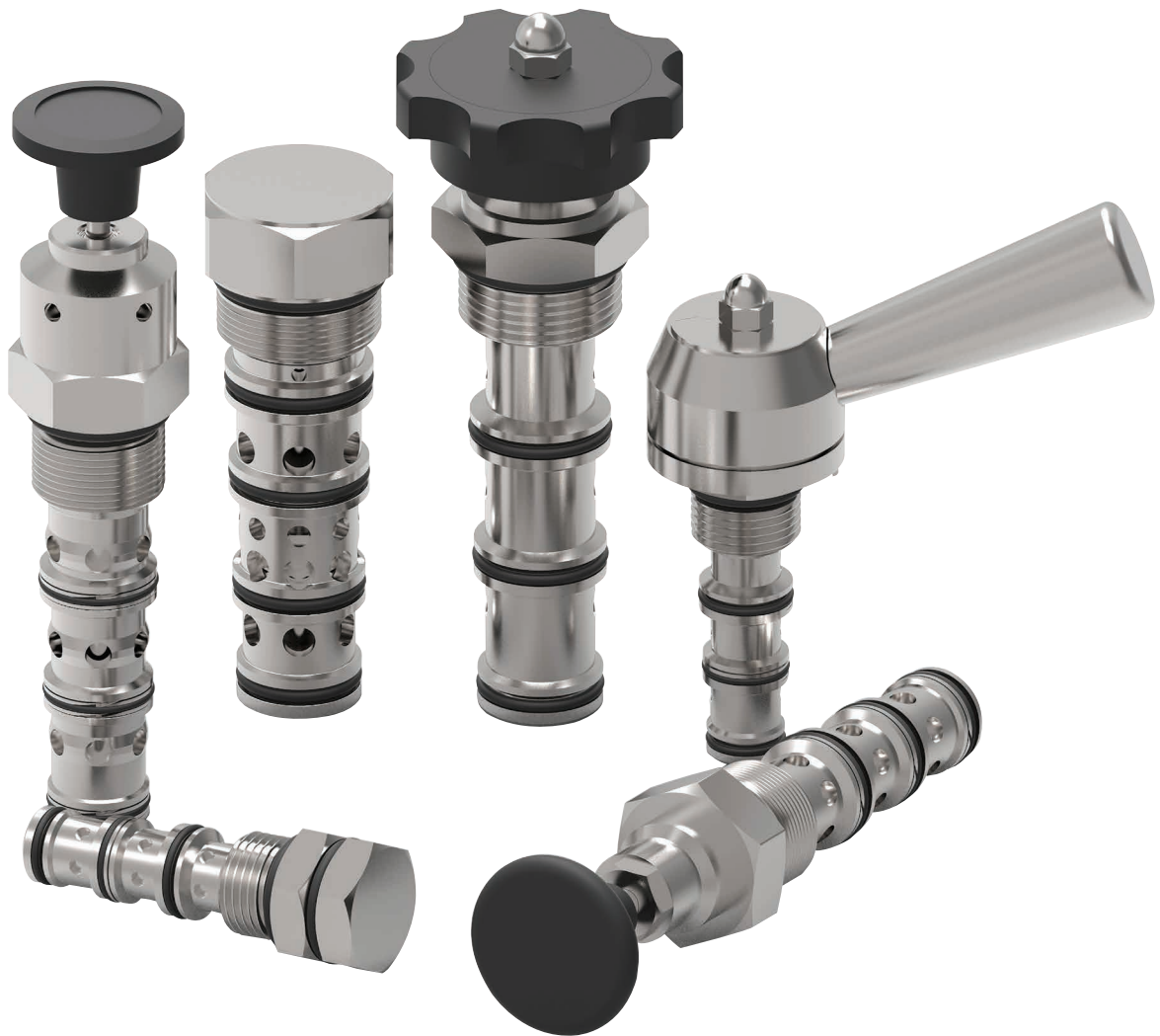


Directional controls

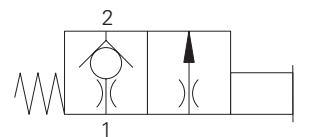
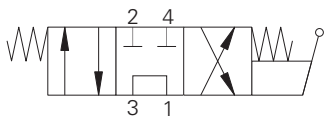
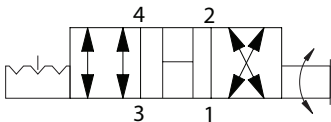
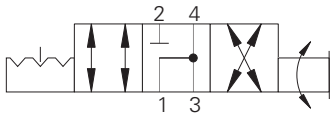
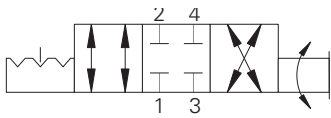
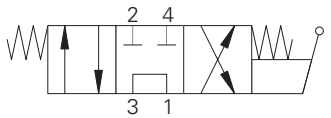
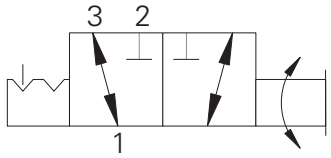
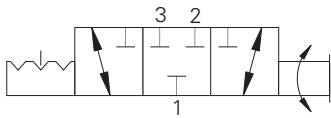
Manual and pilot operated directional control valves for applications up to 350 bar (5000 psi) and 265 L/min (70 USgpm)



Powering Business Worldwide

Valve locator

Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual rotary valve</i>				
MRV3-10	C-10-3	23 (6)	210 (3000)	D-9
MRV3-16	C-16-3	64 (17)	210 (3000)	D-9
MRV13-10	C-10-3	23 (6)	350 (5000)	D-12
MRV13-12	C-12-3	46 (12)	350 (5000)	D-12
MRV13-16	C-16-3	64 (17)	350 (5000)	D-12

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual rotary valve</i>				
MRV4-10	C-10-4	11 (3)	210 (3000)	D-17
MRV4-16	C-16-4	45 (12)	210 (3000)	D-17
MRV14-10	C-10-4	11 (3)	350 (5000)	D-20
MRV14-12	C-12-4	23 (6)	350 (5000)	D-20
MRV14-16	C-16-4	45 (12)	350 (5000)	D-20

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual rotary valve</i>				
MRV5-10	C-10-4	11 (3)	210 (3000)	D-25
MRV5-16	C-16-4	45 (12)	210 (3000)	D-25
MRV15-10	C-10-4	11 (3)	350 (5000)	D-28
MRV15-12	C-12-4	23 (6)	350 (5000)	D-28
MRV15-16	C-16-4	45 (12)	350 (5000)	D-28

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual rotary valve</i>				
MRV6-10	C-10-4	11 (3)	210 (3000)	D-33
MRV6-16	C-16-4	11 (3)	300 (5000)	D-33

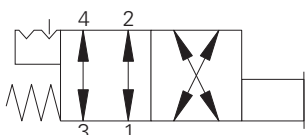
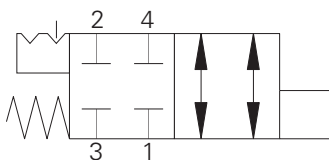
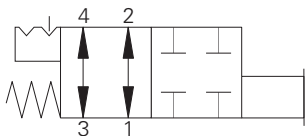
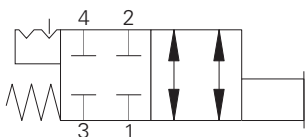
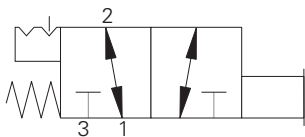
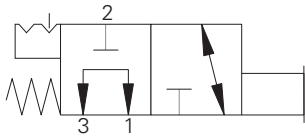
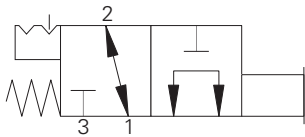
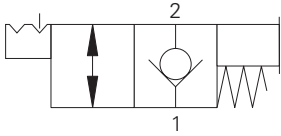
Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual rotary valve</i>				
MRV7-10	C-10-4	11 (3)	210 (3000)	D-36

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual lever valve, spool</i>				
MLV9-12-A	C-12-4	60 (13.9)	210 (3000)	D-38
MLV9-12-B	C-12-4	60 (15.9)	210 (3000)	D-38
MLV9-12-E	C-12-4	60 (15.9)	210 (3000)	D-38
MLV9-12-F	C-12-4	60 (15.9)	210 (3000)	D-38

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Check MO</i>				
3CP2	A879	5.5-15 (1.4-4)	210 (3000)	D-41

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
		L/min (USgpm)	bar (psi)	
<i>Manual pull valve, NC</i>				
MPV1-10	C-10-2	45 (12)	210 (3000)	D-43
MPV3-10	C-10-2	45 (12)	210 (3000)	D-45

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual push valve</i>				
MSV1-12	C-12-3	41.8 (11)	210 (3000)	D-47
MSV11-10	C-10-3	23 (6)	350 (5000)	D-49
MSV11-12	C-12-3	30 (8)	350 (5000)	D-49
MSV12-12	C-12-3	38 (10)	350 (5000)	D-54

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual push valve</i>				
MSV2-12	C-12-3	38 (10)	210 (3000)	D-52

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual push valve</i>				
MSV5-12	C-12-3	41.8 (11)	210 (3000)	D-56
MSV15-12	C-12-3	41.8 (11)	350 (5000)	D-58

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual push valve</i>				
MSV3-12	C-12-4	53.2 (14)	210 (3000)	D-60
MSV13-12	C-12-4	53.2 (14)	350 (5000)	D-62

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual push valve</i>				
MSV4-12	C-12-4	53.2 (14)	210 (3000)	D-64
MSV14-12	C-12-4	53.2 (14)	350 (5000)	D-66

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual push valve</i>				
MSV6-12	C-12-4	53.2 (14)	210 (3000)	D-68
MSV16-12	C-12-4	53.2 (14)	350 (5000)	D-70

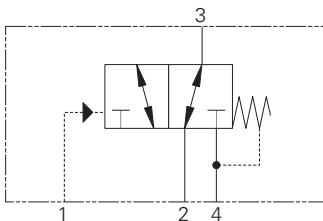
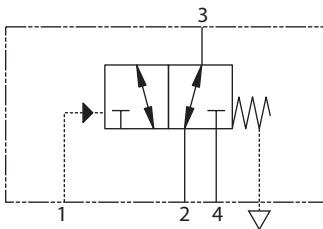
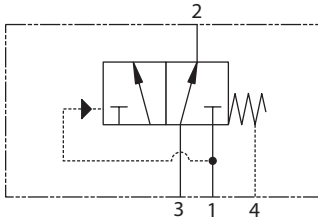
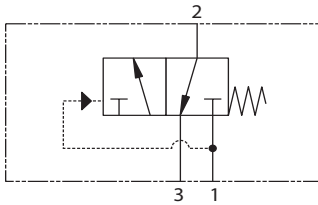
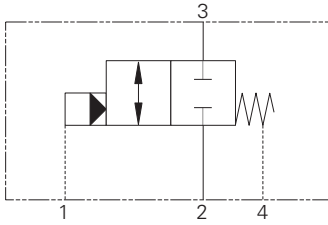
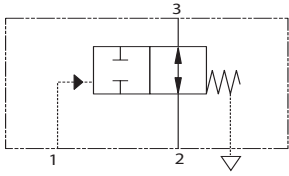
Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Manual push valve</i>				
MSV17-10	C-12-4	20 (5.3)	350 (5000)	D-72
MSV17-12	C-12-4	20 (5)	350 (5000)	D-72
MSV7-12	C-12-4	45 (11.9)	210 (3000)	D-76

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

Directional controls

Valve locator

Functional symbol



Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Pilot to shift 2/2 valve</i>				
PTS7-10	C-10-3	30 (8)	210 (3000)	D-78
PTS17-10	C-10-3	30 (8)	350 (5000)	D-80
PTS17-12	C-12-3	114 (30)	350 (5000)	D-80

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Pilot to shift 2/2 valve</i>				
1RDS702	A21145	80 (20)	420 (6090)	D-87

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Brake sequence</i>				
1SB10	A893	10 (2.5)	350 (5000)	D-83

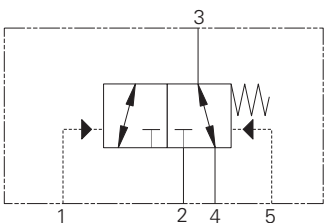
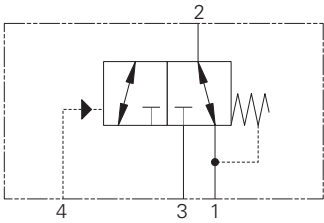
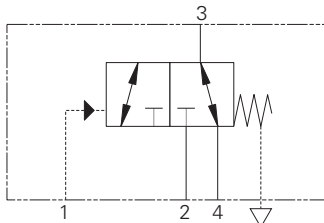
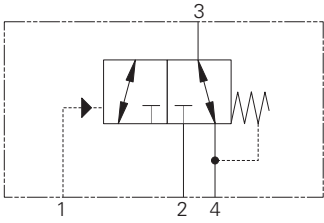
Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Brake release shuttle</i>				
1SB304	A5302	30 (8)	350 (5000)	D-85

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Pilot to shift valve</i>				
PTS1-10	C-10-4	30 (8)	210 (3000)	D-89
PTS1-16	C-16-4	132 (35)	210 (3000)	D-89
PTS1-20	C-20-4	265 (70)	210 (3000)	D-89
PTS11-12	C-12-4	76 (20)	350 (5000)	D-94
PTS11-10	C-10-4	30 (8)	350 (5000)	D-94
PTS11-16	C-16-4	132 (35)	350 (5000)	D-94

Model	Cavity	Flow rating	Typical pressure	Page
		L/min (USgpm)	bar (psi)	
<i>Pilot to shift valve</i>				
PTS12-10	C-10-4	30 (8)	350 (5000)	D-99
PTS12-12	C-12-4	114 (30)	350 (5000)	D-99
PTS12-16	C-16-4	132 (35)	350 (5000)	D-99
PTS2-16	C-16-4	132 (35)	210 (3000)	D-104
PTS2-20	C-20-4	265 (70)	210 (3000)	D-104

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

Functional symbol



Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Pilot to shift valve</i>				
PTS13-10	C-10-4	30 (8)	350 (5000)	D-107
PTS13-12	C-12-4	114 (30)	350 (5000)	D-107
PTS13-16	C-16-4	132 (35)	350 (5000)	D-107
PTS3-16	C-16-4	132 (35)	210 (3000)	D-112
PTS3-20	C-20-4	265 (70)	210 (3000)	D-112
PTS6-16	C-16-4	132 (35)	210 (3000)	D-126
PTS16-16	C-16-4	132 (35)	350 (5000)	D-128

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Pilot to shift valve</i>				
PTS14-12	C-12-4	114 (30)	350 (5000)	D-115
PTS14-16	C-16-4	132 (35)	350 (5000)	D-115
PTS5-16	C-16-4	132 (35)	210 (3000)	D-122
PTS15-16	C-16-4	132 (35)	350 (5000)	D-124

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Pilot to shift valve</i>				
PTS5-10	C-10-3	11 (3)	210 (3000)	D-118
PTS15-12	C-12-3	105 (28)	350 (5000)	D-120

Model	Cavity	Flow rating L/min (USgpm)	Typical pressure bar (psi)	Page
<i>Pilot to shift valve</i>				
PTS9-8	C-8-5S	19 (5)	280 (4000)	D-130
PTS9-10	C-10-5S	38 (10)	280 (4000)	D-130
PTS9-12	C-12-5S	76 (20)	280 (4000)	D-130
PTS9-16	C-16-5S	151 (40)	280 (4000)	D-130
PTS9-20	C-20-5S	230 (60)	280 (4000)	D-130

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

Directional controls

Valve locator

Directional controls

Introduction

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

Two pressure ratings are shown for all products featured in this catalog – typical application pressure and fatigue pressure. The typical application pressure rating is the maximum recommended operating pressure for the valve in a given system. The fatigue pressure rating is the pressure for the valve to be free for infinite life from metal fatigue.

Features and benefits

- Products in this catalog have been fatigue tested for one million cycles at 132% or 10 million cycles at 115% of rated pressure.
- 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.
- All aluminum manifolds are gold anodized to resist corrosion.
- Desired settings may be locked down.
- Aluminum knob and cap options are available on some models.
- Reliable, economical and compact.

MRV3 / 13	MRV4 / 14	MRV5 / 15	MRV6	MRV7	MLV9	MPV	MSV1 / 11 / 12	MSV2
MRV3-10	MRV4-10	MRV5-10	MRV6-10	MRV7-10	MLV9-12-A	MPV1-10	MSV1-12	MSV2-12
MRV3-16	MRV4-16	MRV5-16	MRV6-16		MLV9-12-B	MPV3-10	MSV11-10	
MRV13-10	MRV14-10	MRV15-10			MLV9-12-E		MSV11-12	
MRV13-12	MRV14-12	MRV15-12			MLV9-12-F		MSV12-12	
MRV13-16	MRV14-16	MRV15-16						

MSV3 / 13	MSV4 / 14	MSV5 / 15	MSV6 / 16	MSV7 / 17	PTS1 / 11	PTS2 / 12	PTS3 / 13	PTS5 / 14 / 15
MSV3-12	MSV4-12	MSV5-12	MSV6-12	MSV7-12	PTS1-10	PTS2-16	PTS3-16	PTS5-16
MSV13-12	MSV14-12	MSV15-12	MSV16-12	MSV17-10	PTS1-16	PTS2-20	PTS3-20	PTS14-12
				MSV17-12	PTS1-20	PTS12-10	PTS13-10	PTS14-16
					PTS11-10	PTS12-12	PTS13-12	PTS15-16
					PTS11-12	PTS12-16	PTS13-16	PTS5-10
					PTS11-16			PTS15-12

PTS6 / 16	PTS7 / 17	PTS9	DSV4	3CP2	IRDS	1SB
PTS6-10	PTS7-10	PTS9-8	DSV4-10	3CP2	1RDS702	1SB10
PTS6-16	PTS17-10	PTS9-10	DSV4-12			1SB304
PTS16-10	PTS17-12	PTS9-12	DSV4-16			
PTS16-12		PTS9-16				
PTS16-16		PTS9-20				

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

Read this page before using any of the products/information in this catalog.

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).

Model	Torque For Cartridge in Body	
	Aluminum Housing	Steel Housing
MRV3-10	47-54 Nm (35-40 ft. lbs)	-
MRV3-16	108-122 Nm (80-90 ft. lbs)	-
MRV13-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
MRV13-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
MRV13-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
MRV4-10	47-54 Nm (35-40 ft. lbs)	-
MRV4-16	108-122 Nm (80-90 ft. lbs)	-
MRV14-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
MRV14-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
MRV14-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
MRV5-10	47-54 Nm (35-40 ft. lbs)	-
MRV5-16	108-122 Nm (80-90 ft. lbs)	-
MRV15-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
MRV15-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
MRV15-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
MRV6-10	47-54 Nm (35-40 ft. lbs)	-
MRV6-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
MRV7-10	47-54 Nm (35-40 ft. lbs)	-
MLV9-12-A	34-41 Nm (25-30 ft. lbs)	-
MLV9-12-B	34-41 Nm (25-30 ft. lbs)	-
MLV9-12-E	34-41 Nm (25-30 ft. lbs)	-
MLV9-12-F	34-41 Nm (25-30 ft. lbs)	-
MPV1-10	47-54 Nm (35-40 ft. lbs)	-
MPV3-10	47-54 Nm (35-40 ft. lbs)	-
MSV1-12	81-95 Nm (60-70 ft. lbs)	-
MSV11-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
MSV11-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
MSV12-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
MSV2-12	81-95 Nm (60-70 ft. lbs)	-
MSV3-12	81-95 Nm (60-70 ft. lbs)	-
MSV13-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
MSV4-12	81-95 Nm (60-70 ft. lbs)	-
MSV14-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
MSV5-12	81-95 Nm (60-70 ft. lbs)	-
MSV15-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
MSV6-12	81-95 Nm (60-70 ft. lbs)	-
MSV16-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
MSV7-12	81-95 Nm (60-70 ft. lbs)	-
MSV17-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
MSV17-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS1-10	47-54 Nm (35-40 ft. lbs)	-

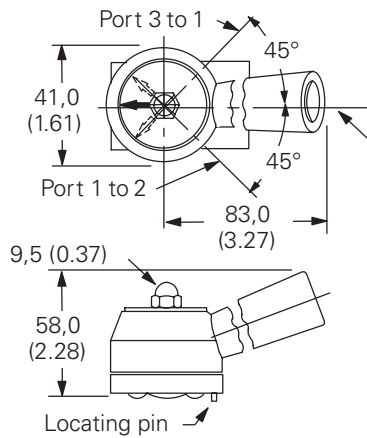
Model	Torque For Cartridge in Body	
	Aluminum Housing	Steel Housing
PTS1-16	108-122 Nm (80-90 ft. lbs)	-
PTS1-20	128-155 Nm (95-115 ft. lbs)	-
PTS11-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
PTS11-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS11-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
PTS2-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
PTS2-20	128-155 Nm (95-115 ft. lbs)	-
PTS12-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
PTS12-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS12-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
PTS3-16	108-122 Nm (80-90 ft. lbs)	-
PTS3-20	129-155 Nm (95-115 ft. lbs)	-
PTS13-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
PTS13-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS13-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
PTS5-16	108-122 Nm (80-90 ft. lbs)	-
PTS14-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS14-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
PTS15-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
PTS5-10	47-54 Nm (35-40 ft. lbs)	-
PTS15-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS6-10	47-75 Nm (35-40 ft. lbs)	-
PTS6-16	108-122 Nm (80-90 ft. lbs)	-
PTS16-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
PTS16-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS16-16	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS7-10	47-54 Nm (35-40 ft. lbs)	-
PTS17-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
PTS17-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS9-8	34-41 Nm (25-30 ft. lbs)	-
PTS9-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
PTS9-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
PTS9-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
PTS9-20	129-155 Nm (95-115 ft. lbs)	-
DSV4-10	47-54 Nm (35-40 ft. lbs)	68-75 Nm (50-55 ft. lbs)
DSV4-12	81-95 Nm (60-70 ft. lbs)	102-115 Nm (75-85 ft. lbs)
DSV4-16	108-122 Nm (80-90 ft. lbs)	136-149 Nm (100-110 ft. lbs)
3CP2	45 Nm (33 lbs ft)	-
1RDS702	67 Nm (50 lbs ft)	-
1SB10	60 Nm (44 lbs ft)	-
1SB304	60 Nm (44 lbs ft)	-

Alternative adjusters

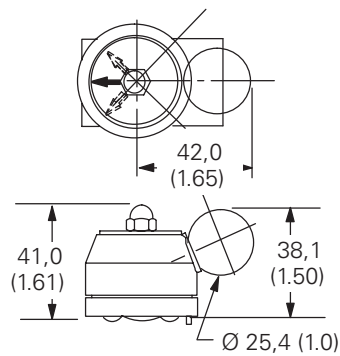
For light duty aluminum housings only

D

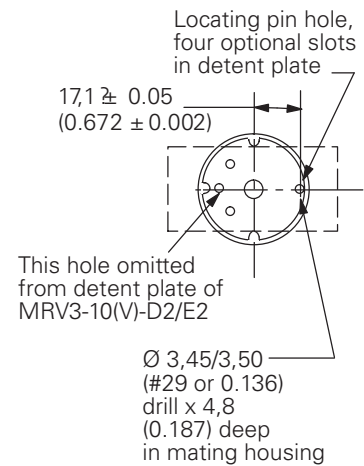
D(2)
Size 10



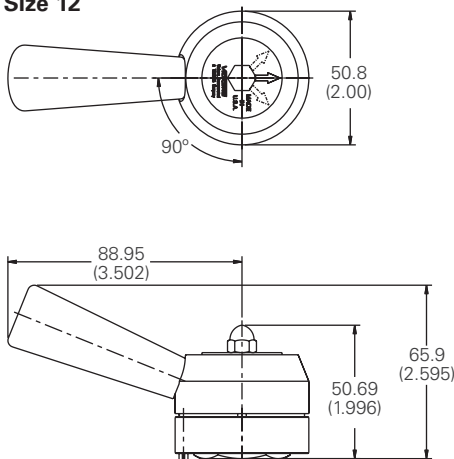
Size 10
E(2)



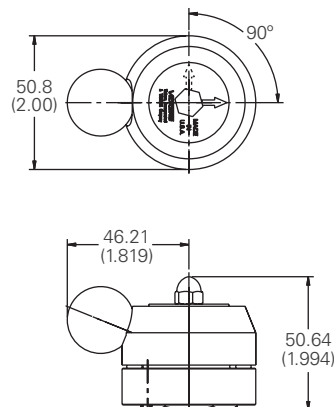
Size 10
Locating PIN installation



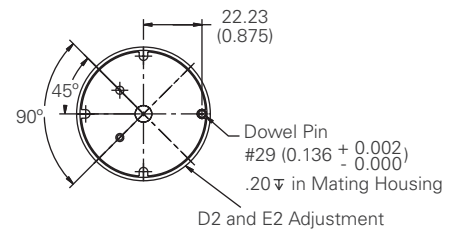
D(2)
Size 12



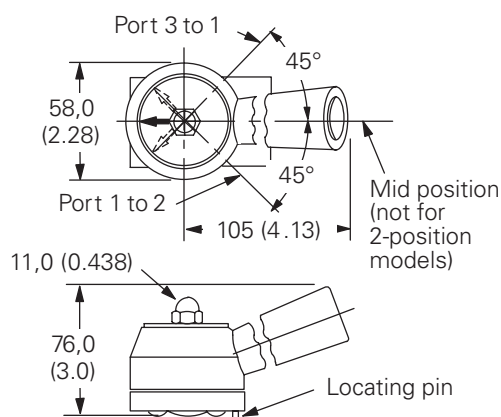
Size 12
E(2)



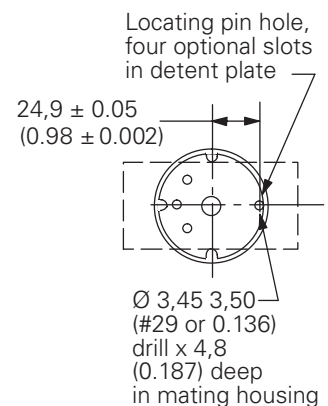
Size 12
Locating PIN installation



D(2)
Size 16



Size 16
Locating PIN installation

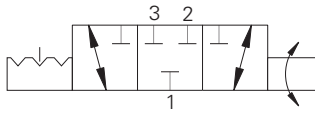


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

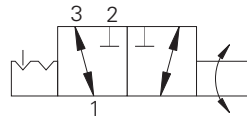
MRV3-10/16 - Manual rotary valve

Manual semi-rotary directional control valve
 MRV3-10: 23 L/min (6 USgpm) • 210 bar (3000 psi)
 MRV3-16: 64 L/min (17 USgpm) • 210 bar (3000 psi)

3 position models



2 position models



Operation

This valve will direct flow between ports 1 and 3 and block port 2 in one position. By turning the operator 90°, flow will be directed between ports 1 and 2 and port 3 will be blocked. During cross-over transition, all ports are blocked.

Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

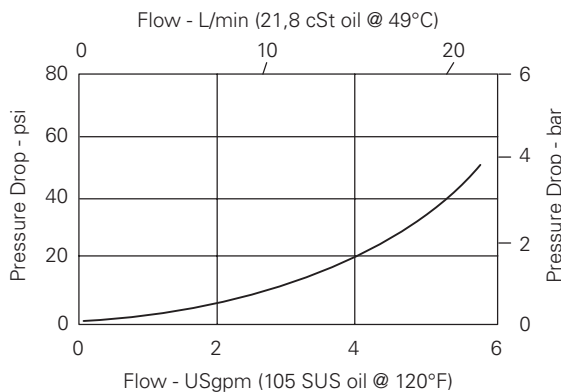
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow -10	23 L/min (6 US gpm)
Rated flow -16	64 L/min (17 US gpm)
Temperature range	-40°C to 120°C (-40° to 248°F)
Manual operators	For manual operator option refer model code
Cavity -10	C-10-3
Cavity -16	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 -10	0,22 kg (0.4 lbs)
Weight cartridge only -16	0,53 kg (1.16 lbs)
Seal kit -10	565804 (Buna-N), 889599 (Viton®)
Seal kit -16	889632 (Buna-N), 889636 (Viton®)

*Light duty housing only.

Viton is a registered trademark of E.I. DuPont

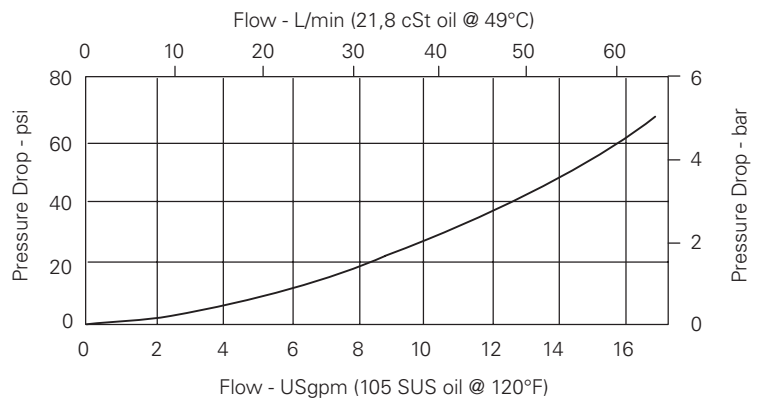
Pressure drop curves for -10

Cartridge only



Pressure drop curves for -16

Cartridge only



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

MRV3-10/16 - Manual rotary valve

Manual semi-rotary directional control valve

MRV3-10: 23 L/min (6 USgpm) • 210 bar (3000 psi)

MRV3-16: 64 L/min (17 USgpm) • 210 bar (3000 psi)

Model code

MRV3 - 10 - (V) - ** - * - 00**



1 Function

MRV3 - Manual rotary valve
4-way

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton

4 Manual operator

O - No operator
D - Level (3-position detent)
D2 - Level (2-position detent)
E - Ball (3-position detent)
E2 - Ball (2-position detent)
K - Knob (2-position, no detent)

5 Port size

Code	Port size	Housing number	
		Aluminum Fatigue Rated	Steel
0	Cartridge		
A3B	3/8" BSPP	02-173358*	
A6T	SAE 6	5566162*	
A2G	1/4" BSPP	876705	
A3G	3/8" BSPP	876714	
A6H	SAE 6	876704	
A8H	SAE 8	876711	
S2G	1/4" BSPP		02-175127
S3G	3/8" SAE		02-175128
S6T	SAE 6		02-175124
S8T	SAE 8		02-175125

See section J for housing details.
* Aluminum light duty.

6 Special features

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

Model code

MRV3 - 16 - (V) - ** - * - 00**



1 Function

MRV13 - Manual rotary valve
4-way

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton

4 Manual operator

O - No operator
D - Level (3-position detent)
D2 - Level (2-position detent)
K - Knob (2-position, no detent)

5 Port size

Code	Port size	Housing number	
		Aluminum fatigue rated	Steel
0	Cartridge		
A12T	SAE12	566152*	
A6B	3/4" BSPP	02-1754165*	
A10H	SAE10	876721	
A12H	SAE12	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.
* Aluminum light duty.

6 Special features

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

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

MRV3-10/16 - Manual rotary valve

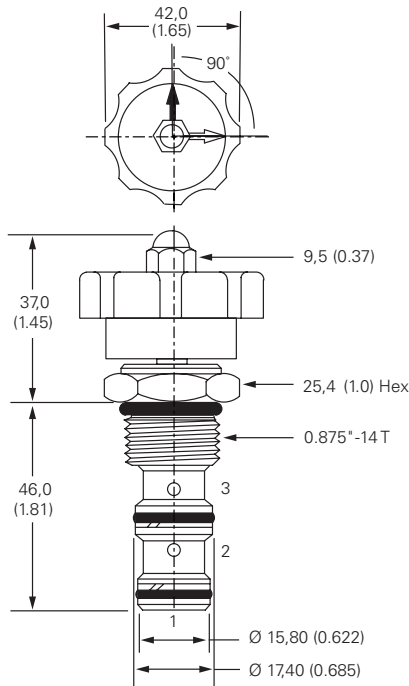
Manual semi-rotary directional control valve
 MRV3-10: 23 L/min (6 USgpm) • 210 bar (3000 psi)
 MRV3-16: 64 L/min (17 USgpm) • 210 bar (3000 psi)

Dimensions

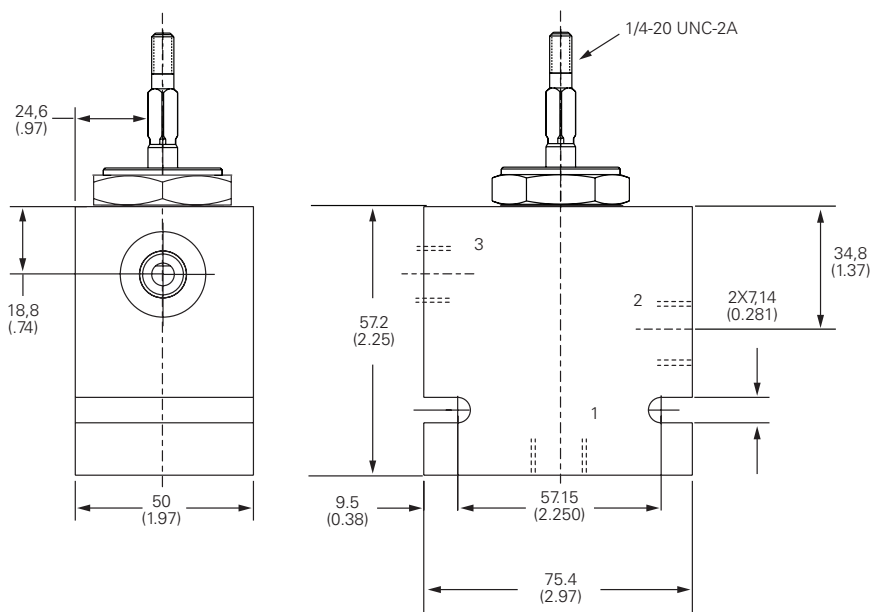
mm (inch)

MRV3-10

Cartridge only

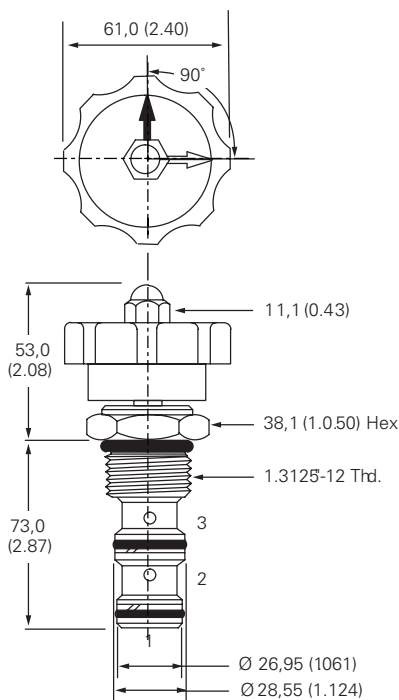


Installation drawing (aluminum)

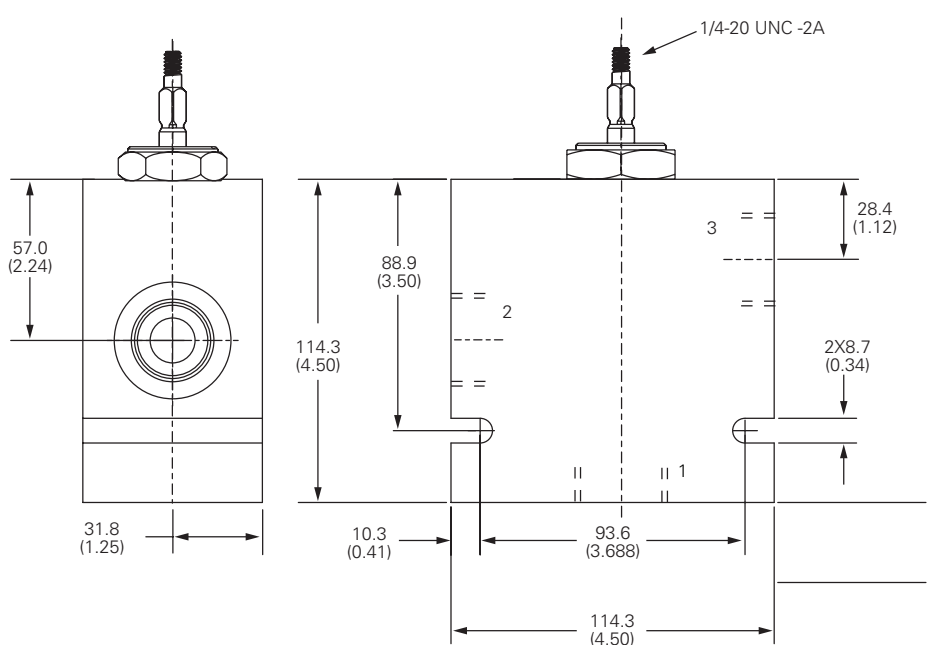


MRV3-16

Cartridge only



Installation drawing (aluminum)



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

MRV13-10/12/16 - Manual rotary valve

Manual semi-rotary directional control valve

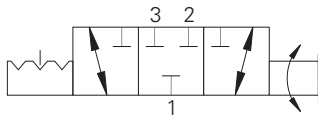
MRV13-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)

MRV13-12: 46 L/min (12 USgpm) • 350 bar (5000 psi)

MRV13-16: 64 L/min (17 USgpm) • 350 bar (5000 psi)

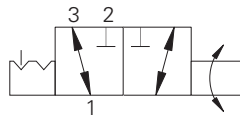
MRV13-(V)-D/E

3 position models



MRV13-(V)-D2/2E

2 position models



Operation

This valve will direct flow between ports 1 and 3 and block port 2 in one position.

By turning the operator 90°, flow will be directed between ports 1 and 2 and port 3 will be blocked. During cross-over transition, all ports are blocked.

Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

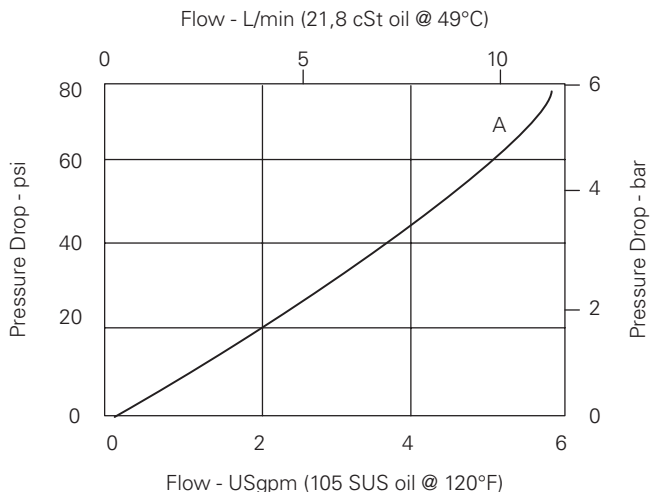
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow 10	23 L/min (6 USgpm)
Rated Flow 12	46 L/min (12 USgpm)
Rated Flow 16	64 L/min (17 USgpm)
Internal leakage	250 cc/min (15in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Manual operators	For manual operator option refer model code
Cavity 10	C-10-3
Cavity 12	C-12-3
Cavity 16	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 materials	Aluminum or Steel
Weight cartridge only - 10	0,22 kg (0.48 lbs)
Weight cartridge only - 12	0.32 kg (0.70 lbs)
Weight cartridge only - 16	0.53 kg (1.16 lbs)
Seal kit 10	565804 (Buna-N), 889599 (Viton®)
Seal kit 12	02-180095 (Buna-N), 02-165887 (Viton®)
Seal kit 16	889632 (Buna-N), 889636 (Viton®)

* Light duty housing only.

Viton is a registered trademark of E.I. DuPont

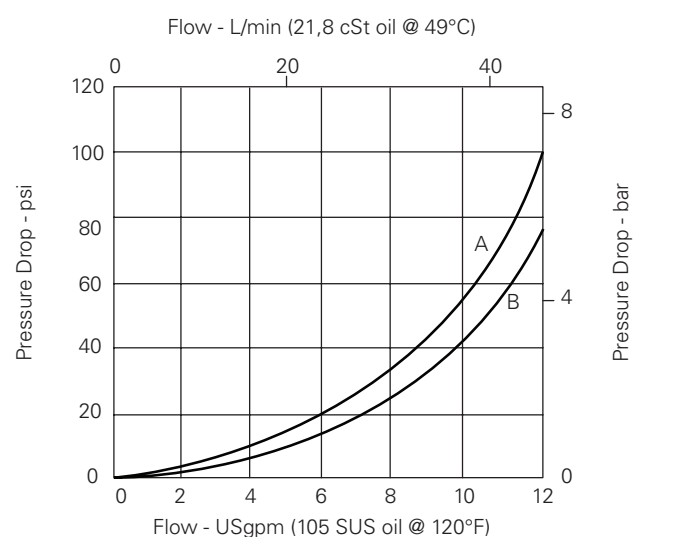
Pressure drop curves for -10

Cartridge only



Pressure drop curves for -12

Cartridge only



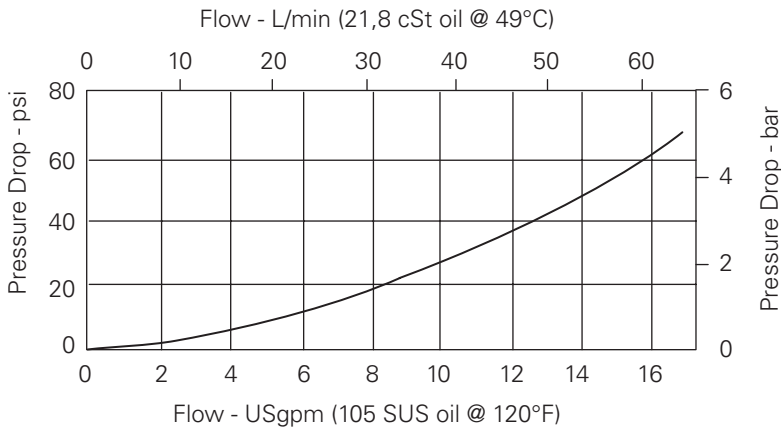
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MRV13-10/12/16 - Manual rotary valve

Manual semi-rotary directional control valve
 MRV13-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 MRV13-12: 46 L/min (12 USgpm) • 350 bar (5000 psi)
 MRV13-16: 64 L/min (17 USgpm) • 350 bar (5000 psi)

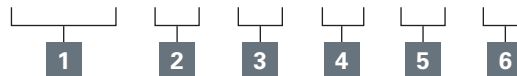
Pressure drop curves for -16

Cartridge only



Model code

MRV13 - 10 - (V) - ** - * - 00**



1 Function

MRV13 - Manual rotary valve

2 Size

10 - 10 size

3 Seals

Blank - Buna-N
V - Viton®

4 Manual operator

0 - No operator
D - Level (3-position detent)
D2 - Level (2-position detent)
E - Ball (3-position detent)
E2 - Ball (2-position detent)
K - Knob (2-position, no detent)

5 Port size

Code	Port size	Housing number	
0	Cartridge only	Aluminum Fatigue Rated	Steel
A2G	1/4" BSPP	02-185804	
A3G	3/8" BSPP	02-185805	
A6H	SAE 6	02-185802	
A8H	SAE 8	02-185803	
S2G	1/4" BSPP		02-175127
S3G	1/3" BSPP		02-175128
S6T	SAE 6		02-175124
S8T	SAE 8		02-175125

6 Special features

00 - Non (Only required if valve has special features, omitted if "00").

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

MRV13-10/12/16 - Manual rotary valve

Manual semi-rotary directional control valve

MRV13-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)

MRV13-12: 46 L/min (12 USgpm) • 350 bar (5000 psi)

MRV13-16: 64 L/min (17 USgpm) • 350 bar (5000 psi)

Model code

MRV13 - 12 - (V) - ** - ** - 00

1
2
3
4
5
6

1 Function

MRV13 - Manual rotary valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N

V - Viton®

4 Manual operator

0 - No operator

D - Level (3-position detent)

D2 - Level (2-position detent)

E - Ball (3-position detent)

E2 - Ball (2-position detent)

K - Knob (2-position, no detent)

5 Port size

Code	Port size	Housing number	
		Aluminum fatigue rated	Steel
0			
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

6 Special features

00 - Non (Only required if valve has special features, omitted if "00").

Model code

MRV13 - 16 - (V) - ** - * - 00**

1
2
3
4
5
6

1 Function

MRV13 - Manual rotary valve

2 Size

16 - 16 size

3 Seals

Blank - Buna-N

V - Viton®

4 Manual operators

0 - No operator

D - Lever (3-position detent)

D2 - Lever (2-position detent)

K - Knob (2-position, no detent)

5 Port size

Code	Port size	Housing number	
		Aluminum Fatigue rated	Steel
0			
A10H	SAE 10	876721	
A12H	SAE 12	876723	
A4G	1/2" BSPP	876720	
A6G	3/4" BSPP	876722	
S4G	1/2" BSPP		02-175131
S6T	3/4" BSPP		02-175132
S10T	SAE 10		02-175129
S12T	SAE 12		02-175130

6 Special features

00 - Non (Only required if valve has special features, omitted if "00")

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

MRV13-10/12/16 - Manual rotary valve

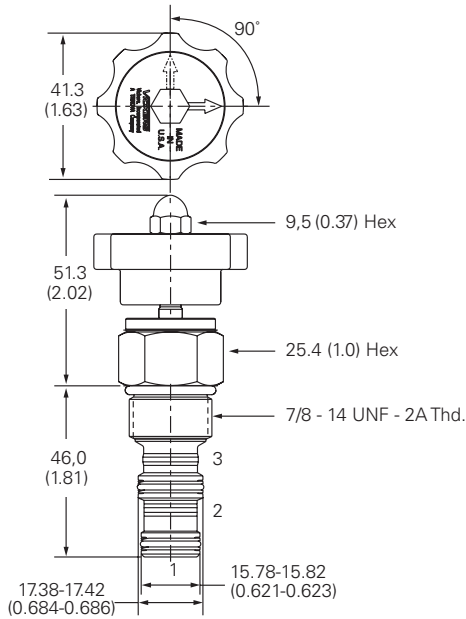
Manual semi-rotary directional control valve
 MRV13-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 MRV13-12: 46 L/min (12 USgpm) • 350 bar (5000 psi)
 MRV13-16: 64 L/min (17 USgpm) • 350 bar (5000 psi)

Dimensions

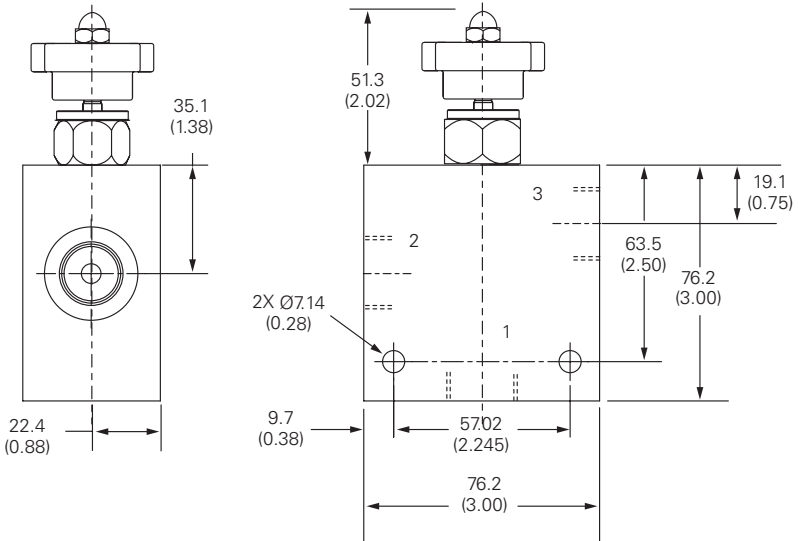
mm (inch)

MRV13-10

Cartridge only

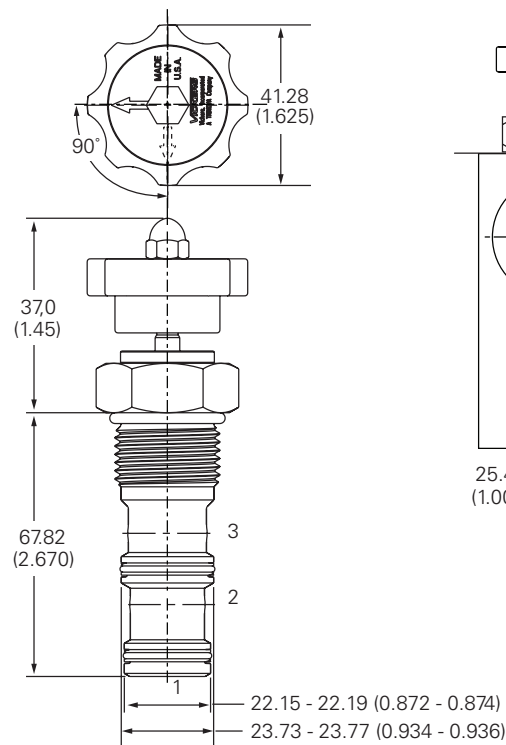


Installation drawing (steel)

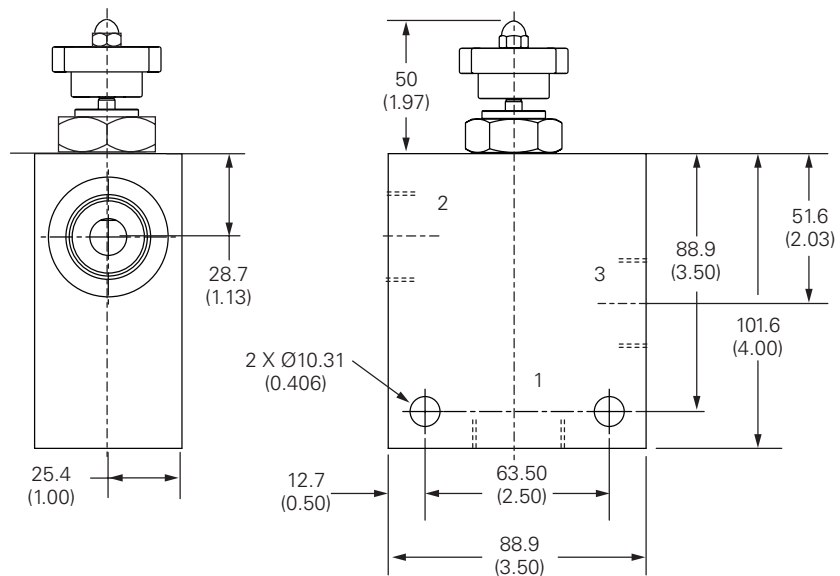


MRV13-12

Cartridge only



Installation drawing (steel)



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

MRV13-10/12/16 - Manual rotary valve

Manual semi-rotary directional control valve

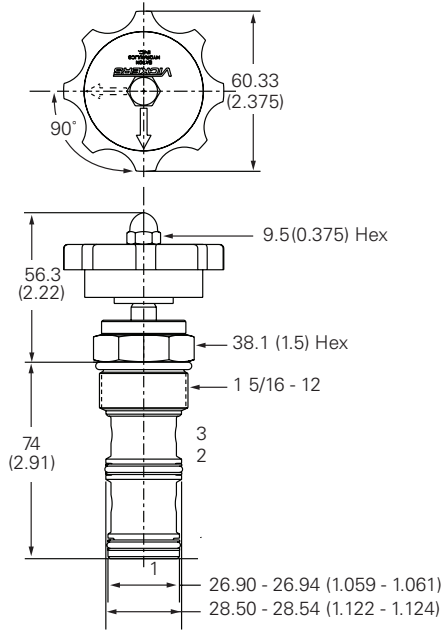
MRV13-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)

MRV13-12: 46 L/min (12 USgpm) • 350 bar (5000 psi)

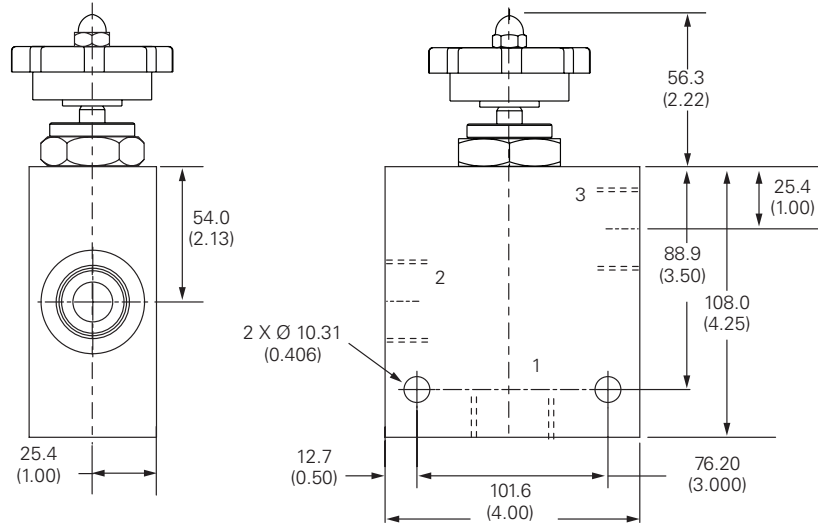
MRV13-16: 64 L/min (17 USgpm) • 350 bar (5000 psi)

MRV13-16

Cartridge only



Installation drawing (steel)



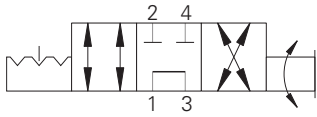
D

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

MRV4-10/16 - Manual rotary valve

Manual semi-rotary directional control valve
 MRV4-10: 11 L/min (3 USgpm) • 210 bar (3000 psi)
 MRV4-16: 45 L/min (12 USgpm) • 210 bar (3000 psi)

3 position models



Operation

This valve will direct flow between ports 1 and 2 and ports 3 and 4 in one position. By turning the operator 90°, flow will be directed between ports 1 and 4 and port 3 to port 2. During the cross-over transition, ports 2 and 4 are blocked and ports 1 and 3 are connected.

Performance data

Ratings and specifications

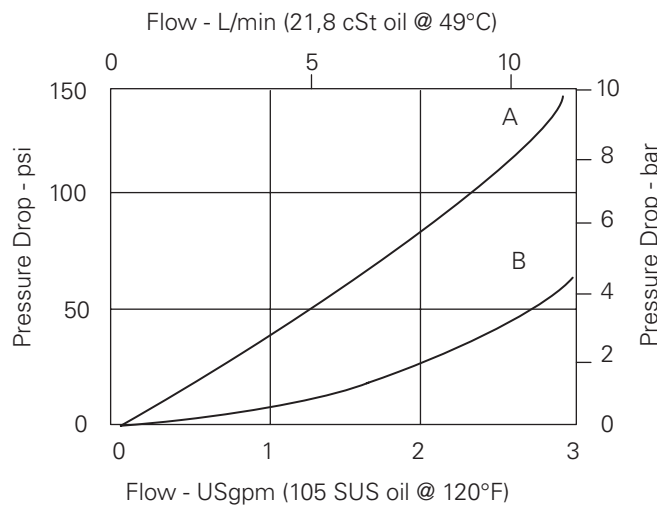
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated Flow 10	11 L/min (3 US gpm)
Rated Flow 16	45 L/min (12 USgpm)
Temperature range	-40°C to 120°C (-40° to 248°F)
Manual operators	For manual operator option refer model code
Cavity 10	C-10-4
Cavity 16	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 material	Aluminum or Steel
Weight cartridge only -10	0,17 kg (0.38 lbs)
Weight cartridge only -16	0,65 kg (1.43 lbs)
Seal kit 10	565805 (Buna-N), 889600 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)

* Light duty housing only.
 Viton is a registered trademark of E.I. DuPont

Pressure drop curves for - 10

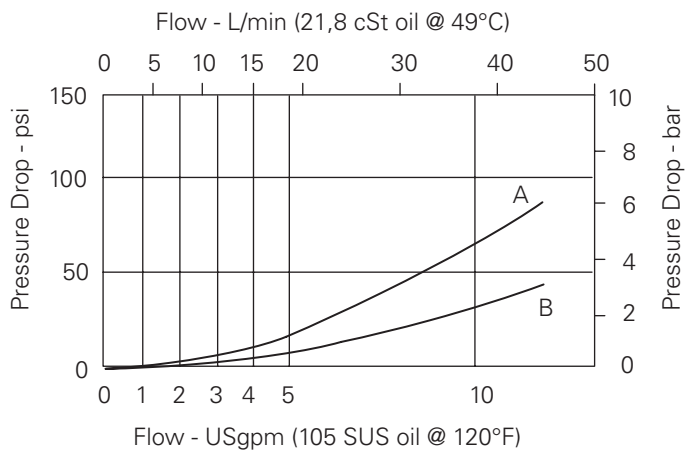
Cartridge only



- A** - Port 3 to port 4 or 3 to 2
- B** - Port 4 to port 1 or 2 to 1

Pressure drop curves for -16

Cartridge only



- A** - Port 3 to port 4 or 3 to 2
- B** - Port 4 to port 1 or 2 to 1

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

MRV4-10/16 - Manual rotary valve

Manual semi-rotary directional control valve

MRV4-10: 11 L/min (3 USgpm) • 210 bar (3000 psi)

MRV4-16: 45 L/min (12 USgpm) • 210 bar (3000 psi)

Model code

MRV4 - 10 - (V) - ** - * - 00**

1
2
3
4
5
6

1 Function

MRV4 - Manual rotary valve
4-way

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton

4 Manual operator

O - No operator
D - Lever (3-position detent)
D2 - Lever (2-position detent)
E - Ball (3-position detent)
E2 - Ball (2-position detent)
K - Knob (2-position, no detent)

5 Port size

Code	Port size	Housing number		
		Aluminum Light duty	Aluminum Fatigue rated	Steel
0	Cartridge			
A3B	3/8" BSPP	02-179705		
A6T	SAE 6	566161		
A2G	1/4" BSPP		876709	
A3G	3/8" BSPP		876715	
A6H	SAE 6		876708	
A8H	SAE 8		876713	
S2G	1/4" BSPP			02-175139
S3G	3/8" BSPP			02-175140
S6T	SAE 6			02-175137
S8T	SAE 8			02-175138

See section J for housing details.

