

Comatrol

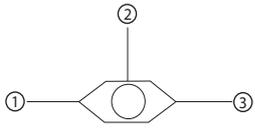
RESPONSIVENESS IN MOTION

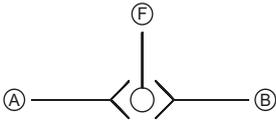
Member of the Danfoss Group

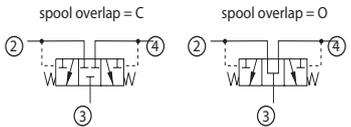


Shuttle Valves

www.comatrol.com

Cartridge	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP124-1	CP04-3	Load Shuttle Valves, Normal direction	3.7 l/min [1 US gal/min]	350 bar [5075 psi]	SH - 5
	CP128-1	SDC08-3		22 l/min [5.8 US gal/min]	315 bar [4570 psi]	SH - 6
	SV04	NCS04/3		15 l/min [4 US gal/min]	315 bar [4570 psi]	SH - 7
	CP120-4	SDC10-3		25 l/min [7 US gal/min]	330 bar [4800 psi]	SH - 8
	SV06	NCS06/3		48 l/min [12.7 US gal/min]	350 bar [5075 psi]	SH - 9

In-line	Model No.	Cavity	Description	Flow*	Pressure	Page
	VS 06	none	Load shuttle Valve, In-line	35 l/min [9 US gal/min]	350 bar [5075 psi]	SH - 10
	VS 10	none		45 l/min [12 US gal/min]	350 bar [5075 psi]	SH - 11

Hot oil shuttle	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP720-3	SDC10-4	Hot Oil Shuttle	25 l/min [7 US gal/min]	350 bar [5075 psi]	SH - 12
	CP721-3	CP12-3M		90 l/min [24 US gal/min]	350 bar [5075 psi]	SH - 13

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

OVERVIEW

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

Shuttle valves

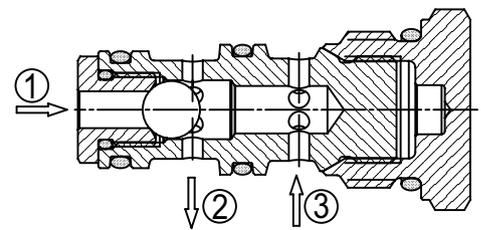


LOAD SHUTTLE VALVE

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

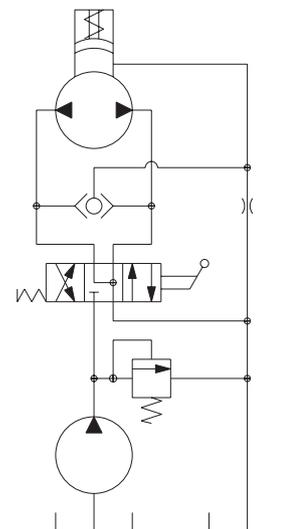
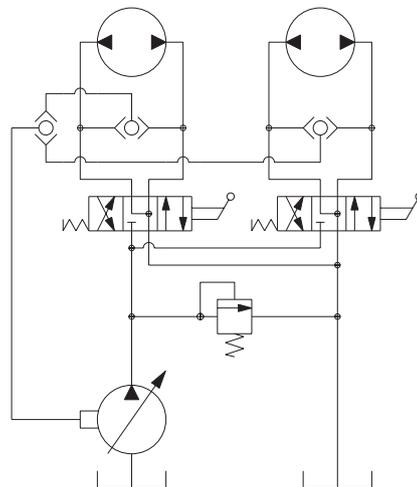
- Logic for load sensing circuits
- Bi-directional motor brake release valve

