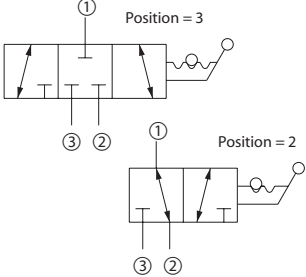
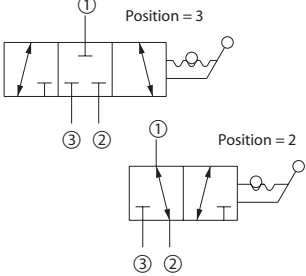


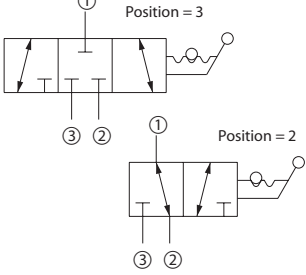
Cartridge Valves Technical Information

Directional Control Valves

Quick Reference

Manual Push/Pull	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP600-1	SDC10-2	Directional Mechanical, Poppet, Pull to Open	68 l/min [18 US gal/min]	210 bar [3000 psi]	12.8
	CE 06	NCS06/2		20 l/min [5 US gal/min]	210 bar [3000 psi]	12.9
	CP600-2	SDC10-2		50 l/min [13 US gal/min]	210 bar [3000 psi]	12.10

Manual Push/Pull	Model No.	Cavity	Description	Flow*	Pressure	Page
	DMP08-NC	SDC08-2	Directional Mechanical, Poppet, Normally Closed	38 l/min [10 US gal/min]		12.11

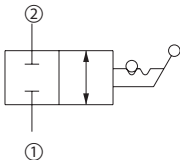
Manual Push/Pull	Model No.	Cavity	Description	Flow*	Pressure	Page
	DMP08-NO	SDC08-2	Directional Mechanical, Poppet, Normally Open	38 l/min [10 US gal/min]		12.12

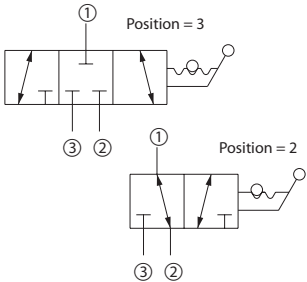
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

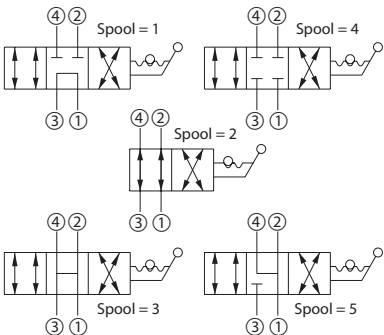
Cartridge Valves Technical Information

Directional Control Valves

Quick Reference

Manual Rotary Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP620-1	SDC10-2	Directional Manual, Rotary, 2-Position, 2-Way	75 l/min [20 US gal/min]	210 bar [3000 psi]	12.13

Manual Rotary Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP630-1	SDC10-3	Directional Manual, Rotary, 2-Position, 3-Way	30.3 l/min [8 US gal/min]	210 bar [3000 psi]	12.14

Manual Rotary Valve	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP640-1	SDC10-4	Directional Manual, Rotary, 2-Position, 4-Way	10 l/min [3 US gal/min]	210 bar [3000 psi]	12.15

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

Cartridge Valves Technical Information

Directional Control Valves

Quick Reference

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP710-8	SDC10-4	Directional Control Valve, 2-Position, 3-Way	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.16
	CP712-11	CP16-4		130 l/min [34 US gal/min]	450 bar [6500 psi]	12.17
	CP712-8	CP16-4		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.18

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP710-1	SDC10-3	Directional Control Valve, 2-Position, 2-Way, Atmospheric Vent	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.19
	CP712-1	SDC16-3		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.20
	CP713-1	SDC20-3		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.21

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP710-3	SDC10-3	Directional Control Valve, 2-Position, 2-Way, Hydraulic Vent	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.22

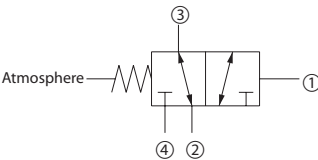
Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP710-2	SDC10-3	Directional Control Valve, 2-Position, 2-Way	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.23
	CP712-2	SDC16-3		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.24
	CP713-2	SDC20-3		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.25

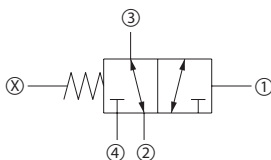
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

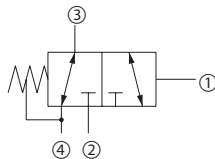
Cartridge Valves Technical Information

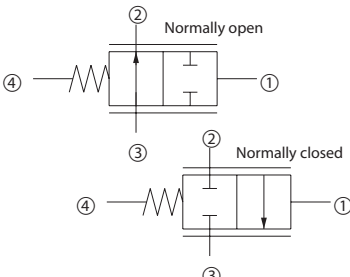
Directional Control Valves

Quick Reference

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP720-1	SDC10-4	Directional Control Valve, 2-Position, 3-Way, Atmospheric Vent	30 l/min [8 US gal/min]	210 bar [3000 psi]	12.26
	CP722-1	CP16-4		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.27
	CP723-1	SDC20-4		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.28

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP720-2	SDC10-4	3w 2p double pilot operated spool	25 l/min [7 US gal/min]	210 bar [3000 psi]	12.29
	CP722-2	CP16-4		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.30
	CP723-2	SDC20-4		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.31

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP720-5	SDC10-4	Directional Control Valve, 2-Position, 3-Way	40 l/min [11 US gal/min]	210 bar [3000 psi]	12.32
	CP722-11	CP16-4		125 l/min [33 US gal/min]	450 bar [6500 psi]	12.33
	CP722-5	CP16-4		130 l/min [34 US gal/min]	210 bar [3000 psi]	12.34
	CP723-5	SDC20-4		265 l/min [70 US gal/min]	210 bar [3000 psi]	12.35

Hydraulic Piloted	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP712-7	CP16-4	Directional Control Valve, Normally Closed/Open, External Pilot, External Drain	220 l/min [58 US gal/min]	210 bar [3000 psi]	12.36

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

Cartridge Valves Technical Information

Directional Control Valves

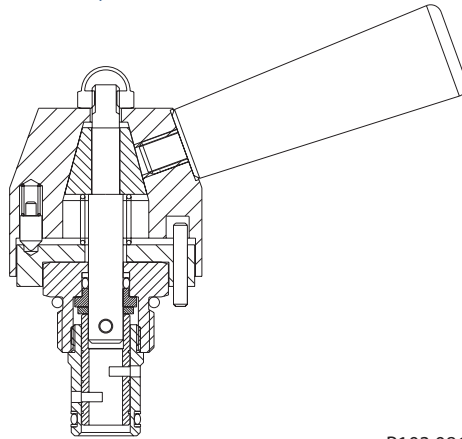
Application Notes

TYPES OF DIRECTIONAL CONTROL VALVES

Directional valves are either manually or hydraulically actuated spools.

Manually-actuated valves are available as 2-way, 3-way, and 4-way valves, and are used either for flow or direction control.

Manually actuated valve



P103 086

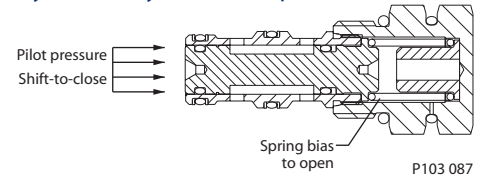
Hydraulically-actuated spool valves are available as 2-way (normally-open or normally-closed), 3-way, and 4-way valves, and are used for direction control. These are all 2-position valves that are spring-biased to a neutral position and use 3-10 bar [40-150 psi] hydraulic pressure to shift the spool.

Directional control valves



F102 007

Hydraulically actuated spool valve



P103 087

Cartridge Valves Technical Information

Directional Control Valves

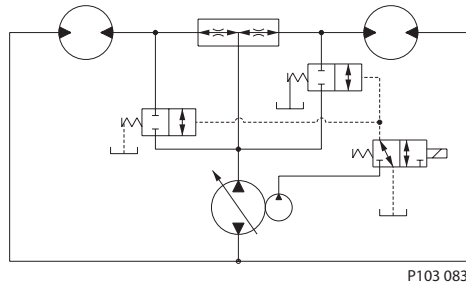
Application Notes

APPLICATIONS

Common applications include:

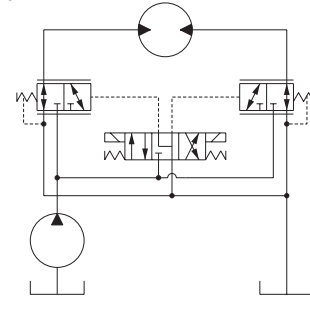
- Directional control valves for high flow with pilot pressure controlled by solenoid valves.
- Bypass valves for flow dividers in vehicle traction circuits.

Pilot-operated bypass valves for traction circuit

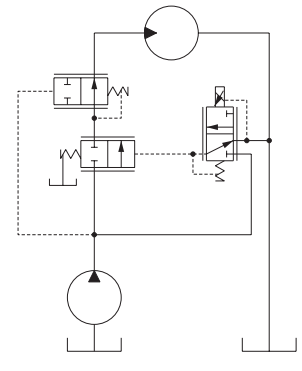


A hydraulically-actuated spool valve (CP712-7) is also available to create an infinitely variable orifice that is controlled by pilot pressure. This valve is typically used in a circuit with a proportional pressure reducing valve (e.g. CP558-24) and a pressure compensator (e.g. CP312-4). Such a circuit creates a pressure-compensated proportional flow control for flows too large for direct-acting proportional valves.

Pilot-operated directional valve circuit



Pilot-operated proportional flow control circuit



Cartridge Valves Technical Information

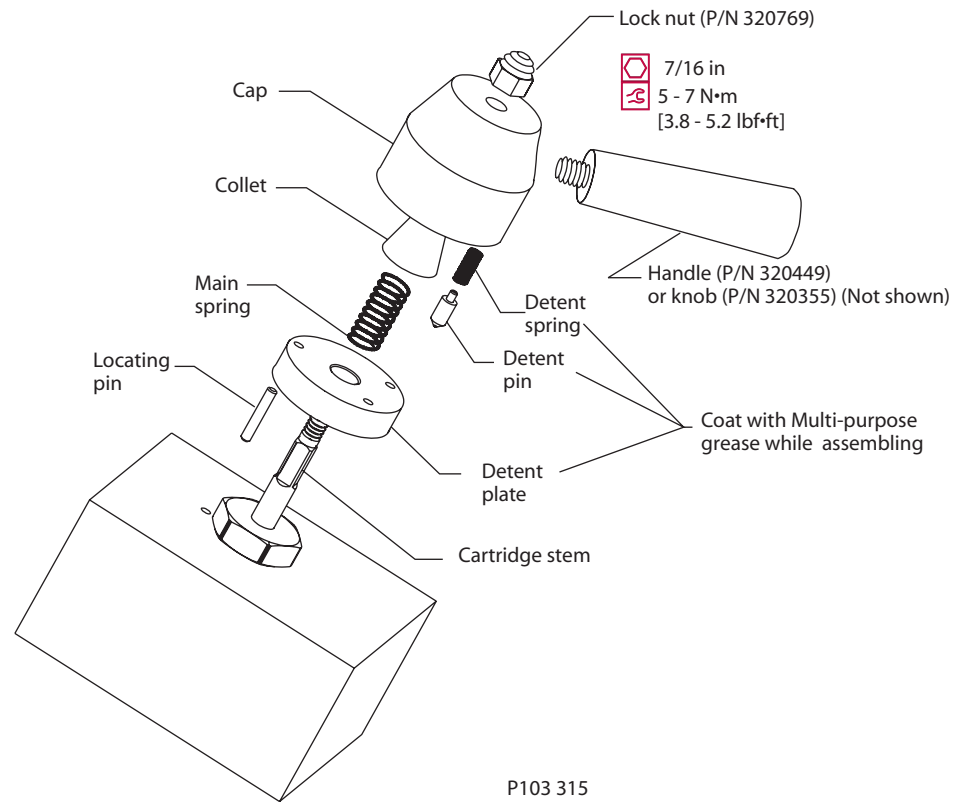
Directional Control Valves

Application Notes

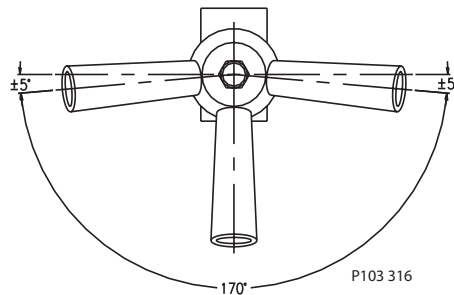
INSTALLATION

1. Install cartridge.
2. Place locating pin in the hole in the block.
3. Install detent plate over the cartridge stem and locating pin.
4. Place the main spring over the cartridge stem.
5. Install the collet into the cap.
6. Place the detent spring and detent pin into cap and install cap over the assembly as shown.
7. Place the lock nut and torque as shown.
8. Thread handle or knob into cap.

