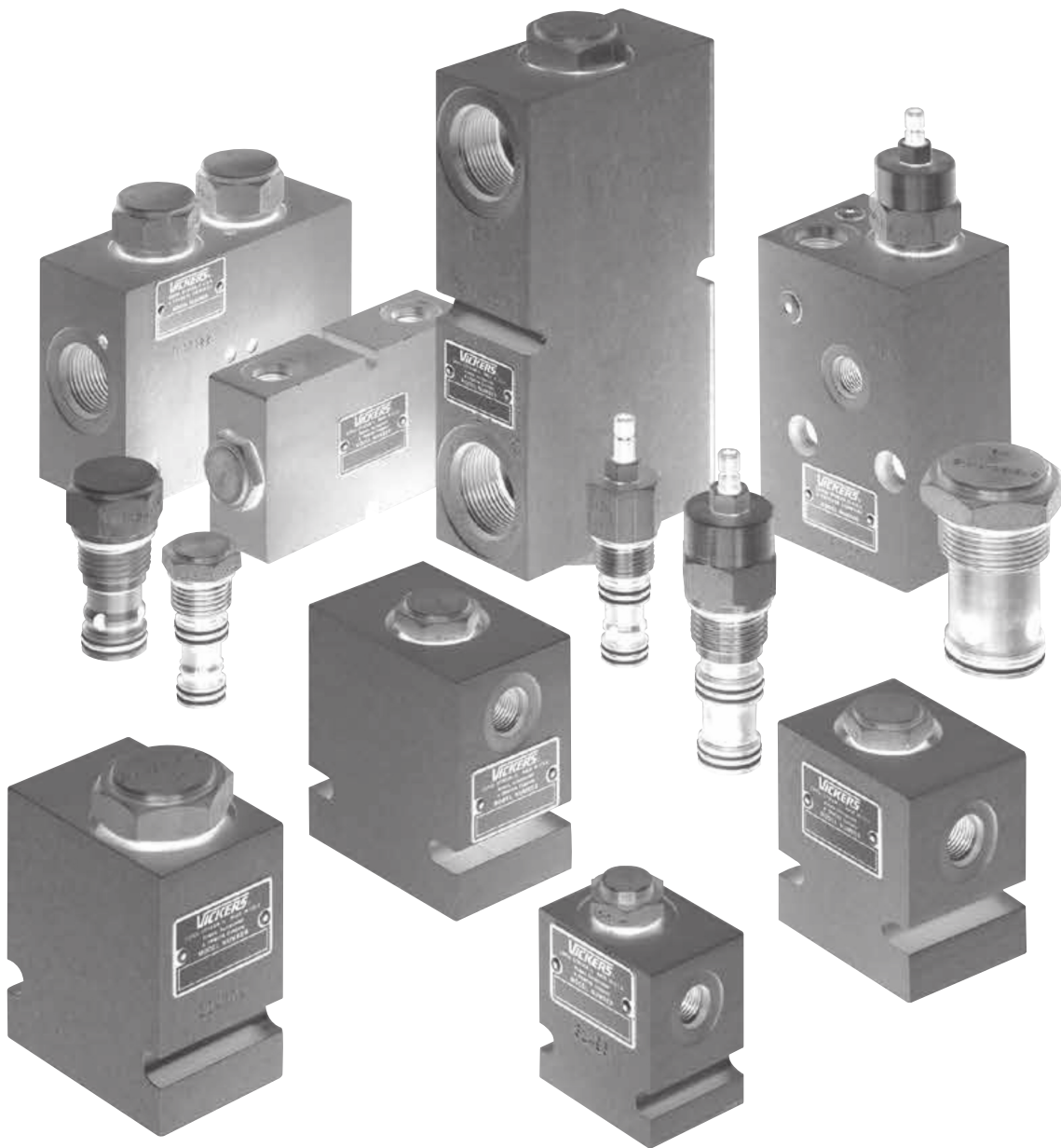


Check valves

Direct and pilot operated check valve functions for applications up to 350 bar (5000 psi) and 227 L/min (60 USgpm)



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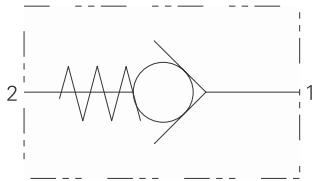
Check valves

CHECK VALVES	G-4	4CKD90 - CHECK VALVE.....	G-46
FPR - CHECK VALVE.....	G-8	4CK1 20 - CHECK VALVE	G-48
3CA20 - CHECK VALVE	G-10	4CK300 - CHECK VALVE	G-50
CV3-4 - CHECK VALVE.....	G-12	4CK SERIES - CHECK VALVE.....	G-52
CV3-8 - CHECK VALVE.....	G-14	4SK30 - CHECK VALVE.....	G-54
CV3-10/CV13-10 - CHECK VALVE.....	G-16	4SK90 - CHECK VALVE.....	G-56
CV16-10 - CHECK VALVE	G-18	4SK1 40 SERIES - CHECK VALVE.....	G-58
CV11-12 - CHECK VALVE.....	G-20	DPC2-8 - CHECK VALVE.....	G-60
CV1-16/CV11-16 - CHECK VALVE.....	G-22	4CKKT - CHECK VALVE.....	G-62
CV2-20 - CHECK VALVE	G-24	4KD25 - CHECK VALVE	G-64
3CA300 - CHECK VALVE	G-26	5CK30 - CHECK VALVE.....	G-66
CV6-4 - CHECK VALVE.....	G-28	5CK1 20 - CHECK VALVE	G-68
CV6-10 - CHECK VALVE	G-30	5CK300 - CHECK VALVE	G-70
RCV3-10 - CHECK VALVE.....	G-32	1SH10 - SHUTTLE VALVE.....	G-72
CV6-16 - CHECK VALVE.....	G-34	1SH60 - SHUTTLE VALVE.....	G-74
RCV3-10 - CHECK VALVE.....	G-36	DSV1-10 - SHUTTLE VALVE.....	G-76
SPC2-8 - CHECK VALVE.....	G-38	DSV2-4 - SHUTTLE VALVE	G-78
SPC2-10 - CHECK VALVE	G-40	DSV2-8 - SHUTTLE VALVE	G-80
4CK30 - CHECK VALVE.....	G-42	DSV3 ** B - SHUTTLE VALVE.....	G-82
4CK90 - CHECK VALVE.....	G-44		

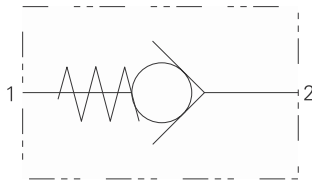
Check valves

Valve locator

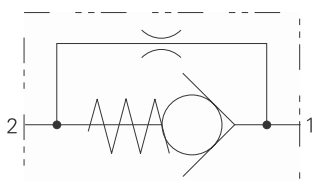
Functional symbol



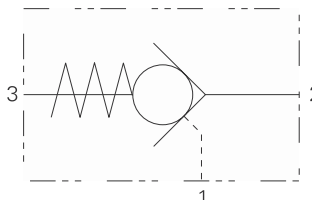
Model	Cavity	Flow rating	Typical pressure	Page
<i>Check valve, direct</i>		L/min (USgpm)	bar (psi)	
FPR1/4	Inline	12 (3)	350 (5000)	G-8
FPR3/8	Inline	30 (8)	350 (5000)	G-8
FPR1/2	Inline	45 (12)	350 (5000)	G-8
FPR3/4	Inline	85 (22)	300 (4300)	G-8
FPR1	Inline	140 (37)	250 (3600)	G-8
FPR11/4	Inline	220 (58)	250 (3600)	G-8
FPR11/2	Inline	310 (82)	210 (3000)	G-8
3CA20	A879	40 (10)	350 (5000)	G-10
CV3-4	C-4-2	7.6 (2)	350 (5000)	G-12
CV3-8	C-8-2	30 (8)	350 (5000)	G-14
CV3-10	C-10-2	76 (20)	210 (3000)	G-16
CV13-10	C-10-2	76 (20)	350 (5000)	G-16
CV11-12	C-12-2 (u)	114 (30)	350 (5000)	G-20
CV1-16	C-16-2	151 (40)	210 (3000)	G-22
CV11-16	C-16-2	151 (40)	350 (5000)	G-22
CV2-20	C-20-2	227 (60)	210 (3000)	G-24
3CA300	C-20-2	300 (80)	350 (5000)	G-26



Model	Cavity	Flow rating	Typical pressure	Page
<i>Check valve, direct</i>		L/min (USgpm)	bar (psi)	
CV16-10	C-10-2	76 (20)	350 (5000)	G-30



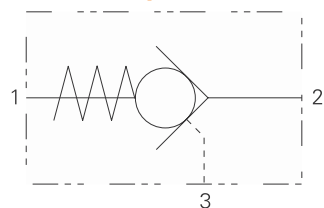
Model	Cavity	Flow rating	Typical pressure	Page
<i>Check valve, with bypass orifice</i>		L/min (USgpm)	bar (psi)	
CV6-4	C-4-2	7.5 (2)	350 (5000)	G-28
CV6-10	C-10-2	76 (20)	350 (5000)	G-30
CV6-16	C-16-2	151 (40)	210 (3000)	G-34



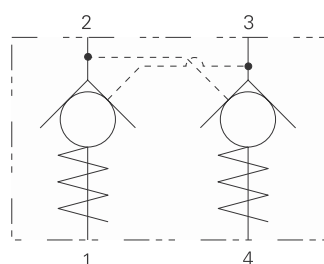
Model	Cavity	Flow rating	Typical pressure	Page
<i>Check valve, pilot-to-open</i>		L/min (USgpm)	bar (psi)	
SPC2-8	C-8-3	19 (5)	240 (3500)	G-38
SPC2-10	C-10-3	23 (6)	240 (3500)	G-40

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

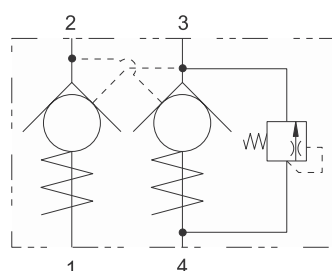
Functional symbol



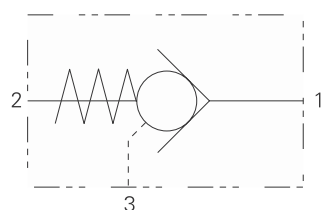
Model	Cavity	Flow rating	Typical pressure	Page
<i>Check valve, pilot-to-open</i>		L/min (USgpm)	bar (psi)	
4CK30	A6610	30 (8)	350 (5000)	G-42
4CK90	A12336	90 (24)	350 (5000)	G-44
4CKD90	A12336	90 (24)	420 (6000)	G-46
4CK120	A877	120 (32)	350 (5000)	G-48
4CK300	A6935	300 (80)	350 (5000)	G-50
4SK30	A20090-T11A	30 (8)	350 (5000)	G-54
4SK90	A20092-T2A	90 (24)	350 (5000)	G-56
4SK140	A20094-T17A	140 (37)	350 (5000)	G-58
4KD25	Inline	25 (6)	700 (10000)	G-64



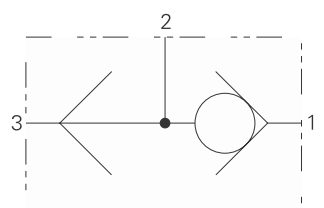
Model	Cavity	Flow rating	Typical pressure	Page
<i>Dual pilot checks</i>		L/min (USgpm)	bar (psi)	
DPC2-8	C-8-4	19 (5)	240 (3500)	G-60



Model	Cavity	Flow rating	Typical pressure	Page
<i>Dual pilot checks with thermal relief</i>		L/min (USgpm)	bar (psi)	
4CKKT50	A12744	25 (6.6)	300 (4350)	G-62



Model	Cavity	Flow rating	Typical pressure	Page
<i>Check valve, pilot-to-close</i>		L/min (USgpm)	bar (psi)	
5CK30	A6610	30 (8)	350 (5000)	G-66
5CK120	A877	120 (32)	350 (5000)	G-68
5CK300	A6935	250 (65)	350 (5000)	G-70



Model	Cavity	Flow rating	Typical pressure	Page
<i>Shuttle</i>		L/min (USgpm)	bar (psi)	
1SH10	A16927	20 (5)	350 (5000)	G-72
1SH60	C-I-M18-3	50 (13)	350 (5000)	G-74
DSV1-10	C-10-3	23 (6)	210 (3000)	G-76
DSV2-4	C-4-3	3 (.75)	240 (3500)	G-78
DSV2-8	C-8-3	23 (6)	240 (3500)	G-80
DSV3-XX-B	Inline	170 (45)	350 (5000)	G-82

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

Check valves

Section overview

This section gives basic specifications for the full line of HCL screw-in cartridge check valves. Its purpose is to provide a quick convenient reference tool when choosing Vickers cartridge valves or designing a system using these components.

Hydraulic Controls' range of direct and pilot operated check valves provides the hydraulic circuit designer with a wide selection of cartridge and in-line products.

Two pressure ratings are shown for all products featured in this catalog. 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.

All poppet type check valve cartridges have hardened and ground poppets and sharp-edged ground steel seats. This provides an excellent product that is dirt-tolerant, has reliable seating, and is suitable for fast cycling with long life.

Direct operated check valves

Cartridges fit into industry standard cavities and may be supplied for installation in manifolds, or be provided in standard housings having SAE or BSPP ports suitable for in-line mounting.

A wide selection of cracking pressures is available from 0,21 to 20,7 bar (3 to 300 psi). Thus the opportunity exists to use the valves not only as conventional check but also as low pressure relief valves.

Pilot operated check valves

These valves are used for:

- Position load locking
- As an alternative to counterbalance valves where neither the overrunning loads or release speed are factors in the application.

The high pressure 4CK** series pilot-to-open check valves complement the 1CE series counterbalance cartridges and are physically interchangeable with them.

The 4CK**s provide a low cost Alternative to load control when the dynamics of neither overrunning loads nor load release speed are factors to be considered in the design of the hydraulic circuit for the load to be controlled.

The pilot-to-open valves positively lock a load from port 1 to port 2 until pilot pressure applied to port 3 is sufficient to unseat the valve. This then permits flow from port 1 to port 2.

The 4CK** covers flow up to 300 L/min (80USgpm). These POC valves are suitable for use in a broad range of load control applications with typical system operating pressures up to 350 bar (5000 psi).

Features and benefits

- Products in this catalog have been fatigue tested for one million cycles at 132% of rated pressure.
- Simple load holding device. Low cost alternative to more complex solutions when overrunning loads are not present and / or control of load release speed is not required.
- Provides high operational efficiency and low spring settings.
- Valves are offered with a wide variety of standard housings with SAE and BSPP port options in the following configurations:
 - In-line single
 - In-line dual
 - SAE, 4-bolt, code 61
 - Close coupled, nipple mounted
 - Gasket mounted single
 - Gasket mounted dual

The HCL range of direct and pilot operated check valves provides the hydraulic designer with a wide selection of cartridge and in-line products.

- Unique design provides compact package and low pressure drops that match or exceed current market expectations and provide for excellent repeatability and stability.
- 3:1 pilot ratio satisfies simple load holding application requirements, while providing smooth operation and longer operating life.

Single pilot check

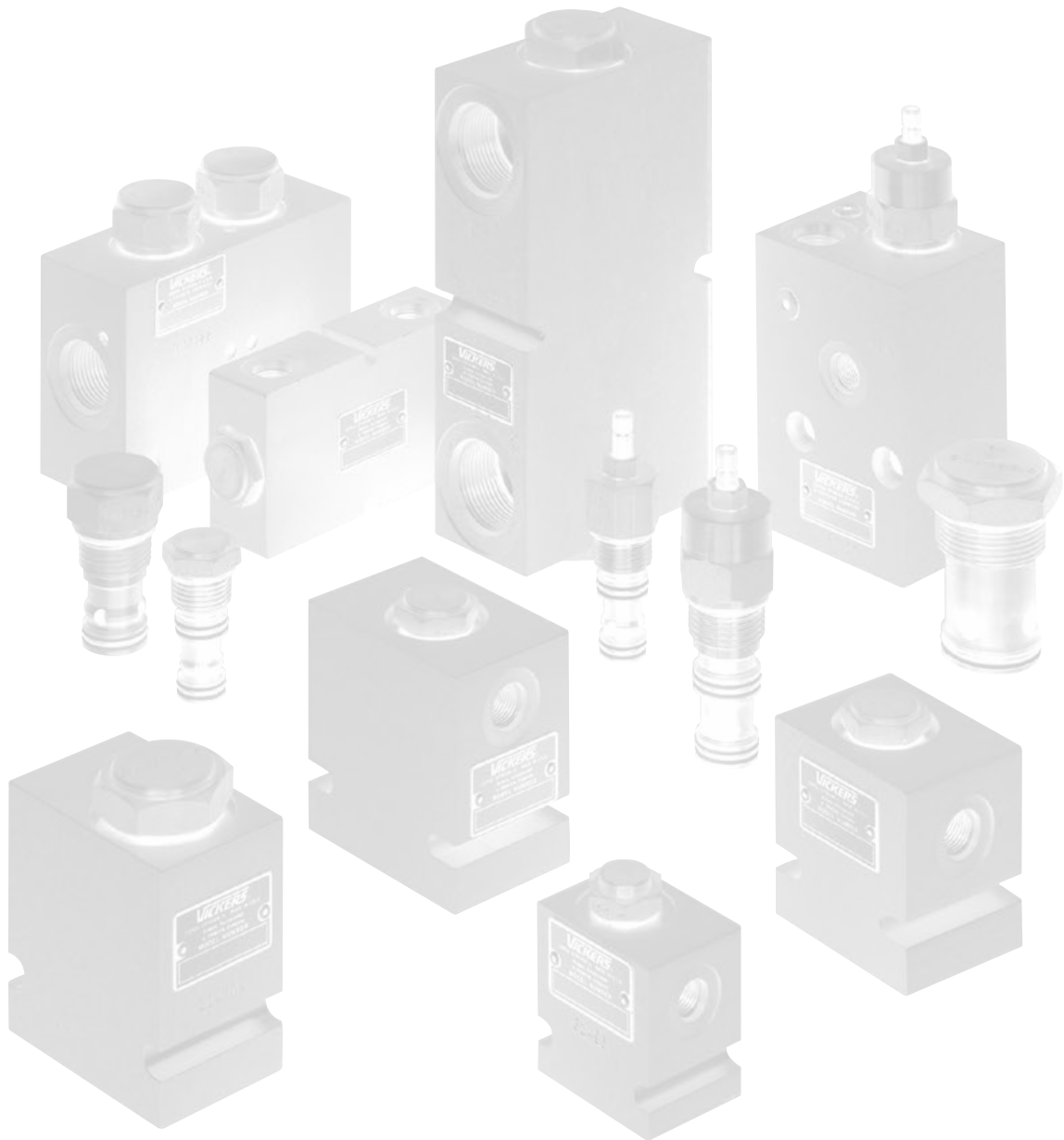
Also offered are SPC2-8 and SPC2-10 single pilot check valves with pressures to 240 bar (3500 psi) and flows to 23 L/min (6 USgpm). These valves operate similar to the 4CK** Series product but offer an opposite flow path which offers the designer a choice of pilot operated check valve when laying out a custom manifold for ease of design and fit the C10-2 cavity.

Supporting products

Hydraulic Controls' screw-in cartridge valves are available in a wide range of mounting configurations and porting options to provide flexibility in developing circuits. Housings are available in either aluminium 210 bar (3500 psi) or steel 350 bar (5000 psi) configurations. All are available with a choice of BSPP (ISO-0228/1) or SAE style ports.



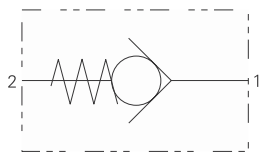
HYDRAULIC CONTROLS Pty Ltd



G

FPR - Check valve

Guided poppet line mounted up to 310 L/min (82 USgpm) • 350 bar (5000 psi)



Operation

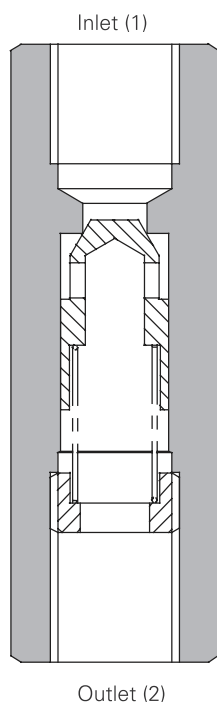
These are in line check valves. Free flow is allowed from port 1 to port 2 when the inlet pressure rises higher than the crack pressure.

Flow is prevented between port 2 and port 1 by the poppet resting on the seat within the body.

Features

All steel construction with hardened and precision ground poppet gives excellent flow capability and shut-off characteristics with good tolerance to particle (dirt) contaminated fluid.

Sectional view



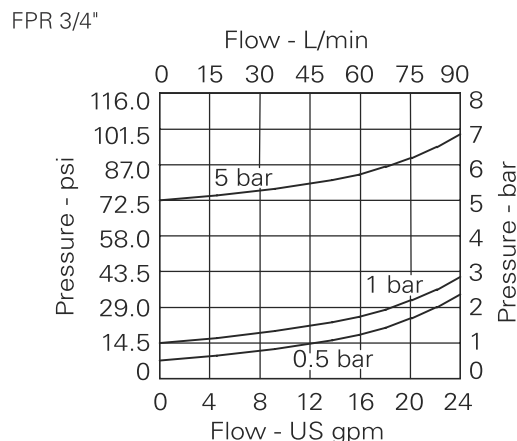
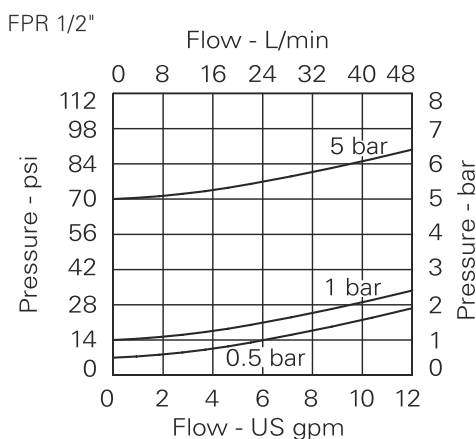
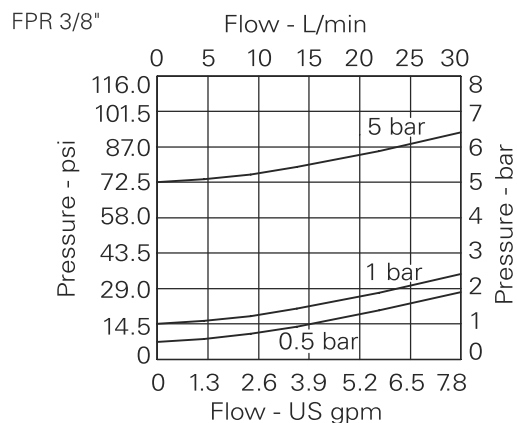
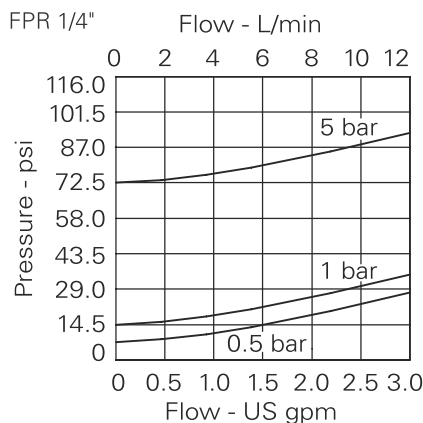
Performance data

Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)

Rated flow	310 L/min (82 USgpm)			
Valve material	Working parts hardened and ground steel. External surfaces zinc plated.			
Mounting position	Line mounted			
Weight	FPR 1/4"	0.11 kg (0.24 lbs)	FPR 1"	0.89 kg (1.95 lbs)
	FPR 3/8"	0.19 kg (0.42 lbs)	FPR 1 1/4"	1.75 kg (3.85 lbs)
	FPR 1/2"	0.25 kg (0.55 lbs)	FPR 1 1/2"	2.10 kg (4.63 lbs)
	FPR 3/4"	0.50 kg (1.10 lbs)		
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)			
Operating temp	-30°C to +90°C (-22°C to +194°F)			
Nominal viscosity range	5 to 500 cSt			

Pressure drop



Description

A range of line mounted valves for convenient installation into hydraulic circuits. Valves allow flow at a low pressure drop (from 0.5 bar, 7 psi) in the free flow direction and prevent flow in the reverse direction. The range extends from 1/4" BSP to 1 1/2" BSP (12 liters/min 3 US GPM to 310 min/min, 82 US GPM) nominal flow with cracking pressures from 0.5 to 5 bar (7 to 72.5 psi).

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

FPR - Check valve

Guided poppet line mounted up to 310 L/min (82 USgpm) • 350 bar (5000 psi)

Model code

FPR ** - 0.5



1 Basic code

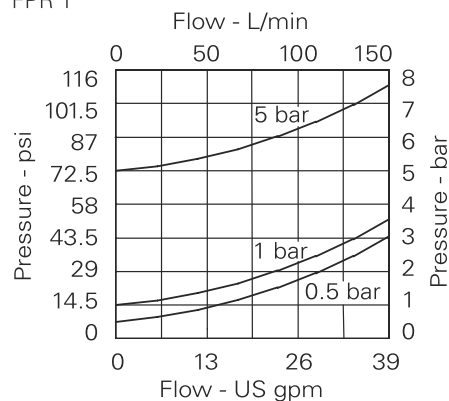
FPR1/4 - Inline valve
FPR3/8 - Inline valve
FPR1/2 - Inline valve
FPR3/4 - Inline valve
FPR1 - Inline valve
FPR11/4 - Inline valve
FPR11/2 - Inline valve

2 Cracking pressure

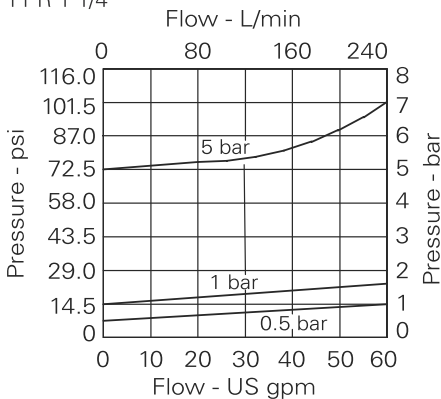
0.5 - 0.5 bar (standard)
1.0 - 1.0 bar (FPR1/4, 3/8, 1/2, 3/4 Only)
2.5 - 2.5 bar
5.0 - 5.0 bar
10.0 - 10.0 bar

Pressure drop

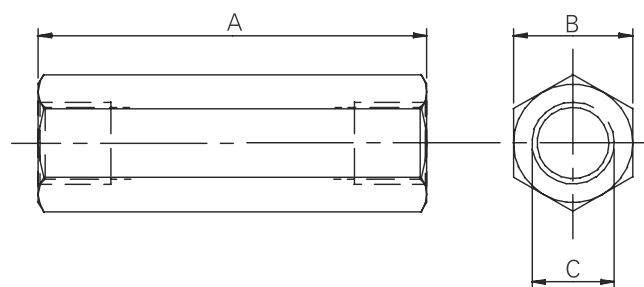
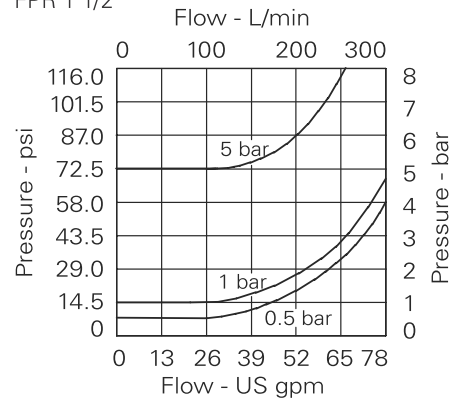
FPR 1"



FPR 1 1/4"



FPR 1 1/2"



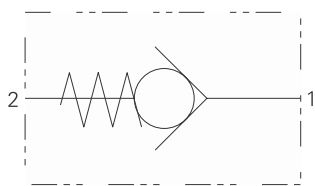
Basic code	Flow rate	Pressure	A	B	C
FPR 1/4	12 L/min (3 USgpm)	350 bar (5000 psi)	62	19	1/4" BSP
FPR 3/8	30 L/min (8 USgpm)	350 bar (5000 psi)	68	24	3/8" BSP
FPR 1/2	45 L/min (12 USgpm)	350 bar (5000 psi)	78	27	1/2" BSP
FPR 3/4	85 L/min (22 USgpm)	300 bar (4300 psi)	88	36	3/4" BSP
FPR 1	140 L/min (37 USgpm)	250 bar (3600 psi)	112	46	1" BSP
FPR 1 1/4	220 L/min (58 USgpm)	250 bar (3600 psi)	142	55	1 1/4" BSP
FPR 1 1/2	310 L/min (82 USgpm)	210 bar (3000 psi)	155	60	1 1/2" BSP

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

3CA20 - Check valve

Direct acting, ball type

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



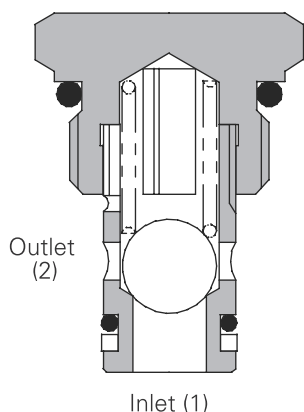
Operation

The valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2. In the other direction the valve is closed.

Features

Cartridge design with machined seats and precision ground balls gives excellent flow reseal characteristics. Installation into the 2-port 7/8" UNF cavity gives easy fitment and serviceability.

Sectional view



Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	40 L/min (10 USgpm)
Maximum pressure	350 bar (5000 psi)
Cracking pressures	0.5 bar (7 psi) 1.5 bar (22 psi) 3.5 bar (50 psi) 7.0 bar (100 psi)
Cartridge material	All steel construction. External parts electroless zinc plated.
Standard housing material	Standard aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A879 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs. ft.)
Weight	0.05 kg (0.11 lbs.)
Seal kit number	SK396 (Nitrile), SK396V (Viton®)
Recommended filtration level	BS5540/4 Class 18/3 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22°C to +194°F)
Leakage	0.2 ml/min nominal
Nominal viscosity range	5 to 500 cSt

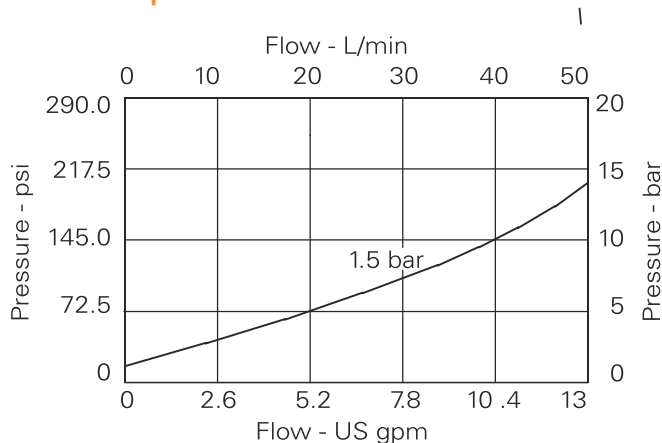
Viton is a registered trademark of E. I. DuPont

Description

These cartridge check valves allow flow at a low pressure drop, with cracking pressure from 0.5 to 7 bar (7 to 100 psi) in the free flow direction and close to prevent flow in the reverse direction.

They fit into simply machined cavities and are therefore ideal for installation into custom designed Hydraulic Integrated Circuits, manifold blocks and other hydraulic equipment.

Pressure drop curves

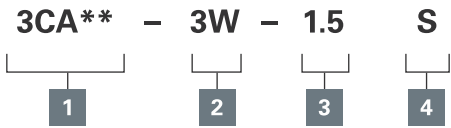


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

3CA20 - Check valve

Direct acting, ball type
40 L/min (10 USgpm) • 350 bar (5000 psi)

Model code



1 Basic code
3CA20 - Cartridge only
3CA25 - Cartridge and body

Code	Port size	Housing number - body only	
		Aluminium	Steel
2W	1/4" BSP	A1485	
3W	3/8" BSP	A1043	A14175
6T	3/8" SAE	A15676	A14843

3 Cracking pressure
0.5 - 0.5 bar (7 psi)
1.5 - 1.5 bar (22 psi)
3.5 - 3.5 bar (50 psi)
7.0 - 7.0 bar (100 psi)

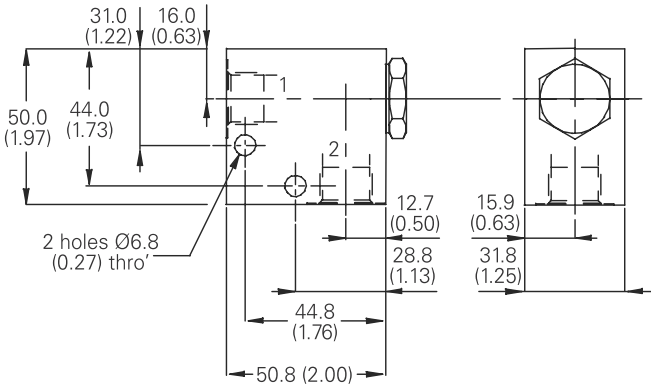
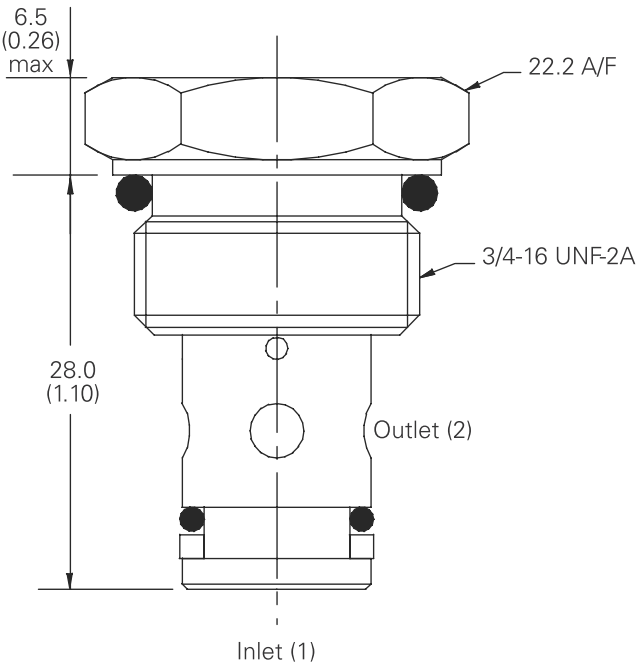
4 Seals
S - Nitrile (For use with most industrial hydraulic oils)
SV - Viton (for high temperature and most special fluid applications)

Dimensions

mm (inch)

Cartridge only
Basic code
3CA20

Single valve
1/4", 3/8" Ports
Basic code
3CA25



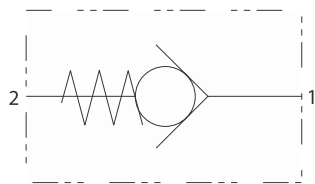
Note: For applications above 210 please consult our technical department or use the steel body option.