Load shuttle valve



Bi-directional motor brake release valve

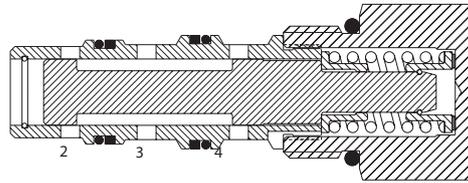
Load sensing circuit



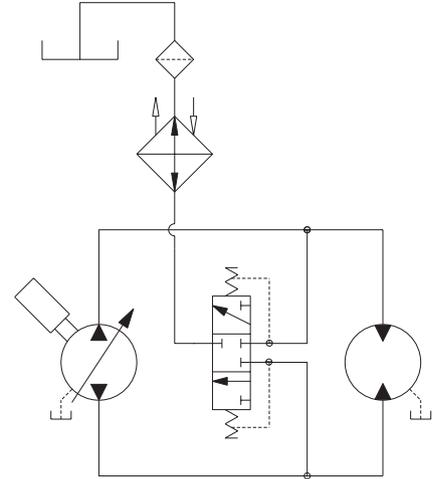
HOT OIL SHUTTLE VALVE Hot oil shuttles are spool-type valves that use internal piloting at 2 and 4 to direct oil from the lower of the two input pressures to the outlet at 3.

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

Hot oil shuttle valve



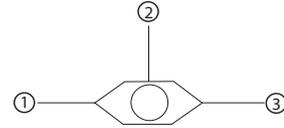
Closed-circuit hydrostatic loop



OPERATION

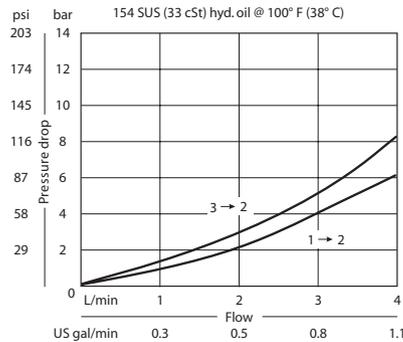
This valve senses the higher of the two input pressures at ports 1 and 3 and routes it to the output port 2.

Schematic



SPECIFICATIONS

Theoretical performance



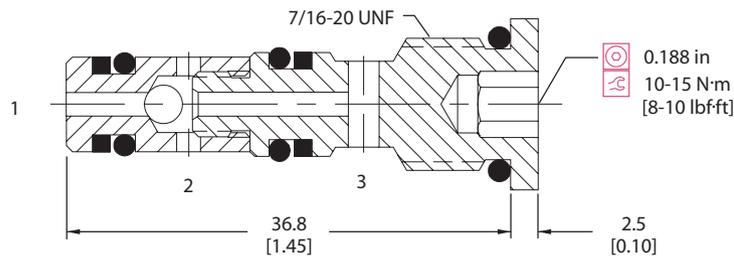
Specifications

Rated pressure*	350 bar [5075 psi]
Rated flow at 7 bar [100 psi]	3.7 l/min [1 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.02 kg [0.04 lb]
Cavity	CP04-3

*Rated pressure based on NFPA fatigue test standard (at 1 million cycles)

DIMENSIONS
mm [in]

Cross-sectional view



ORDERING INFORMATION

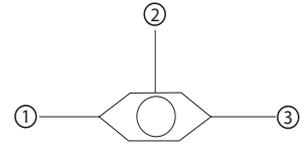
CP124 - 1 - B - 4S

<p>Seals</p> <p>B = Buna-N V = Viton</p>	<p>Seal kit</p> <p>120111 120282</p>	<p>Housing and ports</p> <p>0 = No Housing 2B = AL, 1/4 BSP 4S = AL, #4 SAE Other housings available</p>	<p>Housing P/N</p> <p>No Housing CP04-3-2B CP04-3-4S</p>
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OPERATION

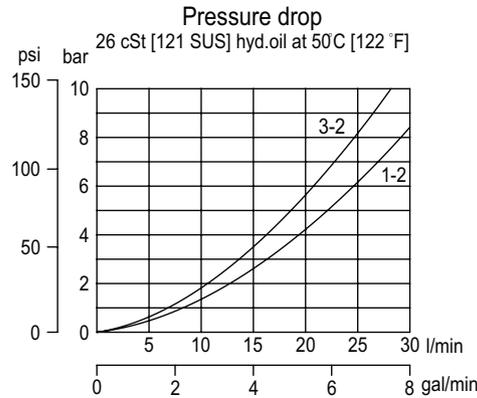
This valve senses the higher of the two input pressures at ports 1 and 3 and routes it to the output port 2.