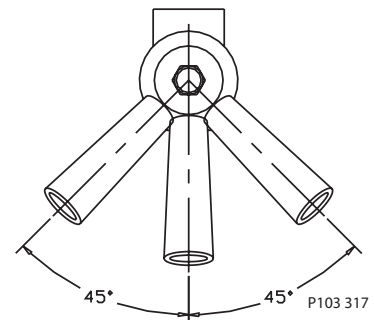
Assembly Drawing



Handle orientation for 2-way valve.



Handle orientation for 3-way and 4-way valves.



Cartridge Valves Technical Information

Directional Control Valves

Manual Push Pull

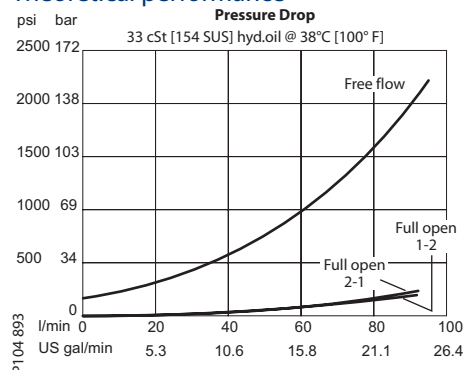
CP600-1

OPERATION

This valve allows free-flow from 1 to 2 and blocks from 2 to 1. It is manually operated with or without knob.

SPECIFICATIONS

Theoretical performance



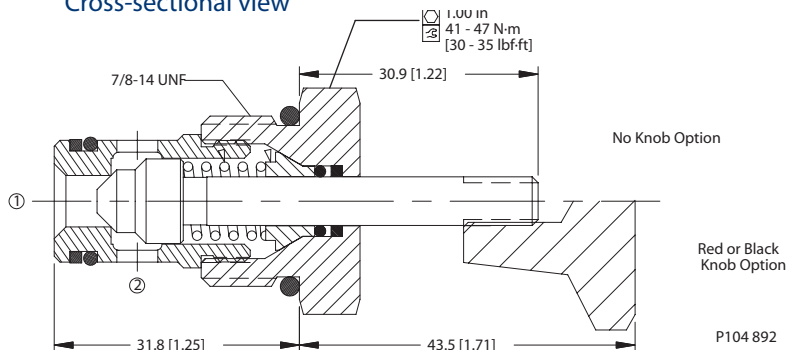
Specifications

Rated pressure	207 bar [3002 psi]
Rated flow at 7 bar [100 psi]	68 l/min [18 US gal/min]
Leakage	6 drops/min @ at rated pressure
Weight	0.11 kg [0.24 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

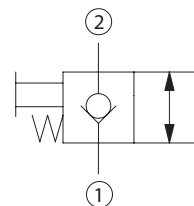
Cross-sectional view



ORDERING INFORMATION

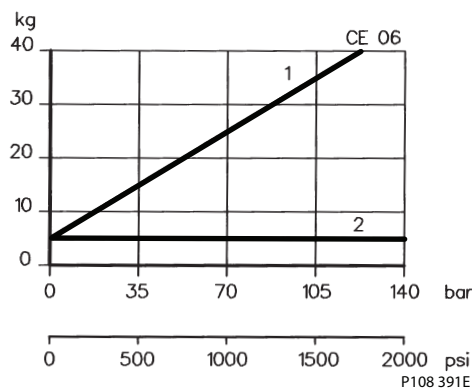
CP600-1-B-6S-00-K			
Seals	Seal kit	Knob Option	
B = BUNA-N	120015	28 = 1/4-28 UNF-2A (NO KNOB)	P104 894
V = VITON	120016	20 = 1/4-20 UNF-2A (NO KNOB)	
		K = BLACK KNOB	
Body & Ports	Body P/N	R = RED KNOB	
0 = Cartridge only	No Body	Force Required to Operate Override	
6S = Aluminum, #6 SAE	CP10-2-6S	0 = 0 N [0 lbf]	
8S = Aluminum, #8 SAE	CP10-2-8S	10 = 44 N [10 lbf]	
3B = Aluminum, 3/8 BSPP	SDC10-2-DG-3B	27 = 120 N [27 lbf]	
4B = Aluminum, 1/2 BSPP	SDC10-2-LG2-4B		

Schematic



P104 891

Force required to operate override



Cartridge Valves Technical Information

Directional Control Valves

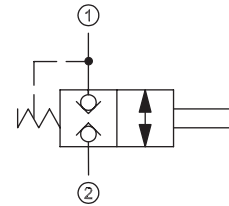
Manual Push Pull

CE 06

OPERATION

This is a normally-closed, manually-operated, bi-directional poppet valve.

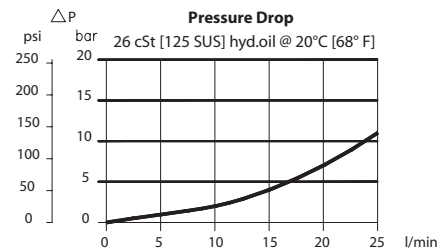
Schematic



P104 551E

SPECIFICATIONS

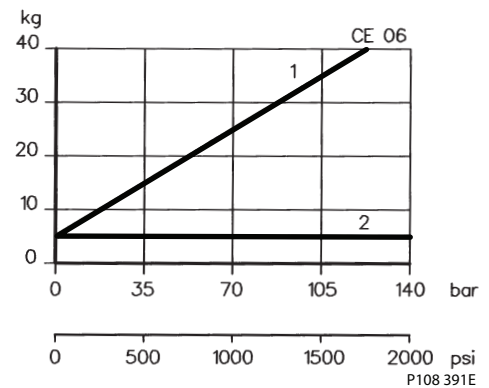
Theoretical performance



Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.20 kg [0.44 lb]
Cavity	NCS06/2

Force required to operate override

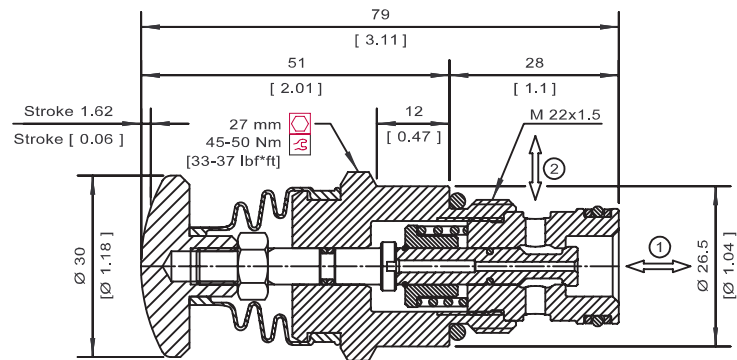


P108 391E

DIMENSIONS

mm [in]

Cross-sectional view



P103 899E

ORDERING INFORMATION

CE 06 - 00 - V

Seals

V = Viton 230000380
 Omit = Buna-N 230000060

Seal kit

Housing and ports

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

Housing P/N

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

P103 837E

Cartridge Valves Technical Information

Directional Control Valves

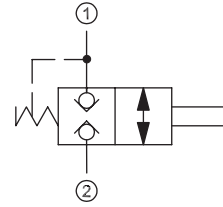
Manual Rotary Valve

CP600-2

OPERATION

This valve is a normally closed, manually operated, bi-directional poppet valve.

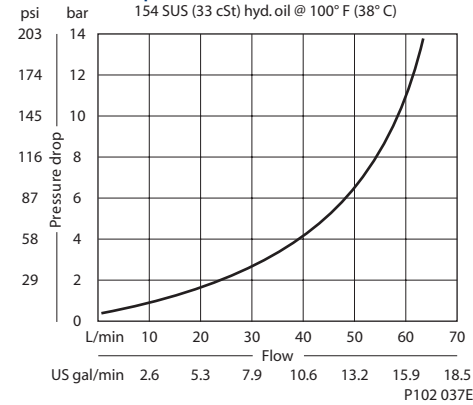
Schematic



P104 551E

SPECIFICATIONS

Theoretical performance



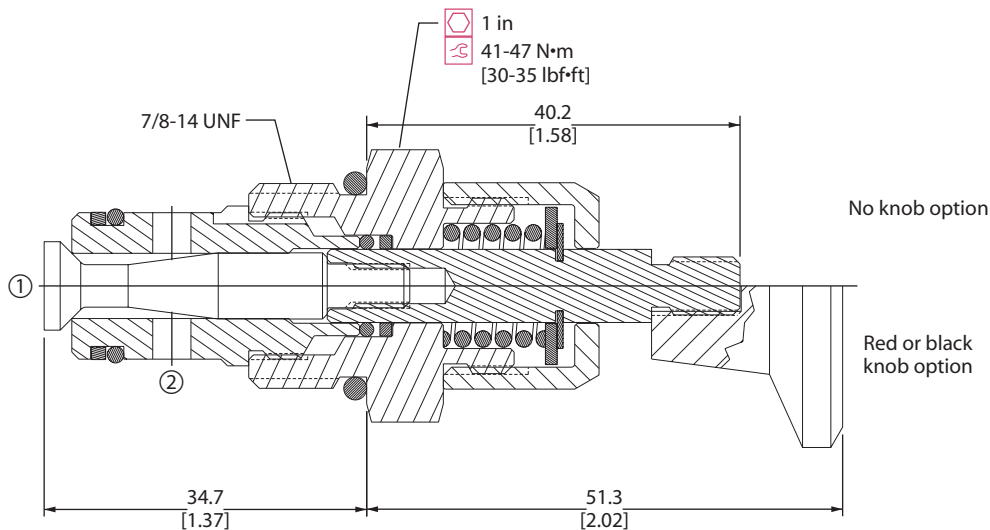
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.11 kg [0.25 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 764E

ORDERING INFORMATION

CP600 - 2 - B - 8S - 10 - B			
Seals		Seal kit	Knob option
B = Buna-N		120015	0 = No knob (1/4-28 UNF threads)
V = Viton		120016	B = Black knob
Housing and ports		Housing P/N	R = Red knob
0 = No Housing		No Housing	
DG3B = AL, 3/8 BSP		SDC10-2-DG-3B	
DG4B = AL, 1/2 BSP		SDC10-2-DG-4B	
6S = AL, #6 SAE		CP10-2-6S	
8S = AL, #8 SAE		CP10-2-8S	
Other housings available			Spring load
			10 = 44 N [10 lbf]
			15 = 67 N [15 lbf]

P102 765E

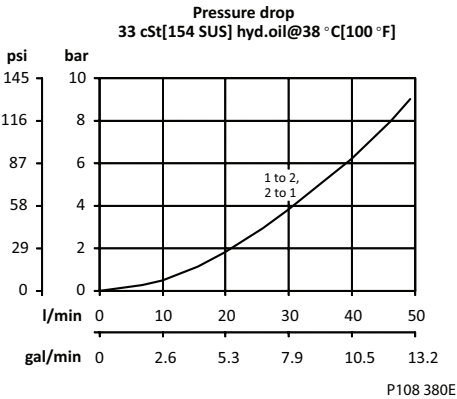
Cartridge Valves Technical Information
Directional Control Valves
Manual Rotary Valve
DMP08-NC

OPERATION

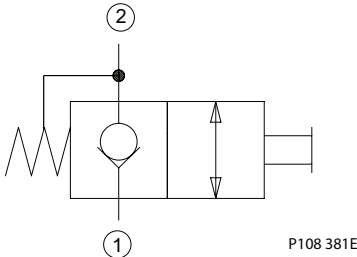
This valve is a normally closed, manually operated, poppet type valve with free reverse flow..

