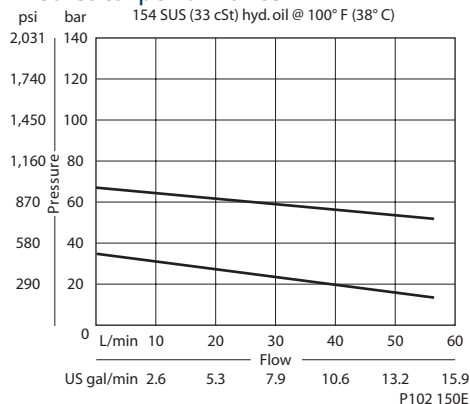
Schematic



P103 231

SPECIFICATIONS

Theoretical performance



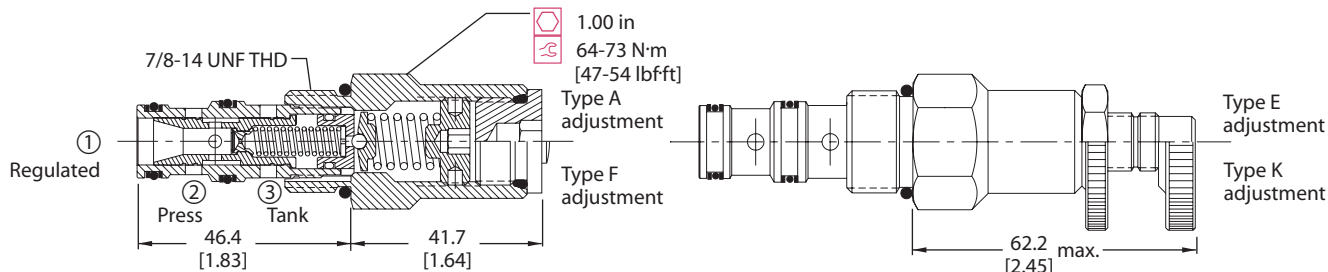
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [10 US gal/min]
Weight	0.20 kg [0.43 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 149E

ORDERING INFORMATION

CP230 - 4 - B - 6S - A - C - 150

Seals

B = Buna-N
V = Viton

Housing and ports

0 = No Housing
SE3B = Al, 3/8 BSP
SE4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE

Other housings available

Adjustment option

A = Internal
E = External
F = Tamper resistant
K = Knob

Seal kit

120027
120028

Housing P/N

No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

Pressure setting

Code x 10psi (0.69 bar)
Example: 150 = 1500 psi (105 bar)

Pressure range

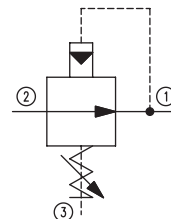
	bar	[psi]
A =	14-55	[200-800]
Standard	28	[400]
B =	21-103	[300-1500]
Standard	69	[1000]
C =	28-207	[400-3000]
Standard	103	[1500]
D =	28-345	[400-5000]
Standard	103	[1500]

P102 152E

OPERATION

This is a pilot-operated pressure reducing (non-relieving) valve.

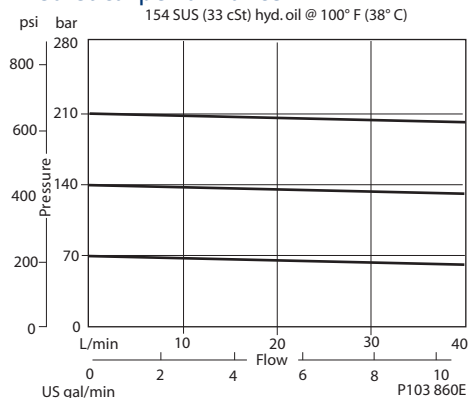
Schematic



P103 231

SPECIFICATIONS

Theoretical performance



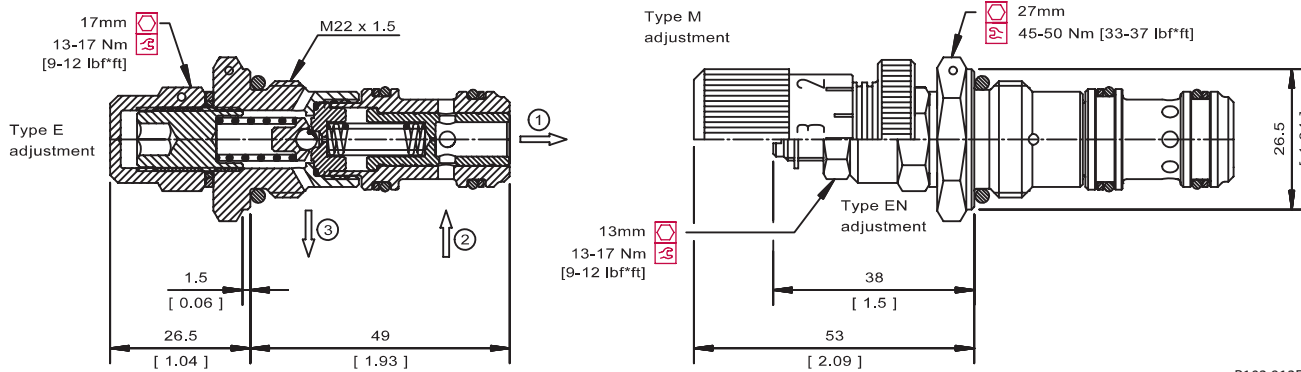
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	40 l/min [10 US gal/min]
Weight	0.14 kg [0.31 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 913E

ORDERING INFORMATION

PPRC 06 - EN - 1 - 00 - V

Type of adjustment

- E = Internal screw
- EN = External screw
- M = Handwheel

Setting range

- 1 = 10-70 bar [145-1015 psi]
- 2 = 30-140 bar [435-2031 psi]
- 3 = 70-210 bar [1015-3046 psi]

Seals

- V = Viton
- Omit = Buna-N

Housing and ports

- 00 = No Housing
- SE3/8 = AL, 3/8 BSP
- SE1/2 = AL, 1/2 BSP
- SE6S = AL, #6 SAE
- SE8S = AL, #8 SAE
- Other housings available

Seal kit

- 230000110
- 230000070

Housing P/N

- No Housing
- NCS06/3-SE-3/8
- NCS06/3-SE-1/2
- NCS06/3-SE-6S
- NCS06/3-SE-8S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative P103 794E

Cartridge Valves Technical Information

Pressure Reducing Valves

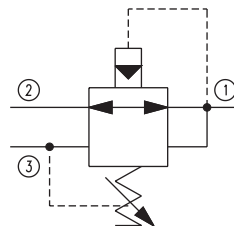
Pressure Reducing, Relieving

PRMP 064

OPERATION

This is a pilot-operated pressure reducing/relieving valve.

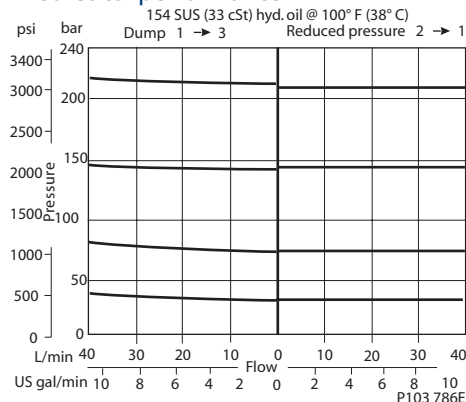
Schematic



P103 230

SPECIFICATIONS

Theoretical performance



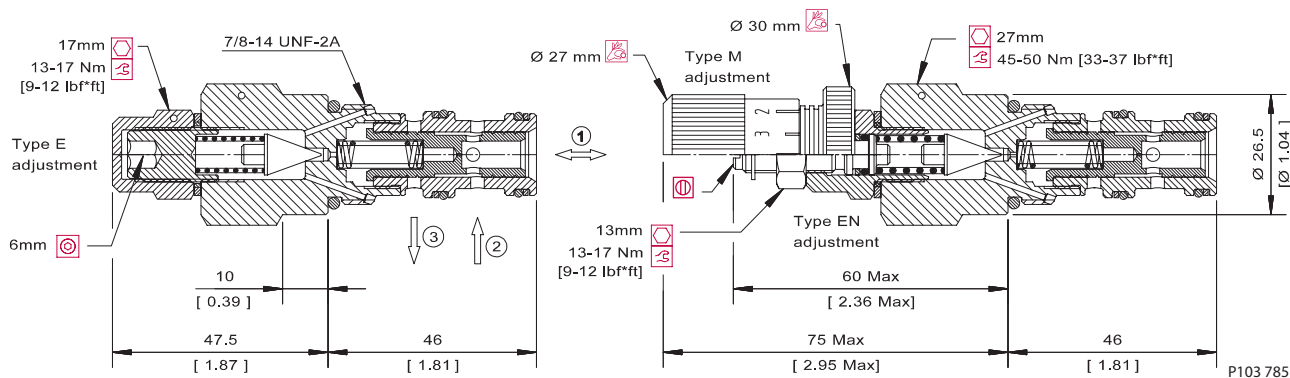
Specifications

Rated pressure	315 bar [4500 psi]
Rated Flow	40 l/min [10 US gal/min]
Weight	0.21 kg [0.46 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PRMP 064 - EN - 1 - SE3/8 - V

Adjustment
E = Internal screw
EN = External screw
M = Handwheel

Setting range
1 = 10-70 bar [145-1015 psi]
2 = 30-140 bar [435-2031 psi]
3 = 70-210 bar [1015-3046 psi]

Seals Seal Kit
V = Viton 354003719
Omit = Buna-N 230000070

Housing and ports Housing P/N
00 = No Housing No Housing
SE3B = Al, 3/8 BSP SDC10-3-SE-3B
SE4B = Al, 1/2 BSP SDC10-3-SE-4B
65 = Al, #6 SAE CP10-3-6S
8S = Al, #8 SAE CP10-3-8S
Other housings available

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

P103 787E

Cartridge Valves Technical Information

Pressure Reducing Valves

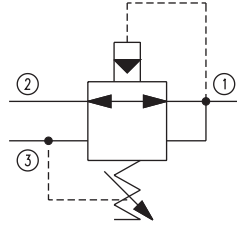
Pressure Reducing, Relieving

CP231-3

OPERATION

This is a pilot-operated pressure reducing/relieving valve.

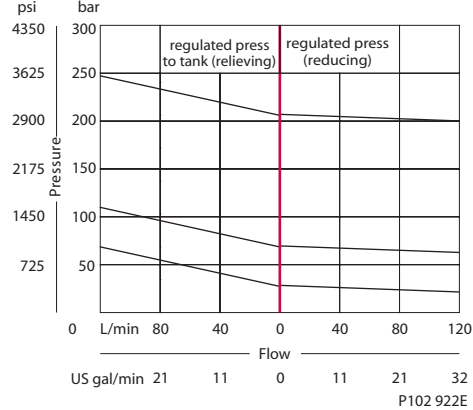
Schematic



P103 230

SPECIFICATIONS

Theoretical performance



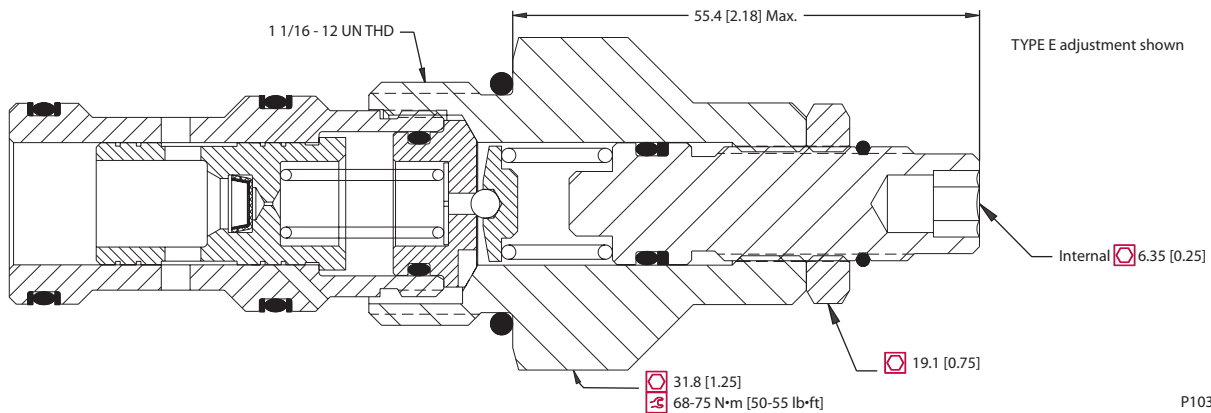
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Weight	0.27 kg [0.60 lb]
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP231-3-B-10S-A-A-050

Seals	Seal kit	Pressure range	Pressure setting
B = Buna-N	120335	A = 14-55 bar [200-800 psi]	Code x 10psi (0.69 bar)
V = Viton	120336	B = 21-103 bar [300-1500 psi]	Example: 050 = 500 psi (34 bar)
		F = 27-207 bar [400-3000 psi]	
		C = 27-207 bar [400-3000 psi]	
		D = 27-345 bar [400-5000 psi]	
		Adjustment options	Housing P/N
		A = Internal	No Housing
		F = Tamper Resistant	CP12-3S-4B/2B
		E = External	CP12-3S-6B/2B
		K = Knob	CP12-3S-10S/4S
			CP12-3S-12S/4S
		Housing and ports	
		0 = No Housing	
		4B = Al, 1/2 BSP	
		6B = Al, 3/4 BSP	
		10S = Al, #10 SAE	
		12S = Al, #12 SAE	
		Other housings available	

P102 622E

Cartridge Valves Technical Information

Pressure Reducing Valves

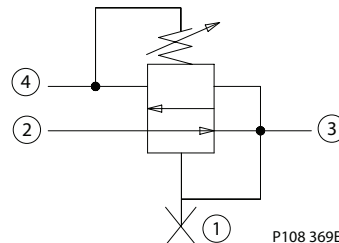
Pressure Reducing, Relieving

PRR10-DRD

OPERATION

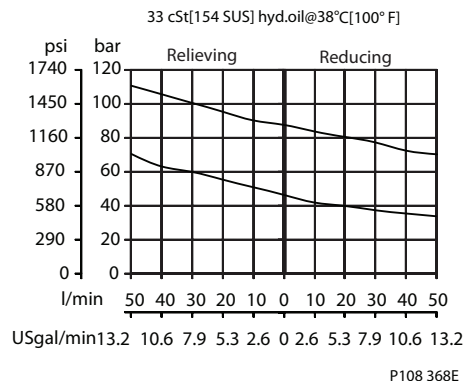
This is a direct-acting pressure reducing/relieving valve, with dampening port.

Schematic



SPECIFICATIONS

Theoretical performance



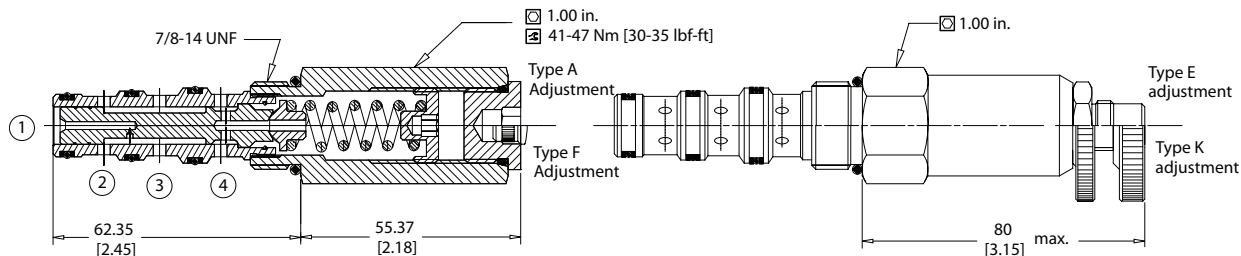
Specifications

Rated pressure	105 bar [1522 psi]
Rated Flow at 7 bar [100 psi]	38 l/min [10 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



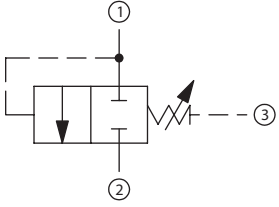
P108 367E

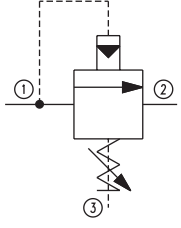
ORDERING INFORMATION

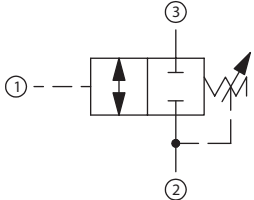
PRR10-DRD-4-E-104-B-00

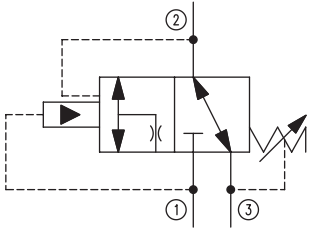
Pressure Range	Housing and ports	Housing Part #
1 = 4-27 bar [50-400 psi]	00 = No Housing	No Housing
Standard Setting 21 bar [300 psi]	3B = Al, 3/8 BSP	CP10-4-3B
2 = 5-55 bar [70-800 psi]	4B = Al, 1/2 BSP	CP10-4-4B
Standard Setting 35 bar [500 psi]	6S = Al, #6 SAE	CP10-4-6S
3 = 7-96 bar [100-1400 psi]	8S = Al, #8 SAE	CP10-4-8S
Standard Setting 69 bar [1000 psi]	Seals	Seal Kit
4 = 35-165 bar [500-2400 psi]	B = Buna-N	120023
Standard Setting 104 bar [1500 psi]	V = Viton	120024
Adjustment Type	Pressure Setting	
A = Internal	104 = 104 bar [1500 psi]	
E = External	XXX = Standard Setting	
F = Tamper Resistant		
K = Knob		

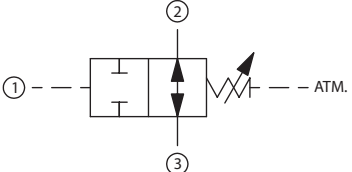
P108 370E

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-8	SDC10-3	Sequence Valve, 2-Way,	55 l/min [14 US gal/min]	210 bar [3000 psi]	06.8
	CP241-8	CP12-3S	Normally Closed	150 l/min [39 US gal/min]	40 bar [600 psi]	06.9

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-21	SDC10-3	Sequence Valve, Pilot Operated Spool	45 l/min [12 US gal/min]	350 bar [5000 psi]	06.10
	CP241-21	CP12-3S		75 l/min [20 US gal/min]	350 bar [5000 psi]	06.11

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-2	SDC10-3	Sequence Valve, 2-Way, Normally Closed, External Pilot, Internal Drain	35 l/min [9 US gal/min]	210 bar [3000 psi]	06.12

Kick Down Type	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-22	SDC10-3	Sequence Valve, Kick-Down Type	45 l/min [12 US gal/min]	350 bar [5000 psi]	06.13

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDP 06/NA	NCS06/3	Sequence Valve, 2-Way, Normally Open	25 l/min [7 US gal/min]	315 bar [4500 psi]	06.14

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDP 06/NC	NCS06/3	Sequence Valve, 2-Way, Normally Closed	25 l/min [7 US gal/min]	315 bar [4500 psi]	06.15

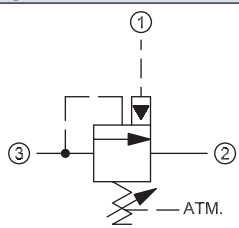
Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-5	SDC10-4	Sequence Valve, 2-Way, Normally Open	25 l/min [7 US gal/min]	210 bar [3000 psi]	06.16

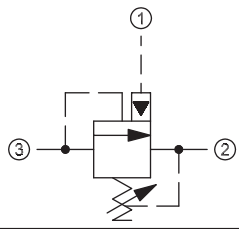
Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-1	SDC10-3	Sequence Valve, 2-Way, Normally Open	25 l/min [7 US gal/min]	210 bar [3000 psi]	06.17

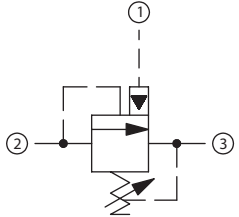
Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-9	SDC10-3	Sequence Valve, 3-Way	20 l/min [5 US gal/min]	210 bar [3000 psi]	06.18

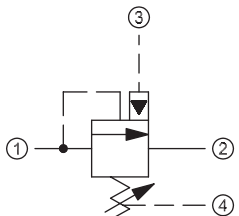
Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDP 06/4201	NCS06/4	Sequence Valve, 3-Way	22 l/min [6 US gal/min]	315 bar [4500 psi]	06.19

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Unloading	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDB 06-CN	NCS06/3	Unloading Valve, Differential Area,	80 l/min [21 US gal/min]	350 bar [5000 psi]	06.20
	VDB 12-CN	NCS12/3	Pilot Operated, Atmospheric Vented	160 l/min [42 US gal/min]	350 bar [5000 psi]	06.21

Unloading	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDB 06-EN	NCS06/3	Unloading Valve, Differential Area,	80 l/min [21 US gal/min]	350 bar [5000 psi]	06.22
	VDB 12-EN	NCS12/3	Pilot Operated	160 l/min [42 US gal/min]	350 bar [5000 psi]	06.23

Unloading	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-30	SDC10-3	Unloading Valve, Pilot Operated	4 l/min [1 US gal/min]	210 bar [3000 psi]	06.24

Unloading	Model No.	Cavity	Description	Flow*	Pressure	Page
	AUV 06	NCS06/4	Unloading Valve, Pilot Operated, Spool	50 l/min [13 US gal/min]	250 bar [3600 psi]	06.25

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

SEQUENCE VALVES

As the name implies, sequence valves control a sequence of operations. Sequence valves usually use a pressure signal to shift a spool, thereby opening or closing a flow path at a pre-set pressure.

Sequence valves



F102 013

DIRECT-ACTING SEQUENCE VALVES

Direct-acting sequence valves are spool-type valves with a spring force holding the spool closed. When inlet pressure exceeds the spring setting, the spool shifts to direct flow to a second function.

Direct-acting sequence valves come in a variety of configurations:

- Internally-piloted with external drain
- Internally-piloted with internal drain
- Externally-piloted with internal drain

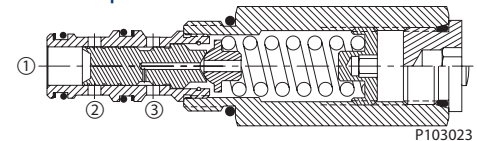
Direct-acting sequence valves are best suited for fairly constant flow and lower pressures.

PILOT-OPERATED SEQUENCE VALVES

Also available are pilot-operated sequence valves that have an internal pilot and an external drain.

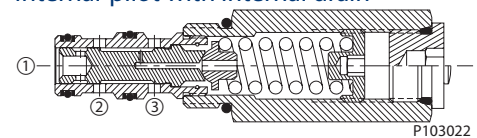
Pilot-operated sequence valves are best suited for higher and more widely varying flows, and higher pressures.

Internal-pilot with external drain



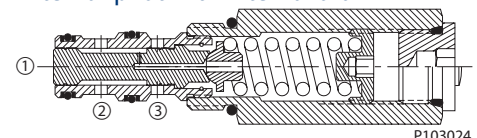
P103023

Internal-pilot with internal drain



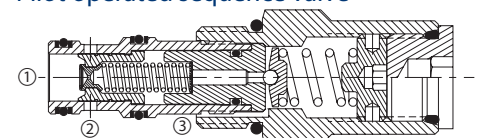
P103022

External-pilot with internal drain



P103024

Pilot operated sequence valve



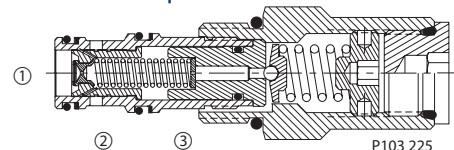
P103025

KICK-DOWN SEQUENCE VALVES

Another type of pilot-operated sequence valve is commonly known as a kick-down sequence valve. The kick-down sequence valve blocks flow at 1 until sufficient pressure exists at 1 to force the pilot poppet off its seat. This creates a pressure differential across the spool that causes the spool to shift and open flow from 1 to 2. The spool will remain open until flow through the valve is shut off.

A common application for a kick-down sequence valve is as a safety device in circuits where overloading or overheating could cause damage if pressure is held for an extended period of time.

Kick-down sequence valve



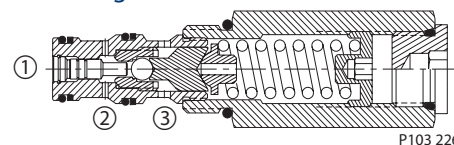
UNLOADING VALVES

Another type of sequence valve is commonly known as an unloading valve. The unloading valve blocks flow at 2 until sufficient pressure exists at 1 to pilot the poppet open against the pre-determined spring setting and allow flow from 2 to 3. If the pressure at 1 drops below the pilot ratio value multiplied by the pre-determined spring setting the valve will close, blocking flow at 2.

Various pilot ratio values are available; consult catalog sheets for details.

An unloading valve is typically used to *unload* a pump outlet to tank at a minimum pressure drop, resulting in higher system efficiencies with less heat generation.

Unloading valve



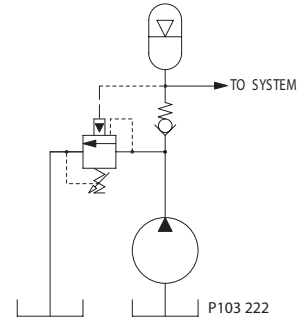
APPLICATIONS

Unloading valves

Common applications for unloading valves include:

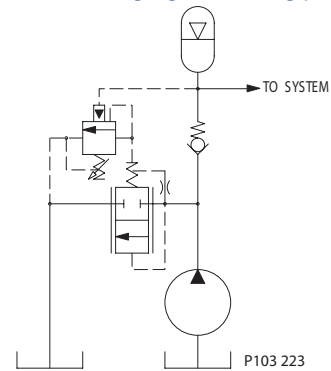
- Pump unloading in an accumulator charging system

Accumulator charging/unloading valve



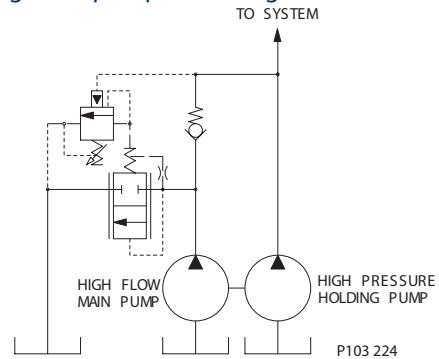
- For higher flow rates the unloading valve may be used to pilot a larger logic element

Accumulator charging/unloading pilot valve



- Pump unloading in a 2 pump high-low circuit

High-low pump unloading



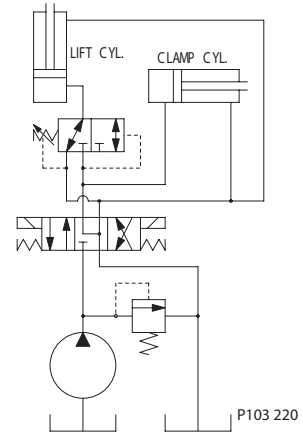
**APPLICATIONS
 (continued)**

Sequence valves

Both direct-acting and pilot-operated sequence valves have many common applications including:

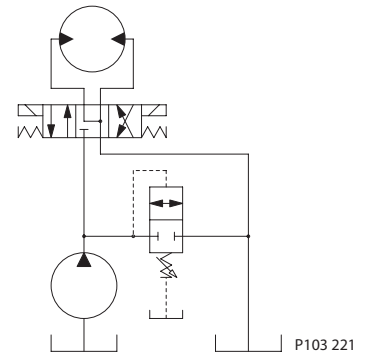
- Providing a sequenced series of operations such as in a clamp and lift circuit

Clamp & lift circuit



- Use as a relief valve where the return line has high or varying backpressure. The independent spring chamber drain line provides a relief setting unaffected by downstream pressure.

Sequence valve as relief

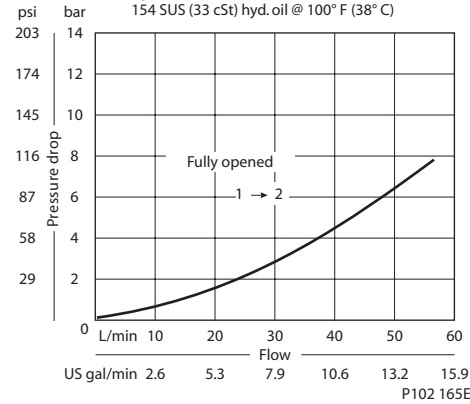


OPERATION

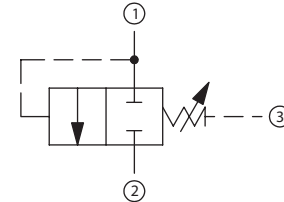
Valve blocks flow from 1 to 2 until sufficient pressure is applied at 1

SPECIFICATIONS

Theoretical performance



Schematic



P102 164E

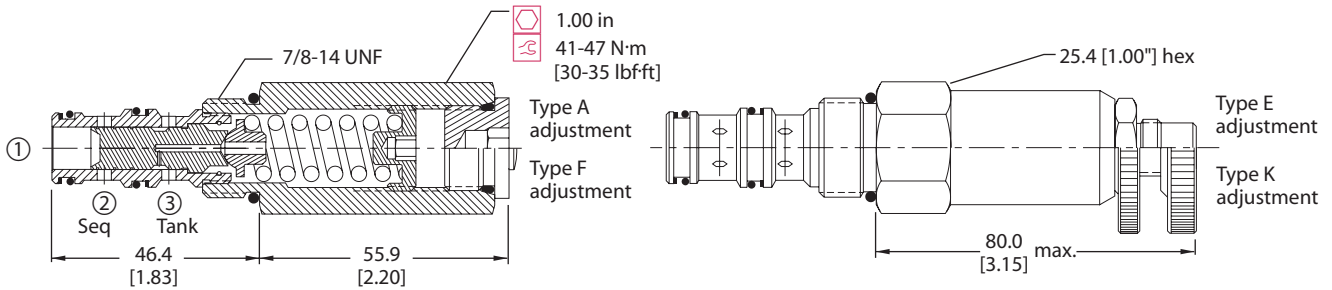
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	55 l/min [14 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 163E

ORDERING INFORMATION

CP240 - 8 - B - 6S - A - C - 050

Seals
B = Buna-N
V = Viton

Seal kit
120027
120028

Housing and ports
0 = No Housing
SE3B = Al, 3/8 BSP
SE4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE
Other housings available

Housing P/N
No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

Adjustment option
A = Internal
E = External
F = Tamper resistant
K = Knob

Crack pressure
Code x 10 = psi
Example: 100 = 1000 psi

Pressure range

	bar	[psi]
A	4-28	[50-400]
Std. setting	17	[250]
B	5-55	[75-800]
Std. setting	28	[400]
C	7-97	[100-1400]
Std. setting	69	[1000]
D	34-166	[500-2400]
Std. setting	103	[1500]

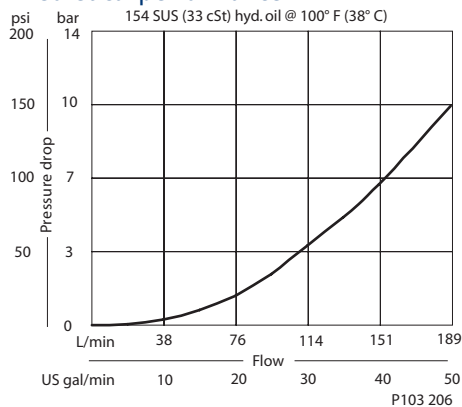
P102 167E

OPERATION

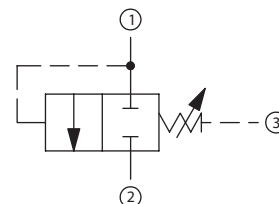
Valve blocks flow from 1 to 2 until sufficient pressure is applied at 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 164E

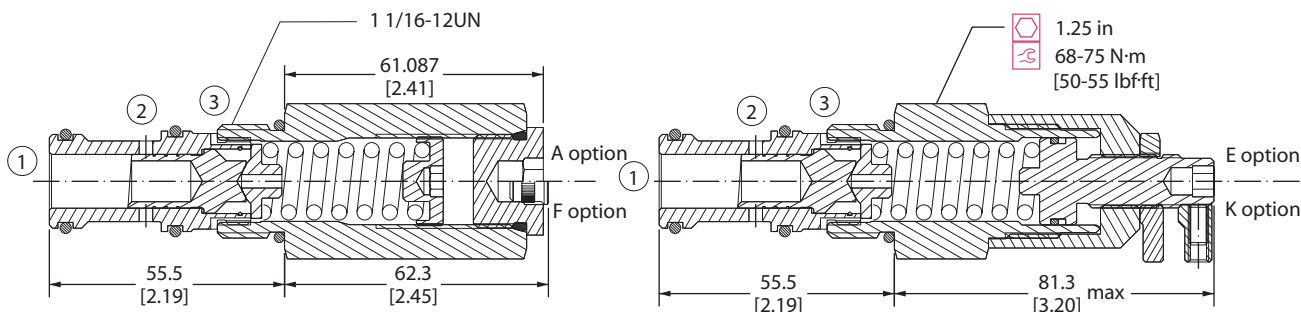
Specifications

Rated pressure	40 bar [600 psi]
Rated flow at 7 bar [100 psi]	150 l/min [39 US gal/min]
Weight	0.41 kg [0.90 lb]
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 626E

ORDERING INFORMATION

CP241-8-B-10S-A-C-050

Pressure range
 A = 1-10 bar [13-150 psi]
 B = 3.4-28 bar [50-400 psi]
 C = 5.5-41 bar [80-600 psi]

Pressure setting
 Code x 10psi (0.69 bar)
 Example: 050 = 500 psi (35 bar)

Adjustment option
 A = Internal
 E = External
 F = Tamper resistant
 K = Knob

Housing and ports
 0 = No Housing
 4B = Al, 1/2 BSP
 6B = Al, 3/4 BSP
 10S = Al, #10 SAE
 12S = Al, #12 SAE
 Other housings available

Housing P/N
 No Housing
 CP12-3S-4B/2B
 CP12-3S-6B/2B
 CP12-3S-10S/4S
 CP12-3S-12S/4S

Seals
 B= Buna-N
 V= Viton

Seal kit
 120680
 120681

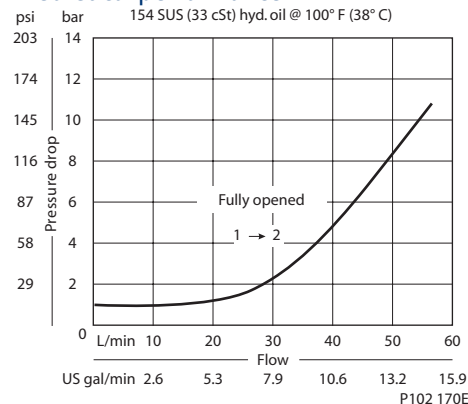
P102 632E

OPERATION

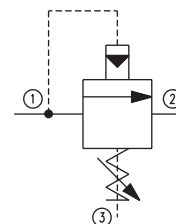
Valve is a pilot-operated sequence valve that blocks flow from 1 to 2 until sufficient pressure is applied at 1.

SPECIFICATIONS

Theoretical performance



Schematic



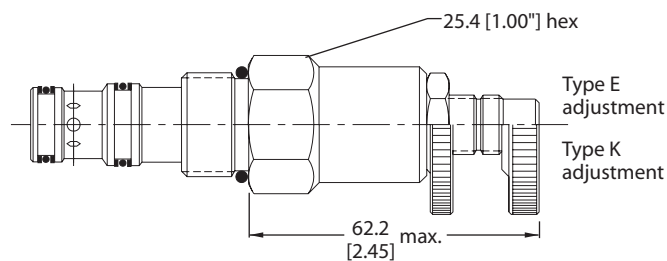
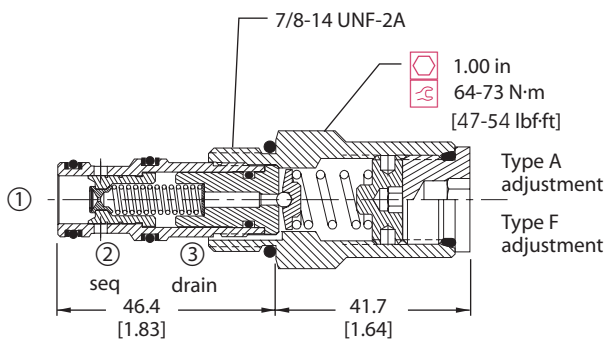
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.23 kg [0.51 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP240 - 21 - B - 6S - A - C - 150

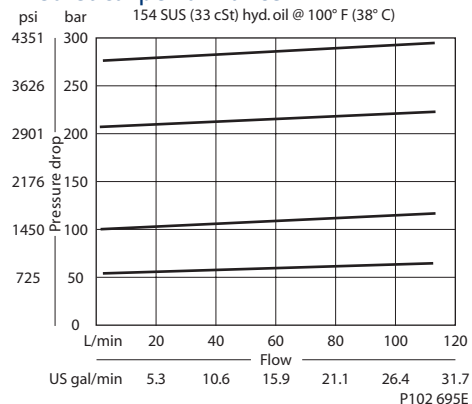
Seals B = Buna-N V = Viton	Seal kit 120009 120010	Crack pressure Code x 10 = psi Example: 150 = 1500 psi																								
Housing and ports 0 = No Housing SE3B = Al, 3/8 BSP SE4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available	Housing P/N No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S	Pressure range																								
Adjustment option A = Internal E = External F = Tamper resistant K = Knob		<table border="0"> <tr> <td>A =</td> <td>14-55</td> <td>[200-800]</td> </tr> <tr> <td>Std. setting</td> <td>28</td> <td>[400]</td> </tr> <tr> <td>B =</td> <td>21-103</td> <td>[300-1500]</td> </tr> <tr> <td>Std. setting</td> <td>69</td> <td>[1000]</td> </tr> <tr> <td>C =</td> <td>28-207</td> <td>[400-3000]</td> </tr> <tr> <td>Std. setting</td> <td>103</td> <td>[1500]</td> </tr> <tr> <td>D =</td> <td>28-345</td> <td>[400-5000]</td> </tr> <tr> <td>Std. setting</td> <td>103</td> <td>[1500]</td> </tr> </table>	A =	14-55	[200-800]	Std. setting	28	[400]	B =	21-103	[300-1500]	Std. setting	69	[1000]	C =	28-207	[400-3000]	Std. setting	103	[1500]	D =	28-345	[400-5000]	Std. setting	103	[1500]
A =	14-55	[200-800]																								
Std. setting	28	[400]																								
B =	21-103	[300-1500]																								
Std. setting	69	[1000]																								
C =	28-207	[400-3000]																								
Std. setting	103	[1500]																								
D =	28-345	[400-5000]																								
Std. setting	103	[1500]																								

OPERATION

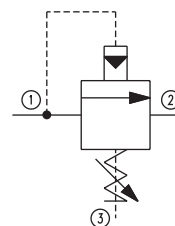
Valve is a pilot-operated sequence valve that blocks flow from 1 to 2 until sufficient pressure is applied at 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 168E

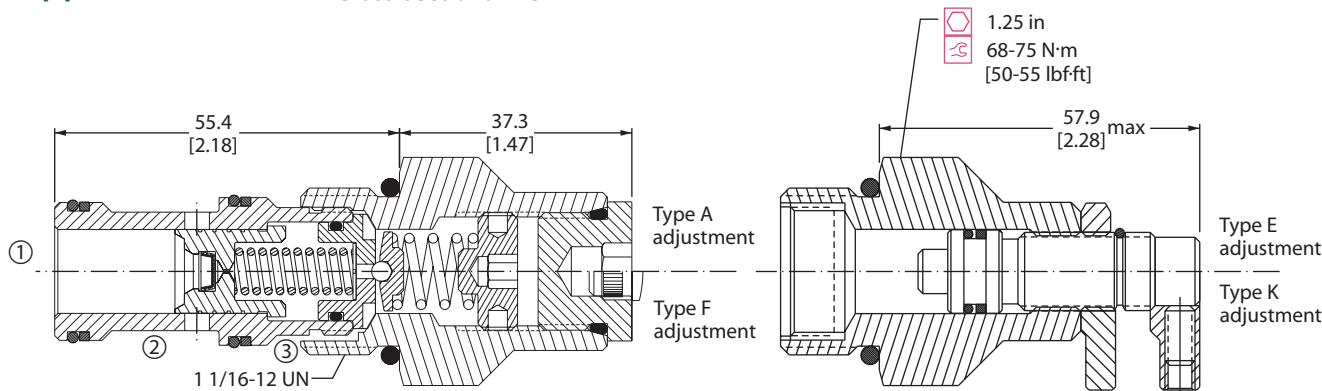
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	75 l/min [20 US gal/min]
Weight	0.17 kg [0.37 lb]
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 696E

ORDERING INFORMATION

CP241 - 21 - B - 6S - A - C - 150

Seals B = Buna-N V = Viton	Seal kit 120335 120336	Crack pressure Code x 10 = psi Example: 150 = 1500 psi																											
Housing and ports 0 = No Housing 4B = Al, 1/2 BSP 6B = Al, 3/4 BSP 10S = Al, #10 SAE 12S = Al, #12 SAE Other housings available	Housing P/N No Housing CP12-3S-4B/2B CP12-3S-6B/2B CP12-3S-10S/4S CP12-3S-12S/4S	Pressure range																											
Adjustment option A = Internal E = External F = Tamper resistant K = Knob		<table border="0"> <tr> <td></td> <td>bar</td> <td>[psi]</td> </tr> <tr> <td>A =</td> <td>14-55</td> <td>[200-800]</td> </tr> <tr> <td>Standard</td> <td>28</td> <td>[400]</td> </tr> <tr> <td>B =</td> <td>21-103</td> <td>[300-1500]</td> </tr> <tr> <td>Standard</td> <td>69</td> <td>[1000]</td> </tr> <tr> <td>C =</td> <td>28-207</td> <td>[400-3000]</td> </tr> <tr> <td>Standard</td> <td>103</td> <td>[1500]</td> </tr> <tr> <td>D =</td> <td>28-345</td> <td>[400-5000]</td> </tr> <tr> <td>Standard</td> <td>103</td> <td>[1500]</td> </tr> </table>		bar	[psi]	A =	14-55	[200-800]	Standard	28	[400]	B =	21-103	[300-1500]	Standard	69	[1000]	C =	28-207	[400-3000]	Standard	103	[1500]	D =	28-345	[400-5000]	Standard	103	[1500]
	bar	[psi]																											
A =	14-55	[200-800]																											
Standard	28	[400]																											
B =	21-103	[300-1500]																											
Standard	69	[1000]																											
C =	28-207	[400-3000]																											
Standard	103	[1500]																											
D =	28-345	[400-5000]																											
Standard	103	[1500]																											

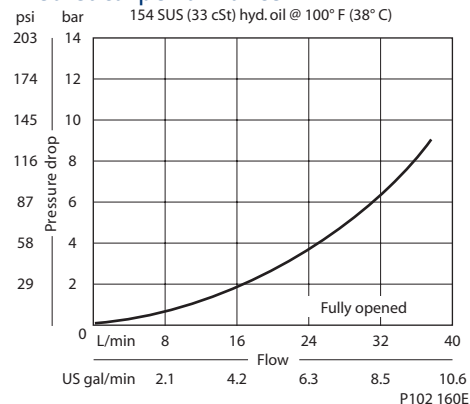
P102 697E

OPERATION

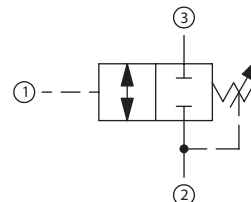
Valve blocks between 2 and 3 until sufficient pilot pressure is applied at 1 to open the valve. Note that pressure at 2 is additive to the spring setting.

SPECIFICATIONS

Theoretical performance



Schematic



P102 159E

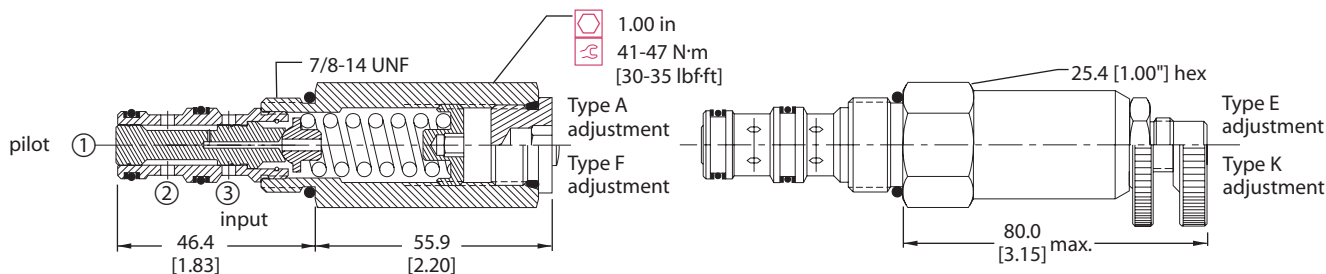
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gal/min]
Weight	0.24 kg [0.52 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP240 - 2 - B - 6S - A - C - 100

Seals
B = Buna-N
V = Viton

Housing and ports
0 = No Housing
SE3B = Al, 3/8 BSP
SE4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE
Other housings available

Adjustment option
A = Internal
E = External
F = Tamper resistant
K = Knob

Seal kit
120009
120010

Housing P/N
No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

Crack pressure
Code x 10 = psi
Example: 100 = 1000 psi

Pressure range

	bar	[psi]
A =	4-28	[50-400]
Std. setting	17	[250]
B =	5-55	[75-800]
Std. setting	28	[400]
C =	7-97	[100-1400]
Std. setting	69	[1000]
D =	34-166	[500-2400]
Std. setting	103	[1500]

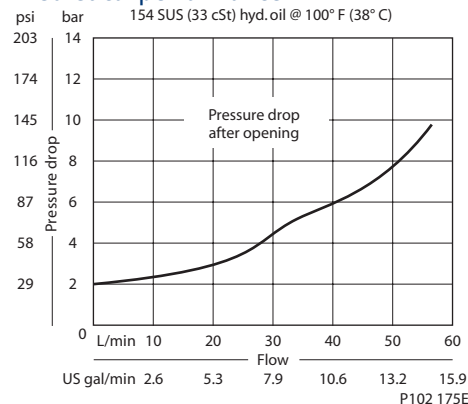
P102 162E

OPERATION

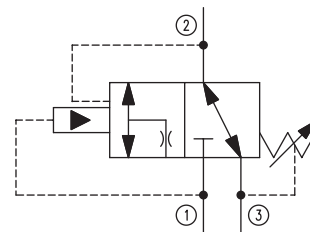
This is a “kick-down” type sequence valve that blocks flow from 1 to 2 until sufficient pressure is applied at 1. Once open, the valve remains open until flow is completely shut off.

SPECIFICATIONS

Theoretical performance



Schematic



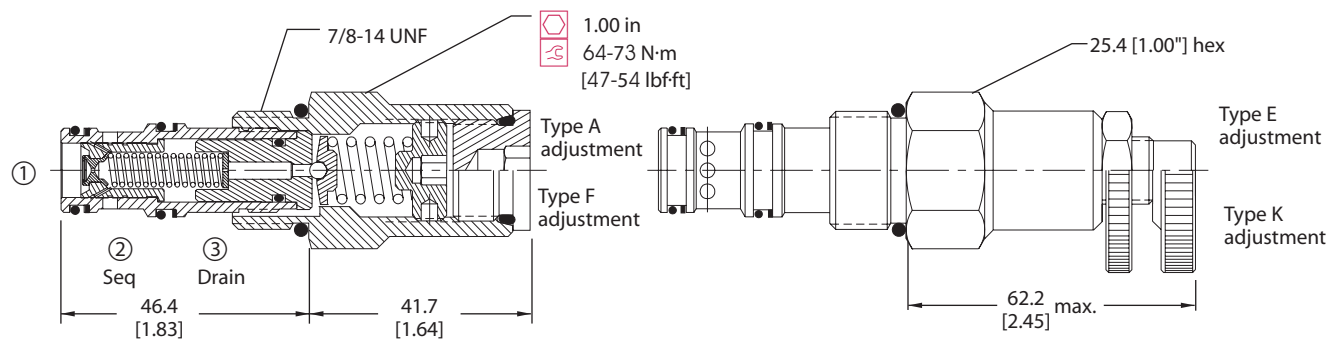
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.19 kg [0.42 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP240 - 22 - B - 6S - A - C - 150

- Seals**
B = Buna-N
V = Viton
- Seal kit**
120027
120028
- Housing and ports**
0 = No Housing
SE3B = Al, 3/8 BSP
SE4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE
Other housings available
- Housing P/N**
No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S
- Adjustment option**
A = Internal
E = External
F = Tamper resistant
K = Knob
- Crack pressure**
Code x 10 = psi
Example: 150 = 1500 psi
- Pressure range**

Code	bar	[psi]
A	14-55	[200-800]
Standard	28	[400]
B	21-103	[300-1500]
Standard	69	[1000]
C	28-207	[400-3000]
Standard	103	[1500]
D	28-345	[400-5000]
Standard	103	[1500]

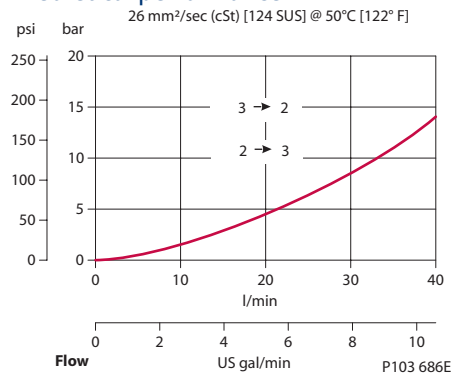
P102 177E

OPERATION

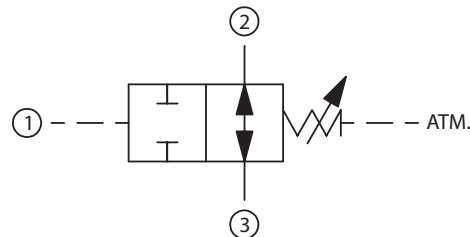
This is a direct-acting, normally-open, spool-type sequence valve with external pilot and atmospheric vent.

SPECIFICATIONS

Theoretical performance



Schematic



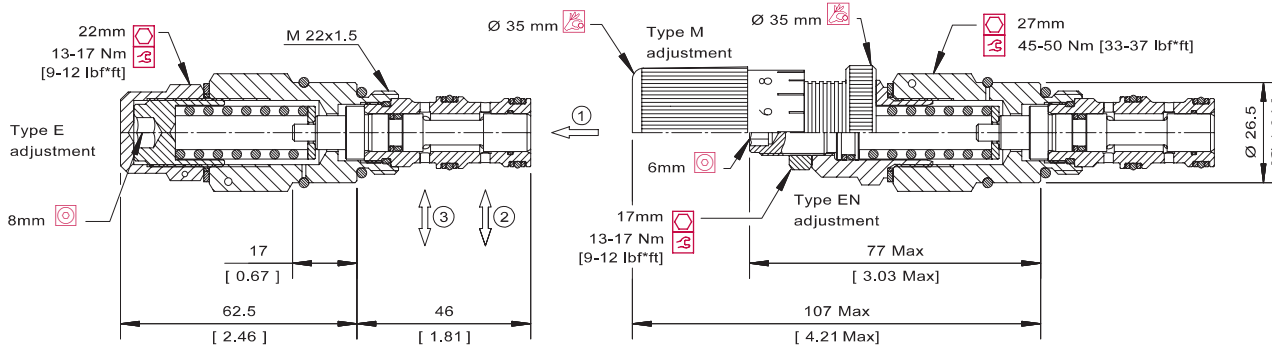
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 659

ORDERING INFORMATION

VDP 06 / NA - EN - 1 - 00 - V

Type of adjustment

- E = Internal screw
- EN = External screw
- M = Handwheel

Setting range

- 1 = 15-40 bar [217-580 psi]
- 2 = 30-120 bar [435-3046 psi]
- 3 = 105-190 bar [1523-2756 psi]

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

Seals

- V = Viton
- Omit = Buna-N

Seal kit

- 230000590
- 230000430

Housing and ports

- 00 = No Housing
- SE3/8 = AL, 3/8 BSP
- SE1/2 = AL, 1/2 BSP
- SE6S = AL, #6 SAE
- SE8S = AL, #8 SAE
- Other housings available

Housing P/N

- No Housing
- NCS06/3-SE-3/8
- NCS06/3-SE-1/2
- NCS06/3-SE-6S
- NCS06/3-SE-8S

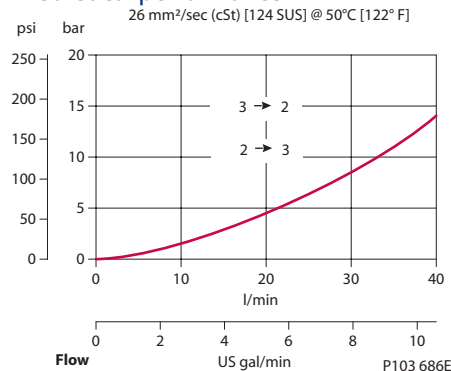
P103 713E

OPERATION

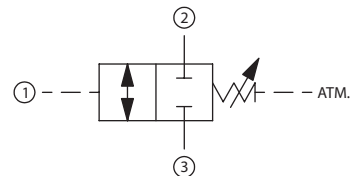
This is a direct-acting, normally-closed, spool-type sequence valve with external pilot and atmospheric vent.

SPECIFICATIONS

Theoretical performance



Schematic



P103 528

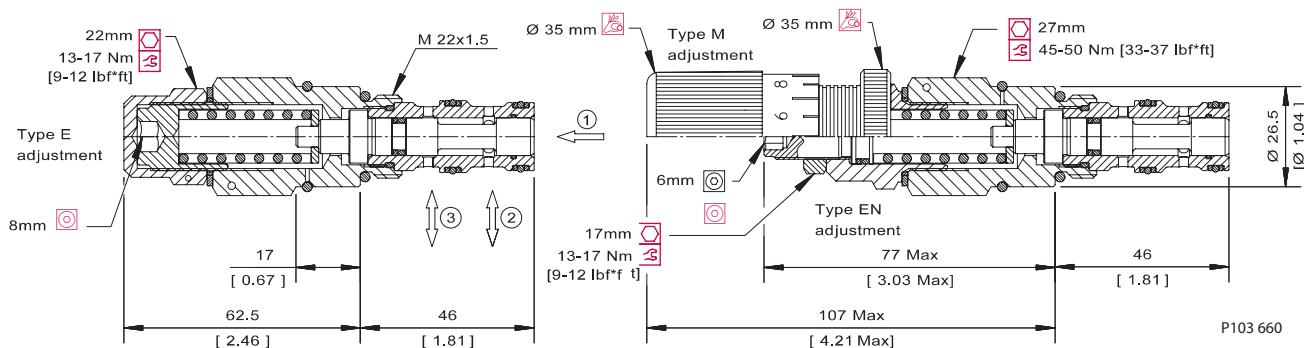
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 660

ORDERING INFORMATION

VDP 06 / NC - EN - 1 - 00 - V

Adjustment

E = Internal screw
EN = External screw
M = Handwheel

Setting range

1 = 15-40 bar [217-580 psi]
2 = 30-120 bar [435-1740 psi]
3 = 105-190 bar [1523-2756 psi]

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

Seals

V = Viton
Omit = Buna-N

Housing and ports

00 = No Housing
SE3/8 = AL, 3/8 BSP
SE1/2 = AL, 1/2 BSP
SE6S = AL, #6 SAE
SE8S = AL, #8 SAE
Other housings available

Seal kit

230000059
230000430

Housing P/N

No Housing
NCS06/3-SE-3/8
NCS06/3-SE-1/2
NCS06/3-SE-6S
NCS06/3-SE-8S

P103 714E

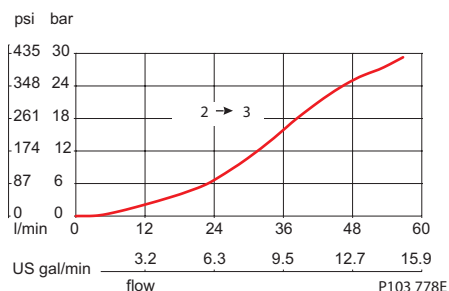
OPERATION

Valve allows flow between 2 and 3 until sufficient pressure is applied at 1 to close the valve. Note that pressure at 4 is additive to the spring setting.

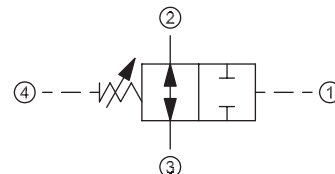
SPECIFICATIONS

Theoretical performance

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



Schematic



P103 520

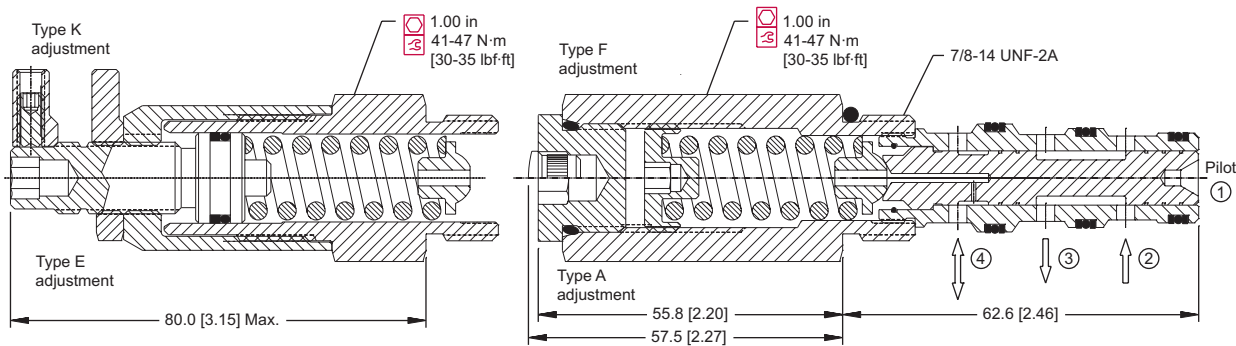
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P103 745

ORDERING INFORMATION

CP240-5-V-L3B-A-B-050

<p>Seals</p> <p>Seal kit</p> <p>B = Buna-N 120023</p> <p>V = Viton 120024</p>	<p>Housing and ports</p> <p>0 = No Housing</p> <p>L3B = AL, 3/8 BSP</p> <p>L4B = AL, 1/2 BSP</p> <p>6S = AL, #6 SAE</p> <p>8S = AL, #8 SAE</p> <p>Other housings available</p>	<p>Housing P/N</p> <p>No Housing</p> <p>SDC10-4-L-3B</p> <p>SDC10-4-L-4B</p> <p>SDC10-4-6S</p> <p>SDC10-4-8S</p>	<p>Sequence Pressure</p> <p>Code x 0.69 = bar</p> <p>[Code x 10 = psi]</p> <p>Example: 050 = 34.5 bar [500 psi]</p> <p>Pressure range</p> <table border="0"> <tr><td>bar</td><td>[psi]</td></tr> <tr><td>A = 3.4 - 27.6</td><td>[50 - 400]</td></tr> <tr><td>B = 4.8 - 55.2</td><td>[70 - 800]</td></tr> <tr><td>C = 6.9 - 96.5</td><td>[100 - 1400]</td></tr> <tr><td>D = 34.5 - 165.5</td><td>[500 - 2400]</td></tr> </table> <p>Adjustment option</p> <p>A = Internal</p> <p>E = External</p> <p>F = Tamper resistant</p> <p>K = Knob</p>	bar	[psi]	A = 3.4 - 27.6	[50 - 400]	B = 4.8 - 55.2	[70 - 800]	C = 6.9 - 96.5	[100 - 1400]	D = 34.5 - 165.5	[500 - 2400]
bar	[psi]												
A = 3.4 - 27.6	[50 - 400]												
B = 4.8 - 55.2	[70 - 800]												
C = 6.9 - 96.5	[100 - 1400]												
D = 34.5 - 165.5	[500 - 2400]												

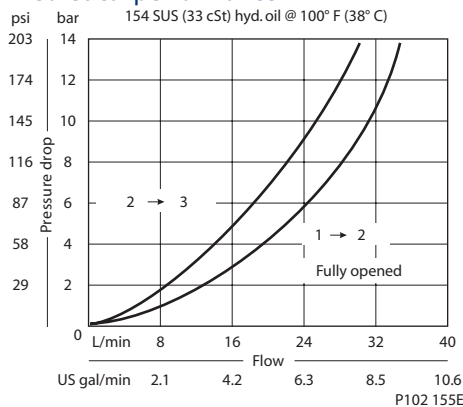
P103 779E

OPERATION

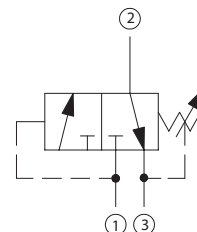
This valve is a direct acting, spool type sequence valve with internal pilot. This valve allows flow from 2 to 3 and blocks 1. At reaching the sequence pressure 1 is opened to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P102 153E

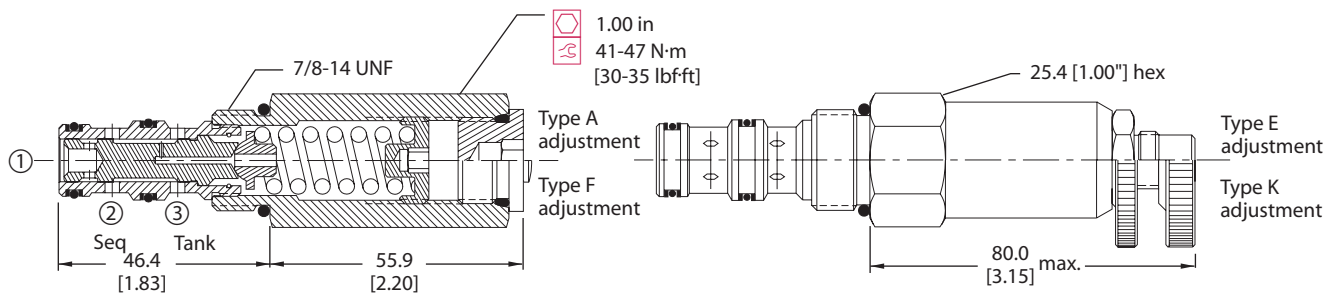
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.25 kg [0.56 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 154E

ORDERING INFORMATION

CP240 - 1 - B - 6S - A - C - 100

Seals B = Buna-N V = Viton	Seal kit 120009 120010	Housing and ports 0 = No Housing SE3B = Al, 3/8 BSP SE4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available	Housing P/N No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S	Adjustment option A = Internal E = External F = Tamper resistant K = Knob	Crack pressure Code x 10 = psi Example: 100 = 1000 psi	Pressure range
						bar [psi] A = 4-28 [50-400] Std. setting 17 [250] B = 5-55 [75-800] Std. setting 28 [400] C = 7-97 [100-1400] Std. setting 69 [1000] D = 34-166 [500-2400] Std. setting 103 [1500]

P102 157E

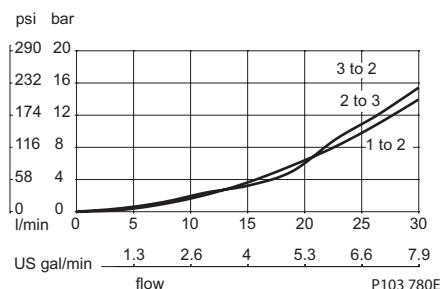
OPERATION

This valve drains 3 to 2 when the pressure at 1 is below the spring setting, and connects 1 to 2 when the pressure at 1 exceeds the spring setting. Note that pressure at 2 is additive to the spring setting.

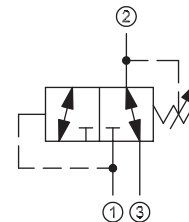
SPECIFICATIONS

Theoretical performance

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



Schematic



P103 526

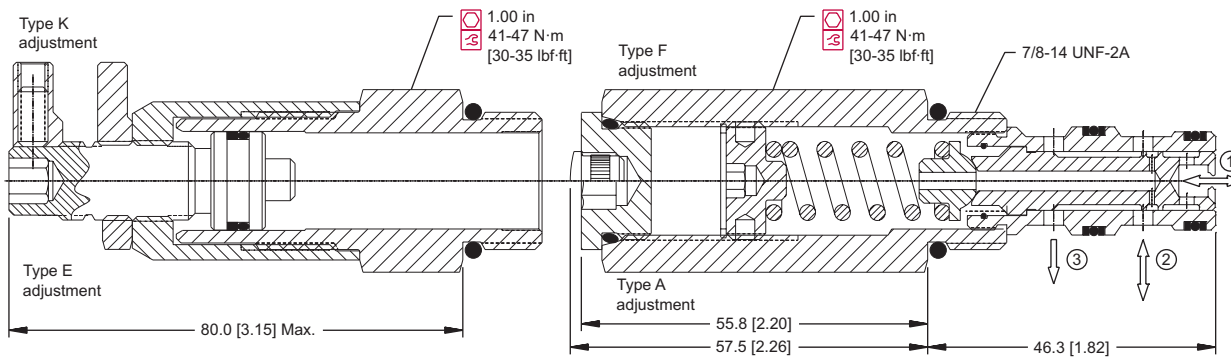
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.24 kg [0.52 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P103 746

ORDERING INFORMATION

CP240-9-B-6S-E-A-020

<p>Seals</p> <p>Seal kit B = Buna-n 120009 V = Viton 120010</p>	<p>Housing and ports</p> <p>0 = No Housing SE3B = Al, 3/8 BSP SE4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available</p>	<p>Housing P/N</p> <p>No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S</p>	<p>Crack Pressure</p> <p>Code x 0.69 = bar [Code x 10 = psi] Example: 020 = 14 bar [200 psi]</p> <p>Pressure range</p> <table border="0"> <tr> <td>bar</td> <td>[psi]</td> </tr> <tr> <td>A = 6.9 - 27.6</td> <td>[100 - 400]</td> </tr> <tr> <td>B = 20.7 - 55.2</td> <td>[300 - 800]</td> </tr> <tr> <td>C = 20.7 - 96.5</td> <td>[300 - 1400]</td> </tr> <tr> <td>D = 68.9 - 165.5</td> <td>[1000 - 2400]</td> </tr> </table> <p>Adjustment option</p> <p>A = Internal E = External F = Tamper resistant K = Knob</p>	bar	[psi]	A = 6.9 - 27.6	[100 - 400]	B = 20.7 - 55.2	[300 - 800]	C = 20.7 - 96.5	[300 - 1400]	D = 68.9 - 165.5	[1000 - 2400]
bar	[psi]												
A = 6.9 - 27.6	[100 - 400]												
B = 20.7 - 55.2	[300 - 800]												
C = 20.7 - 96.5	[300 - 1400]												
D = 68.9 - 165.5	[1000 - 2400]												

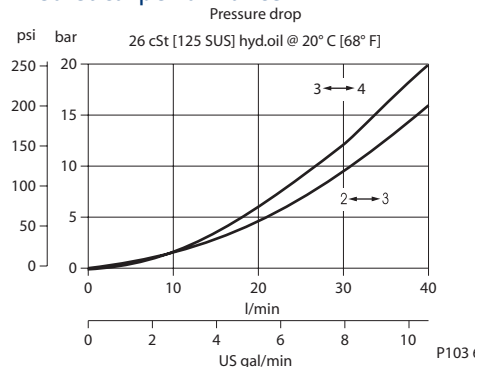
P103 781E

OPERATION

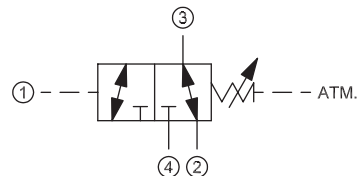
This is a direct-acting, spool-type sequence valve with external pilot and atmospheric vent.

SPECIFICATIONS

Theoretical performance



Schematic



P103 527

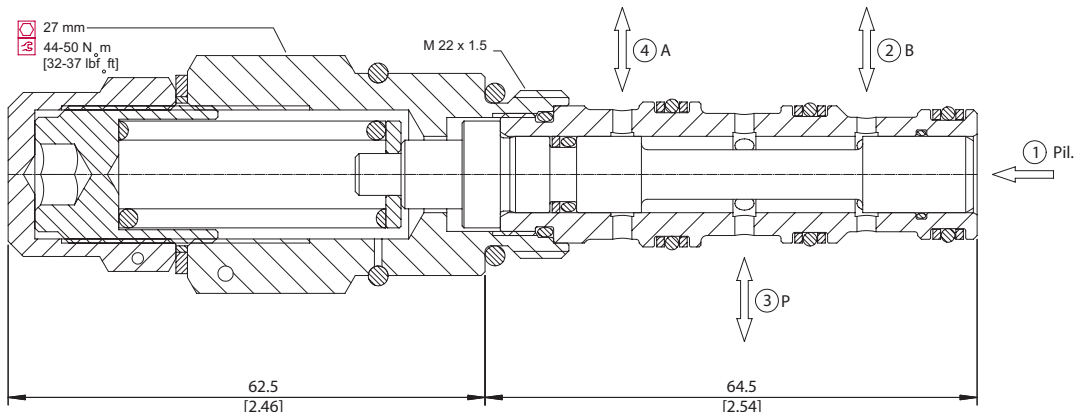
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	22 l/min [6 US gal/min]
Weight	0.28 kg [0.62 lb]
Cavity	NCS06/4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VDP 06 / 42 01 - M - 1 - 00 - V

Adjustment
E = Internal screw
EN = External screw
M = Handwheel

Setting range
1 = 15 - 40 bar [220-580 psi]
2 = 30 - 120 bar [430-1740 psi]
3 = 105 - 190 bar [1520-2750 psi]

Seals
V = Viton
Omit = Buna-N

Housing and ports
00 = No Housing
L3/8 = AL, 3/8 BSP
L1/2 = AL, 1/2 BSP
L6S = AL, #6 SAE
L8S = AL, #8 SAE
Other housings available

Seal kit
230000350
230000080

Housing P/N
No Housing
NCS06/4-L-3/8
NCS06/4-L-1/2
NCS06/4-L-6S
NCS06/4-L-8S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

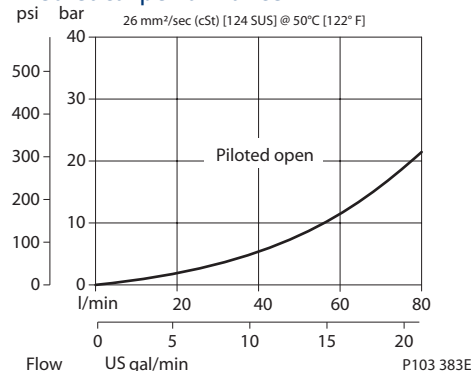
P103 712E

OPERATION

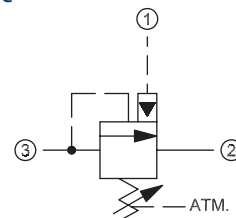
This is a pilot-operated, atmospherically-vented, unloading valve.

SPECIFICATIONS

Theoretical performance



Schematic



P103 523

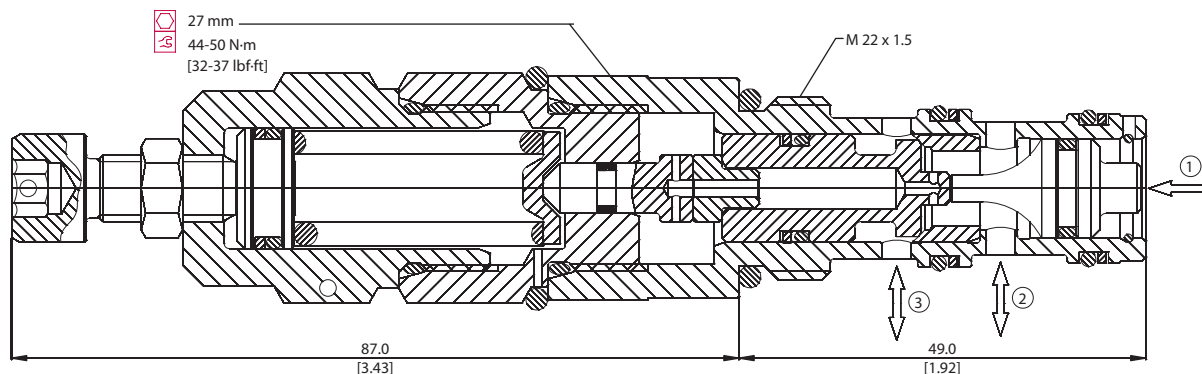
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	80 l/min [21 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 407

ORDERING INFORMATION

VDB 06-CN - 2 - A - 00 - V

Setting range

- 1 = 25 - 140 bar [362 - 2031 psi]
- 2 = 70 - 210 bar [1015 - 3046 psi]
- 3 = 105 - 350 bar [1523 - 5076 psi]

Pilot ratio

- A = 7.1 : 1
- B = 4.1 : 1
- E = 1 : 1

Seals

- V = Viton
- Omit = Buna-N

Housing and ports

- 00 = No Housing
- SE3/8 = AL, 3/8 BSP
- SE1/2 = AL, 1/2 BSP
- SE6S = AL, #6 SAE
- SE8S = AL, #8 SAE
- Other housings available

Seal kit

- 230000110
- 230000070

Housing P/N

- No Housing
- NCS06/3-SE-3/8
- NCS06/3-SE-1/2
- NCS06/3-SE-6S
- NCS06/3-SE-8S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

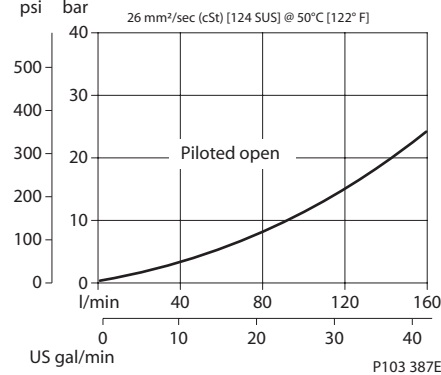
P103 408E

OPERATION

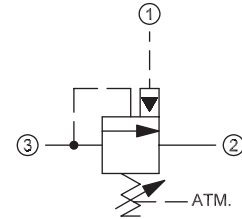
This is a pilot-operated, atmospherically-vented, unloading valve.

SPECIFICATIONS

Theoretical performance



Schematic



P103 523

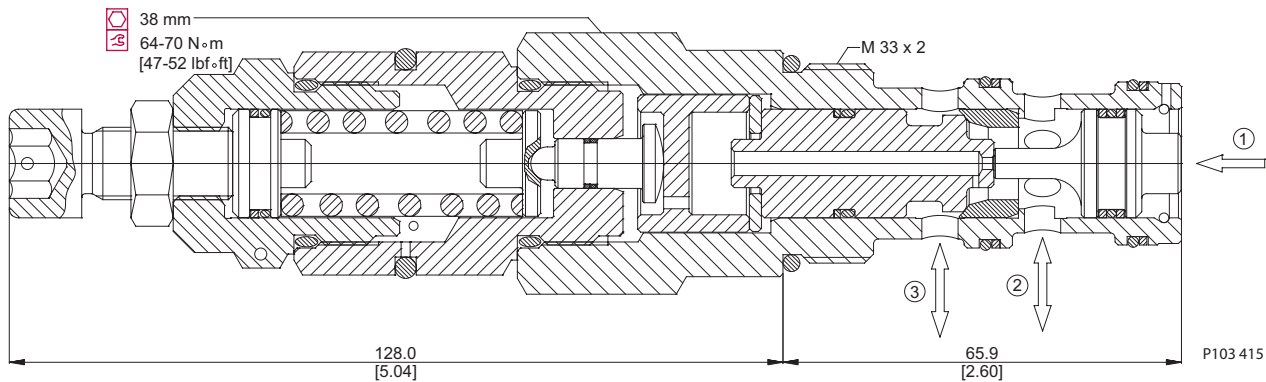
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	160 l/min [42 US gal/min]
Weight	0.93 kg [2.05 lb]
Cavity	NCS12/3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VDB 12-CN - 2 - A - 00 - V

Setting range

Pilot ratio A	Pilot ratio B
1 = 25 - 170 bar [363-2466 psi]	1 = 25 - 120 bar [363-1740 psi]
2 = 70 - 250 bar [1015-3626 psi]	2 = 60 - 200 bar [870-2900 psi]
3 = 105 - 350 bar [1523-5076 psi]	3 = 90 - 280 bar [1305-4061 psi]

Pilot ratio

A = 6.9:1
 B = 4.7:1

Seals

V = Viton
 Omit = Buna-N

Housing and ports

00 = No Housing
 SE1/2 = AL, 1/2 BSP
 SE3/4 = AL, 3/4 BSP
 SE8S = AL, #8 SAE
 SE12S = AL, #12 SAE
 Other housings available

Seal kit

230000360
 230000130

Housing P/N

No Housing
 NCS12/3-SE-1/2
 NCS12/3-SE-3/4
 NCS12/3-SE-8S
 NCS12/3-SE-12S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

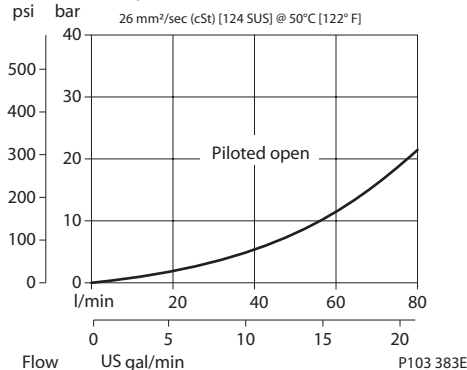
P103 416E

OPERATION

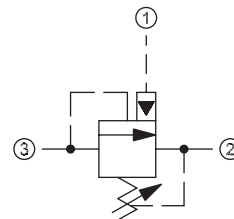
This is a pilot-operated unloading valve.

SPECIFICATIONS

Theoretical performance



Schematic



P103 522

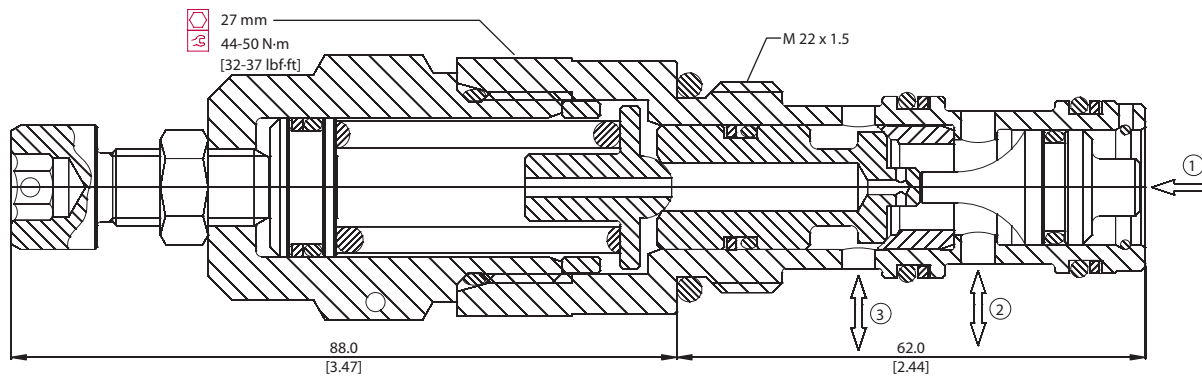
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	80 l/min [21 US gal/min]
Weight	0.21 kg [0.46 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 409

ORDERING INFORMATION

VDB 06-EN - 2 - A - SE3/8 - V

Setting range

- 1 = 25 - 140 bar [362 - 2031 psi]
- 2 = 70 - 210 bar [1015 - 3046 psi]
- 3 = 105 - 350 bar [1523 - 5076 psi]

Pilot ratio

- A = 7.1 : 1
- B = 4.1 : 1
- E = 1 : 1

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

Seals

- V = Viton
- Omit = Buna-N

Seal kit

- 230000110
- 230000070

Housing and ports

- 00 = No Housing
- SE3/8 = AL, 3/8 BSP
- SE1/2 = AL, 1/2 BSP
- SE6S = AL, #6 SAE
- SE8S = AL, #8 SAE
- Other housings available

Housing P/N

- No Housing
- NCS06/3-SE-3/8
- NCS06/3-SE-1/2
- NCS06/3-SE-6S
- NCS06/3-SE-8S

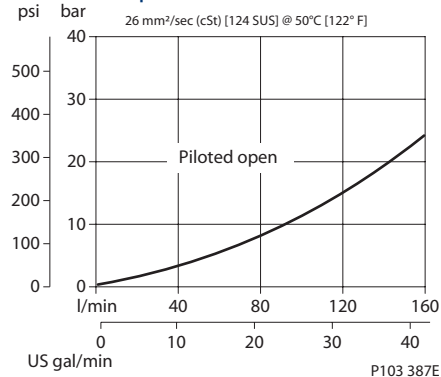
P103 384E

OPERATION

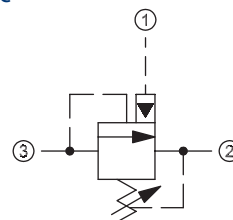
This is a pilot-operated unloading valve.

SPECIFICATIONS

Theoretical performance



Schematic



P103 522

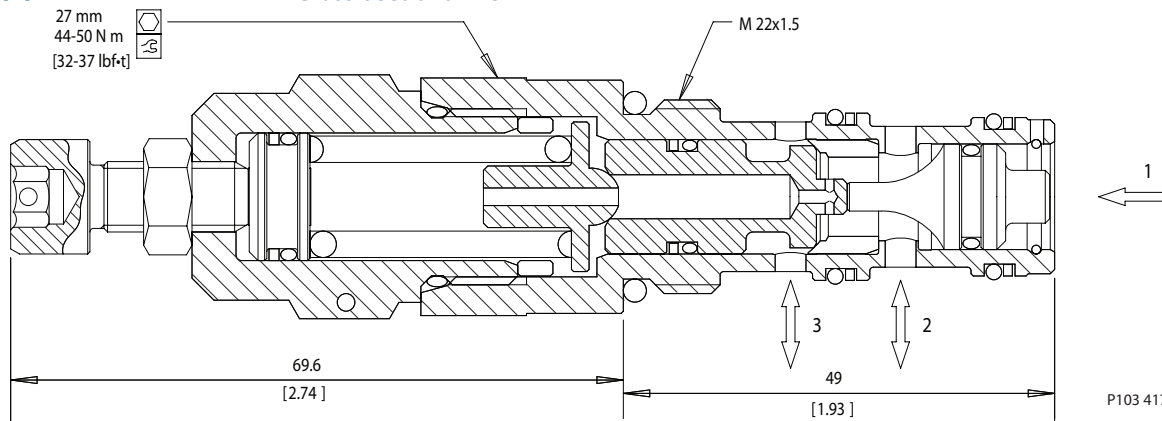
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	160 l/min [42 US gal/min]
Weight	0.70 kg [1.54 lb]
Cavity	NCS12/3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VDB 12-EN - 2 - A - 00 - V

Setting range

Pilot ratio A	Pilot ratio B
1 = 25 - 170 bar [363-2466 psi]	1 = 25 - 120 bar [363-1740 psi]
2 = 70 - 250 bar [1015-3626 psi]	2 = 60 - 200 bar [870-2900 psi]
3 = 105 - 350 bar [1523-5076 psi]	3 = 90 - 280 bar [1305-4061 psi]

Pilot ratio

A = 6.9:1
 B = 4.7:1

Seals

V = Viton
 Omit = Buna-N

Housing and ports

00 = No Housing
 SE1/2 = AL, 1/2 BSP
 SE3/4 = AL, 3/4 BSP
 SE8S = AL, #8 SAE
 SE12S = AL, #12 SAE
 Other housings available

Seal kit

230000360
 230000130

Housing P/N

No Housing
 NCS12/3-SE-1/2
 NCS12/3-SE-3/4
 NCS12/3-SE-8S
 NCS12/3-SE-12S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

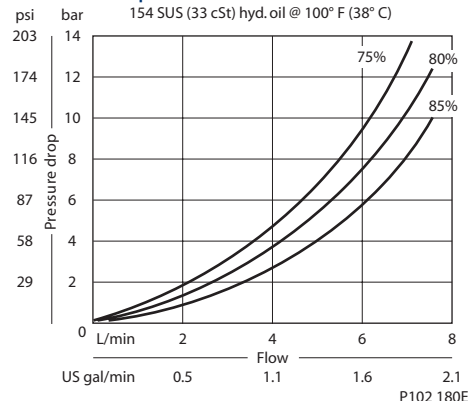
P103 388E

OPERATION

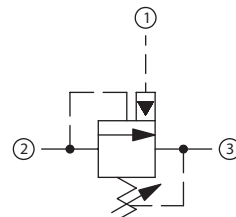
This is a normally-closed sequence valve that loads and unloads a system at a pre-determined ratio.

SPECIFICATIONS

Theoretical performance



Schematic



P102 178E

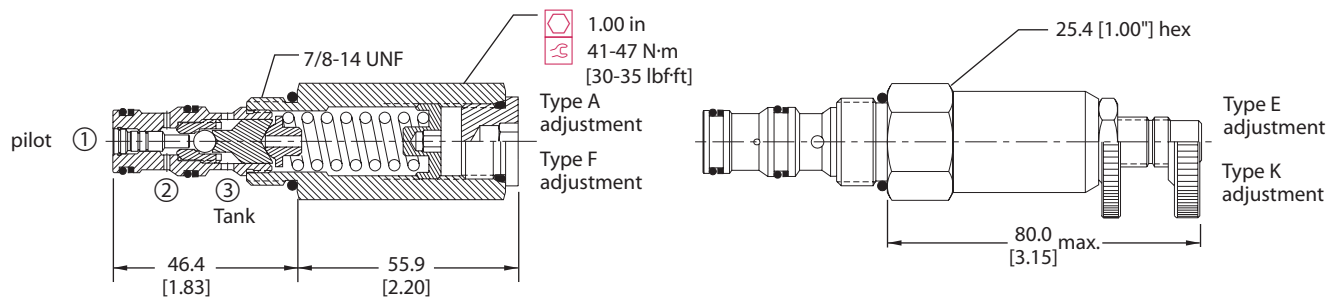
Specifications

Rated pressure	210 bar [3000 psi]
Maximum flow	4 l/min [1 US gal/min]
Weight	0.24 kg [0.53 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP240 - 30 - B - 6S - A - B - 75-150

Seals
B = Buna-N
V = Viton

Seal kit
120027
120028

Housing and ports
0 = No Housing
SE3B = Al, 3/8 BSP
SE4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE
Other housings available

Housing P/N
No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

Adjustment option
A = Internal
E = External
F = Tamper resistant
K = Knob

Crack pressure
Code x 10 = psi
Example: 150 = 1500 psi

Pressure ratio
75 = 75%
80 = 80%
85 = 85%

Pressure range
A = 34-138 bar [500-2000] [psi]
Std. setting 69 [1000]
B = 62-207 bar [900-3000] [psi]
Std. setting 103 [1500]

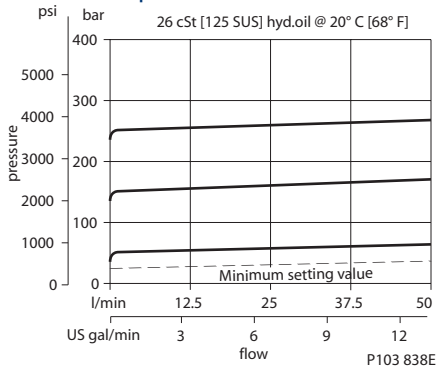
P102 182E

OPERATION

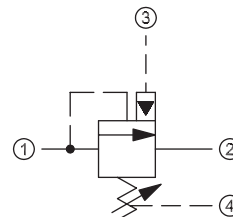
This is a normally-closed sequence valve that loads and unloads a system at a pre-determined ratio.

SPECIFICATIONS

Theoretical performance



Schematic



P103 519

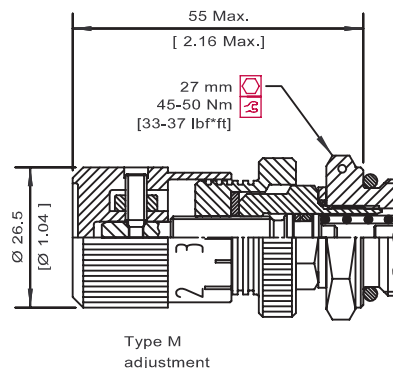
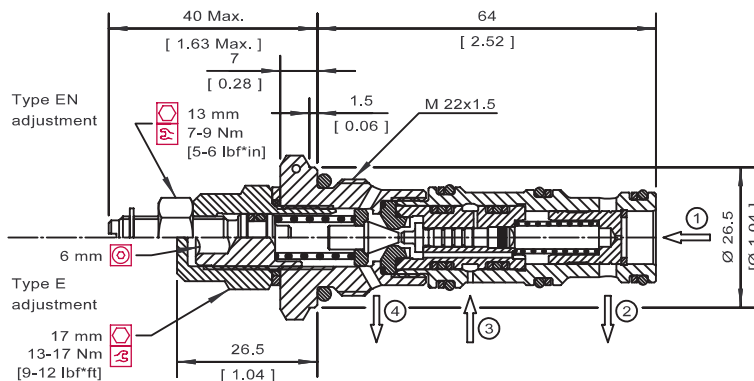
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	50 l/min [13 US gal/min]
Weight	0.22 kg [0.49 lb]
Cavity	NCS06/4

DIMENSIONS

mm [in]

Cross-sectional view



P103 898E

ORDERING INFORMATION

AUV 06 - EN - 1 - A - L3/8 - V

Adjustment

E = Internal screw
EN = External screw
M = Handwheel

Setting range

1 = 10-70 bar [145-1015 psi]
2 = 30-140 bar [435-2031 psi]
3 = 70-210 bar [1015-3046 psi]

Pressure ratio

A = 85%

Seals

V = Viton
Omit = Buna-N

Seal kit

230000350
230000080

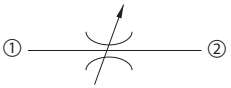
Housing and ports

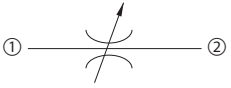
00 = No Housing
L3/8 = AL, 3/8 BSP
L1/2 = AL, 1/2 BSP
L6S = AL, #6 SAE
L8S = AL, #8 SAE
Other housings available

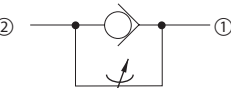
Housing P/N

No Housing
NCS06/4-L-3/8
NCS06/4-L-1/2
NCS06/4-L-6S
NCS06/4-L-8S

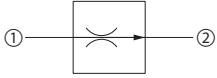
To order this valve with a specific factory setting, contact your Sauer-Danfoss representative P103 839E

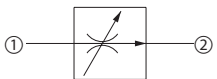
Needle Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP618-6	SDC08-2	Needle Valve, Bi-Directional, Fine Metering	10 l/min [3 US gal/min]	210 bar [3000 psi]	7.8

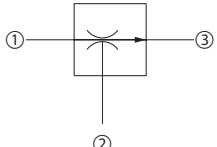
Needle Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP618-1	SDC08-2	Needle Valve, Bi-Directional	25 l/min [7 US gal/min]	210 bar [3000 psi]	7.9
	CP618-2	SDC08-2		45 l/min [12 US gal/min]	210 bar [3000 psi]	7.10
	CP610-1	SDC10-2		50 l/min [13 US gal/min]	210 bar [3000 psi]	7.11
	CP610-2	SDC10-2		50 l/min [13 US gal/min]	210 bar [3000 psi]	7.12
	CP611-2	CP12-2		115 l/min [30 US gal/min]	210 bar [3000 psi]	7.13
	CP612-1	SDC16-2		190 l/min [50 US gal/min]	210 bar [3000 psi]	7.14
	CP612-2	SDC16-2		190 l/min [50 US gal/min]	210 bar [3000 psi]	7.15
	CP613-1	SDC20-2		380 l/min [100 US gal/min]	210 bar [3000 psi]	7.16

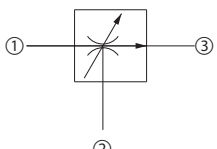
Needle Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP610-7	SDC10-2	Needle Valve, Bi-Directional, Fine Metering, Reverse Free Flow	55 l/min [15 US gal/min]	210 bar [3000 psi]	7.17

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

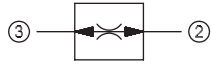
Pressure-Compensated, Restrictive Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP308-1	SDC08-2	Flow Control Valve, Fixed Setting, Restrictive Type	15 l/min [4 US gal/min]	210 bar [3000 psi]	07.18
	CP300-1	SDC10-2		23 l/min [6 US gal/min]	210 bar [3000 psi]	07.19
	CP301-1	CP12-2		60 l/min [16 US gal/min]	210 bar [3000 psi]	07.20

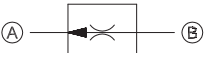
Pressure-Compensated, Restrictive Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP308-2	SDC08-2	Flow Control Valve, Adjustable, Restrictive Type	15 l/min [4 US gal/min]	210 bar [3000 psi]	07.21
	CP300-2	SDC10-2		23 l/min [6 US gal/min]	210 bar [3000 psi]	07.22
	VR 06	NCS06/2		30 l/min [8 US gal/min]	315 bar [4500 psi]	07.23
	VR 12	NCS12/2		60 l/min [16 US gal/min]	315 bar [4500 psi]	07.24

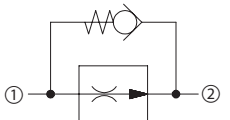
Pressure-Compensated, Priority Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP310-1	SDC10-3	Flow Control Valve, Fixed Setting, Priority Type	23 l/min [6 US gal/min]	210 bar [3000 psi]	07.25
	VRF 06	NCS06/3		30 l/min [8 US gal/min]	315 bar [4500 psi]	07.26
	CP311-1	CP12-3		45 l/min [12 US gal/min]	210 bar [3000 psi]	07.27
	CP312-1	SDC16-3		65 l/min [17 US gal/min]	210 bar [3000 psi]	07.28

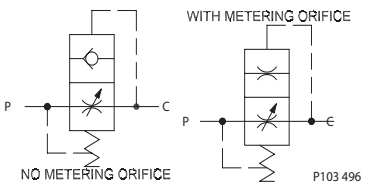
Pressure-Compensated, Priority Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP310-2	SDC10-3	Flow Control Valve, Adjustable, Priority Type	23 l/min [6 US gal/min]	210 bar [3000 psi]	07.29
	VRC 06	NCS06/3		50 l/min [13 US gal/min]	315 bar [4500 psi]	07.30
	VRC 12	NCS12/3		100 l/min [26 US gal/min]	315 bar [4500 psi]	07.31

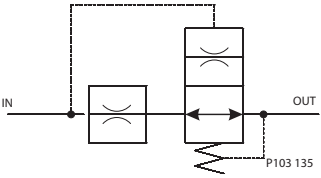
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Pressure-Compensated, Priority Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP300-6	SDC10-3	Flow Control Valve, Fixed Setting,	23 l/min [6 US gal/min]	210 bar [3000 psi]	07.32
	FCH10-BD	SDC10-3	Bi-Directional	23 l/min [6 US gal/min]	350 bar [5076 psi]	07.33

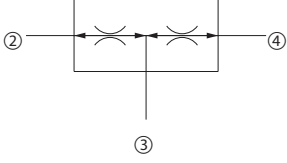
In-line	Model No.	Cavity	Description	Flow*	Pressure	Page
	SC 10	none	Flow Control Valve, In-line	16 l/min [4 US gal/min]	210 bar [3000 psi]	07.34
	SC 13	none		47 l/min [12 US gal/min]	210 bar [3000 psi]	07.35

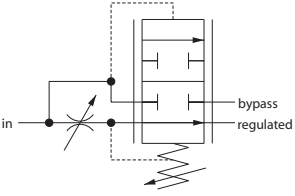
In-line	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP9014-1	none	Load Lowering Valve	113 l/min [30 US gal/min]	210 bar [3000 psi]	07.36

In-line	Model No.	Cavity	Description	Flow*	Pressure	Page
	BC 06	none	Velocity Fuse	30 l/min [8 US gal/min]	210 bar [3000 psi]	07.37
	BC 10	none		60 l/min [16 US gal/min]	210 bar [3000 psi]	07.38
	BC 13	none		85 l/min [22 US gal/min]	210 bar [3000 psi]	07.39

In-line	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP330-3	#10 SAE Port	Velocity Fuse	110 l/min [29 US gal/min]	207 bar [3000 psi]	07.50

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Flow Divider/Combiner	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP340-1	SDC10-4	Flow Divider, Divider/Combiner	45 l/min [12 US gal/min]	210 bar [3000 psi]	07.40
	VDF 06	NCS06/4		45 l/min [12 US gal/min]	210 bar [3000 psi]	07.41
	CP341-1	CP12-4		75 l/min [20 US gal/min]	210 bar [3000 psi]	07.42
	CP342-1	CP16-4		150 l/min [40 US gal/min]	210 bar [3000 psi]	07.43
	CP342-3	CP16-4		150 l/min [40 US gal/min]	450 bar [6500 psi]	07.44
	CP343-1	SDC20-4		340 l/min [90 US gal/min]	210 bar [3000 psi]	07.45

Pressure-Compensated, Priority Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	2F94-01	none	Flow Control Valve, Catalog HIC	30 l/min [8 US gal/min]	210 bar [3000 psi]	07.46
	2F95-01	none		60 l/min [16 US gal/min]	210 bar [3000 psi]	07.47
	2F96-01	none		95 l/min [25 US gal/min]	210 bar [3000 psi]	07.48
	2F97-01	none		190 l/min [50 US gal/min]	210 bar [3000 psi]	07.49

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

OVERVIEW

Pressure compensated flow control valves are used to limit or regulate flow. Three basic types of cartridges are available; restrictive-type, priority-type, and divider/combiner type. Combination valves in manifolds for additional features such as fully adjustable flow or free reverse flow are also available.

Flow control valves



F102 003

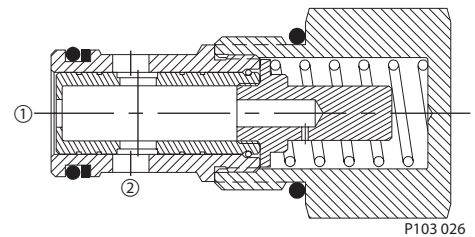
Flow control valves
 Application notes

RESTRICTED-TYPE PRESSURE COMPENSATED

Restrictive-type pressure compensated flow control valves are two-ported valves that maintain a constant flow rate from 1 to 2 regardless of load pressure changes in the circuit downstream of 2. The control orifice in the spool is factory set to the flow specification. The valve begins to respond to load changes when flow through the valve creates a pressure differential across the control orifice of approximately 7 bar [100 psi], and accurately maintains flow within +/- 10% across the range of 35-207 bar [500-3000 psi]. Reverse flow from 2 to 1 returns through the control orifice and is non-compensated.

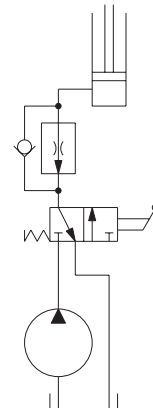
Restrictive-type flow control valves can be used in meter-in or meter-out applications to control actuator speeds.

Restricted-type pressure compensated flow control valve



P103 026

Actuator speed control circuit



P103 051

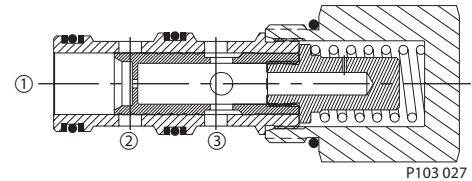
**PRIORITY-
 TYPE PRESSURE
 COMPENSATED**

Priority-type pressure compensated flow control valves are three-ported valves that maintain a constant flow rate from 1 to 3 regardless of load pressure changes in the priority circuit downstream of 3 or in the bypass circuit downstream of 2. The control orifice in the spool is factory set to the flow specification. The valve begins to respond to load pressure changes when flow to 3 creates a pressure differential across the control orifice of approximately 7 bar [100 psi]. The valve accurately maintains flow to the priority circuit across the range of 35-207 bar [500-3000 psi], with any excess inlet flow bypassing to 2. Note that both 2 and 3 may be fully and independently pressurized. Also note that if 2 is blocked, the valve will function as a restrictive-type flow control.

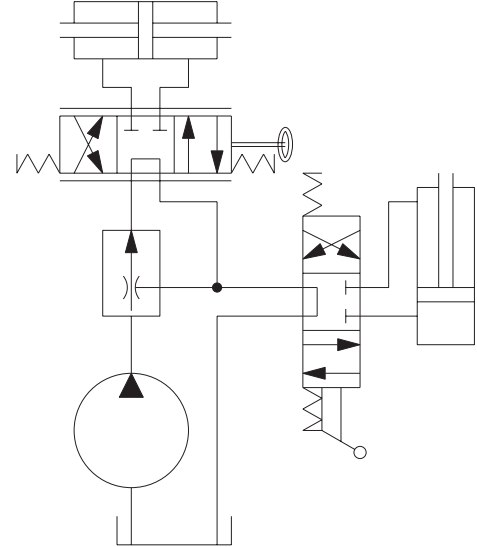
Priority-type flow control valves are used in meter-in applications. A common application is to direct a fixed flow rate to a priority function, such as steering, while secondary flow is available to other intermittent functions.

Flow divider/combiners are pressure

Priority-type pressure compensated flow control valve



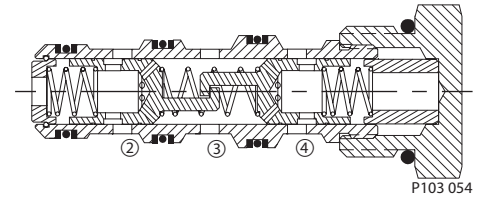
Steering priority circuit



**FLOW DIVIDER /
 COMBINER**

compensated valves. When the valve is functioning as a divider, it will divide input flow from 3 to the two outputs at 2 and 4 according to a preset ratio. This ratio is unaffected by pressure. When the valve is functioning as a combiner, it will combine the flow from the two inputs from 2 and 4 into one output at 3. Note that a flow divider/combiner is specified with a nominal flow rate for each leg. When operating with flow rates higher than specified, the dividing and combining ratios will be maintained, but at a cost of higher pressure drop and associated heat generation. When operating with lower flow rates than specified, the dividing and combining ratios are also maintained, but at a cost of accuracy. For example, a 22 l/min [5.8 US gal/min] : 22 l/min [5.8 US gal/min] flow divider will divide flow in a 50:50 ratio with an accuracy of $\pm 10\%$ (± 2.2 l/min [± 0.58 US gal/min]) per leg. With an input flow of 8.0 l/min [2.1 US gal/min], the flow division will be 4.0 ± 2.2 l/min [1.1 ± 0.58 US gal/min] per leg.

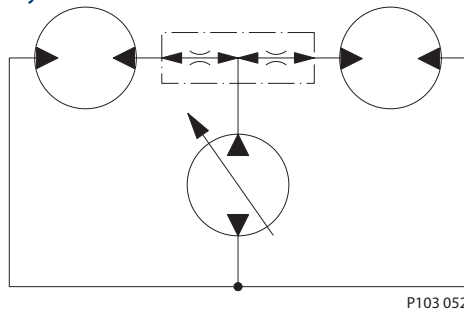
Flow divider / combiner



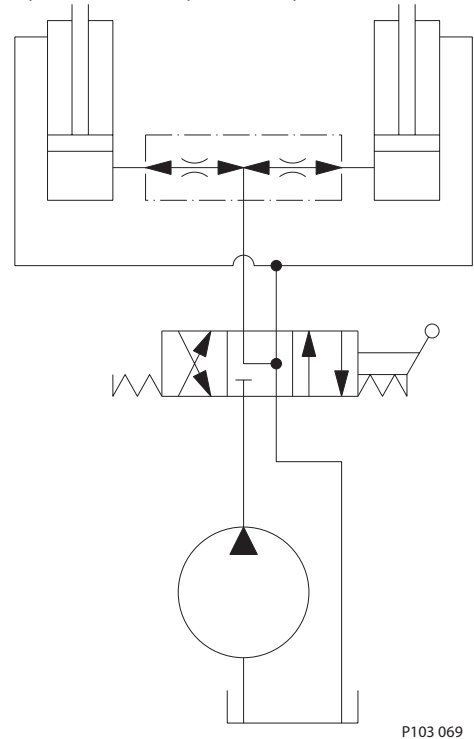
Common applications for flow divider/combiners include:

- Combining flow (forward) or dividing flow (reverse) to hydraulic wheel motors for vehicle drive application. Note that an external orifice is added to allow more flow to one motor than the other while turning a corner (not shown).
- Synchronizing motion of hydraulic cylinders. Note that if circuit operation results in a blockage of one cylinder port, the other port will also close. Consult factory for details.

Hydraulic wheel motor circuit



Synchronized hydraulic cylinders circuit

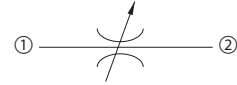


Flow control valves
 Application notes

OPERATION

This valve is a non-pressure compensated, fine-metering, adjustable flow control valve.

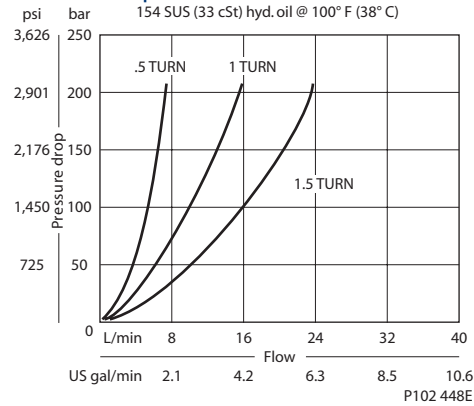
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



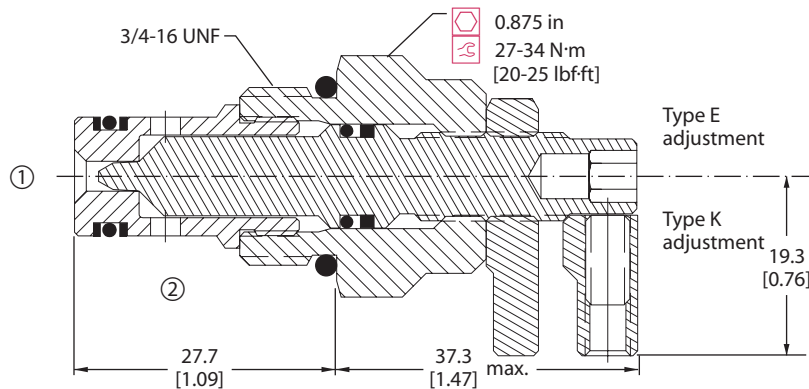
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.12 kg [0.26 lb]
Cavity	SDC08-2

Cross-sectional view

DIMENSIONS

mm [in]



P102 440E

ORDERING INFORMATION

CP618 - 6 - B - 6S - K

Seals
 B = Buna-N
 V = Viton

Seal kit
 120227
 120228

Housing and ports
 0 = No Housing
 DG2B = AL, 1/4 BSP
 DG3B = AL, 3/8 BSP
 DG4S = AL, #4 SAE
 DG6S = AL, #6 SAE
 Other housings available

Housing P/N
 No Housing
 SDC08-2-DG-2B
 SDC08-2-DG-3B
 CP08-2-4S
 CP08-2-6S

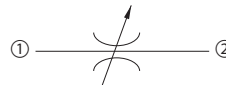
Adjustment option
 E = External
 K = Knob

P102 458E

OPERATION

This valve is a non-pressure compensated, adjustable flow control valve.

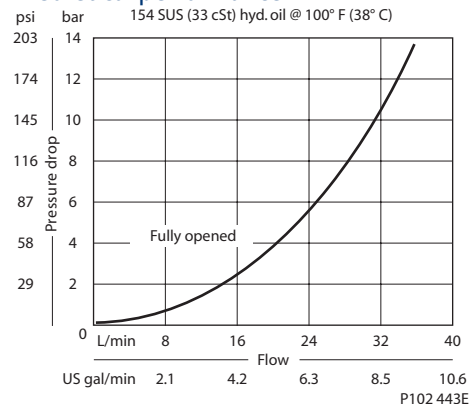
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

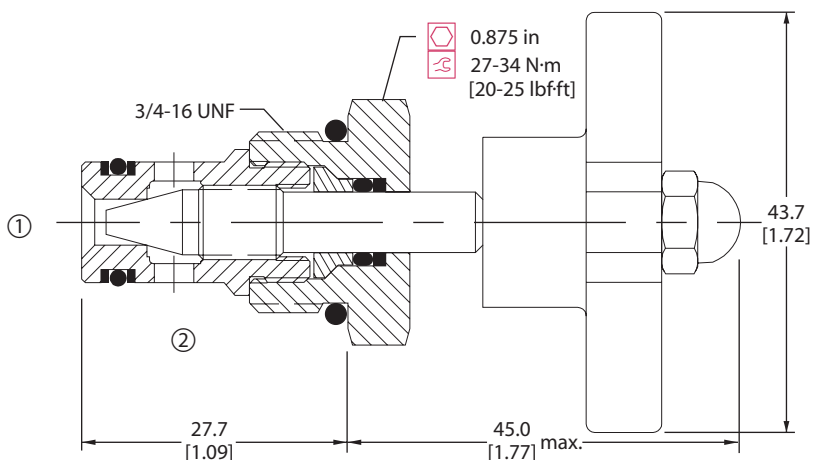
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.07 kg [0.15 lb]
Cavity	SDC08-2

Flow control valves
CP618-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 434E

ORDERING INFORMATION

CP618 - 1 - B - 6S - B

Seals
B = Buna-N
V = Viton

Seal kit
120227
120228

Housing and ports
0 = No Housing
DG2B = AL, 1/4 BSP
DG3B = AL, 3/8 BSP
DG4S = AL, #4 SAE
DG6S = AL, #6 SAE
Other housings available

Housing P/N
No Housing
SDC08-2-DG-2B
SDC08-2-DG-2B
CP08-2-4S
CP08-2-6S

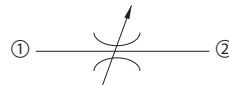
Knob option
B = Black
R = Red

P102 452E

OPERATION

This valve is a non-pressure compensated, adjustable flow control valve.

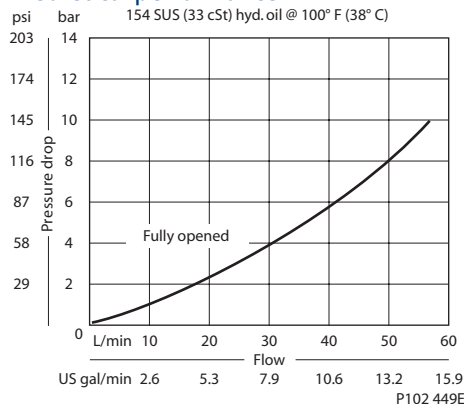
Schematic



P102 460E

SPECIFICATIONS

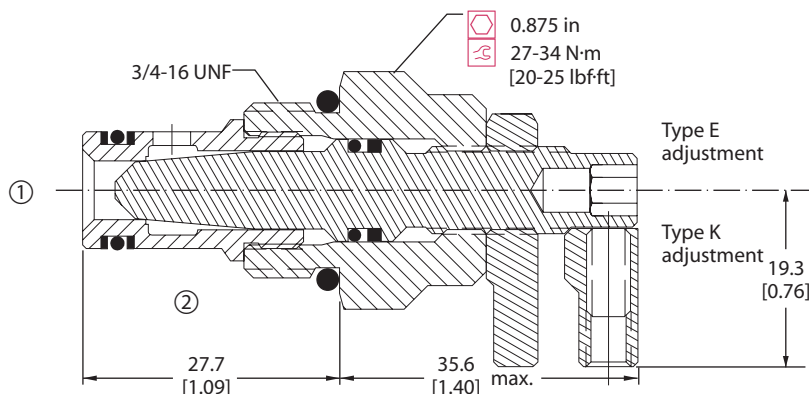
Theoretical performance



Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.09 kg [0.20 lb]
Cavity	SDC08-2

Cross-sectional view



DIMENSIONS

mm [in]

ORDERING INFORMATION

CP618 - 2 - B - 6S - K

Seals

B = Buna-N
 V = Viton

Seal kit
 120227
 120228

Housing and ports

0 = No Housing
 DG2B = AL, 1/4 BSP
 DG3B = AL, 3/8 BSP
 DG4S = AL, #4 SAE
 DG6S = AL, #6 SAE
 Other housings available

Housing P/N

No Housing
 SDC08-2-DG-2B
 SDC08-2-DG-2B
 CP08-2-4S
 CP08-2-6S

Adjustment option

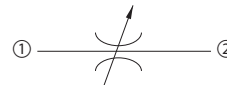
E = External adjustment
 K = Knob adjustment

P102 459E

OPERATION

This valve is a non-pressure compensated, adjustable flow control valve.

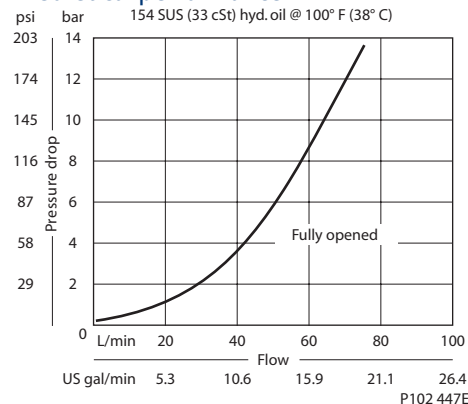
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

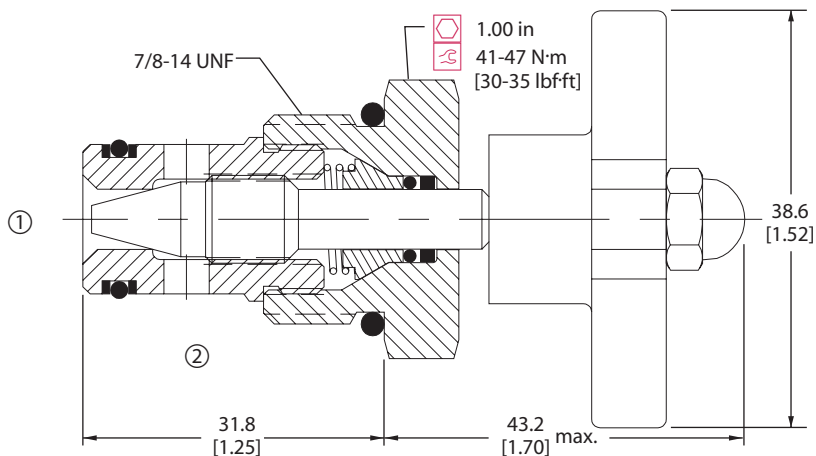
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.10 kg [0.22 lb]
Cavity	SDC10-2

Flow control valves
CP610-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 439E

ORDERING INFORMATION

CP610 - 1 - B - 8S - B

Seals
B = Buna-N
V = Viton

Seal kit
120073
120074

Housing and ports
0 = No Housing
DG3B = AL, 3/8 BSP
DG4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N
No Housing
SDC10-2-DG-3B
SDC10-2-DG-4B
CP10-2-6S
CP10-2-8S

Knob option
B = Black
R = Red

P102 457E

OPERATION

This valve is a non-pressure compensated, adjustable flow control valve.

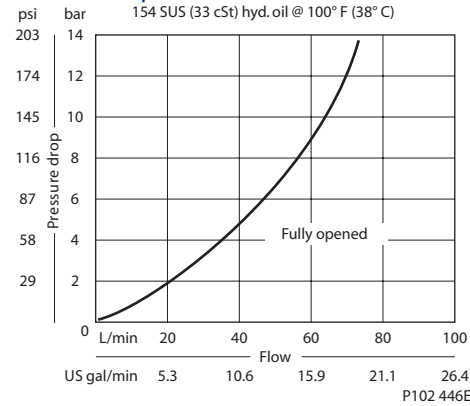
Schematic



P102 460E

SPECIFICATIONS

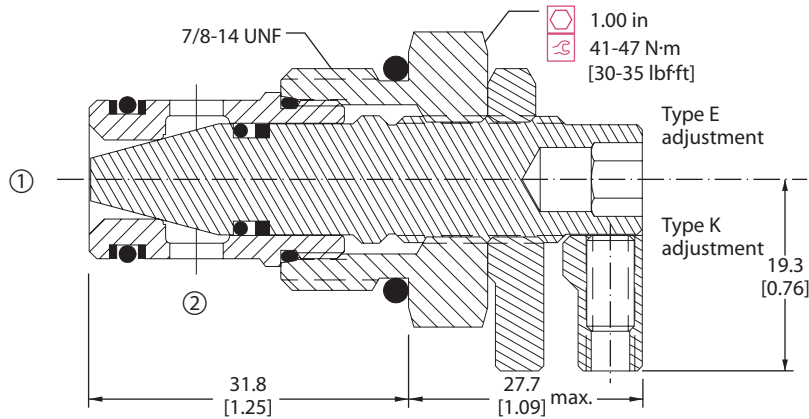
Theoretical performance



Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-2

Cross-sectional view



P102 438E

DIMENSIONS

mm [in]

ORDERING INFORMATION

CP610 - 2 - B - 8S - K

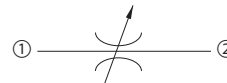
Seals			
B = Buna-N		Seal kit	
V = Viton		120073	
		120074	
Housing and ports		Housing P/N	
0 = No Housing		No Housing	
DG3B = AL, 3/8 BSP		SDC10-2-DG-3B	
DG4B = AL, 1/2 BSP		SDC10-2-DG-4B	
6S = AL, #6 SAE		CP10-2-6S	
8S = AL, #8 SAE		CP10-2-8S	
Other housings available			
		Adjustment option	
		E = External	
		K = Knob	

P102 456E

OPERATION

This valve is a non-pressure compensated, adjustable flow control valve.

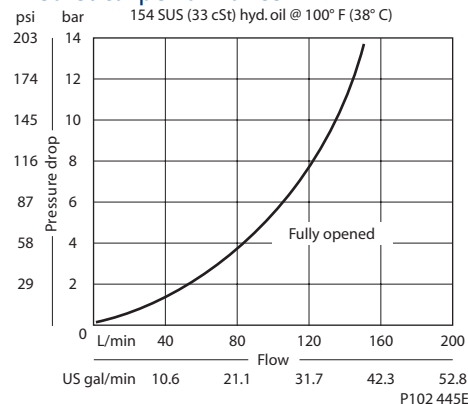
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

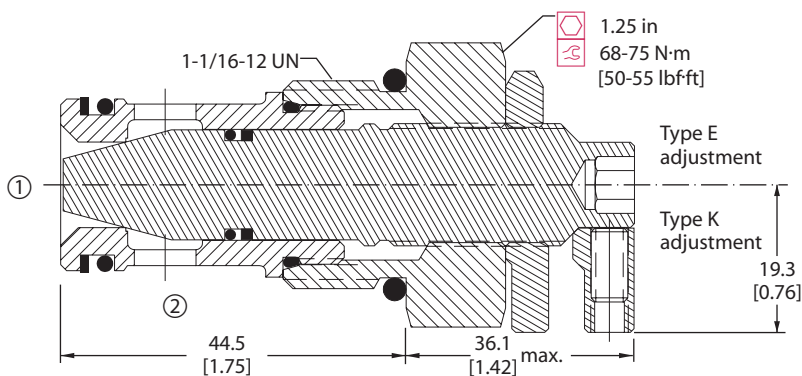
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.26 kg [0.57 lb]
Cavity	CP12-2

Flow control valves
CP611-2

DIMENSIONS

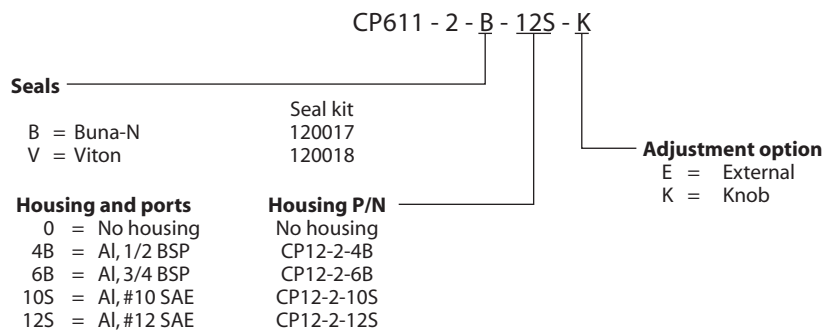
mm [in]

Cross-sectional view



P102 436E

ORDERING INFORMATION

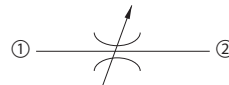


P102 454E

OPERATION

This valve is a non-pressure compensated, adjustable flow control valve.

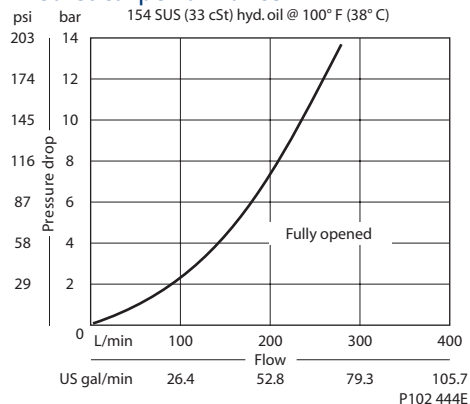
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



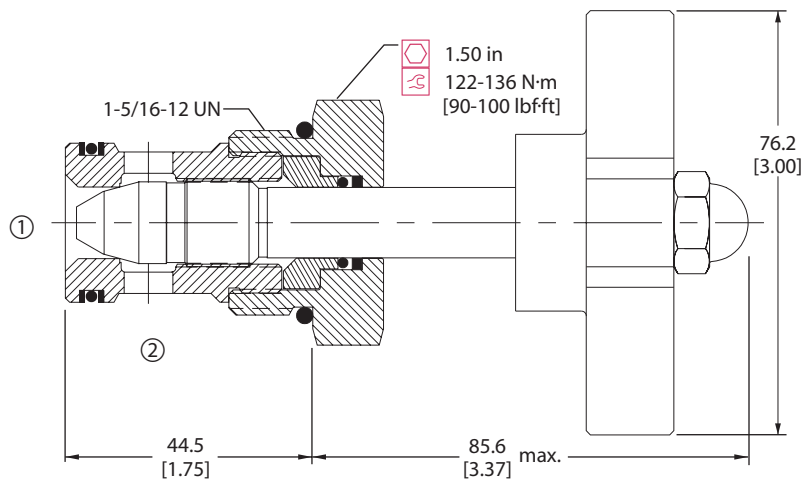
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.31 kg [0.68 lb]
Cavity	SDC16-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 435E

ORDERING INFORMATION

CP612 - 1 - B - 16S

Seals

B = Buna-N
V = Viton

Seal kit
120567
120568

Housing and ports

0 = No Housing
DG6B = AL, 3/4 BSP
DG8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N

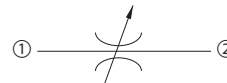
No Housing
SDC16-2-DG-6B
SDC16-2-DG-8B
SDC16-2-12S
SDC16-2-16S

P102 453E

OPERATION

This valve is a non-pressure compensated, adjustable flow control valve.

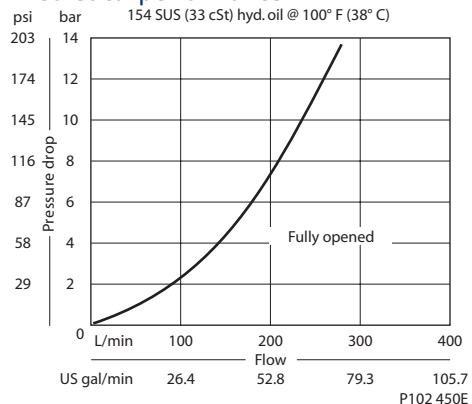
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

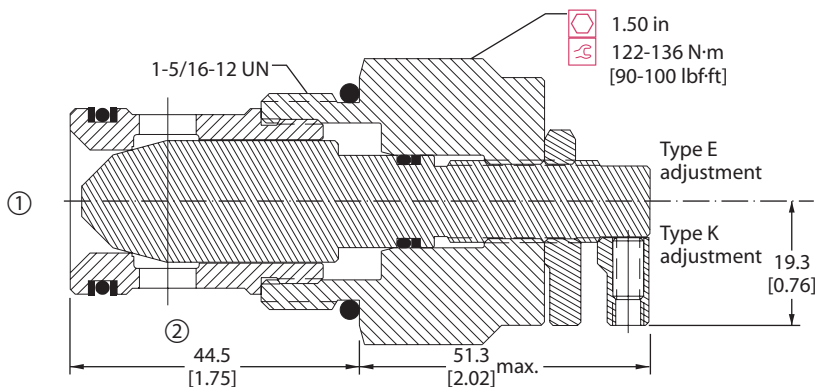
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.48 kg [1.06 lb]
Cavity	SDC16-2

Flow control valves
CP612-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 442E

ORDERING INFORMATION

CP612 - 2 - B - 16S - K

Seals

B = Buna-N
V = Viton

Seal kit
120567
120568

Housing and ports

0 = No Housing
DG6B = AL, 3/4 BSP
DG8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N

No Housing
SDC16-2-DG-6B
SDC16-2-DG-8B
SDC16-2-12S
SDC16-2-16S

Adjustment option

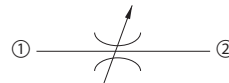
E = External
K = Knob

P102 451E

OPERATION

This valve is a non-pressure compensated, adjustable flow control valve.

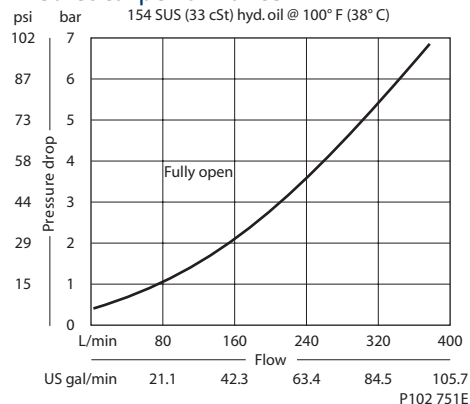
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

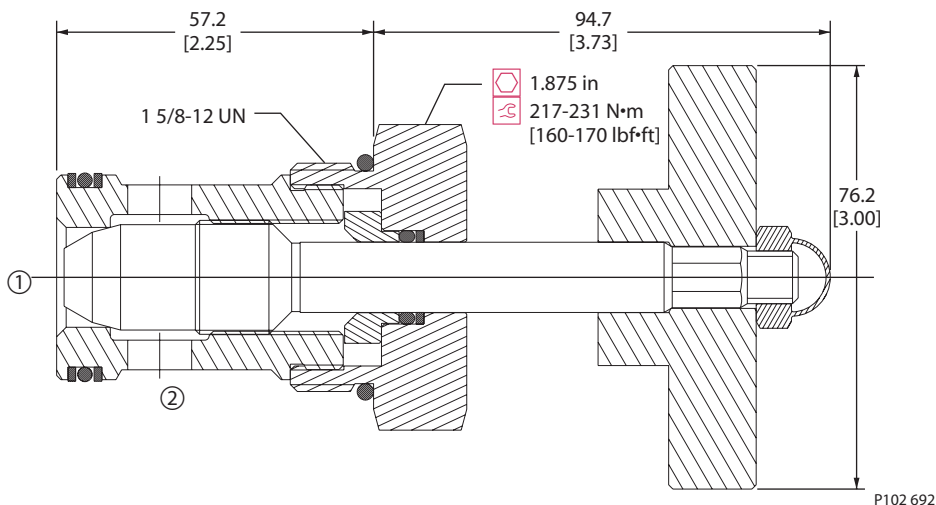
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	380 l/min [100 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.85 kg [1.87 lb]
Cavity	SDC20-2

Flow control valves
 CP613-1

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP613-1-B-16S

Housing and ports
 0 = No Housing
 8B = AL, 1 BSP
 10B = AL, 1-1/4 BSP
 16S = AL, #16 SAE
 20S = AL, #20 SAE
 Other housings available

Housing P/N
 No Housing
 CP20-2-8B
 CP20-2-10B
 CP20-2-16S
 CP20-2-20S

Seals

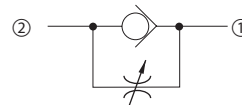
Seal kits
 B = Buna-N 120172
 V = Viton 120173

P102 693E

OPERATION

This valve is an adjustable orifice with free reverse flow.

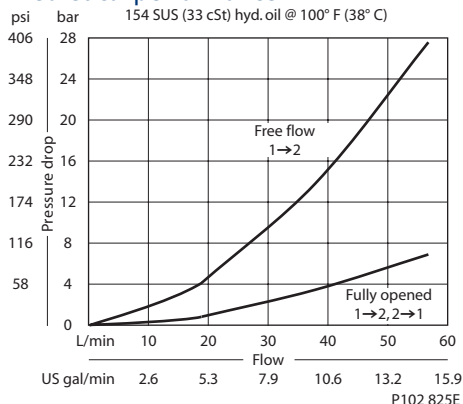
Schematic



P102 824

SPECIFICATIONS

Theoretical performance



Specifications

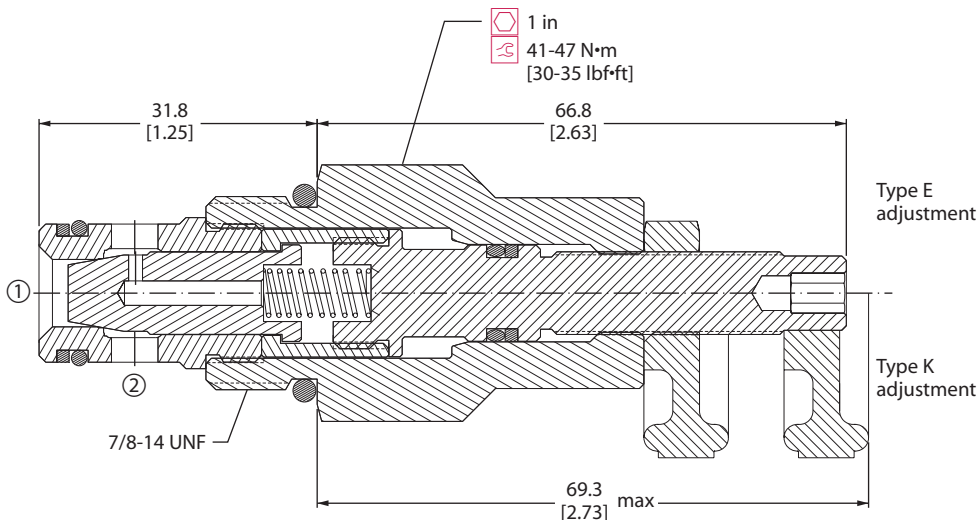
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	55 l/min [15 US gal/min]
Leakage	30 drops/min @ Rated pressure
Weight	0.18 kg [0.40 lb]
Cavity	SDC10-2

Flow control valves
CP610-7

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP610 - 7 - B - 8S - K

Seals

B = Buna-N
V = Viton

Housing and ports
0 = No Housing
DG3B = AL, 3/8 BSP
DG4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Seal kit
120015
120016

Housing P/N
No Housing
SDC10-2-DG-3B
SDC10-2-DG-4B
CP10-2-6S
CP10-2-8S

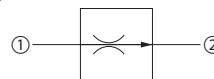
Adjustment option
E = External
K = Knob

P102 763E

OPERATION

This valve is a fixed pressure compensated flow control valve.

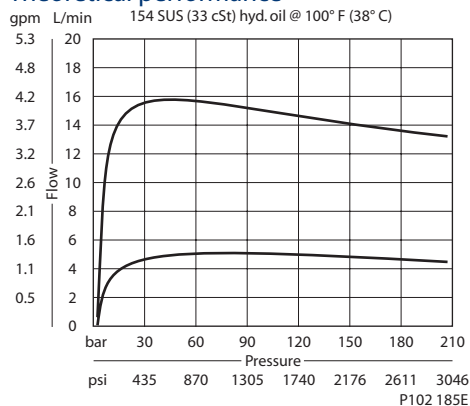
Schematic



P102 183E

SPECIFICATIONS

Theoretical performance



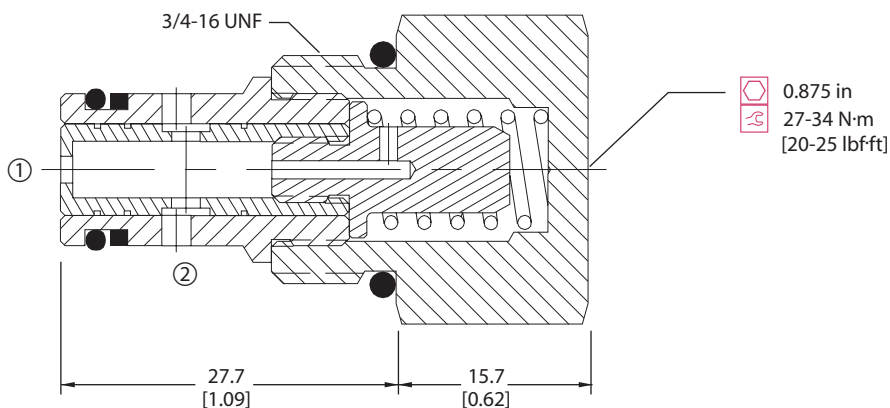
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	15 l/min [4 US gal/min]
Weight	0.08 kg [0.17 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-15.1 l/min [1.8-4 US gal/min]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 184E

ORDERING INFORMATION

CP308 - 1 - B - 6S - 1.0

Seals	Seal kit	Regulated Flow	L/min [US gal/min]
B = Buna-N	120221		
V = Viton	120022	To	
Housing and ports	Housing P/N	4.0 = 15.1 [4.0]	
0 = No Housing	No Housing		
DG2B = Al, 1/4 BSP	SDC08-2-DG-2B		
DG3B = Al, 3/8 BSP	SDC08-2-DG-3B		
4S = Al, #4 SAE	CP08-2-4S		
6S = Al, #6 SAE	CP08-2-6S		
Other housings available			

P102 187E

Cartridge Valves Technical Information

Flow Control Valves

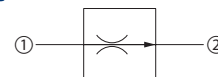
Pressure-Compensated, Restrictive Flow Control

CP300-1

OPERATION

This valve is a fixed pressure compensated flow control valve.

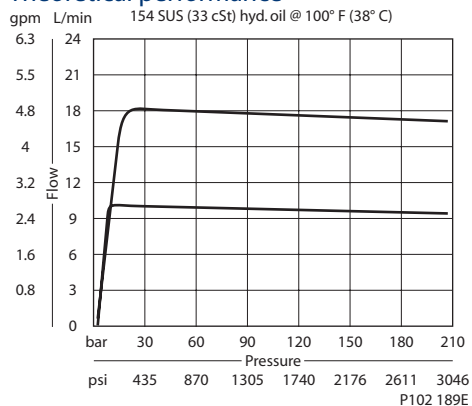
Schematic



P102 183E

SPECIFICATIONS

Theoretical performance



Specifications

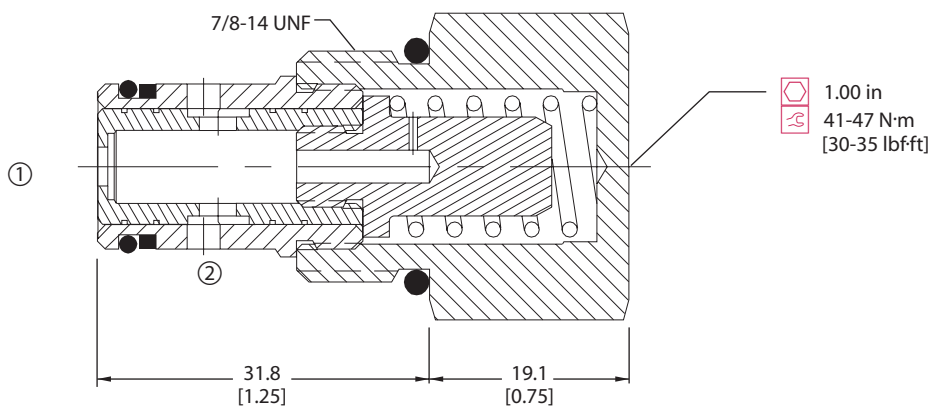
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.12 kg [0.26 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-22.7 l/min [1.8-6 US gal/min]
Cavity	SDC10-2

Flow control valves
 CP300-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 188E

ORDERING INFORMATION

CP300-1-B-8S-2.5

Seals	Seal kit		Regulated Flow	L/min [US gal/min]
B = Buna-N V = Viton	120015 120016			
Housing and ports	Housing P/N			
0 = No Housing	No Housing			
DG3B = Al, 3/8 BSP	SDC10-2-DG-3B			
DG4B = Al, 1/2 BSP	SDC10-2-DG-4B			
6S = Al, #6 SAE	CP10-2-6S			
8S = Al, #8 SAE	CP10-2-8S			
Other housings available				

P102 191E

Cartridge Valves Technical Information

Flow Control Valves

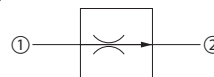
Pressure-Compensated, Restrictive Flow Control

CP301-1

OPERATION

This valve is a fixed pressure compensated flow control valve.

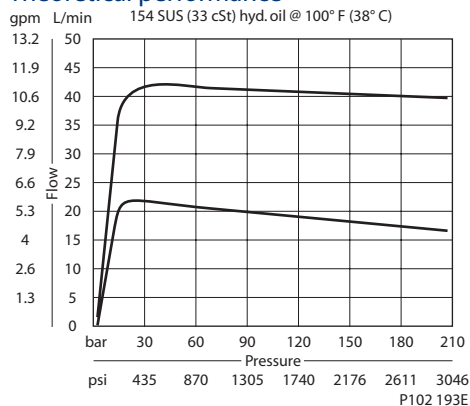
Schematic



P102 183E

SPECIFICATIONS

Theoretical performance



Specifications

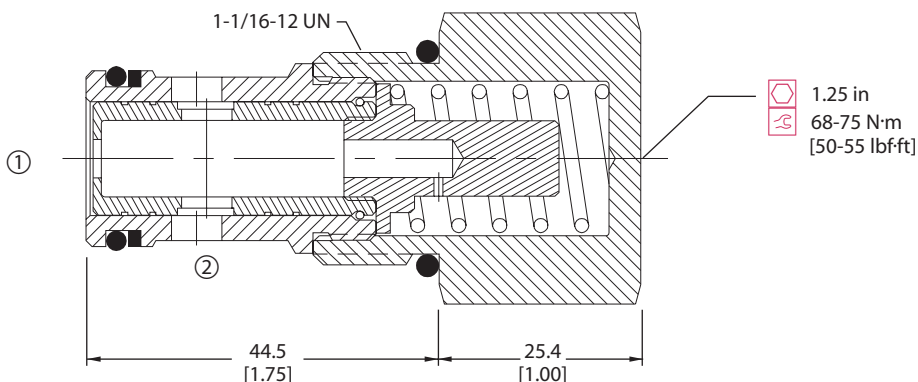
Rated pressure	210 bar [3000 psi]
Max regulated flow	57 l/min [15 US gal/min]
Weight	0.24 kg [0.52 lb]
Accuracy ± 15%	1.9-7.5 l/min [0.5-2 US gal/min]
± 10%	7.6-56.8 l/min [2-15 US gal/min]
Cavity	CP12-2

Flow control valves
CP301-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 192E

ORDERING INFORMATION

CP301 - 1 - B - 12S - 10.0

Seals	Seal kit		Regulated Flow
B = Buna-N V = Viton	120017 120018		
Housing and ports	Housing P/N		
0 = No Housing	No Housing		
4B = Al, 1/2 BSP	CP12-2-4B		
6B = Al, 3/4 BSP	CP12-2-6B		
10S = Al, #10 SAE	CP12-2-10S		
12S = Al, #12 SAE	CP12-2-12S		
Other housings available			

P102 195E

Cartridge Valves Technical Information

Flow Control Valves

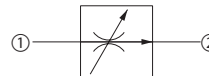
Pressure-Compensated, Restrictive Flow Control

CP308-2

OPERATION

This valve is a limited adjustment pressure compensated flow control valve.

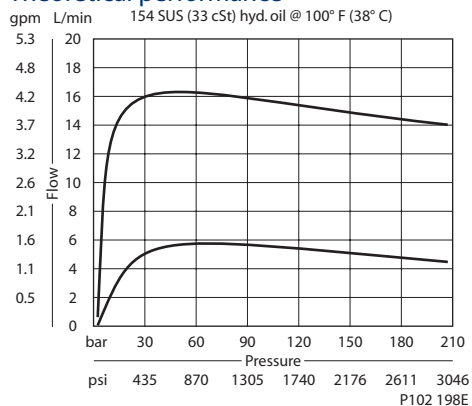
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



Specifications

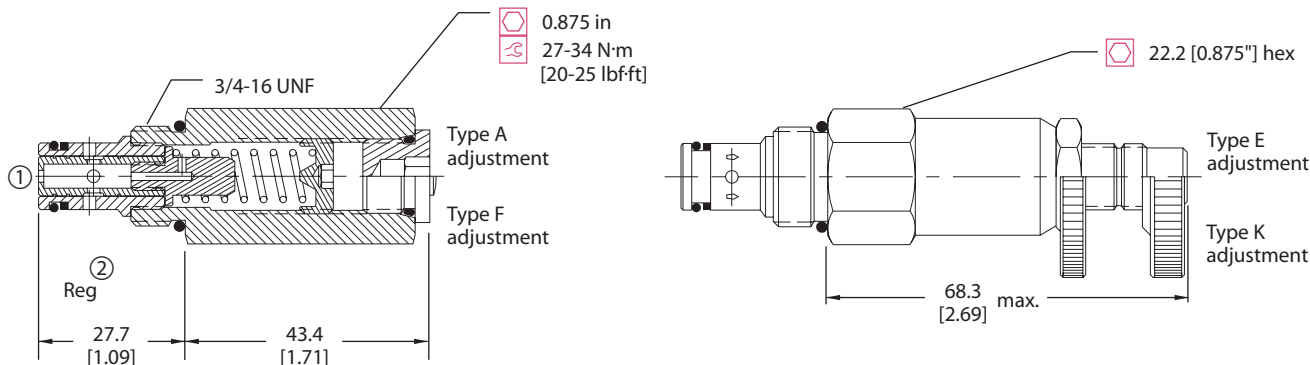
Rated pressure	210 bar [3000 psi]
Max regulated flow	15 l/min [4 US gal/min]
Weight	0.15 kg [0.32 lb]
Cavity	SDC08-2

Flow control valves
CP308-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 197E

ORDERING INFORMATION

CP308 - 2 - B - 6S - A - 1.0

Seals
B = Buna-N
V = Viton

Seal kit
120221
120222

Housing and ports
0 = No Housing
DG2B = Al, 1/4 BSP
DG3B = Al, 3/8 BSP
4S = Al, #4 SAE
6S = Al, #6 SAE
Other housings available

Housing P/N
No Housing
SDC08-2-DG-2B
SDC08-2-DG-3B
CP08-2-4S
CP08-2-6S

Regulated Flow
L/min [US gal/min]
0.1 = .4 [0.1]
To
4.0 = 15.1 [4.0]

Adjustment option
A = Internal
E = External
F = Tamper resistant
K = Knob

P102 200E

Cartridge Valves Technical Information

Flow Control Valves

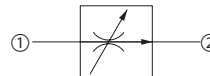
Pressure-Compensated, Restrictive Flow Control

CP300-2

OPERATION

This valve is a limited adjustment pressure compensated flow control valve.

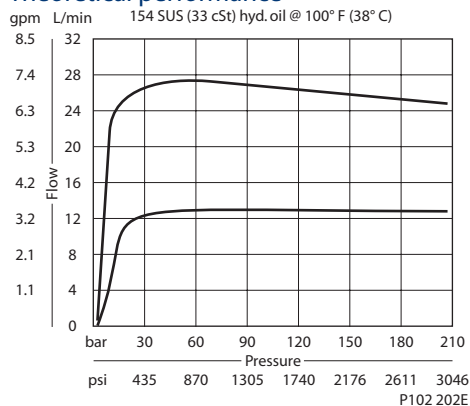
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



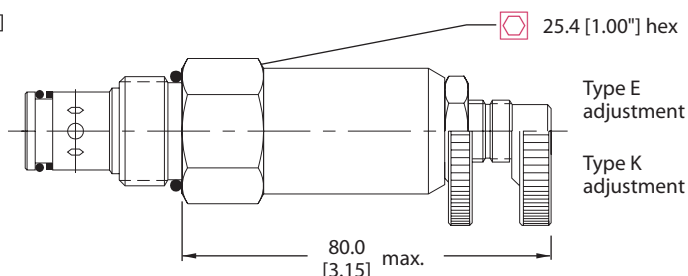
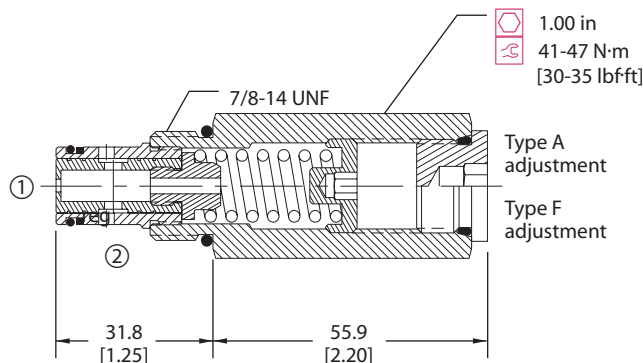
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.24 kg [0.52 lb]
Accuracy ± 20%	0.5-2.2 l/min [0.1-0.5 US gal/min]
± 15%	2.3-6.8 l/min [0.5-1.5 US gal/min]
± 10%	6.8-27.3 l/min [1.5-6 US gal/min]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 201E

ORDERING INFORMATION

Seals

B = Buna-N
V = Viton

Housing and ports

0 = No Housing
DG3B = Al, 3/8 BSP
DG4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE
Other housings available

Seal kit

120015
120016

Housing P/N

No Housing
SDC10-2-DG-3B
SDC10-2-DG-4B
CP10-2-6S
CP10-2-8S

Regulated Flow

L/min [US gal/min]
0.5 = 2.4 [0.5]
To
6.0 = 22.7 [6.0]

Adjustment option

A = Internal
E = External
F = Tamper resistant
K = Knob

P102 204E

Cartridge Valves Technical Information

Flow Control Valves

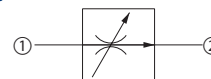
Pressure-Compensated, Restrictive Flow Control

VR 06

OPERATION

This valve is a limited adjustment, pressure compensated, restrictive-type flow control valve.

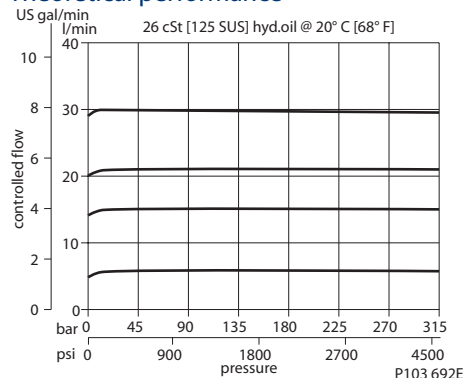
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



Specifications

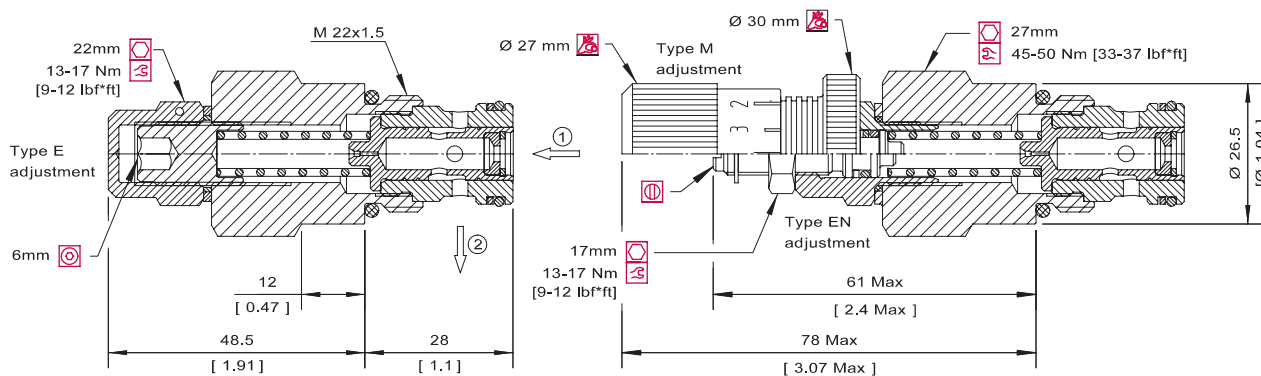
Rated pressure	315 bar [4500 psi]
Max regulated flow	30 l/min [8 US gal/min]
Weight	0.19 kg [0.42 lb]
Cavity	NCS06/2

P103 692E

DIMENSIONS

mm [in]

Cross-sectional view



P103 664

ORDERING INFORMATION

VR 06 - EN-1.25 - 00 - V

Adjustment

E = Internal screw
EN = External screw
M = Handwheel

Orifice size

mm	L/min	[US gal/m]
1.25	1-4	[0.3-1.1]
2.00	3-10	[0.8-2.6]
3.00	6-20	[1.6-5.3]
3.50	10-30	[2.6-7.9]

other orifices available
consult factory

Seals

V = Viton
Omit = Buna-N

Seal kit

230000380
230000060

Housing and ports

00 = No Housing
DG3/8 = AL, 3/8 BSP
DG1/2 = AL, 1/2 BSP
DG6S = AL, #6 SAE
DG8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
NCS06/2-DG-3/8
NCS06/2-DG-1/2
NCS06/2-DG-6S
NCS06/2-DG-8S

P103 718E

Cartridge Valves Technical Information

Flow Control Valves

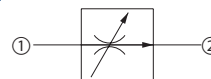
Pressure-Compensated, Restrictive Flow Control

VR 12

OPERATION

This valve is a limited adjustment, pressure compensated, restrictive-type flow control valve.

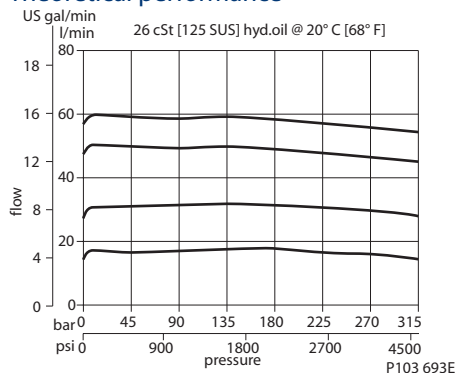
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



Specifications

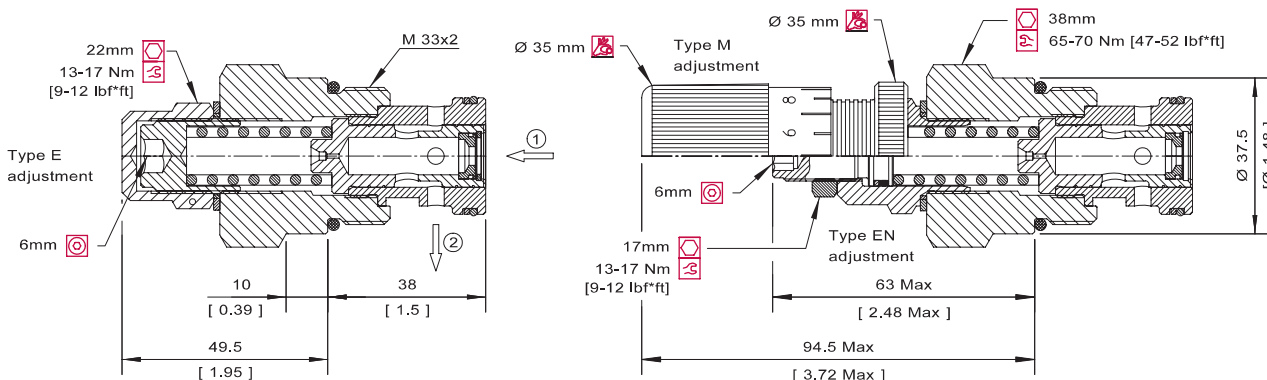
Rated pressure	315 bar [4500 psi]
Max regulated flow	60 l/min [16 US gal/min]
Weight	0.44 kg [0.97 lb]
Cavity	NCS12/2

P103 693E

DIMENSIONS

mm [in]

Cross-sectional view



P103 665

ORDERING INFORMATION

VR 12 - EN - 1.25 - 00 - V

Adjustment

E = Internal screw
EN = External screw
M = Handwheel

Orifice size

mm	L/min	[US gal/m]
1.50	2.5-6.5	[0.7-1.7]
2.50	6-16	[1.6-4.2]
4.00	16-40	[4.2-10.6]
5.00	25-60	[6.6-15.8]

Seals

V = Viton
Omit = Buna-N

Seal kit

230000470
230000120

Housing and ports

00 = No Housing
DG1/2 = AL, 1/2 BSP
DG3/4 = AL, 3/4 BSP
DG8S = AL, #8 SAE
DG12S = AL, #12 SAE
Other housings available

Housing P/N

No Housing
NCS12/2-DG-1/2
NCS12/2-DG-3/4
NCS12/2-DG-8S
NCS12/2-DG-12S

P103 719E

Cartridge Valves Technical Information

Flow Control Valves

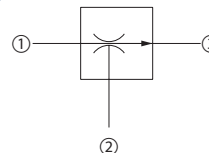
Pressure-Compensated, Priority Flow Control

CP310-1

OPERATION

This valve is a fixed, pressure compensated priority-type flow control valve.

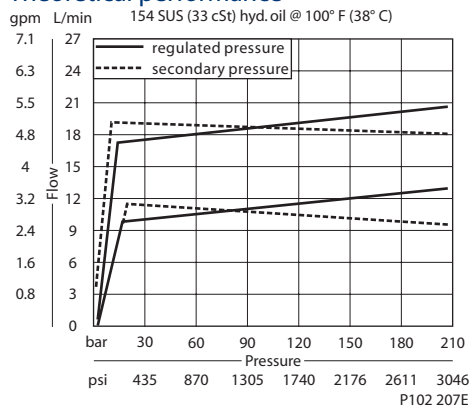
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



Specifications

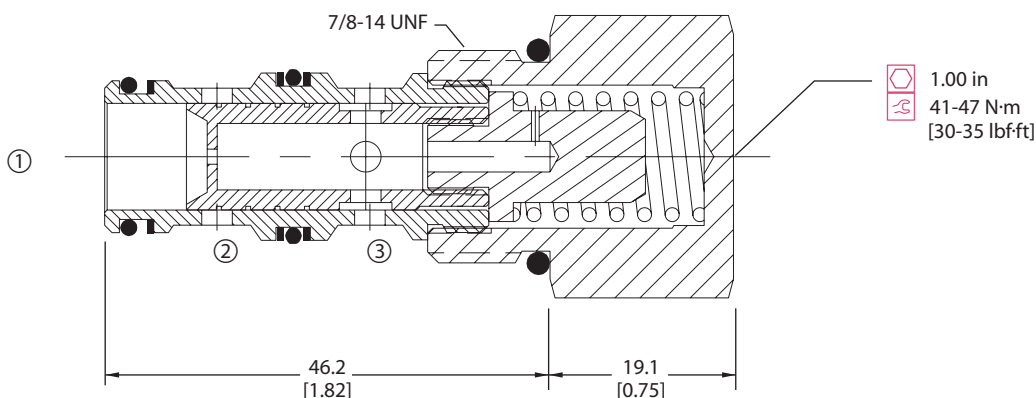
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Max inlet flow	38 l/min [10 US gal/min]
Weight	0.13 kg [0.29 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-22.7 l/min [1.8-6 US gal/min]
Cavity	SDC10-3

Flow control valves
CP310-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 206E

ORDERING INFORMATION

CP310 - 1 - B - 8S - 2.5

Seals	Seal kit	Regulated Flow	L/min [US gal/m]
B = Buna-N V = Viton	120240 120241		
Housing and ports	Housing P/N		
00 = No Housing SE3B = Al, 3/8 BSP SE4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available	No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S		

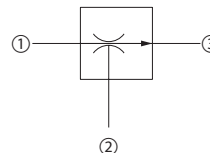
P102 209E

Cartridge Valves Technical Information
 Flow Control Valves
 Pressure-Compensated, Priority Flow Control
VRF 06

OPERATION

This valve is a fixed, pressure compensated, priority-type flow control.

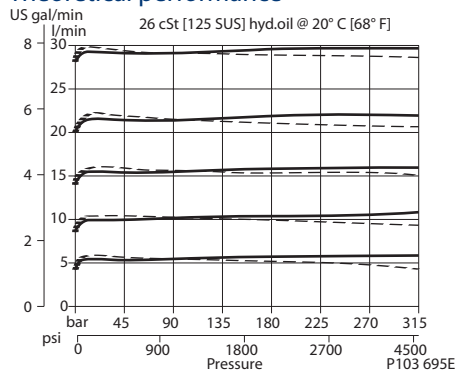
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



Specifications

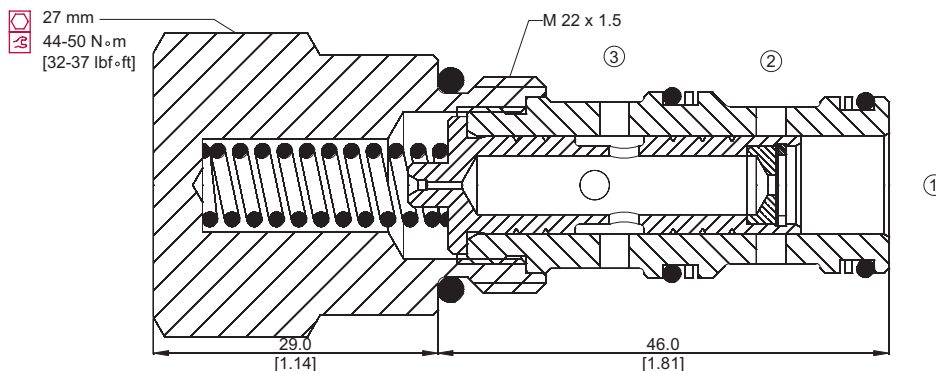
Rated pressure	315 bar [4500 psi]
Max regulated flow	26 l/min [7 US gal/min]
Max inlet flow	50 l/min [13 US gal/min]
Weight	0.19 kg [0.42 lb]
Accuracy ± 10%	2.3-25.5 l/min [0.5-6.8 US gal/min]
Cavity	NCS06/3

Flow control valves
VRF 06

DIMENSIONS

mm [in]

Cross-sectional view



P103 667

ORDERING INFORMATION

VRF 06 - 1.5 - SE3/8 - V

Orifice size	Orifice	flow	[US gal/min]
	0.75	= 1.5	[0.4]
	1.00	= 2.0	[0.53]
	1.25	= 3.5	[0.92]
	1.50	= 4.5	[1.19]
	1.75	= 6	[1.58]
	2.00	= 9.0	[1.38]
	2.25	= 10	[2.64]
	2.50	= 12	[3.30]
	2.75	= 15	[3.96]
	3.00	= 18	[4.75]
	3.25	= 21.5	[5.68]
	3.50	= 25	[6.73]

Seals	Seal kit
V = Viton	230000110
Omit = Buna-N	230000070

Housing and ports	Housing P/N
00 = No Housing	No Housing
SE3/8 = AL, 3/8 BSP	NCS06/3-SE-3/8
SE1/2 = AL, 1/2 BSP	NCS06/3-SE-1/2
SE65 = AL, #6 SAE	NCS06/3-SE-65
SE85 = AL, #8 SAE	NCS06/3-SE-85
Other housings available	

P103 722E

Cartridge Valves Technical Information

Flow Control Valves

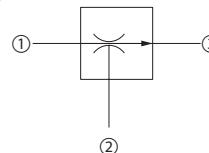
Pressure-Compensated, Priority Flow Control

CP311-1

OPERATION

This valve is a fixed, pressure compensated priority-type flow control valve.

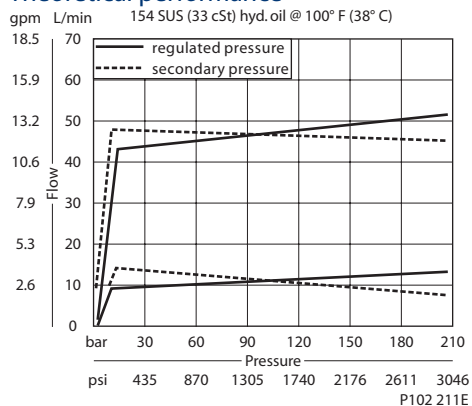
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



Specifications

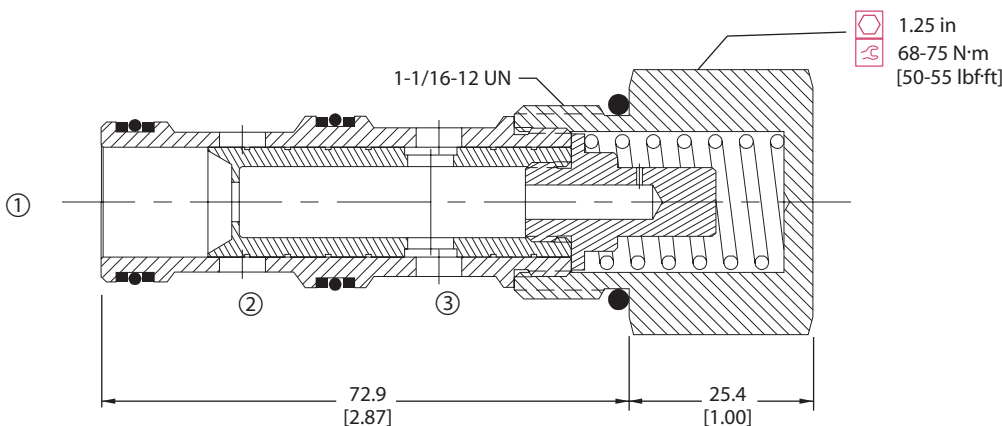
Rated pressure	210 bar [3000 psi]
Max regulated flow	45 l/min [12 US gal/min]
Max inlet flow	95 l/min [25 US gal/min]
Weight	0.28 kg [0.61 lb]
Accuracy ± 15%	1.9-7.5 l/min [0.5-2 US gal/min]
± 10%	7.6-45.4 l/min [2-12 US gal/min]
Cavity	CP12-3

Flow control valves CP311-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 210E

ORDERING INFORMATION

CP311 - 1 - B - 12S - 10.0

Seals	Seal kit		
B = Buna-N	120053		
V = Viton	120052		
Housing and ports	Housing P/N	Regulated Flow	
0 = No Housing	No Housing	L/min [US gal/min]	
4B = Al, 1/2 BSP	CP12-3-4B	0.5 = 1.9 [0.5]	
6B = Al, 3/4 BSP	CP12-3-6B	12.0 = 45.4 [12.0]	
10S = Al, #10 SAE	CP12-3-10S		
12S = Al, #12 SAE	CP12-3-12S		
Other housings available			

P102 213E

Cartridge Valves Technical Information

Flow Control Valves

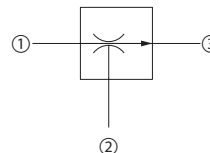
Pressure-Compensated, Priority Flow Control

CP312-1

OPERATION

This valve is a fixed, pressure compensated priority-type flow control valve.

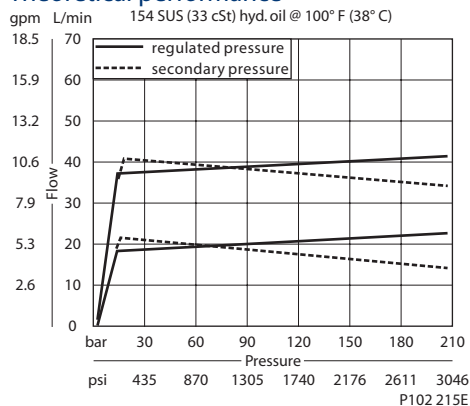
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



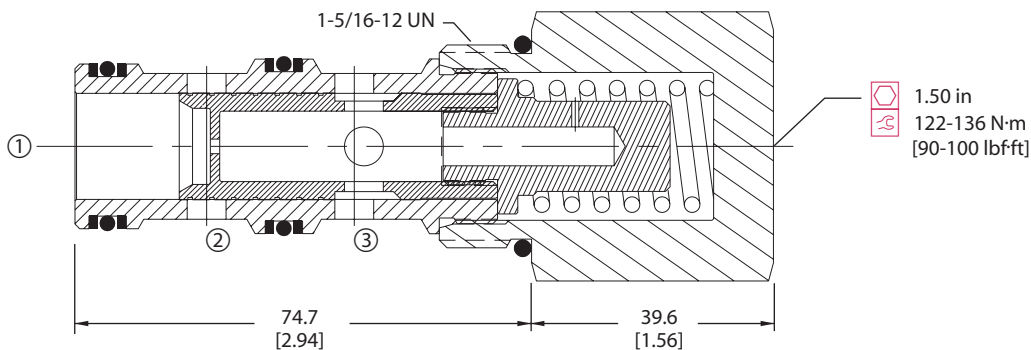
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	64 l/min [17 US gal/min]
Max inlet flow	130 l/min [34 US gal/min]
Weight	0.53 kg [1.17 lb]
Accuracy	± 15% 1.9-7.5 l/min [0.5-2 US gal/min]
	± 10% 7.6-64.3 l/min [2-17 US gal/min]
Cavity	SDC16-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 214E

ORDERING INFORMATION

CP312 - 1 - B - 16S - 10.0

Seals	Seal kit	Regulated flow
B = Buna-N V = Viton	120202 120203	
Housing and ports	Housing P/N	L/min [US gal/min]
0 = No Housing	No Housing	0.5 = 1.9 [0.5]
SE6B = Al, 3/4 BSP	SDC16-3-SE-6B	To
SE8B = Al, 1 BSP	SDC16-3-SE-8B	17.0 = 64.3 [17.0]
12S = Al, #12 SAE	CP16-3-12S	
16S = Al, #16 SAE	CP16-3-12S	
Other housings available		

P102 217E

Cartridge Valves Technical Information

Flow Control Valves

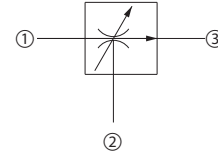
Pressure-Compensated, Priority Flow Control

CP310-2

OPERATION

This valve is a limited adjustment, pressure compensated, priority-type flow control valve.

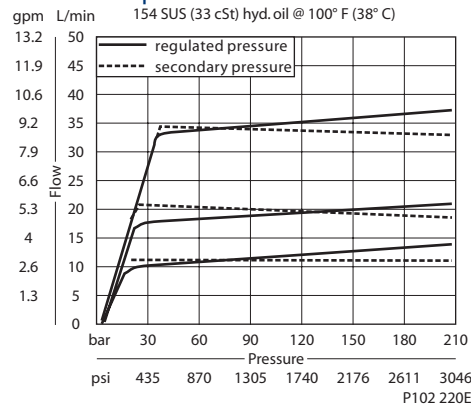
Schematic



P102 218E

SPECIFICATIONS

Theoretical performance



Specifications

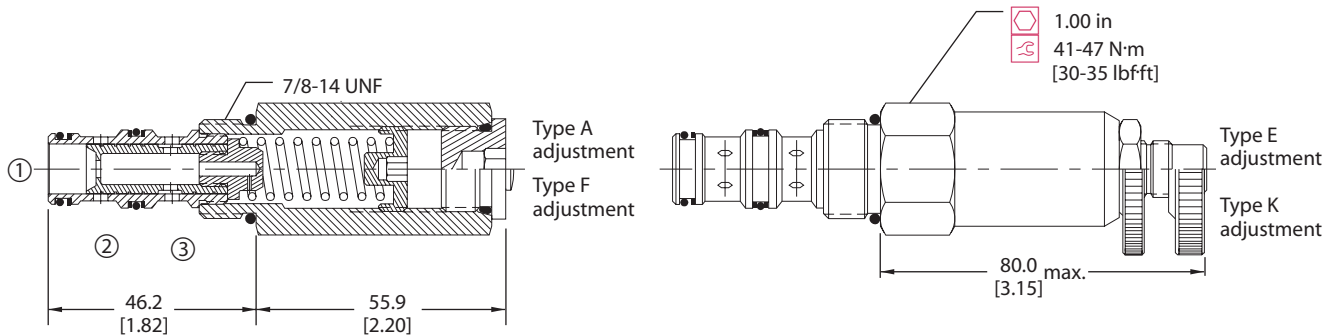
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Max inlet flow	38 l/min [10 US gal/min]
Weight	0.24 kg [0.52 lb]
Cavity	SDC10-3

Flow control valves
CP310-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 219E

ORDERING INFORMATION

CP310 - 2 - B - 8S - A - 2.5

Seals	Seal kit	Regulated Flow
B = Buna-N V = Viton	120240 120241	
Housing and ports	Housing P/N	L/min [US gal/min]
0 = No Housing SE3B = Al, 3/8 BSP SE4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available	No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S	0.1 = .4 [0.1] To 6.0 = 22.7 [6.0]
		Adjustment option
		A = Internal E = External F = Tamper resistant K = Knob

P102 222E

Cartridge Valves Technical Information

Flow Control Valves

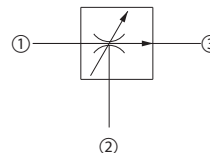
Pressure-Compensated, Priority Flow Control

VRC 06

OPERATION

This valve is a limited adjustment, pressure compensated, priority-type flow control valve.

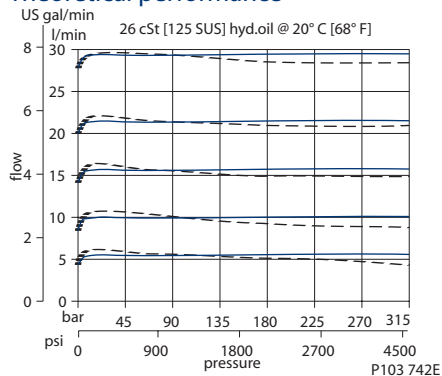
Schematic



P102 218E

SPECIFICATIONS

Theoretical performance



Specifications

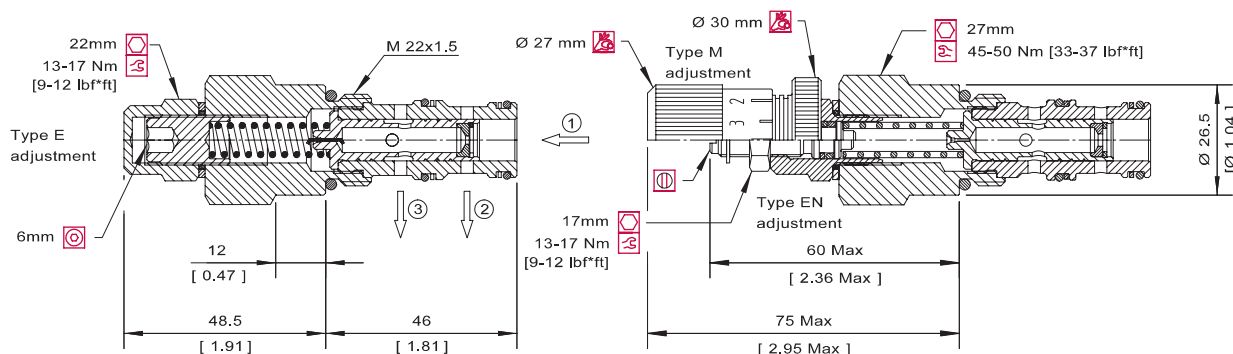
Rated pressure	315 bar [4500 psi]
Max regulated flow	30 l/min [8 US gal/min]
Max inlet flow	50 l/min [13 US gal/min]
Weight	0.21 kg [0.46 lb]
Cavity	NCS06/3

Flow control valves
VRC 06

DIMENSIONS

mm [in]

Cross-sectional view



P103 741

ORDERING INFORMATION

VRC 06 - EN-2.0 - SE3/8 - V

<p>Type of adjustment</p> <p>E = Internal screw EN = External screw M = Handwheel</p>	<p>Seals</p> <p>V = Viton Omit = Buna-N</p>	<p>Seal kit</p> <p>230000110 230000070</p>															
<p>Orifice size</p> <table border="0"> <tr> <td>mm</td> <td>L/min</td> <td>[US gal/m]</td> </tr> <tr> <td>1.25</td> <td>= 1-4</td> <td>[0.3-1.1]</td> </tr> <tr> <td>2.0</td> <td>= 3-10</td> <td>[0.8-2.5]</td> </tr> <tr> <td>3.0</td> <td>= 6-20</td> <td>[1.6-5.3]</td> </tr> <tr> <td>3.5</td> <td>= 10-30</td> <td>[2.6-7.9]</td> </tr> </table> <p>other orifices available consult factory</p>	mm	L/min	[US gal/m]	1.25	= 1-4	[0.3-1.1]	2.0	= 3-10	[0.8-2.5]	3.0	= 6-20	[1.6-5.3]	3.5	= 10-30	[2.6-7.9]	<p>Housing and ports</p> <p>00 = No Housing SE3/8 = AL, 3/8 BSP SE1/2 = AL, 1/2 BSP SE6S = AL, #6 SAE SE8S = AL, #8 SAE Other housings available</p>	<p>Housing P/N</p> <p>No Housing NCS06/3-SE-3/8 NCS06/3-SE-1/2 NCS06/3-SE-6S NCS06/3-SE-8S</p>
mm	L/min	[US gal/m]															
1.25	= 1-4	[0.3-1.1]															
2.0	= 3-10	[0.8-2.5]															
3.0	= 6-20	[1.6-5.3]															
3.5	= 10-30	[2.6-7.9]															

P103 720E

Cartridge Valves Technical Information

Flow Control Valves

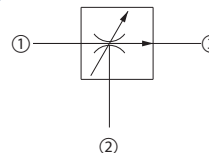
Pressure-Compensated, Priority Flow Control

VRC 12

OPERATION

This valve is a limited adjustment, pressure compensated, priority-type flow control valve.

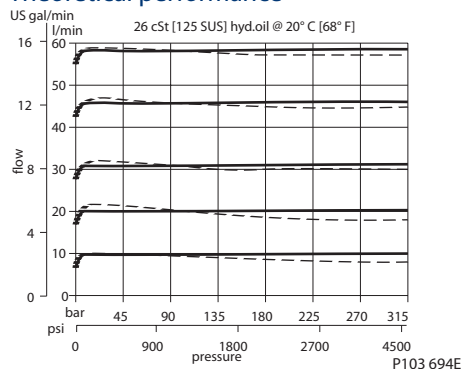
Schematic



P102 218E

SPECIFICATIONS

Theoretical performance



Specifications

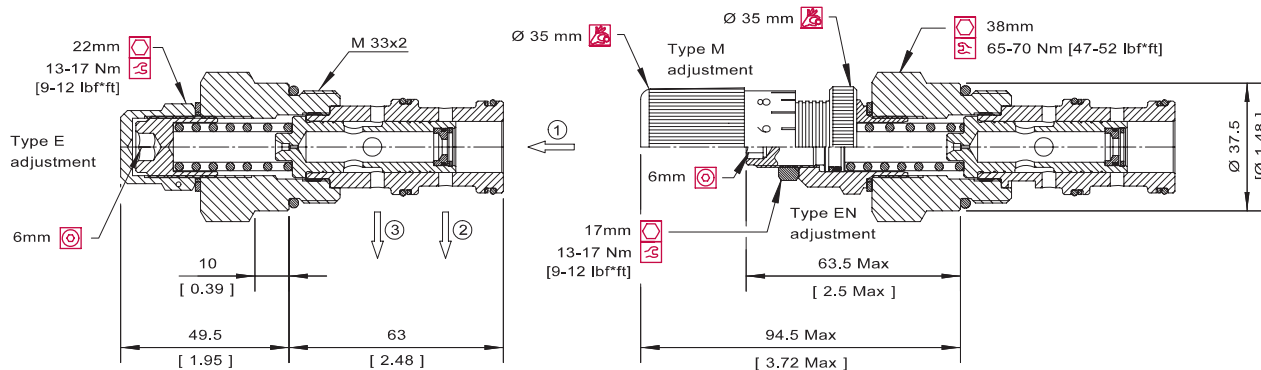
Rated pressure	315 bar [4500 psi]
Max regulated flow	73 l/min [19 US gal/min]
Max inlet flow	100 l/min [26 US gal/min]
Weight	0.50 kg [1.10 lb]
Cavity	NCS12/3

Flow control valves
VRC 12

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VRC 12 - EN-1.5 - SE1/2 - V

Adjustment

E = Internal screw
EN = External screw
M = Handwheel

Orifice size

mm	L/min	[US gal/min]
1.25	= 2.5-6.5	[0.7-1.7]
2.50	= 6-16	[1.6-4.2]
3.50	= 9-32	[2.4-8.4]
4.00	= 16-40	[4.2-10.6]
5.00	= 25-60	[6.6-15.8]
5.75	= 30-73	[7.9-19.3]

Seals

V = Viton
Omit = Buna-N

Seal kit

230000360
230000130

Housing and ports

00 = No Housing
SE1/2 = AL, 1/2 BSP
SE3/4 = AL, 3/4 BSP
SE8S = AL, #8 SAE
SE12S = AL, #12 SAE
Other housings available

Housing P/N

No Housing
NCS12/3-SE-1/2
NCS12/3-SE-3/4
NCS12/3-SE-8S
NCS12/3-SE-12S

P103 721E

Cartridge Valves Technical Information

Flow Control Valves

Pressure-Compensated, Priority Flow Control

CP300-6

OPERATION

This valve is a fixed setting, pressure compensated, bi-directional flow control valve. NOTE: Port 1 must be blocked for proper operation.

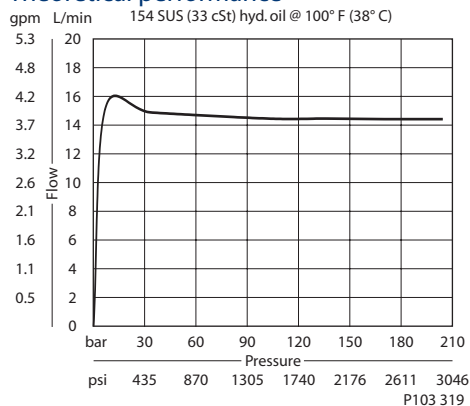
Schematic



P103 508

SPECIFICATIONS

Theoretical performance



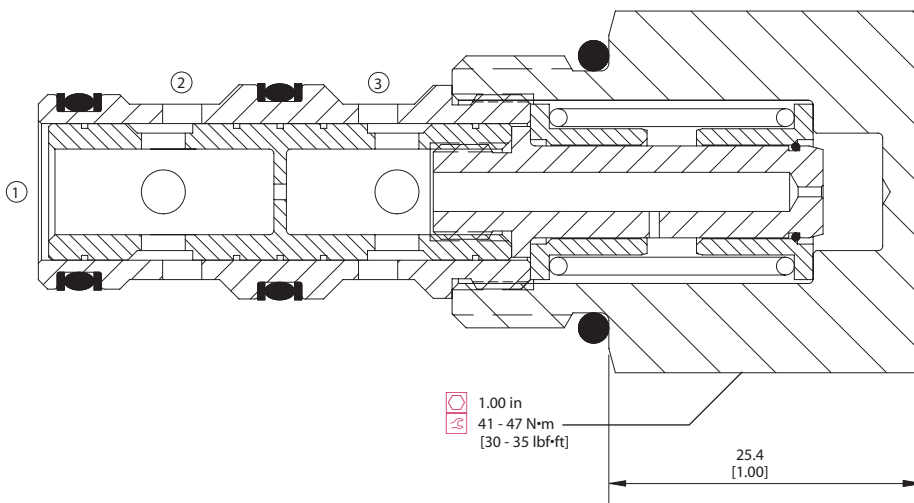
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.13 kg [0.29 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.4-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-23 l/min [1.8-6 US gal/min]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P103 256

ORDERING INFORMATION

CP300 - 6 - B - 8S - 2.5

Seals

B = Buna-N
 V = Viton

Seal kit

120009
 120010

Housing and ports

0 = No Housing
 SE3B = Al, 3/8 BSP
 SE4B = Al, 1/2 BSP
 6S = Al, #6 SAE
 8S = Al, #8 SAE
 Other housings available

Housing P/N

No Housing
 SDC10-3-SE-3B
 SDC10-3-SE-4B
 CP10-3-6S
 CP10-3-8S

Regulated Flow

L/min	[US gal/min]
0.1	[0.1]
6.0	[6.0]

P103 255

Cartridge Valves Technical Information

Flow Control Valves

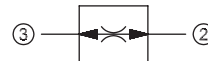
Pressure-Compensated, Priority Flow Control

FCH10-BD

OPERATION

This valve is a fixed setting, pressure compensated, bi-directional flow control valve. NOTE: Port 1 must be blocked for proper operation.

Schematic



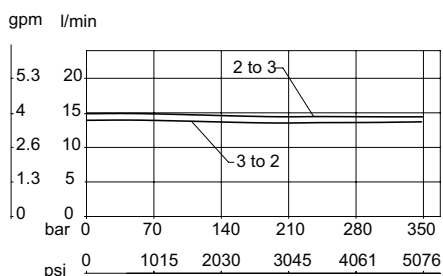
P103 508

SPECIFICATIONS

Theoretical performance

Performance

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



P108 379E

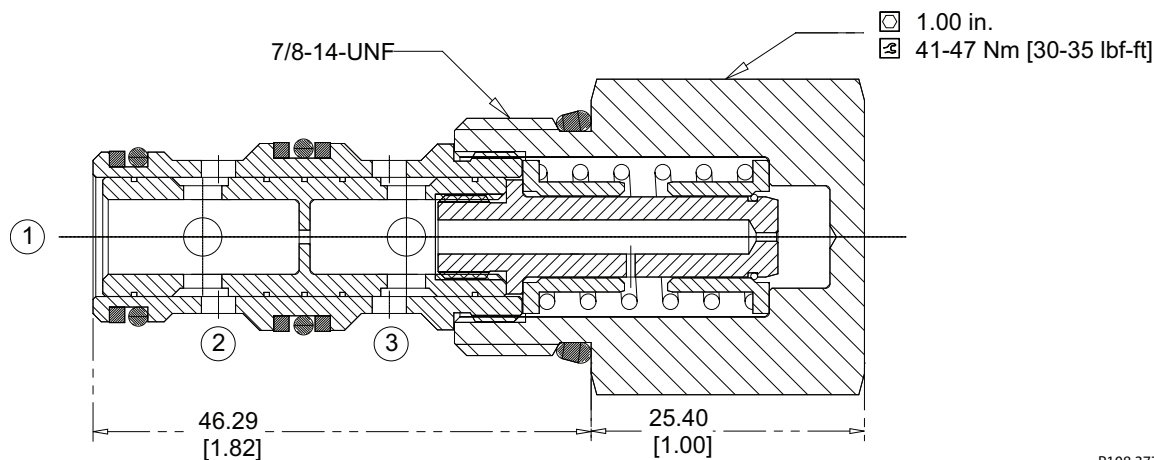
Specifications

Rated pressure	350 bar [5075 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.14 kg [0.34 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-22.7 l/min [0.6-6.0 US gal/min]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P108 377E

ORDERING INFORMATION

FCH10-BD-3.8-U-00

Regulated Flow
 0.4 = 0.4 lpm [0.1 gpm]
 to
 22.7 = 22.7 lpm [6.0 gpm]

Housing and ports
 00 = No Housing
 DG-3B = Al, 3/8 BSP
 DG-4B = Al, 1/2 BSP
 6S = Al, #6 SAE
 8S = Al, #8 SAE

Housing Part #
 No Housing
 SDC10-3-DG-3B
 SDC10-3-DG-4B
 CP10-3-6S
 CP10-3-8S

Seals
 U = Urethane

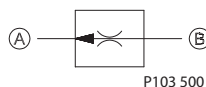
Seal Kit
 120726

P108 376E

OPERATION

This is an in-line restrictive type flow control valve.

Schematic



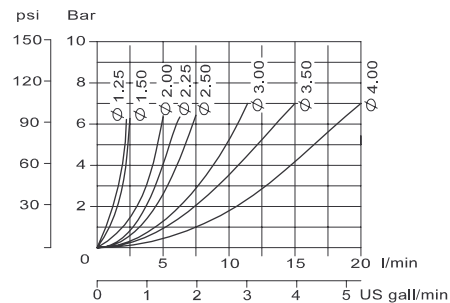
SPECIFICATIONS

Specifications

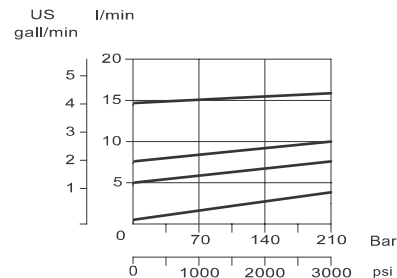
Pressure rating	210 bar [3000 psi]
Max regulated flow	16 l/min [4.2 US gal/min]
Cavity	Consult factory

Theoretical performance

Pressure drop from A⇒B according to orifice diameter
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]

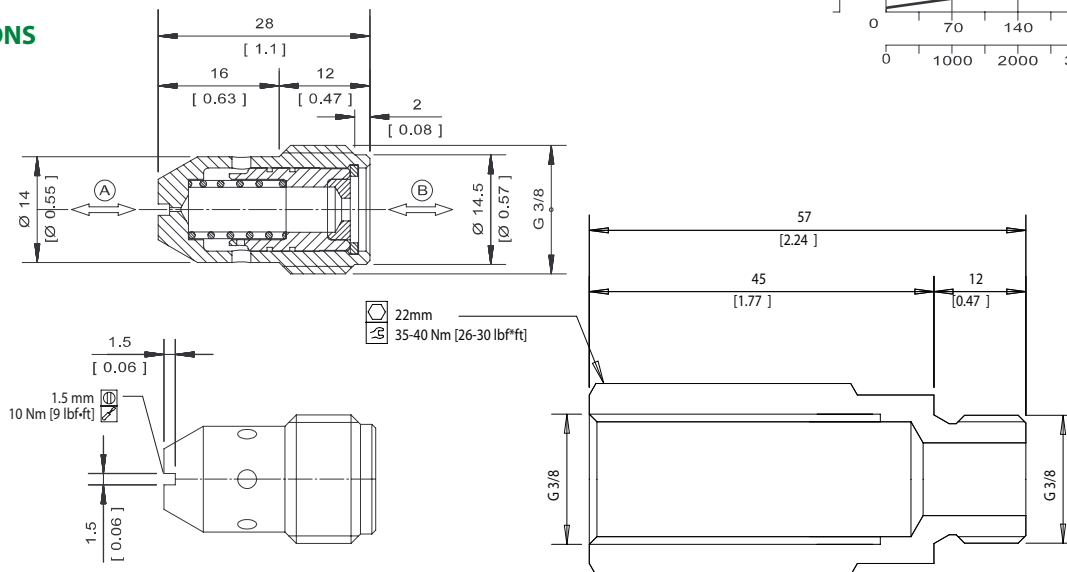


Variation in controlled flow from B⇒A according to pressure
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



P103 941E

DIMENSIONS



P103 926E

ORDERING INFORMATION

SC10 - 1.25 - G - 00

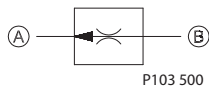
Orifice diameter mm	Flow at 100 bar [1450 psi] l/min [US gal/min]	00 = Cartridge only L = 3/8 BSP
1.25	2.0[0.53]	
1.50	3.0[0.79]	
2.00	4.0[1.06]	
2.25	5.0[1.32]	
2.50	6.0[1.59]	
3.00	9.0[2.38]	
3.50	11.0[2.91]	
4.00	16.0[4.23]	

P103 851E

OPERATION

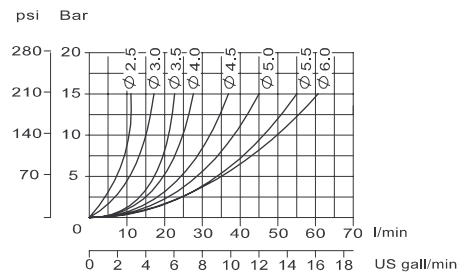
This is an in-line restrictive type flow control valve.

Schematic

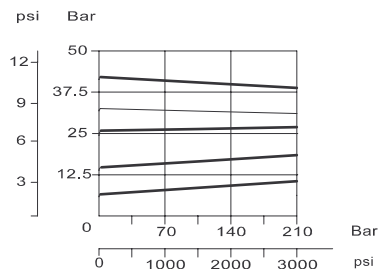


Theoretical performance

Pressure drop from A \Rightarrow B according to orifice diameter
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Variation in controlled flow from B \Rightarrow A according to pressure
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]

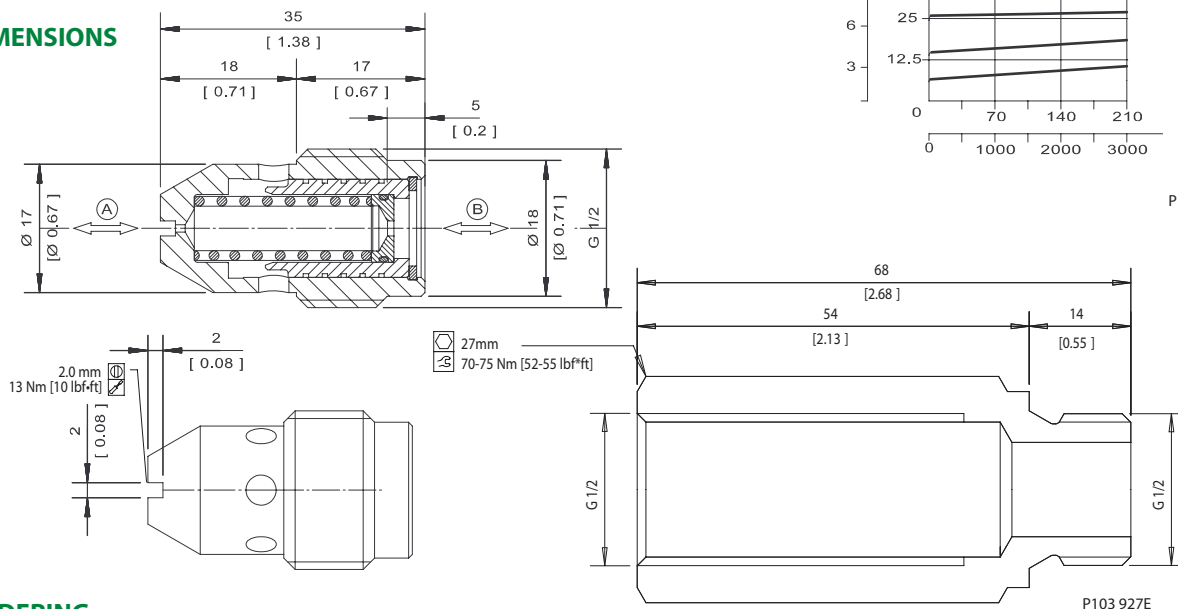


SPECIFICATIONS

Specifications

Pressure rating	207 bar [3000 psi]
Max regulated flow	47 l/min [12 US gal/min]
Cavity	Consult factory

DIMENSIONS



ORDERING INFORMATION

SC13/4.5 - G - 00

Orifice flow		00 = Cartridge only
Orifice diameter	Flow at 100 bar [1450 psi]	L = 1/2 BSP
mm	l/min [US gal/min]	
2.50	= 9 [2.38]	
3.00	= 12 [3.17]	
3.50	= 17 [4.49]	
4.00	= 21 [5.55]	
4.50	= 27 [7.13]	
5.00	= 32 [8.45]	
5.50	= 40 [10.57]	
6.00	= 47 [12.42]	

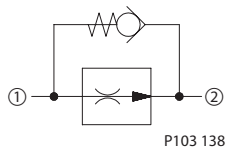
P103 852E

OPERATION

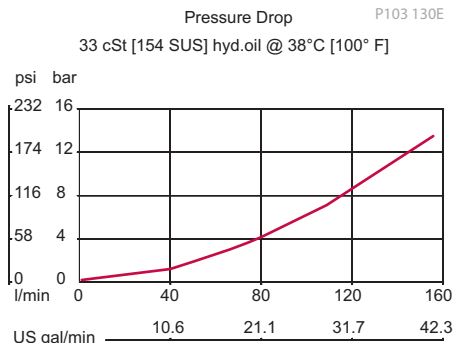
This is an in-line restrictive type flow control valve with free reverse flow.

SPECIFICATIONS

Schematic

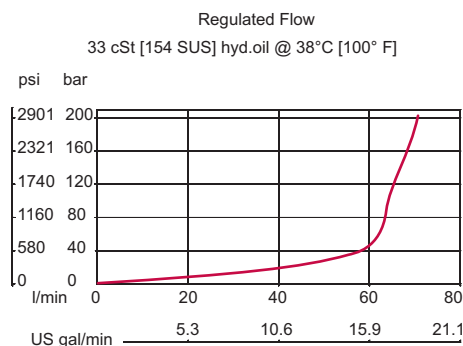


Specifications



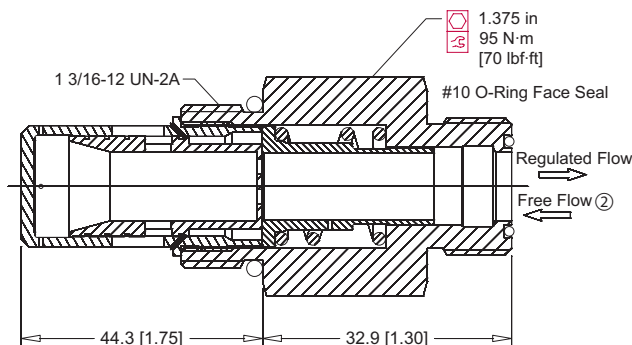
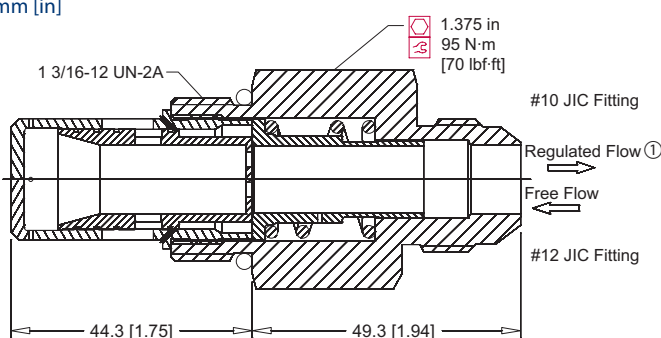
Specifications

Pressure rating	207 bar [3000 psi]
Rated Free Flow at 7 bar [100 psi]	113 l/min [30 US gal/min]
Max regulated flow	106 l/min [28 US gal/min]
Cavity	Modified SAE #14 port



DIMENSIONS

mm [in]



P103 126

ORDERING INFORMATION

CP9014-1-B-10-24

Seals	Seal kit	Flow Setting
B = Buna-N	720025	l/min USgal/min
V = Viton	720363	18 = 68.1 18
		24 = 90.8 24
		28 = 106.0 28
		Consult factory for complete list of flows.
		Connection (Port2)
		10 = #10SAE37° JIC Fitting 7/8-14UNC-2A
		12 = #12SAE37° JIC Fitting 11/16-12UN-2A
		FS10 = #10SAEO-Ring Face Seal 17/16-12UN-2A

P103 134E

Cartridge Valves Technical Information

Flow Control Valves

In-line

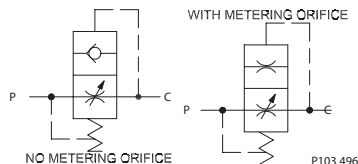
BC 06 Velocity Fuse

OPERATION

This is an in-line flow limiter that closes and then provides non-compensated restricted flow when the specified flow setting is exceeded. The valve provides free reverse flow when operated in the opposite direction.

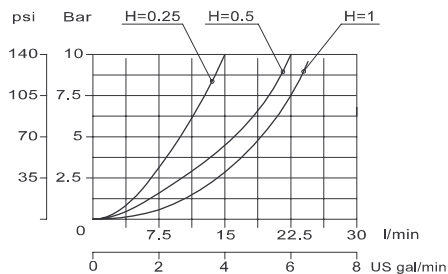
SPECIFICATIONS

Schematic

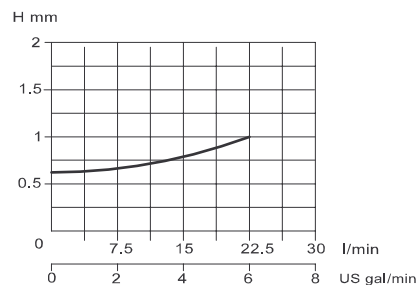


Theoretical performance

Pressure drop from P⇒C according to Adjustment H
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Values for adjustment H are guideline only, being conditioned by a variety of factors (oil temperature and viscosity, volume and flexibility of circuits).



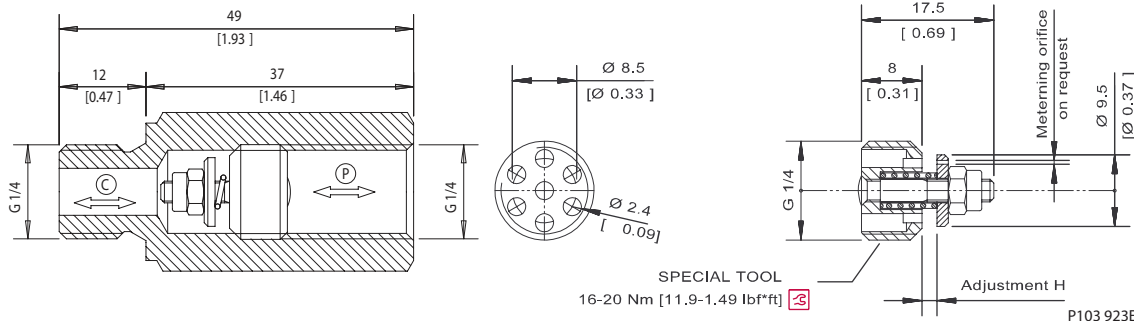
P104 568E

Specifications

Pressure rating	210 bar [3000 psi]
Rated Free Flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Cavity	Consult factory

DIMENSIONS

mm [in]



ORDERING INFORMATION

BC 06 - 1.0 - G - 00 - S1.5

Adjustment H	1.0	G	00	S1.5	Metering orifice	
00 = No factory adjustment	0.25 = 0.25 mm [in]	0.5 = 0.5 mm [in]	1.0 = 1.0 mm [in]	1.5 = 1.5mm [in]	2.0 = 2.0mm [in]	Omit = No orifice
00 = Cartridge only	L = 1/4 BSP					S0.5 = 0.5 mm [in]
						S0.7 = 0.7 mm [in]
						S1.0 = 1.0 mm [in]
						S1.5 = 1.5 mm [in]
						S2.0 = 2.0 mm [in]

P103 853E

Cartridge Valves Technical Information

Flow Control Valves

In-line

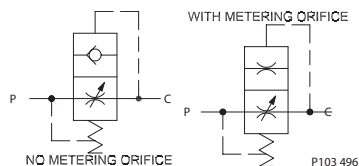
BC 10 Velocity Fuse

OPERATION

This is an in-line flow limiter that closes and then provides non-compensated restricted flow when the specified flow setting is exceeded. The valve provides free reverse flow when operated in the opposite direction.

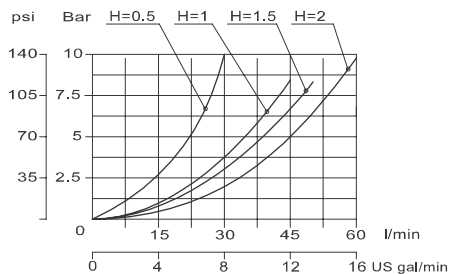
SPECIFICATIONS

Schematic

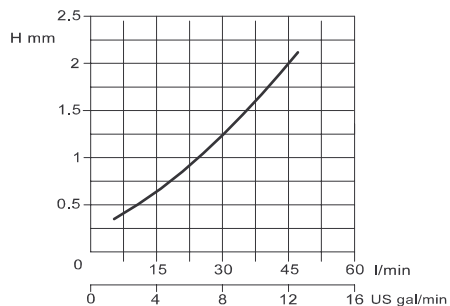


Theoretical performance

Pressure drop from P → C according to Adjustment H
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Values for adjustment H are guideline only, being conditioned by a variety of factors (oil temperature and viscosity, volume and flexibility of circuits).



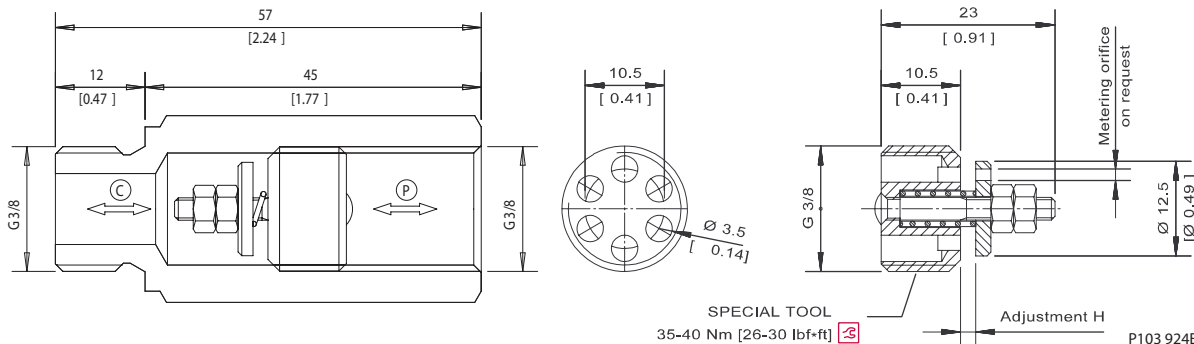
P103 939E

Specifications

Pressure rating	210 bar [3000 psi]
Rated Free Flow at 7 bar [100 psi]	60 l/min [16 US gal/min]
Cavity	Consult factory

DIMENSIONS

mm [in]



P103 924E

ORDERING INFORMATION

BC 10 - 1.0 - G - 00 - S1.5

Adjustment H

- 00 = No factory adjustment
- 0.25 = 0.25 mm [in]
- 0.5 = 0.5 mm [in]
- 1.0 = 1.0 mm [in]
- 1.5 = 1.5 mm [in]
- 2.0 = 2.0 mm [in]

Metering orifice

- Omit = No orifice
- S0.5 = 0.5 mm [in]
- S0.7 = 0.7 mm [in]
- S1.0 = 1.0 mm [in]
- S1.5 = 1.5 mm [in]
- S2.0 = 2.0 mm [in]

Coupling

- 00 = Cartridge only
- L = 3/8 BSP

P103 847E

Cartridge Valves Technical Information

Flow Control Valves

In-line

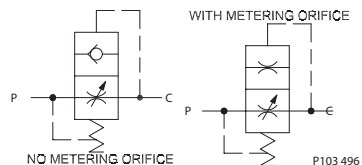
BC 13 Velocity Fuse

OPERATION

This is an in-line flow limiter that closes and then provides non-compensated restricted flow when the specified flow setting is exceeded. The valve provides free reverse flow when operated in the opposite direction.

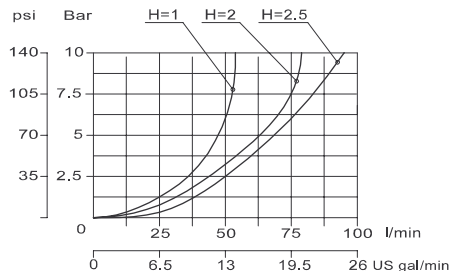
SPECIFICATIONS

Schematic

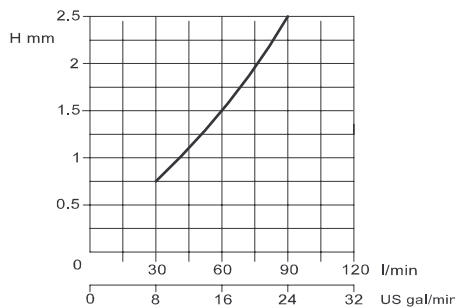


Theoretical performance

Pressure drop from P⇒C according to Adjustment H
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Values for adjustment H are guideline only, being conditioned by a variety of factors (oil temperature and viscosity, volume and flexibility of circuits).



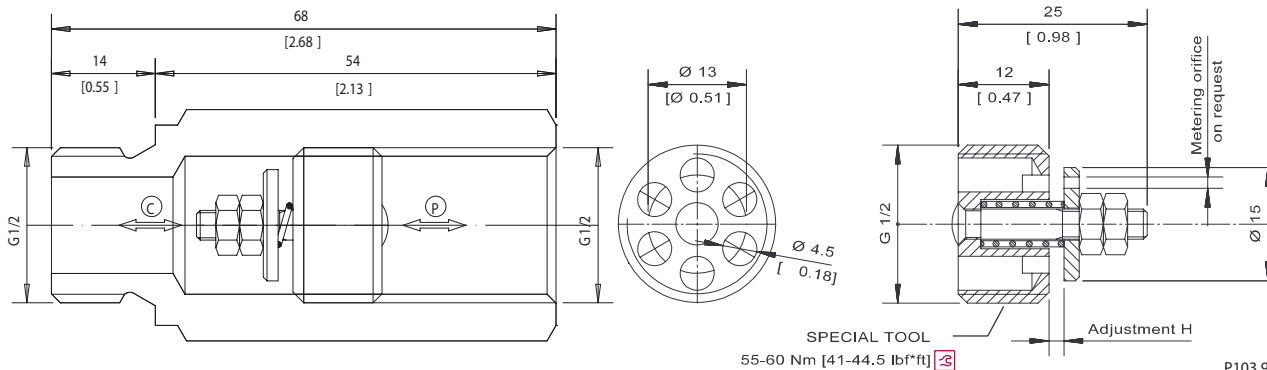
P103 940E

Specifications

Pressure rating	210 bar [3000 psi]
Rated Free Flow at 7 bar [100 psi]	85 l/min [30 US gal/min]
Cavity	Consult factory

DIMENSIONS

mm [in]



SPECIAL TOOL
55-60 Nm [41-44.5 lbf*ft]

P103 92

ORDERING INFORMATION

BC 13 - 1.0 - G - 00 - S1.5

Adjustment H
00 = No factory adjustment
0.25 = 0.25 mm [in]
0.5 = 0.5 mm [in]
1.0 = 1.0 mm [in]
1.5 = 1.5 mm
2.0 = 2.0 mm

Metering orifice
Omit = No orifice
S0.5 = 0.5 mm [in]
S0.7 = 0.7 mm [in]
S1.0 = 1.0 mm [in]
S1.5 = 1.5 mm [in]
S2.0 = 2.0 mm [in]

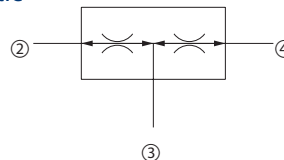
Coupling
00 = Cartridge only
L = 3/8 BSP

P103 848E

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

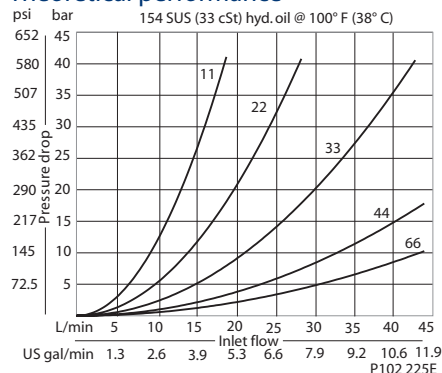
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



Specifications

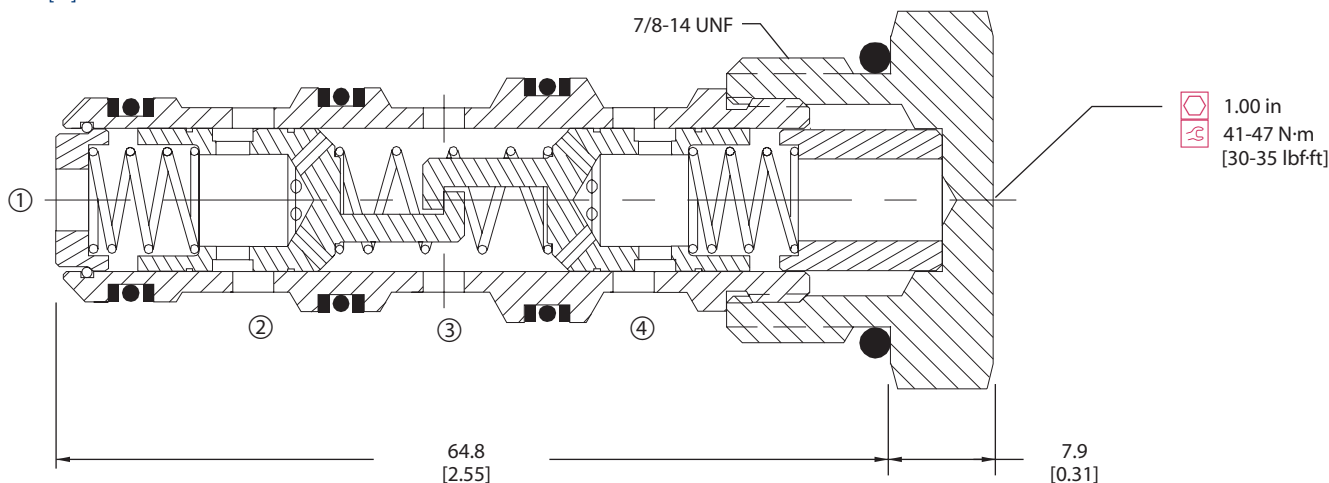
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.11 kg [0.24 lb]
Cavity	SDC10-4

Flow control valves
CP340-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 224E

ORDERING INFORMATION

CP340 - 1 - B - 6S - 44

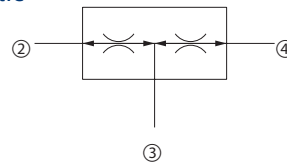
Seals	Seal kit	Flow settings	
B = Buna-N	120023	Code	Flow ratio
V = Viton	120024		Port 2:Port 4
Housing and ports	Housing P/N		Total flow
0 = No Housing	No Housing	11	1:1
3B = Al, 3/8 BSP	CP10-4-2B-X1	22	1:1
4B = Al, 1/2 BSP	CP10-4-3B-X1	33	1:1
4S = Al, #4 SAE	CP10-4-4S-X1	36	1:2
6S = Al, #6 SAE	CP10-4-6S-X1	44	1:1
Other housings available		46	2:3
		63	2:1
		64	3:2
		66	1:1

P102 227E

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

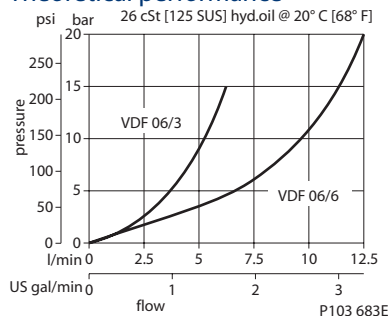
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



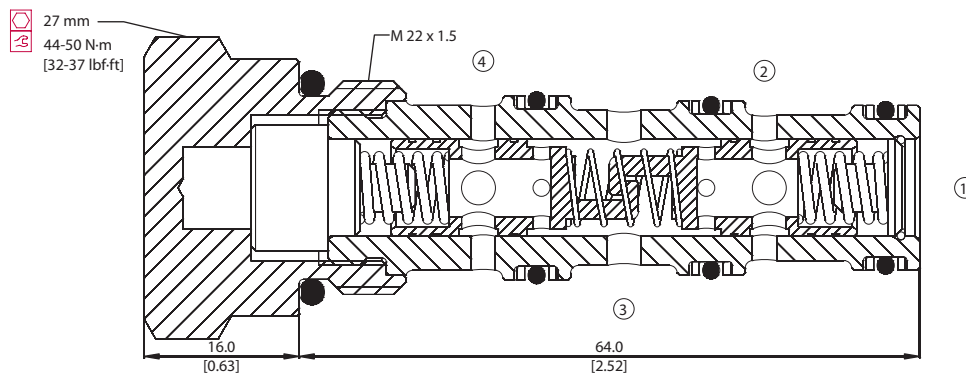
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	NCS06/4

Flow control valves
VDF 06

DIMENSIONS

Cross-sectional view



P103 656

ORDERING INFORMATION

VDF 06 - 10 - 00 - V

Flow rate
 l/min [US gal/min]
 3 = Min 3 [0.8] Max 6.5 [1.7]
 6 = Min 6 [1.6] Max 12.5 [3.3]
 10 = Min 10 [2.6] Max 25 [6.6]
 25 = Min 22 [5.8] Max 45 [11.9]

Seals
 V = Viton
 Omit = Buna-N

Seal kit
 230000350
 230000610

Housing and ports
 00 = No Housing
 L3/8 = AL, 3/8 BSP
 L3/4 = AL, 3/4 BSP
 L6S = AL, #6 SAE
 L8S = AL, #8 SAE
 Other housings available

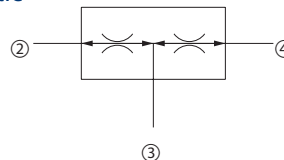
Housing P/N
 No Housing
 NCS06/4-L-3/8
 NCS06/4-L-1/2
 NCS06/4-L-6S
 NCS06/4-L-8S

P103 710E

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

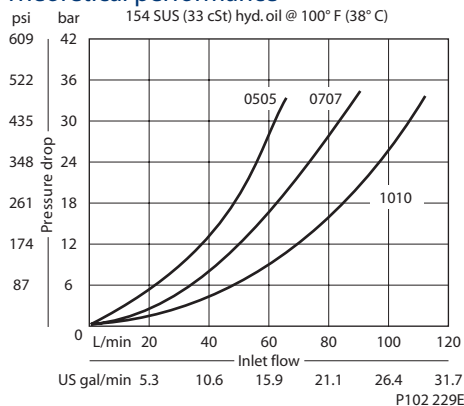
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



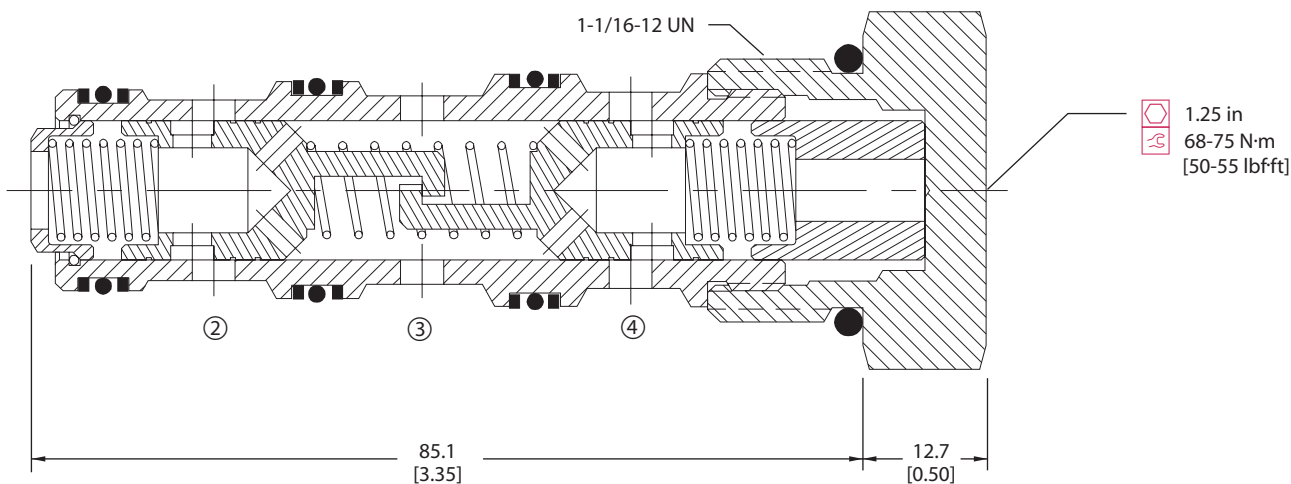
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow	75 l/min [20 US gal/min]
[100 psi]	
Weight	0.23 kg [0.50 lb]
Cavity	CP12-4

Flow control valves
CP341-1

DIMENSIONS

Cross-sectional view



P102 228E

ORDERING INFORMATION

CP341 - 1 - B - 10S - 0707

Seals

B = Buna-N
V = Viton

Housing and ports

0 = No Housing
4B = Al, 1/2 BSP
6B = Al, 3/4 BSP
10S = Al, #10 SAE
12S = Al, #12 SAE
Other housings available

Seal kit

120262
120263

Housing P/N

No Housing
CP12-4-4B-X1
CP12-4-6B-X1
CP12-4-10S-X1
CP12-4-12S-X1

Flow settings

Code	Flow ratio Port 2:Port 4	Total flow
0505	1:1	38 L/min [10 gpm]
0507	5:7	45 L/min [12 gpm]
0510	1:2	57 L/min [15 gpm]
0707	1:1	53 L/min [14 gpm]
0710	7:10	64 L/min [17 gpm]
1010	1:1	76 L/min [20 gpm]

P102 231E

Cartridge Valves Technical Information

Flow Control Valves

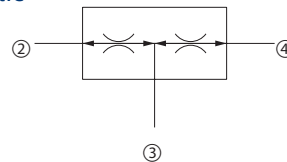
Flow Divider/Combiner

CP342-1

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

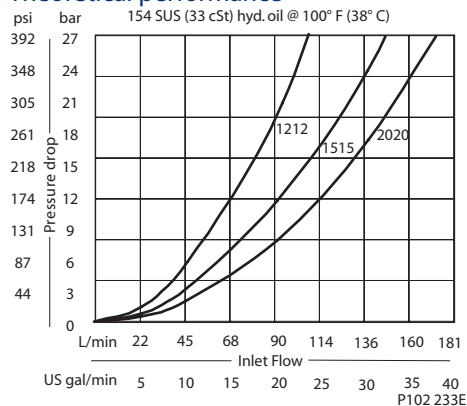
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



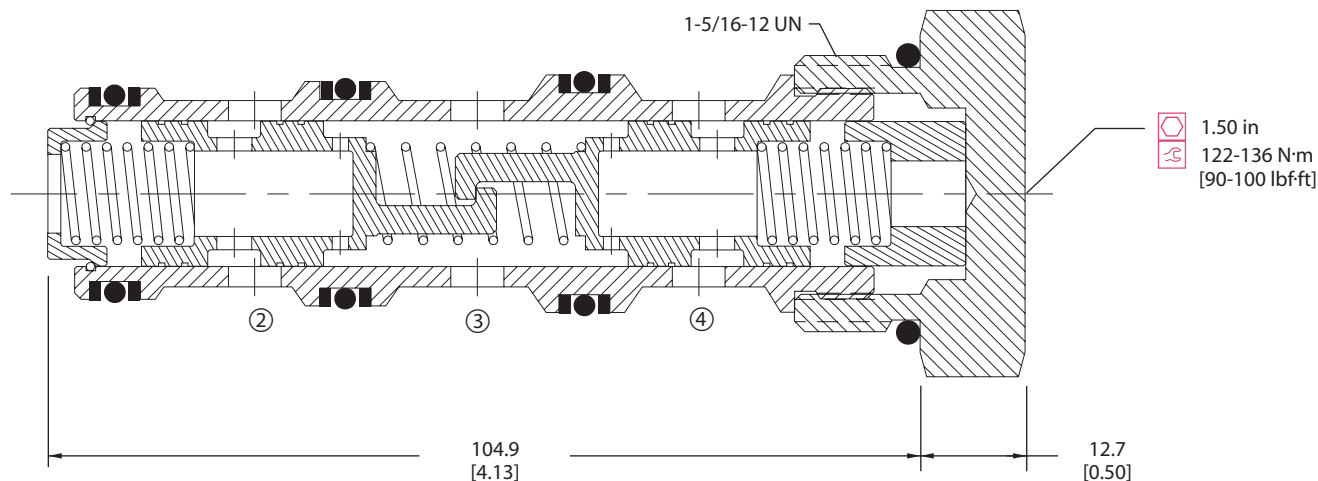
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow [100 psi]	150 l/min [40 US gal/min]
Weight	0.37 kg [0.81 lb]
Cavity	CP16-4

Flow control valves
CP342-1

DIMENSIONS

Cross-sectional view



ORDERING INFORMATION

CP342 - 1 - B - 16S - 1515

Seals B = Buna-N V = Viton	Seal kit 120025 120026	Flow settings	
Housing and ports 0 = No Housing 6B = Al, 3/4 BSP 8B = Al, 1 BSP 12S = Al, #12 SAE 16S = Al, #16 SAE Other housings available	Housing P/N No Housing CP16-4-6B-X1 CP16-4-8B-X1 CP16-4-12S-X1 CP16-4-16S-X1	Code	Flow ratio Port 2:Port 4
		1020	1:2
		1212	1:1
		1215	4:5
		1220	3:5
		1512	5:4
		1515	1:1
		1520	3:4
		2012	5:3
		2015	4:3
		2020	1:1
			Total flow
			30 gpm [114 L/min]
			24 gpm [91 L/min]
			27 gpm [102 L/min]
			32 gpm [121 L/min]
			27 gpm [102 L/min]
			30 gpm [114 L/min]
			35 gpm [132 L/min]
			32 gpm [121 L/min]
			35 gpm [132 L/min]
			40 gpm [151 L/min]

P102 235E

Cartridge Valves Technical Information

Flow Control Valves

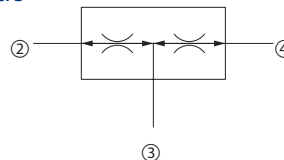
Flow Divider/Combiner

CP342-3

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

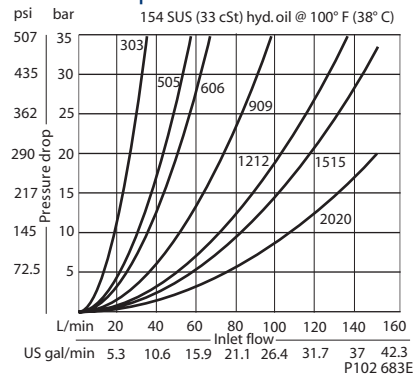
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



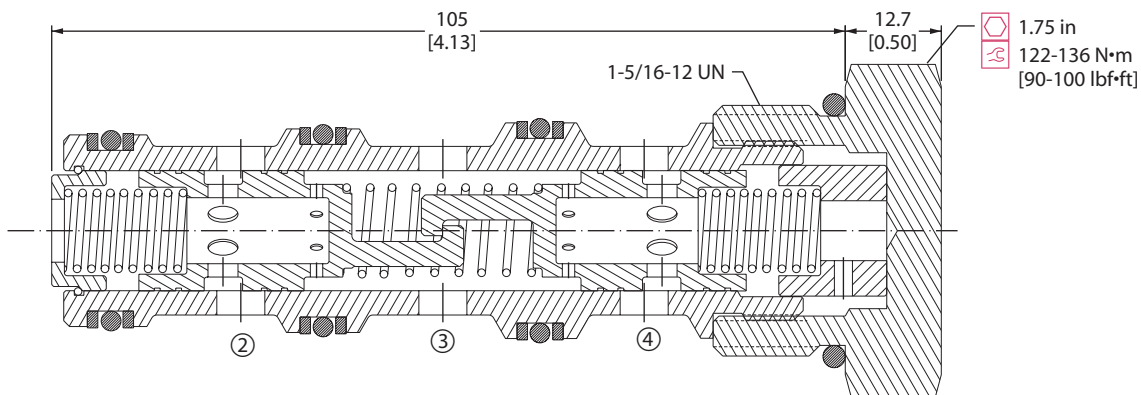
Specifications

Rated pressure	450 bar [6500 psi]
Rated flow [100 psi]	150 l/min [40 US gal/min]
Weight	0.37 kg [0.81 lb]
Cavity	CP16-4

Flow control valves
CP342-3

DIMENSIONS

Cross-sectional view



P102 652

ORDERING INFORMATION

		CP342-3-U-16S-0505		Flow settings				
				Code	Flow ratio	Total flow		
				0303	1:1	23 L/min [6 gpm]		
				0505	1:1	38 L/min [10 gpm]		
				0606	1:1	45 L/min [12 gpm]		
				0909	1:1	68 L/min [18 gpm]		
				1212	1:1	91 L/min [24 gpm]		
				1515	1:1	114 L/min [30 gpm]		
				2020	1:1	151 L/min [40 gpm]		
				1220	3:5	121 L/min [32 gpm]		
				1215	4:5	102 L/min [27 gpm]		
				1520	3:4	132 L/min [35 gpm]		
				2012	5:3	121 L/min [32 gpm]		
				1512	5:4	102 L/min [27 gpm]		
				2015	4:3	132 L/min [35 gpm]		
				1020	1:2	114 L/min [30 gpm]		
								P102 899E

Seals	Seal kit	Housing P/N
U = Urethane	120677	No Housing
		CP16-4-S6B-X1
		CP16-4-S8B-X1
		CP16-4-S12S-X1
		CP16-4-S16S-X1
		Other housings available

Cartridge Valves Technical Information

Flow Control Valves

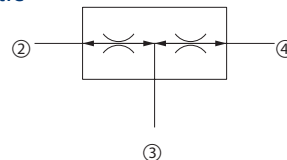
Flow Divider/Combiner

CP343-1

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

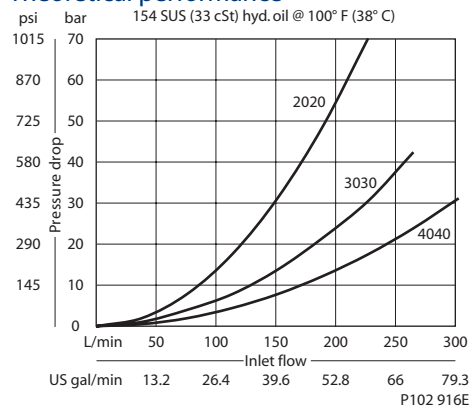
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



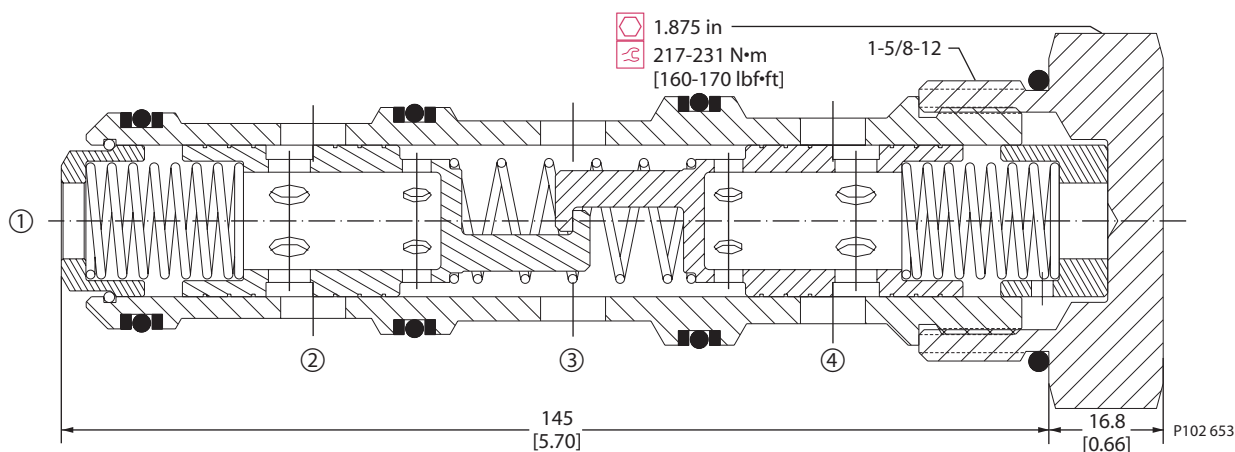
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	340 l/min [90 US gal/min]
Weight	1.13 kg [2.50 lb]
Cavity	SDC20-4

Flow control valves
CP343-1

DIMENSIONS

Cross-sectional view



ORDERING INFORMATION

CP343-1-B-16S-4545

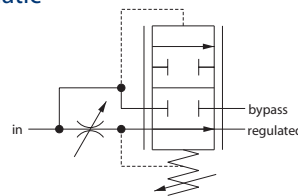
Housing and ports		Housing P/N	Flow settings		
			Code	Flow ratio Port 2:Port 4	Total flow
0	= No Housing	No Housing	2020	1:1	151 L/min [40 gpm]
8B	= Al, 1 BSP	SDC20-4-8B-X1	2525	1:1	189 L/min [50 gpm]
10B	= Al, 1-1/4 BSP	SDC20-4-10B-X1	3030	1:1	227 L/min [60 gpm]
16S	= Al, #16 SAE	SDC20-4-16S-X1	3535	1:1	265 L/min [70 gpm]
20S	= Al, #20 SAE	SDC20-4-20S-X1	4020	2:1	227 L/min [60 gpm]
Other housings available			4040	1:1	303 L/min [80 gpm]
			4530	3:2	284 L/min [75 gpm]
			4545	1:1	341 L/min [90 gpm]
Seals		Seal kit			
B	= Buna-N	120181			
V	= Viton	120182			

P102 898E

OPERATION

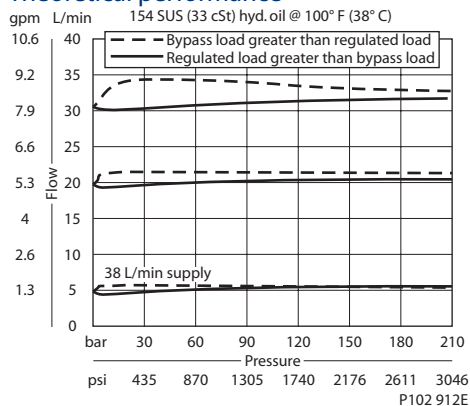
This valve is an adjustable, priority-type, pressure compensated flow control valve.

Schematic



SPECIFICATIONS

Theoretical performance



P102 682

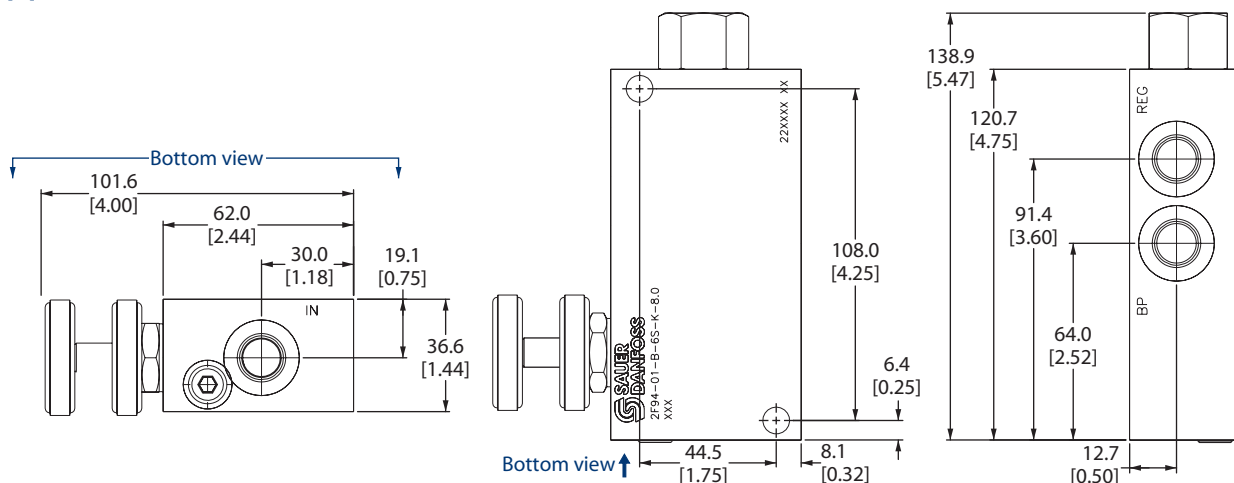
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	30 l/min [8 US gal/min]
Max inlet flow	60 l/min [16 US gal/min]
Weight	1.00 kg [2.20 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

2F94-01-B-6S-E-8.0

Adjustment options
E = External adjustment
K = Knob adjustment

Adjustment range
Code = 0-8 gpm

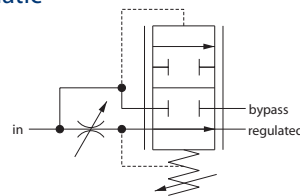
Body and ports
6S = Aluminum, #6 SAE

Seals
B = Buna-N Consult Factory
V = Viton Consult Factory

OPERATION

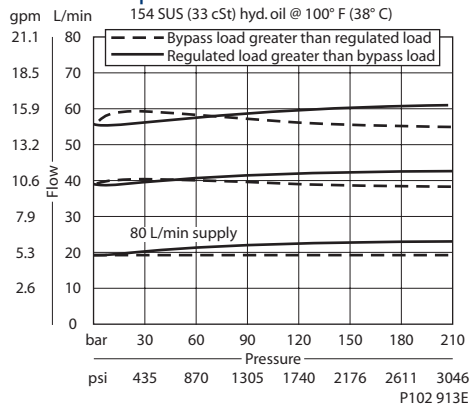
This valve is an adjustable, priority-type, pressure compensated flow control valve.

Schematic



SPECIFICATIONS

Theoretical performance



Specifications

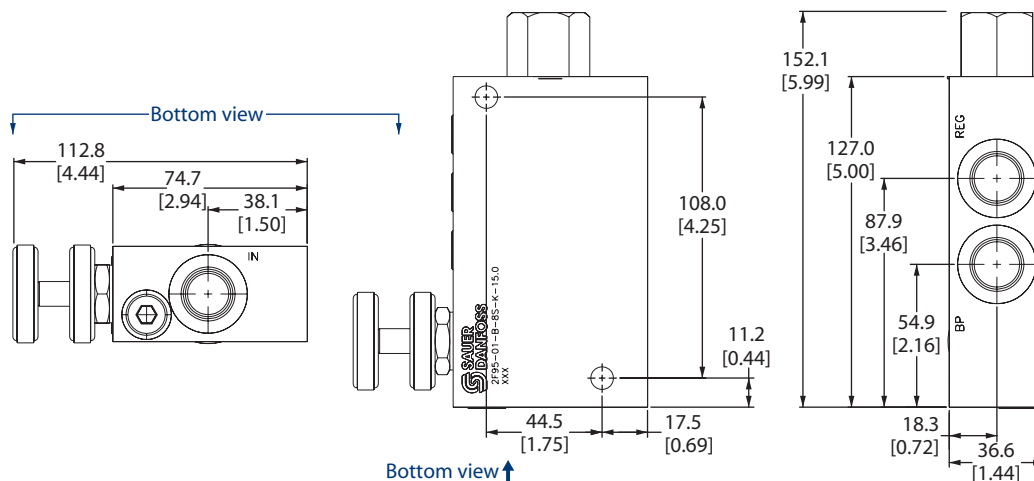
Rated pressure	210 bar [3000 psi]
Max regulated flow	60 l/min [16 US gal/min]
Max inlet flow	95 l/min [25 US gal/min]
Weight	1.00 kg [2.20 lb]
Cavity	none

P102 682

DIMENSIONS

mm [in]

Cross-sectional view



P102 679

ORDERING INFORMATION

2F95-01-B-8S-E-15

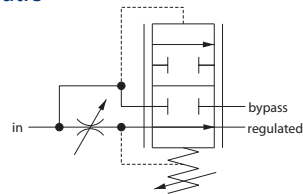
- Adjustment options**
E = External adjustment
K = Knob adjustment
- Body and ports**
8S = Aluminum, #8 SAE
- Seals**
B = Buna-N
V = Viton
- Adjustment range**
Code = 0-15 gpm
- Seal kits**
Consult Factory

P102 649E

OPERATION

This valve is an adjustable, priority-type, pressure compensated flow control valve.

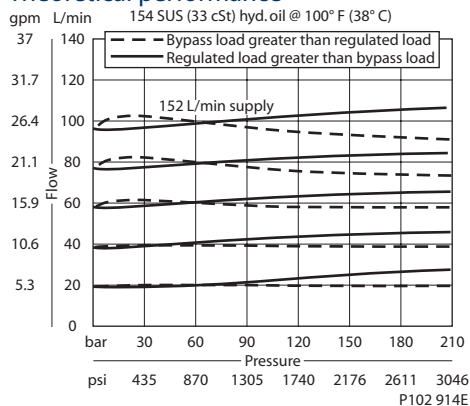
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



Specifications

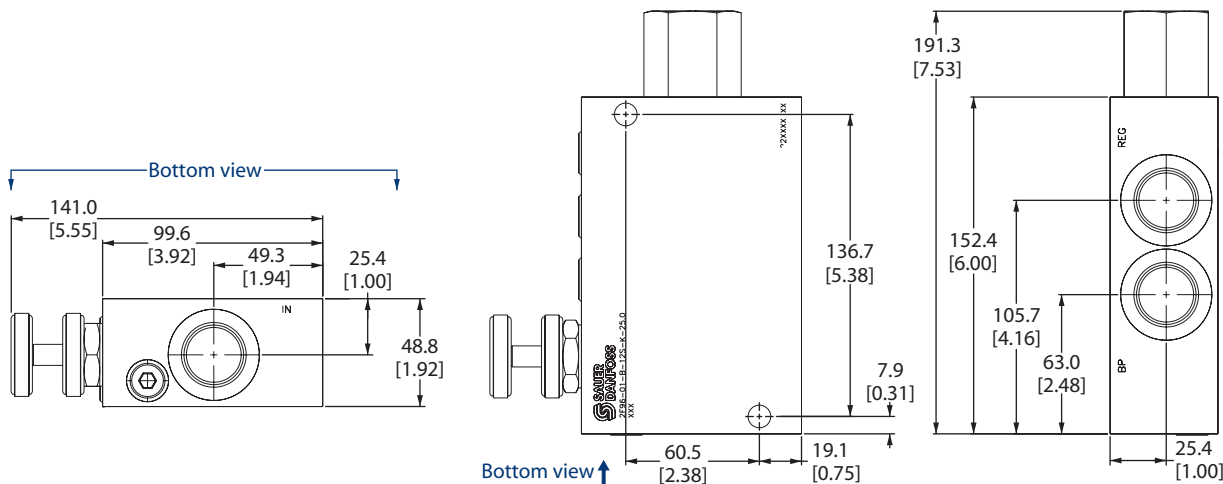
Rated pressure	210 bar [3000 psi]
Max regulated flow	95 l/min [25 US gal/min]
Max inlet flow	150 l/min [40 US gal/min]
Weight	1.77 kg [3.90 lb]
Cavity	none

Flow control valves
2F96

DIMENSIONS

mm [in]

Cross-sectional view



P102 680

ORDERING INFORMATION

2F96-01-B-12S-E-25

Adjustment options
E = External adjustment
K = Knob adjustment

Body and ports
12S = Aluminum, #12 SAE

Seals
B = Buna-N
V = Viton

Adjustment range
Code = 0-25 gpm

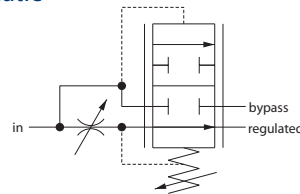
Seal kits
Consult Factory
Consult Factory

P102 650E

OPERATION

This valve is an adjustable, priority-type, pressure compensated flow control valve.

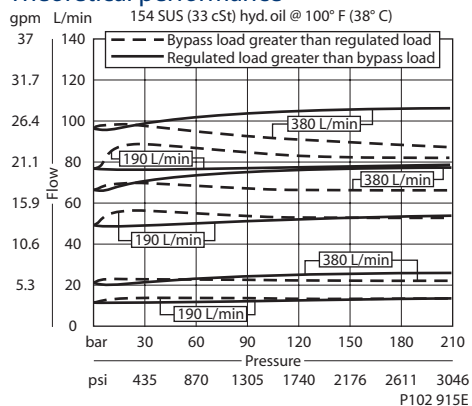
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



Specifications

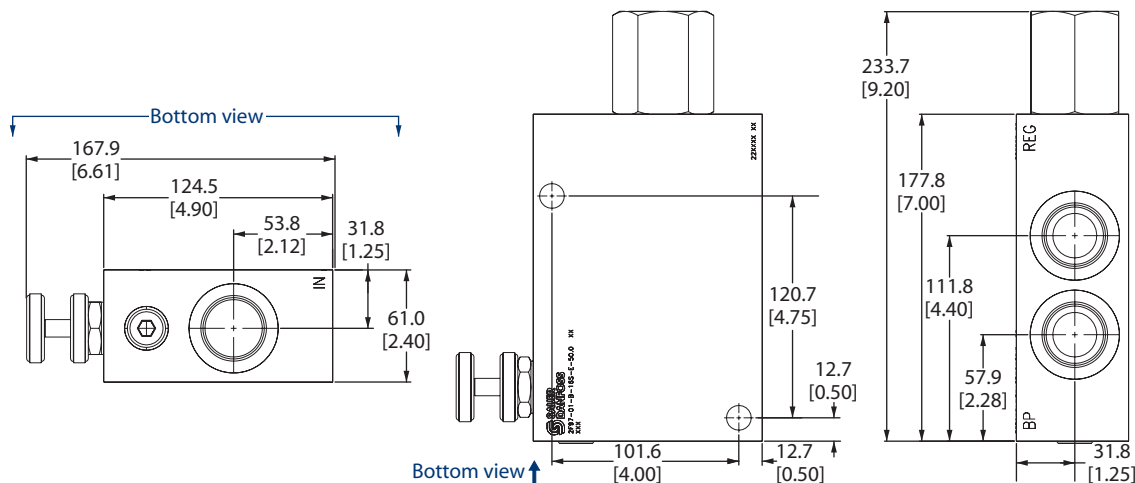
Rated pressure	210 bar [3000 psi]
Max regulated flow	190 l/min [50 US gal/min]
Max inlet flow	380 l/min [100 US gal/min]
Weight	3.81 kg [8.40 lb]
Cavity	none

Flow control valves
2F97

DIMENSIONS

mm [in]

Cross-sectional view



P102 681

ORDERING INFORMATION

2F97-01-B-16S-E-50

- Adjustment options**
E = External adjustment
K = Knob adjustment
- Body and ports**
16S = Aluminum, #16 SAE
- Seals**
B = Buna-N
V = Viton
- Adjustment range**
Code = 0-50 gpm
- Seal kits**
Consult Factory

P102 651E

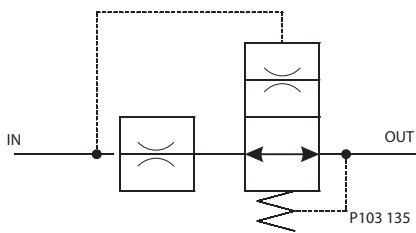
Velocity Fuse CP330-3

OPERATION

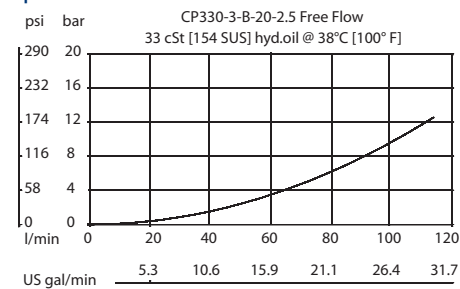
This is an in-line flow limiter that closes and then provides non-compensated restricted flow when the specified flow setting is exceeded. The valve provides free reverse flow when operated in the opposite direction.

SPECIFICATIONS

Schematic



Specifications



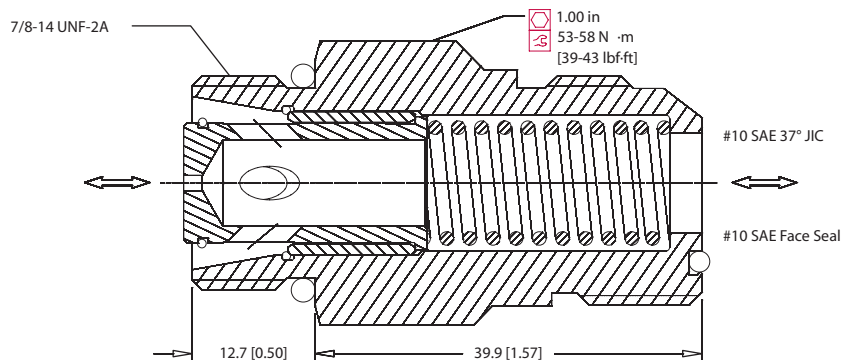
Specifications

Pressure rating	207 bar [3000 psi]
Max Trip Flow	110 l/min [29 US gal/min]
Bypass Flow	9.5 lpm [2.5 gal/min]
Weight	0.12 kg [0.26 lbs]
Cavity	#10 SAE Port

P103 127E

DIMENSIONS

mm [in]



P103 123

ORDERING INFORMATION

CP330-3-B-FS10-17-2.5

Seals B = BUNA-N V = VITON	Bypass Flow @ 48 bar [700 psi]
	l/min USgal/min
	2.5 = 9.5 2.5
Fitting Type Omit = #10SAE37° JIC FS10 = #10SAE face seal	Flow Setting
	l/min USgal/min
	17 = 64.4 17
	20 = 75.7 20
	23 = 87.1 23
	26 = 98.4 26
	29 = 109.8 29

P103 131E

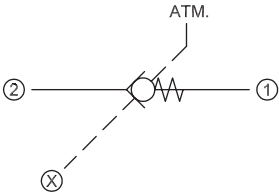
Pilot to Open	Model No.	Cavity	Description	Flow*	Pressure	Page
	RPC 04	NCS04/3	Pilot Operated Check Valve, Pilot to Open	12 l/min [3 US gal/min]	210 bar [3000 psi]	08.6
	RPC 06	NCS06/3		25 l/min [7 US gal/min]	315 bar [4500 psi]	08.7
	CP450-1	SDC10-3		30 l/min [8 US gal/min]	240 bar [3480 psi]	08.8
	RPC 12	NCS12/3		70 l/min [18 US gal/min]	315 bar [4500 psi]	08.9

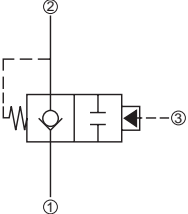
Pilot to Open	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP458-2	SDC08-3	Pilot Operated Check Valve, Reverse Pilot to Open	20 l/min [5 US gal/min]	210 bar [3000 psi]	08.10
	MC10-RO	SDC10-3S		45 l/min [12 US gal/min]	250 bar [3600 psi]	08.11
	CP451-2	CP12-3S		95 l/min [25 US gal/min]	210 bar [3000 psi]	08.12
	CP452-2	SDC16-3S		130 l/min [34 US gal/min]	210 bar [3000 psi]	08.13
	CP453-2	CP20-3S		230 l/min [61 US gal/min]	210 bar [3000 psi]	08.14

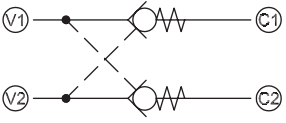
Pilot to Open	Model No.	Cavity	Description	Flow*	Pressure	Page
	RPV 06	NCS06/4	Pilot Operated Check Valve, Pilot-to-open with drain	30 l/min [8 US gal/min]	315 bar [4500 psi]	08.15

Pilot operated check valves
 Quick reference

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP453-5	SDC20-2	Pilot Operated Check Valve, Reverse Pilot-to-open with vent	250 l/min [66 US gal/min]	350 bar [5000 psi]	08.16

Pilot to Close	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP460-1	SDC10-3	Pilot Operated Check Valve, Pilot to Close	45 l/min [12 US gal/min]	210 bar [3000 psi]	08.17
	CP461-1	CP12-3S		115 l/min [30 US gal/min]	210 bar [3000 psi]	08.18
	CP462-1	SDC16-3S		190 l/min [50 US gal/min]	210 bar [3000 psi]	08.19

Dual Pilot-Operated Checks	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP410-1	none	Pilot Operated Check Valve, Catalog HIC	85 l/min [22 US gal/min]	210 bar [3000 psi]	08.20

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

MOTION CONTROL VALVES

Motion control valves, also referred to as load holding valves, are used to control the motion of a load in the following ways:

- Prevent a load from dropping in case of hose or tube failure.
- Prevent a load from drifting caused by directional control valve spool leakage.
- Provide smooth, modulated motion when the load is in a lowering or run-away mode.
- Provide smooth, modulated motion when the directional control valve is suddenly closed.

There are two basic types of motion control valves:

- Pilot-operated, or pilot-to-open check valves will satisfy the first two of the above requirements.
- Counterbalance valves will satisfy all four of the above requirements.

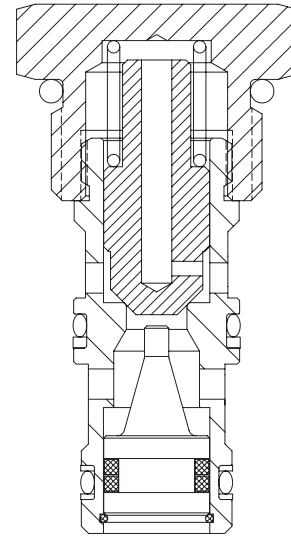
Pilot operated check valves



PILOT-OPERATED CHECK VALVES

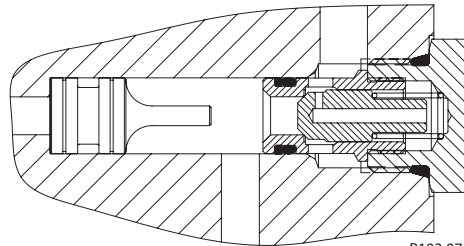
Pilot-operated, or pilot-to-open check valves will positively hold a pressurized load and will release the load upon application of a pressure signal to the pilot port. Pilot-operated check valves are available as individual cartridges, standard **Cartridge-In-Body (CIB)** packages, or can be created in custom manifolds by using a standard check valve such as CV10-NP with a guided pilot piston. For more information on pilot pistons, see Accessories.

Individual cartridges



P103 070

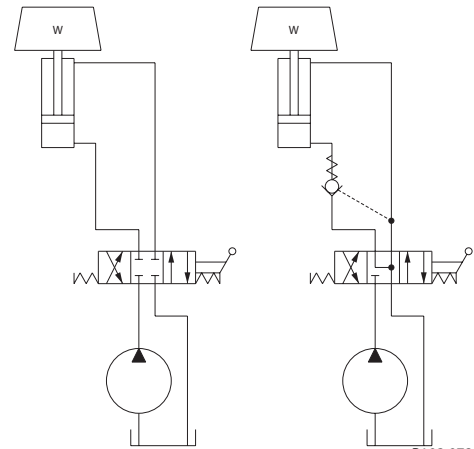
Cartridge in body



P103 071

A typical circuit application for pilot-operated check valves contains a pump, directional control valve, and an actuator. Without a pilot-operated check valve the load will drift down due to spool leakage if the directional control valve is centered with the load raised. Additionally there is no protection against the load dropping in the event of hydraulic line failure. Adding a pilot-operated check valve helps prevent cylinder drift and provides protection against hose or tube failure. In this circuit, moving the directional control valve to the right causes the cylinder to extend. When the directional control valve is centered, the pilot-operated check valve will prevent leakage and lock the cylinder in position. Moving the directional control valve to the left sends pressure/flow to the rod end of the cylinder. This pressure also acts on the pilot piston to open the check valve and allow the load to be lowered.

Typical circuit application



P103 072

PILOT-OPERATED CHECK VALVES (continued)

The pressure required to pilot open the check valve can be calculated by:

$$P = \frac{W + (P_c \cdot A_b)}{(A_b \cdot R) - A_r} \quad \text{cylinder retracts}$$

$$P = \frac{W + (P_c \cdot A_r)}{(A_r \cdot R) - A_b} \quad \text{cylinder extends}$$

W = Load

P_c = Check valve crack pressure (typically 0.34-4.5 bar [5-65 psi]; consult catalog sheets for details)

A_b = Cylinder bore area

A_r = Cylinder rod area

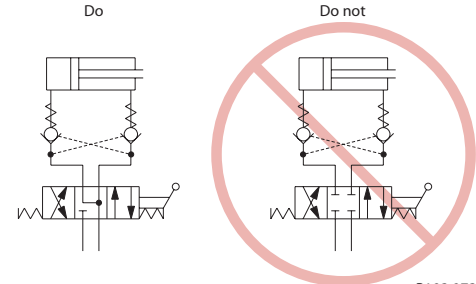
R = Check valve pilot ratio (typically 3:1 or 4:1; consult catalog sheets for details)

Note that these equations are idealized and do not consider any backpressure in the circuit, which is additive to the pressure required to pilot open the check valve.

Some additional guidelines for pilot-operated check valve applications:

- Use pilot-operated check valves for load holding, not for motion (speed) control. Pilot-operated check valves are on-off, non-modulating devices. Trying to use a pilot-operated check valve to control an overrunning load can result in severely unstable motion. For motion (speed) control of overrunning loads, use a counterbalance valve.
- Use caution when applying pilot-operated check valves to the rod end of a cylinder. Cylinders with large rod:bore diameter ratios may intensify rod pressure to a point where the required pilot pressure may be dangerously high— refer to the above equations. If intensification creates application concerns, consider using a counterbalance valve.
- Do not use pilot-operated check valves with closed-center, directional control valves. Pressure trapped between the directional control valve and the pilot-operated check valve can pilot the check valve open and result in undesired load motion.
- Locate pilot-operated check valves at or near the actuator to provide maximum load holding protection in the event of hydraulic line failure.

Closed center, directional control valves



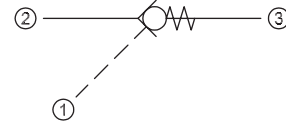
P103 073

Cartridge Valves Technical Information
Pilot operated check valves
Pilot to Open
RPC 04

OPERATION

This is a pilot-to-open check valve.

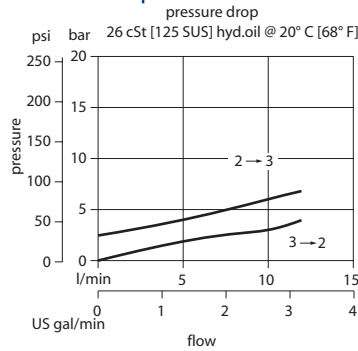
Schematic



P102 381E

SPECIFICATIONS

Theoretical performance



P103 679E

Specifications

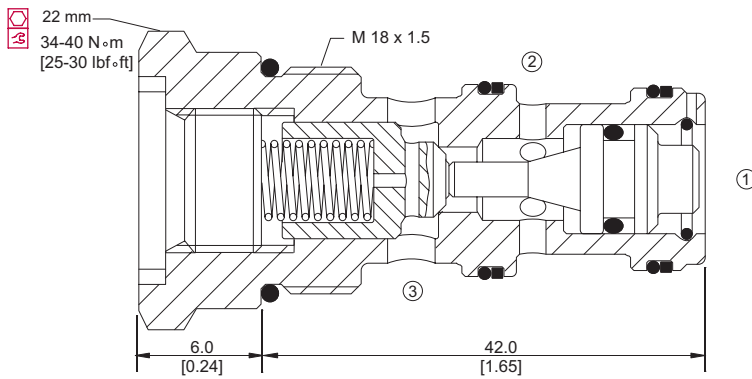
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	12 l/min [3 US gal/min]
Weight	0.06 kg [0.13 lb]
Pilot ratio	3.2:1
Cavity	NCS04/3

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P103 652

ORDERING INFORMATION

RPC 04 - 2.5 - OR - 00 - V

Pressure to open

0.5 = 0.5 bar [7 psi]
 2.5 = 2.5 bar [36 psi]
 5.0 = 5 bar [72 psi]

Piston seals

OR = Seal
 Omit = No seal

Seals

V = Viton
 Omit = Buna-N

Housing and ports

00 = No Housing
 SE1/4 = AL, 1/4 BSP
 SE4S = AL, #4 SAE
 SE6S = AL, #6 SAE
 Other housings available

Seal kit

230000450
 230000160

Housing P/N

No Housing
 NCS04/3-SE-1/4
 NCS04/3-SE-4S
 NCS04/3-SE-6S

P103 706E

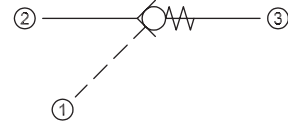
Pilot operated check valves
 RPC 04

Cartridge Valves Technical Information
Pilot operated check valves
Pilot to Open
RPC 06

OPERATION

This is a pilot-to-open check valve.

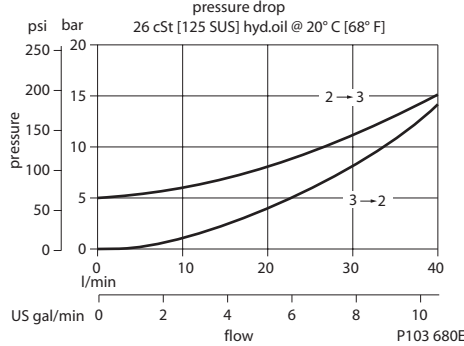
Schematic



P102 381E

SPECIFICATIONS

Theoretical performance



Specifications

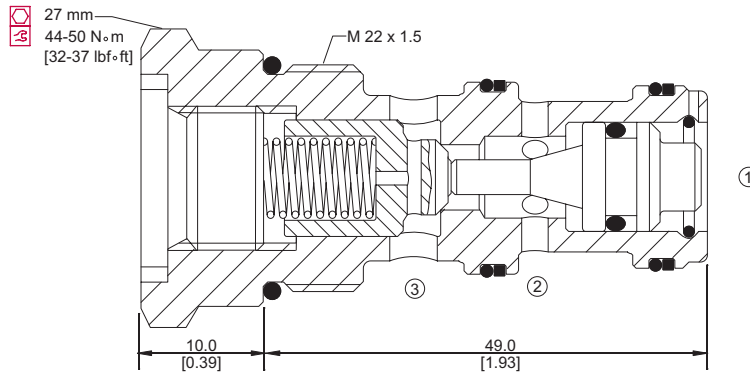
Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.10 kg [0.22 lb]
Pilot ratio	3.4:1
Cavity	NCS06/3

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P103 653

ORDERING INFORMATION

RPC 06 - 5 - OR - 00 - V

Pressure to open

0.5 = 0.5 bar [7 psi]
5 = 5 bar [73 psi]

Piston seals

OR = Seals
Omit = No seals

Seals

V = Viton
Omit = Buna-N

Housing and ports

00 = No Housing
SE3/8 = AL, 3/8 BSP
SE3/4 = AL, 3/4 BSP
SE6S = AL, #6 SAE
SE8S = AL, #8 SAE
Other housings available

Seal kit

230000110
230000070

Housing P/N

No Housing
NCS06/3-SE-3/8
NCS06/3-SE-1/2
NCS06/3-SE-6S
NCS06/3-SE-8S

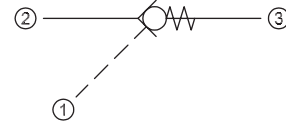
P103 707E

Cartridge Valves Technical Information
 Pilot operated check valves
 Pilot to Open
 CP450-1

OPERATION

This valve is a pilot-to-open check valve.

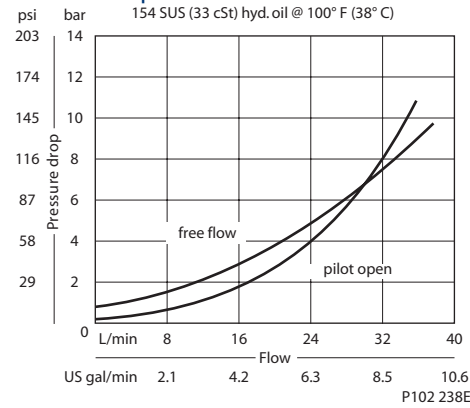
Schematic



P102 381E

SPECIFICATIONS

Theoretical performance



Specifications

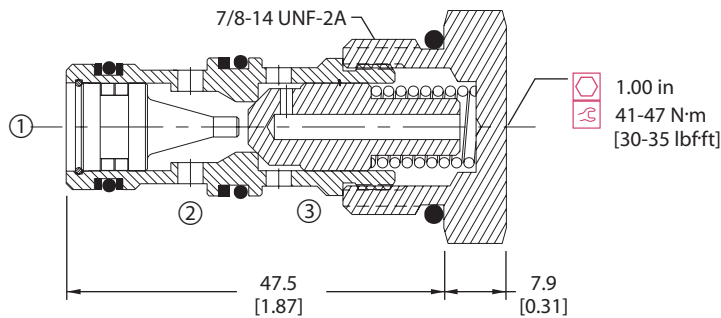
Rated pressure	240 bar [3480 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.09 kg [0.20 lb]
Pilot ratio	3.0:1
Cavity	SDC10-3

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P102 236E

ORDERING INFORMATION

CP450 - 1 - B - 8S - 015 - 0

Seals	Seal kit 120570	Piston seals	0 = No seals S = Seals included
B = Buna-N V = Viton	120571	Cracking Pressure	bar [psi]
Body and ports	Body P/N	065 = 4.48 [65]	
0 = Cartridge	No body	115 = 7.90 [115]	
6S = Aluminum, #6 SAE	CP10-3-6S	200 = 13.8 [200]	
8S = Aluminum, #8 SAE	CP10-3-8S	315 = 21.8 [315]	
SE3B = Aluminum, 3/8 BSP	SDC10-3-SE-3B		
SE4B = Aluminum, 1/2 BSP	SDC10-3-SE-4B		

P102 067E

Pilot operated check valves
 CP450-1

Cartridge Valves Technical Information

Pilot operated check valves

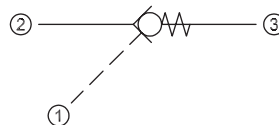
Pilot to Open

RPC 12

OPERATION

This is a pilot-to-open check valve.

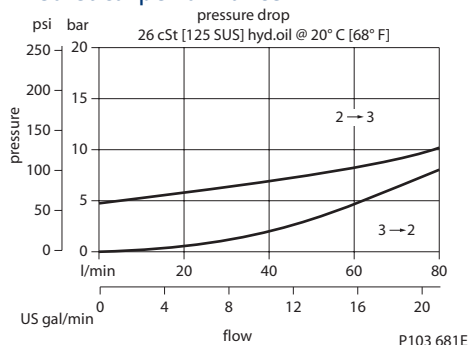
Schematic



P102 381E

SPECIFICATIONS

Theoretical performance



Specifications

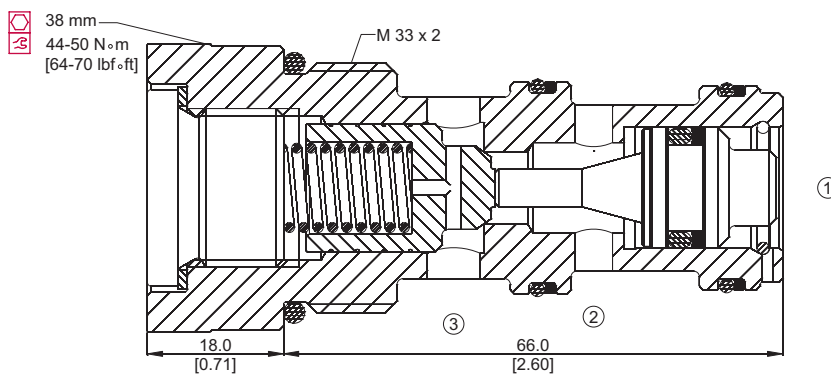
Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	70 l/min [18 US gal/min]
Weight	0.20 kg [0.44 lb]
Pilot ratio	2.8:1
Cavity	NCS12/3

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P103 654

ORDERING INFORMATION

RPC 12 - 5 - OR - 00 - V

Pressure to open 0.5 = 0.5 bar [7 psi] 5 = 5 bar [73 psi]	Seals V = Viton Omit = Buna-N	Seal kit 230000360 230000130
Piston seals OR = Seals Omit = No seals	Housing and ports 00 = No Housing SE1/2 = AL, 1/2 BSP SE3/4 = AL, 3/4 BSP SE8S = AL, #8 SAE SE12S = AL, #12 SAE Other housings available	Housing P/N No Housing NCS12/3-SE-1/2 NCS12/3-SE-3/4 NCS12/3-SE-8S NCS12/3-SE-12S

P103 708E

Pilot operated check valves
RPC 12

Cartridge Valves Technical Information

Pilot operated check valves

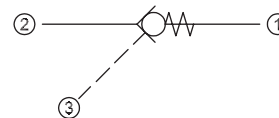
Pilot to Open

CP458-2

OPERATION

This valve is a pilot-to-open check valve.

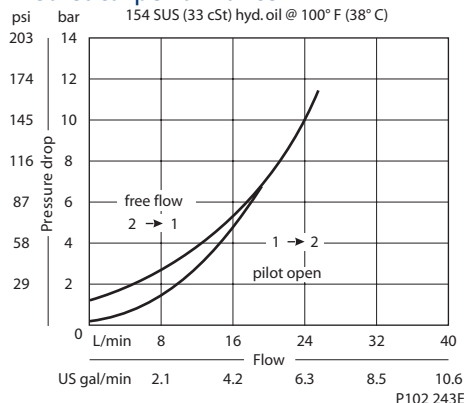
Schematic



P102 377E

SPECIFICATIONS

Theoretical performance



Specifications

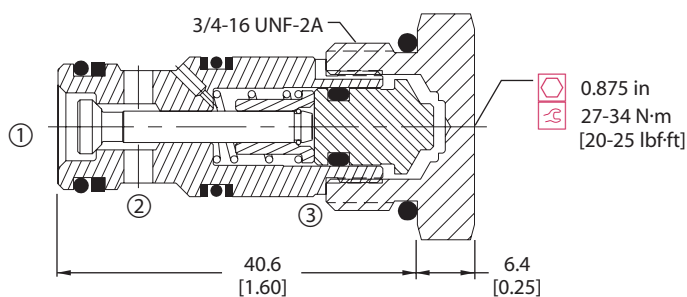
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.07 kg [0.15 lb]
Pilot ratio	2.8:1
Cavity	SDC08-3

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P102 242E

ORDERING INFORMATION

CP458 - 2 - B - 6S - 065 - 0

Seals B = Buna-N V = Viton	Seal kit 120250 120253	Piston seals 0 = No seals S = Seals included
Housing and ports 0 = No Housing SE2B = Al, 1/4 BSP SE3B = Al, 3/8 BSP 4S = Al, #4 SAE 6S = Al, #6 SAE Other housings available	Housing P/N No Housing SDC08-3-SE-2B SDC08-3-SE-3B CP08-3-4S CP08-3-6S	Crack Pressure bar [psi] 065 = 4.48 [65]

P102 076E

Cartridge Valves Technical Information

Pilot operated check valves

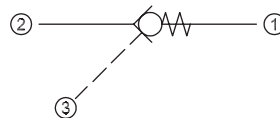
Pilot to Open

MC10-RO

OPERATION

This is a pilot-to-open check valve.

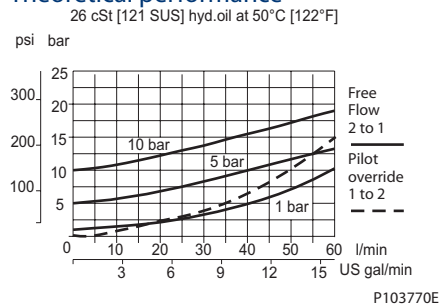
Schematic



P102 377E

SPECIFICATIONS

Theoretical performance



Specifications

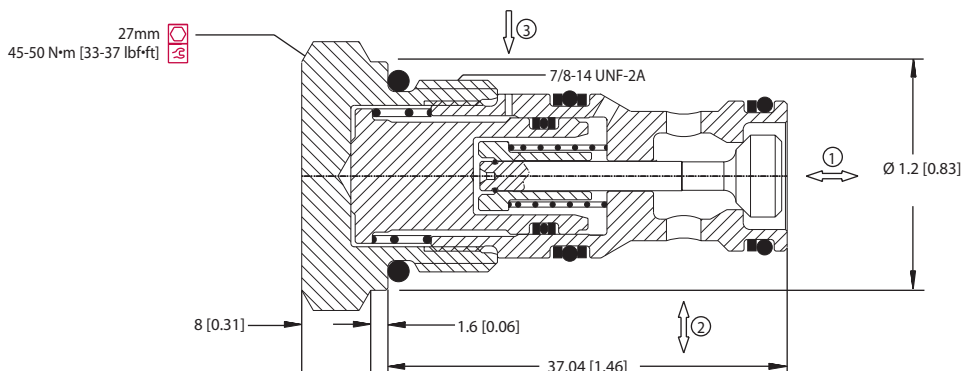
Rated pressure	250 bar [3600 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Leakage	6 drops/min @
Weight	0.12 kg [0.26 lb]
Pilot ratio	3.0:1
Cavity	SDC10-3S

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P103 753

ORDERING INFORMATION

MC10-RO-5-OR-A-B-6S

Crack Pressure

1 = 1 bar [15 psi]
5 = 5 bar [73 psi]
10 = 10 bar [145 psi]

Piston seals

Omit = No seal
OR = Seals included

Housing and ports

00 = No Housing
SE3B = Al, 3/8 BSP
SE4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE

Other housings available

Seals

B = Buna-N
V = Viton

Housing P/N

No Housing
SDC10-3S-SE-3B
SDC10-3S-SE-4B
SDC10-3S-6S/6S
SDC10-3S-8S/6S

Seal kit

35401419
35401519

P103 771E

Pilot operated check valves
MC10-RO

Cartridge Valves Technical Information

Pilot operated check valves

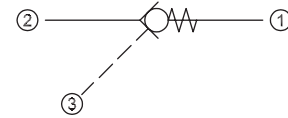
Pilot to Open

CP451-2

OPERATION

This valve is a pilot-to-open check valve.

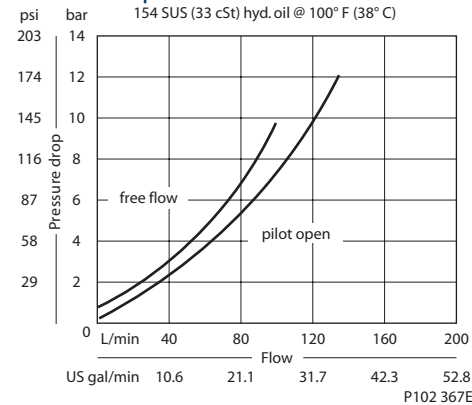
Schematic



P102 377E

SPECIFICATIONS

Theoretical performance



Specifications

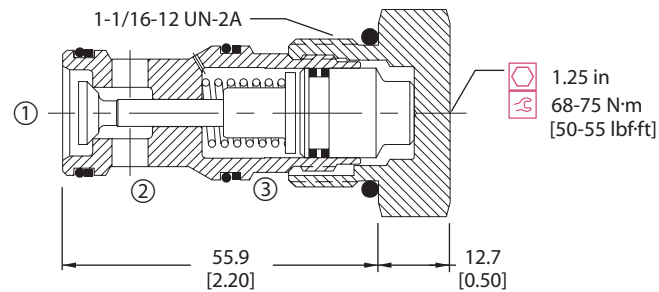
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	95 l/min [25 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.21 kg [0.46 lb]
Pilot ratio	3:1
Cavity	CP12-3S

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P102 354E

ORDERING INFORMATION

CP451 - 2 - B - 12S - 065 - 0

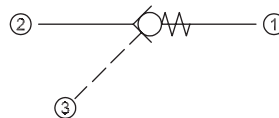
Seals		Piston seals	
B = Buna-N	Seal kit 120204	0 = No seals	
V = Viton	Seal kit 120205	S = Seals included	
Housing and ports	Housing P/N	Crack Pressure	
0 = No Housing	No Housing	bar [psi]	
4B = Al, 1/2 BSP	CP12-3S-4B/2B	065 = 4.48 [65]	
6B = Al, 3/4 BSP	CP12-3S-6B/2B		
10S = Al, #10 SAE	CP12-3S-10S/4S		
12S = Al, #12 SAE	CP12-3S-12S/4S		
Other housings available			

P102 063E

OPERATION

This valve is a pilot-to-open check valve.

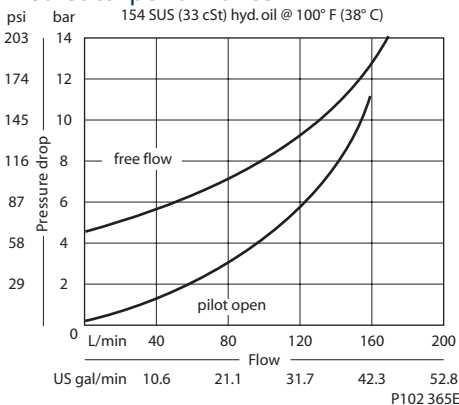
Schematic



P102 377E

SPECIFICATIONS

Theoretical performance



Specifications

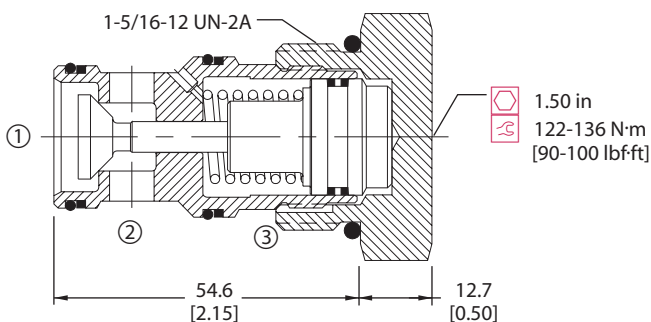
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.29 kg [0.64 lb]
Pilot ratio	3:1
Cavity	SDC16-3S

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P102 352E

ORDERING INFORMATION

CP452 - 2 - B - 16S - 065 - 0

Seals B = Buna-N V = Viton	Seal kit 120033 120034	Piston seals 0 = No seals S = Seals included
Housing and ports 0 = No Housing 6B = Al, 3/4 BSP 8B = Al, 1 BSP 12S = Al, #12 SAE 16S = Al, #16 SAE Other housings available	Housing P/N No Housing CP16-3S-6B/2B CP16-3S-8B/2B CP16-3S-12S/4S CP16-3S-12S/4S	Crack Pressure bar [psi] 065 = 4.48 [65]

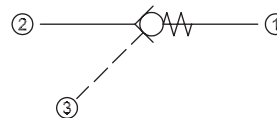
P102 081E

Pilot operated check valves
CP452-2

OPERATION

This valve is a pilot-to-open check valve.

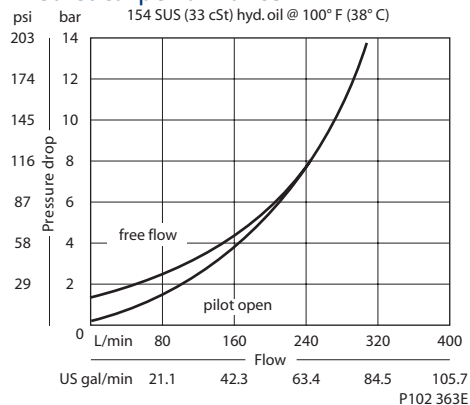
Schematic



P102 377E

SPECIFICATIONS

Theoretical performance



Specifications

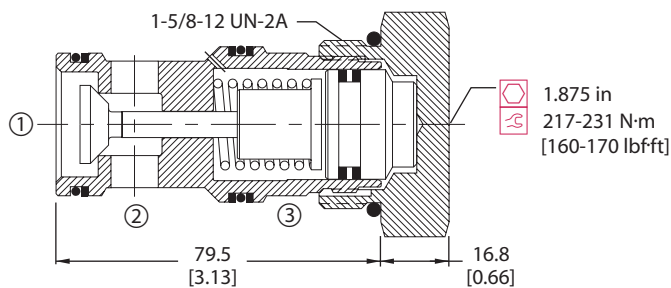
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	230 l/min [61 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.66 kg [1.46 lb]
Pilot ratio	3:1
Cavity	CP20-3S

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P102 350E

ORDERING INFORMATION

CP453 - 2 - B - 20S - 065 - 0

Seals B = Buna-N V = Viton	Seal kit 120380 120381	Piston seals 0 = No seals S = Seals included
Housing and ports 0 = No Housing 8B = Al, 1 BSP 10B = Al, 1-1/4 BSP 16S = Al, #16 SAE 20S = Al, #20 SAE Other housings available	Housing P/N No Housing CP20-3S-8B/2B CP20-3S-10B/2B CP20-3S-16S/4S CP20-3S-20S/4S	Crack Pressure bar [psi] 065 = 4.48 [65]

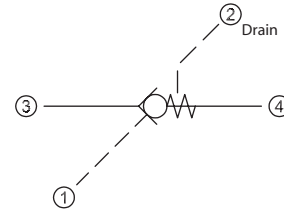
P102 086E

Cartridge Valves Technical Information
Pilot operated check valves
Pilot to Open with Drain
RPV 06

OPERATION

This is a pilot-to-open check valve with an internal drain.