6 Special features

00 - None

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

Model code

MRV4 - 16 - (V) - ** - *** - 00**

1
2
3
4
5
6

1 Function

MRV4 - Manual rotary valve
4-way

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton

4 Manual operator

O - No operator
D - Level (3-position detent)
D2 - Level (2-position detent)
K - Knob (2-position, no detent)

5 Port size

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0	Cartridge			
A12T	SAE 12	566411	-	-
A6B	3/4" BSPP	02-175468	-	-
A10H	SAE 10	-	876729	-
A12H	SAE 12	-	876731	-
A4G	1/2" BSPP	-	876728	-
A6G	3/4" BSPP	-	876730	-
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.

6 Special features

00 - Non (Only required if valve has special features, omitted if "00".)

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

MRV14-10/12/16 - Manual rotary valve

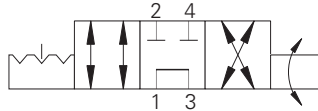
Manual semi-rotary directional control valve

MRV14-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)

MRV14-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)

MRV14-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

3 position models



Operation

This valve will direct flow between ports 1 and 2 and ports 3 and 4 in one position.

By turning the operator 90°, flow will be directed between ports 1 and 4 and port 3 to port 2.

During the cross-over transition, ports 2 and 4 are blocked and ports 1 and 3 are connected.

Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

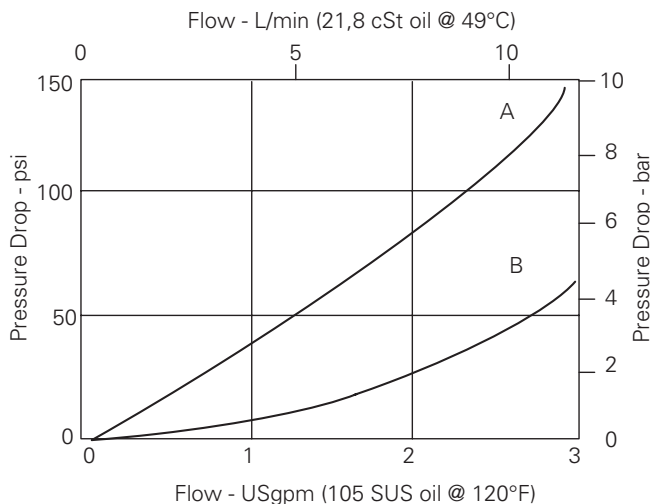
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow 10	11 L/min (3 USgpm)
Rated Flow 12	23 L/min (6 USgpm)
Rated Flow 16	45 L/min (12 USgpm)
Internal leakage	300 cc/min (18in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Manual operators	For manual operator option refer model code
Cavity 10	C-10-4
Cavity 12	C-12-4
Cavity 16	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 -10	0.17 kg (0.38 lbs)
Weight cartridge only -12	0.45 kg (0.99 lbs)
Weight cartridge only -16	0.65 kg (1.43 lbs)
Seal kit 10	565805 (Buna-N), 889600 (Viton®)
Seal kit 12	02-160979 (Buna-N), 02-160980 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)

* Light duty housing only.

Viton is a registered trademark of E.I. DuPont

Pressure drop curves for - 10

Cartridge only

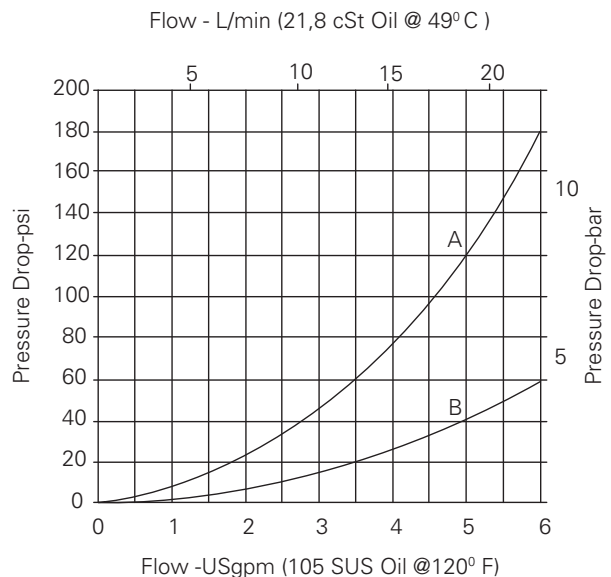


A - Port 3 to port 4 or 3 to 2

B - Port 4 to port 1 or 2 to 1

Pressure drop curves for - 12

Cartridge only



A - Port 3 to port 4 or 3 to 2

B - Port 4 to port 1 or 2 to 1

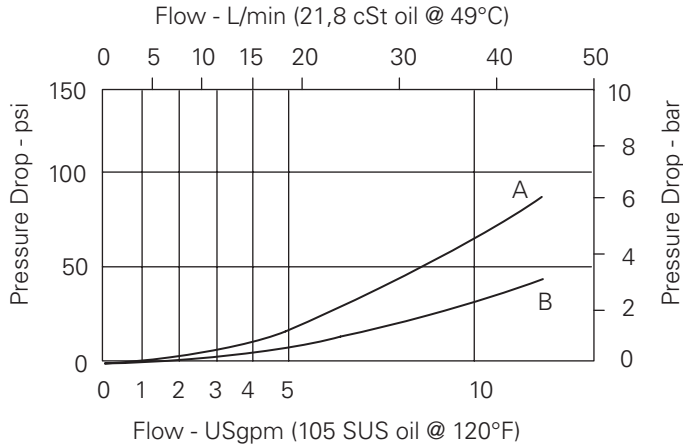
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MRV14-10/12/16 - Manual rotary valve

Manual semi-rotary directional control valve
 MRV14-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)
 MRV14-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 MRV14-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

Pressure drop curves for - 16

Cartridge only



A - Port 3 to port 4 or 3 to 2

B - Port 4 to port 1 or 2 to 1

Model code

MRV14 - 10 - (V) - ** - * - 00**

1 2 3 4 5 6

1 Function

MRV14 - Manual rotary valve
4-way

2 Size

10 - 10 size

3 Seals

Blank - Buna-N
V - Viton®

4 Manual operator

0 - No operator
D - Lever (3-position detent)
D2 - Lever (2-position detent)
E - Ball (3-position detent)
E2 - Ball (2-position detent)
K - Knob (2-position, no detent)

5 Port size

0 - Cartridge only

6 Special features

00 - Non (Only required if valve has special features, omitted if "00")

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0				
A3B	3/8" BSPP	02-179705		
A6T	SAE 6	566161		
A2G	1/4" BSPP		876709	
A3G	3/8" BSPP		876715	
A6H	SAE 6		876708	
A8H	SAE 8		876713	
AZG	1/4" BSPP			02-175139
A3G	3/8" BSPP			02-175140
S6T	SAE 6			02-175137
S8T	SAE 8			02-175138

See section J for housing details.

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

MRV14-10/12/16 - Manual rotary valve

Manual semi-rotary directional control valve

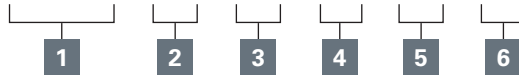
MRV14-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)

MRV14-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)

MRV14-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

Model code

MRV14 - 12 - (V) - ** - * - 00**



1 Function

MRV14 - Manual rotary valve
4-way

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Manual operator

0 - No operator
D - Lever (3-position detent)
D2 - Lever (2-position detent)
E - Ball (3-position detent)
E2 - Ball (2-position detent)
K - Knob (2-position, no detent)

5 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum Fatigue rated	Steel
0			
A4G	1/2" BSPP	5986431-001	
A6G	3/4" BSPP	5986432-001	
A8H	SAE 8	5986433-001	
A10H	3/8" BSPP	5986434-001	
A12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S10H	SAE 10		5991074-001
S12H	SAE 12		5991075-001

See section J for housing details.

6 Special features

00 - Non

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

Model code

MRV14 - 16 - (V) - ** - ** - 00**



1 Function

MRV14 - Manual rotary valve
4-way

2 Size

16 - 16 size

3 Seals

Blank - Buna-N
V - Viton®

4 Manual operators

0 - No operator
D - Lever (3-position detent)
D2 - Lever (2-position detent)
K - Knob (2-position, no detent)

5 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0				
A12T	SAE 12	566411		
A6B	3/4" BSPP	02-175468		
A10H	SAE 10		876729	
A12H	SAE 12		876731	
A4G	1/2" BSPP		876728	
A6G	3/4" BSPP		876730	
S4G	1/2" SSPP			02-175143
S6G	3/4" BSPP			02-175144
S10T	SAE 10			02-175141
S12T	SAE 12			02-175142

See section J for housing details.

6 Special features

00 - Non

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

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

MRV14-10/12/16 - Manual rotary valve

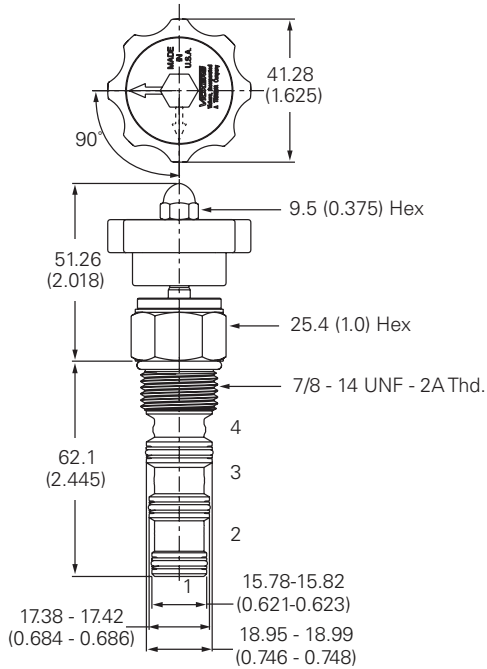
Manual semi-rotary directional control valve
 MRV14-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)
 MRV14-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 MRV14-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

Dimensions

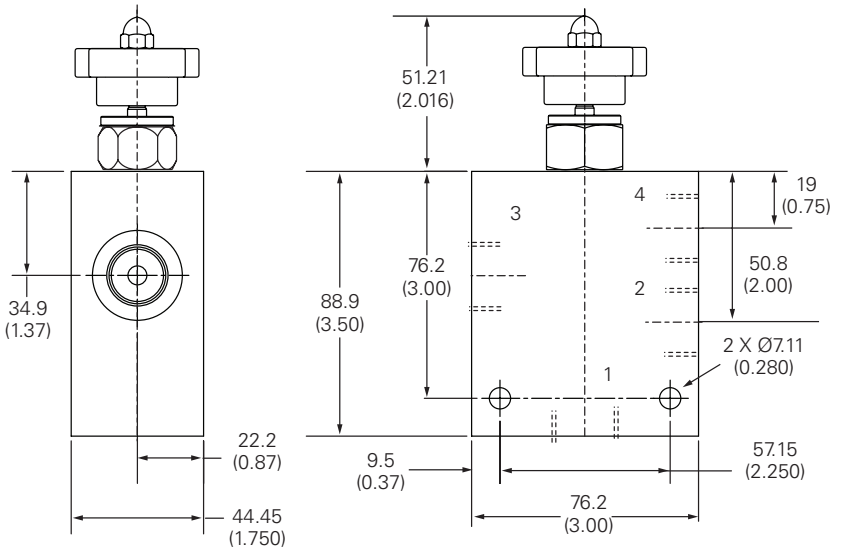
mm (inch)

MRV14-10

Cartridge only

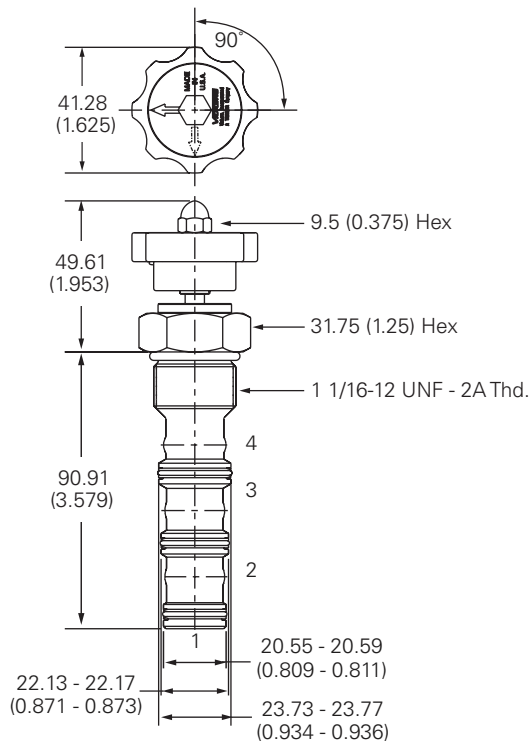


Installation drawing (steel)

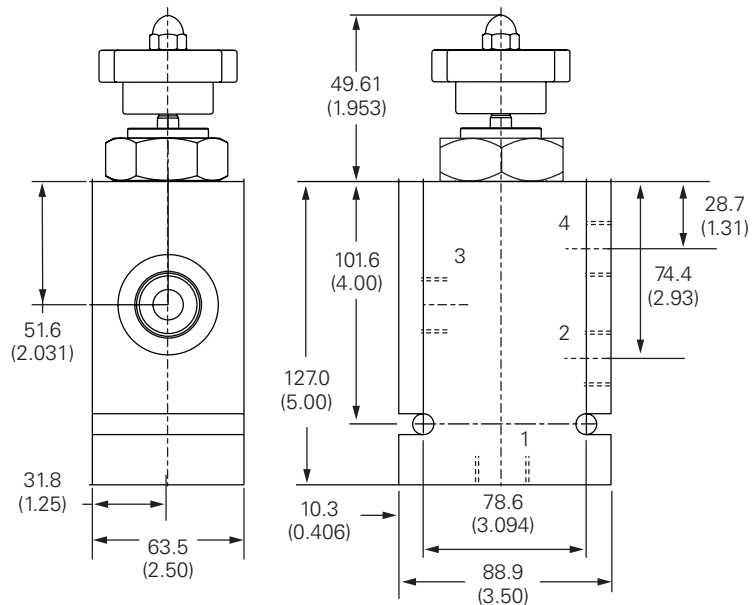


MRV14-12

Cartridge only



Installation drawing (steel)



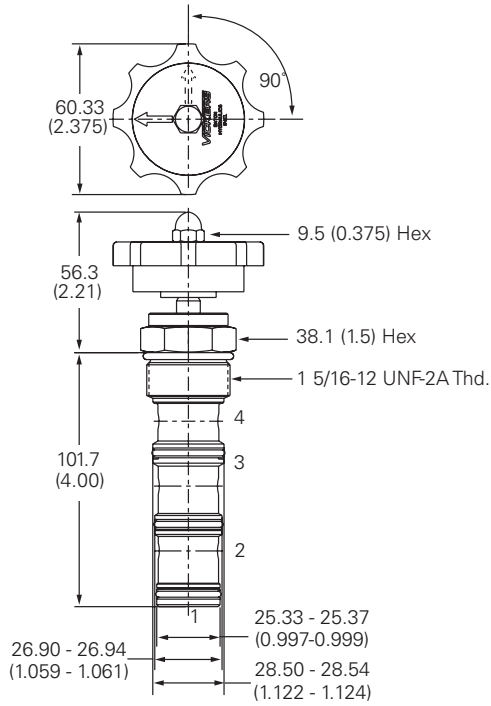
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MRV14-10/12/16 - Manual rotary valve

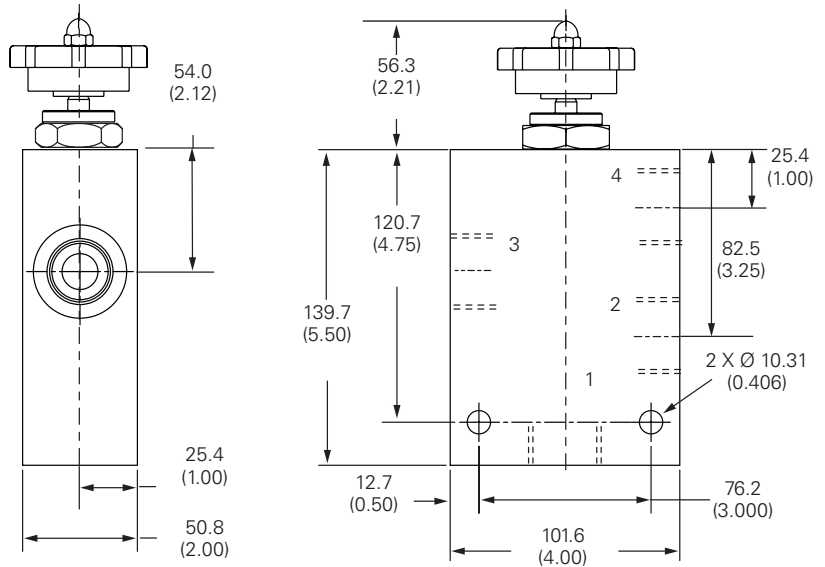
Manual semi-rotary directional control valve
 MRV14-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)
 MRV14-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 MRV14-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

MRV14-16

Cartridge only



Installation drawing (steel)

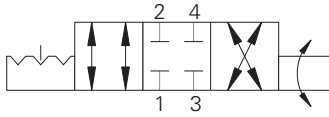


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MRV5-10/16 - Manual rotary valve

Manual semi-rotary directional control valve
 MRV5-10: 11 L/min (3 USgpm) • 210 bar (3000 psi)
 MRV5-16: 45 L/min (12 USgpm) • 210 bar (3000 psi)

3 position models



Operation

This valve will direct flow between ports 1 and 2 and ports 3 and 4 in one position.

By turning the operator 90°, flow will be directed between ports 1 and 4 and port 3 and 2. During the cross-over transition, all ports are blocked.

Performance data

Ratings and specifications

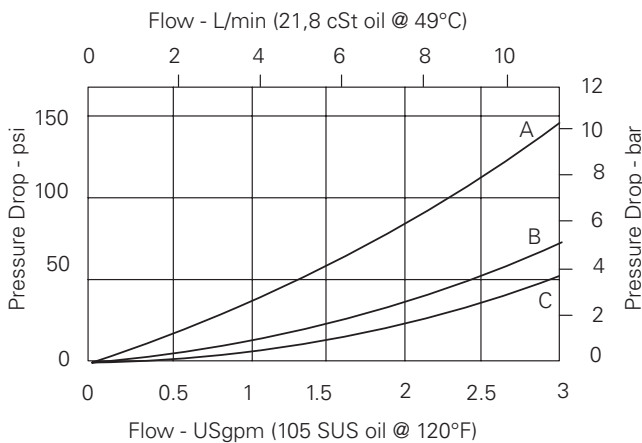
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated Flow 10	11 L/min (3 USgpm)
Rated Flow 16	45 L/min (12 USgpm)
Temperature range	-40°C to 120°C (-40° to 248°F)
Manual operators	For manual operator option refer model code
Cavity 10	C-10-4
Cavity 16	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 material	Aluminum or Steel
Weight cartridge only - 10	0,27 kg (0.59 lbs)
Weight cartridge only - 16	0,65 kg (1.43 lbs)
Seal kit 10	889625 (Buna-N), 566080 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)

* Light duty housing only.
 Viton is a registered trademark of E.I. DuPont

Pressure drop curves - 10

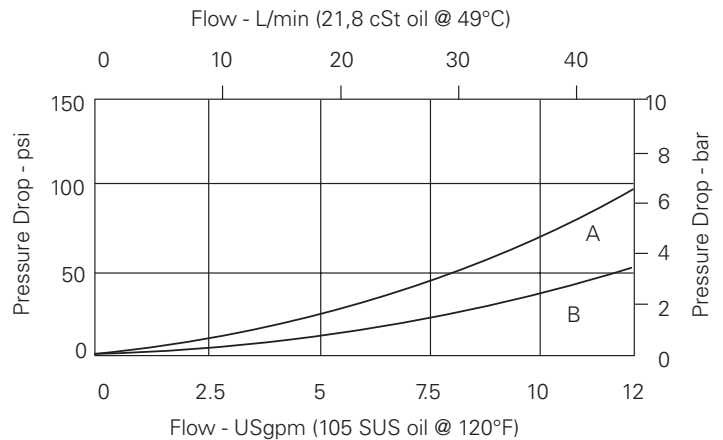
Cartridge only



- A** - Port 3 to 4 or 3 to 2
- B** - Port 4 to 1
- C** - Port 2 to 1

Pressure drop curves - 16

Cartridge only



- A** - Port 3 to 4 or 3 to 2
- B** - Port 4 to 1 or 2 to 1

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

MRV5-10/16 - Manual rotary valve

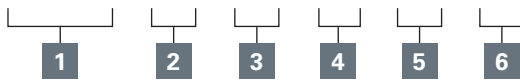
Manual semi-rotary directional control valve

MRV5-10: 11 L/min (3 USgpm) • 210 bar (3000 psi)

MRV5-16: 45 L/min (12 USgpm) • 210 bar (3000 psi)

Model code

MRV5 - 10 - (V) - ** - * - 00**



1 Function

MRV5 - Manual rotary valve
4-way

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton

4 Manual operator

O - No operator
D - Level (3-position detent)
D2 - Level (2-position detent)
E - Ball (3-position detent)
E2 - Ball (2-position detent)
K - Knob (2-position, no detent)

5 Port size

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0	Cartridge			
A3B	3/8" BSPP	02-179705	-	-
A6T	SAE 6	566161	-	-
A2G	1/4" BSPP	-	876709	-
A3G	3/8" BSPP	-	876715	-
A6H	SAE 6	-	876708	-
A8H	SAE 8	-	876713	-
S2G	1/4" BSPP	-	-	02-175139
S3G	3/8" BSPP	-	-	02-175140
S6T	SAE 6	-	-	02-175137
S8T	SAE 8	-	-	02-175138

See section J for housing details.

6 Special features

00 - Non

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

Model code

MRV5 - 16 - (V) - ** - *** - 00**



1 Function

MRV5 - Manual rotary valve
4-way

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton

4 Manual operator

O - No operator
D - Level (3-position detent)

5 Port size

Code	Port size	Housing number	
		Aluminum	Aluminum light duty
0	Cartridge		
A12T	SAE 12	566411	-
A6B	3/4" BSPP	02-175468	-
A10H 876729	SAE 10	-	
A12H 876731	SAE 12	-	
A4G	1/2" BSPP	-	876728
A6G	3/4" BSPP	-	876730

See section J for housing details.

6 Special features

00 - None

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

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

MRV5-10/16 - Manual rotary valve

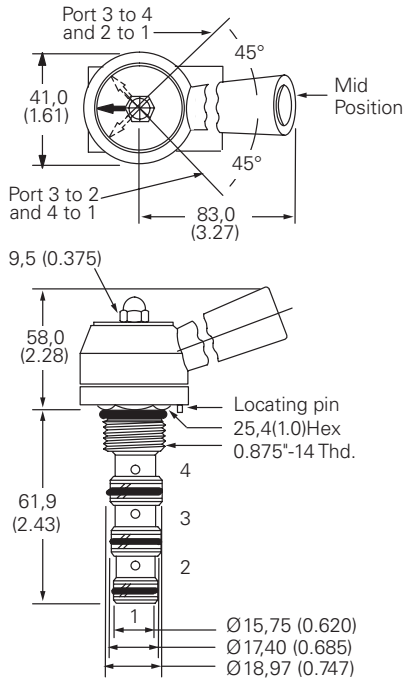
Manual semi-rotary directional control valve
 MRV5-10: 11 L/min (3 USgpm) • 210 bar (3000 psi)
 MRV5-16: 45 L/min (12 USgpm) • 210 bar (3000 psi)

MRV5-10

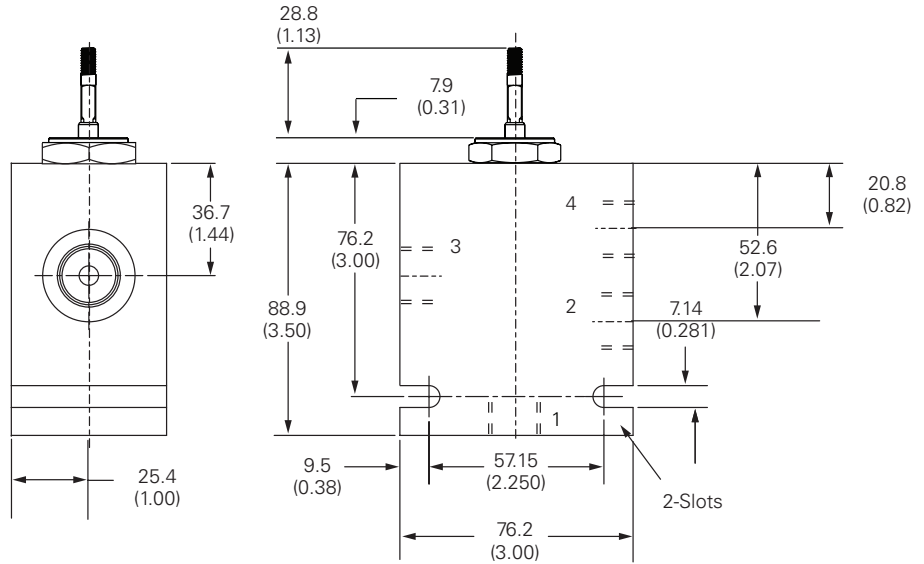
Dimensions

mm (inch)

Cartridge only

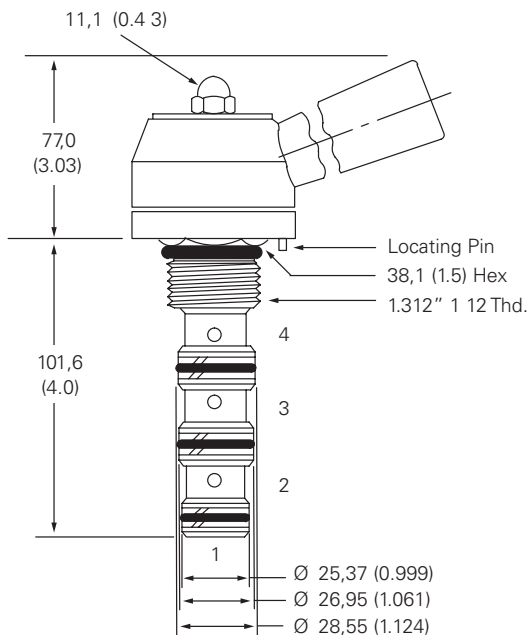


Installation drawing (aluminum)

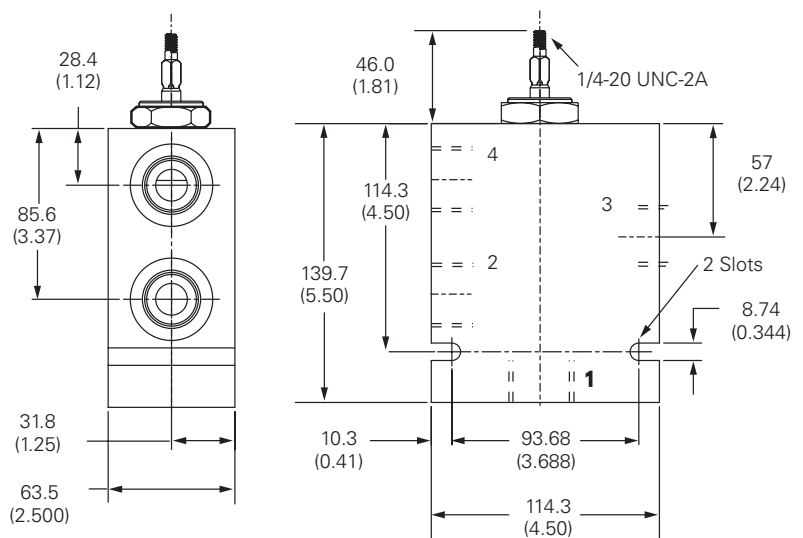


MRV5-16

Cartridge only



Installation drawing (aluminum)



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

MRV15-10/12/16 - Manual rotary valve

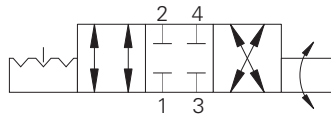
Manual semi-rotary directional control valve

MRV15-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)

MRV15-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)

MRV15-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

3 position models



Operation

This valve will direct flow between ports 1 and 2 and ports 3 and 4 in one position.

By turning the operator 90°, flow will be directed between ports 1 and 4 and port 3 and 2. During the cross-over transition, all ports are blocked.

Performance data

Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

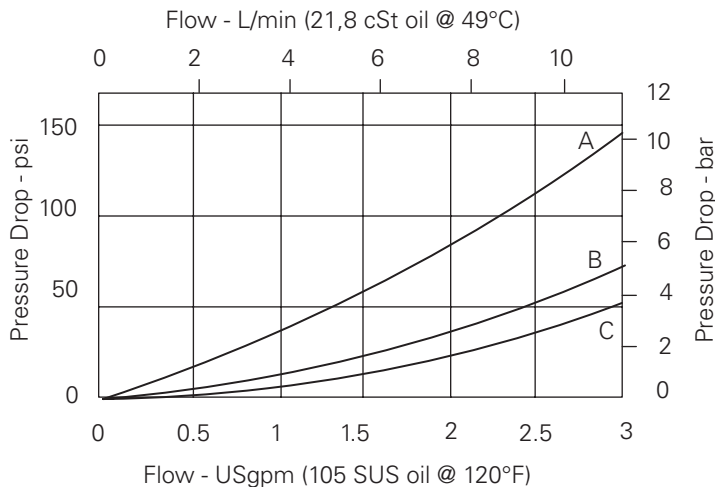
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow 10	11 L/min (3 USgpm)
Rated Flow 12	23 L/min (6 USgpm)
Rated Flow 16	45 L/min (12 USgpm)
Internal leakage	300 cc/min (18in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Manual operators	For manual operator option refer model code
Cavity 10	C-10-4
Cavity 12	C-12-4
Cavity 16	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 - 10	0.27 kg (0.59 lbs)
Weight cartridge only - 12	0.45 kg (0.99 lbs)
Weight cartridge only - 16	0.65 kg (1.43 lbs)
Seal kit 10	565805 (Buna-N), 889600 (Viton®)
Seal kit 12	02-160979 (Buna-N), 02-160980 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)

* Light duty housing only.

Viton is a registered trademark of E.I. DuPont

Pressure drop curves - 10

Cartridge only



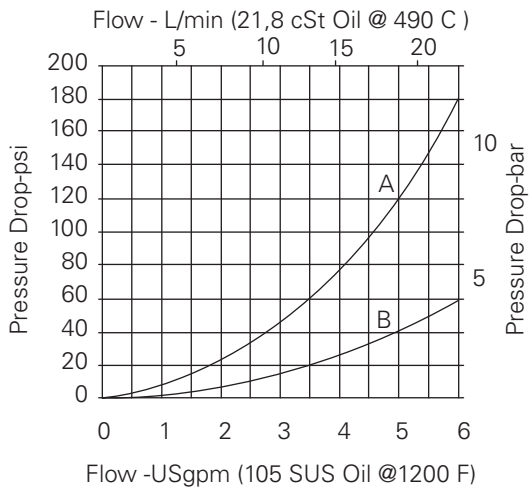
A - Port 3 to 4 or 3 to 2

B - Port 4 to 1

C - Port 2 to 1

Pressure drop curves -12

Cartridge only



A - Port 3-4 and port 3-2

B - Port 2-1 and port 4-1

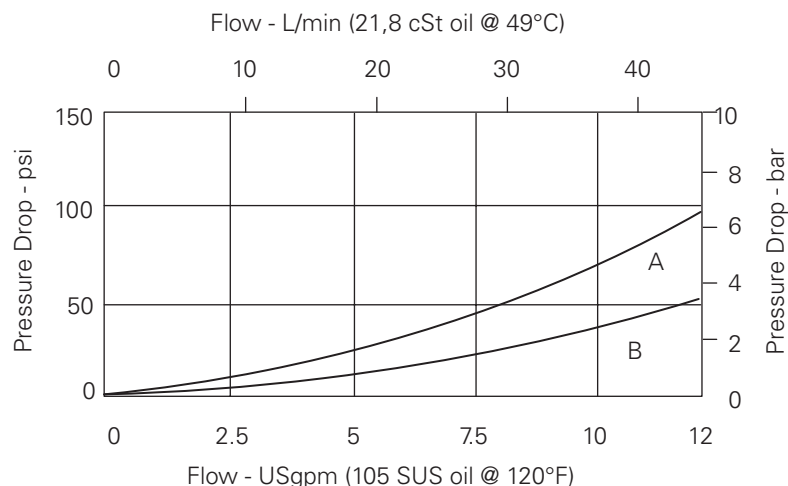
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MRV15-10/12/16 - Manual rotary valve

Manual semi-rotary directional control valve
 MRV15-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)
 MRV15-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 MRV15-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

Pressure drop curves - 16

Cartridge only



A - Port 3 to 4 or 3 to 2

B - Port 4 to 1 or 2 to 1

Model code

MRV15 - 10 - (V) - ** - *** - 00**

1 2 3 4 5 6

1 Function

MRV15 - Manual rotary valve
4-way

2 Size

10 - 10 size

3 Seals

Blank - Buna-N
V - Viton®

4 Manual operator

0 - No operator
D - Lever (3-position detent)
D2 - Lever (2-position detent)
E2 - Ball (2-position detent)
K - Knob (2-position, no detent)

5 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0				
A3B	3/8" BSPP	02-179705		
A6T	SAE 6	566161		
A2G	1/4" BSPP		02-185804	
A3G	3/8" BSPP		02-185805	
A6H	SAE 6		02-185802	
A8H	SAE 8		02-185803	
S2G	1/4" SSPP			02-175139
S3G	3/8" BSPP			02-175140
S6T	SAE 6			02-175137
S8T	SAE 8			02-175138

See section J for housing details.

6 Special features

00 - Non

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

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

MRV15-10/12/16 - Manual rotary valve

Manual semi-rotary directional control valve

MRV15-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)

MRV15-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)

MRV15-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

Model code

MRV15 - 12 - (V) - ** - ** - 00**

1
 2
 3
 4
 5
 6

1 Function

MRV15 - Manual rotary valve
4-way

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Manual operators

0 - No operator
D - Lever (3-position detent)
E - Ball (3-position detent)
D2 - Lever (2-position detent)
E2 - Ball (2-position detent)
K - Knob (2-position, no detent)

5 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum light-duty	Steel
0			
A4G	1/2" BSPP	5986431-001	
A6G	3/4" BSPP	5986432-001	
A8H	SAE 8	5986433-001	
A10H	SAE 10	5986434-001	
A12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S10H	SAE 10		5991074-001
S12H	SAE 12		5991075-001

See section J for housing details.

6 Special features

00 - Non

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

Model code

MRV15 - 16 - (V) - * - ** - 00**

1
 2
 3
 4
 5
 6

1 Function

MRV15 - Manual rotary valve
4-way

2 Size

16 - 16 size

3 Seal

Blank - Buna-N
V - Viton®

4 Manual operators

0 - No operator
D - Lever (3-position detent)

5 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0				
A12T	SAE 12	566411		
A6B	3/4" BSPP	02-175468		
A10H	SAE 10		876729	
A12H	SAE 12		876731	
A4G	1/2" BSPP		876728	
A6G	3/4" BSPP		876730	
S4G	1/2" SSPP			02-175143
S6G	3/4" BSPP			02-175144
S10T	SAE 10			02-175141
S12T	SAE 12			02-175142

See section J for housing details.

6 Special features

00 - None

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

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

MRV15-10/12/16 - Manual rotary valve

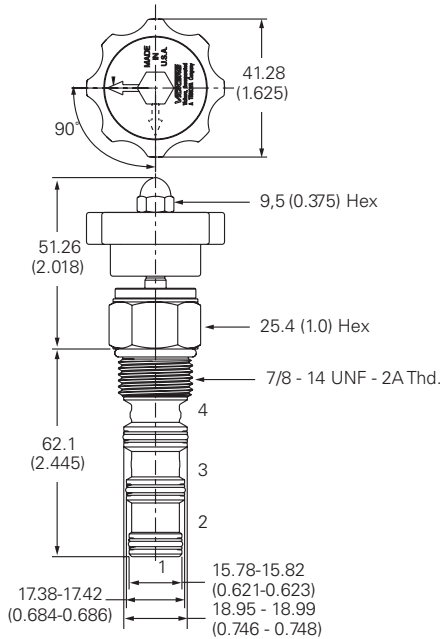
Manual semi-rotary directional control valve
 MRV15-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)
 MRV15-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 MRV15-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

MRV15-10

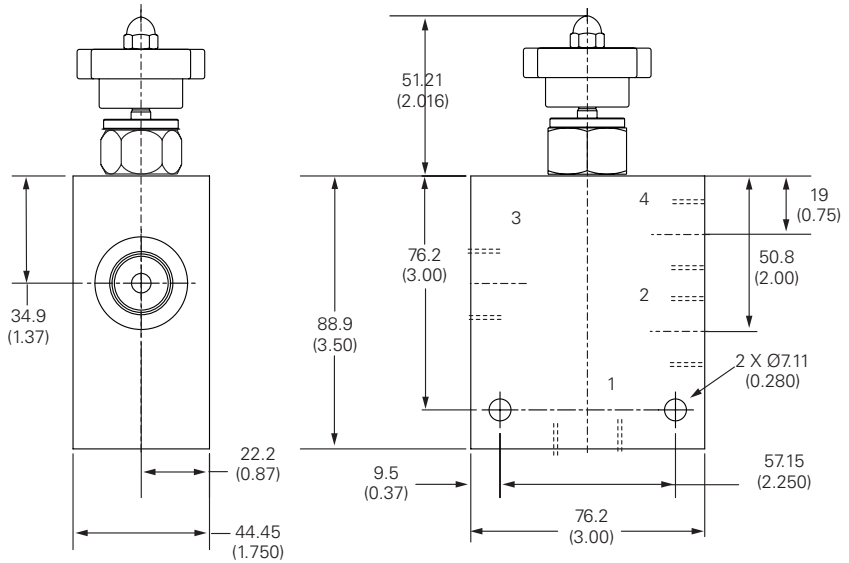
Dimensions

mm (inch)

Cartridge only

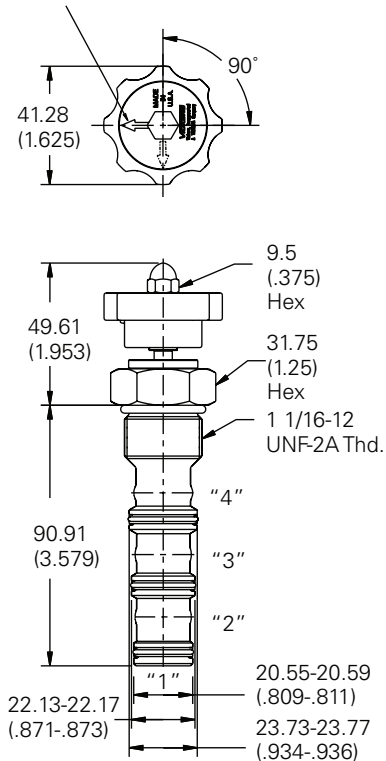


Installation drawing (steel)

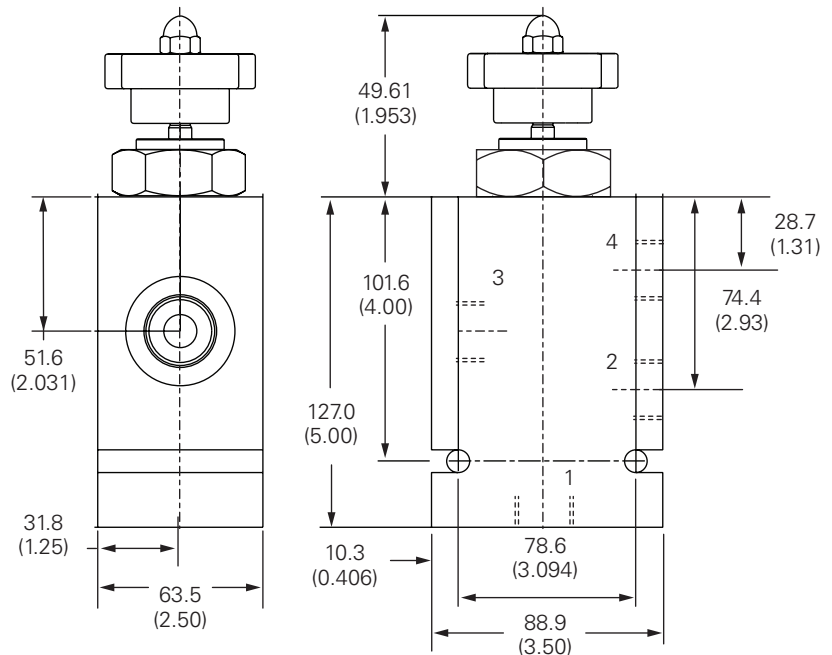


MRV15-12

Cartridge only



Installation drawing (steel)



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

MRV15-10/12/16 - Manual rotary valve

Manual semi-rotary directional control valve

MRV15-10: 11 L/min (3 USgpm) • 350 bar (5000 psi)

MRV15-12: 23 L/min (6 USgpm) • 350 bar (5000 psi)

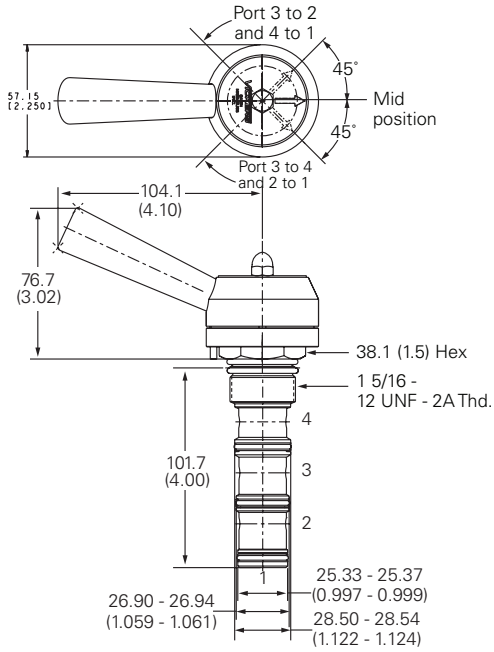
MRV15-16: 45 L/min (12 USgpm) • 350 bar (5000 psi)

MRV15-16

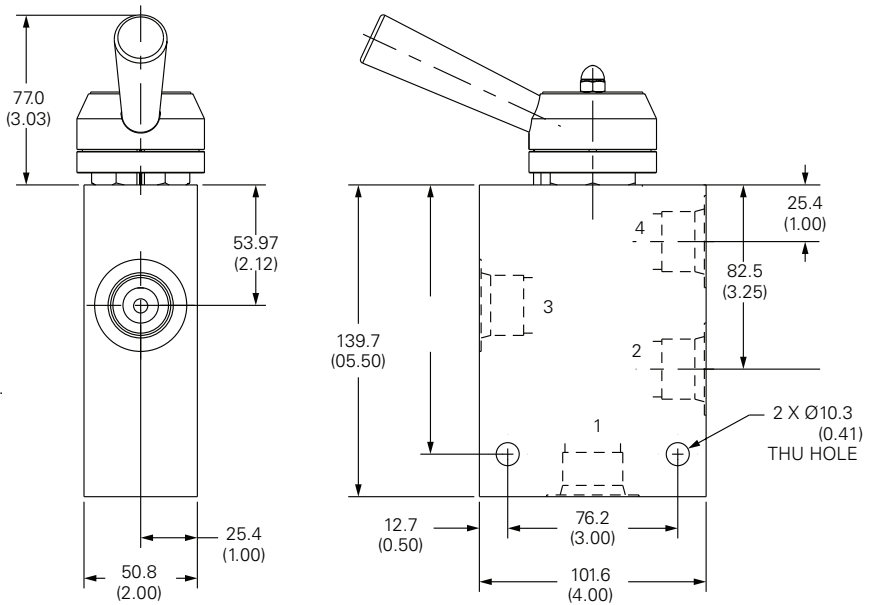
Dimensions

mm (inch)

Cartridge only



Installation drawing (steel)



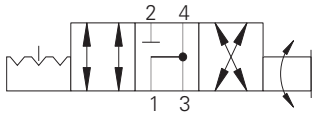
D

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

MRV6-10/16 - Manual rotary valve

Manual semi-rotary directional control valve
 MRV6-10: 11 L/min (3 USgpm) • 210 bar (3000 psi)
 MRV6-16: 45 L/min (12 USgpm) • 210 bar (3000 psi)

3 position models



Operation

This valve will direct flow between ports 1 and 2 and ports 3 and 4 in one position.

By turning the operator 90°, flow will be directed between ports 1 and 4 and port 3 to 2. During the cross-over transition all ports 1, 3 and 4 are open to each other and port 2 is blocked.

Performance data

Ratings and specifications

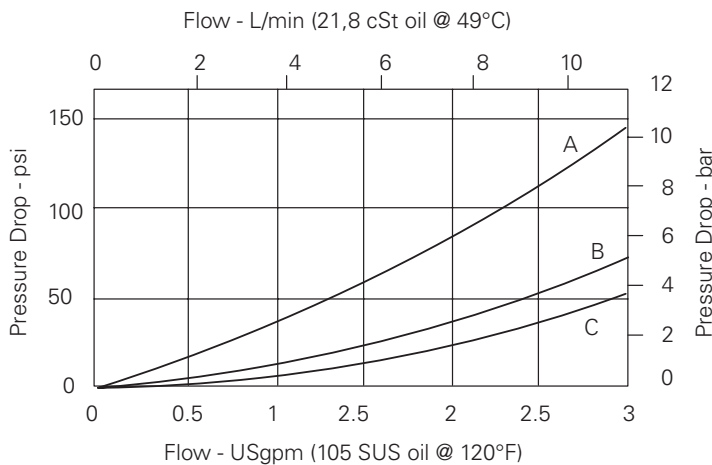
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow 10	11 L/min (3 USgpm)
Rated flow 16	45 L/min (12 USgpm)
Internal leakage	164cc/min (10in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Manual operators	For manual operator option refer model code
Cavity 10	C-10-4
Cavity 16	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 and Steel
Weight cartridge only 10	0,27 kg (0.59 lbs)
Weight cartridge only 16	0,27 kg (0.59 lbs)
Seal kit 10	889625 (Buna-N), 566080 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)

* Light duty housing only.
 Viton is a registered trademark of E.I. DuPont

Pressure drop curves - 10

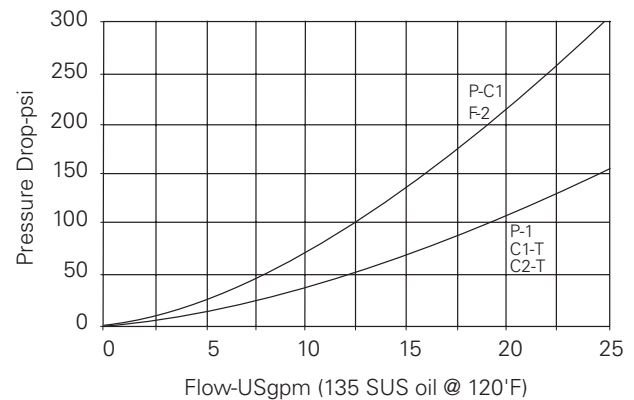
Cartridge only



- A** - Port 3 to 4 or 3 to 2
- B** - Port 4 to 1
- C** - Port 2 to 1

Pressure drop curves - 16

Cartridge only



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

MRV6-10/16 - Manual rotary valve

Manual semi-rotary directional control valve

MRV6-10: 11 L/min (3 USgpm) • 210 bar (3000 psi)

MRV6-16: 45 L/min (12 US gpm) • 210 bar (3000 psi)

Model code

MRV6 - 10 - (V) - ** - * - 00**

1 2 3 4 5 6

1 Function

MRV6 - Manual rotary valve
4-way

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Manual operator

O - No operator
D - Level (3-position detent)
E - Ball (3-position detent)

5 Port size

Code	Port size	Housing number		
		Aluminum Light duty	Aluminum Fatigue rated	Steel
0	Cartridge			
A3B	3/8" BSPP	02-179705	-	-
A6T	SAE 6	566161	-	-
A2G	1/4" BSPP	-	876709	-
A3G	3/8" BSPP	-	876715	-
A6H	SAE 6	-	876708	-
A8H	SAE 8	-	876713	-
S2G	1/4" BSPP	-	-	02-175139
S3G	3/8" BSPP	-	-	02-175140
S6T	SAE 6	-	-	02-175137
S8T	SAE 8	-	-	02-175138

See section J for housing details.

6 Special features

00 - None

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

Model code

MRV6 16 (V) D 0 00

1 2 3 4 5 6

1 Function

MRV6 - Manual rotary valve
4-way

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton

4 Adjustment

D - 3-position detent

5 Port size

0 - Cartridge Only
6 - 3/4" NPTF
8 - 1" NPTF
12T - SAE 12
16T - SAE 16

6 Special features

00 - None

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

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

MRV6-10/16 - Manual rotary valve

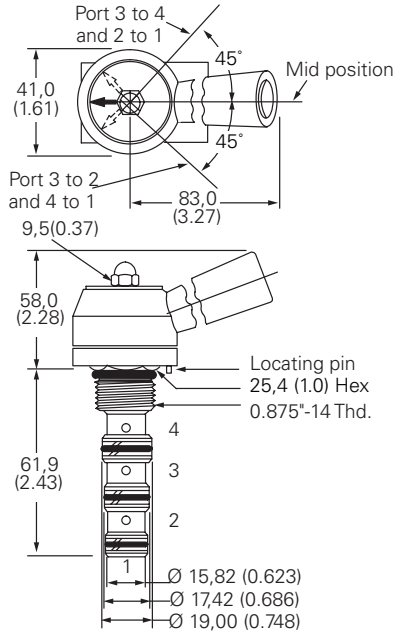
Manual semi-rotary directional control valve
 MRV6-10: 11 L/min (3 USgpm) • 210 bar (3000 psi)
 MRV6-16: 45 L/min (12 US gpm) • 210 bar (3000 psi)

MRV6-10

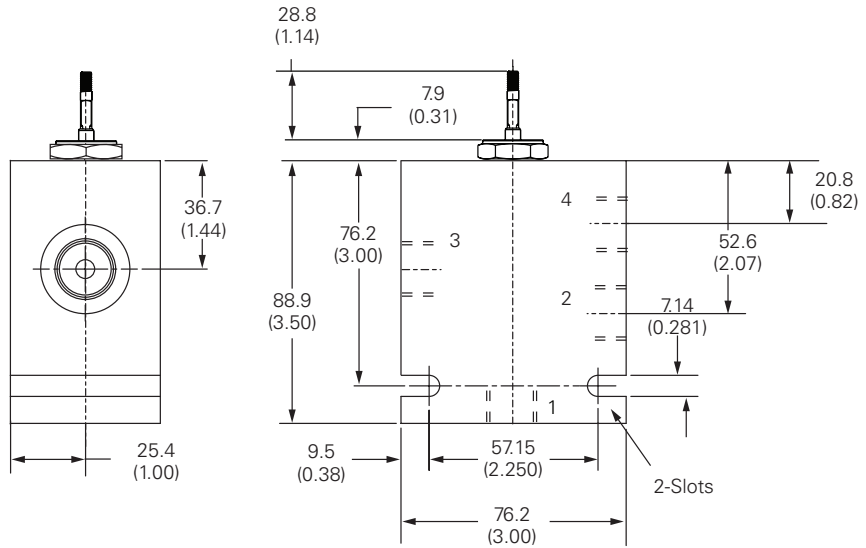
Dimensions

mm (inch)

Cartridge only

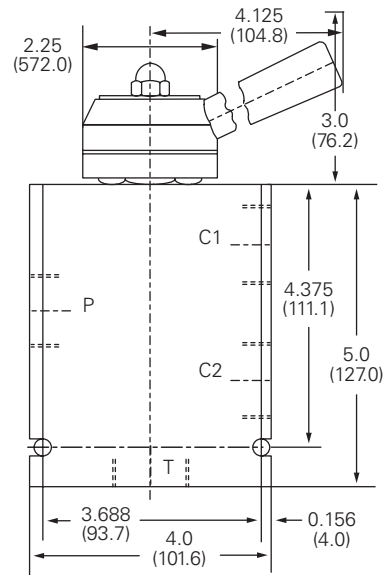
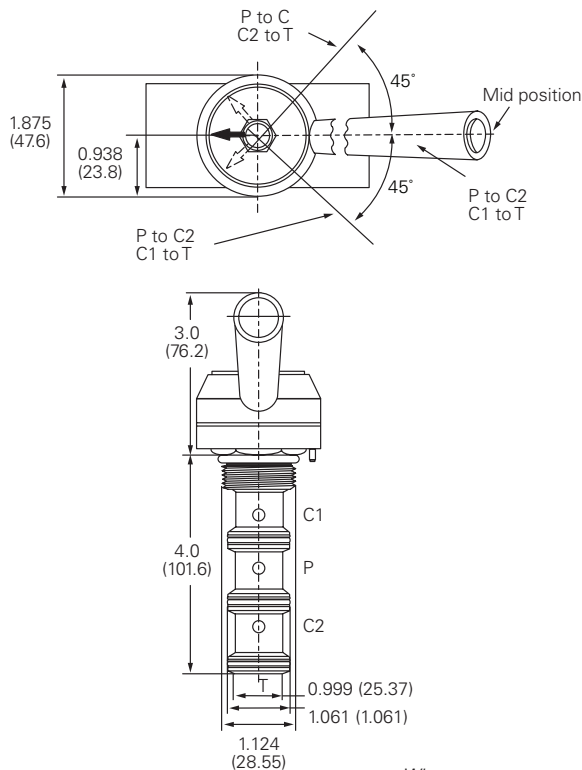


Installation drawing (Aluminum)



MRV6-16

Cartridge and Installation drawing

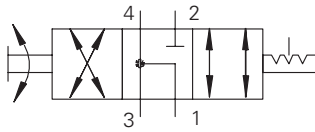


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MRV7-10 - Manual rotary valve

Manual semi-rotary directional control valve
11 L/min (3 USgpm) • 210 bar (3000 psi)

3 position models



Operation

This valve will direct flow between ports 1 and 2 and ports 3 and 4 in one position.

By turning the operator 90°, flow will be directed between ports 1 and 4 and port 3 to 2. During the cross-over transition all ports are open to each other.