SPECIFICATIONS

Theoretical performance



Schematic



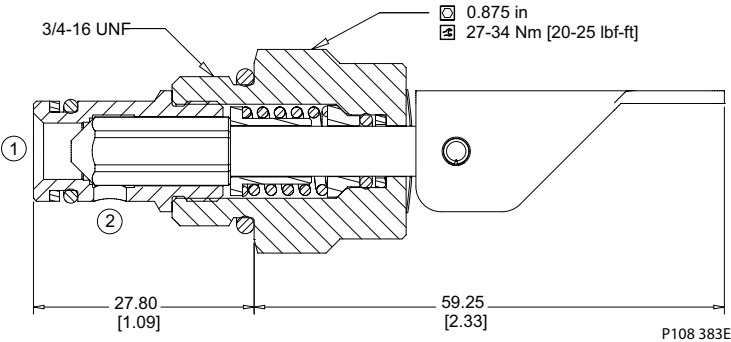
Specifications

Rated pressure	207 bar [3000 psi]
Rated flow at 7 bar [100 psi]	48 l/min [12.7 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.12 kg [0.27 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

DMP08-NC-18-LD-B-00

Shift Force
18 = 18 N [4 lbf]

Handle Option
LD = Detented Lever

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

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

Seals
B = Buna-N
V = Viton

Seal Kit
120221
120222

P108 382E

Cartridge Valves Technical Information

Directional Control Valves

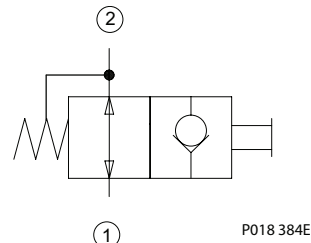
Manual Rotary Valve

DMP08-NO

OPERATION

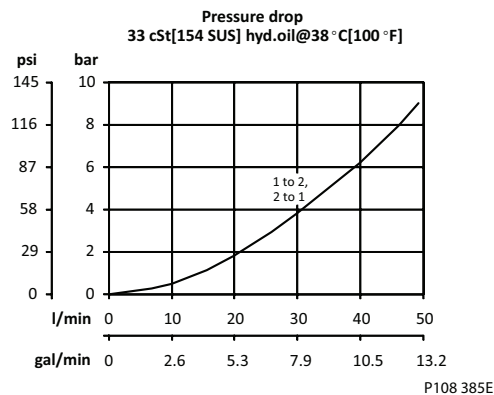
This valve is a normally open, manually operated, poppet type valve with free reverse flow..

Schematic



SPECIFICATIONS

Theoretical performance



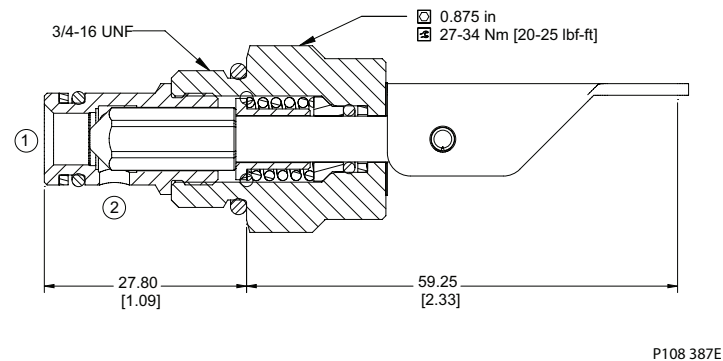
Specifications

Rated pressure	207 bar [3000 psi]
Rated flow at 7 bar [100 psi]	48 l/min [12.7 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.12 kg [0.27 lb]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

DMP08-NO-18-LD-B-00

Shift Force
18 = 18 N [4 lbf]

Handle Option
LD = Detented Lever

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

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

Seals
B = Buna-N
V = Viton

Seal Kit
120221
120222

P108 387E

Cartridge Valves Technical Information

Directional Control Valves

Manual Rotary Valve

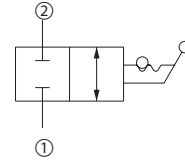
CP620-1

OPERATION

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

Refer to application notes for installation details.

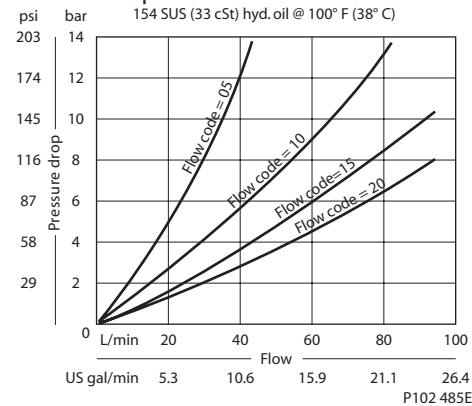
Schematic



P102 503E

SPECIFICATIONS

Theoretical performance



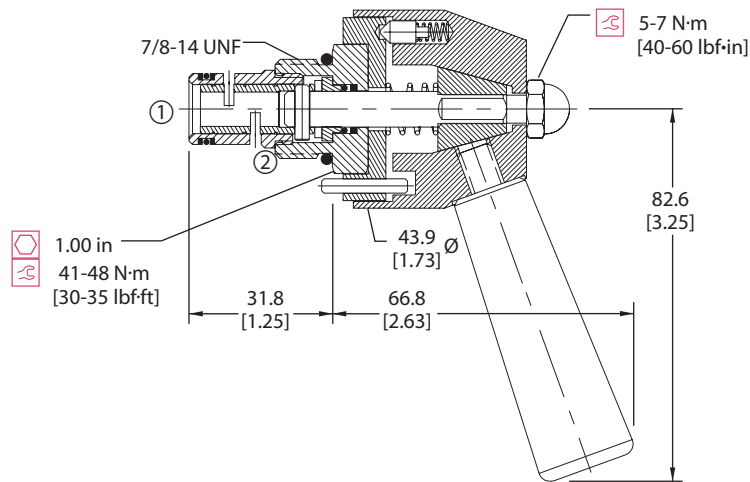
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	75 l/min [20 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ Rated pressure
Weight	0.31 kg [0.69 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 473E

ORDERING INFORMATION

CP620 - 1 - B - 8S - 20 - 2 - DR			
Seals	Seal kit	Rotation to close	Detent
B - Buna-N	120073	R - Clockwise	D = Detent with handle
V - Viton	120074	L - Counterclockwise	K = Knob (not shown)
Housing and ports	Housing P/N		knob is not detented
0 = No Housing	No Housing		Position
DG3B = AL, 3/8 BSP	SDC10-2-DG-3B		2 - 2 Position detent
DG4B = AL, 1/2 BSP	SDC10-2-DG-4B		3 - 3 Position detent
6S = AL, #6 SAE	CP10-2-6S		10 - 10 Position detent
8S = AL, #8 SAE	CP10-2-8S		
Other housings available		Flow	
		05 = 19 l/min [5 US gpm]	
		10 = 38 l/min [10 US gpm]	
		15 = 57 l/min [15 US gpm]	
		20 = 77 l/min [20 US gpm]	

P102 893E

Cartridge Valves Technical Information

Directional Control Valves

Manual Rotary Valve

CP630-1

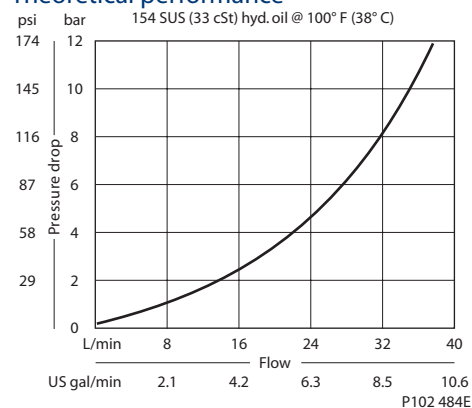
OPERATION

This valve is a 2 position 3 way manual directional control.

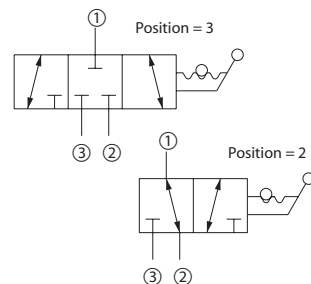
Refer to application notes for installation details.

SPECIFICATIONS

Theoretical performance



Schematic



P102 502E

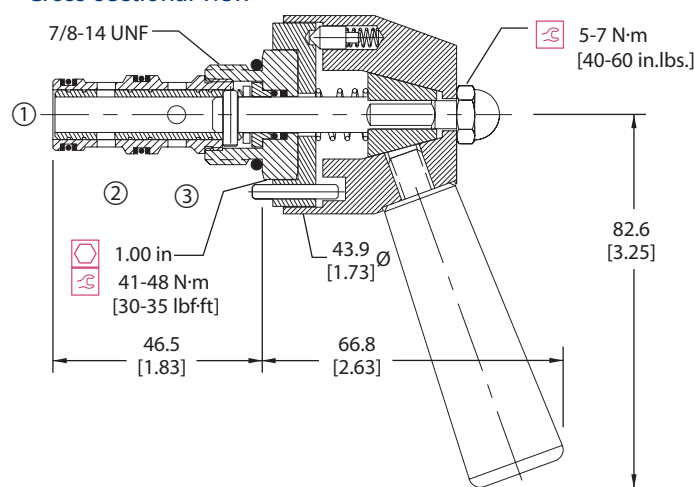
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ Rated pressure
Weight	0.32 kg [0.71 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 472E

ORDERING INFORMATION

CP630 - 1 - B - 8S - 3 - D

Seals

B = Buna-N
V = Viton

Seal kit
120009
120010

Housing and ports

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

Housing P/N

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

Detent

D = Detent with handle
K = Knob (not shown)
knob is not detented

Position

2 = 2 Position detent
3 = 3 Position detent

P102 957E

Cartridge Valves Technical Information

Directional Control Valves

Manual Rotary Valve

CP640-1

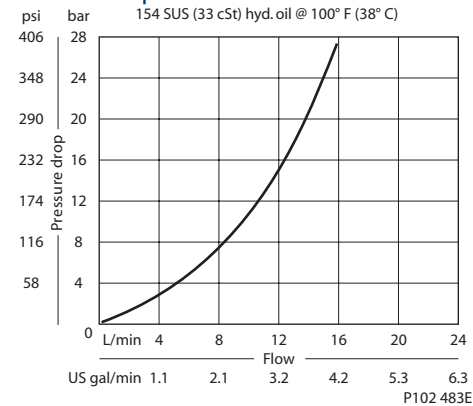
OPERATION

This valve is a 3 position 4 way manual directional control.

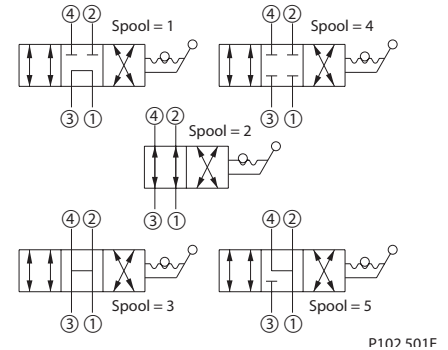
Refer to application notes for installation details.