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

CV3-4 - Check valve

Direct acting, poppet type

7.6 L/min (2 USgpm) • 350 bar (5000 psi)



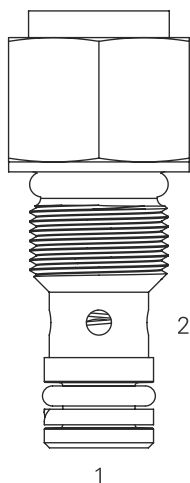
Operation

The valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2. In the other direction the valve is closed.

Features

Compact screw in cartridge design. Hardened and ground working parts to limit leakage and extend service life.

Sectional view



Performance data

Ratings and specifications

Performance data is typical with fluid at 21.8 cST (105 SUS) and 49°C (120°F)

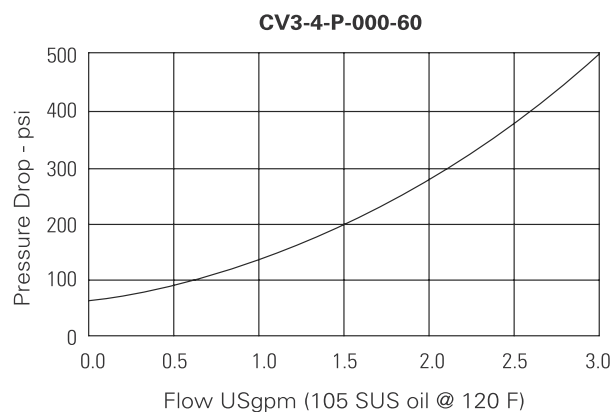
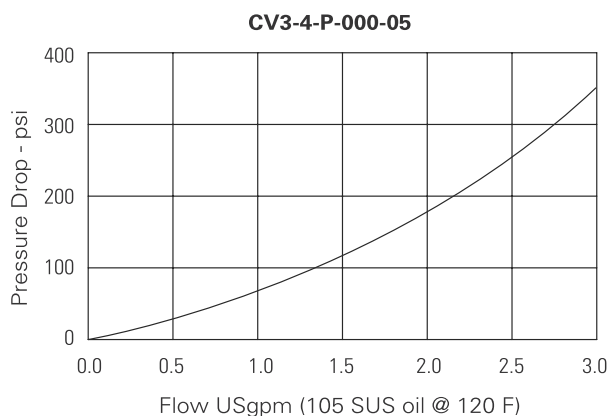
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	7.6 L/min (2 USgpm)
Free flow cracking pressure @ 1 L/min (0.25 USgpm)	5-0.34 bar (5 psi) 60 - 4.1 bar (60 psi)
Internal leakage, port 2 to 1	5 drops/min maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248° F)
Cavity	C-4-2
Fluids	All general purpose hydraulic fluids such as MIL -H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/ 16/13
Weight: cartridge only	0.04 kg (0.09 lbs.)
Seal kit	9900174-000 (Buna-N) 9900175-000 (Viton®)

Viton is a registered trademark of E. I. DuPont

Descriptions

This is a compact Poppet Type check valve ideal for use in manifolds for load sense or low flow applications.

Pressure drop



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

CV3-4 - Check valve

Direct acting, poppet type
7.6 L/min (2 USgpm) • 350 bar (5000 psi)

Model code

CV3 - 4 (V) - P - * - ** - 00**



1 Function

CV3 - Check valve

2 Size

4 - 4 size

3 Seal material

Blank - Buna-N
V - Viton

4 Style

P - Poppet Type

5 Port size

000 - Cartridge only

6 Free flow cracking pressure

05 - 0,34 bar (5 psi)
60 - 4.1 bar (60 psi)

7 Special features

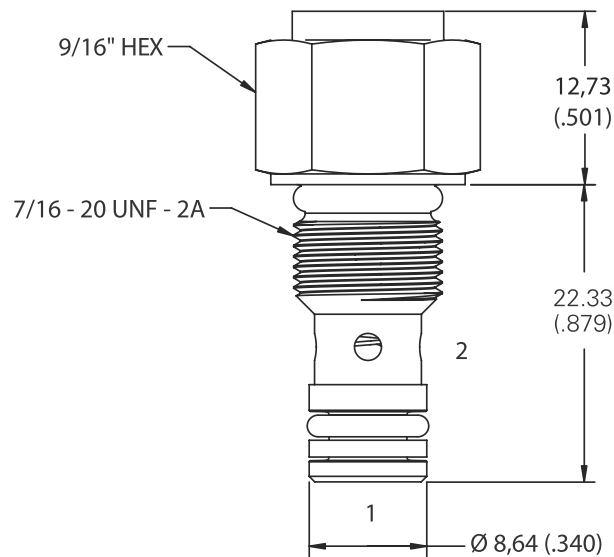
00 - None
(Only required if valve has special features, omitted if "00")

Dimensions

mm (inch)

Cartridge only

Basic code
CV3-4



Note: Torque cartridge in aluminum or steel housing to 8.1-13.6 Nm (6-10 ft. lbs).

Warning

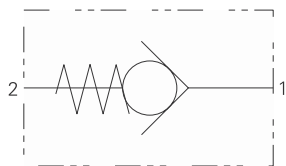
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings must be used for operating pressures above 210 bar (3000 psi).

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

CV3-8 - Check valve

Direct acting, poppet type

30 L/min (8 USgpm) • 350 bar (5000 psi)



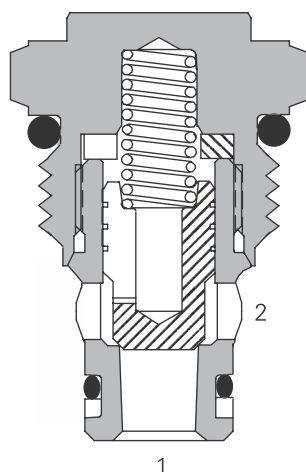
Operation

The valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2. In the other direction the valve is closed.

Features

Compact screw in cartridge design. Hardened steel ball to limit leakage and extend service life.

Sectional view



Performance data

Ratings and specifications

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

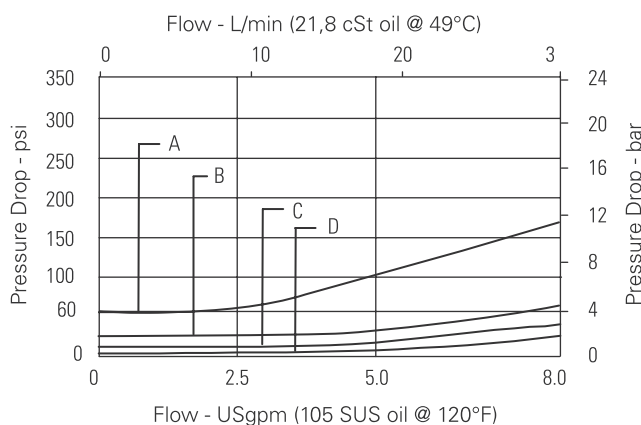
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	280 bar (4000 psi)
Rated flow	30 L/min (8 USgpm)
Cracking pressures @ 1.0 L/min (0.25 USgpm)	4 - 0.28 bar (4 psi) 10 - 0.70 bar (10 psi) 15 - 1.03 bar (15 psi) 25 - 1.70 bar (25 psi) 30 - 2.07 bar (30 psi) 60 - 4.00 bar (60 psi)
Internal leakage	5 drops/min. maximum @ 350 bar (5000 psi)
Temperature range	-40° to 120°C (-40° to 248° F)
Cavity	C-8-2
Fluids	All general purpose hydraulic fluids such as: MIL - H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/16/13
Standard housing materials	Aluminum or steel
Weight: cartridge only	0.04 kg (0.09 lbs.)
Seal kit	02-165875 (Buna-N) 02-165877 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

This is a compact poppet type check valve ideal for use in manifolds for load sense or low flow applications.

Pressure drop



A - CV3-8-P-O-60
B - CV3-8-P-O-25

C - CV3-8-P-O-10
D - CV3-8-P-O-4

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

CV3-8 - Check valve

Direct acting, poppet type
30 L/min (8 USgpm) • 350 bar (5000 psi)

Model code

CV3	- 8	(V)	- P	- (*)	**	- ***	- 00
1	2	3	4	5	6	7	8

1 Function

CV3 - Check valve

2 Size

8 - 8 size

3 Seal material

Blank - Buna-N
V - Viton

4 Style

P - Poppet

5 Valve housing material

Omit for cartridge only

A - Aluminum
S - Steel

6 Port size

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

See section J for housing details.

7 Cracking pressure

004 - 0.28 bar (4 psi)
010 - 0.70 bar (10 psi)
015 - 1.03 bar (15 psi)
025 - 1.70 bar (25 psi)
030 - 2.07 bar (30 psi)
060 - 4.00 bar (60 psi)

8 Special features

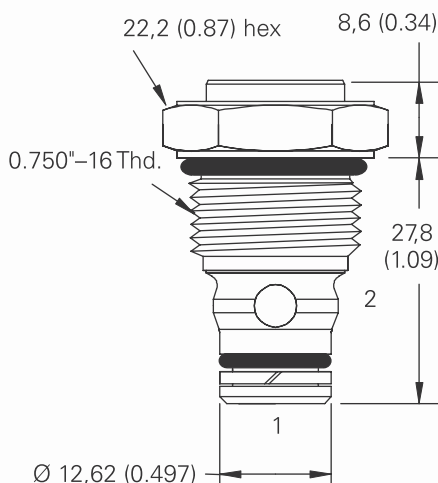
00 - None
(Only required if valve has special features, omitted if "00")
SS - 316 Stainless Steel external components

Dimensions

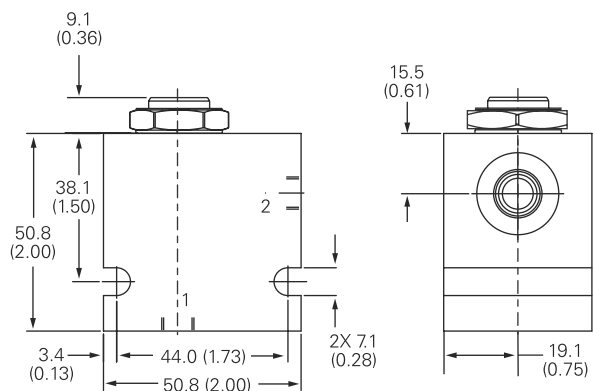
mm (inch)

Cartridge only

Basic code
CV3-8



Installation drawing (Steel)



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

Warning

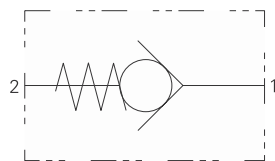
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings must be used for operating pressures above 210 bar (3000 psi).

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

CV3-10/CV13-10 - Check valve

Direct acting, poppet type

Up to 76 L/min (20 USgpm) • 350 bar (5000 psi)



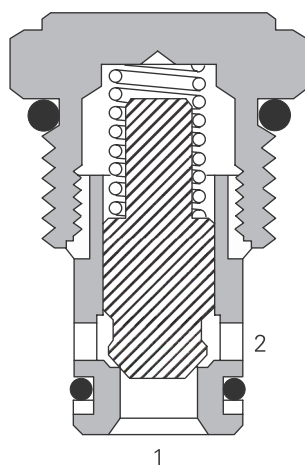
Operation

The valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2. In the other direction the valve is closed.

Features

Hardened and ground working parts to limit leakage and extend service life.

Sectional view



Performance data

Ratings and specifications

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

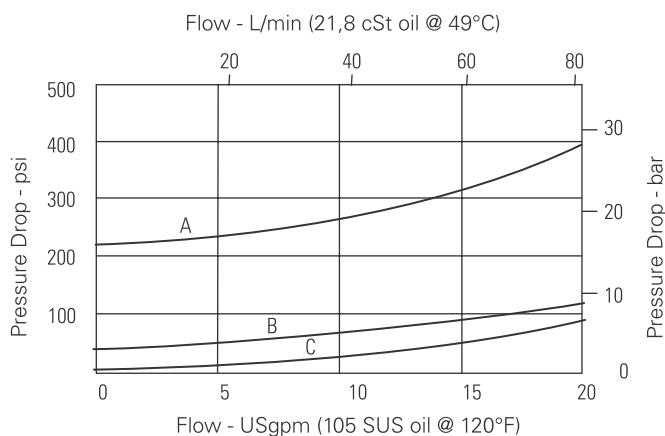
Typical application pressure (all ports) CV3/CV13	210 bar (3000 psi)/350 bar (5000 psi)	
Cartridge fatigue pressure (infinite life) CV3/CV13	210 bar (3000 psi)/350 bar (5000 psi)	
Rated flow	76 L/min (20 USgpm)	
Free flow cracking pressures @ 1.0 L/min (0.25 USgpm)	003 - 0.21 bar (3 psi) 010 - 0.69 bar (10 psi) 020 - 1.38 bar (20 psi) 035 - 2.41 bar (35 psi) 040 - 2.76 bar (40 psi) 065 - 4.48 bar (65 psi) 100 - 6.90 bar (100 psi) 180 - 12.40 bar (180 psi) 210 - 14.50 bar (210 psi)	
Internal leakage, Port 2 to 1	5 drops/min. maximum @ 350 bar (5000 psi)	
Temperature range	-40° to 120°C (-40° to 248° F)	
Cavity	C-10-2	
Fluids	All general purpose hydraulic fluids such as MIL - H-5606, SAE 10, SAE 20, etc.	
Filtration	Cleanliness code 18/ 16/13	
Standard housing material	Aluminum or steel	
Weight: cartridge only	0.08 kg (0.17 lbs.)	
Seal kit	565803 (Buna-N) 566086 (Viton®)	

Viton is a registered trademark of E.I. DuPont

Description

This is a compact poppet type check valve ideal for use in manifolds for load sense or low flow applications.

Pressure drop



A - CV(*)3 10*P 000 210 00

B - CV(*)3 10*P 000 040 00

C - CV(*)3 10*P 000 003 00

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

CV3-10/CV13-10 - Check valve

Direct acting, poppet type
Up to 76 L/min (20 USgpm) • 350 bar (5000 psi)

Model code

CV(*)3-10 * - P - * ** - *** - 00

1 2 3 4 5 6 7 8

1 Function

CV3 - Check valve 210 bar (3000 psi)
CV13 - Check valve 350 bar (5000 psi)

2 Size

10 - 10 size

3 Seal material

N - Buna-N
V - Viton

4 Style

P - Poppet

5 Valve housing material

0 - None
A - Aluminum
S - Steel

6 Port size

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

See section J for housing details.

7 Free flow cracking pressure

003 - 0.21 bar (3 psi) (anticavitation)
010 - 0.69 bar (10 psi) (anticavitation)
020 - 1.38 bar (20 psi)
035 - 2.41 bar (35 psi)
040 - 2.76 bar (40 psi)
065 - 4.48 bar (65 psi)
100 - 6.90 bar (100 psi)
180 - 12.4 bar (180 psi)
210 - 14.5 bar (210 psi)

8 Special features

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

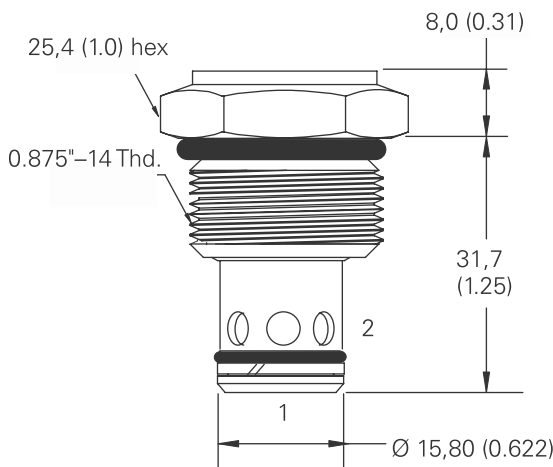
Dimensions

mm (inch)

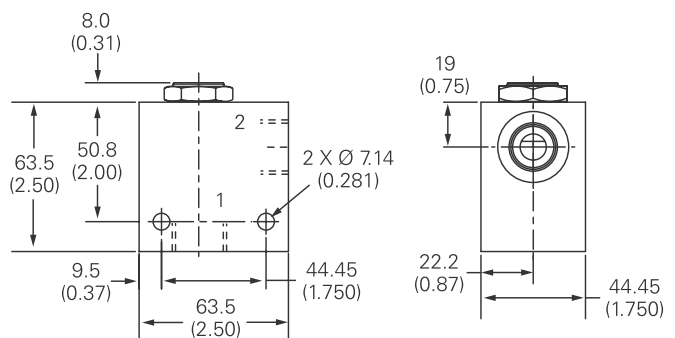
Cartridge only

Basic code
CV3-10

Torque cartridge in aluminum housing 47-54 Nm (35-40 lbf ft).
Torque cartridge in steel housing 68-70 Nm (50-55 lbf ft)
A - 47-54 Nm (35 - 40 lbf. ft.)
S - 68-70 Nm (50-55 lbf ft.)



Installation drawing (Steel)



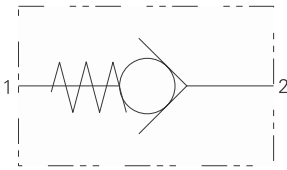
Warning

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

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

CV16-10 - Check valve

Direct acting, poppet types, side in, nose out
76 L/min (20 USgpm) • 350 bar (5000 psi)



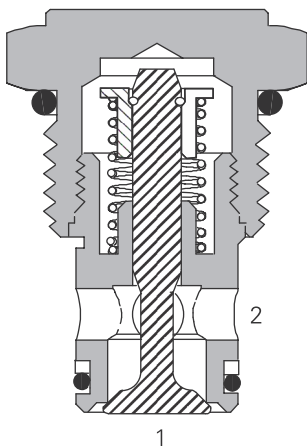
Operation

The valve remains closed until the spring bias is reached at port 2 at which time the poppet lifts off the seat and allows flow from port 2 to port 1. In the other direction the valve is closed.

Features

Hardened and ground working parts to limit leakage and extend service life. Robust design with a 350 bar max pressure rating.

Sectional view



Description

This is a poppet type screw-in cartridge valve allowing free flow from port 2 to 1. This gives flexibility to the manifold designer allowing the production of the most compact solution.

Performance data

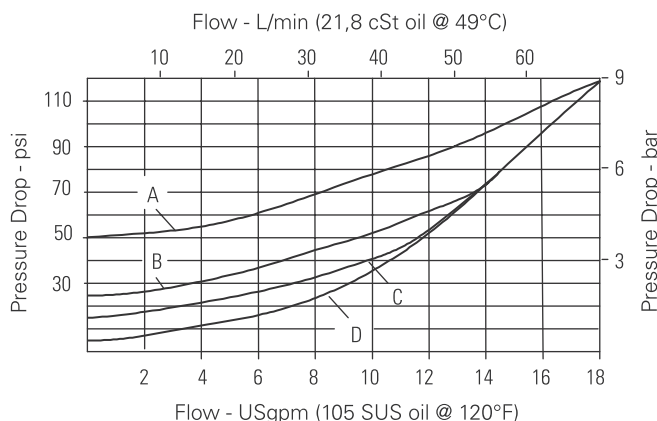
Ratings and specifications

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)	310 bar (4500 psi)
Rated flow	76 L/min (20 USgpm)
Free flow cracking pressures @ 1.0 L/min (0.25 USgpm)	05 - 0.34 bar (5 psi) 15 - 1.03 bar (15 psi) 25 - 1.70 bar (25 psi) 50 - 3.40 bar (50 psi)
Internal leakage, Port 2 to 1	5 drops/min. maximum @ 350 bar (5000 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 or steel
Weight, cartridge only	0.08 kg (0.17 lbs.)
Seal kit	565803 (Buna-N) 566086 (Viton®)

Viton is a registered trademark of E.I. DuPont

Pressure drop



A - CV16-10-P-O-50
B - CV16-10-P-O-25

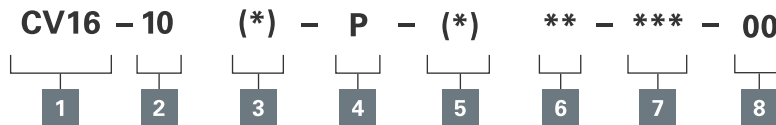
C - CV16-10-P-O-15
D - CV16-10-P-O-5

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

CV16-10 - Check valve

Direct acting, poppet types, side in, nose out
76 L/min (20 USgpm) • 350 bar (5000 psi)

Model code



1 Function

CV16 - Check valve

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton

4 Style

P - Poppet

5 Valve housing material

Omit for cartridge only
A - Aluminum
S - Steel

6 Port size

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

See section J for housing details.

7 Free flow cracking pressure

5 - 0.34 bar (5 psi)
(Anti-cavitation)
15 - 1.03 bar (15 psi)
25 - 1.70 bar (25 psi)
50 - 3.40 bar (50 psi)

8 Special features

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

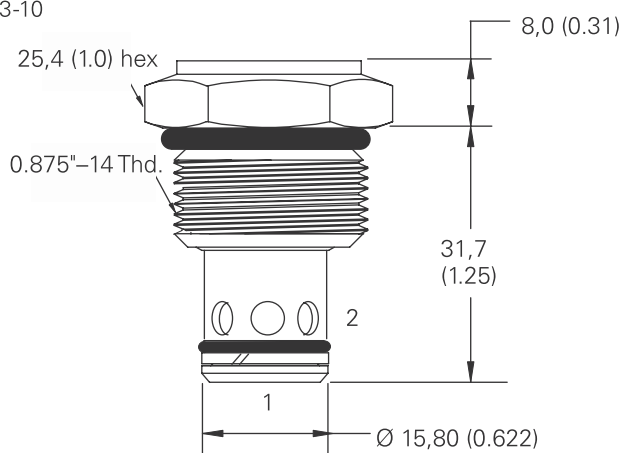
Dimensions

mm (inch)

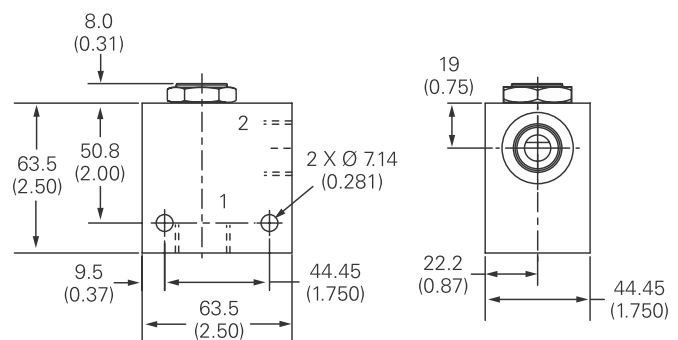
Note: Torque cartridge in aluminum housing 47-54 Nm (35-40 ft. lbs). Torque cartridge in steel housing 68-70 Nm (50-55 ft. lbs).

Cartridge only

Basic code
CV3-10



Installation drawing (Steel)



Warning

The cavity should be machined to 14,29 (0.562) maximum diameter and 36,00 (1.417) maximum depth (see cavity detail, page M-12).

Warning

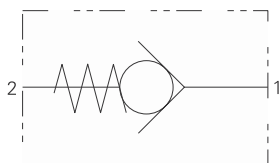
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings must be used for operating pressures above 210 bar (3000 psi).

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

CV11-12 - Check valve

Direct acting, poppet type

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



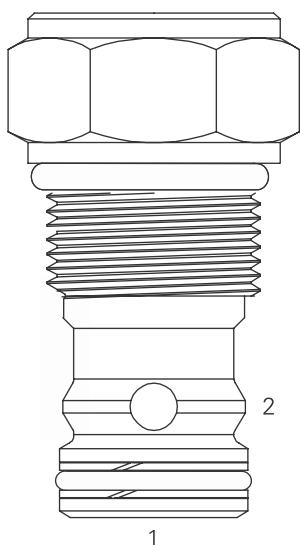
Operation

The valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2. In the other direction the valve is closed.

Pilot operation

Hardened and ground working parts to limit leakage and extend service life. Robust design with a 350 bar max pressure rating.

Sectional view



Performance data

Ratings and specifications

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

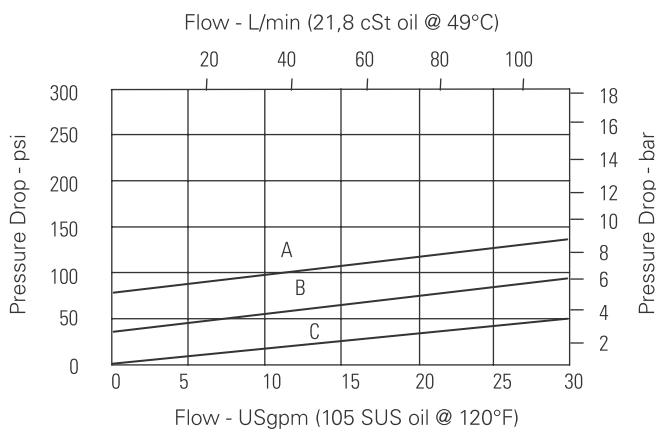
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	114 L/min (30 USgpm)
Free flow cracking pressures @ 1.0 L/min (0.25 USgpm)	2.5 - 0.17 bar (2.5 psi) 5.0 - 0.35 bar (5 psi) 10.0 - 0.69 bar (10 psi) 20.0 - 1.38 bar (20 psi) 40.0 - 2.76 bar (40 psi) 80.0 - 5.50 bar (80 psi) 160.0 - 11.0 bar (160 psi)
Internal leakage, Port 2 to 1	5 drops/min. maximum @ 350 bar (5000 psi)
Hysteresis	Less than 0,35 bar (5 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-12-2 or C-12-2U
Fluids	All general purpose hydraulic fluids such as MIL - H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/16/13
Standard housing materials	Aluminum or steel
Weight, cartridge only	0,24 kg (0.54 lbs.)
Seal kit	02-165889 (Buna-N) 02-165888 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

This is a poppet type, direct acting screw-in cartridge check valve allowing free flow from port 1 to 2.

Pressure drop



A – CV11-12-P-O-80

B – CV11-12-P-O-20

C – CV11-12-P-O-2.5

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

CV11-12 - Check valve

Direct acting, poppet type
114 L/min (30 USgpm) • 350 bar (5000 psi)

Model code

CV11	- 12	(V)	- P	- (*)	***	(U)	- **	- 00
1	2	3	4	5	6	7	8	9

1 Function

CV11 - Check valve

2 Size

12 - 12 size

3 Seal material

Blank - Buna-N
V - Viton

4 Style

P - Poppet

5 Valve housing material

Omit for cartridge only
A - Aluminum
S - Steel

6 Port size

Code	Port size	Housing number			
		C-12-2U Aluminum light duty	C-12-2 Aluminum fatigue rated	C-12-2U Steel fatigue rated	C-12-2 Steel fatigue rated
0	Cartridge only				
10T	SAE 10	02-160641	02-160640	02-169817	02-169744
12T	SAE 12	02-160645	02-160644	02-168790	02-169782
4G	1/2" BSPP	02-161116	02-161118	02-172512	02-172062
6G	3/4" BSPP	02-161115	02-161117	02-162922	02-169665

See section J for housing details.

7 Cavity

Blank - Cavity without undercut
U - Cavity with undercut

8 Cracking pressure

2.5 - 0,17 bar (2.55 psi)
5.0 - 0,35 bar (5 psi)
10 - 0,69 bar (10 psi)
20 - 1,38 bar (20 psi)
40 - 2,75 bar (40 psi)
80 - 5,50 bar (80 psi)
160 - 11,0 bar (160 psi)

9 Special features

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

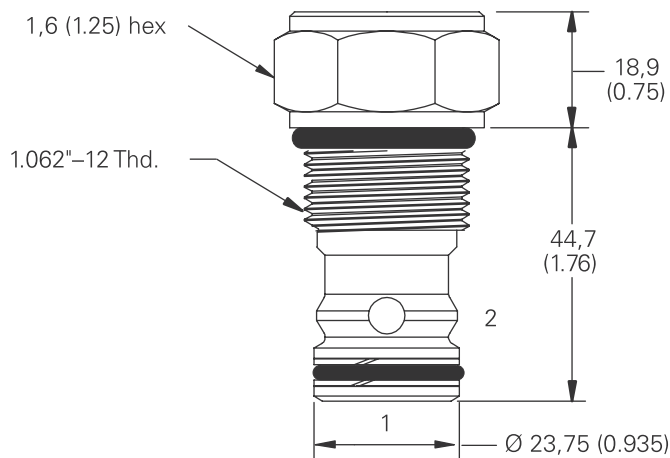
Dimensions

mm (inch)

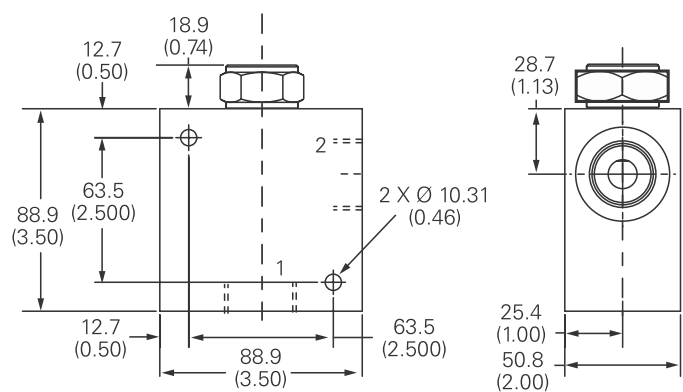
Torque cartridge in housing
A - 81-95 Nm (60-70 ft. lbs).
S - 102-115 Nm (75-85 ft. lbs).

Cartridge only

Basic code
CV11



Installation drawing (Steel)



Warning

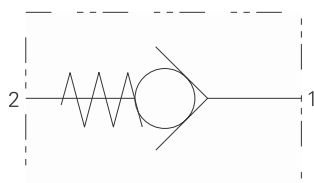
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings must be used for operating pressures above 210 bar (3000 psi).

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

CV1-16/CV11-16 - Check valve

Direct acting, poppet type

151 L/min (40 USgpm) • 350 bar (5000 psi)



Operation

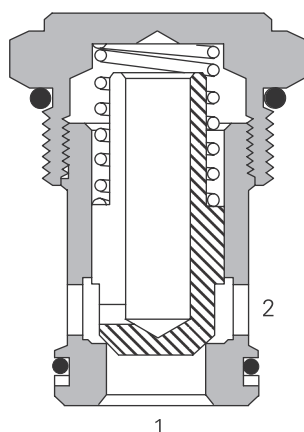
The valve remains closed until the spring bias is reached at port 1 at which time the poppet lifts off the seat and allows flow from port 1 to port 2. In the other direction the valve is closed.

Features

Hardened and ground working parts to limit leakage and extend service life.

Sectional view

CV1-16



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)	CV1-16 210 bar (3000 psi)/CV11 350 bar (5000 psi)
--	---

Cartridge fatigue pressure (infinite life)	CV1-16 210 bar (3000 psi)/CV11-16 350 bar (5000 psi)
--	--

Rated flow	151 L/min (40 USgpm)
------------	----------------------

Free flow cracking pressures @ 1 L/min (0.25 USgpm)	5 - 0,34 bar (5 psi) 20 - 1,34 bar (20 psi) 30 - 2,07 bar (30 psi) 40 - 2,67 bar (40 psi) 50 - 3,45 bar (50 psi) 100 - 6,90 bar (100 psi)
---	--

Note: Only the 5 psi option is available for CV11-16

Internal leakage, Port 2 to 1	5 drops/min. maximum @ 210 bar (3000 psi)
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Temperature range	-40° to 120°C (-40° to 248°F)
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Cavity	C-16-2
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Fluids	All general purpose hydraulic fluids such as: MIL - H-5606, SAE 10, SAE 20, etc.
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Filtration	Cleanliness code 18/16/13
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Standard housing materials	Aluminum or steel
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Weight, cartridge only	0,26 kg (0.58 lbs.)
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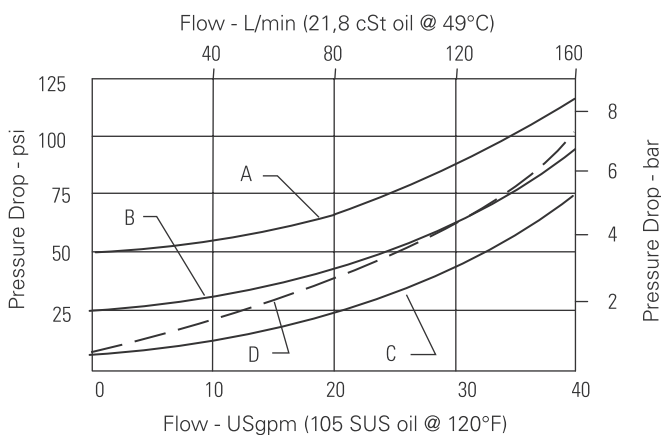
Seal kit	565810 (Buna-N) 889609 (Viton®)
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Viton is a registered trademark of E.I. DuPont

Description

This is a poppet type, direct acting screw-in cartridge check valve allowing free flow from port 1 to 2.