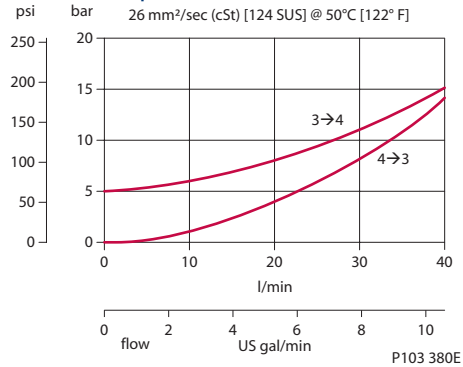
Schematic



P103 511

SPECIFICATIONS

Theoretical performance



Specifications

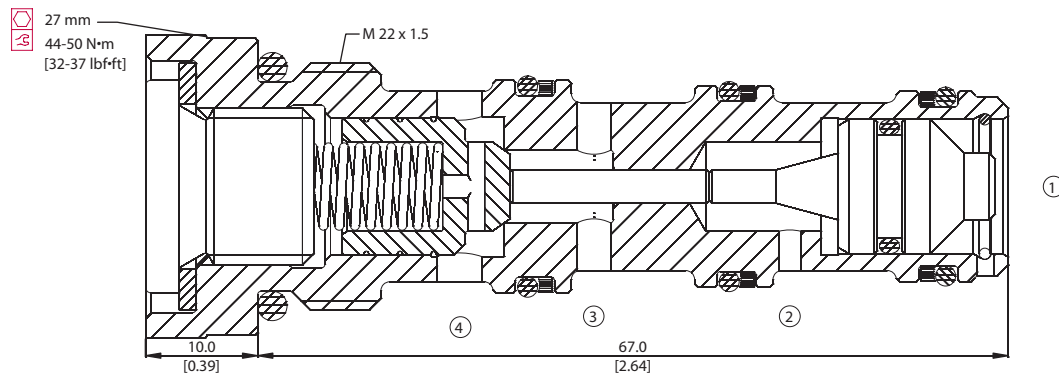
Rated pressure	315 bar [4500 psi]
Rated flow at bar [psi]	30 l/min [8 US gal/min]
Weight	0.13 kg [0.29 lb]
Pilot ratio	3.4:1
Cavity	NCS06/4

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P103 379

ORDERING INFORMATION

RPV 06 - 5 - OR - 00 - V

Piston seals
 OR = Seals
 Omit = No seals

Seals
 V = Viton
 Omit = Buna-N

Seal Kit
 Consult factory
 230000080

Housing and ports
 00 = No Housing
 L3/8 = AL, 3/8 BSP
 L3/4 = AL, 3/4 BSP
 L6S = AL, #6 SAE
 L8S = AL, #8 SAE
 Other housings available

Housing P/N
 No Housing
 NCS06/4-L-3/8
 NCS06/4-L-1/2
 NCS06/4-L-6S
 NCS06/4-L-8S

P103 381E

Pilot operated check valves
 RPV 06

Cartridge Valves Technical Information

Pilot operated check valves

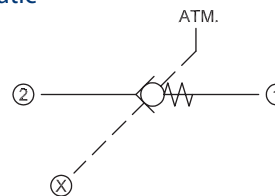
Pilot to Open with Drain

CP453-5

OPERATION

This is a pilot-to-open check valve with an external pilot connection.

Schematic

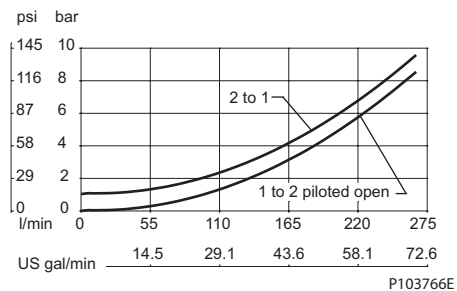


P103 509

SPECIFICATIONS

Theoretical performance

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



P103766E

Specifications

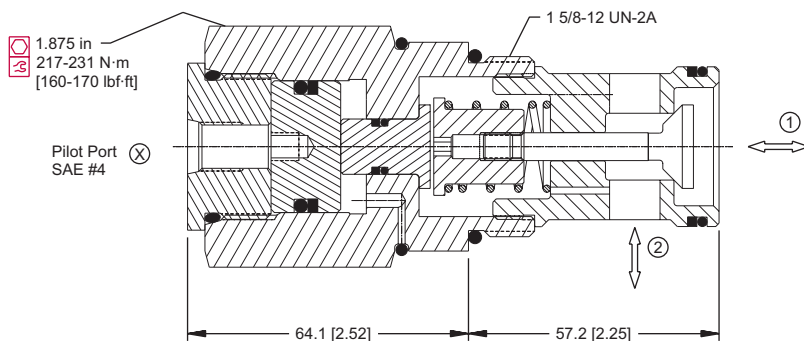
Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	250 l/min [66 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	1.23 kg [2.71 lb]
Pilot ratio	4:1
Cavity	SDC20-2

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P103 751

ORDERING INFORMATION

		CP453-5-B-16S-4-065			
Seals	Seal kit			Crack Pressure	
B = Buna-N	120011			065 = 4.3	65
V = Viton	120012			100 = 6.9	100
Housing and ports		Housing P/N		Pilot ratio	
0 = No Housing		No Housing		4 = 4:1	
8B = AL, 1 BSP		CP20-2-8B			
10B = AL, 1-1/4 BSP		CP20-2-10B			
16S = AL, #16 SAE		CP20-2-16S			
20S = AL, #20 SAE		CP20-3-20S			
Other housings available					

P103 767E

Pilot operated check valves
CP453-5

Cartridge Valves Technical Information

Pilot operated check valves

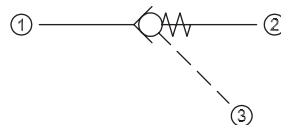
Pilot to Close

CP460-1

OPERATION

This valve is a pilot-to-close check valve.

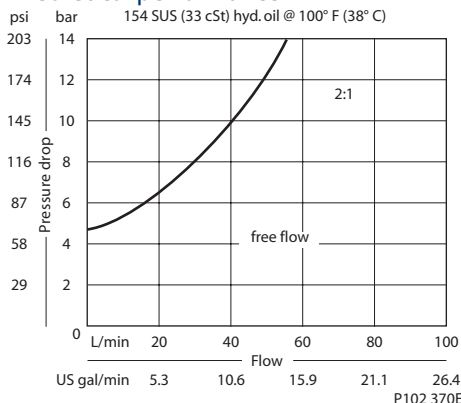
Schematic



P102 378E

SPECIFICATIONS

Theoretical performance



Specifications

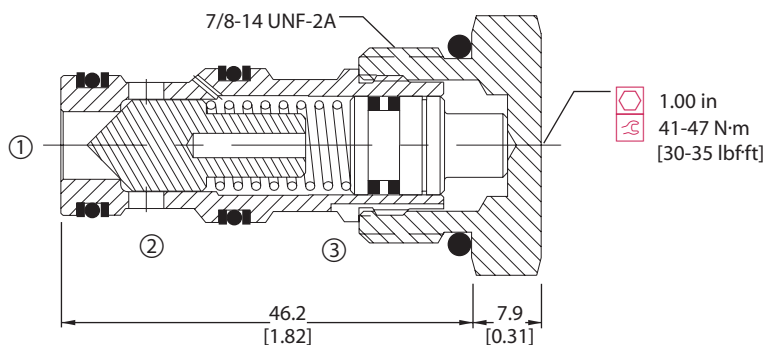
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	22 l/min [5.8 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.10 kg [0.21 lb]
Pilot ratio	2:1
Cavity	SDC10-3

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P102 356E

ORDERING INFORMATION

CP460 - 1 - B - 8S - 2 - 065 - 0

seals	Seal kit	Piston seals	0 = No seals	Crack Pressure	065 = 4.48 bar [psi]
B = Buna-N	120009	S = Seals included			
V = Viton	120010				
Housing and ports	Housing P/N				
0 = No Housing	No Housing				
E3B = Al, 3/8 BSP	SDC10-3-SE-3B				
E4B = Al, 1/2 BSP	SDC10-3-SE-4B				
6S = Al, #6 SAE	CP10-3-6S				
8S = Al, #8 SAE	CP10-3-8S				
Other housings available					
				Pilot ratio	2 = 2:1

P102 072E

Cartridge Valves Technical Information

Pilot operated check valves

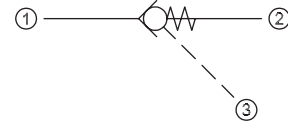
Pilot to Close

CP461-1

OPERATION

This valve is a pilot-to-close check valve.

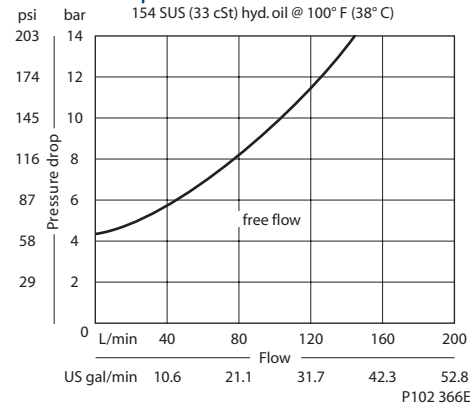
Schematic



P102.378E

SPECIFICATIONS

Theoretical performance



Specifications

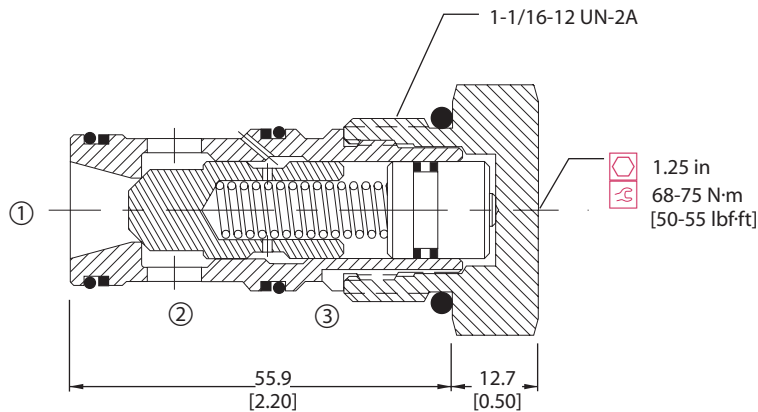
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.21 kg [0.47 lb]
Pilot ratio	2.3:1
Cavity	CP12-3S

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P102.353E

ORDERING INFORMATION

CP461 - 1 - B - 12S - 065 - 0

Seals	Seal kit 120335 120336	Piston seals 0 = No seals S = Seals included
B = Buna-N V = Viton	Housing P/N No Housing CP12-3S-4B/2B CP12-3S-6B/2B CP12-3S-10S/4S CP12-3S-12S/4S	Crack Pressure bar [psi] 065 = 4.48 [65]
Housing and ports 0 = No Housing 4B = Al, 1/2 BSP 6B = Al, 3/4 BSP 10S = Al, #10 SAE 12S = Al, #12 SAE Other housings available		

P102.077E

Cartridge Valves Technical Information

Pilot operated check valves

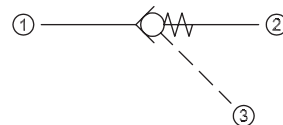
Pilot to Close

CP462-1

OPERATION

This valve is a pilot-to-close check valve.

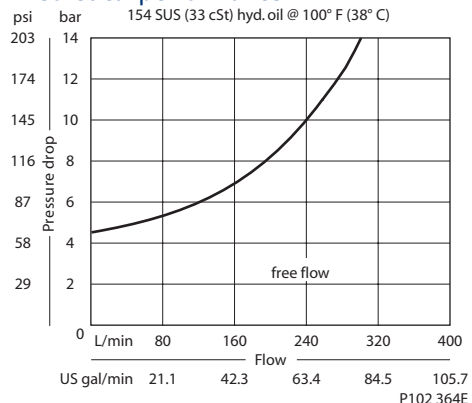
Schematic



P102 378E

SPECIFICATIONS

Theoretical performance



Specifications

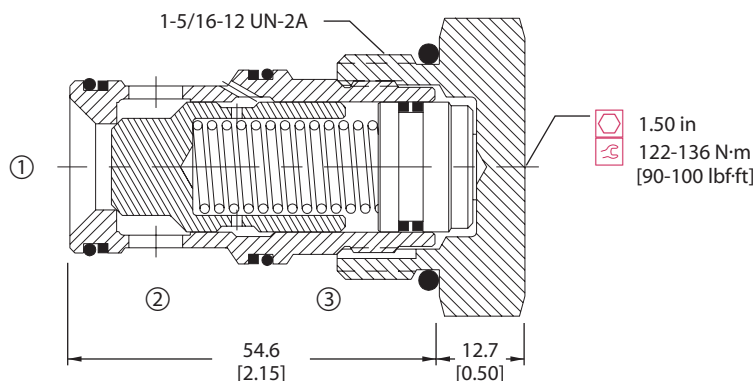
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.29 kg [0.64 lb]
Pilot ratio	2.3:1
Cavity	SDC16-3S

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



P102 351E

ORDERING INFORMATION

CP462 - 1 - B - 16S - 065 - 0

Seals		Piston seals	
B = Buna-N	Seal kit 120033	0 = No seals	
V = Viton	120034	S = Seals included	
Housing and ports	Housing P/N	Crack Pressure	
00 = No Housing	No Housing	bar [psi]	
6B = Al, 3/4 BSP	CP16-3S-6B/2B	065 = 4.48 [65]	
8B = Al, 1 BSP	CP16-3S-8B/2B		
12S = Al, #12 SAE	CP16-3S-12S/4S		
16S = Al, #16 SAE	CP16-3S-12S/4S		
Other housings available			

P102 082E

Pilot operated check valves
CP462-1

Cartridge Valves Technical Information

Pilot operated check valves

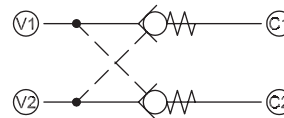
Dual Pilot-Operated Checks

CP410-1

OPERATION

This is a dual pilot operated check valve, which uses two CV10-NP check valves.

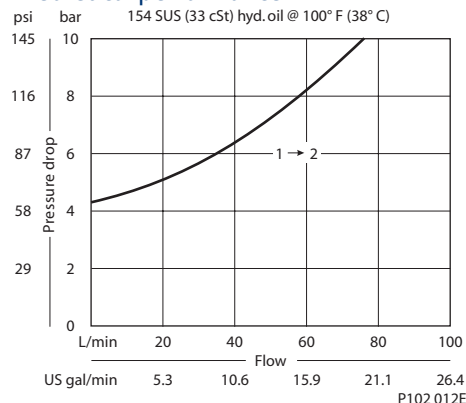
Schematic



P102 383E

SPECIFICATIONS

Theoretical performance



Specifications

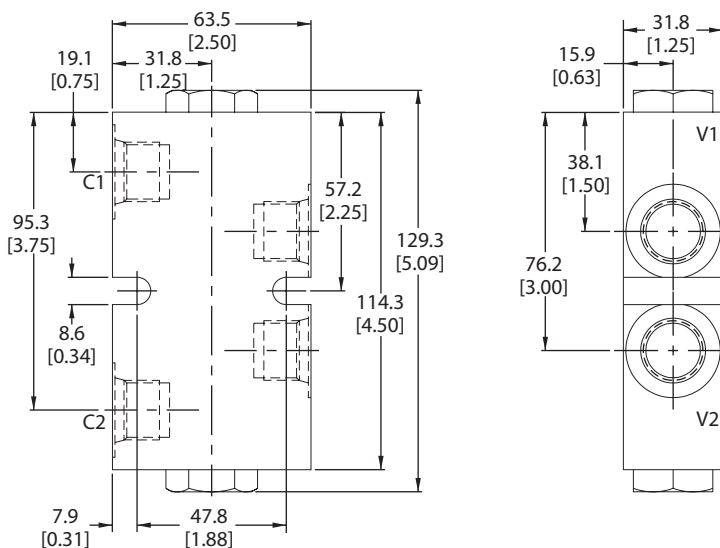
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	85 l/min [22 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.67 kg [1.48 lb]
Pilot ratio	4:1
Cavity	none

Note: A piston seal requires a 4.5 bar [65 psi] or greater return spring.

DIMENSIONS

mm [in]

Cross-sectional view



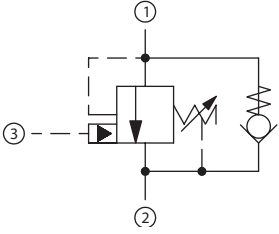
P102 346E

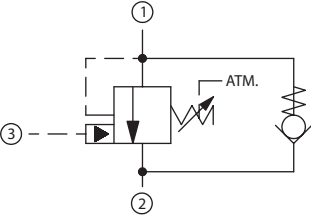
ORDERING INFORMATION

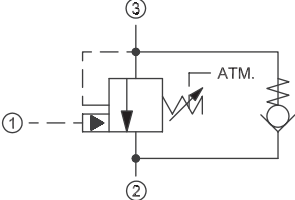
CP410 - 1 - B - 8S - 0 - 065

Seals	Seal kit	W/ piston seals	Crack Pressure	bar	[psi]
B = Buna-N	120072	120176	065	= 4.50	[65]
V = Viton	120161	120177			
Housing and ports	Housing P/N		Piston seals		
6S = Aluminum, #6 SAE	220099		0 = No seals		
8S = Aluminum, #8 SAE	220100		S = Seals included		
3B = Al, 3/8 BSP	221794				
4B = Al, 1/2 BSP	221652				

P102 088E

Hydraulic Vent	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP448-1	CP08-3L	Counterbalance Valve, Hydraulic Vent	20 l/min [5 US gal/min]	350 bar [5000 psi]	09.6
	CB10-HV	SDC10-3S		60 l/min [16 US gal/min]	350 bar [5000 psi]	09.7
	CP441-1	CP12-3S		115 l/min [30 US gal/min]	350 bar [5000 psi]	09.8
	CP443-1	CP20-3S		190 l/min [50 US gal/min]	350 bar [5000 psi]	09.9

Atmospheric Vent	Model No.	Cavity	Description	Flow*	Pressure	Page
	CB10-AV	SDC10-3S	Counterbalance Valve, Atmospheric Vent	60 l/min [16 US gal/min]	350 bar [5000 psi]	09.10

Atmospheric Vent	Model No.	Cavity	Description	Flow*	Pressure	Page
	VCB 12-CN	NCS12/3	Counterbalance Valve, Atmospheric Vent	140 l/min [37 US gal/min]	350 bar [5000 psi]	09.11

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Dual Counterbalance	Model No.	Cavity	Description	Flow*	Pressure	Page
	1EEC11-1	None	Dual-Counterbalance Valve, with Makeup Checks, Catalog HIC	57 l/min [15 US gal/min]	345 bar [5000 psi]	09.12

Dual Counterbalance	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP448-2	None	Counterbalance Valve, Hydraulic Vent, Catalog HIC	20 l/min [5 US gal/min]	350 bar [5000 psi]	09.13
	DCB10-HV	None		60 l/min [16 US gal/min]	350 bar [5075 psi]	09.14
	CP441-2	None		115 l/min [30 US gal/min]	350 bar [5000 psi]	09.15

Dual Counterbalance	Model No.	Cavity	Description	Flow*	Pressure	Page
	DCB10-AV	None	Counterbalance Valve, Atmospheric Vent, Catalog HIC	60 l/min [16 US gal/min]	350 bar [5075 psi]	09.16

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

MOTION CONTROL VALVES

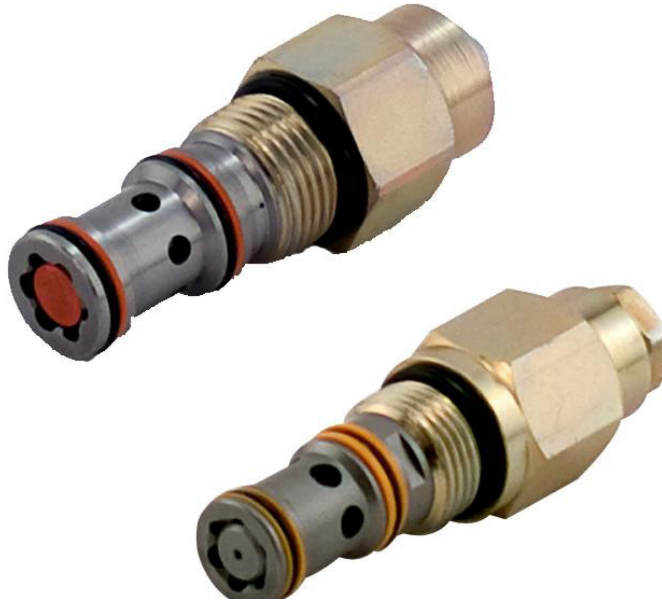
Motion control valves, also referred to as load holding valves, are used to control the motion of a load in the following ways:

- Prevent a load from dropping in case of hose or tube failure.
- Prevent a load from drifting caused by directional control valve spool leakage.
- Provide smooth, modulated motion when the load is in a lowering or run-away mode.
- Provide smooth, modulated motion when the directional control valve is suddenly closed.

There are two basic types of motion control valves:

- Pilot-operated, or pilot-to-open check valves will satisfy the first two of the above requirements.
- Counterbalance valves will satisfy all four of the above requirements.

Counterbalance valves



COUNTERBALANCE VALVES

A counterbalance valve provides several functions:

- Free flow in one direction.
- Leak-free load holding.
- Protection against hydraulic line failure.
- Protection against pressure shocks caused by external forces or overrunning loads
- Cavitation-free motion control to match speed to pump flow when a load could cause loss of control of an actuator (cylinder or motor).
- Smooth, modulated motion control when the directional valve is suddenly closed.

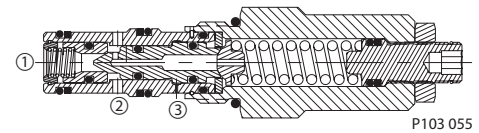
COUNTERBALANCE VALVES (continued)

Counterbalance valves will positively hold a pressurized load and will control the motion of the load based on application of a pressure signal to the pilot port. Counterbalance valves are available as individual cartridges or standard cartridge-in-body (CIB) packages.

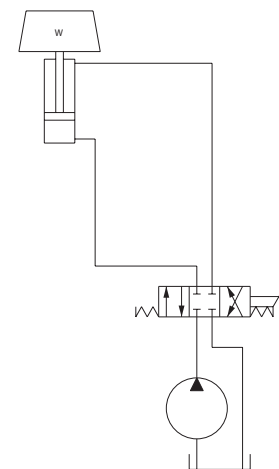
A typical circuit application for a counterbalance valve contains a pump, directional control valve, and an actuator. Without a counterbalance valve the load will drift down due to spool leakage if the directional control valve is centered with the load raised. Additionally there is no protection against the load dropping in the event of hydraulic line failure.

Adding a counterbalance valve controls motion and provides protection against hose or tube failure. In this circuit, moving the directional control valve to the left causes the cylinder to extend, raising the load with free flow going through the check valve portion of the counterbalance valve. When the directional control valve is centered, the counterbalance valve will prevent leakage and lock the load in position. Moving the directional control valve to the right sends flow/pressure to the rod end of the cylinder. This pressure also acts to pilot open the counterbalance valve and allows the load to be lowered. Should the load cause the cylinder to run away from the pump, pilot pressure to the counterbalance valve will decrease and the counterbalance valve will modulate to match the cylinder speed to the pump flow.

Individual cartridge counterbalance valve

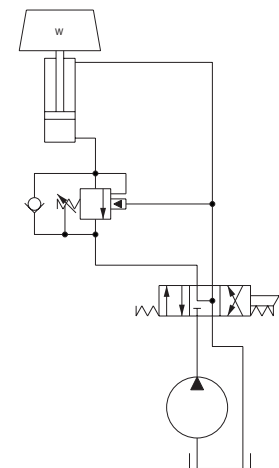


Circuit without a counterbalance valve



P103 121

Circuit with a counterbalance valve



P103 122

COUNTERBALANCE VALVES
(continued)

The pressure required to pilot open the counterbalance valve can be calculated as follows:

$$P = \frac{(P_s \cdot A_b) - W}{(A_b \cdot R) + A_r} \text{ (load retracts cylinder)}$$

$$P = \frac{(P_s \cdot A_r) - W}{(A_r \cdot R) + A_b} \text{ (load extends cylinder)}$$

W = Load

P_s = Counterbalance valve relief setting; see below for more information

A_b = Cylinder bore area

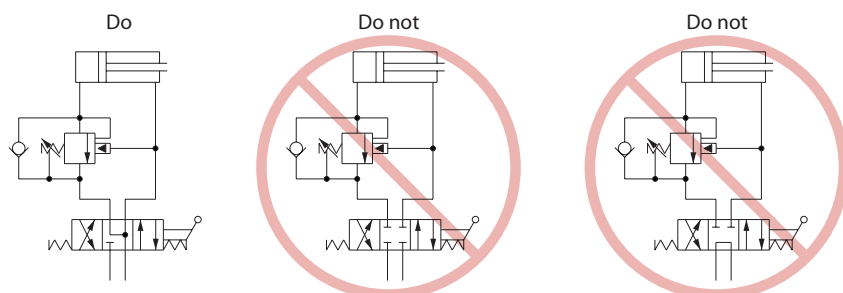
A_r = Cylinder rod area

R = Counterbalance valve pilot ratio; see below for more information

Note that these equations are idealized and do not consider any backpressure in the circuit, which is additive to the pressure required to pilot open the check valve.

Some additional guidelines for counterbalance valve applications:

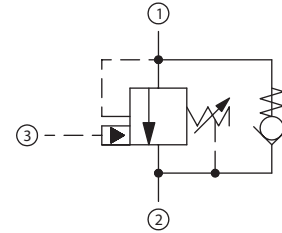
- Specify the counterbalance valve relief setting high enough to stop any motion (flow) at the maximum expected actuator pressure. Generally it is recommended to use a setting of 1.3 multiplied by the maximum load pressure.
- Use low pilot ratios (3:1 and 4.5:1) for applications where loads may vary widely. Low pilot ratios require higher pilot pressure and are less efficient but provide stable, precise control for varying loads.
- Use high pilot ratios (8:1 and 10:1) for applications where loads are relatively constant. High pilot ratio valves require lower pilot pressure, have faster response, and are more efficient, but lack stability and precision in response to varying loads.
- Do not oversize counterbalance valves. There is no pressure drop operating limit for counterbalance valves and in fact some pressure drop is required to maintain valve operation.
- Locate counterbalance valves at or near the actuator to provide maximum load holding protection in the event of hydraulic line failure.
- Do not use counterbalance valves with closed-center directional control valves. Pressure trapped between the directional control valve and the actuator can pilot the counterbalance valve open and result in undesired load motion.
- Do not use counterbalance valves with tandem-center directional control valves. Backpressure in the system can prevent the counterbalance valve from opening.



OPERATION

This is a pilot-operated counterbalance valve.

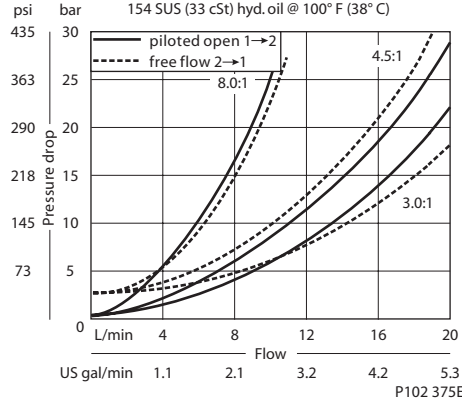
Schematic



P102 376E

SPECIFICATIONS

Theoretical performance



P102 375E

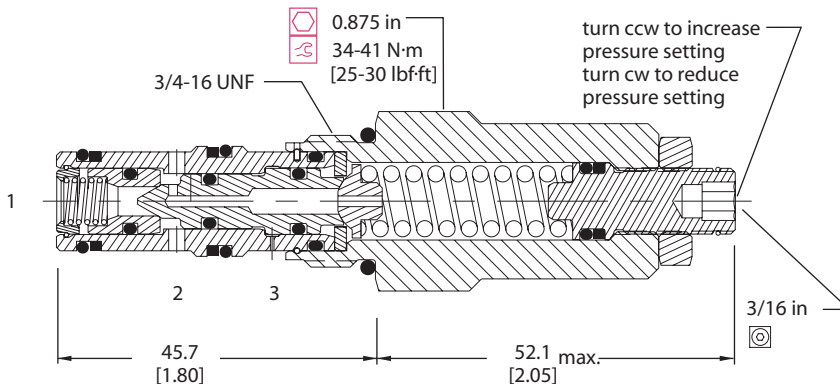
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 22 bar [319 psi]	20 l/min [5 US gal/min]
Leakage	10 drops/min @ 70% of crack pressure
Weight	0.16 kg [0.36 lb]
Pilot ratio	3:1, 4.5:1, 8:1
Cavity	CP08-3L

DIMENSIONS

mm [in]

Cross-sectional view



P102 360E

ORDERING INFORMATION

Seals

- B = Buna-N
- V = Viton

Housing and ports

- 0 = No Housing
- 2B = AL, 1/4 BSP
- 3B = AL, 3/8 BSP
- 4S = AL, #4 SAE
- 6S = AL, #6 SAE
- Other housings available

Adjustment option

- E = External

CP448 - 1 - B - 6S - E - B - 150 - 4.5 - 040

Seal kit
120238
120239

Housing P/N
No Housing
CP08-3L-2B
CP08-3L-3B
CP08-3L-4S
CP08-3L-6S

Pressure range

Pilot ratio 3.0
bar [psi]
A = 41-103 [600-1500]
Std. setting 69 [1000]
B = 69-207 [1000-3000]
Std. setting 103 [1500]
C = 124-345 [1800-5000]
Std. setting 172 [2500]

Pilot ratio
3.0:1
4.5:1
8.0:1

Pilot ratio 4.5
bar [psi]
A = 55-172 [800-2500]
Std. setting 103 [1500]
B = 103-345 [1500-5000]
Std. setting 172 [2500]

Free flow check crack pressure
bar [psi]
040 = 2.76 [40]

Crack pressure

Code x 10 = psi
Example: 150 = 1500 psi
XXX = Std. setting w/no stamping

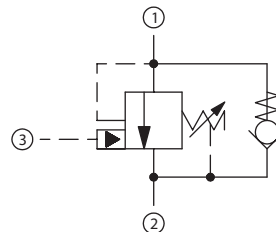
Pilot ratio 8.0
bar [psi]
A = 103-345 [1500-5000]
Std. setting 172 [2500]

P102 102E

OPERATION

This is a pilot-operated counterbalance valve.

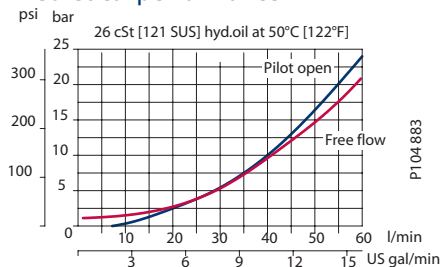
Schematic



P102 376E

SPECIFICATIONS

Theoretical performance



P104 883

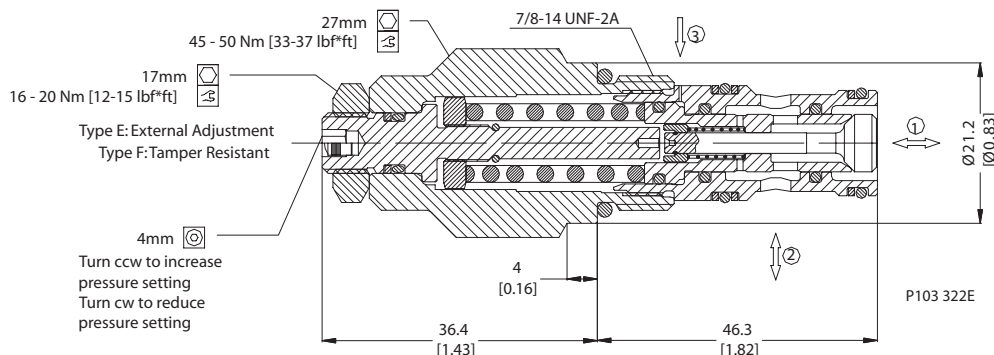
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	10 drops/min @ 70% of crack pressure
Weight	0.22 kg [0.47 lb]
Pilot ratio	1.5:1, 3:1, 4.5:1, 10:1
Cavity	SDC10-3S

DIMENSIONS

mm [in]

Cross-sectional view



P103 322E

ORDERING INFORMATION

CB10-HV-1-A-1-E-70-B-XXXX

Spring Range
For Pilot Ratio Z (1.5:1)
 1 = 20-70 bar [290-1015 psi]
 2 = 30-90 bar [435-1305 psi]
 3 = 50-140 bar [725-2030 psi]
For Pilot Ratio A (3:1)
 1 = 35-110 bar [507-1595 psi]
 2 = 60-150 bar [870-2175 psi]
 3 = 80-230 bar [1160-3335 psi]
For Pilot Ratio B (4.5:1)
 1 = 55-180 bar [797-2610 psi]
 2 = 75-240 bar [1087-3480 psi]
 3 = 90-350 bar [1305-5075 psi]
For Pilot Ratio C (10:1)
 1 = 90-350 bar [1305-5075 psi]

Pilot Ratio
 Z = 1.5 to 1
 A = 3 to 1
 B = 4.5 to 1
 C = 10 to 1

Adjustment type
 E = external adjustment
 F = tamper resistant

Body and ports
 00 = Cartridge only
 6S = Aluminium, #6 SAE
 8S = Aluminium, #8 SAE
 SE3B = Aluminium, 3/8" BSPP
 SE4B = Aluminium, 1/2" BSPP

Body Nomenclature
 No Body
 SDC10-3S-6S
 SDC10-3S-8S
 SDC10-3S-SE3B
 SDC10-3S-SE4B

Seals
 B = Buna-N
 V = Viton

Seal kit
 230001020
 35401519

Std. setting
 45 = 45 bar [650 psi] Set in Spring 1 For Pilot Ratio Z
 60 = 60 bar [870 psi] Set in Spring 2 For Pilot Ratio Z
 70 = 70 bar [1015 psi] Set in Spring 1 For Pilot Ratio A
 100 = 100 bar [1450 psi] Set in Spring 3 For Pilot Ratio Z
 100 = 100 bar [1450 psi] Set in Spring 1 For Pilot Ratio B
 100 = 100 bar [1450 psi] Set in Spring 2 For Pilot Ratio A,B
 175 = 175 bar [2537 psi] Set in Spring 3 For Pilot Ratio A,B
 175 = 175 bar [2537 psi] Set in Spring 1 For Pilot Ratio C

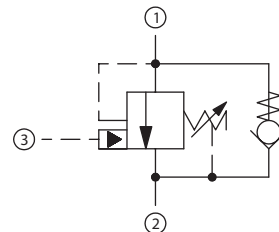
P103 324E

Counterbalance valves
 CB10 HV

OPERATION

This is a pilot-operated counterbalance valve.

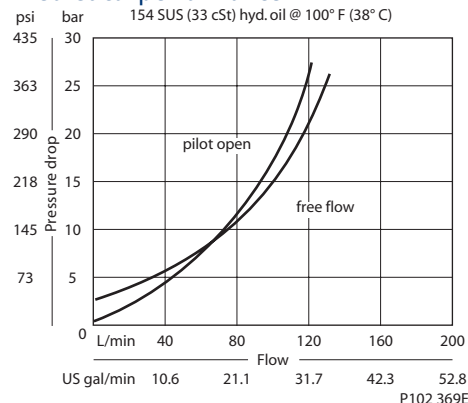
Schematic



P102 376E

SPECIFICATIONS

Theoretical performance



P102 369E

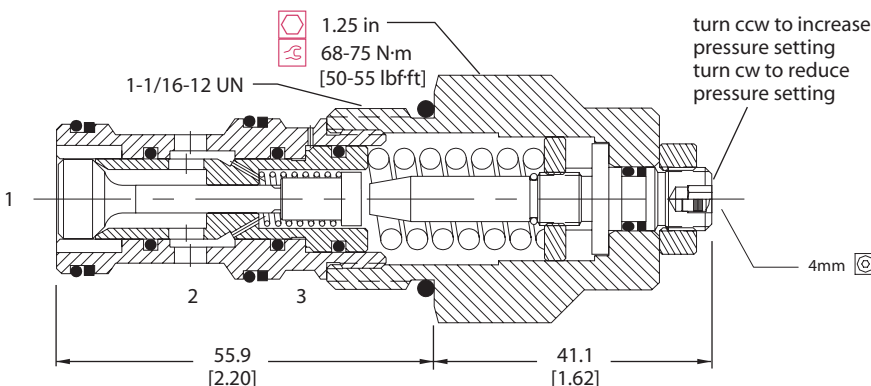
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ 70% of crack pressure
Weight	0.22 kg [0.48 lb]
Pilot ratio	3:1, 4.5:1, 10:1
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 355E

ORDERING INFORMATION

CP441 - 1 - B - 12S - E - B - 250 - 4.5 - 015

Seals

- B = Buna-N
- V = Viton

Housing and ports

- 0 = No Housing
- 4B = AL, 1/2 BSP
- 6B = AL, 3/4 BSP
- 10S = AL, #10 SAE
- 12S = AL, #12 SAE
- Other housings available

Adjustment option

- E = External adjustment

Seal kit
120335
120336

Housing P/N
No Housing
CP12-3S-4B/2B
CP12-3S-6B/2B
CP12-3S-10S/4S
CP12-3S-12S/4S

Pilot ratio
3.0:1
4.5:1
10.0:1

Free flow check Crack Pressure

	bar	[psi]
005	= .34	[5]
015	= 1.03	[15]

Crack pressure

Code x 10 = psi
Example: 250 = 2500 psi
XXX=Std. setting w/no stamping

Pressure range

Pilot ratio 3.0		Pilot ratio 4.5		Pilot ratio 10.0	
bar	[psi]	bar	[psi]	bar	[psi]
A = 34-103	[500-1500]	A = 34-138	[500-2000]	A = 69-345	[1000-5000]
Std. setting 69	[1000]	Std. setting 103	[1500]	Std. setting 172	[2500]
B = 103-207	[1500-3000]	B = 103-345	[1500-5000]		
Std. setting 172	[2500]	Std. setting 207	[3000]		

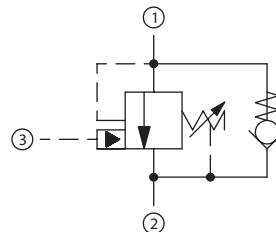
P102 097E

Counterbalance valves
CP441-1

OPERATION

This is a pilot-operated counterbalance valve.

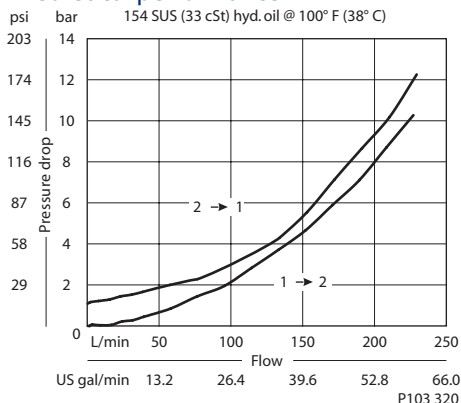
Schematic



P102 376E

SPECIFICATIONS

Theoretical performance



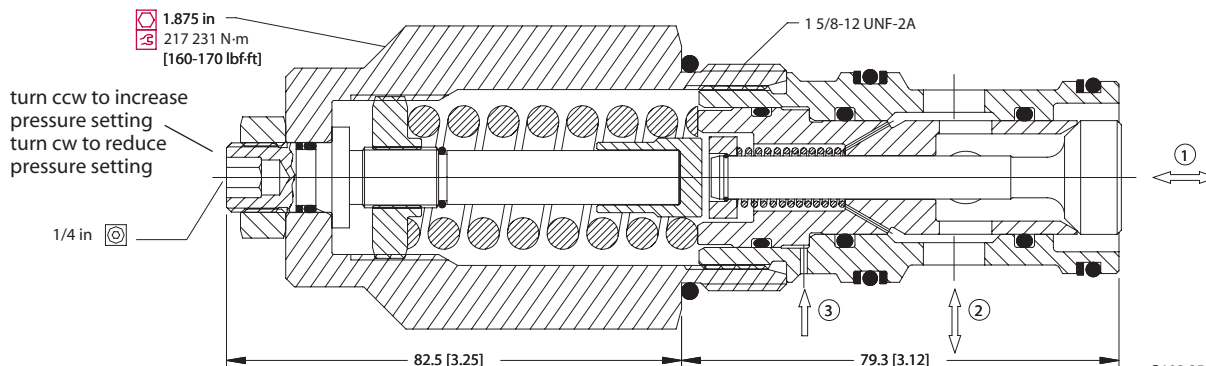
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	10 drops/min @ 70% of crack pressure
Weight	1.22 kg [2.69 lb]
Pilot ratio	3:1, 4.5:1, 10:1
Cavity	CP20-3S

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP443 - 1 - B - 16S - E - A - 100 - 3.0 - 015

Seals
B = Buna-N
V = Viton

Housing and ports
0 = No Housing
8B = AL, 1 BSP
10B = AL, 1-1/4 BSP
16S = AL, #16 SAE
20S = AL, #20 SAE
Other housings available

Adjustment option
E = External

Seal kit
120380
120381

Housing P/N
No Housing
CP20-3S-8B/2B
CP20-3S-10B/2B
CP20-3S-16S/4S
CP20-3S-20S/4S

Pilot ratio
3.0 = 3.0:1
4.5 = 4.5:1
10.0 = 10.0:1

Pressure range
Pilot ratio 3.0
bar [psi]
A = 34-103 [500-1500]
Std setting 69 [1000]
B = 103-207 [1500-3000]
Std setting 172 [2500]

Pilot ratio 4.5
bar [psi]
A = 34-138 [500-2000]
Std setting 103 [1500]
B = 103-345 [1500-5000]
Std setting 207 [3000]

Pilot ratio 10.0
bar [psi]
A = 69-345 [1000-5000]
Std setting 172 [2500]

Free flow check Cracking Pressure
bar [psi]
015 = 1.00 [15]

Cracking pressure
Code x 10 = psi
Example: 100 = 1000 psi
XXX = Std. setting w/no stamping

P103 257

Counterbalance valves
CP443-1

Cartridge Valves Technical Information

Counterbalance valves

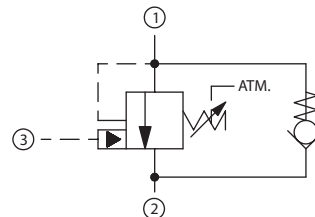
Atmospheric Vent

CB10-AV

OPERATION

This is a pilot-operated counterbalance valve with an atmospheric vent.

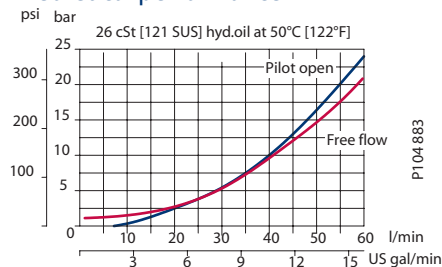
Schematic



P103 325

SPECIFICATIONS

Theoretical performance



P104 883

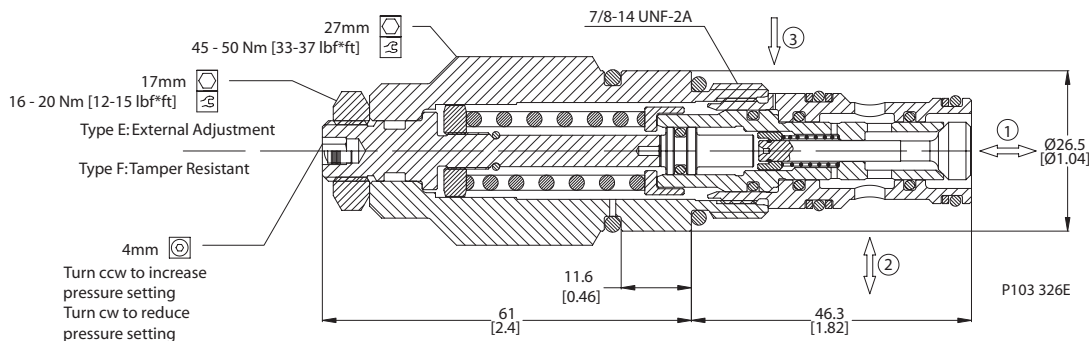
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	10 drops/min @ 70% of crack pressure
Weight	0.27 kg [0.60 lb]
Pilot ratio	1.5:1, 3:1, 4.5:1, 10:1
Cavity	SDC10-3S

DIMENSIONS

mm [in]

Cross-sectional view



P103 326E

ORDERING INFORMATION

CB10-AV-1-A-1-E-70-B-XXXX

Spring Range

For Pilot Ratio Z (1.5:1)

- 1 = 20-70 bar [290-1015 psi]
- 2 = 30-90 bar [435-1305 psi]
- 3 = 50-140 bar [725-2030 psi]

For Pilot Ratio A (3:1)

- 1 = 35-110 bar [507-1595 psi]
- 2 = 60-150 bar [870-2175 psi]
- 3 = 80-230 bar [1160-3335 psi]

For Pilot Ratio B (4.5:1)

- 1 = 55-180 bar [797-2610 psi]
- 2 = 75-240 bar [1087-3480 psi]
- 3 = 90-350 bar [1305-5075 psi]

For Pilot Ratio C (10:1)

- 1 = 90-350 bar [1305-5075 psi]

Pilot Ratio

- Z = 1.5 to 1
- A = 3 to 1
- B = 4.5 to 1
- C = 10 to 1

Adjustment type

- E = external adjustment
- F = tamper resistant

Body and ports

- 00 = Cartridge only
- 6S = Aluminium, #6 SAE
- 8S = Aluminium, #8 SAE
- SE3B = Aluminium, 3/8" BSPP
- SE4B = Aluminium, 1/2" BSPP

Body Nomenclature

- No Body
- SDC10-3S-6S
- SDC10-3S-8S
- SDC10-3S-SE3B
- SDC10-3S-SE4B

Seals

- B = Buna-N
- V = Viton

Seal kit

- 230001020
- 35401519

Std. setting

- 45 = 45 bar [650 psi] Set in Spring 1 For Pilot Ratio Z
- 60 = 60 bar [870 psi] Set in Spring 2 For Pilot Ratio Z
- 70 = 70 bar [1015 psi] Set in Spring 1 For Pilot Ratio A
- 100 = 100 bar [1450 psi] Set in Spring 3 For Pilot Ratio Z
- 100 = 100 bar [1450 psi] Set in Spring 1 For Pilot Ratio B
- 100 = 100 bar [1450 psi] Set in Spring 2 For Pilot Ratio A,B
- 175 = 175 bar [2537 psi] Set in Spring 3 For Pilot Ratio A,B
- 175 = 175 bar [2537 psi] Set in Spring 1 For Pilot Ratio C

P103 327E

Cartridge Valves Technical Information

Counterbalance valves

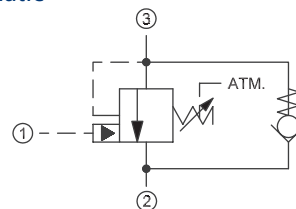
Atmospheric Vent

VCB 12-CN

OPERATION

This is a pilot-operated counterbalance valve with an atmospheric vent.

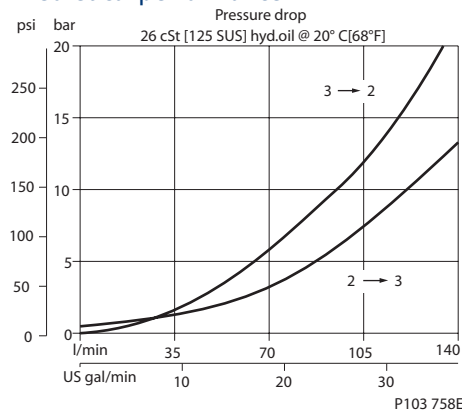
Schematic



P103 502

SPECIFICATIONS

Theoretical performance



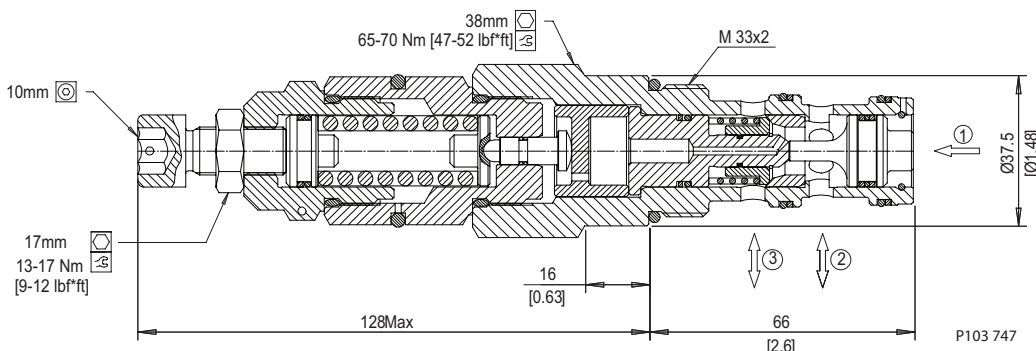
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 22 bar [319 psi]	140 l/min [37 US gal/min]
Weight	0.93 kg [2.05 lb]
Pilot ratio	4.7:1, 5.9:1, 6.9:1
Cavity	NCS12/3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VCB 12-CN-2-A-SE3/8-V

Spring range

Pilot ratio A & C
1 = 25 to 140 bar [363 to 2031 psi]
2 = 70 to 250 bar [1015 to 3626 psi]
3 = 105 to 350 bar [1523 to 5076 psi]

Pilot ratio B

1 = 25 to 120 bar [363 to 1740 psi]
2 = 60 to 200 bar [870 to 2901 psi]
3 = 90 to 280 bar [1305 to 4061 psi]

Pilot ratio:

A = 6.9:1
B = 4.7:1

Housing and ports

00 = No Housing
SE1/2 = AL, 1/2 BSP
SE3/4 = AL, 3/4 BSP
SE8S = AL, #8 SAE
SE12S = AL, #12 SAE
Other housings available

Seals

Omit = Buna N
V = Viton

Seal kit

230000130
230000360

Housing P/N

No Housing
NCS12/3-SE-1/2
NCS12/3-SE-3/4
NCS12/3-SE-8S
NCS12/3-SE-12S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

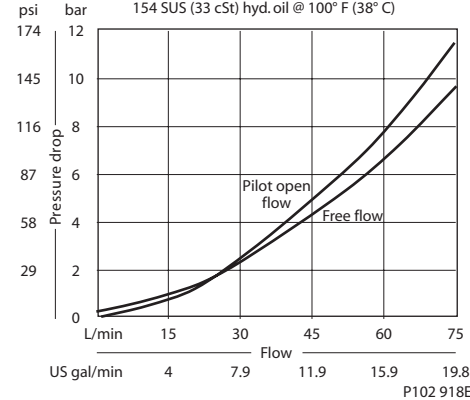
P103 859

OPERATION

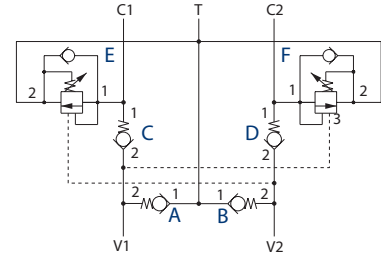
This valve is a dual counterbalance valve with make up checks.

SPECIFICATIONS

Theoretical performance



Schematic



P102 686

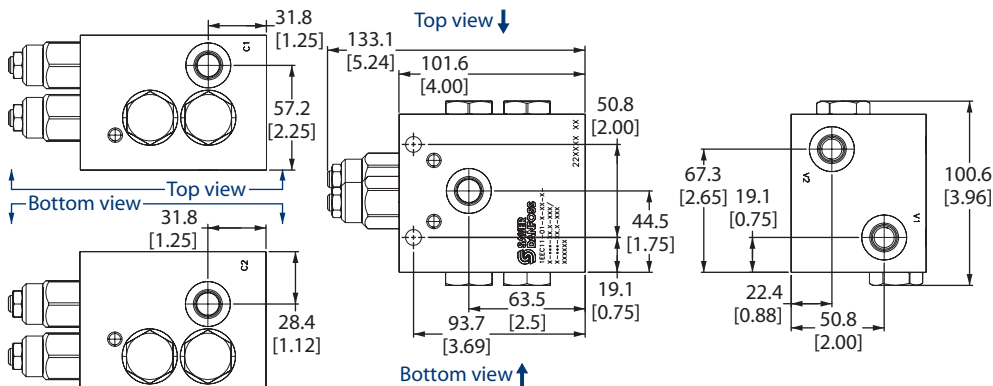
Specifications

Rated pressure	345 bar [5000 psi]
Rated flow at 7 bar [100 psi]	57 l/min [15 US gal/min]
Weight	2.04 kg [4.50 lb]
Pilot ratio	3:1, 4.5:1, or 10:1
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

1EEC11-01-B-85-E-A-100-3.0-005

Seals

B = Buna-N
V = Viton

Body and ports

6S = #6 SAE (T, C and V ports)
8S = #8 SAE (T, C and V ports)

Relief adjustment option

E = External adjustment
K = Knob adjustment

Pressure range

	Pilot ratio 3.0	Pilot ratio 4.5	Pilot ratio 10.0
A =	34-103 bar [500-1500 psi]	34-172 bar [500-2500 psi]	103-345 bar [1500-5000 psi]
Standard setting	69 bar [1000 psi]	103 bar [1500 psi]	172 bar [2500 psi]
B =	69-172 bar [1000-2500 psi]	69-241 bar [1000-3500 psi]	
Standard setting	103 bar [1500 psi]	103 bar [1500 psi]	
C =	103-241 bar [1500-3500 psi]	103-345 bar [1500-5000 psi]	
Standard setting	172 bar [2500 psi]	172 bar [2500 psi]	

Free flow check cracking pressure

005 = 0.34 bar [5 psi]
015 = 1.03 bar [15 psi]

Pilot ratio

Cartridge Valves Technical Information

Counterbalance valves

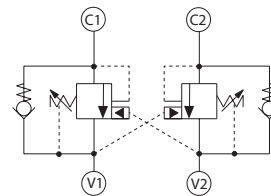
Dual Counterbalance

CP448-2

OPERATION

This valve is a dual counterbalance valve. It uses two CP448-1 cartridges.

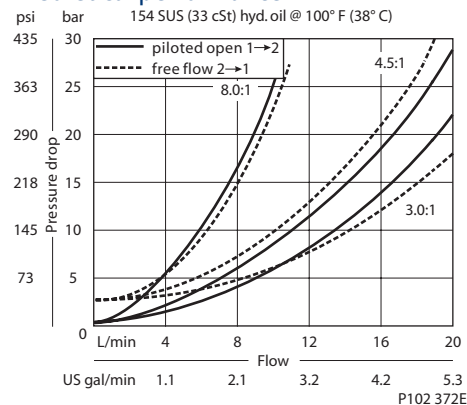
Schematic



P102 379E

SPECIFICATIONS

Theoretical performance



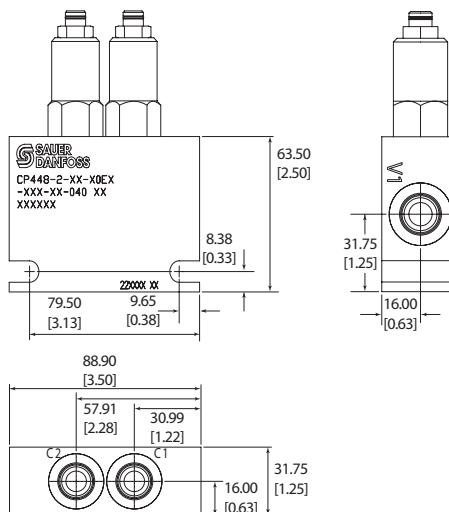
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 22 bar [319 psi]	20 l/min [5 US gal/min]
Weight	0.78 kg [1.72 lb]
Pilot ratio	3:1, 4.5:1, 8:1
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



P102 749

ORDERING INFORMATION

CP448-2-4S-B-0-E-B-150-4.5-040

Check crack pressure 040 = 2.8 bar [40 psi]																
Pilot ratio	1.5 — 3.0 — 4.5 — 8.0															
Crack pressure Code x 10 = psi Example: 050 = 500 psi																
Adjustment option E = External																
Housing and ports 4S = AL, #4 SAE 6S = AL, #6 SAE other housings available, consult factory																
Seals B = Buna N V = Viton	Seal kits 120238 120239															
Pressure range	<table border="0"> <tr> <td>A</td> <td>14-55 bar [200-300 psi]</td> <td>41-124 bar [600-1800 psi]</td> <td>55-186 bar [800-2700 psi]</td> <td>103-345 bar [1500-5000 psi]</td> </tr> <tr> <td>B</td> <td>34-117 bar [500-1700 psi]</td> <td>69-241 bar [1000-3500 psi]</td> <td>103-345 bar [1500-5000 psi]</td> <td></td> </tr> <tr> <td>C</td> <td>55-207 bar [800-3000 psi]</td> <td>124-345 bar [1800-5000 psi]</td> <td></td> <td></td> </tr> </table>	A	14-55 bar [200-300 psi]	41-124 bar [600-1800 psi]	55-186 bar [800-2700 psi]	103-345 bar [1500-5000 psi]	B	34-117 bar [500-1700 psi]	69-241 bar [1000-3500 psi]	103-345 bar [1500-5000 psi]		C	55-207 bar [800-3000 psi]	124-345 bar [1800-5000 psi]		
A	14-55 bar [200-300 psi]	41-124 bar [600-1800 psi]	55-186 bar [800-2700 psi]	103-345 bar [1500-5000 psi]												
B	34-117 bar [500-1700 psi]	69-241 bar [1000-3500 psi]	103-345 bar [1500-5000 psi]													
C	55-207 bar [800-3000 psi]	124-345 bar [1800-5000 psi]														

P102 750E

Cartridge Valves Technical Information

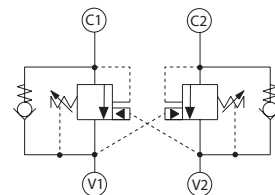
Counterbalance valves

Dual Counterbalance

DCB10-HV

OPERATION

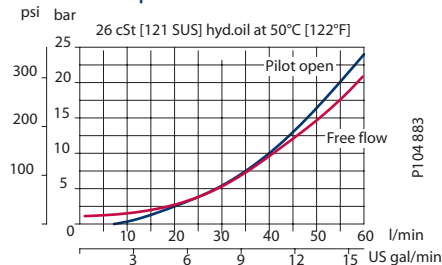
This is a dual counterbalance valve with hydraulic vent. This assembly uses 2 CB10-HV cartridges.



P102 379E

SPECIFICATIONS

Theoretical performance



Specifications

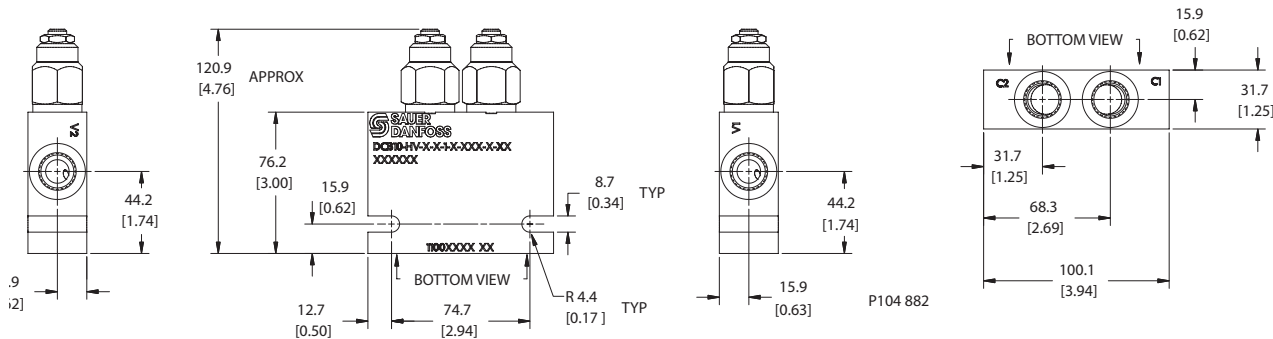
Rated pressure	350 bar [5075 psi]*
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	0.90 kg [1.98 lb]
Pilot ratio	1.5:1, 3.0:1, 4.5:1, 10.0:1
Cavity	None

* 350 bar with steel housing
210 bar with aluminum housing

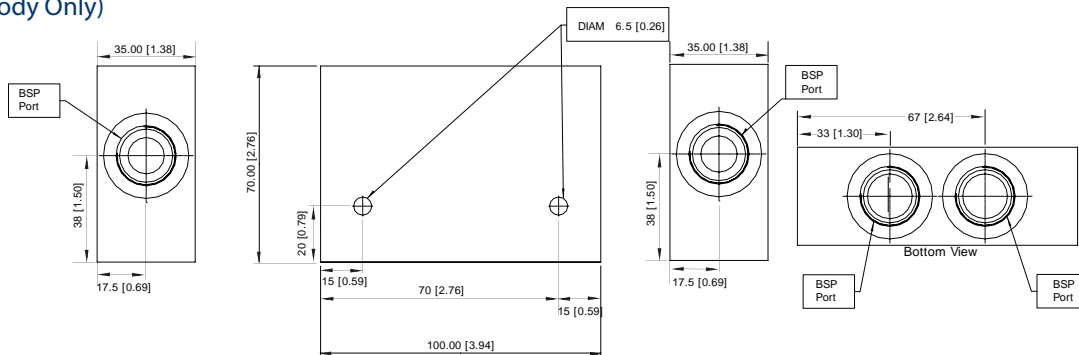
mm [in]

Cross-sectional view

SAE - Ported



BSP Ported - (Body Only)



DCB10-HV-1-B-1-E-100-B-8S

Spring range

For pilot ratio Z (1.5:1)
1 = 20-70 bar [290-1015 psi]
2 = 30-90 bar [435-1305 psi]
3 = 50-140 bar [725-2030 psi]

For pilot ratio A (3:1)

1 = 35-110 bar [507-1595 psi]
2 = 60-150 bar [870-2175 psi]
3 = 80-230 bar [1160-3335 psi]

For pilot ratio B (4.5:1)

1 = 55-180 bar [797-2610 psi]
2 = 75-240 bar [1087-3480 psi]
3 = 90-350 bar [1305-5075 psi]

For pilot ratio C (10:1)

1 = 90-350 bar [1305-5075 psi]

Pilot ratio
Z = 1.5 to 1
A = 3 to 1
B = 4.5 to 1
C = 10 to 1

Check crack pressure
1 = 1 bar (14.5 psi)

Adjust type
E = External adjustment
F = Tamper resistant

Seals

B = Buna-N 11002672
V = Viton 11002673

Std. setting

45 = 45 bar [650 psi] Set in Spring 1 For Pilot Ratio Z
60 = 60 bar [870 psi] Set in Spring 2 For Pilot Ratio Z
70 = 70 bar [1015 psi] Set in Spring 1 For Pilot Ratio A
100 = 100 bar [1450 psi] Set in Spring 3 For Pilot Ratio Z
100 = 100 bar [1450 psi] Set in Spring 1 For Pilot Ratio B
100 = 100 bar [1450 psi] Set in Spring 2 For Pilot Ratio A,B
175 = 175 bar [2537 psi] Set in Spring 3 For Pilot Ratio A,B
175 = 175 bar [2537 psi] Set in Spring 1 For Pilot Ratio C

Body and ports

6S = Aluminium, #6 SAE
8S = Aluminium, #8 SAE
SE3B = Aluminium, 3/8" BSPP
SE4B = Aluminium, 1/2" BSPP
S6S = Steel, #6 SAE
S8S = Steel, #8 SAE

Body P/N

11002669
11001779
922518510
922518610
11009171
11009170

P104 884

Cartridge Valves Technical Information

Counterbalance valves

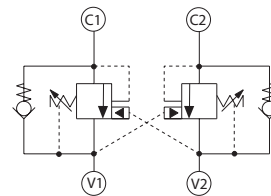
Dual Counterbalance

CP441-2

OPERATION

This valve is a dual counterbalance valve. It uses two CP441-1 cartridges.

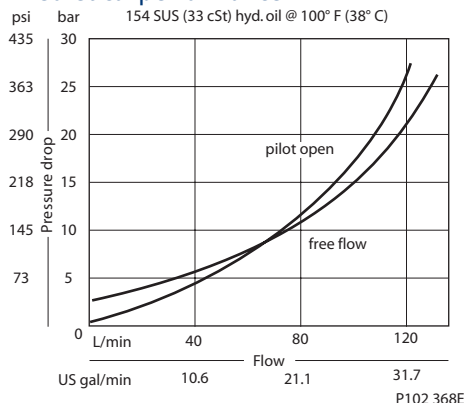
Schematic



P102 379E

SPECIFICATIONS

Theoretical performance



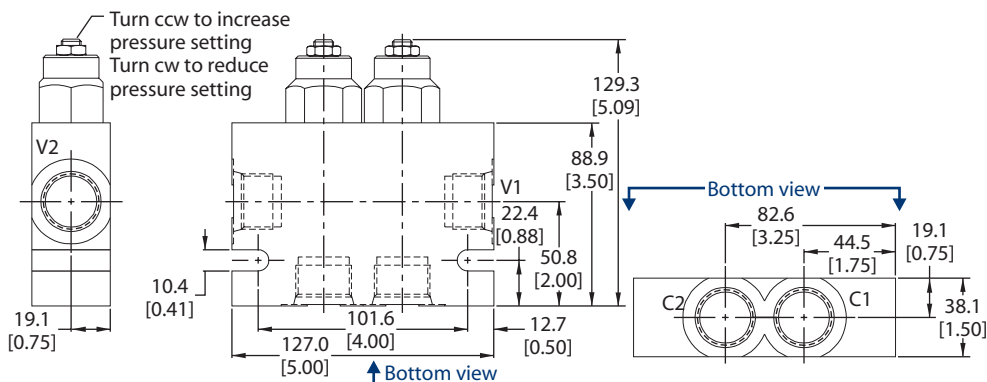
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Weight	1.26 kg [2.77 lb]
Pilot ratio	3:1, 4.5:1, 10:1
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP441 - 2 - 12S - B - E - B - 250 - 4.5 - 015

Housing and ports	Housing P/N	Free flow check Cracking pressure	Pilot ratio
10S = AL, #10 SAE	220752	bar [psi]	
12S = AL, #12 SAE	220753	005 = .34 [5]	
6B = AL, 3/4 BSP		015 = 1.03 [15]	
4B = AL, 1/2 BSP			
other housings available, consult factory			
Seals	Seal kit	Crack pressure	
B = Buna-N	120414	Code x 10 = psi	
V = Viton	120415	Example: 250 = 2500 psi	
Adjustment option		Pressure range	
E = External adjustment			
	Pilot ratio 3.0	Pilot ratio 4.5	Pilot ratio 10.0
	bar [psi]	bar [psi]	bar [psi]
	A = 34-103 [500-1500]	A = 34-138 [500-2000]	A = 69-345 [1000-5000]
	Std. setting 69 [1000]	Std. setting 103 [1500]	Std. setting 172 [2500]
	B = 103-207 [1500-3000]	B = 103-345 [1500-5000]	B = N/a [N/a]
	Std. setting 103 [1500]	Std. setting 103 [1500]	

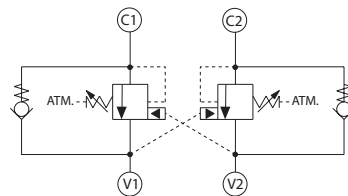
P102 089E

Cartridge Valves Technical Information

Counterbalance valves

Dual Counterbalance

DCB10-AV



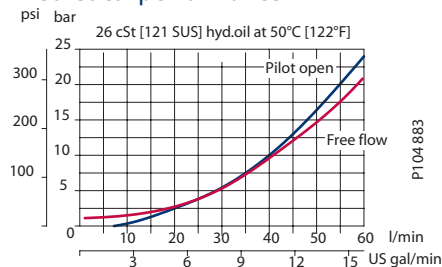
P104 885

OPERATION

This is a dual counterbalance valve with atmospheric vent. This assembly uses the CB10-AV valve.

SPECIFICATIONS

Theoretical performance



P104 883

mm [in]

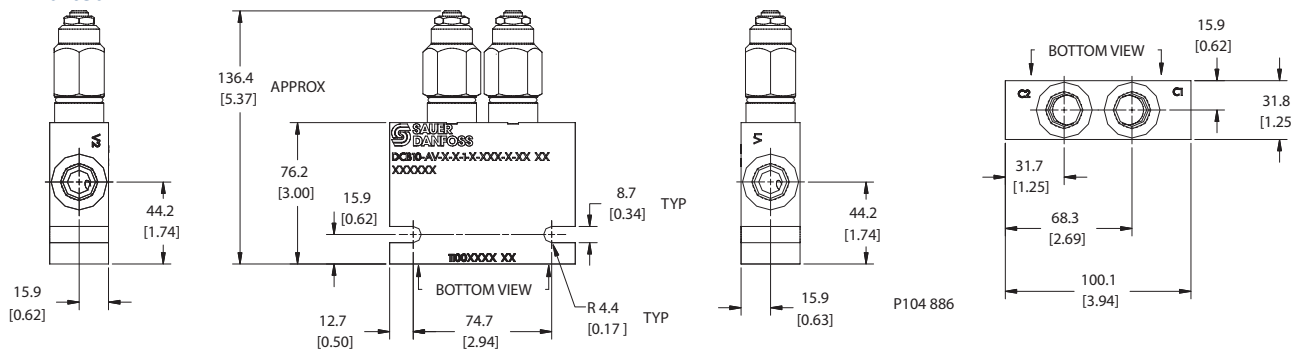
Specifications

Rated pressure	350 bar [5075 psi]*
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	10 drops/min @ 70% of crack pressure
Weight	0.90 kg [1.98 lb]
Pilot ratio	1.5:1, 3.0:1, 4.5:1, 10.0:1
Cavity	None

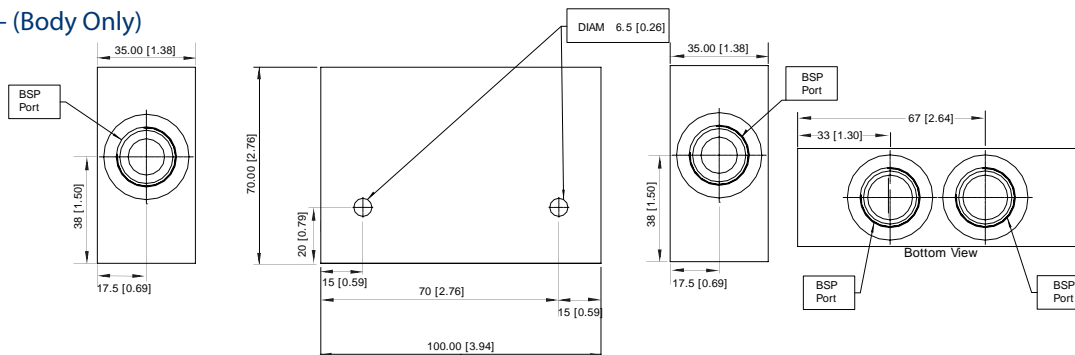
* 350 bar with steel housing
210 bar with aluminum housing

Cross-sectional view

SAE - Ported



BSP Ported - (Body Only)



DCB10-AV-1-B-1-E-100-B-8S

Spring range

For pilot ratio Z (1.5:1)
1 = 20-70 bar [290-1015 psi]
2 = 30-90 bar [435-1305 psi]
3 = 50-140 bar [725-2030 psi]

For pilot ratio A (3:1)
1 = 35-110 bar [507-1595 psi]
2 = 60-150 bar [870-2175 psi]
3 = 80-230 bar [1160-3335 psi]

For pilot ratio B (4.5:1)
1 = 55-180 bar [797-2610 psi]
2 = 75-240 bar [1087-3480 psi]
3 = 90-350 bar [1305-5075 psi]

For pilot ratio C (10:1)
1 = 90-350 bar [1305-5075 psi]

Pilot ratio

Z = 1.5 to 1
A = 3 to 1
B = 4.5 to 1
C = 10 to 1

Check crack pressure

1 = 1 bar (14.5 psi)

Adjust type

E = External adjustment
F = Tamper resistant

Body and ports

6S = Aluminium, #6 SAE
8S = Aluminium, #8 SAE
SE3B = Aluminium, 3/8" BSPP
SE4B = Aluminium, 1/2" BSPP
S6S = Steel, #6 SAE
S6S = Steel, #8 SAE

Seals

B = Buna-N
V = Viton

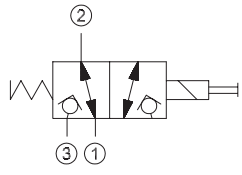
Std. setting

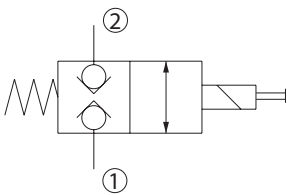
45 = 45 bar [650 psi] Set in Spring 1 For Pilot Ratio Z
60 = 60 bar [870 psi] Set in Spring 2 For Pilot Ratio Z
70 = 70 bar [1015 psi] Set in Spring 1 For Pilot Ratio A
100 = 100 bar [1450 psi] Set in Spring 3 For Pilot Ratio Z
100 = 100 bar [1450 psi] Set in Spring 1 For Pilot Ratio B
100 = 100 bar [1450 psi] Set in Spring 2 For Pilot Ratio A,B
175 = 175 bar [2537 psi] Set in Spring 3 For Pilot Ratio A,B
175 = 175 bar [2537 psi] Set in Spring 1 For Pilot Ratio C

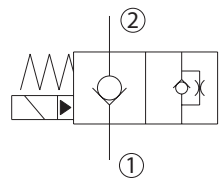
Body P/N

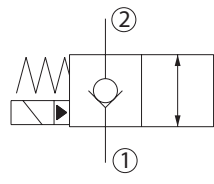
11002669
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11009170

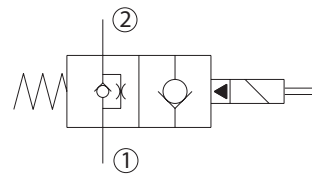
P104 887

3-Way, 2-Position Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	EVH 06/D5	NCS06/3	Solenoid Valve, Poppet Type, 3-Way, 2-Position	20 l/min [5 US gal/min]	230 bar [3300 psi]	10.16

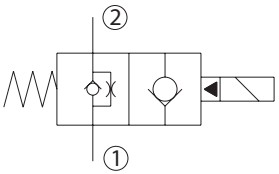
2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	SVP08-CDB	SDC08-2	Solenoid Valve, Poppet Type, Double-Blocking,	16 l/min [4 US gal/min]	230 bar [3300 psi]	10.17
	EVK 06/C5	NCS06/2	Normally Closed	50 l/min [13 US gal/min]	210 bar [3000 psi]	10.18

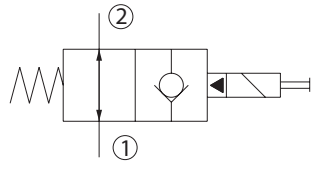
2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	SVP08-NC	SDC08-2	Solenoid Valve, Poppet Type, Normally Closed, Pilot	35 l/min [9 US gal/min]	230 bar [3300 psi]	10.19
	SVP10-NC	SDC10-2	Operated	80 l/min [21 US gal/min]	230 bar [3300 psi]	10.20
	CP501-1	CP12-2		115 l/min [30 US gal/min]	210 bar [3000 psi]	10.21

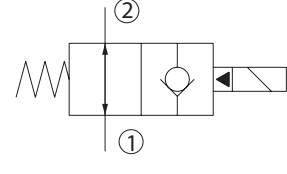
2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	SVP08-NCR	SDC08-2	Solenoid Valve, Poppet Type, Normally Closed, Pilot	35 l/min [9 US gal/min]	230 bar [3300 psi]	10.22
	SVP10-NCR	SDC10-2	Operated with Reverse Free Flow	80 l/min [21 US gal/min]	230 bar [3300 psi]	10.23
	CP501-3	CP12-2		115 l/min [30 US gal/min]	210 bar [3000 psi]	10.24
	CP502-3	SDC16-2		130 l/min [34 US gal/min]	210 bar [3000 psi]	10.25
	CP503-3	SDC20-2		230 l/min [61 US gal/min]	210 bar [3000 psi]	10.26

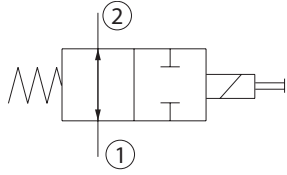
2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	SVP08-NO	SDC08-2	Solenoid Valve, Poppet Type, Normally Open, Pilot	35 l/min [9 US gal/min]	230 bar [3300 psi]	10.27
	SVP10-NO	SDC10-2	Operated	80 l/min [21 US gal/min]	230 bar [3300 psi]	10.28

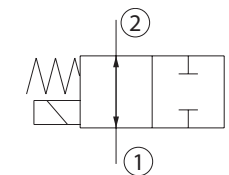
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP501-2	CP12-2	Solenoid Valve, Poppet Type, Normally Open, Pilot Operated	115 l/min [30 US gal/min]	210 bar [3000 psi]	10.29

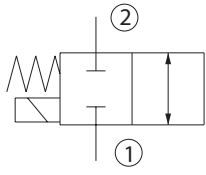
2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	SVP08-NOR	SDC08-2	Solenoid Valve, Poppet Type, Normally Open, Pilot Operated with reverse Free Flow	35 l/min [9 US gal/min]	230 bar [3300 psi]	10.30
	SVP10-NOR	SDC10-2		80 l/min [21 US gal/min]	230 bar [3300 psi]	10.31

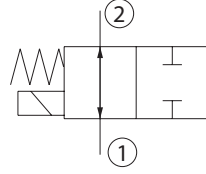
2-Way Poppet	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP501-4	CP12-2	Solenoid Valve, Poppet Type, Normally Open, Pilot Operated with reverse Free Flow	115 l/min [30 US gal/min]	210 bar [3000 psi]	10.32
	CP502-4	SDC16-2		130 l/min [34 US gal/min]	210 bar [3000 psi]	10.33
	CP503-4	SDC20-2		230 l/min [61 US gal/min]	210 bar [3000 psi]	10.34

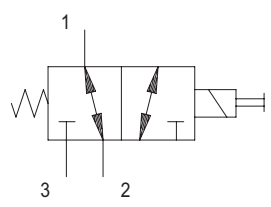
2-Way Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-22-01	SDC08-2	Solenoid Valve, Spool Type, 2-Way, 2-Position, Normally Open, Push Type	16 l/min [4 US gal/min]	230 bar [3300 psi]	10.35

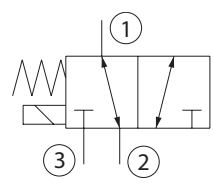
2-Way Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-22-01	SDC10-2	Solenoid Valve, Spool Type, 2-Way, 2-Position, Normally Open, Pull Type	27 l/min [7 US gal/min]	230 bar [3300 psi]	10.36

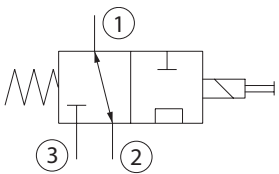
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

2-Way Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-22-02	SDC08-2	Solenoid Valve, Spool Type, 2-Way, 2-Position, Normally Closed, Pull Type	14 l/min [4 US gal/min]	230 bar [3300 psi]	10.37
	SV10-22-02	SDC10-2		35 l/min [9 US gal/min]	230 bar [3300 psi]	10.38

2-Way Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-22-03	SDC08-2	Solenoid Valve, Spool Type, 2-Way, 2-Position, Normally Open, Pull Type	12 l/min [3 US gal/min]	230 bar [3300 psi]	10.39

3-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-23-01	SDC08-3	Solenoid Valve, Spool Type, 3-Way, 2-Position	17 l/min [5 US gal/min]	230 bar [3300 psi]	10.40
	SV10-23-01	SDC10-3		28 l/min [7 US gal/min]	230 bar [3300 psi]	10.41
	CP521-21	CP12-3		60 l/min [16 US gal/min]	240 bar [3500 psi]	10.42

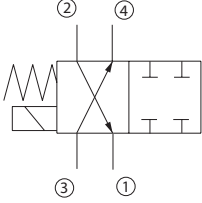
3-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-23-02	SDC08-3	Solenoid Valve, Spool Type, 3-Way, 2-Position	10 l/min [3 US gal/min]	230 bar [3300 psi]	10.43
	SV10-23-02	SDC10-3		15 l/min [4 US gal/min]	230 bar [3300 psi]	10.44

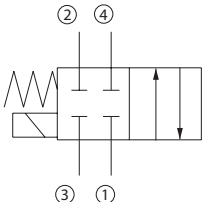
3-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-23-03	SDC08-3	Solenoid Valve, Spool Type, 3-Way, 2-Position	18 l/min [5 US gal/min]	230 bar [3300 psi]	10.45

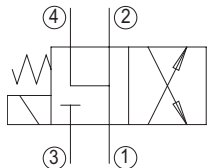
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

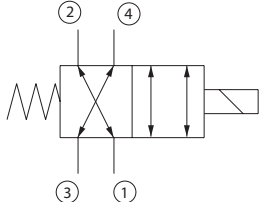
3-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-23-04	SDC08-3	Solenoid Valve, Spool Type, 3-Way, 2-Position	10 l/min [3 US gal/min]	230 bar [3300 psi]	10.46
	SV10-23-04	SDC10-3		20 l/min [5 US gal/min]	230 bar [3300 psi]	10.47
4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-24-01	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	8 l/min [2 US gal/min]	230 bar [3300 psi]	10.48
	SV10-24-01	SDC10-4		15 l/min [4 US gal/min]	230 bar [3300 psi]	10.49
4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-24-02	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	10 l/min [3 US gal/min]	230 bar [3300 psi]	10.50
4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-24-04	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	8 l/min [2 US gal/min]	230 bar [3300 psi]	10.51
4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-24-12	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	18 l/min [5 US gal/min]	230 bar [3300 psi]	10.52

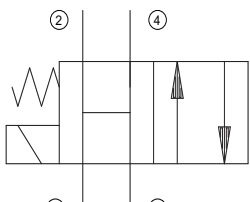
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-24-05	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	25 l/min [7 US gal/min]	230 bar [3300 psi]	10.53

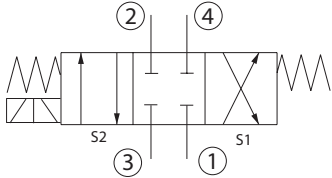
4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-24-07	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	24 l/min [6 US gal/min]	230 bar [3300 psi]	10.54

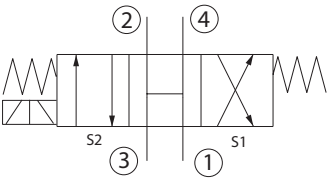
4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-24-08	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	24 l/min [6 US gal/min]	230 bar [3300 psi]	10.55

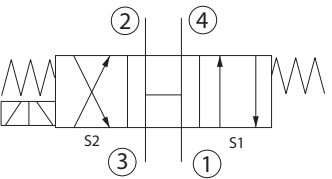
4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP531-21	CP12-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	32 l/min [8 US gal/min]	240 bar [3500 psi]	10.56

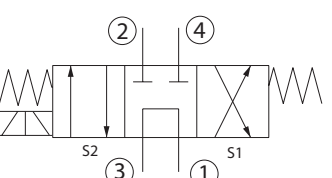
4-Way, 2-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-24-13	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 2-Position	21 l/min [6 US gal/min]	230 bar [3300 psi]	10.57

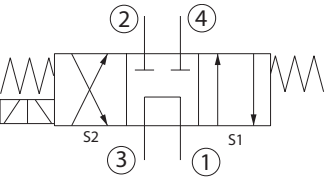
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-34-02	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	10 l/min [2 US gal/min]	230 bar [3300 psi]	10.58
	SV10-34-02	SDC10-4		20 l/min [6 US gal/min]	230 bar [3300 psi]	10.59

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-34-03	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	8 l/min [2 US gal/min]	230 bar [3300 psi]	10.60

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-34-03	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	16 l/min [4 US gal/min]	230 bar [3300 psi]	10.61

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-34-04	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	6 l/min [2 US gal/min]	230 bar [3300 psi]	10.62

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-34-04	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	15 l/min [4 US gal/min]	230 bar [3300 psi]	10.63

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV08-34-05	SDC08-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	10 l/min [2 US gal/min]	230 bar [3300 psi]	10.64
	SV10-34-05	SDC10-4		20 l/min [6 US gal/min]	230 bar [3300 psi]	10.65

4-Way, 3-Position Spool	Model No.	Cavity	Description	Flow*	Pressure	Page
	SV10-34-11	SDC10-4	Solenoid Valve, Spool Type, 4-Way, 3-Position	24 l/min [6 US gal/min]	230 bar [3300 psi]	10.66

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

SOLENOID VALVES

Solenoid valves are electrically-operated, on-off poppet or spool-type valves for load holding, blocking, or directional control applications.

Solenoid valves



PLUS+1™ COMPLIANT

Comatrol solenoid valves are PLUS+1™ compliant. PLUS+1 compliance means our valves are directly compatible with the PLUS+1 machine control architecture. Adding solenoid valves to your application using PLUS+1 GUIDE software is as easy as *drag-and-drop*. Software development that used to take months can now be done in just a few hours. For more information on PLUS+1 GUIDE, visit www.comatrol.com or www.sauer-danfoss.com/plus1. The table below details available GUIDE function blocks for controlling Comatrol solenoid valves.

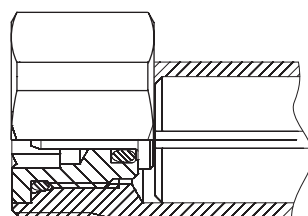
GUIDE function blocks

On-off	10106088
On-off-on	10106102

SV AND SVP COIL OPTIONS

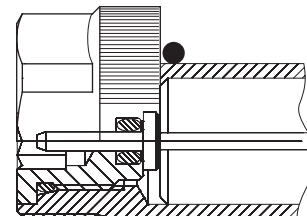
All SV and SVP valves may be ordered with a robust coil option. The robust coil option uses a steel nut and does not use O-rings on the top and bottom of the coil. The standard coil option uses a plastic nut with one O-ring on the top of the coil and one O-ring on the bottom of the coil.

Robust Coil Nut



No O-rings needed
 Torque is same as standard nut

Standard Coil Nut



Standard Coil Nut Kit includes O-rings

P108 282E

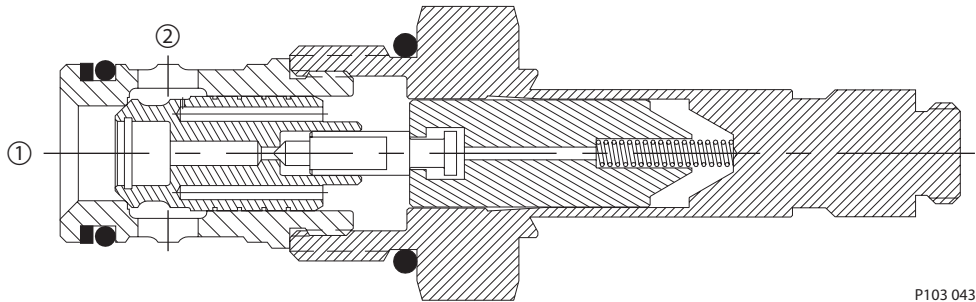
POPPET-TYPE SOLENOID VALVES

Poppet-type solenoid valves are two-way, normally open or normally-closed valves.

Normally-closed

Normally-closed poppet valves block flow from 2 to 1 when de-energized. When the solenoid coil is energized, magnetic force lifts the small pilot dart from its seat, creating a pressure differential across the main poppet that provides the force to lift the main poppet off its seat. Models with free-reverse-flow also act as a low-pressure, free-flow check valve from 1 to 2 when energized; standard models provide an orifice-connection to 2 when pressure is applied at 1.

Normally closed poppet-type solenoid valve

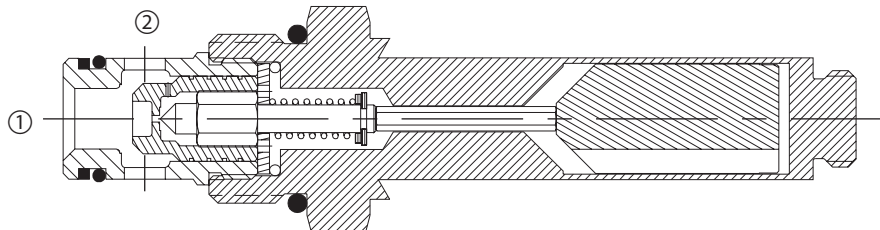


P103 043

Normally-open

Normally-open poppet valves provide free flow from 2 to 1 when de-energized. When the solenoid coil is energized, magnetic force seats the small pilot dart, creating a pressure differential that provides the force to seat the main poppet and block flow. Models with free-reverse flow also act as a low-pressure, free-flow check valve from 1 to 2 when de-energized; standard models provide an orifice-connection to 2 when pressure is applied at 1.

Normally open poppet-type solenoid valve



P103 044

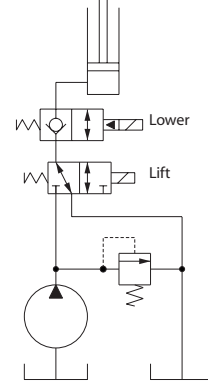
POPPET-TYPE SOLENOID VALVES (continued)

Applications

Common applications for normally-open and normally-closed poppet valves include:

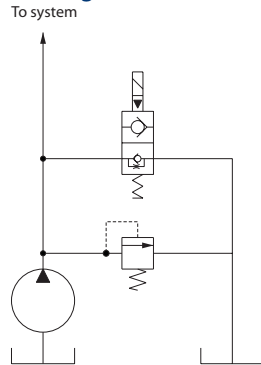
- Load holding and lowering with single-acting cylinders.
- Unloading of a fixed-displacement pump.
- Use in combination to duplicate four-way, three-position valve functions. These circuits create low-cost, compact alternatives to subplate- or stack-type directional control valves. As an added advantage these poppet valve circuits do not need load holding checks as the poppets provide the same low-leakage function.

Lift, hold, & lower single acting cylinder



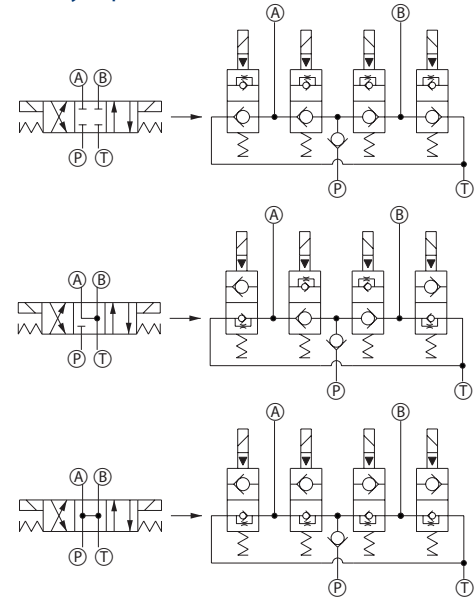
P103 102E

Pump unloading



P103 103E

4-way 3-position directional valve circuits



P103 104

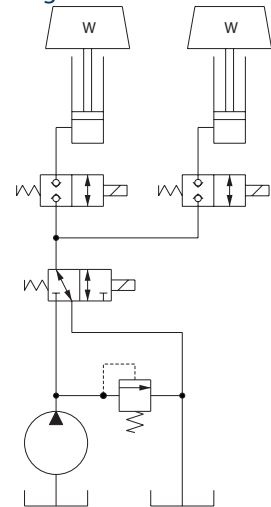
BI-DIRECTIONAL POPPET-TYPE SOLENOID VALVES

Bi-directional poppet-type solenoid valves are two-way, normally open or normally-closed valves. The poppets are pressure-balanced so that the spring holds the poppet in its de-energized position. When the solenoid coil is energized, magnetic force overcomes the spring and causes the poppet to shift.

Normally-closed

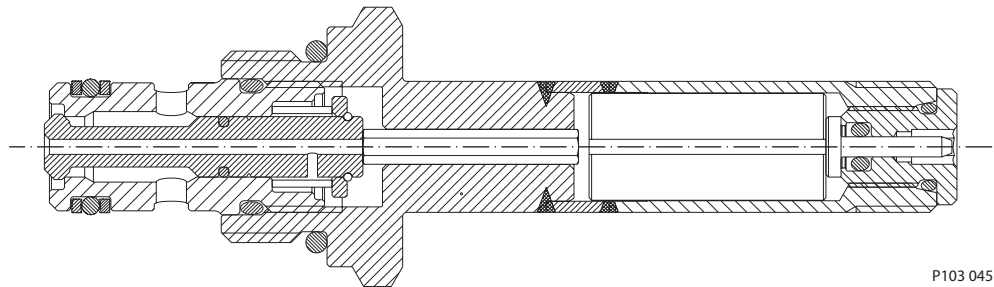
Normally-closed bi-directional poppet valves block flow in both directions when de-energized and allow free-flow when energized. These valves are typically used as directional controls for single-acting cylinders or uni-directional motors where low-leakage load holding is required, or where multiple functions must be separated.

Independent cylinder operation and load-holding



P103 105

Normally closed bi-directional poppet-type solenoid valve



P103 045

SPOOL-TYPE SOLENOID VALVES

Spool-type valves are available in 2-way 2-position, 3-way 2-position, 4-way 2-position, and 4-way 3 position configurations. For all these valves the spools are pressure-balanced and are held in position by a spring when de-energized. When the solenoid coil is energized, magnetic force overcomes the spring and shifts the spool. As the spool moves, flow forces, also known as Bernoulli forces, act on the spool and can prevent proper operation. These forces are a function of pressure and flow, and the catalog ratings show the operating limits for each valve. These limits are based on the valve's ability to shift at 85% of nominal voltage at 140°F ambient temperature. For this reason flow and pressure ratings for solenoid spool valves should not be exceeded.

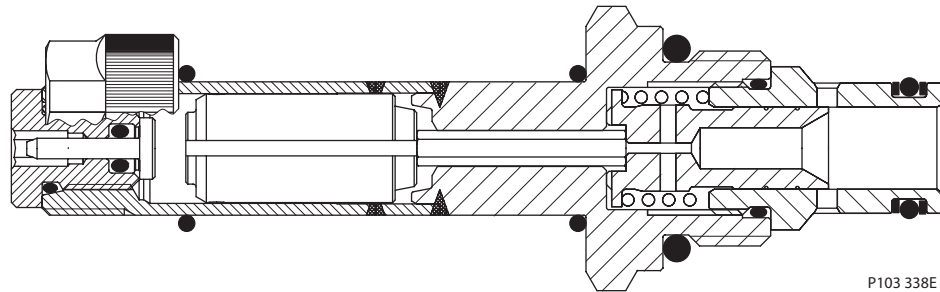
Consult your Comatrol representative for extreme applications.

SPOOL-TYPE SOLENOID VALVES (continued)

Two-way, two-position

Two-way, two-position spool-type valves are either normally open or normally closed.

Two-way, two-position spool-type solenoid valve

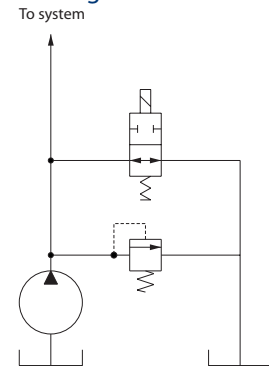


P103 338E

Common applications for two-way, two-position spool type solenoid valves are:

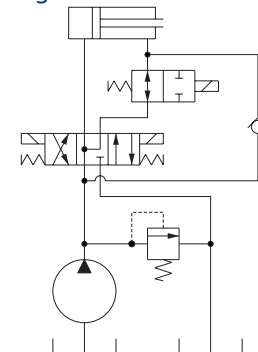
- Unloading of a fixed-displacement pump.
- Cylinder regeneration. When the two-way two-position spool valve is energized the cylinder circuit is in regeneration mode for faster cylinder extension.
- Two-speed motor (or cylinder) operation. By using multiple valves and circuit logic, similar circuits can be used for three-speed, four-speed, etc.

Pump unloading



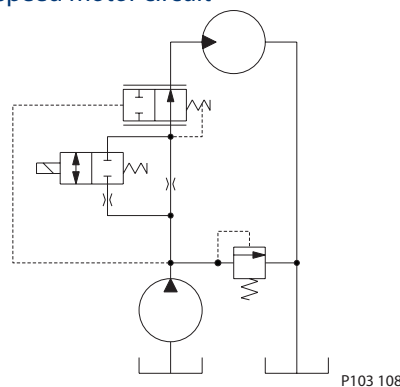
P103 106E

Cylinder regeneration circuit



Energize 2-way spool valve for faster extension P103 107

Two-speed motor circuit



P103 108

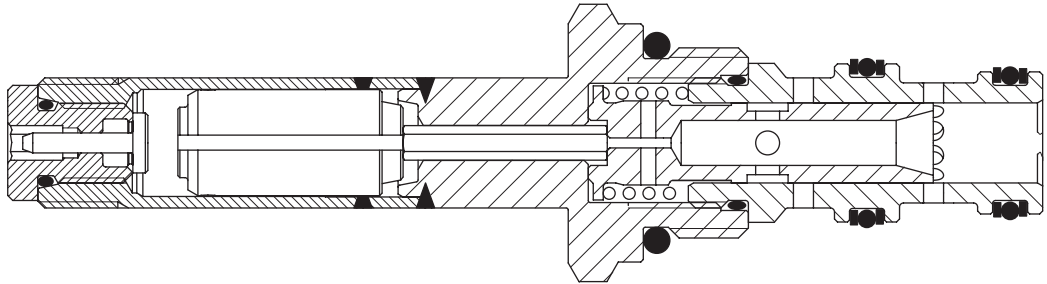
SPOOL-TYPE SOLENOID VALVES (continued)

Three-way, two-position

Three-way, two-position spool-type valves are available with a variety of porting and flow paths.

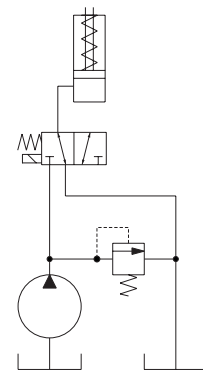
Common applications for three-way, two-position spool type solenoid valves:

Three-way, two-position spool-type solenoid valves



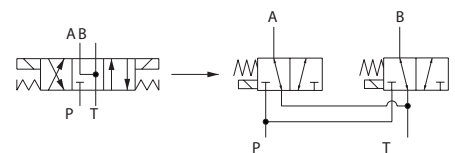
Single acting cylinder, clutch, or brake

- Control of a single-acting cylinder, clutch, or brake.
- Circuit selector
- Pilot control for a large directional spool.
- Use in combination to duplicate four-way, three-position valve functions, creating low-cost, compact alternatives to subplate- or stack-type directional control valves.



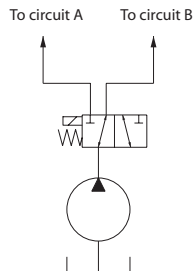
P103 109

4-way 3-position directional valve circuits



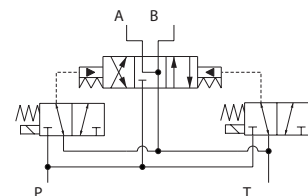
P103 112

Selector circuit



P103 110E

Pilot for directional valve



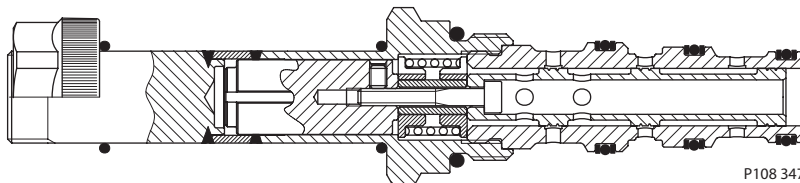
P103 111

SPOOL-TYPE SOLENOID VALVES (continued)

Four-way, two-position

Four-way, two-position spool-type valves are available with normally-open, normally-closed, reversing, and single-acting spool options.

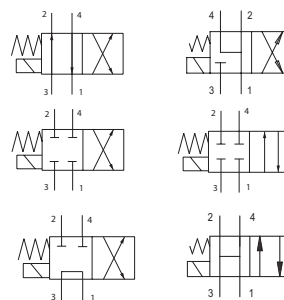
Four-way, two-position spool-type solenoid valves



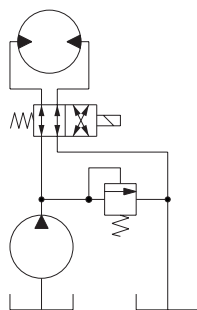
Common applications for four-way, two-position spool type solenoid valves are:

- Directional control for motors or cylinders.
- Use in combination to duplicate four-way, three-position valve functions, creating low-cost, compact alternatives to subplate- or stack-type directional control valves.

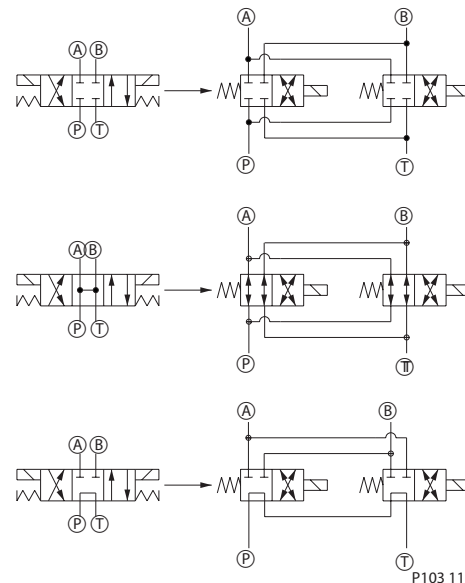
4-way 2-position spool options



Motor directional control



4-way 3-position directional valve circuits

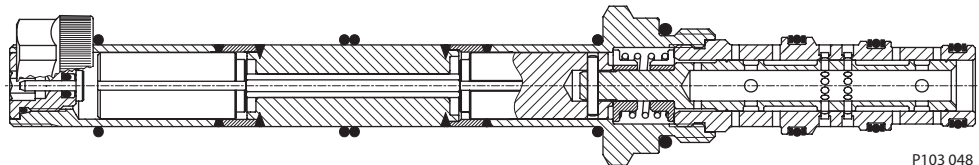


SPOOL-TYPE SOLENOID VALVES (continued)

Four-way, three-position

Four-way, three-position spool-type valves are available with normally-open, normally-closed, motor, and tandem spools.

Four-way, three-position spool-type solenoid valve

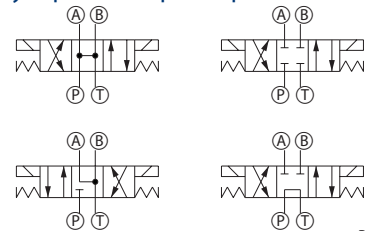


P103 048

These valves are typically used for directional control for motor or cylinder functions.

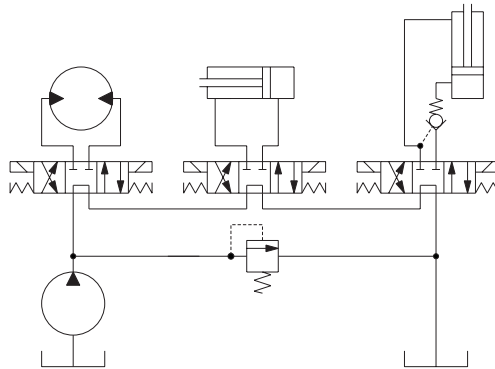
Typical series (or open-center) and parallel (or closed-center) circuits are shown below.

4-way 3-position spool options



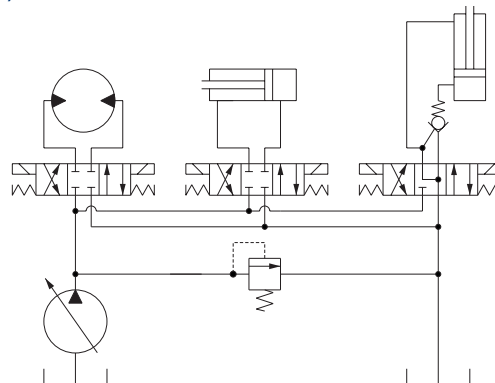
P103 116

Series (open-center) circuit



P103 117

Parallel (closed-center) circuit



P103 118

OPERATION

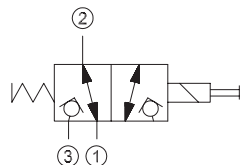
This is a direct-acting, 2-position, 3-way, poppet-type solenoid valve.

SPECIFICATIONS

Specifications

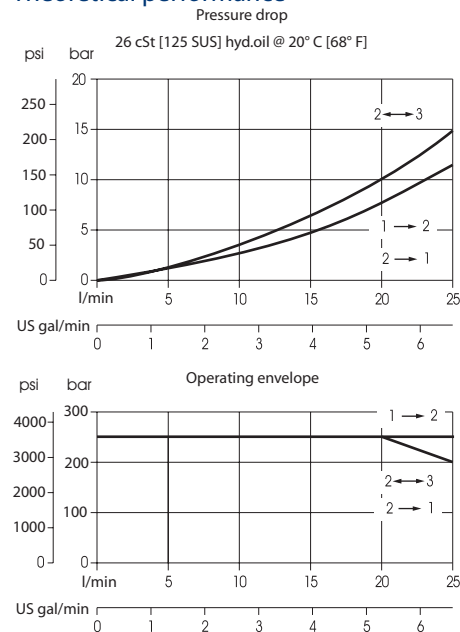
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.44 kg [0.97 lb]
Cavity	NCS06/3
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Schematic



P103 536

Theoretical performance

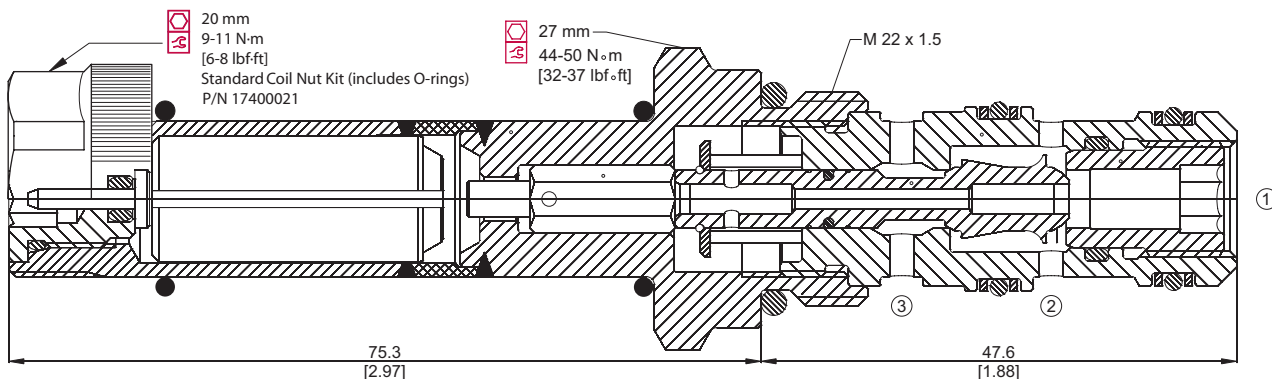


P103 616E

DIMENSIONS

mm [in]

Cross-sectional view



P103 611

ORDERING INFORMATION

EVH 06/D5-12D-DN-00-V

Coil voltage
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)
Coil termination:
00 = No Coil
FL = Flying Lead
AJ = Amp Junior *
DN = DIN 43650 *
DE = Deutsch
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Seals
Omit = Buna
V = Viton

Seal kit
230000110
230000070

Body and ports
00 = Cartridge only
SE3/8 = Al, 3/8 BSP
SE1/2 = Al, 1/2 BSP
SE6S = Al, #6 SAE
SE8S = Al, #8 SAE
Other housings available

Body Nomenclature
No Body
NCS06/3-SE-3/8
NCS06/3-SE-1/2
NCS06/3-SE-6S
NCS06/3-SE-8S

P103 619E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

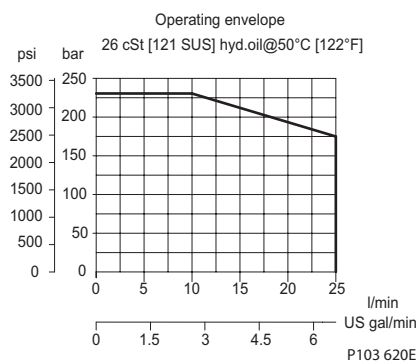
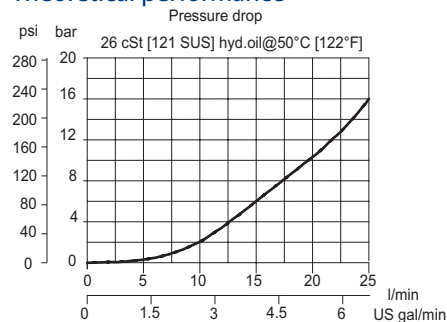
This is a normally-closed, double-blocking poppet-type solenoid valve.

SPECIFICATIONS

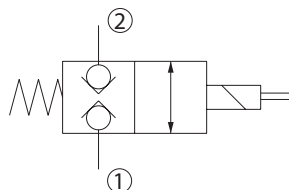
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	16 l/min [4 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.32 kg [0.71 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic



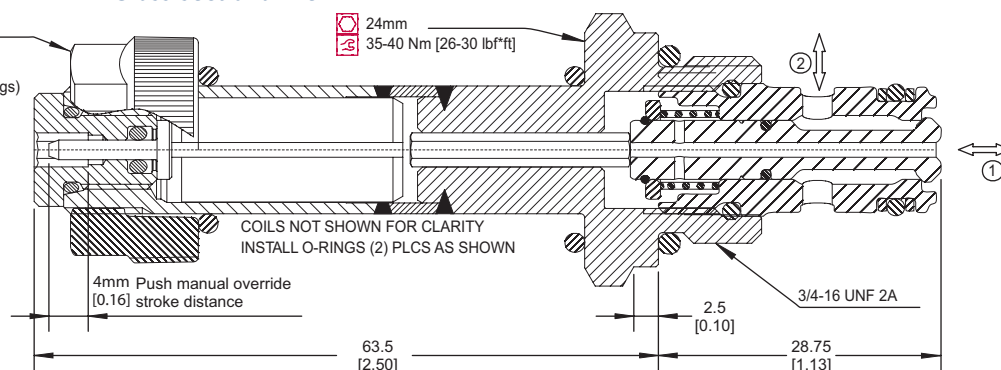
P102 716

DIMENSIONS

mm [in]

20mm
4-6 Nm [35-53 lbf*in]
Standard KIT (Includes O-rings)
P/N 173800588

Cross-sectional view



P103 488

ORDERING INFORMATION

SVP08-CDB-12D-DN-B-F-00

Coil voltage
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)
Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *

AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1
*These terminations are not available on robust coil (R12D, R24D)

Body and Ports
Omit = Cartridge only
4S = Al, #4 SAE
6S = Al, #6 SAE
DG2B = Al, 1/4 BSP
DG3B = Al, 3/8 BSP
Other housings available
Filter
Omit = No Filter
F = Filter 300 µm

Seals Seal Kit
B = Buna-N seals 354001619
V = Viton seals 354001719

Body Nomenclature
No Body
CP08-2-4S
CP08-2-6S
SDC08-2-DG2B
SDC08-2-DG3B

P103 545E

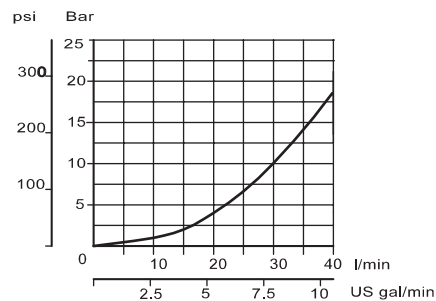
Solenoid valves
SVP08-CDB

OPERATION

This is a normally-closed, double-blocking poppet-type solenoid valve.

Theoretical performance

Pressure drop
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]

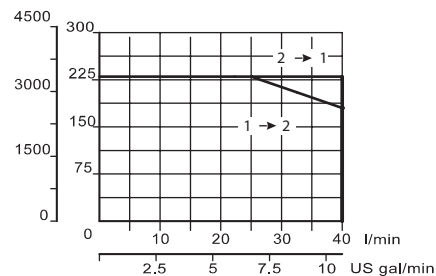


SPECIFICATIONS

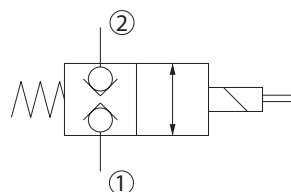
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Weight	0.43 kg [0.95 lb]
Cavity	NCS06/2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Operating envelope
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Schematic



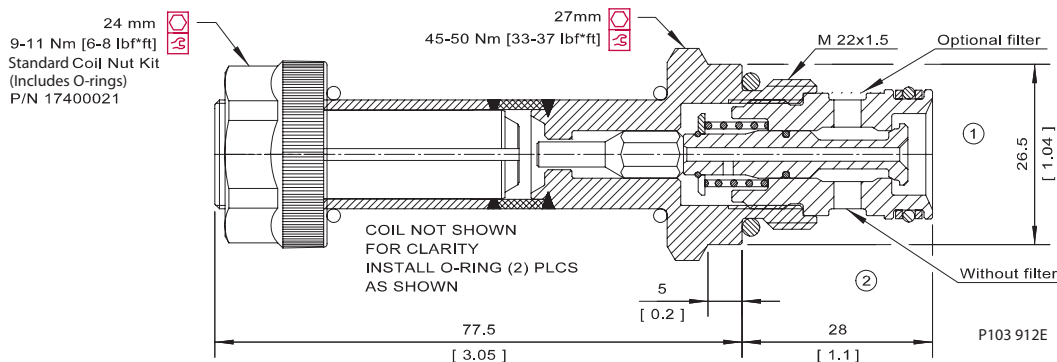
P102 716

P103 861E

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

EVK 06/C5-F-12D-DN-00-V

Filter	Seals	Seal kit	
Omit = No Filter	Omit = Buna	230000440	
F = Filter 300 µm	V = Viton	230000710	
Coil voltage	Body and ports		Body Nomenclature
00 = No Coil	00 = Cartridge only		No Body
12D = 12 VDC (Standard Coil)	DG3/8 = Al, 3/8 BSP		NCS06/2-DG-3/8
24D = 24 VDC (Standard Coil)	DG1/2 = Al, 1/2 BSP		NCS06/2-DG-1/2
R12D = 12 VDC (R-Coil)	DG6S = Al, #6 SAE		NCS06/2-DG-6S
R24D = 24 VDC (R-Coil)	DG8S = Al, #8 SAE		NCS06/2-DG-8S
Coil termination:	Other housings available		
00 = No Coil			
FL = Flying Lead			
AJ = Amp Junior *			
DN = DIN 43650 *			
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1			
DE = Deutsch			

*These terminations are not available on robust coil (R12D, R24D)

P103 850E

Solenoid valves
EVK 06/C5

OPERATION

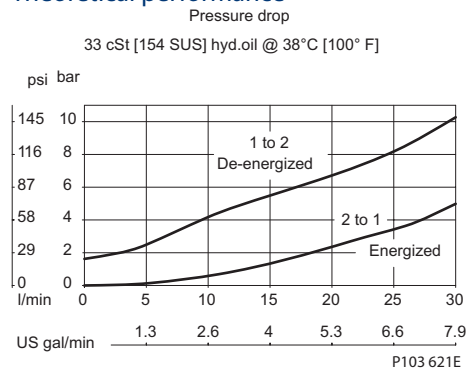
This is a normally-closed, pilot-operated, poppet-type solenoid valve.

SPECIFICATIONS

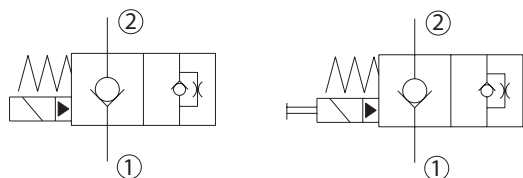
Specifications

Rated pressure	230 bar [3300 psi]
Maximum flow at rated pressure	35 l/min [9 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.23 kg [0.51 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



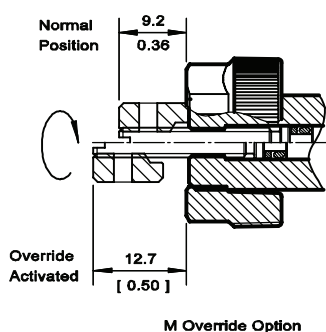
Schematic



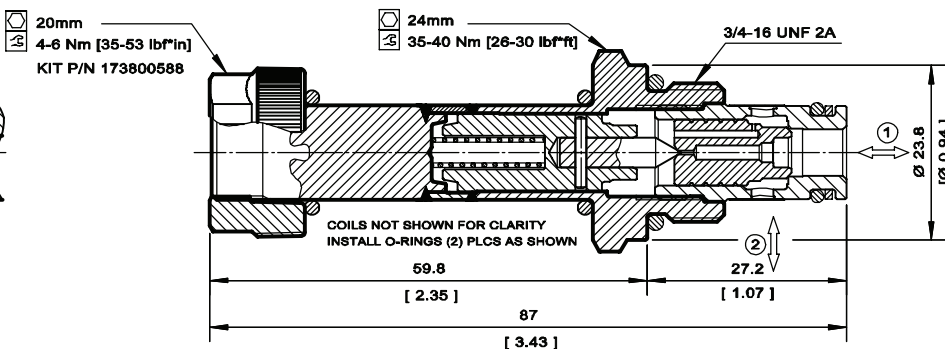
P102 384

DIMENSIONS

mm [in]



Cross-sectional view



ORDERING INFORMATION

SVP08-NC-12D-DN-M-B-F-00

<p>Coil voltage:</p> <ul style="list-style-type: none"> 00 = No Coil 12D = 12VDC (Standard Coil) 24D = 24VDC (Standard Coil) R12D = 12VDC (R-Coil) R24D = 24VDC (R-Coil) <p>Coil termination:</p> <ul style="list-style-type: none"> 00 = No Coil FL = Flying Lead DN = DIN 43650 * DE = Deutsch AJ = Amp Junior * SP = Spade * AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1 	<p>Body and ports:</p> <ul style="list-style-type: none"> 00 = Cartridge only DG2B = Al, 1/4 BSP DG3B = Al, 3/8 BSP 4S = Al, #4 SAE 6S = Al, #6 SAE Other housings available <p>Filter:</p> <ul style="list-style-type: none"> Omit = No Filter F = Filter 300 mm <p>Seals:</p> <ul style="list-style-type: none"> B = Buna-n 35400011 V = Viton 35400021 <p>Override Type:</p> <ul style="list-style-type: none"> Omit = No Override 	<p>Body Nomenclature</p> <ul style="list-style-type: none"> No Body SDC08-2-DG-2B SDC08-2-DG-3B CP08-2-4S CP08-2-6S
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OPERATION

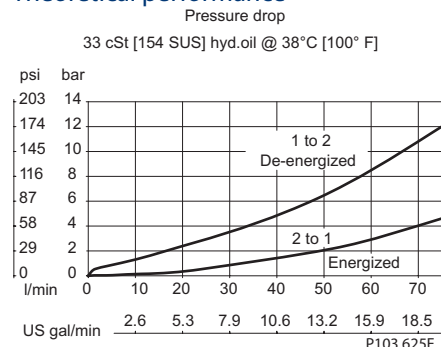
This is a normally-closed, pilot-operated, poppet-type solenoid valve.

SPECIFICATIONS

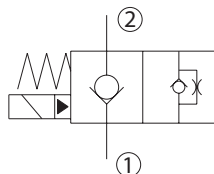
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



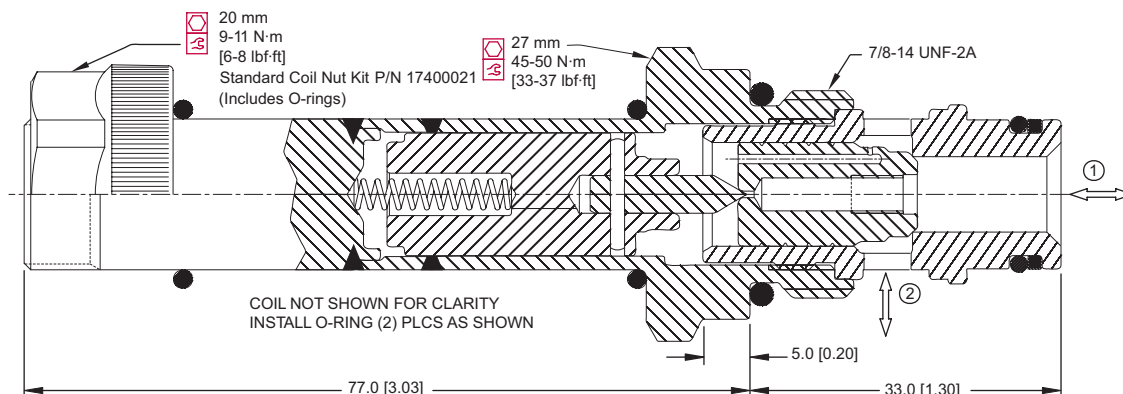
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



P103 491

ORDERING INFORMATION

SVP10-NC-12D-DN-B-F-00

- Coil voltage
- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)
- Coil termination:
- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1
- * These terminations are not available on robust coil (R12D, R24D)

- Body and ports
- 00 = Cartridge only
- DG3B = Al, 3/8 BSP
- DG4B = Al, 1/2 BSP
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- Other housings available
- Filter
- Omit = No Filter
- F = Filter 300 µm
- Seals
- B = Buna-N
- V = Viton
- Seals kit
- 354000719
- 354000819

- Body Nomenclature
- No Body
- SDC10-2-DG-3B
- SDC10-2-DG-4B
- CP10-2-6S
- CP10-2-8S

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Solenoid valves
SVP10-NC

OPERATION

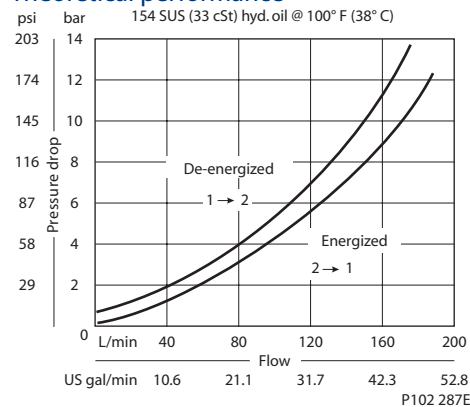
This valve is a normally closed, pilot operated, poppet type solenoid.

SPECIFICATIONS

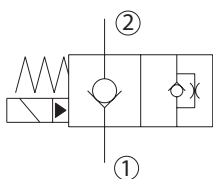
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.53 kg [1.16 lb]
Cavity	CP12-2
Standard Coil	D10 16 Watt
Coil nut	620186

Theoretical performance



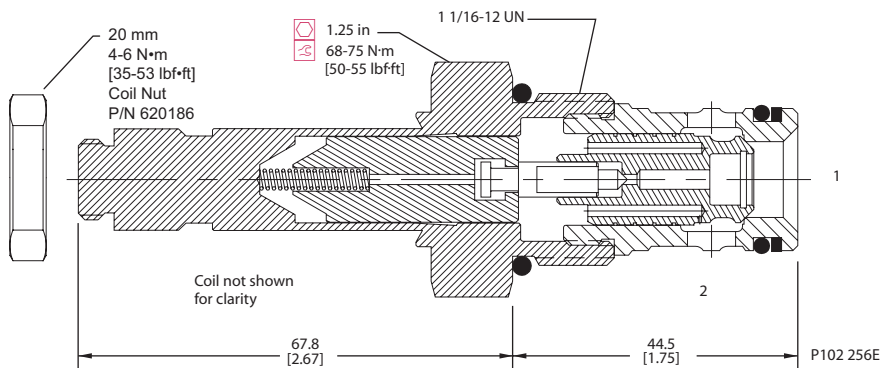
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP501 - 1 - B - 12S - 24D - S

<p>Seals B = Buna-N V = Viton</p>	<p>Seal kit 120265 120264</p>	<p>Termination 0 = No connector S = Spade L = Lead H = DIN 43650 DE = Deutsch M2 = Metri-Pak 150 Type 1</p>
<p>Housing and ports 0 = No Housing 4B = AL, 1/2 BSP 6B = AL, 3/4 BSP 10S = AL, #10 SAE 12S = AL, #12 SAE Other housings available</p>	<p>Housing P/N No Housing CP12-2-4B CP12-2-6B CP12-2-10S CP12-2-12S</p>	<p>Voltage 000 = No coil 12D = 12 VDC 24D = 24 VDC</p>

Solenoid valves
CP501-1

P102 323E

OPERATION

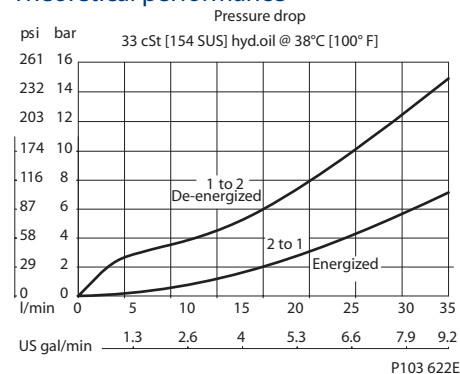
This is a normally-closed, pilot-operated, poppet-type solenoid valve with free reverse flow.

SPECIFICATIONS

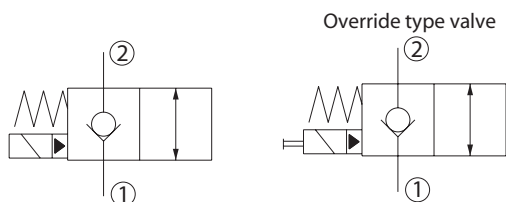
Specifications

Rated pressure	230 bar [3300 psi]
Maximum flow at rated pressure	35 l/min [9 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.23 kg [0.51 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance

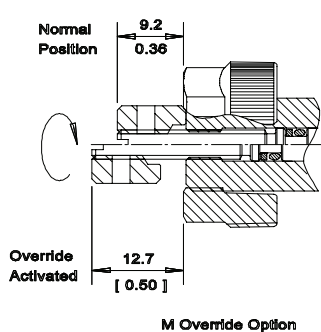


Schematic

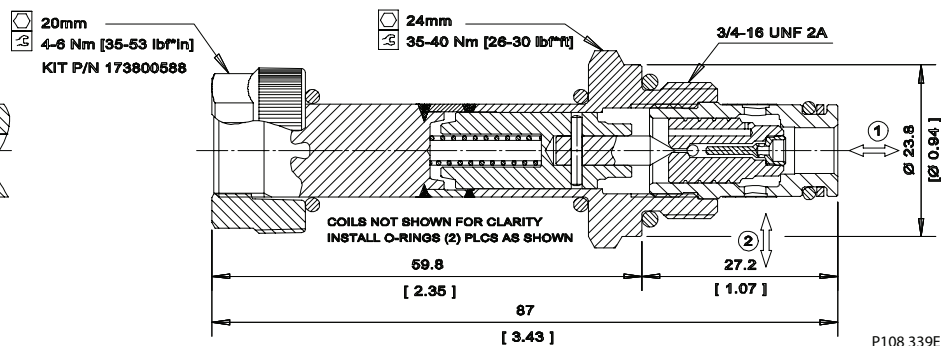


DIMENSIONS

mm [in]



Cross-sectional view



ORDERING INFORMATION

SVP08-NCR-12-DN-M-B-F-00

Coil voltage:
00 = No Coil
12D = 12VDC (Standard Coil)
24D = 24VDC (Standard Coil)
R12D = 12VDC (R-Coil)
R24D = 24VDC (R-Coil)

Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1
*These terminations are not available on robust coil (R12D,R24D)

Body and ports:
00 = Cartridge only
DG2B = Al, 1/4 BSP
DG3B = Al, 3/8 BSP
4S = Al, #4 SAE
6S = Al, #6 SAE
Other housings available

Filter:
Omit = No Filter
F = Filter 300 mm

Seals: Seal kit
B = Buna-n 354000119
V = Viton 354000219

Override Type:
Omit = No Override
M = Manual Override (Screw type)

Body Nomenclature
No Body
SDC08-2-DG-2B
SDC08-2-DG-3B
CP08-2-4S
CP08-2-6S

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OPERATION

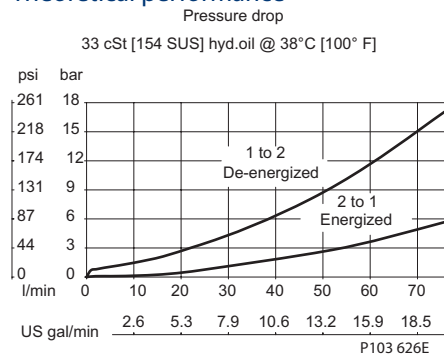
This is a normally-closed, pilot-operated, poppet-type solenoid valve with free reverse flow.

SPECIFICATIONS

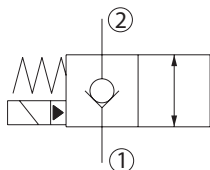
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



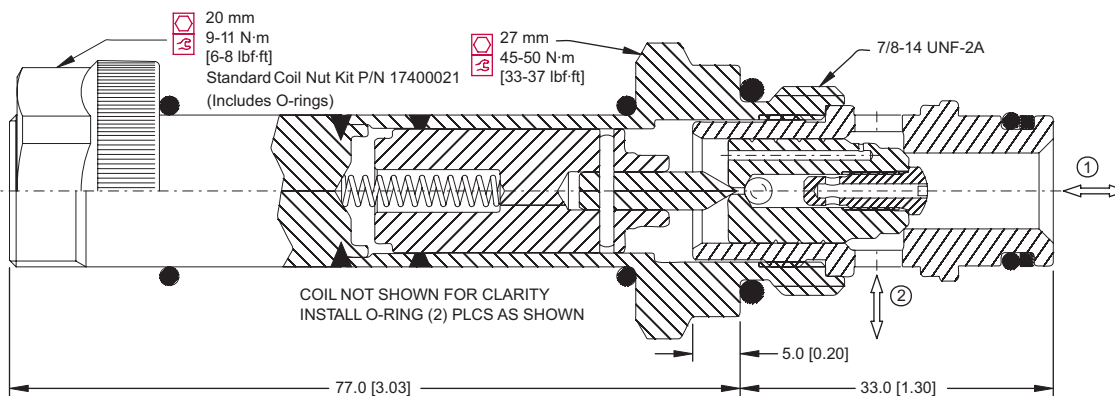
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



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ORDERING INFORMATION

SVP10-NCR-12D-DN-B-F-00

Coil voltage
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)
Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1
* These terminations are not available on robust coil (R12D, R24D)

Body and ports
00 = Cartridge only
DG3B = Al, 3/8 BSP
DG4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE
Other housings available

Filter
Omit = No Filter
F = Filter 300 µm

Seals Seals kit
B = Buna-N 354000719
V = Viton 354000819

Body Nomenclature
No Body
SDC10-2-DG-3B
SDC10-2-DG-4B
CP10-2-6S
CP10-2-8S

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OPERATION

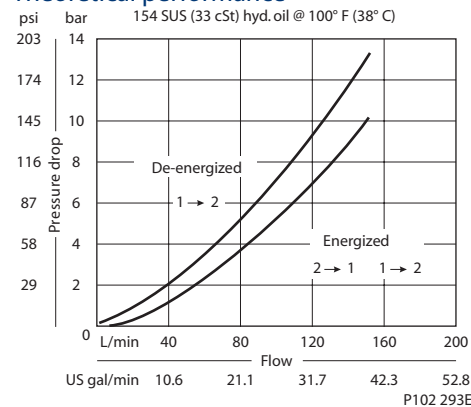
This valve is a normally closed, pilot operated, poppet type solenoid valve with free reverse flow.

SPECIFICATIONS

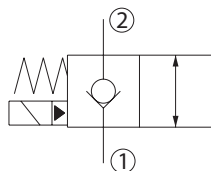
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.53 kg [1.16 lb]
Cavity	CP12-2
Standard Coil	D10 16 Watt
Coil nut	620186

Theoretical performance



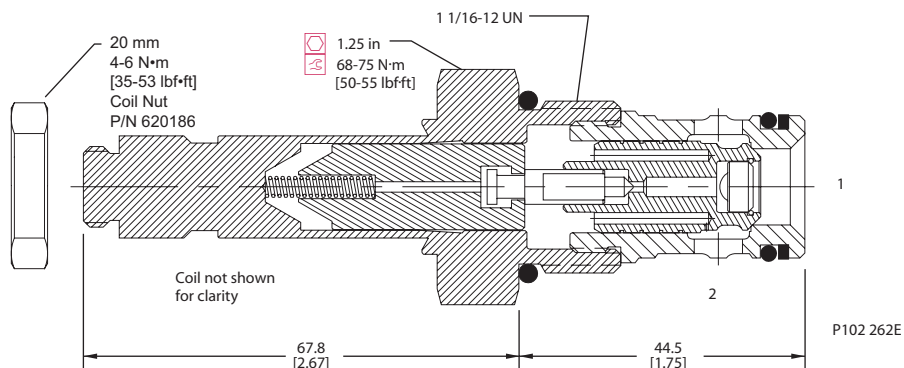
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

Seal
B = Buna-N
V = Viton

Housing and ports
0 = No Housing
4B = AL, 1/2 BSP
6B = AL, 3/4 BSP
10S = AL, #10 SAE
12S = AL, #12 SAE
Other housings available

Seal kit
120265
120264

Housing P/N
No Housing
CP12-2-4B
CP12-2-6B
CP12-2-10S
CP12-2-12S

Termination
0 = No connector
S = Spade
L = Lead
H = DIN 43650
DE = Deutsch
M2 = Metri-Pak 150 Type 1

Voltage
000 = No coil
12D = 12 VDC
24D = 24 VDC

CP501 - 3 - B - 12S - 24D - S

OPERATION

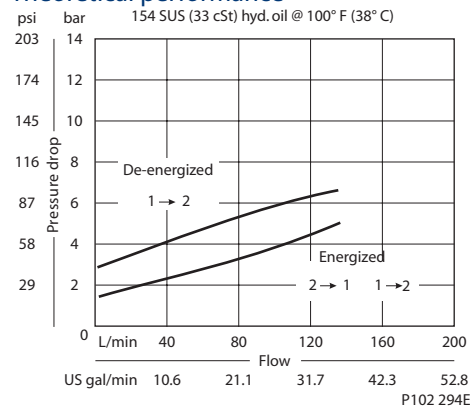
This valve is a normally closed, pilot operated, poppet type solenoid valve with free reverse flow.

SPECIFICATIONS

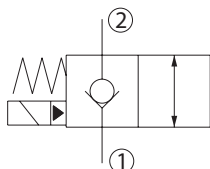
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.66 kg [1.45 lb]
Cavity	SDC16-2
Standard Coil	D10 16 Watt
Coil nut	620186

Theoretical performance



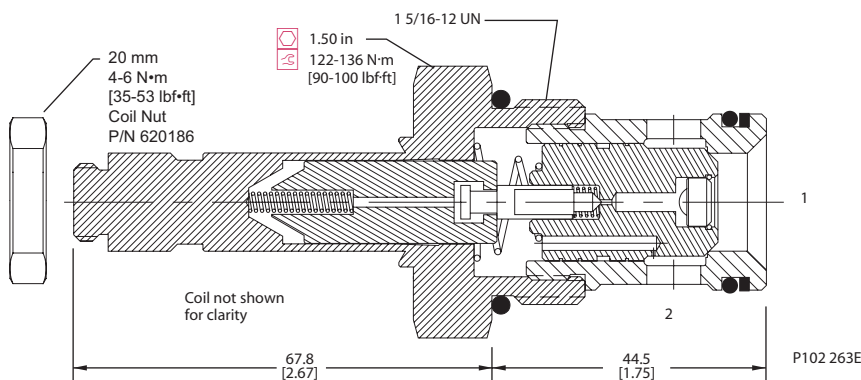
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP502 - 3 - B - 16S - 24D - S

<p>Seals B = Buna-N V = Viton</p> <p>Housing and ports 0 = No Housing DG6B = AL, 3/4 BSP DG8B = AL, 1 BSP 12S = AL, #12 SAE 16S = AL, #16 SAE Other housings available</p>	<p>Seal kit 120019 120020</p> <p>Housing P/N No Housing SDC16-2-DG-6B SDC16-2-DG-8B CP16-2-12S CP16-2-16S</p>	<p>Termination 0 = No connector S = Spade L = Lead H = DIN 43650 DE = Deutsch M2 = Metri-Pak 150 Type 1</p> <p>Voltage 000 = No coil 12D = 12 VDC 24D = 24 VDC</p>
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OPERATION

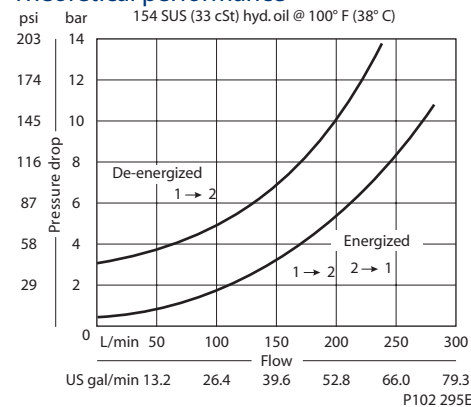
This valve is a normally closed, pilot operated, poppet type solenoid valve with free reverse flow.

SPECIFICATIONS

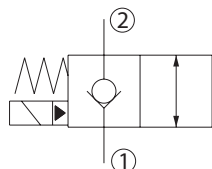
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	230 l/min [61 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.91 kg [2.00 lb]
Cavity	SDC20-2
Standard Coil	D10 16 Watt
Coil nut	620186

Theoretical performance



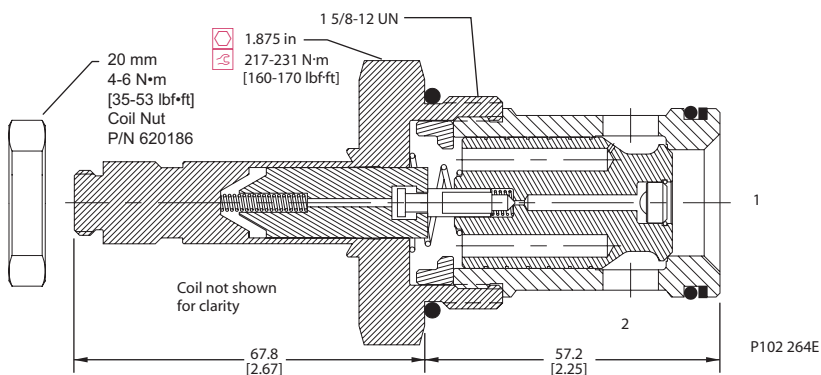
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

Seals

B = Buna-N
V = Viton

Seal kit

120011
120012

Housing and ports

0 = No Housing
8B = AL, 1 BSP
10B = AL, 1-1/4 BSP
16S = AL, #16 SAE
20S = AL, #20 SAE
Other housings available

Housing P/N

No Housing
CP20-2-8B
CP20-2-10B
CP20-2-16S
CP20-2-20S

CP503 - 3 - B - 20S - 24D - S

Voltage

000 = No coil
12D = 12 VDC
24D = 24 VDC

Termination

0 = No connector
S = Spade
L = Lead
H = DIN 43650
DE = Deutsch
M2 = Metri-Pak 150 Type 1

Solenoid valves
CP503-3

OPERATION

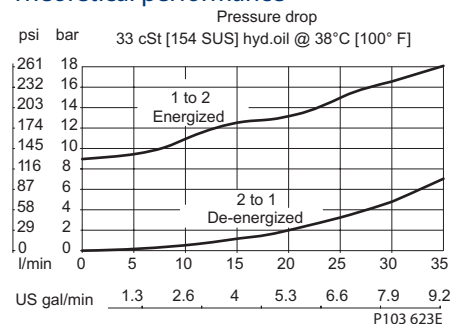
This is a normally-open, pilot-operated, poppet-type solenoid valve.

SPECIFICATIONS

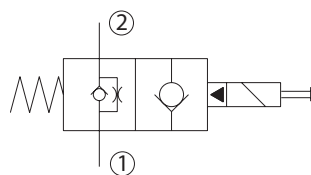
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.23 kg [0.51 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic

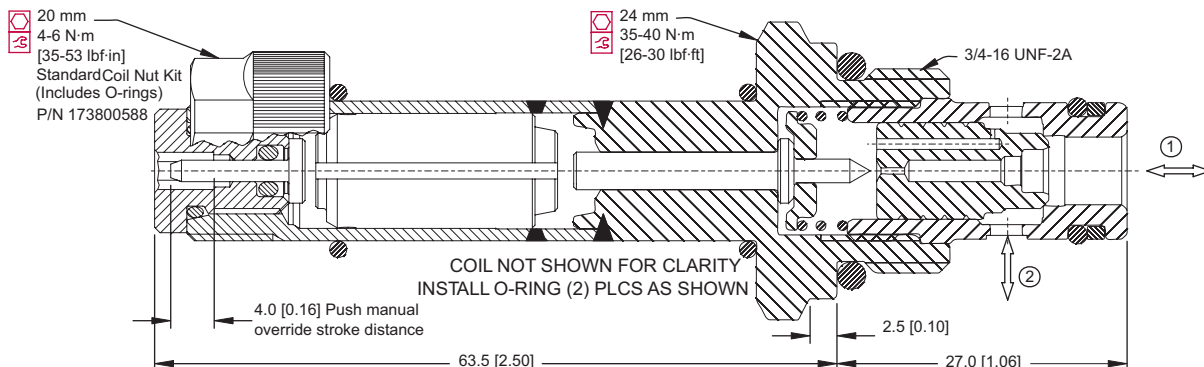


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DIMENSIONS

mm [in]

Cross-sectional view



P103 489

ORDERING INFORMATION

SVP08-NO-12D-DN-B-F-00

Coil voltage	00 = No Coil 12D = 12 VDC (Standard Coil) 24D = 24 VDC (Standard Coil) R12D = 12 VDC (R-Coil) R24D = 24 VDC (R-Coil)	Body and ports	00 = Cartridge only DG2B = Al, 1/4 BSP DG3B = Al, 3/8 BSP 4S = Al, #4 SAE 6S = Al, #6 SAE Other housings available	Body Nomenclature	No Body SDC08-2-DG-2B SDC08-2-DG-3B CP08-2-4S CP08-2-6S
Coil termination:	00 = No Coil FL = Flying Lead DN = DIN 43650 * DE = Deutsch AJ = Amp Junior * SP = Spade *	Filter	Omit = No Filter F = Filter 300 µm		
	AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1 * These terminations are not available on robust coil (R12D, R24D)	Seals	Seals kit B = Buna-N 354003119 V = Viton 354003619		

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OPERATION

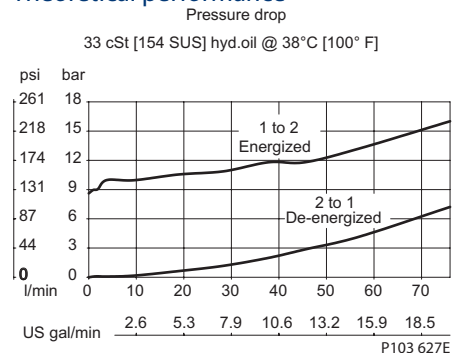
This is a normally-open, pilot-operated, poppet-type solenoid valve.

SPECIFICATIONS

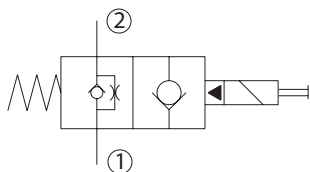
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic

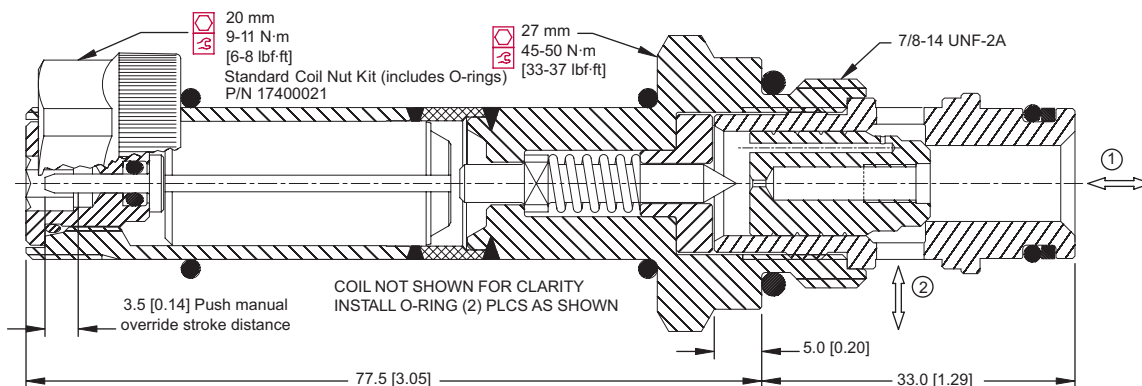


P102 385

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

SVP10-NO-12D-DN-B-F-00

Coil voltage
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)
Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1
* These terminations are not available on robust coil (R12D, R24D)

Body and ports
00 = Cartridge only
DG3B = Al, 3/8 BSP
DG4B = Al, 1/2 BSP
6S = Al, #6 SAE
8S = Al, #8 SAE
Other housings available

Filter
Omit = No Filter
F = Filter 300 µm

Seals Seals kit
B = Buna-N 354000719
V = Viton 354000819

Body Nomenclature
No Body
SDC10-2-DG-3B
SDC10-2-DG-4B
CP10-2-6S
CP10-2-8S

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OPERATION

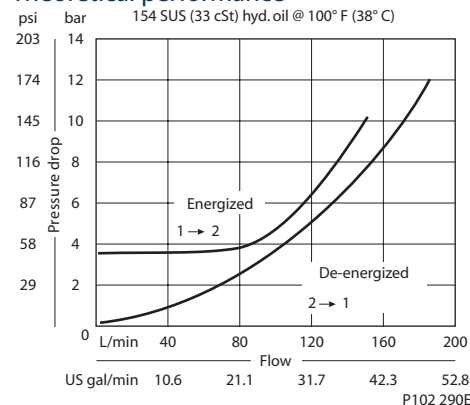
This valve is a normally open, pilot operated, poppet type solenoid.

SPECIFICATIONS

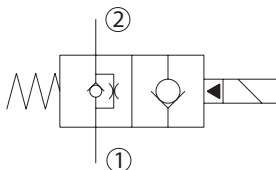
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.54 kg [1.19 lb]
Cavity	CP12-2
Standard Coil	D10 16 Watt
Coil nut	621468 (Std.), 622477 (Option M)

Theoretical performance



Schematic

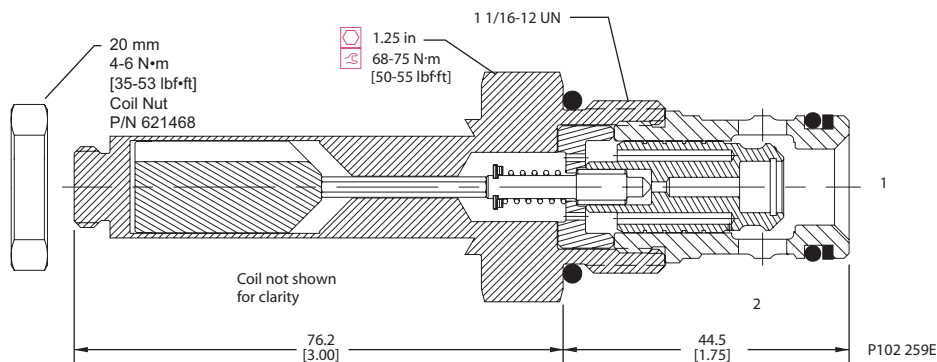


P102 261E

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP501 - 2 - B - 10S - 24D - S

Seals	Seal kit	Termination 0 = No connector S = Spade L = Lead H = DIN 43650 DE = Deutsch M2 = Metri-Pak 150 Type 1 P102.322E
B = Buna-N V = Viton	120265 120264	
Housing and ports	Housing P/N	Voltage
0 = No Housing 4B = AL, 1/2 BSP 6B = AL, 3/4 BSP 10S = AL, #10 SAE 12S = AL, #12 SAE Other housings available	No Housing CP12-2-4B CP12-2-6B CP12-2-10S CP12-2-12S	000 = No coil 12D = 12 VDC 24D = 24 VDC

Solenoid valves
CP501-2

OPERATION

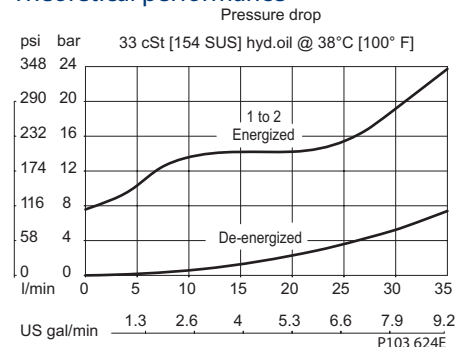
This is a normally-open, pilot-operated, poppet-type solenoid valve with free reverse flow.

SPECIFICATIONS

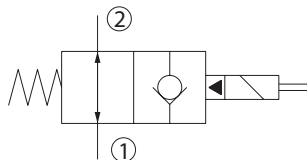
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.23 kg [0.51 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic

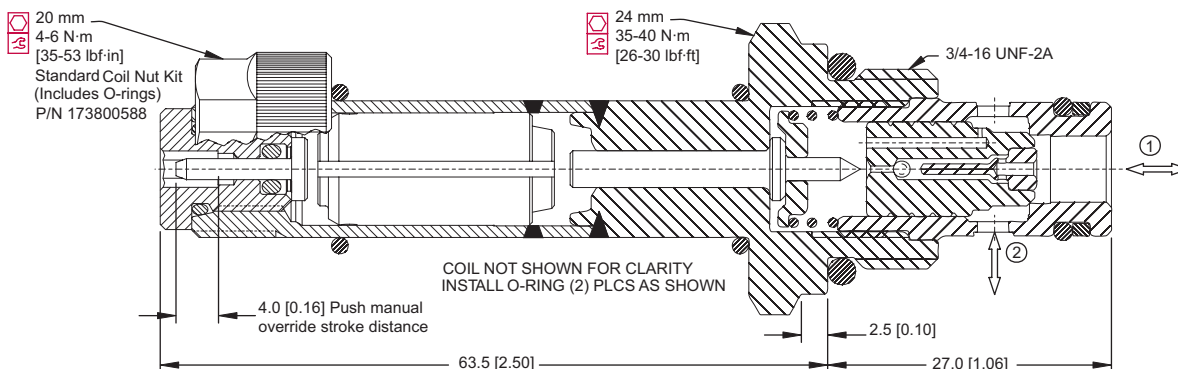


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DIMENSIONS

mm [in]

Cross-sectional view



P103 490

ORDERING INFORMATION

SVP08-NOR-12D-DN-B-F-00

- Coil voltage
- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)
- Coil termination:
- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1
- * These terminations are not available on robust coil (R12D, R24D)

- Body and ports
- 00 = Cartridge only
- DG2B = Al, 1/4 BSP
- DG3B = Al, 3/8 BSP
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- Other housings available
- Filter
- Omit = No Filter
- F = Filter 300 µm
- Seals
- B = Buna-N
- V = Viton
- Seals kit
- 354000119
- 354000219

- Body Nomenclature
- No Body
- SDC08-2-DG-2B
- SDC08-2-DG-3B
- CP08-2-4S
- CP08-2-6S

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Solenoid valves
SVP08-NOR

OPERATION

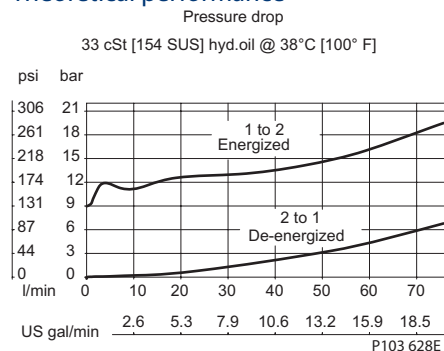
This is a normally-open, pilot-operated, poppet-type solenoid valve with free reverse flow.

SPECIFICATIONS

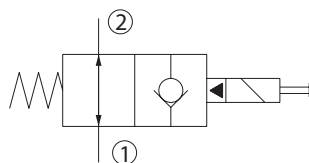
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic

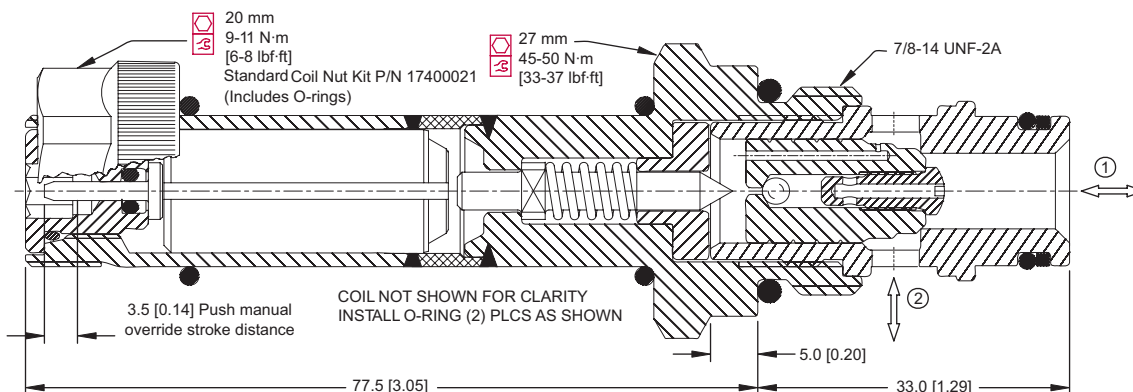


P102 387

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

SVP10-NOR-12D-DN-B-F-00

Coil voltage	00 = No Coil 12D = 12 VDC (Standard Coil) 24D = 24 VDC (Standard Coil) R12D = 12 VDC (R-Coil) R24D = 24 VDC (R-Coil)	Body and ports	00 = Cartridge only DG3B = Al, 3/8 BSP DG4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available	Body Nomenclature	No Body SDC10-2-DG-3B SDC10-2-DG-4B CP10-2-6S CP10-2-8S
Coil termination:	00 = No Coil FL = Flying Lead DN = DIN 43650 * DE = Deutsch AJ = Amp Junior * SP = Spade *	Filter	Omit = No Filter F = Filter 300 µm		
	AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1 * These terminations are not available on robust coil (R12D, R24D)	Seals	B = Buna-N V = Viton	Seals kit	354000719 354000819

P103 551E

OPERATION

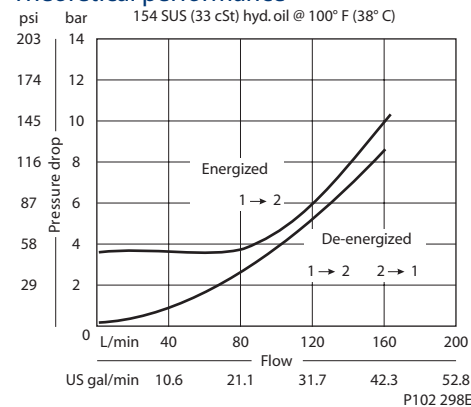
This valve is a normally open, pilot operated, poppet type solenoid valve with free reverse flow.

SPECIFICATIONS

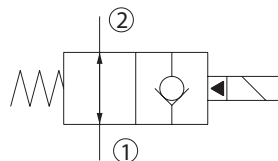
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.54 kg [1.19 lb]
Cavity	CP12-2
Standard Coil	D10 16 Watt
Coil nut	621468 (Std.), 622477 (Option M)

Theoretical performance



Schematic

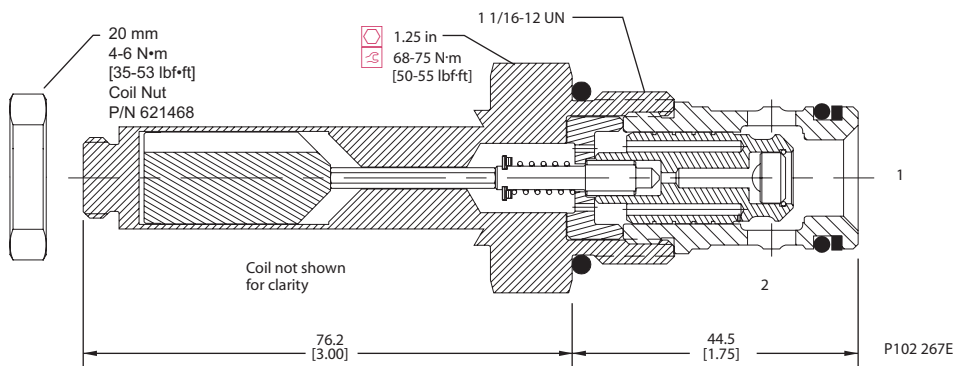


P108 262

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP501 - 4 - B - 10S - 24D - S

<p>Seals</p> <p>B = Buna-N V = Viton</p>	<p>Seal kit</p> <p>120265 120264</p>	<p>Housing and ports</p> <p>0 = No Housing 4B = AL, 1/2 BSP 6B = AL, 3/4 BSP 10S = AL, #10 SAE 12S = AL, #12 SAE Other housings available</p>	<p>Housing P/N</p> <p>No Housing CP12-2-4B CP12-2-6B CP12-2-10S CP12-2-12S</p>	<p>Voltage</p> <p>000 = No coil 12D = 12 VDC 24D = 24 VDC</p>	<p>Termination</p> <p>0 = No connector S = Spade L = Lead H = DIN 43650 DE = Deutsch M2 = Metri-Pak 150 Type 1</p>
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P102 320E

Solenoid valves
CP501-4

OPERATION

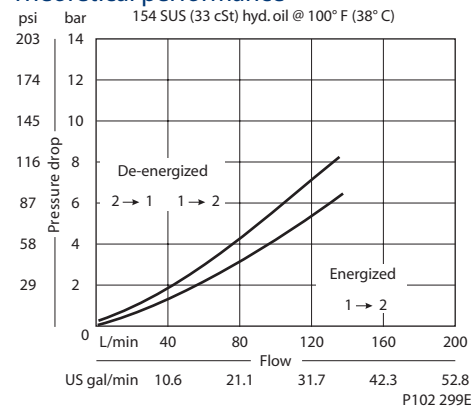
This valve is a normally open, pilot operated, poppet type solenoid.

SPECIFICATIONS

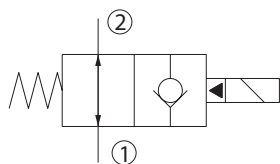
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.68 kg [1.50 lb]
Cavity	SDC16-2
Standard Coil	D10 16 Watt
Coil nut	621468 (Std.), 622477 (Option M)

Theoretical performance



Schematic

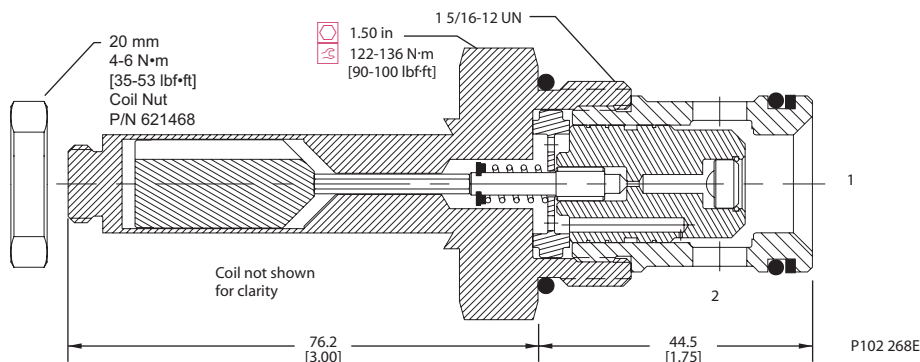


P108 262

DIMENSIONS

mm [in]

Cross-sectional view



P102 268E

ORDERING INFORMATION

CP502 - 4 - B - 12S - 24D - S

Seals B = Buna-N V = Viton	Seal kit 120019 120020	Housing and ports 0 = No Housing DG6B = AL, 3/4 BSP DG8B = AL, 1 BSP 12S = AL, #12 SAE 16S = AL, #16 SAE Other housings available	Housing P/N No Housing SDC16-2-DG-6B SDC16-2-DG-8B CP16-2-12S CP16-2-16S	Voltage 000 = No coil 12D = 12 VDC 24D = 24 VDC	Termination 0 = No connector S = Spade L = Lead H = DIN 43650 DE = Deutsch M2 = Metri-Pak 150 Type 1
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P102 317E

OPERATION

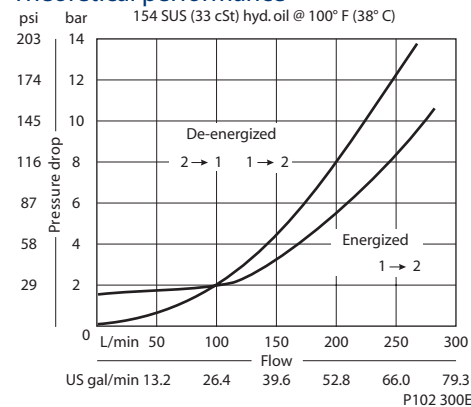
This valve is a normally open, pilot operated, poppet type solenoid.

SPECIFICATIONS

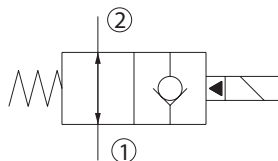
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	230 l/min [61 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.91 kg [2.00 lb]
Cavity	SDC20-2
Standard Coil	D10 16 Watt
Coil nut	621468 (Std.), 622477 (Option M)

Theoretical performance



Schematic

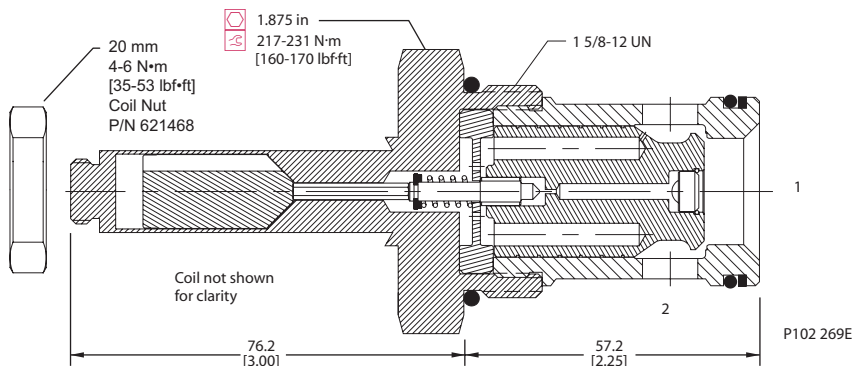


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DIMENSIONS

mm [in]

Cross-sectional view



P102 269E

ORDERING INFORMATION

CP503 - 4 - B - 16S - 24D - S

Seals		Seal kit		Termination	
B = Buna-N		120011		0 = No connector	
V = Viton		120012		S = Spade	
Housing and ports		Housing P/N		L = Lead	
0 = No Housing		No Housing		H = DIN 43650	
8B = AL, 1 BSP		CP20-2-8B		DE = Deutsch	
10B = AL, 1-1/4 BSP		CP20-2-10B		M2 = Metri-Pak 150	
16S = AL, #16 SAE		CP20-2-16S		Type 1	P102 345E
20S = AL, #20 SAE		CP20-2-20S			
Other housings available					
				Voltage	
				000 = No coil	
				12D = 12 VDC	
				24D = 24 VDC	

OPERATION

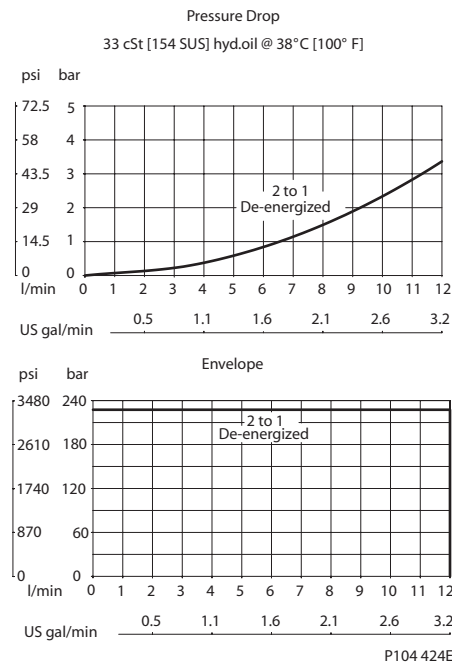
This is a normally-open, direct-acting, 2-way, 2-position, spool-type solenoid valve.

SPECIFICATIONS

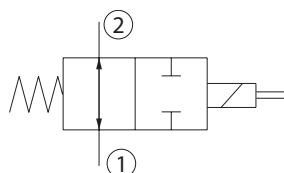
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	16 l/min [4 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic

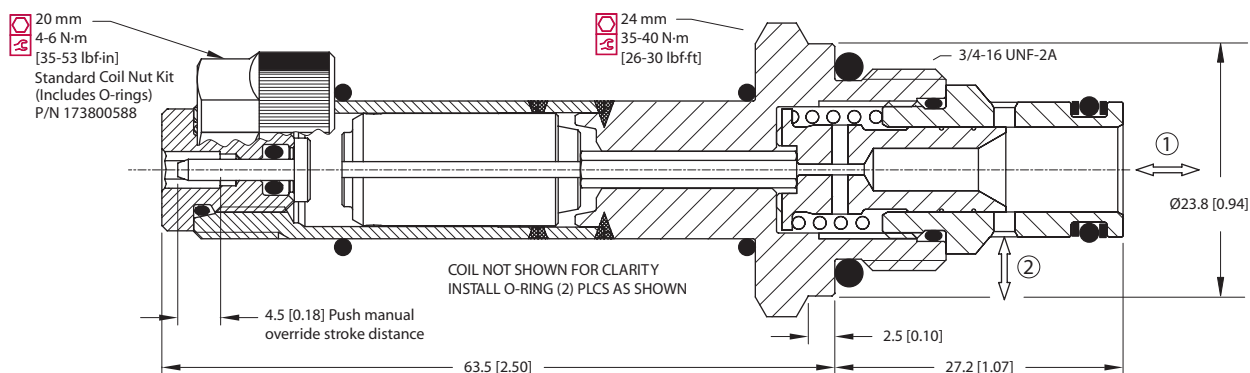


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DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

SV08-22-01-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- DG2B = Al, 1/4 BSP
- DG3B = Al, 3/8 BSP
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- Other housings available

Seals

- B = Buna-N
- V = Viton

Seals kit

- 354003119
- 354003619

Body Nomenclature

- No Body
- SDC08-2-DG-2B
- SDC08-2-DG-3B
- CP08-2-4S
- CP08-2-6S

P103 423E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

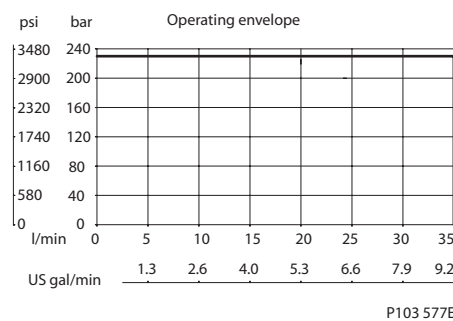
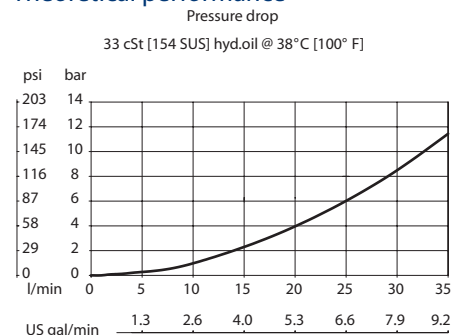
This is a normally-open, direct-acting, 2-way, 2-position, spool-type solenoid valve.

SPECIFICATIONS

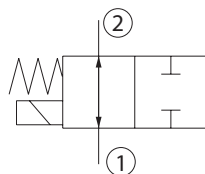
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	27 l/min [7 US gal/min]
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic

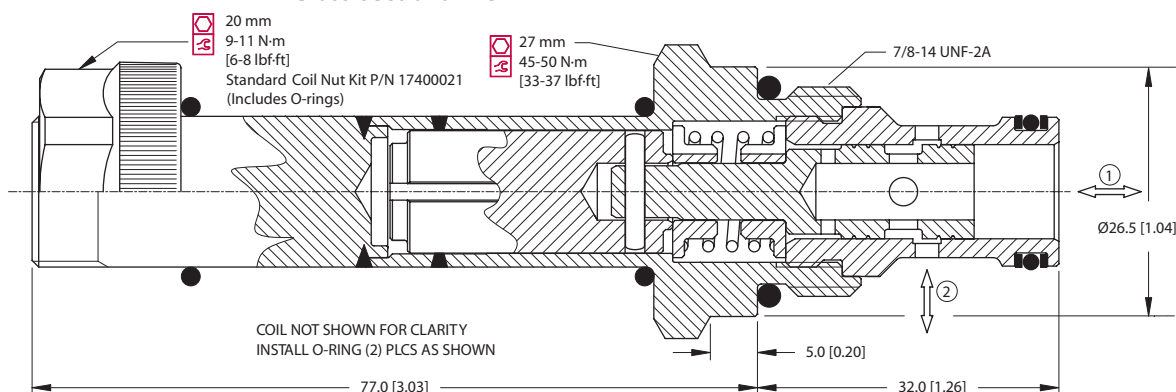


P102 389

DIMENSIONS

mm [in]

Cross-sectional view



P103 476

ORDERING INFORMATION

SV10-22-01-12D-DN-B-00

Coil voltage
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)
Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports
00 = Cartridge only
6S = Al, #6 SAE
8S = Al, #8 SAE
DG3B = Al, 3/8 BSP
DG4B = Al, 1/2 BSP
Other housings available
Seals
B = Buna-N
V = Viton

Body Nomenclature
No Body
CP10-2-6S
CP10-2-8S
SDC10-2-DG3B
SDC10-2-DG4B

P103 438E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

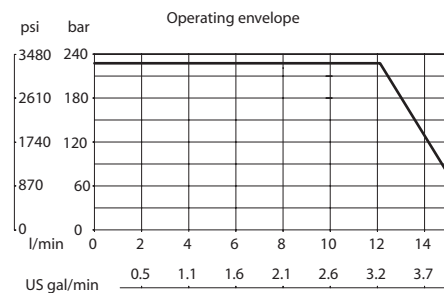
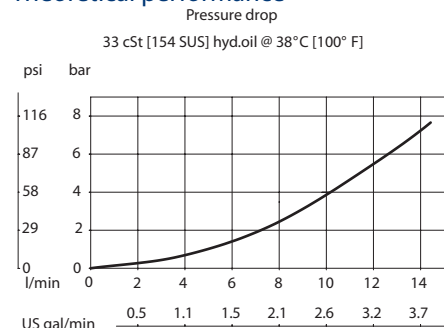
This is a normally-closed, direct-acting, 2-way, 2-position, spool-type solenoid valve.

SPECIFICATIONS

Specifications

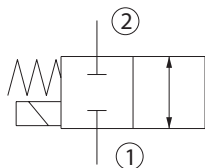
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	14 l/min [4 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 564E

Schematic

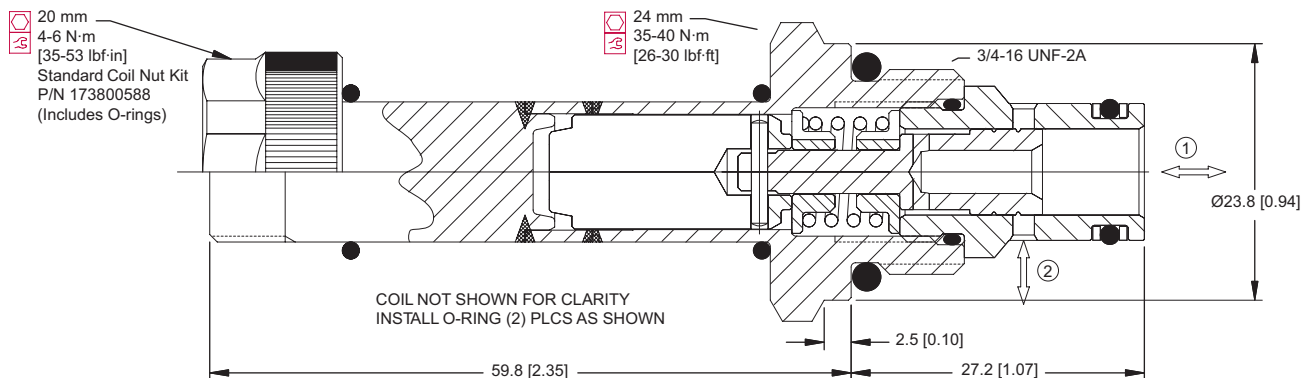


P102 388

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

SV08-22-02-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- DG2B = Al, 1/4 BSP
- DG3B = Al, 3/8 BSP
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- Other housings available

Seals

- B = Buna-N
- V = Viton

Seal kit

- 354003119
- 354003619

Body Nomenclature

- No Body
- SDC08-2-DG-2B
- SDC08-2-DG-3B
- CP08-2-4S
- CP08-2-6S

P103 386E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

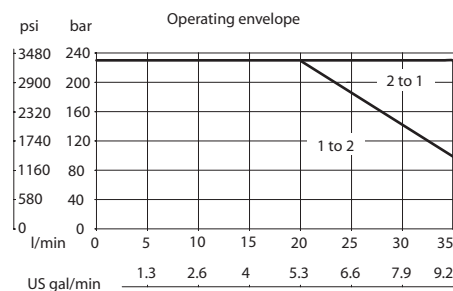
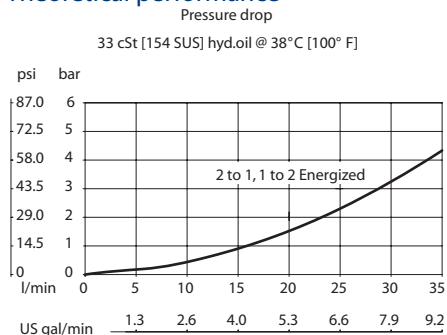
This is a normally-closed, direct-acting, 2-way, 2-position, spool-type solenoid valve.

SPECIFICATIONS

Specifications

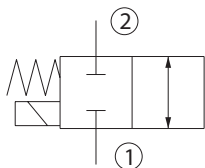
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gal/min]
Weight	0.43 kg [0.95 lb]
Cavity	SDC10-2
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 578E

Schematic

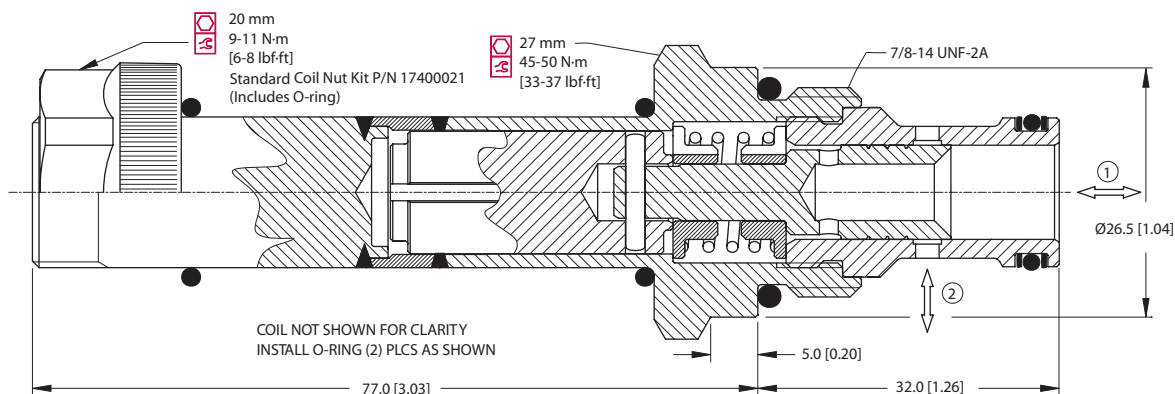


P102 388

DIMENSIONS

mm [in]

Cross-sectional view



P103 477

ORDERING INFORMATION

SV10-22-02-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- DG3B = Al, 3/8 BSP
- DG4B = Al, 1/2 BSP
- Other housings available

Seals

- B = Buna-N
- V = Viton

Seals kit

- 354004019
- 354003419

Body Nomenclature

- No Body
- CP10-2-6S
- CP10-2-8S
- SDC10-2-DG3B
- SDC10-2-DG4B

P103 439E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

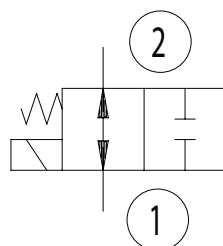
This is a direct-acting, 2-position, 2-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

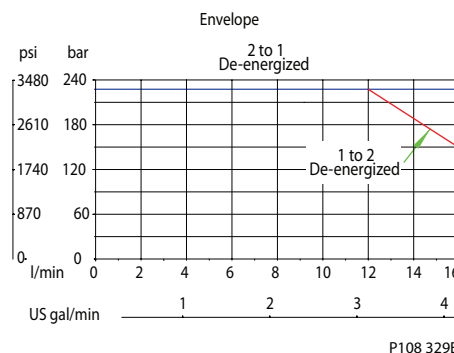
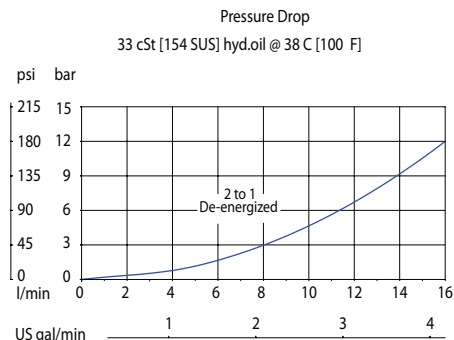
Rated pressure	230 bar [3300 psi]
Maximum flow at rated pressure	12 l/min [3.2 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	SDC08-2
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Schematic



P108 327E

Theoretical performance

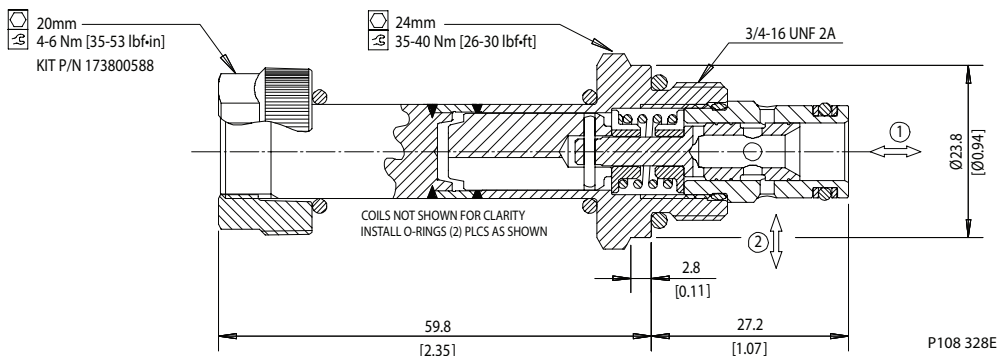


P108 329E

DIMENSIONS

mm [in]

Cross-sectional view



P108 328E

ORDERING INFORMATION

SV08-22-03-12D-DN-B-00

Coil voltage:
00 = No Coil
12D = 12VDC (Standard Coil)
24D = 24VDC (Standard Coil)
R12D = 12VDC (R-Coil)
R24D = 24VDC (R-Coil)

Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1
*These terminations are not available on robust coil (R12D,R24D)

Body and ports:
00 = Cartridge only
DG2B = Al, 1/4 BSP
DG3B = Al, 3/8 BSP
45 = Al, #4 SAE
65 = Al, #6 SAE
Other housings available

Seals: Seal kit
B = Buna-n 354003119
V = Viton 354003619

Body Nomenclature
No Body
SDC08-2-DG-2B
SDC08-2-DG-3B
CP08-2-4S
CP08-2-6S

P108 326E

OPERATION

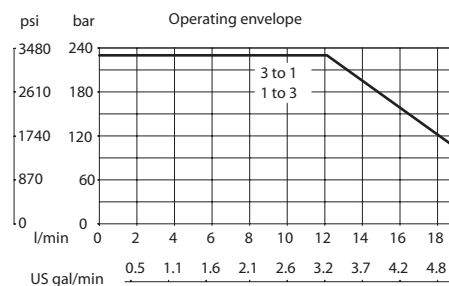
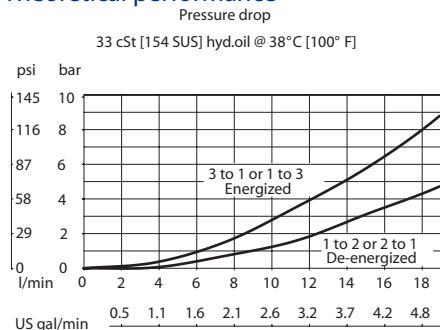
This is a direct-acting, 2-position, 3-way, spool-type solenoid valve.

SPECIFICATIONS

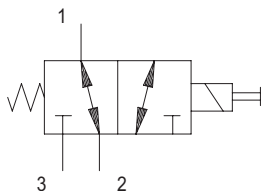
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	17 l/min [5 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-3
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic

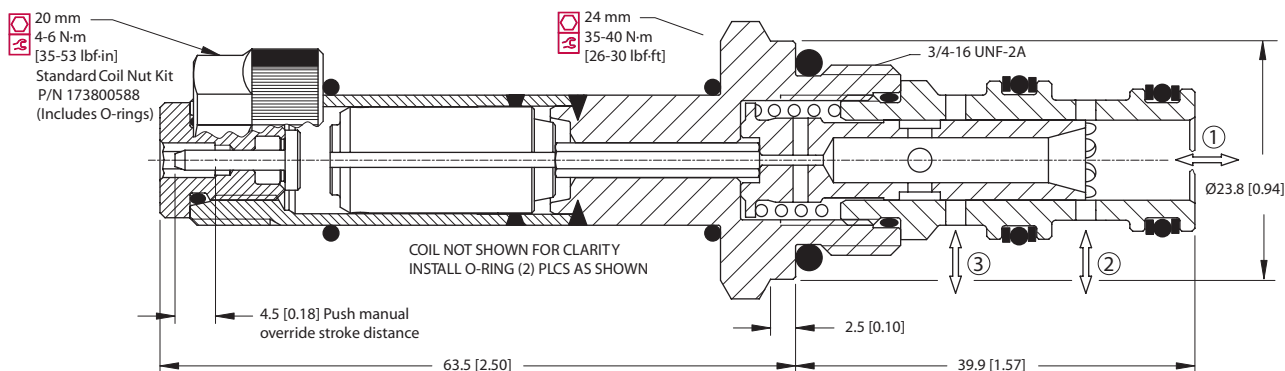


P108 332E

DIMENSIONS

mm [in]

Cross-sectional view



P103 463

ORDERING INFORMATION

SV08-23-01-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- SE2B = Al, 1/4 BSP
- SE3B = Al, 3/8 BSP
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- Other housings available

- Seals** **Seals kit**
- B = Buna-N 354003210
 - V = Viton 354003819

Body Nomenclature

- No Body
- SDC08-3-SE2B
- SDC08-3-SE3B
- CP08-3-4S
- CP08-3-6S

P103 425E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

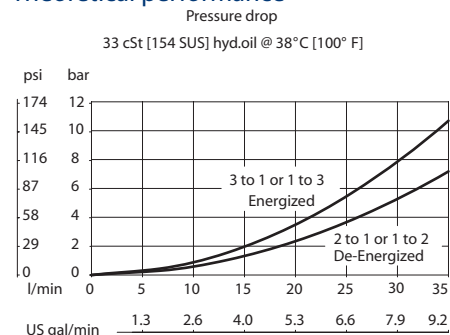
This is a direct-acting, 2-position, 3-way, spool-type solenoid valve.

SPECIFICATIONS

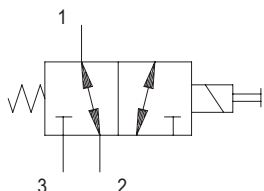
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	28 l/min [7 US gal/min]
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-3
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

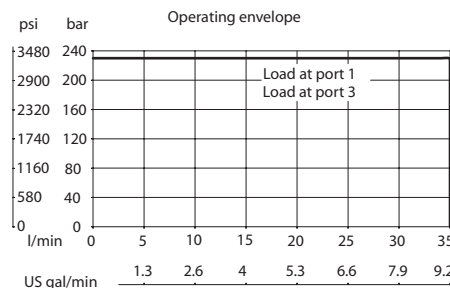
Theoretical performance



Schematic



P108 332E

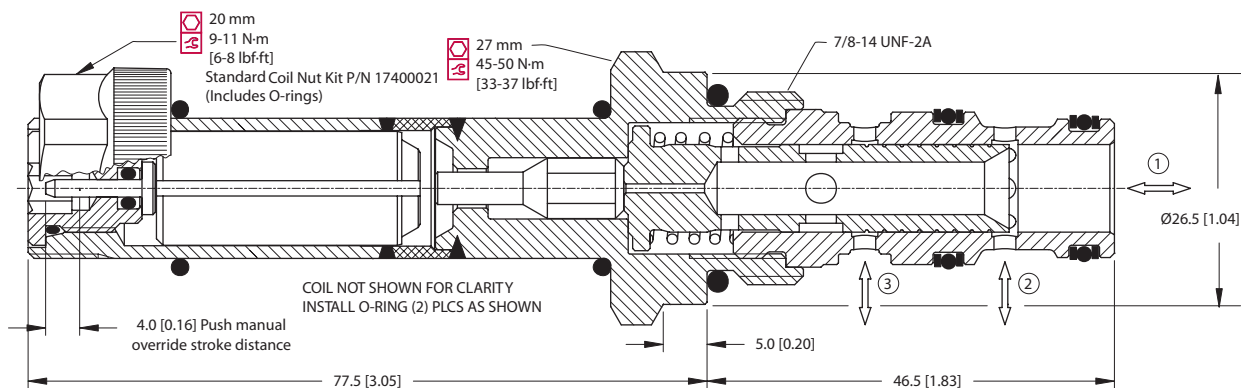


P103 579E

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

SV10-23-01-12D-DN-B-00

Coil voltage
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)
Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports
00 = Cartridge only
6S = Al, #6 SAE
8S = Al, #8 SAE
SE3B = Al, 3/8 BSP
SE4B = Al, 1/2 BSP
Other housings available
Seals
B = Buna-N
V = Viton

Seals kit
354004210
354003719

Body Nomenclature
No Body
CP10-3-6S
CP10-3-8S
SDC10-3-SE3B
SDC10-3-SE4B

P103 440E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

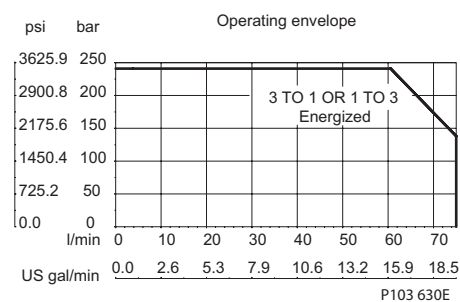
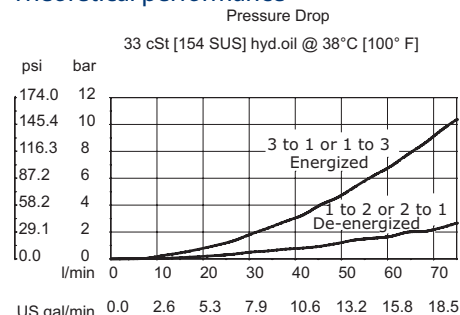
This is a direct-acting, 2-position, 3-way, spool-type solenoid valve.

SPECIFICATIONS

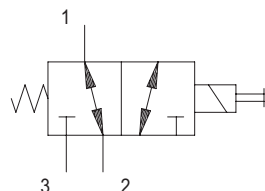
Specifications

Rated pressure	240 bar [3500 psi]
Rated flow at 7 bar [100 psi]	60 l/min [16 US gal/min]
Weight	0.80 kg [1.76 lb]
Cavity	CP12-3
Standard Coil	D14E 30Watt
Coil nut	321567

Theoretical performance



Schematic

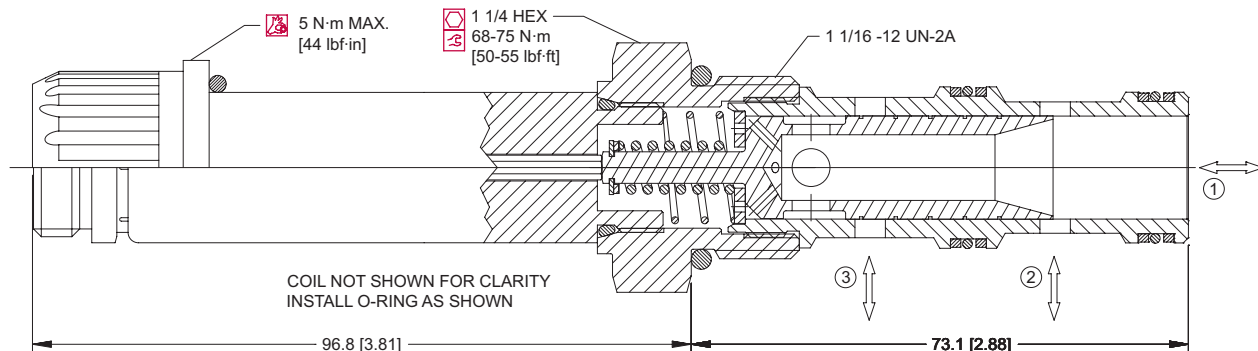


P108 332E

DIMENSIONS

mm [in]

Cross-sectional view



P103 629E

ORDERING INFORMATION

CP521-21-B-10S-24D-S

Seals	Seal kit 120053 120052	Termination	0 = No connector S = Spade L = Lead wire H = DIN 43640 M2 = Metripak 150 Type 1 DE = Deutsch AJ = Amp Junior
Housing and ports	No Housing CP12-3-4B CP12-3-6B CP12-3-10S CP12-3-12S	Coil Voltage	000 = No coil 12D = 12 VDC 24D = 24 VDC
0 = No Housing 4B = AL, 1/2 BSP 6B = AL, 3/4 BSP 10S = AL, #10 SAE 12S = AL, #12 SAE			

P103 631E

OPERATION

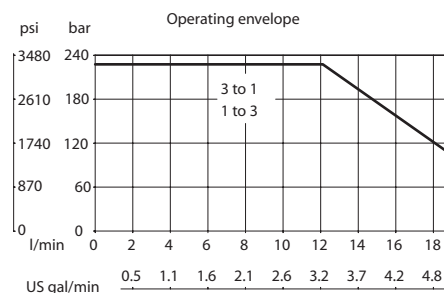
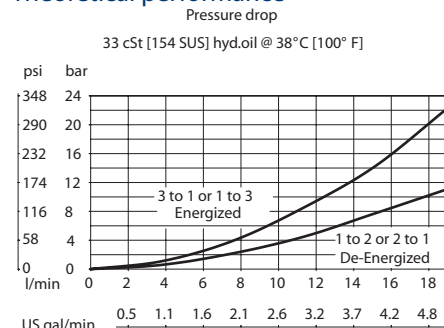
This is a direct-acting, 2-position, 3-way, spool-type solenoid valve.

SPECIFICATIONS

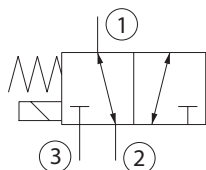
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-3
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic



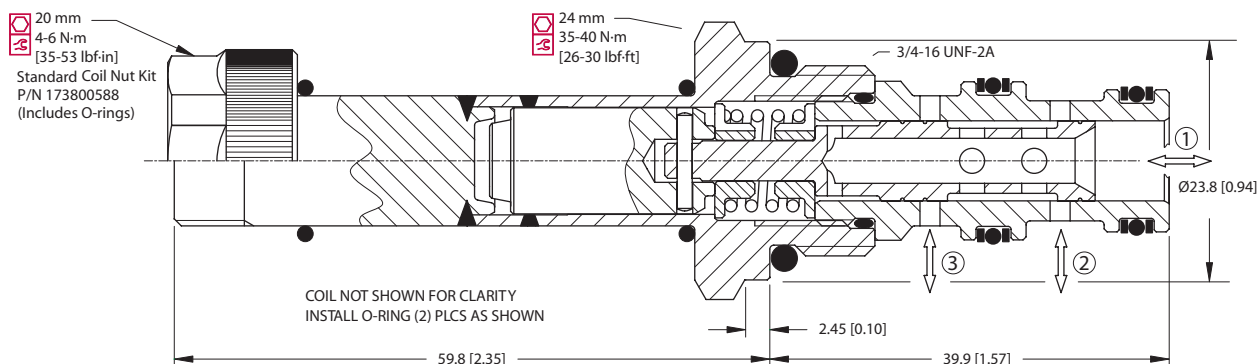
P108 285

P103 565E

DIMENSIONS

mm [in]

Cross-sectional view



P103 464

ORDERING INFORMATION

SV08-23-02-12D-DN-B-00

- Coil voltage**
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)
- Coil termination:**
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

- Body and ports**
00 = Cartridge only
SE2B = Al, 1/4 BSP
SE3B = Al, 3/8 BSP
4S = Al, #4 SAE
6S = Al, #6 SAE
Other housings available
- Seals**
B = Buna-N
V = Viton
- Seals kit**
354003210
354003819
- Body Nomenclature**
No Body
SDC08-3-SE2B
SDC08-3-SE3B
CP08-3-4S
CP08-3-6S
- P103 426E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

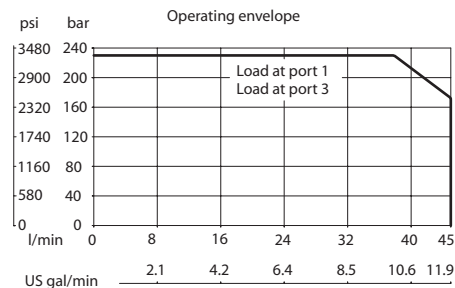
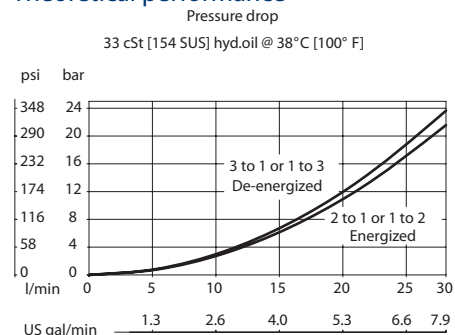
This is a direct-acting, 2-position, 3-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

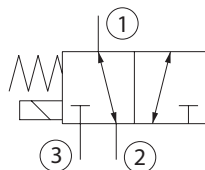
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	15 l/min [4 US gal/min]
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-3
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 580E

Schematic

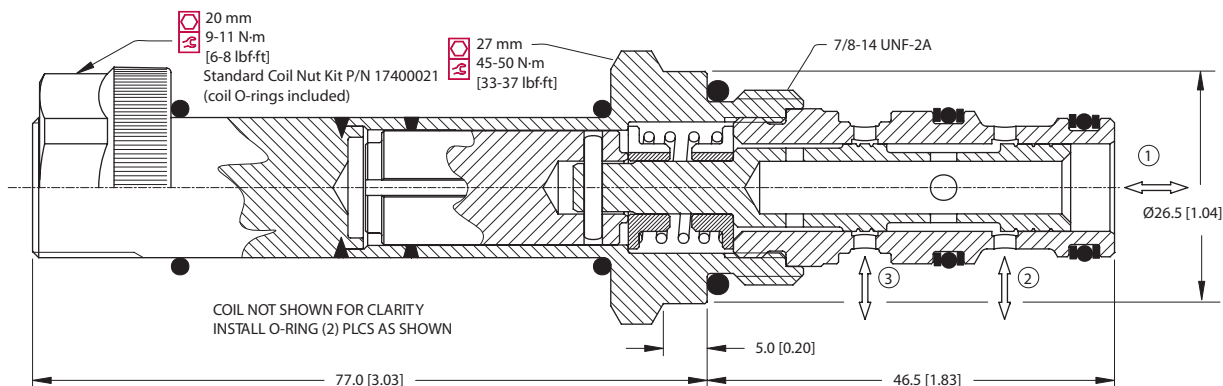


P102 720

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

SV10-23-02-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- SE3B = Al, 3/8 BSP
- SE4B = Al, 1/2 BSP
- Other housings available

- Seals**
- B = Buna-N
 - V = Viton

- Seals kit**
- 354004210
 - 354003719

Body Nomenclature

- No Body
- CP10-3-6S
- CP10-3-8S
- SDC10-3-SE3B
- SDC10-3-SE4B

P103 441E

* These terminations are not available on robust coil (R12D, R24D)

Solenoid valves
SV10-23-02

OPERATION

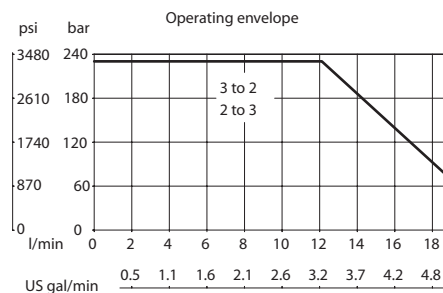
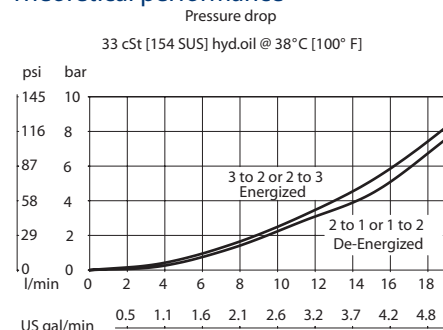
This is a direct-acting, 2-position, 3-way, spool-type solenoid valve.

SPECIFICATIONS

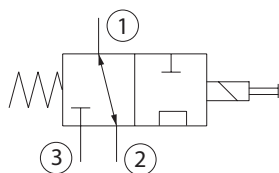
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	18 l/min [5 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-3
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic



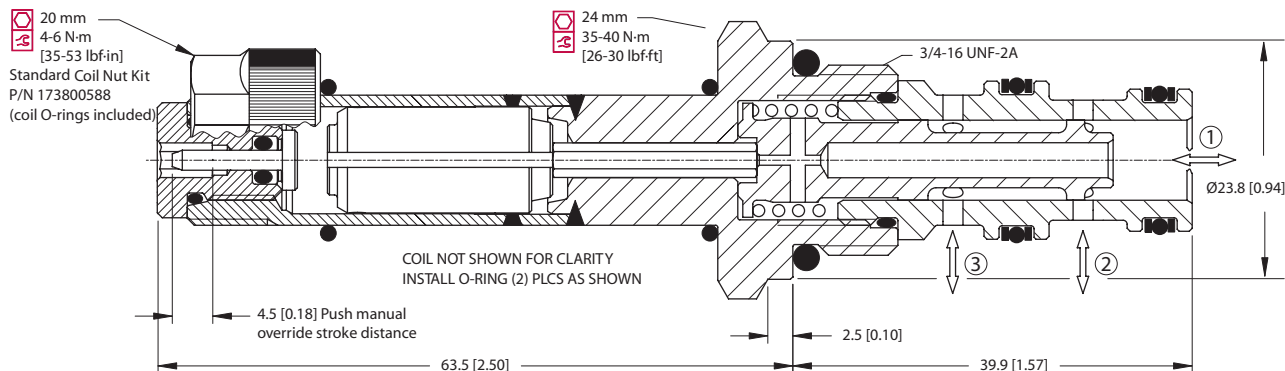
P108 264

P103 566E

DIMENSIONS

mm [in]

Cross-sectional view



P103 465

ORDERING INFORMATION

SV08-23-03-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- SE2B = Al, 1/4 BSP
- SE3B = Al, 3/8 BSP
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- Other housings available

- Seals**
B = Buna-N
V = Viton
- Seals kit**
354003210
354003819

Body Nomenclature

- No Body
- SDC08-3-SE2B
- SDC08-3-SE3B
- CP08-3-4S
- CP08-3-6S

P103 427E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

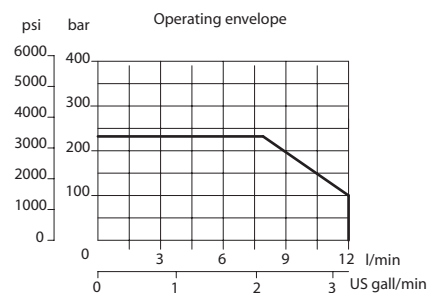
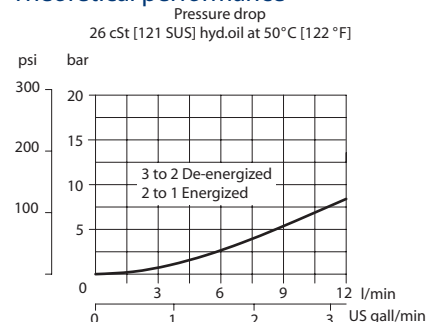
This is a direct-acting, 2-position, 3-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

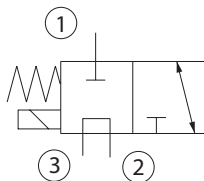
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-3
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 567E

Schematic

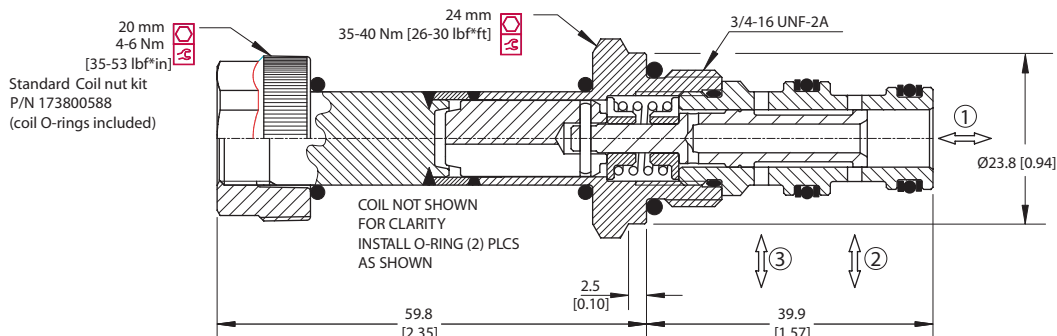


P108 265

DIMENSIONS

mm [in]

Cross-sectional view



P103 466

ORDERING INFORMATION

SV08-23-04-12D-DN-B-00

Coil voltage
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)

Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports
00 = Cartridge only
SE2B = Al, 1/4 BSP
SE3B = Al, 1/4 BSP
4S = Al, #4 SAE
6S = Al, #6 SAE
Other housings available

Seals
B = Buna-N
V = Viton

Body Nomenclature
No Body
SDC08-3-SE2B
SDC08-3-SE3B
CP08-3-4S
CP08-3-6S

P103 428E

* These terminations are not available on robust coil (R12D, R24D)

Solenoid valves
SV08-23-04

OPERATION

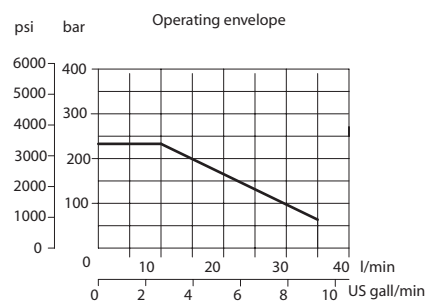
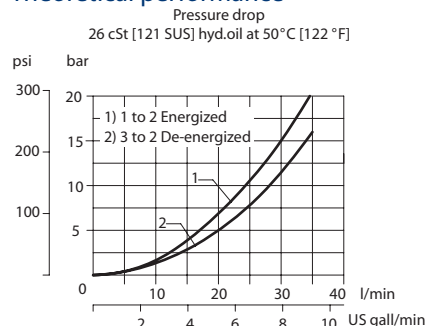
This is a direct-acting, 2-position, 3-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

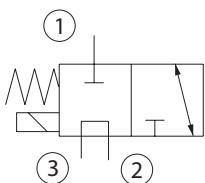
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.42 kg [0.93 lb]
Cavity	SDC10-3
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 581E

Schematic

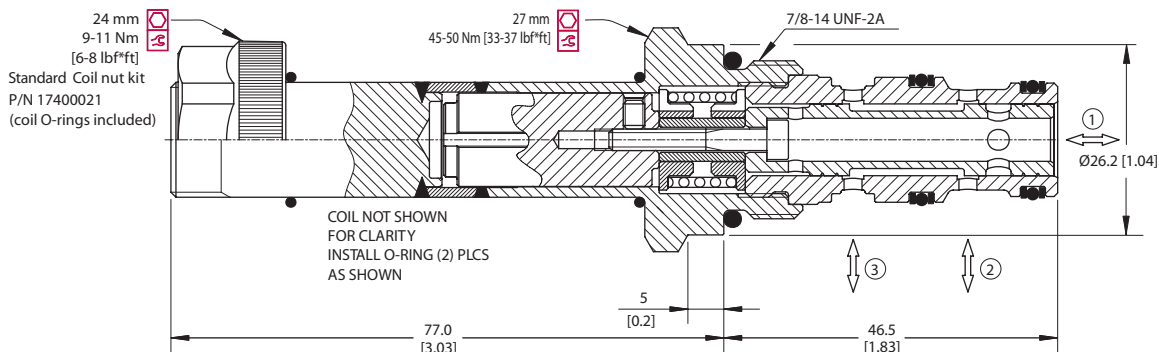


P108 265

DIMENSIONS

mm [in]

Cross-sectional view



P103 480

ORDERING INFORMATION

SV10-23-04-12D-DN-B-00

Coil voltage

00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)

Coil termination:

00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

00 = Cartridge only
6S = Al, #6 SAE
8S = Al, #8 SAE
L3B = Al, 3/8 BSP
L4B = Al, 1/2 BSP
Other housings available

Seals **Seals kit**
B = Buna-N 354004210
V = Viton 354003719

Body Nomenclature

No Body
CP10-3-6S
CP10-3-8S
SDC10-3-SE3B
SDC10-3-SE4B

P103 440E

* These terminations are not available on robust coil (R12D, R24D)

Solenoid valves
SV10-23-04

OPERATION

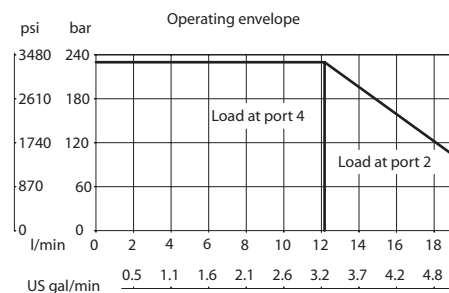
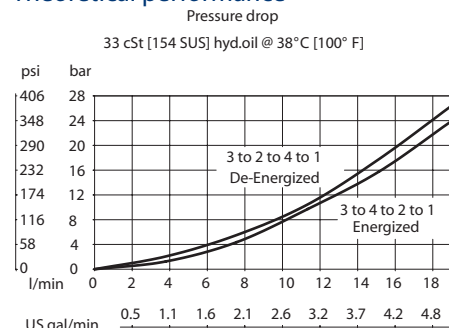
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

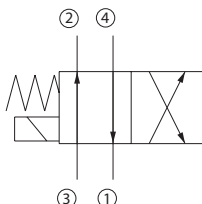
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	8 l/min [2 US gal/min]
Weight	0.32 kg [0.71 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 568E

Schematic

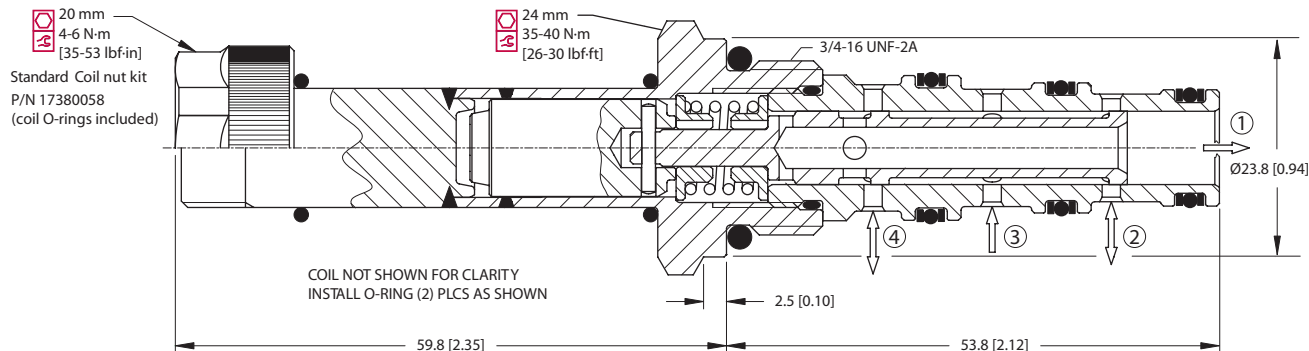


P108266

DIMENSIONS

mm [in]

Cross-sectional view



P103 467

ORDERING INFORMATION

SV08-24-01-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- L2B = Al, 1/4 BSP
- Other housings available

Body Nomenclature

- No Body
- CP08-4-4S
- CP08-4-6S
- SDC08-4-L2B

Seals

- B = Buna-N
- V = Viton

Seals kit

- 354003319
- 354003919

P103 429E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

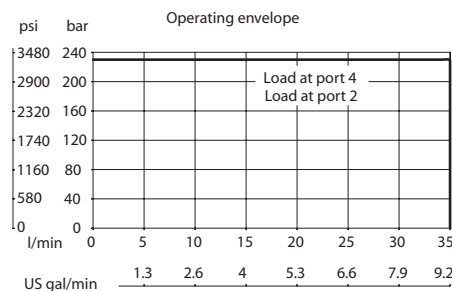
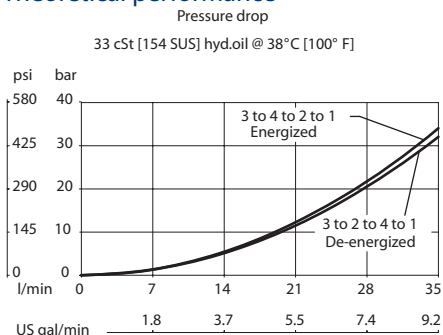
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

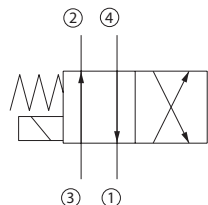
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	15 l/min [4 US gal/min]
Weight	0.45 kg [0.99 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic

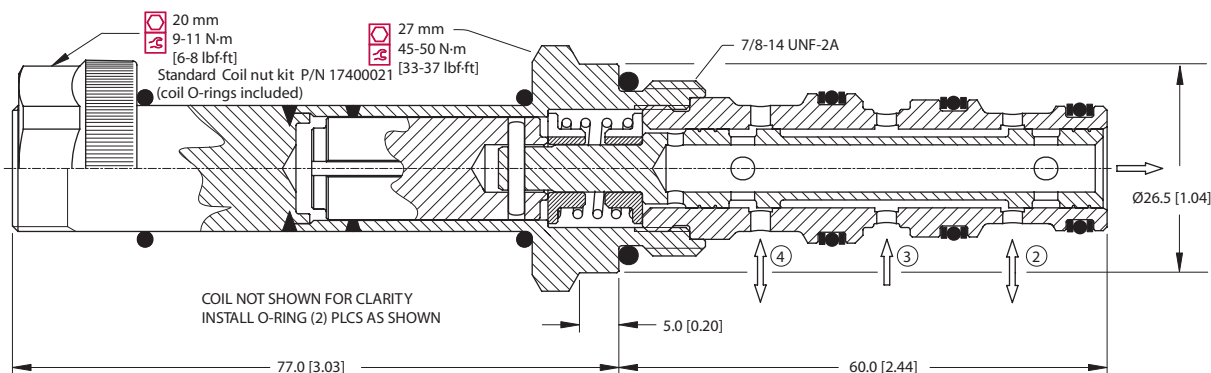


P108266

DIMENSIONS

mm [in]

Cross-sectional view



P103 484

ORDERING INFORMATION

SV10-24-01-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- L3B = Al, 3/8 BSP
- L4B = Al, 1/2 BSP
- Other housings available

- Seals**
- B = Buna-N 354001919
 - V = Viton 354002019

Body Nomenclature

- No Body
- CP10-4-6S
- CP10-4-8S
- SDC10-4-L3B
- SDC10-4-L4B

P103 443E

* These terminations are not available on robust coil (R12D, R24D)

Solenoid valves
SV10-24-01

OPERATION

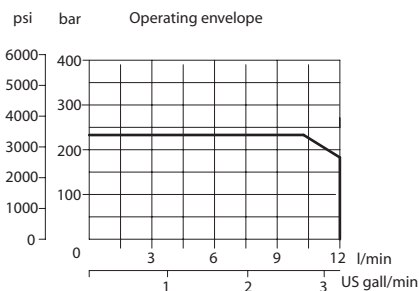
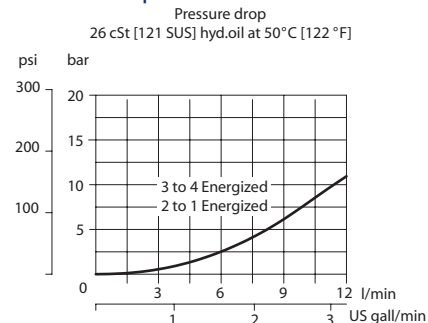
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

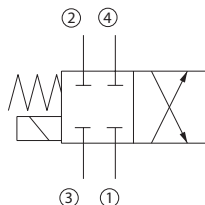
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 570E

Schematic

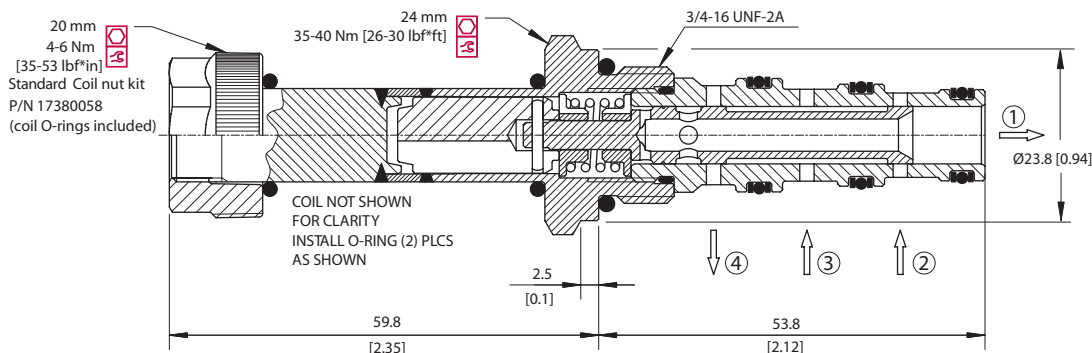


P108268

DIMENSIONS

mm [in]

Cross-sectional view



P103 468

ORDERING INFORMATION

SV08-24-02-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- L2B = Al, 1/4 BSP
- Other housings available

Seals

- B = Buna-N
- V = Viton

Seals kit

- 354003319
- 354003919

Body Nomenclature

- No Body
- CP08-4-4S
- CP08-4-6S
- SDC08-4-L2B

P103 430E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

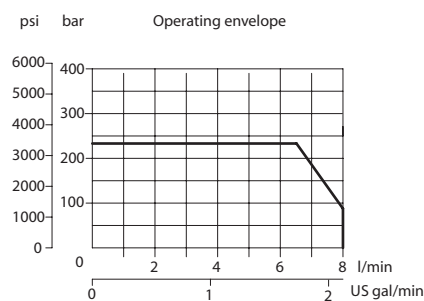
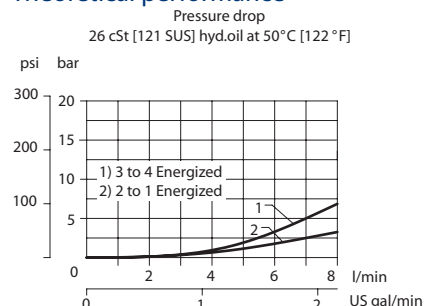
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

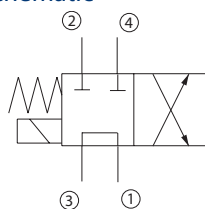
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	8 l/min [2 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 571E

Schematic

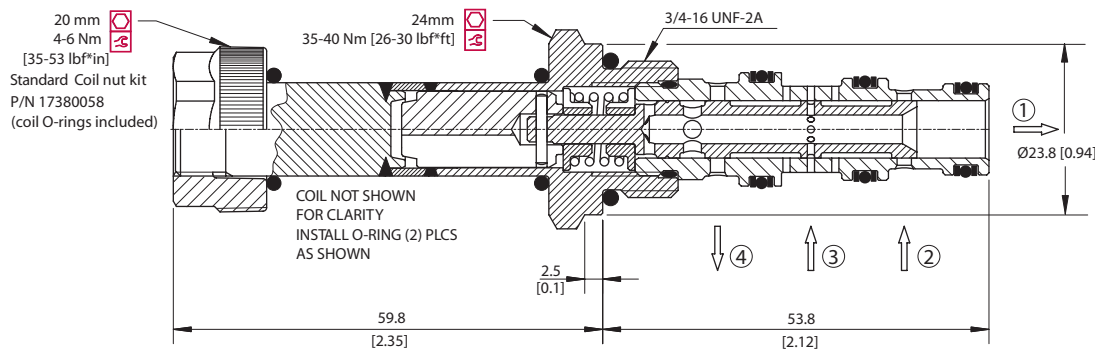


P108271

DIMENSIONS

mm [in]

Cross-sectional view



P103 470

ORDERING INFORMATION

SV08-24-04-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- L2B = Al, 1/4 BSP
- Other housings available

- Seals**
- B = Buna-N
 - V = Viton
- Seals kit**
- 354003319
 - 354003419

Body Nomenclature

- No Body
- CP08-4-4S
- CP08-4-6S
- SDC08-4-L2B

P103 432E

* These terminations are not available on robust coil (R12D, R24D)

Solenoid valves
SV24-24-04

OPERATION

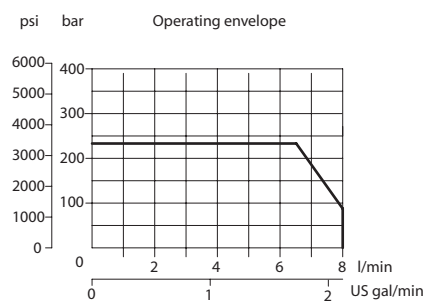
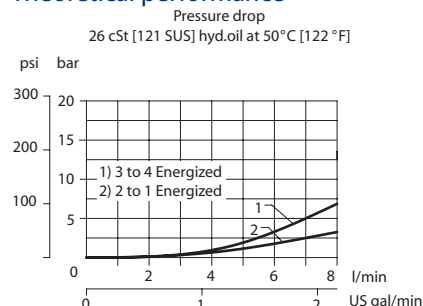
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

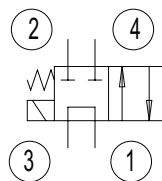
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	8 l/min [2 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 571E

Schematic

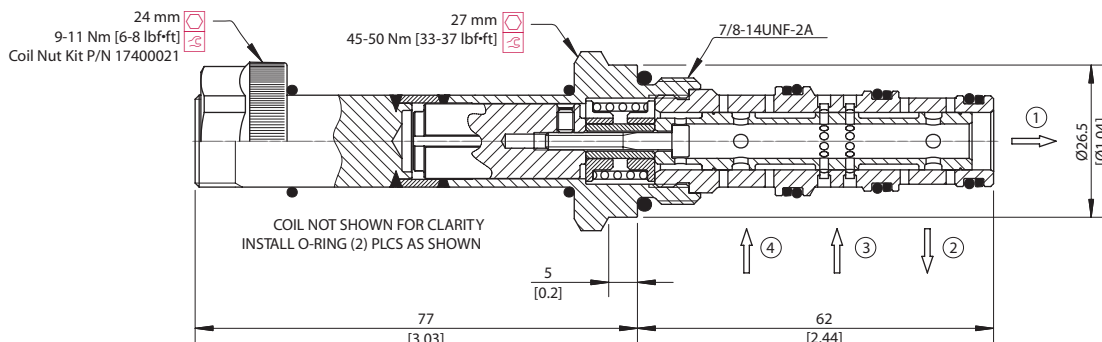


P108 393E

DIMENSIONS

mm [in]

Cross-sectional view



P103 552

ORDERING INFORMATION

SV08-24-04-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- L2B = Al, 1/4 BSP
- Other housings available

- Seals** **Seals kit**
- B = Buna-N 354003319
 - V = Viton 354003419

Body Nomenclature

- No Body
- CP08-4-4S
- CP08-4-6S
- SDC08-4-L2B

P103 432E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

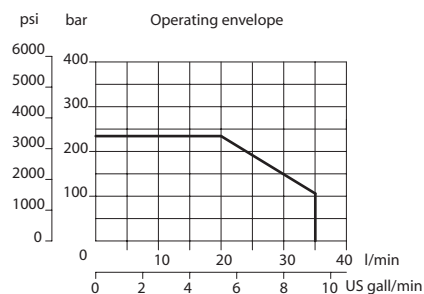
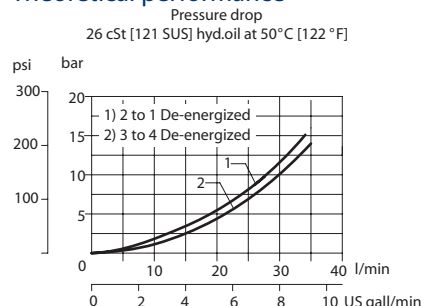
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

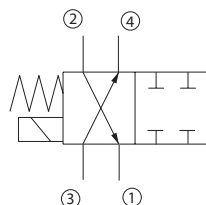
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.45 kg [0.99 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 583E

Schematic

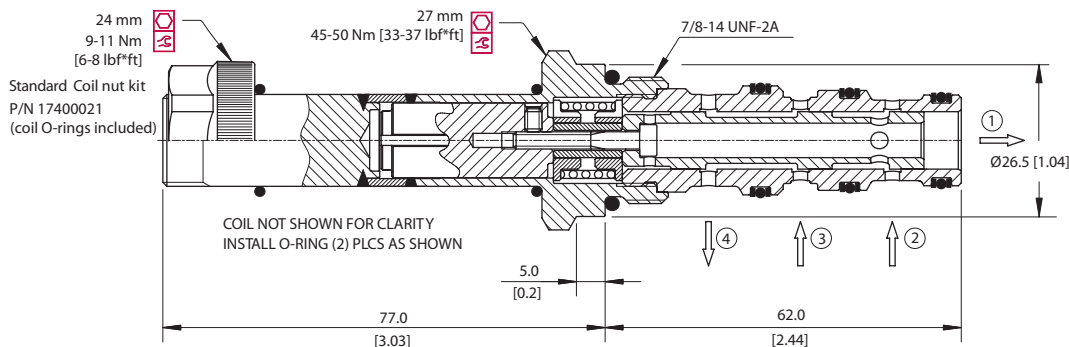


P108270

DIMENSIONS

mm [in]

Cross-sectional view



P103 481

ORDERING INFORMATION

SV10-24-05-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- L3B = Al, 3/8 BSP
- L4B = Al, 1/2 BSP
- Other housings available

- | | |
|--------------|------------------|
| Seals | Seals kit |
| B = Buna-N | 354001919 |
| V = Viton | 354002019 |

Body Nomenclature

- No Body
- CP10-4-6S
- CP10-4-8S
- SDC10-4-L3B
- SDC10-4-L4B

P103444E

* These terminations are not available on robust coil (R12D, R24D)

Solenoid valves
SV10-24-05

OPERATION

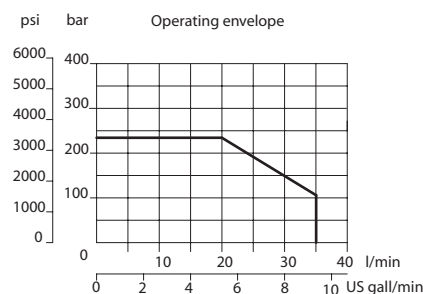
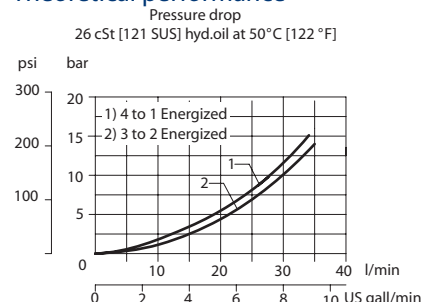
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

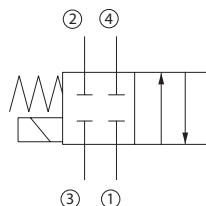
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at bar [psi]	24 l/min [6 US gal/min]
Weight	0.45 kg [0.99 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic



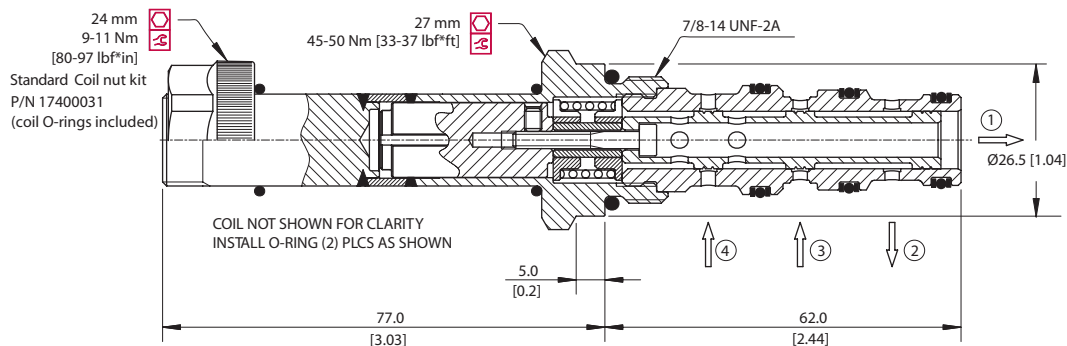
P108273

P103 585E

DIMENSIONS

mm [in]

Cross-sectional view



P103 483

ORDERING INFORMATION

SV10-24-02-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- L3B = Al, 3/8 BSP
- L4B = Al, 1/2 BSP
- Other housings available

Seals

- B = Buna-N
- V = Viton

Seals kit

- 354001919
- 354002019

Body Nomenclature

- No Body
- CP10-4-6S
- CP10-4-8S
- SDC10-4-L3B
- SDC10-4-L4B

P103 446E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

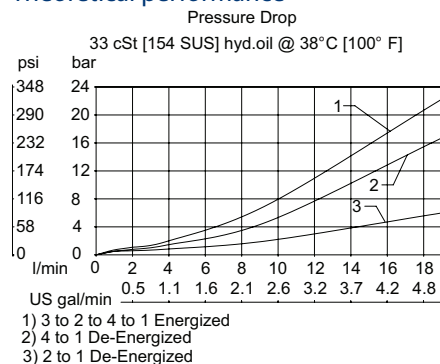
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

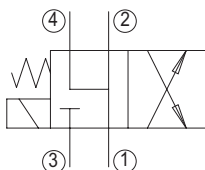
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at bar [psi]	24 l/min [6 US gal/min]
Weight	0.45 kg [0.99 lb]
Cavity	SDC08-4
Standard Coil	M16 20 Watt
Robust Coil	R16 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

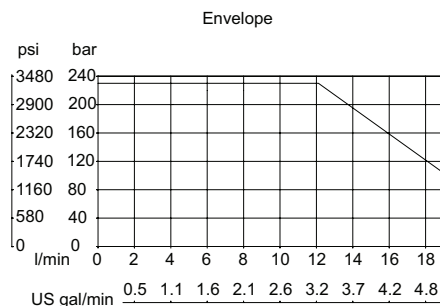
Theoretical performance



Schematic



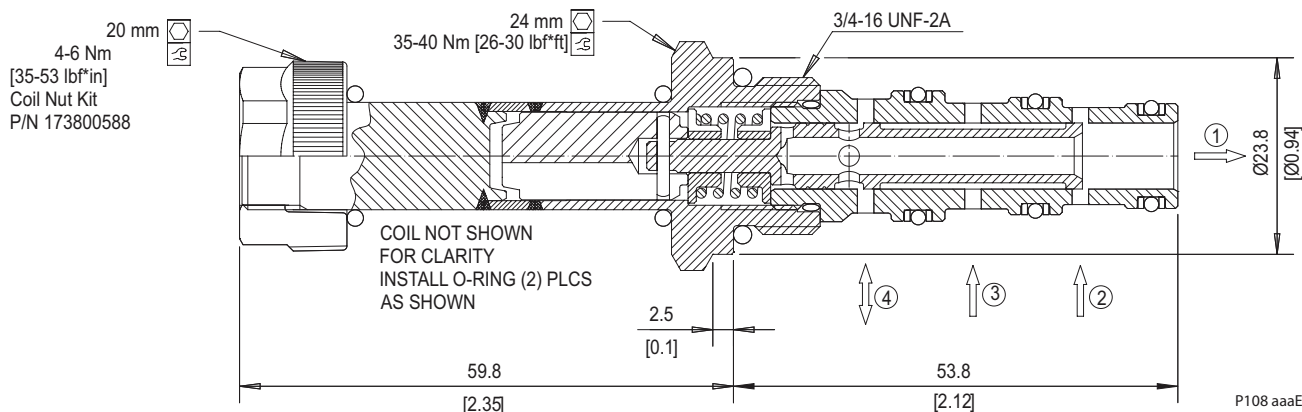
P108 334E



P108 yyyE

DIMENSIONS

mm [in]



P108 aaaE

ORDERING INFORMATION

Coil voltage
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)
Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

SV08 -24-08-12D - DN -B-00

Body and ports
00 = Cartridge only
4S = Al, #4 SAE
6S = Al, #6 SAE
L2B = Al, 1/4 BSP
Other housings available

Seals kit
B = Buna-N 354003319
V = Viton 354003919

Body Nomenclature
No Body
CP08-4-4S
CP08-4-6S
SDC08-4-L2B

* These terminations are not available on robust coil (R12D, R24D)

P108 zzzE

OPERATION

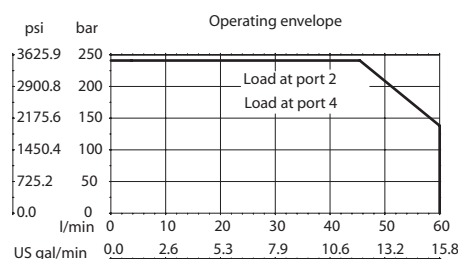
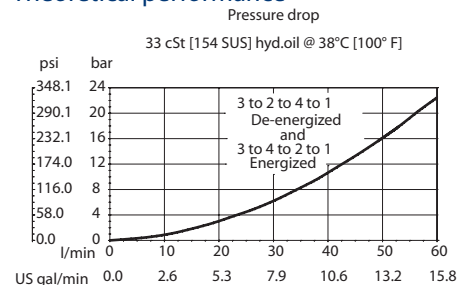
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

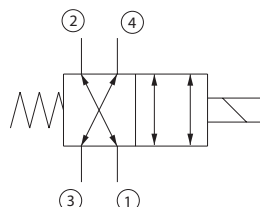
Specifications

Rated pressure	240 bar [3500 psi]
Rated flow at 13 bar [189 psi]	32 l/min [8 US gal/min]
Weight	0.82 kg [1.81 lb]
Cavity	CP12-4
Standard Coil	D14E 30Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic



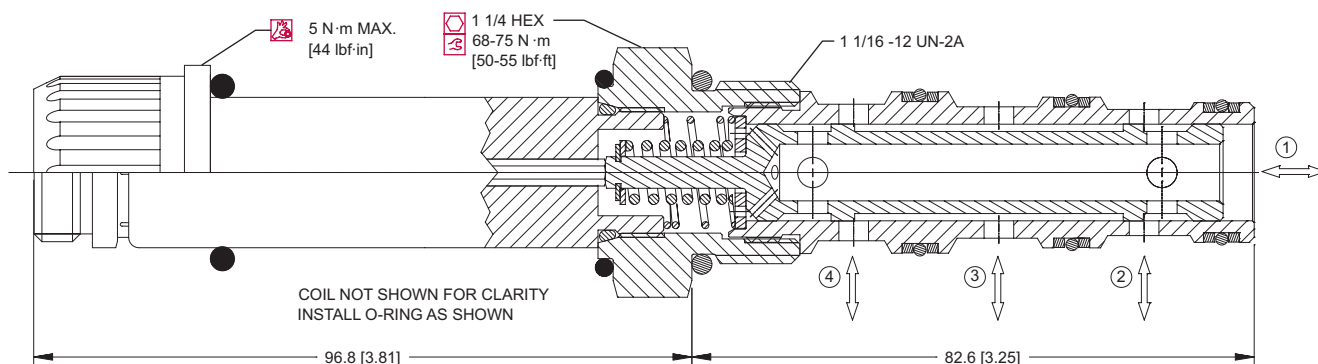
P108267

P103 634E

DIMENSIONS

mm [in]

Cross-sectional view



P103 632E

ORDERING INFORMATION

CP531-21-B-10S-24D-S

Seals
B = Buna-N
V = Viton
Seal kit
120262
120263

Housing and ports
0 = No Housing
3B = AL, 3/8 BSP
4B = AL, 1/2 BSP
10S = AL, #10 SAE
12S = AL, #12 SAE
Other housings available

Housing P/N
No Housing
CP12-4-3B
CP12-4-4B
CP12-4-10S
CP12-4-12S

Termination
0 = No connector
S = Spade
L = Lead wire
H = DIN 43650
M2 = Metripak 150, Type 1
DE = Deutsch
AJ = Amp Junior

Coil Voltage
000 = No coil
12D = 12 VDC
24D = 24 VDC

P103 633E

OPERATION

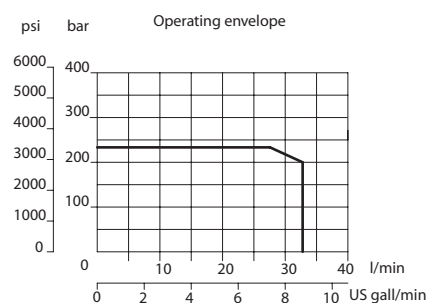
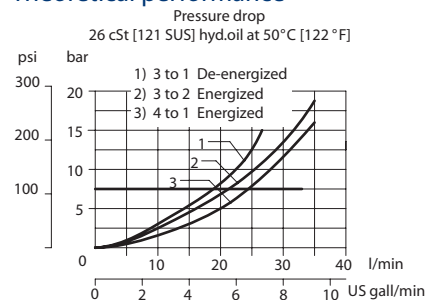
This is a direct-acting, 2-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

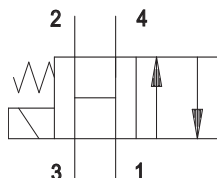
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	21 l/min [6 US gal/min]
Weight	0.45 kg [0.99 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 587E

Schematic

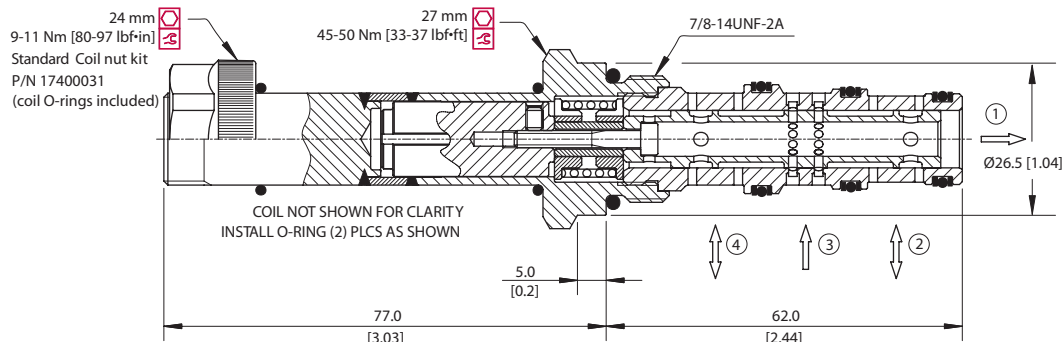


P108 333E

DIMENSIONS

mm [in]

Cross-sectional view



P103 553

ORDERING INFORMATION

SV10-24-13-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- L3B = Al, 3/8 BSP
- L4B = Al, 1/2 BSP
- Other housings available

- Seals**
B = Buna-N
V = Viton
- Seals kit**
354001919
354002019

Body Nomenclature

- No Body
- CP10-4-6S
- CP10-4-8S
- SDC10-4-L3B
- SDC10-4-L4B

P103 448E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

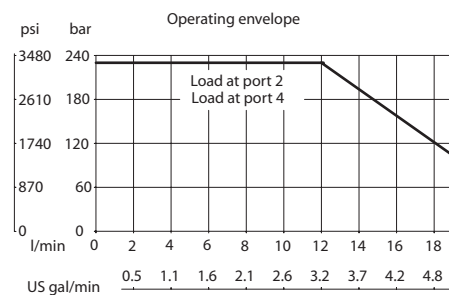
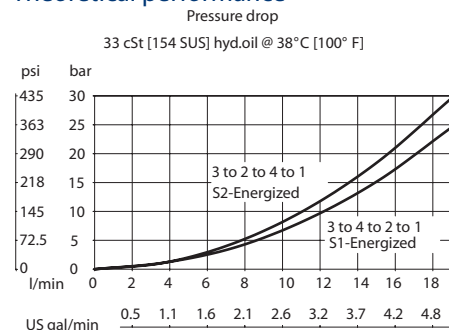
This is a direct-acting, 3-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

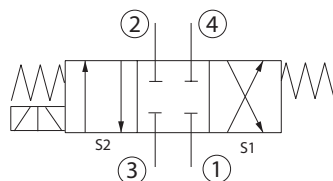
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Weight	0.55 kg [1.21 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic



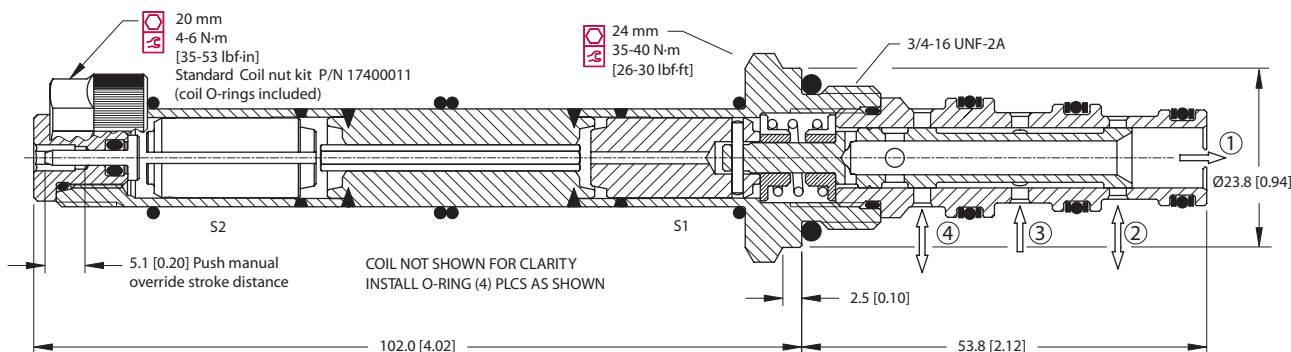
P108279

P103 573E

DIMENSIONS

mm [in]

Cross-sectional view



P103 472

ORDERING INFORMATION

SV08-34-02-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- L2B = Al, 1/4 BSP
- Other housings available

Body Nomenclature

- No Body
- CP08-4-4S
- CP08-4-6S
- SDC08-4-L2B

- Seals**
- B = Buna-N
 - V = Viton
- Seals kit**
- 354003319
 - 354003919

P103 434E

* These terminations are not available on robust coil (R12D, R24D)

Solenoid valves
SV08-34-02

OPERATION

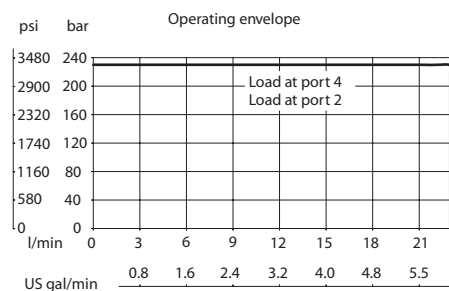
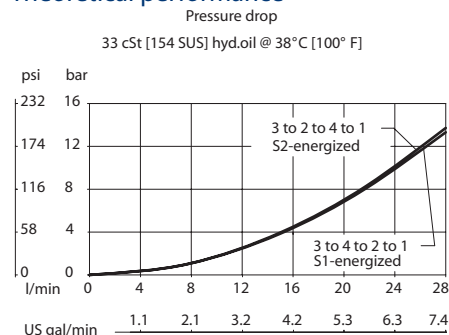
This is a direct-acting, 3-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

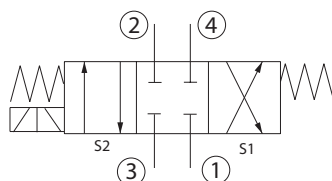
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.81 kg [1.79 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 588E

Schematic

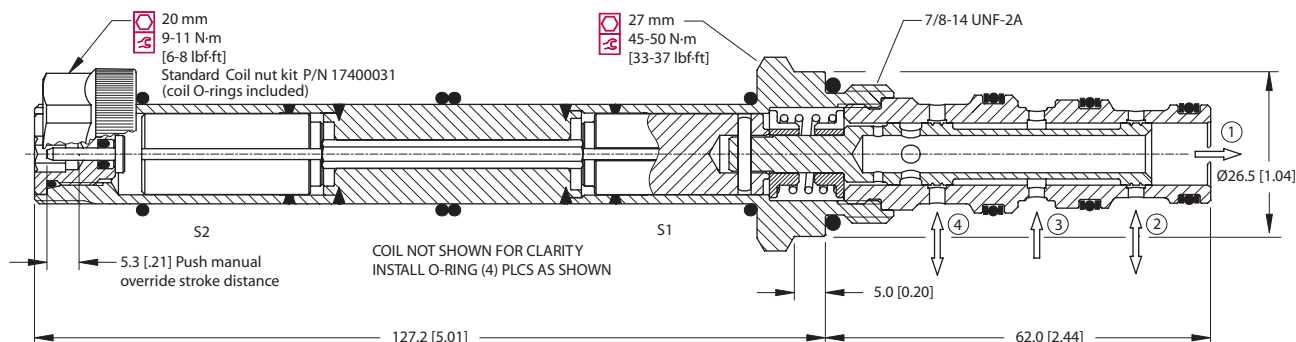


P108279

DIMENSIONS

mm [in]

Cross-sectional view



P103 554

ORDERING INFORMATION

SV10-34-02-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- L3B = Al, 3/8 BSP
- L4B = Al, 1/2 BSP
- Other housings available

- Seals**
B = Buna-N
V = Viton
- Seals kit**
354001919
354002019

Body Nomenclature

- No Body
- CP10-4-6S
- CP10-4-8S
- SDC10-4-L3B
- SDC10-4-L4B

P103 449E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

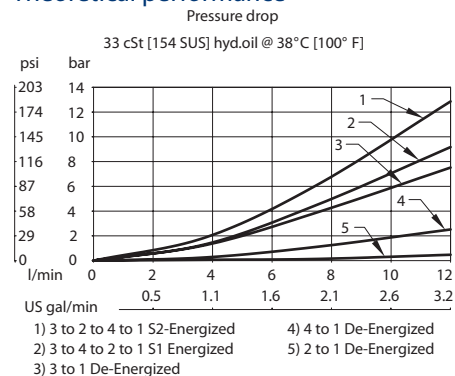
This is a direct-acting, 3-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

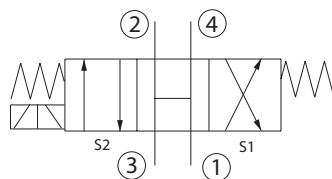
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	8 l/min [2 US gal/min]
Weight	0.55 kg [1.21 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance

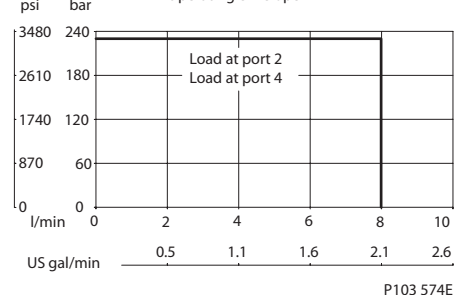


Schematic



P108277

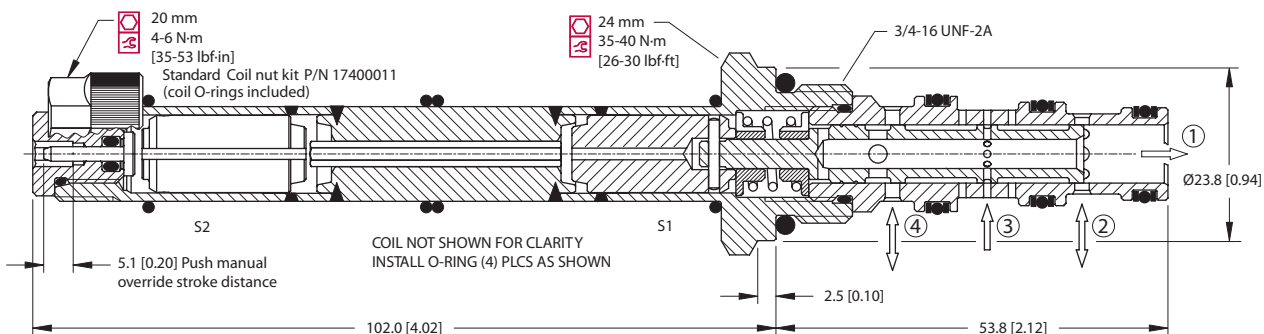
Operating envelope



DIMENSIONS

mm [in]

Cross-sectional view



P103 473

ORDERING INFORMATION

SV08-34-03-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- L2B = Al, 1/4 BSP
- Other housings available

Body Nomenclature

- No Body
- CP08-4-4S
- CP08-4-6S
- SDC08-4-L2B

- Seals** **Seals kit**
- B = Buna-N 354003319
 - V = Viton 354003919

P103 435E

* These terminations are not available on robust coil (R12D, R24D)

Solenoid valves
SV08-34-03

OPERATION

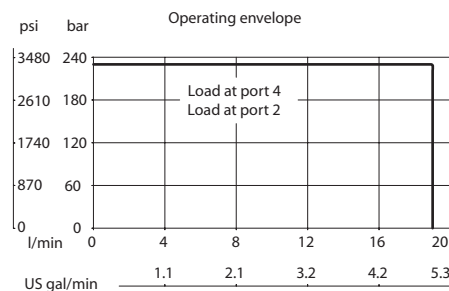
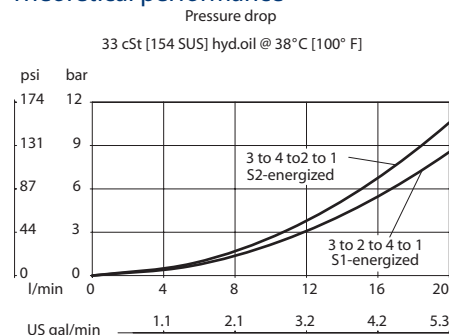
This is a direct-acting, 3-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

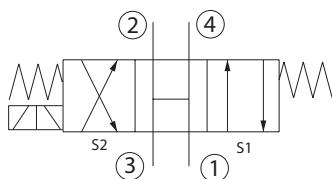
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	16 l/min [4 US gal/min]
Weight	0.81 kg [1.79 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



Schematic



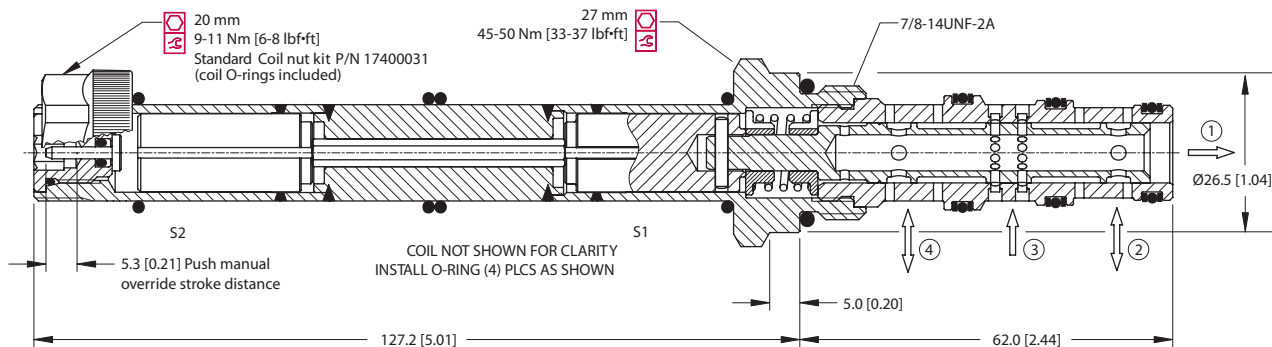
P108278

P103 589E

DIMENSIONS

mm [in]

Cross-sectional view



P103 555

ORDERING INFORMATION

SV10-34-03-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- L3B = Al, 3/8 BSP
- L4B = Al, 1/2 BSP
- Other housings available

- Seals**
B = Buna-N
V = Viton
- Seals kit**
354001919
354002019

Body Nomenclature

- No Body
- CP10-4-6S
- CP10-4-8S
- SDC10-4-L3B
- SDC10-4-L4B

P103 450E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

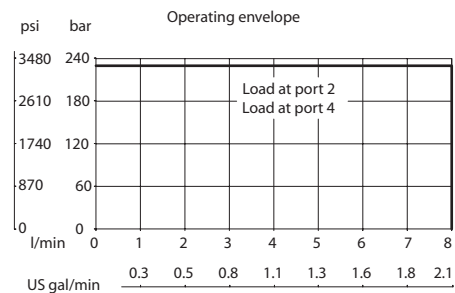
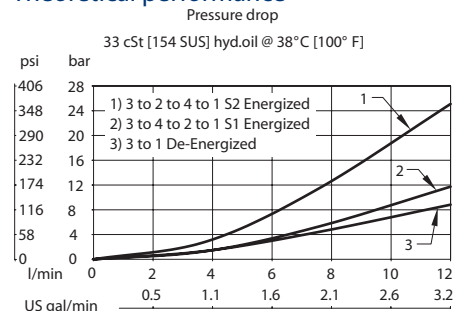
This is a direct-acting, 3-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

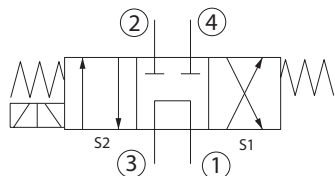
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	6 l/min [2 US gal/min]
Weight	0.55 kg [1.21 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 575E

Schematic

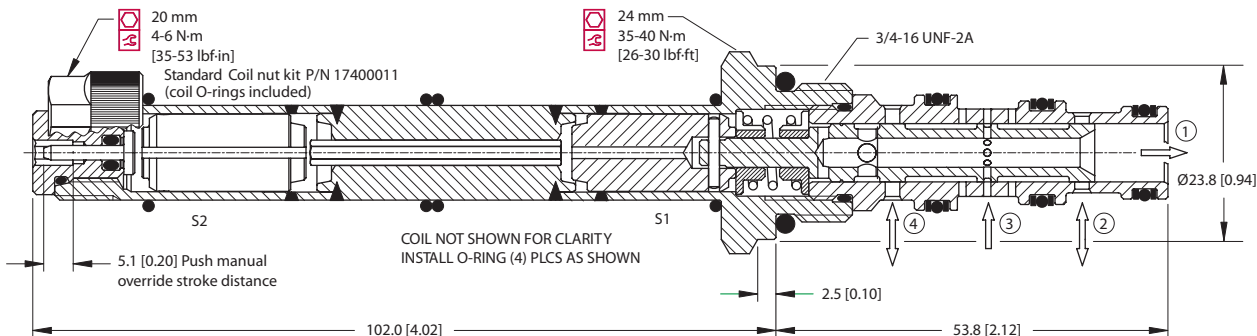


P102 394E

DIMENSIONS

mm [in]

Cross-sectional view



P103 474

ORDERING INFORMATION

SV08-34-04-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- L2B = Al, 1/4 BSP
- Other housings available

Body Nomenclature

- No Body
- CP08-4-4S
- CP08-4-6S
- SDC08-4-L2B

Seals

- B = Buna-N
- V = Viton

Seals kit

- 354003319
- 354003919

P103 436E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

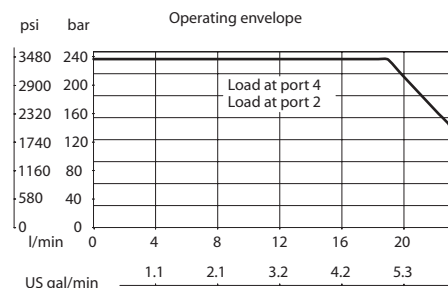
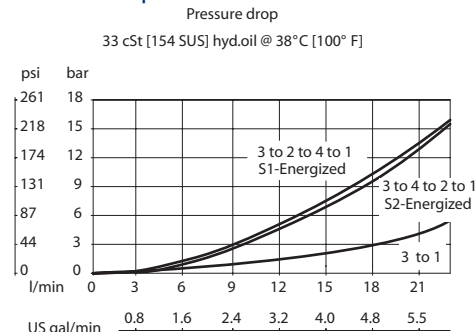
This is a direct-acting, 3-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

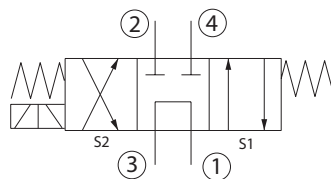
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	15 l/min [4 US gal/min]
Weight	0.81 kg [1.79 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 590E

Schematic

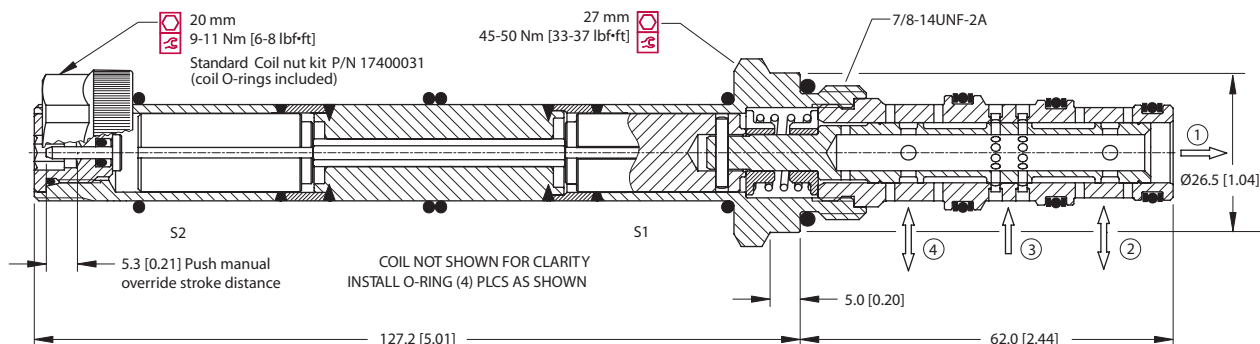


P108276

DIMENSIONS

mm [in]

Cross-sectional view



P103 556

ORDERING INFORMATION

SV10-34-04-12D-DN-B-00

Coil voltage
00 = No Coil
12D = 12 VDC (Standard Coil)
24D = 24 VDC (Standard Coil)
R12D = 12 VDC (R-Coil)
R24D = 24 VDC (R-Coil)
Coil termination:
00 = No Coil
FL = Flying Lead
DN = DIN 43650 *
DE = Deutsch
AJ = Amp Junior *
SP = Spade *
AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports
00 = Cartridge only
6S = Al, #6 SAE
8S = Al, #8 SAE
L3B = Al, 3/8 BSP
L4B = Al, 1/2 BSP
Other housings available
Seals
B = Buna-N
V = Viton

Seals kit
354001919
354002019

Body Nomenclature
No Body
CP10-4-6S
CP10-4-8S
SDC10-4-L3B
SDC10-4-L4B

P103 451E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

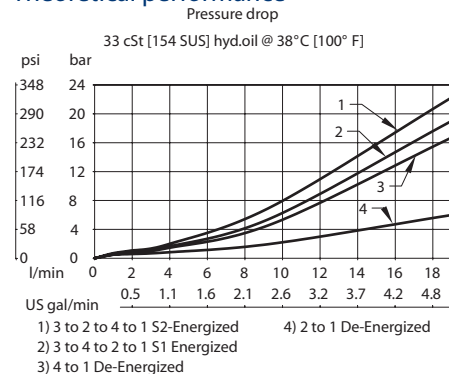
This is a direct-acting, 3-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

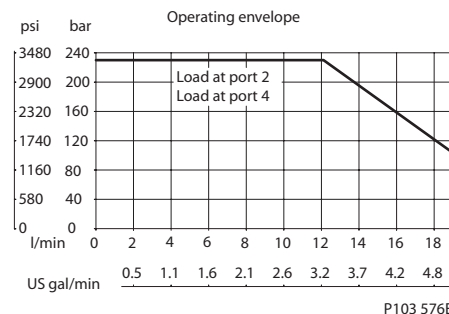
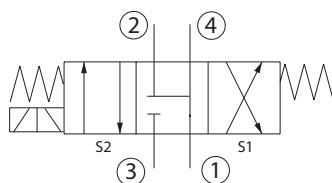
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Weight	0.55 kg [1.21 lb]
Cavity	SDC08-4
Standard Coil	M13 20 Watt
Robust Coil	R13 16 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



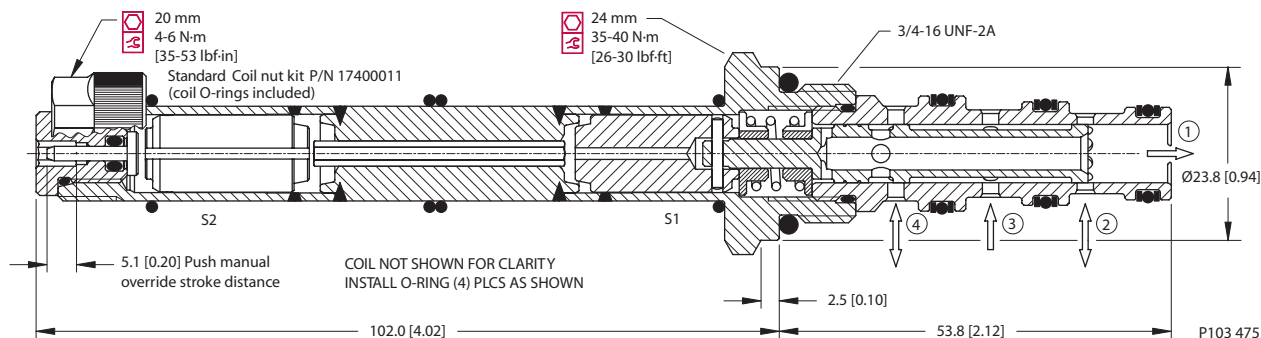
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

SV08-34-05-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 4S = Al, #4 SAE
- 6S = Al, #6 SAE
- L2B = Al, 1/4 BSP
- Other housings available

Body Nomenclature

- No Body
- CP08-4-4S
- CP08-4-6S
- SDC08-4-L2B

Seals

- B = Buna-N
- V = Viton

Seals kit

- 354003319
- 354003919

P103 437E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

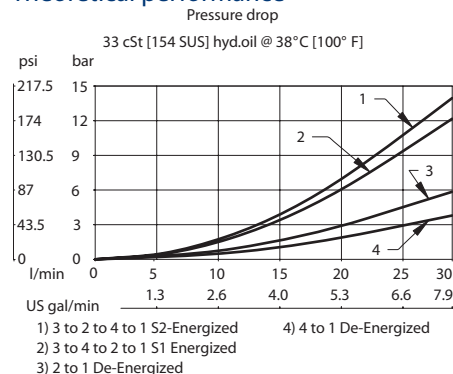
This is a direct-acting, 3-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

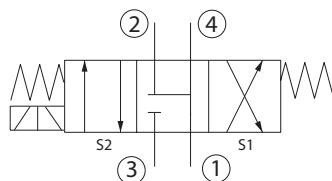
Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.81 kg [1.79 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

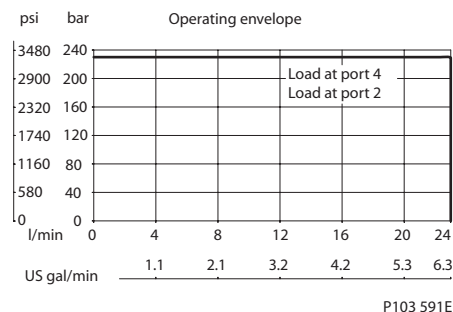
Theoretical performance



Schematic



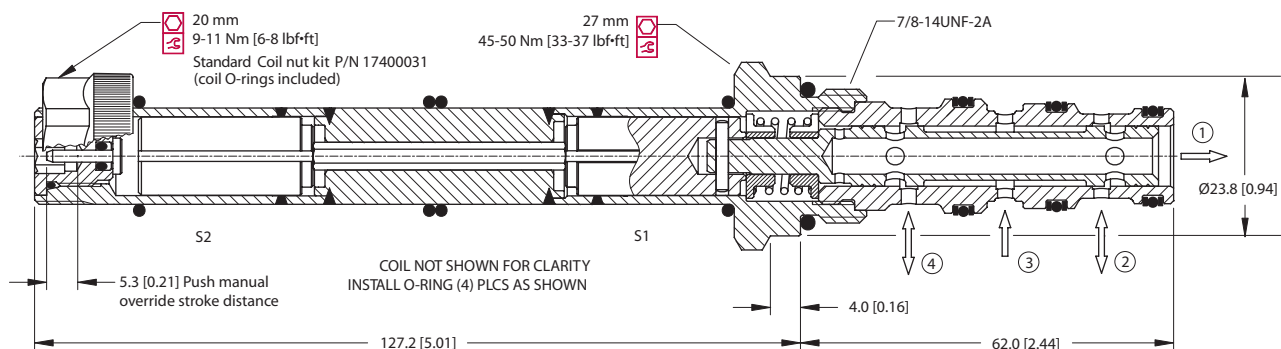
P108280



DIMENSIONS

mm [in]

Cross-sectional view



P103 557

ORDERING INFORMATION

SV10-34-05-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- L3B = Al, 3/8 BSP
- L4B = Al, 1/2 BSP
- Other housings available

- Seals**
B = Buna-N
V = Viton
- Seals kit**
354001919
354002019

Body Nomenclature

- No Body
- CP10-4-6S
- CP10-4-8S
- SDC10-4-L3B
- SDC10-4-L4B

P103 452E

* These terminations are not available on robust coil (R12D, R24D)

OPERATION

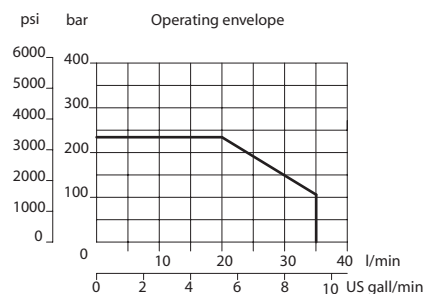
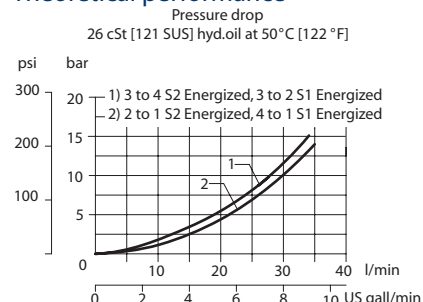
This is a direct-acting, 3-position, 4-way, spool-type solenoid valve.

SPECIFICATIONS

Specifications

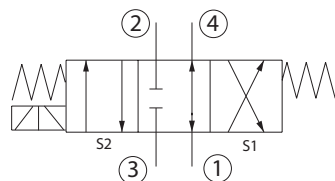
Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	24 l/min [6 US gal/min]
Weight	0.81 kg [1.79 lb]
Cavity	SDC10-4
Standard Coil	M16 26 Watt
Robust Coil	R16 20 Watt Robust Nut P/N 173804910 (no coil O-rings needed)

Theoretical performance



P103 597E

Schematic

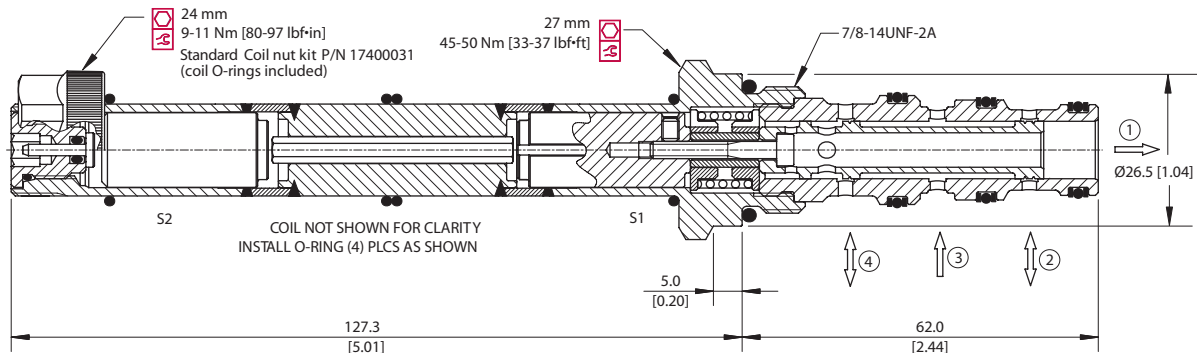


P108283

DIMENSIONS

mm [in]

Cross-sectional view



P103 563

ORDERING INFORMATION

SV10-34-11-12D-DN-B-00

Coil voltage

- 00 = No Coil
- 12D = 12 VDC (Standard Coil)
- 24D = 24 VDC (Standard Coil)
- R12D = 12 VDC (R-Coil)
- R24D = 24 VDC (R-Coil)

Coil termination:

- 00 = No Coil
- FL = Flying Lead
- DN = DIN 43650 *
- DE = Deutsch
- AJ = Amp Junior *
- SP = Spade *
- AS = AMP SuperSeal 1.5 and Metri-Pack 150 type 1

Body and ports

- 00 = Cartridge only
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- L3B = Al, 3/8 BSP
- L4B = Al, 1/2 BSP
- Other housings available

Seals

- B = Buna-N
- V = Viton

Seals kit

- 354001919
- 354002019

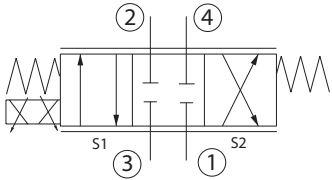
Body Nomenclature

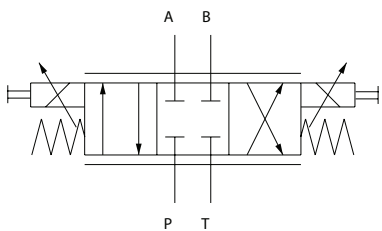
- No Body
- CP10-4-6S
- CP10-4-8S
- SDC10-4-L3B
- SDC10-4-L4B

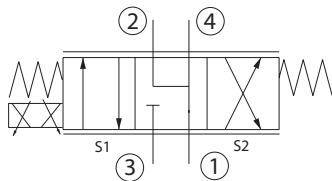
P103 458E

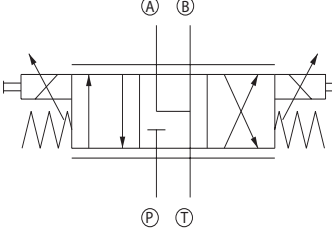
* These terminations are not available on robust coil (R12D, R24D)

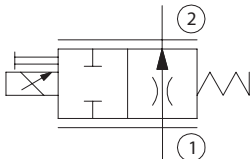
Solenoid valves
SV10-34-11

Proportional Directional	Model No.	Cavity	Description	Flow*	Pressure	Page
	PSV10-34-02	SDC10-4	Proportional Directional Valve	22 l/min [6 US gal/min]	250 bar [3600 psi]	11.12

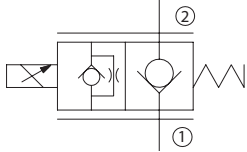
Proportional Directional	Model No.	Cavity	Description	Flow*	Pressure	Page
	PDCV03-3Z11	ISO D03	Proportional Directional Valve	30.3 l/min [8 US gal/min]	320 bar [4640 psi]	11.13
	PDCV05-3Z11	ISO D05		60 l/min [16 US gal/min]	320 bar [4600 psi]	11.14

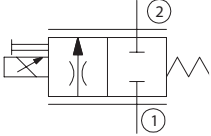
Proportional Directional	Model No.	Cavity	Description	Flow*	Pressure	Page
	PSV10-34-05	SDC10-4	Proportional Directional Valve	22 l/min [6 US gal/min]	250 bar [3600 psi]	11.15

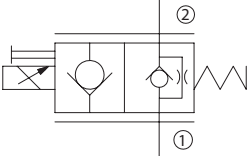
Proportional Directional	Model No.	Cavity	Description	Flow*	Pressure	Page
	PDCV03-3Y11	ISO D03	Proportional Directional Valve	30.3 l/min [8 US gal/min]	320 bar [4640 psi]	11.16
	PDCV05-3Y11	ISO D05		60 l/min [16 US gal/min]	320 bar [4600 psi]	11.17

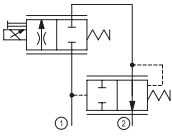
Proportional Flow Controls	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP518-PNC	SDC08-2	Proportional Flow Control Valve, Non-Compensated, Normally Open	12 l/min [3 US gal/min]	210 bar [3000 psi]	11.18
	PSV10-NC	SDC10-2		40 l/min [11 US gal/min]	260 bar [3770 psi]	11.19
	PSV12-NC	SDC12-2		80 l/min [21 US gal/min]	260 bar [3770 psi]	11.20
	PSV16-NC	SDC16-2		100 l/min [26 US gal/min]	260 bar [3770 psi]	11.21

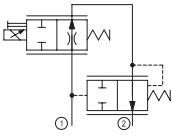
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Proportional Flow Controls	Model No.	Cavity	Description	Flow*	Pressure	Page
	PSVP10-NCR	SDC10-2	Proportional Flow Control Valve, Non-Compensated, Normally Closed, Poppet Type	55 l/min [14 US gal/min]	260 bar [3770 psi]	11.22
	PSVP12-NCR	SDC12-2		70 l/min [18 US gal/min]	260 bar [3770 psi]	11.23
	PSVP16-NCR	SDC16-2		90 l/min [24 US gal/min]	260 bar [3770 psi]	11.24

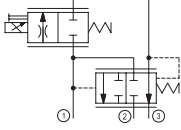
Proportional Flow Controls	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP518-PNO	SDC08-2	Proportional Flow Control Valve, Non-Compensated, Normally Open	12 l/min [3 US gal/min]	210 bar [3000 psi]	11.25
	PSV10-NO	SDC10-2		45 l/min [12 US gal/min]	260 bar [3770 psi]	11.26
	PSV12-NO	SDC12-2		100 l/min [26 US gal/min]	260 bar [3770 psi]	11.27

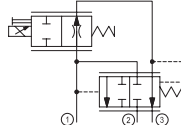
Proportional Flow Controls	Model No.	Cavity	Description	Flow*	Pressure	Page
	PSVP10-NOR	SDC10-2	Proportional Flow Control Valve, Non-Compensated, Normally Open, Poppet Type	45 l/min [12 US gal/min]	260 bar [3770 psi]	11.28
	PSVP12-NOR	SDC12-2		70 l/min [18 US gal/min]	260 bar [3770 psi]	11.29
	PSVP16-NOR	SDC16-2		80 l/min [21 US gal/min]	260 bar [3770 psi]	11.30

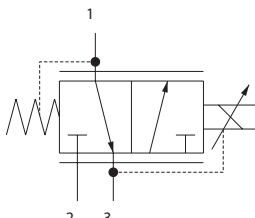
Proportional Flow Controls	Model No.	Cavity	Description	Flow*	Pressure	Page
	PFC10-RC	SDC10-2	Proportional Flow Control Valve, Pressure Compensated, Restrictive Type, Normally Closed	30 l/min [8 US gal/min]	260 bar [3770 psi]	11.31
	PFC12-RC	SDC12-2		65 l/min [17 US gal/min]	260 bar [3770 psi]	11.32
	PFC16-RC	SDC16-2		90 l/min [24 US gal/min]	260 bar [3770 psi]	11.33

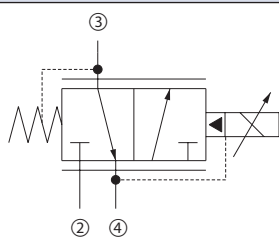
Proportional Flow Controls	Model No.	Cavity	Description	Flow*	Pressure	Page
	PFC10-RO	SDC10-2	Proportional Flow Control Valve, Pressure Compensated, Restrictive Type, Normally Open	30 l/min [8 US gal/min]	260 bar [3770 psi]	11.34
	PFC12-RO	SDC12-2		60 l/min [16 US gal/min]	260 bar [3770 psi]	11.35
	PFC16-RO	SDC16-2		85 l/min [22 US gal/min]	260 bar [3770 psi]	11.36

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

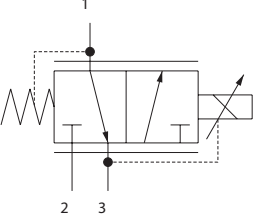
Proportional Flow Controls	Model No.	Cavity	Description	Flow*	Pressure	Page
	PFC10-PC	SDC10-3	Proportional Flow Control Valve, Pressure Compensated, Priority Type, Normally Closed	40 l/min [11 US gal/min]	260 bar [3770 psi]	11.37
	PFC12-PC	SDC12-3		65 l/min [17 US gal/min]	260 bar [3770 psi]	11.38
	PFC16-PC	SDC16-3		85 l/min [22 US gal/min]	260 bar [3770 psi]	11.39

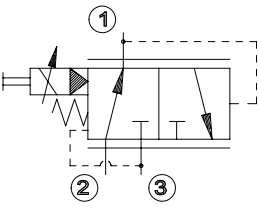
Proportional Flow Controls	Model No.	Cavity	Description	Flow*	Pressure	Page
	PFC10-PO	SDC10-3	Proportional Flow Control Valve, Pressure Compensated, Priority Type, Normally Open	35 l/min [9 US gal/min]	260 bar [3770 psi]	11.40
	PFC12-PO	SDC12-2		70 l/min [18 US gal/min]	260 bar [3770 psi]	11.41
	PFC16-PO	SDC16-3		90 l/min [24 US gal/min]	260 bar [3770 psi]	11.42

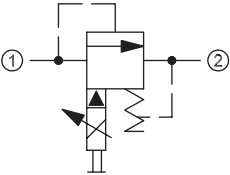
Proportional Pressure Reducing	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP558-24	SDC08-3	Proportional Pressure Reducing Valve, Direct Acting, Normally Open	4 l/min [1 US gal/min]	34 bar [500 psi]	11.43

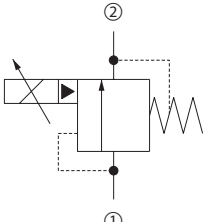
Proportional Pressure Reducing	Model No.	Cavity	Description	Flow*	Pressure	Page
	XRP 044	SDC10-4	Proportional Pressure Reducing/Relieving Valve, Piloted, Normally Open	25 l/min [7 US gal/min]	50 bar [700 psi]	11.44

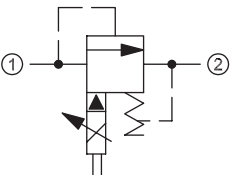
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Proportional Pressure Reducing	Model No.	Cavity	Description	Flow*	Pressure	Page
	PPR10-PAC	SDC10-3	Proportional Pressure Reducing/Relieving Valve, Piloted, Normally Closed	18 l/min [5 US gal/min]	250 bar [3625 psi]	11.45

Proportional Pressure Reducing	Model No.	Cavity	Description	Flow*	Pressure	Page
	XRP 06	NCS06/3	Proportional Pressure Reducing/Relieving Valve, Piloted, Normally Open	25 l/min [7 US gal/min]	315 bar [4500 psi]	11.46

Proportional Pressure Relieving	Model No.	Cavity	Description	Flow*	Pressure	Page
	XMD 04	NCS04/2	Proportional Pressure Reducing Valve,	5 l/min [1 US gal/min]	250 bar [3600 psi]	11.47
	CP558-20	SDC08-2	Direct Acting, Normally Open	8 l/min [2 US gal/min]	210 bar [3000 psi]	11.48

Proportional Pressure Relieving	Model No.	Cavity	Description	Flow*	Pressure	Page
	PRV10-POC	SDC10-2	Proportional Relief Valve, Pilot Operated, Normally Closed	76 l/min [20 US gal/min]	250 bar [3600 psi]	11.49
	PRV12-POC	SDC12-2		180 l/min [48 US gal/min]	250 bar [3600 psi]	11.50

Proportional Pressure Relieving	Model No.	Cavity	Description	Flow*	Pressure	Page
	XMP 06	NCS06/2	Proportional Relief Valve, Pilot Operated, Normally Open	50 l/min [13 US gal/min]	315 bar [4500 psi]	11.51

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

PROPORTIONAL VALVES

Proportional, or electro-proportional valves, provide infinitely variable control of flow, pressure, or direction, in response to a electric input signal.

There are four basic types of Comatrol proportional valves:

- Flow control valves.
- Pressure reducing/relieving valves.
- Pressure relief valves.
- Directional control valves

Proportional valves



PLUS+1™ COMPLIANT

Comatrol solenoid valves are PLUS+1™ compliant. PLUS+1 compliance means our valves are directly compatible with the PLUS+1 machine control architecture. Adding solenoid valves to your application using PLUS+1 GUIDE software is as easy as *drag-and-drop*. Software development that used to take months can now be done in just a few hours. For more information on PLUS+1 GUIDE, visit www.comatrol.com or www.sauer-danfoss.com/plus1. The table below details available GUIDE function blocks for controlling Comatrol solenoid valves.

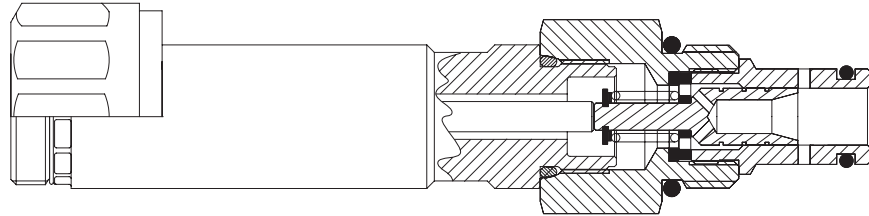
GUIDE function blocks

Two-way proportional	10106103
Three-way proportional	10106104

PROPORTIONAL FLOW CONTROL VALVES

Comatrol proportional flow control valves are 2-way, spool-type valves that are directly operated with a proportional electromagnetic solenoid actuator. By controlling electric current, these valves create an infinitely variable orifice.