SPECIFICATIONS

Theoretical performance



Schematic



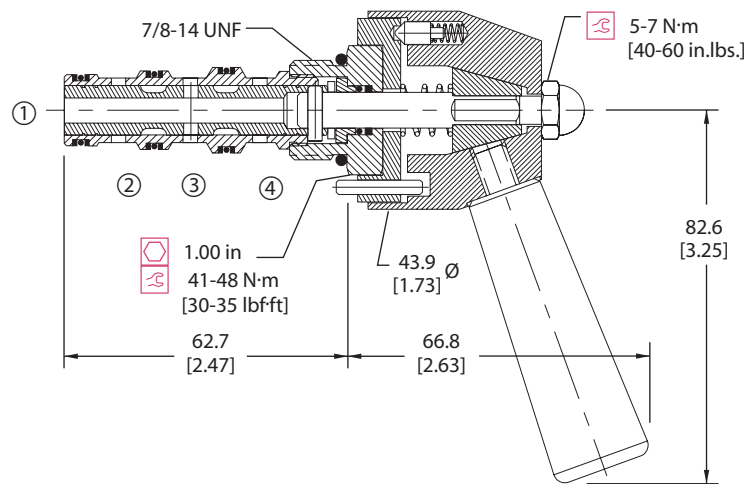
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Leakage	82 cm ³ /min [5 in ³ /min] @ Rated pressure
Weight	0.35 kg [0.77 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP640 - 1 - B - 8S - 3 - 3 - D

Seals

B = Buna-N
V = Viton

Seal kit
120023
120024

Housing and ports

0 = No Housing
LE3B = AL, 3/8 BSP
LE4B = AL, 1/2 BSP
6S = AL, #6 SAE
8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
SDC10-4-L-3B
SDC10-4-L-4B
SDC10-4-6S
SDC10-4-8S

Detent

D = Detent with handle
K = Knob (not shown)
knob is not detented

Position

2 = 2 Position detent
3 = 3 Position detent

Spool

1 = Tandem
2 = 2 position
3 = All open
4 = All closed
5 = Motor

P102 002E

Cartridge Valves Technical Information

Directional Control Valves

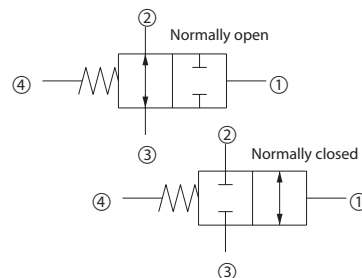
Hydraulic Piloted

CP710-8

OPERATION

This valve is a 2-way double hydraulically piloted spool.

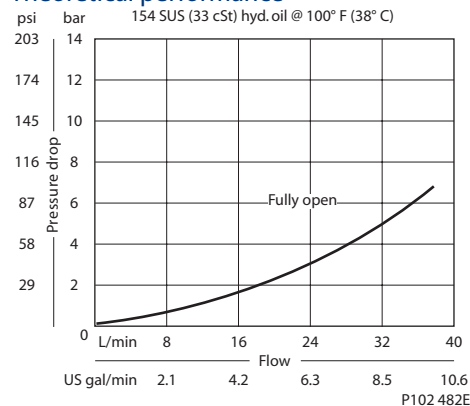
Schematic



P102 959

SPECIFICATIONS

Theoretical performance



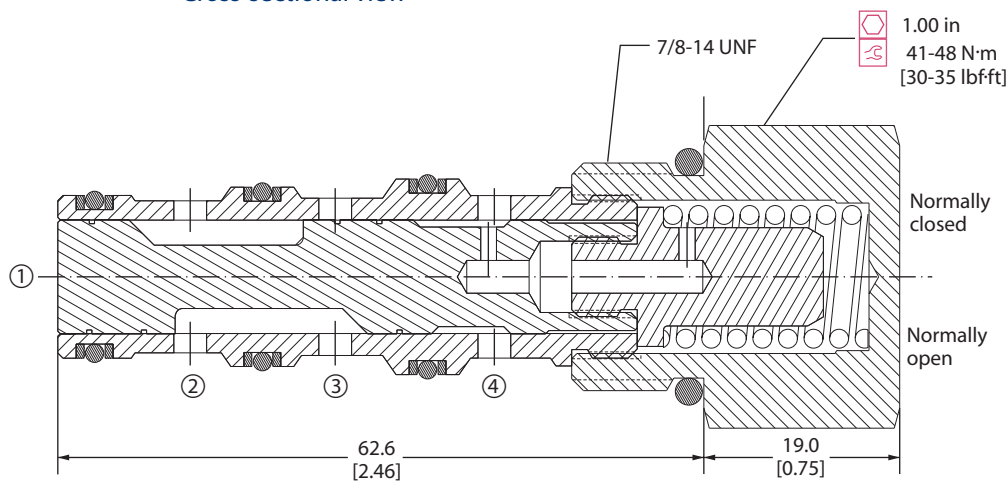
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 934E

ORDERING INFORMATION

CP710 - 8 - B - 16S - C - 080			
Seals		Seal kit	
B = Buna-N		120009	
V = Viton		120010	
Housing and ports		Housing P/N	
0 = No Housing		No Housing	
L3B = AL, 3/8 BSP		SDC10-4-L-3B	
L4B = AL, 1/2 BSP		SDC10-4-L-4B	
6S = AL, #6 SAE		CP10-4-6S	
8S = AL, #8 SAE		CP10-4-8S	
Other housings available			
Configuration		Shift pressure	
O = Normally open		040 = 2.8 bar [40 psi]	
C = Normally closed		080 = 5.5 bar [80 psi]	
		150 = 10.3 bar [150 psi]	

P102 935E

Cartridge Valves Technical Information

Directional Control Valves

Hydraulic Piloted

CP712-11

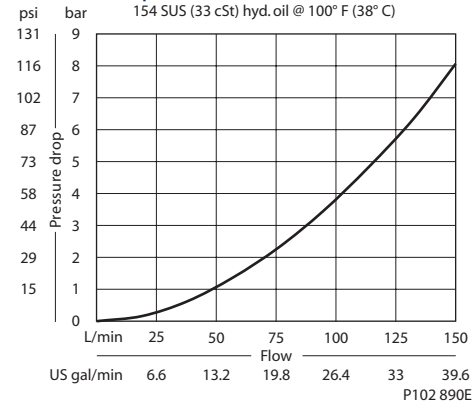
OPERATION

This valve is a 2-way double hydraulically piloted spool.

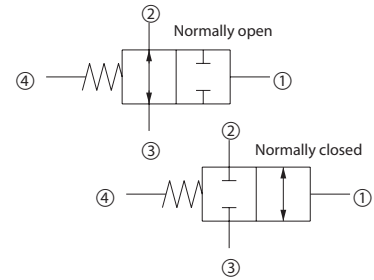
Note: Maximum pressure at port 4 is 207 bar [3000 psi].

SPECIFICATIONS

Theoretical performance



Schematic



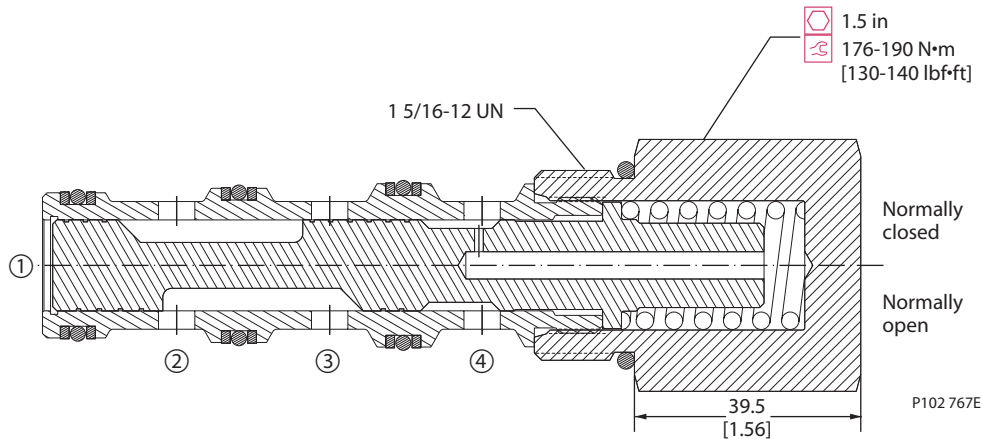
Specifications

Rated pressure	450 bar [6500 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Leakage	328 cm ³ /min [20 in ³ /min] @ 210 bar [3000 psi]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP712-11-U-0-C-040

Configuration
 O = Normally open
 C = Normally closed

Seals
 U = Urethane
 Seal kit 120677

Shift pressure
 040 = 2.8 bar [40 psi]
 080 = 5.5 bar [80 psi]

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

Housing P/N
 No Housing
 CP16-4-6B
 CP16-4-8B
 CP16-4-12S
 CP16-4-16S

Cartridge Valves Technical Information

Directional Control Valves

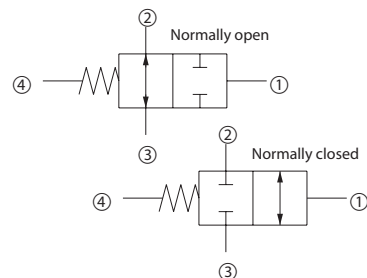
Hydraulic Piloted

CP712-8

OPERATION

This valve is a 2-way double hydraulically piloted spool.

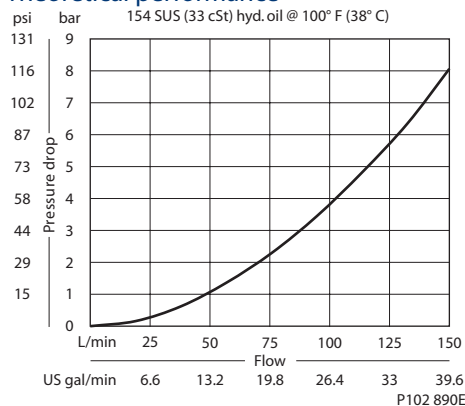
Schematic



P102 959

SPECIFICATIONS

Theoretical performance



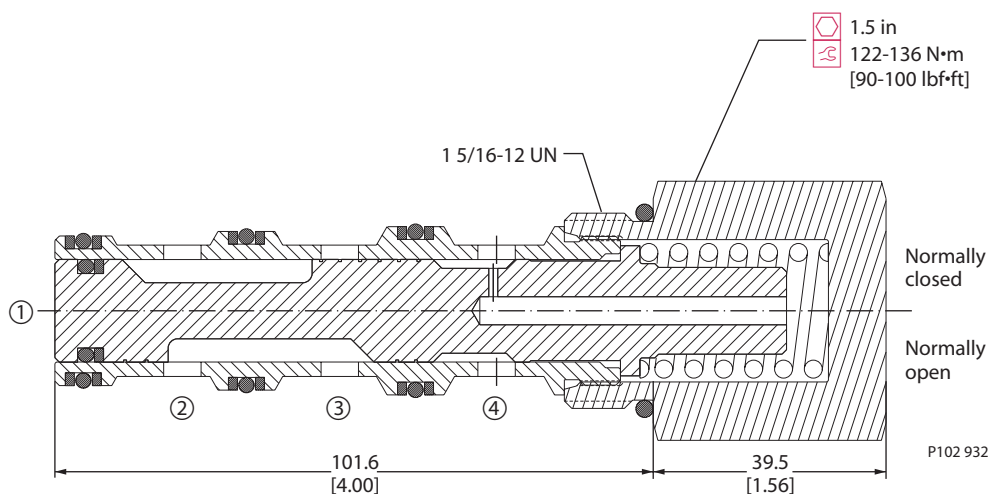
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP712 - 8 - B - 16S - C - 080 - S1

Seals

B = Buna-N
V = Viton

Housing and ports

0 = No Housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Seal kit
120025
120026

Housing P/N

No Housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

Spool seal

S3 = No seal
S4 = Seal included

Shift pressure

040 = 2.8 bar [40 psi]
080 = 5.5 bar [80 psi]
150 = 10.3 bar [150 psi]
shift pressure assumes no seals

Configuration

O = Normally open
C = Normally closed

P102 933E

Cartridge Valves Technical Information

Directional Control Valves

Hydraulic Piloted

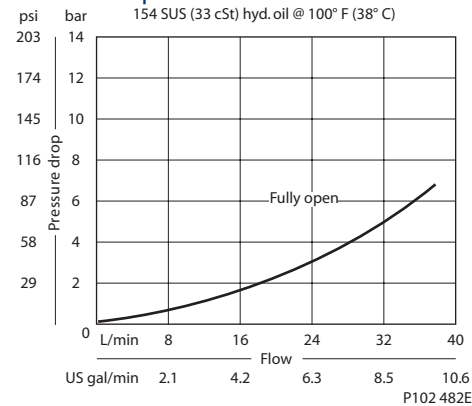
CP710-1

OPERATION

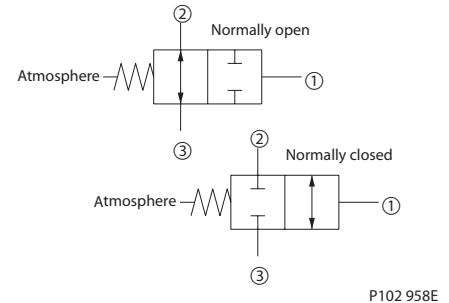
This valve is a hydraulically operated spool with atmospheric vent.

