Flow controls

FLow control functions for applications up to 350 bar (5000 psi) and 350 L/min (92 USgpm)

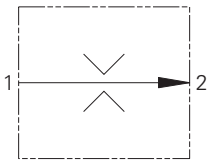
Powering Business Worldwide

Flow controls

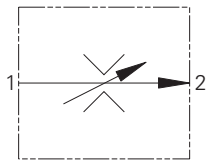
Flow controls

Valve locator

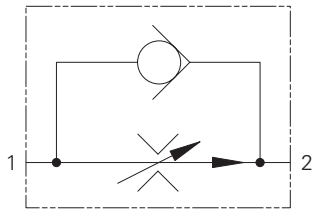
Functional symbol



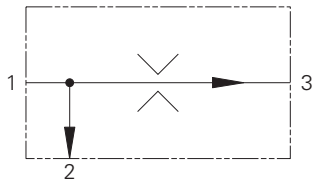
Model	Cavity	Flow rating	Typical pressure	Page
Flow regulator valve, fixed		L/min (USgpm)	bar (psi)	
FR5-8	C-8-2	10 (25)	280 (4000)	H-10
FR5-10	C-10-2	23 (6)	280 (4000)	H-12
FR1-16	C-16-2	114 (30)	210 (3000)	H-14
FR1-20	C-20-2	227 (60)	210 (3000)	H-16



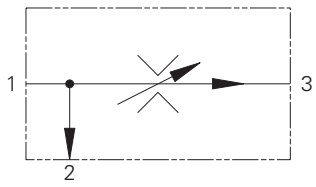
Model	Cavity	Flow rating	Typical pressure	Page
Flow regulator valve, adjustable		L/min (USgpm)	bar (psi)	
FR2-10	C-10-2	38 (10)	210 (3000)	H-18
FR2-16	C-16-2	114 (30)	210 (3000)	H-20



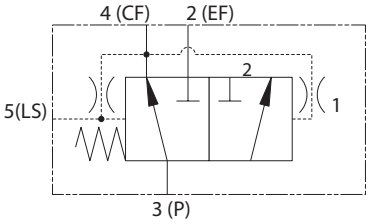
Model	Cavity	Flow rating	Typical pressure	Page
Flow regulator with check		L/min (USgpm)	bar (psi)	
2CFRC60	A7447	4-60 (1-16)	350 (5000)	H-22
FAR1-10	C-10-2	1-38 (0.25-10)	310 (4500)	H-24
FAR1-12	C-12-2(u)	1.5-95 (0.4-25)	310 (4500)	H-26
FAR1-16	C-16-2	3.8-114 (1-30)	310 (4500)	H-28

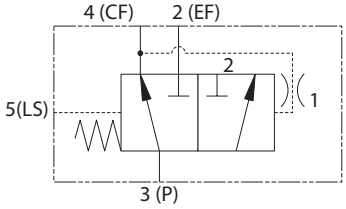


Model	Cavity	Flow rating	Typical pressure	Page
Priority flow regulator, bypass, fixed		L/min (USgpm)	bar (psi)	
PFR5-8	C-8-3	<10 (2.5)	280 (4000)	H-32
PFR5-10	C-10-3	<23 (6)	280 (4000)	H-34
PFR15-10	C-10-3	<38 (10)	350 (5000)	H-36
PFR11-12	C-12-3	<30 (8)	350 (5000)	H-38
PFR11-16	C-16-3	<114 (30)	350 (5000)	H-40



Model	Cavity	Flow rating	Typical pressure	Page
Priority flow regulator, bypass, adjustable		L/min (USgpm)	bar (psi)	
2CFP60	CVA-27-04-0	<60 (16)	350 (5000)	H-42
PFR2-10	C-10-3	<60 (15)	210 (3000)	H-30
PFR12-10	C-10-3	<64 (17)	350 (5000)	H-44
PFR12-12	C-12-3	<45 (12)	350 (5000)	H-46
PFR2-16	C-16-3	<114 (30)	210 (3000)	H-48
PFR12-16	C-16-3	<114 (30)	350 (5000)	H-50

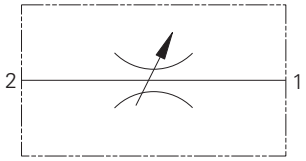




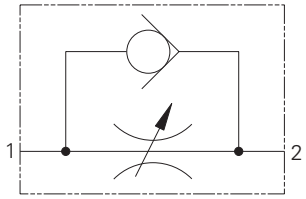
Model	Cavity	Flow rating	Typical pressure	Page
Priority flow regulator		L/min (USgpm)	bar (psi)	
PFRD/S-12	C-12-5S	76 (20)	280 (4000)	H-52
PFRD/S-16	C-16-5S	150 (40)	280 (4000)	H-54
PFRD/S-20	C-20-5S	230 (60)	240 (3500)	H-56

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

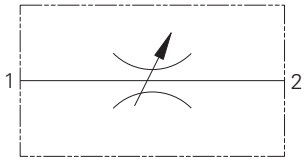
Functional symbol



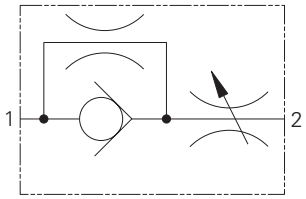
Model	Cavity	Flow rating	Typical pressure	Page
Manual rotary flow restrictor		L/min (USgpm)	bar (psi)	
MRV2-10	C-10-2	<56 (15)	210 (3000)	H-58
MRV2-16	C-16-2	<170.3 (45)	210 (3000)	H-60



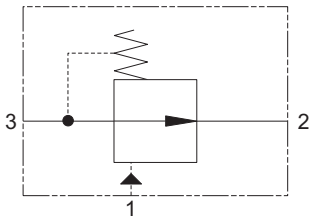
Model	Cavity	Flow rating	Typical pressure	Page
Needle valve		L/min (USgpm)	bar (psi)	
2CR80	A7447	<80 (20)	350 (5000)	H-62



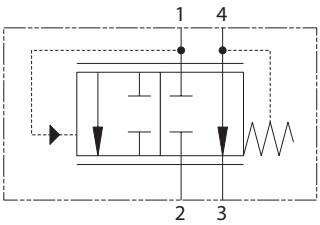
Model	Cavity	Flow rating	Typical pressure	Page
Needle valve		L/min (USgpm)	bar (psi)	
NV1-8	C-8-2	<45 (12)	280 (4000)	H-64
NV1-10	C-10-2	<45 (12)	210 (3000)	H-66
FCV7-10	C-10-2	<45 (12)	210 (3000)	H-72
FCV11-12	C-12-2(u)	<114 (30)	350 (5000)	H-74
FCV6-16	C-16-2	<208 (55)	210 (3000)	H-76



Model	Cavity	Flow rating	Typical pressure	Page
Needle valve		L/min (USgpm)	bar (psi)	
NV1-16	C-16-2	<151 (40)	210 (3000)	H-68
NV1-20	C-20-2	<265 (70)	210 (3000)	H-70



Model	Cavity	Flow rating	Typical pressure	Page
Pressure compensator, restrictive		L/min (USgpm)	bar (psi)	
PCS3-10	C-10-3	<38 (10)	210 (3000)	H-78
PCS13-10	C-10-3	<38 (10)	350 (5000)	H-80
PCS3-12	C-12-3	<58 (15)	240 (3500)	H-82
PCS13-12	C-12-3	<58 (15)	350 (5000)	H-84
PCS3-16	C-16-3	<114 (30)	210 (3000)	H-86
PCS13-16	C-16-3	<114 (30)	350 (5000)	H-88
PCS3-20	C-20-3	<189 (50)	210 (3000)	H-90



Model	Cavity	Flow rating	Typical pressure	Page
Pressure compensator bypass/priority		L/min (USgpm)	bar (psi)	
PCS4-10	C-10-4	<38 (10)	210 (3000)	H-92
PCS14-10	C-10-4	<38 (10)	350 (5000)	H-94
PCS4-12	C-12-4	<58 (15)	240 (3500)	H-96
PCS14-12	C-12-4	<58 (15)	350 (5000)	H-98
PCS4-16	C-16-4	<114 (30)	210 (3000)	H-100
PCS14-16	C-16-4	<114 (30)	350 (5000)	H-102
PCS4-20	C-20-4	<189 (50)	210 (3000)	H-104

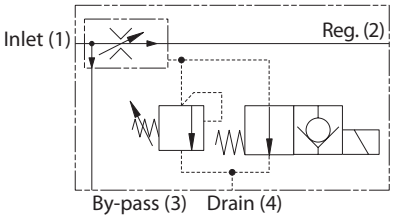
H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

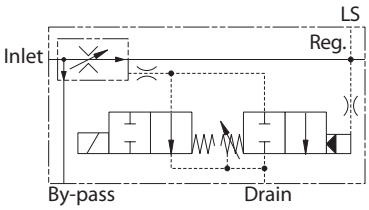
Flow controls

Valve locator

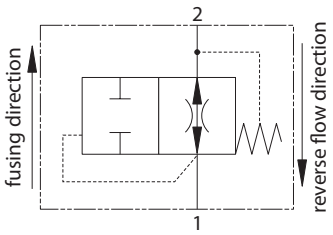
Functional symbol



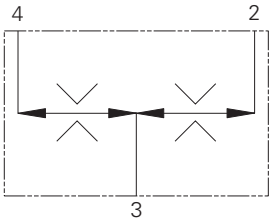
Model	Cavity	Flow rating	Typical pressure	Page
Flow regulator/diverter		L/min (USgpm)	bar (psi)	
2FPH55		<55 (14)	280 (4000)	H-106
2FPH95		<95 (25)	350 (5000)	H-106
2FPH195		<160 (42)	350 (5000)	H-106



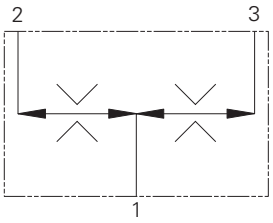
Model	Cavity	Flow rating	Typical pressure	Page
Flow regulator/diverter		L/min (USgpm)	bar (psi)	
2FPH250		<200 (52)	350 (5000)	H-106
2FPH350		<350 (92)	350 (5000)	H-106



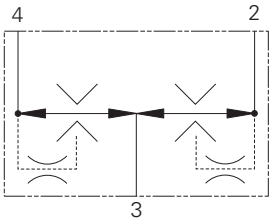
Model	Cavity	Flow rating	Typical pressure	Page
Flow fuse		L/min (USgpm)	bar (psi)	
VF1-10	C-10-2	23 (6)	210 (3000)	H-110
VF11-10	C-10-2	23 (6)	350 (5000)	H-110
VF1-16	C-16-2	114 (30)	210 (3000)	H-112



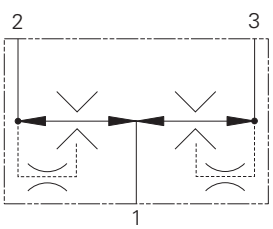
Model	Cavity	Flow rating	Typical pressure	Page
Flow divider/conbiner		L/min (USgpm)	bar (psi)	
FDC1-16	C-16-4	<178 (47)	210 (3000)	H-114
FDC11-16	C-16-4	<140 (37)	350 (5000)	H-116
2CFD50	A12744	<40 (10.5)	350 (5000)	H-118
2CFD200	CVB-42-04-0	<220 (58)	280 (4000)	H-120



Model	Cavity	Flow rating	Typical pressure	Page
Flow divider/combiner		L/min (USgpm)	bar (psi)	
FDC1-20	Inline	<141 (37)	210 (3000)	H-122



Model	Cavity	Flow rating	Typical pressure	Page
Flow divider/combiner, posi-traction		L/min (USgpm)	bar (psi)	
FDC3-16	C-16-4	<152 (40)	210 (3000)	H-124



Model	Cavity	Flow rating	Typical pressure	Page
Flow divider/combiner, posi-traction		L/min (USgpm)	bar (psi)	
FDC3-20	Inline	<570 (150)	210 (3000)	H-126

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

This section gives basic specifications for the complete line of Eaton's Integrated Hydraulics threaded cartridge flow control valves. Its purpose is to provide a quick, convenient reference tool when choosing cartridge valves or designing a system using these components.

Valve features and benefits

Eaton offers a complete range of Integrated Hydraulics flow controls cartridge valves, with a variety of features, including:

- Products in this catalog have been Fatigue tested to one million cycles at 132% or 10 million cycles at 115% of rated pressure.
- Non-adjustable, pressure compensated, flow regulator for flows to 227 L/min (60 USgpm).
- Adjustable, pressure compensated, flow regulator for flows to 114 L/min (30 USgpm).
- Fixed and adjustable priority bypass type flow regulator for regulated flows to 114 L/min (30 USgpm).
- Adjustable flow control without free reverse flow check with flows rated to 114 L/min (30 USgpm).
- Adjustable flow control with free reverse flow check with flows rated to 45 L/min (12 USgpm).
- Needle valves with flows rated to 265 L/min (70 USgpm).
- Velocity fuses with flows rated to 227 L/min (60 USgpm).
- Flow divider/combiners (FDC1 and FDC11) with flows rated to 568 L/min (150 USgpm).
- Posi-traction valves (FDC13) with flows rated to 567 L/min (150 USgpm)
- Operating pressures to 350 bar (5000 psi).
- Here are some of the benefits of Eaton flow controls:
- All operating parts are hardened steel, ground and honed for long life and low leakage.
- Designed for maximum flexibility and minimal space requirements.
- All exposed cartridge surfaces are zinc dichromate plated to resist corrosion. Steel housings are available for cartridges rated to 350 bar (5000 psi) application pressures.
- All aluminum manifolds are gold anodized to resist corrosion.
- Reliable, economical and compact.
- Low leakage.
- Variety of adjustment options.
- Adjustments designed not to go spring solid at "full in" position or to allow the adjustment to be removed when backed out.

Notable are the two styles of flow divider/combiner:

FDC1/FDC11

The FDC*1 is a cartridge type hydraulic flow divider-combiner valve. It divides and combines flow, regardless of system load or pressure, proportionally per specified flow division.

For example: FDC*1-10-*–66 will divide an incoming flow of 45 L/min (12 USgpm) equally out each port with an accuracy of 10% each side. With 45 L/min (12 USgpm) in at "3" port, flow out port "4" can be 22 L/min (6 USgpm) 4,5 L/min (1.2 USgpm) while flow at port "2" is 22,7 L/min (6 USgpm) 4,5 L/min (1.2 USgpm).

The combining accuracy is the same with incoming flow at port "4" and "2" and flow out port "3" of 45 L/min (12 USgpm). Inlet flow at port "4" will be 22 L/min (6 USgpm) 4,5 L/min (1.2 USgpm). Inlet flow at port "2" will be 22 L/min (6 USgpm) 4,5 L/min (1.2 USgpm).

Flow division or combining will be maintained even if unequal loads are placed on ports "4" and "2".

A special feature of the FDC*1–** is that it provides rephase flow to either port 2 or port 4 when one of the two is blocked. This feature is useful in hydraulic circuits that require cylinders to move at the same time. If one cylinder bottoms out first, the opposite cylinder is provided with "rephase" flow to allow the cylinder to bottom and start the cylinders together for movement in the opposite direction.

FDC3/FDC13

The FDC*3 is a cartridge type positive traction valve that divides and combines flow, regardless of system load or pressure, proportionally per specified flow division.

This valve is used in place of a standard flow divider-combiner in systems where hydraulic motors are used as drive wheels on each side of the machine. The positive traction valve acts much like a standard flow divider-combiner as the vehicle travels in a straight line. Equal amounts of flow go to each "C" port. As the vehicle turns a corner, a standard flow divider will maintain equal flow to each drive motor. On a turn, it is necessary for the outer wheel to turn faster than the inner wheel. A standard flow divider-combiner will provide equal flow to each motor causing the drive motors to skid. The positive traction valve solves this problem by allowing the one motor to turn faster than the other.

This operates in a similar way as a mechanical differential on an automobile. In a turn, the inside drive motor is restricted and builds up pressure, while the outside drive motor is without restriction. Under conditions of high differential pressure, the positive traction valve passes extra flow to the least restricted motor to prevent skidding. Under straight running conditions the differential pressure is low and equal amounts of flow are provided to each drive motor.

⚠ Warning
For pressure over 210 bar (3000 psi) use steel housing.

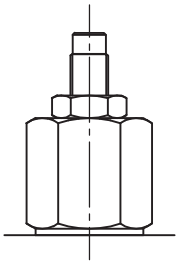
H

Adjustments

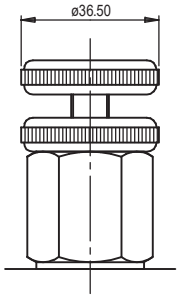
Adjustments

The adjustment range and Max setting figures shown throughout this catalog give the design range for each valve, higher or lower values may be attainable but should not be used without first contacting our Engineering department. Setting must ALWAYS be carried out using and appropriate gauge and it must NOT be assumed that screwing an adjuster to its maximum or minimum position will yield the maximum or minimum stated design setting for that valve.

Alternative adjusters



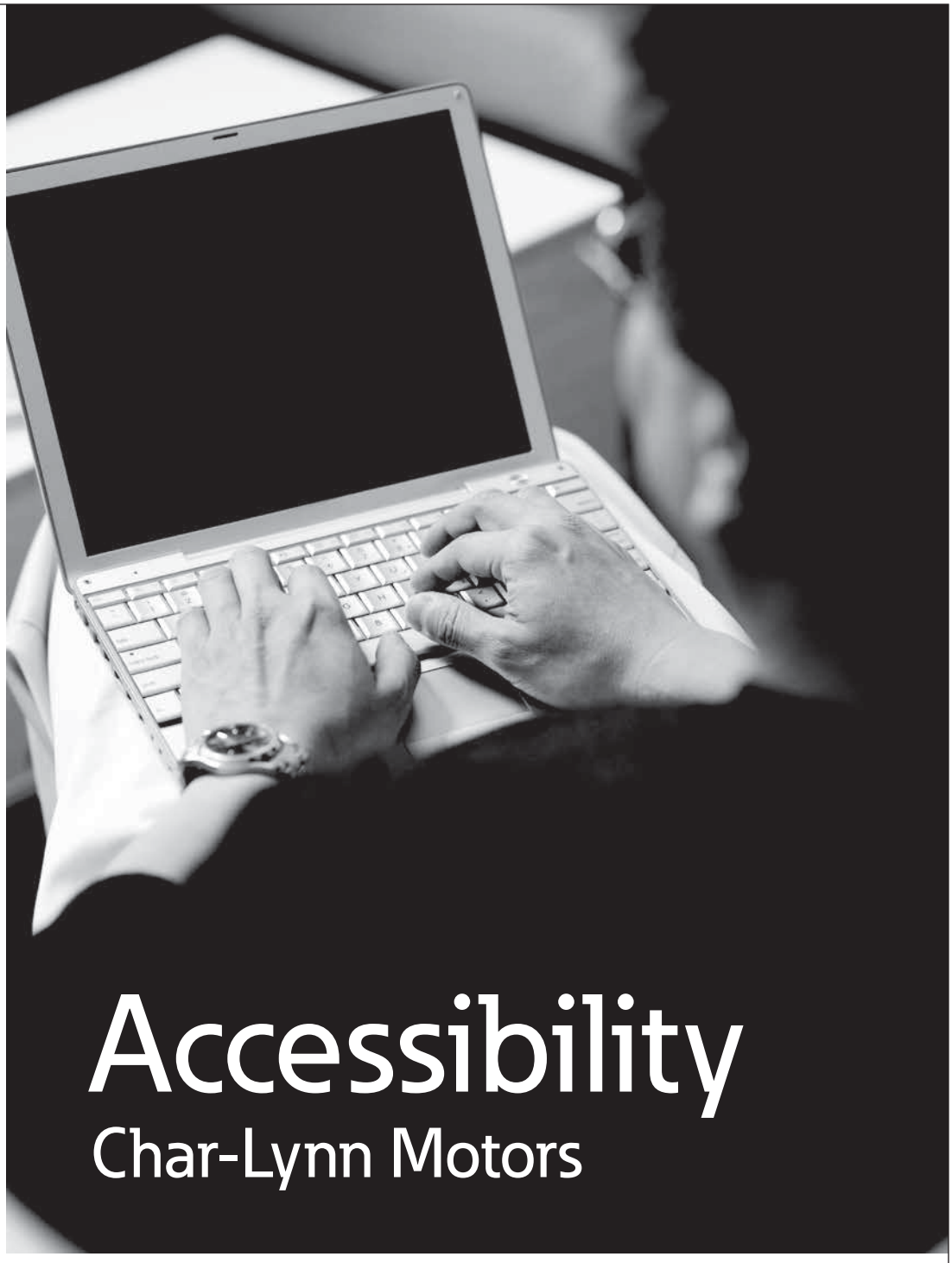
'P' - LEAKPROOF SCREW



'R' - HANDKNOB

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.



Accessibility
Char-Lynn Motors

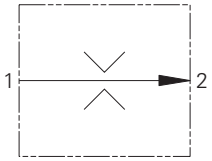
EATON
Powering Business Worldwide

Ease of Doing Business

- Expanded Eaton.com
- Products Catalog
- Char-Lynn Service and Repair

FR5-8 - Flow regulator

Fixed pressure compensated
10 L/min (2.5 USgpm) • 280 bar (4000 psi)



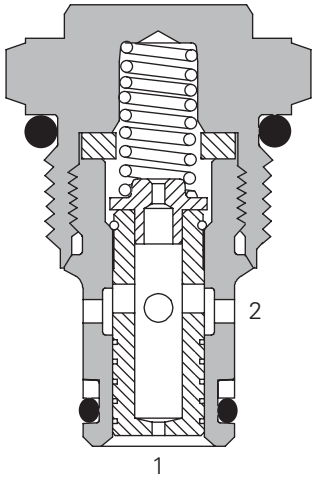
Operation

This valve maintains a constant flow from port 1 to port 2 based on 5.5 bar (80 psid) regardless of pressure changes downstream on port 2. Reverse flow from port 2 to port 1 is at the value of the fixed orifice and is non-pressure compensated.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		350 bar (5000 psi) steel housing 210 bar (3000 psi) aluminum housing
Cartridge fatigue pressure (infinite life)		280 bar (4000 psi)
Rated flow		10 L/min (2.5 USgpm)
Temperature range		–40° to 120°C (–40° to 248°F)
Flow regulation accuracy	0,4–1,9 L/min (0.1–0.49 USgpm) 0,4–1,9 L/min (0.1–0.49 USgpm) 1,9 – 5,7 L/min (0.5–1.49 USgpm) 5,7–10 L/min (1.5–2.5 USgpm)	20% @ 210 bar (3000 psi) 40% @ 350 bar (5000 psi) 15% 10%
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges		
Cavity		C-8-2
Fluids		All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20 etc.
Filtration		Cleanliness code 18/**16/13**
Standard housing material		Aluminum or steel
Weight cartridge only		0,05 kg (0.12 lbs)
Seal kit		02–165875 (Buna-N) 02–165877 (Viton®)

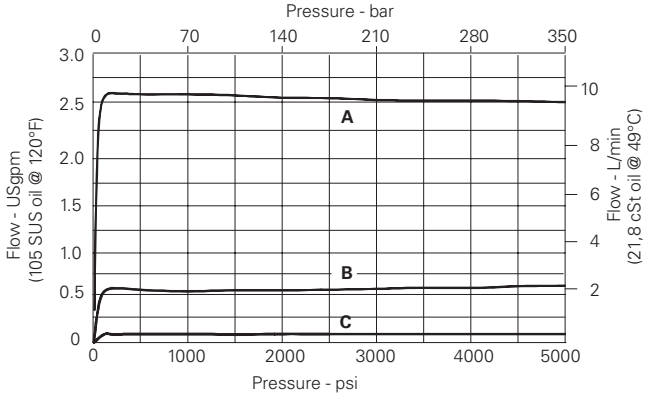
Viton is a registered trademark of E.I. DuPont

Description

This is a fixed orifice, pressure compensated, restrictive flow regulator screw-in cartridge valve.

Typical flow regulation

Cartridge only



A - 9,5 L/min (2.5 USgpm)
B - 1,9 L/min (0.5 USgpm)
C - 0,38 L/min (0.1 USgpm)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR5-8 - Flow regulator

Fixed pressure compensated
10 L/min (2.5 USgpm) • 280 bar (4000 psi)

Model code

FR 5	–	8	(V)	–	F	–	(*)	**	–	*.*	–	00
1		2	3		4		5	6		7		8

1 Function
FR5 - Flow regulator

2 Size
8 - 8 Size

3 Seal material
Blank - Buna-N
V - Viton®

4 Adjustment
F - Fixed orifice

5 Valve housing material
Omit for cartridge only
A - Aluminum
S - Steel

6 Port size

Code	Port size	Housing number	
		Aluminium fatigue rated	Steel fatigue rated
0	Cartridge only		
4T	SAE 4	02–160730	02–160736
6T	SAE 6	02–160731	02–160737
8T	SAE 8	02–160732	02–160738
2G	1/4" BSPP	02–160727	02–160733
3G	3/8" BSPP	02–160728	02–160734

See section J for housing details.

7 Factory set flow rate, nominal
(Specify in USgpm) Range 0,4-9,5 L/min (0.1–2.5 USgpm)

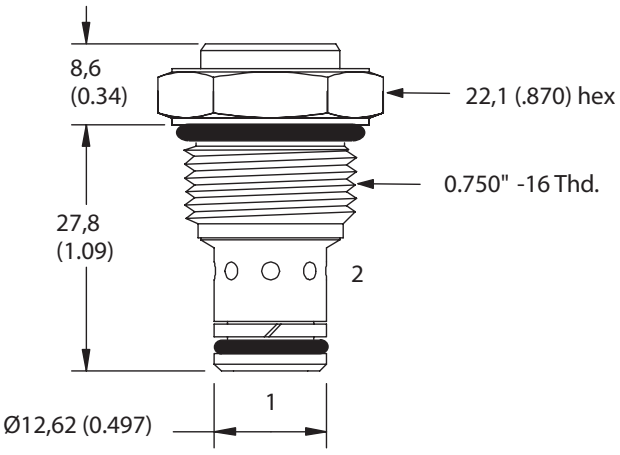
Example:
0.5-1,9 L/min (0.5 USgpm)

8 Special features
00 - None
(Only required if valve has special features, omitted if "00")
SS - 316 Stainless Steel external components

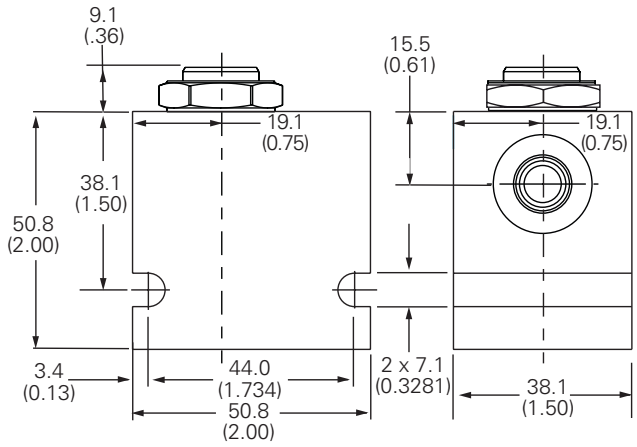
Dimensions
mm (inch)

Torque cartridge in steel oraluminum housing 34-41 Nm (25-30 ft lbs).

Cartridge
Basic code
FR5-8



Installation drawing (Steel)



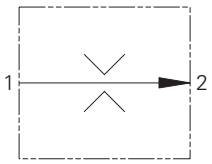
⚠ Warning
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR5-10 - Flow regulator

Fixed, pressure compensated
23 L/min (6 USgpm) • 280 bar (4000 psi)



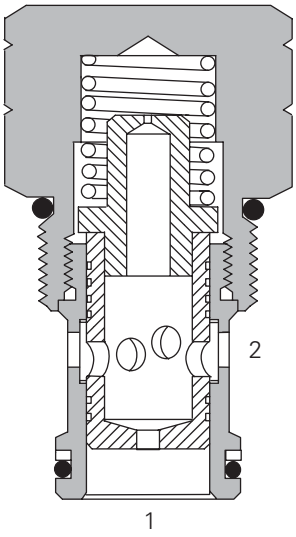
Operation

This valve maintains a constant flow from port 1 to port 2 based on 5.5 bar (80 psid) regardless of pressure changes downstream on port 2. Reverse flow from port 2 to port 1 is at the value of the fixed orifice and is non-pressure compensated.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		350 bar (5000 psi) steel housing
Cartridge fatigue pressure (infinite life)		280 bar (4000 psi)
Rated flow		23 L/min (6 USgpm)
Temperature range		–40° to 120°C (–40° to 248°F)
Flow regulation accuracy	0,38–1,9 L/min (0.1–0.49 USgpm) 0,38–1,9 L/min (0.1–0.49 USgpm) 1,9 – 5,7 L/min (0.5–1.49 USgpm) 5,7–22,7 L/min (1.5–6 USgpm)	±20% @ 210 bar (3000 psi) ±40% @ 350 bar (5000 psi) ±15% @ 350 bar (5000 psi) ±10% @ 350 bar (5000 psi)
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges		
Cavity		C-10-2
Fluids		All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20 etc.
Filtration		Cleanliness code 18/**16/13**
Standard housing material		Aluminum or Steel
Weight cartridge only		0,12 kg (0.26 lbs)
Seal kit		565803 (Buna-N) 566086 (Viton®)

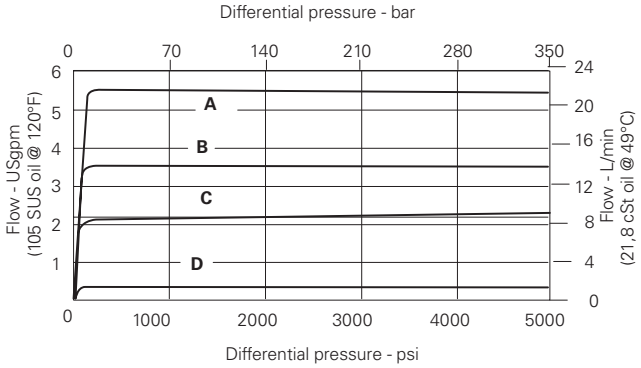
Viton is a registered trademark of E.I. DuPont

Description

This is a fixed orifice, pressure compensated, restrictive flow regulator screw-in cartridge valve.

Typical flow regulation

Cartridge only



A – 21 L/min (5.5 USgpm)
B – 13,3 L/min (3.5 USgpm)
C – 7,8 L/min (2.0 USgpm)
D – 0,95 L/min (0.25 USgpm)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR5-10 - Flow regulator

Fixed, pressure compensated
23 L/min (6 USgpm) • 280 bar (4000 psi)

Model code

FR 5	–	10	(V)	–	F	–	(*)	**	–	*.*	–	00
1		2	3		4		5	6		7		8

1 Function
FR5 - Flow regulator

2 Size
10 - 10 Size

3 Seal material
Blank - Buna-N
V - Viton®

4 Adjustment
F - Fixed orifice

5 Valve housing material
Omit for cartridge only
A - Aluminum
S - Steel

6 Port size

Code	Port size	Housing number		
		Aluminium light duty	Aluminium fatigue rated	Steel fatigue rated
0	Cartridge only			
3B	3/8" BSPP	02–175462	–	–
2G	1/4" BSPP	–	876702	02-175102
3G	3/8" BSPP	–	876703	02-175103
6H	SAE 6	–	876700	–
8H	SAE 8	–	876701	–
6T	SAE 6	566151	–	02-175100
8T	SAE 8	–	–	02-175101

See section J for housing details.

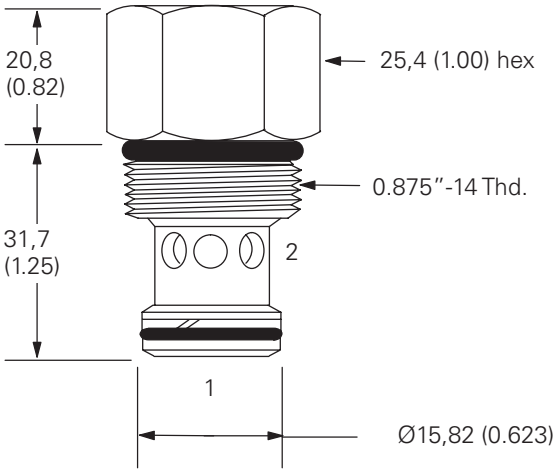
7 Factory set flow rate
(Specify in USgpm)
Range 0,4-9,5 L/min
(0.1-2.5 USgpm)

8 Special features
00 - None
(Only required if valve has special features, omitted if "00")

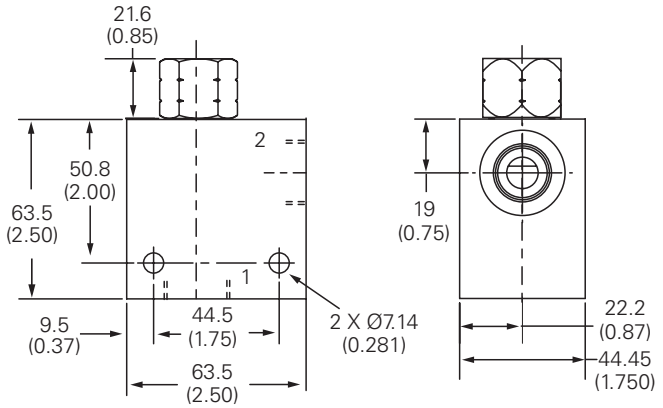
Dimensions
mm (inch)

Torque cartridge in housing
A - 47-54 Nm (35-40 ft lbs)
S - 68-75 Nm (50-55 ft lbs)

Cartridge
Basic code
FR5-10



Installation drawing (Steel)

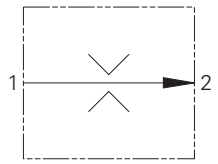


⚠ Warning
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR1-16 - Flow regulator

Fixed, pressure compensated
114 L/min (30 USgpm) • 210 bar (3000 psi)



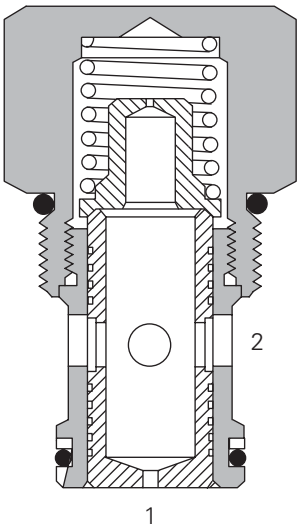
Operation

This valve maintains a constant flow from port 1 to port 2 based on 5.5 bar (80 psid) regardless of pressure changes downstream on port 2. Reverse flow from port 2 to port 1 is at the value of the fixed orifice and is non-pressure compensated.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)		210 bar (3000 psi)
Rated flow		114 L/min (30 USgpm)
Temperature range		–40° to 120°C (–40° to 248°F)
Flow regulation accuracy	1,9–10,9 L/min (0.5–2.9 USgpm) 11,4–114 L/min (3–30 USgpm)	±15% ±10%
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges		
Cavity		C-16-2
Fluids		All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20 etc.
Filtration		Cleanliness code 18/**16/13**
Standard housing material		Aluminum
Weight cartridge only		0,33 kg (0.72 lbs)
Seal kit		565810 (Buna-N) 880609 (Viton®)

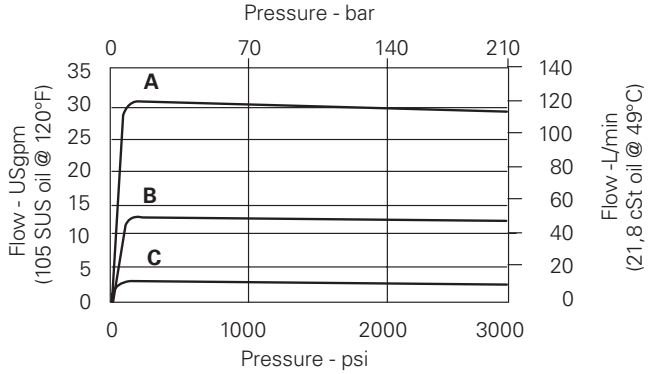
Viton is a registered trademark of E.I. DuPont

Description

This is a fixed orifice, pressure compensated, restrictive flow regulator screw-in cartridge valve.

Typical flow regulation

Cartridge only



A - 114 L/min (30.0 USgpm)
B - 60 L/min (15.0 USgpm)
C - 9,5 L/min (2.5 USgpm)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR1-16 - Flow regulator

Fixed, pressure compensated
114 L/min (30 USgpm) • 210 bar (3000 psi)

Model code

FR 1 – 16 (V) – F *** – *.* – 00

1 2 3 4 5 6 7

1 Function
FR1 - Flow regulator

2 Size
16 - 16 Size

3 Seal material
Blank - Buna-N
V - Viton®

4 Adjustment
F - Fixed orifice

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
6B	3/4" BSPP	02–175463	–
12T	SAE 12	566149	–
4G	1/2" BSPP	–	876716
6G	3/4" BSPP	–	876718
10H	SAE 10	–	876717
12H	SAE 12	–	566113

See section J for housing details.

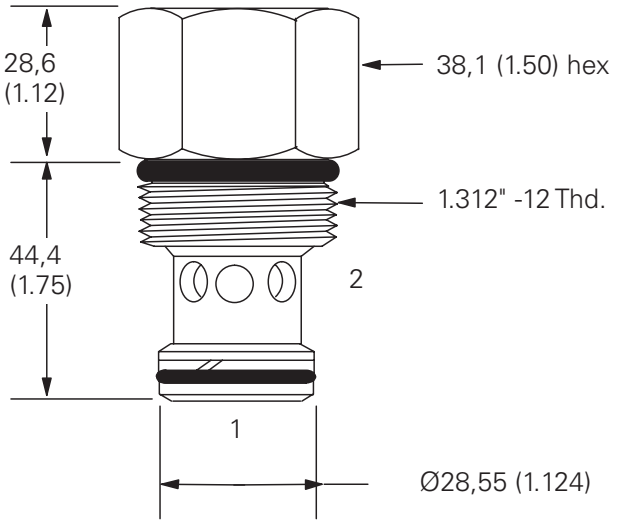
6 Factory set flow rate, nominal
(Specify in USgpm)
Range 1,9-114 L/min
(0.5-30 USgpm)

7 Special features
00 - None
(Only required if valve has special features, omitted if "00")

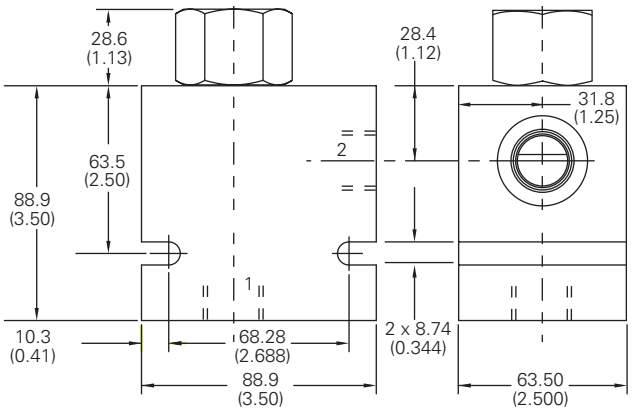
Dimensions
mm (inch)

Torque cartridge in aluminum housing to 108-122 Nm (80-90 ft lbs)

Cartridge
Basic code
FR1-16



Installation drawing



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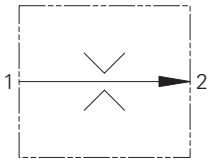
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR1-20 - Flow regulator

Fixed, pressure compensated
227 L/min (60 USgpm) • 210 bar (3000 psi)



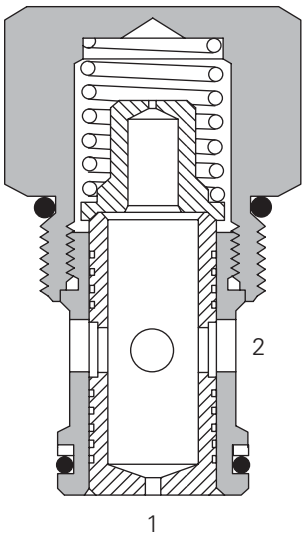
Operation

This valve maintains a constant flow from port 1 to port 2 based on 5.5 bar (80 psid) regardless of pressure changes downstream on port 2. Reverse flow from port 2 to port 1 is at the value of the fixed orifice and is non-pressure compensated.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)		210 bar (3000 psi)
Rated flow		227 L/min (60 USgpm)
Temperature range		–40° to 120°C (–40° to 248°F)
Flow regulation accuracy	3,8–18,5 L/min (1–4.9 USgpm) 19–227 L/min (5–60 USgpm)	±15% ±10%
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges		
Cavity		C-20-2
Fluids		All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20 etc.
Filtration		Cleanliness code 18/**16/13**
Standard housing material		Aluminum
Weight cartridge only		0,82 kg (1.8 lbs)
Seal kit		889615 (Buna-N), 889619 (Viton®)

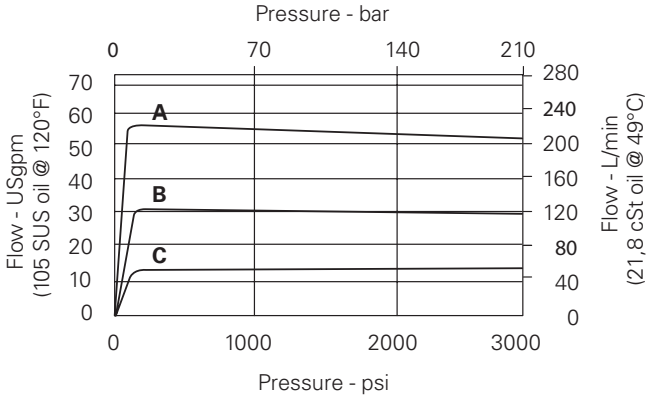
Viton is a registered trademark of E.I. DuPont

Description

This is a fixed orifice, pressure compensated, restrictive flow regulator screw-in cartridge valve.

Typical flow regulation

Cartridge only



A - 227 L/min (60.0 USgpm)
B - 114 L/min (30.0 USgpm)
C - 38 L/min (10.0 USgpm)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR1-20 - Flow regulator

Fixed, pressure compensated
227 L/min (60 USgpm) • 210 bar (3000 psi)

Model code

FR 1	–	20	(V)	–	F	–	***	–	*.*	–	00
1		2	3		4		5		6		7

1 Function
FR1 - Flow regulator

2 Size
20 - 20 Size

3 Seal material
Blank - Buna-N
V - Viton®

4 Adjustment
F - Fixed orifice

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
6B	3/4" BSPP	02–175464	–
12T	SAE 12	566409	–
4G	1/2" BSPP	–	876732
6G	3/4" BSPP	–	876734
10H	SAE 10	–	876733
12H	SAE 12	–	876735

See section J for housing details.

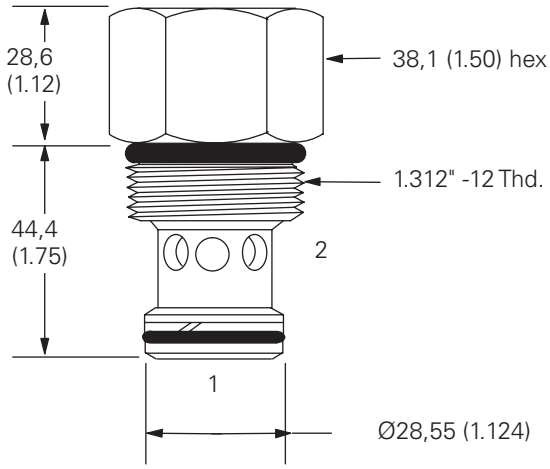
6 Factory set flow rate, nominal
(Specify in USgpm)
Range 3.8-277 L/min
(0.5-60 USgpm)

7 Special features
00 – None
(Only required if valve has special features, omitted if "00")

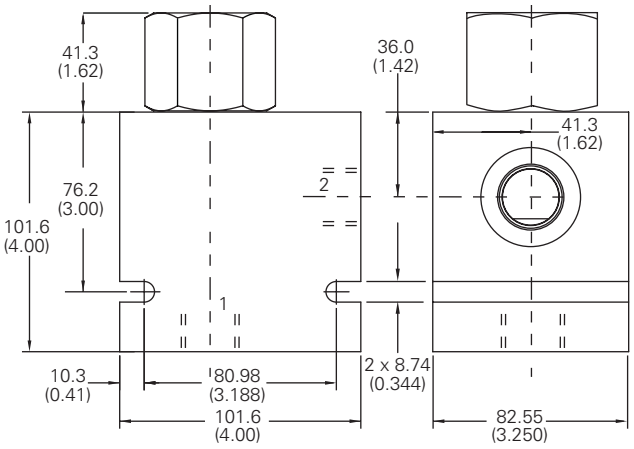
Dimensions
mm (inch)

Torque cartridge in aluminum housing to 128-155 Nm (95-115 ft lbs)

Cartridge
Basic code
FR1-20



Installation drawing

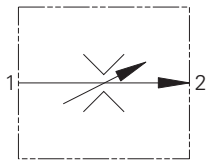


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR2-10 - Flow regulator

Limited range, adjustable pressure compensated
38 L/min (10 Usgpm) • 210 bar (3000 psi)



Operation

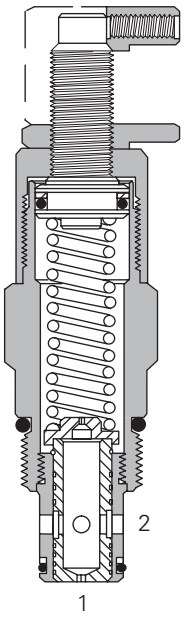
This valve maintains a constant flow from port 1 to port 2 based on the setting adjustment, regardless of pressure changes downstream on port 2.

Reverse flow from port 2 to port 1 is at the value of the fixed orifice and is non-pressure compensated.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	38 L/min (10 USgpm)
Temperature range	–40° to 120°C (–40° to 248°F)
Flow regulation accuracy	0,4–1,9 L/min (0.1–0.49 USgpm) ±20% 1,9–7,5 L/min (0.5–1.99 USgpm) ±15% 7,6–37,8 L/min (2.0–10.0 USgpm) ±10%
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges	
Cavity	C-10-2
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum
Weight cartridge only	0,22 kg (.48 lbs)
Seal kit	565803 (Buna-N), 566086 (Viton®)

Viton is a registered trademark of E.I. DuPont

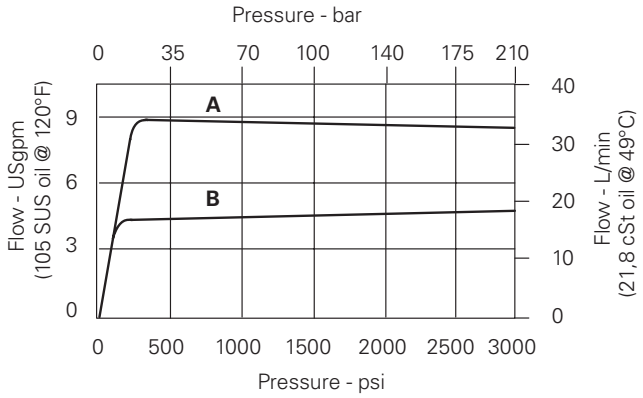
Description

This valves is a limited range adjustable, pressure compensated, screw-in flow regulator cartridge valve.

The flow adjustment is from the factory set maximum flow rate down to 50% of that factory set flow rate.

Typical flow regulation

Cartridge only



A - 38,0 L/min (10.0 USgpm)
B - 19,0 L/min (5.0 USgpm)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR2-10 - Flow regulator

Limited range, adjustable pressure compensated
38 L/min (10 Usgpm) • 210 bar (3000 psi)

Model code

FR 2	–	10	(V)	–	*	–	***	–	*.*	–	00
1		2	3		4		5		6		7

1 Function
FR2 - Flow regulator

2 Size
10 - 10 Size

3 Seal material
Blank - Buna-N
V - Viton®

4 Adjustment
C - Cap
F - Factory-set
I - Internal
K - Knob
S - Screw

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
3B	3/8" BSPP	02–175462	–
6T	SAE 6	566151	–
2G	1/4" BSPP	–	876702
3G	3/8" BSPP	–	876703
6H	SAE 6	–	876700
8H	SAE 8	–	876701

See section J for housing details.