Proportional flow control valve

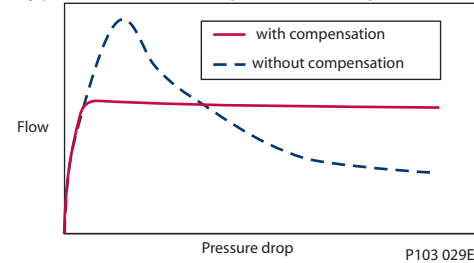


P108 349

These valves are designed to be used with a logic element to provide pressure compensation. Pressure compensation provides two advantages:

1. A constant pressure differential is maintained across the proportional valve (variable orifice), which maintains constant flow regardless of changes in operating pressure or load.
2. A constant pressure differential across the proportional valve limits the flow forces acting on the valve spool. At high flow and pressure, the electromagnetic and spring forces can be insufficient to maintain valve operation without pressure compensation.

Typical flow versus pressure drop

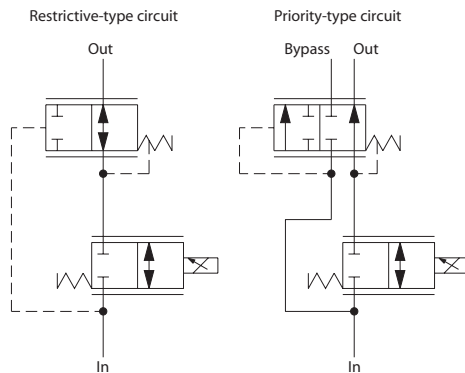


P103 029E

Typical circuits use restrictive-type or priority-type pressure compensators with proportional flow control valves to control speed of a hydraulic motor or cylinder.

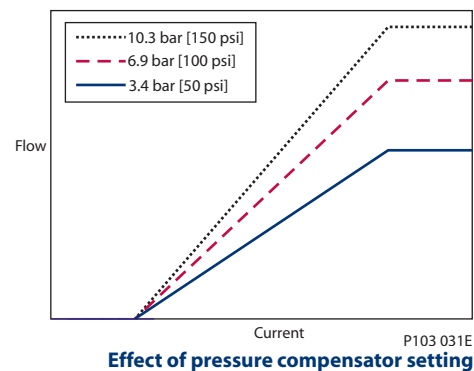
Proportional flow control valves are available with a variety of flow capabilities (variable orifice sizes). By matching this flow capability to various pressure compensator settings, a wide range of flow vs. current control curves can be attained.

Typical circuit using a proportional valve



P103 030E

Flow versus current



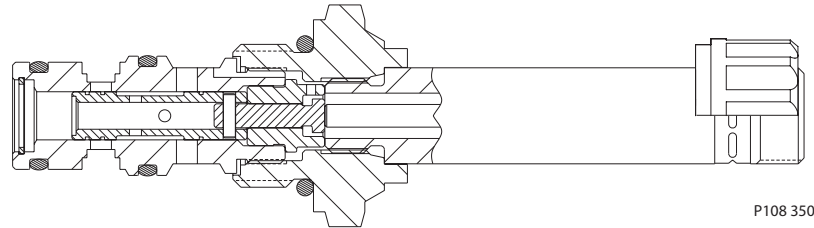
P103 031E

Effect of pressure compensator setting

**PROPORTIONAL
 PRESSURE REDUCING/
 RELIEVING VALVES**

Proportional pressure reducing/relieving valves are 3-way valves that provide a controlled output pressure as a function of electric current, regardless of system pressure or flow (within the valve's limits). Direct acting designs are available for low-flow applications.

Direct-acting, proportional, pressure reducing valve

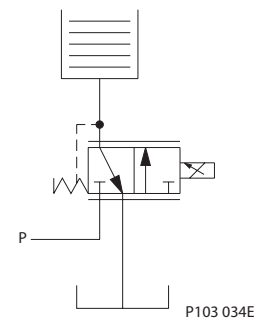


Proportional valves
 Application notes

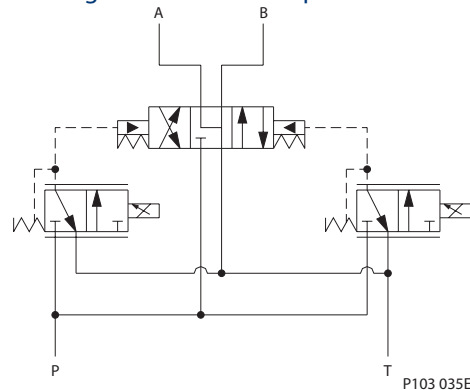
Proportional pressure reducing valves have a variety of applications including:

- Single acting cylinder position control, e.g. combine header height control.
- Clutch or brake pressure control.
- Pilot signal to a directional control valve. By slowly ramping the current to the proportional valve in this example, a soft-start and soft-stop is attained.

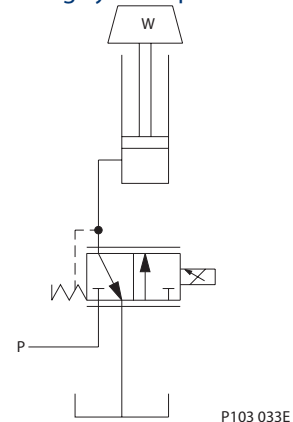
Clutch pressure control



Pilot signal to directional spool valve



Single-acting cylinder piston control



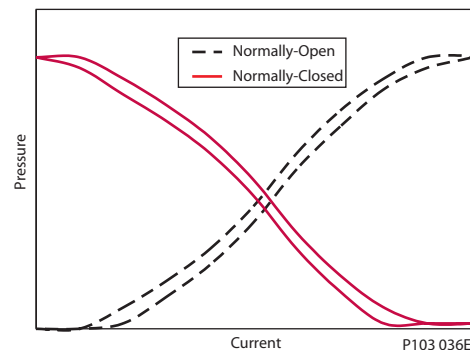
High flow proportional pressure reducing valve functions can be created by using a proportional valve to pilot a differential sensing valve; see differential sensing valve application notes for more information.

PROPORTIONAL PRESSURE RELIEF VALVES

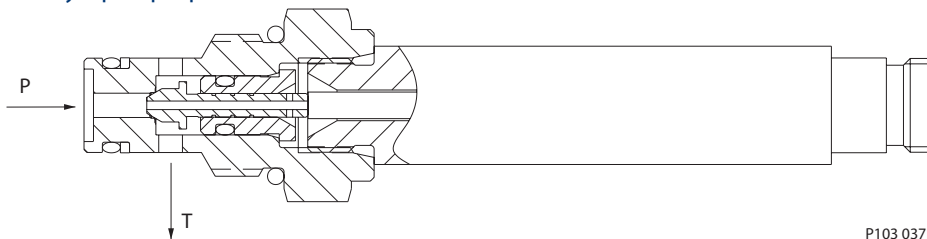
Proportional pressure relief valves are 2-way valves that provide a relief pressure as a function of electric current. Both normally-open (increasing pressure with increasing current), and normally-closed (decreasing pressure with increasing current) are available.

The normally-open proportional relief valve is a direct-acting design for low flow applications. High flow normally-open proportional relief valve functions can be created by using a proportional valve to pilot a differential sensing valve; see differential sensing valve application notes for more information.

Normally closed versus normally open proportional relief valves



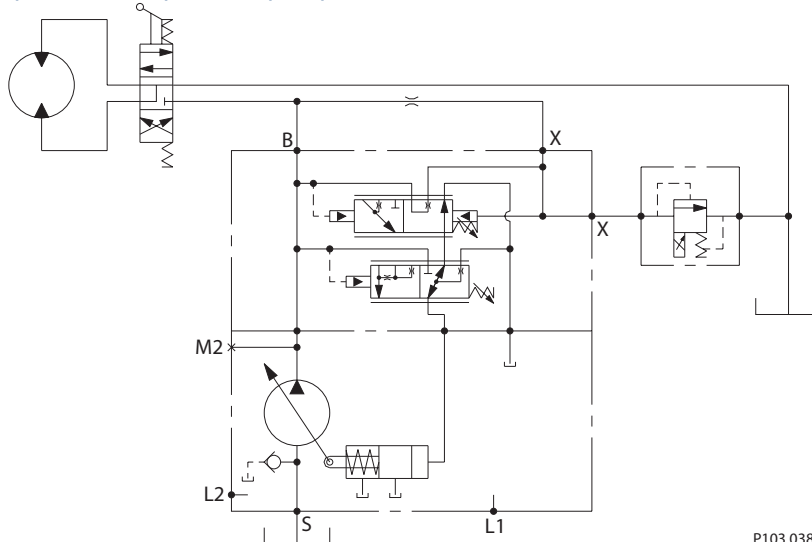
Normally-open proportional relief valve



Common applications for normally-open proportional relief valves are:

- Electro-proportional control of system relief pressure; see differential sensing valve application notes for more information.
- Electro-proportional remote pressure compensator control for open circuit piston pumps (for more information refer to BLN-10128 Series 45 Open Circuit Axial Piston Pumps Technical Information).

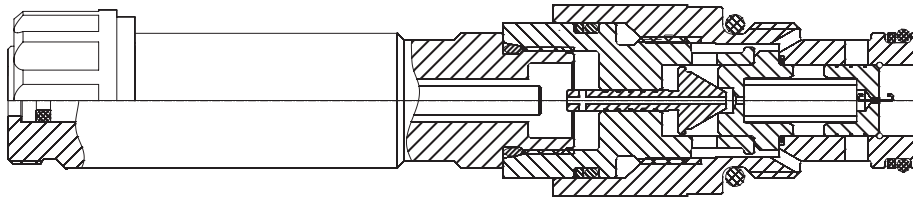
Remote pressure compensator pump control



PROPORTIONAL PRESSURE RELIEF VALVES (continued)

Normally-closed proportional relief valves are available in direct-acting and pilot-operated designs. A direct-acting, normally-closed proportional relief valve is used for low flow applications. For high flow applications, internally pilot-operated cartridges are available.

Internally pilot-operated cartridge for high flow applications

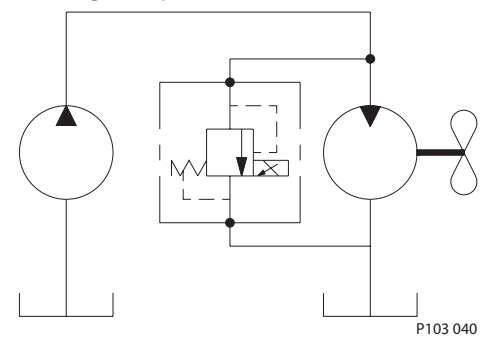


P108 351

Common applications for normally-closed proportional relief valves are:

- Electro-proportional control of system relief pressure or electro-proportional remote pressure compensator control for open circuit piston pumps as above, but where system requirements dictate full pressure with no electrical signal.
- Cooling fan speed control in hydrostatic fan drive systems. (For more information refer to BLN-10080 *Fan Drives Systems and Components Technical Information*).

Cooling fan speed control

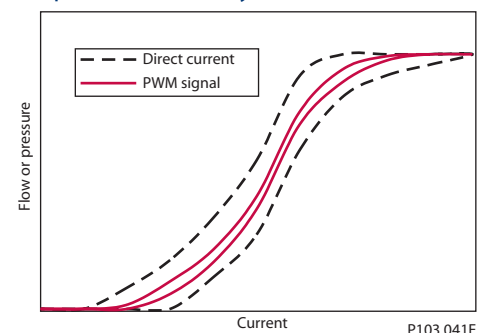


P103 040

ELECTRICAL REQUIREMENTS

All proportional cartridge valves are analog-type valves that control flow or pressure as a function of electric current. For this reason, proportional valves should be driven with a current-controlled device that will maintain constant output regardless of changes in system voltage, line losses, or temperature. Typically available current-controlled valve drivers output a pulse-width-modulated (PWM) square-wave signal. An advantage of a PWM signal is that the dither it provides significantly reduces hysteresis. Comatrol recommends using a 100-200 Hz dither for best performance.

Proportional valve hysteresis



P103 041E

Typical performance

TERMS AND DEFINITIONS

Analog Proportional Valves are controlled by electric current, which may be direct current (DC) or a PWM signal.

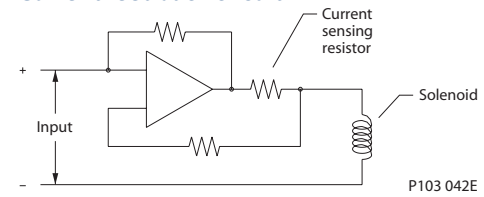
Compensator is a hydraulic component that maintains a constant pressure drop across a fixed or variable orifice.

Current is the flow of electricity through a conductor or coil, normally measured in amps (A). Steady-state current flow in an electrical circuit can be calculated by Ohm's Law, as well as voltage and resistance.

$$\text{Ohm's Law} \quad I = \frac{V}{R}$$

Current Control is a feature of almost all valve drivers. The output of analog proportional valves is a direct function of current. If a valve is controlled with voltage, higher solenoid temperatures, which increase solenoid resistance, will result in lower valve output. To compensate for this, most valve drivers are designed with current feedback circuitry. This means that as solenoid temperature rises or as supply voltage and voltage losses change, the current and corresponding valve output are maintained.

Current feedback circuit



Deadband is the range from zero to the minimum current which causes the valve to respond.

Digital Proportional Valves are extremely fast responding valves that are controlled by a precise on-off signal to produce an average output that is a function of duty cycle.

Dither is a "ripple" signal sent to a solenoid to reduce hysteresis. Dither can be a sine, square, or saw-tooth wave superimposed on a PWM signal or it can be a wave on top of a DC signal.

Duty Cycle is the % of time the valve is on divided by total time.

Hysteresis is the difference in output for a given input, depending on whether the input is increasing or decreasing. It is normally expressed as a % of the maximum rated output. For example, if a 160 l/min [42 US gal/min] proportional flow control valve provides 80 l/min [21 US gal/min] with 1 amp-increasing and 88 l/min [23 US gal/min] at 1 amp-decreasing, the hysteresis is:

$$\frac{(88-80)}{160} = 5\%$$

I_{min} is the minimum current required for valve response (see deadband).

I_{max} is the current required for maximum valve output.

TERMS AND DEFINITIONS
(continued)

PWM is an acronym for Pulse-Width-Modulation. Most valve drivers use a current-controlled PWM output to reduce valve hysteresis and to allow current control without excessive heat generation. A typical PWM output is a square wave from 80-500 Hz.

Ramping is the application of current to a solenoid with a linear or non-linear ramp, rather than an instantaneous step. Ramping current on and off to a proportional valve provides actuators with soft-starts and soft-stops. Ramps can generally be set or pre-programmed into valve drivers.

Resistance is a component's opposition to the flow of electrical current, usually measured in ohms (Ω). Resistance depends on the conductivity of the material, as well as size, shape, and temperature. Solenoid resistance can vary greatly with temperature; to compensate for this, current-controlled drivers are generally always used with proportional valves.

Threshold is the minimum current required for valve response; see deadband.

Valve Driver is a generic term for any device that sends a signal to a proportional valve. A valve driver may range from a simple electronic circuit attached to a knob or lever up to a microcontroller with custom software and multiple inputs and outputs.

Voltage is the potential for current to flow in an electric circuit, usually measured in volts (V).

OPERATION

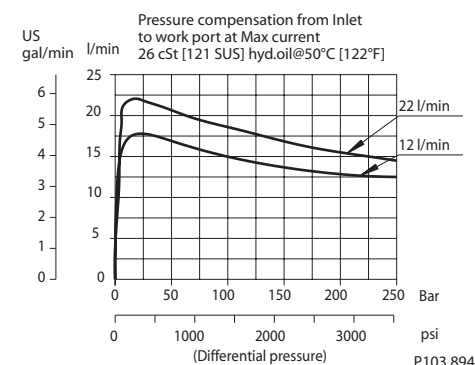
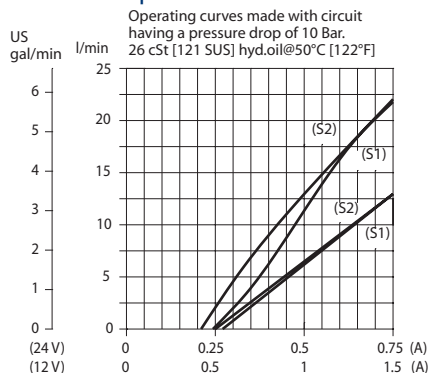
This is a non-compensated proportional directional control valve.

SPECIFICATIONS

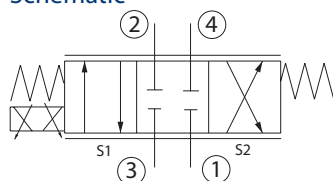
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow at 10 bar [150 psi]	22 l/min [6 US gal/min]
Weight	0.77 kg [1.70 lb]
Hysteresis	4% maximum
Threshold current	0.5 A (12 VDC coil) 0.25 A (24 VDC coil)
Maximum control current	1.5 A (12 VDC coil) 0.8 A (24 VDC coil)
Cavity	SDC10-4
Standard Coil	M16 26 Watt

Theoretical performance



Schematic

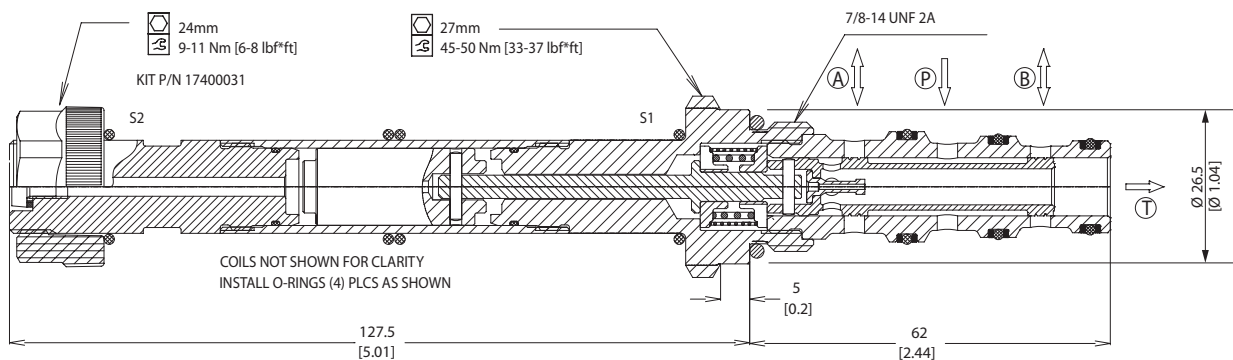


P102 711

DIMENSIONS

mm [in]

Cross-sectional view



P103 824

ORDERING INFORMATION

PSV10-34-02-12-DN-22-B-XX

Coil voltage

0 = No coil
12 = 12V DC
24 = 24V DC

Coil termination

0 = No connector
AJ = Amp junior
AS = Amp superseal 1.5
DE = Deutsch
DN = DIN 43650
FL = Lead wires
SP = Spade

Housing and ports

00 = No Housing
L3B = AL, 3/8 BSP
L4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Seals

B = Buna-N 354001919
V = Viton 354002019

Max regulated flow

12 = 12 l/min [3.2 gal/min]
22 = 22 l/min [5.8 gal/min]

Housing P/N

No Housing
SDC10-4-L-3B
SDC10-4-L-4B
CP10-4-6S
CP10-4-8S

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OPERATION

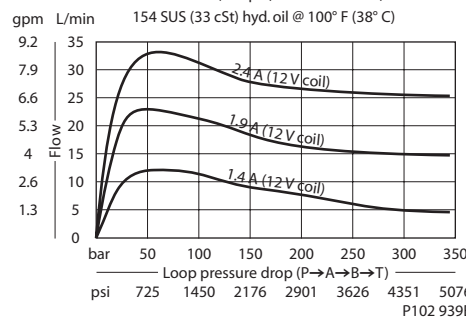
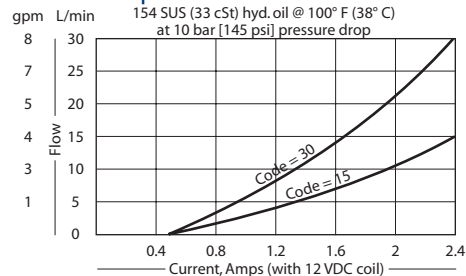
This valve is a proportional directional control.

SPECIFICATIONS

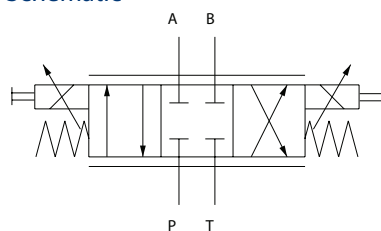
Specifications

Rated pressure	320 bar [4640 psi]
Rated flow at 10 bar [145 psi]	30 l/min [8 US gal/min]
Weight	2.40 kg [5.29 lb]
Hysteresis	6% maximum
Threshold current	0.5 A (12 VDC coil) 0.25 A (24 VDC coil)
Maximum control current	2.4 A (12 VDC coil) 1.2 A (24 VDC coil)
Cavity	ISO D03
Standard Coil	PD03 40 Watt
Coil nut	158-8005

Theoretical performance



Schematic

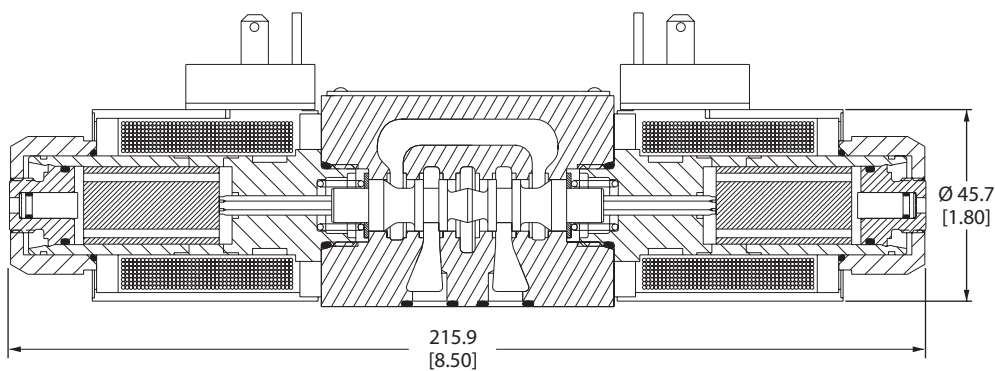


P102 711E

DIMENSIONS

mm [in]

Cross-sectional view



P102 710

ORDERING INFORMATION

PDCV03-3Z11/15-12-E1-8S

Subplate option

- OMIT = No subplate
- 8S = Aluminum, #8 SAE ports
- S8S = Steel, #8 SAE ports

Voltage

- 12 = 12 VDC
- 24 = 24 VDC

Nominal flow rate

- 15 = 15 L/min [4.0 gpm]
- 30 = 30 L/min [7.9 gpm]

Termination

- E1 = DIN 43650
- E3 = Amp Jr.
- E8 = Lead wires
- E12 = Deutsch
- E14 = Dual spade

Seal Kit

- B = Buna-N 158-8007
- V = Viton 158-8062
- Note: All internal seals are viton

Bolt Kit

- #10-24 Thd. 158-8064
- M5 Thd. 158-8026

P102 714E

Proportional valves
 PDCV03-3Z11

OPERATION

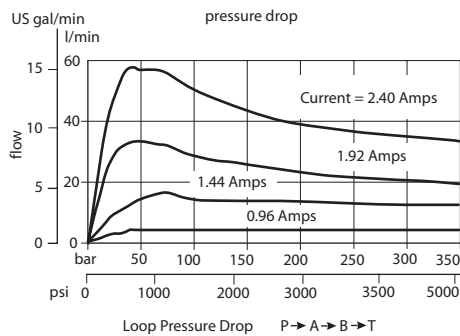
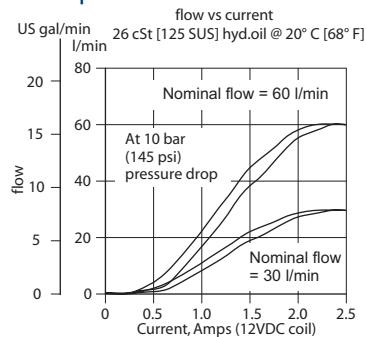
This is a non-compensated proportional directional control valve.

SPECIFICATIONS

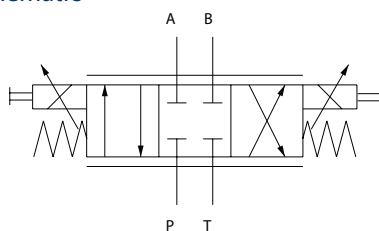
Specifications

Rated pressure	320 bar [4600 psi]
Rated flow at 10 bar [150 psi]	60 l/min [16 US gal/min]
Weight	6.60 kg [14.60 lb]
Hysteresis	6% maximum
Threshold current	0.2 A (12 VDC coil) 0.1 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Cavity	ISO D05
Standard Coil	PD05 23 Watt

Theoretical performance



Schematic

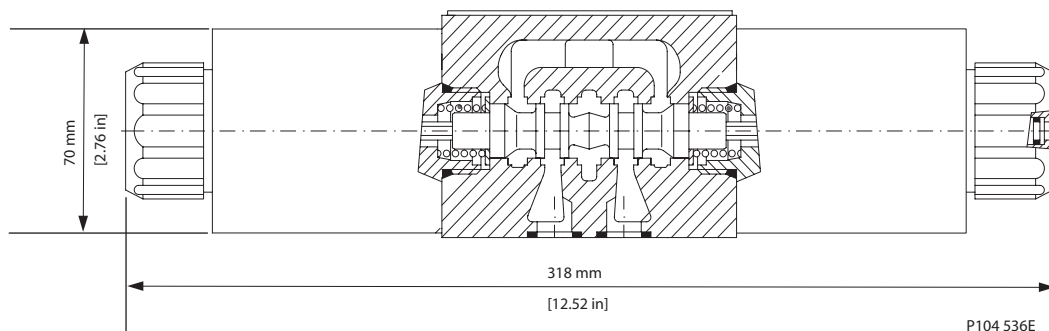


P102 711E

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PDCV05-3Z11/30-12-E1

Flow rate
30 = 30 l/min [7.9 US gal/min]
60 = 60 l/min [15.8 US gal/min]

Voltage
12 = 12 VDC
24 = 24 VDC

Connector
E1 = DIN 43650
E8 = Lead wires
E10 = Deutsch on leads

Seal kit
B = Buna N 158-8023
V = Viton 158-8094
All internal seals are Viton

Bolt kit
1/4-20 Thd 158-8095
M6 Thd 158-8024

P103 987E

OPERATION

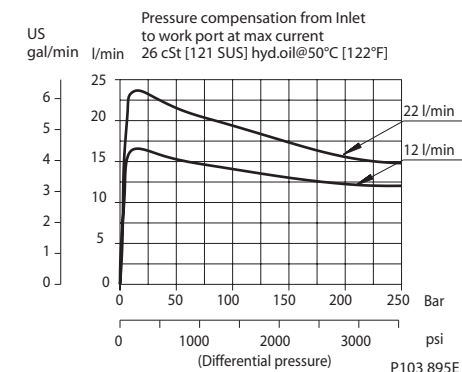
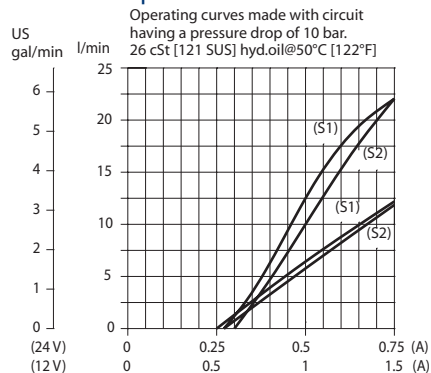
This is a non-compensated proportional directional control valve.

SPECIFICATIONS

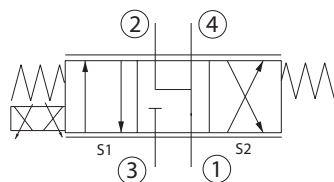
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow at 10 bar [150 psi]	22 l/min [6 US gal/min]
Weight	0.77 kg [1.70 lb]
Hysteresis	4% maximum
Threshold current	0.5 A (12 VDC coil) 0.25 A (24 VDC coil)
Maximum control current	1.5 A (12 VDC coil) 0.8 A (24 VDC coil)
Cavity	SDC10-4
Standard Coil	M16 26 Watt

Theoretical performance



Schematic

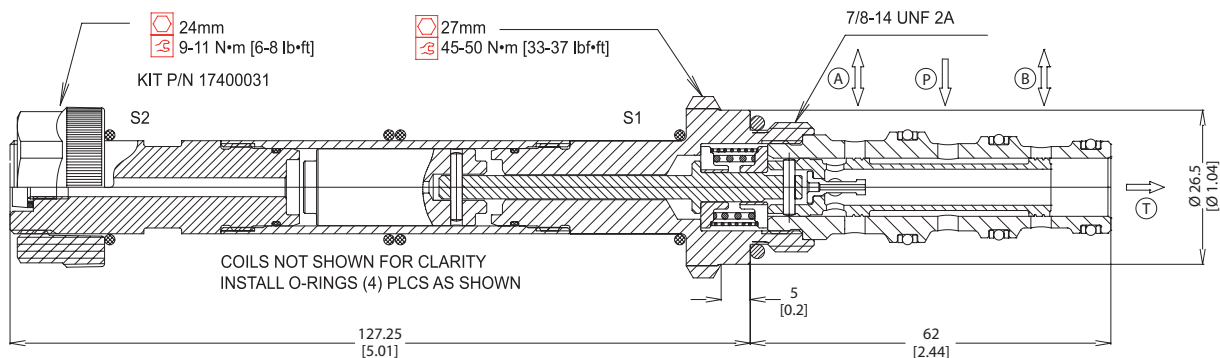


P108 287

DIMENSIONS

mm [in]

Cross-sectional view



P103 825

ORDERING INFORMATION

PSV10-34-05-12-DN-22-B-XX

Coil voltage

0 = No coil
12 = 12V DC
24 = 24V DC

Coil termination

0 = No connector
AJ = Amp junior
AS = Amp superseal 1.5
DE = Deutsch
DN = DIN 43650
FL = Lead wires
SP = Spade

Housing and ports

00 = No Housing
L3B = AL, 3/8 BSP
L4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Seals Seal Kit
B = Buna-N 354001919
V = Viton 354002019

Max regulated flow

12 = 12 l/min [3.2 gal/min]
22 = 22 l/min [5.8 gal/min]

Housing P/N

No Housing
SDC10-4-L-3B
SDC10-4-L-4B
CP10-4-6S
CP10-4-8S

P103 827E

OPERATION

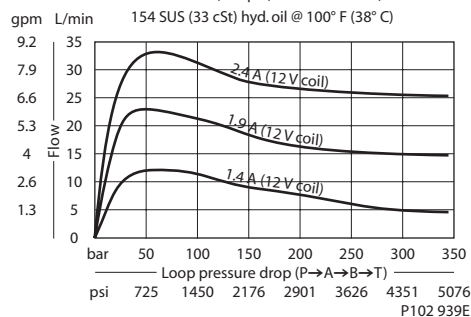
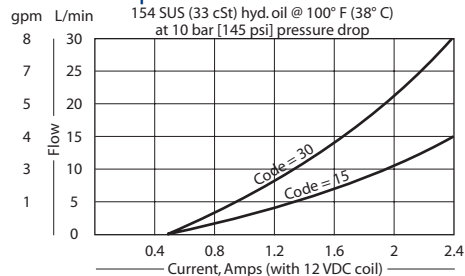
This valve is a proportional directional control.

SPECIFICATIONS

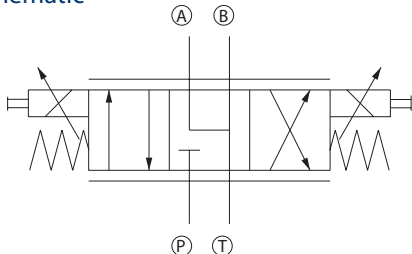
Specifications

Rated pressure	320 bar [4640 psi]
Rated flow at 10 bar [145 psi]	30 l/min [8 US gal/min]
Weight	2.40 kg [5.29 lb]
Hysteresis	6% maximum
Threshold current	0.5 A (12 VDC coil) 0.25 A (24 VDC coil)
Maximum control current	2.4 A (12 VDC coil) 1.2 A (24 VDC coil)
Cavity	ISO D03
Standard Coil	PD03 40 Watt
Coil nut	158-8005

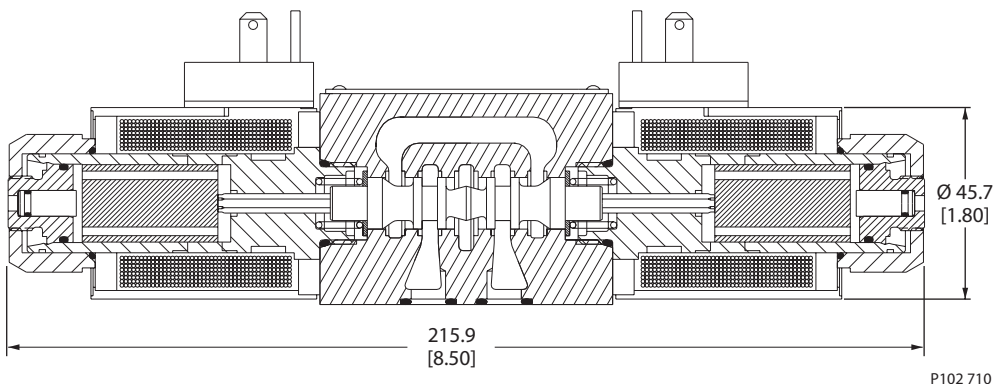
Theoretical performance



Schematic



Cross-sectional view



DIMENSIONS

mm [in]

ORDERING INFORMATION

PDCV03-3Y11/15-12-E1-8S

Subplate option

- OMIT = No subplate
- 8S = Aluminum, #8 SAE ports
- S8S = Steel, #8 SAE ports

Voltage

- 12 = 12 VDC
- 24 = 24 VDC

Nominal flow rate

- 15 = 15 L/min [4.0 gpm]
- 30 = 30 L/min [7.9 gpm]

Termination

- E1 = DIN 43650
- E3 = Amp Jr.
- E8 = Lead wires
- E12 = Deutsch
- E14 = Dual spade

Seal Kit

- B = Buna-N 158-8007
- V = Viton 158-80062
- Note: All internal seals are viton

Bolt Kit

- #10-24 Thd. 158-8064
- M5 Thd. 158-8026

P102 713E

OPERATION

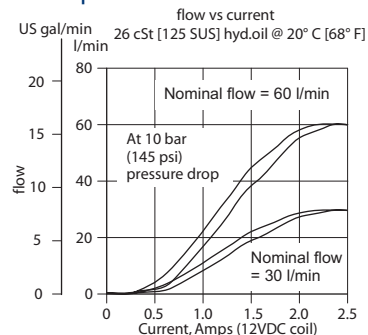
This is a non-compensated proportional directional control valve.

SPECIFICATIONS

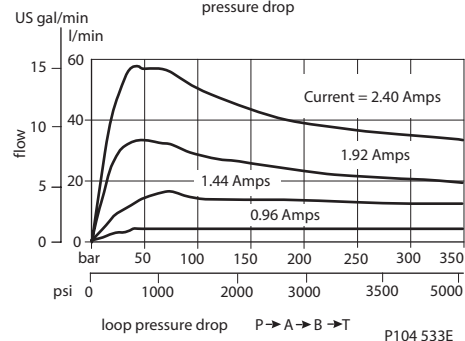
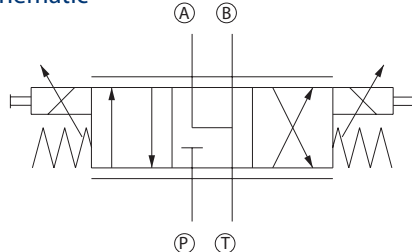
Specifications

Rated pressure	320 bar [4600 psi]
Rated flow at 10 bar [150 psi]	60 l/min [16 US gal/min]
Weight	6.60 kg [14.60 lb]
Hysteresis	6% maximum
Threshold current	0.2 A (12 VDC coil) 0.1 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Cavity	ISO D05
Standard Coil	PD05 23 Watt

Theoretical performance



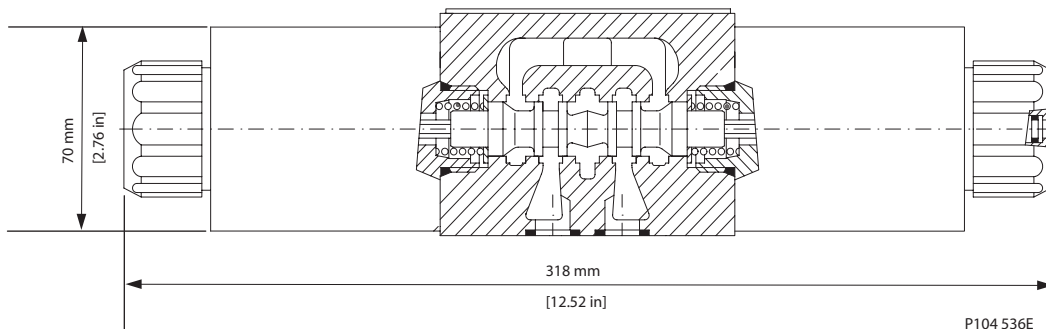
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

P-DCV05-3Y11/30-12-E1

Nominal flow rate
30 = 30 l/min [7.9 US gal/min]
60 = 60 l/min [15.8 US gal/min]

Voltage
12 = 12 VDC
24 = 24 VDC

Connector
E1 = DIN 43650
E8 = Lead wires
E10 = Deutsch on leads

Seal kit
B = Buna N 158-8023
V = Viton 158-8094
All internal seals are Viton

Bolt kit
1/4-20Thd 158-8093
M6 Thd 158-8024

P103 986E

Proportional valves
P-DCV05-3Y11

OPERATION

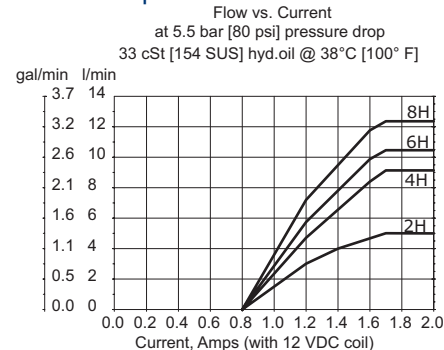
This valve is a non-compensated, normally-closed, proportional flow control.

SPECIFICATIONS

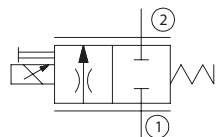
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 6 bar [80 psi]	12 l/min [3 US gal/min]
Weight	0.36 kg [0.80 lb]
Hysteresis	10% maximum
Threshold current	0.8 A (12 VDC coil) 0.4 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	21 bar [300 psi] maximum
Cavity	SDC08-2
Standard Coil	M19P 22 Watt
Coil nut	173802114

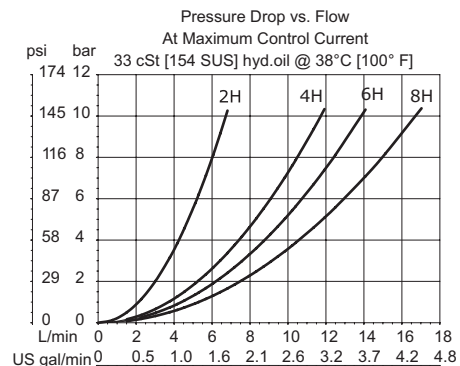
Theoretical performance



Schematic



P104 832

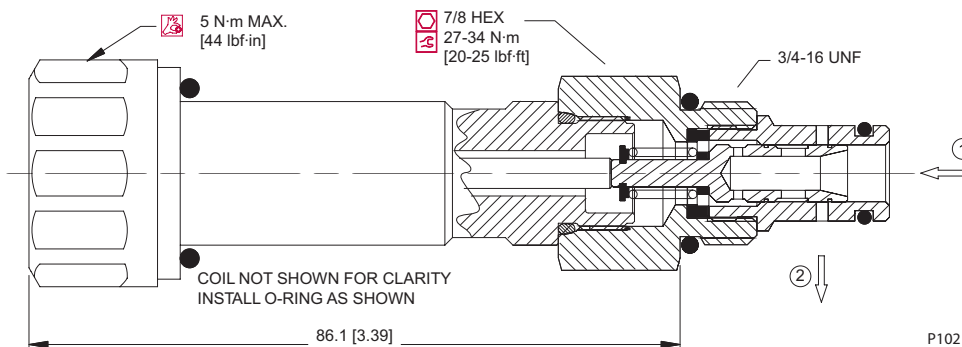


P102 940E

DIMENSIONS

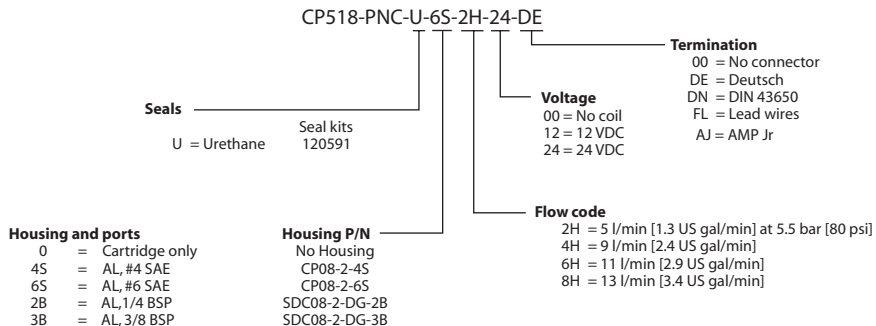
mm [in]

Cross-sectional view



P102 704E

ORDERING INFORMATION



P102 654E

OPERATION

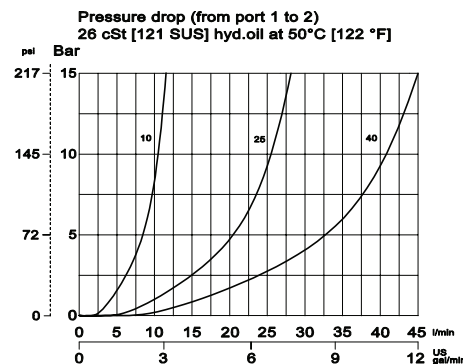
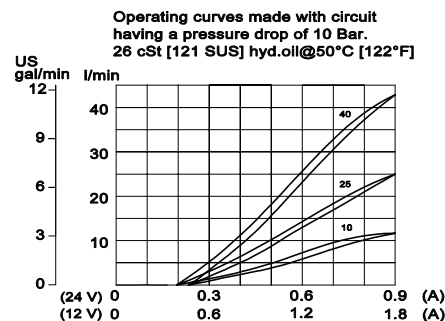
This is a normally-closed, direct-acting, spool-type, non-compensated, proportional flow control. Controlled flow is from port 1 to 2.

SPECIFICATIONS

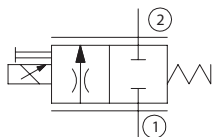
Specifications

Rated pressure	260 bar [3770 psi]
Maximum flow at 10 bar [145 psi]	PSV10-NC-10: 10 l/min [2.64 US gal/min] PSV10-NC-25: 25 l/min [6.6 US gal/min] PSV10-NC-40: 40 l/min [10.6 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.51 kg [1.12 lb]
Hysteresis	5% maximum
Threshold current	0.4 A (12 VDC coil) 0.2 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC10-2
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

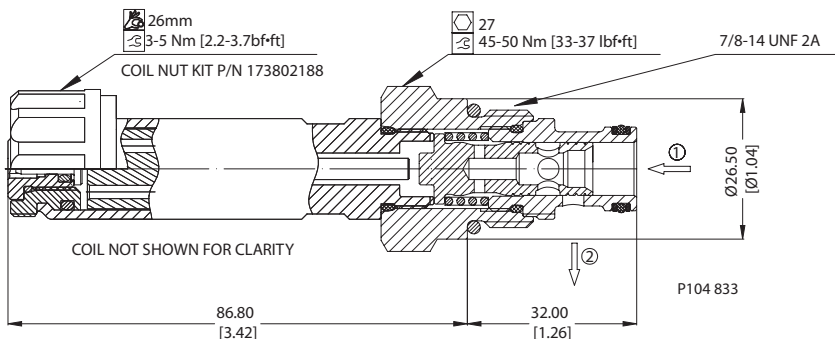


P104 832

DIMENSIONS

mm [in]

Cross-sectional view



P104 833

ORDERING INFORMATION

PSV10-NC-XX-12D-DN-B-00

- Max regulated flow**
10 = 10 l/min
25 = 25 l/min
40 = 40 l/min
- Coil voltage**
00 = No coil
12D = 12V DC
24D = 24V DC
- Coil termination**
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch

- Body and Ports**
00 = no housing
6S = Al, #6 SAE
8S = Al, #8 SAE
DG3B = Al, 3/8 BSP
DG4B = Al, 1/2 BSP
Other housing available
- Seals**
B = Buna-N seals
V = Viton seals

- Body Nomenclature**
No Body
CP10-2-6S
CP10-2-8S
SDC10-2-DG3B
SDC10-2-DG4B

- Seal Kit**
35400401
35400341

Proportional valves
PSV10-NC

OPERATION

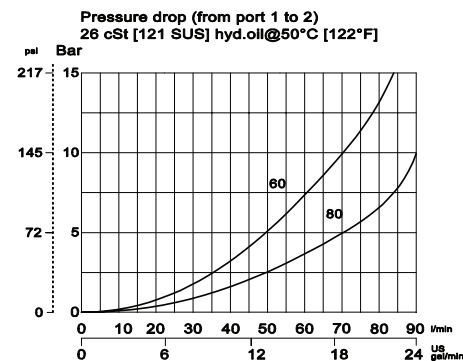
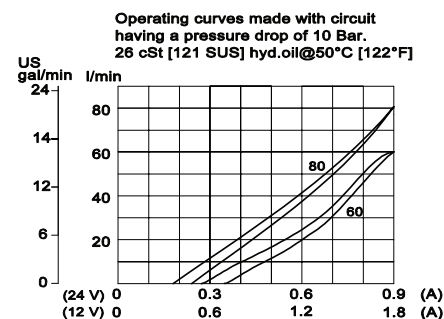
This is a normally-closed, direct-acting, spool-type, non-compensated, proportional flow control. Controlled flow is from port 1 to 2.

SPECIFICATIONS

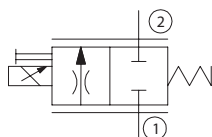
Specifications

Rated pressure	260 bar [3770 psi]
Maximum flow at 10 bar [145 psi]	PSV12-NC-60: 60 l/min [15.85 US gal/min] PSV12-NC-80: 80 l/min [21.13 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.76 kg [1.68 lb]
Hysteresis	5% maximum
Threshold current	0.5 A (12 VDC coil) 0.25 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC12-2
Standard Coil	D14E(35W) 35 Watt

Theoretical performance



Schematic

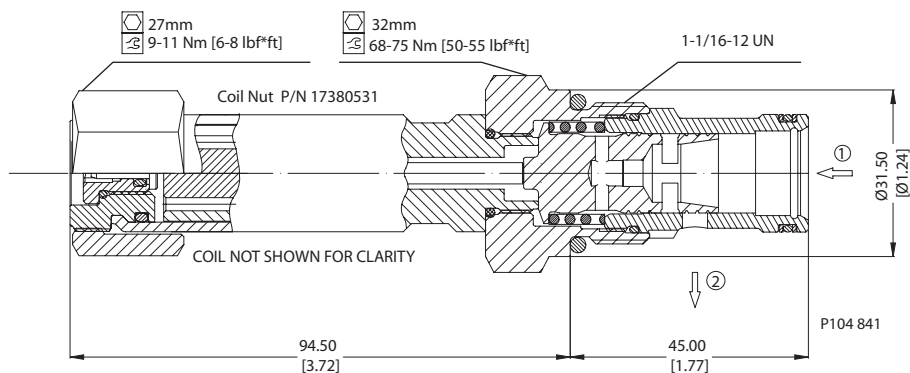


P104 832

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PSV12-NC-XX-12D-DN-B-00

Max regulated flow
60 = 60 l/min
80 = 80 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = Amp Junior
AS = Amp Superseal

Body and Ports
00 = No housing
10S = Al, #10 SAE
12S = Al, #12 SAE
DG4B = Al, 1/2 BSP
DG6B = Al, 3/4 BSP
Other housing available

Seals
B = Buna-N seals
V = Viton

Body Nomencl.
No Body
CP12-2-10S
CP12-2-12S
SDC12-2-DG4B
SDC12-2-DG6B

Seal Kit
354008319
354008419

OPERATION

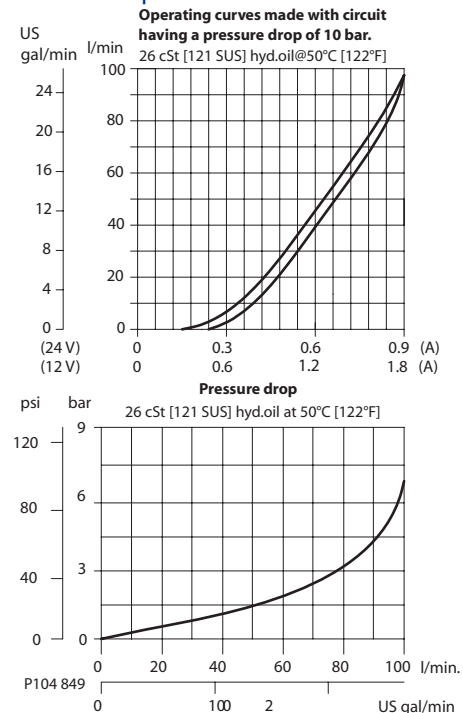
This is a normally-closed, direct-acting, spool-type, non-compensated, proportional flow control. Controlled flow is from port 1 to 2.

SPECIFICATIONS

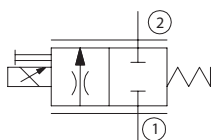
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 10 bar [145 psi]	100 l/min [26 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.87 kg [1.92 lb]
Hysteresis	5% maximum
Threshold current	0.5 A (12 VDC coil) 0.25 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC16-2
Standard Coil	D14E(35W) 35 Watt

Theoretical performance



Schematic

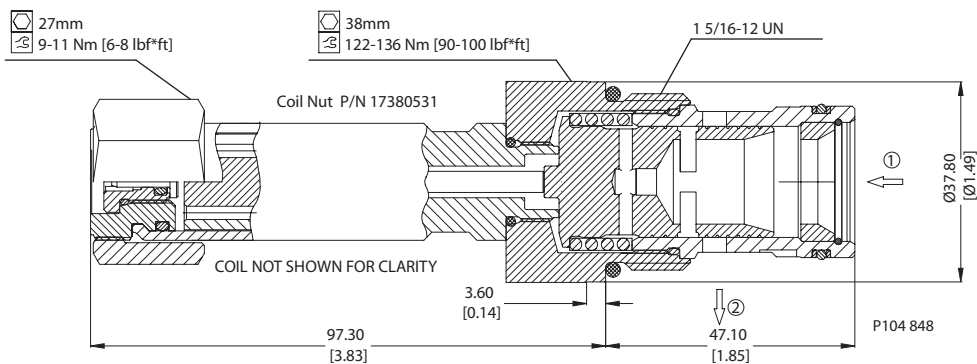


P104 832

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PSV16-NC-100-12D-DN-B-00

Max regulated flow
100 = 100 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = Amp Junior
AS = Amp Superseal

Body and Ports
00 = No housing
DG6B = Al, 3/4 BSP
DG8B = Al, 1 BSP
12S = Al, #12 SAE
16S = Al, #16 SAE
Other housing available

Seals
B = Buna-N seals
V = Viton

Seal Kit
354008719
354008819

Body Nomencl.
No Body
SDC16-2-DG-6B
SDC16-2-DG-8B
CP16-2-12S
CP16-2-16S

P104 850

Proportional valves
PSV16-NC

OPERATION

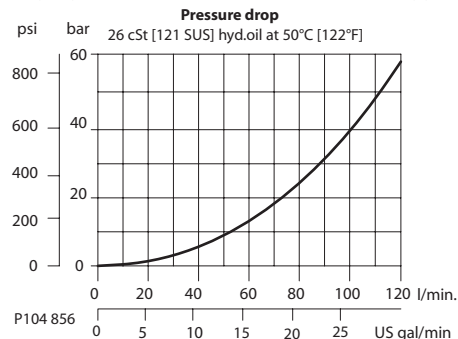
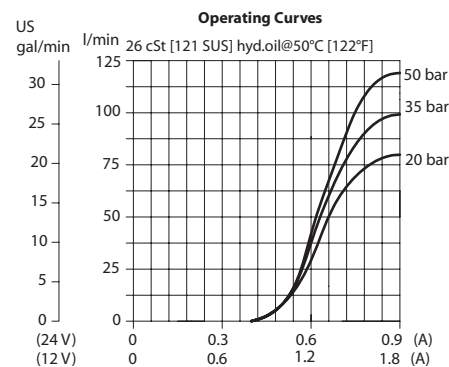
This is a non-compensated, normally-closed, pilot-operated, poppet-type, proportional flow-control. Controlled flow is from port 2 to 1.

SPECIFICATIONS

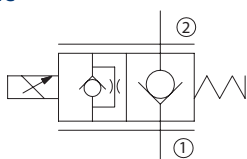
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 10 bar [150 psi]	55 l/min [14 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	0.54 kg [1.19 lb]
Hysteresis	8% maximum
Threshold current	0.8 A (12 VDC coil) 0.4 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC10-2
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

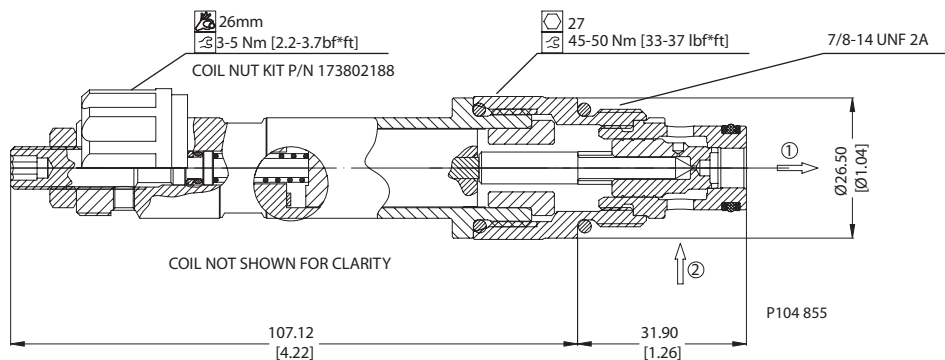


P104 854

DIMENSIONS

mm [in]

Cross-sectional view



P104 855

ORDERING INFORMATION

PSVP10-NCR-12D-DN-B-00

Coil voltage

00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination

00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = AMP Jr

Body and Ports

00 = No housing
6S = Al, #6 SAE
8S = Al, #8 SAE
DG3B = Al, 3/8 BSP
DG4B = Al, 1/2 BSP
Other housing available

Seals

B = Buna-N seals 354004019
V = Viton seals 354003419

Seal Kit

354004019
354003419

Body Nomenclature

No Body
CP10-2-6S
CP10-2-8S
SDC10-2-DG3B
SDC10-2-DG4B

P104 857

OPERATION

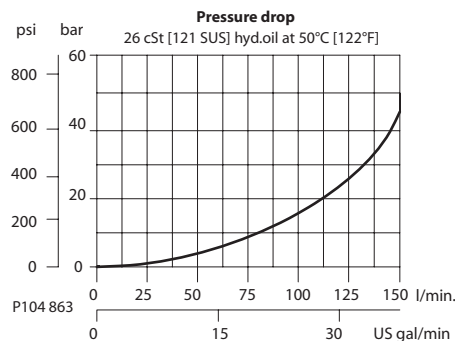
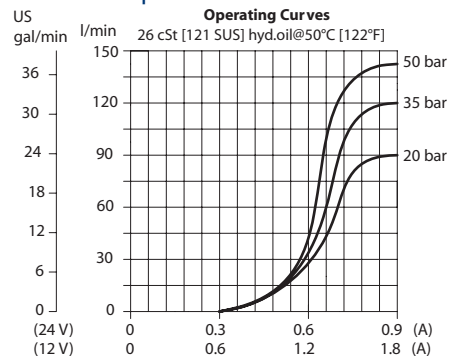
This is a non-compensated, normally-closed, pilot-operated, poppet-type, proportional flow-control. Controlled flow is from port 2 to 1.

SPECIFICATIONS

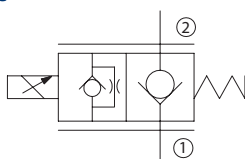
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 10 bar [150 psi]	70 l/min [18 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	0.60 kg [1.32 lb]
Hysteresis	8% maximum
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC12-2
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

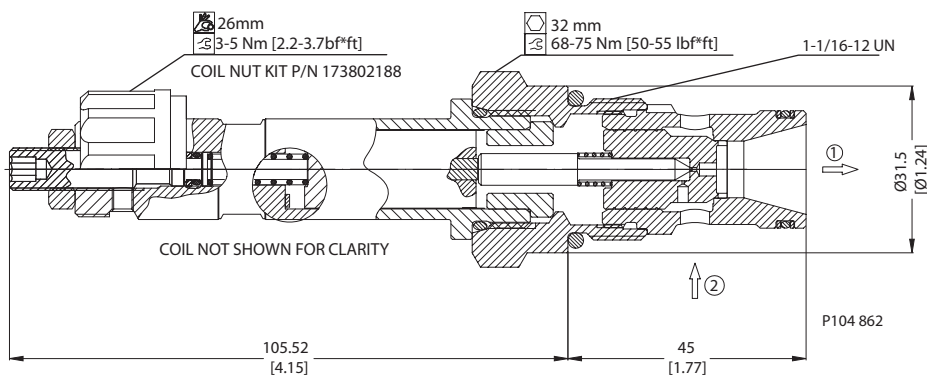


P104 854

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PSVP12-NCR-12D-DN-B-00

Coil voltage
 00 = No coil
 12D = 12V DC
 24D = 24V DC

Coil termination
 00 = No coil
 FL = Flying Lead
 DN = ISO 4400 (DIN 43650)
 DE = Deutsch
 AJ = AMP Jr

Body and Ports
 00 = No housing
 10S = Al, #10 SAE
 12S = Al, #12 SAE
 4B = Al, 1/2 BSP
 6B = Al, 3/4 BSP
 Other housing available

Body Nomencl.
 No Body
 CP12-3-10S
 CP12-3-12S
 CP12-3-4B
 CP12-3-6B

Seals
 B = Buna-N seals
 V = Viton

Seal Kit
 354008319
 354008419

P104 864

Proportional valves
PSVP12-NCR

OPERATION

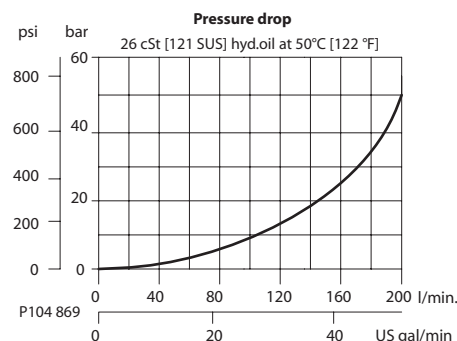
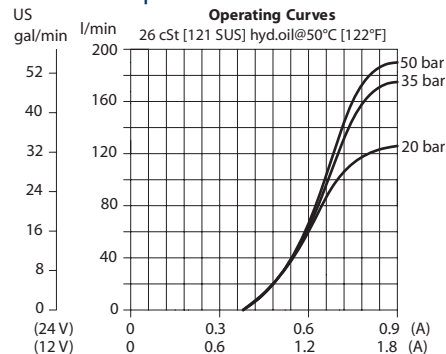
This is a non-compensated, normally-closed, pilot-operated, poppet-type, proportional flow-control. Controlled flow is from port 2 to 1.

SPECIFICATIONS

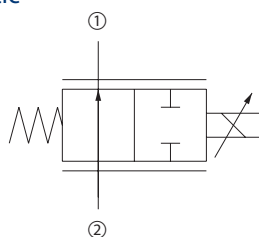
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 10 bar [150 psi]	100 l/min [26 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	0.85 kg [1.87 lb]
Hysteresis	8% maximum
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC16-2
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

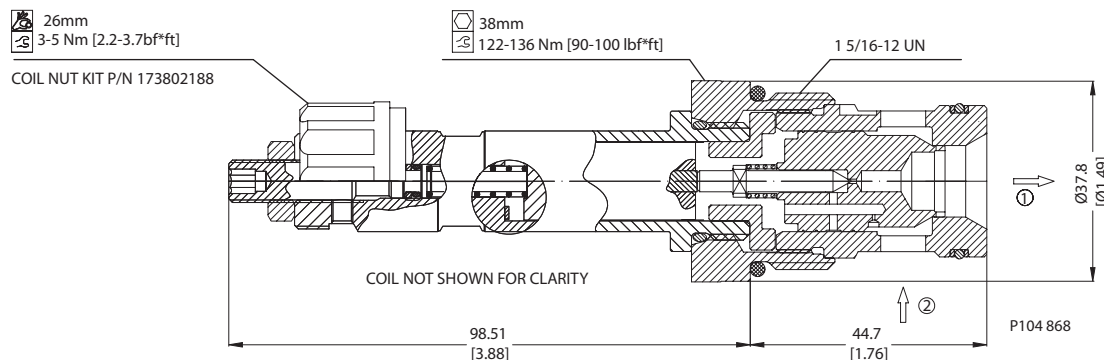


P102 660

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PSVP16-NCR-12D-DN-B-00

Coil voltage

00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination

00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = AMP Jr

Body and Ports

00 = No housing
DG6B = Al, 3/4 BSP
DG8B = Al, 1 BSP
12S = Al, #12 SAE
16S = Al, #16 SAE
Other housing available

Body Nomencl.

No Body
SDC16-2-DG-6B
SDC16-2-DG-8B
CP16-2-12S
CP16-2-16S

Seals

B = Buna-N seals
V = Viton

Seal Kit

354008719 P104 870
354008819

OPERATION

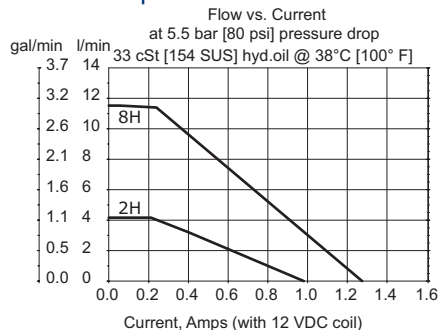
This valve is a non-compensated, normally-open, proportional flow control.

SPECIFICATIONS

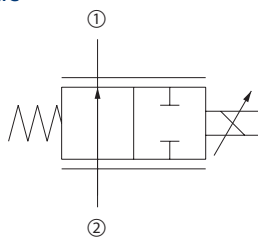
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 6 bar [80 psi]	12 l/min [3 US gal/min]
Weight	0.36 kg [0.80 lb]
Hysteresis	4% maximum
Threshold current	0.2 A (12 VDC coil) 0.1 A (24 VDC coil)
Maximum control current	1.2 A (12 VDC coil) 0.6 A (24 VDC coil)
Pressure differential	21 bar [300 psi] maximum
Cavity	SDC08-2
Standard Coil	M19P 22 Watt
Coil nut	173802114

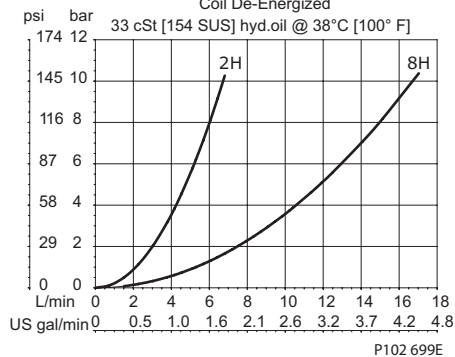
Theoretical performance



Schematic



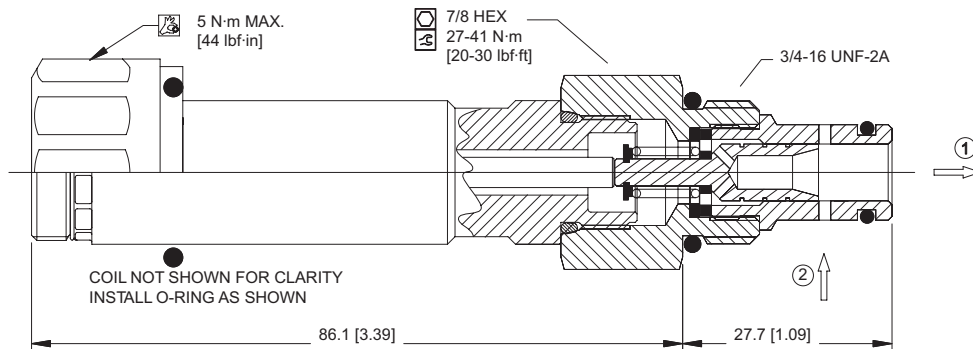
Pressure Drop vs. Flow
Coil De-Energized
33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



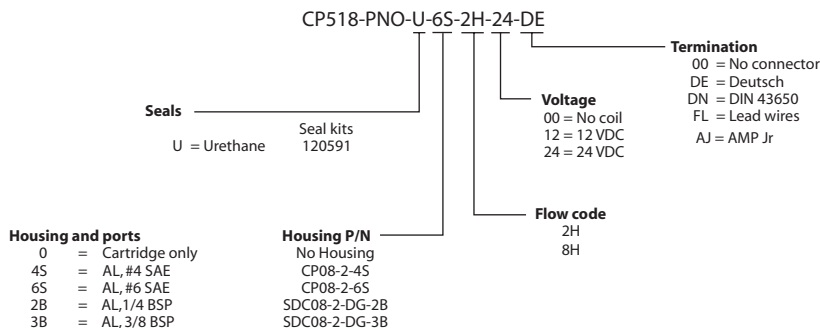
DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION



P102 655E

Proportional valves
CP518-PNO

OPERATION

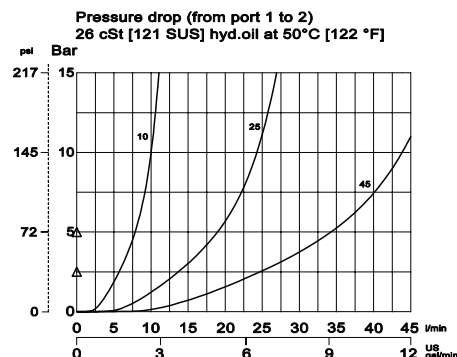
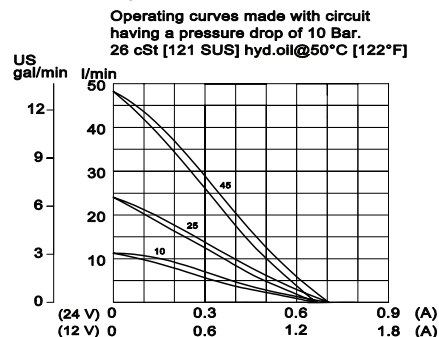
This is a normally-open, direct-acting, spool-type, non-compensated, proportional flow-control. Controlled flow is from port 1 to 2.

SPECIFICATIONS

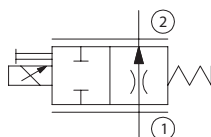
Specifications

Rated pressure	260 bar [3770 psi]
Maximum flow at 10 bar [145 psi]	PSV10-NO-10: 10 l/min [2.64 US gal/min] PSV10-NO-25: 25 l/min [6.6 US gal/min] PSV10-NO-40: 40 l/min [10.6 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.51 kg [1.12 lb]
Hysteresis	5% maximum
Threshold current	0.1 A (12 VDC coil) 0.05 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC10-2
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

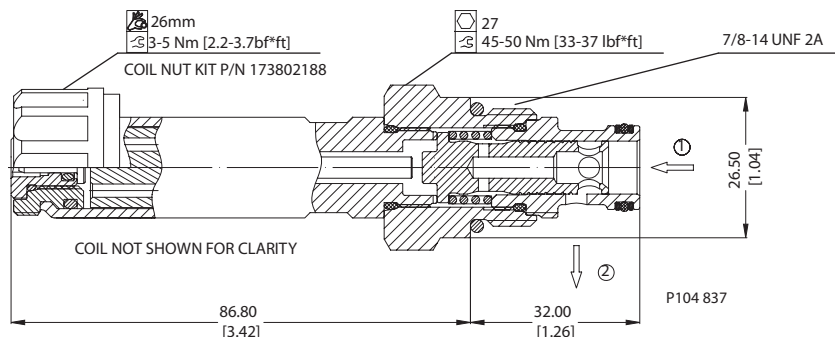


P104 836

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PSV10-NO-XX-12D-DN-B-00

Max regulated flow
10 = 10 l/min
25 = 25 l/min
45 = 45 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch

Body and Ports
Omit = Cartridge only
6S = Al #6 SAE
8S = Al, #8 SAE
DG3B = Al, 3/8 BSP
DG4B = Al, 1/2 BSP
Hother housing available

Seals
B = Buna-N seals
V = Viton seals

Seal Kit
35400401
35400341

Body Nomenclature
No Body
CP10-2-6S
CP10-2-8S
SDC10-2-DG3B
SDC10-2-DG4B

OPERATION

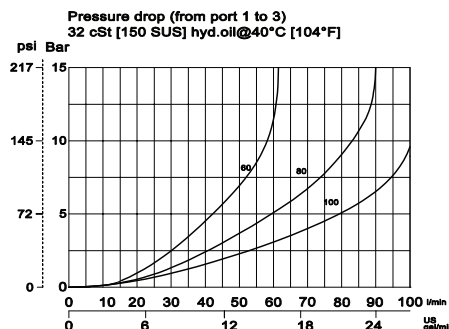
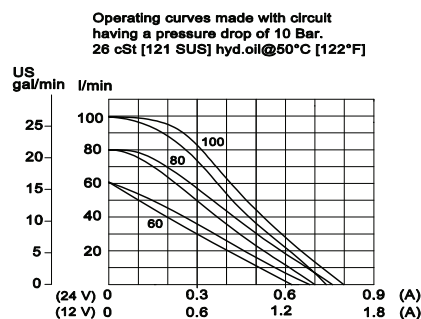
This is a normally-open, direct-acting, spool-type, non-compensated, proportional flow control. Controlled flow is from port 1 to 2.

SPECIFICATIONS

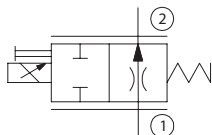
Specifications

Rated pressure	260 bar [3770 psi]
Maximum flow at 10 bar [145 psi]	PSV12-NO-60: 60 l/min [15.85 US gal/min] PSV12-NO-80: 80 l/min [31.13 US gal/min] PSV12-NO-100: 100 l/min [26.41 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.76 kg [1.68 lb]
Hysteresis	5% maximum
Threshold current	0.3 A (12 VDC coil) 0.15 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC12-2
Standard Coil	D14E(35W) 35 Watt

Theoretical performance



Schematic

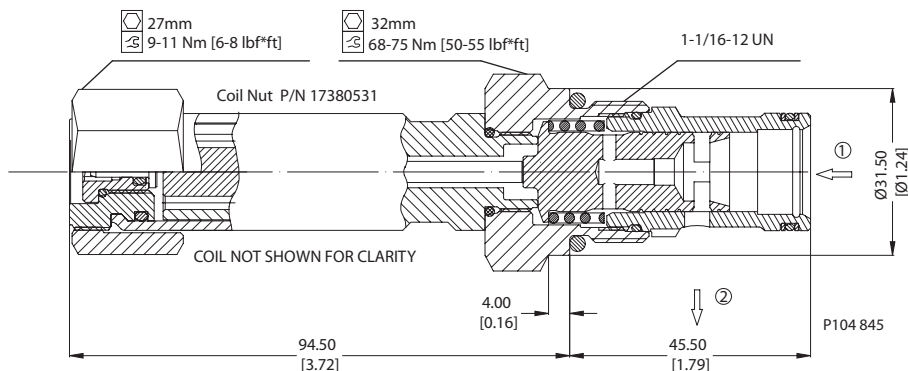


P104 836

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PSV12-NO-XX-12D-DN-B-00

Max regulated flow
60 = 60 l/min
80 = 80 l/min
100 = 100 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = Amp Junior
AS = Amp superseal

Body and Ports

00 = No housing
10S = Al, #10 SAE
12S = Al, #12 SAE
DG4B = Al, 1/2 BSP
DG6B = Al, 3/4 BSP
Other housing available

Seals
B = Buna-N seals
V = Viton

Body Nomencl.

No Body
CP12-2-10S
CP12-2-12S
SDC12-2-DG4B
SDC12-2-DG6B

Seal Kit
354008319
354008419

Proportional valves
PSV12-NO

OPERATION

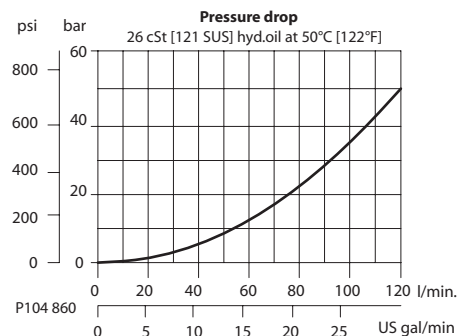
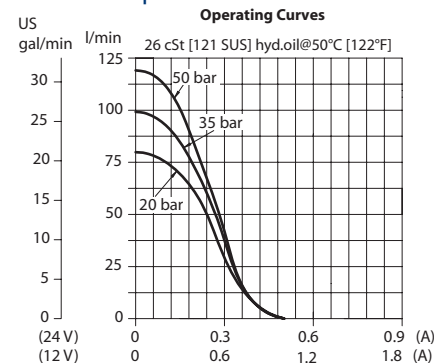
This is a non-compensated, normally-open, pilot-operated, poppet-type, proportional flow-control. Controlled flow is from port 2 to 1.

SPECIFICATIONS

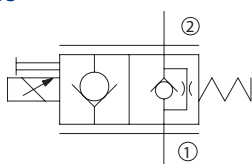
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 10 bar [2600/150 psi]	45 l/min [12 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	0.54 kg [1.19 lb]
Hysteresis	8% maximum
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC10-2
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

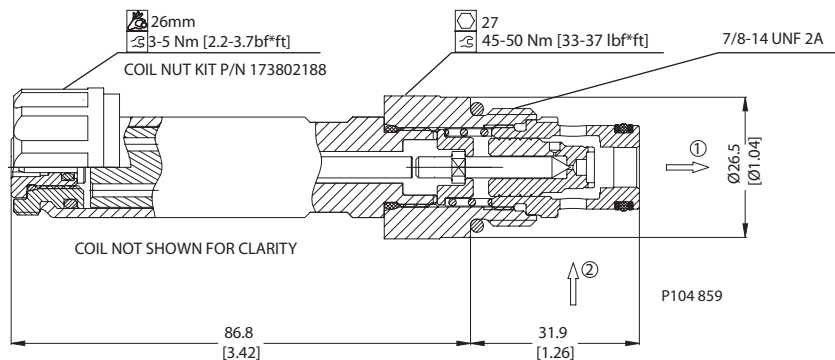


P104 858

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PSVP10-NOR-12D-DN-B-00

Coil voltage

- 00 = No coil
- 12D = 12V DC
- 24D = 24V DC

Coil termination

- 00 = No coil
- FL = Flying Lead
- DN = ISO 4400 (DIN 43650)
- DE = Deutsch
- AJ = AMP Jr

Body and Ports

- 00 = No housing
- 6S = Al, #6 SAE
- 8S = Al, #8 SAE
- DG3B = Al, 3/8 BSP
- DG4B = Al, 1/2 BSP
- Other housing available

Seals

- B = Buna-N seals
- V = Viton seals

Seal Kit

- 354004019
- 354003419

Body Nomenclature

- No Body
- CP10-2-6S
- CP10-2-8S
- SDC10-2-DG3B
- SDC10-2-DG4B

P104 861

OPERATION

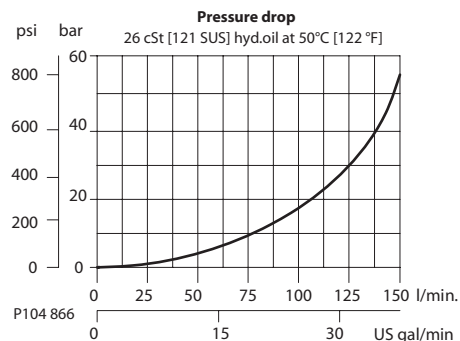
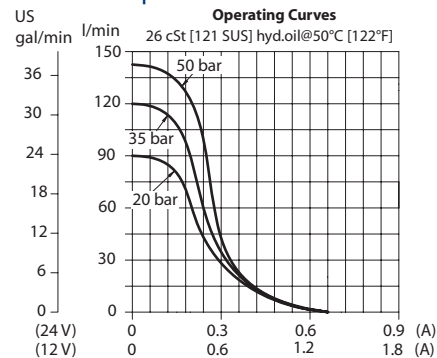
This is a non-compensated, normally-open, pilot-operated, poppet-type, proportional flow-control. Controlled flow is from port 2 to 1.

SPECIFICATIONS

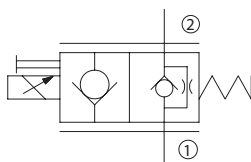
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 10 bar [150 psi]	70 l/min [18 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	0.60 kg [1.32 lb]
Hysteresis	8% maximum
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC12-2
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

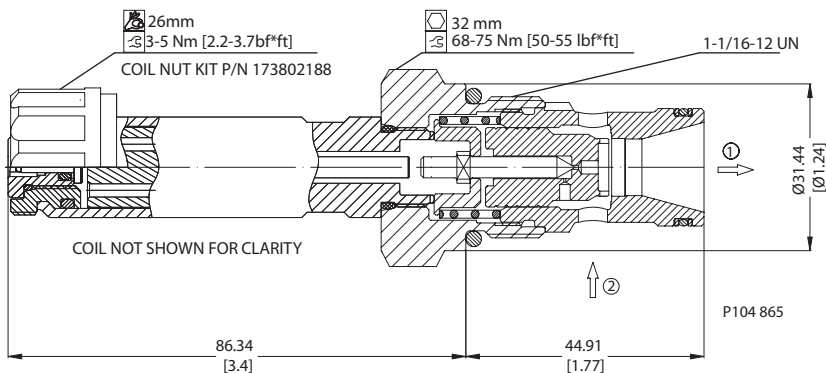


P104 858

DIMENSIONS

mm [in]

Cross-sectional view



P104 865

ORDERING INFORMATION

PSVP12-NOR-12D-DN-B-00

- Coil voltage**
00 = No coil
12D = 12V DC
24D = 24V DC
- Coil termination**
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = AMP Jr

- Body and Ports**
00 = No housing
10S = Al, #10 SAE
12S = Al, #12 SAE
4B = Al, 1/2 BSP
6B = Al, 3/4 BSP
Other housing available

- Body Nomencl.**
No Body
CP12-3-10S
CP12-3-12S
CP12-3-4B
CP12-3-6B

- Seals**
B = Buna-N seals
V = Viton
- Seal Kit**
354008319
354008419
- P104 867

Proportional valves
PSVP12-NOR

OPERATION

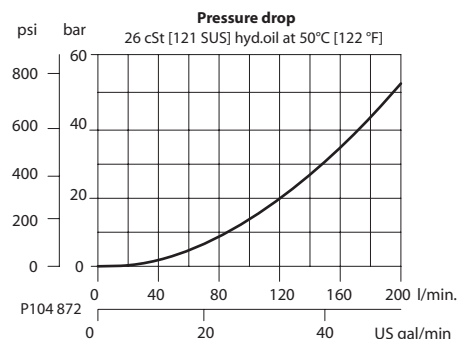
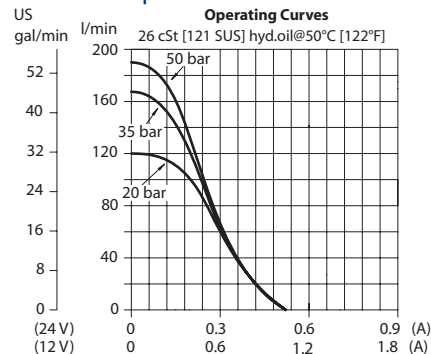
This is a non-compensated, normally-open, pilot-operated, poppet-type, proportional flow-control. Controlled flow is from port 2 to 1.

SPECIFICATIONS

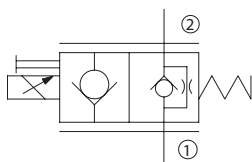
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 10 bar [150 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	0.85 kg [1.87 lb]
Hysteresis	8% maximum
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC16-2
Standard Coil	M19P 22 Watt

Theoretical performance



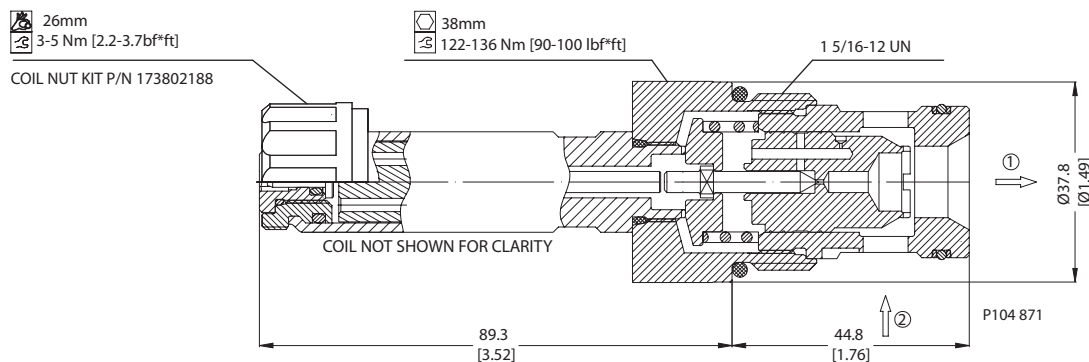
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PSVP16-NOR-12D-DN-B-00

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = AMP Jr

Body and Ports
00 = No housing
DG6B = Al, 3/4 BSP
DG8B = Al, 1 BSP
12S = Al, #12 SAE
16S = Al, #16 SAE
Hother housing available

Seals
B = Buna-N seals 354008719 P104 873
V = Viton 354008819

Body Nomencl.
No Body
SDC16-2-DG-6B
SDC16-2-DG-8B
CP16-2-12S
CP16-2-16S

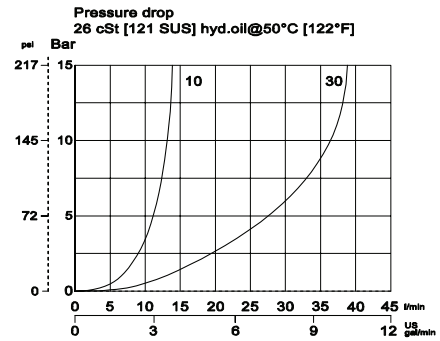
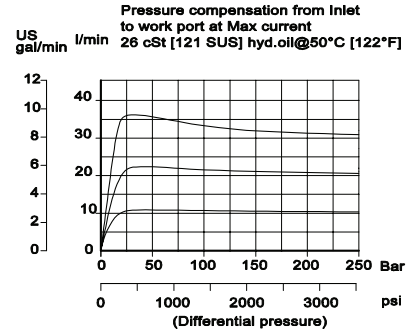
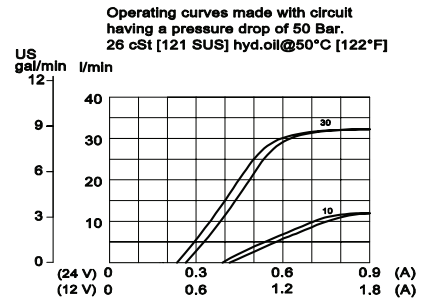
Proportional valves
PSVP16-NOR

OPERATION

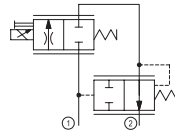
This is a pressure-compensated, restrictive-type, normally-closed, spool-type, proportional flow-control. Controlled flow is from port 1 to 2.

SPECIFICATIONS

Rated pressure	260 bar [3770 psi]
Maximum flow at rated pressure	PFC10-RC-10: 10 l/min [2.64 US gal/min] PFC10-RC-30: 30 l/min [7.9 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.65 kg [1.43 lb]
Hysteresis	8% maximum
Threshold current	0.5 A (12 VDC coil) 0.25 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC10-2
Standard Coil	M19P 22 Watt



Schematic

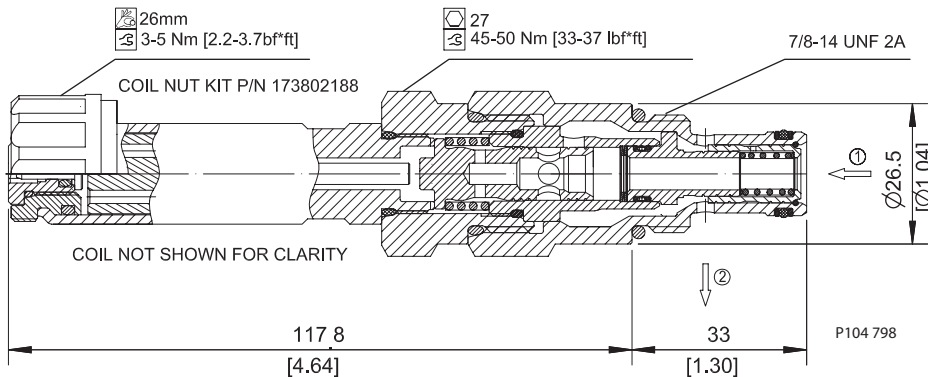


P104 797

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC10-RC-XX-12D-DN-B-00

Max regulated flow
10 = 10 l/min
30 = 30 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch

Body and Ports
00 = No housing
6S = Al, #6 SAE
8S = Al, #8 SAE
DG3B = Al, 3/8 BSP
DG4B = Al, 1/2 BSP
Other housing available

Seals Seal Kit
B = Buna-N seals 35400401
V = Viton seals 35400341

Body Nomenclature
No Body
CP10-2-6S
CP10-2-8S
SDC10-2-DG3B
SDC10-2-DG4B

Proportional valves
PFC12-RC

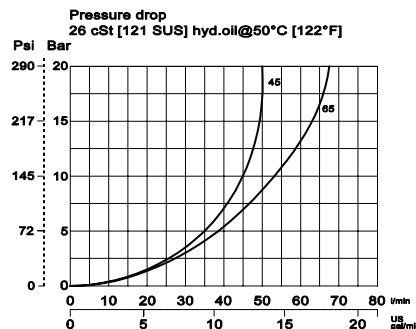
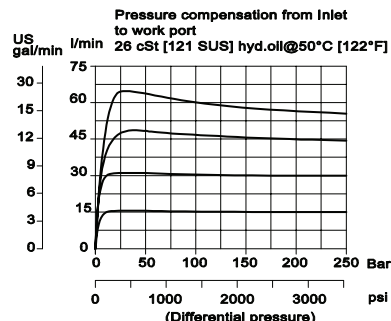
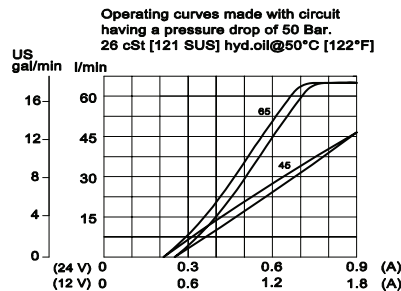
OPERATION

This is a pressure-compensated, restrictive-type, normally-closed, spool-type, proportional flow-control. Controlled flow is from port 1 to 2.

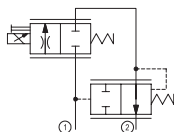
SPECIFICATIONS

Specifications

Rated pressure	260 bar [3770 psi]
Maximum flow at rated pressure	PFC12-RC-45: 45 l/min [11.9 US gal/min] PFC12-RC-65: 65 l/min [17.17 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.77 kg [1.70 lb]
Hysteresis	8% maximum
Threshold current	0.3 A (12 VDC coil) 0.15 A (14 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (14 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC12-2
Standard Coil	D14E(35W) 35 Watt



Schematic

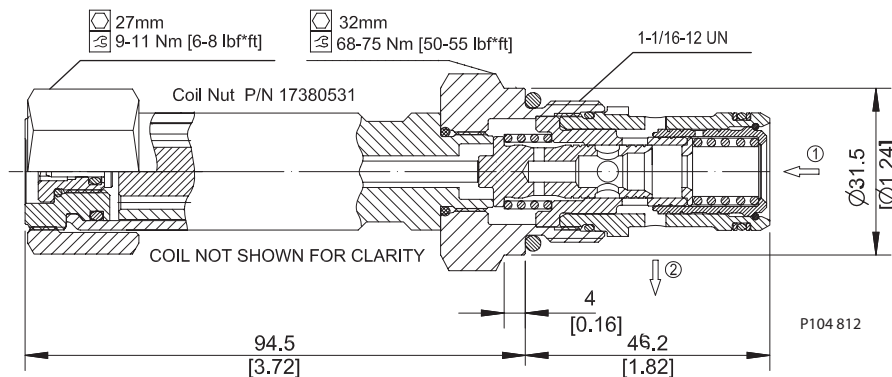


P104 797

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC12-RC-XX-12D-DN-B-00

Max regulated flow
45 = 45 l/min
65 = 65 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = Amp Junior
AS = Amp Superseal

Body and Ports
00 = No housing
10S = Al, #10 SAE
12S = Al, #12 SAE
DG4B = Al, 1/2 BSP
DG6B = Al, 3/4 BSP
Other housing available

Seals Seal Kit
B = Buna-N seals 354008319
V = Viton 354008419

Body Nomencl.
No Body
CP12-2-10S
CP12-2-12S
SDC12-2-DG4B
SDC12-2-DG6B

OPERATION

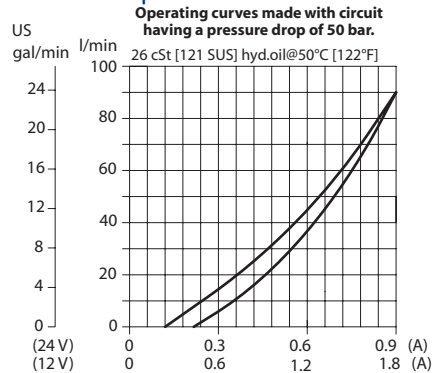
This is a pressure-compensated, restrictive-type, normally-closed, spool-type, proportional flow control. Controlled flow is from port 1 to 2.

SPECIFICATIONS

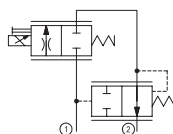
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 260 bar [3771 psi]	90 l/min [24 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.91 kg [2.01 lb]
Hysteresis	8% maximum
Threshold current	0.4 A (12 VDC coil) 0.2 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC16-2
Standard Coil	D14E(35W) 35 Watt

Theoretical performance

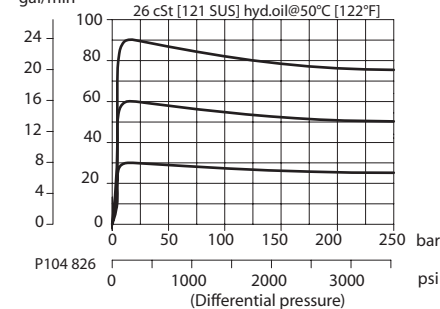


Schematic



P104 797

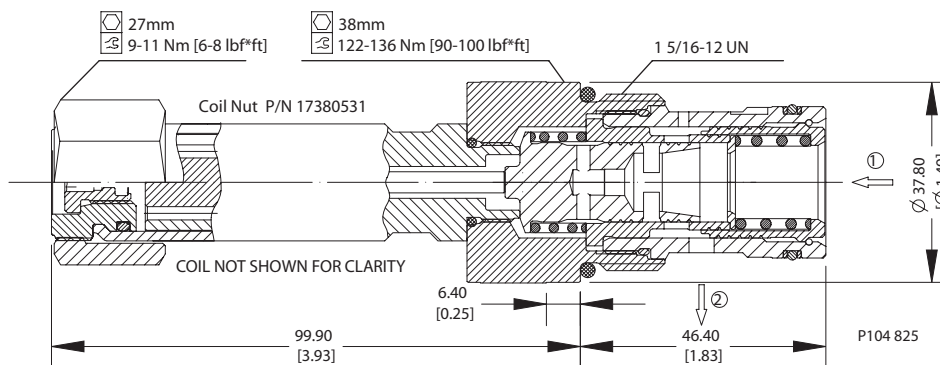
Pressure compensation from Inlet to work port at max current



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC16-RC-90-12D-DN-B-00

Max regulated flow
90 = 90 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = Amp Junior
AS = Amp Superseal

Body and Ports
00 = No housing
DG6B = Al, 3/4 BSP
DG8B = Al, 1 BSP
12S = Al, #12 SAE
16S = Al, #16 SAE
Other housing available

Seals
B = Buna-N seals
V = Viton

Seal Kit
354008719
354008819

Body Nomencl.
No Body
SDC16-2-DG-6B
SDC16-2-DG-8B
CP16-2-12S
CP16-2-16S

P104 827

Proportional valves
PFC16-RC

OPERATION

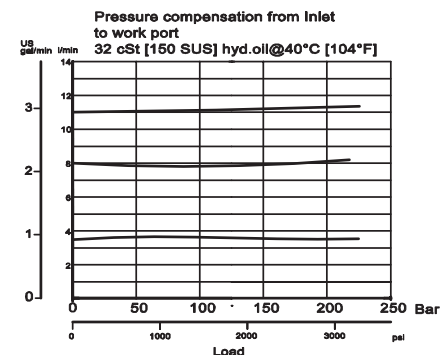
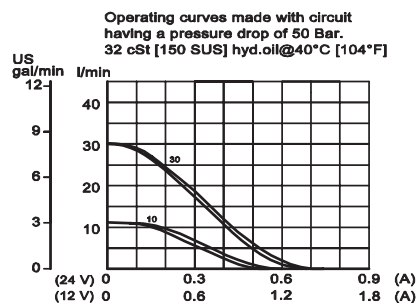
This is a pressure-compensated, restrictive-type, normally-open, spool-type, proportional flow-control. Controlled flow is from port 1 to 2.

SPECIFICATIONS

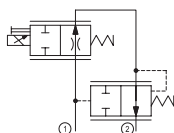
Specifications

Rated pressure	260 bar [3770 psi]
maximum flow at rated pressure	PFC10-RO-10: 10 l/min [2.64 US gal/min] PFC10-RO-30: 30 l/min [7.9 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.65 kg [1.43 lb]
Hysteresis	8% maximum
Threshold current	0.2 A (12 VDC coil) 0.1 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC10-2
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

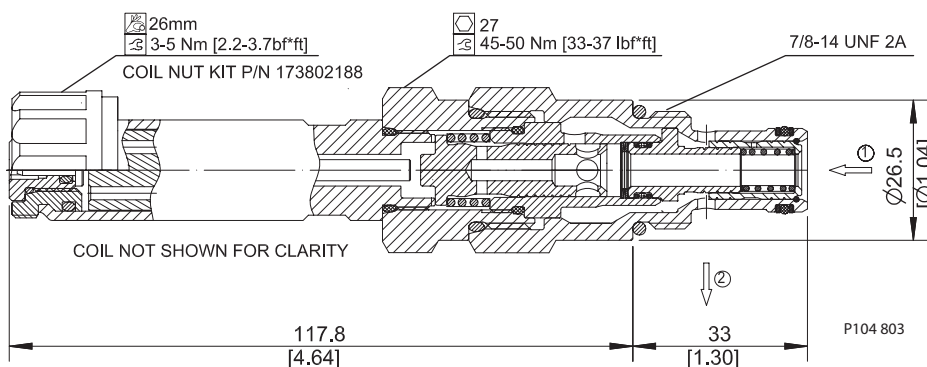


P104 802

DIMENSIONS

mm [in]

Cross-sectional view



P104 803

ORDERING INFORMATION

PFC10-RO-30-12D-DN-B-00

Max regulated flow
10 = 10 l/min
30 = 30 l/min

Coil voltage
00 = No coil
12D = 12VDC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = AMP Jr

Body and Ports

00 = No housing
6S = Al, #6 SAE
8S = Al, #8 SAE
DG3B = Al, 3/8 BSP
DG4B = Al, 1/2 BSP
Other housing available

Seals
B = Buna-N seals
V = Viton seals

Body Nomenclature

No Body
CP10-2-6S
CP10-2-8S
SDC10-2-DG3B
SDC10-2-DG4B

Seal Kit
354004019
354003419
P104 805

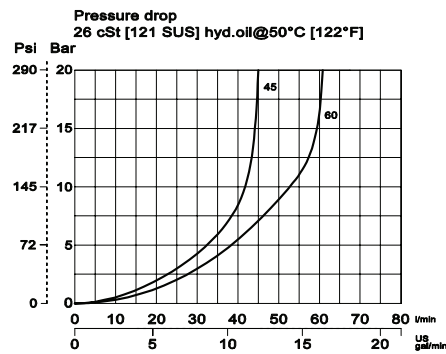
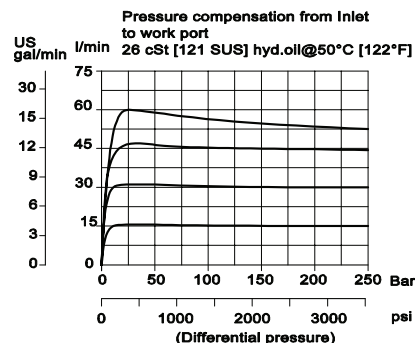
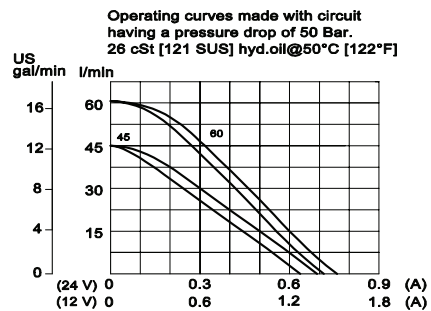
OPERATION

This is a pressure-compensated, restrictive-type, normally-open, spool-type, proportional flow-control. Controlled flow is from port 1 to 2.

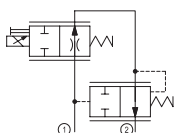
SPECIFICATIONS

Specifications

Rated pressure	260 bar [3770 psi]
Maximum flow at rated pressure	PFC12-RO-45: 45 l/min [11.9 US gal/min] PFC12-RO-60: 60 l/min [15.9 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.77 kg [1.70 lb]
Hysteresis	8% maximum
Threshold current	0.42 A (12 VDC coil) 0.21 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC12-2
Standard Coil	D14E(35W) 35 Watt



Schematic

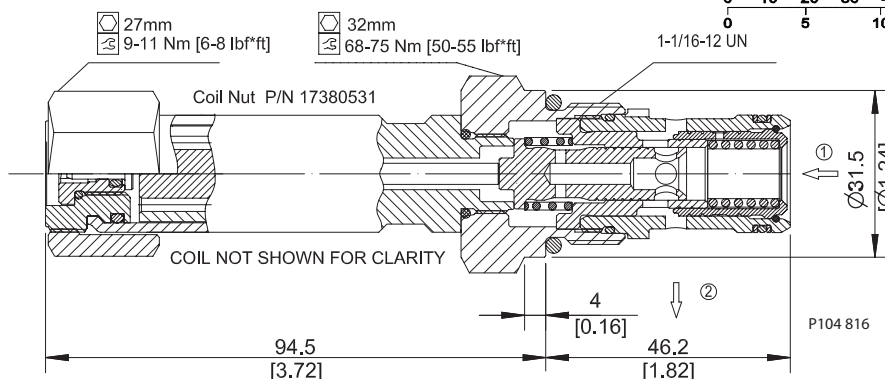


P104 802

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC12-RO-XX-12D-DN-B-00

<p>Max regulated flow 45 = 45 l/min 60 = 60 l/min</p>	<p>Coil voltage 00 = No coil 12D = 12V DC 24D = 24V DC</p>	<p>Coil termination 00 = No coil FL = Flying Lead DN = ISO 4400 (DIN 43650) DE = Deutsch AJ = Amp Junior AS = Amp Superseal</p>	<p>Body and Ports 00 = No housing 10S = Al, #10 SAE 12S = Al, #12 SAE DG4B = Al, 1/2 BSP DG6B = Al, 3/4 BSP Other housing available</p>	<p>Body Nomencl. No Body CP12-2-10S CP12-2-12S SDC12-2-DG4B SDC12-2-DG6B</p>
			<p>Seals B = Buna-N seals V = Viton</p>	<p>Seal Kit 354008319 354008419</p>

Proportional valves
PFC12-RO

OPERATION

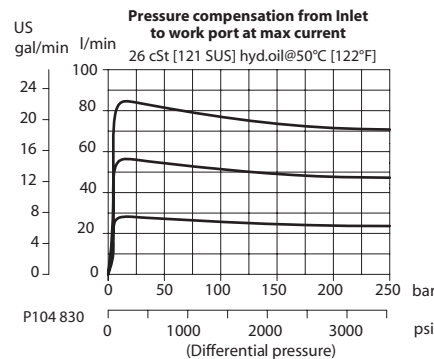
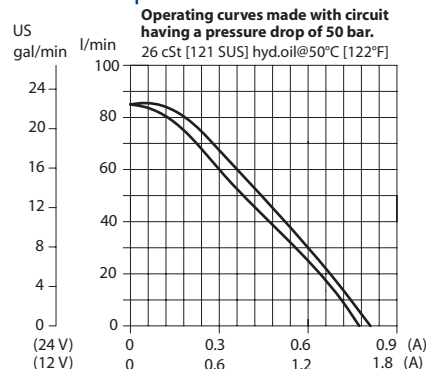
This is a pressure-compensated, restrictive-type, normally-open, spool-type, proportional flow-control. Controlled flow is from port 1 to 2.

SPECIFICATIONS

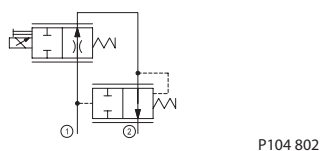
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 260 bar [3771 psi]	85 l/min [22 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.91 kg [2.01 lb]
Hysteresis	8% maximum
Threshold current	0.2 A (12 VDC coil) 0.1 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC16-2
Standard Coil	D14E(35W) 35 Watt

Theoretical performance



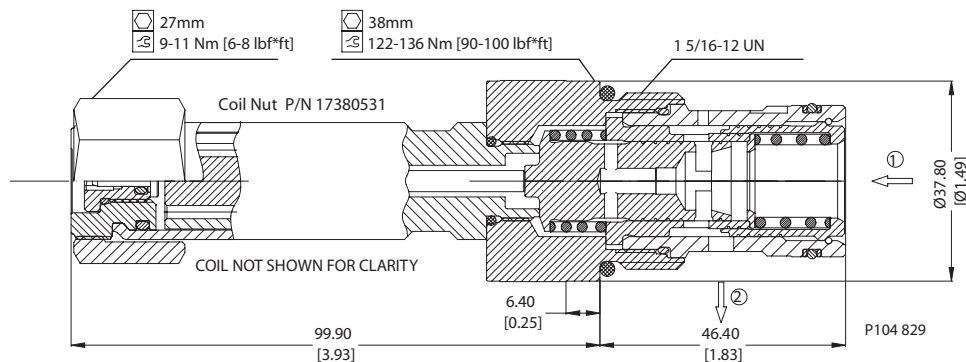
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC16-RO-85-12D-DN-B-00

Max regulated flow
85 = 85 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = Amp Junior
AS = Amp Superseal

Body and Ports
00 = No housing
DG6B = Al, 3/4 BSP
DG8B = Al, 1 BSP
12S = Al, #12 SAE
16S = Al, #16 SAE
Other housing available

Seals
B = Buna-N seals
V = Viton

Seal Kit
354008719
354008819

Body Nomencl.
No Body
SDC16-2-DG-6B
SDC16-2-DG-8B
CP16-2-12S
CP16-2-16S

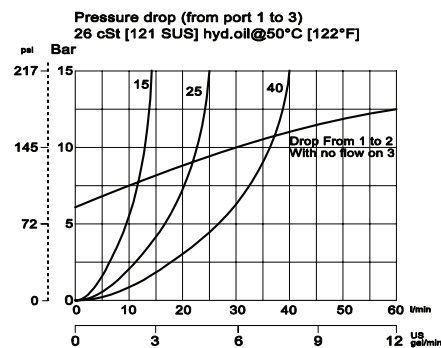
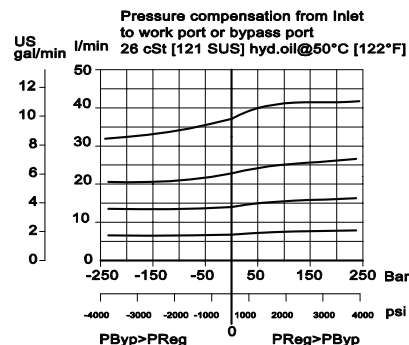
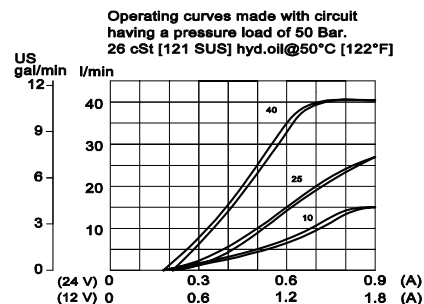
P104 831

OPERATION

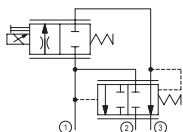
This is a pressure-compensated, priority-type, normally-closed, spool-type, proportional flow-control. Controlled flow is from port 1 to 3, port 2 is bypass.

SPECIFICATIONS

Rated pressure	260 bar [3770 psi]
Maximum flow at rated pressure	PFC10-PC-10: 10 l/min [2.64 US gal/min] PFC10-PC-25: 25 l/min [6.6 US gal/min] PFC10-PC-40: 40 l/min [10.6 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight including coil	0.62 kg [1.37 lb]
Hysteresis	8% maximum
Threshold current	0.36 A (12 VDC coil) 0.18 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC10-3
Standard Coil	M19P 22 Watt



Schematic

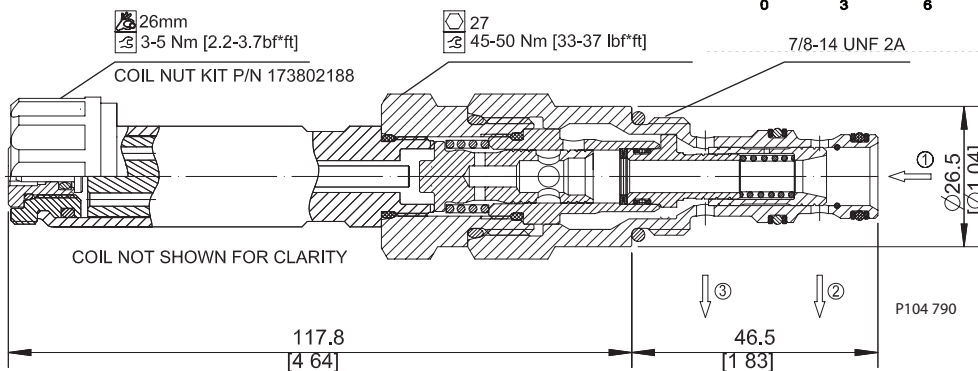


P104 789

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC10-PC-XX-12D-DN-B-00

Max regulated flow
10 = 10 l/min
25 = 25 l/min
40 = 40 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination:
00 = No coil
FL = Flying Lead
DN = DIN 43650
DE = Deutsch

Body and ports
00 = No housing
6S = Al, #6 SAE
8S = Al, #8 SAE
SE3B = Al, 3/8" BSP
SE4B = Al, 1/2" BSP
Other housing available

Seals Seals kit
B = Buna-N 35400421
V = Viton 35400371

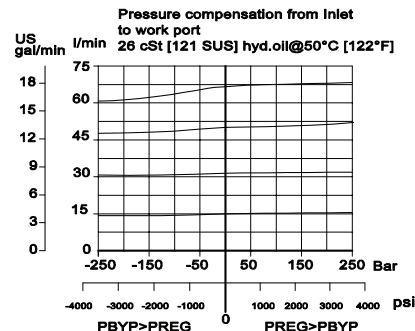
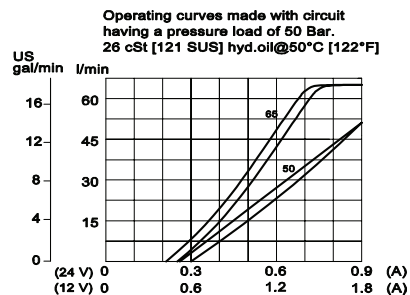
Body Nomenclature
No Body
CP10-3-6S
CP10-3-8S
SDC10-3-SE3B
SDC10-3-SE4B

OPERATION

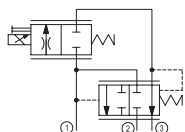
This is a pressure-compensated, priority-type, normally-closed, spool-type, proportional flow-control. Controlled flow is from port 1 to 3, port 2 is bypass.

SPECIFICATIONS

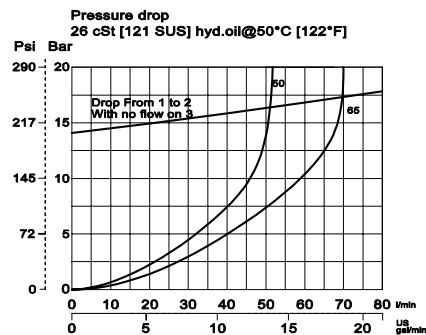
Rated pressure	260 bar [3770 psi]
Maximum flow at rated pressure	PFC12-PC-50: 50 l/min [13.21 US gal/min] PFC12-PC-65: 65 l/min [17.17 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.81 kg [1.79 lb]
Hysteresis	8% maximum
Threshold current	0.5 A (12 VDC coil) 0.25 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC12-3
Standard Coil	D14E(35W) 35 Watt



Schematic



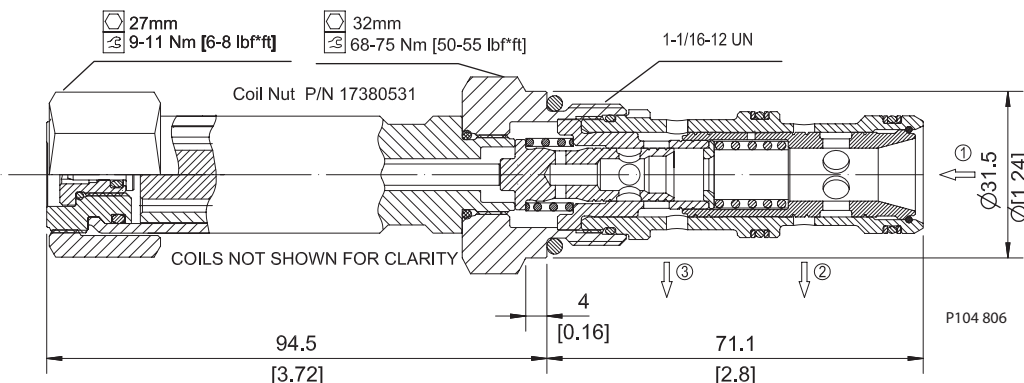
P104 789



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC12-PC-XX-12D-DN-B-00

Max regulated flow
50 = 50 l/min
65 = 65 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = Amp Junior
AS = Amp Superseal

Body and Ports
00 = No housing
10S = Al, #10 SAE
12S = Al, #12 SAE
4B = Al, 1/2 BSP
6B = Al, 3/4 BSP
Other housing available

Seals
B = Buna-N seals
V = Viton

Body Nomencl.
No Body
CP12-3-10S
CP12-3-12S
CP12-3-4B
CP12-3-6B

Seal Kit
354008319
354008419

OPERATION

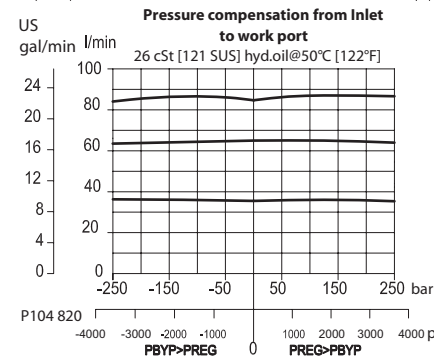
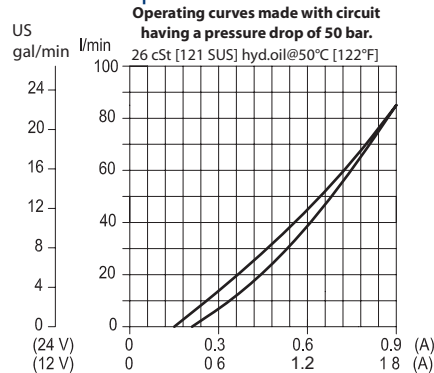
This is a pressure-compensated, priority-type, normally-closed, spool-type, proportional flow-control. Controlled flow is from port 1 to 3, port 2 is bypass.

SPECIFICATIONS

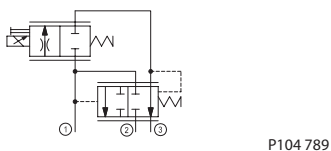
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 260 bar [3771 psi]	85 l/min [22 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.97 kg [2.14 lb]
Hysteresis	8% maximum
Threshold current	0.4 A (12 VDC coil) 0.2 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC16-3
Standard Coil	D14E(35W) 35 Watt

Theoretical performance



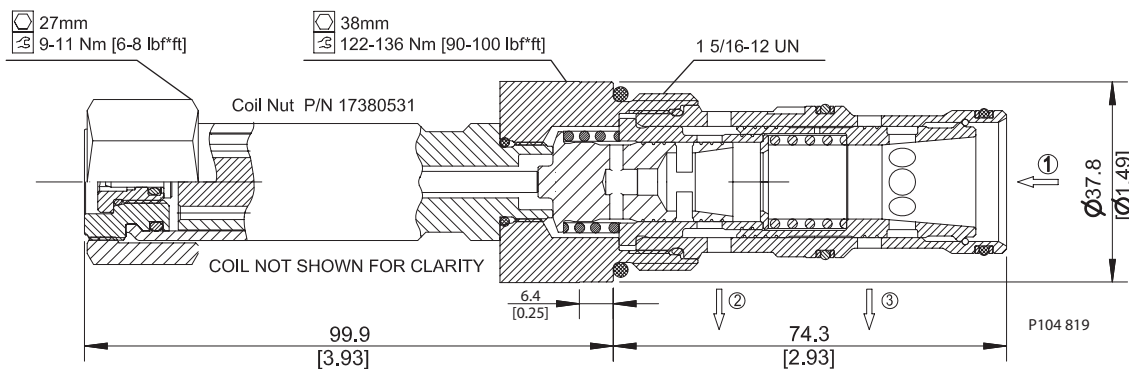
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC16-PC-85-12D-DN-B-00

Max regulated flow
 85 = 85 l/min

Coil voltage
 00 = No coil
 12D = 12V DC
 24D = 24V DC

Coil termination
 00 = No coil
 FL = Flying Lead
 DN = ISO 4400 (DIN 43650)
 DE = Deutsch
 AJ = Amp Junior
 AS = Amp Superseal

Body and Ports
 00 = No housing
 6B = Al, 3/4 BSP
 8B = Al, 1 BSP
 12S = Al, #12 SAE
 16S = Al, #16 SAE
 Other housings available

Body Nomenclature
 No housing
 SDC16-3-HE-6B
 SDC16-3-HE-8B
 CP16-3-12S
 CP16-3-16S

Seals
 B = Buna-N seals
 V = Viton seals

Seal Kit
 354008919
 354009019

P104 821

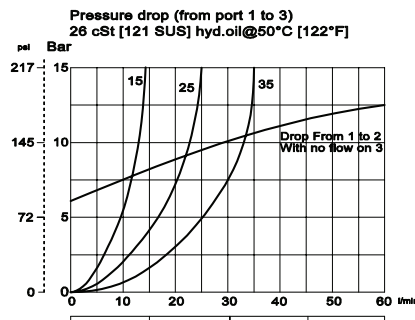
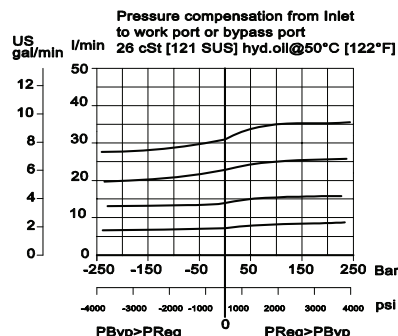
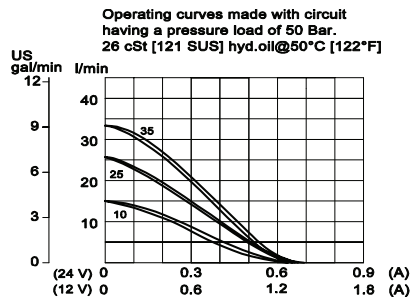
Proportional valves
PFC16-PC

OPERATION

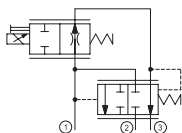
This is a pressure-compensated, priority-type, normally-open, spool-type, proportional flow-control. Controlled flow is from port 1 to 3, port 2 is bypass.

SPECIFICATIONS

Rated pressure	260 bar [3770 psi]
Maximum flow at rated pressure	PFC10-PO-10: 10 l/min [2.64 US gal/min] PFC10-PO-25: 25 l/min [6.6 US gal/min] PFC10-PO-35: 35 l/min [9.25 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight including coil	0.72 kg [1.59 lb]
Hysteresis	8% maximum
Threshold current	0.1 A (12 VDC coil) 0.05 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC10-3
Standard Coil	M19P 22 Watt



Schematic

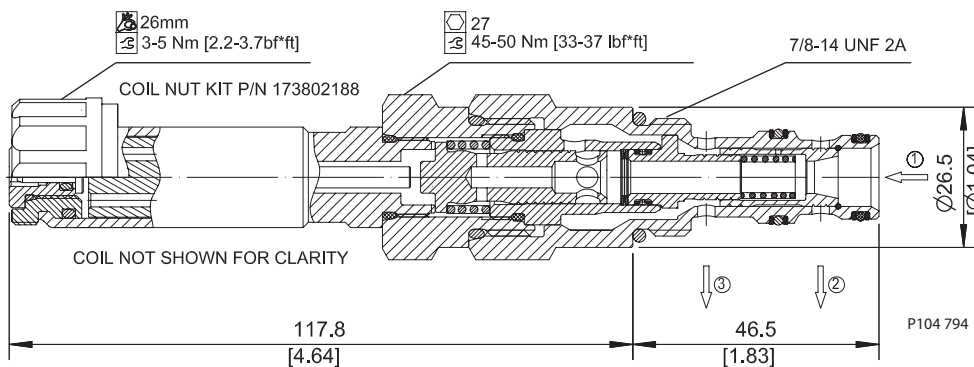


P104 793

DIMENSIONS

mm [in]

Cross-sectional view



P104 794

ORDERING INFORMATION

PFC10-PO-XX-12D-DN-B-00

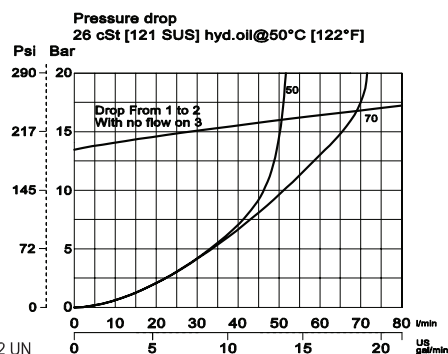
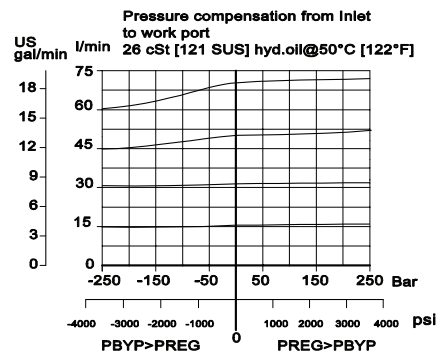
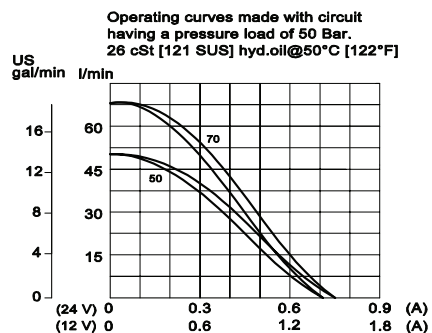
<p>Max regulated flow 10 = 10 l/min 25 = 25 l/min 35 = 35 l/min</p> <p>Coil voltage 00 = No coil 12D = 12V DC 24D = 24V DC</p> <p>Coil termination: 00 = No coil FL = Flying Lead DN = DIN 43850 DE = Deutsch</p>	<p>Body and ports 00 = No housing 6S = Al, #6 SAE 8S = Al, #8 SAE SE3B = Al, 3/8" BSP SE4B = Al, 1/2" BSP Other housing available</p> <p>Seals Seals kit B = Buna-N 35400421 V = Viton 35400371</p>	<p>Body Nomenclature No Body CP10-3-6S CP10-3-8S SDC10-3-SE3B SDC10-3-SE4B</p>
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OPERATION

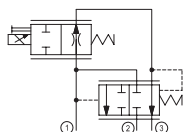
This is a pressure-compensated, priority-type, normally-open, spool-type, proportional flow-control. Controlled flow is from port 1 to 3, port 2 is bypass.

SPECIFICATIONS

Rated pressure	260 bar [3770 psi]
maximum flow at rated pressure	PFC12-PO-50: 50 l/min [13.21 US gal/min] PFC12-PO-70: 70 l/min [8.5 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.81 kg [1.79 lb]
Hysteresis	8% maximum
Threshold current	0.2 A (12 VDC coil) 0.1 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC12-3
Standard Coil	D14E(35W) 35 Watt



Schematic

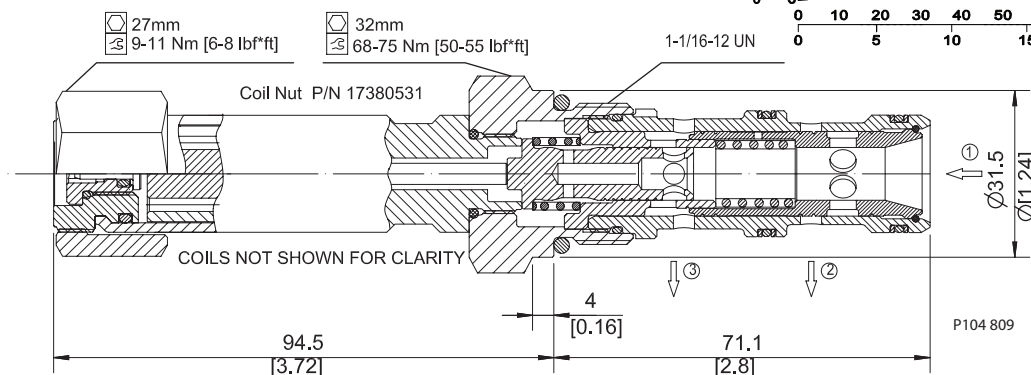


P104 793

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC12-PO-XX-12D-DN-B-00

Max regulated flow
50 = 50 l/min
70 = 70 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
AJ = Amp Junior
AS = Amp Superseal

Body and Ports
00 = No housing
10S = Al, #10 SAE
12S = Al, #12 SAE
4B = Al, 1/2 BSP
6B = Al, 3/4 BSP
Other housing available

Seals
B = Buna-N seals
V = Viton

Seal Kit
354008319
354008419

Body Nomencl.
No Body
CP12-3-10S
CP12-3-12S
CP12-3-4B
CP12-3-6B

OPERATION

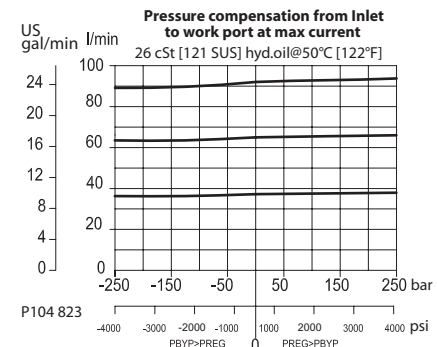
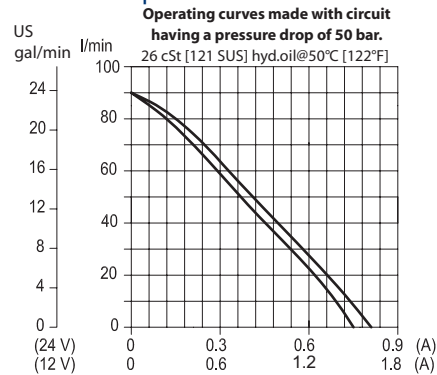
This is a pressure-compensated, priority-type, normally-open, spool-type, proportional flow-control. Controlled flow is from port 1 to 3, port 2 is bypass.

SPECIFICATIONS

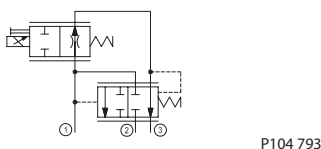
Specifications

Rated pressure	260 bar [3770 psi]
Rated flow at 260 bar [3771 psi]	90 l/min [24 US gal/min]
Leakage	420 cm ³ /min [25.6 in ³ /min] @ at rated pressure
Weight	0.97 kg [2.14 lb]
Hysteresis	8% maximum
Threshold current	0.1 A (12 VDC coil) 0.05 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC16-3
Standard Coil	D14E(35W) 35 Watt

Theoretical performance



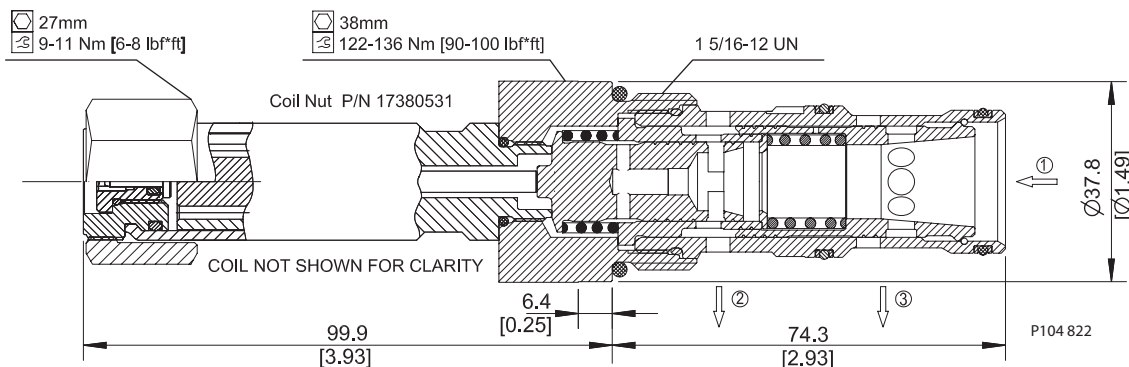
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PFC16-PO-90-12D-DN-B-00

Max regulated flow
90 = 90 l/min

Coil voltage
00 = No coil
12D = 12V DC
24D = 24V DC

Coil termination
00 = No coil
FL = Flying Lead
DN = ISO 4400 (DIN 43650)
DE = Deutsch
A J = Amp Junior
AS = Amp Superseal

Body and Ports
00 = No housing
6B = Al, 3/4 BSP
8B = Al, 1 BSP
12S = Al, #12 SAE
16S = Al, #16 SAE
Other housings available

Seals
B = Buna-N seals
V = Viton seals

Seal Kit
354008919
354009019

Body Nomenclature
No housing
SDC16-3-HE-6B
SDC16-3-HE-8B
CP16-3-12S
CP16-3-16S

P104 824

OPERATION

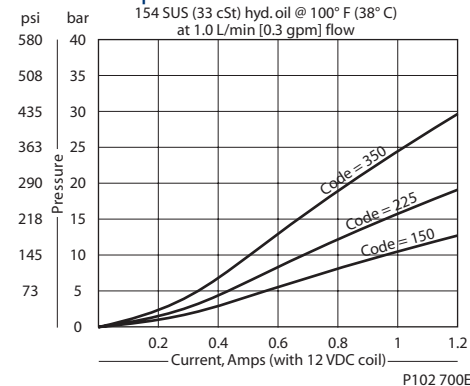
This valve is a direct acting, proportional, pressure reducing/relieving valve.

SPECIFICATIONS

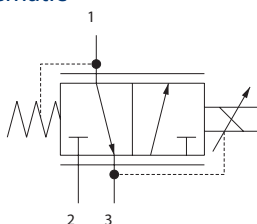
Specifications

Rated pressure	34 bar [500 psi]
Rated flow at 7 bar [100 psi]	4 l/min [1 US gal/min]
Weight	0.27 kg [0.60 lb]
Hysteresis	10% maximum
Threshold current	0.1 A (12 VDC coil) 0.05 A (24 VDC coil)
Maximum control current	1 A (12 VDC coil) 0.5 A (24 VDC coil)
Cavity	SDC08-3
Standard Coil	D08 16 Watt
Coil nut	322399

Theoretical performance



Schematic

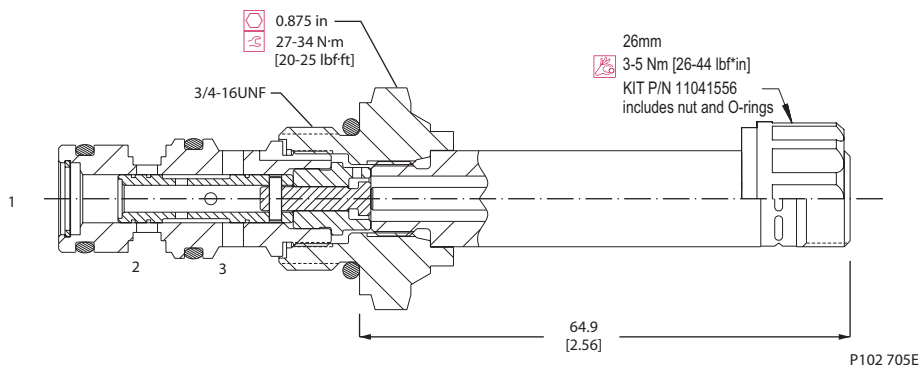


P102 433E

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP558-24-B-4S-150-12D-H

Seals	Seal Kit	Voltage	Connector
B = Buna-N	11016151	000 = No coil	H = DIN 43650
V = Viton	120708	12D = 12 VDC coil	L = Lead
		24D = 24 VDC coil	S = Spade
Housing and ports	Housing P/N	Pressure Code	AJ = Amp Junior
00 = No Housing	No Housing	150 = 10.3 bar [150 psi]	M2 = Metripak 150
SE2B = AL, 1/4 BSP	SDC08-3-SE-2B	225 = 15.5 bar [225 psi]	Type 1
SE3B = AL, 3/8 BSP	SDC08-3-SE-3B	350 = 24.1 bar [350 psi]	DE = Deutsch
4S = AL, #4 SAE	CP08-3-4S		
6S = AL, #6 SAE	CP08-3-6S		

P102 708E

Proportional valves
CP558-24

OPERATION

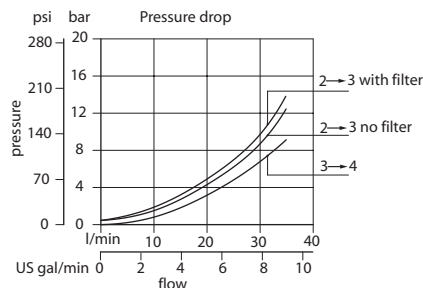
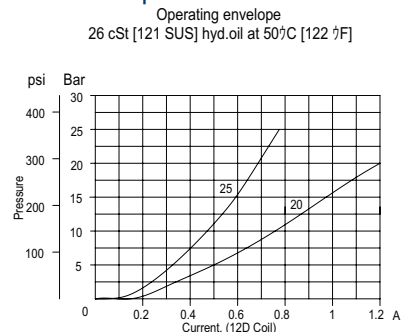
This is a pilot-operated, proportional pressure reducing/relieving valve.

SPECIFICATIONS

Specifications

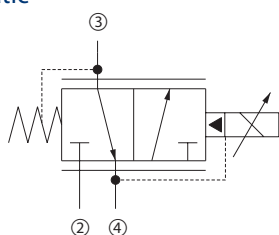
Rated pressure	50 bar [700 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.34 kg [0.75 lb]
Hysteresis	6% maximum
Threshold current	0.15 A (12 VDC coil) 0.08 A (24 VDC coil)
Maximum control current	1.2 A (12 VDC coil) 0.6 A (24 VDC coil)
Cavity	SDC10-4
Standard Coil	M13 20 Watt

Theoretical performance



P103 705E

Schematic



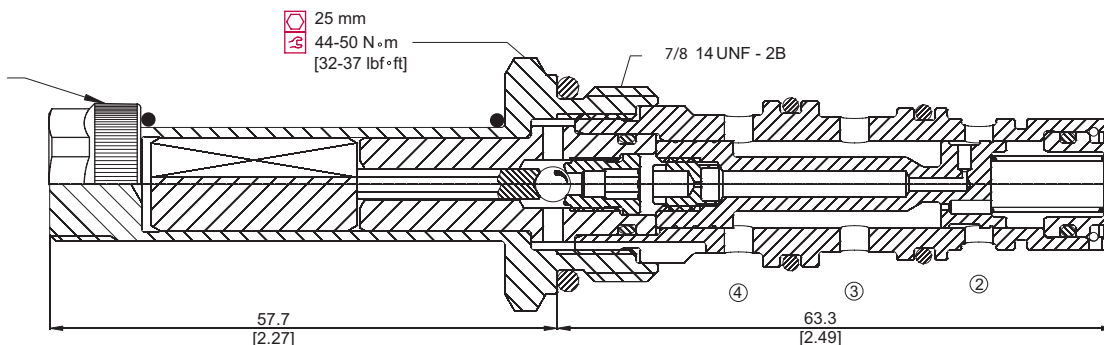
P102 943

DIMENSIONS

mm [in]

20 mm
4-6 Nm
[35-53 lbf·in]
Coil Nut Kit
P/N 173800588

Cross-sectional view



P103 678

ORDERING INFORMATION

XRP 044 \ 25* - F - 24D - DE - 00 V

Setting Range

20 = 0 - 20 bar [0 - 290 psi]
25 = 0 - 25 bar [0 - 360 psi]

Inlet filter

F = 300 µm filter
Omit = No filter

Voltage

0 = No coil
12D = 12VDC coil
24D = 24VDC coil

Termination

00 = No connector DN = DIN 43650 (ISO 4400)
AJ = AMP junior DN1 = "DN" w/Connector
AMS = AMP Superseal 1.5 FL600 = Lead wires
DE = Deutsch SP = Spade

Seals
V = Viton
Omit = Buna-N

Seal kit
Consult factory
Consult factory

Housing and ports

00 = No Housing
L3/8 = AL, 3/8 BSP
L1/2 = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-4-L-3/8
SDC10-4-L-1/2
CP10-4-6S
CP10-4-8S

* other pressure ranges available, consult factory

P103 733E

OPERATION

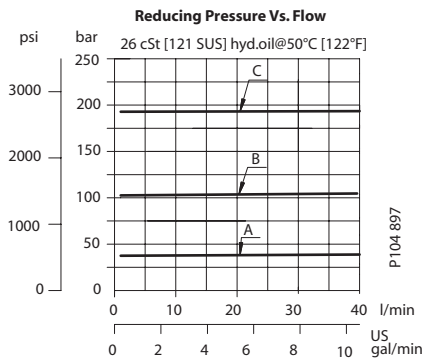
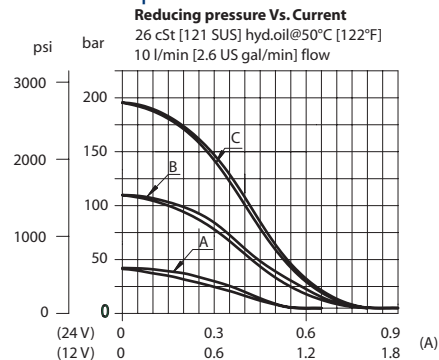
This is a pilot-operated, proportional pressure-reducing/relieving valve (Normally closed).

SPECIFICATIONS

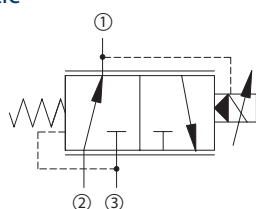
Specifications

Rated pressure	250 bar [3625 psi]
Rated flow at 7 bar [100 psi]	18 l/min [5 US gal/min]
Weight	0.62 kg [1.37 lb]
Hysteresis	10% maximum
Threshold current	0 A (12 VDC coil) 0 A (24 VDC coil)
Maximum control current	1.4 A (12 VDC coil) 0.7 A (24 VDC coil)
Pressure differential	0 bar [0 psi] maximum
Cavity	SDC10-3
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

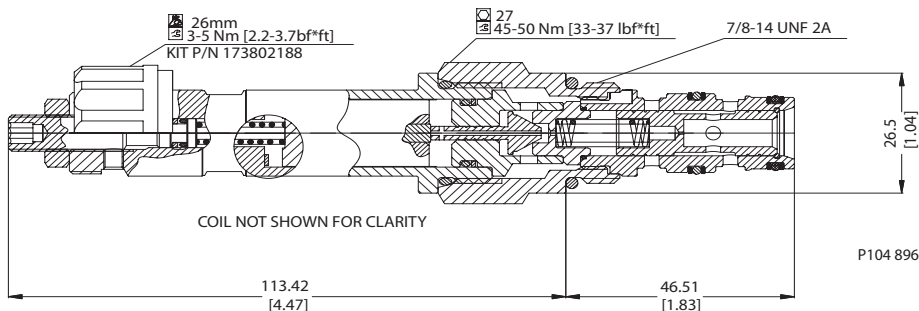


P104 895

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PPR10-PAC-40-A-12D-DN-B-00

Cracking pressure

Code = Setting in Bar
 Std. setting
 40 = 40 bar setting (type A)
 100 = 100 bar setting (type B)
 200 = 200 bar setting (type C)

Pressure range

A= 20 - 60 bar [360 - 940 psi] Max inlet pressure 150 Bar
 B= 70 - 150 bar [960-2250 psi]
 C= 160 - 210 bar [2260-3120 psi]

Coil voltage

12D=12VDC
 24D=24VDC
 00=No Coil

Housing and ports

00 = Cartridge only
 6S = Al, #6 SAE
 8S = Al, #8 SAE
 SE3B = Al, 3/8" BSP
 SE4B = Al, 1/2" BSP
 Other housing available

Housing Nomenclature

No Body
 CP10-3-6S
 CP10-3-8S
 SDC10-3-SE3B
 SDC10-3-SE4B

Seals

B = Buna-N
 V = Viton

Seals kit

354004210
 354003719

Coil termination

00 = No coil, nut included
 AJ= AMP Junior
 DE= Deutsch
 DN= DIN 46650
 FL= Flying leads(140mm lead length standard)

P104 898

Proportional valves
PPR10-PAC

OPERATION

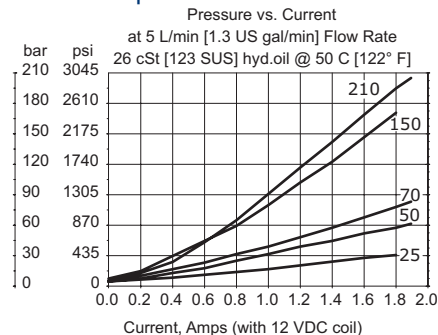
This is a pilot-operated, proportional pressure reducing/relieving valve.

SPECIFICATIONS

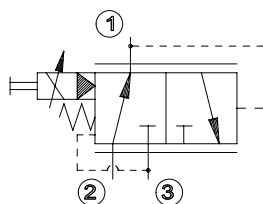
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.55 kg [1.21 lb]
Hysteresis	3% maximum
Threshold current	0 A (12 VDC coil) 0 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Cavity	NCS06/3
Standard Coil	M19P 22 Watt

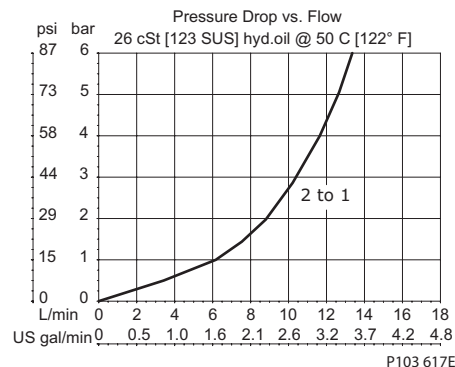
Theoretical performance



Schematic



P108 348E

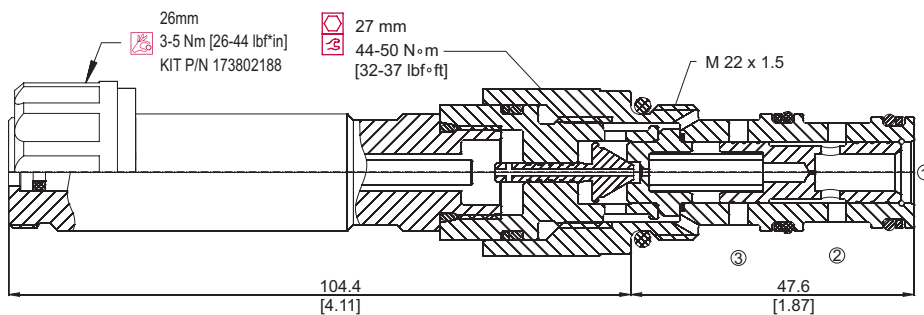


P103 617E

DIMENSIONS

mm [in]

Cross-sectional view



P103 612

ORDERING INFORMATION

XRP 06 - 70 - 12D - DE - EN - 00 V

Setting range 25 = 6-25 bar [90-360 psi] 50 = 6-55 bar [90-800 psi] 70 = 5-75 bar [90-1100 psi] 150 = 8-155 bar [120-2200 psi] 210 = 9-210 bar [130-3100 psi]	Seals V = Viton Omit = Buna-N	Seals 230000110 230000070
Voltage 00 = No coil 12D = 12VDC 24D = 24VDC	Housing and ports 00 = No Housing SE6S = AL, #6 SAE SE8S = AL, #8 SAE SE3/8 = AL, 3/8 BSP SE1/2 = AL, 1/2 BSP	Housing P/N No Housing NCS06/3-SE-6S NCS06/3-SE-8S NCS06/3-SE-3/8 NCS06/3-SE-1/2
Termination 00 = No connector AJ = AMP Jr DE = Deutsch	Manual override 00 = Push control (Standard) EN = Screw control	
DN = DIN 43650 (ISO 4400) DN1 = "DN" w/Connector FL600 = Lead wires		

P103 732E

OPERATION

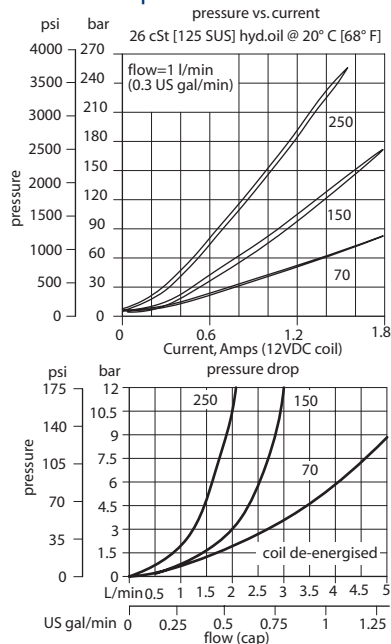
This is a direct-acting normally-open, proportional relief valve.

SPECIFICATIONS

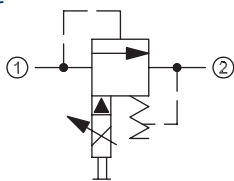
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	4 l/min [1 US gal/min]
Weight	0.44 kg [0.97 lb]
Hysteresis	3% maximum
Threshold current	0 A (12 VDC coil) 0 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Cavity	NCS04/2
Standard Coil	M19P 22 Watt

Theoretical performance



Schematic

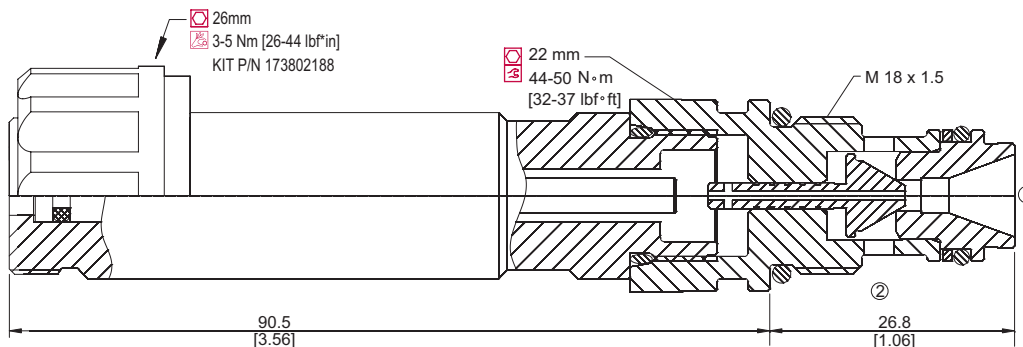


DIMENSIONS

mm [in]

P103 512

Cross-sectional view



P103 696E

P103 668

ORDERING INFORMATION

XMD 04 - 70 - 24D - DE - EN - 00 - V

Setting range

70 = 3-75 bar [44-1088 psi]
150 = 4-160 bar [58-2321 psi]
250 = 7-250 bar [102-3626 psi]

Voltage

00 = No coil
12D = 12 VDC coil
24D = 24 VDC coil

Termination

00 = No connector
AJ = AMP Jr
DE = Deutsch

DN = DIN 43650 (ISO 4400)
DN1 = "DN" w/Connector
FL600 = Lead wires

Seals

V = Viton
Omit = Buna-N

Housing and ports

00 = No Housing
DG1/4 = AL, 1/4 BSP
DG4S = AL, #4 SAE
DG6S = AL, #6 SAE
Other housings available

Seal kit

230000390
230000190

Housing P/N

No Housing
NCS04/2-DG-1/4
NCS04/2-DG-4S
NCS04/2-DG-6S

Manual override

00 = Push control (Standard)
EN = Screw control

P103 723E

OPERATION

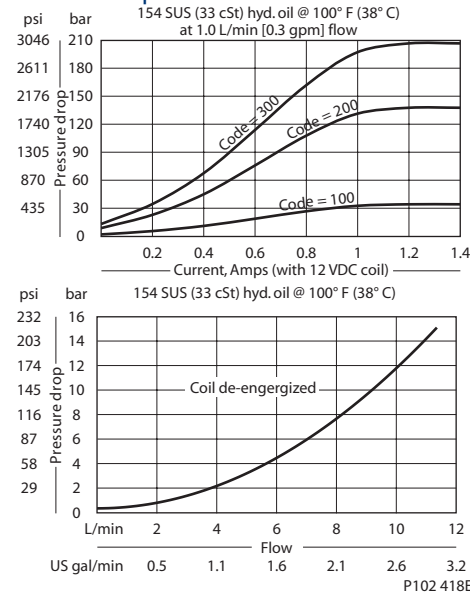
This valve is a direct acting, normally-open, proportional valve.

SPECIFICATIONS

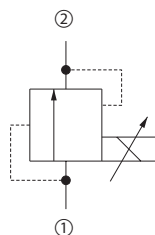
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow	8 l/min [2 US gal/min]
Weight	0.48 kg [1.06 lb]
Hysteresis	10% maximum
Threshold current	0 A (12 VDC coil) 0 A (24 VDC coil)
Maximum control current	1.2 A (12 VDC coil) 0.6 A (24 VDC coil)
Cavity	SDC08-2
Standard Coil	D10 30 Watt
Coil nut	321978

Theoretical performance



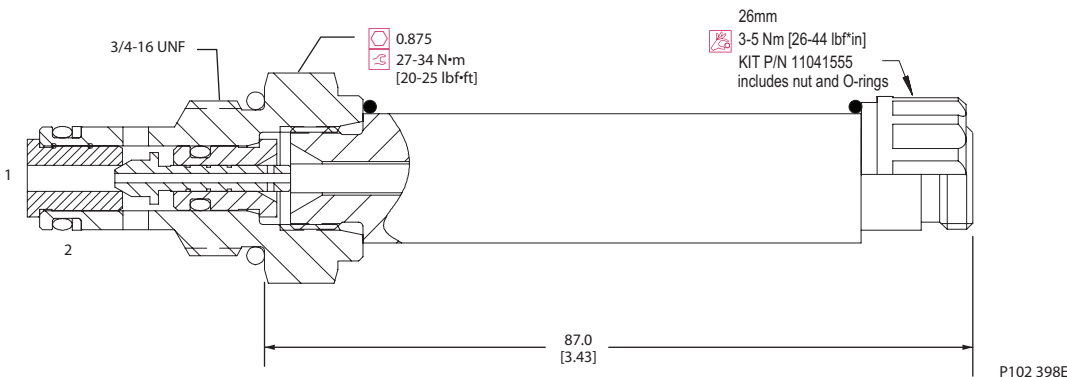
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP558 - 20 - B - 6S - 300 - 24D - H

Seals
B = Buna-N
V = Viton

Housing and ports
0 = No Housing
DG2B = AL, 1/4 BSP
DG3B = AL, 3/8 BSP
4S = AL, #4 SAE
6S = AL, #6 SAE
Other housings available

Seal kit
120221
120222

Housing P/N
No Housing
SDC08-2-DG-2B
SDC08-2-DG-3B
CP08-2-4S
CP08-2-6S

Voltage
000 = No coil
12D = 12 VDC coil
24D = 24 VDC coil

Pressure code
050 = 35 bar [500 psi] max
100 = 69 bar [1000 psi] max
200 = 138 bar [2000 psi] max
300 = 207 bar [3000 psi] max

Termination
00 = No connector
H = DIN 43650
L = Lead wires
DE = Deutsch
M2 = Metripack 150 Type 1
S = Spade

P102 412E

OPERATION

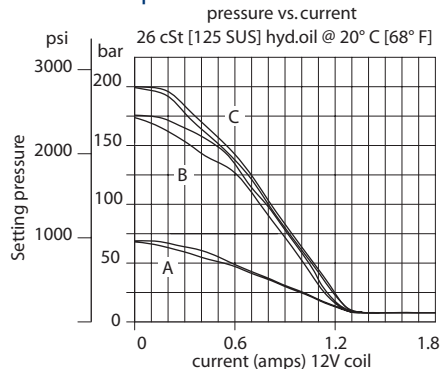
This is a normally-closed, pilot-operated, proportional relief valve.

SPECIFICATIONS

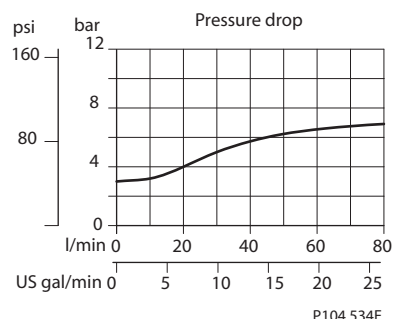
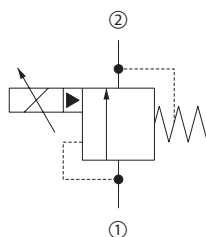
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	76 l/min [20 US gal/min]
Weight	0.53 kg [1.17 lb]
Hysteresis	10% maximum
Threshold current	0 A (12 VDC coil) 0 A (24 VDC coil)
Maximum control current	1.4 A (12 VDC coil) 0.7 A (24 VDC coil)
Cavity	SDC10-2
Standard Coil	M19P 22 Watt

Theoretical performance



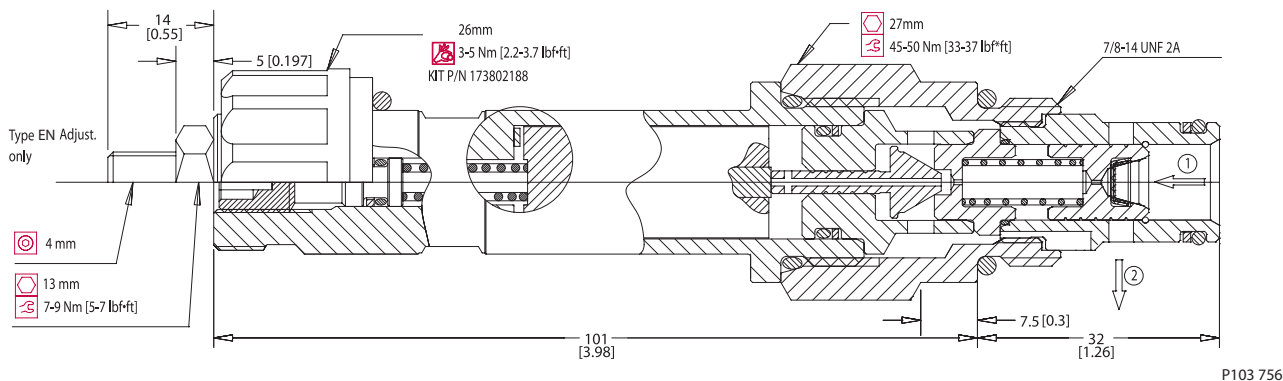
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PRV10-POC-215-C-12-DT-F-B-00

<p>Crack pressure Code = Setting in bar</p> <p>Standard settings 55 = 55 bar [800 psi] Range A 135 = 135 bar [1960 psi] Range B 215 = 215 bar [3120 psi] Range C</p> <p>Pressure range A = 25 - 65 bar [360 - 940 psi] B = 65 - 155 bar [940 - 2250 psi] C = 155 - 215 bar [2250 - 3120 psi]</p>	<p>Voltage 00 = No coil 12 = 12 VDC 24 = 24 VDC</p>	<p>Housing and ports 00 = No Housing DG3B = AL, 3/8 BSP DG4B = AL, 1/2 BSP 65 = AL, #6 SAE 85 = AL, #8 SAE Other housings available</p>	<p>Housing P/N No Housing SDC10-2-DG-3B SDC10-2-DG-4B CP10-2-65 CP10-2-85</p>
<p>Termination 0 = No connector DE = Deutsch FL = Lead wires</p>	<p>Adjustment option: E = External F = Tamper resistant H = Hidden</p>	<p>Seals B = Buna-N V = Viton</p>	<p>Seal Kit 354000719 354000819</p>

Proportional valves
PRV10-POC

OPERATION

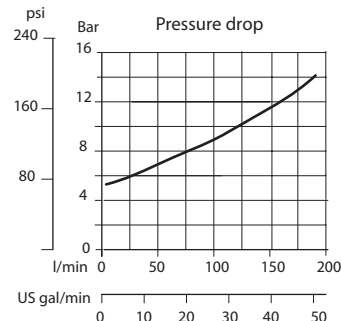
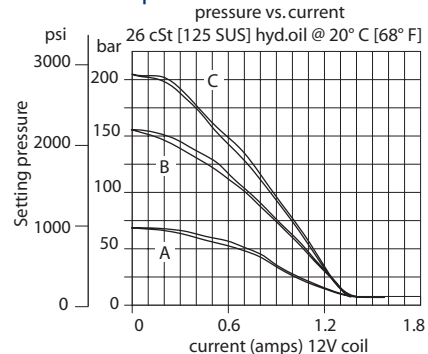
This is a normally-closed, pilot-operated, proportional relief valve.

SPECIFICATIONS

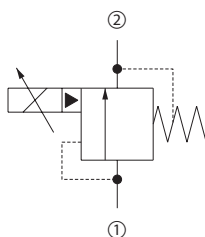
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	180 l/min [48 US gal/min]
Weight	0.62 kg [1.37 lb]
Hysteresis	10% maximum
Threshold current	0 A (12 VDC coil) 0 A (24 VDC coil)
Maximum control current	1.5 A (12 VDC coil) 0.8 A (24 VDC coil)
Cavity	SDC12-2
Standard Coil	M19P 22 Watt

Theoretical performance



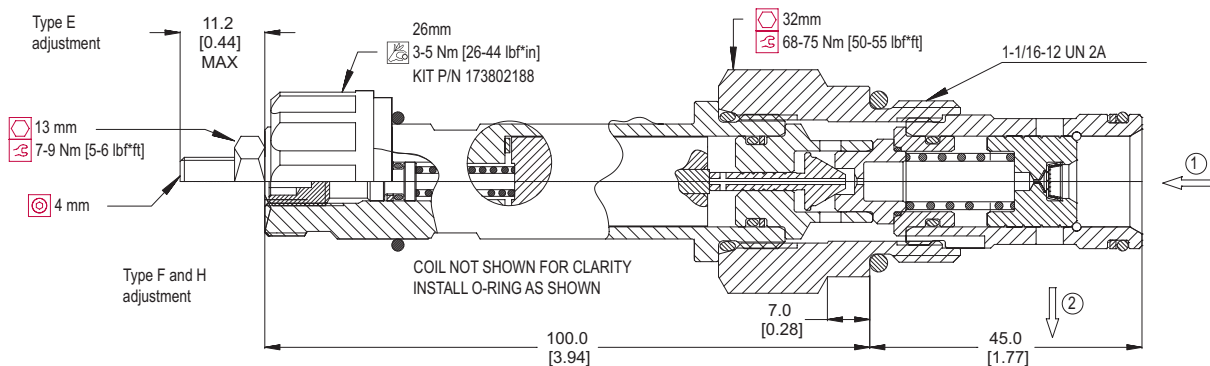
Schematic



DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

PR V12-POC-215-C-12-DT-F-B 00

Crack pressure
Code = Setting in bar
Standard settings
55 = 55 bar [800 psi] Range A
135 = 135 bar [1960 psi] Range B
215 = 215 bar [3120 psi] Range C
Pressure range
A = 25 - 65 bar [360 - 940 psi]
B = 65 - 155 bar [940-2250 psi]
C = 155 - 215 bar [2250-3120 psi]

Voltage
00 = No coil
12 = 12 VDC
24 = 24 VDC

Termination
0 = No connector
DE = Deutsch
DN = DIN 43650
FL = Lead wires
AJ = AMP Jr

Housing and ports
00 = No Housing
DG4B = AL, 1/2 BSP
DG6B = AL, 3/4 BSP
10S = AL, #10 SAE
12S = AL, #12 SAE
Other housings available

Seals
B = Buna-N
V = Viton

Seal Kit
354001319
354001819

Housing P/N
No Housing
SDC12-2-DG-4B
SDC12-2-DG-6B
SDC12-10S
SDC12-16S

Adjustment option:
E = External
F = Tamper resistant
H = Hidden

OPERATION

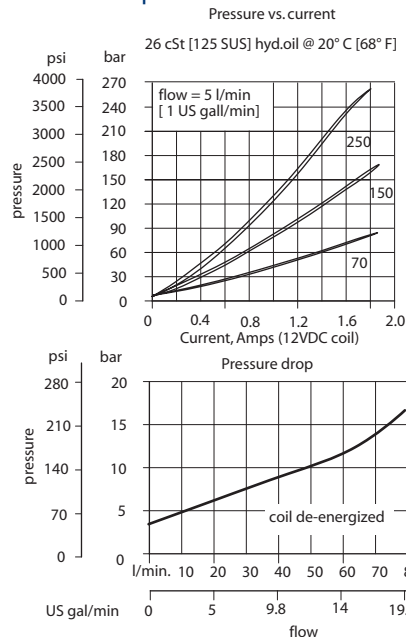
This is a pilot-operated, normally-open, proportional relief valve.

SPECIFICATIONS

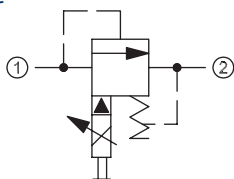
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow	50 l/min [13 US gal/min]
Weight	0.53 kg [1.17 lb]
Hysteresis	3% maximum
Threshold current	0 A (12 VDC coil) 0 A (24 VDC coil)
Maximum control current	1.8 A (12 VDC coil) 0.9 A (24 VDC coil)
Cavity	NCS06/2
Standard Coil	M19P 22 Watt

Theoretical performance

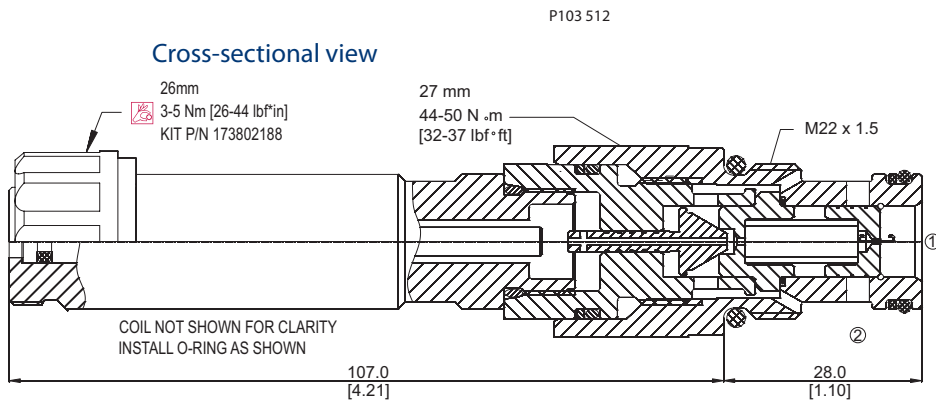


Schematic



DIMENSIONS

mm [in]



ORDERING INFORMATION

XMP 06 - 70 - 24D - DE - EN - 00 V

Setting range

- 70 = 3-70 bar [44-1015 psi]
- 150 = 5-150 bar [73-2176 psi]
- 250 = 7-250 bar [102-3626 psi]

Solenoid

- 12D-A = 12VDC
- 24D-A = 24VDC

Connector

- 00 = No connec
- AJ = AMP Jr
- DE = Deutsch
- DN = DIN 43650 (ISO 4400)
- DN1 = "DN" w/Connector

Seals

- V = Viton Seals
- Ignore for Buna-N

Housings and Ports

- 0 = Cartridge
- SE-4B 1/2"BS PP, Alum
- SE-6S #6 SAE, Alum
- SE-8S #8 SAE, Alum
- other styles available

Manual override

- 00 = With pushing control (Standard)
- EN = With screw control

P103 724E

Manual Push/Pull	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP600-1	SDC10-2	Directional Mechanical, Poppet, Pull to Open	68 l/min [18 US gal/min]	210 bar [3000 psi]	12.8

Manual Push/Pull	Model No.	Cavity	Description	Flow*	Pressure	Page
	CE 06	NCS06/2	Directional Mechanical, Poppet, Pull to Open	20 l/min [5 US gal/min]	210 bar [3000 psi]	12.9
	CP600-2	SDC10-2		50 l/min [13 US gal/min]		12.10

Manual Push/Pull	Model No.	Cavity	Description	Flow*	Pressure	Page
	DMP08-NC	SDC08-2	Directional Mechanical, Poppet, Normally Closed	38 l/min [10 US gal/min]		12.11

Manual Push/Pull	Model No.	Cavity	Description	Flow*	Pressure	Page
	DMP08-NO	SDC08-2	Directional Mechanical, Poppet, Normally Open	38 l/min [10 US gal/min]		12.12

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Manual Rotary Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP620-1	SDC10-2	Directional Manual, Rotary, 2-Position, 2-Way	75 l/min [20 US gal/min]	210 bar [3000 psi]	12.13

Manual Rotary Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP630-1	SDC10-3	Directional Manual, Rotary, 2-Position, 3-Way	30.3 l/min [8 US gal/min]	210 bar [3000 psi]	12.14

Manual Rotary Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP640-1	SDC10-4	Directional Manual, Rotary, 2-Position, 4-Way	10 l/min [3 US gal/min]	210 bar [3000 psi]	12.15

Directional control valves
 Quick reference

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

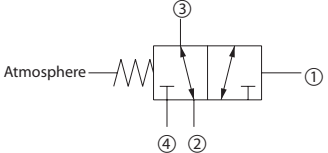
Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP710-8	SDC10-4	Directional Control Valve, 2-Position, 2-Way	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.16
	CP712-11	CP16-4		130 l/min [34 US gal/min]	450 bar [6500 psi]	12.17
	CP712-8	CP16-4		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.18

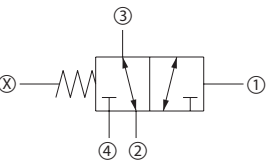
Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP710-1	SDC10-3	Directional Control Valve, 2-Position, 2-Way, Atmospheric Vent	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.19
	CP712-1	SDC16-3		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.20
	CP713-1	SDC20-3		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.21

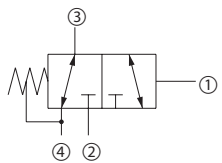
Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP710-3	SDC10-3	Directional Control Valve, 2-Position, 2-Way, Hydraulic Vent	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.22

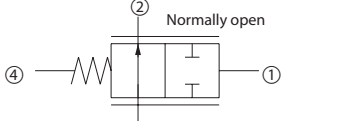
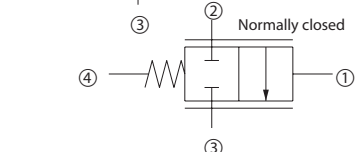
Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP710-2	SDC10-3	Directional Control Valve, 2-Position, 2-Way, External Pilot	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.23
	CP712-2	SDC16-3		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.24
	CP713-2	SDC20-3		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.25

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP720-1	SDC10-4	Directional Control Valve, 2-Position, 3-Way,	30 l/min [8 US gal/min]	210 bar [3000 psi]	12.26
	CP722-1	CP16-4	Atmospheric Vent	130 l/min [34 US gal/min]	210 bar [3000 psi]	12.27
	CP723-1	SDC20-4		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.28

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP720-2	SDC10-4	Directional Control Valves, 2-Position, 3-Way, External	25 l/min [7 US gal/min]	210 bar [3000 psi]	12.29
	CP722-2	CP16-4	Pilot	130 l/min [34 US gal/min]	210 bar [3000 psi]	12.30
	CP723-2	SDC20-4		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.31

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP720-5	SDC10-4	Directional Control Valve, 2-Position, 3-Way,	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.32
	CP722-11	CP16-4	Hydraulic Vent	125 l/min [33 US gal/min]	450 bar [6500 psi]	12.33
	CP722-5	CP16-4		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.34
	CP723-5	SDC20-4		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.35

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
 	CP712-7	CP16-4	Directional Control Valve, Normally Closed/Open, Hydraulically Piloted, Proportional	220 l/min [58 US gal/min]	210 bar [3000 psi]	12.36

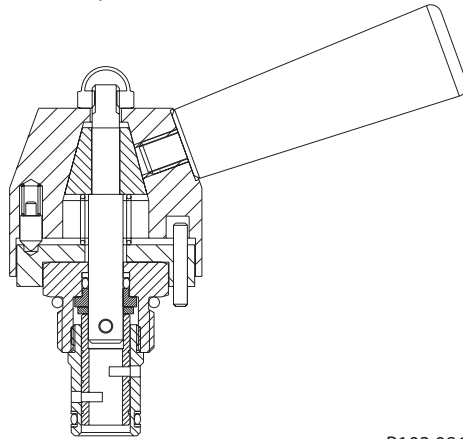
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

TYPES OF DIRECTIONAL CONTROL VALVES

Directional valves are either manually or hydraulically actuated spools.

Manually-actuated valves are available as 2-way, 3-way, and 4-way valves, and are used either for flow or direction control.

Manually actuated valve



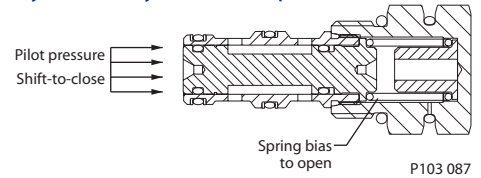
P103 086

Hydraulically-actuated spool valves are available as 2-way (normally-open or normally-closed), 3-way, and 4-way valves, and are used for direction control. These are all 2-position valves that are spring-biased to a neutral position and use 3-10 bar [40-150 psi] hydraulic pressure to shift the spool.

Directional control valves



Hydraulically actuated spool valve



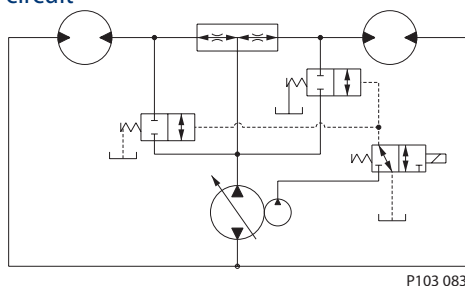
P103 087

APPLICATIONS

Common applications include:

- Directional control valves for high flow with pilot pressure controlled by solenoid valves.
- Bypass valves for flow dividers in vehicle traction circuits.

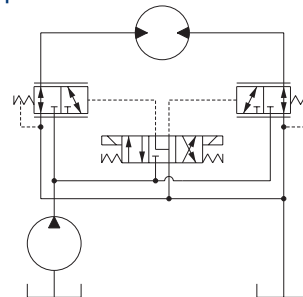
Pilot-operated bypass valves for traction circuit



P103 083

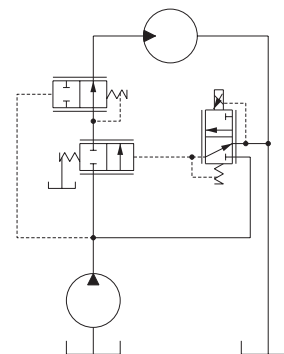
A hydraulically-actuated spool valve (CP712-7) is also available to create an infinitely variable orifice that is controlled by pilot pressure. This valve is typically used in a circuit with a proportional pressure reducing valve (e.g. CP558-24) and a pressure compensator (e.g. CP312-4). Such a circuit creates a pressure-compensated proportional flow control for flows too large for direct-acting proportional valves.

Pilot-operated directional valve circuit



P103 085

Pilot-operated proportional flow control circuit

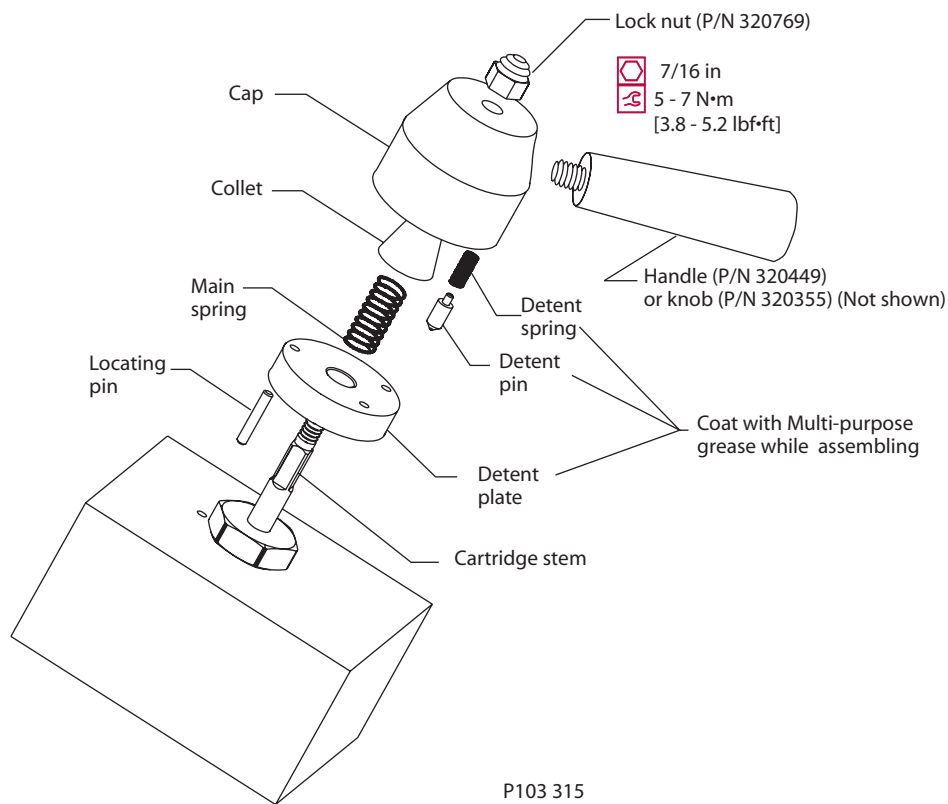


P103 084

INSTALLATION

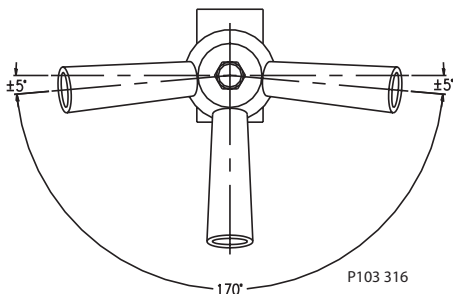
1. Install cartridge.
2. Place locating pin in the hole in the block.
3. Install detent plate over the cartridge stem and locating pin.
4. Place the main spring over the cartridge stem.
5. Install the collet into the cap.
6. Place the detent spring and detent pin into cap and install cap over the assembly as shown.
7. Place the lock nut and torque as shown.
8. Thread handle or knob into cap.

Assembly Drawing

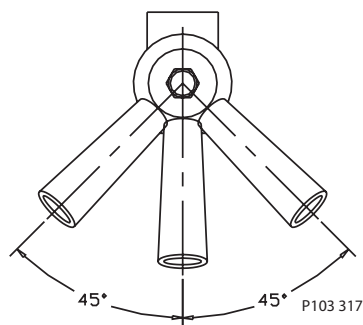


Directional control valves
Quick reference

Handle orientation for 2-way valve.



Handle orientation for 3-way and 4-way valves.



Cartridge Valves Technical Information

Directional Control Valves

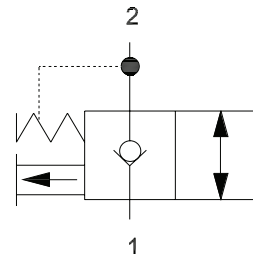
Manual Push/Pull

CP600-1

OPERATION

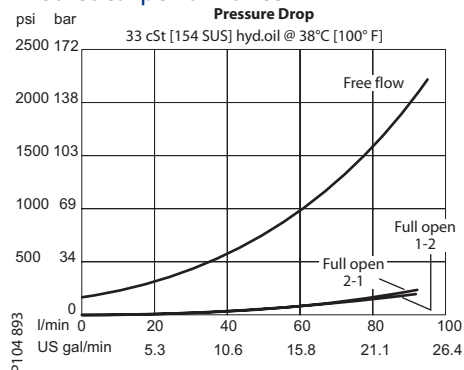
This valve allows free-flow from 1 to 2 and blocks from 2 to 1. It is manually operated with or without knob.

Schematic

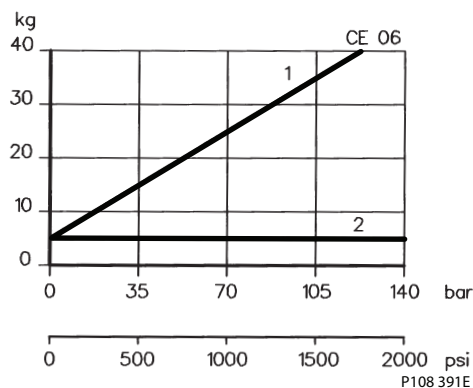


SPECIFICATIONS

Theoretical performance



Force required to operate override



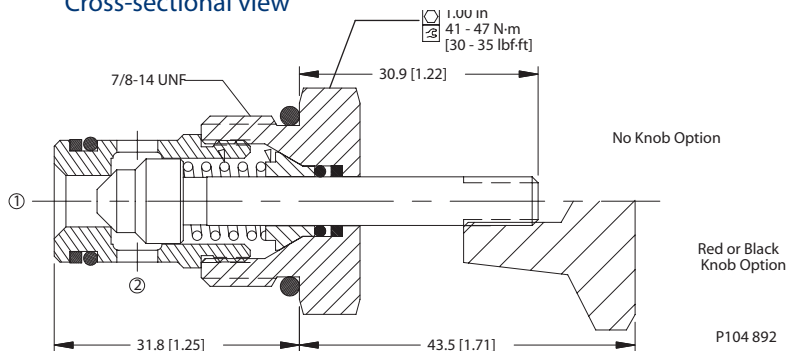
Specifications

Rated pressure	207 bar [3002 psi]
Rated flow at 7 bar [100 psi]	68 l/min [18 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	0.11 kg [0.24 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

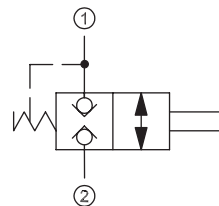
CP600-1-B-6S-00-K

Seals	Seal kit	Knob Option
B = BUNA-N	120015	28 = 1/4-28 UNF-2A (NO KNOB)
V = VITON	120016	20 = 1/4-20 UNF-2A (NO KNOB)
Body & Ports	Body P/N	K = BLACK KNOB
0 = Cartridge only	No Body	R = RED KNOB
6S = Aluminum, #6 SAE	CP10-2-6S	Force Required to Operate Override
8S = Aluminum, #8 SAE	CP10-2-8S	10 = 44 N [10 lbf] P104 894
3B = Aluminum, 3/8 BSPP	SDC10-2-DG-3B	27 = 120 N [27 lbf]
4B = Aluminum, 1/2 BSPP	SDC10-2-LG2-4B	

OPERATION

This is a normally-closed, manually-operated, bi-directional poppet valve.

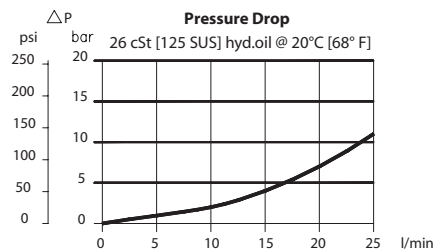
Schematic



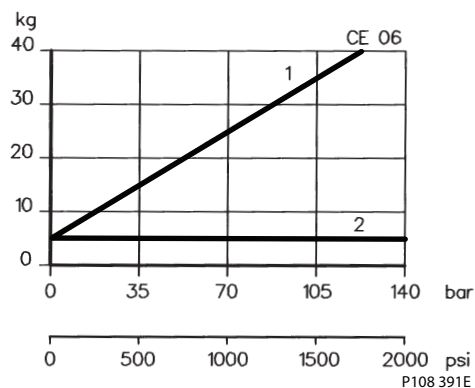
P104 551E

SPECIFICATIONS

Theoretical performance



Force required to operate override



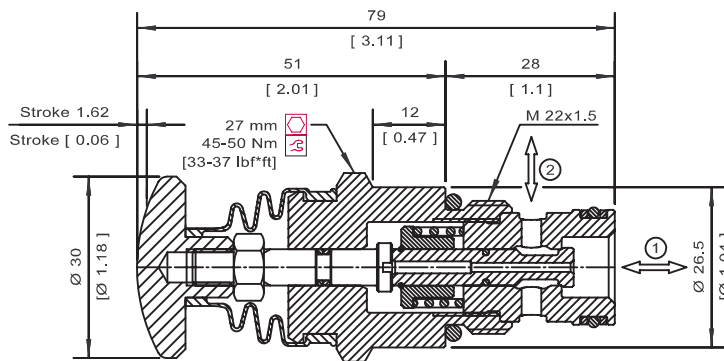
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.20 kg [0.44 lb]
Cavity	NCS06/2

DIMENSIONS

mm [in]

Cross-sectional view



P103 899E

ORDERING INFORMATION

CE 06 - 00 - V

Seals
V = Viton Seal kit 230000380
Omit = Buna-N Seal kit 230000060

Housing and ports
00 = No Housing
DG3/8 = AL, 3/8 BSP
DG1/2 = AL, 1/2 BSP
DG6S = AL, #6 SAE
DG8S = AL, #8 SAE
Other housings available

Housing P/N
No Housing
NCS06/2-DG-3/8
NCS06/2-DG-1/2
NCS06/2-DG-6S
NCS06/2-DG-8S

P103 837E

Directional control valves
CE 06

Cartridge Valves Technical Information

Directional Control Valves

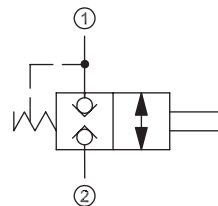
Manual Push/Pull

CP600-2

OPERATION

This valve is a normally closed, manually operated, bi-directional poppet valve.

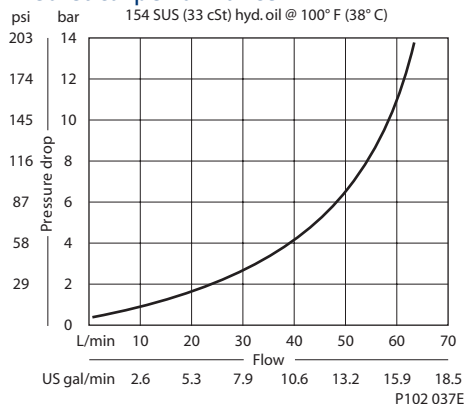
Schematic



P104 551E

SPECIFICATIONS

Theoretical performance



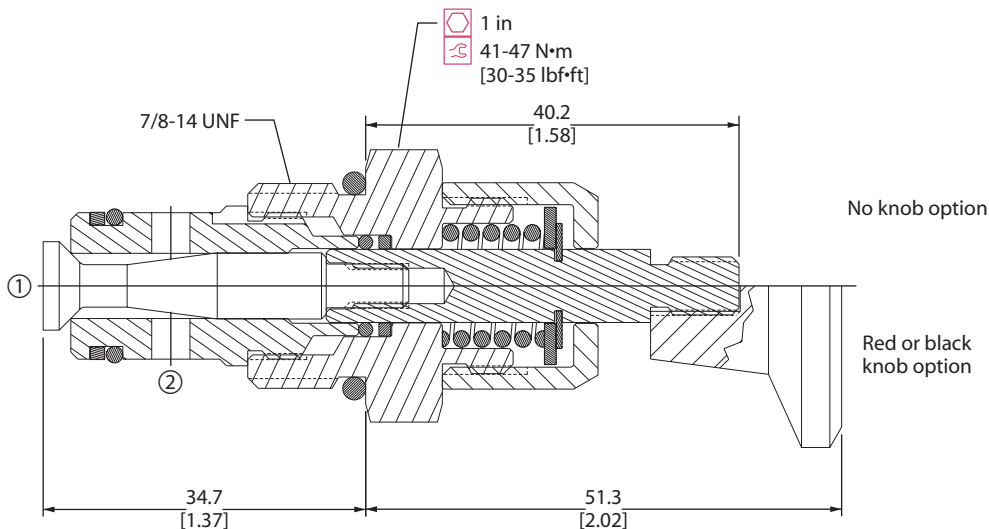
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.11 kg [0.25 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP600 - 2 - B - 8S - 10 - B

Seals	Seal kit	Knob option
B = Buna-N	120015	0 = No knob (1/4-28 UNF threads)
V = Viton	120016	B = Black knob
Housing and ports	Housing P/N	R = Red knob
0 = No Housing	No Housing	
DG3B = AL, 3/8 BSP	SDC10-2-DG-3B	
DG4B = AL, 1/2 BSP	SDC10-2-DG-4B	
6S = AL, #6 SAE	CP10-2-6S	
8S = AL, #8 SAE	CP10-2-8S	
Other housings available		Spring load
		10 = 44 N [10 lbf]
		15 = 67 N [15 lbf]

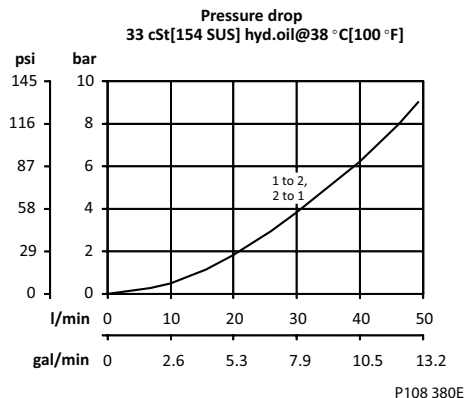
P102 765E

OPERATION

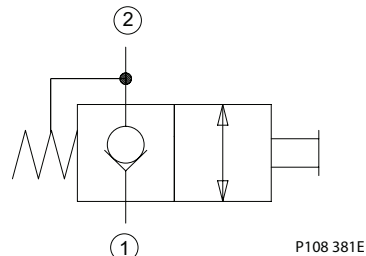
This valve is a normally closed, manually operated, poppet type valve with free reverse flow..

SPECIFICATIONS

Theoretical performance



Schematic



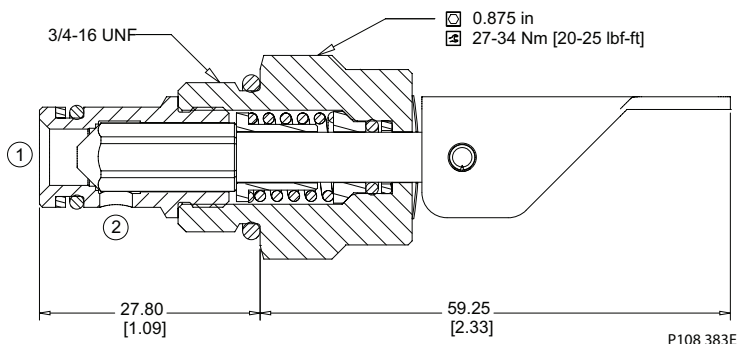
Specifications

Rated pressure	207 bar [3000 psi]
Rated flow at 7 bar [100 psi]	48 l/min [12.7 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.12 kg [0.27 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

DMP08-NC-18-LD-B-00

Shift Force
18 = 18 N [4 lbf]

Handle Option
LD = Detented Lever

Housing and ports
00 = No Housing
DG-2B = Al, 1/4 BSP
DG-3B = Al, 3/8 BSP
4S = Al, #4 SAE
6S = Al, #6 SAE

Housing Part #
No Housing
SDC08-2-DG-2B
SDC08-2-DG-3B
CP08-2-4S
CP08-2-6S

Seals
B = Buna-N
V = Viton

Seal Kit
120221
120222

P108 382E

Directional control valves
DMP08-NC

Cartridge Valves Technical Information

Directional Control Valves

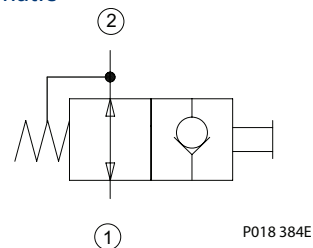
Manual Push/Pull

DMP08-NO

OPERATION

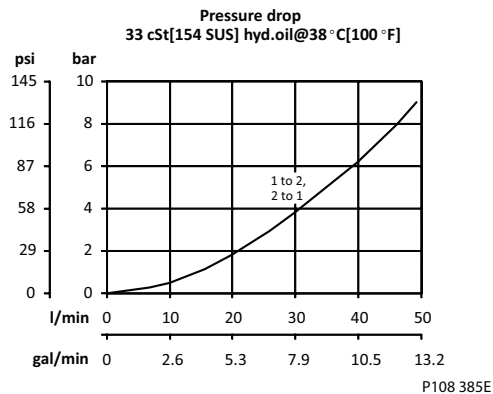
This valve is a normally open, manually operated, poppet type valve with free reverse flow..

Schematic



SPECIFICATIONS

Theoretical performance



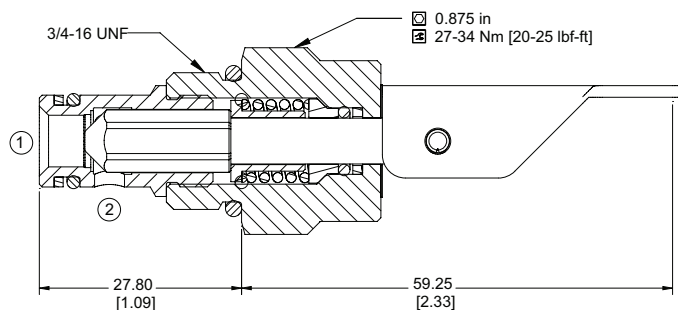
Specifications

Rated pressure	207 bar [3000 psi]
Rated flow at 7 bar [100 psi]	48 l/min [12.7 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.12 kg [0.27 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



P108 387E

ORDERING INFORMATION

DMP08-NO-18-LD-B-00

Shift Force
 18 = 18 N [4 lbf]

Handle Option
 LD = Detented Lever

- Housing and ports
 00 = No Housing
 DG-2B = Al, 1/4 BSP
 DG-3B = Al, 3/8 BSP
 4S = Al, #4 SAE
 6S = Al, #6 SAE

Housing Part #
 No Housing
 SDC08-2-DG-2B
 SDC08-2-DG-3B
 CP08-2-4S
 CP08-2-6S

Seals
 B = Buna-N
 V = Viton

Seal Kit
 120221
 120222

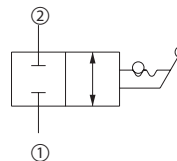
P108 387E

OPERATION

This valve is a non-compensated, adjustable flow control.

Refer to application notes for installation details.

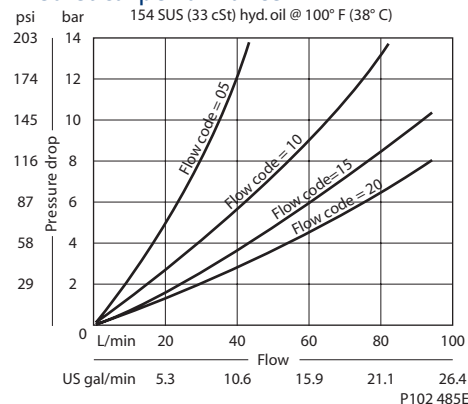
Schematic



P102 503E

SPECIFICATIONS

Theoretical performance



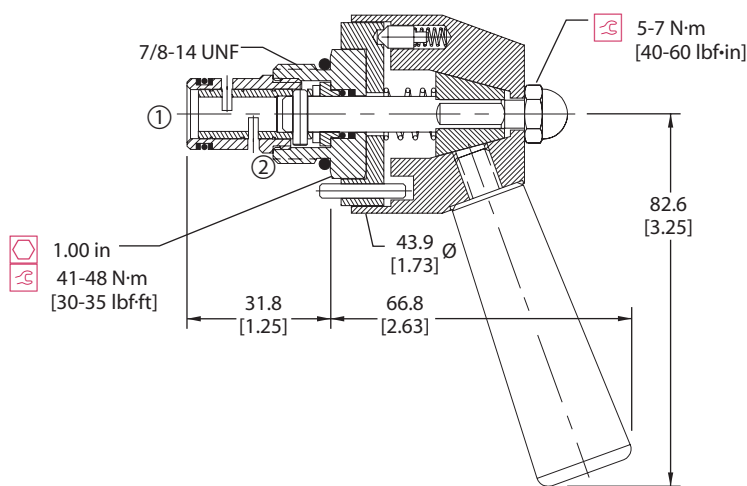
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	75 l/min [20 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ Rated pressure
Weight	0.31 kg [0.69 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



Directional control valves
CP620-1

ORDERING INFORMATION

CP620 - 1 - B - 8S - 20 - 2 - DR

Seals

B - Buna-N
V - Viton

Seal kit
120073
120074

Housing and ports

0 = No Housing
DG3B = AL, 3/8 BSP
DG4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-2-DG-3B
SDC10-2-DG-4B
CP10-2-6S
CP10-2-8S

Flow

05 = 19 l/min [5 US gpm]
10 = 38 l/min [10 US gpm]
15 = 57 l/min [15 US gpm]
20 = 77 l/min [20 US gpm]

Rotation to close

R - Clockwise
L - Counterclockwise

Detent

D = Detent with handle
K = Knob (not shown)
knob is not detented

Position

2 - 2 Position detent
3 - 3 Position detent
10 - 10 Position detent

P102 893E

Cartridge Valves Technical Information

Directional Control Valves

Manual Rotary Valve

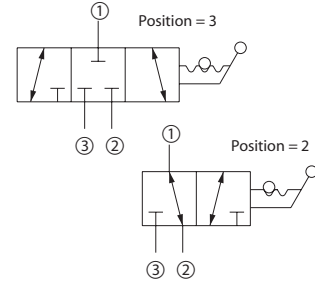
CP630-1

OPERATION

This valve is a 2 position 3 way manual directional control.

Refer to application notes for installation details.

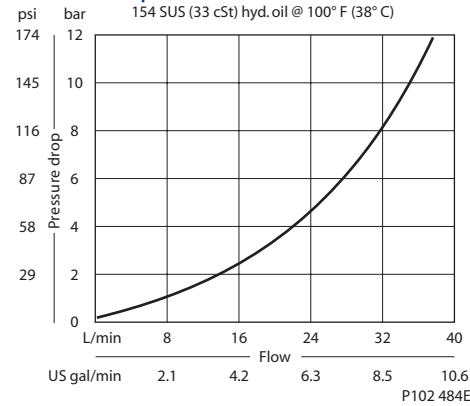
Schematic



P102 502E

SPECIFICATIONS

Theoretical performance



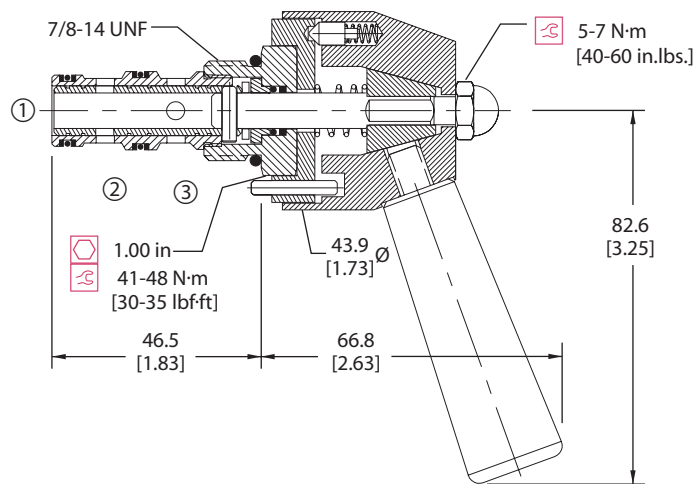
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ Rated pressure
Weight	0.32 kg [0.71 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 472E

ORDERING INFORMATION

CP630 - 1 - B - 8S - 3 - D

Seals

B = Buna-N
 V = Viton

Seal kit
 120009
 120010

Housing and ports

0 = No Housing
 SE3B = AL, 3/8 BSP
 SE4B = AL, 1/2 BSP
 6S = AL, #6 SAE
 8S = AL, #8 SAE
 Other housings available

Housing P/N

No Housing
 SDC10-3-SE-3B
 SDC10-3-SE-4B
 CP10-3-6S
 CP10-3-8S

Detent

D = Detent with handle
 K = Knob (not shown)
 knob is not detented

Position

2 = 2 Position detent
 3 = 3 Position detent

P102 957E

Cartridge Valves Technical Information

Directional Control Valves

Manual Rotary Valve

CP640-1

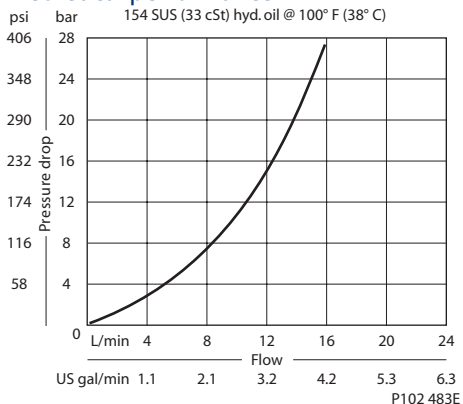
OPERATION

This valve is a 3 position 4 way manual directional control.

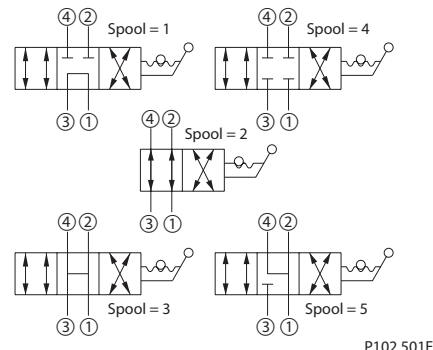
Refer to application notes for installation details.

SPECIFICATIONS

Theoretical performance



Schematic



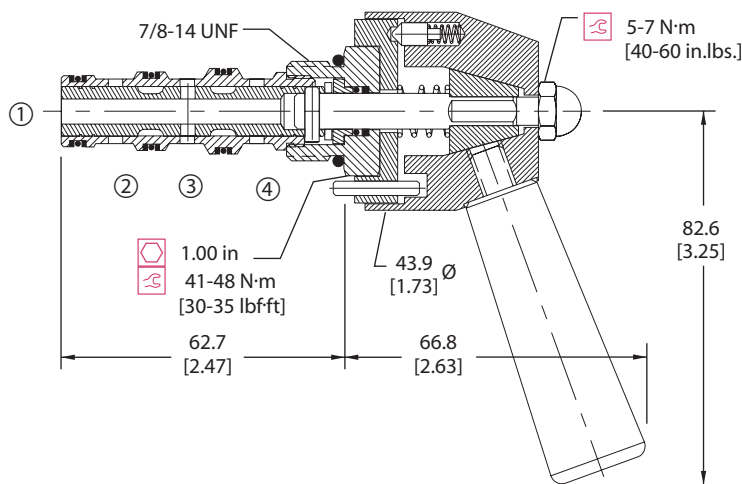
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ Rated pressure
Weight	0.35 kg [0.77 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP640 - 1 - B - 8S - 3 - 3 - D

Seals

B = Buna-N
 V = Viton

Housing and ports

0 = No Housing
 LE3B = AL, 3/8 BSP
 LE4B = AL, 1/2 BSP
 6S = AL, #6 SAE
 8S = AL, #8 SAE
 Other housings available

Seal kit

120023
 120024

Housing P/N

No Housing
 SDC10-4-L-3B
 SDC10-4-L-4B
 SDC10-4-6S
 SDC10-4-8S

Detent

D = Detent with handle
 K = Knob (not shown)
 knob is not detented

Position

2 = 2 Position detent
 3 = 3 Position detent

Spool

1 = Tandem
 2 = 2 position
 3 = All open
 4 = All closed
 5 = Motor

P102 002E

Directional control valves
 CP640-1

Cartridge Valves Technical Information

Directional Control Valves

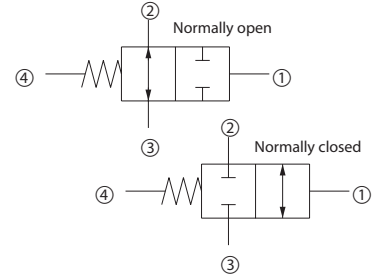
Hydraulic Piloted

CP710-8

OPERATION

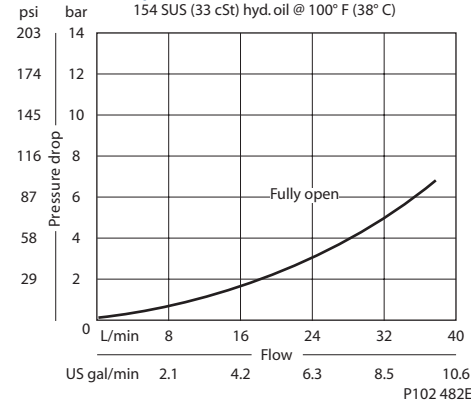
This valve is a 2-way double hydraulically piloted spool.

Schematic



SPECIFICATIONS

Theoretical performance



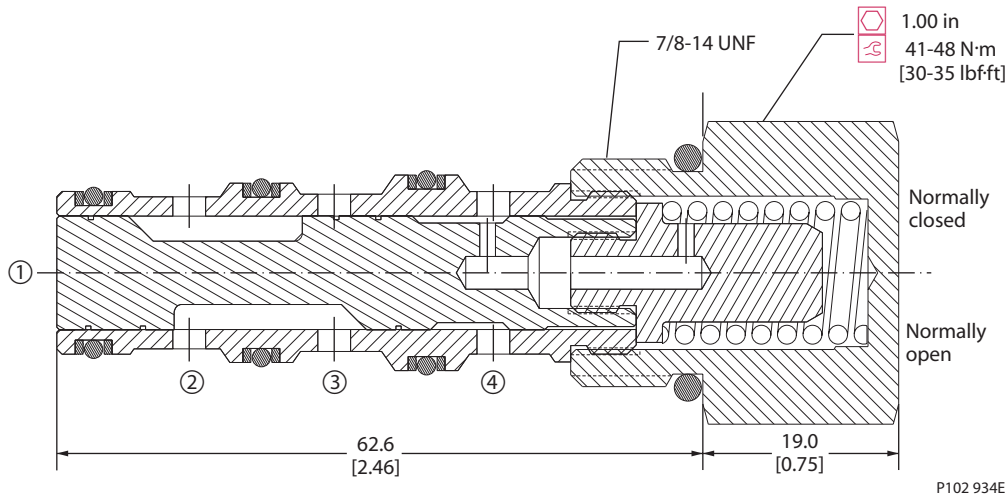
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP710 - 8 - B - 16S - C - 080

Seals		
B = Buna-N	Seal kit 120009	
V = Viton	Seal kit 120010	
Housing and ports	Housing P/N	Shift pressure
0 = No Housing	No Housing	040 = 2.8 bar [40 psi]
L3B = AL, 3/8 BSP	SDC10-4-L-3B	080 = 5.5 bar [80 psi]
L4B = AL, 1/2 BSP	SDC10-4-L-4B	150 = 10.3 bar [150 psi]
6S = AL, #6 SAE	CP10-4-6S	
8S = AL, #8 SAE	CP10-4-8S	
Other housings available		
Configuration		
O = Normally open		
C = Normally closed		

P102 935E

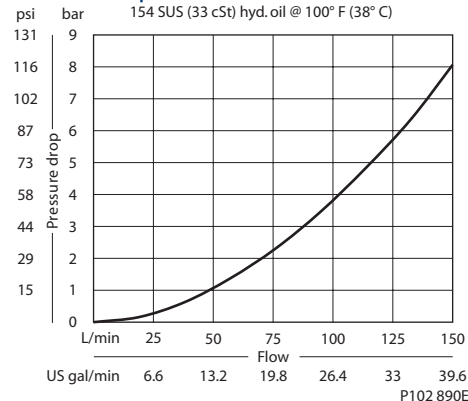
OPERATION

This valve is a 2-way double hydraulically piloted spool.

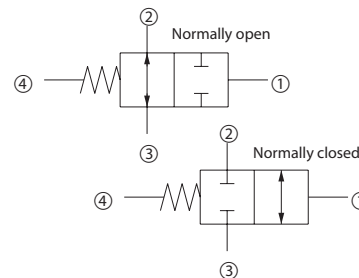
Note: Maximum pressure at port 4 is 207 bar [3000 psi].

SPECIFICATIONS

Theoretical performance



Schematic



P102 959

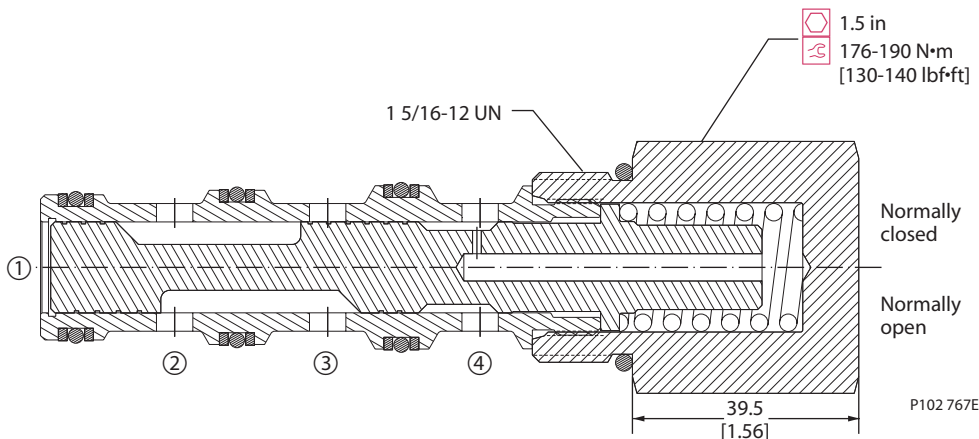
Specifications

Rated pressure	450 bar [6500 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Leakage	328 cm ³ /min [20 in ³ /min] @ 210 bar [3000 psi]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP712-11-U-0-C-040

- Shift pressure**
040 = 2.8 bar [40 psi]
080 = 5.5 bar [80 psi]
- Configuration**
O = Normally open
C = Normally closed
- Housing and ports**
0 = No Housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available
- Seals**
U = Urethane Seal kit 120677

Housing P/N
No Housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

Directional control valves
CP712-11

Cartridge Valves Technical Information

Directional Control Valves

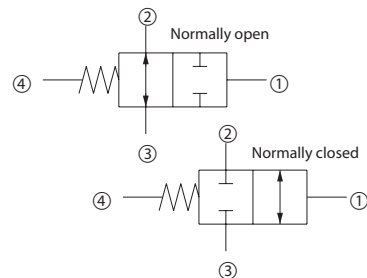
Hydraulic Piloted

CP712-8

OPERATION

This valve is a 2-way double hydraulically piloted spool.

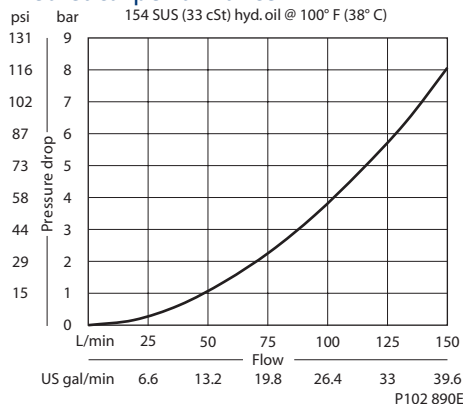
Schematic



P102 959

SPECIFICATIONS

Theoretical performance



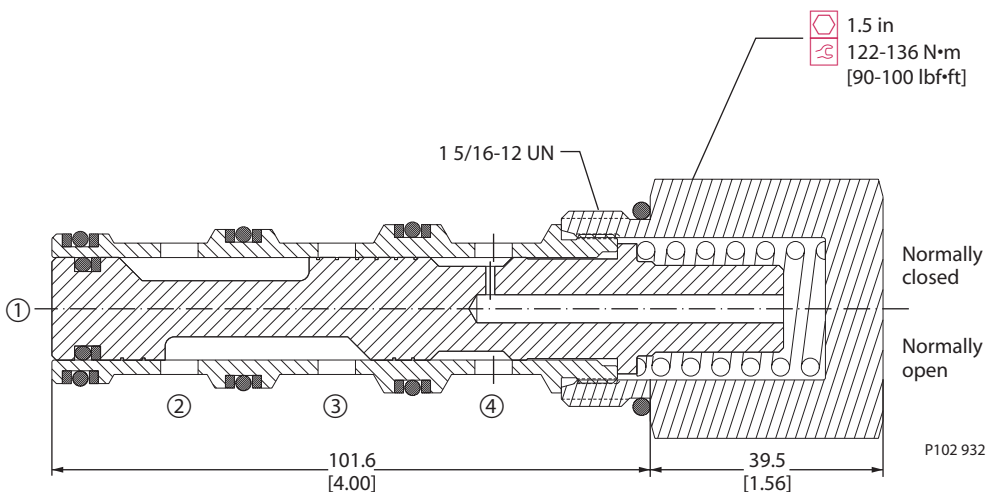
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 932

ORDERING INFORMATION

CP712 - 8 - B - 16S - C - 080 - S1

Seals

B = Buna-N
 V = Viton

Housing and ports

0 = No Housing
 6B = AL, 3/4 BSP
 8B = AL, 1 BSP
 12S = AL, #12 SAE
 16S = AL, #16 SAE
 Other housings available

Housing P/N

No Housing
 CP16-4-6B
 CP16-4-8B
 CP16-4-12S
 CP16-4-16S

Spool seal

S3 = No seal
 S4 = Seal included

Shift pressure

040 = 2.8 bar [40 psi]
 080 = 5.5 bar [80 psi]
 150 = 10.3 bar [150 psi]
 shift pressure assumes no seals

Configuration

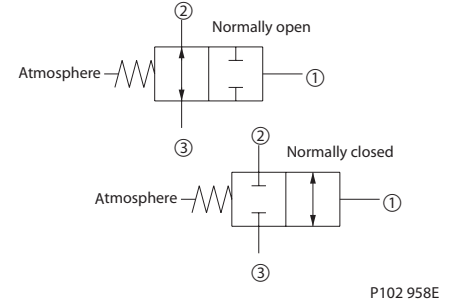
O = Normally open
 C = Normally closed

P102 933E

OPERATION

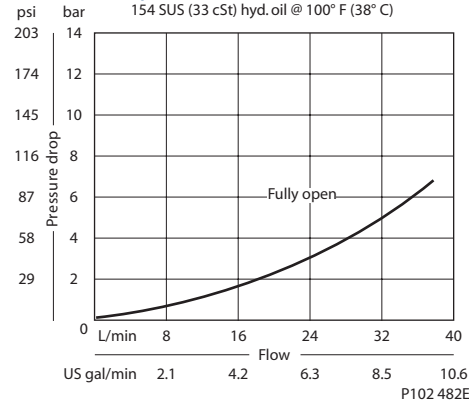
This valve is a hydraulically operated spool with atmospheric vent.

Schematic



SPECIFICATIONS

Theoretical performance



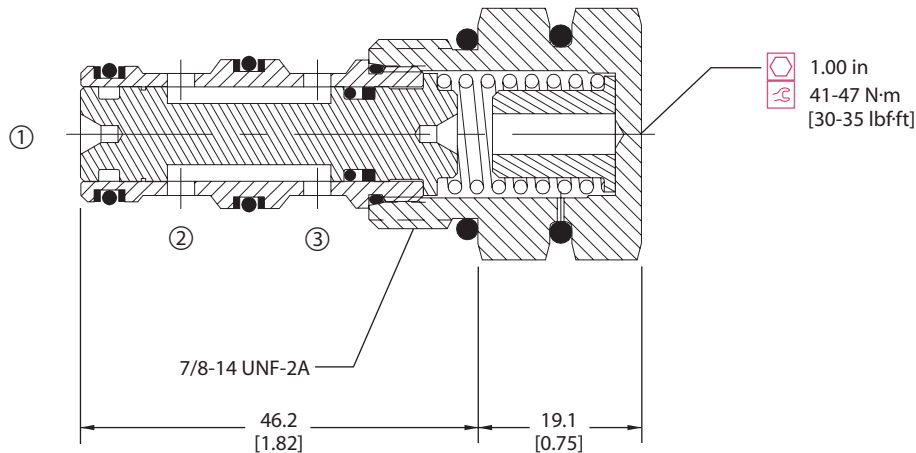
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 470E

ORDERING INFORMATION

CP710 - 1 - B - 8S - C - 150 - S1

Seals
 B = Buna-N
 V = Viton

Housing and ports
 0 = No Housing
 SE3B = AL, 3/8 BSP
 SE4B = AL, 1/2 BSP
 6S = AL, #6 SAE
 8S = AL, #8 SAE
 Other housings available

Seal kit
 120009
 120010

Housing P/N
 No Housing
 SDC10-3-SE-3B
 SDC10-3-SE-4B
 CP10-3-6S
 CP10-3-8S

Spool seals
 S1 = Seal at top of spool
 S2 = Seals at top and bottom of spool

Shift pressure
 bar [psi]
 050 = 3.5 [50]
 080 = 5.5 [80]
 150 = 10.3 [150]

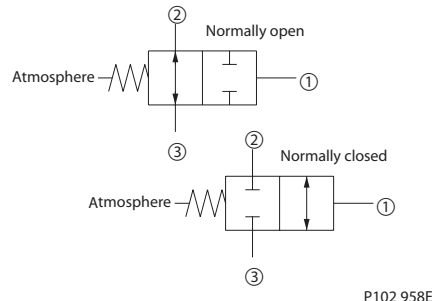
Configuration
 O = Normally open
 C = Normally closed

P102 004E

OPERATION

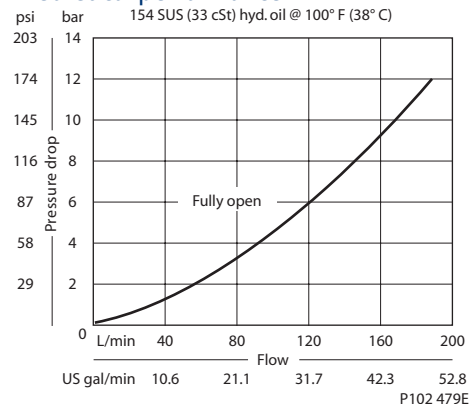
This valve is a hydraulically operated spool with atmospheric vent.

Schematic



SPECIFICATIONS

Theoretical performance



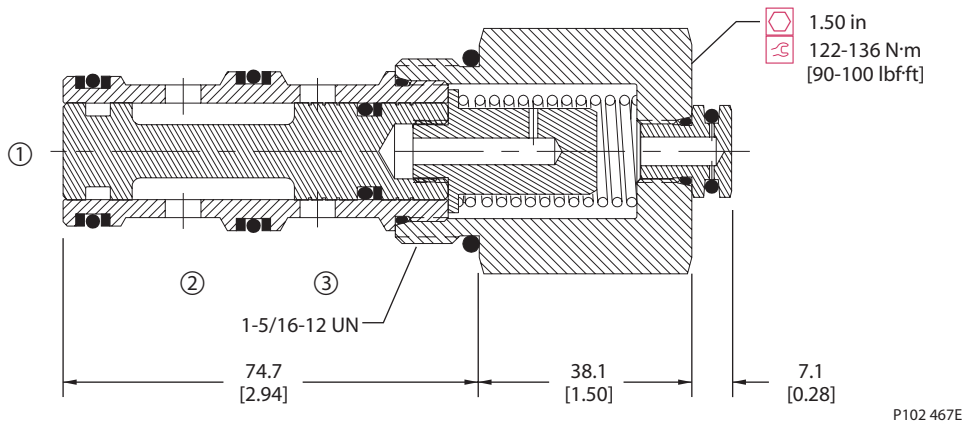
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.57 kg [1.25 lb]
Cavity	SDC16-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP712 - 1 - B - 16S - C - 080 - S1

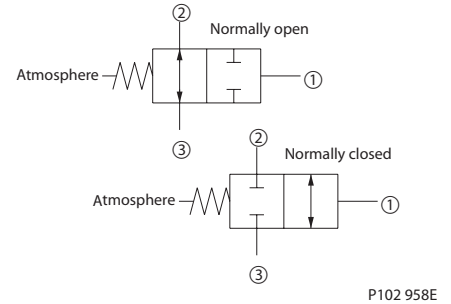
- Seals**
 - B = Buna-N
 - V = Viton
- Seal kit**
 - 120202
 - 120203
- Housing and ports**
 - 0 = No Housing
 - SE6B = AL, 3/4 BSP
 - SE8B = AL, 1 BSP
 - 12S = AL, #12 SAE
 - 16S = AL, #16 SAE
 - Other housings available
- Housing P/N**
 - No Housing
 - SDC16-3-SE-6B
 - SDC16-3-SE-8B
 - CP16-3-12S
 - CP16-3-16S
- Spool seals**
 - S1 = Seal at top of spool
 - S2 = Seals at top and bottom of spool
- Shift pressure**
 - 040 = 2.8 bar [40 psi]
 - 080 = 5.5 bar [80 psi]
 - 150 = 10.3 bar [150 psi]
- Configuration**
 - O = Normally open
 - C = Normally closed

Directional control valves
CP712-1

OPERATION

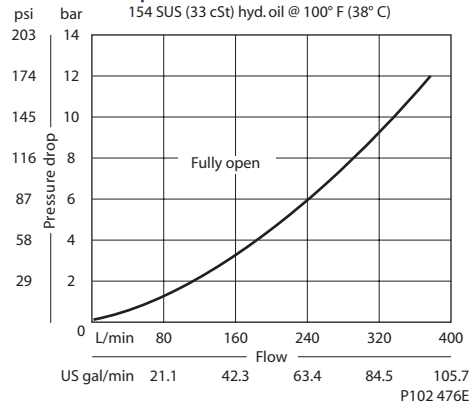
This valve is a hydraulically operated spool with atmospheric vent.

Schematic



SPECIFICATIONS

Theoretical performance



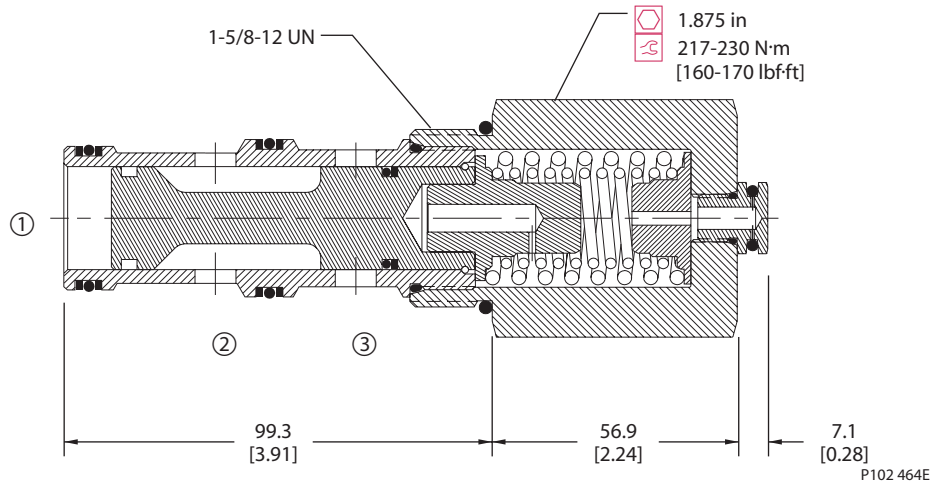
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.26 kg [2.78 lb]
Cavity	SDC20-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP713 - 1 - B - 20S - C - 150 - S1

Seals

B = Buna-N
 V = Viton

Seal kit
 120200
 120201

Housing and ports

0 = No Housing
 8B = AL, 1 BSP
 10B = AL, 1-1/4 BSP
 16S = AL, #16 SAE
 20S = AL, #20 SAE
 Other housings available

Housing P/N

No Housing
 CP20-3-8B
 CP20-3-10B
 CP20-3-16S
 CP20-3-20S

Spool seals

S1 = Seal at top of spool
 S2 = Seals at both ends of spool

Shift pressure

	bar	[psi]
050	= 3.5	[50]
080	= 5.5	[80]
100	= 6.9	[100]
130	= 9.0	[130]
150	= 10.3	[150]

Configuration

O = Normally open
 C = Normally closed

Directional control valves
 CP713-1

P102 954E

Cartridge Valves Technical Information

Directional Control Valves

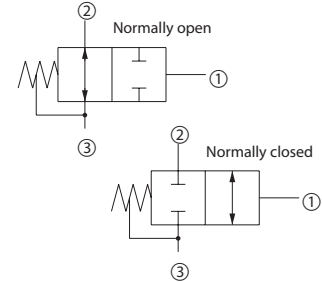
Hydraulic Piloted

CP710-3

OPERATION

This valve is a 2-way hydraulically piloted spool.

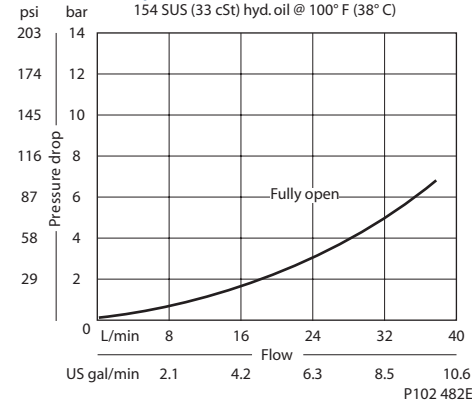
Schematic



P102 756

SPECIFICATIONS

Theoretical performance



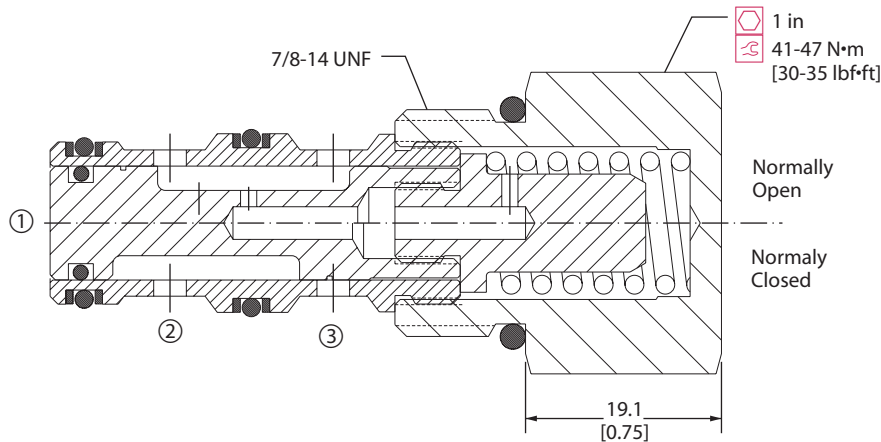
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 755

ORDERING INFORMATION

CP710 - 3 - B - 16S - C - 150 - S1

Seals

B = Buna-N
 V = Viton

Housing and ports

0 = No Housing
 SE3B = AL, 3/8 BSP
 SE4B = AL, 1/2 BSP
 6S = AL, #6 SAE
 8S = AL, #8 SAE
 Other housings available

Seal kit

120009
 120010

Housing P/N

No Housing
 SDC10-3-SE-3B
 SDC10-3-SE-4B
 CP10-3S-6S
 CP10-3S-8S

Spool seal

S3 = No seal
 S4 = With seal

Shift pressure

bar [psi]
 150 = 10.3 [150]
 shift pressure assumes no seal

Configuration

O = Normally open
 C = Normally closed

P102 754E

Cartridge Valves Technical Information

Directional Control Valves

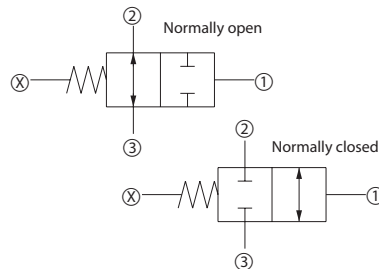
Hydraulic Piloted

CP710-2

OPERATION

This valve is a 2-way double hydraulically piloted spool.

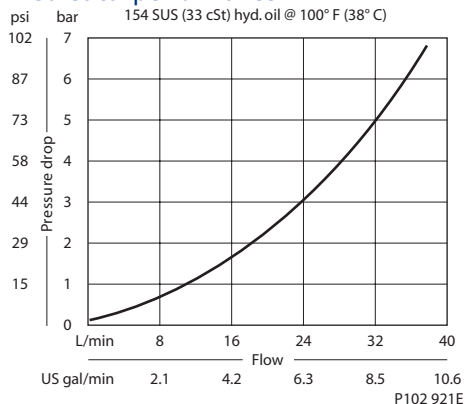
Schematic



P102 499E

SPECIFICATIONS

Theoretical performance



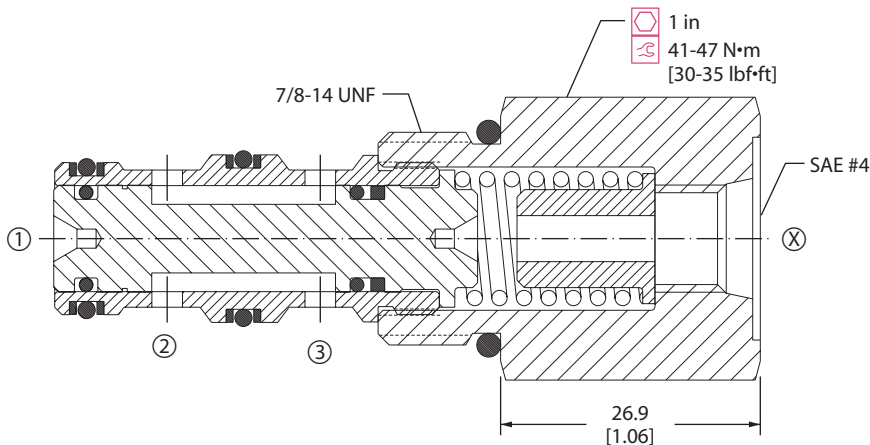
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 752

ORDERING INFORMATION

CP710 - 2 - B - 16S - C - 080 - S1

Seals
 B = Buna-N
 V = Viton

Housing and ports
 0 = No Housing
 SE3B = AL, 3/8 BSP
 SE4B = AL, 1/2 BSP
 6S = AL, #6 SAE
 8S = AL, #8 SAE
 Other housings available

Housing P/N
 No Housing
 SDC10-3-SE-3B
 SDC10-3-SE-4B
 CP10-3-6S
 CP10-3-8S

Configuration
 O = Normally open
 C = Normally closed

Spool seals
 S1 = Seal at top of spool
 S2 = Seal at top and bottom of spool
 S3 = No seals
 S4 = Seal at bottom of spool

Shift pressure

bar	[psi]
040	2.8 [40]
050	3.4 [50]
080	5.5 [80]
125	8.6 [125]
150	10.3 [150]

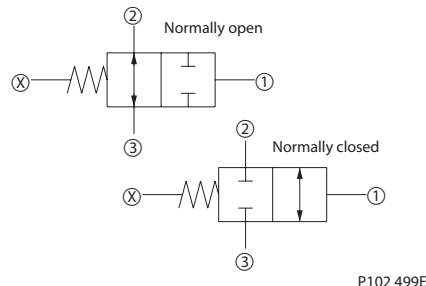
shift pressure assumes no seals

P102 753E

OPERATION

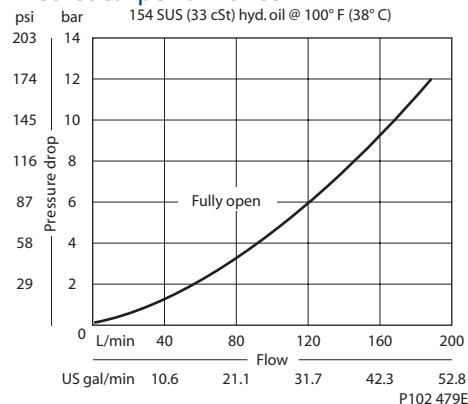
This valve is a 2-way double hydraulically piloted spool.

Schematic



SPECIFICATIONS

Theoretical performance



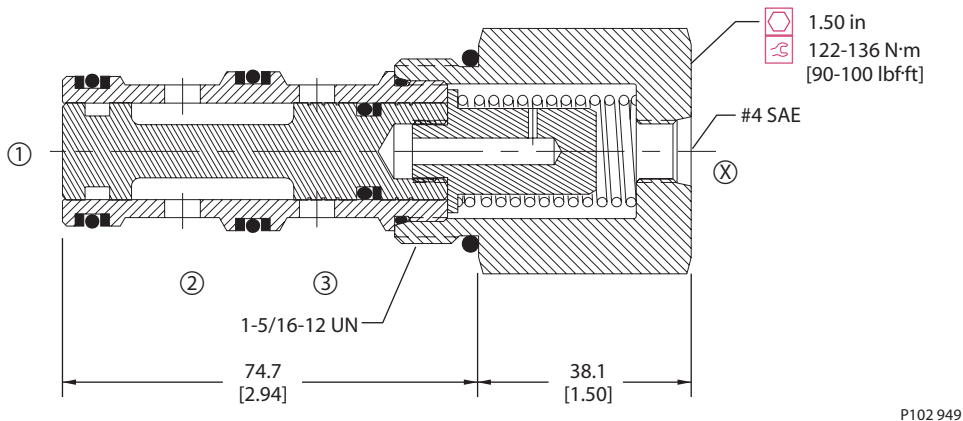
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.57 kg [1.25 lb]
Cavity	SDC16-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 949

ORDERING INFORMATION

CP712 - 2 - B - 16S - C - 080 - S1

Seals
B = Buna-N
V = Viton
Seal kit 120202
120203

Housing and ports
0 = No Housing
SE6B = AL, 3/4 BSP
SE8B = AL, 1BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N
No Housing
SDC16-3-SE-6B
SDC16-3-SE-8B
CP16-3-12S
CP16-3-16S

Spool seals
S1 = Seal at top of spool
S2 = Seals at top and bottom of spool
S3 = No seals
S4 = Seal at bottom of spool

Shift pressure
bar [psi]
040 = 2.8 [40]
080 = 5.5 [80]
150 = 10.3 [150]
shift pressure assumes no seals

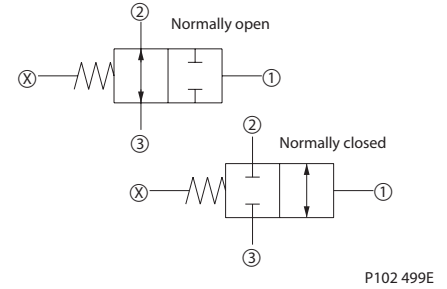
Configuration
O = Normally open
C = Normally closed

P102 007E

OPERATION

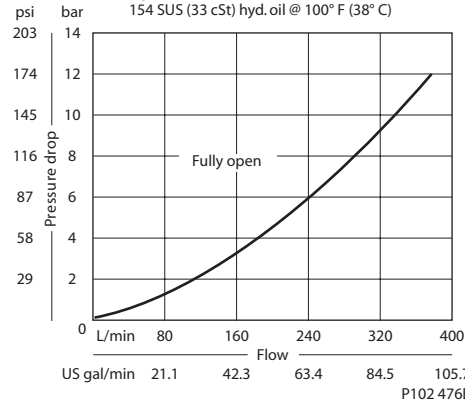
This valve is a 2-way double hydraulically piloted spool.

Schematic



SPECIFICATIONS

Theoretical performance



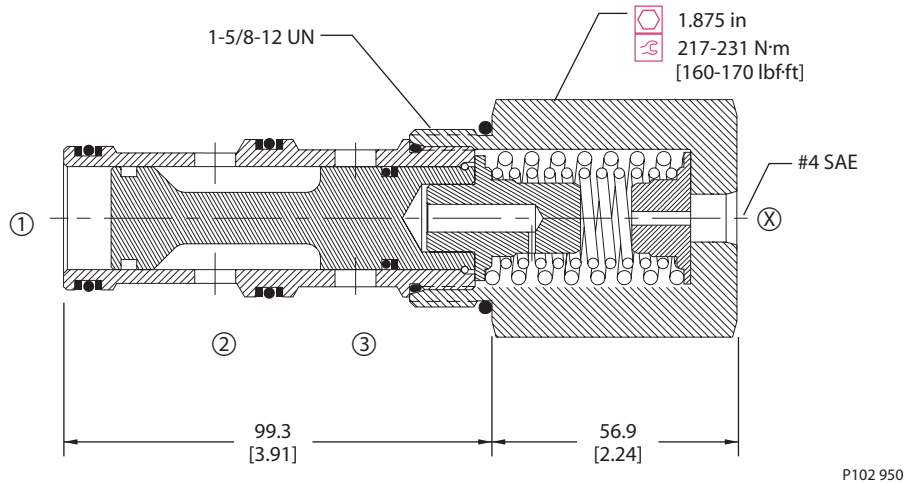
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.26 kg [2.78 lb]
Cavity	SDC20-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP713 - 2 - B - 20S - C - 150 - S1

Seals
 B = Buna-N
 V = Viton

Housing and ports
 0 = No Housing
 8B = AL, 1 BSP
 10B = AL, 1-1/4 BSP
 16S = AL, #16 SAE
 20S = AL, #20 SAE
 Other housings available

Configuration
 0 = Normally open
 C = Normally closed

Seal kit
 120200
 120201

Housing P/N
 No Housing
 CP20-3-8B
 CP20-3-10B
 CP20-3-16S
 CP20-3-20S

Spool seals
 S1 = Seal at top of spool
 S2 = Seals at top and bottom of spool
 S3 = No seals
 S4 = Seal at bottom of spool

Shift pressure

	bar	[psi]
050	3.5	[50]
080	5.5	[80]
100	6.9	[100]
130	9.0	[130]
150	10.3	[150]

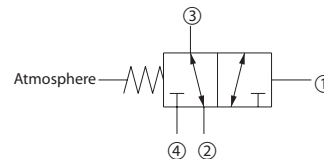
shift pressure assumes no seals

Directional control valves
 CP713-2

OPERATION

This valve is a 3-way hydraulically piloted spool with atmospheric vent.

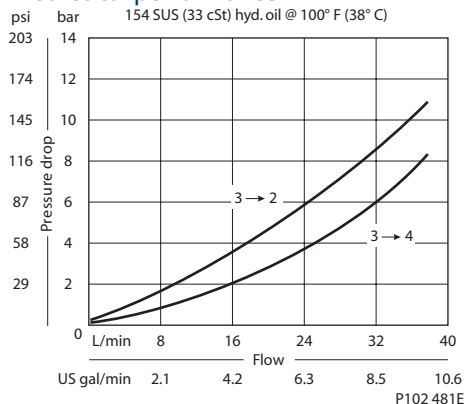
Schematic



P102 498E

SPECIFICATIONS

Theoretical performance



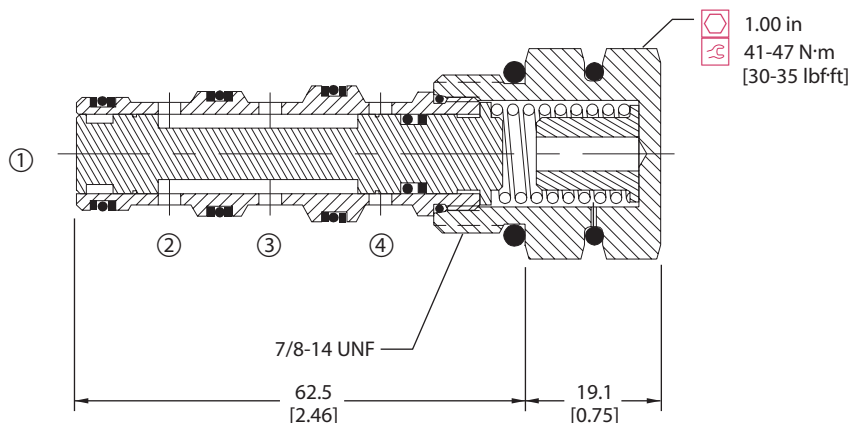
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 469E

ORDERING INFORMATION

CP720 - 1 - B - 8S - 150 - S1

Seals

B = Buna-N
V = Viton

Seal kit
120023
120024

Housing and ports

0 = No Housing
L3B = AL, 3/8 BSP
L4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-4-L-3B
SDC10-4-L-4B
CP10-4-6S
CP10-4-8S

Spool seals

S1 = Seal at top of spool
S2 = Seals at both ends of spool

Shift pressure

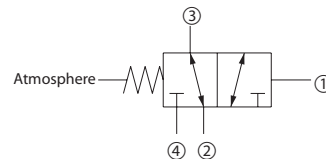
	bar	[psi]
040	2.8	[40]
050	3.5	[50]
080	5.5	[80]
125	8.6	[125]
150	10.3	[150]

P102 005E

OPERATION

This valve is a 3-way hydraulically piloted spool with atmospheric vent.

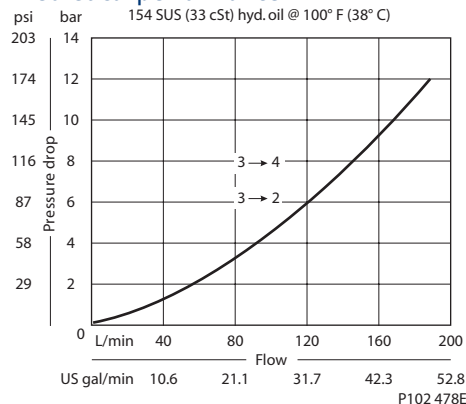
Schematic



P102 498E

SPECIFICATIONS

Theoretical performance



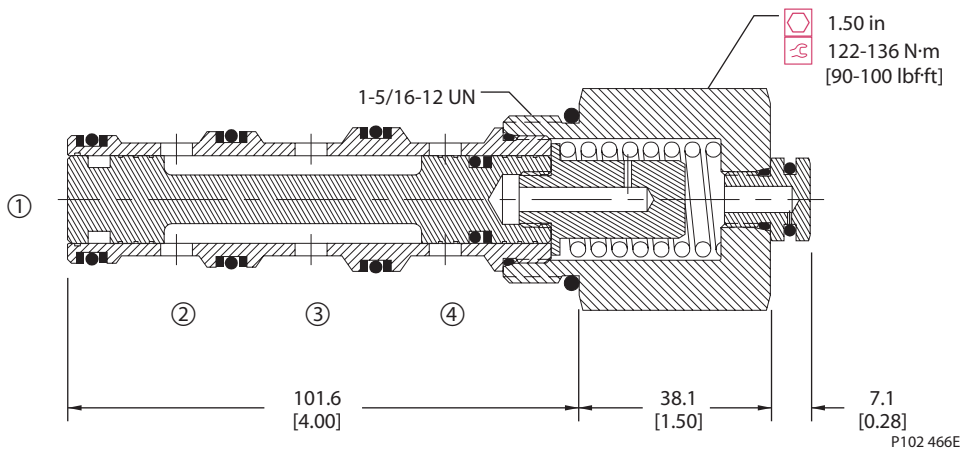
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP722 - 1 - B - 16S - 150 - S1

Seals

B = Buna-N
V = Viton

Housing and ports

0 = No Housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Seal kit
120025
120026

Housing P/N

No Housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

Spool seals

S1 = No seals
S2 = Seal at bottom of spool

Shift pressure

040 = 2.8 bar [40] psi
080 = 5.5 bar [80] psi
150 = 10.3 bar [150] psi

shift pressure assumes no seals

P102 010E

Directional control valves
CP722-1

Cartridge Valves Technical Information

Directional Control Valves

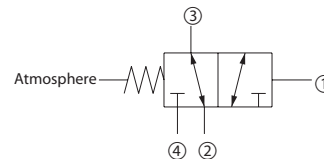
Hydraulic Piloted

CP723-1

OPERATION

This valve is a 3-way hydraulically piloted spool with atmospheric vent.

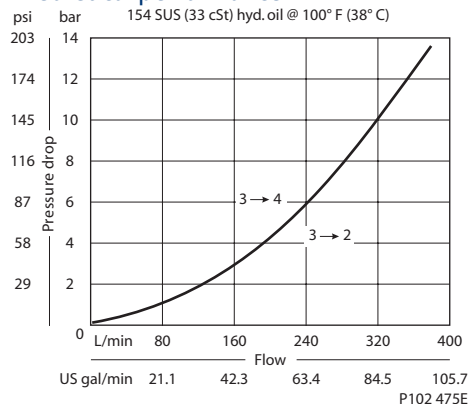
Schematic



P102 498E

SPECIFICATIONS

Theoretical performance



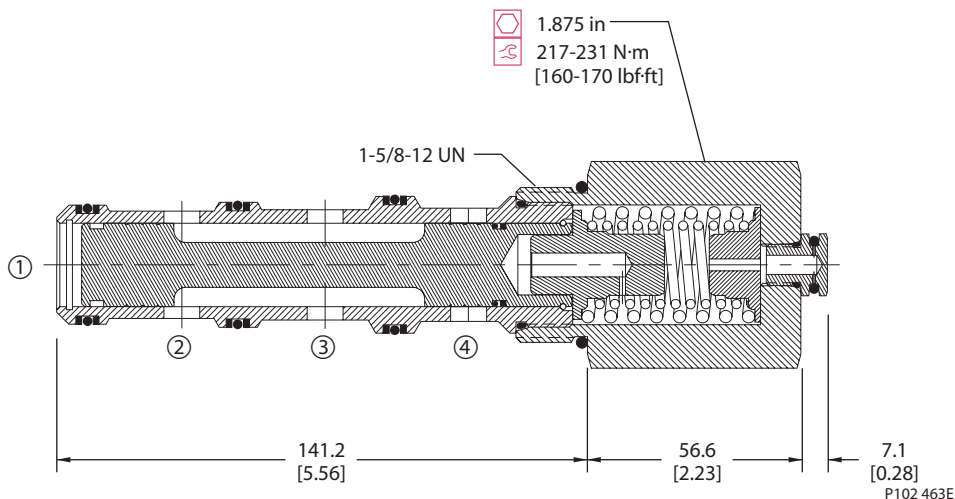
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.22 kg [2.68 lb]
Cavity	SDC20-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP723 - 1 - B - 20S - 150 - S1

Seals

B = Buna-N
V = Viton

Seal kit
120181
120182

Housing and ports

0 = No Housing
8B = AL, 1 BSP
10B = AL, 1-1/4 BSP
16S = AL, #16 SAE
20S = AL, #20 SAE
Other housings available

Housing P/N

No Housing
CP20-4-8B
CP20-4-10B
CP20-4-16S
CP20-4-20S

Spool seals

S1 = Seal at top of spool (required)
S2 = Seals at both ends of spool

Shift pressure

Shift pressure (bar)	Shift pressure (psi)
050	3.5 [50]
080	5.5 [80]
100	6.9 [100]
130	9.0 [130]
150	10.3 [150]

P102 015E

Cartridge Valves Technical Information

Directional Control Valves

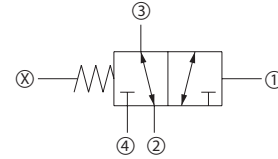
Hydraulic Piloted

CP720-2

OPERATION

This valve is a 3-way double hydraulically piloted spool.

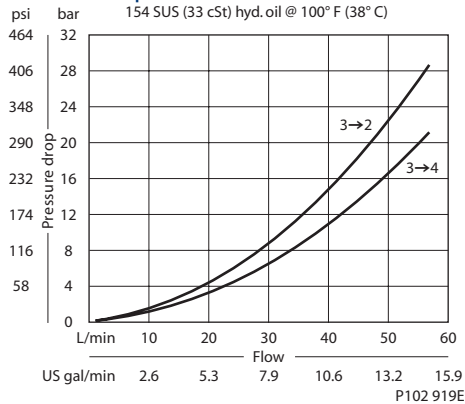
Schematic



P102 938E

SPECIFICATIONS

Theoretical performance



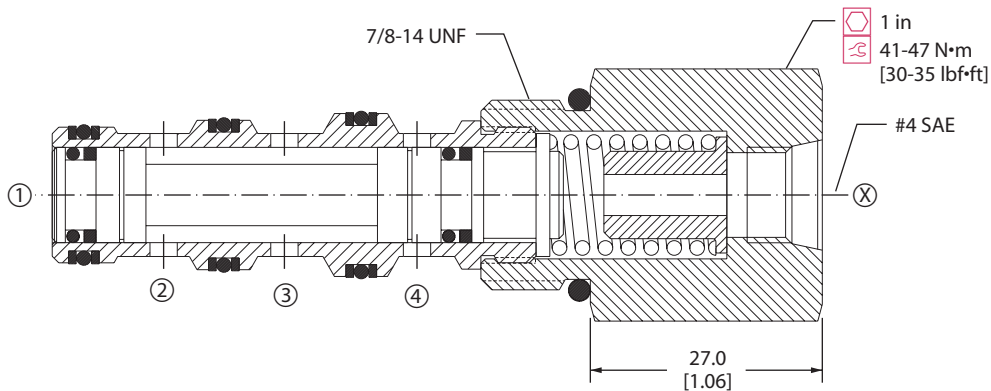
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 758

ORDERING INFORMATION

CP720 - 2 - B - 4S - 150 - S1

Seals	Seal kit	Spool seals
B = Buna-N	120200	S1=Seal at top of spool
V = Viton	120201	S2=Seals at both ends of spool
		S3= No seal
		S4= Seals at bottom of spool
Housing and ports	Housing P/N	Shift pressure
0 = No Housing	No Housing	040 = 2.8 [40]
L3B = AL, 3/8 BSP	SDC10-4-L-3B	050 = 3.5 [50]
L4B = AL, 1/2 BSP	SDC10-4-L-4B	080 = 5.5 [80]
6S = AL, #6 SAE	CP10-4-6S	125 = 8.6 [125]
8S = AL, #8 SAE	CP10-4-8S	150 = 10.3 [150]
Other housings available		shift pressure assumes no seals

P102 759E

Cartridge Valves Technical Information

Directional Control Valves

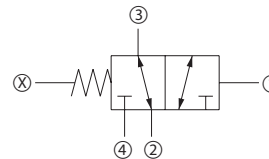
Hydraulic Piloted

CP722-2

OPERATION

This valve is a 3-way double hydraulically piloted spool.

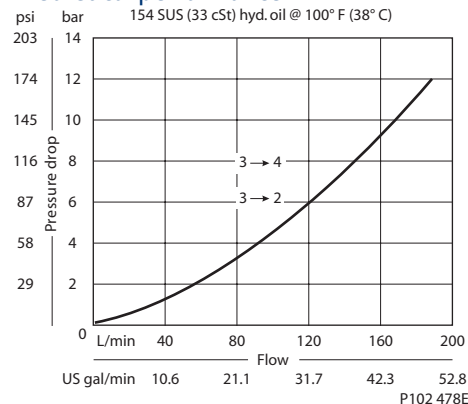
Schematic



P102 938E

SPECIFICATIONS

Theoretical performance



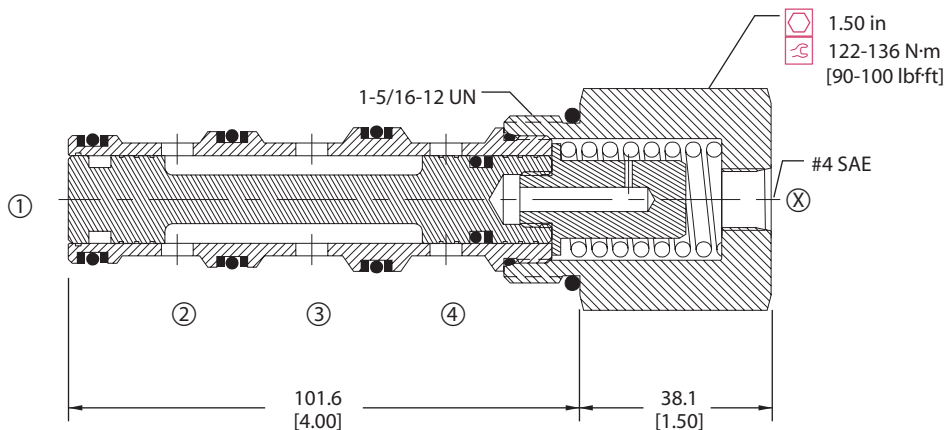
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 951

ORDERING INFORMATION

CP722 - 2 - B - 16S - 150 - S1

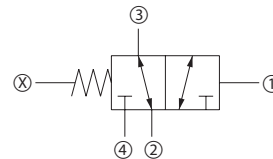
Seals		Seal kit		Spool seals	
B = Buna-N		120025		S1 = Seal at top of spool	
V = Viton		120026		S2 = Seals at both ends of spool	
				S3 = No seals	
				S4 = Seal at bottom of spool	
Housing and ports		Housing P/N		Shift pressure	
0 = No Housing		No Housing		bar [psi]	
6B = AL, 3/4 BSP		CP16-4-6B		040 = 2.8 [40]	
8B = AL, 1 BSP		CP16-4-8B		080 = 5.5 [80]	
12S = AL, #12 SAE		CP16-4-12S		150 = 10.3 [150]	
16S = AL, #16 SAE		CP16-4-16S		shift pressure assumes no seals	
Other housings available					

P102 955E

OPERATION

This valve is a 3-way double hydraulically piloted spool.

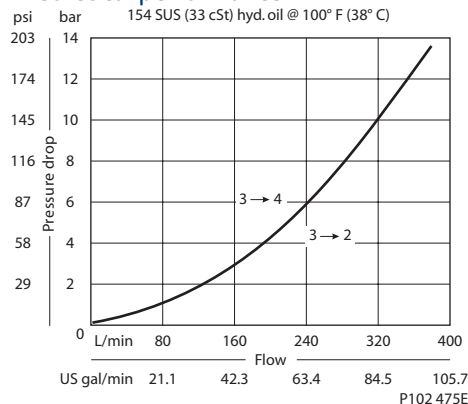
Schematic



P102 938E

SPECIFICATIONS

Theoretical performance



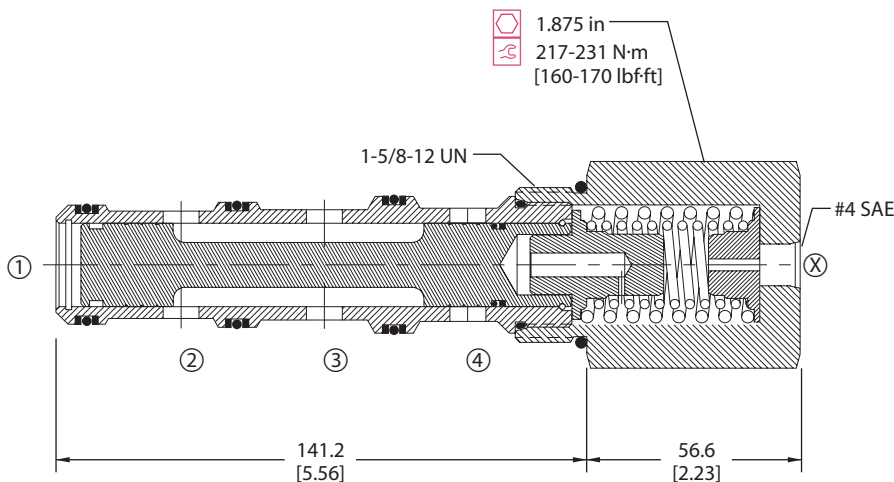
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.22 kg [2.68 lb]
Cavity	SDC20-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 952

ORDERING INFORMATION

CP723 - 2 - B - 20S - 150 - S1

Seals

B = Buna-N
V = Viton

Housing and ports

0 = No Housing
8B = AL, 1 BSP
10B = AL, 1-1/4 BSP
16S = AL, #16 SAE
20S = AL, #20 SAE
Other housings available

Seal kit
120181
120182

Housing P/N

No Housing
CP20-4-8B
CP20-4-10B
CP20-4-16S
CP20-4-20S

Spool seals

S1 = Seal at top of spool
S2 = Seals at top and bottom of spool
S3 = No seals
S4 = Seal at bottom of spool

Shift pressure

	bar	[psi]
050	= 3.5	[50]
080	= 5.5	[80]
100	= 6.9	[100]
130	= 9.0	[130]
150	= 10.3	[150]

shift pressure assumes no seals

P102 956E

Directional control valves
CP723-2

Cartridge Valves Technical Information

Directional Control Valves

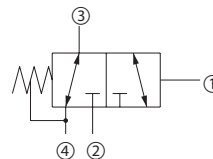
Hydraulic Piloted

CP720-5

OPERATION

This valve is a 3-way hydraulically piloted spool.

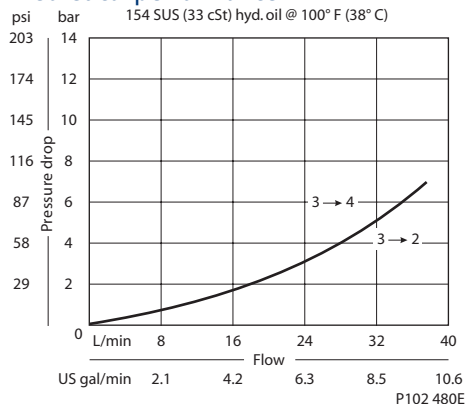
Schematic



P102 500E

SPECIFICATIONS

Theoretical performance



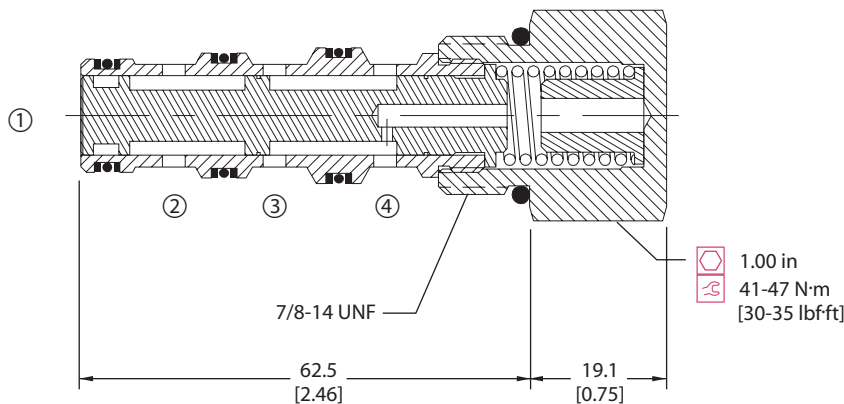
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP720 - 5 - B - 8S - 150 - S3

Seals

B = Buna-N
V = Viton

Housing and ports

0 = No Housing
L3B = AL, 3/8 BSP
L4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-4-L-3B
SDC10-4-L-4B
CP10-4-6S
CP10-4-8S

Spool seals

S3 = No seal
S4 = Seal at bottom of spool

Shift pressure

Shift pressure (bar)	Shift pressure (psi)
050	3.5 [50]
080	5.5 [80]
125	8.6 [125]
150	10.3 [150]

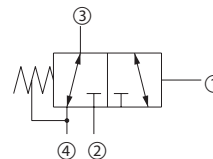
shift pressure assumes no seals

P102 006E

OPERATION

This valve is a 3-way hydraulically-piloted spool.

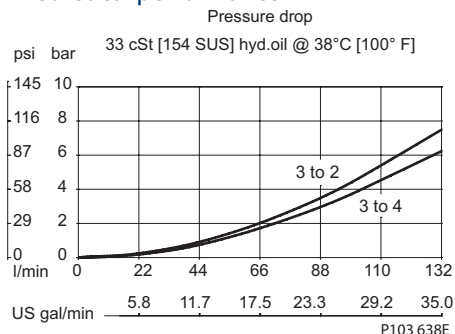
Schematic



P102 500E

SPECIFICATIONS

Theoretical performance



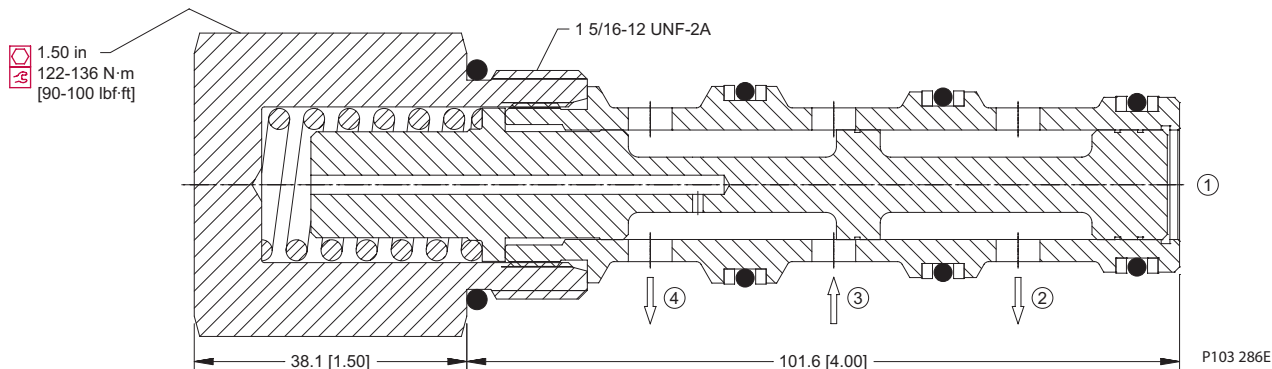
Specifications

Rated pressure	450 bar [6500 psi]
Rated flow at 7 bar [100 psi]	125 l/min [33 US gal/min]
Leakage	164 cm ³ /min [10 in ³ /min] @ Oil temperature range -20° to 80°C [-4° to 180°F]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP722-11-U-6B-040

Seals	Seal kit U = Urethane 120677	Shift pressure bar [psi] 040 = 2.8 40 080 = 5.5 80
Housing and ports	Housing P/N	
0 = No Housing	No Housing	
6B = AL, 3/4 BSP	CP16-4-6B	
8B = AL, 1 BSP	CP16-4-8B	
12S = AL, #12 SAE	CP16-4-12S	
16S = AL, #16 SAE	CP16-4-16S	
Other housings available		

P103 287E

Directional control valves
CP722-11

Cartridge Valves Technical Information

Directional Control Valves

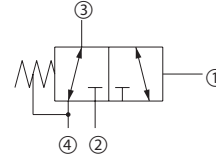
Hydraulic Piloted

CP722-5

OPERATION

This valve is a 3-way hydraulically piloted spool.

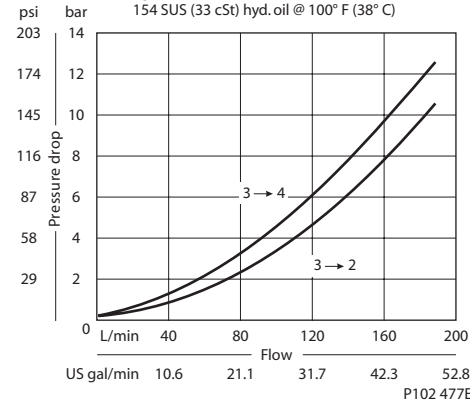
Schematic



P102 500E

SPECIFICATIONS

Theoretical performance



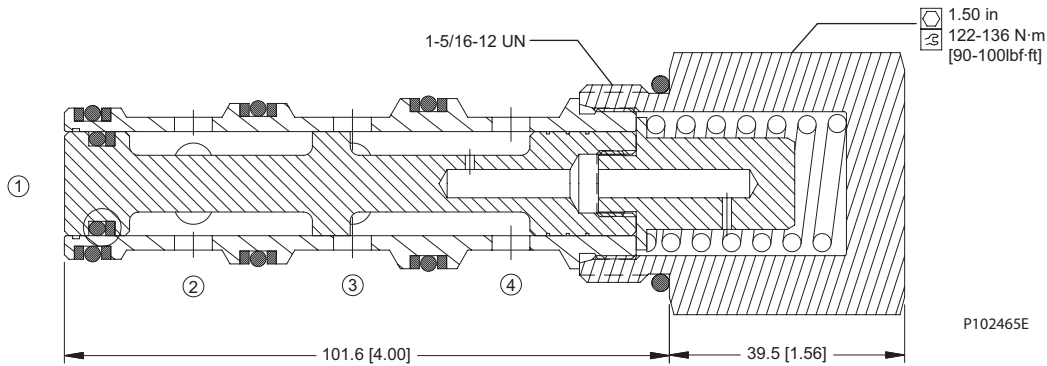
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP722 - 5 - B - 16S - 150 - S3

Seals

B = Buna-N
V = Viton

Seal kit
120025
120026

Housing and ports

0 = No Housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N

No Housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

Spool seals

S3 = No seal
S4 = Seal at bottom of spool

Shift pressure

	bar	[psi]
040	= 2.8	[40]
080	= 5.5	[80]
150	= 10.3	[150]

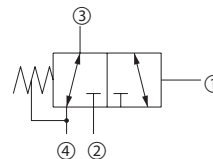
shift pressure assumes no seals

P102 013E

OPERATION

This valve is a 3-way hydraulically piloted spool.

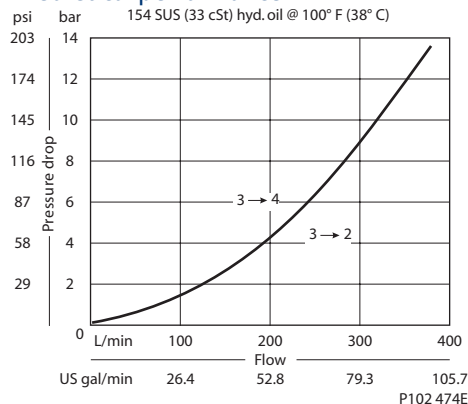
Schematic



P102 500E

SPECIFICATIONS

Theoretical performance



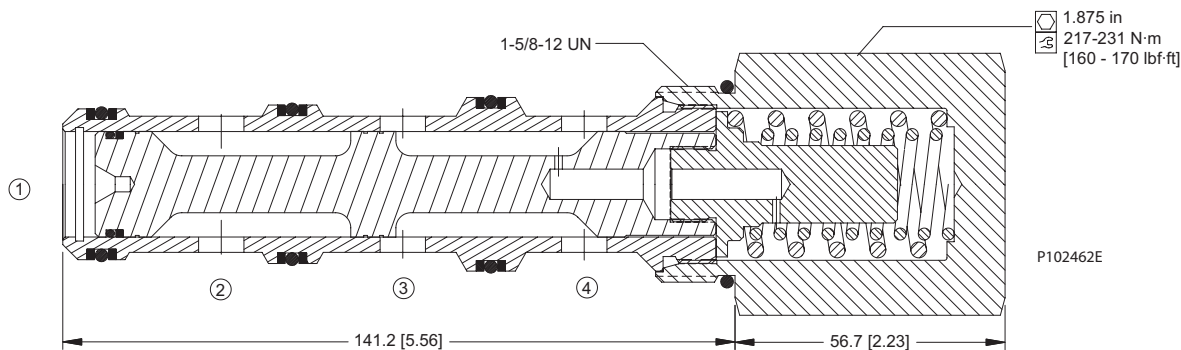
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.22 kg [2.68 lb]
Cavity	SDC20-4

DIMENSIONS

mm [in]

Cross-sectional view



Directional control valves
CP723-5

ORDERING INFORMATION

CP723 - 5 - B - 20S - 150 - S3

Seals

B = Buna-N
V = Viton

Seal kit

120181
120182

Housing and ports

00 = No Housing
8B = AL, 1 BSP
10B = AL, 1-1/4 BSP
16S = AL, #16 SAE
20S = AL, #20 SAE
Other housings available

Housing P/N

No Housing
CP20-4-8B
CP20-4-10B
CP20-4-16S
CP20-4-20S

Spool seals

S3 = No seal
S4 = Seal at bottom of spool

Shift pressure

bar	[psi]
050	3.5 [50]
080	5.5 [80]
100	6.9 [100]
130	9.0 [130]
150	10.3 [150]

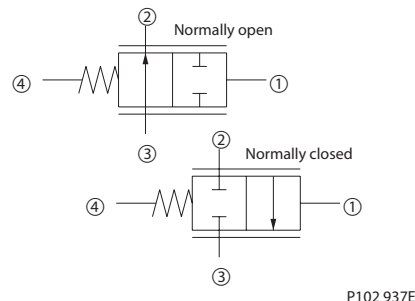
shift pressure assumes no seals

P102 018E

OPERATION

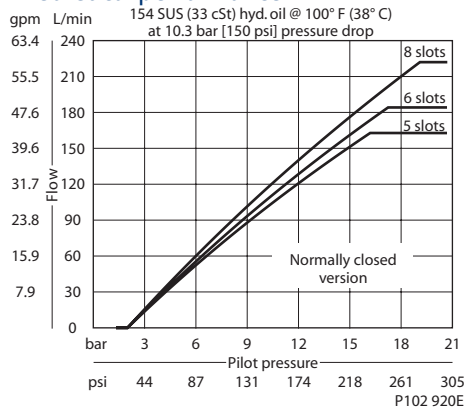
This valve is a hydraulically piloted proportional flow control.

Schematic



SPECIFICATIONS

Theoretical performance



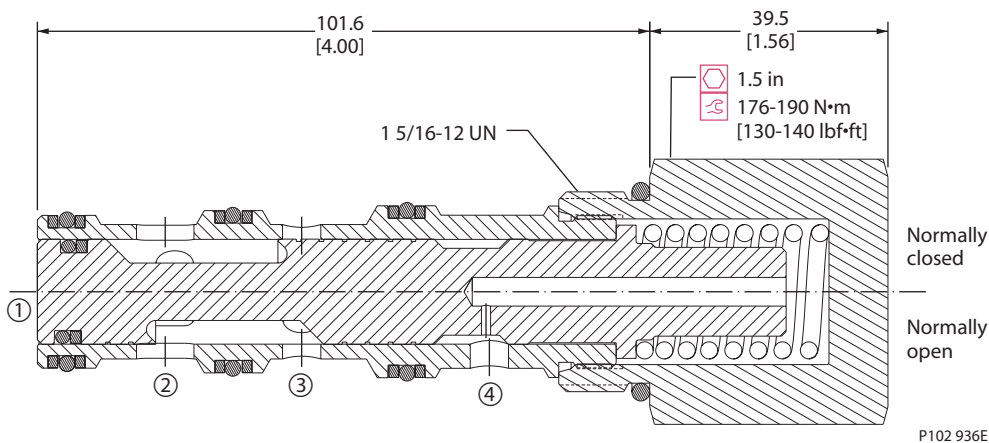
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 10 bar [150 psi]	220 l/min [58 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP712-7-B-12S-C-5-S4

Spool seal

S3 = No spool seal
S4 = With spool seal

Spool configuration

C = Normally closed
O = Normally open

Sleeve option

5 = 5 slots
6 = 6 slots
8 = 8 slots

Seals

B = Buna-N
V = Viton

Seal kit
120025
120026

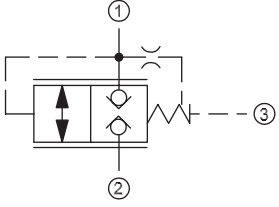
Housing and ports

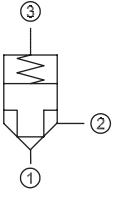
0 = No Housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

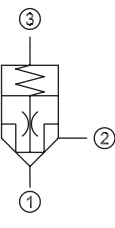
Housing P/N

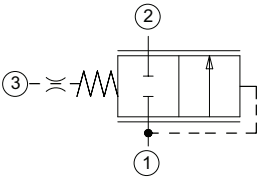
No Housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

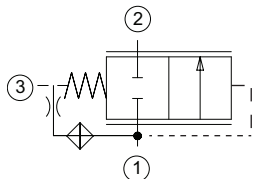
P102 894E

Logic Element, Poppet Type	Model No.	Cavity	Description	Flow*	Pressure	Page
	VLP 12/P2	NCS12/3	Logic Element Poppet, Double Blocking Closed, Vent to Open	160 l/min [42 US gal/min]	315 bar [4500 psi]	13.10

Logic Element, Poppet Type	Model No.	Cavity	Description	Flow*	Pressure	Page
	VLP 12/A5	NCS12/3	Logic Element Poppet, Normally Closed, Pilot to Close	160 l/min [42 US gal/min]	315 bar [4500 psi]	13.11

Logic Element, Poppet Type	Model No.	Cavity	Description	Flow*	Pressure	Page
	VLP 12/C2	NCS12/3	Logic Element Poppet, Normally Closed, Vent to Open	160 l/min [42 US gal/min]	315 bar [4500 psi]	13.12

Logic Element, Spool Type	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP700-1	SDC10-3	Logic Element, Normally Closed, Pilot to Close	50 l/min [13 US gal/min]	210 bar [3000 psi]	13.13
	CP701-1	CP12-3S		150 l/min [40 US gal/min]	210 bar [3000 psi]	13.14
	CP702-1	SDC16-3S		190 l/min [50 US gal/min]	210 bar [3000 psi]	13.15
	LE20-CPC	CP20-3S		320 l/min [85 US gal/min]	207 bar [3000 psi]	13.16

Logic Element, Spool Type	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP700-2	SDC10-3	Logic Element, Normally Closed, Vent to Open	50 l/min [13 US gal/min]	210 bar [3000 psi]	13.17
	CP701-2	CP12-3S		150 l/min [40 US gal/min]	210 bar [3000 psi]	13.18
	CP702-2	SDC16-3S		190 l/min [50 US gal/min]	210 bar [3000 psi]	13.19
	CP703-2	CP20-3S		320 l/min [85 US gal/min]	210 bar [3000 psi]	13.20

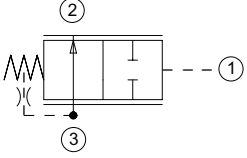
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

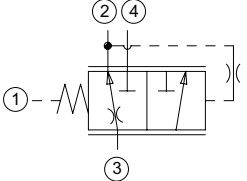
Logic Element, Spool Type	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP700-4	SDC10-3	Logic Element, Normally Open,	40 l/min [11 US gal/min]	210 bar [3000 psi]	13.21
	CP701-4	CP12-3S	Pilot to Open	75 l/min [20 US gal/min]	210 bar [3000 psi]	13.22
	CP702-4	SDC16-3S		114 l/min [30 US gal/min]	210 bar [3000 psi]	13.23
	CP703-4	CP20-3S		200 l/min [53 US gal/min]	210 bar [3000 psi]	13.24

Logic Element, Spool Type	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP700-3	SDC10-3	Logic Element, Normally Open,	40 l/min [11 US gal/min]	210 bar [3000 psi]	13.25
	CP701-3	CP12-3S	Vent to Close	80 l/min [21 US gal/min]	210 bar [3000 psi]	13.26
	CP702-3	SDC16-3S		115 l/min [30 US gal/min]	210 bar [3000 psi]	13.27

Pressure Compensator	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP310-4	SDC10-4	Pressure Compensator, Flow Control,	40 l/min [11 US gal/min]	210 bar [3000 psi]	13.28
	CP311-4	CP12-4	Priority	60 l/min [16 US gal/min]	210 bar [3000 psi]	13.29
	CP312-4	CP16-4		130 l/min [34 US gal/min]	210 bar [3000 psi]	13.30
	CP313-4	SDC20-4		340 l/min [90 US gal/min]	210 bar [3000 psi]	13.31

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Pressure Compensator	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP300-4	SDC10-3	Pressure Compensator, Flow Control, Restrictive	40 l/min [11 US gal/min]	210 bar [3000 psi]	13.32
	CP301-4	CP12-3		90 l/min [24 US gal/min]	210 bar [3000 psi]	13.33
	CP302-4	SDC16-3		130 l/min [34 US gal/min]	210 bar [3000 psi]	13.34
	CP303-4	SDC20-3		284 l/min [75 US gal/min]	210 bar [3045 psi]	13.35

Pressure Compensator	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP310-6	SDC10-4	Pressure Compensator, Load Sense, Priority, Static	40 l/min [11 US gal/min]	210 bar [3000 psi]	13.36
	PC12-LPS	CP12-4		75 l/min [20 US gal/min]	207 bar [3000 psi]	13.39
	CP312-6	CP16-4		125 l/min [33 US gal/min]	210 bar [3000 psi]	13.37
	CP313-6	SDC20-4		200 l/min [53 US gal/min]	210 bar [3000 psi]	13.38

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

OVERVIEW

Logic elements are multi-purpose devices. These valves, when used with other cartridge valves, can create a wide variety of circuits for control of pressure, flow, and direction.

Differential sensing valves

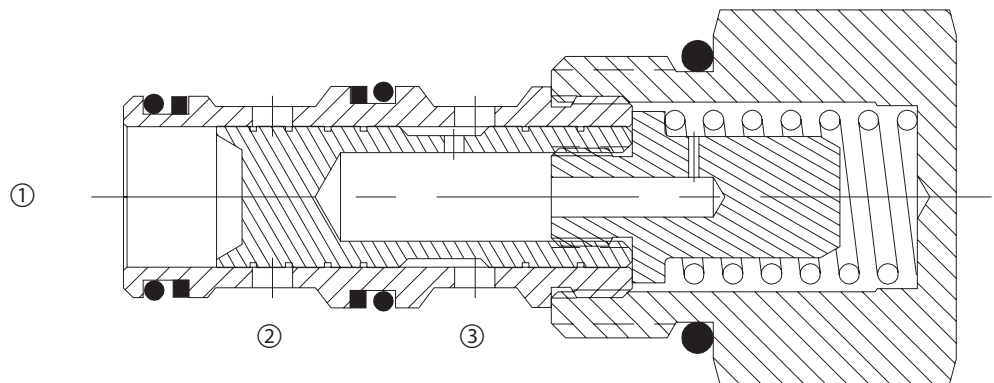


F102 006

**SPRING BIASED,
 NORMALLY CLOSED,
 DIFFERENTIAL SENSING
 VALVES**

Spring-biased, normally-closed differential sensing valves include: CP700-1, CP701-1, and CP702-1. These valves are normally closed and will modulate based on the spring control pressure, inlet pressure at port , and pilot pressure at port .

Spring biased, normally closed, differential sensing valve cross section



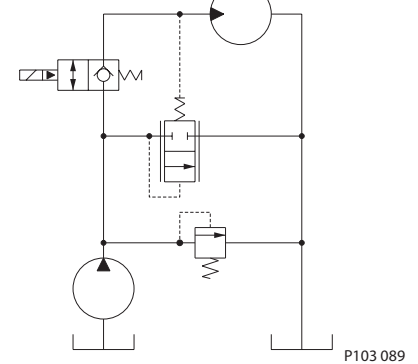
P103 088

**SPRING BIASED,
 NORMALLY CLOSED,
 DIFFERENTIAL SENSING
 VALVES
 (continued)**

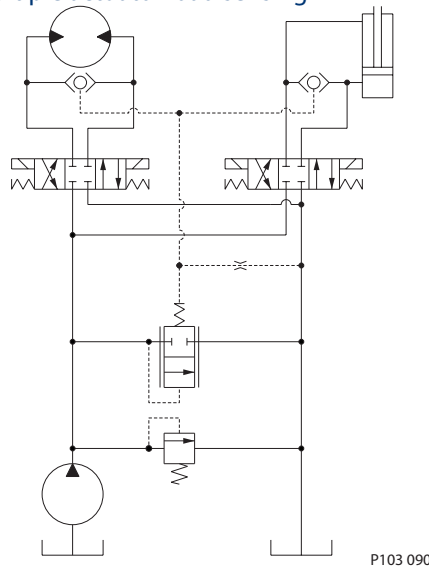
Common applications

- Load-sensing for a fixed-displacement pump with single or multiple actuators.
- Bypass-type pressure-compensated flow control.

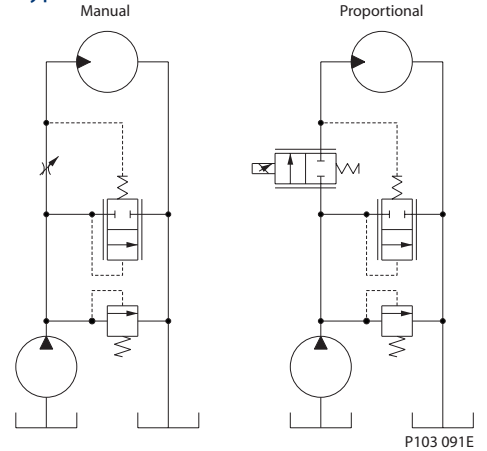
Single actuator load sensing



Multiple actuator load sensing



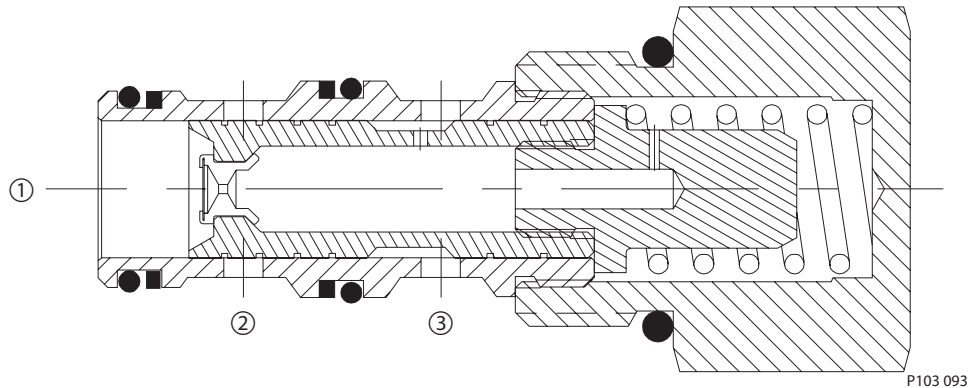
Bypass flow control



**SPRING BIASED,
 NORMALLY CLOSED,
 VENT TO OPEN
 DIFFERENTIAL SENSING
 VALVES**

Spring-biased, normally-closed, vent-to-open differential sensing valves include: CP700-2, CP701-2, and CP702-2. These valves are normally closed and will modulate based on the spring control pressure, inlet pressure at port , and pilot pressure at port .

Spring biased, normally closed, vent to open differential sensing valve

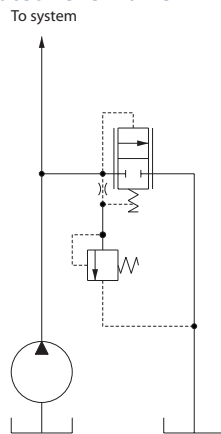


P103 093

Common applications include:

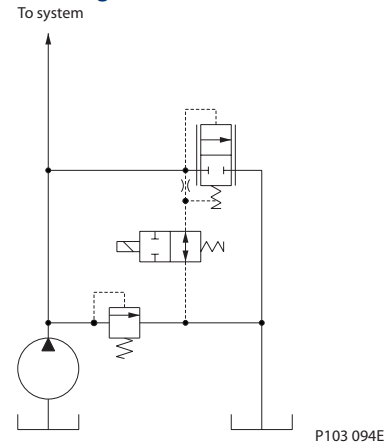
- Pump unloading.
- Pilot-operated relief valve.
- Sequence valve.
- Selector circuit.