Schematic



SPECIFICATIONS

Theoretical performance



Specifications

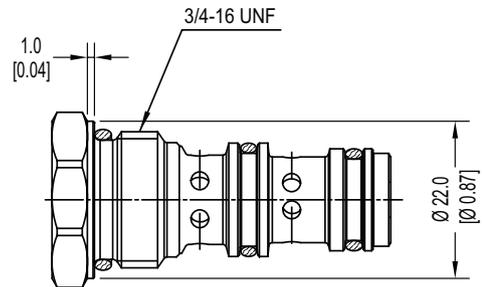
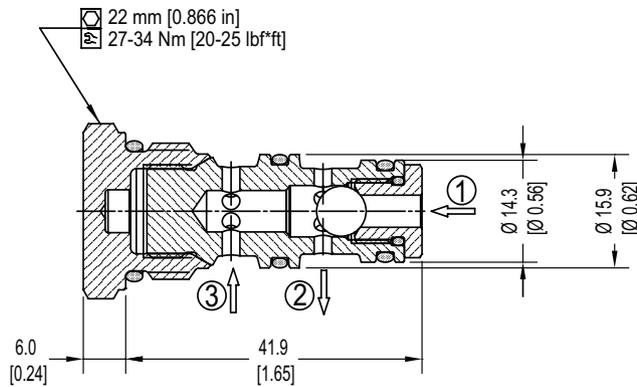
Rated pressure*	315 bar [4570 psi]
Rated flow at 7 bar [100 psi]	22 l/min [5.8 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.06 kg [0.14 lb]
Cavity	SDC08-3

*Rated pressure based on NFPA fatigue test standard (at 1 million cycles)

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP128-1-B-0

Load Shuttle Valve
Normal Direction

Seal Option	Seal kit
B = Buna-N	120238
V = Viton	120239

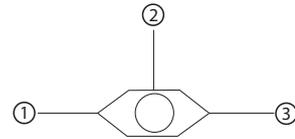
Code	Ports & Material	Body Nomenclature
0	0 = Cartridge only	No Body
SE2B	AL, 1/4 BSP	SDC08-3-SE-2B
SE3B	AL, 3/8 BSP	SDC08-3-SE-3B
4S	AL, #4 SAE	CP08-3-4S
6S	AL, #6 SAE	CP08-3-6S

**Aluminum bodies to be used for pressures less than 210 bar (3000 psi)
***Other housings available

OPERATION

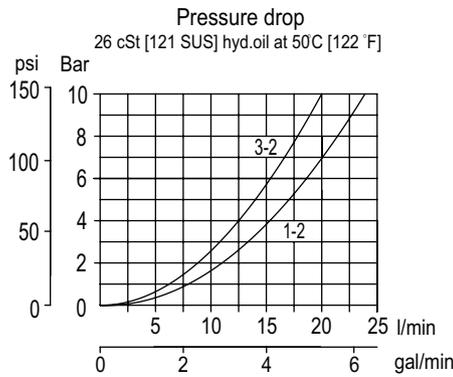
This valve senses the higher of two input pressures at 1 and 3, and routes it to the output 2.