Performance data

Ratings and specifications

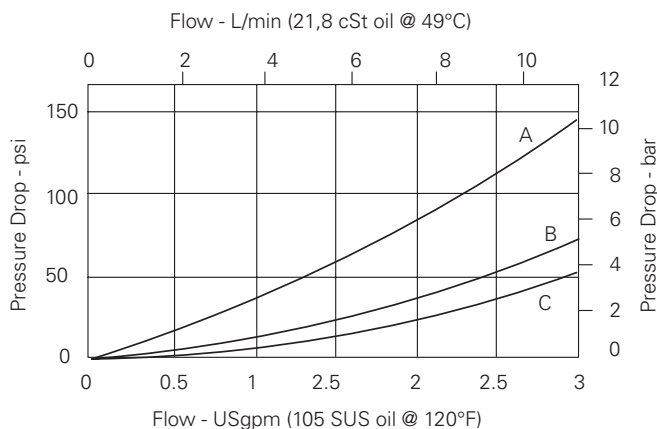
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	11 L/min (3 USgpm)
Internal leakage	164cc/min (10in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Manual operators	For manual operator option refer model code
Cavity	C-10-4
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 and Steel
Weight cartridge only	0,27 kg (0.59 lbs)
Seal kit	889625 (Buna-N), 566080 (Viton®)

* Light duty housing only.
Viton is a registered trademark of E.I. DuPont

Pressure drop curves

Cartridge only



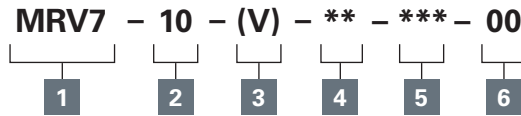
- A** - Port 3 to 4 or 3 to 2
- B** - Port 4 to 1
- C** - Port 2 to 1

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

MRV7-10 - Manual rotary valve

Manual semi-rotary directional control valve
11 L/min (3 USgpm) • 210 bar (3000 psi)

Model code



1 Function

MRV7 - Manual rotary valve
4-way

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton

4 Manual operator

O - No operator
D - Level (3-position detent)
E - Ball (3-position detent)

5 Port size

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0	Cartridge			
A3B	3/8" BSPP	02-179705	-	-
A6T	SAE 6	566161	-	-
A2G	1/4" BSPP	-	876709	-
A3G	3/8" BSPP	-	876715	-
A6H	SAE 6	-	876708	-
A8H	SAE 8	-	876713	-
S2G	1/4" BSPP	-	-	02-175139
S3G	3/8" BSPP	-	-	02-175140
S6T	SAE 6	-	-	02-175137
S8T	SAE 8	-	-	02-175138

See section J for housing details.

6 Special features

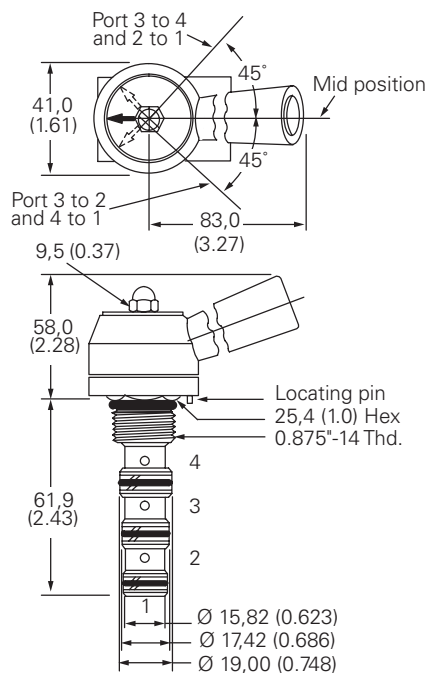
00 - None

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

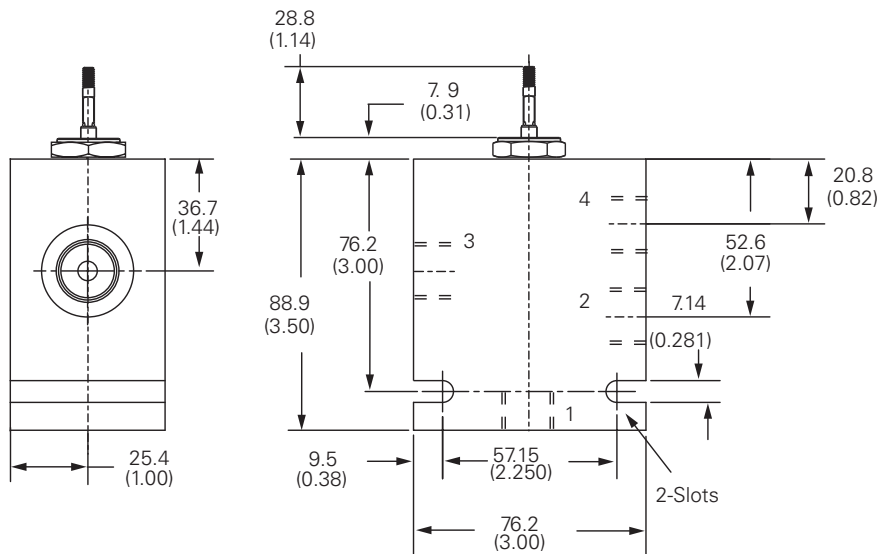
Dimensions

mm (inch)

Cartridge only



Installation drawing (Aluminum)

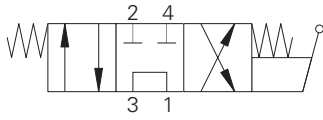


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MLV9-1 2-A/B/E/F - Directional valve

Manual lever valve, spool
60 L/min (15.9 USgpm) • 210 bar (3000 psi)

Operation



In the center position, this valve allows flow from port 3 to port 1 and blocks ports 2 and 4.

In position 1, flow is directed from port 3 to port 2 and from port 4 to port 1. In position 2, flow is directed from port 3 to port 4 and from port 2 to port 1.

Performance data

Ratings and specifications

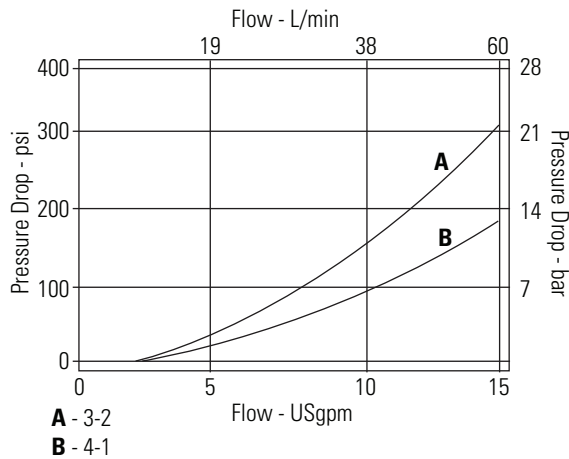
Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Fatigue pressure	(210 bar) 3,000 psi per NFPA/T2-6-1 R2-2000
Rated burst pressure	(626 bar) 9090 psi per NFPA/T2-6-1 R2-2000
Max flow	60 L/min (15.9 USgpm)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-4
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	.57 kg (1.25 lbs)
Seal kit	9900171-000 (Buna-N), 9900172 (Viton®)
Internal leakage	246 cm ³ /min (15 in ³ /min) max. @ 210 bar (3000 psi)

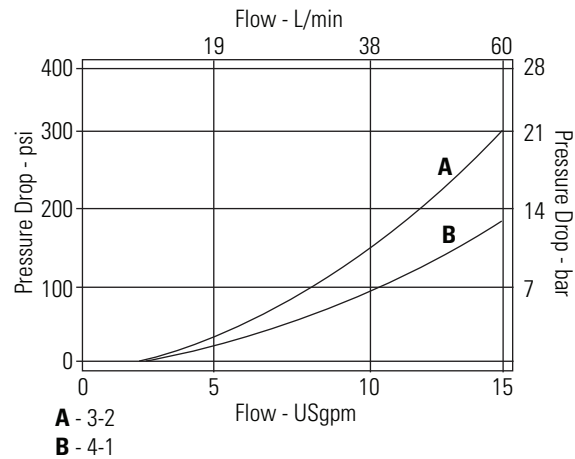
Endurance tested to 1 million cycles at full rated flow and pressure

Viton is a registered trademark of E.I. DuPont

Pressure drop for - A



Pressure drop curves for - B

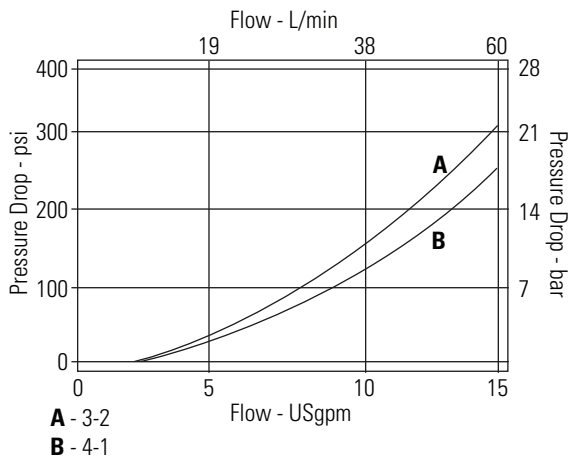


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

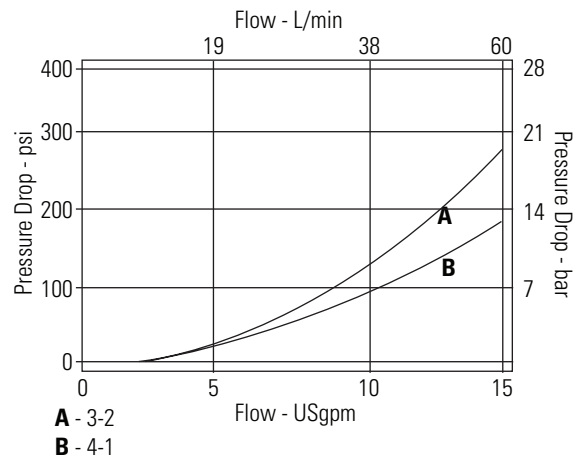
MLV9-12-B - Directional valve

Manual lever valve, spool
60 L/min (15.9 USgpm) • 210 bar (3000 psi)

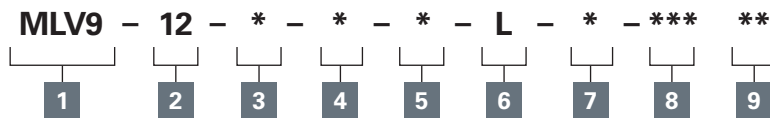
Pressure drop for - E



Pressure drop for - F



Model code



1 Function

MLV9 - Manual lever valve

2 Size

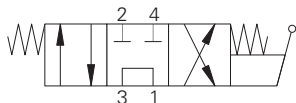
12 - 12 size

3 Seal material

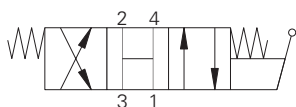
Blank - Buna-N
V - Viton®

4 Spool center condition

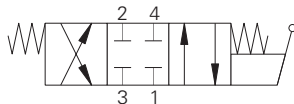
A



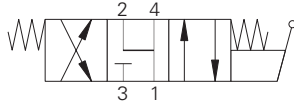
B



E



F



5 Detent option

O - Spring return
D - Detent, spring centered

6 Lever

L - Lever

7 Housing material

Blank - Cartridge only
A - Aluminum

8 Port size - bodied valve

Code	Port size	Housing number
Aluminum		
0	Cartridge only	
A4G	1/2" BSPP	5986431-001
A6G	3/4" BSPP	5986432-001
A8H	SAE 8	5986433-001
A10T	SAE 10	6030517-001
A12H	SAE 12	5986436-001

See section J for housing details.

9 Lever position

00 - 90°
01 - 45°
02 - 0°
03 - 135°
04 - 180°

See page D-297 for lever position

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

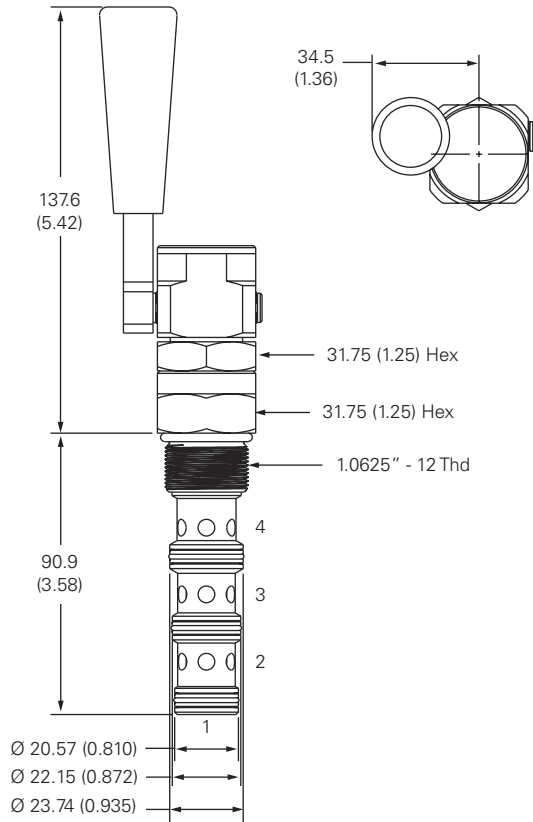
MLV9-12 - Directional valve

Manual lever valve, spool
 60 L/min (15.9 USgpm) • 210 bar (3000 psi)

Dimensions

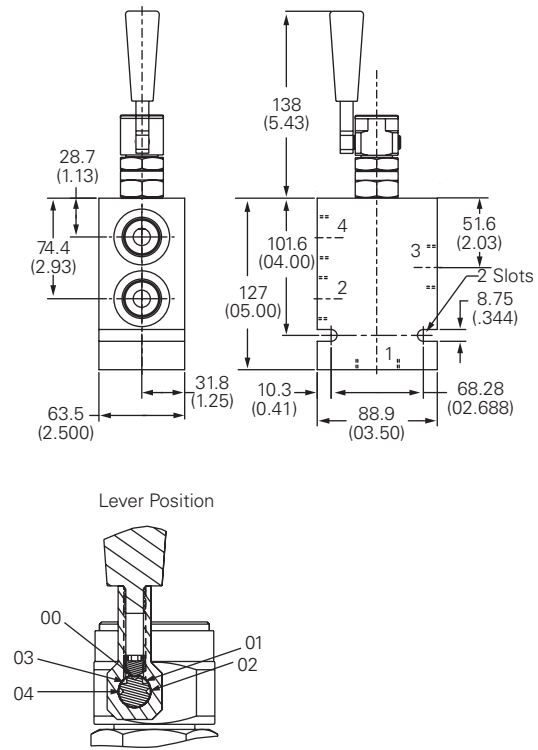
mm (inch)

Cartridge only



Installation drawings (aluminum)

MLV9-12-A/B/E/F



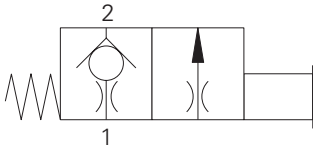
Spare parts

Lever - 21113

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

3CP2 - Series check valve

Check, manually operated
5.5-15 L/min (1.5-4 USgpm) • 210 bar (3000 psi)



Operation

The poppet seals flow from ports 1 to 2, depressing the hand knob lifts the poppet from its seat permitting flow the flow rate is determined by the size of the orifice and the pressure in the system, various orifice sizes are available.

Flow from port 2 to 1 should be avoided - if required please consult our technical department.

Performance data

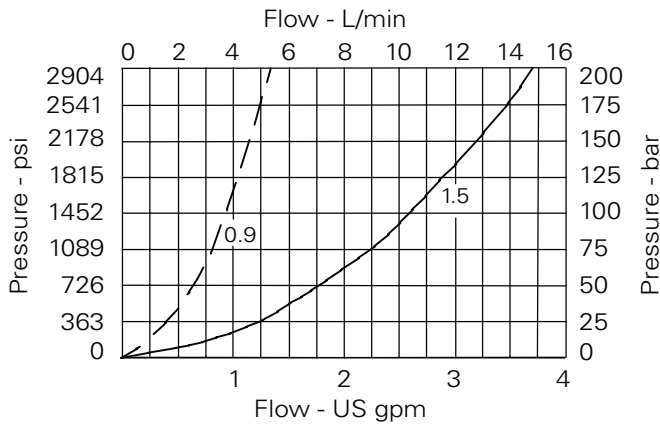
Ratings and specifications

Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Max pressure	210 bar (3000 psi)
Rated flow	.9 mm orifice 5.5 L/min (1.4 US gpm), 1.5 mm orifice 15 L/min (4 US gpm)
Internal leakage	.3 ml/min nominal (5 dpm)
Temperature range	-30° to 90°C (-22° to 194°F)
Cavity	A879 (see Section M)
Torque cartridge into cavity	45 Nm (33 lbs ft)
Mounting position	Unrestricted
Filtration	BS5540/4 Class 18/13 (25 micron or better)
Nominal viscosity range	5 to 500 cSt
Cartridge material	All steel construction. External parts electroless zinc plated.
Standard housing materials	Aluminum
Weight	.05 kg (.11 lbs)
Seal kit	SK187 (Nitrile) SK187V (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop

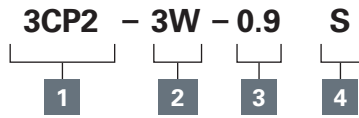


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

3CP2 - Series check valve

Check, manually operated
5.5-15 L/min (1.5-4 USgpm) • 210 bar (3000 psi)

Model code



1 Function

3CP2 - Cartridge only
3CP25 - Cartridge and body

2 Port size

Code	Port size	Housing number	
		Aluminum	Steel
0	Cartridge only		
2W	1/4" BSP	A1485	
3W	3/8" BSP	A1043	A18175
6T	3/8" SAE	A15676	A14843

3 Orifice size

0.9 - 0.9 mm
1.5 - 1.5 mm

4 Seals

S - Nitrile
SV - Viton

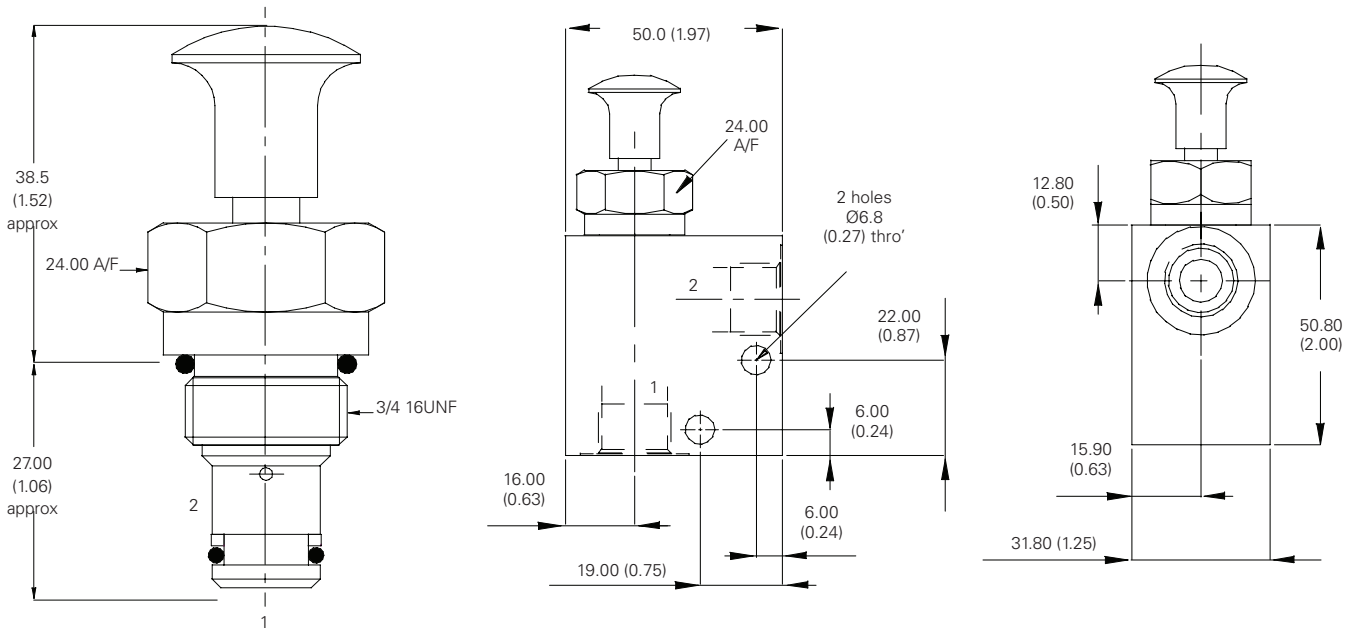
See section J for housing details.

Dimensions

mm (inch)

Cartridge only

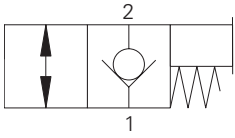
Installation drawing



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

MPV1-10 - Manual pull valve

Poppet type, normally closed valve
45 L/min (11.9 USgpm) • 210 bar (3000 psi)



Operation

This valve blocks flow from port 2 to port 1 and will allow flow from port 1 to port 2 when the spring bias is overcome.

Performance data

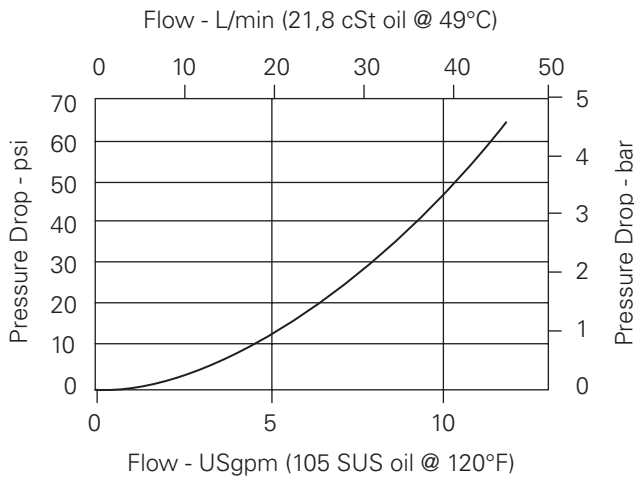
Ratings and specifications

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 (11.9 USgpm)
Internal leakage, port 2 to port 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 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	0,11 kg (0.24 lbs)
Seal kit	565803 (Buna-N), 566086 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



⚠ Warning

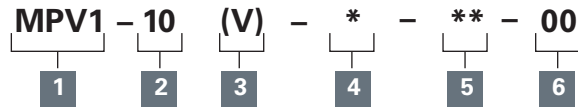
Back pressure of
16 bar (240 psi)
will unseat the poppet.

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

MPV1-10 - Manual pull valve

Poppet type, normally closed valve
45 L/min (11.9 USgpm) • 210 bar (3000 psi)

Model code



1 Function

MPV1 - Manual pull valve

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N

V - Viton®

4 Type

T - Stem only

K - Knob

5 Port size

0 - Cartridge only

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	-	876700
8H	SAE 8	-	876701

See section J for housing details.

6 Special features

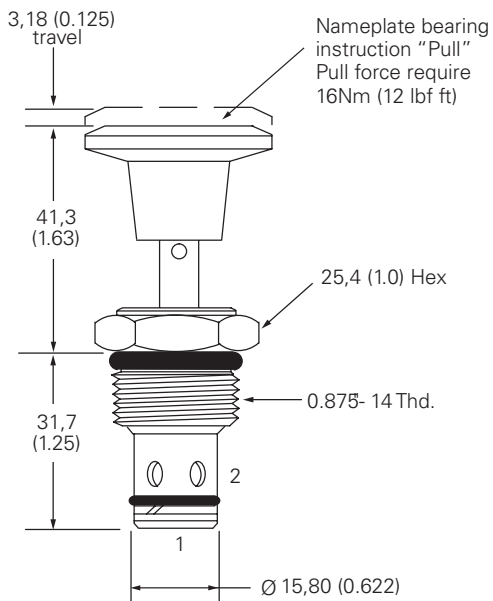
00 - None

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

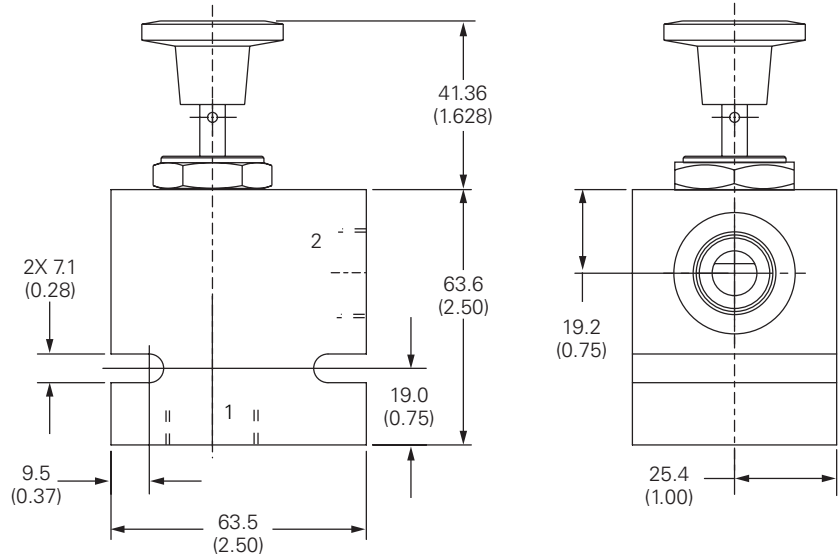
Dimensions

mm (inch)

Cartridge only



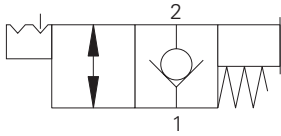
Installation drawing



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

MPV3-10 - Manual pull valve

Normally closed valve
45 L/min (11.9 USgpm) • 210 bar (3000 psi)



Operation

This valve blocks flow from port 2 to port 1 and will allow flow from port 1 to port 2 when the spring bias is overcome.

When the valve is actuated free flow is allowed in both directions.

Performance data

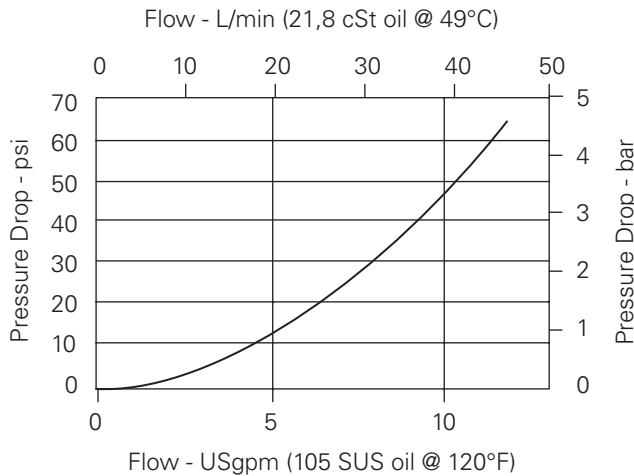
Ratings and specifications

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 (11.9 USgpm)
Internal leakage (port 2 to port 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 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	0,11 kg (0.24 lbs)
Seal kit	565803 (Buna-N), 566086 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



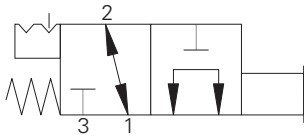
⚠ Warning

Back pressure of
16 bar (240 psi)
will unseat the poppet.

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

MSV1-12 - Manual push valve

Push and twist directional control valve
41.8 L/min (11 USgpm) • 210 bar (3000 psi)



Operation

In the normal position, the valve allows flow from port 1 to port 2 while port 3 is blocked. In the actuated position, flow is allowed from port 3 to port 1 while port 2 is blocked.

Performance data

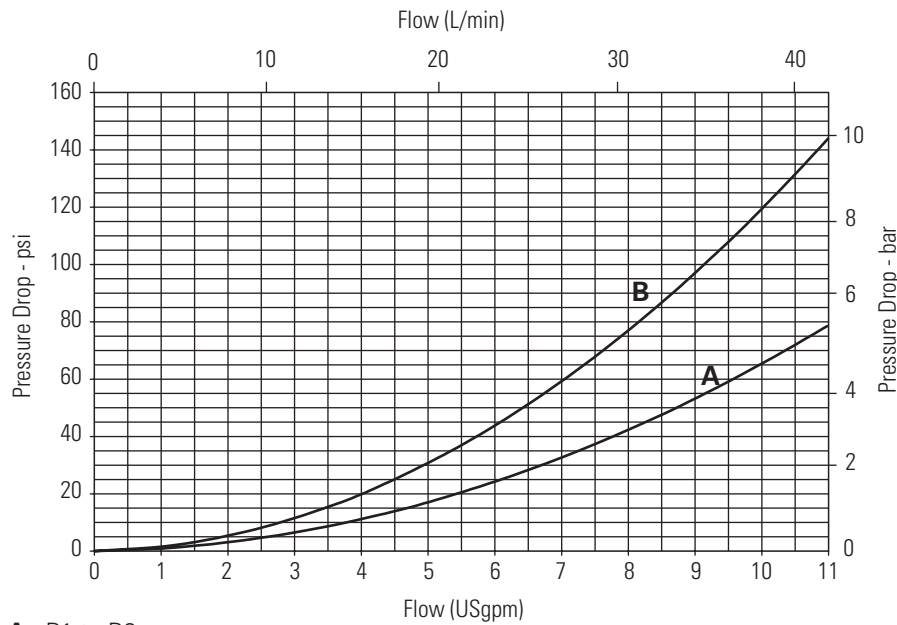
Ratings and specifications

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	41,8 L/min (11 USgpm)
Internal leakage	350 cc/min (21.5 in ³ /min)
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	Cleanliness code 18/16/13
Standard housing materials	Aluminum
Weight cartridge only	0,29 kg (0.66 lbs)
Seal kit	9900171-000 (Buna-N), 9900172-000 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



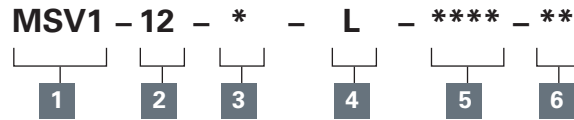
A - P1 to P2
B - P3 to P1

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

MSV1-12 - Manual push valve

Push and twist directional control valve
41.8 L/min (1.1 USgpm) • 210 bar (3000 psi)

Model code



1 Function

MSV1 - Manual push valve

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation
E - Emergency stop actuation
N - No Detent

5 Port size

0 - Cartridge only

6 Special features

00 - None

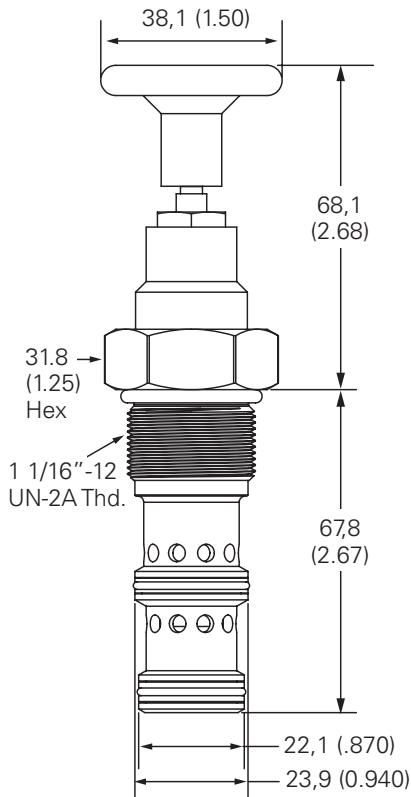
(Only required if valve has special features, omitted if "00.")

Code	Port size	Housing number
		Aluminium
A6G	3/4" BSPP	02-161816
A12H	SAE 12	02-160646

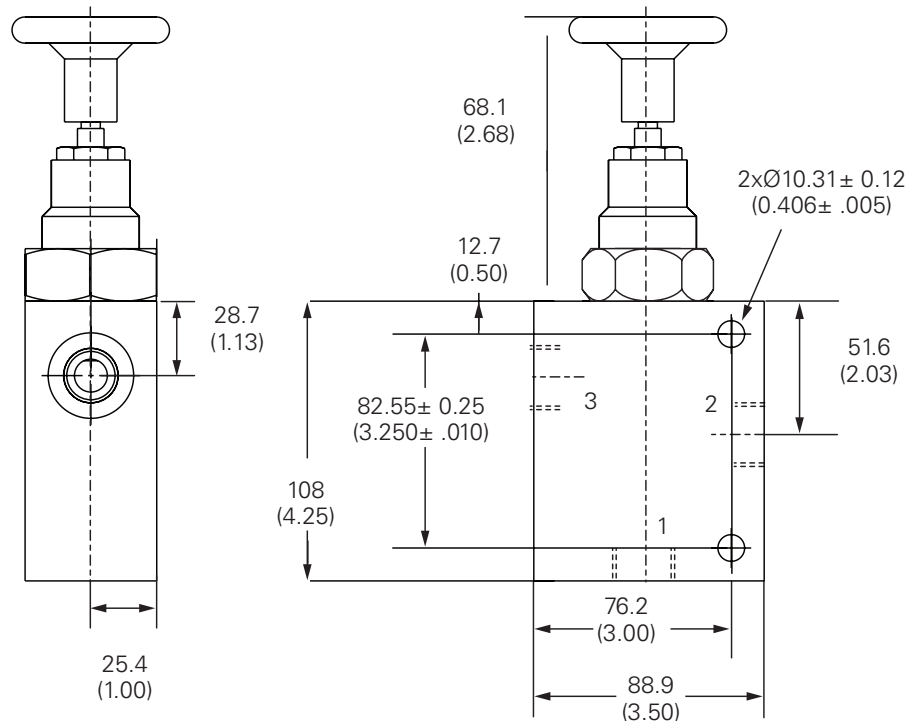
Dimensions

mm (inch)

Cartridge only



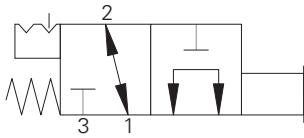
Installation drawing



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

MSV11-10/12 - Manual push valve

Push and twist directional control valve
 MSV11-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 MSV11-12: 30 L/min (8 USgpm) • 350 bar (5000 psi)



Operation

In the normal position, the valve allows flow from port 1 to port 2 while port 3 is blocked. In the actuated position, flow is allowed from port 3 to port 1 while port 2 is blocked.

Performance data

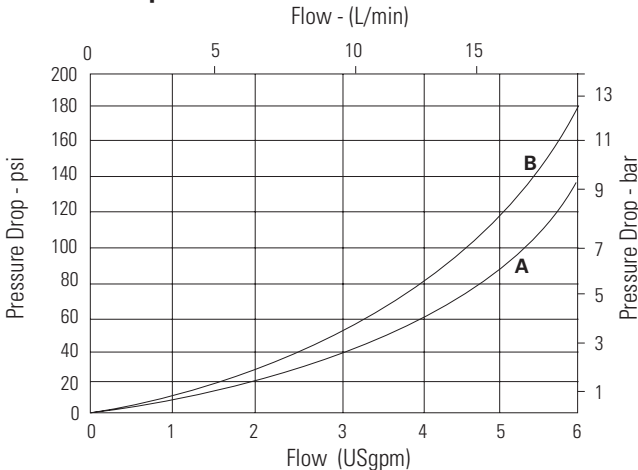
Ratings and specifications

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 10	23 L/min (6 USgpm)
Rated Flow 12	30 L/min (8 USgpm)
Internal leakage	350 cc/min (21.5 in ³ /min) @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity 10	C-10-3
Cavity 12	C-12-3
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 and Steel
Weight cartridge only - 10	0.25 kg (0.55 lbs)
Weight cartridge only - 12	0.29 kg (0.66 lbs)
Seal kit 10	889624 (Buna-N), 889628 (Viton®)
Seal kit 12	9900171-000 (Buna-N), 9900172-000 (Viton®)

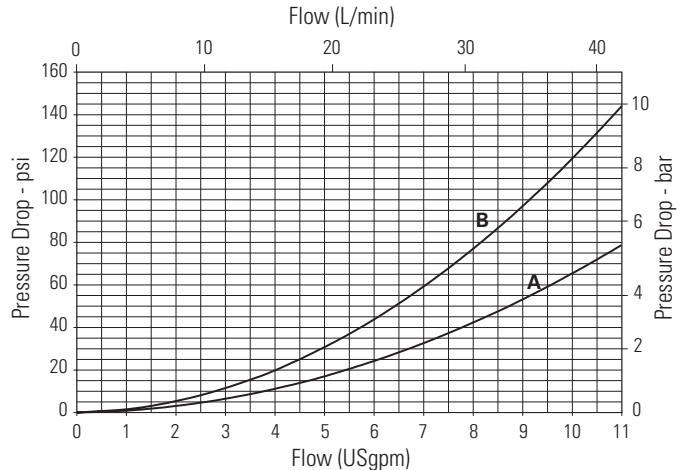
Viton is a registered trademark of E.I. DuPont

Pressure drop for - 10



- A** - Port 1 to port 2
- B** - Port 3 to port 1

Pressure drop for - 12



- A** - P1 to P2
- B** - P3 to P1

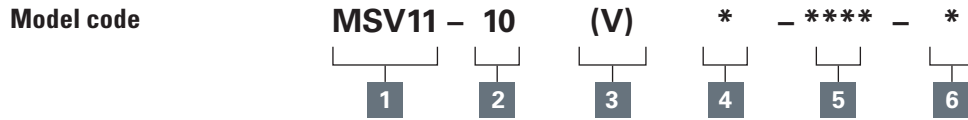
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MSV1 1-10/12 - Manual push valve

Push and twist directional control valve

MSV11-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)

MSV11-12: 30 L/min (8 USgpm) • 350 bar (5000 psi)



1 Function

MSV11 - 3-way, 2 position manual push valve

2 Size

10 - 10 size

3 Seals

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation, with detent
E - Emergency stop actuation
N - No detent, momentary actuation
K - Push and twist

5 Port size

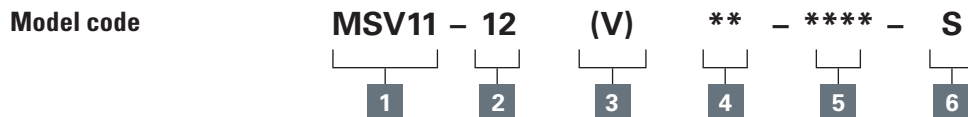
0 - Cartridge only

Code	Port size	Housing number	
		Aluminum	Steel
A2G	1/4" BSPP	876705	
A3G	3/8" BSPP	876714	
A6H	SAE 6	876704	
A8H	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

See section J for housing details.

6 Special features

Blank - No special features



1 Function

MSV11 - Manual push valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position, push & twist actuation, with detent.
E - Emergency stop actuation
N - No detent, momentary actuation
K - Push and twist

5 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum	Steel
0			
A6G	3/4" BSPP	02-161816	
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

6 Valve housing material

Blank - Cartridge only
S - Steel

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

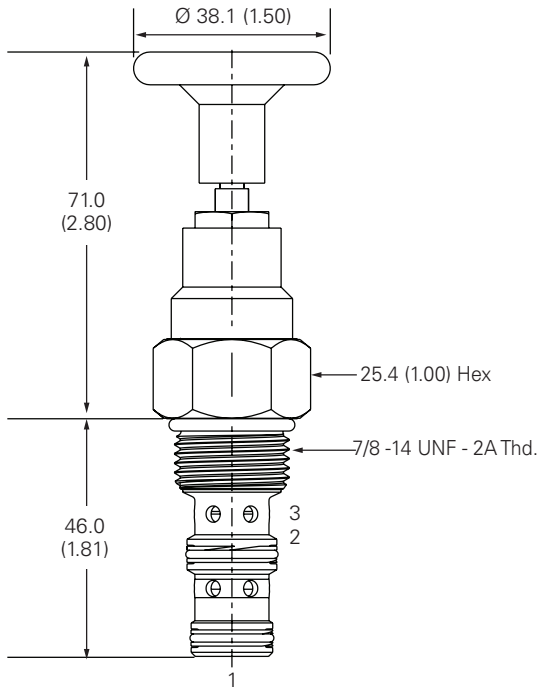
MSV11-10/12 - Manual push valve

Push and twist directional control valve
 MSV11-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 MSV11-12: 30 L/min (8 USgpm) • 350 bar (5000 psi)

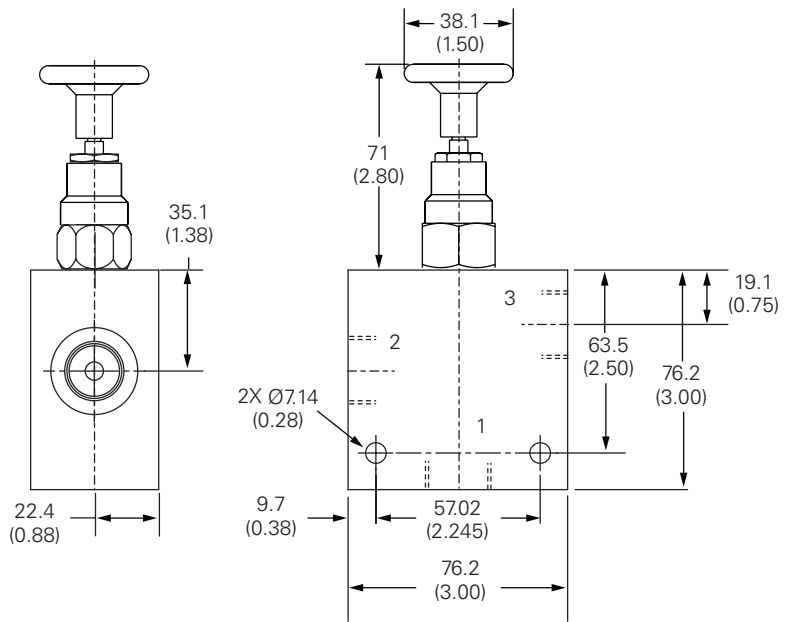
Dimensions

mm (inch)

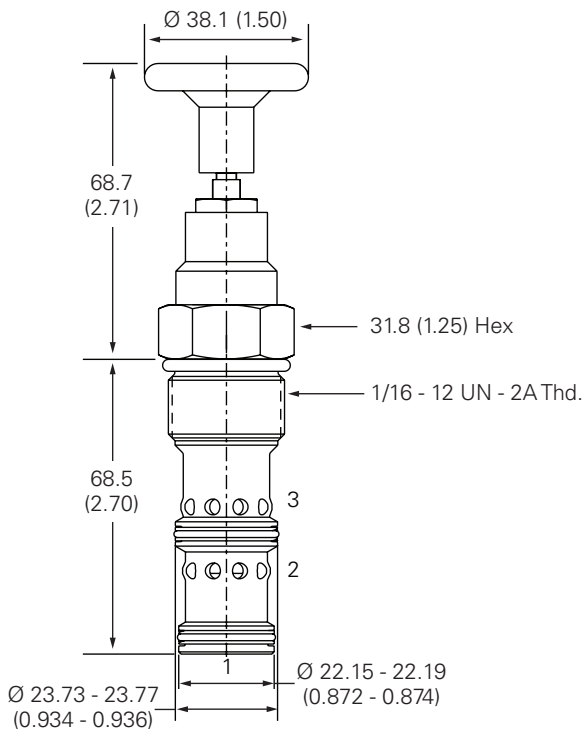
Cartridge only



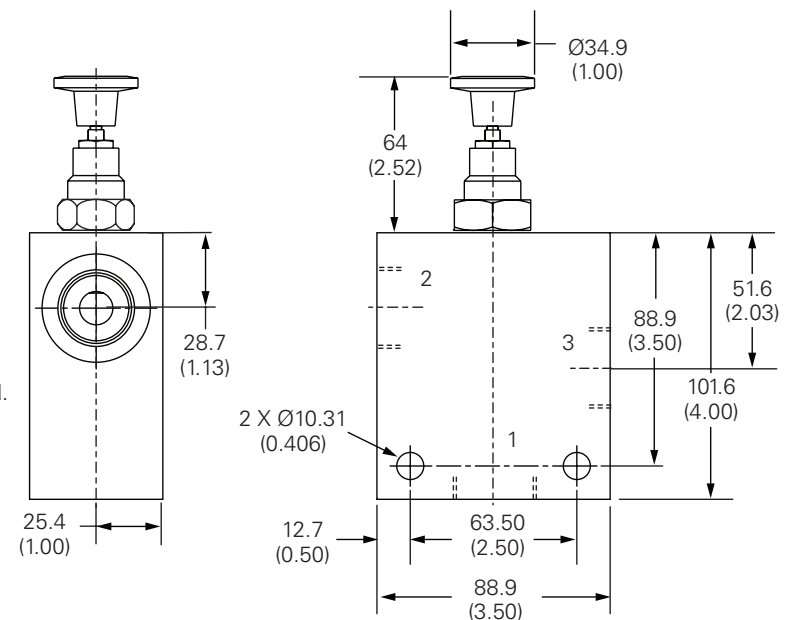
Installation drawing (steel)



Cartridge only



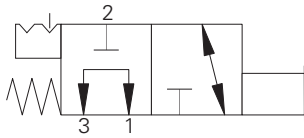
Installation drawing (steel)



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

MSV2-12 - Manual push valve

Push and twist directional control valve
38 L/min (10 USgpm) • 210 bar (3000 psi)



Operation

In the normal position, the valve allows flow from port 1 to port 3 while port 2 is blocked. In the actuated position, flow is allowed from port 2 to port 1 while port 3 is blocked.

Performance data

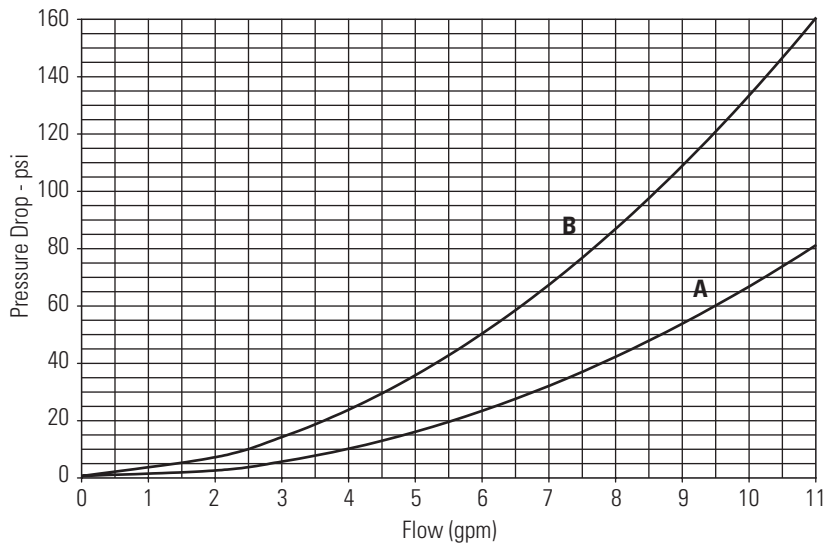
Ratings and specifications

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)
Internal leakage	350 cc/min (21.5 in ³ /min)
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	Cleanliness code 18/16/13
Standard housing materials	Aluminum
Weight cartridge only	0,29 kg (0.66 lbs)
Seal kit	9900171-000 (Buna-N), 9900172-000 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



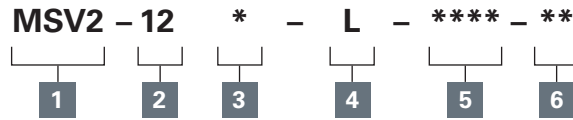
A - P2 to P1
B - P1 to P3

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

MSV2-12 - Manual push valve

Push and twist directional control valve
38 L/min (10 USgpm) • 210 bar (3000 psi)

Model code



1 Function

MSV1 - Manual push valve
3-way, 2 position

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation
E - Emergency stop actuation
N - No Detent

5 Port size

0 - Cartridge only

6 Special features

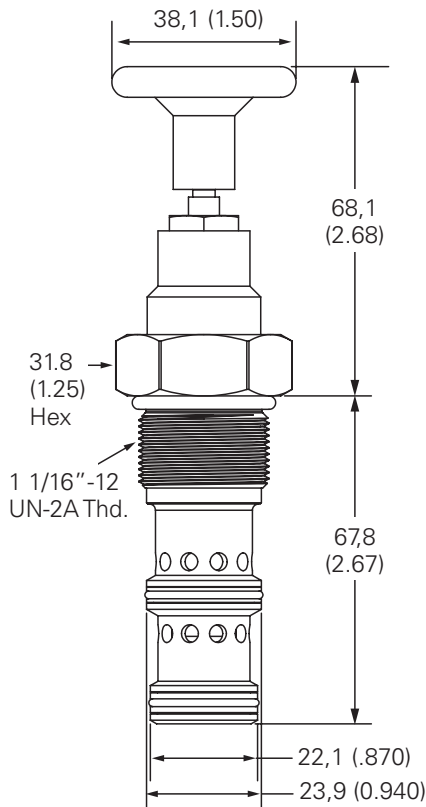
Blank - No special features

Code	Port size	Housing number
Aluminum		
A6G	3/4" BSPP	02-161816
A12H	SAE 12	02-160646

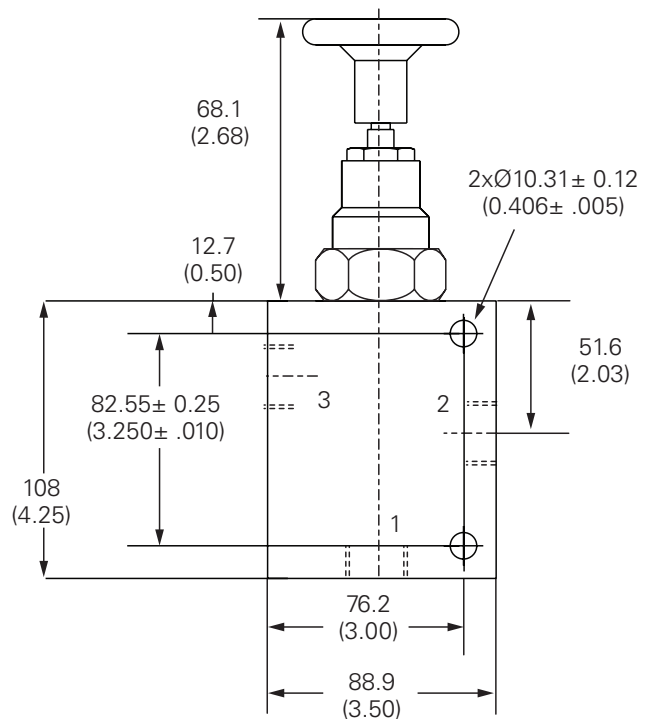
Dimensions

mm (inch)

Cartridge only



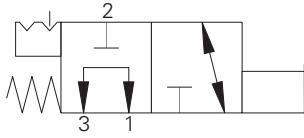
Installation drawing



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

MSV12-12 - Manual push valve

Push and twist directional control valve
 38 L/min (10 USgpm) • 350 bar (5000 psi)



Operation

In the normal position, the valve allows flow from port 1 to port 2 while port 3 is blocked. In the actuated position, flow is allowed from port 3 to port 1 while port 2 is blocked.

Performance data

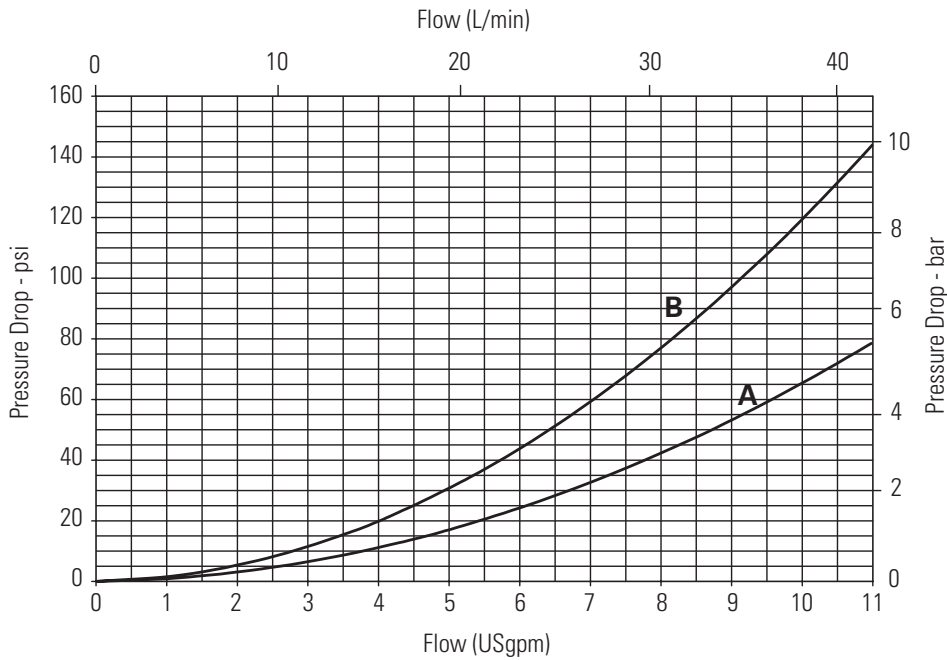
Ratings and specifications

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)
Internal leakage	350 cc/min (21.5 in ³ /min) @ 210 bar (3000 psi)
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	Cleanliness code 18/16/13
Standard housing materials	Aluminum and Steel
Weight cartridge only	0,29 kg (0.66 lbs)
Seal kit	9900171-000 (Buna-N), 9900172-000 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



A - P1 to P2

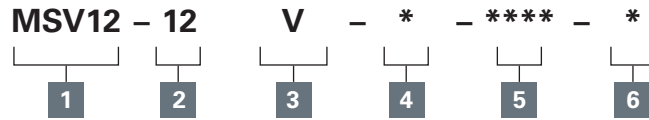
B - P3 to P1

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

MSV12-12 - Manual push valve

Push and twist directional control valve
38 L/min (10 USgpm) • 350 bar (5000 psi)

Model code



1 Function

MSV12 - 3-way, 2 position manual push valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation, with detent

E - Emergency stop actuation

N - No detent, momentary actuation

K - Push and twist

5 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum	Steel
0			
A6G	3/4" BSPP	02-161816	
A12H	SAE 12	02-160646	
S4G	1/2" BSPP	02-169815	
S6G	3/4" BSPP	02-169814	
S10H	SAE 10		02-161070
S12H	SAE 12		02-169816

See section J for housing details.

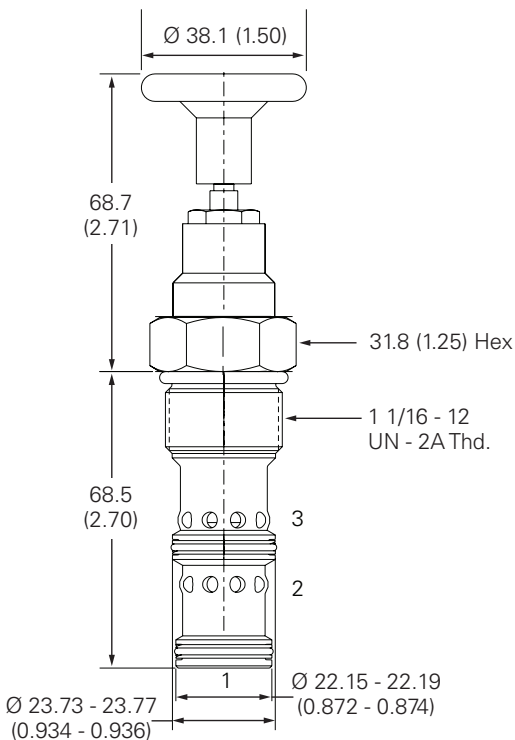
6 Special features

Blank - No special features

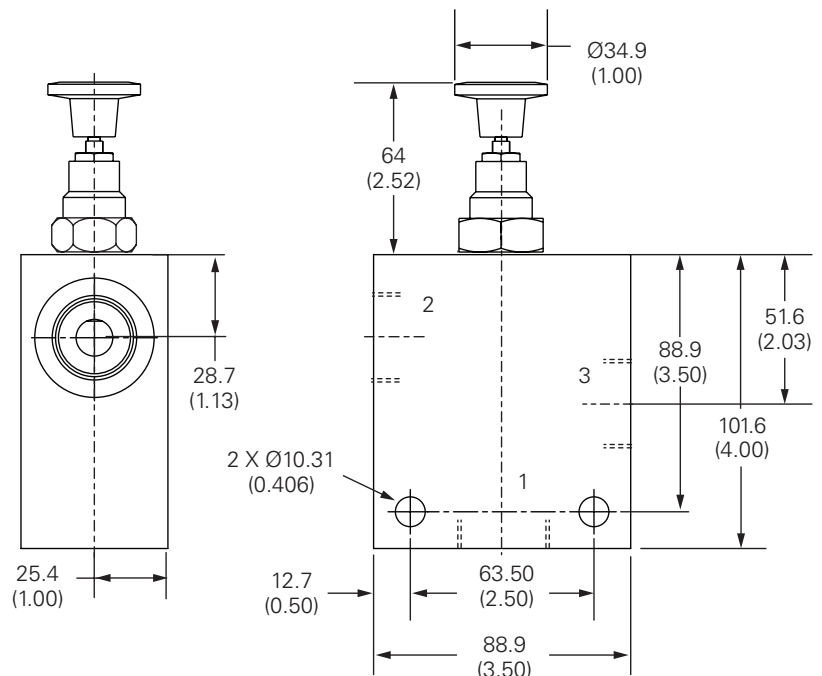
Dimensions

mm (inch)

Cartridge only



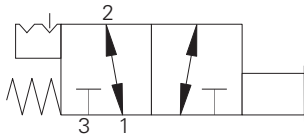
Installation drawing (steel)



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

MSV5-12 - Manual push valve

Push and twist directional control valve
 41.8 L/min (11 USgpm) • 210 bar (3000 psi)



Operation

In the normal position, the valve allows flow from port 2 to port 1 while port 3 is blocked. In the actuated position, flow is allowed from port 3 to port 2 while port 1 is blocked.