SPECIFICATIONS

Theoretical performance



Schematic



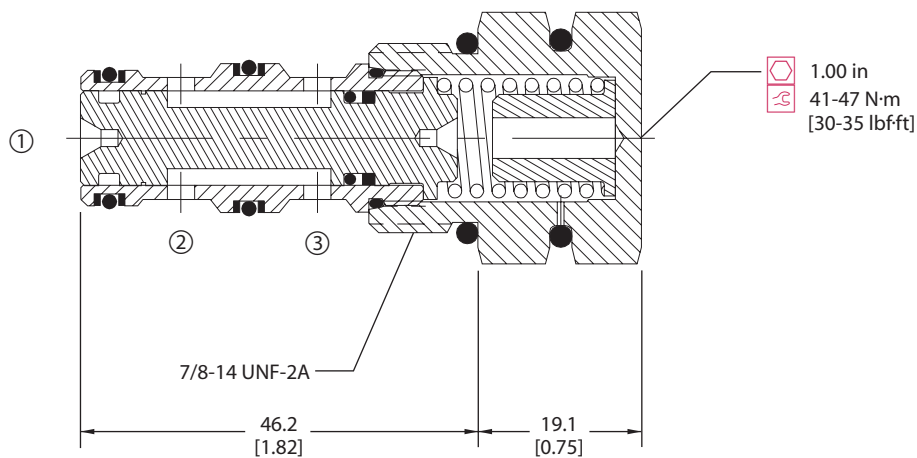
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

Seals		Seal kit		Seal kit	
B	= Buna-N	120009		S1	= Seal at top of spool
V	= Viton	120010		S2	= Seals at top and bottom of spool
Housing and ports		Housing P/N		Shift pressure	
0	= No Housing	No Housing		bar	[psi]
SE3B	= AL, 3/8 BSP	SDC10-3-SE-3B		050	= 3.5 [50]
SE4B	= AL, 1/2 BSP	SDC10-3-SE-4B		080	= 5.5 [80]
6S	= AL, #6 SAE	CP10-3-6S		150	= 10.3 [150]
8S	= AL, #8 SAE	CP10-3-8S		Configuration	
Other housings available				O	= Normally open
				C	= Normally closed

P102 004E

Cartridge Valves Technical Information

Directional Control Valves

Hydraulic Piloted

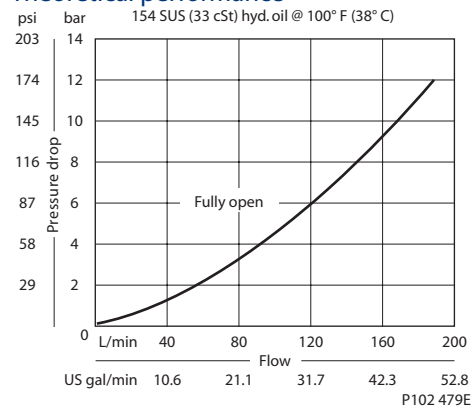
CP712-1

OPERATION

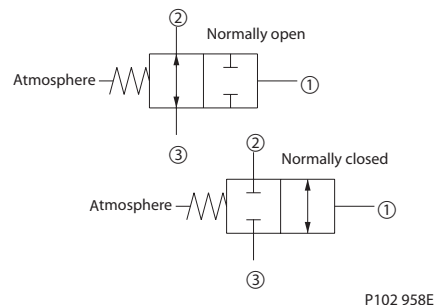
This valve is a hydraulically operated spool with atmospheric vent.

SPECIFICATIONS

Theoretical performance



Schematic



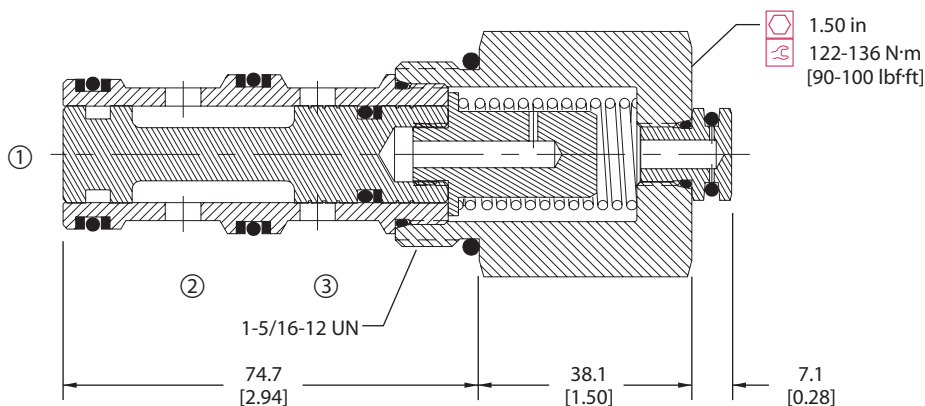
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.57 kg [1.25 lb]
Cavity	SDC16-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP712 - 1 - B - 16S - C - 080 - S1			
Seals		Seal kit	
B = Buna-N		120202	
V = Viton		120203	
Housing and ports		Housing P/N	
0 = No Housing		No Housing	
SE6B = AL, 3/4 BSP		SDC16-3-SE-6B	
SE8B = AL, 1 BSP		SDC16-3-SE-8B	
12S = AL, #12 SAE		CP16-3-12S	
16S = AL, #16 SAE		CP16-3-16S	
Other housings available			
Spool seals		Shift pressure	
S1 = Seal at top of spool		040 = 2.8 bar [40] psi	
S2 = Seals at top and bottom of spool		080 = 5.5 bar [80] psi	
		150 = 10.3 bar [150] psi	
Configuration			
O = Normally open			
C = Normally closed			

P102 953E

Cartridge Valves Technical Information

Directional Control Valves

Hydraulic Piloted

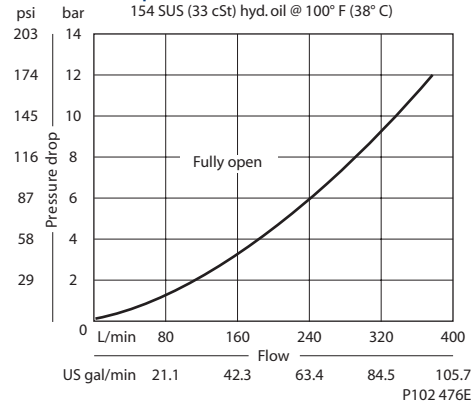
CP713-1

OPERATION

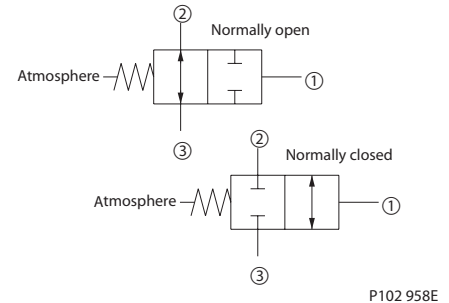
This valve is a hydraulically operated spool with atmospheric vent.

SPECIFICATIONS

Theoretical performance



Schematic



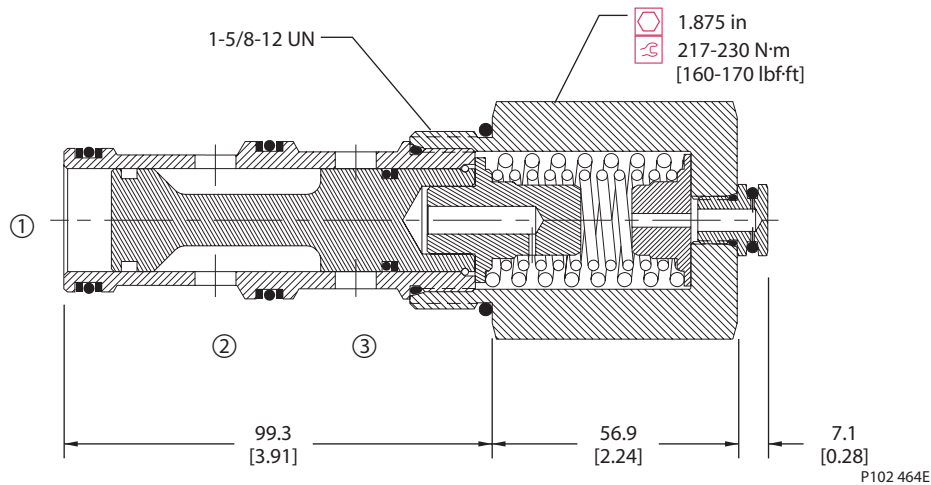
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.26 kg [2.78 lb]
Cavity	SDC20-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP713 - 1 - B - 20S - C - 150 - S1			
Seals	Seal kit	Spool seals	
B = Buna-N	120200	S1 = Seal at top of spool	
V = Viton	120201	S2 = Seals at both ends of spool	
Housing and ports	Housing P/N	Shift pressure	
0 = No Housing	No Housing	050 = 3.5 bar [50 psi]	
8B = AL, 1 BSP	CP20-3-8B	080 = 5.5 bar [80 psi]	
10B = AL, 1-1/4 BSP	CP20-3-10B	100 = 6.9 bar [100 psi]	
16S = AL, #16 SAE	CP20-3-16S	130 = 9.0 bar [130 psi]	
20S = AL, #20 SAE	CP20-3-20S	150 = 10.3 bar [150 psi]	
Other housings available			
Configuration			
O = Normally open			
C = Normally closed			

P102 954E

Cartridge Valves Technical Information

Directional Control Valves

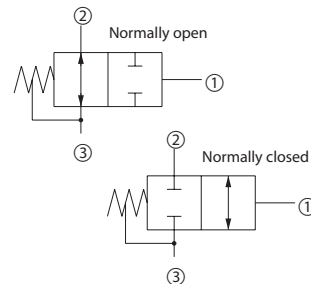
Hydraulic Piloted

CP710-3

OPERATION

This valve is a 2-way hydraulically piloted spool.