Pilot-operated relief valve



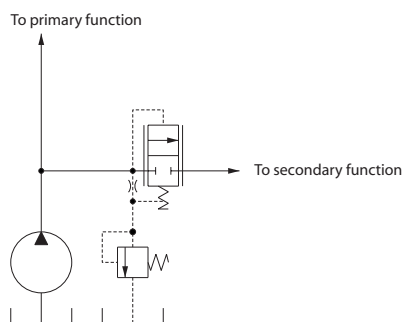
P103 095E

Pump unloading



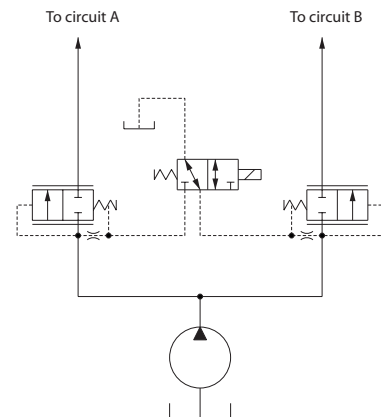
P103 094E

Pilot-operated sequence valve



P103 096E

Selector valve

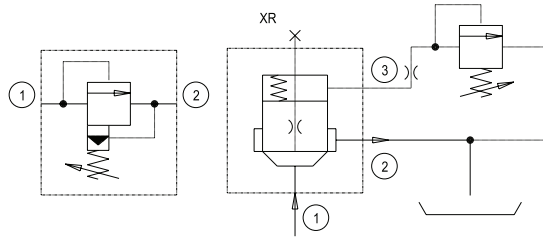


P103 097E

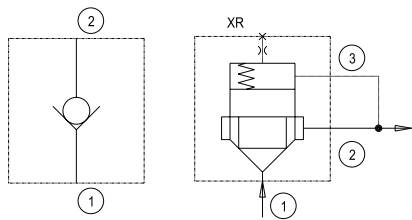
**LOGIC ELEMENT
 POPPET-TYPE
 CIRCUIT EXAMPLES**

Poppet-type logic elements provide a multitude of hydraulic circuit options, as illustrated in the circuit examples below. These poppet designs provide low-leakage and are commonly piloted, to provide the needed functionality, as a pressure relief, check valve, directional valve, or flow control.

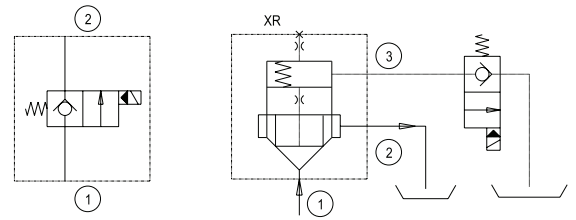
PRESSURE RELIEF VALVE VLP /P2



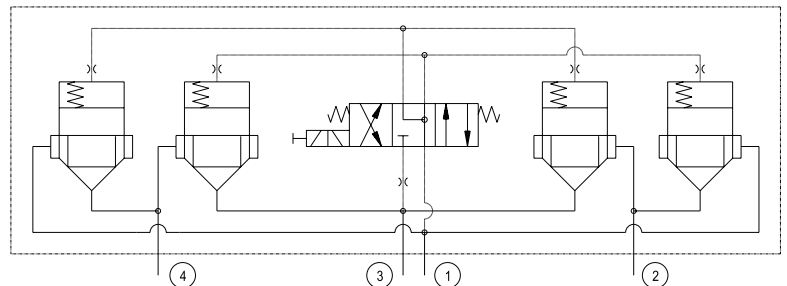
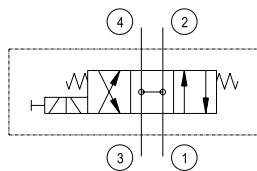
CHECK VALVE VLP /A5



DIRECTIONAL VALVE VLP /C2

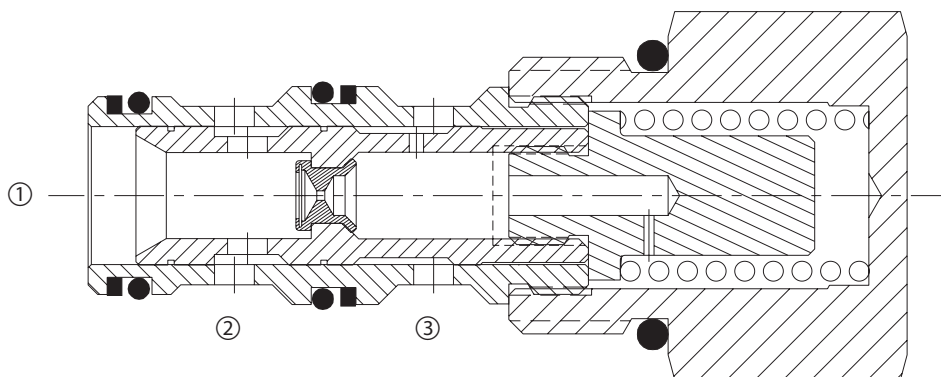
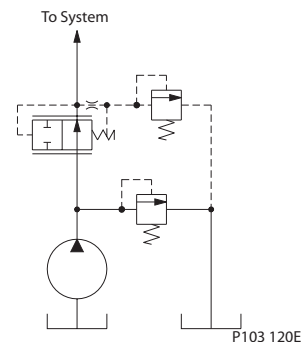


4-3 WAY ON-OFF VALVES VLP/A5



**SPRING BIASED,
 NORMALLY OPEN, VENT
 TO CLOSE, DIFFERENTIAL**

Spring-biased, normally-open, vent-to-close differential sensing valves include: CP700-3, CP701-3, and CP702-3. These valves are normally open and will modulate based on spring control pressure, outlet pressure at port , and pilot pressure at port . One application for this valve is to create a high-flow pressure reducing valve when using a small relief valve (like CP208-1), or a proportional relief valve (like CP558-20) as a pilot element.

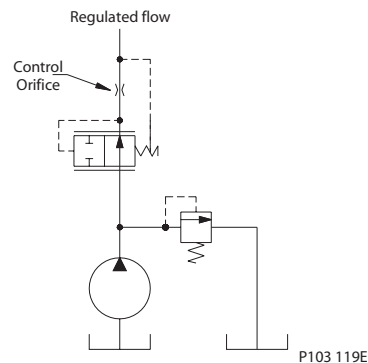


Pressure compensator

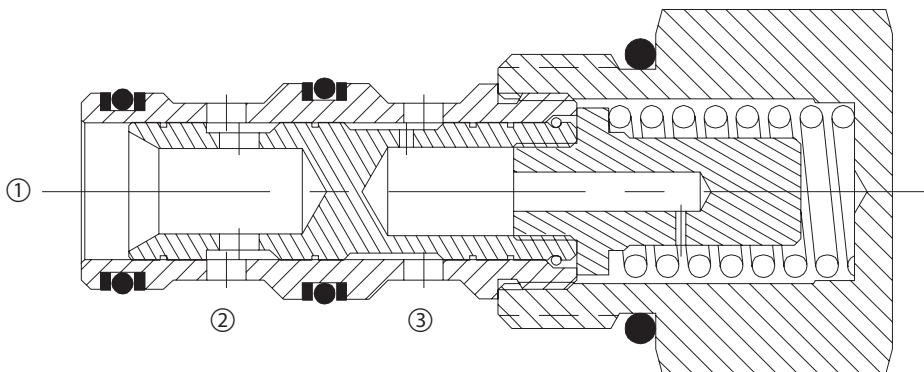
P103 098

**SPRING BIASED,
 NORMALLY OPEN,
 DIFFERENTIAL SENSING
 VALVES**

Spring-biased, normally-open differential sensing valves include: CP700-4, CP701-4, and CP702-4. These valves are normally open and will modulate based on spring control pressure, outlet pressure at port , and pilot pressure at port . One application for this valve is as a pressure compensator when used with a fixed or adjustable orifice to create a pressure-compensated flow control.



Spring biased, normally open, differential sensing valve



P103 099

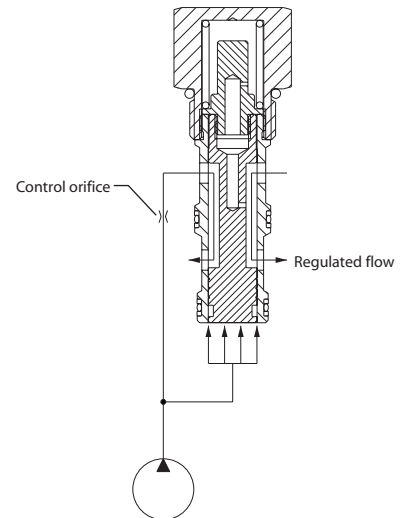
**PRESSURE
 COMPENSATING,
 DIFFERENTIAL SENSING
 VALVES**

Pressure compensators offer the circuit designer capability to add pressure compensation to any fixed or variable orifice. This ensures that flow, and resulting actuator speed, are maintained regardless of system and working pressures. Note that a pressure compensator is required when using Comatrol direct-acting proportional flow controls; see *Proportional valve application notes* for more information.

Restrictive-type

Restrictive-type pressure compensators are three-ported valves that work in series with a fixed or variable control orifice. The pressure compensator is located downstream of the orifice and is spring-biased to an open position as shown. The spool “senses” the pressure on either side of the control orifice and will vary its restriction in order to maintain a constant pressure differential across the control orifice, hence maintaining a constant flow rate.

Restrictive-type pressure compensator operation

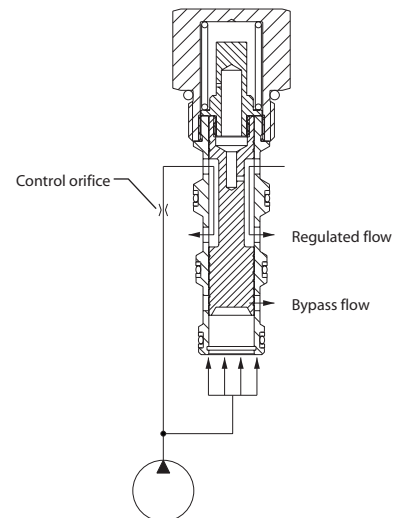


P103 100E

Priority-type

Priority-type pressure compensators are four-ported valves that work in series with a fixed or variable control orifice. As with the restrictive-type valves, these valves maintain a constant pressure differential across the control orifice. However, rather than restricting flow when the differential pressure becomes too high, the priority-type pressure compensators open a fourth bypass port for all flow in excess of that demanded by the control orifice. Note that if the bypass port is blocked, the valve will function as a restrictive-type pressure compensator.

Priority-type pressure compensator operation



P103 101E

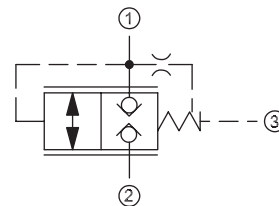
SUMMARY

All of these circuits are particularly effective to control high flows while using small (e.g. 8 series) solenoid and relief valves as pilot elements. The above examples are typical circuits but are by no means the only applications for these valves. Effective use of differential sensing valves is a key to designing cost-effective circuits, and is limited only by the imagination of the designer.

OPERATION

This is a poppet-type logic element with multi-function potential when used with other direction control devices.

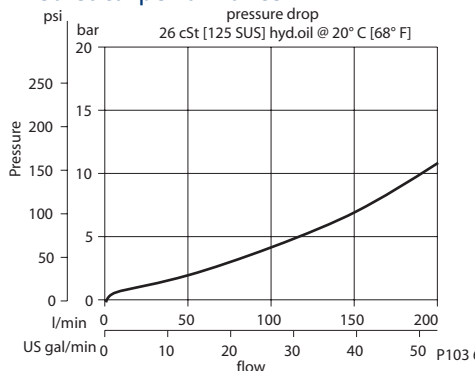
Schematic



P103 505

SPECIFICATIONS

Theoretical performance



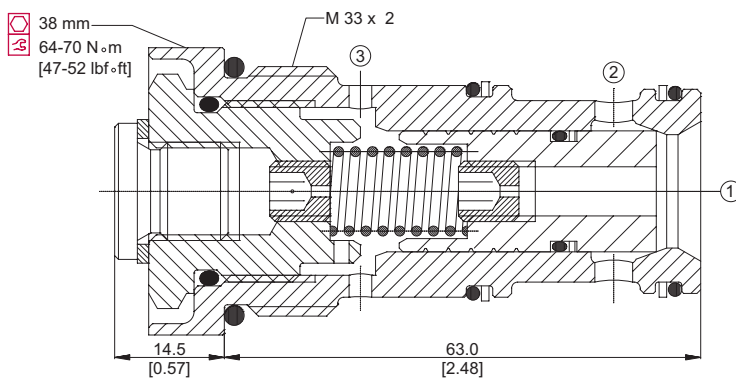
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	160 l/min [42 US gal/min]
Weight	0.30 kg [0.66 lb]
Cavity	NCS12/3
Bias spring	2 bar [29 psi]

DIMENSIONS

mm [in]

Cross-sectional view



P103 662

ORDERING INFORMATION

VLP 12/P2 - B - SE8S - V

Seals
V = Viton
Omit = Buna-N

Seal kit
230000360
230000130

Housing and ports
00 = No Housing
SE1/2 = AL, 1/2 BSP
SE3/4 = AL, 3/4 BSP
SE8S = AL, #8 SAE
SE12S = AL, #12SAE
Other housings available

Housing P/N
No Housing
NCS12/3-SE-1/2
NCS12/3-SE-3/4
NCS12/3-SE-8S
NCS12/3-SE-12S

P103 715E

Cartridge Valves Technical Information

Logic Elements

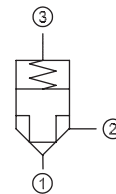
Logic Element, Poppet Type

VLP 12/A5

OPERATION

This is a poppet-type logic element with multi-function potential when used with other direction control devices.

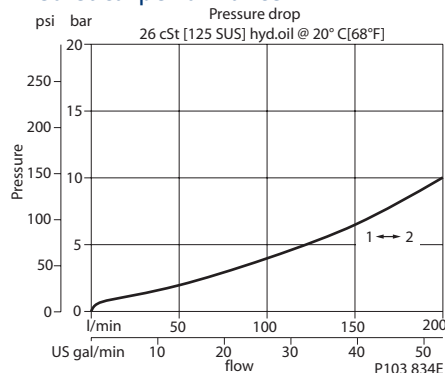
Schematic



P103 503

SPECIFICATIONS

Theoretical performance



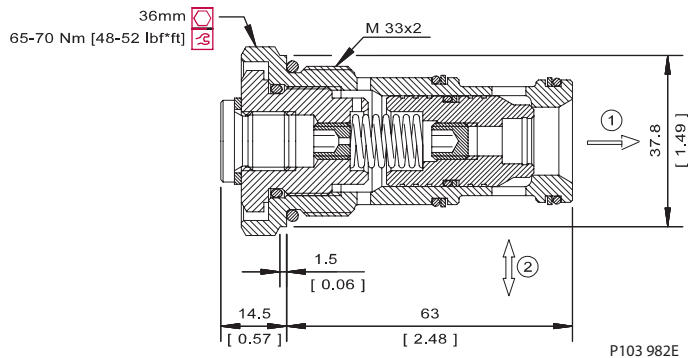
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	160 l/min [42 US gal/min]
Weight	0,30 kg [0.66 lb]
Cavity	NCS12/3
Bias spring	2 bar [29 psi]

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VLP 12/A5 - B - SE8S - V

Seals
V = Viton
Omit = Buna-N

Seal kit
230000360
230000130

Housing and ports
00 = No Housing
SE1/2 = AL, 1/2 BSP
SE3/4 = AL, 3/4 BSP
SE8S = AL, #8 SAE
SE12S = AL, #12SAE
Other housings available

Housing P/N
No Housing
NCS12/3-SE-1/2
NCS12/3-SE-3/4
NCS12/3-SE-8S
NCS12/3-SE-12S

P103 835E

Logic elements
VLP 12/A5

Cartridge Valves Technical Information

Logic Elements

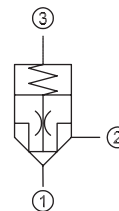
Logic Element, Poppet Type

VLP 12/C2

OPERATION

This is a poppet-type logic element with multi-function potential when used with other direction control devices.

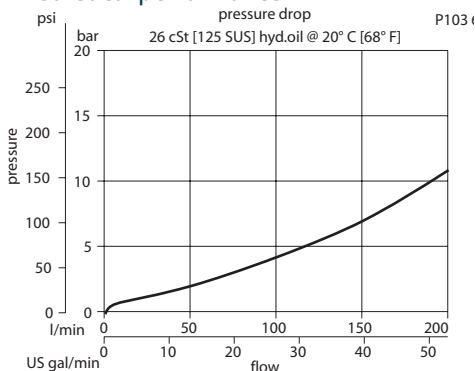
Schematic



P103 504

SPECIFICATIONS

Theoretical performance



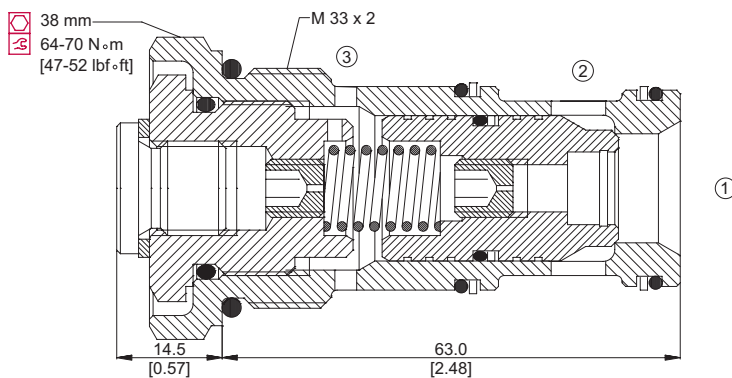
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	160 l/min [42 US gal/min]
Weight	0.30 kg [0.66 lb]
Cavity	NCS12/3
Bias spring	2 bar [29 psi]

DIMENSIONS

mm [in]

Cross-sectional view



P103 661

ORDERING INFORMATION

VLP 12/C2 - B - SE8S - V

Seals
V = Viton
Omit = Buna-N

Seal kit
230000360
230000130

Housing and ports
00 = No Housing
SE1/2 = AL, 1/2 BSP
SE3/4 = AL, 3/4 BSP
SE8S = AL, #8 SAE
SE12S = AL, #12SAE
Other housings available

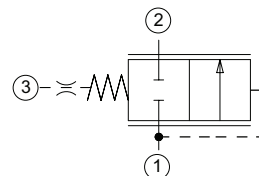
Housing P/N
No Housing
NCS12/3-SE-1/2
NCS12/3-SE-3/4
NCS12/3-SE-8S
NCS12/3-SE-12S

P103 740E

OPERATION

This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

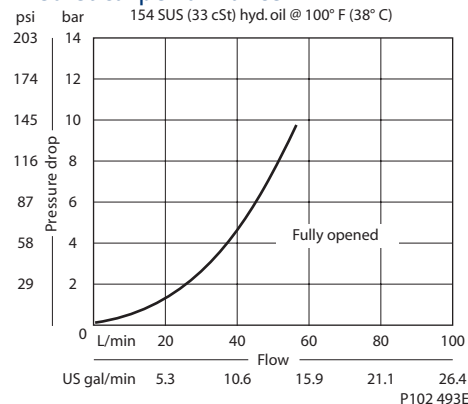
Schematic



P102 488E

SPECIFICATIONS

Theoretical performance



P102 493E

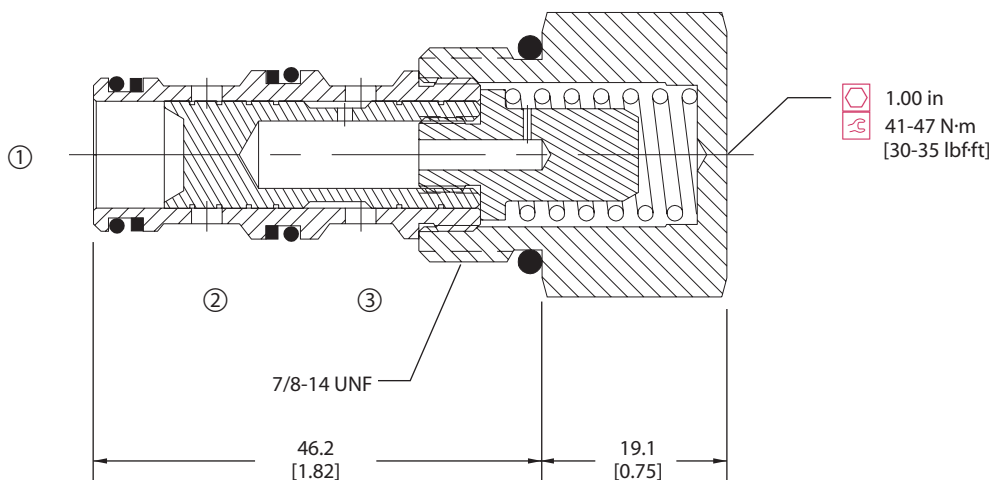
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Weight	0.12 kg [0.27 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 521E

ORDERING INFORMATION

CP700 - 1 - B - 8S - 080

Seals

- B = Buna-N
- V = Viton

Housing and ports

- 0 = No Housing
- SE3B = AL, 3/8 BSP
- SE4B = AL, 1/2 BSP
- 6S = AL, #6 SAE
- 8S = AL, #8 SAE
- Other housings available

- Seal kit 120027
- Seal kit 120028

Housing P/N

- No Housing
- SDC10-3-SE-3B
- SDC10-3-SE-4B
- CP10-3-6S
- CP10-3-8S

Differential Control Pressure

bar	[psi]
040	= 2.8 [40]
080	= 5.5 [80]
110	= 7.6 [110]
150	= 10.3 [150]
190	= 13.1 [190]

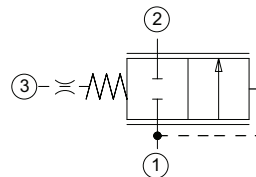
P102 025E

Logic elements
CP700-1

OPERATION

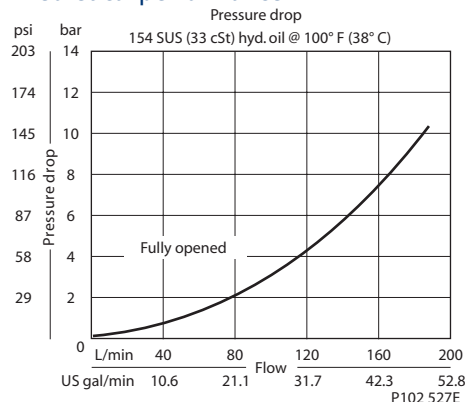
This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

Schematic



SPECIFICATIONS

Theoretical performance



P102 488E

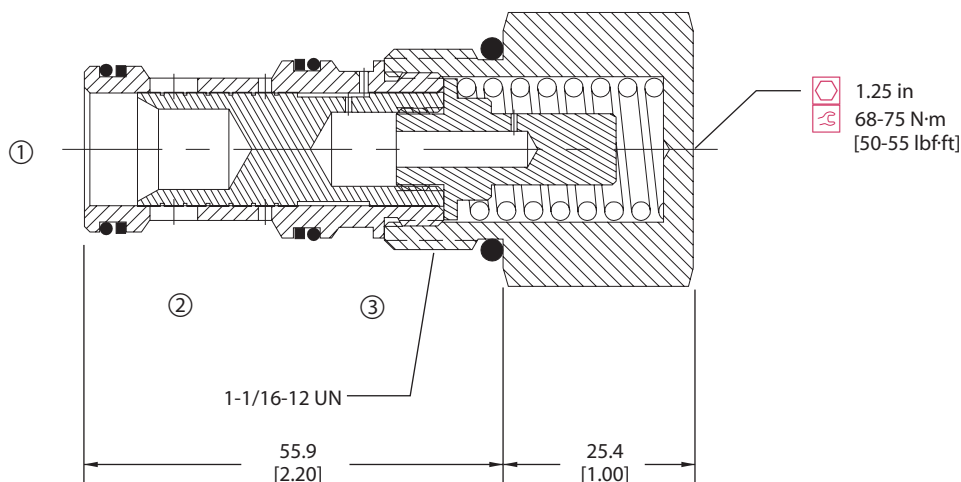
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	150 l/min [40 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 513E

ORDERING INFORMATION

CP701 - 1 - B - 12S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120335
120336

Housing and ports

0 = No housing
4B = AL, 1/2 BSP
6B = AL, 3/4 BSP
10S = AL, #10 SAE
12S = AL, #12 SAE

Housing P/N

No housing
CP12-3S-4B/2B = 1/4 BSP
CP12-3S-6B/2B = 1/4 BSP
CP12-3S-10S/4S = #4 SAE
CP12-3S-12S/4S = #4 SAE

Pilot port

Differential Control Pressure

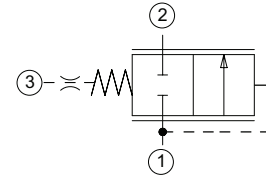
	bar	[psi]
030	= 2.1	[30]
050	= 3.5	[50]
080	= 5.5	[80]
100	= 6.9	[100]
150	= 10.3	[150]
170	= 11.7	[170]

P102 042E

OPERATION

This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

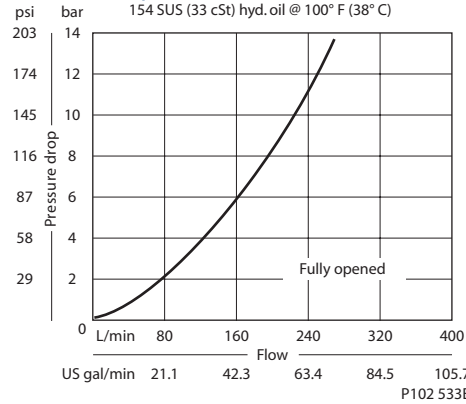
Schematic



P102 488E

SPECIFICATIONS

Theoretical performance



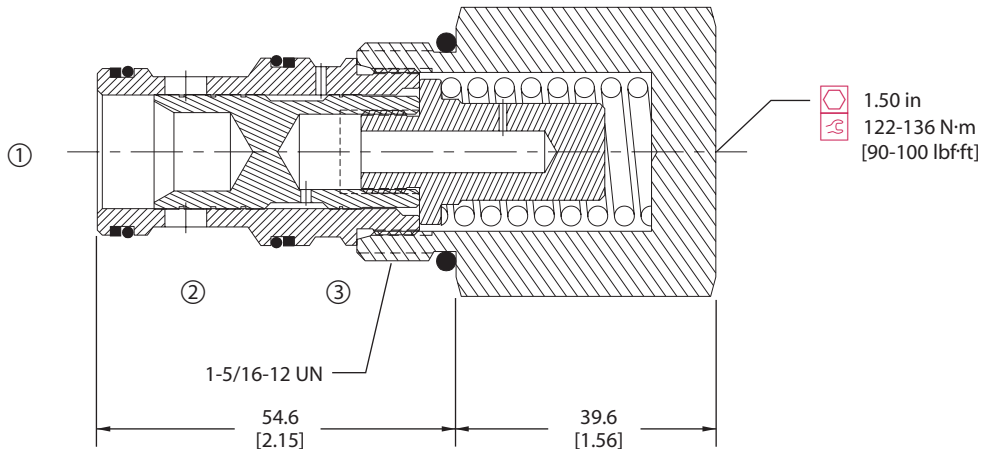
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Weight	0.38 kg [0.83 lb]
Cavity	SDC16-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 507E

ORDERING INFORMATION

CP702 - 1 - B - 16S - 080

Seals

B = Buna-N
 V = Viton

Seal kit
 120033
 120034

Housing and ports

0 = No housing
 6B = AL, 3/4 BSP
 8B = AL, 1 BSP
 12S = AL, #12 SAE
 16S = AL, #16 SAE
 Other housings available

Housing P/N Pilot port
 No housing
 CP16-3S-6B/2B = 1/4 BSP
 CP16-3S-8B/2B = 1/4 BSP
 CP16-3S-12S/4S = #4 SAE
 CP16-3S-12S/4S = #4 SAE

Differential Control Pressure

bar	[psi]
040	= 2.8 [40]
080	= 5.5 [80]
110	= 7.6 [110]
150	= 10.3 [150]
170	= 11.7 [170]

P102 054E

Cartridge Valves Technical Information

Logic Elements

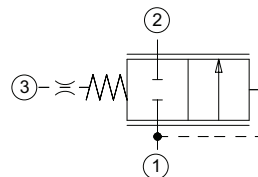
Logic Element, Spool Type

LE20-CPC

OPERATION

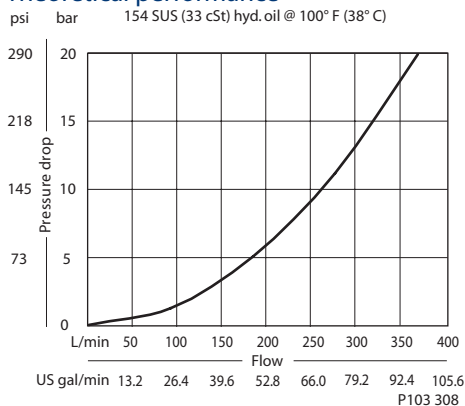
This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

Schematic



SPECIFICATIONS

Theoretical performance



P102 488E

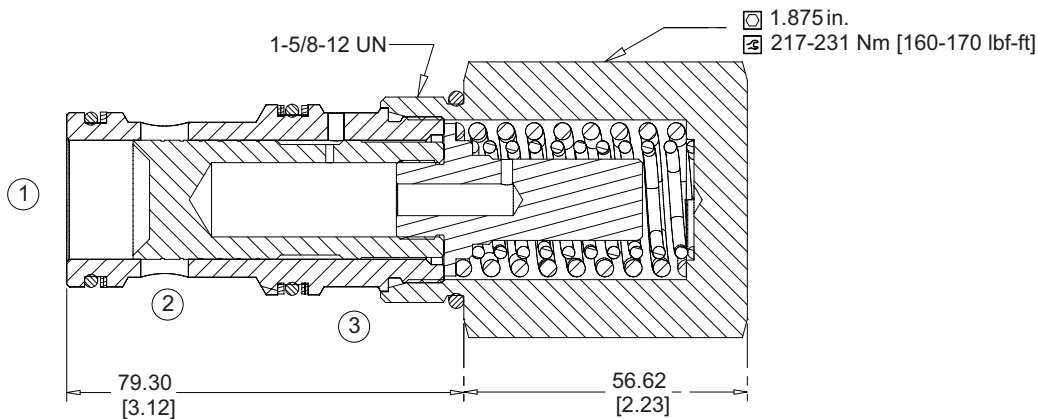
Specifications

Rated pressure	207 bar [3000 psi]
Rated flow at 7 bar [100 psi]	320 l/min [85 US gal/min]
Weight	1.19 kg [2.62 lb]
Cavity	CP20-3S

DIMENSIONS

mm [in]

Cross-sectional view



P108 372E

ORDERING INFORMATION

LE20-CPC-5.5-B-00

Differential Control Pressure
 5.5 = 5.5 bar [80 psi]
 7.0 = 7 bar [100 psi]
 10.0 = 10.0 bar [150 psi]

Housing and ports
 00 = No Housing
 8B = Al, 1 BSP
 10B = Al, 1-1/4 BSP
 16S = Al, #16 SAE
 20S = Al, #20 SAE

Housing Part # Pilot Port
 No Housing
 CP20-3S-8B/2B 1/4 BSP
 CP20-3S-10B/2B 1/4 BSP
 CP20-3S-16S/4S #4 SAE
 CP20-3S-20S/4S #4 SAE

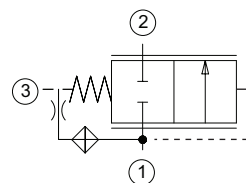
Seals Seal Kit
 B = Buna-N 120380
 V = Viton 120381

P108 371E

OPERATION

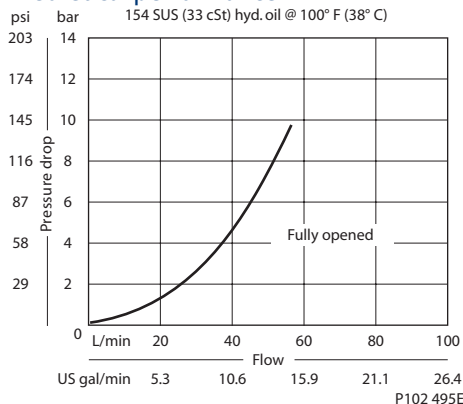
This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

Schematic



SPECIFICATIONS

Theoretical performance



P102 487E

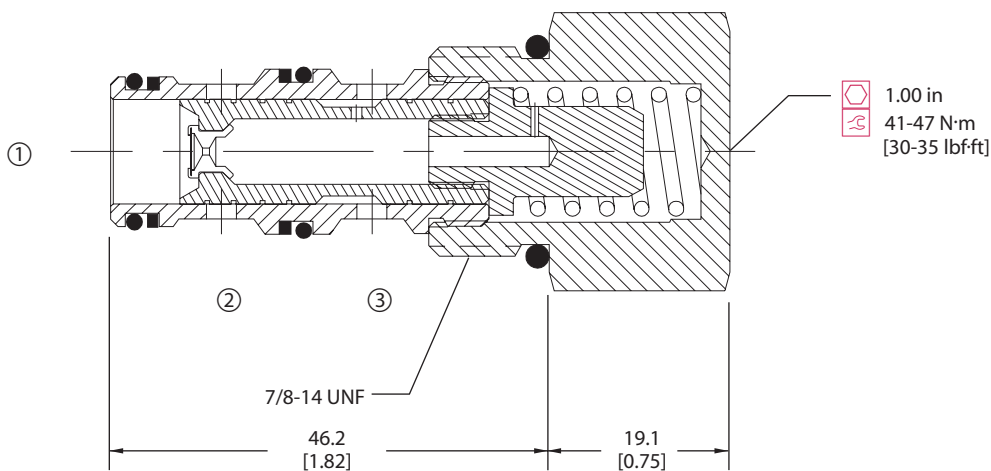
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Weight	0.13 kg [0.28 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 519E

ORDERING INFORMATION

CP700 - 2 - B - 8S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120027
120028

Housing and ports

0 = No Housing
SE3B = AL, 3/8 BSP
SE4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

Differential Control Pressure

bar	[psi]
040	= 2.8 [40]
080	= 5.5 [80]
110	= 7.6 [110]
150	= 10.3 [150]
190	= 11.7 [190]

P102 029E

Logic elements
CP700-2

Cartridge Valves Technical Information

Logic Elements

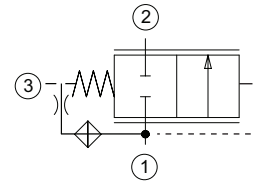
Logic Element, Spool Type

CP701-2

OPERATION

This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

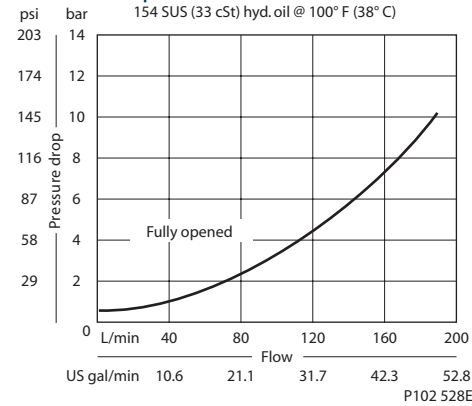
Schematic



P102 487E

SPECIFICATIONS

Theoretical performance



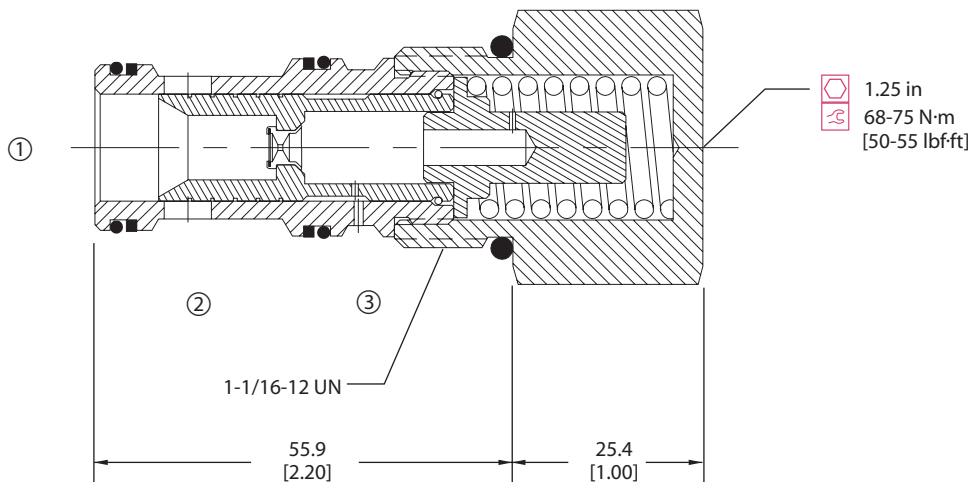
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	150 l/min [40 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 512E

ORDERING INFORMATION

CP701 - 2 - B - 12S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120335
120336

Housing and ports

0 = No housing
4B = AL, 1/2 BSP
6B = AL, 3/4 BSP
10S = AL, #10 SAE
12S = AL, #12 SAE
other housings available

Housing P/N

No housing
CP12-3S-4B/2B = 1/4 BSP
CP12-3S-6B/2B = 1/4 BSP
CP12-3S-10S/4S = #4 SAE
CP12-3S-12S/4S = #4 SAE

Pilot port

Differential Control Pressure

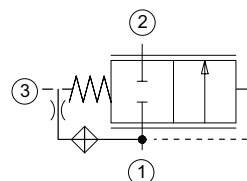
	bar	[psi]
030	= 2.1	[30]
050	= 3.5	[50]
080	= 5.5	[80]
100	= 6.9	[100]
150	= 10.3	[150]

P102 043E

OPERATION

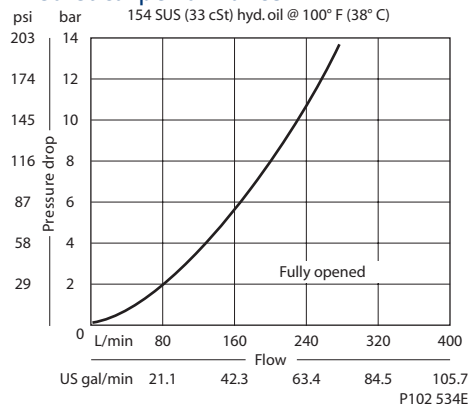
This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

Schematic



SPECIFICATIONS

Theoretical performance



P102 487E

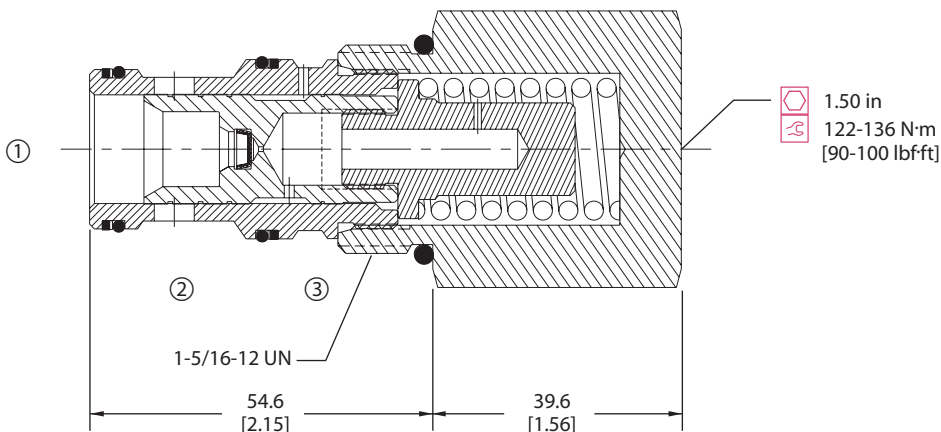
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Weight	0.38 kg [0.83 lb]
Cavity	SDC16-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 506E

ORDERING INFORMATION

CP702 - 2 - B - 16S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120033
120034

Housing and ports

0 = No housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N Pilot port
No housing
CP16-3S-6B/2B = 1/4 BSP
CP16-3S-8B/2B = 1/4 BSP
CP16-3S-12S/4S = #4 SAE
CP16-3S-12S/4S = #4 SAE

Differential Control Pressure

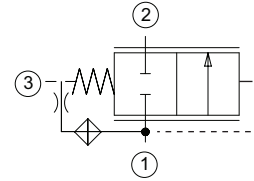
bar	[psi]
040	= 2.8 [40]
080	= 5.5 [80]
110	= 7.6 [110]
150	= 10.3 [150]
170	= 11.7 [170]

P102 055E

OPERATION

This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

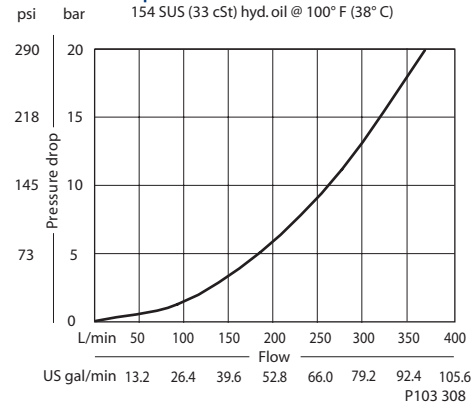
Schematic



P102 487E

SPECIFICATIONS

Theoretical performance



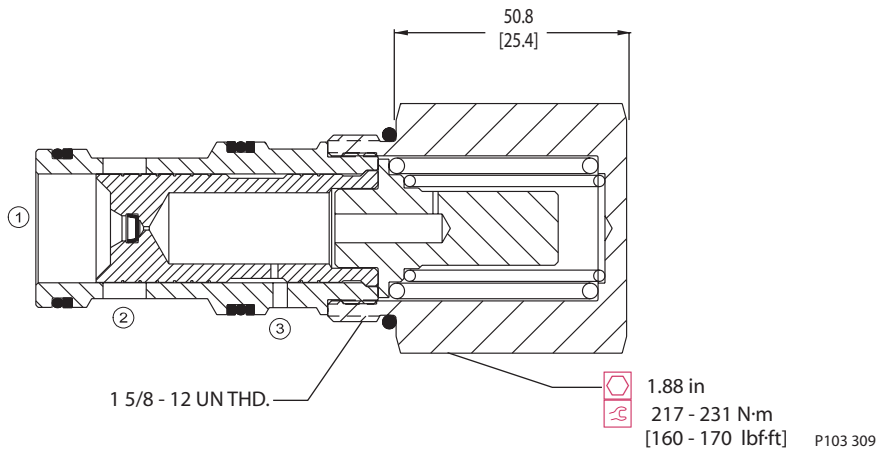
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	320 l/min [85 US gal/min]
Weight	1.18 kg [2.60 lb]
Cavity	CP20-3S

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP703 - 2 - B - 16S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120380
120381

Housing and ports

0 = No housing
8B = AL, 1 BSP
10B = AL, 1-1/4 BSP
16S = AL, #16 SAE
20S = AL, #20 SAE
other housings available

Housing P/N

No housing
CP20-3S-8B/2B = 1/4 BSP
CP20-3S-10B/2B = 1/4 BSP
CP20-3S-16S/4S = #4 SAE
CP20-3S-20S/4S = #4 SAE

Pilot port

Differential control pressure

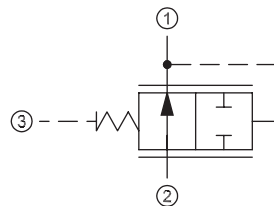
bar	[psi]
050	3.4 [50]
080	5.5 [80]
100	6.9 [100]
130	9.0 [130]
150	10.3 [150]

P103 307

OPERATION

This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

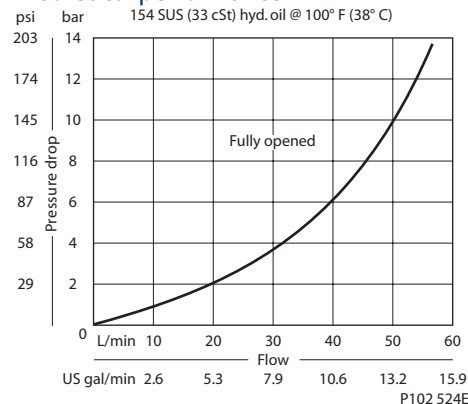
Schematic



P102 429E

SPECIFICATIONS

Theoretical performance



P102 524E

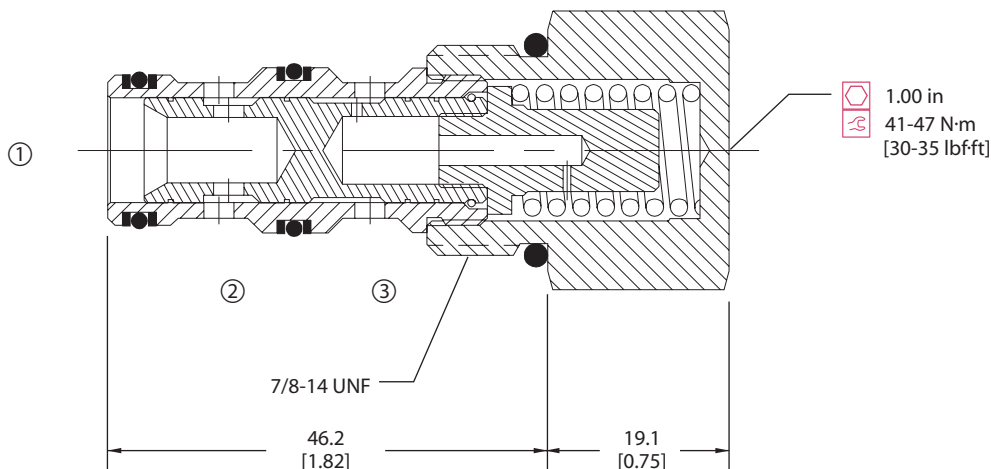
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.13 kg [0.28 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 516E

ORDERING INFORMATION

CP700 - 4 - B - 8S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120009
120010

Housing and ports

0 = No Housing
SE3B = AL, 3/8 BSP
SE4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

Differential Control Pressure

bar	[psi]
040	2.8 [40]
080	5.5 [80]
110	7.6 [110]
150	10.3 [150]
200	13.8 [200]

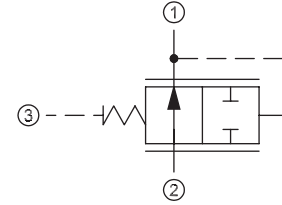
Logic elements
CP700-4

P102 034E

OPERATION

This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

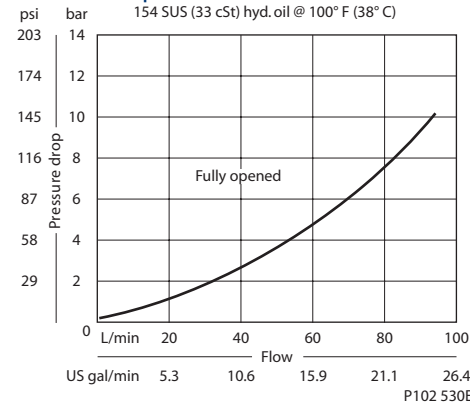
Schematic



P102 429E

SPECIFICATIONS

Theoretical performance



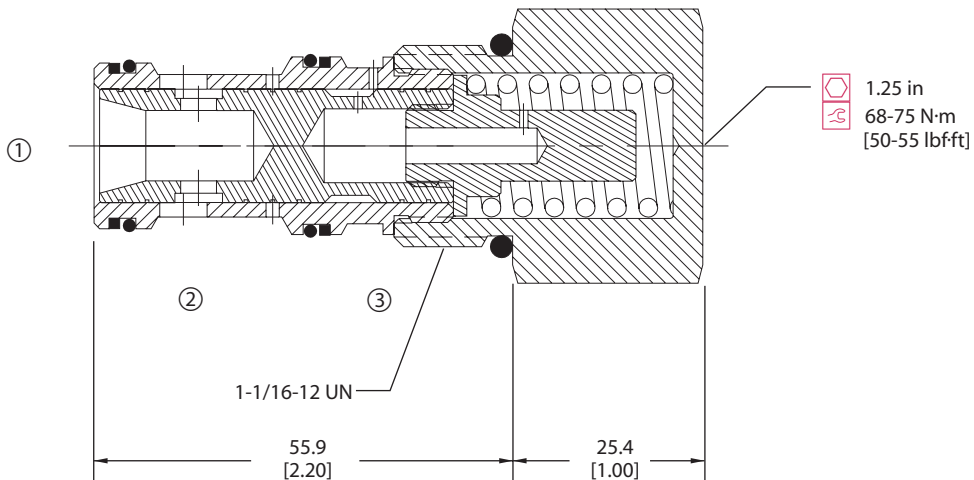
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	75 l/min [20 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 510E

ORDERING INFORMATION

CP701 - 4 - B - 12S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120335
120336

Housing and ports

0 = No housing
4B = AL, 1/2 BSP
6B = AL, 3/4 BSP
10S = AL, #10 SAE
12S = AL, #12 SAE

Housing P/N

No housing
CP12-3S-4B/2B = 1/4 BSP
CP12-3S-6B/2B = 1/4 BSP
CP12-3S-10S/4S = #4 SAE
CP12-3S-12S/4S = #4 SAE

Pilot port

Differential Control Pressure

bar [psi]
030 = 2.1 [30]
050 = 3.5 [50]
080 = 5.5 [80]
100 = 6.9 [100]
150 = 10.3 [150]

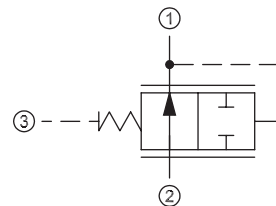
P102 047E

Logic Element, Spool Type
CP702-4

OPERATION

This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

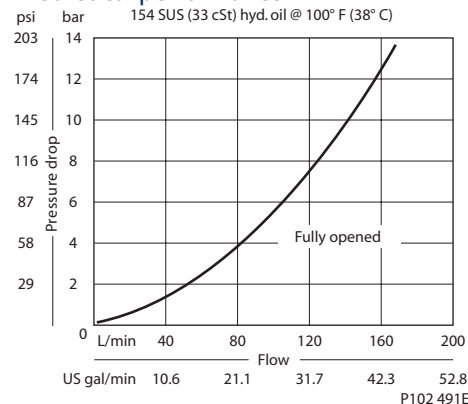
Schematic



P102 429E

SPECIFICATIONS

Theoretical performance



P102 491E

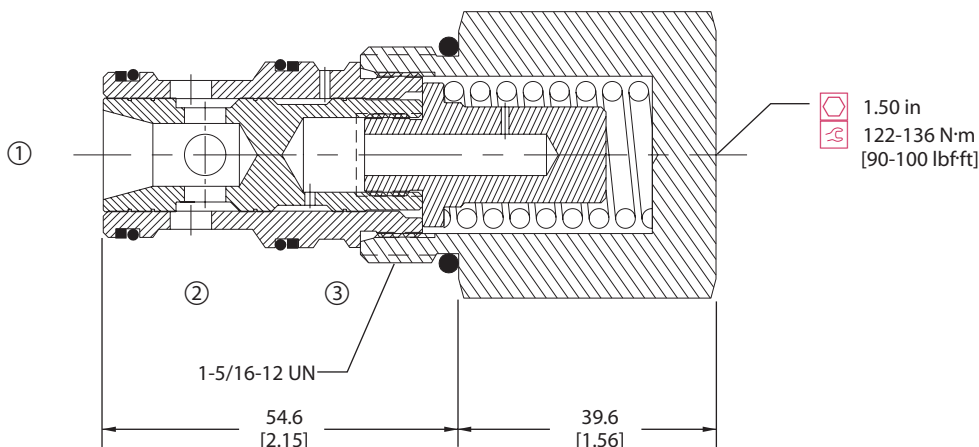
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	114 l/min [30 US gal/min]
Weight	0.38 kg [0.83 lb]
Cavity	SDC16-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 523E

ORDERING INFORMATION

CP702 - 4 - B - 16S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120033
120034

Housing and ports

0 = No housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N Pilot port
No housing
CP16-3S-6B/2B = 1/4 BSP
CP16-3S-8B/2B = 1/4 BSP
CP16-3S-12S/4S = #4 SAE
CP16-3S-12S/4S = #4 SAE

Differential Control Pressure

bar	[psi]
040	= 2.8 [40]
080	= 5.5 [80]
110	= 7.6 [110]
150	= 10.3 [150]
190	= 13.1 [190]

P102 020E

Logic elements
CP702-4

Cartridge Valves Technical Information

Logic Elements

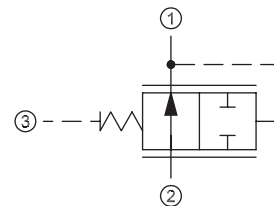
Logic Element, Spool Type

CP703-4

OPERATION

This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

Schematic

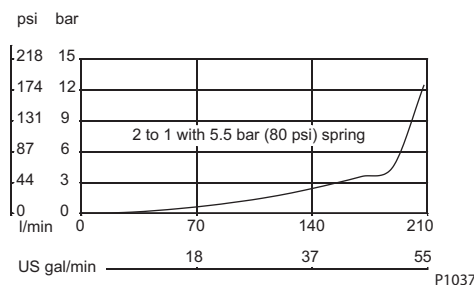


P102 429E

Theoretical performance

Pressure Drop

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



P1037

SPECIFICATIONS

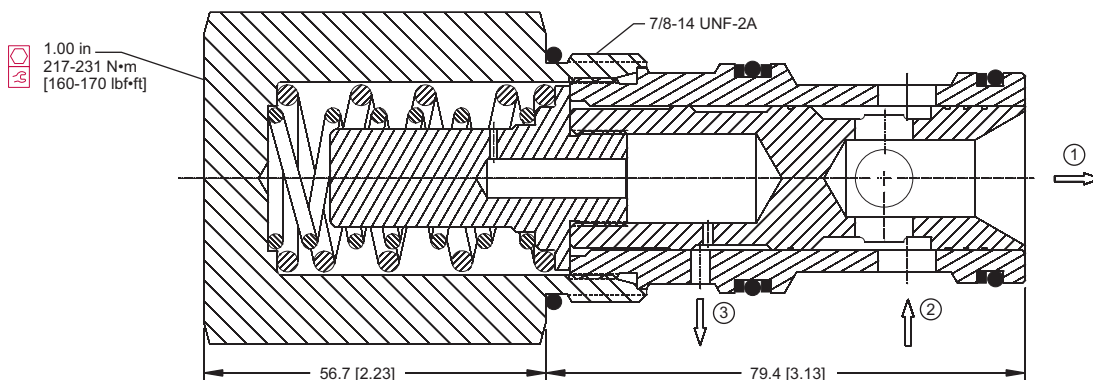
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	200 l/min [53 US gal/min]
Weight	1.18 kg [2.60 lb]
Cavity	CP20-3S

DIMENSIONS

mm [in]

Cross-sectional view



P103 749

ORDERING INFORMATION

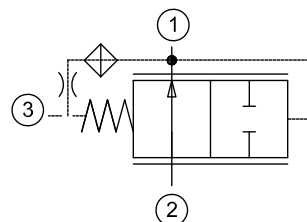
		CP703-4-B-8B-050			
Seals		Seal kit		Differential Control Pressure	
B = Buna-N		120380		050 = 3.5 [50]	
V = Viton		120381		080 = 5.5 [80]	
Housing and ports		Housing P/N	Pilot port	100 = 6.9 [100]	
0 = No housing		No housing		130 = 9.0 [130]	
8B = AL, 1 BSP		CP20-3S-8B/2B = 1/4 BSP		150 = 10.3 [150]	
10B = AL, 1-1/4 BSP		CP20-3S-10B/2B = 1/4 BSP			
16S = AL, #16 SAE		CP20-3S-16S/4S = #4 SAE			
20S = AL, #20 SAE		CP20-3S-20S/4S = #4 SAE			
other housings available					

P103 763E

OPERATION

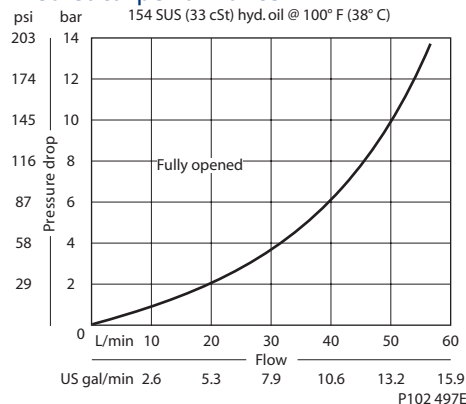
This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

Schematic



SPECIFICATIONS

Theoretical performance



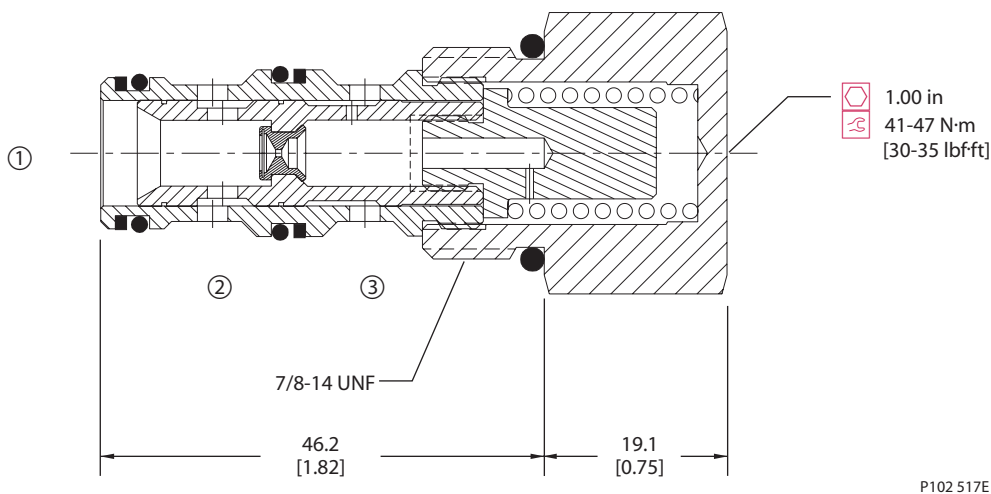
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.13 kg [0.28 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 517E

ORDERING INFORMATION

CP700 - 3 - B - 8S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120027
120028

Housing and ports

0 = No Housing
SE3B = AL, 3/8 BSP
SE4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

Differential Control Pressure

	bar	[psi]
040	2.8	[40]
080	5.5	[80]
110	7.6	[110]
150	10.3	[150]
200	13.8	[200]

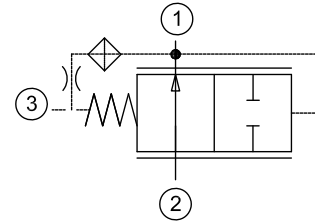
P102 033E

Logic elements
CP700-3

OPERATION

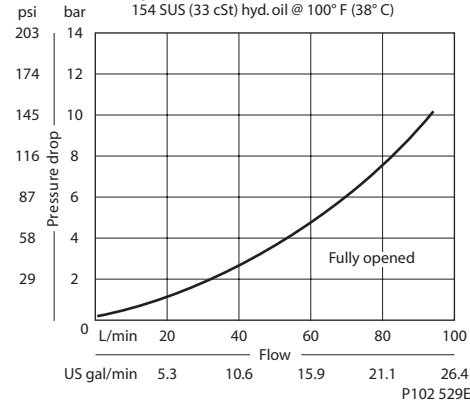
This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

Schematic



SPECIFICATIONS

Theoretical performance



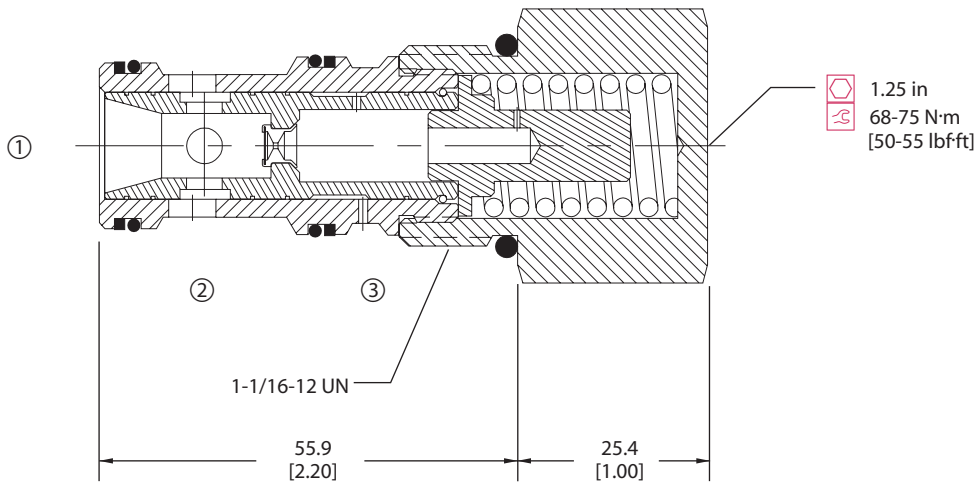
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	80 l/min [21 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 511E

ORDERING INFORMATION

CP701 - 3 - B - 12S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120335
120336

Housing and ports

0 = No housing
4B = AL, 1/2 BSP
6B = AL, 3/4 BSP
10S = AL, #10 SAE
12S = AL, #12 SAE

Housing P/N

No housing
CP12-3S-4B/2B = 1/4 BSP
CP12-3S-6B/2B = 1/4 BSP
CP12-3S-10S/4S = #4 SAE
CP12-3S-12S/4S = #4 SAE

Pilot port

Differential Control Pressure

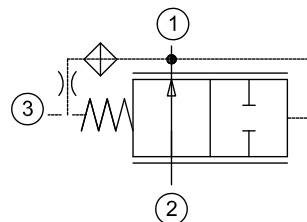
bar	[psi]
030	= 2.1 [30]
050	= 3.5 [50]
080	= 5.5 [80]
100	= 6.9 [100]
150	= 10.3 [150]

P102 046E

OPERATION

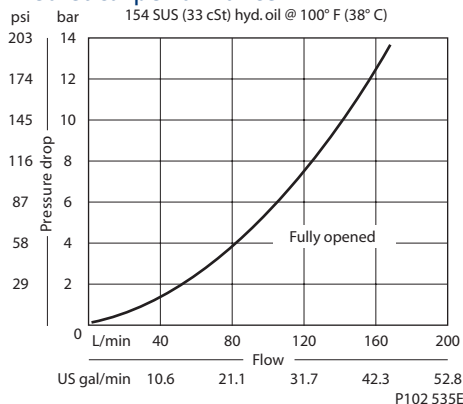
This is a spool-type logic element with multi-function potential when used with other pressure, flow, or direction control devices.

Schematic



SPECIFICATIONS

Theoretical performance



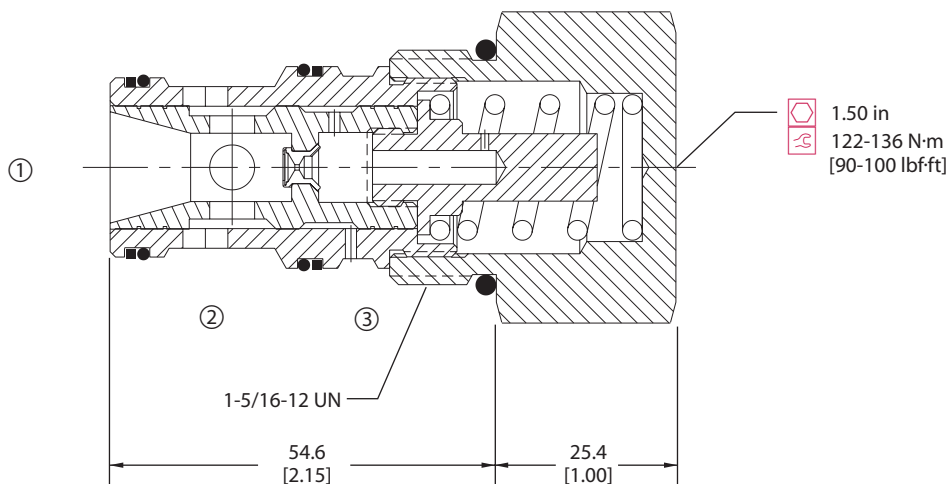
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Weight	0.38 kg [0.83 lb]
Cavity	SDC16-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 505E

ORDERING INFORMATION

CP702 - 3 - B - 16S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120033
120034

Housing and ports

0 = No housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N Pilot port
No housing
CP16-3S-6B/2B = 1/4 BSP
CP16-3S-8B/2B = 1/4 BSP
CP16-3S-12S/4S = #4 SAE
CP16-3S-12S/4S = #4 SAE

Differential Control Pressure

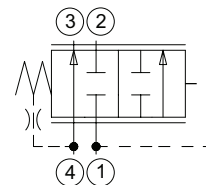
bar	[psi]
040	2.8 [40]
080	5.5 [80]
110	7.6 [110]
150	10.3 [150]
190	13.1 [190]

P102 059E

OPERATION

This valve is a priority type pressure compensator.

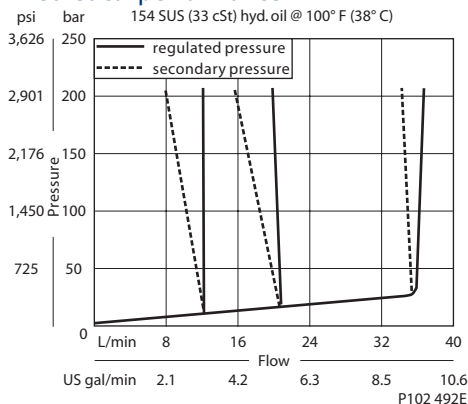
Schematic



P102 489E

SPECIFICATIONS

Theoretical performance



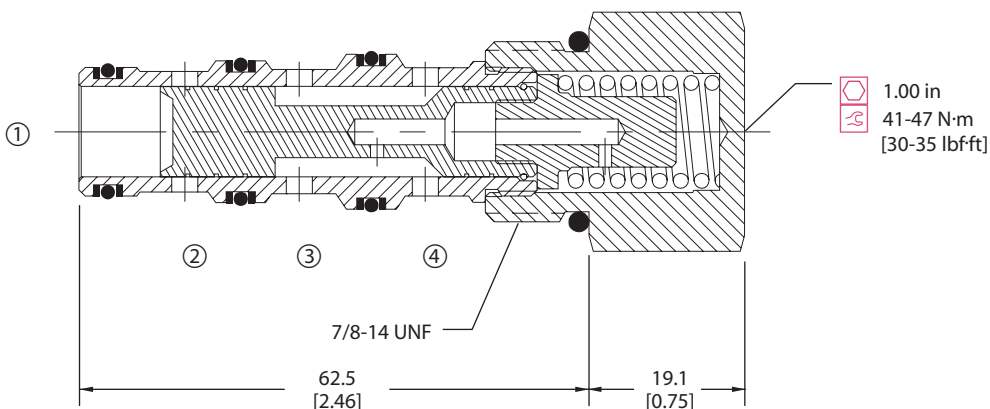
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.15 kg [0.32 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 522E

ORDERING INFORMATION

CP310 - 4 - B - 8S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120023
120024

Housing and ports

0 = No Housing
L3B = AL, 3/8 BSP
L4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-4-L-3B
SDC10-4-L-4B
CP10-4-6S
CP10-4-8S

Differential Control Pressure

	bar	[psi]
040	= 2.8	[40]
080	= 5.5	[80]
110	= 7.6	[110]
150	= 10.3	[150]
190	= 13.1	[190]

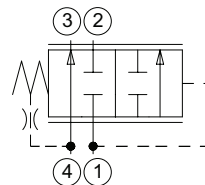
P102 022E

Logic elements
CP310-4

OPERATION

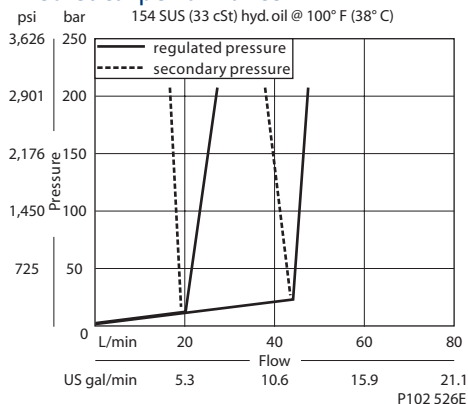
This valve is a priority type pressure compensator.

Schematic



SPECIFICATIONS

Theoretical performance



P102 489E

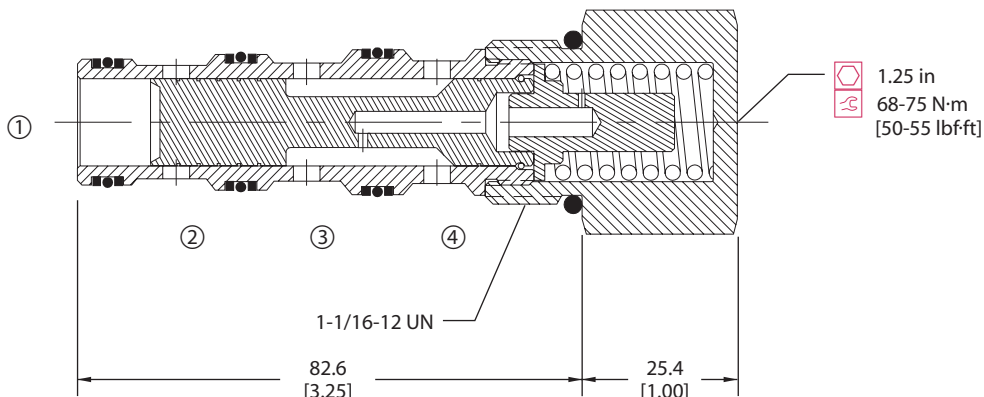
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	60 l/min [16 US gal/min]
Weight	0.31 kg [0.69 lb]
Cavity	CP12-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 514E

ORDERING INFORMATION

CP311 - 4 - B - 10S - 080

Seals

- B = Buna-N
- V = Viton

- Seal kit 120262
- Seal kit 120263

Housing and ports

- 0 = No housing
- 10S = AL, #10 SAE
- 12S = AL, #12 SAE
- 3B = AL, 1/2 BSP
- 4B = AL, 3/4 BSP
- Other housings available

Housing P/N

- No housing CP12-4-10S
- CP12-4-12S
- CP12-4-3B
- CP12-4-4B

Differential Control Pressure

- 050 = 3.5 [50]
- 080 = 5.5 [80]
- 100 = 6.9 [100]
- 150 = 10.3 [150]

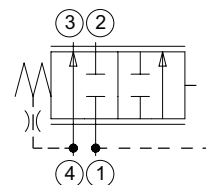
P102 039E

Logic elements
CP311-4

OPERATION

This valve is a priority type pressure compensator.

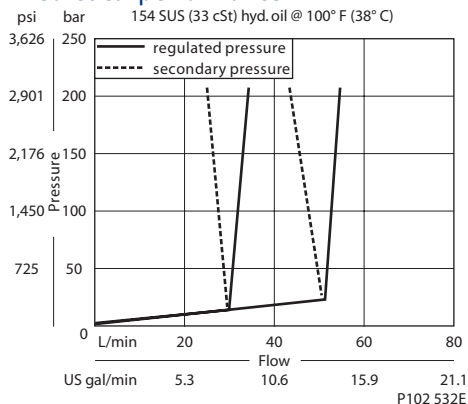
Schematic



P102 489E

SPECIFICATIONS

Theoretical performance



P102 532E

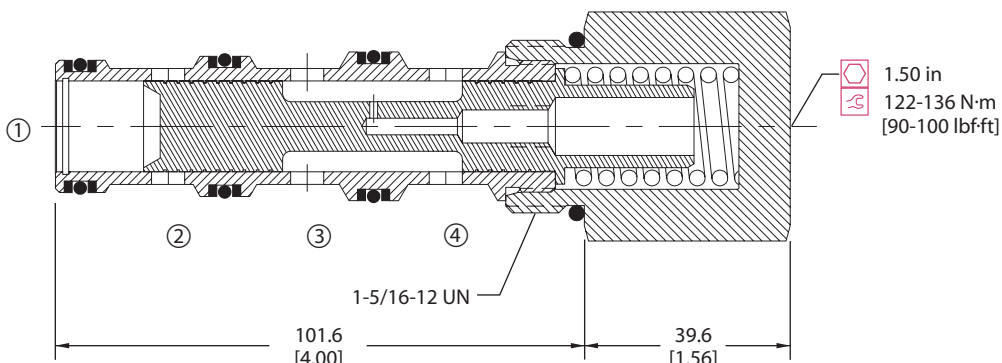
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.60 kg [1.32 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 508E

ORDERING INFORMATION

CP312 - 4 - B - 16S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120025
120026

Housing and ports

0 = No housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N

No housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

Differential Control Pressure

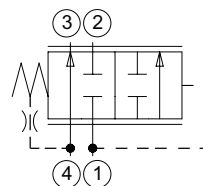
bar	[psi]
040	= 2.8 [40]
080	= 5.5 [80]
110	= 7.6 [110]
150	= 10.3 [150]

P102 051E

OPERATION

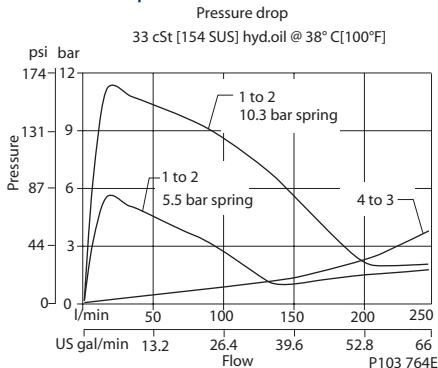
This valve is a priority type pressure compensator.

Schematic



SPECIFICATIONS

Theoretical performance



P102 489E

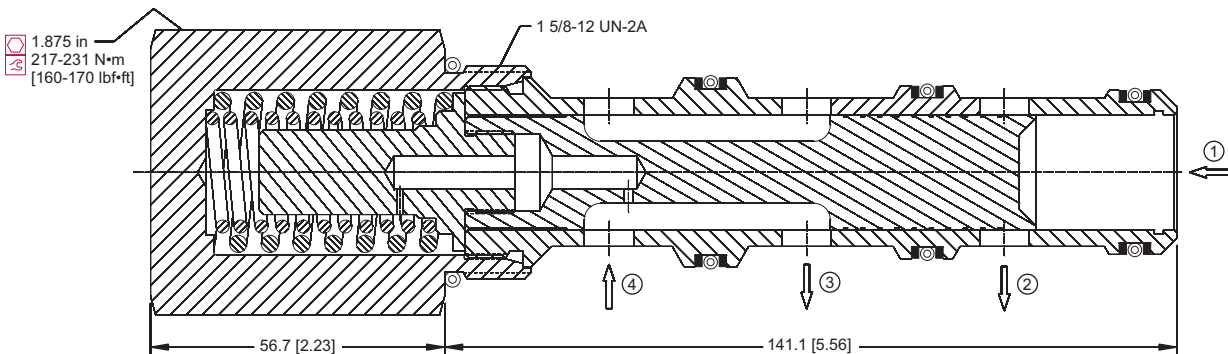
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	340 l/min [90 US gal/min]
Weight	1.30 kg [2.80 lb]
Cavity	SDC20-4

DIMENSIONS

mm [in]

Cross-sectional view



P103 750

ORDERING INFORMATION

CP313-4-B-16S-130

Seals		Seal kits		Differential control pressure	
B = Buna-N		120181		050 = 3.4	50
V = Viton		120182		080 = 5.5	80
Housing and ports		Housing P/N		100 = 6.9	100
0 = No Housing		No Housing		130 = 9.0	130
8B = AL, 1 BSP		CP20-4-8B		150 = 10.3	150
10B = AL, 1-1/4 BSP		CP20-4-10B			
16S = AL, #16 SAE		CP20-4-16S			
20S = AL, #20 SAE		CP20-4-20S			
Other housings available					

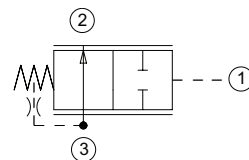
P103 765E

Logic elements
CP313-4

OPERATION

This valve is a restrictive type pressure compensator.

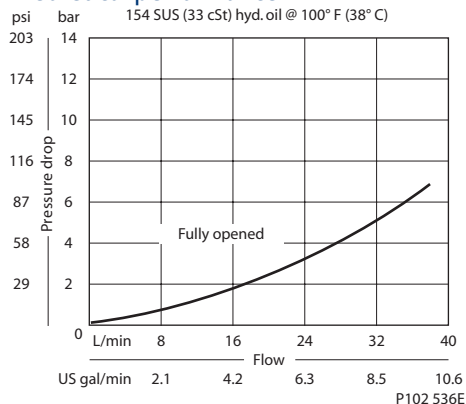
Schematic



P102 490E

SPECIFICATIONS

Theoretical performance



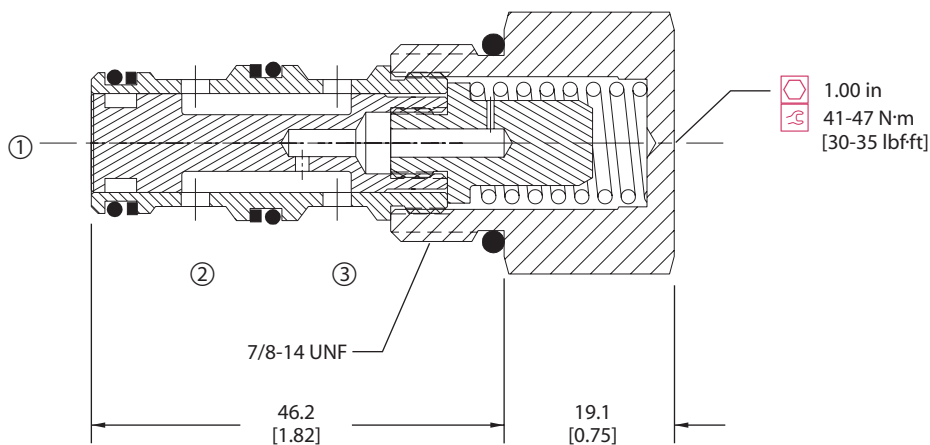
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 504E

ORDERING INFORMATION

CP300 - 4 - B - 8S - 0 - 080

Seals

B = Buna-N
V = Viton

Seal kit
120027
120028

Housing and ports

0 = No Housing
SE3B = AL, 3/8 BSP
SE4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S

Differential Control Pressure

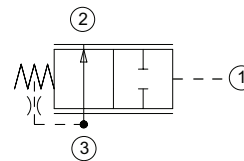
bar	[psi]
040	= 2.8 [40]
080	= 5.5 [80]
110	= 7.6 [110]
150	= 10.3 [150]
190	= 13.1 [190]

P102 060E

OPERATION

This valve is a restrictive type pressure compensator.

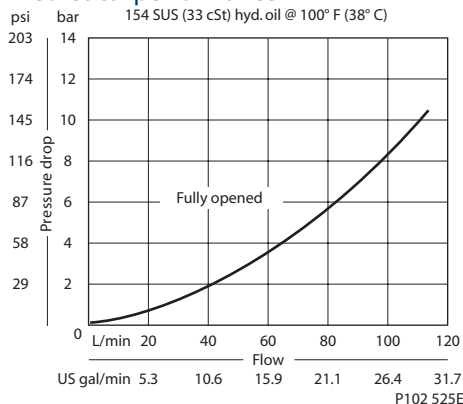
Schematic



P102 490E

SPECIFICATIONS

Theoretical performance



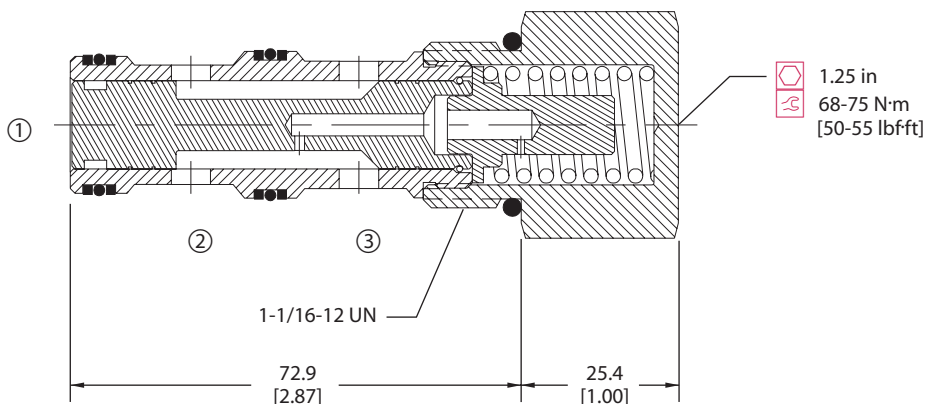
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	90 l/min [24 US gal/min]
Weight	0.30 kg [0.67 lb]
Cavity	CP12-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 515E

ORDERING INFORMATION

CP301 - 4 - B - 12S - 0 - 080

Seals

B = Buna-N
V = Viton

Seal kit
120053
120052

Housing and ports

0 = No housing
10S = AL, #10 SAE
12S = AL, #12 SAE
4B = AL, 1/2 BSP
6B = AL, 3/4 BSP

Housing P/N

No housing
CP12-3-10S
CP12-3-12S
CP12-3-4B
CP12-3-6B

Differential Control Pressure

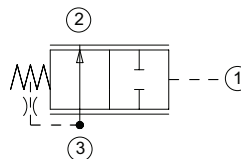
bar	[psi]
050	= 3.5 [50]
080	= 5.5 [80]
100	= 6.9 [100]
150	= 10.3 [150]
190	= 13.1 [190]

P102 038E

OPERATION

This valve is a restrictive type pressure compensator.

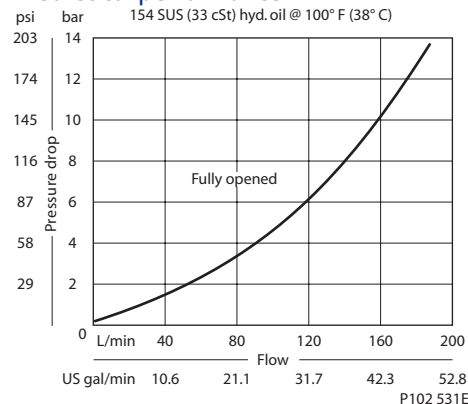
Schematic



P102 490E

SPECIFICATIONS

Theoretical performance



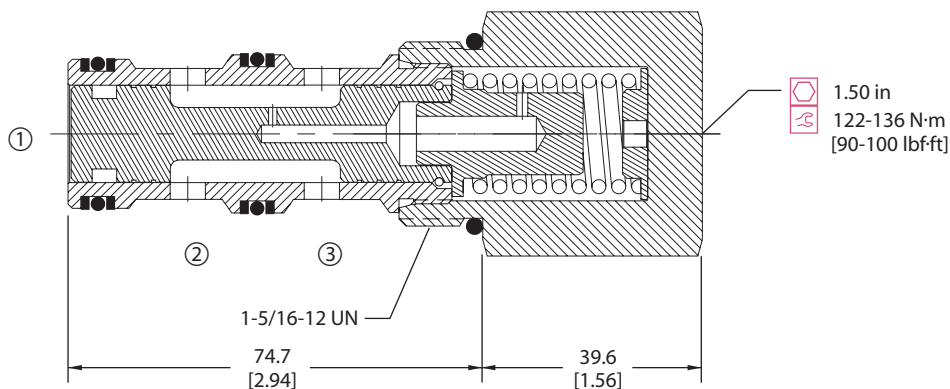
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.56 kg [1.24 lb]
Cavity	SDC16-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 509E

ORDERING INFORMATION

CP302 - 4 - B - 16S - 0 - 080

Seals

B = Buna-N
V = Viton

Seal kit
120202
120203

Housing and ports

0 = No housing
SE6B = AL, 3/4 BSP
SE8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N
No housing
SDC16-3-SE-6B
SDC16-3-SE-8B
CP16-3-12S
CP16-3-16S

Differential Control Pressure

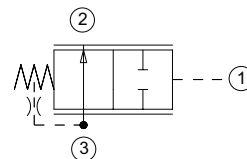
bar	[psi]
040	= 2.8 [40]
080	= 5.5 [80]
100	= 6.9 [100]
150	= 10.3 [150]
230	= 15.9 [230]

P102 050E

OPERATION

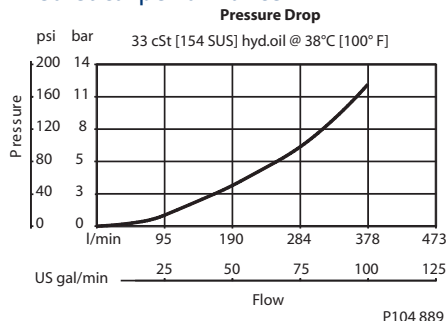
This is a restrictive-type pressure-compensator.

Schematic



SPECIFICATIONS

Theoretical performance



P102 490E

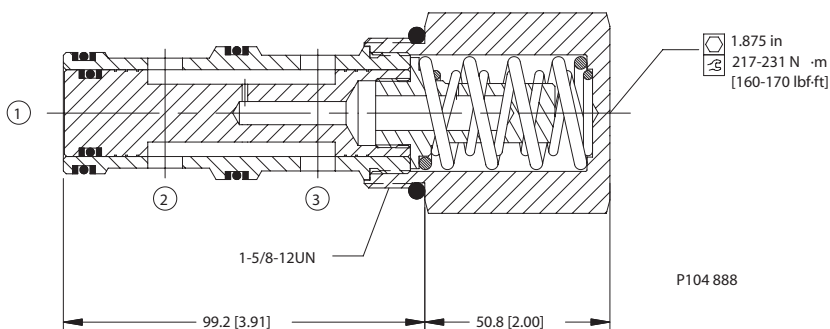
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [100 psi]	284 l/min [75 US gal/min]
Weight	1.11 kg [2.45 lb]
Cavity	SDC20-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP303-4-B-16S-0-150

Seals	Seal kit	Differential Control Pressure
B = BUNA-N	120200	bar [psi]
V = VITON	120201	050 = 3.4 [50]
Housing and ports	Housing P/N	080 = 5.5 [80]
0 = Cartridge only	No Body	100 = 6.9 [100]
16S = AL, #16 SAE	CP20-3-16S	130 = 9.0 [130]
20S = AL, #20 SAE	CP20-3-20S	150 = 10.3 [150]
8B = AL, 1 BSP	CP20-3-3B	
10B = AL, 1-1/4 BSP	CP20-3-4B	
other housings available		

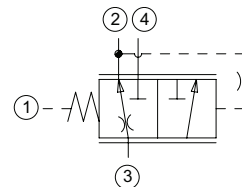
P104 890

Logic elements
CP303-4CA

OPERATION

This is a static load sense priority valve.

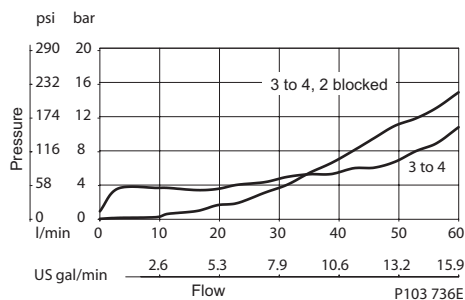
Schematic



Theoretical performance

Pressure Drop

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



P103 495

SPECIFICATIONS

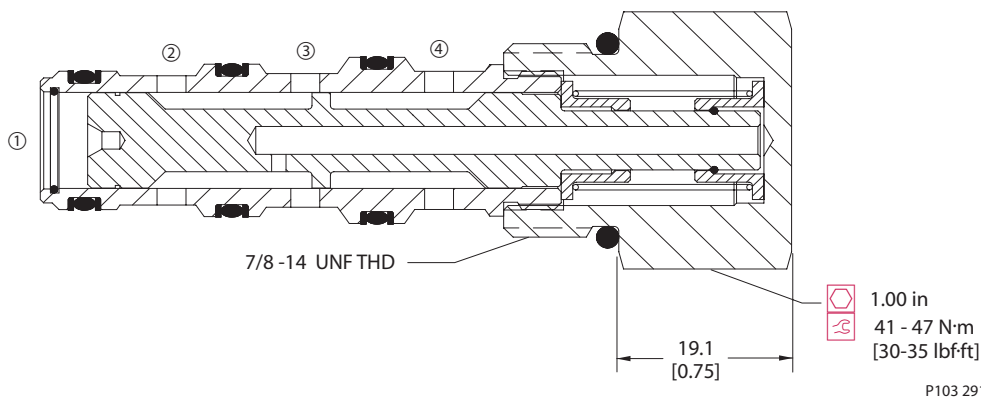
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P103 291

ORDERING INFORMATION

CP310 - 6 - B - 8S - 080

Seals

B = Buna-N
 V = Viton

Seal kit
 120023
 120024

Compensator Spring

bar [psi]
 080 = 5.5 [80]

Housing and ports

0 = No Housing
 L3B = AL, 3/8 BSP
 L4B = AL, 1/2 BSP
 6S = AL, #6 SAE
 8S = AL, #8 SAE
 Other housings available

Housing P/N

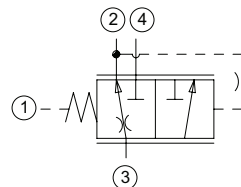
No Housing
 SDC10-4-L-3B
 SDC10-4-L-4B
 CP10-4-6S
 CP10-4-8S

P103 295

OPERATION

This is a static load sense priority valve.

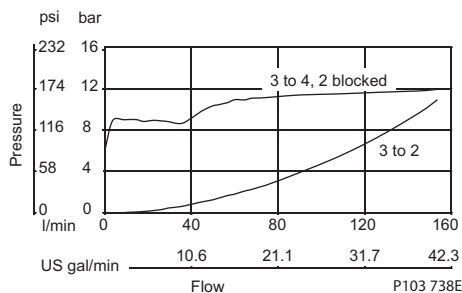
Schematic



Theoretical performance

Pressure Drop

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



P103 495

SPECIFICATIONS

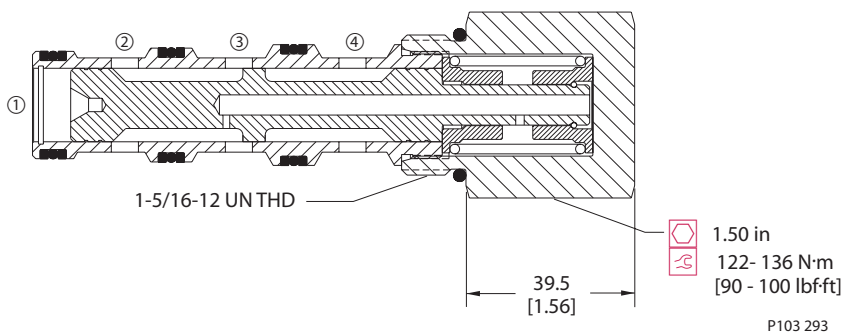
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	125 l/min [33 US gal/min]
Weight	0.63 kg [1.39 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



P103 293

ORDERING INFORMATION

CP312 - 6 - B - 12S - 080

Seals

B = Buna-N
V = Viton

Seal kit
120025
120026

Compensator Spring

bar [psi]
080 = 5.5 [80]

Housing and ports

0 = No housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N

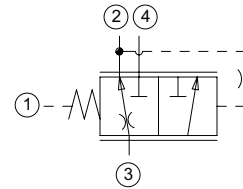
No housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

P103 298

OPERATION

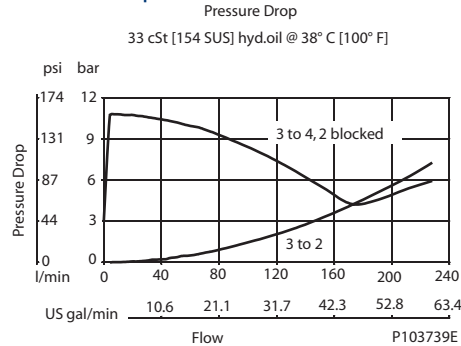
This is a static load sense priority valve.

Schematic



SPECIFICATIONS

Theoretical performance



P103 495

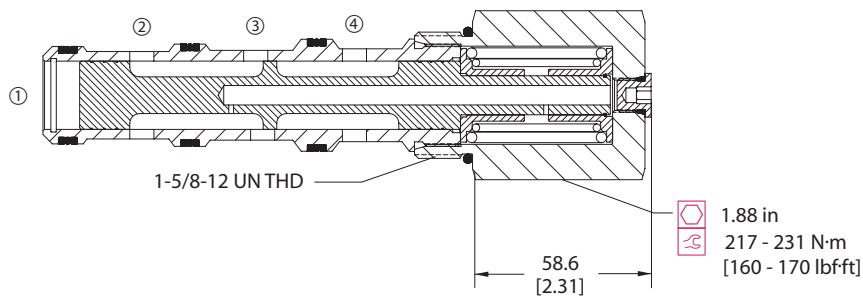
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	200 l/min [53 US gal/min]
Weight	1.33 kg [2.93 lb]
Cavity	SDC20-4

DIMENSIONS

mm [in]

Cross-sectional view



P103 294

ORDERING INFORMATION

CP313 - 6 - B - 16S - 080

Seals

B = Buna-N
 V = Viton

Seal kit
 120181
 120182

Housing and ports

0 = No Housing
 8B = AL, 1 BSP
 10B = AL, 1-1/4 BSP
 16S = AL, #16 SAE
 20S = AL, #20 SAE
 Other housings available

Housing P/N

No Housing
 CP20-4-8B
 CP20-4-10B
 CP20-4-16S
 CP20-4-20S

Compensator Spring

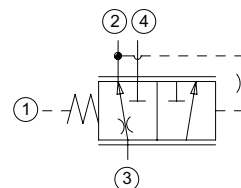
bar [psi]
 050 = 3.4 [50]
 080 = 5.5 [80]
 100 = 6.9 [100]
 130 = 9.0 [130]
 150 = 10.3 [150]

P103 297

OPERATION

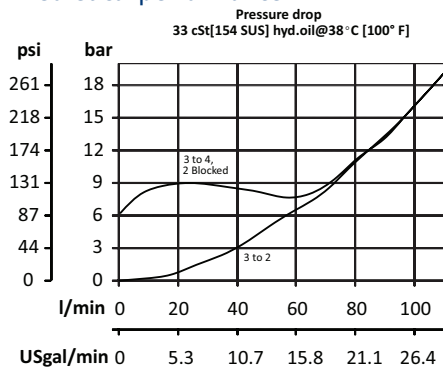
This is a static load sense priority valve.

Schematic



SPECIFICATIONS

Theoretical performance



P103 495

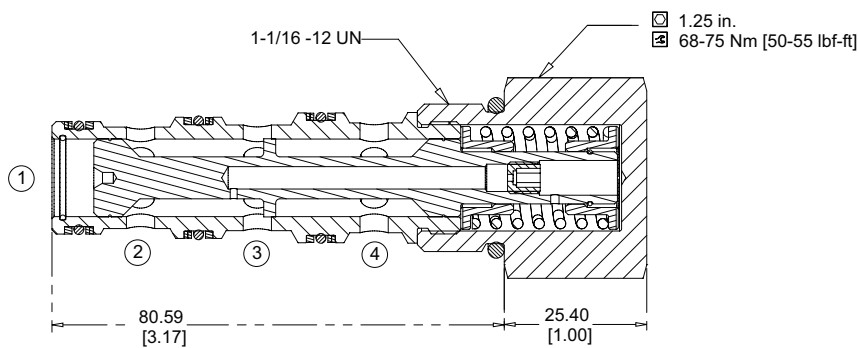
Specifications

Rated pressure	207 bar [3000 psi]
Rated flow at 7 bar [100 psi]	75 l/min [20 US gal/min]
Weight	0.31 kg [0.68 lb]
Cavity	CP12-4

DIMENSIONS

mm [in]

Cross-sectional view



P108 373E

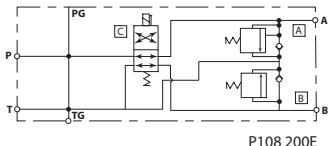
ORDERING INFORMATION

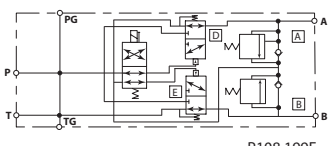
PC12-LPS-5.5-B-00

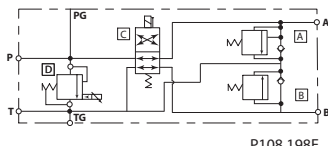
Differential Control Pressure 5.5 = 5.5 bar [80 psi] 7.0 = 7 bar [100 psi] 10.0 = 10.0 bar [150 psi]	Housing and ports 00 = No Housing 3B = Al, 1/2 BSP 4B = Al, 3/4 BSP 10S = Al, #10 SAE 12S = Al, #12 SAE	Housing Part # No Housing CP12-4-3B CP12-4-4B CP12-4-10S CP12-4-12S
	Seals B = Buna-N V = Viton	Seal Kit 120262 120263

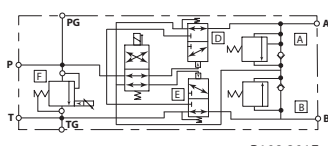
P108 375E

Logic elements
PC12-LPS

Fan Drive HICs	Model No.	Cavity	Description	Flow*	Pressure	Page
 <p>P108 200E</p>	RFD-40-000	none	Fan Drive HIC with Reversing Control	Up to 40 l/min [10.5 US gal/min] See performance chart	210 bar [3000 psi]	14.6
	RFD-80-000	none		Up to 80 l/min [21.1 US gal/min] See performance chart		14.8

Fan Drive HICs	Model No.	Cavity	Description	Flow*	Pressure	Page
 <p>P108 199E</p>	RFD-120-000	none	Fan Drive HIC with Reversing Control	Up to 120 l/min [31.7 US gal/min] See performance chart	210 bar [3000 psi]	14.10

Fan Drive HICs	Model No.	Cavity	Description	Flow*	Pressure	Page
 <p>P108 198E</p>	RFD-40-PRV	none	Fan Drive HIC with Proportional and Reversing Control	Up to 40 l/min [10.5 US gal/min] See performance chart	210 bar [3000 psi]	14.12
	RFD-80-PRV	none		Up to 80 l/min [21.1 US gal/min] See performance chart		210 bar [3000 psi]

Fan Drive HICs	Model No.	Cavity	Description	Flow*	Pressure	Page
 <p>P108 201E</p>	RFD-120-PRV	none	Fan Drive HIC with Proportional and Reversing Control	Up to 120 l/min [31.7 US gal/min] See performance chart	210 bar [3000 psi]	14.16

* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

OVERVIEW

Off-highway mobile machinery OEMs and distributors can choose from six pre-engineered Hydraulic Integrated Circuits (HICs) designed to provide speed control and reversing for hydraulic modulating fan drive motors in open circuit hydraulic fan drive systems. The program includes:

- 40, 80, and 120 LPM Frame Sizes
- Variable piston pump or fixed pump circuits
- Over-Pressure Protection / Anti-Cavitation is standard
- Viton O-rings are standard

	40 LPM	80 LPM	120 LPM
	RFD-40-000	RFD-80-000	RFD-120-000
Variable pump fan drive circuits: - Provide reversing control and over-pressure protection/anti-cavitation			
Fixed pump fan drive circuits: - Provide modulating and reversing control with over-pressure protection/anti-cavitation			
	RFD-40-PRV	RFD-80-PRV	RFD-120-PRV

Functions

Proportional relief valve:

- Regulates fan speed by controlling pressure drop across fan motor
- Normally closed to ensure full fan speed in the absence of electrical signal
- PLUS+1® compliant

Solenoid reversing valve:

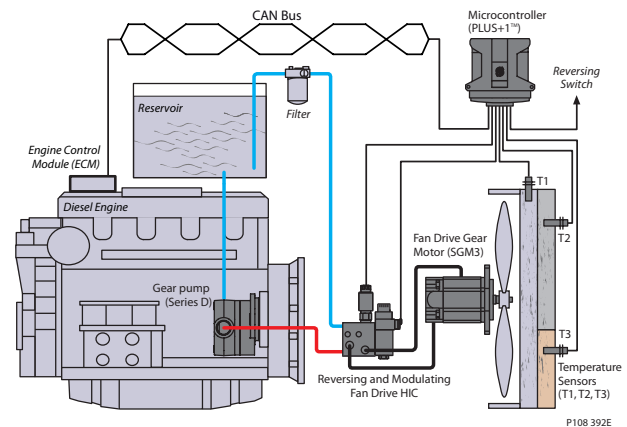
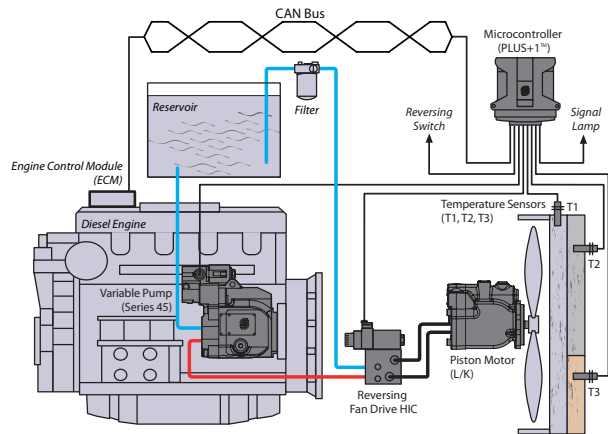
- Reverses flow to the fan motor to reverse fan direction
- Open transition spool to reduce the likelihood of pressure spikes during reversals
- Sized to minimize parasitic losses due to pressure drop

Dual shock valve with anti-cavitation checks:

- Trims the maximum motor torque by absorbing pressure spikes (shock effects) at the work ports
- Anti-cavitation feature allows additional flow to the motor through the tank port when motor overruns the pump
- PVLP shock valves (from PVG) allow for a compact design

Custom designs available upon request.

Circuits - Variable Pump or Fixed Pump



RFD-xx-000

- Variable Pump fan drive circuits
- HIC provides reversing control and over-pressure protection/anti-cavitation
- Variable pump provides modulation (speed control)

RFD-xx-PRV

- Fixed Pump fan drive circuits
- HIC provides modulating and reversing control with over-pressure protection/anti-cavitation

Features

Integrated and compact design with customer flexibility in mind:

- Designed and tested specifically for fan drive systems
- Configurable for quick availability

Proportional control allows the engine temperature to be controlled within narrow limits:

- Helps meet the requirements of new emissions legislation
- The engine can be run more efficiently - improving fuel economy and reducing emissions

Increased design flexibility and scalability:

- Multiple frame sizes that allow you to match to your flow and pressure drop requirements for multiple machines and their respective fan requirements
- HIC valve can be placed in the most suitable location on the machine
- Reduce parasitic losses by limiting flow to and from the fan drive motor
- The gear motor is shorter compared to a fan motor with integrated valve
- Two sets of mounting holes for mounting flexibility (SAE and Metric compatible)

Features (continued)

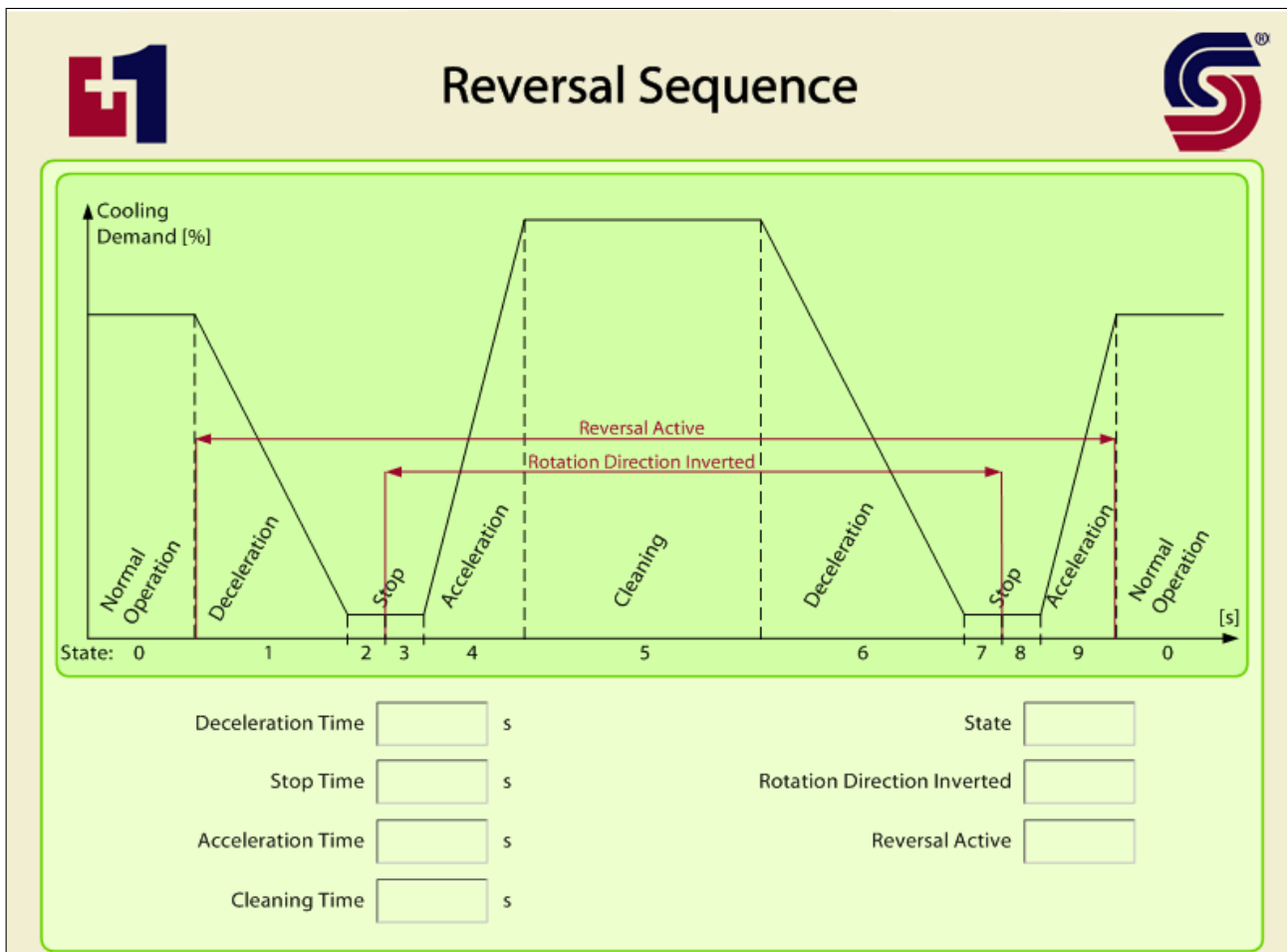
Increased productivity:

- Fan is reversible to purge (de-clog) coolers and radiators
- Prevents overheating with purged cooler
- More power available for useful work when radiator is not clogged

Automatic cleaning sequence programmed using PLUS+1™:

- Manual or automatic activation
- Reference Sauer-Danfoss 'Fan Drive Application Block' information
- Service screen below illustrates an example reversing fan drive software setup

Service screen below illustrates an example reversing fan drive software setup



Cartridge Valves Technical Information
 Fan Drive HICs
 Fan Drive HIC with Reversing Control
 RFD-40-000

OPERATION

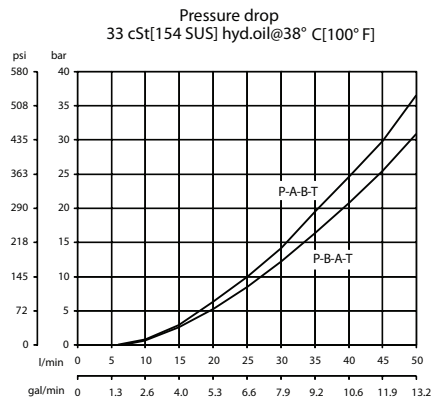
This valve reverses flow to the fan motor to reverse fan direction. It includes an open transition spool to reduce pressure spikes during reversals.

It trims the maximum motor torque by absorbing pressure spikes at the work ports. An anti-cavitation feature allows additional flow to the motor when the motor over-runs the pump.

SPECIFICATIONS

Rated pressure	210 bar [3000 psi]
Flow	Up to 40 l/min [10.5 US gal/min] See performance chart
Weight	3.23 kg [7.11 lb]
Valves	DCV03, PVLP
Gauge Port Size	#4 SAE [1/4 BSP]

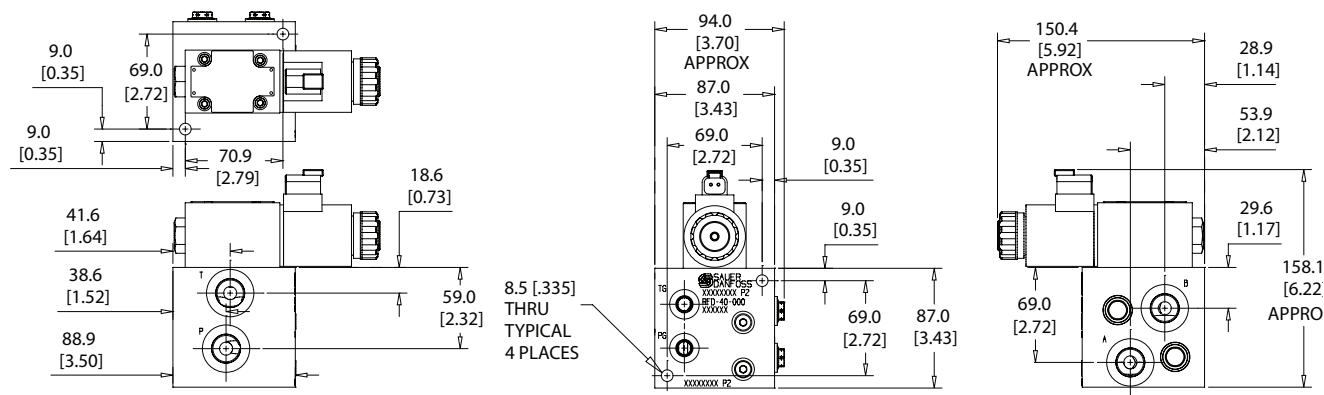
THEORETICAL PERFORMANCE



P108 294E

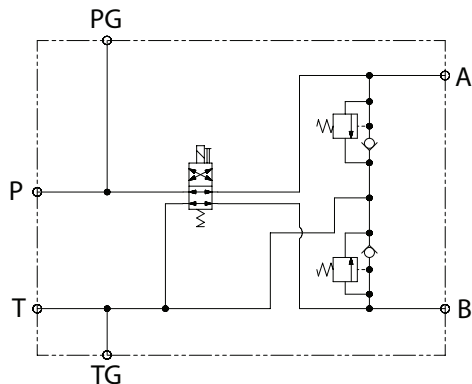
DIMENSION DRAWING

Dimensions mm [in]



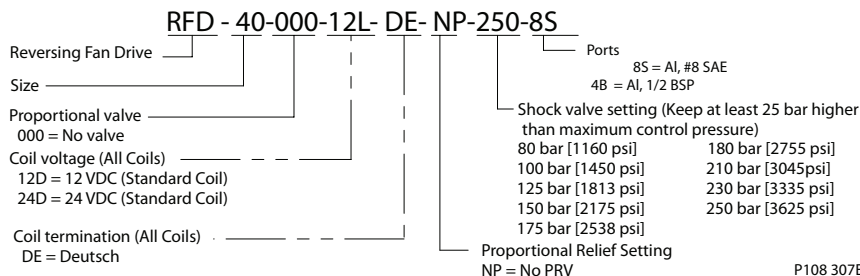
P108 36

SCHEMATIC



P108 293E

ORDERING INFORMATION



P108 307E

Cartridge Valves Technical Information
 Fan Drive HICs
 Fan Drive HIC with Reversing Control
 RFD-80-000

OPERATION

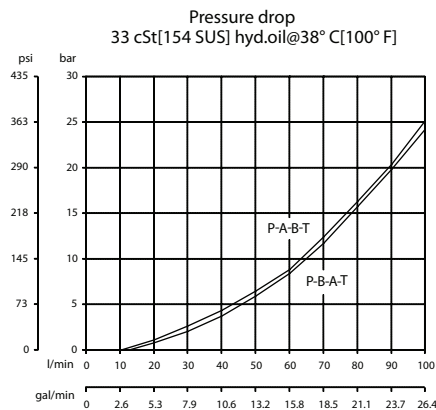
This valve reverses flow to the fan motor to reverse fan direction. It includes an open transition spool to reduce pressure spikes during reversals.

It trims the maximum motor torque by absorbing pressure spikes at the work ports. An anti-cavitation feature allows additional flow to the motor when the motor over-runs the pump.

SPECIFICATIONS

Rated pressure	210 bar [3000 psi]
Flow	Up to 80 l/min [21.5 US gal/min] See performance chart
Weight	6.74 kg [14.86 lb]
Valves	DCV05, PVLP
Gauge Port Size	#4 SAE [1/4 BSP]

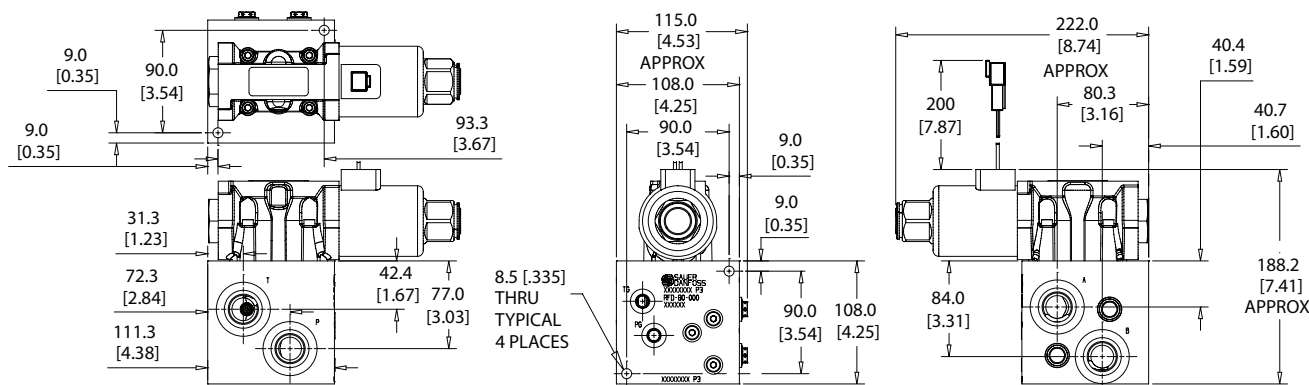
THEORETICAL PERFORMANCE



P108 306E

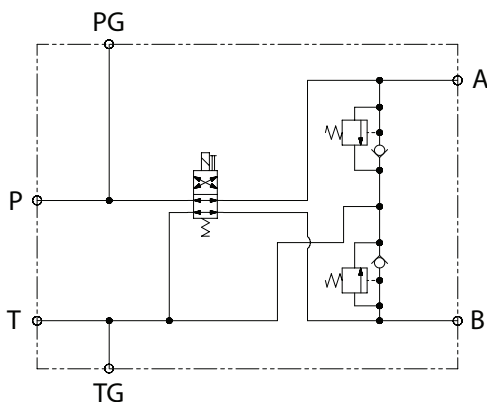
DIMENSION DRAWING

Dimensions mm [in]



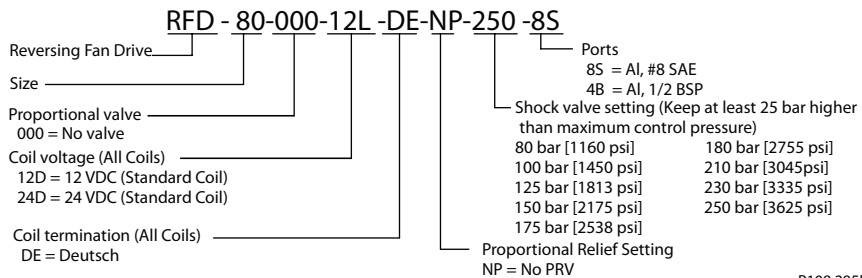
P108 296E

SCHEMATIC



P108 305E

ORDERING INFORMATION



P108 295E

Cartridge Valves Technical Information
 Fan Drive HICs
 Fan Drive HIC with Reversing Control
 RFD-120-000

OPERATION

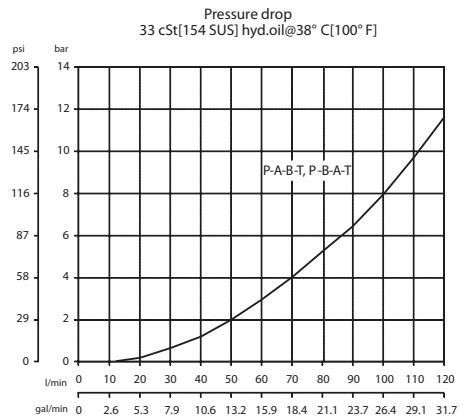
This valve reverses flow to the fan motor to reverse fan direction. It includes an open transition spool to reduce pressure spikes during reversals.

It trims the maximum motor torque by absorbing pressure spikes at the work ports. An anti-cavitation feature allows additional flow to the motor when the motor over-runs the pump.

SPECIFICATIONS

Rated pressure	210 bar [3000 psi]
Flow	Up to 120 l/min [31.7 US gal/min] See performance chart
Weight	4.26 kg [9.40 lb]
Valves	CP722-5, SV08-24-01, PVLP
Gauge Port Size	#4 SAE [1/4 BSP]

THEORETICAL PERFORMANCE

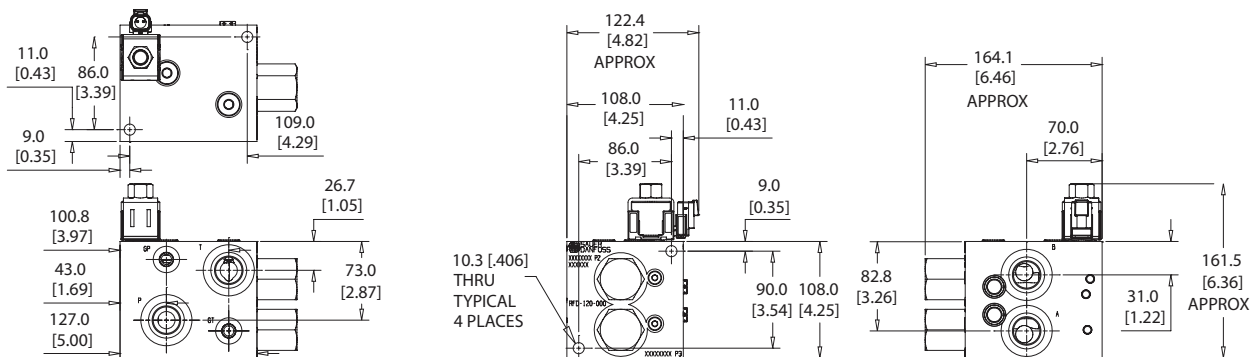


P108 309E

Cartridge Valves Technical Information
 Fan Drive HICs
 Fan Drive HIC with Reversing Control
 RFD-120-000

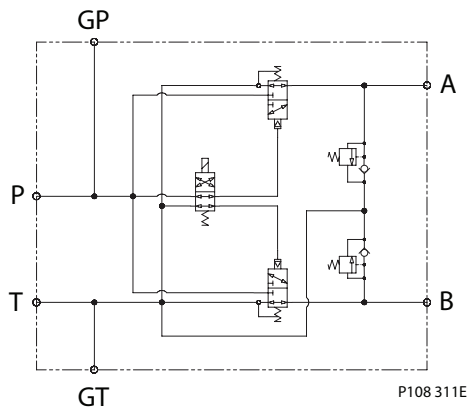
DIMENSION DRAWING

Dimensions mm [in]



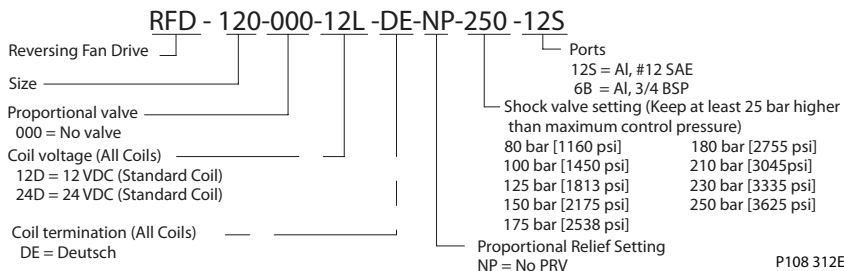
P108 310E

SCHEMATIC



P108 311E

ORDERING INFORMATION



P108 312E

Cartridge Valves Technical Information

Fan Drive HICs

Fan Drive HIC with Proportional and Reversing Control

RFD-40-PRV

OPERATION

This valve regulates fan speed by controlling pressure drop across the fan motor. It operates in a normally closed configuration in the absence of an electrical signal.

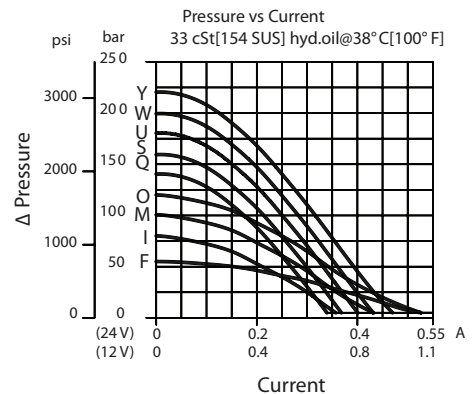
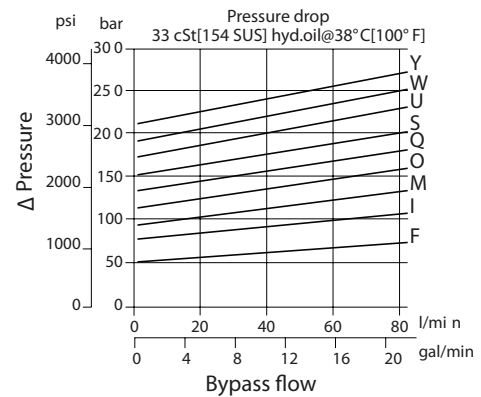
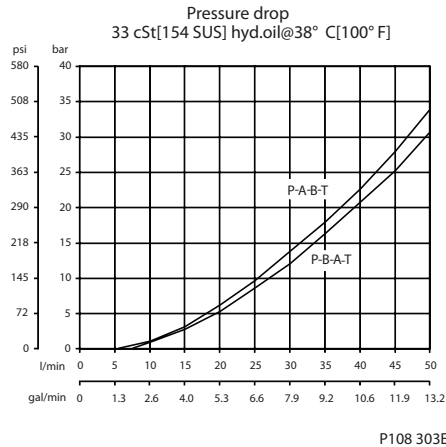
The valve reverses flow to the fan motor to reverse fan direction. It includes an open transition spool to reduce pressure spikes during reversals.

It trims the maximum motor torque by absorbing pressure spikes at the work ports. An anti-cavitation feature allows additional flow to the motor when the motor over-runs the pump.

SPECIFICATIONS

Rated pressure	210 bar [3000 psi]
Flow	Up to 40 l/min [10.5 US gal/min] See performance chart
Weight	4.52 kg [9.96 lb]
Valves	DCV03, PRV10-IS2, PVLP
Gauge Port Size	#4 SAE [1/4 BSP]

THEORETICAL PERFORMANCE



Cartridge Valves Technical Information

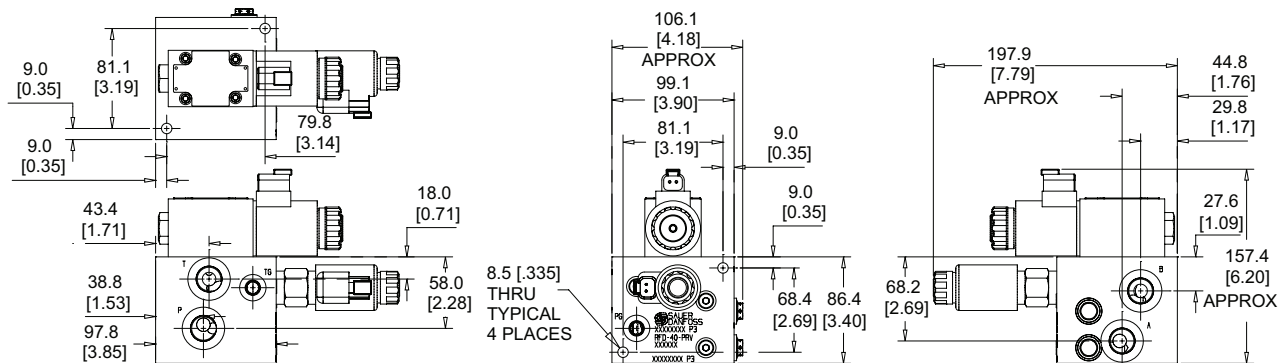
Fan Drive HICs

Fan Drive HIC with Proportional and Reversing Control

RFD-40-PRV

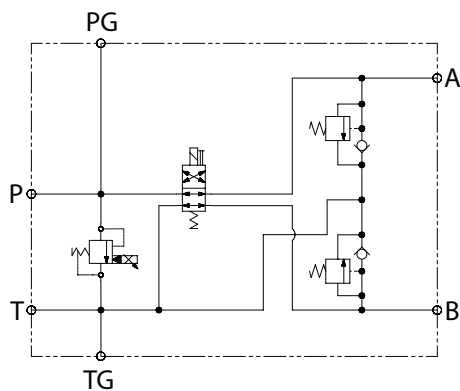
DIMENSION DRAWING

Dimensions mm [in]



P108 304E

SCHEMATIC



P108 301E

ORDERING INFORMATION

RFD-40-PRV-12L-DE-Y-250-8S

Reversing Fan Drive	Ports
Size	8S = Al, #8 SAE
Proportional valve	4B = Al, 1/2 BSP
PRV=Proportional Relief Valve	Shock valve setting (Keep at least 25 bar higher than maximum control pressure)
000 = No valve	80 bar [1160 psi] 180 bar [2755 psi]
Coil voltage (All Coils)	100 bar [1450 psi] 210 bar [3045 psi]
12L = 12 VDC (Standard Coil)	125 bar [1813 psi] 230 bar [3335 psi]
24L = 24 VDC (Standard Coil)	150 bar [2175 psi] 250 bar [3625 psi]
Coil termination (All Coils)	175 bar [2538 psi]
DE = Deutsch	Proportional Relief Setting
	F=45 bar[653 psi] O=120 bar[1740 psi] U=185 bar[2683 psi]
	I=75 bar[1088 psi] Q=140 bar[2030 psi] W=205 bar[2973 psi]
	M=100 bar[1450psi] S=160 bar[2320 psi] Y=225 bar[3263 psi]

P108 303E

Cartridge Valves Technical Information

Fan Drive HICs

Fan Drive HIC with Proportional and Reversing Control

RFD-80-PRV

OPERATION

This valve regulates fan speed by controlling pressure drop across the fan motor. It operates in a normally closed configuration in the absence of an electrical signal.

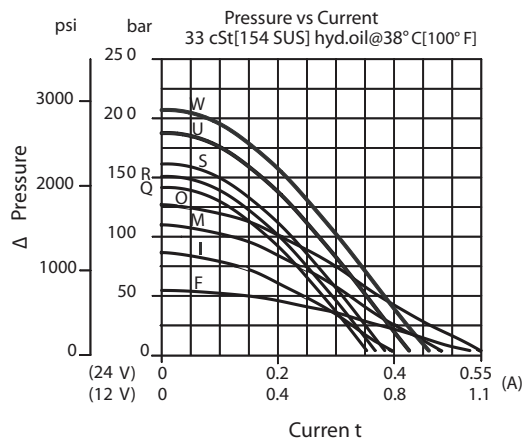
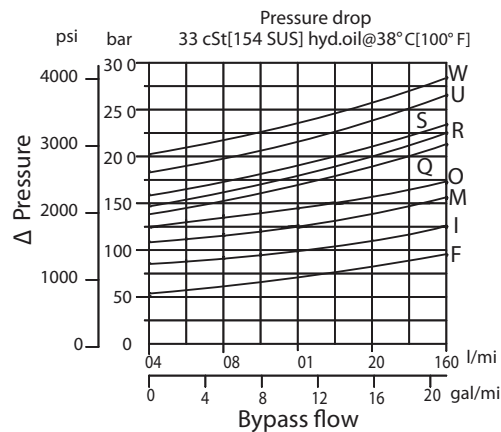
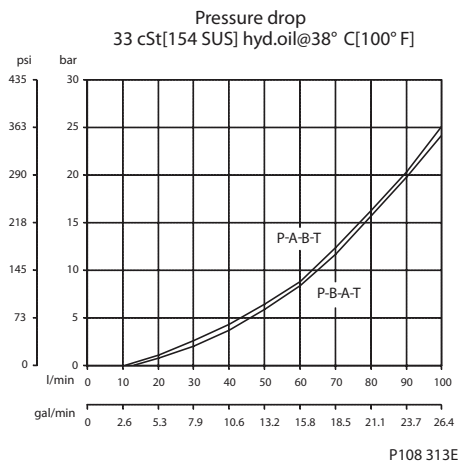
The valve reverses flow to the fan motor to reverse fan direction. It includes an open transition spool to reduce pressure spikes during reversals.

It trims the maximum motor torque by absorbing pressure spikes at the work ports. An anti-cavitation feature allows additional flow to the motor when the motor over-runs the pump.

SPECIFICATIONS

Rated pressure	210 bar [3000 psi]
Flow	Up to 80 l/min [21.7 US gal/min] See performance chart
Weight	8.35 kg [18.40 lb]
Valves	DCV05, PRV12-IS2, PVLP
Gauge Port Size	#4 SAE [1/4 BSP]

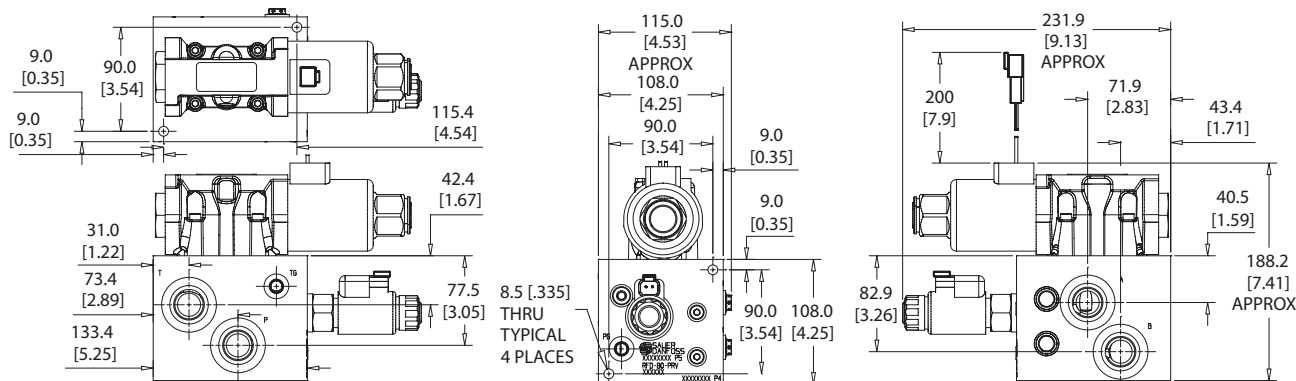
THEORETICAL PERFORMANCE



Cartridge Valves Technical Information
 Fan Drive HICs
 Fan Drive HIC with Proportional and Reversing Control
 RFD-80-PRV

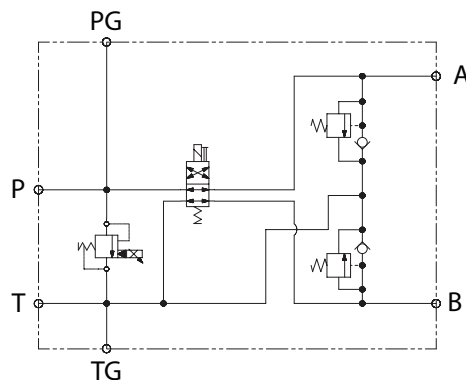
DIMENSION DRAWING

Dimensions mm [in]



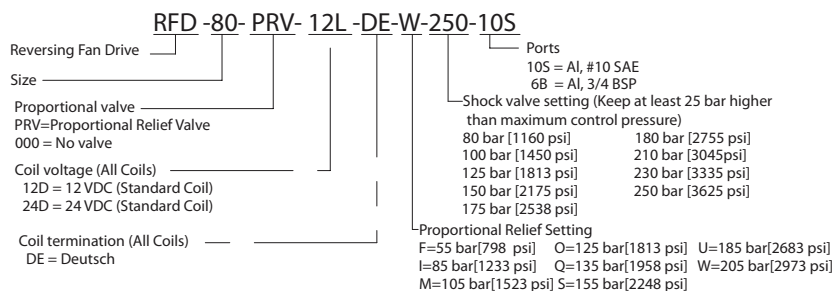
P108 314E

SCHEMATIC



P108 315E

ORDERING INFORMATION



P108 116E

Cartridge Valves Technical Information
 Fan Drive HICs
 Fan Drive HIC with Proportional and Reversing Control
 RFD-120-PRV

OPERATION

This valve regulates fan speed by controlling pressure drop across the fan motor. It operates in a normally closed configuration in the absence of an electrical signal.

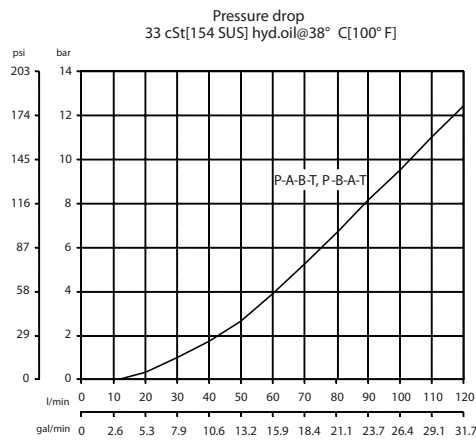
The valve reverses flow to the fan motor to reverse fan direction. It includes an open transition pool to reduce pressure spikes during reversals.

It trims the maximum motor torque by absorbing pressure spikes at the work ports. An anti-cavitation feature allows additional flow to the motor when the motor over-runs the pump.

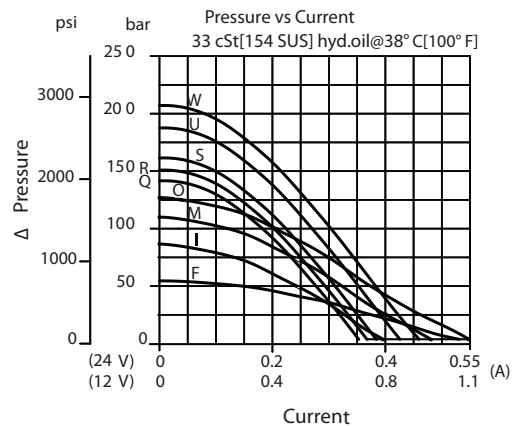
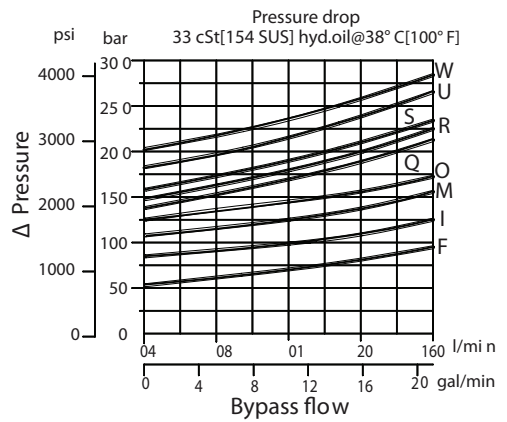
SPECIFICATIONS

Rated pressure	210 bar [3000 psi]
Flow	Up to 120 l/min [31.7 US gal/min] See performance chart
Weight	15.7 kg [6.93 lb]
Valves	CP722-5, SV08-24-01, PRV12-IS2, PVLP
Gauge Port Size	#4 SAE [1/4 BSP]

THEORETICAL PERFORMANCE



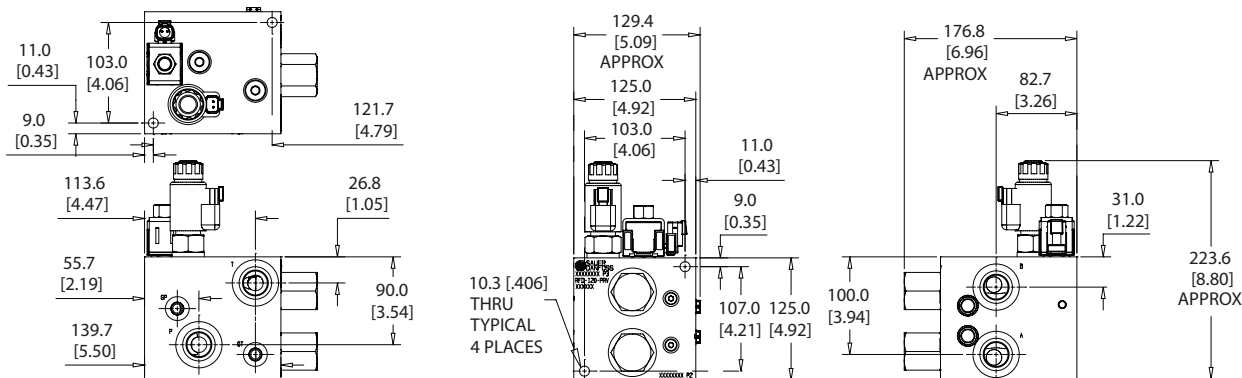
P108 317E



Cartridge Valves Technical Information
 Fan Drive HICs
 Fan Drive HIC with Proportional and Reversing Control
 RFD-120-PRV

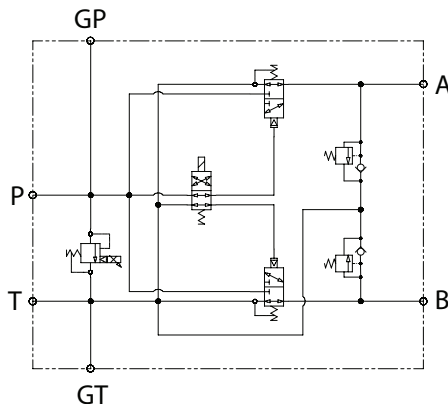
DIMENSION DRAWING

Dimensions mm [in]



P108 318E

SCHEMATIC

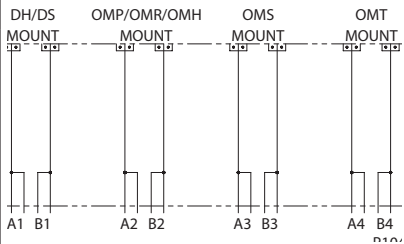


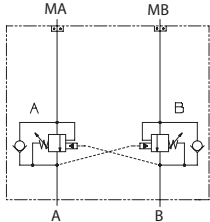
P108 319E

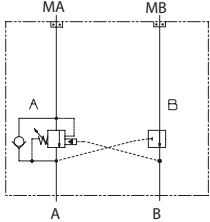
ORDERING INFORMATION

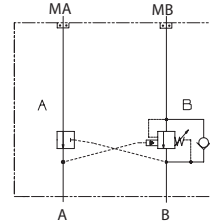
RFD - 120 - PRV - 12L - DE - W - 250 - 12S	
Reversing Fan Drive	Ports
Size	12S = Al, #12 SAE
Proportional valve	6B = Al, 3/4 BSP
PRV=Proportional Relief Valve	Shock valve setting (Keep at least 25 bar higher than maximum control pressure)
000 = No valve	80 bar [1160 psi] 180 bar [2755 psi]
Coil voltage (All Coils)	100 bar [1450 psi] 210 bar [3045 psi]
12D = 12 VDC (Standard Coil)	125 bar [1813 psi] 230 bar [3335 psi]
24D = 24 VDC (Standard Coil)	150 bar [2175 psi] 250 bar [3625 psi]
Coil termination (All Coils)	175 bar [2538 psi]
DE = Deutsch	Proportional Relief Setting
	F=55 bar[798 psi] O=125 bar[1813 psi] U=185 bar[2683 psi]
	I=85 bar[1233 psi] Q=135 bar[1958 psi] W=205 bar[2973 psi]
	M=105 bar[1523 psi] S=155 bar[2248 psi]

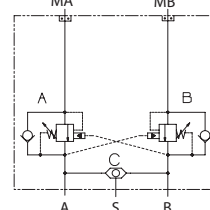
P108 120E

Symbol	Description	Order No.	Page
	Motormount HIC Test Block	11025000	15.21

Symbol	Description	Motor	Model No.	Page
	Dual counterbalance valve	DH	MM-DH-00-DCB10-HV	15.22
		DS	MM-DS-00-DCB10-HV	15.23
		OMP/OMR	MM-OMP/OMR-00-DCB10-HV	15.24
		OMH	MM-OMH-00-DCP441-1	15.25
		OMS	MM-OMS-00-DCP441-1	15.26
		OMT	MM-OMT-00-DCP441-1	15.27

Symbol	Description	Motor	Model No.	Page
	Single counterbalance valve (A port)	DH	MM-DH-00-ACB10-HV	15.28
		DS	MM-DS-00-ACB10-HV	15.29
		OMP/OMR	MM-OMP/OMR-00-ACB10-HV	15.30
		OMH	MM-OMH-00-ACP441-1	15.31
		OMS	MM-OMS-00-ACP441-1	15.32
		OMT	MM-OMT-00-ACP441-1	15.33

Symbol	Description	Motor	Model No.	Page
	Single counterbalance valve (B port)	DH	MM-DH-00-BCB10-HV	15.34
		DS	MM-DS-00-BCB10-HV	15.35
		OMP/OMR	MM-OMP/OMR-00-BCB10-HV	15.36
		OMH	MM-OMH-00-BCP441-1	15.37
		OMS	MM-OMS-00-BCP441-1	15.38
		OMT	MM-OMT-00-BCP441-1	15.39

Symbol	Description	Motor	Model No.	Page
	Dual counterbalance valve with shuttle	DH	MM-DH-LS-DCB10-HV	15.39
		DS	MM-DS-LS-DCB10-HV	15.40
		OMP/OMR	MM-OMP/OMR-LS-DCB10-HV	15.41
		OMH	MM-OMH-LS-DCP441-1	15.42
		OMS	MM-OMS-LS-DCP441-1	15.43
		OMT	MM-OMT-LS-DCP441-1	15.44

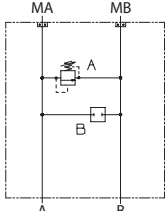
Motor mount HICs
 Quick reference

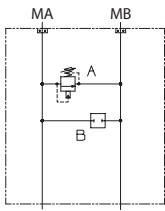
Symbol	Description	Motor	Model No.	Page
	Single counterbalance valve (A port) with shuttle	DH	MM-DH-LS-ACB10-HV	15.46
		DS	MM-DS-LS-ACB10-HV	15.47
		OMP/OMR	MM-OMP/OMR-LS-ACB10-HV	15.48
		OMH	MM-OMH-LS-ACP441-1	15.49
		OMS	MM-OMS-LS-ACP441-1	15.50
		OMT	MM-OMT-LS-ACP441-1	15.51

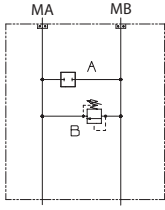
Symbol	Description	Motor	Model No.	Page
	Single counterbalance valve (B port) with shuttle	DH	MM-DH-LS-BCB10-HV	15.52
		DS	MM-DS-LS-BCB10-HV	15.53
		OMP/OMR	MM-OMP/OMR-LS-BCB10-HV	15.54
		OMH	MM-OMH-LS-BCP441-1	15.55
		OMS	MM-OMS-LS-BCP441-1	15.56
		OMT	MM-OMT-LS-BCP441-1	15.57

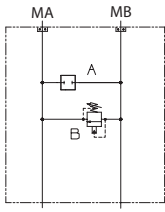
Symbol	Description	Motor	Model No.	Page
	Dual cross-port relief valve	DH	MM-DH-00-DVME06	15.58
		DS	MM-DS-00-DVME06	15.59
		OMP/OMR	MM-OMP/OMR-00-DVME06	15.60

Symbol	Description	Motor	Model No.	Page
	Dual cross-port relief valve	OMH	MM-OMH-00-DCP211-2	15.61
		OMS	MM-OMS-00-DCP211-2	15.62
		OMT	MM-OMT-00-DCP211-2	15.63

Symbol	Description	Motor	Model No.	Page
	Single cross-port relief valve (A port)	DH	MM-DH-00-AVME06	15.64
		DS	MM-DS-00-AVME06	15.65
		OMP/OMR	MM-OMP/OMR-00-AVME06	15.66

Symbol	Description	Motor	Model No.	Page
	Single cross-port relief valve (A port)	OMH	MM-OMH-00-ACP211-2	15.67
		OMS	MM-OMS-00-ACP211-2	15.68
		OMT	MM-OMT-00-ACP211-2	15.69

Symbol	Description	Motor	Model No.	Page
	Single cross-port relief valve (B port)	DH	MM-DH-00-BVME06	15.70
		DS	MM-DS-00-BVME06	15.71
		OMP/OMR	MM-OMP/OMR-00-BVME06	15.72

Symbol	Description	Motor	Model No.	Page
	Single cross-port relief valve (B port)	OMH	MM-OMH-00-BCP211-2	15.73
		OMS	MM-OMS-00-BCP211-2	15.74
		OMT	MM-OMT-00-BCP211-2	15.75

Motor mount HICs
Quick reference

Symbol	Description	Motor	Model No.	Page
	Dual cross-port relief valve with shuttle	DH	MM-DH-LS-DVME06	15.76
		DS	MM-DS-LS-DVME06	15.77
		OMP/OMR	MM-OMP/OMR-LS-DVME06	15.78

Symbol	Description	Motor	Model No.	Page
	Dual cross-port relief valve with shuttle	OMH	MM-OMH-LS-DCP211-2	15.79
		OMS	MM-OMS-LS-DCP211-2	15.80
		OMT	MM-OMT-LS-DCP211-2	15.81

Symbol	Description	Motor	Model No.	Page
	Single cross-port relief valve (A port) with shuttle	DH	MM-DH-LS-AVME06	15.82
		DS	MM-DS-LS-AVME06	15.83
		OMP/OMR	MM-OMP/OMR-LS-AVME06	15.84

Symbol	Description	Motor	Model No.	Page
	Single cross-port relief valve (A port) with shuttle	OMH	MM-OMH-LS-ACP211-2	15.85
		OMS	MM-OMS-LS-ACP211-2	15.86
		OMT	MM-OMT-LS-ACP211-2	15.87

Symbol	Description	Motor	Model No.	Page
	Single cross-port relief valve (B port) with shuttle	DH	MM-DH-LS-BVME06	15.88
		DS	MM-DS-LS-BVME06	15.89
		OMP/OMR	MM-OMP/OMR-LS-BVME06	15.90

Symbol	Description	Motor	Model No.	Page
	Single cross-port relief valve (B port) with shuttle	OMH	MM-OMH-LS-BCP211-2	15.91
		OMS	MM-OMS-LS-BCP211-2	15.92
		OMT	MM-OMT-LS-BCP211-2	15.93

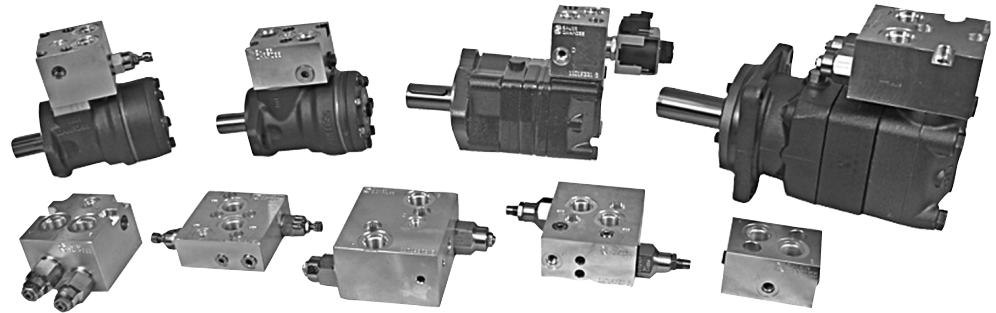
Symbol	Description	Motor	Model No.	Page
	Bypass solenoid with drain	DH	MM-DH-00-SVP10-NCR	15.94
		DS	MM-DS-00-SVP10-NCR	15.95
		OMP/OMR	MM-OMP/OMR-00-SVP10-NCR	15.96
		OMH	MM-OMH-00-SVP10-NCR	15.97
		OMS	MM-OMS-00-SVP10-NCR	15.98
		OMS	MM-OMT-00-CP502-3	15.99

Symbol	Description	Motor	Model No.	Page
	Dual shock valve with anticavitation	DH	MM-DH-00-DPVLP	15.100
		DS	MM-DS-00-DPVLP	15.101
		DS	MM-OMP/OMR-00-DPVLP	15.102
		OMH	MM-OMH-00-DPVLP	15.103
		OMS	MM-OMS-00-DPVLP	15.104
		OMT	MM-OMT-00-DPVLP	15.105

OVERVIEW

This family of motor mount HICs (Hydraulic Integrated Circuits) complements Sauer-Danfoss orbital motors—also known as Low Speed, High Torque (LSHT) motors. These HICs perform several complementary functions common in LSHT motor applications.

Motor mount HIC family



FUNCTIONS

There are four basic types of HIC functions, or schemes, with additional functions available:

- Counterbalance (or overcenter)
 - Dual or single valve on A or B port
 - With or without brake shuttle
- Cross-port relief
 - Dual or single valve on A or B port
 - With or without brake shuttle
- Bypass solenoid
 - With drain port
- Dual shock valve with anti-cavitation checks
 - Uses PVLP (shock valve from PVG line)
 - Dual only
 - Ductile iron manifold only

ADVANTAGES

There are advantages to using Comatrol motor mount HICs:

- Pre-packaged designs, specifically for SD motors
 - Pre-work is done to ensure proper assembly and mounting to motor
- System plumbing and packaging efficiencies
 - Reduction in fittings, tubing, and/or hoses
 - Reduction in assembly time
- HICs have been pre-tested to NFPA test standards
- Off-the-shelf* solution of common valve functions applied with orbital motors

ORBITAL MOTORS

There are seven specific Sauer-Danfoss orbital motor types in this program. The table below highlights the motors and their basic technical information. For more information refer to the technical information manual number in the table. HICs fit only the porting configuration shown.

Sauer-Danfoss orbital motors compatible with HICs

Motor type	Units	Displacement range	Max pressure drop* [continuous]	Max pressure drop* [intermittent]	Max flow* [continuous]	Max flow* [intermittent]	Port style for HIC mount	Technical Information
DH	US	2.20 - 23.82 in ³	1800 psi	2400 psi	15.9 US gal/min	19.8 US gal/min	Manifold	520L0439 [DH and DS Orbital Motors]
	Metric	25.0 - 389.2 cm ³	124 bar	166 bar	60 l/min	75 l/min		
DS	US	3.16 - 23.91 in ³	2000 psi	2500 psi	15.9 US gal/min	19.8 US gal/min		
	Metric	51.6 - 390.7 cm ³	138 bar	172 bar	60	75 l/min		
OMP	US	1.53 - 23.82 in ³	2030	2540	15.9 US gal/min	19.8 US gal/min	G 1/2 (BSP)	520L0262 [OMP, OMR, OMH and OMEW Orbital Motors]
	Metric	36.0 - 389.2 cm ³	140 bar	175 bar	60 l/min.	75 l/min		
OMR	US	3.16 - 22.8 in ³	2540 psi	2900 psi	15.9 US gal/min	19.8 US gal/min		
	Metric	51.6 - 372.6 cm ³	175 bar	200 bar	60 l/min.	75 l/min		
OMH	US	12.32 - 28.80 in ³	2540 psi	2900 psi	19.8 US gal/min	23.8 US gal/min		
	Metric	201.3 - 470.6 cm ³	175 bar	200 bar	75 l/min.	90 l/min.		
OMS	US	4.91 - 29.78 in ³	3050 psi	3990 psi	19.8 US gal/min	23.8 US gal/min	G 1/2 (BSP)	520L0407 [OMS, OMT and OMV Orbital Motors]
	Metric	80.5 - 488.0 cm ³	210 bar	275 bar	75 l/min.	90 l/min.		
OMT	US	9.83 - 31.95 in ³	2900 psi	3480 psi	33.0 US gal/min	39.6 US gal/min	G 3/4 (BSP)	
	Metric	161.1 - 523.6 cm ³	200 bar	240 bar	125 l/min.	150 l/min.		

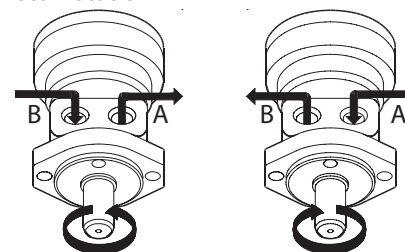
* Pressures and flows are displacement and shaft size dependent. Refer to motor catalog for more specific motor technical details.

Motor mount HICs Application notes

Motor rotation

For the motor mount HIC program, the port designations are illustrated here. With the shaft facing you, A is the port on the right, while B is the port on the left.

Motor rotation



151-1874.10

Order code

The order code is easy to understand. Each code starts with MM for Motor Mount. The second field represents motor type (DH, DS, OMP/OMR, OMH, OMS, or OMT). The third field represents secondary valve (00 for none, LS for shuttle). The fourth field gives the primary valve position (D for dual, A port, or B port) followed by the cartridge used (CB10-HV, CP441-1, VME-06, CP211-1, SVP10-NCR, CP502-3 or PVLV). The remainder of the code details options specific to that cartridge, including port style on the HIC. See each individual valve in this section for a detailed breakdown of the available options.

Sample order code

MM-DH-00-DCB10-HV-1-C-1-E-100-B-10S

- Motor mount: MM
- Motor code: DH
- Secondary valve: 00 = No valve
- Dual counterbalance valve: DC
- Type: HV = Hydraulic Vent
- Pressure range: 1 = 35-110 bar [507-1595 psi]
- For pilot ratio A (3:1): 2 = 60-150 bar [870-2176 psi]
- 3 = 80-230 bar [1160-3336 psi]
- For pilot ratio B (4.5:1): 1 = 55-180 bar [797-2611 psi]
- 2 = 75-240 bar [1088-3481 psi]
- 3 = 90-350 bar [1305-5076 psi]
- For pilot ratio C (10:1): 1 = 110-350 bar [1595-5076 psi]
- Pilot ratio: C = 10:1
- Housing and ports: 10S = Al, #10SAE
- 4B = Al, 1/2 BSP
- Seals: B = Buna-N, V = Viton
- Cracking pressure (bar): Example: 100 = 100 bar [1450 psi]
- Adjust type: E = External adjustment, F = Tamper resistant
- Check crack pressure: 1 = 1 bar [14.5 psi]

Part # 11019287, 11019288, 354001419, 354001519, P104 595

**ORBITAL MOTORS
 (continued)**

Important notes

- Motors are sold separately from HICs.
 - Contact your Sauer-Danfoss representative to order motors.
 - Refer to the motor technical information manual for detailed motor information.

- Mounting bolts and O-rings are included with the purchase of the HIC.
 - The service mount kit allows ordering of just bolts and O-rings.
 - All O-rings are viton.

- All HICs in this program are aluminum, except the dual shock valve HIC.
 - Dual shock valve housing is ductile iron.
 - For ductile iron on any other HIC, please contact your Comatrol representative.

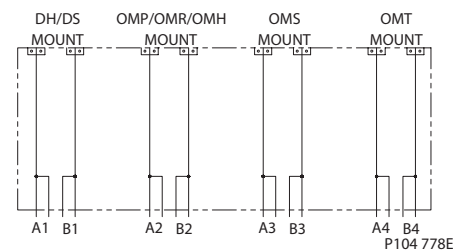
- OMP/OMR and OMH use the same mount, but OMH has higher flow capability.
 - The OMH uses different cartridges to accommodate the higher flow.

- DH and DS use the same mount, but DS requires an additional subplate to clear the motor housing.
 - This subplate is included with the purchase of the HIC.
 - The subplate is also included in the service mount kit for DS HICs.

- Motor mount HICs using dual valves have both valves set identically at the factory.

- Testing
 - A test block is available for HIC testing and adjustment of pressure settings.
 - The test block order number is **11025000**.
 - For further details, refer to the *Accessories* section of this catalog.

Test block schematic



COUNTERBALANCE VALVES

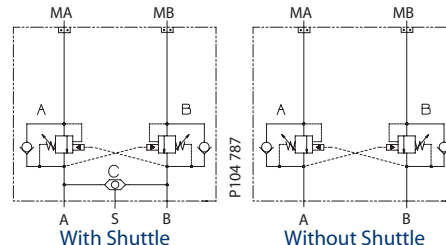
Counterbalance valves prevent motors from drifting excessively due to control valve leakage. They can hold the load in the event of hose/tube failure, or limit overrun when a load is in a lowering or runaway mode (vehicle going downhill). They provide a smooth, cushioned stop when the control valve is suddenly closed.

Counterbalance valves have a pilot ratio of 3.0:1, 4.5:1, or 10.0:1. Typical pilot ratio for motor applications is 10.0:1

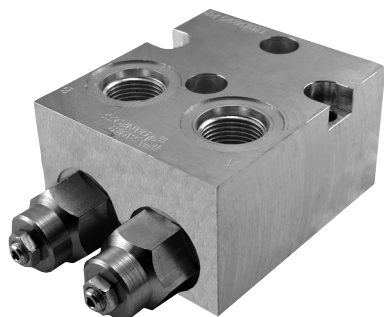
An optional shuttle valve is available for functions such as load sensing feedback, operating an unloading valve, or releasing a brake. The shuttle connects the highest pressure port (A or B) to the S port.

Configurations are available with dual counterbalance valves, or single valve on A or B port. Typical counterbalance applications include swing drives, winch drives, and vehicle propulsion. For more information about counterbalance valves, see [Counterbalance valves](#), section 9 of this catalog.

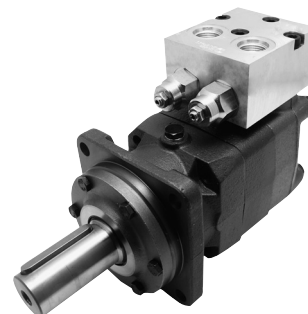
Dual counterbalance valve



Dual counterbalance valve



F102 243



F102 246

Motor mount HICs
 Application notes

COUNTERBALANCE VALVES (continued)

Sample system circuits

Motor with dual counterbalance valve

A typical rotary circuit application for a counterbalance valve contains a pump, directional control valve, system relief valve, and motor. Without a counterbalance valve there is no back pressure to hold the load on the motor, or to prevent free rotation when the control valve shifts to the neutral position. Additionally nothing prevents motor rotation in the event of hydraulic line failure.

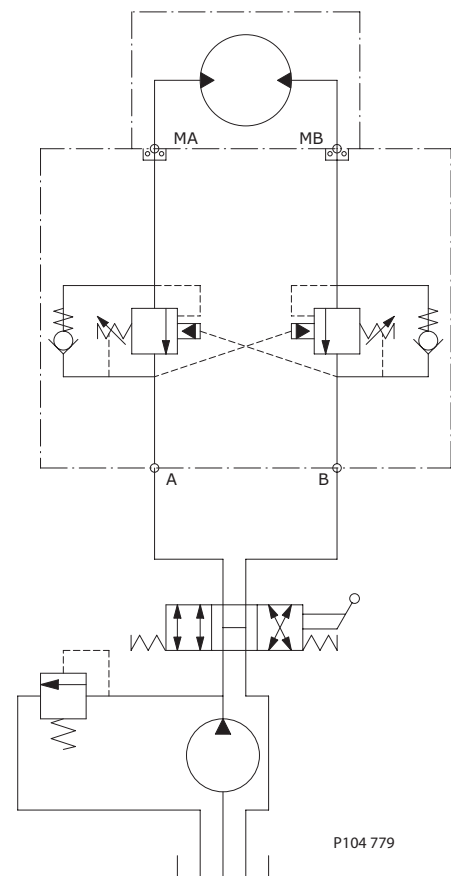
A counterbalance valve controls motion. It also provides protection against hose or tube failure. In this circuit, a dual counterbalance HIC is mounted to a standard motor, providing functionality in both directions.

Moving the directional control valve to the left causes the motor to rotate in one direction. The motor rotates the load with free flow going through the check valve portion of the counterbalance valve, while piloting open the opposite counterbalance valve to allow flow to discharge from the motor.

When the directional control valve is centered, the counterbalance valve prevents leakage and locks the load in position. Moving the directional control valve to the right sends flow to rotate the motor in the opposite direction.

If the load causes the motor to overrun the pump, pilot pressure to the downstream counterbalance valve decreases and the valve modulates to match the motor speed to the pump flow.

Dual counterbalance valve



Typical application of dual counterbalance valve in a motor circuit.

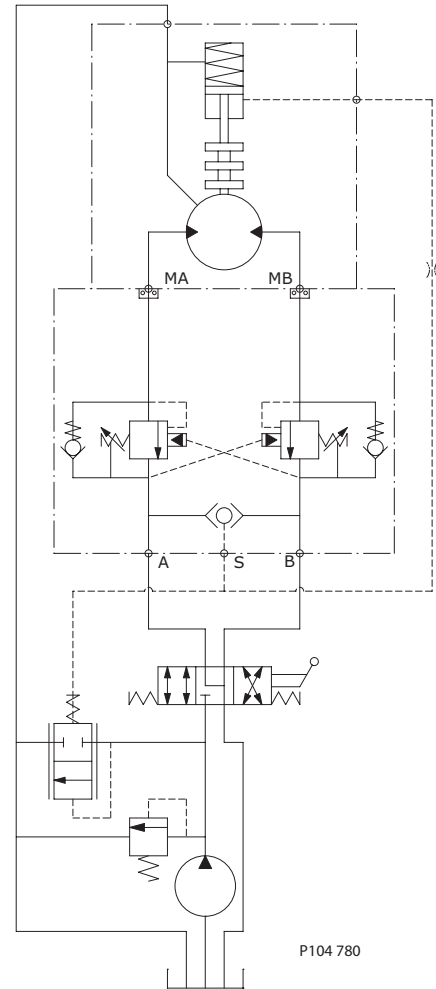
COUNTERBALANCE VALVES (continued)

Motor with dual counterbalance valve and shuttle operating a brake and unloading valve
 Adding a load sense, or brake shuttle valve allows further functionality. In this circuit, an integral brake and an unloading valve (logic element), are added. The shuttle valve senses the higher pressure work port and provides pressure to release the brake when the system pressure exceeds the minimum brake release pressure.

When the directional control valve shifts in either direction, pressure builds in the circuit to release the brake and allows the motor to rotate. As shown in the diagram, an orifice provides a slight delay in timing the brake release. When the directional control valve is centered, the brake re-engages. Additionally, the LS pressure signal pilots an unloading valve.

When the directional control valve is centered, pressure builds at the outlet of the gear pump and opens the unloading valve, allowing the pump flow to bypass the circuit and exhaust into the reservoir. When the directional control valve shifts in either direction, the unloading valve is piloted to stay in the closed position, thus allowing pump flow to enter the working circuit. Similarly, this LS pressure could communicate flow demand to a load sensing open circuit piston pump.

Dual counterbalance with shuttle



P104 780

Motor with integral brake, system includes pump unloading valve.

Motor mount HICs
 Application notes

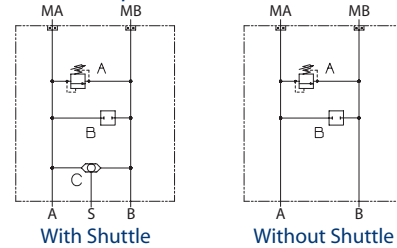
CROSS-PORT RELIEF VALVES

The cross-port relief valve controls maximum torque of the motor. It provides overpressure protection for the work ports. The cross port relief valve is a full-flow relief. It can bypass all motor flow when pressure reaches the relief setting.

The cross-port relief valve is available in configurations with dual (cross-port) valves or with relief on A or B port only. An optional shuttle valve is also available for load-sensing pumps or auxiliary functions such as brake release.

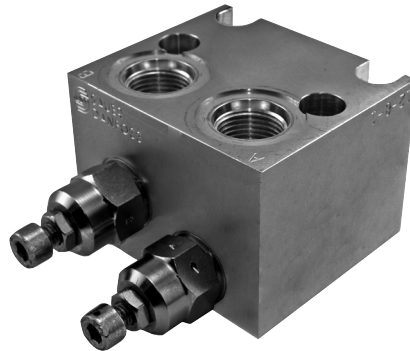
Typical applications for cross-port relief valves include vehicle propulsion, auger drives, conveyer drives, and slew drive. Any rotary application requiring pressure limiting can benefit from a motor-mounted cross-port relief valve. For more information on relief valves, see *Relief Valves*, section 4 of this catalog.

Dual cross-port relief with shuttle



P104 788

Cross-port relief valve



F102 238



F102 239

CROSS-PORT RELIEF VALVES (continued)

Sample system circuits

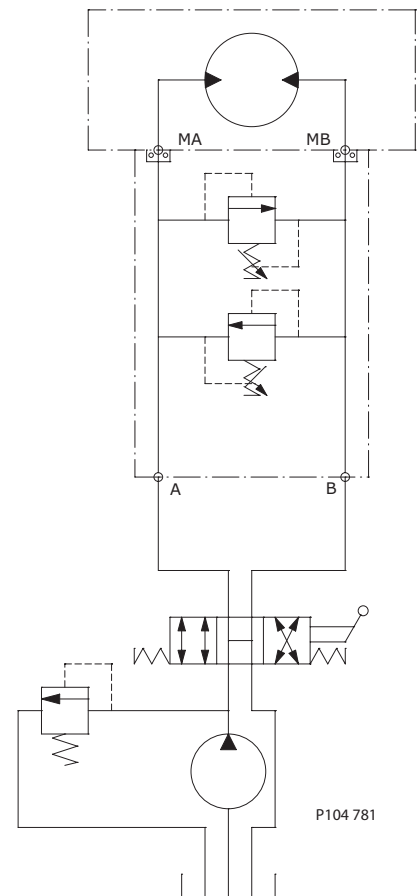
Motor with dual cross-port relief

A typical rotary circuit application for a cross-port relief valve contains a pump, directional control valve, system relief valve, and motor. Without a cross-port relief valve there is no overpressure protection at motor work ports. A cross-port relief valve controls motor torque while reducing system component fatigue.

In this circuit, a dual cross-port relief HIC is mounted to a standard motor, providing functionality in both directions. Moving the directional control valve to the left causes the motor to rotate in one direction. When the load exceeds the valve setting, the valve opens allowing the flow to bypass to the opposite work port. The cross-port relief valve remains open until the load on the motor decreases below the pressure setting.

The system relief valve shown in this circuit provides the primary pressure protection. The directional control valve can isolate the pump and motor while shifting, making independent pressure protection necessary. A motor-mounted cross-port relief is typically used in circuits where limiting the torque from the load is critical, where the load is very dynamic, or where distance from the system relief limits responsiveness.

Dual cross-port relief



Simple rotary circuit with dual cross-port relief valve.

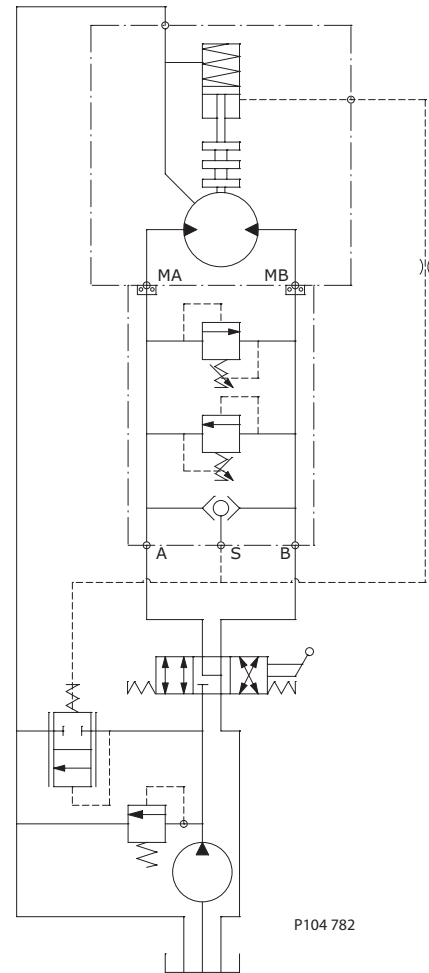
CROSS-PORT RELIEF VALVES (continued)

Motor with dual cross-port relief, and shuttle operating a brake and unloading valve
 Adding a load sense, or brake shuttle valve allows further functionality. In this circuit, an integral brake and an unloading valve (logic element), are added. The shuttle valve senses the higher pressure work port and provides pressure to release the brake when the system pressure exceeds the minimum brake release pressure.

When the directional control valve shifts in either direction, pressure builds in the circuit to release the brake and allows the motor to rotate. As shown in the diagram, an orifice provides a slight delay in timing the brake release. When the directional control valve is centered, the brake re-engages. Additionally, the LS pressure signal pilots an unloading valve.

When the directional control valve is centered, pressure builds at the outlet of the gear pump and opens the unloading valve, allowing the pump flow to bypass the circuit and exhaust into the reservoir. When the directional control valve shifts in either direction, the unloading valve is piloted to stay in the closed position, thus allowing pump flow to enter the working circuit. Similarly, this LS pressure could communicate flow demand to a load sensing open circuit piston pump.

Dual cross-port relief with shuttle



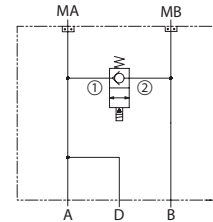
P104 782

Motor with integral brake, system includes pump unloading valve.

BYPASS SOLENOID VALVES

The bypass solenoid allows an electric signal to enable/disable motor rotation independent of system hydraulics. The normally closed solenoid valve bypasses flow from B to A when energized. This function is unidirectional. Contact your Comatrol representative if you require reverse logic or if you want to use a flow control valve instead of a solenoid.

Bypass solenoid

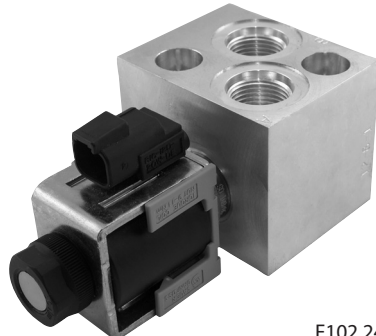


P104 750

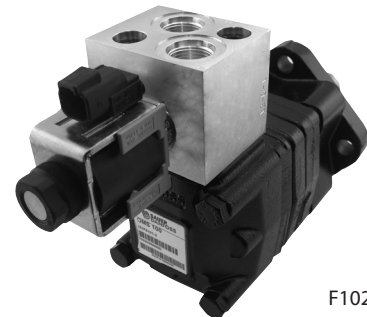
The manifold includes a drain port connected to port A to simplify circuit plumbing. Depending on motor drain pressure capabilities, you may connect the motor drain directly to port D on the HIC instead of routing it back to the reservoir.

Typical uses for this valve include applications requiring individual motors on the same circuit to be turned off independently, disabling motor during system start-up to limit pressure losses, and on/off fan drive applications. For further information on solenoid valves, see *Solenoid valves*, section 10 of this catalog.

Bypass solenoid valve with robust coil



F102 241



F102 242

BYPASS SOLENOID VALVES (continued)

Sample system circuits

Motor with drain, no directional valve

A typical rotary circuit application for a bypass solenoid valve contains a pump, system relief valve, motor, and in most cases, a directional control valve. The bypass solenoid valve allows an electrically-actuated method of bypassing flow at the motor.

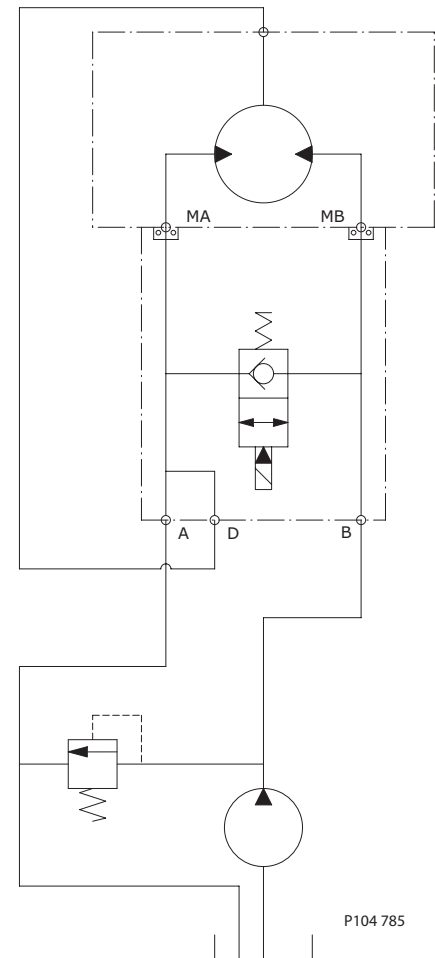
A bypass solenoid valve, when energized, stops the motor rotating by bypassing flow around the motor. In this circuit, a bypass solenoid HIC is mounted to a motor with a drain port, providing functionality in only one direction of motor rotation. The pump provides flow directly to one port of the HIC.

Flow normally goes through the motor and exits the opposite port to the reservoir. When the bypass solenoid valve is energized, the flow bypasses the motor. This causes the motor to stop rotating even though the pump continues to provide flow.

Because this circuit only flows in one direction, and the HIC drain port connects to the discharge port, the motor drain port can connect directly to the HIC. This simplifies system plumbing. You can eliminate the motor drain line to the reservoir. If the motor does not have a case drain, cap the HIC drain port.

The system relief provides pressure protection in this circuit. A circuit similar to this is typically used in systems where the motor only needs to rotate in one direction, a directional control valve is not required, and the application requires the motor to disengage while

Bypass solenoid with drain port



This circuit has no directional valve. The solenoid bypass valve controls motor rotation (on/off).

BYPASS SOLENOID VALVES (continued)

the pump flow continues.

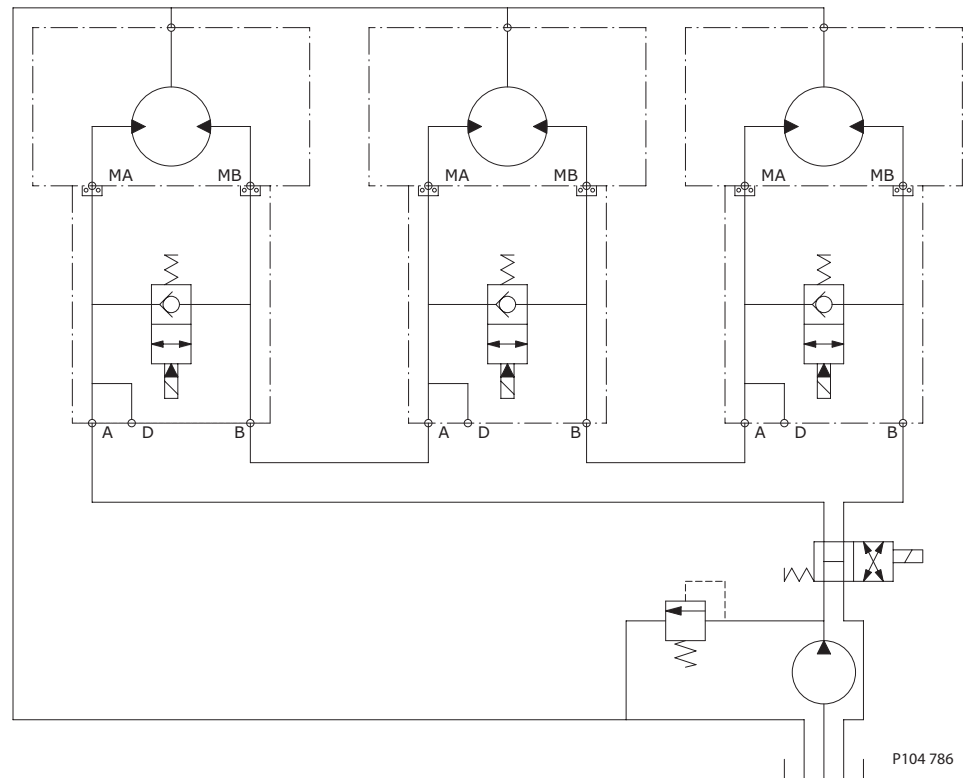
Motors in series

Another potential application of the solenoid bypass valve is one with two or more motors in series. This circuit contains a pump, directional control valve, system relief valve, and a series of motors with drain ports. The motors rotate in one direction, so the system uses a two-position directional valve.

When the directional control valve shifts to the left, flow enters and exits the motor on the right, then through the motor in the middle, through the left motor, then back to the directional control valve and discharges to the reservoir. The function of the solenoid bypass valve in this circuit is to engage and disengage motors that use the same flow source. Any of the three motors can be bypassed individually while maintaining the series flow through the circuit.

Because the drain port connects directly to the discharge port, you cannot use it with motors in series. This circuit is typical of conveyor or auger systems where multiple motors use a common flow source.

Bypass solenoid valve with motors in series



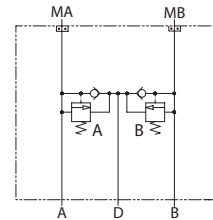
This circuit uses three motors in series with a solenoid operated directional valve and pump relief.

Motor mount HICs
 Application notes

**DUAL SHOCK VALVE
 WITH ANTICAVITATION
 CHECKS**

This valve provides overpressure protection of the motor work ports. It absorbs momentary pressure spikes (shock effects). It is not a full-flow pressure relief valve: Use the dual cross-port relief HIC for full-flow pressure protection or torque limitation. The valve protects the motor from cavitation by allowing additional flow to the motor through the drain port when the motor overruns the pump. This is useful in series wheel-drive applications where one motor must turn faster than the other while the vehicle is cornering. Other applications include auger drives, conveyer drives, slew drives, or any rotary working circuits that experience shock effects.

Dual shock valve with anticavitation checks



P104 763

A dual shock valve with anti-cavitation motor mount HIC is typically used in circuits where limiting the torque spikes from the load is critical, where the load is very dynamic, or where distance from the system relief valve causes delayed responsiveness. The anticavitation function is also beneficial in high inertial load applications.

Because the valves seat on the cavity, the housing is made of ductile iron. This limits wear. Only dual valve configurations are available. This HIC uses the PVLP shock valves from our PVG line of flow-sharing directional valves. For more information on PVLP, refer to the [PVG 32 Technical Information Manual, 520L0344](#).

Dual shock valve with anticavitation checks



F102 244



F102 245

**DUAL SHOCK VALVE
 WITH ANTICAVITATION
 CHECKS (continued)**

Sample system circuit

Single motor with drain, open center/closed port directional valve

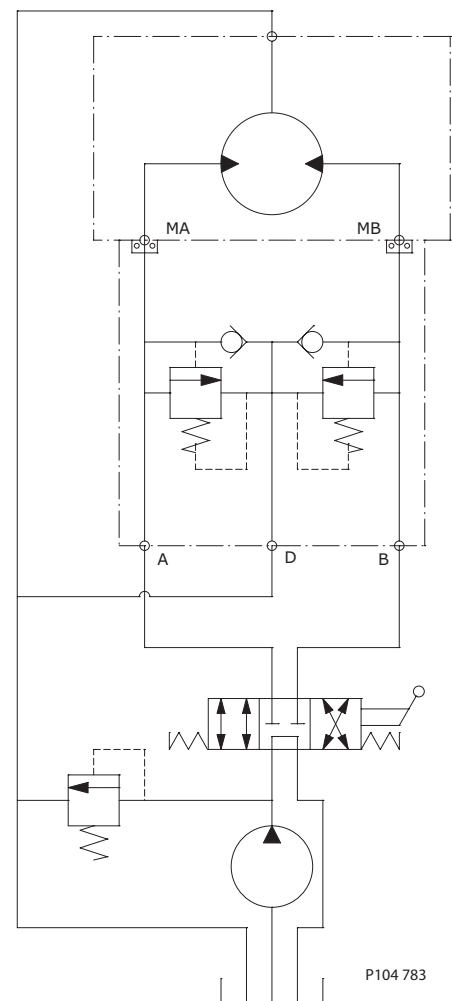
A typical rotary circuit application for a shock valve with anticavitation contains a pump, directional control valve, system relief valve, and motor. Without this valve there is no over-pressure protection at the motor work ports and no protection against cavitation during overrun.

In this circuit, a dual shock valve with anticavitation HIC is mounted to a standard motor, providing functionality in both directions. Moving the directional control valve to the left causes the motor to rotate in one direction. When the motor load exceeds the pressure setting of the shock valve, the valve opens allowing flow to bypass to the drain port. If the drain port is not connected, the flow discharges through the anticavitation check to the opposite system port. The shock valve remains open until the load on the motor decreases below the pressure setting.

The system relief valve in this circuit provides full-flow pressure protection close to the gear pump. The shock valves protect the circuit from pressure spikes closest to the load.

The anticavitation function prevents motor cavitation when the motor overruns pump flow. For anticavitation to function properly, it requires a flow source, typically drawing from the reservoir through the drain port as

Dual shock valve with anticavitation checks



Single motor with closed center directional valve and system relief valve. Connection at port D is necessary for anticavitation function.

Motor mount HICs
 Application notes

**DUAL SHOCK VALVE
 WITH ANTICAVITATION
 CHECKS (continued)**

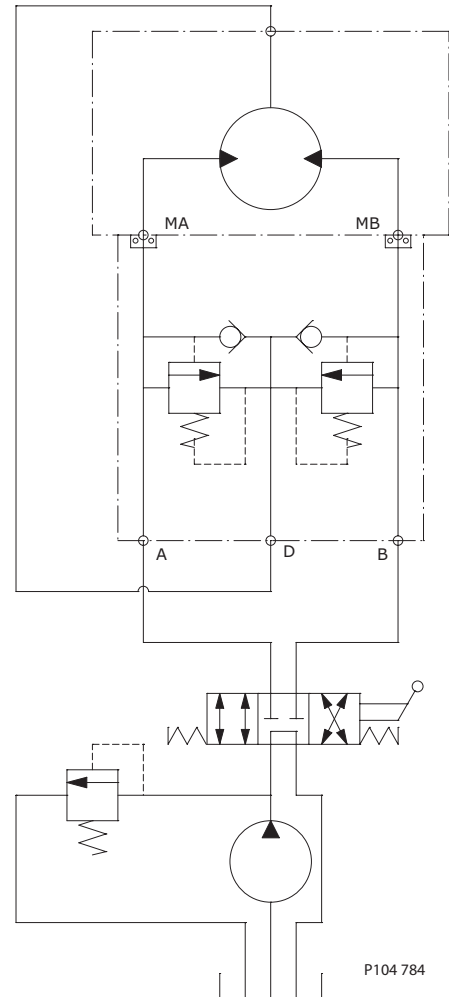
shown in the circuit.

Using anticavitation checks as drain checks

Applications that do not require anticavitation protection can use the anticavitation checks as drain checks. Connecting the motor drain directly to the drain port on the HIC allows drain flow to join motor discharge and return to the reservoir through the directional control valve. This saves running a motor drain to the reservoir, but doing this defeats the anticavitation feature: Do not apply the valve in this fashion unless your application never experiences overrunning loads.

Because the drain port is connected to the motor case, pressure spikes in this circuit discharge through the downstream motor port.

Dual shock valve with motor drain

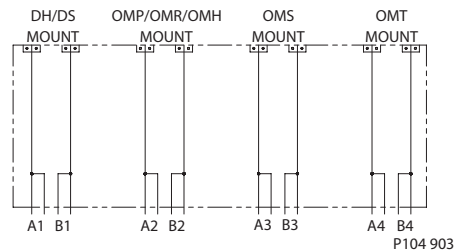


Single motor with drain shown. Connect motor drain to port D on HIC to use anticavitation checks as drain checks. This defeats anticavitation function.

OPERATION

Use this steel test block for setting or testing motor-mount HICs. It contains the mounting patterns for DH, DS, OMH, OMP, OMR, OMS, and OMT motors. Interface ports are SAE.

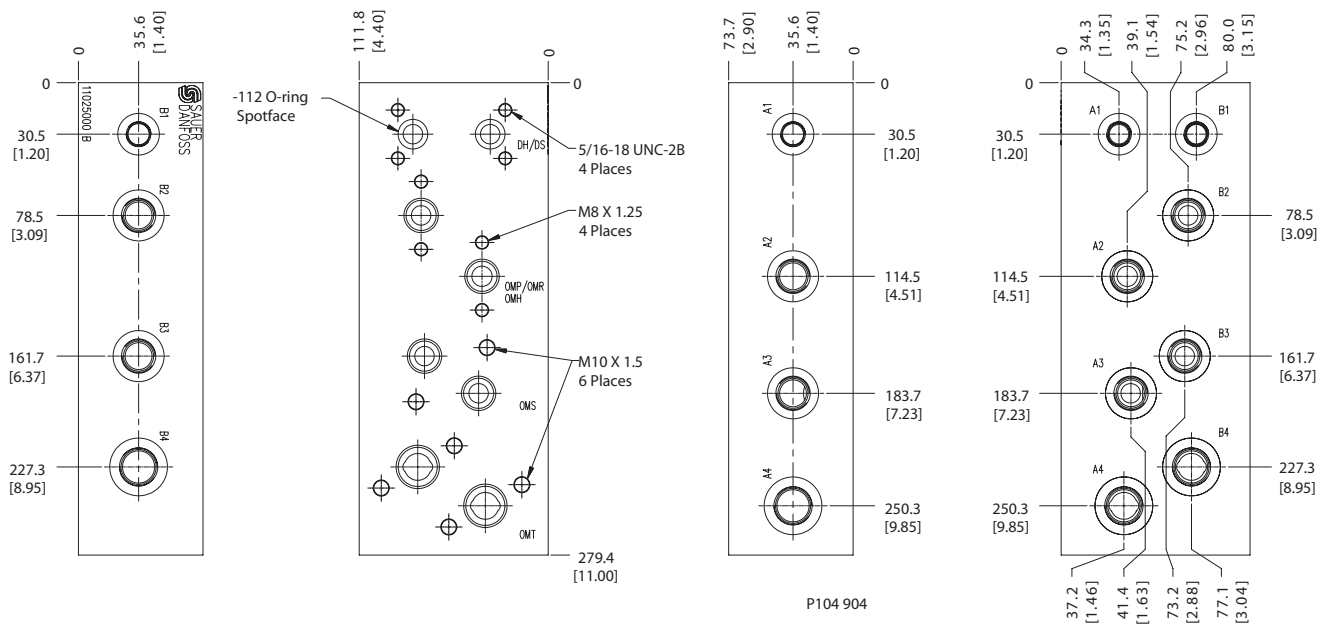
Schematic Diagram



SPECIFICATIONS

Rated pressure	345 bar [5000 psi]
Weight	16.21 kg [35.7 lb]
Ports	
A1/B1 (DH/DS)	SAE #6
A2/B2 (OMP/OMR/OMH)	SAE #8
A3/B3 (OMS)	SAE #8
A4/B4 (OMT)	SAE #10

DIMENSIONS



ORDERING INFORMATION

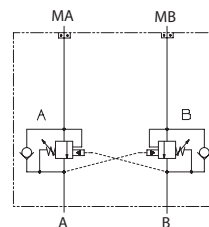
Order Number - **11025000**

Motor mount HICs
 MMHC Test Block - 11025000

OPERATION

This is a dual counterbalance HIC that mounts to DH motors with manifold mount porting.

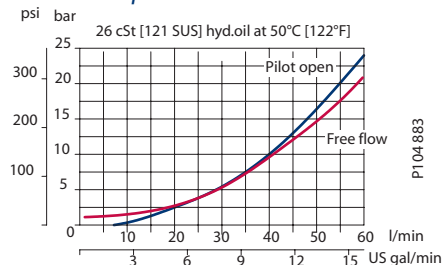
Schematic



P104 593

SPECIFICATIONS

Theoretical performance



P104 883

Specifications

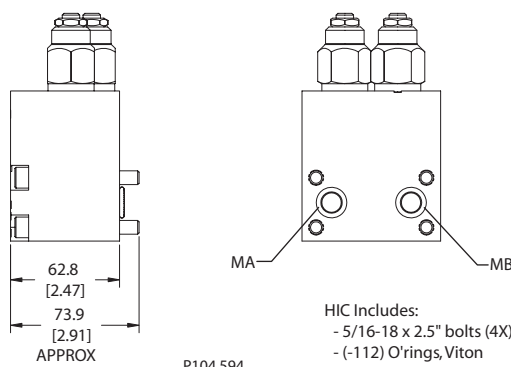
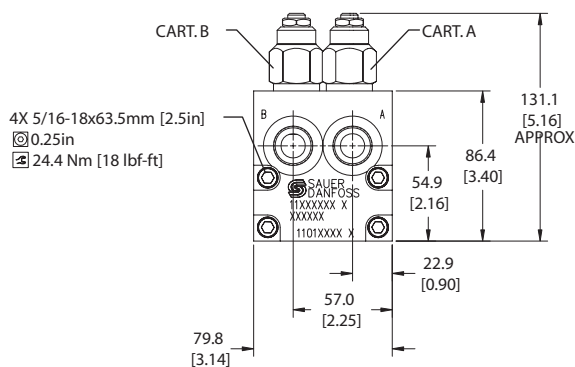
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ 70% of crack pressure
Weight	1.49 kg [3.28 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Service mount kit	11023864
Motor	DH

Motor mount HICs
MM-DH-00-DCB10-HV

DIMENSIONS

Cross-sectional view

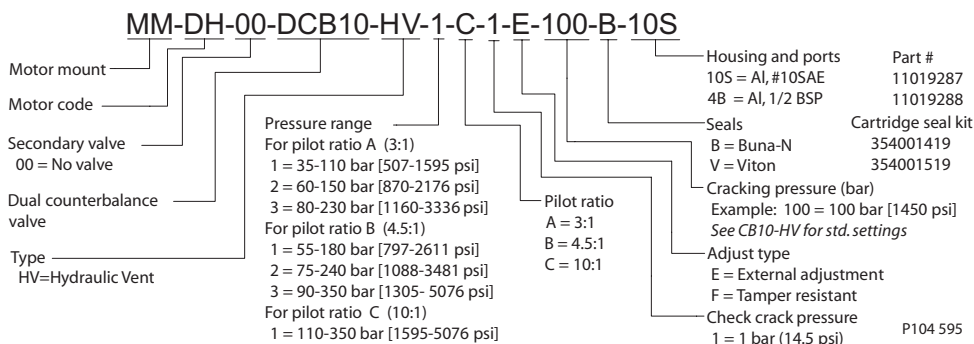
mm [in]



P104 594

HIC Includes:
- 5/16-18 x 2.5" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (2X)

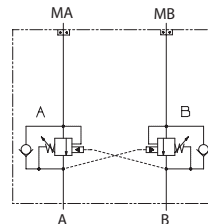
ORDERING INFORMATION



OPERATION

This is a dual counterbalance HIC that mounts to DS motors with manifold mount porting.

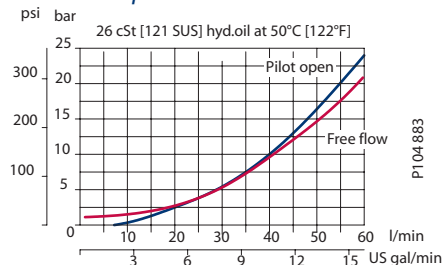
Schematic



P104 593

SPECIFICATIONS

Theoretical performance



P104-883

Specifications

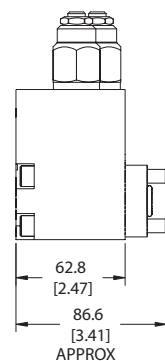
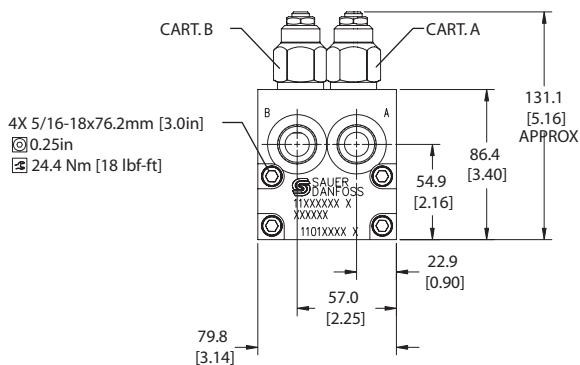
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.60 kg [3.53 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Service mount kit	11023865
Motor	DS

Motor mount HICs
MM-DS-00-DCB10-HV

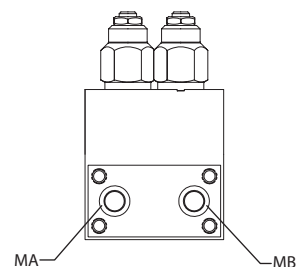
DIMENSIONS

Cross-sectional view

mm [in]



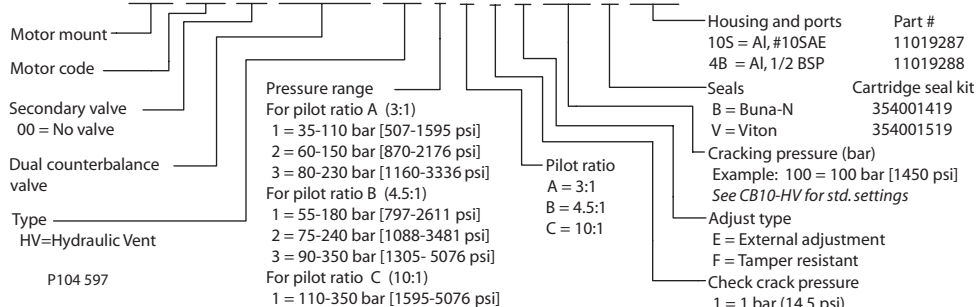
P104 596



HIC Includes:
- 5/16-18 x3.0" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (4X)
- Sub-plate

ORDERING INFORMATION

MM-DS-00-DCB10-HV-1-C-1-E-100-B-10S

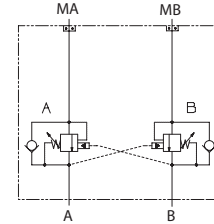


P104 597

OPERATION

This is a dual-counterbalance HIC that mounts to OMP/OMR motors with BSP porting.

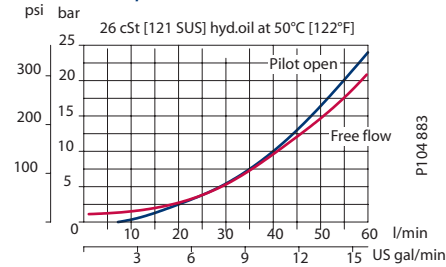
Schematic



P104 593

SPECIFICATIONS

Theoretical performance



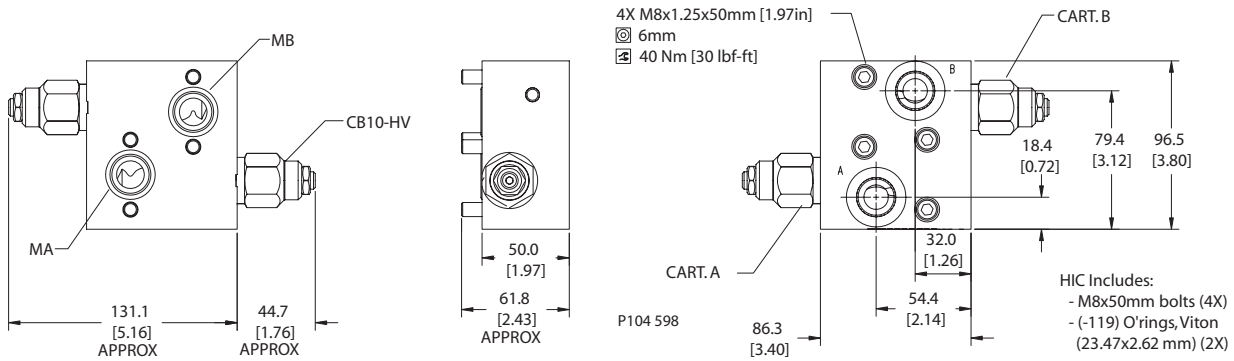
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.43 kg [3.15 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Service mount kit	11023162
Motor	OMP/OMR

DIMENSIONS

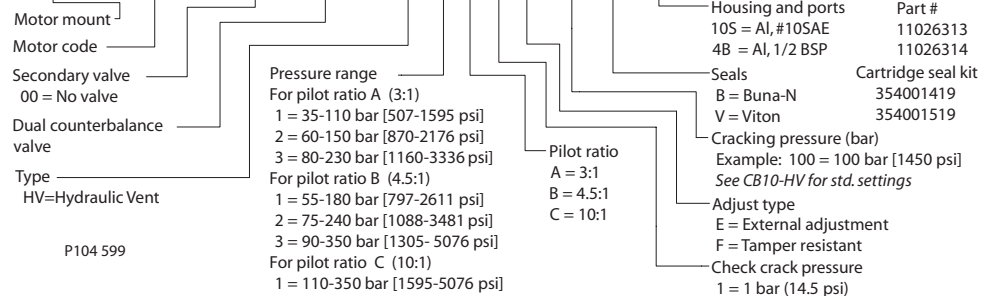
Cross-sectional view

mm [in]



ORDERING INFORMATION

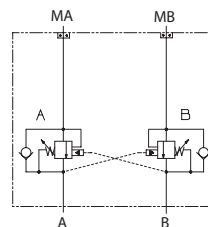
MM-OMP/OMR-00-DCB10-HV-1-C-1-E-100-B-10S



OPERATION

This is a dual-counterbalance HIC that mounts to OMH motors with BSP porting.

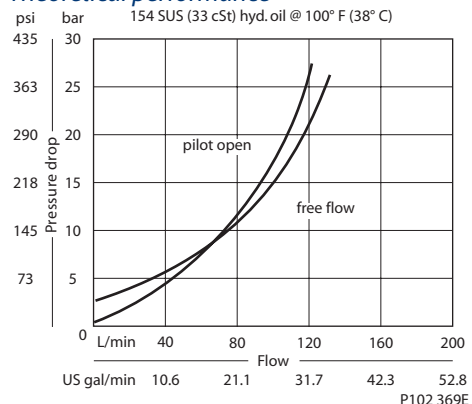
Schematic



P104 593

SPECIFICATIONS

Theoretical performance



Specifications

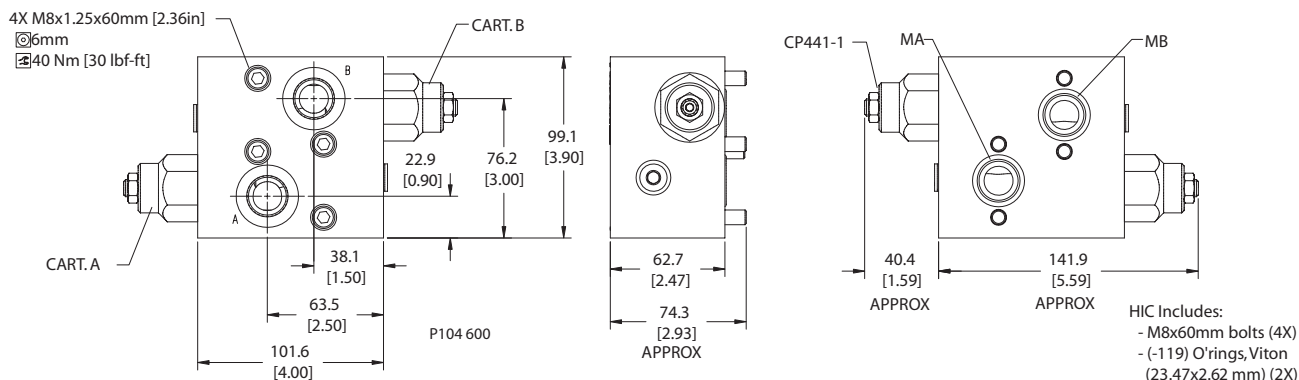
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	1.93 kg [4.25 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Service mount kit	11023869
Motor	OMH

Motor mount HICs
 MM-OMH-00-DCP441-1

DIMENSIONS

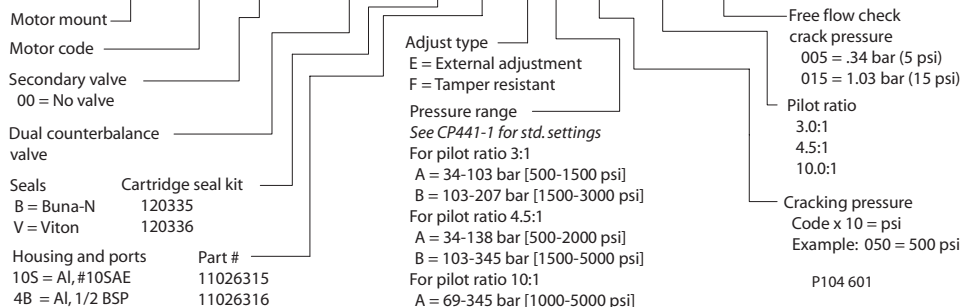
Cross-sectional view

mm [in]



ORDERING INFORMATION

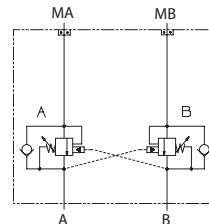
MM-OMH-00-DCP441-1-B-10S-E-A-250-10.0-015



OPERATION

This is a dual-counterbalance HIC that mounts to OMS motors with BSP porting.

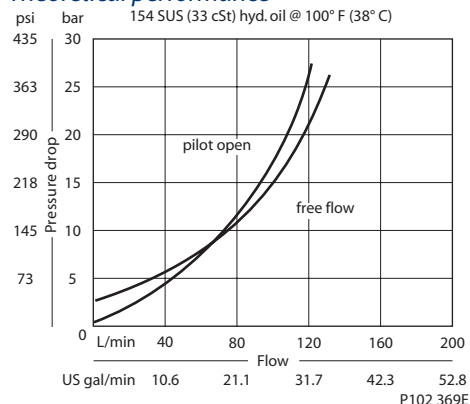
Schematic



P104 593

SPECIFICATIONS

Theoretical performance



Specifications

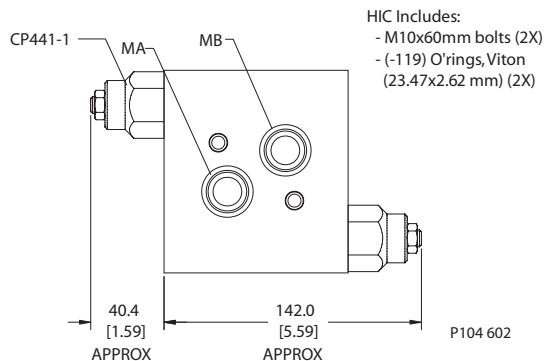
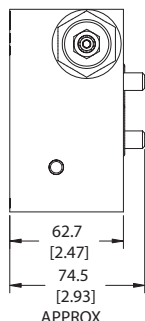
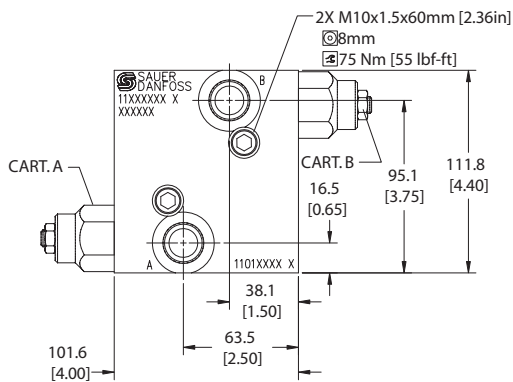
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.13 kg [4.70 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Service mount kit	11023867
Motor	OMS

Motor mount HICs
MM-OMS-00-DCP441-1

DIMENSIONS

Cross-sectional view

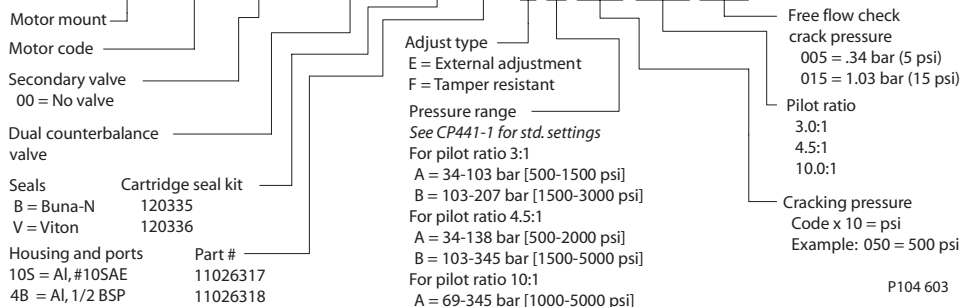
mm [in]



P104 602

ORDERING INFORMATION

MM-OMS-00-DCP441-1-B-10S-E-A-250-10.0-015

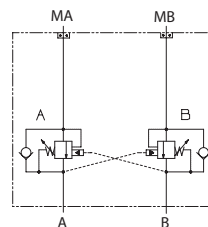


P104 603

OPERATION

This is a dual-counterbalance HIC that mounts to OMT motors with BSP porting.

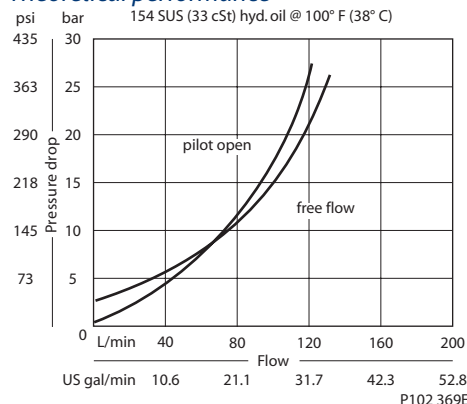
Schematic



P104 593

SPECIFICATIONS

Theoretical performance



Specifications

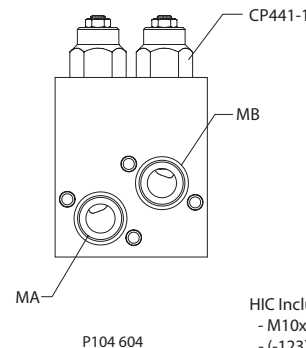
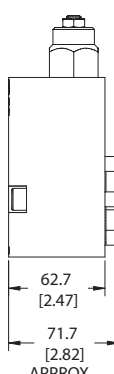
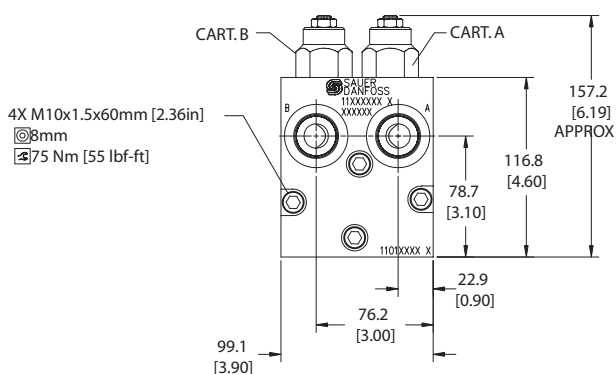
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.20 kg [4.85 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Service mount kit	11023871
Motor	OMT

Motor mount HICs
 MM-OMT-00-DCP441-1

DIMENSIONS

Cross-sectional view

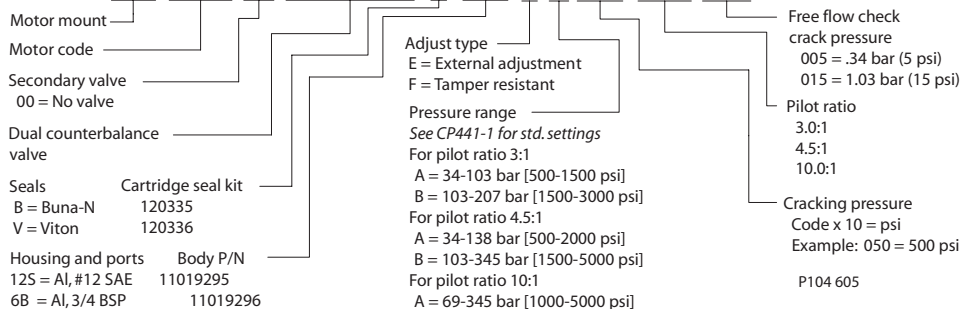
mm [in]



HIC Includes:
 - M10x60mm bolts (4X)
 - (-123) O'rings, Viton (29.82x2.62 mm) (2X)

ORDERING INFORMATION

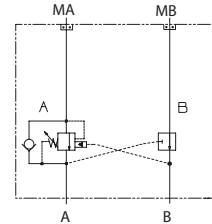
MM-OMT-00-DCP441-1-B-12S-E-A-250-10.0-015



OPERATION

This is a single-counterbalance HIC (A port) that mounts to DH motors with manifold mount porting.

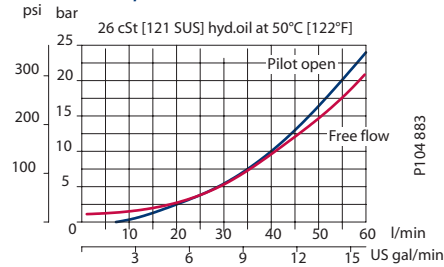
Schematic



P104 606

SPECIFICATIONS

Theoretical performance



P104 883

Specifications

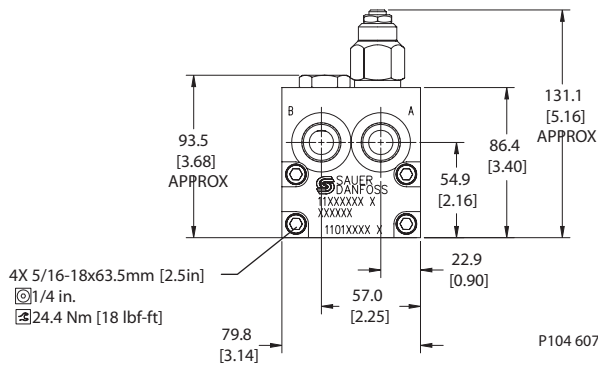
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ 70% of crack pressure
Weight	1.49 kg [3.28 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Plug	SDC10-V-3S-B1
Service mount kit	11023864
Motor	DH

Motor mount HICs
MM-DH-00-ACB10-HV

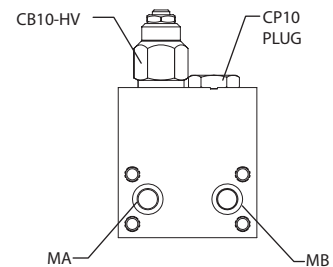
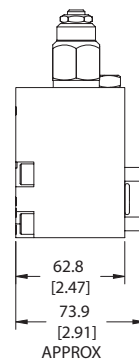
DIMENSIONS

Cross-sectional view

mm [in]

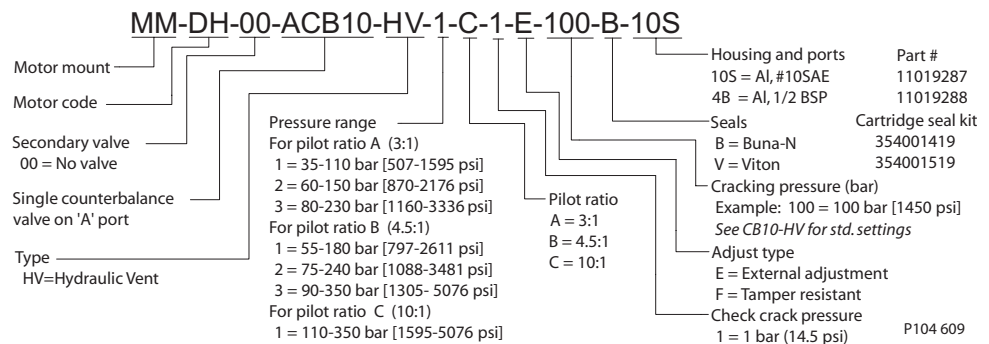


P104 607



HIC Includes:
- 5/16-18 x 2.5" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (2X)

ORDERING INFORMATION

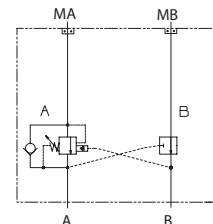


P104 609

OPERATION

This is a single-counterbalance HIC (A port) that mounts to DS motors with manifold mount porting.

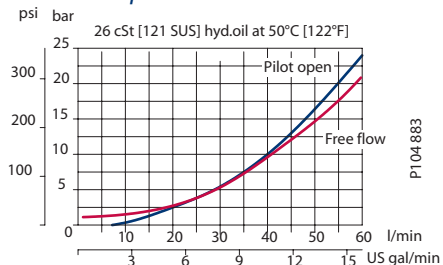
Schematic



P104 606

SPECIFICATIONS

Theoretical performance



Specifications

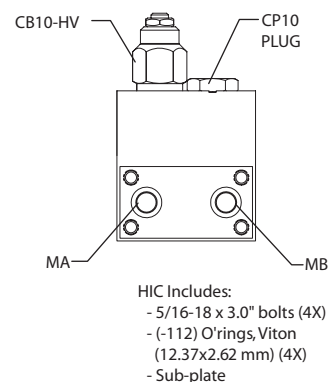
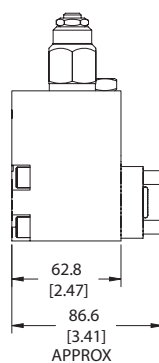
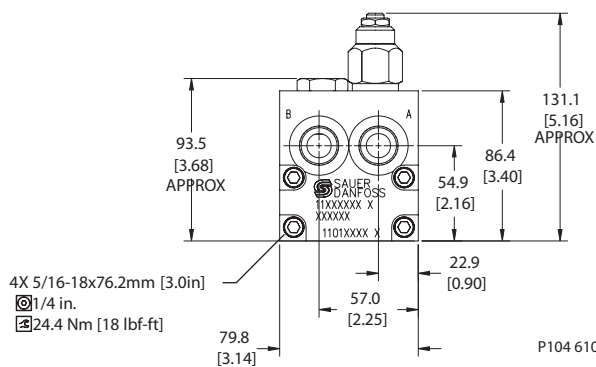
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.60 kg [3.53 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Plug	SDC10-V-3S-B1
Service mount kit	11023865
Motor	DS

Motor mount HICs
MM-DS-00-ACB10-HV

DIMENSIONS

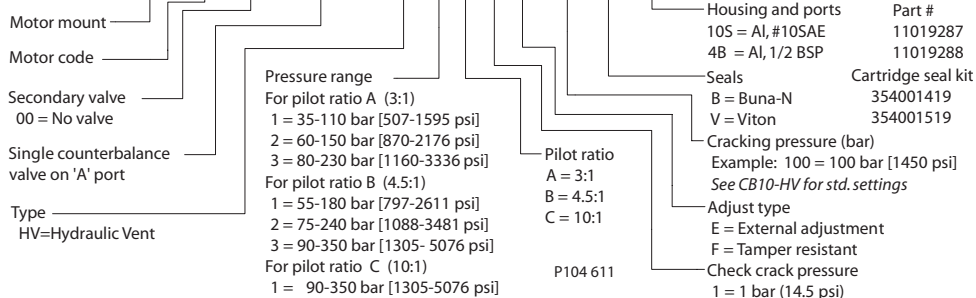
Cross-sectional view

mm [in]



ORDERING INFORMATION

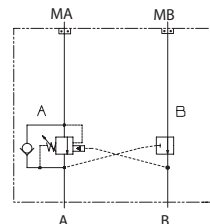
MM-DS-00-ACB10-HV-1-C-1-E-100-B-10S



OPERATION

This is a single-counterbalance HIC (A port) that mounts to OMP/OMR motors with BSP porting.

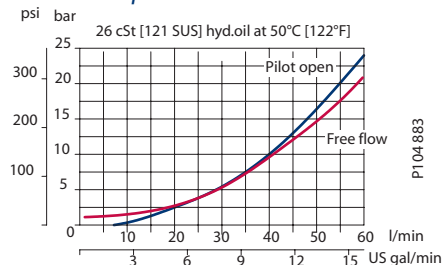
Schematic



P104 606

SPECIFICATIONS

Theoretical performance



Specifications

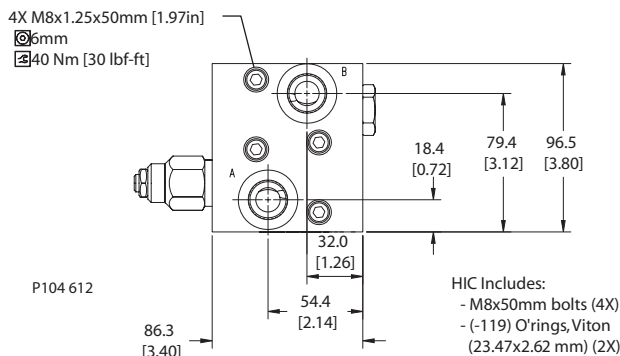
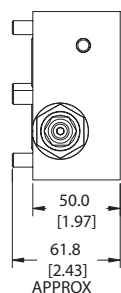
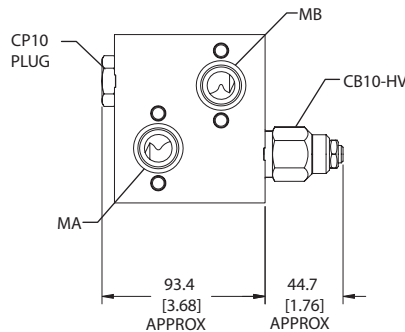
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ 70% of crack pressure
Weight	1.43 kg [3.15 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Plug	SDC10-V-3S-B1
Service mount kit	11023162
Motor	OMP/OMR

Motor mount HICs
MM-OMP/OMR-00-ACB10-HV

DIMENSIONS

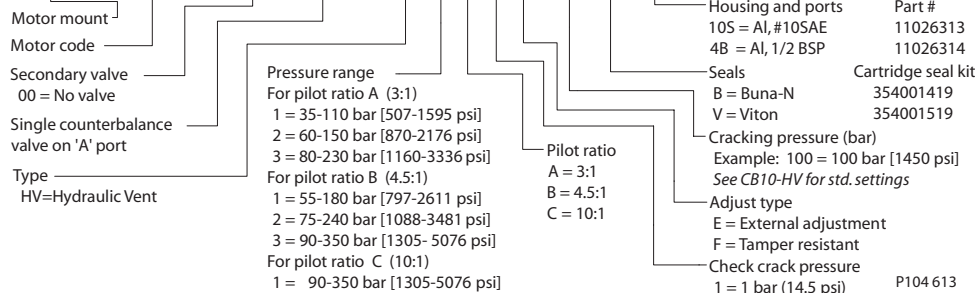
Cross-sectional view

mm [in]



ORDERING INFORMATION

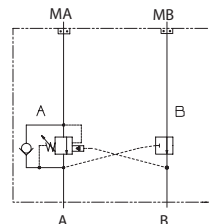
MM-OMP/OMR-00-ACB10-HV-1-C-1-E-100-B-10S



OPERATION

This is a single-counterbalance HIC (A port) that mounts to OMH motors with BSP porting.

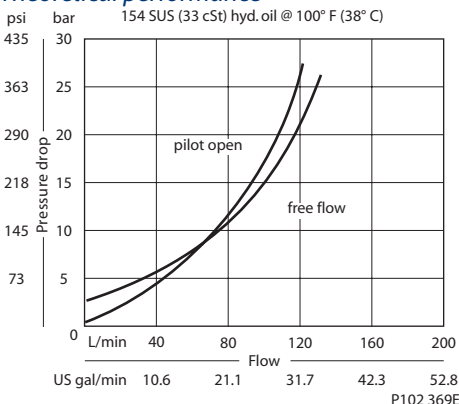
Schematic



P104 606

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	1.93 kg [4.25 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Plug	CP12-V-3S-B1
Service mount kit	11023869
Motor	OMH

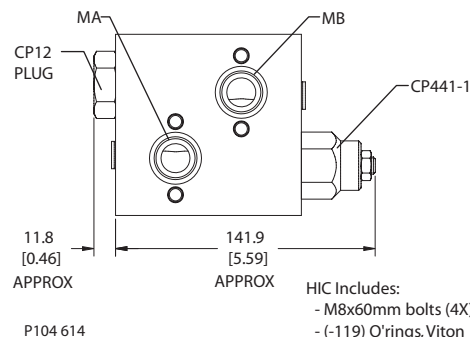
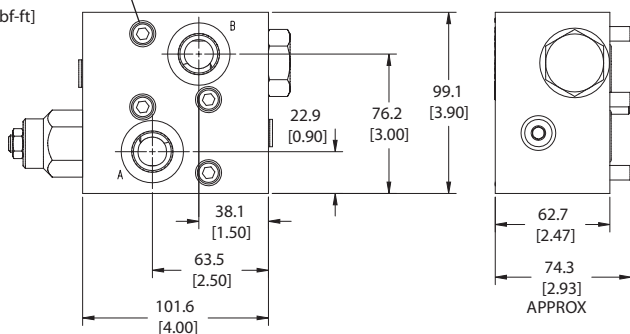
Motor mount HICs
MM-OMH-00-ACP441-1

DIMENSIONS

Cross-sectional view

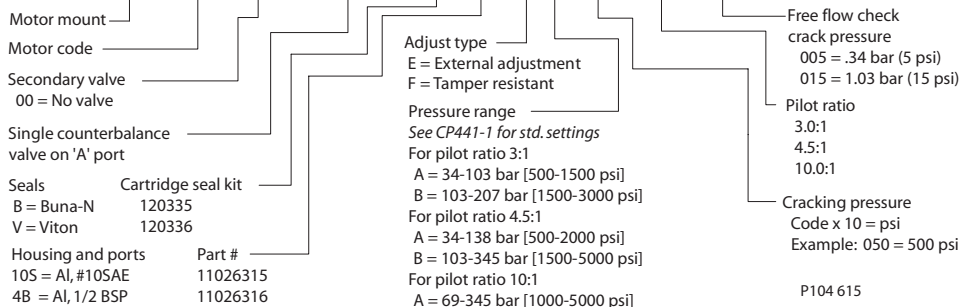
mm [in]

4X M8x1.25x60mm [2.36in]
⊙6mm
⊙40 Nm [30 lbf-ft]



ORDERING INFORMATION

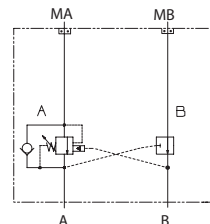
MM-OMH-00-ACP441-1-B-10S-E-A-250-10.0-015



OPERATION

This is a single-counterbalance HIC (A port) that mounts to OMS motors with BSP porting.

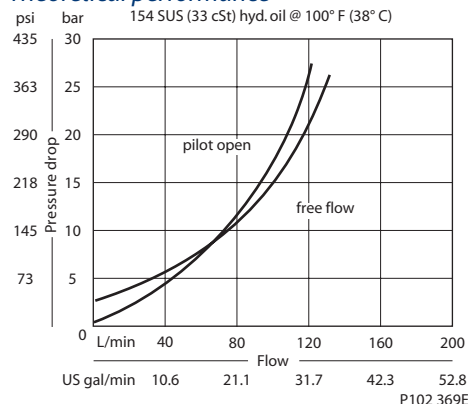
Schematic



P104 606

SPECIFICATIONS

Theoretical performance



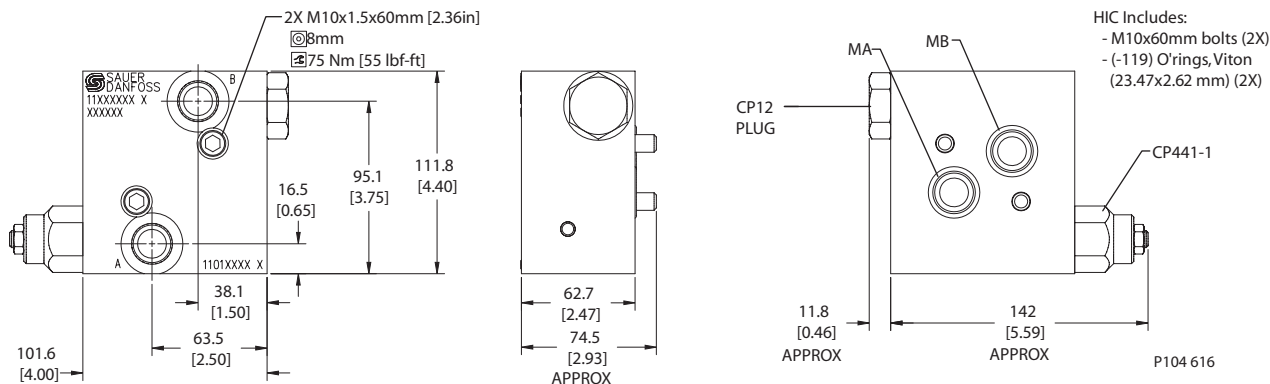
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.13 kg [4.70 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Plug	CP12-V-3S-B1
Service mount kit	11023867
Motor	OMS

DIMENSIONS

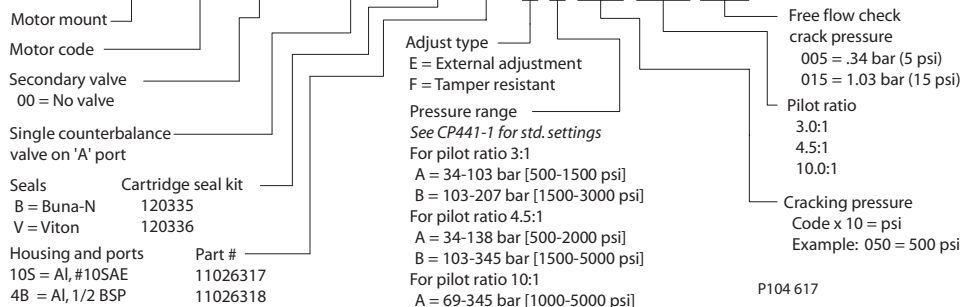
Cross-sectional view

mm [in]



ORDERING INFORMATION

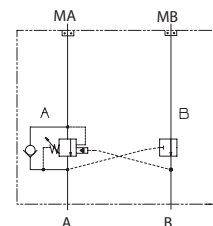
MM-OMS-00-ACP441-1-B-10S-E-A-250-10.0-015



OPERATION

This is a single-counterbalance HIC (A port) that mounts to OMT motors with BSP porting.

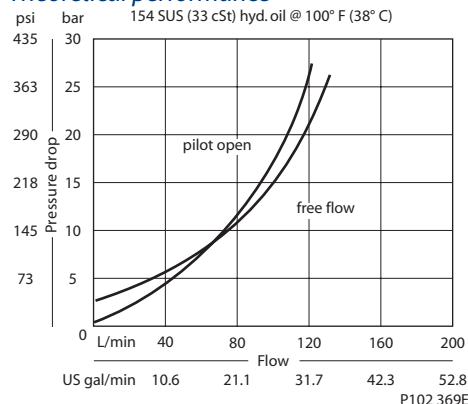
Schematic



P104 606

SPECIFICATIONS

Theoretical performance



Specifications

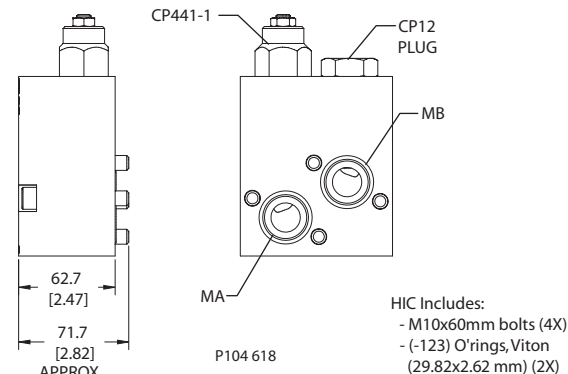
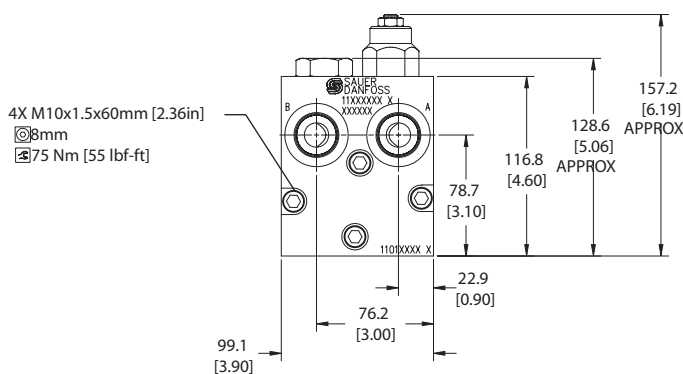
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.20 kg [4.85 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Plug	CP12-V-3S-B1
Service mount kit	11023871
Motor	OMT

Motor mount HICs
 MM-OMT-00-ACP441-1

DIMENSIONS

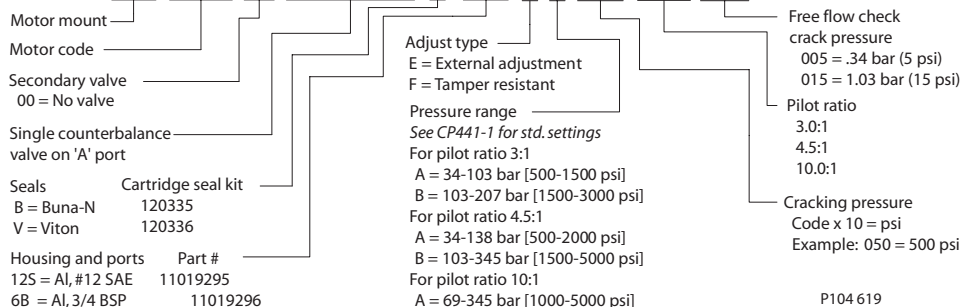
Cross-sectional view

mm [in]



ORDERING INFORMATION

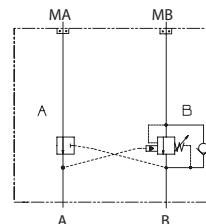
MM-OMT-00-ACP441-1-B-12S-E-A-250-10.0-015



OPERATION

This is a single counterbalance HIC (on B port) that mounts to DH motors with manifold mount porting.

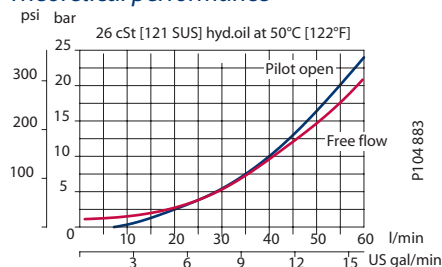
Schematic



P104 620

SPECIFICATIONS

Theoretical performance



Specifications

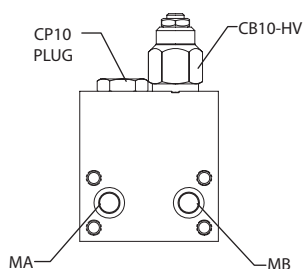
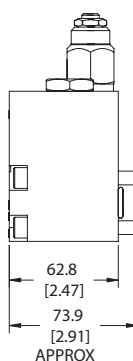
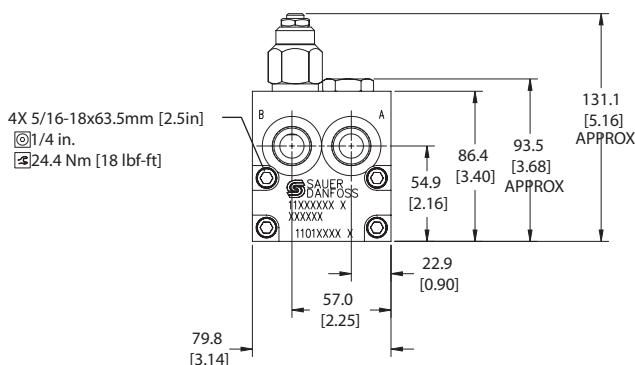
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.49 kg [3.28 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Plug	SDC10-V-3S-B1
Service mount kit	11023864
Motor	DH

Motor mount HICs
MM-DH-00-BCB10-HV

DIMENSIONS

Cross-sectional view

mm [in]



P104 621

HIC Includes:
- 5/16-18 x 2.5" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (2X)

ORDERING INFORMATION

MM-DH-00-BCB10-HV-1-C-1-E-100-B-10S

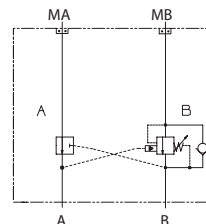
Motor mount	Motor code	Secondary valve	Single counterbalance valve on 'B' port	Type	Pressure range	Pilot ratio	Housing and ports	Part #
		00 = No valve		HV=Hydraulic Vent	For pilot ratio A (3:1)	A = 3:1	10S = Al, #10SAE	11019287
					1 = 35-110 bar [507-1595 psi]	B = 4.5:1	4B = Al, 1/2 BSP	11019288
					2 = 60-150 bar [870-2176 psi]	C = 10:1	Seals	Cartridge seal kit
					3 = 80-230 bar [1160-3336 psi]		B = Buna-N	354001419
					For pilot ratio B (4.5:1)		V = Viton	354001519
					1 = 55-180 bar [797-2611 psi]		Cracking pressure (bar)	
					2 = 75-240 bar [1088-3481 psi]		Example: 100 = 100 bar [1450 psi]	
					3 = 90-350 bar [1305- 5076 psi]		See CB10-HV for std. settings	
					For pilot ratio C (10:1)		Adjust type	
					1 = 90-350 bar [1305-5076 psi]		E = External adjustment	
							F = Tamper resistant	
							Check crack pressure	

P104 622

OPERATION

This is a single counterbalance HIC (on B port) that mounts to DS motors with manifold mount porting.

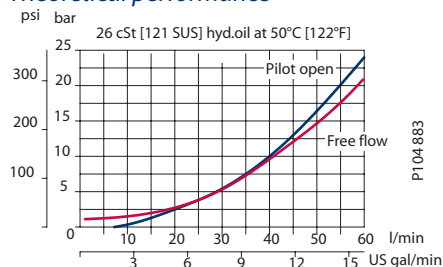
Schematic



P104 620

SPECIFICATIONS

Theoretical performance



P104-883

Specifications

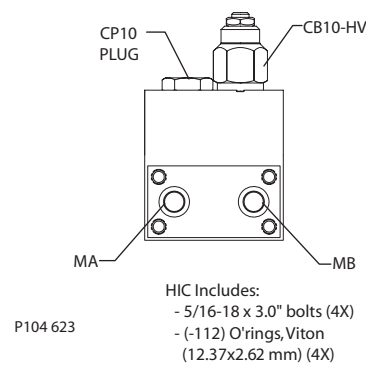
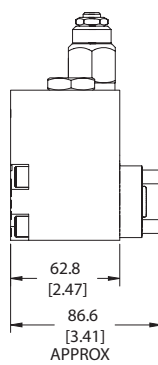
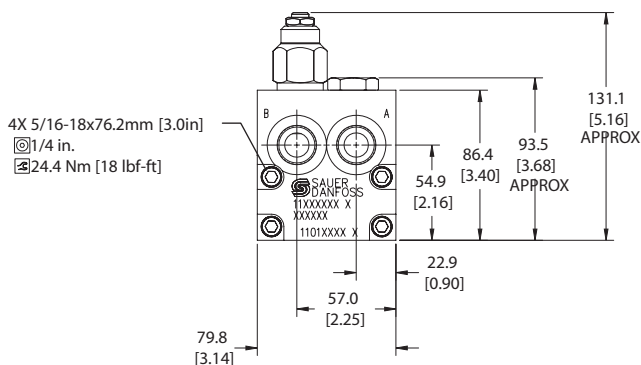
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.60 kg [3.53 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Plug	SDC10-V-3S-B1
Service mount kit	11023865
Motor	DS

Motor mount HICs
MM-DS-00-BCB10-HV

DIMENSIONS

Cross-sectional view

mm [in]

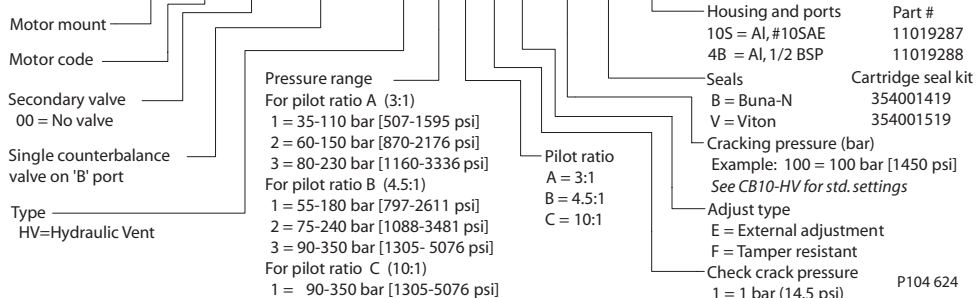


P104 623

HIC Includes:
- 5/16-18 x 3.0" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (4X)

ORDERING INFORMATION

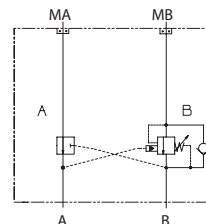
MM-DS-00-BCB10-HV-1-C-1-E-100-B-10S



OPERATION

This is a single counterbalance HIC (on B port) that mounts to OMP/OMR motors with BSP porting.

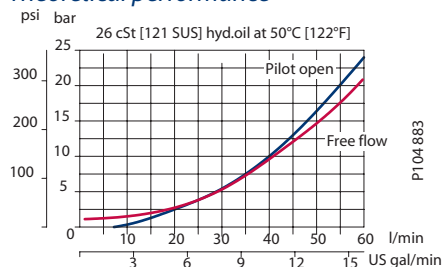
Schematic



P104 620

SPECIFICATIONS

Theoretical performance



P104 883

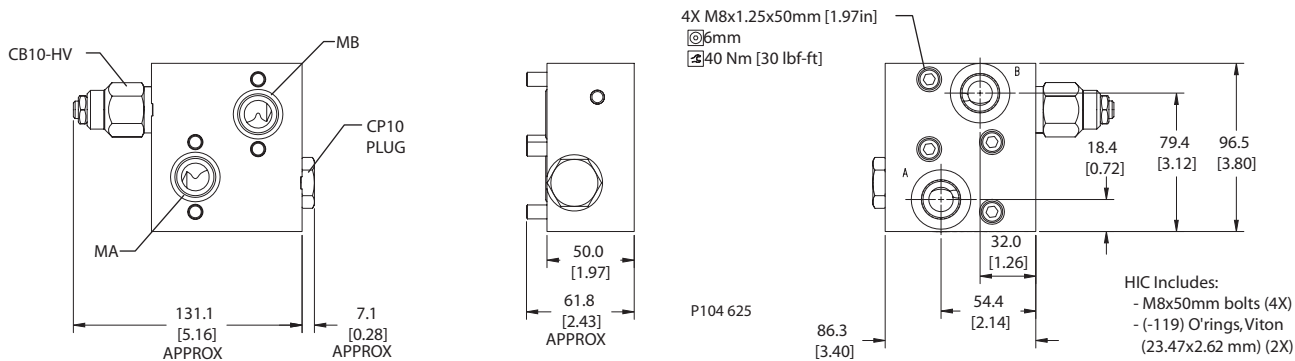
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.43 kg [3.15 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Plug	SDC10-V-3S-B1
Service mount kit	11023762
Motor	OMP/OMR

DIMENSIONS

Cross-sectional view

mm [in]



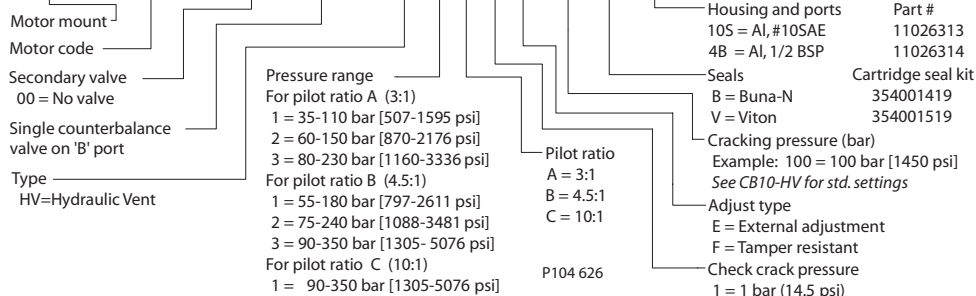
P104 625

86.3 [3.40]

HIC Includes:
- M8x50mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)

ORDERING INFORMATION

MM-OMP/OMR-00-BCB10-HV-1-C-1-E-100-B-10S

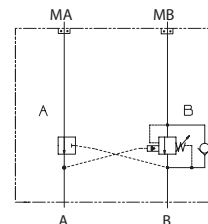


P104 626

OPERATION

This is a single counterbalance HIC (on B port) that mounts to OMH motors with BSP porting.

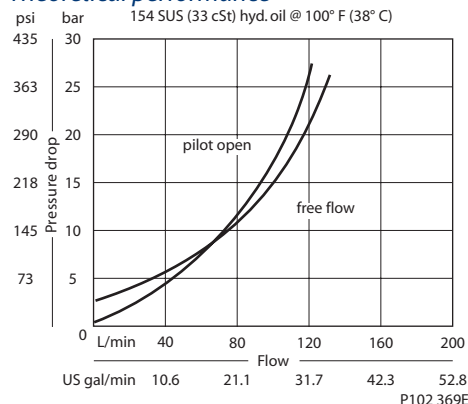
Schematic



P104 620

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	1.93 kg [4.25 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Plug	CP12-V-3S-B1
Service mount kit	11023869
Motor	OMH

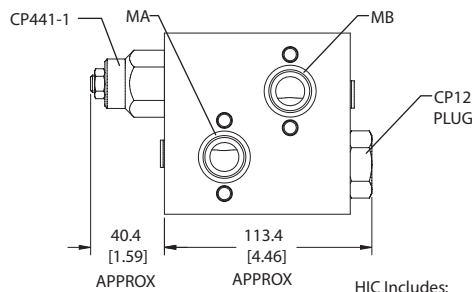
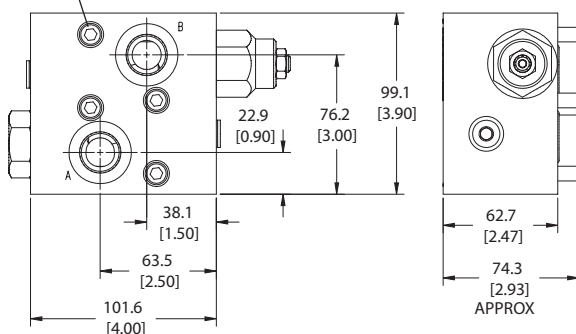
Motor mount HICs
 MM-OMH-00-BCP441-1

DIMENSIONS

Cross-sectional view

mm [in]

4X M8x1.25x60mm [2.36in]
 6mm
 40 Nm [30 lbf-ft]

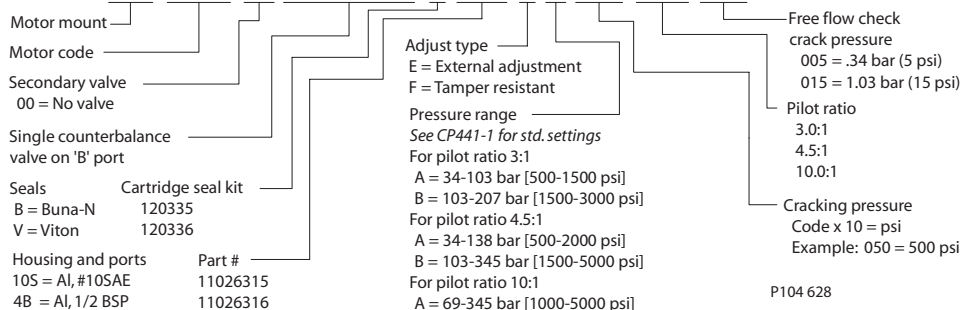


HIC Includes:
 - M8x60mm bolts (4X)
 - (-119) O'rings, Viton (23.47x2.62 mm) (2X)

P104 627

ORDERING INFORMATION

MM-OMH-00-BCP441-1-B-10S-E-A-250-10.0-015

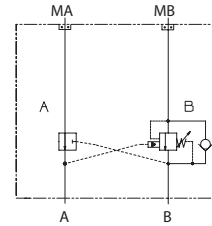


P104 628

OPERATION

This is a single counterbalance HIC (on B port) that mounts to OMS motors with BSP porting.

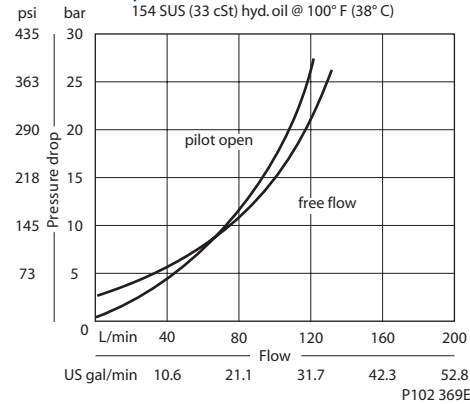
Schematic



P104 620

SPECIFICATIONS

Theoretical performance



Specifications

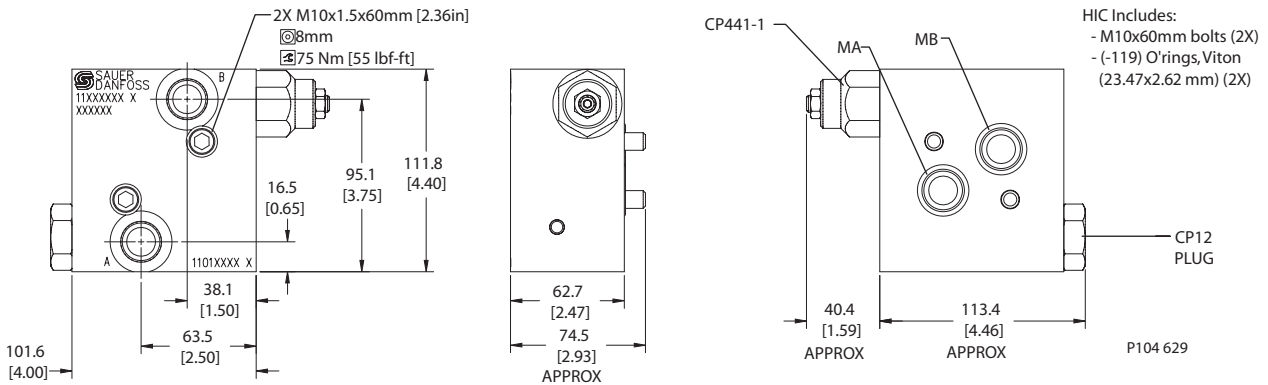
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.13 kg [4.70 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Plug	CP12-V-3S-B1
Service mount kit	11023867
Motor	OMS

Motor mount HICs
MM-OMS-00-BCP441-1

DIMENSIONS

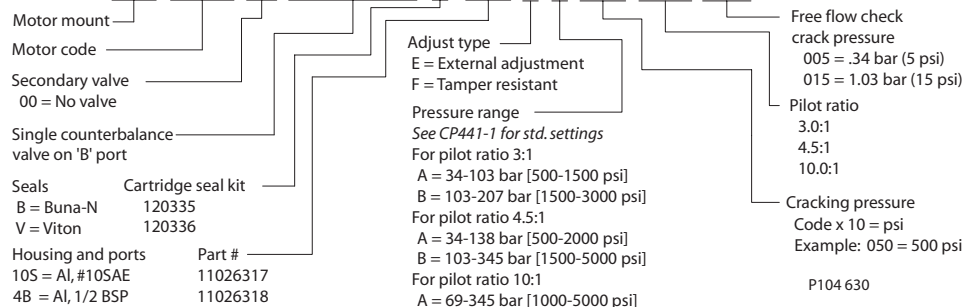
Cross-sectional view

mm [in]



ORDERING INFORMATION

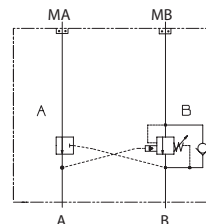
MM-OMS-00-BCP441-1-B-10S-E-A-250-10.0-015



OPERATION

This is a single counterbalance HIC (on B port) that mounts to OMT motors with BSP porting.

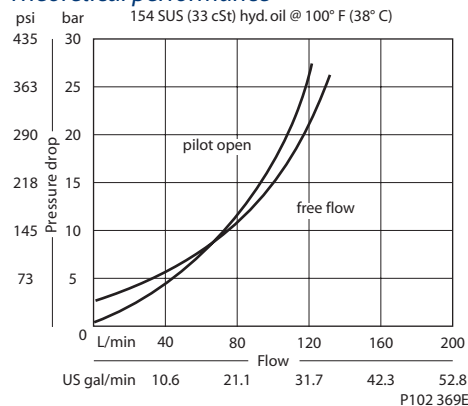
Schematic



P104 620

SPECIFICATIONS

Theoretical performance



Specifications

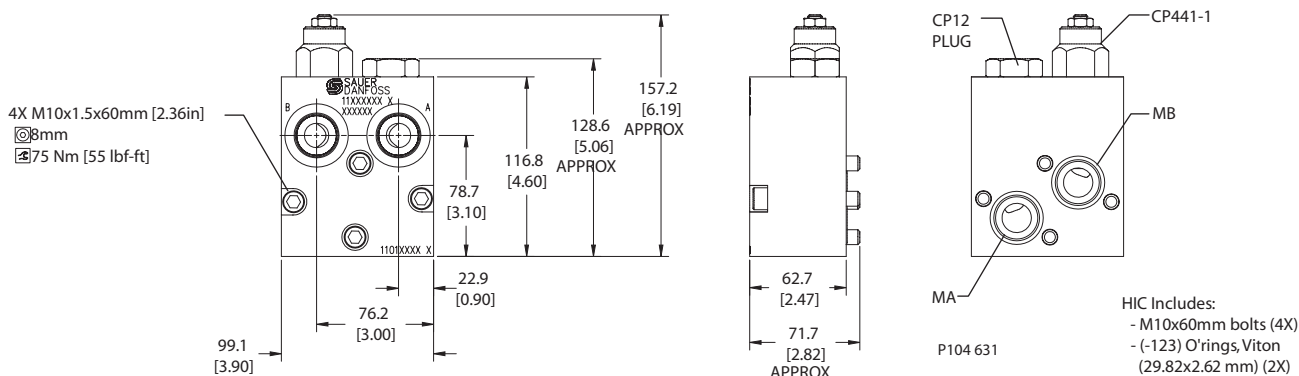
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.20 kg [4.85 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Plug	CP12-V-3S-B1
Service mount kit	11023871
Motor	OMT

Motor mount HICs
MM-OMT-00-BCP441-1

DIMENSIONS

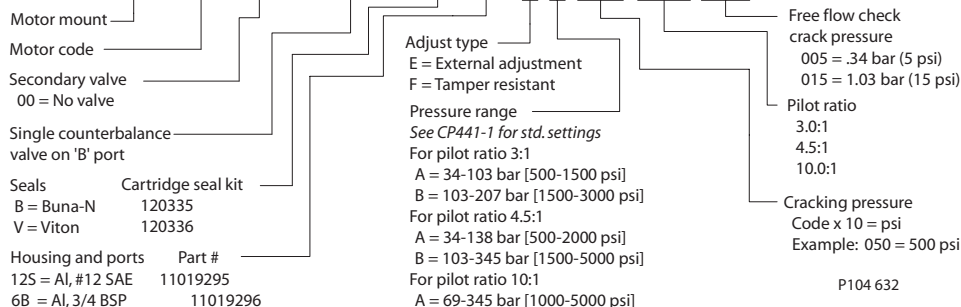
Cross-sectional view

mm [in]



ORDERING INFORMATION

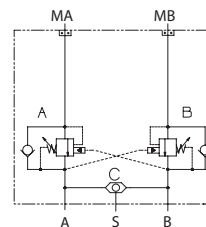
MM-OMT-00-BCP441-1-B-12S-E-A-250-10.0-015



OPERATION

This is a dual counterbalance HIC with shuttle that mounts to DH motors with manifold mount porting.

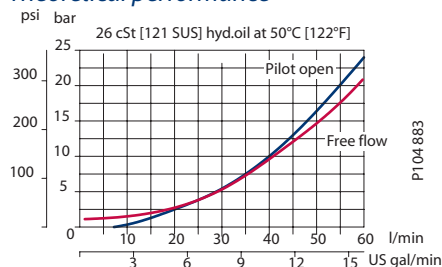
Schematic



P104 633

SPECIFICATIONS

Theoretical performance



P104 883

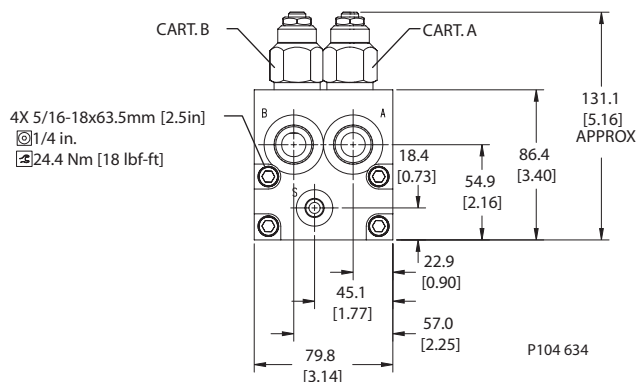
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ 70% of crack pressure
Weight	1.49 kg [3.28 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023864
Motor	DH

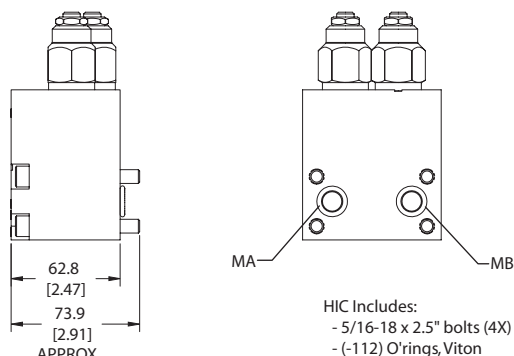
DIMENSIONS

Cross-sectional view

mm [in]

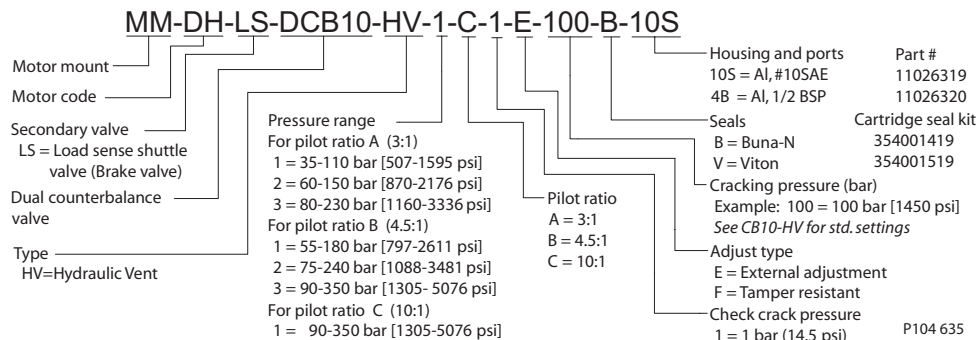


P104 634



HIC Includes:
- 5/16-18 x 2.5" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (2X)

ORDERING INFORMATION

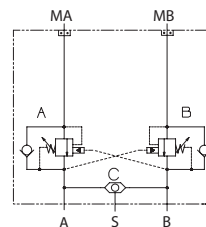


Motor mount HICs
MM-DH-LS-DCB10-HV

OPERATION

This is a dual counterbalance HIC with shuttle that mounts to DS motors with manifold mount porting.

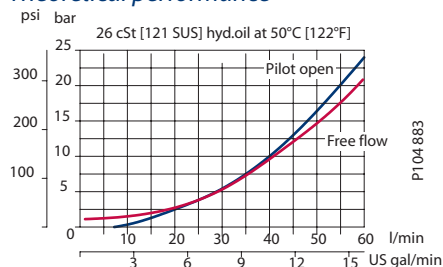
Schematic



P104 633

SPECIFICATIONS

Theoretical performance



P104-883

Specifications

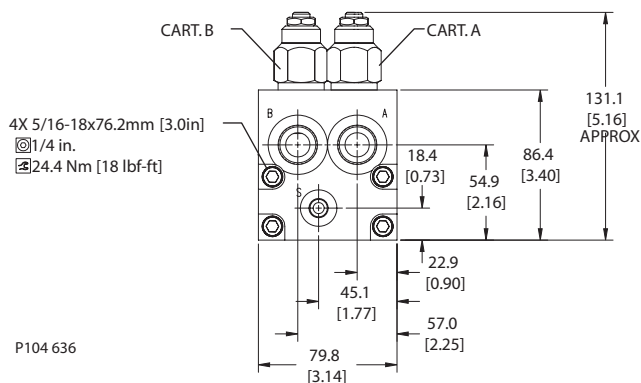
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.60 kg [3.53 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023865
Motor	DS

Motor mount HICs
MM-DS-LS-DCB10-HV

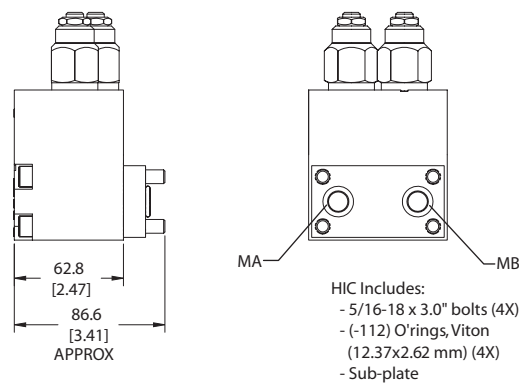
DIMENSIONS

Cross-sectional view

mm [in]



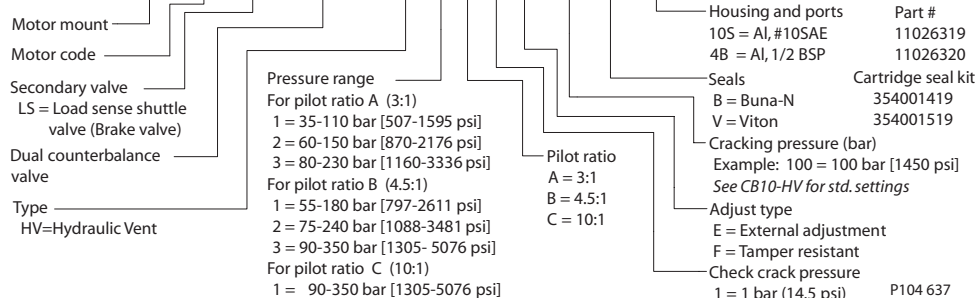
P104 636



HIC Includes:
- 5/16-18 x 3.0" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (4X)
- Sub-plate

ORDERING INFORMATION

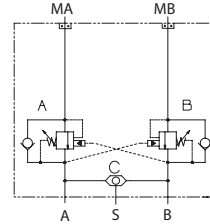
MM-DS-LS-DCB10-HV-1-C-1-E-100-B-10S



OPERATION

This is a dual counterbalance HIC with shuttle that mounts to OMP/OMR motors with BSP porting.

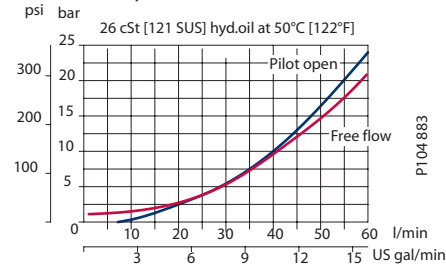
Schematic



P104 633

SPECIFICATIONS

Theoretical performance



P104 883

Specifications

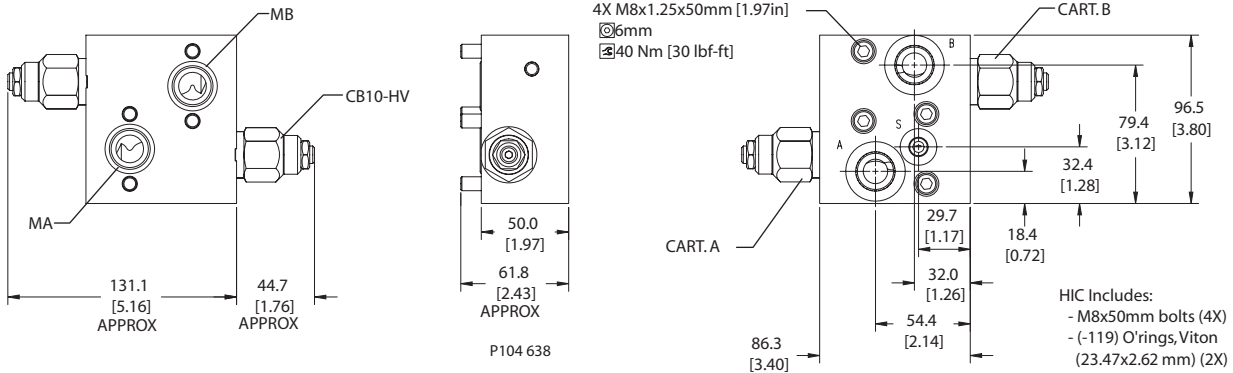
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.44 kg [3.17 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023162
Motor	OMP/OMR

Motor mount HICs
MM-OMP/OMR-LS-DCB10-HV

DIMENSIONS

Cross-sectional view

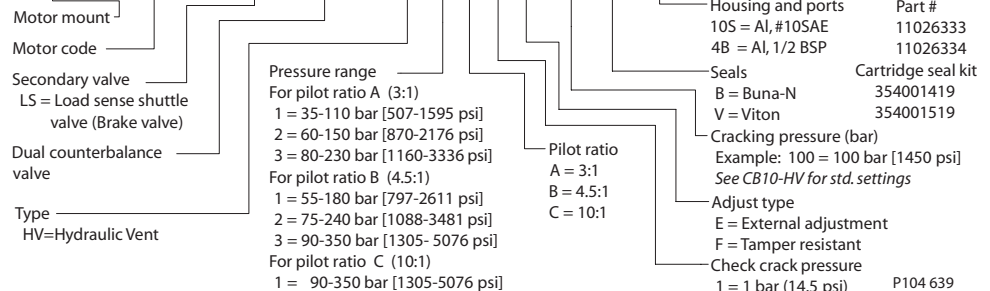
mm [in]



HIC Includes:
- M8x50mm bolts (4X)
- (-119) O'rings,Viton (23.47x2.62 mm) (2X)

ORDERING INFORMATION

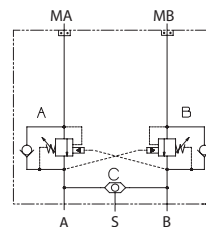
MM-OMP/OMR-LS-DCB10-HV-1-C-1-E-100-B-10S



OPERATION

This is a dual counterbalance HIC with shuttle that mounts to OMH motors with BSP porting.

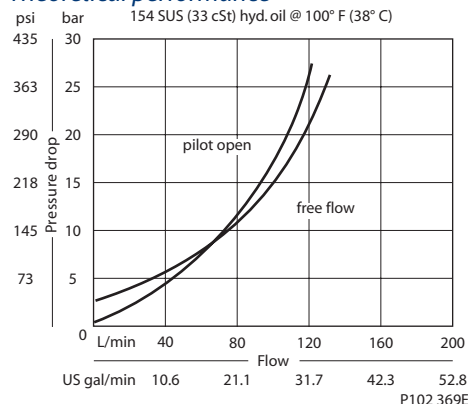
Schematic



P104 633

SPECIFICATIONS

Theoretical performance



Specifications

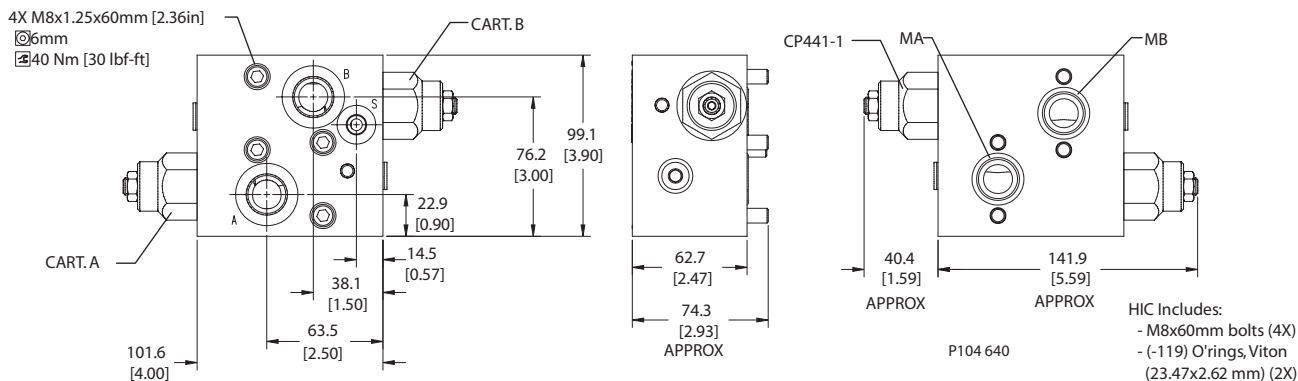
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	1.93 kg [4.25 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023869
Motor	OMH

Motor mount HICs
 MM-OMH-LS-DCP441-1

DIMENSIONS

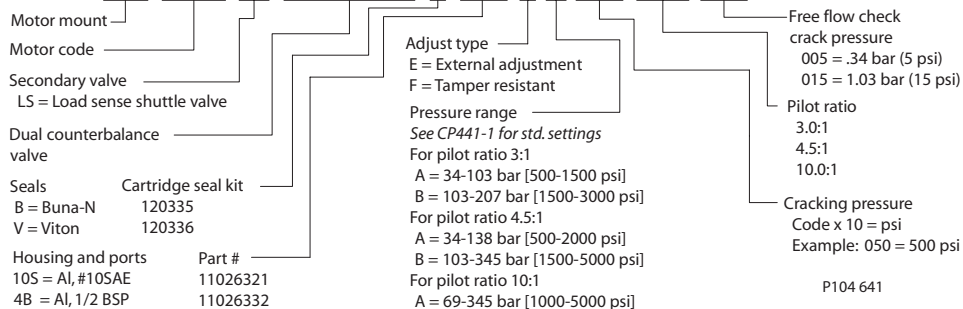
Cross-sectional view

mm [in]



ORDERING INFORMATION

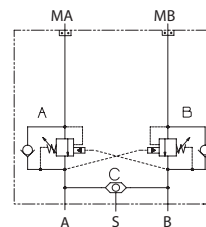
MM-OMH-LS-DCP441-1-B-10S-E-A-250-10.0-015



OPERATION

This is a dual counterbalance HIC with shuttle that mounts to OMS motors with BSP porting.

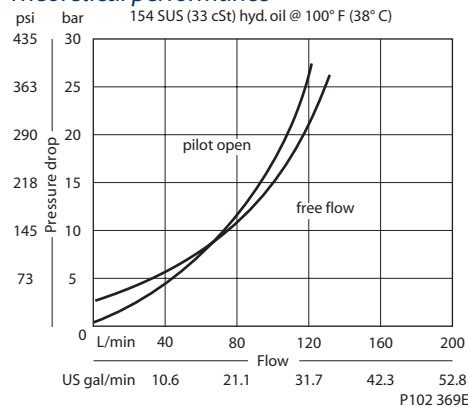
Schematic



P104 633

SPECIFICATIONS

Theoretical performance



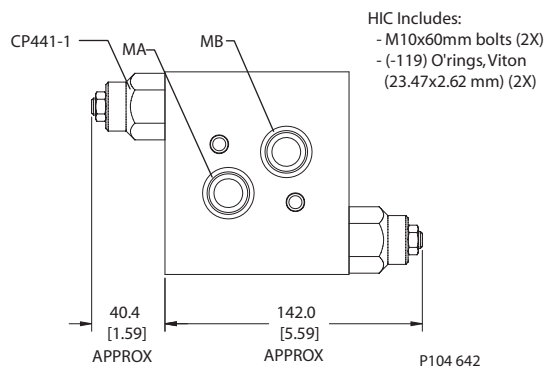
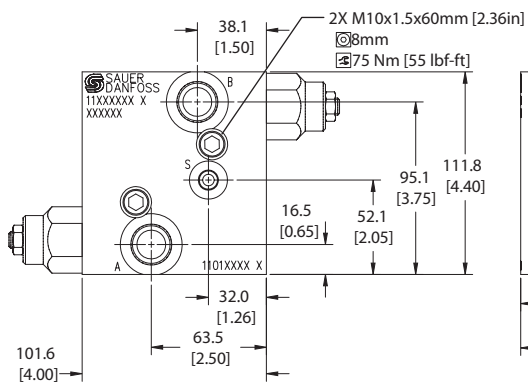
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.13 kg [4.70 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023867
Motor	OMS

DIMENSIONS

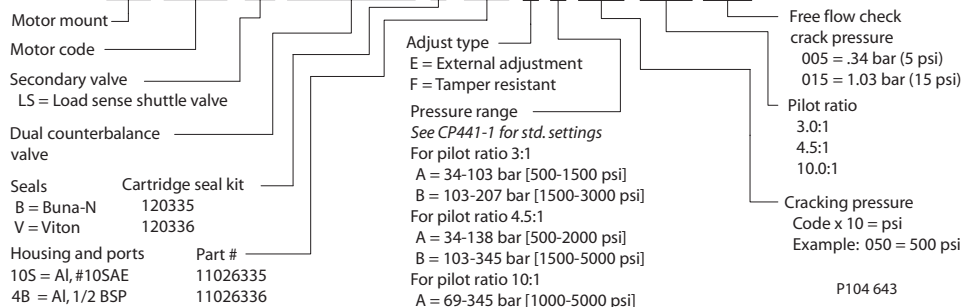
Cross-sectional view

mm [in]



ORDERING INFORMATION

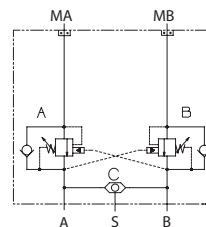
MM-OMS-LS-DCP441-1-B-10S-E-A-250-10.0-015



OPERATION

This is a dual counterbalance HIC with shuttle that mounts to OMT motors with BSP porting.

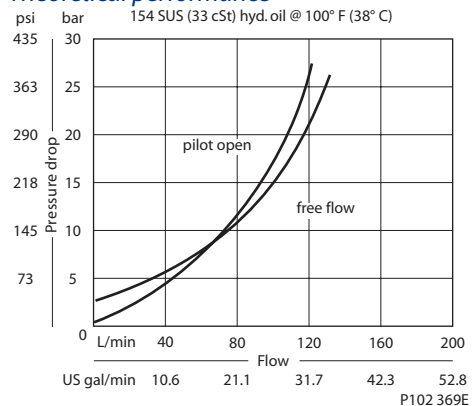
Schematic



P104 633

SPECIFICATIONS

Theoretical performance



Specifications

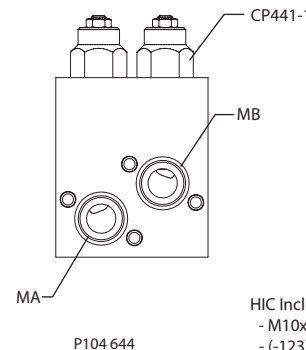
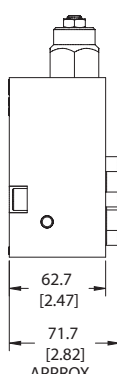
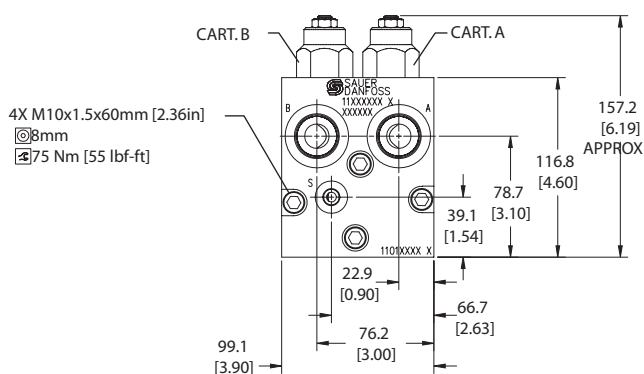
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.19 kg [4.83 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023871
Motor	OMT

Motor mount HICs
MM-OMT-LS-DCP441-1

DIMENSIONS

Cross-sectional view

mm [in]

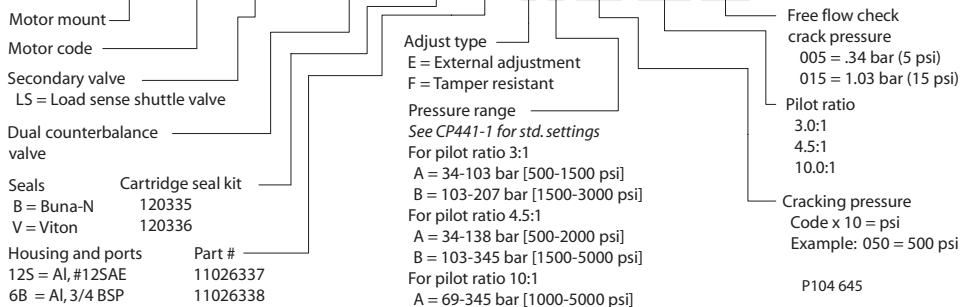


HIC Includes:
 - M10x60mm bolts (4X)
 - (-123) O'rings, Viton (29.82x2.62 mm) (2X)

P104 644

ORDERING INFORMATION

MM-OMT-LS-DCP441-1-B-12S-E-A-250-10.0-015

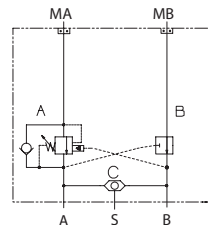


P104 645

OPERATION

This is a single counterbalance (A port) HIC with shuttle that mounts to DH motors with manifold mount porting.

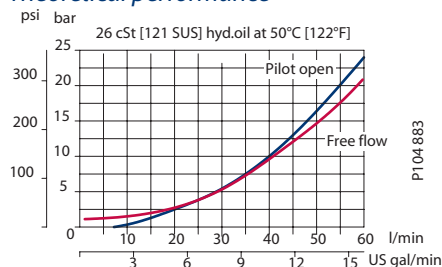
Schematic



P104 646

SPECIFICATIONS

Theoretical performance



P104 883

Specifications

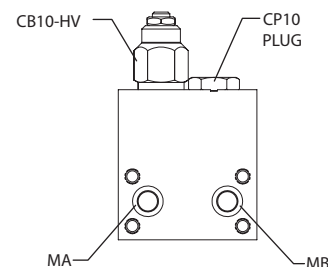
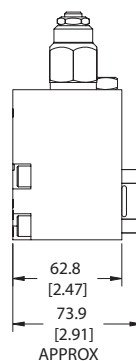
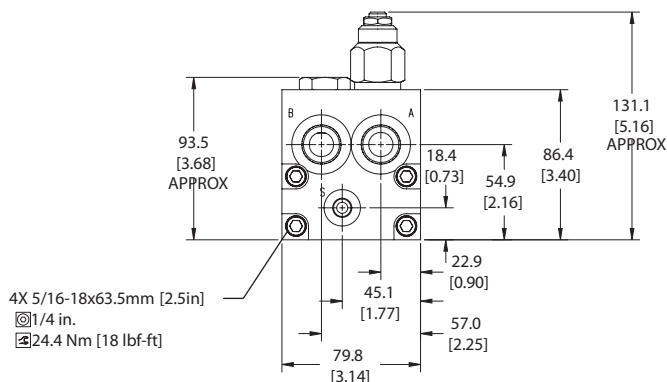
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.49 kg [3.28 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Shuttle	CP124-1
Plug	SDC10-V-3S-B1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023864
Motor	DH

Motor mount HICs
MM-DH-LS-ACB10-HV

DIMENSIONS

Cross-sectional view

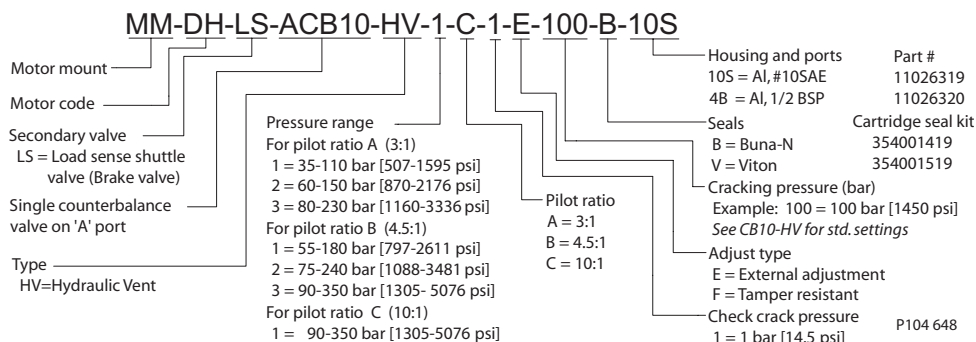
mm [in]



HIC Includes:
- 5/16-18 x 2.5" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (2X)

P104 647

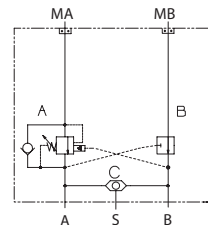
ORDERING INFORMATION



OPERATION

This is a single counterbalance (A port) HIC with shuttle that mounts to DS motors with manifold mount porting.