Performance data

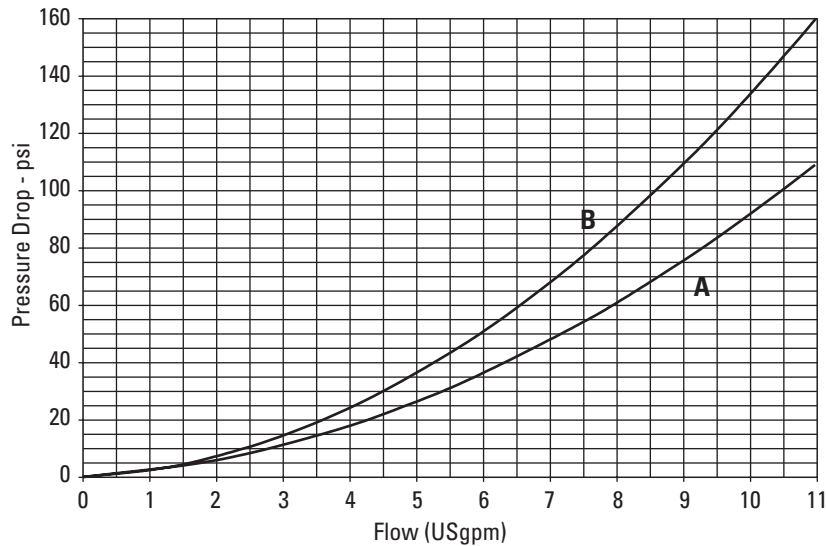
Ratings and specifications

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	41.8 L/min (11 USgpm)
Internal leakage	350 cc/min (21.5 in ³ /min)
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	Cleanliness code 18/16/13
Standard housing materials	Aluminum
Weight cartridge only	0,29 kg (0.66 lbs)
Seal kit	9900171-000 (Buna-N), 9900172-000 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



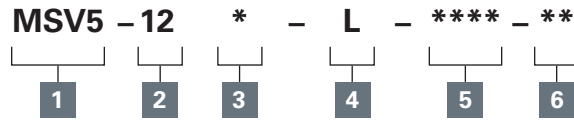
- A - P2 to P1
- B - P3 to P2

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

MSV5-12 - Manual push valve

Push and twist directional control valve
41.8 L/min (11 USgpm) • 210 bar (3000 psi)

Model code



1 Function

MSV5 - 3 way, 2 position
Manual push valve

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation
E - Emergency stop actuation
N - No Detent

5 Port size

0 - Cartridge only

6 Special features

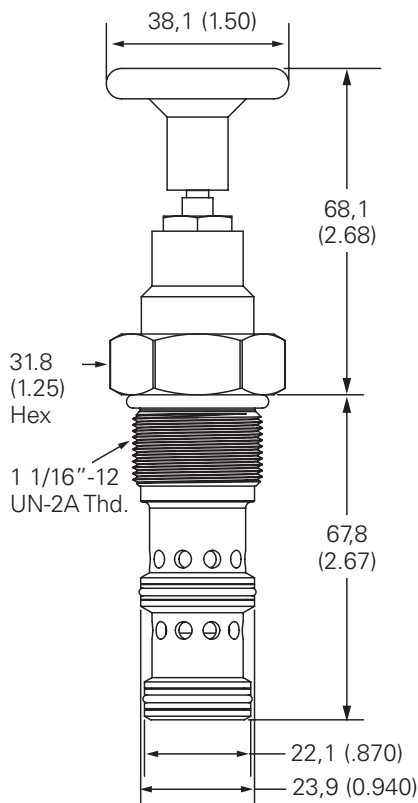
Blank - No special features

Code	Port size	Housing number
Aluminum		
A6G	3/4" BSPP	02-161816
A12H	SAE 12	02-160646

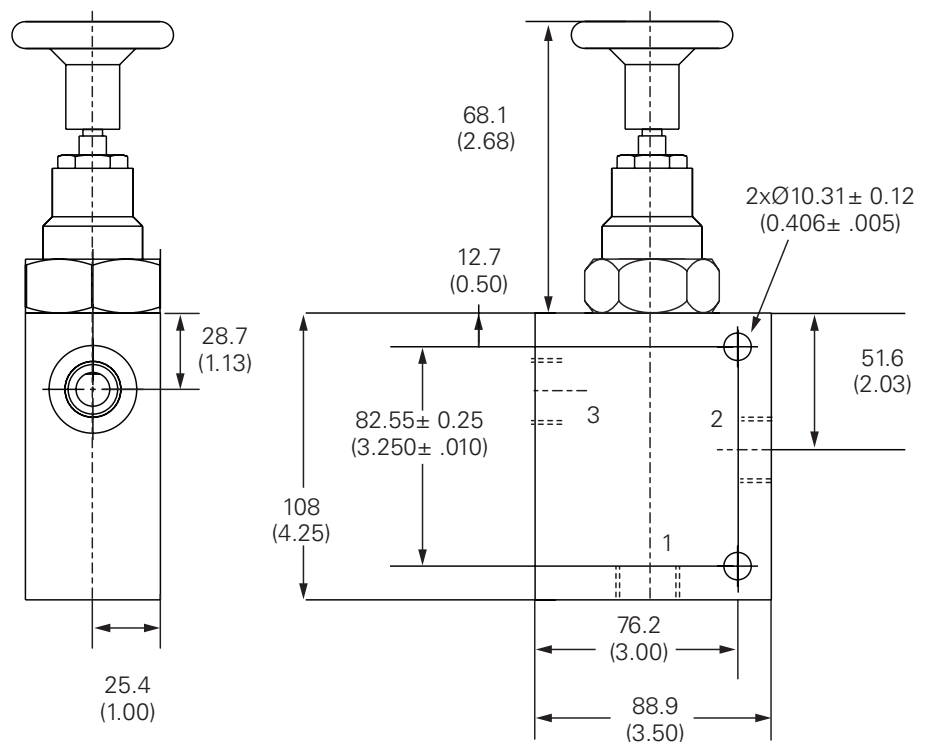
Dimensions

mm (inch)

Cartridge only



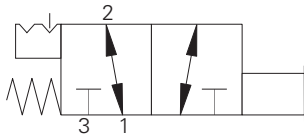
Installation drawing



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

MSV15-12 - Manual push valve

Push and twist directional control valve
 41.8 L/min (11 USgpm) • 350 bar (5000 psi)



Operation

In the normal position, the valve allows flow from port 2 to port 1 while port 3 is blocked. In the actuated position, flow is allowed from port 3 to port 2 while port 1 is blocked.

Performance data

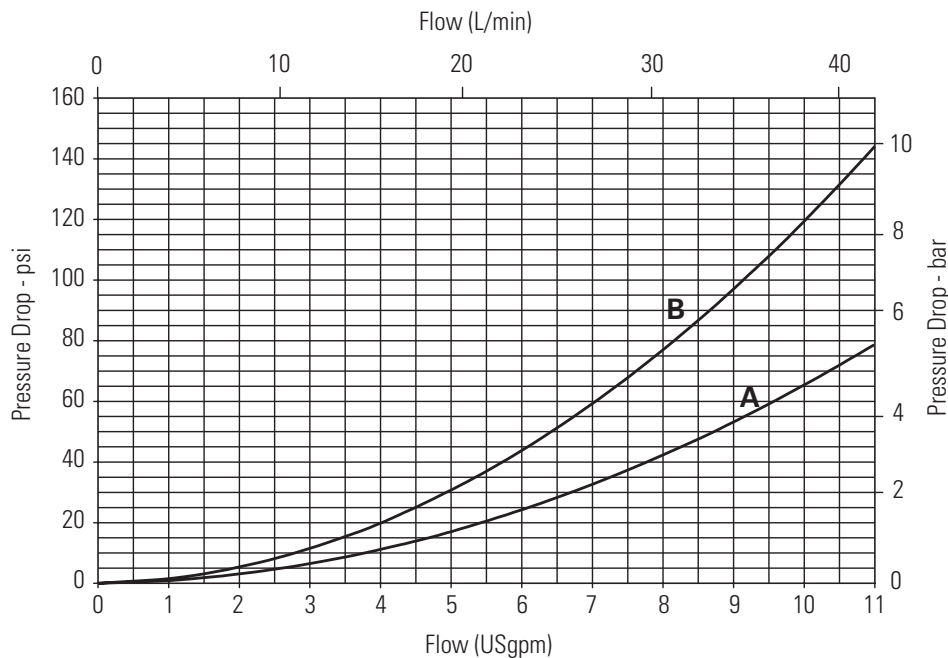
Ratings and specifications

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	41,8 L/min (11 USgpm)
Internal leakage	350 cc/min (21.5 in ³ /min)
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	Cleanliness code 18/16/13
Standard housing materials	Steel
Weight cartridge only	0,29 kg (0.66 lbs)
Seal kit	9900171-000 (Buna-N), 9900172-000 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



A - P2 to P1

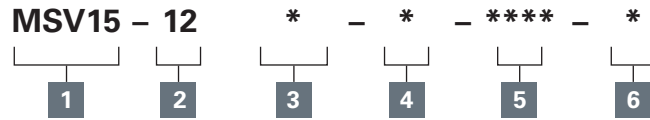
B - P3 to P2

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

MSV15-12 - Manual push valve

Push and twist directional control valve
41.8 L/min (11 USgpm) • 350 bar (5000 psi)

Model code



1 Function

MSV15 - 3-way, 2 position manual push valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation, with detent
E - Emergency stop actuation
N - No detent, momentary actuation
K - Push and twist

5 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum	Steel
0			
A6G	3/4" BSPP	02-161816	
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.

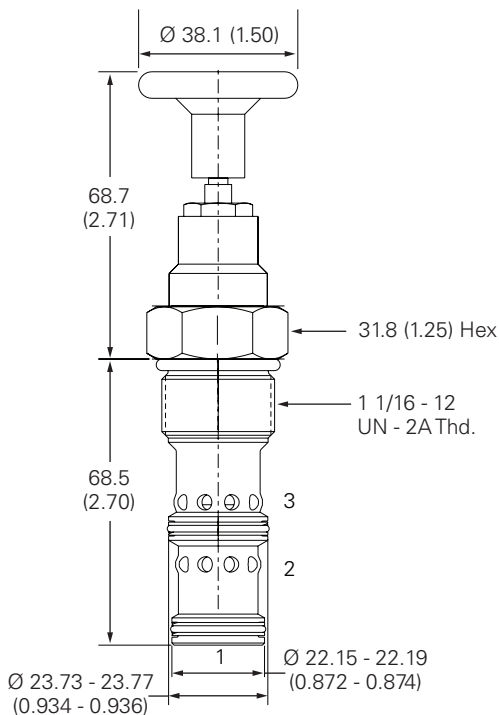
6 Special features

Blank - No special features

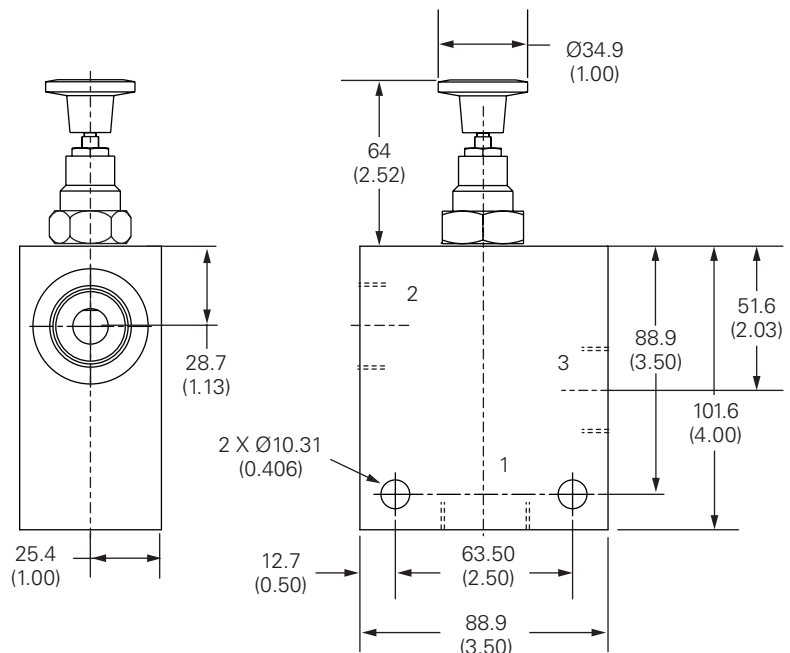
Dimensions

mm (inch)

Cartridge only



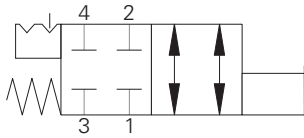
Installation drawing (steel)



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

MSV3-12 - Manual push valve

Push and twist, normally closed, directional control valve
 53,2 L/min (14 USgpm) • 210 bar (3000 psi)



Operation

In the normal position, all ports are blocked. In the actuated position, flow is allowed from port 3 to port 4 and from port 2 to port 1.

Performance data

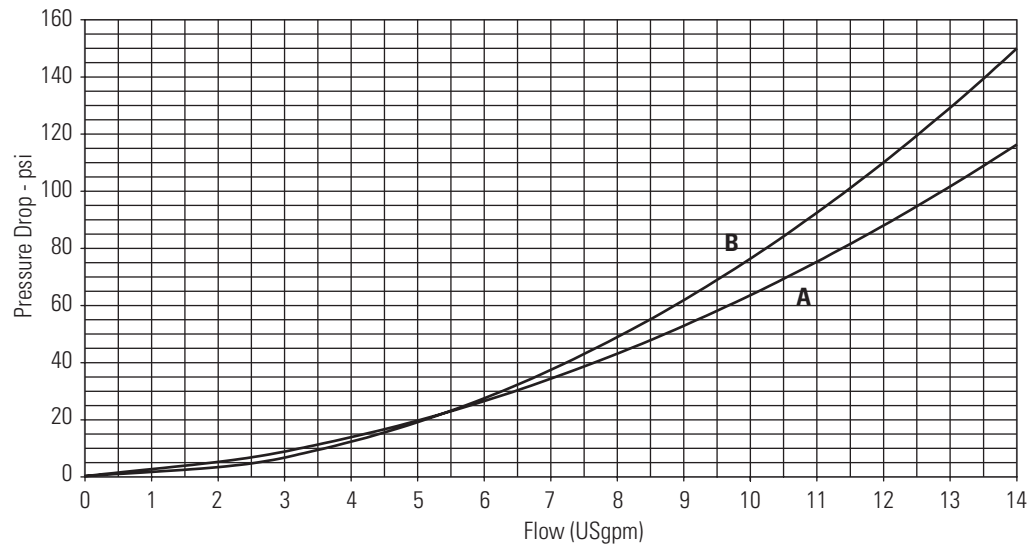
Ratings and specifications

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	53,2 L/min (14 USgpm)
Internal leakage	350 cc/min (21.5 in3/min) @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-4
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	0,32 kg (0.71 lbs)
Seal kit	02-160979 (Buna-N), 02-160980 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



A - P3 to P4

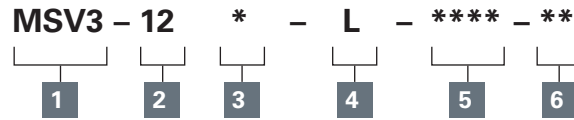
B - P2 to P1

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

MSV3-12 - Manual push valve

Push and twist, normally closed, directional control valve
53,2 L/min (14 USgpm) • 210 bar (3000 psi)

Model code



1 Function

MSV3 - 4 way, 2 position
Manual push valve

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation
E - Emergency stop actuation
N - No Detent

5 Port size

0 - Cartridge only

6 Special features

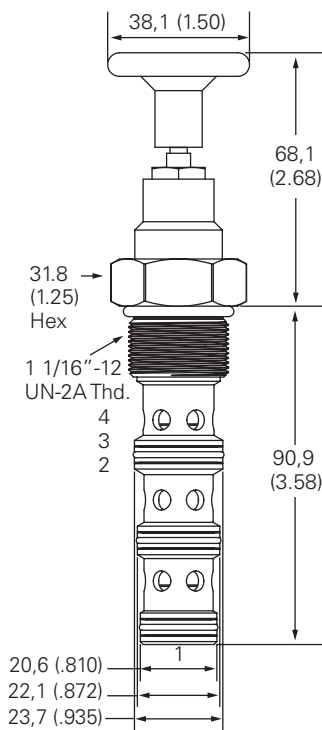
Blank - No special features

Code	Port size	Housing number
Aluminium		
A6G	3/4" BSPP	5986432-001
A10T	SAE 10	6030517-001
A12H	SAE 12	5986436-001

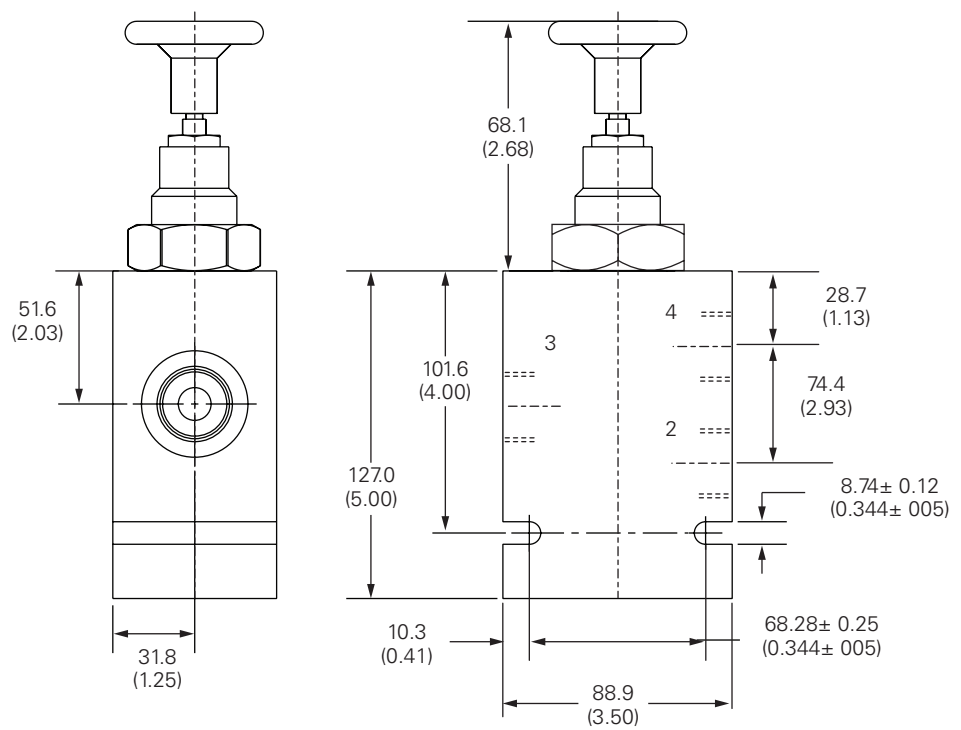
Dimensions

mm (inch)

Cartridge only



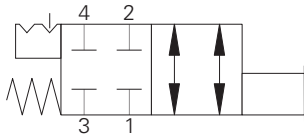
Installation drawing



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

MSV13-12 - Manual push valve

Push and twist, normally closed, directional control valve
 53,2 L/min (14 USgpm) • 350 bar (5000 psi)



Operation

In the normal position, all ports are blocked. In the actuated position, flow is allowed from port 3 to port 4 and from port 2 to port 1.

Performance data

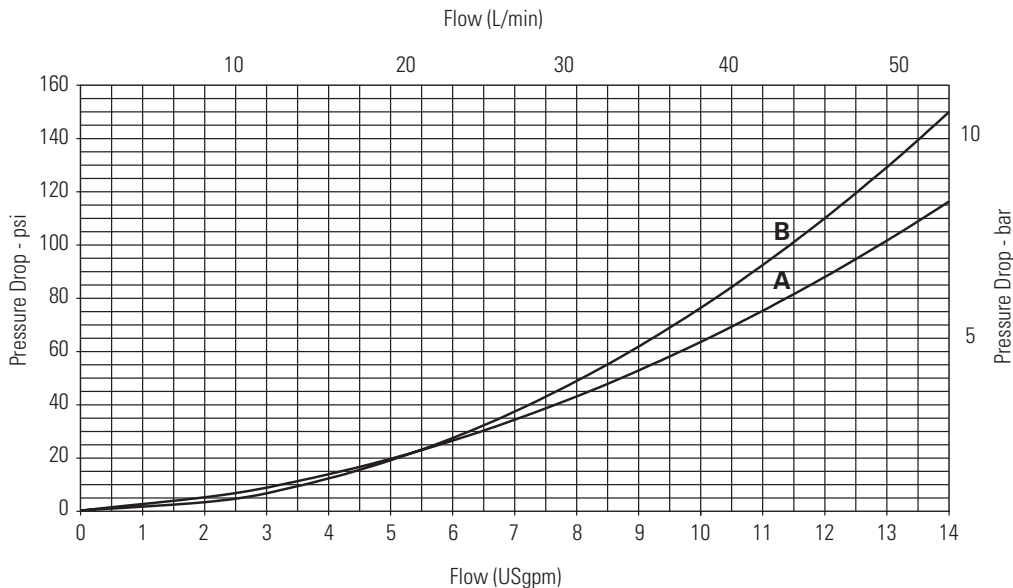
Ratings and specifications

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	53,2 L/min (14 USgpm)
Internal leakage	350 cc/min (21.5 in ³ /min) @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-4
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	0,32 kg (0.71 lbs)
Seal kit	02-160979 (Buna-N), 02-160980 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



A - P3 to P4

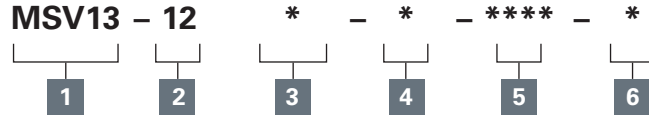
B - P2 to P1

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

MSV13-12 - Manual push valve

Push and twist, normally closed, directional control valve
53,2 L/min (14 USgpm) • 350 bar (5000 psi)

Model code



1 Function

MSV13 - 4-way, 2 position manual push valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N

V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation, with detent

E - Emergency stop actuation

N - No detent, momentary actuation

K - Push and twist

5 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum	Steel
0			
A6G	3/4" BSPP	5986432-001	
A10H	SAE 10	5986434-001	
A12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S10T	SAE 10		5991074-001
S12T	SAE 12		5991075-001

See section J for housing details.

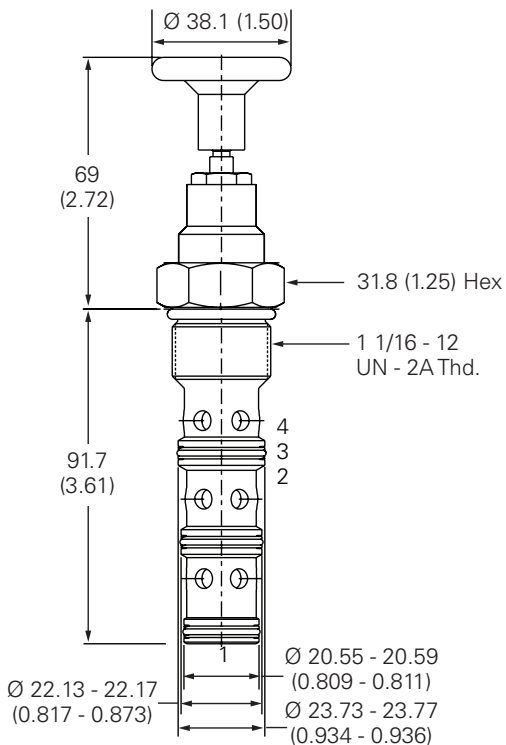
6 Special features

Blank - No special features

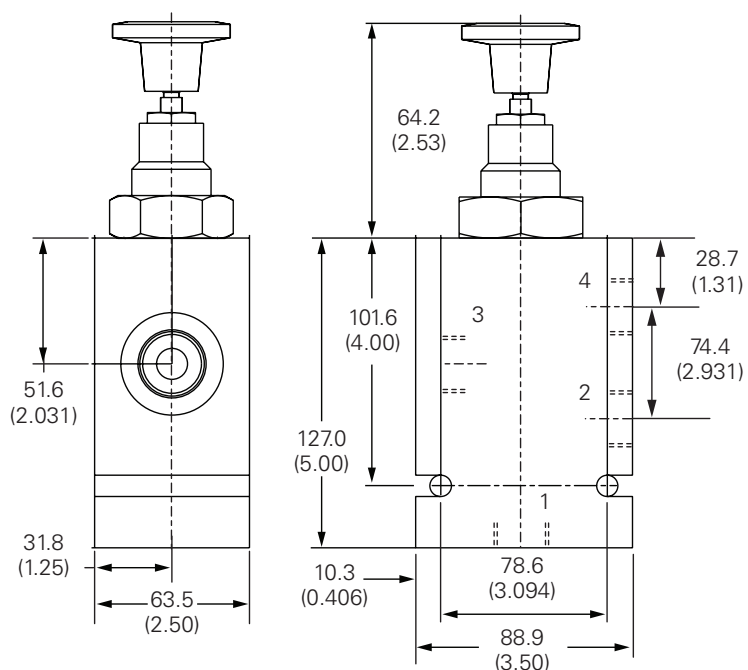
Dimensions

mm (inch)

Cartridge only



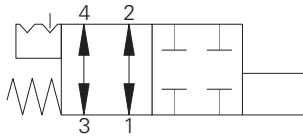
Installation drawing



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

MSV4-12 - Manual push valve

Push and twist, normally open, directional control valve
 53,2 L/min (14 USgpm) • 210 bar (3000 psi)



Operation

In the normal position, flow is allowed from port 3 to port 4 and from port 2 to port 1. In the actuated position, all ports are blocked.

Performance data

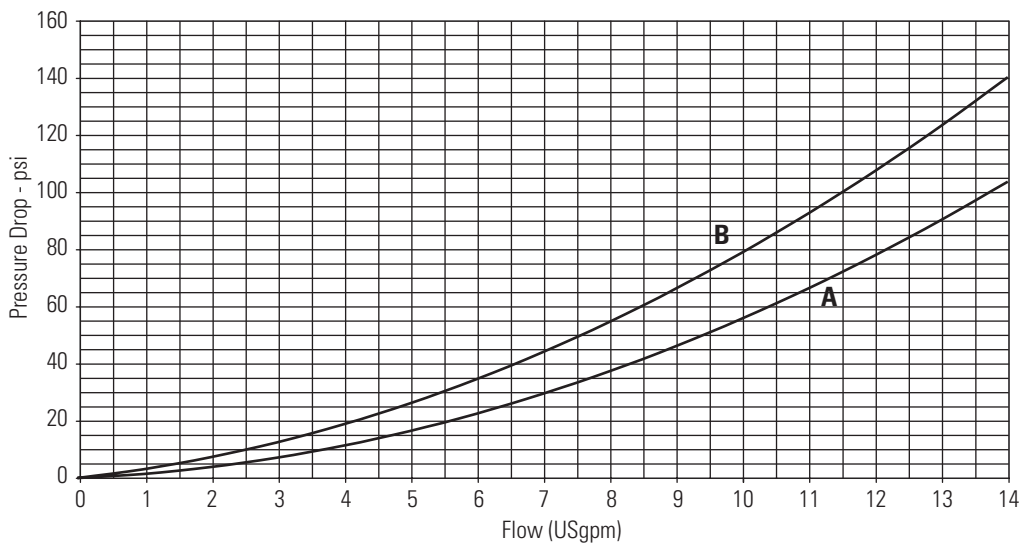
Ratings and specifications

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	53,2 L/min (14 USgpm)
Internal leakage	350 cc/min (21.5 in3/min)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-4
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	0,32 kg (0.71 lbs)
Seal kit	02-160979 (Buna-N), 02-160980 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



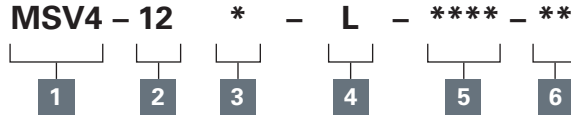
A - P3 to P4
B - P2 to P1

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

MSV4-12 - Manual push valve

Push and twist, normally open, directional control valve
53,2 L/min (14 USgpm) • 210 bar (3000 psi)

Model code



1 Function

MSV4 - 4-way, 2 position,
Manual push valve

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation
E - Emergency stop actuation
N - No Detent

5 Port size

0 - Cartridge only

6 Special features

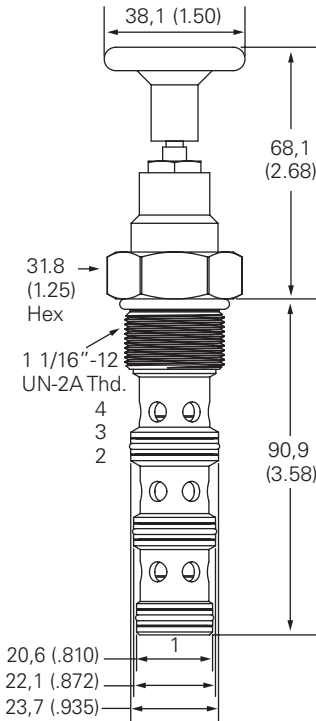
Blank - No special features

Code	Port size	Housing number
Aluminium		
A6G	3/4" BSPP	5986432-001
A10T	SAE 10	6030517-001
A12H	SAE 12	5986436-001

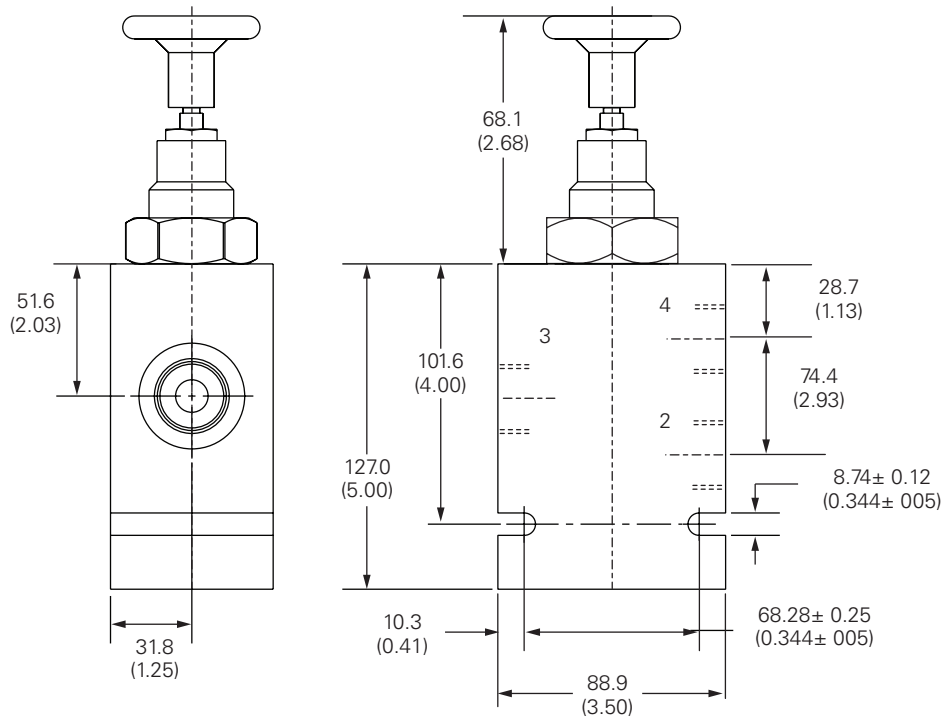
Dimensions

mm (inch)

Cartridge only



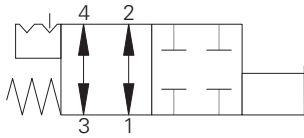
Installation drawing



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

MSV14-12 - Manual push valve

Push and twist, normally open, directional control valve
 53,2 L/min (14 USgpm) • 350 bar (5000 psi)



Operation

In the normal position, flow is allowed from port 3 to port 4 and from port 2 to port 1. In the actuated position, all ports are blocked.

Performance data

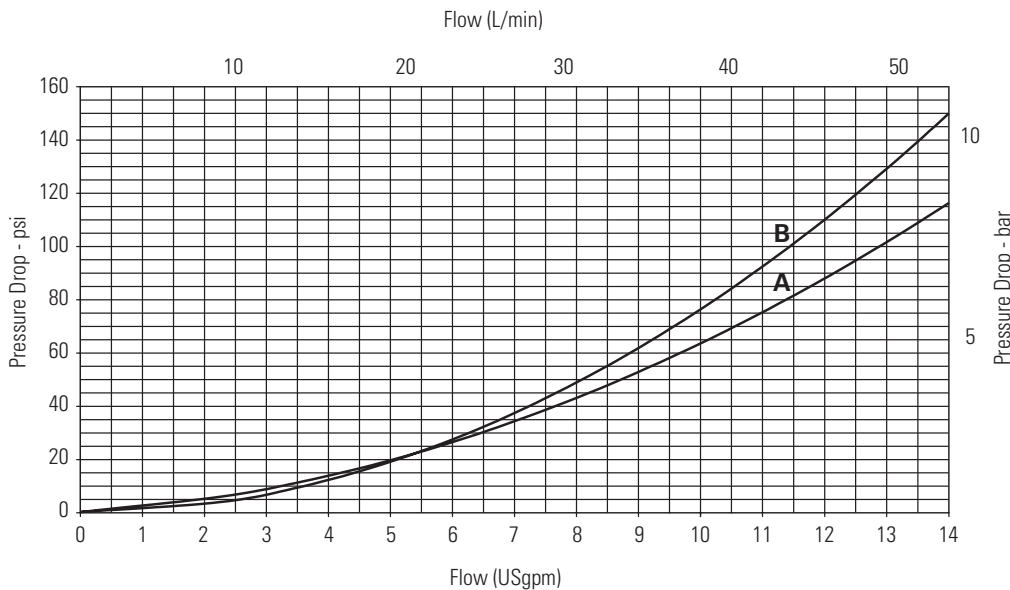
Ratings and specifications

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	53,2 L/min (14 USgpm)
Internal leakage	350 cc/min (21 in ³ /min) @ 219 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-4
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 and Steel
Weight cartridge only	0,32 kg (0.71 lbs)
Seal kit	02-160979 (Buna-N), 02160981 (Viton)

Viton is a registered trademark of E.I. DuPont

Pressure drop



A - P3 to P4

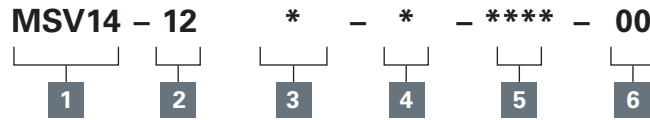
B - P2 to P1

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

MSV14-12 - Manual push valve

Push and twist, normally open, directional control valve
53,2 L/min (14 USgpm) • 350 bar (5000 psi)

Model code



1 Function

MSV14 - 4-Way 2 position manual push valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Actuation Option

- L** - 2 position 'push and twist' actuation, with detent
- E** - Emergency stop actuation
- N** - No detent, momentary actuation
- K** - Push and twist

5 Port size

0 - Cartridge only

Code	Port size	Housing number	
0		Aluminum	Steel
A6G	3/4" BSPP	5986432-001	
A10H	3/4" BSP	5986434-001	
A12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S10H	SAE 10		5981074-001
S12H	SAE 12		5981075-001

See section J for housing details.

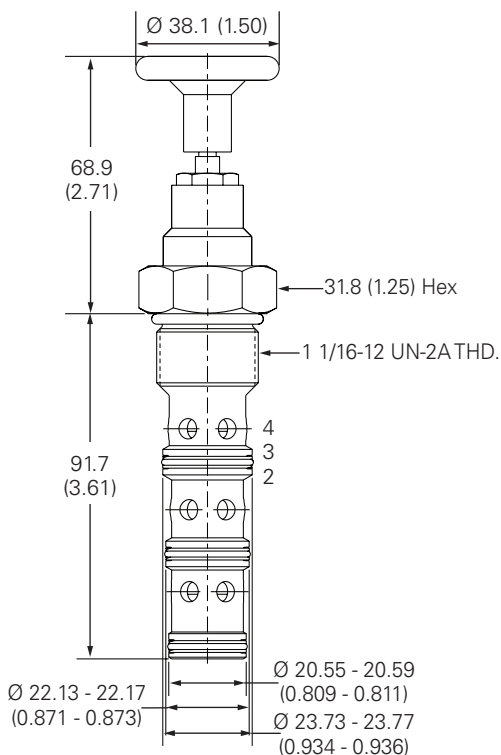
6 Special features

00 - Non (Only required if valve has special features, omitted if "00")

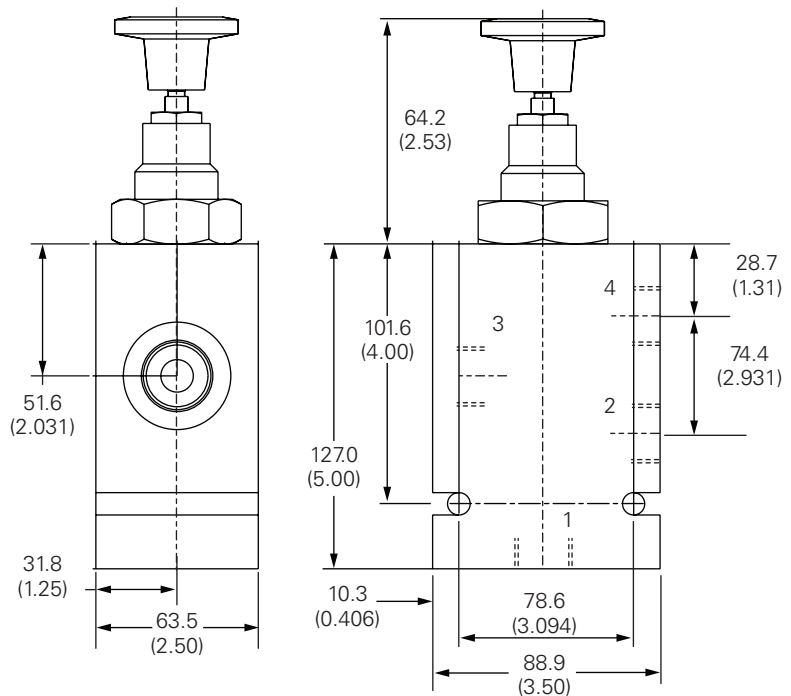
Dimensions

mm (inch)

Cartridge only



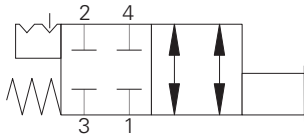
Installation drawing (steel)



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

MSV6-12 - Manual push valve

Push and twist, normally closed, directional control valve
53.2 L/min (14 USgpm) • 210 bar (3000 psi)



Operation

In the normal position, all ports are blocked. In the actuated position, flow is allowed from port 3 to port 2 and from port 4 to port 1.

Performance data

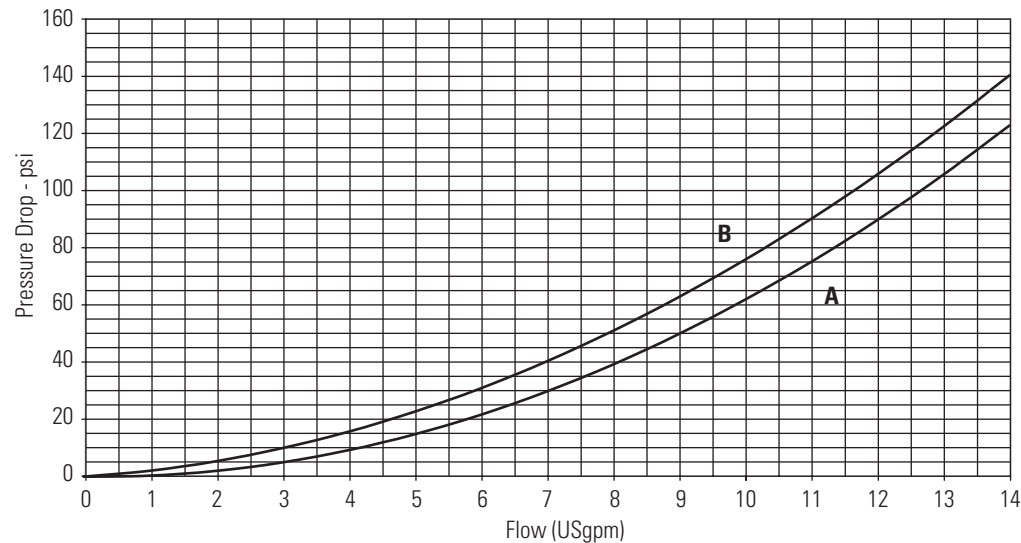
Ratings and specifications

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	53,2 L/min (14 USgpm)
Internal leakage	350 cc/min (21.5 in3/min)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-4
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	0,32 kg (0.71 lbs)
Seal kit	02-160979 (Buna-N), 02-160980 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



A - P4 to P1

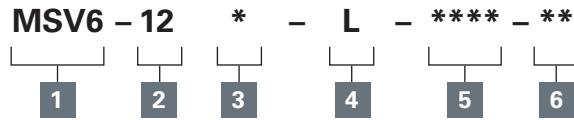
B - P3 to P2

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

MSV6-12 - Manual push valve

Push and twist, normally closed, directional control valve
53,2 L/min (14 USgpm) • 210 bar (3000 psi)

Model code



1 Function

MSV6 - 4 way, 2 position
Manual push valve

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist'
actuation
E - Emergency stop actuation
N - No Detent

5 Port size

0 - Cartridge only

Code	Port size	Housing number
Aluminium		
A6G	3/4" BSPP	5986432-001
A10T	SAE 10	6030517-001
A12H	SAE 12	5986436-001

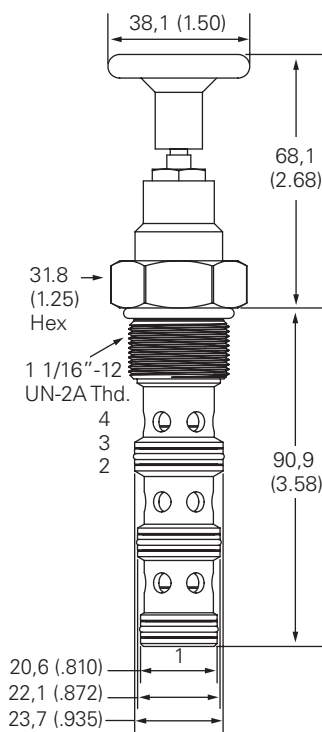
6 Special features

Blank - No special features

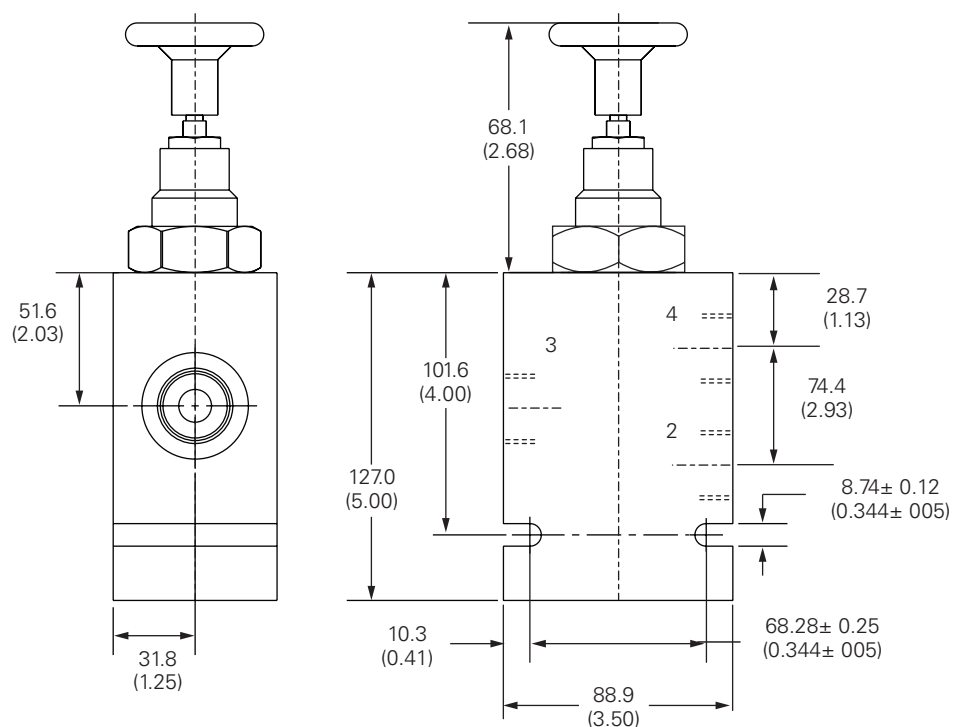
Dimensions

mm (inch)

Cartridge only



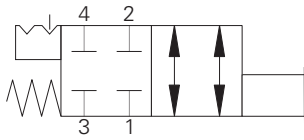
Installation drawing



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

MSV16-12 - Manual push valve

Push and twist, normally closed, directional control valve
 53.2 L/min (14 USgpm) • 350 bar (5000 psi)



Operation

In the normal position, all ports are blocked. In the actuated position, flow is allowed from port 3 to port 4 and from port 1 to port 2.

Performance data

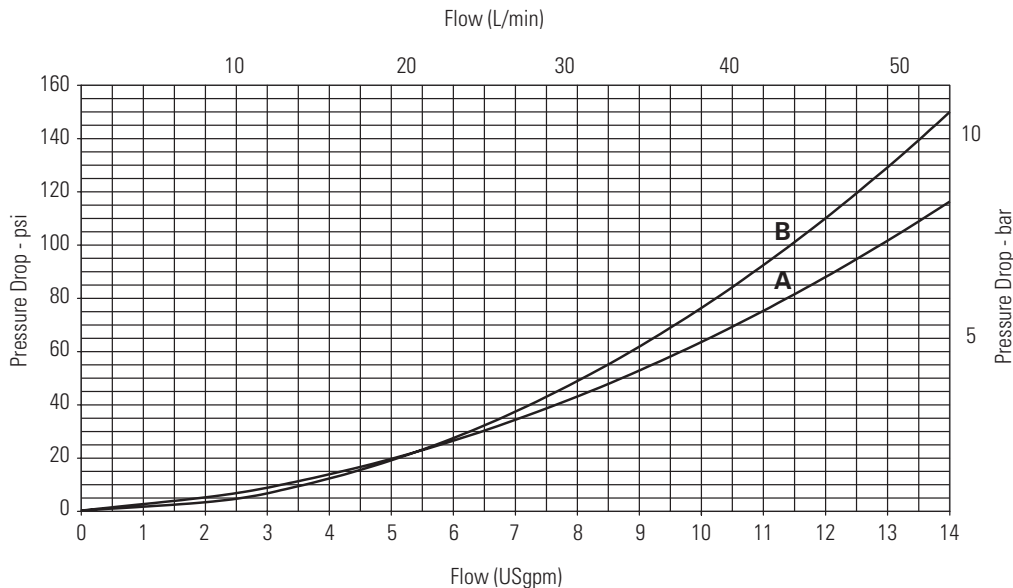
Ratings and specifications

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	53.2 L/min (14 USgpm)
Internal leakage	350 cc/min (21.5 in ³ /min) @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-4
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 and Steel
Weight cartridge only	0,32 kg (0.71 lbs)
Seal kit	02-160979 (Buna-N), 02-160980 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



A - P4 to P1

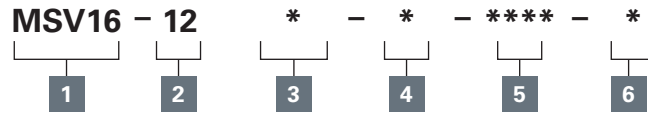
B - P3 to P2

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

MSV16-12 - Manual push valve

Push and twist, normally closed, directional control valve
53.2 L/min (14 USgpm) • 350 bar (5000 psi)

Model code



1 Function

MSV16 - 4-way, 2 position manual push valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation, with detent
E - Emergency stop actuation
N - No detent, momentary actuation
K - Push and twist

5 Port size

0 - Cartridge only

6 Special features

Blank - No special features

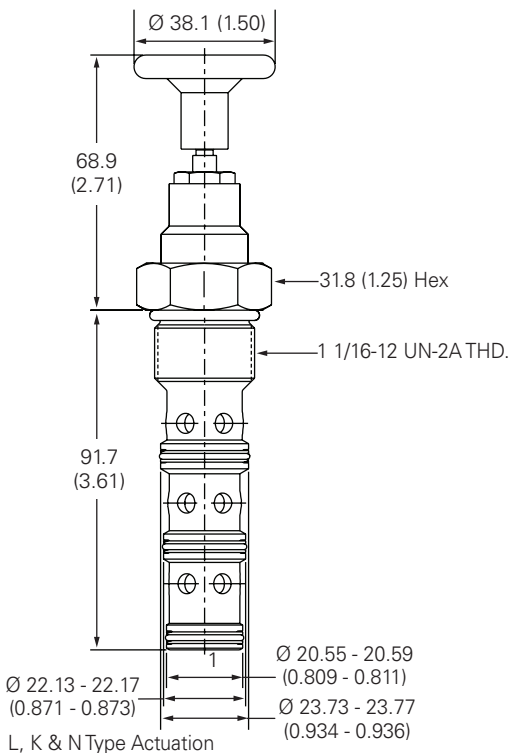
Code	Port size	Housing number	
		Aluminum	Steel
A6G	3/4" BSPP	5986432-001	
A10H	SAE 10	5986434-001	
S12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S10T	SAE 10		5991074-001
S12T	SAE 12		5991075-001

See section J for housing details.

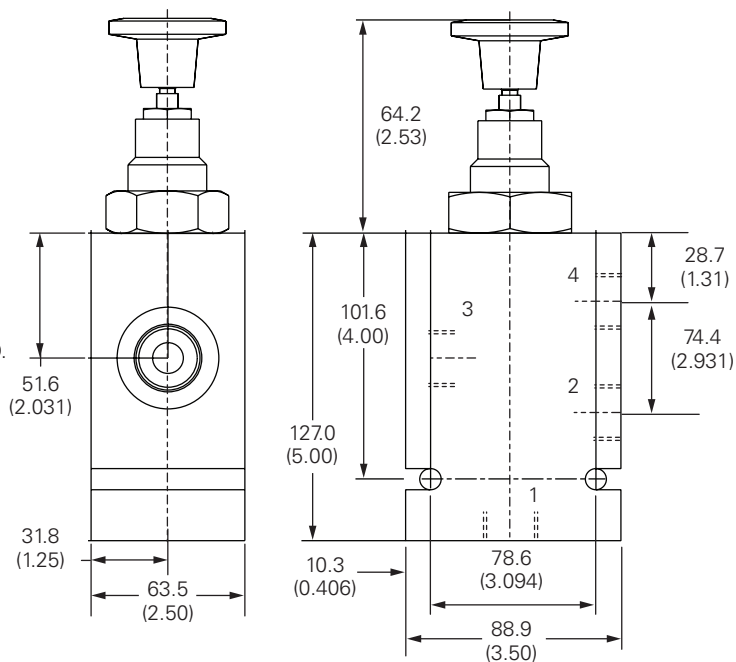
Dimensions

mm (inch)

Cartridge only



Installation drawing (steel)



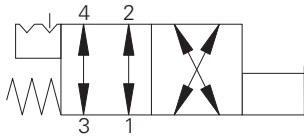
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

MSV17-10/12 - Manual push valve

Push and twist directional control valve

MSV17-10: 17 L/min (5 USgpm) • 350 bar (5000 psi)

MSV17-12: 45 L/min (12 USgpm) • 350 bar (5000 psi)



Operation

In the normal position, flow is allowed from port 3 to port 4 and from port 2 to port 1. In the actuated position, flow is allowed from port 3 to port 2 and from port 4 to port 1.

Performance data

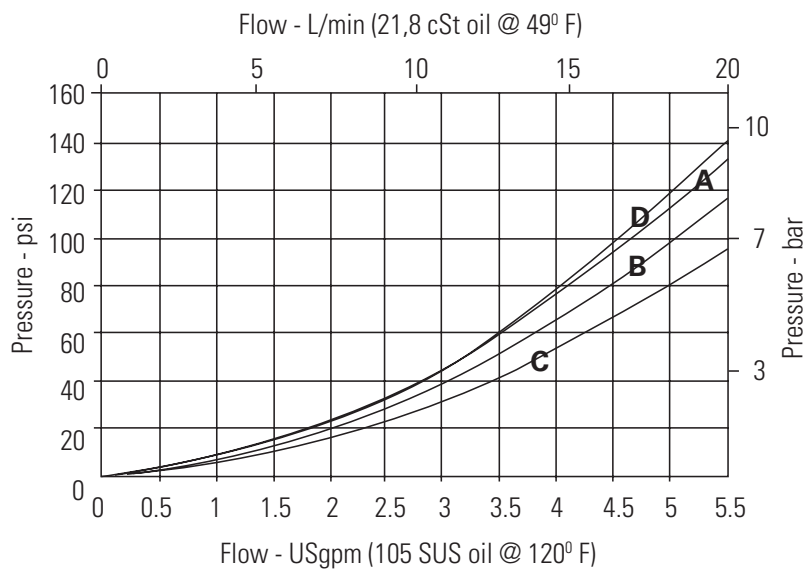
Ratings and specifications

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 10	17 l/min (5 USgpm)
Rated Flow 12	45 l/min (12 USgpm)
Internal leakage	350 cc/min (21.5 in ³ /min) @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity 10	C-10-4
Cavity 12	C-12-4
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 and Steel
Weight cartridge only -10	0,28 kg (0,61 lbs)
Weight cartridge only -12	0,32 kg (0,71 lbs)
Seal kit 10	SK2-10-4 (Buna-N), SK2-10V-4 (Viton®)
Seal kit 12	02-160979 (Buna-N), 02-160980 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop for - 10



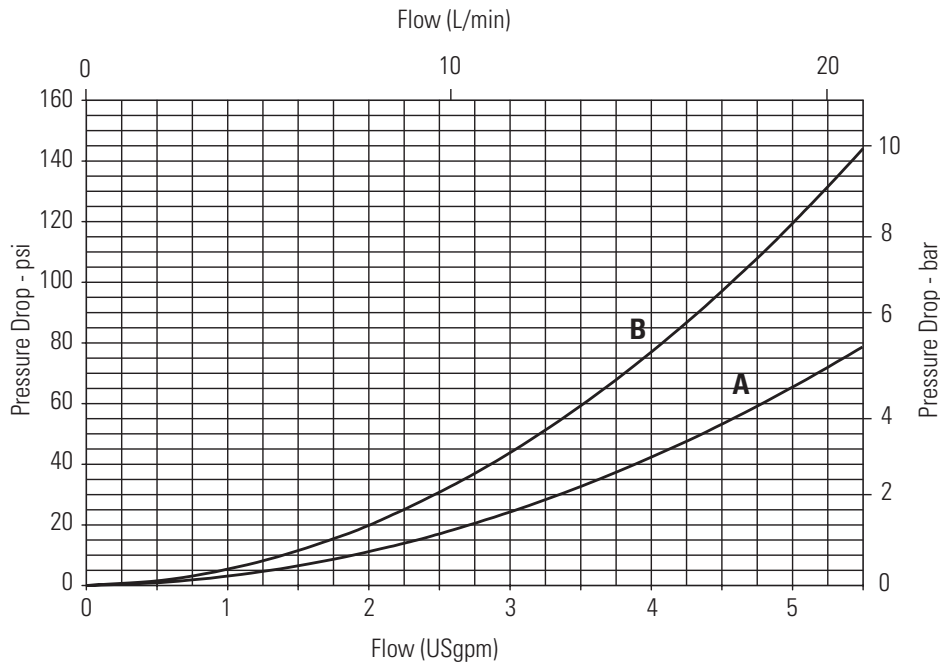
- A** - Port 3 to port 2 energized
- B** - Port 3 to port 4 de-energized
- C** - Port 2 to port 1 de-energized
- D** - Port 4 to port 1 energized

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

MSV17-10/12 - Manual push valve

Push and twist directional control valve
 MSV17-10: 17 L/min (5 USgpm) • 350 bar (5000 psi)
 MSV17-12: 45 L/min (12 USgpm) • 350 bar (5000 psi)

Pressure drop for - 12



A - P4 to P1 and P3 to P2

B - P2 to P1 and P3 to P4

Model code

MSV17 - 10 * - * - *** - *

1 2 3 4 5 6

1 Function

MSV17 - 4-way, 2 position manual push valve

2 Size

10 - 10 size

3 Seals

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation, with detent
E - Emergency stop actuation
N - No detent, momentary actuation
K - Push and twist

5 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum	Steel
A2G	1/4" BSPP	02-185804	
A3G	3/8" BSPP	02-185805	
A6H	SAE 6	02-185802	
A8H	SAE 8	02-185803	
S2G	1/4" BSPP		02-175139
S3G	3/8" BSPP		02-175140
S6T	SAE 6		02-175137
S8T	SAE 8		02-175138

See section J for housing details.