6 Factory set flow rate,
(Specify in USgpm)
Range 0,38–22,7 L/min
(0.1–10.0 USgpm)

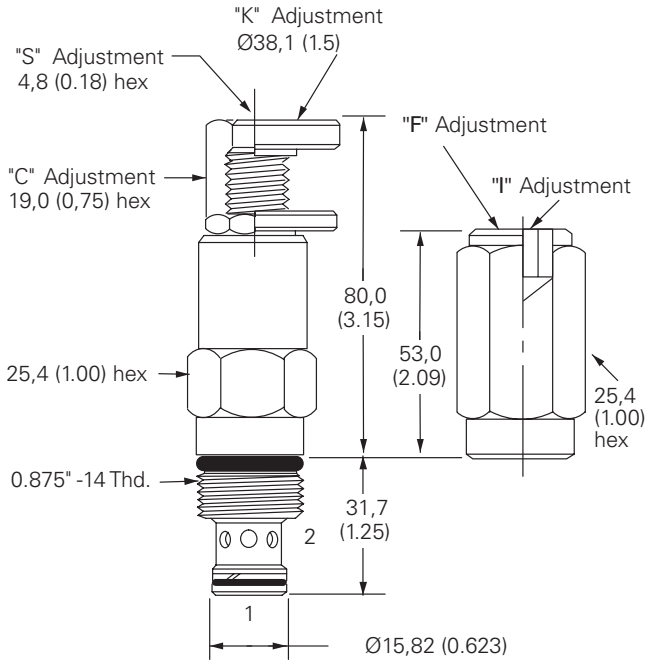
7 Special features
00 – None
(Only required if valve has special features, omitted if "00")

SS - 316 Stainless steel external components

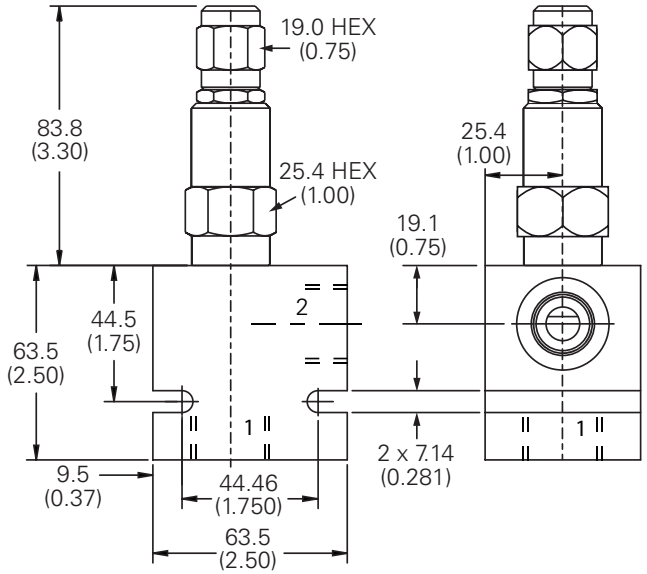
Dimensions
mm (inch)

Torque cartridge in aluminum housing to 47-54 Nm (35-40 ft lbs)

Cartridge
Basic code
FR2-10



Installation drawing



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

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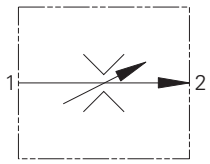
FR2-16 - Flow regulator

Limited range, adjustable pressure compensated
114 L/min (30 USgpm) • 210 bar (3000 psi)



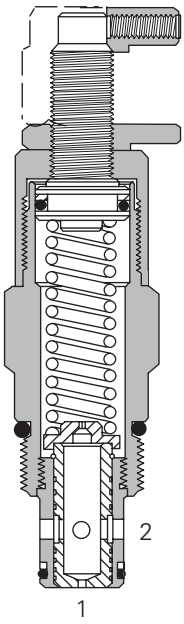
Operation

This valve maintains a constant flow from port 1 to port 2 based on the setting adjustment, regardless of pressure changes down stream on port 2. Reverse flow from port 2 to port 1 is at the value of the fixed orifice and is non-pressure compensated.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	114 L/min (30 USgpm)
Temperature range	–40° to 120°C (–40° to 248°F)
Flow regulation accuracy	1,9–10,9 L/min (0.5–2.9 USgpm) ±15% 11,4–114 L/min (3–30 USgpm) ±10%
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges	
Cavity	C-16-2
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum
Weight cartridge only	0,71 kg (1.57 lbs)
Seal kit	565810 (Buna-N) 889609 (Viton®)

Viton is a registered trademark of E.I. DuPont

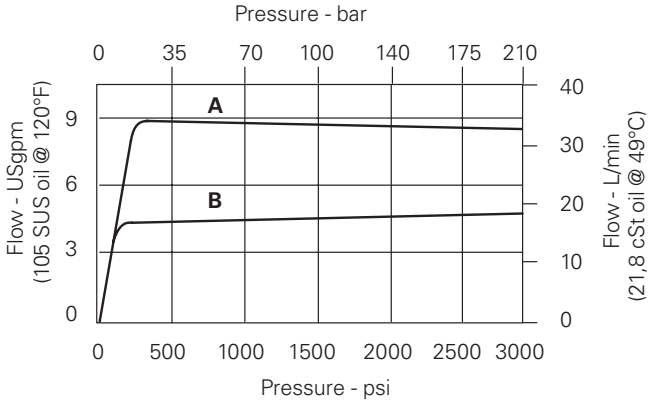
Description

This valves is a limited range adjustable, pressure compensated, screw-in flow regulator cartridge valve.

The flow adjustment is from the factory set maximum flow rate down to 50% of that factory set flow rate.

Typical flow regulation

Cartridge only



A - 114 L/min (30.0 USgpm)
B - 38 L/min (10.0 USgpm)
C - 9,5 L/min (2.5 USgpm)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FR2-16 - Flow regulator

Limited range, adjustable pressure compensated
114 L/min (30 USgpm) • 210 bar (3000 psi)

Model code

FR 2	–	16	(V)	–	*	–	***	–	*.*	–	00
1		2	3		4		5		6		7

1 Function
FR2 - Flow regulator

2 Size
16 - 16 Size

3 Seal material
Blank - Buna-N
V - Viton®

4 Adjustment
C - Cap
K - Knob
S - Screw
Y - Knob (Stainless)

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
6B	3/4" BSPP	02–175463	–
12T	SAE 12	566149	–
4G	1/2" BSPP	–	876716
6G	3/4" BSPP	–	876718
10H	SAE 10	–	876717
12H	SAE 12	–	876713

See section J for housing details.

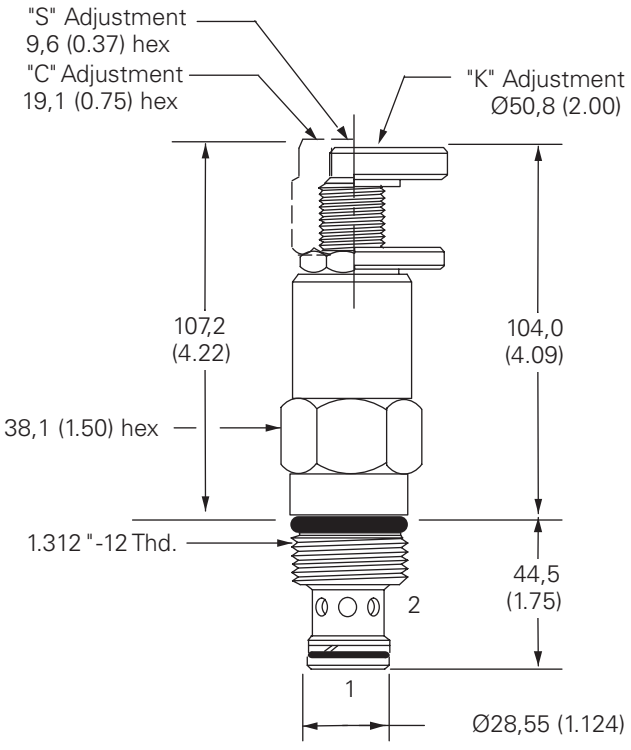
6 Factory set flow rate,
(Specify in USgpm)
Range 1,9–114 L/min
(0.5–30 USgpm)

7 Special features
00 – None
(Only required if valve has special features, omitted if "00")
SS - 316 Stainless steel external components

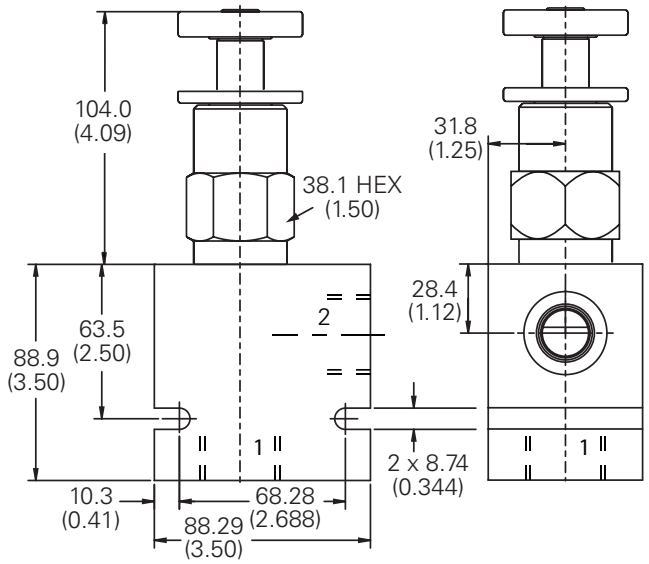
Dimensions
mm (inch)

Torque cartridge in aluminum housing to 108-122 Nm (80-90 ft lbs)

Cartridge
Basic code
FR2-16



Installation drawing

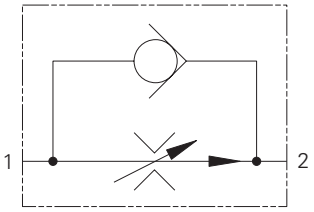


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

H

2CFRC60 - Flow regulator

Restrictive, pressure compensated with reverse check
4-60 L/min (1 to 16 USgpm) • 350 bar (5000 psi)



Operation

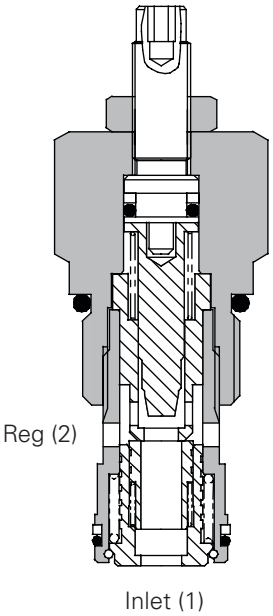
Flow into the inlet of the valve passes through the adjustable orifice and out of the regulated port. The pressure drop across the orifice is sensed on the regulating sleeve and produces a force which, at the required flow rate, overcomes the spring force. The resultant movement of the sleeve regulates the flow by closing the radial valve ports.

The inbuilt check allows free return of flow (2 to 1).

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and of 32 cSt (150 SUS)	
Rated Flow	4 to 60 liters/min (1 to 16 USgpm)
Maximum pressure	350 bar (5000 psi)
Cartridge material	All working parts hardened & ground steel. Zinc plated body
Standard housing material	Standard aluminum (up to 210 bar*) Add suffix "377" for steel option
Mounting position	Unrestricted
Cavity Number	A7447 (See Section M)
Torque cartridge into cavity	75 Nm (55 ft lbs)
Weight	2CFRC60: 0,29 kg (0.64 lbs) 2CFRC65: 0,75 kg (1.65 lbs)
Seal kit number	SK578 (Nitrile) SK578V (Viton®)
Recommended Filtration Level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	–30° to +90°C (–22° to +194°F)
Nominal range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont

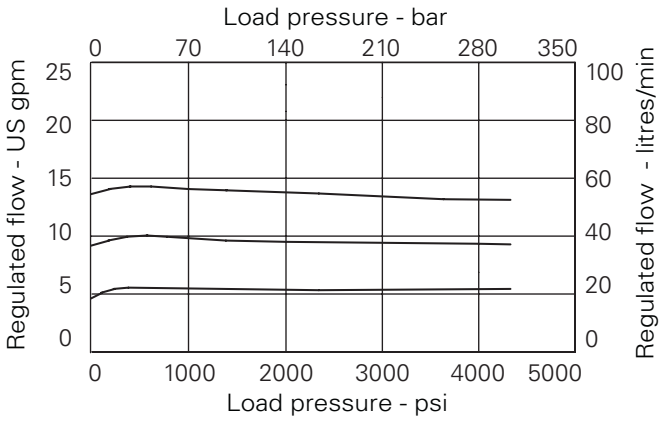
Description

This is a two-port, restrictive flow regulator with a built in free flow check valve. Typical uses include the control of actuator speed by regulating the flow into or out of the actuator (meter-in or meter-out).

The flow (and actuator speed) will be largely independent of the load and the pressure conditions. If used to restrict flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will normally pass over the system relief valve.

Pressure drop curves

Cartridge only



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2CFRC60 - Flow regulator

Restrictive, pressure compensated with reverse check
4-60 L/min (1 to 16 USgpm) • 350 bar (5000 psi)

Model code

2CFRC – P 4W – 4 S**

1 2 3 4 5

1 Basic code
2CFRC60 - Cartridge only
2CFRC65 - Cartridge & body

2 Adjustment means
P - Leakproof screw adjustment
R - Handknob adjustment (See page H-6 for dimensions)

3 Port size - bodied valves only
4W - 1/2" BSP
8T - 1/2" SAE

4 Adjustable flow range
4 - 4-40 L/min. Standard setting 30 L/min
6 - 6-60 L/min. Standard setting 40 L/min

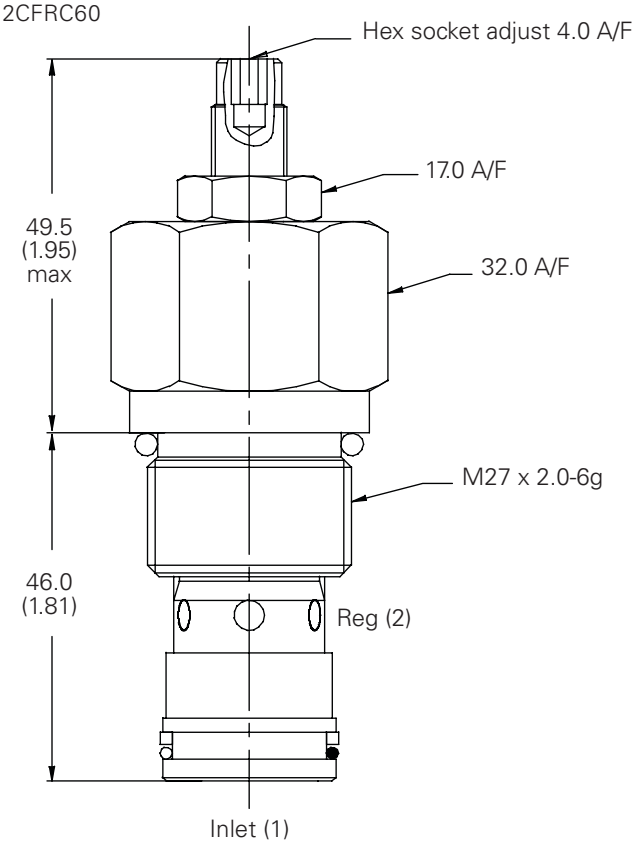
5 Seals
S - Nitrile (for use with most industrial hydraulic oils
SV - Viton (for high temperature & most special fluid applications)

Dimensions

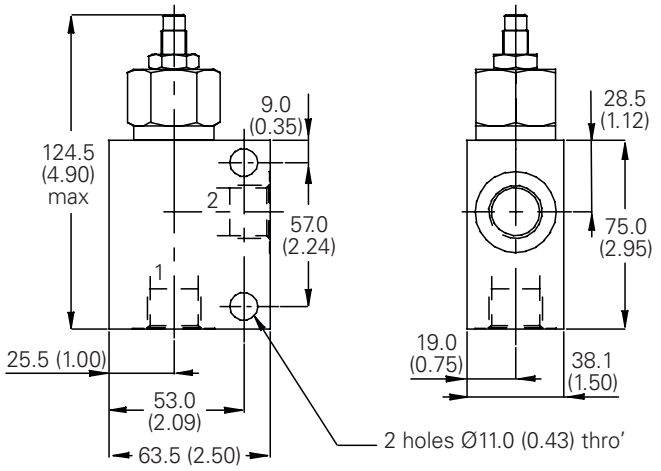
mm (inch)

Note: For applications above 210 bar (3000 psi)please consult our technical department or use the steel body option

Cartridge only
Basic code
2CFRC60



Complete valve
Basic code
2CFRC65

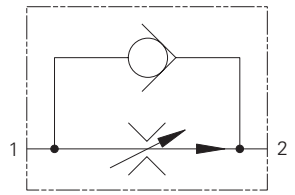


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

H

FAR1-10 - Flow regulator

Fully adjustable, pressure compensated with free reverse flow
1-38 L/min (0.25-10 USgpm) • 310 bar (4500 psi)



Operation

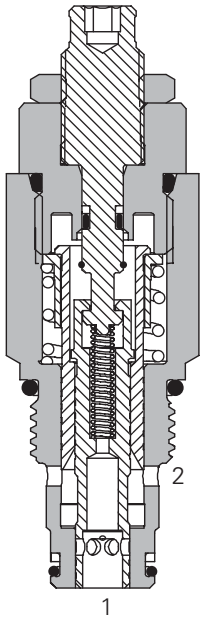
Flow into the inlet of the valve passes through the adjustable orifice and out of the regulated port. The pressure drop across the orifice is sensed on the regulating sleeve and produces a force which, at the required flow rate, overcomes the spring force. The resultant movement of the sleeve regulates the flow by closing the radial valve ports.

The inbuilt check allows free return of flow (2 to 1).

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	5–350 bar (75–5000 psi) steel housing
Min. pressure differential across valve	14 bar (200 psi)
Cartridge fatigue pressure (infinite life)	310 bar (4500 psi)
Rated flow	1–38 L/min (0.25–10 USgpm)
Temperature range	40° to 120°C (–40° to 248°F)
Flow regulation accuracy Factory set maximum flow rate accuracy under standard test conditions and within the above ranges	4–38 L/min (1–10 USgpm) ±10% 1–4 L/min (0.25–1 USgpm) ±20%
Reverse check crack pressure	1.7 bar (25 psi)
Leakage at shutoff position	0.4 L/min (24.4 in3/min)
Cavity	C-10-2
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum or Steel
Weight cartridge only	"S" 0,02 kg (0.44 lbs) "K" 0,23 kg (0.51 lbs) "H" 0,26 kg (0.59 lbs)
Seal kit	565803 (Buna-N), 566086 (Viton®)

Viton is a registered trademark of E.I. DuPont

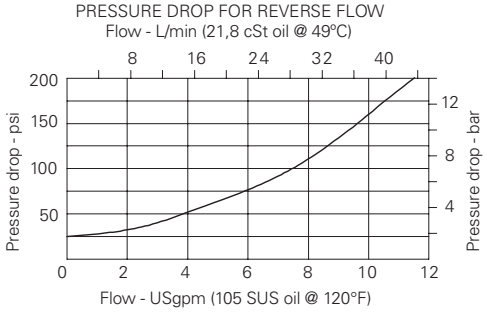
Description

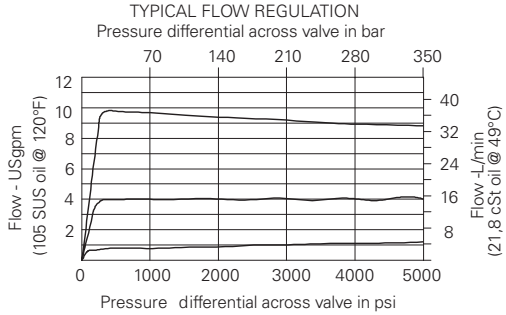
This is a two-port, restrictive flow regulator with a built in free flow check valve. Typical uses include the control of actuator speed by regulating the flow into or out of the actuator (meter-in or meter-out).

The flow (and actuator speed) will be largely independent of the load and the pressure conditions. If used to restrict flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will normally pass over the system relief valve.

Typical flow regulation

Cartridge only





Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FAR1-10 - Flow regulator

Fully adjustable, pressure compensated with free reverse flow
1-38 L/min (0.25-10 USgpm) • 310 bar (4500 psi)

Model code

FAR1 – 10 (V) – * – * – ** – *.* – 00

1 2 3 4 5 6 7 8

1 Function

FAR1 - Flow adjustable, pressure compensated flow regulator with reverse flow check

2 Size

10 - 10 Size

3 Seal material

Blank - Buna-N
V - Viton®

4 Adjustment means

H - Calibrated handknob with locknut
K - Handknob with locknut
S - Screw with locknut

5 Valve housing material

Omit for cartridge only

A - Aluminum
S - Steel

6 Port size

Code	Port size	Housing number		
		Aluminium light duty	Aluminium fatigue rated	Steel fatigue rated
0	Cartridge only			
3B	3/8" BSPP	02–175462	–	–
2G	1/4" BSPP	–	876702	02-175102
3G	3/8" BSPP	–	876703	02-175103
6H	SAE 6	–	876700	–
8H	SAE 8	–	876701	–
6T	SAE 6	566151	–	02-175100
8T	SAE 8	–	–	02-175101

See section J for housing details.

7 Factory set flow rate

Blank - Normal factory setting at 5 USgpm User requested setting within .25–10 US gpm (1–38 L/min.)

8 Special features

00 – None
(Only required if valve has special features, omitted if "00")

⚠ Warning

Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Dimensions

mm (inch)

Torque cartridge in housing

A - 47-54 Nm (35-40 ft lbs)
S - 68-75 Nm (50-55 ft lbs)
"K" adjustment kit – 565585

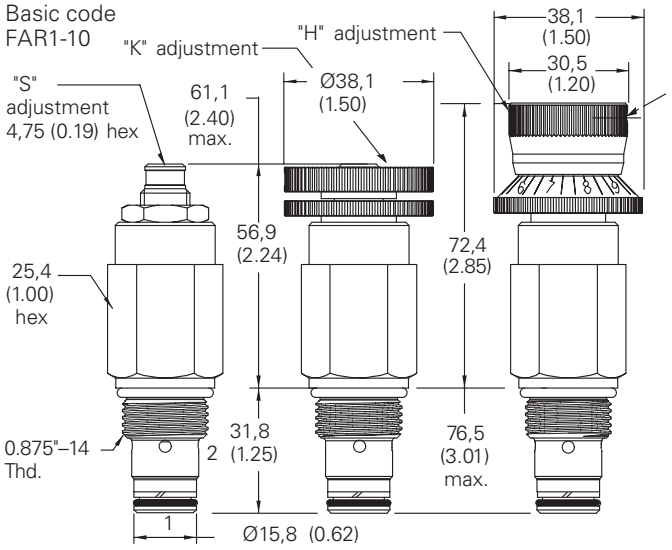
Note: To reset scale and knob to an optimum viewing position:

1. Loosen the set screw
2. Rotate zero point on scale to a desired orientation.
3. Align mark on knob with zero on scale.
4. Tighten the set screw firmly.

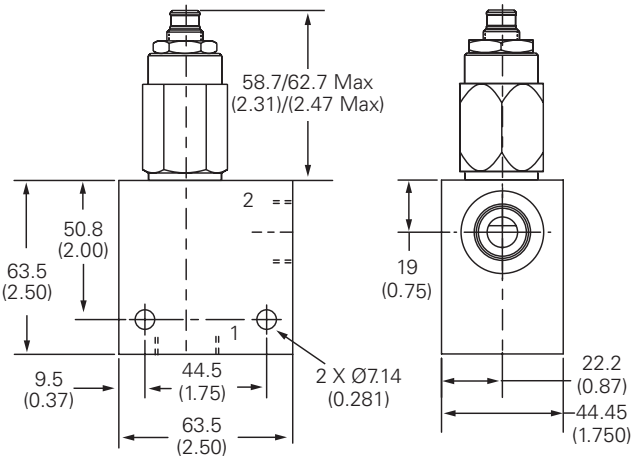
Note: To change the setting:

1. Loosen the set screw
2. Loosen jamnut while holding the knob steady, or move the knob along the axis slightly.
3. Turn adjusting screw (jam nut and knob will turn at the same time).
4. At the new adjusting screw position, tighten jamnut firmly while holding the knob steady, or move the knob along the axis slightly.
5. Tighten the set screw firmly.

Cartridge



Installation drawing (Steel)

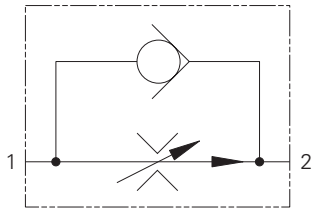


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

H

FAR1-12 - Flow regulator

Fully adjustable, pressure compensated with free reverse flow
1.5-94.5 L/min (0.4-25 USgpm) • 310 bar (4500 psi)



Operation

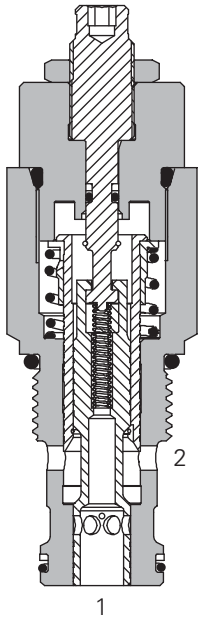
Flow into the inlet of the valve passes through the adjustable orifice and out of the regulated port. The pressure drop across the orifice is sensed on the regulating sleeve and produces a force which, at the required flow rate, overcomes the spring force. The resultant movement of the sleeve regulates the flow by closing the radial valve ports.

The inbuilt check allows free return of flow (2 to 1).

Features

Cartridge construction gives versatility of application.
A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		350 bar (5000 psi)
Min. pressure differential across valve		15,9 bar (230 psi)
Max. pressure differential across valve		329 bar (4770 psi)
Cartridge fatigue pressure (infinite life)		310 bar (4500 psi)
Rated flow		1,5–94,5 L/min (.4–25 USgpm)
Temperature range		40° to 120°C (–40° to 248°F)
Flow regulation accuracy	1,5–3,8 L/min (.4–1.0 USgpm) above 3,8–68,1 L/min (above 1–18 USgpm) above 68,1–94,6 L/min (above 18–25 USgpm) 3,8–56,8 L/min (1–15 USgpm) above 56,8–89,1 L/min (above 15–23 USgpm)	±20% @5000 psi ±10% @3000 psi ±15% @3000 psi ±10% @5000 psi ±15% @5000 psi
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges		
Reverse check crack pressure		1.7 bar (25 psi)
Leakage at shutoff position		0,5 L/min (30 in3/min)
Cavity		C–12–2 & C–12–2U
Fluids		All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration		Cleanliness code 18/**16/13**
Standard housing material		Aluminum or Steel
Weight cartridge only		"S" 0,43 kg (0.95 lbs)
Seal kit		02–181304 (Buna-N) 02–181305 (Viton®)

Viton is a registered trademark of E.I. DuPont

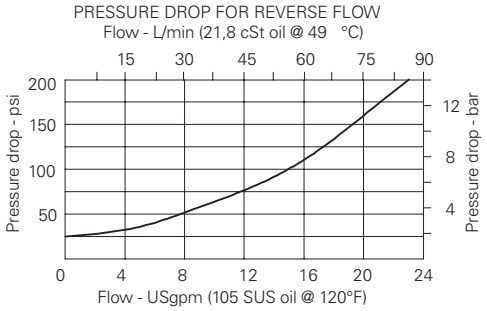
Description

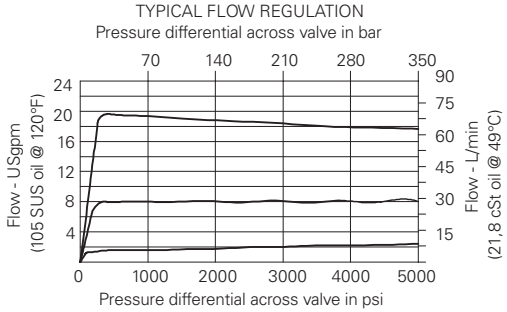
This is a two-port, restrictive flow regulator with a built in free flow check valve. Typical uses include the control of actuator speed by regulating the flow into or out of the actuator (meter-in or meter-out).

The flow (and actuator speed) will be largely independent of the load and the pressure conditions. If used to restrict flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will normally pass over the system relief valve.

Typical flow regulation

Cartridge only





Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FAR1-12 - Flow regulator

Fully adjustable, pressure compensated with free reverse flow
1.5-94.5 L/min (0.4-25 USgpm) • 310 bar (4500 psi)

Model code

FAR1 – 12 (V) – * – * – ** – *.* – 00

1 2 3 4 5 6 7 8

1 Function

FAR1 - Flow adjustable, pressure compensated flow regulator with reverse flow check

2 Size

12 - 12 Size

3 Seal material

Blank - Buna-N
V - Viton®

4 Adjustment

H - Calibrated handknob with locknut
K - Handknob with locknut
S - Screw with locknut

5 Valve housing material

Omit for cartridge only
A - Aluminum **S** - Steel

6 Port size

Code	Port size	Housing number		See section J for housing	
		C-12-2U Aluminium light duty	C-12-2 Aluminium fatigue rated	C-12-2U Steel fatigue rated	C-12-2 Steel fatigue rated
0	Cartridge only				
10T(U)	SAE 10	02–160641	02-160640	02-169817	02-169744
12T(U)	SAE 12	02–160645	02-160644	02-169790	02-169782
4G(U)	1/2" BSPP	02–161116	02-161118	02-172512	02-172062
6G(U)	3/4" BSPP	02–161115	02-161117	02-162922	02-169665

See section J for housing details.

7 Factory set flow rate

Blank - Normal factory setting at 10 USgpm User requested setting Within .04–25 US gpm (1,5-–94,6 L/min.) up to 210 bar (3000 psi) Within 0.4-23 USgpm (1,5-87,1 L/min.) up to 350bar (5000 psi)

8 Special features

00 – None
(Only required if valve has special features, omitted if "00")

Dimensions

mm (inch)

Torque cartridge in housing
A - 81-93 Nm (60-70 ft lbs)
S - 102-115 Nm (75-85 ft lbs)

"K" adjustment kit – 565585

Note: To reset scale and knob to an optimum viewing position:

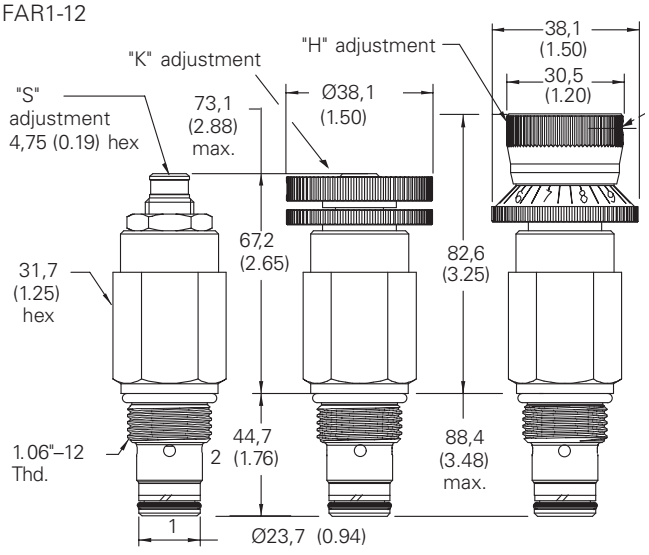
1. Loosen the set screw
2. Rotate zero point on scale to a desired orientation.
3. Align mark on knob with zero on scale.
4 Tighten the set screw firmly.

Note: To change the setting:

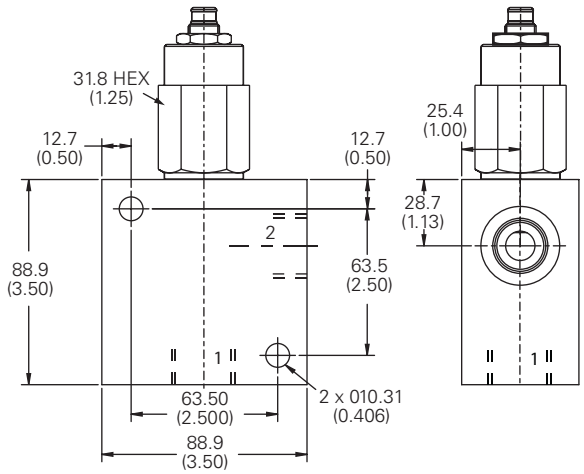
1. Loosen the set screw
2. Loosen jamnut while holding the knob steady, or move the knob along the axis slightly.
3. Turn adjusting screw (jam nut and knob will turn at the same time).
4. At the new adjusting screw position, tighten jamnut firmly while holding the knob steady, or move the knob along the axis slightly.
5. Tighten the set screw firmly.

Cartridge

Basic code
FAR1-12



Installation Drawing (Steel)



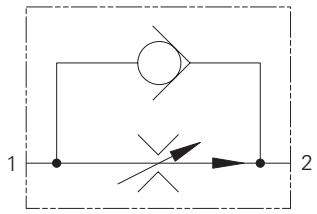
⚠ Warning

Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FAR1-16 - Flow regulator

Fully adjustable, pressure compensated with free reverse flow
3.8-114 L/min (1-30 USgpm) • 310 bar (4500 psi)



Operation

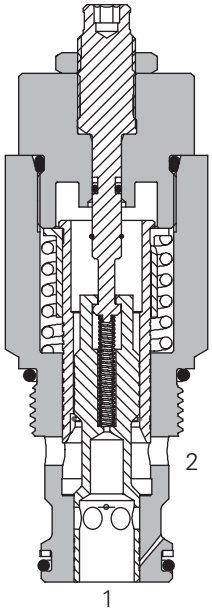
Flow into the inlet of the valve passes through the adjustable orifice and out of the regulated port. The pressure drop across the orifice is sensed on the regulating sleeve and produces a force which, at the required flow rate, overcomes the spring force. The resultant movement of the sleeve regulates the flow by closing the radial valve ports.

The inbuilt check allows free return of flow (2 to 1).

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		350 bar (5000 psi)
Min. pressure differential across valve		17 bar (250 psi)
Max. pressure differential across valve		328 bar (4750 psi)
Cartridge fatigue pressure (infinite life)		310 bar (4500 psi)
Rated flow		3,8–113,6 L/min (1–30 USgpm)
Temperature range		40° to 120°C (–40° to 248°F)
Flow regulation accuracy	3,8–15,1 L/min (1.0–4.0 USgpm) above 15,1–30,3 L/min (above 4.0–8.0 USgpm) above 30,3–113,6 L/min (above 8.0–30.0 USgpm)	±30% @5000 psi ±20% @5000 psi ±10% @5000 psi
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges		
Reverse check crack pressure		1.7 bar (25 psi)
Leakage at shutoff position		0,55 L/min (33.5 in3/min)
Cavity		C–16–2
Fluids		All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration		Cleanliness code 18/**16/13**
Standard housing material		Aluminum or steel
Weight cartridge only		"S" 0,67 kg (1.48 lbs) "K" 0,70 kg (1.55 lbs) "H" 0,74 kg (1.62 lbs)
Seal kit		565810 (Buna-N) 889609 (Viton®)

Viton is a registered trademark of E.I. DuPont

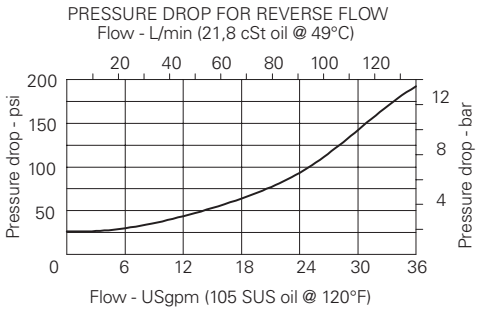
Description

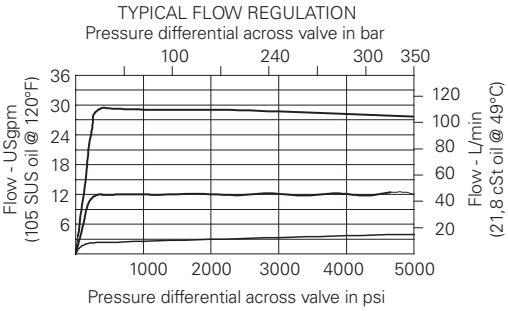
This is a two-port, restrictive flow regulator with a built in free flow check valve. Typical uses include the control of actuator speed by regulating the flow into or out of the actuator (meter-in or meter-out).

The flow (and actuator speed) will be largely independent of the load and the pressure conditions. If used to restrict flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will normally pass over the system relief valve.

Typical flow regulation

Cartridge only





Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FAR1-16 - Flow regulator

Fully adjustable, pressure compensated with free reverse flow
3.8-114 L/min (1-30 USgpm) • 310 bar (4500 psi)

Model code

FAR1	–	16	(V)	–	*	–	*	–	**	–	*.*	–	00
1		2	3		4		5		6		7		8

1 Function

FAR1 - Flow adjustable, pressure compensated flow regulator with reverse flow check

2 Size

16 - 16 Size

3 Seal material

Blank - Buna-N
V - Viton®

4 Adjustment

H - Calibrated handknob with locknut
K - Handknob with locknut
S - Screw with locknut

5 Valve housing material

Omit for cartridge only
A - Aluminum
S - Steel

6 Port size

Code	Port size	Housing number		
		Aluminium light duty	Aluminium fatigue rated	Steel fatigue rated
4G	1/2" BSPP	–	876716	02-175106
6B	3/4" BSPP	02-175463	–	–
6G	3/4" BSPP	–	876718	02-175107
10T	SAE 10	–	–	–
10H	SAE 10	–	876717	02-175104
12T	SAE 12	566149	–	–
12H	SAE 12	–	566113	02-175105

See section J for housing details.

7 Factory set flow rate

Blank - Normal factory setting at 15 USgpm user requested setting within 1-30 USgpm (3,8-113,6 L/min.)

8 Special features

00 – None
(Only required if valve has special features, omitted if "00")

Dimensions

mm (inch)

Torque cartridge in housing

A - 108–122 Nm (80–90 ft lbs)
S - 136–149 Nm (100–110 ft lbs)

Note: To reset scale and knob to an optimum viewing position:

1. Loosen the set screw
2. Rotate zero point on scale to a desired orientation.
3. Align mark on knob with zero on scale.
4. Tighten the set screw firmly.

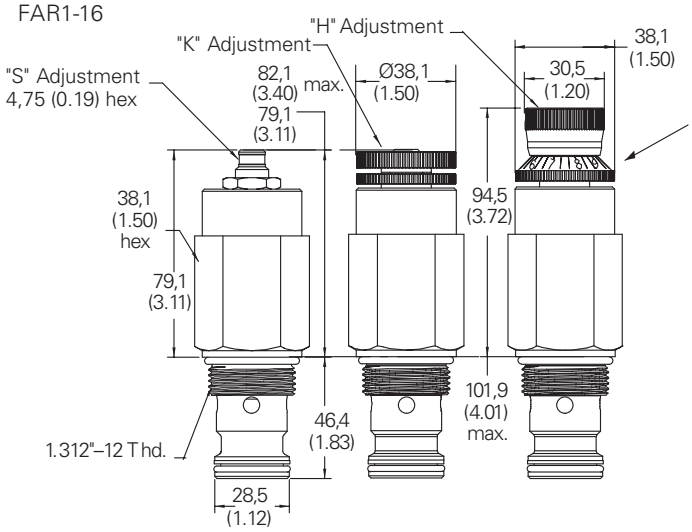
Note: To change the setting:

1. Loosen the set screw
2. Loosen jamnut while holding the knob steady, or move the knob along the axis slightly.
3. Turn adjusting screw (jam nut and knob will turn at the same time).
4. At the new adjusting screw position, tighten jamnut firmly while holding the knob steady, or move the knob along the axis slightly.
5. Tighten the set screw firmly.

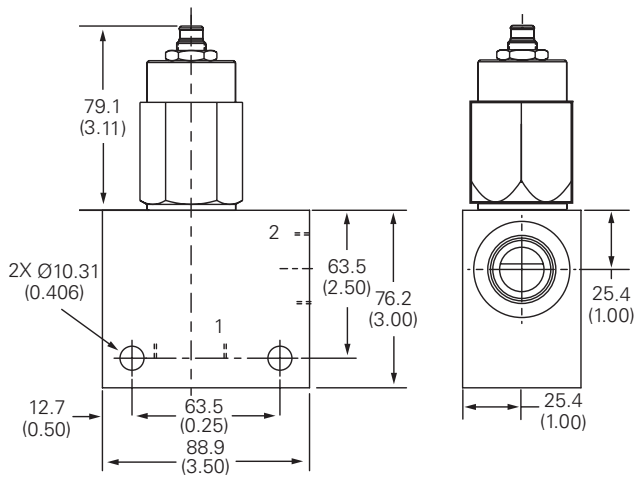
⚠ Warning

Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Cartridge
Basic code
FAR1-16



Installation drawing (Steel)



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR2-10 - Flow regulator

Priority flow regulator, adjustable

Description

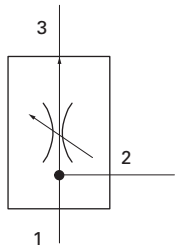
The PFR2-10 is a limited range adjustable*, pressure compensated, priority type, flow regulator screw-in cartridge valve.

*The flow adjustment is from the factory set maximum flow rate down to 50% of that factory set flow rate.

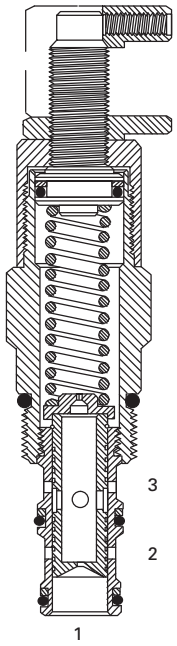
Operation

This valve maintains a constant, factory-set, priority flow from port 1 to port 3 based on the setting adjustment, regardless of pressure changes downstream on port 3. Flow in excess of the priority setting is directed to port 2. If the priority flow at port 3 is blocked, the spool will shift to satisfy the priority flow requirement, thereby closing off flow to port 2.

Functional symbol



Sectional view



Ratings and specifications

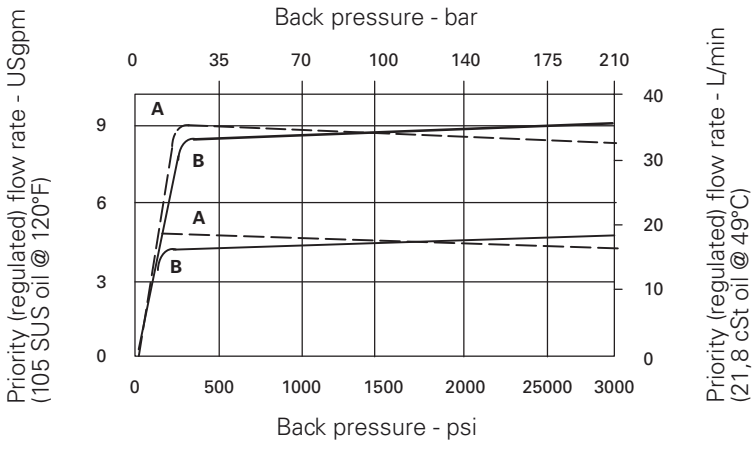
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	Maximum inlet flow 60 L/min (15 USgpm) Maximum regulated flow 38 L/min (10 USgpm)
Flow regulation accuracy	0,4–1,9 L/min (0.1–0.49 USgpm) ±20% 1,9–7,5 L/min (0.5–1.99 USgpm) ±15% 7,6–37,8 L/min (2.0–10.0 USgpm) ±10% Factory set maximum priority flow rate accuracy under standard test conditions and within the above ranges
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C–10–3
Fluids	All general purpose hydraulic fluids such as: MIL–H–5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/16/13
Standard housing materials	Aluminum
Weight cartridge only	0,25 kg (0.54 lb.)
Seal kits	565804 Buna-N 889599 Viton® Viton is a registered trademark of E.I. DuPont

Typical flow regulation

Cartridge only

A - Port 3, priority (regulated) outlet pressurized

B - Port 2, bypass outlet pressurized



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Model code

PFR2 – 10 (V) – * – ** – *.* – 00

1 2 3 4 5 6 7

1 Function

PFR2 - Priority flow regulator

2 Size

10 - 10 Size

3 Seals

Blank - Buna-N
V - Viton®

4 Adjustment

C - Cap
K - Knob
S - Screw

5 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
3B	3/8" BSPP	02–173358	–
6T	SAE 6	566162	–
2G	1/4" BSPP	–	876705
3G	3/8" BSPP	–	876714
6H	SAE 6	–	876704
8H	SAE 8	–	876711

See section J for housing details.

6 Factory set flow rate, nominal

(Specify in USgpm) Range 0,38–37,8 L/min (0.1–10.0 USgpm)

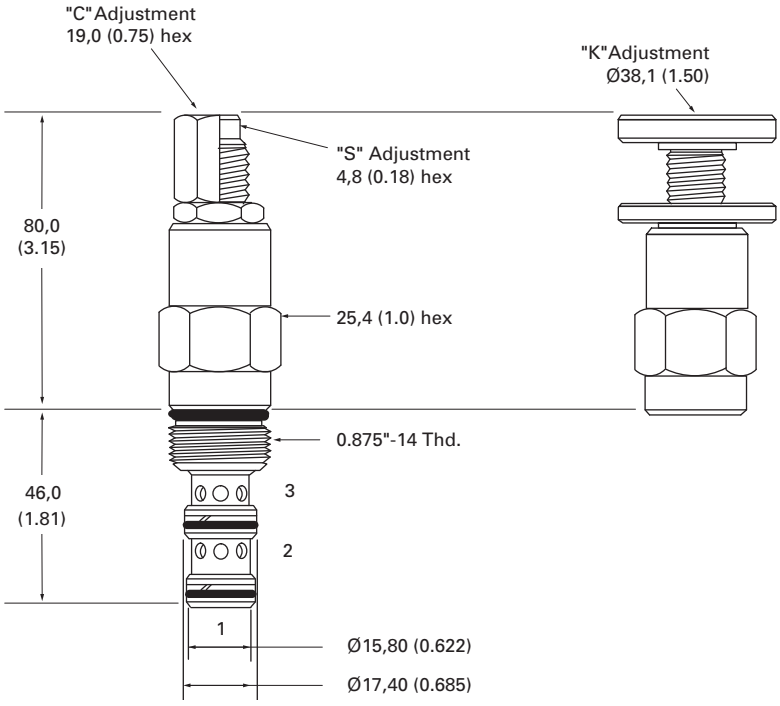
7 Special features

00 – None
(Only required if valve has special features, omitted if "00".)

Dimensions

mm (inch)

Torque cartridge in aluminum housing to 47–54 Nm (35–40 ft.lbs)

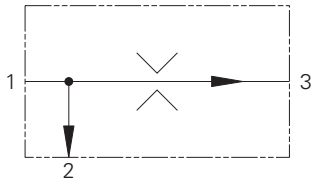


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR5-8 - Flow regulator

Fixed, priority type, pressure compensated
Up to 10 L/min (2.5 USgpm) • 280 bar (4000 psi)



Operation

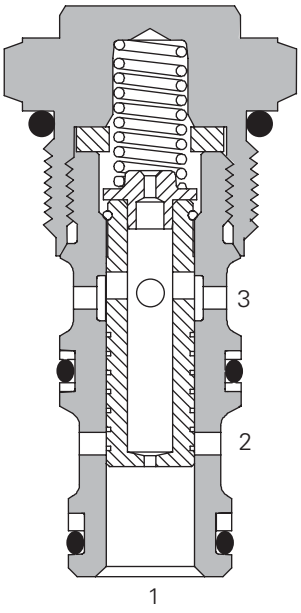
Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		350 bar (5000 psi) in steel housing
Cartridge fatigue pressure (infinite life)		280 bar (4000 psi)
Rated flow	maximum inlet flow maximum regulated flow	15,1 L/min (4 USgpm) 10 L/min (2.5 USgpm)
Temperature range		-40° to 120°C (-40° to 248°F)
Internal leakage		82 cm^3/min. @ 350 bar (3000 psi) 5 in^3 /min @ 5000 psi)
Flow regulation accuracy	0,4–1,9 L/min (0.1–0.49 USgpm) 0,4–1,9 L/min (0.1–0.49 USgpm) 1,9–5,7 L/min (0.5–1.49 USgpm) 5,7–10 L/min (1.5–2.5 USgpm)	±20% @ 210 bar (3000 psi) ±40% @ 350 bar (5000 psi) ±15% @ 350 bar (5000 psi) ±10% @ 350 bar (5000 psi)
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges		
Cavity		C–8–3
Fluids		All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20 etc.
Filtration		Cleanliness code 18/**16/13**
Standard housing material		Aluminum or steel
Weight cartridge only		0,07 kg (0.15 lbs)
Seal kit		02–173427 (Buna-N) 02–173434 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

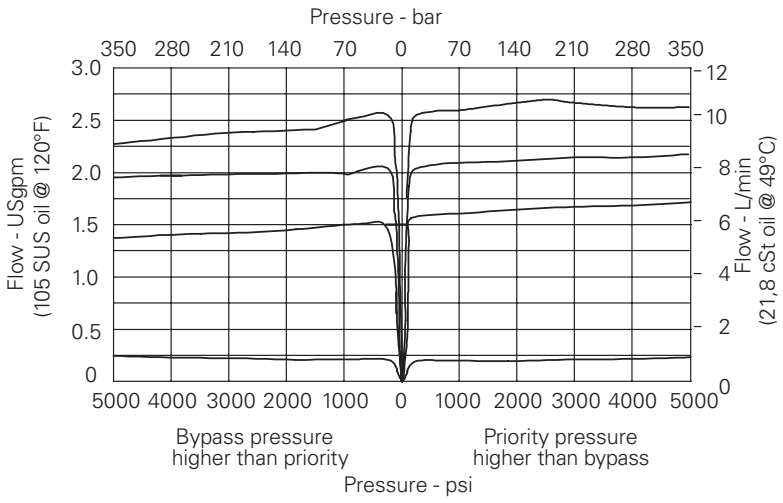
These valves are priority flow regulators. The flow (and actuator speed) will be largely independent of the load and the pressure conditions.

If used to regulate flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will be diverted to the bypass port. The bypass flow may be used for a secondary circuit whether the secondary pressure requirement is higher or lower than the regulated pressure.

The valve inlet pressure will be approximately 7 bar (100 psi) more than the regulated or bypass pressure, whichever is higher.

Typical flow regulation

Cartridge only



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR5-8 - Flow regulator

Fixed, priority type, pressure compensated
Up to 10 L/min (2.5 USgpm) • 280 bar (4000 psi)

Model code

**PFR5 – 8 (V) – F – (*) – ** – *.* – **

1 2 3 4 5 6 7 8

1 Function
PFR5 - Priority flow regulator

2 Size
8 - 8 size

3 Seals
Blank - Buna-N
V - Viton®

4 Adjustment
F - Fixed orifice

5 Valve housing material
Omit for cartridge only
S - Steel
A - Aluminum

6 Port size

Code	Port size	Housing number	
		Aluminium fatigue rated	Steel fatigue rated
0	Cartridge only		
4T	SAE 4	02–160741	02-160745
6T	SAE 6	02–160742	02-160746
2G	1/4" BSPP	02–160739	02-160743
3G	3/8" BSPP	02–160740	02-160744

See section J for housing details.