Pressure drop



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

CV1-16/CV11-16 - Check valve

Direct acting, poppet type
151 L/min (40 USgpm) • 350 bar (5000 psi)

Model code

CV(*)1-16 (V) - P *** - ** - 00

1 2 3 4 5 6 7

1 Function

CV1 - Check valve, 210 bar
CV11 - Check valve, 350 bar

2 Size

16 - 16 size

3 Seal material

Blank - Buna-N
V - Viton

4 Style

P - Poppet

5 Port size

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

See section J for housing details.

6 Cracking pressure

5 - 0.34 bar (5 psi)
(Anti-cavitation)
20 - 1.34 bar (20 psi)
30 - 2.07 bar (30 psi)
40 - 2.67 bar (40 psi)
50 - 3.45 bar (50 psi)
100 - 6.90 bar (100 psi)

7 Special features

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

Dimensions

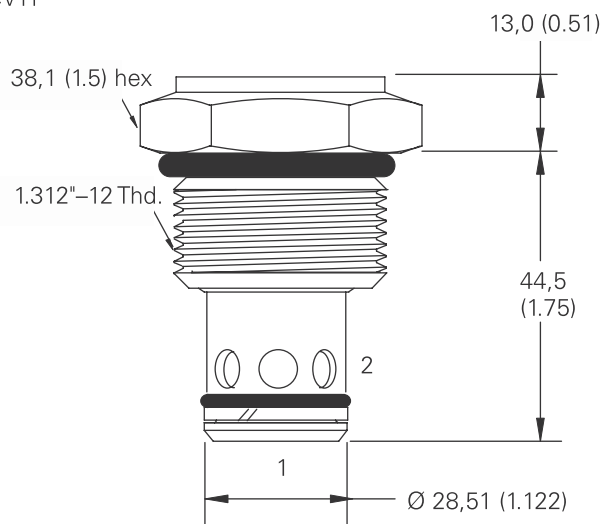
mm (inch)

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

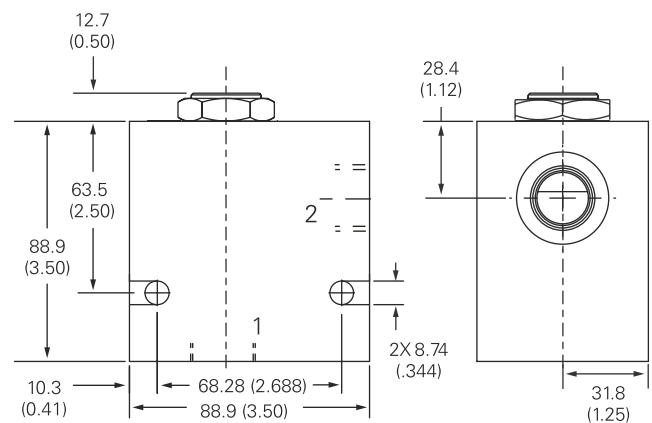
Cartridge only

Basic code

CV1, CV11



Installation drawing (Aluminum)



Warning

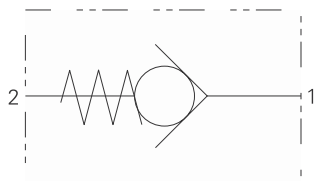
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings must be used for operating pressures above 210 bar (3000 psi).

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

CV2-20 - Check valve

Direct acting, poppet type

227 L/min (60 USgpm) • 210 bar (3000 psi)



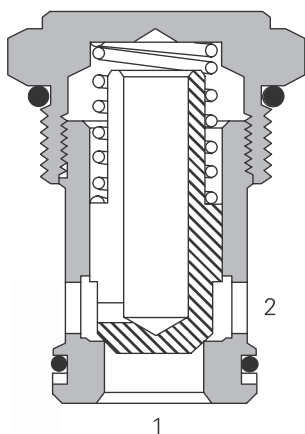
Operation

This is a poppet type, direct acting screw-in cartridge check valve allowing free flow from port 1 to 2.

Features

Hardened and ground working parts to limit leakage and extend service life. Robust design with a 210 bar (3000 psi) max pressure rating.

Sectional view



Performance data

Ratings and specifications

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

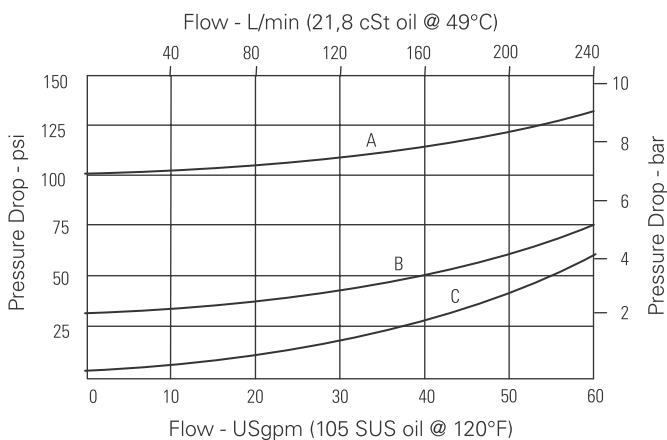
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	227 L/min (60 USgpm)
Free flow cracking pressures @ 1 L/min (0.25 USgpm)	5 - 0,34 bar (5 psi) 15 - 1,03 bar (15 psi) 30 - 2,07 bar (30 psi) 60 - 4,14 bar (60 psi) 100 - 6,90 bar (100 psi)
Internal leakage, Port 2 to 1	5 drops/min. maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-20-2
Fluids	All general purpose hydraulic fluids such as MIL - H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/16/13
Standard housing material	Aluminum
Weight, cartridge only	0,49 kg (1.09 lbs.)
Seal kit	889615 (Buna-N) 889619 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

This is a poppet type, direct acting screw-in cartridge check valve allowing free flow from port 1 to 2.

Pressure drop



A – CV2-20-P-O-100
B – CV2-20-P-O-30

C – CV2-20-P-O-5

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

CV2-20 - Check valve

Direct acting, poppet type
227 L/min (60 USgpm) • 210 bar (3000 psi)

Model code

CV2	_ 20	(V)	_ P	_ ***	_ ***	_ 00
1	2	3	4	5	6	7

1 Function

CV2 - Check valve

2 Size

20 - 20 size

3 Seal material

Blank - Buna-N
V - Viton

4 Style

P - Poppet

5 Port size

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

6 Free flow cracking pressure

5 - 0,34 bar (5 psi)
Anti-cavitation
15 - 1,03 bar (15 psi)
30 - 2,07 bar (30 psi)
60 - 4,14 bar (60 psi)
100 - 6,90 bar (100 psi)

7 Special features

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

Dimensions

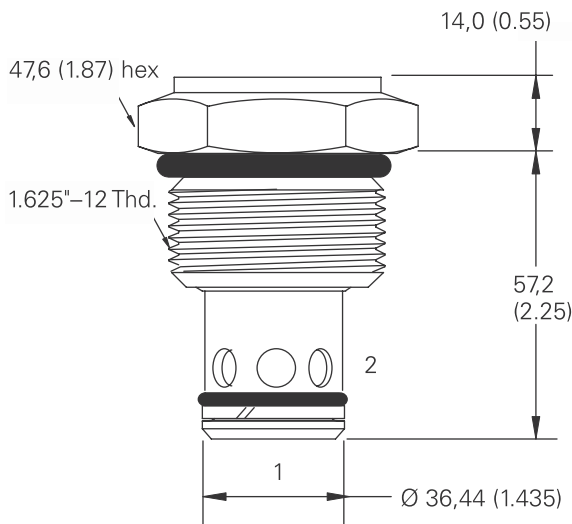
mm (inch)

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

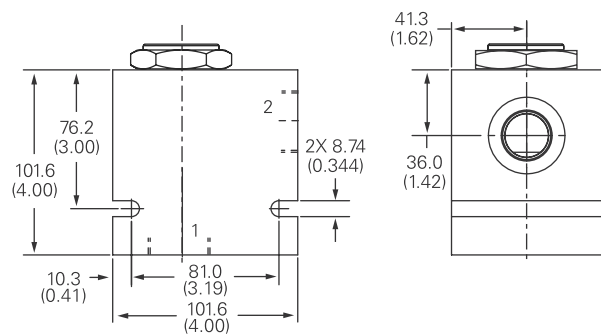
Cartridge only

Basic code

CV2



Installation drawing (Aluminum)

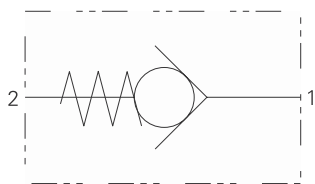


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

3CA300 - Check valve

Direct acting, poppet style

300 L/min (80 USgpm) • 350 bar (5000 psi)



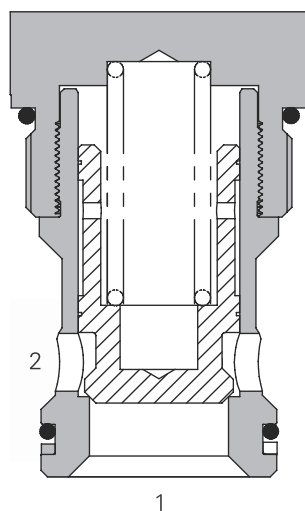
Operation

This is a poppet type, direct acting screw-in cartridge check valve allowing free flow from port 1 to 2.

Features

Hardened and ground working parts to limit leakage and extend service life. Robust design with a 350 bar (5000 psi) max pressure rating.

Sectional view



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)

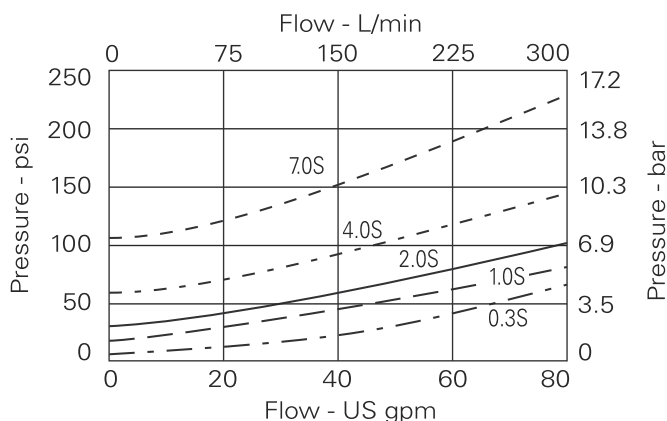
Typical application pressure (all ports)	350 bar (5000 psi)
Rated flow	300 L/min (80 USgpm)
Free flow cracking pressure	0.3 - 3 bar (4.4 psi) 1.0 - 1 bar (14.5 psi) 2.0 - 2 bar (29 psi) 4.0 - 4 bar (58 psi) 7.0 - 7 bar (100 psi)
Leakage	0.2 millilitres/min nominal
Temperature range	-30° to 90°C (-22° to 194°F)
Cavity	A13245 (C-20-2) See Section M)
Torque cartridge into cavity	150 Nm (110 lbs ft)
Filtration	BS5540/4 Class 18/13 (25 micron nominal)
Cartridge material	All steel construction. External parts electroless zinc plated.
Standard housing material	Aluminum (up to 210 bar) Add suffix '377' for steel option.
Normal Viscosity Range	15 to 250 cSt
Weight	0.48 kg (1.06 lbs.)
Mounting position	Unrestricted
Seal kit	SK1341 (Nitrile) SK1341V (Viton®)

Viton is a registered trademark of E.I. DuPont

Descriptions

This is a poppet type, direct acting screw-in cartridge check valve allowing free flow from port 1 to 2.

Pressure drop



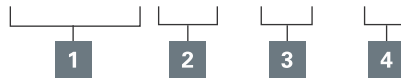
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

3CA300 - Check valve

Direct acting, poppet style
300 L/min (80 USgpm) • 350 bar (5000 psi)

Model code

3CA*-10W - 1.0 - S**



1 Function

3CA300 - Cartridge only
3CA355 - Cartridge and body

2 Port size - bodied valves only

Code	Port size	Housing number	
		Aluminum	Steel
10W	1 1/4" BSP	C24005	C24006
20T	1 1/4" SAE	C24011	C24012

3 Cracking pressure

0.3 - 0.3 bar (4.4 psi)
1.0 - 1.0 bar (14.5 psi)
2.0 - 2.0 bar (29 psi)
4.0 - 4.0 bar (58 psi)
7.0 - 7.0 bar (100 psi)

4 Seals

S - Nitrile (For use with most industrial hydraulic oils)
SV - Viton (For high temperature and most special fluid applications)

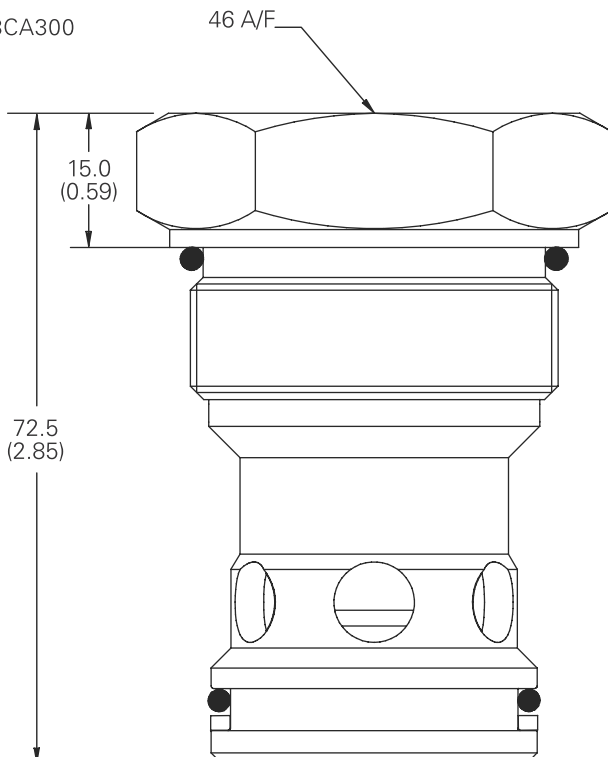
Dimensions

mm (inch)

Note: For applications above 210 please consult our technical department or use the steel body option.

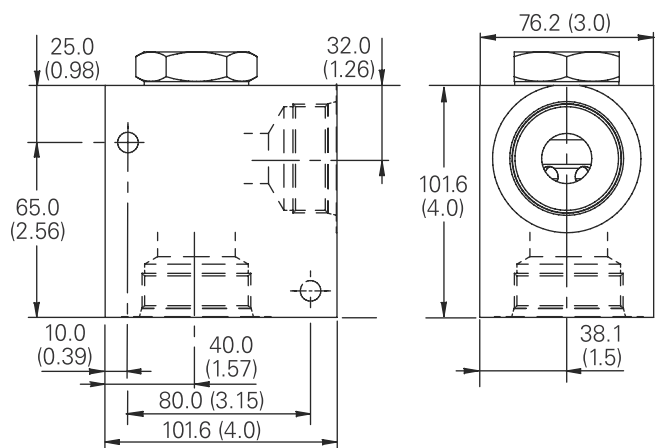
Cartridge only

Basic code
3CA300



Single valve

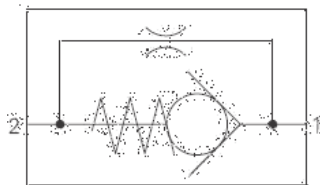
1 1/4", 1 1/2" Ports
Basic code 3CA355



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

CV6-4 - Check valve

Direct acting, poppet type with orifice
7.6 L/min (2 USgpm) • 350 bar (5000 psi)



Operation

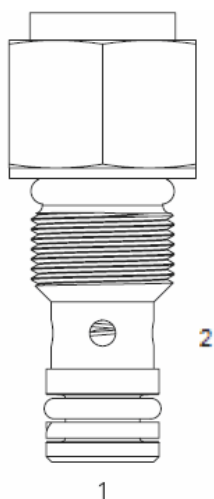
The poppet remains on its seat until the pressure drop across the orifice overcomes the spring force over the seat area.

Full flow will then take place from port 1 to 2. Flow from port 2 to 1 will be restricted by the orifice.

Features

Hardened and ground working parts extend service life.
Robust design with a 350 bar (5000 psi) max pressure rating.
Compact simple solution in a single cartridge.

Sectional view



Performance data

Ratings and specifications

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

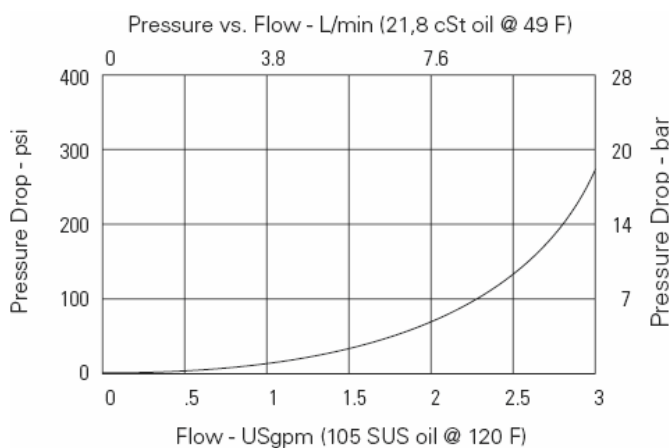
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated Flow	7.6 L/min (2 US gpm)
Free flow cracking pressure @ 1 L/min (0.25 USgpm)	5 PSI – 0.34 Bar
Orifice size range	0.015" to 0.050" (0.381 mm – 1.270 mm)
Temperature range	–40° to 120°C (–40° to 248°F)
Cavity	C-4-2
Fluids	All general purpose hydraulic fluids such as: MIL-H-5606, SAE10, SAE20 etc
Filtration	Cleanliness code 18/16/13
Weight cartridge only	0.04 kg (.09 lbs)
Seal Kit	9900174-000 (Buna-N) 9900175-00 (Viton®)

Descriptions

This is a poppet type screw-in cartridge check valve with a by-pass orifice. This will allow free flow into an actuator while restricting the flow out of it.

Pressure drop

Cartridge with body



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

CV6-4 - Check valve

Direct acting, poppet type with orifice
7.6 L/min (2 USgpm) • 350 bar (5000 psi)

Model code

CV6 - 4 - * - P - *** - ** - *** - **



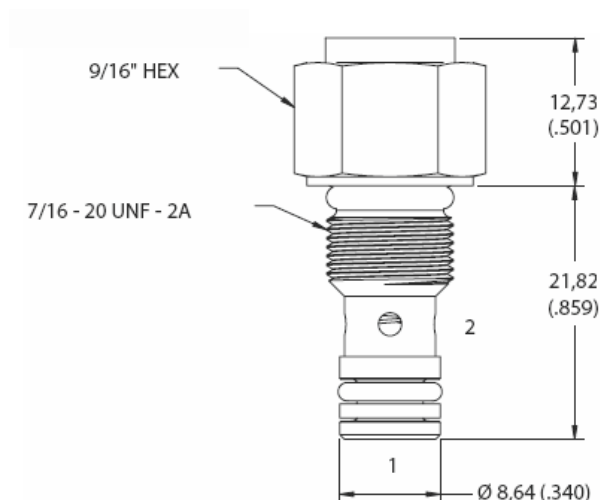
1 Function CV6 - Check valve with bypass orifice	5 Port size 000 - Cartridge only	7 Orifice size Specify in thousandths of an inch Ø - 0.050 max Ø - 0.015 min	8 Special features 00 - None (Only required if valve has special features, omitted if "00")
2 Size 4 - 4 size	6 Free flow cracking pressure 05 - 0, 34 bar (5 psi)		
3 Seal material Blank - Buna-N V - Viton			
4 Style P - Poppet			

Dimensions

mm (inch)

Cartridge only

Basic code
CV6-4



Note: Torque cartridge in aluminum or steel housing to 8.1-13.6 Nm (6-10 ft. lbs).

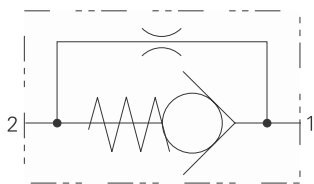
Warning

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

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

CV6-10 - Check valve

Direct acting, poppet type with orifice
76 L/min (20 USgpm) • 350 bar (5000 psi)



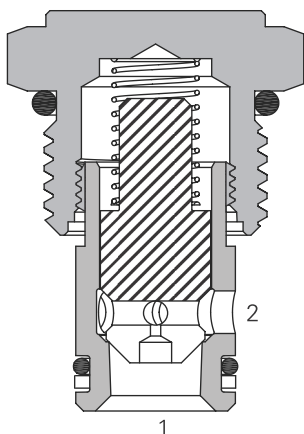
Operation

The poppet remains on its seat until the pressure drop across the orifice overcomes the spring force over the seat area. Full flow will then take place from port 1 to 2. Flow from port 2 to 1 will be restricted by the orifice.

Features

Hardened and ground working parts extend service life.
Robust design with a 350 bar (5000 psi) max pressure rating. Compact simple solution in a single cartridge.

Sectional view



Performance data

Ratings and specifications

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

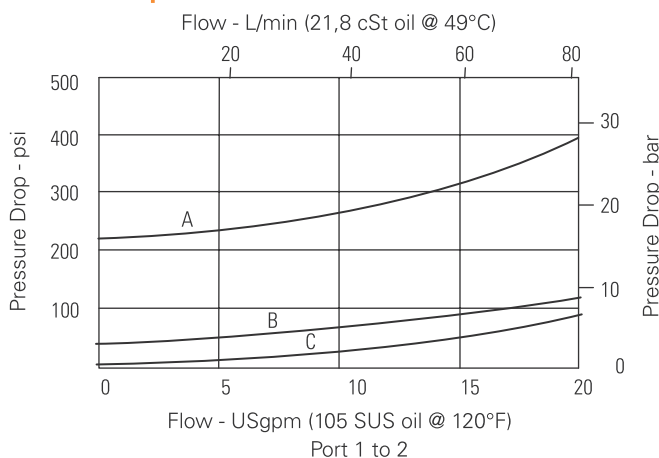
Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	76 L/min (20 USgpm)
Free flow cracking pressures @ 1 L/min (0.25 USgpm)	003 - 0,21 bar (3 psi) 010 - 0,69 bar (10 psi) 020 - 1,38 bar (20 psi) 035 - 2,41 bar (35 psi) 040 - 2,76 bar (40 psi) 065 - 4,48 bar (65 psi) 100 - 6,90 bar (100 psi) 180 - 12,40 bar (180 psi) 210 - 14,50 bar (210 psi)
Orifice size range	0.015 to 0.125" (0.381 - 3.175 mm)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-10-2
Fluids	All general purpose hydraulic fluids such as MIL - H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/16/13
Standard housing material	Aluminum or steel
Weight, cartridge only	0,49 kg (1.09 lbs.)
Seal kit	889615 (Buna-N) 889619 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

This is a poppet type screw-in cartridge check valve with a by-pass orifice. This will allow free flow into an actuator while restricting the flow out of it.

Pressure drop



A - CV6 10*P 000 210 00
B - CV6 10*P 000 040 00

C - CV6 10*P 000 003 00

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

CV6-10 - Check valve

Direct acting, poppet type with orifice
76 L/min (20 USgpm) • 350 bar (5000 psi)

Model code

CV6 -10 * - P - * *** - *** -*** - 00

1 2 3 4 5 6 7 8 9

1 Function

CV6 -Check valve with bypass orifice

2 Size

10 - 10 size

3 Seal material

N - Buna-N
V - Viton

4 Style

P - Poppet

5 Valve housing material

0 - No housing
A - Aluminum
S - Steel

6 Free flow cracking pressure

003 - 0,21 bar (3 psi)
(Anti-cavitation)
010 - 0,69 bar (10 psi)
(Anti-cavitation)
020 - 1,38 bar (20 psi)
035 - 2,41 bar (35 psi)
040 - 2,76 bar (40 psi)
065 - 4,48 bar (65 psi)
100 - 6,90 bar (100 psi)
180 - 12,4 bar (180 psi)
210 - 14,5 bar (210 psi)

7 Port size

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

8 Orifice size

Specify in thousandths of an inch
Ø - 0.125 max
Ø - 0.015 min

9 Special features

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

Dimensions

mm (inch)

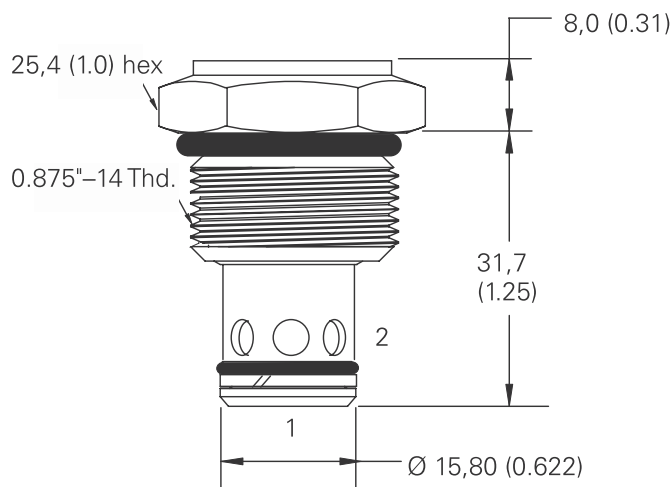
Torque cartridge in housing

A - 47-54 Nm (35-40 ft lbs).
S - 68-70 Nm (50-55 ft lbs).

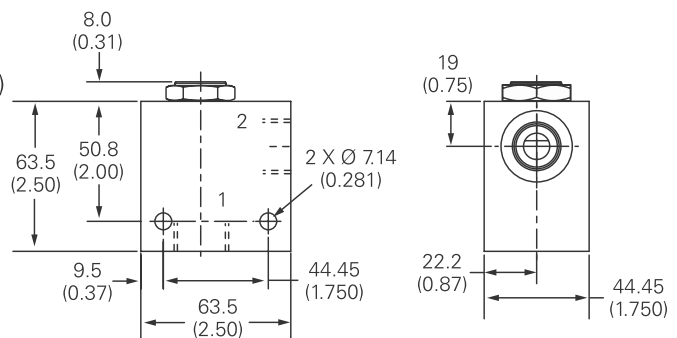
Cartridge drawing

Basic code

CV6-10



Installation drawing (Steel)



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

RCV3-10 - Check valve

Restrictive check valve

76 L/min (20 USgpm) • 350 bar (5000 psi)

Description

The RCV3-10-P is a poppet type, screw-in cartridge check valve with stroke limiter.

Operation

This valve remains closed until the spring bias is reached at port 1 at which

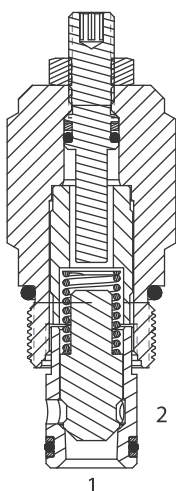
time the poppet lifts off the seat and allows flow from port 1 to port 2. The effective

orifice in the free flow direction is adjustable.

Functional symbol



Sectional view



Ratings and specifications

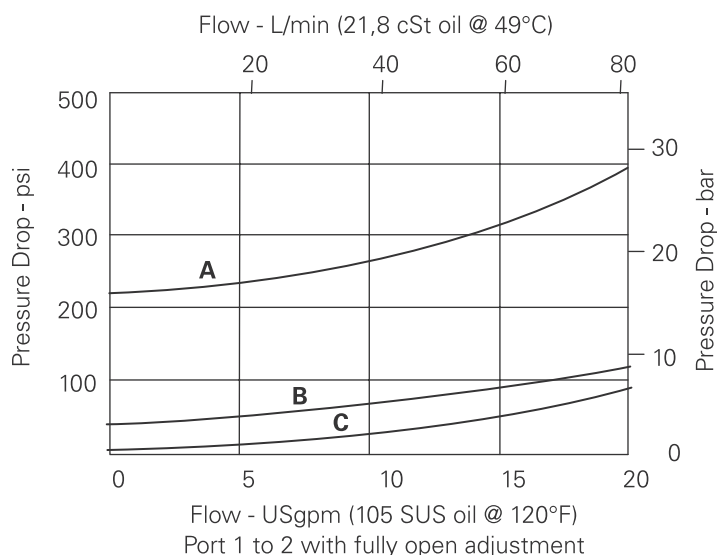
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	76 L/min (20 USgpm)
Free flow cracking pressure @1 L/min (0.25 USgpm)	003 – 0,21 bar (3 psi) 010 – 0,69 bar (10 psi) 020 – 1,38 bar (20 psi) 040 – 2,76 bar (40 psi) 065 – 4,48 bar (65 psi) 100 – 6,90 bar (100 psi) 180 – 12,40 bar (180 psi) 210 – 14,50 bar (210 psi)
Internal leakage, Port 2 to 1	5 drops/min maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-10-2
Fluids	All general purpose 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	0,22 kg (0.48 lbs)
Seal kit	565803 Buna-N 566086 Viton® Viton is a registered trademark of E.I. DuPont

Pressure drop curves

Cartridge only

- A – RCV3 10* P 0 00 210
- B – RCV3 10* P 0 00 040
- C – RCV3 10* P 0 00 003



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

RCV3-10 - Check valve

Restrictive check valve
76 L/min (20 USgpm) • 350 bar (5000 psi)

Model code

RCV3	10	*	P	*	**	***	00
1	2	3	4	5	6	7	8

1 Function

RCV3 - Check valve with stroke limiter (Restrictive check valve)

2 Size

10 - 10 size

3 Seal

N - Buna-N
V - Viton®

4 Style

P - Poppet

5 Block material

0 - No housing
A - Aluminum
S - Steel

7 Free flow cracking pressure

003 - 0,21 bar (3 psi) (Anti-cavitation)
010 - 0,69 bar (10 psi) (Anti-cavitation)
020 - 1,38 bar (20 psi)
040 - 2,76 bar (40 psi)
065 - 4,48 bar (65 psi)
100 - 6,90 bar (100 psi)
180 - 12,4 bar (180 psi)
210 - 14,5 bar (210 psi)

6 Port size

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

See section J for housing details.

8 Special features

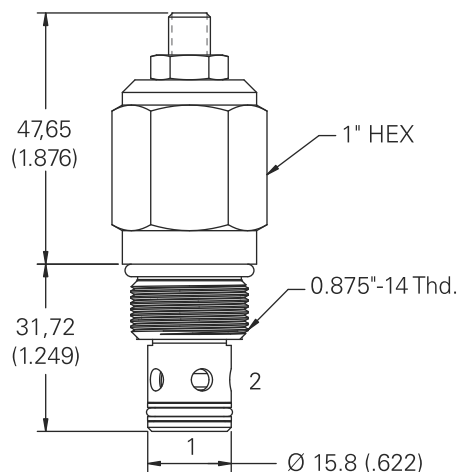
00 - None
(Only required if valve has special features - omitted if "00")

Dimensions

mm (inch)

Torque cartridge in housing

A - 47-54 Nm (35-40 ft. lbs)
S - 68-75 Nm (50-55 ft. lbs)



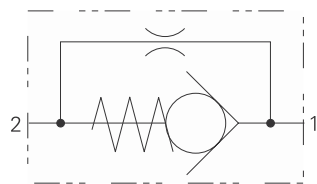
⚠ Aluminum housings can be used for pressures up to 210 bar (3000 psi) Steel housings must be used for operating pressures above 210 bar (3000 psi).

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

CV6-16 - Check valve

Direct acting, poppet type with orifice

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



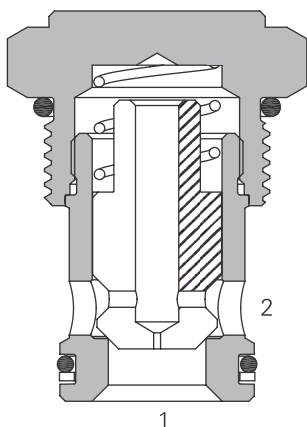
Operation

The poppet remains on its seat until the pressure drop across the orifice overcomes the spring force over the seat area. Full flow will then take place from port 1 to 2. Flow from port 2 to 1 will be restricted by the orifice.

Features

Hardened and ground working parts extend service life. Robust design with a 210 bar (3000 psi) max pressure rating. Compact simple solution in a single cartridge.