6 Special features

Blank - No special features

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

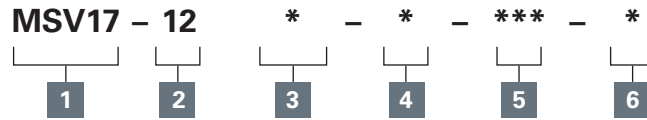
MSV17-10/12 - Manual push valve

Push and twist directional control valve

MSV17-10: 17 L/min (5 USgpm) • 350 bar (5000 psi)

MSV17-12: 45 L/min (12 USgpm) • 350 bar (5000 psi)

Model code



1 Function

MSV17 - 4-way, 2 position manual push valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N

V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation, with detent

E - Emergency stop actuation

N - No detent, momentary actuation

K - Push and twist

5 Port size

0 - Cartridge only

6 Special features

Blank - No special features

Code	Port size	Housing number	
		Aluminium	Steel
A6G	3/4" BSPP	5986432-001	
A10H	SAE 10	5986434-001	
A12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S3G	3/8" BSPP		5991074-001
S6T	SAE 6		5991075-001

See section J for housing details.

D

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

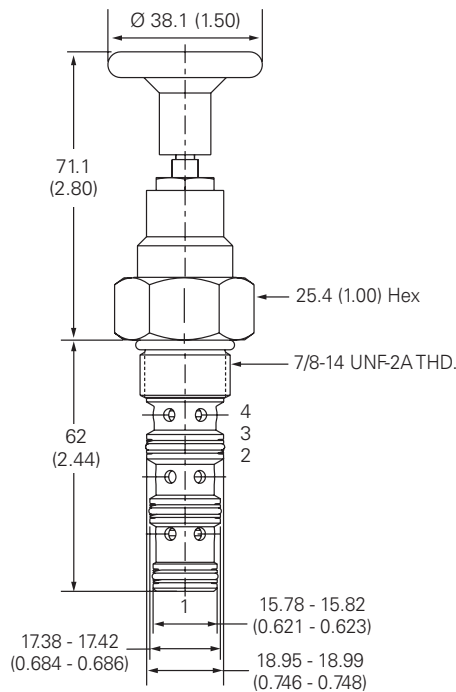
MSV17-10/12 - Manual push valve

Push and twist directional control valve
 MSV17-10: 17 L/min (5 USgpm) • 350 bar (5000 psi)
 MSV17-12: 45 L/min (12 USgpm) • 350 bar (5000 psi)

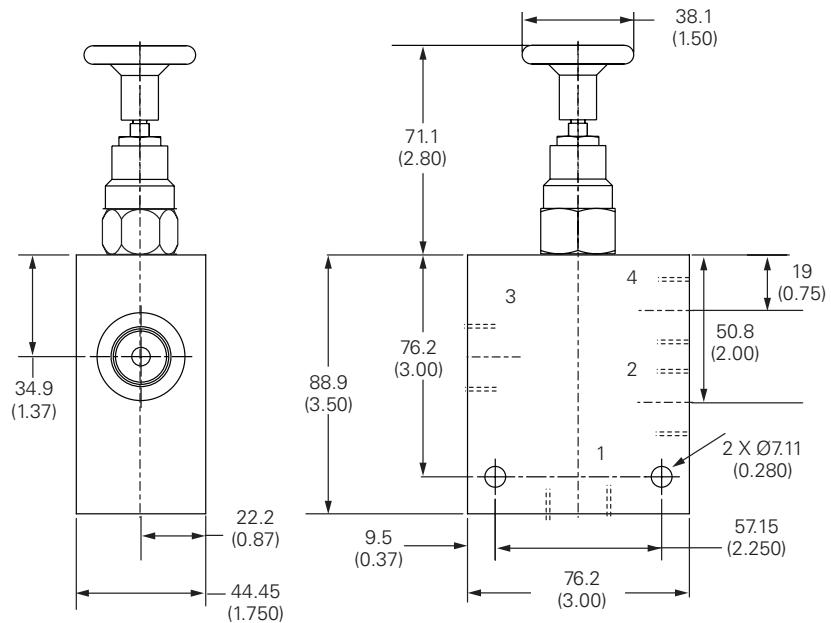
Dimensions

mm (inch)

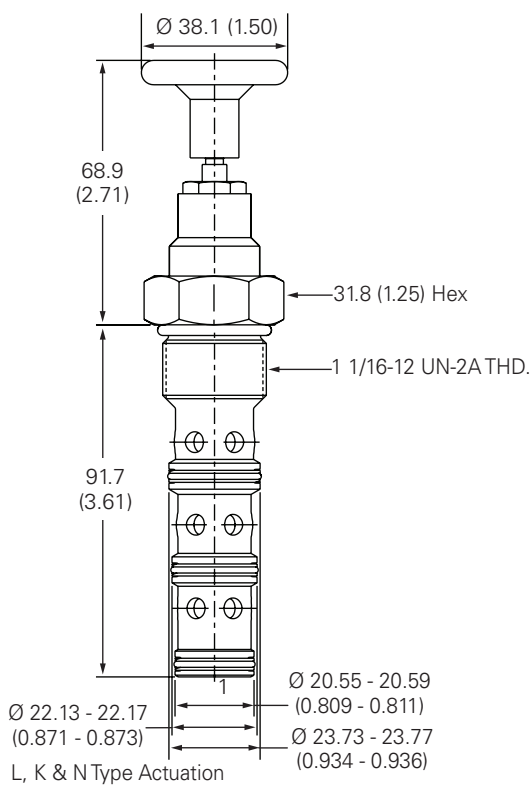
Cartridge only



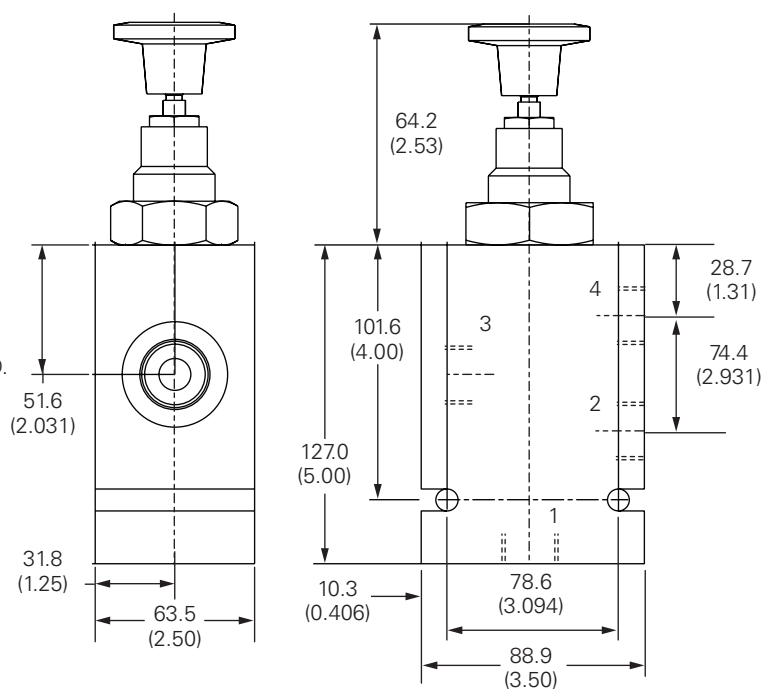
Installation drawing (steel)



Cartridge only



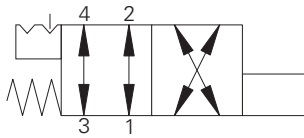
Installation drawing (steel)



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

MSV7-12 - Manual push valve

Push and twist directional control valve
 45 L/min (11.9 USgpm) • 210 bar (3000 psi)



Operation

In the normal position, flow is allowed from port 3 to port 4 and from port 2 to port 1. In the actuated position, flow is allowed from port 3 to port 2 and from port 4 to port 1.

Performance data

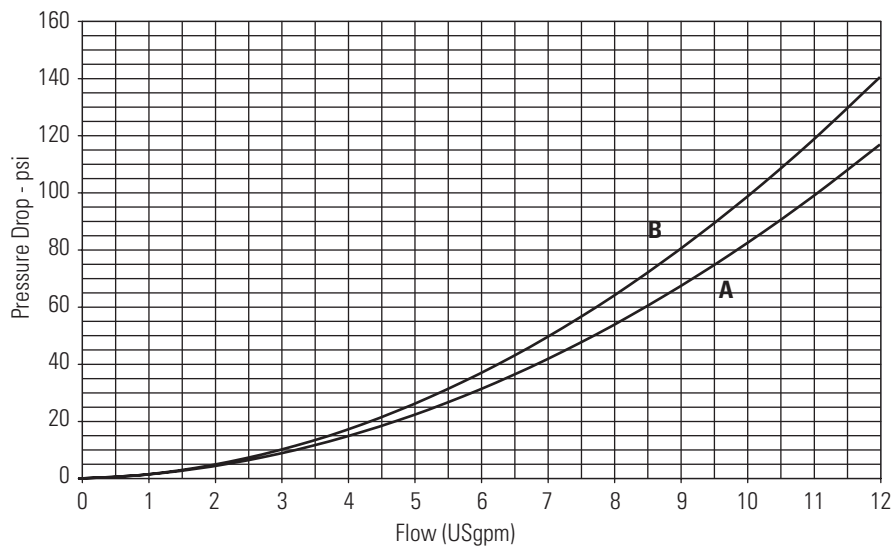
Ratings and specifications

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 (11.9 USgpm)
Internal leakage	350 cc/min (21.5 in ³ /min) @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-4
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	0,32 kg (0.71 lbs)
Seal kit	02-160979 (Buna-N), 02-160980 (Viton®)

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Pressure drop



- A** - P4 to P1, P3 to P2
- B** - P2 to P1, P3 to P4

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

MSV7-12 - Manual push valve

Push and twist directional control valve
45 L/min (11.9 USgpm) • 210 bar (3000 psi)

Model code

MSV7 - 12 * - L - ** - ****

1
2
3
4
5
6

1 Function

MSV7 - 4 way, 2 position manual push valve

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Actuation option

L - 2 position 'push and twist' actuation
E - Emergency stop actuation
N - No Detent

5 Port size

0 - Cartridge only

6 Special features

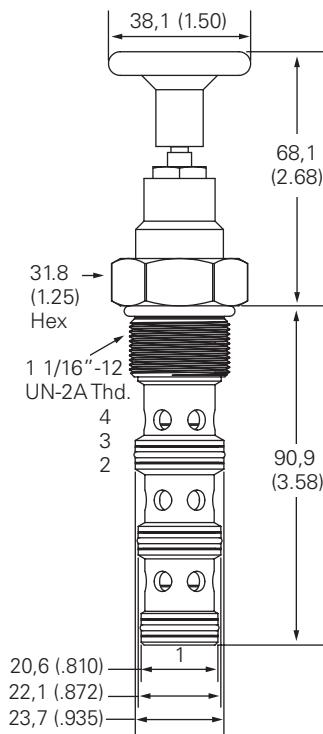
Blank - No special features

Code	Port size	Housing number
Aluminium		
A6G	3/4" BSPP	5986432-001
A10T	SAE 10	6030517-001
A12H	SAE 12	5986436-001

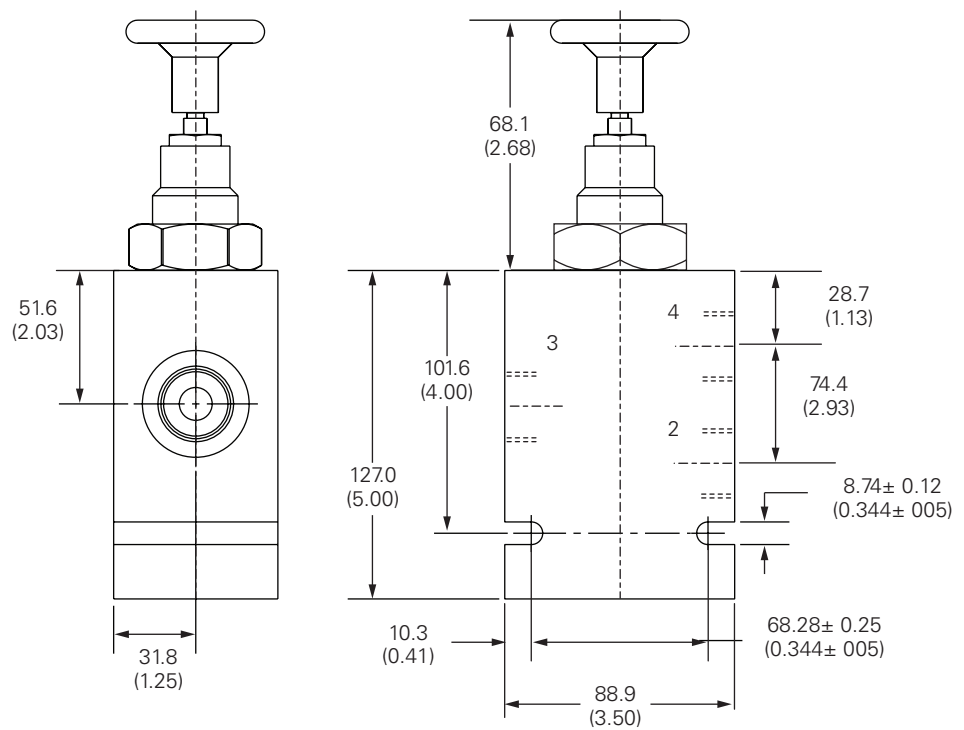
Dimensions

mm (inch)

Cartridge only



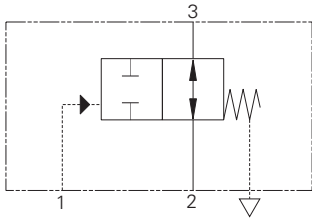
Installation drawing



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

PTS7-10 - Pilot to shift valve

2/2, pilot operated directional control valve
 30 L/min (8 USgpm) • 210 bar (3000 psi)



Operation

This valve allows flow between ports 2 and 3 until sufficient pressure at port 1 overcomes the spring bias, which closes both ports.

The spring chamber for this valve is externally vented to atmosphere.

Performance data

Ratings and specifications

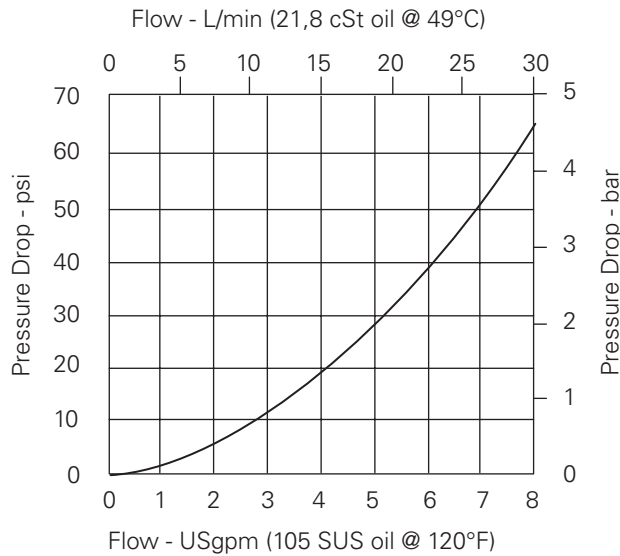
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	30 L/min (8 USgpm)
Internal leakage	164 cc/min (10 in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressures	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume	0,49 cm ³ (0.02 in ³)
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	0,10 kg (0.23 lbs)
Seal kit	889624 (Buna-N), 889628 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop curves

Cartridge only

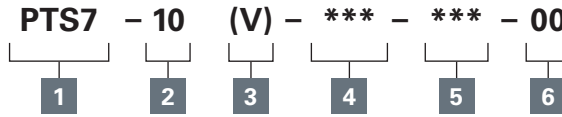


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS7-10 - Pilot to shift valve

2/2, pilot operated directional control valve
30 L/min (8 USgpm) • 210 bar (3000 psi)

Model code



1 Function
PTS7 - Pilot to shift valve

2 Size
10 - 10 size

3 Seal material
Blank - Buna-N
V - Viton

4 Port size

Code	Port size	Housing number		
		Aluminium light duty	Aluminium fatigue rated	Steel
0	Cartridge			
A3B	3/8" BSPP	02-173358	-	-
A6T	SAE 6	566162	-	-
A2G	1/4" BSPP	-	876705	-
A3G	3/8" BSPP	-	876714	-
A6H	SAE 6	-	876704	-
A8H	SAE 8	-	876711	-

See section J for housing details.

5 Pilot to shift (nominal)

Note: Code based on pressure in psi.

40 - 2,75 bar (40 psi)

80 - 5,5 bar (80 psi)

160 - 11,0 bar (160 psi)

6 Special features

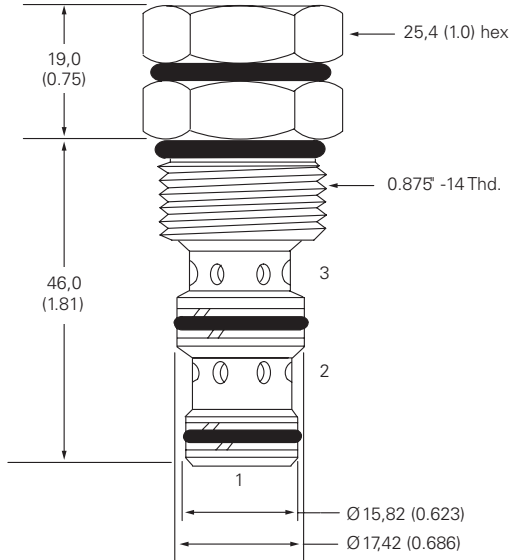
00 - None

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

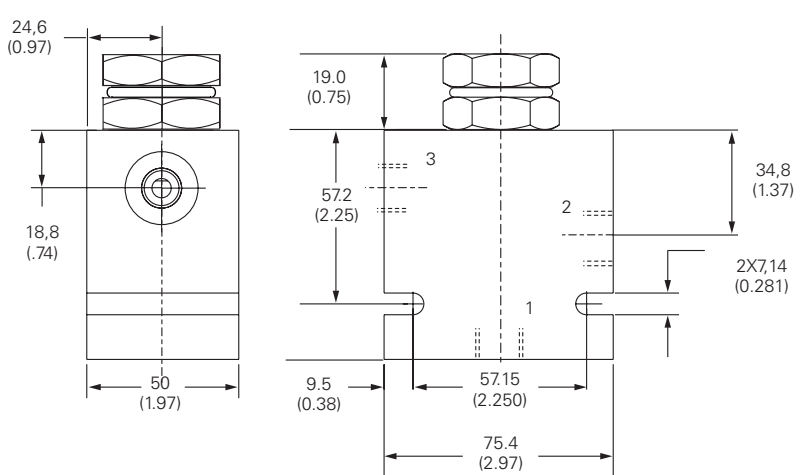
Dimensions

mm (inch)

Cartridge only



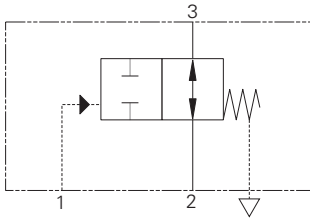
Installation drawing (aluminum)



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

PTS17-10/12 - Pilot to shift valve

2/2, pilot operated directional control valve
 PTS17-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS17-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)



Operation

This valve allows flow between ports 2 and 3 until sufficient pressure at port 1 overcomes the spring bias, which closes both ports.
 The spring chamber for this valve is externally vented to atmosphere.

Performance data

Ratings and specifications

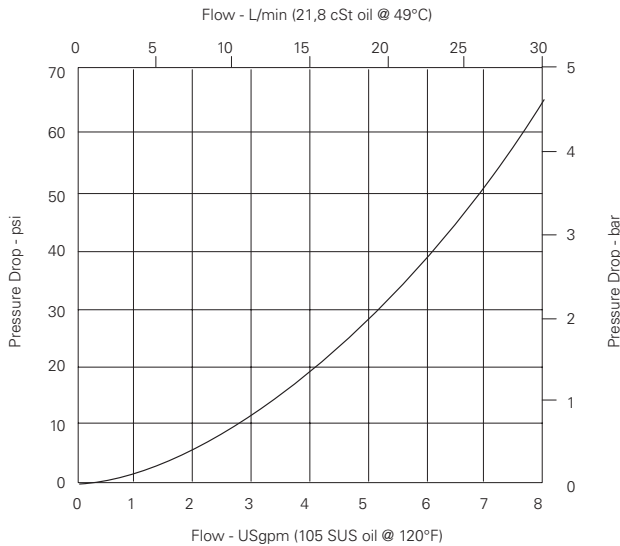
Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow 10	30 L/min (8 USgpm)
Rated Flow 12	114 L/min (30 USgpm)
Internal leakage	210 cc/min (13in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot Pressure 10	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot Pressure 12	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 120 - 8,3 bar (120 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume	0,49 cm ³ (0.02 in ³)
Cavity 10	C-10-3
Cavity 12	C-12-3
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 and Steel
Weight cartridge only - 10	0,10 kg (0.23 lbs)
Weight cartridge only - 12	0,25 kg (0.55 lbs)
Seal kit 10	889624 (Buna-N), 889628 (Viton®)
Seal kit 12	9900171 (Buna-N), 9900172 (Viton®)

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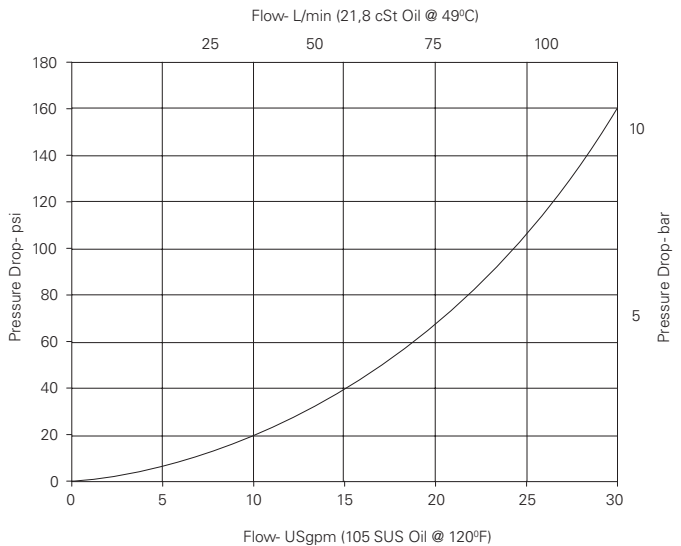
Pressure drop curves for - 10

Cartridge only



Pressure drop curves for - 12

Cartridge only

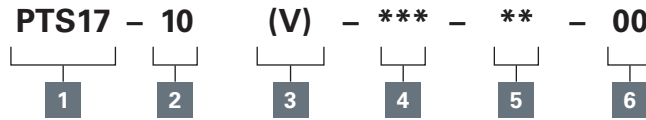


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS17-10/12 - Pilot to shift valve

2/2, pilot operated directional control valve
 PTS17-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS17-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)

Model code



1 Function

PTS17 - Pilot to shift valve

2 Size

10 - 10 Size

3 Seals

Blank - Buna-N
 V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminium light duty	Aluminium fatigue rated	Steel
A3B	3/8" BSPP	02-173358		
A6T	SAE 6	566162		
A2G	1/4" BSPP		876705	
A3G	3/8" BSPP		876714	
A6H	SAE 6		876704	
A8H	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

See section J for housing details.

5 Pilot to shift (nominal)

Note: Code based on pressure in psi.

40 - 2,75 bar (40 psi)

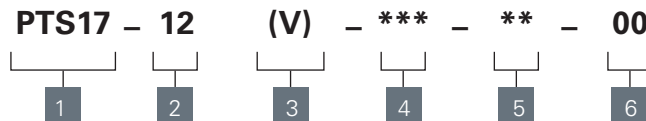
80 - 5,5 bar (80 psi)

160 - 11,0 bar (160 psi)

6 Special features

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

Model code



1 Function

PTS17 - Pilot to shift valve

2 Size

12 - 12 Size

3 Seals

Blank - Buna-N
 V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
		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.

5 Pilot to shift (nominal)

Note: Code based on pressure in 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")

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

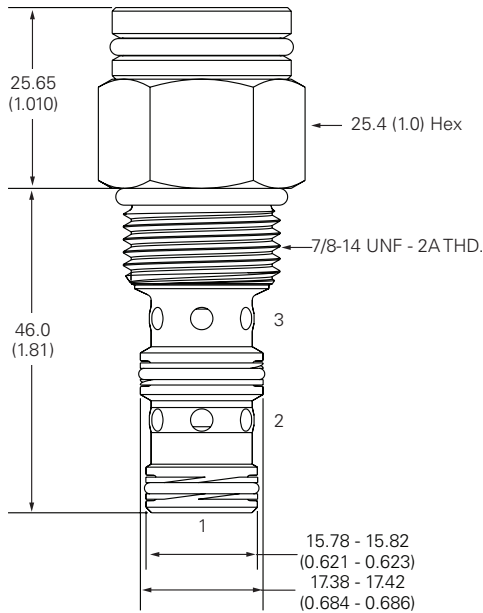
PTS17-10/12 - Pilot to shift valve

2/2, pilot operated directional control valve
 PTS17-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS17-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)

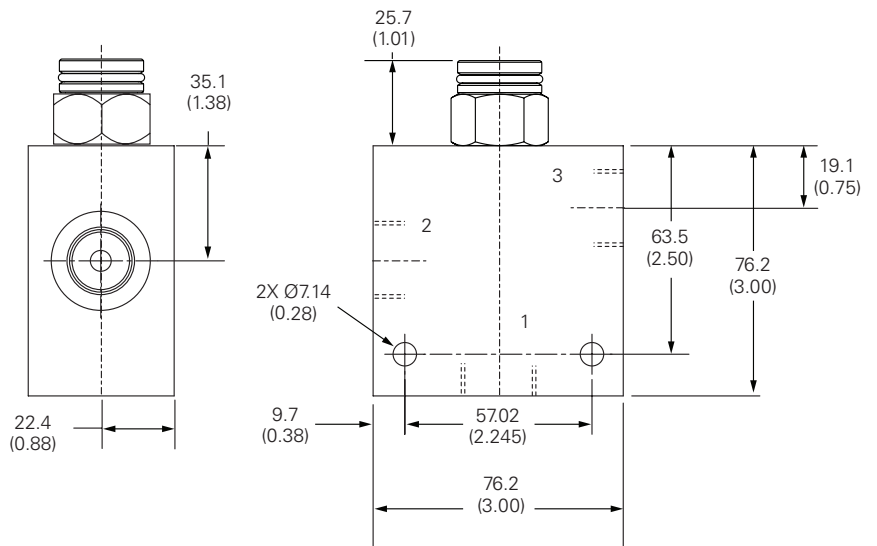
Dimensions

mm (inch)

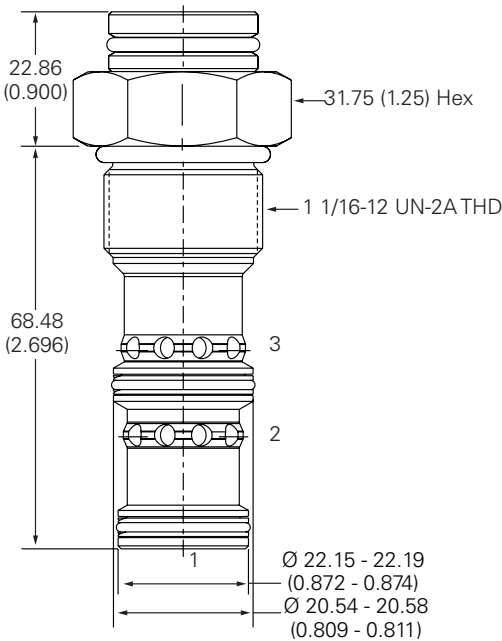
Cartridge only



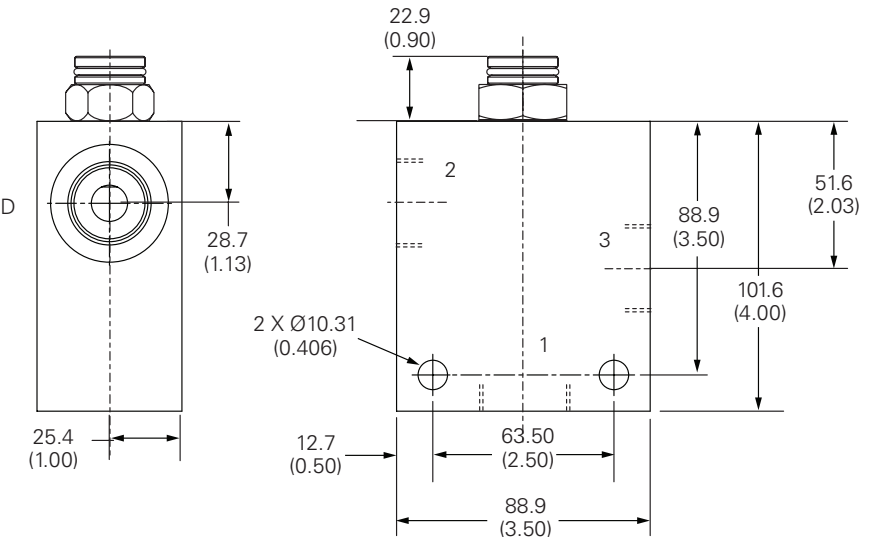
Installation drawing (steel)



Cartridge only



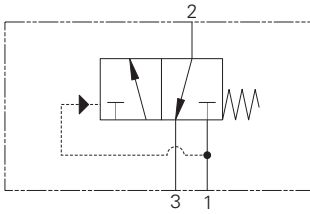
Installation drawing (steel)



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

1SB10 - Brake sequence valve

Brake sequence directional valve
10 L/min (2.5 USgpm) • 350 bar (5000 psi)



Operation

When the pressure in the inlet line is below the switching pressure (15 bar), the outlet will be connected to the tank, the spool being held in place by the spring force.

When the pressure in the inlet line exceeds the switching pressure, the spool will slide back, opening inlet to outlet.

Performance data

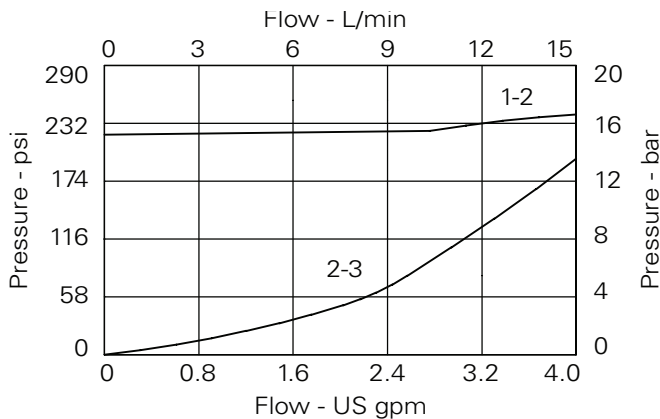
Ratings and specifications

Performance data is typical with fluid at 21,8 cST (105 SUS) and 49°C (120°F)

Max working pressure	350 bar (5000 psi)
Rated flow	10 L/min (2.5 US gpm)
Internal leakage	50 ml/min nominal
Temperature range	-30° to 90°C (22° to 194°F)
Cavity	A893 (see Section M)
Torque cartridge into cavity	60 Nm (44 lbs ft)
Mounting position	Unrestricted
Filtration	BS5540/4 Class 18/13 (25 micron or better)
Nominal viscosity range	5 to 500 cSt
Cartridge material	All working parts hardened and ground steel. External surfaces zinc plated.
Standard housing materials	Aluminum and Steel
Weight	1SB10 .12 kg (.26 lbs), 1SB15 1.0 kg (2.2 lbs)
Seal kit	SK182 (Nitrile) SK182V (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



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

1SB10 - Brake sequence valve

Brake sequence directional valve
 10 L/min (2.5 USgpm) • 350 bar (5000 psi)

Model code **1SB** - 3W S -**

1 2 3 4

1 Function
1SB10 - Cartridge only

2 Port size

Code	Port size	Housing number	
		Aluminum single	Steel
0	Cartridge only		
2W	1/4" BSP		A1882
3W	3/8" BSP		A1883
6T	3/8" SAE	A10715	A7371

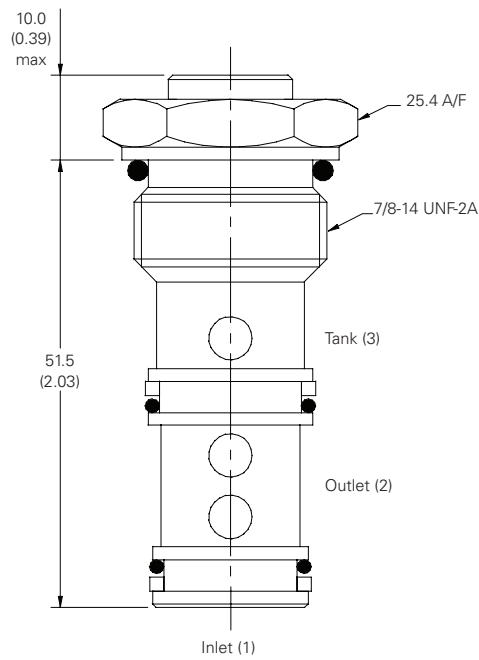
3 Seals
S - Nitrile
SV- Viton

4 Body material
 (Omit for aluminum (up to 210 bar).

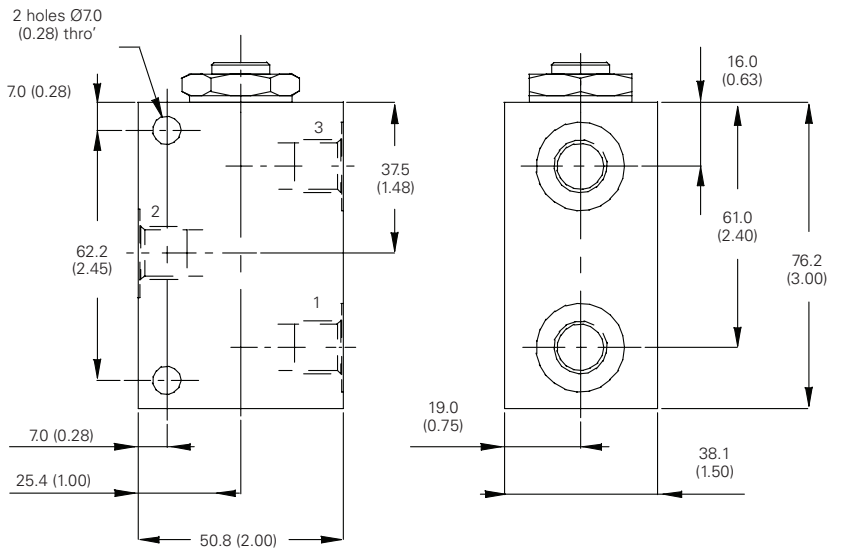
Dimensions

mm (inch)

Cartridge only



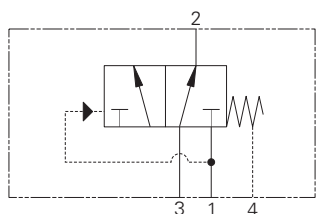
Installation drawing



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

1SB304 - Brake release shuttle valve

Brake release shuttle directional valve
30 L/min (8 USgpm) • 350 bar (5000 psi)



Operation

When pressure in the inlet exceeds the set pressure, flow is allowed from inlet to outlet closing off the tank line.

When the inlet pressure is removed, the spool returns to its normal position, opening the outlet port to tank and closing the inlet port.

Performance data

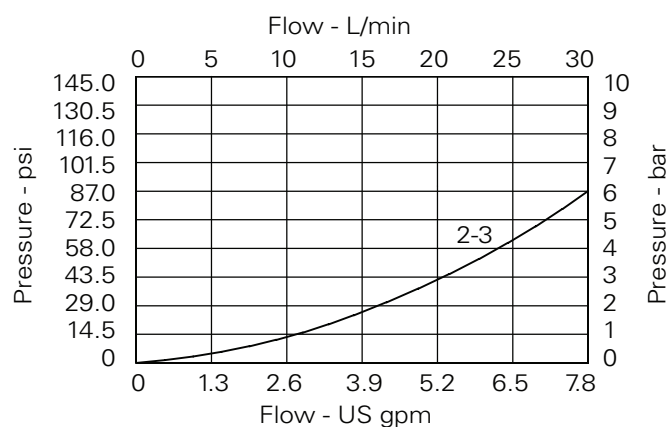
Ratings and specifications

Performance data is typical with fluid at 32 cST (150 SUS)

Max working pressure	350 bar (5000 psi)
Rated flow	30 L/min (8 US gpm)
Pilot pressure	10 to 100 bar (145 to 1450 psi) max pilot pressure 210 bar
Internal leakage	50 ml/min nominal
Temperature range	-30° to 90°C (-22° to 194°F)
Cavity	A5302 (see Section M)
Torque cartridge into cavity	60 Nm (44 lbs ft)
Mounting position	Unrestricted
Filtration	BS5540/4 Class 18/13 (25 micron or better)
Nominal viscosity range	5 to 500 cSt
Cartridge material	All working parts hardened and ground steel. External surfaces zinc plated.
Standard housing materials	Aluminum and Steel
Weight	.24 kg (.53 lbs)
Seal kit	SK645 (Nitrile) SK645V (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop

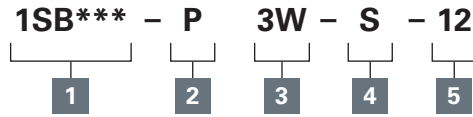


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

1SB304 - Brake release shuttle valve

Brake release shuttle directional valve
30 L/min (8 USgpm) • 350 bar (5000 psi)

Model code



1 Function

1SB304 - Cartridge only

2 Adjustment means

P - Leakproof screw adjustment

3 Port size

Code	Port size	Housing number	
		Aluminum	Steel
0	Cartridge only		
3W	3/8" BSP	B13602	B13603
6T	3/8" SAE	B21661	B21660

4 Seals

S - Nitrile
SV - Viton

5 Pressure range

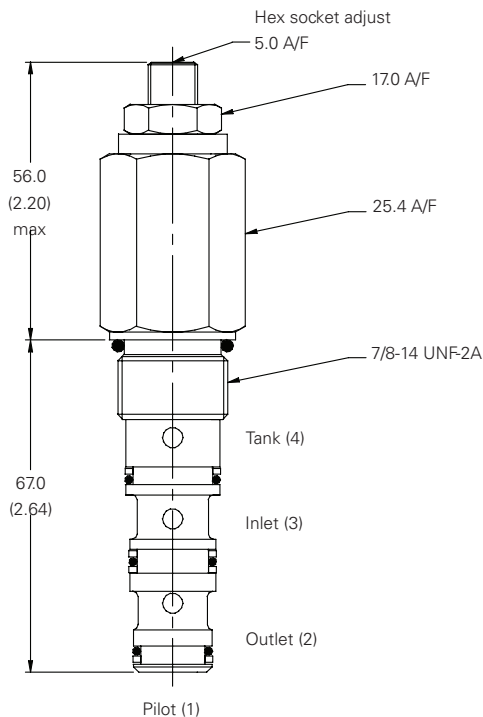
Note: Code based on pressure in bar.

6 - 10-60 bar.
Std setting 30 bar
12 - 20-100 bar.
Std setting 60 bar
Std setting made at 14 L/min
(3.8 USgpm).

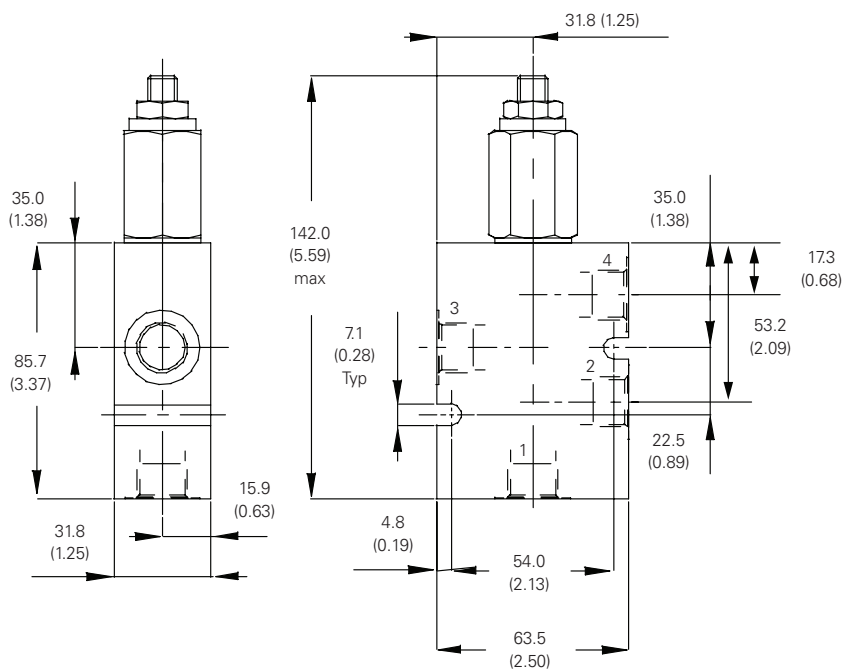
Dimensions

mm (inch)

Cartridge only



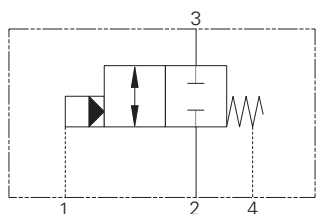
Installation drawing



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

1RDS702 - Pilot to shift valve

Pilot to shift directional valve
80 L/min (20 USgpm) • 420 bar (6090 psi)



Operation

When a pre-set pilot pressure is reached the spool moves back against the spring either opening or closing the line between inlet and outlet.

When the pilot pressure falls the valve will return to its normal position.

Performance data

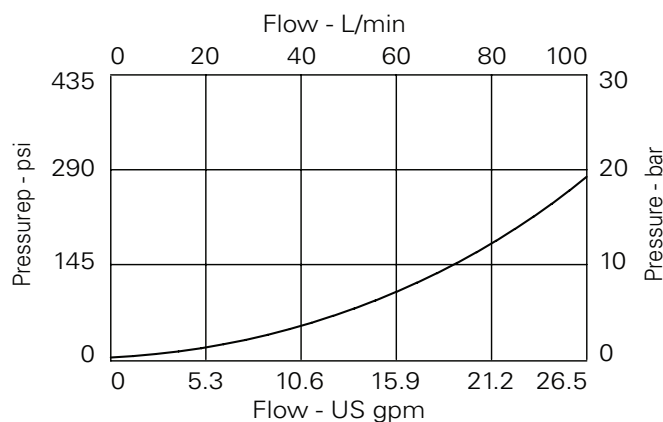
Ratings and specifications

Performance data is typical with fluid at 32 cSt (150 SUS)

Max working pressure	420 bar (6090 psi)
Rated flow	80 L/min (20 USgpm)
Internal leakage	90 ml/min nominal per land
Temperature range	-30° to 90°C (-22° to 194°F)
Cavity	A21145 (see Section M)
Torque cartridge into cavity	67 Nm (50 lbs ft)
Mounting position	Unrestricted
Filtration	BS5540/4 Class 18/13 (25 micron or better)
Nominal viscosity range	5 to 500 cSt
Pilot pressure	7 or 10 bar (101.5 or 145 psi)
Cartridge material	All working parts hardened and ground steel. External surfaces zinc plated.
Standard housing materials	Aluminum and Steel
Weight	1RDS702 .37 kg (.8 lbs), 1RDS752 1.97 kg (4.3 lbs)
Seal kit	SK1227 (Nitrile) SK1227V (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



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

1RDS702 - Pilot to shift valve

Pilot to shift directional valve
80 L/min (20 USgpm) • 420 bar (6090 psi)

Model code

1RDS* - 2 N - 6W - S - 1.0**

1
 2
 3
 4
 5
 6

1 Function

1RDS702 - Cartridge only
1RDS752 - Cartridge and body

2 Options

2 - Normally closed

3 Adjustment means

N - Fixed

4 Port size

Code	Port size	Housing number	
		Aluminum	Steel
Omit	Cartridge only		
6W	3/4" BSP	B21818	B21819
12T	3/4" SAE	B21822	B21823

5 Seals

S - Nitrile
SV - Viton

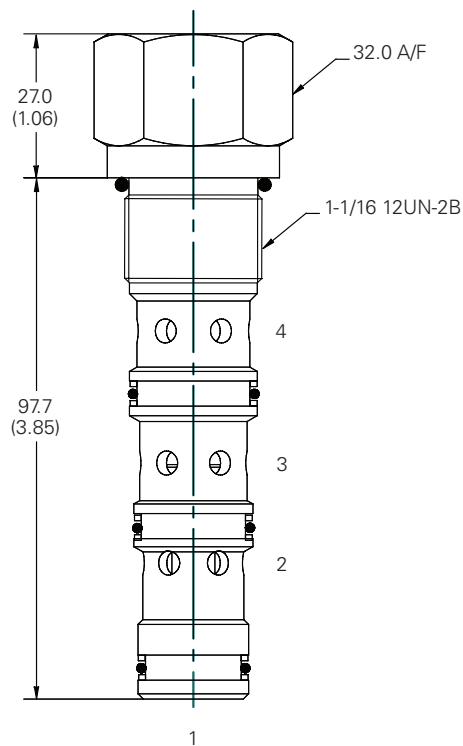
6 Pilot pressure.

.7 - 7 bar
1.0 - 10 bar

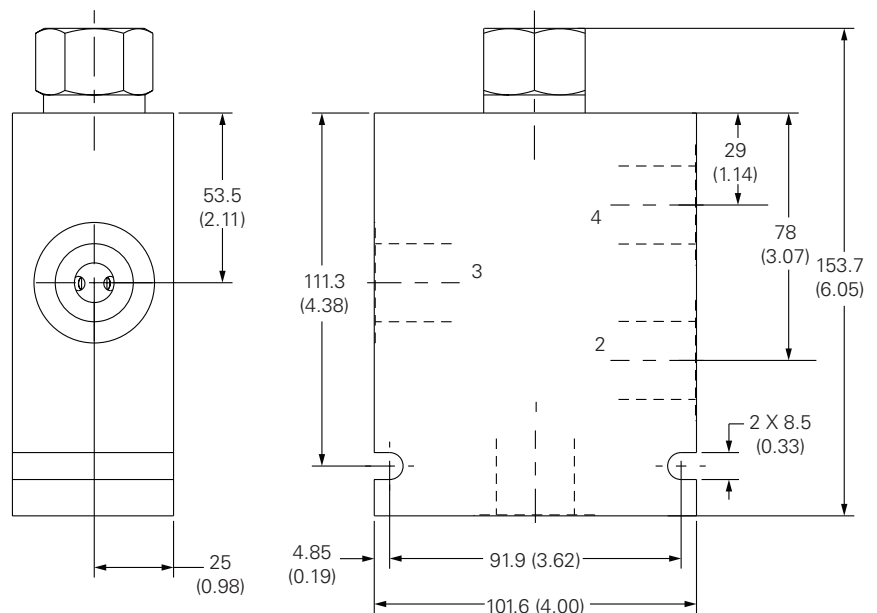
Dimensions

mm (inch)

Cartridge only



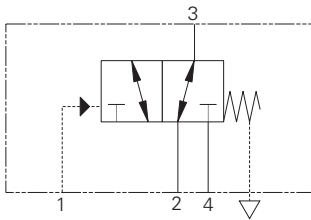
Installation drawing



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

PTS1-10/16/20 - Pilot to shift valve

Pilot operated, directional control valve
 PTS1-10: 30 L/min (7.9 USgpm) • 210 bar (3000 psi)
 PTS1-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)
 PTS1-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)



Operation

This valve allows flow between ports 2 and 3 while blocking port 4 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 3 and port 4 while blocking port 2. During the cross-over transition, all ports are blocked. The spring chamber for this valve is externally vented to atmosphere.

Performance data

Ratings and specifications

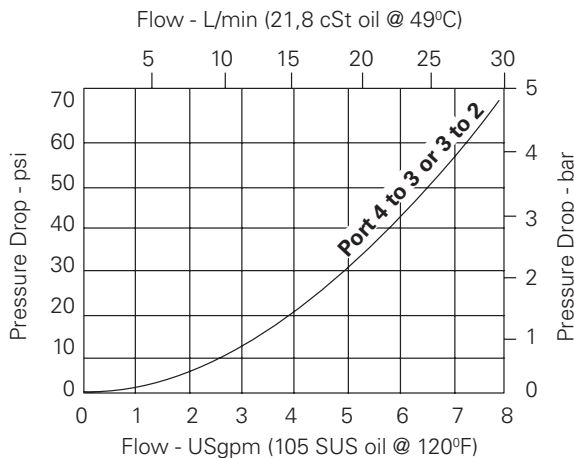
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated Flow 10	30 L/min (8 USgpm)
Rated Flow 16	132 L/min (35 USgpm)
Rated Flow 20	265 L/min (70 USgpm)
Internal leakage	164 cc/min (10 in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressure 10 & 16	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot pressure 20	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi)
Pilot displacement volume 10	0,49 cm ³ (0.02 in ³)
Pilot displacement volume 16	1,97 cm ³ (0.12 in ³)
Pilot displacement volume 20	6,72 cm ³ (0.41 in ³)
Cavity 10	C-10-4
Cavity 16	C-16-4
Cavity 20	C-20-4
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 - 10	0,14 kg (0.32 lbs)
Weight cartridge only - 16	0,5 kg (1.12 lbs)
Weight cartridge only - 20	1,1 kg (2.40 lbs)
Seal kit 10	889625 (Buna-N), 566080 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)
Seal kit 20	565916 (Buna-N), 889646 (Viton®)

Viton is a registered trademark of E.I. DuPont

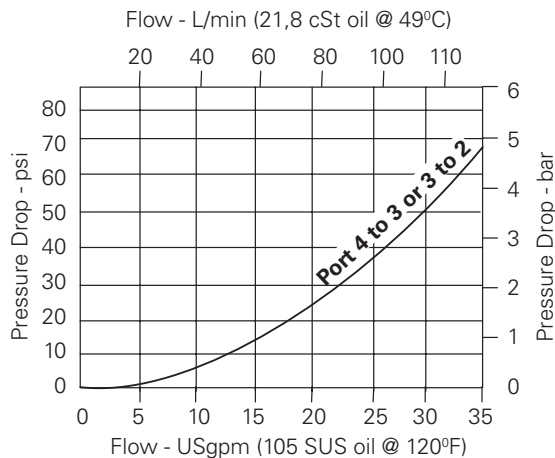
Pressure drop curves for - 10

Cartridge only



Pressure drop curves for 16

Cartridge only



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

PTS1-10/16/20 - Pilot to shift valve

Pilot operated, directional control valve

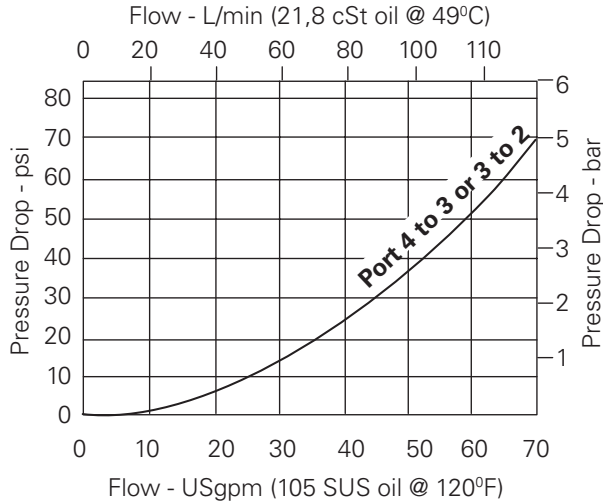
PTS1-10: 30 L/min (7.9 USgpm) • 210 bar (3000 psi)

PTS1-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)

PTS1-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)

Pressure drop curves for - 20

Cartridge only



Model code

PTS1 - 10 (V) - ** - ** - 00**



1 Function

PTS1 - Pilot to shift valve

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N

V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
3B	3/8" BSPP	02-179705	
6T	SAE 6	566161	
2G	1/4" BSPP	-	876709
3G	3/8" BSPP	-	876715
6H	SAE 6	-	876708
8H	SAE 8	-	876713

See section J for housing details.

5 Pilot to shift (nominal)

40 - 2,75 bar (40 psi)

80 - 5,5 bar (80 psi)

160 - 11,0 bar (160 psi)

6 Special features

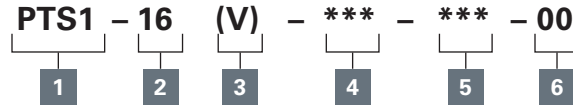
00 - None

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

PTS1-10/16/20 - Pilot to shift valve

Pilot operated, directional control valve
 PTS1-10: 30 L/min (7.9 USgpm) • 210 bar (3000 psi)
 PTS1-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)
 PTS1-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)

Model code



1 Function

PTS1 - Pilot to shift valve

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
 V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
12T	SAE 12	566411	-
6B	3/4" BSPP	02-175468	-
10H	SAE 10	-	876729
12H	SAE 12	-	876731
4G	1/2" BSPP	-	876728
6G	3/4" BSPP	-	876730

See section J for housing details.

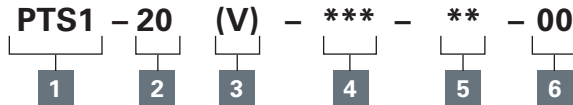
5 Pilot to shift (nominal)

40 - 2,75 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.")

Model code



1 Function

PTS1 - Pilot to shift valve

2 Size

20 - 20 size

3 Seal material

Blank - Buna-N
 V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminium light duty	Aluminium fatigue rated
16T	SAE 16	566412	-
8B	1" BSPP	02-175469	-
12H	SAE 12	-	876745
16H	SAE 16	-	876747
6G	3/4" BSPP	-	876744
8G	1" BSPP	-	876746

See section J for housing details.