7 Factory set flow rate
(Specify in USgpm)
Range 0,4–9,5 L/min
(0.1–2.5 USgpm)

Example: 0.5–1,9 L/min
(0.5 USgpm)

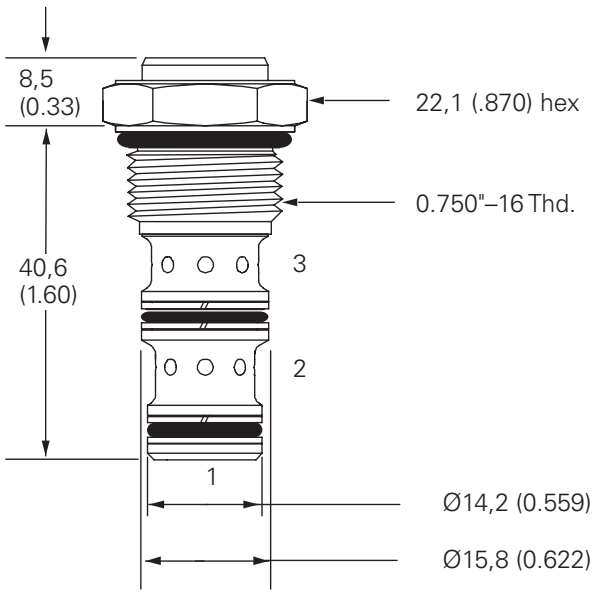
8 Special features
00 – None
(Only required if valve has special features, omitted if "00")

SS - 316 Stainless Steel external components

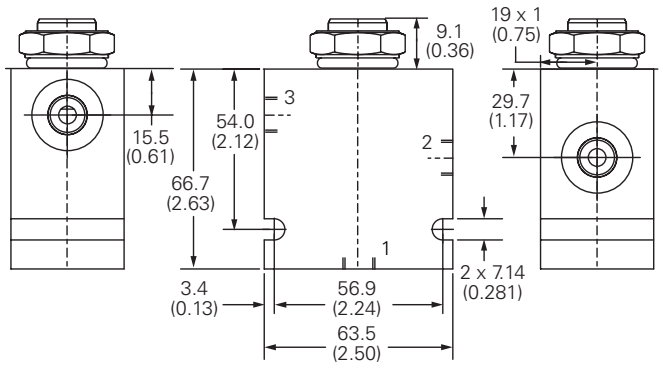
Dimensions
mm (inch)

Torque cartridge in steel or aluminum housing to 34–41 Nm (25–30 ft lbs).

Cartridge
Basic code
PFR5-8



Installation drawing (Steel)

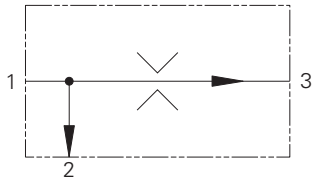


⚠ Warning
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR5-10 - Flow regulator

Fixed, priority type, pressure compensated
Up to 23 L/min (6 USgpm) • 280 bar (4000 psi)



Operation

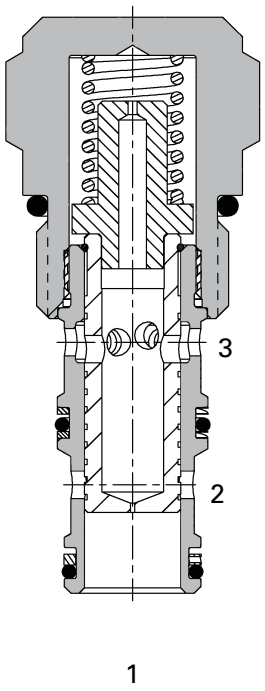
Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)		280 bar (4000 psi)
Rated flow		Maximum inlet flow 60 L/min (15 USgpm) Maximum regulated flow 23 L/min (6 USgpm)
Temperature range		-40° to 120°C (-40° to 248°F)
Internal leakage		82 cm³/min @ 350 bar (3000 psi) 5 in³/min @ 5000 psi)
Flow regulation accuracy	0,4–1,9 L/min (0.1–0.49 USgpm) 0,4–1,9 L/min (0.1–0.49 USgpm) 1,9–5,7 L/min (0.5–1.49 USgpm) 5,7–22,7 L/min (1.5–6 USgpm)	±20% @ 210 bar (3000 psi) ±40% @ 350 bar (5000 psi) ±15% @ 350 bar (5000 psi) ±10% @ 350 bar (5000 psi)
Factory set maximum flow rate accuracy under standard test conditions and within the above ranges		
Cavity		C–10–3
Fluids		All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20 etc.
Filtration		Cleanliness code 18/**16/13**
Standard housing material		Aluminum or steel
Weight cartridge only		0,13 kg (0.28 lbs)
Seal kit		565804 (Buna-N) 889599 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

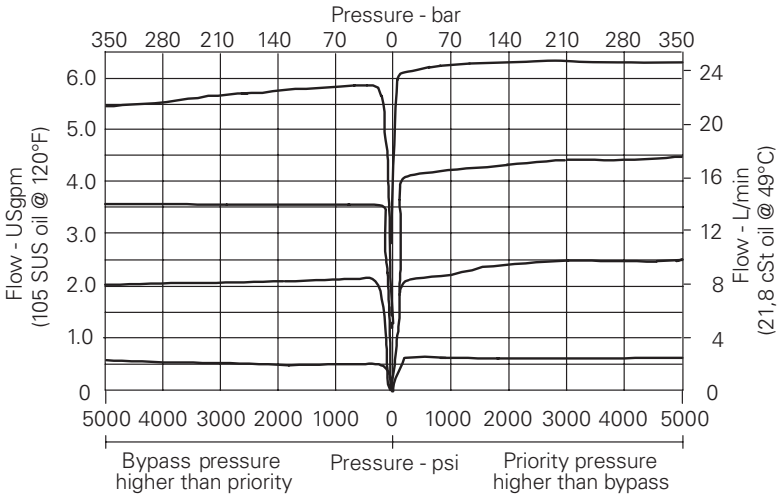
These valves are priority flow regulators. The flow (and actuator speed) will be largely independent of the load and the pressure conditions.

If used to regulate flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will be diverted to the bypass port. The bypass flow may be used for a secondary circuit whether the secondary pressure requirement is higher or lower than the regulated pressure.

The valve inlet pressure will be approximately 7 bar (100 psi) more than the regulated or bypass pressure, whichever is higher.

Typical flow regulation

Cartridge only



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR5-10 - Flow regulator

Fixed, priority type, pressure compensated
Up to 23 L/min (6 USgpm) • 280 bar (4000 psi)

Model code

PFR5 – 10 (V) – F – * – ** – *.* – 00

1 2 3 4 5 6 7 8

1 Function

PFR5 - Priority flow regulator

2 Size

10 - 10 size

3 Seals

Blank - Buna-N
V - Viton®

4 Adjustment

F - Fixed orifice

5 Valve housing material

Omit for cartridge only
S - Steel
A - Aluminum

6 Port size

Code	Port size	Housing number		
		Aluminium light duty	Aluminium fatigue rated	Steel
0	Cartridge only			
2G	1/4" BSPP	–	876705	02-175127
3B	3/8" BSPP	02–173358	–	–
3G	3/8" BSPP	–	876714	02-175128
6T	SAE 6	566162	–	02-175124
6H	SAE 6	–	876704	–
8H	SAE 8	–	876711	–
8T	SAE 8	–	02-175125	–

See section J for housing details.

7 Factory set flow rate

(Specify in USgpm)
Range 0,38-22,7 L/min (0.1-6.0 USgpm)

Example: 0.5–1,9 L/min (0.5 USgpm)

8 Special features

00 – None
(Only required if valve has special features, omitted if "00")

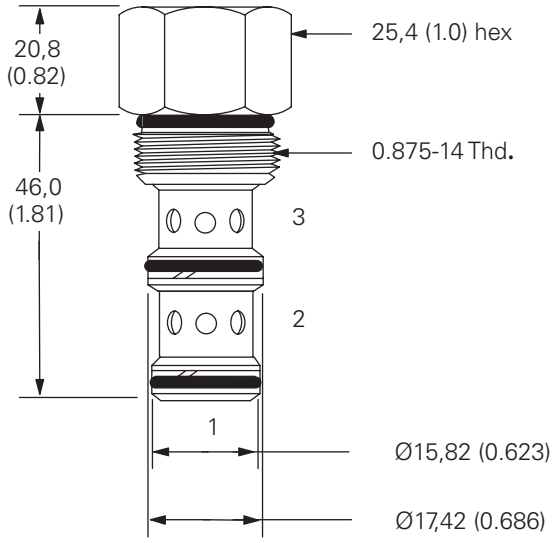
Dimensions

mm (inch)

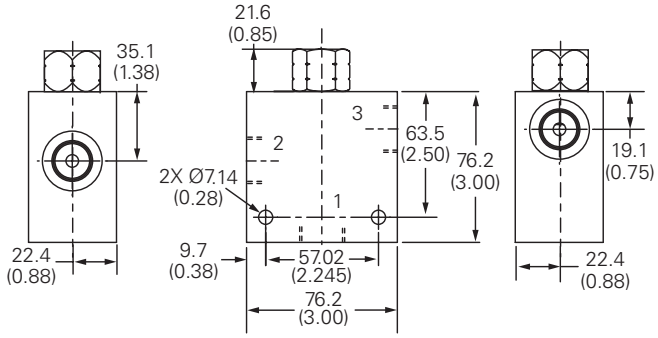
Torque cartridge in housing
A - 47-54 Nm (35-40 ft lbs)
B - 68-75 Nm (50-55 ft lbs)

Note: For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

Cartridge
Basic code
PFR5-10



Installation drawing (Steel)

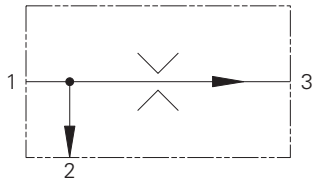


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR15-10 - Flow regulator

Fixed, priority type, pressure compensated
Up to 38 L/min (10 USgpm) • 350 bar (5000 psi)



Operation

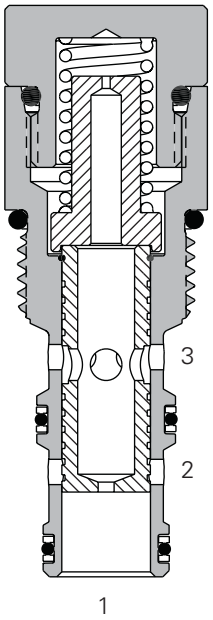
Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical Application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	Maximum inlet flow 64 L/min (17 USgpm) Maximum regulated flow 38 L/min (10 USgpm)
Flow regulation accuracy	0,4-1,9 L/min (0.1-0.49 USgpm) ±20% @ 210 bar (3000 psi) 0,4-1,9 L/min (0.1-0.49 USgpm) ±40% @ 350 bar (5000 psi) 1,9-5,7 L/min (0.5-1.49 USgpm) ±15% @ 350 bar (5000 psi) 5,7-22,7 L/min (1.5-6 USgpm) ±10% @ 350 bar (5000 psi) Factory set maximum priority flow rate accuracy under standard test conditions and within the above ranges
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-10-3
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	18/**16/13**
Standard housing materials	Aluminum or Steel
Weight cartridge only	0,13 kg (0.28 lb.)
Seal kit	565804 (Buna-N), 889599 (Viton®)

Viton is a registered trademark of E.I. DuPont

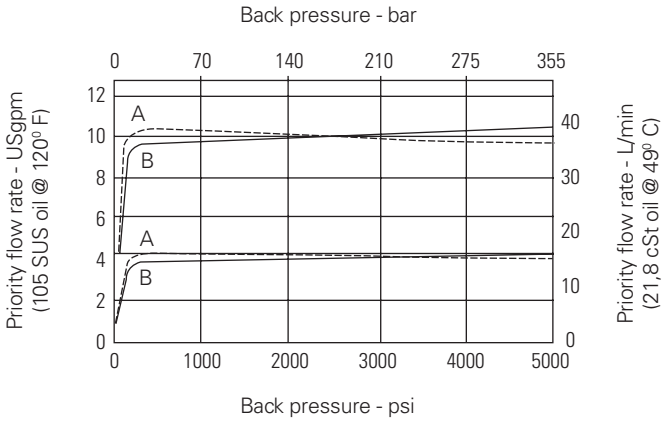
Description

These valves are priority flow regulators. The flow (and actuator speed) will be largely independent of the load and the pressure conditions.

If used to regulate flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will be diverted to the bypass port. The bypass flow may be used for a secondary circuit whether the secondary pressure requirement is higher or lower than the regulated pressure.

The valve inlet pressure will be approximately 7 bar (100 psi) more than the regulated or bypass pressure, whichever is higher.

Typical flow regulation



A - Port 3, priority (regulated outlet) pressurized.
B - Port 2, (bypass outlet) pressurized.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR15-10 - Flow regulator

Fixed, priority type, pressure compensated
Up to 38 L/min (10 USgpm) • 350 bar (5000 psi)

Model code

PFR15 – 10 (V) – F – * – ** – *.* – 00

1 2 3 4 5 6 7 8

1 Function
PFR15 - Priority flow regulator

2 Size
10 - 10 Size

3 Seals
Blank - Buna-N
V - Viton®

4 Adjustment
F - Fixed orifice

5 Valve housing material
Omit for cartridge only
S - Steel
A - Aluminum

6 Port size
0 - Cartridge only

Code	Port size		Housing number - body only	
			Aluminium fatigue rated	Steel
2G	1/4" BSPP	—	876705	
3G	3/8" BSPP	—	876714	
6H	SAE 6	—	876704	
8H	SAE 8	—	876711	
2G	1/4" BSPP			02-175127
3G	3/6" BSPP			02-175128
6T	SAE 6			02-175124
8T	SAE 8			02-175125

See section J for housing details.

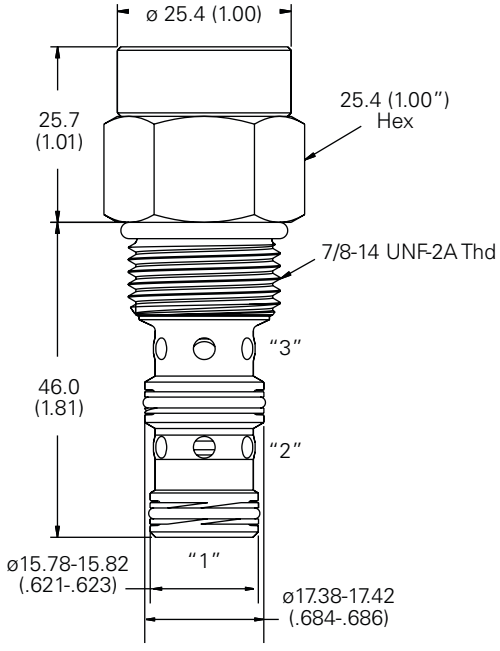
7 Factory set flow rate, nominal
(Specify in USgpm)
Range 0,38-38 L/min
(0.1-10 USgpm)

8 Special features
00 - None
(Only required if valve has special features, omitted if "00.")

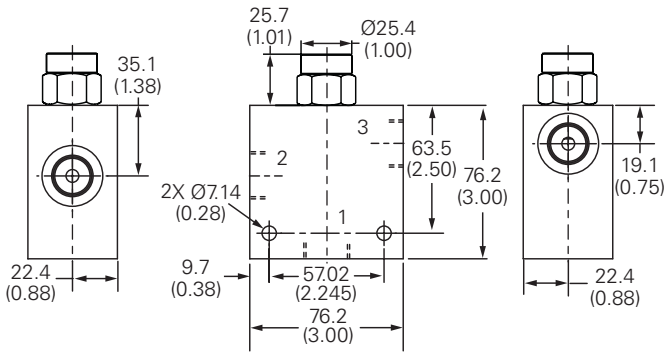
Dimensions
mm (inch)

Note: Torque cartridge in housing
A - 47-54 Nm (35-40 ft. lbs)
S - 68-75 Nm (50-55 ft. lbs)

Cartridge only
Basic code
PFR15-10



Installation drawing (Steel)

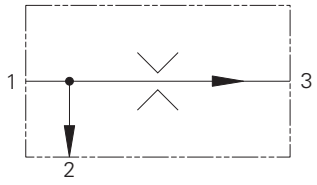


⚠ Warning
Aluminum housings can be used for pressures up to 210 bar (3000 psi) Steel housings must be used for operating pressures above 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR11-12 - Flow regulator

Fixed, priority type, pressure compensated
Up to 30 L/min (8 USgpm) • 350 bar (5000 psi)



Operation

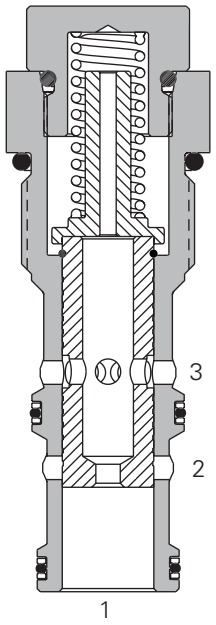
Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical Application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	Maximum inlet flow 76 L/min (20 USgpm) Maximum regulated flow 30 L/min (8 USgpm)
Flow regulation accuracy	1,9-10,9 L/min (0.5-2.9 USgpm) ±15% 11,4-114 L/min (3-30 USgpm) ±10%
Factory set maximum priority flow rate accuracy under standard test conditions and within the above ranges	
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-3
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	18/**16/13**
Standard housing materials	Aluminum or Steel
Weight cartridge only	0,25 kg (0.55 lbs)
Seal kit	9900171 (Buna-N) 9900172 (Viton®)

Viton is a registered trademark of E.I. DuPont

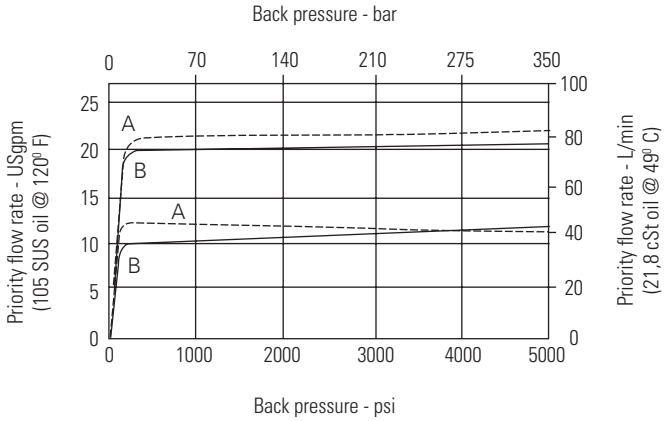
Description

These valves are priority flow regulators. The flow (and actuator speed) will be largely independent of the load and the pressure conditions.

If used to regulate flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will be diverted to the bypass port. The bypass flow may be used for a secondary circuit whether the secondary pressure requirement is higher or lower than the regulated pressure.

The valve inlet pressure will be approximately 7 bar (100 psi) more than the regulated or bypass pressure, whichever is higher.

Typical flow regulation



A - Port 3, priority (regulated outlet) pressurized.
B - Port 2, (bypass outlet) pressurized.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR11-12 - Flow regulator

Fixed, priority type, pressure compensated
Up to 30 L/min (8 USgpm) • 350 bar (5000 psi)

Model code

PFR11 – 12 (V) – F – * – *.* – 00**

1 2 3 4 5 6 7

1 Function

PFR11 - Priority flow regulator

2 Size

12 - 12 Size

3 Seals

Blank - Buna-N
V - Viton®

4 Adjustment

F - Fixed orifice

5 Port size

0 - Cartridge only

Code	Port size	Housing number - body only	
		Aluminium	Steel
A4G	1/2" BSPP	02-161817	
A6G	3/4" BSPP	02-161816	
A10H	SAE 10	02-160642	
A12H	SAE 12	02-160646	
S4G	1/2" BSPP		02-169815
S6G	3/4" BSPP		02-169814
S10T	SAE 10		02-161070
S12T	SAE 12		02-169816

See section J for housing details.

6 Factory set flow rate

(Specify in USgpm)
Range 1,9-76 L/min
(0.5-20 USgpm)

7 Special features

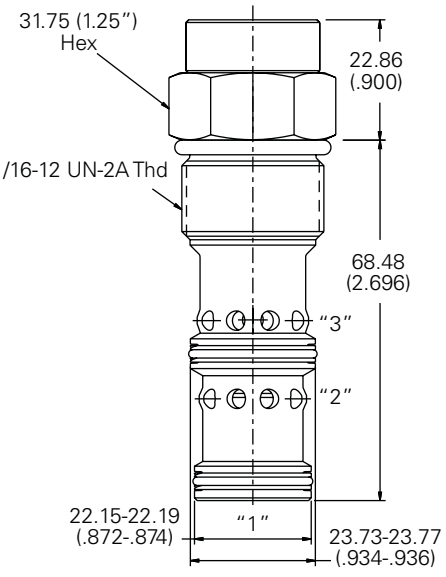
00 - None
(Only required if valve has special features, omitted if "00.")

Dimensions

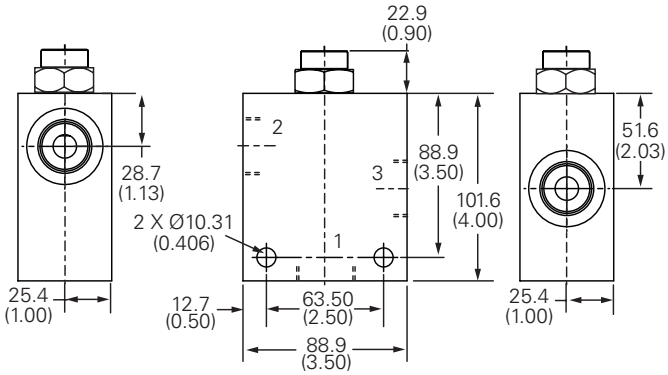
mm (inch)

Cartridge only

Basic code
PFR11-12



Installation drawing (Steel)



Note: Torque cartridge in aluminum housing to 81-95 Nm (60-70 ft. lbs)

Note: Torque cartridge in steel housing to 102-115 Nm (75-85 ft. lbs)

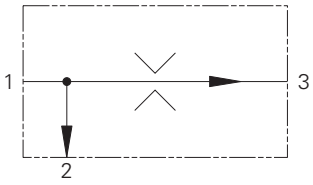
⚠ Warning

Aluminum housings can be used for pressures up to 210 bar (3000 psi) Steel housings must be used for operating pressures above 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR1 1-16 - Flow regulator

Fixed, priority type, pressure compensated
Up to 114 L/min (30 USgpm) • 350 bar (5000 psi)



Operation

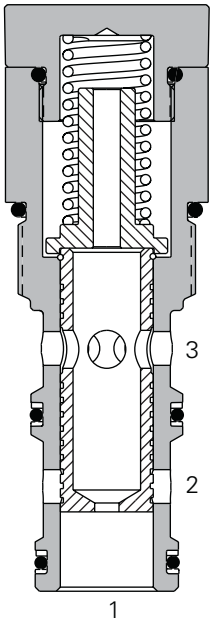
Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical Application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	Maximum inlet flow 151 L/min (40 USgpm) Maximum regulated flow 114 L/min (30 USgpm)
Flow regulation accuracy	1,9-10,9 L/min (0.5-2.9 USgpm) ±15% 11,4-114 L/min (3-30 USgpm) ±10%
Factory set maximum priority flow rate accuracy under standard test conditions and within the above ranges	
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-16-3
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	18/**16/13**
Standard housing materials	Aluminum or Steel
Weight cartridge only	0,38 kg (0.84 lb.)
Seal kit	565811 (Buna-N), 889610 (Viton®)

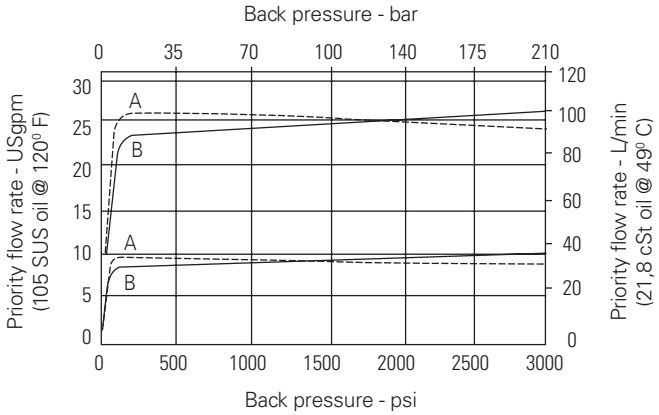
Viton is a registered trademark of E.I. DuPont

Description

Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Typical flow regulation



A - Port 3, priority (regulated outlet) pressurized.
B - Port 2, (bypass outlet) pressurized.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR11-16 - Flow regulator

Fixed, priority type, pressure compensated
Up to 114 L/min (30 USgpm) • 350 bar (5000 psi)

Model code

PFR11 – 16 (V) – F – * – *.* – 00**

1 2 3 4 5 6 7

1 Function

PFR11 - Priority flow regulator

2 Size

16 - 16 Size

3 Seals

Blank - Buna-N
V - Viton®

4 Adjustment

F - Fixed orifice

5 Port size

Code	Port size	Housing number - body only		
		Aluminium light duty	Aluminium fatigue rated	Steel
A12T	SAE 12	566152		
A10H	SAE 10		876721	
A12H	SAE 12		876723	
A4G	1/2" BSPP		876720	
A6G	3/4" BSPP		876722	
S4G	1/2" BSPP			02-175131
S6G	3/4" BSPP			02-175132
S10T	SAE 10			02-175129
S12T	SAE 12			02-175130

See section J for housing details.

6 Factory set flow rate

(Specify in USgpm)
Range 1,9-76 L/min
(0.5-20 USgpm)

7 Special features

00 - None
(Only required if valve has special features, omitted if "00.")

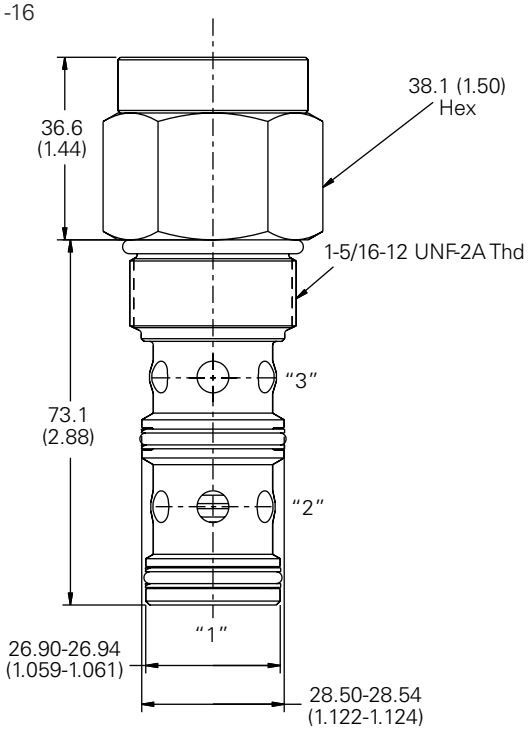
Dimensions

mm (inch)

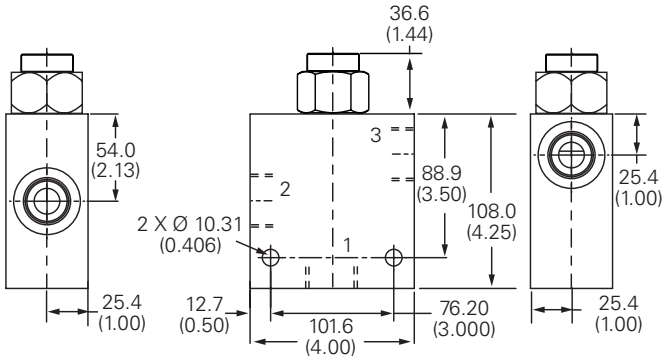
Note: Torque cartridge in aluminum housing to 108-122 Nm (80-90 ft. lbs)

Note: Torque cartridge in steel housing to 136-149.6 Nm (100-110 ft. lbs)

Cartridge Only
Basic code
PFR11-16



Installation drawing (Steel)



⚠ Warning

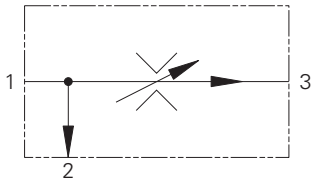
Aluminum housings can be used for pressures up to 210 bar (3000 psi) Steel housings must be used for operating pressures above 210 bar (3000 psi).

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2CFP60 - Flow regulator

Adjustable, priority type pressure compensated
4-60 L/min (1-16 USgpm) • 350 Bar (5000 psi)



Operation

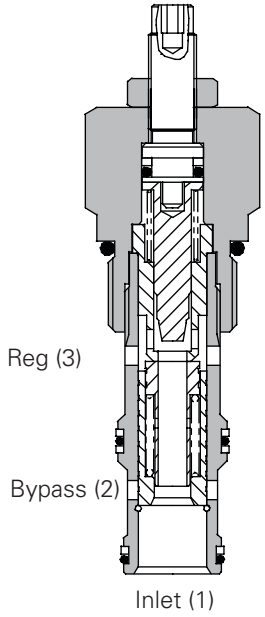
Inlet flow passes through the adjustable orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Figures based on Oil Temp of 40˚C and of 32 cST (150 SUS)	
Rated flow	Inlet: 90 L/min (24 USgpm) Reg: 4-60 L/min (1-16 USgpm)
Maximum pressure	350 bar (5000 psi)
Cartridge material	Working parts hardened & ground steel. Zinc plated body
Standard housing material	Aluminum (up to 210 bar*) Add suffix "377" for steel option
Mounting position	Unrestricted
Cavity Number	CVA-27-04-0 (See Section M)
Torque cartridge into cavity	75 Nm (55 ft lbs)
Weight	2CFP60: 0,16 kg (0.35 lbs) 2CFP65: 1,80 kg (3.76 lbs)
Seal kit number	SK579 (Nitrile), SK579V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	–30° to +90° C (–22° to +194° F)
Nominal range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont

Description

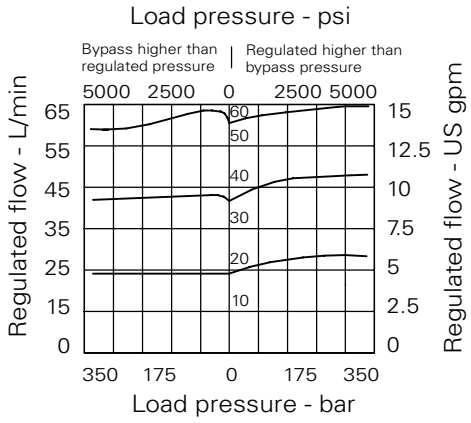
These valves are priority flow regulators. The flow (and actuator speed) will be largely independent of the load and the pressure conditions.

If used to regulate flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will be diverted to the bypass port. The bypass flow may be used for a secondary circuit whether the secondary pressure requirement is higher or lower than the regulated pressure.

The valve inlet pressure will be approximately 7 bar (100 psi) more than the regulated or bypass pressure, whichever is higher.

Pressure drop

Cartridge only



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2CFP60 - Flow regulator

Adjustable, priority type pressure compensated
4-60 L/min (1-16 USgpm) • 350 Bar (5000 psi)

Model code

2CFP**	–	P	4W	–	4	S
1		2	3		4	5

1 Basic code

2CFP60 - Cartridge only
2CFP65 - Cartridge & body

2 Adjustment means

P - Leakproof screw adjustment
R - Handknob adjustment
(See page H-6 for dimensions)

3 Port size

Code	Port size	Housing number	
		Aluminium	Steel
4W	1/2" BSP	B12631	B13664
8T	1/2" BSP	B10820	B11566

4 Adjustable flow range

4 - 4-40 L/min
Standard setting 30 L/min

6 - 6-60 L/min
Standard setting 40 L/min

5 Seals

S - Nitrile (for use with most industrial hydraulic oils)

SV - Viton (for high temperature & most special fluid applications)

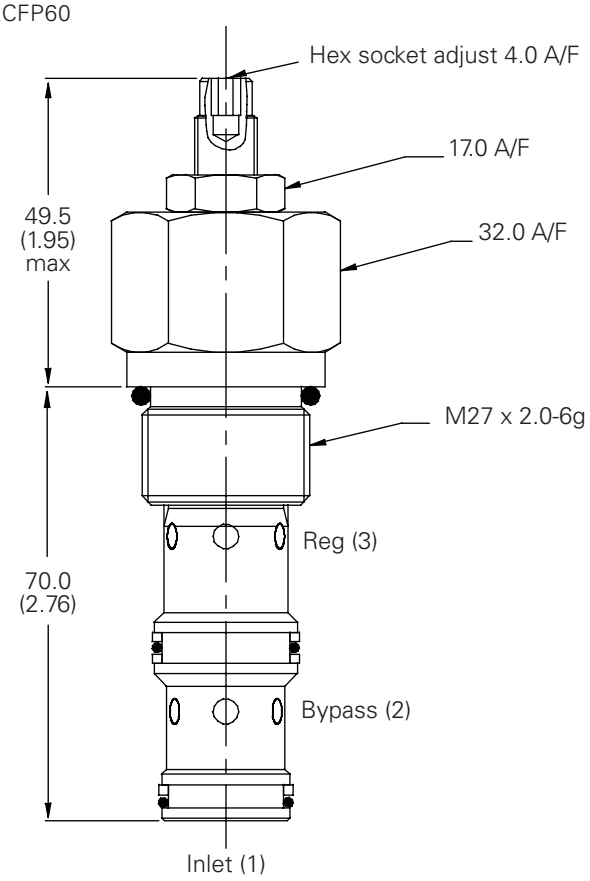
Dimensions

mm (inch)

Note: For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

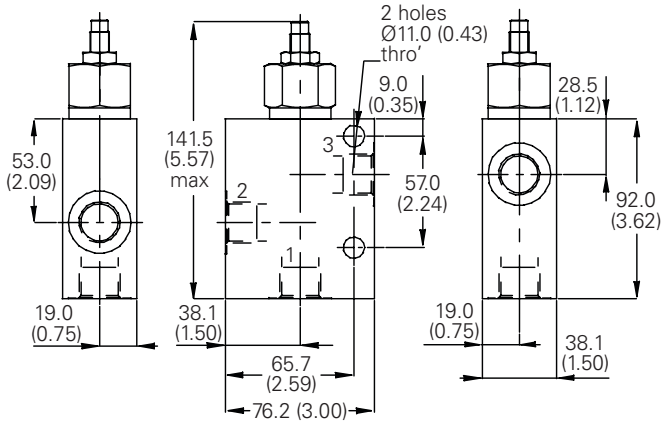
Cartridge only

Basic code
2CFP60



Complete valve

1/2" Ports
Basic code
2CFP65

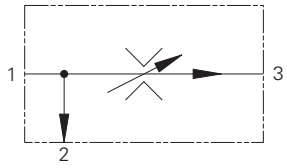


H

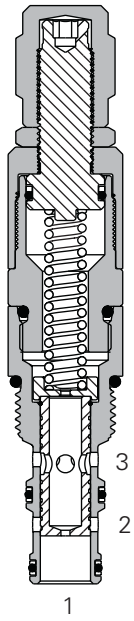
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR12-10 - Flow regulator

Adjustable, priority type pressure compensated
38L/min (10 USgpm) • 350 bar (5000 psi)



Sectional view



Description

These valves are limited range adjustable pressure compensated,priority type Flow regulators. The flow (and actuator speed) will be largely independent of the load and the pressure conditions.

If used to regulate flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will be diverted to the bypass port. The bypass flow may be used for a secondary circuit whether the secondary pressure requirement is higher or lower than the regulated pressure.

The valve inlet pressure will be approximately 7 bar (100 psi) more than the regulated or bypass pressure, whichever is higher.

*The flow adjustment is from the factory set maximum flow rate down to 50% of that factory set flow rate.

Operation

Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

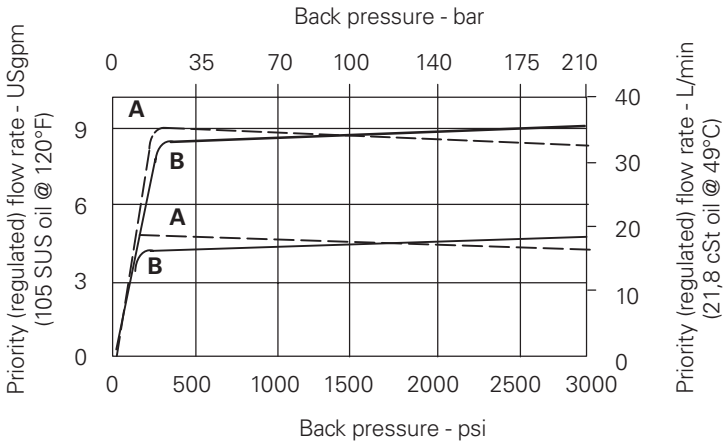
Performance data

Ratings and Specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical Application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	Maximum inlet flow 64 L/min (17 USgpm) Maximum regulated flow 38 L/min (10 USgpm)
Flow regulation accuracy	0,4-1,9 L/min (0.1-0.49 USgpm) ±20% 1,9-7,5 L/min (0.5-1.99 USgpm) ±15% 7,6-37,8 L/min (2.0-10.0 USgpm) ±10% Factory set maximum priority flow rate accuracy under standard test conditions and within the above ranges
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-10-3
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	18/**16/13**
Standard housing materials	Steel
Weight cartridge only	0.25 kg (0.54 lb.)
Seal kit	565804 (Buna-N) 889599 (Viton®)

Viton is a registered trademark of E.I. DuPont

Typical flow regulation



A - Port 3, priority (regulated outlet) pressurized.
B - Port 2, (bypass outlet) pressurized.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR12-10 - Flow regulator

Adjustable, priority type pressure compensated
38L/min (10 USgpm) • 350 bar (5000 psi)

Model code

PFR12	10	(V)	*	**	*.*	00
1	2	3	4	5	6	7

1 Function

PFR12 - Priority flow regulator

2 Size

10 - 10 Size

3 Seals

Blank - Buna-N
V - Viton

4 Adjustment

C - Cap
K - Knob
S - Screw

5 Port size

Code	Port size	Housing number - body only	
		Aluminium fatigue rated	Steel
2G	1/4" BSPP	876705	
3G	3/8" BSPP	876714	
6H	SAE 6	876704	
8H	SAE 8	876711	
S2G	1/4" BSPP		02-175127
S3G	3/8" BSPP		02-175128
S6T	SAE 6		02-175124
S8T	SAE 8		02-175125

6 Factory set flow rate, nominal

(Specify in USgpm)
Range 0,38-37,8 L/min
(0.1-10.0 USgpm)

7 Special features

00 - None
(Only required if valve has special features, omitted if "00.")

Dimensions

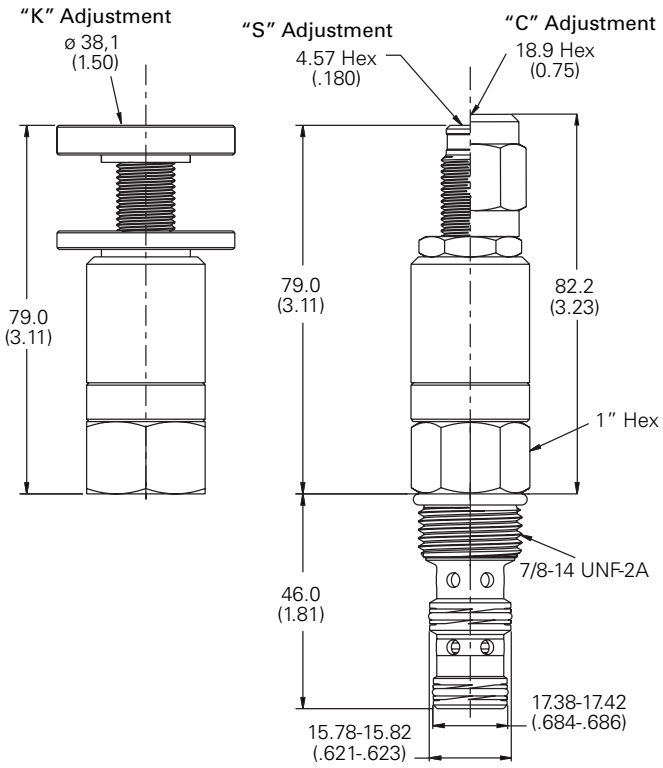
mm (inch)

Note: Torque cartridge in aluminum housing to 47-54 Nm (35-40 ft. lbs)

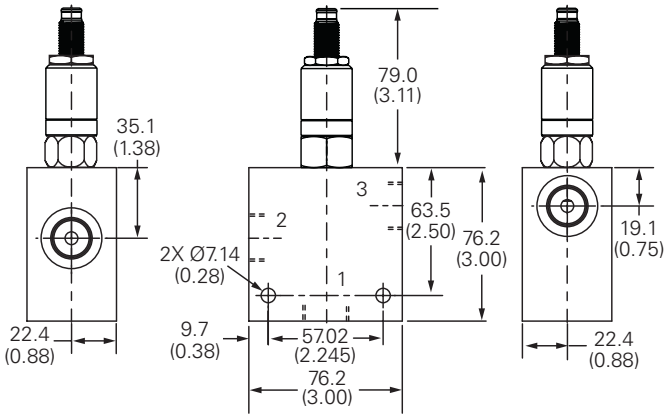
Note: Torque cartridge in steel housing to 68-75 Nm (50-55 ft. lbs)

Cartridge only

Basic code
PFR12-10



Installation drawing (Steel)



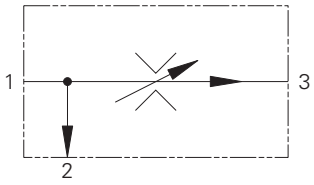
⚠ Warning

Aluminum housings can be used for pressures up to 210 bar (3000 psi) Steel housings must be used for operating pressures above 210 bar (3000 psi).

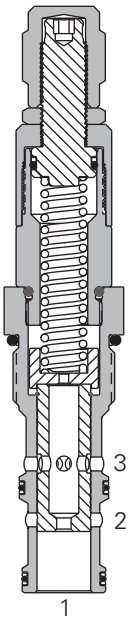
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR12-12 - Flow regulator

Adjustable, priority type, pressure compensated
45 L/min (12 USgpm) • 350 bar (5000 psi)



Sectional view



Description

These valves are priority flow regulators. The flow (and actuator speed) will be largely independent of the load and the pressure conditions.

If used to regulate flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will be diverted to the bypass port. The bypass flow may be used for a secondary circuit whether the secondary pressure requirement is higher or lower than the regulated pressure.

The valve inlet pressure will be approximately 7 bar (100 psi) more than the regulated or bypass pressure, whichever is higher.

Operation

Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

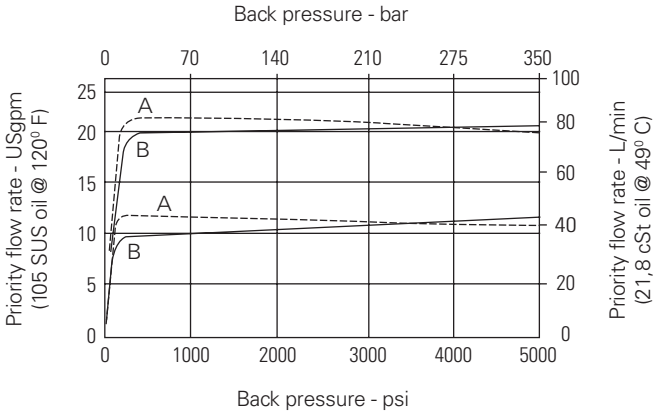
Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical Application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	Maximum inlet flow 114 L/min (30 USgpm) Maximum regulated flow 45 L/min (12 USgpm)
Flow regulation accuracy	1,89 - 75,7 L/min (0.5 - 20.0 USgpm) ± 15% Factory set maximum priority flow rate accuracy under standard test conditions and within the above ranges
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-3
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	18/**16/13**
Standard housing materials	Aluminum or Steel
Weight cartridge only	0,32 kg (0.70 lb.)
Seal kit	9900171 (Buna-N) 9900172 (Viton®)

Viton is a registered trademark of E.I. DuPont

Typical flow regulation



A - Port 3, priority (regulated outlet) pressurized.
B - Port 2, (bypass outlet) pressurized.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR12-12 - Flow regulator

Adjustable, priority type, pressure compensated
45 L/min (12 USgpm) • 350 bar (5000 psi)

Model code

PFR12 – 12 (V) – * – ** – *.* – 00

1 2 3 4 5 6 7

1 Function

PFR12 - Priority flow regulator

2 Size

12 - 12 Size

3 Seals

Blank - Buna-N
V - Viton

4 Adjustment

C - Cap
K - Knob
S - Screw

5 Port size

0 - Cartridge only

Code	Port size	Housing number - body only	
		Aluminium fatigue rated	Steel
A4G	1/2" BSPP	02-161817	
A6G	3/4" BSPP	02-161816	
A10H	SAE 10	02-160642	
A12H	SAE 12	02-160646	
S4G	1/2" BSPP		02-169815
S6G	3/4" BSPP		02-169814
S10T	SAE 10		02-161070
S12T	SAE 12		02-169816

See section J for housing details.

6 Factory set flow rate, nominal

(Specify in USgpm)
Range 1,89 - 75,7 L/min
(0.5 - 20.0 USgpm)

7 Special features

00 - None
(Only required if valve has special features, omitted if "00.")

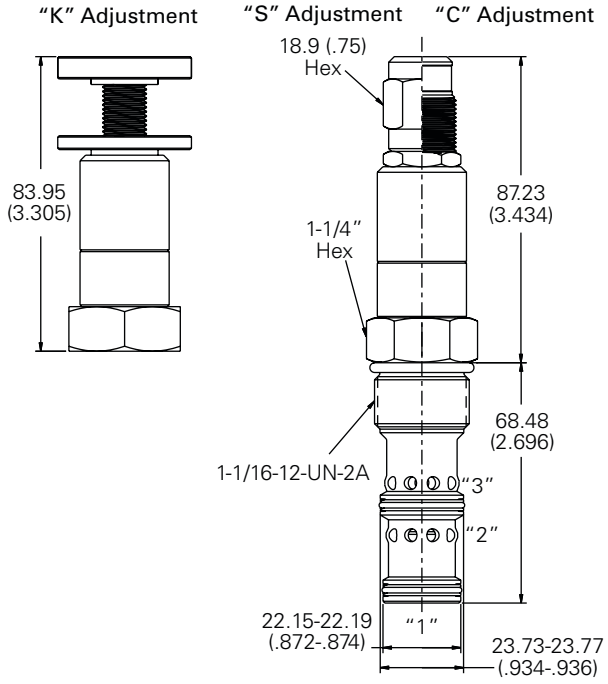
Dimensions

mm (inch)

Note: Torque cartridge in aluminum housing to 81-95 Nm (60-70 ft. lbs)

Note: Torque cartridge in steel housing to 102-115 Nm (75-85 ft. lbs)

Cartridge only
Basic code
PFR12-12



Installation drawing (Steel)

⚠ Warning

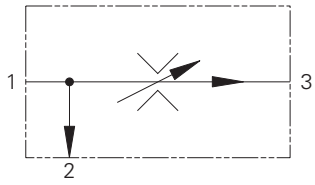
Aluminum housings can be used for pressures up to 210 bar (3000 psi) Steel housings must be used for operating pressures above 210 bar (3000 psi).

H

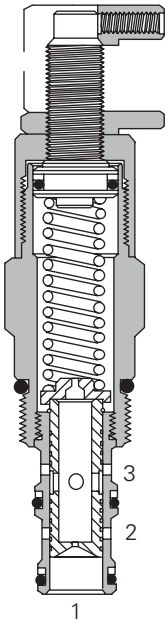
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR2-16 - Flow regulator

Limited range adjustable, priority pressure compensated
114 L/min (30 USgpm) • 210 Bar (3000 psi)



Sectional view



Operation

Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Performance data

Ratings and specification

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	Maximum inlet flow 151 L/min (40 USgpm) Maximum regulated flow 114 L/min (30 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F))
Flow regulation accuracy Factory set maximum flow rate accuracy under standard test conditions and within the above ranges	1,9–10,9 L/min (0.5–2.9 USgpm) ±15% 11,4–114 L/min (3–30 USgpm) ±10%
Cavity	C–16–3
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum or Steel
Weight cartridge only	0,43 kg (0.95 lbs)
Seal kit	565811 (Buna-N) 889610 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

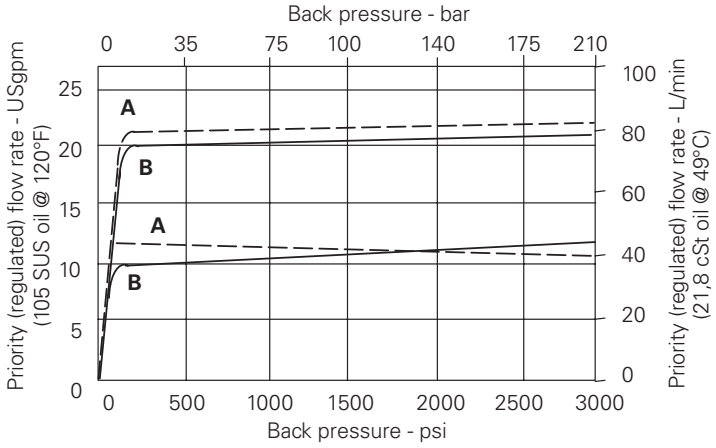
These valves are priority flow regulators. The flow (and actuator speed) will be largely independent of the load and the pressure conditions.

If used to regulate flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will be diverted to the bypass port. The bypass flow may be used for a secondary circuit whether the secondary pressure requirement is higher or lower than the regulated pressure.

The valve inlet pressure will be approximately 7 bar (100 psi) more than the regulated or bypass pressure, whichever is higher.