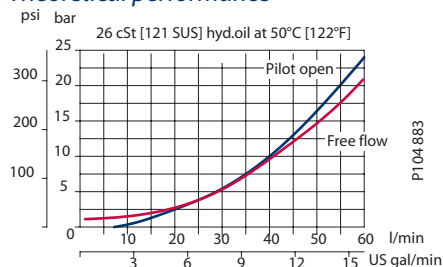
Schematic



P104 646

SPECIFICATIONS

Theoretical performance



P104-883

Specifications

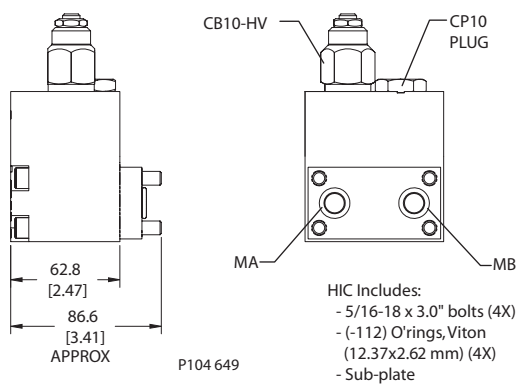
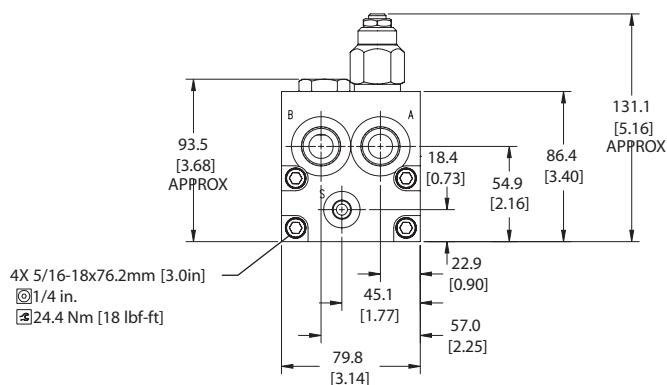
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.60 kg [3.53 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Shuttle	CP124-1
Plug	SDC10-V-3S-B1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023865
Motor	DS

Motor mount HICs
 MM-DS-LS-ACB10-HV

DIMENSIONS

Cross-sectional view

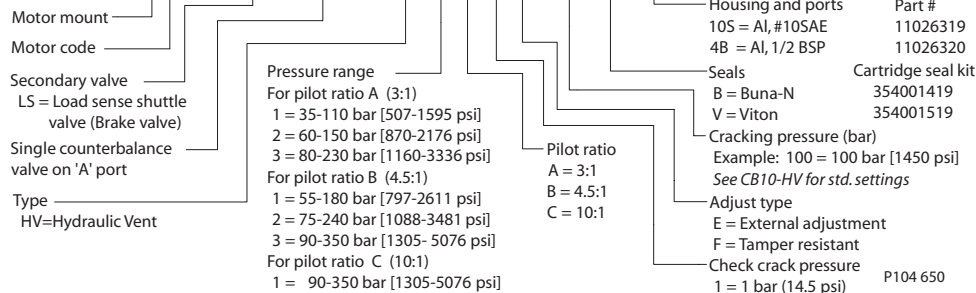
mm [in]



HIC Includes:
 - 5/16-18 x 3.0" bolts (4X)
 - (-112) O-rings, Viton (12.37x2.62 mm) (4X)
 - Sub-plate

ORDERING INFORMATION

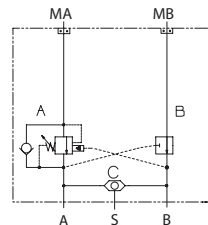
MM-DS-LS-ACB10-HV-1-C-1-E-100-B-10S



OPERATION

This is a single counterbalance (A port) HIC with shuttle that mounts to OMP/OMR motors with BSP porting.

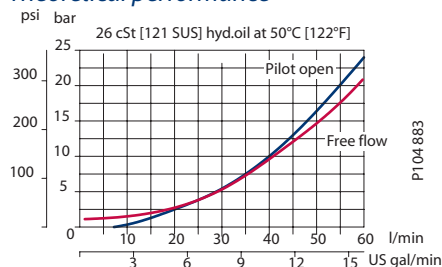
Schematic



P104 646

SPECIFICATIONS

Theoretical performance



P104 883

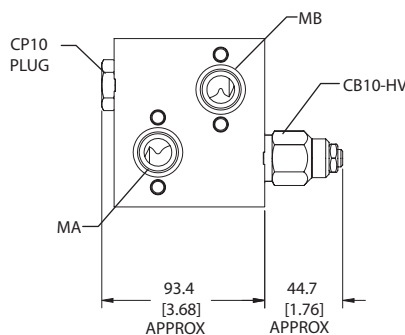
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.44 kg [3.17 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Shuttle	CP124-1
Plug	SDC10-V-3S-B1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023162
Motor	OMP/OMR

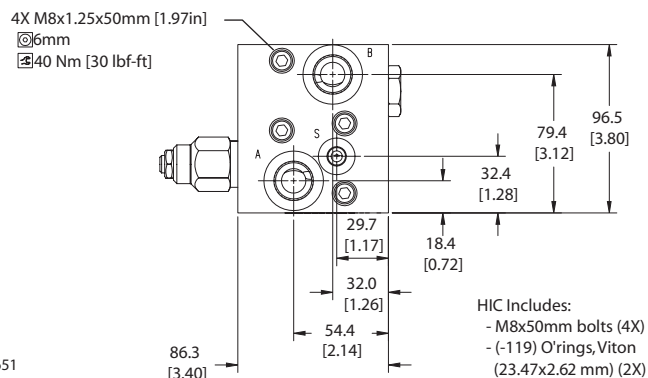
DIMENSIONS

Cross-sectional view

mm [in]



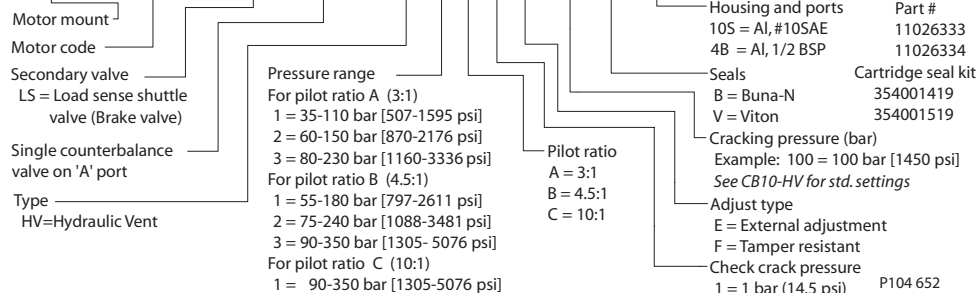
P104 651



HIC Includes:
- M8x50mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)

ORDERING INFORMATION

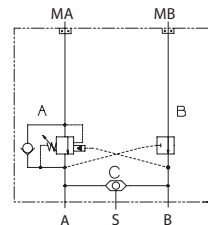
MM-OMP/OMR-LS-ACB10-HV-1-C-1-E-100-B-10S



OPERATION

This is a single counterbalance (A port) HIC with shuttle that mounts to OMH motors with BSP porting.

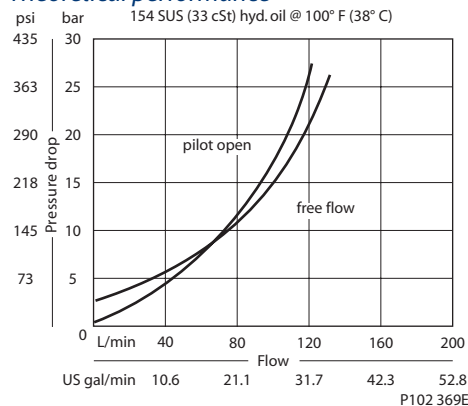
Schematic



P104 646

SPECIFICATIONS

Theoretical performance



P102 369E

Specifications

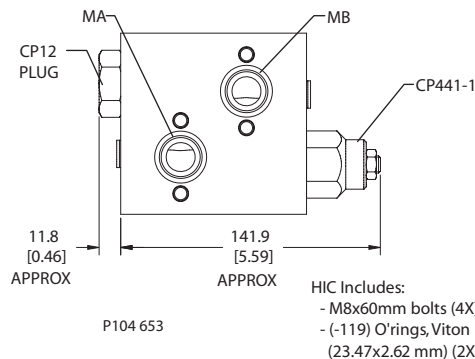
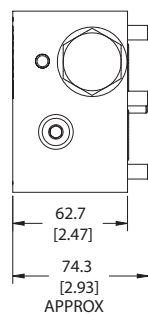
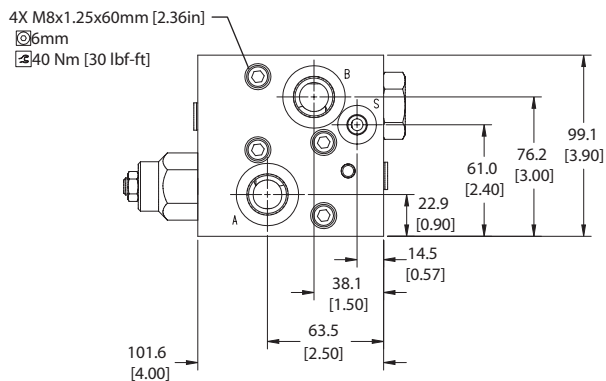
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	1.93 kg [4.25 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Shuttle	CP124-1
Plug	CP12-V-3S-B1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023869
Motor	OMH

Motor mount HICs
 MM-OMH-LS-ACP441-1

DIMENSIONS

Cross-sectional view

mm [in]

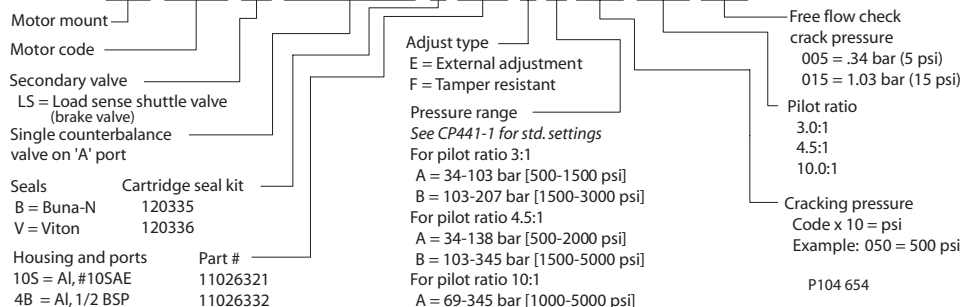


P104 653

HIC Includes:
 - M8x60mm bolts (4X)
 - (-119) O'rings, Viton (23.47x2.62 mm) (2X)

ORDERING INFORMATION

MM-OMH-LS-ACP441-1-B-10S-E-A-250-10.0-015

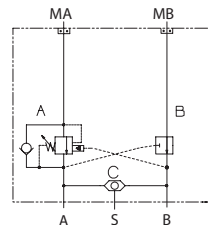


P104 654

OPERATION

This is a single counterbalance (A port) HIC with shuttle that mounts to OMS motors with BSP porting.

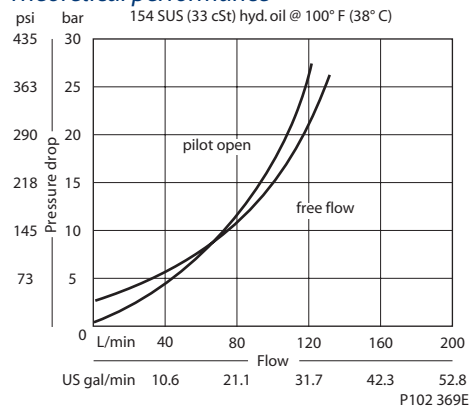
Schematic



P104 646

SPECIFICATIONS

Theoretical performance



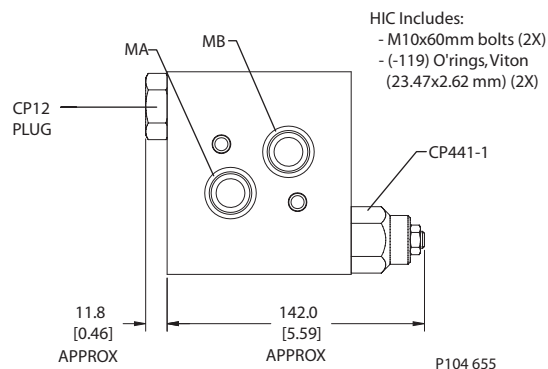
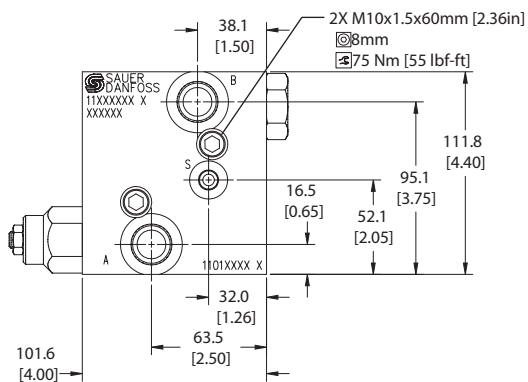
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.13 kg [4.70 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Shuttle	CP124-1
Plug	CP12-V-3S-B1
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023867
Motor	OMS

DIMENSIONS

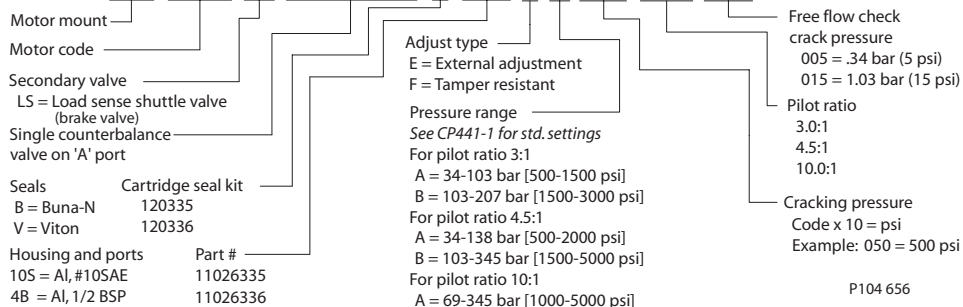
Cross-sectional view

mm [in]



ORDERING INFORMATION

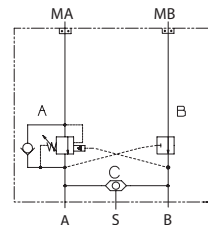
MM-OMS-LS-ACP441-1-B-10S-E-A-250-10.0-015



OPERATION

This is a single counterbalance (A port) HIC with shuttle that mounts to OMT motors with BSP porting.

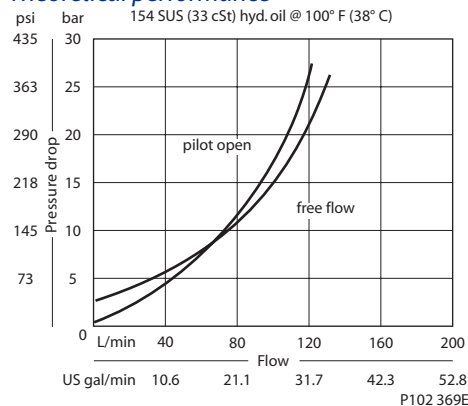
Schematic



P104 646

SPECIFICATIONS

Theoretical performance



Specifications

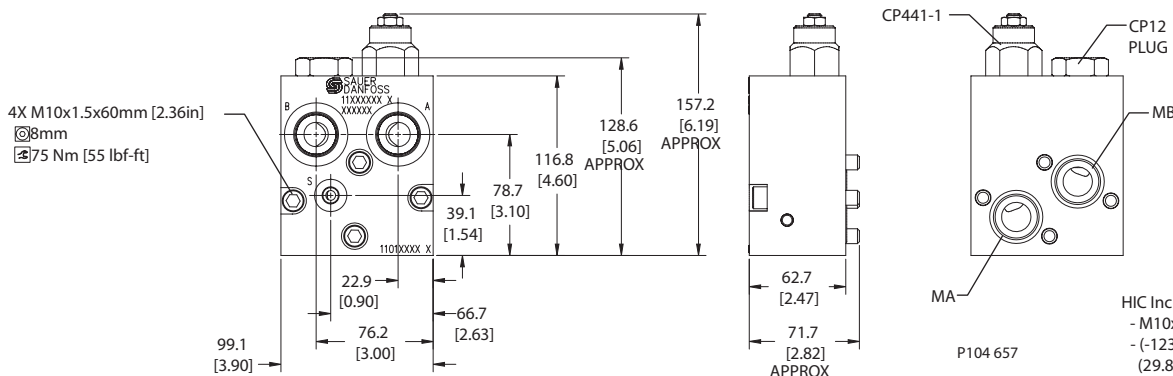
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.19 kg [4.83 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Shuttle	CP124-1
Plug	CP12-V-3S-B1
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023871
Motor	OMT

Motor mount HICs
MM-OMT-LS-ACP441-1

DIMENSIONS

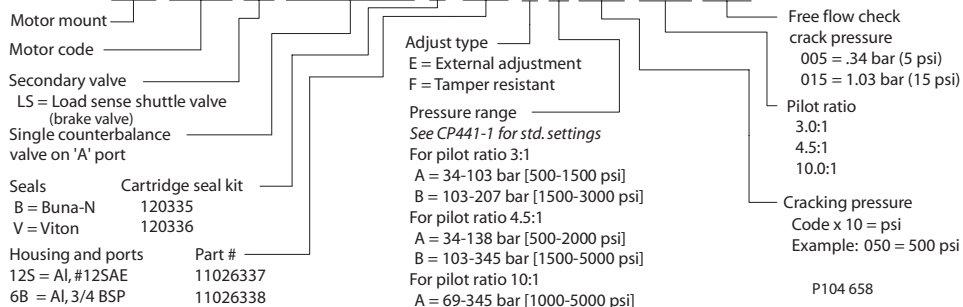
Cross-sectional view

mm [in]



ORDERING INFORMATION

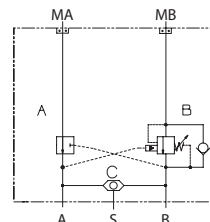
MM-OMT-LS-ACP441-1-B-12S-E-A-250-10.0-015



OPERATION

This is a single counterbalance (B port) HIC with shuttle that mounts to DH motors with manifold mount porting.

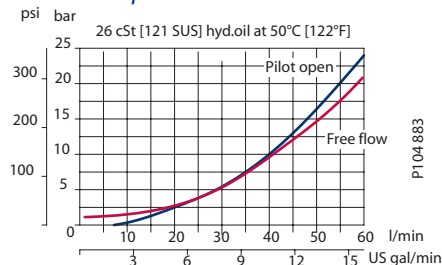
Schematic



P104 659

SPECIFICATIONS

Theoretical performance



P104 883

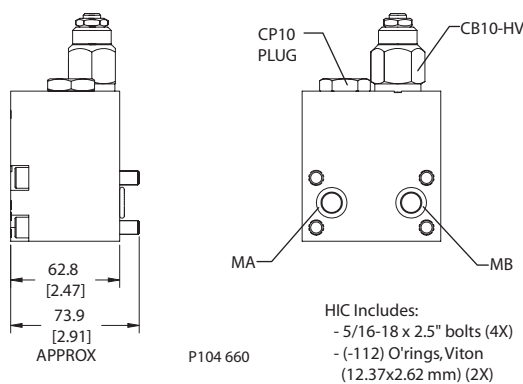
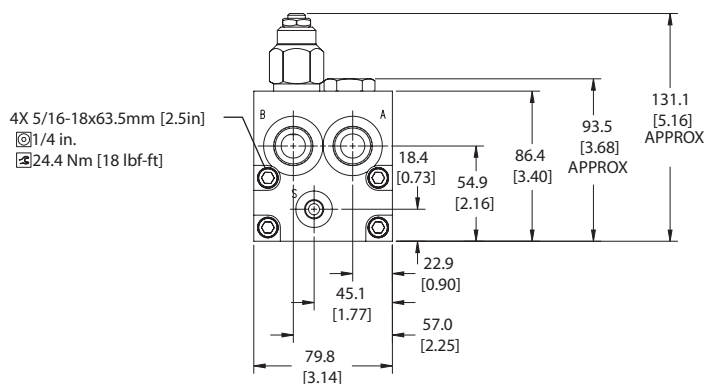
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.49 kg [3.28 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Shuttle	CP124-1
Plug	SDC10-V-3S-B1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023864
Motor	DH

DIMENSIONS

Cross-sectional view

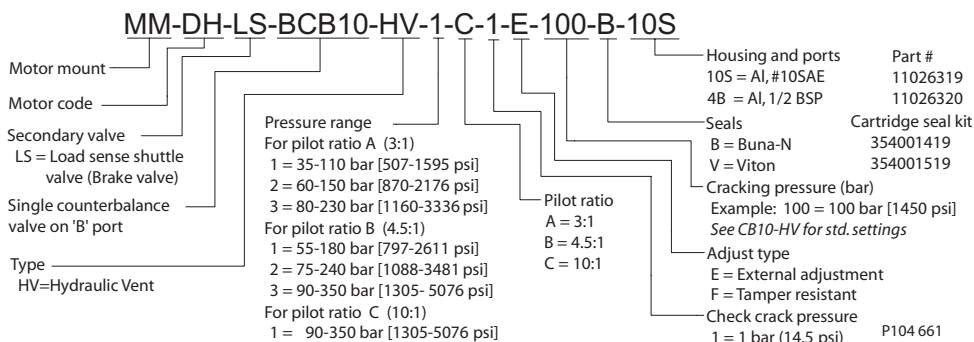
mm [in]



HIC Includes:
- 5/16-18 x 2.5" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (2X)

P104 660

ORDERING INFORMATION

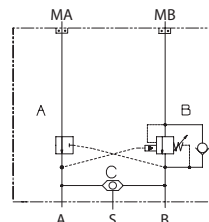


Motor mount HICs
MM-DH-LS-BCB10-HV

OPERATION

This is a single counterbalance (B port) HIC with shuttle that mounts to DS motors with manifold mount porting.

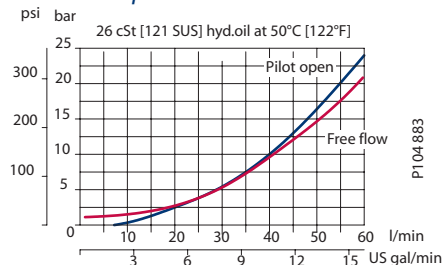
Schematic



P104 659

SPECIFICATIONS

Theoretical performance



P104-883

Specifications

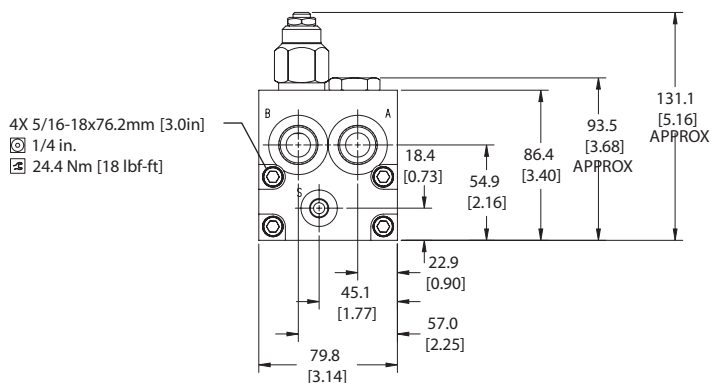
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.60 kg [3.53 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Shuttle	CP124-1
Plug	SDC10-V-3S-B1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023865
Motor	DS

Motor mount HICs
MM-DS-LS-BCB10-HV

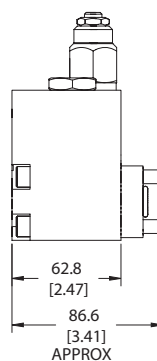
DIMENSIONS

Cross-sectional view

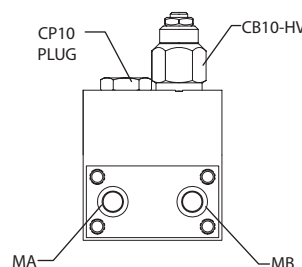
mm [in]



4X 5/16-18x76.2mm [3.0in]
⊙ 1/4 in.
⊠ 24.4 Nm [18 lbf-ft]



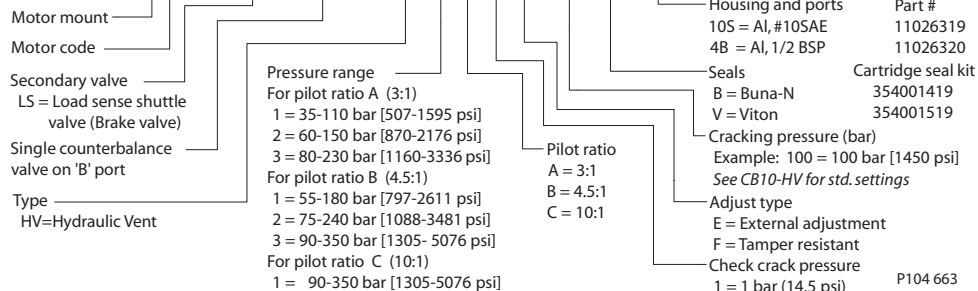
P104 662



HIC Includes:
- 5/16-18 x 3.0" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (4X)
- Sub-plate

ORDERING INFORMATION

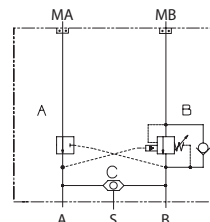
MM-DS-LS-BCB10-HV-1-C-1-E-100-B-10S



OPERATION

This is a single counterbalance (B port) HIC with shuttle that mounts to OMP/OMR motors with BSP porting.

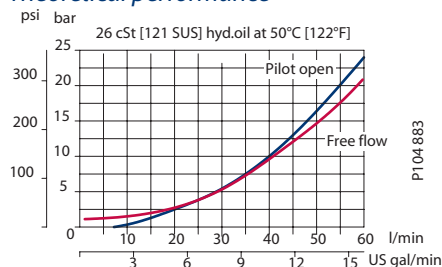
Schematic



P104 659

SPECIFICATIONS

Theoretical performance



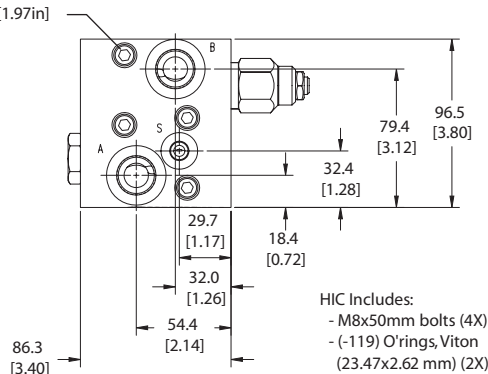
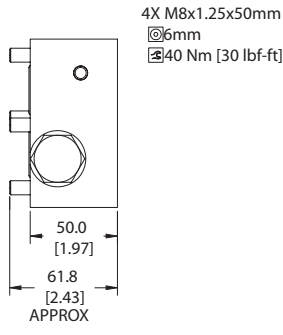
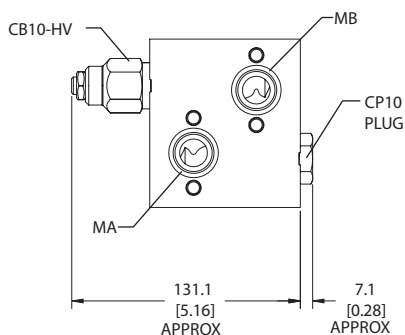
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	60 l/min [16 US gal/min]
Leakage	6 drops/min @ at 70% of crack pressure
Weight	1.44 kg [3.17 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CB10 HV
Shuttle	CP124-1
Plug	SDC10-V-3S-B1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023162
Motor	OMP/OMR

DIMENSIONS

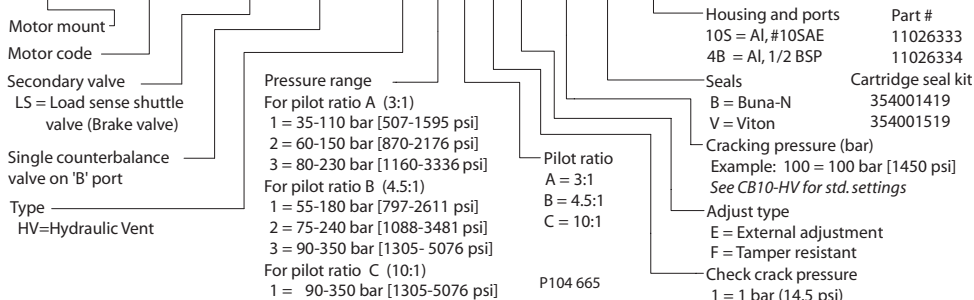
Cross-sectional view

mm [in]



ORDERING INFORMATION

MM-OMP/OMR-LS-BCB10-HV-1-C-1-E-100-B-10S

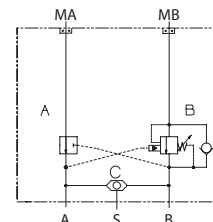


Motor mount HICs
MM-OMP/OMR-LS-BCB10-HV

OPERATION

This is a single counterbalance (B port) HIC with shuttle that mounts to OMH motors with BSP porting.

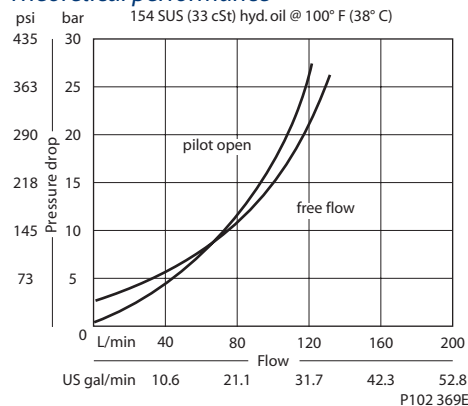
Schematic



P104 659

SPECIFICATIONS

Theoretical performance



Specifications

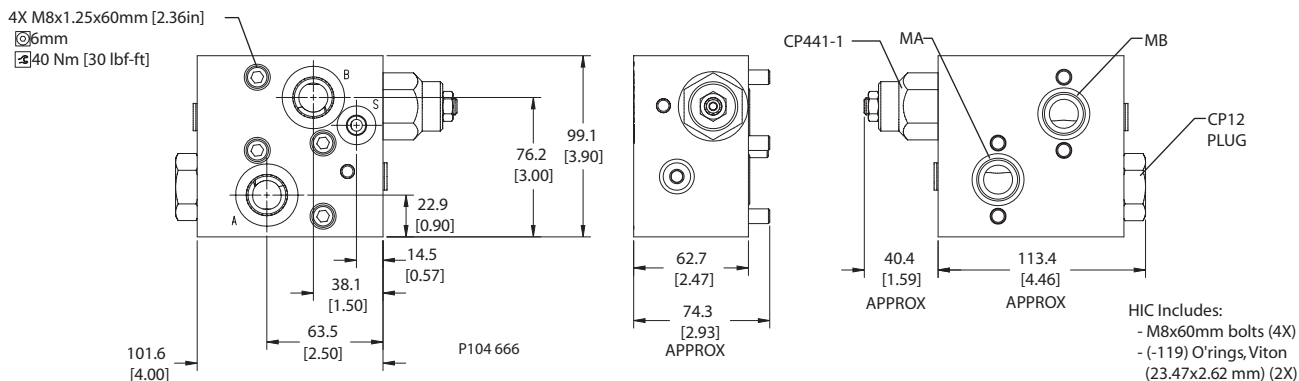
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	1.93 kg [4.25 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Shuttle	CP124-1
Plug	CP12-V-3S-B1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023869
Motor	OMH

Motor mount HICs
 MM-OMH-LS-BCP441-1

DIMENSIONS

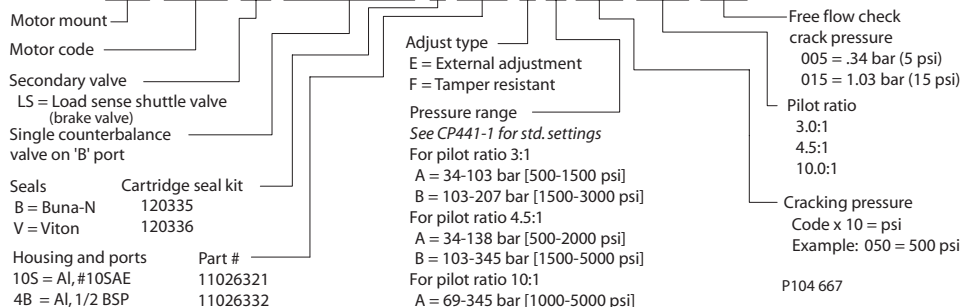
Cross-sectional view

mm [in]



ORDERING INFORMATION

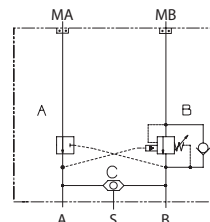
MM-OMH-LS-BCP441-1-B-10S-E-A-250-10.0-015



OPERATION

This is a single counterbalance (B port) HIC with shuttle that mounts to OMS motors with BSP porting.

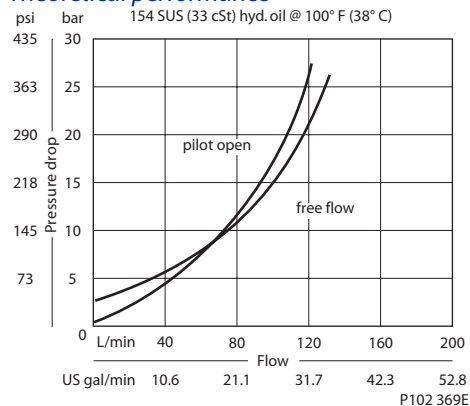
Schematic



P104 659

SPECIFICATIONS

Theoretical performance



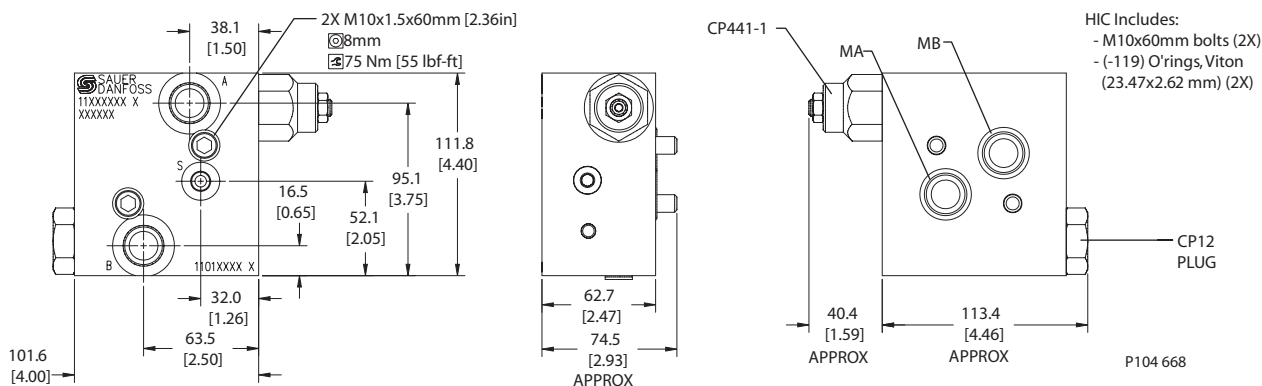
Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.13 kg [4.70 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Shuttle	CP124-1
Plug	CP12-V-3S-B1
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023867
Motor	OMS

DIMENSIONS

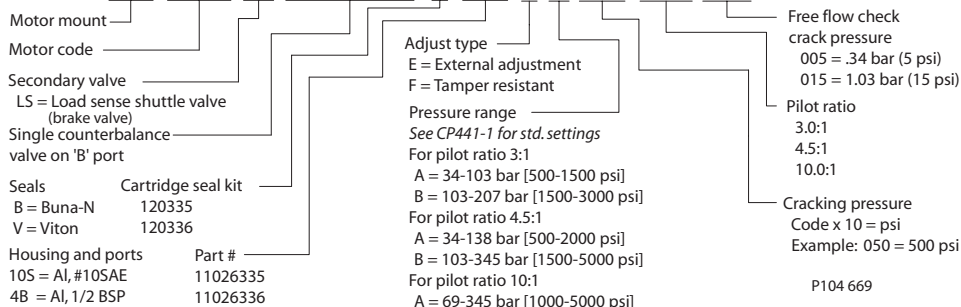
Cross-sectional view

mm [in]



ORDERING INFORMATION

MM-OMS-LS-BCP441-1-B-10S-E-A-250-10.0-015

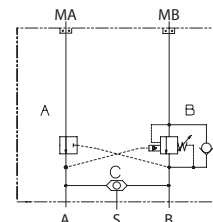


P104 669

OPERATION

This is a single counterbalance (B port) HIC with shuttle that mounts to OMS motors with BSP porting.

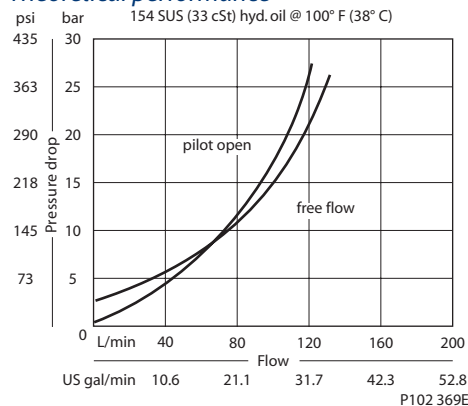
Schematic



P104 659

SPECIFICATIONS

Theoretical performance



Specifications

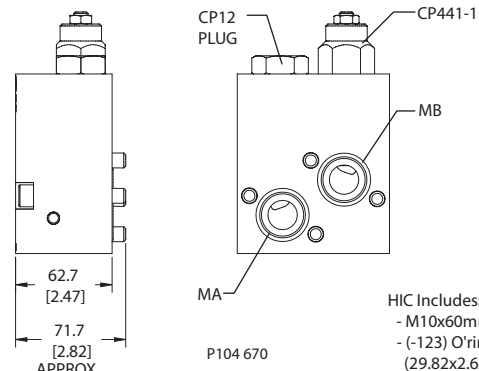
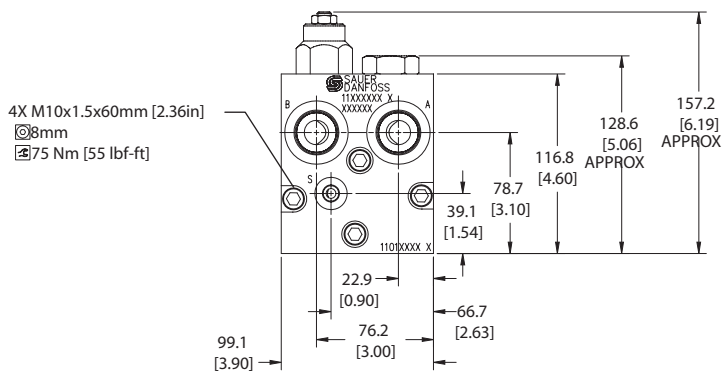
Rated pressure	210 bar [3045 psi]
Rated flow at 22 bar [319 psi]	115 l/min [30 US gal/min]
Leakage	10 drops/min @ at 70% of crack pressure
Weight	2.19 kg [4.83 lb]
Pilot ratio	3.0:1, 4.5:1, 10.0:1
Cartridge	CP441-1
Shuttle	CP124-1
Plug	CP12-V-3S-B1
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023871
Motor	OMT

Motor mount HICs
MM-OMT-LS-BCP441-1

DIMENSIONS

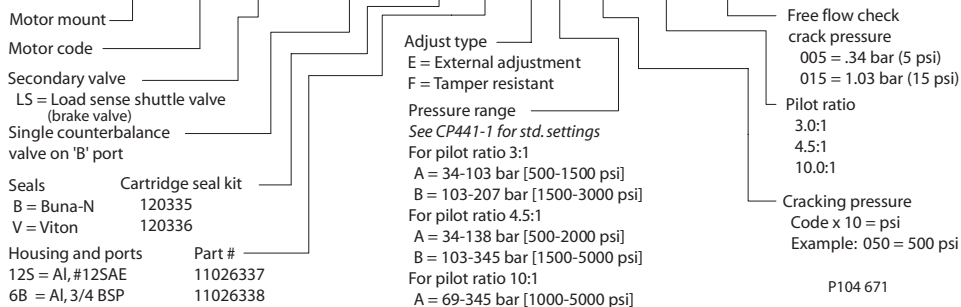
Cross-sectional view

mm [in]



ORDERING INFORMATION

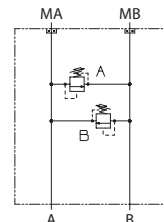
MM-OMT-LS-BCP441-1-B-12S-E-A-250-10.0-015



OPERATION

This is a dual cross-port relief HIC that mounts to DH motors with manifold mount porting.

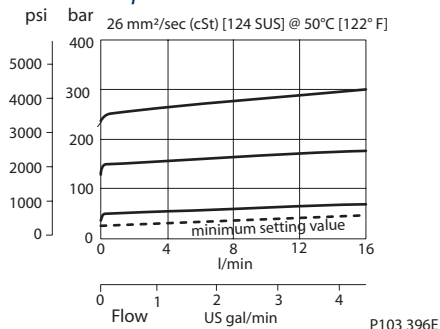
Schematic



P104 905

SPECIFICATIONS

Theoretical performance



Specifications

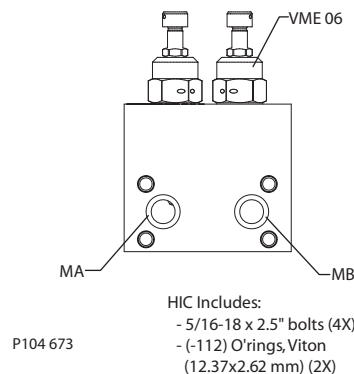
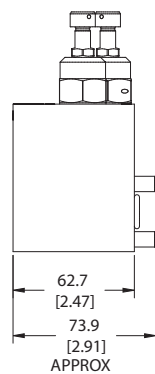
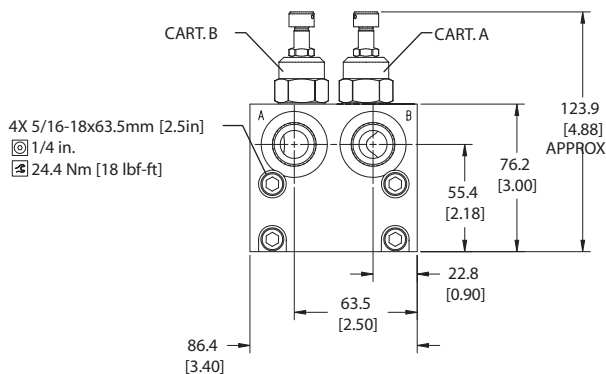
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.28 kg [2.82 lb]
Cartridge	VME 06
Service mount kit	11023864
Motor	DH

Motor mount HICs
MM-DH-00-DVME06

DIMENSIONS

Cross-sectional view

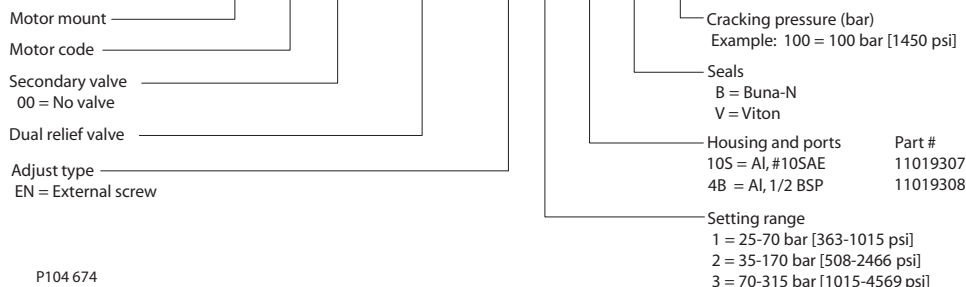
mm [in]



P104 673

ORDERING INFORMATION

MM-DH-00-DVME06-EN-2-10S-B-100

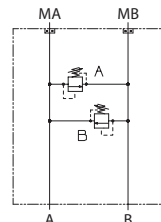


P104 674

OPERATION

This is a dual cross-port relief HIC that mounts to DS motors with manifold mount porting.

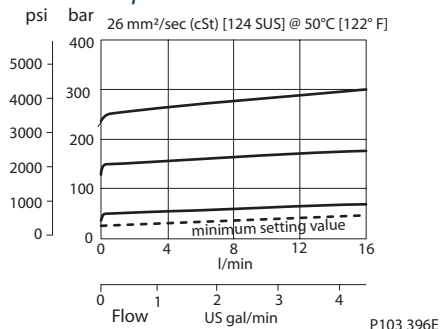
Schematic



P104 905

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

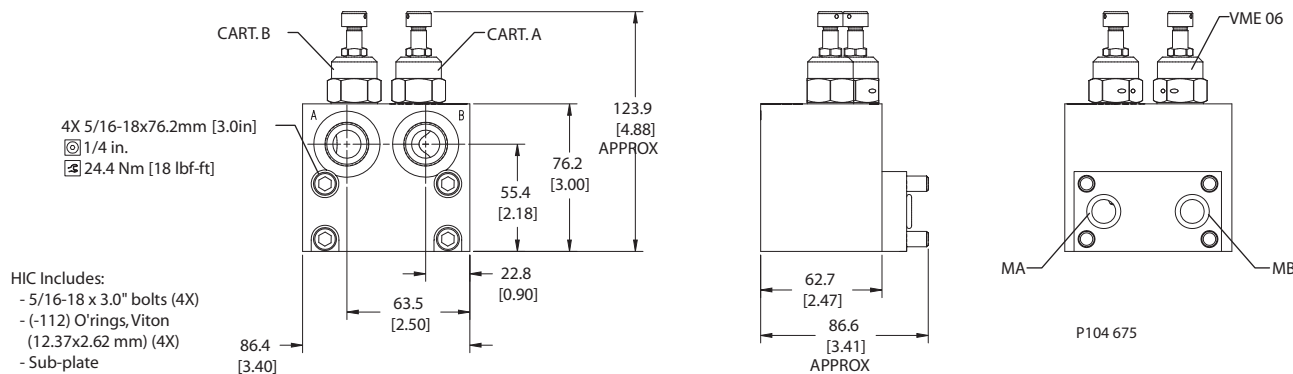
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.39 kg [3.06 lb]
Cartridge	VME 06
Service mount kit	11023865
Motor	DS

Motor mount HICs
 MM-DS-00-DVME06

DIMENSIONS

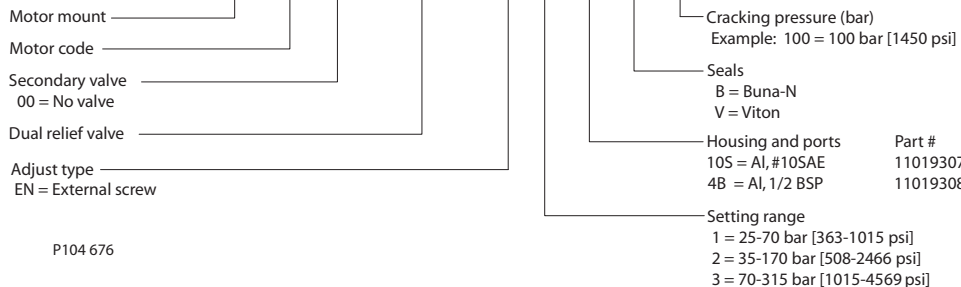
Cross-sectional view

mm [in]



ORDERING INFORMATION

MM-DS-00-DVME06-EN-2-10S-B-100

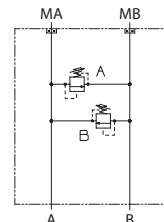


P104 676

OPERATION

This is a dual cross-port relief HIC that mounts to OMP/OMR motors with BSP porting.

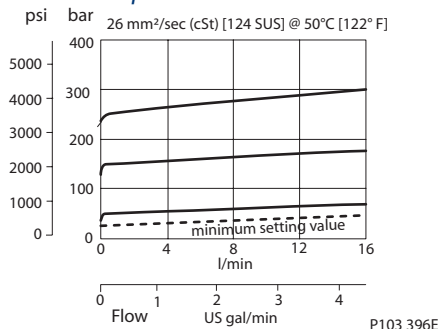
Schematic



P104 905

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

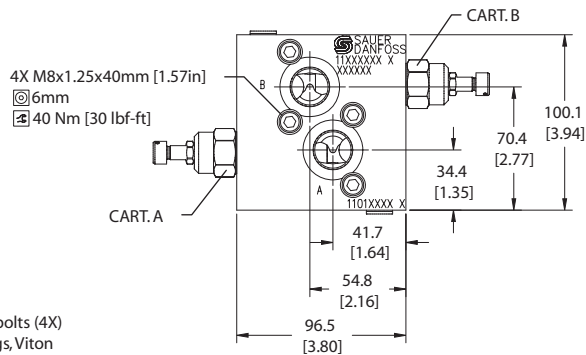
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.14 kg [2.51 lb]
Cartridge	VME 06
Service mount kit	11023868
Motor	OMP/OMR

Motor mount HICs
MM-OMP/OMR-00-DVME06

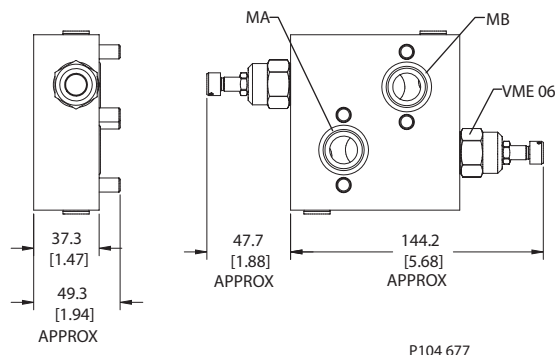
DIMENSIONS

Cross-sectional view

mm [in]



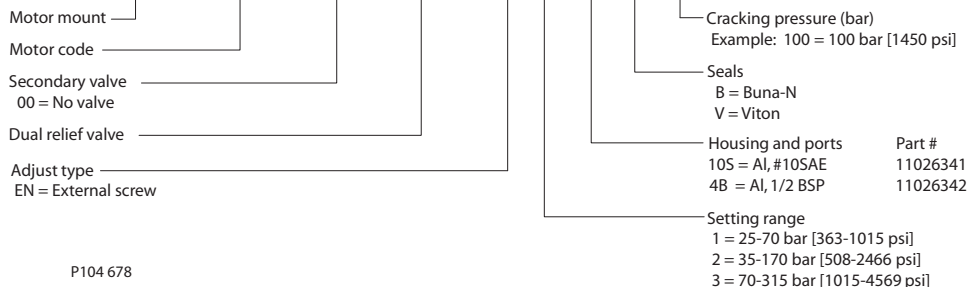
HIC Includes:
- M8x40mm bolts (4X)
- (-119) O-rings, Viton (23.47x2.62 mm) (2X)



P104 677

ORDERING INFORMATION

MM-OMP/OMR-00-DVME06-EN-2-10S-B-100

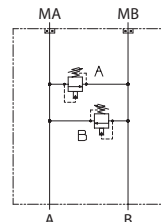


P104 678

OPERATION

This is a dual cross-port relief HIC that mounts to OMH motors with BSP porting.

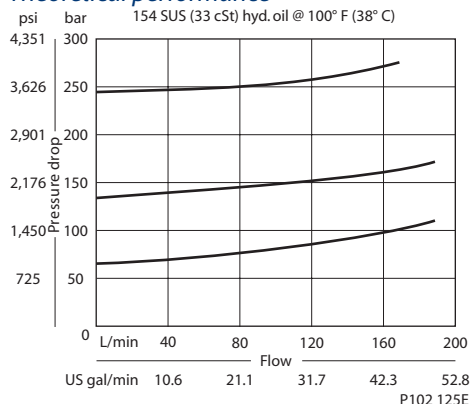
Schematic



P104 672

SPECIFICATIONS

Theoretical performance



Specifications

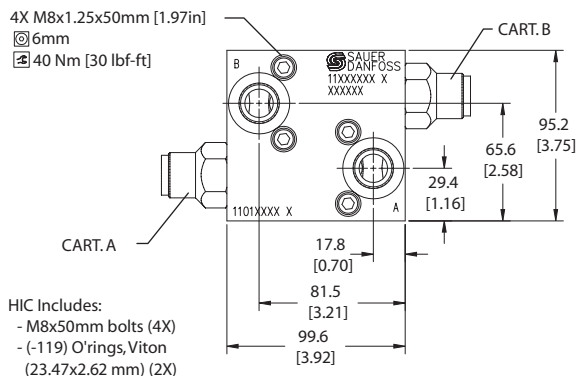
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.42 kg [3.13 lb]
Cartridge	CP211-2
Service mount kit	11023762
Motor	OMH

Motor mount HICs
MM-OMH-00-DCP211-2

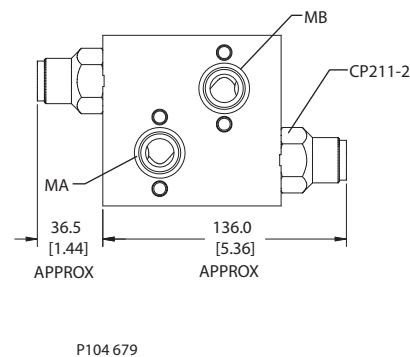
DIMENSIONS

Cross-sectional view

mm [in]

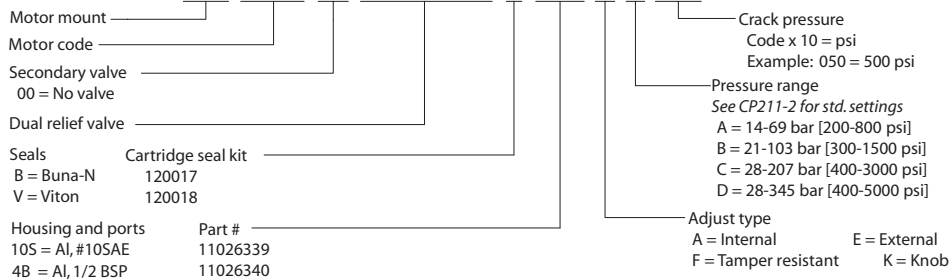


HIC Includes:
- M8x50mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



ORDERING INFORMATION

MM-OMH-00-DCP211-2-B-10S-E-C-254

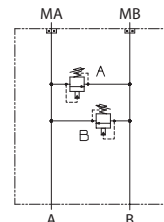


P104 680

OPERATION

This is a dual cross-port relief HIC that mounts to OMS motors with BSP porting.

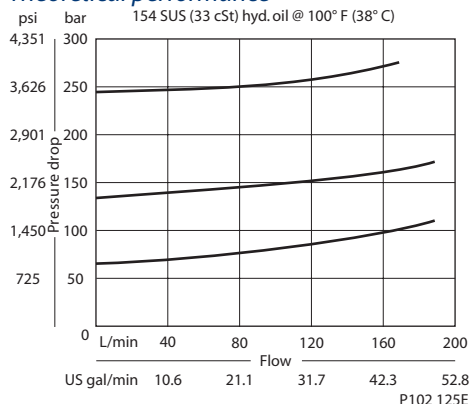
Schematic



P104 672

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.60 kg [3.53 lb]
Cartridge	CP211-2
Service mount kit	11023866
Motor	OMS

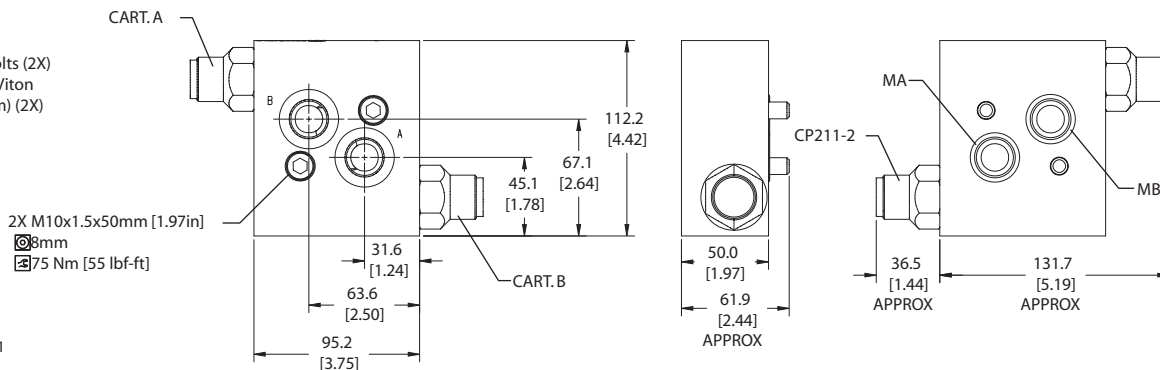
Motor mount HICs
MM-OMS-00-DCP211-2

DIMENSIONS

Cross-sectional view

mm [in]

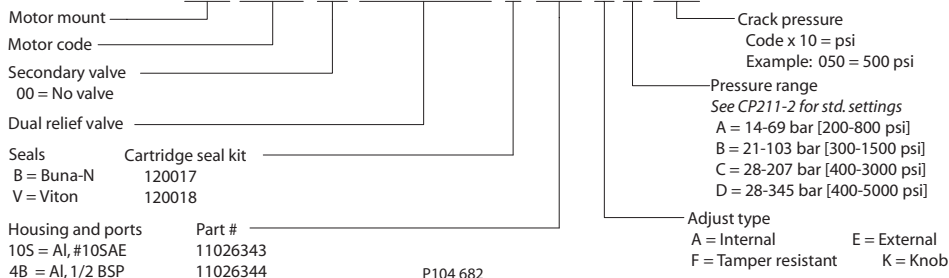
HIC Includes:
- M10x50mm bolts (2X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



P104 681

ORDERING INFORMATION

MM-OMS-00-DCP211-2-B-10S-E-C-254

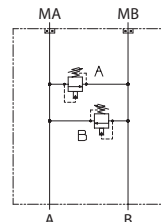


P104 682

OPERATION

This is a dual cross-port relief HIC that mounts to OMT motors with BSP porting.

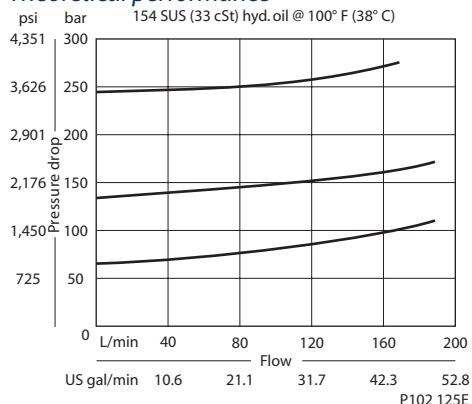
Schematic



P104 672

SPECIFICATIONS

Theoretical performance



Specifications

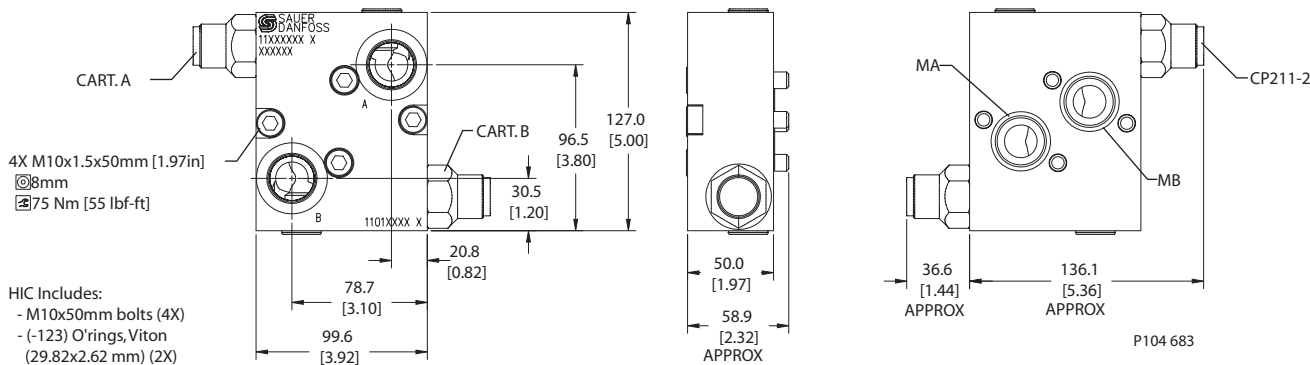
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.85 kg [4.08 lb]
Cartridge	CP211-2
Service mount kit	11023870
Motor	OMT

Motor mount HICs
MM-OMT-00-DCP211-2

DIMENSIONS

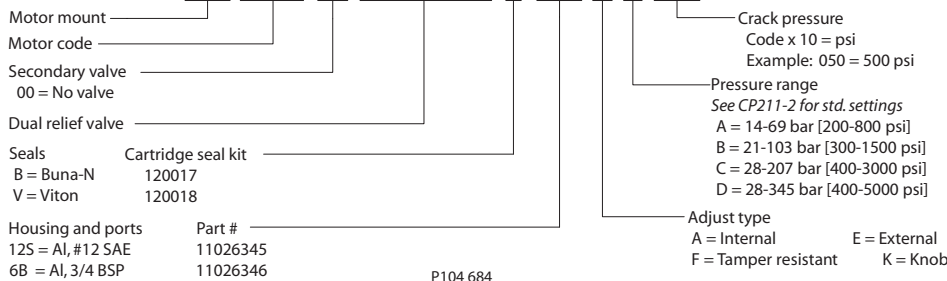
Cross-sectional view

mm [in]



ORDERING INFORMATION

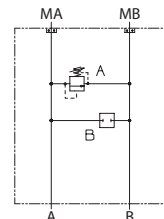
MM-OMT-00-DCP211-2-B-12S-E-C-254



OPERATION

This is a single cross-port relief (A to B) HIC that mounts to DH motors with manifold mount porting.

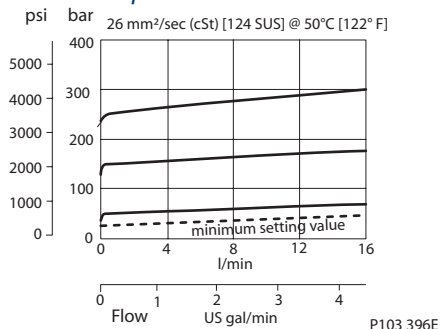
Schematic



P104 906

SPECIFICATIONS

Theoretical performance



Specifications

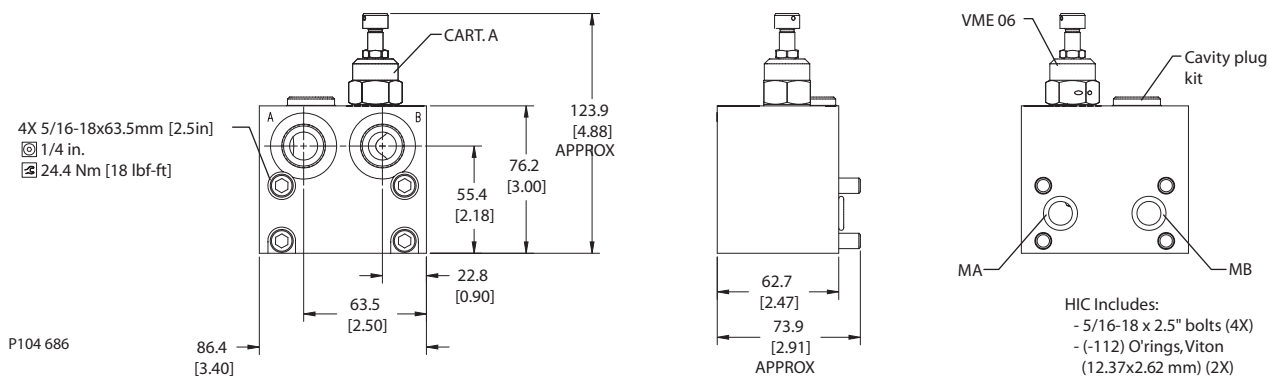
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.28 kg [2.82 lb]
Cartridge	VME 06
Plug	11023862
Service mount kit	11026074
Motor	DH

Motor mount HICs
 MM-DH-00-AVME06

DIMENSIONS

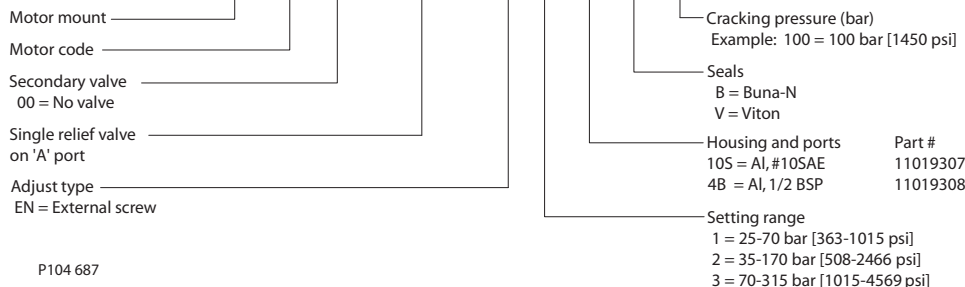
Cross-sectional view

mm [in]



ORDERING INFORMATION

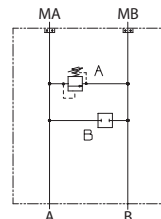
MM-DH-00-AVME06-EN-2-10S-B-100



OPERATION

This is a single cross-port relief (A to B) HIC that mounts to DS motors with manifold mount porting.

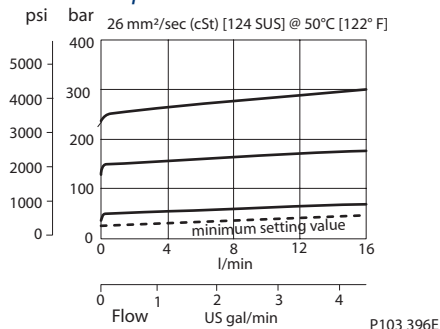
Schematic



P104 906

SPECIFICATIONS

Theoretical performance



Specifications

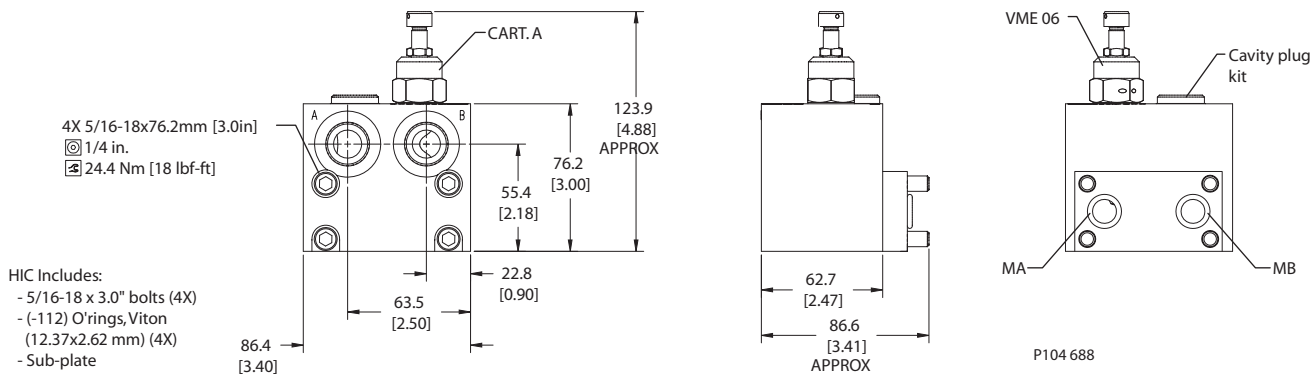
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.39 kg [3.06 lb]
Cartridge	VME 06
Plug	11026074
Service mount kit	11023865
Motor	DS

Motor mount HICs
MM-DS-00-AVME06

DIMENSIONS

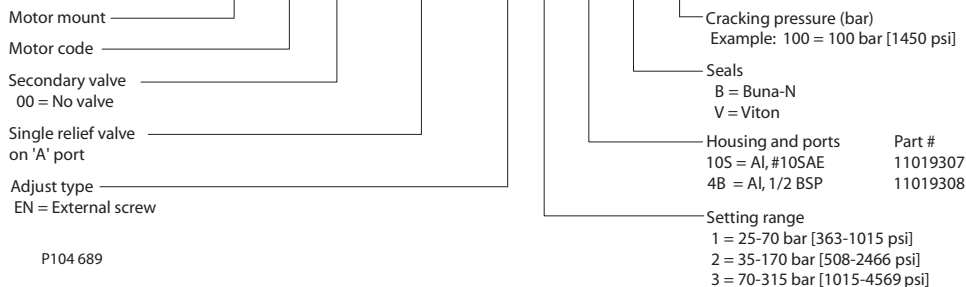
Cross-sectional view

mm [in]



ORDERING INFORMATION

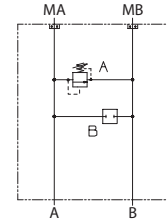
MM-DS-00-AVME06-EN-2-10S-B-100



OPERATION

This is a single cross-port relief (A to B) HIC that mounts to OMP/OMR motors with BSP porting.

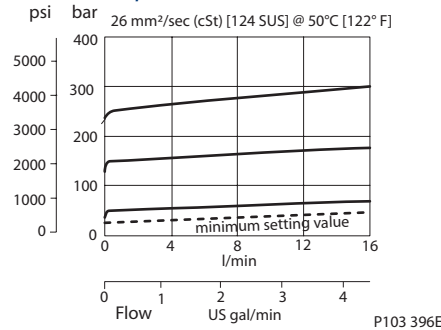
Schematic



P104 906

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

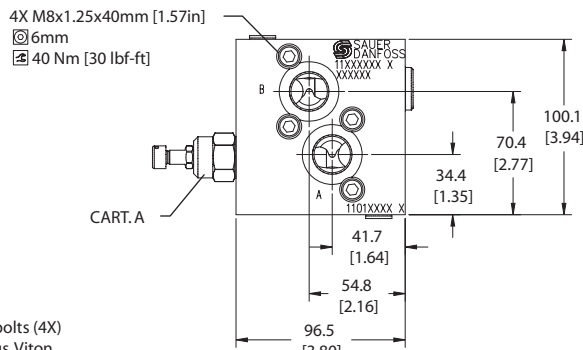
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.14 kg [2.51 lb]
Cartridge	VME 06
Plug	11026074
Service mount kit	11023868
Motor	OMP/OMR

Motor mount HICs
MM-OMP/OMR-00-AVME06

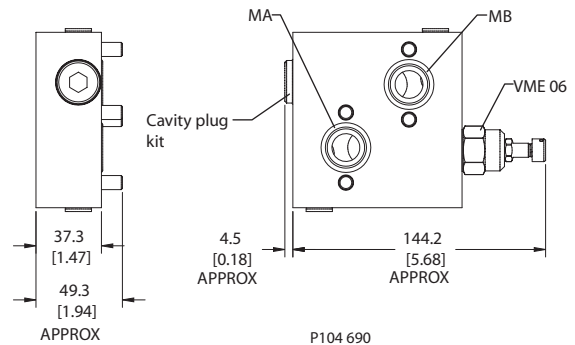
DIMENSIONS

Cross-sectional view

mm [in]



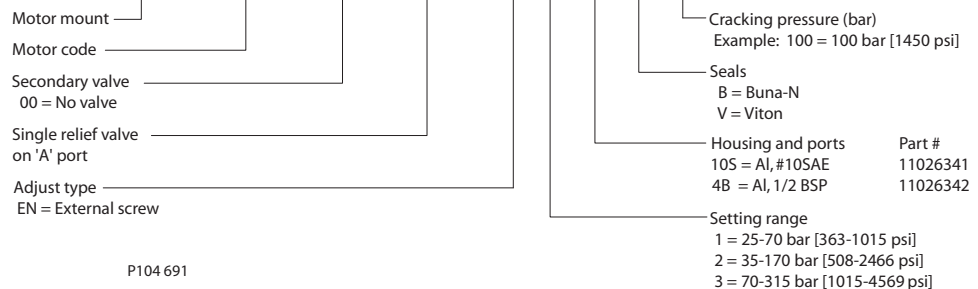
HIC Includes:
- M8x40mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



P104 690

ORDERING INFORMATION

MM-OMP/OMR-00-AVME06-EN-2-10S-B-100

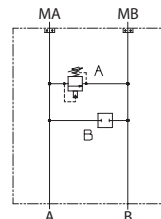


P104 691

OPERATION

This is a single cross-port relief (A to B) HIC that mounts to OMH motors with BSP porting.

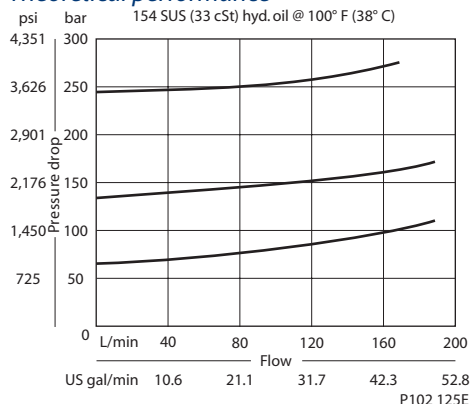
Schematic



P104 685

SPECIFICATIONS

Theoretical performance



Specifications

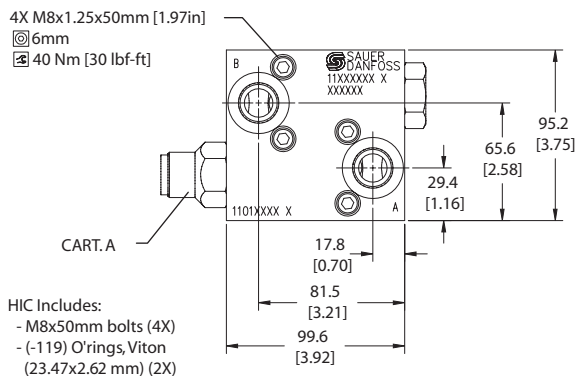
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.42 kg [3.13 lb]
Cartridge	CP211-2
Plug	CP12-V-2-B
Service mount kit	11023162
Motor	OMH

Motor mount HICs
MM-OMH-00-ACP211-2

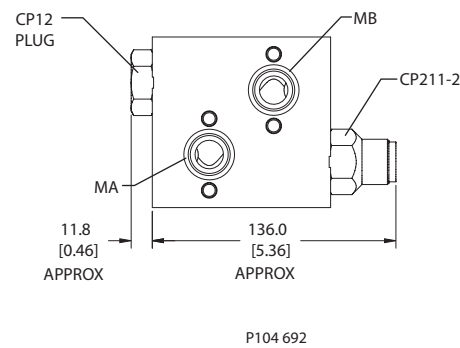
DIMENSIONS

Cross-sectional view

mm [in]



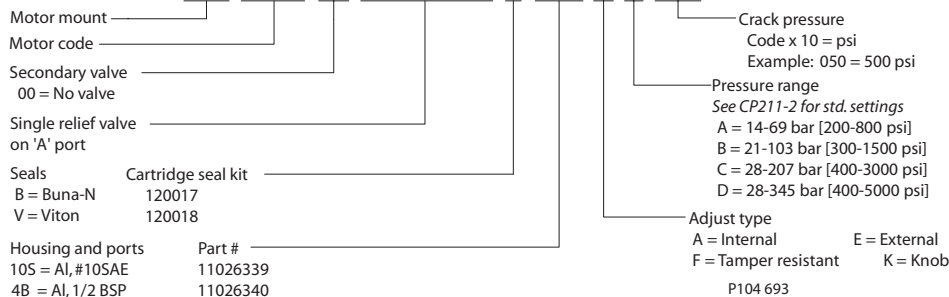
HIC Includes:
- M8x50mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



P104 692

ORDERING INFORMATION

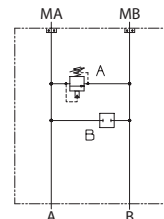
MM-OMH-00-ACP211-2-B-10S-E-C-254



OPERATION

This is a single cross-port relief (A to B) HIC that mounts to OMS motors with BSP porting.

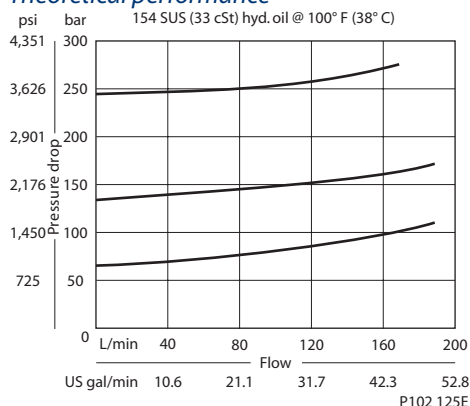
Schematic



P104 685

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.60 kg [3.53 lb]
Cartridge	CP211-2
Plug	CP12-V-2-B
Service mount kit	11023866
Motor	OMS

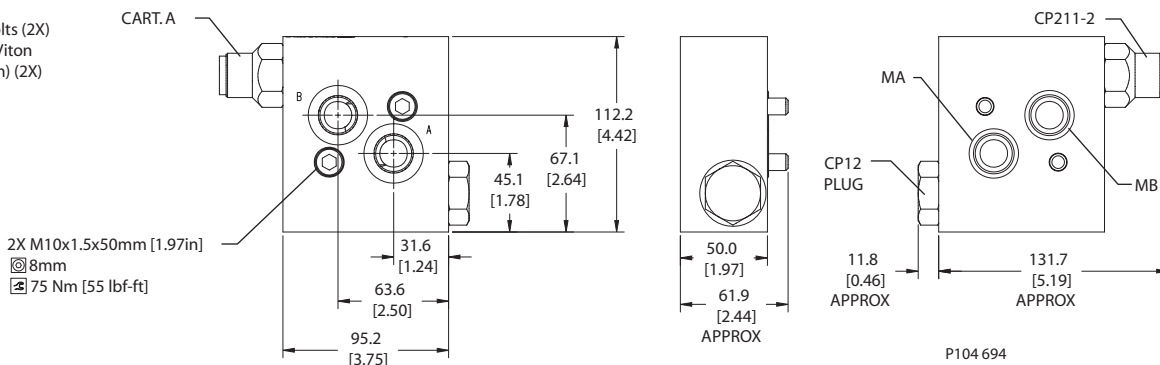
Motor mount HICs
MM-OMS-00-ACP211-2

DIMENSIONS

Cross-sectional view

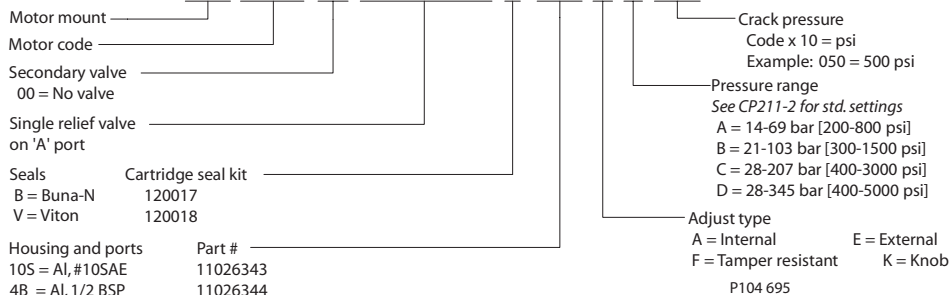
mm [in]

HIC Includes:
- M10x50mm bolts (2X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



ORDERING INFORMATION

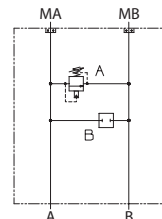
MM-OMS-00-ACP211-2-B-10S-E-C-254



OPERATION

This is a single cross-port relief (A to B) HIC that mounts to OMT motors with BSP porting.

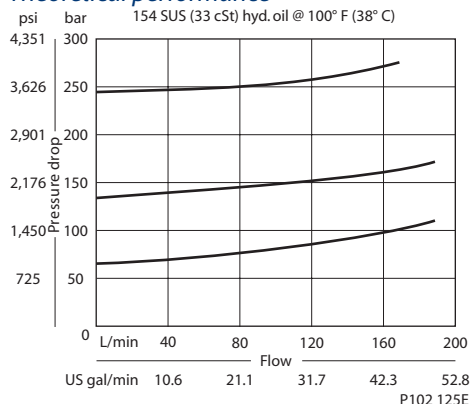
Schematic



P104 685

SPECIFICATIONS

Theoretical performance



Specifications

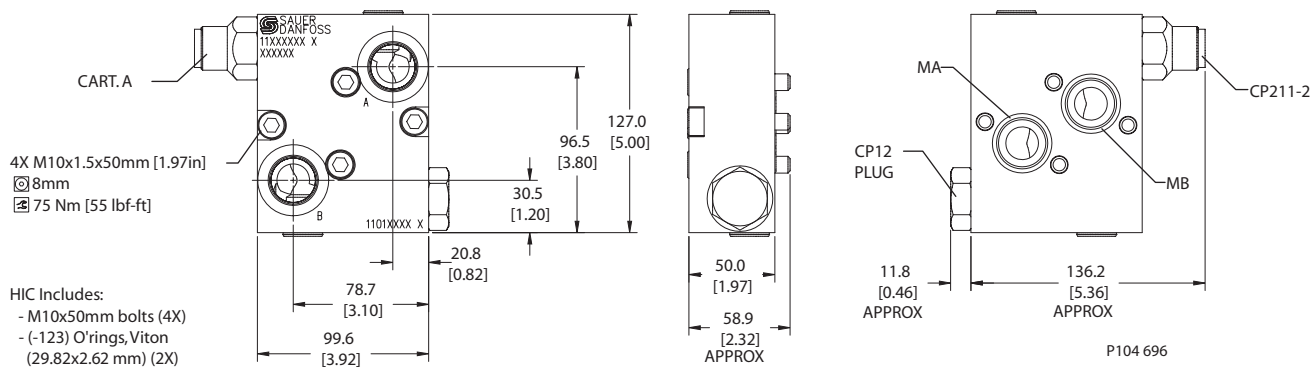
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.85 kg [4.08 lb]
Cartridge	CP211-2
Plug	CP12-V-2-B
Service mount kit	11023870
Motor	OMT

Motor mount HICs
MM-OMT-00-ACP211-2

DIMENSIONS

Cross-sectional view

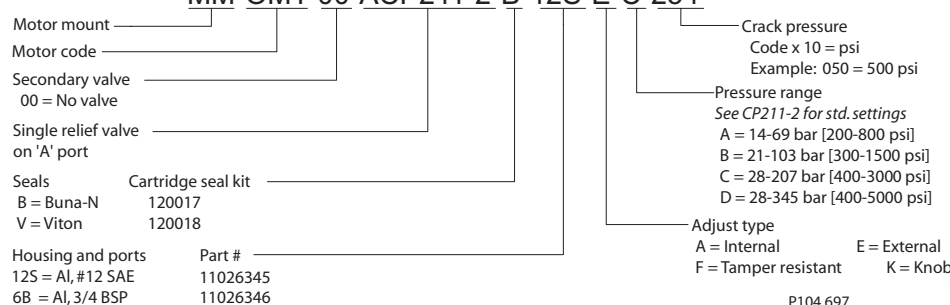
mm [in]



P104 696

ORDERING INFORMATION

MM-OMT-00-ACP211-2-B-12S-E-C-254

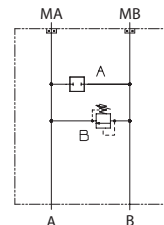


P104 697

OPERATION

This is a single cross-port relief (B to A) HIC that mounts to DH motors with manifold mount porting.

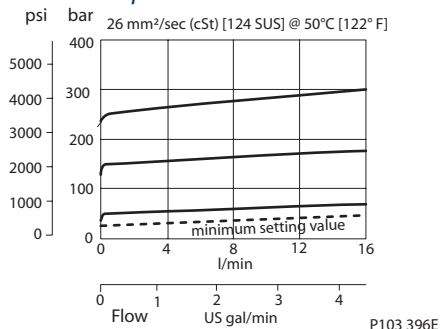
Schematic



P104 907

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

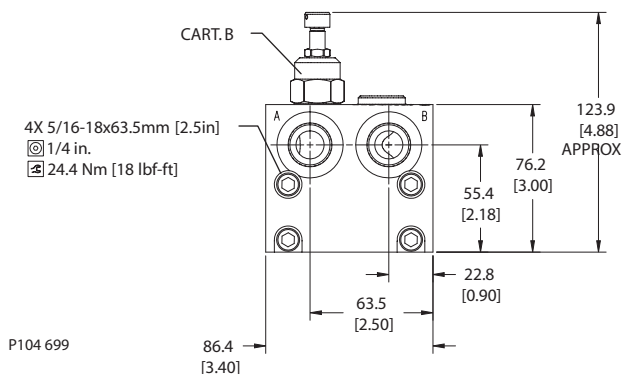
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.28 kg [2.82 lb]
Cartridge	VME 06
Plug	11026074
Service mount kit	11023864
Motor	DH

Motor mount HICs
MM-DH-00-BVME06

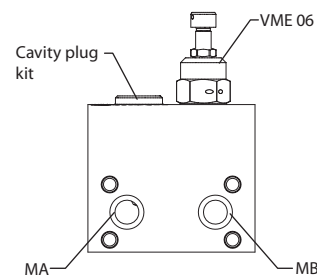
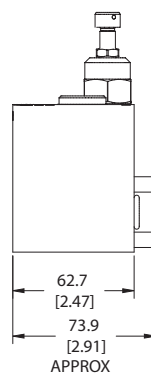
DIMENSIONS

Cross-sectional view

mm [in]



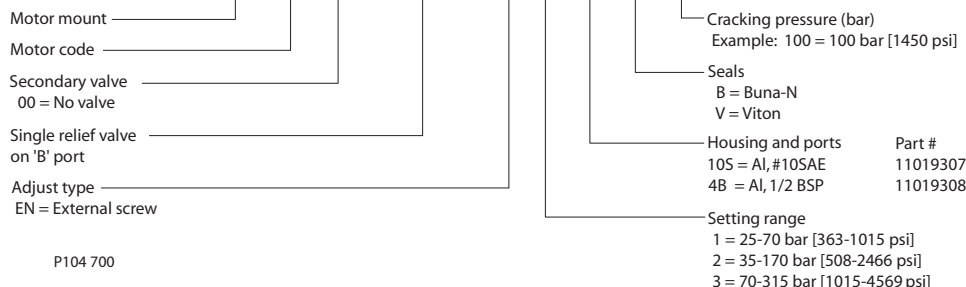
P104 699



HIC Includes:
- 5/16-18 x 2.5" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (2X)

ORDERING INFORMATION

MM-DH-00-BVME06-EN-2-10S-B-100

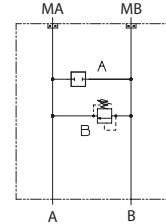


P104 700

OPERATION

This is a single cross-port relief (B to A) HIC that mounts to DS motors with manifold mount porting.

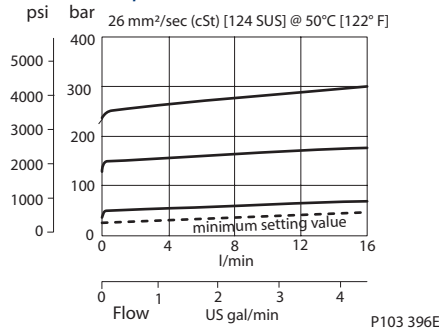
Schematic



P104 907

SPECIFICATIONS

Theoretical performance



Specifications

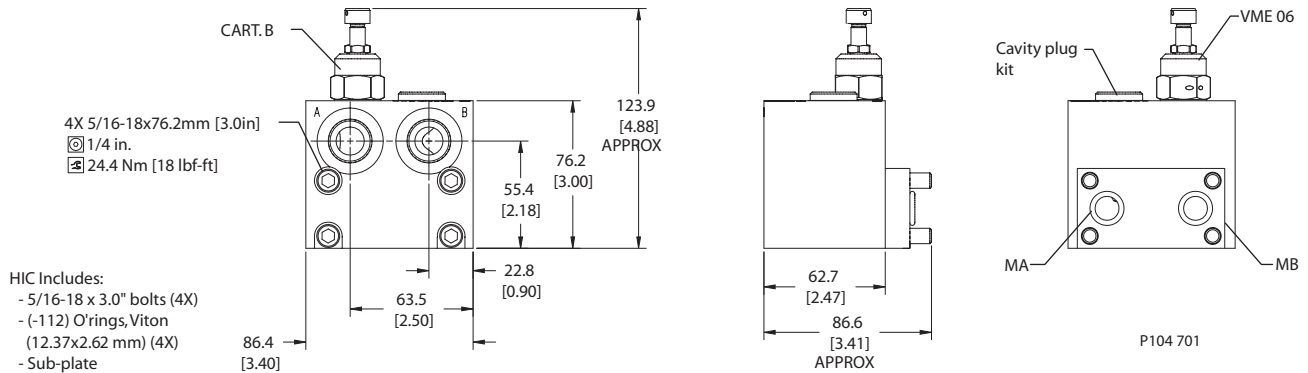
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.39 kg [3.06 lb]
Cartridge	VME 06
Plug	11026074
Service mount kit	11023865
Motor	DS

Motor mount HICs
MM-DS-00-BVME06

DIMENSIONS

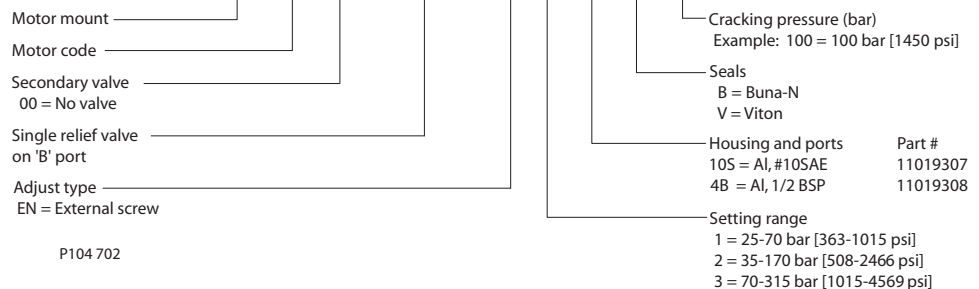
Cross-sectional view

mm [in]



ORDERING INFORMATION

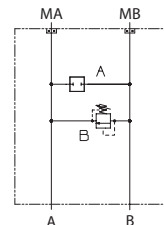
MM-DS-00-BVME06-EN-2-10S-B-100



OPERATION

This is a single cross-port relief (B to A) HIC that mounts to OMP/OMR motors with BSP porting.

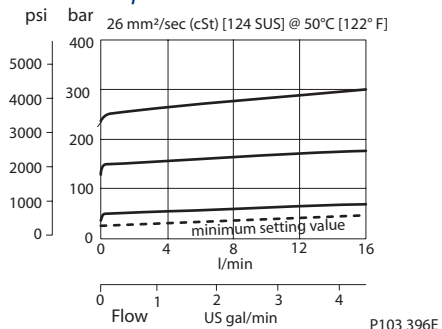
Schematic



P104 907

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

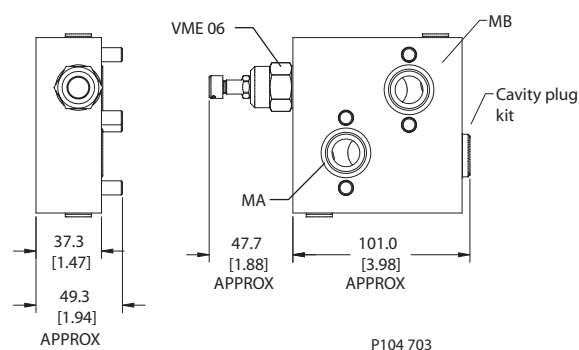
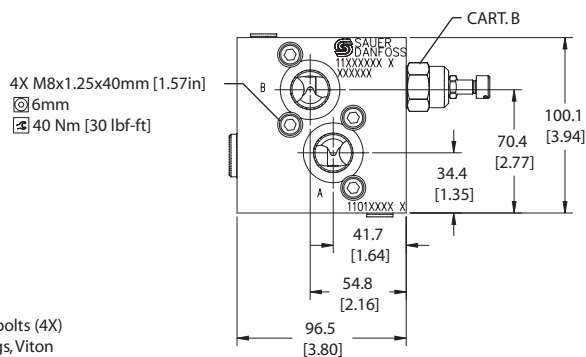
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.14 kg [2.51 lb]
Cartridge	VME 06
Plug	11026074
Service mount kit	11023868
Motor	OMP/OMR

Motor mount HICs
MM-OMP/OMR-00-BVME06

DIMENSIONS

Cross-sectional view

mm [in]



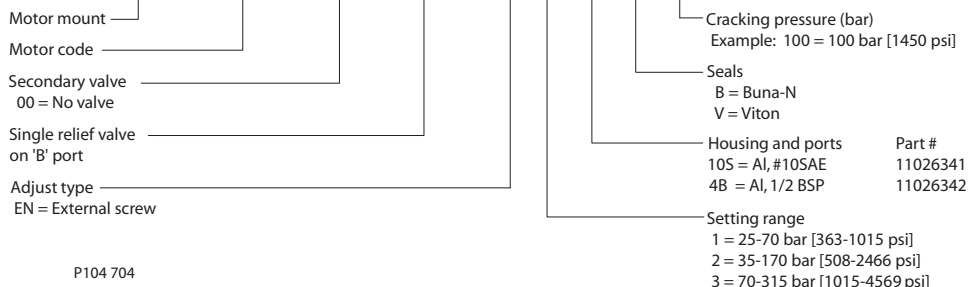
P104 703

HIC Includes:

- M8x40mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)

ORDERING INFORMATION

MM-OMP/OMR-00-BVME06-EN-2-10S-B-100

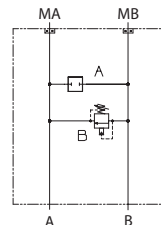


P104 704

OPERATION

This is a single cross-port relief (B to A) HIC that mounts to OMH motors with BSP porting.

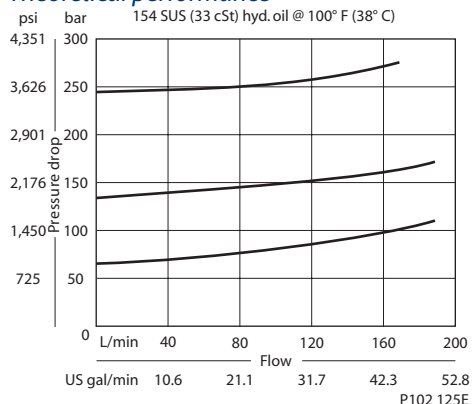
Schematic



P104 698

SPECIFICATIONS

Theoretical performance



Specifications

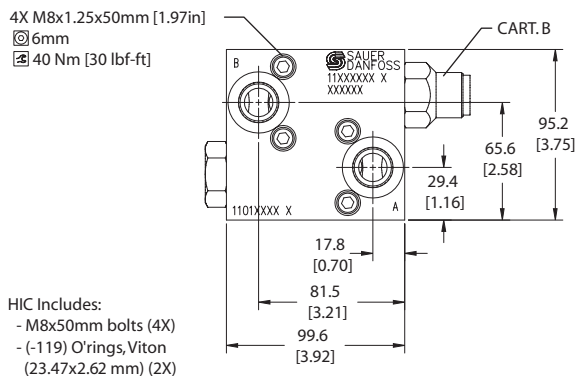
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.42 kg [3.13 lb]
Cartridge	CP211-2
Plug	CP12-V-2-B
Service mount kit	11023162
Motor	OMH

Motor mount HICs
 MM-OMH-00-BCP211-2

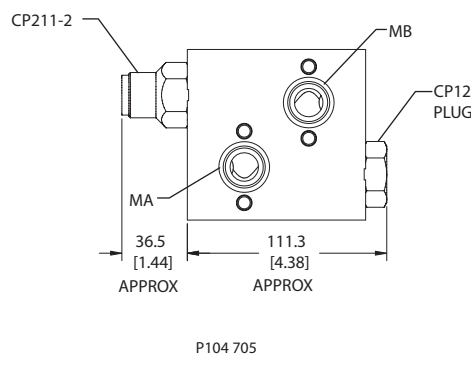
DIMENSIONS

Cross-sectional view

mm [in]



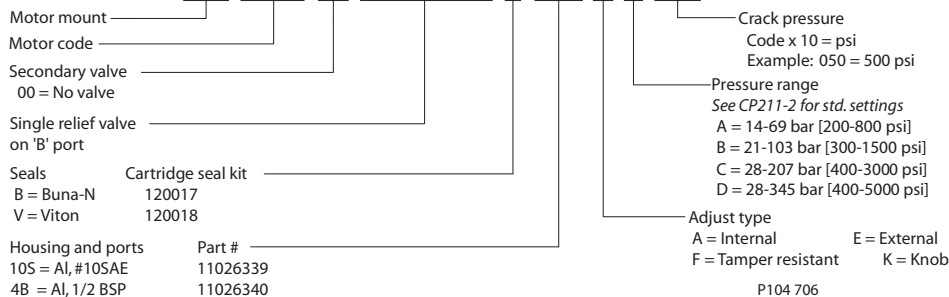
HIC Includes:
 - M8x50mm bolts (4X)
 - (-119) O'rings, Viton (23.47x2.62 mm) (2X)



P104 705

ORDERING INFORMATION

MM-OMH-00-BCP211-2-B-10S-E-C-254

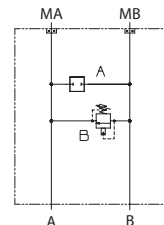


P104 706

OPERATION

This is a single cross-port relief (B to A) HIC that mounts to OMS motors with BSP porting.

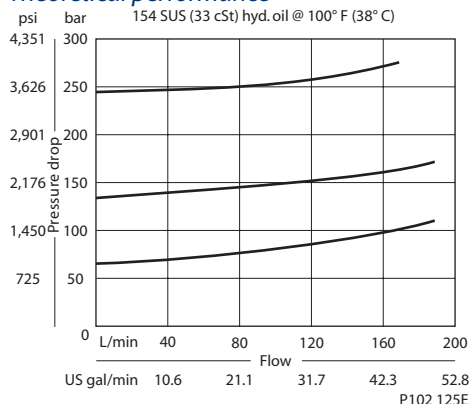
Schematic



P104 698

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.60 kg [3.53 lb]
Cartridge	CP211-2
Plug	CP12-V-2-B
Service mount kit	11023866
Motor	OMS

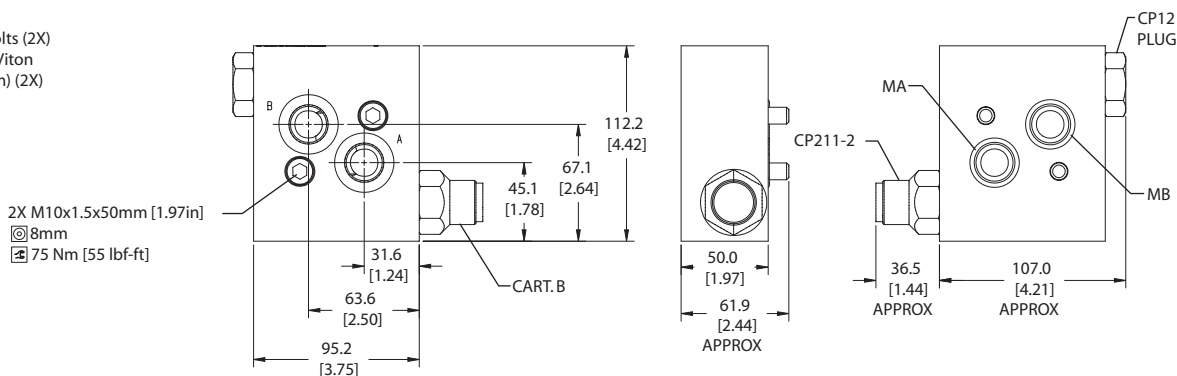
Motor mount HICs
MM-OMS-00-BCP211-2

DIMENSIONS

Cross-sectional view

mm [in]

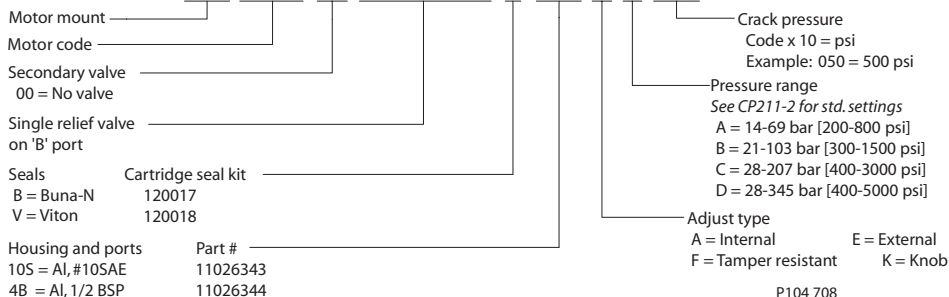
- HIC Includes:
- M10x50mm bolts (2X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



P104 707

ORDERING INFORMATION

MM-OMS-00-BCP211-2-B-10S-E-C-254

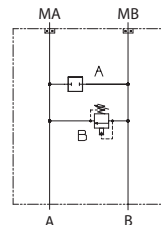


P104 708

OPERATION

This is a single cross-port relief (B to A) HIC that mounts to OMT motors with BSP porting.

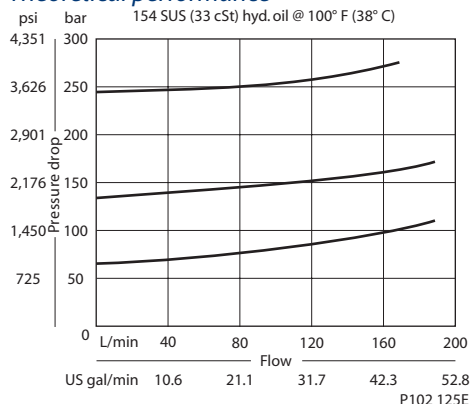
Schematic



P104 698

SPECIFICATIONS

Theoretical performance



Specifications

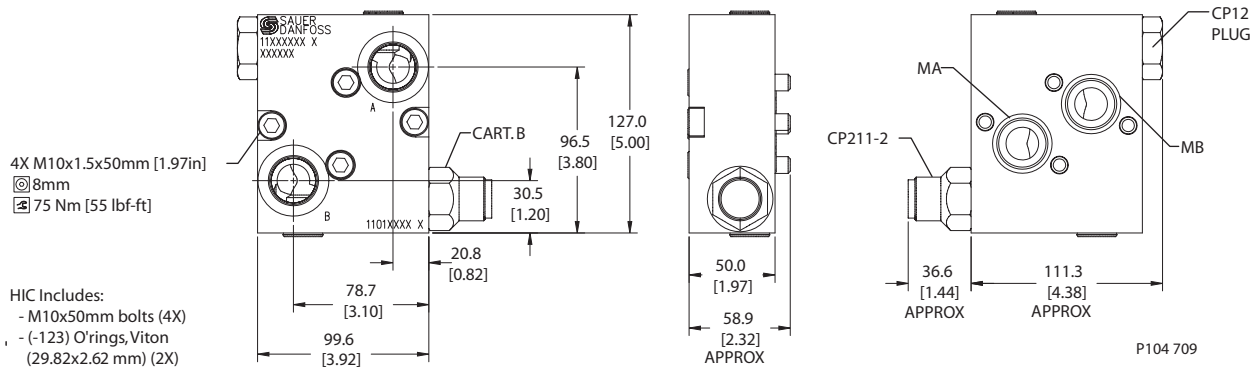
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.85 kg [4.08 lb]
Cartridge	CP211-2
Plug	CP12-V-2-B
Service mount kit	11023870
Motor	OMT

Motor mount HICs
MM-OMT-00-BCP211-2

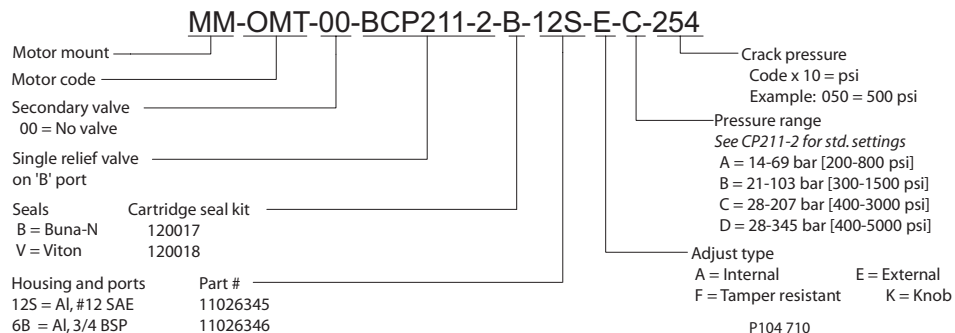
DIMENSIONS

Cross-sectional view

mm [in]



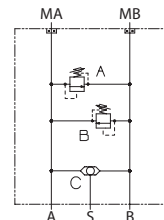
ORDERING INFORMATION



OPERATION

This is a dual cross-port relief HIC with shuttle that mounts to DH motors with manifold mount porting.

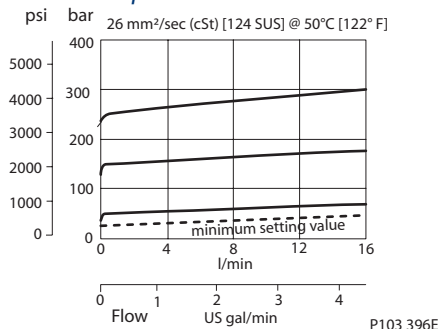
Schematic



P104 908

SPECIFICATIONS

Theoretical performance



Specifications

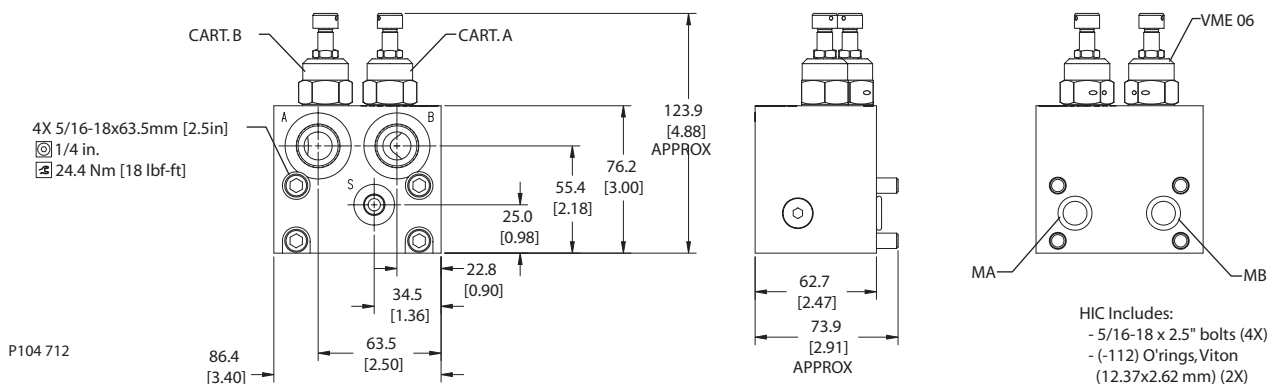
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.28 kg [2.82 lb]
Cartridge	VME 06
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023864
Motor	DH

Motor mount HICs
MM-DH-LS-DVME06

DIMENSIONS

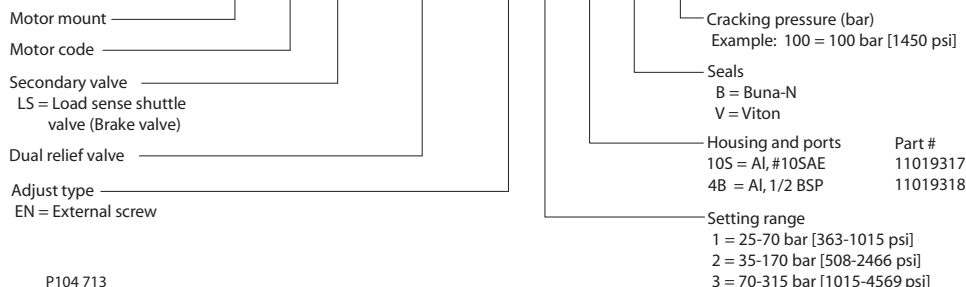
Cross-sectional view

mm [in]



ORDERING INFORMATION

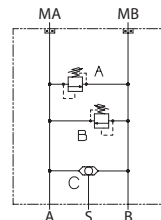
MM-DH-LS-DVME06-EN-2-10S-B-100



OPERATION

This is a dual cross-port relief HIC with shuttle that mounts to DS motors with manifold mount porting.

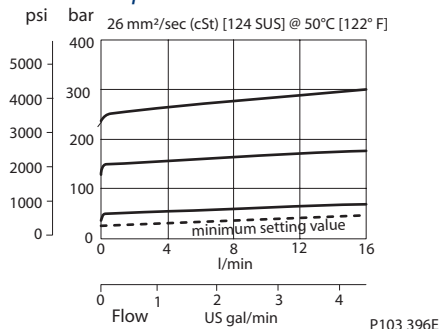
Schematic



P104 908

SPECIFICATIONS

Theoretical performance



Specifications

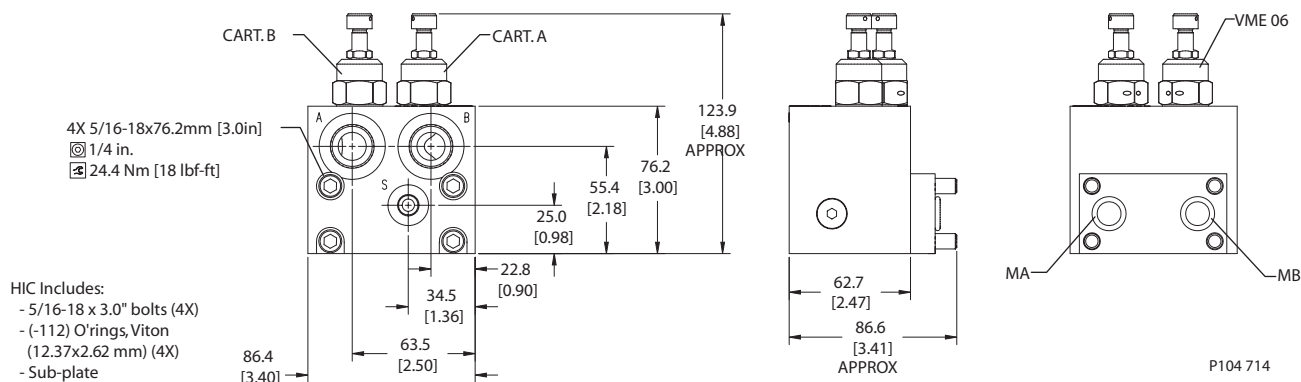
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.39 kg [3.06 lb]
Cartridge	VME 06
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023865
Motor	DS

Motor mount HICs
MM-DS-LS-DVME06

DIMENSIONS

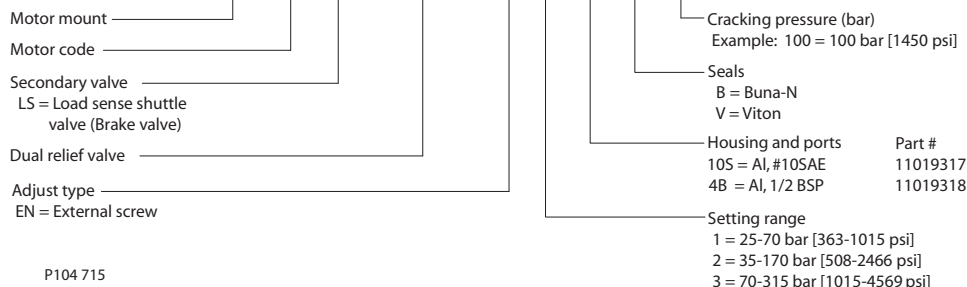
Cross-sectional view

mm [in]



ORDERING INFORMATION

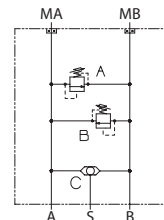
MM-DS-LS-DVME06-EN-2-10S-B-100



OPERATION

This is a dual cross-port relief HIC with shuttle that mounts to OMP/OMR motors with BSP porting.

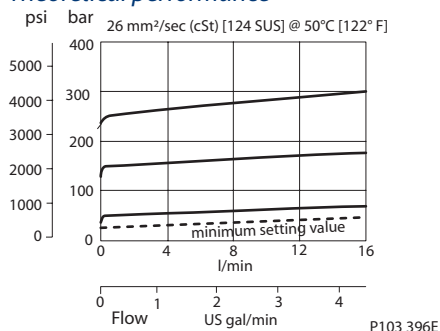
Schematic



P104 908

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

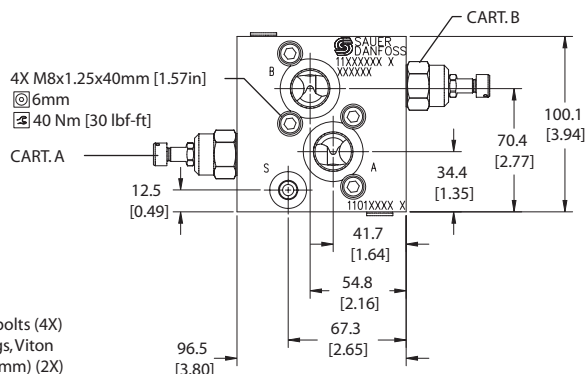
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.13 kg [2.49 lb]
Cartridge	VME 06
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023868
Motor	OMP/OMR

Motor mount HICs
MM-OMP/OMR-LS-DVME06

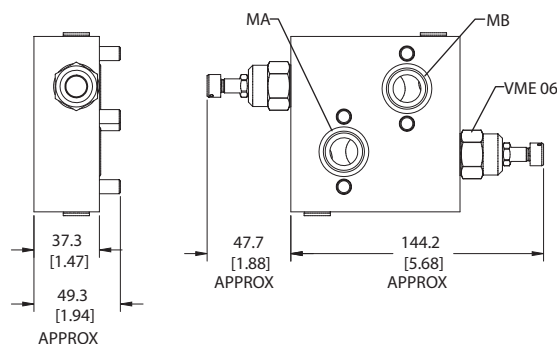
DIMENSIONS

Cross-sectional view

mm [in]



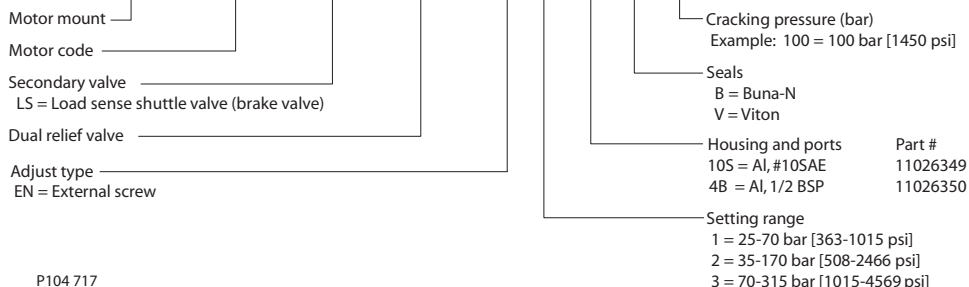
HIC Includes:
- M8x40mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



P104 716

ORDERING INFORMATION

MM-OMP/OMR-LS-DVME06-EN-2-10S-B-100

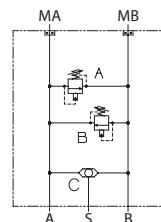


P104 717

OPERATION

This is a dual cross-port relief HIC with shuttle that mounts to OMH motors with BSP porting.

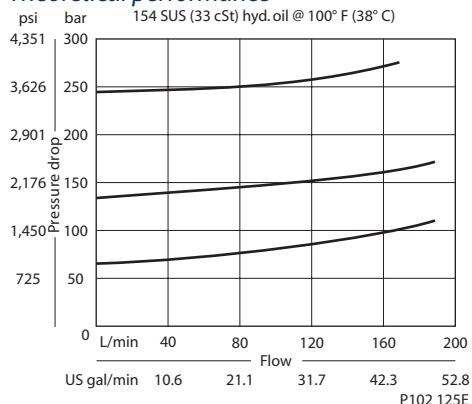
Schematic



P104 711

SPECIFICATIONS

Theoretical performance



Specifications

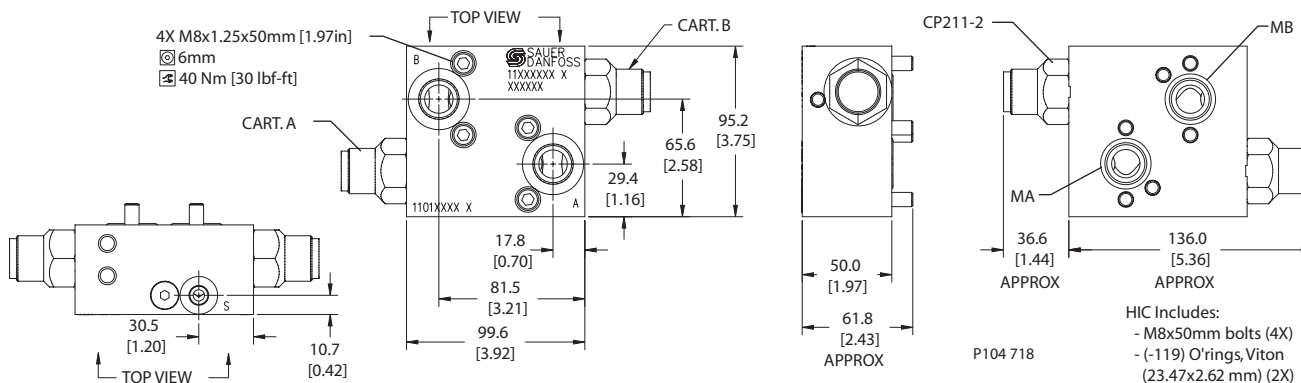
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.41 kg [3.11 lb]
Cartridge	CP211-2
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023162
Motor	OMH

Motor mount HICs
 MM-OMH-LS-DCP211-2

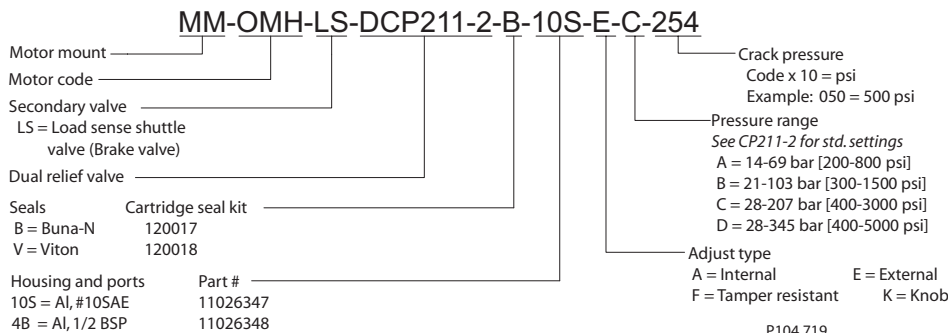
DIMENSIONS

Cross-sectional view

mm [in]



ORDERING INFORMATION

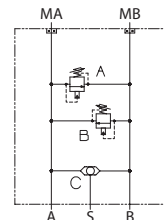


P104 719

OPERATION

This is a dual cross-port relief HIC with shuttle that mounts to OMS motors with BSP porting.

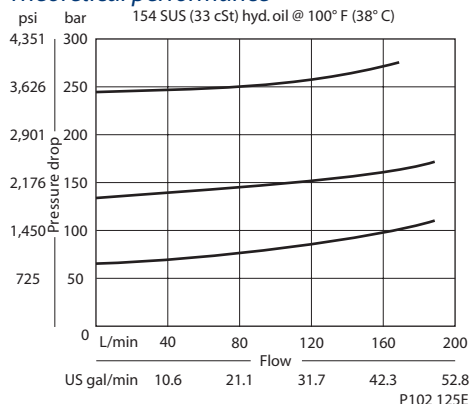
Schematic



P104 711

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.60 kg [3.53 lb]
Cartridge	CP211-2
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023866
Motor	OMS

Motor mount HICs
MM-OMS-LS-DCP211-2

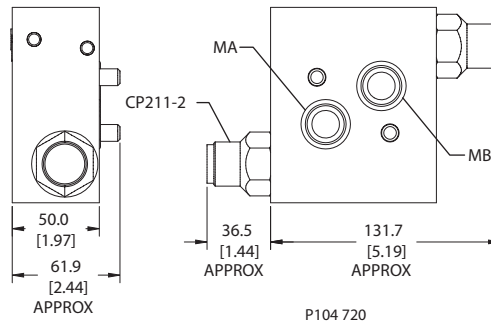
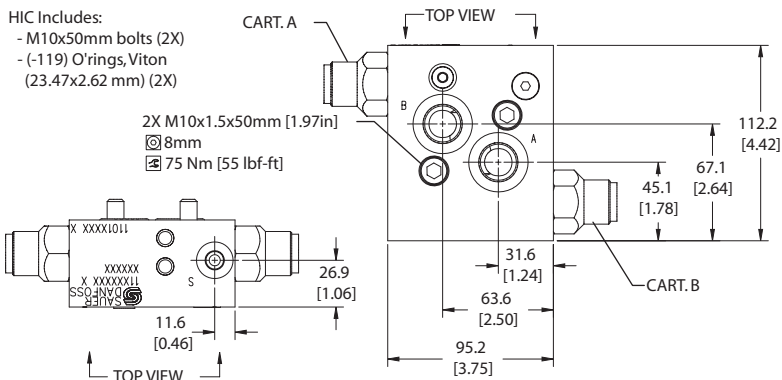
DIMENSIONS

Cross-sectional view

mm [in]

HIC Includes:
- M10x50mm bolts (2X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)

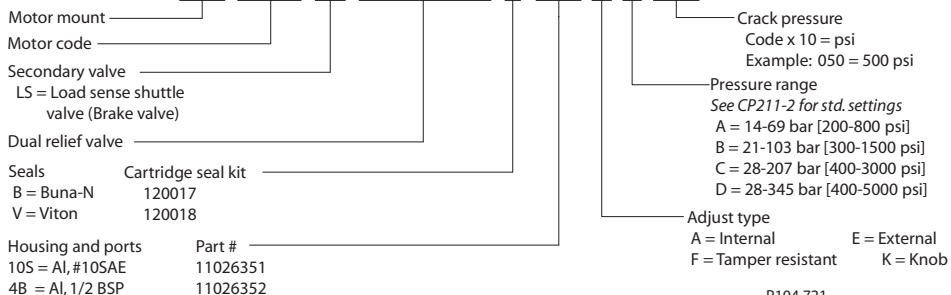
2X M10x1.5x50mm [1.97in]
8mm
75 Nm [55 lbf-ft]



P104 720

ORDERING INFORMATION

MM-OMS-LS-DCP211-2-B-10S-E-C-254

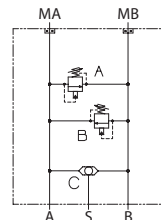


P104 721

OPERATION

This is a dual cross-port relief HIC with shuttle that mounts to OMT motors with BSP porting.

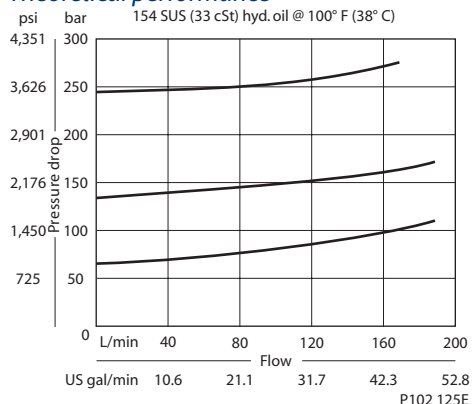
Schematic



P104 711

SPECIFICATIONS

Theoretical performance



Specifications

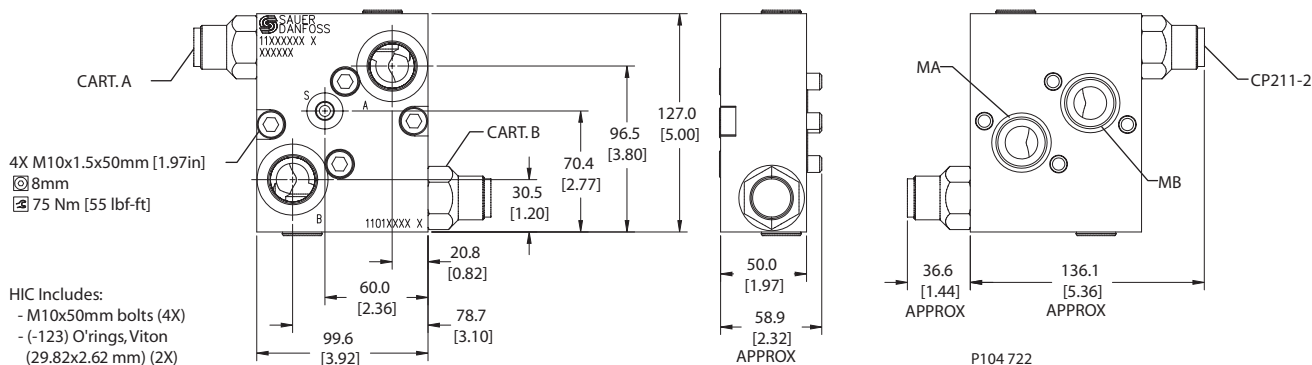
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.84 kg [4.06 lb]
Cartridge	CP211-2
Shuttle	CP124-1
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023870
Motor	OMT

Motor mount HICs
 MM-OMT-LS-DCP211-2

DIMENSIONS

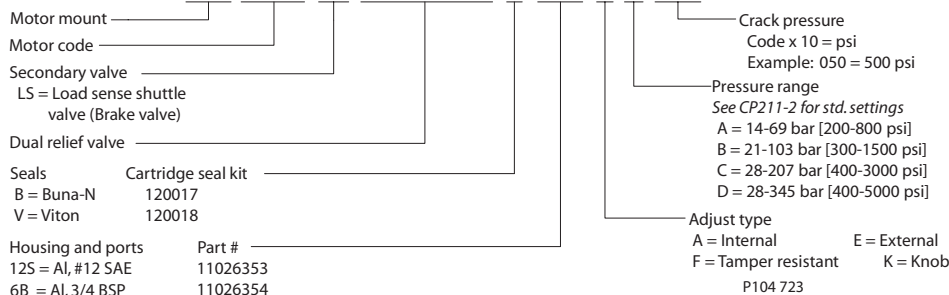
Cross-sectional view

mm [in]



ORDERING INFORMATION

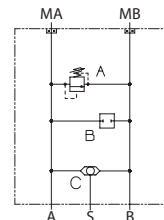
MM-OMT-LS-DCP211-2-B-12S-E-C-254



OPERATION

Single cross-port relief (A to B) HIC with shuttle that mounts to DH motors with manifold mount porting.

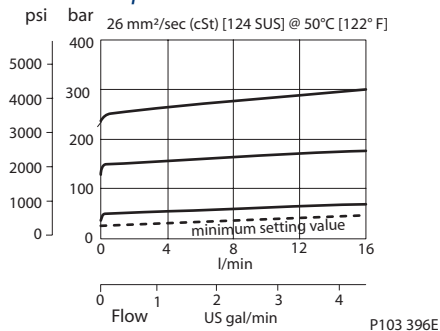
Schematic



P104 909

SPECIFICATIONS

Theoretical performance



Specifications

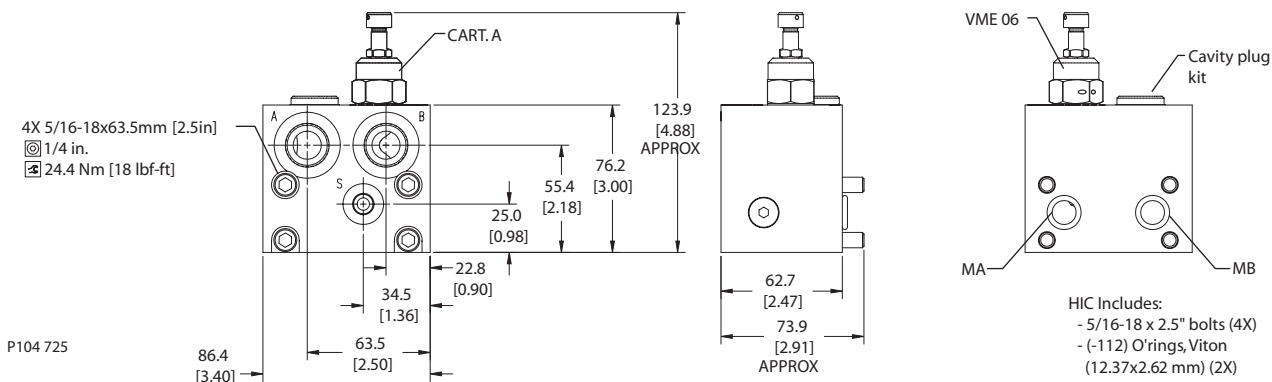
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.28 kg [2.82 lb]
Cartridge	VME 06
Shuttle	CP124-1
Plug	11026074
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023864
Motor	DH

Motor mount HICs
MM-DH-LS-AVME06

DIMENSIONS

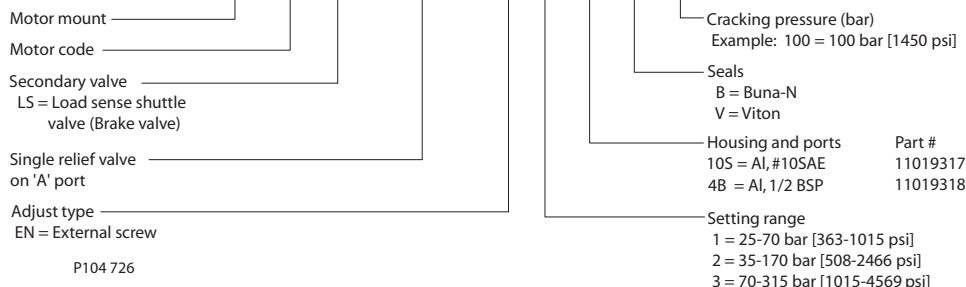
Cross-sectional view

mm [in]



ORDERING INFORMATION

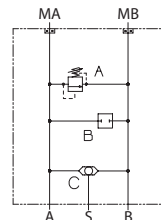
MM-DH-LS-AVME06-EN-2-10S-B-100



OPERATION

Single cross-port relief (A to B) HIC with shuttle that mounts to DS motors with manifold mount porting.

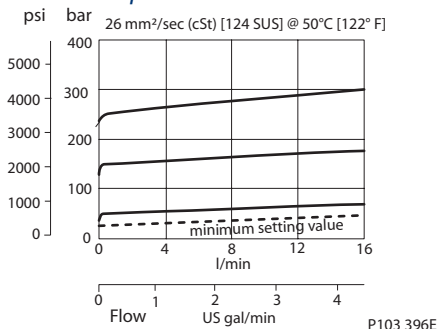
Schematic



P104 909

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

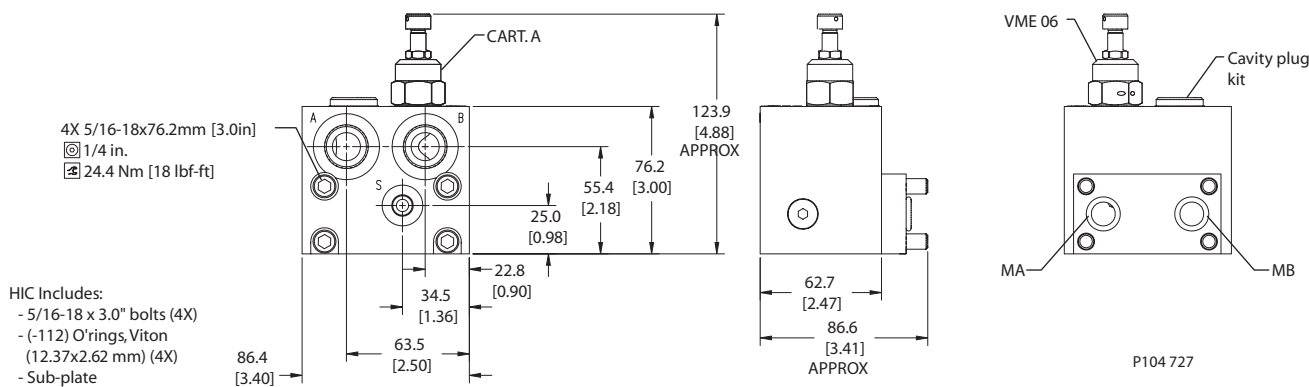
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.39 kg [3.06 lb]
Cartridge	VME 06
Shuttle	CP124-1
Plug	11026074
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023865
Motor	DS

Motor mount HICs
 MM-DS-LS-AVME06

DIMENSIONS

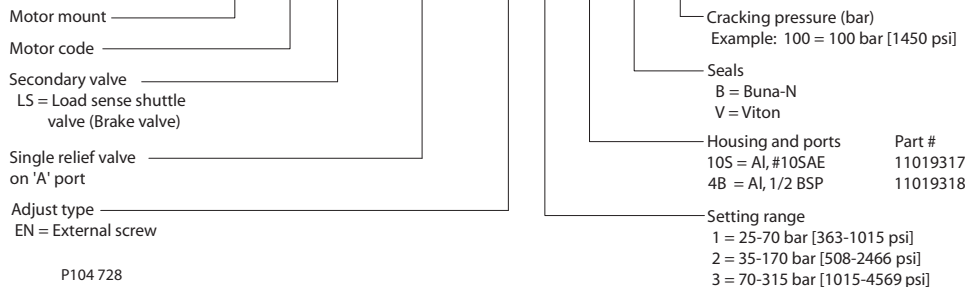
Cross-sectional view

mm [in]



ORDERING INFORMATION

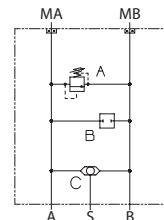
MM-DS-LS-AVME06-EN-2-10S-B-100



OPERATION

Single cross-port relief (A to B) HIC with shuttle that mounts to OMP/OMR motors with BSP porting.

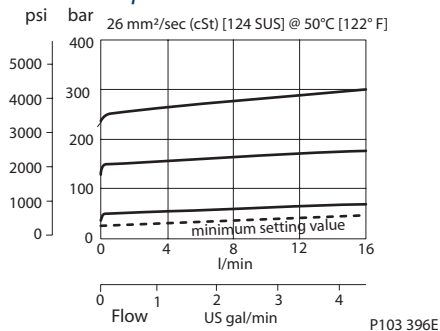
Schematic



P104 909

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

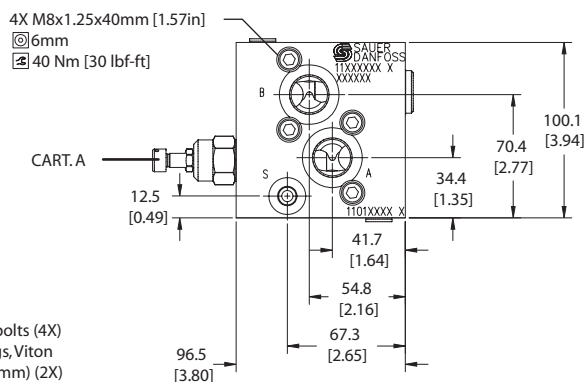
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.13 kg [2.49 lb]
Cartridge	VME 06
Shuttle	CP124-1
Plug	11026074
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023868
Motor	OMP/OMR

Motor mount HICs
MM-OMP/OMR-LS-AVME06

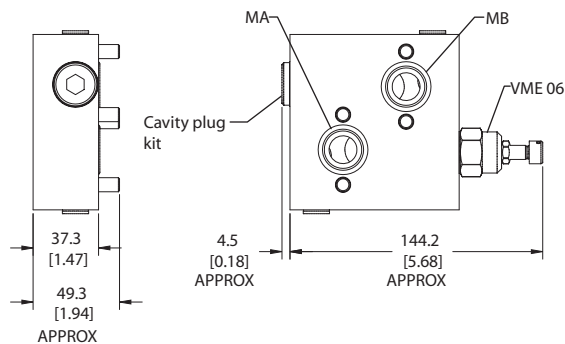
DIMENSIONS

Cross-sectional view

mm [in]



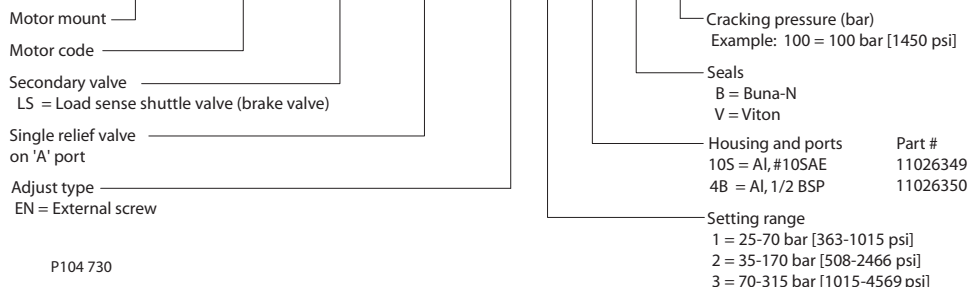
HIC Includes:
- M8x40mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



P104 729

ORDERING INFORMATION

MM-OMP/OMR-LS-AVME06-EN-2-10S-B-100

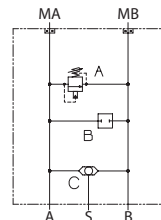


P104 730

OPERATION

Single cross-port relief (A to B) HIC with shuttle that mounts to OMH motors with BSP porting.

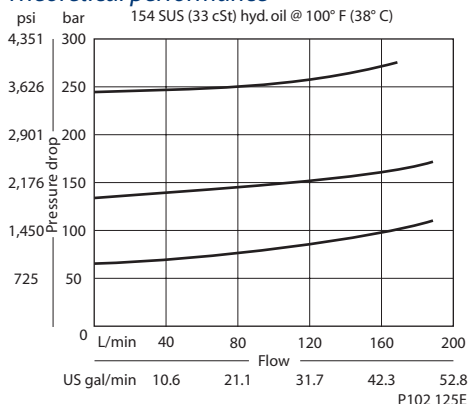
Schematic



P104 724

SPECIFICATIONS

Theoretical performance



Specifications

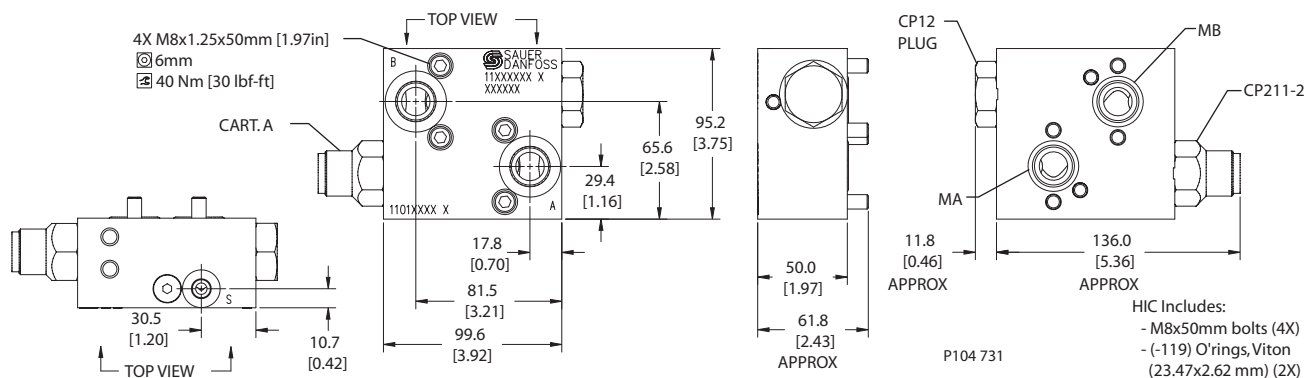
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.41 kg [3.11 lb]
Cartridge	CP211-2
Shuttle	CP124-1
Plug	CP12-V-2-B
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023162
Motor	OMH

Motor mount HICs
MM-OMH-LS-ACP211-2

DIMENSIONS

Cross-sectional view

mm [in]



ORDERING INFORMATION

MM-OMH-LS-ACP211-2-B-10S-E-C-254

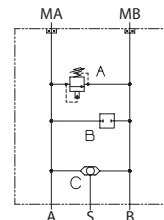
- Motor mount
- Motor code
- Secondary valve
LS = Load sense shuttle valve (Brake valve)
- Single relief valve on 'A' port
- Seals
B = Buna-N
V = Viton
- Housing and ports
10S = Al, #10SAE
4B = Al, 1/2 BSP
- Cartridge seal kit
120017
120018
- Part #
11026347
11026348
- Crack pressure
Code x 10 = psi
Example: 050 = 500 psi
- Pressure range
See CP211-2 for std. settings
A = 14-69 bar [200-800 psi]
B = 21-103 bar [300-1500 psi]
C = 28-207 bar [400-3000 psi]
D = 28-345 bar [400-5000 psi]
- Adjust type
A = Internal
F = Tamper resistant
E = External
K = Knob

P104 732

OPERATION

This is a single cross-port relief (A to B) HIC with shuttle that mounts to OMS motors with BSP porting.

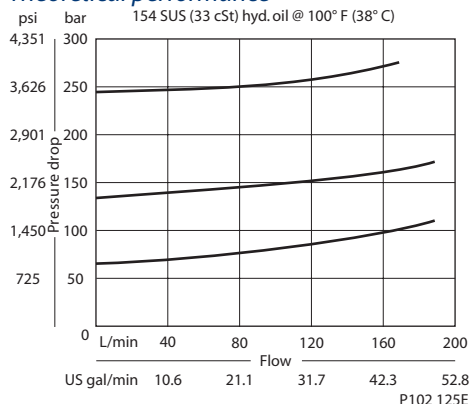
Schematic



P104 724

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.60 kg [3.53 lb]
Cartridge	CP211-2
Shuttle	CP124-1
Plug	CP12-V-2-B
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023866
Motor	OMS

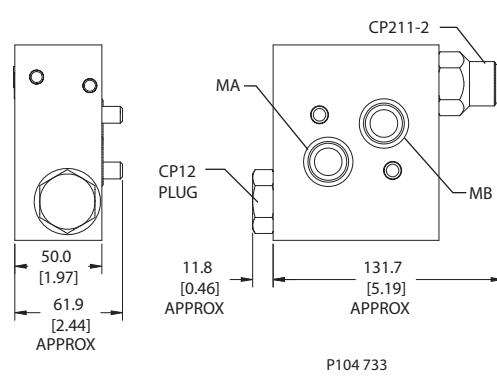
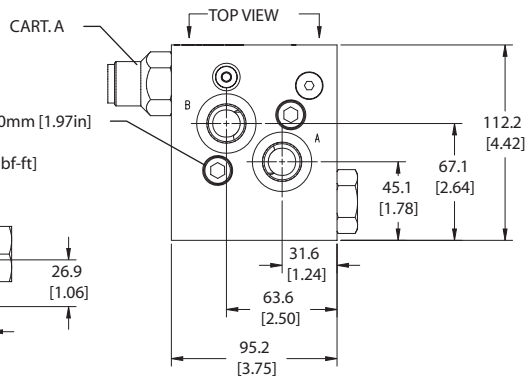
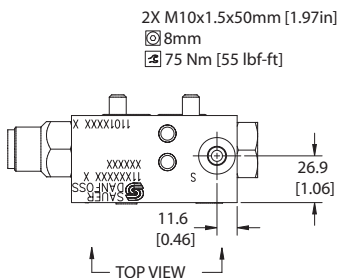
Motor mount HICs
MM-OMS-LS-ACP211-2

DIMENSIONS

Cross-sectional view

mm [in]

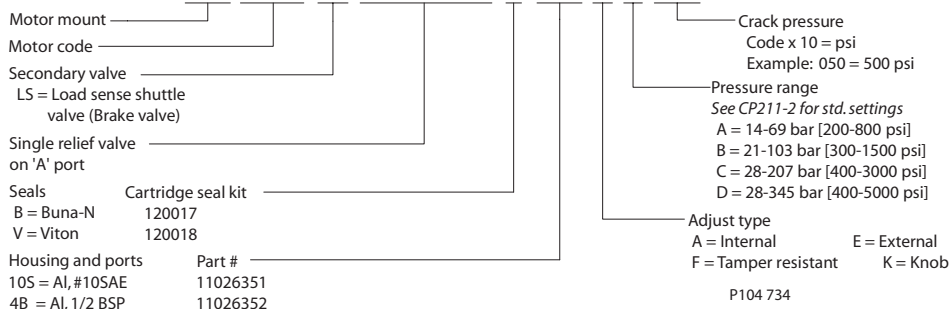
HIC Includes:
- M10x50mm bolts (2X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



P104 733

ORDERING INFORMATION

MM-OMS-LS-ACP211-2-B-10S-E-C-254

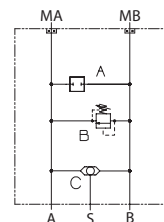


P104 734

OPERATION

This is a single cross-port relief (B to A) HIC with shuttle that mounts to DH motors with manifold mount porting.

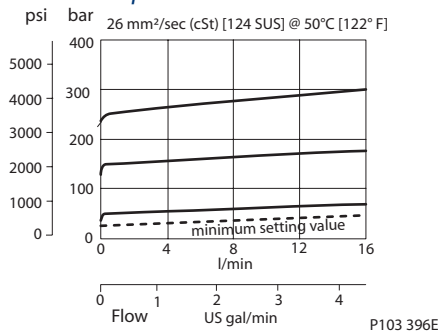
Schematic



P104 910

SPECIFICATIONS

Theoretical performance



Specifications

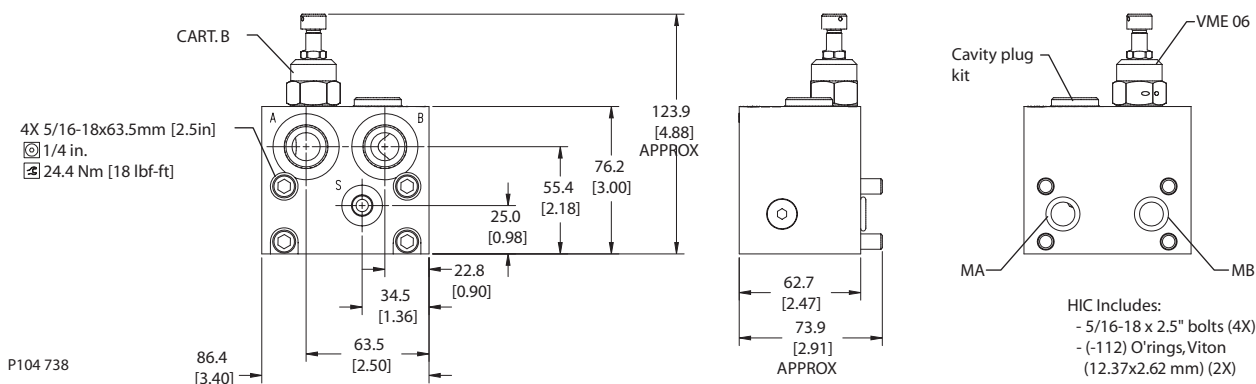
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.28 kg [2.82 lb]
Cartridge	VME 06
Shuttle	CP124-1
Plug	11026074
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023864
Motor	DH

Motor mount HICs
 MM-DH-LS-BVME06

DIMENSIONS

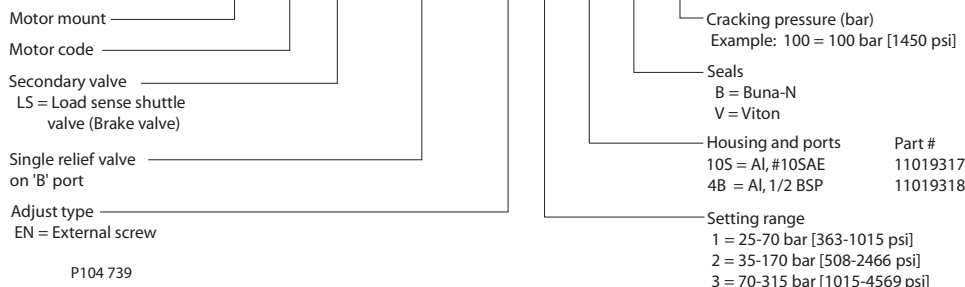
Cross-sectional view

mm [in]



ORDERING INFORMATION

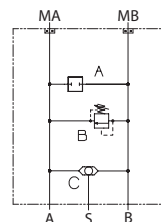
MM-DH-LS-BVME06-EN-2-10S-B-100



OPERATION

This is a single cross-port relief (B to A) HIC with shuttle that mounts to DS motors with manifold mount porting.

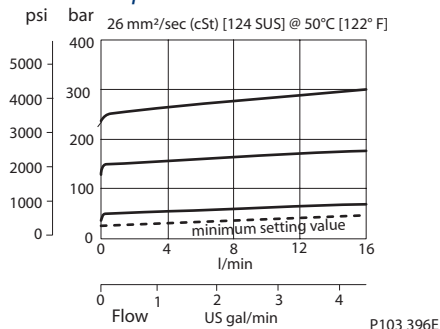
Schematic



P104 910

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

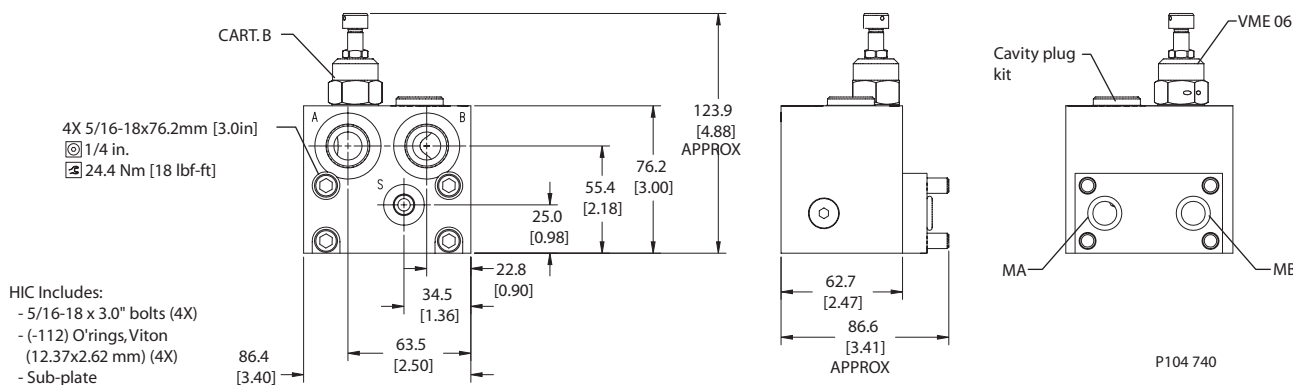
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.39 kg [3.06 lb]
Cartridge	VME 06
Shuttle	CP124-1
Plug	11026074
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023865
Motor	DS

Motor mount HICs
 MM-DS-LS-BVME06

DIMENSIONS

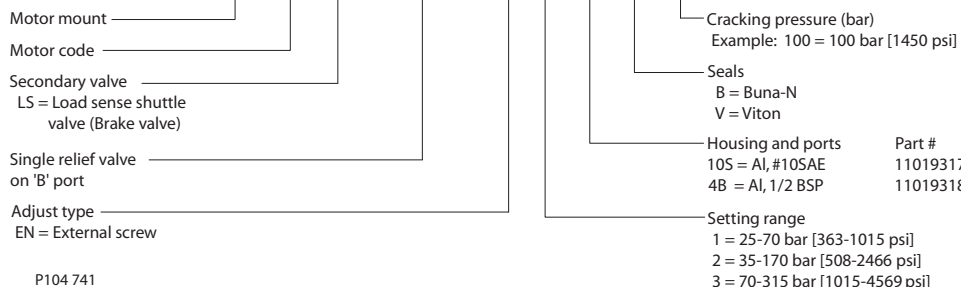
Cross-sectional view

mm [in]



ORDERING INFORMATION

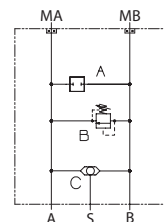
MM-DS-LS-BVME06-EN-2-10S-B-100



OPERATION

This is a single cross-port relief (B to A) HIC with shuttle that mounts to OMP/OMR motors with BSP porting.

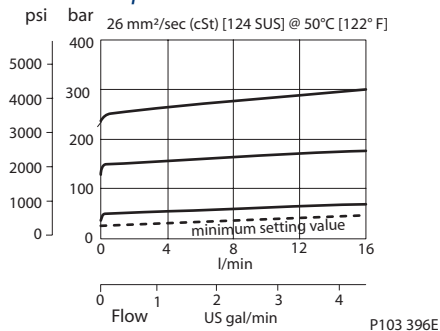
Schematic



P104 910

SPECIFICATIONS

Theoretical performance



P103 396E

Specifications

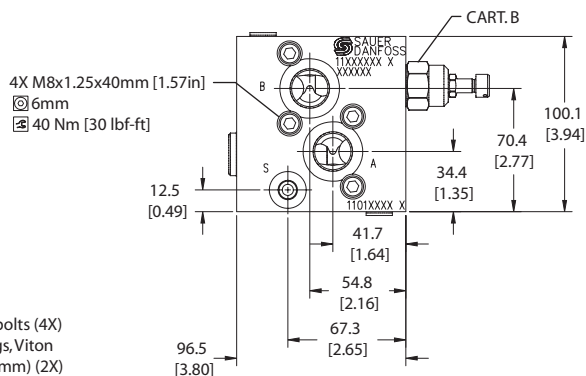
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	40 l/min [11 US gal/min]
Weight	1.13 kg [2.49 lb]
Cartridge	VME 06
Shuttle	CP124-1
Plug	11026074
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023868
Motor	OMP/OMR

Motor mount HICs
MM-OMP/OMR-LS-BVME06

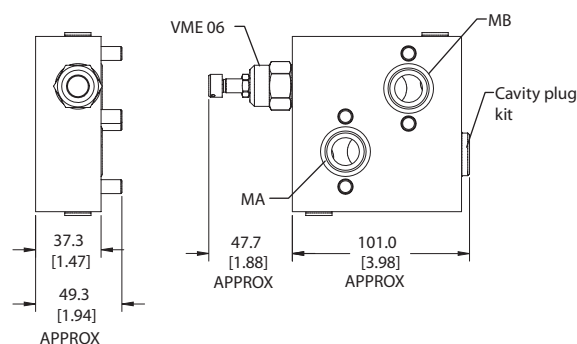
DIMENSIONS

Cross-sectional view

mm [in]



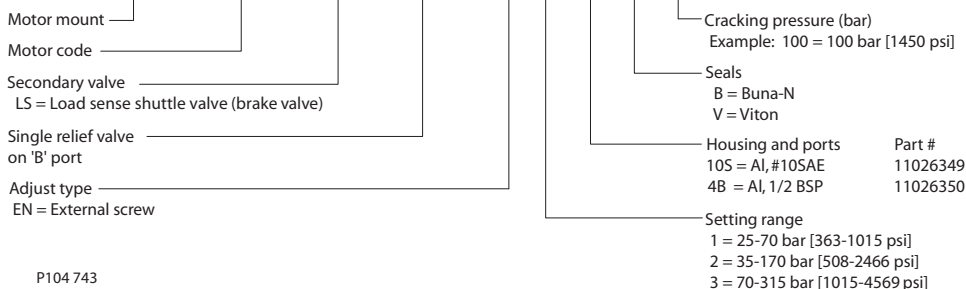
HIC Includes:
- M8x40mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)



P104 742

ORDERING INFORMATION

MM-OMP/OMR-LS-BVME06-EN-2-10S-B-100

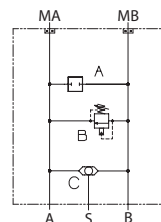


P104 743

OPERATION

This is a single cross-port relief (B to A) HIC with shuttle that mounts to OMH motors with BSP porting.

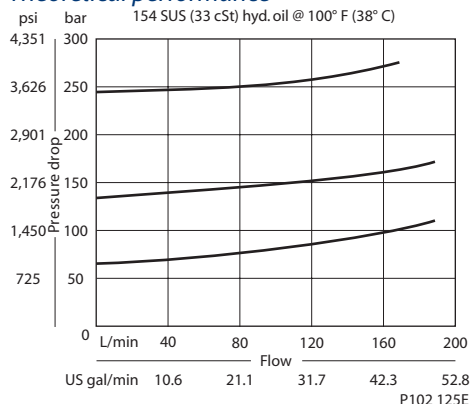
Schematic



P104 737

SPECIFICATIONS

Theoretical performance



Specifications

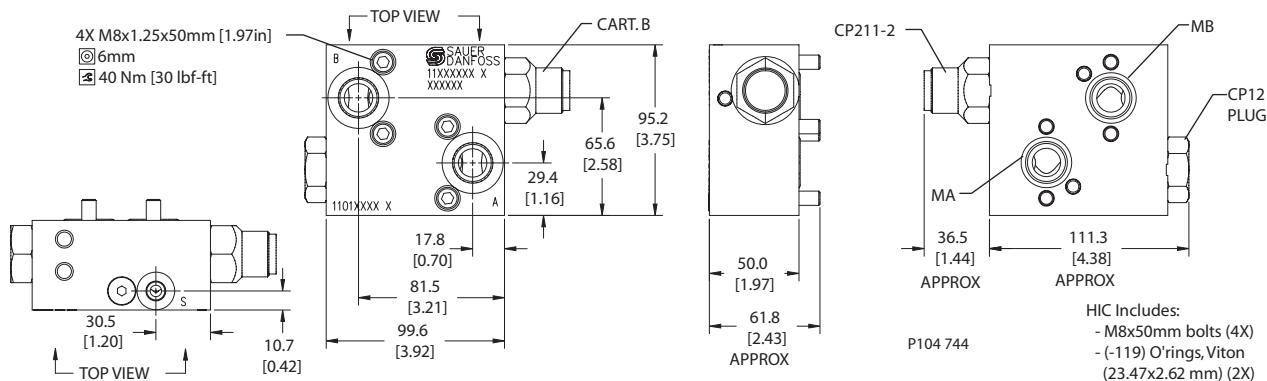
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.41 kg [3.11 lb]
Cartridge	CP211-2
Shuttle	CP124-1
Plug	CP12-V-2-B
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023162
Motor	OMH

Motor mount HICs
MM-OMH-LS-BCP211-2

DIMENSIONS

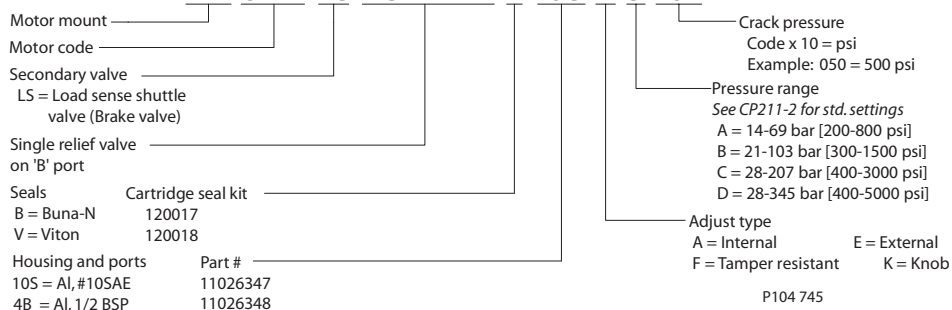
Cross-sectional view

mm [in]



ORDERING INFORMATION

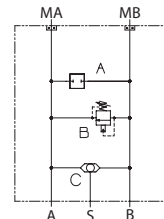
MM-OMH-LS-BCP211-2-B-10S-E-C-254



OPERATION

This is a single cross-port relief (B to A) HIC with shuttle that mounts to OMS motors with BSP porting.

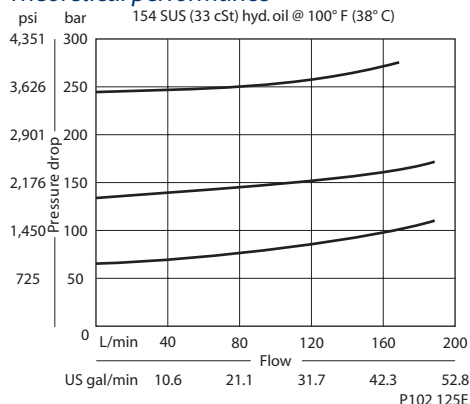
Schematic



P104 737

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.60 kg [3.53 lb]
Cartridge	CP211-2
Shuttle	CP124-1
Plug	CP12-V-2-B
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023866
Motor	OMS

Motor mount HICs
MM-OMS-LS-BCP211-2

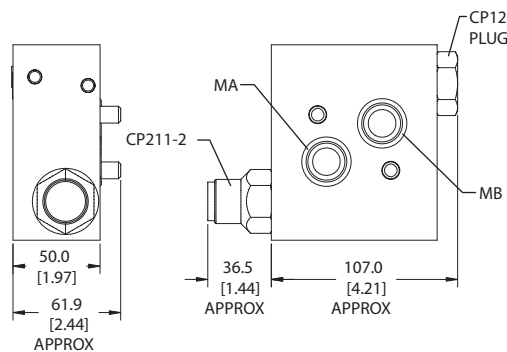
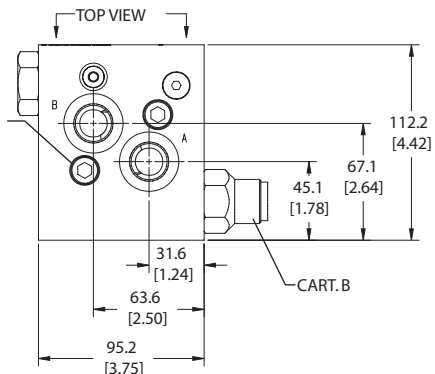
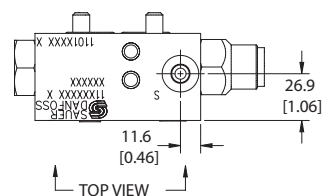
DIMENSIONS

Cross-sectional view

mm [in]

HIC Includes:
- M10x50mm bolts (2X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)

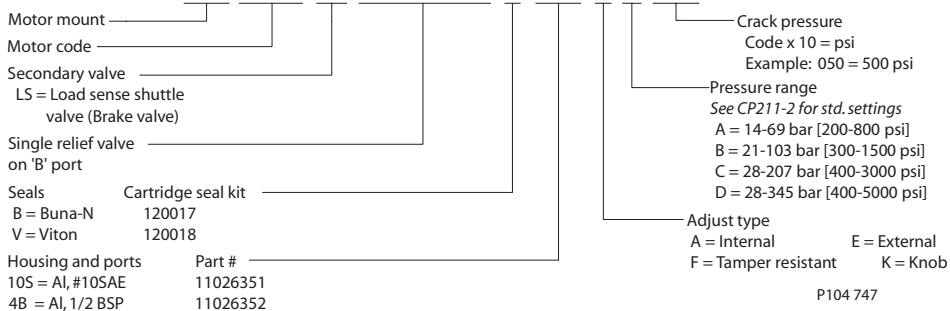
2X M10x1.5x50mm [1.97in]
8mm
75 Nm [55 lbf-ft]



P104 746

ORDERING INFORMATION

MM-OMS-LS-BCP211-2-B-10S-E-C-254

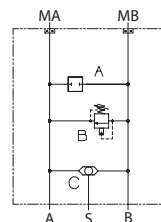


P104 747

OPERATION

This is a single cross-port relief (B to A) HIC with shuttle that mounts to OMT motors with BSP porting.

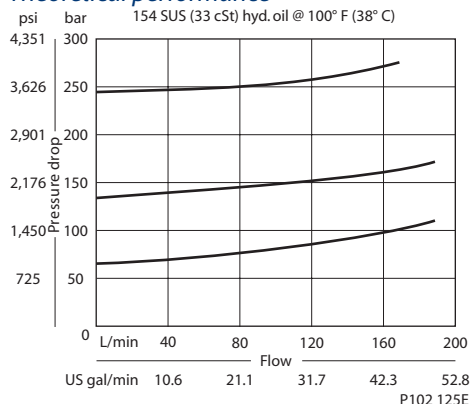
Schematic



P104 737

SPECIFICATIONS

Theoretical performance



Specifications

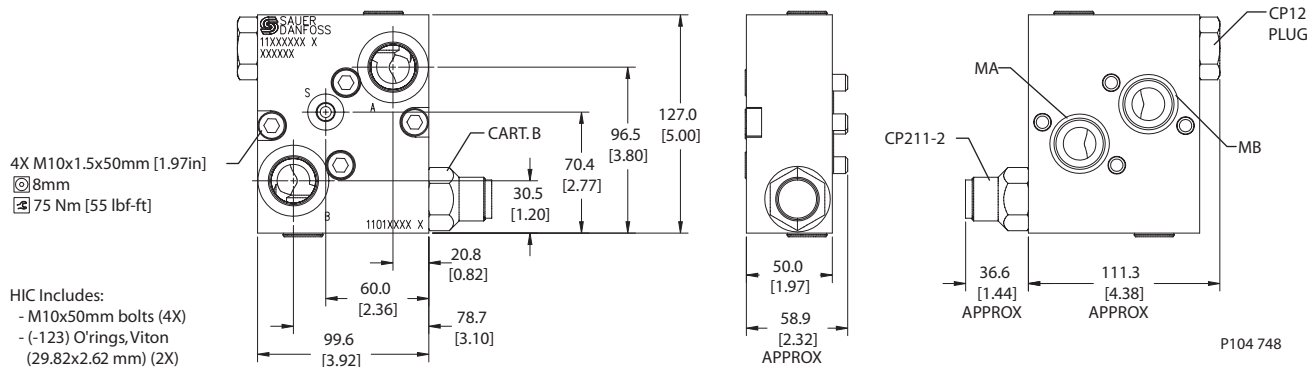
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	190 l/min [50 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.84 kg [4.06 lb]
Cartridge	CP211-2
Shuttle	CP124-1
Plug	CP12-V-2-B
Shuttle/drain port	#4 SAE (1/8 BSP)
Service mount kit	11023870
Motor	OMT

Motor mount HICs
 MM-OMT-LS-BCP211-2

DIMENSIONS

Cross-sectional view

mm [in]



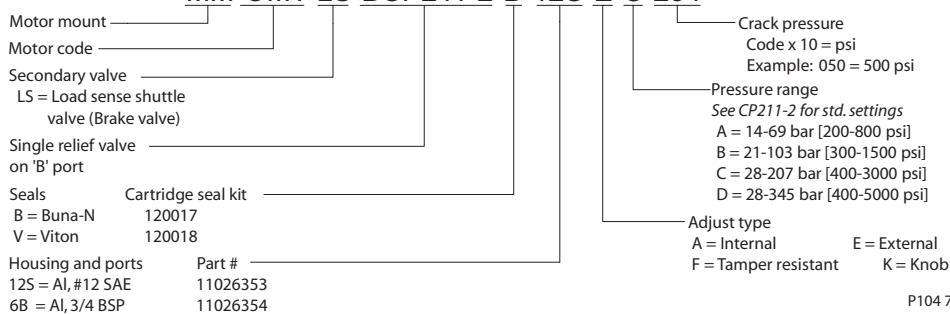
4X M10x1.5x50mm [1.97in]
 8mm
 75 Nm [55 lbf-ft]

HIC Includes:
 - M10x50mm bolts (4X)
 - (-123) O'rings, Viton (29.82x2.62 mm) (2X)

P104 748

ORDERING INFORMATION

MM-OMT-LS-BCP211-2-B-12S-E-C-254

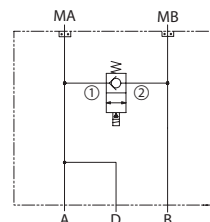


P104 749

OPERATION

This is a bypass solenoid HIC with drain that mounts to DH motors with manifold mount porting. When energized, the valve connects ports A and B. Drain connects to port A.

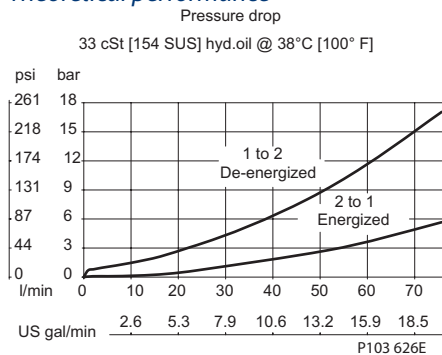
Schematic



P104 750

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	1.36 kg [3.00 lb]
Cartridge	SVP10-NCR
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023864
Motor	DH

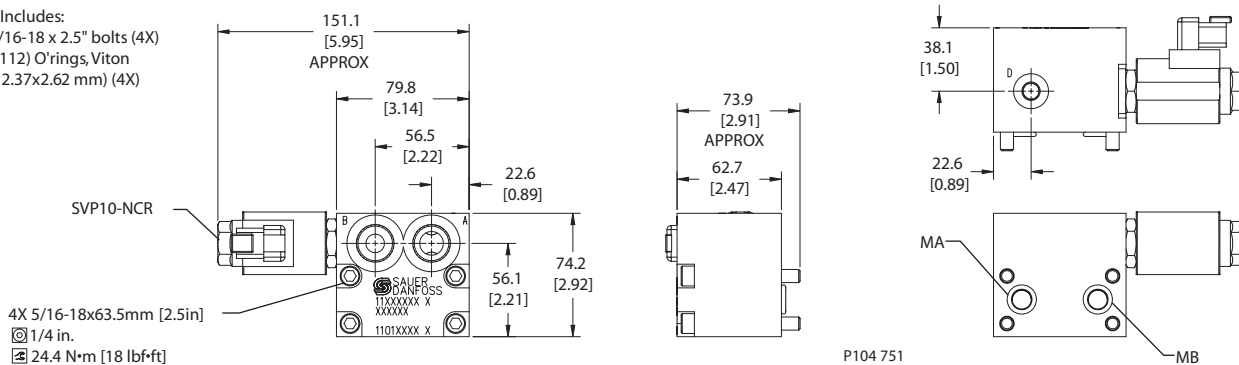
Motor mount HICs
MM-DH-00-SVP10-NCR

DIMENSIONS

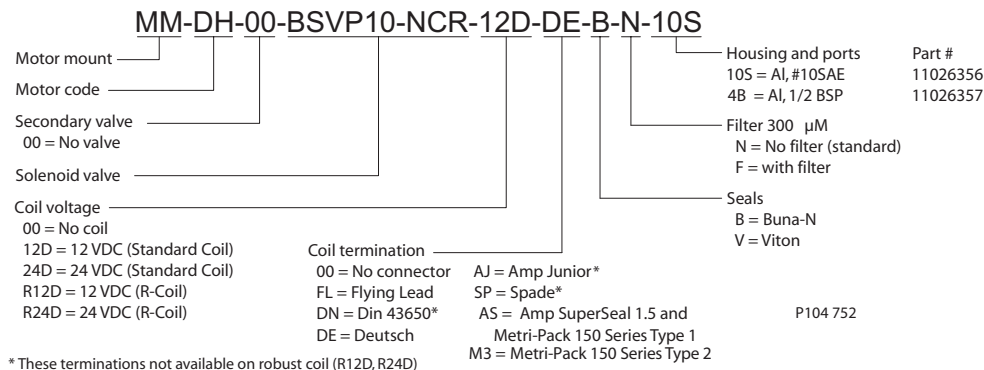
Cross-sectional view

mm [in]

HIC Includes:
- 5/16-18 x 2.5" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (4X)



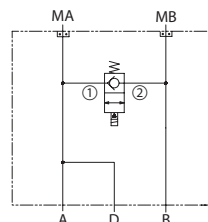
ORDERING INFORMATION



OPERATION

This is a bypass solenoid HIC with drain that mounts to DH motors with manifold mount porting. When energized, the valve connects ports A and B. Drain connects to port A.

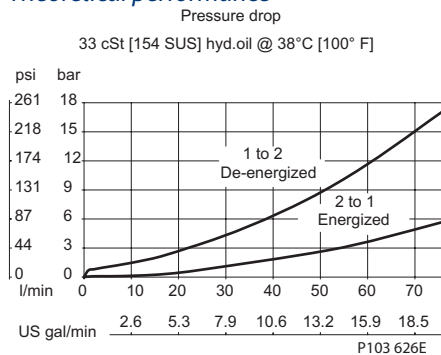
Schematic



P104 750

SPECIFICATIONS

Theoretical performance



Specifications

Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	1.47 kg [3.24 lb]
Cartridge	SVP10-NCR
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023865
Motor	DS

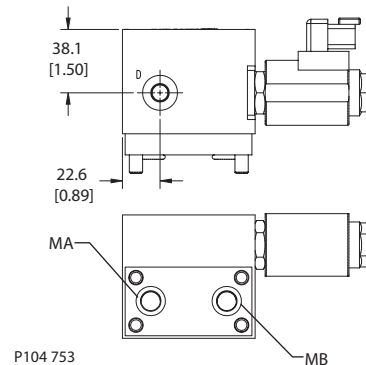
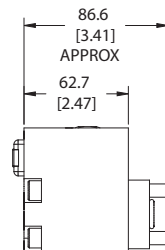
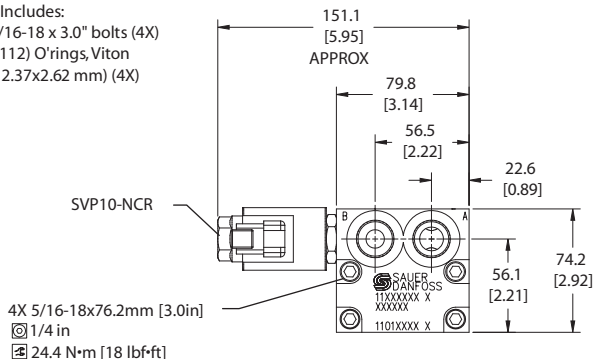
Motor mount HICs
MM-DS-00-SVP10-NCR

DIMENSIONS

Cross-sectional view

mm [in]

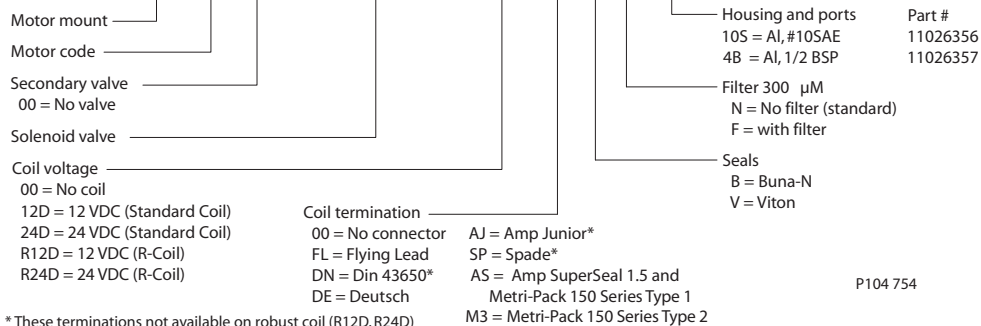
HIC Includes:
- 5/16-18 x 3.0" bolts (4X)
- (-112) O'rings, Viton (12.37x2.62 mm) (4X)



P104 753

ORDERING INFORMATION

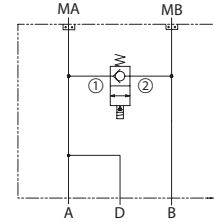
MM-DS-00-BSVP10-NCR-12D-DE-B-N-10S



OPERATION

This is a bypass solenoid HIC with drain that mounts to DH motors with manifold mount porting. When energized, the valve connects ports A and B. Drain connects to port A.

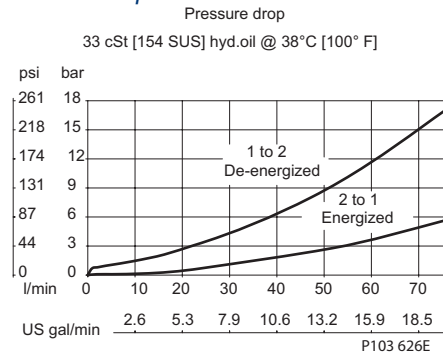
Schematic



P104 750

SPECIFICATIONS

Theoretical performance



Specifications

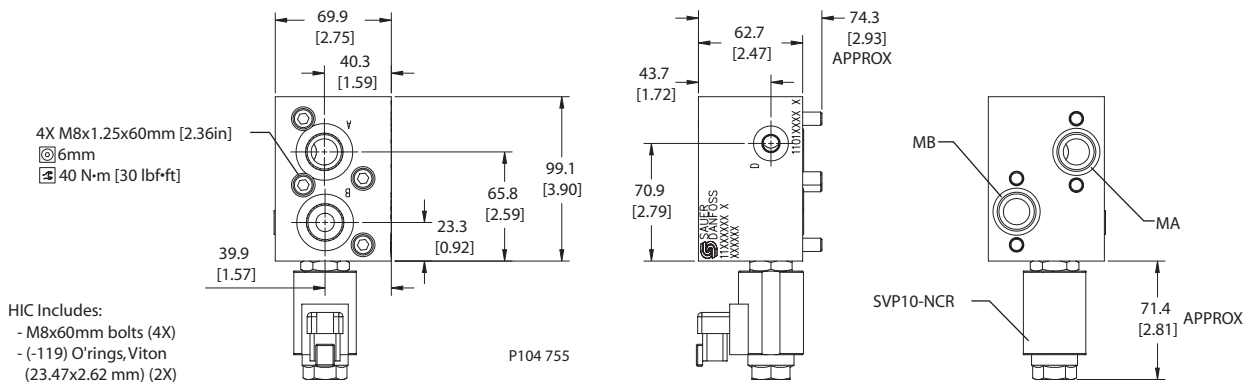
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	1.51 kg [3.33 lb]
Cartridge	SVP10-NCR
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023869
Motor	OMP/OMR

Motor mount HICs
MM-OMP/OMR-00-SVP10-NCR

DIMENSIONS

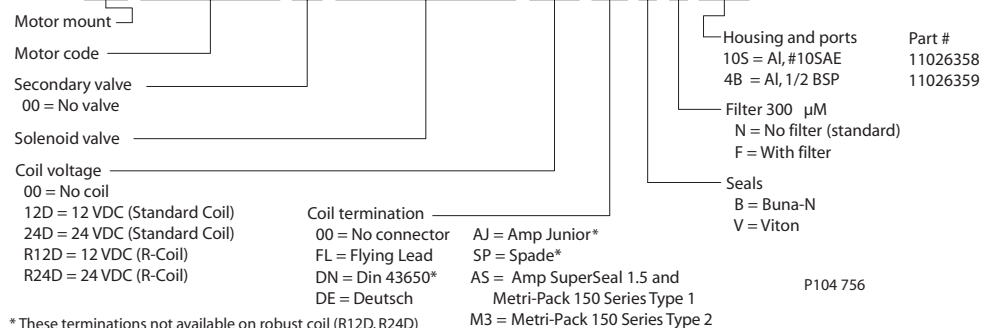
Cross-sectional view

mm [in]



ORDERING INFORMATION

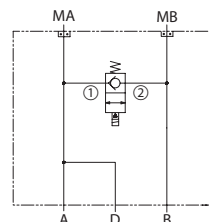
MM-OMP/OMR-00-BSVP10-NCR-12D-DE-B-N-10S



OPERATION

This is a bypass solenoid HIC with drain that mounts to DH motors with manifold mount porting. When energized, the valve connects ports A and B. Drain connects to port A.

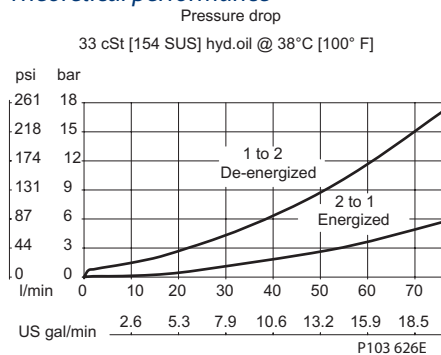
Schematic



P104 750

SPECIFICATIONS

Theoretical performance



Specifications

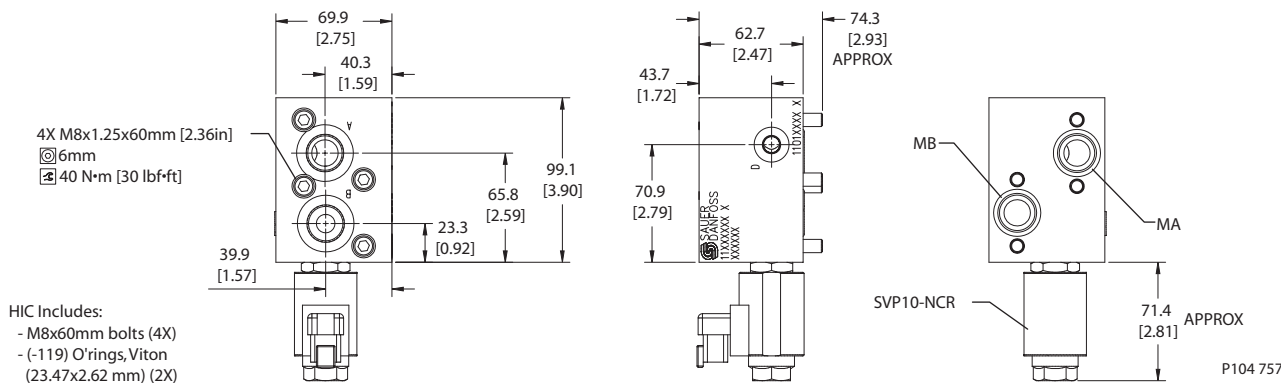
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	1.51 kg [3.33 lb]
Cartridge	SVP10-NCR
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023869
Motor	OMH

Motor mount HICs
MM-OMH-00-SVP10-NCR

DIMENSIONS

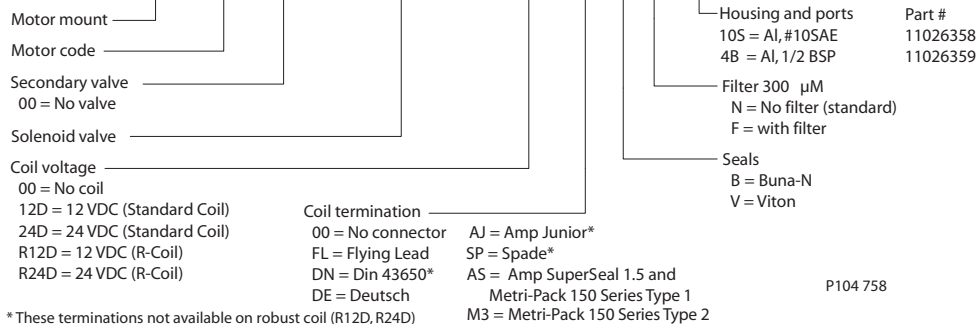
Cross-sectional view

mm [in]



ORDERING INFORMATION

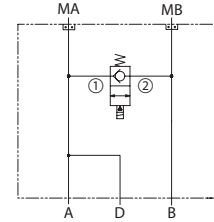
MM-OMH-00-BSVP10-NCR-12D-DE-B-N-10S



OPERATION

This is a bypass solenoid HIC with drain that mounts to DH motors with manifold mount porting. When energized, the valve connects ports A and B. Drain connects to port A.

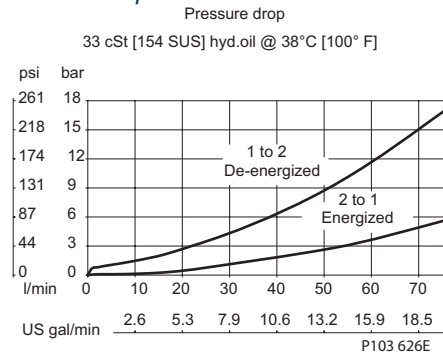
Schematic



P104 750

SPECIFICATIONS

Theoretical performance



Specifications

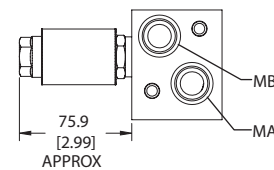
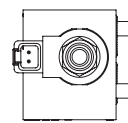
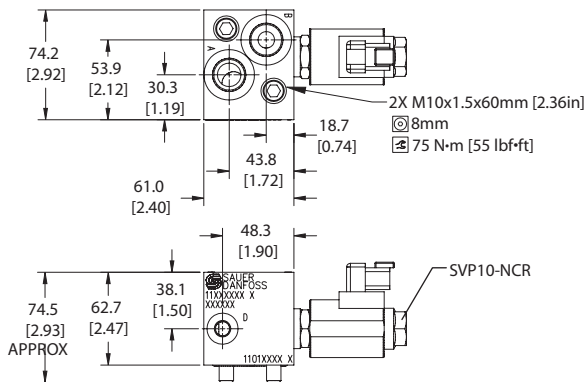
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	1.03 kg [2.27 lb]
Cartridge	SVP10-NCR
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023867
Motor	OMS

Motor mount HICs
MM-OMS-00-SVP10-NCR

DIMENSIONS

Cross-sectional view

mm [in]

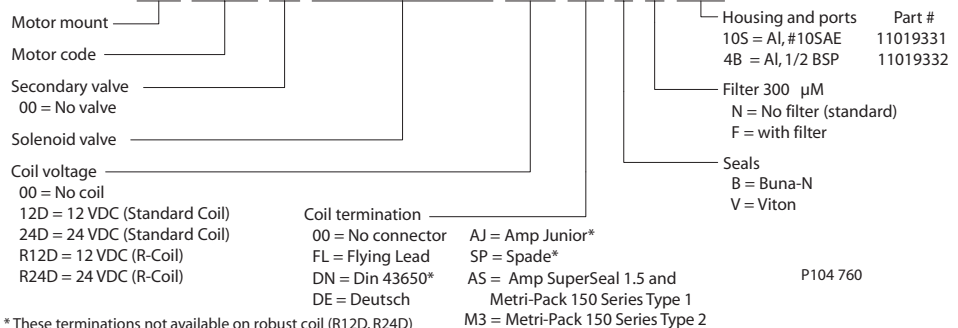


P104 759

- HIC Includes:
- M10x60mm bolts (2X)
 - (-119) O'rings, Viton
 - (23.47x2.62 mm) (2X)

ORDERING INFORMATION

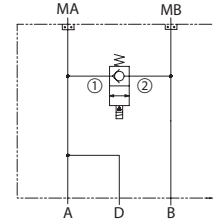
MM-OMS-00-BSVP10-NCR-12D-DE-B-N-10S



OPERATION

This is a bypass solenoid HIC with drain that mounts to DH motors with manifold mount porting. When energized, the valve connects ports A and B. Drain connects to port A.

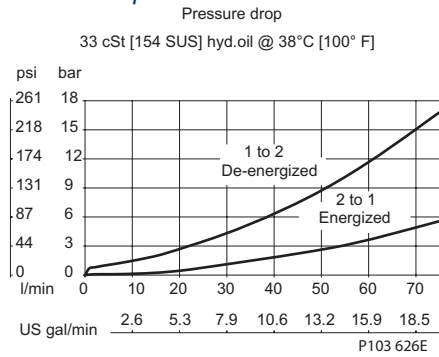
Schematic



P104 750

SPECIFICATIONS

Theoretical performance



Specifications

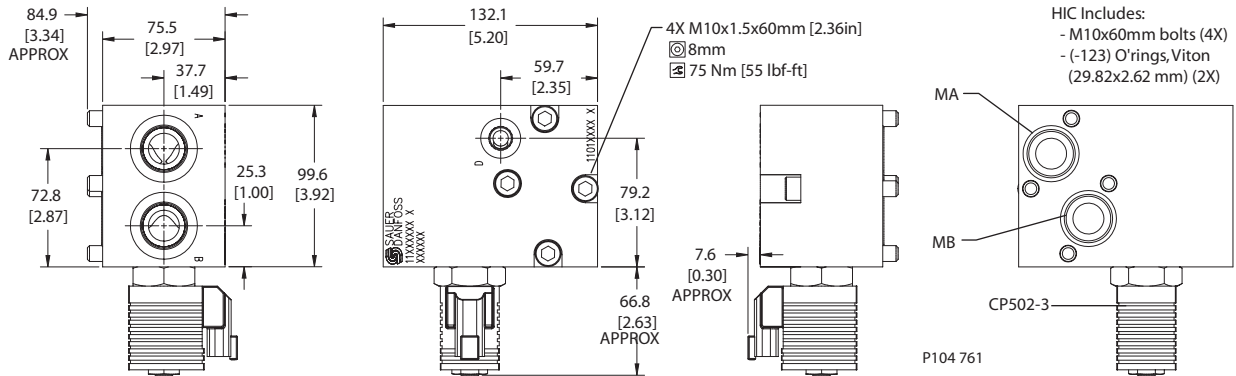
Rated pressure	210 bar [3045 psi]
Rated flow at 7 bar [102 psi]	80 l/min [21 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	2.18 kg [4.81 lb]
Cartridge	CP502-3
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023871
Motor	OMS

Motor mount HICs
MM-OMT-00-CP502-3

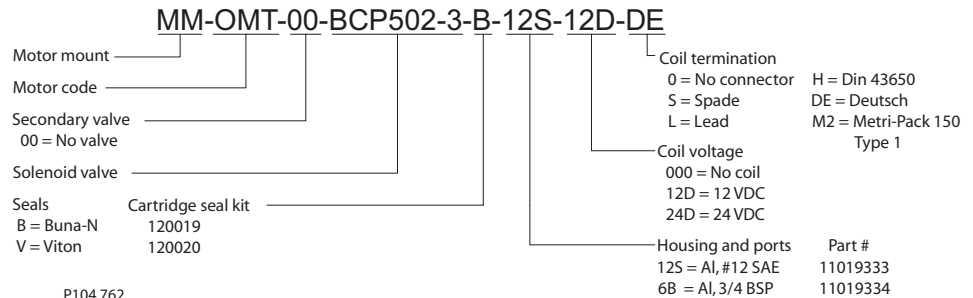
DIMENSIONS

Cross-sectional view

mm [in]



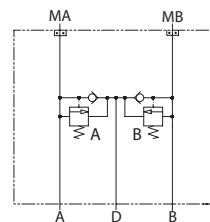
ORDERING INFORMATION



OPERATION

This is a dual shock valve with anticavitation checks that mounts to DH motors with manifold mount porting. The PVLP shock valve absorbs short-duration pressure spikes. Do not use it as a full-flow pressure relief valve. For anticavitation protection, connect drain port to reservoir with adequate piping.

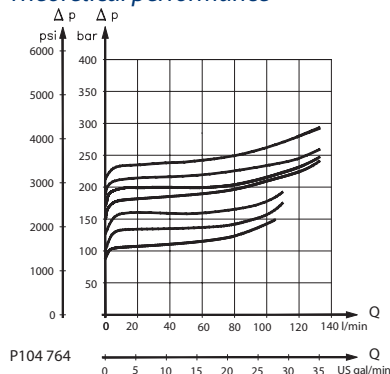
Schematic



P104 763

SPECIFICATIONS

Theoretical performance



P104 764

Specifications

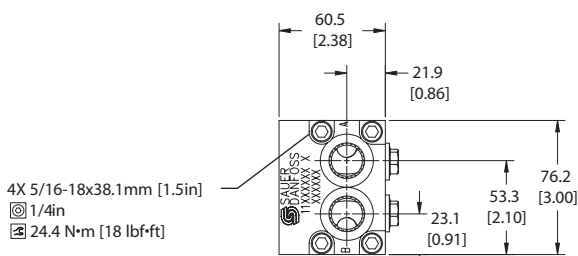
Rated pressure	345 bar [5003 psi]
Rated flow at 7 bar [102 psi]	57 l/min [15 US gal/min]
Crack pressure	0.5 bar [7 psi]
Leakage	5 cm ³ /min [0.3 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.20 kg [2.65 lb]
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023862
Motor	DH

Motor mount HICs
MM-DH-00-DPVLP

DIMENSIONS

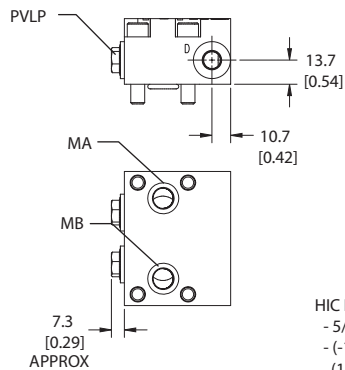
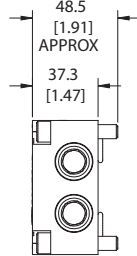
Cross-sectional view

mm [in]



- 4X 5/16-18x38.1mm [1.5in]
- ⊙ 1/4in
- ⊞ 24.4 N·m [18 lbf·ft]

P104 765



- HIC Includes:
- 5/16-18 x 1.5" bolts (4X)
 - (-112) O'rings, Viton (12.37x2.62 mm) (4X)

ORDERING INFORMATION

MM-DH-00-DPVLP-100-S8S

- Motor mount
- Motor code
- Secondary valve
00 = No valve
- Dual shock valve

- Housing and ports
S8S = 11L17 or Ductile, #8 SAE
S3B = 11L17 or Ductile, 3/8 BSP

- Part #
11019335
11019336

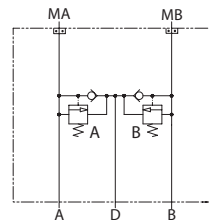
- Pressure setting (Bar)
100 = 100 bar [1450 psi]
125 = 125 bar [1813 psi]
150 = 150 bar [2175 psi]
175 = 175 bar [2538 psi]
190 = 190 bar [2755 psi]
210 = 210 bar [3045 psi]
230 = 230 bar [3335 psi]

P104 766

OPERATION

This is a dual shock valve with anticavitation checks that mounts to DS motors with manifold mount porting. The PVLP shock valve absorbs short-duration pressure spikes. Do not use it as a full-flow pressure relief valve. For anticavitation protection, connect drain port to reservoir with adequate piping.

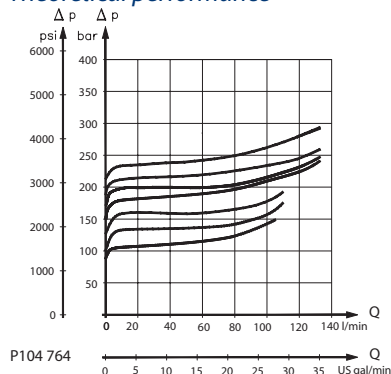
Schematic



P104 763

SPECIFICATIONS

Theoretical performance



P104 764

Specifications

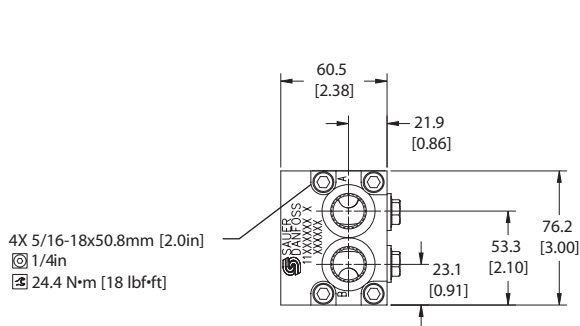
Rated pressure	345 bar [5003 psi]
Rated flow at 7 bar [102 psi]	57 l/min [15 US gal/min]
Crack pressure	0.5 bar [7 psi]
Leakage	5 cm ³ /min [0.3 in ³ /min] @ at 207 bar [3000 psi]
Weight	1.31 kg [2.89 lb]
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023863
Motor	DS

Motor mount HICs
MM-DS-00-DPVLP

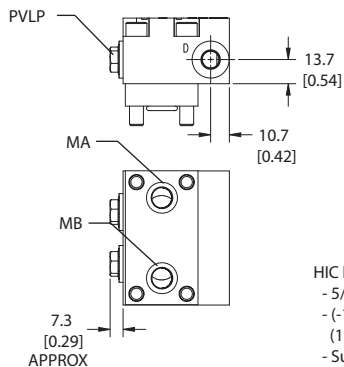
DIMENSIONS

Cross-sectional view

mm [in]



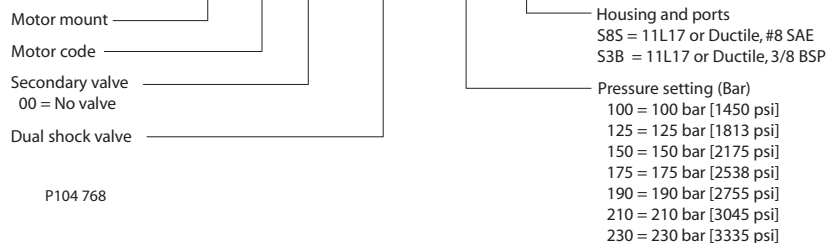
P104 767



- HIC Includes:
- 5/16-18 x 2.0" bolts (4X)
 - (-112) O'rings, Viton (12.37x2.62 mm) (4X)
 - Sub-plate

ORDERING INFORMATION

MM-DS-00-DPVLP-100-S8S



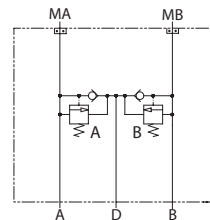
Part #
11019335
11019336

P104 768

OPERATION

This is a dual shock valve with anticavitation checks that mounts to OMP/OMR motors with BSP porting. The PVLP shock valve absorbs short-duration pressure spikes. Do not use it as a full-flow pressure relief valve. For anticavitation protection, connect drain port to reservoir with adequate piping.

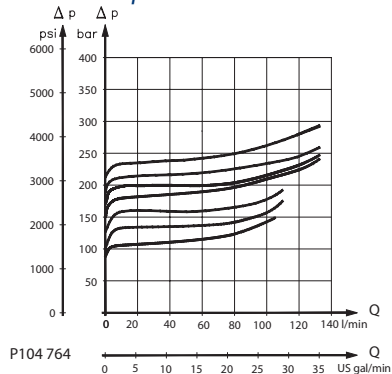
Schematic



P104 763

SPECIFICATIONS

Theoretical performance



P104 764

Specifications

Rated pressure	345 bar [5003 psi]
Rated flow at 7 bar [102 psi]	57 l/min [15 US gal/min]
Crack pressure	0.5 bar [7 psi]
Leakage	5 cm ³ /min [0.3 in ³ /min] @ at 207 bar [3000 psi]
Weight	2.12 kg [4.67 lb]
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023162
Motor	OMP/OMR

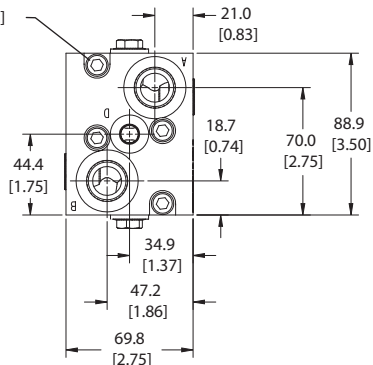
Motor mount HICs
MM-OMP/OMR-00-DPVLP

DIMENSIONS

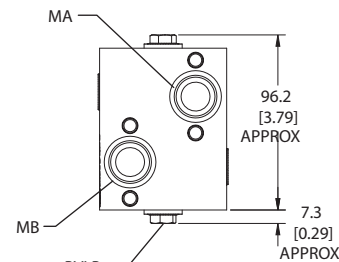
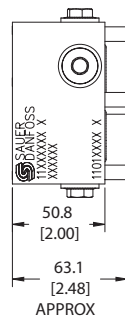
Cross-sectional view

mm [in]

4X M8x1.25x50mm [1.97in]
⊙6mm
⊕40 N•m [30 lbf-ft]



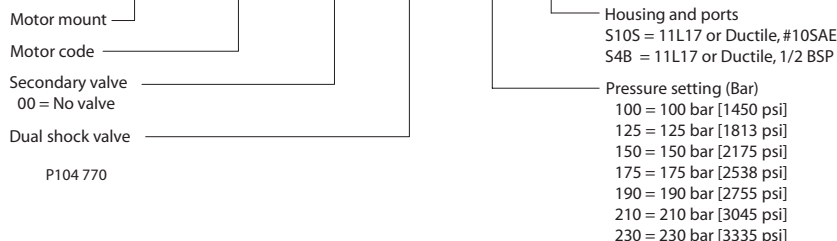
P104 769



HIC Includes:
- M8x50mm bolts (4X)
- (-119) O'rings, Viton (23.47x2.62 mm) (2X)

ORDERING INFORMATION

MM-OMP/OMR-00-DPVLP-100-S4B



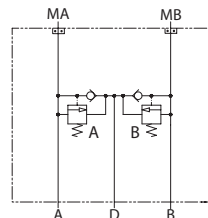
Part #
11026360
11026361

P104 770

OPERATION

This is a dual shock valve with anticavitation checks that mounts to OMH motors with BSP porting. The PVLP shock valve absorbs short-duration pressure spikes. Do not use it as a full-flow pressure relief valve. For anticavitation protection, connect drain port to reservoir with adequate piping.

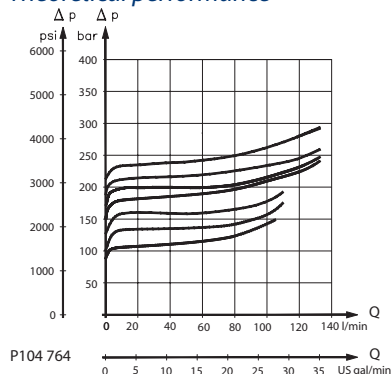
Schematic



P104 763

SPECIFICATIONS

Theoretical performance



P104 764

Specifications

Rated pressure	345 bar [5003 psi]
Rated flow at 7 bar [102 psi]	57 l/min [15 US gal/min]
Crack pressure	0.5 bar [7 psi]
Leakage	5 cm ³ /min [0.3 in ³ /min] @ 207 bar [3000 psi]
Weight	2.12 kg [4.67 lb]
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023162
Motor	OMH

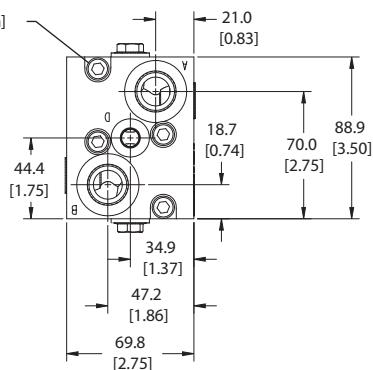
Motor mount HICs
MM-OMH-00-DPVLP

DIMENSIONS

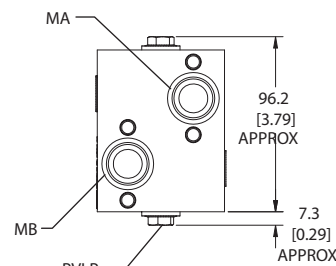
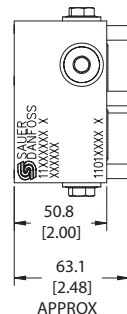
Cross-sectional view

mm [in]

- 4X M8x1.25x50mm [1.97in]
- ⊙6mm
- ⊠40 N·m [30 lbf·ft]



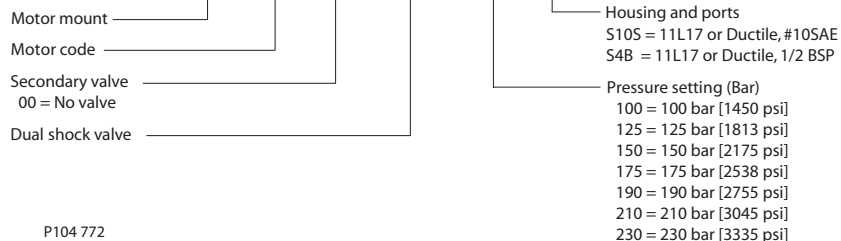
P104 771



- HIC Includes:
- M8x50mm bolts (4X)
 - (-119) O'rings, Viton (23.47x2.62 mm) (2X)

ORDERING INFORMATION

MM-OMH-00-DPVLP-175-S4B



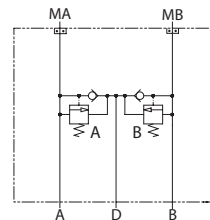
Part #
11026360
11026361

P104 772

OPERATION

This is a dual shock valve with anticavitation checks that mounts to OMS motors with BSP porting. The PVLP shock valve absorbs short-duration pressure spikes. Do not use it as a full-flow pressure relief valve. For anticavitation protection, connect drain port to reservoir with adequate piping.

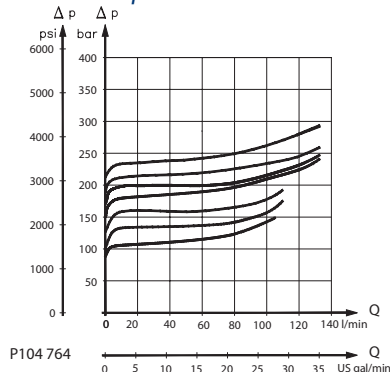
Schematic



P104 763

SPECIFICATIONS

Theoretical performance



P104 764

Specifications

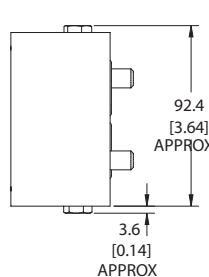
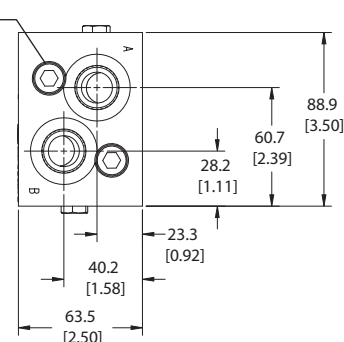
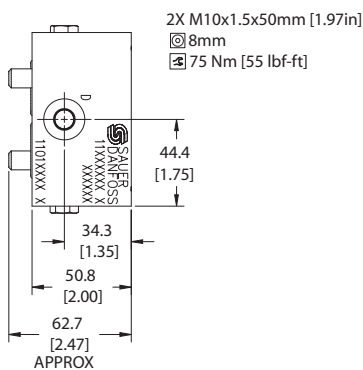
Rated pressure	345 bar [5003 psi]
Rated flow at 7 bar [102 psi]	57 l/min [15 US gal/min]
Crack pressure	0.5 bar [7 psi]
Leakage	5 cm ³ /min [0.3 in ³ /min] @ at 207 bar [3000 psi]
Weight	2.02 kg [4.45 lb]
Shuttle/drain port	#4 SAE (1/4 BSP)
Service mount kit	11023866
Motor	OMS

Motor mount HICs
MM-OMS-00-DPVLV

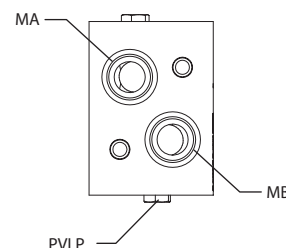
DIMENSIONS

Cross-sectional view

mm [in]



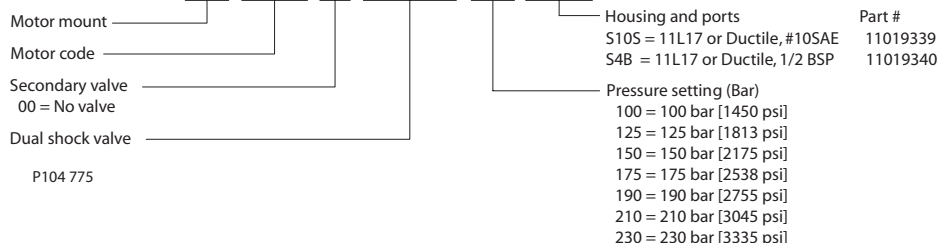
P104 774



HIC Includes:
- M10x50mm bolts (2X)
- (-119) O-rings, Viton (23.47x2.62 mm) (2X)

ORDERING INFORMATION

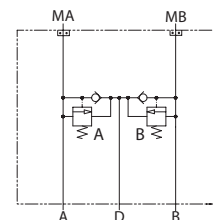
MM-OMS-00-DPVLV-175-S10S



OPERATION

This is a dual shock valve with anticavitation checks that mounts to OMT motors with BSP porting. The PVLP shock valve absorbs short-duration pressure spikes. Do not use it as a full-flow pressure relief valve. For anticavitation protection, connect drain port to reservoir with adequate piping.

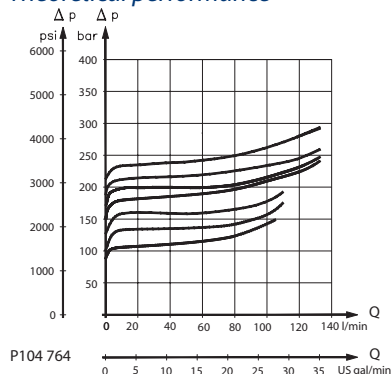
Schematic



P104 763

SPECIFICATIONS

Theoretical performance



P104 764

Specifications

Rated pressure	345 bar [5003 psi]
Rated flow at 7 bar [102 psi]	57 l/min [15 US gal/min]
Crack pressure	0.5 bar [7 psi]
Leakage	5 cm ³ /min [0.3 in ³ /min] @ 207 bar [3000 psi]
Weight	2.94 kg [6.48 lb]
Shuttle/drain port	#6 SAE (1/4 BSP)
Service mount kit	11023870
Motor	OMT

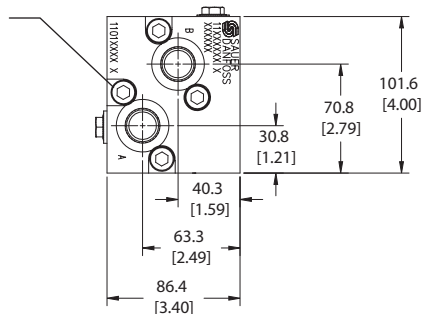
Motor mount HICs
 MM-OMT-00-DPVLP

DIMENSIONS

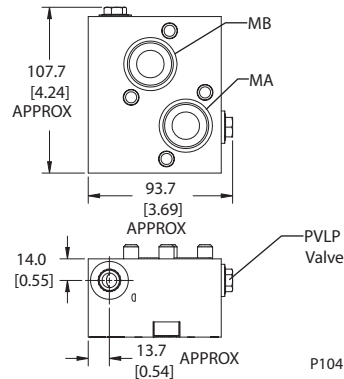
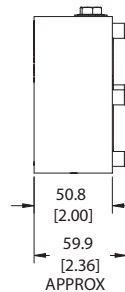
Cross-sectional view

mm [in]

- 4X M10x1.5x50mm [1.97in]
- 8mm
- 75 N·m [55 lbf·ft]



- HIC Includes:
- M10x50mm bolts (4X)
 - (-123) O'rings, Viton (29.82x2.62 mm) (2X)



P104 776

ORDERING INFORMATION

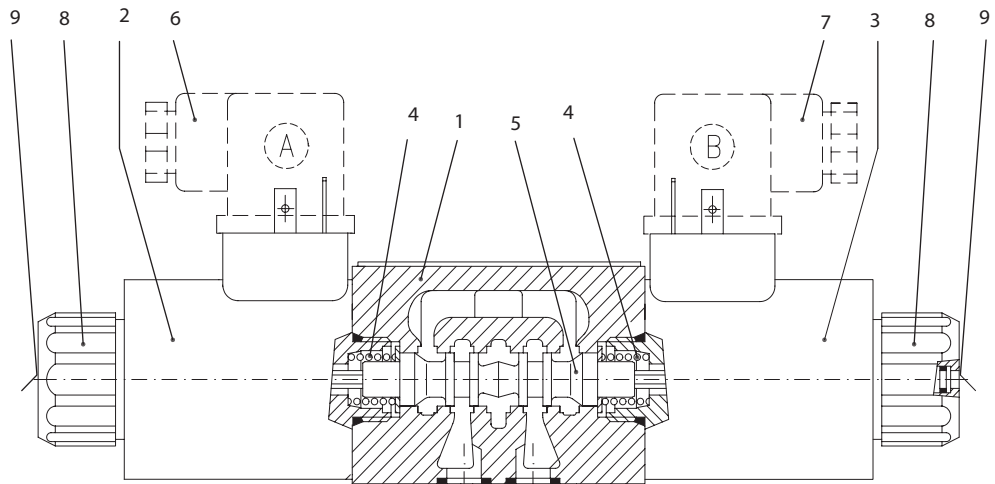
MM-OMT-00-DPVLP-175-S10S

- Motor mount
- Motor code
- Secondary valve
00 = No valve
- Dual shock valve
- Housing and ports
S10S = 11L17 or Ductile, #10SAE
S4B = 11L17 or Ductile, 1/2 BSP
- Pressure setting (Bar)
100 = 100 bar [1450 psi]
125 = 125 bar [1813 psi]
150 = 150 bar [2175 psi]
175 = 175 bar [2538 psi]
190 = 190 bar [2755 psi]
210 = 210 bar [3045 psi]
230 = 230 bar [3335 psi]

Part #
11026364
11026365

P104 777

OVERVIEW



P104 435E

Directional control valves
 DCV03

DCV 03 directional control valves consist of: housing (1), control spool (5), with two centering springs (4), and cylindrical operating solenoids (2, 3).

The three-position directional valves have two solenoids and two springs. Two-position directional valves have either one solenoid and one return spring or two solenoids and a detent assembly.

The operating solenoids are DC. For AC supply the solenoids are provided with a rectifier, which is integrated directly into the coil.

The plug connectors (6, 7) can be rotated 90°. By loosening the nut (8), the solenoids can be rotated 360°. This enables the solenoids to be replaced without opening the valves.

In the case of solenoid malfunction or power failure, the spool can be actuated by manual override (9), provided the pressure in T-port does not exceed 25 bar [360 psi].

The valve housing (1) is phosphate coated. The operating solenoids (2, 3) are zinc coated.

FEATURES

- 3 position, 4-way, and 2 position, 4-way directional valves
- Cylindrical operating solenoids with separate operating coils – connector can be rotated 90°
- 4-land spool – reduced functional dependence on fluid viscosity
- Push button manual override
- Installation dimensions to ISO 4401-03-02-0-94 and DIN 24340-A6



TECHNICAL DATA

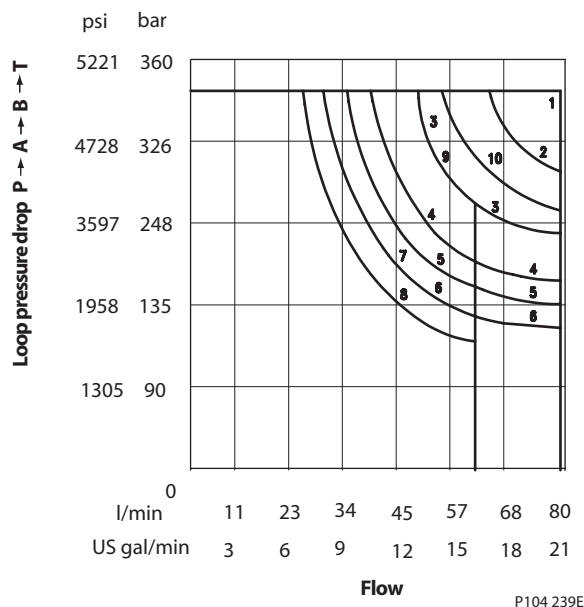
Specifications

Nominal size	mm [in.]	6.0 [0.24]
Maximum flow	l/min [US gal/min]	See p-Q characteristics below
Maximum operating pressure	bar [psi]	320 [4640]
Maximum back pressure (port T)	bar [psi]	210 [3050]
Pressure drop	bar [psi]	see Δ p-Q characteristics, page 4
Weight – with 1 solenoid with 2 solenoids	Kg [lb]	1.6 [3.52] 2.2 [4.84]

CHARACTERISTICS

p - Q Characteristics

Operating limits for maximum hydraulic power transferred by the directional valve. Measured at viscosity = 35 mm²/sec (cSt) [166 SUS].

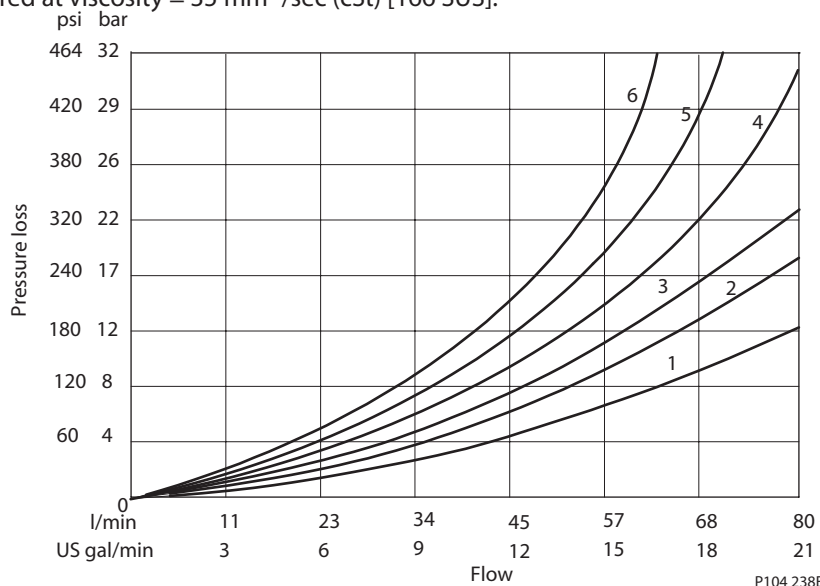


Spool	Curve
Z11	1
C11	7
H11	4
P11	1
Y11	3
B11	9
Y41	7
Z21	1
C41	6
R11	4
R21	5
A51	6
P51	1
Y51	3
C51	7
Z51	1
Z71	8
Z81	8
Z91	8
R31	6
H51	8
F51	8
X11	4
K11	8
N11	8
J15	1
J75	10
L21	6
F11	6

CHARACTERISTICS
 (continued)

Δp-Q Characteristics

Measured at viscosity = 35 mm²/sec (cSt) [166 SUS].



P104 238E

Spool	P-A	P-B	A-T	B-T	P-T
Z11	2	2	3	3	
C11	5	5	5	6	3
H11	2	2	2	2	3
P11	1	1	3	3	
Y11	2	2	2	2	
L21	2	2	3	3	
B11	2	2	3	3	
Y41	3	3	3	3	
Z21		2	3		
C41	4	4			5
F11	1	2		3	3
R11	2	2	3	3	
R21	2	2	3	3	
A51	2	2			
P51		1	3		
Y51		2	2		
C51	2			3	4
Z51		2	3		
Z71	3	3			
Z81			3	3	
Z91	3			3	3
R31	2			3	
H51		2	3		
F51		2	3		
X11	2	2	3	3	
K11		2	3		
N11					
J15	2	2	3	3	
J75	2	2			

Directional control valves
 DCV03

ORDER CODE

DCV 03 - □ - □□□□ - □□□□ - □□ - □□ - □□ - □□

Directional control valve

Nominal size

Operating positions

Code	Description
2	Two position
3	Three position

Spool

See *Spool options*, page 5

Voltage

Code	Description
01200	12 VDC / 2.72 A
02400	24 VDC / 1.29 A
12060	115 VAC / 0.35 A / 50(60) Hz
23050	230 VAC / 0.17 A / 50(60) Hz

The AC coils correspond with E5 coils only.

Connector

Code	Description
E1	DIN 43650
E2	DIN 43650 with diode
E3	AMP junior
E4	AMP junior with diode
E5	DIN 43650 with rectifier in coil
E8	Lead wires
E9	Lead wires with diode in coil
E12	Deutsch
E13	Deutsch with diode in coil

Seals

Code	Description
B	Buna-N
V	Viton

P port orifice

Code	Description
Omit	None
D1	1.0 mm [0.04 in]
D2	1.5 mm [0.06 in]
D3	2.0 mm [0.08 in]
D4	2.2 mm [0.09 in]
D5	2.5 mm [0.10 in]

Spool speed control orifice

Code	Description
Omit	None
T1	0.7 [0.03 in] orifice

Manual override

Code	Description
00	Standard
N1	Covered with coil nut
N2	Protective rubber boot.
N3	Detent assembly

Connector plug (DIN 43650)

Code	Description
Omit	No plug
K1	Connector plug
K2	Connector plug with LED

Requires E1, E2, or E5 coil connection

SPOOL OPTIONS

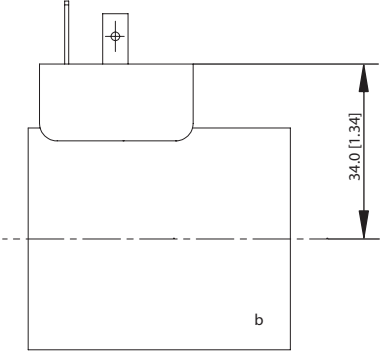
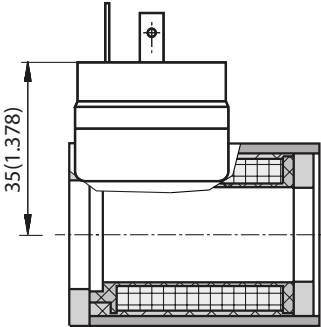
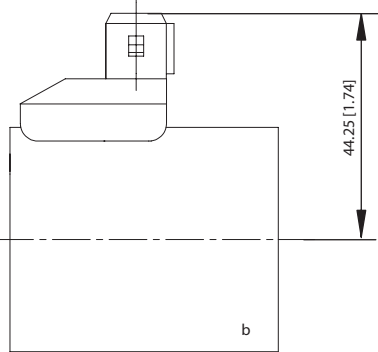
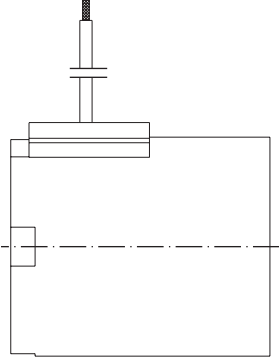
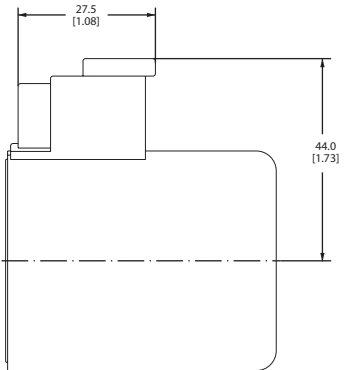
Functional Symbols

Code	Symbol	Transition	Code	Symbol	Transition
Z11*			Z51*		
C11*			Z71		
H11*			Z81		
P11			Z91		
Y11*			R31		
L21			H51		
B11			F51		
Y41			Z11*		
Z21			X11		
C41			C11		
F11			H11		
R11*			K11		
R21*			N11		
A51*			F11		
P51			J15*		
Y51*			J75		
C51*					


* standard spool options.

Directional control valves
 DCV03

Directional control valves
 DCV03

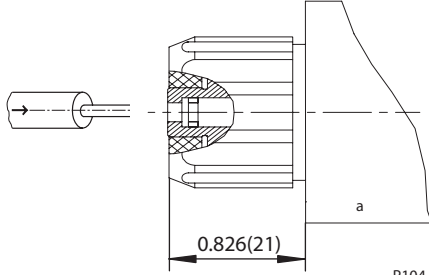
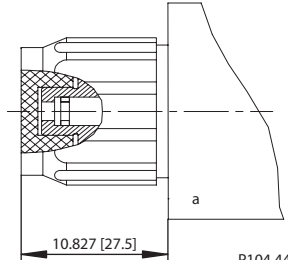
Code	Dimensional sketch	
E1, E2	 <p>P104 436E</p>	<p>E5</p> 
E3, E4	 <p>P104 437E</p>	
E8, E9	 <p>P102 860E</p>	
E12, E13	 <p>P102 857E</p>	

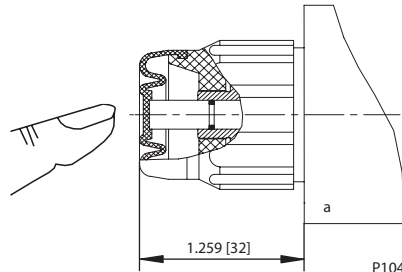
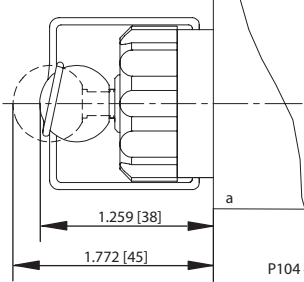
**CONNECTOR
 OPTIONS**

<i>DIN 43650</i>	Code	Type	Model	Max. input voltage
	 P104 439E	K1	Plug B (black)	without rectifier
Plug A (grey)			without rectifier	250 VDC 230 VAC
K2		Plug B (black)	without rectifier and with LED	30 VDC 230 VAC
		Plug A (grey)	without rectifier and with LED	30 VDC 230 VAC

Directional control valves
DCV03

**MANUAL OVERRIDE
 OPTIONS**

<i>Standard</i>	<i>Covered with coil nut</i>
Code 00 mm[in]	Code N1 mm[in]
 P104 440E	 P104 441E
	Manual override covered by coil nut

<i>Rubber boot</i>	<i>Detent assembly</i>
Code N2 mm [in]	Code N3 mm [in]
 P104 442E	 P104 443E
Manual override protected by rubber boot	Manual override with detent

SPOOL SPEED CONTROL ORIFICE

Code	Sketch	Description
T1	<p style="text-align: right;">P104 444E</p>	<p>This directional valve provides cushioned control spool shifting by means of orifice situated in the solenoid armature.</p> <p>To ensure proper function, air bleeding required. To bleed :</p> <ol style="list-style-type: none"> 1. Remove Boot (2) 2. Open Plug (1) 3. Tighten plug after air is removed 4. Replace boot

P-PORT ORIFICE OPTIONS

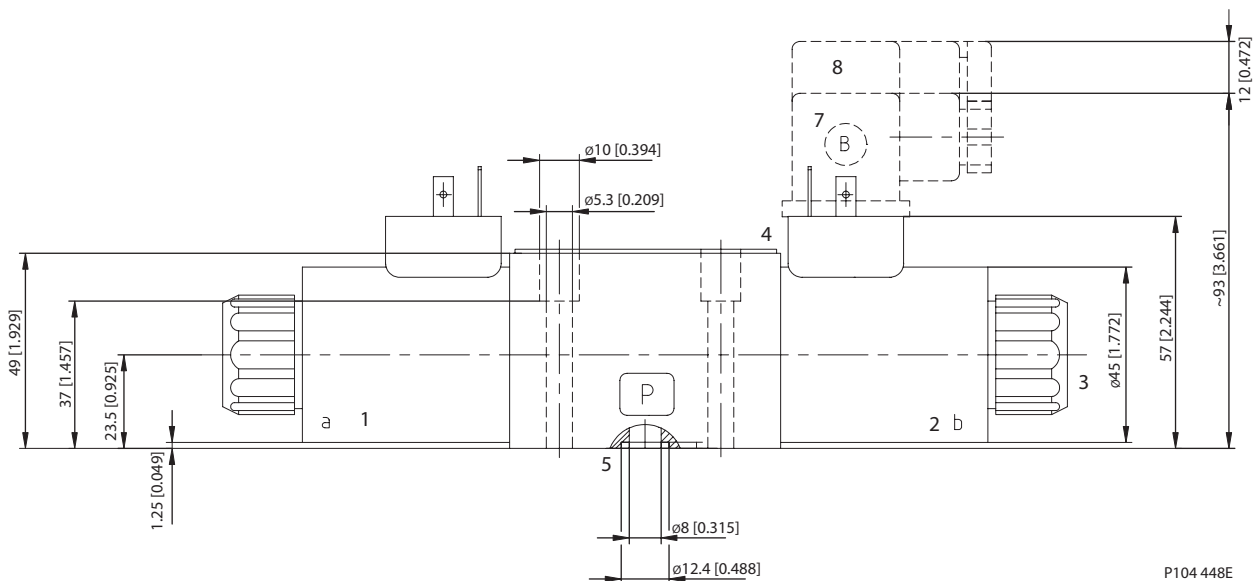
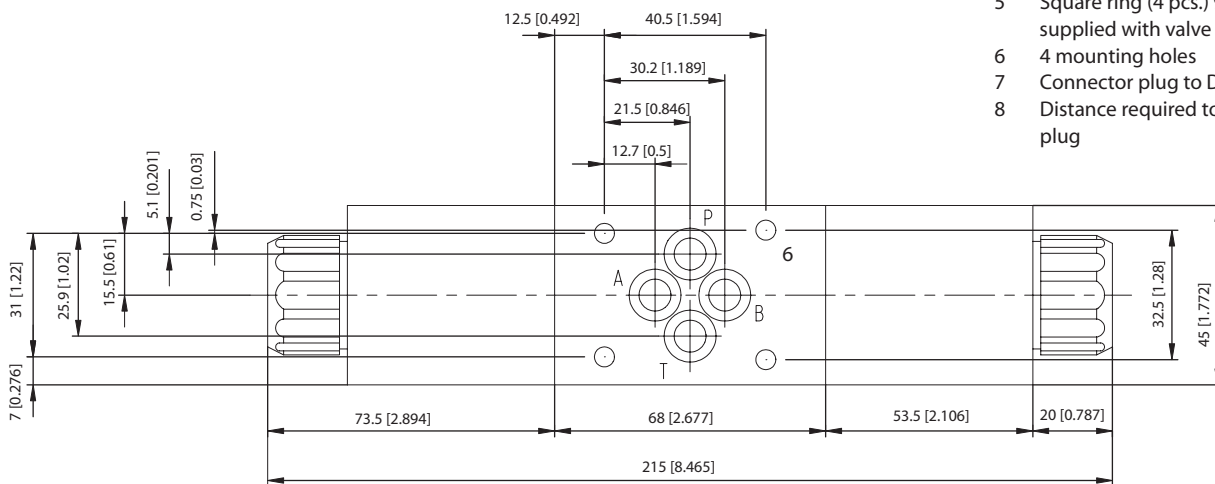
Code	D mm [in]	<p style="text-align: right;">P104 445E</p>	Description
None	None		<p>The orifice installed in the P port restricts the input flow..</p> <p>Orifices can also be used in all ports. Flow can be bidirectional.</p>
D1	1.0 [0.04]		
D2	1.5 [0.06]		
D3	2.0 [0.08]		
D4	2.2 [0.09]		
D5	2.5 [0.10]		

DIMENSIONS

Valve with two solenoids

Dimensions: mm [in]

- 1 Solenoid a
- 2 Solenoid b
- 3 Manual override
- 4 Name plate
- 5 Square ring (4 pcs.) 9.25 x 1.68 supplied with valve
- 6 4 mounting holes
- 7 Connector plug to DIN 43650
- 8 Distance required to remove plug



P104 448E

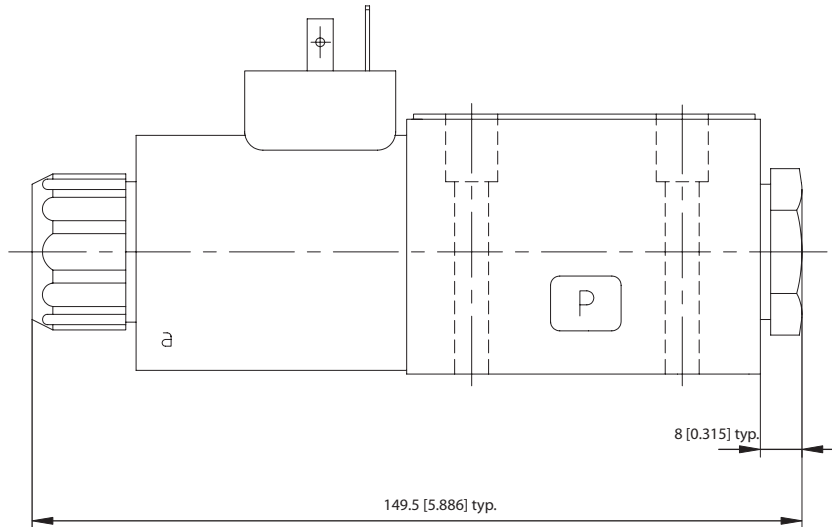
Directional control valves
DCV03

DIMENSIONS
 (continued)

Valve with one solenoid - side a

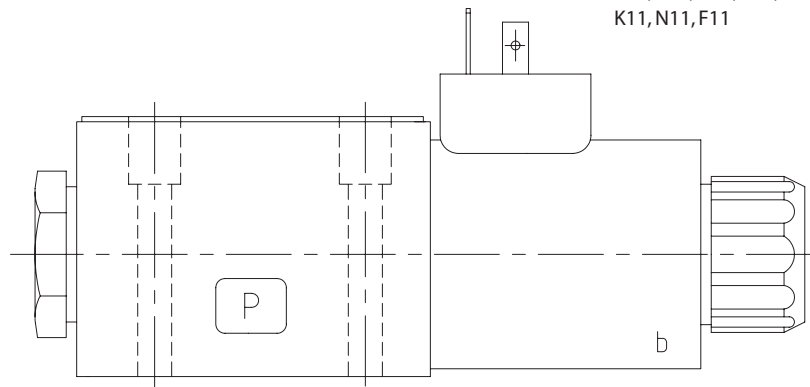
Dimensions: mm [in]

Functional symbols
 R11, R21, A51, P51, Y51,
 C51, Z51, H51, J15, J75, Z71,
 Z81, Z91, F51

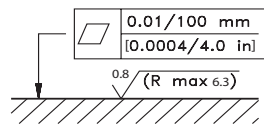


Valve with one solenoid - size b

Functional symbols
 X11, C11, H11, Z11,
 K11, N11, F11



P104 449E

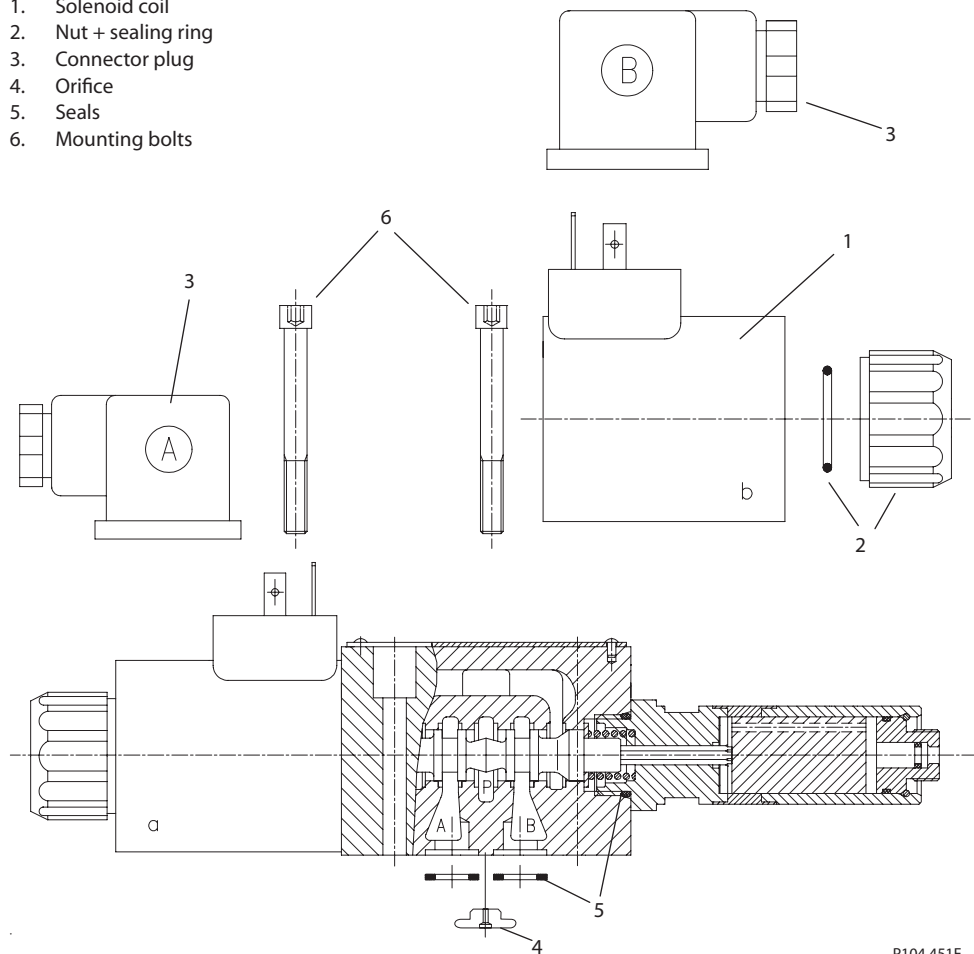


P104 450E

Required surface finish of
 interface

REPLACEMENT PARTS

1. Solenoid coil
2. Nut + sealing ring
3. Connector plug
4. Orifice
5. Seals
6. Mounting bolts



P104 451E

Directional control valves
DCV03

Solenoid

Voltage	E1 DIN 43650	E2 DIN 43650 w/Diode	E3 Amp Jr.	E4 Amp Jr. w/Diode	E5 DIN w/Rectifier	E8 Lead Wires	E9 Lead Wires w/Diode	E12 Deutsch	E13 Deutsch w/Diode
Ordering Number									
01200	158-8004	11051915	***	158-8139	***	158-8083	***	158-8055	11030059
02400	158-8009	158-8053	***	***	***	***	***	158-8057	158-8129
12060	***	***	Not Available		158-8028	Not Available			
23050	***	***			158-8018				

*** Consult Factory

**REPLACEMENT PARTS
 (continued)**

Solenoid nut

M/O code	Type of nut	Ordering number
No Code	Standard nut	158-8005
N1	Closing nut	Consult factory
N2	Nut with rubber cap	Consult factory
N3	Nut with detent assembly	Consult factory

Connector (DIN 43650)

Code	Model	Connector plug A gray	Connector plug B black
		Ordering number	
K1	No rectifier or LED	158-8076	088010080
K2	with LED	Consult factory	Consult factory

Orifice

Code	Diameter mm [in]	Ordering number
D1	1.0 [0.039]	158-8013
D2	1.5 [0.059]	158-8003
D3	2.0 [0.078]	158-8079
D4	2.2 [0.87]	158-8080
D5	2.5 [0.098]	158-8081

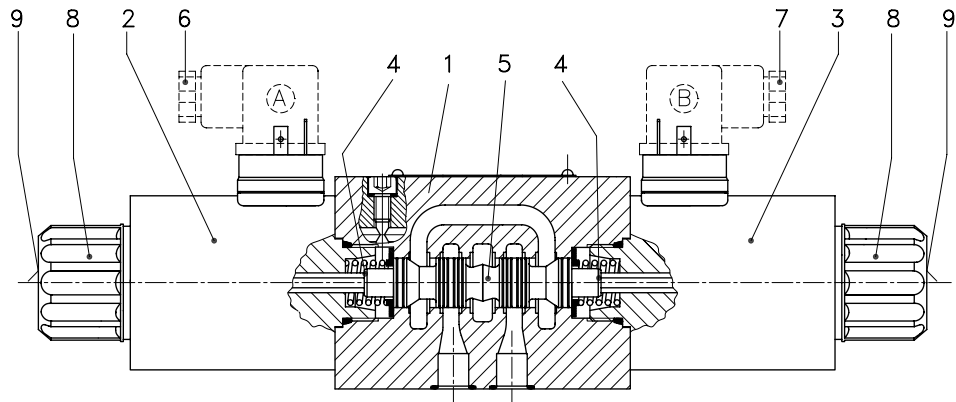
Seal kit

Type	Ordering number
Buna-N	158-8007
Viton	158-8062

Mounting bolts – set

Type, Qty	Ordering number
M5 x 45 DIN 912-10.9 (4 pcs)	158-8026
10-24 UNC x 1.75 (4 pcs)	158-8064

OVERVIEW



P106.001E

DCV 05 directional control valves consist of: housing (1), control spool (5), centering springs (4), and operating solenoids (2, 3).

The three-position directional valves have two solenoids and two springs. The two position directional valves have one solenoid and one return spring.

The operating solenoids are DC and are supplied through connectors A and B (6, 7). For AC supply, the solenoids are provided with rectifiers integrated directly into the coil. T

The connectors must be ordered separately. By loosening nut (8), the solenoid can be rotated in four positions 90° apart.

Provided that the pressure in T-port does not exceed 360 psi [25 bar], the valve can be actuated by manual override (9).

The valve housing (1) is phosphate coated. The operating solenoids (2, 3) are zinc coated.

FEATURES

- 3 position, 4-way and 2 position, 4-way directional valves
- Solenoids can be fixed in three positions 90° apart
- Push button manual override
- Installation dimensions to DIN 24340 and ISO 4401



TECHNICAL DATA

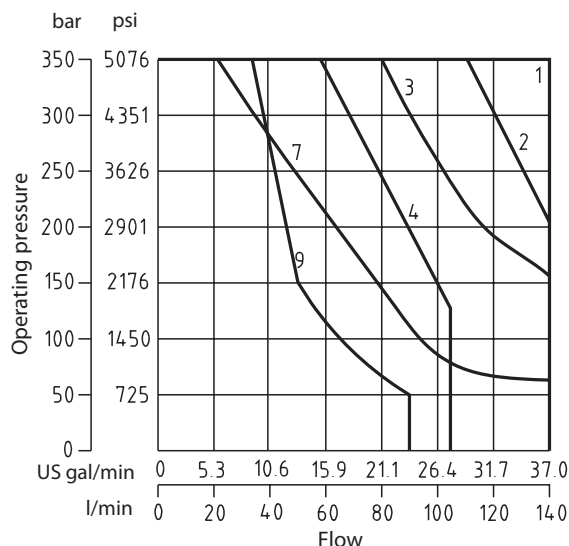
Specifications

Nominal size	mm [in.]	10 [0.39]
Maximum flow	l/min [US gal/min]	See p-Q characteristics, below
Max. operating pressure	bar [psi]	350 [5075]
Max. back pressure (port T)	bar [psi]	210 [3045]
Pressure drop	bar [psi]	see Δ p-Q characteristics, page 4
Weight – with 1 solenoid with 2 solenoids	Kg [lb]	3.9 [8.6] 5.4 [11.9]

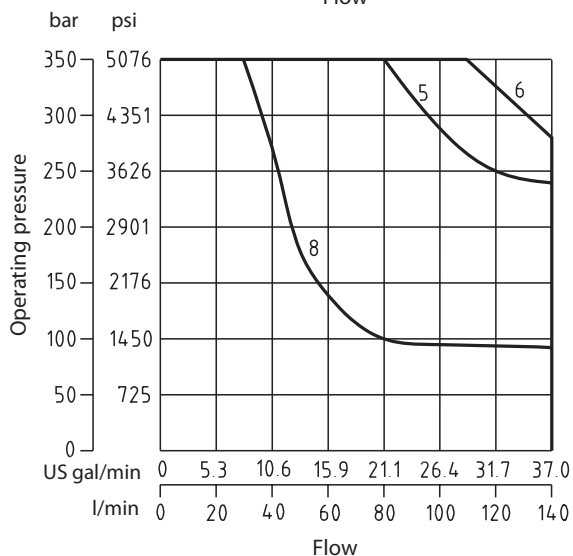
CHARACTERISTICS

p - Q Characteristics

Operating limits for maximum hydraulic power transferred by the directional valve.
For respective spool type – see *Spool Options*, page 5. Measured at viscosity = 32 mm²/s (cSt) [156 SUS].



Spool	Curve
Z11	1
C11	3
H11	1
P11	1
Y11	5
B11	4
R11	2
Z51	1
H51	1
P51	1
Y51	5
C51	3
X11	2
B51	4
L21	7
R21	2
J15	6
J75	6
A51	8
C21	9

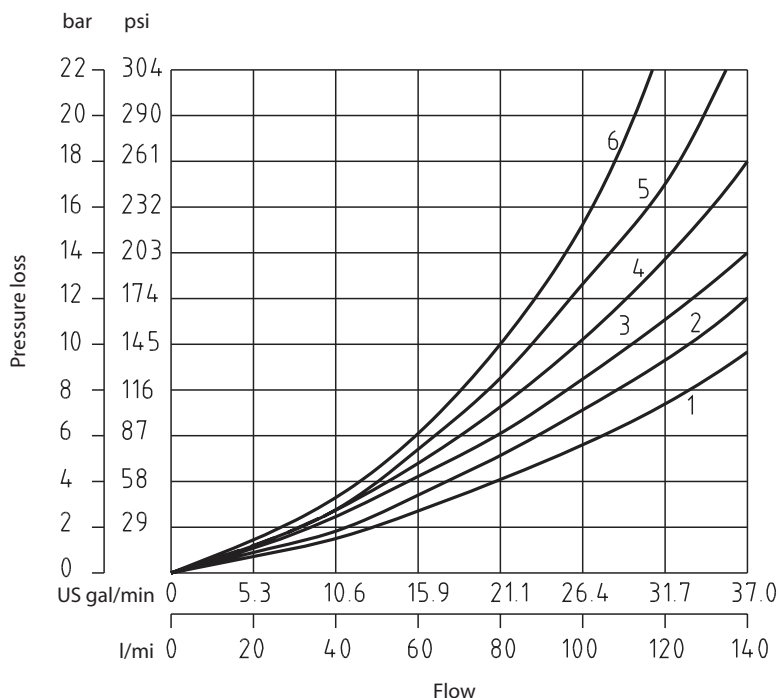


P104 203E

CHARACTERISTICS
 (continued)

p - Q Characteristics

Measured at viscosity = 32 mm²/s (cSt) [156 SUS].



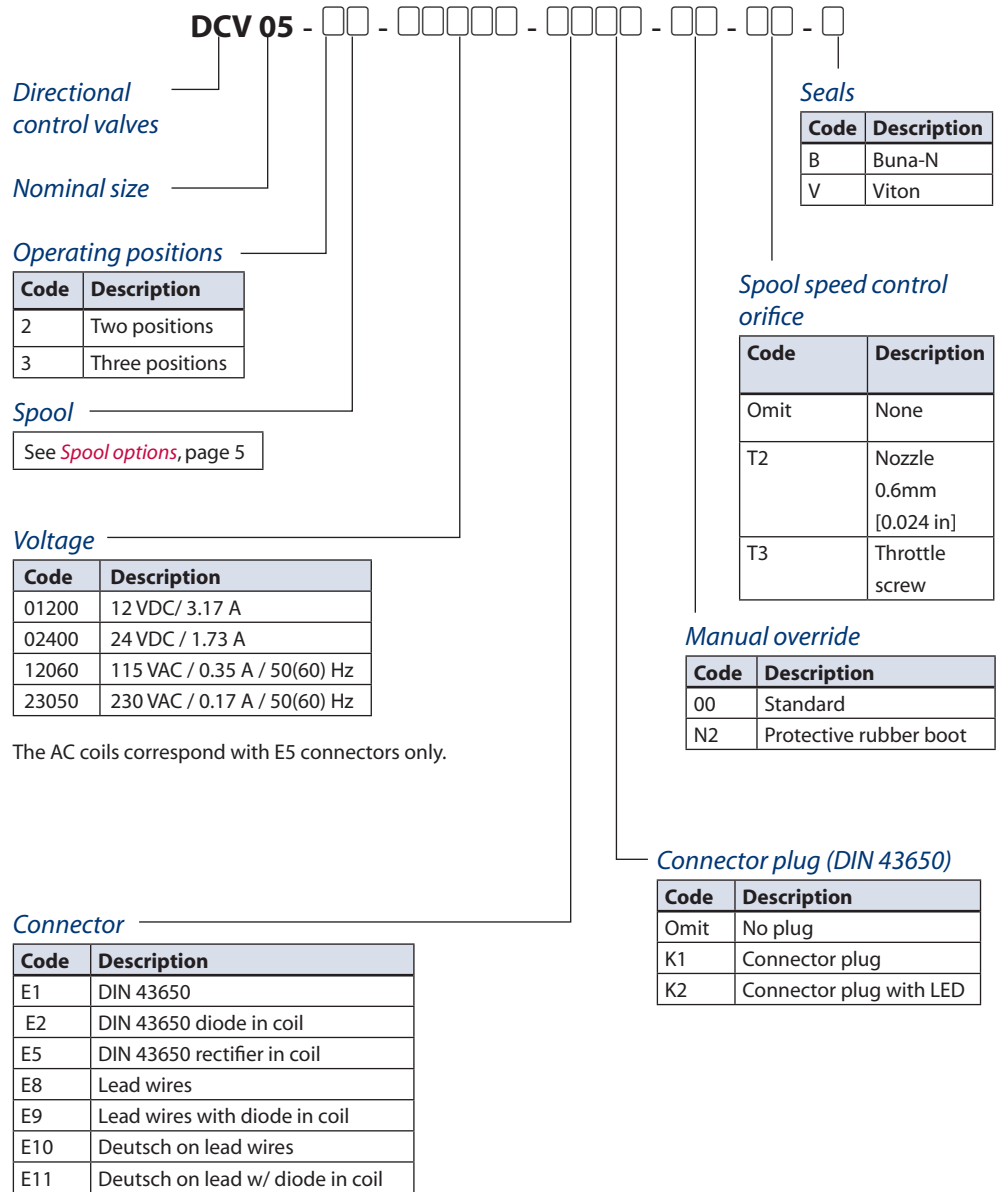
P104 204E

Spool	P-A	P-B	A-T	B-T	P-T
Z11	1	1	2	2	
C11	4	3	4	5	1
H11	1	1	2	2	1
P11	1	1	2	2	
Y11	1	1	2	2	
B11	1	1	2	2	
R11	1	1	2	2	
Z51		1	2		
H51		1	2		1
P51		1	2		
Y51		1	2		
C51	4			5	1
X11	1	1	2	2	
B51		1	2		
L21	1	1	1	2	2
R21	1	1	1	3	
J15	1	4	2	3	
J75	1	1			
A51	1	1			
C21	6	6	6	6	4

Directional control valves
 DCV05

ORDER CODE

Directional control valves
DCV05



SPOOL OPTIONS

Functional Symbols

Code	Symbol	Transition	Code	Symbol	Transition
Z11*			Y51*		
C11*			C51		
H11*			B51		
P11			Z51*		
Y11*			H51		
Y21			X11		
B11			C11		
C21			H11		
R11*			J15*		
R21*			J75		
A51*			X25		
P51			M21		

* standard spool option.

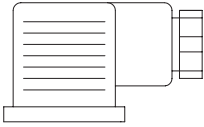
TERMINAL OPTIONS

Code	Sketch
E1, E2, E5	<p>P104 549</p>
E8, E9	<p>P104 451E</p>
E10, E11	<p>P104 452E</p>

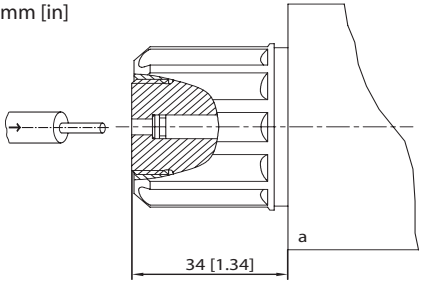
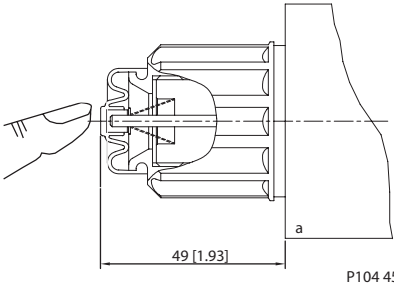
Directional control valves
 DCV05

CONNECTOR OPTIONS

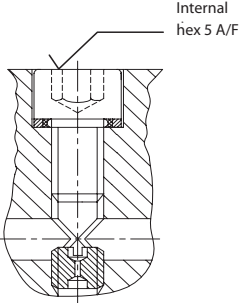
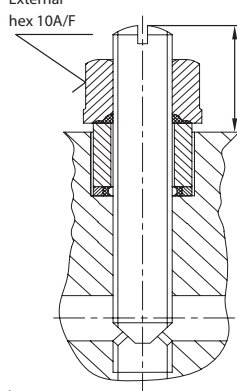
DIN 43650

 P104 439E	Code	Type	Model	Max. input voltage
		K1	Plug B (black)	Without rectifier
Plug A (grey)			Without rectifier	250 VDC 230 VAC
K2		Plug B (black)	Without rectifier and LED	30 VDC 230 VAC
		Plug A (grey)	Without rectifier and LED	30 VDC 230 VAC

MANUAL OVERRIDE OPTION

Standard	Covered by coil nut
Code 00 mm [in]  P104 458E	Code N2  P104 453E Manual override covered by coil nut

SPOOL SPEED CONTROL ORIFICE OPTION

Nozzle 0.6 mm [0.024 in.]	Throttle screw
Code T2 Dimensional sketch  P104 459E Service Kit: 11089509	Code T3 Dimensional sketch  P104 454E Service Kit: 11089508

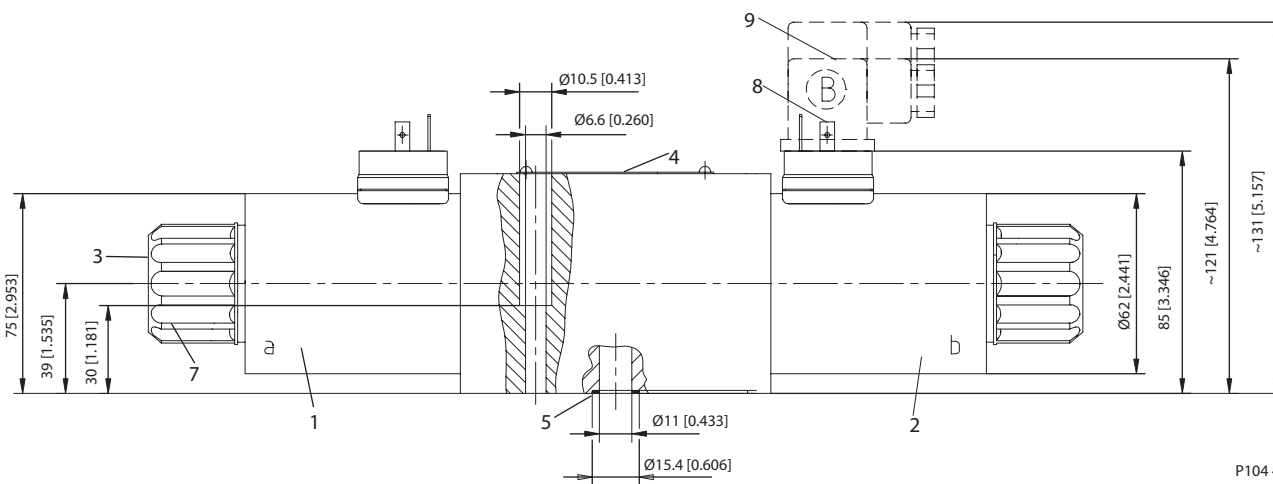
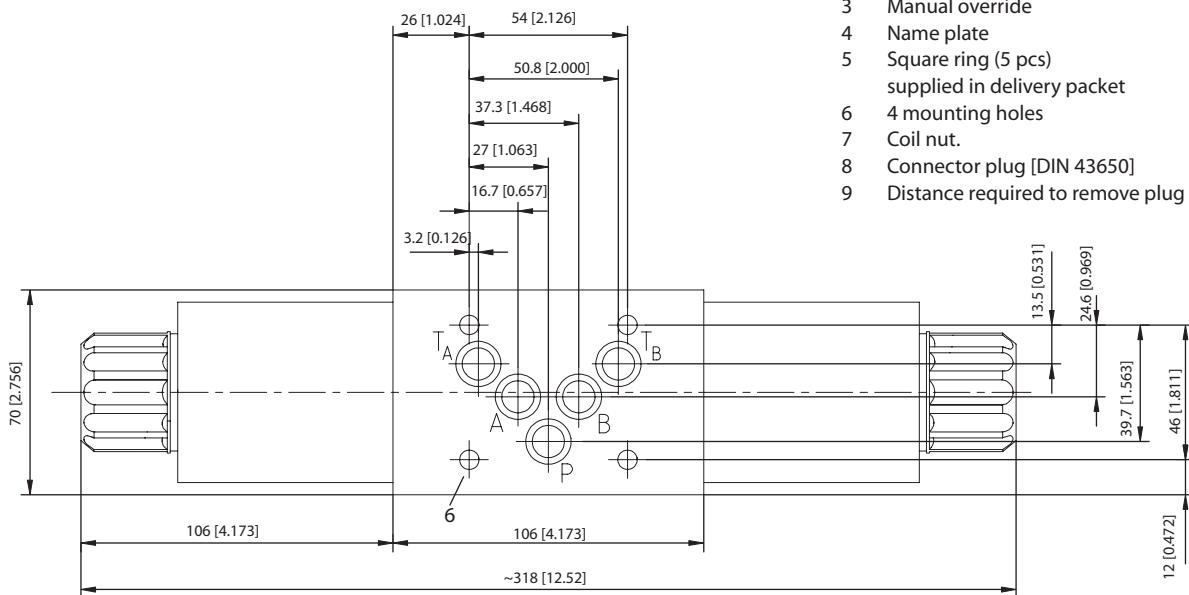
Directional control valves
DCV05

DIMENSIONS

Valve with two solenoids

Dimensions: mm [in]

- 1 Solenoid a
- 2 Solenoid b
- 3 Manual override
- 4 Name plate
- 5 Square ring (5 pcs) supplied in delivery packet
- 6 4 mounting holes
- 7 Coil nut.
- 8 Connector plug [DIN 43650]
- 9 Distance required to remove plug



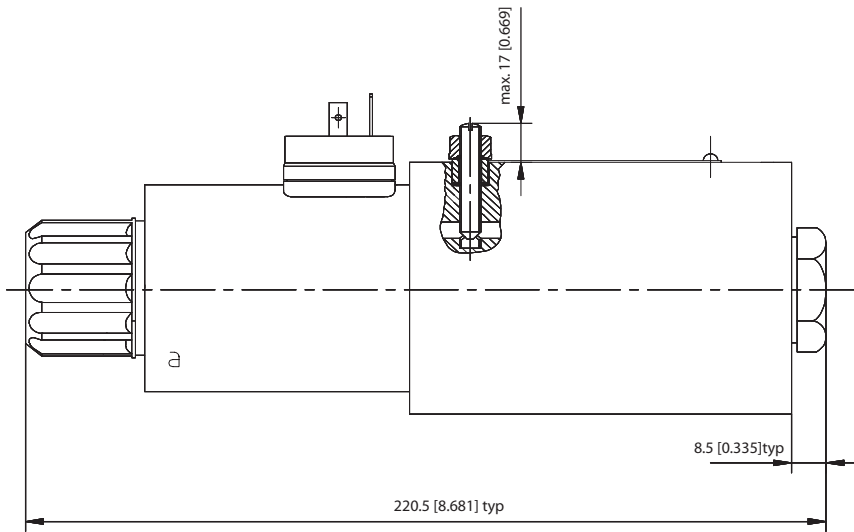
P104 455E

Directional control valves
 DCV05

DIMENSIONS
 (continued)

Valve with one solenoid - side a

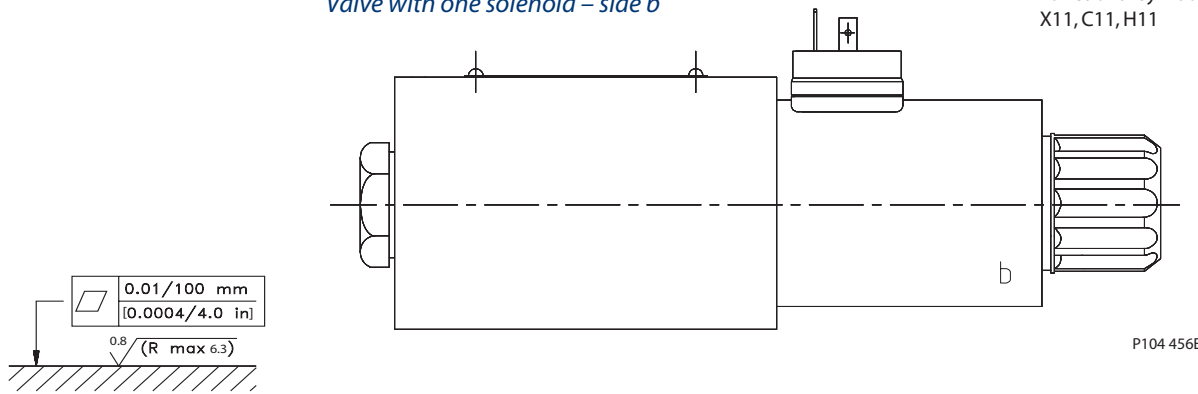
Dimensions: mm [in]



Functional symbols
 R11, R21, A51, P51, Y51,
 C51, Z51, H51, B51, M21,
 X25, J15, J75

Valve with one solenoid - side b

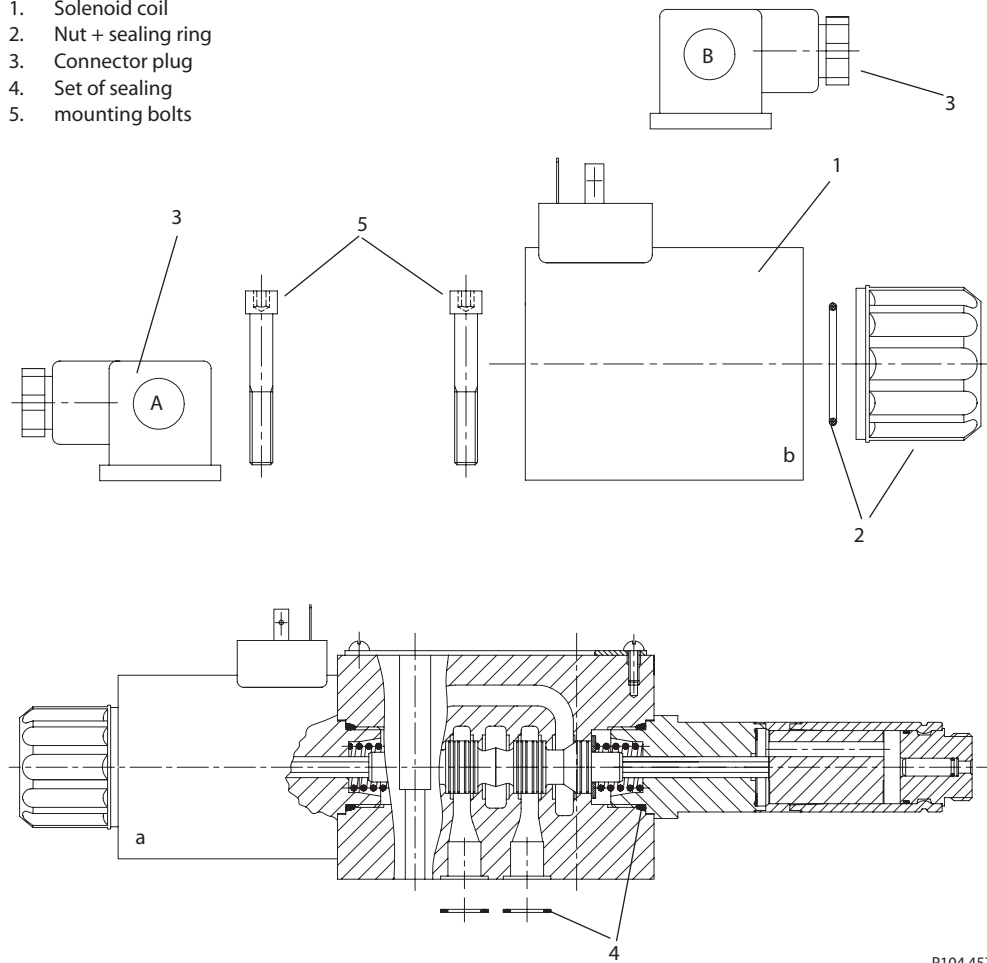
Functional symbols
 X11, C11, H11



Required surface finish of
 interface

REPLACEMENT PARTS

1. Solenoid coil
2. Nut + sealing ring
3. Connector plug
4. Set of sealing
5. mounting bolts



P104 457E

Solenoid

Voltage	E1 DIN	E2 DIN	E5 DIN	E8 Lead	E9 Lead	E10 Deutsch	E11 Deutsch	E12	E13
	43650	43650 w/Diode	w/Rectifier	Wires	Wires w/ Diode	on Leads	on Leads w/Diode	Deutsch	Deutsch w/Diode
	Ordering Number								
01200	158-8019	***	***	***	***	158-8102	158-8099	11041824	158-8105
02400	158-8021	***	***	***	***	***	***	158-8100	***
11550	***	***	158-8027	Not Available					
23050	***	***	158-8020						

*** Consult Factory

**REPLACEMENT PARTS
 (continued)**

Solenoid nut

Manual override Code	Type of nut	Ordering number
No Code	Standard nut	158-8068
N1	Nut with rubber cap	Consult factory

Connector (DIN 43650)

Code	Model	Connector plug A gray	Connector plug B black
		Ordering number	
K1	No rectifier or LED	158-8076	158-8075
K2	With LED	Consult factory	Consult factory

Seal kit

Type	Ordering number
Buna-N	158-8023
Viton	158-8094

Mounting bolts – set

Type	Ordering number
M6 x 40 bolts	158-8024
1/4-20 bolts	158-8095

Directional control valves
DCV05

CONTENTS

CPF20..... 18.2
 CP600-5..... 18.3
 CP602-5..... 18.4
 120662 handle kit..... 18.5
 MP06 18.6
 MP12 18.6
 X05-FD10 Traction manifold..... 18.9
 X05-FD16 Traction manifold..... 18.10
 X05-FD104 Traction manifold 18.11
 DIN connectors 18.13
 Pilot pistons..... 18.14
 Cavity plugs (CP cavities)..... 18.17
 Cavity plugs (NCS cavities)..... 18.18
 Seal kits (NCS cavities) 18.19
 Orifice plugs 18.20
 Screened orifice plug..... 18.22



Accessories
 Quick reference

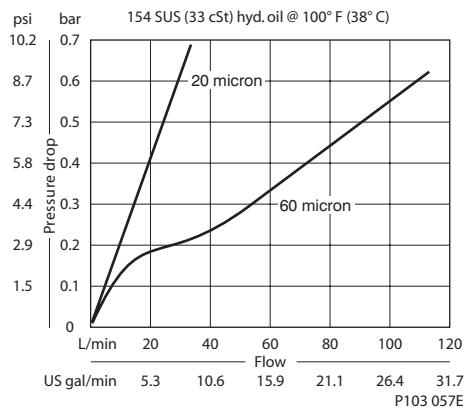
OPERATION

This cartridge assembly is a high pressure screen.

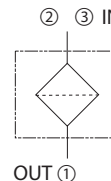
Not recommended as a substitute for hydraulic system filters.

SPECIFICATIONS

Performance graph



Schematic



P103 059

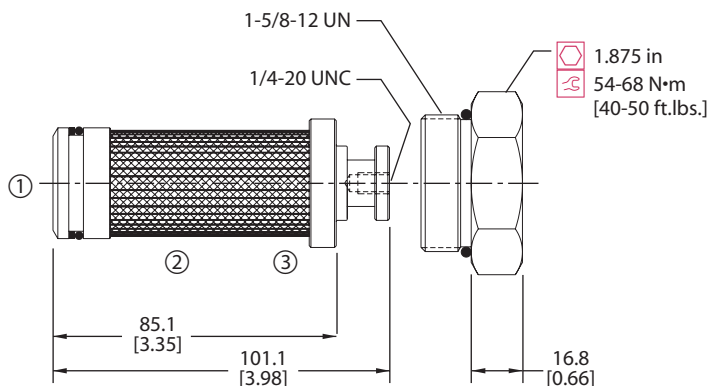
Specifications

Pressure rating	207 bar [3000 psi]
Nominal flow: 20 micron	38 L/min [10 gpm]
Nominal flow: 60 micron	114 L/min [30 gpm]
Weight	0.47 kg [1.04 lbs]
Cavity	SDC20-3

DIMENSIONS

mm [in]

Cross section



P103 058

ORDERING INFORMATION

CPF20 - 3 - B - 20S - P - 020

Seals
 B = Buna-N
 V = Viton

Seal kit
 120608
 120609

Housing and ports
 0 = No Housing
 6B=AL, 3/4 BSP
 8B=AL, 1 BSP
 12S=AL, #12 SAE
 16S=AL, #16 SAE
 Other housings available

Housing P/N
 No Housing
 CP20-3-6B
 CP20-3-8B
 CP20-3-12S
 CP20-3-16S

Filter mesh
 020 = 20 micron
 060 = 60 micron

Plug option
 P = Filter w/ #20 SAE hex plug
 Omit = Filter only

P103 060E

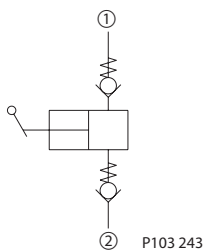
Accessories
 CPF20 Cavity screen

OPERATION

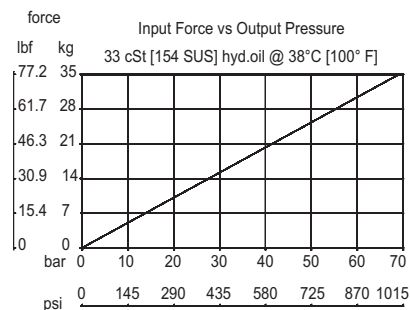
This is a manually operated uni-directional pump.

SPECIFICATIONS

Schematic



Specifications

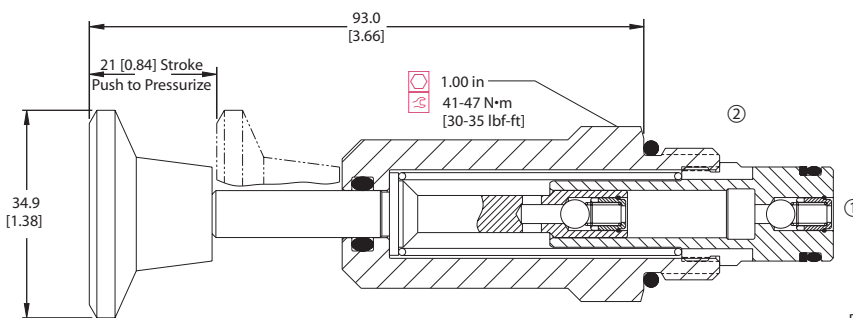


Specifications

Pressure rating	207 bar [3000 psi]
Displacement	1.2 cu. cm [0.07 cu. in.]/stroke
Leakage	6 drops/min @ rated pressure
Weight	0.24 kg [0.52 lbs]
Cavity	SDC 10-2
Pump force	34N [7.7lbs]

DIMENSIONS

mm [in]



ORDERING INFORMATION

CP600-5-B-6S			
Seals		Housing & Ports	Housing P/N
B = Buna-N	Seal kit 120015	0 = Cartridge only	No Housing
V = Viton	120016	6S = AL, #6 SAE	CP10-2-6S
		8S = AL, #8 SAE	CP10-2-8S
		DG3B = AL, 3/8 BSPP	SDC10-2-DG-3B
		DG4B = AL, 1/2 BSPP	SDC10-2-DG-4B
		Other housings available	

P103 132E

Accessories
 CP600-5 pump

OPERATION

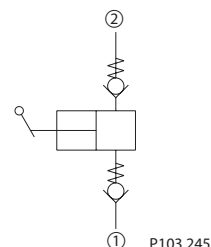
Manually operated pump.

SPECIFICATIONS

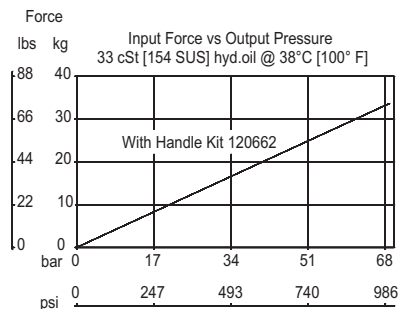
Specifications

Pressure rating	207 bar [3000 psi]
Displacement	9.2 cm ³ [0.56 in ³] / stroke
Leakage	6 drops/ minute @ rated pressure
Cavity	SDC16-2

Schematic



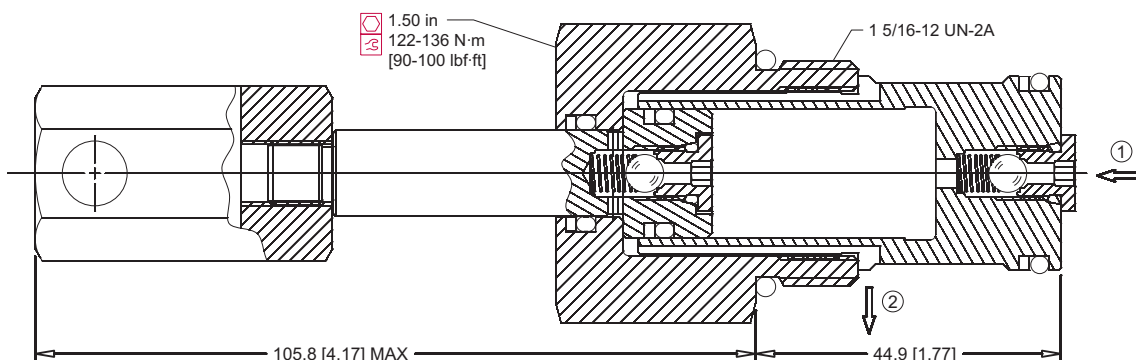
Performance graph



DIMENSIONS

mm [in]

Cross section



ORDERING INFORMATION

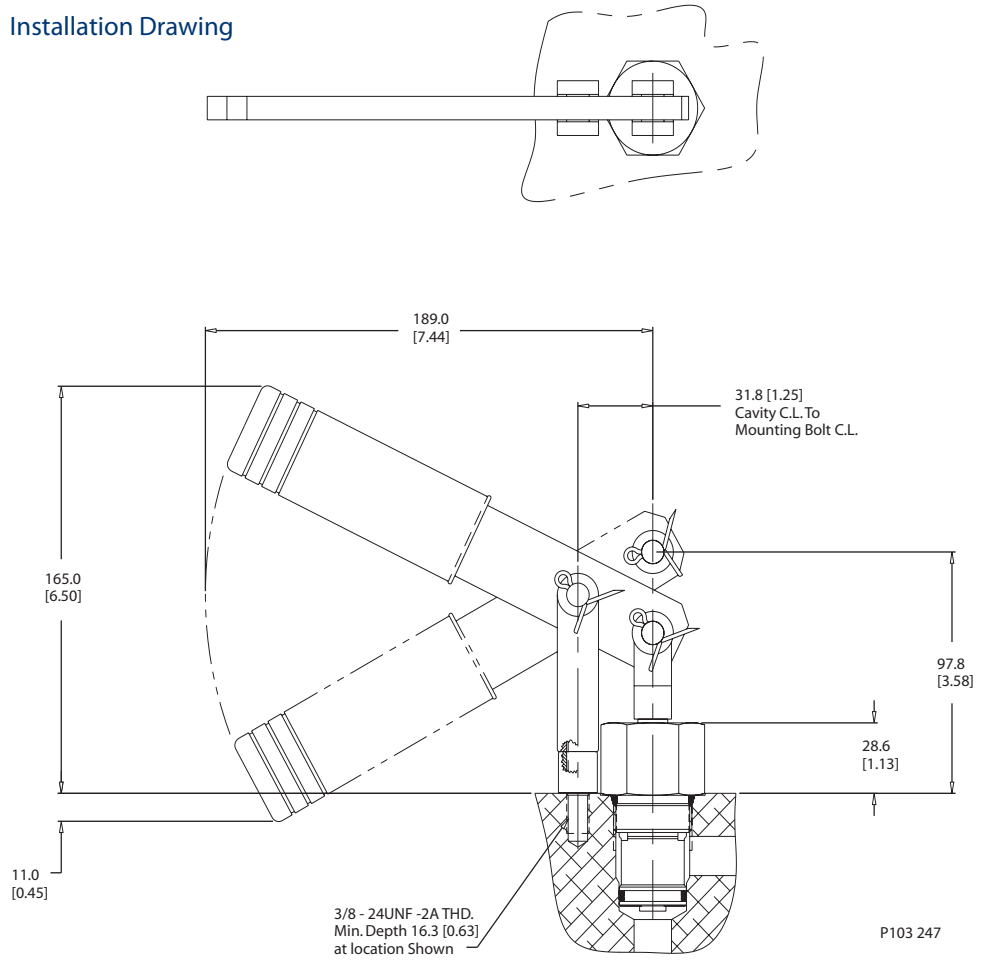
CP602-5-B-12S		
Seals	Seal kit	Housing and Ports
B = Buna-N	120019	0 = No Housing
V = Viton	120030	6S = #6 SAE
		8S = #8 SAE
		12S = AL#12 SAE
		16S = AL#16 SAE
		6B = AL 3/4 BSPP
		8B = AL 1 BSPP
		Other housings available
Handle kit is required - sold separately PN - 120662		Housing P/N No Housing 11083731 11083691 CP16-2-12S CP16-2-16S CP16-2-6B CP16-2-8B

P103 133E

Accessories
 CP602-5 hand pump

DIMENSIONS

Installation Drawing



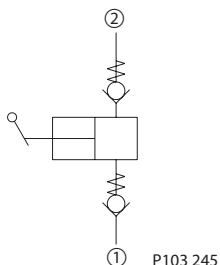
Accessories
 120662 handle kit

**ORDERING
 INFORMATION**

To order, request part number 120662—handle kit

SPECIFICATIONS

Schematic



Specifications

Size		06	12
Displacement Per Stroke	cm ³	0.94	5
	[in ³]	[0.057]	[0.305]
Max. pressure	bar	315	315
	[psi]	[4569]	[4569]
NCS Cavity		06/2	12/2
Max tightening torque	Nm	40	80
	[lbf·in]	[354]	[708]
Weight	cartridge	kg	
	[lb]	0.254	
		[0.560]	
cartridge with handle	kg	0.550	
	[lb]	[1.213]	
with housing	kg	0.854	
	[lb]	[1.883]	

Description

These small displacement hand pumps are used typically for piloting the operation of small hydraulic cylinders or valves. These pumps can be mounted inline using the standard housing or in special blocks. For smooth operation, inlet lines should not be excessively long, and the vertical distance between pump and tank level no more than 300 mm.