5 Pilot to Shift (Nominal)

40 - 2,75 bar (40 psi)
 80 - 5,5 bar (80 psi)

6 Special features

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

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

PTS1-10/16/20 - Pilot to shift valve

Pilot operated, directional control valve

PTS1-10: 30 L/min (7.9 USgpm) • 210 bar (3000 psi)

PTS1-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)

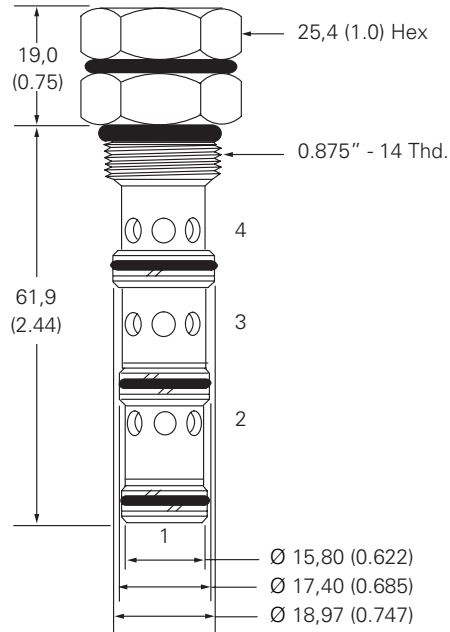
PTS1-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)

Dimensions

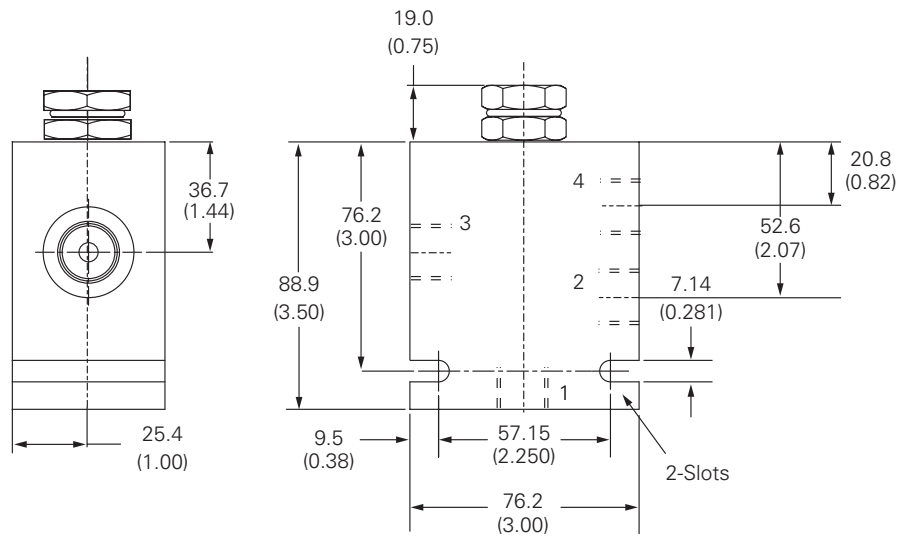
mm (inch)

PTS1-10

Cartridge only

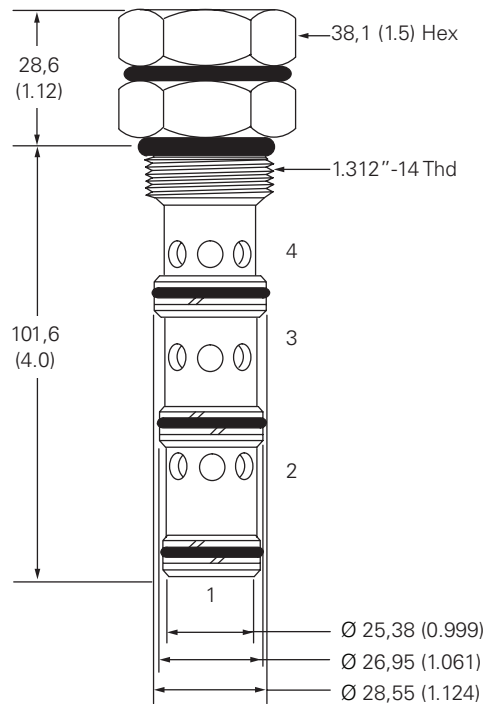


Installation drawing

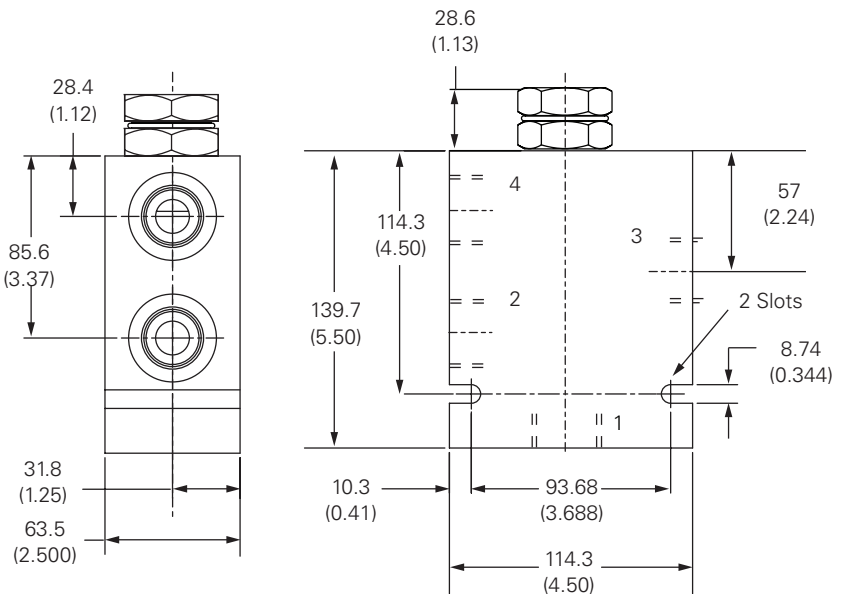


PTS1-16

Cartridge only



Installation drawing



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

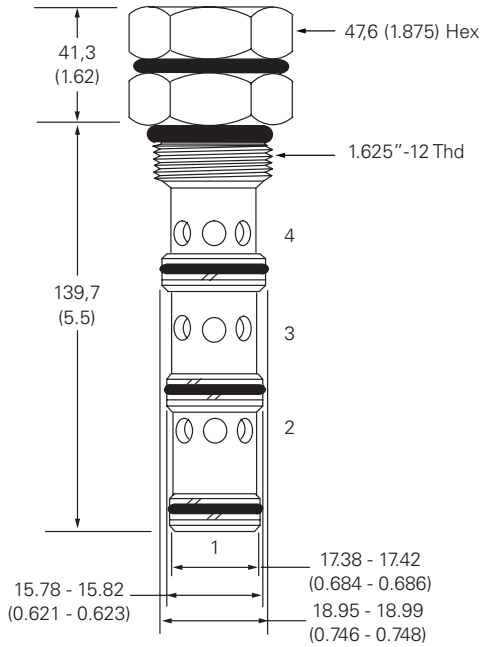
PTS1-10/16/20 - Pilot to shift valve

Pilot operated, directional control valve
 PTS1-10: 30 L/min (79 USgpm) • 210 bar (3000 psi)
 PTS1-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)
 PTS1-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)

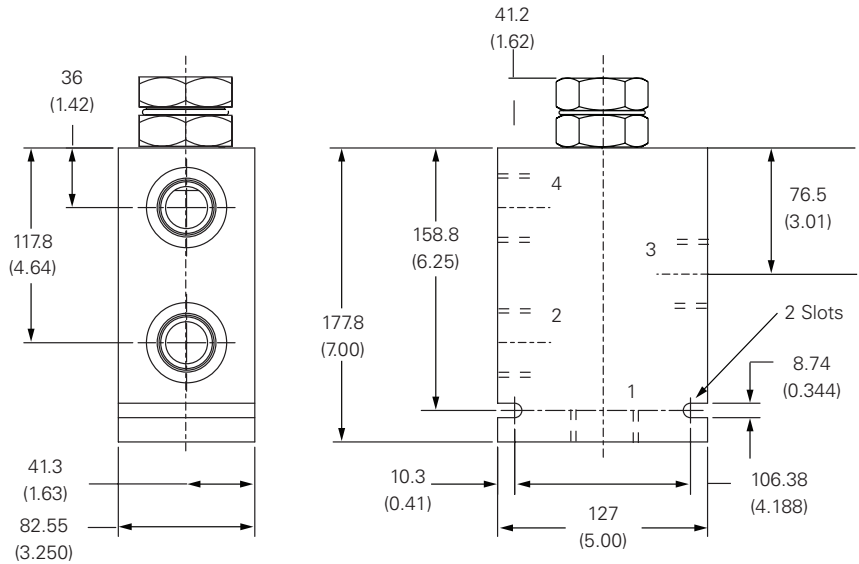
Dimensions

mm (inch)

Cartridge only



Installation drawing



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

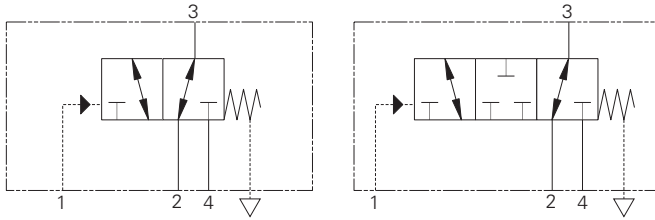
PTS1 1-10/12/16 - Pilot to shift valve

Pilot operated, directional control valve

PTS1 1-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)

PTS1 1-12: 76 L/min (20 USgpm) • 350 bar (5000 psi)

PTS1 1-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)



Operation

This valve allows flow between ports 2 and 3 while blocking port 4 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 3 and port 4 while blocking port 2. During the cross-over transition, all ports are blocked. The spring chamber for this valve is externally vented to atmosphere.

Performance data

Ratings and specifications

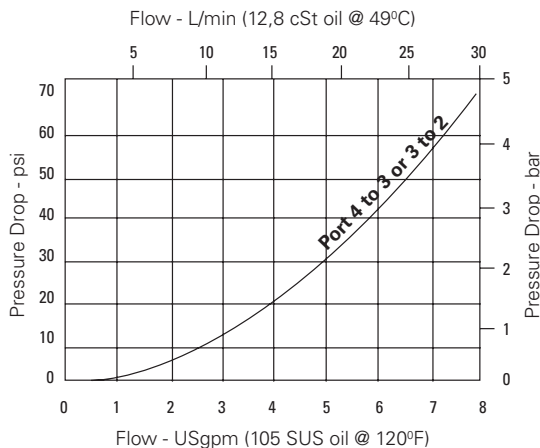
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow 10	30 L/min (8 USgpm)
Rated Flow 12	76 L/min (20 USgpm)
Rated Flow 16	132 L/min (35 USgpm)
Internal leakage -10	210 cc/min (13 in3/min) @ 210 bar (3000 psi)
Internal leakage -12 & 16	250 cc/min (15 in3/min) @ 350 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressure 10	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot pressure 12	80-5,5 bar (80 psi) 120-8,3 bar (120 psi)
Pilot pressure 16	80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume 10	0,49 cm ³ (0.02 in ³)
Pilot displacement volume 12	0,49 cm ³ (0.02 in ³)
Pilot displacement volume 16	1,97 cm ³ (0.12 in ³)
Cavity 10	C-10-4
Cavity 12	C-12-4
Cavity 16	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, Steel (5000 PSI)
Weight cartridge only -10	0,14 kg (0.32 lbs)
Weight cartridge only -12	0,32 kg (0.70 lbs)
Weight cartridge only -16	0,5 kg (1.12 lbs)
Seal kit 10	889625 (Buna-N), 566080 (Viton®)
Seal kit 12	02-160979 (Buna-N), 02-160980 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)

Viton is a registered trademark of E.I. DuPont

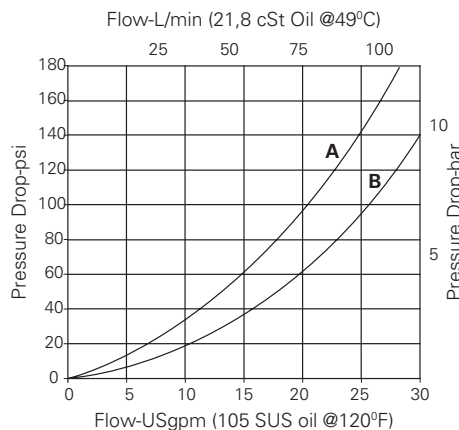
Pressure drop curves for - 10

Cartridge only



Pressure drop curves for 12

Cartridge only



A - P3 to P2

B - P3 to P4

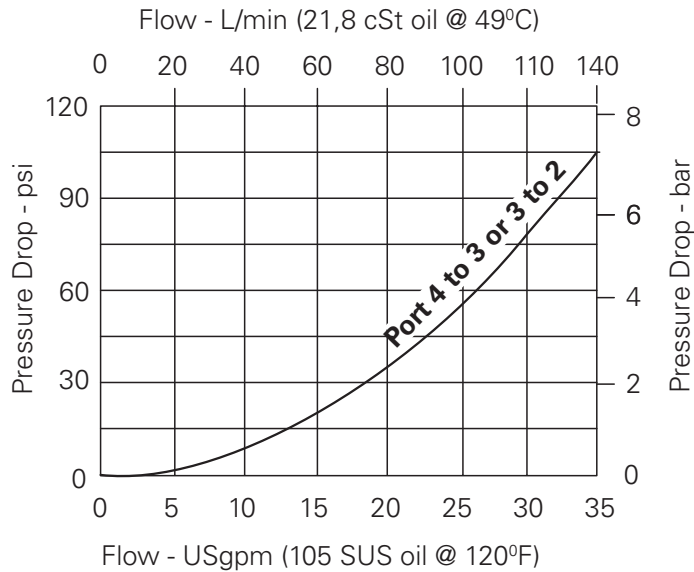
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS1 1-10/12/16 - Pilot to shift valve

Pilot operated, directional control valve
 PTS11-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS11-12: 76 L/min (20 USgpm) • 350 bar (5000 psi)
 PTS11-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

Pressure drop curves for - 16

Cartridge only



Model code

PTS11 - 10 (V) - * - *** - 00**

1 2 3 4 5 6

1 Function

PTS11 - Pilot to shift valve

2 Size

10 - 10 Size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number
O		Aluminum fatigue rated Steel
A2G	1/4" BSPP	02-185804
A3G	3/8" BSPP	02-185805
A6H	SAE 6	02-185802
A8H	SAE 8	02-185803
S2G	1/4" BSPP	02-175127
S3G	1/3" BSPP	02-175128
S6T	SAE 6	02-175124
S8T	SAE 8	02-175125

5 Pilot to shift (nominal)

40 - 2,75 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")

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

PTS1 1-10/12/16 - Pilot to shift valve

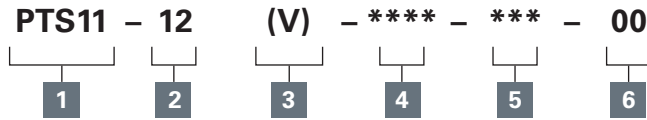
Pilot operated, directional control valve

PTS1 1-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)

PTS1 1-12: 76 L/min (20 USgpm) • 350 bar (5000 psi)

PTS1 1-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

Model code



1 Function

PTS11 - Pilot to shift valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum fatigue rated	Steel
A4G	1/2" BSPP	5986431-001	
A6G	3/4" BSPP	5986432-001	
A8H	SAE 8	5986433-001	
A10H	SAE 10	5986434-001	
A12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S10H	SAE 10		5981074-001
S12H	SAE 12		5981075-001

See section J for housing details.

5 Pilot to shift (nominal)

80 - 5,5 bar (80 psi)

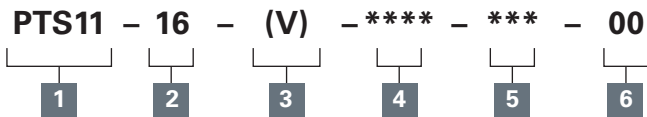
120 - 8,3 bar (120 psi)

6 Special features

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

01 - External vent port with vent port option (SAE-4)

Model code



1 Function

PTS11 - Pilot to shift valve

2 Size

16 - 16 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0				
A12T	SAE 12	566411		
A6B	3/4" BSPP	02-175468		
A10H	SAE 10		876729	
A12H	SAE 12		876731	
A4G	1/2" BSPP		876728	
A6G	3/4" BSPP		876730	
S4G	1/2" BSPP			02-175143
S6G	3/4" BSPP			02-175144
S10T	SAE 10			02-175141
S12T	SAE 12			02-175142

5 Pilot to shift (nominal)

80 - 5,5 bar (80 psi)

160 - 11 bar (160 psi)

6 Special features

00 - Non (Only required if valve has special features, omitted if "00")

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

PTS1 1-10/12/16 - Pilot to shift valve

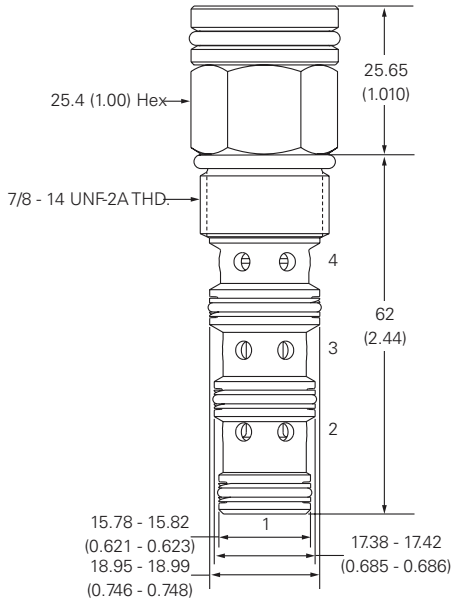
Pilot operated, directional control valve
 PTS1 1-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS1 1-12: 76 L/min (20 USgpm) • 350 bar (5000 psi)
 PTS1 1-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

PTS11-10

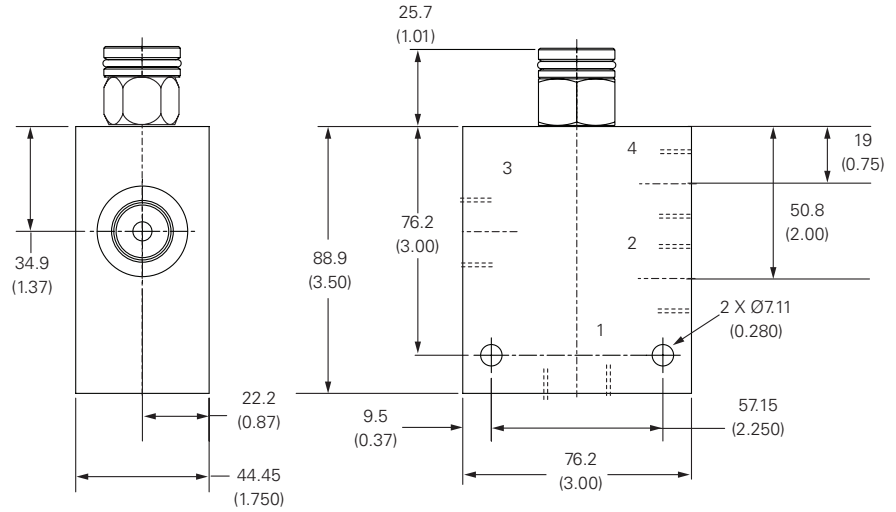
Dimensions

mm (inch)

Cartridge only

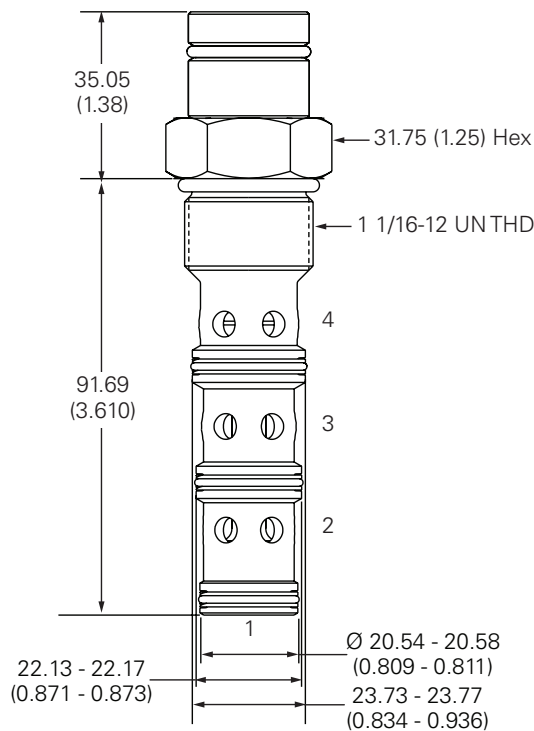


Installation drawing (steel)

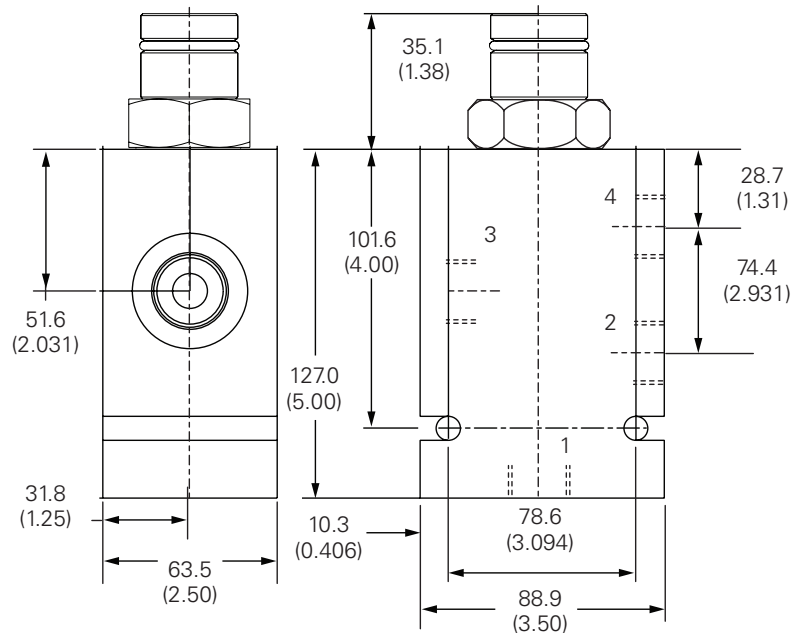


PTS11-12

Cartridge only



Installation drawing (steel)



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

PTS11-10/12/16 - Pilot to shift valve

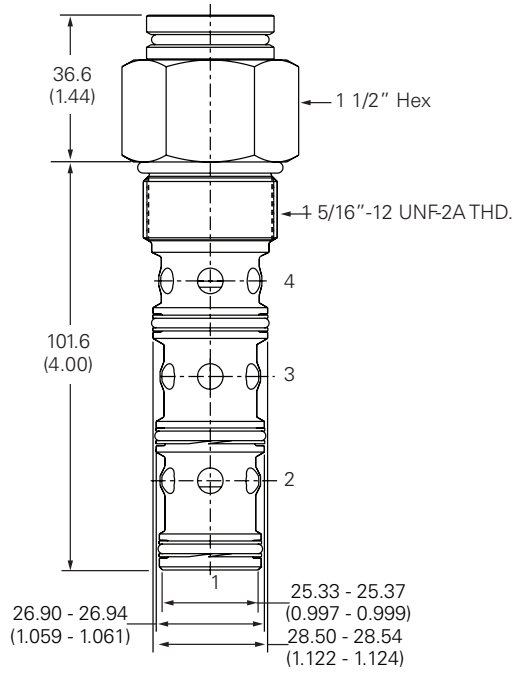
Pilot operated, directional control valve
 PTS11-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS11-12: 76 L/min (20 USgpm) • 350 bar (5000 psi)
 PTS11-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

PTS11-16

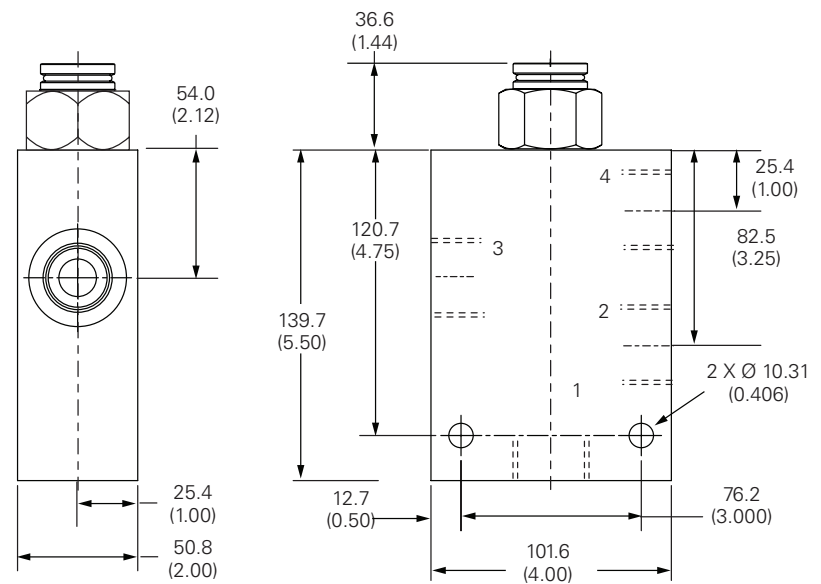
Dimensions

mm (inch)

Cartridge only



Installation drawing (steel)

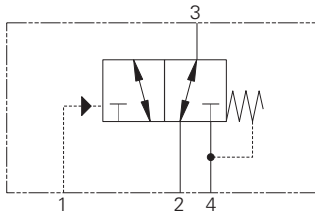


D

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

PTS12-10/12/16 - Pilot to shift valve

Pilot operated, directional control valve
 PTS12-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS12-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)
 PTS12-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)



Operation

This valve allows flow between ports 2 and 3 while blocking port 4 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 3 and port 4 while blocking port 2. During the cross-over transition, all ports are blocked. The spring chamber for this valve is externally vented to port 4.

Performance data

Ratings and specifications

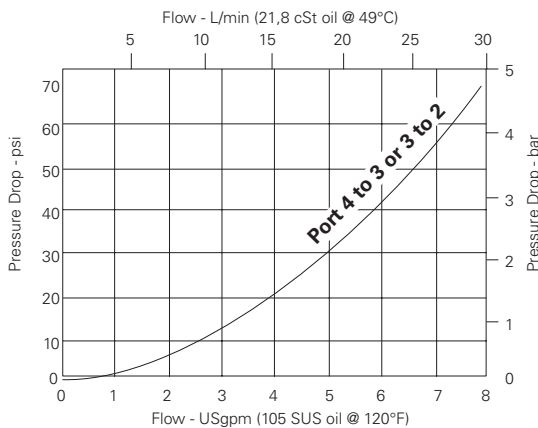
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow 10	30 L/min (8 USgpm)
Rated Flow 12	114 L/min (30 USgpm)
Rated Flow 16	132 L/min (35 USgpm)
Internal leakage	250 cc/min (15in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot Pressure 10	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot Pressure 12	80 - 5,5 bar (80 psi) 120 - 8,3 bar (120 psi) 160 - 11,0 bar (160 psi)*
Pilot Pressure 16	80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot Displacement Volume - 10 & 12	0,49 cm ³ (0.02 in ³)
Pilot Displacement Volume -16	
Cavity 10	C-10-4
Cavity 12	C-12-4
Cavity 16	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, Steel
Weight cartridge only - 10	0,14 kg (0.32 lbs)
Weight cartridge only - 12	0,32 kg (0.70 lbs)
Weight cartridge only - 16	0,5 kg (1.12 lbs)
Seal kit 10	889625 (Buna-N), 566080 (Viton®)
Seal kit 12	02-160979 (Buna-N), 02-160980 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)

Viton is a registered trademark of E.I. DuPont

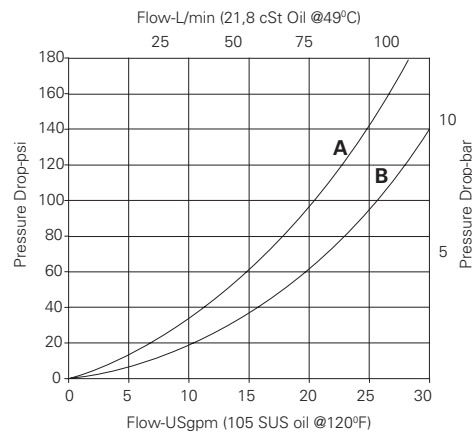
Pressure drop curves for - 10

Cartridge only



Pressure drop curves for - 12

Cartridge only



A - P3 to P2

B - P3 to P4

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

PTS12-10/12/16 - Pilot to shift valve

Pilot operated, directional control valve

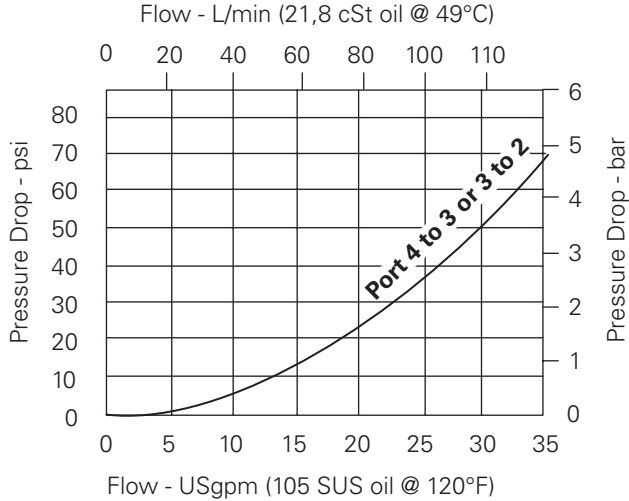
PTS12-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)

PTS12-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)

PTS12-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

Pressure drop curves for - 16

Cartridge only



Model code

PTS12 - 10 **V** - ******* - ******* - **00**

1 2 3 4 5 6

1 Function

PTS12 - Pilot to shift valve

2 Size

10 - 10 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
0	Fatigue rated	Aluminum	Steel
A2G	1/4" BSPP	02-185804	
A3G	3/8" BSPP	02-185805	
A6H	SAE 6	02-185802	
A8H	SAE 8	02-185803	
S2G	1/4" BSPP		02-175139
S3G	3/8" BSPP		02-175140
S6T	SAE 6		02-175137
S8T	SAE 8		02-175138

See section J for housing details.

5 Pilot to shift (nominal)

40 - 2,75 bar (40 psi)
80 - 5,5 bar (80 psi)
120 - 8,3 bar (120 psi)

6 Special features

00 - Non (Only required if valve has special features, omitted if "00")

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

PTS12-10/12/16 - Pilot to shift valve

Pilot operated, directional control valve
 PTS12-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS12-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)
 PTS12-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

Model code

PTS12 - 12 - V - * - *** - 00**

1 2 3 4 5 6

1 Function

PTS12 - Pilot to shift valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum fatigue rated	Steel
0			
A4G	1/2" BSPP	5986431-001	
A6G	3/4" BSPP	5986432-001	
A8H	SAE 8	5986433-001	
A10H	SAE 10	5986434-001	
A12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S10H	SAE 10		5981074-001
S12H	SAE 12		5981075-001

5 Pilot to shift (nominal)

80 - 5,5 bar (80 psi)
120 - 8,3 bar (120 psi)
160 - 8,3 bar (160 psi)*
 *Only for adjustable types

6 Special features

04 - "F Type" fixed type

Model code

PTS12 - 16 - (V) - * - *** - 00**

1 2 3 4 5 6

1 Function

PTS12 - Pilot to shift valve

2 Size

16 - 16 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
A12T	SAE 12	566411		
A6B	3/4" BSPP	02-175468		
A10H	SAE 10		876729	
A12H	SAE 12		876731	
A4G	1/2" BSPP		876728	
A6G	3/4" BSPP		876730	
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 Pilot to shift (nominal)

160 - 11,0 bar (160 psi)

6 Special features

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

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

PTS12-10/12/16 - Pilot to shift valve

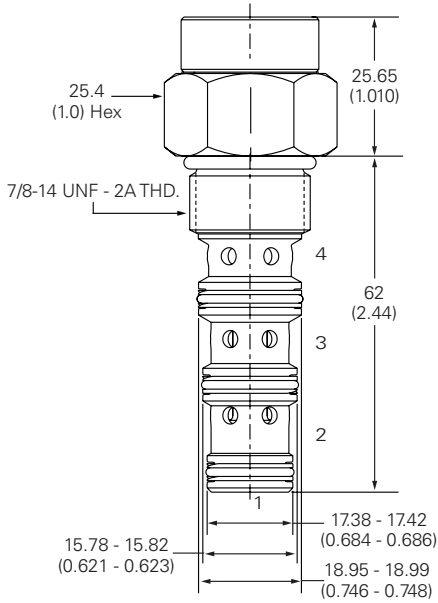
Pilot operated, directional control valve
 PTS12-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS12-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)
 PTS12-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

PTS12-10

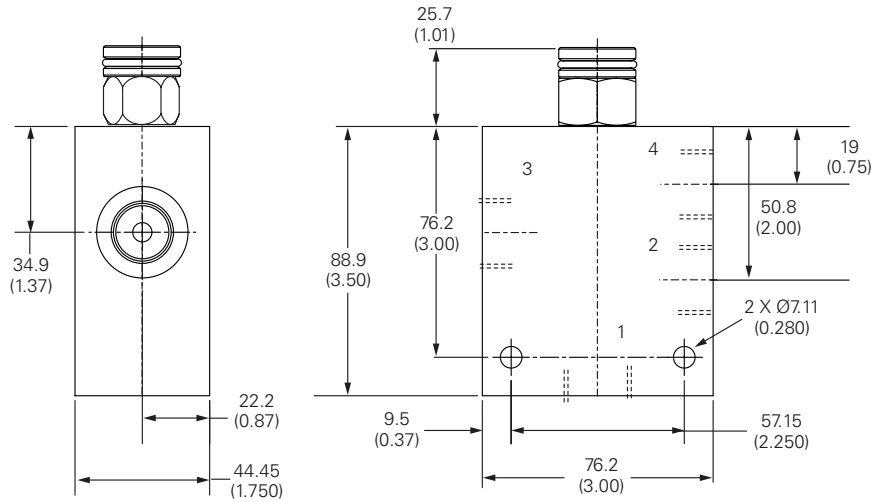
Dimensions

mm (inch)

Cartridge only

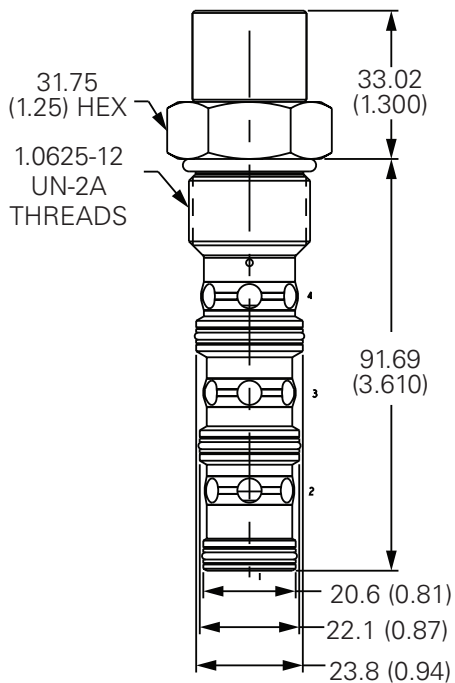


Installation drawing (steel)

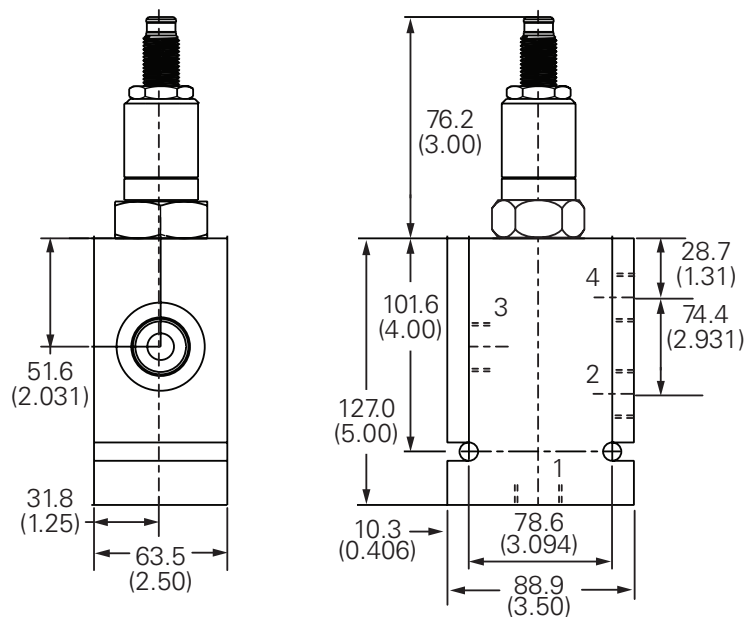


PTS12-12

Cartridge only



Installation drawing (steel)



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

PTS12-10/12/16 - Pilot to shift valve

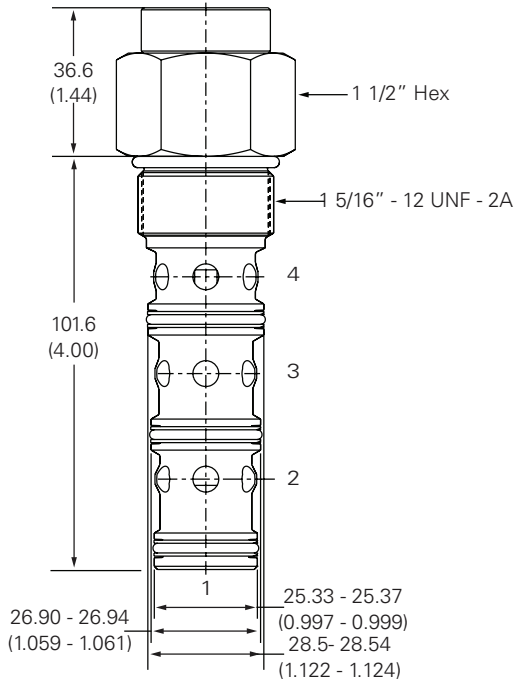
Pilot operated, directional control valve
 PTS12-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS12-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)
 PTS12-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

PTS12-16

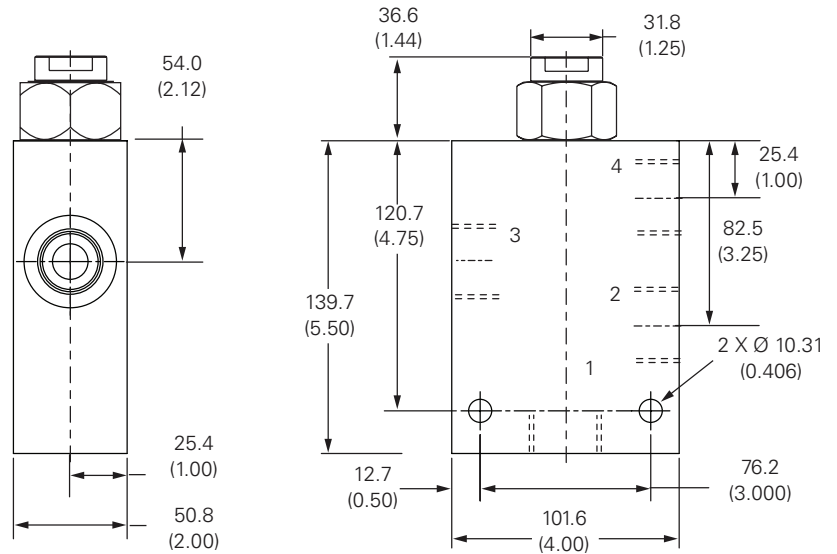
Dimensions

mm (inch)

Cartridge only



Installation drawing (steel)



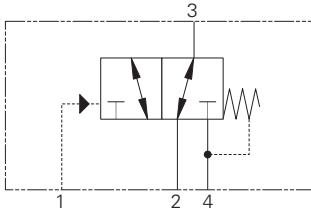
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS2-16/20 - Pilot to shift valve

Pilot operated, directional control valve

PTS2-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)

PTS2-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)



Operation

This valve allows flow between ports 2 and 3 while blocking port 4 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 3 and port 4 while blocking port 2. During the cross-over transition, all ports are blocked. The spring chamber for this valve is vented to port 4.

Performance data

Ratings and specifications

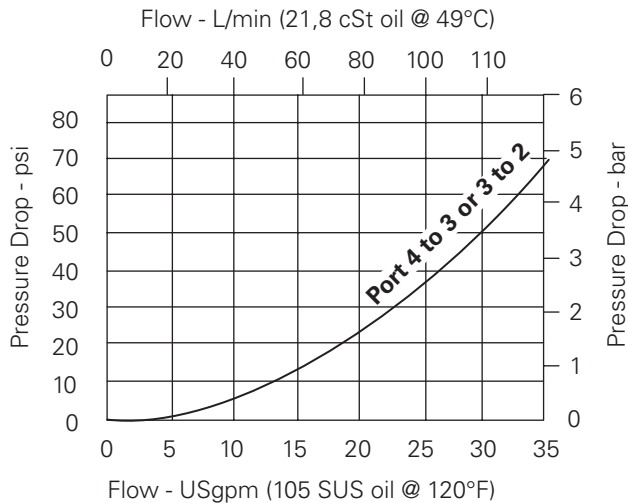
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated Flow 10	132 L/min (35 USgpm)
Rated Flow 12	265 L/min (70 USgpm)
Internal leakage	164 cc/min (10 in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot Pressure 16	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot Pressure 20	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi)
Pilot Displacement Volume 16	1,97 cm ³ (0.12 in ³)
Pilot Displacement Volume 20	6,72 cm ³ (0.41 in ³)
Cavity 16	C-16-4
Cavity 20	C-20-4
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, Steel
Weight cartridge only -16	0,5 kg (1.12 lbs)
Weight cartridge only -20	1.1 Kg (2.4 lbs)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)
Seal kit 20	565916 (Buna-N), 889646 (Viton®)

Viton is a registered trademark of E.I. DuPont

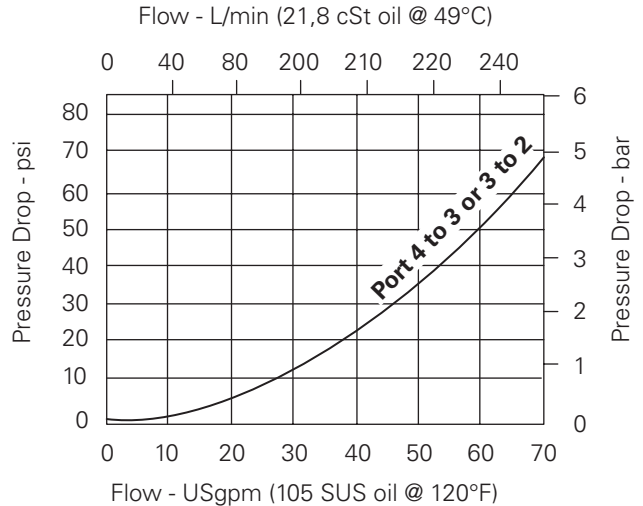
Pressure drop curves for -16

Cartridge only



Pressure drop curves for -20

Cartridge only



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

PTS2-16/20 - Pilot to shift valve

Pilot operated, directional control valve
 PTS2-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)
 PTS2-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)

Model code

PTS2 - 16 (V) - *** - *** - 00

1 2 3 4 5 6

1 Function

PTS2 - Pilot to shift valve

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
 V - Viton

4 Port size

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0	Cartridge			
A12T	SAE 12	566411	-	-
A6B	3/4" BSPP	02-175468	-	-
A10H	SAE 10	-	876729	-
A12H	SAE 12	-	876731	-
A4G	1/2" BSPP	-	876728	-
A6G	3/4" BSPP	-	876730	-
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 Pilot to shift (nominal)

40 - 2,75 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".)

Model code

PTS2 - 20 (V) - *** - ** - 00

1 2 3 4 5 6

1 Function

PTS2 - Pilot to shift valve

2 Size

20 - 20 size

3 Seal material

Blank - Buna-N
 V - Viton

4 Port size

Code	Port size	Housing number	
		Aluminum light duty	Aluminium fatigue rated
0	Cartridge		
16T	SAE 16	566412	-
8B	1" BSPP	02-175469	-
12H	SAE 12	-	876745
16H	SAE 16	-	876747
6G	3/4" BSPP	-	876744
8G	1" BSPP	-	876746

See section J for housing details.

5 Pilot to shift (nominal)

40 - 2,75 bar (40 psi)
 80 - 5,5 bar (80 psi)

6 Special features

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

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

PTS2-16/20 - Pilot to shift valve

Pilot operated, directional control valve

PTS2-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)

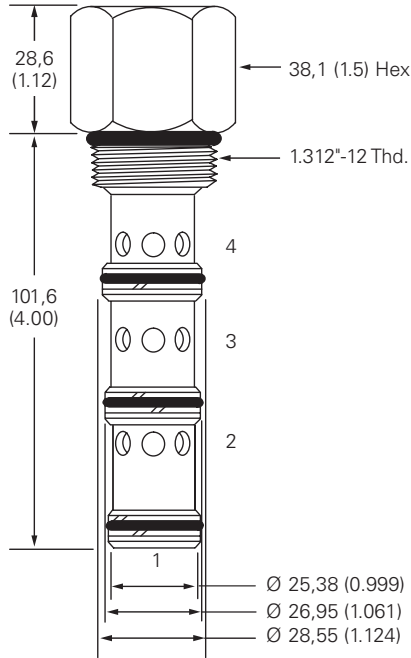
PTS2-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)

PTS2-16

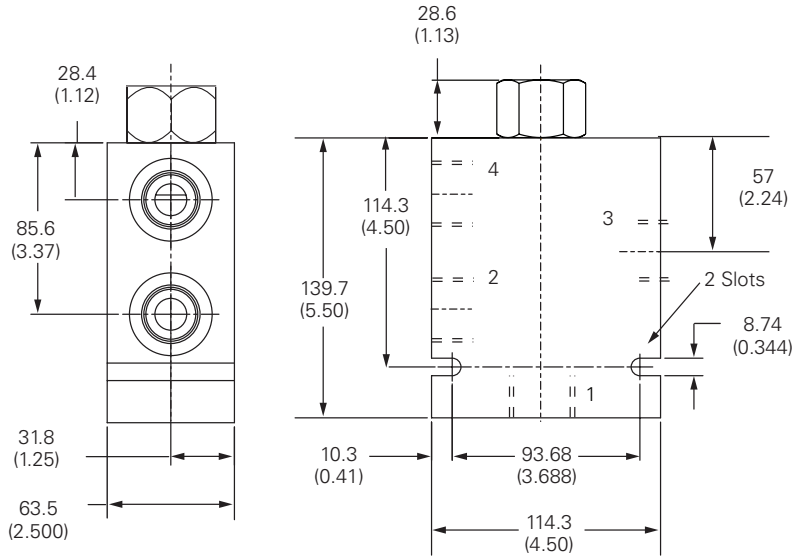
Dimensions

mm (inch)

Cartridge only

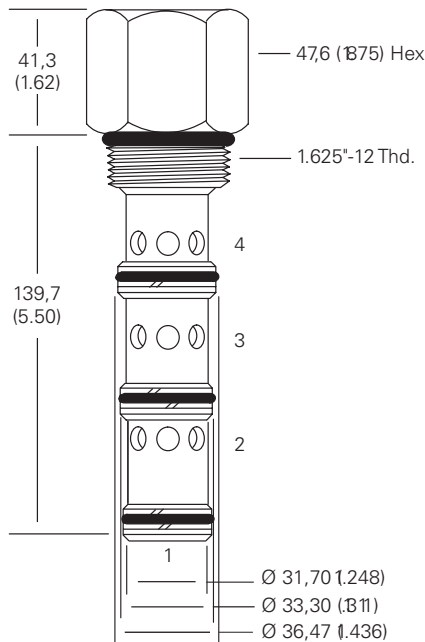


Installation drawing (aluminum)

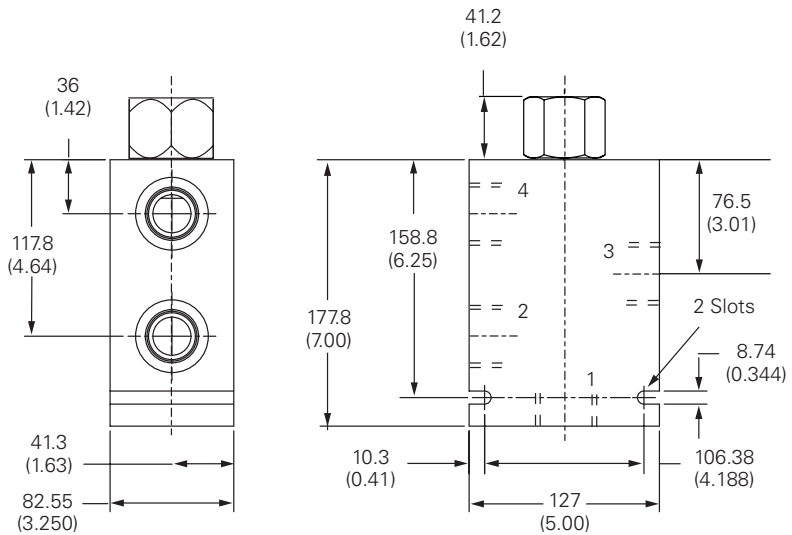


PTS2-20

Cartridge only



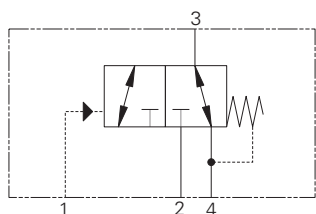
Installation drawing



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

PTS13-10/12/16 - Pilot to shift valve

Pilot operated, directional control valve
 PTS13-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS13-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)
 PTS13-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)



Operation

This valve allows flow between ports 3 and 4 while blocking port 2 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 2 and port 3 while blocking port 4. During the cross-over transition, all ports are blocked. The spring chamber for this valve is vented to port 4.

Performance data

Ratings and specifications

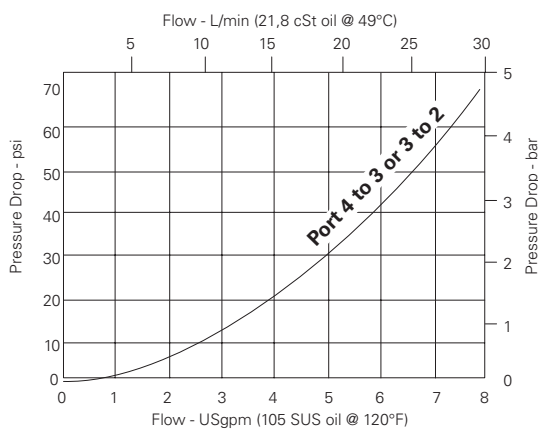
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow 10	30 L/min (8 USgpm)
Rated Flow 12	113 L/min (30 USgpm)
Rated Flow 16	132 L/min (35 USgpm)
Internal leakage	210 cc/min (13in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120° C (-40° to 248°F)
Pilot Pressure 10	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot Pressure 12	80 - 5,5 bar (80 psi) 120 - 8,3 bar (120 psi) 160 - 11,0 bar (160 psi)
Pilot Pressure 16	80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume	0,49 cm ³ (0.02 in ³)
Cavity 10	C-10-4
Cavity 12	C-12-4
Cavity 16	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 12	0.32 kg (0.70 lbs)
Weight cartridge only 16	0,5 kg (1.12 lbs)
Seal kit 10	889625 (Buna-N), 566080 (Viton®)
Seal kit 12	02-160979 (Buna-N), 02-160980 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)

Viton is a registered trademark of E.I. DuPont

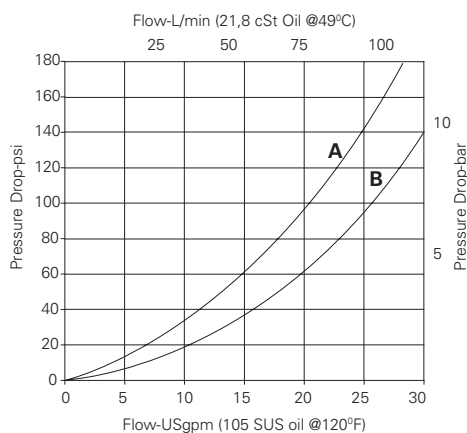
Pressure drop curves for -10

Cartridge only



Pressure drop curves for -12

Cartridge only



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

PTS13-10/12/16 - Pilot to shift valve

Pilot operated, directional control valve

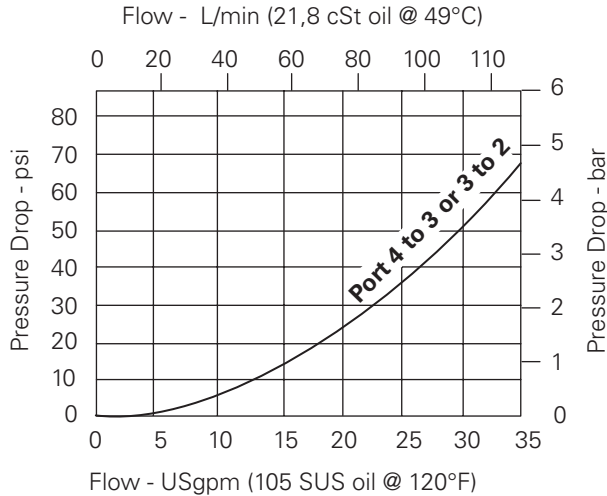
PTS13-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)

PTS13-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)

PTS13-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

Pressure drop curves for -16

Cartridge only



Model code

PTS13 - 10 - (V) - ** - *** - 00**



1 Function

PTS13 - Pilot to shift valve

2 Size

10 - 10 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
A3B	3/8" BSPP	02-179705		
A6T	SAE 6	566161		
A2G	1/4" BSPP		02-185804	
A3G	3/8" BSPP		02-185805	
A6H	SAE 6		02-185802	
A8H	SAE 8		02-185803	
S2G	1/4" BSPP			02-175139
S3G	3/8" BSPP			02-175140
S6T	SAE 6			02-175137
S8T	SAE 8			02-175138

See section J for housing details.

5 Pilot to shift (nominal)

40 - 2,75 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")

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

PTS13-10/12/16 - Pilot to shift valve

Pilot operated, directional control valve
 PTS13-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS13-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)
 PTS13-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

Model code

PTS13 - 12 - (V) - ** - *** - 00**

1
 2
 3
 4
 5
 6

1 Function

PTS13 - Pilot to shift valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminum	Steel
A4G	1/2" BSPP	5986431-001	
A6G	3/4" BSPP	5986432-001	
A8H	SAE 8	5986433-001	
A10H	SAE 10	5986434-001	
A12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S10T	SAE 10		5991074-001
S12T	SAE 12		5991075-001

See section J for housing details.

5 Pilot to shift (nominal)

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

6 Special features

04 - 'F Type' fixed type w/closed transition

Model code

PTS13 - 16 (V) - ** - *** - 00**

1
 2
 3
 4
 5
 6

1 Function

PTS13 - Pilot to shift valve

2 Size

16 - 16 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
A12T	SAE 12	566411		
A6B	3/4" BSPP		02-175468	
A10H	SAE 10		876729	
A12H	SAE 12		876731	
A4G	1/2" BSPP		876728	
A6G	3/4" BSPP		876730	
S4G	1/2" BSPP			02-175143
S6G	1/4" BSPP			02-175144
S10T	SAE 10			02-175141
S12T	SAE 12			02-175142

See section J for housing details.