Typical flow regulation

Cartridge only



A - Port 3, priority (regulated) outlet pressurized
B - Port 2, bypass outlet pressurized

Notes: The flow adjustment is from the factory - set maximum flow rate down to 50% of that factory set flow rate.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR2-16 - Flow regulator

Limited range adjustable, priority pressure compensated
114 L/min (30 USgpm) • 210 Bar (3000 psi)

Model code

PFR2 – 16 (V) – * – * – *.* – 00**

1 2 3 4 5 6 7

1 Function

PFR2 - Priority flow regulator

2 Size

16 - 16 size

3 Seals

Blank - Buna-N
V - Viton®

4 Adjustment

C - Cap
K - Knob
S - Screw

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminum fatigue rated
0	Cartridge only	566152	–
12T	SAE 12	02-175465	–
6B	3/4" BSPP	–	876721
10H	SAE 10	–	876723
12H	SAE 12	–	876720
4G	1/2" BSPP	–	876722
6G	3/4" BSPP		

See section J for housing details.

6 Factory set flow rate

(Specify in USgpm)
Range 1,9–114 L/min
(0.5–30 USgpm)

7 Special features

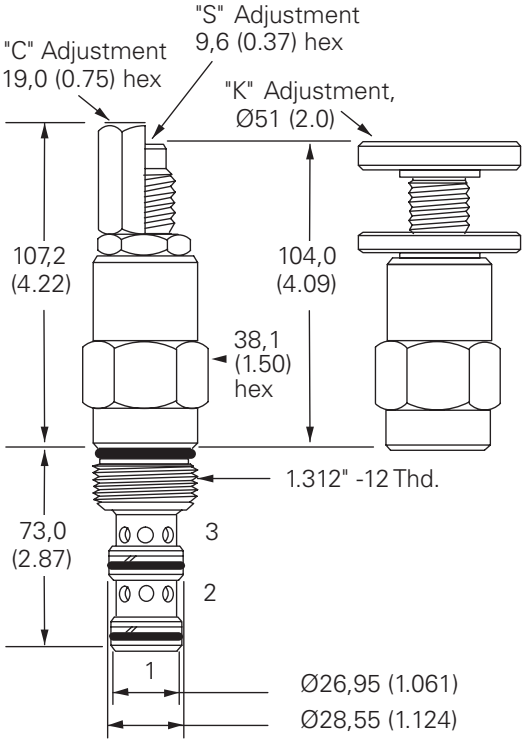
00 – None
(Only required if valve has special features, omitted if "00")
SS - 316 stainless steel external components

Dimensions

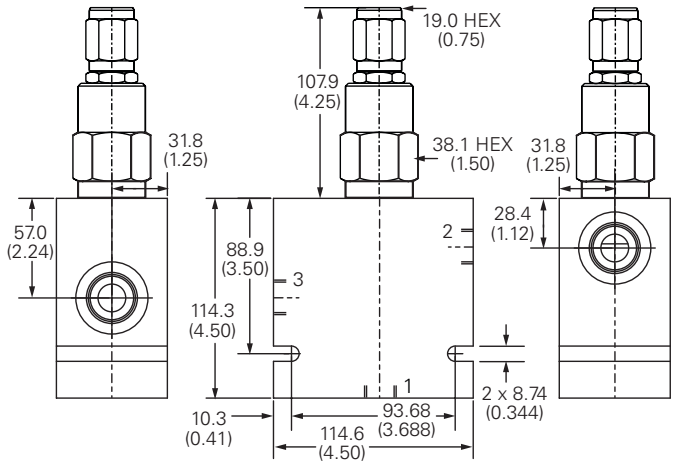
mm (inch)

Torque cartridge in aluminum housing to 108–122 Nm (80–90 ft lbs).

Cartridge only
Basic code
PFR2-16



Installation drawing

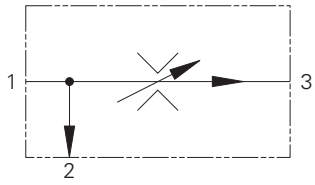


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR12-16 - Flow regulator

Adjustable, priority type, pressure compensated
114 L/min (30 USgpm) • 350 bar (5000 psi)



Operation

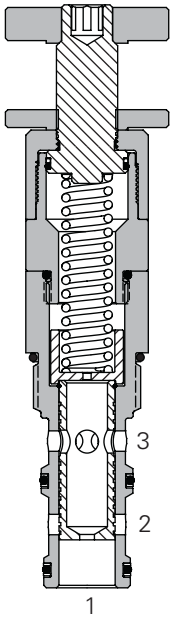
Inlet flow passes through the fixed orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports.

The valve will pass flow in the return direction but this is restricted by the flow path through the control orifice.

Features

Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or directly into a cylinder or other actuator. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Hardened and ground working parts give accurate flow control and long working life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical Application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	Maximum inlet flow 151 L/min (40 USgpm) Maximum regulated flow 114 L/min (30 USgpm)
Flow regulation accuracy	1,9-10,9 L/min (0.5-2.9 USgpm) ±15%* 11,4-114 L/min (3-30 USgpm) ±10%*
* Factory set maximum priority flow rate accuracy under standard test conditions and within the above ranges	
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-16-3
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	18/**16/13**
Standard housing materials	Aluminum or Steel
Weight cartridge only	0,43 kg (0.95 lb.)
Seal kit	889632 (Buna-N) 889636 (Viton®)

Viton is a registered trademark of E.I. DuPont

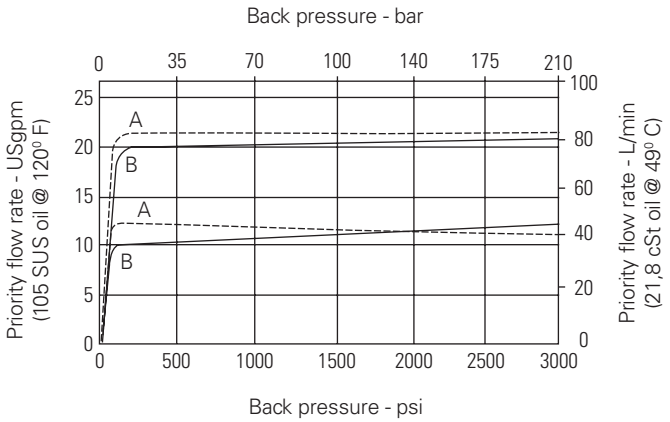
Description

These valves are priority flow regulators. The flow (and actuator speed) will be largely independent of the load and the pressure conditions.

If used to regulate flow from a fixed supply, for example a standard gear or piston pump, the valve will pass the required flow and any surplus flow will be diverted to the bypass port. The bypass flow may be used for a secondary circuit whether the secondary pressure requirement is higher or lower than the regulated pressure.

The valve inlet pressure will be approximately 7 bar (100 psi) more than the regulated or bypass pressure, whichever is higher.

Typical flow regulation



A - Port 3, priority (regulated outlet) pressurized.
B - Port 2, (bypass outlet) pressurized.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFR12-16 - Flow regulator

Adjustable, priority type, pressure compensated
114 L/min (30 USgpm) • 350 bar (5000 psi)

Model code

PFR12 – 16 (V) – * – ** – *.* – 00

1 2 3 4 5 6 7

1 Function

PFR12 - Priority flow regulator

2 Size

16 - 16 Size

3 Seals

Blank - Buna-N
V - Viton®

4 Adjustment means

C - Cap
K - Knob
S - Screw

5 Port size

Code	Port size	Housing number - body only	
		Aluminium fatigue rated	Steel
0	Cartridge only		
A10H	SAE 10	876721	
A12H	SAE 12	876723	
A4G	1/2" BSPP	876720	
A6G	3/4" BSPP	876722	
S4G	1/2" BSPP		02-175131
S6G	3/4" BSPP		02-175132
S10T	SAE 10		02-175129
S12T	SAE 12		02-175130

See section J for housing details.

6 Factory set flow rate, nominal

(Specify in USgpm)
Range 1,9-114 L/min
(0.5-30 USgpm)

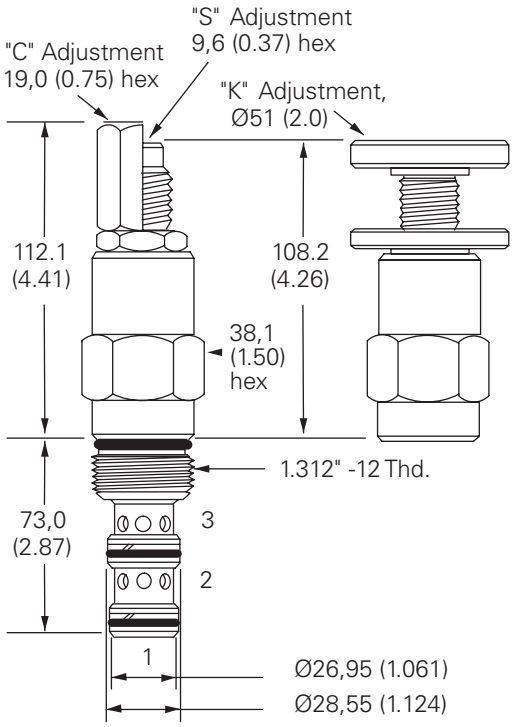
7 Special features

00 - None
(Only required if valve has special features, omitted if "00.")

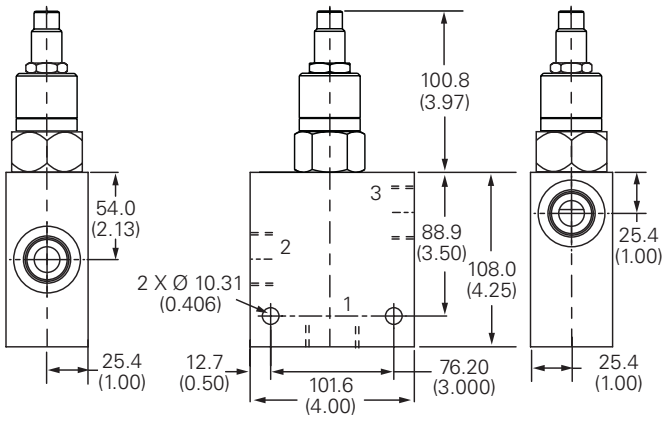
Dimensions

mm (inch)

Cartridge only
Basic code
PFR12-16



Installation drawing (Steel)



Note: Torque cartridge in aluminum housing to 108-122 Nm (80-90 ft. lbs)

Note: Torque cartridge in steel housing to 136-149.6 Nm (100-110 ft. lbs)

⚠ Warning

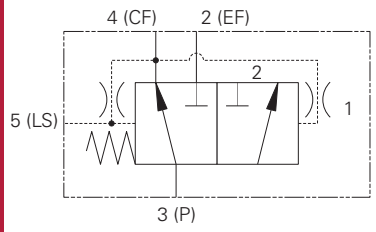
Aluminum housings can be used for pressures up to 210 bar (3000 psi) Steel housings must be used for operating pressures above 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

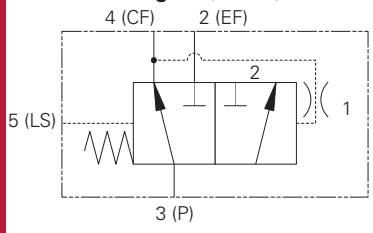
PFRD/S-12 - Priority flow control

Spool type, load sensing
76 L/min (20 USgpm) • 280 Bar (4000 psi)

Dynamic signal (PFRD)



Static signal (PFRS)



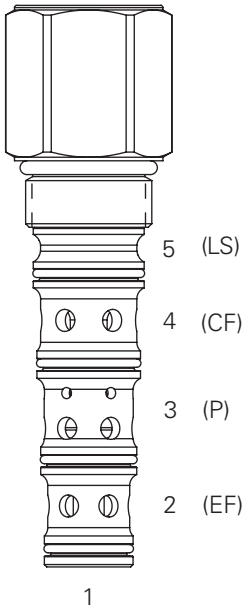
Operation

This valve is used in the flow control mode. Pump flow from the valve inlet port 3 is delivered first to port 4 at a fixed rate; excess flow is bypassed to port 2. The valve maintains the controlled flow to 4 regardless of inlet pressure change or load pressure changes at 2 or 4. This valve is typically used with open loop load sense systems in steering and braking circuits. The static type is used for less difficult applications where response or circuit stability is not a problem. The dynamic type is used for difficult applications where response or circuit stability are critical. The load sense line connected to port 5 should not exceed 2 Meters (6 Feet) in length. Overpressure protection for the circuits connected to ports 2 and 4 must be provided by external relief valves. The control pressure is determined by assuring adequate inlet pressure to the steering unit and must be matched to the steering unit's required flow. The control pressure must be supplied to the valve as a minimum inlet pressure. The pressure at port 4 can vary by 10% when the load at the excess flow port 2 varies from 0 to maximum pressure.

Features

Hardened and ground working parts to limit leakage and extend service life. Robust design with a 280 bar max pressure rating.

Sectional view



Note: Port 1 unused, port should be plugged.

Description

This is a load sense priority flow regulator designed to provide a controlled pressure compensated flow on demand. The valve is ideal for steering or accumulator charging circuits.

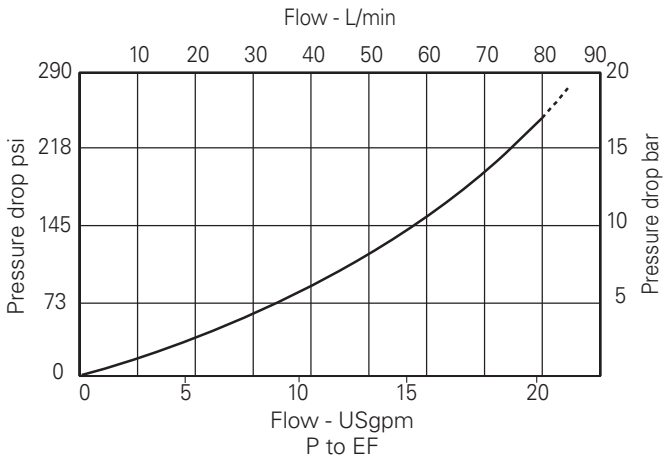
Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	280 bar (4000 psi)
Cartridge fatigue pressure (infinite life)	280 bar (4000 psi)
Rated inlet flow	76 L/min (20 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F))
Cavity	C–12–5S
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum or steel
Weight cartridge only	0,36 kg (0.79 lb)
Seal kit	202914-921
Internal leakage	164cc/min (10 in 3/min) @ 3000 PSID
Recommended L/S orifice	0.031" (not included in valve)

Pressure drop

Cartridge only



Notes: Minimum inlet flow should not be less than 1/4 of maximum inlet flow.

Minimum pressure drop is determined by control pressure.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Model code

PFR* – **12** **U** – * – *** – *** – **00**

1 2 3 4 5 6 7

1 Function

PFRS - Priority flow regulator Static signal type
PFRD - Priority flow regulator Dynamic signal type

2 Size

12 - 12 size

3 Seal material

U - Urethane (standard)

4 Valve housing material

O - Cartridge only
A - Aluminum
S - Steel (standard)

5 Port size

Code	Port size		Housing number	
	Port 2, 3, 4	Port 5	Aluminium	Steel
000	No Body	–	–	–
10T	SAE 10	SAE 4	4998820-001	4998821-001
12T	SAE 12	SAE 4	4998820-002	4998821-002
04G	1/2" BSPP	1/4" BSPP	4998820-003	4998821-003
06G	3/4" BSPP	1/4" BSPP	4998820-004	4998821-004

*These model digits will not be stamped on the valve.

See section J for housing details.

6 Control pressure

PFRS options
055 - 55 psi (3.8 bar)
078 - 78 psi (5.4 bar)
100 - 100 psi (6.9 bar)
PFRD options
075 - 75 psi (5.2 bar)
110 - 110 psi (7.6 bar)
145 - 145 psi (10.0 bar)

7 Special features

00 - None
(Only required if valve has special features, omit if ("00")

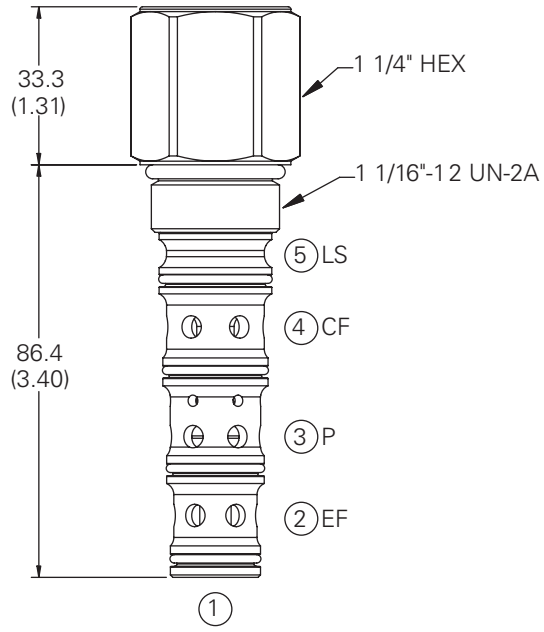
Dimensions

mm (inch)

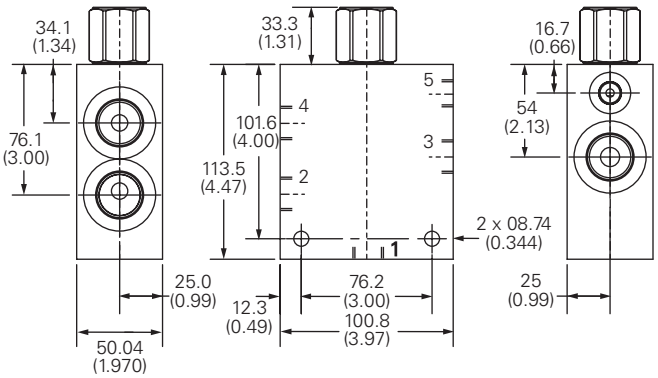
Torque cartridge in housing
A - 81-95 Nm (60-70 ft lbs)
S - 102-115 Nm (75-85 ft lbs)

Note: Standard housings include port 1, however for most applications this port must be blocked.

Cartridge only
Basic code
PFRD/S-12



Installation drawing (Steel)



⚠ Warning

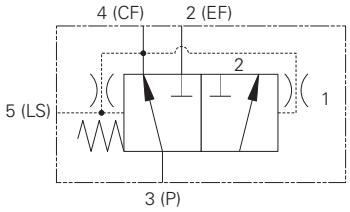
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

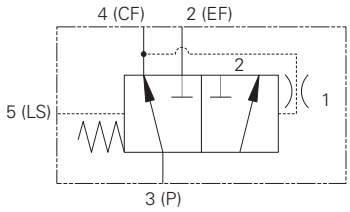
PFRD/S-16 - Priority flow control

Spool type, load-sensing
150 L/min (40 USgpm) • 280 bar (4000 psi)

Dynamic signal (PFRD)



Static signal (PFRS)



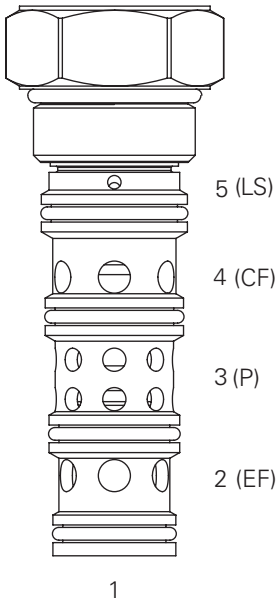
Operation

This valve is used in the flow control mode. Pump flow from the valve inlet port 3 is delivered first to port 4 at a fixed rate; excess flow is bypassed to port 2. The valve maintains the controlled flow to 4 regardless of inlet pressure change or load pressure changes at 2 or 4. This valve is typically used with open loop load sense systems in steering and braking circuits. The static type is used for less difficult applications where response or circuit stability is not a problem. The dynamic type is used for difficult applications where response or circuit stability are critical. The load sense line connected to port 5 should not exceed 2 Meters (6 Feet) in length. Overpressure protection for the circuits connected to ports 2 and 4 must be provided by external relief valves. The control pressure is determined by assuring adequate inlet pressure to the steering unit and must be matched to the steering unit's required flow. The control pressure must be supplied to the valve as a minimum inlet pressure. The pressure at port 4 can vary by 10% when the load at the excess flow port 2 varies from 0 to maximum pressure.

Features

Hardened and ground working parts to limit leakage and extend service life. Robust design with a 280 bar max pressure rating.

Sectional view



Note: Port 1 unused, port should be plugged.

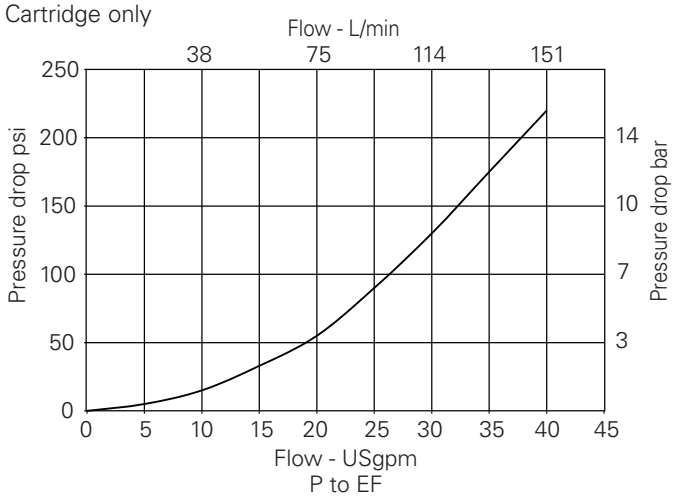
Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	280 bar (4000 psi)
Cartridge fatigue pressure (infinite life)	280 bar (4000 psi)
Rated inlet flow	150 L/min (40 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F))
Cavity	C–16–5S
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum or Steel
Weight cartridge only	0,47 kg (1.05 lbs)
Seal kit	202915-922
Internal leakage	164cc/min (10 in 3/min) @ 3000 PSID
Recommended L/S orifice	0.036" (not included in valve)

Pressure drop

Cartridge only



Notes: Minimum inlet flow should not be less than 1/4 of maximum inlet flow. Minimum pressure drop is determined by control pressure.

Description

This is a load sense priority flow regulator designed to provide a controlled pressure compensated flow on demand. The valve is ideal for steering or accumulator charging circuits.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Model code

PFR* – **16** **U** – * – *** – *** – **00**

1 2 3 4 5 6 7

1 Function

PFRS - Priority flow regulator Static signal type
PFRD - Priority flow regulator Dynamic signal type

2 Size

16 - 16 size

3 Seal material

U - Urethane (standard)

4 Valve housing material

O - Cartridge only
A - Aluminum
S - Steel (standard)

5 Port size

Code	Port size		Housing number	
	Port 2, 3, 4	Port 5	Aluminium	Steel
000	No Body	–	–	–
12T	SAE 12	SAE 4	4994880-001	4994881-001
16T	SAE 16	SAE 4	4994880-002	4994881-002
06G	3/4" BSPP	1/4" BSPP	4994880-003	4994881-003
08G	1" BSPP	1/4" BSPP	4994880-004	4994881-004

*These model digits will not be stamped on the valve.
See section J for housing details.

6 Control pressure

PFRS options
065 - 65 psi (4.5 bar)
130 - 130 psi (8.9 bar)
160 - 160 psi (11.0 bar)
PFRD options
080 - 80 psi (5.5 bar)
110 - 110 psi (7.6 bar)
130 - 130 psi (9.0 bar)

7 Special features

00 - None
(Only required if valve has special features, omit if ("00")

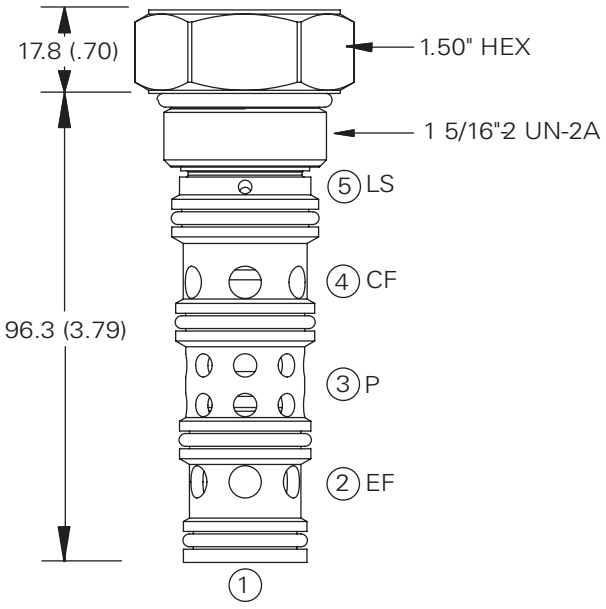
Dimensions

mm (inch)

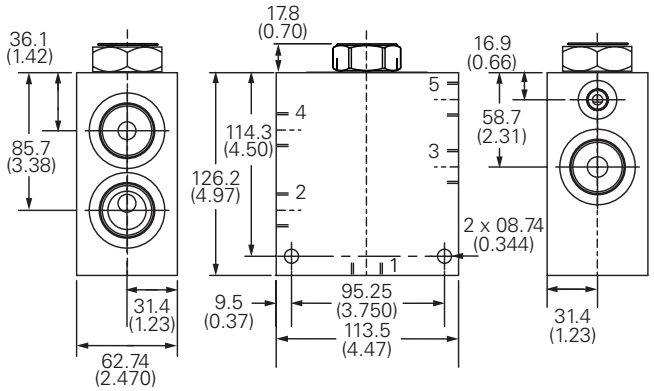
Torque cartridge in housing
A - 108-122 Nm (80-90 ft lbs)
B - 136-149 Nm (100-110 ft lbs)

Note: Standard housings include port 1, however for most applications this port must be blocked.

Cartridge only
Basic code
PFRD/S-16



Installation drawing (Steel)



⚠ Warning

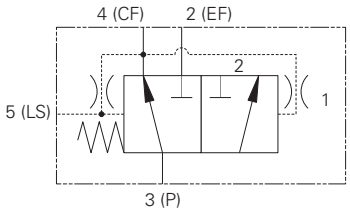
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

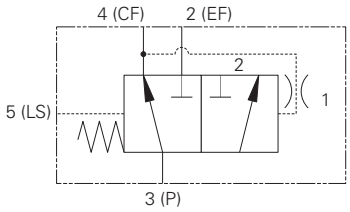
PFRD/S-20 - Priority flow control

Spool type, load-sensing
230 L/min (60 USgpm) • 240 bar (3500 psi)

Dynamic signal (PFRD)



Static signal (PFRS)



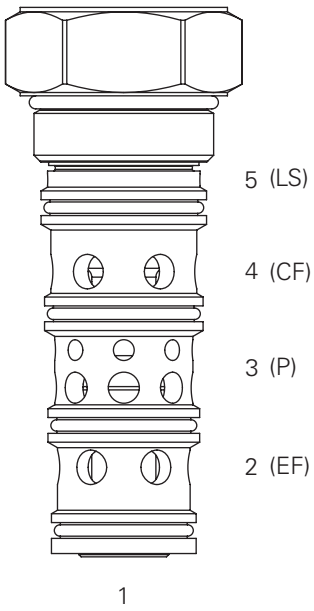
Operation

This valve is used in the flow control mode. Pump flow from the valve inlet port 3 is delivered first to port 4 at a fixed rate; excess flow is bypassed to port 2. The valve maintains the controlled flow to 4 regardless of inlet pressure change or load pressure changes at 2 or 4. This valve is typically used with open loop load sense systems in steering and braking circuits. The static type is used for less difficult applications where response or circuit stability is not a problem. The dynamic type is used for difficult applications where response or circuit stability are critical. The load sense line connected to port 5 should not exceed 2 Meters (6 Feet) in length. Overpressure protection for the circuits connected to ports 2 and 4 must be provided by external relief valves. The control pressure is determined by assuring adequate inlet pressure to the steering unit and must be matched to the steering unit's required flow. The control pressure must be supplied to the valve as a minimum inlet pressure. The pressure at port 4 can vary by 10% when the load at the excess flow port 2 varies from 0 to maximum pressure.

Features

Hardened and ground working parts to limit leakage and extend service life. Robust design with a 280 bar max pressure rating.

Sectional view



Note: Port 1 unused, port should be plugged.

Description

This is a load sense priority flow regulator designed to provide a controlled pressure compensated flow on demand. The valve is ideal for steering or accumulator charging circuits.

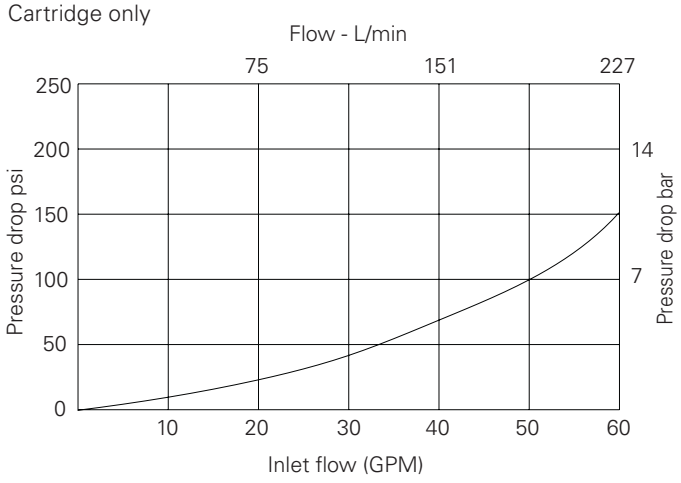
Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	240 bar (3500 psi)
Cartridge fatigue pressure (infinite life)	240 bar (3500 psi)
Rated inlet flow	230 L/min (60 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F))
Cavity	C–20–5S
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum or Steel
Weight cartridge only	0,86 kg (1.9 lbs)
Seal kit	02-187543
Internal leakage	164cc/min (10 in 3/min) @ 3000 PSID
Recommended L/S orifice	0.047" (not included in valve)

Pressure drop

Cartridge only



Notes: Minimum inlet flow should not be less than 1/4 of maximum inlet flow.
Minimum pressure drop is determined by control pressure.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PFRD/S-20 - Priority flow control

Spool type, load-sensing
230 L/min (60 USgpm) • 240 bar (3500 psi)

Model code

PFR* – **20** **U** – * – *** – *** – **00**

1 2 3 4 5 6 7

1 Function

PFRS - Priority flow regulator Static signal type
PFRD - Priority flow regulator Dynamic signal type

2 Size

20 - 20 size

3 Seal material

U - Urethane (standard)

4 Valve housing material

O - Cartridge only
A - Aluminum
S - Steel (standard)

5 Port size

Code	Port size		Housing number	
	Port 2, 3, 4	Port 5	Aluminium	Steel
000	No Body	–	–	–
12T	SAE 12	SAE 4	4998822-001	4998823-001
16T	SAE 16	SAE 4	4998822-002	4998823-002
06G	3/4" BSPP	1/4" BSPP	4998822-003	4998823-003
08G	1" BSPP	1/4" BSPP	4998822-004	4998823-004

*These model digits will not be stamped on the valve.

See section J for housing details.

6 Control pressure

PFRS options
080 - 80 psi (5.5 bar)
100 - 100 psi (6.9 bar)
PFRD options
085 - 85 psi (5.9 bar)
110 - 110 psi (7.6 bar)

7 Special features

00 - None
(Only required if valve has special features, omit if ("00")

Dimensions

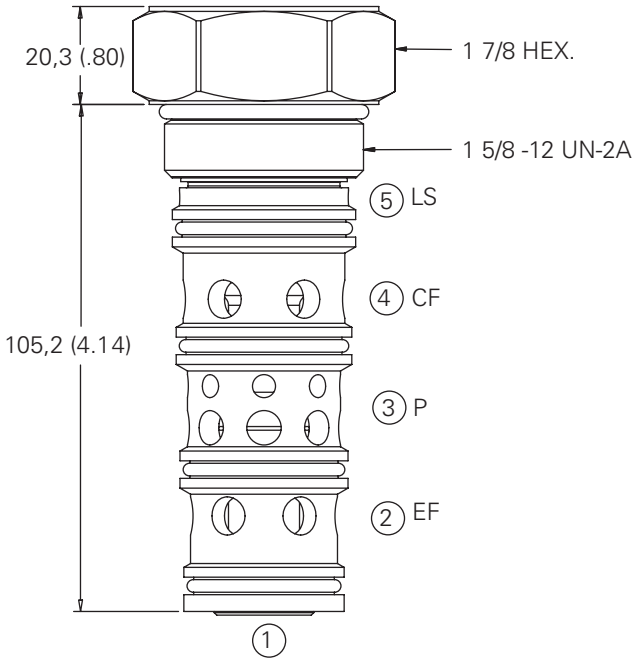
mm (inch)

Torque cartridge in housing
A - 130-155 Nm (95-115 ft lbs)
B - 160-180 Nm (120-135 ft lbs)

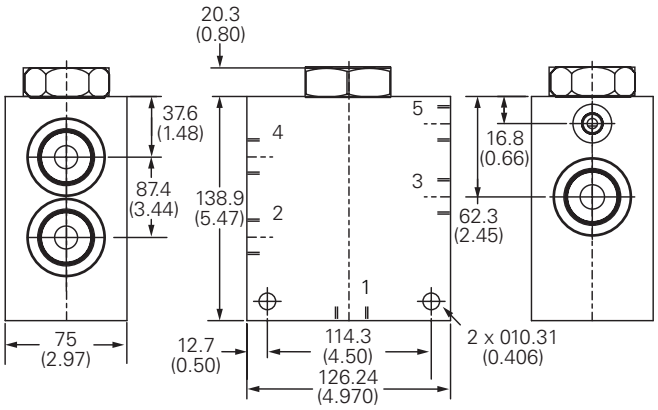
Note: Standard housings include port 1, however for most applications this port must be blocked.

Cartridge only

Basic code
PFRD/S-20



Installation drawing (Steel)



⚠ Warning

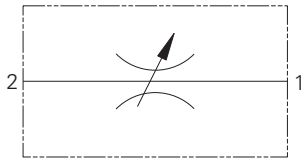
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MRV2-10 - Flow restrictor valve

Semi-rotary
Up to 57 L/min (15 USgpm) • 210 Bar (3000 psi)



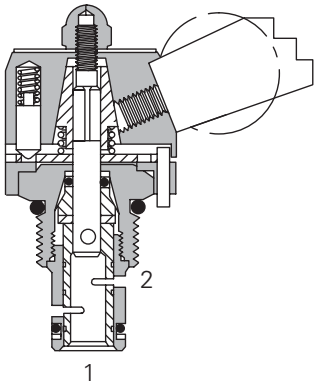
Operation

This valve will increase or decrease flow by changing the variable orifice with the rotary adjustment. Recommended flow path is 2 to 1.

Features

Hardened and ground working components. Cartridge construction for maximum mounting flexibility. Flexible mounting for the handle position, detent available.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Rated inlet flow	**05** – 0-18,9 L/min (0–5 USgpm) **10** – 0-37,8 L/min (0–10 USgpm) **15** – 0-56,7 L/min (0–15 USgpm)
Internal leakage	164 cm^3/min (10 in^3/min) maximum 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Manual operators * Light duty housing only	**B** – Ball lever (friction lock)* **E** – Ball lever (10 position detent)* **D** – Lever (10 position detent)* **L** – Lever (friction lock)* **K** - Knob (non-locking)
Cavity	C–10–2
Fluids	All general purpose hydraulic fluids such as: -H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum
Weight cartridge only	0,79 kg (1.74 lbs)
Seal kit	561810 (Buna-N), 889609 (Viton®)

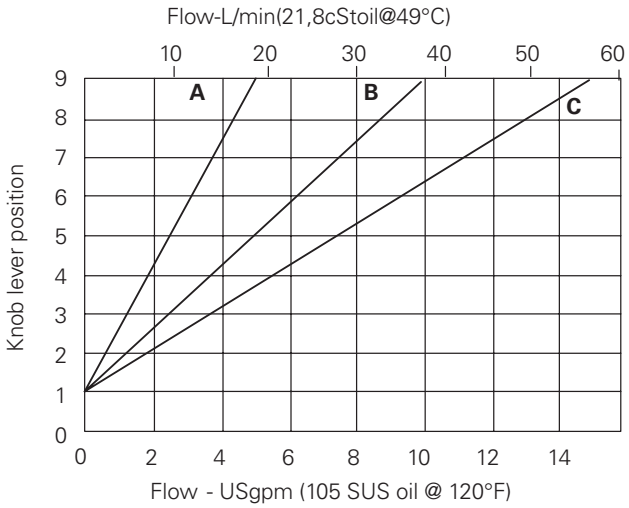
Viton is a registered trademark of E.I. DuPont

Description

This is a 2 way 2 position manually operated semi rotary restrictor screw in cartridge valve. This can be used in conjunction with a compensator to give an increase in flow in proportion to the movement of the lever.

Pressure drop

Cartridge only
@ 5,5 bar (80 psi) pressure drop



Rated flow (See model code position 6)
A - 05
B - 10
C - 15

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Model code

MRV2 – 10 (V) – * – ** – ** – 00

1 2 3 4 5 6 7

1 Function

MRV2 - Manual rotary valve

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Adjustment

O - Cartridge only
B - Ball lever (friction lock)*
E - Ball lever (10 position detent)*
D - Lever (10 position detent)*
L - Lever (friction lock)*
K - Knob (non-locking)

*Light duty housings only

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
3B	3/8" BSPP	02-175462	–
6T	SAE 6	566151	–
2G	1/4" BSPP	–	876702
3G	3/8" BSPP	–	876703
6H	SAE 6	–	876700
8H	SAE 8	–	876701

See section J for housing details.

6 Max flow ranges

05 - 0-18,9 L/min (0-5 USgpm)
10 - 0-37,8 L/min (0-10 USgpm)
15 - 0-56,7 L/min (0-15 USgpm)

7 Special features

00 - None
(Only required if valve has special features, omit if ("00")
SS - 316 Stainless Steel external components

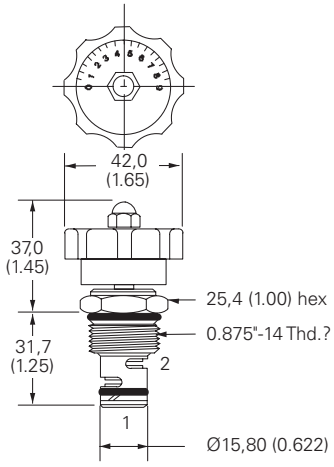
Dimensions

mm (inch)

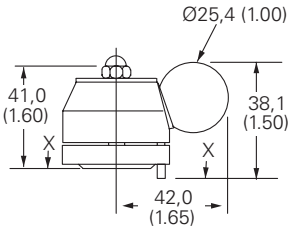
Cartridge only
Basic code
MVR2-10

Torque cartridge in aluminum housing 47-54 Nm (35-50 ft lbs)

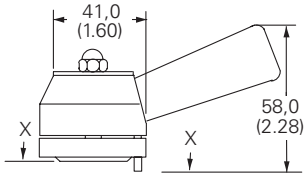
MRV2-10-K Knob Operated
Arrow can be re-located by slacking the plate. Re-tighten nut.



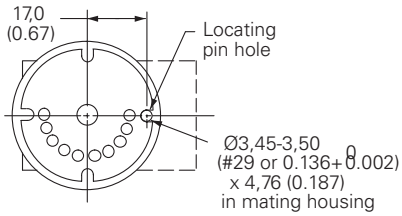
MRV2-10-B/E Models



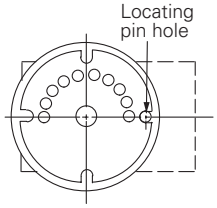
MRV2-10-D/L Models



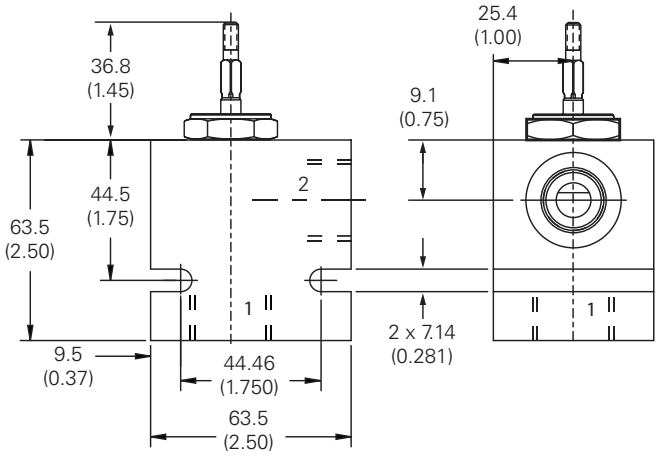
MRV2-10-E/D Models



MRV2-10-B/L Models



Installation drawing



⚠ Warning

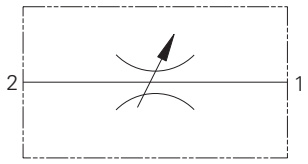
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MRV2-16 - Flow restrictor valve

Semi-rotary
Up to 170 L/min (45 USgpm) • 210 bar (3000 psi)



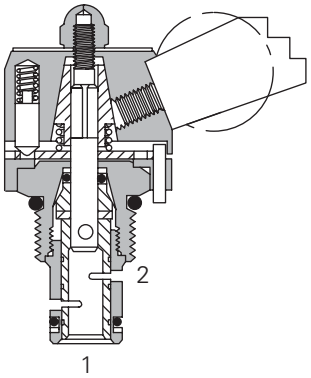
Operation

This valve will increase or decrease flow by changing the variable orifice with the rotary adjustment. Recommended flow path is 2 to 1.

Features

Hardened and ground working components. Cartridge construction for maximum mounting flexibility. Flexible mounting for the handle position, detent available.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)		210 bar (3000 psi)
Rated inlet flow	**10** – 0-37,8 L/min **15** – 0-56,7 L/min **20** – 0-75,7 L/min **25** – 0-94,6 L/min **30** – 0-113,5 L/min **35** – 0-132,4 L/min **40** – 0-151,4 L/min **45** – 0-170,3 L/min	(0–10 USgpm) (0–15 USgpm) (0–20 USgpm) (0–25 USgpm) (0–30 USgpm) (0–35 USgpm) (0–40 USgpm) (0–45 USgpm)
Internal leakage		82 cm^3/min (5 in^3/min maximum 210 bar (3000 psi)
Temperature range		-40° to 120°C (-40° to 248°F)
Manual Operators *Light duty housing only.	**D** – **L** – **K** –	Lever (10 position detent)* Lever (friction lock)* Knob (non-locking)
Cavity		C–16–2
Fluids		All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration		Cleanliness code 18/**16/13**
Standard housing material		Aluminum
Weight cartridge only		0,79 kg (1.74 lbs)
Seal kit		565810 (Buna-N), 889609 (Viton®)

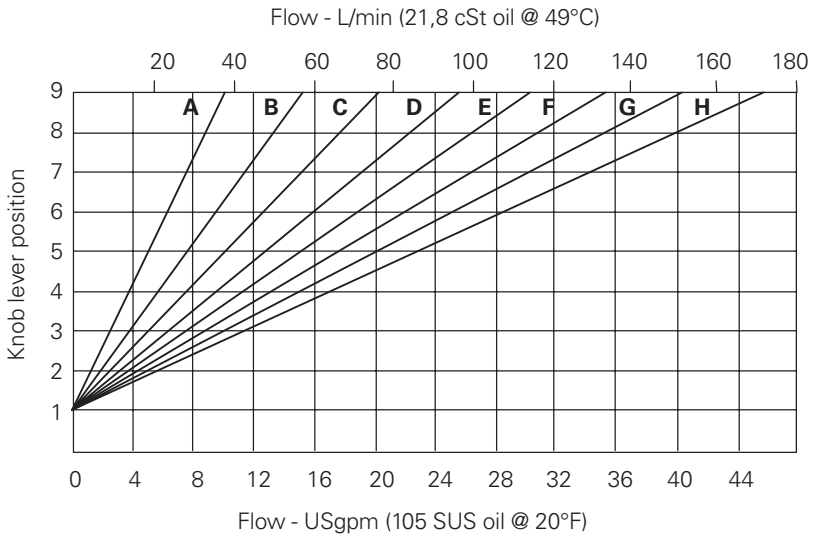
Viton is a registered trademark of E.I. DuPont

Description

This is a 2 way 2 position manually operated semi rotary restrictor screw in cartridge valve. This can be used in conjunction with a compensator to give an increase in flow in proportion to the movement of the lever.

Pressure drop curves

Cartridge only
@ 5,5 bar (80 psi) pressure drop



Rated flow (See model code position 6)

A - 10	**C** - 20	**E** - 30	**G** - 40
B - 15	**D** - 25	**F** - 35	**H** - 45

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MRV2-16 - Flow restrictor valve

Semi-rotary
Up to 170 L/min (45 USgpm) • 210 bar (3000 psi)

Model code

MRV2 – 16 (V) – * – ** – ** – 00

1 2 3 4 5 6 7

1 Function

MRV2 - Manual rotary valve

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Adjustment

O - Cartridge only
D - Lever (10 position detent)*
L - Lever (friction lock)*
K - Knob (non-locking)
*Light duty housings only.

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only	02-175463	–
6B	3/4" BSPP	566149	–
12T	SAE 12	–	876716
4G	1/2" BSPP	–	876718
6G	3/4" BSPP	–	876717
10H	SAE 10	–	566113
12H	SAE 12	–	

See section J for housing details.

6 Max flow ranges

10 - 0-37,8 L/min (0-10 USgpm)
15 - 0-56,7 L/min (0-15 USgpm)
20 - 0-75,7 L/min (0-20 USgpm)
25 - 0-94,6 L/min (0-25 USgpm)
30 - 0-113,5 L/min (0-30 USgpm)
35 - 0-132,4 L/min (0-35 USgpm)
40 - 0-151,4 L/min (0-40 USgpm)
45 - 0-170,3 L/min (0-45 USgpm)

7 Special features

00 - None
(Only required if valve has special features, omit if ("00")

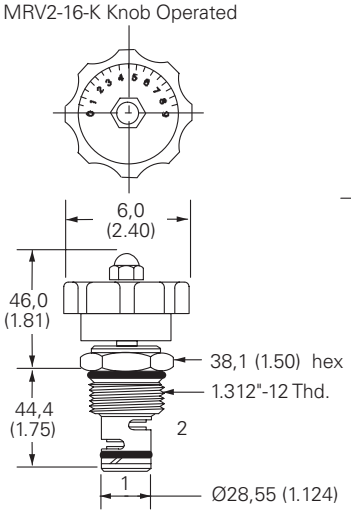
Dimensions

mm (inch)

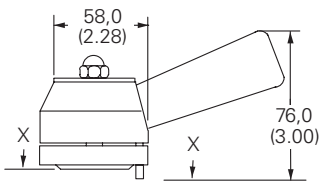
Torque cartridge in aluminum housing 108-122 Nm (80-90 ft lbs)

Cartridge only
Basic code
MRV2-16

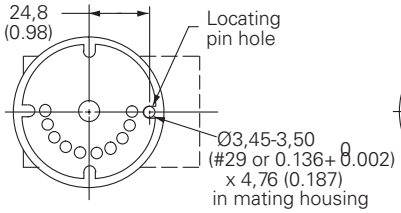
MRV2-16-K Knob Operated



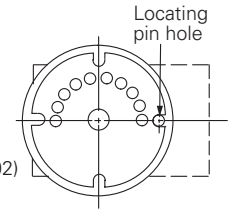
MRV2-16-D/L Models



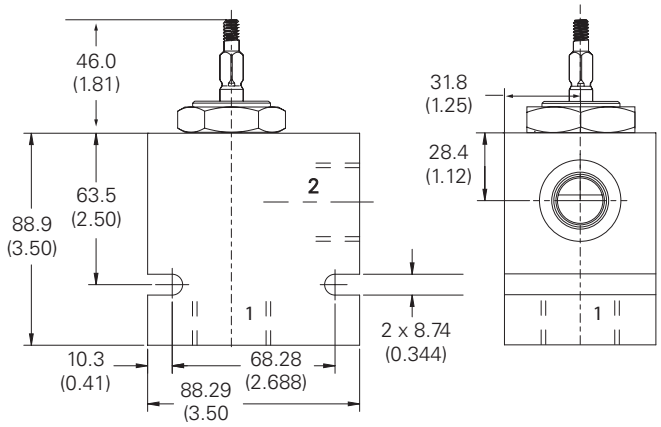
MRV2-16-D Models



MRV2-16-L Models



Installation drawing



⚠ Warning

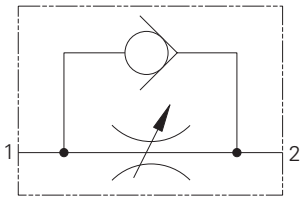
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

H

2CR80 - Flow restrictor valve

Needle with free reverse flow check
80 L/min (20 USgpm) • 350 bar (5000 psi)



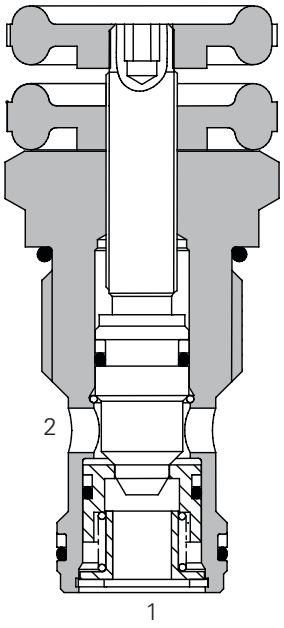
Operation

Rotation of the adjustment screw varies the valve opening to give a flow path approximately proportional to the turns of the screw. The check valve allows free flow in one direction.

Features

All steel construction with hardened and ground adjustment needle. Cartridge construction for versatility in applications. Sealed adjuster for leak-free adjustment.