Sectional view



Performance data

Ratings and specifications

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

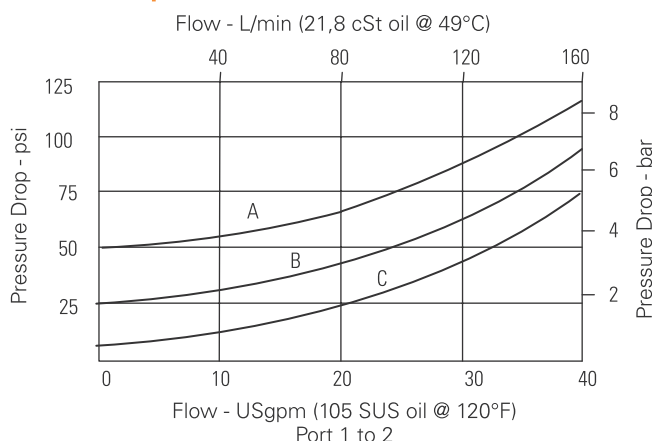
Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	151 L/min (40 USgpm)
Free flow cracking pressure @ 1 L/min (0.25 USgpm)	005 - 0,21 bar (3 psi) 020 - 1,34 bar (20 psi) 030 - 2,07 bar (30 psi) 040 - 2,76 bar (40 psi) 050 - 3,45 bar (50 psi) 100 - 6,9 bar (100 psi)
Orifice size range	0.015 to 0.125" (0.381 - 3.175 mm)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-16-2
Fluids	All general purpose hydraulic fluids such as MIL - H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/ 16/13
Standard housing material	Aluminum
Weight, cartridge only	0,26 kg (0.58 lbs.)
Seal kit	565810 (Buna-N) 889609 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

This is a poppet type screw-in cartridge check valve with a by-pass orifice. This will allow free flow into an actuator while restricting the flow out of it.

Pressure drop



A – CV6 16*P 0000 050 00

C – CV6 16*P 0000 005 00

B – CV6 16*P 0000 020 00

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

CV6-16 - Check valve

Direct acting, poppet type with orifice
151 L/min (40 USgpm) • 210 bar (3000) psi

Model code

CV6 - 16 * - P - * * - *** - *** - 00**

1	2	3	4	5	6	7	8	9

1 Function

CV6 - Check valve with bypass orifice

2 Size

16 - 16 size

3 Seal material

N - Buna-N
V - Viton

4 Style

P - Poppet

5 Valve housing material

0 - No housing
A - Aluminum

6 Port size

000 - Cartridge only

7 Free flow cracking pressure

005 - 0,21 bar (5 psi)
(Anti-cavitation)
020 - 1,34 bar (20 psi)
(Anti-cavitation)
030 - 2,07 bar (30 psi)
040 - 2,76 bar (40 psi)
050 - 3,45 bar (50 psi)
100 - 6,90 bar (100 psi)

Code

Port size

Housing number

		Aluminum light duty	Aluminum fatigue rated
6B	3/4" BSPP	02-175463	-
12T	SAE 12	566149	-
4G	1/2" BSPP	-	876716
6G	3/4" BSPP	-	876718
10H	SAE 10	-	876717
12H	SAE 12	-	566113

8 Orifice size

Specify in thousandths of an inch
Ø - 0.125 max
Ø - 0.015 min

9 Special features

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

Dimensions

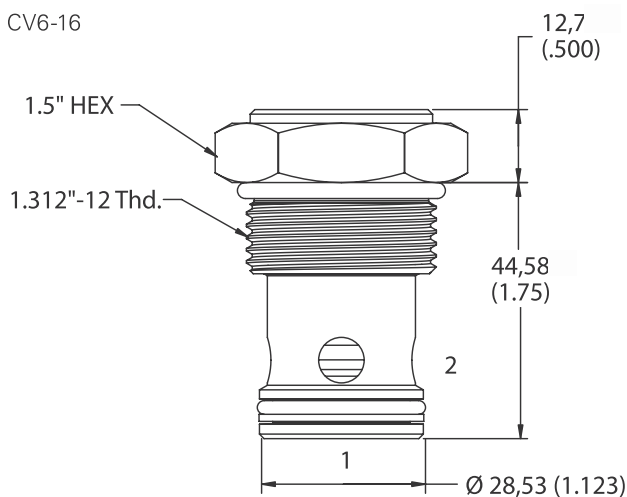
mm (inch)

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

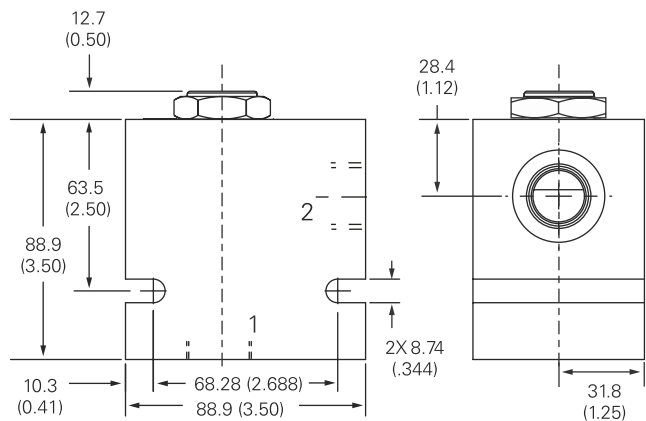
Cartridge drawing

Basic code

CV6-16



Installation drawing



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

RCV3-10 - Check valve

Restrictive check valve

76 L/min (20 USgpm) • 350 bar (5000) psi

Description

The RCV3-10-P is a poppet type, screw-in cartridge check valve with stroke limiter.

Operation

This valve remains closed until the spring bias is reached at port 1 at which

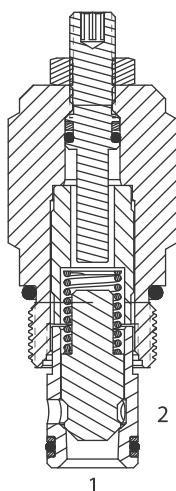
time the poppet lifts off the seat and allows flow from port 1 to port 2. The effective

orifice in the free flow direction is adjustable.

Functional symbol



Sectional view



Performance data

Ratings and specifications

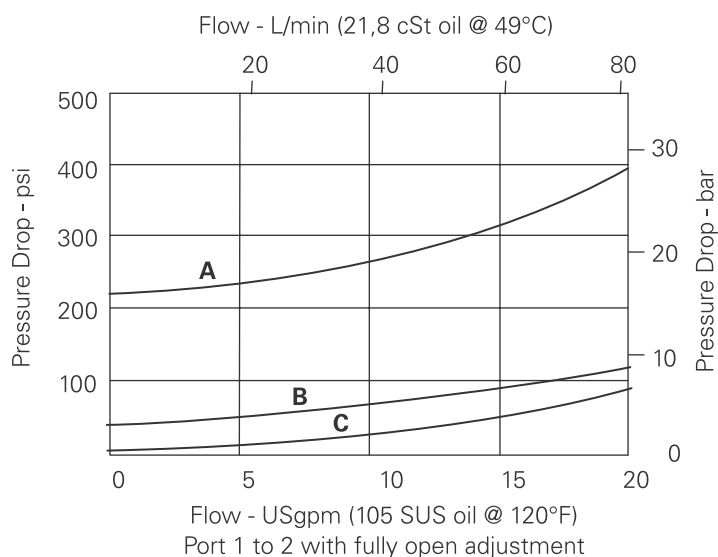
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	350 bar (5000 psi)
Cartridge fatigue pressure (infinite life)	350 bar (5000 psi)
Rated flow	76 L/min (20 USgpm)
Free flow cracking pressure @1 L/min (0.25 USgpm)	003 – 0,21 bar (3 psi) 010 – 0,69 bar (10 psi) 020 – 1,38 bar (20 psi) 040 – 2,76 bar (40 psi) 065 – 4,48 bar (65 psi) 100 – 6,90 bar (100 psi) 180 – 12,40 bar (180 psi) 210 – 14,50 bar (210 psi)
Internal leakage, Port 2 to 1	5 drops/min maximum @ 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-10-2
Fluids	All general purpose 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	0,22 kg (0.48 lbs)
Seal kit	565803 Buna-N 566086 Viton® Viton is a registered trademark of E.I. DuPont

Pressure drop curves

Cartridge only

- A – RCV3 10* P 0 00 210
- B – RCV3 10* P 0 00 040
- C – RCV3 10* P 0 00 003



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

RCV3-10 - Check valve

Restrictive check valve
76 L/min (20 USgpm) • 350 bar (5000) psi

Model code

RCV3	10	*	P	*	**	***	00
1	2	3	4	5	6	7	8

1 Function

RCV3 - Check valve with stroke limiter (Restrictive check valve)

2 Size

10 - 10 size

3 Seals

N - Buna-N
V - Viton®

4 Style

P - Poppet

5 Block material

0 - No housing
A - Aluminum
S - Steel

7 Free flow cracking pressure

003 - 0,21 bar (3 psi) (Anti-cavitation)
010 - 0,69 bar (10 psi) (Anti-cavitation)
020 - 1,38 bar (20 psi)
040 - 2,76 bar (40 psi)
065 - 4,48 bar (65 psi)
100 - 6,90 bar (100 psi)
180 - 12,4 bar (180 psi)
210 - 14,5 bar (210 psi)

6 Port size

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

8 Special features

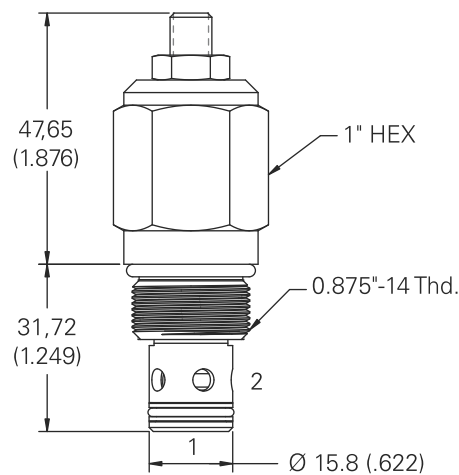
00 - None
(Only required if valve has special features - omitted if "00")

Dimensions

mm (inch)

Torque cartridge in housing

A - 47-54 Nm (35-40 ft. lbs)
S - 68-75 Nm (50-55 ft. lbs)



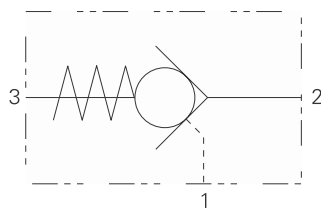
⚠ Aluminum housings can be used for pressures up to 210 bar (3000 psi) Steel housings must be used for operating pressures above 210 bar (3000 psi).

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

SPC2-8 - Check valve

Pilot-to-open, poppet type

19 L/min (5 USgpm) • 240 bar (3500 psi)



Operation

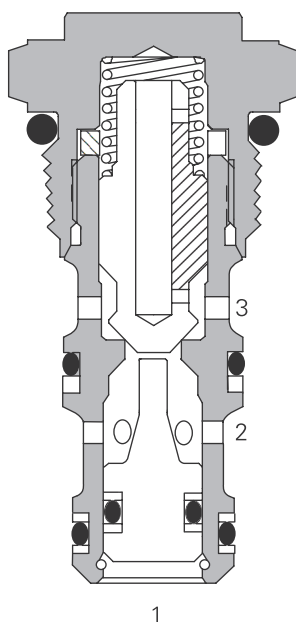
Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 3. Reverse flow is prevented by the poppet reseating.

Pressure applied to the pilot port 1 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

Sectional view



Performance data

Ratings and specifications

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

Typical application pressure (all ports)	240 bar (3500 psi)
Cartridge fatigue pressure (infinite life)	240 bar (3500 psi)
Rated flow	19 L/min (5 USgpm)
Pilot ratio	3:1
Cracking pressure	15 - 1,0 bar (15 psi) 35 - 2,4 bar (35 psi) 65 - 4,5 bar (65 psi)
Internal leakage (all leak rates @ 240 bar (3500 psi))	
Port 3 to 2	5 drops/min. maximum at 240 bar (3500 psi)
Port 2 to 1 unsealed piston*	140 cc/min. maximum, zero leakage with sealed piston
*Unsealed piston only supplied with 15 psi spring option	
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-8-3
Fluids	All general purpose hydraulic fluids such as MIL - H-5606, SAE 10, SAE 20, etc
Recommended filtration	Cleanliness code 18/16/13
Standard housing materials	Aluminum or steel
Weight, cartridge only	0,07 kg (0.15 lbs.)
Seal kit	02-173326 (Buna-N) 02-173327 (Viton®)

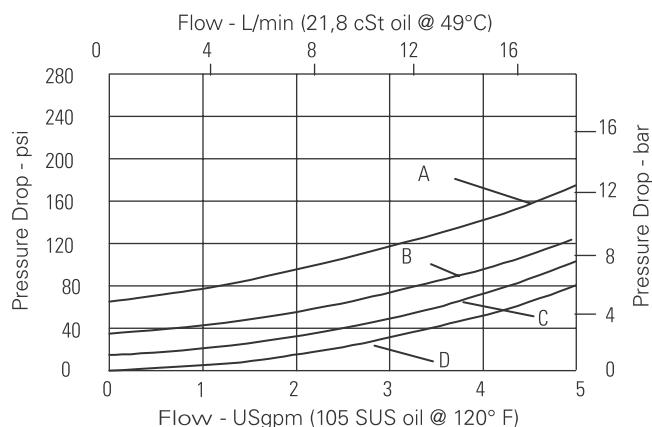
Viton is a registered trademark of E.I. DuPont

Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

Pressure drop



A - CV6 16*P 0000 050 00

B - CV6 16*P 0000 020 00

C - CV6 16*P 0000 005 00

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

SPC2-8 - Check valve

Pilot-to-open, poppet type
19 L/min (5 USgpm) • 240 bar (3500 psi)

Model code

SPC2 - 8 (X) - P - (*) ** - ** - 00

1 2 3 4 5 6 7 8

1 Basic code

SPC2 - Single pilot check valve

2 Size

8 - 8 size

3 Seals

Blank - Buna-N

V - Viton
U - Buna-N with no piston seals
W - Viton with no piston seals

4 Style

P - Poppet

5 Valve body material

Omit for cartridge only

A - Aluminum
S - Steel

6 Port size

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

7 Cracking pressure

15 - 1,0 bar (15 psi)
35 - 2,4 bar (35 psi)
65 - 4,5 bar (65 psi)

8 Special features

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

Dimensions

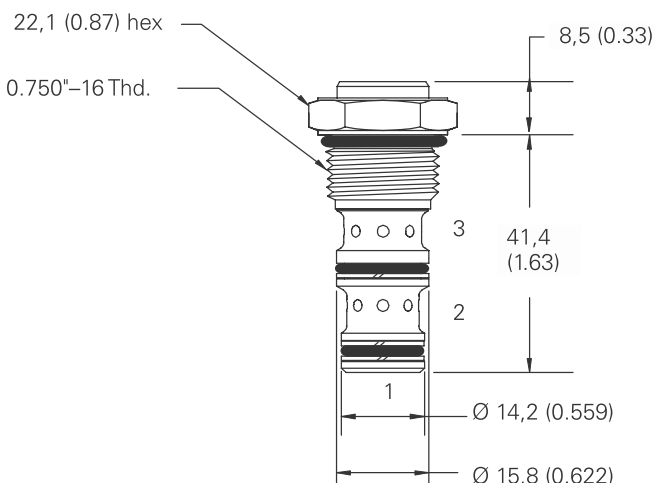
mm (inch)

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

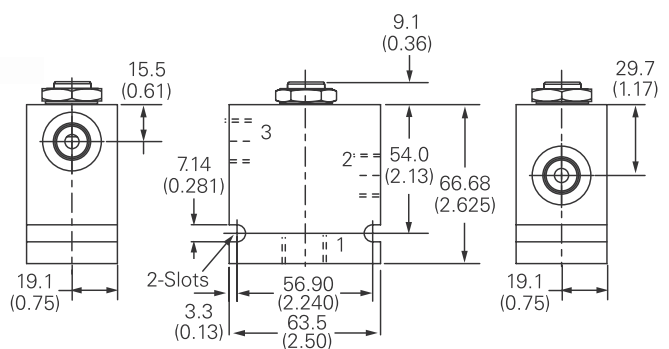
Cartridge drawing

Basic code

SPC2-8



Installation drawing (Steel)



⚠ Warning

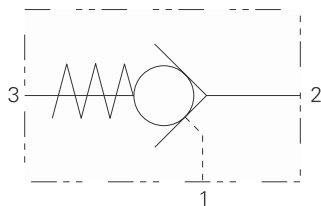
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings must be used for operating pressures above 210 bar (3000 psi).

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

SPC2-10 - Check valve

Pilot-to-open, poppet type

23 L/min (6 USgpm) • 210 bar (3000 psi)



Operation

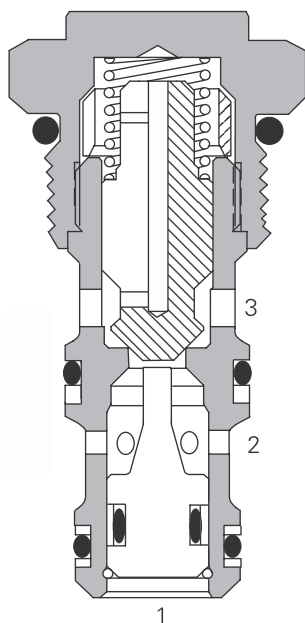
Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 3. Reverse flow is prevented by the poppet reseating.

Pressure applied to the pilot port 1 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

Sectional view



Performance data

Ratings and specifications

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

Typical application pressure (all ports)	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	23 L/min (6 USgpm)
Pilot ratio	4:1
Cracking pressure @ 1 L/min (0.25 USgpm)	025 - 1,72 bar (25 psi) 050 - 3,45 bar (35 psi) 100 - 6,90 bar (100 psi)
Internal leakage	Port 3 to 2 5 drops/min. maximum at 210 bar (3000 psi)
Temperature range	-40° to 120°C (-40° to 248°F)
Cavity	C-10-3
Fluids	All general purpose hydraulic fluids such as MIL - H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/16/13
Standard housing material	Aluminum
Weight, cartridge only	0,08 kg (0.18 lbs.)
Seal kit (check valve)	02-153267 (Buna-N) 02-173666 (Viton®)

Viton is a registered trademark of E.I. DuPont

Description

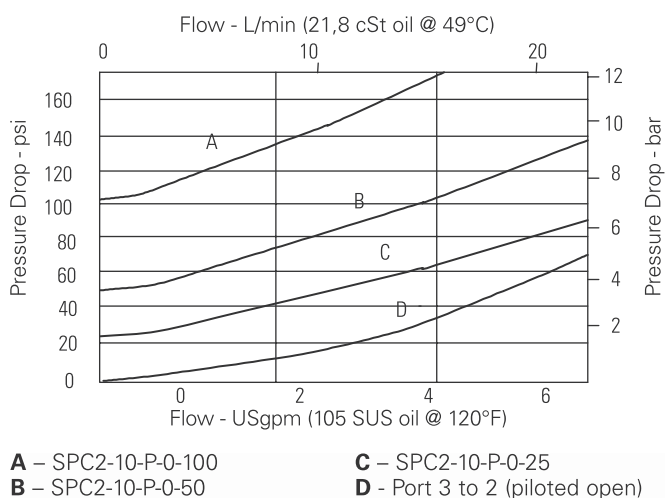
Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

Warning

Do not use Single Pilot Check Valves in load holding applications where either overrunning loads are possible or load release speed is critical. Failure to observe these guidelines may result in bodily injury or damage to equipment.

Pressure drop



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

SPC2-10 - Check valve

Pilot-to-open, poppet type
23 L/min (6 USgpm) • 210 bar (3000 psi)

Model code

SPC2 - 10 (X) - P - ** - * - 00**



1 Function

SPC2 - Single pilot check valve

2 Size

10 - 10 size

3 Seal material

Blank - Buna-N
V - Viton
U - Buna-N with no piston seals
W - Viton with no piston seals

4 Style

P - Poppet

5 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.

6 Free flow cracking pressure

25 - 1,72 bar (25 psi)
50 - 3,45 bar (50 psi)
100 - 6,90 bar (100 psi)

7 Special features

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

Dimensions

mm (inch)

Torque cartridge housing

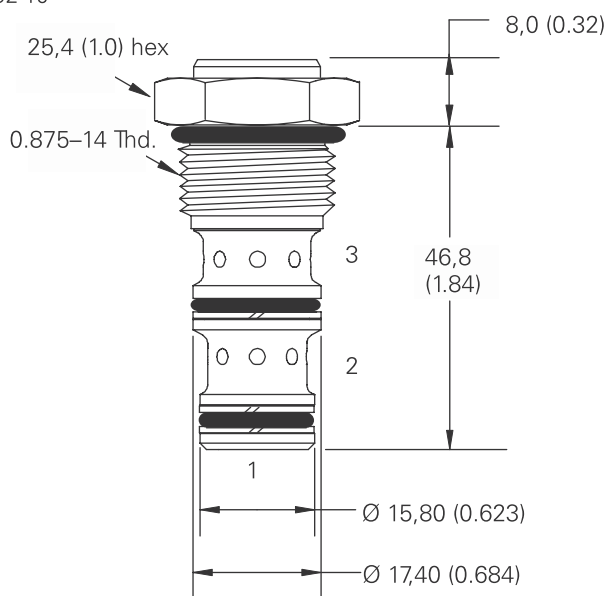
A - 47-54 Nm (35-40 ft. lbs).

B - 68-70 Nm (50-55 ft. lbs).

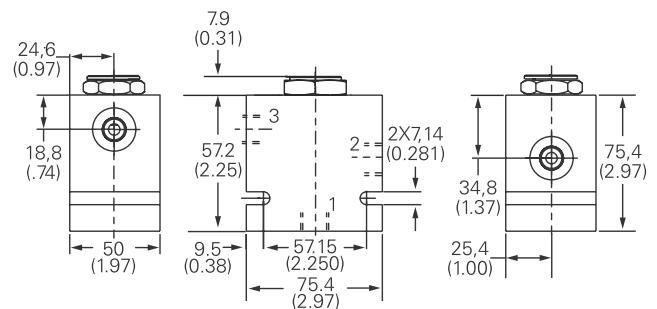
Cartridge drawing

Basic code

SPC2-10



Installation drawing



⚠ Warning

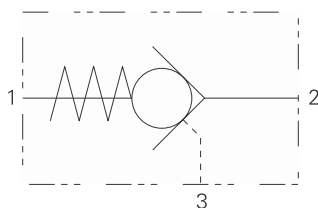
Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings must be used for operating pressures above 210 bar (3000 psi).

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

4CK30 - Check valve

Pilot-to-open, poppet type

30 L/min (8 USgpm) • 350 Bar (5000 psi)



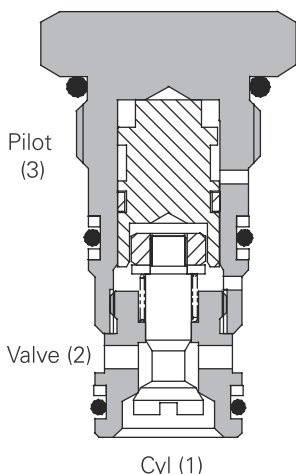
Operation

Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

Sectional view



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)

Rated flow	30 L/min (8 USgpm)		
Max setting	350 bar (5000 psi)		
Pilot ratio	3:1		
Cartridge material	Working parts hardened & ground steel. Electroless zinc plated body.		
Standard housing material	Standard aluminium (up to 210 bar) Add suffix "377" for steel option		
Mounting position	Unrestricted		
Cavity number	A6610 (See section M)		
Torque cartridge into cavity	45 Nm (33 lbs ft)		
Weight	4CK30	0.08 kg	(0.18 lbs)
	4CK35	0.34 kg	(0.75 lbs)
	4CKK35	0.76 kg	(1.67 lbs)
Seal kit number	SK430 (Nitrile) SK430V (Viton®)		
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)		
Operating temperature	-30°C to +90°C (-22° to +194°F)		
Leakage	0.3 milliliters/min nominal (5 dpm)		
Nominal viscosity range	5 to 500 cSt		

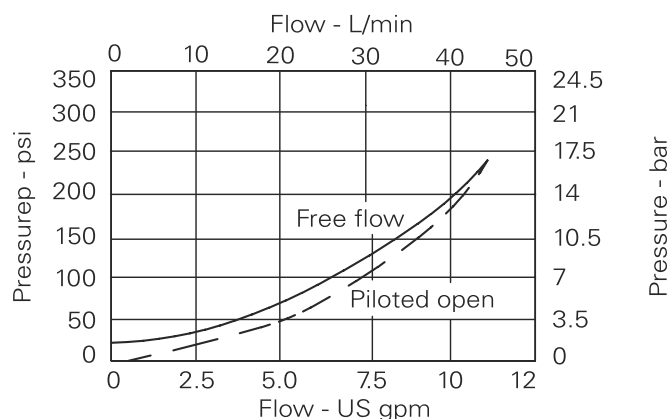
Viton is a registered trademark of E.I. DuPont

Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

Pressure drop

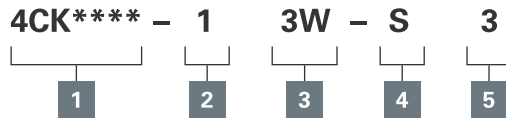


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CK30 - Check valve

Pilot-to-open, poppet type
30 L/min (8 USgpm) • 350 Bar (5000 psi)

Model code



1 Basic code

4CK30 - Cartridge Only
4CK35 - Cartridge and Body
4CKK34 - Cartridges and Dual Body

2 Pilot port size

1 - Internal

3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium double	Steel double
3W	3/8" BSP. 1/4" BSP Pilot Port	B6743	B12823	B6836	B13803
6T	3/8" SAE. 1/4" SAE Pilot Port	B10536		B10805	
8T	1/2" SAE. 1/4" SAE Pilot Port	B7884	84811	B30237	B11812

4 Seals

S -Nitrile (For use with most industrial hydraulic oils)
SV -Viton (For high temperature and most special fluid applications)

5 Optional pilot seal

Omit if not required

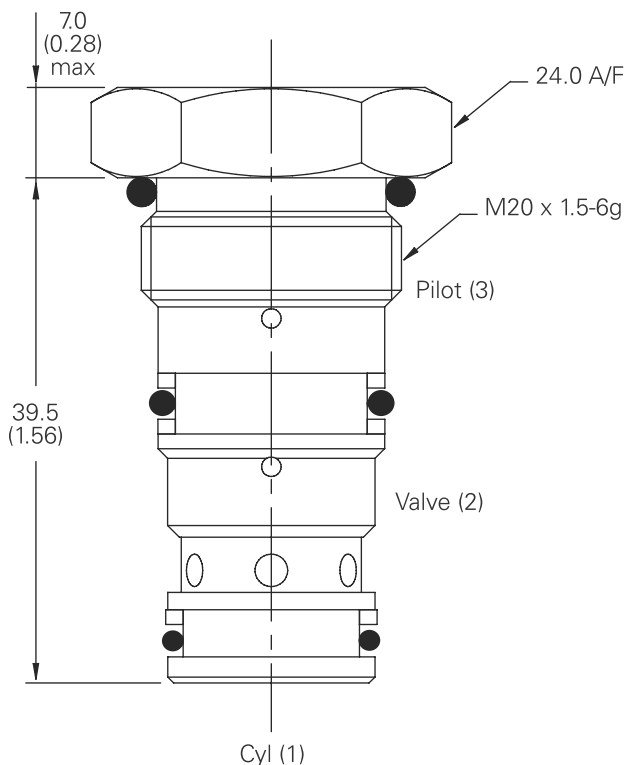
Dimensions

mm (inch)

Cartridge only

Basic code

4CK30

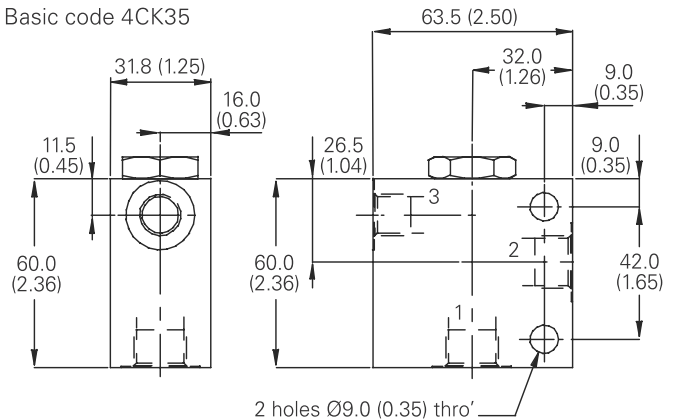


Note: For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

Single valve

3/8", 1/2" Ports

Basic code 4CK35

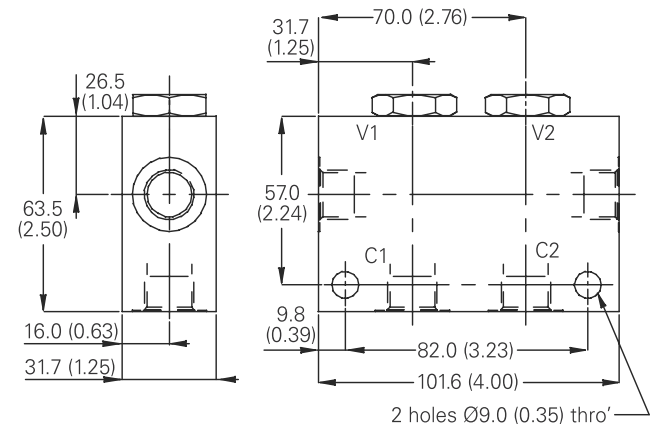


Dual valve

3/8", 1/2" Ports

Basic code 4CKK34

Internally cross piloted

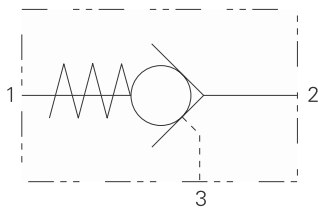


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CK90 - Check valve

Pilot-to-open, poppet type

90 L/min (24 USgpm) • 350 bar (5000 psi)



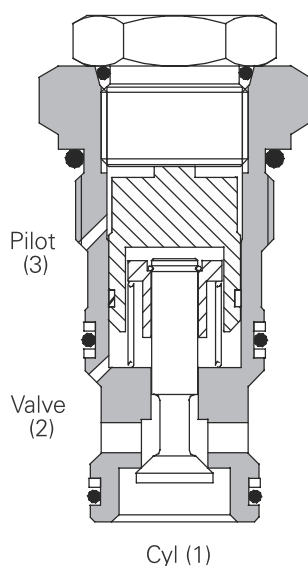
Operation

Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

Sectional view



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)

Rated flow	90 L/min (24 USgpm)	
Max pressure	350 bar (5000 psi)	
Pilot ratio	4:1	
Cartridge material	Working parts hardened and ground steel. Electroless zinc plated body.	
Standard housing material	Standard aluminium (up to 210 bar). Add suffix "377" for steel option.	
Mounting position	Unrestricted	
Cavity number	A12336 (See Section M)	
Torque cartridge into cavity	90 Nm (66 lbs ft)	
Weight	4CK90	0.27 kg (0.61 lbs)
	4CK95	1.33 kg (2.90 lbs)
	4CKK95	2.03 kg (4.51 lbs)
Seal kit number	SK832 (Nitrile) SK832V (Viton®)	
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)	
Operating temperature	-30°C to +90°C (-22° to +194°F)	
Leakage	0.3 milliliters/min nominal (5 dpm)	
Nominal viscosity range	5 to 500 cSt	

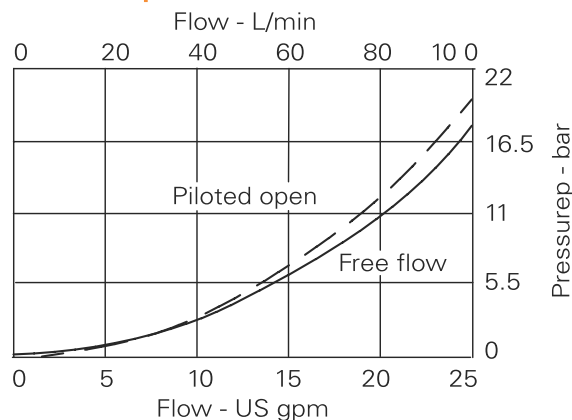
Viton is a registered trademark of E.I. DuPont

Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

Pressure drop

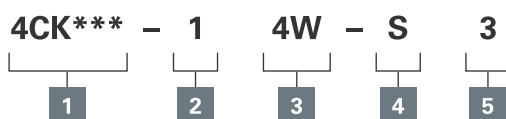


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CK90 - Check valve

Pilot-to-open, poppet type
90 L/min (24 USgpm) • 350 bar (5000 psi)

Model code



1 Basic code

4CK90 - Cartridge Only
4CK95 - Cartridge and Body
4CKK95 - Cartridges and Dual Body

2 Pilot port sizes

1 - Internal

3 Port sizes

Code	Port size	Housing number - body valves only			
		Aluminium single	Steel single	Aluminium double	Steel double
4W	1/2" BSP 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628
8T	1/2" SAE 1/4" SAE Pilot Port	B10806	B10922	C10807	C11561

4 Seals

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

SV - Viton (For high temperature and most special fluid applications)

5 Optional pilot seal

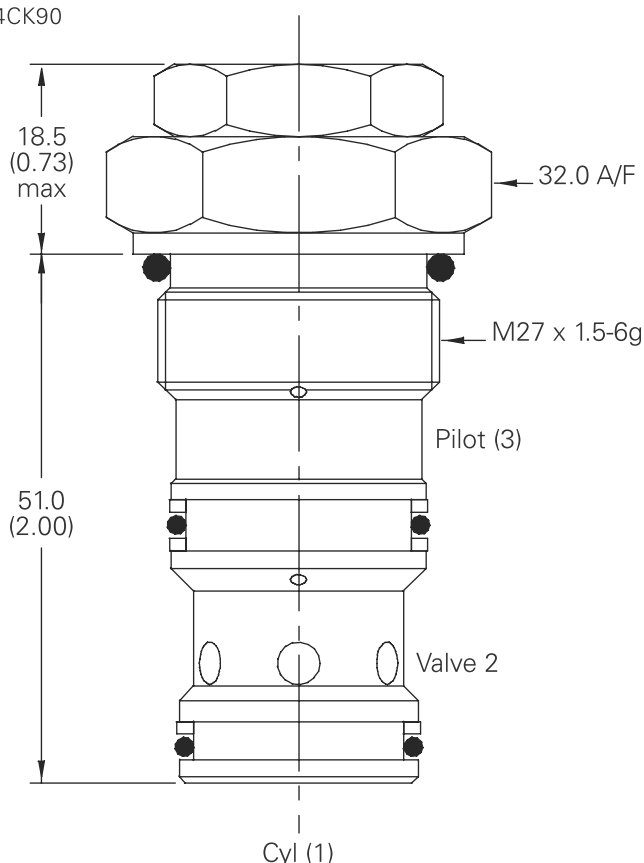
Omit if not required

Dimensions

mm (inch)

Cartridge only

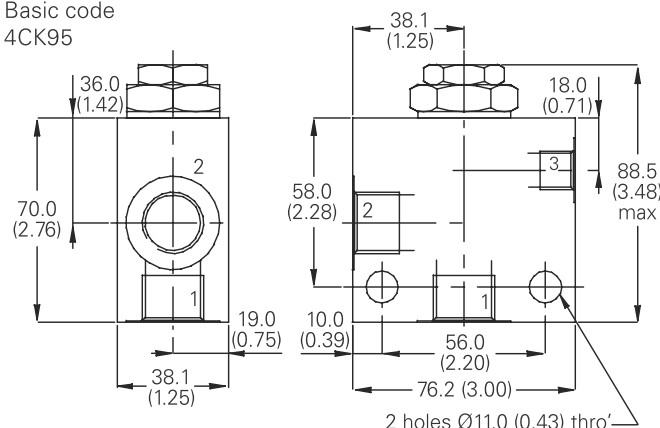
Basic code
4CK90



Note: For applications above 210 bar (3000 psi) please consult our technical department.