5 Pilot to shift (nominal)

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")

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

PTS13-10/12/16 - Pilot to shift valve

Pilot operated, directional control valve

PTS13-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)

PTS13-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)

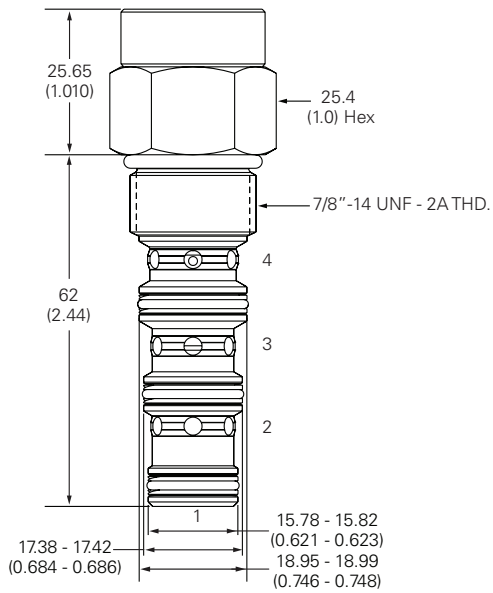
PTS13-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

PTS13-10

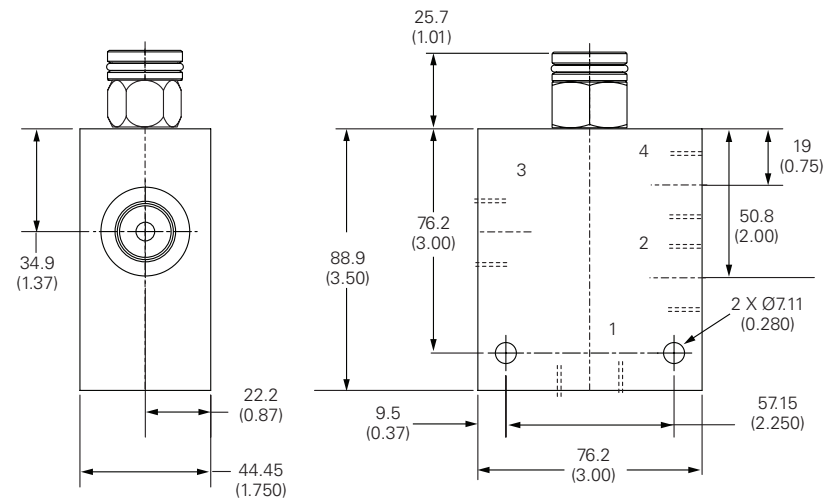
Dimensions

mm (inch)

Cartridge only

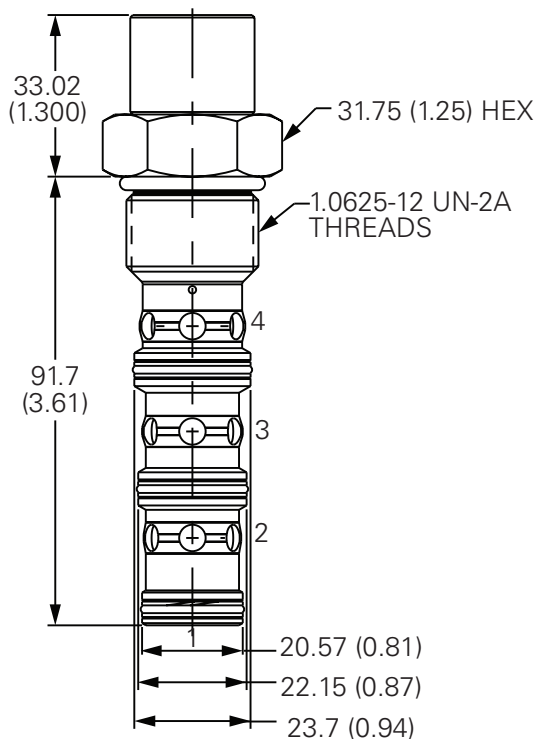


Installation drawing (Steel)

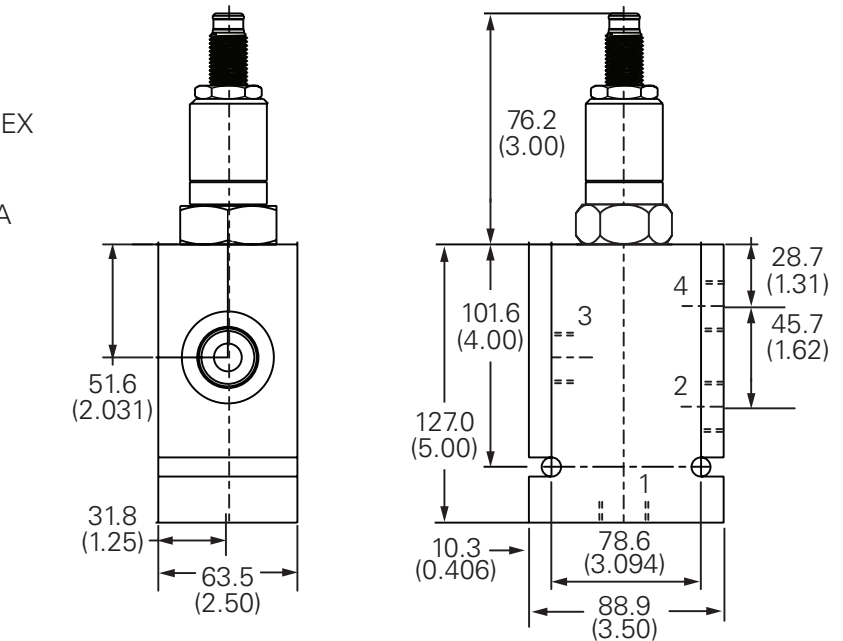


PTS13-12

Cartridge only



Installation drawing (steel)



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

PTS13-10/12/16 - Pilot to shift valve

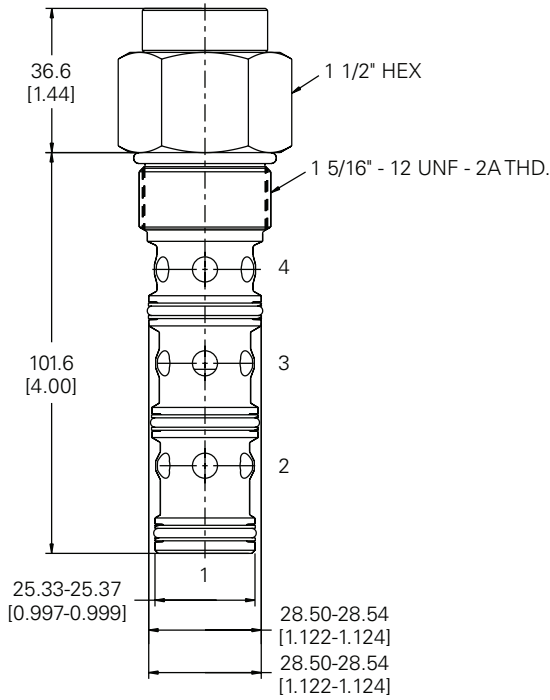
Pilot operated, directional control valve
 PTS13-10: 30 L/min (8 USgpm) • 350 bar (5000 psi)
 PTS13-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)
 PTS13-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

PTS13-16

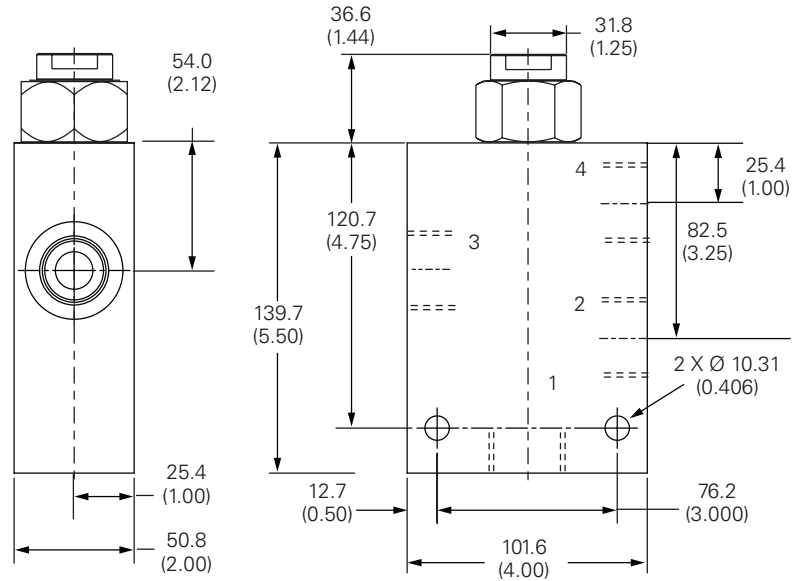
Dimensions

mm (inch)

Cartridge only



Installation drawing (Steel)



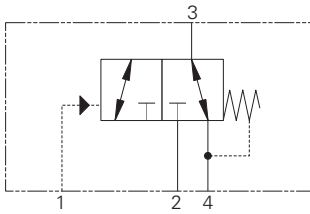
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS3-16/20 - Pilot to shift valve

Pilot operated, directional control valve

PTS3-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)

PTS3-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)



Operation

This valve allows flow between ports 3 and 4 while blocking port 2 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 2 and port 3 while blocking port 4. During the cross-over transition, all ports are blocked. The spring chamber for this valve is vented to port 4.

Performance data

Ratings and specifications

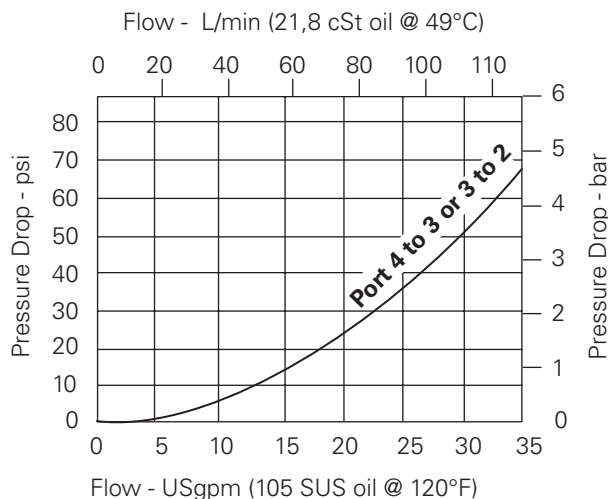
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated Flow 16	132 L/min (35 USgpm)
Rated Flow 20	265 L/min (70 USgpm)
Internal leakage	164 cc/min (10 in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot Pressure 16	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot Pressure 20	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi)
Pilot displacement volume	1,97 cm ³ (0.12 in ³)
Cavity 16	C-16-4
Cavity 20	C-20-4
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 - 16	0,5 kg (1.12 lbs)
Weight cartridge only - 20	1.1 kg (1.12 lbs)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)
Seal kit 20	565916 (Buna-N), 889646 (Viton®)

Viton is a registered trademark of E.I. DuPont

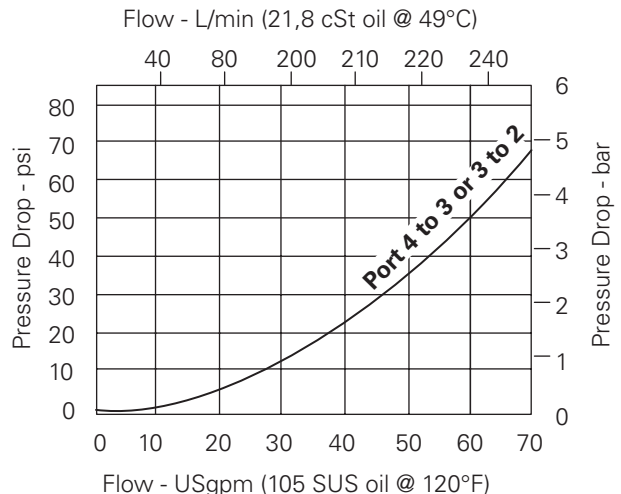
Pressure drop curves for - 16

Cartridge only



Pressure drop curves for - 20

Cartridge only



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

PTS3-16/20 - Pilot to shift valve

Pilot operated, directional control valve
 PTS3-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)
 PTS3-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)

Model code

PTS3 - 16 (V) - ** - *** - 00**

1
 2
 3
 4
 5
 6

1 Function

PTS3 - Pilot to shift valve

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Port size

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0	Cartridge			
A12T	SAE 12	566411	–	–
A6B	3/4" BSPP	02-175468	–	–
A10H	SAE 10	–	876729	–
A12H	SAE 12	–	876731	–
A4G	1/2" BSPP	–	876728	–
A6G	3/4" BSPP	–	876730	–

See section J for housing details.

5 Pilot to shift (nominal)

40 - 2,75 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".)

Model code

PTS3 - 20 (V) - * - ** - 00**

1
 2
 3
 4
 5
 6

1 Function

PTS3 - Pilot to shift valve

2 Size

20 - 20 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Port size

Code	Port size	Housing number	
		Aluminum light duty	Aluminum fatigue rated
0	Cartridge only		
16T	SAE 16	566412	–
8B	1" BSPP	02-175469	–
12H	SAE 12	–	876745
16H	SAE 16	–	876747
6G	3/4" BSPP	–	876744
8G	1" BSPP	–	876746

See section J for housing details.

5 Pilot to shift (nominal)

40 - 2,75 bar (40 psi)
80 - 5,5 bar (80 psi)

6 Special features

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

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

PTS3-16/20 - Pilot to shift valve

Pilot operated, directional control valve

PTS3-16: 132 L/min (35 USgpm) • 210 bar (3000 psi)

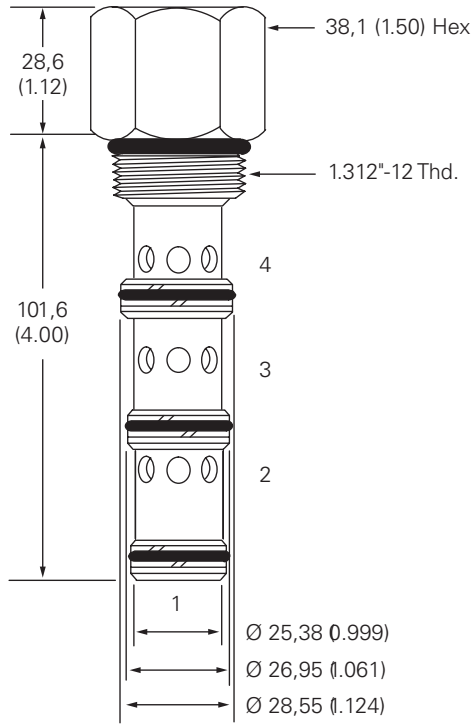
PTS3-20: 265 L/min (70 USgpm) • 210 bar (3000 psi)

PTS3-16

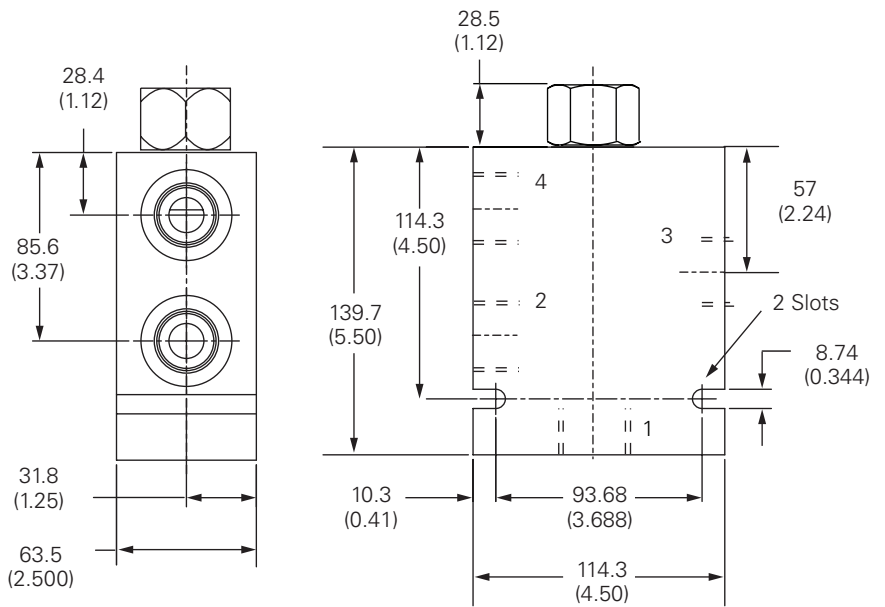
Dimensions

mm (inch)

Cartridge only

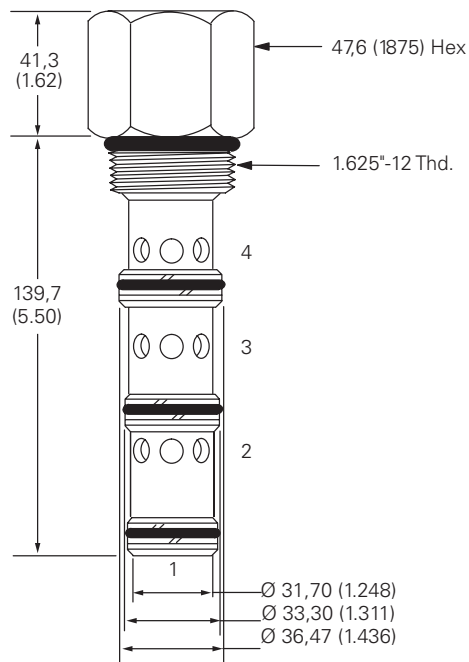


Installation drawing (Aluminum)

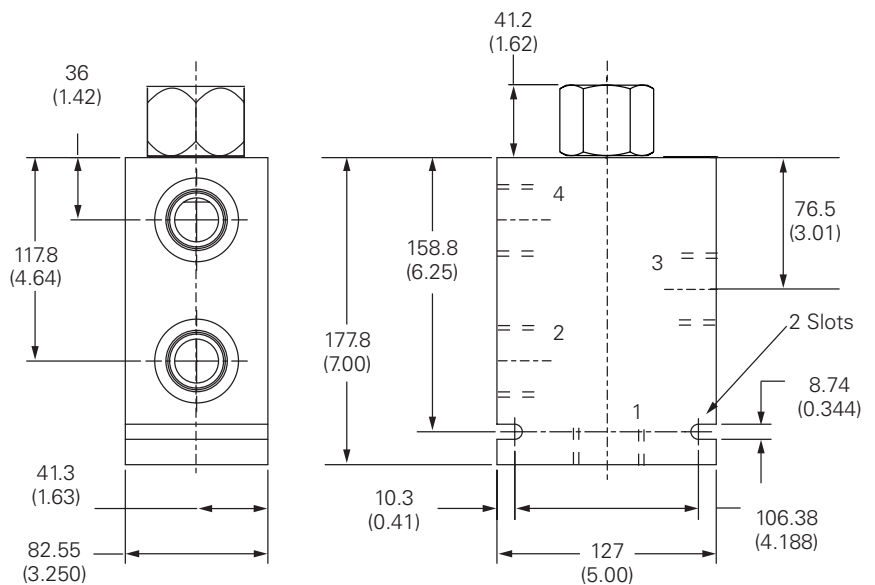


PTS3-16

Cartridge only



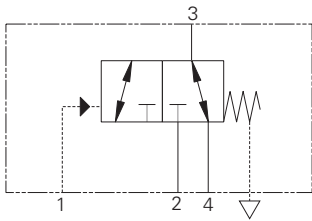
Installation drawing



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

PTS14-12/16 - Pilot to shift valve

Pilot operated, directional control valve
 PTS14-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)
 PTS14-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)



Operation

This valve allows flow between ports 3 and 4 while blocking port 2 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 2 and port 3 while blocking port 4. During the cross-over transition, all ports are blocked. The spring chamber for this valve is externally vented to atmosphere.

Performance data

Ratings and specifications

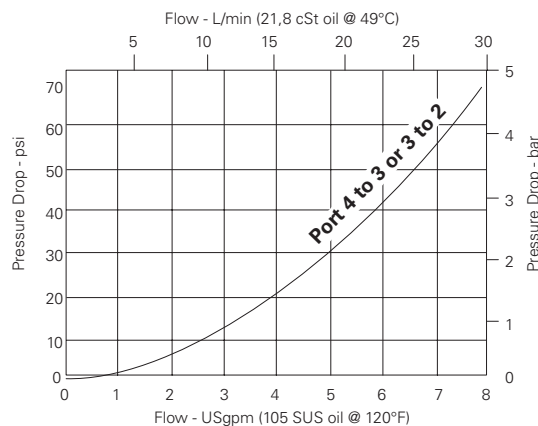
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow 12	114 L/min (30 USgpm)
Rated Flow 16	132 L/min (35 USgpm)
Internal leakage	210 cc/min (13in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot Pressure 12	80 - 5,5 bar (80 psi) 120 - 8,3 bar (120 psi)
Pilot Pressure 16	80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume	1,97 cm ³ (0.12 in ³)
Cavity 12	C-12-4
Cavity 16	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 - 12	0.32 kg (0.70 lbs)
Weight cartridge only - 16	0,5 kg (1.12 lbs)
Seal kit 12	02-160979 (Buna-N), 02-160980 (Viton®)
Seal kit 16	889634 (Buna-N), 889638 (Viton®)

Viton is a registered trademark of E.I. DuPont

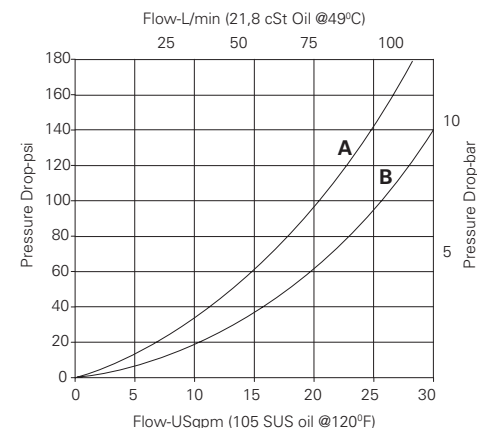
Pressure drop curves for - 16

Cartridge only



Pressure drop curves for -12

Cartridge only



A - P3 to P2

B - P3 to P4

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

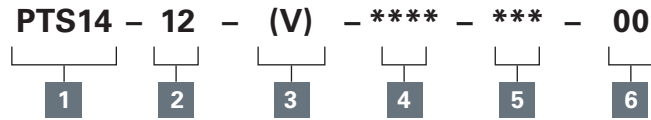
PTS14-12/16 - Pilot to shift valve

Pilot operated, directional control valve

PTS14-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)

PTS14-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

Model code



1 Function

PTS14 - Pilot to shift valve

2 Size

12 - 12 size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminium fatigue rated	Steel
A4G	1/2" BSPP	5986431-001	
A6G	3/4" BSPP	5986432-001	
A8H	SAE 8	5986433-001	
A10H	SAE 10	5986434-001	
A12H	SAE 12	5986436-001	
A6G	3/4" BSPP		5991073-001
S10H	SAE 10		5991074-001
S12H	SAE 12		5991074-001

See section J for housing details.

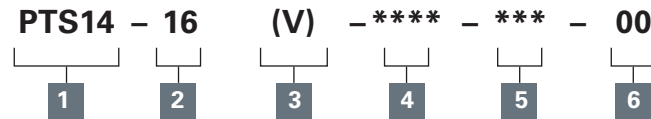
5 Pilot to shift (nominal)

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

6 Special features

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

Model code



1 Function

PTS14 - Pilot to shift valve

2 Size

16 - 16 Size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminum light duty	Aluminium fatigue rated	Steel
A12T	SAE 12	566411		
A6B	3/4" BSPP	02-175468		
A10H	SAE 10		876729	
A12H	SAE 12		876731	
A4G	1/2" BSPP		876728	
A6G	3/4" BSPP		876730	
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 Pilot to shift (nominal)

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")

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

PTS14-12/16 - Pilot to shift valve

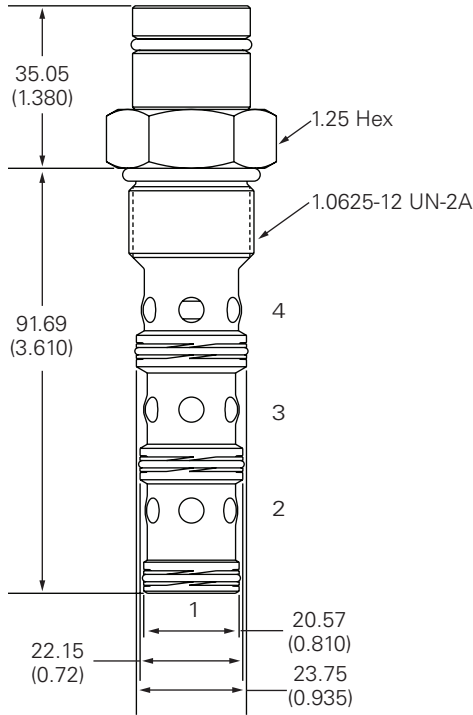
Pilot operated, directional control valve
 PTS14-12: 114 L/min (30 USgpm) • 350 bar (5000 psi)
 PTS14-16: 132 L/min (35 USgpm) • 350 bar (5000 psi)

PTS14-12

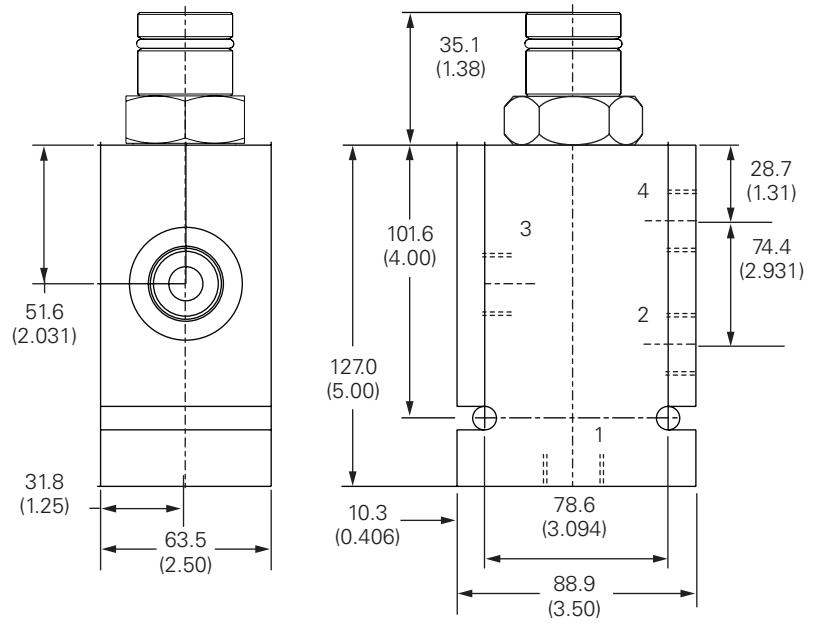
Dimensions

mm (inch)

Cartridge only

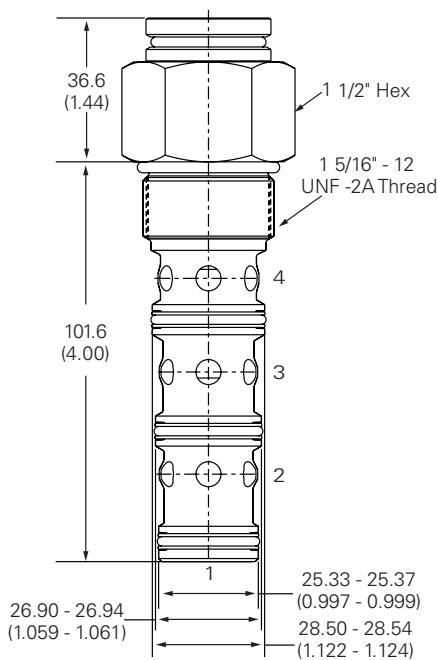


Installation drawing (steel)

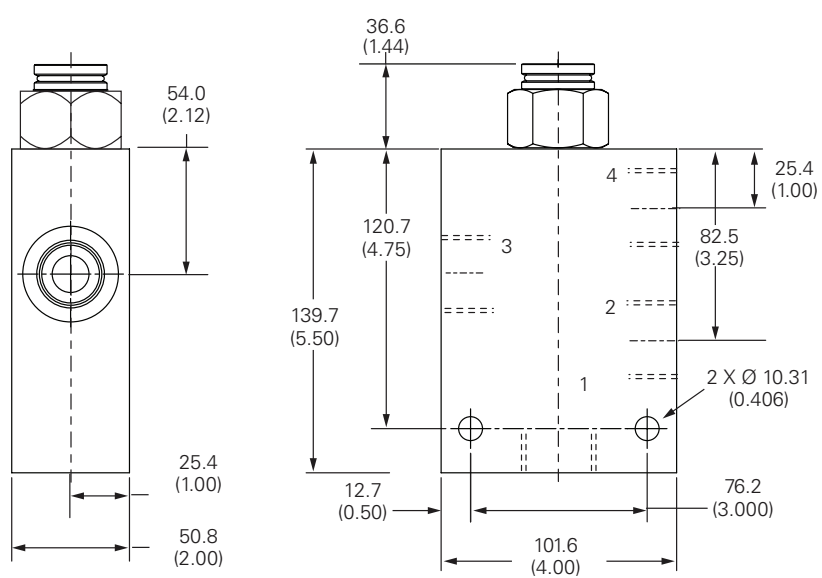


PTS14-16

Cartridge only



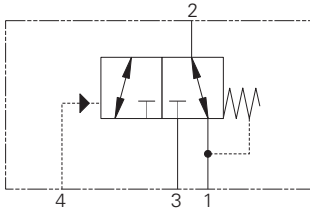
Installation drawing (steel)



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

PTS5-10 - Pilot to shift valve

Pilot operated, directional control valve
 11 L/min (3 USgpm) • 210 bar (3000 psi)



Operation

This valve allows flow between ports 1 and 2 while blocking port 3 until sufficient pressure has been applied to port 4 and the spring bias is overcome.

At this time, flow is directed between port 2 and port 3 while blocking port 1. During the cross-over transition, all ports are blocked. The spring chamber for this valve is vented to port 1.

Performance data

Ratings and specifications

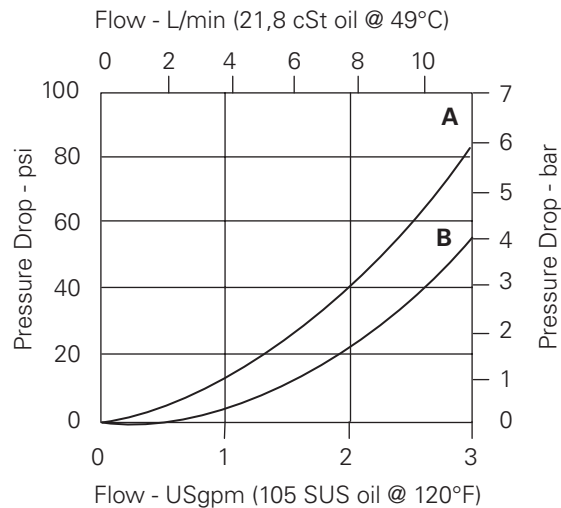
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	11 L/min (3 USgpm)
Internal leakage	164 cc/min (10 in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressure	3,45 bar (50 psi)
Pilot displacement volume	0,49 cm ³ (0.02 in ³)
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	0,14 kg (0.32 lbs)
Seal kit	889624 (Buna-N), 889628 (Viton®)

Viton is a registered trademark of E.I. DuPont.

Pressure drop curves

Cartridge only



A - Port 3 to 2

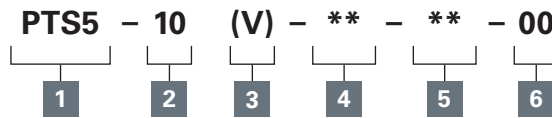
B - Port 2 to 1

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

PTS5-10 - Pilot to shift valve

Pilot operated, directional control valve
11 L/min (3 USgpm) • 210 bar (3000 psi)

Model code



1 Function
PTS5 - Pilot to shift valve

2 Size
10 - 10 size

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

4 Port size

Code	Port size	Housing number	
		Aluminum light duty	Aluminum fatigue rated
0	Cartridge only		
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.

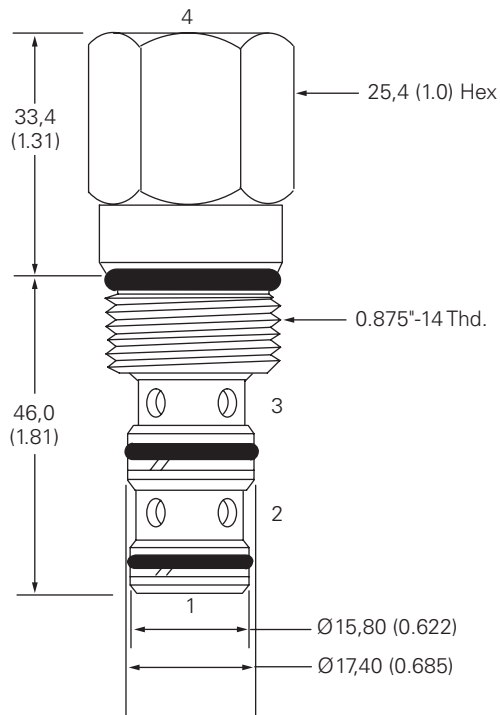
5 Pilot to shift (nominal)
50 - 3,45 bar (50 psi)

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

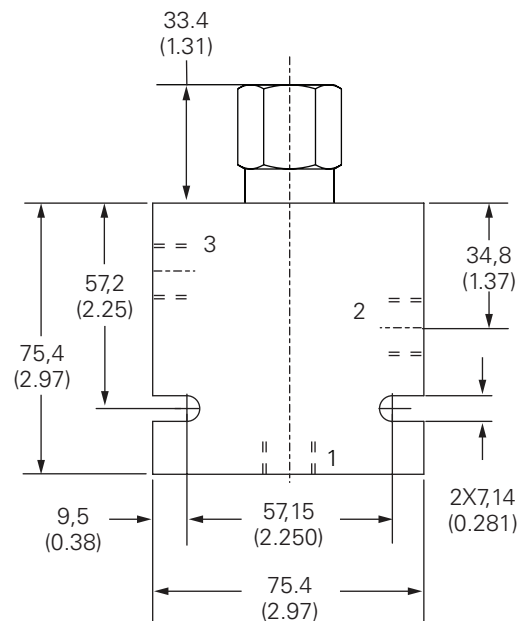
Dimensions

mm (inch)

Cartridge only



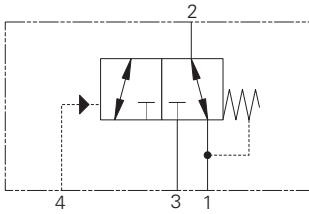
Installation drawing



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

PTS15-12 - Pilot to shift valve

Pilot operated, directional control valve
 105 L/min (27.7 USgpm) • 350 bar (5000 psi)



Operation

This valve allows flow between ports 1 and 2 while blocking port 3 until sufficient pressure has been applied to port 4 and the spring bias is overcome.

At this time, flow is directed between port 2 and port 3 while blocking port 1. During the cross-over transition, all ports are blocked. The spring chamber for this valve is vented to port 1.

Performance data

Ratings and specifications

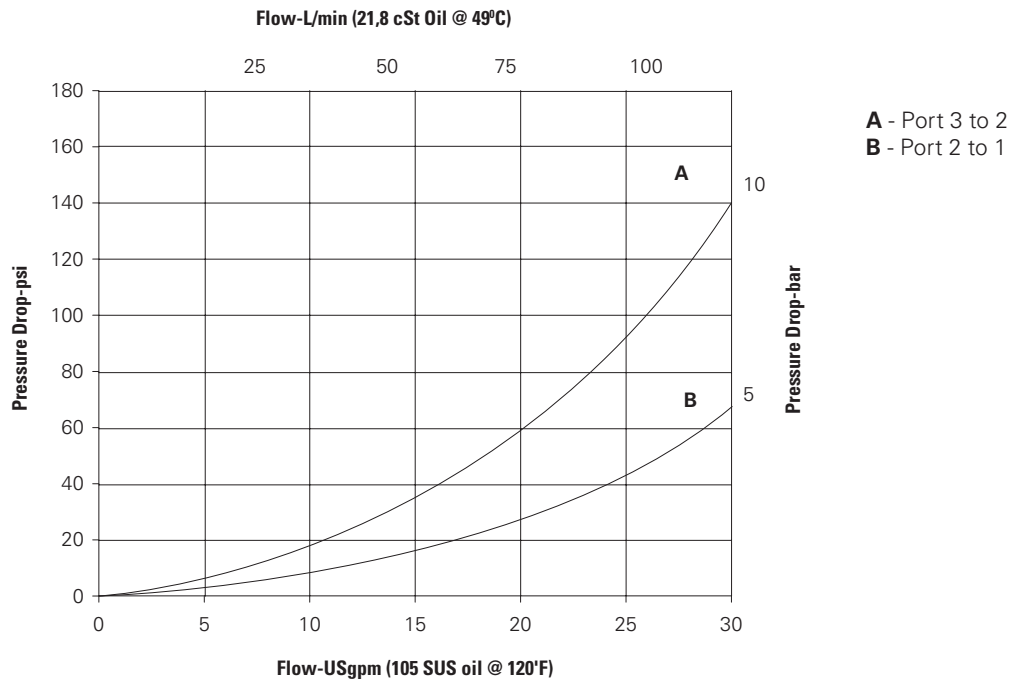
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	105 L/min (28 USgpm)
Internal leakage	210 cc/min (13 in ³ /min) maximum @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressures	2.76 bar (40 psi)
Pilot displacement volume	0,49 cm ³ (0.02 in ³)
Cavity	C-12-3
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, Steel
Weight cartridge only	0,21 kg (0.55 lbs)
Seal kit	9900171 (Buna-N), 9900172 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop curves

Cartridge only

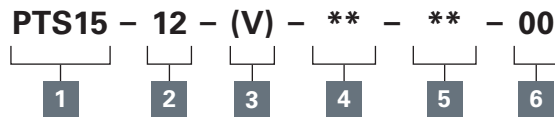


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS15-12 - Pilot to Shift Valve

Pilot operated, directional control valve
105 L/min (27.7 USgpm) • 350 bar (5000 psi)

Model code



1 Function
PTS15 - Pilot to shift valve

2 Size
12 - 12 size

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

4 Port size

Code	Port size	Housing number	
		Aluminum	Steel
0	Cartridge		
A4G	1/2" BSPP	02-161817	
A6G	3/4" BSPP	02-161816	
A10H	SAE 10	02-160642	
A12H	SAE 12	02-160646	
S8G	1/2" BSPP		02-169814
S10T	SAE 10		02-161070
S12T	SAE 12		02-169816

See section J for housing details.

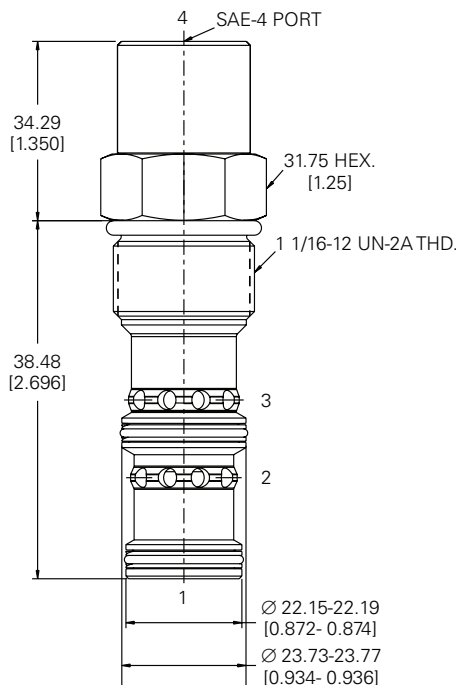
5 Pilot to shift (nominal)
40 - 2,76 bar (40 psi)

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

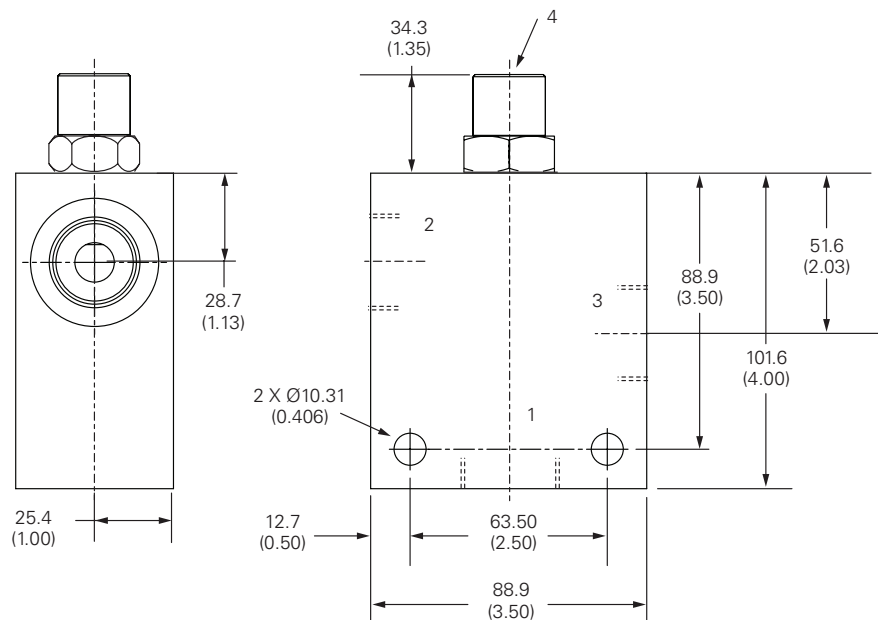
Dimensions

mm (inch)

Cartridge only



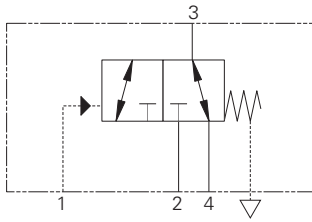
Installation drawing (steel)



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

PTS5-16 - Pilot to shift valve

Pilot operated, directional control valve
 132 L/min (35 USgpm) • 210 bar (3000 psi)



Operation

This valve allows flow between ports 3 and 4 while blocking port 2 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 2 and port 3 while blocking port 4. During the cross-over transition, all ports are open. The spring chamber for this valve is externally vented to atmosphere.

Performance data

Ratings and specifications

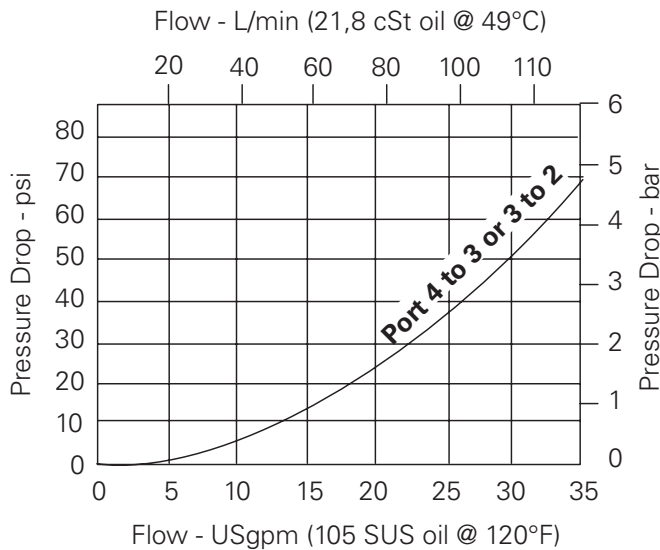
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	132 L/min (35 USgpm)
Internal leakage	164 cc/min (10 in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressures	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume	1,97 cm ³ (0.12 in ³)
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	0,5 kg (1.12 lbs)
Seal kit	889634 (Buna-N), 889638 (Viton®)

Viton is a registered trademark of E.I. DuPont.

Pressure drop curves

Cartridge only

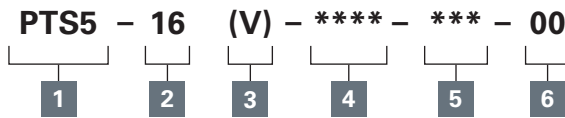


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS5-16 - Pilot to shift valve

Pilot operated, directional control valve
132 L/min (35 USgpm) • 210 bar (3000 psi)

Model code



1 Function
PTS5 - Pilot to shift valve

2 Size
16 - 16 size

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

4 Port size

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0	Cartridge			
A12T	SAE 12	566411	-	-
A6B	3/4" BSPP	02-175468	-	-
A10H	SAE 10	-	876729	-
A12H	SAE 12	-	876731	-
A4G	1/2" BSPP	-	876728	-
A6G	3/4" BSPP	-	876730	-

See section J for housing details.

5 Pilot to shift (nominal)

40 - 2,75 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

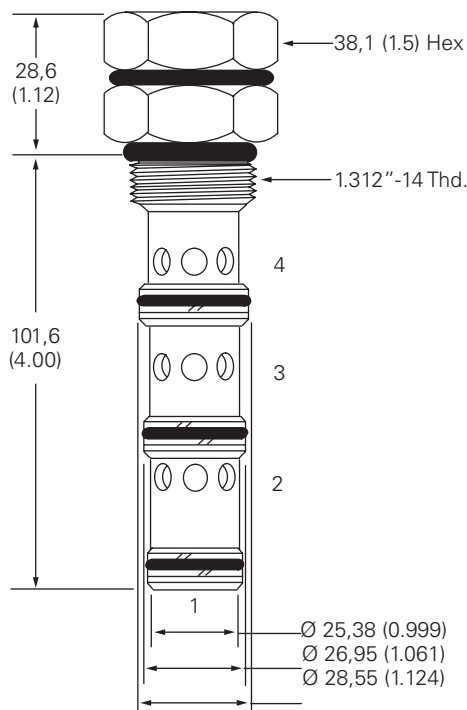
6 Special features

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

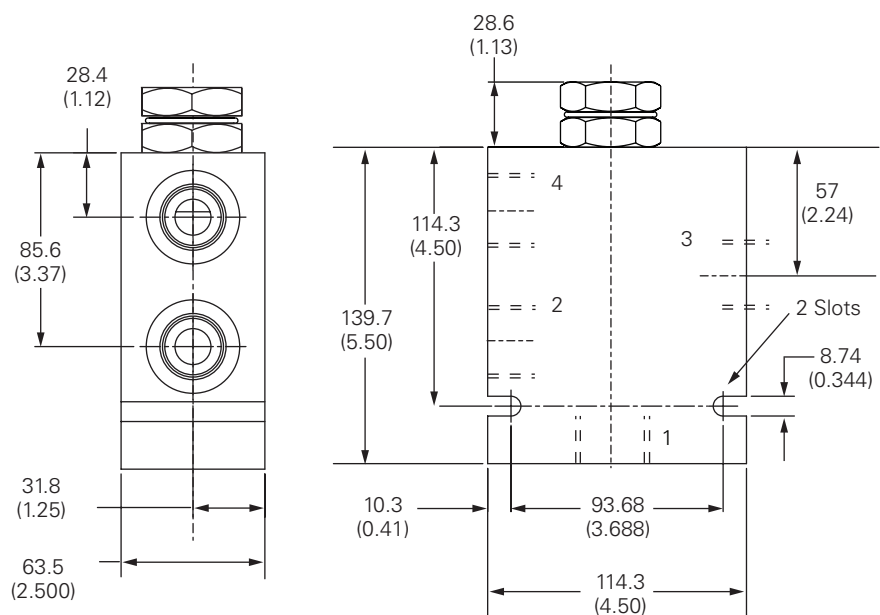
Dimensions

mm (inch)

Cartridge only



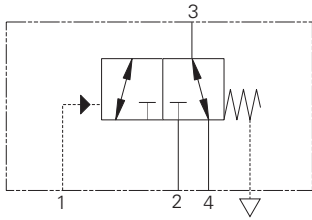
Installation drawing



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

PTS15-16 - Pilot to shift valve

Pilot operated, directional control valve
 132 L/min (35 USgpm) • 350 bar (5000 psi)



Operation

This valve allows flow between ports 3 and 4 while blocking port 2 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 2 and port 3 while blocking port 4. During the cross-over transition, all ports are open. The spring chamber for this valve is externally vented to atmosphere.

Performance data

Ratings and specifications

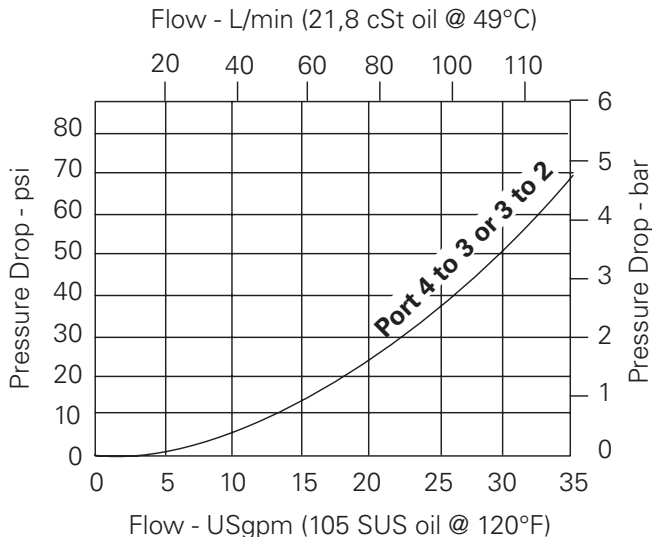
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	132 L/min (35 USgpm)
Internal leakage	210 cc/min (13in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressures	80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume	1,97 cm ³ (0.12 in ³)
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	0.5 kg (1.12 lbs)
Seal kit	889634 (Buna-N), 889638 (Viton®)

Viton is a registered trademark of E.I. DuPont.

Pressure drop curves

Cartridge only



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

PTS15-16 - Pilot to shift valve

Pilot operated, directional control valve
132 L/min (35 USgpm) • 350 bar (5000 psi)

Model code

PTS15 - 16 - (V) - ** - *** - 00**

1
2
3
4
5
6

1 Function

PTS15 - Pilot to shift valve

2 Size

16 - 16 Size

3 Seals

Blank - Buna-N

4 Port size

0 - Cartridge only

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
A12T	SAE 12	566411		
A6B	3/4" BSPP	02-175468		
A10H	SAE 10		876729	
A12H	SAE 12		876731	
A4G	1/2" BSPP		876728	
A6G	3/4" BSPP		876730	
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 Pilot to shift (nominal)

40 - 2,76 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

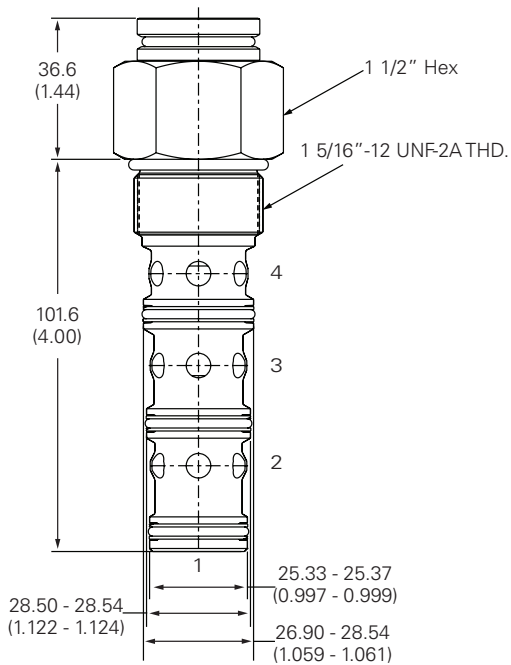
6 Special features

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

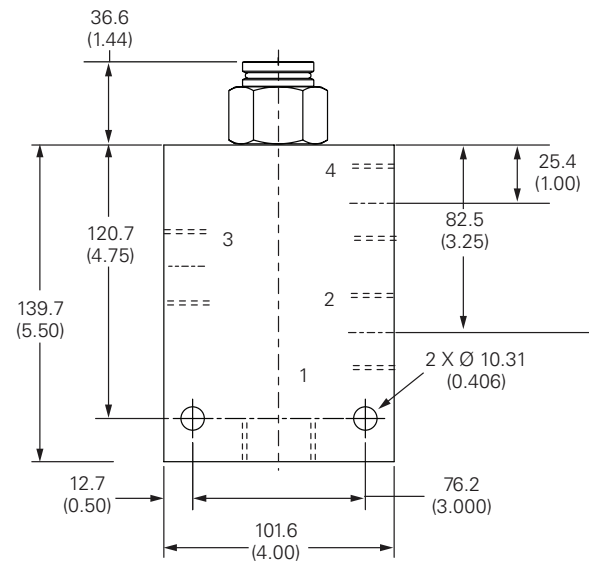
Dimensions

mm (inch)

Cartridge only



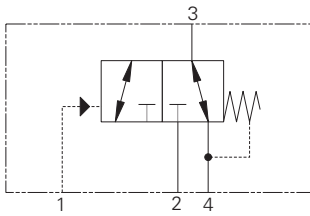
Installation drawing (steel)



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

PTS6-16 - Pilot to shift valve

Pilot operated, directional control valve
 132 L/min (35 USgpm) • 210 bar (3000 psi)



Operation

This valve allows flow between ports 3 and 4 while blocking port 2 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 2 and port 3 while blocking port 4. During the cross-over transition, all ports are open. The spring chamber for this valve is vented to port 4.

Performance data

Ratings and specifications

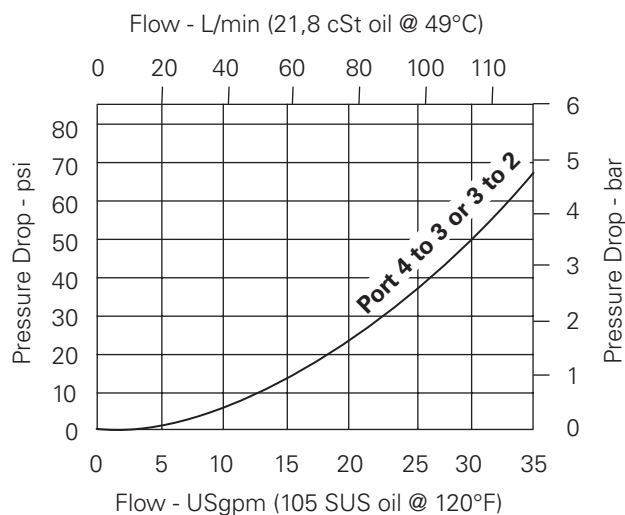
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	132 L/min (35 USgpm)
Internal leakage	164 cc/min (10 in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressures	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume	1,97 cm ³ (0.12 in ³)
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	0,5 kg (1.12 lbs)
Seal kit	889634 (Buna-N), 889638 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop curves

Cartridge only

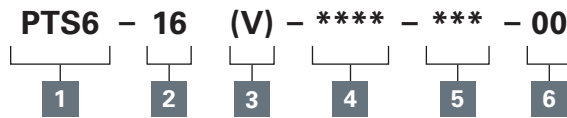


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS6-16 - Pilot to shift valve

Pilot operated, directional control valve
132 L/min (35 USgpm) • 210 bar (3000 psi)

Model code



1 Function

PTS6 - Pilot to shift valve

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Port size

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
0	Cartridge			
A12T	SAE 12	566411	-	-
A6B	3/4" BSPP	02-175468	-	-
A10H	SAE 10	-	876729	-
A12H	SAE 12	-	876731	-
A4G	1/2" BSPP	-	876728	-
A6G	3/4" BSPP	-	876730	-

See section J for housing details.

5 Pilot to shift (nominal)

40 - 2,75 bar (40 psi)
80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

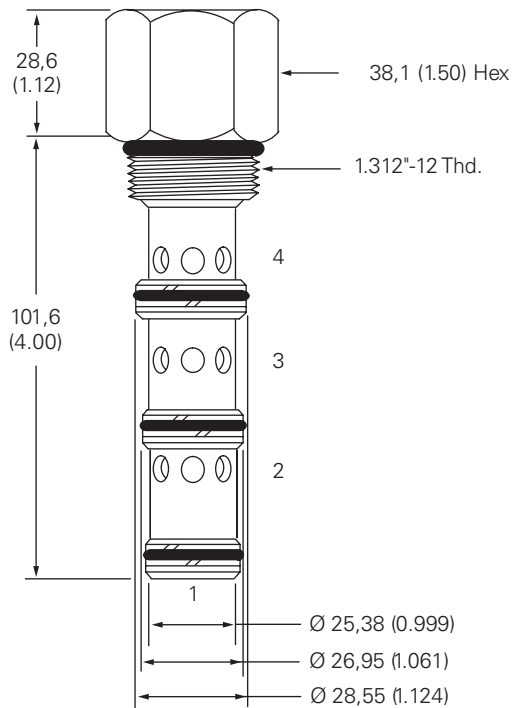
6 Special features

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

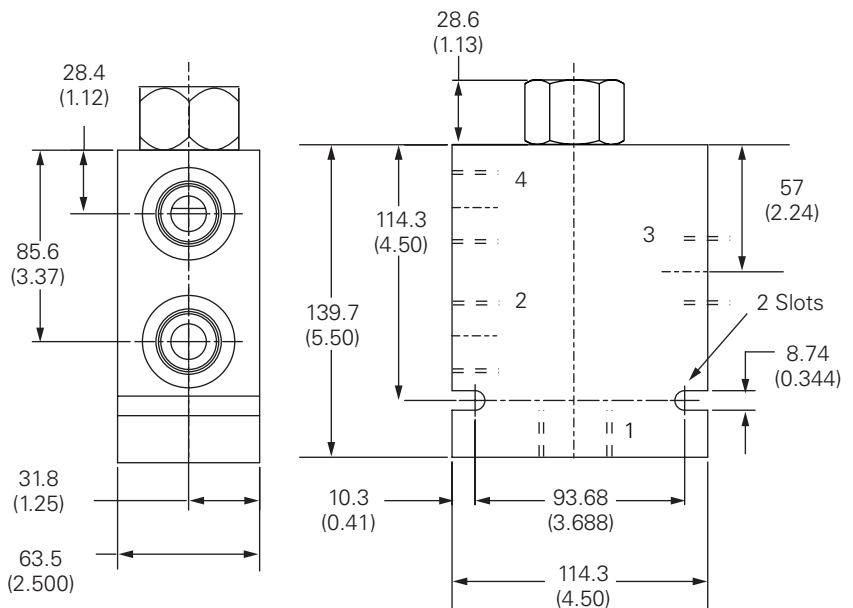
Dimensions

mm (inch)

Cartridge only



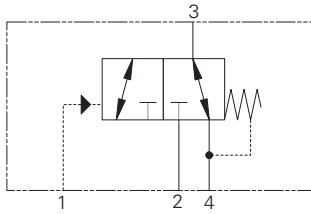
Installation drawing



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

PTS16-16 - Pilot to shift valve

Pilot operated, directional control valve
132 L/min (35 USgpm) • 350 bar (5000 psi)



Operation

This valve allows flow between ports 3 and 4 while blocking port 2 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At this time, flow is directed between port 2 and port 3 while blocking port 4. During the cross-over transition, all ports are open. The spring chamber for this valve is vented to port 4.

Performance data

Ratings and specifications

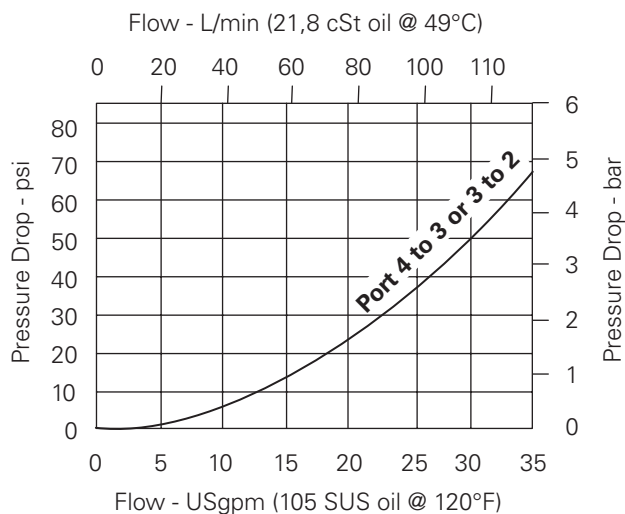
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	132 L/min (35 USgpm)
Internal leakage	210 cc/min (13in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressures	80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume	1,97 cm ³ (0.12 in ³)
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	0,5 kg (1.12 lbs)
Seal kit	889634 (Buna-N), 889638 (Viton®)

Viton is a registered trademark of E.I. DuPont.