Sectional view



Performance data

Ratings and specifications

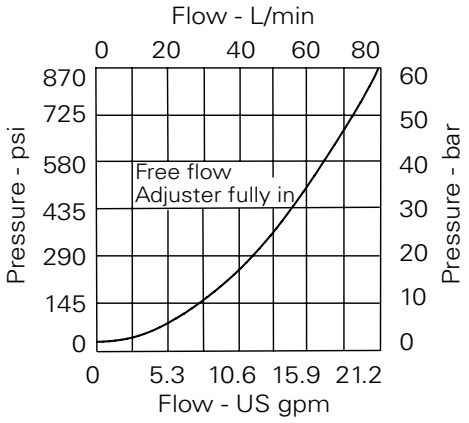
Performance data is typical with fluid at 40 cSt and 40°C	
Maximum pressure	350 bar (5000 psi)
Rated inlet flow	80 L/min (20 USgpm)
Temperature range	-30° to 120°C (-22° to 248°F)
Cavity	A7447 (See Section M)
Mounting position	Unrestricted
Torque cartridge into cavity	75 Nm (55 lbs ft)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	BS5540/4 Class 18/**16/13** (25 micron nominal)
Nominal viscosity	32 cSt
Standard housing material	Standard aluminum (up to 210 bar), add suffix "377" for steel option
Cartridge material	Working parts hardened and ground steel. Zinc plated body
Weight cartridge only	0,2 kg (0.4 lbs)
Seal kit	SK578 (Nitrile), SK578V (Viton®)

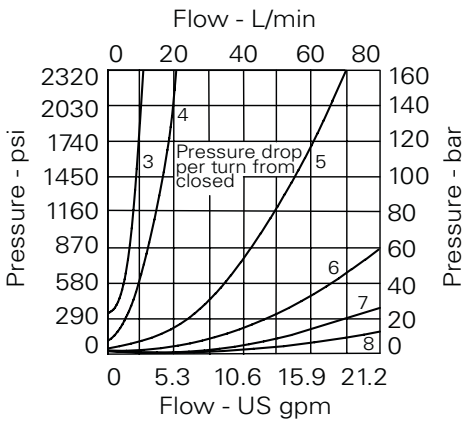
Viton is a registered trademark of E.I. DuPont

Description

The cartridge restrictor valve range can be set and locked to restrict flow in one direction. A typical use is the speed control of cylinder or other actuators. The free flow check allows for meter-in or meter-out actuator control.

Pressure drop





Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2CR80 - Flow restrictor valve

Needle with free reverse flow check
80 L/min (20 USgpm) • 350 bar (5000 psi)

Model code

2CR8* – P 4W – S

1 2 3 4

1 Function

2CR80 - Cartridge only
2CR85 - Cartridge and body

2 Adjustment

P - Leakproof screw
R - Handknob
See page H-6 for dimensions.

3 Port size

Code	Port size	Housing number	
		Aluminium	Steel
0	Cartridge only		
4W	1/2" BSPP	B7418	B13663
8T	1/2" SAE	B10712	B11565

4 Seals

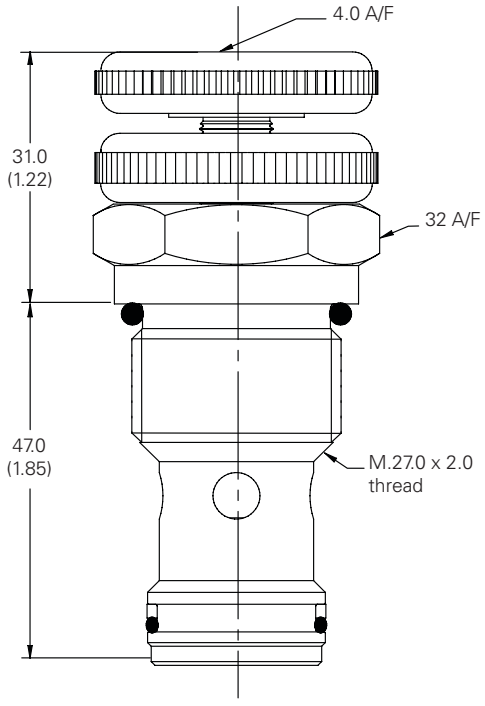
S - Nitrile (for use with most industrial hydraulic oils)
SV - Viton® (for high temperature & most special fluid applications)

Dimensions

mm (inch)

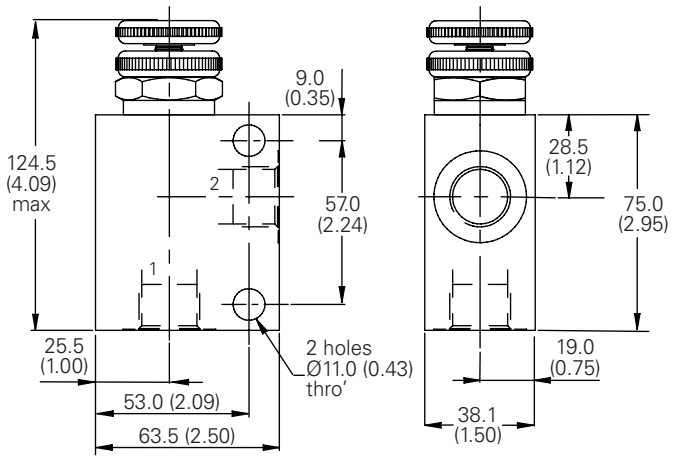
Cartridge only

Basic code 2CR80



Complete valve

Basic code 2CR85



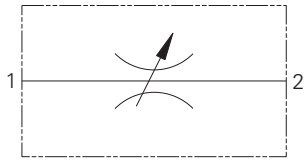
H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

NV1-8 - Flow restrictor valve

Needle
45 L/min (12 USgpm) • 210 Bar (3000 psi)

Dynamic signal (PFRD)



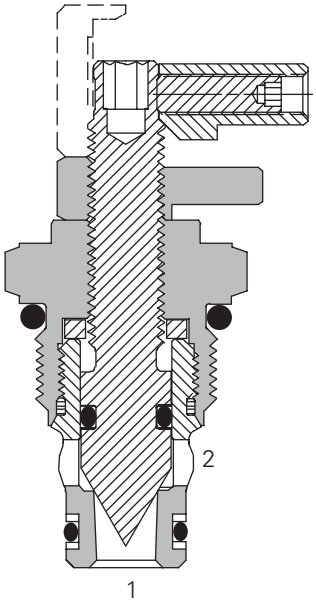
Operation

This needle valve is a variable orifice used to create a pressure drop when flow passes from port 1 to port 2 or port 2 to 1. Clockwise rotation of the adjust screw decreases the orifice size to completely closed and anti-clockwise increases the orifice. The setting can be locked using the lock nut on the adjust screw.

Features

Hardened and ground working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	350 bar (5000 psi) steel housing 210 bar (3000 psi) aluminum housing
Cartridge fatigue pressure (infinite life)	280 bar (4000 psi)
Rated flow	45 L/min (12 USgpm)
Internal leakage	5 drops/min. maximum @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C–8–2
Fluids	All general purpose hydraulic fluids such as: MIL–H–5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing materials	Aluminum or steel
Weight cartridge only	0,07 kg. (0.15 lbs.)
Seal Kits	02-165875 Buna–N 02-165877 Viton®

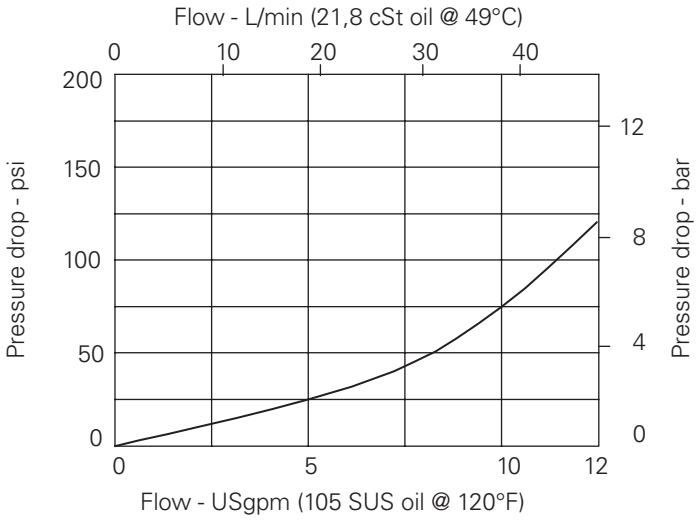
Viton is a registered trademark of E.I. DuPont

Description

This is a manually adjusted cartridge type needle valve. With fine control it is ideal for none compensated speed control of actuators or as a control orifice in conjuntion with a pressure compensator. Total shut off can be achieved allowing the valve to be used as a shut off valve.

Pressure drop

Cartridge only



Fully open port 1 to port 2 or port 2 to port 1

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

NV1-8 - Flow restrictor valve

Needle
45 L/min (12 USgpm) • 210 Bar (3000 psi)

Model code

NV1 – 8 – (V) – * – (*) – ** – 00

1 2 3 4 5 6 7

1 Function
NV1 - Needle valve

2 Size
8 - 8 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Style
S - Screw
C - Cap
K - Knob

5 Valve housing material
Omit - Cartridge only
S - Steel
A - Aluminum

6 Port size

Code	Port size	Housing number	
		Aluminium fatigue duty	Aluminium fatigue rated
0	Cartridge only		
4T	SAE 4	02–160730	02-160736
6T	SAE 6	02–160731	02-160737
8T	SAE 8	02–160732	02-160738
2G	1/4" BSPP	02–160727	02-160733
3G	3/8" BSPP	02–160728	02-160734

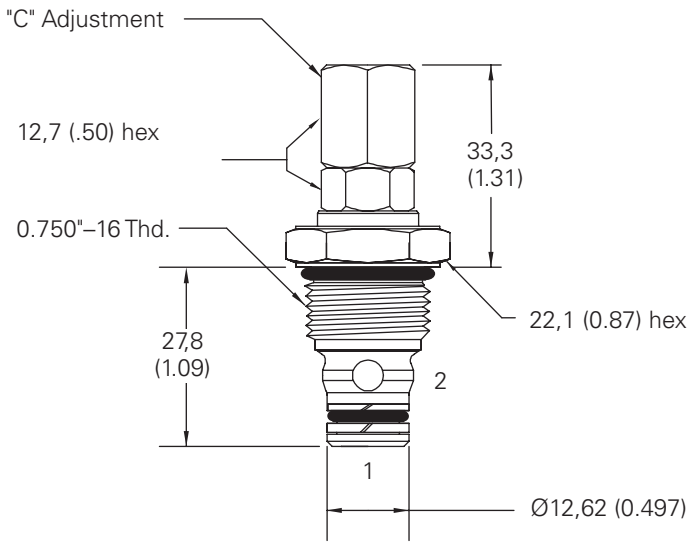
See section J for housing details.

7 Special features
00 - None
(Only required if valve has special features, omit if ("00")

Dimensions
mm (inch)

Cartridge only
Basic code
NV1-8

Torque cartridge in
aluminum or steel housing
34-41 Nm (25-30 ft lbs)



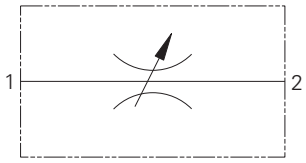
⚠ Warning
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

NV1-10 - Flow restrictor valve

Needle
45 L/min (12 USgpm) • 210 bar (3000 psi)



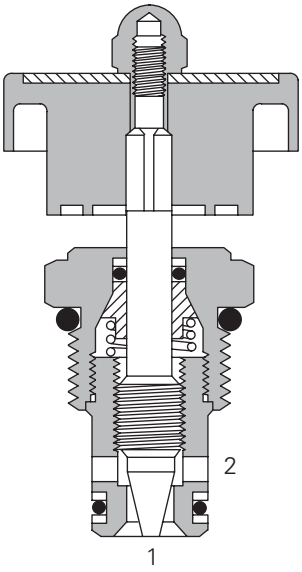
Operation

This needle valve is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjust screw de-creases the orifice size to completely closed and anti-clockwise increases the orifice. The setting can be locked using the lock nut on the adjust screw

Features

Hardened and ground working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	45 L/min (12 USgpm)
Internal leakage	5 drops/min maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C–10–2
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum
Weight cartridge only	0,11 kg. (0.24 lbs)
Seal kit	565806 (Buna-N) 889627 (Viton®)

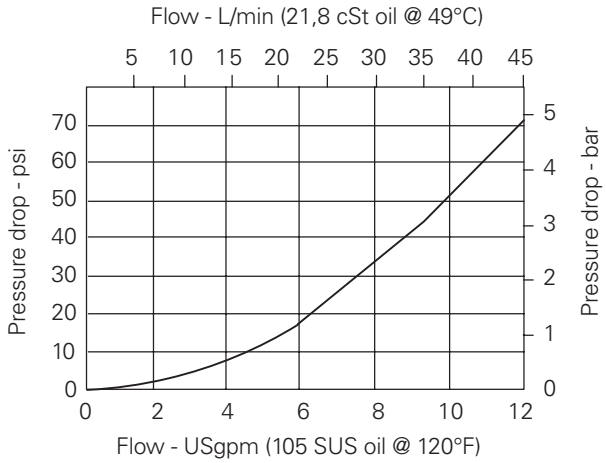
Viton is a registered trademark of E.I. DuPont

Description

This is a manually adjusted cartridge type needle valve. With fine control it is ideal for none compensated speed control of actuators or as a control orifice in conjunction with a pressure compensator Total shut off can be achieved allowing the valve to be used as a shut of valve.

Pressure drop

Cartridge only



Fully open port 1 to port 2 or port 2 to port 1

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

NV1-10 - Flow restrictor valve

Needle
45 L/min (12 USgpm) • 210 bar (3000 psi)

Model code

NV1 – 10 (V) – * – ** – 00

1 2 3 4 5 6

1 Function

NV1 - Needle valve

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Adjustment

K - Knob (black)
R - Knob (red)

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
3B	3/8" BSPP	02–175462	–
6T	SAE 6	566151	–
2G	1/4" BSPP	–	876702
3G	3/8" BSPP	–	876703
6H	SAE 6	–	876700
3G	SAE 8	–	876701

See section J for housing details.

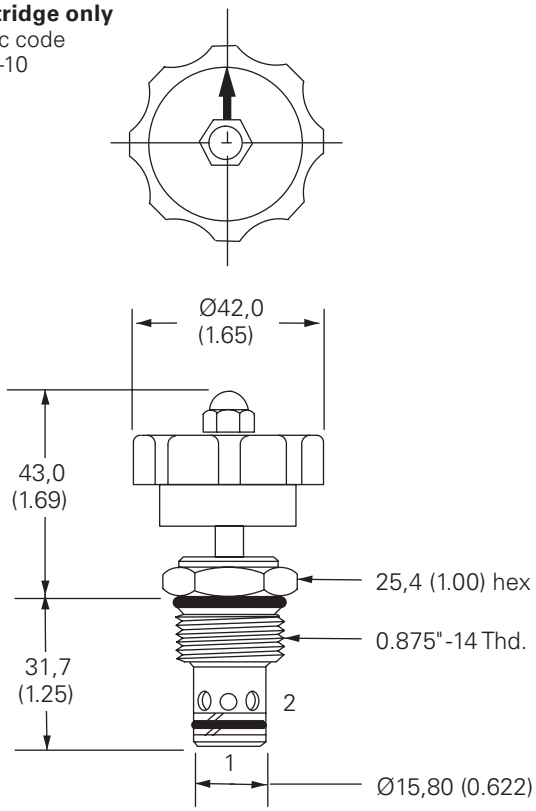
6 Special features

00 - None
(Only required if valve has special features, omit if ("00")

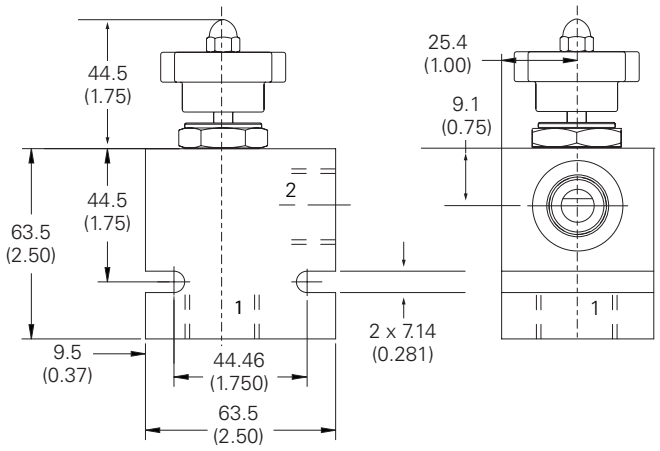
Dimensions
mm (inch)

Torque cartridge in aluminum housing
47-54 Nm (35-40 ft lbs)

Cartridge only
Basic code
NV1-10



Installation drawing

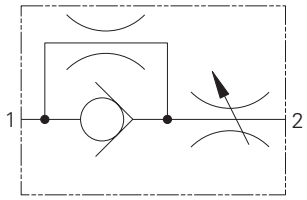


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

NV1-16 - Flow restrictor valve

Needle
151 L/min (40 USgpm) • 210 bar (3000 psi)



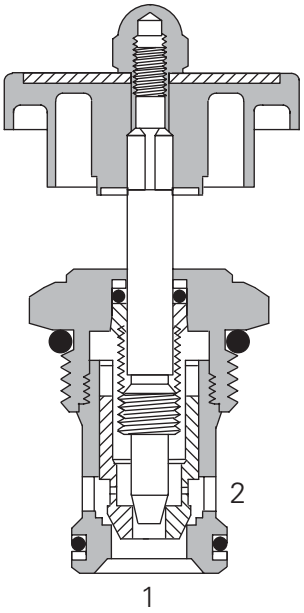
Operation

This needle valve is non-pressure compensated. Flow is controlled in the direction from port 2 to port 1, from full flow to tight shut-off, by turning the adjustment feature clockwise. The flow from port 1 to port 2 will be restricted.

Features

Hardened and ground working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	151 L/min (40 USgpm)
Internal leakage	5 drops/min maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C–16–2
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum
Weight cartridge only	0,34 kg. (0.76 lbs)
Seal kit	565810 (Buna-N), 889609 (Viton®)

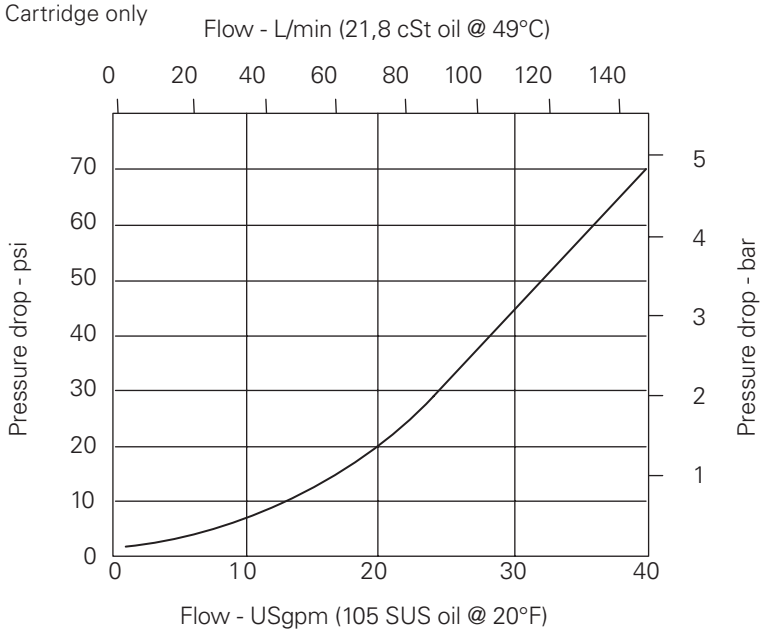
Viton is a registered trademark of E.I. DuPont

Description

This is a manually adjusted cartridge type needle valve. With fine control it is ideal for none compensated speed control of actuators or as a control orifice in conjunction with a pressure compensator Total shut off can be achieved allowing the valve
to be used as a shut of valve.

Pressure drop curves

Cartridge only



Full open port 2 to port 1

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

NV1-16 - Flow restrictor valve

Needle
151 L/min (40 USgpm) • 210 bar (3000 psi)

Model code

NV1 – 16 (V) – * – ** – 00

1 2 3 4 5 6

1 Function

NV1 - Needle valve

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Adjustment

K - Knob (black)
R - Knob (red)

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
6B	3/4" BSPP	02–175463	–
12T	SAE 12	566149	–
4G	1/2" BSPP	–	876716
6G	3/4" BSPP	–	876718
10H	SAE 10	–	876717
12G	SAE 12	–	566113

See section J for housing details.

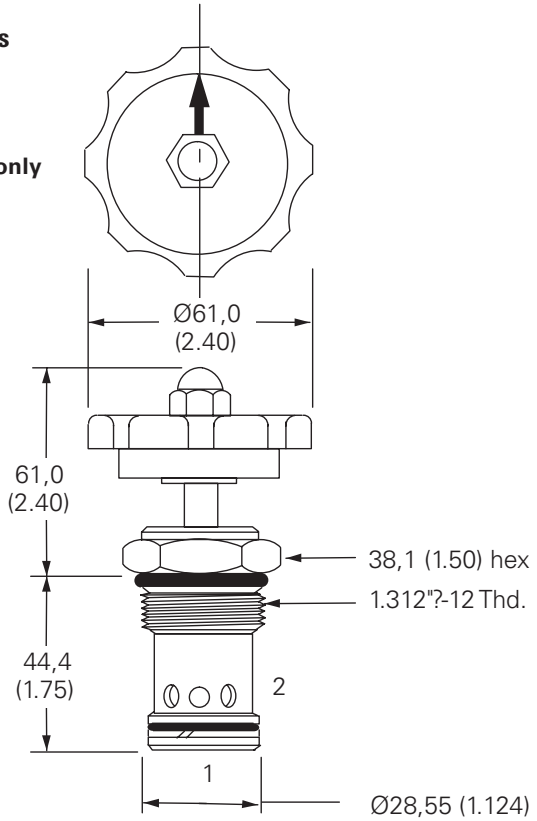
6 Special features

00 - None
(Only required if valve has special features, omit if ("00")

Dimensions

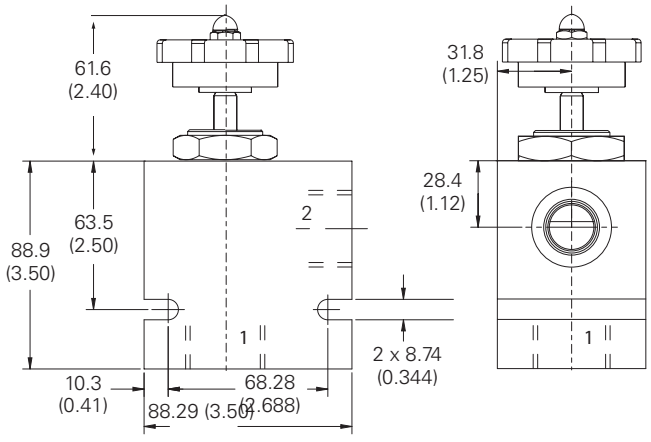
mm (inch)

Cartridge only
Basic code
NV1-16



Torque cartridge in
aluminum housing
108-122 Nm (80-90 ft lbs)

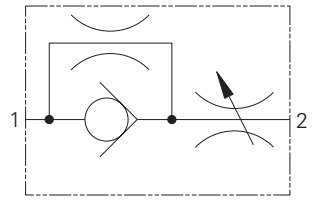
Installation drawing



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

NV1-20 - Flow restrictor valve

Needle
265 L/min (70 USgpm) • 210 bar (3000 psi)



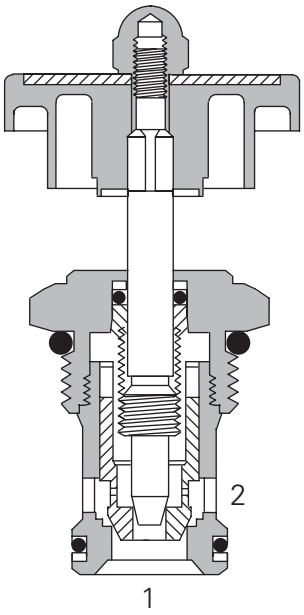
Operation

This needle valve is non-pressure compensated. Flow is controlled in the direction from port 2 to port 1, from full flow to tight shut-off, by turning the adjustment feature clockwise. The flow from port 1 to port 2 will be restricted.

Features

Hardened and ground working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	265 L/min (70 USgpm)
Internal leakage	5 drops/min maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C–20–2
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum
Weight cartridge only	0,59 kg. (1.3 lbs)
Seal kit	889615 (Buna-N), 889619 (Viton®)

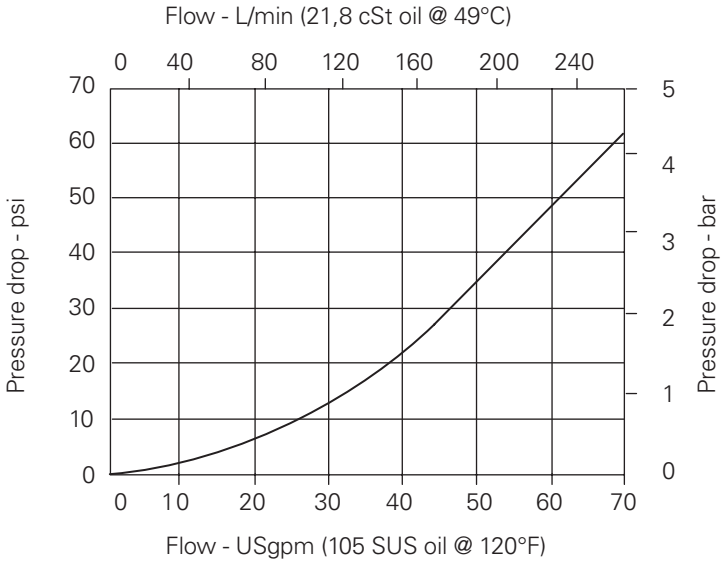
Viton is a registered trademark of E.I. DuPont

Description

This is a manually adjusted cartridge type needle valve. With fine control it is ideal for none compensated speed control of actuators or as a control orifice in conjunction with a pressure compensator Total shut off can be achieved allowing the valve to be used as a shut of valve.

Pressure drop curves

Cartridge only



Full open port 2 to port 1

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

NV1-20 - Flow restrictor valve

Needle
265 L/min (70 USgpm) • 210 bar (3000 psi)

Model code

NV1 – 20 (V) – * – ** – 00

1 2 3 4 5 6

1 Function

NV1 - Needle valve

2 Size

20 - 20 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Adjustment means

K - Knob (black)
R - Knob (red)

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
8B	1" BSPP	02-175464	–
16T	SAE 16	566409	–
6G	3/4" BSPP	–	876732
8G	1" BSPP	–	876734
12H	SAE 12	–	876733
16H	SAE 16	–	876735

See section J for housing details.

6 Special features

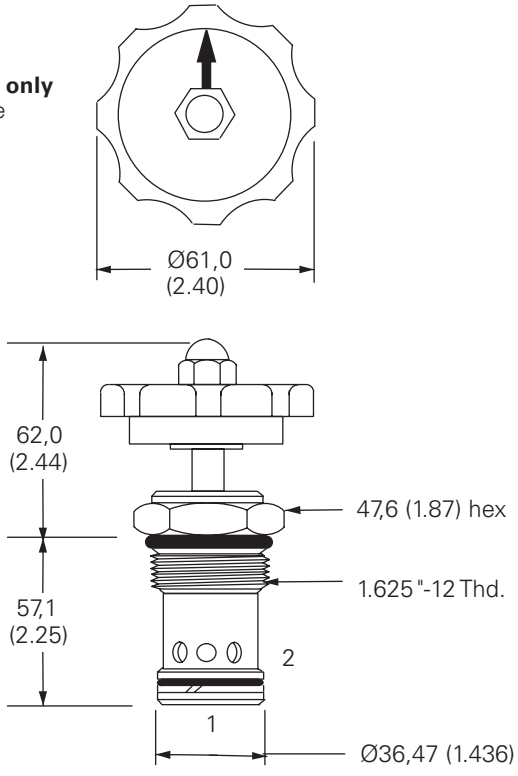
00 - None
(Only required if valve has special features, omit if ("00")

Dimensions

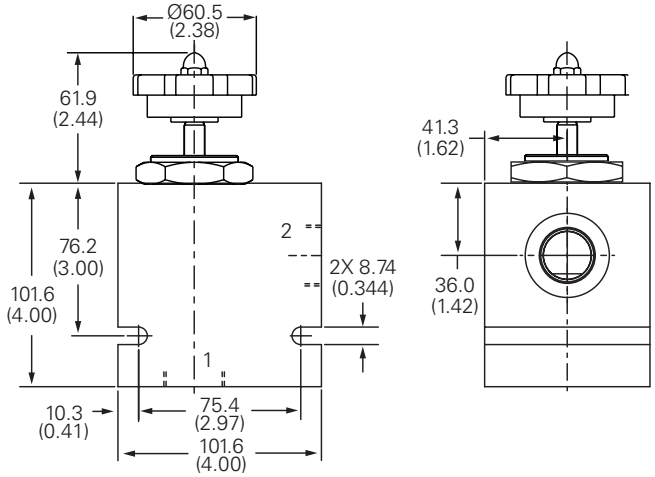
mm (inch)

Torque cartridge in aluminum housing
128-155 Nm (95-115 ft lbs)

Cartridge only
Basic code
NV1-20



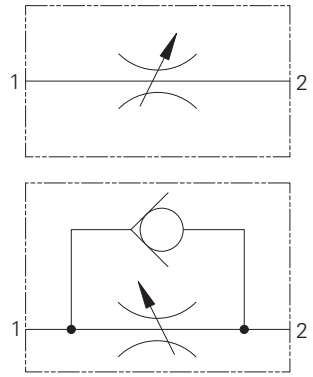
Installation drawing



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FCV7-10 - Flow restrictor valve

Needle
Up to 45 L/min (12 USgpm) • 210 bar (3000 psi)



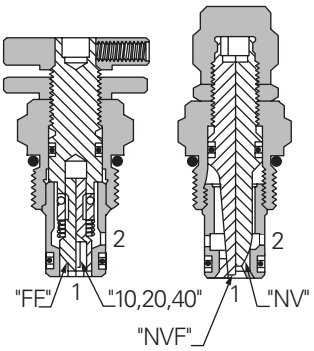
Operation

This needle valve is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjust screw de-creases the orifice size to completely closed and anti-clockwise increases the orifice. The setting can be locked using the lock nut on the adjust screw

Features

Hardened and ground working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

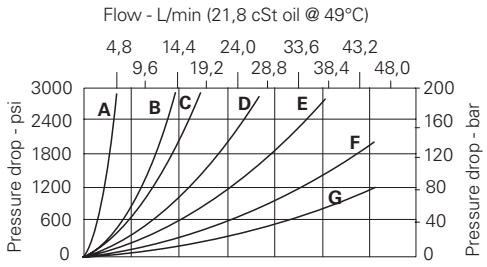
Ratings and specifications

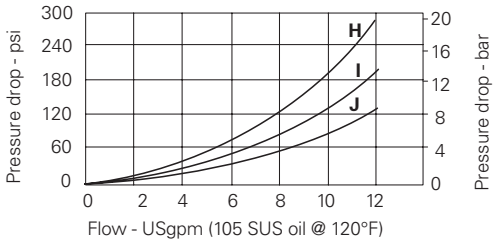
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Rated flow	45 L/min (12 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C–10–2
Fluids	All general purpose hydraulic fluids such as: MIL–H–5606, SAE 10, SAE 20, etc.
Filtration	ISO 4406, class 18/**16/13** or cleaner
Standard housing materials	Aluminum
Weight cartridge only	0,11 kg (0.25 lbs.)
Seal kits	565806 Buna N 889627 Viton®

Viton is a registered trademark of E.I. DuPont

Pressure drop

Cartridge only





Description

This is a manually adjusted cartridge type needle valve. With fine control it is ideal for none compensated speed control of actuators or as a control orifice in conjunction with a pressure compensator Total shut off can be achieved allowing the valve to be used as a shut of valve.

Typical flow regulation (full open)

Curve	Code option*	Flow direction port:	Valve condition
A	10	2 to 1 1 to 2	Open Closed
B	20	2 to 1 1 to 2	Open Closed
C	10	1 to 2	Open
D	40	2 to 1 1 to 2	Open Closed
E	NVF	Both directions	Open

Curve	Code option	Flow direction port	Valve condition
F	20	1 to 2	Open
G	40	1 to 2	Open
H	FF	2 to 1	Open
I	FF	1 to 2	Open & Closed
J	NV	Both directions	Open

*See controlled flow option in model code.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FCV7-10 - Flow restrictor valve

Needle
Up to 45 L/min (12 USgpm) • 210 bar (3000 psi)

Model code

FCV7 – 10 (V) – * – ** – * – 00**

1 2 3 4 5 6 7

1 Function

FCV7 – Flow regulator

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Style

C - Cap
K - Knob
S - Screw

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
3B	3/8" BSPP	02–175462	–
6T	SAE 6	566151	–
2G	1/4" BSPP	–	876702
3G	3/8" BSPP	–	876703
6H	SAE 6	–	8767008H
8H	SAE 8	–	876701

See section J for housing details.

6 Controlled flow option

		Maximum flow range (nominal)
NV	Needle valve	0-45 L/min (0-12 USgpm)
NVF	Needle valve, fine	0-38 L/min (0-10 USgpm)
FF	Needle valve with free reverse flow	0-45 L/min (0-12 USgpm)
10	Flow range, type 10, with free reverse flow	0-6,6 L/min (0-1.75 USgpm)
20	Flow range, type 20, with free reverse flow	0-14 L/min (0-3.75 USgpm)
40	Flow range, type 40, with free reverse flow	0-27 L/min (0-7.25 USgpm)

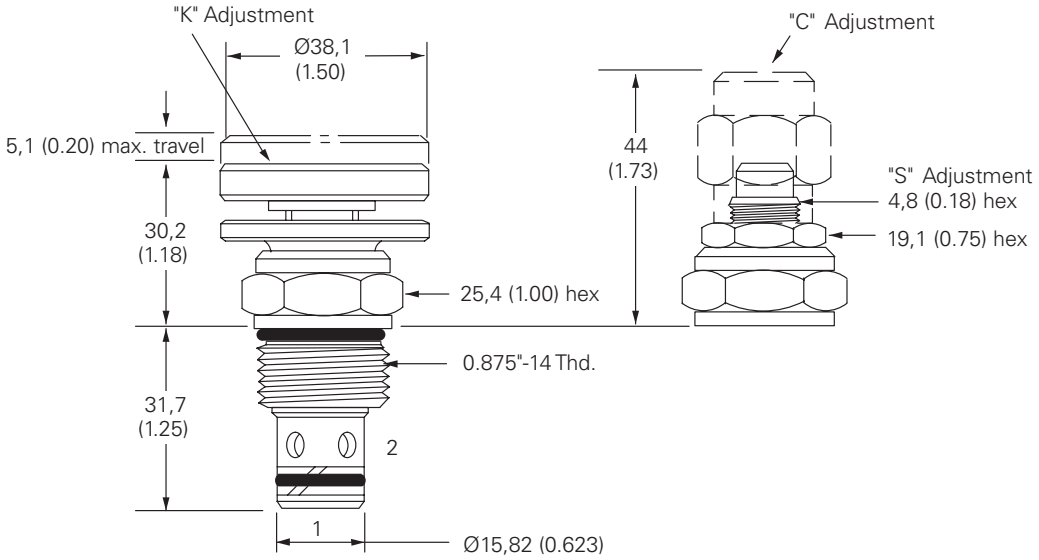
7 Special features

00 - None
(Only required if valve has special features, omit if ("00")

Dimensions
mm (inch)

Torque cartridge in aluminum housing to 47–54 Nm (35–40 ft.lbs)

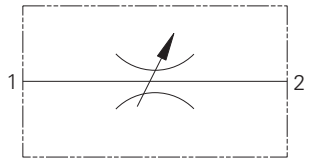
Cartridge only
Basic code FCV7-10



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FCV11-12 - Flow restrictor valve

Needle
114 L/min • 350 bar (5000 psi)



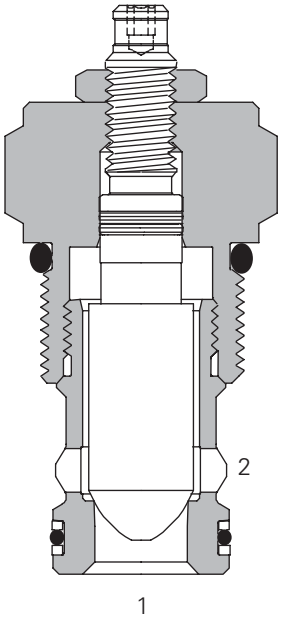
Operation

This needle valve is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjust screw de-creases the orifice size to completely closed and anti-clockwise increases the orifice. The setting can be locked using the lock nut on the adjust screw.

Features

Hardened and ground working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	350 bar (5000 psi) Port "1" to "2" 210 bar (3000 psi) Port "1" to "2"
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	114 L/min (30 USgpm)
Internal leakage	less than 5 drops/min maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-2 or C-12-2U
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum or steel
Weight cartridge only	0,24 kg (0.54 lbs)
Seal kit	2–165889 (Buna-N) 02–165888 (Viton®)

Viton is a registered trademark of E.I. DuPont

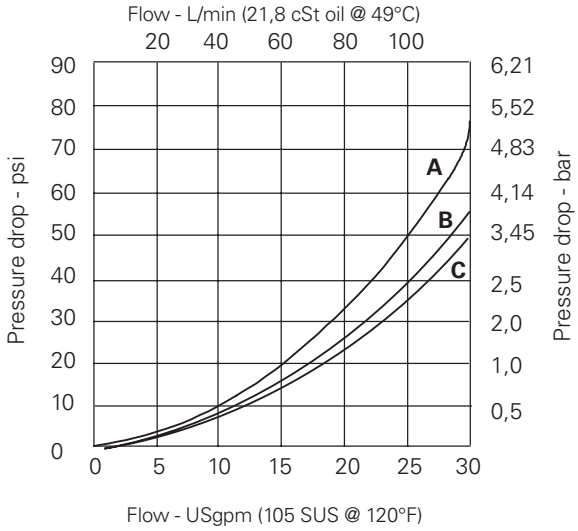
Description

This is a manually adjusted cartridge type needle valve. With fine control it is ideal for none compensated speed control of actuators or as a control orifice in conjunction with a pressure compensator Total shut off can be achieved allowing the valve to be used as a shut of valve.

Pressure drop curves

Cartridge only

A - Cartridge with C-12-2 valve body, full open
B - Cartridge with C-12-2U valve body, full open
C - Cartridge only, full open



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FCV11-12 - Flow restrictor valve

Needle
114 L/min • 350 bar (5000 psi)

Model code

FCV11 – 12 (V) – S – * – * – (U) – NV – 00**

1 2 3 4 5 6 7 8 9

1 Function
FCV11 - Flow control valve

2 Size
12 - 12 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Adjustment
S - Screw
K - Knob

5 Valve housing material
Blank - No body
A - Aluminum
S - Steel

6 Port size

Code	Port size	Housing number			
		C-12-2U Aluminium fatigue rated	C-12-2 Aluminium fatigue rated	C-12-2U Steel fatigue rated	C-12-2 Steel fatigue rated
0	Cartridge only				
10T(U)	SAE 10	02–160641	02–160640	02–169817	02–169744
12T(U)	SAE 12	02–160645	02–160644	02v169790	02–169782
4G(U)	1/2" BSPP	02–161116	02–161118	02–172512	02–172062
6G(U)	3/4" BSPP	02–161115	02–161117	02–162922	02–169665

See section J for housing details.

7 Cavity
Blank – Cavity without undercut
U – Cavity with undercut

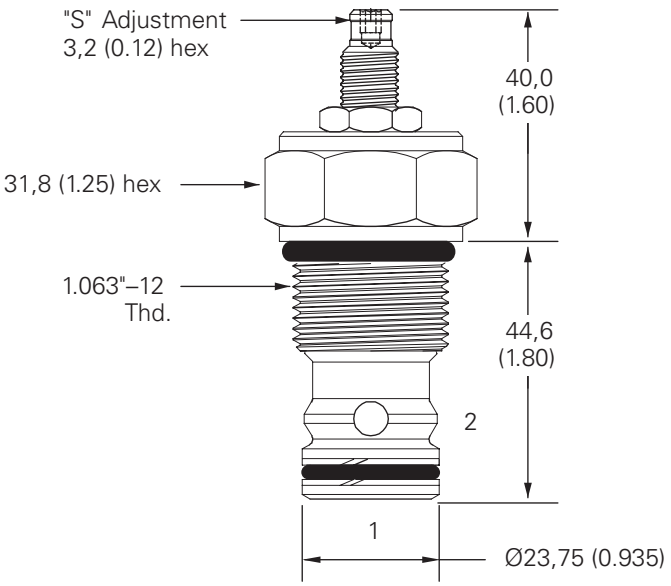
8 Valve type
NV – Needle Valve (Adjustable)

9 Special features
00 - None
(Only required if valve has special features, omit if ("00")

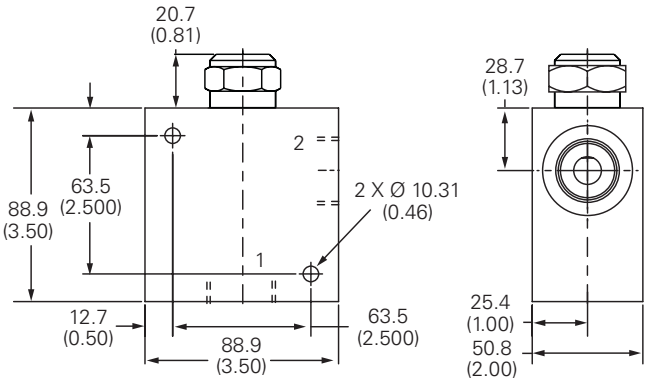
Dimensions
mm (inch)

Torque cartridge in housing
A - 81–95 Nm (60–70 ft lbs)
S - 102–115 Nm (75–85 ft lbs)

Cartridge only
Basic code
FCV11-12



Installation drawing (Steel)



⚠ Warning

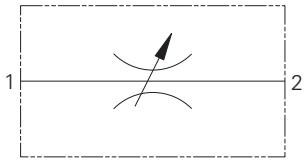
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

H

FCV6-16 - Flow restrictor valve

Needle
208 L/min (55 USgpm) • 210 bar (3000 psi)



Operation

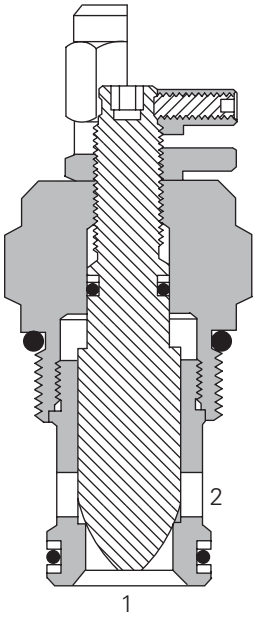
This needle valve is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1.

Clockwise rotation of the adjust screw de-creases the orifice size to completely closed and anti-clockwise increases the orifice. The setting can be locked using the lock nut on the adjust screw.

Features

Hardened and ground working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	208 L/min (55 USgpm)
Internal leakage	Port 2 to 1; <5 drops/min maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C–16–2
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20 etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing material	Aluminum
Weight cartridge only	0,37 kg (0.81 lbs)
Seal kit	889631 (Buna-N) 889635 (Viton®)

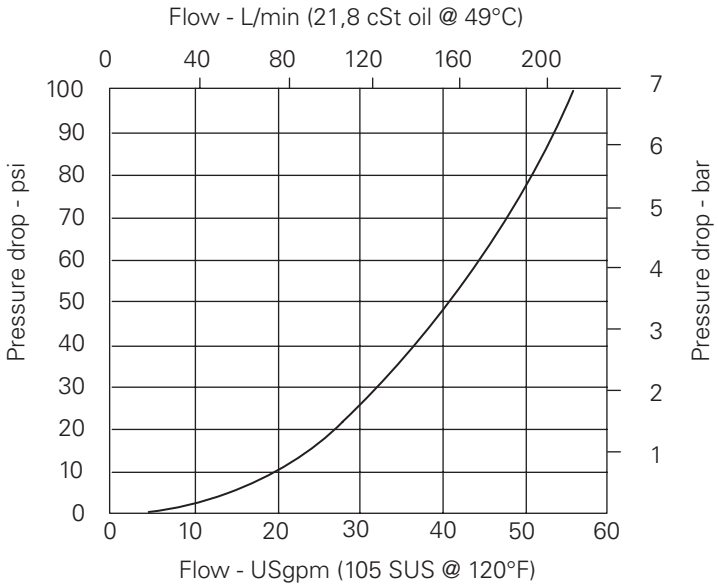
Viton is a registered trademark of E.I. DuPont

Description

This is a manually adjusted cartridge type needle valve. With fine control it is ideal for none compensated speed control of actuators or as a control orifice in conjunction with a pressure compensator Total shut off can be achieved allowing the valve to be used as a shut of valve.

Pressure drop

Cartridge only



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FCV6-16 - Flow restrictor valve

Needle
208 L/min (55 USgpm) • 210 bar (3000 psi)

Model code

FCV6 – 16 (V) – * – * – NV – 00**

1 2 3 4 5 6 7

1 Function
FCV6 - Needle valve

2 Size
16 - 16 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Adjustment
C - Cap
K – Knob
S – Screw

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
6B	3/4" BSPP	02–175463	–
12T	SAE 12	566149	–
4G	1/2" BSPP	–	876716
6G	3/4" BSPP	–	876718
10H	SAE 10	–	876717
12H	SAE 12	–	566113

See section J for housing details.