Schematic



SPECIFICATIONS

Theoretical performance



Specifications

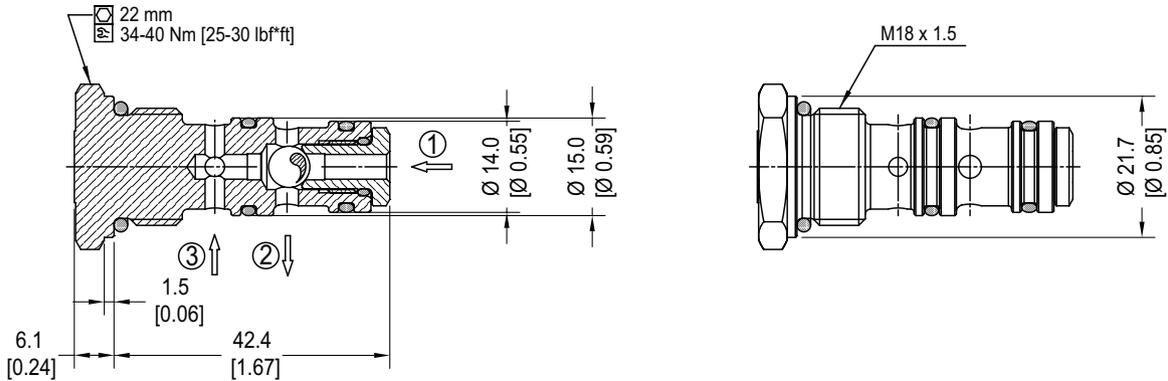
Rated pressure*	315 bar [4570 psi]
Rated flow at 7 bar [100 psi]	15 l/min [4 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.07 kg [0.15 lb]
Cavity	NCS04/3

*Rated pressure based on NFPA fatigue test standard (at 1 million cycles)

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

SV04-00-V

Load Shuttle Valve
 Normal Direction

Seal Option	Seal Kit
Omit = Buna-N	230000160
V = Viton	230000450

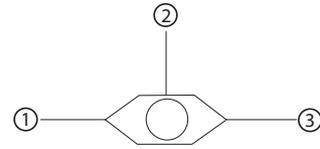
Code	Ports & Material	Body Nomenclature
00	00 = Cartridge only	No Body
SE1/4	AL, 1/4 BSP	NCS04/3-SE-1/4
SE4S	AL, #4 SAE	NCS04/3-SE-4S
SE6S	AL, #6 SAE	NCS04/3-SE-6S

** Aluminum bodies are to be used for pressures less than 210 bar (3000 psi).
 *** Other housings available

OPERATION

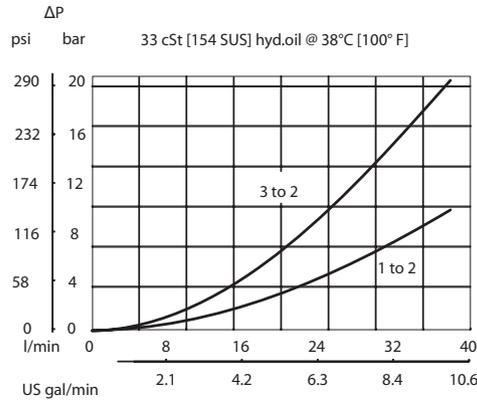
This valve senses the higher of two input pressures at 1 and 3, and routes it to the output 2.

Schematic



SPECIFICATIONS

Theoretical performance



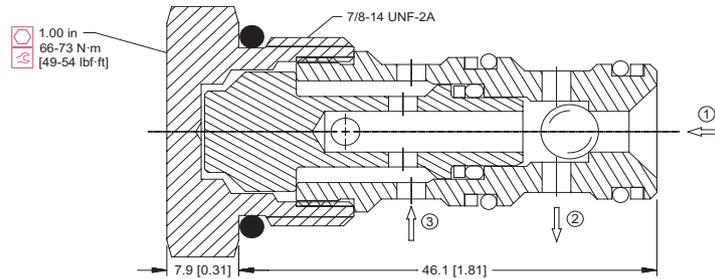
Specifications

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

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP120-4-B-8S

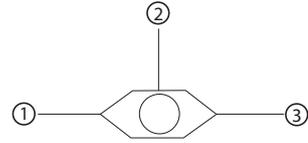
Seals	Seal kit	Housing and ports	Housing P/N
B = Buna-N	120027	00 = No Housing	No Housing
V = Viton	120028	SE3B = AL, 3/8 BSP	SDC10-3-SE-3B
		SE4B = AL, 1/2 BSP	SDC10-3-SE-4B
		6S = AL, #6 SAE	CP10-3-6S
		8S = AL, #8 SAE	CP10-3-8S
		Other housings available	