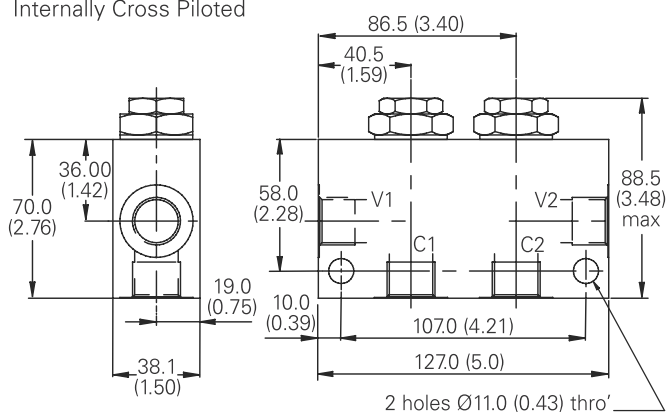
Complete valve

1/2" Ports
Basic code
4CK95



Dual valve

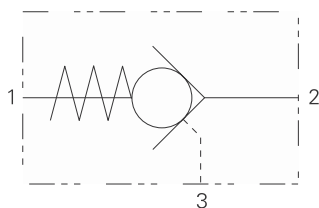
1/2" Ports
Basic code 4CKK95
Internally Cross Piloted



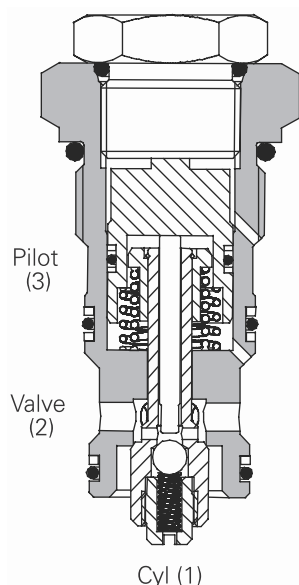
Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CKD90 - Check valve

Pilot-to-open, poppet type with decompression stage
90 L/min (24 USgpm) • 420 bar (6000 psi)



Sectional view



Description

A decompression pilot check can be used in most applications that use a standard pilot operated check. Free flow in one direction and load holding in the other. The decompression feature allows locked-in pressure to decay in a controlled fashion, reducing hydraulic noise and instability caused by the rapid loss of energy from the actuator. The valve is effective in clamping circuits and when used with intensifiers or when there are high load induced pressures.

Operation

The ball and poppet are held onto their respective seats by spring force, ensuring positive sealing as long as the pressure on port 1 is equal to or greater than the pressure on port 2. As soon as the pressure on port 2 exceeds the pressure on port 1 plus the spring force, the valve opens from 2 to 1. In order to pass flow in the reverse direction, pilot pressure must be applied to port 3. Once this reaches the required level, the pilot piston acting on the pin in the Center of the poppet lifts the ball off its seat, enabling

the fluid to decompress and thus reducing the load pressure acting on port 1. As the load pressure decreases, the pilot pressure required to open the main stage also decreases and when the correct pilot pressure is reached, the main stage poppet is lifted off its seat by the advancing pilot piston, allowing full flow from 1 to 2.

When calculating the pilot pressure, it must be remembered that any back pressure on port 2 will cause this to increase on a 1:1 ratio.

Features

Decompression stage reduces hydraulic noise on rapid loss of pressure. Precision ground ball and hardened and ground poppet ensure positive sealing and long, trouble-free working life.

This valve is directly interchangeable with the 4CK90 check valve and 1CE*90 series overcenter valve.

Performance data

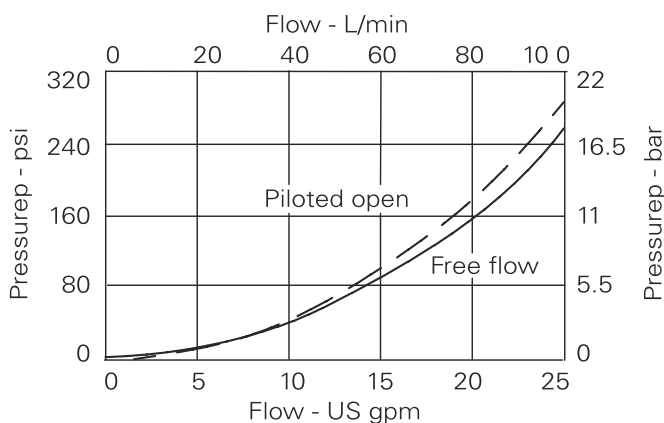
Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)

Rated flow	90 L/min (24 USgpm)
Max pressure	Cylinder Port 1 420 bar (6000 psi) Ports 2 & 3 350 bar (5000 psi)
Pilot ratio	25:1 decompression stage 3: main stage
Cartridge material	Working parts hardened and ground steel. Electroless nickel plated body.
Standard Housing Material	Standard aluminium (up to 210 bar*). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A12336
Torque cartridge into cavity	90 Nm (66 lbs ft)
Weight	0.243 kg (0.54 lbs)
Seal kit number	SK986 (Nitrile) SK986V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22° to +194°F)
Leakage	0.3 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E.I. DuPont

Pressure drop

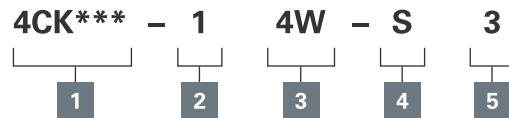


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CKD90 - Check valve

Pilot-to-open, poppet type with decompression stage
90 L/min (24 USgpm) • 420 bar (6000 psi)

Model code



1 Basic code

4CKD90 - Cartridge only
4CKD95 - Cartridge and Body
4CKKD95 - Cartridges and Dual Body

2 Pilot port sizes

1 - Internal

3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium double	Steel double
4W	1/2" BSP 1/4" BSP Pilot Port	B13625	B13626	C13627	C13628
8T	1/2" SAE 1/4" SAE Pilot Port	B10806	B10922	C10807	C11561

4 Seals

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

SV - Viton (For high temperature and most special fluid applications)

5 Optional pilot seal

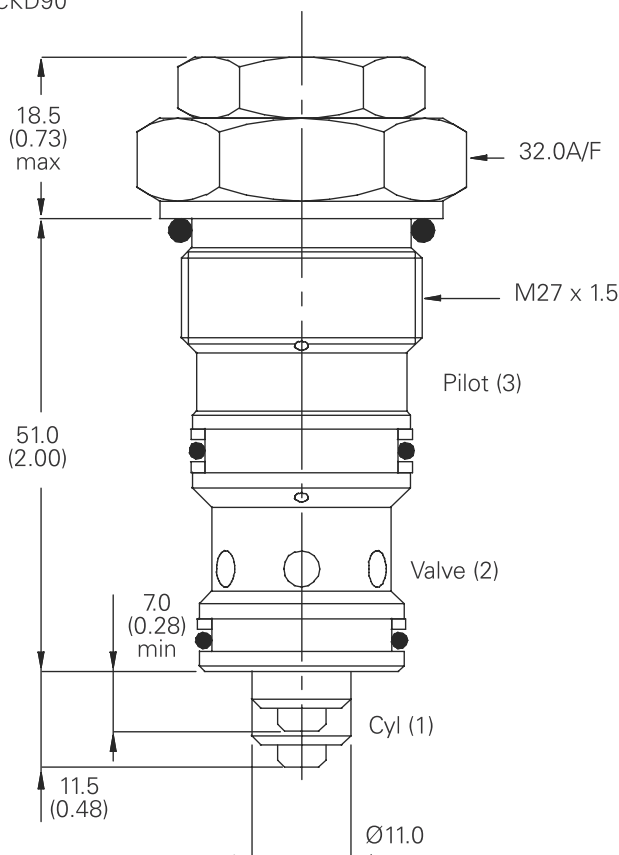
Omit if not required

Dimensions

mm (inch)

Cartridge only

Basic code
4CKD90



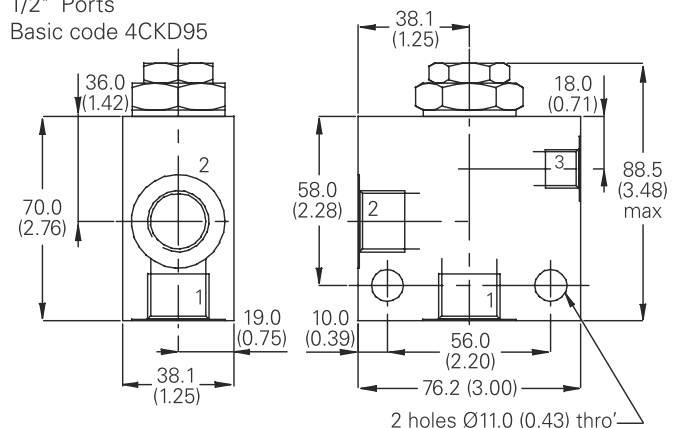
Note: For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

Note: Ensure cavity clears nose end of cartridge.

Complete valve

1/2" Ports

Basic code 4CKD95

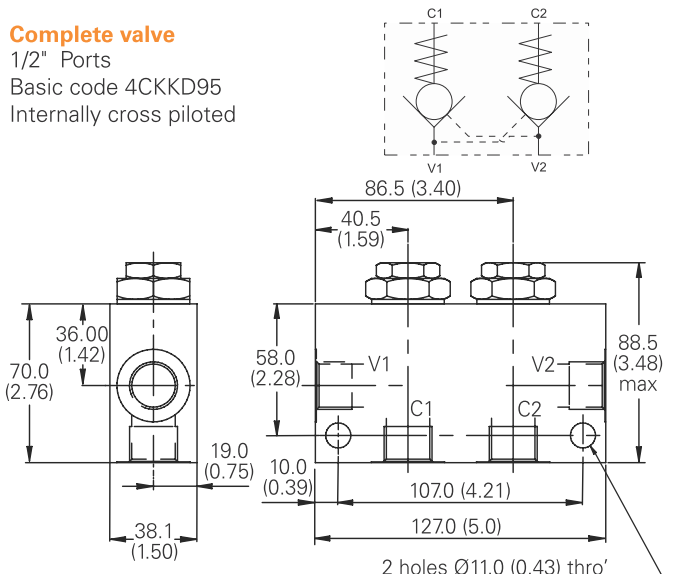


Complete valve

1/2" Ports

Basic code 4CKKD95

Internally cross piloted

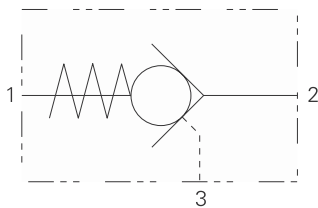


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CK120 - Check valve

Pilot-to-open, poppet type

120 L/min (32 USgpm) • 350 bar (5000 psi)



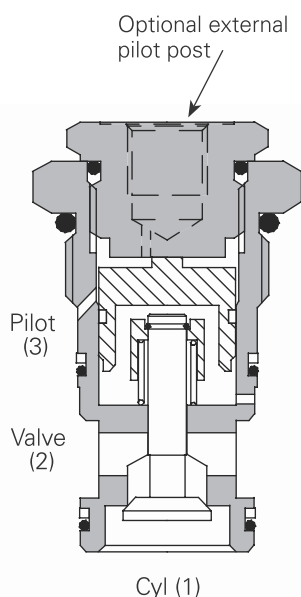
Operation

Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

Sectional view



Performance data

Ratings and specifications

Figures based on: Oil Temp = 40° C Viscosity = 32 cSt (150 SUS)

Rated flow	120 L/min (32 USgpm)
Max pressure	350 bar (5000 psi)
Pilot ratio	3:1
Cartridge material	Working parts hardened and ground steel. Zinc plated body.
Standard housing material	Standard aluminium (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A877 (See Section M)
Torque cartridge into cavity	100 Nm (74 lbs ft)
Weight	4CK120 0.28 kg (0.62 lbs) 4CK125 1.15 kg (2.54 lbs) 4CKK125 1.96 kg (4.32 lbs)
Seal kit number	SK381 (Nitrile) SK381V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22° to +194°F)
Leakage	0.3 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

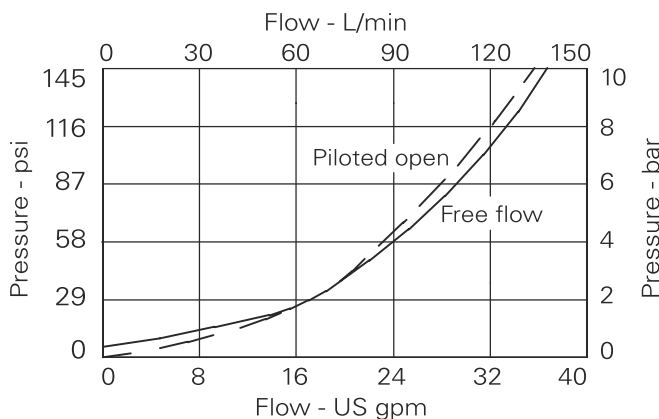
Viton is a registered trademark of E.I. DuPont

Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

Pressure drop

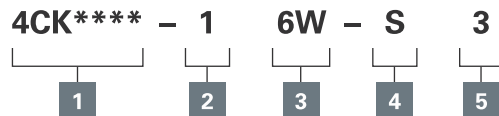


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CK120 - Check valve

Pilot-to-open, poppet type
120 L/min (32 USgpm) • 350 bar (5000 psi)

Model code



1 Basic code

4CK120 - Cartridge Only
4CK125 - Cartridge and Body
4CKK125 - Cartridges and Dual Body

2 Pilot port sizes

Code	Port size
1	Internal
2W	1/4" BSP (External Pilot). Omit for bodied valves
4T	1/4" SAE (External Pilot). Omit for bodied valves

4 Seals

S - Nitrile (For use with most industrial hydraulic oils)
SV - Viton (For high temperature and most special fluid applications)

3 Port sizes - bodied valves only

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium double	Steel double
6W	3/4" BSP 1/4" BSP Pilot Port	B6898	B5544	C2543	C1200
12T	3/4" SAE 1/4" SAE Pilot Port	B8200		C10629	C16434
16T	1" SAE 1/4" SAE Pilot Port	B10708	B11814		

5 Optional pilot seal

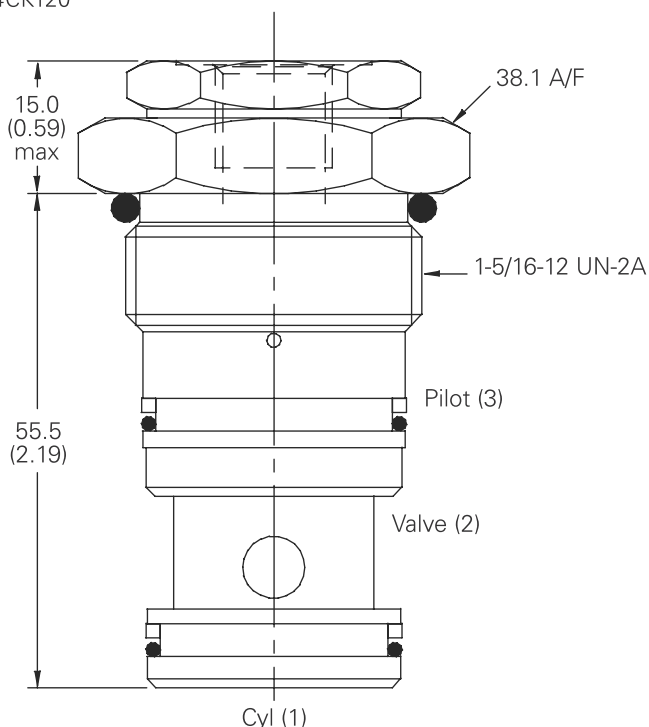
Omit if not required

Dimensions

mm (inch)

Cartridge only

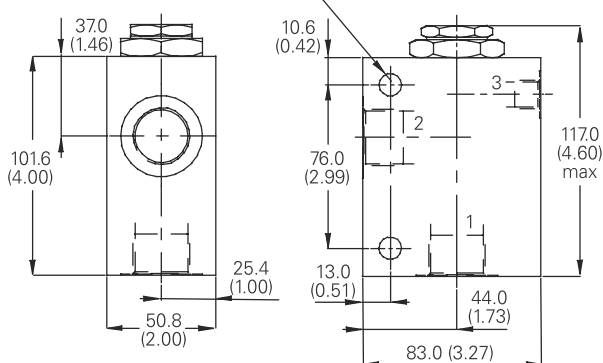
Basic code
4CK120



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

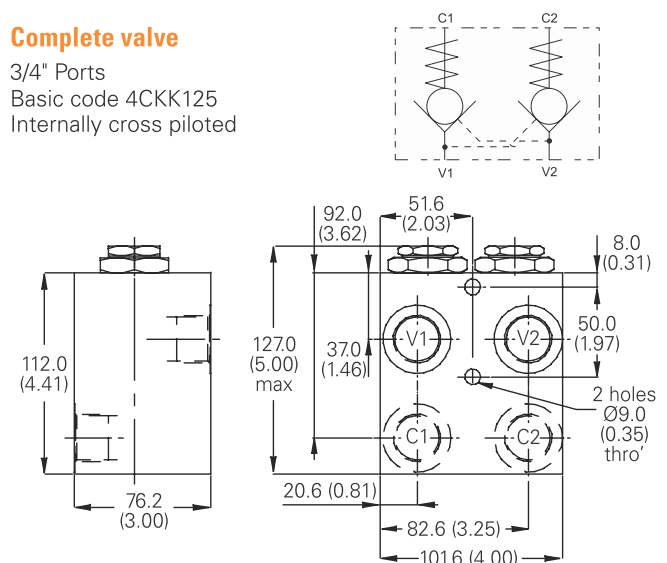
Complete valve

3/4", 1/2" Ports
Basic code 4CK125
2 holes Ø10.5 (0.41) thro'



Complete valve

3/4" Ports
Basic code 4CKK125
Internally cross piloted

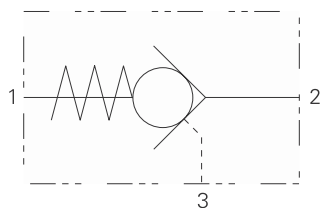


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CK300 - Check valve

Pilot-to-open, poppet type

300 L/min (80 USgpm) • 350 bar (5000 psi)



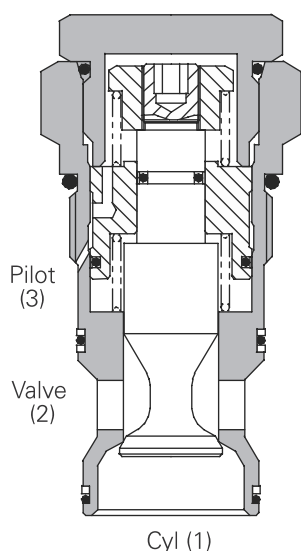
Operation

Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

Sectional view



Performance data

Ratings and specifications

Figures based on oil temp of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	300 L/min (80 USgpm)
Max pressure	350 bar (5000 psi)
Pilot ratio	3:1
Cartridge material	Working parts hardened and ground steel. Zinc nickel plated body.
Standard housing material	Standard aluminium (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A6935 (See Section M)
Torque cartridge into cavity	150 Nm (110 lbs ft)
Weight	4CK300 0.28 kg (0.62 lbs) 4CK350 1.15 kg (2.54 lbs) 4CKK350 1.96 kg (4.32 lbs)
Seal kit number	SK683 (Nitrile) SK683V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22° to +194°F)
Leakage	0.5 milliliters/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

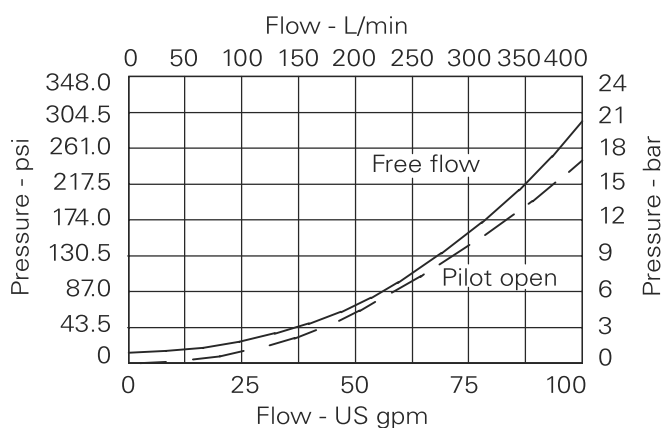
Viton is a registered trademark of E.I. DuPont

Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

Pressure drop

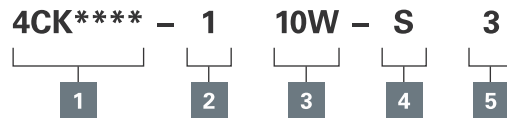


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CK300 - Check valve

Pilot-to-open, poppet type
300 L/min (80 USgpm) • 350 bar (5000 psi)

Model code



1 Basic code

4CK300 - Cartridge Only
4CK350 - Cartridge and Body
4CKK350 - Cartridges and Dual Body

2 Pilot port size

1 - Internal

3 Port sizes

Code	Port size	Housing number - body only			
		Aluminium single	Steel single	Aluminium double	Steel double
10W	1 1/4" BSP 1/4" BSP Pilot Port	B6814	B8610	C8704	C8705
20T	1 1/4" SAE 1/4" SAE Pilot Port	B10630	B11474	C10811	C11564

4 Seals

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

SV - Viton (For high temperature and most special fluid applications)

5 Optional pilot seal

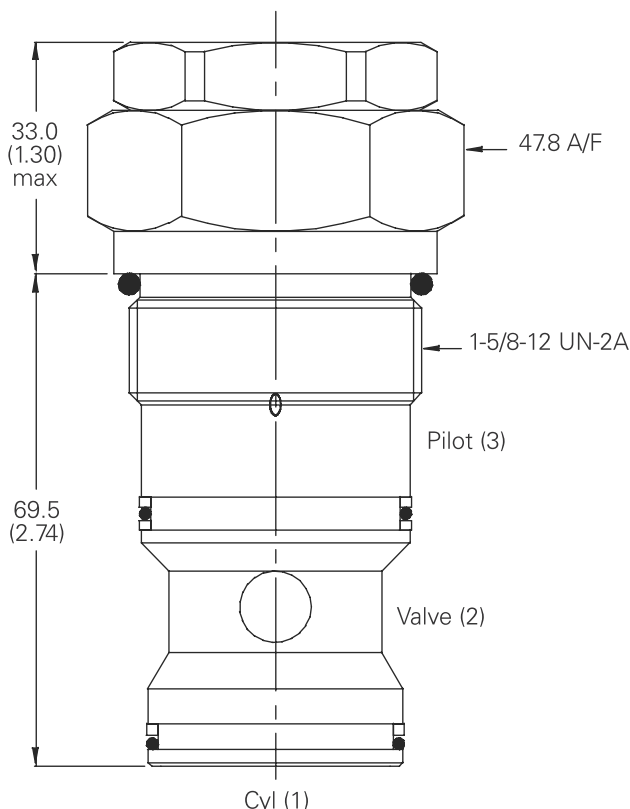
Omit if not required

Dimensions

mm (inch)

Cartridge only

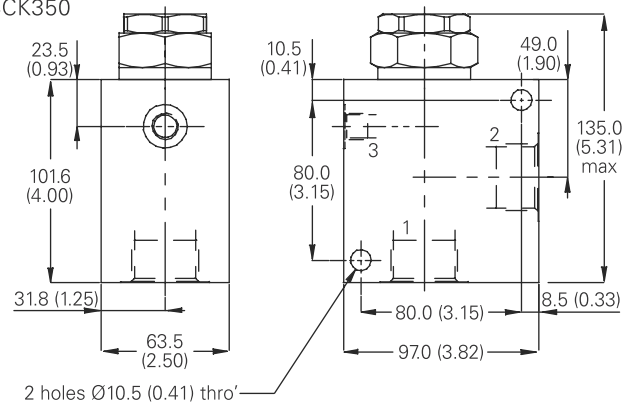
Basic code
4CK300



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

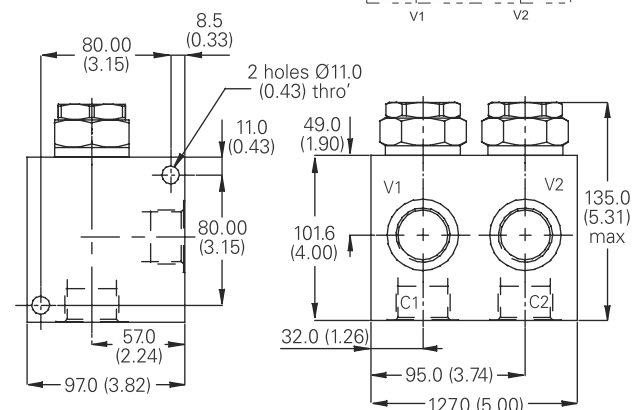
Single valve

1 1/4" Ports
Basic code
4CK350



Dual valve

1 1/4" Ports
Basic code 4CKK350
Internally Cross Piloted

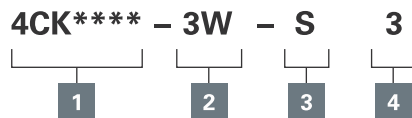


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4CK Series - Check valve

Alternative body arrangements for 30 to 300 liters/min valves

Model code



1 Basic code

4CK36 - Cartridge and Body Through Ported
4CBK35 - Cartridge and Body Banjo Mounted
4CKG35 - Cartridge and Body Gasket Mounted
4CKK35 - Cartridge and Dual Body
4CK156 - Cartridge and Body Through Ported
4CBK150 - Cartridge and Body Banjo Mounted
4CKG150 - Cartridge and Body Gasket Mounted
4CK356 - Cartridge and Body Through Ported
4CKG350 - Cartridge and Body Gasket Mounted

3 Seals

S - Nitrile (For use with most industrial hydraulic oils)
SV - Viton (For high temperature and most special fluid applications)

4 Optional pilot seal

3 - Required
 Omit if not required

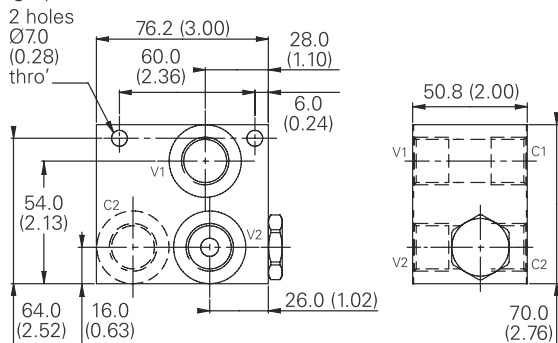
2 Port sizes

Code	Port size	Housing number		Aluminium	Steel	Aluminium	Aluminum	Steel	Aluminum	Steel
		Aluminium	Steel							
4CK30	Cartridge	Through Ported Body - Only	Banjo Mounted	Gasket Mounted Sub-Assembly	Sub-Assembly	Cross Piloted			Sub-Assembly	
3W	3/8" BSP	B13542	B13543	AXP13617-3W-S	BXP13621-3W-S	-			BXP24147-3W-S	BXP24147-3W-S-377
6T	3/8" SAE	-	-	-	-				BXP24147-6T-S-377	
4CK120	Cartridge									
6W	3/4" SAE	B13629	B13630	AXP13565-6W-S	BXP13634-6W-S	BXP13634-6W-S-377				
4CK300	Cartridge									
10W	1 1/4" BSP	C13637	C13638		CXP20647-10W-S	CXP20647-10W-S-377				

Complete valves - 4CK30 cartridge, 3/8" ports

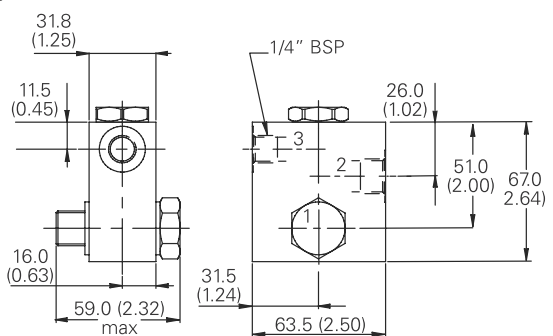
Complete valve

Through ported • Basic code 4CK36



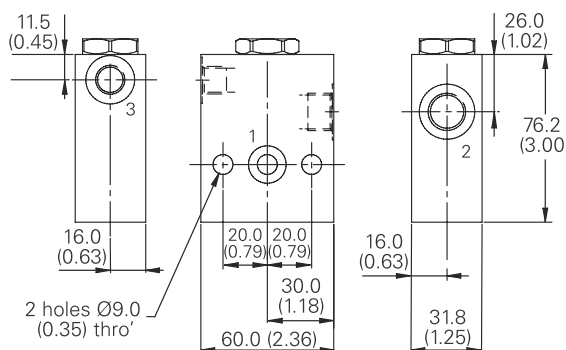
Complete valve

Banjo mounted • Basic code 4CBK35



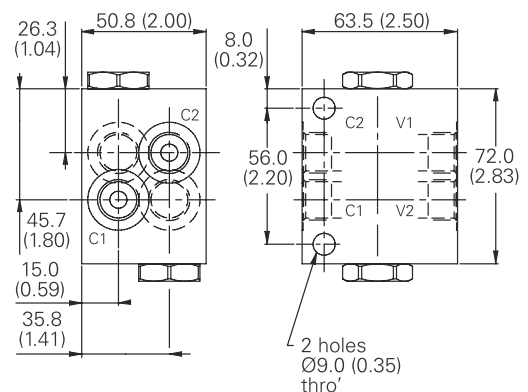
Complete valve

Gasket mounted • Basic code 4CKG35



Complete valve

Internally cross piloted • Basic code 4CKK35



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

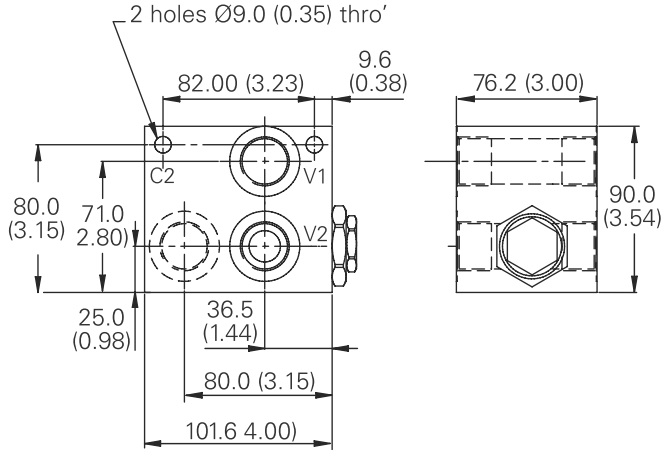
4CK Series - Check valve

Alternative body arrangements for 30 to 300 liters/min valves

Complete valves - 4CK120 cartridge, 3/4" ports

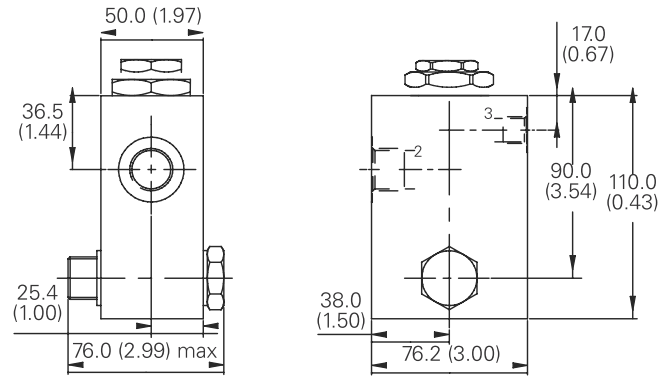
Complete valve

Through Ported
Basic code 4CK156



Complete valve

Banjo Mounted
Basic code 4CBK150

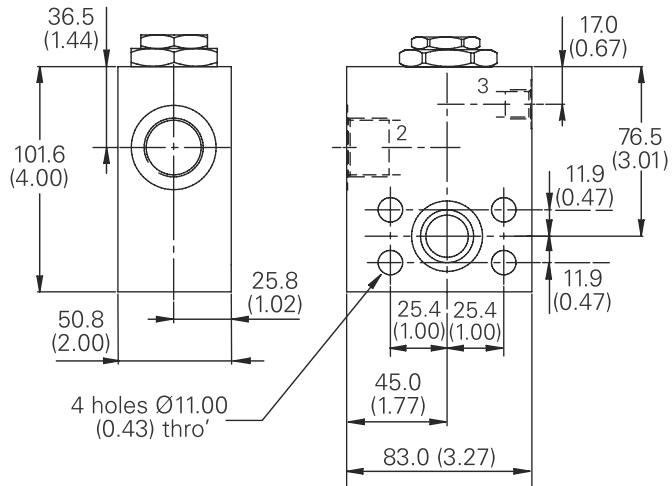


Note: For applications above 210 bar please consult our technical department or use the steel body