6 Controlled flow option
NV – Needle valve

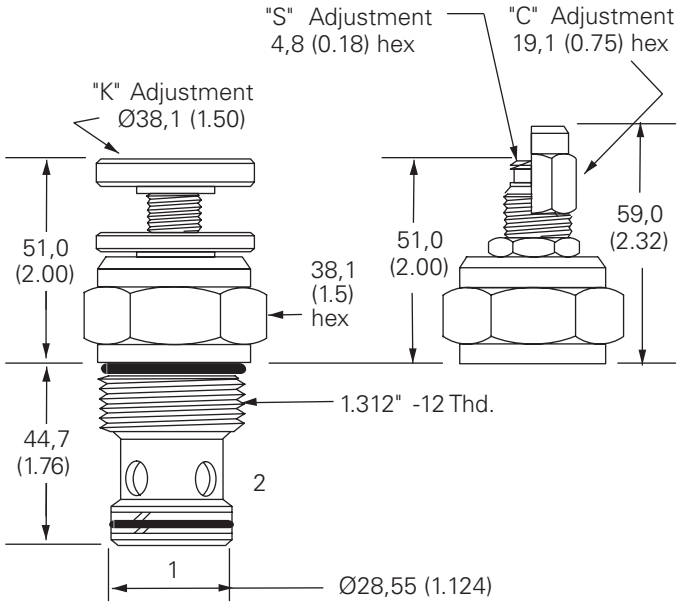
7 Special features
00 - None

(Only required if valve has special features, omit if ("00")

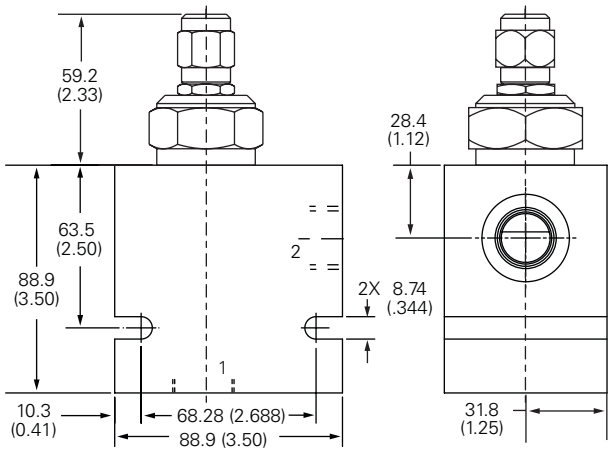
Dimensions
mm (inch)

Torque cartridge in aluminum housing
108-122 Nm (80-90 ft lbs)

Cartridge only
Basic code
FCV6-16



Installation drawing



⚠ Warning

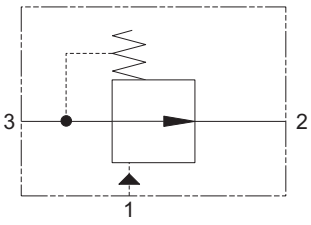
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS3-10 - Pressure compensator

Restrictive
38 L/min (10 USgpm) • 210 bar (3000 psi)



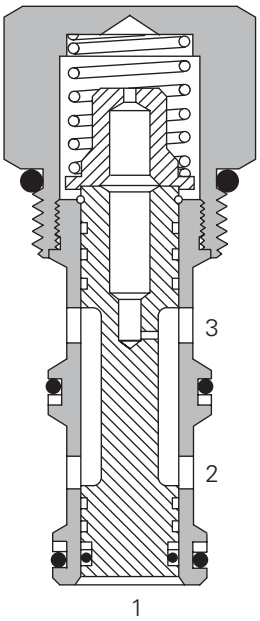
Operation

This valve, when used with either a fixed or variable orifice between port 1 and port 3, maintains a constant flow. This is based on what ever pressure differential is chosen. Flow out of port 2, regardless of pressure, changes downstream on port 2.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	38 L/min (10 USgpm)
Cavity	C-10-3
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulics fluids such as: MIL-H-5606, SAE 10, SAE 20 etc
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,12 kg (0.26 lbs)
Seal kit	565812 (Buna-N), 889611 (Viton®)

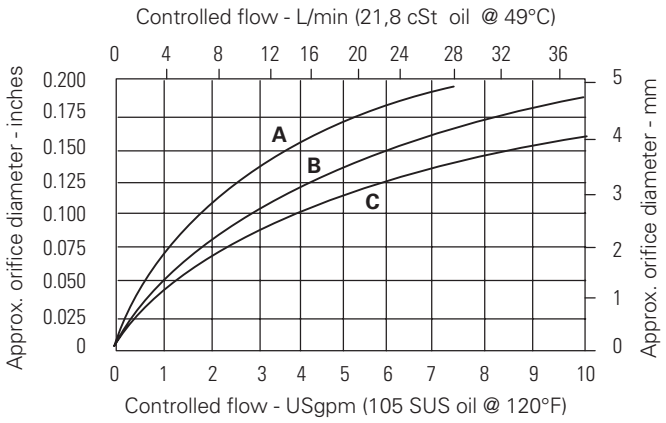
Viton is a registered trademark of E.I. DuPont

Description

This is a restrictive style compensator suitable for use with a separate needle valve or orifice to provide a pressure compensated flow while the excess oil passes over a relief valve or closes down the compensator on a pump. This, when used in a manifold, is ideal for motor or cylinder speed control either meter in or meter out.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control ΔP)
B - 5,5 bar (80 psi) (control ΔP)
C - 11,0 bar (160 psi) (control ΔP)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS3-10 - Pressure compensator

Restrictive
38 L/min (10 USgpm) • 210 bar (3000 psi)

Model code

PCS3 – **10** **(V)** – ***** – **(S)** – ******* – **00**

1 2 3 4 5 6 7

1 Function
PCS3 - Pressure compensator restrictive type

2 Size
10 - 10 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Spool seals
Blank - No seal on spool
S - Seal on spool
(For load holding applications where leakage from port 1 to 2 could cause cylinder drift, use of seal will increase hysteresis)

6 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
60 - 4,1 bar (60 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

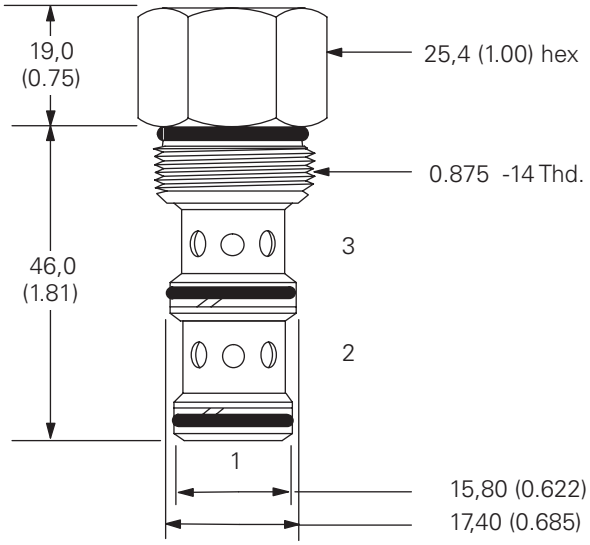
7 Special features
00 - None
(Only required if valve has special features, omit if ("00")

Dimensions

mm (inch)

Torque into aluminum housing to 47-54 Nm (35-40 ft lbs)

Cartridge only
Basic code
PCS3-10

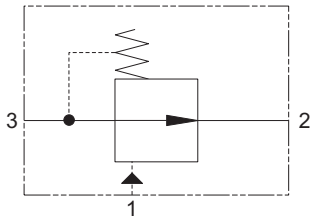


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS13-10 - Pressure compensator

Restrictive
38 L/min (10 USgpm) • 350 bar (5000 psi)



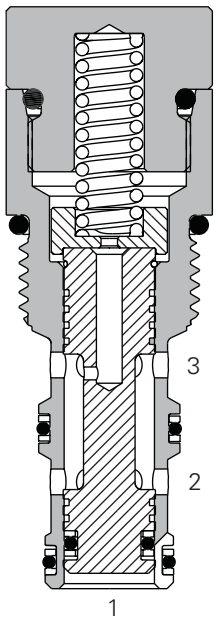
Operation

This valve, when used with either a fixed or variable orifice between port 1 and port 3, maintains a constant flow. This is based on what ever pressure differential is chosen. Flow out of port 2, regardless of pressure, changes downstream on port 2.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility. Working pressure 350 bar.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	38 L/min (10 USgpm)
Cavity	C-10-3
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 8/**16/13**
Weight cartridge only	0,12 kg (0.26 lbs) Weight cartridge only
Seal kit	5565818 (Buna-N) 889611 (Viton®)

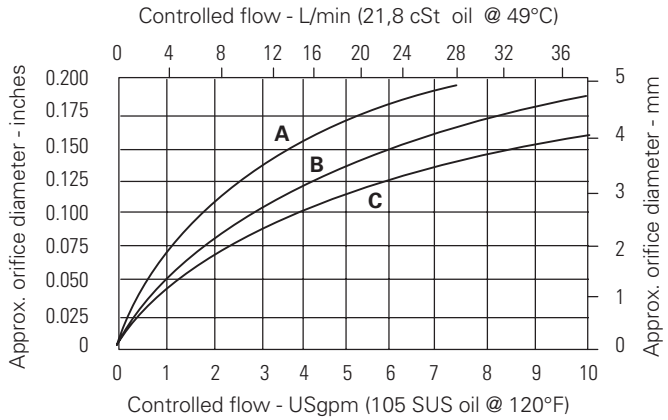
Viton is a registered trademark of E.I. DuPont

Description

This is a high pressure restrictive style compensator suitable for use with a separate needle valve or orifice to provide a pressure compensated flow while the excess oil passes over a relief valve or closes down the compensator on a pump. This, when used in a manifold, is ideal for motor or cylinder speed control either meter in or meter out.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control Δ P)

B - 5,5 bar (80 psi) (control Δ P)

C - 11,0 bar (160 psi) (control Δ P)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS13-10 - Pressure compensator

Restrictive
38 L/min (10 USgpm) • 350 bar (5000 psi)

Model code

PCS13 – 10 (V) – * – (S) – * – 00**

1 2 3 4 5 6 7

1 Function
PCS13 - Pressure compensator restrictive type

2 Size
10 - 10 Size

3 Seals
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Spool seals
Blank - No seal on spool
S - Seal on spool.
(For load holding applications were leakage from port 1 to 2 could cause cylinder drift, use of seal will increase hysteresis)

6 Pressure differential
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

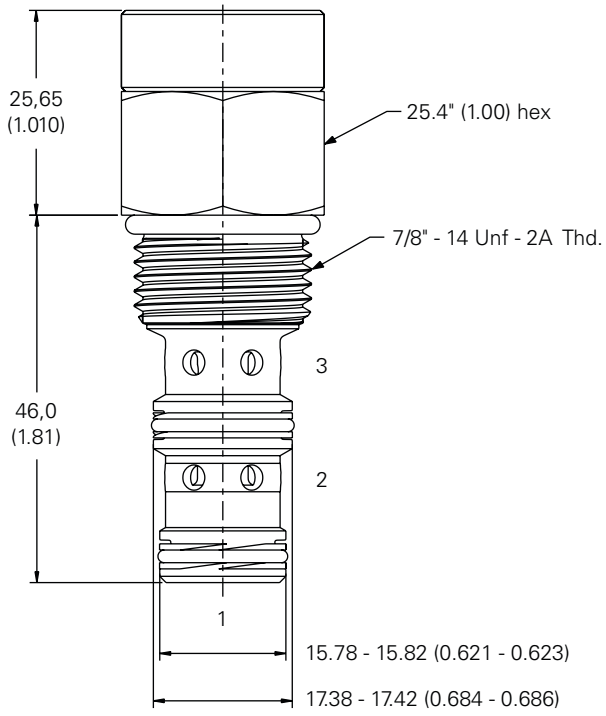
7 Special features
00 - None
(Only required if valve has special features, omitted if "00.")

Dimensions
mm (inch)

Cartridge only
Basic code
PCS13-10

Torque into aluminum housing to 47-54 Nm (35-40 ft. lbs)

Torque into steel housing to 68-75 Nm (50-55 ft. lbs)



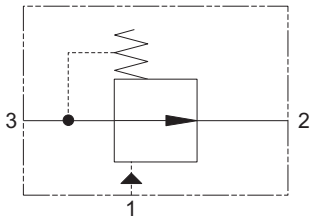
⚠ Warning
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS3-12 - Pressure compensator

Restrictive
58 L/min (15 USgpm) • 240 bar (3500 psi)



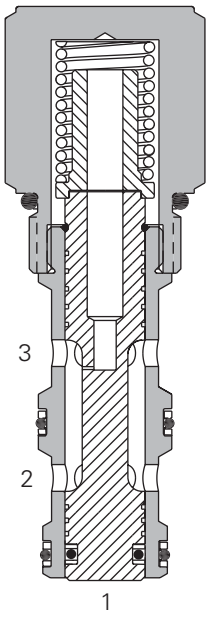
Operation

This valve, when used with either a fixed or variable orifice between port 1 and port 3, maintains a constant flow. This is based on what ever pressure differential is chosen. Flow out of port 2, regardless of pressure, changes downstream on port 2.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical application pressure (all ports)	240 bar (3500 psi)
Cartridge fatigue pressure (infinite life)	240 bar (3500 psi)
Rated flow	58 L/min (15 USgpm)
Cavity	C-12-3
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulics fluids such as MIL-H-5606, SAE 10, SAE 20 etc
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,30 kg (0.55 lbs)
Seal kit	9900333-000 (Buna-N) 9900334-000 (Viton®)

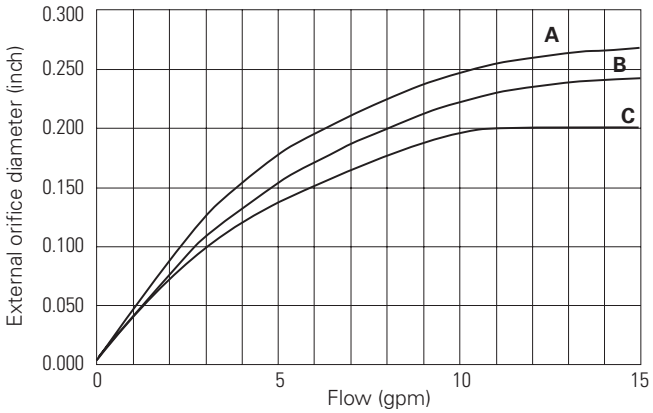
Viton is a registered trademark of E.I. DuPont

Description

This is a restrictive style compensator suitable for use with a separate needle valve or orifice to provide a pressure compensated flow while the excess oil passes over a relief valve or closes down the compensator on a pump. This, when used in a manifold, is ideal for motor or cylinder speed control either meter in or meter out.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control DP)
B - 5,5 bar (80 psi) (control DP)
C - 11,0 bar (160 psi) (control DP)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS3-12 - Pressure compensator

Restrictive
58 L/min (15 USgpm) • 240 bar (3500 psi)

Model code

PCS3 – 12 (V) – * – (S) – * – 00**

1 2 3 4 5 6 7

1 Function
DCS3 - Pressure compensator restrictive type

2 Size
12 - 12 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Spool seals
Blank - No seal on spool
S - Seal on spool
(For load holding applications where leakage from port 1 to 2 could cause cylinder drift, use of seal will increase hysteresis)

6 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
120 - 8,3 bar (120 psi)

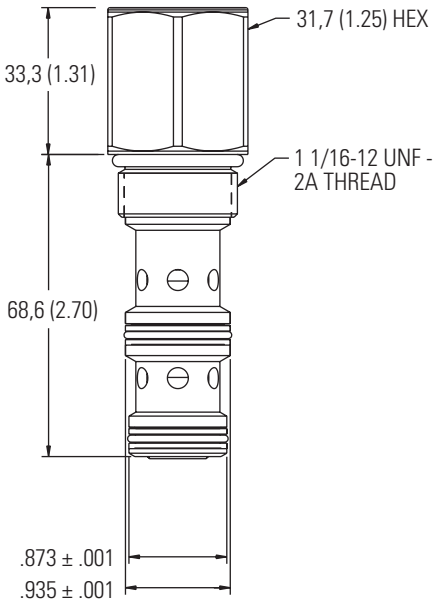
7 Special features
00 - None
(Only required if valve has special features, omit if "00".)

Dimensions

mm (inch)

Torque into aluminum housing to 81-95 Nm (60-70 ft lbs)

Cartridge only
Basic code
PCS3-12

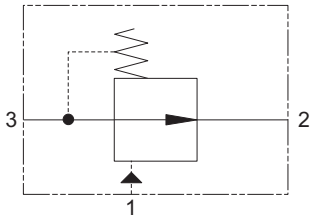


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS13-12 - Pressure compensator

Restrictive
58 L/min (15 USgpm) • 350 bar (5000 psi)



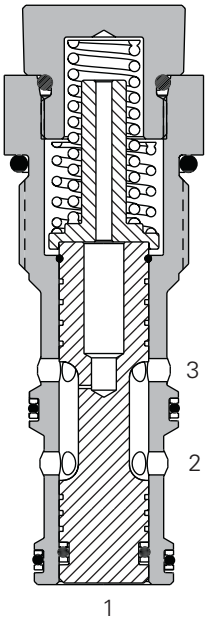
Operation

This valve, when used with either a fixed or variable orifice between port 1 and port 3, maintains a constant flow. This is based on what ever pressure differential is chosen. Flow out of port 2, regardless of pressure, changes downstream on port 2.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility. Working pressure 350 bar.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	58 L/min (15 USgpm)
Cavity	C-12-3
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,30 kg (.55 lbs)
Seal kit	9900333-000 (Buna-N) 9900334-000 (Viton®)

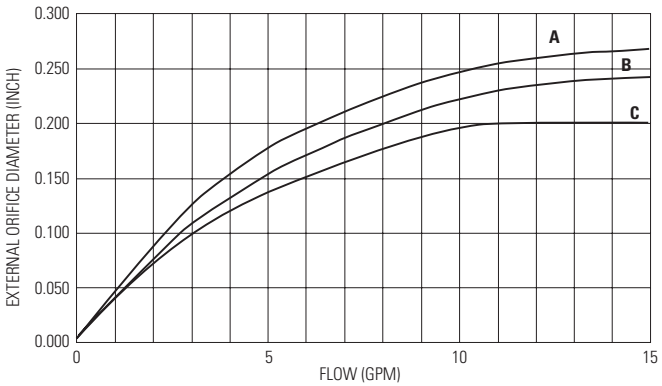
Viton is a registered trademark of E.I. DuPont

Description

This is a high pressure restrictive style compensator suitable for use with a separate needle valve or orifice to provide a pressure compensated flow while the excess oil passes over a relief valve or closes down the compensator on a pump. This, when used in a manifold, is ideal for motor or cylinder speed control either meter in or meter out.

Performance characteristics

Cartridge Only



A - 2,8 bar (40 psi) (control Δ P)
B - 5,5 bar (80 psi) (control Δ P)
C - 11,0 bar (160 psi) (control Δ P)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS13-12 - Pressure compensator

58 L/min (15 USgpm) • 350 bar (5000 psi)

Model code

PCS13 – 12 (V) – * – (S) – * – 00**

1 2 3 4 5 6 7

1 Function

PCS13 - Pressure compensator restrictive type

2 Size

12 - 12 Size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

(Customized housings are necessary for close-coupling, compensator and orifice)

5 Spool seals

Blank - No seal on spool
S - Seal on spool.

(For load holding applications were leakage from port 1 to 2 could cause cylinder drift, use of seal will increase hysteresis)

6 Pressure differential

40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
120 - 8,3 bar (120psi)
160 - 11,0 bar (160 psi)

7 Special features

00 - None
(Only required if valve has special features, omitted if "00.")

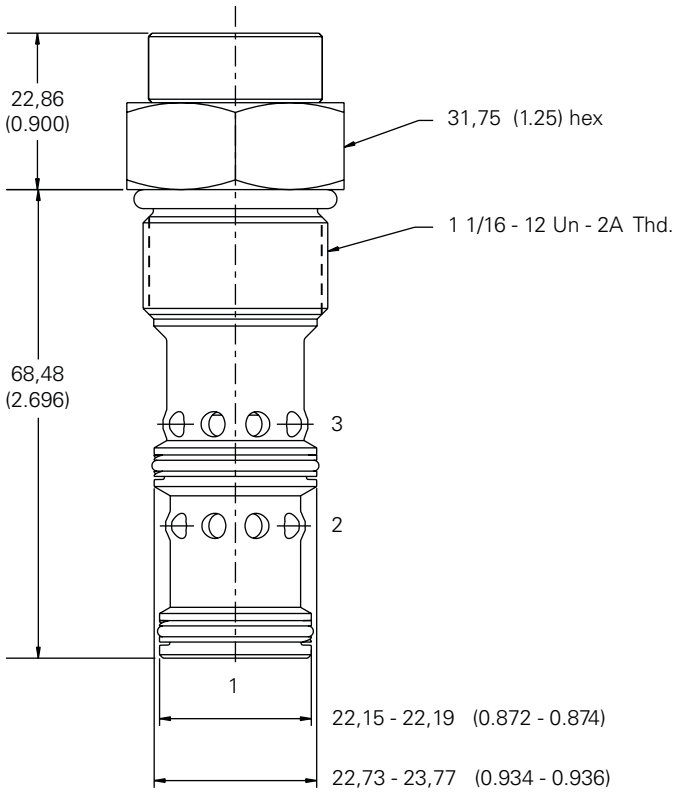
Dimensions

mm (inch)

Torque into aluminum housing to 81-95 Nm (60-70 ft. lbs)

Torque into steel housing to 102-115 Nm (75-85 ft. lbs)

Cartridge only
Basic code
PCS13-12



⚠ Warning

Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

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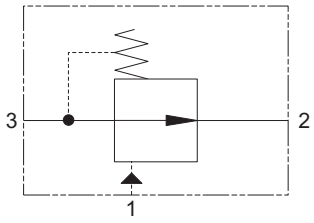
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS3-16 - Pressure compensator

Restrictive

114 L/min (30 USgpm) • 210 bar (3000 psi)



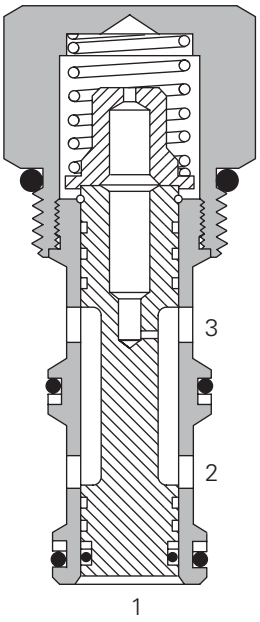
Operation

This valve, when used with either a fixed or variable orifice between port 1 and port 3, maintains a constant flow. This is based on what ever pressure differential is chosen. Flow out of port 2, regardless of pressure, changes downstream on port 2.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility. Working pressure 350 bar.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	114 L/min (30 USgpm)
Cavity	C-16-3
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice.
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulics fluids such as: MIL-H-5606, SAE 10, SAE 20 etc
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,38 kg (0.84 lbs)
Seal kit	565811 (Buna-N) 889610 (Viton®)

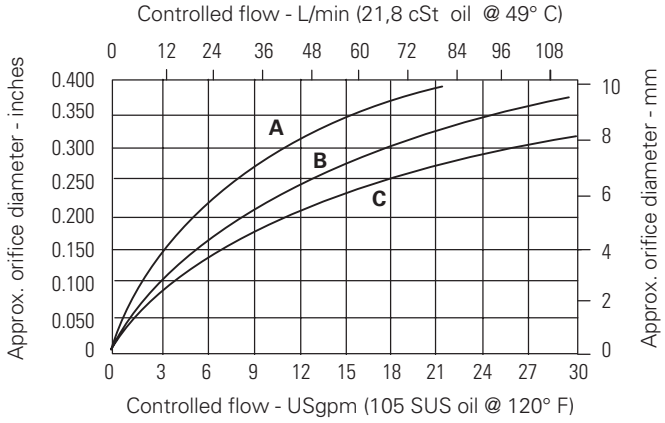
Viton is a registered trademark of E.I. DuPont

Description

This is a restrictive style compensator suitable for use with a separate needle valve or orifice to provide a pressure compensated flow while the excess oil passes over a relief valve or closes down the compensator on a pump. This, when used in a manifold, is ideal for motor or cylinder speed control either meter in or meter out.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control ΔP)

B - 5,5 bar (80 psi) (control ΔP)

C - 11,0 bar (160 psi) (control ΔP)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS3-16 - Pressure compensator

Restrictive
114 L/min (30 USgpm) • 210 bar (3000 psi)

Model code

PCS3 – **16** **(V)** – ***** – **(S)** – ******* – **00**
1 2 3 4 5 6 7

1 Function
PCS3 - Pressure compensator restrictive type

2 Size
16 - 16 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Spool seals
Blank - No seal on spool
S - Seal on spool
(For load holding applications where leakage from port 1 to 2 could cause cylinder drift, use of seal will increase hysteresis)

6 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

7 Special features
00 - None
(Only required if valve has special features, omit if "00".)

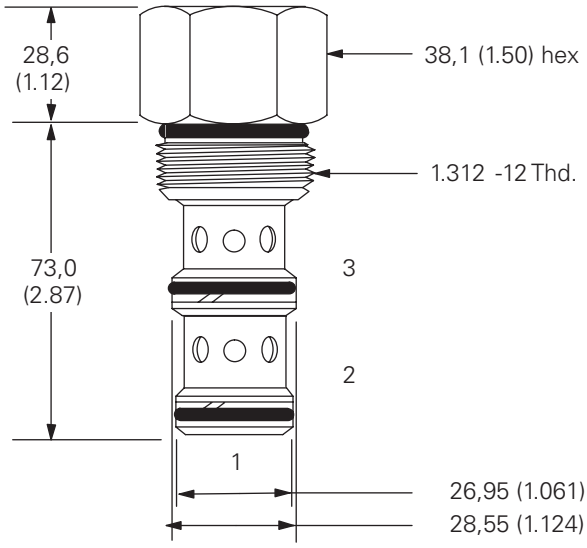
Dimensions

mm (inch)

Cartridge only
Basic code
PCS3-16

Torque into aluminum housing to 108-122 Nm (80-90 ft lbs)

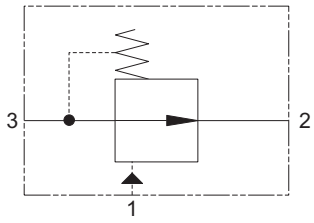
Torque into steel housing to 136-149 Nm (100-110 ft lbs)



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS13-16 - Pressure compensator

Restrictive
114 L/min (30 USgpm) • 350 bar (5000 psi)



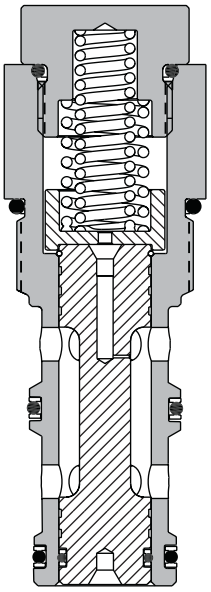
Operation

This valve, when used with either a fixed or variable orifice between port 1 and port 3, maintains a constant flow. This is based on what ever pressure differential is chosen. Flow out of port 2, regardless of pressure, changes downstream on port 2.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility. Working pressure 350 bar.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	114 L/min (30 USgpm)
Cavity	C-16-3
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,38 kg (.84 lbs)
Seal kit	565811 (Buna-N) 889610 (Viton®)

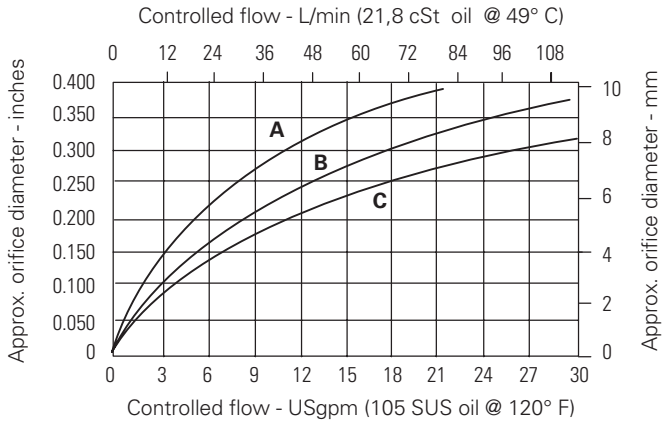
Viton is a registered trademark of E.I. DuPont

Description

This is a high pressure restrictive style compensator suitable for use with a separate needle valve or orifice to provide a pressure compensated flow while the excess oil passes over a relief valve or closes down the compensator on a pump. This, when used in a manifold, is ideal for motor or cylinder speed control either meter in or meter out.

Performance characteristics

Cartridge Only



A - 2,8 bar (40 psi) (control Δ P)

B - 5,5 bar (80 psi) (control Δ P)

C - 11,0 bar (160 psi) (control Δ P)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

Model code

PCS13 – 16 (V) – * – (S) – *** – 00
1 2 3 4 5 6 7

1 Function
PCS13 - Pressure compensator restrictive type

2 Size
16 - 16 Size

3 Seals
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Spool seals
Blank - No seal on spool
S - Seal on spool.
(For load holding applications were leakage from port 1 to 2 could cause cylinder drift, use of seal will increase hysteresis)

6 Pressure differential
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

7 Special features
00 - None
(Only required if valve has special features, omitted if "00.")

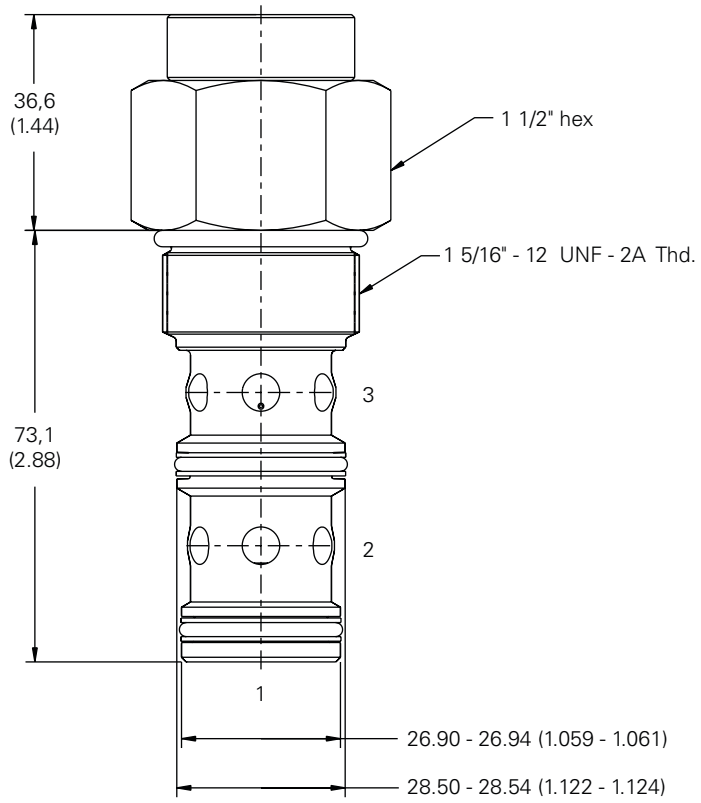
Dimensions

mm (inch)

Cartridge only
Basic code
PCS13-16

Torque into aluminum housing to 108-122 Nm (80-90 ft. lbs)

Torque into steel housing to 136-149 Nm (100-110 ft. lbs)

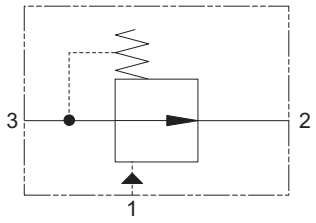


⚠ Warning
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

H

PCS3-20 - Pressure compensator

Restrictive
189 L/min (50 USgpm) • 210 bar (3000 psi)



Operation

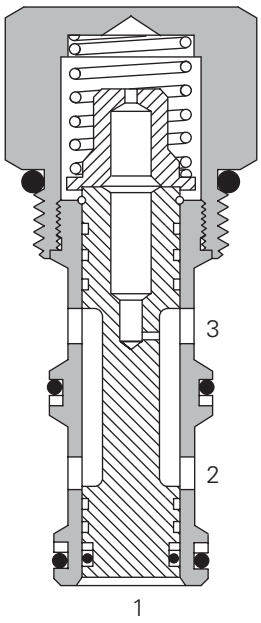
This valve, when used with either a fixed or variable orifice between port 1 and port 3, maintains a constant flow.

This is based on what ever pressure differential is chosen. Flow out of port 2, regardless of pressure, changes downstream on port 2.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	189 L/min (50 USgpm)
Cavity	C-20-3
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulics fluids such as: MIL-H-5606, SAE 10, SAE 20 etc
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,88 kg (1.94 lbs)
Seal kit	889616 (Buna-N), 02-175433 (Viton®)

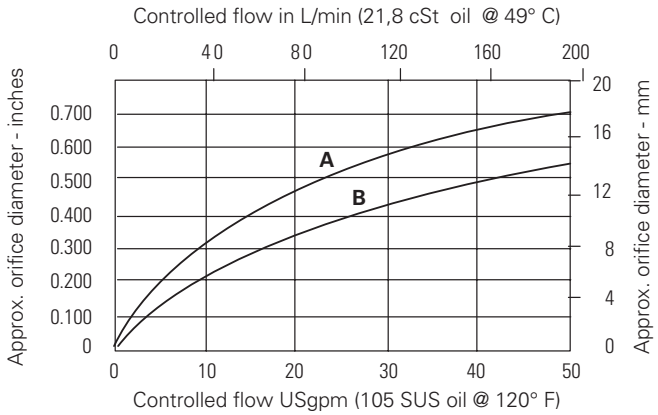
Viton is a registered trademark of E.I. DuPont

Description

This is a restrictive style compensator suitable for use with a separate needle valve or orifice to provide a pressure compensated flow while the excess oil passes over a relief valve or closes down the compensator on a pump. This, when used in a manifold, is ideal for motor or cylinder speed control either meter in or meter out.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control ΔP)
B - 5,5 bar (80 psi) (control ΔP)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS3-20 - Pressure compensator

Restrictive
189 L/min (50 USgpm) • 210 bar (3000 psi)

Model code

PCS3 – 20 (V) – * – (S) – * – 00**

1 2 3 4 5 6 7

1 Function
PCS3 - Pressure compensator restrictive type

2 Size
20 - 20 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Spool seals
Blank - No seal on spool
S - Seal on spool
(For load holding applications where leakage from port 1 to 2 could cause cylinder drift, use of seal will increase hysteresis)

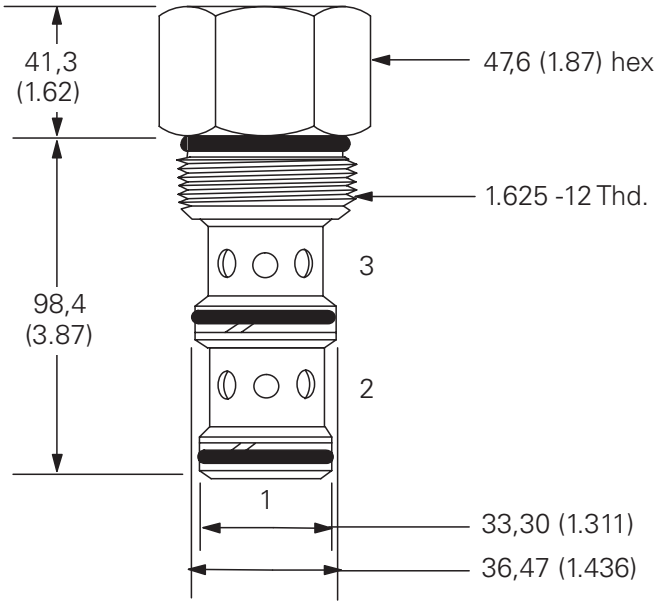
6 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)

7 Special features
00 - None
(Only required if valve has special features, omit if "00".)

Dimensions
mm (inch)

Cartridge only
Basic code
PCS3-20

Torque into aluminum housing to 128-155 Nm (95-115 ft lbs)

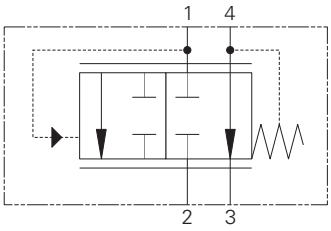


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS4-10 - Pressure compensator

Bypass or priority
38 L/min (10 USgpm) • 210 bar (3000 psi)



Operation

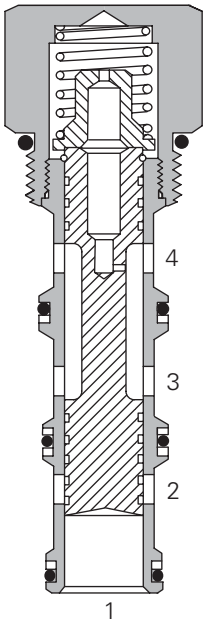
This valve, when used with either a fixed or variable orifice on port 4, maintains a constant flow out of port 3, regardless of pressure changes downstream of port 3. This is based on whatever pressure differential is chosen.

All flow in excess of the priority requirement is bypassed from port 1 to port 2. If the priority port is deadheaded, the valve will try to direct flow out of the priority port and shut off the bypass flow, blocking of all flow.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Description

This is a priority style compensator suitable for use with a separate needle valve or orifice to provide a priority pressure compensated flow. This when used in a manifold is ideal for motor or cylinder control where priority is required.

Performance data

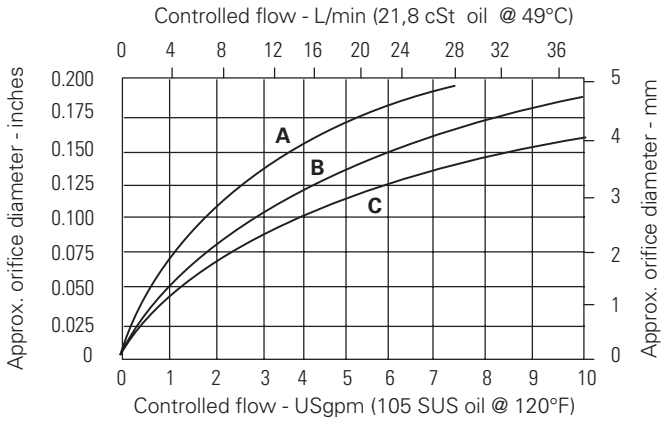
Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	38 L/min (10 USgpm)
Cavity	C-10-4
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulics fluids such as: MIL-H-5606, SAE 10, SAE 20 etc
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,14 kg (0.32 lbs)
Seal kit	889651 (Buna-N) 889653 (Viton®)

Viton is a registered trademark of E.I. DuPont

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control ΔP)
B - 5,5 bar (80 psi) (control ΔP)
C - 11,0 bar (160 psi) (control ΔP)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS4-10 - Pressure compensator

Bypass or priority
38 L/min (10 USgpm) • 210 bar (3000 psi)

Model code

PCS4 – **10** **(V)** – ***** – ******* – **00**
1 2 3 4 5 6

1 Function
PCS4 - Pressure compensator restrictive type

2 Size
10 - 10 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

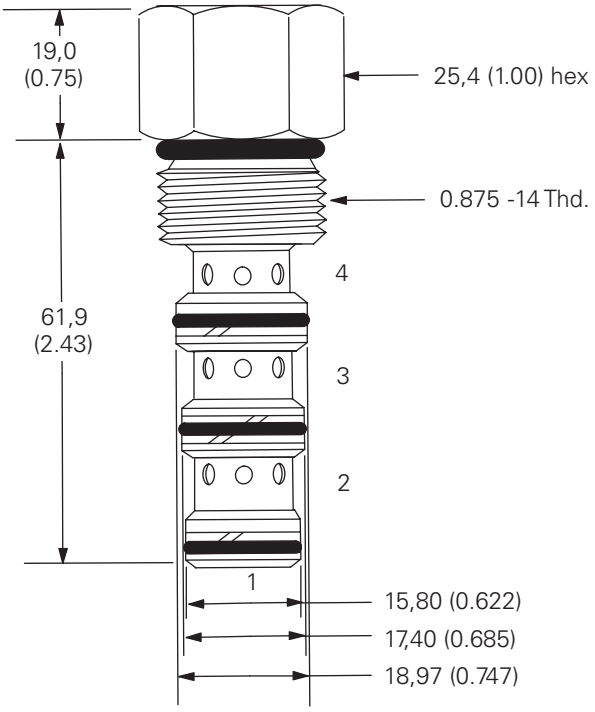
6 Special features
00 - None
(Only required if valve has special features, omit if ("00".)

Dimensions
mm (inch)

Cartridge only
Basic code
PSC4-10

Torque into aluminum housing to 47-54 Nm (35-40 ft lbs)

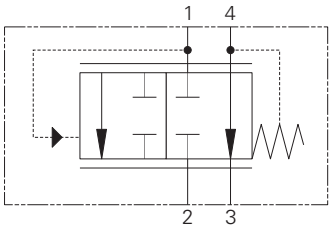
Torque into steel housing to 68-75 Nm (50-55 ft lbs)



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS14-10 - Pressure compensator

Bypass or priority
38 L/min (10 USgpm) • 350 bar (5000 psi)



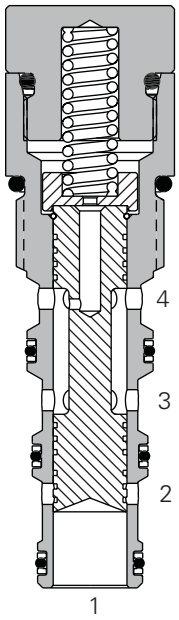
Operation

This valve, when used with either a fixed or variable orifice on port 4, maintains a constant flow out of port 3, regardless of pressure changes downstream of port 3. This is based on whatever pressure differential is chosen. All flow in excess of the priority requirement is bypassed from port 1 to port 2. If the priority port is deadheaded, the valve will try to direct flow out of the priority port and shut off the bypass flow, blocking of all flow.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility. Working pressure 350 bar.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	38 L/min (10 USgpm)
Cavity	C-10-4
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,14 kg (0.32 lbs)
Seal kit	889651 (Buna-N) 889653 (Viton®)

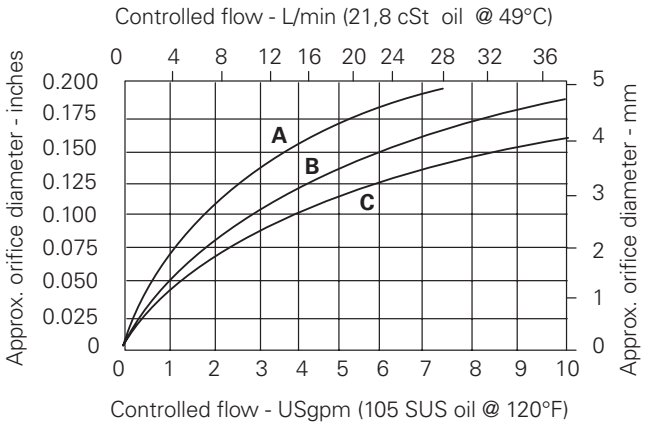
Viton is a registered trademark of E.I. DuPont

Description

This is a high pressure priority style compensator suitable for use with a separate needle valve or orifice to provide a priority pressure compensated flow. This when used in a manifold is ideal for motor or cylinder control where priority is required.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control Δ P)
B - 5,5 bar (80 psi) (control Δ P)
C - 11,0 bar (160 psi) (control Δ P)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS14-10 - Pressure compensator

Bypass or priority
38 L/min (10 USgpm) • 350 bar (5000 psi)

Model code

PCS14– 10 (V) – * – * – 00**

1 2 3 4 5 6

1 Function
PCS14 - Pressure compensator bypass type

2 Size
10 - 10 Size

3 Seals
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only

(Customized housings are necessary for close-coupling, compensator and orifice)

5 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

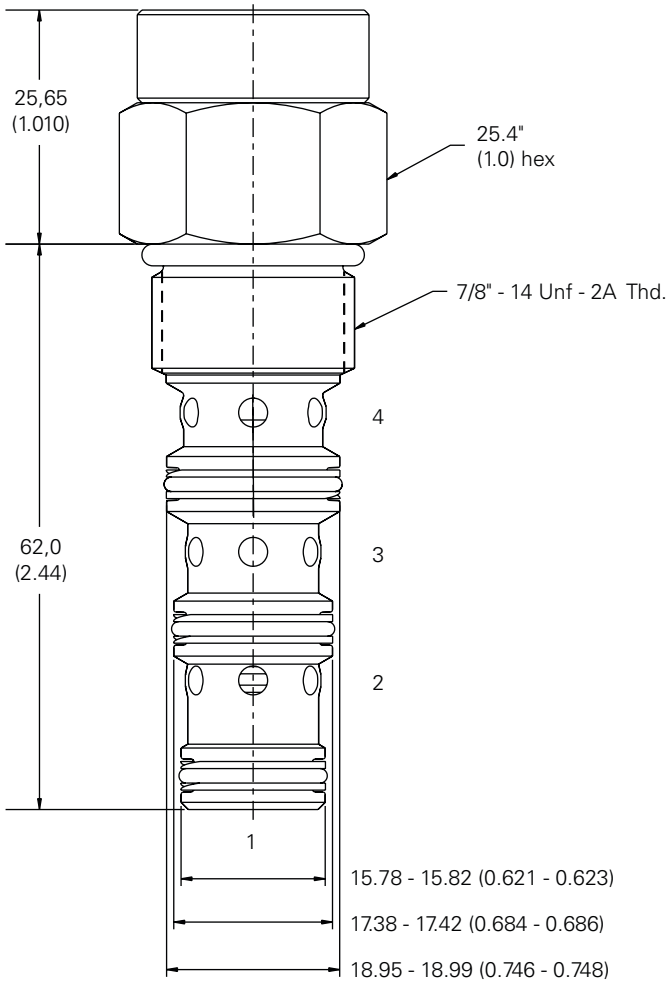
6 Special features
00 - None
(Only required if valve has special features, omitted if "00.")

Dimensions
mm (inch)

Cartridge only
Basic code
PCS14-10

Torque into aluminum housing to 47-54 Nm (35-40 ft. lbs)

Torque into steel housing to 68-75 Nm (50-55 ft. lbs)



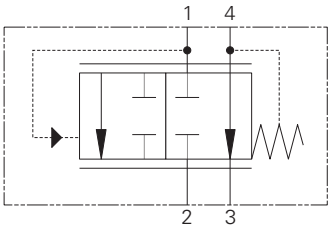
⚠ Warning

Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS4-12 - Pressure compensator

Bypass or priority
58 L/min (15 USgpm) • 240 bar (3500 psi)



Operation

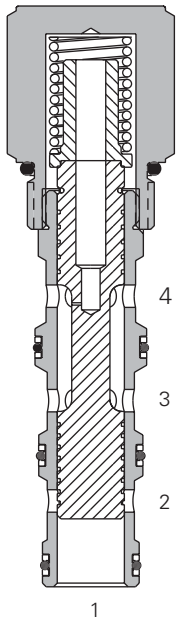
This valve, when used with either a fixed or variable orifice on port 4, maintains a constant flow out of port 3, regardless of pressure changes downstream of port 3. This is based on whatever pressure differential is chosen.

All flow in excess of the priority requirement is bypassed from port 1 to port 2. If the priority port is deadheaded, the valve will try to direct flow out of the priority port and shut off the bypass flow, blocking of all flow.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Description

This is a priority style compensator suitable for use with a separate needle valve or orifice to provide a priority pressure compensated flow. This when used in a manifold is ideal for motor or cylinder control where priority is required.

Performance data

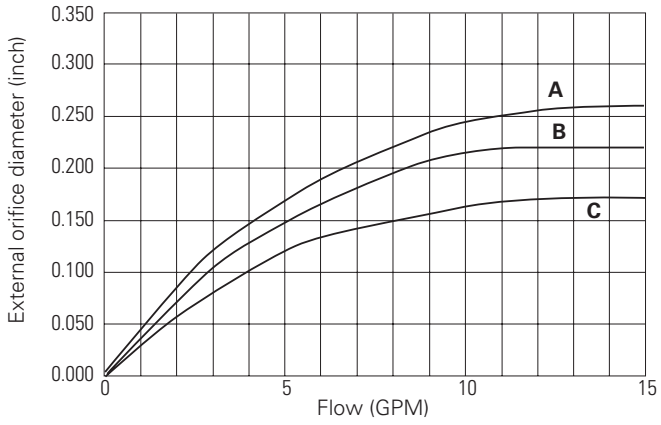
Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical application pressure (all ports)	240 bar (3500 psi)
Cartridge fatigue pressure (infinite life)	240 bar (3500 psi)
Rated flow	58 L/min (15 USgpm)
Cavity	C-12-4
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulics fluids such as: MIL-H-5606, SAE 10, SAE 20 etc
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,36 kg (0.80 lbs)
Seal kit	9900335-000 (Buna-N) 9900336-000 (Viton®)

Viton is a registered trademark of E.I. DuPont

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control DP)
B - 5,5 bar (80 psi) (control DP)
C - 11,0 bar (160 psi) (control DP)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS4-12 - Pressure compensator

Bypass or priority
58 L/min (15 USgpm) • 240 bar (3500 psi)

Model code

PCS4 – 12 (V) – * – * – 00**

1 2 3 4 5 6

1 Function

PCS4 - Pressure compensator restrictive type

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

(Customized housings are necessary for close-coupling, compensator and orifice)

5 Pressure differential (Nominal)

40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
120 - 8,3 bar (120 psi)

6 Special features

00 - None

(Only required if valve has special features, omit if "00".)