SH - Shuttle Valves Catalog
 CP120-4

OPERATION

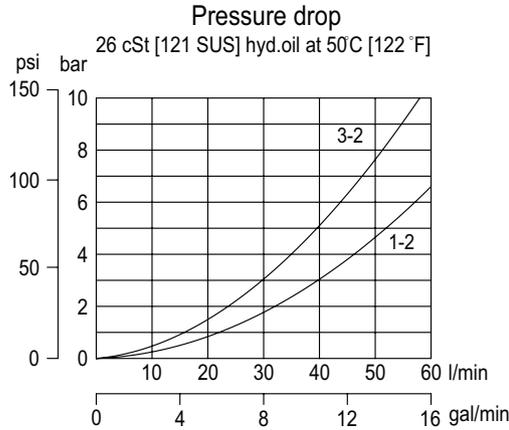
This valve senses the higher of two input pressures at 1 and 3, and routes it to the output 2.

Schematic



SPECIFICATIONS

Theoretical performance



Specifications

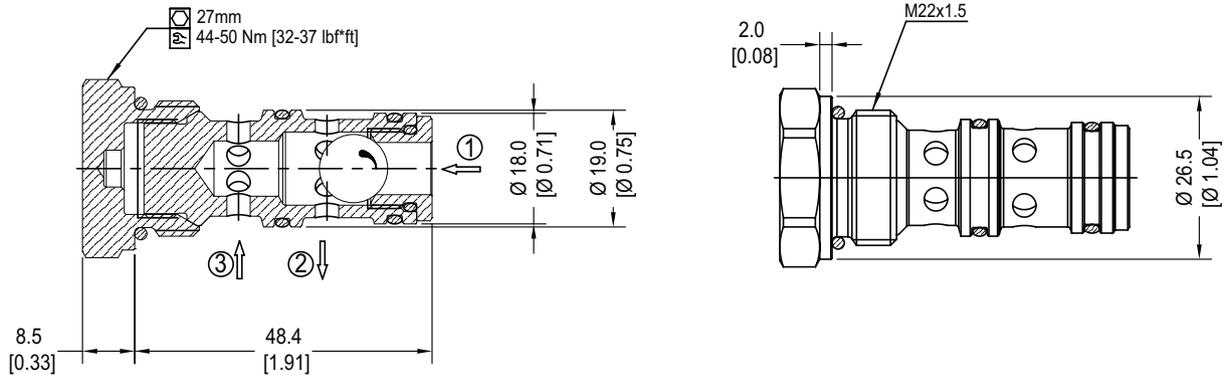
Rated pressure*	350 bar [5075 psi]
Rated flow at 7 bar [100 psi]	48 l/min [12.7 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.11 kg [0.24 lb]
Cavity	NCS06/3

*Rated pressure based on NFPA fatigue test standard (at 1 million cycles)

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

SV06-00-V

Load Shuttle Valve
 Normal Direction

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

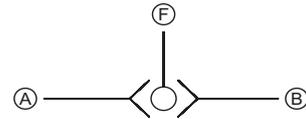
Code	Ports & Material	Body Nomenclature
00	00 = Cartridge only	No Body
SE3/8	AL, 3/8 BSP	NCS06/3-SE3/8
SE1/2	AL, 1/2 BSP	NCS06/3-SE1/2
SE6S	AL, #6 SAE	NCS06/3-SE-6S
SE8S	AL, #8 SAE	NCS06/3-SE-6S