SAE 6000 PSI Flange ports - 4CK120 cartridge, 3/4" ports

Complete valve

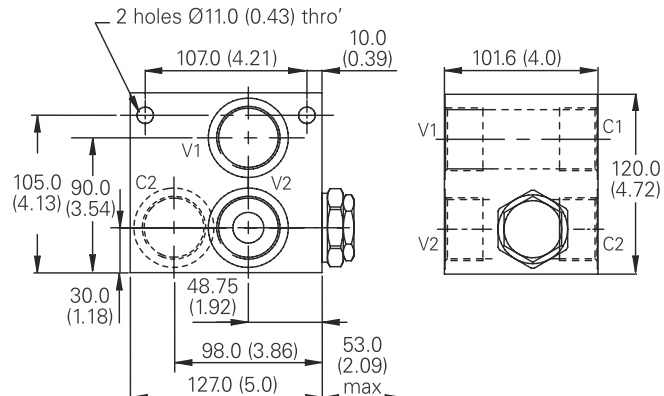
Gasket Mounted
Basic code 4CKG150



Complete valves - 4CK300 cartridge, 1 1/4" ports

Complete valve

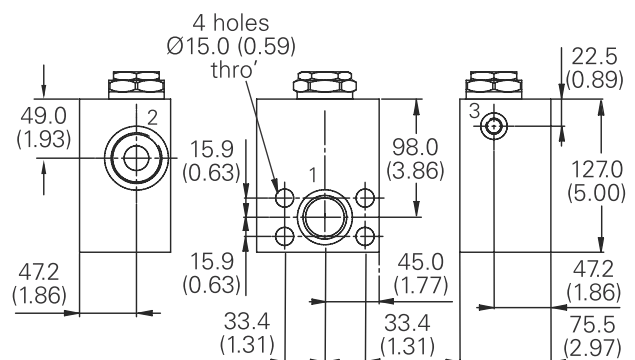
Through ported
Basic code 4CK356



SAE 6000 PSI Flange ports - 4CK300 cartridge, 1 1/4" ports

Complete valve

Gasket Mounted
Basic code 4CKG350

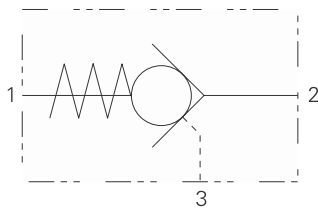


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

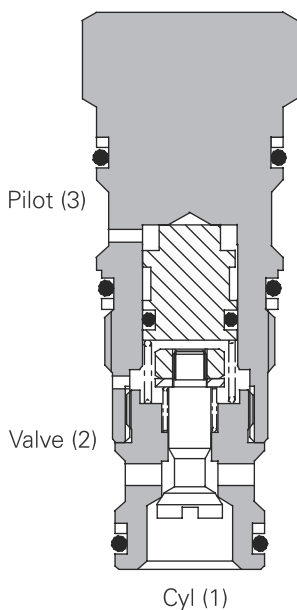
4SK30 - Check valve

Pilot-to-open, poppet type

30 L/min (8 USgpm) • 350 bar (5000 psi)



Sectional view



Operation

Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	30 L/min (8 USgpm)	
Maximum pressure	350 bar (5000 psi)	
Pilot ratio	3:1 and 5:1	
Cartridge material	Working parts hardened and ground steel. Zinc plated body.	
Mounting position	Unrestricted	
Cavity number	A20090-T11A	
Torque cartridge into cavity	45 Nm (33 lbs ft.)	
Weight	0.18 kg (0.39 lbs)	
Seal kit number	SK1079 SK1079V	(Nitrile) (Viton®)
Recommended Filtration level	BS5540/4 Class 18/13 (25 micron nominal)	
Operating temperature	-30° to +90° C (-22° to +194°F)	
Leakage	0.3 ml/min nominal	
Nominal viscosity range	5 to 500 cSt	

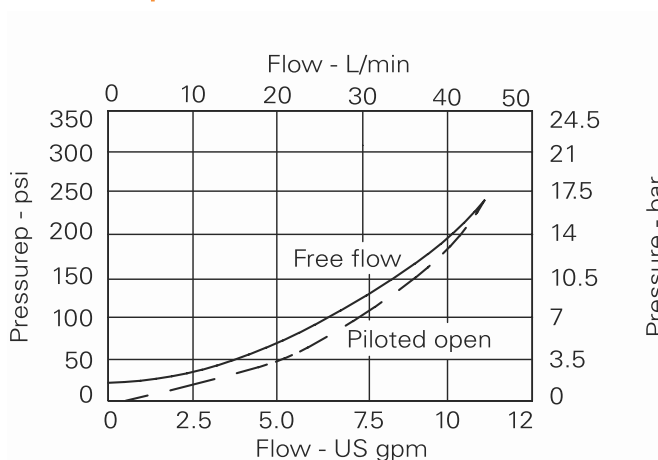
Viton is a registered trademark of E. I. DuPont

Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

Pressure drop

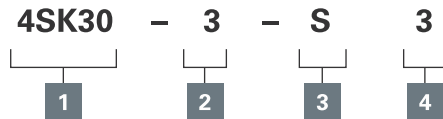


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4SK30 - Check valve

Pilot-to-open, poppet type
30 L/min (8 USgpm) • 350 bar (5000 psi)

Model code



1 Basic code

4SK30 - Complete valve

2 Pilot ratio

3 - 3:1
5 - 5:1

3 Seals

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

4 Optional pilot seal

Omit if not required

Dimensions

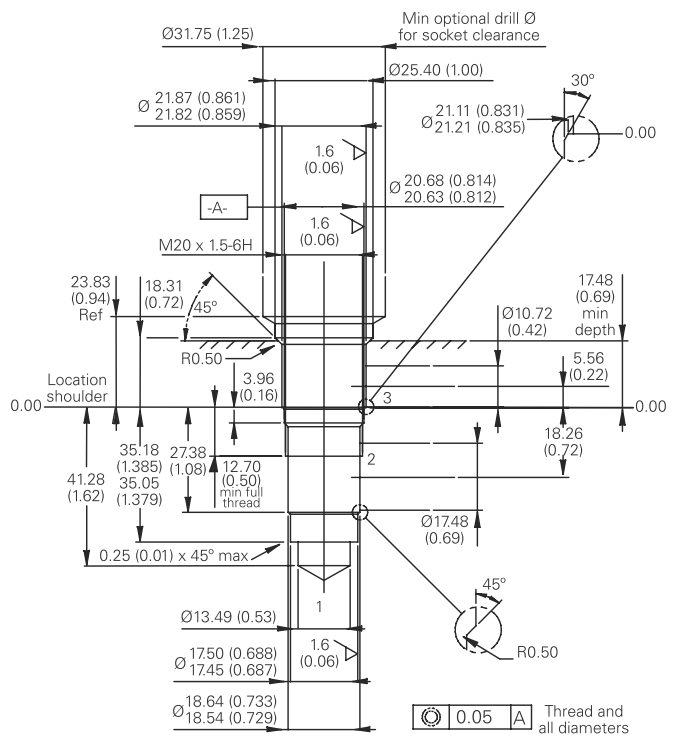
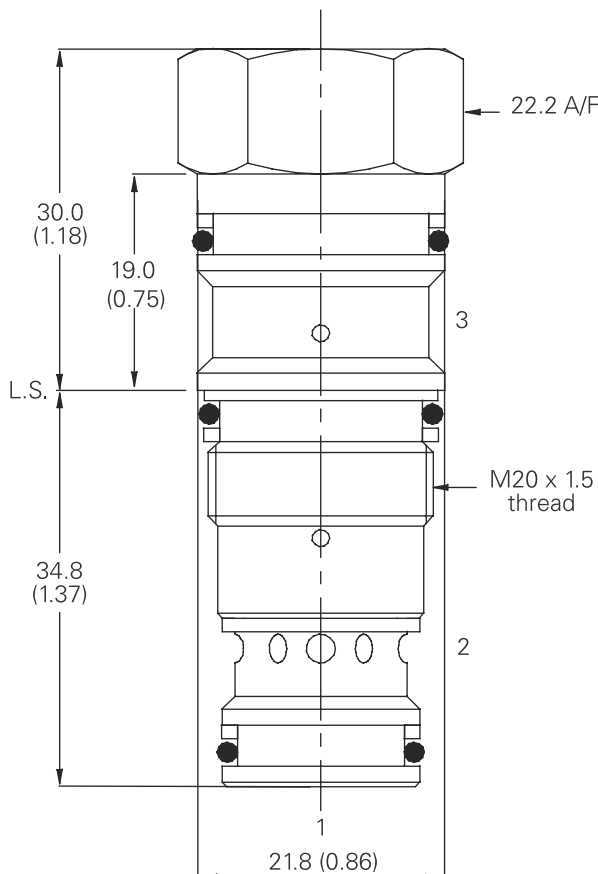
mm (inch)

Cartridge only

Basic code
4SK30

Cavity

Basic code A20090-T11A
Form Drill TD-11A
Form Reamer TR11A

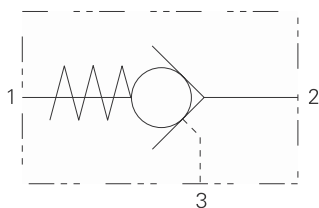


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4SK90 - Check valve

Pilot-to-open, poppet type

90 L/min (24 USgpm) • 350 Bar (5000 psi)



Operation

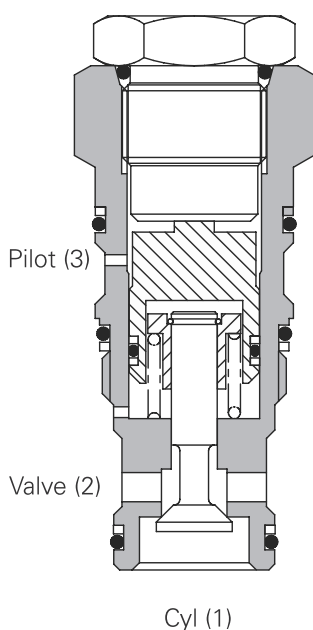
Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating. Pressure applied

to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

Sectional view



Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	90 L/min (24 USgpm)
Maximum pressure	350 bar (5000 psi)
Pilot ratio	4:1
Cartridge material	Working parts hardened and ground steel. Zinc plated body
Mounting position	Unrestricted
Cavity number	A20092-T2A
Torque cartridge into cavity	60 Nm (44 lbs. ft.)
Weight	0.39 kg (0.86 lbs.)
Seal kit number	SK1093 (Nitrile) SK1093V (Viton®)
Recommended Filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22° to +194°F)
Leakage	0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

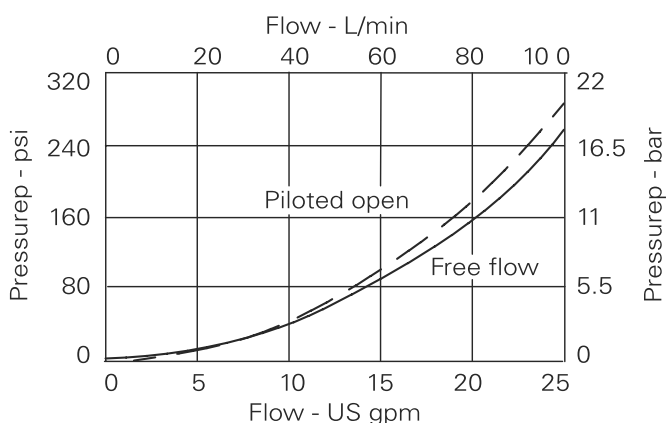
Viton is a registered trademark of E. I. DuPont

Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

Pressure drop

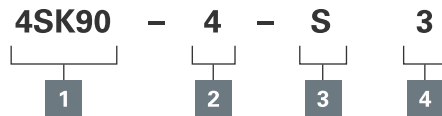


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4SK90 - Check valve

Pilot-to-open, poppet type
90 L/min (24 USgpm) • 350 Bar (5000 psi)

Model code



1 Basic code

4SK90 - Complete valve

2 Pilot ratio

4 - 4:1

3 Seals

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

4 Optional pilot seal

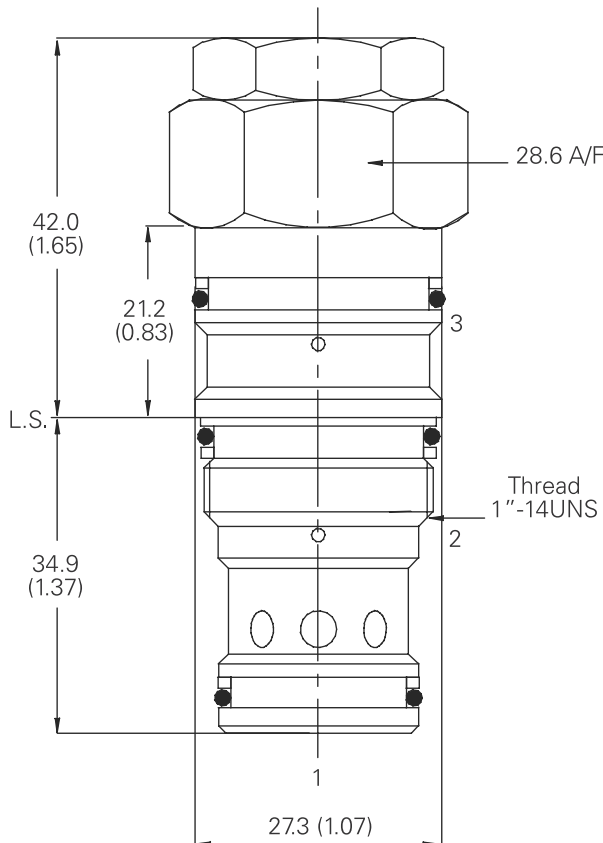
Omit if not required

Dimensions

mm (inch)

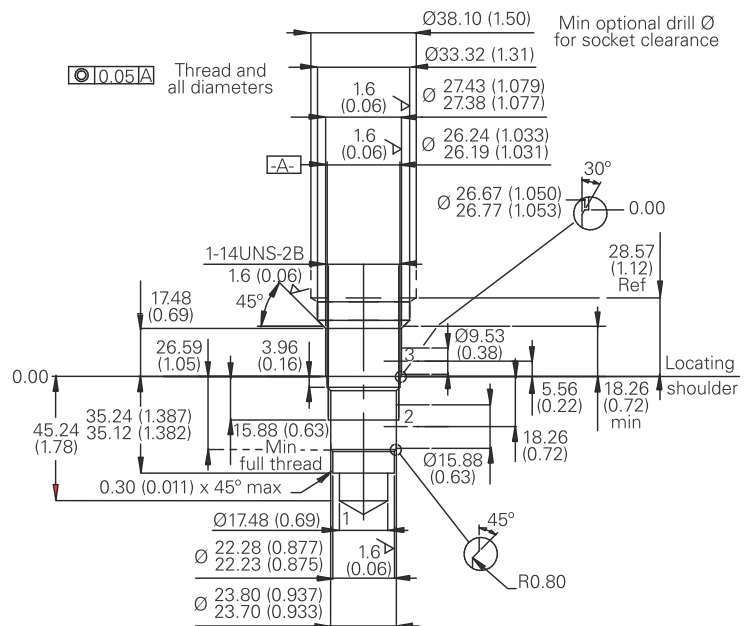
Cartridge only

Basic code
4SK90



Cavity

Basic code A20092-T2A
Form drill TD-2A
Form reamer TR-2A



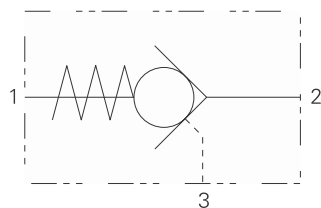
Note: For applications above 210 bar (3000 psi) please consult our technical department or use the steel body.

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

4SK140 Series - Check valve

Pilot-to-open, poppet type

140 L/min (37 USgpm) • 350 bar (5000 psi)



Operation

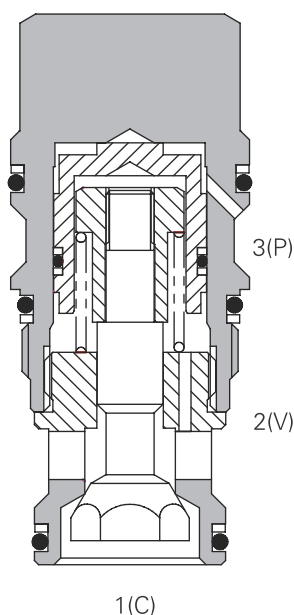
Pressure on the valve port 2 causes the poppet to lift against the spring force, allowing the flow to the cylinder port 1. Reverse flow is prevented by the poppet reseating.

Pressure applied to the pilot port 3 will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. Fits the same cavity as the overcenter valves of a similar size.

Sectional view



Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	140 L/min (37 USgpm)
Maximum pressure	350 bar (5000 psi)
Pilot ratio	3:1
Cartridge material	Working parts hardened and ground steel. Zinc plated body.
Mounting position	Unrestricted
Cavity number	A20094-T17A
Torque cartridge into cavity	200 Nm (150 lbs. ft.)
Weight	0.44 kg (0.96 lbs.)
Seal kit number	SK1116 (Nitrile) SK1116V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30°C to +90°C (-22° to +194°F)
Leakage	0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

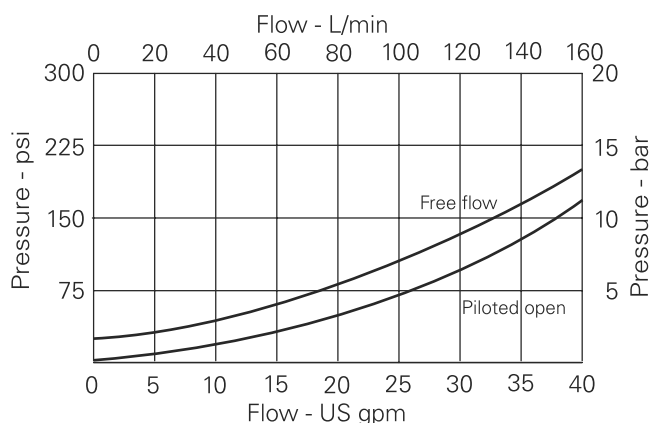
Viton is a registered trademark of E. I. DuPont

Description

Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

These valves are ideally suited for fitting directly into a cylinder, giving economy of installation, direct control of cylinder movement and ease of servicing.

Pressure drop

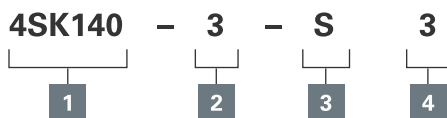


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4SK140 Series - Check valve

Pilot-to-open, poppet type
140 L/min (37 USgpm) • 350 bar (5000 psi)

Model code



1 Function

4SK140 - Complete valve

2 Pilot ratio

3 - 3:1

3 Seals

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

4 Optional pilot seal

Omit if not required

Dimensions

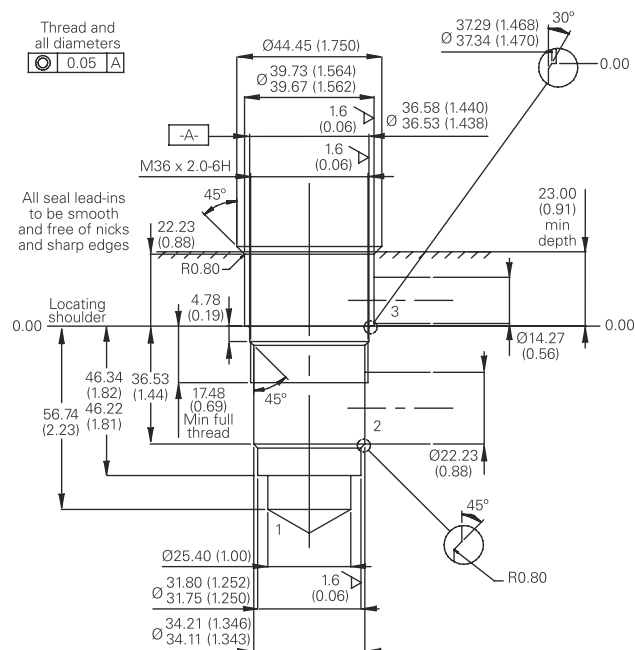
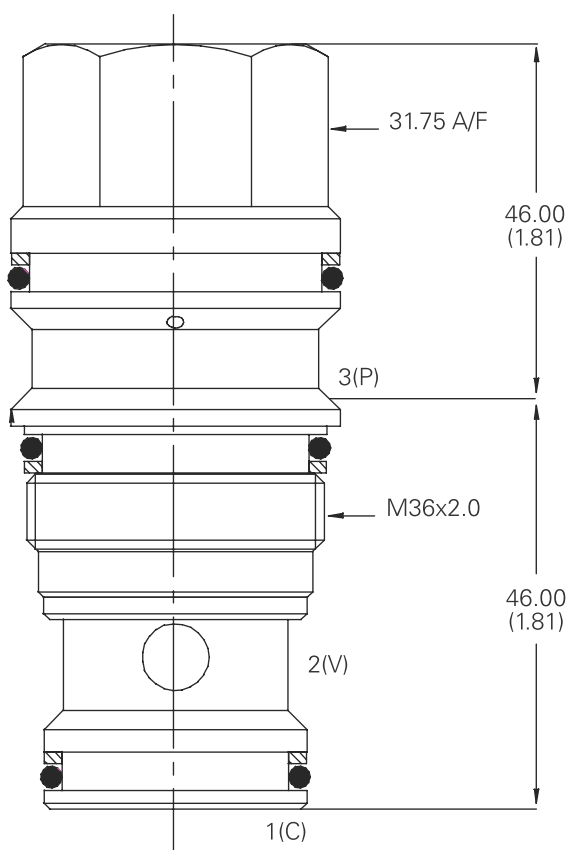
mm (inch)

Cartridge only

Basic code
4SK140

Cavity

Basic code A20094-T17A
Form drill TD-17A
Form reamer TR-17A

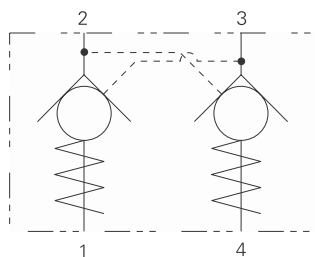


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

DPC2-8 - Check valve

Dual, pilot-to-open, poppet type

19 L/min (5 USgpm) • 240 bar (3500 psi)



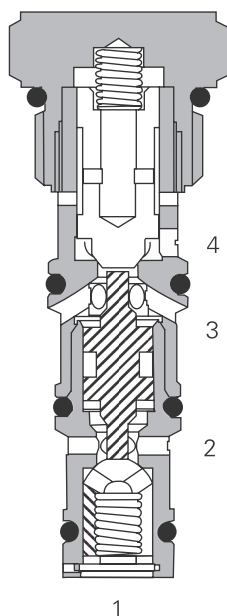
Operation

The valve allows flow from port 2 to port 1 or from port 3 to port 4 when the spring bias is overcome. Flow is blocked from ports 4 to 3 and from 1 to 2 until pilot pressure is applied to ports 2 and 3 respectively.

Features

Hardened and ground poppets to give minimal internal leakage and long life.

Sectional view



Performance data

Ratings and specifications

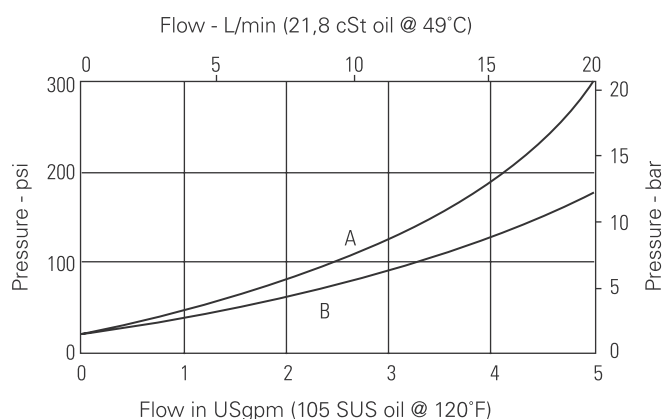
Performance data is typical with fluid at 21,8 cSt (105 SUS) and 49°C (120°F)

Typical application pressure (all ports)	240 bar (3500 psi)
Cartridge fatigue pressure (infinite life)	240 bar (3500 psi)
Rated inlet flow	19 L/min (5 USgpm)
Pilot ratio	3:1
Maximum internal leakage	
Ports 2 to 3 and 3 to 2:	140 cc/min. (8.5 in ³ /min.) @ 240 bar (3500 psi)
Ports 4 to 3 and 1 to 2:	5 drops/min. @ 240 bar (3500 psi)
Free flow cracking pressure @ 1 L/min (0.25 USgpm)	1,72 bar (25 psi)
Temperature range	–40° to 120° C (–40° to 248° F)
Cavity	C-8-4
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	0,08 kg (0.18 lbs.)
Seal kit	02-370387 Urethane

Description

This is a dual pilot-to-open check valve ideal for stabilizer cylinders fitting directly into the cylinder reducing pipework to a minimum.

Pressure drop



Warning

Do not use Pilot-to-Open Check Valves in load holding applications where either overrunning loads are possible or load release speed is critical. Failure to observe these guidelines may result in bodily injury or damage to equipment.

A – Port 2 to Port 1
B – Port 3 to Port 4

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

DPC2-8 - Check valve

Dual, pilot-to-open, poppet type
19 L/min (5 USgpm) • 240 bar (3500 psi)

Model code

DPC2 - 8 U - A - 25 - * - ** - 00

1 2 3 4 5 6 7 8

1 Function

DPC2 - Dual pilot operated check

2 Size

8 - 8 size

3 Seal material

U - Urethane

4 Pilot leakage

A - Standard

5 Crack pressure

25 - 1,7 bar (25 psi)

6 Body

Omit for cartridge only
A - Aluminum
S - Steel

7 Port size

Code	Port size	Housing number	
		Aluminium fatigue rated	Steel fatigue rated
0	Cartridge only		
2G	1/4" BSPP	02-160747	02-160753
3G	3/8" BSPP	02-160748	02-160754
4T	SAE 4	02-160749	02-160751
6T	SAE 6	02-160750	02-160752

See section J for housing.

8 Special features

00 - None

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

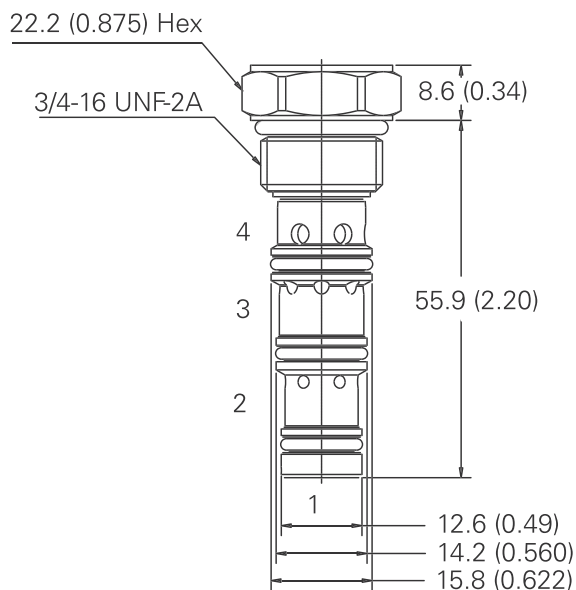
Dimensions

mm (inch)

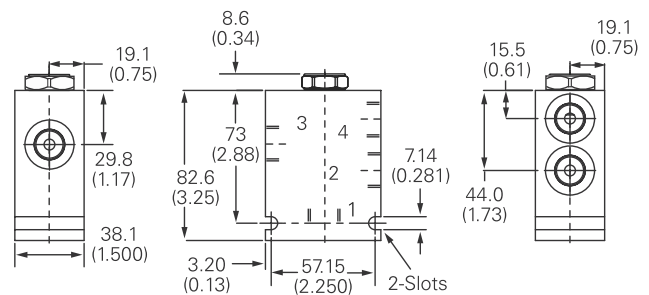
Note: Torque cartridge in Aluminum or Steel housing to 34-41 Nm (25-30 ft. lbs).

Cartridge only

Basic code
4SK140



Installation drawing (Steel)



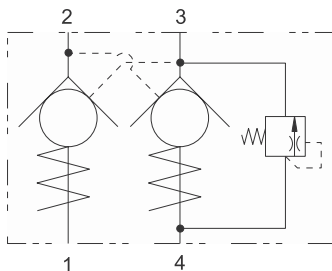
Warning

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

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

4CKKT - Check valve

Dual, pilot-to-open with thermal relief
25 L/min (6.6 USgpm) • 300 bar (4350 psi)



Operation

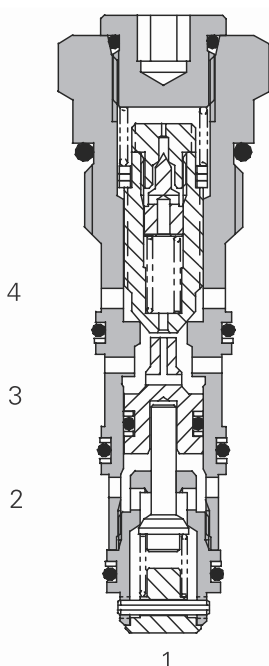
Pressure on the valve port causes the poppet to lift against the spring force, allowing the flow to the cylinder port. Reverse flow is prevented by the poppet reseating. Pressure applied to the pilot port will overcome the cylinder port pressure and lift the poppet from its seat, allowing flow from the cylinder to valve port.

In dual pilot check valves, each pilot section is cross connected to the opposite line giving automatic pilot operation in both directions. When the pressure in C2 rises above the setting of the relief valve, the relief valve will open, allowing flow to the V2 port, relieving pressure on the cylinder.

Features

Hardened and ground poppet gives excellent flow capability for valve size, positive sealing and long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits.

Sectional view



Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	25 L/min (6.6 USgpm)
Maximum pressure	300 bar (4350 psi)
Pilot ratio	3:1
Cartridge material	Working parts hardened and ground steel. Electroless zinc plated body.
Standard housing material	Standard aluminum (up to 210 bar). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A12744 (See Section M)
Torque cartridge into cavity	30 Nm (22 lbs. ft.)
Weight	4CKKT50 0.08 kg (0.18 lbs) 4CKKT55 0.34 kg (0.75 lbs)
Seal kit number	SK1120 (Nitrile) SK1120V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90° C (-22° to +194°F)
Leakage	C1 - V1 1.0 ml/min nominal (15 dpm) C2 - V2 0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

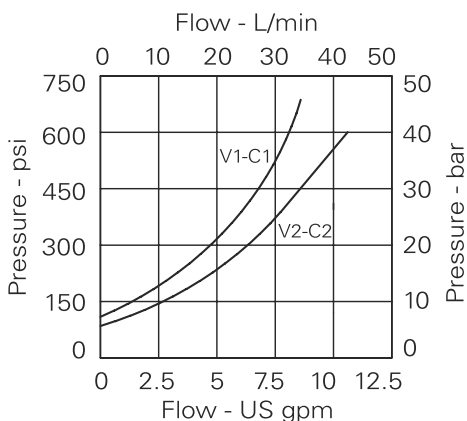
Viton is a registered trademark of E. I. DuPont

Description

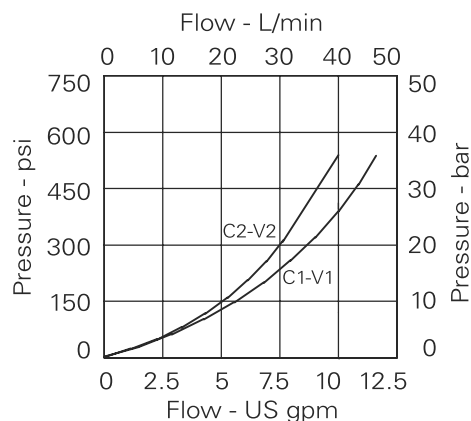
Pilot check valves allow flow to pass in one direction, with a low pressure drop, then prevent reverse flow until pilot pressure is applied. There are many applications for this valve type, the most common being to lock and hold a cylinder, or another hydraulic actuator, in position.

A pilot relief valve will protect the cylinder and hoses from thermal expansion of the hydraulic fluid. The maximum flow through the relief is 1.0l/min.