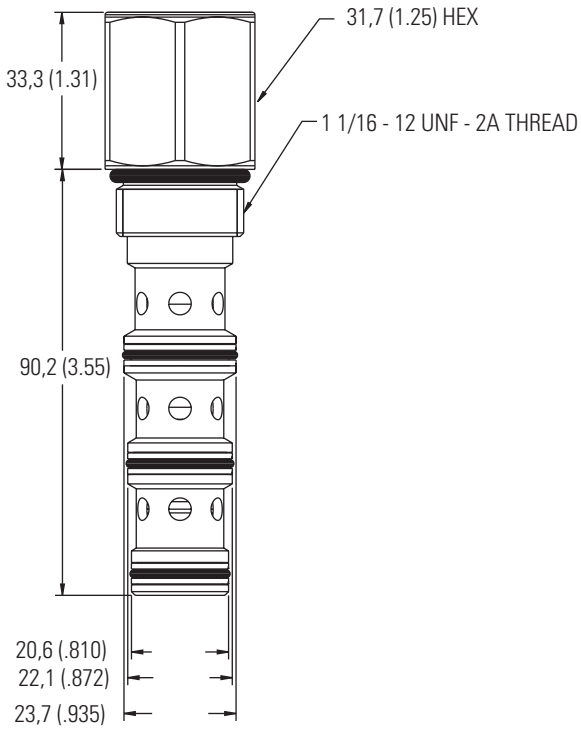
Dimensions

mm (inch)

Cartridge only
Basic code
PCS4-12

Torque into aluminum housing to 81-95 Nm (60-70 ft lbs)

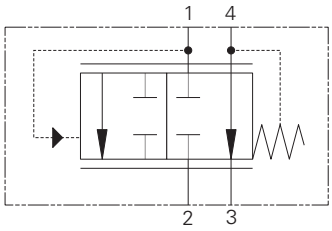
Torque into steel housing to 102-115 Nm (75-85 ft lbs)



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS14-12 - Pressure compensator

Bypass or priority
58 L/min (15 USgpm) • 350 bar (5000 psi)



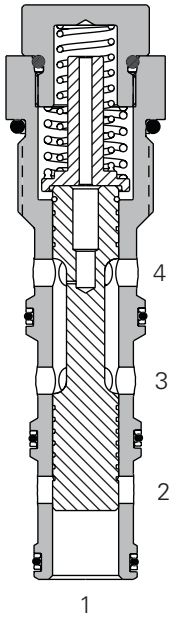
Operation

This valve, when used with either a fixed or variable orifice on port 4, maintains a constant flow out of port 3, regardless of pressure changes downstream of port 3. This is based on whatever pressure differential is chosen. All flow in excess of the priority requirement is bypassed from port 1 to port 2. If the priority port is deadheaded, the valve will try to direct flow out of the priority port and shut off the bypass flow, blocking of all flow.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility. Working pressure 350 bar.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	58 L/min (15 USgpm)
Cavity	C-12-4
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,36 kg (0.80 lbs)
Seal kit	9900335-000 (Buna-N) 9900336-000 (Viton®)

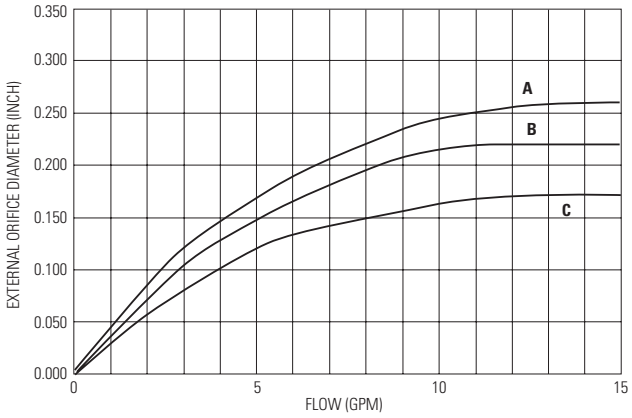
Viton is a registered trademark of E.I. DuPont

Description

This is a high pressure priority style compensator suitable for use with a separate needle valve or orifice to provide a priority pressure compensated flow. This when used in a manifold is ideal for motor or cylinder control where priority is required.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control Δ P)
B - 5,5 bar (80 psi) (control Δ P)
C - 11,0 bar (160 psi) (control Δ P)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS14-12 - Pressure compensator

Bypass or priority
58 L/min (15 USgpm) • 350 bar (5000 psi)

Model code

PCS14 – 12 (V) – * – * – 00**

1 2 3 4 5 6

1 Function
PCS14 - Pressure compensator bypass type

2 Size
12 - 12 Size

3 Seals
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
120 - 8,3 bar (120 psi)
160 - 11,0 bar (160 psi)

6 Special features
00 - None
(Only required if valve has special features, omitted if "00.")

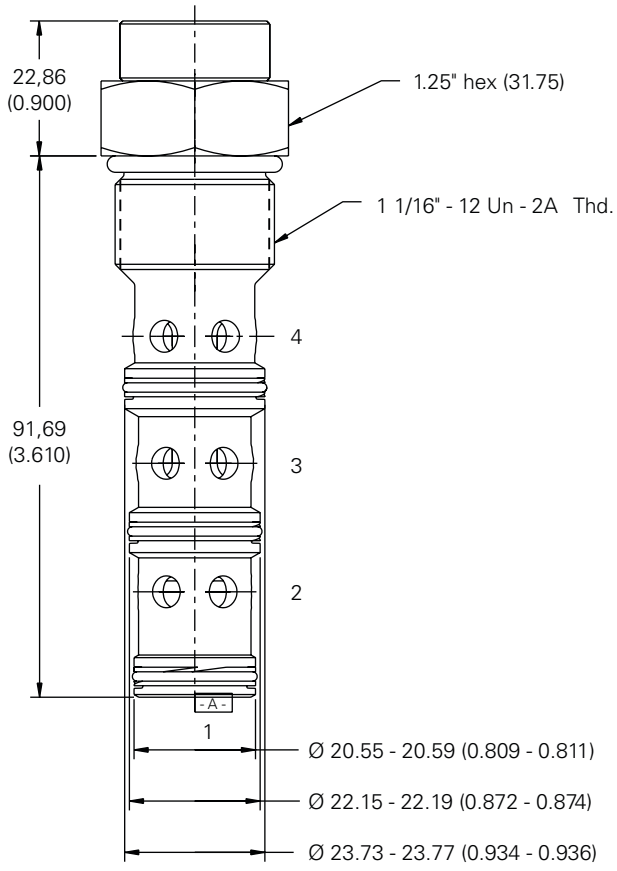
Dimensions

mm (inch)

Torque into aluminum housing to 81-95 Nm (60-70 ft. lbs)

Torque into steel housing to 102-115 Nm (75-85 ft. lbs)

Cartridge only
Basic code
PCS14-12



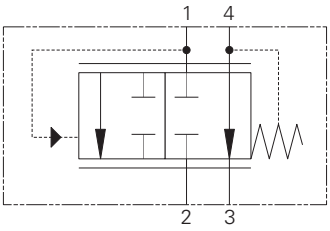
⚠ Warning
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS4-16 - Pressure compensator

Bypass or priority
114 L/min (30 USgpm) • 210 bar (3000 psi)



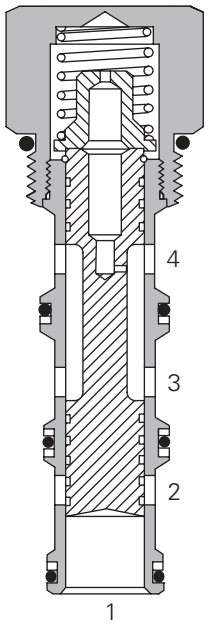
Operation

This valve, when used with either a fixed or variable orifice on port 4, maintains a constant flow out of port 3, regardless of pressure changes downstream of port 3. This is based on whatever pressure differential is chosen. All flow in excess of the priority requirement is bypassed from port 1 to port 2. If the priority port is deadheaded, the valve will try to direct flow out of the priority port and shut off the bypass flow, blocking of all flow.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	114 L/min (30 USgpm)
Cavity	C-16-4
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulics fluids such as: MIL-H-5606, SAE 10, SAE 20 etc
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,50 kg (1.12 lbs)
Seal kit	889660 (Buna-N), 02-175435 (Viton®)

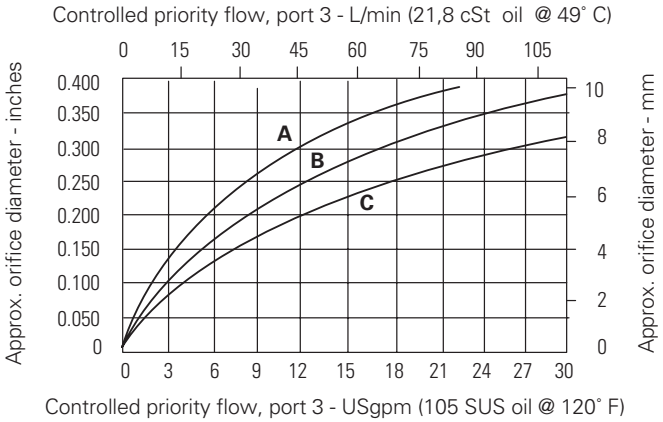
Viton is a registered trademark of E.I. DuPont

Description

This is a priority style compensator suitable for use with a separate needle valve or orifice to provide a priority pressure compensated flow. This when used in a manifold is ideal for motor or cylinder control where priority is required.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control ΔP)
B - 5,5 bar (80 psi) (control ΔP)
C - 11,0 bar (160 psi) (control ΔP)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS4-16 - Pressure compensator

Bypass or priority
114 L/min (30 USgpm) • 210 bar (3000 psi)

Model code

PCS4 – 16 (V) – * – * – 00**

1 2 3 4 5 6

1 Function
PCS4 - Pressure compensator restrictive type

2 Size
16 - 16 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only

(Customized housings are necessary for close-coupling, compensator and orifice)

5 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

6 Special features
00 - None

(Only required if valve has special features, omit if "00".)

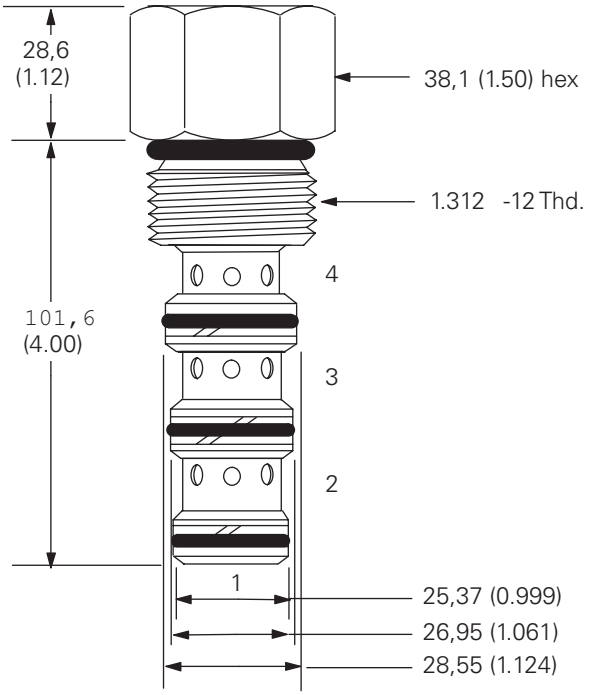
Dimensions

mm (inch)

Cartridge only
Basic code
PCS4-16

Torque into aluminum housing to 108-122 Nm (80-90 ft lbs)

Torque into steel housing to 136-149 Nm (100-110 ft lbs)

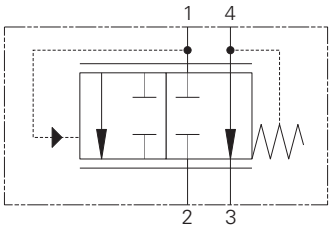


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS14-16 - Pressure compensator

Bypass or priority
114 L/min (30 USgpm) • 350 bar (5000 psi)



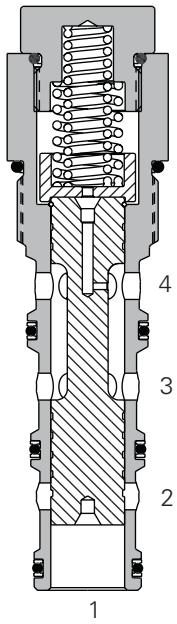
Operation

This valve, when used with either a fixed or variable orifice on port 4, maintains a constant flow out of port 3, regardless of pressure changes downstream of port 3. This is based on whatever pressure differential is chosen. All flow in excess of the priority requirement is bypassed from port 1 to port 2. If the priority port is deadheaded, the valve will try to direct flow out of the priority port and shut off the bypass flow, blocking of all flow.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility. Working pressure 350 bar (5000 psi).

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	114 L/min (30 USgpm)
Cavity	C-16-4
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120°C (-40° to 248°F)
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,50 kg (1.12 lbs)
Seal kit	889660 (Buna-N) 02-175435 (Viton®)

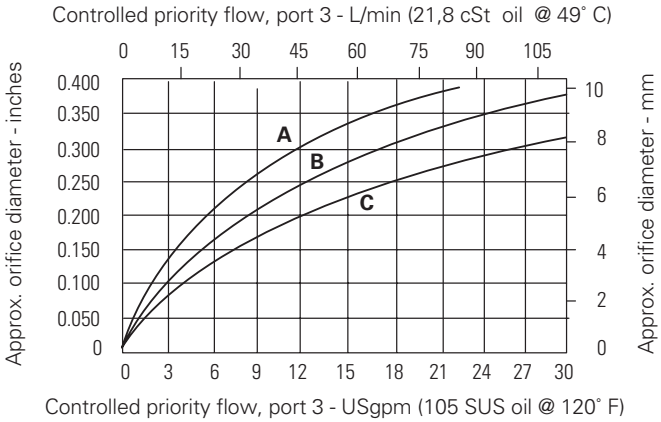
Viton is a registered trademark of E.I. DuPont

Description

This is a high pressure priority style compensator suitable for use with a separate needle valve or orifice to provide a priority pressure compensated flow. This when used in a manifold is ideal for motor or cylinder control where priority is required.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control Δ P)
B - 5,5 bar (80 psi) (control Δ P)
C - 11,0 bar (160 psi) (control Δ P)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS14-16 - Pressure compensator

Bypass or priority
114 L/min (30 USgpm) • 350 bar (5000 psi)

Model code

PCS14 – 16 (V) – * – * – 00**

1 2 3 4 5 6

1 Function
PCS14 - Pressure compensator bypass type

2 Size
16 - 16 Size

3 Seals
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

6 Special features
00 - None
(Only required if valve has special features, omitted if "00.")

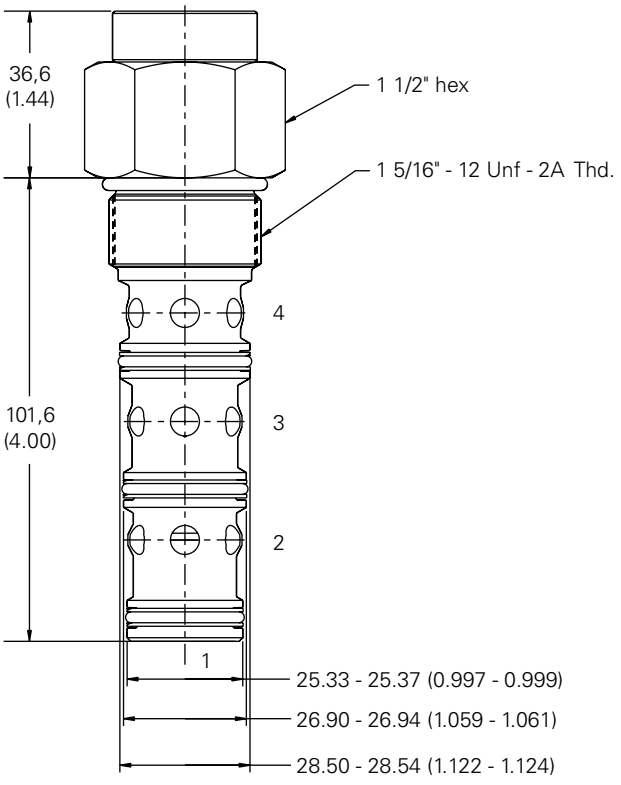
Dimensions

mm (inch)

Cartridge only
Basic code
PCS14-16

Torque into aluminum housing to 108-122 Nm (80-90 ft. lbs)

Torque into steel housing to 136-149 Nm (100-110 ft. lbs)

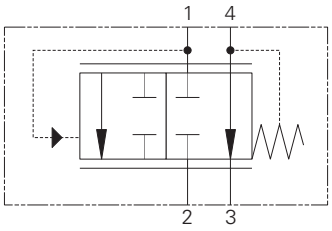


⚠ Warning
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS4-20 - Pressure compensator

Bypass or priority
189 L/min (50 USgpm) • 210 bar (3000 psi)



Operation

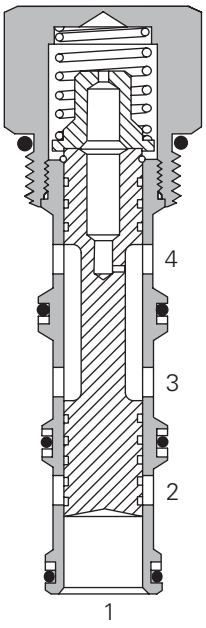
This valve, when used with either a fixed or variable orifice on port 4, maintains a constant flow out of port 3, regardless of pressure changes downstream of port 3. This is based on whatever pressure differential is chosen.

All flow in excess of the priority requirement is bypassed from port 1 to port 2. If the priority port is deadheaded, the valve will try to direct flow out of the priority port and shut off the bypass flow, blocking of all flow.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49° C (120° F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	189 L/min (50 USgpm)
Cavity	C-20-4
Standard housing materials	Customized housings are necessary for close-coupling, the compensator and orifice
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulics fluids such as: MIL-H-5606, SAE 10, SAE 20 etc
Filtration	Cleanliness code 18/**16/13**
Weight cartridge only	0,50 kg (1.12 lbs)
Seal	kit 889660 (Buna-N) 02-175435 (Viton®)

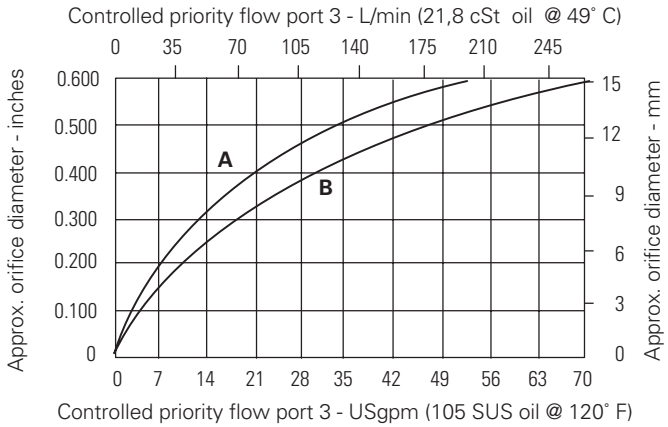
Viton is a registered trademark of E.I. DuPont

Descriptions

This is a priority style compensator suitable for use with a separate needle valve or orifice to provide a priority pressure compensated flow. This when used in a manifold is ideal for motor or cylinder control where priority is required.

Performance characteristics

Cartridge only



A - 2,8 bar (40 psi) (control ΔP)
B - 5,5 bar (80 psi) (control ΔP)

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PCS4-20 - Pressure compensator

Bypass or priority
189 L/min (50 USgpm) • 210 bar (3000 psi)

Model code

PCS4 – 20 (V) – * – * – 00**

1 2 3 4 5 6

1 Function
PCS4 - Pressure compensator bypass type

2 Size
20 - 20 size

3 Seal material
Blank - Buna-N
V - Viton®

4 Port size
0 - Cartridge only
(Customized housings are necessary for close-coupling, compensator and orifice)

5 Pressure differential (Nominal)
40 - 2,8 bar (40 psi)
80 - 5,5 bar (80 psi)

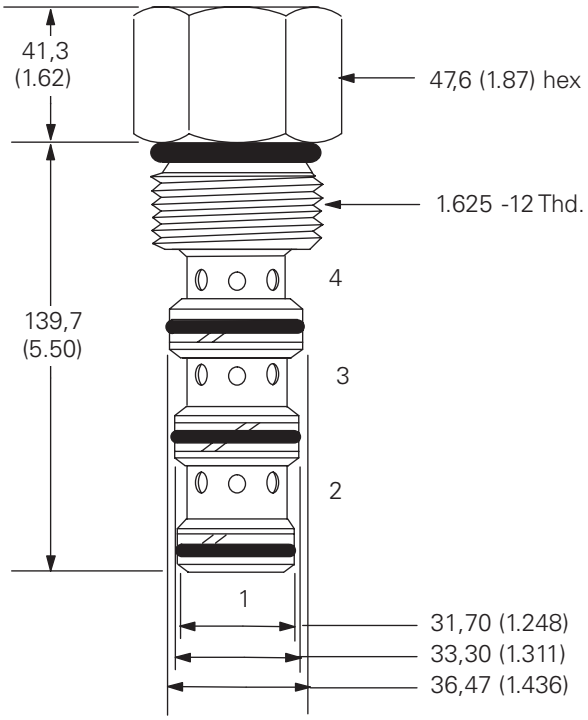
6 Special features
00 - None
(Only required if valve has special features, omit if "00".)

Dimensions

mm (inch)

Cartridge only
Basic code
PCS4-20

Torque into aluminum housing to 128-155 Nm (95-115 ft lbs)

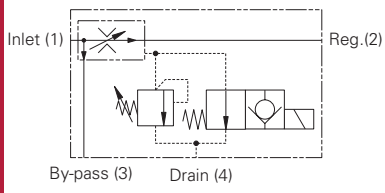


H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2FPH - Flow regulator

Pressure compensated regulator/diverter, priority style. solenoid switch
Up to 160 L/min (42 USgpm) • 350 bar (5000 psi)



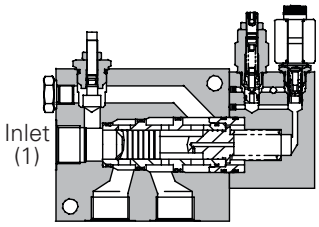
Operation

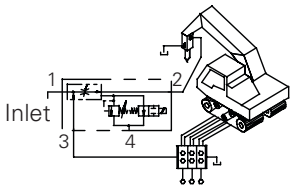
Inlet flow passes through the adjustable orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening the radial valve ports to the bypass port and closing the regulated flow ports. The solenoid valve vents the spring chamber to a drain line and in its NORMAL (de-energized) mode all inlet flow is diverted to the bypass port. The pre-set regulated flow is selected by energizing the solenoid. The adjustable relief valve vents the spring chamber at the pre-set pressure and diverts the flow to the bypass port. It may be necessary to fit a 10 bar check valve in the bypass or regulated line to ensure the valve switches fully.

Features

Line body construction with three ports allows direct connection into hydraulic systems. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Remote functional selection with solenoid operation. Adjustable relief valve gives system protection. Hardened and ground working parts give accurate flow control and long working life.

Sectional view





Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and of 32 cSt (150 SUS)

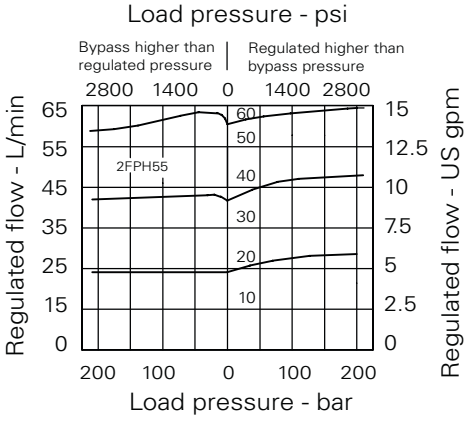
Rated flow	*Inlet*	2FPH55	95 L/min (25 USgpm)
		2FPH95	150 L/min (40 USgpm)
		2FPH195	380 L/min (100 USgpm)
	Regulated	2FPH55	55 L/min (14 USgpm)
		2FPH95	95 L/min (25 USgpm)
		2FPH195	160 L/min (42 USgpm)
Maximum pressure	2FPH55		280 bar (4000 psi)
	2FPH95/2FPH195		350 bar (5000 psi)
Material			All working parts hardened & ground steel
Standard housing material	2FPH55		Aluminum (up to 210 bar)
	2FPH95/2FPH195		Steel
Mounting position			Line mounted
Weight	2FPH55		3.00 Kg (6.60 lbs)
	2FPH95		3.50 Kg (7.70 lbs)
	2FPH195		12.26 Kg (27.00 lbs)
Seal kit number	2FPH55		SK267 (Nitrile) SK267V (Vition)
	2FPH95		SK547 (Nitrile) SK547V (Viton)
	2FPH195		SK258 (Nitrile) SK258V (Viton)
Recommended filtration level			BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature			–30° to +90°C (–22° to +194°F)
Nominal range			5 to 500 cSt

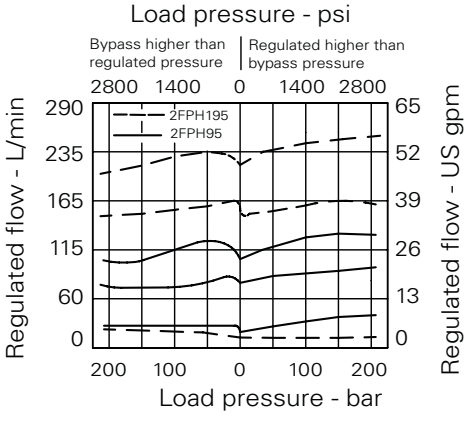
Viton is a registered trademark of E.I. DuPont

Description

The 2FPH series of priority flow regulator valves gives full control of regulated flow plus remote selection of priority flow and adjustable pressure limitation of the regulated line.

Pressure drop





Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2FPH - Flow regulator

Pressure compensated regulator/diverter, priority style. solenoid switch
Up to 160 L/min (42 USgpm) • 350 bar (5000 psi)

Model code

2FPH ** – **P** **6W** – **95** – **S** **H** **24**

1 2 3 4 5 6 7

1 Basic code
2FPH55 - Complete valve
2FPH95 - Complete valve
2FPH195 - Complete valve

2 Adjustment means
P - Leakproof screw adjustment
R - Handknob adjustment (See page H-6 for dimensions)

3 Port size - bodied valves only
4W - 1/2" BSP
6W - 3/4" BSP
8W - 1" BSP
8T - 1/2" SAE
12T - 3/4" SAE
16T - 1" SAE

4 Adjustable flow range
2FPH55 - 0-55 liters/min
2FPH95 - 0-95 liters/min
2FPH195 - 0-195 liters/min

5 Seals
S - Nitrile (for use with most industrial hydraulic oils)
SV - Viton (for high temperature & most special fluid applications)

6 Coil termination
H - ISO 4400 (plug included)
F - Flying leads, DC only
DM - Deutsch moulded
Other terminations available on request

7 Voltage
12 - 12 VDC
24 - 24 VDC
Other options available on request

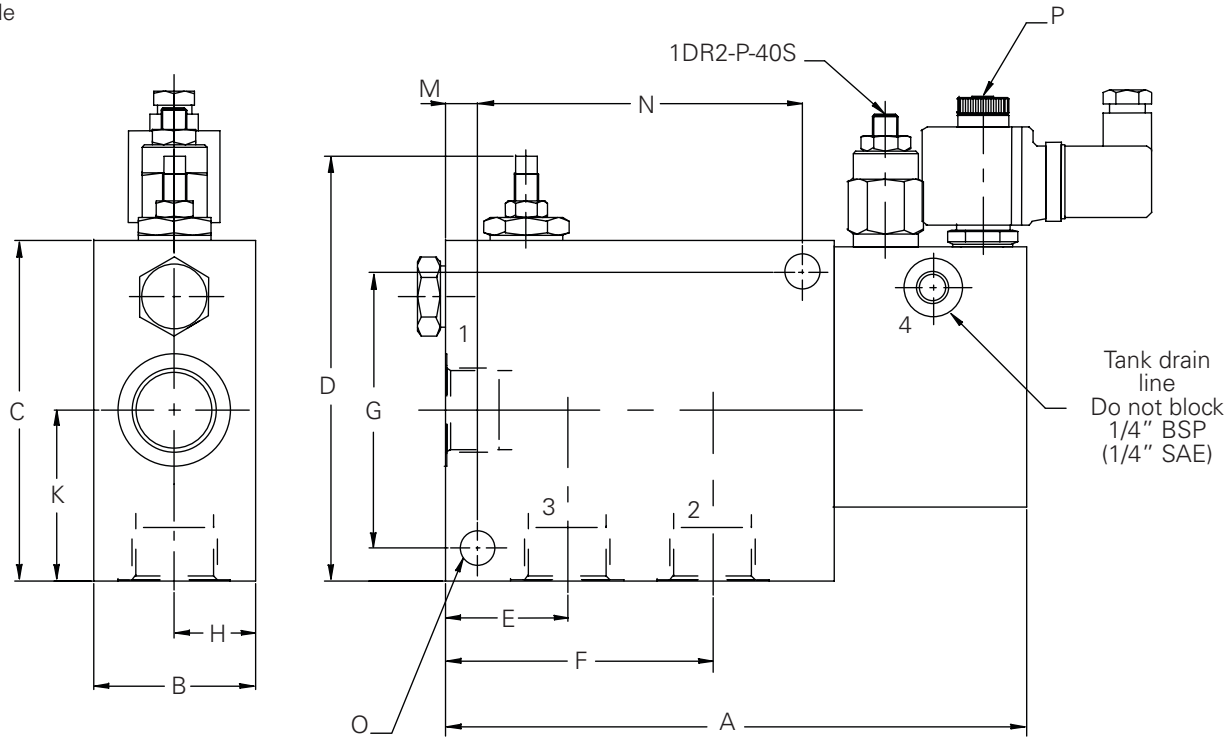
Code	Port size	A	B	C	D	E	F	G	H	K	L	M	N	O	P	Std R/V
2FPH55	1/2"	168	51	76	127	44.5	82.5	-	32	28.5	8.5	10	95	Ø8.5	SX203	280 bar
2FPH95	3/4"	232	63.5	76	127	58	102	58	39.5	32	10	10	136	Ø10.5	S207	200 bar
2FPH195	1"	227.5	63.5	133	168	47	104	108	32	67	13	13	127	Ø13.5	S207	280 bar

Dimensions

mm (inch)

Note: For applications above 210 bar please consult our technical department or use the steel body option

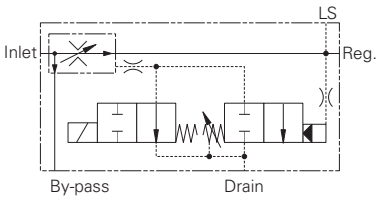
Complete valve
Basic code
2FPH



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2FPH - Flow regulator

Pressure compensated regulator/diverter, priority style. solenoid switch
350 L/min (92 USgpm) • 350 bar (5000 psi)



Operation

Inlet flow passes through the adjustable orifice and the radial holes in the spool/sleeve assembly then out of the regulated port. The pressure drop across the orifice is sensed at each end of the spool, producing a force which, at the required flow rate, overcomes the spring force. The resultant movement of the spool regulates the flow by opening more radial holes to the bypass port. The solenoid valve vents the spring chamber to a drain line and in its de-energized mode all inlet flow is diverted to the bypass port. The pre-set regulated flow is selected by energizing the solenoid. The adjustable pilot valve vents the spring chamber when the regulated line reaches the preset pressure, diverting the flow to the bypass port where the pressure can continue to rise if necessary. It may be necessary to fit a 10 bar check valve in the bypass or regulated line to ensure the valve switches fully.

Features

Line body construction with three ports allows direct connection into hydraulic systems. Leakproof adjust screw gives easy, accurate adjustment to required flow setting. Remote functional selection with solenoid operation. Adjustable relief valve gives system protection whilst allowing bypass pressure to rise above setting if required. Hardened and ground working parts give accurate flow control and long working life.

Performance data

Ratings and specifications

Figures based on oil temperature of 40˚ C and of 32 cSt (150 SUS)

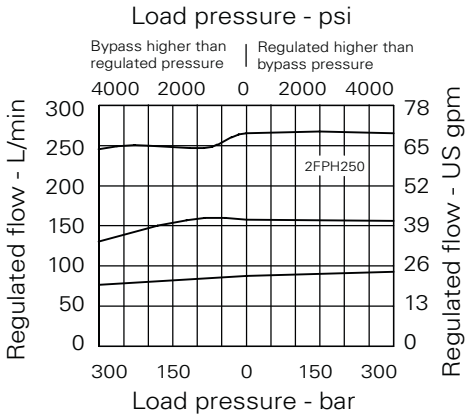
Rated flow	*Inlet*	**2FPH250**	350 L/min (92 USgpm)
		2FPH350	450 L/min (120 USgpm)
	Regulated	**2FPH250**	200 L/min (52 USgpm)
		2FPH350	350 L/min (92 USgpm)
Maximum pressure			350 bar (5000 psi)
Material			All working parts hardened & ground steel
Standard housing material			Steel, zinc plated and passivated
Mounting position			Line mounted
Weight		**2FPH250**	17 kg (37.4 lbs)
		2FPH350	28 kg (61.0 lbs)
Seal kit number	**2FPH250**		SK819 (Nitrile), SK819V (Viton®)
	2FPH350		SK820 (Nitrile), SK820V (Viton®)
Recommended filtration level	**BS5540/4**		Class 18/13 (25 micron nominal)
Operating temperature			-30° to +90° C (–22° to +194° F)
Nominal range			5 to 500 cSt

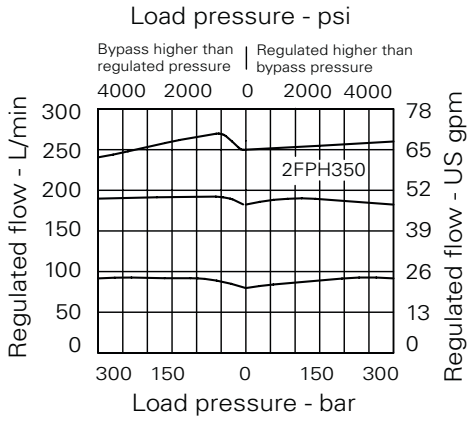
Viton is a registered trademark of E.I. DuPont

Description

The 2FPH series of priority flow regulator valves gives full control of regulated flow plus remote selection of priority flow and adjustable pressure limitation of the regulated line.

Pressure drop





Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2FPH - Flow regulator

Pressure compensated regulator/diverter, priority style. solenoid switch
350 L/min (92 USgpm) • 350 bar (5000 psi)

Model code

2FPH* – P 8W – 250 S H 24**

1 2 3 4 5 6 7

1 Basic code
2FPH250 - Complete valve
2FPH350 - Complete valve

2 Adjustment means
PR

3 Port size - bodied valves only
8W - 1" BSP
12W - 1 1/2" BSP
16T - 1" SAE
24T - 1 1/2" SAE

4 Adjustable flow range
250 - 0-250 L/min (2FPH250)
350 - 0-350 L/min (2FPH350)

5 Seals
S - Nitrile (for use with most industrial hydraulic oils)
SV - Viton (for high temperature & most special fluid applications)

6 Coil termination
H - ISO 4400 (plug included)
F - Flying leads, DC only
DM - Deutsch moulded other terminations available on request

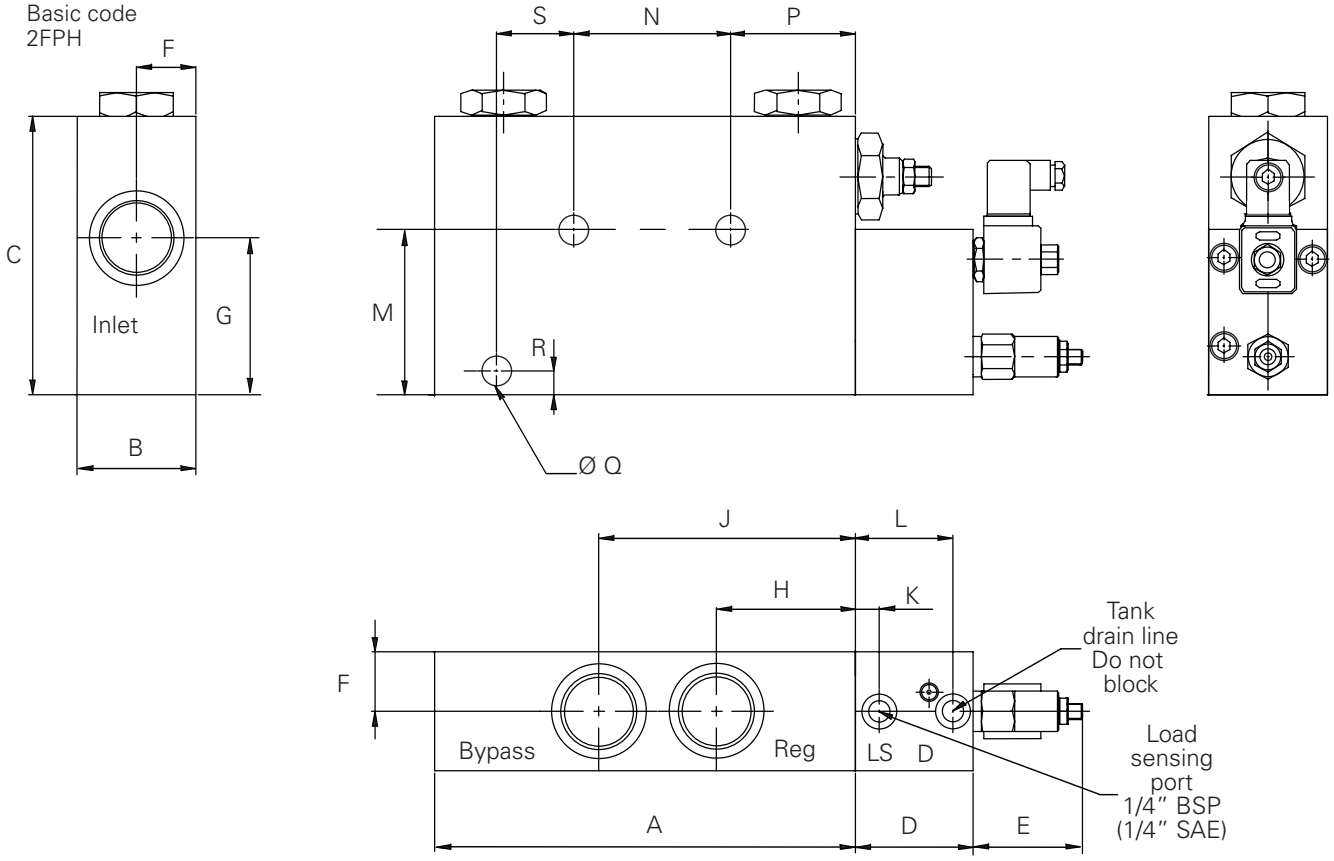
7 Voltage
12 - 12 VDC
24 - 24 VDC
Other options available on request

Basic code	port size	A	B	C	D	E	F	G	H	K	L	M	N	O	P	O	R	S	Std R/V
2FPH250	1"	177	63.5	177.8	75	70	31.75	143	47.5	105	15	62	110	95	63	13.5	-	-	280 bar
2FPH350	1-1/2"	269	76.2	177.8	75	70	38.1	100	89	164	5	62	15	100	39	18	90	50	200 bar

Dimensions

mm (inch)

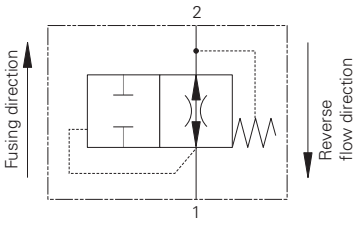
Complete Valve
Basic code
2FPH



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

VF11-10 - Velocity fuse

23 L/min (6 USgpm) • 350 bar (5000 psi)



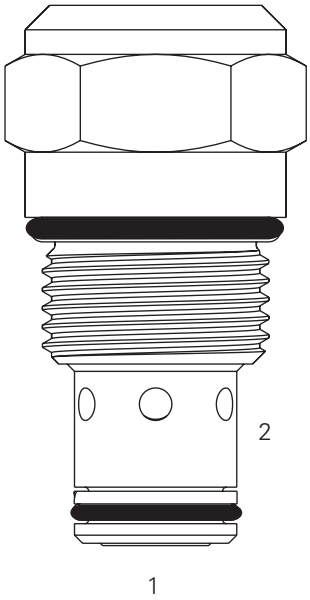
Operation

This valve is normally open from port 1 to port 2. When flow exceeds the setting of the valve, it closes. The valve returns to the open condition when the pressure at port 1 is reduced to less than 80 psi.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Note: The valve is not intended for use in pump unloading applications

Description

This is a screw in cartridge velocity fuse used to lock a cylinder or motor in place in the case of a complete hose failure.

Performance data

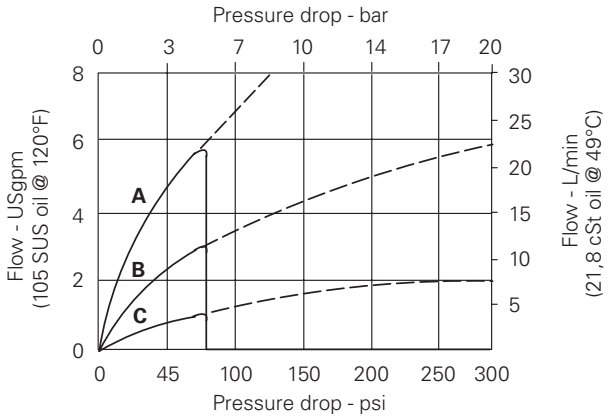
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)		
Typical application pressure (all ports)	VF11	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	VF11	350 bar (5000 psi)
Rated Flow		23 L/min (6 USgpm)
Flow regulation accuracy Factory set maximum flow rate accuracy under standard test conditions and within the above ranges		1,9–22,7 L/min (0.5–6.0 USgpm) ±20%
Internal leakage		Port 2 to 1; <5 drops/min, maximum @ 210 bar (3000 psi)
Temperature range		-40° to 120°C (-40° to 248°F)
Cavity		C–10–2
Fluids		All general purpose hydraulics fluids such as: MIL-H-5606, SAE 10, SAE 20, etc
Filtration		Cleanliness code 18/**16/13**
Standard housing materials		Aluminium or steel
Weight		0,11 kg (0.25 lbs)
Seal kit		565803 (Buna-N) 566086 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop

Cartridge only



A - 22,8 L/min (6 USgpm) maximum flow setting
— Port 1 to 2, fusing direction
--- Port 2 to 1, reverse flow down to 0

B - 14,44 L/min (3 USgpm) maximum flow setting
— Port 1 to 2, fusing direction
--- Port 2 to 1, reverse flow down to 0

C - 3,8 L/min (1 USgpm) maximum flow setting
— Port 1 to 2, fusing direction
--- Port 2 to 1, reverse flow down to 0

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

VF11-10 - Velocity fuse

23 L/min (6 USgpm) • 350 bar (5000 psi)

Model code

VF11 – 10 (V) – F – ** –*.* – 00

1 2 3 4 5 6 7

1 Function

VF11 - Velocity fuse 350 bar (5000 psi)

2 Size

10 - Size

3 Seals

N or Blank - Buna-N
V - Viton®

4 Adjustment

F - Fixed orifice

5 Port size

Code	Port size	Housing number		
		Aluminium light duty	Aluminium fatigue rated	Steel
0	Cartridge only			
(A)3B	3/8" BSPP	02–175462	–	–
(A)6T	SAE 6	566151	–	–
(A)2G	1/4" BSPP	–	876702	–
(A)3G	3/8" BSPP	–	876703	–
(A)6H	SAE 6	–	876700	–
(A)8H	SAE 8	–	876701	–
S6T	SAE 6	–	–	02-175100
S8T	SAE 8	–	–	02-175101
S2G	1/4" BSPP	–	–	02-175102
S3G	3/8" BSPP	–	–	02-175103

See section J for housing details.

6 Factory set flow rate

(Specify in USgpm) Range 1,9-22,7 L/min (0.5 - 6.0 USgpm)

7 Special features

00 - None

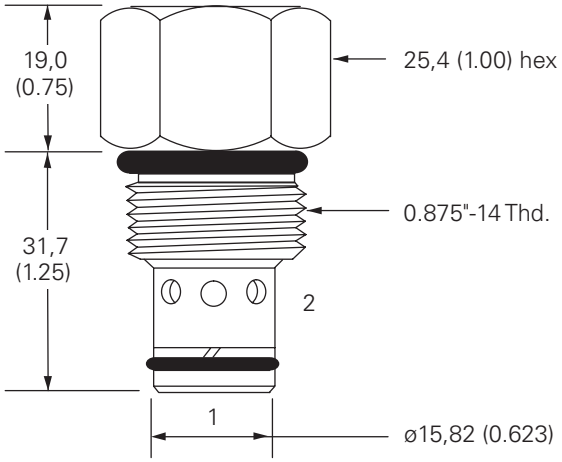
(Only required if valve has special features, omitted if "00".)

Dimensions

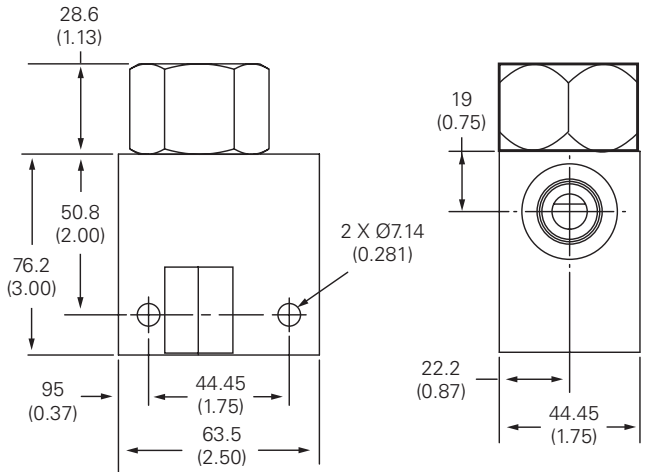
mm (inch)

Torque cartridge in housing:
A - 47-54 Nm (35-40 ft lbs)
S - 68-75 Nm (50-55 ft lbs)

Cartridge only
Basic code
VF1/11



Installation drawing (Steel)



⚠ Warning

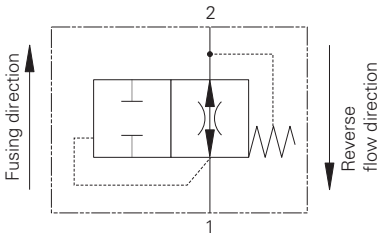
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

VF1-16 - Velocity fuse

114 L/min (30 USgpm) • 210 bar (3000 psi)



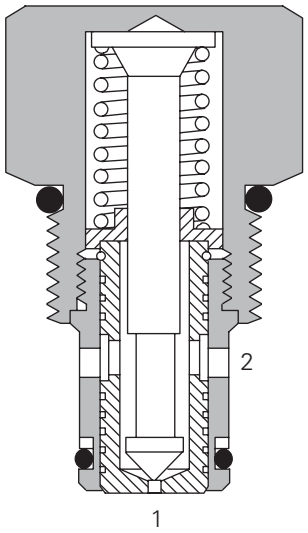
Operation

This valve is normally open from port 1 to port 2. When flow exceeds the setting of the valve, it closes. The valve returns to the open condition when the pressure at port 1 is reduced to less than 80 psi.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Description

This is a screw in cartridge velocity fuse used to lock a cylinder or motor in place in the case of a complete hose failure.

Note: The valve is not intended for use in pump unloading applications.

Performance data

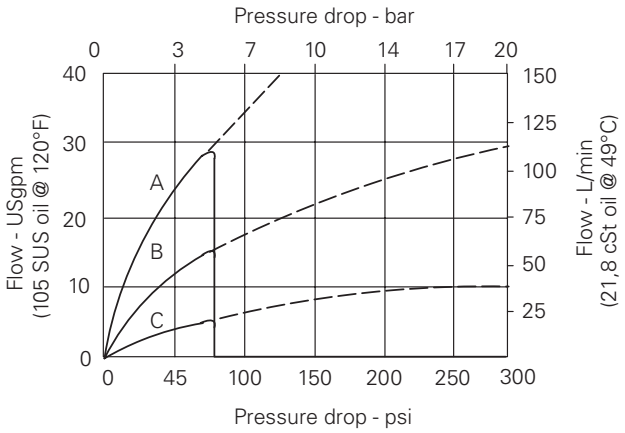
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	114 L/min (30 USgpm)
Flow regulation accuracy Factory set maximum flow rate accuracy under standard test conditions and within the above ranges	9,5–114 L/min (2.5–30.0 USgpm) ±20%
Internal leakage	Port 1 to 2 closed; <5 drops/min maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C–16–2
Fluids	All general purpose hydraulic fluids such as MIL–H–5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing materials	Aluminum
Weight cartridge only	0,33 kg (0.72 lbs)
Seal kit	565810 (Buna-N) 889609 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop

Cartridge only



A - 114 L/min (30 USgpm) maximum flow setting
— Port 1 to 2, fusing direction
--- Port 2 to 1, reverse flow down to 0

B - 60 L/min (15 USgpm) maximum flow setting
— Port 1 to 2, fusing direction
--- Port 2 to 1, reverse flow down to 0

C - 19 L/min (5 USgpm) maximum flow setting
— Port 1 to 2, fusing direction
--- Port 2 to 1, reverse flow down to 0

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

VF1-16 - Velocity fuse

114 L/min (30 USgpm) • 210 bar (3000 psi)

Model code

VF1 – 16 (V) – F – * – ** – 00**

1 2 3 4 5 6 7

1 Function

VF1 - Velocity fuse

2 Size

16 - 16 size

3 Seals

Blank - Buna-N
V - Viton®

4 Style

F - Factory set

5 Port size

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
0	Cartridge only		
6B	3/4" BSPP	02–175463	–
12T	SAE 12	566149	–
4G	1/2" BSPP	–	876716
6G	3/4" BSPP	–	876718
10H	SAE 10	–	876717
12H	SAE 12	–	566113

See section J for housing details.

6 Factory set flow rate

(Specify in USgpm) Range 9,5-114 L/min ((2.5-30 USgpm)

7 Special features

00 - None

(Only required if valve has special features, omitted if "00".)

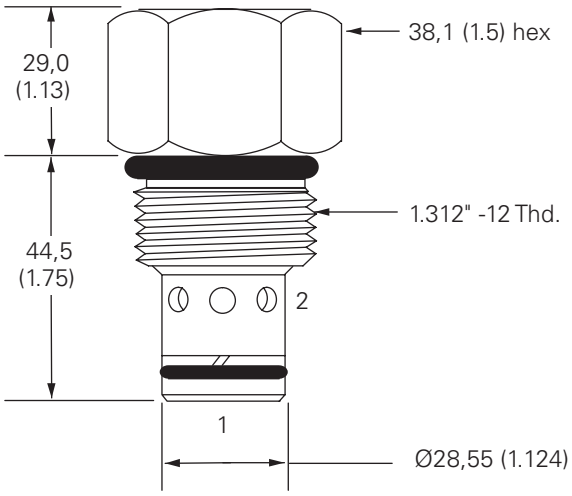
Dimensions

mm (inch)

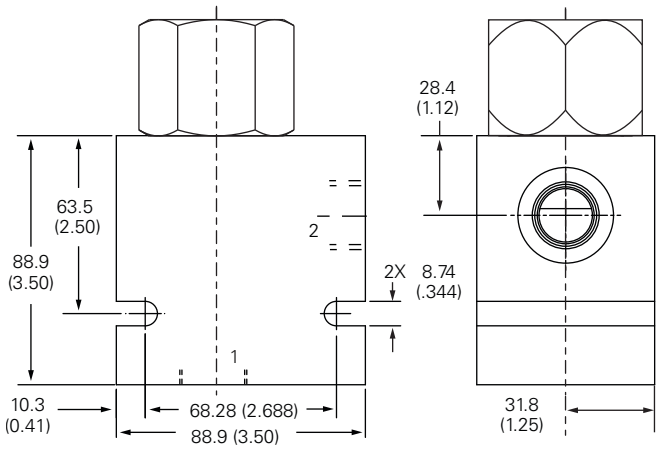
Torque cartridge in aluminum housing to 108–122 Nm (80–90 ft lbs)

Cartridge only

Basic code
VF1-16



Installation drawing



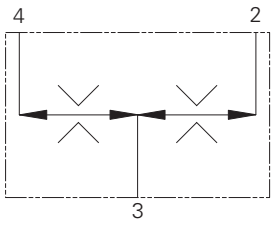
⚠ Warning

Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings **must** be used for operating pressures **above** 210 bar (3000 psi).

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC1-16 - Flow divider/combiner

Pressure compensated, spool type
Up to 178 L/min (47 USgpm) • 210 bar (3000 psi)



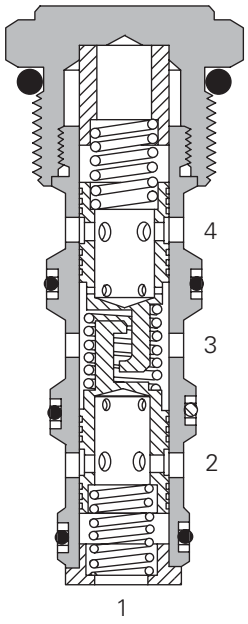
Operation

Inlet flow passes through the two matched orifices in the spools, through the spools and out of the radial holes in the sleeve. The matched orifices and the compensating springs ensure that the flow is divided equally, excess flow in either direction causes the spool to move and close the radial holes in the sleeve until equilibrium is restored. In the reverse direction the spools close together and regulate the flow in through the radial ports.