**Aluminum bodies are to be used for pressures less than 210 bar (3000 psi)
 ***Other housings available

OPERATION

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

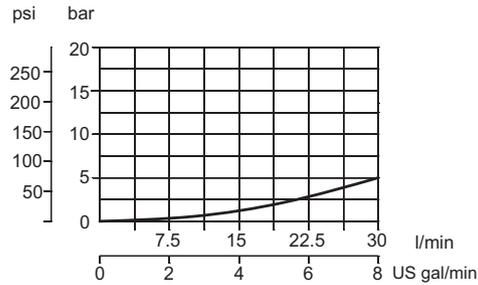
Schematic



SPECIFICATIONS

Theoretical performance

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

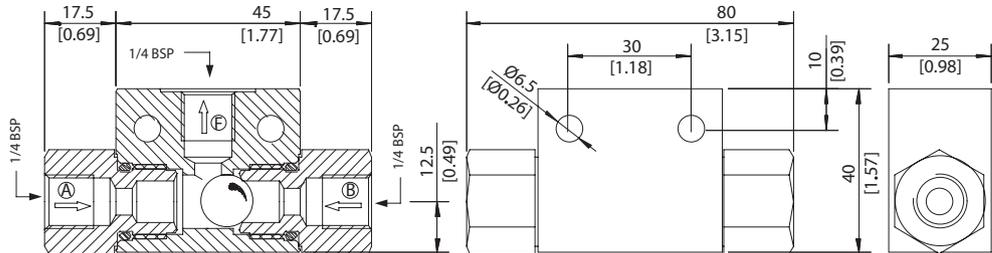


Specifications

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

DIMENSIONS
 mm [in]

Cross-sectional view



ORDERING INFORMATION

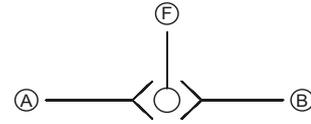
VS 06-G-V

SEALS
 Omit = Buna
 V = Viton

OPERATION

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

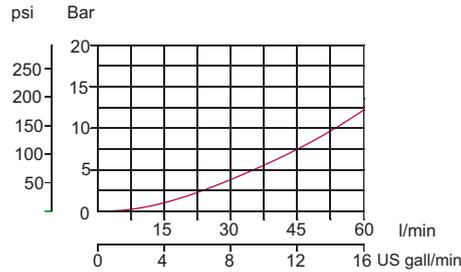
Schematic



SPECIFICATIONS

Theoretical performance

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



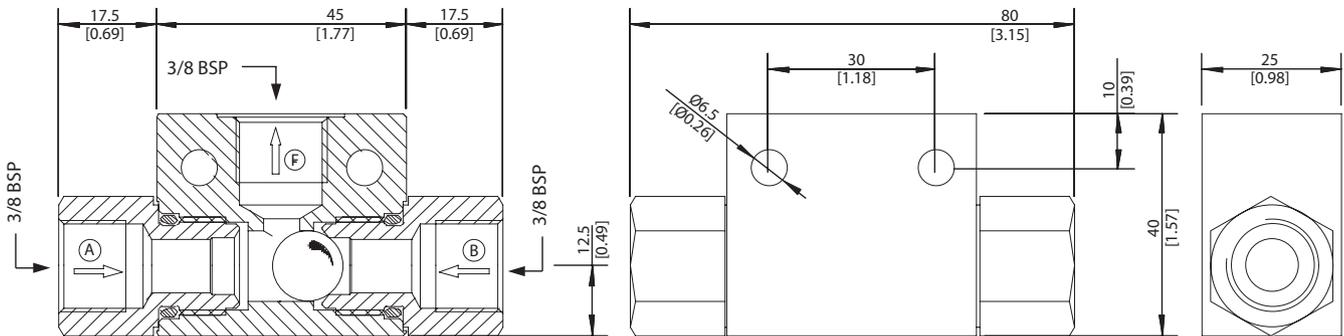
Specifications

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

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VS 10-G-V

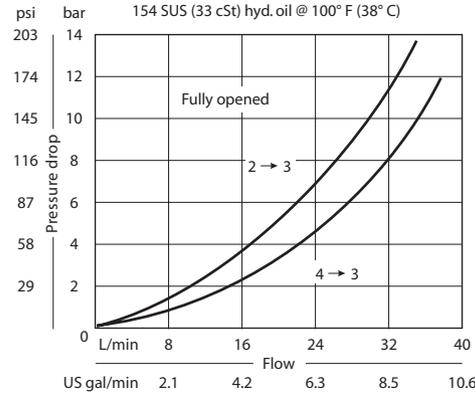
SEALS
 Omit = Buna
 V = Viton

OPERATION

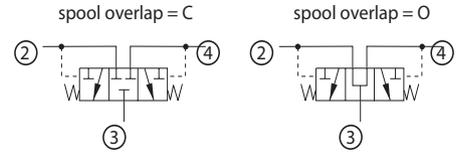
This valve has an internally piloted spool that directs flow from the lower pressure inlet, 2 or 4, to the output at 3.