Pressure drop



Free flow



Piloted open

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

4CKKT - Check valve

Dual, pilot-to-open with thermal relief
25 L/min (6.6 USgpm) • 300 bar (4350 psi)

Model code

4CKKT** - 3W - 3 S 3 - 28

1 2 3 4 5 6

1 Basic code

4CKKT50 - Cartridge only
4CKKT55 - Cartridge and body

2 Port size - bodied valves only

Code	Port size	Housing number
Aluminium dual		
3W	3/8" BSP	B19240
6T	3/8" SAE	B19241
4W	1/2" BSP	B19228
8T	1/2" SAE	B19229

3 Pilot Ratio

3 - 3:1

4 Seals

S - Nitrile (For use with most industrial hydraulic oils)
SV - Viton (For high temperature and most special fluid applications)

5 Optional Pilot Seal

3 - Standard
Omit if not required

6 Pressure Setting

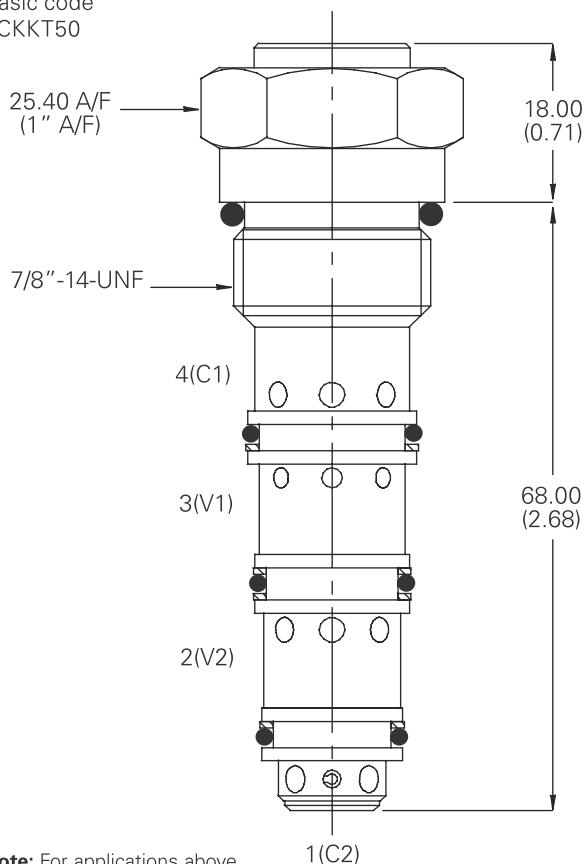
24 - 240 bar (3500 psi)
28 - 280 bar (4000 psi)
35 - 350 bar (5000 psi)

Description

mm (inch)

Cartridge only

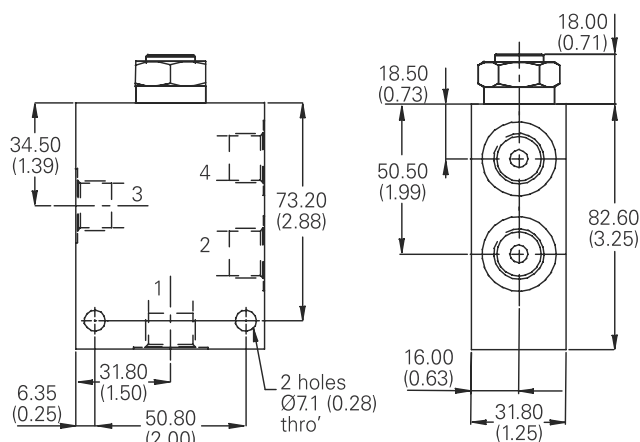
Basic code
4CKKT50



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

Dual valve

3/8" Ports
4CKKT55 Internally Cross -Piloted

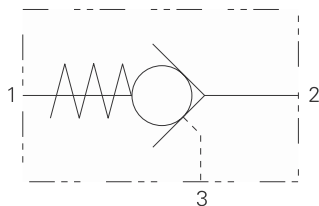


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

4KD25 - Check valve

Pilot-to-open with decompression stage

25 L/min (6 USgpm) • 700 bar (10000 psi)



Operation

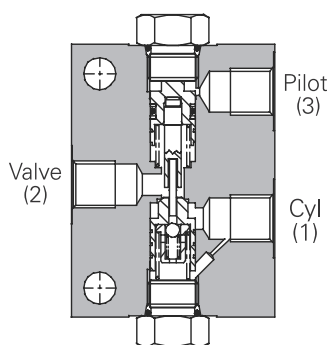
In free flow direction, flow through inlet unseats the poppet and flows out of the cylinder port. When the control valve is centered the load is locked. When pilot pressure is applied the piston unseats the small poppet in the center of

the main poppet. Flow through this small seat area lowers the load or locked pressure (decompression stage). With load pressure reduced the main poppet is then piloted fully open allowing reverse flow.

Features

Decompression feature for low pilot pressure requirements and to reduce hydraulic noise on rapid loss of pressure.

Sectional view



Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

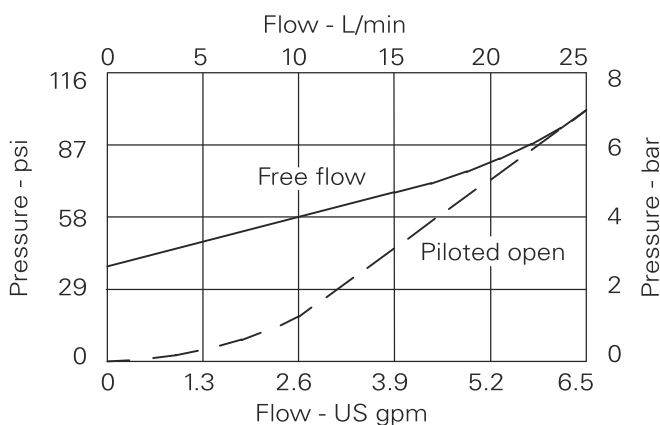
Rated flow	25 L/min (6 USgpm)
Maximum pressure	700 bar (10000 psi) Cylinder Port 140 bar (2000 psi) Pilot Port
Pilot ratio	25:1 Decompression 4:1 Full Flow
Body material	Steel
Mounting position	Line mounted
Weight	0.8 kg (1.8 lbs.)
Seal kit number	SK1060 (Nitrile) SK1060V (Viton®)
Recommended filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90° C (-22° to +194°F)
Nominal viscosity range	5 to 500 cSt

Viton is a registered trademark of E. I. DuPont

Description

Used to lock a cylinder or part of a circuit and prevent reverse flow until pilot pressure is applied. For use in high pressure, low flow circuits and circuits requiring decompression. Can be used in conjunction with the 1T16 pressure intensifier. See page J-42.

Pressure drop



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

4KD25 - Check valve

Pilot-to-open with decompression stage
25 L/min (6 USgpm) • 700 bar (10000 psi)

Model code

4KD25 - **N** **2W** - **S** **3**

1 2 3 4 5

1 Basic code

4KD25 - Complete valve

2 Adjustment means

N - Fixed

3 Port sizes - bodied valves only

2W - 1/4" BSP

4 Seals

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

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

5 'O' Ring on pilot piston

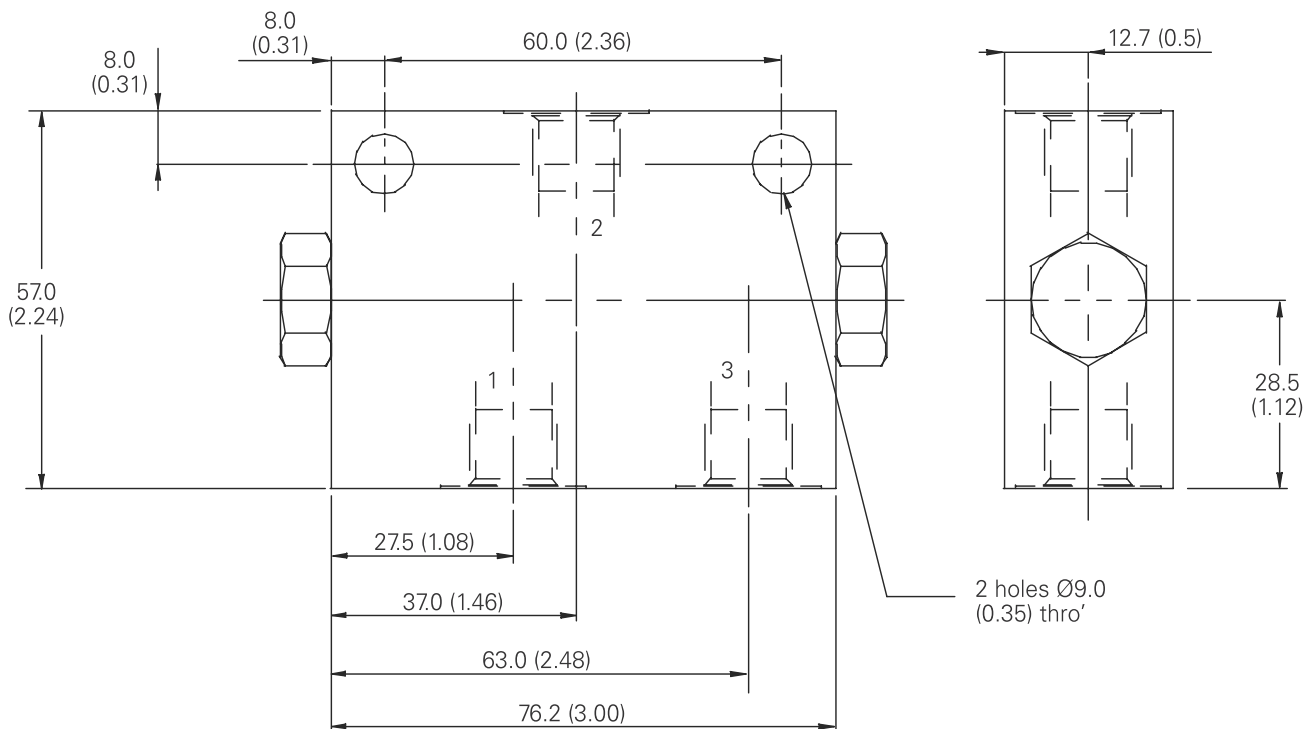
3 - Standard
Omit if not required

Dimensions

mm (inch)

Complete valve

1/4" Ports
Basic code
4KD25

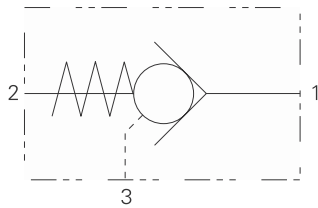


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

5CK30 - Check valve

Pilot-to-close. ball type

30 L/min (8 USgpm) • 350 bar (5000 psi)



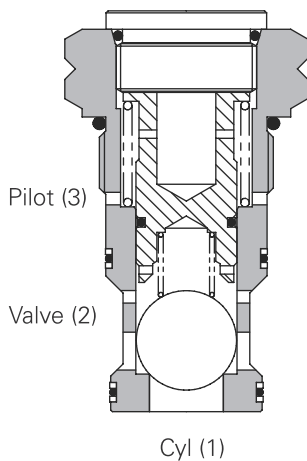
Operation

Pressure on the cylinder port causes the ball to lift against the spring force, allowing flow through to the valve port. Reverse flow is prevented by the ball reseating. Pressure applied to the pilot port will hold the ball against its seat, preventing flow from cylinder to valve.

Features

Easy flow path gives good pressure to flow characteristics and hardened components ensure a long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. They fit the same cavities as the 4CK pilot-to-open check valves, so care should be taken when selecting the valve.

Sectional view



Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	30 L/min (8 USgpm)
Maximum pressure	350 bar (5000 psi)
Pilot ratio	2:1
Cartridge material	Working parts hardened and ground steel. Zinc nickel plated body.
Standard housing material	Standard aluminum (up to 210 bar). Add suffix "377" for steel option
Mounting position	Unrestricted
Cavity number	A6610 (See Section M)
Torque cartridge into cavity	45 Nm (33 lbs. ft.)
Weight	0.08 kg (0.18 lbs)
Seal kit number	SK829 (Nitrile) SK829V (Viton®)
Recommended Filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90°C (-22° to +194°F)
Leakage	0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

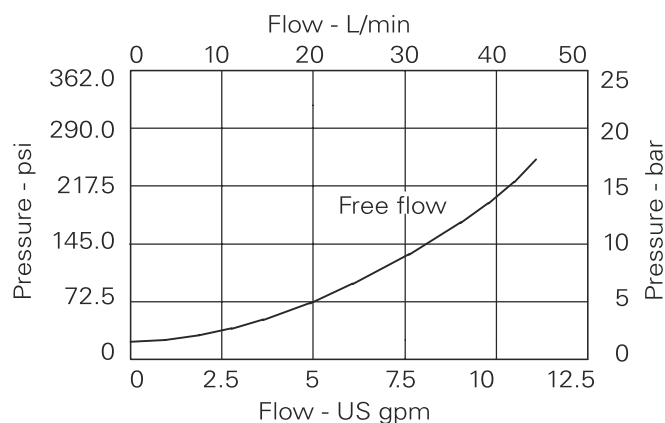
Viton is a registered trademark of E. I. DuPont

Description

Pilot to close check valves allow flow to pass in one direction, with a low pressure drop to prevent reverse flow. When the pilot pressure is applied, flow is prevented in either direction. The pilot ratio of 2:1 allows a lower pressure in the pilot line to hold the valve closed.

The 5CK series are check cartridges ideally suited for fitting directly onto a cylinder. They are ideal for use in regenerative circuits, accumulator dump circuits and in control of cylinders or motors.

Pressure drop

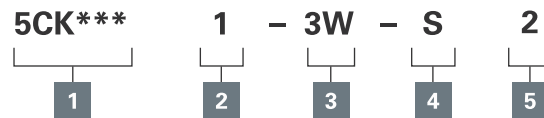


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

5CK30 - Check valve

Pilot-to-close. ball type
30 L/min (8 USgpm) • 350 bar (5000 psi)

Model code



1 Basic code

5CK30 - Cartridge only
5CK35 - Cartridge & body

2 Pilot port size

1 - Internal
Omit for line valves

3 Port size - bodied valves only

Code	Port size	Housing number	
		Aluminum	Steel
3W	3/8" BSP 1/4" BSP Pilot Port	B6743	B12823
6T	3/8" SAE 1/4" SAE Pilot Port	B10536	
8T	1/2" SAE 1/4" Pilot Port		B11811

4 Seals

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

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

5 Pilot ratio

2 - 2:1

Dimensions

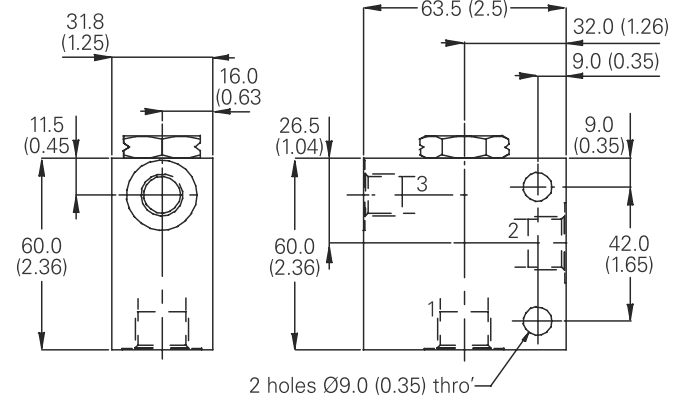
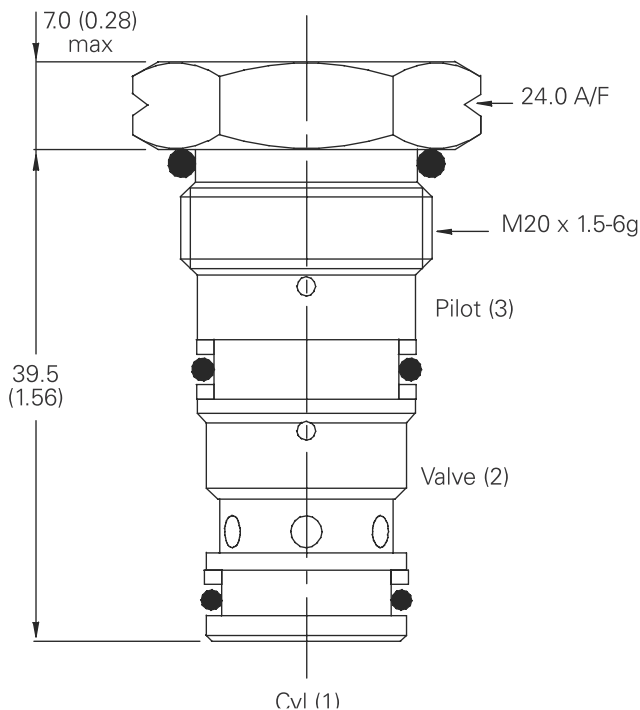
mm (inch)

Cartridge only

Basic code
5CK30

Single valve

3/8", 1/2" Ports
Basic code
5CK35



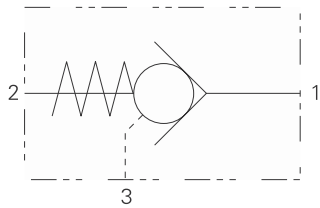
Note: For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

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

5CK120 - Check valve

Pilot-to-close, ball type

120 L/min (32 USgpm) • 350 bar (5000 psi)



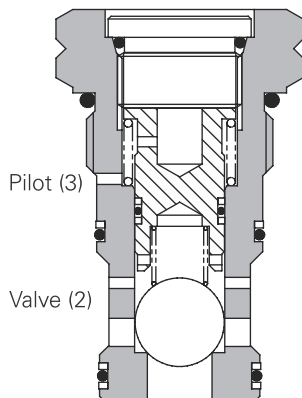
Operation

Pressure on the cylinder port causes the ball to lift against the spring force, allowing flow through to the valve port. Reverse flow is prevented by the ball reseating. Pressure applied to the pilot port will hold the ball against its seat, preventing flow from cylinder to valve.

Features

Easy flow path gives good pressure to flow characteristics and hardened components ensure a long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. They fit the same cavities as the 4CK pilot-to-open check valves, so care should be taken when selecting the valve.

Sectional view



Cyl (1)

Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	120 L/min (32 USgpm)
Maximum pressure	350 bar (5000 psi)
Pilot ratio	2:1
Cartridge material	Working parts hardened and ground steel. Zinc nickel plated body.
Standard housing material	Standard aluminum (up to 210 bar*). Add suffix "377" for steel option.
Mounting position	Unrestricted
Cavity number	A877
Torque cartridge into cavity	100 Nm (74 lbs. ft.)
Weight	0.28 kg (0.62 lbs)
Seal kit number	SK833 (Nitrile) SK833 (Viton®)
Recommended Filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90° C (-22° to +194°F)
Leakage	0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

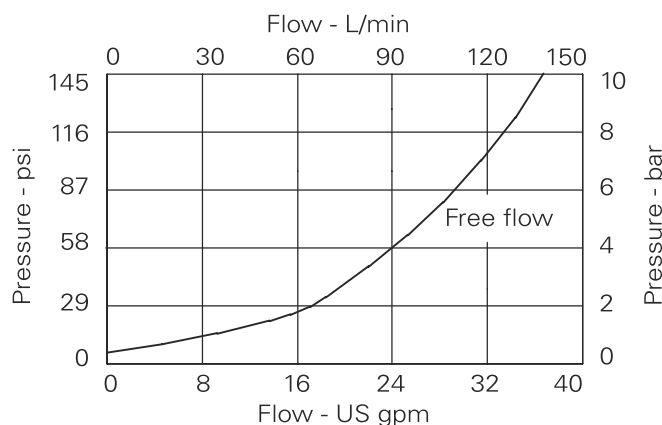
Viton is a registered trademark of E. I. DuPont

Description

Pilot to close check valves allow flow to pass in one direction, with a low pressure drop to prevent reverse flow. When the pilot pressure is applied, flow is prevented in either direction. The pilot ratio of 2:1 allows a lower pressure in the pilot line to hold the valve closed.

The 5CK series are check cartridges ideally suited for fitting directly onto a cylinder. They are ideal for use in regenerative circuits, accumulator dump circuits and in control of cylinders or motors.

Pressure drop

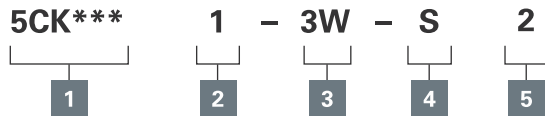


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

5CK120 - Check valve

Pilot-to-close, ball type
120 L/min (32 USgpm) • 350 bar (5000 psi)

Model code



1 Function

5CK120 - Cartridge only
5CK125 - Cartridge and body

2 Pilot port size

1 - Internal
Omit for line valves

3 Port size

Code	Port size	Housing number	
		Aluminum	Steel
6W	3/4" BSP 1/4" BSP/SAE Pilot Port	B6898	B5544
12T	3/4" SAE 1/4" SAE Pilot Port	B8200	
16T	1" SAE 1/4" SAE Pilot Port	B10708	B11814

4 Seals

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

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

5 Pilot Ratio

2 - 2:1

Dimensions

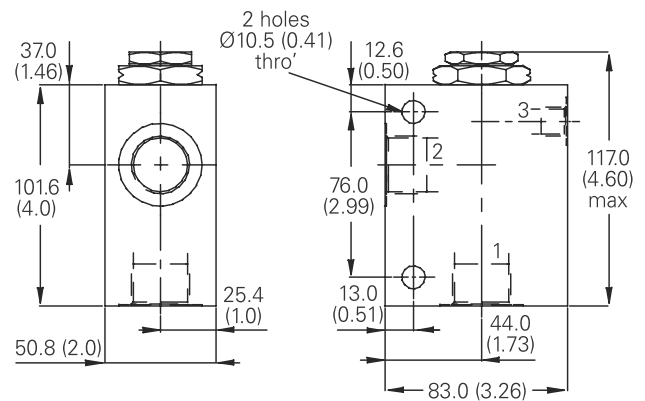
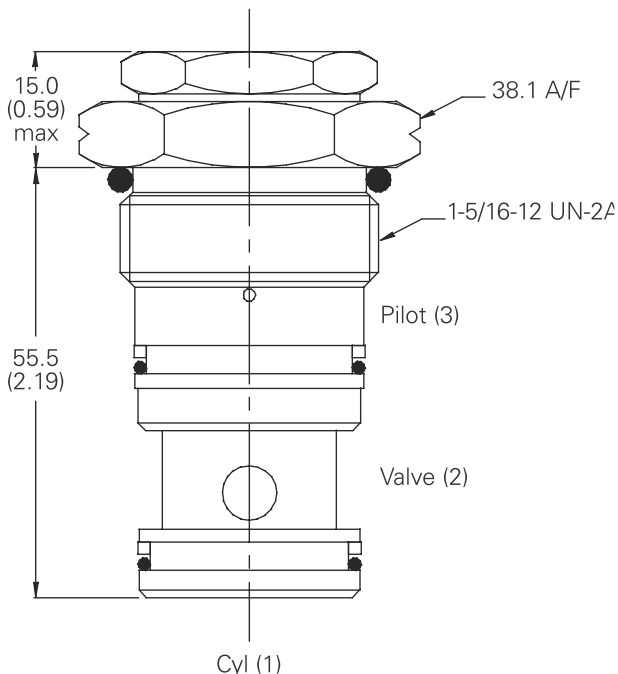
mm (inch)

Cartridge only

Basic code
5CK120

Single valve

3/4", 1" Ports
Basic code
5CK125



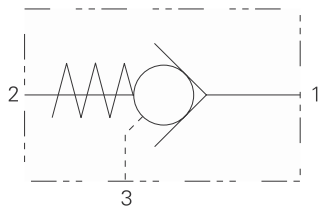
Note: For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

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

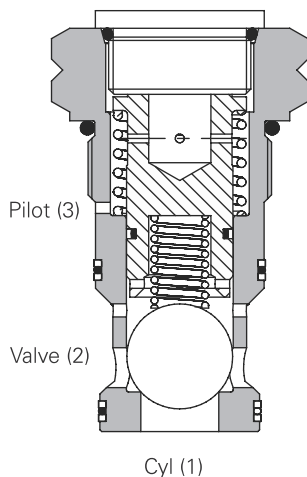
5CK300 - Check valve

Pilot-to-close, ball type

250 L/min (65 USgpm) • 350 bar (5000 psi)



Sectional view



Operation

Pressure on the cylinder port causes the ball to lift against the spring force, allowing flow through to the valve port. Reverse flow is prevented by the ball reseating. Pressure applied to the pilot port will hold the ball against its seat, preventing flow from cylinder to valve.

Features

Easy flow path gives good pressure to flow characteristics and hardened components ensure a long working life. Cartridge construction allows installation in actuators, manifold blocks and Hydraulic Integrated Circuits. They fit the same cavities as the 4CK pilot-to-open check valves, so care should be taken when selecting the valve.

Performance data

Ratings and specifications

Figures based on oil temperature of 40° C and viscosity of 32 cSt (150 SUS)

Rated flow	250 L/min (65 USgpm)
Maximum pressure	350 bar (5000 psi)
Pilot ratio	2:1
Cartridge material	Working parts hardened and ground steel. Zinc nickel plated body
Standard housing material	Standard aluminum (up to 210 bar*). Add suffix "377" for steel option
Mounting position	Unrestricted
Cavity number	A6935
Torque cartridge into cavity	150 Nm (110 lbs. ft.)
Weight	0.28 kg (0.62 lbs)
Seal kit number	SK834 (Nitrile) SK834V (Viton®)
Recommended Filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating temperature	-30° to +90°C (-22° to +194°F)
Leakage	0.3 ml/min nominal (5 dpm)
Nominal viscosity range	5 to 500 cSt

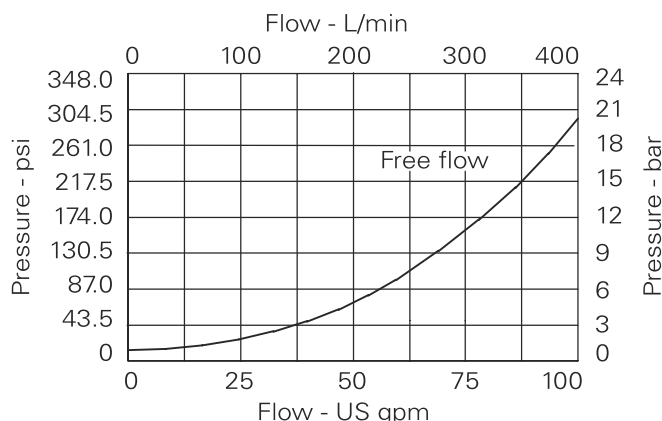
Viton is a registered trademark of E. I. DuPont

Description

Pilot to close check valves allow flow to pass in one direction, with a low pressure drop to prevent reverse flow. When the pilot pressure is applied, flow is prevented in either direction. The pilot ratio of 2:1 allows a lower pressure in the pilot line to hold the valve closed.

The 5CK series are check cartridges ideally suited for fitting directly onto a cylinder. They are ideal for use in regenerative circuits, accumulator dump circuits and in control of cylinders or motors.

Pressure drop

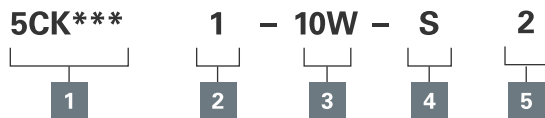


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

5CK300 - Check valve

Pilot-to-close, ball type
250 L/min (65 USgpm) • 350 bar (5000 psi)

Model code



1 Basic code

5CK300 - Cartridge only
5CK350 - Cartridge & body

2 Pilot port size

1 - Internal
Omit for line valves

3 Port size - bodied valves only

Code	Port size	Housing number- body only	
		Aluminum	Steel
10W	1 1/4" BSP		
	1/4" BSP/SAE Pilot Port	B6814	B8610
20T	1 1/4" SAE		
	1/4" BSP/SAE Pilot Port	B10630	B11474

4 Seals

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

5 Pilot ratio

2 - 2:1

Dimensions

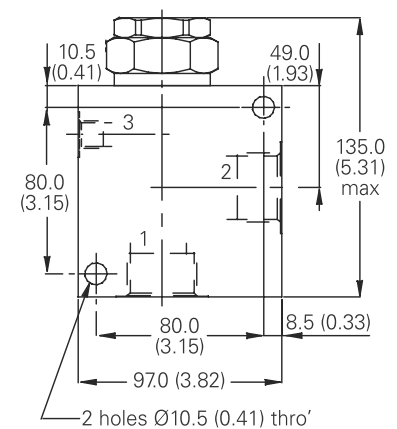
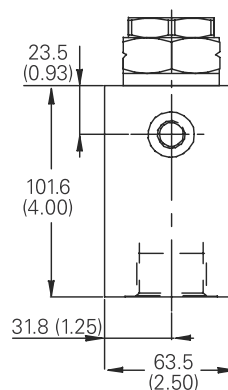
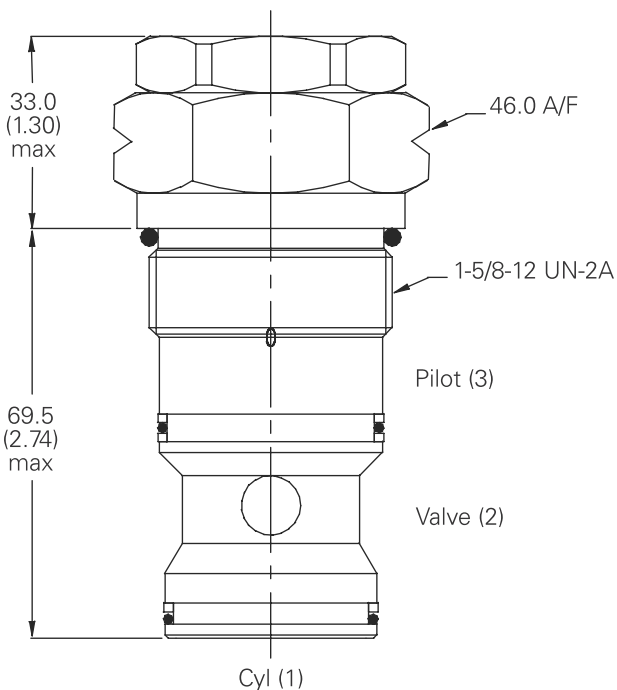
mm (inch)

Cartridge only

Basic code
5CK300

Single valve

1 1/4" Ports
Basic code
5CK350



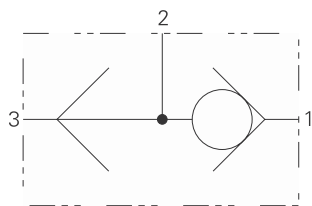
Note: For applications above 210 bar (3000 psi) please consult our technical department or use the steel body option.

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

1SH10 - Shuttle valve

Ball type

20 L/min (5 USgpm) • 350 bar (5000 psi)



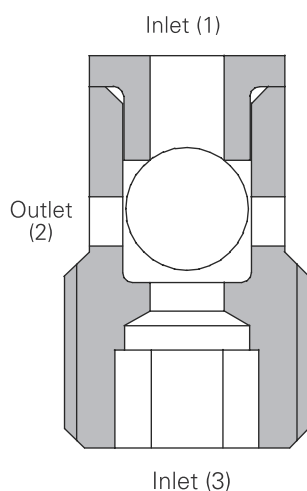
Operation

When a higher pressure is sensed at inlet 1 than at inlet 2 the ball within the cartridge is forced against a seat opening the higher pressure to outlet. When the higher pressure appears at inlet 2 the ball is forced against the other seat which blocks inlet 1 and opens up inlet 2 to outlet.

Features

Cartridge design enabling speedy servicing when mounted in a body or in a composite manifold.

Sectional view



Performance data

Ratings and specifications

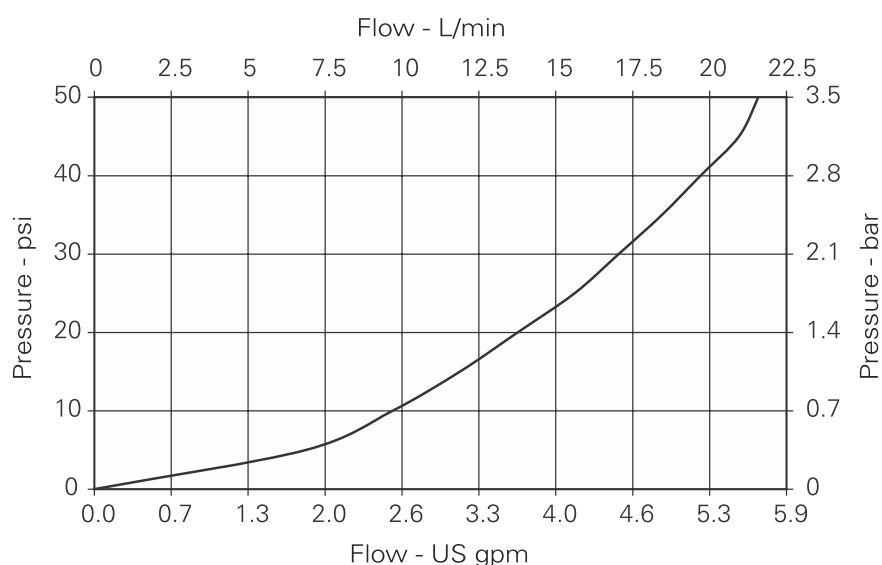
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)

Rated flow	20 L/min (5 USgpm)
Max Pressure	350 bar (5000 psi)
Cartridge Material	Working parts hardened and ground steel. External steel surfaces zinc plated
Mounting position	Unrestricted
Cavity Number	A16927 (See Section M)
Torque Cartridge into Cavity	8-10 Nm (Use Loc-Tite 542)
Weight	0.05 kg (0.11 lbs)
Recommended Filtration level	BS5540/4 Class 18/13 (25 micron nominal)
Operating Temp	-30°C to +90°C (-22° to +194°F)
Leakage	0.6 milliliters/min max
Nominal Viscosity Range	5 to 500 cSt

Description

This valve provides a means of sensing the higher pressures between two lines on a hydraulic circuit allowing this line to be used for an auxiliary function such as the removal of a mechanically applied brake, the operation of a gauge or to give a remote pressure sensing line for the control of a separate valve.