Features

One valve synchronizes in both directions. Matched spools give high accuracy under load and pressure imbalance conditions. Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or other hydraulic equipment.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated inlet flow	See model code
Temperature range	-40° to 120° C (-40° to 248° F)
Cavity	C–16–4
Fluids	All general purpose hydraulic fluids such as MIL–H–5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing materials	Aluminum
Weight cartridge only	0,35 kg (0.78 lbs)
Seal Kits	889634 (Buna–N) 889638 (Viton®)

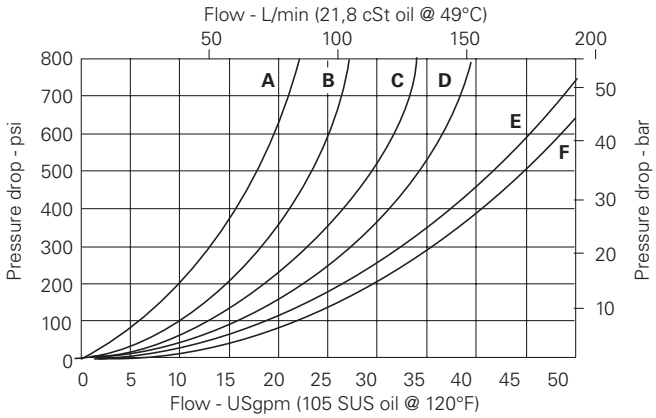
Viton is a registered trademark of E.I. DuPont

Description

This range of flow divider/combiner valves gives division of input flow into two equal parts and re-combination of flow in the reverse direction. Pressure compensation ensures that whether dividing or combining, equal flow is maintained over a wide range of pressure variation. A typical use of these valves is to divide a pump flow to operate two actuators (which may be under different load conditions and at different pressures) and to re-combine the return flows to synchronize actuator movement. Flow variation is within ±10% with the maximum variation of pressure and inlet flow and under normal conditions will be significantly less.

Pressure drop

Cartridge only



Flow division

(See model code position 5)

A - 2* spool
B - 3* spool
C - 4* spool
D - 5* spool
E - 6* spool
F - 8* spool

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC1-16 - Flow divider/combiner

Pressure compensated, spool type
Up to 178 L/min (47 USgpm) • 210 bar (3000 psi)

Model code

FDC1 – 16 (V) – * – ** – 00**

1 2 3 4 5 6

1 Function

FDC1 - Flow divider/combiner

2 Size

16 - 16 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

Code	Port size	Housing number
		Aluminium light duty
0	Cartridge only	
12T	SAE 12	566200
6B	3/4" BSPP	02-175468

See section J for housing details.

5 Flow divisions (Ratios)

Code	Flow division %		Rated inlet flow	
	Port 4	Port 2	L/min	(USgpm)
22	50	50	045,6	(12)
28	20	80	114,0	(30)
33	50	50	068,0	(18)
36	33	67	098,0	(26)
43	57	43	079,0	(21)
44	50	50	090,0	(24)
46	40	60	114,0	(30)
55	50	50	114,0	(30)
62	75	25	090,0	(24)
63	67	33	098,0	(26)
64	60	40	114,0	(30)
66	50	50	132,0	(35)
82	80	20	114,0	(30)
84	67	33	132,0	(35)
88	50	50	178,0	(47)

6 Special features

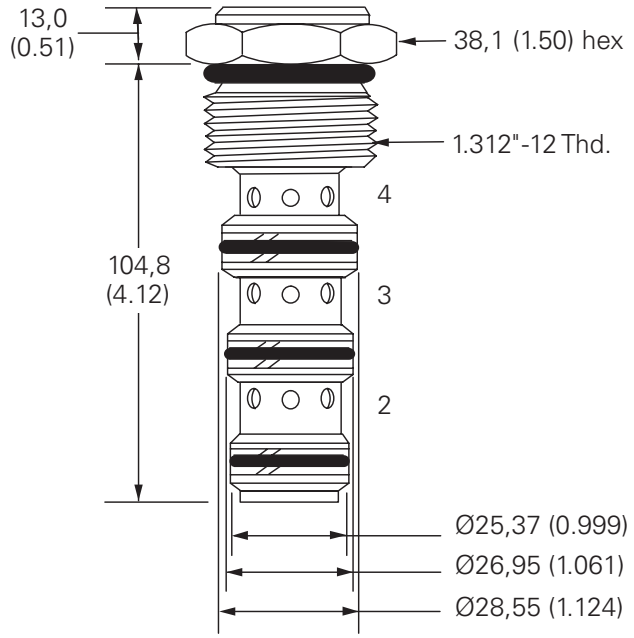
00 - None
(Only required if valve has special features, omitted if "00".)

Dimensions

mm (inch)

Cartridge only
Basic code
FDC1-16

Torque cartridge in aluminum housing to 108–122 Nm (80–90 ft lbs)



Notes: Port 1, unused, blocked by blind cavity.

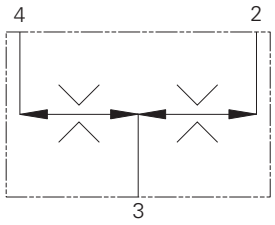
Minimum inlet flow should not be less than 1/4 of maximum inlet flow for a given code.

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC11-16 - Flow divider/combiner

Pressure compensated, spool type
Up to 140 L/min (37 USgpm) • 350 bar (5000 psi)



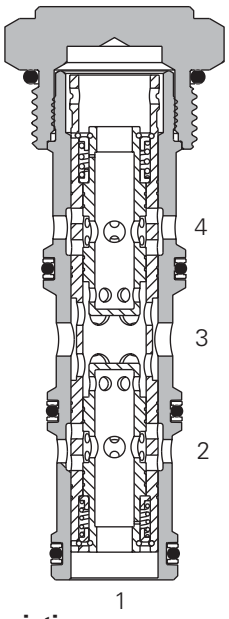
Operation

Inlet flow passes through the two matched orifices in the spools, through the spools and out of the radial holes in the sleeve. The matched orifices and the compensating springs ensure that the flow is divided equally, excess flow in either direction causes the spool to move and close the radial holes in the sleeve until equilibrium is restored. In the reverse direction the spools close together and regulate the flow in through the radial ports.

Features

One valve synchronizes in both directions. Matched spools give high accuracy under load and pressure imbalance conditions. Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or other hydraulic equipment.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated inlet flow	See model code
Temperature range	-40° to 120° C (-40° to 248° F)
Cavity	C–16–4
Fluids	All general purpose hydraulic fluids such as MIL–H–5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing materials	Aluminum or steel
Weight cartridge only	0,35 kg (0.78 lbs)
Seal Kits	889634 (Buna–N) 889638 (Viton®)

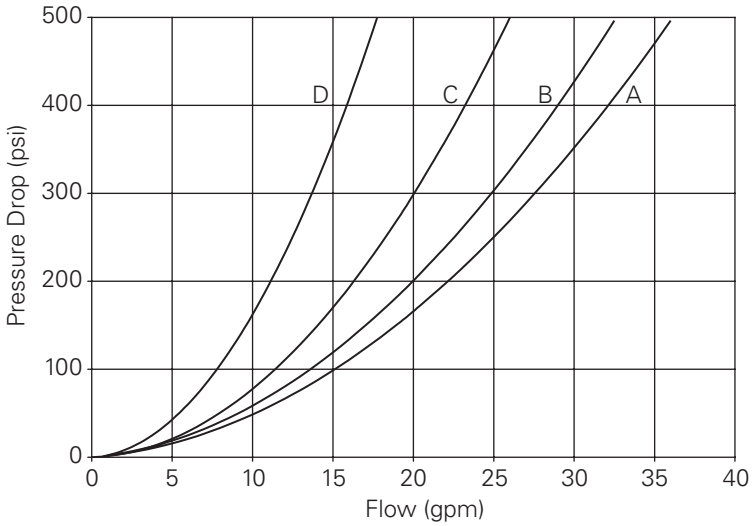
Viton is a registered trademark of E.I. DuPont

Description

This range of flow divider/combiner valves gives division of input flow into two equal parts and re-combination of flow in the reverse direction. Pressure compensation ensures that whether dividing or combining, equal flow is maintained over a wide range of pressure variation. A typical use of these valves is to divide a pump flow to operate two actuators (which may be under different load conditions and at different pressures) and to re-combine the return flows to synchronize actuator movement. Flow variation is within ±10% with the maximum variation of pressure and inlet flow and under normal conditions will be significantly less.

Pressure drop

Cartridge only



Flow division

A - 66
B - 44
C - 33
D - 22

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC11-16 - Flow divider/combiner

Pressure compensated, spool type
Up to 140 L/min (37 USgpm) • 350 bar (5000 psi)

Model code

FDC11 – 16 (V) – ** – ** – 00**

1 2 3 4 5 6

1 Function

FDC11 - Flow divider/combiner

2 Size

16 - 16 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

Code	Port size	Housing number	
		Aluminium	Steel
A12T	SAE 12	20785*	
A6B	3/4" BSPP	02-186592*	
A4G	1/2" BSPP	30706	
A6G	3/4" BSPP	30708	
A10H	SAE 10	30707	
A12H	SAE 12	30709	
S4G	1/2" BSPP		02-175143
S6G	3/4" BSPP		02-175144
S10T	SAE 10		02-175141
S12T	SAE 12		02-175142

See section J for housing details.

5 Flow divisions (Ratios)

Code	Flow division %		Rated inlet flow	
	Port 4	Port 2	L/min	(USgpm)
66	50	50	133,0	(35)
44	50	50	114,0	(30)
33	50	50	083,6	(22)
22	50	50	057,0	(15)
64	60	40	140,6	(37)
45	40	60	140,6	(37)
62	75	25	114,0	(30)
26	25	75	114,0	(30)
42	67	33	83,6	(22)
24	33	67	83,6	(22)

6 Special features

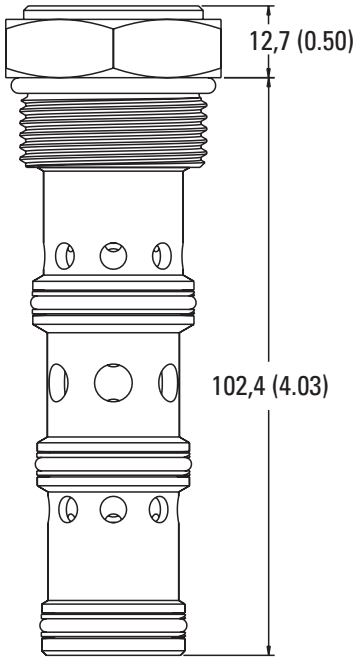
00 - None
(Only required if valve has special features, omitted if "00".)

Dimensions

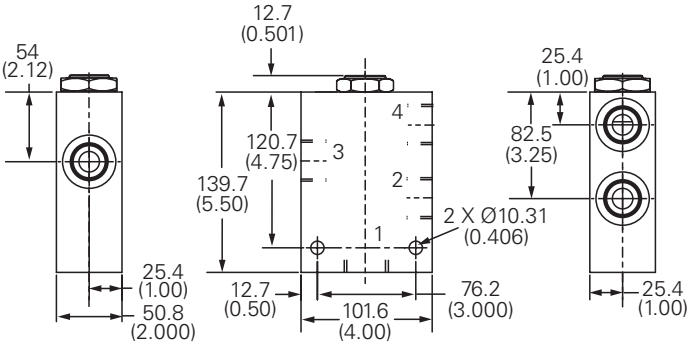
mm (inch)

Torque cartridge in aluminum housing to 108–122 Nm (80–90 ft lbs)

Cartridge only
Basic code
FDC11-16



Installation drawing



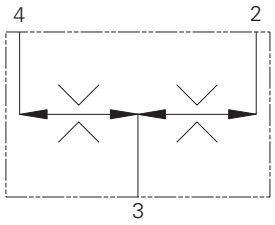
Notes: Port 1, unused, blocked by blind cavity.

Minimum inlet flow should not be less than 1/4 of maximum inlet flow for a given code.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2CFD50 - Flow divider/combiner

Pressure compensated, spool type
Up to 40 L/min (10.5 USgpm) • 350 bar (5000 psi)



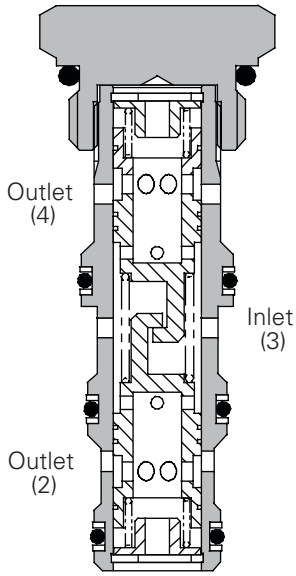
Operation

Inlet flow passes through the two matched orifices in the spools, through the spools and out of the radial holes in the sleeve. The matched orifices and the compensating springs ensure that the flow is divided equally, excess flow in either direction causes the spool to move and close the radial holes in the sleeve until equilibrium is restored. In the reverse direction the spools close together and regulate the flow in through the radial ports.

Features

One valve synchronizes in both directions. Matched spools give high accuracy under load and pressure imbalance conditions. Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or other hydraulic equipment.

Sectional view



Performance data

Ratings and specifications

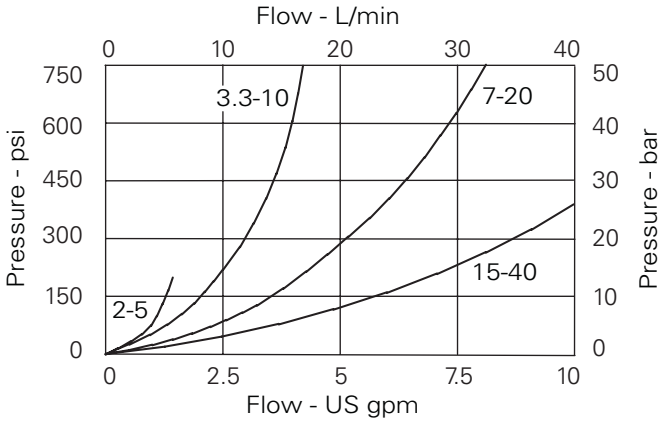
Figures based on oil temp at 40˚ and viscosity at 40 cSt	
Rated flow	Up to 40 L/min (10.5 USgpm)
Max pressure	350 bar (5000 psi)
Cartridge material	All working parts hardened and ground steel. Zinc plated external steel body
Body material	Standard aluminum (up to 210 bar*) add suffix "377" for steel option
Mounting position	Unrestricted
Cavity number	A12744 (See Section M)
Torque cartridge into cavity	34 Nm (25 lbs ft)
Weight	2CFD50 0.10 kg (0.23 lbs) 2CFD55 0.44 kg (0.98 lbs)
Seal kit	SK1065 (Nitrile) SK1065V (Viton®)
Recommended filtration level	Up to 40 L/min (10.5 USgpm)
Operating temp	-30˚ to +90˚C (-22˚ to +194˚F)
Nominal range	50 to 500 cSt

Viton is a registered trademark of E.I. DuPont

Description

This range of flow divider/combiner valves gives division of input flow into two equal parts and re-combination of flow in the reverse direction. Pressure compensation ensures that whether dividing or combining, equal flow is maintained over a wide range of pressure variation. A typical use of these valves is to divide a pump flow to operate two actuators (which may be under different load conditions and at different pressures) and to re-combine the return flows to synchronize actuator movement. Flow variation is within ±10% with the maximum variation of pressure and inlet flow and under normal conditions will be significantly less.

Pressure drop



Note: When used on cylinders size to suit the return flow rate.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2CFD50 - Flow divider/combiner

Pressure compensated, spool type
Up to 40 L/min (10.5 USgpm) • 350 bar (5000 psi)

Model code

2CFD**– 4W – 40 S**

1 2 3 4

1 Function

2CFD50 - Cartridge only
2CFD55 - Cartridge and body

2 Port size

Code	Port size	Housing number - body only	
		Aluminium	Steel
Omit	Cartridge only		
3W	3/8" BSP inlet and outlet	B19187	
4W	1/2" BSP inlet and outlet	B20816	
8T-6T	1/2" SAE inlet and 3/8" SAE outlet	B19185	B21935

See section J for housing details.

3 Capacity (Input)

5 - 2-5 L/min (0.5-1.3 USgpm)
10 - 3.3 - 10 L/min (0.9-2.6 USgpm)
20 - 7-20 L/min (1.8-5.3 USgpm)
40 - 15-40 L/min (4.0-10.5 USgpm)
Other terminations available on request.

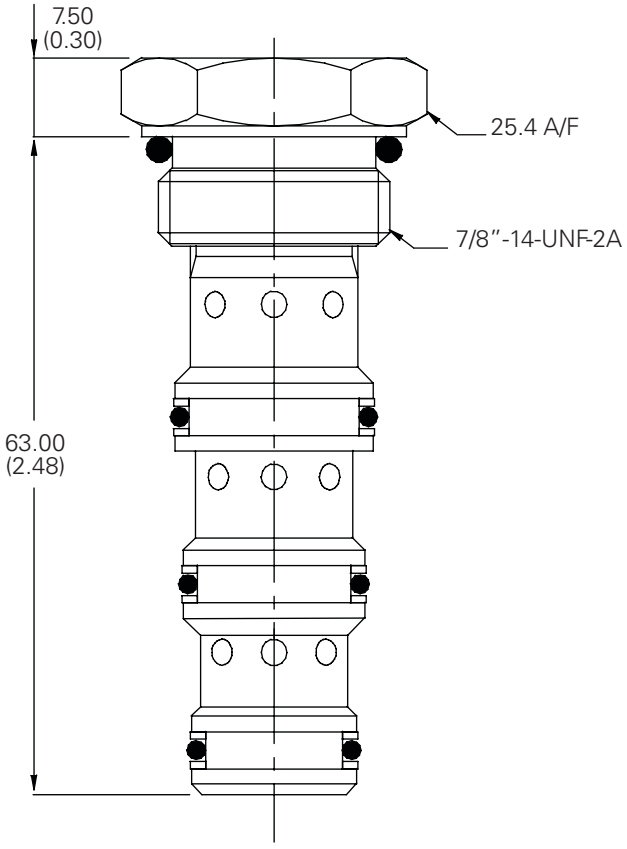
4 Seals

S - Nitrile (for use with most industrial hydraulic oils)
SV - Viton (for high temperature & most special fluid applications)

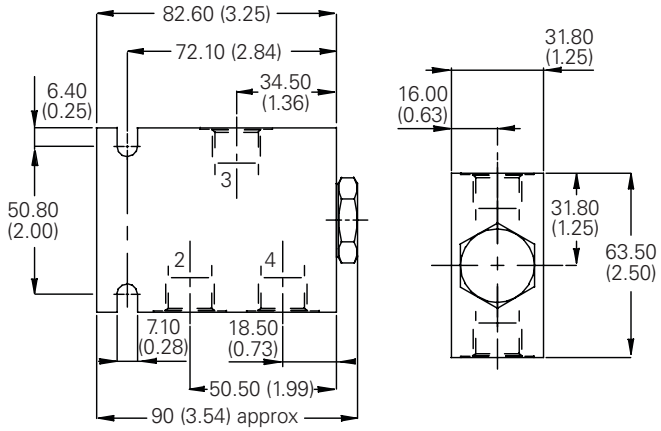
Dimensions

mm (inch)

Cartridge only
Basic code
2CFD50



Complete valve
3/8", 1/2" Ports
Basic code
2CFD55



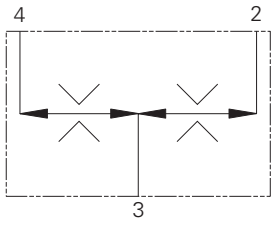
Notes: For applications above 210 bar (3000 psi), please consult our technical department or use the steel body option.

Notes: Blocking one leg will result in a large reduction in flow from the other. Valves with higher working pressures are available. Contact main office for details.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2CFD200 - Flow divider/combiner

Pressure compensated, spool type
Up to 220 L/min (58 USgpm) • 280 bar (4000 psi)



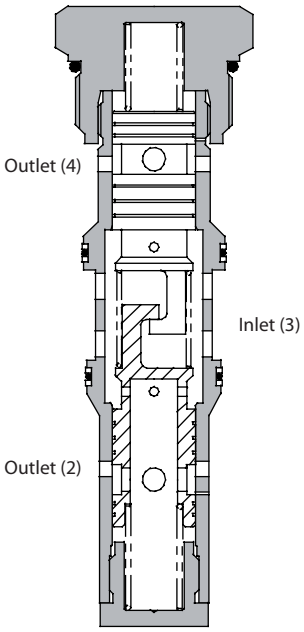
Operation

Inlet flow passes through the two matched orifices in the spools, through the spools and out of the radial holes in the sleeve. The matched orifices and the compensating springs ensure that the flow is divided equally, excess flow in either direction causes the spool to move and close the radial holes in the sleeve until equilibrium is restored. In the reverse direction the spools close together and regulate the flow in through the radial ports.

Features

One valve synchronizes in both directions. Matched spools give high accuracy under load and pressure imbalance conditions. Cartridge construction gives versatility of application. A valve may be fitted into a line body, a custom designed Hydraulic Integrated Circuit or other hydraulic equipment.

Sectional view



Performance data

Ratings and specifications

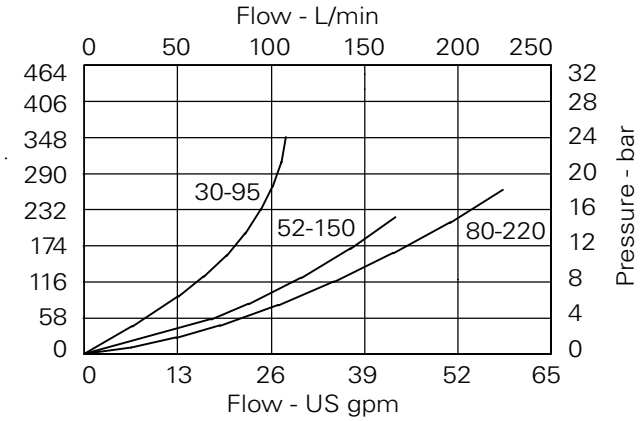
Figures based on an oil temp at 40˚C and of 32 cSt (150 SUS)	
Rated Flow	Up to 220 liters/min (58 USgpm)
Ratio division	50/50 standard
Maximum pressure	280 bar (4000 psi)
Cartridge material	Working parts hardened & ground steel. Zinc plated external steel body
Body material	Aluminum (up to 210 bar*) Add suffix "377" for steel option
Mounting position	Unrestricted
Cavity Number	CVB-42-04-0 (See Section M)
Torque cartridge into cavity	150 Nm (110 ft lbs)
Weight	2CFD200: 0,78 kg (1.72 lbs) 2CFD250: 2,50 kg (5.50 lbs)
Seal kit number	SK597 (Nitrile), SK597V (Viton®)
Recommended Filtration Level	BS5540/4 Class 18/13
Temperature range	–30° to +90° C (–22° to 194° F)
Nominal range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont

Description

This range of flow divider/combiner valves gives division of input flow into two equal parts and re-combination of flow in the reverse direction. Pressure compensation ensures that whether dividing or combining, equal flow is maintained over a wide range of pressure variation. A typical use of these valves is to divide a pump flow to operate two actuators (which may be under different load conditions and at different pressures) and to re-combine the return flows to synchronize actuator movement. Flow variation is within ±10% with the maximum variation of pressure and inlet flow and under normal conditions will be significantly less.

Pressure drop



Note: When used on cylinders, size to suit the return flow rate.

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

2CFD200 - Flow divider/combiner

Pressure compensated, spool type
Up to 220 L/min (58 USgpm) • 280 bar (4000 psi)

Model code **2CFD*** – 8W-6W – 95 S**

1 2 3 4

1 Function

2CFD200 - Cartridge only
2CFD250 - Cartridge & body

2 Port size

Code	Port size	Housing number - body only	
		Aluminium	Steel
Omit	Cartridge only		
8W-6W	1" BSP inlet, 3/4" BSP outlet	C12320	
10W-8W	1 1/4" BSP inlet, 1" BSP outlet	B7666	B9075
16T-12T	1" SAE inlet and 3/4" SAE outlet	B10710	
20T-16T	1-1/4" SAE inlet and 1" SAE outlet	B10711	B11819

See section J for housing details.

3 Capacity (input)

95 - 30-95 L/min (7.9-25 USgpm)
150 - 52-150 L/min (13.7-40 USgpm)
220 - 80-220 L/min (21-58 USgpm)

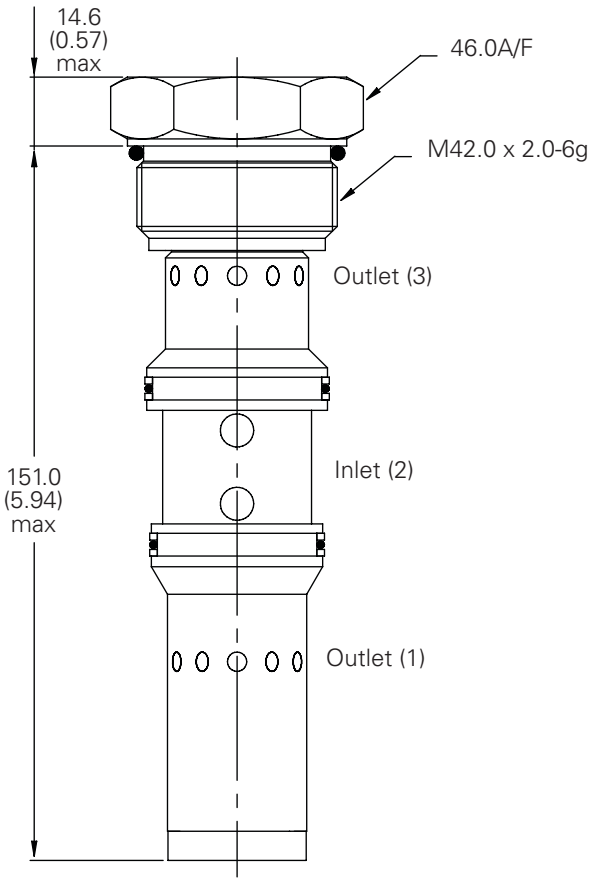
4 Seals

S - Nitrile (for use with most industrial hydraulic oils)
SV - Viton (for high temperature & most special fluid applications)

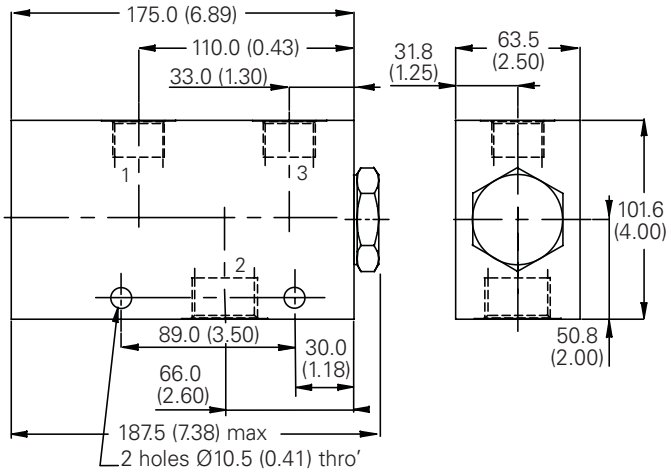
Dimensions

mm (inch)

Cartridge only
Basic code
2CFD200



Complete valve
3/4", 1", 1 1/4" Ports
Basic code
2CFD250



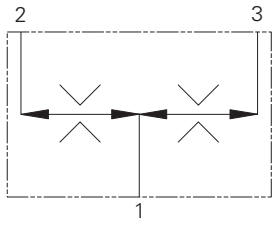
Note: Blocking one leg will result in a large reduction in flow from the other. Valves with higher working pressures are available. Contact factory for details.

Note: For applications above 210 bar (3000 psi)please consult our technical department or use the steel body option

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC1-20 - Flow divider/combiner

Line mounted, pressure compensated, spool type
Up to 378 L/min (100 USgpm) • 210 bar (3000 psi)



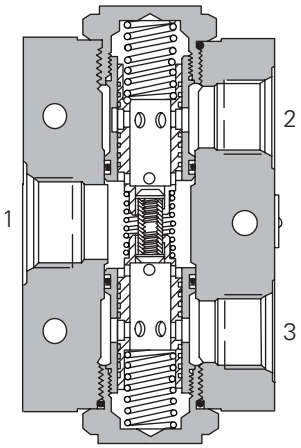
Operation

Inlet flow passes through the two matched orifices in the spools, through the spools and out of the radial holes in the sleeve. The matched orifices and the compensating springs ensure that the flow is divided equally, excess flow in either direction causes the spool to move and close the radial holes in the sleeve until equilibrium is restored. In the reverse direction the spools close together and regulate the flow in through the radial ports.

Features

One valve synchronizes in both directions. Matched spools give high accuracy under load and pressure imbalance conditions.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated inlet flow	See model code
Fluids	All general purpose hydraulic fluids such as MIL–H–5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing materials	Aluminum
Weight cartridge only	2,6 kg. (5.75 lbs)
Seal kits	889639 (Buna–N) 889643 (Viton®)

Viton is a registered trademark of E.I. DuPont

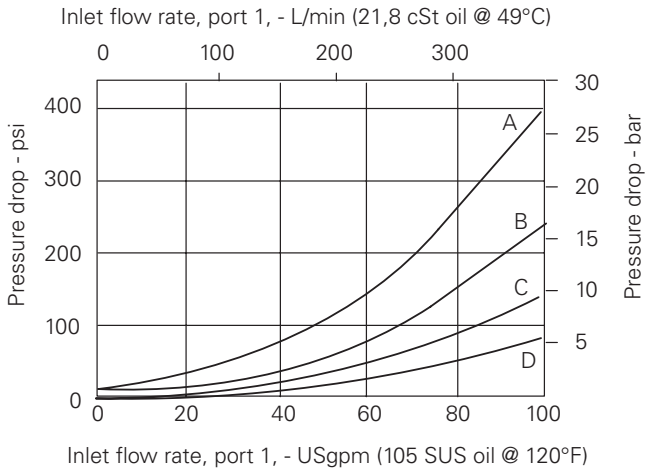
H

Description

This range of flow divider/combiner valves gives division of input flow into two equal parts and re-combination of flow in the reverse direction. Pressure compensation ensures that whether dividing or combining, equal flow is maintained over a wide range of pressure variation. A typical use of these valves is to divide a pump flow to operate two actuators (which may be under different load conditions and at different pressures) and to re-combine the return flows to synchronize actuator movement. Flow variation is within ±10% with the maximum variation of pressure and inlet flow and under normal conditions will be significantly less.

Pressure drop

Cartridge only



Flow division

(See model code position 5)

A - 3* spool
B - 4* spool
C - 6* spool
D - 8* spool

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC1-20 - Flow divider/combiner

Line mounted, pressure compensated, spool type
Up to 378 L/min (100 USgpm) • 210 bar (3000 psi)

Model code

FDC1 – 20 (V) – * – ** – 00**

1 2 3 4 5 6

1 Function

FDC1 - Flow divider/combiner

2 Size

20 - 20 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port Size

16T - SAE 16 (light duty)
20T - SAE 20 (light duty)
(Available as a complete assembly only.)

5 Flow divisions (Ratios)

Code	Flow division %		Max	Inlet flow
	Port 4	Port 2	L/min	(USgpm)
33	50	50	190	50
34	43	57	228	60
36	33	67	265	70
44	50	50	265	70
66	50	50	379	100
88	50	50	379	100

6 Special features

00 - None
(Only required if valve has special features, omitted if "00".)

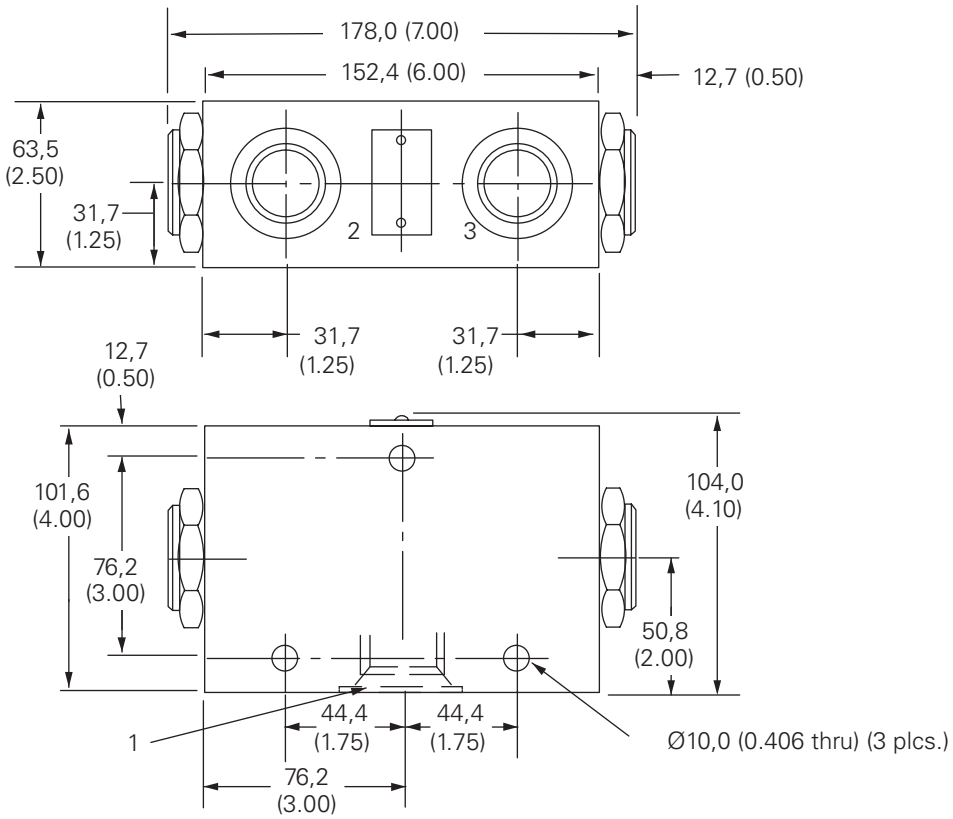
Dimensions

mm (inch)

Complete valve
Basic code
FDC1-20

Torque cartridge in housing to 128–155 Nm (95–115 ft lbs)

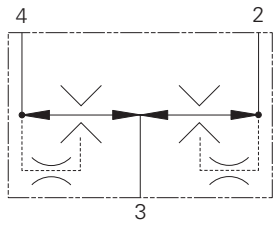
Notes: Minimum inlet flow should not be less than 1/4 of maximum inlet flow for a given code.



Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC3-16 - Flow divider/combiner

Pressure compensated, spool type, posi-traction
Up to 152 L/min (40 USgpm) • 210 bar (3000 psi)



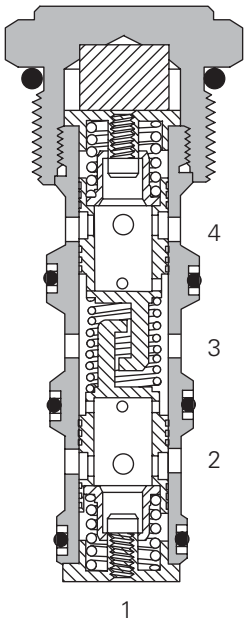
Operation

This valve is used in the dividing mode. It will take the inlet flow (port 3) and split the flow to ports 2 and 4. In the combining mode this valve will take the inlet flows from ports 2 and 4 and combine them into port 3 according to the ratio specified.

Features

Hardened and ground and honed working components. Cartridge construction for maximum mounting flexibility.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated inlet flow	See model code, item
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulic fluids such as: MIL–H–5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing materials	Aluminum
Weight cartridge only	0,35 kg. (0.78 lbs)
Seal kits	889634 (Nitrile) 889638 (Viton®)

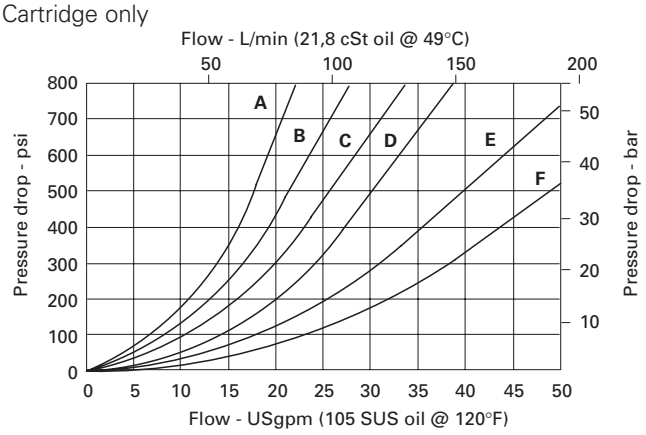
Viton is a registered trademark of E.I. DuPont

Description

This is a pressure compensated flow divider / combiner posi-traction screw in cartridge valve. This is ideal for use in transmission systems where the turning circle requires one wheel to go faster than the other or where rapid make up is required between cylinders at the end of stroke.

Pressure drop

Cartridge only



Flow division

(See model code position 5)

A - 22 spool
B - 33 spool
C - 44 spool
D - 55 spool
E - 66 spool
F - 88 spool

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC3-16 - Flow divider/combiner

Pressure compensated, spool type, posi-traction
Up to 152 L/min (40 USgpm) • 210 bar (3000 psi)

Model code

FDC3 – 16 (V) – ** – ** – 00

1 2 3 4 5 6

1 Function

FDC3 - Posi-traction valve

2 Size

16 - 16 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

Code	Port size	Housing number
		Aluminium
0	Cartridge only	
12T	SAE 12	566200
6B	3/4" BSPP	02-175468

See section J for housing details.

5 Flow divisions

Code	Flow division %		Max	Inlet flow
	Port 4	Port 2	L/min	(USgpm)
22	50	50	57,0	(15)
33	50	50	76,0	(20)
44	50	50	106,4	(28)
55	50	50	126,2	(34)
66	50	50	152,0	(40)
88	50	50	228,0	(60)

6 Special features

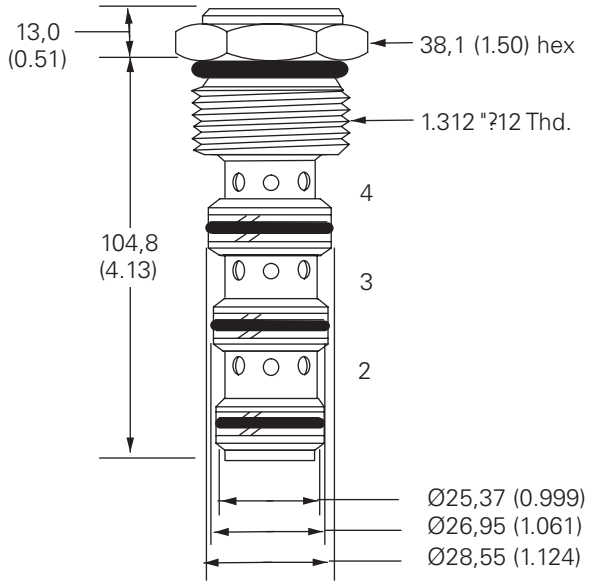
00 - None
(Only required if valve has special features, omitted if "00".)

Dimensions

mm (inch)

Torque cartridge in aluminum housing to 108–122 Nm (80–90 ft lbs)

Cartridge only
Basic code
FDC3-16



Notes: Port 1, unused, blocked by blind cavity.

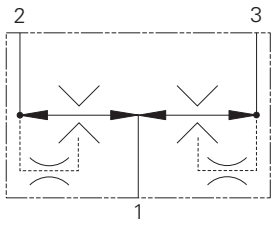
Minimum inlet flow should not be less than 1/4 of maximum inlet flow for a given code.

H

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC3-20 - Flow divider/combiner

Pressure compensated, spool type, posi-traction
Up to 570 L/min (150 USgpm) • 210 bar (3000 psi)



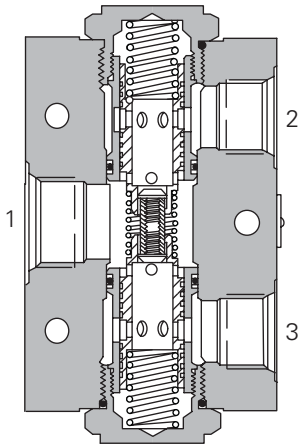
Operation

This valve is used in the dividing mode. It will take the inlet flow (port 3) and split the flow to ports 2 and 4. In the combining mode this valve will take the inlet flows from ports 2 and 4 and combine them into port 3 according to the ratio specified.

Features

One valve synchronizes in both directions. Matched spools give high accuracy under load and pressure imbalance conditions.

Sectional view



Performance data

Ratings and specifications

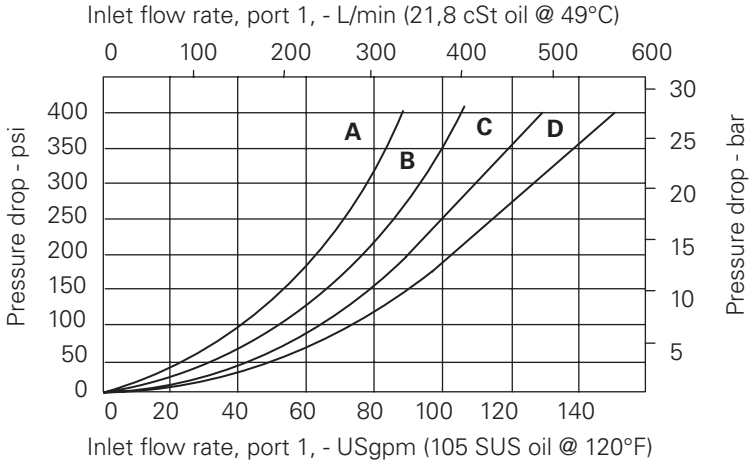
Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)	
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated inlet flow	See model code, item
Temperature range	-40° to 120° C (-40° to 248° F)
Fluids	All general purpose hydraulic fluids such as MIL–H–5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/**16/13**
Standard housing materials	Aluminum
Weight cartridge only	0,35 kg. (0.78 lbs)
Seal kits	889634 (Nitrile) 889638 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

This is a pressure compensated flow divider / combiner posi-traction valve. This is ideal for use in transmission systems where the turning circle requires one wheel to go faster than the other or where rapid make up is required between cylinders at the end of stroke.

Pressure drop



Flow division

(See model code position 5)
A - 33 spool
B - 44 spool
C - 66 spool
D - 88 spool

Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

FDC3-20 - Flow divider/combiner

Pressure compensated, spool type, posi-traction
Up to 570 L/min (150 USgpm) • 210 bar (3000 psi)

Model code

FDC3 – 20 (V) – * – ** – 00**

1 2 3 4 5 6

1 Function

FDC3 - Posi-traction valve

2 Size

20 - 20 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Port size

16T – SAE 16 (light duty)
20T – SAE 20 (light duty)
(Available as a complete assembly only.)

5 Flow divisions (Ratios)

Code	Flow division %		Rated	Inlet flow
	Port 4	Port 2	L/min	(USgpm)
33	50	50	190,0	(50)
44	50	50	266,0	(70)
66	50	50	380,0	(100)
88	50	50	570,0	(150)

6 Special features

00 - None
(Only required if valve has special features, omitted if "00".)

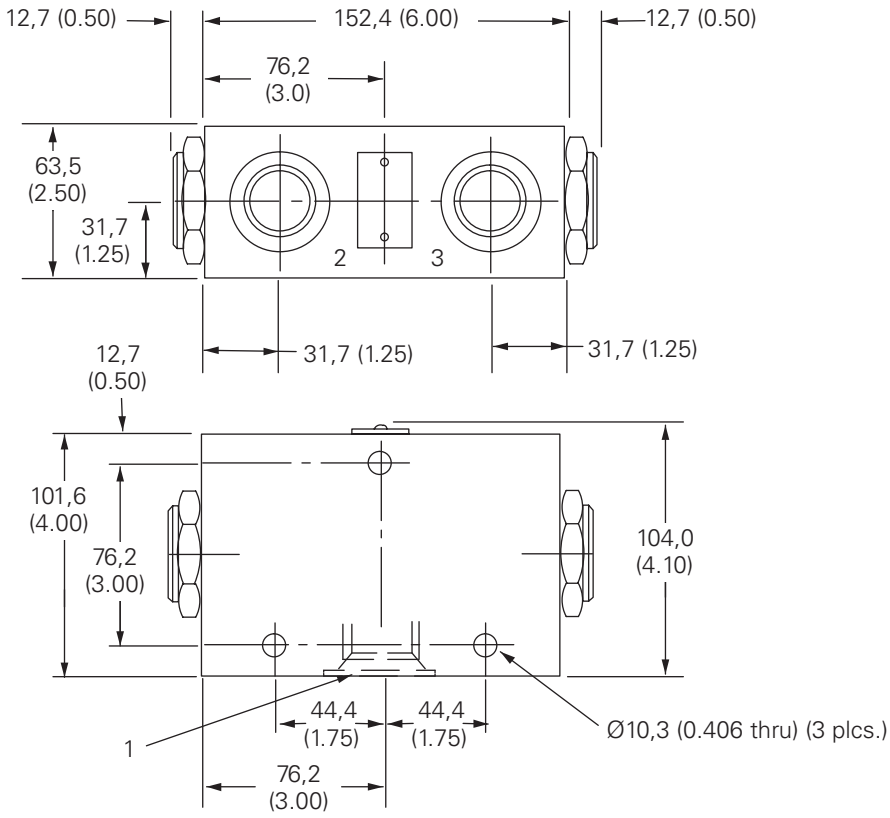
Dimensions

mm (inch)

Complete valve
Basic code
FDC3-20

Torque cartridge in housing to 128–155 Nm (95–115 ft lbs)

Note: Minimum inlet flow should not be less than 1/4 of maximum inlet flow for a given code.



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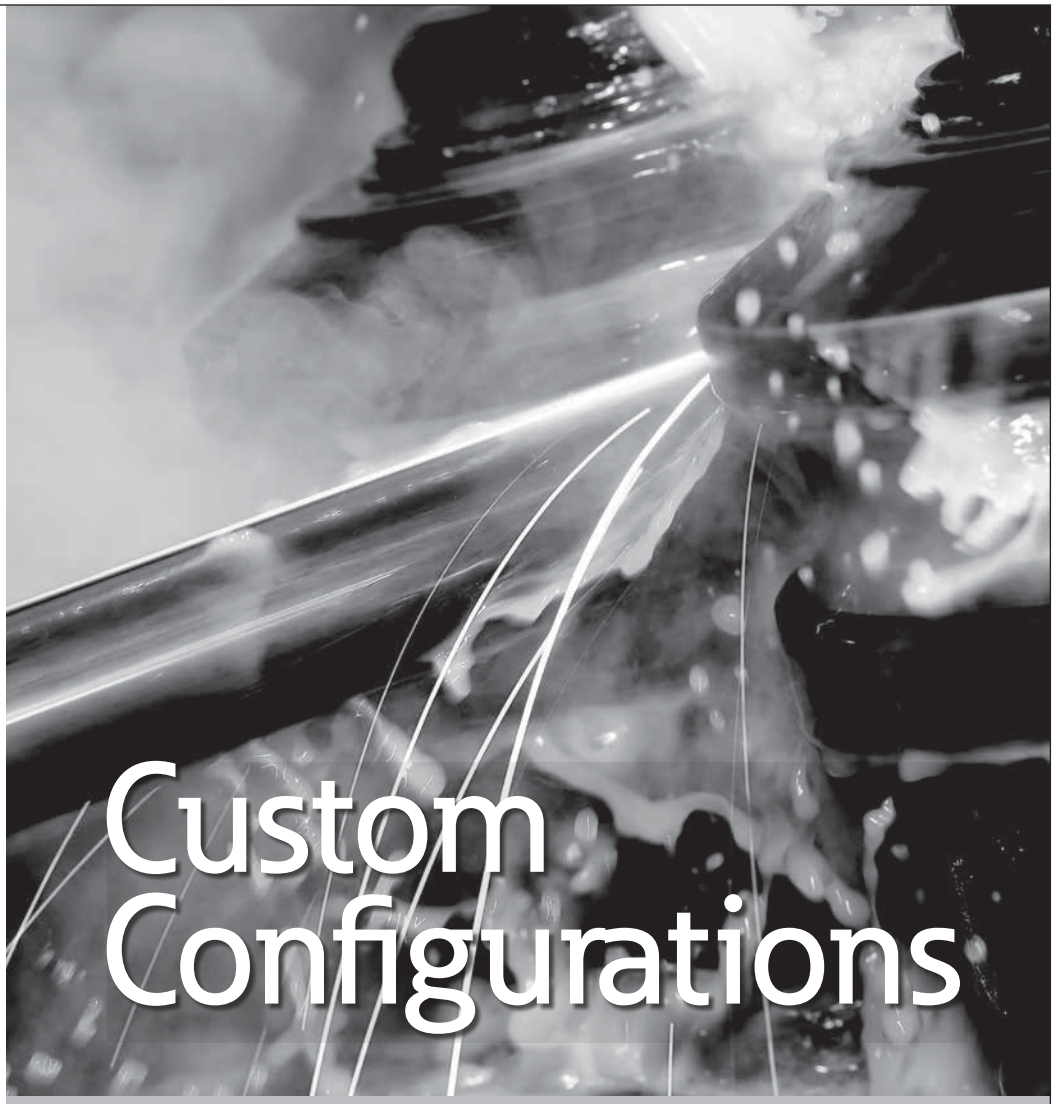

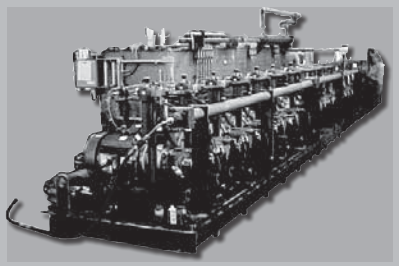

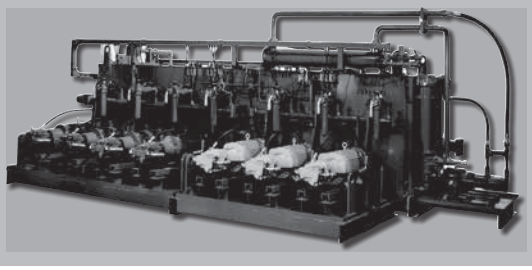

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