SPECIFICATIONS

Theoretical performance



Schematic

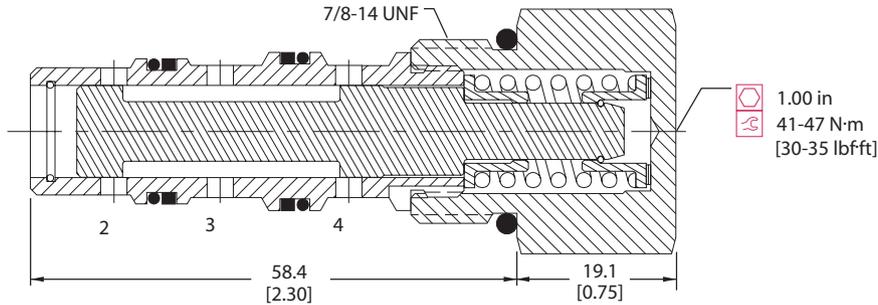


Specifications

Rated pressure	350 bar [5075 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ 207 bar [3000 psi]
Weight	0.15 kg [0.34 lb]
Cavity	SDC10-4

DIMENSIONS
mm [in]

Cross-sectional view



ORDERING INFORMATION

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

Seals
B = Buna-N
V = Viton

Seal kit
11032943
11032944

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

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

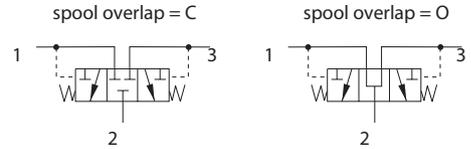
Spool overlap
O = Open
C = Closed

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

OPERATION

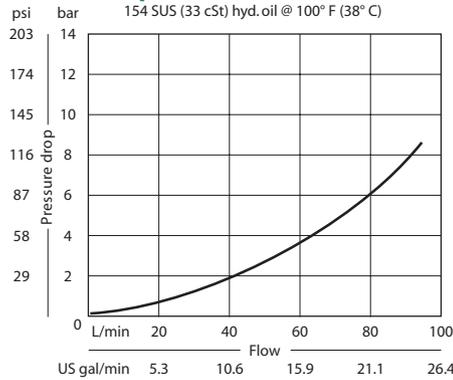
This valve has an internally piloted spool that directs flow from the lower pressure inlet, 1 or 3, to the output at 2.

Schematic



SPECIFICATIONS

Theoretical performance



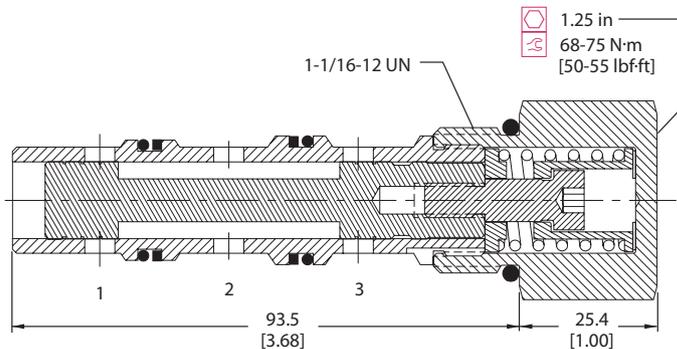
Specifications

Rated pressure	350 bar [5075 psi]
Rated flow at 7 bar [100 psi]	90 l/min [24 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ 207 bar [3000 psi]
Weight	0.34 kg [0.75 lb]
Cavity	CP12-3M

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

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

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