Pressure drop curves

Cartridge only

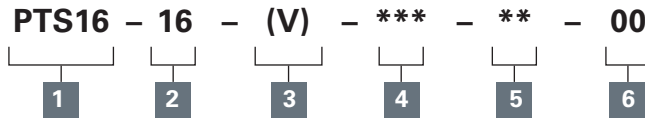


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS16-16 - Pilot to shift valve

Pilot operated, directional control valve
132 L/min (35 USgpm) • 350 bar (5000 psi)

Model code



1 Function

PTS16 - Pilot to shift valve

4 Port size

0 - Cartridge only

5 Pilot to shift (nominal)

80 - 5,5 bar (80 psi)
160 - 11,0 bar (160 psi)

2 Size

16 - 16 Size

3 Seals

Blank - Buna-N
V - Viton®

Code	Port size	Housing number		
		Aluminum light duty	Aluminum fatigue rated	Steel
A12T	SAE 12	566411		
A6B	3/4" BSPP	02-175468		
A10H	SAE 10		876729	
A12H	SAE 12		876731	
A4G	1/2" BSPP		876728	
A6G	3/4" BSPP		876730	
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.

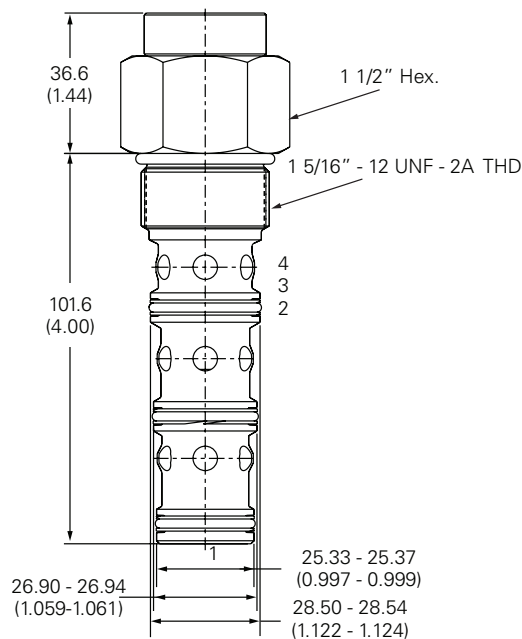
6 Special features

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

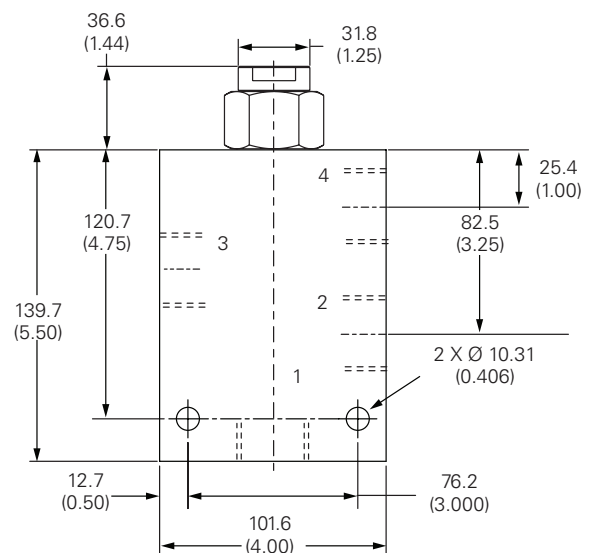
Dimensions

mm (inch)

Cartridge only



Installation drawing (steel)



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

PTS9-8/10/12/16/20 - Pilot to shift valve

Pilot operated, directional control valve

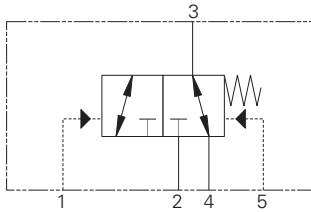
PTS9-8: 19 L/min (5 USgpm) • 280 bar (4000 psi)

PTS9-10: 38 L/min (10 USgpm) • 280 bar (4000 psi)

PTS9-12: 76 L/min (20 USgpm) • 280 bar (4000 psi)

PTS9-16: 151 L/min (40 USgpm) • 280 bar (4000 psi)

PTS9-20: 230 L/min (60 USgpm) • 280 bar (4000 psi)



Operation

This valve allows flow between ports 3 and 4 while blocking port 2 until sufficient pressure has been applied to port 1 and the spring bias is overcome.

At that time flow is directed between ports 3 and 2 while blocking port 4. During the cross-over transition, all ports are open. The spring chamber for this valve is vented to port 5.

Performance data

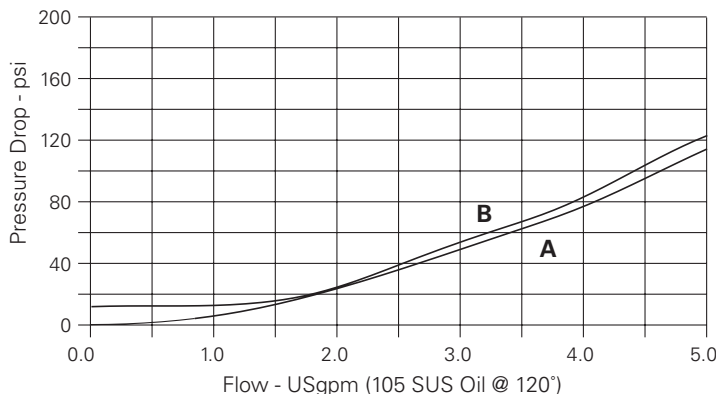
Ratings and specifications

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 Flow 8	19 L/min (5 USgpm)
Rated Flow 10	38 L/min (10 USgpm)
Rated Flow 12	76 L/min (20 USgpm)
Rated Flow 16	151 L/min (40 gpm)
Rated Flow 20	230 L/min (60 USgpm)
Transition	All ports open
Internal leakage, port 2 to port 1	164 cc/min (10 in ³ /min) @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity 8	C-8-5S
Cavity 10	C-10-5S
Cavity 12	C-12-5S
Cavity 16	C-16-5S
Cavity 20	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
Weight cartridge only - 8	0,10 kg (0.23 lbs)
Weight cartridge only - 10	0,10 kg (0.23 lbs)
Weight cartridge only - 12	0,36 kg (0.79 lbs)
Weight cartridge only - 16	0,47 kg (1.05 lbs)
Weight cartridge only - 20	0,86 kg (1.9 lbs)
Seal kit PTS9-8	9900310-001 (Buna-N), 9900310-002 (Viton®)
Seal kit PTS9-10	SK2-10-5S
Seal kit PTS9-12	(Urethane) 202914-921
Seal kit PTS9-16	(Urethane) 202915-922
Seal kit PTS9-20	(Urethane) 02-187543
Standard housing material	Aluminum or Steel

Performance characteristics for - 8

Cartridge only



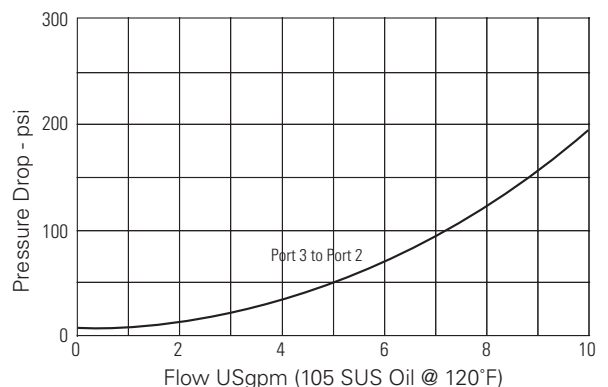
A - Pressure drop port 3 to port 4

B - Pressure drop port 3 to port 2

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

Performance characteristics for - 10

Cartridge only



PTS9-8/10/12/16/20 - Pilot to shift valve

Pilot operated, directional control valve

PTS9-8: 19 L/min (5 USgpm) • 280 bar (4000 psi)

PTS9-10: 38 L/min (10 USgpm) • 280 bar (4000 psi)

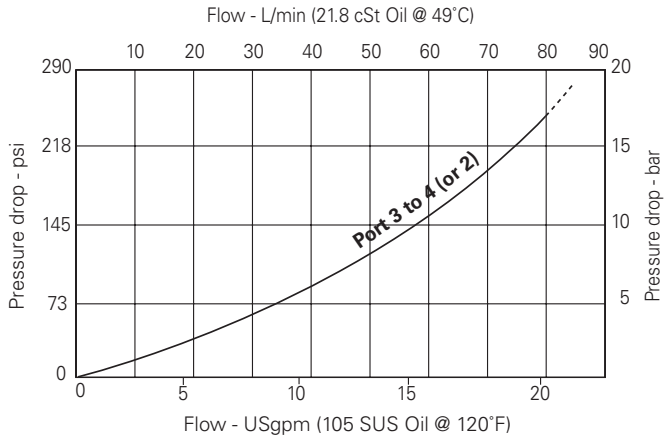
PTS9-12: 76 L/min (20 USgpm) • 280 bar (4000 psi)

PTS9-16: 151 L/min (40 USgpm) • 280 bar (4000 psi)

PTS9-20: 230 L/min (60 USgpm) • 280 bar (4000 psi)

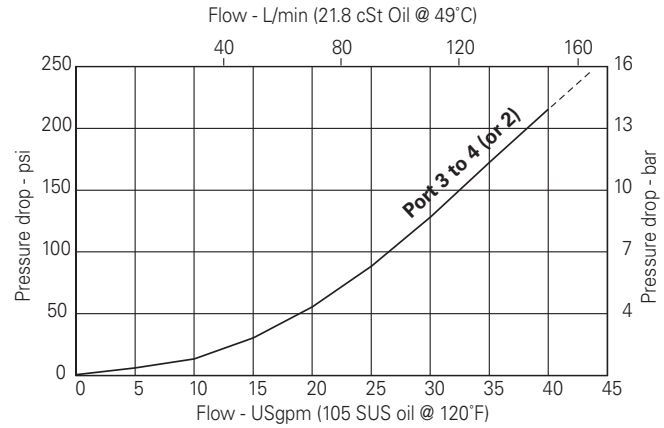
Performance characteristics - 12

Cartridge only



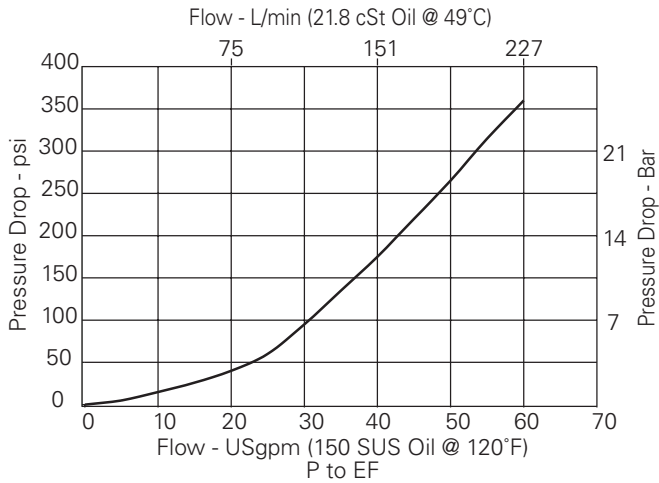
Performance characteristics for - 16

Cartridge only



Performance characteristics - 20

Cartridge only



Model code

PTS9 - 8 * - * - 000 - *** - 00



1 Function

PTS9 - Pilot to shift valve

4 Body

0 - Cartridge only

6 Pilot to shift (nominal)

080 - 5,5 bar (80 psi)

160 - 11,0 bar (160 psi)

2 Size

8 - C-8-5S cavity

5 Port size

000 - Cartridge only

7 Special features

00 - None

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

3 Seal material

Blank - Buna-N

V - Viton®

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

PTS9-8/10/12/16/20 - Pilot to shift valve

Pilot operated, directional control valve

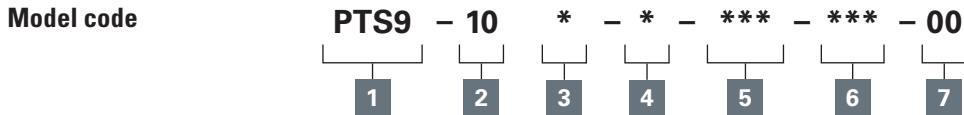
PTS9-8: 19 L/min (5 USgpm) • 280 bar (4000 psi)

PTS9-10: 38 L/min (10 USgpm) • 280 bar (4000 psi)

PTS9-12: 76 L/min (20 USgpm) • 280 bar (4000 psi)

PTS9-16: 151 L/min (40 USgpm) • 280 bar (4000 psi)

PTS9-20: 230 L/min (60 USgpm) • 280 bar (4000 psi)



1 Function
PTS9 - Pilot to shift valve

2 Size
8 - C-10-5S cavity

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

4 Body
0 - Cartridge only

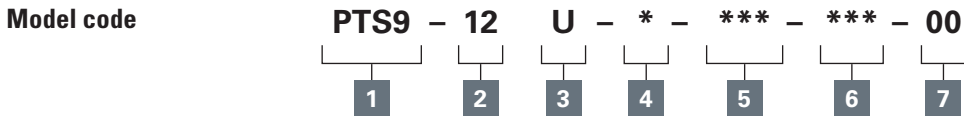
5 Port size
000- Cartridge only

Code	Port size		Housing number	
	Port 1, 2 & 4	Port 1 & 5	Aluminum	Steel
6T	SAE 6	SAE 4	5994133-001	5994134-001
8T	SAE 8	SAE 4	5994133-002	5994134-002
4G	1/2" BSPP	1/4" BSPP	5994133-003	5994134-003

See section J for housing details.

6 Shift pressure
80 - 5,5 bar (80 psi)
100 - 6,9 bar (100 psi)
160 - 11,0 bar (160 psi)

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



1 Function
PTS9 - Pilot to shift valve

2 Size
8 - C-12-5S cavity

3 Seal material
U - Urethane (standard)

4 Body
0 - Cartridge only
A - Aluminum
S - Steel

5 Port size

Code	Port size		Housing number	
	Port 2, 3 & 4	Port 1 & 5	Aluminum	Steel
000	No Body	-	-	-
12T	SAE 12	SAE 4	4998820-002	4998821-002
06G	3/4" BSPP	1/4" BSPP	4998820-004	4998821-004

See section J for housing details.

6 Shift pressure
075 - 5,2 bar (75 psi)
110 - 7,6 bar (110 psi)

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

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

PTS9-8/10/12/16/20 - Pilot to shift valve

Pilot operated, directional control valve
 PTS9-8: 19 L/min (5 USgpm) • 280 bar (4000 psi)
 PTS9-10: 38 L/min (10 USgpm) • 280 bar (4000 psi)
 PTS9-12: 76 L/min (20 USgpm) • 280 bar (4000 psi)
 PTS9-16: 151 L/min (40 USgpm) • 280 bar (4000 psi)
 PTS9-20: 230 L/min (60 USgpm) • 280 bar (4000 psi)

Model code

PTS9 - 16 U - * - * - *** - 00**

1 2 3 4 5 6 7

1 Function

PTS9 - Pilot to shift valve

2 Size

16 - C-16-5S cavity

3 Seal material

U - Urethane (standard)

4 Body

0 - Cartridge only
A - Aluminum
S - Steel

5 Port size

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

See section J for housing details.

6 Shift pressure

030 - 2 bar (30 psi)
050 - 3,5 bar (50 psi)
070 - 4,8 bar (70 psi)

7 Special features

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

Model code

PTS9 - 20 U - * - * - *** - 00**

1 2 3 4 5 6 7

1 Function

PTS9 - Pilot to shift valve

2 Size

20 - C-20-5S cavity

3 Seal material

U - Urethane (standard)

4 Body

0 - Cartridge only
A - Aluminum
S - Steel

5 Port size

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

See section J for housing details.

6 Shift pressure

40 - 2,75 bar (40 psi)
80 - 5,5 bar (80 psi)

7 Special features

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

Dimensions

mm (inch)

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

PTS9-8/10/12/16/20 - Pilot to shift valve

Pilot operated, directional control valve

PTS9-8: 19 L/min (5 USgpm) • 280 bar (4000 psi)

PTS9-10: 38 L/min (10 USgpm) • 280 bar (4000 psi)

PTS9-12: 76 L/min (20 USgpm) • 280 bar (4000 psi)

PTS9-16: 151 L/min (40 USgpm) • 280 bar (4000 psi)

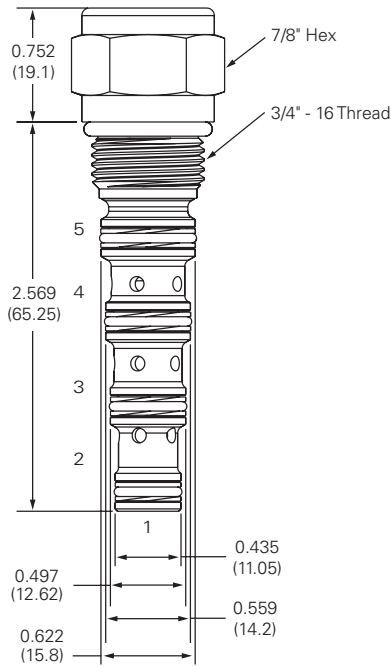
PTS9-20: 230 L/min (60 USgpm) • 280 bar (4000 psi)

PTS9-8

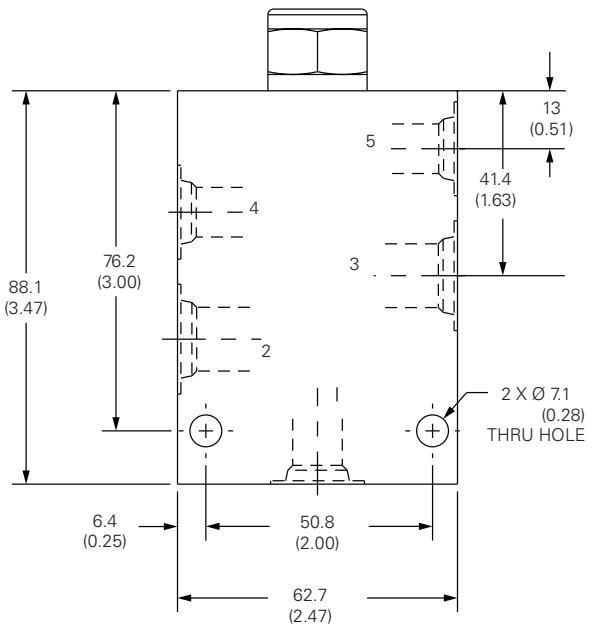
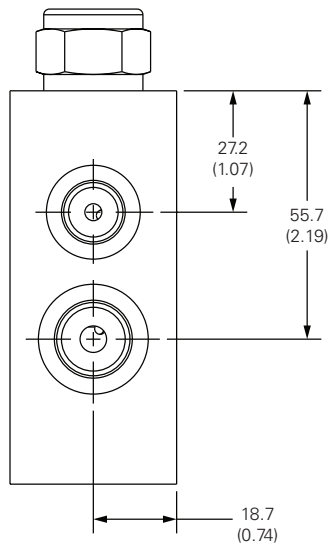
Dimensions

mm (inch)

Cartridge only

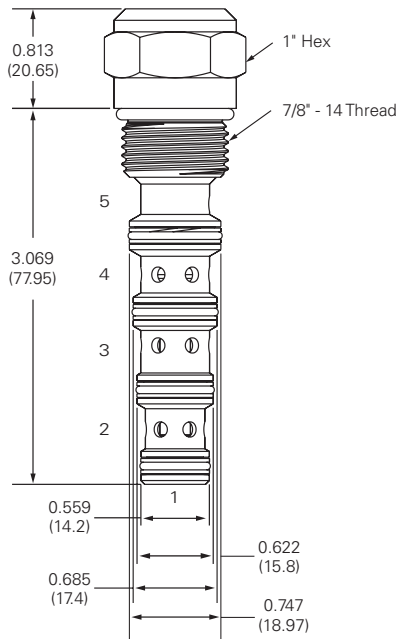


Installation drawing

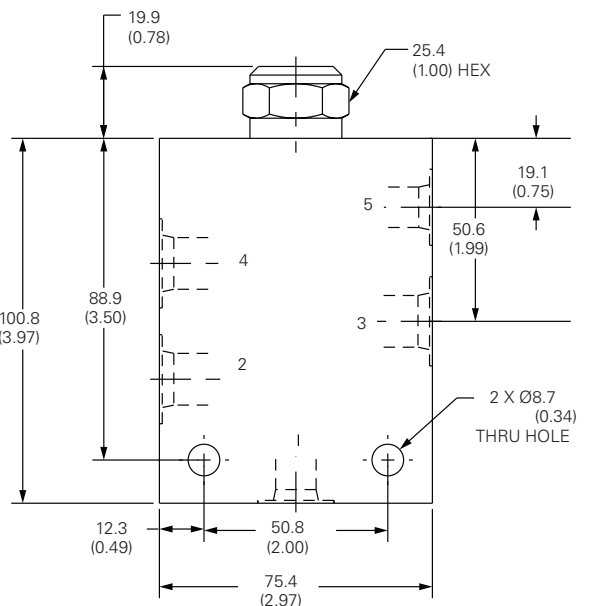
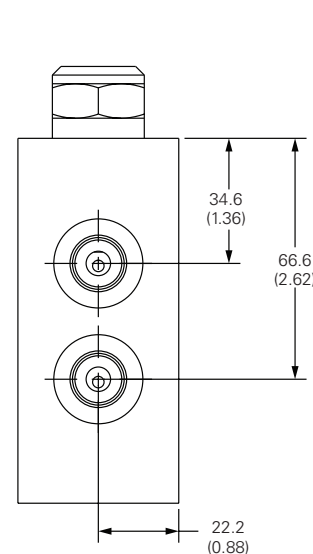


PTS9-10

Cartridge only



Installation drawing



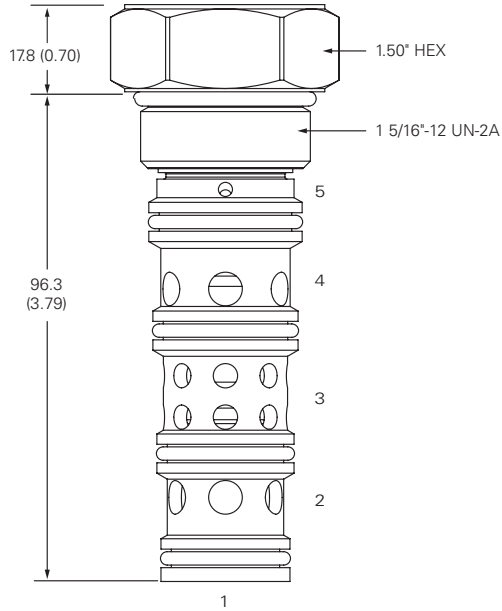
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

PTS9-8/10/12/16/20 - Pilot to shift valve

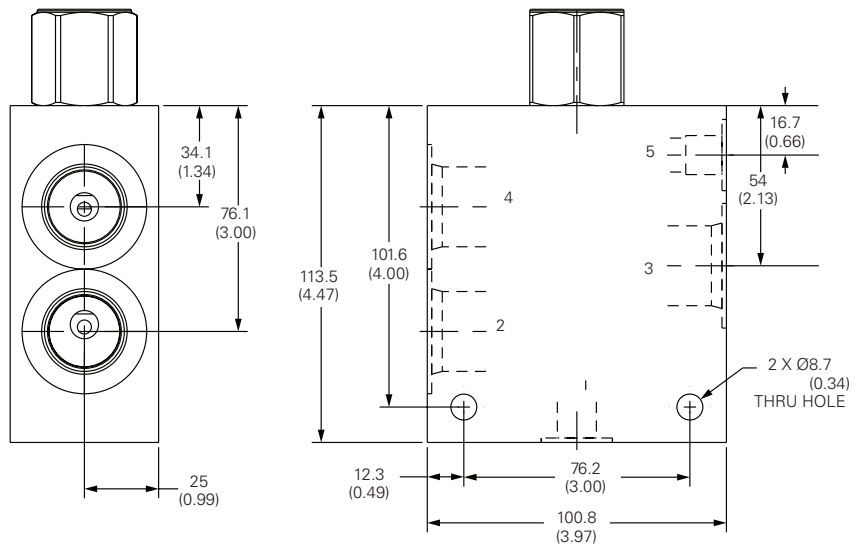
Pilot operated, directional control valve
 PTS9-8: 19 L/min (5 USgpm) • 280 bar (4000 psi)
 PTS9-10: 38 L/min (10 USgpm) • 280 bar (4000 psi)
 PTS9-12: 76 L/min (20 USgpm) • 280 bar (4000 psi)
 PTS9-16: 151 L/min (40 USgpm) • 280 bar (4000 psi)
 PTS9-20: 230 L/min (60 USgpm) • 280 bar (4000 psi)

PTS9-12

Cartridge only

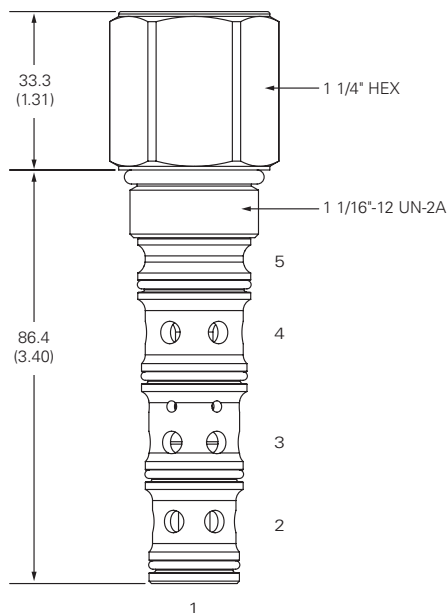


Installation drawing

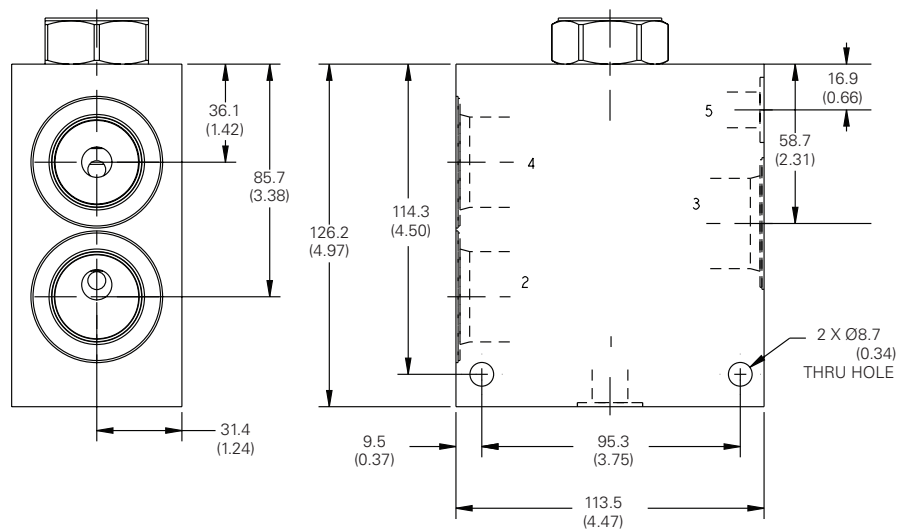


PTS9-16

Cartridge only



Installation drawing



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

DSV4-10/12/16 - Shuttle valve

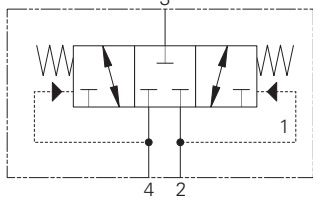
Spring centered, open or closed center spool type shuttle valve

DSV4-10: 26 L/min (6.9 USgpm) • 350 bar (5000 psi)

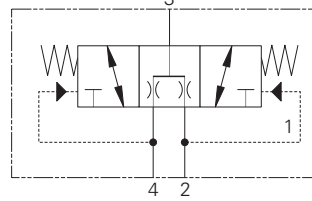
DSV4-12: 113 L/min (29.9 USgpm) • 350 bar (5000 psi)

DSV4-16: 190 L/min (50 USgpm) • 350 bar (5000 psi)

DSV4-**(V)-C-0



DSV4-**(V)-O-0



Operation

When the spring bias is overcome at port 2, the flow is directed from port 4 to port 3 while closing port 2.

When the spring bias is overcome at port 4, the flow is directed from port 2 to port 3 while closing port 4. This valve is available in both a closed and open center spool configuration.

Performance data

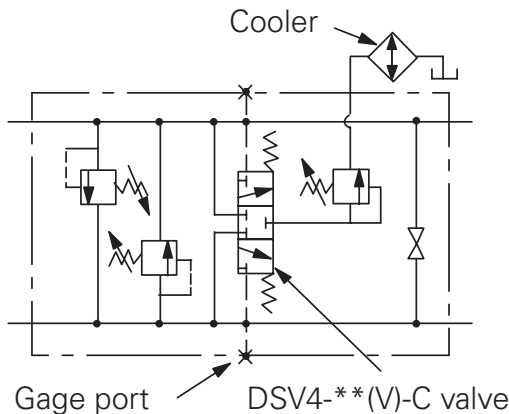
Ratings and specifications

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 8	26 L/min (6.9 USgpm)
Rated Flow 10	113 L/min (29.9 USgpm)
Rated Flow 16	190 L/min (50 USgpm)
Internal leakage	164 cc/min (10 in ³ /min) maximum @ 210 bar (3000 psi)
Pilot pressures	40 - 2,75 bar (40 psi) 80 - 5,5 bar (80 psi) 160 - 11,0 bar (160 psi)
Pilot displacement volume	0,49 cm ³ (0.02 in ³)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity 8	C-10-4
Cavity 10	C-12-4
Cavity 16	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 - 10	0,14 kg (0.32 lbs)
Weight cartridge only - 12	0.36 KG (0.80 LBS)
Weight cartridge only - 16	0,5 kg (1.12 lbs)
Seal kit 10	889597 (Buna-N), 02-172397 (Viton®)
Seal kit 12	SK-12-3 (Buna-N), SK-12V-3 (Viton®)
Seal kit 16	889634 (Buna-N), 889634 (Viton®)

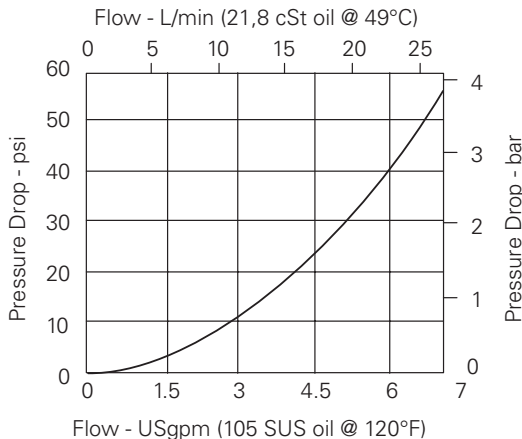
Viton is a registered trademark of E.I. DuPont.

Typical application 10, 12, 16



Pressure drop curves for - 10

Cartridge only



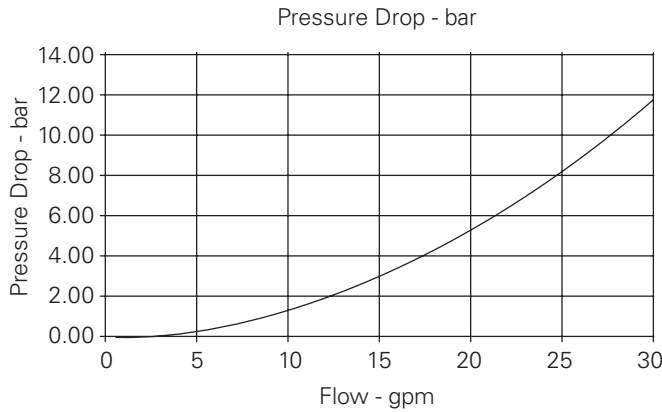
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

DSV4-10/12/16 - Shuttle valve

Spring centered, open or closed center spool type shuttle valve
 DSV4-10: 26 L/min (6.9 USgpm) • 350 bar (5000 psi)
 DSV4-12: 113 L/min (29.9 USgpm) • 350 bar (5000 psi)
 DSV4-16: 190 L/min (50 USgpm) • 350 bar (5000 psi)

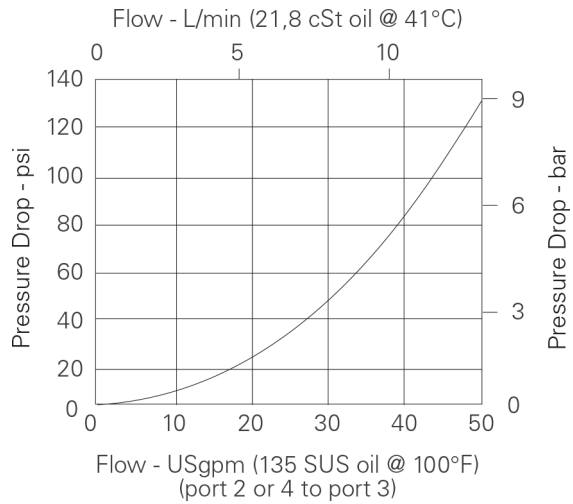
Pressure drop curve for -12

Cartridge only



Pressure drop curve for -16

Cartridge only



Model code

DSV4 - 10 (V) - * - 0 - * - 00**

1 2 3 4 5 6 7

1 Function

DSV4 - Directional shuttle valve

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Spool configuration

C - Normally closed
O - Open center

5 Port size

0 - Cartridge only (Not available with standard housing)

6 Pilot to shift (nominal)

Note: Code based on pressure in psi.
40 - 2,75 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.")

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

DSV4-10/12/16 - Shuttle valve

Spring centered, open or closed center spool type shuttle valve

DSV4-10: 26 L/min (6.9 USgpm) • 350 bar (5000 psi)

DSV4-12: 113 L/min (29.9 USgpm) • 350 bar (5000 psi)

DSV4-16: 190 L/min (50 USgpm) • 350 bar (5000 psi)

Model code

DSV4 – 12 (V) – * – * – * – 00**

1 2 3 4 5 6 7

1 Function

DSV4 - Directional shuttle valve

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N

V - Viton®

4 Spool configuration

C - Normally closed

O - Open center

5 Port size

Code	Port size	Housing number
Aluminium		
A4G	3/8" BSP	02-173358
A6G	SAE 6	566162
A10H	3/8" BSP	876714
A12H	SAE 6	876704

See section J for housing details.

6 Pilot to shift (nominal)

Note: Code based on pressure in psi.

40 - 2,75 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.")

Model code

DSV4 – 16 (V) – * – 0 – * – 00**

1 2 3 4 5 6 7

1 Function

DSV4 - Directional shuttle valve

2 Size

16 - 16 size

3 Seal

Blank - Buna-N

V - Viton®

4 Spool configuration

C - Closed center

O - Open center

5 Port size

O - Cartridge only (Not available with standard housing)

6 Pilot to shift (nominal)

40 - 2,75 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.")

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

DSV4-10/12/16 - Shuttle valve

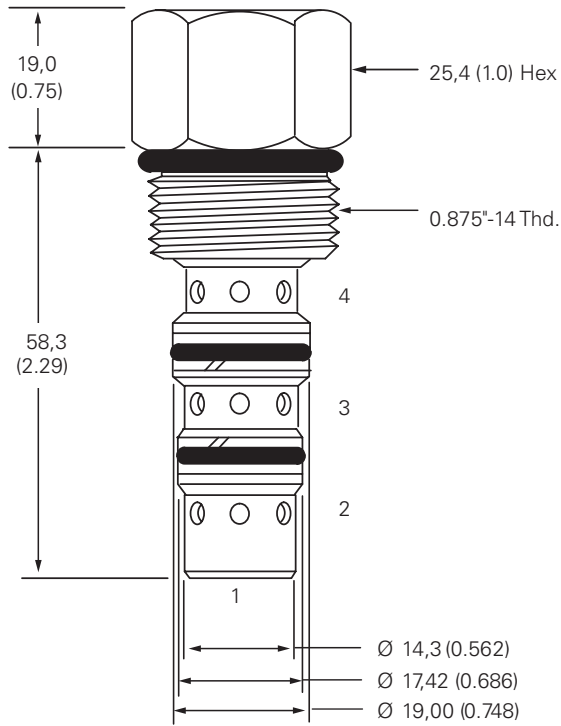
Spring centered, open or closed center spool type shuttle valve
 DSV4-10: 26 L/min (6.9 USgpm) • 350 bar (5000 psi)
 DSV4-12: 113 L/min (29.9 USgpm) • 350 bar (5000 psi)
 DSV4-16: 190 L/min (50 USgpm) • 350 bar (5000 psi)

DSV4-10

Dimensions

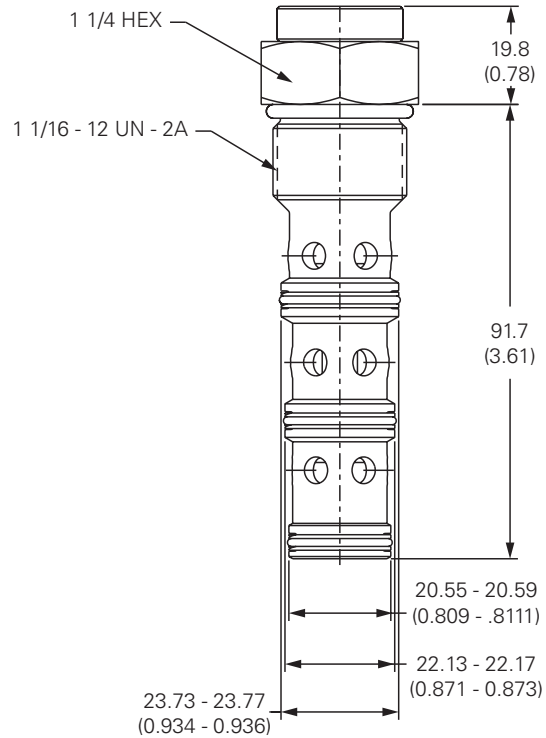
mm (inch)

Cartridge only



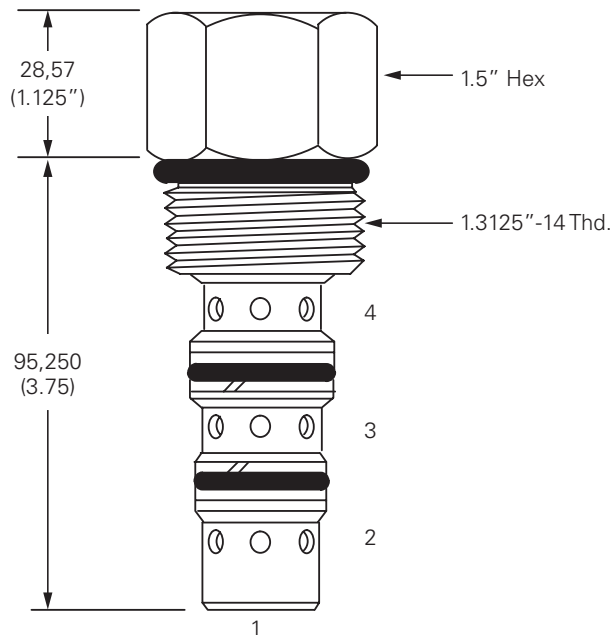
DSV4-12

Cartridge only



DSV4-16

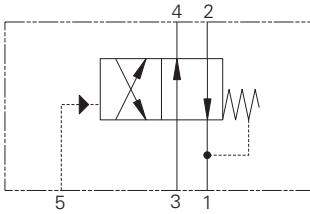
Cartridge only



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

PTS6-10 - Pilot to shift valve

Remote pilot operated, directional control valve
23 L/min (6 USgpm) • 210 bar (3000 psi)



Operation

This valve allows flow between ports 1 and 2 and ports 3 and 4 until sufficient pressure has been applied at port 5 and the spring bias is overcome.

At that time, flow is directed between ports 1 and 4 and ports 3 and 2. During the cross-over transition, all ports are blocked. The spring chamber for this valve is vented internally to port 1.

Performance data

Ratings and specifications

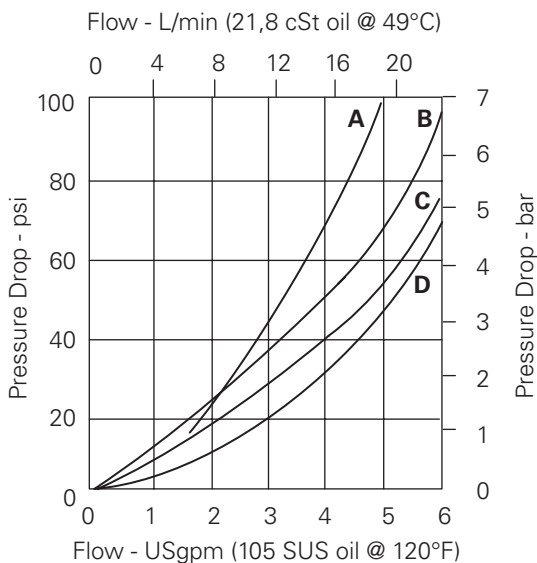
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	23 L/min (6 USgpm)
Internal leakage	164 cc/min (10 in ³ /min) maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot pressure	4,2 bar (60 psi)
Pilot displacement volume	0,49 cm ³ (0.02 in ³)
Cavity	C-10-4
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	0,15 kg (0.33 lbs)
Seal kit	889625 (Buna-N), 566080 (Viton®)

Viton is a registered trademark of E.I. DuPont.

Pressure drop curves

Cartridge only



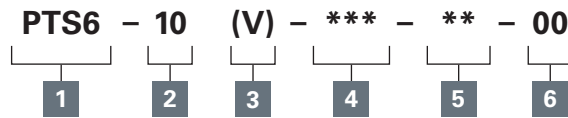
- A** - Port 3 to 4
- B** - Port 4 to 1
- C** - Port 3 to 2
- D** - Port 2 to 1

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

PTS6-10 - Pilot to shift valve

Remote pilot operated, directional control valve
23 L/min (6 USgpm) • 210 bar (3000 psi)

Model code



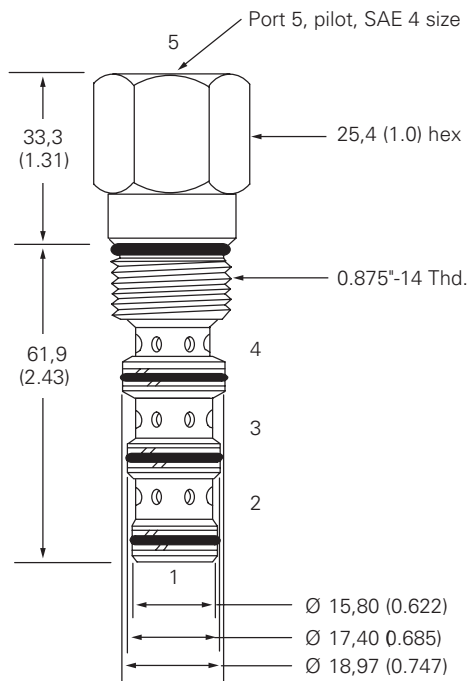
1	Function	4	Port size	5	Pilot to shift (nominal)
PTS6	Pilot to shift valve			60	4,2 bar (60 psi)
2	Size	Code		Special features	
10	10 size			00	None (Only required if valve has special features, omitted if "00".)
3	Seal material	Port size	Housing number		
Blank - Buna-N V - Viton®			Aluminium light duty	Aluminium fatigue rated	
		0	Cartridge		
		A3B	3/8" BSPP	02-179705	-
		A6T	SAE 6	566161	-
		A2G	1/4" BSPP	-	876709
		A3G	3/8" BSPP	-	876715
		A6H	SAE 6	-	876708
		A8H	SAE 8	-	876713

See section J for housing details.

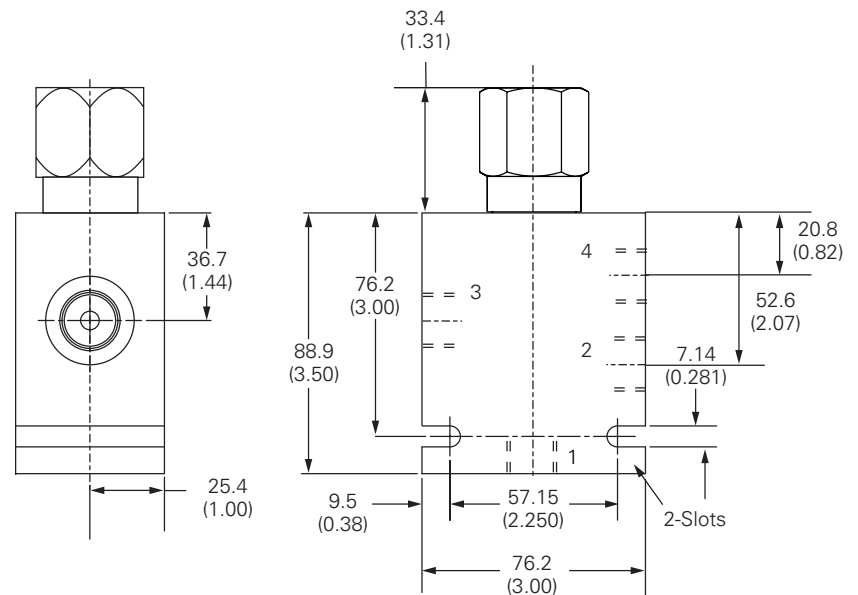
Dimensions

mm (inch)

Cartridge only



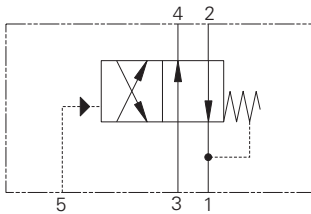
Installation drawing



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

PTS16-10/12 - Pilot to shift valve

Remote pilot operated, directional control valve
 PTS16-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 PTS16-12: 76 L/min (20 USgpm) • 350 bar (5000 psi)



Operation

This valve allows flow between ports 1 and 2 and ports 3 and 4 until sufficient pressure has been applied at port 5 and the spring bias is overcome.

At that time, flow is directed between ports 1 and 4 and ports 3 and 2. During the cross-over transition, all ports are blocked. The spring chamber for this valve is vented internally to port 1.

Performance data

Ratings and specifications

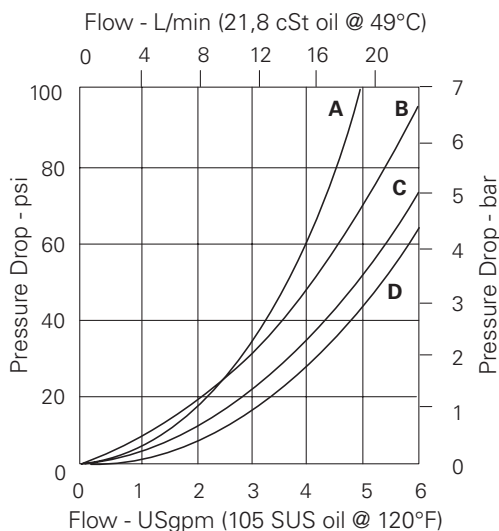
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow 10	23 L/min (6 USgpm)
Rated Flow 12	76 L/min (20 USgpm)
Internal leakage	210 cc/min (13in ³ /min) @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Pilot Pressure 10	4,2 bar (60 psi)
Pilot Pressure 12	3,4 bar (50 psi)
Pilot Displacement 10	0,49 cm ³ (0.02 in ³)
Pilot Displacement 12	1,97 cm ³ (0.12 in ³)
Cavity 10	C-10-4
Cavity 12	C-12-4
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 10	0,5 kg (0.55 lbs)
Weight cartridge only -12	0.32 kg (0.70 lbs)
Seal kit 10	889625 (Buna-N), 566080 (Viton®)
Seal kit 12	02-160979 (Buna-N), 02-160980 (Viton®)

Viton is a registered trademark of E.I. DuPont.

Pressure drop curves for - 10

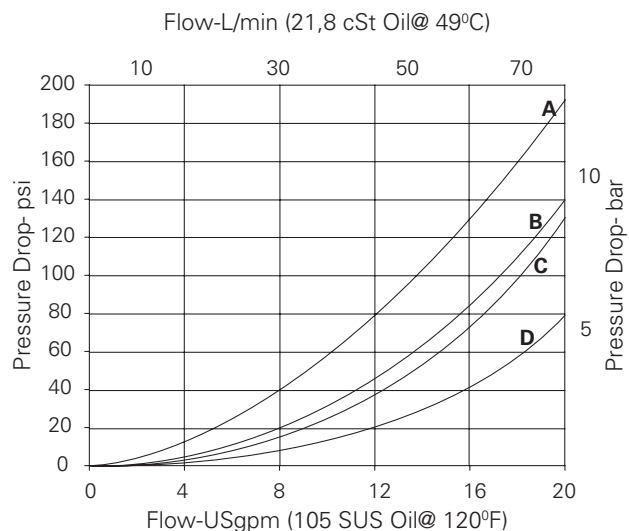
Cartridge only



A - Port 3 to 4 **B** - Port 4 to 1
C - Port 3 to 2 **D** - Port 2 to 1

Pressure drop curves for - 12

Cartridge only



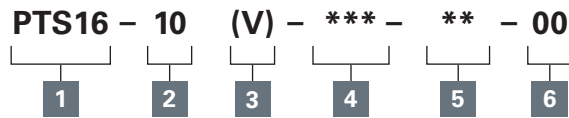
A - Port 4 to 1 **B** - Port 3 to 4
C - Port 3 to 2 **D** - Port 2 to 1

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

PTS16-10/12 - Pilot to shift valve

Remote pilot operated, directional control valve
 PTS16-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 PTS16-12: 76 L/min (20 USgpm) • 350 bar (5000 psi)

Model code



1 Function

PTS16 - Pilot to shift valve

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton®

4 Port size

Code	Port size	Housing number		
		Aluminium light duty	Aluminium fatigue rated	Steel
0	Cartridge			
A3B	3/8" BSPP	02-179705	–	–
A6T	SAE 6	566161	–	–
A2G	1/4" BSPP	–	876709	–
A3G	3/8" BSPP	–	876715	–
A6H	SAE 6	–	876708	–
A8H	SAE 8	–	876713	–
S2G	1/4" BSPP	–	–	02-175139
S3G	3/8" BSPP	–	–	02-175140
S6T	SAE 6	–	–	02-175137
S8T	SAE 8	–	–	02-175138

See section J for housing details.

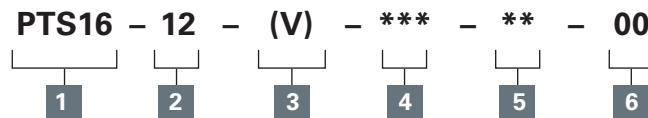
5 Pilot to shift (nominal)

60 - 4,2 bar (60 psi)

6 Special features

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

Model code



1 Function

PTS16 - Pilot to shift valve

2 Size

12 - 12 Size

3 Seals

Blank - Buna-N
V - Viton®

4 Port size

0 - Cartridge only

Code	Port size	Housing number	
		Aluminium	Steel
A4G	1/2" BSPP	5986431-001	
A6G	3/4" BSPP	5986432-001	
A8H	SAE 8	5986433-001	
A10H	SAE 10	5986434-001	
A12H	SAE 12	5986436-001	
S6G	3/4" BSPP		5991073-001
S10T	SAE 10		5991074-001
S12T	SAE 12		5991075-001

See section J for housing details.

5 Pilot to shift (nominal)

50 - 3,4 bar (50 psi)

6 Special features

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

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

PTS16-10/12 - Pilot to shift valve

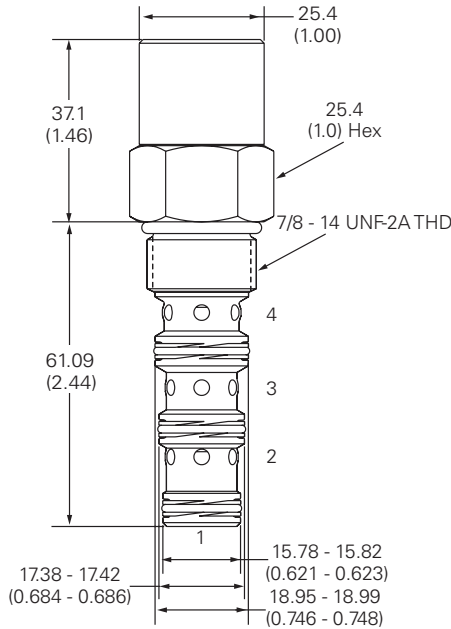
Remote pilot operated, directional control valve
 PTS16-10: 23 L/min (6 USgpm) • 350 bar (5000 psi)
 PTS16-12: 76 L/min (20 USgpm) • 350 bar (5000 psi)

PTS16-10

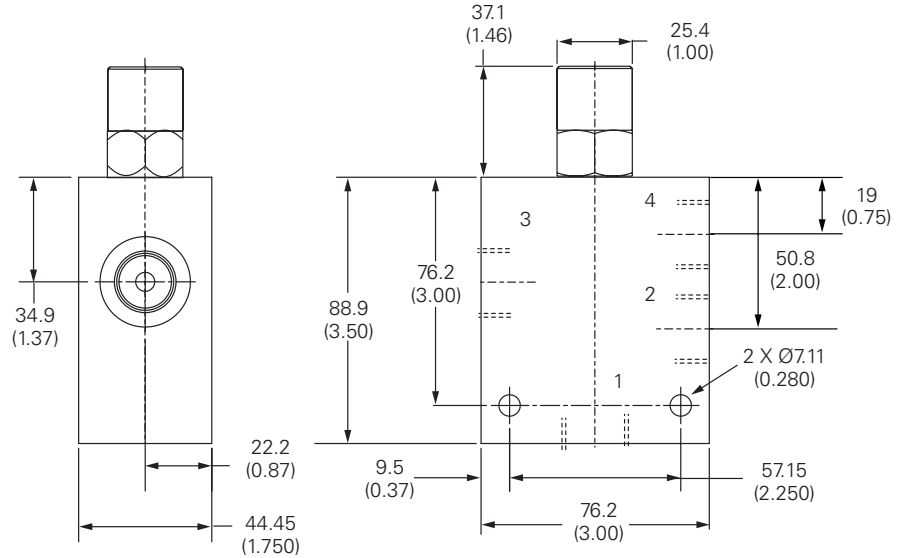
Dimensions

mm (inch)

Cartridge only

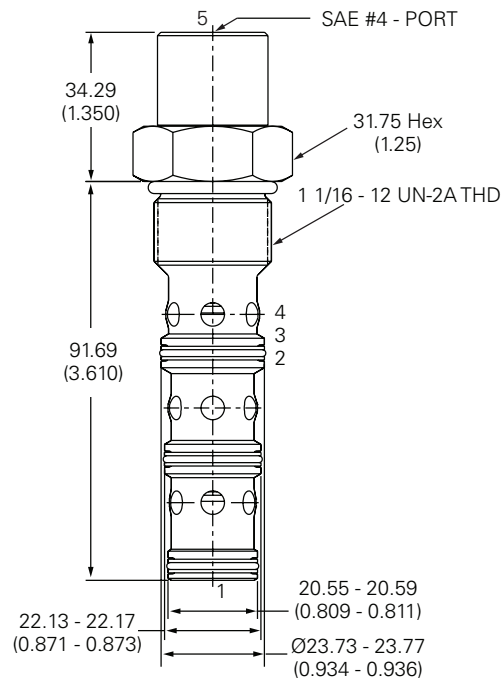


Installation drawing Steel

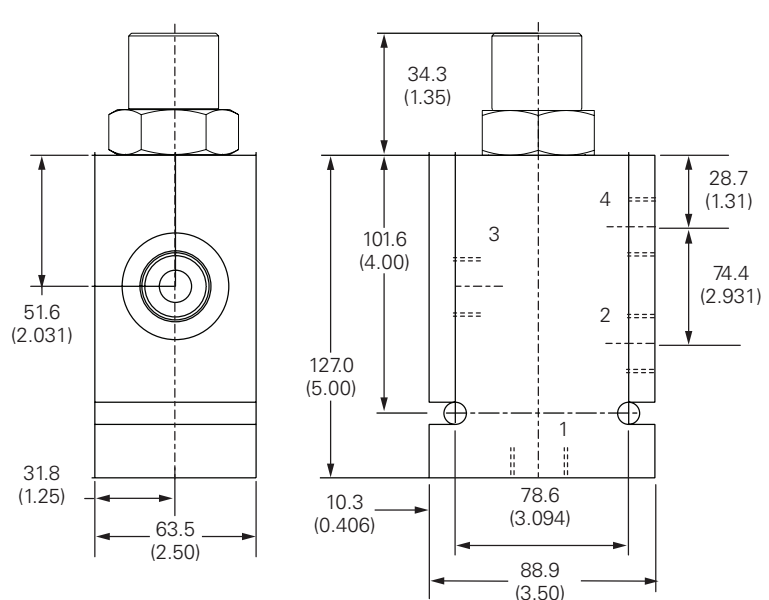


PTS16-12

Cartridge only



Installation drawing (Steel)



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