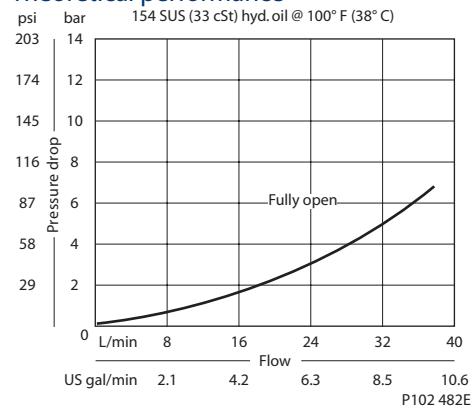
Schematic



P102 756

SPECIFICATIONS

Theoretical performance



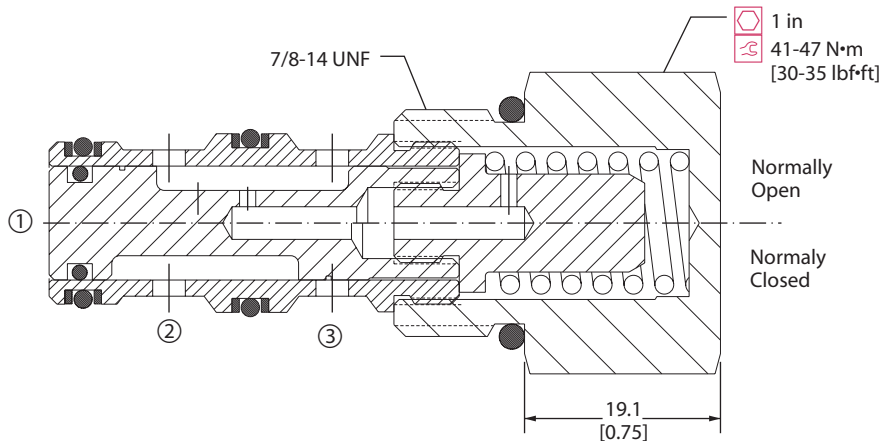
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 755

ORDERING INFORMATION

CP710 - 3 - B - 16S - C - 150 - S1			
Seals		Seal kit	Spool seal
B = Buna-N		120009	S3 = No seal
V = Viton		120010	S4 = With seal
Housing and ports		Housing P/N	Shift pressure
0 = No Housing		No Housing	bar [psi]
SE3B = AL, 3/8 BSP		SDC10-3-SE-3B	150 = 10.3 [150]
SE4B = AL, 1/2 BSP		SDC10-3-SE-4B	shift pressure assumes no seal
6S = AL, #6 SAE		CP10-3S-6S	
8S = AL, #8 SAE		CP10-3S-8S	
Other housings available			
Configuration			
O = Normally open			
C = Normally closed			

P102 754E

Cartridge Valves Technical Information

Directional Control Valves

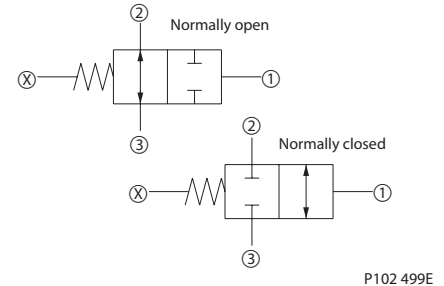
Hydraulic Piloted

CP710-2

OPERATION

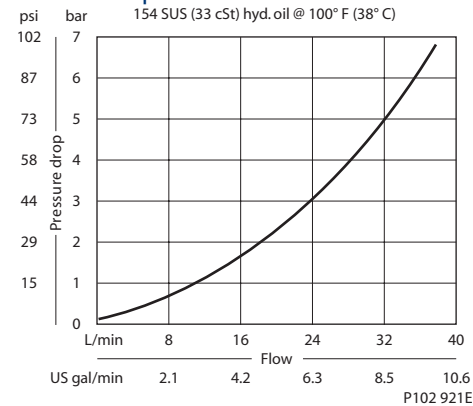
This valve is a 2-way double hydraulically piloted spool.

Schematic



SPECIFICATIONS

Theoretical performance



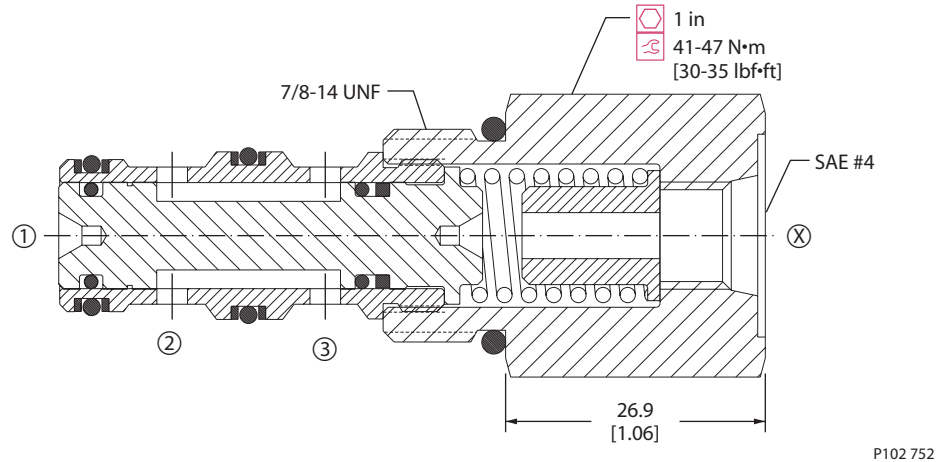
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP710 - 2 - B - 16S - C - 080 - S1			
Seals		Seal kit	
B = Buna-N		120009	
V = Viton		120010	
Housing and ports		Housing P/N	
0 = No Housing		No Housing	
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			
Configuration			
O = Normally open			
C = Normally closed			
Spool seals			
S1 = Seal at top of spool			
S2 = Seal at top and bottom of spool			
S3 = No seals			
S4 = Seal at bottom of spool			
Shift pressure			
040 = 2.8 bar [40 psi]			
050 = 3.4 bar [50 psi]			
080 = 5.5 bar [80 psi]			
125 = 8.6 bar [125 psi]			
150 = 10.3 bar [150 psi]			
shift pressure assumes no seals			

P102 753E

Cartridge Valves Technical Information

Directional Control Valves

Hydraulic Piloted

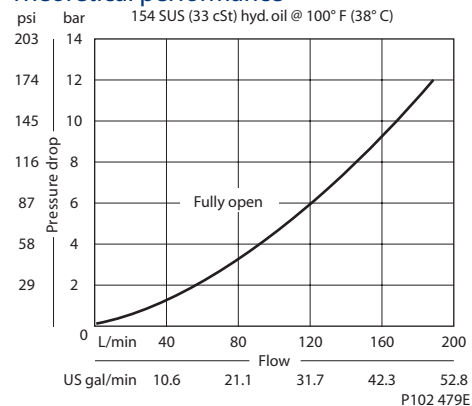
CP712-2

OPERATION

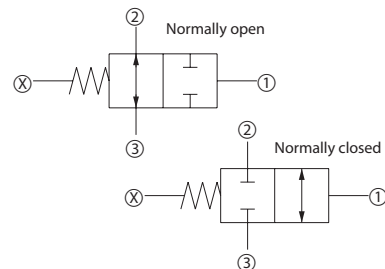
This valve is a 2-way double hydraulically piloted spool.

SPECIFICATIONS

Theoretical performance



Schematic



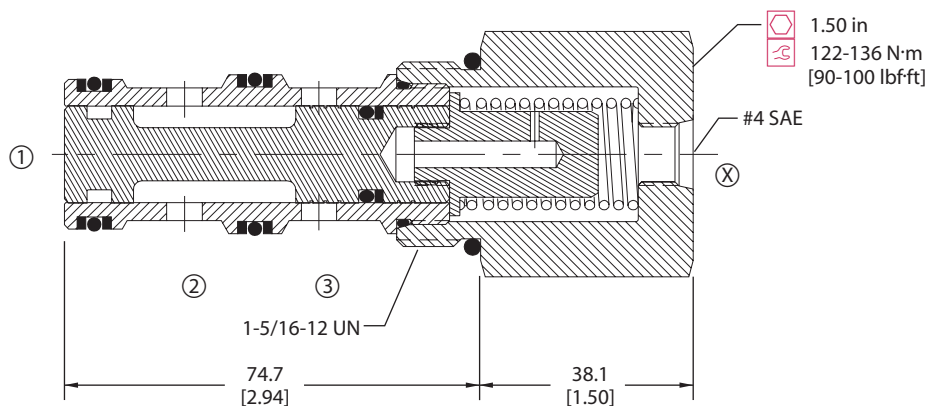
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.57 kg [1.25 lb]
Cavity	SDC16-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP712 - 2 - B - 16S - C - 080 - S1			
Seals	Seal kit	Spool seals	
B = Buna-N	120202	S1 = Seal at top of spool	
V = Viton	120203	S2 = Seals at top and bottom of spool	
		S3 = No seals	
		S4 = Seal at bottom of spool	
Housing and ports	Housing P/N	Shift pressure	
0 = No Housing	No Housing	040 = 2.8 [40]	
SE6B = AL, 3/4 BSP	SDC16-3-SE-6B	080 = 5.5 [80]	
SE8B = AL, 1BSP	SDC16-3-SE-8B	150 = 10.3 [150]	
12S = AL, #12 SAE	CP16-3-12S	shift pressure assumes no seals	
16S = AL, #16 SAE	CP16-3-16S		
Other housings available			
	Configuration		
	O = Normally open		
	C = Normally closed		

Cartridge Valves Technical Information

Directional Control Valves

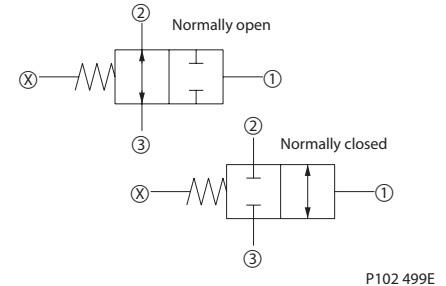
Hydraulic Piloted

CP713-2

OPERATION

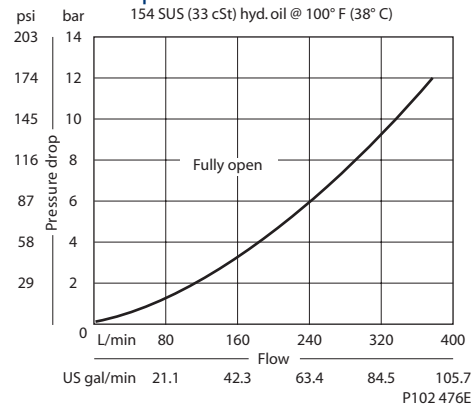
This valve is a 2-way double hydraulically piloted spool.

Schematic



SPECIFICATIONS

Theoretical performance



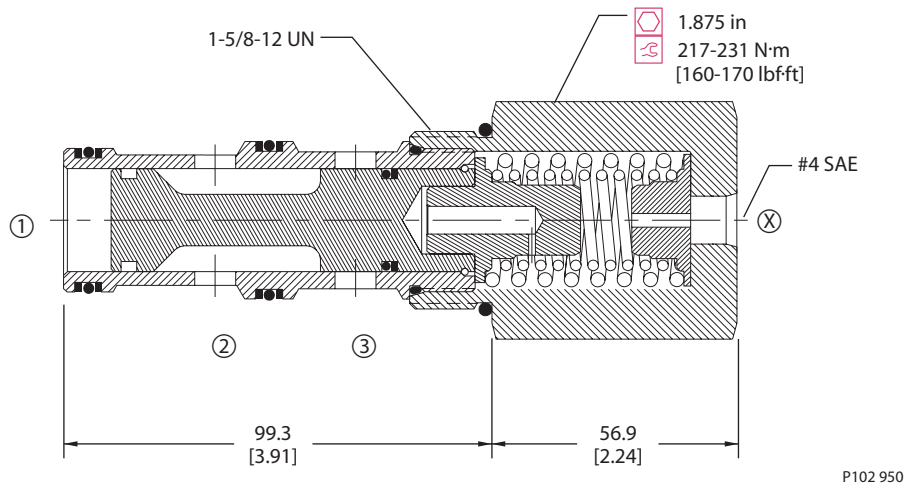
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.26 kg [2.78 lb]
Cavity	SDC20-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP713 - 2 - B - 20S - C - 150 - S1			
Seals		Seal kit	Spool seals
B = Buna-N		120200	S1 = Seal at top of spool
V = Viton		120201	S2 = Seals at top and bottom of spool
Housing and ports		Housing P/N	S3 = No seals
0 = No Housing		No Housing	S4 = Seal at bottom of spool
8B = AL, 1 BSP		CP20-3-8B	
10B = AL, 1-1/4 BSP		CP20-3-10B	Shift pressure
16S = AL, #16 SAE		CP20-3-16S	
20S = AL, #20 SAE		CP20-3-20S	
Other housings available			
Configuration			
0 = Normally open			
C = Normally closed			

	bar	[psi]
050	3.5	[50]
080	5.5	[80]
100	6.9	[100]
130	9.0	[130]
150	10.3	[150]

shift pressure assumes no seals

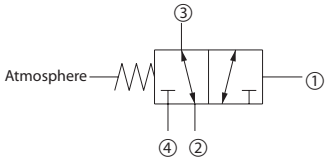
P102 014E

Cartridge Valves Technical Information
Directional Control Valves
Hydraulic Piloted
CP720-1

OPERATION

This valve is a 3-way hydraulically piloted spool with atmospheric vent.