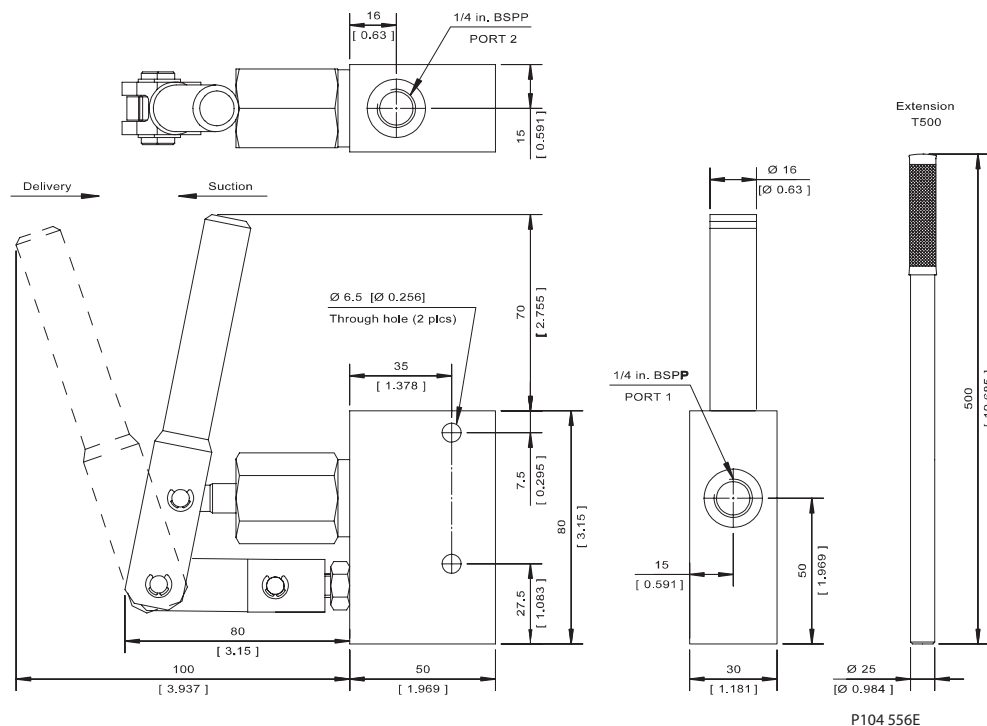
These pumps can work in outdoor applications if the ambient air is not contaminated by powder and dust.

Accessories
 MP06 and MP 12 hand pump

DIMENSIONS

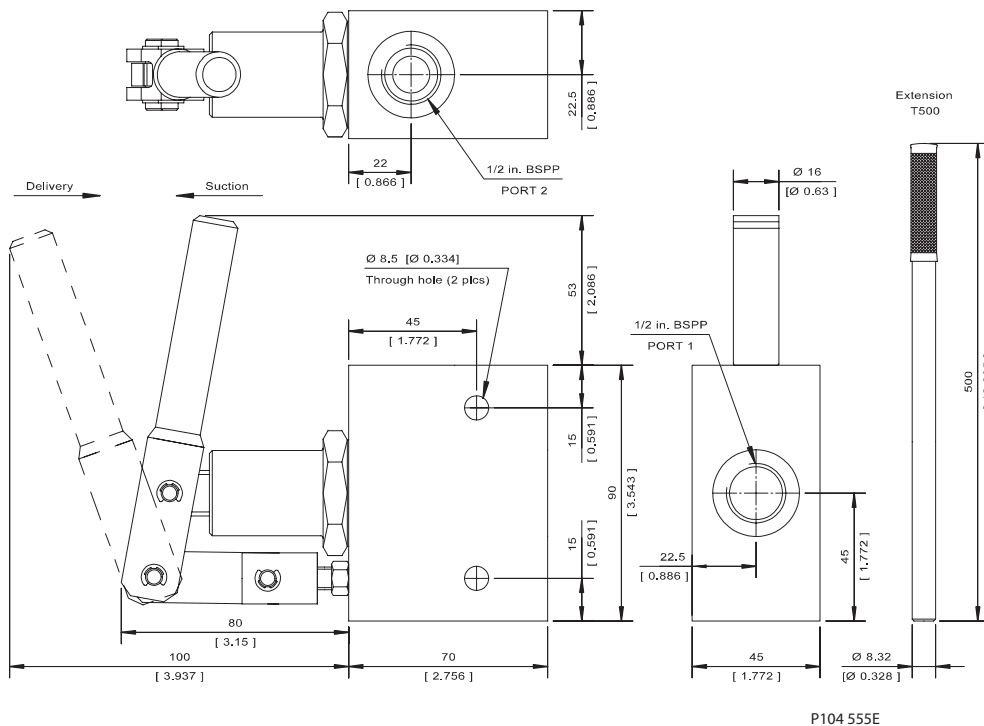
mm [in]

MP06 detail drawing



DIMENSIONS
 (continued)
 mm [in]

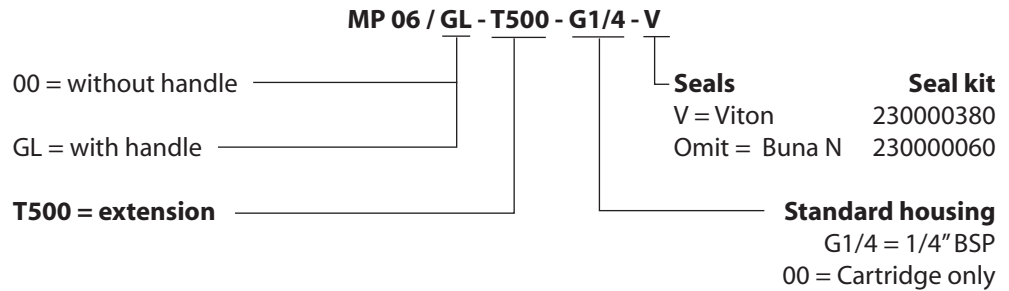
MP12 detail drawing



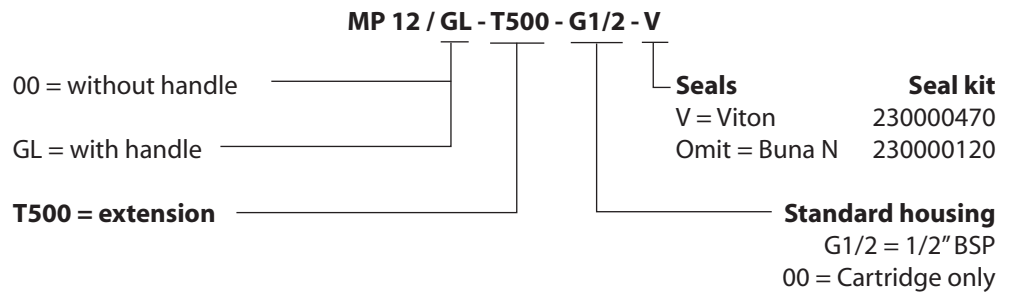
Accessories
 MP 06 and MP 12 hand pump

**ORDERING
 INFORMATION**

Example of designation MP 06



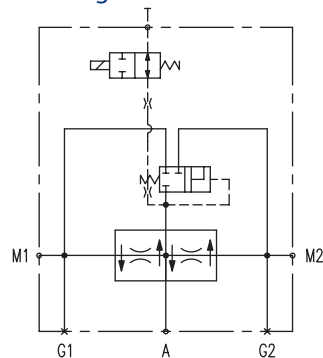
Example of designation MP 12



OPERATION

This valve provides electrically actuated traction control for hydrostatic systems with one pump and two motors in parallel. In normal operation, fluid passes freely through the valve. When the solenoid is energized, fluid is forced through the flow divider/combiner, preventing wheel spin or motor over speed.

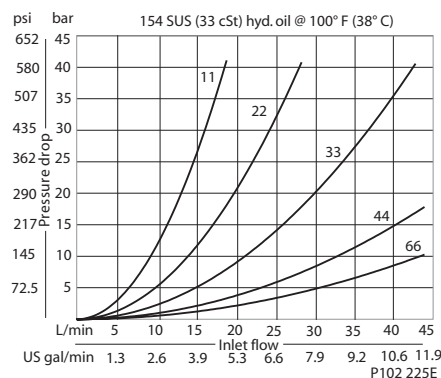
Schematic diagram



P104 584

PERFORMANCE

Performance curve

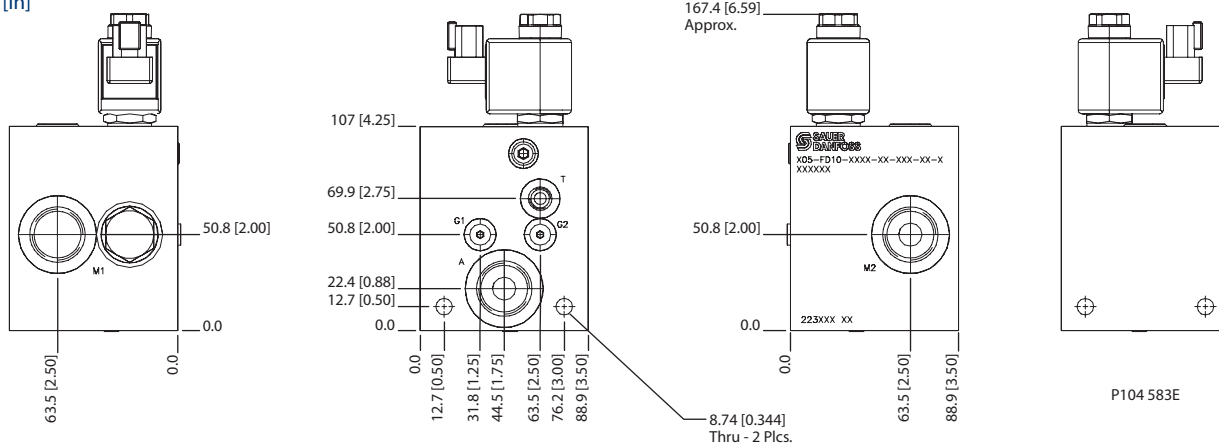


Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	2.79 kg [6.15 lb]

DIMENSIONS

mm [in]



P104 583E

ORDERING INFORMATION

X05-FD10-12S-66-12-DE-B

PORT SIZES & MATERIAL
6061 T6 ALUMINUM
8S = M1, M2 & A - #8 SAE
C1 & G2 - #2 SAE
T - #4 SAE
12S = M1, M2 & A - #12 SAE
C1 & G2 - #2 SAE
T - #4 SAE
4B = M1, M2 & A - 1/2 BSP
G1 & G2 - 1/8 BSP
T - 1/4 BSP
6B = M1, M2 & A - 3/4 BSP
C1 & G2 - 1/8 BSP
T - 1/4 BSP

SEALS
B = BUNA-N
V = VITON

TERMINATION

VOLTAGE
SEE CATALOG FOR SV08-22-01

FLOW DIVISION
SEE CATALOG FOR CP340-1

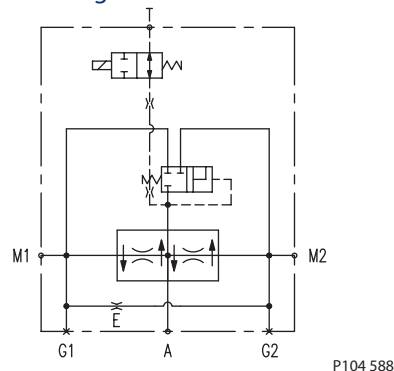
P104 585

Accessories
X05-FD10

OPERATION

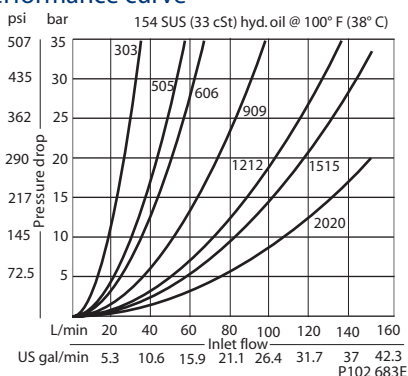
This valve provides electrically actuated traction control for hydrostatic systems with one pump and two motors in parallel. In normal operation, fluid passes freely through the valve. When the solenoid is energized, fluid is forced through the flow divider/combiner, preventing wheel spin or motor over speed.

Schematic diagram



PERFORMANCE

Performance curve

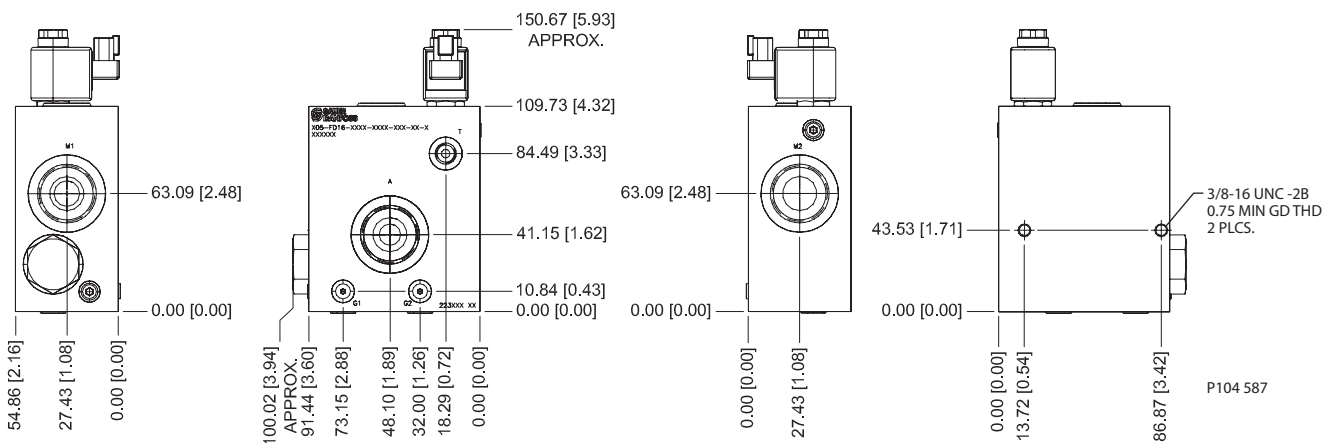


Specifications

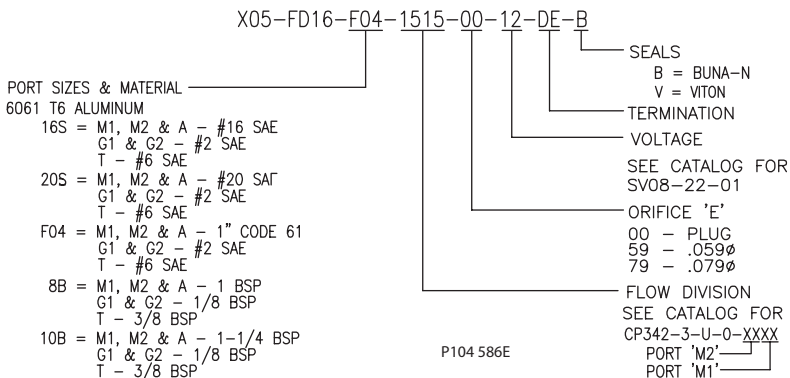
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	150 l/min [40 US gal/min]
Weight	4.48 kg [9.88 lb]

DIMENSIONS

mm [in]



ORDERING INFORMATION



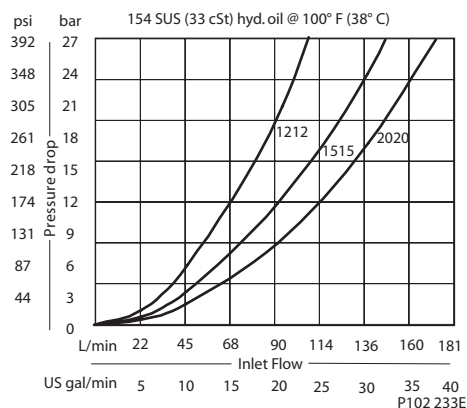
Accessories
X05-FD16

OPERATION

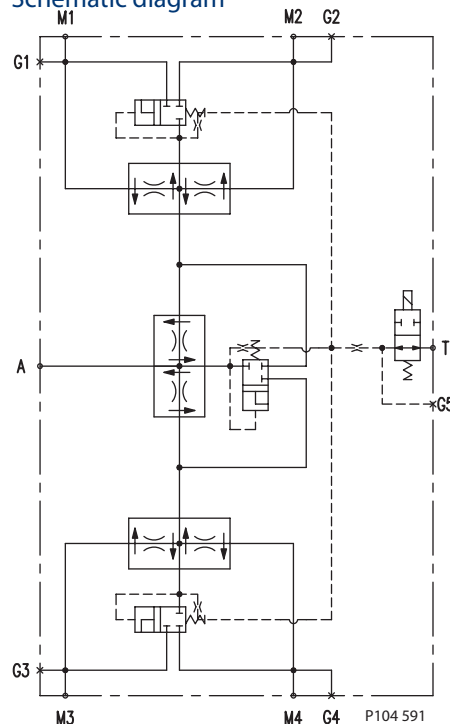
This valve provides electrically actuated traction control for hydrostatic systems with one pump and four motors in parallel. In normal operation, fluid passes freely through the valve. When the solenoid is energized, fluid is forced through the flow divider/combiners. The result is equal flow to all four motors, preventing wheel spin or motor over speed.

PERFORMANCE

Performance curve



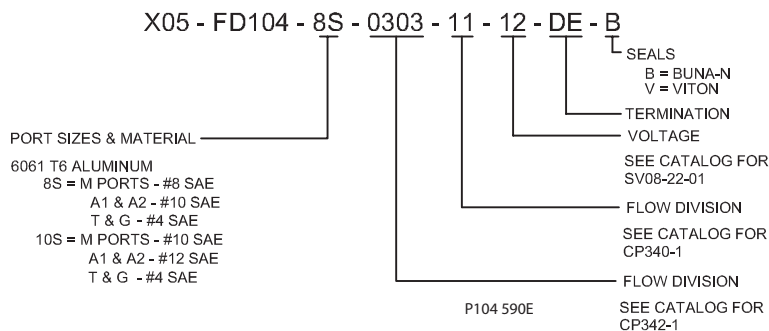
Schematic diagram



Specifications

Rated pressure	230 bar [3300 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	8.74 kg [19.74 lb]

ORDERING INFORMATION



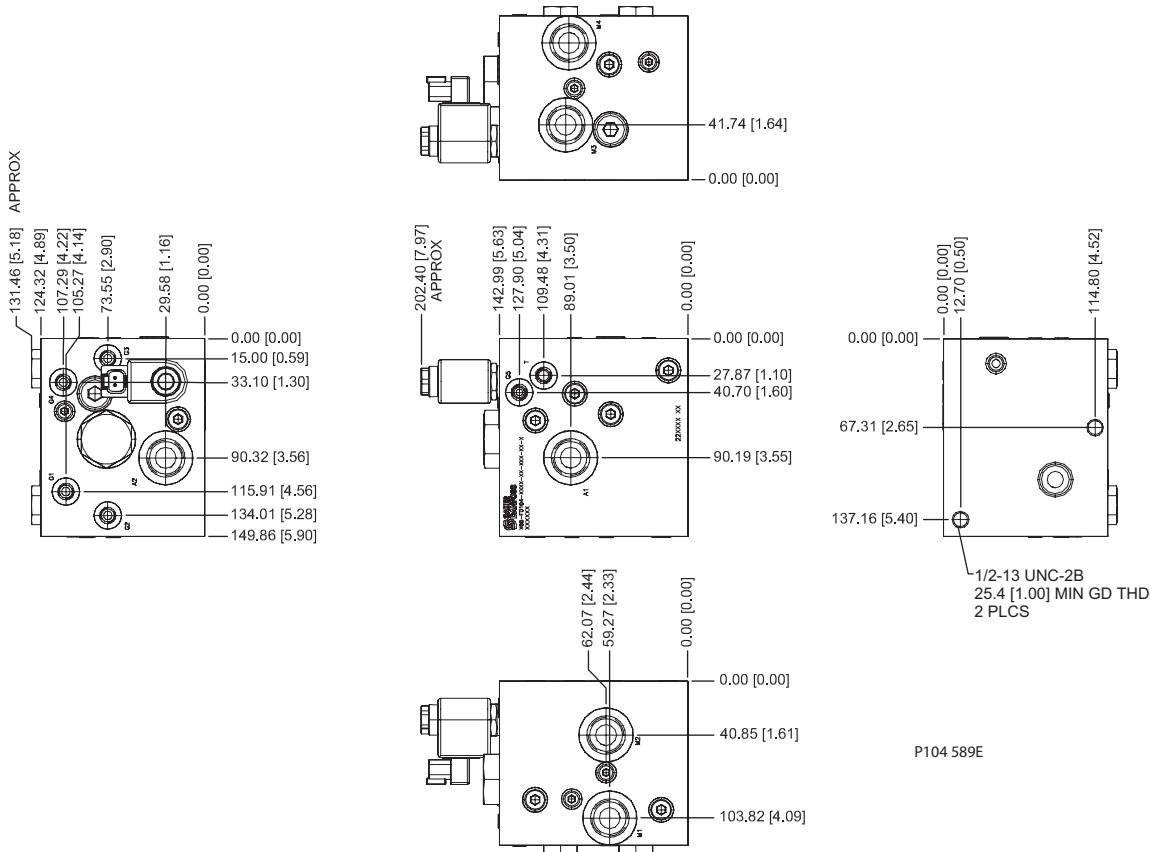
DIMENSIONS

See next page.

Accessories
 X05-FD104

DIMENSIONS

mm [in]



STANDARD CONNECTORS TO DIN 43650

	<p>TYPE A CONNECTOR</p>			<p>Standard connector for use with DC input. Type A Order no. 088010080</p>
	<p>TYPE C CONNECTOR</p>			<p>Full wave bridge rectifier with 4 diodes and VDR protecting the a.c. side against overvoltage from electrical power supply. Type C Order no. 088010060</p>
	<p>TYPE E CONNECTOR</p>			<p>With diode blocking overvoltage on opening. Type E Order no. 088010410</p>
	<p>TYPE K CONNECTOR</p>		<p>Standard connector to Kostal pattern, for use with DC input. Type K Order no. 088010350</p>	

REMARK

For details of use, see technical data relevant to the individual solenoid valves. All connector are supplied unassembled. Connectors with indicator lights are available on request (Consult factory).

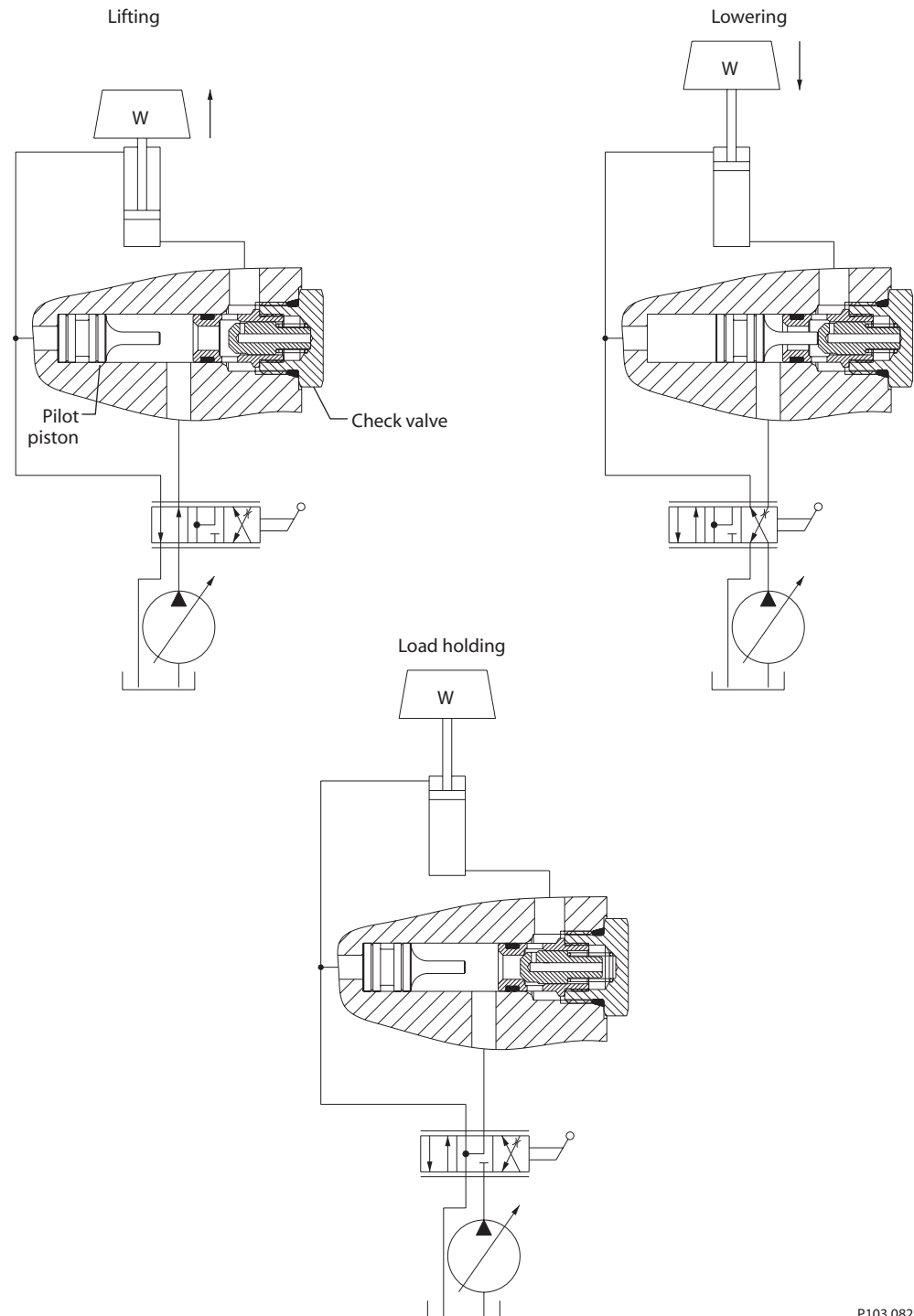
P104 557E

OPERATION

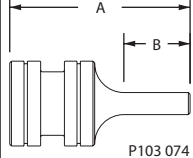
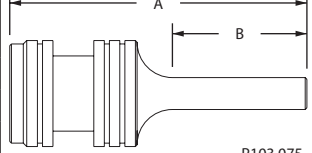
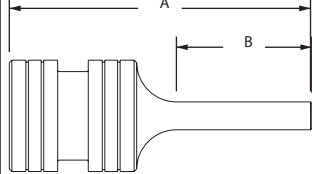
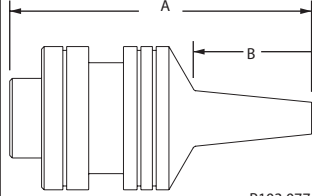
Pilot pistons used with check valve cartridges are an economical way to create pilot-operated check valve functions in custom Hydraulic Integrated Circuits (HIC).

EXAMPLE

Application of pilot pistons

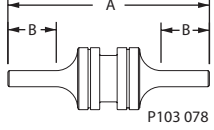
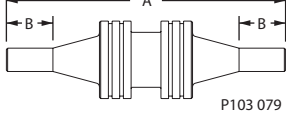
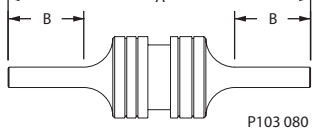
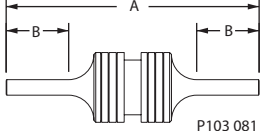


Single-acting pilot pistons

Series	Compatible valves	Pilot ratio	Seals (optional)	Pilot piston order code	A mm [in]	B mm [in]	Bore diameter* mm [in]	
8	CV08-NP	4:1	1) 720092 O-rings 2) 720500 back-up rings	621460	26.97 [1.062]	14.27 [0.562]	Ø 12.70 ± 0.03 [0.501 ± 0.001]	 P103 074
10	CV10-NP	4:1	1) 720178 O-ring 2) 720412 back-up rings	621175	44.45 [1.750]	25.40 [1.000]	Ø 15.90 ± 0.03 [0.626 ± 0.001]	 P103 075
	CP100-3	2.5:1		621176	47.63 [1.875]	28.58 [1.125]		
		621535		38.10 [1.500]	19.05 [0.750]			
12	CP101-1	4:1	1) 720031 O-ring 2) 720385 back-up rings	621538	60.33 [2.375]	34.93 [1.375]	Ø 22.25 ± 0.03 [0.876 ± 0.001]	 P103 076
16	CP102-1	4:1	1) 720033 O-ring 2) 720375 back-up rings	620600	60.20 [2.370]	23.55 [0.927]	Ø 28.63 ± 0.03 [1.127 ± 0.001]	 P103 077

Consult factory for bore details.

Double-acting pilot pistons

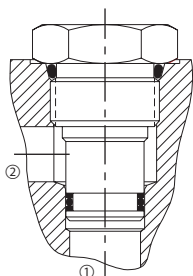
Series	Compatible valves	Pilot ratio	Seals (optional)	Pilot piston order code	A mm [in]	B mm [in]	Bore diameter* mm [in]	
8	CV08-NP	4:1	1) 720092 O-rings 2) 720500 back-up rings	621457	41.28 [1.625]	14.27 [0.562]	Ø 12.70 ± 0.03 [0.501 ± 0.001]	
				621553	52.37 [2.062]	19.84 [0.781]		
				625138	38.10 [1.500]	12.70 [0.500]		
				625298	49.53 [1.950]	18.42 [0.725]		
10	CV10-NP	4:1	1) 720178 O-ring 2) 720412 back-up rings	621058	60.50 [2.382]	20.73 [0.816]	Ø 15.90 ± 0.03 [0.626 ± 0.001]	
				621400	57.15 [2.250]	19.05 [0.750]		
	CP100-3	2.5:1		621692	69.85 [2.750]	25.40 [1.000]		
	625104			66.04 [2.600]	23.50 [0.925]			
12	CP101-1	4:1	1) 720031 O-ring 2) 720385 back-up rings	621539	82.55 [3.250]	28.58 [1.125]	Ø 22.25 ± 0.03 [0.876 ± 0.001]	
16	CP102-1	4:1	1) 720033 O-ring 2) 720375 back-up rings	621540	XXX	XXX	Ø 28.63 ± 0.03 [1.127 ± 0.001]	

Consult factory for bore details.

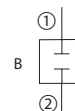
FUNCTION

Cavity plugs are used to block flow into and out of set ports or to block flow between given ports.

2 WAY PLUG



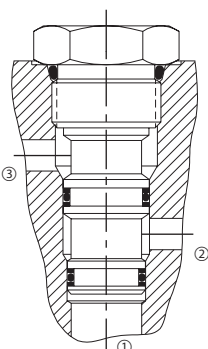
Plug options



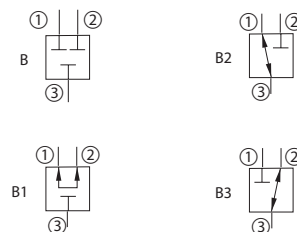
P103 061

P103 065

3 WAY PLUG



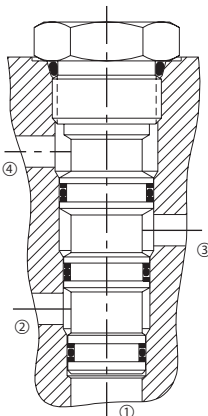
Plug options



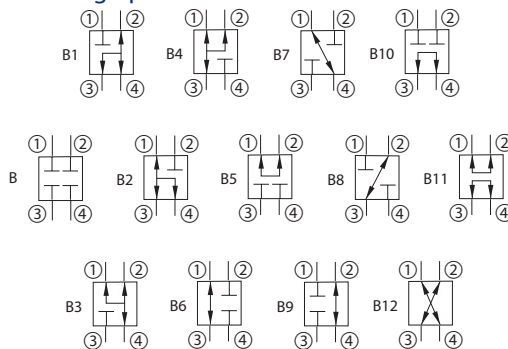
P103 062

P103 066

4 WAY PLUG



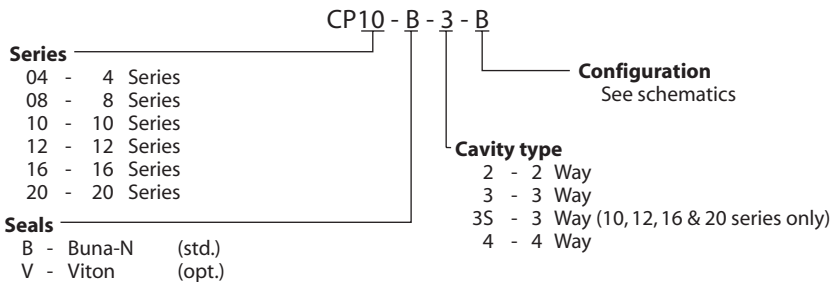
Plug options



P103 063

P103 067

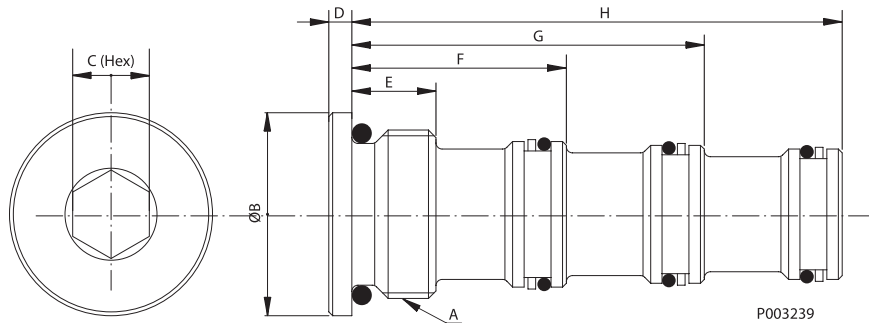
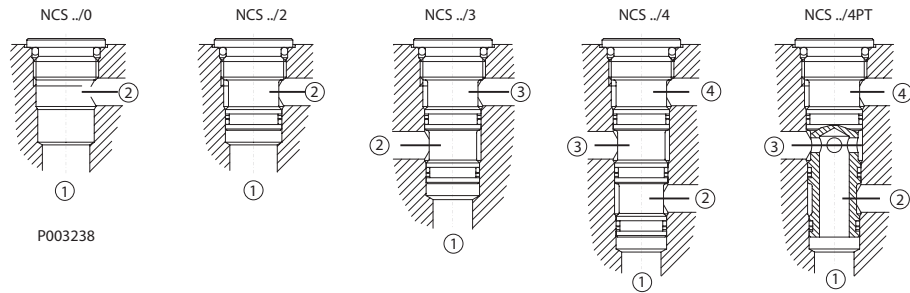
ORDERING INFORMATION



P103 064

Accessories
Cavity plugs

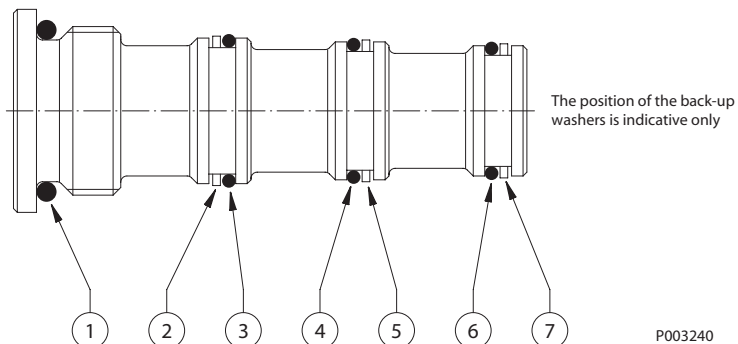
PLUGS FOR NCS CAVITIES



Dimensions

Type	Dimensions-mm								Order number for plug complete	Weight of plug complete-kg [lbs.]
	A	B	C	D	E	F	G	H		
NCS 04/0	M18x1.5	22 [0.87]	8	3 [0.12]	10.5 [0.41]	—	—	—	92.00.010.1	0.018 [0.04]
NCS 04/2	M18x1.5	22 [0.87]	8	3 [0.12]	—	24.5 [0.96]	—	—	92.00.009.1	0.035 [0.08]
NCS 04/3	M18x1.5	22 [0.87]	8	3 [0.12]	—	—	39.5 [1.56]	—	92.00.008.1	0.057 [0.13]
NCS 04/4	M18x1.5	22 [0.87]	8	3 [0.12]	—	—	—	54.5 [2.15]	92.00.007.1	0.070 [0.15]
NCS 04/4PT	M18x1.5	22 [0.87]	8	3 [0.12]	—	—	—	54.5 [2.15]	92.00.021.1	0.060 [0.13]
NCS 06/0	M22x1.5	26 [1.02]	10	3 [0.12]	11 [0.43]	—	—	—	92.00.006.1	0.032 [0.07]
NCS 06/2	M22x1.5	26 [1.02]	10	3 [0.12]	—	28 [1.10]	—	—	92.00.004.1	0.060 [0.13]
NCS 06/3	M22x1.5	26 [1.02]	10	3 [0.12]	—	—	46 [1.81]	—	92.00.014.1	0.098 [0.22]
NCS 06/4	M22x1.5	26 [1.02]	10	3 [0.12]	—	—	—	64 [2.52]	92.00.013.1	0.120 [0.26]
NCS 06/4PT	M22x1.5	26 [1.02]	10	3 [0.12]	—	—	—	64 [2.52]	92.00.020.1	0.100 [0.22]
NCS 12/0	M33x2	38 [1.50]	12	3 [0.12]	15 [0.59]	—	—	—	92.00.018.1	0.117 [0.26]
NCS 12/2	M33x2	38 [1.50]	12	3 [0.12]	—	38 [1.50]	—	—	92.00.017.1	0.200 [0.44]
NCS 12/3	M33x2	38 [1.50]	12	3 [0.12]	—	—	63 [2.48]	—	92.00.016.1	0.280 [0.62]
NCS 12/4	M33x2	38 [1.50]	12	3 [0.12]	—	—	—	88 [3.46]	92.00.015.1	0.370 [0.81]
NCS 12/4PT	M33x2	38 [1.50]	12	3 [0.12]	—	—	—	88 [3.46]	92.00.022.1	0.310 [0.68]

NCS



P003240

Type	Seals back-up washers (composition)	Spares: Set of O-rings and back-up washers (pack of 10 sets minimum)	
		Standard seals	Viton seals
NCS 04/0	1	230030070	230370070
NCS 04/2	1 2 3	230000190	230000390
NCS 04/3	1 2 3 4 5	230000160	230000450
NCS 04/4	1 2 3 4 5 6 7	230000250	230000460
NCS 06/0	1	230080210	230390210
NCS 06/2	1 2 3	230000060	230000380
NCS 06/3	1 2 3 4 5	230000070	230000110
NCS 06/4	1 2 3 4 5 6 7	230000080	230000350
NCS 12/0	1	230030110	230370110
NCS 12/2	1 2 3	230000120	230000470
NCS 12/3	1 2 3 4 5	230000130	230000360
NCS 12/4	1 2 3 4 5 6 7	230000100	230000480

Accessories
Seal Kits

OPERATION

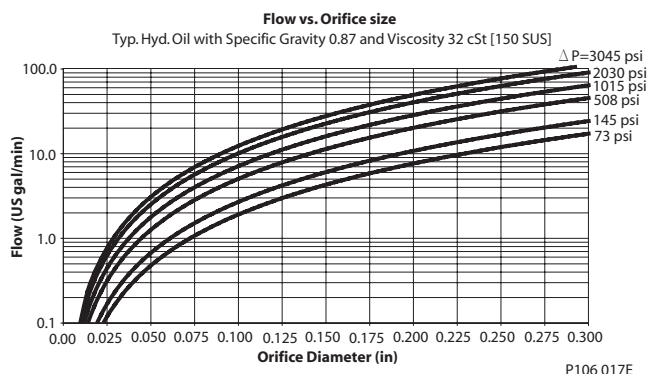
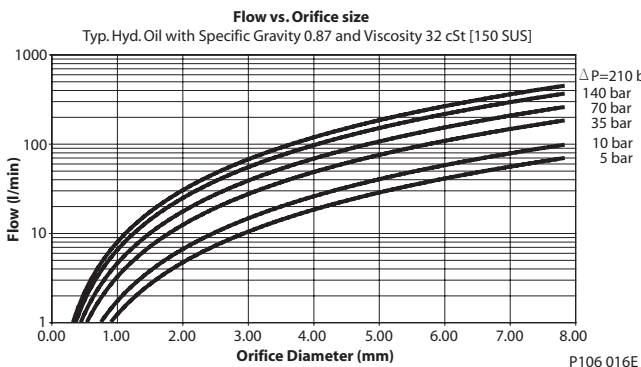
Install in manifold to restrict fluid flow.

Schematic



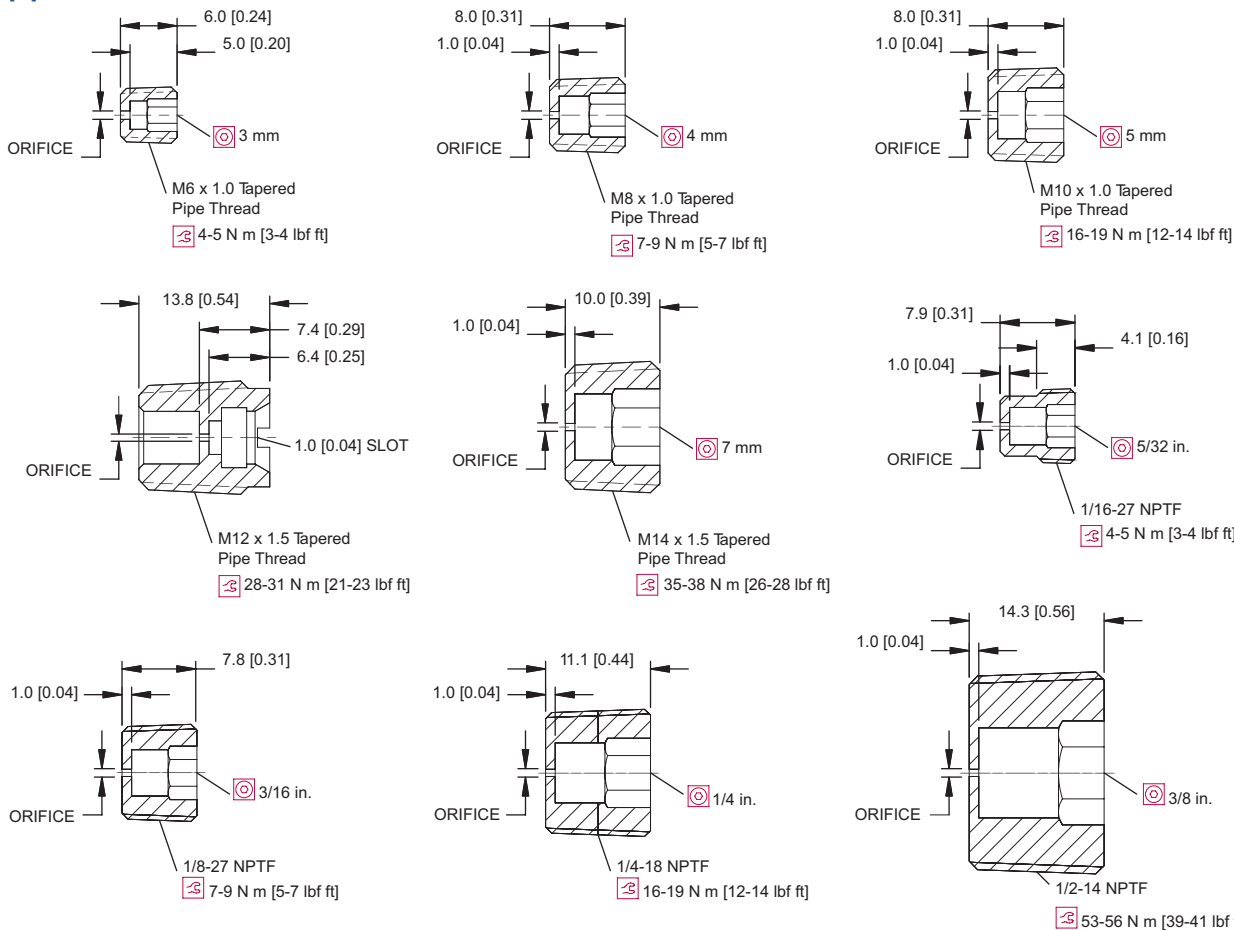
P106 014

SPECIFICATIONS



DIMENSIONS

mm [in]



P106 015E

**ORDERING
 INFORMATION**

Orifice Diameter		Orifice Plug Part Number								
		Plug Thread Size								
mm	[in]	1/16-27 NPTF	1/8-27 NPTF	1/4-18 NPTF	1/2-14 NPTF	M6 x 1.0 Tapered Pipe Thread	M8 x 1.0 Tapered Pipe Thread	M10 x 1.0 Tapered Pipe Thread	M12 x 1.5 Tapered Pipe Thread	M14 x 1.5 Tapered Pipe Thread
None	None			320151	320153	624910	321561	321562	626059	321660
0.33	0.013	11008337				625958				
0.38	0.015	620510				625414				
0.43	0.017								626062	
0.46	0.018									
0.51	0.020	621510	11015116			624898	625190			
0.61	0.024	622417				624904		624478		
0.64	0.025	620634				624862	624838			
0.71	0.028	622846				62486				
0.76	0.030	620296	620299							
0.79	0.031					624855	624857	624308	626133	625266
0.81	0.032	624410								
0.89	0.035	622447				624903	625346	625424		
0.91	0.036	620777				626022				
0.97	0.038	621608								
0.99	0.039					624856	624821			
1.02	0.040	620511								
1.07	0.042	621702				626075				
1.14	0.045	621210								
1.19	0.047	620814	620591			625929	624892	624427		
1.32	0.052	620573				624911	626100			
1.40	0.055	620572								
1.50	0.059					624846	624822	624152		
1.52	0.060	620297								
1.57	0.062	621496								
1.60	0.063					625197	624902	625252		
1.70	0.067					624844				
1.78	0.070	621554				625871	626041			
1.98	0.078	622117								
2.01	0.079					626135	624681	624153		
2.03	0.080									
2.06	0.081									
2.13	0.084									
2.18	0.086	621246								
2.21	0.087						625067			
2.26	0.089									
2.29	0.090					625002				
2.39	0.094		622721			625542		626138		
2.44	0.096	621051		626010						
2.46	0.097						626185			
2.49	0.098									
2.59	0.102						625630			
2.64	0.104									
2.67	0.105			621665						
2.74	0.108							625049		
2.79	0.110						625492			
2.82	0.111									
2.95	0.116	620575								
3.00	0.118							624480		
3.05	0.120									
3.10	0.122									
3.18	0.125		622722				626058	626151		
3.28	0.129									
3.30	0.130									
3.35	0.132						625543			
3.45	0.136									
3.56	0.140		622114							
3.78	0.149	623712								
3.96	0.156									
4.06	0.160			621666						
4.22	0.166									
4.57	0.180		624362							
4.78	0.188				623224					
5.00	0.197									624501
5.16	0.203									
5.61	0.221									
5.84	0.230									625981
6.35	0.250									625068
7.92	0.312									

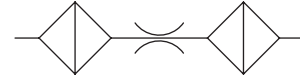
*Contact factory for additional orifice sizes.

P106 018E

OPERATION

Install in manifold to restrict fluid flow.

Schematic



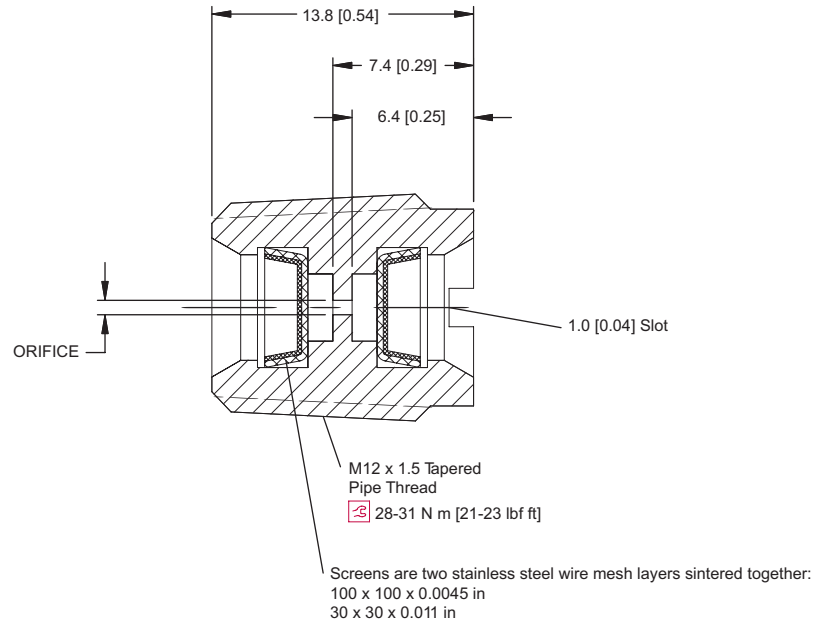
P106 021E

PERFORMANCE

Refer to Orifice plug sizing chart on page 18.28

DIMENSIONS

mm [in]



P106 019E

ORDERING INFORMATION

Orifice Diameter		Orifice Plug Part Number
mm	[in]	
0.38	0.015	923231
0.43	0.017	923038
0.46	0.018	923239
0.51	0.020	923061
0.64	0.025	923053
1.19	0.047	11070992
1.91	0.075	923186
3.56	0.140	923112

P106 020E

AVAILABLE CAVITIES

Cavity	Page
SDC08-2	19.3
SDC08-3	19.4
SDC08-4	19.5
SDC10-2	19.6
SDC10-3	19.7
SDC10-3S	19.8
SDC10-4	19.9
SDC12-2	19.10
SDC12-3	19.11
SDC16-2	19.12
SDC16-3	19.13
SDC16-3S	19.14
SDC20-2	19.15
SDC20-3	19.16
SDC20-4	19.17
CP04-2	19.18
CP04-3	19.19
CP08-3L	19.20
CP12-2	19.21
CP12-3	19.22
CP12-3M	19.23
CP12-3S	19.24
CP12-4	19.25
CP16-4	19.26
CP20-3S	19.27
NCS04/2	19.28
NCS04/3	19.29
NCS06/2	19.30
NCS06/3	19.31
NCS06/4	19.32
NCS12/2	19.33
NCS12/3	19.34
NCS12/4	19.35
VME06	19.36
VME07	19.37
VME08	19.38
FC-144	19.39
FC-304	19.40
FC-336	19.41
ISO D03	19.42
ISO D05	19.43

Cavities
 Quick reference

OVERVIEW

The following pages show details for Comatrol standard valve cavities. These cavities are designed around SAE standard O-ring thread ports. In many cases these cavities are interchangeable with cavities used by other manufacturers. The table below is intended as a guide for cartridge valve interchanges.

Cavity crossover table

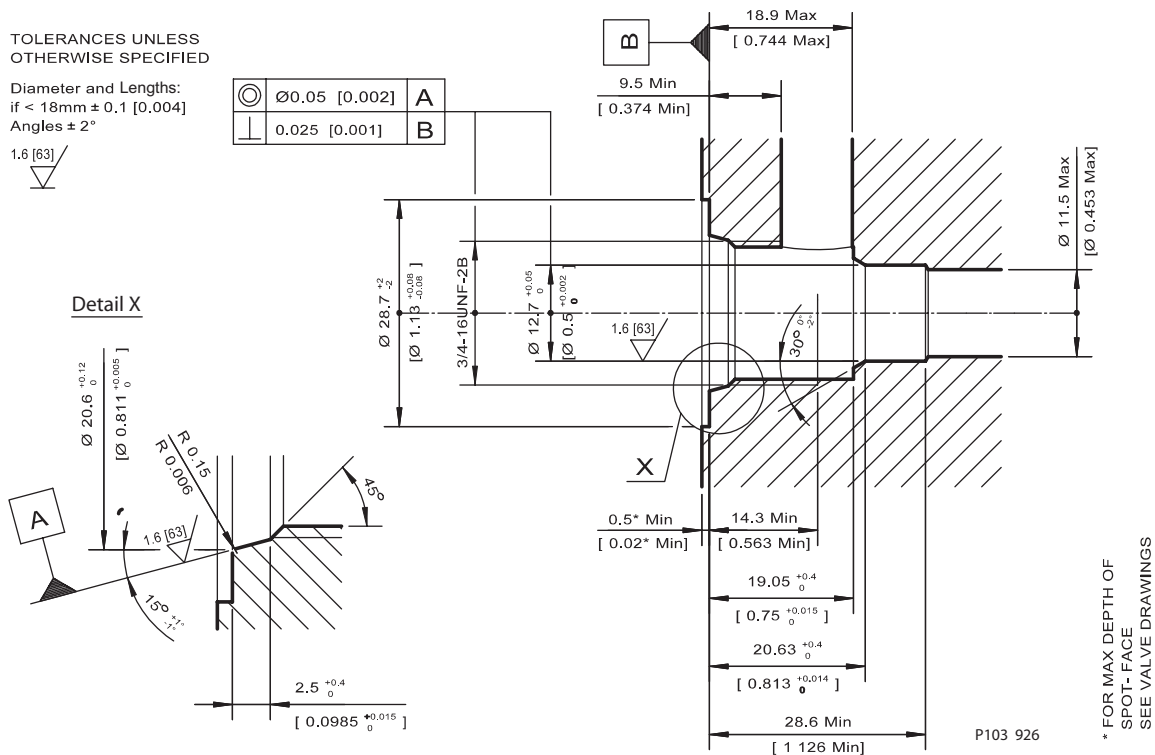
Comatrol	Thread	Delta Power	Eaton-Vickers	HydraForce	Parker	Sterling [Parker]	Command Controls [Bucher]
CP04-2	7/16-20			NO	NO		NO
CP04-3				NO	NO		NO
CP07-3	5/8-18	YES		YES	YES		
SDC08-2	3/4-16	YES	YES	YES	YES	YES	YES
SDC08-3+		YES	YES	YES	YES	YES	YES
CP08-3L							
SDC08-4		YES	YES	YES	YES	YES	YES
SDC10-2	7/8-14	YES	YES	YES	YES	YES	YES
SDC10-3		YES	YES	YES	YES	YES	YES
SDC10-3S			YES	YES	YES	YES	YES
SDC10-4		YES	YES	YES	YES	YES	YES
CP12-2		1 1/16-12	NO	NO	YES	NO	
SDC12-2	NO		NO	NO	NO		NO
CP12-3S	NO		NO	NO	NO		NO
CP12-3	NO		NO	YES	NO		NO
CP12-4	NO		NO	NO	NO		NO
SDC16-2	1 5/16-12			YES	YES	YES	YES
SDC16-3S			YES	YES	YES	YES	YES
SDC16-3			YES	YES	YES	YES	YES
SDC16-4			YES	YES	YES	YES	YES
SDC20-2			YES			YES	
CP20-3S	1 5/8-12			NO			
SDC20-3			YES				
SDC20-4			YES				

Please note that most manufacturers have many non-standard cavities and that details are subject to change. Compare cavity details before interchanging cartridges.

The National Fluid Power Association (NFPA) and International Standards Organization (ISO) are developing a standard, NFPA T3.5.31M-19XX, that will define an industry-wide set of standard cavities. Comatrol will manufacture cartridge valves for NFPA cavities upon formal approval of the standard.

Dimensions

mm [in]



Form tools

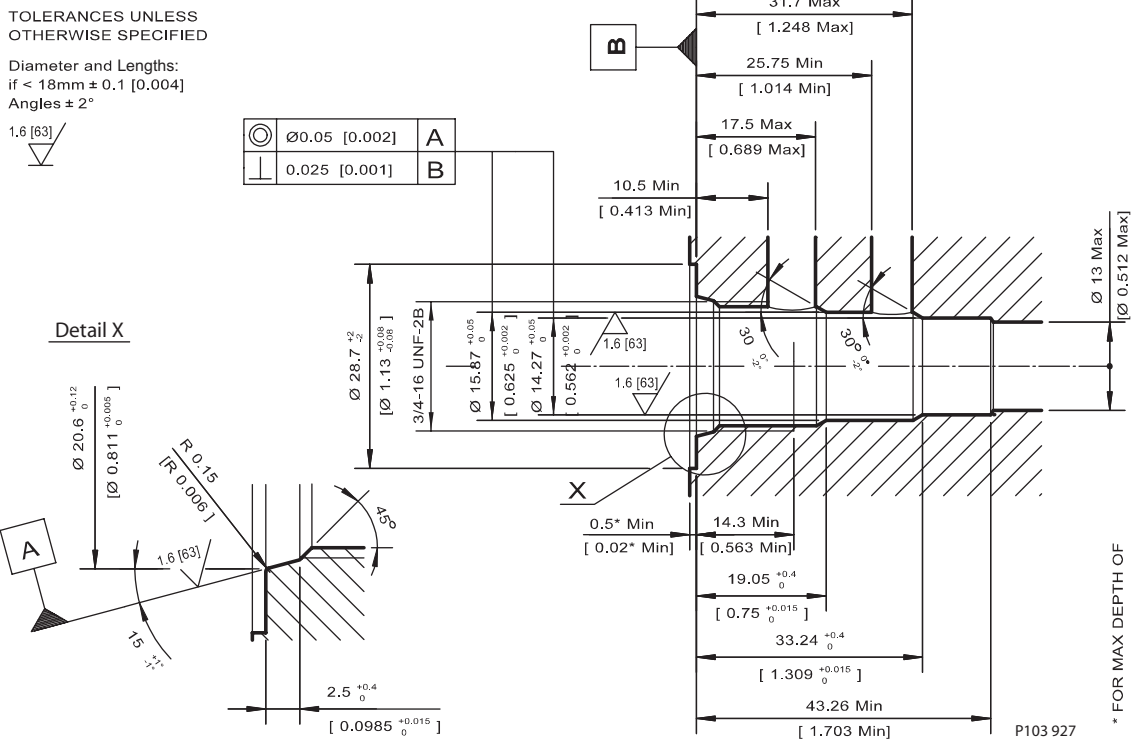
	Model code	Material number
Finishing tool	SDC-08-2-FT	11027180
Roughing tool	SDC-08-2-RT	11027181

Housings

Order Code	Description	Ports	Page
CP08-2-4S	Aluminum Housing	SAE #4	20.66
CP08-2-6S	Aluminum Housing	SAE #6	20.66
CP08-2-6S-2CR	Aluminum Housing - Crossover	SAE #6	20.65
CP08-2-8S-2CR	Aluminum Housing - Crossover	SAE #8	20.65
CP08-2-8S-2PL	Aluminum Housing - Parallel	SAE #8	20.61
CP08-2-S4S	Steel Housing	SAE #4	20.66
SDC08-2-HG1-3B	Aluminum Housing, Two #2 Ports	3/8 BSP	20.62
SDC08-2-HG2-3B	Aluminum Housing, Two #1 Ports	3/8 BSP	20.63
SDC08-2-HG-2B	Aluminum Housing	1/4 BSP	20.64
SDC08-2-HG-3B	Aluminum Housing	3/8 BSP	20.64

mm [in]

Dimensions



Form tools

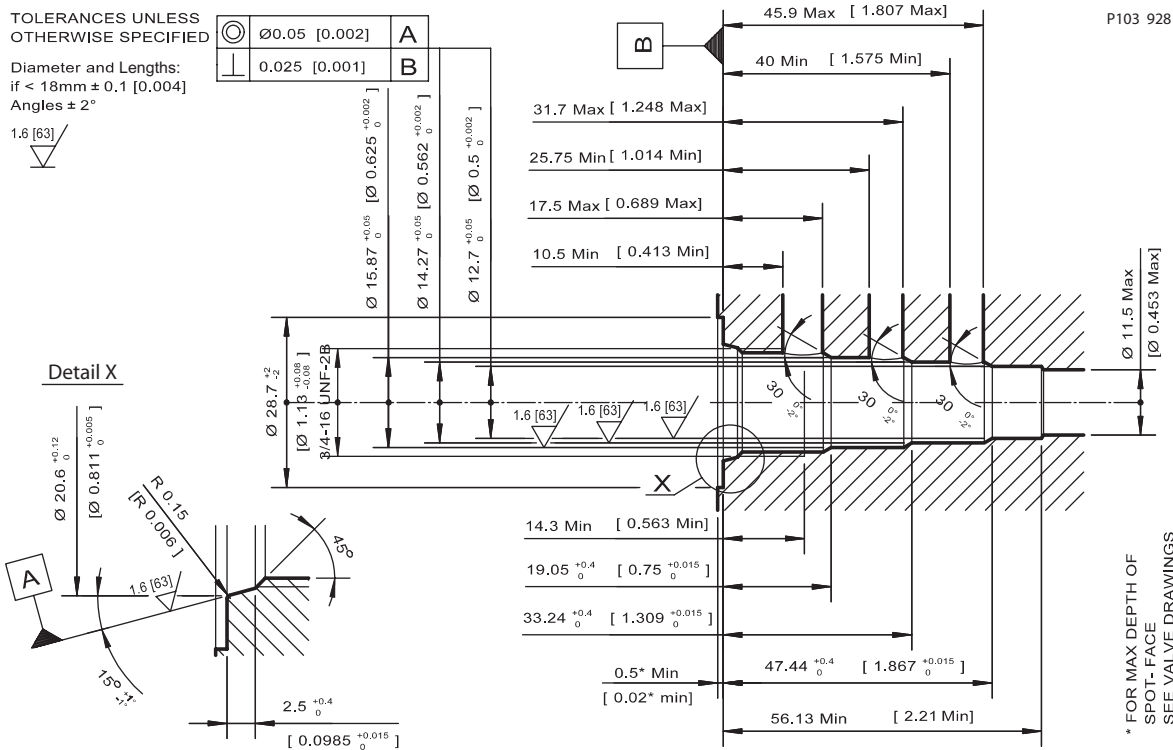
	Model code	Material number
Finishing tool	SDC-08-3-FT	11027182
Roughing tool	SDC-08-3-RT	11027183

Housings

Order Code	Description	Ports	Page
CP08-3-4S	Aluminum Housing	SAE #4	20.69
CP08-3-6S	Aluminum Housing	SAE #6	20.69
CP08-3-S4S	Steel Housing	SAE #4	20.69
CP08-3-S6S	Steel Housing	SAE #6	20.69
SDC08-3-HI-2B	Aluminum Housing, Two #1 Ports	1/4 BSP	20.67
SDC08-3-SE-2B	Aluminum Housing	1/4 BSP	20.68
SDC08-3-SE-3B	Aluminum Housing	3/8 BSP	20.68

Dimensions

mm [in]



Form tools

	Model code	Material number
Finishing tool	SDC-08-4-FT	11027184
Roughing tool	SDC-08-4-RT	11027185

Housings

Order Code	Description	Ports	Page
CP08-4-4S	Aluminum Housing	SAE #4	20.70
CP08-4-6S	Aluminum Housing	SAE #6	20.70
SDC08-4-L-2B	Aluminum Housing	1/4 BSP	20.71

mm [in]

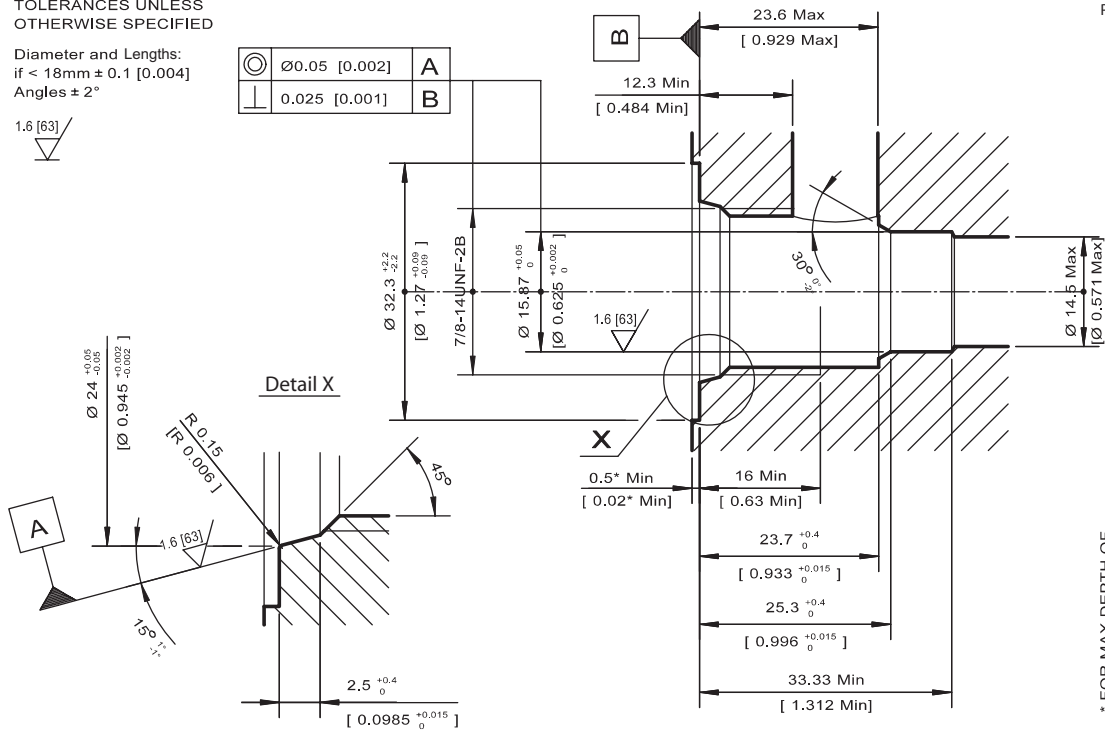
Dimensions

TOLERANCES UNLESS OTHERWISE SPECIFIED

Diameter and Lengths:
if < 18mm ± 0.1 [0.004]
Angles ± 2°

⊙	∅0.05 [0.002]	A
⊥	0.025 [0.001]	B

1.6 [63]



P103 929

* FOR MAX DEPTH OF SPOT-FACE SEE VALVE DRAWINGS

Form tools

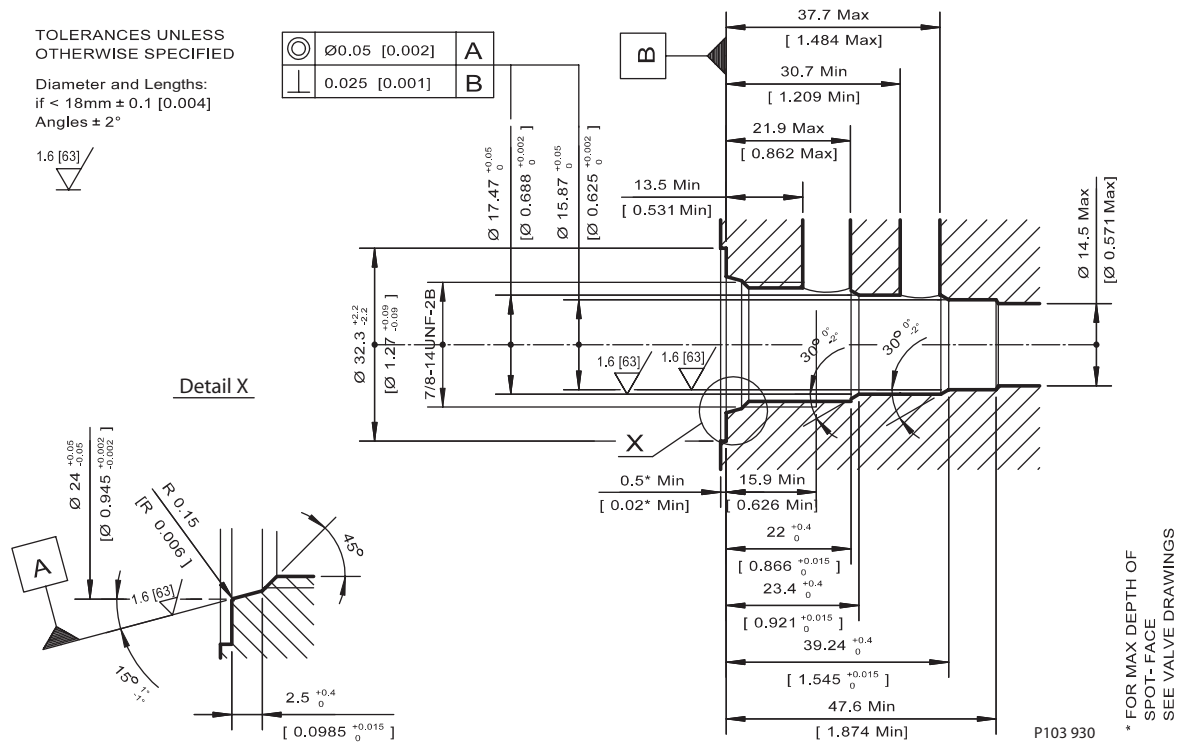
	Model code	Material number
Finishing tool	SDC-10-2-FT	11027186
Roughing tool	SDC-10-2-RT	11027187

Housings

Order Code	Description	Ports	Page
CP10-2-10S-2CR	Aluminum Housing	SAE #10	20.74
CP10-2-6S	Aluminum Housing	SAE #6	20.75
CP10-2-8S	Aluminum Housing	SAE #8	20.75
CP10-2-8S-2PL	Parallel housing	SAE #8	20.72
CP10-2-S6S	Steel Housing	SAE #6	20.75
CP10-2-S8S	Steel Housing	SAE #8	20.75
SDC10-2-DG-3B	Aluminum Housing	3/8 BSP	20.77
SDC10-2-DG-4B	Aluminum Housing	1/2 BSP	20.73
SDC10-2-LG1-4B	Aluminum Housing, Two #2 Ports	1/2 BSP	20.76
SDC10-2-LG2-4B	Aluminum Housing, Two #1 Ports	1/2 BSP	20.78

Dimensions

mm [in]



Form tools

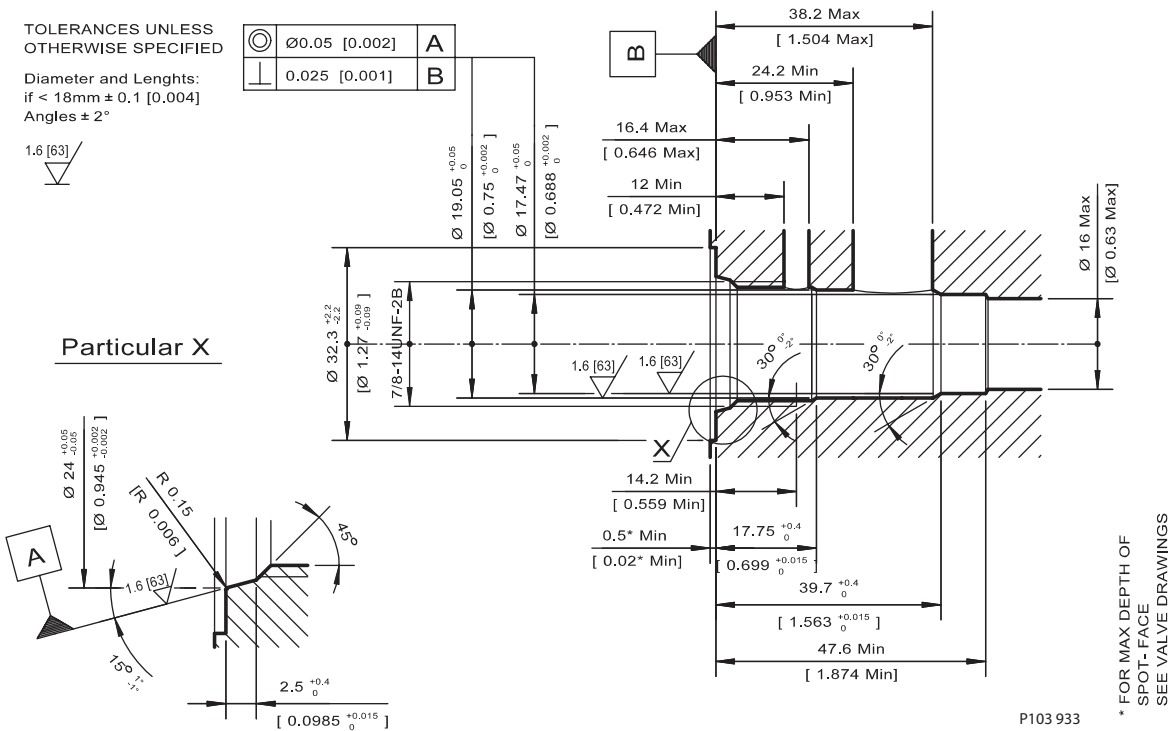
	Model code	Material number
Finishing tool	SDC-10-3-FT	11027188
Roughing tool	SDC-10-3-RT	11027119

Housings

Order Code	Description	Ports	Page
CP10-3-6S	Aluminum Housing	SAE #6	20.79
CP10-3-8S	Aluminum Housing	SAE #8	20.79
CP10-3-S6S	Steel Housing	SAE #6	20.79
CP10-3-S8S	Steel Housing	SAE #8	20.79
SDC10-3-SE-3B	Aluminum Housing	3/8 BSP	20.83
SDC10-3-SE-4B	Aluminum Housing	1/2 BSP	20.82
SDC10-3-SI-3B	Aluminum Housing, Two #1 Ports	3/8 BSP	20.80
SDC10-3-SI-4B	Aluminum Housing, Two #1 Ports	1/2 BSP	20.81

Dimensions

mm [in]



Form tools

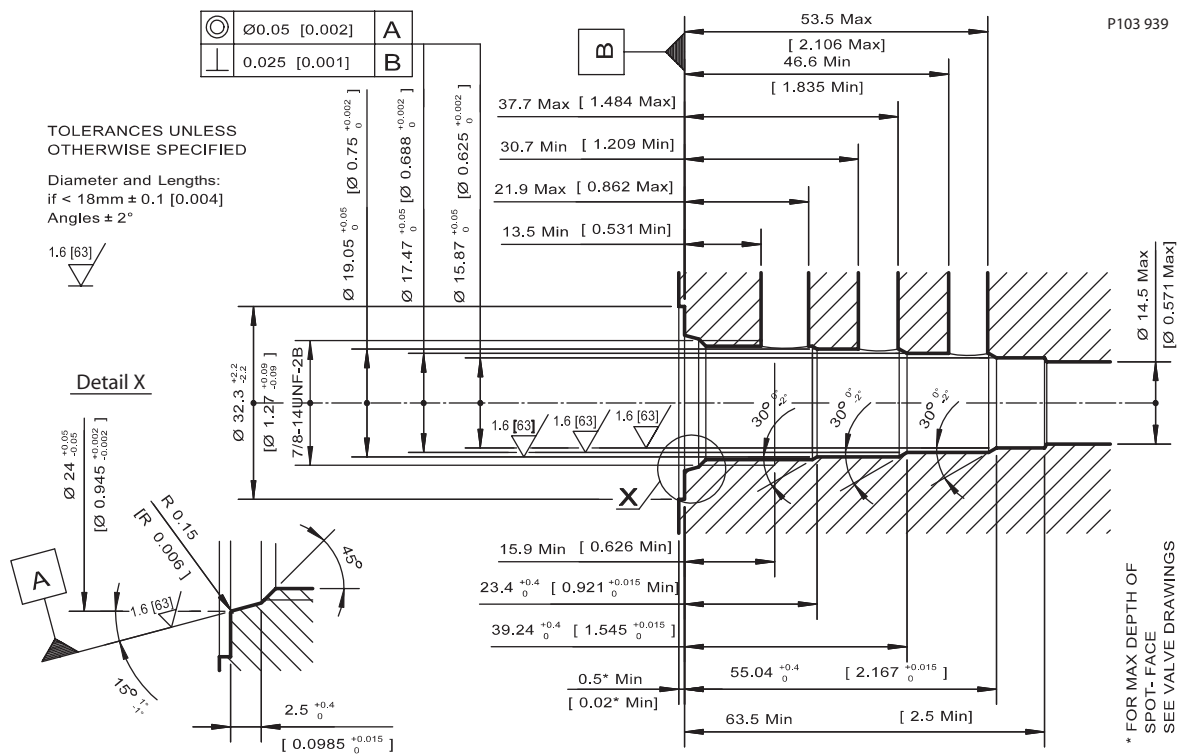
	Model code	Material number
Finishing tool	SDC-10-3S-FT	11027120
Roughing tool	SDC-10-3S-RT	11027121

Housings

Order Code	Description	Ports	Page
SDC10-3S-10S/6S	Aluminum Housing, Pilot at Port #3	SAE #10	20.85
SDC10-3S-8S/6S	Aluminum Housing, Pilot at Port #3	SAE #8	20.85
SDC10-3S-SE-3B	Aluminum Housing	3/8 BSP	20.84
SDC10-3S-SE-4B	Aluminum Housing	1/2 BSP	20.84
SDC10-3S-6S/6S	Aluminum housing, pilot at port #3	SAE #6	20.85

Dimensions

mm [in]



Form tools

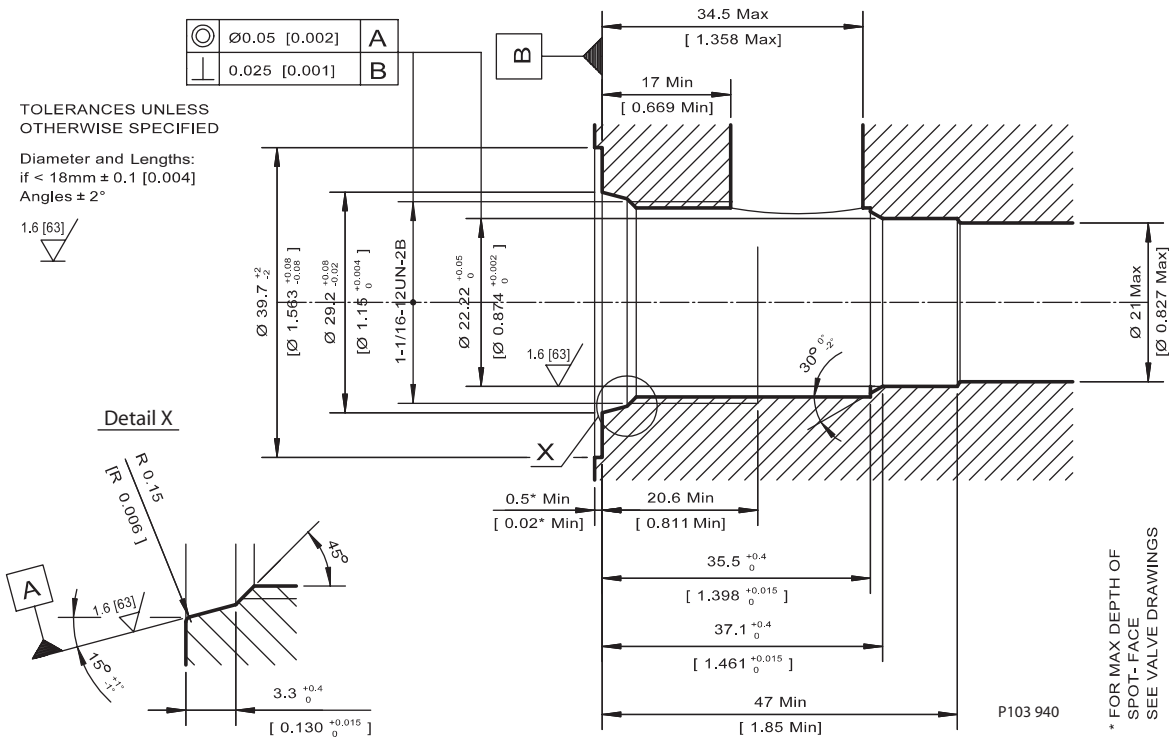
	Model code	Material number
Finishing tool	SDC-10-4-FT	11027192
Roughing tool	SDC-10-4-RT	11027193

Housings

Order Code	Description	Ports	Page
CP10-4-6S	Aluminum Housing	SAE #6	20.86
CP10-4-6S-X1	Aluminum Housing, No Port #1	SAE #6	20.86
CP10-4-8S	Aluminum Housing	SAE #8	20.86
CP10-4-8S-X1	Aluminum Housing, No Port #1	SAE #8	20.86
CP10-4-S6S	Steel Housing	SAE #6	20.86
CP10-4-S8S	Steel Housing	SAE #8	20.86
SDC10-4-HD-3B	Aluminum Housing, No Port #1	3/8 BSP	20.87
SDC10-4-L-3B	Aluminum Housing	3/8 BSP	20.88
SDC10-4-L-4B	Aluminum Housing	1/2 BSP	20.89

mm [in]

Dimensions



Caution
SDC12-2 and CP12-2 cavities are not interchangeable. Differences in sealing area depth may lead to leakage if the wrong valve is used with this cavity. Use only the specified cavity for each valve.

Cavities
SDC12-2

Form tools

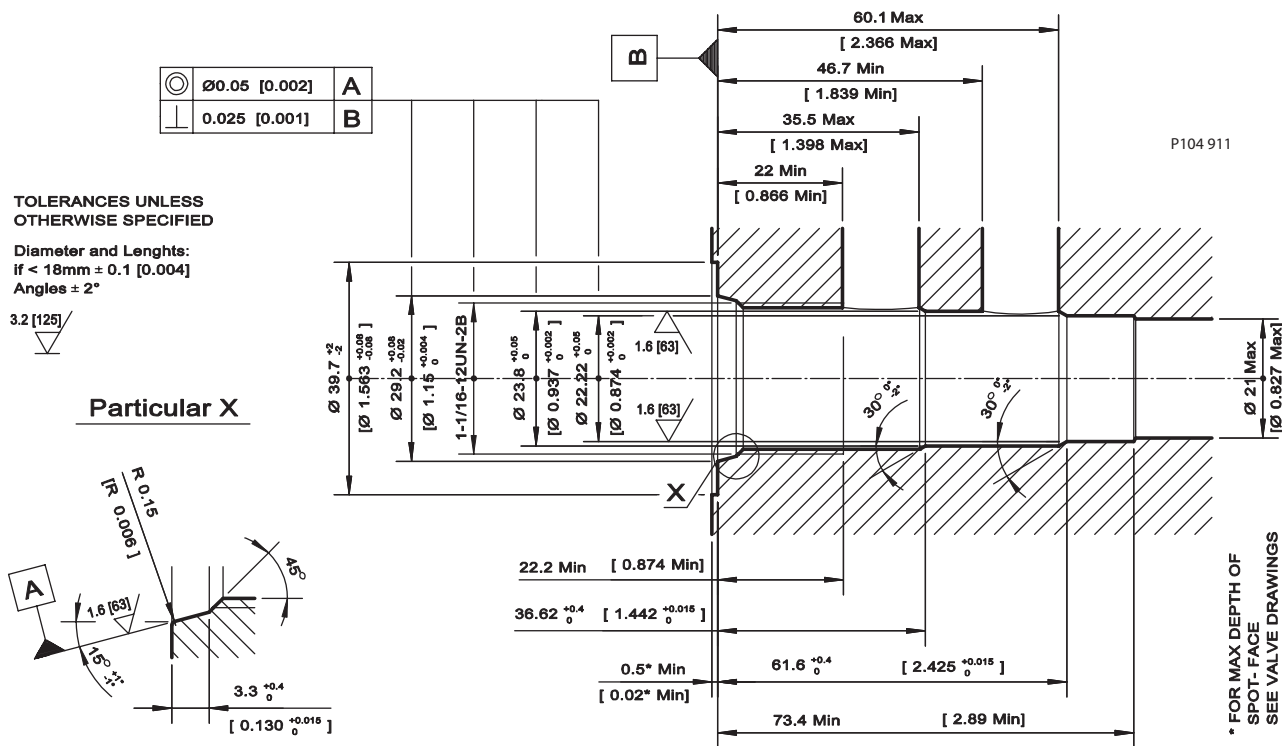
	Model code	Material number
Finishing tool	SDC-12-2-FT	11027194
Roughing tool	SDC-12-2-RT	11027195

Housings

Order Code	Description	Ports	Page
SDC12-2-DG-4B	Aluminum Housing	1/2 BSP	20.94
SDC12-2-DG-6B	Aluminum Housing	3/4 BSP	20.90
SDC12-2-LG1-6B	Aluminum Housing, Two #2 Ports	3/4 BSP	20.93
SDC12-2-LG2-6B	Aluminum Housing, Two #1 Ports	3/4 BSP	20.92
SDC12-2-10S	Aluminum housing	#10 SAE	20.91
SDC12-2-12S	Aluminum housing	#12 SAE	20.91

Dimensions

mm [in]



Form tools

Roughing tool	Consult Factory
Finishing tool	Consult Factory

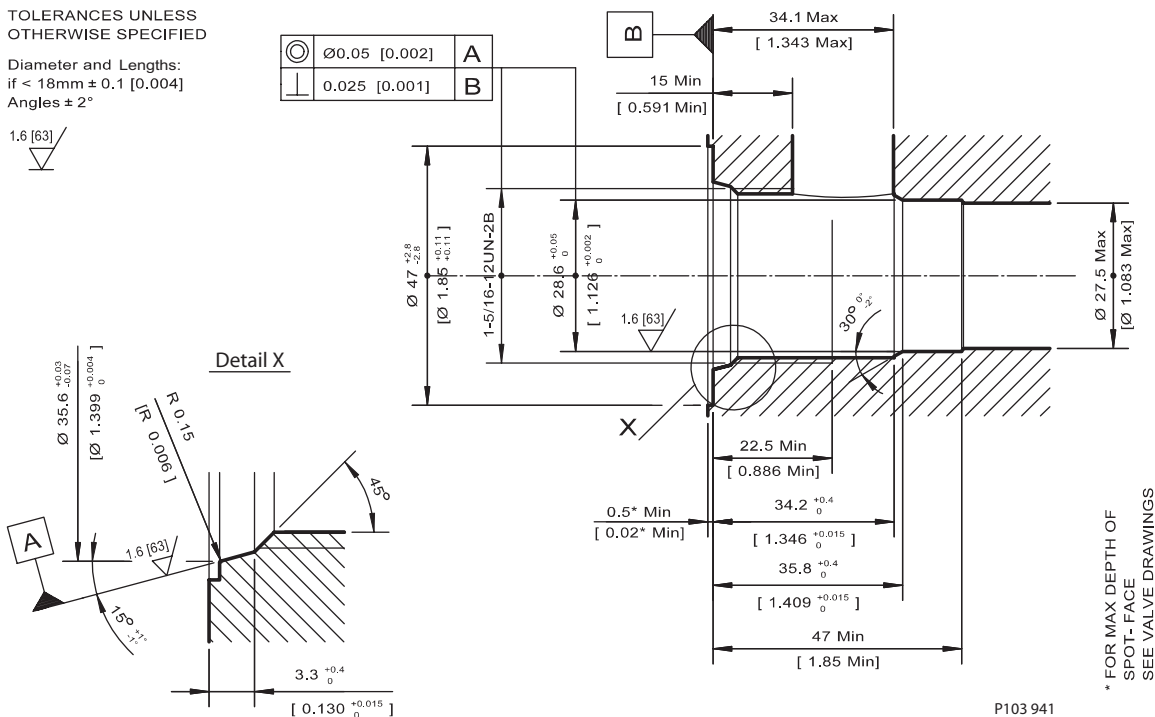
mm [in]

Dimensions

TOLERANCES UNLESS OTHERWISE SPECIFIED

Diameter and Lengths:
 if < 18mm ± 0.1 [0.004]
 Angles ± 2°

1.6 [63]



P103 941

* FOR MAX DEPTH OF SPOT-FACE SEE VALVE DRAWINGS

Form tools

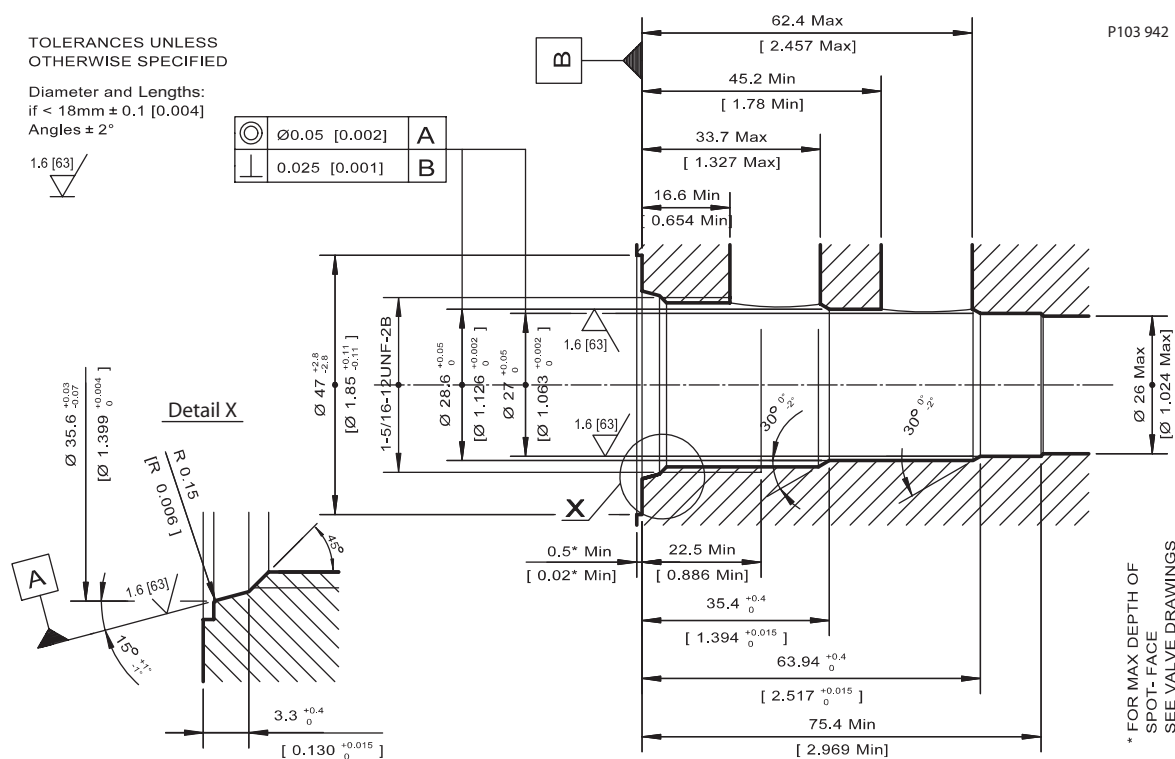
	Model code	Material number
Finishing tool	SDC-16-2-FT	11027196
Roughing tool	SDC-16-2-RT	11027197

Housings

Order Code	Description	Ports	Page
CP16-2-12S	Aluminum Housing	SAE #12	20.96
CP16-2-16S	Aluminum Housing	SAE #16	20.96
CP16-2-S16S	Steel Housing	SAE #16	20.96
SDC16-2-HG1-8B	Aluminum Housing, Two #2 Ports	1 BSP	20.95
SDC16-2-HG2-8B	Aluminum Housing, Two #1 Ports	1 BSP	20.99
SDC16-2-HG-6B	Aluminum Housing	3/4 BSP	20.98
SDC16-2-HG-8B	Aluminum Housing	1 BSP	20.97

Dimensions

mm [in]



Form tools

	Model code	Material number
Finishing tool	SDC-16-3-FT	11027198
Roughing tool	SDC-16-3-RT	11027199

Housings

Order Code	Description	Ports	Page
CP16-3-12S	Aluminum Housing	SAE #12	20.103
CP16-3-16S	Aluminum Housing	SAE #16	20.103
SDC16-2-HE-6B	Aluminum Housing	3/4 BSP	20.101
SDC16-2-HE-8B	Aluminum Housing	1 BSP	20.100
SDC16-3-HI-8B	Aluminum Housing, Two #1 Ports	1 BSP	20.102

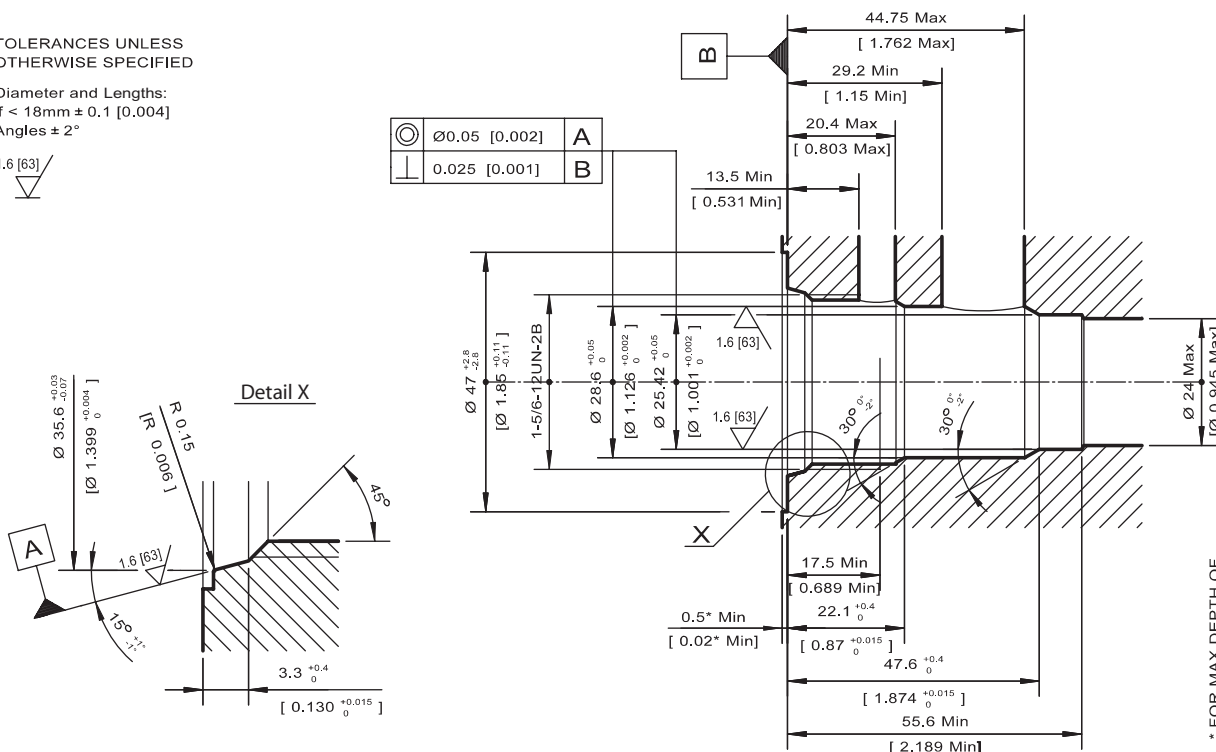
Dimensions

mm [in]

TOLERANCES UNLESS OTHERWISE SPECIFIED

Diameter and Lengths:
if < 18mm ± 0.1 [0.004]
Angles ± 2°

1.6 [63]



* FOR MAX DEPTH OF SPOT-FACE SEE VALVE DRAWINGS

P103 943

Form tools

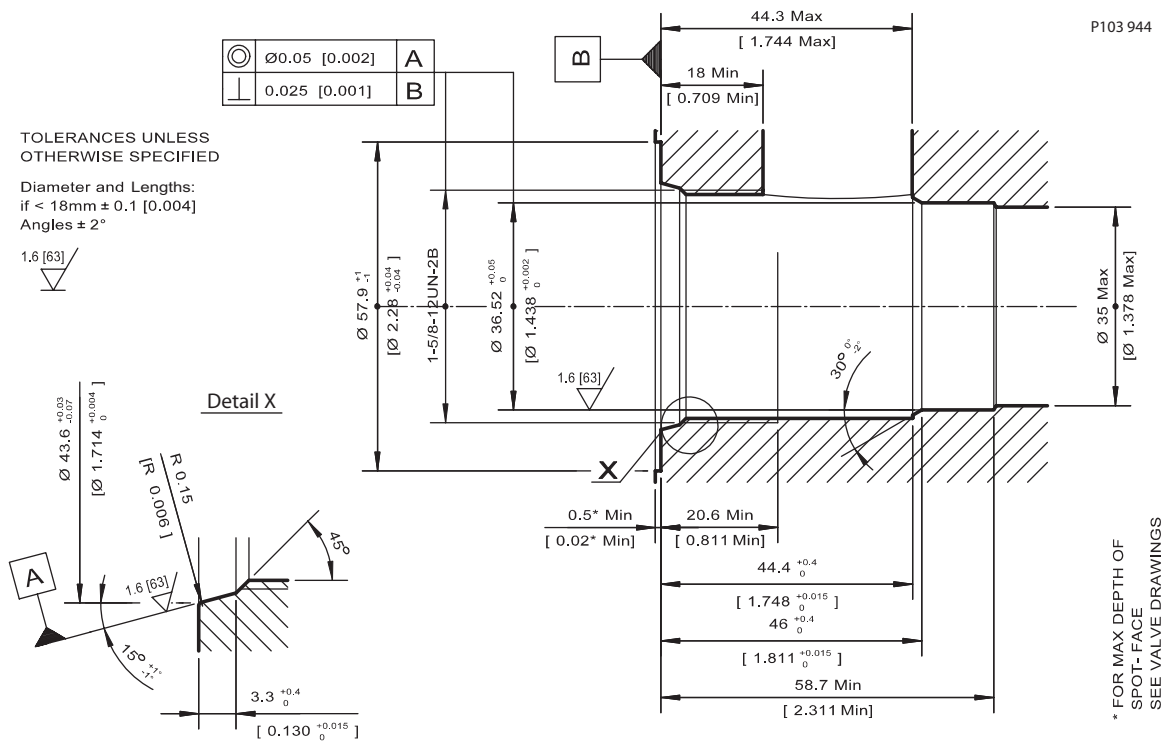
	Model code	Material number
Finishing tool	SDC-16-3S-FT	11027234
Roughing tool	SDC-16-3S-RT	11027235

Housings

Order Code	Description	Ports	Page
CP16-3S-12S/4S	Aluminum Housing, Pilot at Port #3	SAE #12, #4	20.104
CP16-3S-16S/4S	Aluminum Housing, Pilot at Port #3	SAE #16, #4	20.104
CP16-3S-6B/2B	Aluminum Housing, Pilot at Port #3	3/4 BSP, 1/4 BSP	20.104
CP16-3S-8B/2B	Aluminum Housing, Pilot at Port #3	1 BSP, 1/4 BSP	20.104

Dimensions

mm [in]



Form tools

	Model code	Material number
Finishing tool	SDC-20-2-FT	11027236
Roughing tool	SDC-20-2-RT	11027237

Housings

Order Code	Description	Ports	Page
CP20-2-10B	Aluminum Housing	1 1/4 BSP	20.105
CP20-2-16S	Aluminum Housing	SAE #16	20.105
CP20-2-20S	Aluminum Housing	SAE #20	20.105
CP20-2-8B	Aluminum Housing	1 BSP	20.105

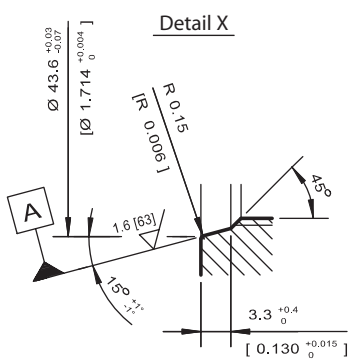
Dimensions

mm [in]

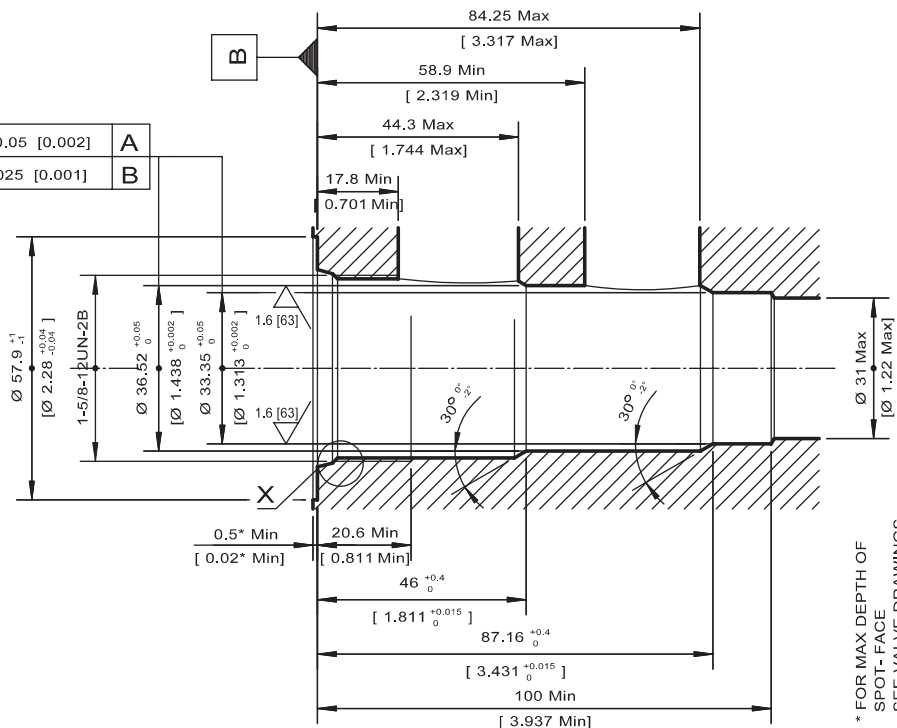
TOLERANCES UNLESS OTHERWISE SPECIFIED

Diameter and Lengths:
if < 18mm ± 0.1 [0.004]
Angles ± 2°

1.6 [63]



⊙	∅0.05 [0.002]	A
⊥	0.025 [0.001]	B



* FOR MAX DEPTH OF SPOT-FACE SEE VALVE DRAWINGS

P103 945

Form tools

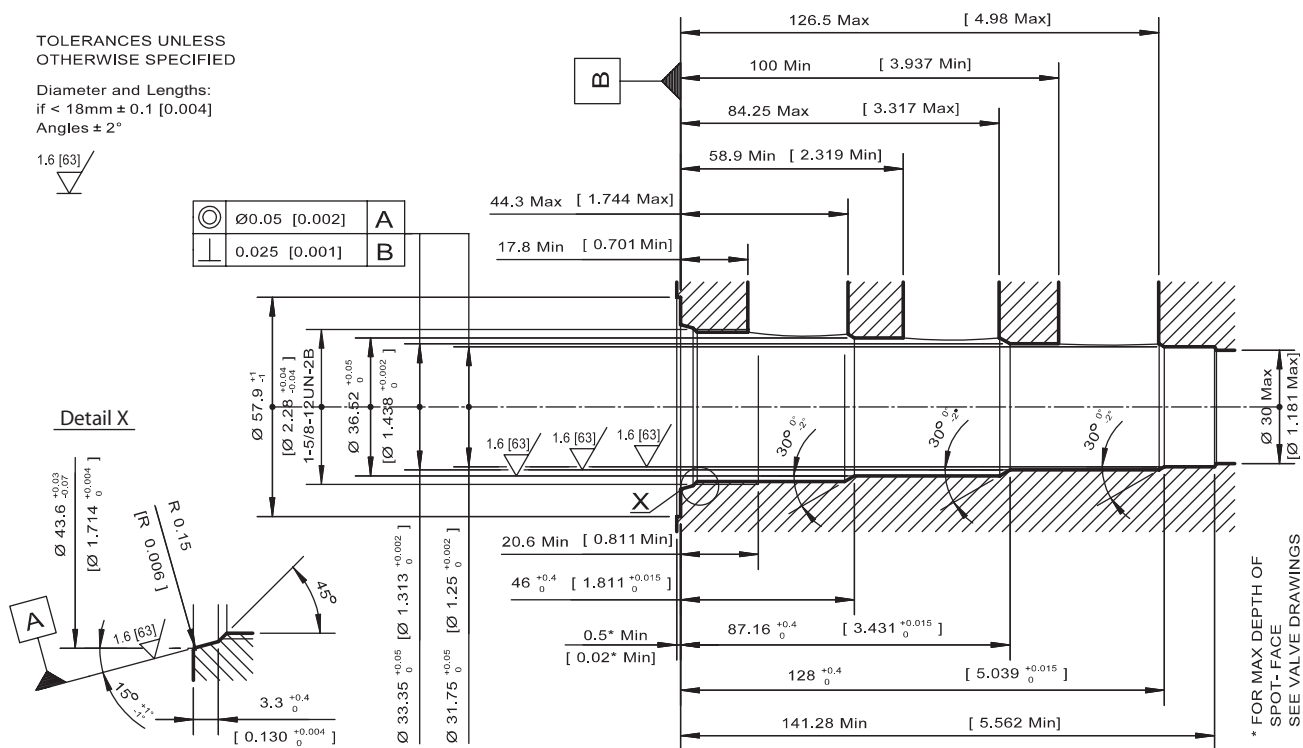
	Model code	Material number
Finishing tool	SDC-20-3-FT	11027238
Roughing tool	SDC-20-3-RT	11027239

Housings

Order Code	Description	Ports	Page
CP20-3-10B	Aluminum Housing	1 1/4 BSP	20.106
CP20-3-10B/2B1	Aluminum Housing, Pilot at Port #3	1 1/4 BSP, 1/4 BSP	20.106
CP20-3-16S	Aluminum Housing	SAE #16	20.106
CP20-3-16S/4S1	Aluminum Housing, Pilot at Port #3	SAE #16, #4	20.106
CP20-3-20S	Aluminum Housing	SAE #20	20.106
CP20-3-20S/4S1	Aluminum Housing, Pilot at Port #3	SAE #20, #4	20.106
CP20-3-8B	Aluminum Housing	1 BSP	20.106
CP20-3-8B/2B1	Aluminum Housing, Pilot at Port #3	1 BSP, 1/4 BSP	20.106

Dimensions

mm [in]



P103 946

Form tools

	Model code	Material number
Finishing tool	SDC-20-4-FT	11027240
Roughing tool	SDC-20-4-RT	11027241

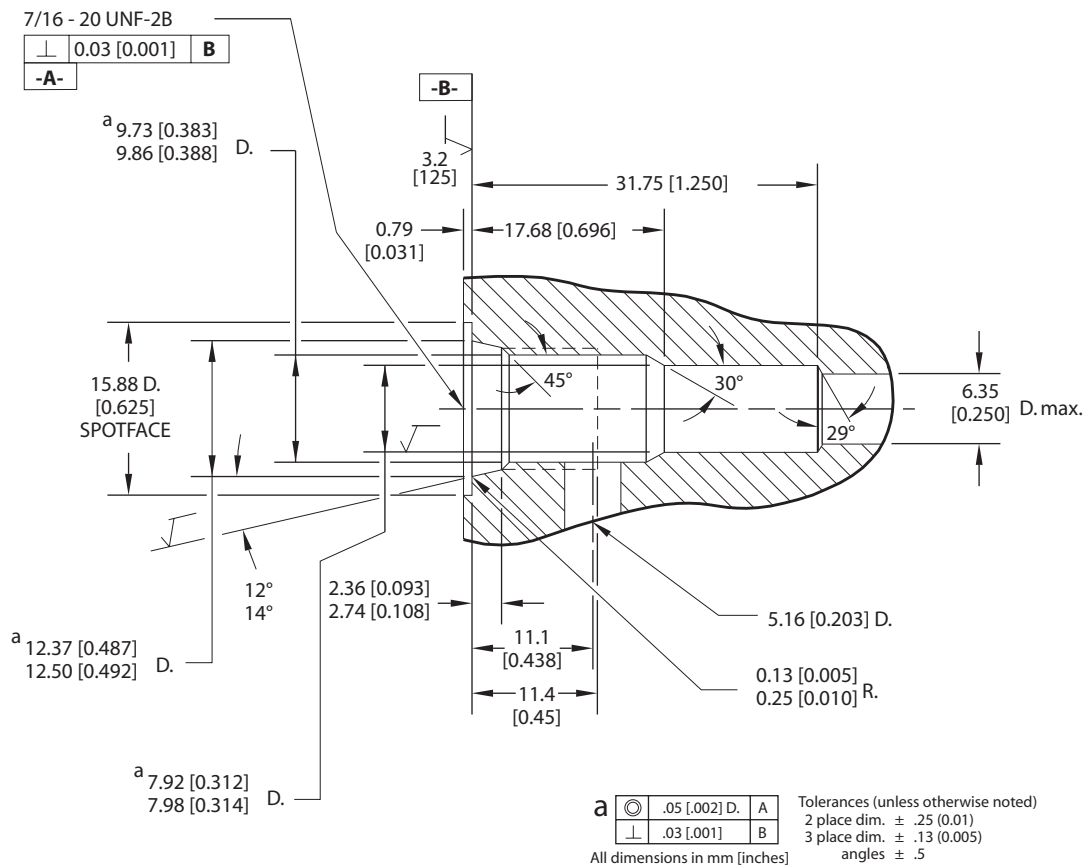
Housings

Order Code	Description	Ports	Page
CP20-4-10B	Aluminum Housing	1 1/4 BSP	20.107
CP20-4-10B-X1	Aluminum Housing, No Port #1	1 1/4 BSP	20.107
CP20-4-16S	Aluminum Housing	SAE #16	20.107
CP20-4-16S/4S	Aluminum Housing, Pilot at Port #1	SAE #16, #4	20.107
CP20-4-16S-X1	Aluminum Housing, No Port #1	SAE #16	20.107
CP20-4-20S	Aluminum Housing	SAE #20	20.107
CP20-4-20S/4S	Aluminum Housing, Pilot at Port #1	SAE #20, #4	20.107
CP20-4-20S-X1	Aluminum Housing, No Port #1	SAE #20	20.107
CP20-4-8B	Aluminum Housing	1 BSP	20.107
CP20-4-8B-X1	Aluminum Housing, No Port #1	1 BSP	20.107
CP20-4-S16S	Steel Housing	SAE #16	20.107
CP20-4-S16S-X1	Steel Housing, No Port #1	SAE #16	20.107

Cavities
SDC20-4

mm [in]

Dimensions



$\sqrt{\quad} = 1.6 [63] \sqrt{\quad}$

P102815

Cavities
 CP04-2

Form tools

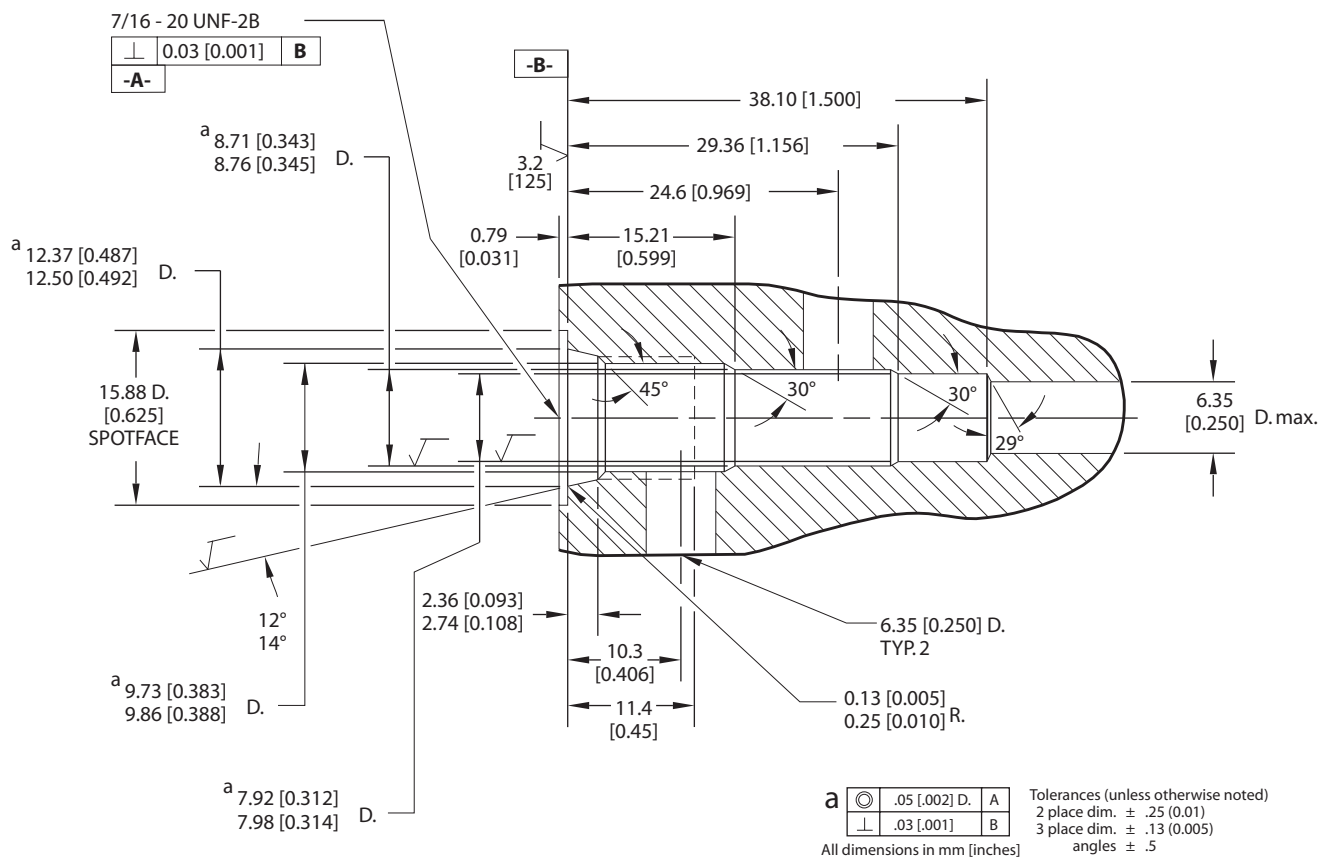
	Model Code	Material Number
Roughing tool	CP-04-2-RT	310038
Finishing tool	CP-04-2-FT	310027

Housings

Order Code	Description	Ports	Page
CP04-2-2B	Aluminum Housing	1/4 BSP	20.6
CP04-2-4S	Aluminum Housing	SAE #4	20.6

Dimensions

mm [in]



$\sqrt{\quad} = 1.6 [63] \sqrt{\quad}$
 P102 769

Form tools

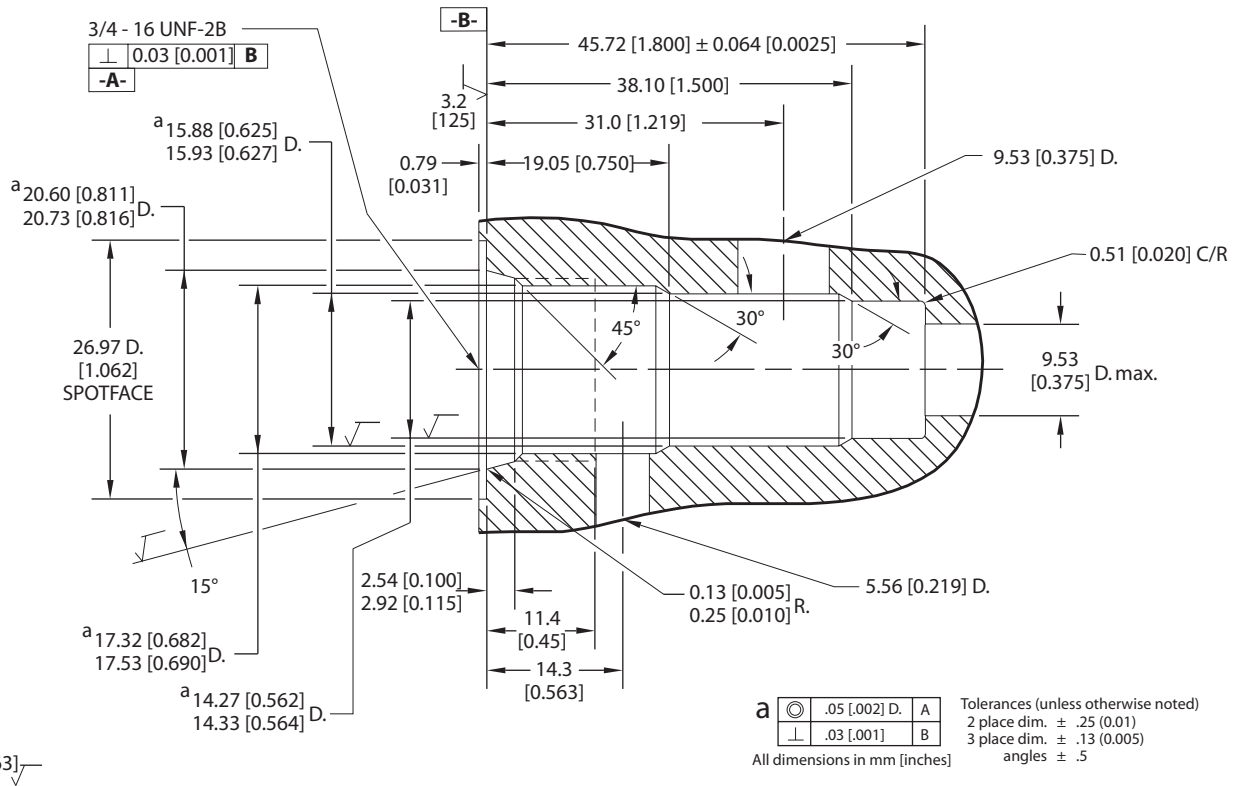
	Model Code	Material Number
Roughing tool	CP-04-3-RT	310037
Finishing tool	CP-04-3-FT	310028

Housings

Order Code	Description	Ports	Page
CP04-3-2B	Aluminum Housing	1/4 BSP	20.7
CP04-3-4S	Aluminum Housing	SAE #4	20.7

Dimensions

mm [in]



P102775

Cavities
 CP08-3L

Form tools

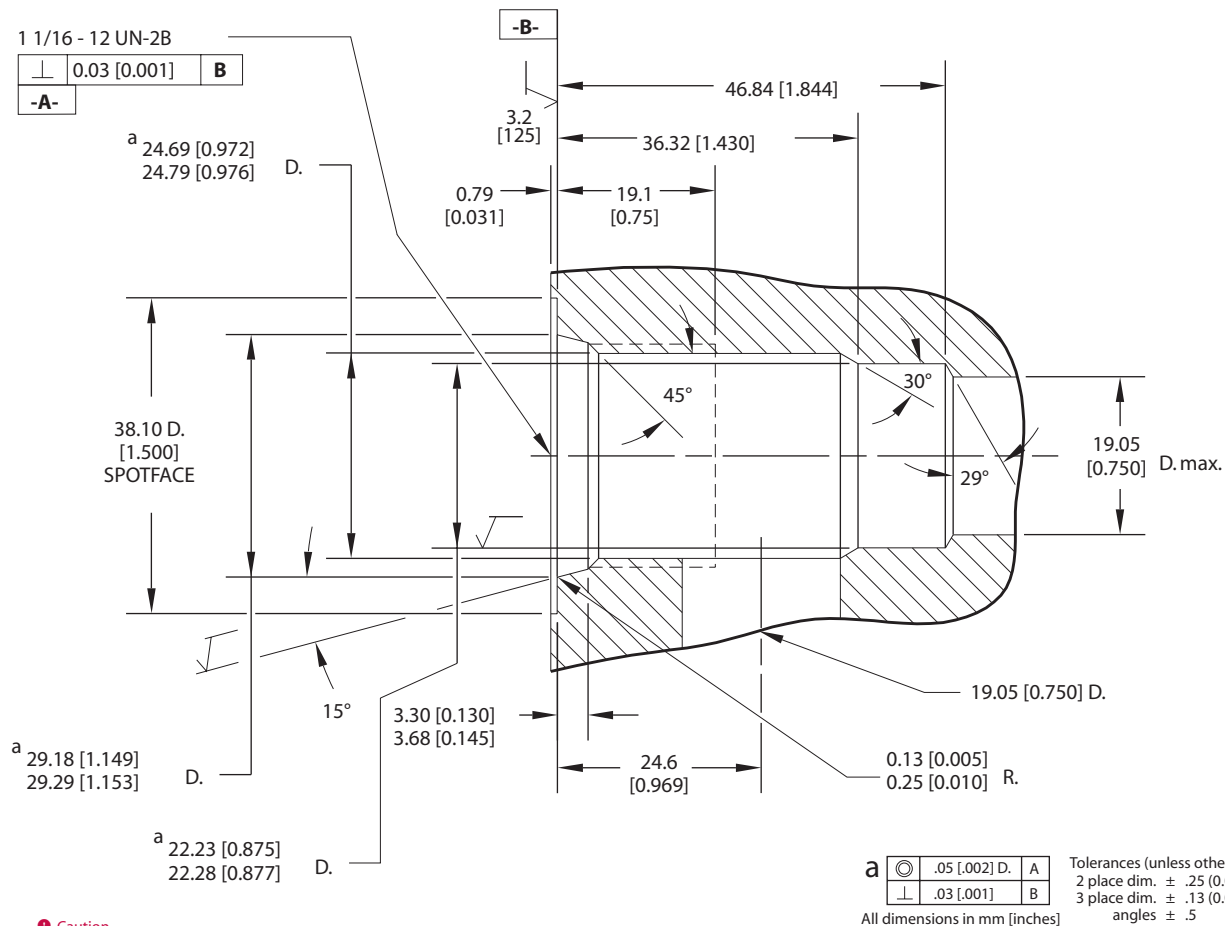
	Model code	Material number
Roughing tool	CP-08-3L-FT	11027088
Finishing tool	CP-08-3L-RT	11027089

Housings

Order Code	Description	Ports	Page
CP08-3L-2B	Aluminum Housing	1/4 BSP	20.9
CP08-3L-3B	Aluminum Housing	3/8 BSP	20.9
CP08-3L-4S	Aluminum Housing	SAE #4	20.9
CP08-3L-6S	Aluminum Housing	SAE #6	20.9

mm [in]

Dimensions



Caution
 SDC12-2 and CP12-2 cavities are not interchangeable. Differences in sealing area depth may lead to leakage if the wrong valve is used with this cavity. Use only the specified cavity for each valve.

$\sqrt{\quad} = 1.6 [63] \sqrt{\quad}$
 P102 789

Form tools

Roughing tool	CP-12-2-RT	310022	
Finishing tool	CP-12-2-FT	310005	

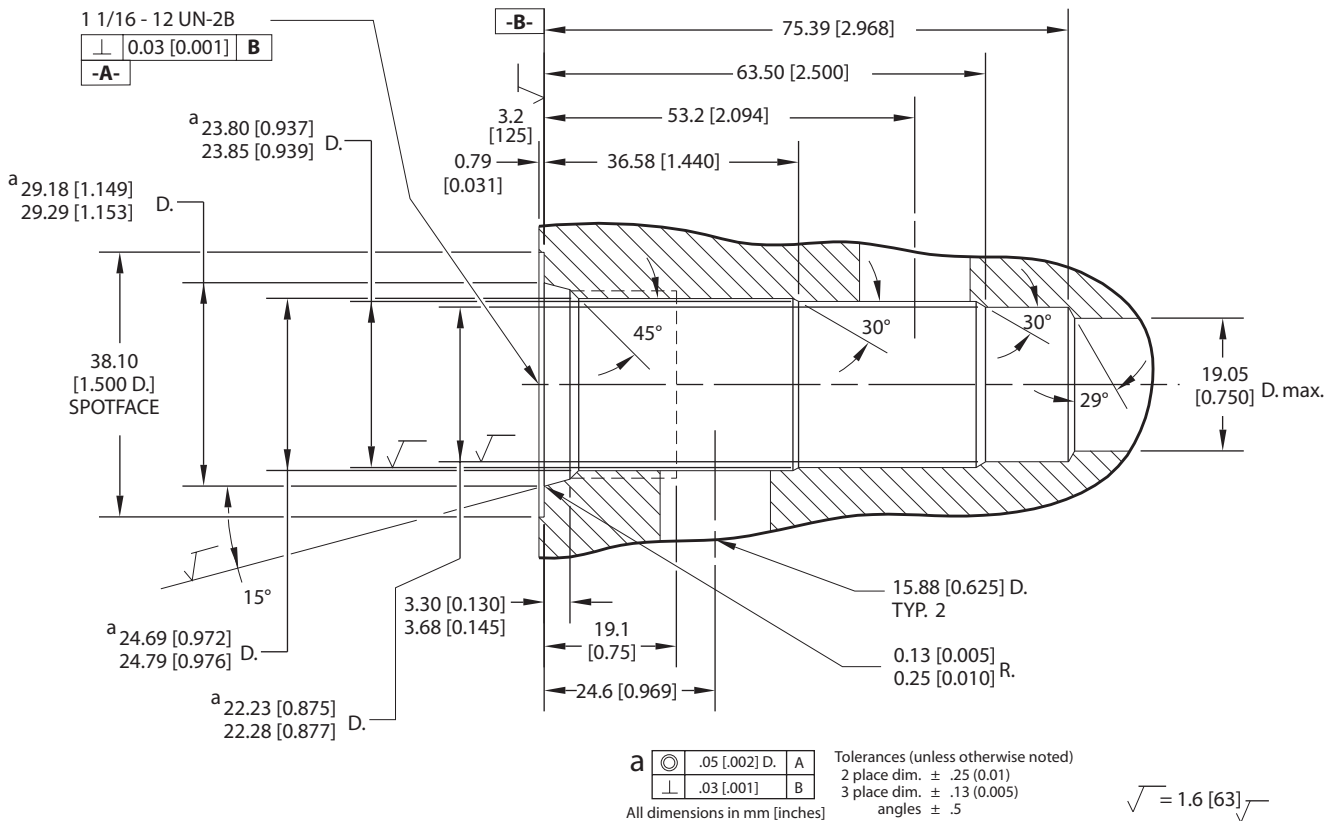
Housings

Order Code	Description	Ports	Page
CP12-2-10S	Aluminum Housing	SAE #10	20.10
CP12-2-12S	Aluminum Housing	SAE #12	20.10
CP12-2-S10S	Steel Housing	SAE #10	20.10
CP12-2-S12S	Steel Housing	SAE #12	20.10
CP12-2-4B	Aluminum housing	1/2 BSP	20.10
CP12-2-6B	Aluminum housing	3/4 BSP	20.10

Cavities
CP12-2

mm [in]

Dimensions



Cavities
CP12-3

Form tools

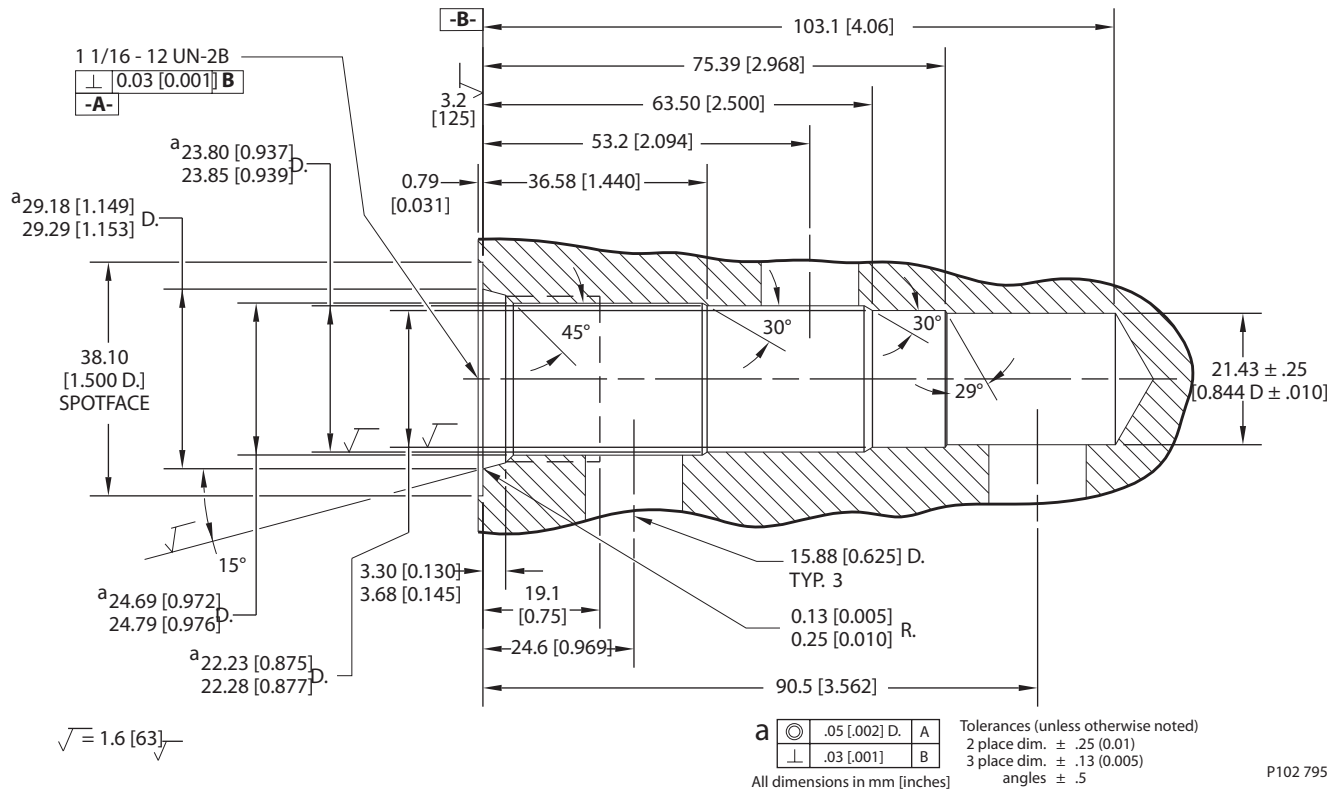
Tool Type	Form Tool Code	Part Number
Roughing tool	CP-12-3-RT	310033
Finishing tool	CP-12-3-FT	310007

Housings

Order Code	Description	Ports	Page
CP12-3-10S	Aluminum Housing	SAE #10	20.11
CP12-3-12S	Aluminum Housing	SAE #12	20.11
CP12-3-4B	Aluminum Housing	1/2 BSP	20.11
CP12-3-6B	Aluminum Housing	3/4 BSP	20.11
CP12-3-S10S	Steel Housing	SAE #10	20.11
CP12-3-S12S	Steel Housing	SAE #12	20.11

Dimensions

mm [in]



Form tools

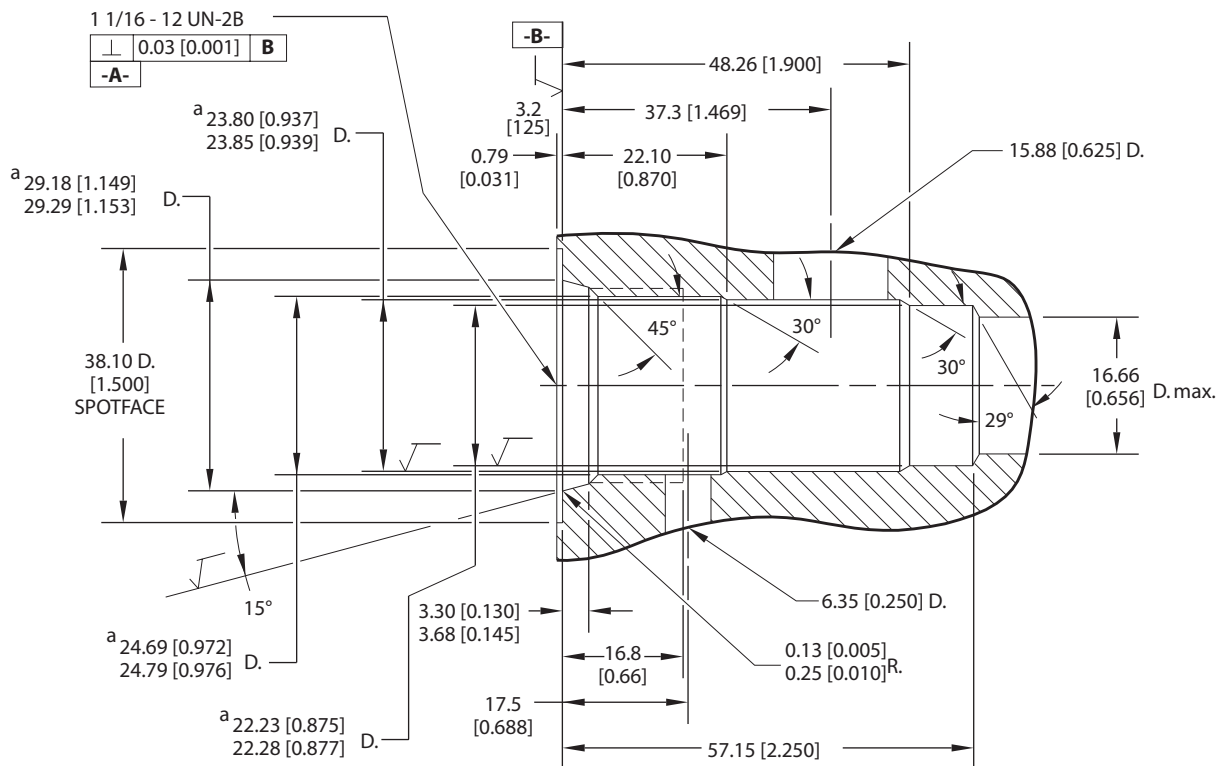
Roughing tool	
Finishing tool	

Housings

Order Code	Description	Ports	Page
CP12-3M-10S	Aluminum Housing	SAE #10	20.12
CP12-3M-12S	Aluminum Housing	SAE #12	20.12
CP12-3M-6B	Aluminum Housing	3/4 BSP	20.12

Dimensions

mm [in]



$\sqrt{\quad} = 1.6 [63] \sqrt{\quad}$

a $\text{Ⓢ} \begin{matrix} .05 [.002] \text{ D.} & \text{A} \\ \perp & .03 [.001] & \text{B} \end{matrix}$ Tolerances (unless otherwise noted)
 2 place dim. $\pm .25 (0.01)$
 3 place dim. $\pm .13 (0.005)$
 angles $\pm .5$
 All dimensions in mm [inches]

P102 791

Form tools

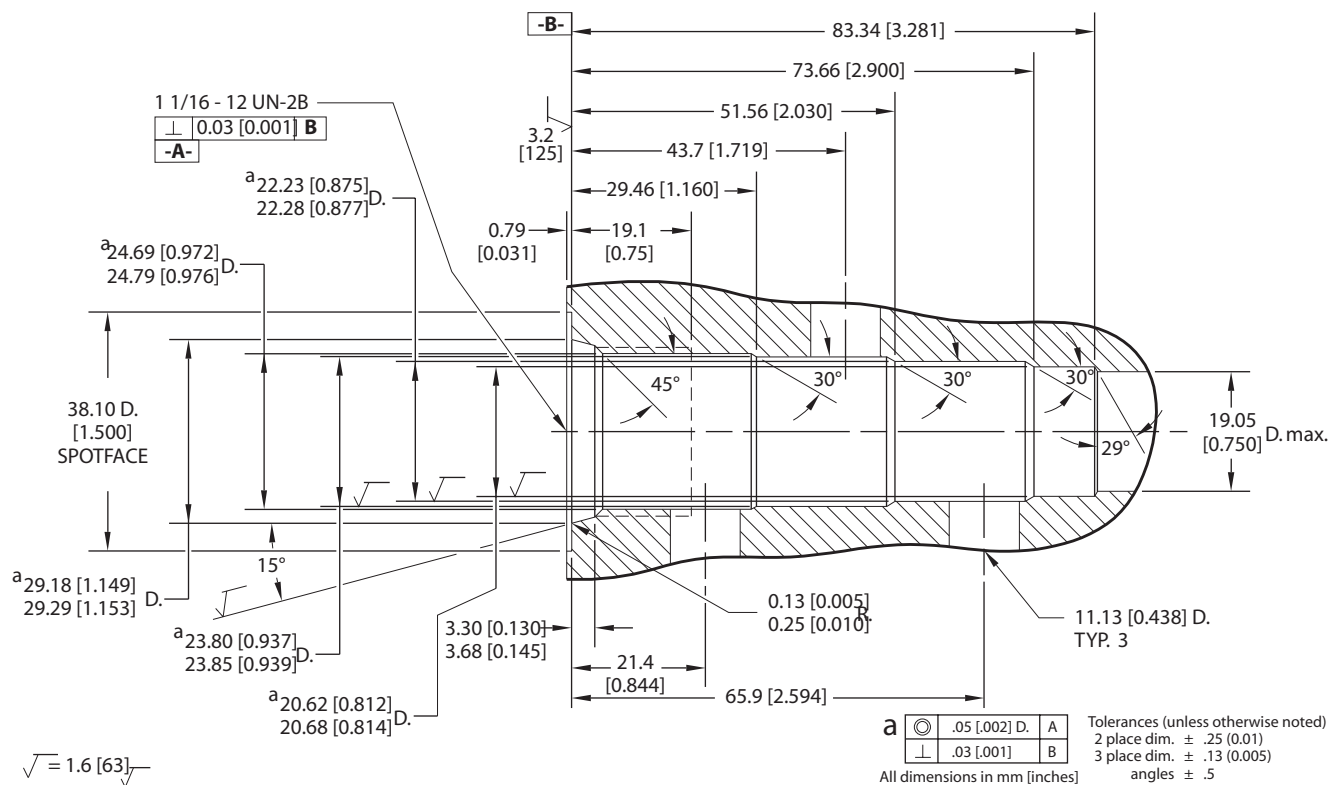
Tool	Part Number	Quantity
Roughing tool	CP-12-3S-RT	310020
Finishing tool	CP-12-3S-FT	310006

Housings

Order Code	Description	Ports	Page
CP12-3S-10S/4S	Aluminum Housing, Pilot at Port #3	SAE #10, #4	20.13
CP12-3S-12S/4S	Aluminum Housing, Pilot at Port #3	SAE #12, #4	20.13
CP12-3S-4B/2B	Aluminum Housing, Pilot at Port #3	1/2 BSP, 1/4 BSP	20.13
CP12-3S-6B/2B	Aluminum Housing, Pilot at Port #3	3/4 BSP, 1/4 BSP	20.13

Dimensions

mm [in]



P102 797

Form tools

	Model code	Material number
Finishing tool	CP-12-4-FT	11027090
Roughing tool	CP-12-4-RT	11027091

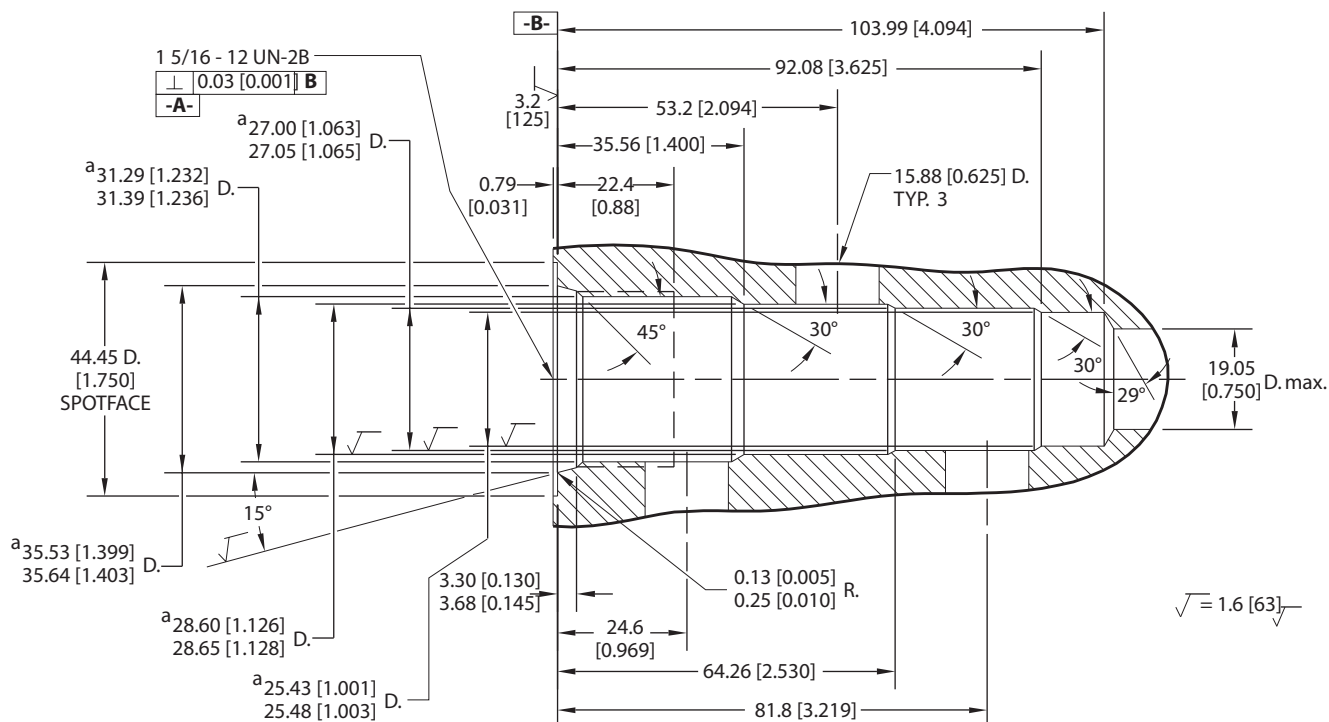
Housings

Order Code	Description	Ports	Page
CP12-4-10S	Aluminum Housing	SAE #10	20.14
CP12-4-10S/4S	Aluminum Housing, Pilot at Port #1	SAE #10, #4	20.14
CP12-4-10S-X1	Aluminum Housing, No Port #1	SAE #10	20.14
CP12-4-3B	Aluminum Housing	3/8 BSP	20.14
CP12-4-3B-X1	Aluminum Housing, No Port #1	3/8 BSP	20.14
CP12-4-4B	Aluminum Housing	1/2 BSP	20.14
CP12-4-4B-X1	Aluminum Housing, No Port #1	1/2 BSP	20.14
CP12-4-8S	Aluminum Housing	SAE #8	20.14
CP12-4-8S/4S	Aluminum Housing, Pilot at Port #1	SAE #10, #4	20.14
CP12-4-8S-X1	Aluminum Housing, No Port #1	SAE #8	20.14



mm [in]

Dimensions



P102 805

a

⊙	.05 [0.002] D.	A
⊥	.03 [0.001]	B

 Tolerances (unless otherwise noted)
 2 place dim. ± .25 (0.01)
 3 place dim. ± .13 (0.005)
 angles ± .5
 All dimensions in mm [inches]

Form tools

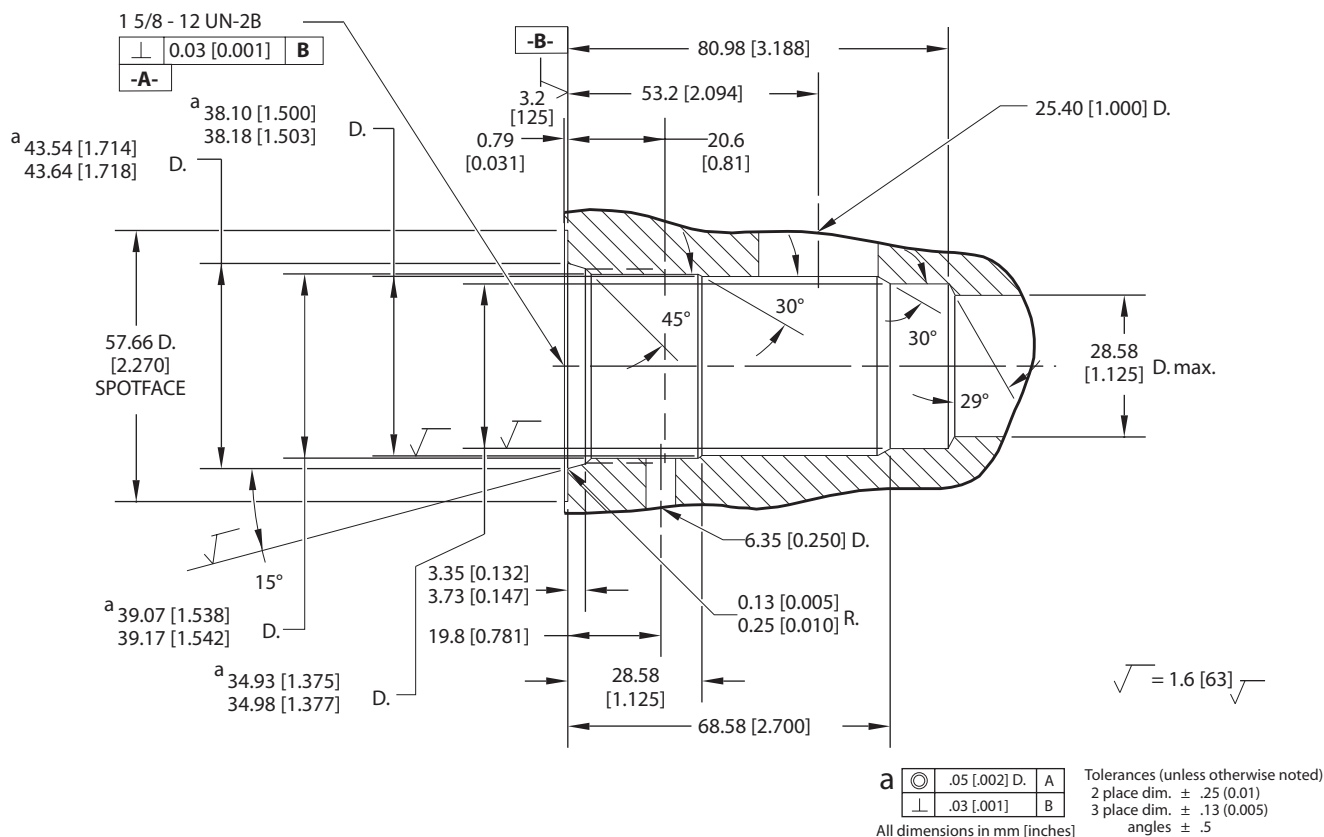
	Model code	Material number
Finishing tool	CP-16-4-FT	11027092
Roughing tool	CP-16-4-RT	11027093

Housings

Order Code	Description	Ports	Page
CP16-4-12S	Aluminum Housing	SAE #12	20.16
CP16-4-12S-X1	Aluminum Housing, No Port #1	SAE #12	20.15
CP16-4-16S	Aluminum Housing	SAE #16	20.16
CP16-4-16S-X1	Aluminum Housing, No Port #1	SAE #16	20.15
CP16-4-6B	Aluminum Housing	3/4 BSP	20.16
CP16-4-8B	Aluminum Housing	1 BSP	20.16

Dimensions

mm [in]



P102 809

Form tools

	Model code	Material number
Finishing tool	CP-20-3S-FT	11013235
Roughing tool	CP-20-3S-RT	11013233

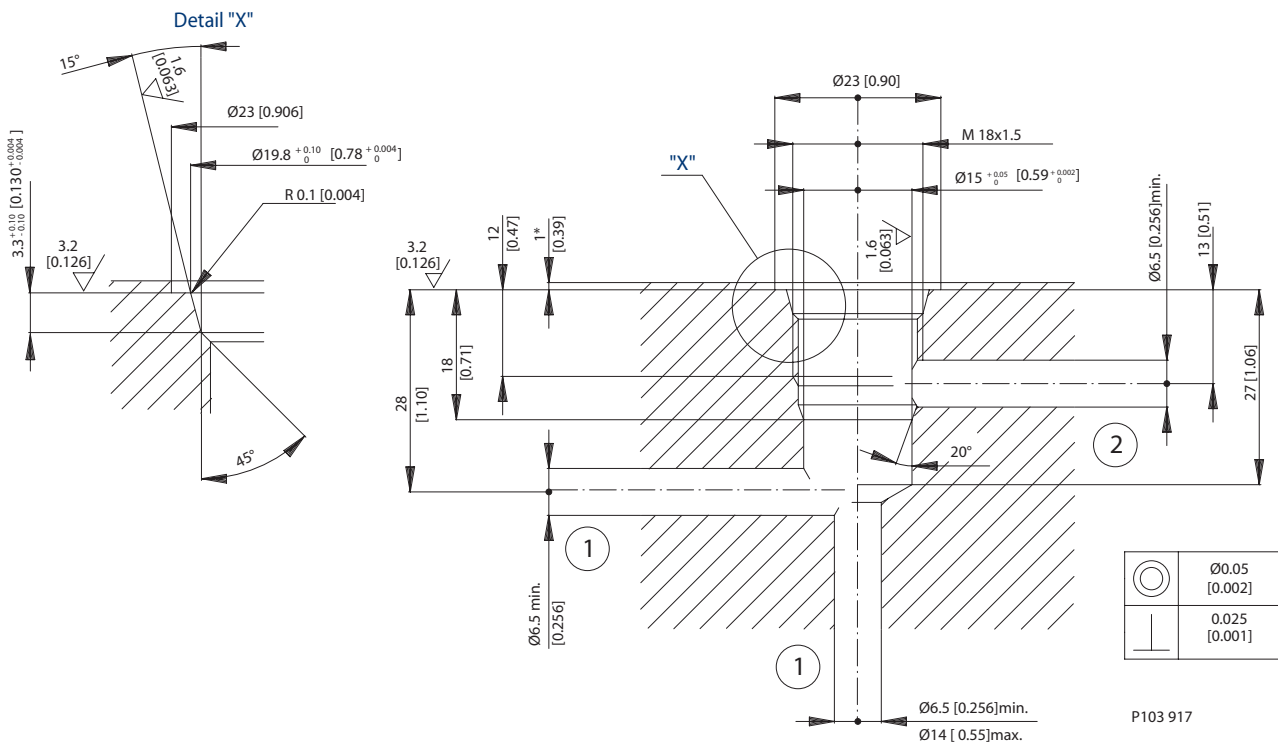
Housings

Order Code	Description	Ports	Page
CP20-3S-10B/2B	Aluminum Housing, Pilot at Port #3	1 1/4 BSP, 1/4 BSP	20.17
CP20-3S-16S/4S	Aluminum Housing, Pilot at Port #3	SAE #16, #4	20.17
CP20-3S-20S/4S	Aluminum Housing, Pilot at Port #3	SAE #20, #4	20.17
CP20-3S-8B/2B	Aluminum Housing, Pilot at Port #3	1 BSP, 1/4 BSP	20.17



mm [in]

Dimensions



Form tools

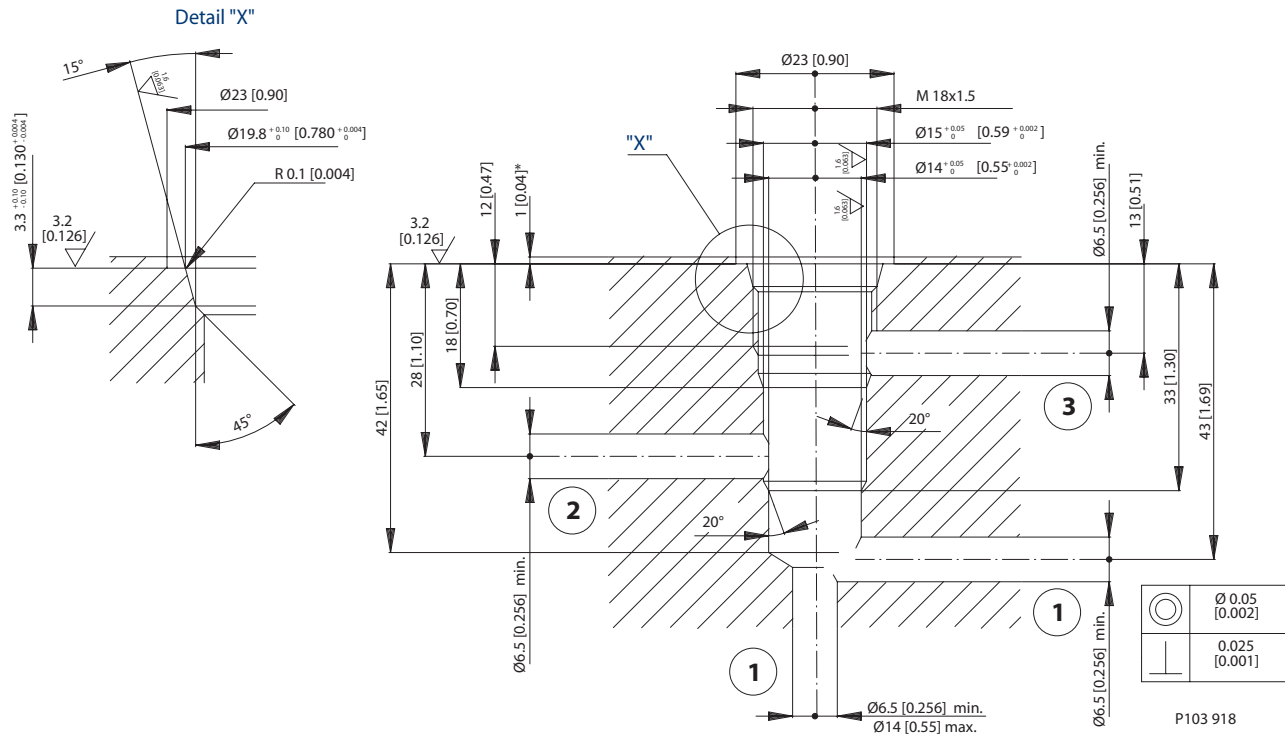
	Model code	Material number
Finishing tool	NCS-04-2-FT	11027154
Roughing tool	NCS-04-2-RT	11027155

Housings

Order Code	Description	Ports	Page
NCS04/2-DG-1/4	Aluminum Housing	1/4 BSP	20.22
NCS04/2-DG-4S	Aluminum Housing	SAE #4	20.22
NCS04/2-DG-6S	Aluminum Housing	SAE #6	20.22
NCS04/2-LG1-1/4	Aluminum Housing, Two #2 Ports	1/4 BSP	20.23
NCS04/2-LG1-4S	Aluminum Housing, Two #2 Ports	SAE #4	20.23
NCS04/2-LG1-6S	Aluminum Housing, Two #2 Ports	SAE #6	20.23
NCS04/2-LG2-1/4	Aluminum Housing, Two #1 Ports	1/4 BSP	20.21
NCS04/2-LG2-4S	Aluminum Housing, Two #1 Ports	SAE #4	20.21
NCS04/2-LG2-6S	Aluminum Housing, Two #1 Ports	SAE #6	20.21

Dimensions

mm [in]



Form tools

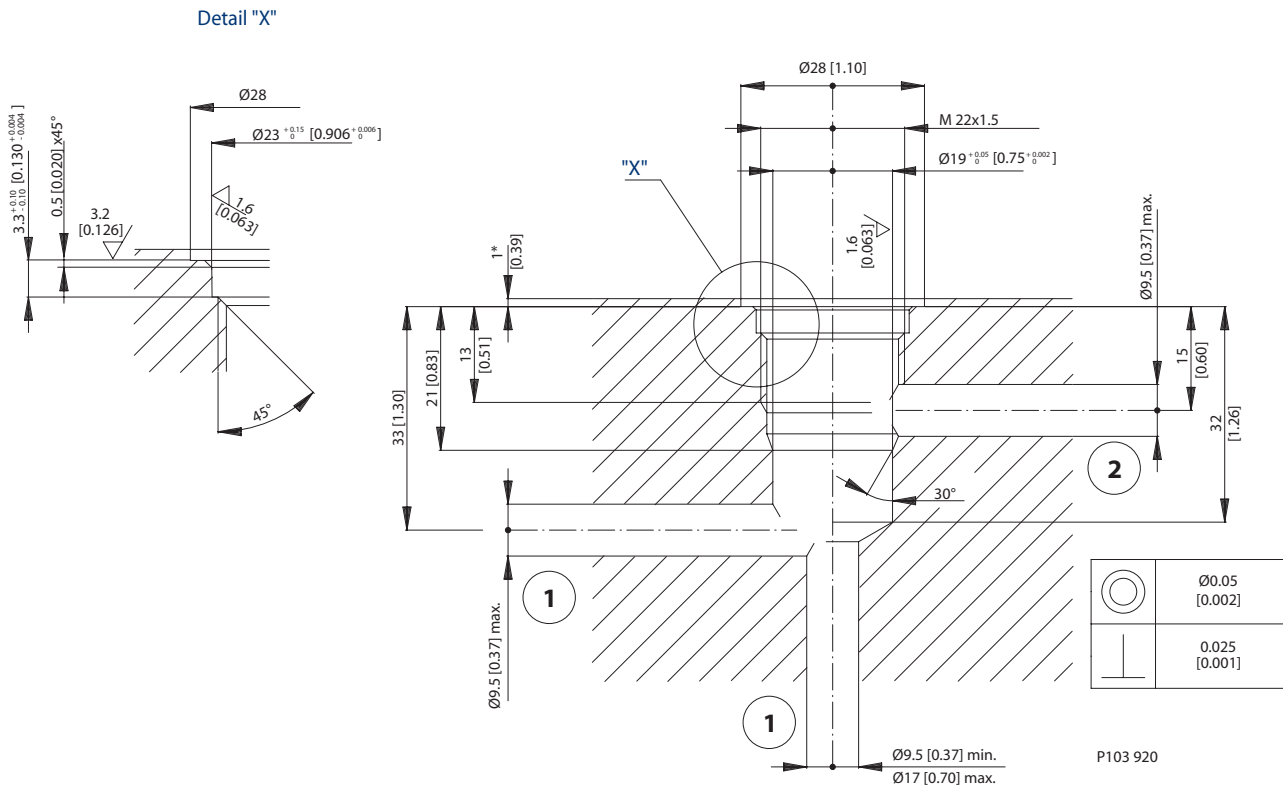
	Model code	Material number
Finishing tool	NCS-04-3-FT	11027156
Roughing tool	NCS-04-3-RT	11027157

Housings

Order Code	Description	Ports	Page
NCS04/3-DI-1/4	Alum. Hsg., 2 Cavities w/#3 Ports Conn.	1/4 BSP	20.26
NCS04/3-DI-3/8	Alum. Hsg., 2 Cavities w/#3 Ports Conn.	3/8 BSP	20.26
NCS04/3-DL-1/4	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	1/4 BSP	20.27
NCS04/3-DL-4S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	SAE #4	20.27
NCS04/3-DL-6S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	SAE #6	20.27
NCS04/3-SE-1/4	Aluminum Housing	1/4 BSP	20.24
NCS04/3-SE-4S	Aluminum Housing	SAE #4	20.28
NCS04/3-SE-6S	Aluminum Housing	SAE #6	20.28
NCS04/3-SI-1/4	Aluminum Housing, Two #1 Ports	1/4 BSP	20.25
NCS04/3-SI-4S	Aluminum Housing, Two #1 Ports	SAE #4	20.29
NCS04/3-SI-6S	Aluminum Housing, Two #1 Ports	SAE #6	20.29

mm [in]

Dimensions



Form tools

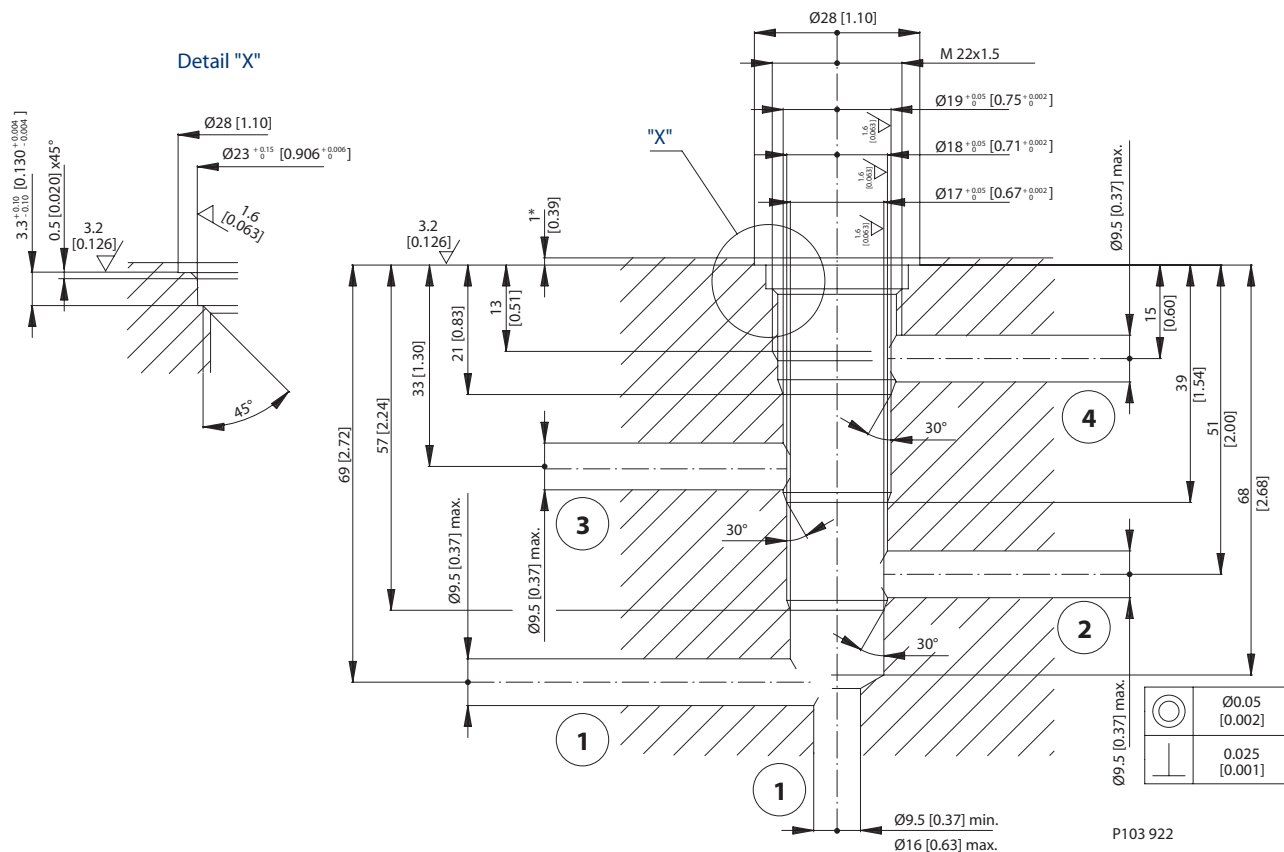
	Model code	Material number
Finishing tool	NCS-06-2-FT	11027158
Roughing tool	NCS-06-2-RT	11027159

Housings

Order Code	Description	Ports	Page
NCS06/2-DG-1/2	Aluminum Housing	1/2 BSP	20.34
NCS06/2-DG-3/8	Aluminum Housing	3/8 BSP	20.33
NCS06/2-DG-6S	Aluminum Housing	SAE #6	20.33
NCS06/2-DG-8S	Aluminum Housing	SAE #8	20.34
NCS06/2-LG1-1/2	Aluminum Housing, Two #2 Ports	1/2 BSP	20.36
NCS06/2-LG1-3/8	Aluminum Housing, Two #2 Ports	3/8 BSP	20.37
NCS06/2-LG1-8S	Aluminum Housing, Two #2 Ports	SAE #8	20.36
NCS06/2-LG2-1/2	Aluminum Housing, Two #1 Ports	1/2 BSP	20.32
NCS06/2-LG2-3/8	Aluminum Housing, Two #1 Ports	3/8 BSP	20.35
NCS06/2-LG2-6S	Aluminum Housing, Two #1 Ports	SAE #6	20.35
NCS06/2-LG2-8S	Aluminum Housing, Two #1 Ports	SAE #8	20.32

mm [in]

Dimensions



Form tools

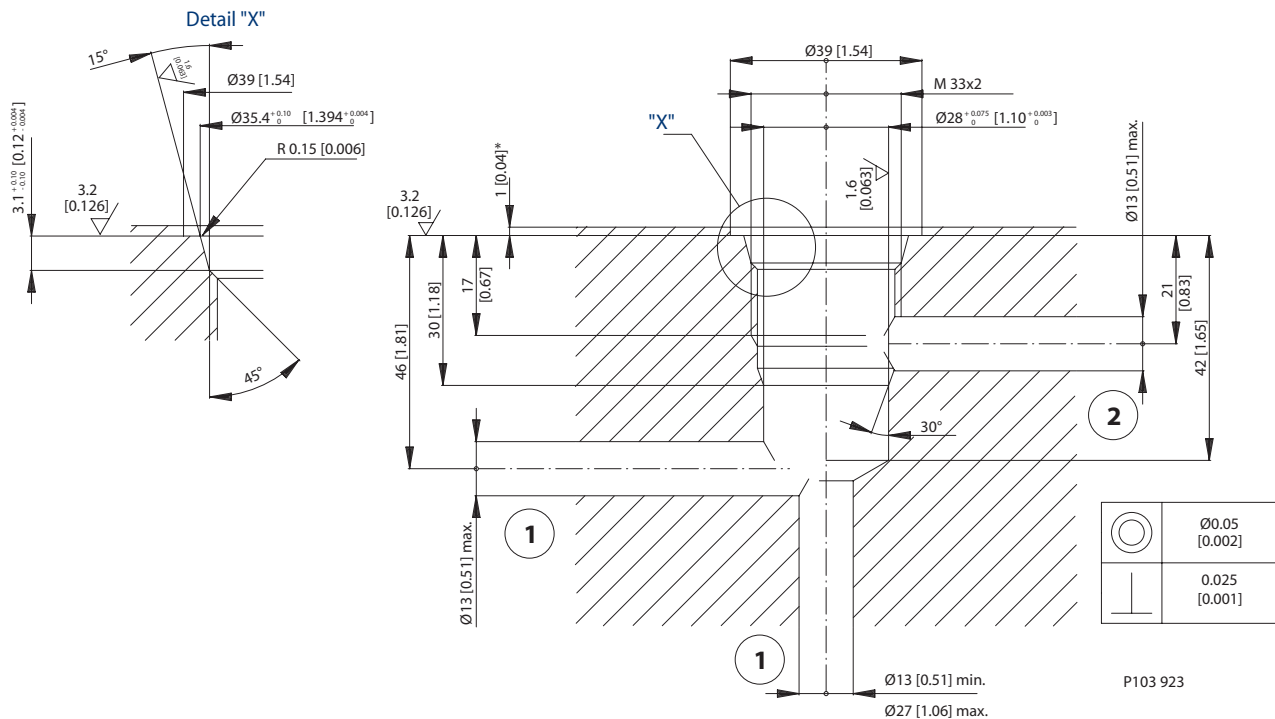
	Model code	Material number
Finishing tool	NCS-06-4-FT	11027172
Roughing tool	NCS-06-4-RT	11027173

Housings

Order Code	Description	Ports	Page
NCS06/4-L-1/2	Aluminum Housing	1/2 BSP	20.47
NCS06/4-L-3/8	Aluminum Housing	3/8 BSP	20.49
NCS06/4-L-6S	Aluminum Housing	SAE #6	20.49
NCS06/4-L-8S	Aluminum Housing	SAE #8	20.47
NCS06/4-LD-1/2	Aluminum Housing, No Port #1	1/2 BSP	20.48
NCS06/4-LD-3/8	Aluminum Housing, No Port #1	3/8 BSP	20.46

Dimensions

mm [in]



Form tools

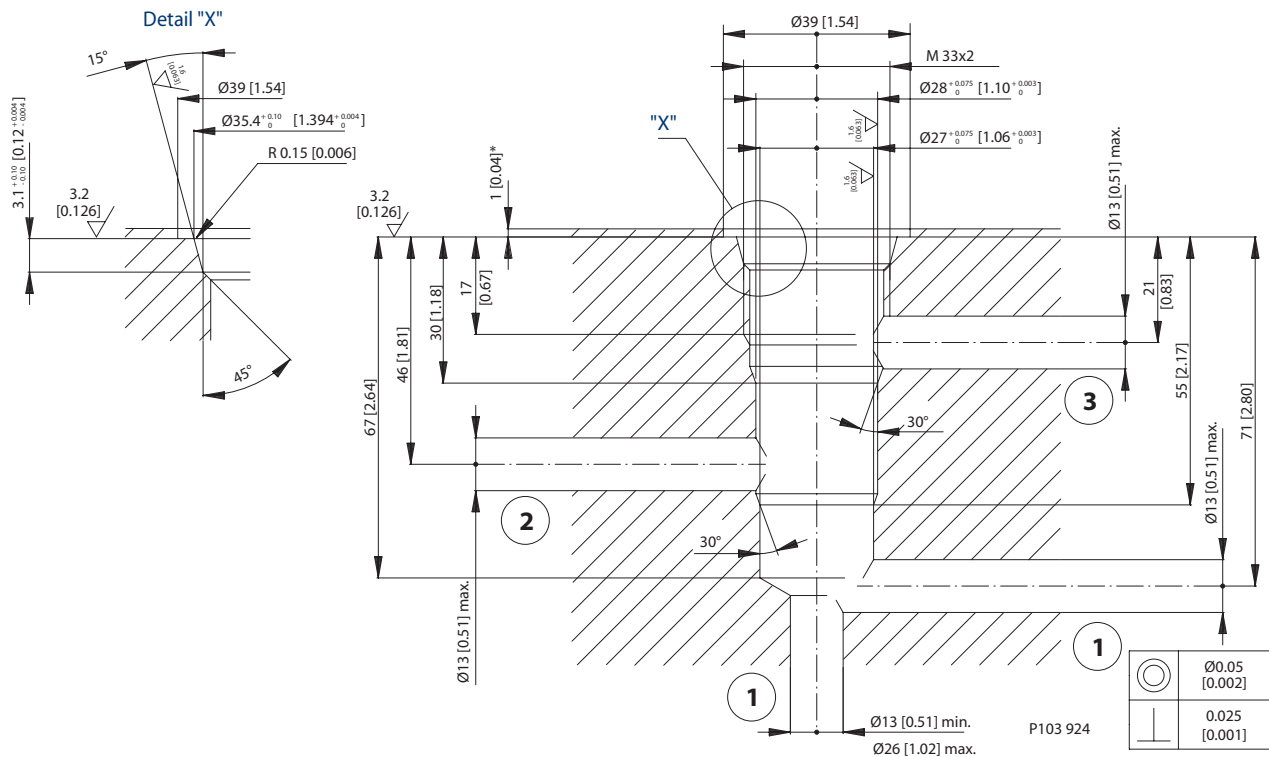
	Model code	Material number
Finishing tool	NCS-12-2-FT	11027174
Roughing tool	NCS-12-2-RT	11027175

Housings

Order Code	Description	Ports	Page
NCS12/2-DG-1/2	Aluminum Housing	1/2 BSP	20.50
NCS12/2-DG-12S	Aluminum Housing	SAE #12	20.50
NCS12/2-DG-3/4	Aluminum Housing	3/4 BSP	20.50
NCS12/2-DG-8S	Aluminum Housing	SAE #8	20.50
NCS12/2-LG1-12S	Aluminum Housing, Two #2 Ports	SAE #12	20.51
NCS12/2-LG1-8S	Aluminum Housing, Two #2 Ports	SAE #8	20.51
NCS12/2-LG2-1/2	Aluminum Housing, Two #1 Ports	1/2 BSP	20.52
NCS12/2-LG2-12S	Aluminum Housing, Two #1 Ports	SAE #12	20.52
NCS12/2-LG2-3/4	Aluminum Housing, Two #1 Ports	3/4 BSP	20.52
NCS12/2-LG2-8S	Aluminum Housing, Two #1 Ports	SAE #8	20.52

mm [in]

Dimensions



Cavities
NCS12/3

Form tools

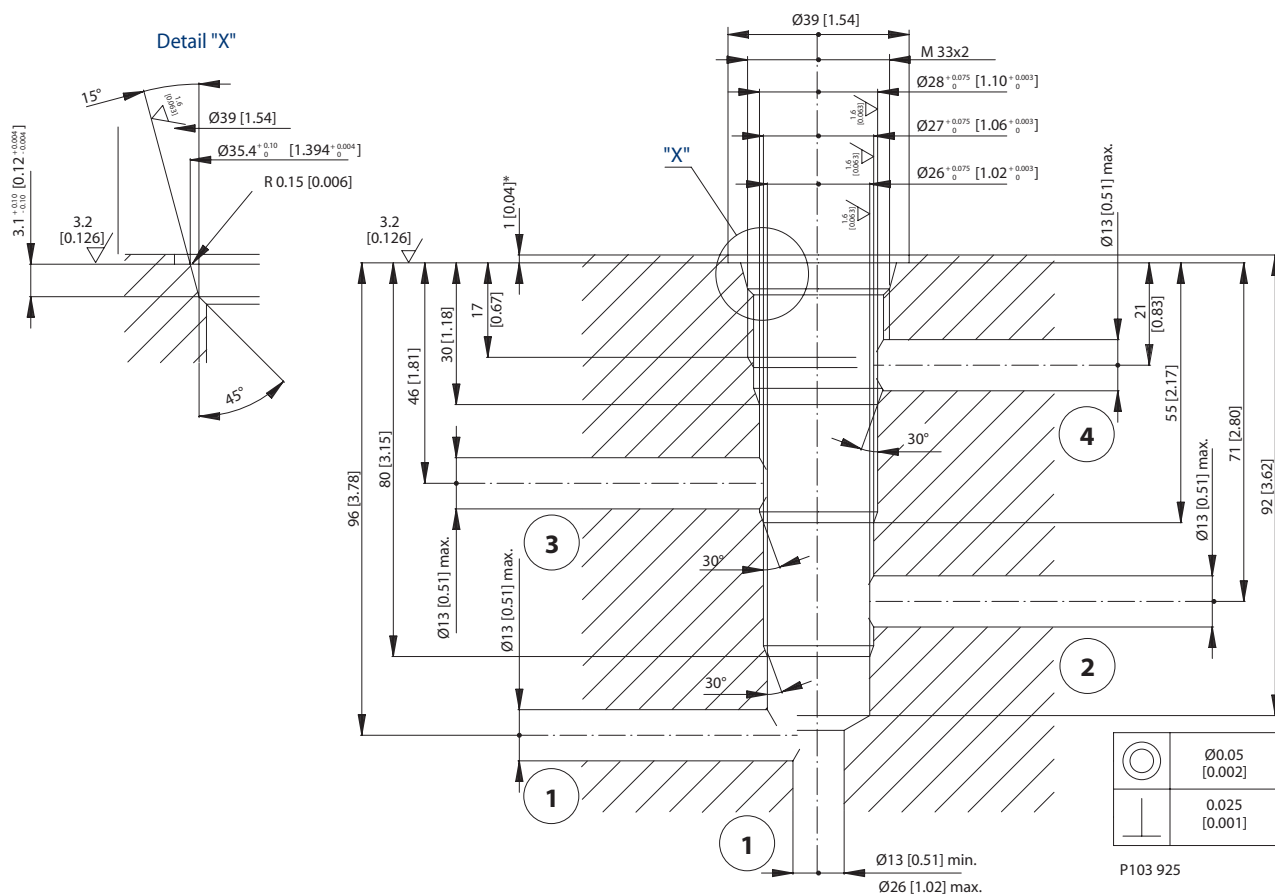
	Model code	Material number
Finishing tool	NCS12-3-FT	11027176
Roughing tool	NCS12-3-RT	11027177

Housings

Order Code	Description	Ports	Page
NCS12/3-DL-1/2	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	1/2 BSP	20.54
NCS12/3-DL-12S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	SAE #12	20.53
NCS12/3-DL-3/4	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	3/4 BSP	20.55
NCS12/3-DL-8S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	SAE #8	20.53
NCS12/3-SE-1	Aluminum Housing	1/2 BSP	20.56
NCS12/3-SE-12S	Aluminum Housing	SAE #12	20.56
NCS12/3-SE-3/4	Aluminum Housing	3/4 BSP	20.56
NCS12/3-SE-8S	Aluminum Housing	SAE #8	20.56
NCS12/3-SI-1	Aluminum Housing, Two #1 Ports	1/2 BSP	20.57
NCS12/3-SI-12S	Aluminum Housing, Two #1 Ports	SAE #12	20.57
NCS12/3-SI-3/4	Aluminum Housing, Two #1 Ports	3/4 BSP	20.57
NCS12/3-SI-8S	Aluminum Housing, Two #1 Ports	SAE #8	20.57

Dimensions

mm [in]



Form tools

	Model code	Material number
Finishing tool	NCS-12-4-FT	11027178
Roughing tool	NCS-12-4-RT	11027179

Housings

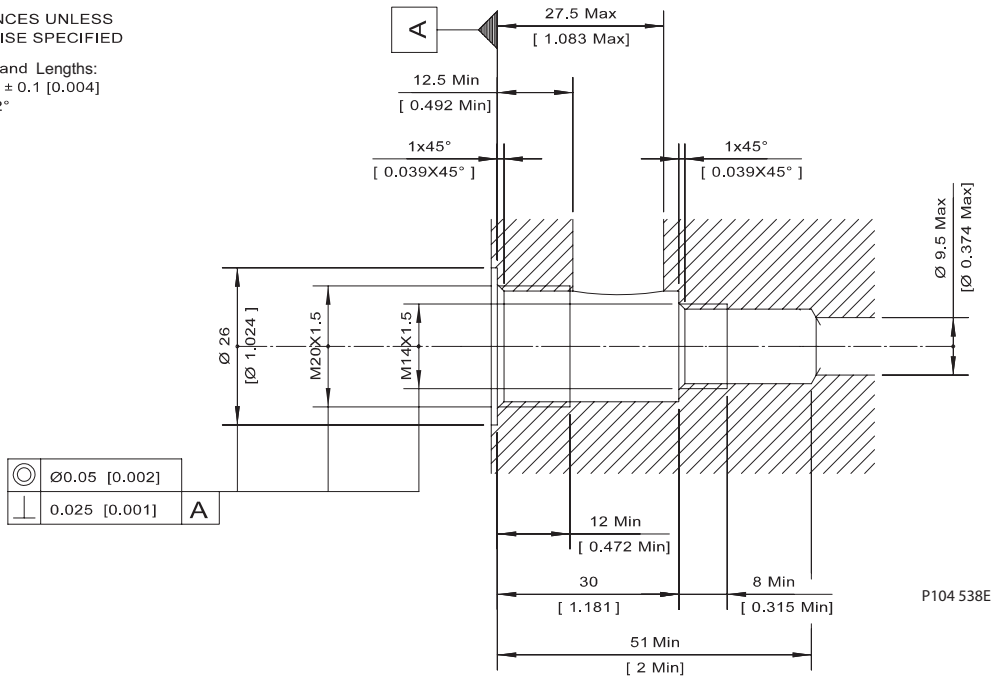
Order Code	Description	Ports	Page
NCS12/4-HD-1	Aluminum Housing, No Port #1	1/2 BSP	20.59
NCS12/4-L-1	Aluminum Housing	1/2 BSP	20.58
NCS12/4-L-12S	Aluminum Housing	SAE #12	20.60
NCS12/4-L-3/4	Aluminum Housing	3/4 BSP	20.58

Dimensions

mm [in]

TOLERANCES UNLESS OTHERWISE SPECIFIED

Diameter and Lengths:
 if < 18mm ± 0.1 [0.004]
 Angles ± 2°



P104 538E

Form tools

	Model code	Material number
Finishing tool	VME-06-FT	11027242
Roughing tool	VME-06-RT	11027243

Housings

Order Code	Description	Ports	Page
VME 06-DG-3B	Aluminum Housing	3/8 BSP	20.109
VME 06-DG-6S	Aluminum Housing	SAE #6	20.109
VME 06-LG-3B	Aluminum Housing	3/8 BSP	20.108
VME 06-LG-6S	Aluminum Housing	SAE #6	20.108

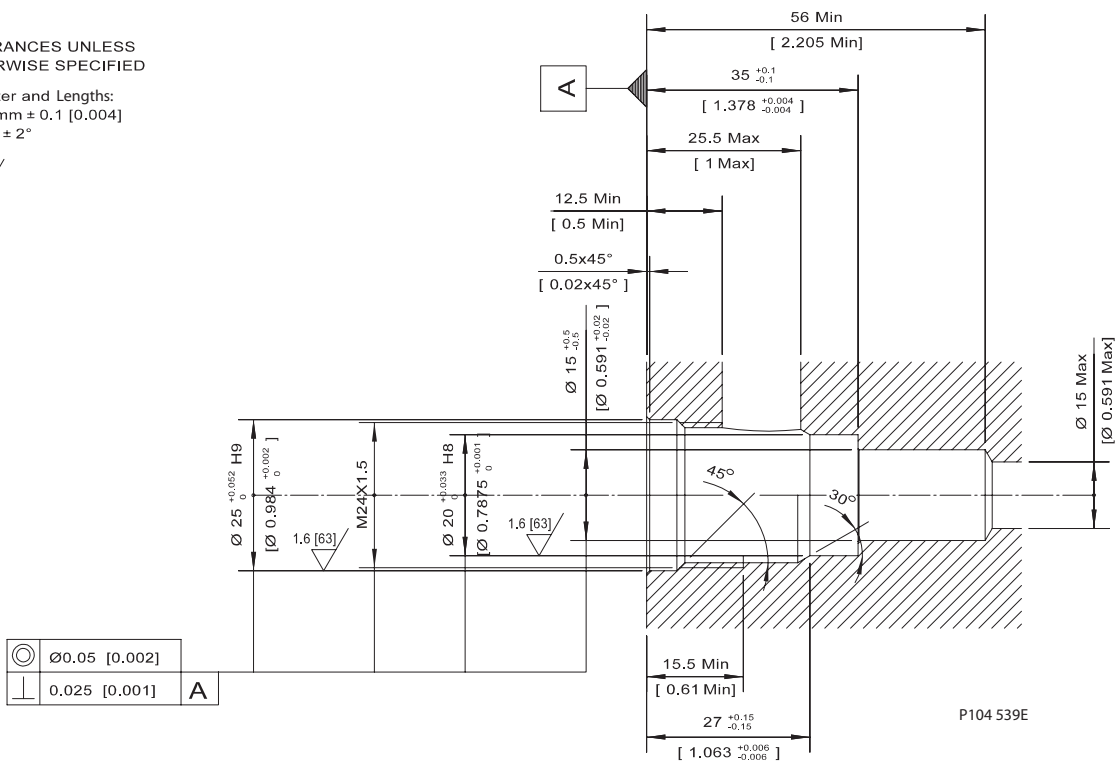
Dimensions

mm [in]

TOLERANCES UNLESS OTHERWISE SPECIFIED

Diameter and Lengths:
 if < 18mm ± 0.1 [0.004]
 Angles ± 2°

3.2 [125]



Form tools

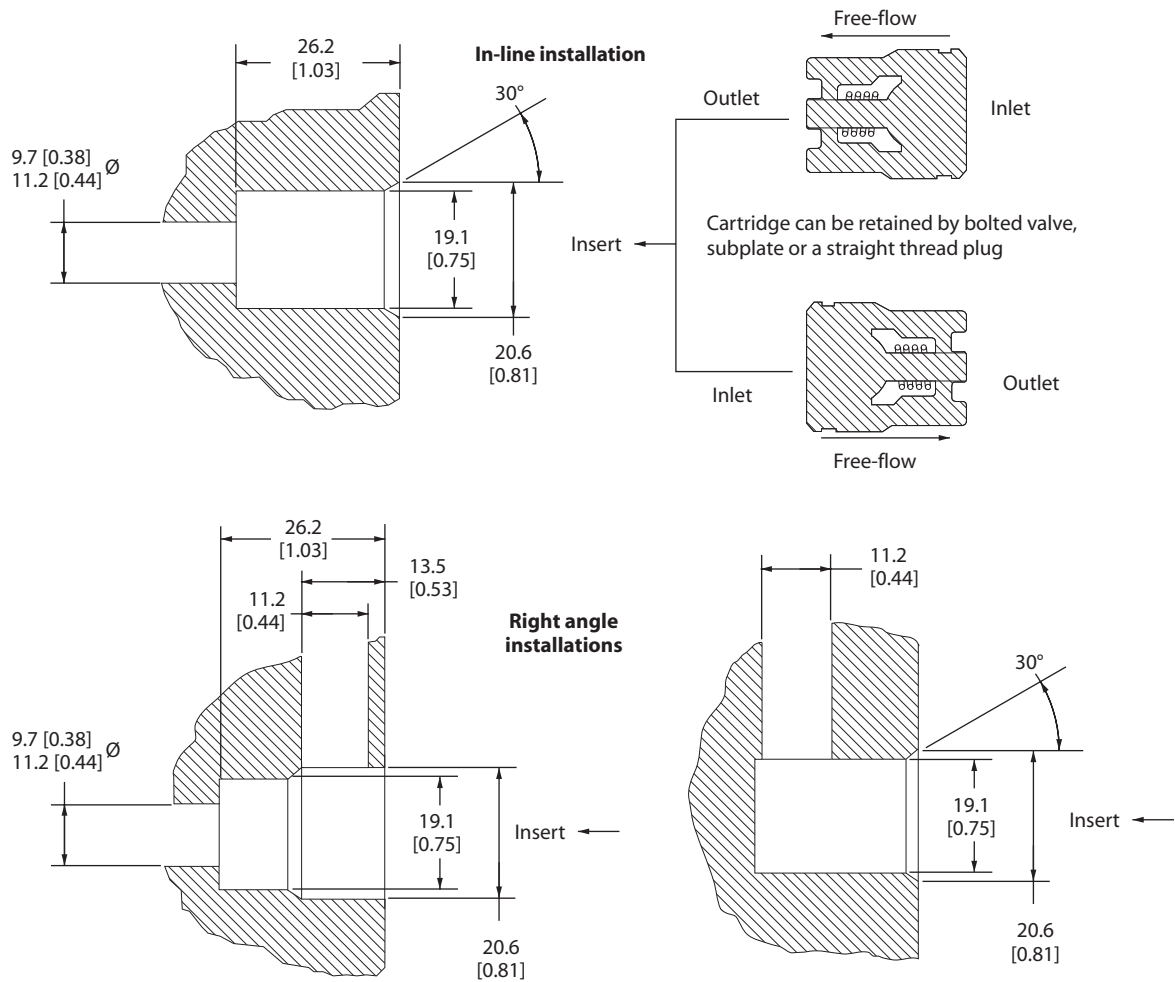
	Model code	Material number
Finishing tool	VME-07-FT	11027244
Roughing tool	VME-07-RT	11027245

Housings

Order Code	Description	Ports	Page
VME 07-DG-4B	Aluminum Housing	1/2 BSP	20.110
VME 07-DG-8S	Aluminum Housing	SAE #8	20.110
VME 07-LG-4B	Aluminum Housing	1/2 BSP	20.111
VME 07-LG-8S	Aluminum Housing	SAE #8	20.111

Dimensions

mm [in]

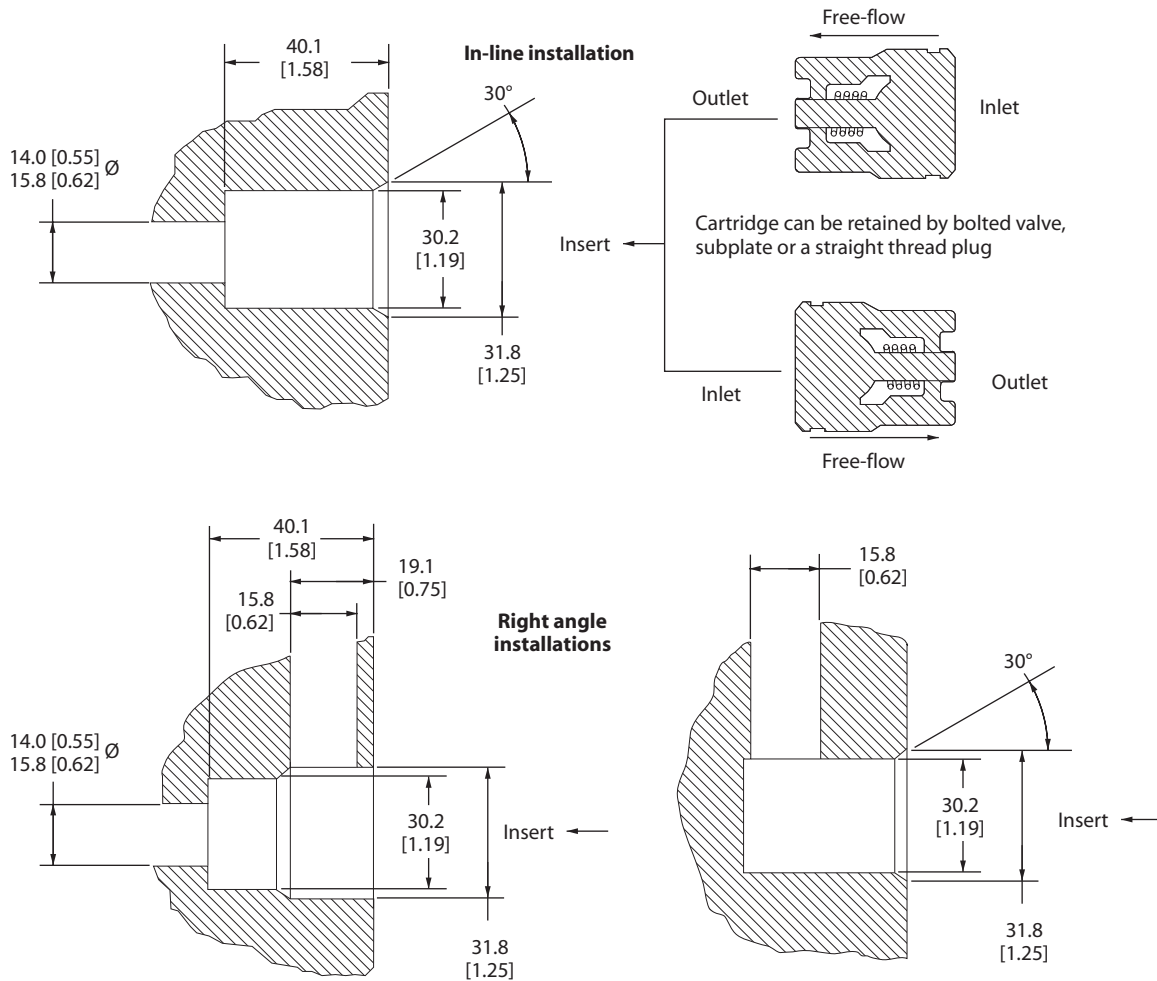


Form tools

Roughing tool	FC-144-RT
Finishing tool	FC-144-FT

mm [in]

Dimensions



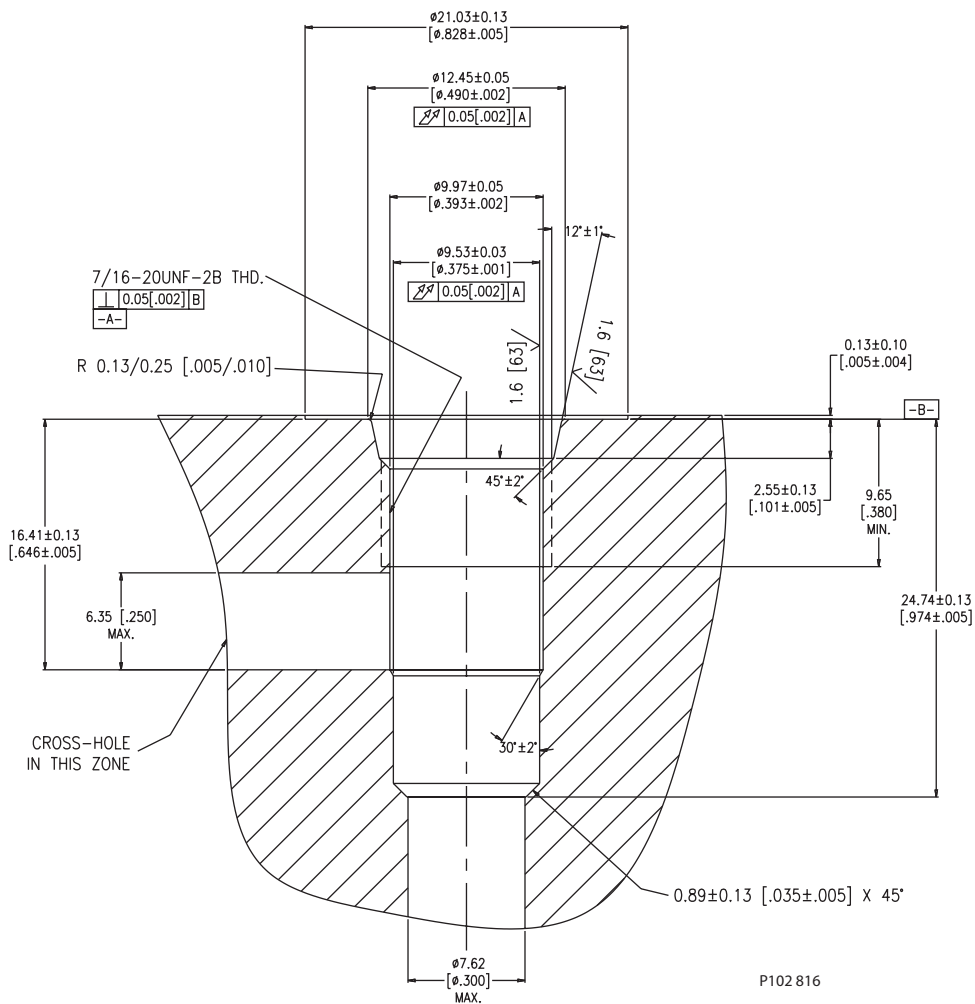
P102 820

Form tools

Roughing tool	FC-304-RT
Finishing tool	FC-304-FT

Dimensions

mm [in]



Form tools

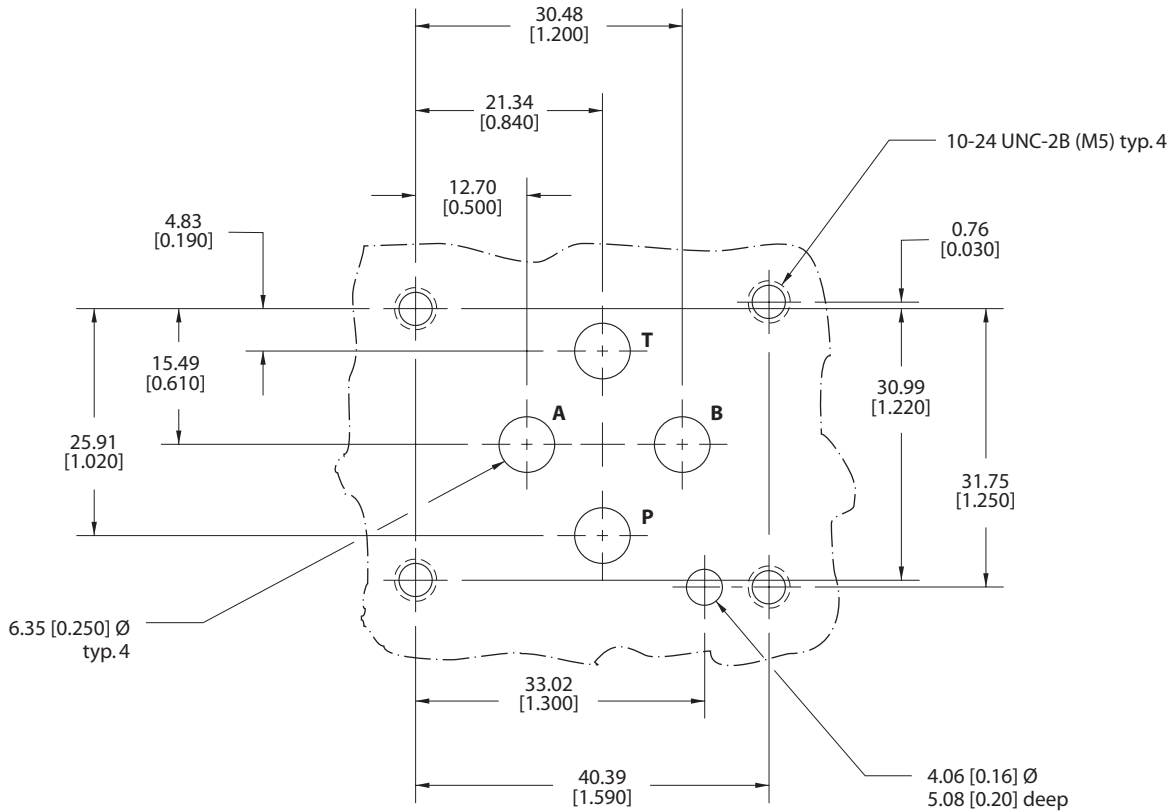
	Model code	Material number
Roughing tool	FC-336-RT	11027248
Finishing Tool	FC-336-FT	310219

Housings

Order Code	Description	Ports	Page
FC336-4S	Aluminum Housing	SAE #4	20.18

Dimensions

mm [in]



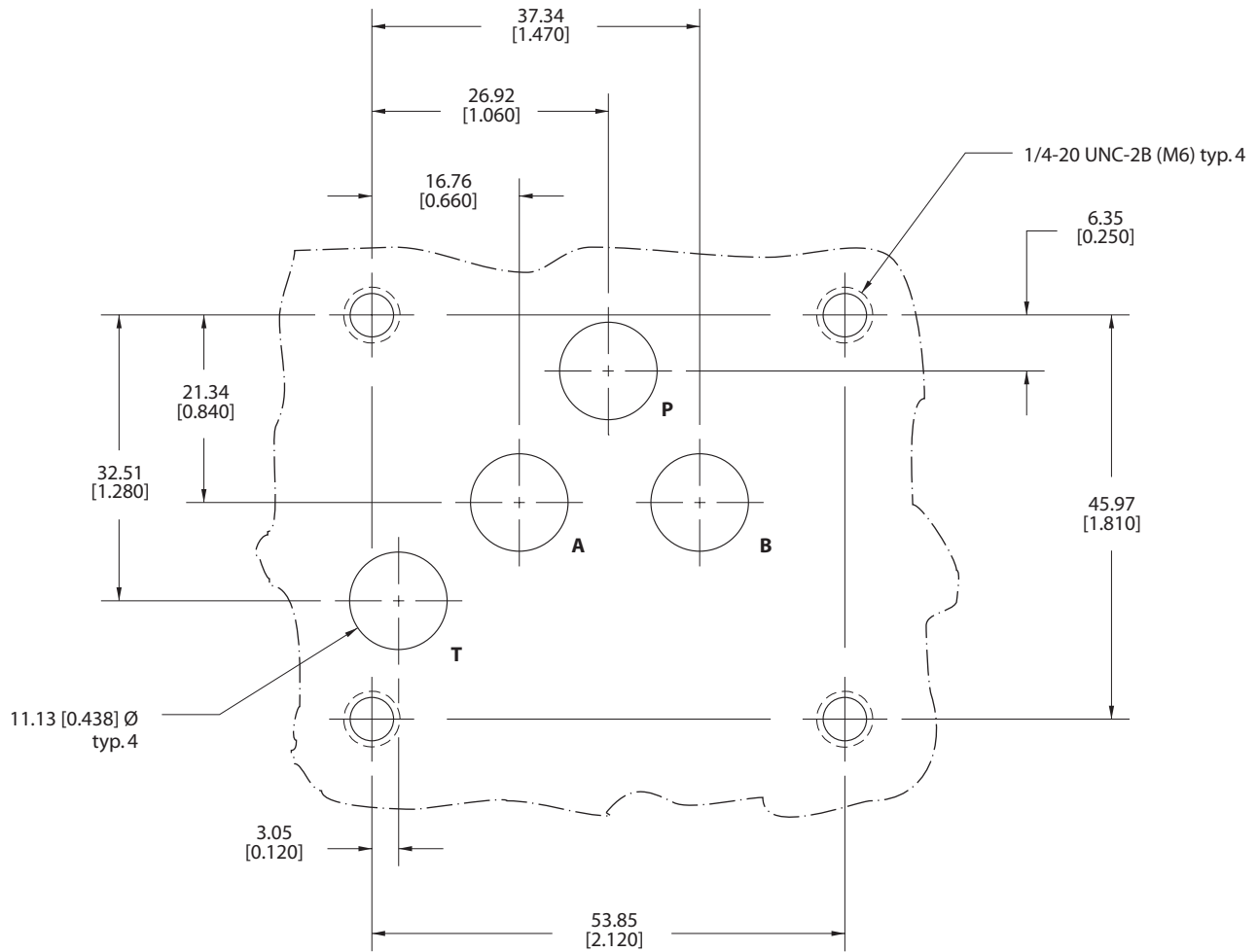
P102 926E

Housings

Order Code	Description	Ports	Page
UDPS-06-AL	ISO D03 Subplate, Aluminum	#8 SAE	20.19
UDPS-06-DI	ISO D03 Subplate, Ductile Iron	#8 SAE	20.19

Dimensions

mm [in]



P102 927E

Housings

Order Code	Description	Ports	Page
UDPS-10-AL	ISO D05 Subplate, Aluminum	#8 SAE	20.20
UDPS-10-DI	ISO D05 Subplate, Ductile Iron	#8 SAE	20.20

AVAILABLE HOUSINGS

Order code	Cavity	Ports	Page
CP04-2-2B	CP04-2	1/4 BSP	20.6
CP04-2-4S	CP04-2	SAE #4	20.6
CP04-3-2B	CP04-3	1/4 BSP	20.7
CP04-3-4S	CP04-3	SAE #4	20.7
CP07-3-4S	CP07-3	SAE #4	20.8
CP08-3L-3B	CP08-3L	3/8 BSP	20.9
CP08-3L-4S	CP08-3L	SAE #4	20.9
CP08-3L-2B	CP08-3L	1/4 BSP	20.9
CP08-3L-6S	CP08-3L	SAE #6	20.9
CP12-2-6B	CP12-2	3/4 BSP	20.10
CP12-2-S12S	CP12-2	SAE #12	20.10
CP12-2-S10S	CP12-2	SAE #10	20.10
CP12-2-12S	CP12-2	SAE #12	20.10
CP12-2-10S	CP12-2	SAE #10	20.10
CP12-2-4B	CP12-2	1/2 BSP	20.10
CP12-3-4B	CP12-3	1/2 BSP	20.11
CP12-3-S12S	CP12-3	SAE #12	20.11
CP12-3-6B	CP12-3	3/4 BSP	20.11
CP12-3-12S	CP12-3	SAE #12	20.11
CP12-3-10S	CP12-3	SAE #10	20.11
CP12-3-S10S	CP12-3	SAE #10	20.11
CP12-3M-10S	CP12-3M	SAE #10	20.12
CP12-3M-12S	CP12-3M	SAE #12	20.12
CP12-3M-6B	CP12-3M	3/4 BSP	20.12
CP12-3S-6B/2B	CP12-3S	3/4 BSP, 1/4 BSP	20.13
CP12-3S-4B/2B	CP12-3S	1/2 BSP, 1/4 BSP	20.13
CP12-3S-12S/4S	CP12-3S	SAE #12, #4	20.13
CP12-3S-10S/4S	CP12-3S	SAE #10, #4	20.13
CP12-4-3B-X1	CP12-4	3/8 BSP	20.14
CP12-4-8S-X1	CP12-4	SAE #8	20.14
CP12-4-8S/4S	CP12-4	SAE #10, #4	20.14
CP12-4-8S	CP12-4	SAE #8	20.14
CP12-4-10S	CP12-4	SAE #10	20.14
CP12-4-4B	CP12-4	1/2 BSP	20.14
CP12-4-3B	CP12-4	3/8 BSP	20.14
CP12-4-10S-X1	CP12-4	SAE #10	20.14
CP12-4-10S/4S	CP12-4	SAE #10, #4	20.14
CP12-4-4B-X1	CP12-4	1/2 BSP	20.14
CP16-4-12S-X1	CP16-4	SAE #12	20.15
CP16-4-16S-X1	CP16-4	SAE #16	20.15
CP16-4-6B	CP16-4	3/4 BSP	20.16
CP16-4-8B	CP16-4	1 BSP	20.16
CP16-4-12S	CP16-4	SAE #12	20.16
CP16-4-16S	CP16-4	SAE #16	20.16
CP20-3S-10B/2B	CP20-3S	1 1/4 BSP, 1/4 BSP	20.17
CP20-3S-16S/4S	CP20-3S	SAE #16, #4	20.17
CP20-3S-20S/4S	CP20-3S	SAE #20, #4	20.17
CP20-3S-8B/2B	CP20-3S	1 BSP, 1/4 BSP	20.17
FC336-4S	FC-336	SAE #4	20.18
UDPS-06-AL	ISO D03	#8 SAE	20.19
UDPS-06-DI	ISO D03	#8 SAE	20.19
UDPS-10-AL	ISO D05	#8 SAE	20.20

AVAILABLE HOUSINGS

Order code	Cavity	Ports	Page
UDPS-10-DI	ISO D05	#8 SAE	20.20
NCS04/2-LG2-1/4	NCS04/2	1/4 BSP	20.21
NCS04/2-LG2-6S	NCS04/2	SAE #6	20.21
NCS04/2-LG2-4S	NCS04/2	SAE #4	20.21
NCS04/2-DG-6S	NCS04/2	SAE #6	20.22
NCS04/2-DG-1/4	NCS04/2	1/4 BSP	20.22
NCS04/2-DG-4S	NCS04/2	SAE #4	20.22
NCS04/2-LG1-6S	NCS04/2	SAE #6	20.23
NCS04/2-LG1-1/4	NCS04/2	1/4 BSP	20.23
NCS04/2-LG1-4S	NCS04/2	SAE #4	20.23
NCS04/3-SE-1/4	NCS04/3	1/4 BSP	20.24
NCS04/3-SI-1/4	NCS04/3	1/4 BSP	20.25
NCS04/3-DI-1/4	NCS04/3	1/4 BSP	20.26
NCS04/3-DI-3/8	NCS04/3	3/8 BSP	20.26
NCS04/3-DL-1/4	NCS04/3	1/4 BSP	20.27
NCS04/3-DL-4S	NCS04/3	SAE #4	20.27
NCS04/3-DL-6S	NCS04/3	SAE #6	20.27
NCS04/3-SE-4S	NCS04/3	SAE #4	20.28
NCS04/3-SE-6S	NCS04/3	SAE #6	20.28
NCS04/3-SI-4S	NCS04/3	SAE #4	20.29
NCS04/3-SI-6S	NCS04/3	SAE #6	20.29
NCS04/3-L-6S	NCS04/4	SAE #6	20.30
NCS04/4-L-1/4	NCS04/4	1/4 BSP	20.31
NCS04/4-L-4S	NCS04/4	SAE #4	20.31
NCS06/2-LG2-8S	NCS06/2	SAE #8	20.32
NCS06/2-LG2-1/2	NCS06/2	1/2 BSP	20.32
NCS06/2-DG-3/8	NCS06/2	3/8 BSP	20.33
NCS06/2-DG-6S	NCS06/2	SAE #6	20.33
NCS06/2-DG-1/2	NCS06/2	1/2 BSP	20.34
NCS06/2-DG-8S	NCS06/2	SAE #8	20.34
NCS06/2-LG2-6S	NCS06/2	SAE #6	20.35
NCS06/2-LG2-3/8	NCS06/2	3/8 BSP	20.35
NCS06/2-LG1-1/2	NCS06/2	1/2 BSP	20.36
NCS06/2-LG1-8S	NCS06/2	SAE #8	20.36
NCS06/2-LG1-3/8	NCS06/2	3/8 BSP	20.37
NCS06/3-DL-1/2	NCS06/3	1/2 BSP	20.38
NCS06/3-DL-8S	NCS06/3	SAE #8	20.38
NCS06/3-LD-6S	NCS06/3	SAE #6	20.39
NCS06/3-LD-8S	NCS06/3	SAE #8	20.40
NCS06/3-SE-8S	NCS06/3	SAE #8	20.41
NCS06/3-SE-1/2	NCS06/3	1/2 BSP	20.41
NCS06/3-SE-3/8	NCS06/3	3/8 BSP	20.42
NCS06/3-SE-6S	NCS06/3	SAE #6	20.42
NCS06/3-SI-3/8	NCS06/3	3/8 BSP	20.43
NCS06/3-SI-6S	NCS06/3	SAE #6	20.43
NCS06/3-SI-1/2	NCS06/3	1/2 BSP	20.44
NCS06/3-SI-8S	NCS06/3	SAE #8	20.44
NCS06/3-DL-6S	NCS06/3	SAE #6	20.45
NCS06/3-DL-3/8	NCS06/3	3/8 BSP	20.45
NCS06/4-LD-3/8	NCS06/4	3/8 BSP	20.46
NCS06/4-L-1/2	NCS06/4	1/2 BSP	20.47
NCS06/4-L-8S	NCS06/4	SAE #8	20.47

AVAILABLE HOUSINGS

Order code	Cavity	Ports	Page
NCS06/4-LD-1/2	NCS06/4	1/2 BSP	20.48
NCS06/4-L-3/8	NCS06/4	3/8 BSP	20.49
NCS06/4-L-6S	NCS06/4	SAE #6	20.49
NCS12/2-DG-12S	NCS12/2	SAE #12	20.50
NCS12/2-DG-3/4	NCS12/2	3/4 BSP	20.50
NCS12/2-DG-8S	NCS12/2	SAE #8	20.50
NCS12/2-DG-1/2	NCS12/2	1/2 BSP	20.50
NCS12/2-LG1-8S	NCS12/2	SAE #8	20.51
NCS12/2-LG1-12S	NCS12/2	SAE #12	20.51
NCS12/2-LG2-12S	NCS12/2	SAE #12	20.52
NCS12/2-LG2-3/4	NCS12/2	3/4 BSP	20.52
NCS12/2-LG2-8S	NCS12/2	SAE #8	20.52
NCS12/2-LG2-1/2	NCS12/2	1/2 BSP	20.52
NCS12/3-DL-12S	NCS12/3	SAE #12	20.53
NCS12/3-DL-8S	NCS12/3	SAE #8	20.53
NCS12/3-DL-1/2	NCS12/3	1/2 BSP	20.54
NCS12/3-DL-3/4	NCS12/3	3/4 BSP	20.55
NCS12/3-SE-12S	NCS12/3	SAE #12	20.56
NCS12/3-SE-3/4	NCS12/3	3/4 BSP	20.56
NCS12/3-SE-1	NCS12/3	1/2 BSP	20.56
NCS12/3-SE-8S	NCS12/3	SAE #8	20.56
NCS12/3-SI-1	NCS12/3	1/2 BSP	20.57
NCS12/3-SI-12S	NCS12/3	SAE #12	20.57
NCS12/3-SI-3/4	NCS12/3	3/4 BSP	20.57
NCS12/3-SI-8S	NCS12/3	SAE #8	20.57
NCS12/4-L-1	NCS12/4	1/2 BSP	20.58
NCS12/4-L-3/4	NCS12/4	3/4 BSP	20.58
NCS12/4-HD-1	NCS12/4	1/2 BSP	20.59
NCS12/4-L-12S	NCS12/4	SAE #12	20.60
CP08-2-8S-2PL	SDC08-2	SAE #8	20.61
SDC08-2-DG-2B	SDC08-2	1/4 BSP	20.62
SDC08-2-DG-3B	SDC08-2	3/8 BSP	20.63
SDC08-2-HG1-3B	SDC08-2	3/8 BSP	20.64
SDC08-2-HG2-3B	SDC08-2	3/8 BSP	20.65
SDC08-2-HG-2B	SDC08-2	1/4 BSP	20.66
SDC08-2-HG-3B	SDC08-2	3/8 BSP	20.67
SDC08-2-LG1-3B	SDC08-2	3/8 BSP	20.68
SDC08-2-LG2-3B	SDC08-2	3/8 BSP	20.69
CP08-2-8S-2CR	SDC08-2	SAE #8	20.70
CP08-2-6S-2CR	SDC08-2	SAE #6	20.71
CP08-2-4S	SDC08-2	SAE #4	20.72
CP08-2-6S	SDC08-2	SAE #6	20.73
CP08-2-54S	SDC08-2	SAE #4	20.74
SDC08-3-HI-2B	SDC08-3	1/4 BSP	20.75
SDC08-3-SE-2B	SDC08-3	1/4 BSP	20.76
SDC08-3-SE-3B	SDC08-3	3/8 BSP	20.77
CP08-3-S6S	SDC08-3	SAE #6	20.69
CP08-3-S4S	SDC08-3	SAE #4	20.69
CP08-3-6S	SDC08-3	SAE #6	20.69
CP08-3-4S	SDC08-3	SAE #4	20.69
CP08-4-6S	SDC08-4	SAE #6	20.70

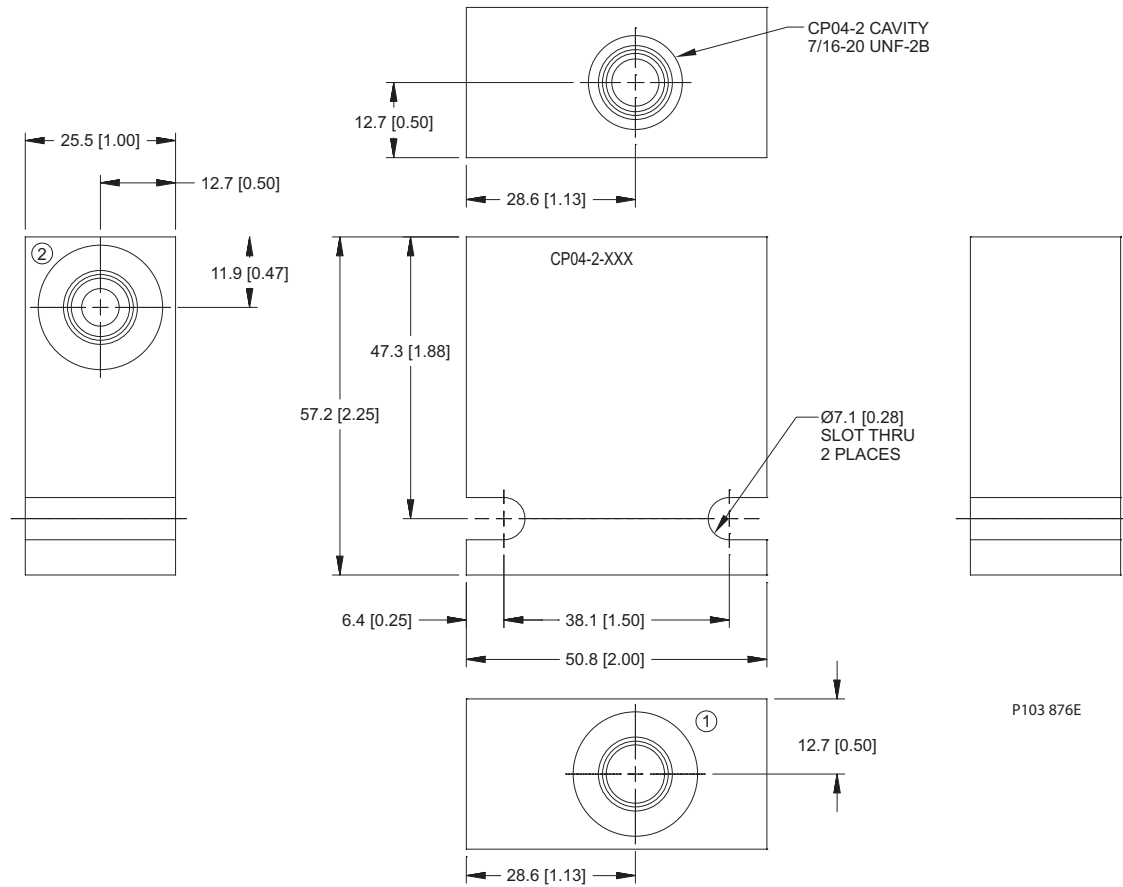
AVAILABLE HOUSINGS

Order code	Cavity	Ports	Page
CP08-4-4S	SDC08-4	SAE #4	20.70
SDC08-4-L-2B	SDC08-4	1/4 BSP	20.71
CP10-2-8S-2PL	SDC10-2	SAE #8	20.72
SDC10-2-DG-4B	SDC10-2	1/2 BSP	20.73
CP10-2-10S-2CR	SDC10-2	SAE #10	20.74
CP10-2-S8S	SDC10-2	SAE #8	20.75
CP10-2-8S	SDC10-2	SAE #8	20.75
CP10-2-6S	SDC10-2	SAE #6	20.75
CP10-2-S6S	SDC10-2	SAE #6	20.75
SDC10-2-LG1-4B	SDC10-2	1/2 BSP	20.76
SDC10-2-DG-3B	SDC10-2	3/8 BSP	20.77
SDC10-2-LG2-4B	SDC10-2	1/2 BSP	20.78
CP10-3-6S	SDC10-3	SAE #6	20.79
CP10-3-8S	SDC10-3	SAE #8	20.79
CP10-3-S6S	SDC10-3	SAE #6	20.79
CP10-3-S8S	SDC10-3	SAE #8	20.79
SDC10-3-SI-3B	SDC10-3	3/8 BSP	20.80
SDC10-3-SI-4B	SDC10-3	1/2 BSP	20.81
SDC10-3-SE-4B	SDC10-3	1/2 BSP	20.82
SDC10-3-SE-3B	SDC10-3	3/8 BSP	20.83
SDC10-3S-SE-3B	SDC10-3S	3/8 BSP	20.84
SDC10-3S-SE-4B	SDC10-3S	1/2 BSP	20.84
SDC10-3S-10S/6S	SDC10-3S	SAE #10	20.85
SDC10-3S-8S/6S	SDC10-3S	SAE #8	20.85
SDC10-3S-6S/6S	SDC10-3S	SAE #6	20.85
CP10-4-S8S	SDC10-4	SAE #8	20.86
CP10-4-8S-X1	SDC10-4	SAE #8	20.86
CP10-4-S6S	SDC10-4	SAE #6	20.86
CP10-4-6S-X1	SDC10-4	SAE #6	20.86
CP10-4-6S	SDC10-4	SAE #6	20.86
CP10-4-8S	SDC10-4	SAE #8	20.86
SDC10-4-HD-3B	SDC10-4	3/8 BSP	20.87
SDC10-4-L-3B	SDC10-4	3/8 BSP	20.88
SDC10-4-L-4B	SDC10-4	1/2 BSP	20.89
SDC12-2-DG-6B	SDC12-2	3/4 BSP	20.90
SDC12-2-12S	SDC12-2	#12 SAE	20.91
SDC12-2-10S	SDC12-2	#10 SAE	20.91
SDC12-2-LG2-6B	SDC12-2	3/4 BSP	20.92
SDC12-2-LG1-6B	SDC12-2	3/4 BSP	20.93
SDC12-2-DG-4B	SDC12-2	1/2 BSP	20.94
SDC16-2-HG1-8B	SDC16-2	1 BSP	20.95
CP16-2-16S	SDC16-2	SAE #16	20.96
CP16-2-12S	SDC16-2	SAE #12	20.96
CP16-2-S16S	SDC16-2	SAE #16	20.96
SDC16-2-HG-8B	SDC16-2	1 BSP	20.97
SDC16-2-HG-6B	SDC16-2	3/4 BSP	20.98
SDC16-2-HG2-8B	SDC16-2	1 BSP	20.99
SDC16-3-HE-8B	SDC16-3	1 BSP	20.100
SDC16-3-HE-6B	SDC16-3	3/4 BSP	20.101
SDC16-3-HI-8B	SDC16-3	1 BSP	20.102
CP16-3-12S	SDC16-3	SAE #12	20.103
CP16-3-16S	SDC16-3	SAE #16	20.103

AVAILABLE HOUSINGS

Order code	Cavity	Ports	Page
CP20-2-16S	SDC20-2	SAE #16	20.105
CP20-2-16S	SDC20-2	SAE #16	20.105
CP16-3S-6B/2B	SDC16-3S	3/4 BSP, 1/4 BSP	20.104
CP16-3S-12S/4S	SDC16-3S	SAE #12, #4	20.104
CP20-2-16S	SDC20-2	SAE #16	20.105
CP20-2-20S	SDC20-2	SAE #20	20.105
CP20-2-8B	SDC20-2	1 BSP	20.105
CP20-2-10B	SDC20-2	1 1/4 BSP	20.105
CP20-3-20S	SDC20-3	SAE #20	20.106
CP20-3-8B/2B1	SDC20-3	1 BSP, 1/4 BSP	20.106
CP20-3-20S/4S1	SDC20-3	SAE #20, #4	20.106
CP20-3-16S/4S1	SDC20-3	SAE #16, #4	20.106
CP20-3-16S	SDC20-3	SAE #16	20.106
CP20-3-10B/2B1	SDC20-3	1 1/4 BSP, 1/4 BSP	20.106
CP20-3-10B	SDC20-3	1 1/4 BSP	20.106
CP20-3-8B	SDC20-3	1 BSP	20.106
CP20-4-20S	SDC20-4	SAE #20	20.107
CP20-4-S16S-X1	SDC20-4	SAE #16	20.107
CP20-4-S16S	SDC20-4	SAE #16	20.107
CP20-4-8B-X1	SDC20-4	1 BSP	20.107
CP20-4-8B	SDC20-4	1 BSP	20.107
CP20-4-16S-X1	SDC20-4	SAE #16	20.107
CP20-4-20S/4S	SDC20-4	SAE #20, #4	20.107
CP20-4-10B	SDC20-4	1 1/4 BSP	20.107
CP20-4-20S-X1	SDC20-4	SAE #20	20.107
CP20-4-10B-X1	SDC20-4	1 1/4 BSP	20.107
CP20-4-16S	SDC20-4	SAE #16	20.107
CP20-4-16S/4S	SDC20-4	SAE #16, #4	20.107
VME 06-LG-3B	VME06	3/8 BSP	20.108
VME 06-LG-6S	VME06	SAE #6	20.108
VME 06-DG-3B	VME06	3/8 BSP	20.109
VME 06-DG-6S	VME06	SAE #6	20.109
VME 07-DG-4B	VME07	1/2 BSP	20.110
VME 07-DG-8S	VME07	SAE #8	20.110
VME 07-LG-4B	VME07	1/2 BSP	20.111
VME 07-LG-8S	VME07	SAE #8	20.111
VME 08-LG-6B	VME08	3/4 BSP	20.112
VME 08-LG-12S	VME08	SAE #12	20.112
VME 08-DG-6B	VME08	3/4 BSP	20.113
VME 08-DG-12S	VME08	SAE #12	20.113
DCB10-3S-6S	SDC10-3S	SAE #6	20.118
DCB10-3S-8S	SDC10-3S	SAE #8	20.118
DCB10-3S-10S	SDC10-3S	SAE #10	20.118
DCB10-3S-SE-3B	SDC10-3S	3/8 BSP	20.118
DCB10-3S-SE-4B	SDC10-3S	1/2 BSP	20.118

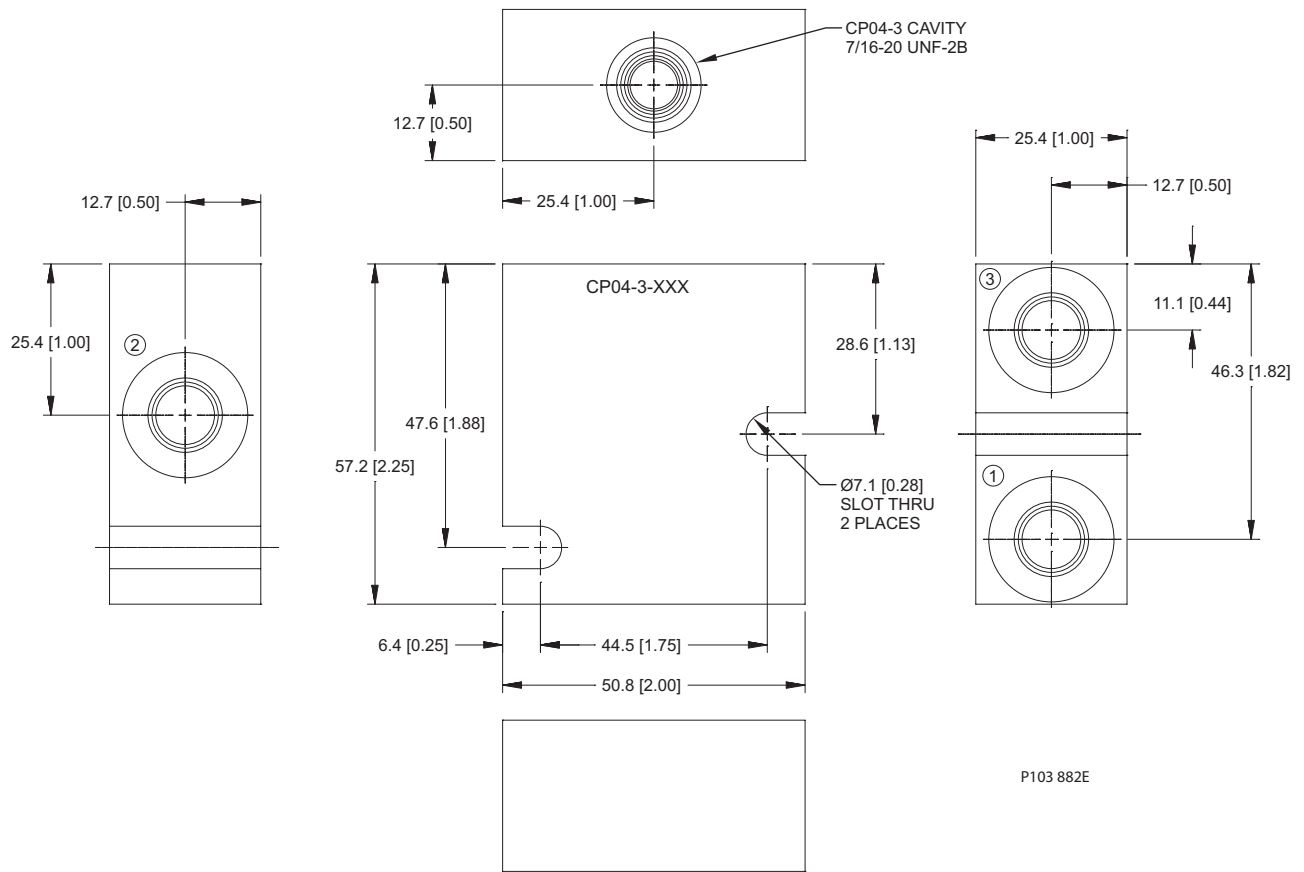
Housing drawing



Options

Order Code	Description	Style	Ports
CP04-2-2B	Aluminum Housing	Standard	1/4 BSP
CP04-2-4S	Aluminum Housing	Standard	SAE #4

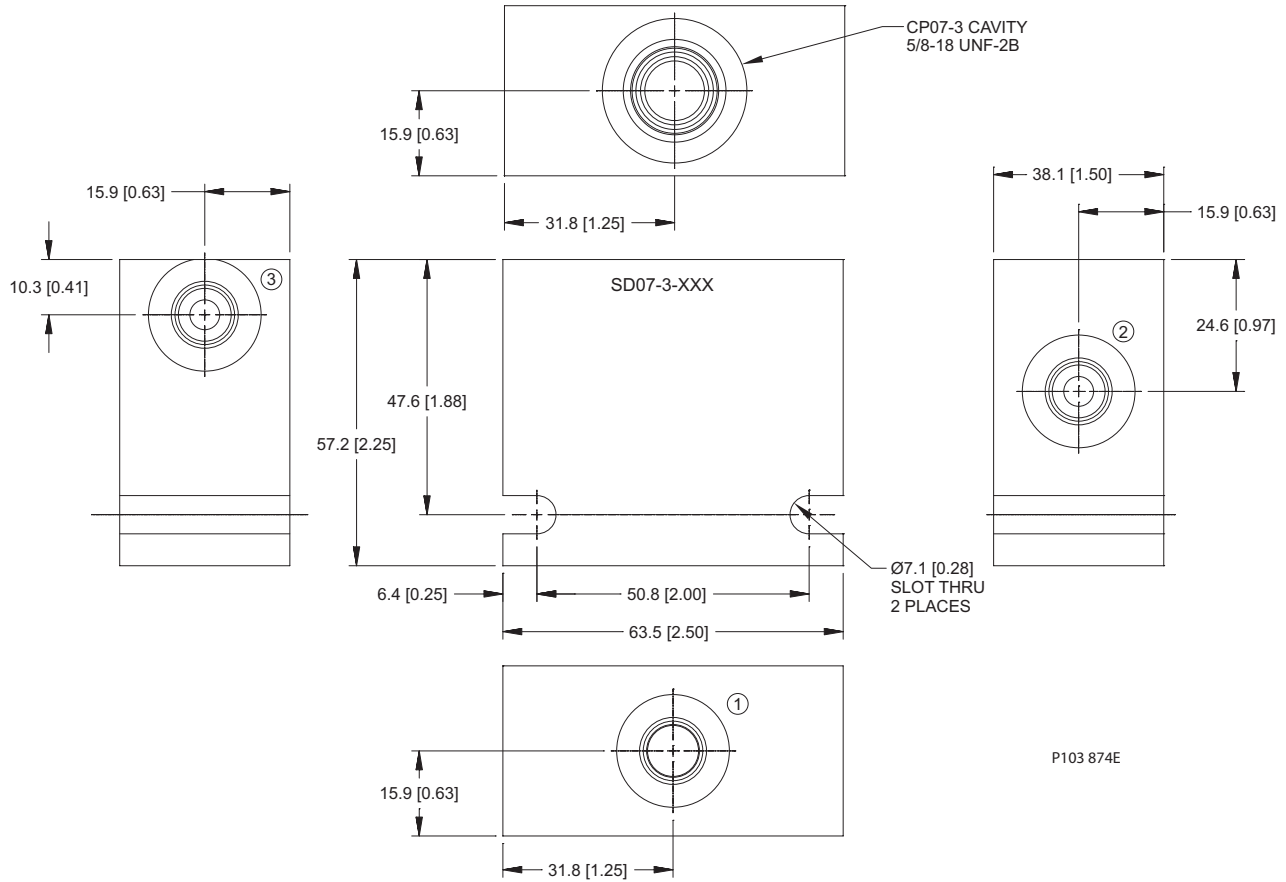
Dimensions



Options

Order Code	Description	Style	Ports
CP04-3-2B	Aluminum Housing	Standard	1/4 BSP
CP04-3-4S	Aluminum Housing	Standard	SAE #4

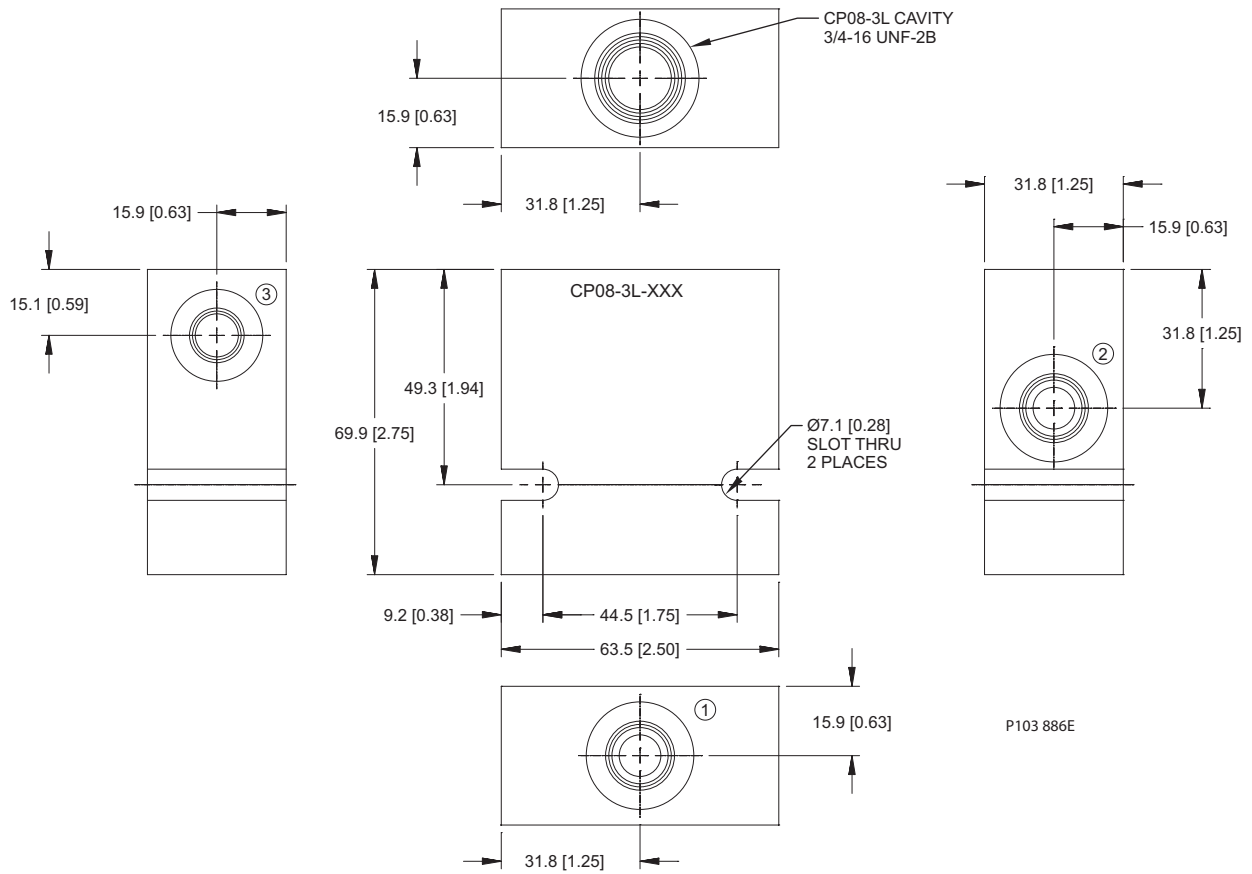
Housing drawing



Options

Order Code	Description	Style	Ports
CP07-3-4S	Aluminum Housing	Standard	SAE #4

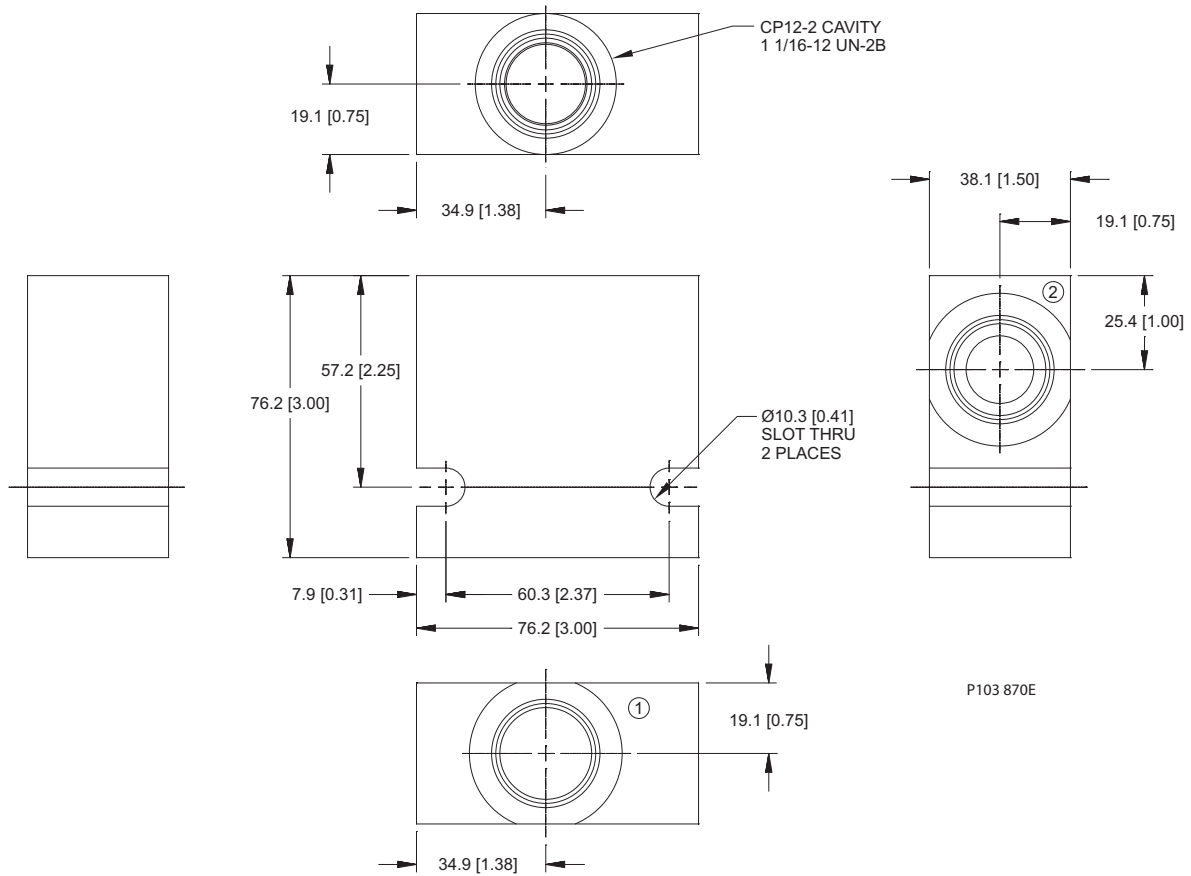
Dimensions



Options

Order Code	Description	Style	Ports
CP08-3L-2B	Aluminum Housing	Standard	1/4 BSP
CP08-3L-3B	Aluminum Housing	Standard	3/8 BSP
CP08-3L-4S	Aluminum Housing	Standard	SAE #4
CP08-3L-6S	Aluminum Housing	Standard	SAE #6

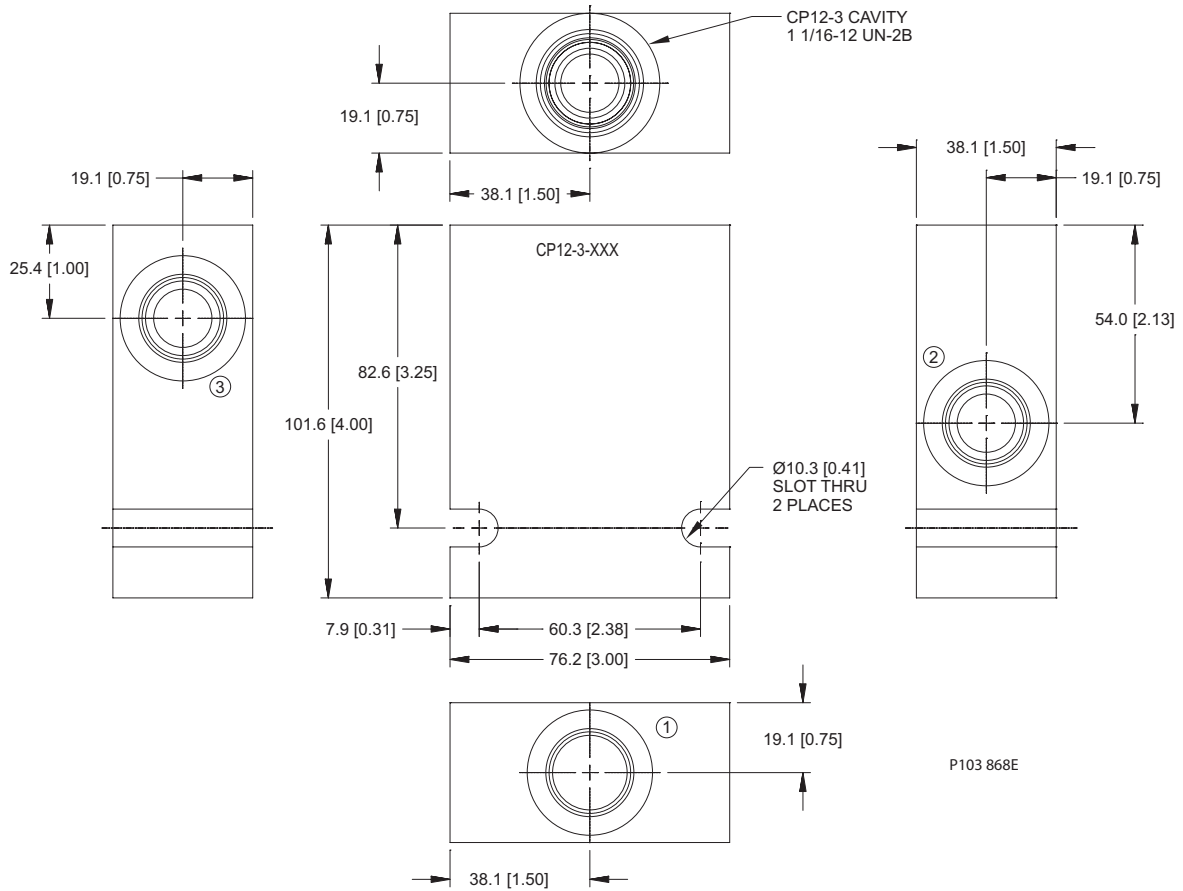
Housing drawing



Options

Order Code	Description	Style	Ports
CP12-2-10S	Aluminum Housing	Standard	SAE #10
CP12-2-12S	Aluminum Housing	Standard	SAE #12
CP12-2-4B	Aluminum housing	Standard	1/2 BSP
CP12-2-6B	Aluminum housing	Standard	3/4 BSP
CP12-2-S10S	Steel Housing	Standard	SAE #10
CP12-2-S12S	Steel Housing	Standard	SAE #12

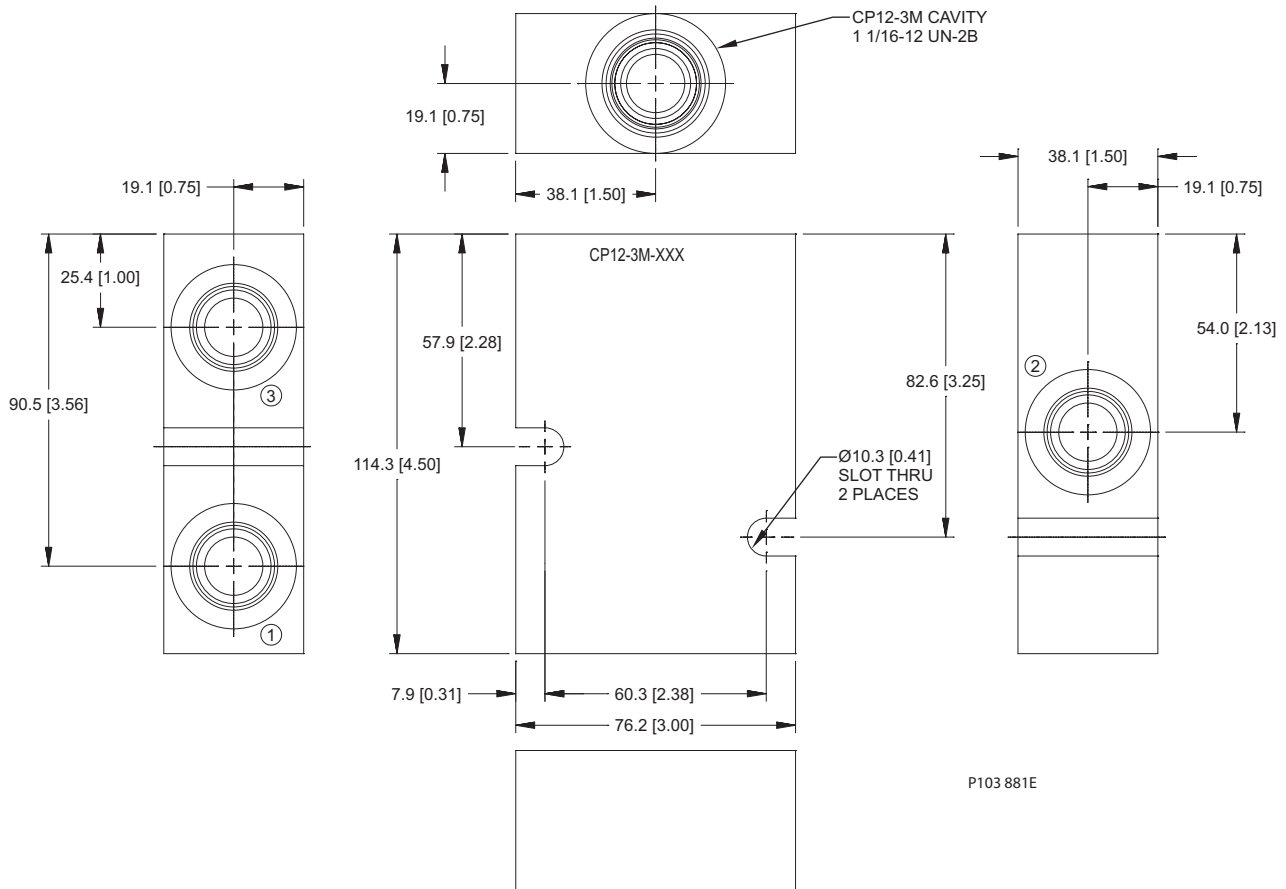
Dimensions



Options

Order Code	Description	Style	Ports
CP12-3-10S	Aluminum Housing	Standard	SAE #10
CP12-3-12S	Aluminum Housing	Standard	SAE #12
CP12-3-4B	Aluminum Housing	Standard	1/2 BSP
CP12-3-6B	Aluminum Housing	Standard	3/4 BSP
CP12-3-S10S	Steel Housing	Standard	SAE #10
CP12-3-S12S	Steel Housing	Standard	SAE #12

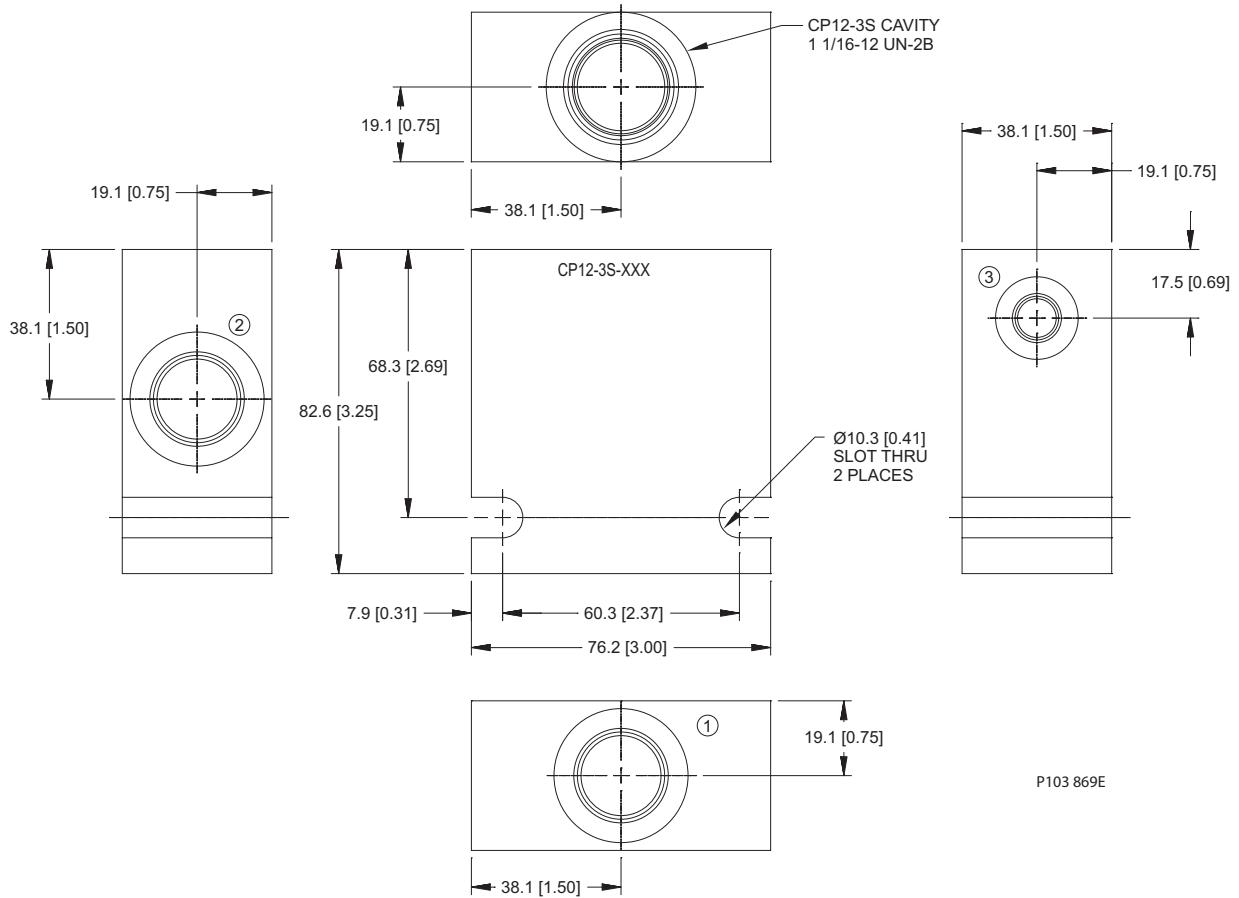
Housing drawing



Options

Order Code	Description	Style	Ports
CP12-3M-10S	Aluminum Housing	Standard	SAE #10
CP12-3M-12S	Aluminum Housing	Standard	SAE #12
CP12-3M-6B	Aluminum Housing	Standard	3/4 BSP

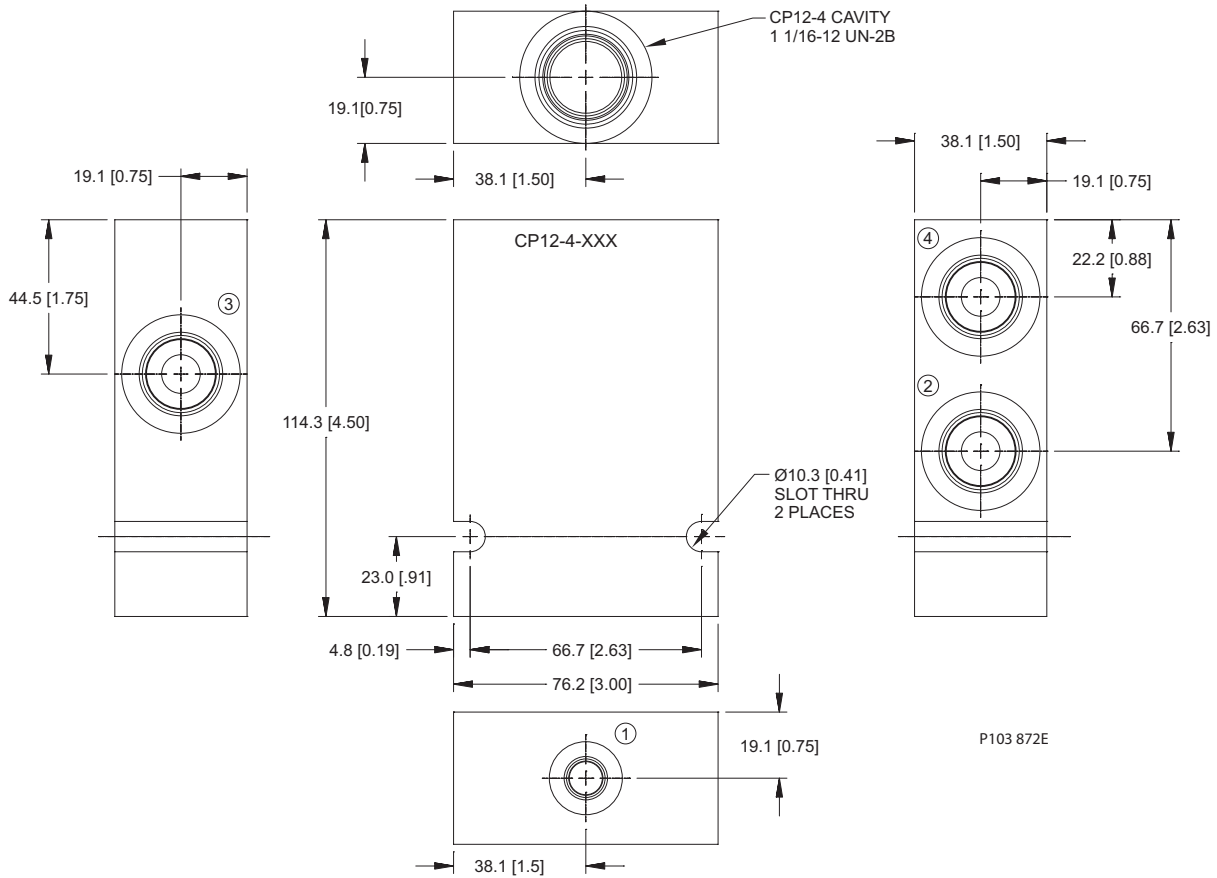
Dimensions



Options

Order Code	Description	Style	Ports
CP12-3S-10S/4S	Aluminum Housing, Pilot at Port #3	Standard	SAE #10, #4
CP12-3S-12S/4S	Aluminum Housing, Pilot at Port #3	Standard	SAE #12, #4
CP12-3S-4B/2B	Aluminum Housing, Pilot at Port #3	Standard	1/2 BSP, 1/4 BSP
CP12-3S-6B/2B	Aluminum Housing, Pilot at Port #3	Standard	3/4 BSP, 1/4 BSP

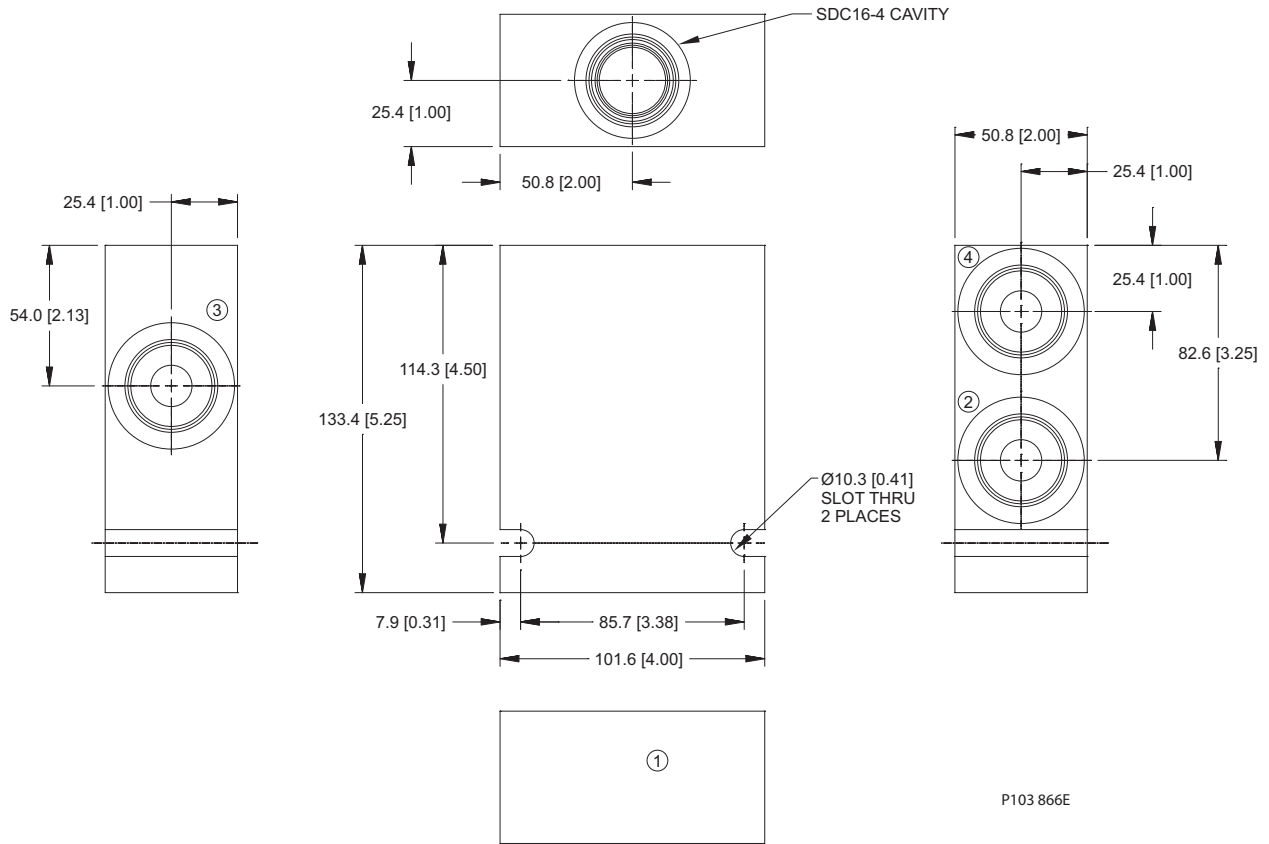
Housing drawing



Options

Order Code	Description	Style	Ports
CP12-4-10S	Aluminum Housing	Standard	SAE #10
CP12-4-10S/4S	Aluminum Housing, Pilot at Port #1	Standard	SAE #10, #4
CP12-4-10S-X1	Aluminum Housing, No Port #1	Omit port 1	SAE #10
CP12-4-3B	Aluminum Housing	Standard	3/8 BSP
CP12-4-3B-X1	Aluminum Housing, No Port #1	Omit port 1	3/8 BSP
CP12-4-4B	Aluminum Housing	Standard	1/2 BSP
CP12-4-4B-X1	Aluminum Housing, No Port #1	Omit port 1	1/2 BSP
CP12-4-8S	Aluminum Housing	Standard	SAE #8
CP12-4-8S/4S	Aluminum Housing, Pilot at Port #1	Standard	SAE #10, #4
CP12-4-8S-X1	Aluminum Housing, No Port #1	Omit port 1	SAE #8

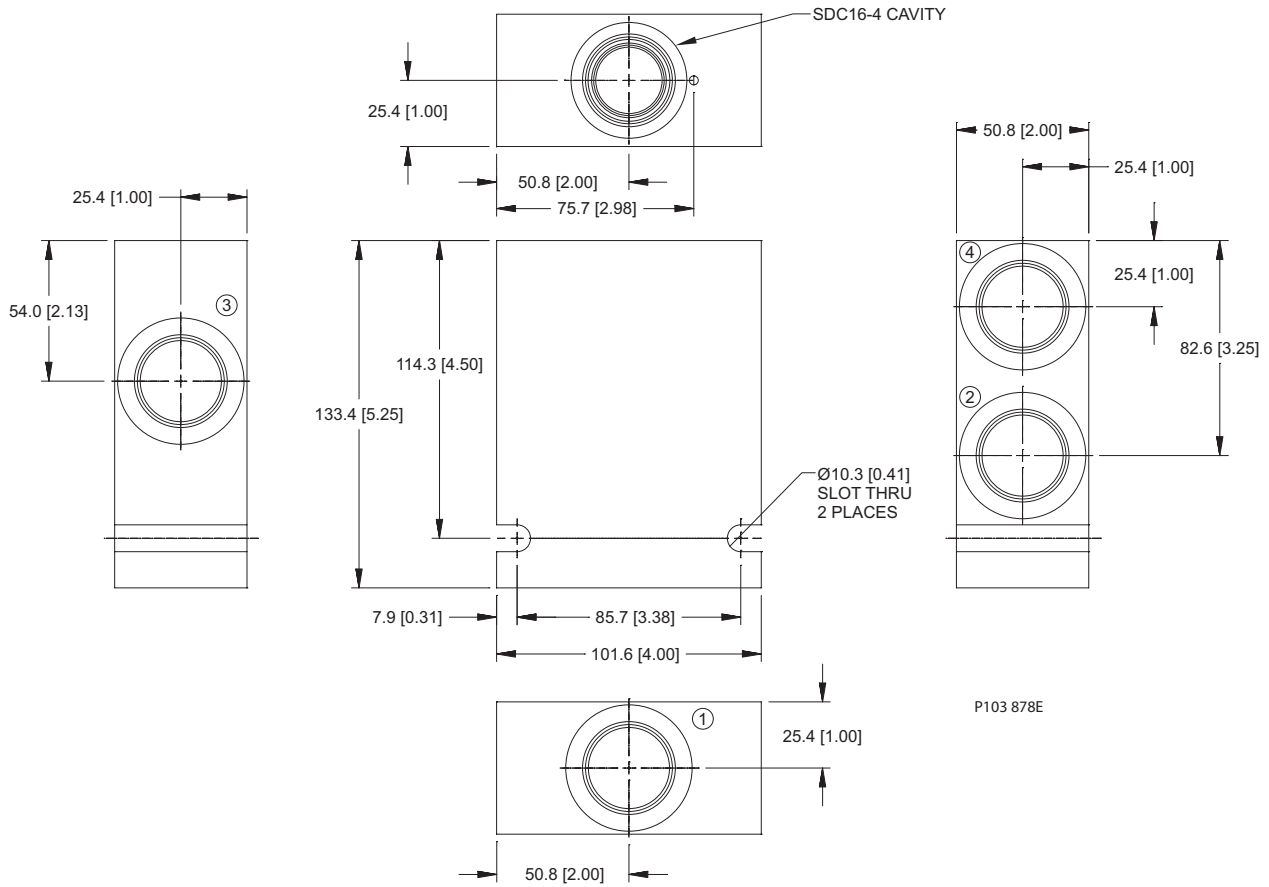
Dimensions



Options

Order Code	Description	Style	Ports
CP16-4-12S-X1	Aluminum Housing, No Port #1	Omit port 1	SAE #12
CP16-4-16S-X1	Aluminum Housing, No Port #1	Omit port 1	SAE #16

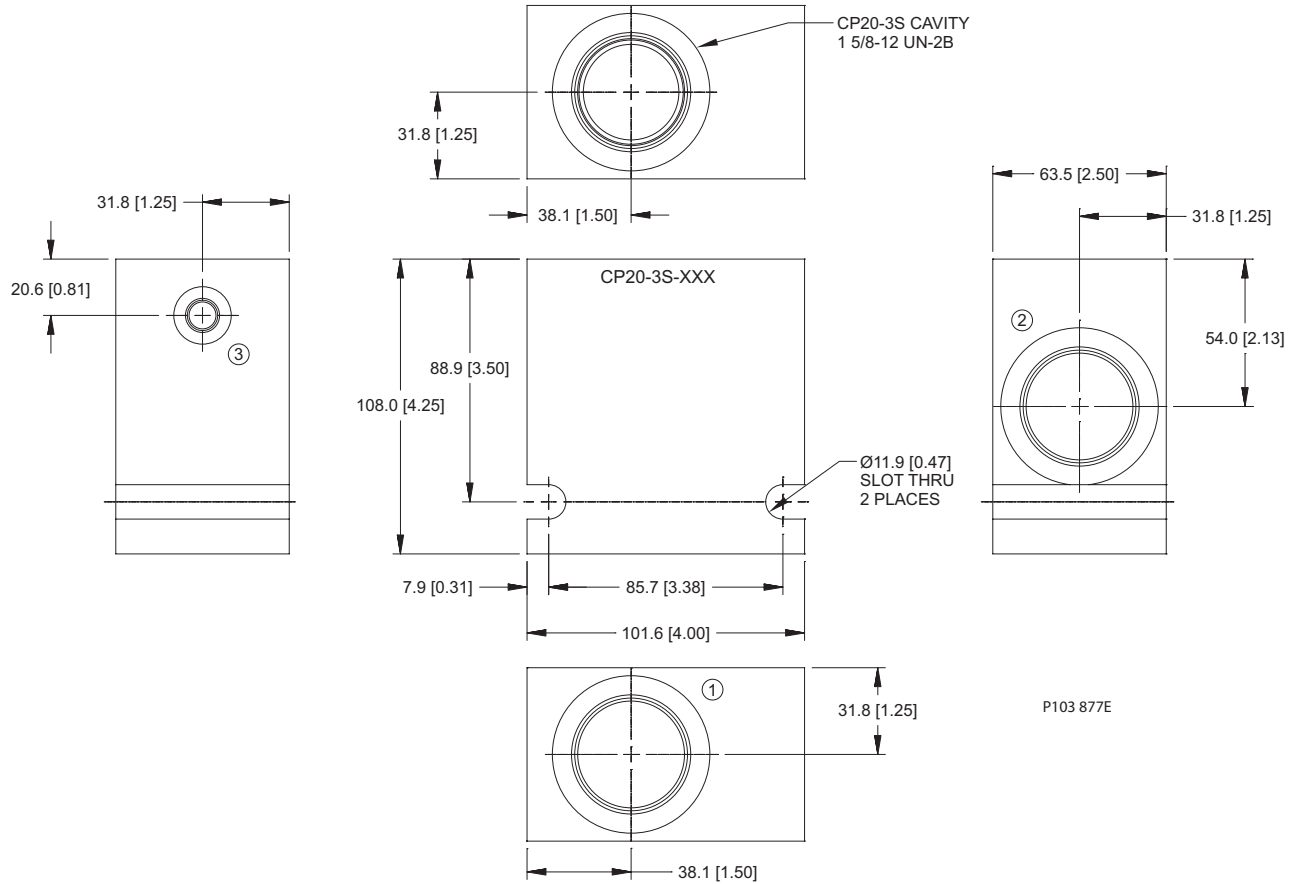
Housing drawing



Options

Order Code	Description	Style	Ports
CP16-4-12S	Aluminum Housing	Standard	SAE #12
CP16-4-16S	Aluminum Housing	Standard	SAE #16
CP16-4-6B	Aluminum Housing	Standard	3/4 BSP
CP16-4-8B	Aluminum Housing	Standard	1 BSP

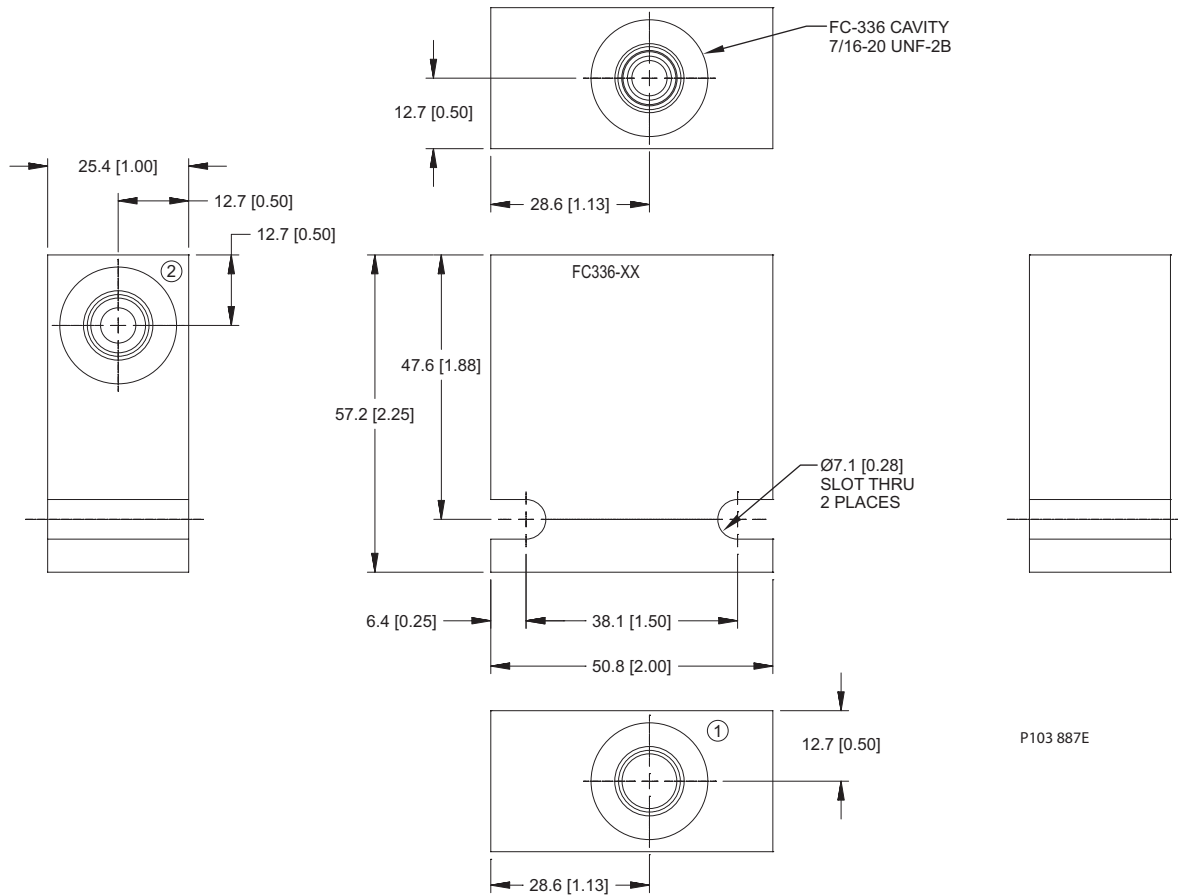
Dimensions



Options

Order Code	Description	Style	Ports
CP20-3S-10B/2B	Aluminum Housing, Pilot at Port #3	Standard	1 1/4 BSP, 1/4 BSP
CP20-3S-16S/4S	Aluminum Housing, Pilot at Port #3	Standard	SAE #16, #4
CP20-3S-20S/4S	Aluminum Housing, Pilot at Port #3	Standard	SAE #20, #4
CP20-3S-8B/2B	Aluminum Housing, Pilot at Port #3	Standard	1 BSP, 1/4 BSP

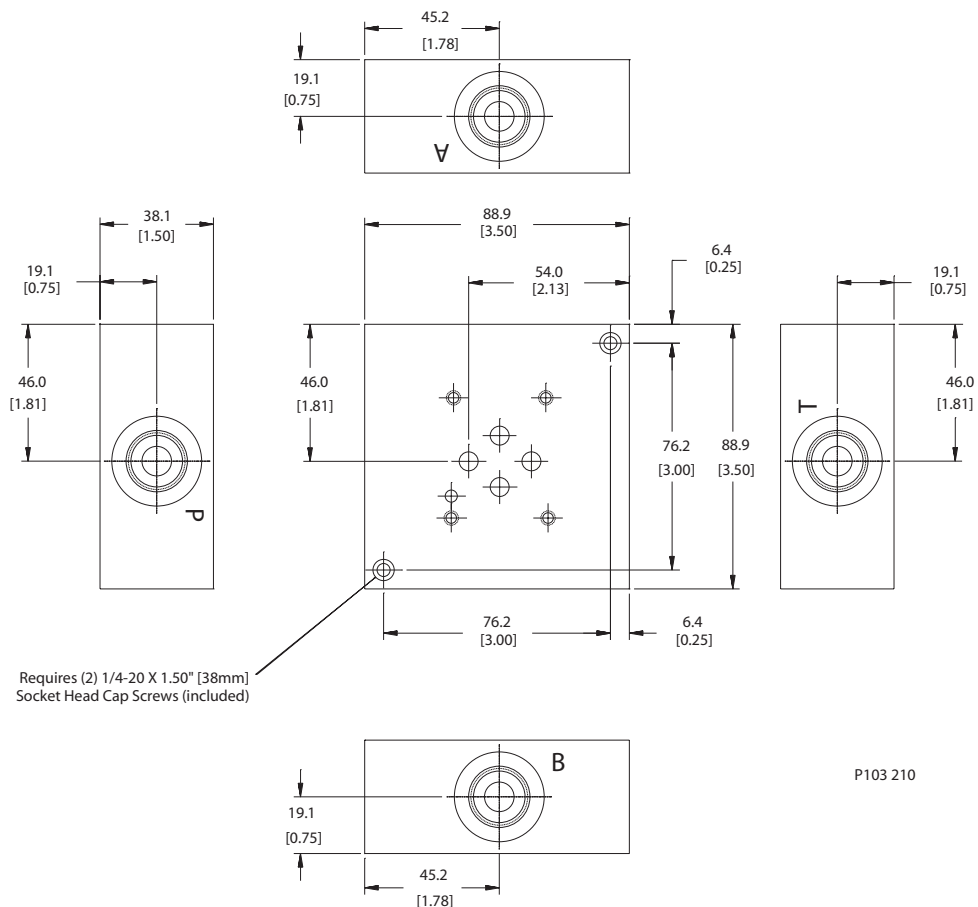
Housing drawing



Options

Order Code	Description	Style	Ports
FC336-4S	Aluminum Housing	Standard	SAE #4

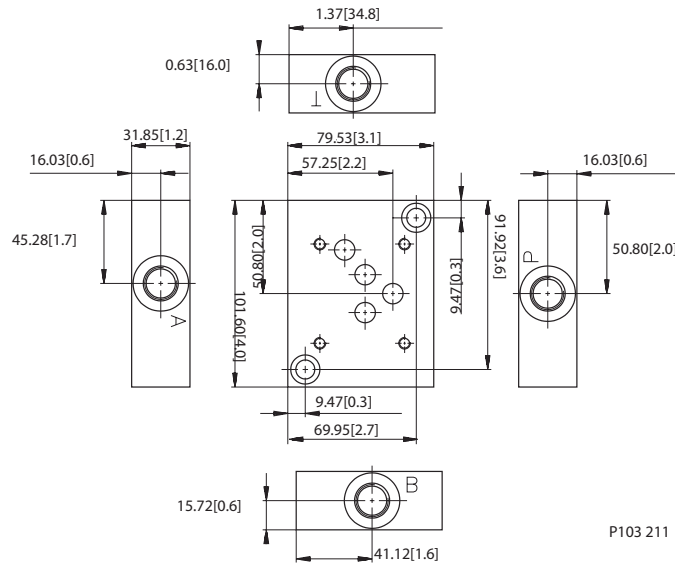
Dimensions



Options

Order Code	Description	Style	Ports
UDPS-06-AL	ISO D03 Subplate, Aluminum	AL	#8 SAE

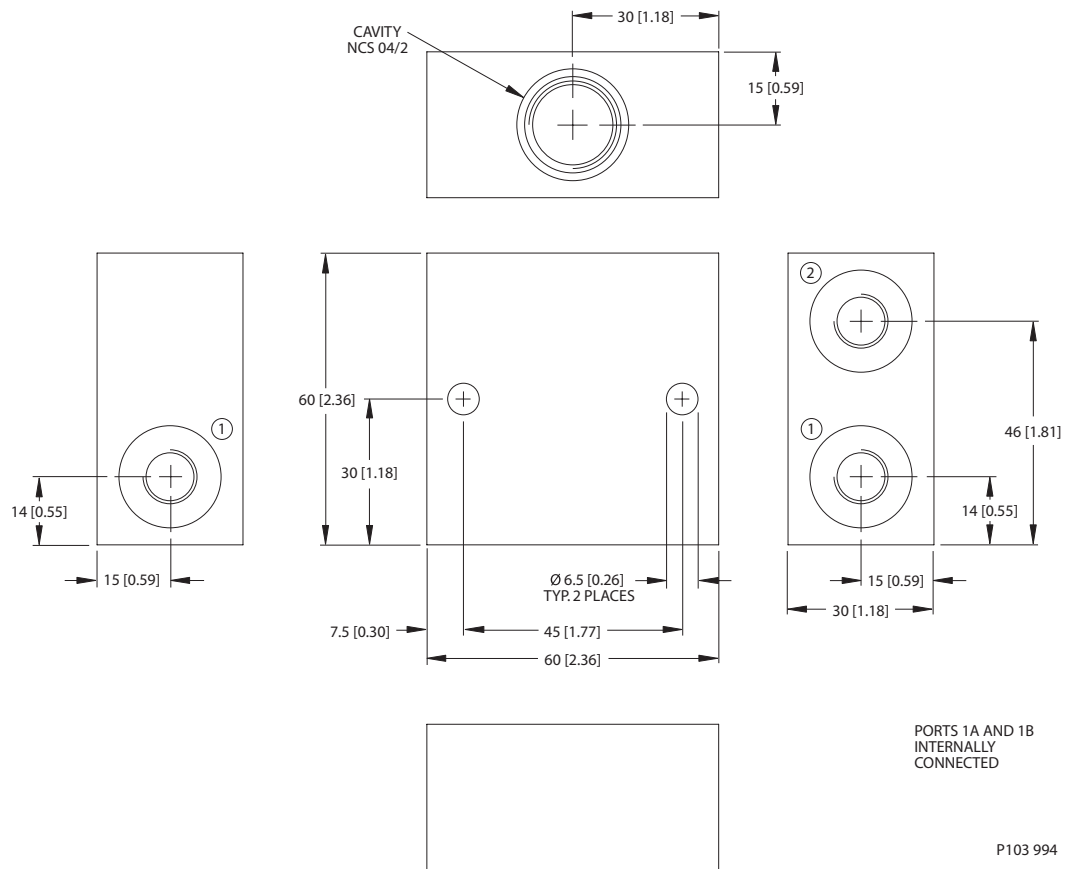
Housing drawing



Options

Order Code	Description	Style	Ports
UDPS-10-AL	ISO D05 Subplate, Aluminum	AL	#8 SAE

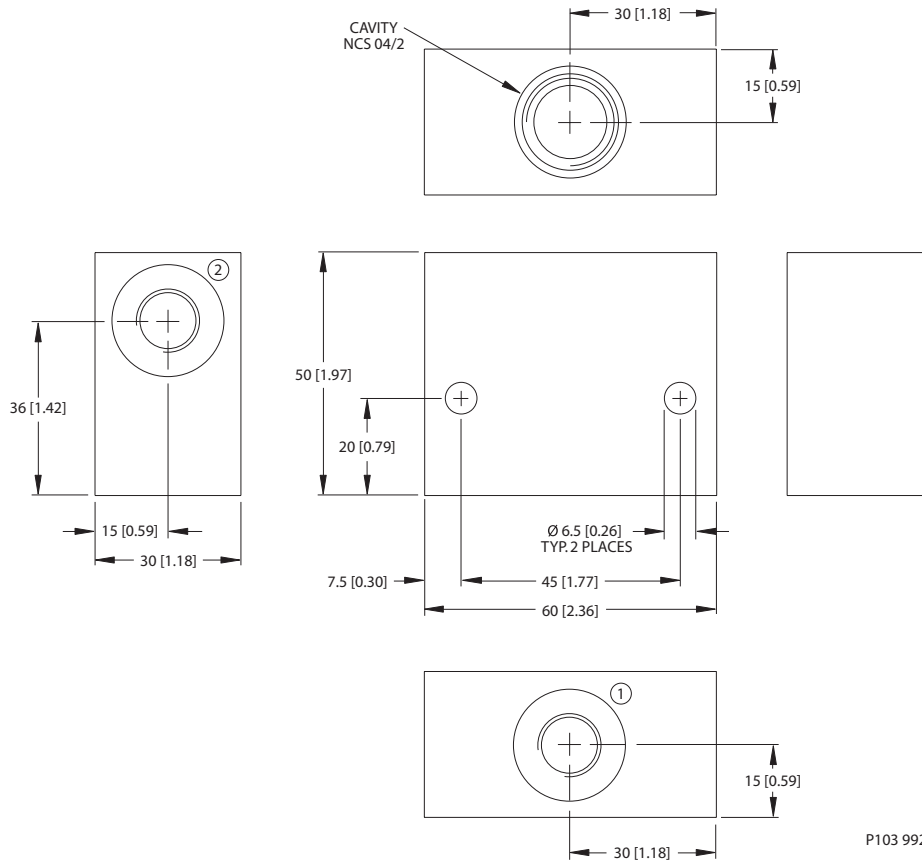
Dimensions



Options

Order Code	Description	Style	Ports
NCS04/2-LG2-1/4	Aluminum Housing, Two #1 Ports	LG2	1/4 BSP
NCS04/2-LG2-4S	Aluminum Housing, Two #1 Ports	LG2	SAE #4
NCS04/2-LG2-6S	Aluminum Housing, Two #1 Ports	LG2	SAE #6