Pressure drop



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

1SH10 - Shuttle valve

Ball type
20 L/min (5 USgpm) • 350 bar (5000 psi)

Model code

1SH10

1

1 Basic code

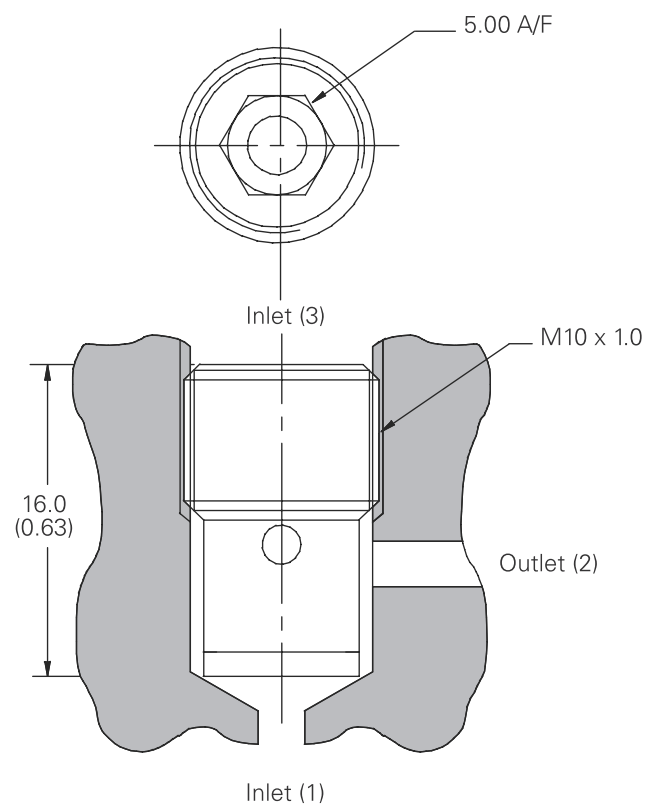
1SH10 - Cartridge Only

Dimensions

mm (inch)

Cartridge only

Basic code
1SH10



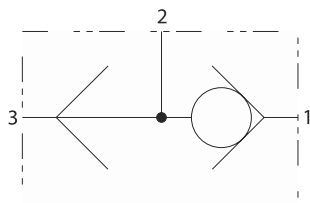
Note: Using LOC-TITE 542, torque cartridge to 8-10 Nm against the bottom of the cavity.

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

1SH60 - Shuttle Valve

Ball type

50 L/min (13 USgpm) • 350 bar (5000 psi)



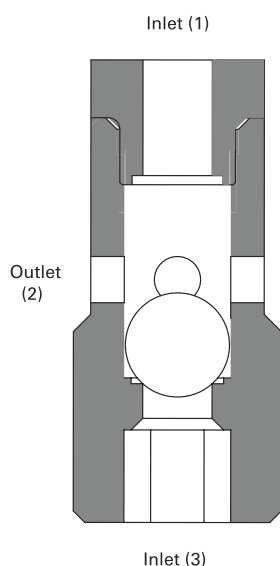
Operation

When a higher pressure is sensed at inlet 1 than at inlet 2 the ball within the cartridge is forced against a seat opening the higher pressure to outlet. When the higher pressure appears at inlet 2 the ball is forced against the other seat which blocks inlet 1 and opens up inlet 2 to outlet.

Features

Cartridge design enabling speedy servicing when mounted in a body or in a composite manifold.

Sectional view



Performance data

Ratings and specifications

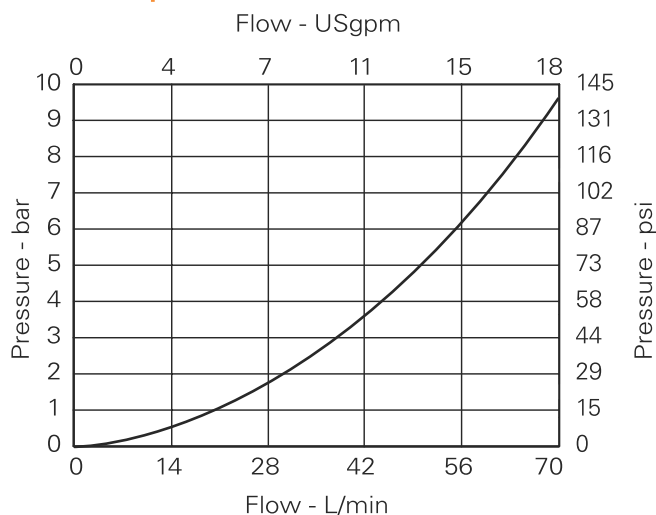
Figures based on: Oil Temp = 40°C Viscosity = 32 cSt (150 SUS)

Rated flow	50 L/min (13 USgpm)
Max Pressure	350 bar (5000 psi)
Cartridge Material	Working parts hardened and ground steel. External steel surfaces zinc plated.
Mounting position	Unrestricted
Cavity Number	C-I-M18-3
Torque Cartridge into Cavity	50 Nm (Use Loc-Tite 603)
Weight	0.04 kg (0.09 lbs)
Recommended Filtration level	BS5540/4 Class 18/13 (10 micron nominal)
Operating Temp	-40°C to +120°C (-40° to +248°F)
Leakage	<5 drops/min @210 bar
Nominal Viscosity Range	5 to 500 cSt

Description

This valve provides a means of sensing the higher pressures between two lines on a hydraulic circuit allowing this line to be used for an auxiliary function such as the removal of a mechanically applied brake, the operation of a gauge or to give a remote pressure sensing line for the control of a separate valve.

Pressure drop

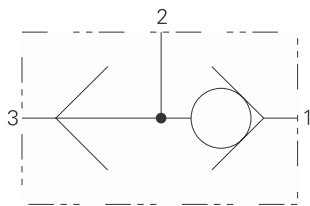


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

DSV1-10 - Shuttle valve

Ball type

23 L/min (6 USgpm) • 210 bar (3000 psi)



Operation

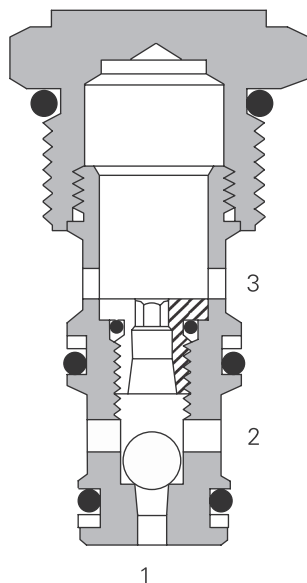
When a higher pressure is sensed at inlet 1 than at inlet 2 the ball within the cartridge is forced against a seat opening the higher pressure to outlet.

When the higher pressure appears at inlet 2 the ball is forced against the other seat which blocks inlet 1 and opens up inlet 2 to outlet.

Features

Cartridge design enabling speedy servicing when mounted in a body or in a composite manifold.

Sectional view



Performance data

Ratings and specifications

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

Maximum pressure	210 bar (3000 psi)
Cartridge fatigue pressure (infinite life)	210 bar (3000 psi)
Rated flow	23 L/min (6 USgpm)
Internal leakage	Between ports 2 to 1, and 2 to 3 <5 drops/min @ 210 bar (3000 psi)
Cavity	C-10-3
Temperature range	-40°C to +120°C (-40° to + 248°F)
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20, etc.
Filtration	Cleanliness code 18/16/13
Standard housing materials	Aluminum
Weight cartridge only	0,08 kg (0.18 lbs)
Seal kits	565804 (Buna-N) 889599 (Viton®)

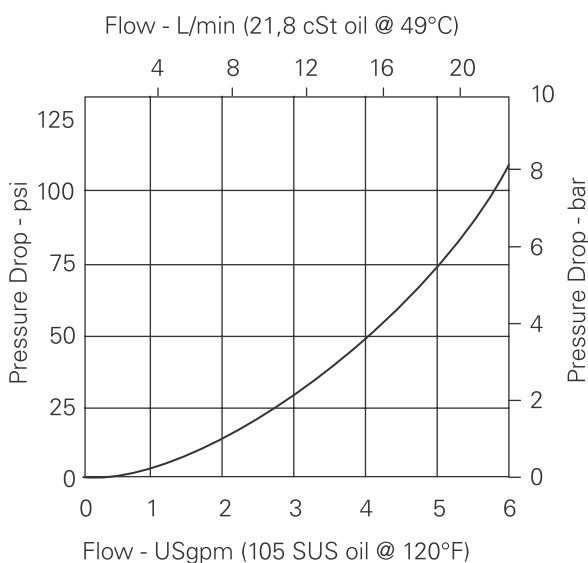
Viton is a registered trademark of E. I. DuPont

Description

This valve provides a means of sensing the higher pressures between two lines on a hydraulic circuit allowing this line to be used for an auxiliary function such as the removal of a mechanically applied brake, the operation of a gauge or to give a remote pressure sensing line for the control of a separate valve.

Pressure drop

Cartridge only



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

1SH60 - Shuttle Valve

Ball type
50 L/min (13 USgpm) • 350 bar (5000 psi)

Model code

1SH10

1

1 Basic code

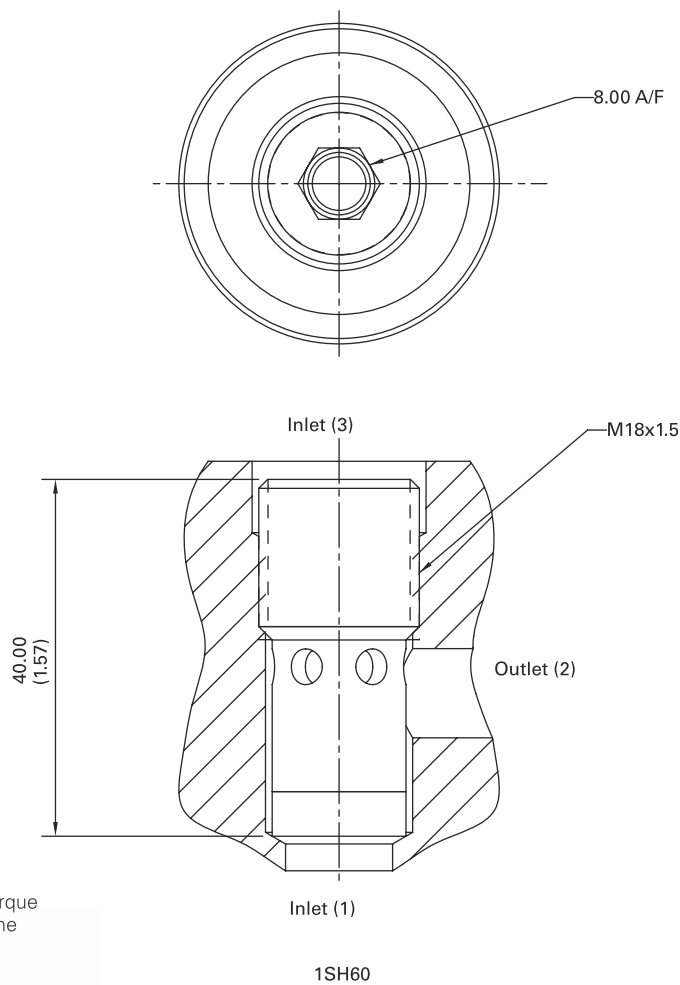
1SH60 - Cartridge Only

Dimensions

mm (inch)

Cartridge only

Basic code
1SH60



Note: Using LOC-TITE 603, torque cartridge to 8-10 Nm against the bottom of the cavity.

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

DSV1-10 - Shuttle valve

Ball type
23 L/min (6 USgpm) • 210 bar (3000 psi)

Model code

DSV1	- 10	(V)	- B	**	00
1	2	3	4	5	6

1 Function

DSV1 - Shuttle Valve

2 Size

10 - 10 Size

3 Seals

Blank - Buna-N
V - Viton

4 Style

B - Ball Type

5 Port size

Code	Port size	Housing number - body only	
		Aluminum light duty	Steel 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.			

6 Special features

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

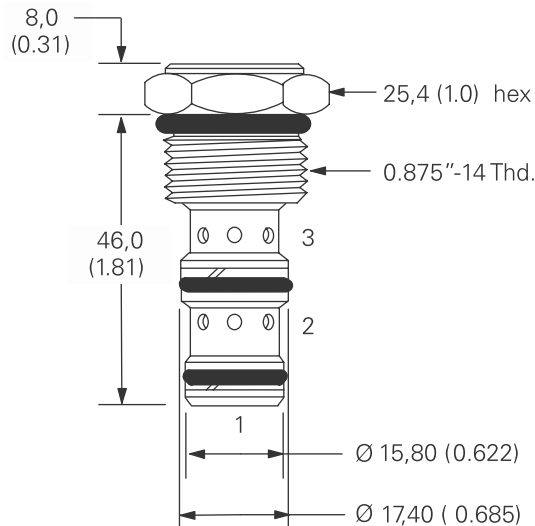
Dimensions

mm (inch)

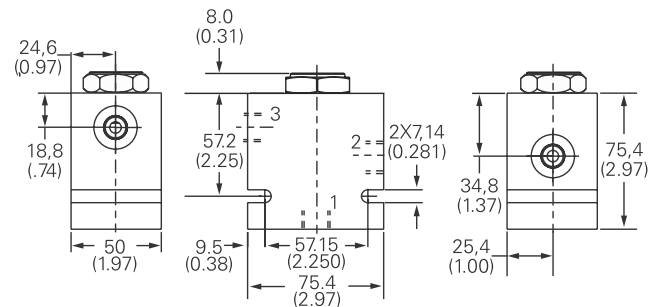
Note: Torque cartridge in Aluminum or Steel housing
47-54 Nm (35-40 ft. lbs).

Cartridge only

Basic code
DSV3-10



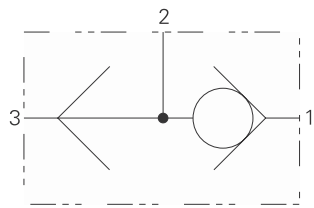
Installation drawing



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

DSV2-4 - Shuttle valve

Ball type
3 L/min (0.75 USgpm) • 240 bar (3500 psi)



Operation

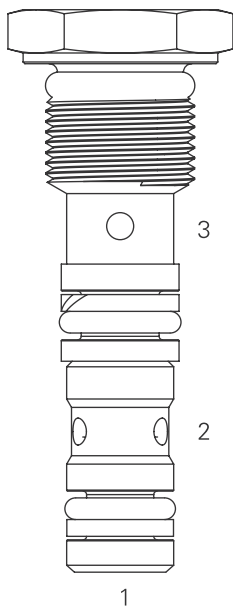
When a higher pressure is sensed at inlet 1 than at inlet 2 the ball within the cartridge is forced against a seat opening the higher pressure to outlet.

When the higher pressure appears at inlet 2 the ball is forced against the other seat which blocks inlet 1 and opens up inlet 2 to outlet.

Features

Cartridge design enabling speedy servicing when mounted in a body or in a composite manifold.

Sectional view



Performance data

Ratings and Specifications

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

Typical application pressure (all ports)	240 bar (3500 psi) steel housing
Cartridge fatigue pressure (infinite life)	240 bar (3500 psi)
Rated flow	3 L/min (0.75 USgpm)
Internal leakage	Between ports 2 and 1, and 2 and 3 <5 drops/min maximum @ 240 bar (3500 psi)
Cavity	C-4-3
Temperature range	-40°C to +120°C (-40° to + 248°F)
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20, etc.
Filtration level	Cleanliness code 18/16/13
Weight cartridge only	0,02 kg (0.044 lbs)
Seal kits	9900176-000 (Buna-N) 9900177-000 (Viton®)

Viton is a registered trademark of E. I. DuPont

Description

This valve provides a means of sensing the higher pressures between two lines on a hydraulic circuit allowing this line to be used for an auxiliary function such as the removal of a mechanically applied brake, the operation of a gauge or to give a remote pressure sensing line for the control of a separate valve.

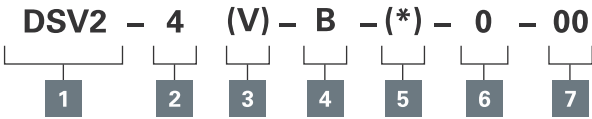
Note: This valve is intended for application as a load sense shuttle valve in load sensing systems

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

DSV2-4 - Shuttle valve

Ball type
3 L/min (0.75 USgpm) • 240 bar (3500 psi)

Model code



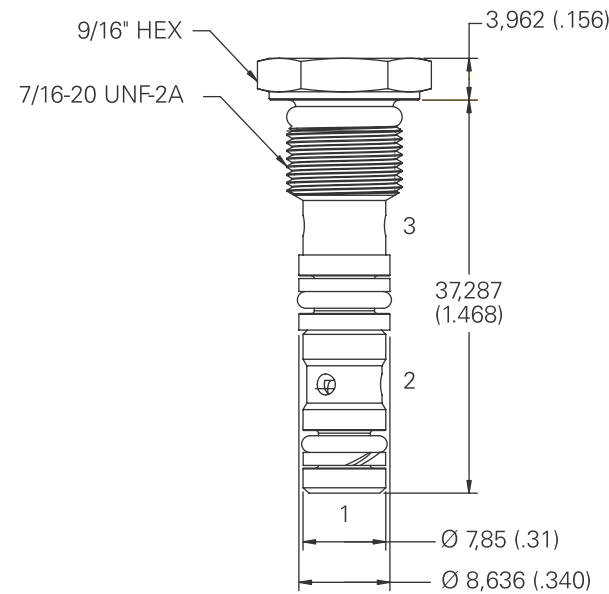
1 Function DSV2 - Shuttle Valve	3 Seals Blank - Buna-N V - Viton	5 Valve housing material Omit for cartridge only A - Aluminum S - Steel	7 Special features 00 - None (Only required if valve has special features, omitted if "00")
2 Size 4 - 4 Size	4 Style B - Ball	6 Port size O - Cartridge Only	

Dimensions

mm (inch)

Cartridge only

Basic code
DSV2-4



Note: Torque cartridge in aluminum or steel housing 8.1-13.6 Nm (6-10 ft lbs).

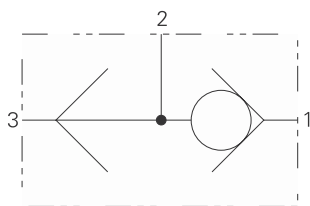
⚠ Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings must be used for operating pressures above 1210 bar (3000 psi).

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

DSV2-8 - Shuttle valve

Ball type

23 L/min (6 USgpm) • 240 bar (3500 psi)



Operation

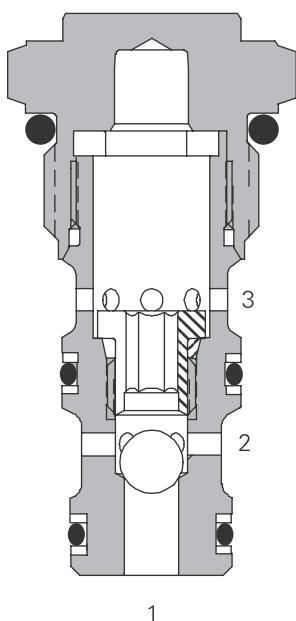
When a higher pressure is sensed at inlet 1 than at inlet 2 the ball within the cartridge is forced against a seat opening the higher pressure to outlet.

When the higher pressure appears at inlet 2 the ball is forced against the other seat which blocks inlet 1 and opens up inlet 2 to outlet.

Features

Cartridge design enabling speedy servicing when mounted in a body or in a composite manifold.

Sectional view



Performance data

Ratings and specifications

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

Typical application pressure (all ports)	240 bar (3500 psi) steel housing
Cartridge fatigue pressure (infinite life)	240 bar (3500 psi)
Rated flow	23 L/min (6 USgpm)
Internal leakage	Between ports 2 and 1, and 2 and 3 <5 drops/min maximum @ 240 bar (3500 psi)
Cavity	C-8-3
Standard housing materials	Aluminum or steel
Temperature range	-40°C to +120°C (-40° to + 248°F)
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20, etc.
Filtration level	Cleanliness code 18/16/13
Weight cartridge only	0,06 kg (0.14 lbs)
Seal kits	02-160755 (Buna-N) 02-160756 (Viton®)

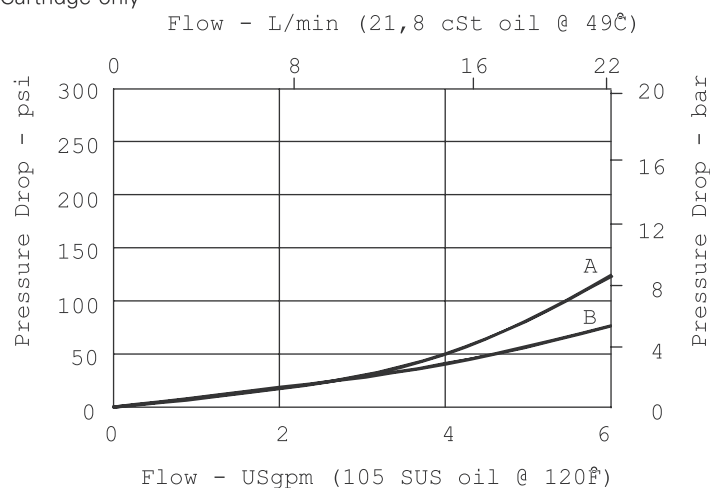
Viton is a registered trademark of E. I. DuPont

Description

This valve provides a means of sensing the higher pressures between two lines on a hydraulic circuit allowing this line to be used for an auxiliary function such as the removal of a mechanically applied brake, the operation of a gauge or to give a remote pressure sensing line for the control of a separate valve.

Pressure drop

Cartridge only



A - Port 1 to port 2

B - Port 3 to port 2

Note: This valve is intended for application as a load sense shuttle valve in load sensing systems

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

DSV2-8 - Shuttle valve

Ball type
23 L/min (6 USgpm) • 240 bar (3500 psi)

Model code

DSV2 - 8 (V) - B - (*) - ** - 00

1 2 3 4 5 6 7

1 Function

DSV2 - Shuttle Valve

2 Size

8 - 8 Size

3 Seals

Blank - Buna-N
V - Viton

4 Style

B - Ball

5 Valve housing material

Omit for cartridge only

A - Aluminum

S - Steel

6 Port size

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

7 Special features

00 - None

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

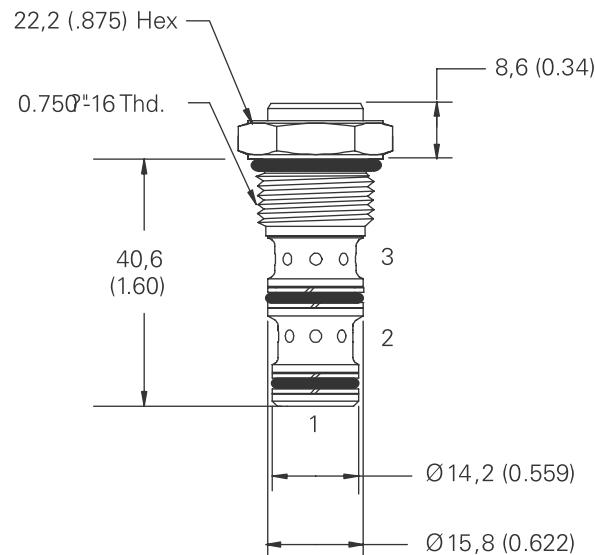
SS - 316Ti Stainless Steel
External components

Dimensions

mm (inch)

Cartridge only

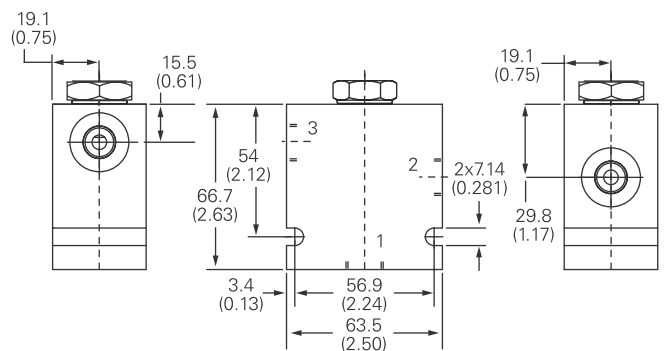
Basic code
DSV2-8



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

⚠ Aluminum housings can be used for pressures up to 210 bar (3000 psi). Steel housings must be used for operating pressures above 1210 bar (3000 psi).

Installation drawing (Steel)

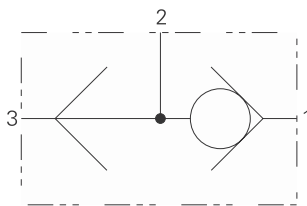


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DSV3 ** B - Shuttle valve

Ball type, in-line housing

Up to 170 L/min (45 USgpm) • 350 bar (5000 psi)

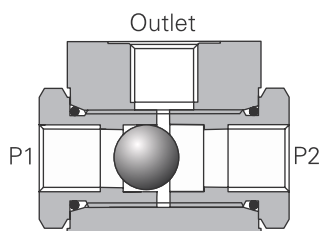


Operation

When a higher pressure is sensed at inlet 1 than at inlet 2 the ball within the cartridge is forced against a seat opening the higher pressure to outlet.

When the higher pressure appears at inlet 2 the ball is forced against the other seat which blocks inlet 1 and opens up inlet 2 to outlet.

Sectional view



Performance data

Ratings and specifications

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

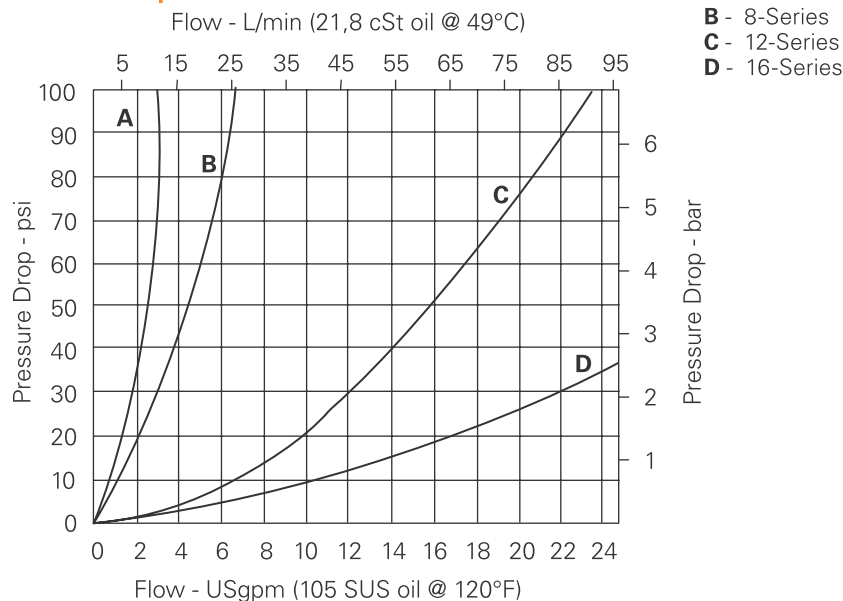
Maximum pressure	210 bar (3000 psi) Aluminum housing 350 bar (5000 psi) Steel housing		
Rated flow	6 series - 11 L/min (3 USgpm) 8 series - 24,6 L/min (6.5 USgpm) 12 series - 88,9 L/min (23.5 USgpm) 16 series - 170,3 L/min (45 USgpm)		
Internal leakage	Between ports 2 to 1, and 2 to 3 <5 drops/min @ 210 bar (3000 psi)		
Temperature range	-40°C to +120°C (-40° to + 248°F)		
Fluids	All general purpose hydraulic fluids such as MIL-H-5606, SAE 10, SAE 20, etc.		
Filtration	Cleanliness code 18/16/13		
Standard housing materials	Aluminum or steel		
Weight	6 series	w/aluminum housing w/steel housing	0,10 kg (0.22 bs) 0,30 kg (0.66 lbs)
	8 series	w/aluminum housing w/steel housing	0,28 kg (0.62 lbs) 0,90 kg (1.86 lbs)
	12 series	w/aluminum housing w/steel housing	0,75 kg (1.65 lbs) 2,25 kg (4.95 lbs)
	16 series	w/aluminum housing w/steel housing	1,76 kg (3.86 lbs) 5,25 kg (11.58 lbs)
Seals (2 required)	6 series	154128 (Buna-N) / 396096 (Viton®)	
	8 series	154129 (Buna-N) / 396098 (Viton®)	
	12 series	154131 (Buna-N) / 396102 (Viton®)	
	16 series	154132 (Buna-N) / 396105 (Viton®)	

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Description

This valve provides a means of sensing the higher pressures between two lines on a hydraulic circuit allowing this line to be used for an auxiliary function such as the removal of a mechanically applied brake, the operation of a gauge or to give a remote pressure sensing line for the control of a separate valve.

Pressure drop

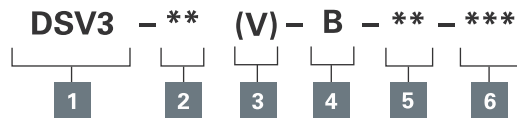


Where measurements are critical request certified drawings. We reserve the right to change specifications without notice.

DSV3 ** B - Shuttle valve

Ball type, in-line housing
Up to 170 L/min (45 USgpm) • 350 bar (5000 psi)

Model code



1 Function

DSV3 - Shuttle Valve

2 Size

6 - 6 Size
8 - 8 Size
12 - 12 Size
16 - 16 Size

3 Seals

Blank - Buna-N
V - Viton

4 Style

B - Ball

5 Housing material

A - Aluminum
S - Steel

6 Port size

6 Series
1 - 1/8" NPTF
8 Series
2 - 1/4" NPTF
6T - SAE 6

12 Series

4 - 1/2" NPTF

8T - SAE 8

16 Series

6 - 3/4" NPTF

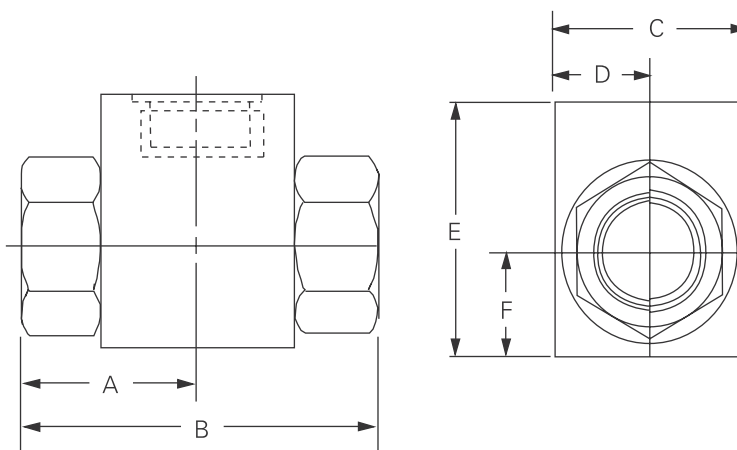
12T - SAE 12

Dimensions

mm (inch)

Cartridge only

Basic code
DSV3



⚠ 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 number	A	B	C	D	E	F
DSV3-6-B-A1	22,2 (0.87)	44,5 (1.75)	19,0 (0.75)	9,5 (0.37)	25,4 (1.00)	9,5 (0.37)
DSV3-6-B-S1	22,2 (0.87)	44,5 (1.75)	20,6 (0.81)	10,3 (0.41)	31,7 (1.25)	12,7 (0.50)
DSV3-8-B-A2	23,8 (0.94)	47,6 (1.87)	25,4 (1.00)	12,7 (0.50)	38,1 (1.50)	12,7 (0.50)
DSV3-8-B-S2	23,8 (0.94)	47,6 (1.87)	31,7 (1.25)	15,9 (0.63)	43,7 (1.72)	15,9 (0.63)
DSV3-8-B-A6T	23,8 (0.94)	47,6 (1.87)	25,4 (1.00)	12,7 (0.50)	38,1 (1.50)	12,7 (0.50)
DSV3-8-B-S6T	23,8 (0.94)	47,6 (1.87)	31,7 (1.25)	15,9 (0.63)	43,7 (1.72)	15,9 (0.63)
DSV3-12-B-A4	31,7 (1.25)	63,5 (2.5)	38,1 (1.50)	19,1 (0.75)	50,8 (2.00)	19,1 (0.75)
DSV3-12-B-S4	31,7 (1.25)	63,5 (2.5)	43,7 (1.72)	21,8 (0.86)	57,5 (2.25)	22,2 (0.88)
DSV3-12-B-A8T	31,7 (1.25)	63,5 (2.5)	38,1 (1.50)	19,1 (0.75)	50,8 (2.00)	19,1 (0.75)
DSV3-12-B-S8T	31,7 (1.25)	63,5 (2.5)	43,7 (1.72)	21,8 (0.86)	57,5 (2.25)	22,2 (0.88)
DSV3-16-B-A6	47,6 (1.88)	95,3 (3.75)	47,6 (1.88)	23,8 (0.94)	63,5 (2.50)	23,8 (0.97)
DSV3-16-B-S6	47,6 (1.88)	95,3 (3.75)	50,0 (1.97)	25,0 (0.98)	62,7 (2.47)	25,4 (1.00)
DSV3-16-B-A12T	47,6 (1.88)	95,3 (3.75)	47,6 (1.88)	23,8 (0.94)	63,5 (2.50)	23,8 (0.97)
DSV3-16-B-S12T	47,6 (1.88)	95,3 (3.75)	50,0 (1.97)	25,0 (0.98)	62,7 (2.47)	25,4 (1.00)

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For enquiries please contact our
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