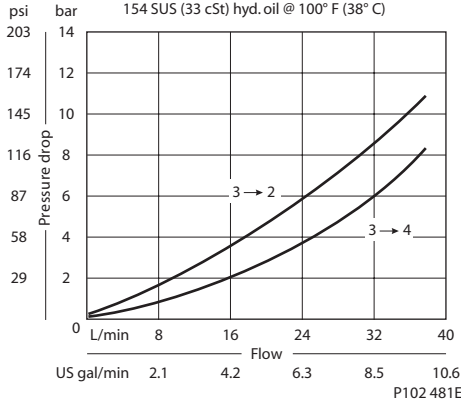
Schematic



P102 498E

SPECIFICATIONS

Theoretical performance



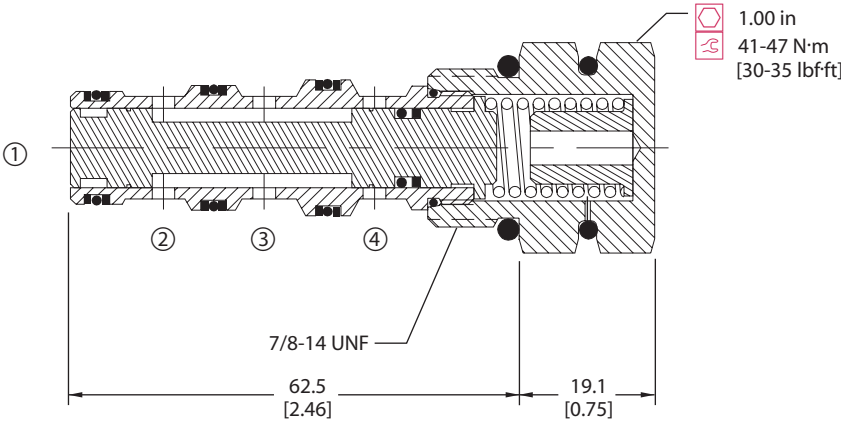
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 469E

ORDERING INFORMATION

CP720 - 1 - B - 8S - 150 - S1			
Seals		Spool seals	
B = Buna-N V = Viton		S1 = Seal at top of spool S2 = Seals at both ends of spool	
Seal kit 120023 120024		Shift pressure	
Housing and ports		bar [psi]	
0 = No Housing L3B = AL, 3/8 BSP L4B = AL, 1/2 BSP 6S = AL, #6 SAE 8S = AL, #8 SAE Other housings available		040 = 2.8 [40] 050 = 3.5 [50] 080 = 5.5 [80] 125 = 8.6 [125] 150 = 10.3 [150]	
Housing P/N			
No Housing SDC10-4-L-3B SDC10-4-L-4B CP10-4-6S CP10-4-8S			

P102 005E

Cartridge Valves Technical Information

Directional Control Valves

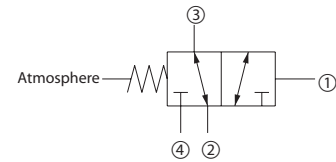
Hydraulic Piloted

CP722-1

OPERATION

This valve is a 3-way hydraulically piloted spool with atmospheric vent.

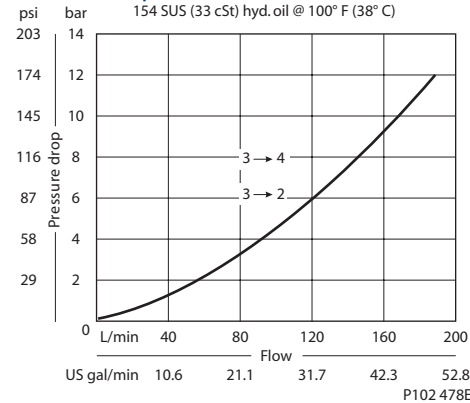
Schematic



P102 498E

SPECIFICATIONS

Theoretical performance



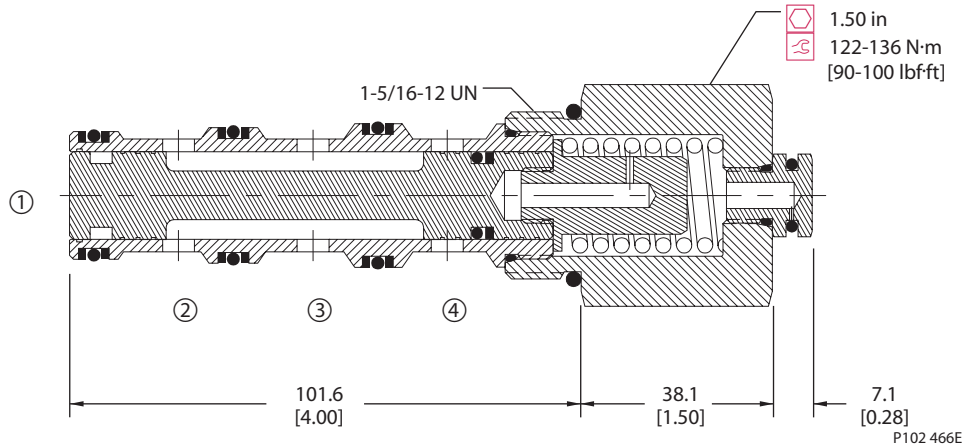
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP722 - 1 - B - 16S - 150 - S1

Seals

B = Buna-N
V = Viton

Housing and ports

0 = No Housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Seal kit
120025
120026

Housing P/N

No Housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

Spool seals

S1 = No seals
S2 = Seal at bottom of spool

Shift pressure

	bar	[psi]
040	2.8	[40]
080	5.5	[80]
150	10.3	[150]

shift pressure assumes no seals

P102 010E

Cartridge Valves Technical Information

Directional Control Valves

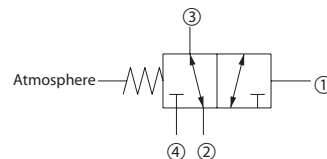
Hydraulic Piloted

CP723-1

OPERATION

This valve is a 3-way hydraulically piloted spool with atmospheric vent.

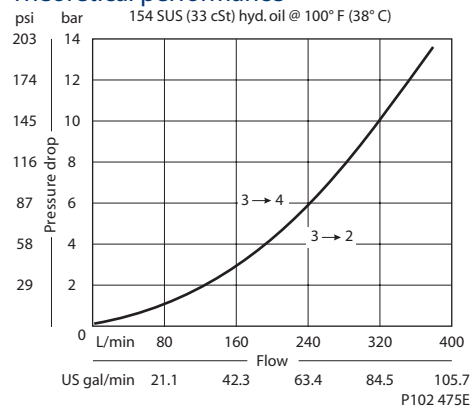
Schematic



P102 498E

SPECIFICATIONS

Theoretical performance



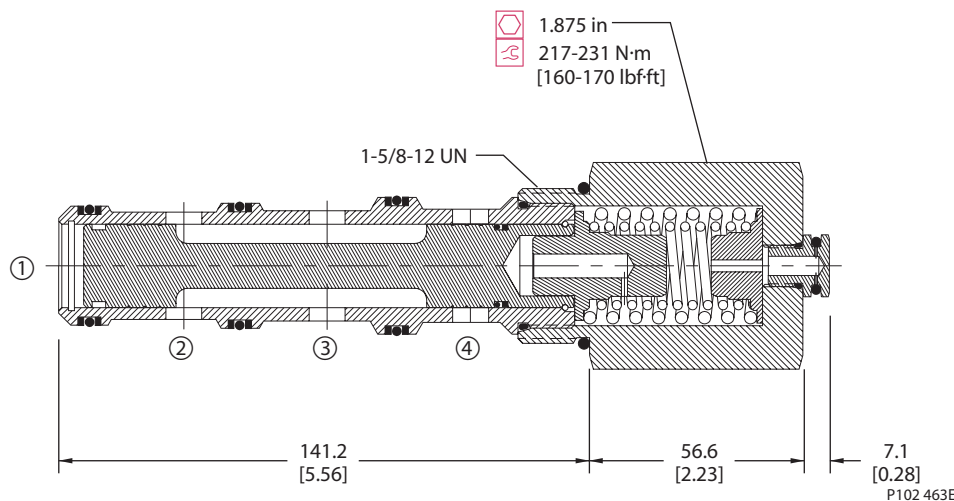
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.22 kg [2.68 lb]
Cavity	SDC20-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP723 - 1 - B - 20S - 150 - S1

Seals

B = Buna-N
V = Viton

Housing and ports

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

Seal kit
120181
120182

Housing P/N

No Housing
CP20-4-8B
CP20-4-10B
CP20-4-16S
CP20-4-20S

Spool seals

S1 = Seal at top of spool (required)
S2 = Seals at both ends of spool

Shift pressure

	bar	[psi]
050	3.5	[50]
080	5.5	[80]
100	6.9	[100]
130	9.0	[130]
150	10.3	[150]

P102 015E

Cartridge Valves Technical Information

Directional Control Valves

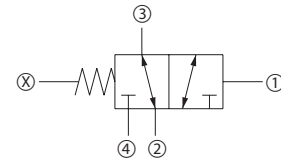
Hydraulic Piloted

CP720-2

OPERATION

This valve is a 3-way double hydraulically piloted spool.

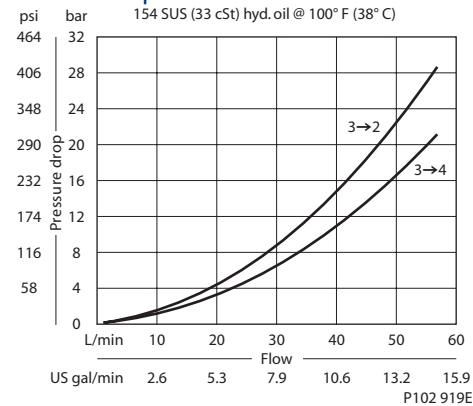
Schematic



P102 938E

SPECIFICATIONS

Theoretical performance



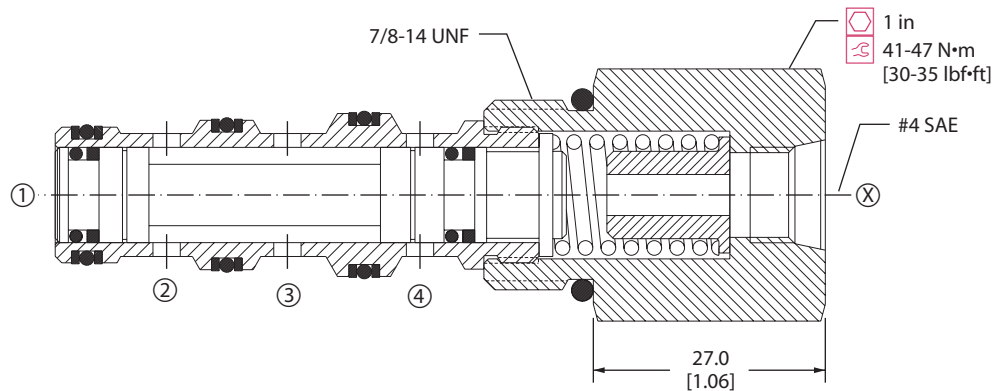
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 758

ORDERING INFORMATION

CP720 - 2 - B - 4S - 150 - S1			
Seals		Spool seals	
B = Buna-N		S1=Seal at top of spool	
V = Viton		S2=Seals at both ends of spool	
		S3 = No seal	
		S4 = Seals at bottom of spool	
Housing and ports		Shift pressure	
0 = No Housing		bar [psi]	
L3B = AL, 3/8 BSP		040 = 2.8 [40]	
L4B = AL, 1/2 BSP		050 = 3.5 [50]	
6S = AL, #6 SAE		080 = 5.5 [80]	
8S = AL, #8 SAE		125 = 8.6 [125]	
Other housings available		150 = 10.3 [150]	
		shift pressure assumes no seals	
Housing P/N			
No Housing			
SDC10-4-L-3B			
SDC10-4-L-4B			
CP10-4-6S			
CP10-4-8S			

Cartridge Valves Technical Information

Directional Control Valves

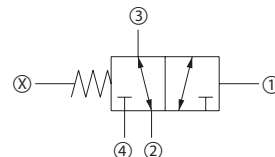
Hydraulic Piloted

CP722-2

OPERATION

This valve is a 3-way double hydraulically piloted spool.