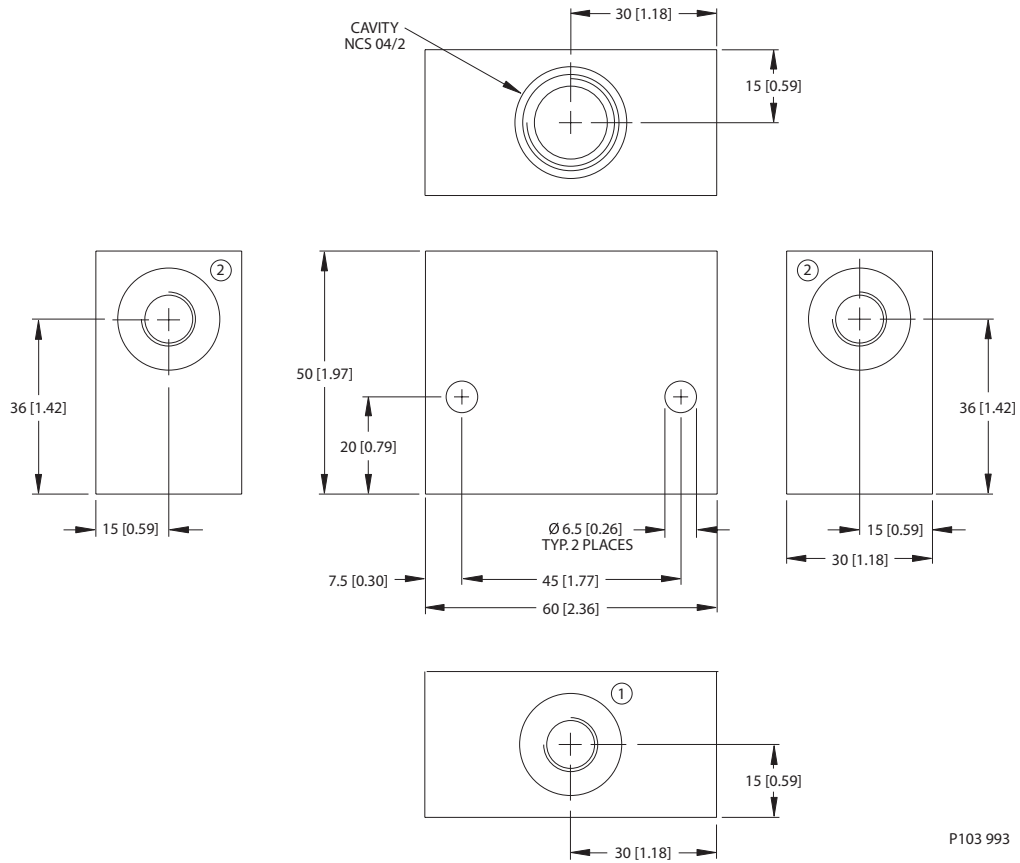
Housing drawing



Options

Order Code	Description	Style	Ports
NCS04/2-DG-1/4	Aluminum Housing	DG	1/4 BSP
NCS04/2-DG-4S	Aluminum Housing	DG	SAE #4
NCS04/2-DG-6S	Aluminum Housing	DG	SAE #6

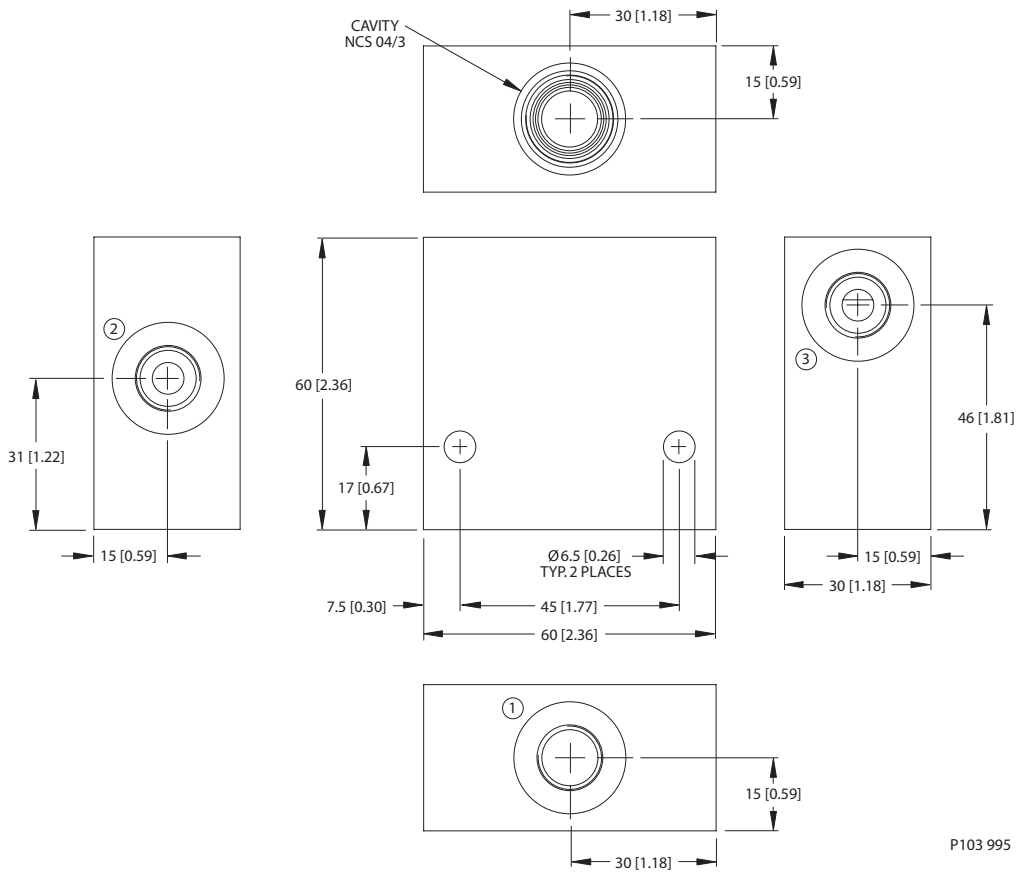
Dimensions



Options

Order Code	Description	Style	Ports
NCS04/2-LG1-1/4	Aluminum Housing, Two #2 Ports	LG1	1/4 BSP
NCS04/2-LG1-4S	Aluminum Housing, Two #2 Ports	LG1	SAE #4
NCS04/2-LG1-6S	Aluminum Housing, Two #2 Ports	LG1	SAE #6

Housing drawing

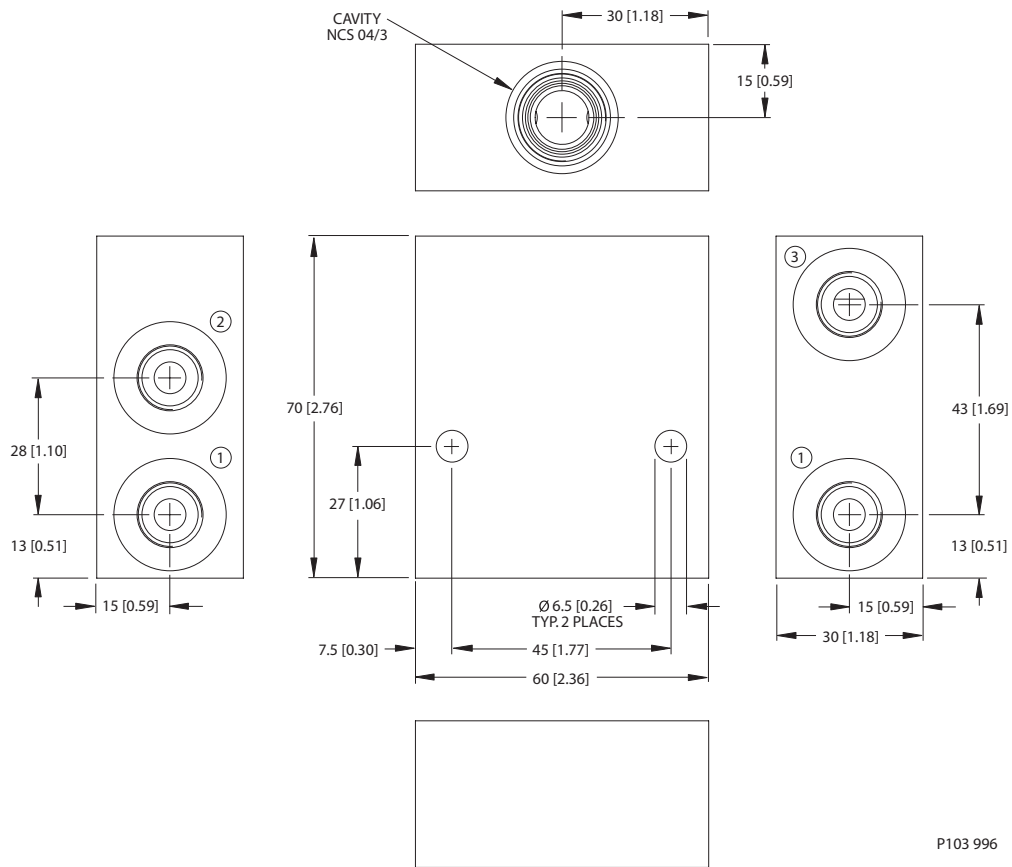


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Options

Order Code	Description	Style	Ports
NCS04/3-SE-1/4	Aluminum Housing	SE	1/4 BSP

Dimensions

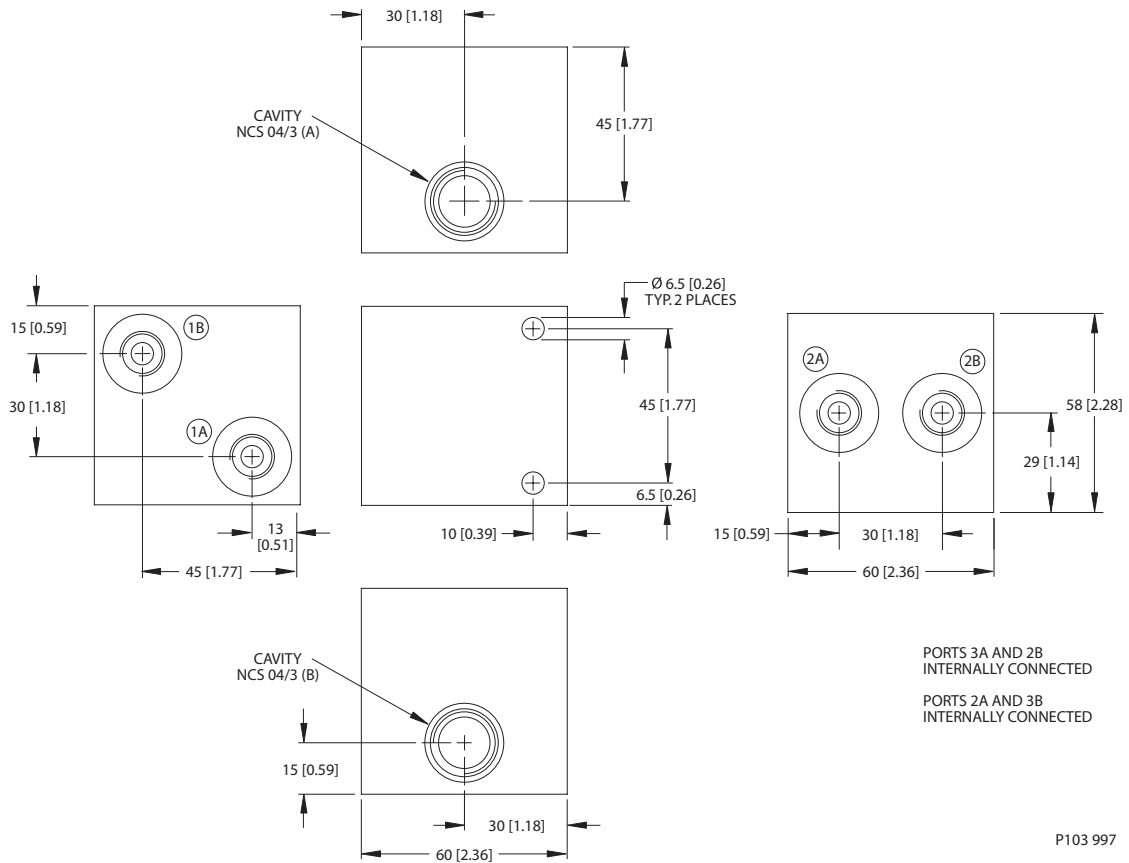


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Options

Order Code	Description	Style	Ports
NCS04/3-SI-1/4	Aluminum Housing, Two #1 Ports	SI	1/4 BSP

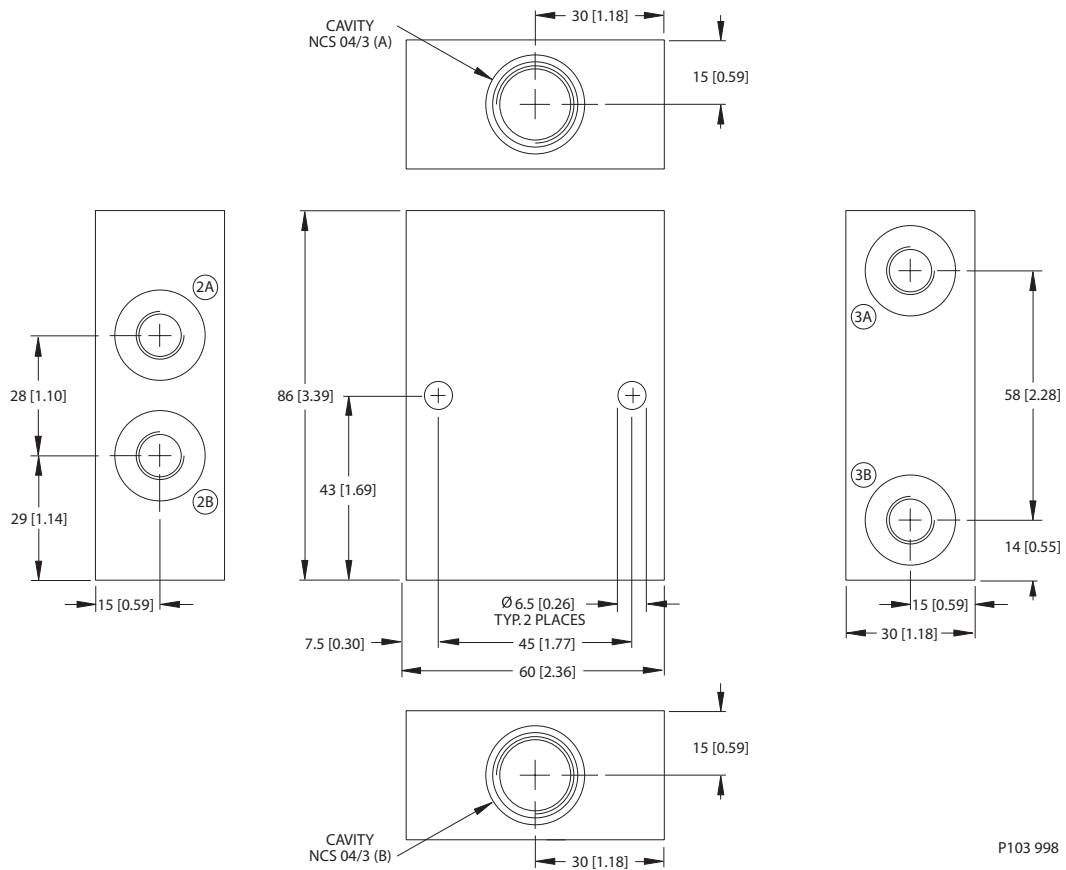
Housing drawing



Options

Order Code	Description	Style	Ports
NCS04/3-DI-1/4	Alum. Hsg., 2 Cavities w/#3 Ports Conn.	DI	1/4 BSP
NCS04/3-DI-3/8	Alum. Hsg., 2 Cavities w/#3 Ports Conn.	DI	3/8 BSP

Dimensions

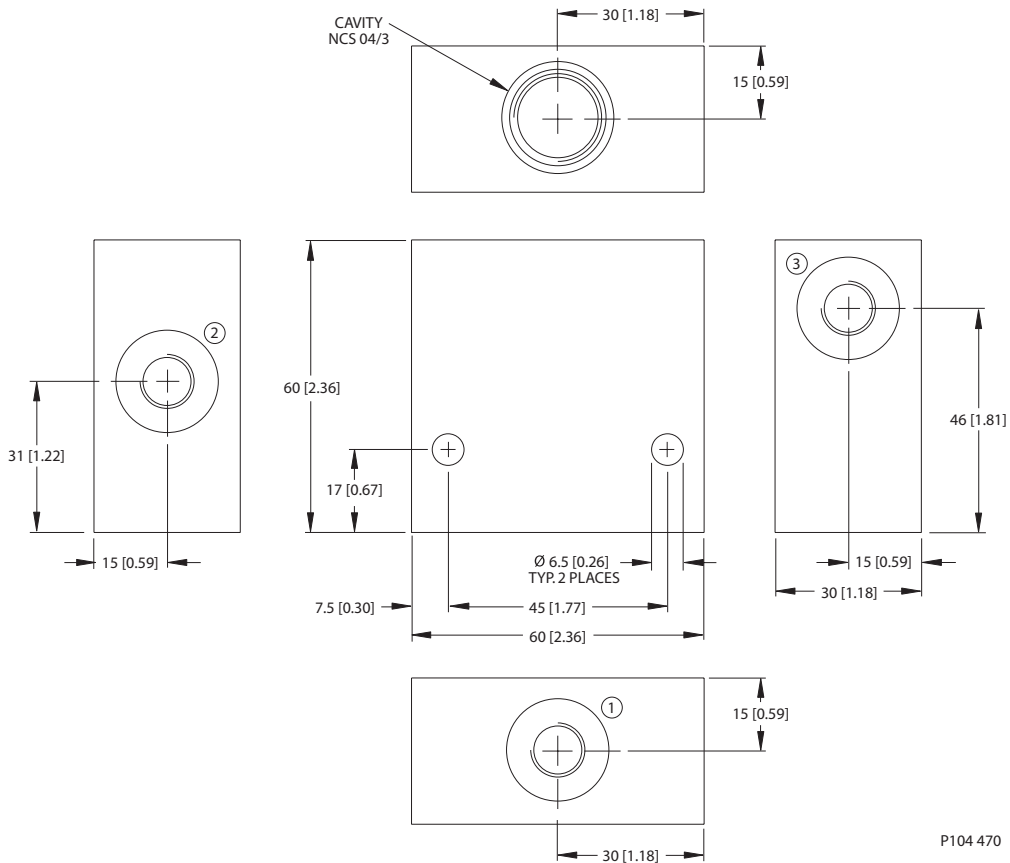


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Options

Order Code	Description	Style	Ports
NCS04/3-DL-1/4	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	1/4 BSP
NCS04/3-DL-4S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	SAE #4
NCS04/3-DL-6S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	SAE #6

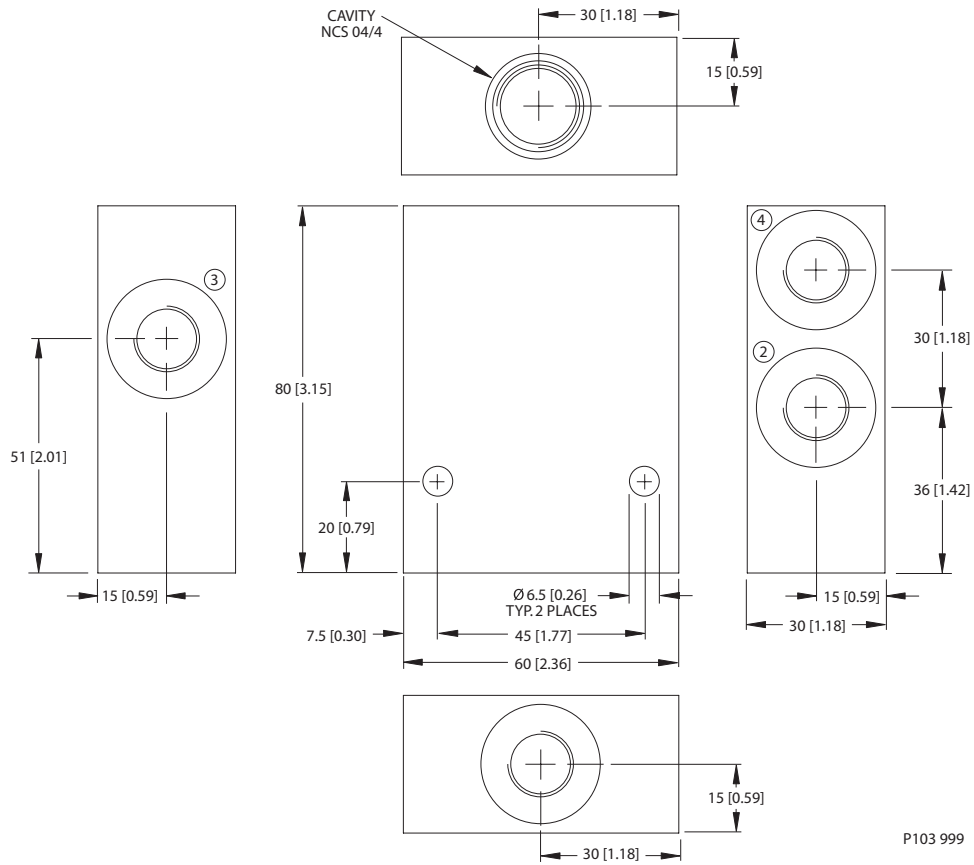
Housing drawing



Options

Order Code	Description	Style	Ports
NCS04/3-SE-4S	Aluminum Housing	SE	SAE #4
NCS04/3-SE-6S	Aluminum Housing	SE	SAE #6

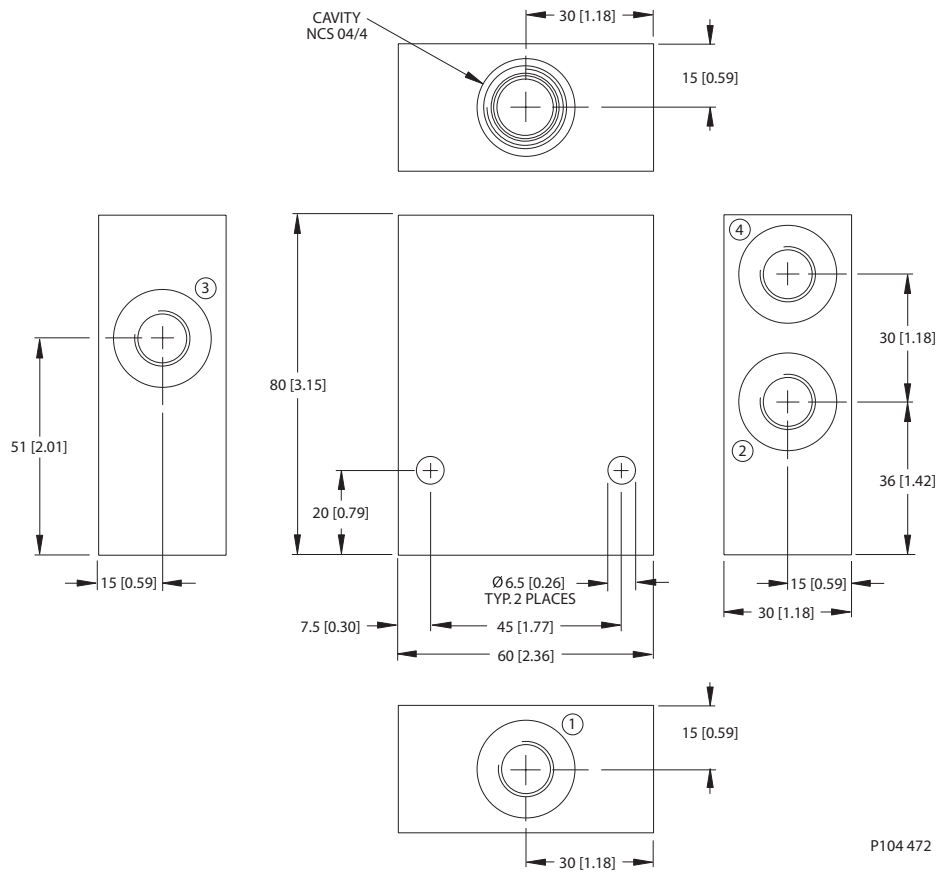
Housing drawing



Options

Order Code	Description	Style	Ports
NCS04/3-L-6S	Aluminum Housing, Two #1 Ports	L	SAE #6

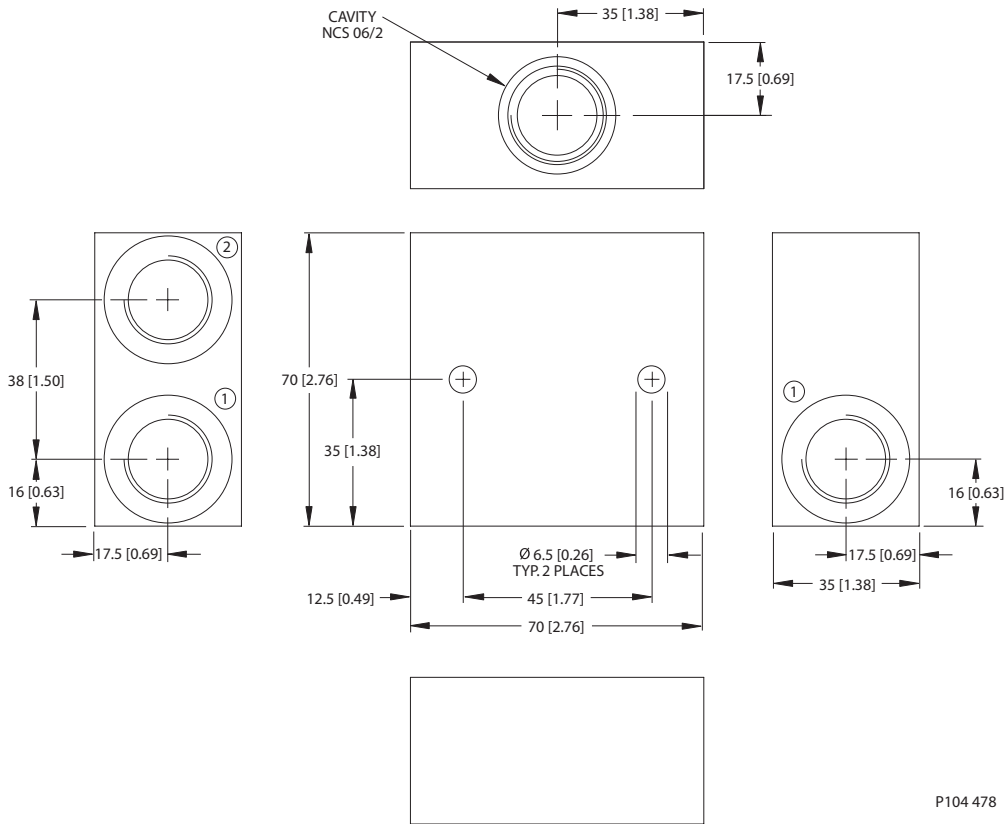
Dimensions



Options

Order Code	Description	Style	Ports
NCS04/4-L-1/4	Aluminum Housing	L	1/4 BSP
NCS04/4-L-4S	Aluminum Housing	L	SAE #4

Housing drawing

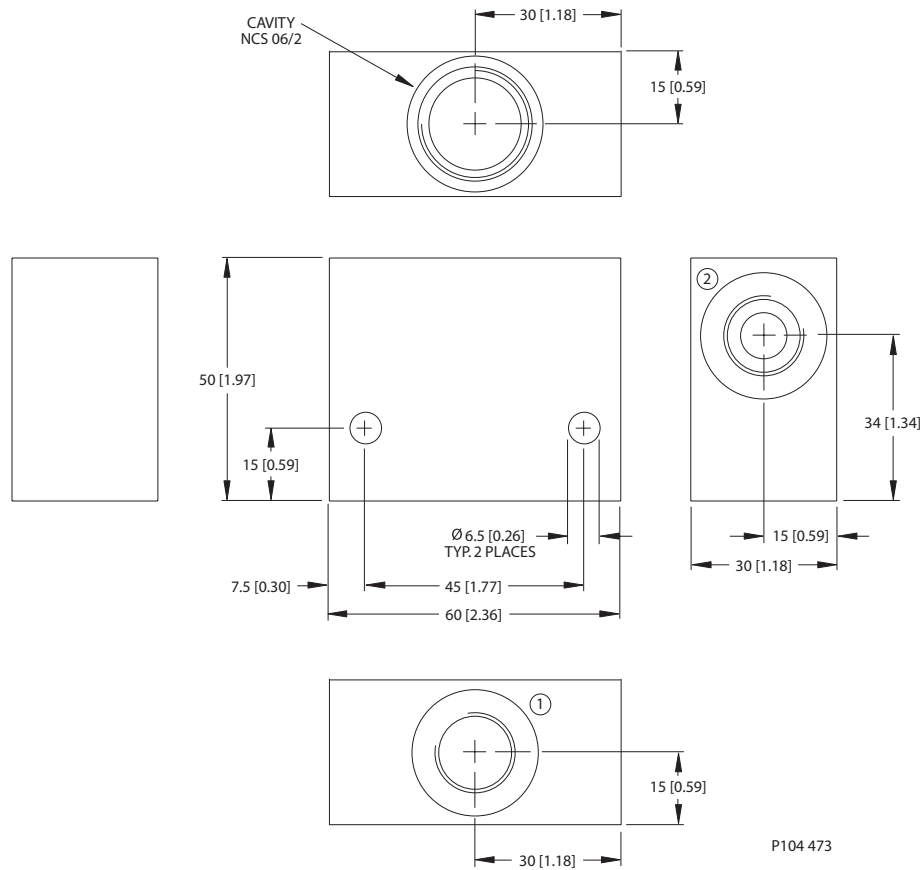


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Options

Order Code	Description	Style	Ports
NCS06/2-LG2-1/2	Aluminum Housing, Two #1 Ports	LG2	1/2 BSP
NCS06/2-LG2-8S	Aluminum Housing, Two #1 Ports	LG2	SAE #8

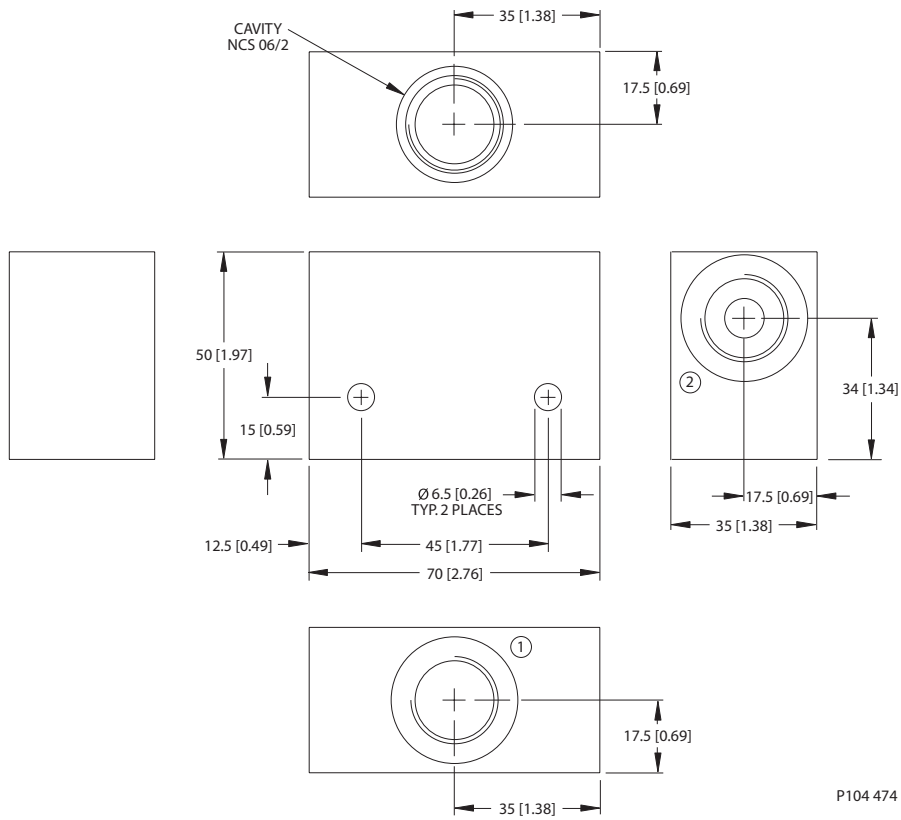
Dimensions



Options

Order Code	Description	Style	Ports
NCS06/2-DG-3/8	Aluminum Housing	DG	3/8 BSP
NCS06/2-DG-6S	Aluminum Housing	DG	SAE #6

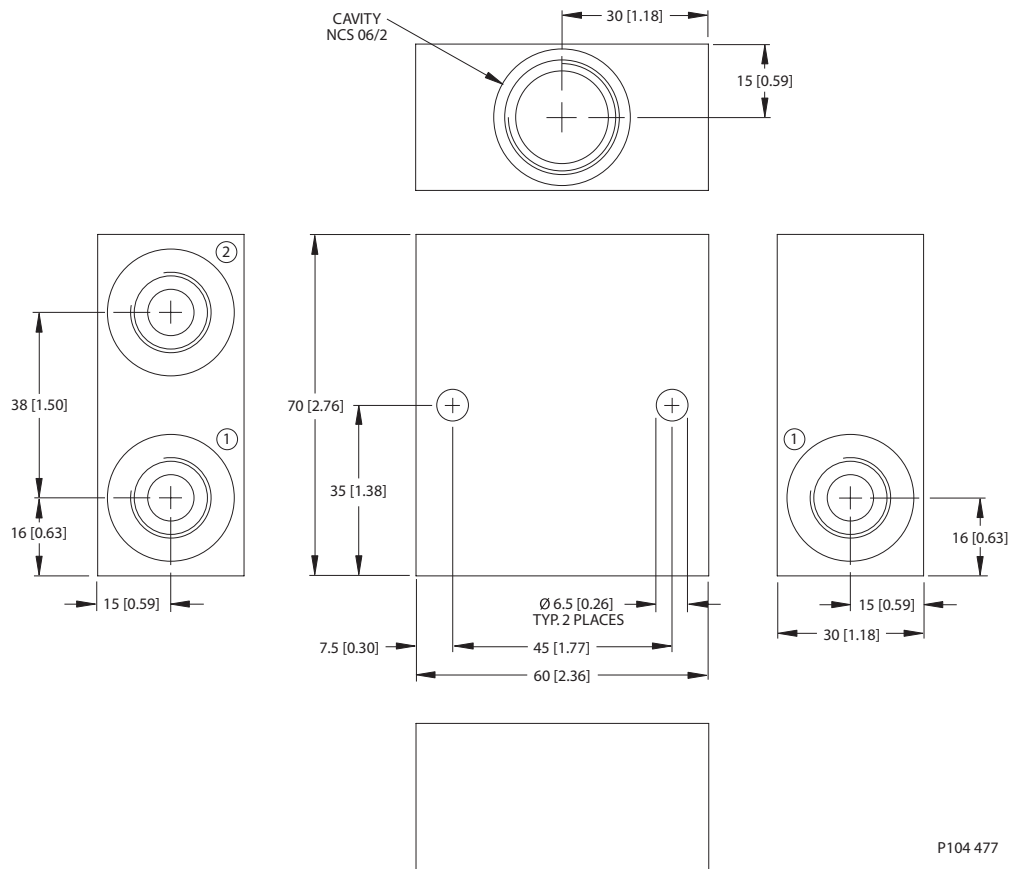
Housing drawing



Options

Order Code	Description	Style	Ports
NCS06/2-DG-1/2	Aluminum Housing	DG	1/2 BSP
NCS06/2-DG-8S	Aluminum Housing	DG	SAE #8

Dimensions

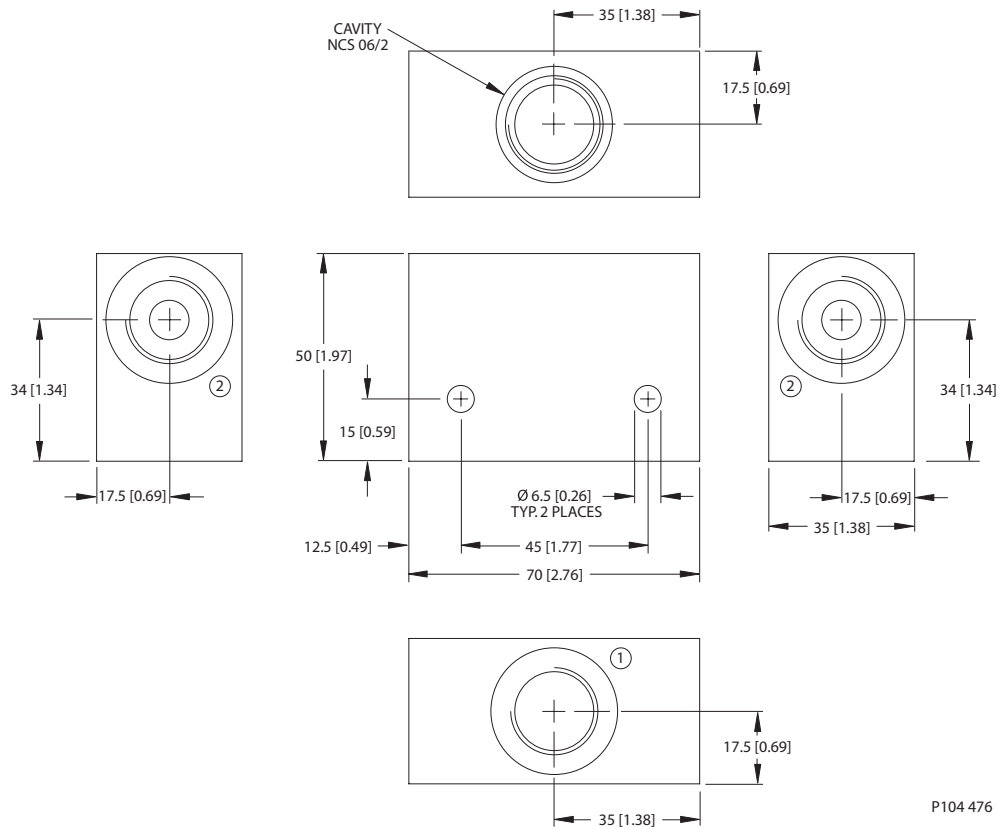


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Options

Order Code	Description	Style	Ports
NCS06/2-LG2-3/8	Aluminum Housing, Two #1 Ports	LG2	3/8 BSP
NCS06/2-LG2-6S	Aluminum Housing, Two #1 Ports	LG2	SAE #6

Housing drawing

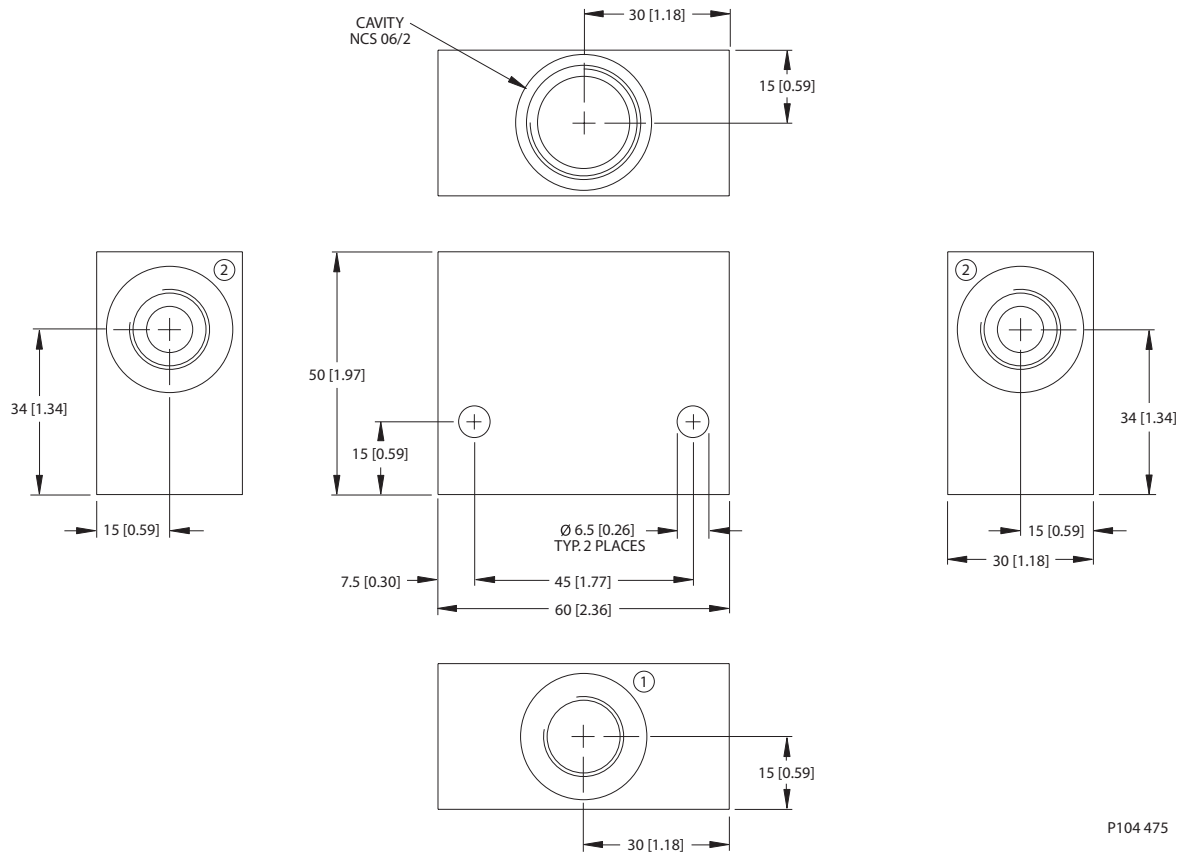


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Options

Order Code	Description	Style	Ports
NCS06/2-LG1-1/2	Aluminum Housing, Two #2 Ports	LG1	1/2 BSP
NCS06/2-LG1-8S	Aluminum Housing, Two #2 Ports	LG1	SAE #8

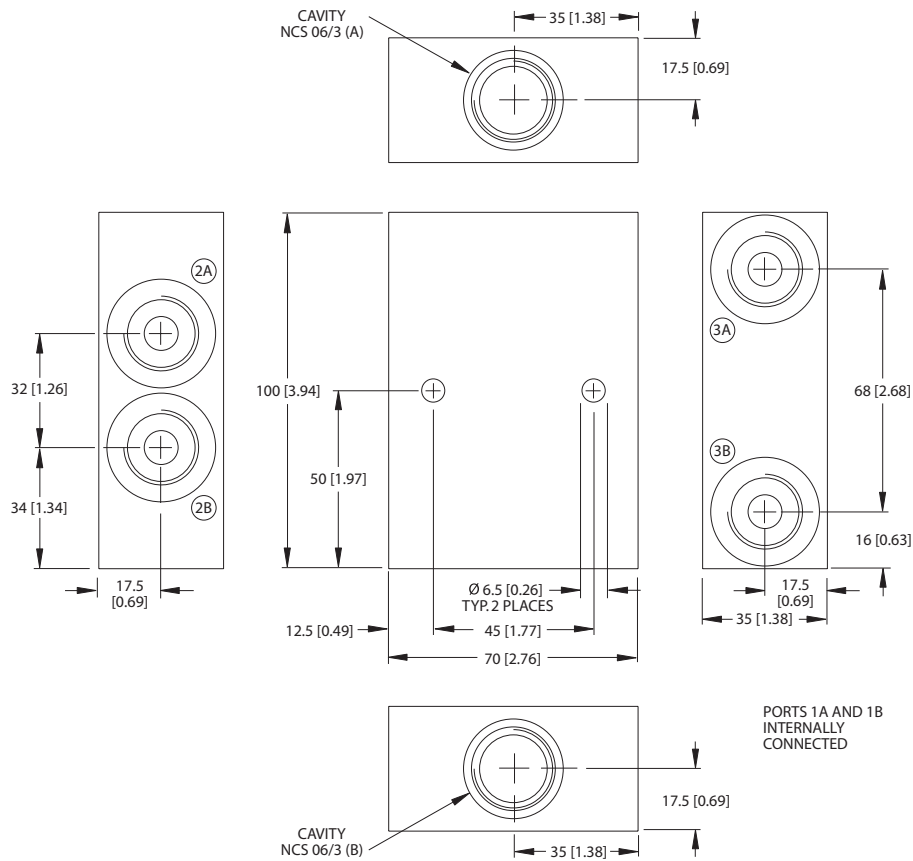
Dimensions



Options

Order Code	Description	Style	Ports
NCS06/2-LG1-3/8	Aluminum Housing, Two #2 Ports	LG1	3/8 BSP

Housing drawing

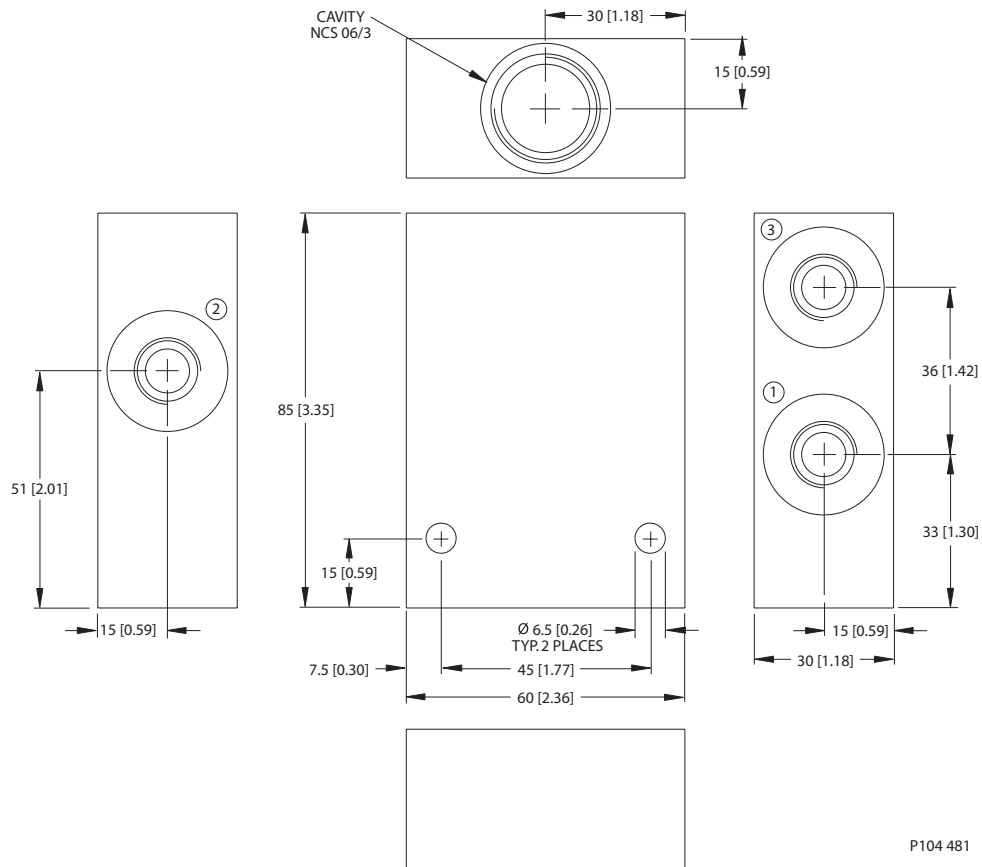


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Options

Order Code	Description	Style	Ports
NCS06/3-DL-1/2	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	1/2 BSP
NCS06/3-DL-8S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	SAE #8

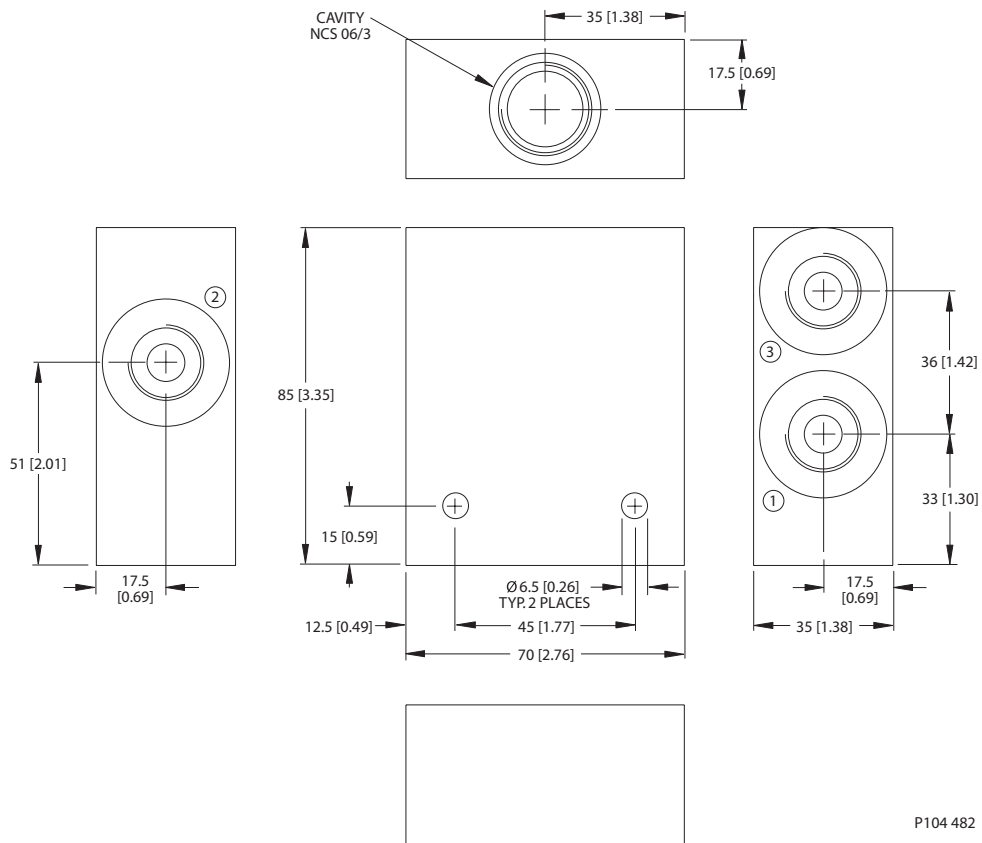
Dimensions



Options

Order Code	Description	Style	Ports
NCS06/3-LD-6S	Aluminum Housing, No Port #1	LD	SAE #6

Housing drawing

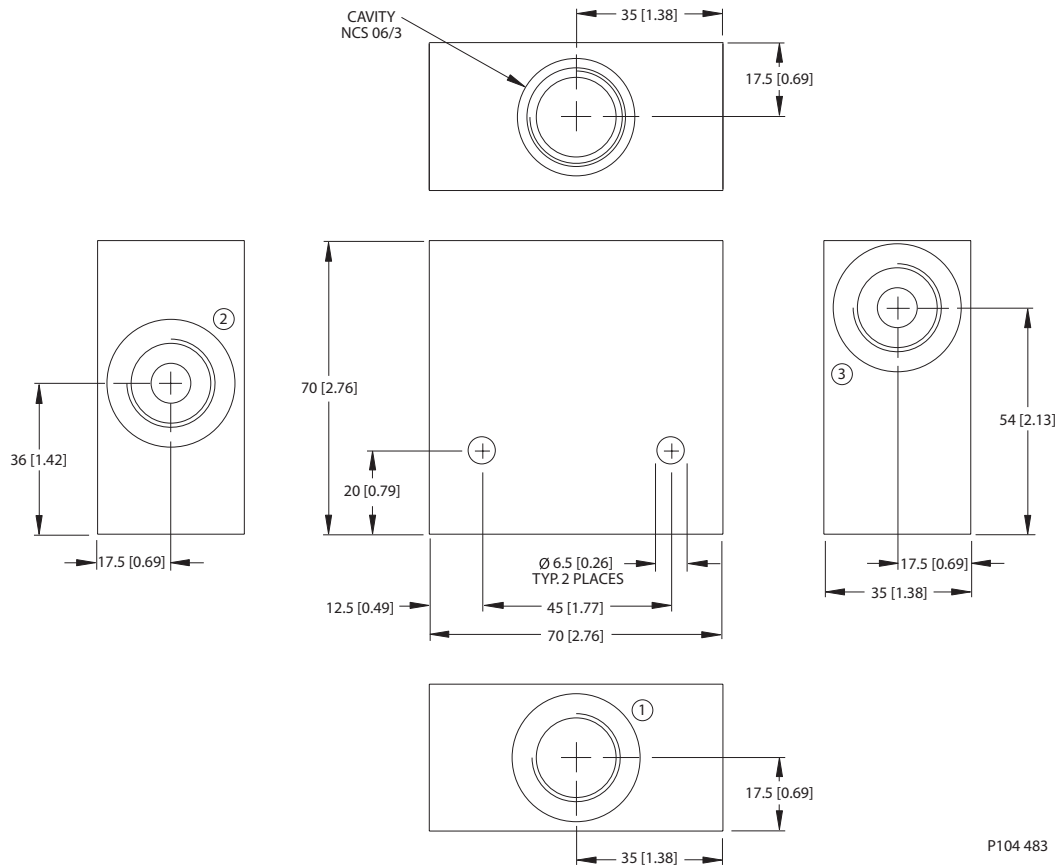


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Options

Order Code	Description	Style	Ports
NCS06/3-LD-85	Aluminum Housing, No Port #1	LD	SAE #8

Dimensions

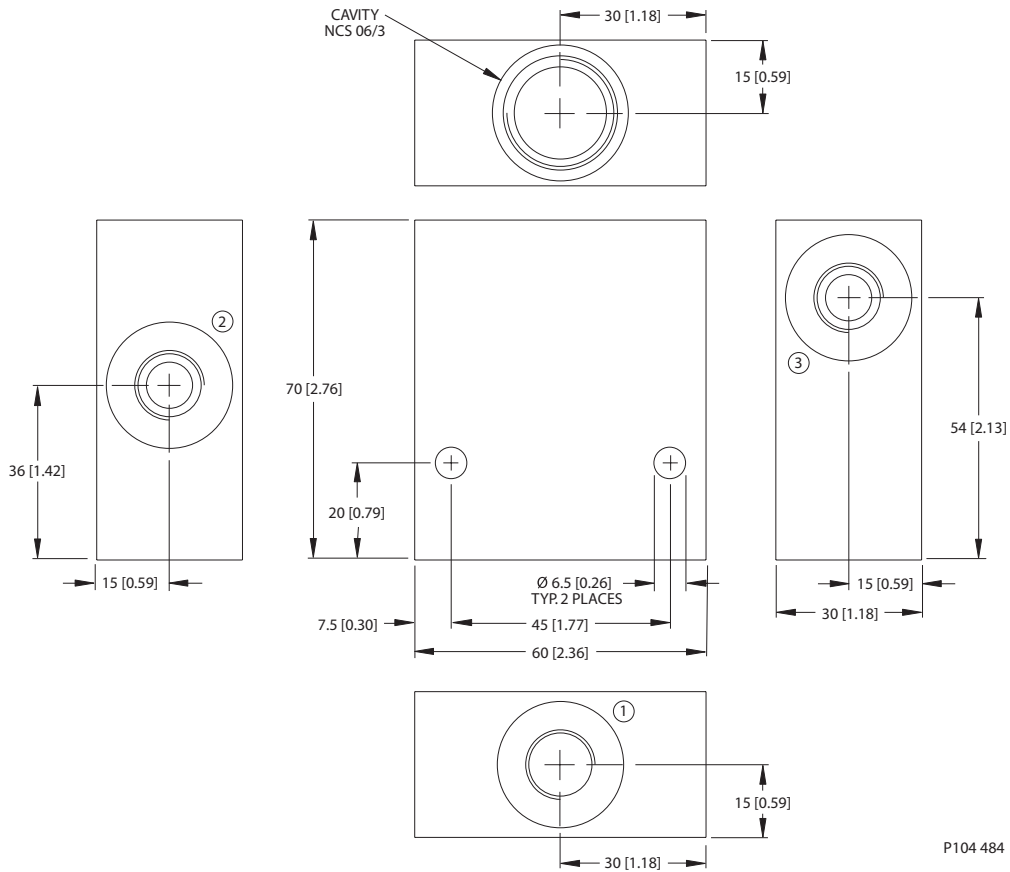


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Options

Order Code	Description	Style	Ports
NCS06/3-SE-1/2	Aluminum Housing	SE	1/2 BSP
NCS06/3-SE-8S	Aluminum Housing	SE	SAE #8

Housing drawing

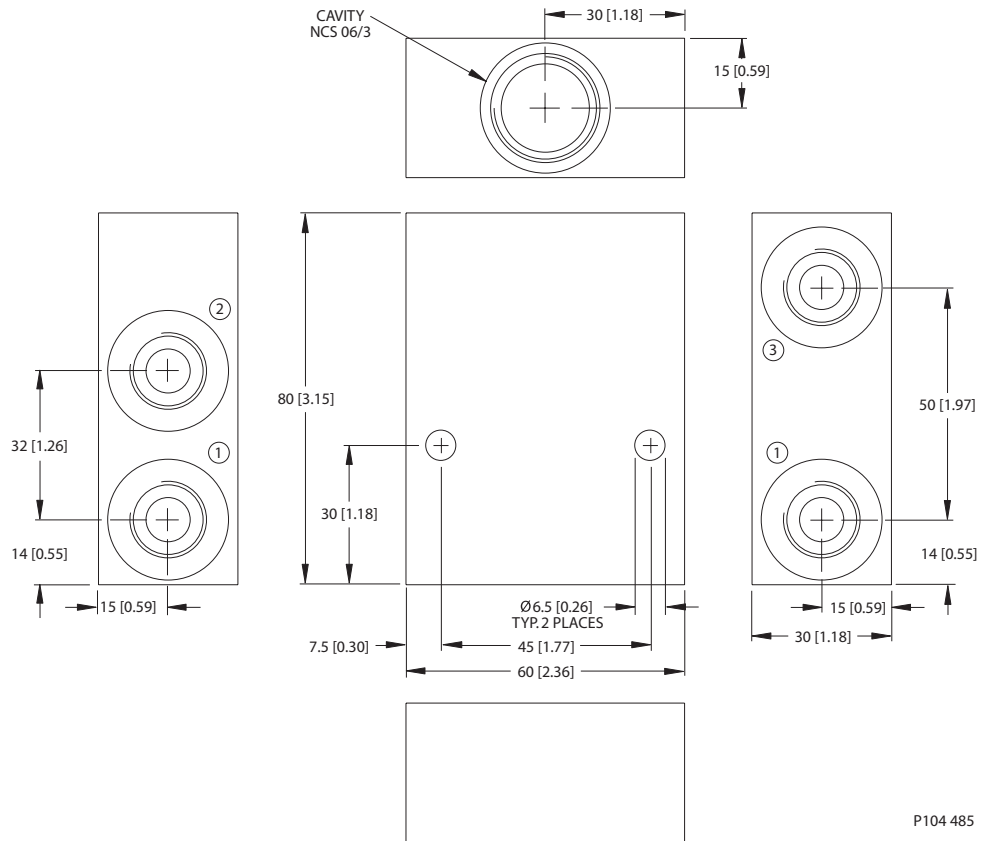


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Options

Order Code	Description	Style	Ports
NCS06/3-SE-3/8	Aluminum Housing	SE	3/8 BSP
NCS06/3-SE-6S	Aluminum Housing	SE	SAE #6

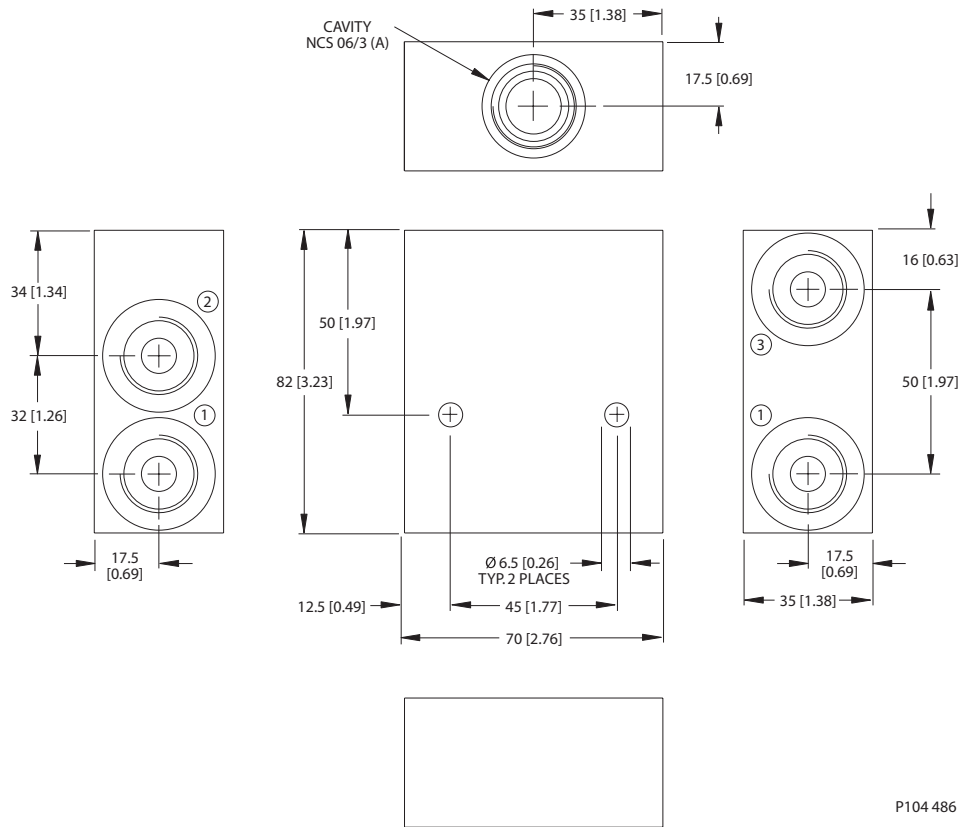
Dimensions



Options

Order Code	Description	Style	Ports
NCS06/3-SI-3/8	Aluminum Housing, Two #1 Ports	SI	3/8 BSP
NCS06/3-SI-6S	Aluminum Housing, Two #1 Ports	SI	SAE #6

Housing drawing

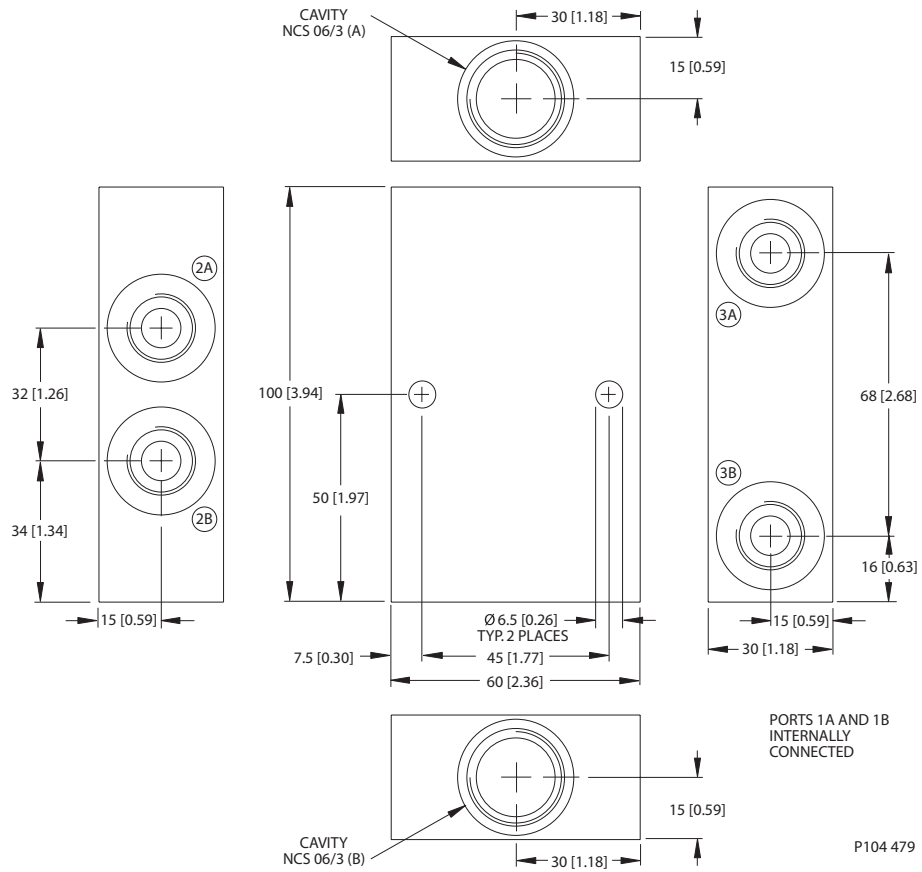


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Options

Order Code	Description	Style	Ports
NCS06/3-SI-1/2	Aluminum Housing, Two #1 Ports	SI	1/2 BSP
NCS06/3-SI-8S	Aluminum Housing, Two #1 Ports	SI	SAE #8

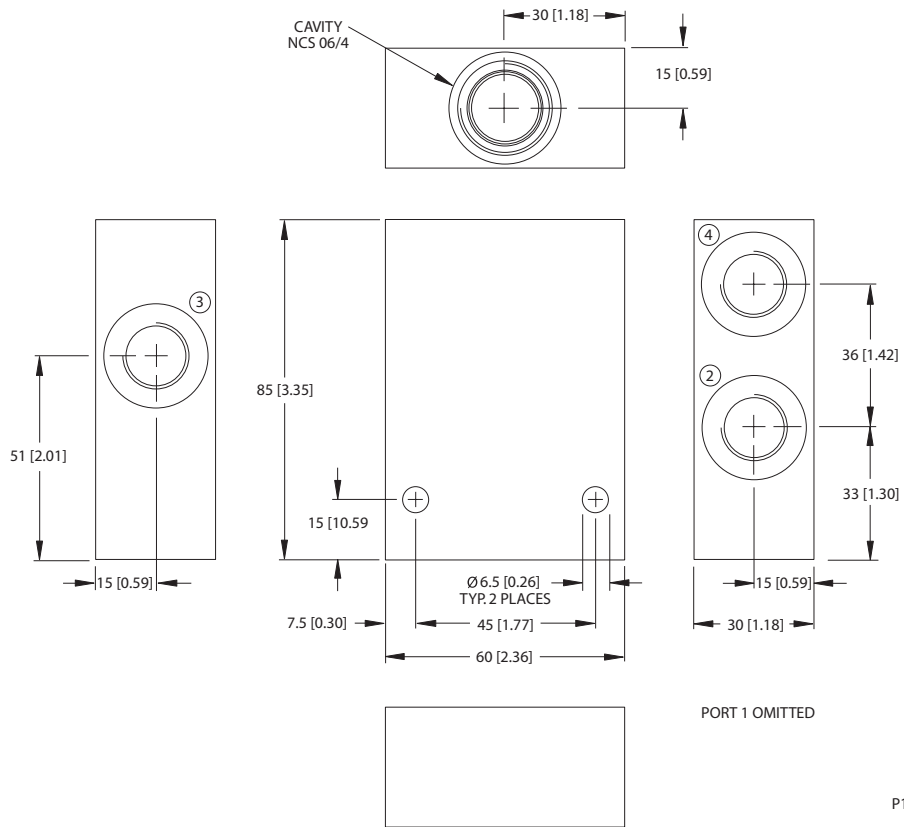
Dimensions



Options

Order Code	Description	Style	Ports
NCS06/3-DL-3/8	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	3/8 BSP
NCS06/3-DL-6S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	SAE #6

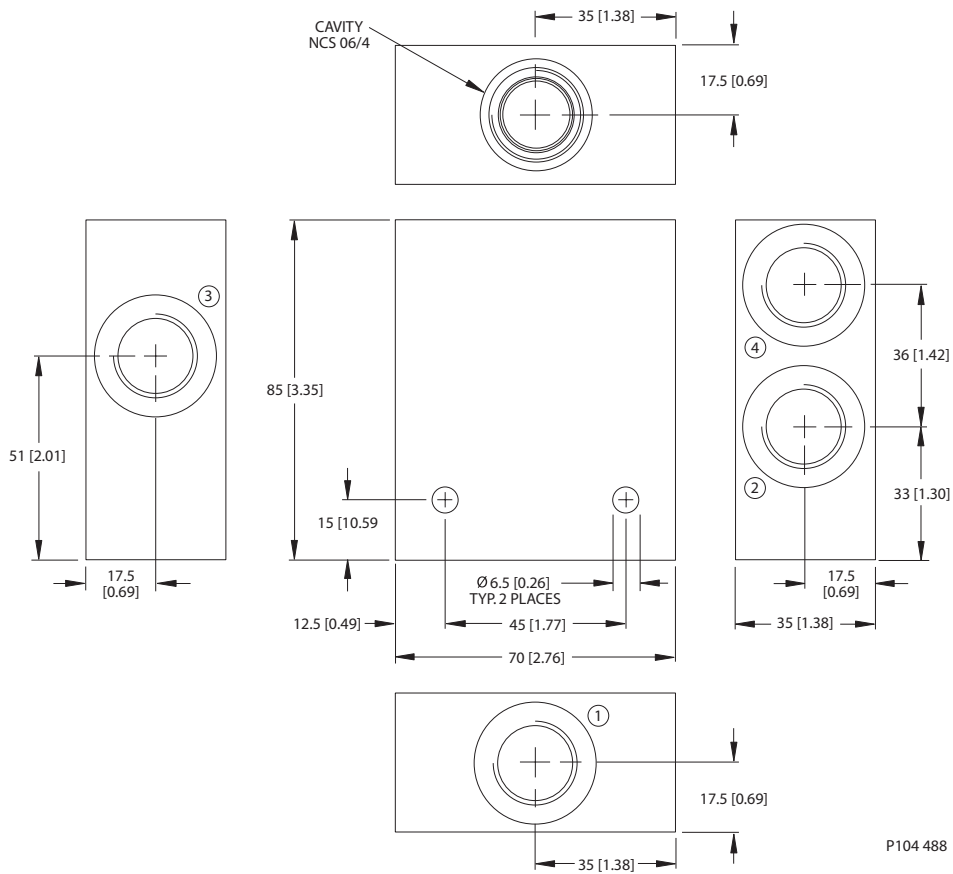
Housing drawing



Options

Order Code	Description	Style	Ports
NCS06/4-LD-3/8	Aluminum Housing, No Port #1	LD	3/8 BSP

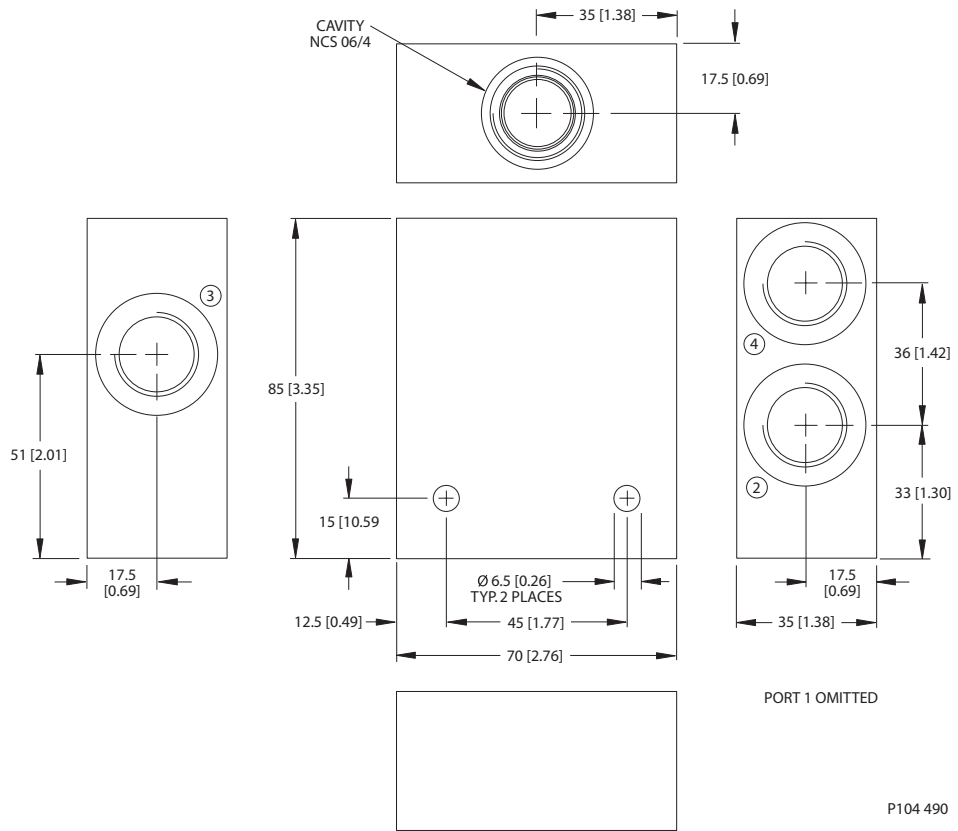
Dimensions



Options

Order Code	Description	Style	Ports
NCS06/4-L-1/2	Aluminum Housing	L	1/2 BSP
NCS06/4-L-8S	Aluminum Housing	L	SAE #8

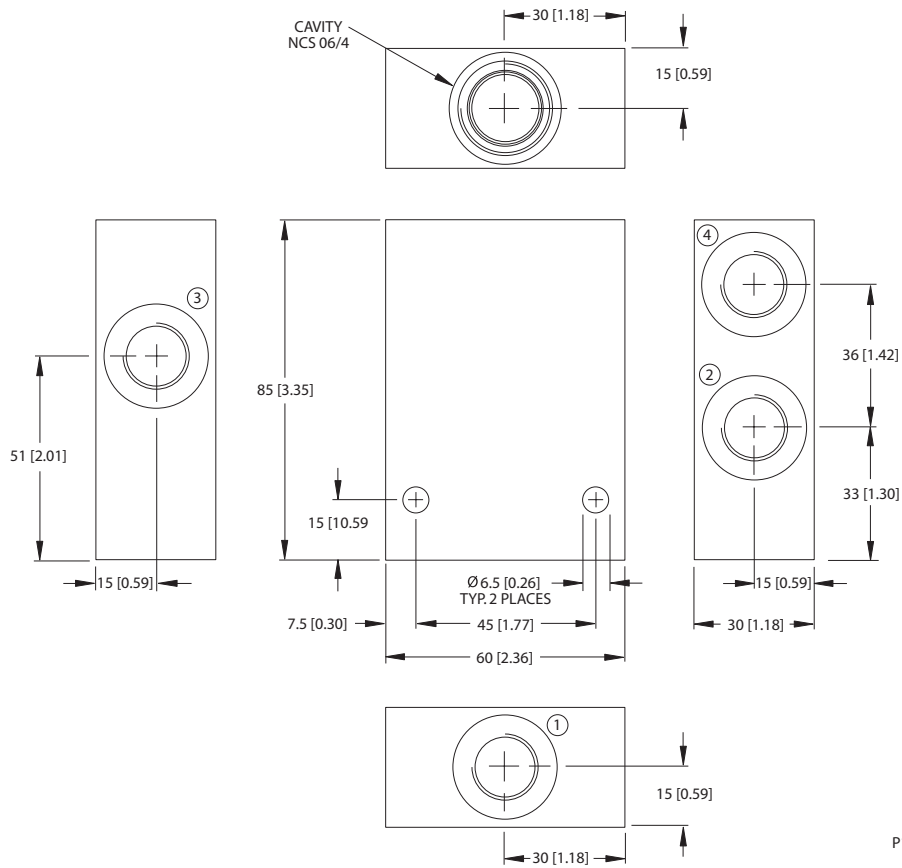
Housing drawing



Options

Order Code	Description	Style	Ports
NCS06/4-LD-1/2	Aluminum Housing, No Port #1	LD	1/2 BSP

Dimensions

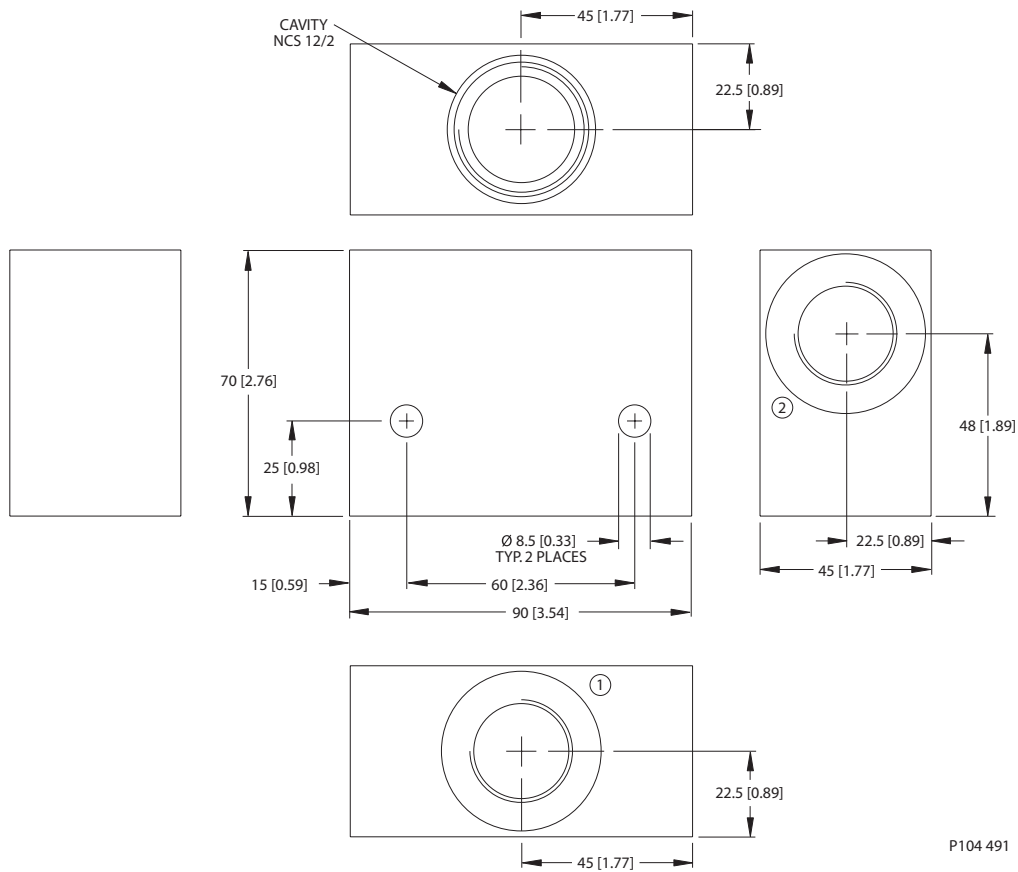


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Options

Order Code	Description	Style	Ports
NCS06/4-L-3/8	Aluminum Housing	L	3/8 BSP
NCS06/4-L-6S	Aluminum Housing	L	SAE #6

Housing drawing

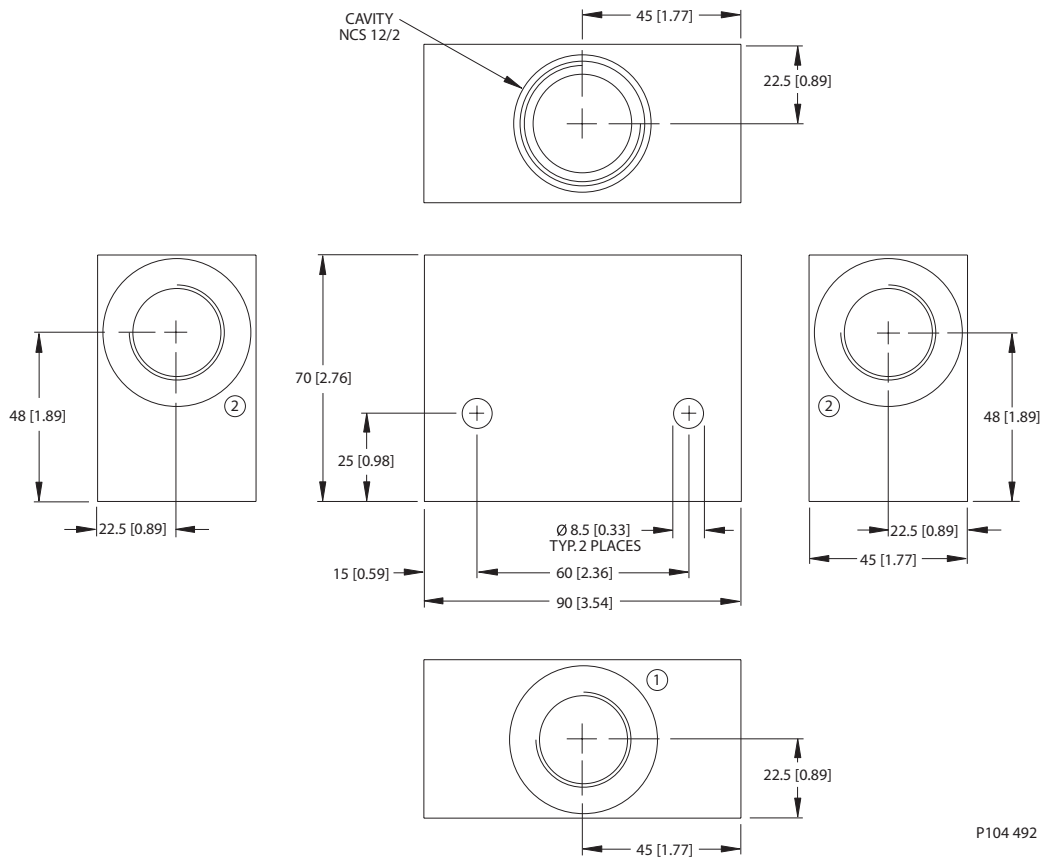


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Options

Order Code	Description	Style	Ports
NCS12/2-DG-1/2	Aluminum Housing	DG	1/2 BSP
NCS12/2-DG-12S	Aluminum Housing	DG	SAE #12
NCS12/2-DG-3/4	Aluminum Housing	DG	3/4 BSP
NCS12/2-DG-8S	Aluminum Housing	DG	SAE #8

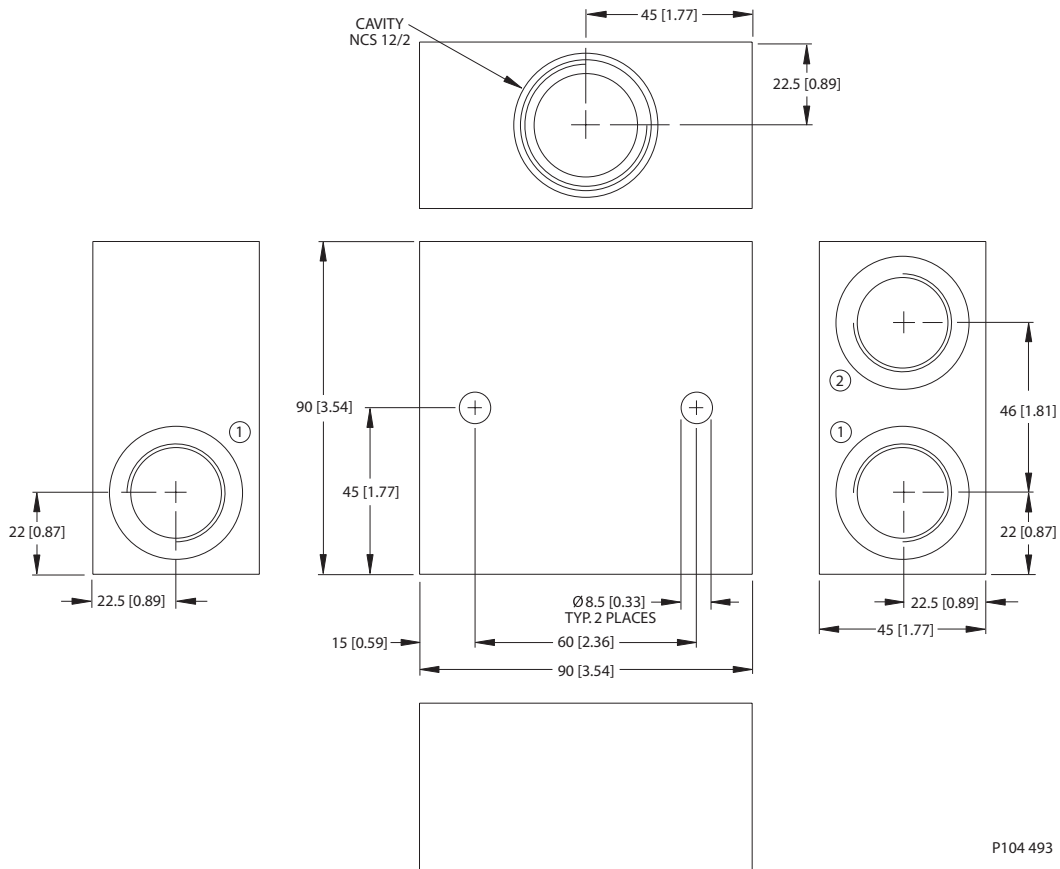
Dimensions



Options

Order Code	Description	Style	Ports
NCS12/2-LG1-12S	Aluminum Housing, Two #2 Ports	LG1	SAE #12
NCS12/2-LG1-8S	Aluminum Housing, Two #2 Ports	LG1	SAE #8

Housing drawing

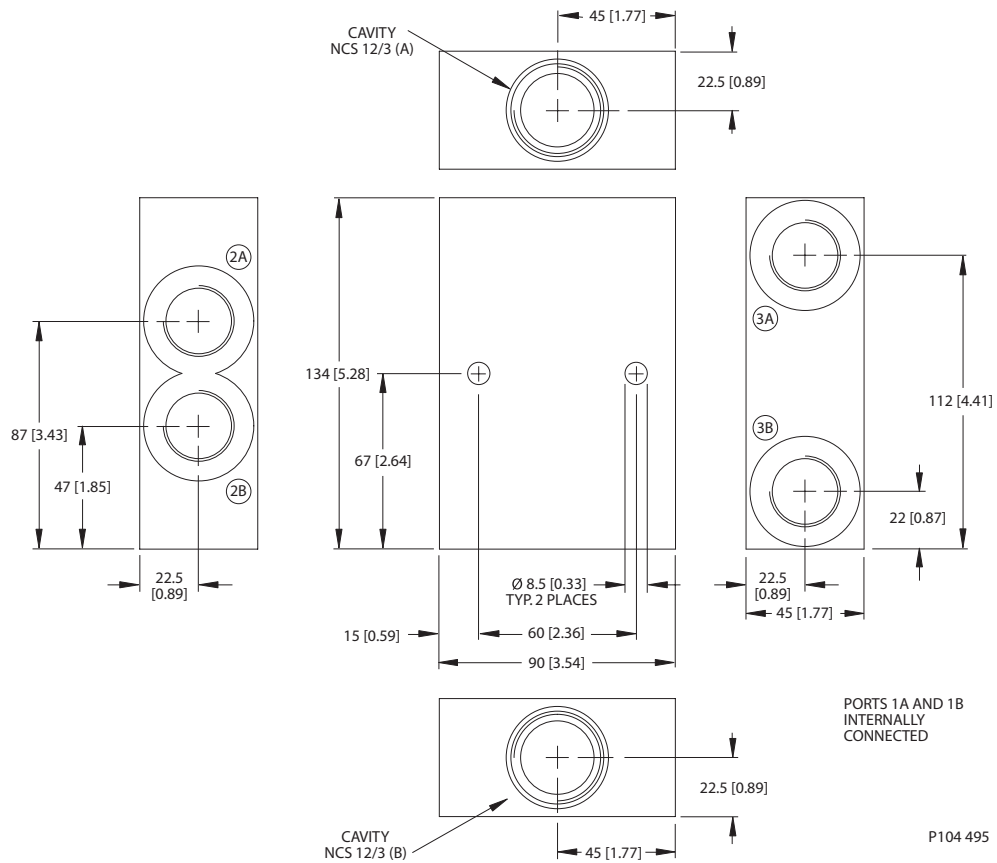


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Options

Order Code	Description	Style	Ports
NCS12/2-LG2-1/2	Aluminum Housing, Two #1 Ports	LG2	1/2 BSP
NCS12/2-LG2-12S	Aluminum Housing, Two #1 Ports	LG2	SAE #12
NCS12/2-LG2-3/4	Aluminum Housing, Two #1 Ports	LG2	3/4 BSP
NCS12/2-LG2-8S	Aluminum Housing, Two #1 Ports	LG2	SAE #8

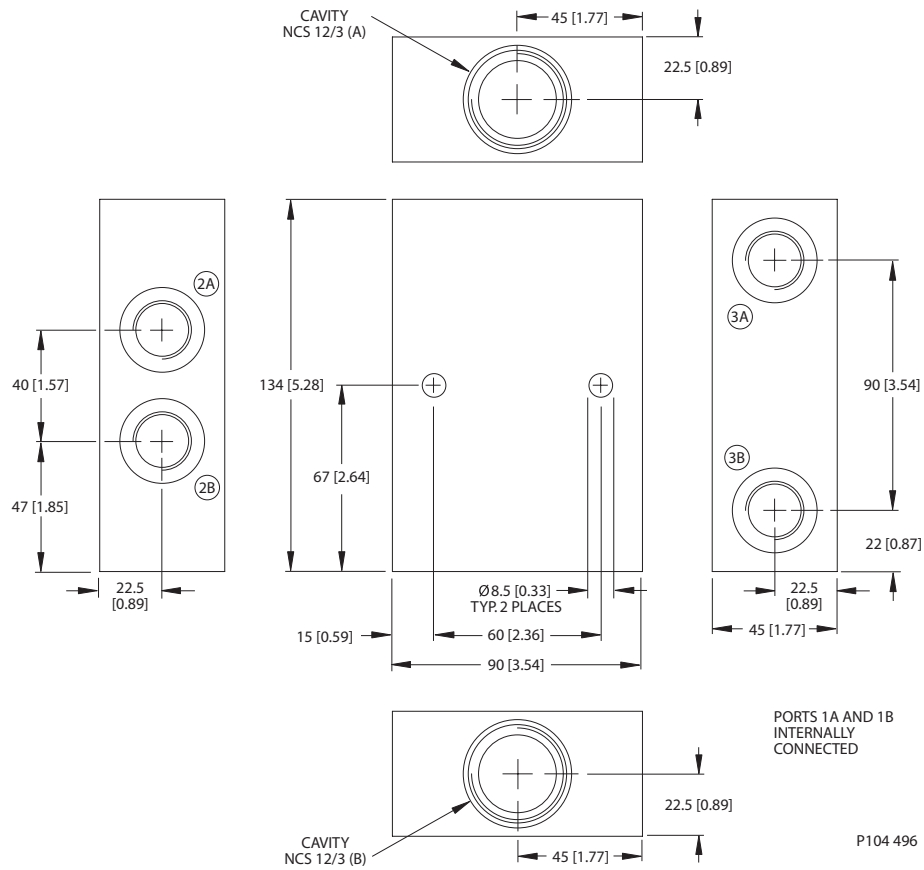
Dimensions



Options

Order Code	Description	Style	Ports
NCS12/3-DL-12S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	SAE #12
NCS12/3-DL-8S	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	SAE #8

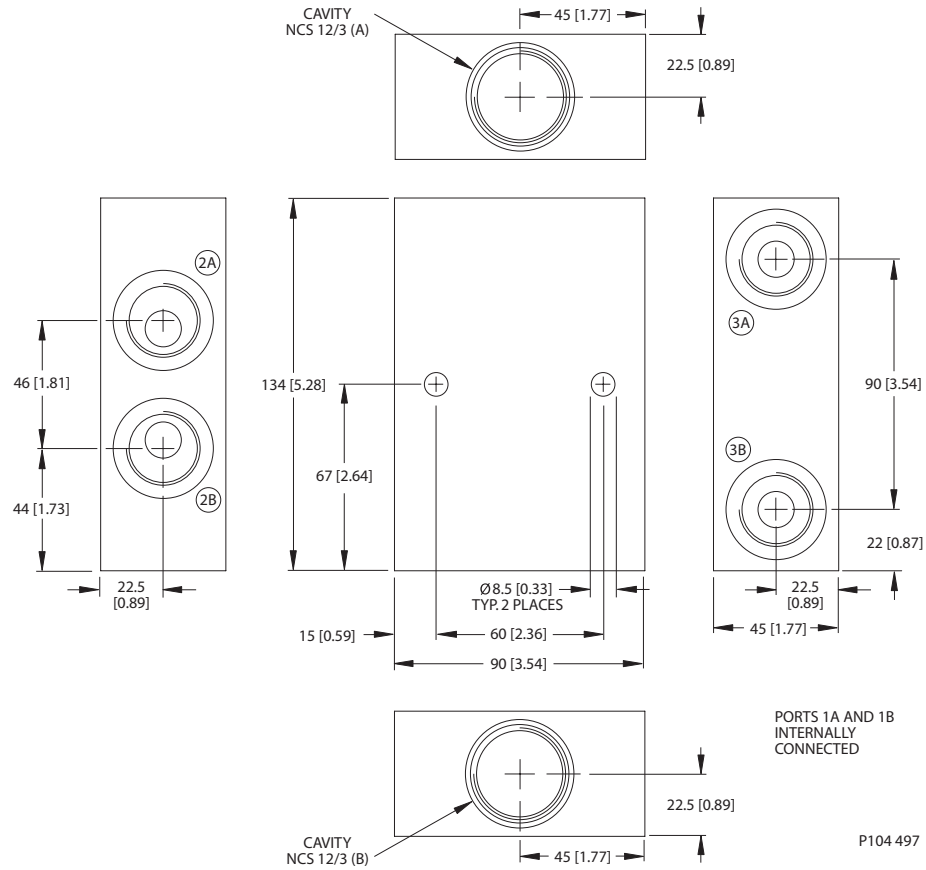
Housing drawing



Options

Order Code	Description	Style	Ports
NCS12/3-DL-1/2	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	1/2 BSP

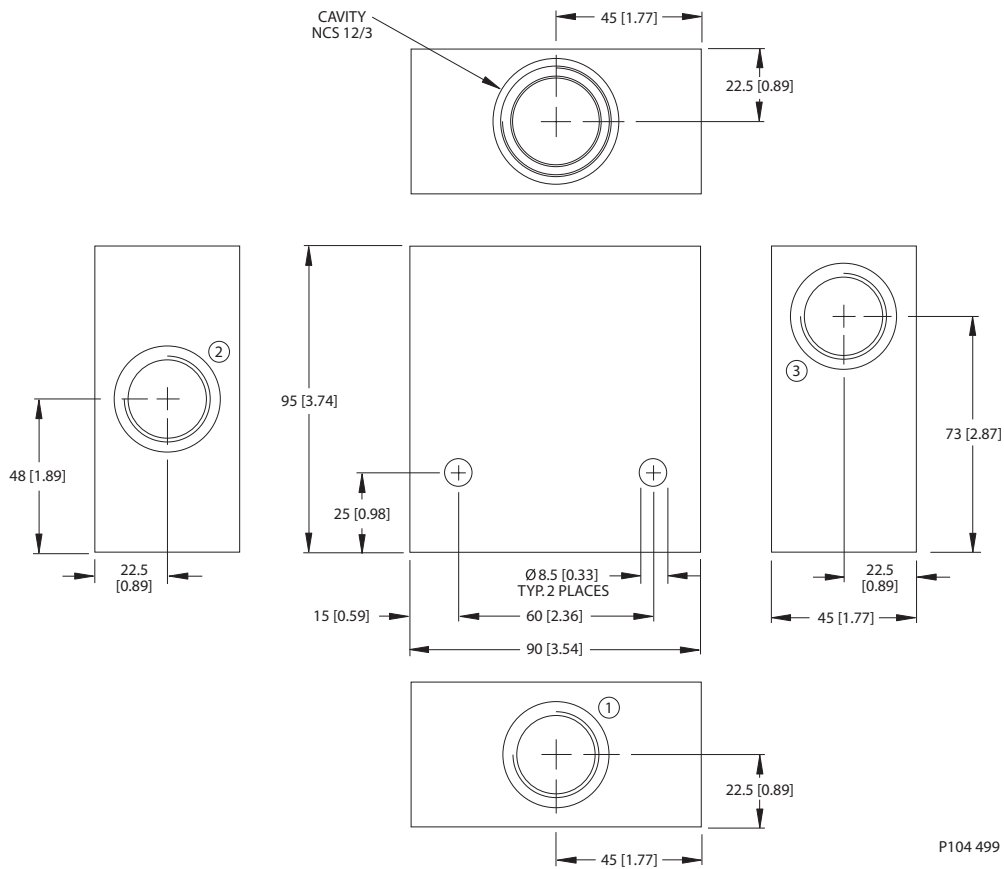
Dimensions



Options

Order Code	Description	Style	Ports
NCS12/3-DL-3/4	Alum. Hsg., 2 Cavities w/#1 Ports Conn.	DL	3/4 BSP

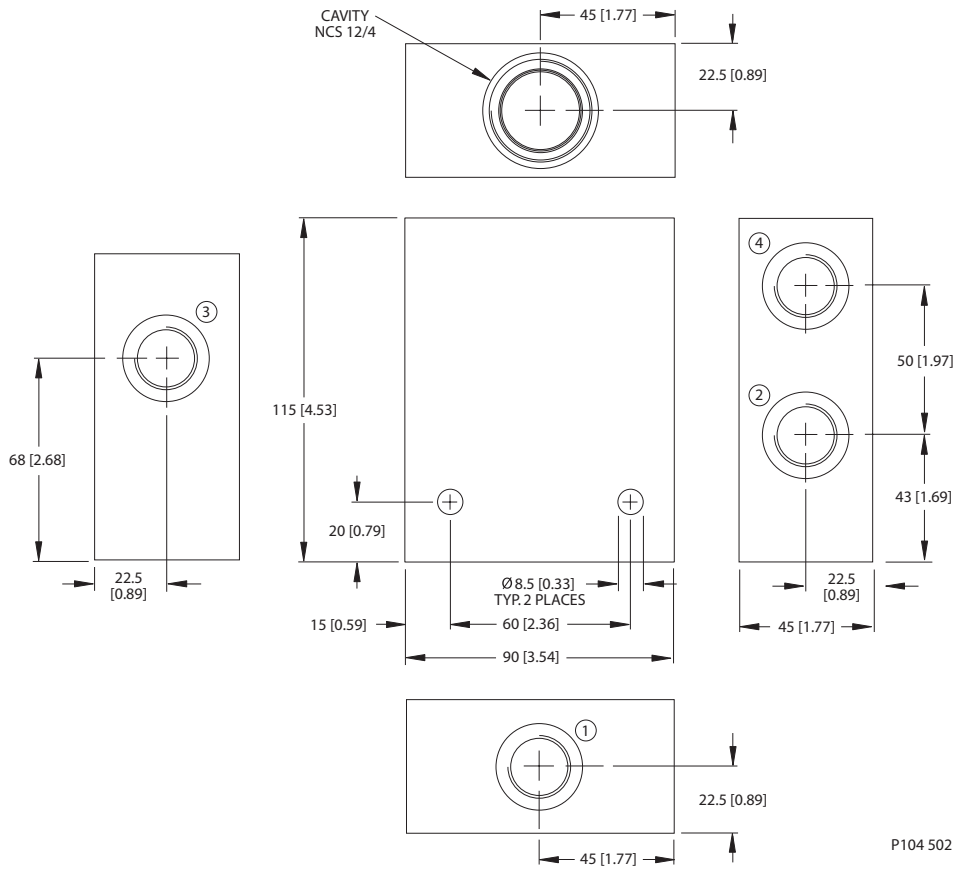
Housing drawing



Options

Order Code	Description	Style	Ports
NCS12/3-SE-1	Aluminum Housing	SE	1/2 BSP
NCS12/3-SE-12S	Aluminum Housing	SE	SAE #12
NCS12/3-SE-3/4	Aluminum Housing	SE	3/4 BSP
NCS12/3-SE-8S	Aluminum Housing	SE	SAE #8

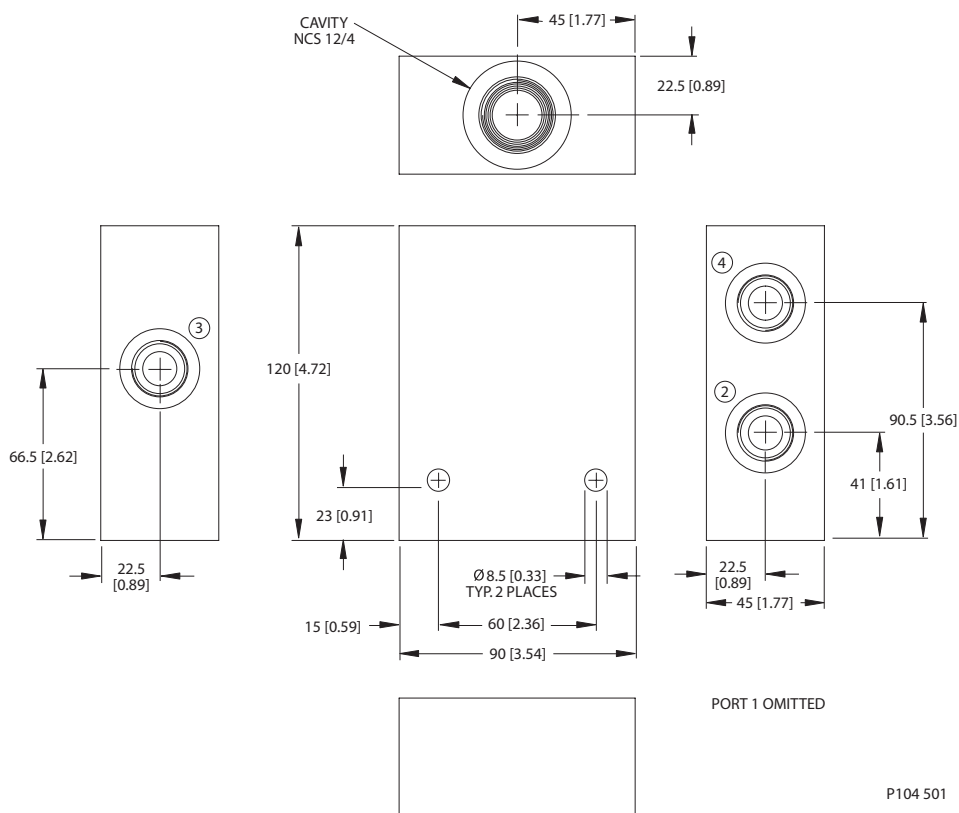
Housing drawing



Options

Order Code	Description	Style	Ports
NCS12/4-L-1	Aluminum Housing	L	1/2 BSP
NCS12/4-L-3/4	Aluminum Housing	L	3/4 BSP

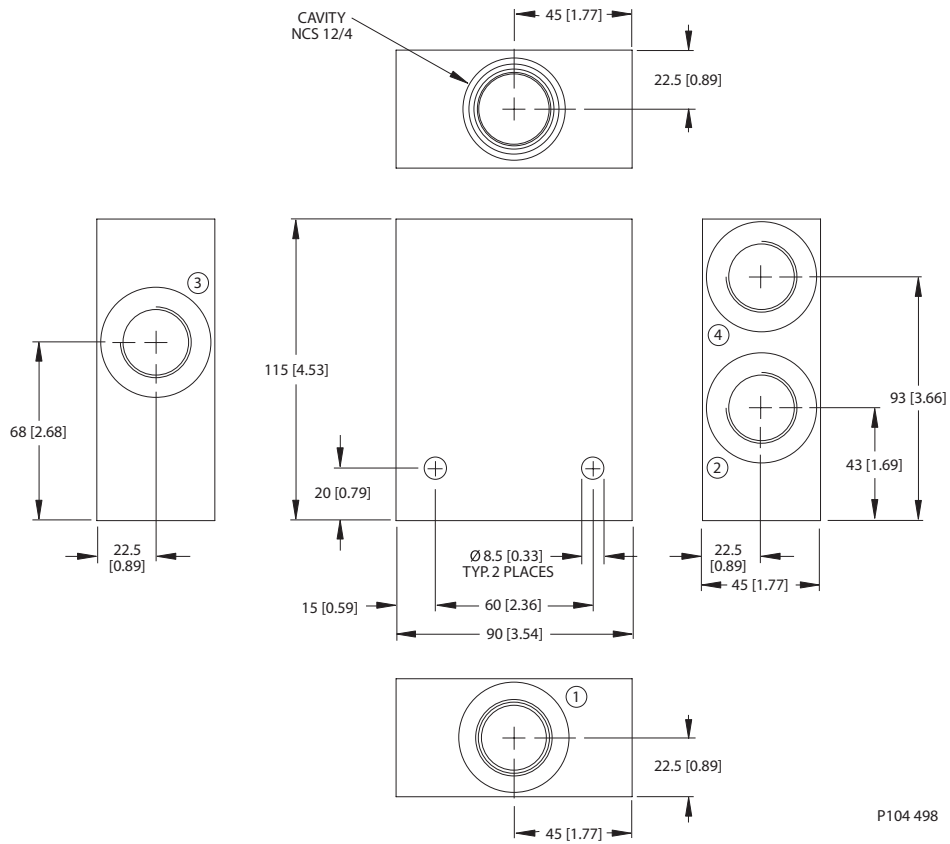
Dimensions



Options

Order Code	Description	Style	Ports
NCS12/4-HD-1	Aluminum Housing, No Port #1	HD	1/2 BSP

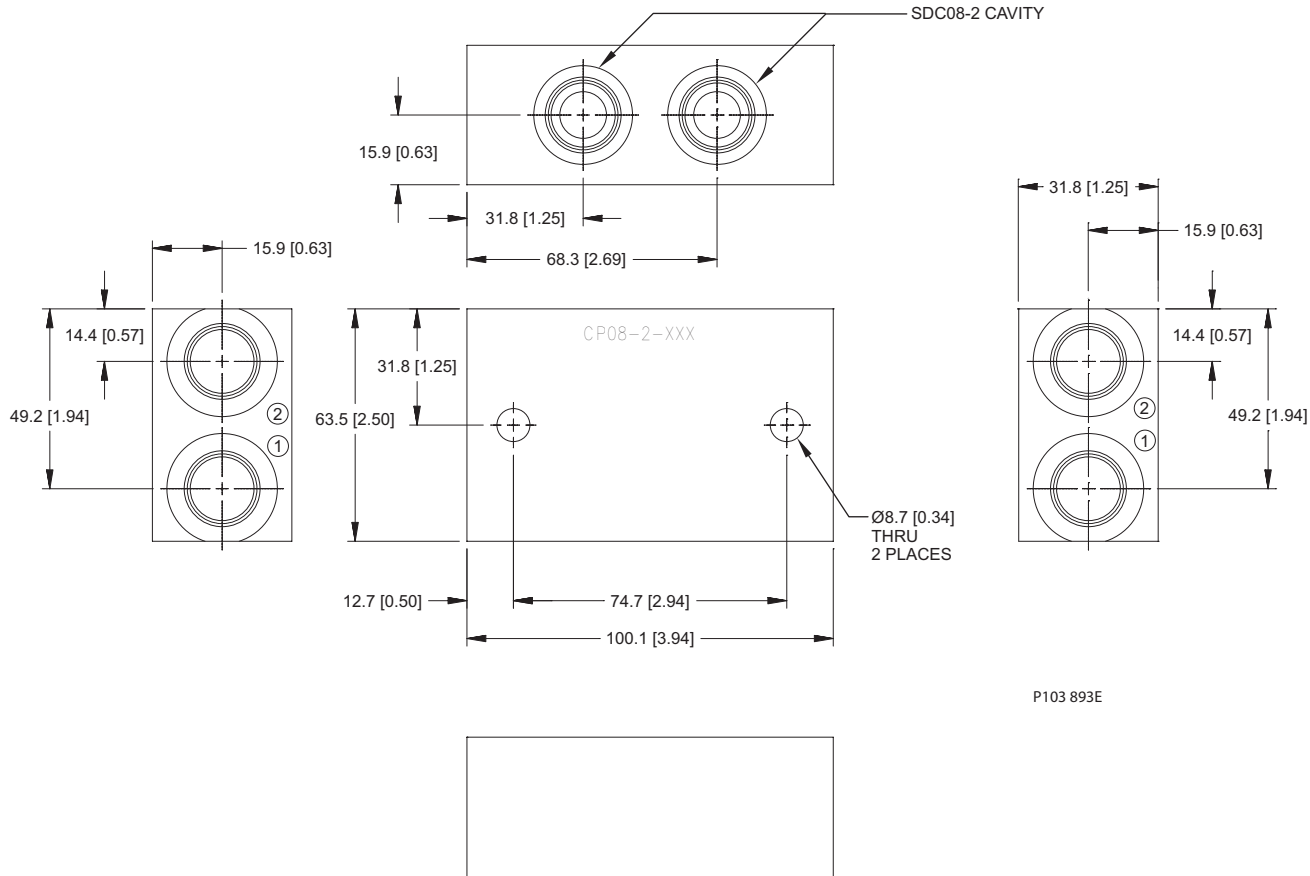
Housing drawing



Options

Order Code	Description	Style	Ports
NCS12/4-L-12S	Aluminum Housing	L	SAE #12

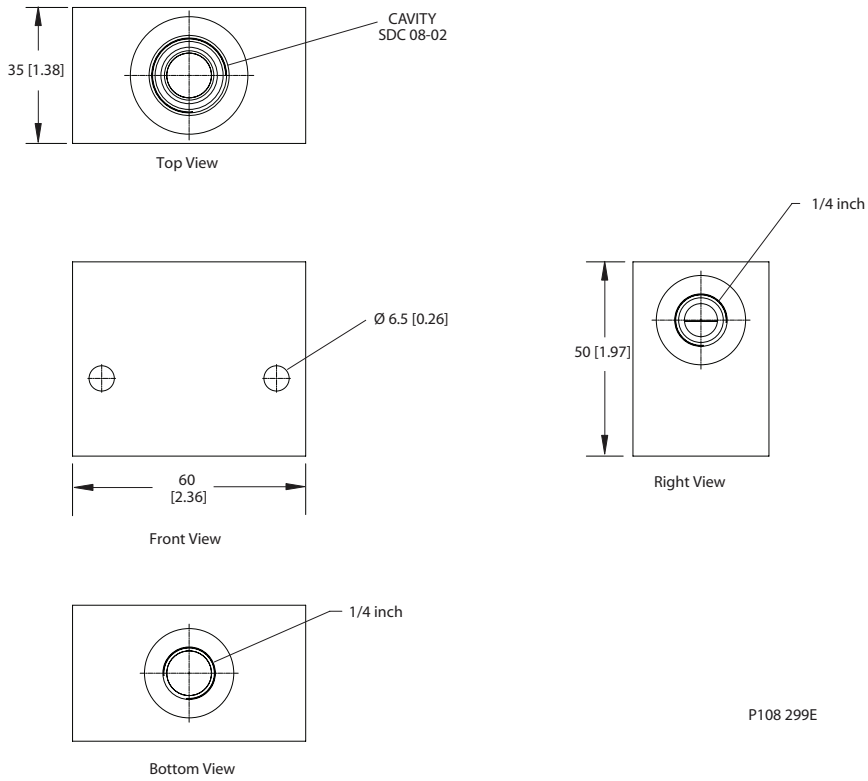
Dimensions



Options

Order Code	Description	Style	Ports
CP08-2-8S-2PL	Aluminum Housing - Parallel	Parallel	SAE #8

Housing drawing

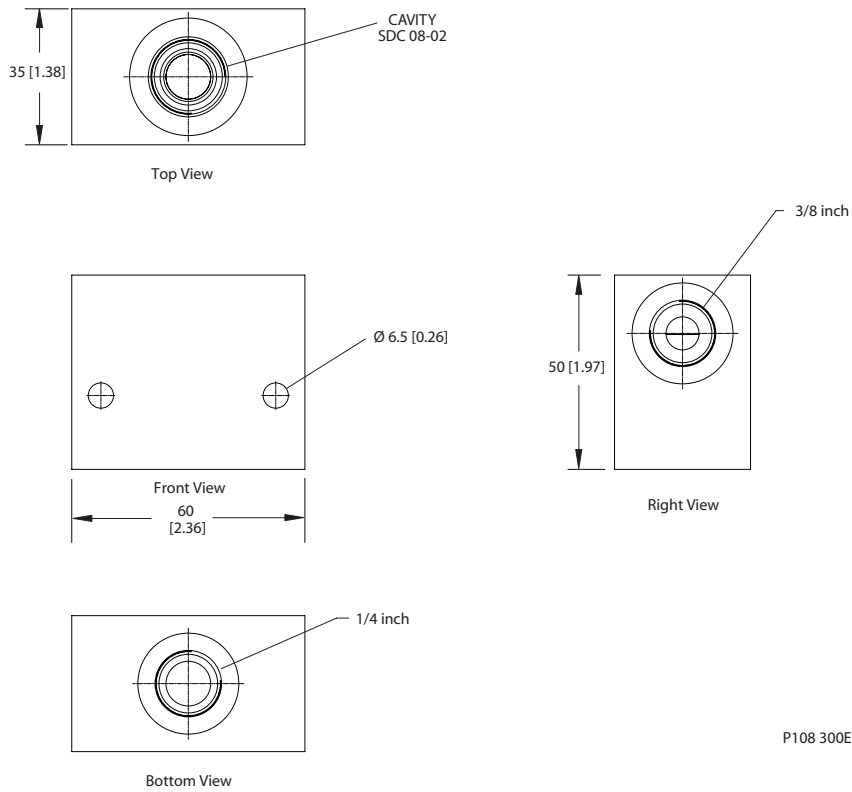


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Options

Order Code	Description	Style	Ports
SDC08-2-DG-2B	Aluminum Housing, Two #2 Ports	DG2	1/4 BSP

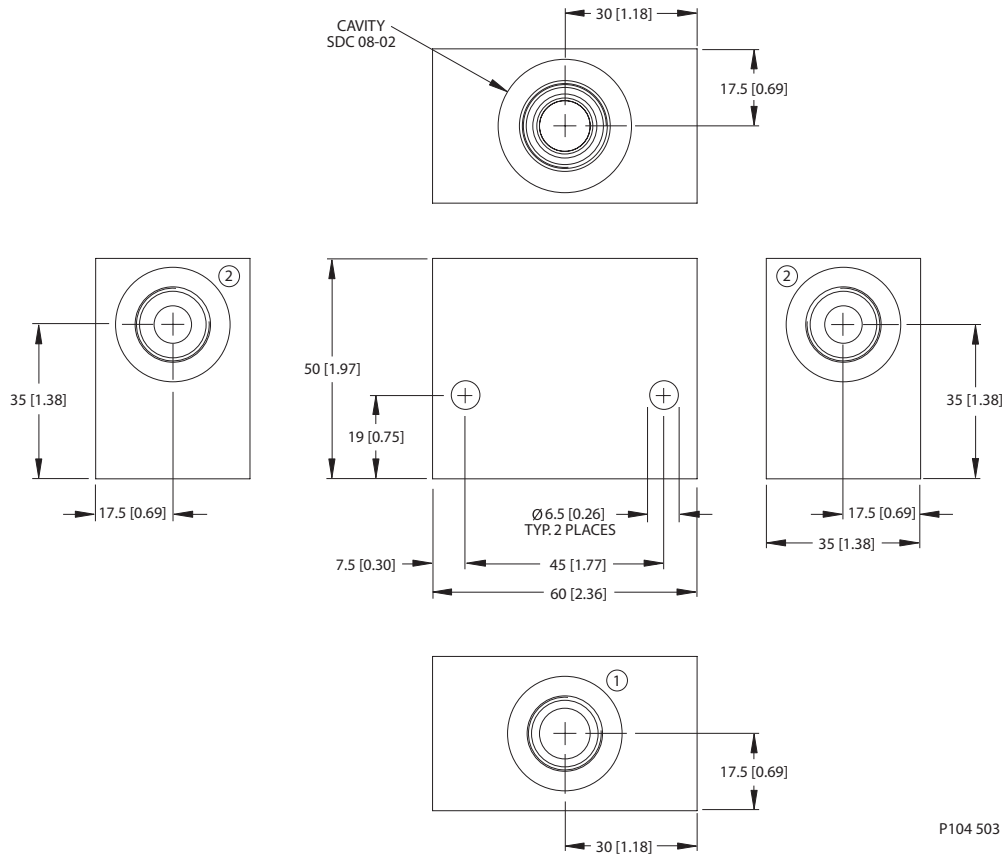
Housing drawing



Options

Order Code	Description	Style	Ports
SDC08-2-DG-3B	Aluminum Housing, Two #2 Ports	DG3	3/8 BSP

Housing drawing

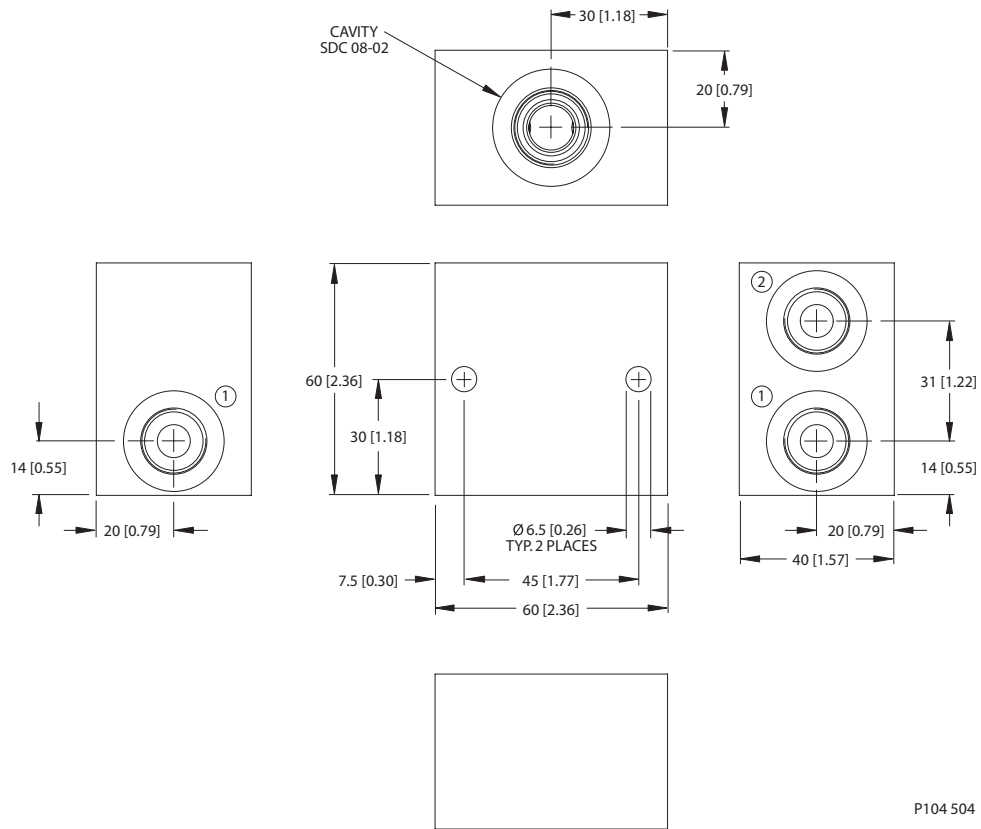


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Options

Order Code	Description	Style	Ports
SDC08-2-HG1-3B	Aluminum Housing, Two #2 Ports	HG1	3/8 BSP

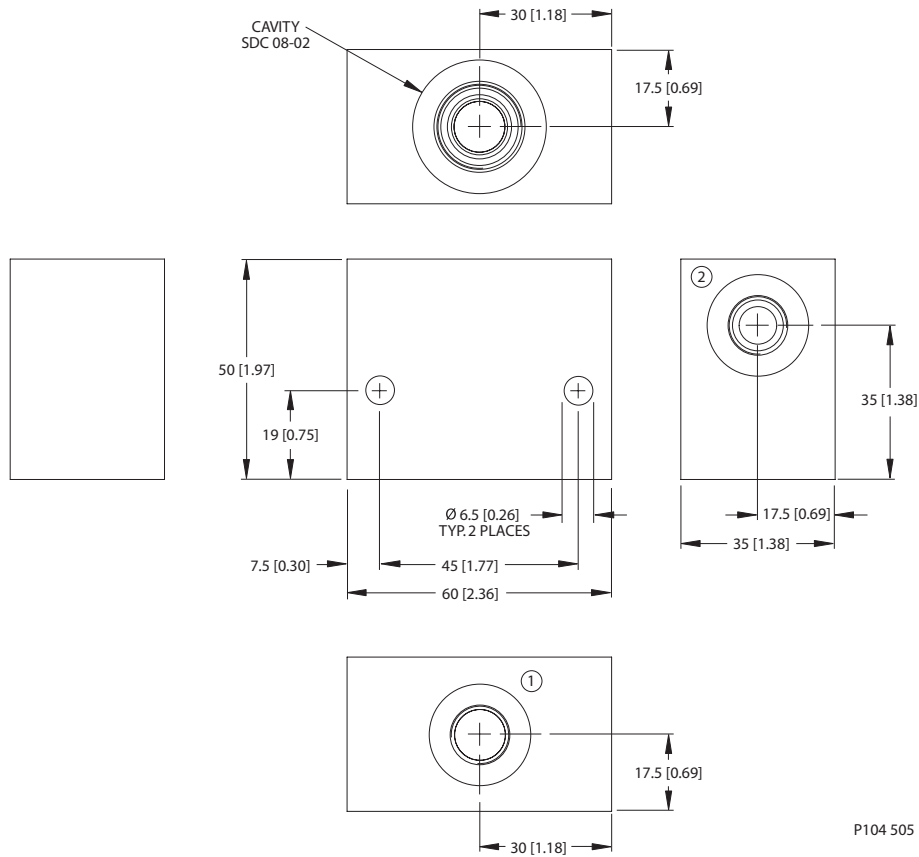
Dimensions



Options

Order Code	Description	Style	Ports
SDC08-2-HG2-3B	Aluminum Housing, Two #1 Ports	HG2	3/8 BSP

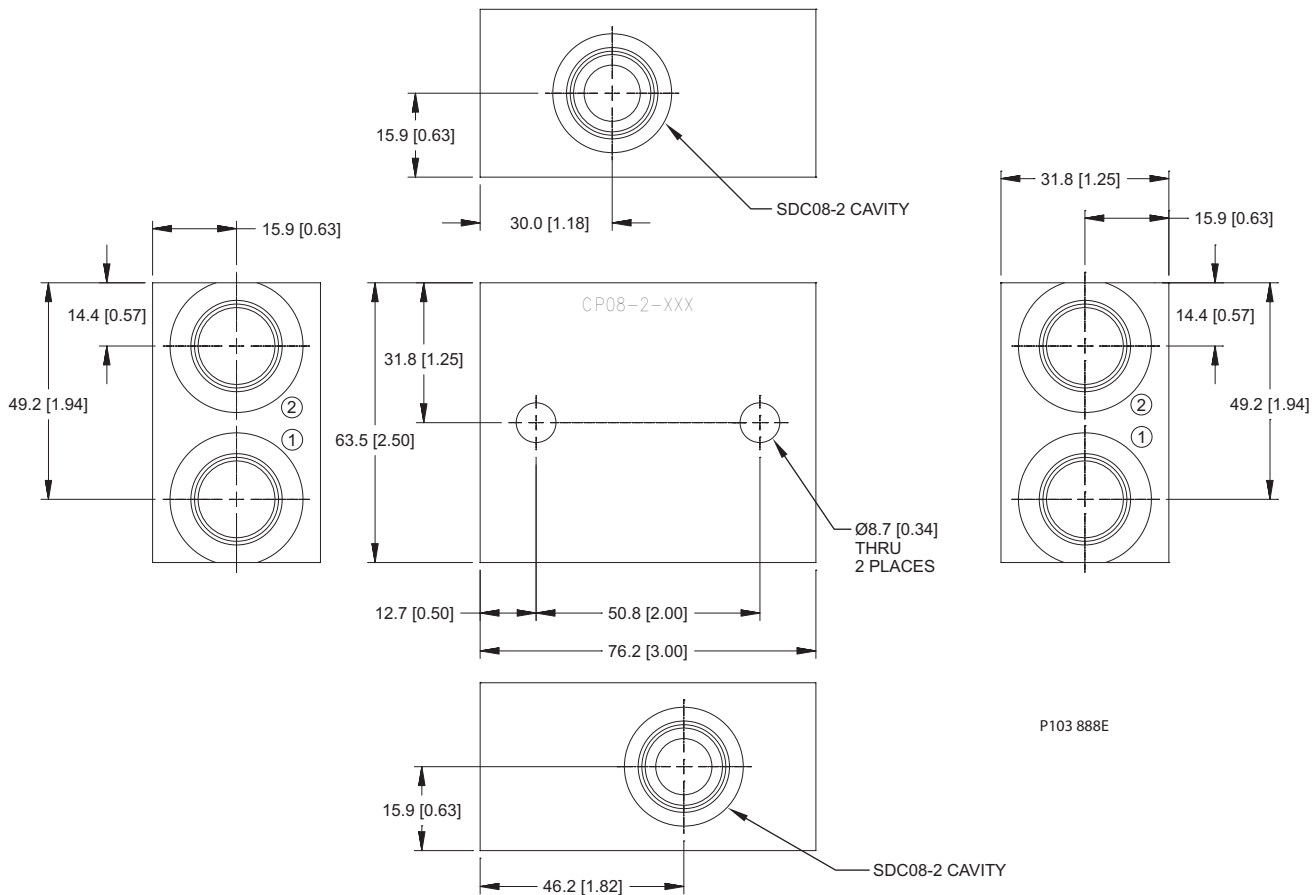
Housing drawing



Options

Order Code	Description	Style	Ports
SDC08-2-HG-2B	Aluminum Housing	HG	1/4 BSP
SDC08-2-HG-3B	Aluminum Housing	HG	3/8 BSP

Dimensions

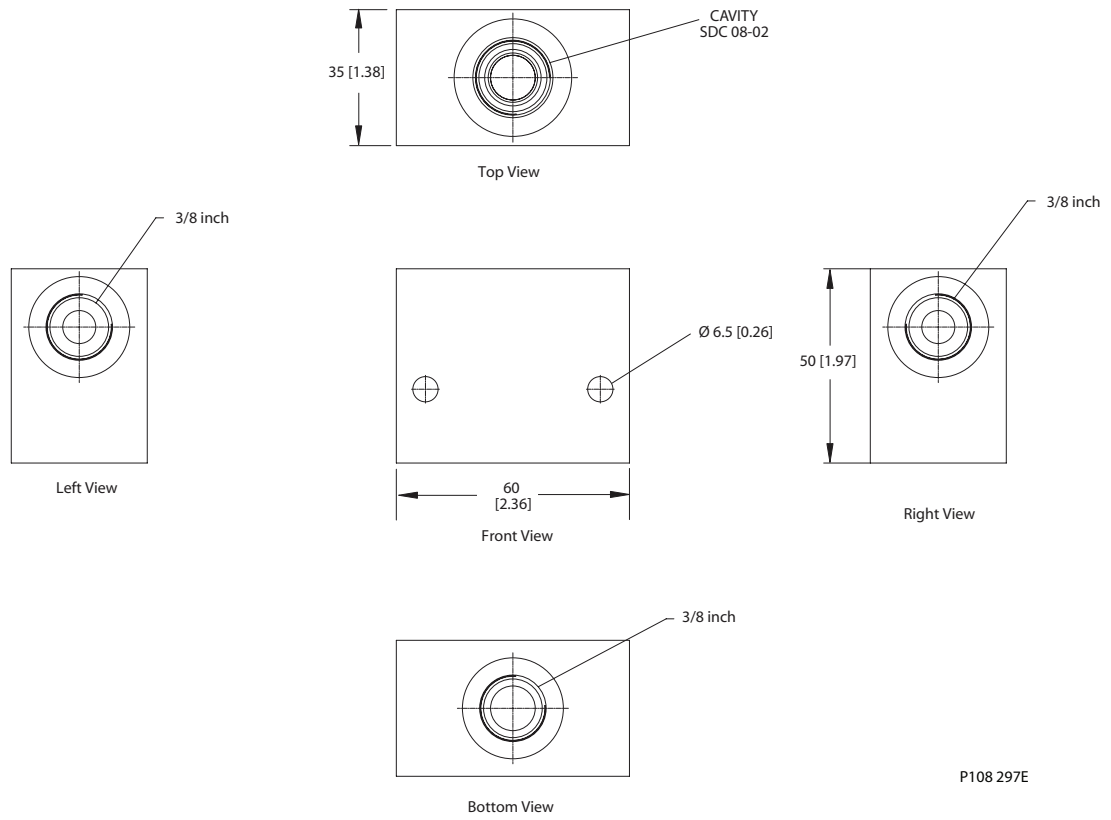


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Options

Order Code	Description	Style	Ports
CP08-2-6S-2CR	Aluminum Housing - Crossover	Crossover	SAE #6
CP08-2-8S-2CR	Aluminum Housing - Crossover	Crossover	SAE #8

Dimensions

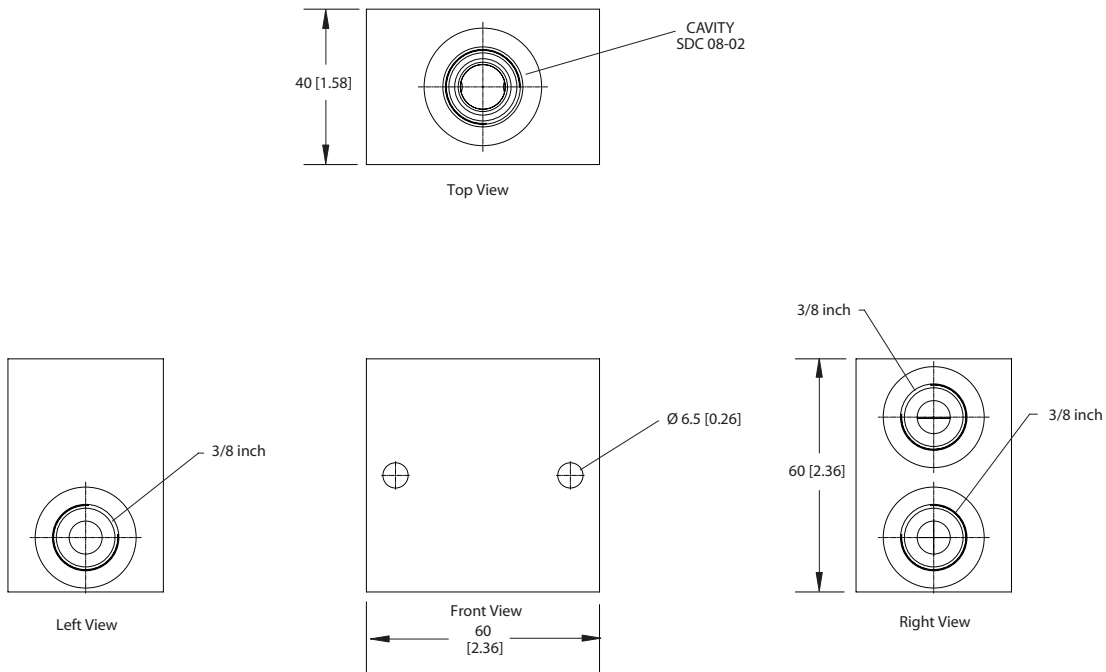


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Options

Order Code	Description	Style	Ports
SDC08-2-LG1-3B	Aluminum Housing	L	3/8 BSP

Dimensions

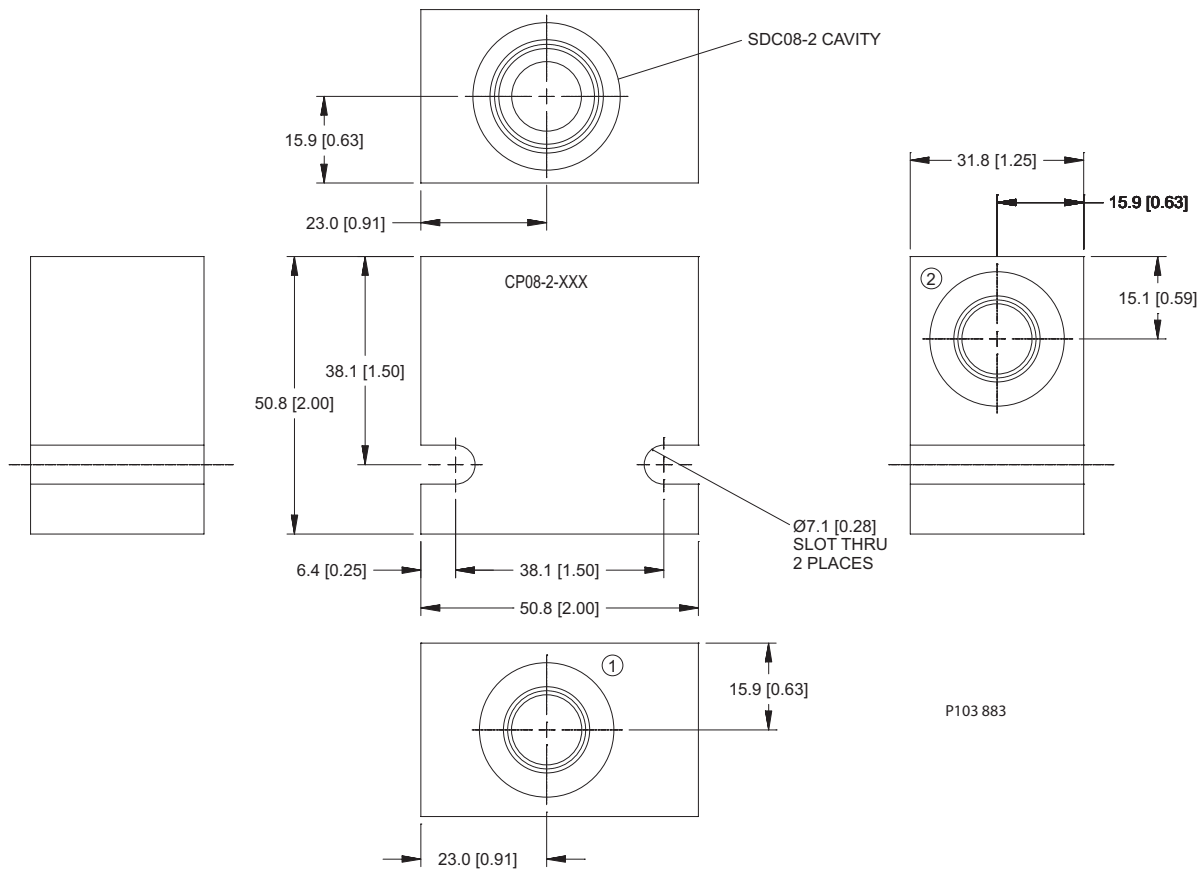


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Options

Order Code	Description	Style	Ports
SDC08-4-LG2-3B	Aluminum Housing	L	3/8 BSP

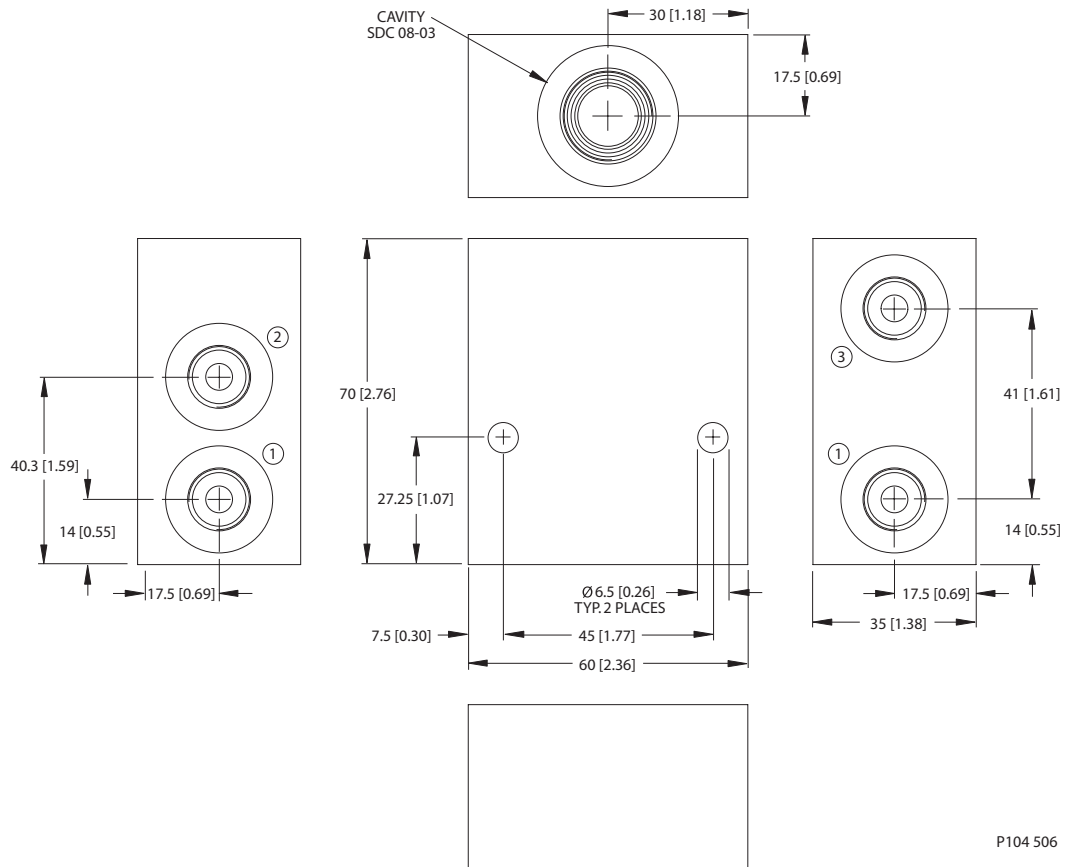
Housing drawing



Options

Order Code	Description	Style	Ports
CP08-2-4S	Aluminum Housing	Standard	SAE #4
CP08-2-6S	Aluminum Housing	Standard	SAE #6
CP08-2-S4S	Steel Housing	Standard	SAE #4

Dimensions

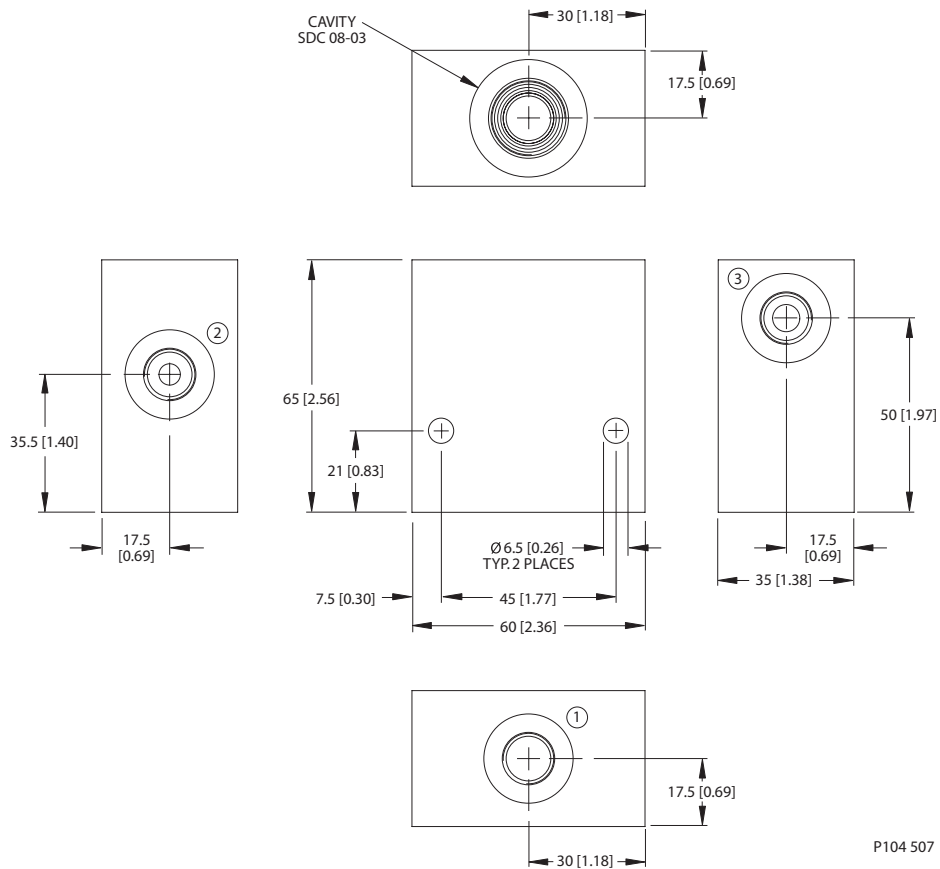


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Options

Order Code	Description	Style	Ports
SDC08-3-HI-2B	Aluminum Housing, Two #1 Ports	HI	1/4 BSP

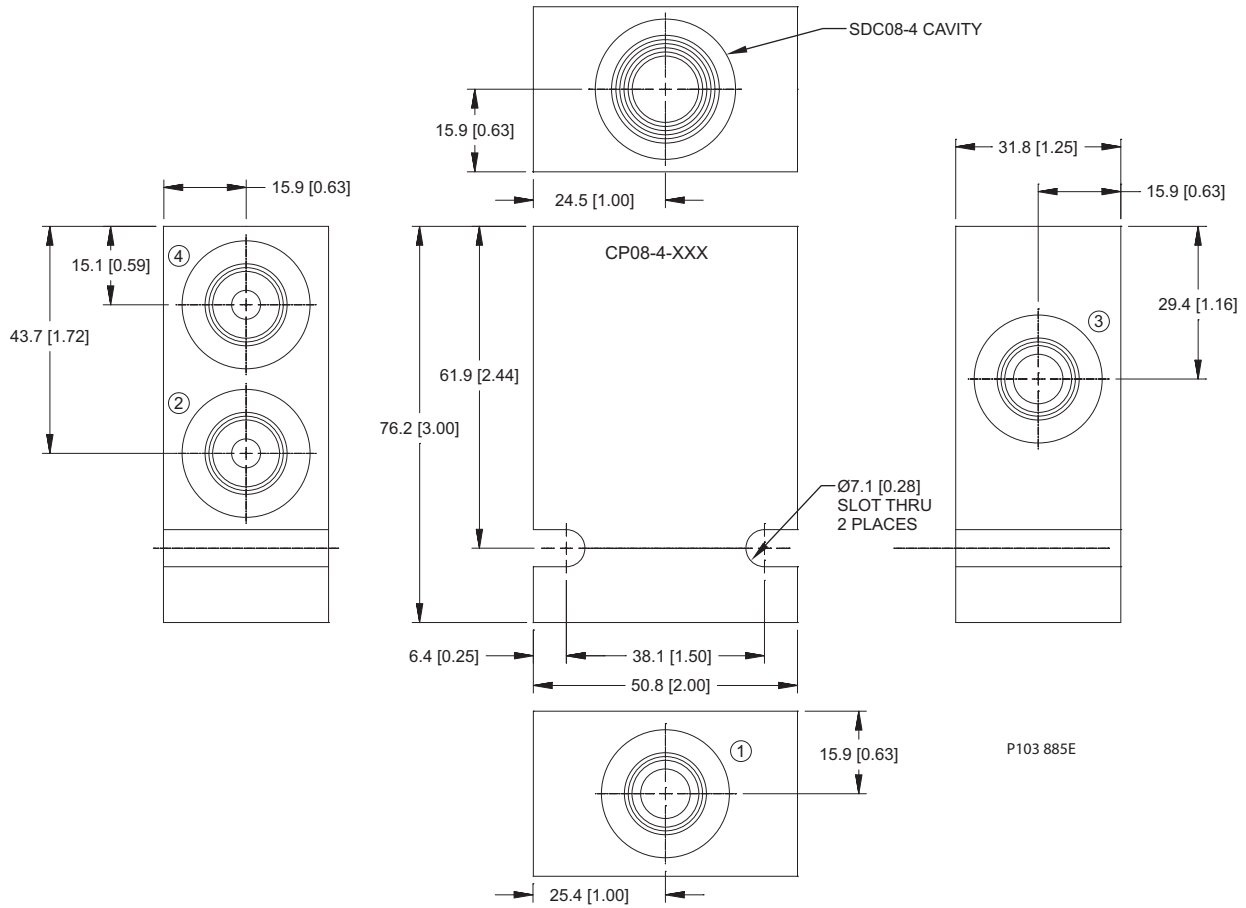
Housing drawing



Options

Order Code	Description	Style	Ports
SDC08-3-SE-2B	Aluminum Housing	SE	1/4 BSP
SDC08-3-SE-3B	Aluminum Housing	SE	3/8 BSP

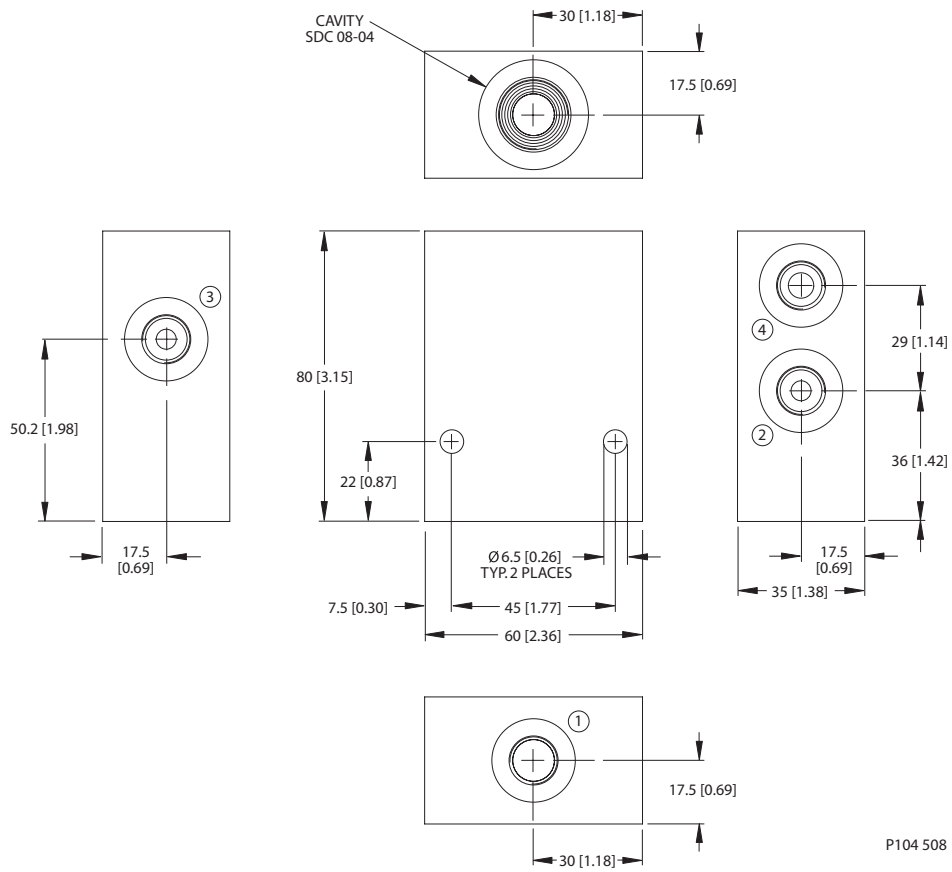
Housing drawing



Options

Order Code	Description	Style	Ports
CP08-4-4S	Aluminum Housing	Standard	SAE #4
CP08-4-6S	Aluminum Housing	Standard	SAE #6

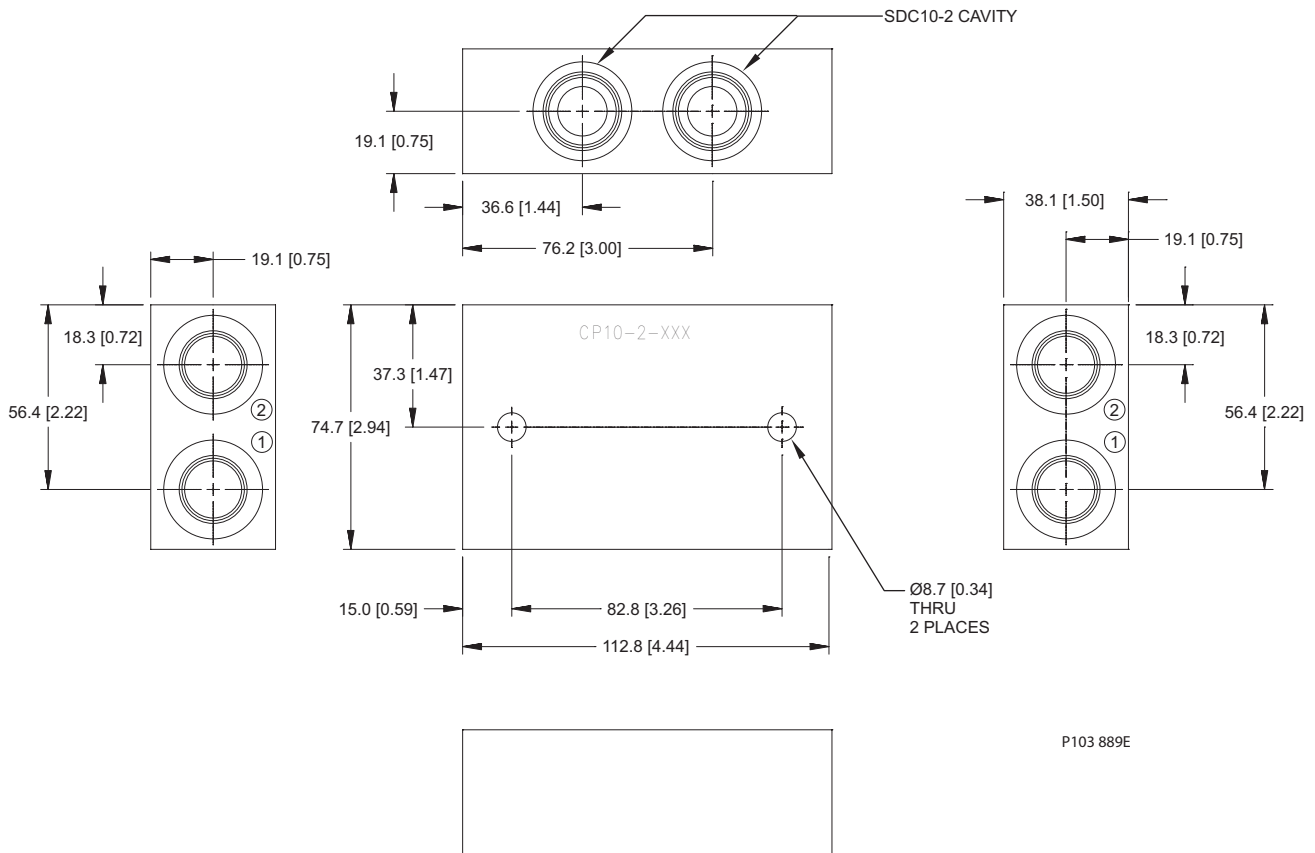
Dimensions



Options

Order Code	Description	Style	Ports
SDC08-4-L-2B	Aluminum Housing	L	1/4 BSP

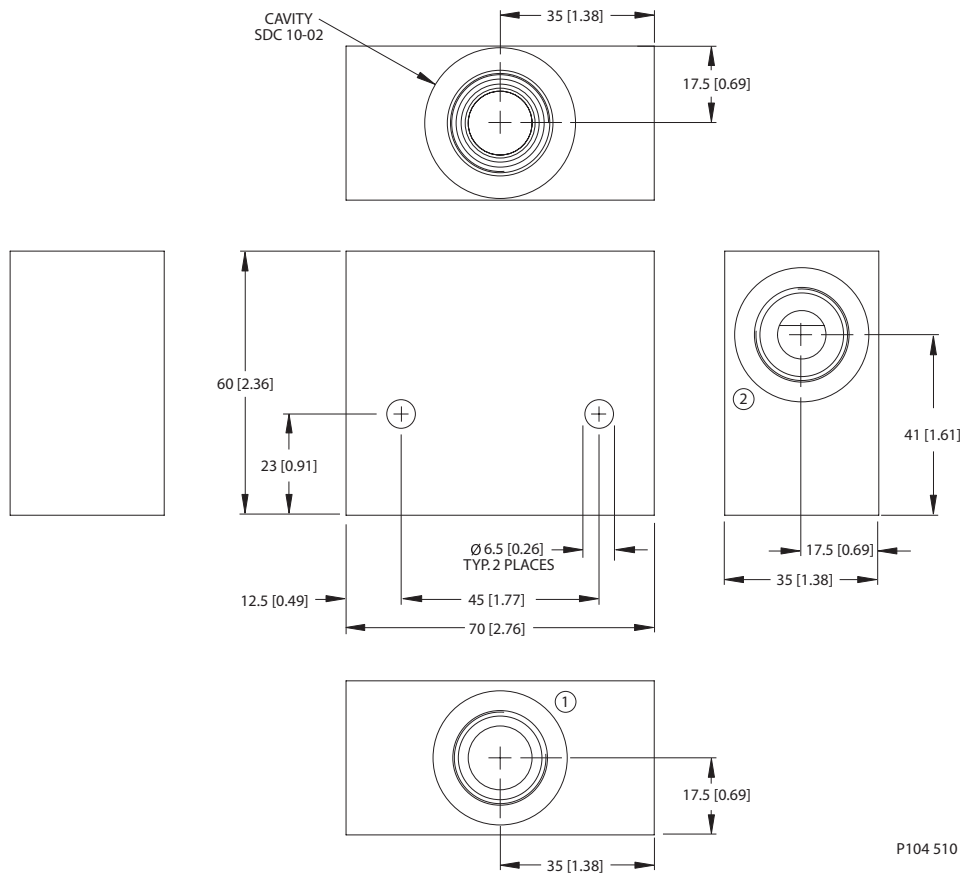
Housing drawing



Options

Order Code	Description	Style	Ports
CP10-2-8S-2PL	Parallel housing	Parallel	SAE #8

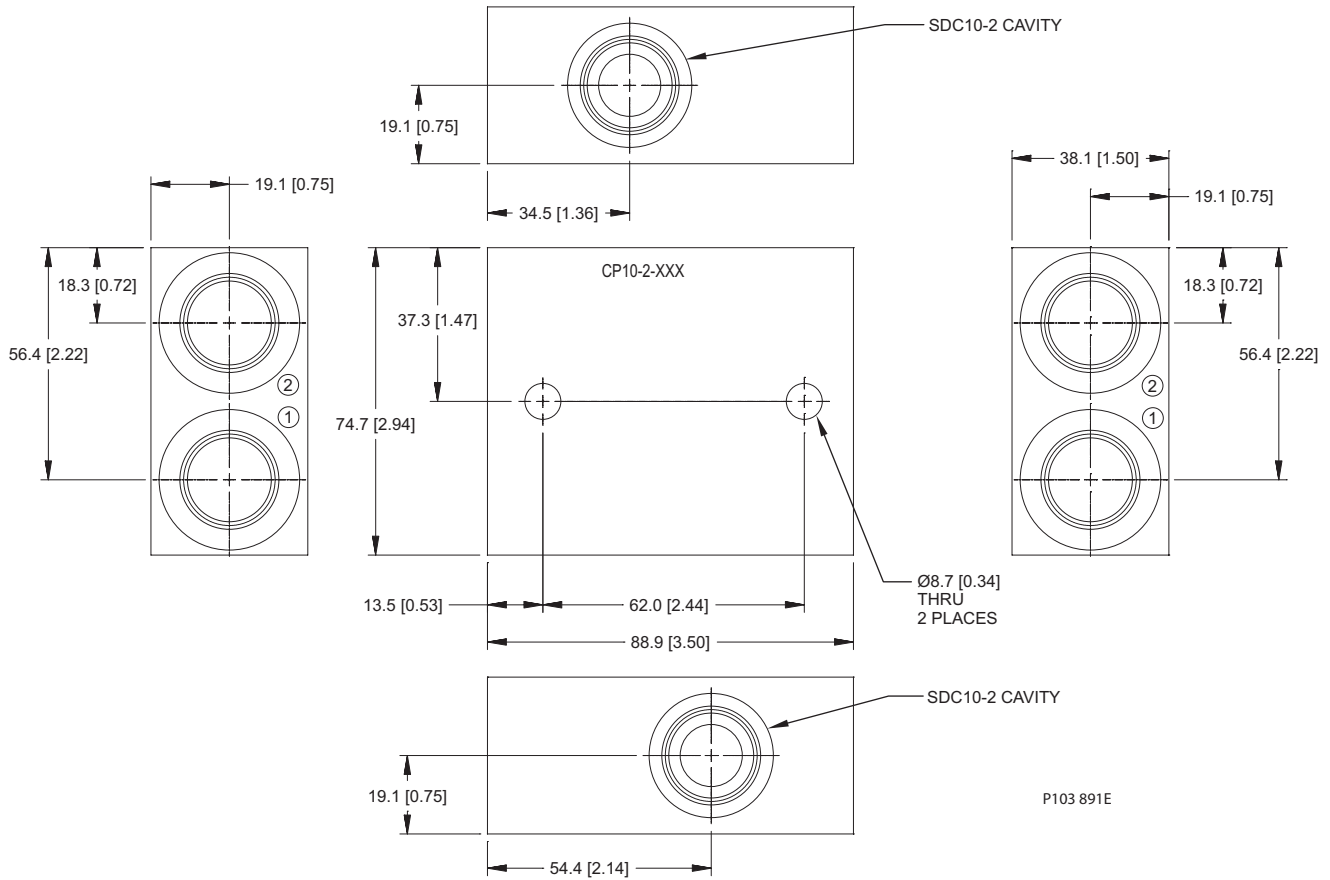
Dimensions



Options

Order Code	Description	Style	Ports
SDC10-2-DG-4B	Aluminum Housing	DG	1/2 BSP

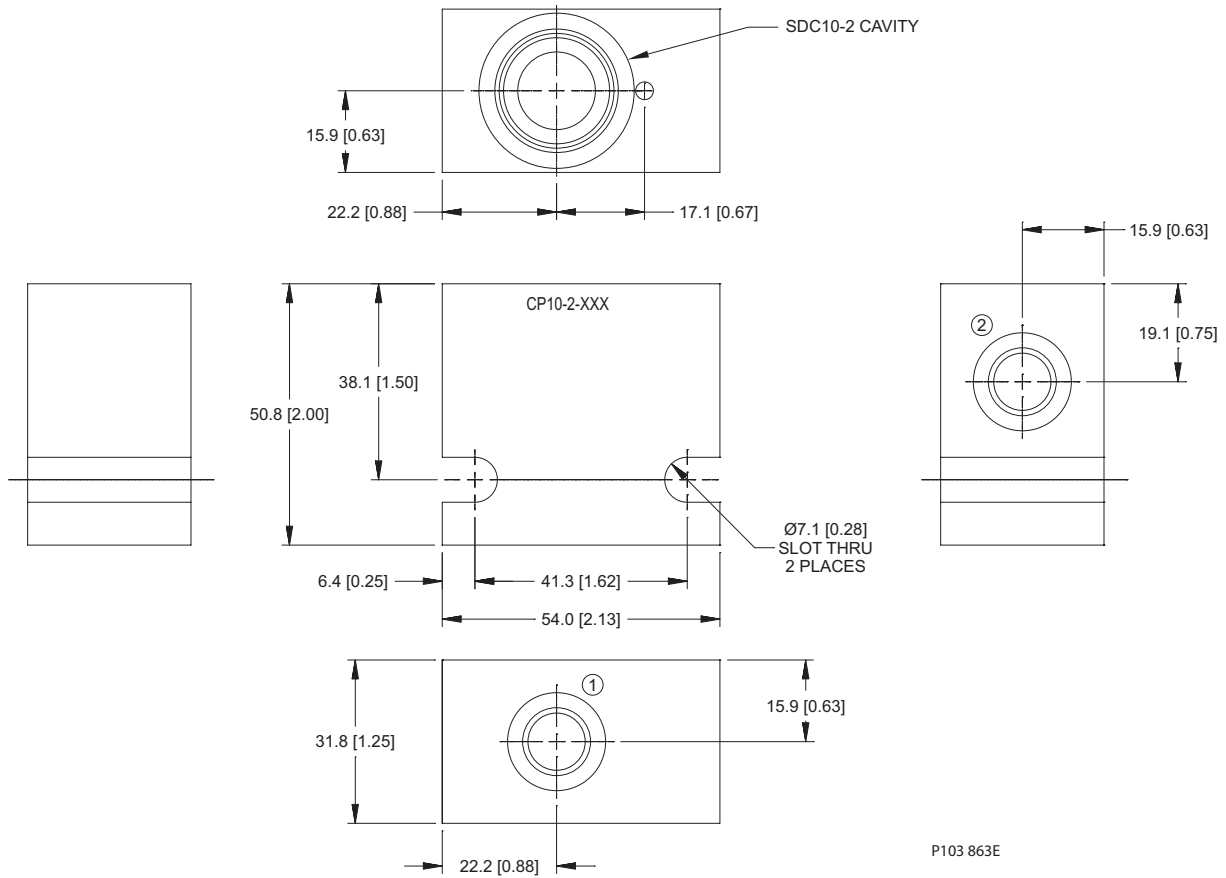
Housing drawing



Options

Order Code	Description	Style	Ports
CP10-2-10S-2CR	Aluminum Housing	Crossover	SAE #10

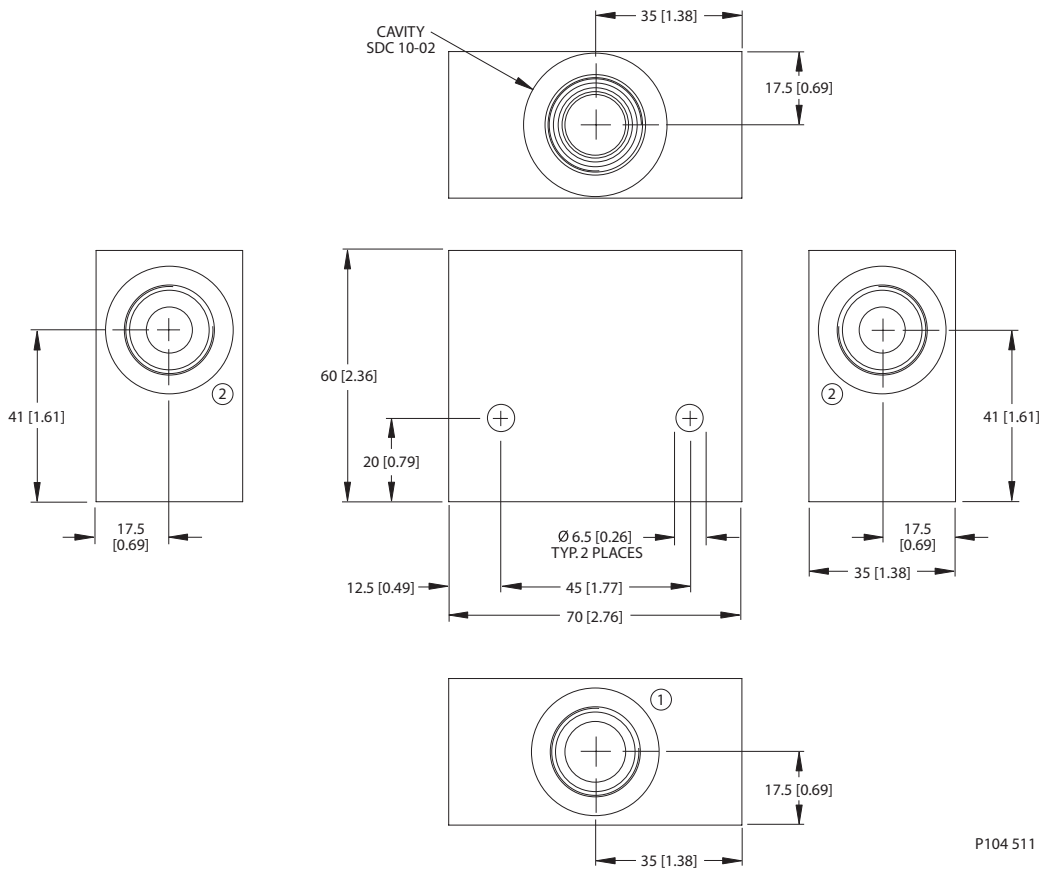
Dimensions



Options

Order Code	Description	Style	Ports
CP10-2-6S	Aluminum Housing	Standard	SAE #6
CP10-2-8S	Aluminum Housing	Standard	SAE #8
CP10-2-S6S	Steel Housing	Standard	SAE #6
CP10-2-S8S	Steel Housing	Standard	SAE #8

Housing drawing

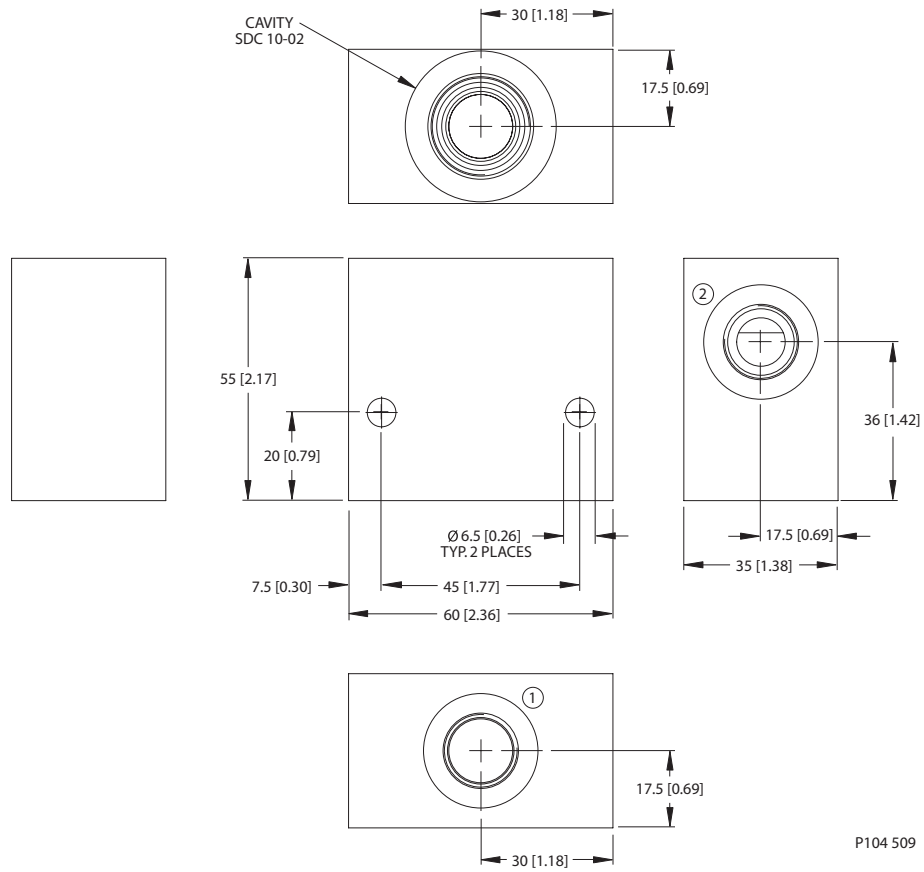


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Options

Order Code	Description	Style	Ports
SDC10-2-LG1-4B	Aluminum Housing, Two #2 Ports	LG1	1/2 BSP

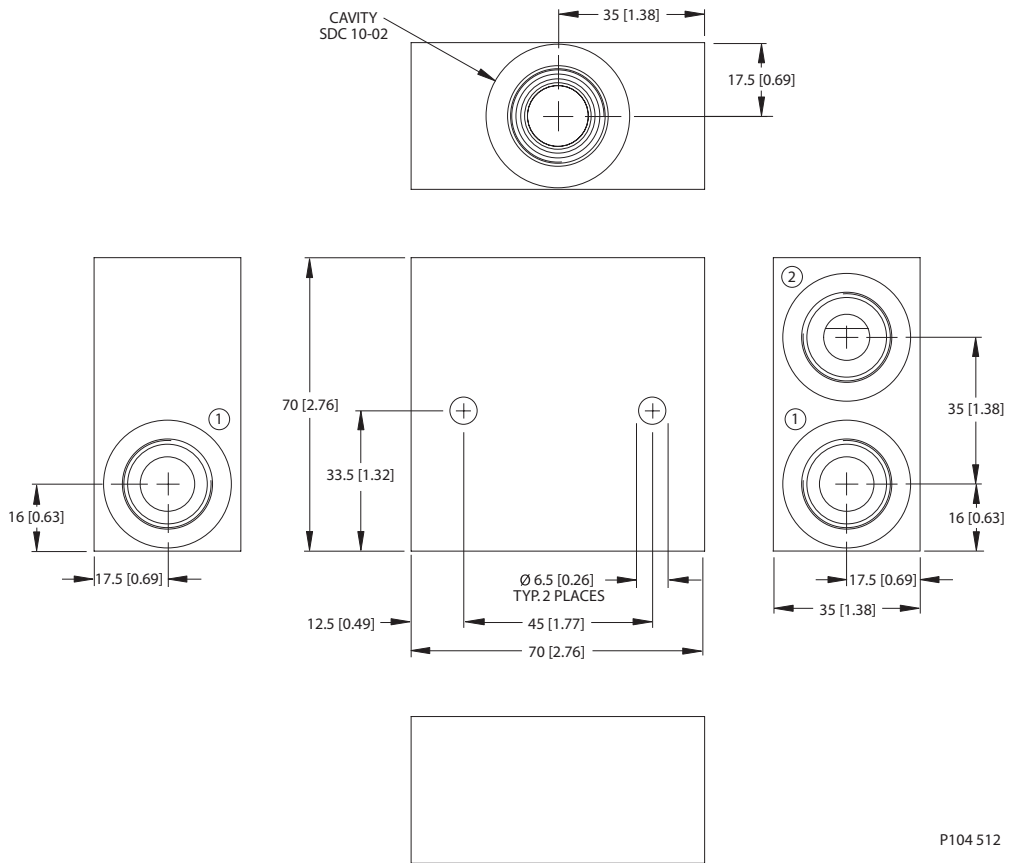
Dimensions



Options

Order Code	Description	Style	Ports
SDC10-2-DG-3B	Aluminum Housing	DG	3/8 BSP

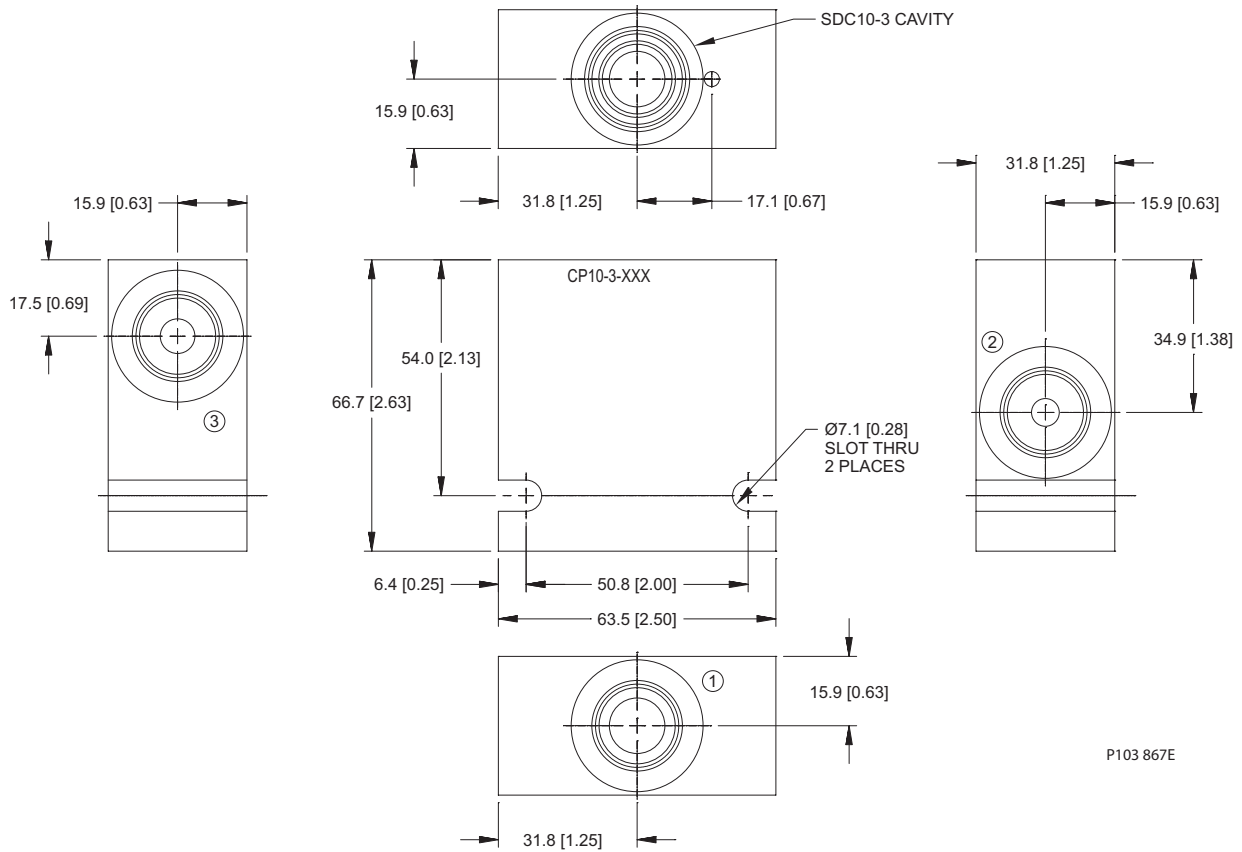
Housing drawing



Options

Order Code	Description	Style	Ports
SDC10-2-LG2-4B	Aluminum Housing, Two #1 Ports	LG2	1/2 BSP

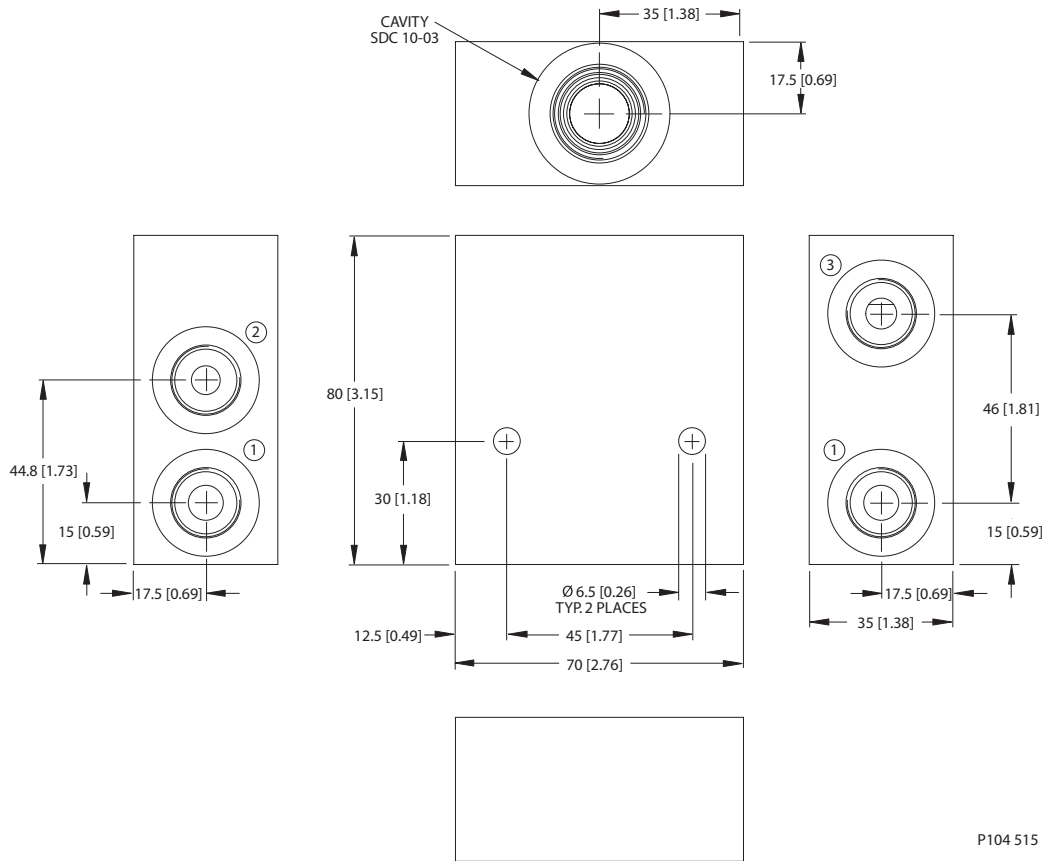
Dimensions



Options

Order Code	Description	Style	Ports
CP10-3-6S	Aluminum Housing	Standard	SAE #6
CP10-3-8S	Aluminum Housing	Standard	SAE #8
CP10-3-S6S	Steel Housing	Standard	SAE #6
CP10-3-S8S	Steel Housing	Standard	SAE #8

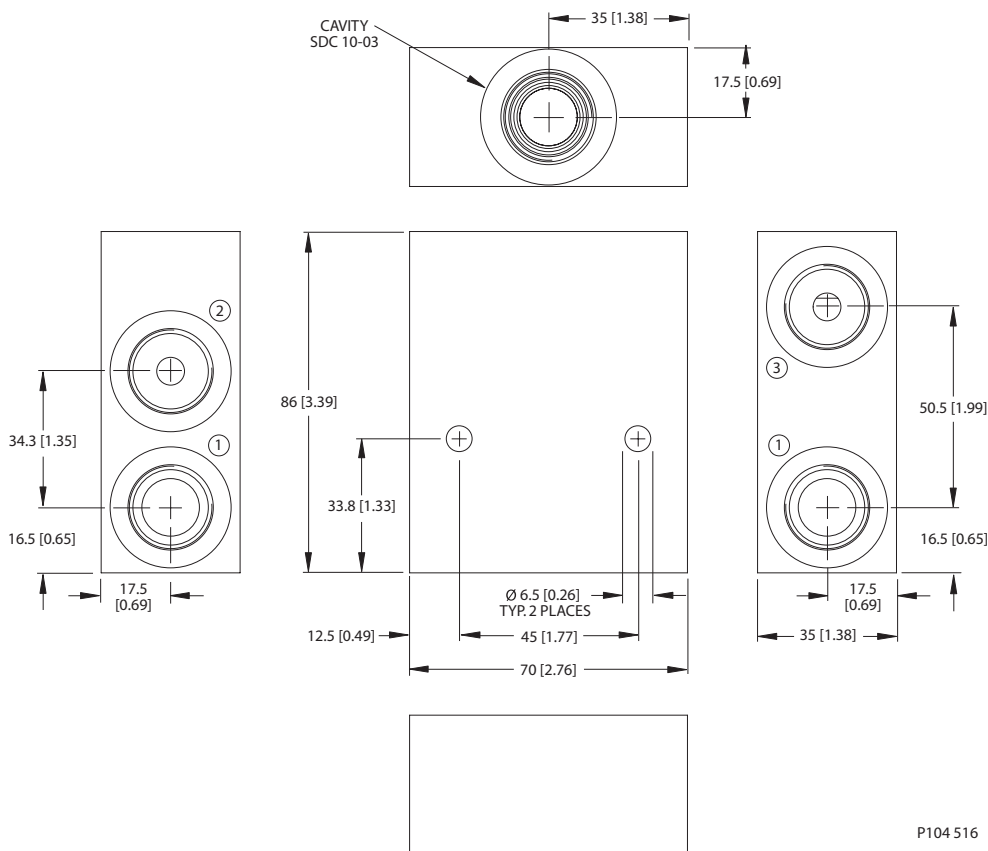
Housing drawing



Options

Order Code	Description	Style	Ports
SDC10-3-SI-3B	Aluminum Housing, Two #1 Ports	SI	3/8 BSP

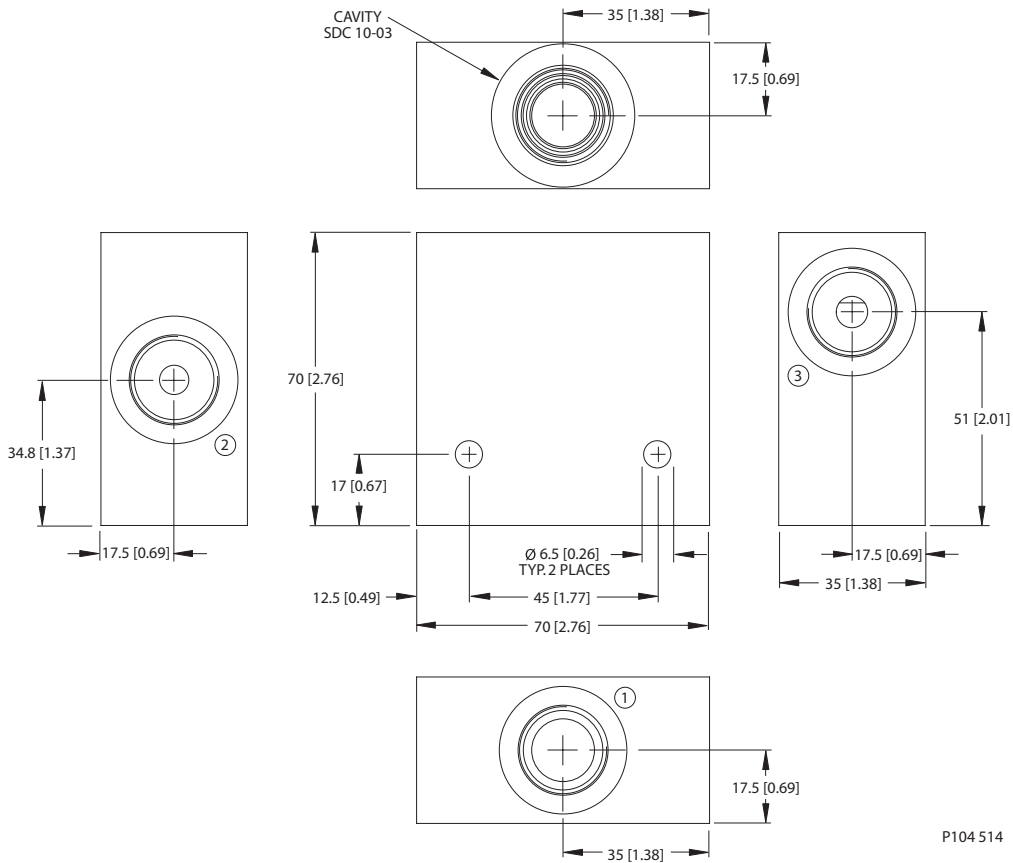
Dimensions



Options

Order Code	Description	Style	Ports
SDC10-3-SI-4B	Aluminum Housing, Two #1 Ports	SI	1/2 BSP

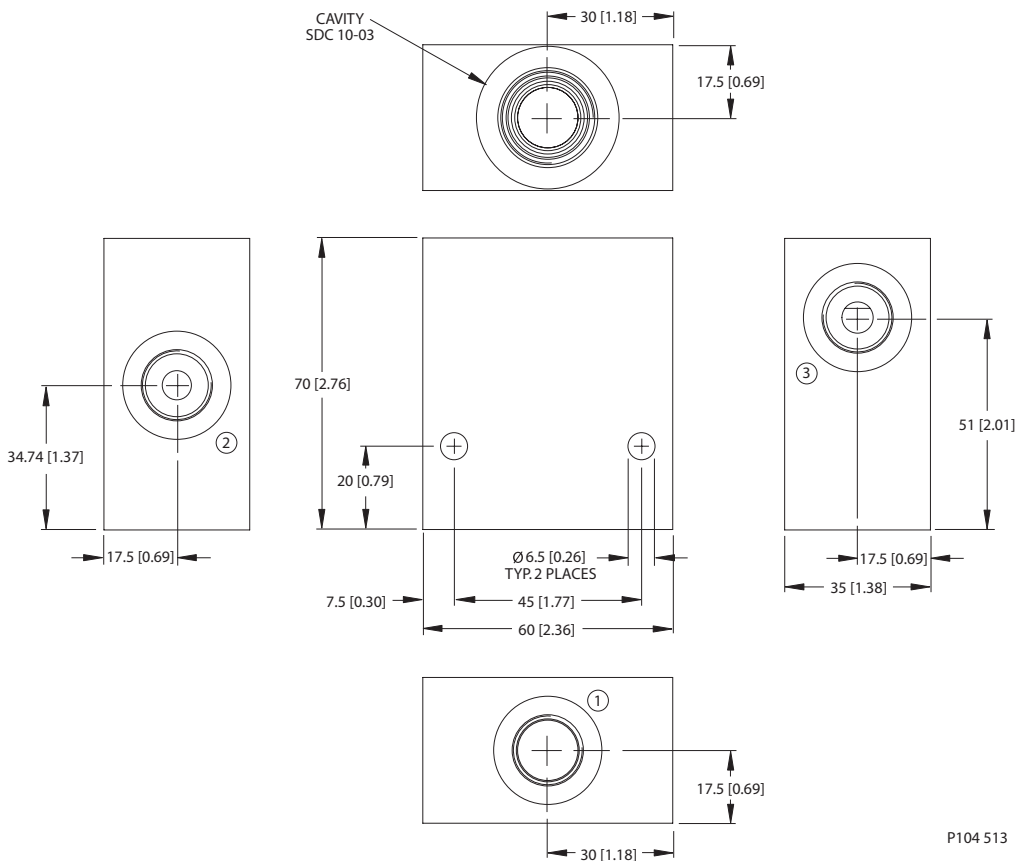
Housing drawing



Options

Order Code	Description	Style	Ports
SDC10-3-SE-4B	Aluminum Housing	SE	1/2 BSP

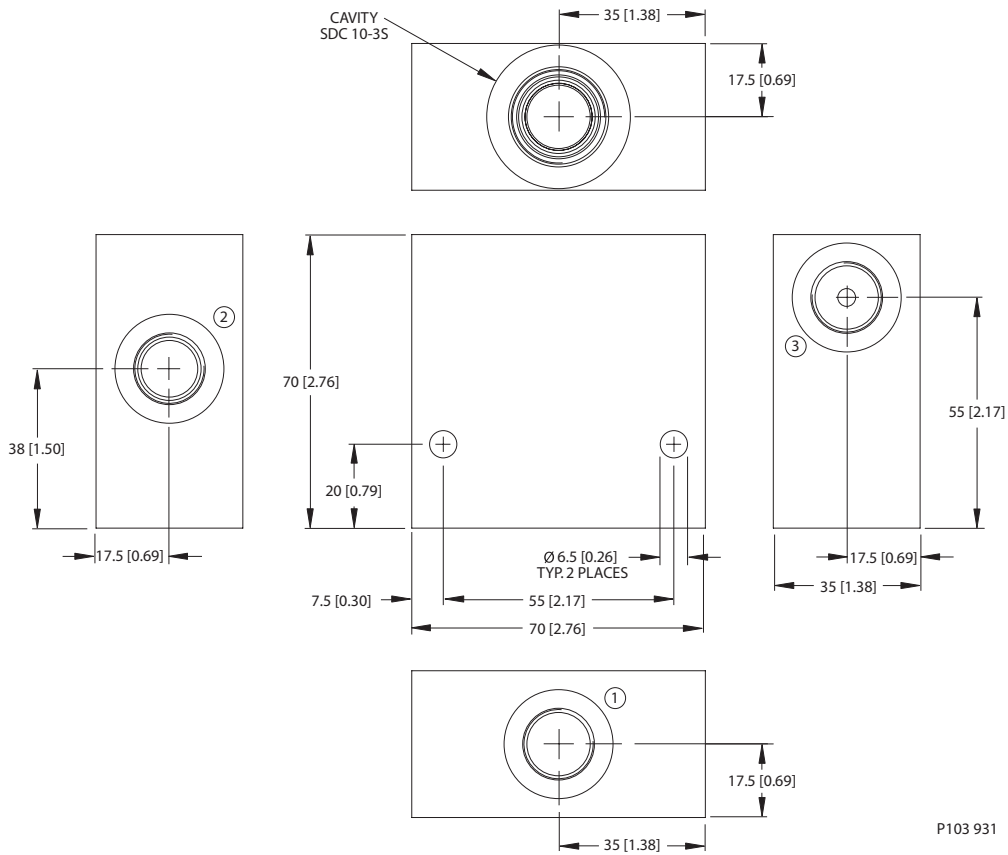
Dimensions



Options

Order Code	Description	Style	Ports
SDC10-3-SE-3B	Aluminum Housing	SE	3/8 BSP

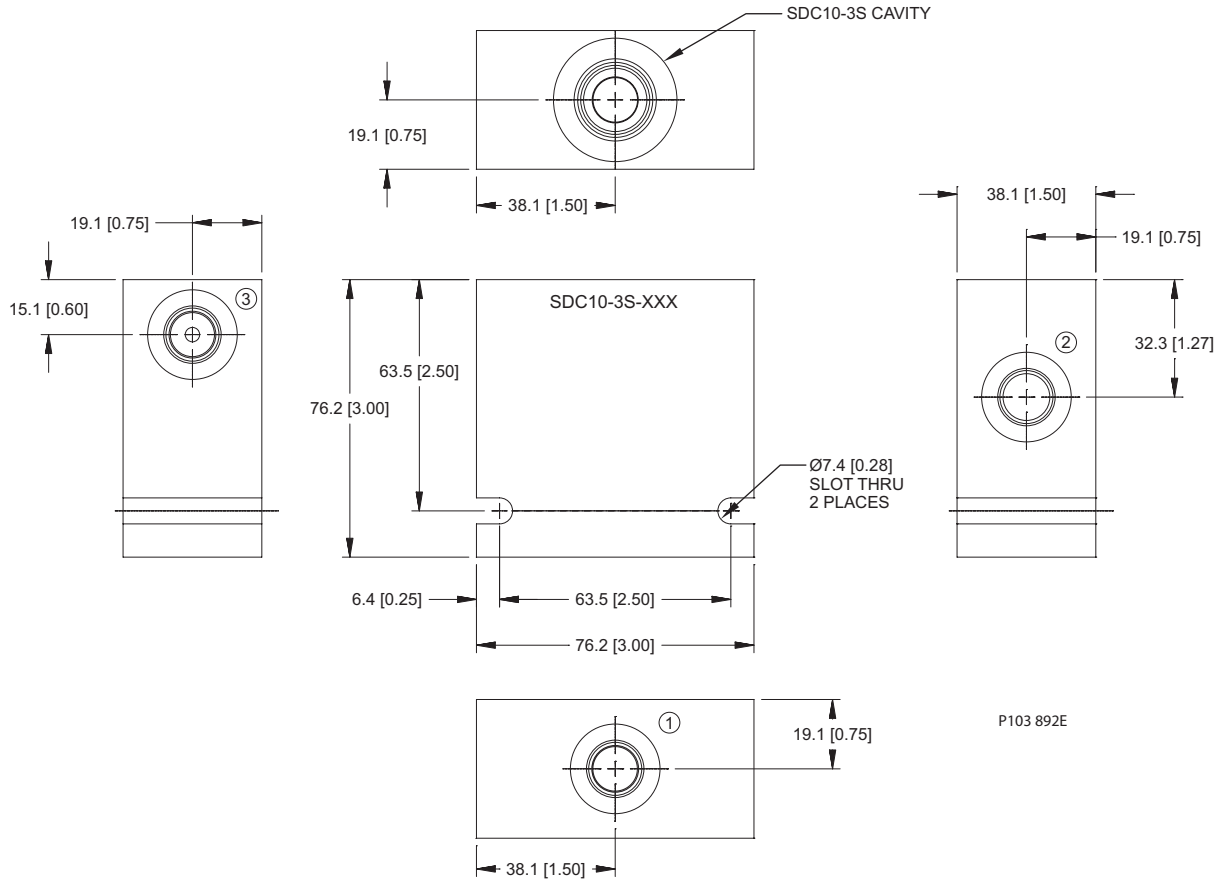
Housing drawing



Options

Order Code	Description	Style	Ports
SDC10-3S-SE-3B	Aluminum Housing	SE	3/8 BSP
SDC10-3S-SE-4B	Aluminum Housing	SE	1/2 BSP

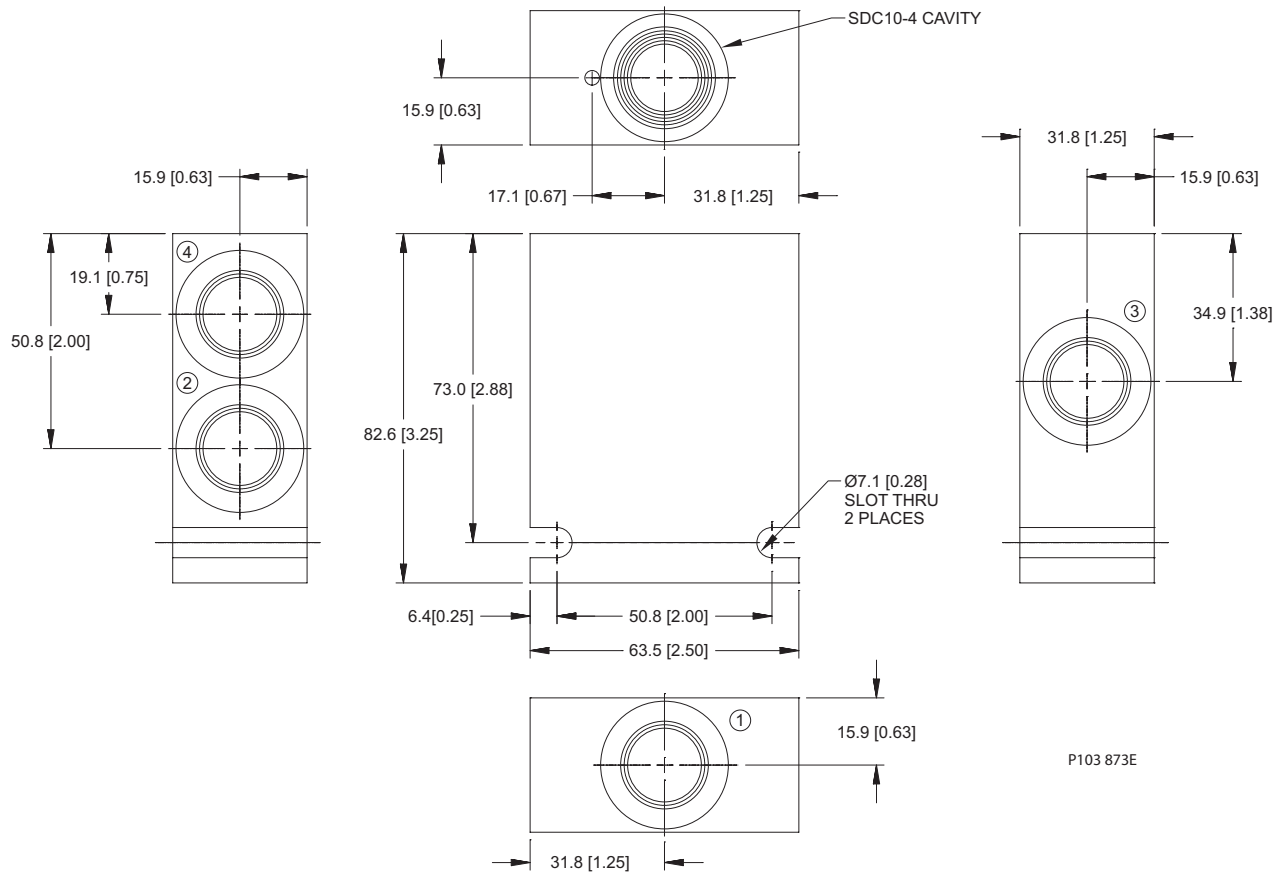
Dimensions



Options

Order Code	Description	Style	Ports
SDC10-3S-10S/6S	Aluminum Housing, Pilot at Port #3	Standard	SAE #10
SDC10-3S-6S/6S	Aluminum housing, pilot at port #3	Standard	SAE #6
SDC10-3S-8S/6S	Aluminum Housing, Pilot at Port #3	Standard	SAE #8

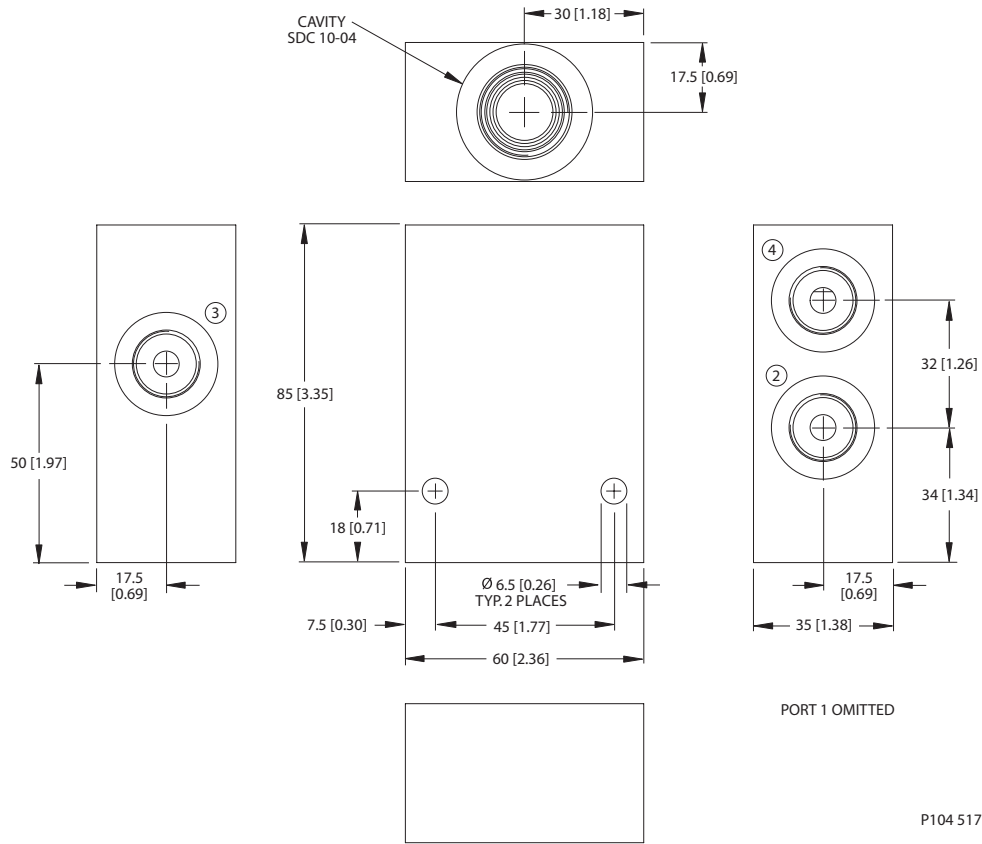
Housing drawing



Options

Order Code	Description	Style	Ports
CP10-4-6S	Aluminum Housing	Standard	SAE #6
CP10-4-6S-X1	Aluminum Housing, No Port #1	Omit port 1	SAE #6
CP10-4-8S	Aluminum Housing	Standard	SAE #8
CP10-4-8S-X1	Aluminum Housing, No Port #1	Omit port 1	SAE #8
CP10-4-S6S	Steel Housing	Standard	SAE #6
CP10-4-S8S	Steel Housing	Standard	SAE #8

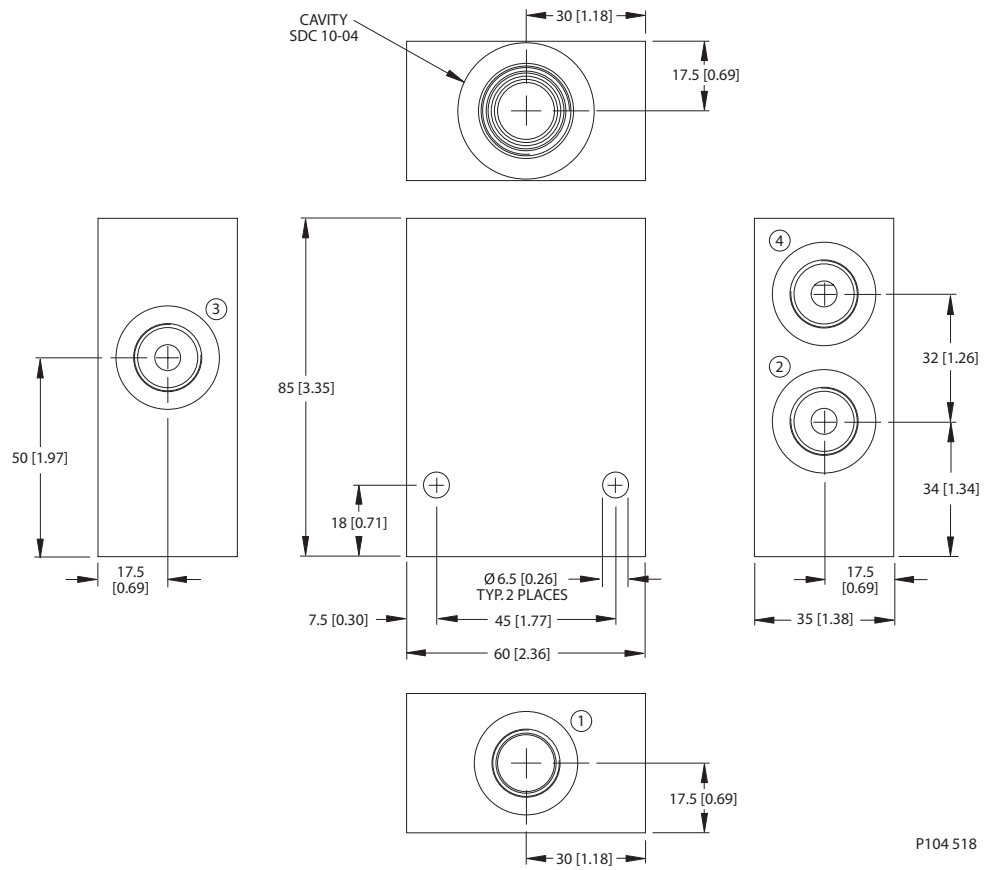
Dimensions



Options

Order Code	Description	Style	Ports
SDC10-4-HD-3B	Aluminum Housing, No Port #1	HD	3/8 BSP

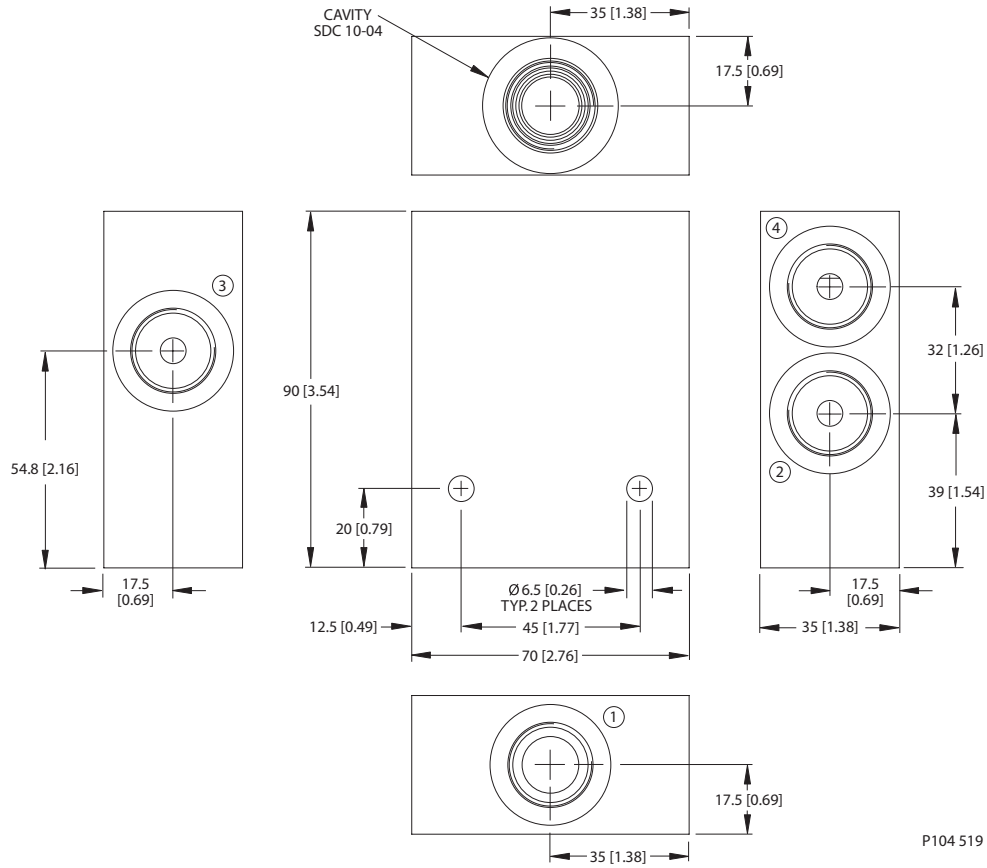
Housing drawing



Options

Order Code	Description	Style	Ports
SDC10-4-L-3B	Aluminum Housing	L	3/8 BSP

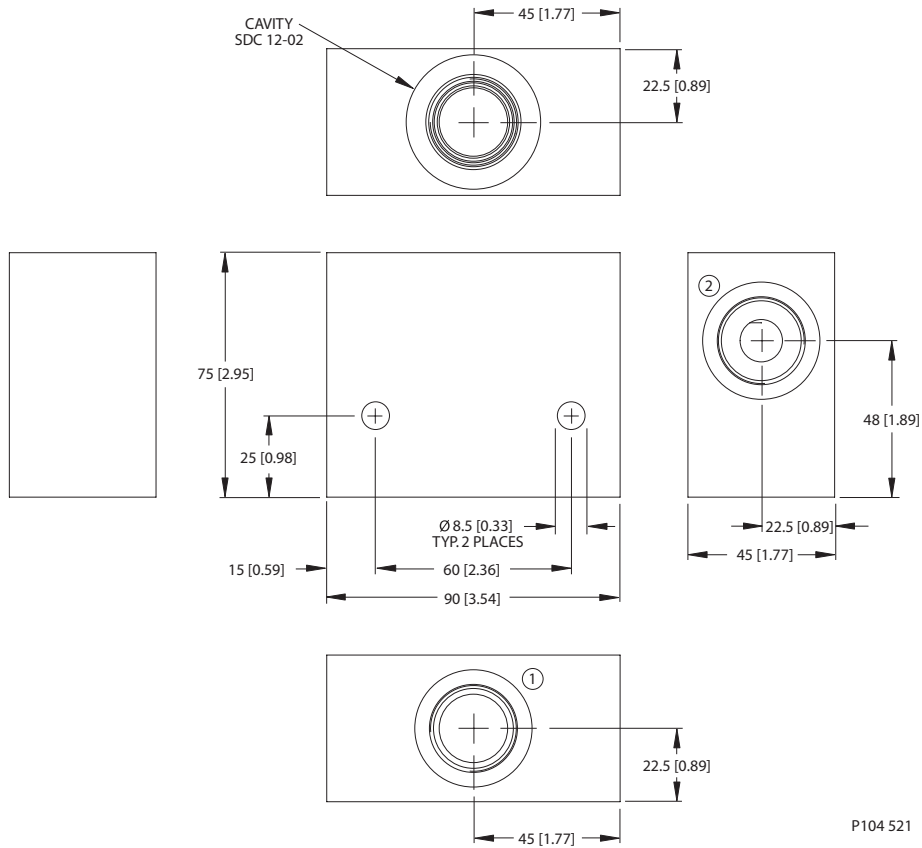
Dimensions



Options

Order Code	Description	Style	Ports
SDC10-4-L-4B	Aluminum Housing	L	1/2 BSP

Housing drawing

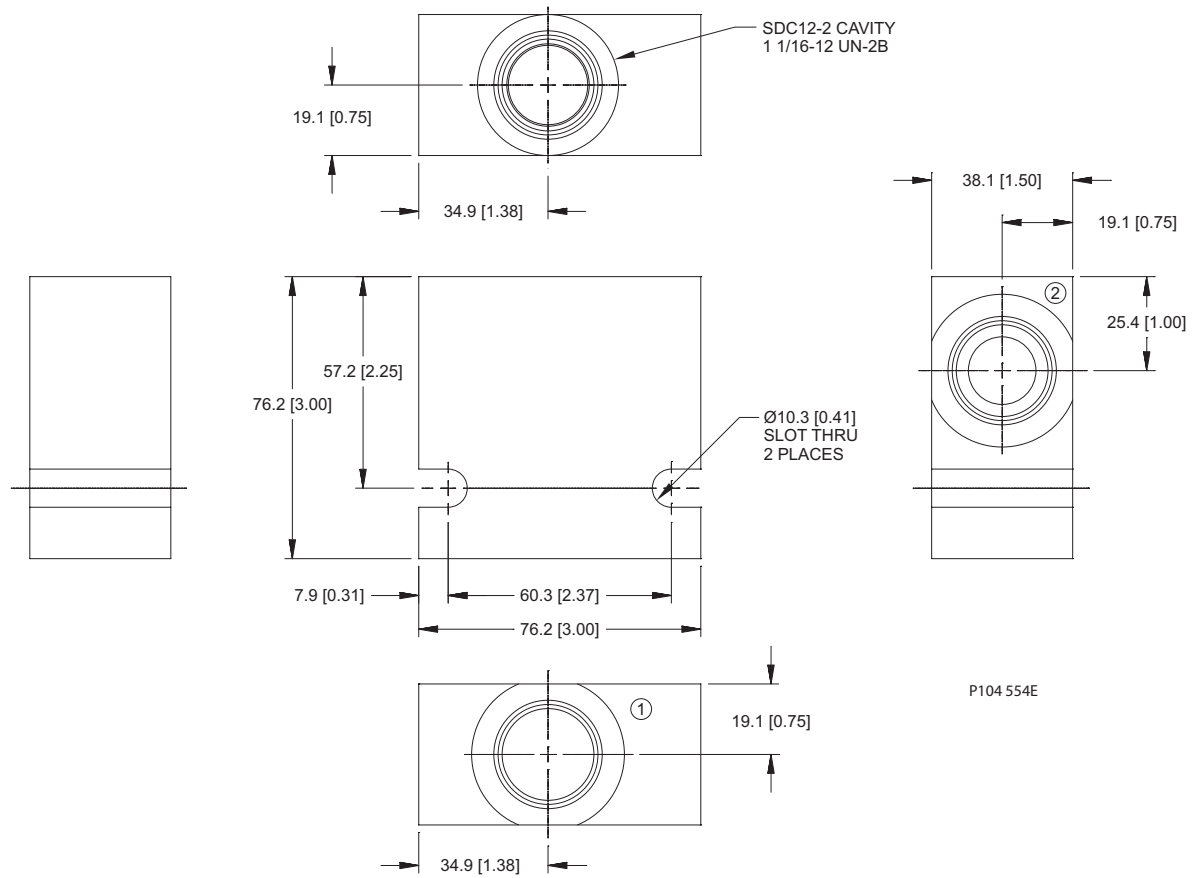


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Options

Order Code	Description	Style	Ports
SDC12-2-DG-6B	Aluminum Housing	DG	3/4 BSP

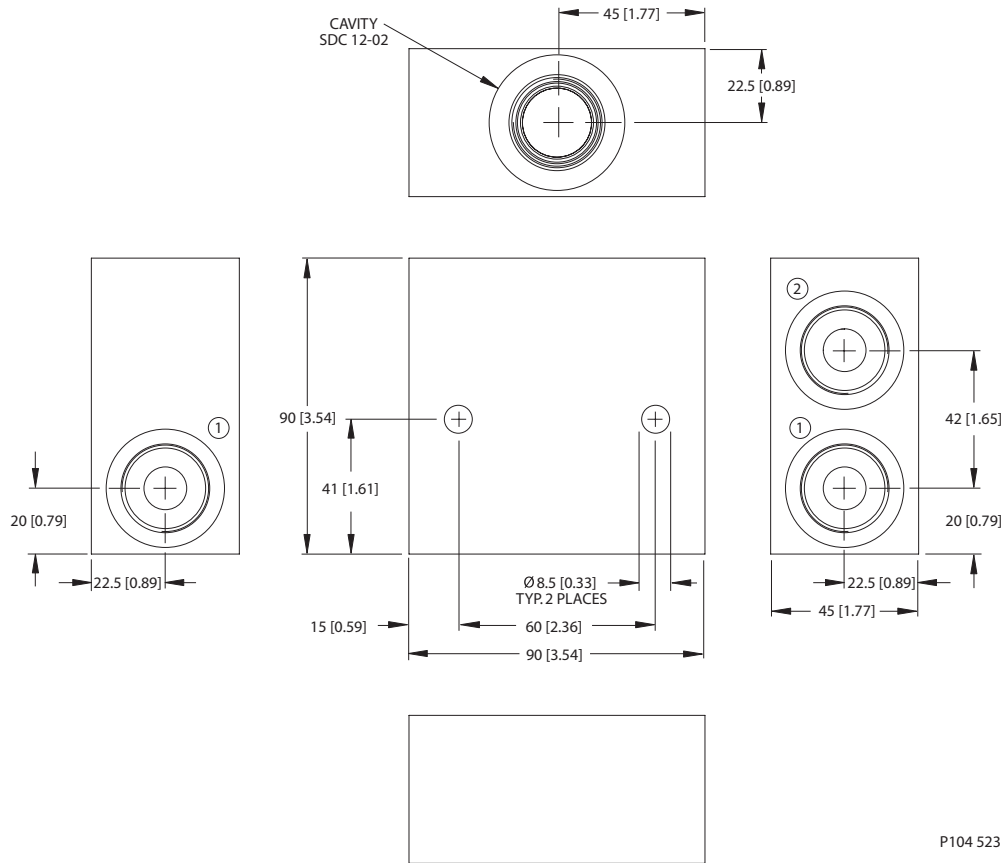
Dimensions



Options

Order Code	Description	Style	Ports
SDC12-2-10S	Aluminum housing	Standard	#10 SAE
SDC12-2-12S	Aluminum housing	Standard	#12 SAE

Housing drawing

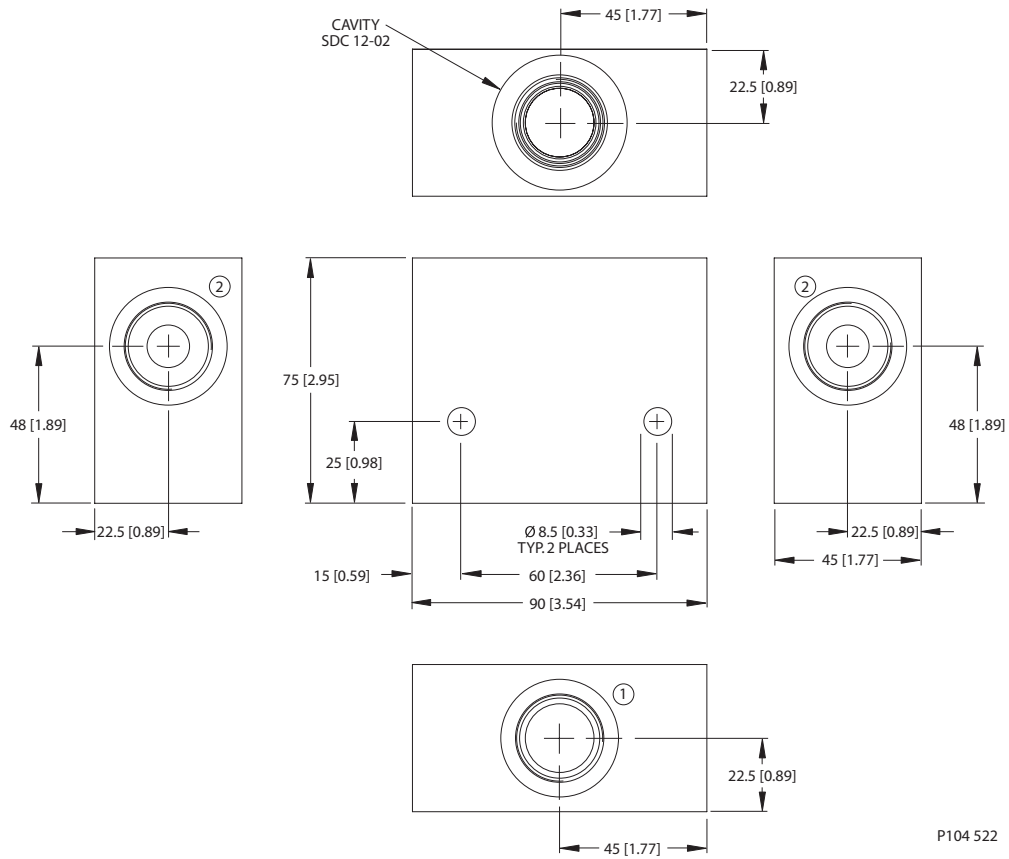


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Options

Order Code	Description	Style	Ports
SDC12-2-LG2-6B	Aluminum Housing, Two #1 Ports	LG2	3/4 BSP

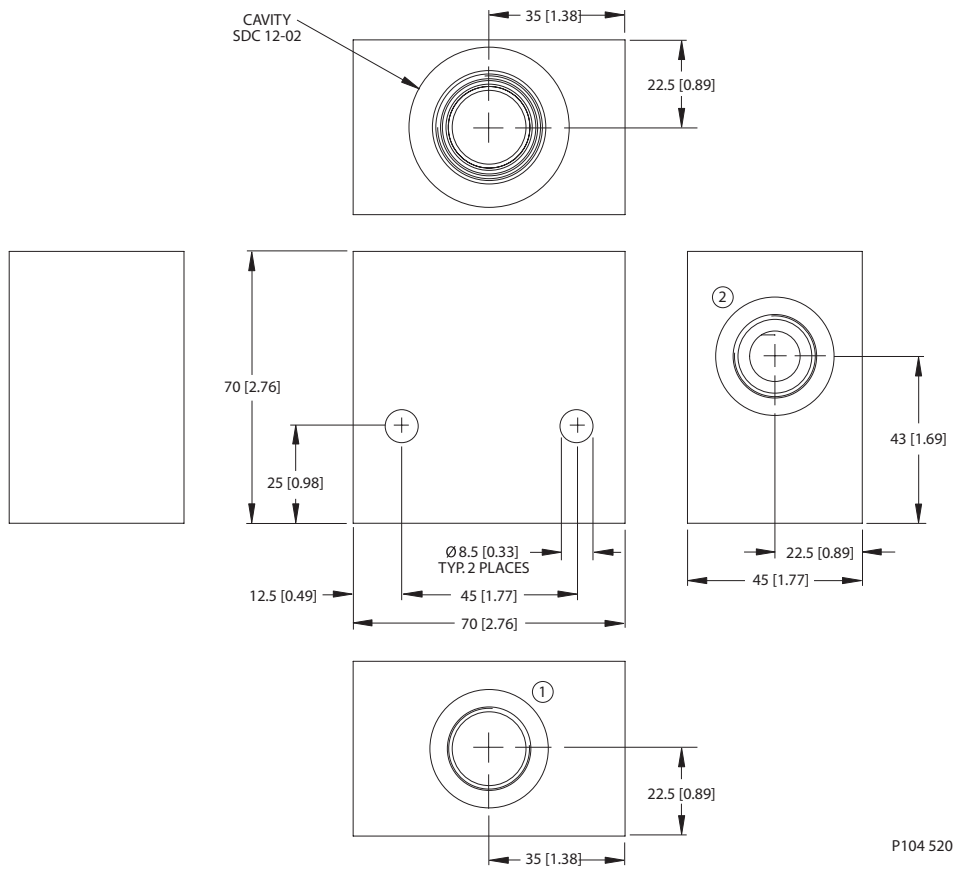
Dimensions



Options

Order Code	Description	Style	Ports
SDC12-2-LG1-6B	Aluminum Housing, Two #2 Ports	LG1	3/4 BSP

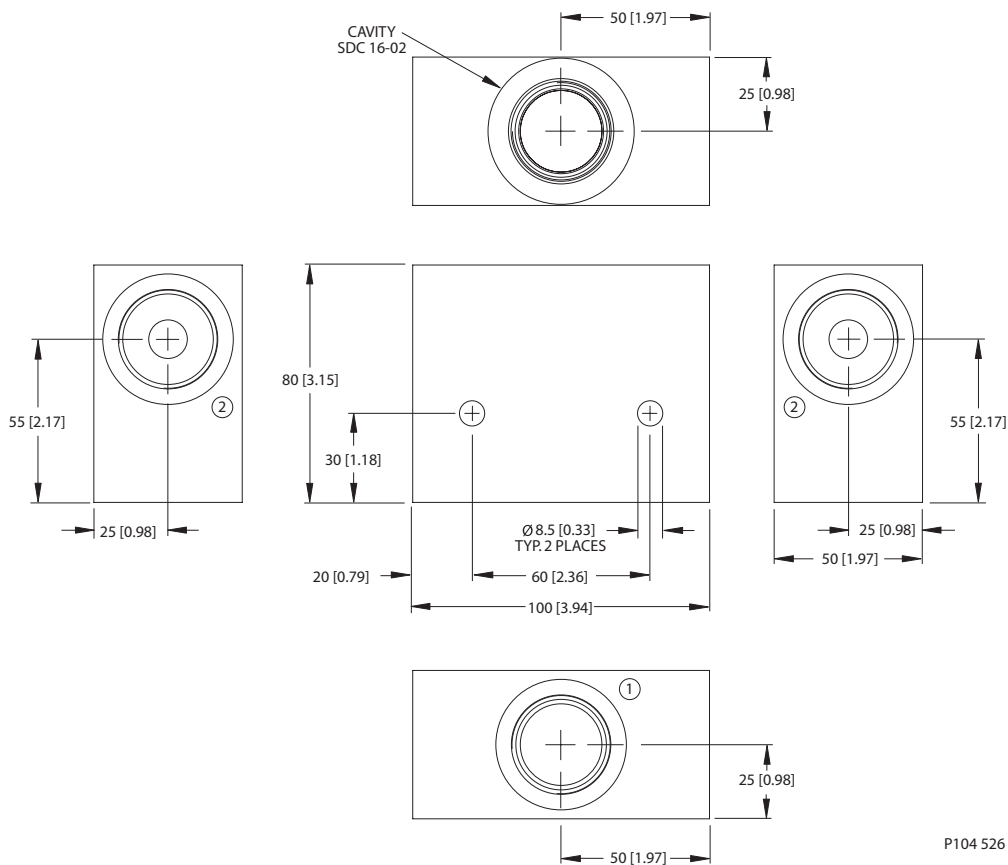
Housing drawing



Options

Order Code	Description	Style	Ports
SDC12-2-DG-4B	Aluminum Housing	DG	1/2 BSP

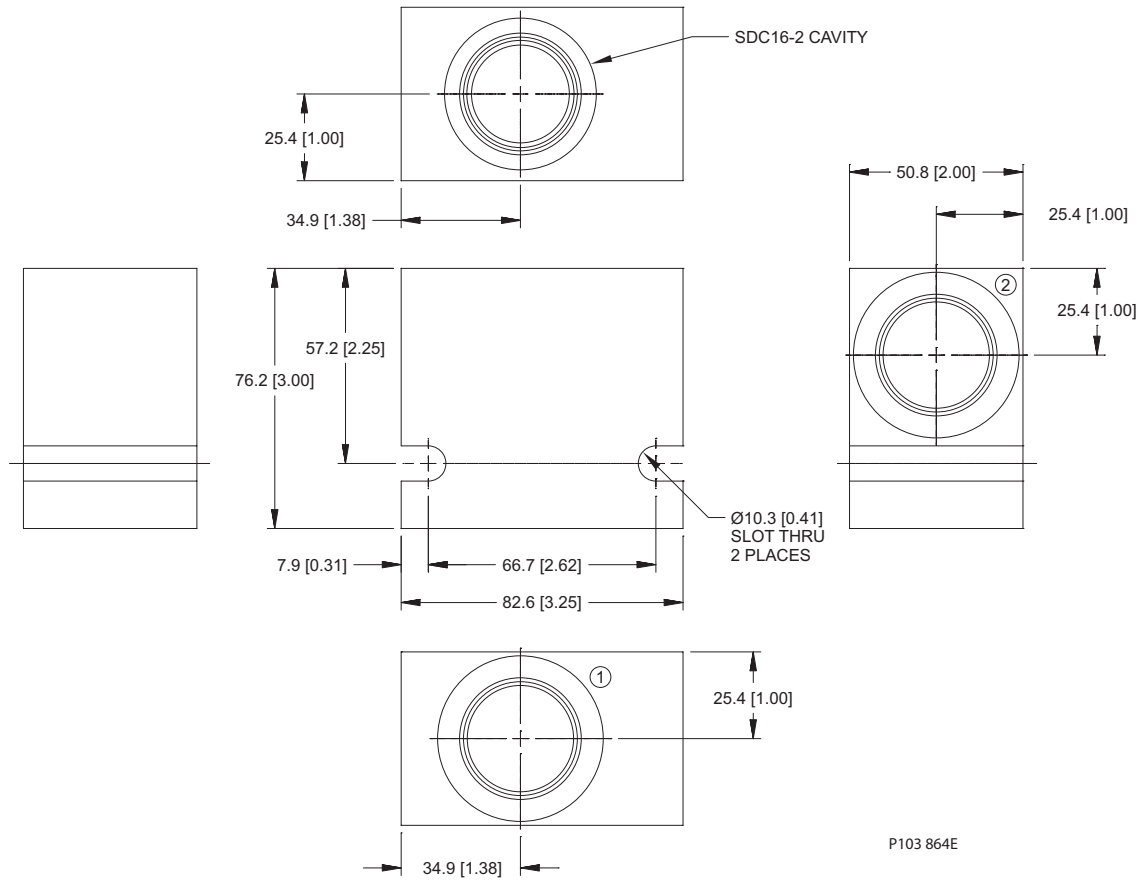
Dimensions



Options

Order Code	Description	Style	Ports
SDC16-2-HG1-8B	Aluminum Housing, Two #2 Ports	HG1	1 BSP

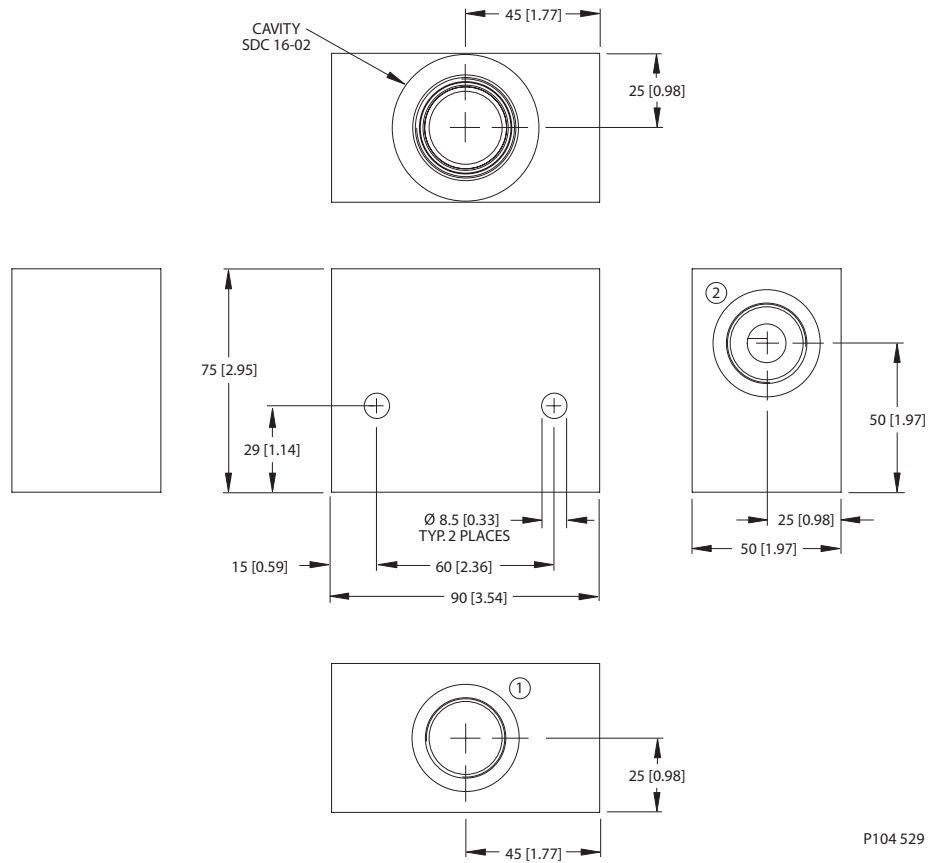
Housing drawing



Options

Order Code	Description	Style	Ports
CP16-2-12S	Aluminum Housing	Standard	SAE #12
CP16-2-16S	Aluminum Housing	Standard	SAE #16
CP16-2-S16S	Steel Housing	Standard	SAE #16

Dimensions

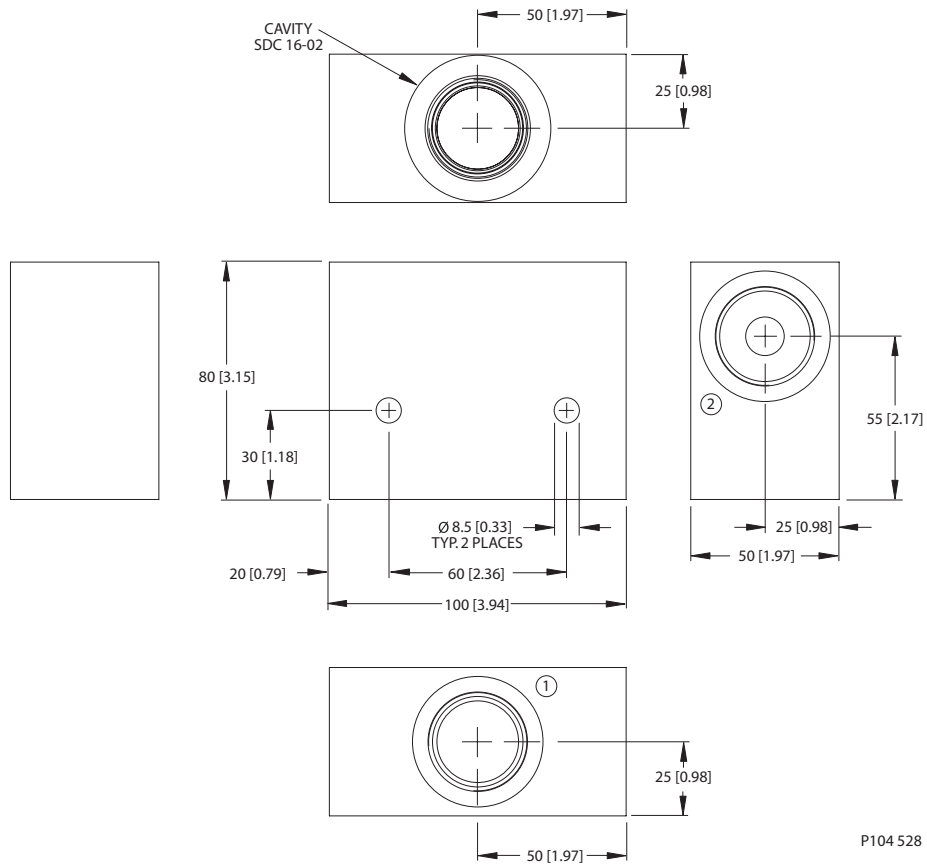


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Options

Order Code	Description	Style	Ports
SDC16-2-HG-8B	Aluminum Housing	HG	1 BSP

Housing drawing

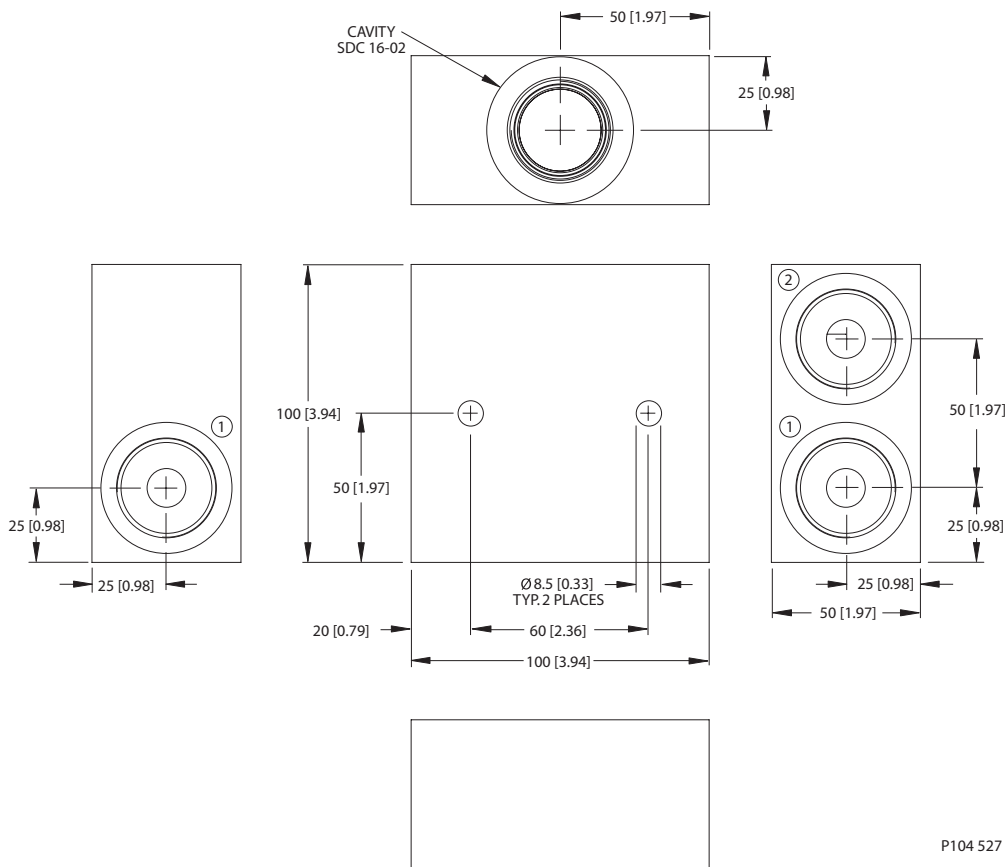


P104 528

Options

Order Code	Description	Style	Ports
SDC16-2-HG-6B	Aluminum Housing	HG	3/4 BSP

Dimensions

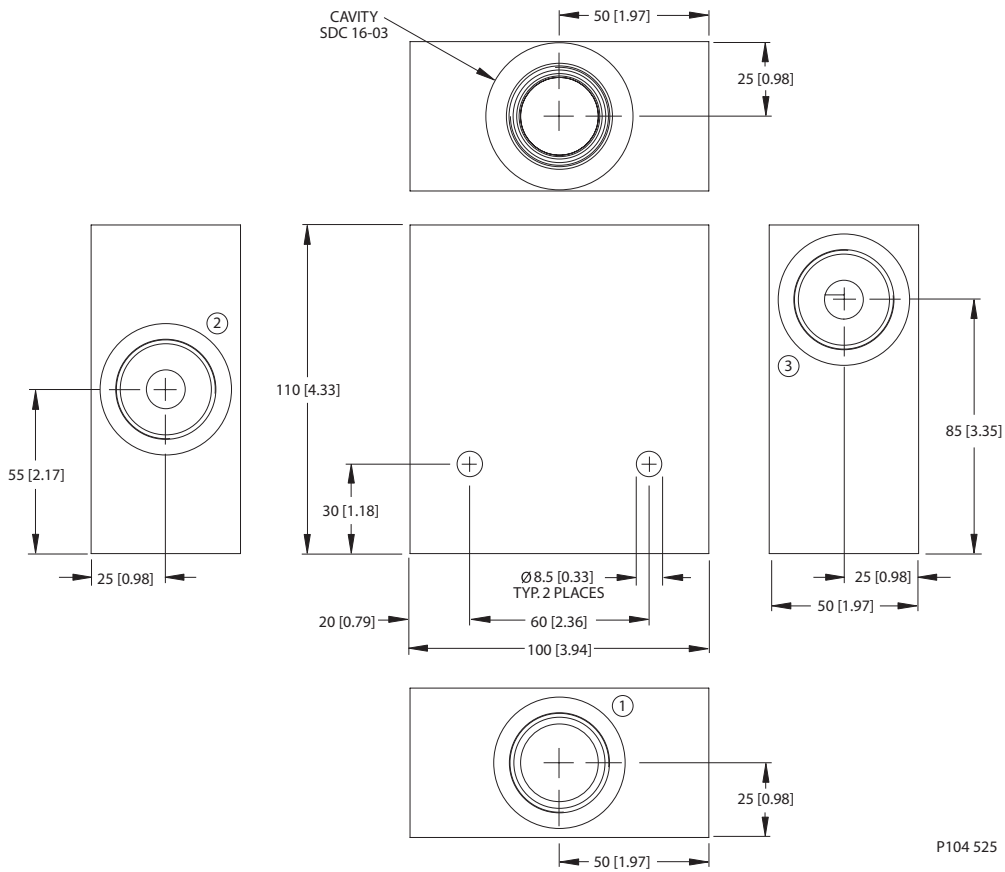


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Options

Order Code	Description	Style	Ports
SDC16-2-HG2-8B	Aluminum Housing, Two #1 Ports	HG2	1 BSP

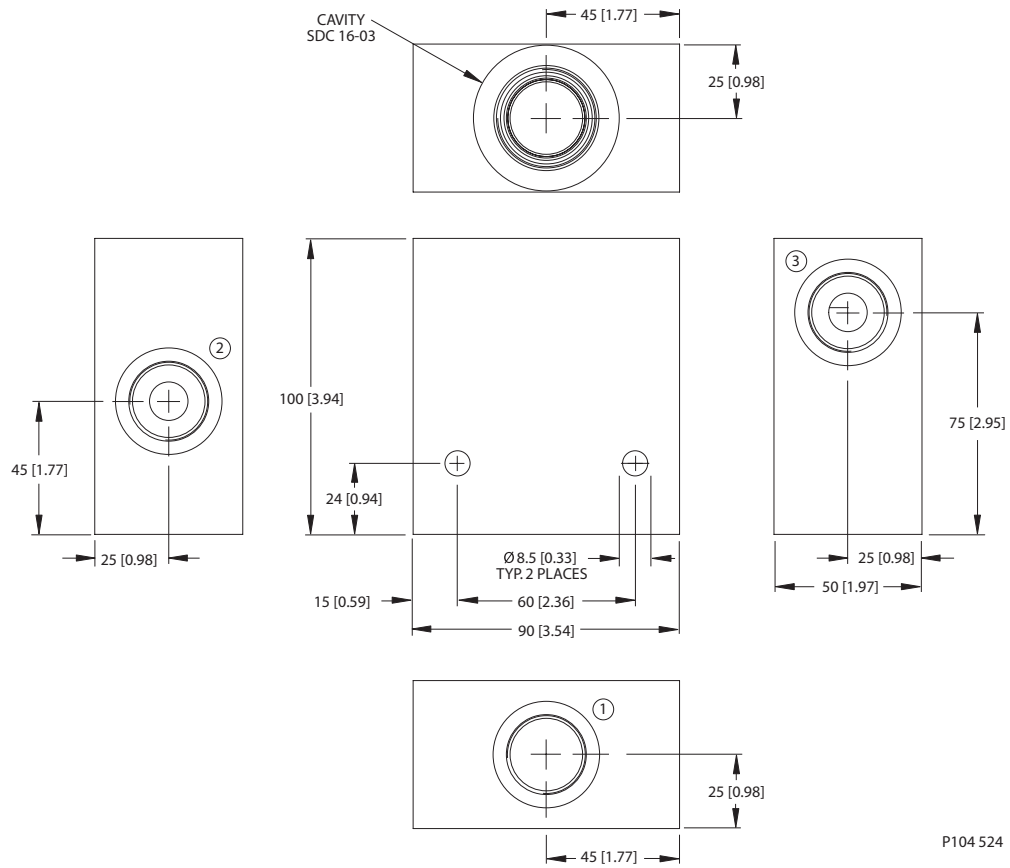
Housing drawing



Options

Order Code	Description	Style	Ports
SDC16-3-HE-8B	Aluminum Housing	HE	1 BSP

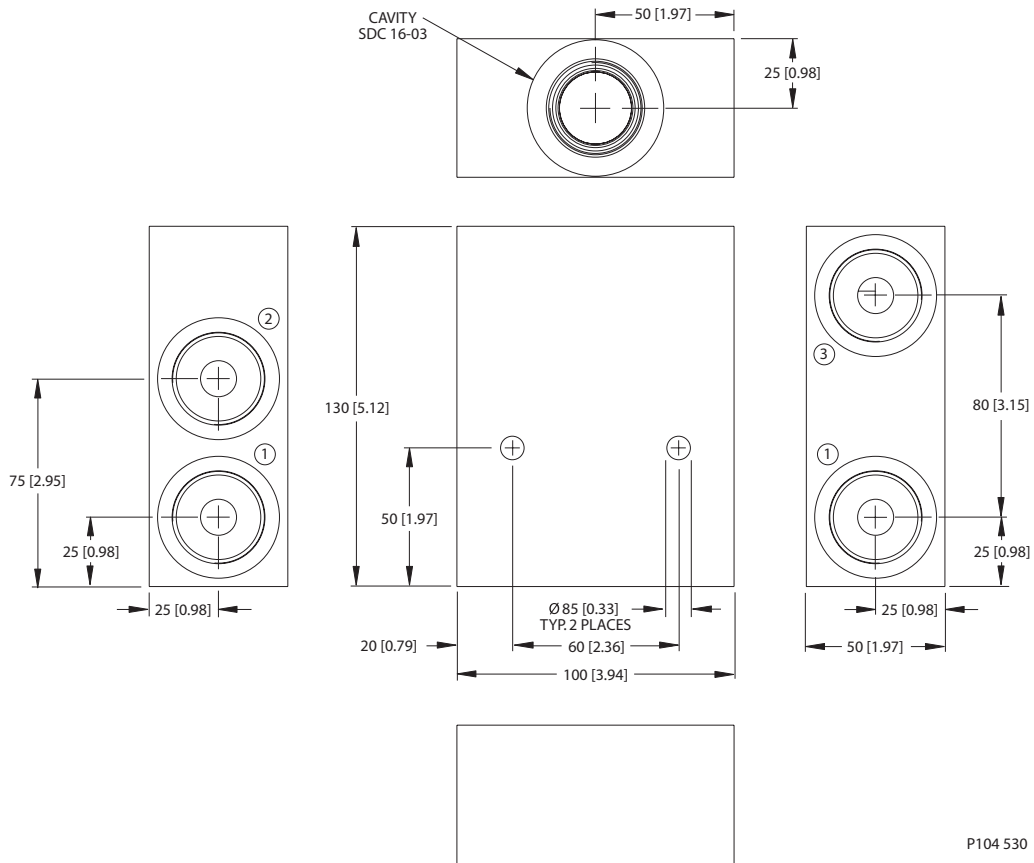
Dimensions



Options

Order Code	Description	Style	Ports
SDC16-3-HE-6B	Aluminum Housing	HE	3/4 BSP

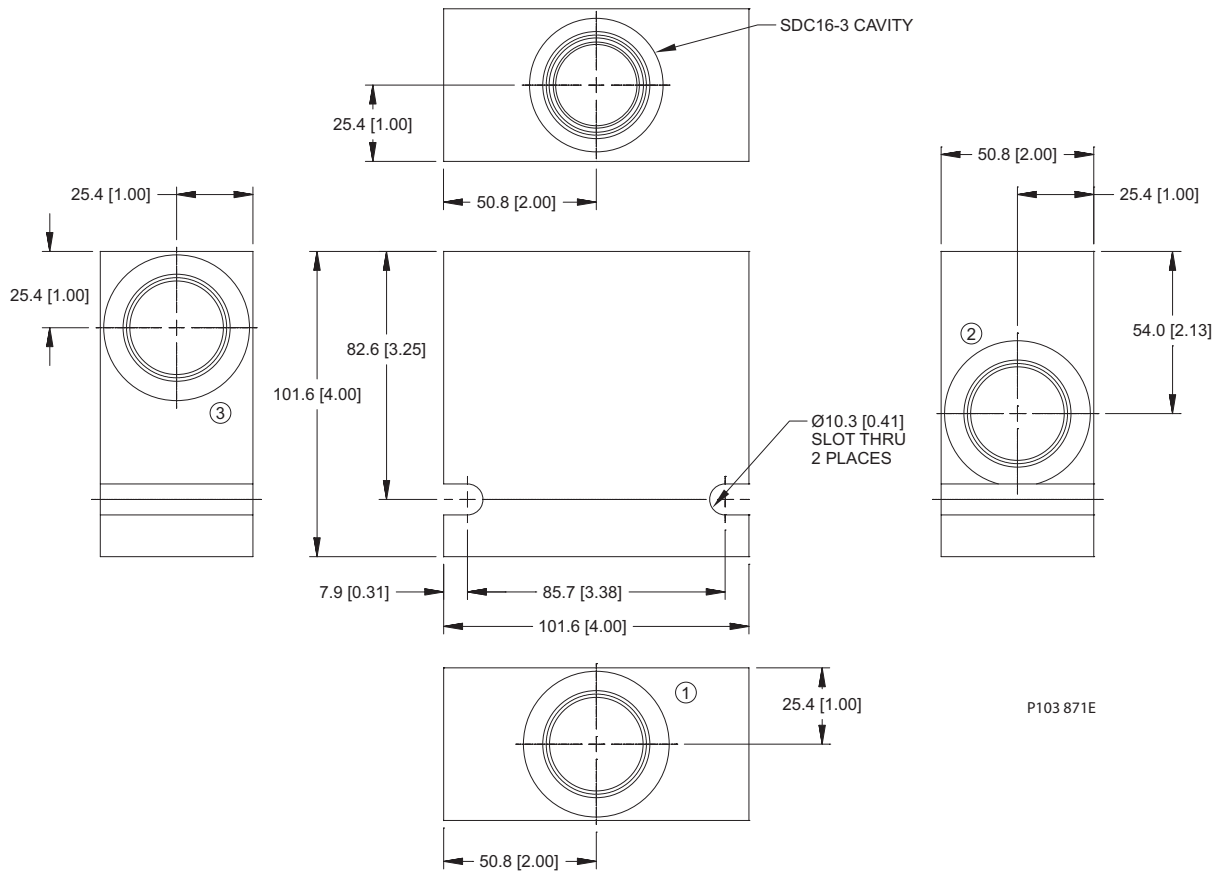
Housing drawing



Options

Order Code	Description	Style	Ports
SDC16-3-HI-8B	Aluminum Housing, Two #1 Ports	HI	1 BSP

Dimensions

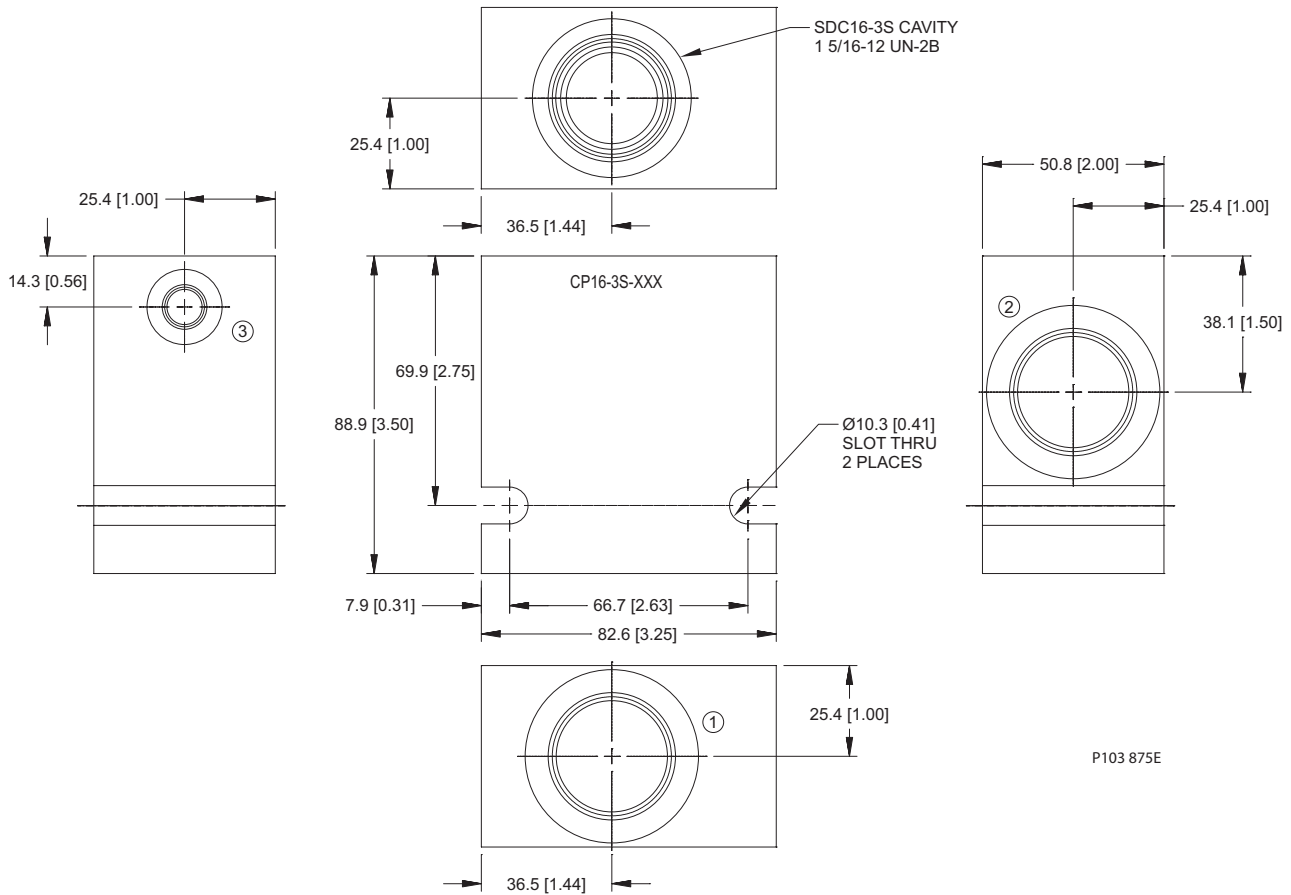


P103 871E

Options

Order Code	Description	Style	Ports
CP16-3-12S	Aluminum Housing	Standard	SAE #12
CP16-3-16S	Aluminum Housing	Standard	SAE #16

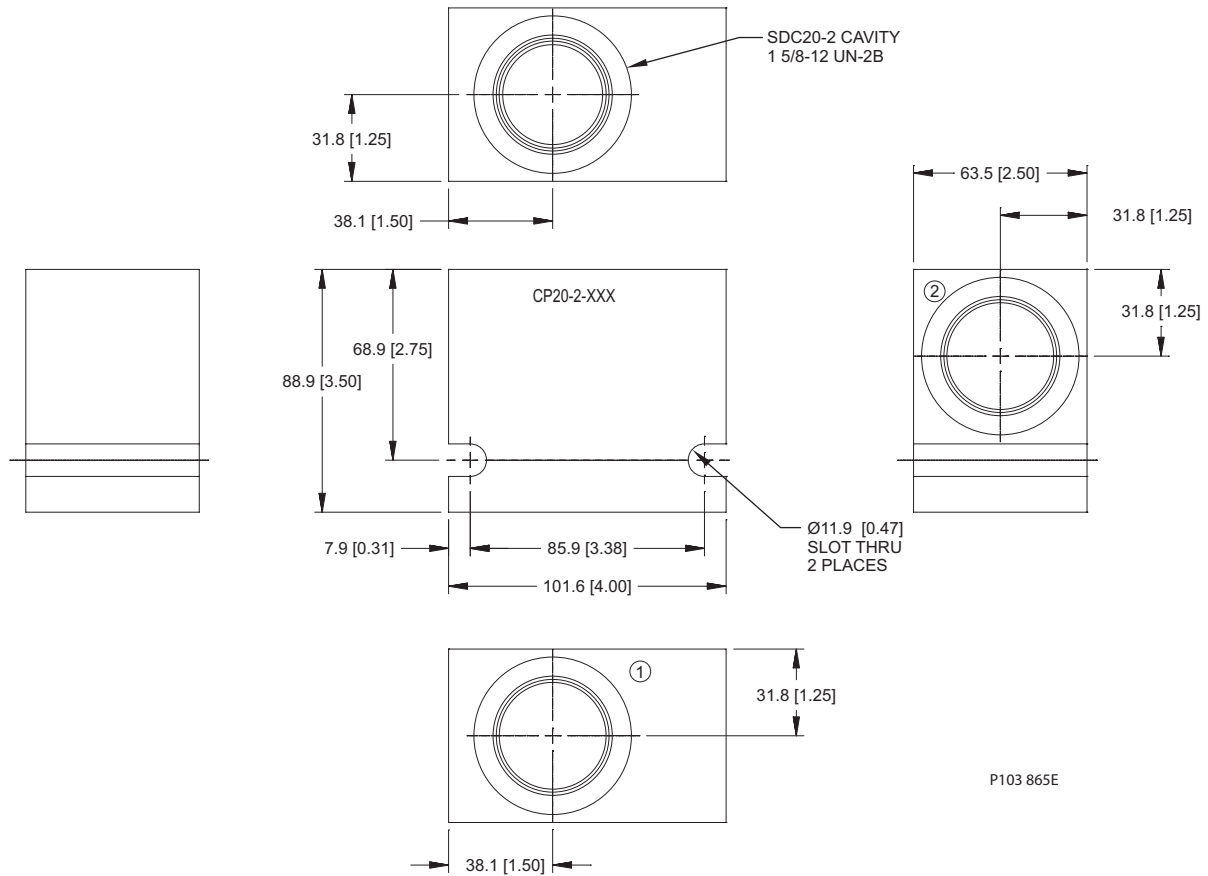
Housing drawing



Options

Order Code	Description	Style	Ports
CP16-3S-12S/4S	Aluminum Housing, Pilot at Port #3	Standard	SAE #12, #4
CP16-3S-16S/4S	Aluminum Housing, Pilot at Port #3	Standard	SAE #16, #4
CP16-3S-6B/2B	Aluminum Housing, Pilot at Port #3	Standard	3/4 BSP, 1/4 BSP
CP16-3S-8B/2B	Aluminum Housing, Pilot at Port #3	Standard	1 BSP, 1/4 BSP

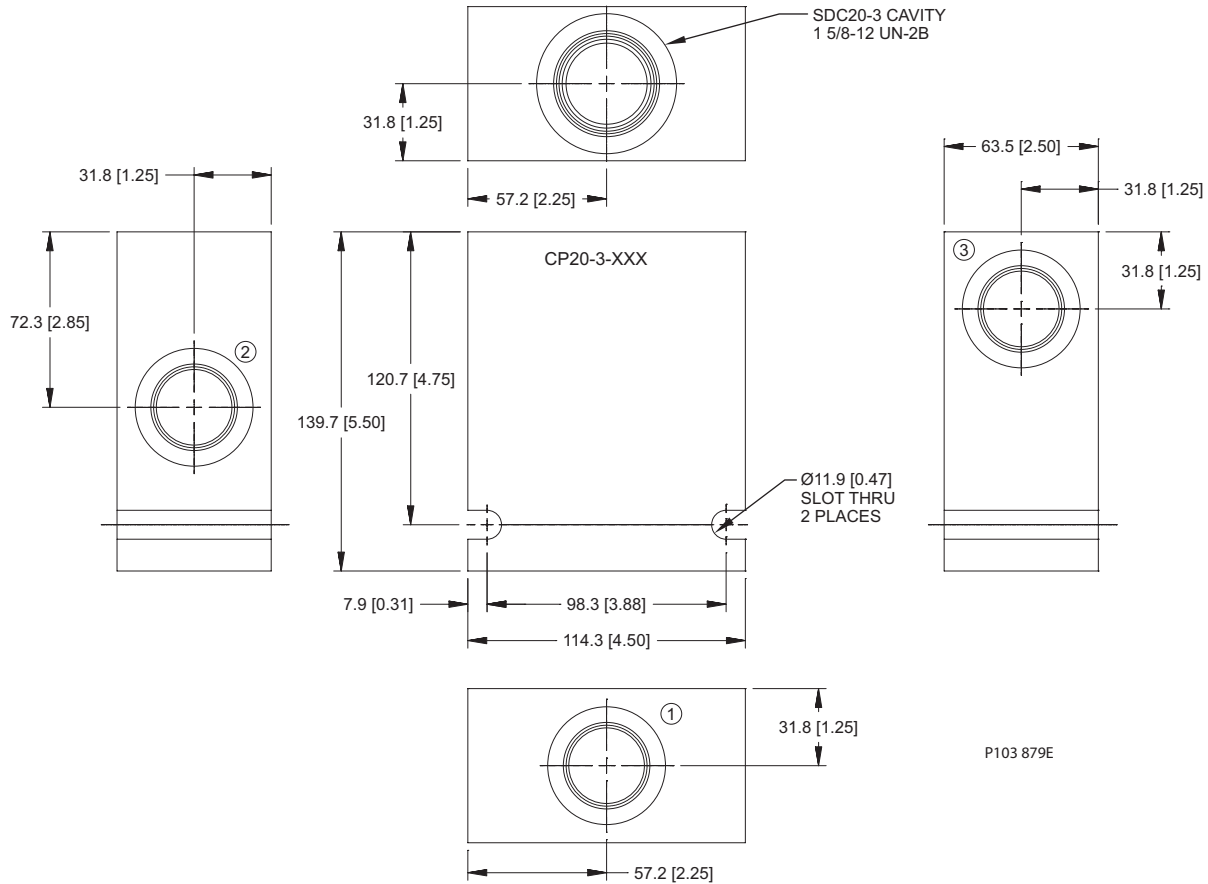
Dimensions



Options

Order Code	Description	Style	Ports
CP20-2-10B	Aluminum Housing	Standard	1 1/4 BSP
CP20-2-16S	Aluminum Housing	Standard	SAE #16
CP20-2-20S	Aluminum Housing	Standard	SAE #20
CP20-2-8B	Aluminum Housing	Standard	1 BSP

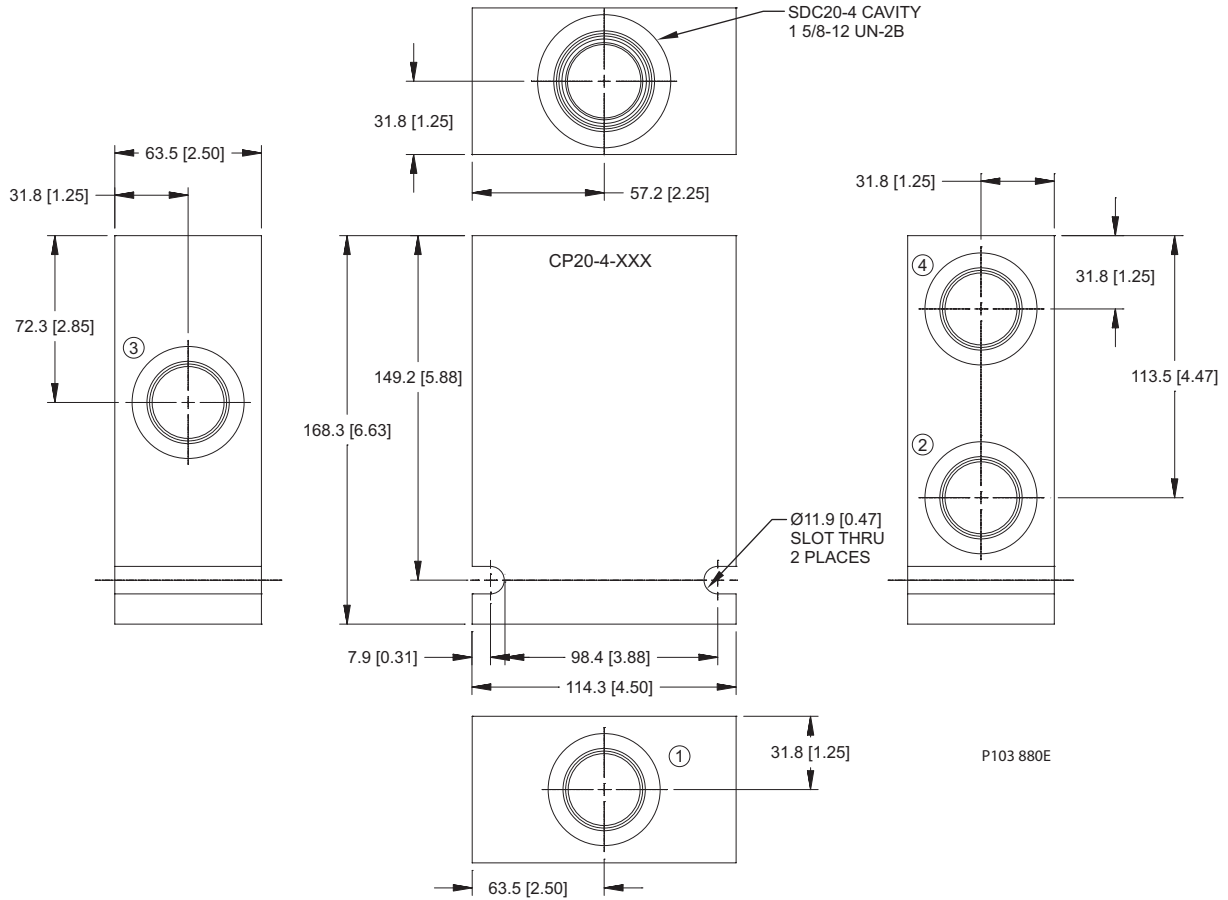
Housing drawing



Options

Order Code	Description	Style	Ports
CP20-3-10B	Aluminum Housing	Standard	1 1/4 BSP
CP20-3-10B/2B1	Aluminum Housing, Pilot at Port #3	Standard	1 1/4 BSP, 1/4 BSP
CP20-3-16S	Aluminum Housing	Standard	SAE #16
CP20-3-16S/4S1	Aluminum Housing, Pilot at Port #3	Standard	SAE #16, #4
CP20-3-20S	Aluminum Housing	Standard	SAE #20
CP20-3-20S/4S1	Aluminum Housing, Pilot at Port #3	Standard	SAE #20, #4
CP20-3-8B	Aluminum Housing	Standard	1 BSP
CP20-3-8B/2B1	Aluminum Housing, Pilot at Port #3	Standard	1 BSP, 1/4 BSP

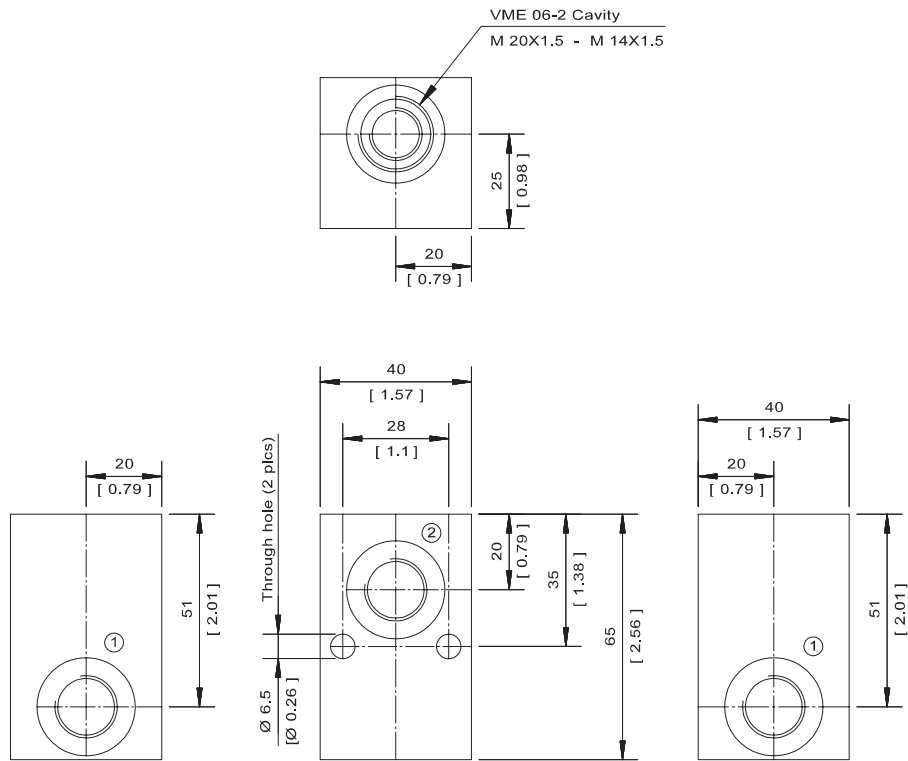
Dimensions



Options

Order Code	Description	Style	Ports
CP20-4-10B	Aluminum Housing	Standard	1 1/4 BSP
CP20-4-10B-X1	Aluminum Housing, No Port #1	Omit port 1	1 1/4 BSP
CP20-4-16S	Aluminum Housing	Standard	SAE #16
CP20-4-16S/4S	Aluminum Housing, Pilot at Port #1	Standard	SAE #16, #4
CP20-4-16S-X1	Aluminum Housing, No Port #1	Omit port 1	SAE #16
CP20-4-20S	Aluminum Housing	Standard	SAE #20
CP20-4-20S/4S	Aluminum Housing, Pilot at Port #1	Standard	SAE #20, #4
CP20-4-20S-X1	Aluminum Housing, No Port #1	Omit port 1	SAE #20
CP20-4-8B	Aluminum Housing	Standard	1 BSP
CP20-4-8B-X1	Aluminum Housing, No Port #1	Omit port 1	1 BSP
CP20-4-S16S	Steel Housing	Standard	SAE #16
CP20-4-S16S-X1	Steel Housing, No Port #1	Omit port 1	SAE #16

Housing drawing

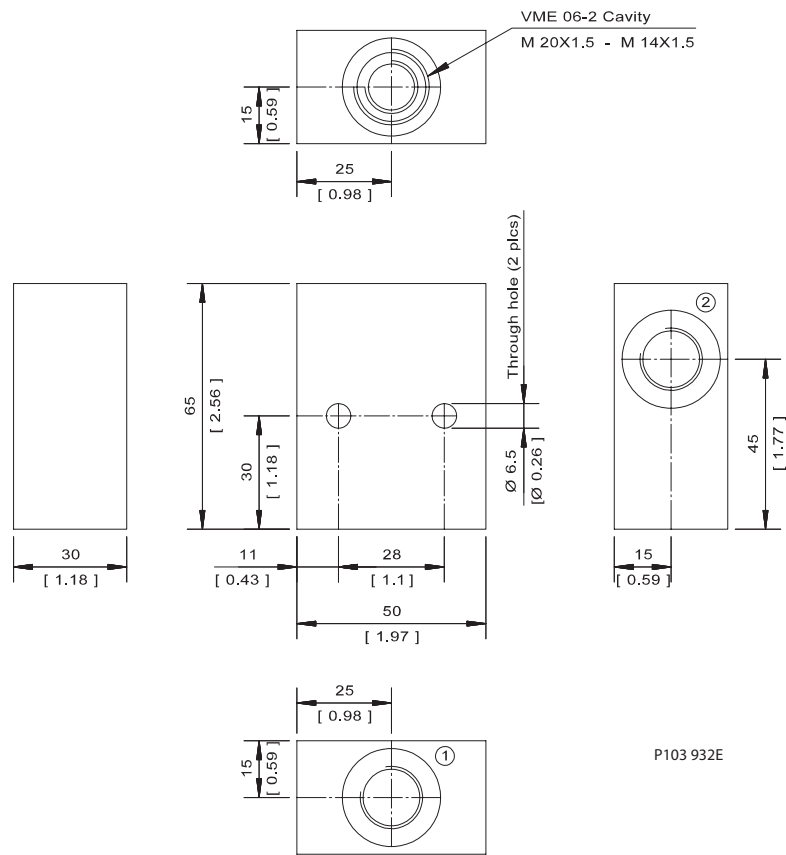


P103 934E

Options

Order Code	Description	Style	Ports
VME 06-LG-3B	Aluminum Housing	LG	3/8 BSP
VME 06-LG-6S	Aluminum Housing	LG	SAE #6

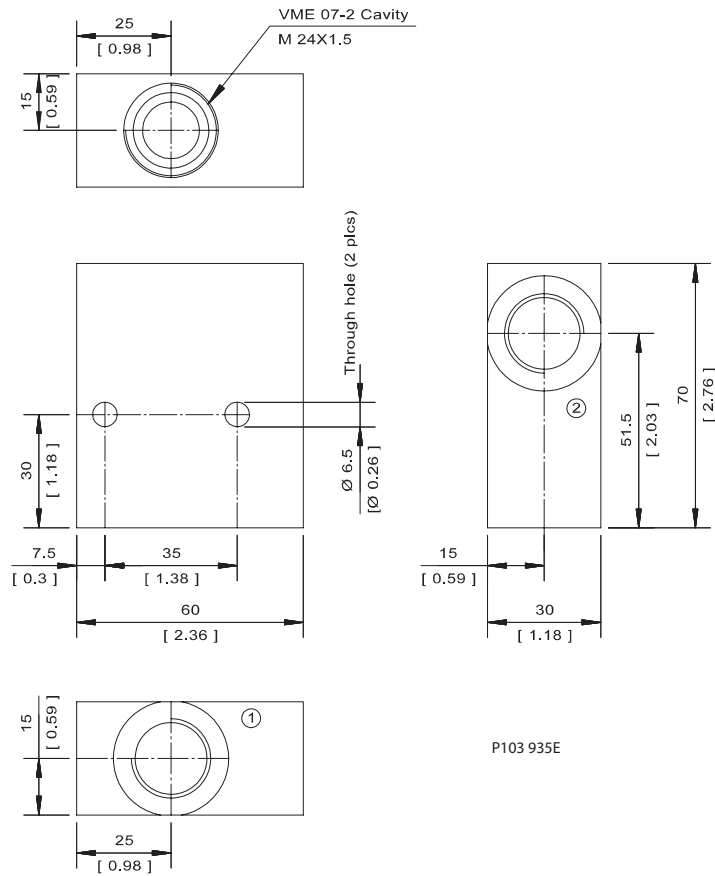
Dimensions



Options

Order Code	Description	Style	Ports
VME 06-DG-3B	Aluminum Housing	DG	3/8 BSP
VME 06-DG-6S	Aluminum Housing	DG	SAE #6

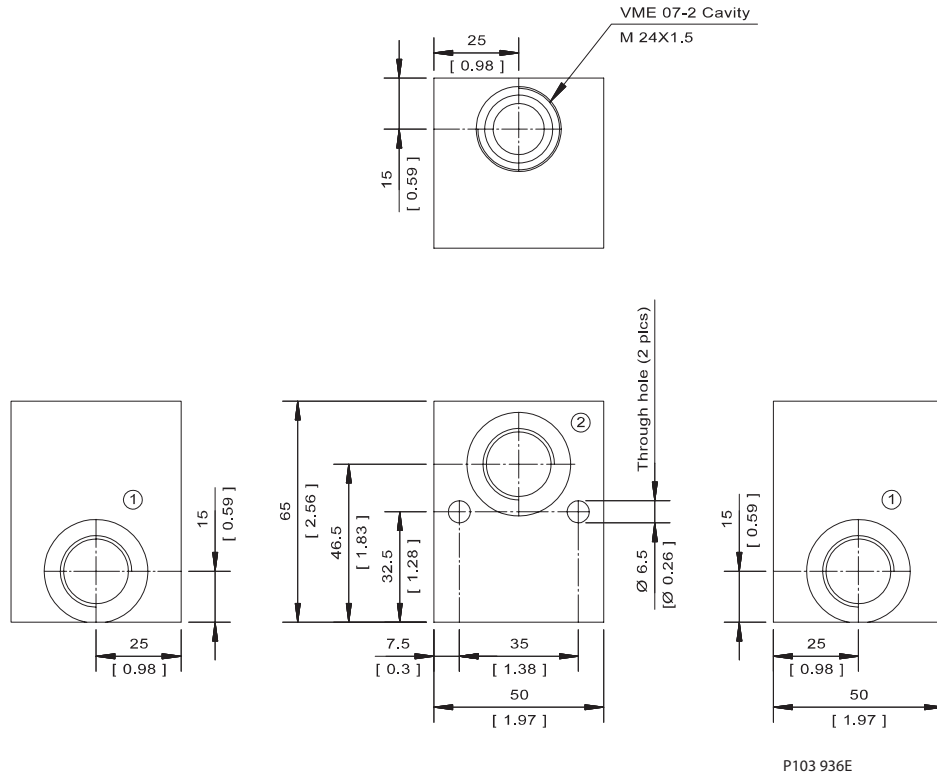
Housing drawing



Options

Order Code	Description	Style	Ports
VME 07-DG-4B	Aluminum Housing	DG	1/2 BSP
VME 07-DG-8S	Aluminum Housing	DG	SAE #8

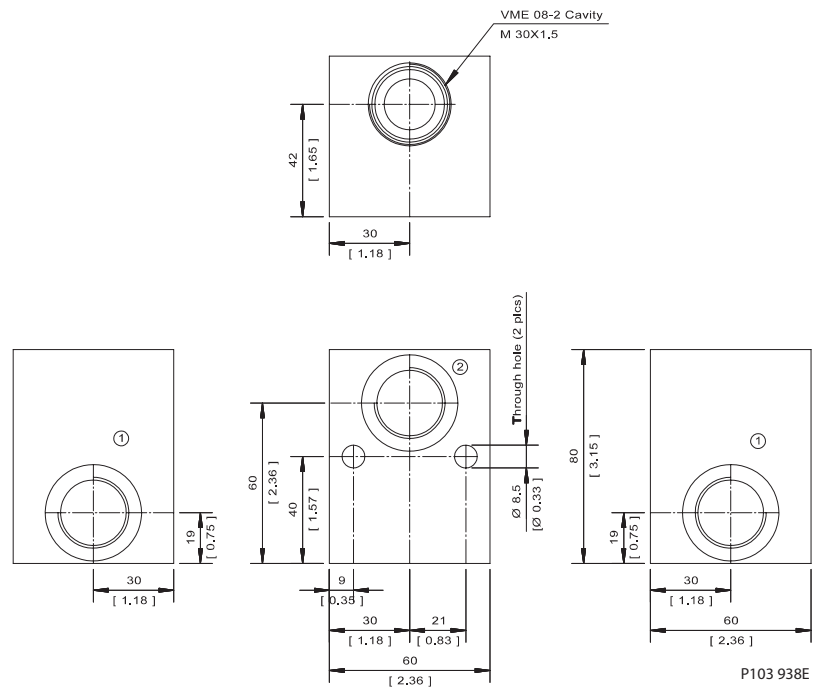
Dimensions



Options

Order Code	Description	Style	Ports
VME 07-LG-4B	Aluminum Housing	LG	1/2 BSP
VME 07-LG-8S	Aluminum Housing	LG	SAE #8

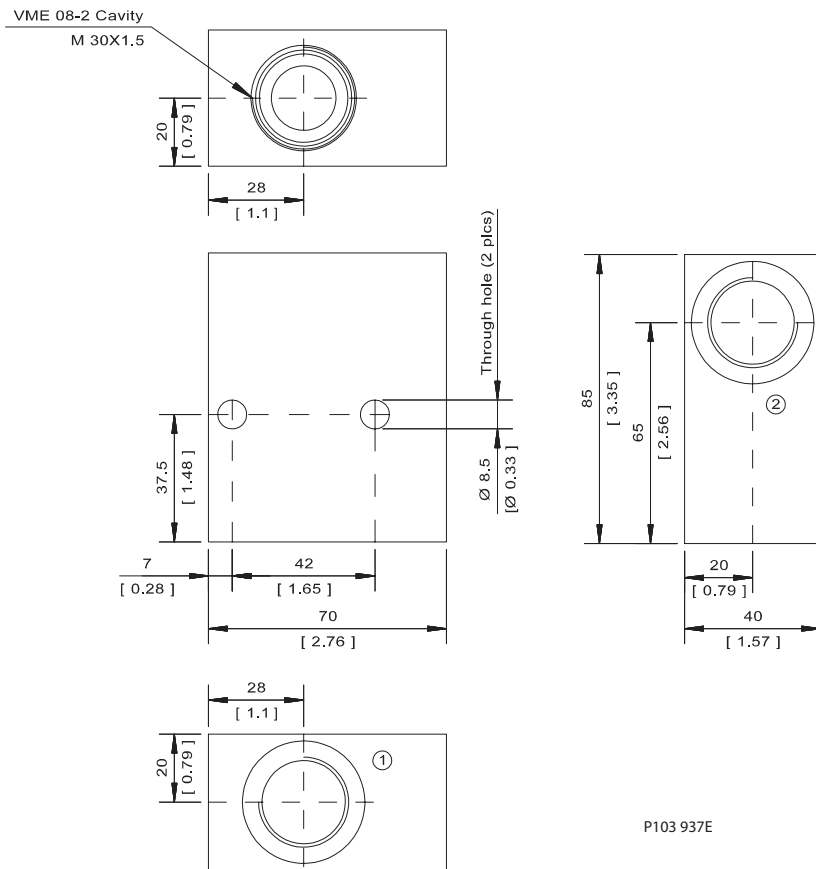
Housing drawing



Options

Order Code	Description	Style	Ports
VME 08-LG-12S	Aluminum Housing	LG	SAE #12
VME 08-LG-6B	Aluminum Housing	LG	3/4 BSP

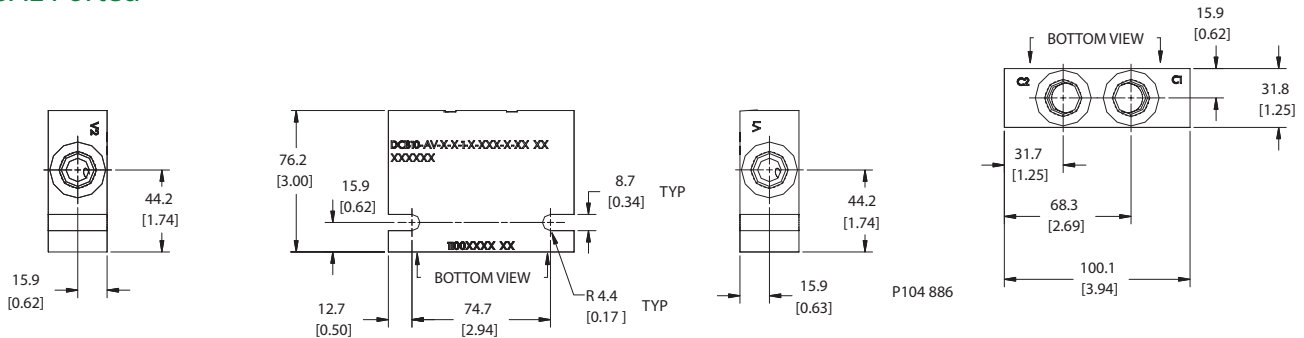
Dimensions



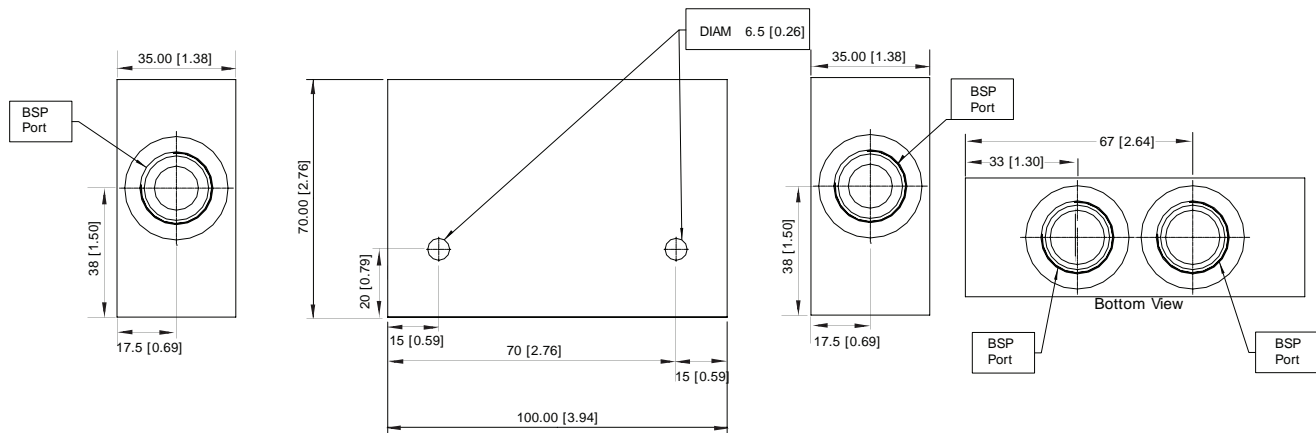
Options

Order Code	Description	Style	Ports
VME 08-DG-12S	Aluminum Housing	DG	SAE #12
VME 08-DG-6B	Aluminum Housing	DG	3/4 BSP

SAE Ported



BSP Ported



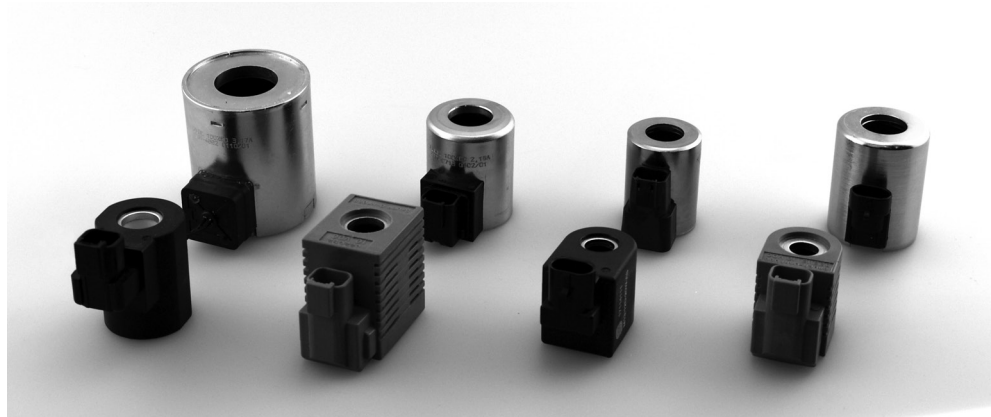
Order Code	Description	Style	Ports
DCB10-3S-6S	Aluminum Housing	Dual Counterbalance	SAE #6
DCB10-3S-8S	Aluminum Housing	Dual Counterbalance	SAE #8
DCB10-3S-10S	Aluminum Housing	Dual Counterbalance	SAE #10
DCB10-3S-SE-3B	Aluminum Housing	Dual Counterbalance	3/8 BSP
DCB10-3S-SE-4B	Aluminum Housing	Dual Counterbalance	1/2 BSP
DCB10-3S-5S	Steel Housing	Dual Counterbalance	SAE #6
DCB10-3S-8S	Steel Housing	Dual Counterbalance	SAE #8
DCB10-3S-SE-S3B	Steel Housing	Dual Counterbalance	3/8 BSP
DCB10-3S-SE-S4B	Steel Housing	Dual Counterbalance	1/2 BSP

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COIL TERMINATION SPECIFICATIONS

Code	Termination	Specifications
A	DIN 43650	DIN 43650A/ISO 4400 standard electrical connector (includes connector for cartridge valves only)
AJ	Amp Junior	Integral to coil
AS	Amp SuperSeal 1.5 (also conforms to MetriPak 150 Type 1)	Integral to coil; mating connector is Delphi-Packard Part Number 12052641
C	Conduit	Two 18 AWG wires, 457 mm [18 in] long with 1/2-14 NPT internal thread for conduit
DE	Deutsch	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
DED	Deutsch with diode	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
DN	DIN 43650	DIN 43650A / ISO 4400 standard electrical connector
DN1	DIN 43650	"DN" with connector (for cartridge valves only)
DP	Dual Post	Two No. 8-32UNC screw terminals 9.5 mm [0.375 in] long
DT04	Deutsch	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
E1	DIN 43650	DIN 43650A / ISO 4400 standard electrical connector
E2	DIN 43650 with diode	DIN 43650A / ISO 4400 standard electrical connector
E3	Amp Junior	Integral to coil
E4	Amp Junior with diode	Integral to coil
E5	DIN 43650 with rectifier	DIN 43650A / ISO 4400 standard electrical connector
E8	Lead wires	Two 18 AWG wires, 457 mm [18 in] long
E9	Lead wires with diode	Two 18 AWG wires, 457 mm [18 in] long
E10	Deutsch (on leads)	On two 18 AWG lead wires, 203 mm [8 in] long with protective braid; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
E11	Deutsch (on leads) with diode	On two 18 AWG lead wires, 203 mm [8 in] long with protective braid; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S

COIL TERMINATION SPECIFICATIONS (continued)

Code	Termination	Specifications
E12	Deutsch	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
E13	Deutsch with diode	Integral to coil; mating connector is Deutsch IPD (Industrial Products Division) Part Number DT06-2S
FL & FL600	Flying leads	Two 18 AWG wires, 600 mm [24 in] long
FLD	Flying leads with diode	Two 18 AWG wires, 600 mm [24 in] long
H	DIN 43650	DIN 43650A / ISO 4400 standard electrical connector
L	Lead Wires	Two 18 AWG wires, 457 mm [18 in] long
M2	Metri-Pak 150 Type 1 (also conforms to Amp SuperSeal 1.5)	Integral to coil; mating connector is Delphi-Packard Part Number 12052641
M3	Metri-Pak 150 Type 2	Integral to coil; mating connector is Delphi-Packard Part Number 12040753
S	Dual Spade	Two 6.35 mm [0.25 in] wide Type 1B spade terminals per SAE J858A
S1	Single Spade	One 6.35 mm [0.25 in] wide Type 1B spade terminal per SAE J858A with internal ground
SP	Dual Spade (M13 & M16 coils)	Two 6.35 mm [0.25 in] wide Type 1B spade terminals per SAE J858A
	Single Post (D08 & D10 coils)	One No. 8-32UNC Screw Terminals 9.5 mm [0.375 in] long with internal ground
WPF	Weatherpack Female	On 150 mm [6 in] lead wires; mating connector is Delphi-Packard Part Number 12010973
WPM	Weatherpack Male	On 150 mm [6 in] lead wires; mating connector is Delphi-Packard Part Number 12015792
WPMD	Weatherpack Male with diode	On 150 mm [6 in] lead wires; mating connector is Delphi-Packard Part Number 12015792

Coils Application notes

Not all connectors available with all coils. Consult individual coil data sheets for details.

PLUS+1™ COMPLIANT

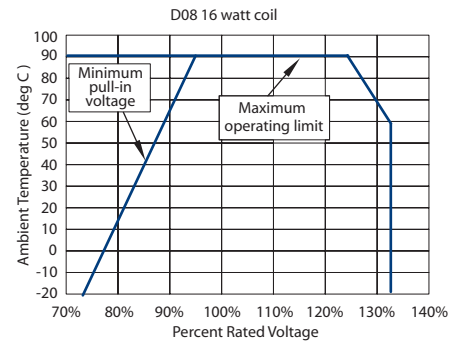
Comatrol solenoid valves are PLUS+1™ compliant. PLUS+1 compliance means our coils are directly compatible with the PLUS+1 machine control architecture. Adding solenoid valves to your application using PLUS+1 GUIDE software is as easy as *drag-and-drop*. Software development that used to take months can now be done in just a few hours. For more information on PLUS+1 GUIDE, visit www.comatrol.com or www.sauer-danfoss.com/plus1. The table below details available GUIDE function blocks for controlling Comatrol coils.

GUIDE function blocks

On-off	10106088
On-off-on	10106102
Two-way proportional	10106103
Three-way proportional	10106104

SPECIFICATIONS

- Duty cycle rating: 100%
- Magnet wire insulation: Class H (180C)
- Ambient temperature: -30 to 60 °C [-22 to 140 °F]
- Diodes are available; contact your Comatrol representative.
- Environmental protection: IP65
- Input voltage tolerance: ± 10%
- All AC coils are internally rectified



P103 948E

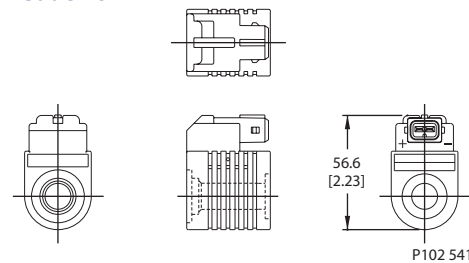
ELECTRICAL SPECIFICATIONS

16 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC	110 VAC	220 VAC
Resistance (Ohms) @ 20 °C [72 °F]	6.3	9	25	36	900	3600
Current draw (A) at 20 °C [77 °F]	1.6	1.33	0.8	0.67	0.13	0.07
Color	Green	Grey	Blue	Black	Black	Black

TERMINALS

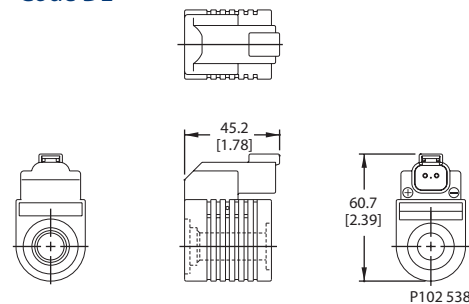
Amp Junior Timer
 Code AJ



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-AJ
12 VDC	16	D08-16W-12D-AJ
20 VDC	16	D08-16W-20D-AJ
24 VDC	16	D08-16W-24D-AJ

Deutsch
 Code DE



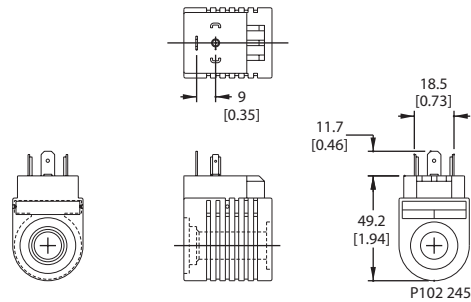
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-DE
12 VDC	16	D08-16W-12D-DE
20 VDC	16	D08-16W-20D-DE
24 VDC	16	D08-16W-24D-DE

mm [in]

TERMINALS
 (continued)

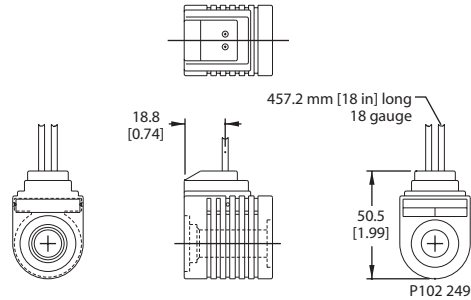
DIN 43650
 Code H



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-H
12 VDC	16	D08-16W-12D-H
20 VDC	16	D08-16W-20D-H
24 VDC	16	D08-16W-24D-H
110 VAC	16	D08-16W-120A-H
220 VAC	16	D08-16W-240A-H

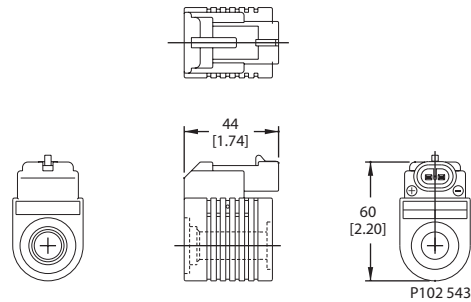
Lead wires
 Code L



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-L
12 VDC	16	D08-16W-12D-L
20 VDC	16	D08-16W-20D-L
24 VDC	16	D08-16W-24D-L

MetriPak 150 Type 1
 Code M2



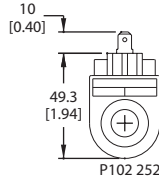
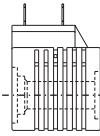
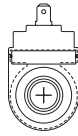
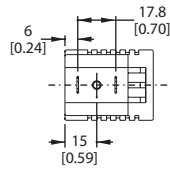
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-M2
12 VDC	16	D08-16W-12D-M2
20 VDC	16	D08-16W-20D-M2
24 VDC	16	D08-16W-24D-M2

mm [in]

TERMINALS
 (continued)

Spade
 Code S

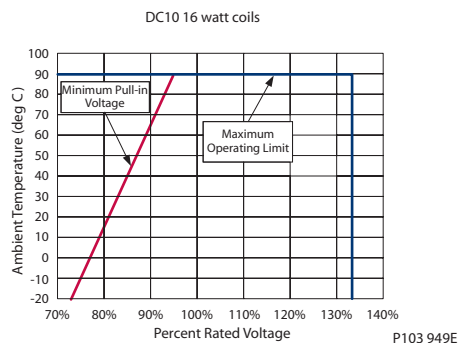


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D08-16W-10D-S
12 VDC	16	D08-16W-12D-S
20 VDC	16	D08-16W-20D-S
24 VDC	16	D08-16W-24D-S

SPECIFICATIONS

- Duty cycle rating: 100%
- Magnet wire insulation: Class H (180C)
- Ambient temperature: -30 to 60 °C [-22 to 140 °F]
- Diodes are available; contact your Comatrol representative.
- Environmental protection: IP65
- Input voltage tolerance: ± 10%
- All AC coils are internally rectified



Coils
D10

ELECTRICAL SPECIFICATIONS

16 watt coils

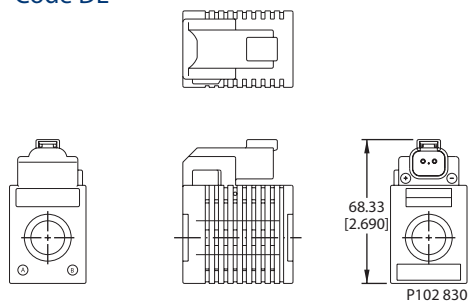
Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC	110 VAC	220 VAC
Resistance (Ohms) @ 20 °C [72 °F]	6.3	9	25	36	900	3600
Current draw (A) at 25 °C [77 °F]	1.6	1.33	0.8	0.67	0.13	0.07
Color	Green	Grey	Blue	Black	Black	Black

30 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC	110 VAC	220 VAC
Resistance (Ohms) @ 20 °C [72 °F]	3.3	4.8	13	19	480	1920
Current draw (A) at 20 °C [77 °F]	3	2.5	1.5	1.25	0.25	0.13
Color	Green	Grey	Blue	Black	Black	Black

TERMINALS

Deutsch Code DE

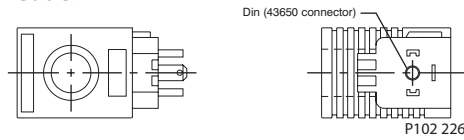


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-DE
12 VDC	16	D10-16W-12D-DE
20 VDC	16	D10-16W-20D-DE
24 VDC	16	D10-16W-24D-DE
10 VDC	30	D10-30W-10D-DE
12 VDC	30	D10-30W-12D-DE
20 VDC	30	D10-30W-20D-DE
24 VDC	30	D10-30W-24D-DE

TERMINALS
 (continued)

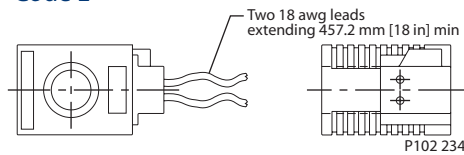
DIN 43650
 Code H



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-H
12 VDC	16	D10-16W-12D-H
20 VDC	16	D10-16W-20D-H
24 VDC	16	D10-16W-24D-H
110 VAC	16	D10-16W-120A-H
220 VAC	16	D10-16W-240A-H
10 VDC	30	D10-30W-10D-H
12 VDC	30	D10-30W-12D-H
20 VDC	30	D10-30W-20D-H
24 VDC	30	D10-30W-24D-H
110 VAC	30	D10-30W-120A-H
220 VAC	30	D10-30W-240A-H

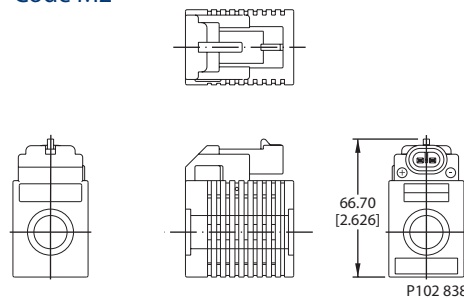
Lead wires
 Code L



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-L
12 VDC	16	D10-16W-12D-L
20 VDC	16	D10-16W-20D-L
24 VDC	16	D10-16W-24D-L
10 VDC	30	D10-30W-10D-L
12 VDC	30	D10-30W-12D-L
20 VDC	30	D10-30W-20D-L
24 VDC	30	D10-30W-24D-L

MetriPak 150 Type 1
 Code M2



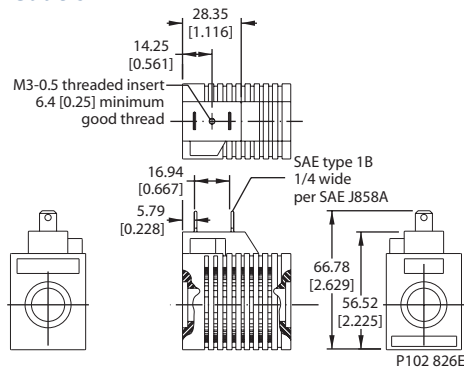
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-M2
12 VDC	16	D10-16W-12D-M2
20 VDC	16	D10-16W-20D-M2
24 VDC	16	D10-16W-24D-M2
10 VDC	30	D10-30W-10D-M2
12 VDC	30	D10-30W-12D-M2
20 VDC	30	D10-30W-20D-M2
24 VDC	30	D10-30W-24D-M2

mm [in]

TERMINALS
 (continued)

Dual Spade
 Code S



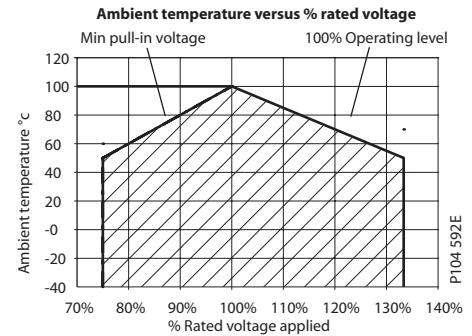
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	D10-16W-10D-S
12 VDC	16	D10-16W-12D-S
20 VDC	16	D10-16W-20D-S
24 VDC	16	D10-16W-24D-S
10 VDC	30	D10-30W-10D-S
12 VDC	30	D10-30W-12D-S
20 VDC	30	D10-30W-20D-S
24 VDC	30	D10-30W-24D-S

Coils
 D10

SPECIFICATIONS

- Duty cycle rating: 100% at 133% of rated voltage and 70°C [158°F]
- Magnet wire insulation: Class H (200°C)
- Ambient temperature: -40 to 70 °C [-40 to 158 °F]
- Diodes are available; contact your Comatrol representative.
- Environmental protection: IP69K (AJ, DE, and M2 connectors), IP65 (all other connectors)
- Input voltage tolerance: ± 10%



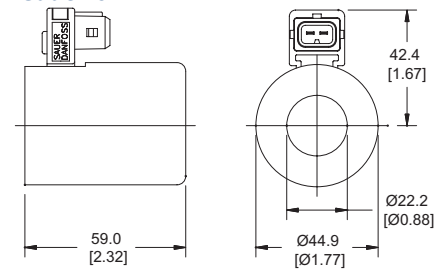
ELECTRICAL SPECIFICATIONS

30 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	3.3	4.8	13	19
Current draw (A) at 20 °C [77 °F]	3	2.5	1.5	1.25
Color	Green	Gray	Blue	Yellow

TERMINALS

Amp Jr. Code AJ

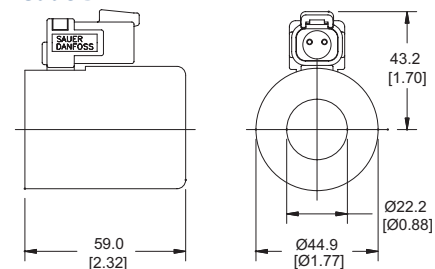


P103 215

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-AJ
12 VDC	30	D14E-30W-12D-AJ
20 VDC	30	D14E-30W-20D-AJ
24 VDC	30	D14E-30W-24D-AJ

Deutsch Code DE



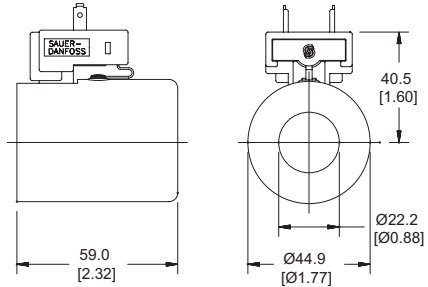
P103 216

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-DE
12 VDC	30	D14E-30W-12D-DE
20 VDC	30	D14E-30W-20D-DE
24 VDC	30	D14E-30W-24D-DE

TERMINALS
 (continued)

DIN 43650
 Code H

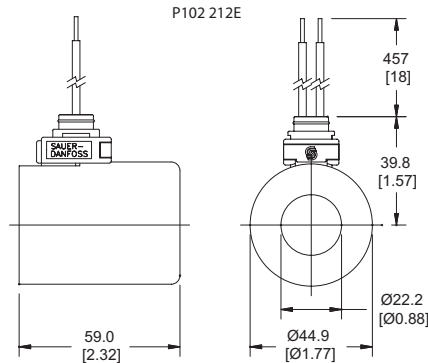


P102 203E

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-H
12 VDC	30	D14E-30W-12D-H
20 VDC	30	D14E-30W-20D-H
24 VDC	30	D14E-30W-24D-H

Lead wires
 Code L

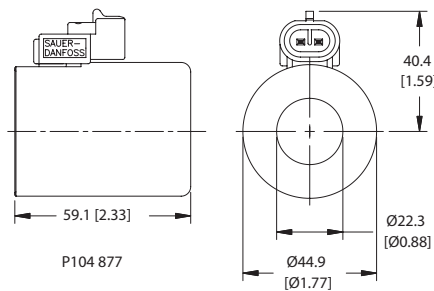


P102 212E

Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-L
12 VDC	30	D14E-30W-12D-L
20 VDC	30	D14E-30W-20D-L
24 VDC	30	D14E-30W-24D-L

Metripak 150, type 1
 Code M2



P104 877

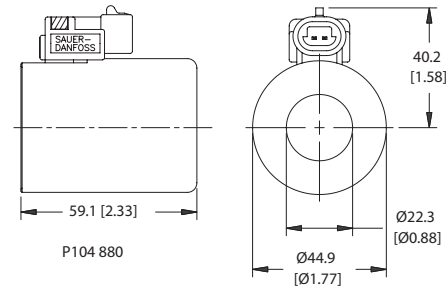
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-M2
12 VDC	30	D14E-30W-12D-M2
20 VDC	30	D14E-30W-20D-M2
24 VDC	30	D14E-30W-24D-M2

mm [in]

TERMINALS
 (continued)

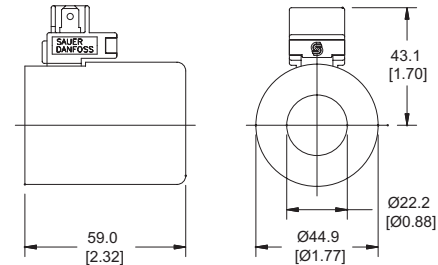
MetriPak 150, Type 2
 Code M3



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-M3
12 VDC	30	D14E-30W-12D-M3
20 VDC	30	D14E-30W-20D-M3
24 VDC	30	D14E-30W-24D-M3

Dual Spade
 Code S



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	30	D14E-30W-10D-S
12 VDC	30	D14E-30W-12D-S
20 VDC	30	D14E-30W-20D-S
24 VDC	30	D14E-30W-24D-S

SPECIFICATIONS

- Magnet wire insulation: Class H (200°C)
- Maximum continuous current 1.8 A (at 12 V) 0.9 A (at 24 V)
- Ambient temperature: -40 to 70 °C [-40 to 158 °F]
- Environmental protection: IP69K (AJ, DE, and AS connectors), IP65 (all other connectors)
- Input voltage tolerance: ± 10%

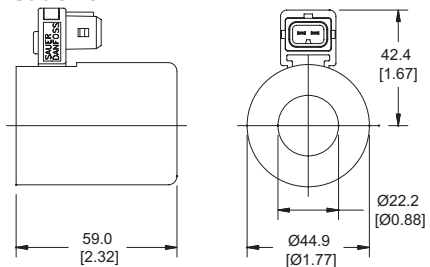
ELECTRICAL SPECIFICATIONS

35 watt coils

Voltage (V)	12 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	4.1	17
Current draw (A) at 20 °C [77 °F]	1.8	0.9
Color	Gray	Yellow

TERMINALS

Amp Jr.
Code AJ

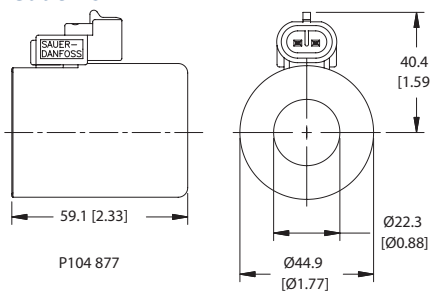


P103 215

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-AJ
24 VDC	35	D14E-24D-0.9A-AJ

Amp SuperSeal 1.5/MetriPak 150 Type 1
Code AS



P104 877

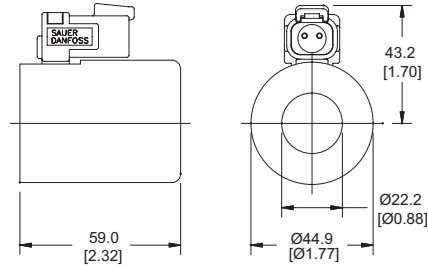
Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-AS
24 VDC	35	D14E-24D-0.9A-AS

mm [in]

TERMINALS
(continued)

Deutsch
Code DE

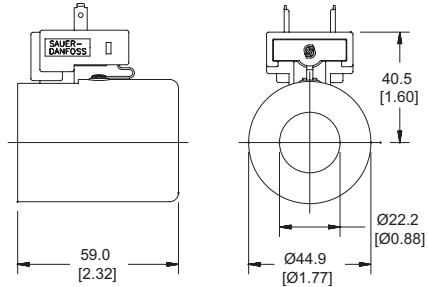


P103 216

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-DE
24 VDC	35	D14E-24D-0.9A-DE

DIN 43650
Code DN

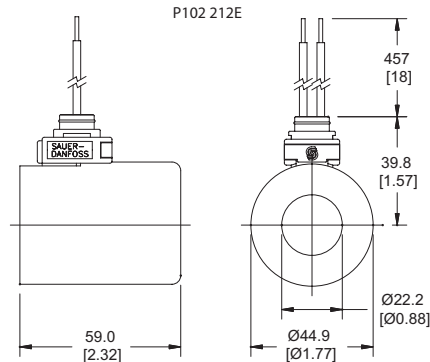


P102 203E

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-DN
24 VDC	35	D14E-24D-0.9A-DN

Lead wires
Code FL



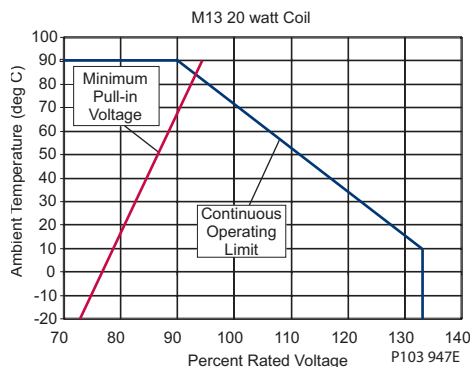
P102 212E

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	35	D14E-12D-1.8A-FL
24 VDC	35	D14E-24D-0.9A-FL

SPECIFICATIONS

- Duty cycle: 100% at 115% of rated voltage at 40°C [104°F]
- Magnet wire insulation: Class H (200C)
- Ambient temperature range: -20 to 40 °C [-4 to 104 °F]
- Environmental protection rating: IP67 (AJ, AS, DE, and M3 term.) IP65 (all others)
- Input voltage range: 85% to 115% of rated voltage
- Temperature rise at 115% of rated voltage: 130°C [266°F] above ambient
- Weight: 0.2 kg [0.44 lb]



Coils
M13

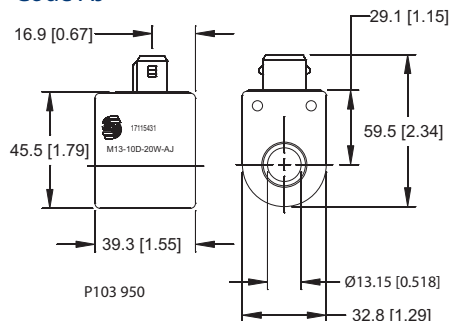
ELECTRICAL SPECIFICATIONS

20 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	5	7.2	20	29
Current draw (A) at 20 °C [77 °F]	2	1.67	1	0.83

TERMINALS

Amp Jr.
Code AJ

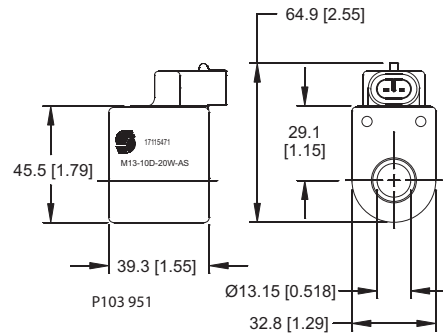


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-AJ
12 VDC	20	M13-12D-20W-AJ
20 VDC	20	M13-20D-20W-AJ
24 VDC	20	M13-24D-20W-AJ

TERMINALS
(continued)

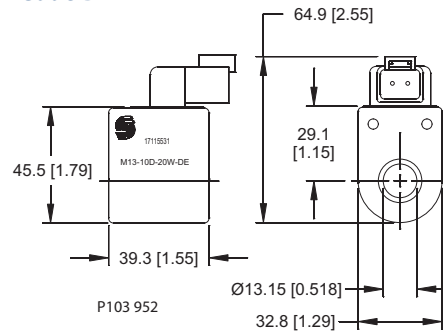
Amp SuperSeal 1.5/MetriPak 150 Type 1
Code AS



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-AS
12 VDC	20	M13-12D-20W-AS
20 VDC	20	M13-20D-20W-AS
24 VDC	20	M13-24D-20W-AS

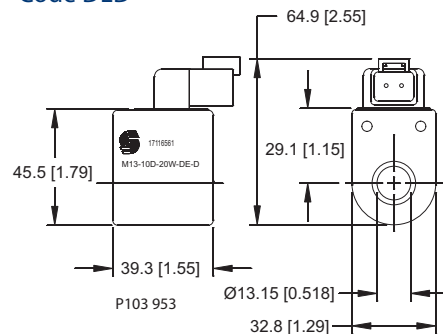
Deutsch
Code DE



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-DE
12 VDC	20	M13-12D-20W-DE
20 VDC	20	M13-20D-20W-DE
24 VDC	20	M13-24D-20W-DE

Deutsch w/diode
Code DED



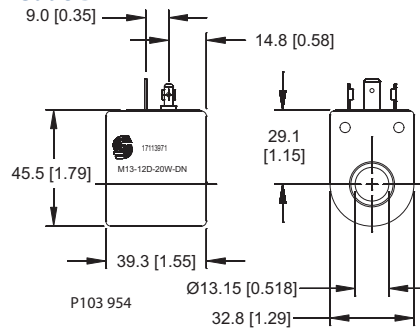
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-DED
12 VDC	20	M13-12D-20W-DED
20 VDC	20	M13-20D-20W-DED
24 VDC	20	M13-24D-20W-DED

TERMINALS
 (continued)

ISO 4400 (DIN 43650)

Code DN

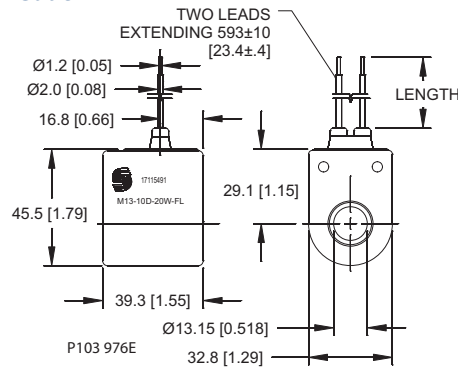


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-DN
12 VDC	20	M13-12D-20W-DN
20 VDC	20	M13-20D-20W-DN
24 VDC	20	M13-24D-20W-DN

Lead wires

Code FL

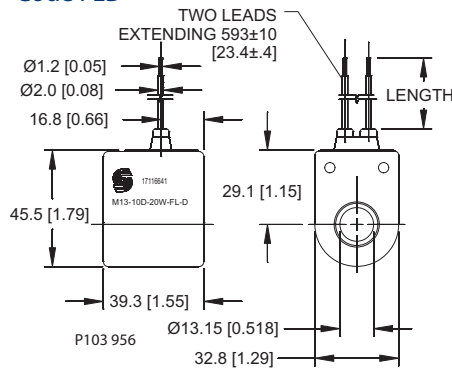


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-FL
12 VDC	20	M13-12D-20W-FL
20 VDC	20	M13-20D-20W-FL
24 VDC	20	M13-24D-20W-FL

Lead wires w/diode

Code FLD



Part numbers

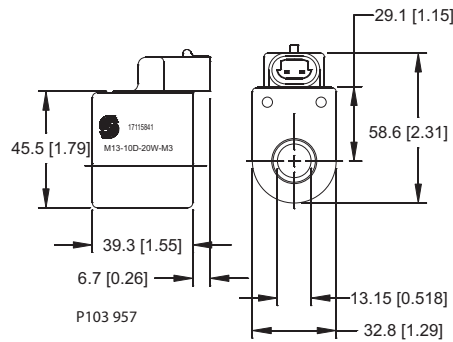
Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-FLD
12 VDC	20	M13-12D-20W-FLD
20 VDC	20	M13-20D-20W-FLD
24 VDC	20	M13-24D-20W-FLD

mm [in]

TERMINALS
(continued)

Coils
M13

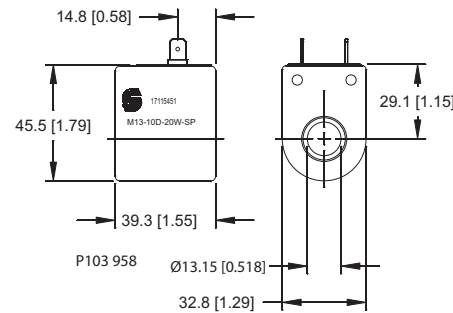
MetriPak 150, Type 2
Code M3



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-M3
12 VDC	20	M13-12D-20W-M3
20 VDC	20	M13-20D-20W-M3
24 VDC	20	M13-24D-20W-M3

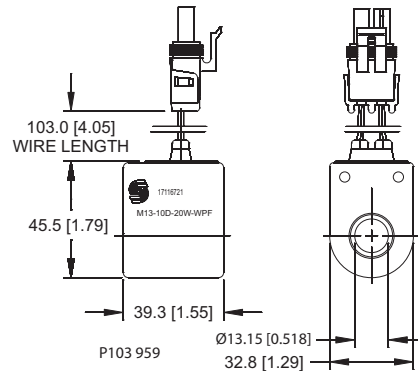
Spade
Code SP



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-SP
12 VDC	20	M13-12D-20W-SP
20 VDC	20	M13-20D-20W-SP
24 VDC	20	M13-24D-20W-SP

Weather pack (female)
Code WPF

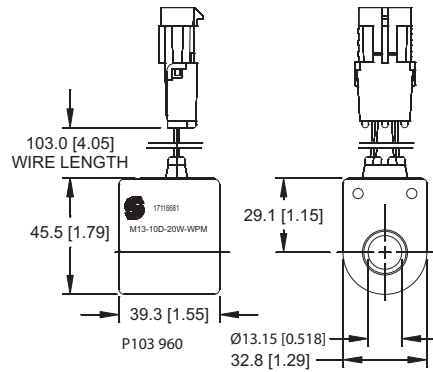


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-WPF
12 VDC	20	M13-12D-20W-WPF
20 VDC	20	M13-20D-20W-WPF
24 VDC	20	M13-24D-20W-WPF

TERMINALS
 (continued)

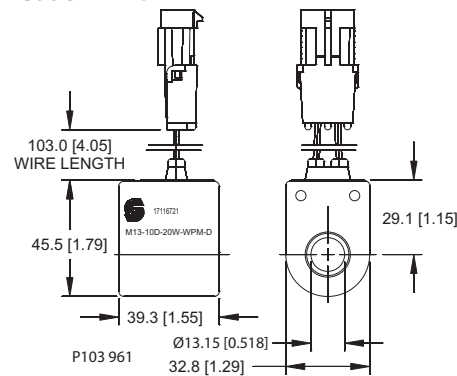
Weather pack (male)
 Code WPM



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-WPM
12 VDC	20	M13-12D-20W-WPM
20 VDC	20	M13-20D-20W-WPM
24 VDC	20	M13-24D-20W-WPM

Weather pack (male) w/diode
 Code WPMD

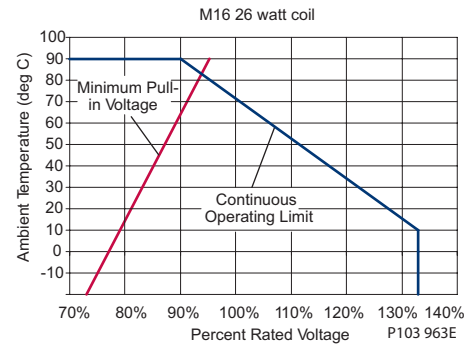


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	M13-10D-20W-WPMD
12 VDC	20	M13-12D-20W-WPMD
20 VDC	20	M13-20D-20W-WPMD
24 VDC	20	M13-24D-20W-WPMD

SPECIFICATIONS

- Duty cycle: 100% at 115% of rated voltage at 40°C [104°F]
- Magnet wire insulation: Class H (200C)
- Ambient temperature range: -20 to 40 °C [-4 to 104 °F]
- Environmental protection rating: IP67 (AJ, AS, DE, and M3 term.) IP65 (all others)
- Input voltage range: 85% to 115% of rated voltage
- Temperature rise at 115% of rated voltage: 130°C [266°F] above ambient
- Weight: 0.24 kg [0.53 lb]



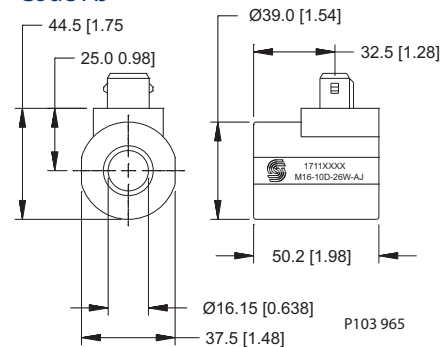
ELECTRICAL SPECIFICATIONS

26 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	4	5.6	15	22
Current draw (A) at 20 °C [77 °F]	2.5	2.14	1.33	1.1

TERMINALS

Amp Jr. Code AJ

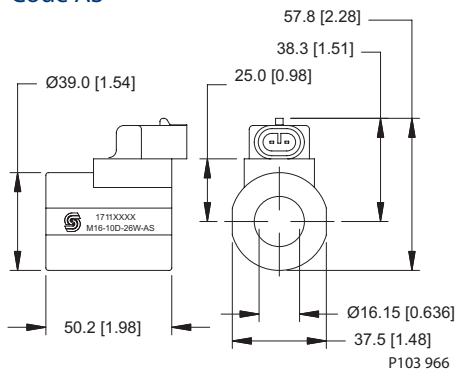


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-AJ
12 VDC	26	M16-12D-26W-AJ
20 VDC	26	M16-20D-26W-AJ
24 VDC	26	M16-24D-26W-AJ

TERMINALS
(continued)

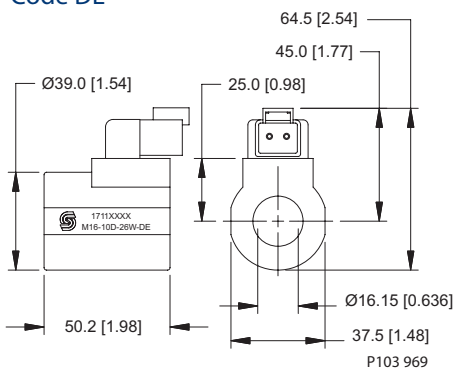
Amp SuperSeal 1.5/MetriPak 150 Type 1
Code AS



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-AS
12 VDC	26	M16-12D-26W-AS
20 VDC	26	M16-20D-26W-AS
24 VDC	26	M16-24D-26W-AS

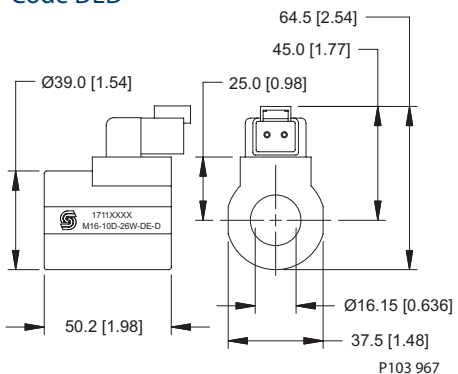
Deutsch
Code DE



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-DE
12 VDC	26	M16-12D-26W-DE
20 VDC	26	M16-20D-26W-DE
24 VDC	26	M16-24D-26W-DE

Deutsch w/diode
Code DED



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-DED
12 VDC	26	M16-12D-26W-DED
20 VDC	26	M16-20D-26W-DED
24 VDC	26	M16-24D-26W-DED

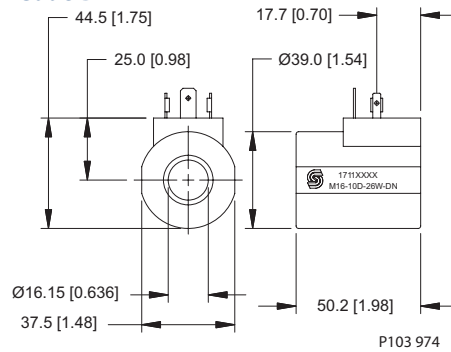
mm [in]

Coils
M16

TERMINALS
(continued)

ISO 4400 (DIN 43650)

Code DN

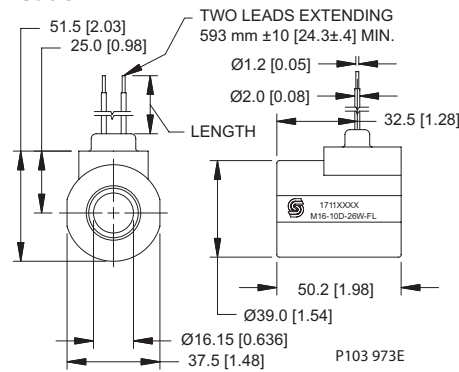


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-DN
12 VDC	26	M16-12D-26W-DN
20 VDC	26	M16-20D-26W-DN
24 VDC	26	M16-24D-26W-DN

Lead wires

Code FL

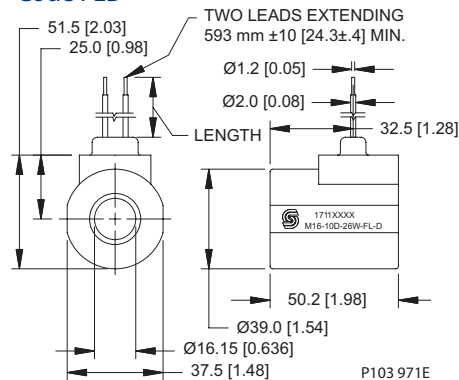


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-FL
12 VDC	26	M16-12D-26W-FL
20 VDC	26	M16-20D-26W-FL
24 VDC	26	M16-24D-26W-FL

Lead wires w/diode

Code FLD

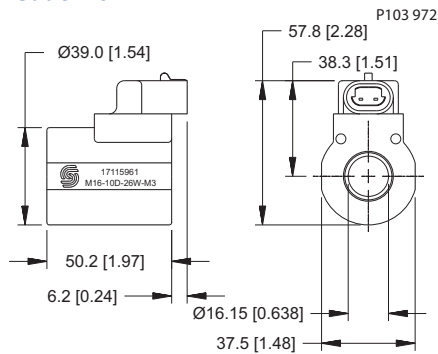


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-FLD
12 VDC	26	M16-12D-26W-FLD
20 VDC	26	M16-20D-26W-FLD
24 VDC	26	M16-24D-26W-FLD

TERMINALS
 (continued)

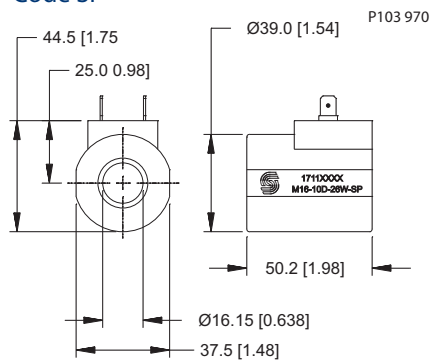
MetriPak 150, Type 2
 Code M3



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-M3
12 VDC	26	M16-12D-26W-M3
20 VDC	26	M16-20D-26W-M3
24 VDC	26	M16-24D-26W-M3

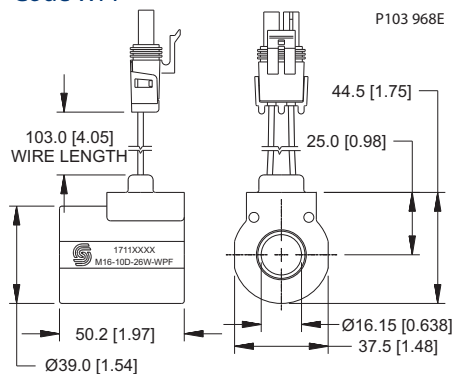
Spade
 Code SP



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-SP
12 VDC	26	M16-12D-26W-SP
20 VDC	26	M16-20D-26W-SP
24 VDC	26	M16-24D-26W-SP

Weather pack (female)
 Code WPF



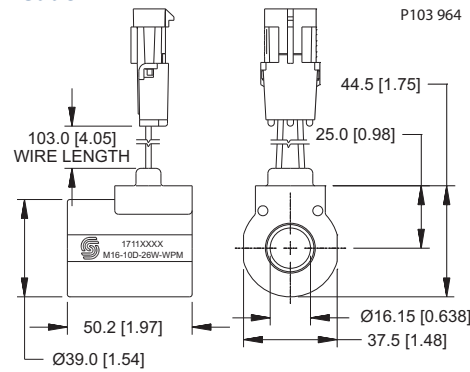
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-WPF
12 VDC	26	M16-12D-26W-WPF
20 VDC	26	M16-20D-26W-WPF
24 VDC	26	M16-24D-26W-WPF

mm [in]

**TERMINALS
 (continued)**

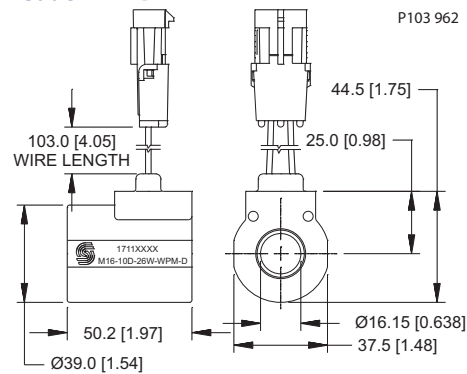
**Weather pack (male)
 Code WPM**



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-WPM
12 VDC	26	M16-12D-26W-WPM
20 VDC	26	M16-20D-26W-WPM
24 VDC	26	M16-24D-26W-WPM

**Weather pack (male) w/diode
 Code WPMD**



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-WPMD
12 VDC	26	M16-12D-26W-WPMD
20 VDC	26	M16-20D-26W-WPMD
24 VDC	26	M16-24D-26W-WPMD

SPECIFICATIONS

- Magnet wire insulation: Class H (200C)
- Duty cycle rating: 100%
- Maximum continuous current 1.8 A (at 12 V) 0.9 A (at 24 V)
- Ambient temperature range: -20 to 40 °C [-4 to 104 °F]
- Environmental protection: IP69K (DE connector), IP65 (all other connectors)
- Weight: 0.37 kg [0.82 lb]

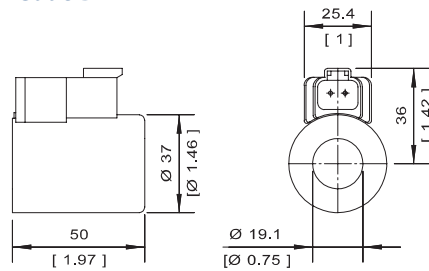
ELECTRICAL SPECIFICATIONS

22 watt coils

Voltage (V)	12 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	3.7	16
Current draw (A) at 20 °C [77 °F]	1.8	0.9

TERMINALS

Deutsch
 Code DE

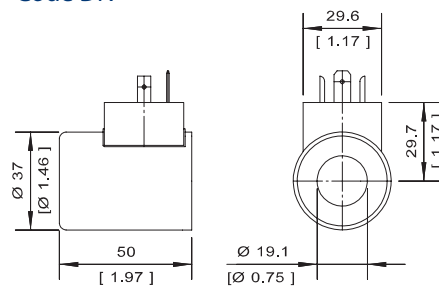


P104 546

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	22	M19P-12D-1.8A-DE
24 VDC	22	M19P-24D-0.9A-DE

ISO 4400 (DIN 43650)
 Code DN



P104 544

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	22	M19P-12D-1.8A-DN
24 VDC	22	M19P-24D-0.9A-DN

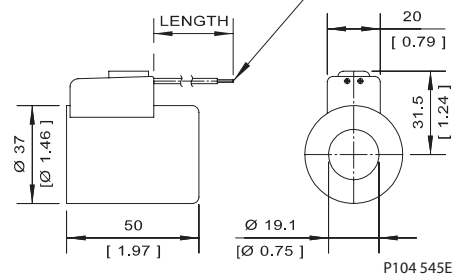
mm [in]

TERMINALS
 (continued)

Lead wires

Code FL

TWO LEADS AWG18
 EXTENDING 140 ± 10 mm [5.5 ± 0.4]

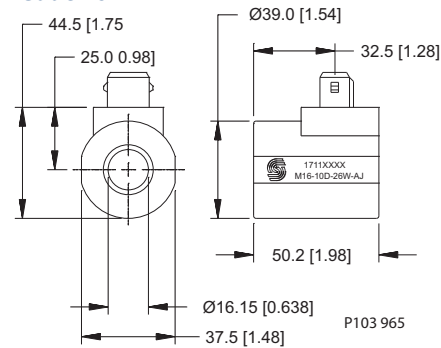


Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	22	M19P-12D-1.8A-FL
24 VDC	22	M19P-24D-0.9A-FL

Amp Jr.

Code AJ



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	26	M16-10D-26W-AJ
12 VDC	26	M16-12D-26W-AJ
20 VDC	26	M16-20D-26W-AJ
24 VDC	26	M16-24D-26W-AJ

SPECIFICATIONS

- Duty cycle rating: 100%
- Magnet wire insulation: Class H (180C)
- Ambient temperature: -30 to 50 °C [-22 to 122 °F]
- Diodes are available; contact your Comatrol representative.
- Environmental protection: IP67 (E12 connector), IP65 (all other connectors)
- Input voltage tolerance: ± 10%

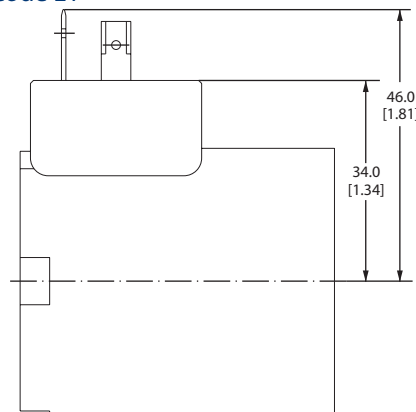
ELECTRICAL SPECIFICATIONS

40 watt coils

Voltage (V)	12 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	3.6	14

TERMINALS

DIN 43650
 Code E1



P102 859

Part numbers

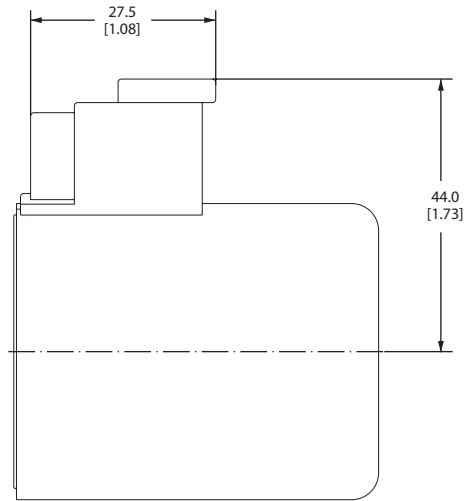
Voltage (V)	Power (W)	Part Number
12 VDC	40	158-8063
24 VDC	40	158-8065

Coils
PDCV03

Coils
PDCV03

**TERMINALS
 (continued)**

Deutsch
 Code E12

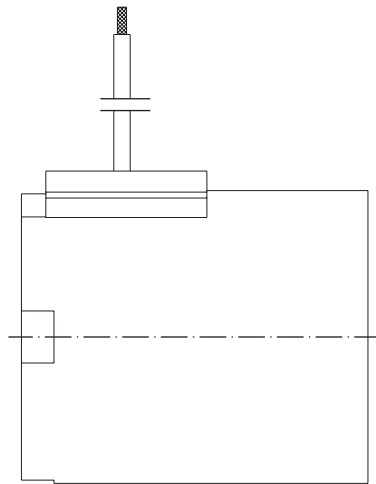


P102 857

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	40	158-8067
24 VDC	40	158-8069

Lead wires
 Code E8



P102 860

Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	40	158-8090
24 VDC	40	158-8091

SPECIFICATIONS

- Duty cycle rating: 100% at 100% of rated current at 50C [122 deg F]
- Magnet wire insulation: Class H (200 C)
- Ambient temperature: -20 to +50 C [-4 to +122 deg F]
- Environmental protection: IP65
- Weight: 0.45kg [1.0 lb]

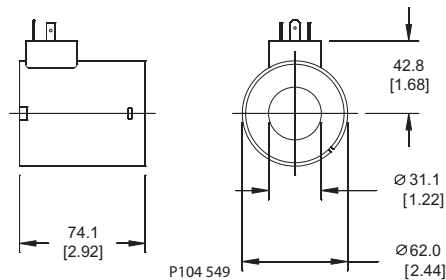
ELECTRICAL SPECIFICATIONS

30 watt coils

Voltage (V)	12 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	2.3	13
Current draw (A) at 20 °C [77 °F]	2.5	1.25

TERMINALS

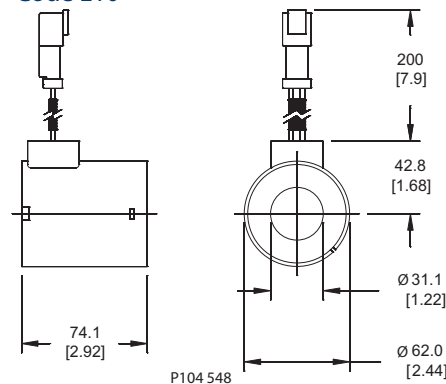
ISO 4400 (DIN 43650)
 Code E1



Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	30	158-8096
24 VDC	30	158-8097

Duetsch connector on lead wires
 Code E10

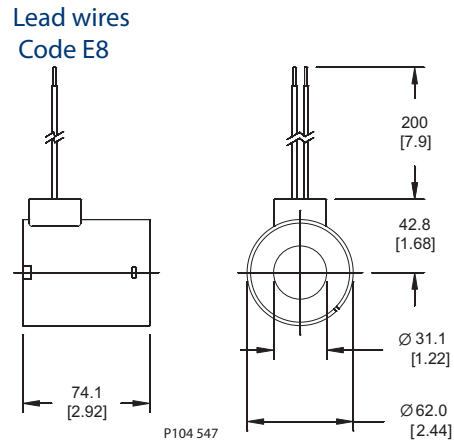


Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	30	Consult factory
24 VDC	30	Consult factory

mm [in]

TERMINALS
 (continued)

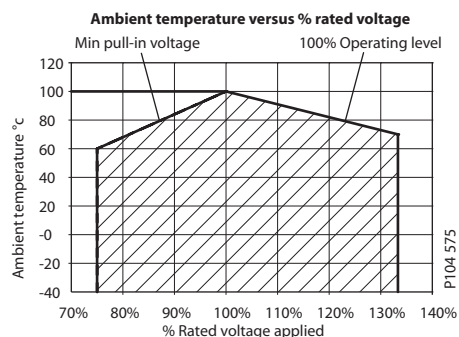


Part numbers

Voltage (V)	Power (W)	Part Number
12 VDC	30	158-8092
24 VDC	30	158-8093

SPECIFICATIONS

- Duty cycle: 100% at 133% of rated voltage and 70°C [158°F]
- Magnet wire insulation: Class H (200°C)
- Ambient temperature range: -40 to +70 °C [-40 to 158 °F]
- Environmental rating: IP69K
- Input voltage range: 75% to 133% of rated voltage
- Weight: 0.22 kg [0.49 lb]



Coils
R13

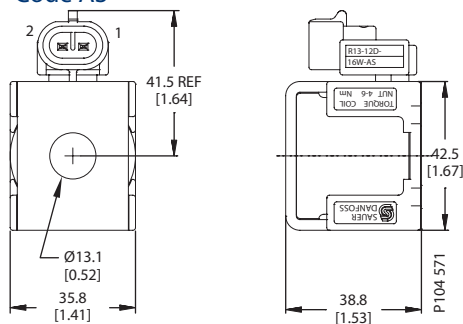
ELECTRICAL SPECIFICATIONS

16 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	6.2	9	25	36
Current draw (A) at 20 °C [77 °F]	1.62	1.34	0.81	0.67
Color	Green	Gray	Blue	Yellow

TERMINALS

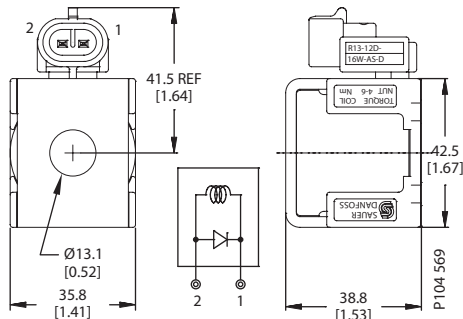
Amp SuperSeal 1.5/MetriPak 150 Type 1
Code AS



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-AS
12 VDC	16	R13-12D-16W-AS
20 VDC	16	R13-20D-16W-AS
24 VDC	16	R13-24D-16W-AS

Amp SuperSeal 1.5/MetriPak 150 Type 1
w/diode
Code ASD



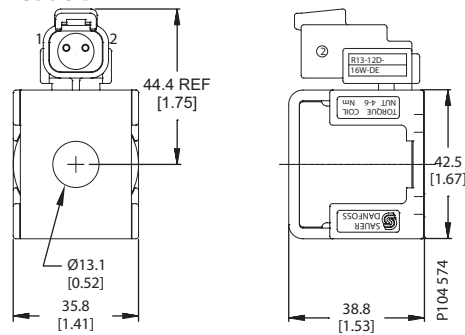
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-AS-D
12 VDC	16	R13-12D-16W-AS-D
20 VDC	16	R13-20D-16W-AS-D
24 VDC	16	R13-24D-16W-AS-D

mm [in]

TERMINALS
(continued)

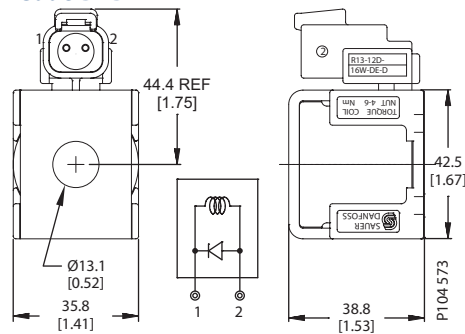
Deutsch
Code DE



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-DE
12 VDC	16	R13-12D-16W-DE
20 VDC	16	R13-20D-16W-DE
24 VDC	16	R13-24D-16W-DE

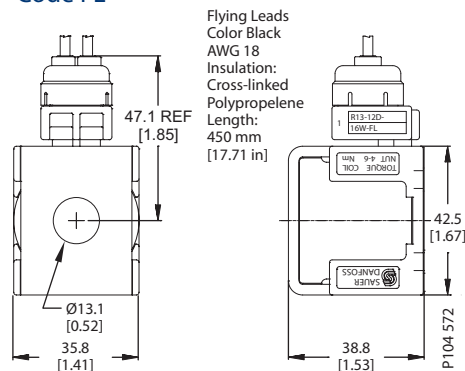
Deutsch w/diode
Code DED



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-DED
12 VDC	16	R13-12D-16W-DED
20 VDC	16	R13-20D-16W-DED
24 VDC	16	R13-24D-16W-DED

Lead wires
Code FL

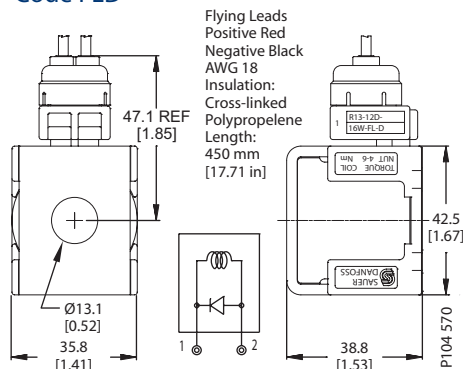


Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-FL
12 VDC	16	R13-12D-16W-FL
20 VDC	16	R13-20D-16W-FL
24 VDC	16	R13-24D-16W-FL

TERMINALS
(continued)

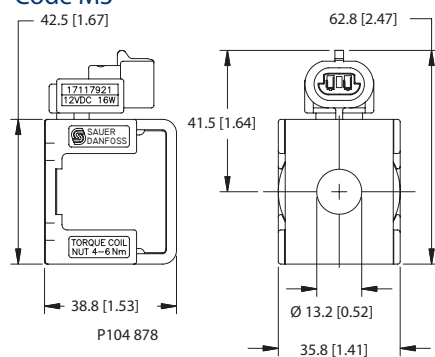
Lead wires w/diode
Code FLD



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-FL-D
12 VDC	16	R13-12D-16W-FL-D
20 VDC	16	R13-20D-16W-FL-D
24 VDC	16	R13-24D-16W-FL-D

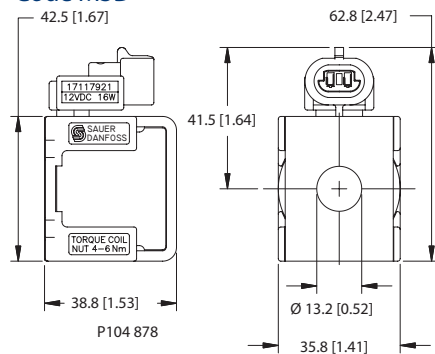
MetriPak 150, type 2
Code M3



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-M3
12 VDC	16	R13-12D-16W-M3
20 VDC	16	R13-20D-16W-M3
24 VDC	16	R13-24D-16W-M3

MetriPak 150, type 2 w/diode
Code M3D



Part numbers

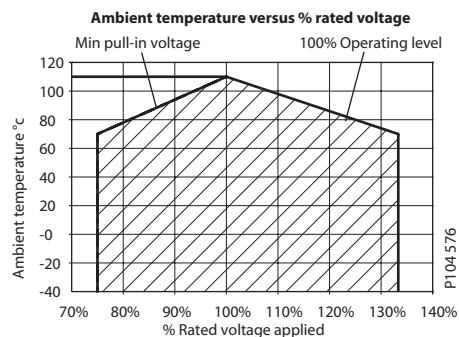
Voltage (V)	Power (W)	Part Number
10 VDC	16	R13-10D-16W-M3D
12 VDC	16	R13-12D-16W-M3D
20 VDC	16	R13-20D-16W-M3D
24 VDC	16	R13-24D-16W-M3D

mm [in]

Coils
R13

SPECIFICATIONS

- Duty cycle: 100% at 133% of rated voltage and 70°C [158°F]
- Magnet wire insulation: Class H (200°C)
- Ambient temperature range: -40 to +70 °C [-40 to 158 °F]
- Environmental rating: IP69K
- Input voltage range: 75% to 133% of rated voltage
- Weight: 0.34 kg [0.75 lb]



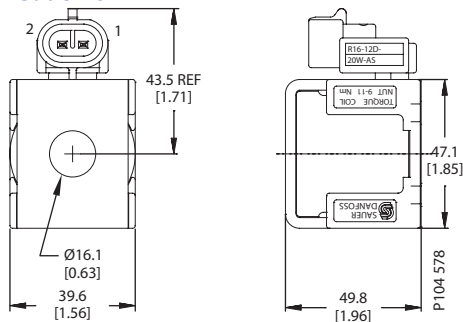
ELECTRICAL SPECIFICATIONS

20 watt coils

Voltage (V)	10 VDC	12 VDC	20 VDC	24 VDC
Resistance (Ohms) @ 20 °C [72 °F]	4.8	6.9	20	28
Current draw (A) at 20 °C [77 °F]	2.08	1.74	1.01	0.85
Color	Green	Gray	Blue	Yellow

TERMINALS

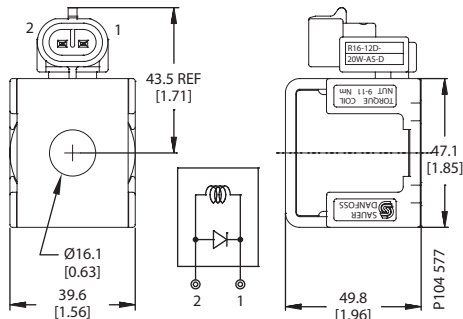
Amp SuperSeal 1.5/MetriPak 150 Type 1 Code AS



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-AS
12 VDC	20	R16-12D-20W-AS
20 VDC	20	R16-20D-20W-AS
24 VDC	20	R16-24D-20W-AS

Amp SuperSeal 1.5/MetriPak 150 Type 1 w/diode Code ASD



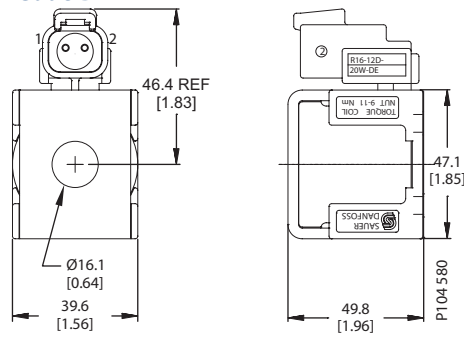
Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-AS-D
12 VDC	20	R16-12D-20W-AS-D
20 VDC	20	R16-20D-20W-AS-D
24 VDC	20	R16-24D-20W-AS-D

mm [in]

TERMINALS
(continued)

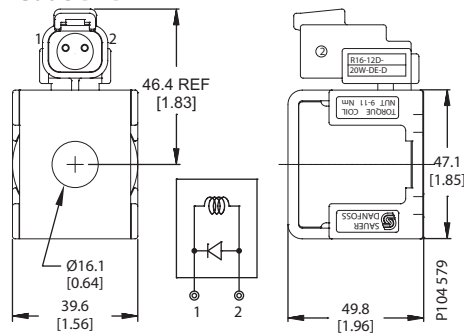
Deutsch
Code DE



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-DE
12 VDC	20	R16-12D-20W-DE
20 VDC	20	R16-20D-20W-DE
24 VDC	20	R16-24D-20W-DE

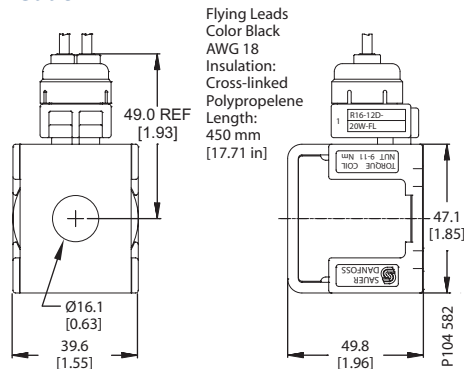
Deutsch w/diode
Code DED



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-DED
12 VDC	20	R16-12D-20W-DED
20 VDC	20	R16-20D-20W-DED
24 VDC	20	R16-24D-20W-DED

Lead wires
Code FL



Part numbers

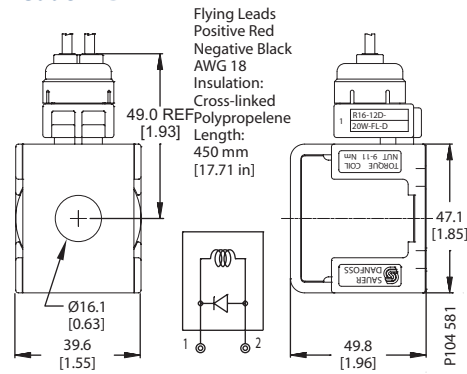
Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-FL
12 VDC	20	R16-12D-20W-FL
20 VDC	20	R16-20D-20W-FL
24 VDC	20	R16-24D-20W-FL

mm [in]

TERMINALS
(continued)

Coils
R16

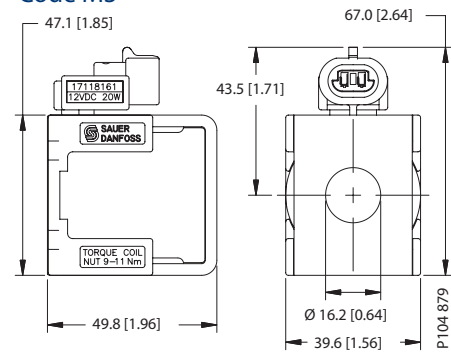
Lead wires w/diode
Code FLD



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-FL-D
12 VDC	20	R16-12D-20W-FL-D
20 VDC	20	R16-20D-20W-FL-D
24 VDC	20	R16-24D-20W-FL-D

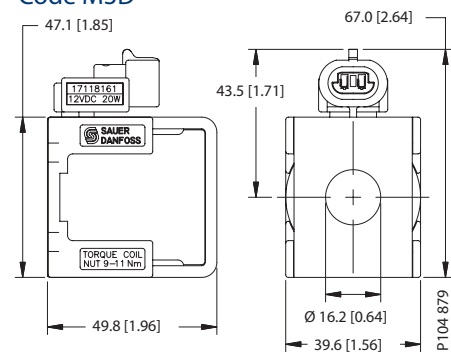
MetriPak 150, type 2
Code M3



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-M3
12 VDC	20	R16-12D-20W-M3
20 VDC	20	R16-20D-20W-M3
24 VDC	20	R16-24D-20W-M3

MetriPak 150, type 2 w/diode
Code M3D



Part numbers

Voltage (V)	Power (W)	Part Number
10 VDC	20	R16-10D-20W-M3-D
12 VDC	20	R16-12D-20W-M3-D
20 VDC	20	R16-20D-20W-M3-D
24 VDC	20	R16-24D-20W-M3-D

Cross reference by [Part Number](#), page 2.

Cross reference by [Model Number](#), page 44.

USING THIS LIST

Comatrol is continually optimizing and expanding our product offering to maintain our leadership position in the cartridge valve and HIC manifold market. The products that are a result of this optimization are shown in other sections of this catalog. Legacy products are products that were at one time core products for Comatrol, Compact Controls, Danfoss Fluid Power, or Fluid Controls, but for a variety of reasons are no longer part of the future product portfolio.

The lists on the following pages show the status of all legacy products. The status category indicates that the product falls into one of the following three basic categories:

- **Direct Replacement:** The new part number shown is for a valve that replaces form, fit, and function of the old valve. For a cartridge, this means the replacement valve fits the same cavity as the original valve. For a Hydraulic Integrated Circuit (HIC) assembly, the new valve may have differences in mounting bolt pattern, port locations, and overall dimensions.
- **Functional Replacement:** The new part number shown is for a valve that replaces the function, but not the form or fit, of the old valve. For a cartridge, this means the replacement valve does not fit the same cavity as the original valve. For an HIC assembly, this means that the mounting bolt pattern, port locations, and overall dimensions may be different. Also note that all valves are available with SAE and BSP ports, but in many cases NPTF ports are no longer standard options.
- **Obsolete:** These products are no longer available and we are unable to offer any suitable replacement.

For more information please refer to the appropriate Product Information Bulletin (PIB) as listed in the tables, or consult your Comatrol representative.

Cartridge Valves Technical Information
 Cross reference list
 Sorted by part number

Cross reference list
 by part number

OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
934980	X28VDC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
11009786	Oleostar - VODL/SC/F/A34/OMT.TS.S.P3.PG	-	-	-	FUNCTIONAL	MM-OMT-L5-DCP441-1-B-6B-E-B-XXX-4.5-015	HIC	-	-
11013769	Oleostar - VAIF/SY/D1D-12/OMR-210-ALU DB CHV (S) #	-	-	-	FUNCTIONAL	MM-OMP/OMR-00-DVME06-EN-3-4B-B-210	HIC	-	-
156B8296	2225-70-20	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
156B8297	2225-70-40	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0001	1A21-R3-40SM	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0002	1A21-R6T-40SV	FC-10	60	280	FUNCTIONAL	RV10-POP-3-K-XXX-V-6S	SDC10-2	120	250
158B0003	1A21-F2-40SV	FC-10	60	280	FUNCTIONAL	RV10-POP-3-E-XXX-V-6S	SDC10-2	120	250
158B0004	1A21-F3-40SV	FC-10	60	280	FUNCTIONAL	RV10-POP-3-E-XXX-V-6S	SDC10-2	120	250
158B0005	1A21-P3-40SV	FC-10	60	280	FUNCTIONAL	RV10-POP-3-E-XXX-V-6S	SDC10-2	120	250
158B0007	1A30-E-30SV	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-C-XXX	SDC10-2	115	350
158B0008	1A30-E-30SV273	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-C-XXX	SDC10-2	115	350
158B0011	1A30-F-15SV38	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-B-XXX	SDC10-2	115	350
158B0015	1A30-R-30SV786	FC-10	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0016	1A32-F12T-60SV	FC-10	150	420	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0017	1A32-F4-15SV38	FC-10	150	420	FUNCTIONAL	CP210-2-V-8S-E-B-XXX	SDC10-2	115	350
158B0018	1A32-F4-15SV818	FC-10	150	420	FUNCTIONAL	CP210-2-V-8S-E-B-XXX	SDC10-2	115	350
158B0019	1A32-F4-60SV	FC-10	150	420	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0020	1A33-R16T-60SV	FC-10	150	420	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0021	1AR13-F4-15S	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0022	1AR13-F4-40S	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0023	1AR13-F4-40SV	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0024	1AR13-F6-15SV	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0025	1AR13-F6-40S	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0026	1AR13-F6-40SV	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0027	1AR13-F8T-40S	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0029	1AR13-R6-15S	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0030	1AR13-R6-40SV	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0031	1AR15-P16T-15SV	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B0032	1AR15-P16T-30SV	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B0033	1AR15-P6-30SV	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B0034	1D15-F2-15S	PIB (PARTS IN BODY)	1	420	FUNCTIONAL	CP208-4-B-S4S-E-C-XXX	SDC08-2	1.1	415
158B0035	1D15-F4T-60S	PIB (PARTS IN BODY)	1	420	FUNCTIONAL	CP208-4-B-S4S-E-C-XXX	SDC08-2	1.1	415
158B0036	1D15-R2-15S	PIB (PARTS IN BODY)	1	420	FUNCTIONAL	CP208-4-B-S4S-K-C-XXX	SDC08-2	1.1	415
158B0037	1D15-R2-60SV	PIB (PARTS IN BODY)	1	420	FUNCTIONAL	CP208-4-V-S4S-K-C-XXX	SDC08-2	1.1	415
158B0038	1D21-F2-50S	PIB (PARTS IN BODY)	45	350	NONE	Service Only. No Comatrol replacement.	-	-	-

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B0039	1D22-F6-50S	PIB (PARTS IN BODY)	45	560	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0040	1D30-E-30SV	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-E-C-XXX	SDC08-2	30	250
158B0041	1D30-F-30SV49	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-E-C-XXX	SDC08-2	30	250
158B0042	1D30-F-30SV915	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-E-C-XXX	SDC08-2	30	250
158B0044	1D41-E-8T-4S	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08-E-1-DG12S-XXX	VME08	80	315
158B0045	1D41-P3-10S	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08-E-1-DG12S-XXX	VME08	80	315
158B0046	1D41-P6-10S	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08-E-1-DG12S-XXX	VME08	80	315
158B0048	1D41-P6-4S	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08-E-1-DG12S-XXX	VME08	80	315
158B0054	1D70-R-15SV600	FC-109	1.2	350	FUNCTIONAL	CP208-4-V-0-K-C-XXX	SDC08-2	1.1	415
158B0057	1G10-P-2S895	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0058	1G10-P-2SV837	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0059	1G10-P-4S895	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0061	1G11-R3-2SV566	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0062	1G11-R3-6SV566	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0063	1G12-P6-2S895	FC-15	150	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0064	1G41-R2-10S19	PIB (PARTS IN BODY)	95	70	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0065	1G41-R2-20S19	PIB (PARTS IN BODY)	95	70	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0066	1L10-E-15SV906	FC-76	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0067	1L10-E-25SV	FC-76	150	350	FUNCTIONAL	CP201-1-V-0-E-B-XXX	CP12-2	150	250
158B0068	1L10-E-40SV38	FC-76	150	350	FUNCTIONAL	CP201-1-V-0-E-C-XXX	CP12-2	150	250
158B0071	1L10-E-50SV	FC-76	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0072	1L10-E-60SV	FC-76	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0074	1L10-F-25SV38	FC-76	150	350	FUNCTIONAL	CP201-1-V-0-E-B-XXX	CP12-2	150	250
158B0075	1L10-F-25SV9	FC-76	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0076	1L10-F-25SV917	FC-76	150	350	FUNCTIONAL	CP201-1-V-0-E-B-XXX	CP12-2	150	250
158B0077	1L10-F-40SV836	FC-76	150	350	FUNCTIONAL	CP201-1-V-0-E-C-XXX	CP12-2	150	250
158B0079	1L11-F12T-40SV	FC-76	150	350	FUNCTIONAL	CP201-1-V-12S-E-C-XXX	CP12-2	150	250
158B0082	1L22-F2-25S831	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1-B-6S-E-C-XXX	SDC10-2	75	250
158B0083	1L22-F3-15S	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1-B-8S-E-B-XXX	SDC10-2	75	250
158B0084	1L22-F3-15S831	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1-B-8S-E-B-XXX	SDC10-2	75	250
158B0085	1L22-F3-40S	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1-B-8S-E-C-XXX	SDC10-2	75	250
158B0086	1L22-F3-40S831	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1-B-8S-E-C-XXX	SDC10-2	75	250
158B0091	1L23-F4-40S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP211-2-B-S10S-F-D-XXX	CP12-2	190	350
158B0092	1L24-E4-40S875	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0093	1L24-E8T-25S794	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0094	1L24-E8T-50S831	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0095	1L24-F10T-25SV	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B0096	1L24-F4-155	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0097	1L24-F4-155831	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0098	1L24-F4-405831	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0099	1L24-F4-255831	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0104	1L24-F8T-255V8	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0105	1L24-F8T-405	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0106	1L60-F-305V732	FC-153	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0109	1LL22-E3-255917	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-B-XXX	CIB	190	250
158B0111	1LL22-F6T-155	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-B-XXX	CIB	190	250
158B0112	1LL22-F6T-255	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-B-XXX	CIB	190	250
158B0113	1LL22-F6T-405	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-C-XXX	CIB	190	250
158B0114	1LL22-F8T-155	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-B-XXX	CIB	190	250
158B0115	1LL22-F8T-155V	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-V-0-E-B-XXX	CIB	190	250
158B0116	1LL22-F8T-255	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-B-XXX	CIB	190	250
158B0118	1LL23-F12T-155	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-B-XXX	CIB	190	250
158B0119	1LL23-F12T-255	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-B-XXX	CIB	190	250
158B0120	1LL23-F12T-405	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-C-XXX	CIB	190	250
158B0122	1LL23-F12T-405V	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-V-0-E-C-XXX	CIB	190	250
158B0123	1LL23-F6-155	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-B-XXX	CIB	190	250
158B0124	1LL23-F6-155362	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-B-XXX	CIB	190	250
158B0125	1LL23-F6-255V	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-V-0-E-B-XXX	CIB	190	250
158B0126	1LL23-F6-405	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-125-B-0-E-C-XXX	CIB	190	250
158B0127	1LL23-F6-505	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0128	1LLCMS-F3W-405V	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0129	1ML33-P6T-30511	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0130	1SD10-E-35V:250	FC-13	150	40	FUNCTIONAL	CP241-8-V-0-K-B-XXX	CP12-3S	150	40
158B0131	1SD10-P-45895	FC-13	150	40	FUNCTIONAL	CP241-8-B-0-E-B-XXX	CP12-3S	150	40
158B0132	1SD10-P-65M917	FC-13	150	40	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0133	1SD10-P-65V227	FC-13	150	40	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0134	1SD10-P-65V499	FC-13	150	40	FUNCTIONAL	CP241-8-V-0-E-C-XXX	CP12-3S	150	40
158B0135	1SD11-P3-65V499	FC-13	150	40	FUNCTIONAL	CP241-8-V-105-E-C-XXX	CP12-3S	150	40
158B0136	1SD11-P4-45895	FC-13	150	40	FUNCTIONAL	CP241-8-B-105-E-B-XXX	CP12-3S	150	40
158B0137	1SD11-P6-45V33	FC-13	150	40	FUNCTIONAL	CP241-8-V-125-E-C-XXX	CP12-3S	150	40
158B0138	1SD11-P6-65V	FC-13	150	40	FUNCTIONAL	CP241-8-V-125-E-C-XXX	CP12-3S	150	40
158B0140	1G10-P-35895	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B0142	1A20-P-40SV	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0145	1A31-F6T-15SV:1000	FC-10	75	420	FUNCTIONAL	CP210-2-V-6S-E-B-100	SDC10-2	115	350
158B0146	1A32-R12T-30SV917	FC-10	150	420	FUNCTIONAL	CP210-2-V-8S-K-C-XXX	SDC10-2	115	350
158B0147	1A32-F8T-60SV917	FC-10	150	420	FUNCTIONAL	CP210-2-V-S8S-E-D-XXX	SDC10-2	115	350
158B0149	1A32-F12T-60SV33:30	FC-10	150	420	FUNCTIONAL	CP210-2-V-S8S-E-D-XXX	SDC10-2	115	350
158B0150	1SA13-3		150	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0152	1LL22-F4-25SM919	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-B-XXX	CIB	190	250
158B0153	1LL23-F12T-25S377	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-B-XXX	CIB	190	250
158B0154	1LLA11-F16T-40SV	PIB (PARTS IN BODY)	151	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0158	1LLC61-1	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0159	1LLC61-4	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0164	1UL12-P12T-8T-15/40	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0165	1UL12-P6-4-15/40SV	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0166	1UL12-P6W-4W-15/40S	PIB (PARTS IN BODY)	150	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0167	1UL15-P16T-12T-15/	PIB (PARTS IN BODY)	305	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0168	1UL15-P16T-12T-15/40SV	PIB (PARTS IN BODY)	305	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0169	1UL15-P16T-12T-30/40SV	PIB (PARTS IN BODY)	305	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0170	1UL15-P8-6-15/25SV	PIB (PARTS IN BODY)	305	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0171	1UL15-P8-6-15/40SV	PIB (PARTS IN BODY)	305	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0205	1L24-F4W-25S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0206	1A32-F12T-60SV33	FC-10	150	420	FUNCTIONAL	CP210-2-V-S8S-E-D-XXX	SDC10-2	115	350
158B0211	1DXP8489-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0217	1L23-F8T-40S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP211-2-B-S10S-F-D-XXX	CP12-2	190	350
158B0218	1D31-F6T-30SV	FC-109	30	210	FUNCTIONAL	CP208-3-V-6S-E-C-XXX	SDC08-2	30	250
158B0219	1LL22-F4W-25S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-B-XXX	CIB	190	250
158B0220	1LL22-F4W-40S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-C-XXX	CIB	190	250
158B0227	1G10-P-03S895	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0230	1L22-F3W-15S	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1-B-8S-E-B-XXX	SDC10-2	75	250
158B0237	1A230-F-30SV-U / 158G5044	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B0237	1A30-F-15SV-U / 158G5042	FC-10	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2000	1B12-P12T-15S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-1-DG8S-XXX	NCS06/2	80	350
158B2001	1B12-P3-15S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-1-DG8S-XXX	NCS06/2	80	350
158B2002	1B12-P3-30S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-2-DG8S-XXX	NCS06/2	80	350
158B2003	1B12-P4-15SV	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-1-DG8S-V-XXX	NCS06/2	80	350

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B2004	1B12-P4-30S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-2-DG8S-XXX	NCS06/2	80	350
158B2008	1B12-P6-15S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-1-DG8S-XXX	NCS06/2	80	350
158B2009	1B12-P6-8S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-1-DG8S-XXX	NCS06/2	80	350
158B2011	1E11-P3-50S45	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-3-A-1-E-175-B-6S	SDC10-3S	60	350
158B2012	1E11-P4-30S68	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-3-Z-1-E-100-B-8S	SDC10-3S	60	350
158B2014	1E11-P4-30SV45	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-3-A-1-E-175-V-8S	SDC10-3S	60	350
158B2015	1E11-P6T-30S45	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-3-A-1-E-175-B-6S	SDC10-3S	60	350
158B2017	1E11-P8T-30S45	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-3-A-1-E-175-B-8S	SDC10-3S	60	350
158B2018	1E11-P8T-50S	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-1-C-1-E-175-B-58S	SDC10-3S	60	350
158B2019	1E11-P8T-50S45	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-3-A-1-E-175-B-8S	SDC10-3S	60	350
158B2020	1E12-P4-30S284	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2022	1E14-P4-8G-30S4	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2023	1E15-E12T-30S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01-B-12S-E-A-XXX-10.0-005	CP20-3S	95	350
158B2024	1E15-E12T-30S38	PIB (PARTS IN BODY)	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2025	1E15-P12T-50S45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01-B-S12S-E-B-XXX-4.5-005	CP20-3S	95	350
158B2026	1E15-P6-12G-30S	PIB (PARTS IN BODY)	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2028	1E16-P16T-30S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2029	1E16-P16T-50S45	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2030	1E16-P16T-50S68	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2031	1E16-P8-30SV45	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2033	1E21-F16T-30S	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2034	1E21-F16T-30S88	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2035	1E21-F20F-30S	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2037	1E70-E-30SV731	-	-	-	FUNCTIONAL	CP441-1-V-0-E-B-XXX-4.5-015	CP12-3S	115	350
158B2038	1E90-F-50SV745	FC-317	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2039	1ED25-N20F-40S	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2040	1EE13-P4-50S45	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-3-B-1-E-XXX-B-8ST (Pilot Ratio 4.5:1 or 10:1 required for 350 bar)	CIB	60	350
158B2041	1EE13-P6T-30S	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-1-C-1-E-XXX-B-6S	CIB	60	350
158B2042	1EE13-P6T-30S45	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-2-B-1-E-XXX-B-6S	CIB	60	350
158B2043	1EE13-P8T-30S	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-1-C-1-E-XXX-B-8S	CIB	60	350
158B2045	1EE13-P8T-30S45	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-2-B-1-E-XXX-B-8S	CIB	60	350
158B2046	1EE13-P8T-50S	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-3-C-1-E-XXX-B-58S	CIB	60	350

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B2047	1EE15-P12T-30S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-12S-B-E-A-XXX-10.0-015	CIB	115	350
158B2048	1EE15-P6-30SV45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-12S-V-E-B-XXX-4.5-015	CIB	115	350
158B2049	1EE15-P6-50S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-S12S-B-E-A-XXX-10.0-015	CIB	115	350
158B2050	1EE15-P6-50S45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-S12S-B-E-B-XXX-4.5-015	CIB	115	350
158B2051	1EEC11-P6T-20S	CIB	60	350	FUNCTIONAL	1EEC11-01-B-6S-E-A-XXX-10.0-005	CIB	60	350
158B2052	1EEC11-P6T-30S	CIB	60	350	FUNCTIONAL	1EEC11-01-B-6S-E-A-XXX-10.0-005	CIB	60	350
158B2053	1EEC11-P6T-50S	CIB	60	350	FUNCTIONAL	1EEC11-01-B-S6S-E-A-XXX-10.0-005	CIB	60	350
158B2054	1EEC12-P4-30S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2055	1EEC12-P4-30SV	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2056	1EEC12-P6-30S45	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2058	1EEC12-P6-50SV	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2059	1EEC12-P8T-50S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2060	1EEC32-F10-30SV	PIB (PARTS IN BODY)	303	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2061	1LC11-8-SV	PIB (PARTS IN BODY)	150	175	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2062	2Z21-4-27S	PIB (PARTS IN BODY)	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2064	1EEC12-P6W-50S116	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2066	1E50-P-50SV	FC-346	57	350	FUNCTIONAL	CB10-HV	SDC10-3S	60	350
158B2067	1E50-P-25SV(10:1)	FC-346	57	350	FUNCTIONAL	CB10-HV	SDC10-3S	60	350
158B2068	1E50-P-50SV(4.5:1)	FC-346	57	350	FUNCTIONAL	CB10-HV	SDC10-3S	60	350
158B2069	1E50-P-25SV(4.5:1)	FC-346	57	350	FUNCTIONAL	CB10-HV	SDC10-3S	60	350
158B2070	1E15-E12T-30S458	PIB (PARTS IN BODY)	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2071	1E15-P12T-12G-30S45	PIB (PARTS IN BODY)	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2072	1E15-P12T-12G-50S22	PIB (PARTS IN BODY)	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2073	1E15-P6-12G-30S45	PIB (PARTS IN BODY)	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2074	1E16-P16T-16G-50S45	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2075	1E16-P8-16G-30S45	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2076	1E16-P8-16G-30SV	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2077	1E21-E10-30SV787	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2079	1E80-E-50SV(4:1)873	FC-173	95	350	FUNCTIONAL	CP441-1-V-0-E-B-36S-4.5-015	CP12-3S	115	350
158B2080	1E80-E-50SV(4:1)874	FC-173	95	350	FUNCTIONAL	CP441-1-V-0-E-B-310-4.5-015	CP12-3S	115	350
158B2085	1E80-F-50SV(8.5:1)933	FC-173	95	350	FUNCTIONAL	CP441-1-V-0-E-A-XXX-10.0-015	CP12-3S	115	350
158B2086	1ED25-N20F-40S10	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2087	1ED25-N20F-40S932	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2088	1EE15-P12T-30S45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-12S-B-E-B-XXX-4.5-015	CIB	115	350
158B2090	1EE21-F20T-30S88	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2091	1EEC11-P6T-30S45	CIB	60	350	FUNCTIONAL	1EEC11-01-B-6S-E-B-XXX-4.5-005	CIB	60	350
158B2092	1EEC12-P12T-50S45	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2093	1EEC32-F10-30SV88	PIB (PARTS IN BODY)	303	210	NONE	Service Only. No Comatrol replacement.	-	-	-

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B2094	1EEC32-F20T-30SV	PIB (PARTS IN BODY)	303	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2095	1EEC32-F16T-30SV88	PIB (PARTS IN BODY)	303	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2096	1LC11-F16T-40SV33	PIB (PARTS IN BODY)	150	175	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2097	1E14-P3-6G-50S45	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2098	1E16-P16T-50SV	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2103	1E16-P8-50S530	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2105	1E50-P-40SV	FC-346	57	350	FUNCTIONAL	CB10-HV	SDC10-3S	60	350
158B2112	1E11-P3W-30S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2113	1E11-P3W-30S45	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2114	1E11-P3W-50S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2115	1E11-P4W-30S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2116	1E11-P4W-30S116	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2117	1E11-P4W-30S45	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2118	1E11-P4W-50S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2119	1E11-P4W-50S45	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2124	1EEC12-P6W-50S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2128	1EEC12-P6W-50S45	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2129	1E15-P6W-12G-50S45	PIB (PARTS IN BODY)	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2130	1EE13-P3W-50S45	PIB (PARTS IN BODY)	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2137	1E16-P8W-30S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2138	1E16-P8W-50S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2139	1E21-F10W-30S	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B2140	1E21-F10W-30S88	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3000	1PA10-F-15S917	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3001	1PA10-F-15SM917	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3003	1PA11-F3-30SV	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3005	1PD11-F6T-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-D-XXX	SDC10-3	40	210
158B3006	1PD11-F6T-3S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-A-XXX	SDC10-3	40	210
158B3007	1PD11-F6T-3SV	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-V-6S-E-A-XXX	SDC10-3	40	210
158B3008	1PD11-F6T-6S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-B-XXX	SDC10-3	40	210
158B3009	1PD11-F6T-6S38	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-B-XXX	SDC10-3	40	210
158B3010	1PD11-F6T-9S40	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-C-XXX	SDC10-3	40	210
158B3012	1PD11-R2-6S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-K-B-XXX	SDC10-3	40	210

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B3013	1PD11-R2-6SV	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-V-45-K-B-XXX	SDC10-3	40	210
158B3014	1PD11-R2-9S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-45-K-C-XXX	SDC10-3	40	210
158B3015	1PD11-R6T-3S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-65-K-A-XXX	SDC10-3	40	210
158B3017	1PD12-F3-3S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-65-E-A-XXX	SDC10-3	40	210
158B3018	1PD12-F3-9S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-65-E-C-XXX	SDC10-3	40	210
158B3019	1PD12-R3-9S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-65-K-C-XXX	SDC10-3	40	210
158B3021	1PD13-C2-9S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3022	1PD13-C6T-9S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3023	1PD14-F4G-05S7	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3024	1PD14-F4G-3S7	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3025	1PD14-R4G-3S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3026	1PD14-R4G-6S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3028	1PD15-F3-3S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3029	1PD15-F3-6S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3030	1PD15-F3-9S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3031	1PD15-F6T-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3032	1PD15-F6T-9S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3033	1PD15-R3-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3035	1PD15-R3-6S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3036	1PD15-R3-9S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3038	1T11-4T-6S579	PIB (PARTS IN BODY)	164cc/min	690	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3039	1TR11-T-6S	PIB (PARTS IN BODY)	164cc/min	690	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3045	1PD11-F2W-9S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-45-E-C-XXX	SDC10-3	40	210
158B3048	1PD11-F2W-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-45-E-D-XXX	SDC10-3	40	210
158B3049	1PAA21-R6W-30S	PIB (PARTS IN BODY)	115	245	FUNCTIONAL	CP231-3-B-12S-K-C-XXX	SDC12-3S	115	350
158B3050	1PAA21-P4W-30S	PIB (PARTS IN BODY)	115	245	FUNCTIONAL	CP231-3-B-10S-E-C-XXX	SDC12-3S	115	350
158B3052	1PAA21-P4W-15S	PIB (PARTS IN BODY)	115	245	FUNCTIONAL	CP231-3-B-10S-E-B-XXX	SDC12-3S	115	350
158B3062	1PD12-F3W-6S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-65-E-B-XXX	SDC10-3	40	210
158B3063	1PA10-F-30SV	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3501	2F10-N-1.0S	FC-60	76	210	FUNCTIONAL	CP311-1-B-0-1.0	CP12-3	95	210
158B3503	2F10-N-2.5S	FC-60	76	210	FUNCTIONAL	CP311-1-B-0-2.5	CP12-3	95	210
158B3504	2F10-N-3.0S	FC-60	76	210	FUNCTIONAL	CP311-1-B-0-3.0	CP12-3	95	210

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B3505	2F10-N-3.0SM917	FC-60	76	210	FUNCTIONAL	CP311-1-B-0-3.0	CP12-3	95	210
158B3506	2F10-N-5.0S	FC-60	76	210	FUNCTIONAL	CP311-1-B-0-5.0	CP12-3	95	210
158B3508	2F74-D3-3-45629	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3509	2F74-P3-3-85645	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3510	2F74-P6T-6T-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3511	2F75-P8T-8T-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3513	2F77-P8-8-50SV	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3514	2F84-P3-3-3-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3515	2F84-P3-3-3-8SV	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3516	2F84-R3-3-3-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3517	2F86-D6-6-6-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3518	2F86-L4-4-4-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3519	2F86-L6-6-6-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3520	2F87-P8-8-8-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3521	2F94-P3-3-3-1S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	2F94-01-B-6S-E-8.0	CIB	30	210
158B3522	2F95-P4-4-4-2S	PIB (PARTS IN BODY)	60	210	NONE	2F95-01-B-8S-E-15	CIB	60	210
158B3523	2F95-P4-4-4-3S	PIB (PARTS IN BODY)	60	210	NONE	2F95-01-B-8S-E-15	CIB	60	210
158B3524	2F96-L6-6-6-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-B-12S-E-25	CIB	95	210
158B3525	2F97-L8-8-8-40S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	2F97-01-B-16S-E-50	CIB	190	210
158B3526	2FA84-P3-8/30S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3527	2FA84-R6T-8/17S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3528	2FA85-P4-8/17S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3531	2FC74-P6T-6T-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3532	2FC75-P4-4-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3533	2FC76-P6-6-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3534	2FC77-P8-8-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3535	2FF12-D6-5/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3539	2FFL12-DG-5/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3540	2FFL12-DG-7/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3541	2FFL12-D12T-5/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3542	2FFL12-D6-7/10SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3543	2FFL12-D12T-7/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3544	2FFLC12-D6-5/10SV	CIB	150	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3545	2FFLC12-D6-5/15SV,	CIB	150	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-

Cross reference list
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Cartridge Valves Technical Information
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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B3546	2FFLC12-D6-7/15SV,	CIB	150	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3547	2FFLC12-D12T-5/15SV	CIB	150	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3548	2FFLW86-D6-10/30SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3551	2FL12-D6-15SV	CIB	150	140	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3552	2FL12-D6W-10SV	CIB	150	140	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3554	2FLW86-D6-15SV	CIB	150	140	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3555	2V13-3-3SV	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-V-65-22	SDC10-4	45	210
158B3556	2V13-4-3-6SV	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-V-65-33	SDC10-4	45	210
158B3557	2V13-8T-6T-15S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-65-66	SDC10-4	45	210
158B3558	2V13-8T-6T-3S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-65-22	SDC10-4	45	210
158B3559	2V13-8T-6T-3SV	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-V-65-22	SDC10-4	45	210
158B3560	2V13-8T-6T-6S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-65-33	SDC10-4	45	210
158B3565	2V16-20T-16T-60S	PIB (PARTS IN BODY)	230	210	FUNCTIONAL	CP343-1-B-20S-3030	SDC20-4	340	210
158B3566	2F86-L12T-12T-12T-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3567	2F86-D12T-12T-12T-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3568	2F86-P12T-12T-12T-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3569	2F86-P6-6-6-25SV	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3572	2F76-P12T-12T-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3573	2F76-L12T-12T-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3574	2F76-L4-4-10S638	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3575	2FC76-P12T-12T-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3576	2F14-N8T-8T-8T-1.5S	FC-60	76	210	FUNCTIONAL	CP311-1-B-10S-1.5	CP12-3	95	210
158B3577	2F87-P16T-16T-16T-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3578	2F87-P8-8-8-50SV	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3580	2F77-R16T-16T-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3581	2F85-P8T-8T-8T-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3582	2F85-D8T-8T-8T-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3583	2F85-P4-4-4-15SV	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3585	2F94-P6T-6T-6T-8SV	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	2F94-01-V-6S-E-8.0	CIB	30	210
158B3587	2F95-P8T-8T-8T-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	2F95-01-B-8S-E-15	CIB	60	210
158B3589	2F96-P12T-12T-12T-25SV	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-V-12S-E-25	CIB	95	210
158B3590	2F96-D12T-12T-12T-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-B-12S-E-25	CIB	95	210
158B3593	2F96-P12T-12T-12T-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-B-12S-E-25	CIB	95	210

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B3594	2F96-P6-6-6-25SV	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-V-12S-E-25	CIB	95	210
158B3597	2F97-P8-8-8-50SV	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	2F97-01-V-16S-E-50	CIB	190	210
158B3600	2F97-E16T-16T-16T-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	2F97-01-V-16S-E-50	CIB	190	210
158B3602	2F97-N16T-2.2S846 (Fixed)	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	2F97-01-B-16S-E-50 (Adjustable)	CIB	190	210
158B3603	2F97-P16T-16T-16T-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	2F97-01-B-16S-E-50	CIB	190	210
158B3606	2FA86-D12T-25/30SV	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3611	2FA86-P12T-25/30S,	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3615	2FC75-R4-4-15S250	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3616	2FC77-P16T-16T-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3617	2FF12-D6-10/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3618	2FF12-D12T-10/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3620	2FFC12-D6-10/20SV	CIB	150	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3621	2FFC12-D6-5/15SV	CIB	150	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3622	2FFC12-D6-7/15SV	CIB	150	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3624	2FFL12-D12T-10/30SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3625	2FFL12-D6-10/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3627	2FFL12-D6-20/25SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3628	2FFL12-D6-5/10SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3629	2FL11-P4-4-2-2-5S	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3630	2V14-16T-12T-25S	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1-B-16S-1212	CP16-4	150	210
158B3631	2V14-16T-12T-25SV,	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1-V-16S-1212	CP16-4	150	210
158B3632	2V14-16T-12T-30(2.0:1)S	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1-B-16S-1020	CP16-4	150	210
158B3633	2V14-16T-12T-40S	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1-B-16S-2020	CP16-4	150	210
158B3634	2V14-16T-12T-50S (1.45:1)	PIB (PARTS IN BODY)	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3635	2V14-8-6-30(2.05:1)S	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1-B-16S-2020	CP16-4	150	210
158B3636	2V16-20T-16T-60SV	PIB (PARTS IN BODY)	230	210	FUNCTIONAL	CP343-1-V-20S-3030	SDC20-4	340	210
158B3637	2V21-L16T-12T-12T-4	PIB (PARTS IN BODY)	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3638	2V21-L8-6-6-40SV	PIB (PARTS IN BODY)	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B3641	2FA85-P8T-15/30S, B	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3642	2FA85-P4W-15/17S, A	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3643	2F85-R4W-4W-4W-15S917	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3644	2FC76-P6W-6W-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3646	2F95-P8T-8T-8T-15V	PIB (PARTS IN BODY)	60	210	NONE	2F95-01-V-8S-E-15	CIB	60	210
158B3647	2F95-P8T-8T-8T-15V	PIB (PARTS IN BODY)	60	210	NONE	2F95-01-V-8S-E-15	CIB	60	210

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B3648	2FA86-D6W-25/30S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3649	2F96-L6-6-6-25S11	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-V-12S-E-25	CIB	95	210
158B3650	2V14-16T-12T-40S33	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1-B-S16S-2020	CP16-4	150	210
158B3653	2F84-R3W-3W-3W-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3654	2F94-P3W-3W-3W-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	2F94-01-B-6S-E-8.0	CIB	30	210
158B3655	2F94-P3W-3W-3W-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	2F94-01-B-6S-E-8.0	CIB	30	210
158B3656	2F95-P4W-4W-4W-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	2F95-01-B-8S-E-15	CIB	60	210
158B3657	2F95-R4W-4W-4W-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	2F95-01-B-8S-K-15	CIB	60	210
158B3661	2F96-P6W-6W-6W-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-B-12S-E-25	CIB	95	210
158B3662	2F74-P3W-3W-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3665	2F74-R3W-3W-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3666	2F86-R6W-6W-6W-25	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3668	2F76-P6W-6W-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3669	2F86-P6W-6W-6W-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3670	2FA85-P4W-15/30S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B3674	2F75-P4W-4W-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B4500	2N11-R2-S	INLINE	45	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4501	2R11-P2-SV	INLINE	45	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4502	2R11-R2-S	INLINE	45	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4505	2RN11-4T-030	INLINE	20	350	DIRECT	2RN11-01-4S-003-030	IN-LINE	20	350
158B4508	2RN12-3-.020	INLINE	30	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4509	2RN12-3-.030	INLINE	30	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4511	3C11-2-15N1	INLINE	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4512	3C11-4T-15	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3C11-01-4S-15	PIB (PARTS IN BODY)	20	350
158B4513	3C11-4T-3	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3C11-01-4S-3	PIB (PARTS IN BODY)	20	350
158B4514	3C12-3-100N1	INLINE	35	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4515	3C12-3-45	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3C12-01-6S-45	PIB (PARTS IN BODY)	35	350
158B4517	3C12-3-65	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3C12-01-6S-65	PIB (PARTS IN BODY)	35	350
158B4518	3C13-4-45	PIB (PARTS IN BODY)	70	350	FUNCTIONAL	3C13-01-8S-45	PIB (PARTS IN BODY)	70	350
158B4519	3C14-12T-15	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3C14-01-12S-15	PIB (PARTS IN BODY)	95	350
158B4520	3C14-12T-3	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3C14-01-12S-3	PIB (PARTS IN BODY)	95	350
158B4521	3C14-12T-45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3C14-01-12S-45	PIB (PARTS IN BODY)	95	350
158B4522	3C14-6-15	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3C14-01-12S-15	PIB (PARTS IN BODY)	95	350

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B4523	3C14-6-45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3C14-01-125-45	PIB (PARTS IN BODY)	95	350
158B4524	3C15-16T-100	INLINE	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4525	3C15-16T-15	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3C15-01-165-15	PIB (PARTS IN BODY)	150	350
158B4526	3C15-16T-45	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3C15-01-165-45	PIB (PARTS IN BODY)	150	350
158B4527	3C15-16T-65	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3C15-01-165-65	PIB (PARTS IN BODY)	150	350
158B4528	3C15-8-100	INLINE	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4529	3C15-8-45	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3C15-01-165-45	PIB (PARTS IN BODY)	150	350
158B4530	3C15-8-65	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3C15-01-165-65	PIB (PARTS IN BODY)	150	350
158B4531	3C16-20T-65	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3C16-01-205-65	PIB (PARTS IN BODY)	230	350
158B4533	3C50-SV12	FC-144	70	210	DIRECT	3C50-01-V-0-005	FC-144	70	210
158B4534	3C90-SV826	DROP IN	190	350	FUNCTIONAL	3C90	-	-	-
158B4535	3CM11-2-3S	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3CM11-01-B-6F-6F-3	PIB (PARTS IN BODY)	20	350
158B4536	3CM11-6T-65S	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3CM11-01-B-6F-6F-65	PIB (PARTS IN BODY)	20	350
158B4537	3CM12-3-3S	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3CM12-01-B-8F-8F-3	PIB (PARTS IN BODY)	35	350
158B4538	3CM12-8T-15SV	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3CM12-01-V-8F-8F-15	PIB (PARTS IN BODY)	35	350
158B4539	3CM12-8T-20S	INLINE	35	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4540	3CM12-8T-35V	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3CM12-01-V-8F-8F-3	PIB (PARTS IN BODY)	35	350
158B4542	3CM12-8T-5S	INLINE	35	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4545	3CM14-12T-15S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3CM14-01-B-12F-12F-15	PIB (PARTS IN BODY)	95	350
158B4546	3CM14-12T-3S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3CM14-01-B-12F-12F-3	PIB (PARTS IN BODY)	95	350
158B4547	3CM14-12T-45S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3CM14-01-B-12F-12F-45	PIB (PARTS IN BODY)	95	350
158B4548	3CM14-6-3S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3CM14-01-B-12F-12F-3	PIB (PARTS IN BODY)	95	350
158B4549	3CM15-16T-15S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3CM15-01-B-16F-16F-15	PIB (PARTS IN BODY)	150	350
158B4550	3CM15-16T-35V	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3CM15-01-V-16F-16F-3	PIB (PARTS IN BODY)	150	350
158B4551	3CM15-8-3S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3CM15-01-B-16F-16F-3	PIB (PARTS IN BODY)	150	350
158B4552	3CM16-20T-3S	INLINE	230	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4554	3CM16-20T-65S	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3CM16-01-B-20F-20F-65	PIB (PARTS IN BODY)	230	350
158B4555	4K14-6-SV	INLINE	-	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4556	4K19-N2-S	PIB (PARTS IN BODY)	25	690	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4557	4K21-K3-S3	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4558	4K21-N2-S3	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4559	4K21-N3-S3	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4560	4K21-N6T-S	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-

Cross reference list
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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B4561	4K21-N6T-SV3	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4562	4K32-N2-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B4564	4K32-N4-8G-2-S	PIB (PARTS IN BODY)	70	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4565	4K32-N4-S107	PIB (PARTS IN BODY)	70	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4567	4K32-N4-S3	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B4568	4K32-N6T-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B4569	4K32-N8T-S921	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B4570	4K33-N2-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4571	4K33-N3-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4572	4K33-N3-S3	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4574	4K33-N4-S3	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4575	4K33-N4T-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4576	4K33-N6T-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4577	4K33-N8T-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4578	4K35-N6-12G-2-S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4579	4K35-N6-S3	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP453-5-B-16S-4-065	SDC20-2	250	350
158B4580	4K35-N6-SV3	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP453-5-V-16S-4-065	SDC20-2	250	350
158B4581	4K41-N10-S665	PIB (PARTS IN BODY)	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4582	4K41-N20F-S	PIB (PARTS IN BODY)	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4583	4K41-N20F-S819	PIB (PARTS IN BODY)	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4584	4K70-2-S3	FC-173	75	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4585	4K70-I-SV	FC-173	75	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4587	4KK21-N2-S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	CP410-1-B-6S-0-065	CIB	85	210
158B4588	4KK21-N4T-S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	CP410-1-B-6S-0-065	CIB	85	210
158B4589	4KK32-N3-S3	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-6S-5-065	CIB	85	210
158B4591	4KK32-N4-SV	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-V-8S-0-065	CIB	85	210
158B4592	4KK32-N6T-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-6S-0-065	CIB	85	210
158B4593	4KK32-N6T-S3	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-6S-5-065	CIB	85	210
158B4594	4KK32-N8T-S3	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-8S-5-065	CIB	85	210
158B4595	4KK32-N8T-S444	PIB (PARTS IN BODY)	70	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B4596	4KK33-N2-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-

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OLD VALVES					NEW VALVES					
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
158B4597	4KK33-N2-S3	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4599	4KK33-N6T-S3	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4600	4KK33-N8T-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4602	4KK35-N12T-S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4603	4KK35-N12T-SV	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4604	4KK33-N4-S542	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4605	4K21-N3W-S	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4608	3C11-2-3	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3C11-01-45-3	PIB (PARTS IN BODY)	20	350	
158B4609	3C12-3-3	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3C12-01-65-3	PIB (PARTS IN BODY)	35	350	
158B4610	3C13-4-3	PIB (PARTS IN BODY)	70	350	FUNCTIONAL	3C13-01-85-3	PIB (PARTS IN BODY)	70	350	
158B4617	4K11-2-S	INLINE	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4618	4K12-3-S	INLINE	30	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4621	4K21-G-S	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4622	4K70-2-S	FC-173	75	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4624	2RN11-4T-021	INLINE	20	350	DIRECT	2RN11-01-45-003-021	IN-LINE	20	350	
158B4627	3C13-4W-65	INLINE	70	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4628	4KK33-N4-S946	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4629	4KXP4065-004	PIB (PARTS IN BODY)	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B4632	4KK32-N3W-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-65-0-065	CIB	85	210	
158B4633	4KK32-N4W-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-85-0-065	CIB	85	210	
158B4634	4K32-N3W-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-	
158B4635	4K21-N6T-SV3/377	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B5501	7W14-216T-M24SV	PIB (PARTS IN BODY)	230	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
158B5503	7W20-2-SV356	FC-109	0.75	210	FUNCTIONAL	SV08-22-02	SDC08-2	16	230	
158B5505	7W21-22-12SV	FC-109	0.75	210	FUNCTIONAL	SV08-22-02	SDC08-2	16	230	
158B5509	7W31-1-6T-12SV	FC-109	7.5	230	FUNCTIONAL	SVP08-NO-12D-L-V-00	SDC08-2	35	230	
158B5512	7W41-22-24SV	FC-109A	2	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230	
158B5514	7W41-26T-12SV	FC-109A	2	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230	
158B5517	7W30-2-24SV	FC-109	7.5	210	FUNCTIONAL	SVP08-NC-24D-L-V-00	SDC08-2	35	230	
158B5519	7AR15-P12T-30-1-12S	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-	
158B5520	7AR15-P6-30-1-12SV	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-	
158B5521	7AR15-P16T-30-1-12S	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-	
158B5522	7AR15-P16T-30-1-12SV910	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-	
158B5523	7AR15-P16T-30-1-H12	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-	
158B5525	7W20-2-HS115SV356	FC-109	0.75	210	NONE	Service Only. No Comatrol replacement.	-	-	-	

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B5526	7W30-2-C115SV356	FC-109	7.5	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5527	7W50-1-DC1155597	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5528	7W50-2-DC1155597	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5530	7W50-2-DC1155651	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5531	7W50-2-DC125V651	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5532	7W50-2-DC1155V782	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5533	7W50-2-DC1155V892	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5534	7W61-12-DC1155329	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5535	7W70-1-DC1155713	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5536	7W70-1-DC1155329	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5538	7W70-1-DC125V651	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5541	7WA81-P12T-30-1-H12	FC-10	76	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5542	7WA81-P12T-30-2-H24SV812	FC-10	76	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5543	7WA81-P12T-30-2-24SV812	FC-10	76	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5545	7W41-26T-D24SV38	FC-109A	2	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230
158B5546	7W14-116T-H12SV	PIB (PARTS IN BODY)	230	210	FUNCTIONAL	CP503-4-V-16S-12D-H	SDC20-2	230	210
158B5547	1E11-P4W-30S45	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B5548	7W14-216T-12SV	PIB (PARTS IN BODY)	230	210	FUNCTIONAL	CP503-3-V-16S-12D-L	SDC20-2	230	210
158B5550	7WA81-P12T-30-1-H24SV	FC-10	76	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6005	1ARXP7423-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6008	1AXP2669-3820	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6010	1AXP3032-5800-R	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6011	1AXP3032-5810-R	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6013	1AXP3722-0447	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6015	1AXP4091-1788	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6020	1AXP6248-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6023	1AXP6398-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6027	1AXP7941-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6028	1AXP8378-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6032	1BBXP928-006	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6033	1CXP5586-9406	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6040	1DXP5242-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6041	1DXP5639-7440	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6045	1DXP7269-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6046	1DXP7269-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6049	1DXP7423-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6052	1EEEXP1696-006	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6056	1EEKXP5408-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6057	1EEXP1887-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6058	1EEXP3074-005	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6063	1EXP2147-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6064	1EXP2147-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6065	1EXP2364-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6068	1EXP4429-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6069	1EXP4429-007	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6072	1EXP4606-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B6075	1EXP6146-3105	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6077	1EXP656-0025V	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6087	1GXP2057-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6088	1GXP3090-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6089	1G10-P-45895	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6089	1GXP5377-001/1G10-P-035895	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6090	1GXP6317-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6095	1LXP2140-006	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6102	1LXY7305-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6103	1PAACP7547-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6105	1PACXP7531-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6106	1PACXP7884-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6109	1PDXP2490-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6110	1PDXP2802-106	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6111	1PDXP2802-107	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6114	1PDXP4097-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6118	1PDXP5283-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6122	1PDXP6843-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6127	1SADXP8052-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6138	1SAXP5133-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6140	1SAXP5278-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6141	1SAXP6233-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6147	1SDXP4125-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6148	1SDXP4125-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6149	1SDXP4237-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6153	1SUAXP6716-300	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6154	1SXP3632-1319	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6155	1UAXP2068-007	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6160	1XP5306-3070	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6161	1A30-R-305V	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-K-C-XXX	SDC10-2	115	350
158B6164	2FDWXP6154-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6165	2FFLXP2754-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6166	2FFXP2786-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6169	2FLWXP7170-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6170	2FLWXP7261-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6171	2FLWXP7261-004M	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6172	2FLWXP7261-006	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6173	2FLXP1737-008	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6175	2FPCXP7170-1	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6177	2FWCXP7105-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6178	2FWCXP7106-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6184	2FXP3035-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6185	2FXP3722-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6186	2FXP3738-007	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6188	2FXP5078-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6191	2FXP5594-005	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6195	2FXP7320-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B6196	2FXP7385-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6197	2FXP7417-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6200	2FXP7804-200	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6203	2NXP7476-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6205	2RXP7448-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6206	2UFWXP7771-005	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6213	2VXP5440-009	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6214	2VXP6341-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6216	2VXP6989-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6217	2VXP6989-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6218	2VXP6989-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6219	2VXP6989-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6222	2XP1823-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6223	2ZXP2192-108	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6224	2ZXP2192-109	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6225	2ZXP3959-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6227	2ZXP5183-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6228	2ZXP5184-201	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6229	2ZXP5185-201	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6230	2ZXP5186-201	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6232	2ZXP5701-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6234	2ZXP5701-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6235	2ZXP5701-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6236	2ZXP5701-005	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6237	2ZXP5701-006	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6238	2ZXP829-524	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6240	2ZXP829-624	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6244	3CXP5024-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6248	3CXP7471-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6249	3CXP7725-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6250	3CXP7726-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6251	3CXP7727-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6252	3CXP7728-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6255	3CXP8141-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6256	3CXP8141-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6262	4KXP7330-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6264	4KKDXP1411-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6267	4KKXP4975-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6270	4KLXP1267-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6272	4KLXP4039-102	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6273	4KVXP5959-008	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6275	4KXP1685-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6276	4KXP2365-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6278	4KXP3067-006	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6280	4KXP5266-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6282	4KXP7328-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6283	4LCXP1281-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6285	4MCXP7602-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-

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Cartridge Valves Technical Information
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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B6290	4MXP7493-005	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6291	4MXP7614-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6296	4XP4038-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6297	4XP4038-5756	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6298	4XP4432-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6300	4XP4502-610	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6302	4XP5970-012	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6303	4XP6474-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6310	7WXP6933-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6314	7WXP7073-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6316	7WXP7452-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6323	7WXP2126-070	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6325	7WXP2126-500	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6326	7WXP2126-600	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6329	7WXP4774-500	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6330	7WXP4774-600	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6337	7WXP7049-200	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6338	7WXP7299-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6340	7WXP7427-200-20	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6345	7WXP7793-100	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6346	7WXP8030-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6348	Plunger Op. 4-way	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6356	7WXP7406-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6357	Load Sensing HIC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6358	1EEXP967-009	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6362	1PACXP8455-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6363	2FLWXP7261-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6365	2FWDXP7173-005	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6370	4KKAXP8456-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6371	3CXP3169-001	-	-	-	NONE	Propretary to CATERPILLAR. Service Only. No Comatrol replacement.	-	-	-
158B6373	7WCXP8489-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6376	4KCXP8206-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6379	Insert Type Check Valve	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6380	2FWXP8707-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6381	2FWXP8707-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6386	1PDCXP7547-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B6387	092G0210-A	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8002	2FR820-N-50SV	FC-329	190	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8005	3C800-55V	FC-329	300	350	FUNCTIONAL	CP103-1-V-0-005	SDC20-2	380	210
158B8006	3C800-655V	FC-329	300	350	FUNCTIONAL	CP103-1-V-0-065	SDC20-2	380	210
158B8012	4H810-1-SV	FC-329B	303	350	FUNCTIONAL	CP723-1-V-0-150-51	SDC20-4	265	210
158B8201	B115VAC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8203	Coil Replacement Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8204	Coil Replacement Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8207	D24VDC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8209	M24VDC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8210	Coil Replacement Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8212	7W440-D	FC-316A	25	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B8222	7WA110-2	FC-10	76	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8230	935451	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8235	M12VDC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8236	S24VDC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8400	1PAA400-R-15SV917	FC-316A	75	350	FUNCTIONAL	CP231-3-V-0-K-B-XXX	SDC12-3S	115	350
158B8401	1RSA400-2P-12SV	FC-316D	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8404	2V400-N-5SV917	FC-316D	40	350	FUNCTIONAL	CP342-3-U-0-0303	CP16-4	150	450
158B8413	1D400-E-50SV:5000	FC-316	55	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8414	1L400-E-50SV:4200	FC-316	115	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8416	3C400-5SV944	FC-316	115	350	FUNCTIONAL	CP100-3-V-0-005	SDC10-2	115	350
158B8422	1A400-P-50SV945	FC-316	115	350	FUNCTIONAL	CP210-2-V-0-K-D-XXX	SDC10-2	115	350
158B8600	2FPC600-SV913	FC-324B	155	350	FUNCTIONAL	CP312-4-V-0-0-100	CP16-4	130	210
158B8603	4H610-2-SV944	FC-324B	150	350	FUNCTIONAL	CP722-2-V-0-150-51	CP16-4	130	210
158B8805	K-P7271-1	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8810	K-P7771-005	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8811	SFFL1-6-4 Subplate Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8814	1SD10-S	FC-13	150	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8816	4RH11-S	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8817	800023	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8818	800037	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8840	800090	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8854	K9P7448	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8862	934965	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8863	934966	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8864	934968	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8865	934974	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8868	800001SV	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8884	810001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8896	972026	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8897	1E80	FC-173	95	350	FUNCTIONAL	CP441-1	CP12-3S	115	350
158B8898	7W20-SV	FC-109	0.75	210	FUNCTIONAL	SV08-22-02	SDC08-2	16	230
158B8904	K-4KK33	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8905	K-P5594	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8906	SPAA1-8T	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8922	Seal Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8924	Adapter Kit (DS)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8927	Motor Mounting Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8928	Kit (DH)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8930	Kit (DH 10:1)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8931	Kit (Single Relief, DS)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8932	Kit (Dual Relief, DS)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8933	Kit (Single Relief, DH)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8934	Kit (Dual Relief, DH)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8943	Seal Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8944	Seal Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8962	Repair Kit - Detent Handknob	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B8963	4C30-SVKIT	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-

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Cartridge Valves Technical Information
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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B8972	Repair Kit - Manual Lever	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9300	98402-2WA	-	-	-	FUNCTIONAL	CP10-2-2B	-	-	-
158B9301	98402-2WS	-	-	-	FUNCTIONAL	CP10-2-52B	-	-	-
158B9302	98402-3WA / 221214	-	-	-	FUNCTIONAL	CP10-2-3B	-	-	-
158B9303	98402-3WS	-	-	-	FUNCTIONAL	C10-2-53B	-	-	-
158B9304	98402-6TA / 220125	-	-	-	FUNCTIONAL	CP10-2-6S	-	-	-
158B9305	98402-6TS	-	-	-	FUNCTIONAL	CP10-2-56S	-	-	-
158B9306	98402-8TA / 220126	-	-	-	FUNCTIONAL	CP10-2-8S	-	-	-
158B9307	98402-8TS	-	-	-	FUNCTIONAL	CP10-2-58S	-	-	-
158B9308	98403-2WA	-	-	-	FUNCTIONAL	CP10-3-2B	-	-	-
158B9309	98403-2WS	-	-	-	FUNCTIONAL	CP10-3-52B	-	-	-
158B9310	98403-3WA / 221297	-	-	-	FUNCTIONAL	CP10-3-3B	-	-	-
158B9311	98403-3WS	-	-	-	FUNCTIONAL	CP10-3-53B	-	-	-
158B9312	98403-6TA / 220205	-	-	-	FUNCTIONAL	CP10-3-6S	-	-	-
158B9313	98403-6TS	-	-	-	FUNCTIONAL	CP10-3-56S	-	-	-
158B9314	98403-8TA / 220206	-	-	-	FUNCTIONAL	CP10-3-8S	-	-	-
158B9315	98403-8TS	-	-	-	FUNCTIONAL	CP10-3-58S	-	-	-
158B9316	98404-2WA	-	-	-	FUNCTIONAL	CP10-4-2B	-	-	-
158B9317	98404-2WS	-	-	-	FUNCTIONAL	CP10-4-52B	-	-	-
158B9318	98404-3WA / 221300	-	-	-	FUNCTIONAL	CP10-4-3B	-	-	-
158B9319	98404-3WS	-	-	-	FUNCTIONAL	CP10-4-53B	-	-	-
158B9320	98404-6TA / 220448	-	-	-	FUNCTIONAL	CP10-4-6S	-	-	-
158B9321	98404-6TS	-	-	-	FUNCTIONAL	CP10-4-56S	-	-	-
158B9322	98404-8TA / 220449	-	-	-	FUNCTIONAL	CP10-4-8S	-	-	-
158B9323	98404-8TS	-	-	-	FUNCTIONAL	CP10-4-58S	-	-	-
158B9324	Mix & Match Steel Body	-	-	-	FUNCTIONAL	FC-173A-12S/6S	-	-	-
158B9325	981152-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9326	Mix & Match Body	-	-	-	FUNCTIONAL	FC-76-16S-T2	-	-	-
158B9329	Mix & Match Body	-	-	-	FUNCTIONAL	FC-10-8S-T1	-	-	-
158B9330	Mix & Match Body	-	-	-	FUNCTIONAL	FC-10-6S-XM	-	-	-
158B9331	982072-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9332	982102-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9333	982079	-	-	-	FUNCTIONAL	FC-10-4S-XM	-	-	-
158B9334	982095-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9335	982096-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9336	982097-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9337	982101-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9338	982103-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9340	Mix & Match Body (SAE 6)	-	-	-	FUNCTIONAL	FC-10-6S-T1	-	-	-
158B9344	982271-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9346	982274-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9347	982275-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9348	Mix & Match Body	-	-	-	FUNCTIONAL	FC-13-6S-T1	-	-	-
158B9349	982283-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9352	983035-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9353	98403-2A	-	-	-	FUNCTIONAL	CP10-3-2P	-	-	-
158B9356	Mix & Match Body	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9359	983030-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B9360	98403-2S	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9363	983081-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9365	983314-U	-	-	-	FUNCTIONAL	CP16-2-S16S	-	-	-
158B9367	983318-U	-	-	-	FUNCTIONAL	CP16-4-S16S	-	-	-
158B9369	983327-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9371	98402-2A	-	-	-	FUNCTIONAL	CP10-2-2P	-	-	-
158B9372	98402-2S	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9373	98402-3A / 22092	-	-	-	FUNCTIONAL	CP10-2-3P	-	-	-
158B9374	98402-3S	-	-	-	FUNCTIONAL	CP10-2-53P	-	-	-
158B9375	98403-3A / 220203	-	-	-	FUNCTIONAL	CP10-3-3P	-	-	-
158B9376	98403-3S	-	-	-	FUNCTIONAL	CP10-3-53P	-	-	-
158B9377	98404-2A	-	-	-	FUNCTIONAL	CP10-4-2P	-	-	-
158B9378	98404-2S	-	-	-	FUNCTIONAL	CP10-4-52P	-	-	-
158B9379	98404-3A / 220446	-	-	-	FUNCTIONAL	CP10-4-3P	-	-	-
158B9380	98404-3S	-	-	-	FUNCTIONAL	CP10-4-53P	-	-	-
158B9383	981587-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9384	981597-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9385	982002-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9386	Body, Aluminum	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9387	Steel Body	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9720	1AR15-16T	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B9750	1AR15-16T Special	PIB (PARTS IN BODY)	225	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9751	1AR17-20T	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9753	1AR41-20T	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9754	1LLC11-12T	PIB (PARTS IN BODY)	150	175	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9755	1LLC11-8T	PIB (PARTS IN BODY)	150	175	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9759	1MA33-12T	PIB (PARTS IN BODY)	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9760	1PAA21-12T	PIB (PARTS IN BODY)	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9761	1PAA21-8T	PIB (PARTS IN BODY)	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9762	Mix & Match Body	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9763	7AR15-12T	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B9765	1AR15-6	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B9766	7W14-16T	PIB (PARTS IN BODY)	230	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9767	7W13-8	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9768	1AR41-8	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9771	1LLC11-4	PIB (PARTS IN BODY)	150	175	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9772	1LLC11-6	PIB (PARTS IN BODY)	150	175	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9773	7AR17-10	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158B9774	1LLMS-4W	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9777	1LMP-4W	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9778	1LMS-4W	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9785	1RSA21-6	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9786	1RSA31-8	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9786	1RSA31-8	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9788	1S12-3	PIB (PARTS IN BODY)	-	-	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B9790	1S12-6T	PIB (PARTS IN BODY)	-	-	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B9791	1S13-12T	PIB (PARTS IN BODY)	-	-	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B9792	1S13-4	PIB (PARTS IN BODY)	-	-	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B9793	1S13-6/120		-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158B9795	7AR15-6	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158B9798	7W13-16T	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0080	1EEC12-P6W-30S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0082	1EEC12-P6W-50S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0102	1EE13-P4W-30S	PIB (PARTS IN BODY)	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0107	1EE13-P4W-50S	PIB (PARTS IN BODY)	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0134	1E11-P4W-50S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0153	1E15-P6W-30S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01-B-12S-E-A-XXX-10.0-005	CP20-3S	95	350
158F0163	1E16-P8W-30S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0164	1E16-P8W-30SV	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0167	1E16-P8W-50S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0171	1E21-F10W-30S	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0173	1E21-F10W-30S88	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0192	1LL23-F6W-40S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-C-XXX	CIB	190	250
158F0223	1PAA21-6W	PIB (PARTS IN BODY)	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0227	1PAA22-10G	PIB (PARTS IN BODY)	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0243	1PD12-F3W-6S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-B-XXX	SDC10-3	40	210
158F0291	2F75-P4W-4W-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158F0307	2F86-P6W-6W-6W-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158F0315	2F96-P6W-6W-6W-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-B-12S-E-25	CIB	95	210
158F0364	1B12-P6-30SV	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-2-DG85-V-XXX	NCS06/2	80	350
158F0370	1LLMP-F4W-40SV	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0374	1LLMS-F4W-40SV	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158F0378	1LLMT-F6W-40SV	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158F0382	1LLMV-F8W-40SV	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G1155	SPAA1-6	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G1675	800009	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G1707	934943	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G1804	934984	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G1810	800007SV	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G1821	1D70-SV	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G1834	800071	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2163	980968W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2165	981146-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2166	981146W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2168	981172-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2169	981172W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2171	981173-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2174	Mix & Match Body	-	-	-	FUNCTIONAL	FC-76-12S-T2	-	-	-
158G2191	981571W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2192	981573W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2193	981576W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2194	981577-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2196	982003-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2197	982003W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2199	982006-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2200	982006W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2201	982007-U	-	-	-	FUNCTIONAL	FC-10-8P	-	-	-
158G2202	Mix & Match Body	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2203	9832009-U	-	-	-	DIRECT	FC-10-4P-T1	-	-	-
158G2204	982009W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2206	982010-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2207	982010W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2210	982011-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2211	982011W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2213	Mix & Match Body	-	-	-	FUNCTIONAL	FC-10-16S-T1	-	-	-
158G2214	982044-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2218	982049-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2219	982049W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2221	982050-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2225	982053-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2226	982054-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2228	982073-U / 220815	-	-	-	FUNCTIONAL	CP8-2-3P	-	-	-
158G2229	982073W-U / 221286	-	-	-	FUNCTIONAL	CP8-2-3B	-	-	-
158G2231	982094-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2233	982095W-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2236	982185-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2238	982188-U / 221285	-	-	-	FUNCTIONAL	CP8-2-2B	-	-	-
158G2261	982302-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2262	983008-U / 220814	-	-	-	FUNCTIONAL	CP8-2-2P	-	-	-
158G2263	983009-U / 220815	-	-	-	FUNCTIONAL	CP8-2-3P	-	-	-
158G2264	983011-U / 221286	-	-	-	FUNCTIONAL	CP8-2-3B	-	-	-

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G2266	983012-U / 221285	-	-	-	FUNCTIONAL	CP8-2-2B	-	-	-
158G2267	983015-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2268	983017-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2269	983018-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2270	983057-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2271	983058-U	-	-	-	FUNCTIONAL	FC-10-4P	-	-	-
158G2274	983315-U	-	-	-	FUNCTIONAL	CP16-2-58P	-	-	-
158G2275	983317-U	-	-	-	FUNCTIONAL	CP16-3-58P	-	-	-
158G2276	983319-U	-	-	-	FUNCTIONAL	CP16-4-58P	-	-	-
158G2338	983014-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2341	Mix & Match Body	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2344	982074-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2345	Mix & Match Body	-	-	-	FUNCTIONAL	FC-13-85/6S-T1	-	-	-
158G2346	Mix & Match Body	-	-	-	FUNCTIONAL	FC-13-12S/6S-T1	-	-	-
158G2347	Mix & Match Body	-	-	-	FUNCTIONAL	FC-10-85	-	-	-
158G2348	Mix & Match Body	-	-	-	FUNCTIONAL	FC-10-12S	-	-	-
158G2349	983316-U	-	-	-	FUNCTIONAL	CP16-3-516S	-	-	-
158G2354	1P13-12T	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2355	1P13-6	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2357	1PAA21-4	PIB (PARTS IN BODY)	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2358	983056-U	-	-	-	FUNCTIONAL	FC-10-6P	-	-	-
158G2359	981572-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2375	OMV Manifold	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2379	Mix & Match Steel Body	-	-	-	FUNCTIONAL	FC-173-12S/6S	-	-	-
158G2380	Mix & Match Body (982037-U)	-	-	-	DIRECT	FC-10-12S-T1	-	-	-
158G2381	983328-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G2383	1513-6	PIB (PARTS IN BODY)	-	-	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G2390	7AR15-12T	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G2395	983326-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3003	Coil Replacement Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3005	Coil Replacement Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3008	Coil Replacement Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3009	Coil Replacement Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3022	H5115VAC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3023	H5230VAC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3024	Coil Replacement Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3025	Coil Replacement Kit	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3027	Coil Kit (-19)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3028	Coil Kit (-20)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3029	P36VDC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3056	HAC230	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3057	HDC12	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3059	HDC24	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3060	HAC115	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3062	C115VDC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G3063	PDC12	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G3064	PDC24	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4006	1A400-P-30SV	FC-316	115	350	FUNCTIONAL	CP210-2-V-0-E-C-XXX	SDC10-2	115	350
158G4007	1A400-P-50SV	FC-316	115	350	FUNCTIONAL	CP210-2-V-0-E-D-XXX	SDC10-2	115	350
158G4008	1D400-P-50SV	FC-316	55	350	FUNCTIONAL	VME 07-E-3-00-V-XXX	VME07	50	315
158G4009	1G400-P-10SV	FC-316	55	140	FUNCTIONAL	CP210-1-V-0-E-C-XXX	SDC10-2	45	210
158G4010	1G400-P-20SV	FC-316	55	140	FUNCTIONAL	CP210-1-V-0-E-C-XXX	SDC10-2	45	210
158G4011	1G400-P-55SV	FC-316	55	140	FUNCTIONAL	CP210-1-V-0-E-C-XXX	SDC10-2	45	210
158G4013	1L400-F-25SV	FC-316	115	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4014	1L400-F-40SV	FC-316	115	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4015	1L400-F-50SV	FC-316	115	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4019	1PAA400-P-15SV	FC-316A	75	350	FUNCTIONAL	CP231-3-V-0-E-B-XXX	SDC12-3S	115	350
158G4021	1PAA400-P-40SV	FC-316A	75	350	FUNCTIONAL	CP231-3-V-0-E-D-XXX	SDC12-3S	115	350
158G4022	1PD400-P-10SV	FC-316A	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4023	1PD400-P-15SV	FC-316A	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4026	1RSA400-P-10SV	FC-316D	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4027	1RSA400-P-20SV	FC-316D	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4029	1SA400-P-50SV	FC-316A	115	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4034	2FP400-P-4SV	FC-316A	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4037	2FR420-N-1SV	FC-316	40	350	FUNCTIONAL	CP301-1-V-0-1.0	CP12-2	60	210
158G4038	2FR420-N-3SV	FC-316	40	350	FUNCTIONAL	CP301-1-V-0-3.0	CP12-2	60	210
158G4039	2FR420-N-5.5SV	FC-316	40	350	FUNCTIONAL	CP301-1-V-0-5.5	CP12-2	60	210
158G4040	2FR420-N-9SV	FC-316	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4044	2FR420-P-1SV	FC-316	40	350	FUNCTIONAL	VR 12-EN-1.50-00-V	NCS12/2	60	315
158G4045	2FR420-P-3SV	FC-316	40	350	FUNCTIONAL	VR 12-EN-2.50-00-V	NCS12/2	60	315
158G4046	2FR420-P-5.5SV	FC-316	40	350	FUNCTIONAL	VR 12-EN-4.00-00-V	NCS12/2	60	315
158G4047	2FR420-P-9SV	FC-316	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4048	2F400-R-10SV	FC-316	60	350	FUNCTIONAL	CP620-1-V-0-10-2-DR	SDC10-2	75	210
158G4049	2N400-P-SV	FC-316	55	350	FUNCTIONAL	CP610-2-V-0-E	SDC10-2	50	210
158G4050	2N400-R-SV	FC-316	55	350	FUNCTIONAL	CP610-2-V-0-K	SDC10-2	50	210
158G4051	2R400-P-SV	FC-316	55	350	FUNCTIONAL	CP610-7-V-0-E	SDC10-2	55	210
158G4052	2R400-R-SV	FC-316	55	350	FUNCTIONAL	CP610-7-V-0-K	SDC10-2	55	210
158G4053	2V400-N-10SV	FC-316D	40	350	FUNCTIONAL	CP342-3-U-0-0505	CP16-4	150	450
158G4054	2V400-N-3SV	FC-316D	40	350	FUNCTIONAL	CP342-3-U-0-0303	CP16-4	150	450
158G4058	3CD400-N-7/55V	FC-316	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4059	3C400-35SV	FC-316	115	350	FUNCTIONAL	CP100-3-V-0-040	SDC10-2	115	350
158G4060	3C400-5SV	FC-316	115	350	FUNCTIONAL	CP100-3-V-0-005	SDC10-2	115	350
158G4061	3C400-65SV	FC-316	115	350	FUNCTIONAL	CP100-3-V-0-065	SDC10-2	115	350
158G4062	4C400-SV	FC-316A	7.6	350	FUNCTIONAL	CP128-1-V-0	SDC08-3	10	210
158G4063	4H400-1-SV	FC-316D	57	350	FUNCTIONAL	CP722-11-U-0-080	CP16-4	125	450
158G4064	4H410-1-SV	FC-316D	57	350	FUNCTIONAL	CP722-1-V-0-150-S1	CP16-4	130	210
158G4066	4KCV400-N-SV	FC-316A	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4067	4KC400-N-SV	FC-316A	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4067	4KC400-N-SV	FC-316A	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4070	4K400-N-SV	FC-316A	45	280	FUNCTIONAL	MC10-RO-1-A-V-0	SDC10-3S	45	250
158G4071	4K400-N-SV3	FC-316A	45	280	FUNCTIONAL	MC10-RO-1-OR-A-V-0	SDC10-3S	45	250
158G4073	4M400-2-SV	FC-316	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4074	4M410-2-SV	FC-316	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4075	1D400-R-50SV	FC-316	55	350	FUNCTIONAL	VME 07-M-3-00-V-XXX	VME07	50	315

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G4076	1G400-R-5SV	FC-316	55	140	FUNCTIONAL	CP210-1-V-0-K-C-XXX	SDC10-2	45	210
158G4077	1G400-R-10SV	FC-316	55	140	FUNCTIONAL	CP210-1-V-0-K-C-XXX	SDC10-2	45	210
158G4078	1G400-R-20SV	FC-316	55	140	FUNCTIONAL	CP210-1-V-0-K-C-XXX	SDC10-2	45	210
158G4079	1A400-R-30SV	FC-316	115	350	FUNCTIONAL	CP210-2-V-0-K-C-XXX	SDC10-2	115	350
158G4080	1A400-R-50SV	FC-316	115	350	FUNCTIONAL	CP210-2-V-0-K-D-XXX	SDC10-2	115	350
158G4081	1RSA400-2P-6SV	FC-316D	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4081	1RSA400-2P-6SV	FC-316D	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4084	1RSA400-2P-20SV	FC-316D	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4084	1RSA400-2P-20SV	FC-316D	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4086	1RSA400-R-10SV	FC-316D	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4092	1PD400-P-25V	FC-316A	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4093	1PD400-R-25V	FC-316A	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4094	1PD400-R-10SV	FC-316A	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4095	1PD400-R-15SV	FC-316A	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4096	1PAA400-R-15SV	FC-316A	75	350	FUNCTIONAL	CP231-3-V-0-K-B-XXX	SDC12-3S	115	350
158G4097	1PAA400-R-40SV	FC-316A	75	350	FUNCTIONAL	CP231-3-V-0-K-D-XXX	SDC12-3S	115	350
158G4098	4H400-2-SV	FC-316D	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4099	4H410-2-SV	FC-316D	57	350	FUNCTIONAL	CP722-2-V-0-150-S1	CP16-4	130	210
158G4504	1PDXP4097-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G4505	1PD12-F3W-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-D-XXX	SDC10-3	40	210
158G4506	1PD12-R3W-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-K-D-XXX	SDC10-3	40	210
158G4507	1PD12-R3W-35V	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-K-A-XXX	SDC10-3	40	210
158G4601	1L22-F4T-25S	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1-B-6S-E-C-XXX	SDC10-2	75	250
158G5001	1A20-R-15SV-U	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5007	1AR15-P6W-30SV	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5008	1AR15-P8-30SV	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5010	1AR15-8	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5013	1AR41-P10-30SV	FC-316	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5019	1AR41-10	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5028	1AXP4359-5004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5032	1A20-R-40SV-U	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5033	1A20-F-15SV-U	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5034	1A20-F-15SV	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5035	1A20-F-40SV-U	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5036	1A20-F-40SV	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5037	1A20-R-15SV	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5038	1A20-R-40SV	FC-10	60	280	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5041	1A30-F-10SV	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-B-XXX	SDC10-2	115	350
158G5042	1A30-F-15SV-U	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-B-XXX	SDC10-2	115	350
158G5043	1A30-F-15SV	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-B-XXX	SDC10-2	115	350
158G5044	1A30-F-30SV-U	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-C-XXX	SDC10-2	115	350
158G5045	1A30-F-30SV	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-C-XXX	SDC10-2	115	350
158G5046	1A30-F-60SV-U	FC-10	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5048	1A30-F-60SV	FC-10	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G5050	1A30-R-10SV	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-K-B-XXX	SDC10-2	115	350
158G5052	1A30-R-15SV	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-K-B-XXX	SDC10-2	115	350
158G5054	1A30-R-30SV	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-K-C-XXX	SDC10-2	115	350
158G5056	1A30-R-60SV	FC-10	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5072	1A80-F-50SV	FC178A	570	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5073	1D15-F2-60S	PIB (PARTS IN BODY)	1	420	FUNCTIONAL	CP208-4-V-54S-E-C-XXX	SDC08-2	1.1	415
158G5076	1D15-R2-60S	PIB (PARTS IN BODY)	1	420	FUNCTIONAL	CP208-4-V-54S-K-C-XXX	SDC08-2	1.1	415
158G5078	1D22-F3-80S	PIB (PARTS IN BODY)	45	560	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5080	1D30-F-15SV	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-E-B-XXX	SDC08-2	30	250
158G5081	1D30-F-30SV	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-E-C-XXX	SDC08-2	30	250
158G5082	1D30-F-55V	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-E-A-XXX	SDC08-2	30	250
158G5083	1D30-R-30SV	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-K-C-XXX	SDC08-2	30	250
158G5086	1D41-P3-4S	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08-E-1-DG12S-XXX	VME08	80	315
158G5087	1D41-P4-10S	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08-E-1-DG12S-XXX	VME08	80	315
158G5088	1D41-P4-4S	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08-E-1-DG12S-XXX	VME08	80	315
158G5092	1D41-P8T-4S	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08-E-1-DG12S-XXX	VME08	80	315
158G5093	1D70-P-15SV	FC-109	1.2	350	FUNCTIONAL	CP208-4-V-0-E-C-XXX	SDC08-2	1.1	415
158G5095	1D70-P-30SV	FC-109	1.2	350	FUNCTIONAL	CP208-4-V-0-E-C-XXX	SDC08-2	1.1	415
158G5096	1D70-P-50SV-U	FC-109	1.2	350	FUNCTIONAL	CP208-4-V-0-E-C-XXX	SDC08-2	1.1	415
158G5097	1D70-P-50SV	FC-109	1.2	350	FUNCTIONAL	CP208-4-V-0-E-C-XXX	SDC08-2	1.1	415
158G5098	1D70-R-15SV	FC-109	1.2	350	FUNCTIONAL	CP208-4-V-0-K-C-XXX	SDC08-2	1.1	415
158G5099	1D70-R-30SV	FC-109	1.2	350	FUNCTIONAL	CP208-4-V-0-K-C-XXX	SDC08-2	1.1	415
158G5101	1D70-R-50SV	FC-109	1.2	350	FUNCTIONAL	CP208-4-V-0-K-C-XXX	SDC08-2	1.1	415
158G5104	1G10-P-03SV	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5106	1G10-P-15V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5108	1G10-P-10SV	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5110	1G10-P-25V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5112	1G10-P-20SV	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5114	1G10-P-35V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5116	1G10-P-45V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5118	1G10-P-65V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5119	1G10-R-03SV	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5121	1G10-R-10SV	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5123	1G10-R-20SV	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5125	1G10-R-35V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5127	1G10-R-45V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5129	1G10-R-65V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5135	1A30-F-10SV	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-B-XXX	SDC10-2	115	350
158G5137	1A30-F-10SV	FC-10	75	420	FUNCTIONAL	CP210-2-V-0-E-B-XXX	SDC10-2	115	350
158G5145	1LLC12-F12T-40S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5146	1LLC12-F6-40SV	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5147	1LLC12-12T	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-

Cross reference list
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OLD VALVES					NEW VALVES					
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
158G5148	1LLC12-6	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5149	1LLC12-6W	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5155	1LL11-F8W-40SV917	CIB	150	350	FUNCTIONAL	CP221-1-16S-V-0-E-C-150	CIB	190	250	
158G5157	1LL22-F3-15S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-B-XXX	CIB	190	250	
158G5158	1LL22-F3-25S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-B-XXX	CIB	190	250	
158G5159	1LL22-F4-15S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-B-XXX	CIB	190	250	
158G5160	1LL22-F4-25S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-B-XXX	CIB	190	250	
158G5161	1LL22-F4-40S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-C-XXX	CIB	190	250	
158G5162	1LL22-F4-50S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5163	1LL23-E12T-40S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-C-XXX	CIB	190	250	
158G5164	1LL23-F6-25S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-B-XXX	CIB	190	250	
158G5171	1L10-E-40SV	FC-76	150	350	FUNCTIONAL	CP201-1-V-0-E-C-XXX	CP12-2	150	250	
158G5173	1L10-F-15SV	FC-76	150	350	FUNCTIONAL	CP201-1-V-0-E-B-XXX	CP12-2	150	250	
158G5175	1L10-F-25SV	FC-76	150	350	FUNCTIONAL	CP201-1-V-0-E-B-XXX	CP12-2	150	250	
158G5181	1L10-F-40SV	FC-76	150	350	FUNCTIONAL	CP201-1-V-0-E-C-XXX	CP12-2	150	250	
158G5184	1L10-F-50SV	FC-76	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5186	1L11-F6W-25SV	FC-76	150	350	FUNCTIONAL	CP201-1-V-12S-F-B-XXX	CP12-2	150	250	
158G5196	1L22-F3-25S	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1-B-6S-E-C-XXX	SDC10-2	75	250	
158G5198	1L22-F6T-25S831	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1-B-6S-E-C-XXX	SDC10-2	75	250	
158G5203	1L24-F4-25S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5204	1L24-F4-40S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5206	1L24-F8T-25S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5207	1L60-F-15SV	FC-153	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5208	1L60-F-30SV	FC-153	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5209	1L60-F-50SV	FC-153	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5210	1L60-F-8SV	FC-153	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5215	1RSA21-12T	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5219	1SA10-F-30SV	FC-13	150	210	FUNCTIONAL	CP241-21-V-0-E-C-XXX	CP12-3S	75	350	
158G5221	1SA10-R-30SV	FC-13	150	210	FUNCTIONAL	CP241-21-V-0-K-C-XXX	CP12-3S	75	350	
158G5223	1SA12-F3W-30SV		75	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5225	1SA13-F4-30SV	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-	
158G5227	1SA13-F6-30SV	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-	
158G5232	1SD10-P-10SV	FC-13	150	140	FUNCTIONAL	CP241-21-V-0-E-B-XXX	CP12-3S	75	350	
158G5233	1SD10-P-25V/1SA12-F3W-30SV	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	
158G5235	1SD10-P-20SV	FC-13	150	140	FUNCTIONAL	CP241-21-V-0-E-C-XXX	CP12-3S	75	350	
158G5238	1SD10-P-4SV	FC-13	150	40	FUNCTIONAL	CP241-8-V-0-E-B-XXX	CP12-3S	150	40	
158G5240	1SD10-P-6SV	FC-13	150	40	FUNCTIONAL	CP241-8-V-0-E-C-XXX	CP12-3S	150	40	
158G5242	1SD10-R-6SV	FC-13	150	40	FUNCTIONAL	CP241-8-V-0-K-C-XXX	CP12-3S	150	40	

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G5251	1S12-2	PIB (PARTS IN BODY)	-	-	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5252	1S12-3W	PIB (PARTS IN BODY)	-	-	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5254	1S13-6W	PIB (PARTS IN BODY)	-	-	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5255	1UA50-F-30SV	FC-10	75	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5257	1UA50-F-60SV	FC-10	75	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5265	1USA50-F-30SV	FC-13	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5269	1D30-R-55V	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-K-A-XXX	SDC08-2	30	250
158G5270	1G10-R-15V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5271	1G10-R-25V	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5273	1UA50-F-155V	FC-10	75	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5278	1A80-F-30SV	FC178A	570	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5279	1SD10-R-45V	FC-13	150	40	FUNCTIONAL	CP241-8-V-0-K-B-XXX	CP12-35	150	40
158G5281	1SD10-R-205V	FC-13	150	140	FUNCTIONAL	CP241-21-V-0-K-C-XXX	CP12-35	75	350
158G5282	1SAR30-F-30SV	FC-314	75	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5284	1SA10-F-10SV	FC-13	150	210	FUNCTIONAL	CP241-21-V-0-E-B-XXX	CP12-35	75	350
158G5285	1SA10-F-60SV	FC-13	150	210	FUNCTIONAL	CP241-21-V-0-E-D-XXX	CP12-35	75	350
158G5286	1SA10-R-10SV	FC-13	150	210	FUNCTIONAL	CP241-21-V-0-K-B-XXX	CP12-35	75	350
158G5288	1USA50-R-30SV	FC-13	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5289	1LL22-F8T-40S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1-12S-B-0-E-C-XXX	CIB	190	250
158G5294	60588-0-U	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5298	1D30-R-155V	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-K-B-XXX	SDC08-2	30	250
158G5305	1B12-P3-8S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-1-DG8S-XXX	NCS06/2	80	350
158G5307	1B12-P4-30SV	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-2-DG8S-XXX	NCS06/2	80	350
158G5308	1B12-P4-8S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-1-DG8S-XXX	NCS06/2	80	350
158G5310	1EEC11-P3-30S	CIB	60	350	FUNCTIONAL	1EEC11-01-B-6S-E-A-XXX-10.0-005	CIB	60	350
158G5311	1EEC11-P3-30S45	CIB	60	350	FUNCTIONAL	1EEC11-01-B-6S-E-B-XXX-4.5-005	CIB	60	350
158G5314	1EEC11-P3W-30S	CIB	60	350	FUNCTIONAL	1EEC11-01-B-6S-E-A-XXX-10.0-005	CIB	60	350
158G5317	1EEC11-P3W-50S	CIB	60	350	FUNCTIONAL	1EEC11-01-B-56S-E-A-XXX-10.0-005	CIB	60	350
158G5318	1EEC11-P3W-50S45	CIB	60	350	FUNCTIONAL	1EEC11-01-B-56S-E-C-XXX-4.5-005	CIB	60	350
158G5319	1EEC12-P12T-50S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5320	1EEC12-P4-50S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5321	1EEC12-P6-30S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5328	1EE13-P3-30S	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-1-C-1-E-XXX-B-6S	CIB	60	350
158G5329	1EE13-P3-30S45	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-3-A-1-E-XXX-B-6S	CIB	60	350
158G5330	1EE13-P3-50S	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-1-C-1-E-XXX-B-56S	CIB	60	350
158G5331	1EE13-P4-30S	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-1-C-1-E-XXX-B-8S	CIB	60	350
158G5332	1EE13-P4-30SV	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-1-C-1-E-XXX-V-8S	CIB	60	350
158G5333	1EE13-P4-30S45	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-3-A-1-E-XXX-B-8S	CIB	60	350
158G5334	1EE13-P4-50S	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB10-HV-1-C-1-E-XXX-B-58S	CIB	60	350
158G5335	1EE13-P8T-50S45	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	DCB-HV-3-B-1-E-XXX-B-58S	CIB	60	350

Cross reference list
 by part number

Cartridge Valves Technical Information
 Cross reference list
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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G5336	1EE15-P6-30S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-12S-B-E-A-XXX-10.0-015	CIB	115	350
158G5338	1EE15-P6W-30S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-12S-B-E-A-XXX-10.0-015	CIB	115	350
158G5340	1EE15-P6W-30S45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-12S-B-E-B-XXX-4.5-015	CIB	115	350
158G5341	1EE15-P6W-50S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-S12S-B-E-A-XXX-10.0-015	CIB	115	350
158G5342	1EE15-P6W-50S45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-S12S-B-E-B-XXX-4.5-015	CIB	115	350
158G5344	1EE21-F8-30S	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5345	1EE21-F8W-30S	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5346	1EE21-F8W-30S88	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5358	1E11-P3-30S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5359	1E11-P3-30SV	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5360	1E11-P3-30S45	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5361	1E11-P3-50S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5362	1E11-P4-30S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5363	1E11-P4-30SV	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5365	1E11-P4-30S45	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-3-A-1-E-175-B-8S	SDC10-3S	60	350
158G5366	1E11-P4-50S	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-1-C-1-E-175-B-58S	SDC10-3S	60	350
158G5367	1E11-P4-50SV	PIB (PARTS IN BODY)	60	350	NONE	CB10-HV-1-C-1-E-175-V-58S	SDC10-3S	60	350
158G5368	1E11-P4-50S45	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5370	1E11-P8T-30S	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-1-C-1-E-175-B-8S	SDC10-3S	60	350
158G5371	1E11-P8T-30S40	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV-1-C-1-E-175-B-8S	SDC10-3S	60	350
158G5373	1E14-P4-6G-30S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5374	1E14-P4-6G-50S	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5375	1E14-P4-6G-50S45	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5380	1E15-P6-30S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01-B-12S-E-A-XXX-10.0-005	-	95	350
158G5381	1E15-P6-30S45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01-B-12S-E-B-XXX-4.5-005	-	95	350
158G5382	1E15-P6-50S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01-B-12S-E-A-XXX-10.0-005	-	95	350
158G5383	1E15-P6-50S45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01-B-12S-E-B-XXX-4.5-005	-	95	350
158G5385	1E16-P16T-30S45	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP443-1-B-16S-E-B-XXX-3.0-015	CP20-3S	190	350
158G5386	1E16-P16T-50S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP443-1-B-S16S-E-A-XXX-10.0-015	CP20-3S	190	350
158G5387	1E16-P8-30S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP443-1-B-16S-E-A-XXX-10.0-015	CP20-3S	190	350

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G5388	1E16-P8-30S45	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP443-1-B-16S-E-B-XXX-3.0-015	CP20-35	190	350
158G5390	1E16-P8-50S45	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5391	1E21-F10-30S	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5392	1E21-F10-30S88	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5396	1E21-F20T-30S	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5397	1E21-F8-30S	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5399	1E21-F8-30S88	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5404	1E70-F-30S	-	-	-	FUNCTIONAL	CP441-1-B-0-E-B-XXX-4.5-015	CP12-35	115	350
158G5405	1E70-F-30SV	-	-	-	FUNCTIONAL	CP441-1-V-0-E-B-XXX-4.5-015	CP12-35	115	350
158G5406	1E80-E-50SV(4:1)	FC-173	95	350	FUNCTIONAL	CP441-1-V-0-E-B-XXX-4.5-015	CP12-35	115	350
158G5407	1E80-F-50SV(4:1)	FC-173	95	350	FUNCTIONAL	CP441-1-V-0-E-B-XXX-4.5-015	CP12-35	115	350
158G5408	1E80-F-50SV(8.5:1)	FC-173	95	350	FUNCTIONAL	CP441-1-V-0-E-A-XXX-10.0-015	CP12-35	115	350
158G5409	1E90-F-50SV	FC-316	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5416	1E12-P4-30SV	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5418	2ZXP840-002	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5419	2ZXP2192-104	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5420	2ZXP2192-106	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5421	2ZXP2192-111	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5422	2ZXP4063-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5423	2ZXP1194-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5424	2ZXP2192-102	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5425	2ZXP2192-110	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5427	2ZXP829-601	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5429	2ZXP840-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5431	1E15-P12T-30S45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01-B-12S-E-B-XXX-4.5-005	CP20-35	95	350
158G5432	1EEC12-P6-50S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5435	1E15-P12T-30S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01-B-12S-E-A-XXX-10.0-005	CP20-35	95	350
158G5436	2ZXP2192-103	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5437	1EEC12-P12T-30S	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5438	2ZXP2192-107	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5439	1EEC12-P12T-30S45	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5440	1E21-F20T-30S88	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5441	1B12-P4-15S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN-1-DG8S-XXX	NCS06/2	80	350
158G5442	1E11-P4W-50S116	PIB (PARTS IN BODY)	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5444	2ZXP2192-105	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5445	2ZXP4063-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5446	1EE15-P12T-50S45	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2-S12S-B-E-B-XXX-4.5-015	CIB	115	350
158G5456	1PAA21-6	PIB (PARTS IN BODY)	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5458	1PA10-F-10SV	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G5459	1PA10-F-15SV	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5460	1PA10-F-30SV	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5461	1PA10-R-10SV	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5463	1PA10-R-30SV	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5468	1PDXP4398-1100	PIB (PARTS IN BODY)	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5469	1PD11-F2-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-E-D-XXX	SDC10-3	40	210
158G5470	1PD11-F2-3S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-E-A-XXX	SDC10-3	40	210
158G5471	1PD11-F2-6S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-E-B-XXX	SDC10-3	40	210
158G5472	1PD11-F2-9S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-E-C-XXX	SDC10-3	40	210
158G5473	1PD11-F6T-9S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-C-XXX	SDC10-3	40	210
158G5474	1PD11-R2-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-K-D-XXX	SDC10-3	40	210
158G5475	1PD11-R2-15S59	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-K-D-XXX	SDC10-3	40	210
158G5476	1PD11-R2-3S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-K-A-XXX	SDC10-3	40	210
158G5477	1PD11-R2-3S59	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-K-A-XXX	SDC10-3	40	210
158G5478	1PD11-R2-6S59	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-K-B-XXX	SDC10-3	40	210
158G5479	1PD11-R2-9S59	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-4S-K-C-XXX	SDC10-3	40	210
158G5481	1PD12-F3-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-D-XXX	SDC10-3	40	210
158G5482	1PD12-F3-6S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-E-B-XXX	SDC10-3	40	210
158G5483	1PD12-R3-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-K-D-XXX	SDC10-3	40	210
158G5484	1PD12-R3-3S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-K-A-XXX	SDC10-3	40	210
158G5485	1PD12-R3-6S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1-B-6S-K-C-XXX	SDC10-3	40	210
158G5486	1PD13-C2-15S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5487	1PD13-C2-6S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5488	1PD13-C2W-15S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5490	1PD13-C6T-15S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5491	1PD14-F4G-15S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5492	1PD14-F4G-3S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5492	1PD14-F4G-3S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5493	1PD14-F4G-6S	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5495	1PD15-F3-15S	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5497	1PD20-P-5SV	FC-13	40	210	FUNCTIONAL	CP230-1-V-0-E-B-XXX	SDC10-3	40	210
158G5508	2FA86-P6-25/30S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-

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OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G5509	2FA87-P8W-50/30S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5513	2FC75-P8T-8T-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5523	2FDWXP5502-006	PIB (PARTS IN BODY)	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5529	2FFLW86-D6-10/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5531	2FFL12-D6-10/30SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5532	2FFL12-D6-5/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5541	2FL12-D6-10SV	CIB	150	140	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5542	2FL12-D6-30SV	CIB	150	140	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5550	2F74-P3-3-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5552	2F75-P4-4-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5554	2F76-P6-6-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5557	2F77-P8W-8W-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5558	2F77-R8-8-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5560	2F85-P4-4-4-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5562	2F86-P6-6-6-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5564	2F87-P8W-8W-8W-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5566	2F87-R8W-8W-8W-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5567	2F94-P3-3-3-8S	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	2F94-01-B-6S-E-8.0	CIB	30	210
158G5569	2F95-P4-4-4-15S	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	2F95-01-B-8S-E-15	CIB	60	210
158G5572	2F96-L6W-6W-6W-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-B-12S-E-25	CIB	95	210
158G5573	2F96-P6-6-6-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01-B-12S-E-25	CIB	95	210
158G5579	2F97-P8-8-8-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	2F97-01-B-16S-E-50	CIB	190	210
158G5580	2F97-P8W-8W-8W-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	2F97-01-B-16S-E-50	CIB	190	210
158G5582	2F97-R8W-8W-8W-50S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	2F97-01-B-16S-K-50	CIB	190	210
158G5588	2V13-3-10S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-6S-66	SDC10-4	45	210
158G5590	2V13-3-3S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-6S-22	SDC10-4	45	210
158G5591	2V13-3-6S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-6S-33	SDC10-4	45	210
158G5592	2V13-4-3-10S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-6S-66	SDC10-4	45	210
158G5593	2V13-4-3-15SV	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-V-6S-66	SDC10-4	45	210
158G5594	2V13-4-3-3S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-6S-22	SDC10-4	45	210
158G5595	2V13-4-3-6S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-6S-33	SDC10-4	45	210
158G5596	2V14-8-6-25S	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1-B-16S-1212	CP16-4	150	210

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G5597	2V14-8-6-40S	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1-B-16S-2020	CP16-4	150	210
158G5598	2V16-10W-8W-60S	PIB (PARTS IN BODY)	230	210	FUNCTIONAL	CP343-1-B-20S-3030	SDC20-4	340	210
158G5599	2V21-L8-6-6-40S	PIB (PARTS IN BODY)	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5600	2V21-L8W-6W-6W-40S	PIB (PARTS IN BODY)	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5601	2ZXP4063-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5602	2ZXP4063-004	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5604	2FFL12-D6-5/7SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5606	2FFL12-D6-7/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5607	2FFLW86-D6-7/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5608	2FLW86-D6W-10SV	CIB	150	140	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5612	2FXP4312-003	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5614	2FL12-D6W-30SV	CIB	150	140	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5618	2F76-L6-6-25S	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5619	2V14-6-4-25S	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1-B-16S-1212	CP16-4	150	210
158G5620	2FL12-D6-20SV	CIB	150	140	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5621	4VXP7399-008	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5622	2FF12-D6W-5/15SV	CIB	140	150	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5623	2FLXP437-005	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5624	2FA87-P8-50/30S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5625	2V13-8T-6T-10S	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1-B-6S-66	SDC10-4	45	210
158G5629	2F10-N-05SV	FC-60	76	210	FUNCTIONAL	CP311-1-V-0-0.5	CP12-3	95	210
158G5632	2FA87-P16T-50/30S	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5656	2N11-P2-S	INLINE	45	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5658	2N11-P2W-S	INLINE	45	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5681	2RN11-2-.030	INLINE	20	350	FUNCTIONAL	2RN11-01-4S-003-030	IN-LINE	20	350
158G5683	2RN11-2-1/550	INLINE	20	350	FUNCTIONAL	2RN11-01-4S-003-030	IN-LINE	20	350
158G5684	2R11-P2-S	INLINE	45	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5695	2R14-P6-S	INLINE	105	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5698	2R14-R6W-S	INLINE	105	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5699	3CM11-6T-3S	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3CM11-01-B-6F-6F-3	PIB (PARTS IN BODY)	20	350
158G5700	3CM12-8T-15S	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3CM12-01-B-8F-8F-15	PIB (PARTS IN BODY)	35	350
158G5702	3CM13-4-3S	INLINE	70	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5703	3CM14-12T-3SV	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3CM14-01-V-12F-12F-3	PIB (PARTS IN BODY)	95	350
158G5705	3CM16-20T-45S	INLINE	230	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5706	3CXP6272-001	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5707	3C11-2-15	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3C11-01-4S-15	PIB (PARTS IN BODY)	20	350
158G5709	3C11-2-45	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3C11-01-4S-45	PIB (PARTS IN BODY)	20	350
158G5710	3C11-2-65	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3C11-01-4S-65	PIB (PARTS IN BODY)	20	350
158G5712	3C11-2W-3	INLINE	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-

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Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
158G5715	3C12-3-15	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3C12-01-6S-15	PIB (PARTS IN BODY)	35	350
158G5717	3C12-3W-3	INLINE	35	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5720	3C12-6T-3	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3C12-01-6S-3	PIB (PARTS IN BODY)	35	350
158G5721	3C13-4-15	PIB (PARTS IN BODY)	70	350	FUNCTIONAL	3C13-01-8S-15	PIB (PARTS IN BODY)	70	350
158G5723	3C13-4-6S	PIB (PARTS IN BODY)	70	350	FUNCTIONAL	3C13-01-8S-6S	PIB (PARTS IN BODY)	70	350
158G5725	3C13-4W-3	INLINE	70	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5728	3C13-8T-15	PIB (PARTS IN BODY)	70	350	FUNCTIONAL	3C13-01-8S-15	PIB (PARTS IN BODY)	70	350
158G5729	3C13-8T-3	PIB (PARTS IN BODY)	70	350	FUNCTIONAL	3C13-01-8S-3	PIB (PARTS IN BODY)	70	350
158G5731	3C14-12T-6S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3C14-01-12S-6S	PIB (PARTS IN BODY)	95	350
158G5732	3C14-6-3	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3C14-01-12S-3	PIB (PARTS IN BODY)	95	350
158G5733	3C14-6-6S	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3C14-01-12S-6S	PIB (PARTS IN BODY)	95	350
158G5734	3C14-6W-15	INLINE	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5737	3C14-6W-6S	INLINE	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5738	3C15-16T-3	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3C15-01-16S-3	PIB (PARTS IN BODY)	150	350
158G5739	3C15-8-15	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3C15-01-16S-15	PIB (PARTS IN BODY)	150	350
158G5740	3C15-8-3	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3C15-01-16S-3	PIB (PARTS IN BODY)	150	350
158G5742	3C15-8W-3	INLINE	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5745	3C16-10-15	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3C16-01-20S-15	PIB (PARTS IN BODY)	230	350
158G5746	3C16-10-3	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3C16-01-20S-3	PIB (PARTS IN BODY)	230	350
158G5747	3C16-10-4S	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3C16-01-20S-4S	PIB (PARTS IN BODY)	230	350
158G5748	3C16-10-6S	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3C16-01-20S-6S	PIB (PARTS IN BODY)	230	350
158G5749	3C16-10W-15	INLINE	230	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5754	3C16-20T-15	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3C16-01-20S-15	PIB (PARTS IN BODY)	230	350
158G5755	3C50-SV	FC-144	70	210	DIRECT	3C50-01	FC-144	70	210
158G5757	3C60-SV	FC-144	70	140	DIRECT	3C60-01	FC-144	70	140
158G5758	3C80-SV	FC-304	190	140	DIRECT	3C80-01	FC-304	190	140
158G5759	3C90-SV	FC-304	190	210	DIRECT	3C90-01	FC-304	190	210
158G5760	4CXP4873-200	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5764	4KK32-N2-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-6S-0-06S	CIB	85	210
158G5765	4KK32-N3-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-6S-0-06S	CIB	85	210
158G5766	4KK32-N3-8G-S	PIB (PARTS IN BODY)	70	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5767	4KK32-N4-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-8S-0-06S	CIB	85	210
158G5768	4KK32-N8T-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1-B-8S-0-06S	CIB	85	210
158G5769	4KK32-N8T-8G-S	PIB (PARTS IN BODY)	70	210	NONE	Service Only. No Comatrol replacement.	-	-	-

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158G5770	4KK33-N3-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5771	4KK33-N4-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5772	4KK33-N6T-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5773	4KK35-N6-S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5774	4KK35-N6W-S	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5778	4K13-4-S	INLINE	75	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5779	4K13-4W-S	INLINE	75	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5780	4K14-6-S	INLINE	-	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5785	4K21-N2-S	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5786	4K21-N3-S	PIB (PARTS IN BODY)	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5787	4K32-N4-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5788	4K32-N8G-S	PIB (PARTS IN BODY)	70	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5789	4K32-N8T-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5790	4K33-N4-S	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5791	4K35-N12T-S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP453-5-B-16S-4-065	SDC20-2	250	350
158G5792	4K35-N6-S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP453-5-B-16S-4-065	SDC20-2	250	350
158G5793	4K35-N6W-S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP453-5-B-16S-4-065	SDC20-2	250	350
158G5794	4K41-N10-S	PIB (PARTS IN BODY)	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5795	4K41-N10W-S	PIB (PARTS IN BODY)	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5796	4K41-N16T-S	PIB (PARTS IN BODY)	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5797	4K41-N8-S	PIB (PARTS IN BODY)	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5798	4K70-I-S	FC-173	75	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5799	4K70-I-S3	FC-173	75	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5806	3C16-20T-3	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3C16-01-20S-3	PIB (PARTS IN BODY)	230	350
158G5808	4K32-N8T-S3	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5809	3CM15-16T-3S	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3CM15-01-B-16F-16F-3	PIB (PARTS IN BODY)	150	350
158G5813	4KK32-N8G-S	PIB (PARTS IN BODY)	70	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5814	4K32-N3-S	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5815	4K19-N4T-S3	PIB (PARTS IN BODY)	25	690	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5816	4K32-N8T-S936	PIB (PARTS IN BODY)	70	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5819	3CM12-8T-3S	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3CM12-01-B-8F-8F-3	PIB (PARTS IN BODY)	35	350
158G5820	4KK35-N12T-S3	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-

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158G5821	4K32-N4W-5	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5853	7AR15-16T	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5855	7AR15-8W	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
158G5861	7WA80-1	FC-10	76	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5862	7WA80-2	FC-10	76	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5872	7W110-1	FC-10	75	210	FUNCTIONAL	SVP10-NO-00-00-V-00	SDC10-2	80	230
158G5873	7W110-2	FC-10	75	210	FUNCTIONAL	SVP10-NC-00-00-V-00	SDC10-2	80	230
158G5875	7W14-8W	PIB (PARTS IN BODY)	230	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5878	7W20-1	FC-109	0.75	210	FUNCTIONAL	SV08-22-01	SDC08-2	16	230
158G5880	7W20-1-24SV	FC-109	0.75	210	FUNCTIONAL	SV08-22-01	SDC08-2	16	230
158G5881	7W20-2	FC-109	0.75	210	FUNCTIONAL	SV08-22-02	SDC08-2	16	230
158G5883	7W20-2-12SV	FC-109	0.75	210	FUNCTIONAL	SV08-22-02	SDC08-2	16	230
158G5885	7W30-1	FC-109	7.5	230	FUNCTIONAL	SVP08-NO-00-00-V-00	SDC08-2	35	230
158G5889	7W30-2	FC-109	7.5	210	FUNCTIONAL	SVP08-NC-00-00-V-00	SDC08-2	35	230
158G5892	7W30-2-24SV	FC-109	7.5	210	FUNCTIONAL	SVP08-NC-24D-L-V-00	SDC08-2	35	230
158G5893	7W40-1	FC-109A	2	210	FUNCTIONAL	SV08-23-04	SDC08-3	10	230
158G5894	7W40-2	FC-109A	2	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230
158G5895	7W40-2-12SV	FC-109A	2	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230
158G5896	7W40-2-24SV	FC-109A	2	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230
158G5898	Two-Way Spool Type (NO)	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5899	7W80-2	FC-10	76	320	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5900	7W90-1	FC-109	20	230	FUNCTIONAL	SVP08-NO-00-00-V-00	SDC08-2	35	230
158G5901	7W90-2	FC-109	20	210	FUNCTIONAL	SVP08-NC-00-00-V-00	SDC08-2	35	230
158G5903	7AR17-20T	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5905	7W440-A	FC-316A	25	210	FUNCTIONAL	SV08-23-04	SDC08-3	10	230
158G5907	7W490-1	FC-316	40	210	FUNCTIONAL	SVP08-NOR-00-00-V-00	SDC08-2	35	210
158G5908	7W490-2	FC-316	40	210	FUNCTIONAL	SVP08-NCR-00-00-V-00	SDC08-2	35	230
158G5909	7W480-1	FC-316D	30	210	FUNCTIONAL	SV10-24-01-00-00-V-0	SDC10-4	15	230
158G5910	7W480-2	FC-316D	30	210	FUNCTIONAL	SV08-24-02-00-00-V-00	SDC08-4	10	230
158G5912	7WAXP7271-300	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5914	7W90-1-M24SV	FC-109	20	230	FUNCTIONAL	SVP08-NO-24D-L-V-00	SDC08-2	35	230
158G5917	7WC490-1	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5918	7WC490-2	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5919	7W440-B	FC-316A	25	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230
158G5920	7W440-C	FC-316A	25	210	FUNCTIONAL	SV08-23-04	SDC08-3	10	230
158G5926	7W70-2-DC24S329	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5971	1T11-2W-6S	PIB (PARTS IN BODY)	164cc/min	690	NONE	Service Only. No Comatrol replacement.	-	-	-
158G5972	1T11-4T-6S	PIB (PARTS IN BODY)	164cc/min	690	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6000	1PAA600-P-15SV	FC-324A	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6001	1PAA600-P-40SV	FC-324A	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6002	2FPC600-SV	FC-324A	155	350	FUNCTIONAL	CP312-4-V-0-0-100	CP16-4	130	210
158G6003	2FRC600-SV	FC-324A	95	350	FUNCTIONAL	CP302-4-V-0-0-100	SDC16-3	130	210
158G6005	2N600-P-SV	FC-324	150	350	FUNCTIONAL	CP612-2-V-0-E	SDC16-2	190	210
158G6006	2N600-R-SV	FC-324	150	350	FUNCTIONAL	CP612-2-V-0-K	SDC16-2	190	210

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158G6007	2V600-N-40SV	FC-324B	150	350	FUNCTIONAL	CP342-3-U-0-2020	CP16-4	150	350
158G6010	3C600-55V	FC-324	150	350	FUNCTIONAL	CP102-1-V-0-005	SDC16-2	150	350
158G6011	3C600-65SV	FC-324	150	350	FUNCTIONAL	CP102-1-V-0-065	SDC16-2	150	350
158G6012	4H600-1-SV	FC-324B	151	350	FUNCTIONAL	CP722-11-U-0-080	CP16-4	125	450
158G6013	4H610-1-SV	FC-324B	151	350	FUNCTIONAL	CP722-1-V-0-150-S1	CP16-4	130	210
158G6014	4KC600-N-SV	FC-324A	151	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6015	4KC600-N-SV3	FC-324A	151	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6016	4K600-N-SV	FC-324A	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6017	4K600-N-SV3	FC-324A	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6018	1PAA600-R-155V	FC-324A	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6019	1PAA600-R-40SV	FC-324A	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6020	4KCV600-N-SV	FC-324A	151	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6021	4H600-2-SV	FC-324B	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6022	4H610-2-SV	FC-324B	150	350	FUNCTIONAL	CP722-2-V-0-150-S1	CP16-4	130	210
158G6023	2VXP7530-100	PIB (PARTS IN BODY)	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
158G6024	2FPC610-SV	FC-324B	155	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G7000	2N800-P-SV	FC-329	300	350	FUNCTIONAL	CP613-1-V-0	SDC20-2	380	210
158G7001	2N800-R-SV	FC-329	300	350	FUNCTIONAL	CP613-1-V-0	SDC20-2	380	210
158G7003	2FPC800-SV	FC-329B	305	350	NONE	Service Only. No Comatrol replacement.	-	-	-
158G7006	3C800-55V	FC-329	300	350	FUNCTIONAL	CP103-1-V-0-005	SDC20-2	380	210
158G7007	3C800-65SV	FC-329	300	350	FUNCTIONAL	CP103-1-V-0-065	SDC20-2	380	210
158G7008	4H800-1-SV	FC-329B	303	350	FUNCTIONAL	CP723-5-V-0-150-S3	SDC20-4	265	210
158G7011	4DS800-N-60SV	FC-329A	300	350	FUNCTIONAL	CP703-2-V-0-080	CP20-35	320	210
158G7014	4DS810-N-110SV	FC-324A	300	350	FUNCTIONAL	CP703-1 (LE20-CPC) TBD	CP20-35	300	210
158G9796	7AR15-8	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	Custom HIC can be created to replace it	HIC	-	-
163F1053	180-E2D-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1055	182-A2E-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1056	182-A2F-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1057	182-E0D-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1058	182-E2D-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1059	182-E0E-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1060	182-E2E-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1061	182-E2F-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1062	182-E2G-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1063	183-A2E-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1064	183-E0D-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1065	183-E2D-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1065	183-E2D-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1067	80120-363	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1068	183-E2F-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1069	187-E2E-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1070	185-E2E-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1071	185-E2D-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1074	187-E2F-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1076	180-E2F-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1077	182-A2D-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-
163F1085	182-M0E-B	-	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-

Cross reference list
 by part number

Cartridge Valves Technical Information
 Cross reference list
 Sorted by part number

OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
1D30-2	1D30-F-30SV:2000	FC-109	30	210	FUNCTIONAL	CP208-3-V-0-E-C-200	SDC08-2	30	250
1E80-12	1E80-F-50SV(8.5:1):3700	FC-173	95	350	FUNCTIONAL	CP441-1-V-0-E-A-370-10.0-015	CP12-3S	115	350
1E80-7	1E80-F-50SV(4:1):3700	FC-173	95	350	FUNCTIONAL	CP441-1-V-0-E-B-370-4.5-015	CP12-3S	115	350
4C30-SV	4C30-SV	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
542116	Housing	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
545059	Housing	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
546006	Housing	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
563003	Piston	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
572034	Piston	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
890166	Boot	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
890372	Fitting - #4 SAE	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
890374	Socket Head Plug - #6 SAE	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973098	Handknob Adj. Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973157	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973172	Handknob Adj. Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973173	Handknob Adj. Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973178	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973180	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973205	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973209	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973210	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973214	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973227-1	Non-Rise Adjust	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973246	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973248	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
973253	Adjust Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
976047	Shell/Coil Sub Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
979091	Relief Valve Cartridge	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
979635	Hydraulic Sub Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
979712	X12VDC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
979746	B12VDC	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
979770	Shell/Coil Sub Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
979874	N.O. Hyd. Sub Assy	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
981587	Body, Aluminum	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
982056	Body	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
982350	Body	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1092	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1137	Form Drill	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1184	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1185	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-120	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1238	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1276	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1289	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1290	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1296	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1297	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1355	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-

Cross reference list
 by part number

Cartridge Valves Technical Information
 Cross reference list
 Sorted by part number

OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
D-140	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1406	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1465	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1527	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1579	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1580	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1620	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1738	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1759	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1770	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1784	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1802	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1815	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1818	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1831	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1842	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1844	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1845	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1861	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1916	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1917	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1918	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-193	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1987	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1988	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-1989	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
D-233	Drill, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1073	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1090	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1175	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1211	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1220	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1234	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1235	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1245	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1278	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1339	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1384	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1385	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-140	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1423	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1468	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1470	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1500	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1556	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1647	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1650	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1665	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-

Cross reference list
 by part number

Cartridge Valves Technical Information
 Cross reference list
 Sorted by part number

OLD VALVES					NEW VALVES				
Part Number	Valve Code / Description	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)
R-1671	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-169	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1699	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1701	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1731	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1732	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1739	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-180	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1800	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1817	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1818	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1866	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1867	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-1868	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
R-37	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1001	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1014	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1021	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1030	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1033	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1040	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1045	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1051	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1066	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1069	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1075	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1078	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1130	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1134	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1135	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1153	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-1156	Tap, Reamer	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
T-17	Tap, Cavity	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-
	1EE81-F12T-50SV	CIB	95	350	FUNCTIONAL	CP441-2-S12S-V-E-A-XXX-10.0-015	CIB	95	350

Cross reference list
 by part number

Cartridge Valves Technical Information
 Cross reference list
 Sorted by model number

OLD VALVES				NEW VALVES					
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
1E11	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	CB10-HV	SDC10-3S	60	350	
1E12	-	-	-	-	-	-	-	-	
1E14	PIB (PARTS IN BODY)	57	350	FUNCTIONAL	CP441-1 (line mounted only)	CP12-3S	115	350	
1E15	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	1E15-01	CP20-3S	95	350	
1E16	PIB (PARTS IN BODY)	151	350	NONE	CP443-1	CP20-3S	190	350	
1E21	PIB (PARTS IN BODY)	303	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1E50	FC-346	57	350	FUNCTIONAL	CB10-HV	SDC10-3S	60	350	
1E70	-	-	-	FUNCTIONAL	CP441-1	CP12-3S	115	350	CV2009-008
1E80	FC-173	95	350	FUNCTIONAL	CP441-1	CP12-3S	115	350	CV2009-008
1E90	FC-316	95	350	FUNCTIONAL	VCB 12-CN	NCS12/3	140	350	
180 - Shear Valve	FC-10	40	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1A20	FC-10	60	280	FUNCTIONAL	RV10-POP	SDC10-2	120	250	
1A30	FC-10	75	420	FUNCTIONAL	CP210-2	SDC10-2	115	350	
1A30-01	FC-10	75	420	FUNCTIONAL	CP210-2	SDC10-2	115	350	CV2009-008
1A30-A01	FC-10	75	420	FUNCTIONAL	CP210-2	SDC10-2	115	350	CV2009-016
1A30-A02	FC-10	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1A30-A03	FC-10	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1A30-A04	FC-10	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1A400	FC-316	115	350	FUNCTIONAL	CP210-2	SDC10-2	115	350	
1A80	FC-178A	570	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
1AR13	PIB (PARTS IN BODY)	150	280	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
1AR15	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
AR15-01	CIB	225	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
1AR17	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1AR41	PIB (PARTS IN BODY)	380	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1AXP	Special	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1B12	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	VSB 06-EN	NCS06/2	80	350	
1D15	PIB (PARTS IN BODY)	1	420	FUNCTIONAL	CP208-4	SDC08-2	1.1	415	
1D21	PIB (PARTS IN BODY)	45	350	FUNCTIONAL	VME 06	VME06	40	315	
1D22	PIB (PARTS IN BODY)	45	560	NONE	Service Only. No Comatrol replacement.	-	-	-	
1D30	FC-109	30	310	FUNCTIONAL	CP208-3	SDC08-2	30	250	
1D400	FC-316	53	350	FUNCTIONAL	VME 07	VME07	50	315	
1D41	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08	VME08	80	315	
1D70	FC-109	1.2	350	FUNCTIONAL	CP208-4	SDC08-2	1.1	415	
1ED25	-	-	-	-	-	-	-	-	
1EE13	PIB (PARTS IN BODY)	60	350	FUNCTIONAL	DCB10-HV	CIB	60	350	
1EE15	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	CP441-2	CIB	115	350	
1EE21	PIB (PARTS IN BODY)	210	305	NONE	Service Only. No Comatrol replacement.	-	-	-	
1EE81	CIB	95	350	FUNCTIONAL	CP441-2	CIB	95	350	
1EEC11	CIB	60	350	FUNCTIONAL	1EEC11-01	CIB	60	350	

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OLD VALVES				NEW VALVES					PIB
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
1EEC11-02	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1EEC11-03	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1EEC12	CIB	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
1EEC12-01	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
1EEC12-02	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1EEC32	PIB (PARTS IN BODY)	303	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1G10	FC-10	70	140	FUNCTIONAL	CP210-1	SDC10-2	45	210	CV2009-008
1G10-01	FC-10	70	140	FUNCTIONAL	CP210-1	SDC10-2	45	210	CV2009-008
1G10-02	FC-10	76	42	FUNCTIONAL	CP211-1	SDC12-2	75	40	
1G10-03	FC-10	76	140	FUNCTIONAL	CP210-1	SDC10-2	45	210	CV2009-016
1G10-A01	FC-10	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1G10-B01	FC-10	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1G11	FC-10	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-	
1G12	FC-10	150	140	NONE	Service Only. No Comatrol replacement.	-	-	-	
1G400	FC-316	55	140	FUNCTIONAL	CP210-1	SDC10-2	45	210	
1G41	PIB (PARTS IN BODY)	95	70	FUNCTIONAL	VME 08	VME08	80	315	
1L10	FC-76	150	350	FUNCTIONAL	CP201-1	CP12-2	150	250	
1L10-01	FC-76	150	350	FUNCTIONAL	CP201-1	CP12-2	150	250	CV2009-008
1L11	FC-76	150	350	FUNCTIONAL	CP201-1	CP12-2	150	250	
1L22	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP200-1	SDC10-2	75	250	
1L23	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP211-2	CP12-2	190	350	
1L24	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
1L400	FC-316	115	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
1L60	FC-153	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
1LC11	CIB	150	350	FUNCTIONAL	CP443-1	CP20-3S	190	350	
1LL11	CIB	150	350	FUNCTIONAL	CP221-1	CIB	190	250	
1LL22	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1	CIB	190	250	
1LL23	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP221-1	CIB	190	250	
1LLA11	CIB	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
1LLC11	PIB (PARTS IN BODY)	150	175	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
1LLC11-01	CIB	250	150	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
1LLC12	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
1LLC12-01	CIB	150	350	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
1MA33	PIB (PARTS IN BODY)	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1MA34	PIB (PARTS IN BODY)	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1PA10	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-	

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OLD VALVES				NEW VALVES					
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
1PA10-01	FC-13	115	245	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1PAA21	PIB (PARTS IN BODY)	115	245	FUNCTIONAL	CP231-3	SDC12-3S	115	350	
1PAA21-01	PIB (PARTS IN BODY)	115	245	FUNCTIONAL	CP231-3	SDC12-3S	115	350	
1PAA400	FC-316A	75	350	FUNCTIONAL	CP231-3	SDC12-3S	115	350	
1PAA600	FC-324A	150	350	FUNCTIONAL	CP231-3	SDC12-3S	115	350	
1PD11	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1	SDC10-3	40	350	
1PD12	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	CP230-1	SDC10-4	41	350	
1PD13	PIB (PARTS IN BODY)	20	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1PD14	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	1PD14-01	SDC10-3	20	350	
1PD15	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
1PD15-01	PIB (PARTS IN BODY)	20	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
1PD20	FC-13	40	210	FUNCTIONAL	CP230-1	SDC10-3	40	210	
1PD20-01	FC-13	40	210	FUNCTIONAL	CP230-1	SDC10-3	40	210	CV2009-016
1PD400	FC-316A	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
1RSA21	PIB (PARTS IN BODY)	115	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1RSA31	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
1RSA400	FC-316D	40	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
1S12	FC-13	75	420	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
1S13	FC-13	75	420	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
1SA10	FC-13	75	420	FUNCTIONAL	CP241-21	CP12-3S	75	350	
1SA10-01	FC-13	75	420	FUNCTIONAL	CP241-21	CP12-3S	75	350	CV2009-008
1SA10-02	ES-1216	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1SA10-A01	FC-13	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1SA12	PIB (PARTS IN BODY)	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-	
1SA12-01	CIB	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1SA13	PIB (PARTS IN BODY)	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-	
1SA13-01	CIB	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1SA13-02	CIB	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1SA400	FC-316A	115	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
1SD10	FC-13	150	140	FUNCTIONAL (10 & 20 option is obsolete)	CP241-8	CP12-3S	150	40	
1SD10-01	FC-13	150	140	FUNCTIONAL	CP241-8	CP12-3S	150	40	CV2009-008
1SD10-02	FC-13	150	140	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1SD10-03	FC-13	150	140	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1SD11	FC-13	150	140	FUNCTIONAL	CP241-8	CP12-3S	150	40	
1SD12	PIB (PARTS IN BODY)	150	140	NONE	Service Only. No Comatrol replacement.	-	-	-	

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OLD VALVES				NEW VALVES					
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
1SD12-01	CIB	150	140	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1SD13	PIB (PARTS IN BODY)	150	140	NONE	Service Only. No Comatrol replacement.	-	-	-	
1SD13-01	CIB	150	140	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
1T11	PIB (PARTS IN BODY)	0.2	690	NONE	Service Only. No Comatrol replacement.	-	-	-	
1TR11	PIB (PARTS IN BODY)	0.2	690	NONE	Service Only. No Comatrol replacement.	-	-	-	
1UA50	FC-10	75	210	FUNCTIONAL	CP240-22	SDC10-3	45	350	
1UL12	PIB (PARTS IN BODY)	150	280	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
1UL15	PIB (PARTS IN BODY)	305	280	NONE	Service Only. No Comatrol replacement.	-	-	-	
1USA50	FC-13	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
2F10	FC-60	76	210	FUNCTIONAL	CP311-1	CP12-3	95	210	
2F14	FC-60	76	210	FUNCTIONAL	CP311-1	CP12-3	95	210	
2F400	FC-316	60	350	FUNCTIONAL	CP620-1	SDC10-2	75	210	
2F74	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F74-01	CIB	30	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F75	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F75-01	CIB	60	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F76	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F76-01	CIB	95	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F77	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F77-01	CIB	190	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F84	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F84-01	CIB	30	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F85	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F85-01	CIB	60	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F86	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F86-01	CIB	95	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F86-B0	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
2F87	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F87-01	CIB	190	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2F94	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	2F94-01	CIB	30	210	
2F95	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	2F95-01	CIB	60	210	
2F96	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	2F96-01	CIB	95	210	
2F96-02	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-016

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OLD VALVES				NEW VALVES					
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
2F97	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	2F97-01	CIB	190	210	
2F97-02	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
2FA84	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FA84-01	CIB	30	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FA85	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FA85-01	CIB	60	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FA86	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FA86-01	CIB	95	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FA87	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FA87-01	CIB	190	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FC74	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FC74-01	CIB	30	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FC75	PIB (PARTS IN BODY)	60	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FC75-01	CIB	60	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FC76	PIB (PARTS IN BODY)	95	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FC76-01	CIB	95	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FC77	PIB (PARTS IN BODY)	190	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FC77-01	CIB	190	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-010
2FF12	PIB (PARTS IN BODY)	140	150	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-009
2FFC12	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-009
2FFCW12	CIB	150	140	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-009
2FFL12	PIB (PARTS IN BODY)	140	150	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-009
2FFLC12	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-009
2FFLW86	PIB (PARTS IN BODY)	140	150	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-009
2FL11	-	-	-	-	-	-	-	-	
2FL12	PIB (PARTS IN BODY)	140	150	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-009
2FLW86	PIB (PARTS IN BODY)	140	150	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-009
2FP400	FC-316A	60	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
2FP401	FC-316A	60	350	FUNCTIONAL	2F95-01	CIB	60	210	
2FPC600	FC-324B	155	350	FUNCTIONAL	CP312-4	CP16-4	130	210	
2FPC800	FC-329B	305	350	FUNCTIONAL	CP313-4	CP20-4	340	210	
2FR420-N (Fixed)	FC-316	40	350	FUNCTIONAL	CP301-1	CP12-2	60	210	

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Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
2FR420-P (Adjustable)	FC-316	40	350	FUNCTIONAL	VR 12	NCS12/2	60	315	
2FR820	FC-329	190	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
2FRC600	FC-324A	95	350	FUNCTIONAL	CP302-4	SDC16-3	130	210	
2FRC800	FC-329A	190	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
2N11	PIB (PARTS IN BODY)	45	350	FUNCTIONAL	CP618-2	SDC08-2	45	210	
2N400	FC-316	55	350	FUNCTIONAL	CP610-2	SDC10-2	50	210	
2N600	FC-324	150	350	FUNCTIONAL	CP612-2	SDC16-2	190	210	
2N800	FC-329	300	350	FUNCTIONAL	CP613-1	SDC20-2	380	210	
2R11	PIB (PARTS IN BODY)	45	350	FUNCTIONAL	CP610-7	SDC10-2	55	210	
2R14	PIB (PARTS IN BODY)	105	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
2R400	FC-316	55	350	FUNCTIONAL	CP610-7	SDC10-2	55	210	
2RN11	PIB (PARTS IN BODY)	20	350	DIRECT	2RN11-01	PIB (PARTS IN BODY)	20	350	
2RN12	PIB (PARTS IN BODY)	30	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
2RN13	PIB (PARTS IN BODY)	70	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
2RN14	PIB (PARTS IN BODY)	95	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
2RN15	PIB (PARTS IN BODY)	150	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
2RN16	PIB (PARTS IN BODY)	225	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
2V13	PIB (PARTS IN BODY)	40	210	FUNCTIONAL	CP340-1	SDC10-4	45	210	
2V14	PIB (PARTS IN BODY)	150	210	FUNCTIONAL	CP342-1	CP16-4	150	210	
2V16	PIB (PARTS IN BODY)	230	210	FUNCTIONAL	CP343-1	SDC20-4	340	210	
2V21	PIB (PARTS IN BODY)	150	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
2V400	FC-316D	40	350	FUNCTIONAL	CP342-3	CP16-4	150	450	
2V600	FC-324B	150	350	FUNCTIONAL	CP342-3	CP16-4	150	450	
2ZXP	PIB (PARTS IN BODY)	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	
3C100	FC-336	15	280	FUNCTIONAL	CV08-NP	SDC08-2	30	310	
3C100-01	FC-336	15	280	FUNCTIONAL	CV04-NB (CP104-1*)	CP04-2	3	207	CV2009-016
3C100-A01	FC-336	15	280	FUNCTIONAL	CV04-NB (CP104-1*)	CP04-2	3	207	CV2009-016
3C100-SV	FC-336	15	280	FUNCTIONAL	CV04-NB (CP104-1*)	CP04-2	3	207	CV2009-016
3C11	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3C11-01	PIB (PARTS IN BODY)	20	350	CV2002-22
3C12	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3C12-01	PIB (PARTS IN BODY)	35	350	
3C13	PIB (PARTS IN BODY)	70	350	FUNCTIONAL	3C13-01	PIB (PARTS IN BODY)	70	350	
3C14	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3C14-01	PIB (PARTS IN BODY)	95	350	
3C15	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3C15-01	PIB (PARTS IN BODY)	150	350	
3C16	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3C16-01	PIB (PARTS IN BODY)	230	350	
3C400	FC-316	115	350	FUNCTIONAL	CP100-3	SDC10-2	115	350	
3C50	FC-144	70	210	DIRECT	3C50-01	FC-144	70	210	
3C60	FC-144	70	140	DIRECT	3C60-01	FC-144	70	140	
3C600	FC-324	150	350	FUNCTIONAL	CP102-1	SDC16-2	210	210	

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Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
3C80	FC-304	190	210	DIRECT	3C80-01	FC-304	190	210	
3C800	FC-329	300	350	FUNCTIONAL	CP103-1	SDC20-2	380	210	
3C90	FC-304	190	140	DIRECT	3C90-01	FC-304	190	140	
3CD400	FC-316	75	420	NONE	Service Only. No Comatrol replacement.	-	-	-	
3CM11	PIB (PARTS IN BODY)	20	350	FUNCTIONAL	3CM11-01	PIB (PARTS IN BODY)	20	350	
3CM12	PIB (PARTS IN BODY)	35	350	FUNCTIONAL	3CM12-01	PIB (PARTS IN BODY)	35	350	
3CM13	PIB (PARTS IN BODY)	70	350	FUNCTIONAL	3CM13-01	PIB (PARTS IN BODY)	70	350	
3CM14	PIB (PARTS IN BODY)	95	350	FUNCTIONAL	3CM14-01	PIB (PARTS IN BODY)	95	350	
3CM15	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	3CM15-01	PIB (PARTS IN BODY)	150	350	
3CM16	PIB (PARTS IN BODY)	230	350	FUNCTIONAL	3CM16-01	PIB (PARTS IN BODY)	230	350	
4C30	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	
4C400	FC-316A	7.6	350	FUNCTIONAL	CP128-1	SDC08-3	10	210	
4DS800	FC-329A	300	350	FUNCTIONAL	CP703-2	CP20-3S	320	210	
4DS810	FC-324A	300	350	FUNCTIONAL	CP703-1 (LE20-CPC)	CP20-3S	300	210	
4H400-1	FC-316D	57	350	FUNCTIONAL	CP722-11	CP16-4	125	450	
4H400-2	FC-316D	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4H410-1	FC-316D	57	350	FUNCTIONAL	CP722-1	CP16-4	130	210	
4H410-2	FC-316D	57	350	FUNCTIONAL	CP722-2	CP16-4	130	210	
4H600-1	FC-324B	151	350	FUNCTIONAL	CP722-11	CP16-4	125	450	
4H600-2	FC-324B	151	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4H610-1	FC-324B	151	350	FUNCTIONAL	CP722-1	CP16-4	130	210	
4H610-2	FC-324B	151	350	FUNCTIONAL	CP722-2	CP16-4	130	210	
4H800-1	FC-329B	303	350	FUNCTIONAL	CP723-5	SDC20-4	265	210	
4H800-2	FC-329B	303	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4H810	FC-329B	303	350	FUNCTIONAL	CP723-1	SDC20-4	265	210	
4K11	PIB (PARTS IN BODY)	20	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4K12	PIB (PARTS IN BODY)	30	350	FUNCTIONAL	CP453-5	SDC20-2	250	350	
4K13	PIB (PARTS IN BODY)	75	350	FUNCTIONAL	CP453-5	SDC20-2	250	350	
4K15	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP453-2	SDC20-3S	230	210	
4K19	PIB (PARTS IN BODY)	23	690	NONE	Service Only. No Comatrol replacement.	-	-	-	
4K21 (4.0:1)	PIB (PARTS IN BODY)	30	210	NONE	CP450-1 (3.0:1)	-	-	-	
4K32	PIB (PARTS IN BODY)	68	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
4K33	PIB (PARTS IN BODY)	68	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
4K35	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	CP453-5	SDC20-2	250	350	
4K400	FC-316A	45	280	FUNCTIONAL	MC10-RO	SDC10-3S	45	250	
4K41	PIB (PARTS IN BODY)	380	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4K600	FC-324A	150	350	FUNCTIONAL	CP452-2	SDC16-3S	130	210	
4K70	FC-173	75	210	FUNCTIONAL	CP453-5	SDC20-2	250	350	

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Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
4KC400	FC-316S	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4KC600	FC-324A	151	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4KCV400	FC-316S	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4KCV600	FC-324A	151	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4KK21	PIB (PARTS IN BODY)	30	210	FUNCTIONAL	CP410-1	CIB	85	210	
4KK32	PIB (PARTS IN BODY)	70	210	FUNCTIONAL	CP410-1	CIB	85	210	
4KK33	PIB (PARTS IN BODY)	70	140	NONE	Service Only. No Comatrol replacement.	-	-	-	
4KK35	PIB (PARTS IN BODY)	150	350	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
4M182	PIB (PARTS IN BODY)	38	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
4M183	PIB (PARTS IN BODY)	38	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
4M185	PIB (PARTS IN BODY)	38	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
4M187	PIB (PARTS IN BODY)	38	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
4M400	FC-316	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4M410	FC-316	57	350	NONE	Service Only. No Comatrol replacement.	-	-	-	
4RH11	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	
7AR15	PIB (PARTS IN BODY)	225	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
7AR17	PIB (PARTS IN BODY)	380	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	
7W110	FC-10	75	210	FUNCTIONAL	SVP10-NC, SVP10-NO	SDC10-2	80	230	CV2009-016
7W13	PIB (PARTS IN BODY)	305	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
7W14-1	PIB (PARTS IN BODY)	230	210	FUNCTIONAL	CP503-4	SDC20-2	230	210	
7W14-2	PIB (PARTS IN BODY)	230	210	FUNCTIONAL	CP503-3	SDC20-2	230	210	
7W20-1	FC-109	0.75	210	FUNCTIONAL	SV08-22-01	SDC08-2	16	230	
7W20-2	FC-109	0.75	210	FUNCTIONAL	SV08-22-02	SDC08-2	16	230	
7W30-1	FC-109	7.5	210	FUNCTIONAL	SVP08-NO	SDC08-2	35	230	
7W30-2	FC-109	7.5	210	FUNCTIONAL	SVP08-NC	SDC08-2	35	230	
7W40-1	FC-109A	2	210	FUNCTIONAL	SV08-23-04	SDC08-3	10	230	
7W40-2	FC-109A	2	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230	
7W440-1	FC-316A	25	210	FUNCTIONAL	SV08-23-04	SDC08-3	10	230	
7W440-2	FC-316A	25	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230	
7W480-1	FC-316D	30	210	FUNCTIONAL	SV10-24-01	SDC10-4	15	230	
7W480-2	FC-316D	30	210	FUNCTIONAL	SV08-24-02	SDC08-4	10	230	
7W490-1	FC-316	40	210	FUNCTIONAL	SVP08-NOR	SDC08-2	35	230	
7W490-2	FC-316	40	210	FUNCTIONAL	SVP08-NCR	SDC08-2	35	230	
7W50	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	
7W61	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	
7W70	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	

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Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
7W80	FC-10	76	320	NONE	Service Only. No Comatrol replacement.	-	-	-	
7W90-1	FC-109	20	210	FUNCTIONAL	SVP08-NO	SDC08-2	35	230	
7W90-2	FC-109	20	210	FUNCTIONAL	SVP08-NC	SDC08-2	35	230	
7WA110	FC-10	76	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
7WA80	FC-10	76	210	NONE	Service Only. No Comatrol replacement.	-	-	-	
7WC490	-	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	
7WXP	Special	-	-	FUNCTIONAL	SVP08-RV	SDC08-2	-	-	CV2009-016
A3106	HIC	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
A3107	HIC	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
A3109	HIC	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
A3110	HIC	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
A3111	HIC	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
A3112	HIC	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
A3120	HIC	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
A5119	HIC	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP100-1	CP10-2	83	210	DIRECT	CV10-NP	SDC10-2	85	300	CV2009-008
CP100-8	SDC10-2	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP100-9	SDC10-2	85	210	FUNCTIONAL	CV10-NP (with orifice in HIC, in parallel)	SDC10-2	85	300	CV2009-016
CP100-A05	SDC10-2	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP100-A06	SDC10-2	-	-	FUNCTIONAL	CP100-3	SDC10-2	115	350	CV2009-016
CP101-1	CP12-2	100	210	FUNCTIONAL	CP100-3	SDC10-2	115	350	CV2009-016
CP102-A01	SDC16-2	-	-	FUNCTIONAL	CP102-1	SDC16-2	210	210	CV2009-016
CP103-3	SDC20-2	-	-	FUNCTIONAL	CP103-1	SDC20-2	380	210	CV2009-016
CP104-A03	CP04-2	-	-	FUNCTIONAL	CP104-2	CP04-2	3	210	CV2009-016
CP108-1	CP08-2	30	210	DIRECT	CV08-NP	SDC08-2	30	210	CV2009-008
CP108-6	SDC08-2	-	-	FUNCTIONAL	CV08-NB (CP108-7*)	SDC08-2	-	-	CV2009-016
CP120-1	SDC10-3	20	210	FUNCTIONAL	CP120-4	SDC10-3	25	330	CV2009-016
CP120-1L	CP10-3L	-	-	FUNCTIONAL	CP120-4	SDC10-3	25	330	CV2009-016
CP120-2	SDC10-2	11.4	210	FUNCTIONAL	CP120-4	SDC10-3	25	330	CV2009-016
CP120-A01	SDC10-3S	-	-	FUNCTIONAL	CP120-4	SDC10-3	25	330	CV2009-016
CP128-2	SDC08-2	7.6	210	FUNCTIONAL	CP128-1	SDC08-3	10	210	CV2009-016
CP128-3	SDC08-2	-	-	FUNCTIONAL	CP128-1	SDC08-3	10	210	CV2009-016
CP200-4	SDC10-2	-	415	FUNCTIONAL	CP208-4	SDC08-2	1.1	415	CV2009-016
CP200-5	CP10-2	38	210	FUNCTIONAL	CP200-3	SDC10-2	40	250	CV2009-008
CP200-A08	SDC10-2	-	-	FUNCTIONAL	CP200-1 or CP200-2	SDC10-2	75/40	250/350	CV2009-016
CP200-A09	SDC10-2	-	-	FUNCTIONAL	CP200-3	SDC10-2	40	250	CV2009-016
CP200-A17	SDC10-2	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP200-A20	SDC10-2	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016

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OLD VALVES				NEW VALVES					
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
CP200-A21	SDC10-2	-	-	FUNCTIONAL	CP200-3	SDC10-2	40	250	CV2009-016
CP204-3	CP04-2	0.76	345	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP208-11	SDC08-2	-	345	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP208-A02	SDC08-2	-	-	FUNCTIONAL	CP208-3	SDC08-2	30	250	CV2009-016
CP210-A01	SDC10-2	-	-	FUNCTIONAL	CP210-1	SDC10-2	45	210	CV2009-016
CP210-A02	SDC10-2	-	-	FUNCTIONAL	CP210-2	SDC10-2	115	350	CV2009-016
CP210-A04	T-10A	-	-	FUNCTIONAL	10782	T-10A	-	-	CV2009-016
CP210-A06	SDC10-2	100	380	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP211-A03	CP12-2	-	-	FUNCTIONAL	CP211-2	CP12-2	190	350	CV2009-016
CP211-A06	CP12-2	190	345	FUNCTIONAL	CP211-2	CP12-2	190	350	CV2009-016
CP218-1	SDC08-2	-	-	FUNCTIONAL	CP210-1	SDC10-2	45	210	CV2009-016
CP218-A01	Special	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP218-A02	SDC08-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP220-2	CIB	76	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	-	-	-	CV2009-016
CP220-3	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP230-3	CP10-3	38	345	FUNCTIONAL	PRMP 064	SDC10-3	40	315	CV2009-008
CP230-3L	CP10-3L	-	-	FUNCTIONAL	PRMP 064	SDC10-3	40	315	CV2009-016
CP230-A03	SDC10-3	-	-	FUNCTIONAL	CP230-A02	SDC10-3	-	-	CV2009-016
CP230-A05	SDC10-3	-	-	FUNCTIONAL	CP230-2	SDC10-3	40	210	CV2009-016
CP230-A11	SDC10-3	-	-	FUNCTIONAL	PRMP 064	SDC10-3	40	315	CV2009-016
CP230-A16	SDC10-3	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP230-A17	SDC10-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP230-A18	SDC10-3	-	-	FUNCTIONAL	PRMP 064	SDC10-3	40	315	CV2009-016
CP231-1	CP12-3	-	-	FUNCTIONAL	CP231-3	SDC12-35	115	350	CV2009-016
CP231-A02	Custom	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP240-11	SDC10-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP240-4	SDC10-4	-	-	FUNCTIONAL	VDP 06/NC	NCS06/3	25	315	CV2009-016
CP240-8L	CP10-3L	-	-	FUNCTIONAL	CP240-8 or CP241-8	SDC10-3 or CP12-35	55/150	210/40	CV2009-016
CP240-A02	SDC10-4	-	-	FUNCTIONAL	CP240-5	SDC10-4	25	210	CV2009-016
CP240-A03	SDC10-35	-	-	FUNCTIONAL	CP240-30	SDC10-3	4	210	CV2009-016
CP240-A07	SDC10-35	-	-	FUNCTIONAL	CP240-30	SDC10-3	4	210	CV2009-016
CP240-A08	CP10-3L	-	-	FUNCTIONAL	CP240-1	SDC10-3	25	210	CV2009-016
CP241-2	CP12-3	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP241-30	CP12-3	-	-	FUNCTIONAL	CP240-30 and CP700-2 (HIC)	HIC	-	-	CV2009-016
CP300-A01	SDC10-2	-	-	FUNCTIONAL	CP300-2	SDC10-2	23	210	CV2009-016
CP300-A09	SDC10-3	38	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP300-A10	SDC10-2	-	210	FUNCTIONAL	CP300-2	SDC10-2	23	210	CV2009-016
CP301-A01	CP12-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP301-A03	CP12-2	-	-	FUNCTIONAL	VR 12	NCS12/2	60	315	CV2009-016

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OLD VALVES				NEW VALVES					PIB
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
CP301-A04	CP12-3	57	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP302-A11	SDC16-3	132	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP308-A01	SDC08-2	-	210	FUNCTIONAL	CP308-A02	SDC08-2	-	-	CV2009-016
CP310-1L	CP10-3L	-	-	FUNCTIONAL	CP310-1	SDC10-3	38	210	CV2009-016
CP310-2L	CP10-3L	-	-	FUNCTIONAL	CP310-2	SDC10-3	38	210	CV2009-016
CP310-5	SDC10-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP310-A02	SDC10-3	-	-	FUNCTIONAL	CP310-1	SDC10-3	38	210	CV2009-016
CP310-A03	CP10-3L	-	-	FUNCTIONAL	CP310-1	SDC10-3	38	210	CV2009-016
CP311-6	CP12-4	75	210	FUNCTIONAL	PC12-LPS (CP311-A01*)	CP12-4	-	210	CV2009-016
CP340-2	SDC10-4	-	-	FUNCTIONAL	CP340-1	SDC10-4	45	210	CV2009-016
CP342-2	SDC16-4	-	-	FUNCTIONAL	CP342-1	CP16-4	150	210	CV2009-016
CP400-1	CIB	57	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-011
CP401-1	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-011
CP402-1	CIB	-	210	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-011
CP408-1	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-011
CP408-B03	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-016
CP410-2	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-016
CP411-1	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-016
CP418-1	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-016
CP440-1	CP10-3L	57	345	FUNCTIONAL	CB10-HV	SDC10-35	60	350	CV2009-008
CP440-2	CIB	57	345	FUNCTIONAL	DCB10-HV	CIB	60	350	CV2009-008
CP440-3	CP10-3	57	345	FUNCTIONAL	CB10-HV	SDC10-35	60	350	CV2009-008
CP440-4	CP10-3L	57	345	FUNCTIONAL	CB10-AV	SDC10-35	60	350	CV2009-008
CP440-A04	CP10-3L	-	-	FUNCTIONAL	CB10-HV	SDC10-35	60	350	CV2009-016
CP440-A05	CP10-3L	-	-	FUNCTIONAL	CB10-HV	SDC10-35	60	350	CV2009-016
CP440-A08	CP10-3L	-	-	FUNCTIONAL	CB10-HV	SDC10-35	60	350	CV2009-016
CP440-A09	CP10-3L	-	-	FUNCTIONAL	CB10-AV	SDC10-35	60	350	CV2009-016
CP440-A10	CP10-3L	57	345	FUNCTIONAL	CB10-HV	SDC10-35	60	350	CV2009-016
CP440-A11	CP10-3L	57	345	FUNCTIONAL	CB10-HV	SDC10-35	60	350	CV2009-016
CP440-A12	CP10-3L	57	345	FUNCTIONAL	CB10-HV	SDC10-35	60	350	CV2009-016
CP440-B01	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	-	-	-	CV2009-016
CP441-B02	CIB	-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	-	-	-	CV2009-016
CP448-A01	CP08-3L	-	-	FUNCTIONAL	CP448-1	CP08-3L	20	350	CV2009-016
CP450-2	CP10-3	38	210	FUNCTIONAL	MC10-RO	SDC10-35	45	250	CV2009-008
CP450-2L	CP10-3L	57	210	FUNCTIONAL	MC10-RO	SDC10-35	45	250	CV2009-008
CP450-6	SDC10-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP450-A02	CP10-3L	-	-	FUNCTIONAL	MC10-RO	SDC10-35	45	250	CV2009-016
CP458-3	SDC08-2	20	210	FUNCTIONAL	CP458-2	SDC08-3	20	210	CV2009-016
CP460-2	SDC10-3	-	-	FUNCTIONAL	VLP 12/A5	NCS12/3	160	315	CV2009-016
CP461-2	CP12-3S	80	210	FUNCTIONAL	VLP 12/A5	NCS12/3	160	315	CV2009-016

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Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
CP463-2	CP20-3S	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP468-1	SDC08-3	40	210	FUNCTIONAL	CP460-1	SDC10-3	45	210	CV2009-016
CP500-1	SDC10-2	57	207	DIRECT	SVP10-NC	SDC10-2	80	230	CV2009-007
CP500-2	SDC10-2	57	207	DIRECT	SVP10-NO	SDC10-2	80	230	CV2009-007
CP500-3	SDC10-2	57	207	DIRECT	SVP10-NCR	SDC10-2	80	230	CV2009-007
CP500-4	SDC10-2	57	207	DIRECT	SVP10-NOR	SDC10-2	80	230	CV2009-007
CP500-5	SDC10-2	-	-	FUNCTIONAL	SVP10-NC	SDC10-2	80	230	CV2009-016
CP500-6	SDC10-2	-	-	FUNCTIONAL	SVP10-NO	SDC10-2	80	230	CV2009-016
CP500-A01	CIB	-	-	FUNCTIONAL	SVP10-NOR	SDC10-2	80	230	CV2009-016
CP500-A02	CIB	-	-	FUNCTIONAL	SVP10-NO	SDC10-2	80	230	CV2009-016
CP500-A11	SDC10-2	57	210	FUNCTIONAL	SVP10-NO	SDC10-2	80	230	CV2009-016
CP500-A15	SDC10-2	57	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP501-A03	CP12-2	115	210	FUNCTIONAL	CP501-1	CP12-2	115	210	CV2009-016
CP502-1	SDC16-2	-	-	FUNCTIONAL	CP502-3	SDC16-2	130	210	CV2009-016
CP502-A02	SDC16-2	132	210	FUNCTIONAL	CP502-3	SDC16-2	130	210	CV2009-016
CP508-1	SDC08-2	30	207	DIRECT	SVP08-NC	SDC08-2	35	230	CV2009-007
CP508-13	SDC08-2	-	210	FUNCTIONAL	SVP08-NCR	SDC08-2	35	230	CV2009-016
CP508-14	SDC08-2	-	210	FUNCTIONAL	SVP08-NOR	SDC08-2	35	230	CV2009-016
CP508-15	SDC08-2	1	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP508-17	SDC08-2	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP508-2	SDC08-2	30	207	DIRECT	SVP08-NO	SDC08-2	35	230	CV2009-007
CP508-3	SDC08-2	30	207	DIRECT	SVP08-NCR	SDC08-2	35	230	CV2009-007
CP508-4	SDC08-2	30	207	DIRECT	SVP08-NOR	SDC08-2	35	230	CV2009-007
CP508-9	SDC08-2	-	-	FUNCTIONAL	SVP08-CDB	SDC08-2	16	230	CV2009-016
CP508-A01	SDC08-2	30	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP508-A08	SDC08-2	30	207	DIRECT	SVP08-NCR	SDC08-2	35	230	CV2009-007
CP508-A10	SDC08-2	-	14	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP508-A11	SDC08-2	30	207	DIRECT	SVP08-NC	SDC08-2	35	230	CV2009-007
CP508-A11	SDC08-2	30	210	DIRECT	SVP08-NC	SDC08-2	35	230	CV2006-007
CP508-A14	SDC08-2	-	140	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP508-A16	SDC08-2	-	210	FUNCTIONAL	SVP08-RV	SDC08-2	-	-	CV2009-016
CP508-B01	CIB	30	210	DIRECT	SVP08-NC	SDC08-2	35	230	CV2006-007
CP510-1	SDC10-2	23	207	DIRECT	SV10-22-02	SDC10-2	35	230	CV2009-007
CP510-2	SDC10-2	23	207	DIRECT	SV10-22-01	SDC10-2	27	230	CV2009-007
CP510-2 --M	SDC10-2	23	207	FUNCTIONAL	SV10-22-01	SDC10-2	27	230	CV2009-007
CP510-A01	SDC10-2	-	-	FUNCTIONAL	SV10-22-01	SDC10-2	27	230	CV2009-016
CP510-A04	SDC10-2	-	-	FUNCTIONAL	SV10-22-01	SDC10-2	27	230	CV2009-016
CP511-A01	Special	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP518-1	SDC08-2	11	207	DIRECT	SV08-22-02	SDC08-2	14	230	CV2009-007
CP518-2	SDC08-2	11	207	DIRECT	SV08-22-01	SDC08-2	16	230	CV2009-007
CP520-1	SDC10-3	23	207	DIRECT	SV10-23-01	SDC10-3	28	230	CV2009-007
CP520-3	SDC10-3	23	210	FUNCTIONAL	Possible replacements are SV10-23-01 or SV10-23-02	SDC10-3	28	230	CV2009-016

Cross reference list
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Cartridge Valves Technical Information
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OLD VALVES				NEW VALVES					PIB
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
CP520-A02	SDC10-3	23	210	FUNCTIONAL	SV10-23-C01	SDC10-3	28	230	CV2009-016
CP520-A05	SDC10-3	-	-	FUNCTIONAL	SV10-23-C01	SDC10-3	28	230	CV2009-016
CP520-A07	SDC10-3	23	207	DIRECT	SV10-23-C01	SDC10-3	28	230	CV2009-007
CP521-1	CP12-3	57	207	FUNCTIONAL	CP521-21	CP12-3	60	240	CV2009-007
CP521-2	CP12-3	-	-	FUNCTIONAL	CP521-21	CP12-3	60	240	CV2009-016
CP521-A01	CP12-3	57	207	DIRECT	CP521-21	CP12-3	60	240	CV2009-007
CP521-A03	CP12-3	57	210	DIRECT	CP521-21	CP12-3	60	240	CV2009-016
CP521-B01	CIB	-	-	FUNCTIONAL	CP521-21	CP12-3	60	240	CV2009-016
CP527-2	CP07-3	7	100	FUNCTIONAL	SV08-23-02	SDC08-3	12	230	CV2009-016
CP528-1	SDC08-3	11	207	DIRECT	SV08-23-01	SDC08-3	17	230	CV2009-007
CP528-2	SDC08-3	11	207	FUNCTIONAL	SV08-23-02	SDC08-3	12	230	CV2009-007
CP528-5	SDC08-3	11	207	DIRECT	SV08-23-03	SDC08-3	18	230	CV2009-007
CP528-A01	SDC08-3	11	207	DIRECT	SV08-23-01	SDC08-3	17	230	CV2009-007
CP528-A10	SDC08-3	11	210	FUNCTIONAL	SV08-23-03	SDC08-3	18	230	CV2009-016
CP530-1	SDC10-4	23	207	FUNCTIONAL	SV10-24-01	SDC10-4	15	230	CV2009-007
CP530-2	SDC10-4	23	207	FUNCTIONAL	SV10-24-07	SDC10-4	24	230	CV2009-007
CP530-21	SDC10-4	-	-	FUNCTIONAL	SV10-24-01	SDC10-4	15	230	CV2009-016
CP530-3	SDC10-4	23	207	FUNCTIONAL	SV10-24-05	SDC10-4	25	230	CV2009-007
CP530-3P-X-XX-1	SDC10-4	19	207	FUNCTIONAL*	SV10-34-04	SDC10-4	24	230	CV2009-007
CP530-3P-X-XX-3	SDC10-4	19	207	FUNCTIONAL*	SV10-34-03	SDC10-4	20	230	CV2009-007
CP530-3P-X-XX-4	SDC10-4	19	207	FUNCTIONAL*	SV10-34-02	SDC10-4	20	230	CV2009-007
CP530-3P-X-XX-5	SDC10-4	19	207	FUNCTIONAL*	SV10-34-05	SDC10-4	20	230	CV2009-007
CP530-6	SDC10-4	11	207	none	Service Only. No Comatrol replacement.	-	-	-	CV2009-007
CP530-A01	CIB	-	-	FUNCTIONAL	SV10-24-01	SDC10-4	15	230	CV2009-016
CP530-A09	SDC10-4	19	207	FUNCTIONAL*	SV10-34-04	SDC10-4	24	230	CV2009-007
CP530-A10	SDC10-4	-	-	FUNCTIONAL	SV10-34-04	SDC10-4	15	230	CV2009-016
CP530-A11	SDC10-4	-	-	FUNCTIONAL	SV10-34-04	SDC10-4	15	230	CV2009-016
CP531-A01	CP12-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP538-1	SDC08-4	11	207	FUNCTIONAL	SV08-24-01	SDC08-4	8	230	CV2009-007
CP538-3P-X-XX-1	SDC08-4	6	207	DIRECT	SV08-34-04	SDC08-4	6	230	CV2009-007
CP538-3P-X-XX-3	SDC08-4	11	207	FUNCTIONAL*	SV08-34-03	SDC08-4	8	230	CV2009-007
CP538-3P-X-XX-4	SDC08-4	11	207	FUNCTIONAL*	SV08-34-02	SDC08-4	10	230	CV2009-007
CP538-3P-X-XX-5	SDC08-4	11	207	FUNCTIONAL*	SV08-34-05	SDC08-4	10	230	CV2009-007
CP538-A01	SDC08-4	-	-	FUNCTIONAL	SV08-34-02	SDC08-4	10	230	CV2009-016
CP550-22	SDC10-2	-	-	FUNCTIONAL	PRV10-POC	SDC10-2	76	250	CV2009-016
CP550-A11	SDC10-3C1 (Special)	-	21	FUNCTIONAL	CP550-A15	SDC10-3C1 (Special)	-	-	CV2009-016
CP550-A13	SDC10-2	-	-	FUNCTIONAL	PRV10-POC	SDC10-2	76	250	CV2009-016
CP551-22	CP12-2	-	-	FUNCTIONAL	PRV12-POC	SDC12-2	180	250	CV2009-016
CP551-A03	CP12-2	-	-	FUNCTIONAL	PRV12-POC	SDC12-2	180	250	CV2009-016
CP558-22	SDC08-2	-	-	FUNCTIONAL	PRV10-POC	SDC10-2 or SDC08-2	76	250	CV2009-016
CP558-23	SDC08-3	2	210	FUNCTIONAL	CP558-24	SDC08-3	4	34	CV2009-016
CP558-A02	SDC08-2	-	345	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP558-A05	SDC08-2	-	-	FUNCTIONAL	PRV10-POC	SDC10-2 or SDC08-2	76	250	CV2009-016
CP558-A07	SDC08-3	4	70	FUNCTIONAL	CP558-A16	SDC08-3	-	-	CV2009-016

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OLD VALVES				NEW VALVES					PIB
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
CP558-A10	SDC08-3	4	34	FUNCTIONAL	CP558-24	SDC08-3	4	34	CV2009-016
CP600-A01	SDC10-2	-	-	DIRECT	CP600-5	SDC10-2	1.2cc	210	CV2009-016
CP601-A02	Custom	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP602-A01	SDC16-2	-	-	FUNCTIONAL	CP602-5	SDC16-2	-	-	CV2009-016
CP608-3	SDC08-2	-	-	FUNCTIONAL	CP600-2	SDC10-2	50	210	CV2009-016
CP608-A01	CIB	-	-	FUNCTIONAL	CP600-2	SDC10-2	50	210	CV2009-016
CP610-3	SDC10-2	38	210	FUNCTIONAL	CP610-7	SDC10-2	55	210	CV2009-016
CP610-4	SDC10-2	53	210	FUNCTIONAL	CP610-7	SDC10-2	55	210	CV2009-016
CP610-A03	SDC10-2	53	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP610-A04	SDC10-2	38	450	FUNCTIONAL	CP610-7	SDC10-2	55	210	CV2009-016
CP610-A05	SDC10-2	-	-	FUNCTIONAL	CP610-2	SDC10-2	50	210	CV2009-016
CP610-A07	SDC10-2	38	450	FUNCTIONAL	CP610-7	SDC10-2	55	210	CV2009-016
CP610-A08	SDC10-2	53	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP618-A01	SDC08-2	-	-	FUNCTIONAL	CP618-1	SDC08-2	250	210	CV2009-016
CP618-A04	SDC08-2	11	210	FUNCTIONAL	CP618-6	SDC08-2	10	210	CV2009-016
CP618-A09	SDC08-2	45	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP620-3	SDC10-3	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP620-A01	SDC10-2	-	-	FUNCTIONAL	CP620-1	SDC10-2	75	210	CV2009-016
CP620-A02	SDC10-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP621-5	CP12-2	114	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP622-1	SDC16-2	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP630-2	SDC10-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP630-3	SDC10-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP640-A01	SDC10-4	-	-	FUNCTIONAL	CP640-1	SDC10-4	10	210	CV2009-016
CP641-A01	CP12-4	-	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP700-1L	CP10-3L	79	210	FUNCTIONAL	CP700-1 or CP701-1	SDC10-3	50/150	210	CV2009-008
CP700-2L	CP10-3L	57	210	FUNCTIONAL	CP700-2 or CP701-2	SDC10-3	50/150	210	CV2009-016
CP700-3L	CP10-3L	38	210	FUNCTIONAL	CP700-3	SDC10-3	40	210	CV2009-016
CP700-4L	CP10-3L	-	-	FUNCTIONAL	CP700-4	SDC10-3	40	210	CV2009-016
CP700-A02	CP10-3L	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP700-A05	SDC10-3	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP700-A06	SDC10-3	-	-	FUNCTIONAL	CP700-1	SDC10-3	50	210	CV2009-016
CP700-A08	SDC10-3	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP702-8	SDC16-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP702-A08	SDC16-3S	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP712-9	SDC16-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP713-7	SDC20-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016

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OLD VALVES				NEW VALVES					PIB
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
CP720-11	SDC10-4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP720-9	SDC10-4	25	210	FUNCTIONAL	CP720-5	SDC10-4	40	210	CV2009-016
CP721-12	CP12-3M	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP800-31	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP800-32	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP800-420	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP800-430	CIB	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
CP810-1	CIB	-	-	FUNCTIONAL	MM-DH(DS)-DVME06	HIC	-	-	CV2009-012
CP810-2	CIB	-	-	FUNCTIONAL	MM-LS-DH(DS)-DVME06	HIC	-	-	CV2009-012
CP810-7	CIB	-	-	FUNCTIONAL	MM-DH(DS)-DCB10-HV	HIC	-	-	CV2009-012
CP810-8	CIB	-	-	FUNCTIONAL	MM-LS-DH(DS)-DCB10-HV	HIC	-	-	CV2009-012
EDH 04/3201	NCS04/3	12	210	FUNCTIONAL	SV08-23-04	SDC08-3	10	230	CV2009-007
EDH 04/3203	NCS04/3	12	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 04/3204	NCS04/3	12	210	FUNCTIONAL	SV08-23-02	SDC08-3	12	230	CV2009-007
EDH 04/4205	NCS04/4	12	315	FUNCTIONAL	SV08-24-01	SDC08-4	8	230	CV2009-007
EDH 04/4206	NCS04/4	12	315	FUNCTIONAL	SV08-24-02	SDC08-4	10	230	CV2009-007
EDH 04/4207	NCS04/4	8	315	FUNCTIONAL	SV08-24-03	SDC08-4	8	230	CV2009-007
EDH 04/4208	NCS04/4	8	315	FUNCTIONAL	SV08-24-04	SDC08-4	8	230	CV2009-007
EDH 04/4209	NCS04/4	12	315	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 04/4212	NCS04/4	12	315	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 04/4213	NCS06/4	12	315	FUNCTIONAL	SV08-24-06	SDC08-4	11	230	CV2009-007
EDH 04/4306	NCS04/4	12	315	FUNCTIONAL	SV08-34-02	SDC08-4	10	230	CV2009-007
EDH 04/4307	NCS04/4	8	315	FUNCTIONAL	SV08-34-03	SDC08-4	8	230	CV2009-007
EDH 04/4308	NCS04/4	8	315	FUNCTIONAL	SV08-34-04	SDC08-4	6	230	CV2009-007
EDH 04/4309	NCS04/4	12	315	FUNCTIONAL	SV08-34-05	SDC08-4	10	230	CV2009-007
EDH 04/NA	NCS04/2	12	315	FUNCTIONAL	SV08-22-03	SDC08-2	12	230	CV2009-007
EDH 04/NC	NCS04/2	12	315	FUNCTIONAL	SV08-22-02	SDC08-2	12	230	CV2009-007
EDH 041/3201	SDC08-3	12	210	DIRECT	SV08-23-04	SDC08-3	10	230	CV2009-007
EDH 041/3201P	SDC08-3	12	210	DIRECT	SV08-23-04	SDC08-3	10	230	CV2009-007
EDH 041/3204	SDC08-3	12	210	DIRECT	SV08-23-02	SDC08-3	12	230	CV2009-007
EDH 041/4205	SDC08-4	12	315	DIRECT	SV08-24-01	SDC08-4	8	230	CV2009-007
EDH 041/4205P	SDC08-4	12	315	DIRECT	SV08-24-01	SDC08-4	8	230	CV2009-007
EDH 041/4206	SDC08-4	12	315	DIRECT	SV08-24-02	SDC08-4	10	230	CV2009-007
EDH 041/4207	SDC08-4	8	315	DIRECT	SV08-24-03	SDC08-4	8	230	CV2009-007
EDH 041/4208	SDC08-4	8	315	DIRECT	SV08-24-04	SDC08-4	8	230	CV2009-007
EDH 041/4213	SDC08-4	12	315	DIRECT	SV08-24-06	SDC08-4	11	230	CV2009-007
EDH 041/4306	SDC08-4	12	315	DIRECT	SV08-34-02	SDC08-4	10	230	CV2009-007
EDH 041/4307	SDC08-4	8	315	DIRECT	SV08-34-03	SDC08-4	8	230	CV2009-007
EDH 041/4308	SDC08-4	8	315	DIRECT	SV08-34-04	SDC08-4	6	230	CV2009-007
EDH 041/4309	SDC08-4	12	315	DIRECT	SV08-34-05	SDC08-4	10	230	CV2009-007
EDH 041/NA	SDC08-2	12	315	DIRECT	SV08-22-03	SDC08-2	12	230	CV2009-007
EDH 041/NC	SDC08-2	12	315	DIRECT	SV08-22-02	SDC08-2	12	230	CV2009-007
EDH 06/3201	NCS06/3	35	210	FUNCTIONAL	SV10-23-04	SDC10-3	35	230	CV2009-007

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OLD VALVES				NEW VALVES					
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
EDH 06/3204	NCS06/3	35	210	FUNCTIONAL	SV10-23-02	SDC10-3	45	230	CV2009-007
EDH 06/3302	NCS06/3	25	210	FUNCTIONAL	EDH 12/3302	NCS12/3	40	210	CV2009-007
EDH 06/3303	NCS06/3	35	210	FUNCTIONAL	EDH 12/3303	NCS12/3	50	210	CV2009-007
EDH 06/4205	NCS06/4	35	315	FUNCTIONAL	SV10-24-01	SDC10-4	15	230	CV2009-007
EDH 06/4206	NCS06/4	35	315	FUNCTIONAL	SV10-24-02	SDC10-4	35	315	CV2009-007
EDH 06/4207	NCS06/4	25	315	FUNCTIONAL	SV10-24-13	SDC10-4	21	315	CV2009-007
EDH 06/4208	NCS06/4	25	315	FUNCTIONAL	SV10-24-12	SDC10-4	18	230	CV2009-007
EDH 06/4209	NCS06/4	35	315	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 06/4212	NCS06/4	35	315	FUNCTIONAL	SV10-24-05	SDC10-4	25	230	CV2009-007
EDH 06/4213	NCS06/4	35	315	FUNCTIONAL	SV10-24-06	SDC10-4	24	230	CV2009-007
EDH 06/4217	NCS06/4	35	315	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 06/4306	NCS06/4	35	315	FUNCTIONAL	SV10-34-02	SDC10-4	20	230	CV2009-007
EDH 06/4307	NCS06/4	25	315	FUNCTIONAL	SV10-34-03	SDC10-4	20	230	CV2009-007
EDH 06/4308	NCS06/4	25	315	FUNCTIONAL	SV10-34-04	SDC10-4	24	230	CV2009-007
EDH 06/4309	NCS06/4	35	315	FUNCTIONAL	SV10-34-05	SDC10-4	20	230	CV2009-007
EDH 06/4310	NCS06/4	20	315	FUNCTIONAL	SV10-34-07	SDC10-4	20	230	CV2009-007
EDH 06/4313	NCS06/4	35	315	FUNCTIONAL	SV10-34-06	SDC10-4	24	230	CV2009-007
EDH 06/4317	NCS06/4	35	315	FUNCTIONAL	SV10-34-09	SDC10-4	20	230	CV2009-007
EDH 06/4319	NCS06/4	35	315	FUNCTIONAL	SV10-34-10	SDC10-4	24	230	CV2009-007
EDH 06/4320	NCS06/4	35	315	FUNCTIONAL	SV10-34-11	SDC10-4	24	230	CV2009-007
EDH 06/NA	NCS06/2	35	315	FUNCTIONAL	SV10-22-01	SDC10-2	27	230	CV2009-007
EDH 06/NC	NCS06/2	35	315	FUNCTIONAL	SV10-22-02	SDC10-2	35	230	CV2009-007
EDH 064/3201	SDC10-4	35	210	DIRECT	SV10-23-04	SDC10-3	35	230	CV2009-007
EDH 064/3201P	SDC10-3	20	210	FUNCTIONAL	SV10-23-04	SDC10-3	15	230	CV2009-007
EDH 064/3204	SDC10-3	35	210	DIRECT	SV10-23-02	SDC10-3	45	230	CV2009-007
EDH 064/4205	SDC10-4	35	315	DIRECT	SV10-24-01	SDC10-4	15	230	CV2009-007
EDH 064/4205P	SDC10-4	20	210	DIRECT	SV10-24-01	SDC10-4	15	230	CV2009-007
EDH 064/4206	SDC10-4	35	315	DIRECT	SV10-24-02	SDC10-4	35	315	CV2009-007
EDH 064/4207	SDC10-4	25	315	DIRECT	SV10-24-13	SDC10-4	21	315	CV2009-007
EDH 064/4208	SDC10-4	25	315	DIRECT	SV10-24-12	SDC10-4	18	230	CV2009-007
EDH 064/4209	SDC10-4	35	315	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 064/4212	SDC10-4	35	315	DIRECT	SV10-24-05	SDC10-4	25	230	CV2009-007
EDH 064/4213	SDC10-4	35	315	DIRECT	SV10-24-06	SDC10-4	24	230	CV2009-007
EDH 064/4306	SDC10-4	35	315	DIRECT	SV10-34-02	SDC10-4	20	230	CV2009-007
EDH 064/4307	SDC10-4	25	315	DIRECT	SV10-34-03	SDC10-4	20	230	CV2009-007
EDH 064/4308	SDC10-4	25	315	DIRECT	SV10-34-04	SDC10-4	24	230	CV2009-007
EDH 064/4309	SDC10-4	35	315	DIRECT	SV10-34-05	SDC10-4	20	230	CV2009-007
EDH 064/4313	SDC10-4	35	315	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 064/NA	SDC10-2	35	315	DIRECT	SV10-22-01	SDC10-2	27	230	CV2009-007
EDH 064/NC	SDC10-2	35	315	DIRECT	SV10-22-02	SDC10-2	35	230	CV2009-007
EDH 066/3201	Flutec M20x1.5 - 3w	20	210	FUNCTIONAL	SV10-23-04	SDC10-3	15	230	CV2009-007
EDH 066/4205	Flutec M20x1.5 - 4w	20	210	FUNCTIONAL	SV10-24-01	SDC10-4	15	230	CV2009-007
EDH 10/4307	NCS10/4	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 12/3201	NCS12/3	50	210	FUNCTIONAL	CP521-21 or DCV03-2X11 (block one port). Both would require the HIC to change.	ISO D03	-	-	CV2009-016

Cross reference list
 by model number

Cartridge Valves Technical Information
 Cross reference list
 Sorted by model number

OLD VALVES				NEW VALVES					PIB
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
EDH 12/3204	NCS12/3	50	210	FUNCTIONAL	CP521-21	CP12-3	60	240	CV2009-016
EDH 12/3302	NCS12/3	40	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 12/3303	NCS12/3	50	210	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 12/4205	NCS12/4	55	210	FUNCTIONAL	Change to CP531-21. Would require the HIC to change.	CP12-3	32	240	CV2009-016
EDH 12/4206	NCS12/4	60	210	FUNCTIONAL	DCV03-2Z11 or DCV03-2Z51	ISO D03	80	320	CV2009-016
EDH 12/4207	NCS12/4	50	210	FUNCTIONAL	DCV03-2H11 or DCV03-2H51	ISO D03	60	320	CV2009-016
EDH 12/4208	NCS12/4	50	210	FUNCTIONAL	DCV03-2C11 or DCV03-2C51	ISO D03	60	320	CV2009-016
EDH 12/4212	NCS12/4	55	210	FUNCTIONAL	DCV03-2K11	ISO D03	60	320	CV2009-016
EDH 12/4214	NCS12/4	60	210	FUNCTIONAL	DCV03-2Z11 or DCV03-2Z51	ISO D03	80	320	CV2009-016
EDH 12/4306	NCS12/4	55	210	FUNCTIONAL	DCV03-3Z11	ISO D03	80	320	CV2009-016
EDH 12/4307	NCS12/4	50	210	FUNCTIONAL	DCV03-3H11	ISO D03	80	320	CV2009-016
EDH 12/4308	NCS12/4	50	210	FUNCTIONAL	DCV03-3C11	ISO D03	60	320	CV2009-016
EDH 12/4309	NCS12/4	55	210	FUNCTIONAL	DCV03-3Y11	ISO D03	80	320	CV2009-016
EDH 12/4310	NCS12/4	40	210	FUNCTIONAL	DCV03-3F11	ISO D03	80	320	CV2009-016
EDH 12/4313	NCS12/4	60	315	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EDH 12/NA	NCS12/2	30	210	FUNCTIONAL	SVP10-NO, but does not close from 1 to 2.	SDC10-2	80	230	CV2009-016
EDH 12/NC	NCS12/2	30	210	FUNCTIONAL	SVP10-NC, but does not close from 1 to 2.	SDC10-2	80	230	CV2009-016
ERC 06/F	NCS06/4	25	315	FUNCTIONAL	CP310-4	SDC10-4	38	210	CV2009-016
ERC 12/F	NCS12/4	60	315	FUNCTIONAL	CP311-4	CP12-4	60	210	CV2009-016
EVH 027/C1	Special	-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EVH 04/C1	NCS04/2	25	315	FUNCTIONAL	SVP08-NC	SDC08-2	35	230	CV2009-007
EVH 04/C5	NCS04/2	15	210	FUNCTIONAL	SVP08-CDB	SDC08-2	16	230	CV2009-007
EVH 04/EC1	NCS04/2	25	210	FUNCTIONAL	SVP08-NC-...M	SDC08-2	35	230	CV2009-007
EVH 041/C1	SDC08-2	25	315	DIRECT	SVP08-NC	SDC08-2	35	230	CV2009-007
EVH 041/C5	SDC08-2	15	210	DIRECT	SVP08-CDB	SDC08-2	16	230	CV2009-007
EVH 041/C5-W	SDC08-2	25	210	DIRECT	SVP08-CDB	SDC08-2	16	230	CV2009-007
EVH 041/EC1	SDC08-2	25	210	DIRECT	SVP08-NC-...M	SDC08-2	35	230	CV2009-007
EVH 047/C5	Special	25	315	FUNCTIONAL	SVP08-CDB	SDC08-2	16	230	CV2009-016
EVH 06/A1	NCS06/2	50	250	FUNCTIONAL	SVP10-NO	SDC10-2	80	230	CV2009-007
EVH 06/A3	NCS06/2	50	250	FUNCTIONAL	SVP10-NOR	SDC10-2	80	230	CV2009-007
EVH 06/C1	NCS06/2	50	250	FUNCTIONAL	SVP10-NC	SDC10-2	80	230	CV2009-007
EVH 06/C3	NCS06/2	50	250	FUNCTIONAL	SVP10-NCR	SDC10-2	80	230	CV2009-007
EVH 06/C5	NCS06/2	50	250	DIRECT	EVK 06/C5	NCS06/2	40	210	CV2009-007
EVH 06/EC1	NCS06/2	50	250	FUNCTIONAL	SVP10-NC	SDC10-2	80	230	CV2009-016
EVH 065/A1	Bosch M20 x 1.5 - 2w	35	250	FUNCTIONAL	SVP10-NO	SDC10-2	80	230	CV2009-007
EVH 065/A3	Bosch M20 x 1.5 - 2w	35	250	FUNCTIONAL	SVP10-NOR	SDC10-2	80	230	CV2009-007
EVH 065/C1	Bosch M20 x 1.5 - 2w	35	250	FUNCTIONAL	SVP10-NC	SDC10-2	80	230	CV2009-007
EVH 065/C3	Bosch M20 x 1.5 - 2w	35	250	FUNCTIONAL	SVP10-NCR	SDC10-2	80	230	CV2009-007
EVH 065/C5	Bosch M20 x 1.5 - 2w	25	250	FUNCTIONAL	EVK 06/C5	NCS06/2	40	210	CV2009-007
EVH 066/C3	Flutec M20x1.5 - 2w	35	250	FUNCTIONAL	SVP10-NCR	SDC10-2	80	230	CV2009-007
EVH 066/C5	Flutec M20x1.5 - 2w	25	250	FUNCTIONAL	EVK 06/C5	NCS06/2	40	210	CV2009-007
EVH 12/A1	NCS12/2	150	250	FUNCTIONAL	CP501-2	CP12-2	115	210	CV2009-016
EVH 12/A3	NCS12/2	150	250	FUNCTIONAL	CP501-4	CP12-2	115	210	CV2009-016
EVH 12/C1	NCS12/2	150	250	FUNCTIONAL	CP501-1	CP12-2	115	210	CV2009-016

Cross reference list
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Cartridge Valves Technical Information
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OLD VALVES				NEW VALVES					PIB
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
EVH 12/C3	NCS12/2	150	250	FUNCTIONAL	CP501-3	CP12-2	115	210	CV2009-016
EVH 12/C5	NCS12/2	150	250	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
EVK 04/A1	NCS04/2	50	250	FUNCTIONAL	SVP08-NO	SDC08-2	35	230	CV2009-007
EVK 04/A3	NCS04/2	50	250	FUNCTIONAL	SVP08-NOR	SDC08-2	35	230	CV2009-007
EVK 04/C1	NCS04/2	50	315	FUNCTIONAL	SVP08-NC	SDC08-2	35	230	CV2009-007
EVK 04/C3	NCS04/2	50	315	FUNCTIONAL	SVP08-NCR	SDC08-2	35	230	CV2009-007
EVK 04/EC1	NCS04/2	50	315	FUNCTIONAL	SVP08-NC-...M	SDC08-2	35	230	CV2009-007
EVK 04/EC3	NCS04/2	50	315	FUNCTIONAL	SVP08-NCR	SDC08-2	35	230	CV2009-007
EVK 041/A1	SDC08-2	50	250	DIRECT	SVP08-NO	SDC08-2	35	230	CV2009-007
EVK 041/A3	SDC08-2	50	250	DIRECT	SVP08-NOR	SDC08-2	35	230	CV2009-007
EVK 041/C1	SDC08-2	50	315	DIRECT	SVP08-NC	SDC08-2	35	230	CV2009-007
EVK 041/C3	SDC08-2	50	315	DIRECT	SVP08-NCR	SDC08-2	35	230	CV2009-007
EVK 041/EC1	SDC08-2	50	315	DIRECT	SVP08-NC-...M	SDC08-2	35	230	CV2009-007
EVK 041/EC3	SDC08-2	50	315	FUNCTIONAL	SVP08-NCR	SDC08-2	35	230	CV2009-007
EVK 047/A1	Special	50	250	FUNCTIONAL	SVP08-NO	SDC08-2	35	230	CV2009-007
EVK 047/C1	Special	50	250	FUNCTIONAL	SVP08-NC	SDC08-2	35	230	CV2009-007
EVK 047/EC1	Special	50	315	FUNCTIONAL	SVP08-NC-...M	SDC08-2	35	230	CV2009-007
EVK 06/A1	NCS06/2	100	250	FUNCTIONAL	SVP10-NO	SDC10-2	80	230	CV2009-007
EVK 06/A3	NCS06/2	100	250	FUNCTIONAL	SVP10-NOR	SDC10-2	80	230	CV2009-007
EVK 06/C1	NCS06/2	100	250	FUNCTIONAL	SVP10-NC	SDC10-2	80	230	CV2009-007
EVK 06/C3	NCS06/2	100	250	FUNCTIONAL	SVP10-NCR	SDC10-2	80	230	CV2009-007
EVK 064/A3	SDC10-2	100	250	FUNCTIONAL	SVP10-NOR	SDC10-2	80	230	CV2009-016
OSA-00005	HIC	-	-	FUNCTIONAL	MM-OMP/OMR-00-DVME06-EN-3-4B-B-190	HIC	-	-	CV2009-013
OSA-00013	HIC	-	-	FUNCTIONAL	MM-OMT-00-DCP211-2-B-6B-E-C-XXX	HIC	-	-	CV2009-013
OSA-00029	HIC	-	-	FUNCTIONAL	MM-OMP/OMR-00-DVME06-EN-2-4B-B-XXX	HIC	-	-	CV2009-013
OSA-00032	HIC	-	-	FUNCTIONAL	MM-OMP/OMR-LS-DVME06-EN-2-4B-B-80	HIC	-	-	CV2009-013
OSB-00001	HIC	-	-	FUNCTIONAL	MM-OMP/OMR-00-ACB10-HV-1-C-1-E-XXX-B-4B	HIC	-	-	CV2009-013
OSD-00004	HIC	-	-	FUNCTIONAL	MM-OMS-00-DCP211-2-B-6B-E-C-290	HIC	-	-	CV2009-013
OSD-00007	HIC	-	-	FUNCTIONAL	MM-OMT-00-DCP211-2-B-6B-E-C-305	HIC	-	-	CV2009-013
OSE-00001	HIC	-	-	FUNCTIONAL	MM-OMP/OMR-LS-DCB10-HV-3-B-1-E-305-B-4B	HIC	-	-	CV2009-013
OSE-00002	HIC	-	-	FUNCTIONAL	MM-OMS-LS-DCP441-1-B-4B-E-B-305-4.5-005	HIC	-	-	CV2009-013
OSE-00003	HIC	-	-	FUNCTIONAL	MM-OMT-LS-DCP441-1-B-6B-E-B-XXX-4.5-015	HIC	-	-	CV2009-013
OSE-00015	HIC	-	-	FUNCTIONAL	MM-OMP/OMR-LS-DCB10-HV-3-B-1-E-XXX-B-4B	HIC	-	-	CV2009-013
OSE-00017	HIC	-	-	FUNCTIONAL	MM-OMS-LS-DCP441-1-B-4B-E-B-250-3.0-015	HIC	-	-	CV2009-013
OSE-00019	HIC	-	-	FUNCTIONAL	MM-OMT-LS-DCP441-1-B-6B-E-B-XXX-4.5-015	HIC	-	-	CV2009-013
OSE-00041	HIC	-	-	FUNCTIONAL	MM-OMP/OMR-00-DCB10-HV-3-B-1-E-100-B-4B	HIC	-	-	CV2009-013
OSE-00042	HIC	-	-	FUNCTIONAL	MM-OMS-LS-DCP441-1-B-4B-E-A-XXX-4.5-015	HIC	-	-	CV2009-013
OSF-00006	HIC	-	-	FUNCTIONAL	MM-OMT-LS-ACP441-1-B-6B-E-B-XXX-4.5-015	HIC	-	-	CV2009-013

Cross reference list
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Cartridge Valves Technical Information
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OLD VALVES				NEW VALVES					
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	PIB
OSF-00007	HIC	-	-	FUNCTIONAL	MM-OMS-LS-ACP441-1-B-105-E-A-250-10.0-015	HIC	-	-	CV2009-013
OSF-00008	HIC	-	-	FUNCTIONAL	MM-OMP/OMR-LS-ACB10-HV-3-B-1-E-XXX-B-4B	HIC	-	-	CV2009-013
PPRC 068	T11-A	40	315	FUNCTIONAL	CP230-4	SDC10-3	40	350	CV2009-016
PPRH 044	SDC10-4	-	-	FUNCTIONAL	XRP 044	SDC10-4	25	50	CV2009-016
PRMN 06	NCS06/3	-	-	FUNCTIONAL	CP230-A02	SDC10-3	-	-	CV2009-016
PRMP 06	NCS06/3	40	315	FUNCTIONAL	PRMP 064	SDC10-3	40	315	CV2009-008
PV12	CIB	200	315	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
RC 04	NCS04/2	20	315	FUNCTIONAL	CV08-NP	SDC08-2	30	310	CV2009-008
RC 041		20	315	FUNCTIONAL	CV08-NP	SDC08-2	30	310	CV2009-008
RC 06	NCS06/2	40	315	FUNCTIONAL	CV10-NB (CP100-7*)	SDC10-2	-	-	CV2009-016
RC 061		40	315	FUNCTIONAL	CV10-NP	SDC10-2	85	300	CV2009-008
RC 12	NCS12/2	90	315	FUNCTIONAL	CP100-3	SDC10-2	115	350	CV2009-016
RCK 12	NCS12/2	-	-	FUNCTIONAL	CP100-3	SDC10-2	115	350	CV2009-016
RDP 06	CIB	30	250	FUNCTIONAL	CP410-1	CIB	85	210	CV2009-008
RDP 10	CIB	60	250	FUNCTIONAL	CP410-1	CIB	85	210	CV2009-008
RDP 13	CIB	80	250	FUNCTIONAL	CP410-1	CIB	85	210	CV2009-008
REB 04	NCS04/2	25	315	FUNCTIONAL	CP618-1	SDC08-2	250	210	CV2009-008
REB 04	NCS04/2	25	315	FUNCTIONAL	CP618-2	SDC08-2	45	210	CV2009-016
REB 041	SDC08-2	-	-	FUNCTIONAL	CP618-2	SDC08-2	45	210	CV2009-016
REB 07		-	-	FUNCTIONAL	CP618-1	SDC08-2	250	210	CV2009-008
REB 13		-	-	FUNCTIONAL	CP618-1	SDC08-2	250	210	CV2009-008
RERN 06	NCS06/2	60	315	FUNCTIONAL	CP610-2	SDC10-2	50	210	CV2009-008
RERN 06	NCS06/2	60	315	FUNCTIONAL	CP610-2	SDC10-2	50	210	CV2009-016
RPI 06		-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
RPI 10		-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
RPI 13		-	-	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
RPP 06	NCS06/2	100	315	FUNCTIONAL	CP210-2	SDC10-2	115	350	CV2009-016
RPP 068	T-10A	100	315	FUNCTIONAL	10782	T-10A	-	-	CV2009-016
RVE 06	NCS06/2	40	315	FUNCTIONAL	CP610-7	SDC10-2	55	210	CV2009-016
SDDS	CIB	-	-	FUNCTIONAL	MM-DH/MM-DS	HIC	-	-	CV2009-012
SDOMP	CIB	-	-	FUNCTIONAL	MM-OMP	HIC	-	-	CV2009-012
SDOMS	CIB	-	-	FUNCTIONAL	MM-OMS	HIC	-	-	CV2009-012
SV08-24-03	SDC08-4	8	230	FUNCTIONAL	DCV03-2H11 or DCV03-2H51	ISO D03	60	320	CV2009-016
SV08-24-06	SDC08-4	11	230	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
SV10-24-06	SDC10-4	24	230	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
SV10-34-06	SDC10-4	24	230	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
SV10-34-07	SDC10-4	20	230	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
SV10-34-08	SDC10-4	21	230	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
SV10-34-09	SDC10-4	20	230	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
SV10-34-10	SDC10-4	24	230	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016

Cross reference list
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Cartridge Valves Technical Information
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OLD VALVES				NEW VALVES					PIB
Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	Replacement Type	Valve Code	Cavity Name	Maximum Flow (LPM)	Rated Pressure (bar)	
VA* 06/*FDS	CIB	60	350	FUNCTIONAL	MM-OMS-00-DCP211-2	HIC	-	-	CV2009-012
VA* 06/*FS	CIB	60	350	FUNCTIONAL	MM-OMP/OMR-00-DVME06	HIC	-	-	CV2009-012
VA* 06/*FSL	CIB	60	350	FUNCTIONAL	MM-OMP/OMR-00-DVME06-*. *-4B-*. *	HIC	-	-	CV2009-012
VAC-VD 06	CIB	80	350	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
VAC-VD 12	CIB	160	350	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-008
VCB 06-CN	NCS06/3	60	350	FUNCTIONAL	CB10-AV	SDC10-35	60	350	CV2009-008
VCB 06-EN	NCS06/3	60	350	FUNCTIONAL	CB10-HV (piloted in port 3 instead port 1)	SDC10-35	60	350	CV2009-008
VCB 12-EN	NCS12/3	140	350	FUNCTIONAL	CP441-1	CP12-35	115	350	CV2009-016
VCB* 06/*DA-B	CIB	60	350	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-012
VCB* 06/*DA-O	CIB	60	350	FUNCTIONAL	No standard replacement. Custom HIC can be created to replace it.	HIC	-	-	CV2009-012
VCB* 06/*DB-R	CIB	60	350	FUNCTIONAL	MM-OMP/OMR-LS-DCB10-HV	HIC	-	-	CV2009-012
VCB* 06/*DB-S	CIB	60	350	FUNCTIONAL	MM-OMS-LS-DCP441-1	HIC	-	-	CV2009-012
VCB* 06/*D-R	CIB	60	350	FUNCTIONAL	MM-OMP/OMR-00-DCB10-HV	HIC	-	-	CV2009-012
VCB* 06/*D-S	CIB	60	350	FUNCTIONAL	MM-OMS-00-DCP441-1	HIC	-	-	CV2009-012
VCB* 06/*SB-R	CIB	60	350	FUNCTIONAL	MM-OMP/OMR-LS-ACB10-HV	HIC	-	-	CV2009-012
VCB* 06/*SB-S	CIB	60	350	FUNCTIONAL	MM-OMS-LS-ACP441-1	HIC	-	-	CV2009-012
VCB* 06/*S-R	CIB	60	350	FUNCTIONAL	MM-OMP/OMR-00-ACB10-HV	HIC	-	-	CV2009-012
VCB* 06/*S-S	CIB	60	350	FUNCTIONAL	MM-OMS-00-ACP441-1	HIC	-	-	CV2009-012
VCD 04	NCS04/3	20	315	FUNCTIONAL	CB10-HV	SDC10-35	60	350	CV2009-008
VD 061	SDC10-2	100	350	FUNCTIONAL	CP200-1 or CP200-2	SDC10-2	75/40	250/350	CV2009-016
VD 06-CN	NCS06/2	80	350	FUNCTIONAL	Service Only. No Comatrol replacement.	-	-	-	CV2009-008
VD 06-EN	NCS06/2	80	350	FUNCTIONAL	CP200-1	SDC10-2	75	250	CV2009-008
VD 06-EN	NCS06/2	80	350	FUNCTIONAL	CP200-1 or CP200-2	SDC10-2	75/40	250/350	CV2009-016
VD 12-CN	NCS12/2	160	350	FUNCTIONAL	Service Only. No Comatrol replacement.	-	-	-	CV2009-008
VD 12-EN	NCS12/2	160	350	FUNCTIONAL	CP201-1	CP12-2	150	250	CV2009-008
VDP 06/3201	NCS06/3	30	315	FUNCTIONAL	CP240-1	SDC10-3	25	210	CV2009-016
VEN 04	NCS04/2	20	315	FUNCTIONAL	RV08-DR	SDC08-2	30	250	CV2009-016
VEN 04	NCS04/2	20	315	FUNCTIONAL	RV08-DR	SDC08-2	30	250	CV2009-008
VEN 041	SAE 08/2	20	315	FUNCTIONAL	RV08-DR	SDC08-2	30	250	CV2009-008
VFC 10		-	-	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-008
VLP 06/R1-E	NCS06/3	38	315	FUNCTIONAL	CP700-4	SDC10-3	40	210	CV2009-016
VLP 06/R1-F	NCS06/3	38	315	FUNCTIONAL	CP700-4	SDC10-3	40	210	CV2009-016
VLP 06/R3	NCS06/3	25	315	FUNCTIONAL	CP300-4	SDC10-3	40	210	CV2009-016
VLP 06/RO (001682)	NCS06/3	60	315	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
VLP 06/RO-E	NCS06/3	25	315	FUNCTIONAL	CP700-1	SDC10-3	50	210	CV2009-016
VLP 06/RO-F	NCS06/3	25	315	FUNCTIONAL	CP700-1	SDC10-3	50	210	CV2009-016
VLP 12/R1	NCS12/3	80	315	FUNCTIONAL	CP701-4	CP12-35	75	210	CV2009-016
VLP 12/R2	NCS12/3	40	315	FUNCTIONAL	CP700-3	SDC10-3	40	210	CV2009-016
VLP 12/R3	NCS12/3	60	315	FUNCTIONAL	CP301-4	CP12-3	90	210	CV2009-016
VLP 12/RO	NCS12/3	60	315	FUNCTIONAL	CP701-1	CP12-35	150	210	CV2009-016
VM 03	Special	10	315	FUNCTIONAL	CP208-4	SDC08-2	1.1	415	CV2009-016
VM 04	NCS04/2	-	-	FUNCTIONAL	CP208-3	SDC08-2	30	250	CV2009-016

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VM 041	SDC08-2	-	-	FUNCTIONAL	CP208-3	SDC08-2	30	250	CV2009-016
VM* 06/*FDS	CIB	-	-	FUNCTIONAL	MM-OMS-00-ACP211-2	HIC	-	-	CV2009-012
VM* 06/*FS	CIB	-	-	FUNCTIONAL	MM-OMP/OMR-00-AVME06	HIC	-	-	CV2009-012
VM* 06/*FSL	CIB	-	-	FUNCTIONAL	MM-OMP/OMR-00-AVME06-*. *-4B-*. *	HIC	-	-	CV2009-012
VS06/M	NCS06/3	80	350	NONE	Service Only. No Comatrol replacement.	-	-	-	CV2009-016
VSE 07	CIB	50	210	FUNCTIONAL	VS06-EN + Housing	NCS06/2	80	350	CV2009-008
VSE 08		-	-	FUNCTIONAL	VS06-EN + Housing	NCS06/2	80	350	CV2009-008
VSP 06-EN	NCS06/3	-	-	FUNCTIONAL	CP241-21	CP12-3S	75	350	CV2009-016
VT 06/03	NCS06/4	40	315	FUNCTIONAL	CP720-3	SDC10-4	25	350	CV2009-016
XDH 064/4306	SDC10-4	22	350	DIRECT	PSV10-34-02	SDC10-4	22	250	CV2009-016
XDH 064/4309	SDC10-4	22	250	DIRECT	PSV10-34-05	SDC10-4	22	250	CV2009-016

1EEC11.....	9.12
2F94-01.....	7.46
2F95-01.....	7.47
2F96-01.....	7.48
2F97-01.....	7.49
2RN11-01.....	2.41
3C11-01.....	2.24
3C12-01.....	2.26
3C13-01.....	2.28
3C14-01.....	2.29
3C15-01.....	2.32
3C16-01.....	2.34
3C50-01.....	2.20
3C60-01.....	2.21
3C80-01.....	2.22
3C90-01.....	2.23
3CM11-01.....	2.35
3CM12-01.....	2.36
3CM13-01.....	2.37
3CM14-01.....	2.38
3CM15-01.....	2.39
3CM16-01.....	2.40
120662 handle kit.....	18.5
AUV 06.....	6.25
BC 06.....	7.37
BC 10.....	7.38
BC 13.....	7.39
Cavity plugs (CP cavities).....	18.17
Cavity plugs (NCS cavities).....	18.18
CB10-AV.....	9.10
CB10-HV.....	9.07
CE 06.....	12.9
CP04-2 cavity.....	19.18
CP04-3 cavity.....	19.19
CP08-3L cavity.....	19.20
CP12-2 cavity.....	19.21
CP12-3 cavity.....	19.22
CP12-3M cavity.....	19.23
CP12-3S cavity.....	19.24
CP12-4 cavity.....	19.25
CP16-4 cavity.....	19.26
CP20-3S cavity.....	19.27
CP100-2.....	2.16
CP100-3.....	2.11
CP101-2.....	2.17
CP102-1.....	2.12
CP102-2.....	2.18
CP103-1.....	2.13
CP103-2.....	2.19
CP104-2.....	2.14
CP108-2.....	2.13
CP120-4.....	3.7
CP124-1.....	3.4
CP128-1.....	3.5
CP200-1.....	4.16
CP200-2.....	4.14
CP200-3.....	4.08
CP200-7.....	4.23
CP201-1.....	4.17
CP208-1.....	4.15
CP208-3.....	4.07
CP208-4.....	4.06
CP210-1.....	4.18
CP210-2.....	4.20
CP211-1.....	4.19
CP211-2.....	4.21
CP220-1.....	4.29
CP221-1.....	4.30
CP230-1.....	5.6
CP230-2.....	5.4
CP230-4.....	5.8
CP231-3.....	5.11
CP240-1.....	6.17
CP240-2.....	6.12
CP240-5.....	6.16
CP240-8.....	6.08
CP240-9.....	6.18
CP240-21.....	6.10
CP240-22.....	6.13
CP240-30.....	6.24
CP241-8.....	6.08
CP241-21.....	6.11
CP300-1.....	7.19
CP300-2.....	7.22
CP300-4.....	13.32
CP300-6.....	7.32
CP301-1.....	7.20
CP301-4.....	13.33
CP302-4.....	13.34
CP303-4.....	13.35
CP308-1.....	7.18
CP308-2.....	7.21
CP310-1.....	7.25
CP310-2.....	7.29
CP310-4.....	13.28
CP310-6.....	13.36
CP311-1.....	7.27
CP311-4.....	13.29
CP312-1.....	7.28
CP312-4.....	13.30
CP312-6.....	13.37
CP313-4.....	13.31
CP313-6.....	13.38
CP340-1.....	7.40
CP341-1.....	7.42
CP342-1.....	7.43
CP342-3.....	7.44
CP343-1.....	7.45
CP410-1.....	8.20
CP441-1.....	9.8
CP441-2.....	9.15
CP443-1.....	9.9
CP448-1.....	9.6
CP448-2.....	9.13
CP450-1.....	8.8
CP451-2.....	8.12
CP452-2.....	8.13
CP453-2.....	8.14
CP453-5.....	8.16
CP458-2.....	8.10
CP460-1.....	8.17
CP461-1.....	8.18
CP462-1.....	8.19
CP501-1.....	10.20
CP501-2.....	10.28
CP501-3.....	10.23
CP501-4.....	10.31
CP502-3.....	10.24
CP502-4.....	10.32
CP503-3.....	10.25
CP503-4.....	10.33
CP518-PNC.....	11.18
CP518-PNO.....	11.25
CP521-21.....	10.55
CP531-21.....	10.41
CP558-20.....	11.48
CP558-24.....	11.43
CP600-1.....	12.08
CP600-2.....	12.10
CP600-5.....	18.3
CP602-5.....	18.4
CP610-1.....	7.11
CP610-2.....	7.12
CP610-7.....	7.17
CP611-2.....	7.13
CP612-1.....	7.14
CP612-2.....	7.15
CP613-1.....	7.16
CP618-6.....	7.8
CP618-1.....	7.9
CP618-2.....	7.10
CP620-1.....	12.13
CP630-1.....	12.14
CP640-1.....	12.15
CP700-1.....	13.13
CP700-2.....	13.17

CP700-3..... 13.25
 CP700-4..... 13.21
 CP701-1..... 13.14
 CP701-2..... 13.18
 CP701-3..... 13.26
 CP701-4..... 13.22
 CP702-1..... 13.15
 CP702-2..... 13.19
 CP702-3..... 13.27
 CP702-4..... 13.23
 CP703-2..... 13.20
 CP703-4..... 13.24
 CP710-1..... 12.19
 CP710-2..... 12.23
 CP710-3..... 12.22
 CP710-8..... 12.16
 CP712-1..... 12.20
 CP712-2..... 12.24
 CP712-7..... 12.36
 CP712-8..... 12.18
 CP712-11..... 12.17
 CP713-1..... 12.21
 CP713-2..... 12.25
 CP720-1..... 12.26
 CP720-2..... 12.29
 CP720-3..... 3.11
 CP720-5..... 12.32
 CP721-3..... 3.12
 CP722-1..... 12.27
 CP722-2..... 12.30
 CP722-5..... 12.34
 CP722-11..... 12.33
 CP723-1..... 12.28
 CP723-2..... 12.31
 CP723-5..... 12.35
 CP9014-1..... 7.36
 CPF20..... 18.2
 CV04-NB..... 2.6
 CV08-NB..... 2.7
 CV08-NP..... 2.9
 CV10-NB..... 2.8
 CV10-NP..... 2.10
 D08 coil..... 21.6
 D10 coil..... 21.9
 D14E coil..... 21.12
 D14E(35W) coil..... 21.15
 DCB10-AV..... 9.16
 DCB10-HV..... 9.14
 DCV03..... 16.1
 DCV05..... 17.1
 DIN connectors..... 18.13
 DMP08-NC..... 12.11

DMP08-NO..... 12.12
 EVH 06/D5..... 10.15
 EVK 06/C5..... 10.17
 FC-144 cavity..... 19.39
 FC-304 cavity..... 19.40
 FC-336 cavity..... 19.41
 FCH10-BD..... 7.33
 ISO D03 cavity..... 19.42
 ISO D05 cavity..... 19.43
 LE20-CPC..... 13.16
 M13 coil..... 21.17
 M16 coil..... 21.22
 M19P coil..... 21.27
 MC10-RO..... 8.11
 MM-DH-00-ACB10-HV..... 15.28
 MM-DH-00-AVME06..... 15.64
 MM-DH-00-BCB10-HV..... 15.34
 MM-DH-00-BVME06..... 15.70
 MM-DH-00-DCB10-HV..... 15.22
 MM-DH-00-DPVLP..... 15.100
 MM-DH-00-DVME06..... 15.58
 MM-DH-00-SVP10-NCR..... 15.94
 MM-DH-LS-ACB10-HV..... 15.46
 MM-DH-LS-AVME06..... 15.82
 MM-DH-LS-BCB10-HV..... 15.52
 MM-DH-LS-BVME06..... 15.88
 MM-DH-LS-DCB10-HV..... 15.39
 MM-DH-LS-DVME06..... 15.76
 MM-DS-00-ACB10-HV..... 15.29
 MM-DS-00-AVME06..... 15.65
 MM-DS-00-BCB10-HV..... 15.35
 MM-DS-00-BVME06..... 15.71
 MM-DS-00-DCB10-HV..... 15.23
 MM-DS-00-DPVLP..... 15.101
 MM-DS-00-DVME06..... 15.59
 MM-DS-00-SVP10-NCR..... 15.95
 MM-DS-LS-ACB10-HV..... 15.47
 MM-DS-LS-AVME06..... 15.83
 MM-DS-LS-BCB10-HV..... 15.53
 MM-DS-LS-BVME06..... 15.89
 MM-DS-LS-DCB10-HV..... 15.40
 MM-DS-LS-DVME06..... 15.77
 MMHC Test Block - 11025000..... 15.21
 MM-OMH-00-ACP211-2..... 15.67
 MM-OMH-00-ACP441-1..... 15.31
 MM-OMH-00-BCP211-2..... 15.73
 MM-OMH-00-BCP441-1..... 15.37
 MM-OMH-00-DCP211-2..... 15.61
 MM-OMH-00-DCP441-1..... 15.25
 MM-OMH-00-DPVLP..... 15.103
 MM-OMH-00-SVP10-NCR..... 15.97
 MM-OMH-LS-ACP211-2..... 15.85

MM-OMH-LS-ACP441-1..... 15.49
 MM-OMH-LS-BCP211-2..... 15.91
 MM-OMH-LS-BCP441-1..... 15.55
 MM-OMH-LS-DCP211-2..... 15.79
 MM-OMH-LS-DCP441-1..... 15.42
 MM-OMP/OMR-00-ACB10-HV..... 15.30
 MM-OMP/OMR-00-AVME06..... 15.66
 MM-OMP/OMR-00-BCB10-HV..... 15.36
 MM-OMP/OMR-00-BVME06..... 15.72
 MM-OMP/OMR-00-DCB10-HV..... 15.24
 MM-OMP/OMR-00-DPVLP..... 15.102
 MM-OMP/OMR-00-DVME06..... 15.60
 MM-OMP/OMR-00-SVP10-NCR..... 15.96
 MM-OMP/OMR-LS-ACB10-HV..... 15.48
 MM-OMP/OMR-LS-AVME06..... 15.84
 MM-OMP/OMR-LS-BCB10-HV..... 15.54
 MM-OMP/OMR-LS-BVME06..... 15.90
 MM-OMP/OMR-LS-DCB10-HV..... 15.41
 MM-OMP/OMR-LS-DVME06..... 15.78
 MM-OMS-00-ACP211-2..... 15.68
 MM-OMS-00-ACP441-1..... 15.32
 MM-OMS-00-BCP211-2..... 15.74
 MM-OMS-00-BCP441-1..... 15.38
 MM-OMS-00-DCP211-2..... 15.62
 MM-OMS-00-DCP441-1..... 15.26
 MM-OMS-00-DPVLP..... 15.104
 MM-OMS-00-SVP10-NCR..... 15.98
 MM-OMS-LS-ACP211-2..... 15.86
 MM-OMS-LS-ACP441-1..... 15.50
 MM-OMS-LS-BCP211-2..... 15.92
 MM-OMS-LS-BCP441-1..... 15.56
 MM-OMS-LS-DCP211-2..... 15.80
 MM-OMS-LS-DCP441-1..... 15.43
 MM-OMT-00-ACP211-2..... 15.69
 MM-OMT-00-ACP441-1..... 15.33
 MM-OMT-00-BCP211-2..... 15.75
 MM-OMT-00-BCP441-1..... 15.39
 MM-OMT-00-CP502-3..... 15.99
 MM-OMT-00-DCP211-2..... 15.63
 MM-OMT-00-DCP441-1..... 15.27
 MM-OMT-00-DPVLP..... 15.105
 MM-OMT-LS-ACP211-2..... 15.87
 MM-OMT-LS-ACP441-1..... 15.51
 MM-OMT-LS-BCP211-2..... 15.93
 MM-OMT-LS-BCP441-1..... 15.57
 MM-OMT-LS-DCP211-2..... 15.81
 MM-OMT-LS-DCP441-1..... 15.44
 MP06..... 18.6
 MP12..... 18.6
 NCS04/2 cavity..... 19.28
 NCS04/3 cavity..... 19.29
 NCS06/2 cavity..... 19.30

NCS06/3 cavity	19.31	RFD-40-PRV.....	14.14	SV10-23-01.....	10.40
NCS06/4 cavity	19.32	RFD-80-PRV.....	14.16	SV10-23-02.....	10.43
NCS12/2 cavity	19.33	RFD-120-PRV	14.18	SV10-23-04.....	10.46
NCS12/3 cavity	19.34	RPC 04.....	8.6	SV10-24-01.....	10.48
NCS12/4 cavity	19.35	RPC 06.....	8.7	SV10-24-12.....	10.51
Orifice plugs	18.20	RPC 12.....	8.9	SV10-24-05.....	10.52
PC12-LPS.....	13.39	RPV 06.....	8.15	SV10-24-07.....	10.53
PDCV03 coil.....	21.29	RS 06.....	2.25	SV10-24-13.....	10.56
PDCV05 coil.....	21.31	RS 10.....	2.27	SV10-34-02.....	10.58
PDCV03-3Y11.....	11.16	RS 13.....	2.30	SV10-34-03.....	10.60
PDCV03-3Z11.....	11.13	RS 19.....	2.31	SV10-34-04.....	10.62
PDCV05-3Y11.....	11.17	RS 25.....	2.33	SV10-34-05.....	10.63
PDCV05-3Z11.....	11.14	RV08-DR.....	4.9	SV10-34-11.....	10.65
PFC10-PC.....	11.37	RV10-POP	4.22	SVP08-CDB.....	10.16
PFC10-PO	11.40	SC 10	7.34	SVP08-NC	10.18
PFC10-RC.....	11.31	SC 13	7.35	SVP08-NCR.....	10.21
PFC10-RO	11.34	Screened orifice plugs	18.22	SVP08-NO	10.26
PFC12-PC.....	11.38	SDC08-2 cavity	19.3	SVP08-NOR	10.29
PFC12-PO	11.41	SDC08-3 cavity	19.4	SVP10-NC	10.19
PFC12-RC.....	11.32	SDC08-4 cavity	19.5	SVP10-NCR.....	10.22
PFC12-RO	11.35	SDC10-2 cavity	19.6	SVP10-NO	10.27
PFC16-PC.....	11.39	SDC10-3 cavity	19.7	SVP10-NOR	10.30
PFC16-PO	11.42	SDC10-3S cavity.....	19.8	VA-E06	4.28
PFC16-RC.....	11.33	SDC10-4 cavity	19.9	VCB 12-CN	9.11
PFC16-RO	11.36	SDC12-2 cavity	19.10	VDB 06-CN.....	6.20
Pilot pistons.....	18.14	SDC12-3 cavity	19.11	VDB 06-EN	6.22
PPR10-PAC.....	11.45	SDC16-2 cavity	19.12	VDB 12-CN.....	6.21
PPRC 06.....	5.9	SDC16-3 cavity	19.13	VDF 06	7.41
PRC 06.....	5.5	SDC16-3S cavity.....	19.14	VDP 06/4201.....	6.19
PRMP 064	5.10	SDC20-2 cavity	19.15	VDP 06/NA	6.14
PRR10-PVG	5.7	SDC20-3 cavity	19.16	VDP 06/NC	6.15
PRR10-DRD	5.12	SDC20-4 cavity	19.17	VEN 06	4.10
PRV10-POC	11.49	Seal kits (NCS cavities).....	18.19	VLP 12/A5	13.11
PRV12-POC	11.50	SV 04.....	3.6	VLP 12/C2	13.12
PSV10-34-02.....	11.12	SV 06.....	3.8	VLP 12/P2	13.10
PSV10-34-05.....	11.15	SV08-22-01.....	10.34	VME 06.....	4.11
PSV10-NC	11.19	SV08-22-02.....	10.36	VME 07.....	4.12
PSV10-NO.....	11.26	SV08-22-03.....	10.38	VME 08.....	4.13
PSV12-NC	11.20	SV08-23-01.....	10.39	VME06 cavity.....	19.36
PSV12-NO.....	11.27	SV08-23-02.....	10.42	VME07 cavity.....	19.37
PSV16-NC	11.21	SV08-23-03.....	10.44	VME08 cavity.....	19.38
PSVP10-NCR.....	11.22	SV08-23-04.....	10.45	VR 06	7.23
PSVP10-NOR.....	11.28	SV08-24-01.....	10.47	VR 12	7.24
PSVP12-NCR.....	11.23	SV08-24-02.....	10.49	VRC 06	7.30
PSVP12-NOR.....	11.29	SV08-24-04.....	10.61	VRC 12	7.31
PSVP16-NCR.....	11.24	SV08-24-08.....	10.54	VRF 06.....	7.26
PSVP16-NOR.....	11.30	SV08-34-02.....	10.57	VS 06	3.9
R13 coil.....	21.33	SV08-34-03.....	10.59	VS 10	3.10
R16 coil.....	21.36	SV08-34-04.....	10.61	VSF 06.....	4.26
RFD-40-000.....	14.6	SV08-34-05.....	10.63	VSF 06-EN.....	4.24
RFD-80-000.....	14.8	SV10-22-01.....	10.35	VSF 12-CN	4.27
RFD-120-000.....	14.10	SV10-22-02.....	10.37	VSF 12-EN.....	4.25

X05-FD10.....	18.9
X05-FD16.....	18.10
X05-FD104.....	18.11
XMD 04.....	11.47
XMP 06.....	11.51
XRP 06.....	11.46
XRP 044.....	11.44