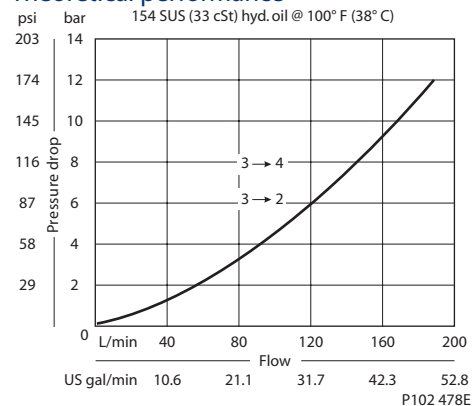
Schematic



P102 938E

SPECIFICATIONS

Theoretical performance



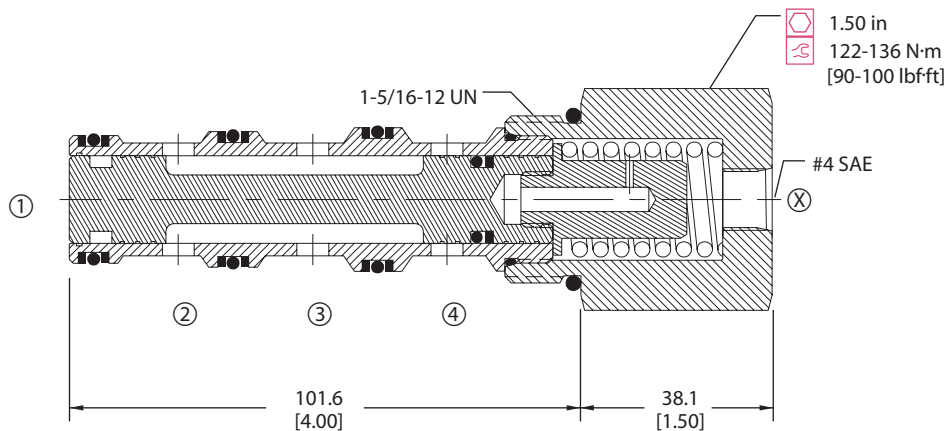
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 951

ORDERING INFORMATION

CP722 - 2 - B - 16S - 150 - S1			
Seals		Spool seals	
B = Buna-N	Seal kit 120025	S1 = Seal at top of spool	
V = Viton	Seal kit 120026	S2 = Seals at both ends of spool	
		S3 = No seals	
		S4 = Seal at bottom of spool	
Housing and ports		Shift pressure	
0 = No Housing	No Housing		
6B = AL, 3/4 BSP	CP16-4-6B	040 = 2.8 bar [40 psi]	
8B = AL, 1 BSP	CP16-4-8B	080 = 5.5 bar [80 psi]	
12S = AL, #12 SAE	CP16-4-12S	150 = 10.3 bar [150 psi]	
16S = AL, #16 SAE	CP16-4-16S	shift pressure assumes no seals	
Other housings available			

P102 955E

Cartridge Valves Technical Information

Directional Control Valves

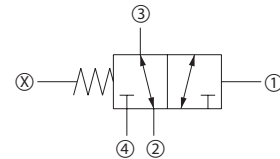
Hydraulic Piloted

CP723-2

OPERATION

This valve is a 3-way double hydraulically piloted spool.

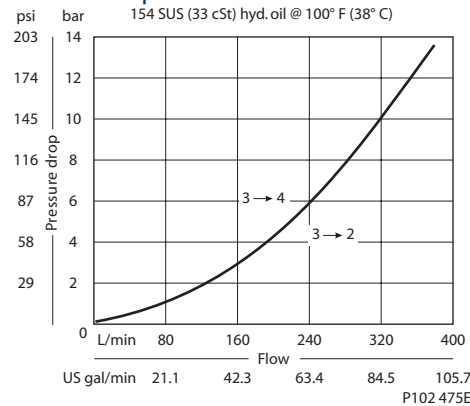
Schematic



P102 938E

SPECIFICATIONS

Theoretical performance



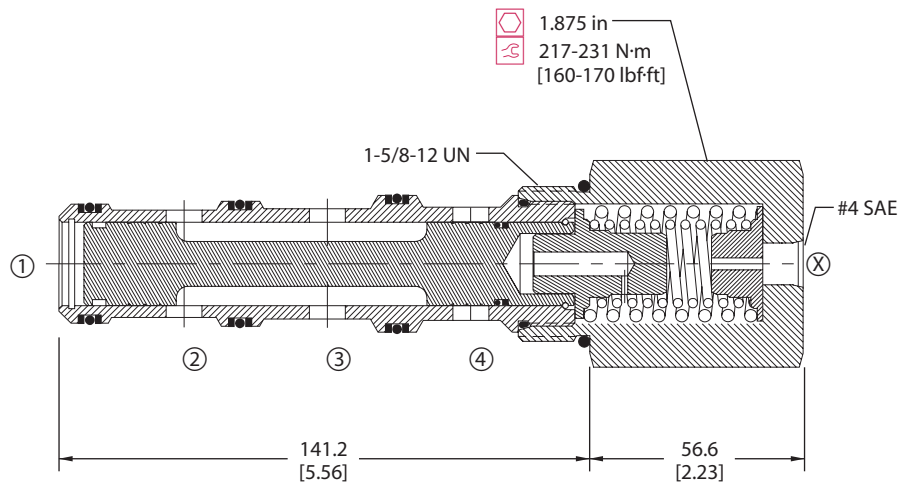
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.22 kg [2.68 lb]
Cavity	SDC20-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 952

ORDERING INFORMATION

CP723 - 2 - B - 20S - 150 - S1

Seals

B = Buna-N
V = Viton

Housing and ports

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

Seal kit
120181
120182

Housing P/N

No Housing
CP20-4-8B
CP20-4-10B
CP20-4-16S
CP20-4-20S

Spool seals

S1 = Seal at top of spool
S2 = Seals at top and bottom of spool
S3 = No seals
S4 = Seal at bottom of spool

Shift pressure

	bar	[psi]
050	3.5	[50]
080	5.5	[80]
100	6.9	[100]
130	9.0	[130]
150	10.3	[150]

shift pressure assumes no seals

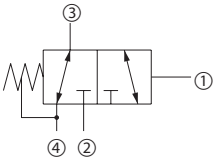
P102 956E

Cartridge Valves Technical Information
Directional Control Valves
Hydraulic Piloted
CP720-5

OPERATION

This valve is a 3-way hydraulically piloted spool.

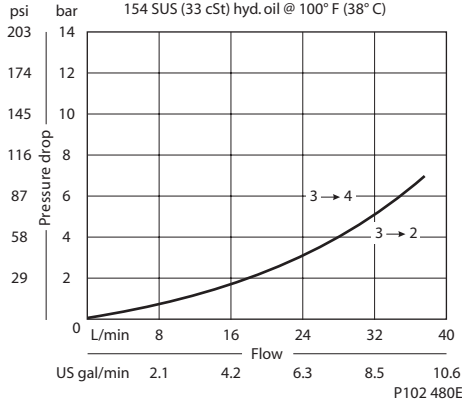
Schematic



P102 500E

SPECIFICATIONS

Theoretical performance



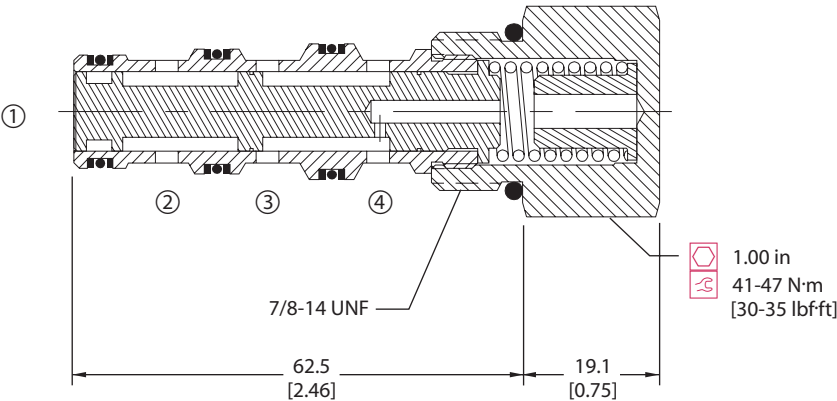
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 468E

ORDERING INFORMATION

CP720 - 5 - B - 8S - 150 - S3

Seals

B = Buna-N
V = Viton

Seal kit
120023
120024

Housing and ports

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

Housing P/N

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

Spool seals

S3 = No seal
S4 = Seal at bottom of spool

Shift pressure

	bar	[psi]
050	3.5	[50]
080	5.5	[80]
125	8.6	[125]
150	10.3	[150]

shift pressure assumes no seals

P102 006E

Cartridge Valves Technical Information

Directional Control Valves

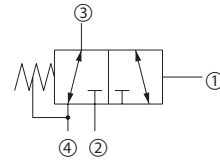
Hydraulic Piloted

CP722-11

OPERATION

This valve is a 3-way hydraulically-piloted spool.

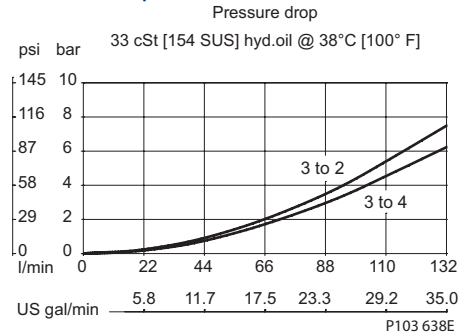
Schematic



P102 500E

SPECIFICATIONS

Theoretical performance



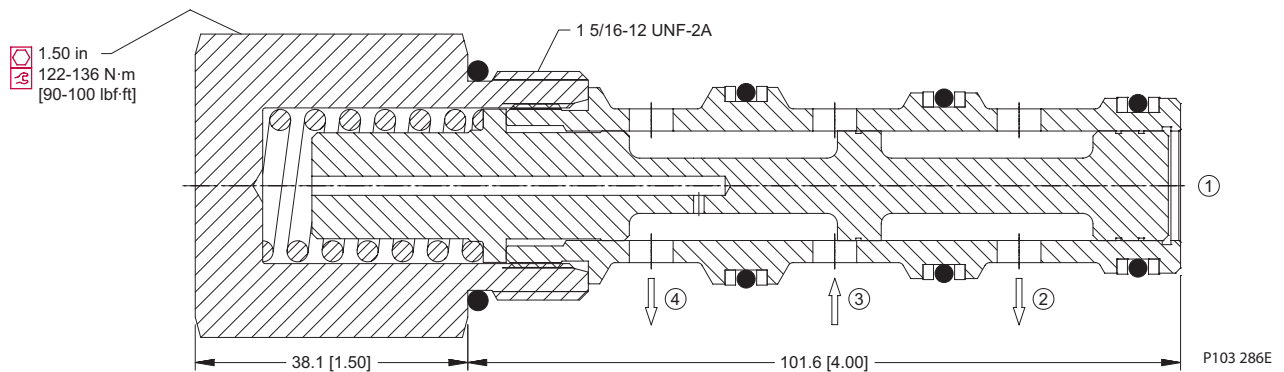
Specifications

Rated pressure	450 bar [6500 psi]
Rated flow at 7 bar [100 psi]	125 l/min [33 US gal/min]
Leakage	164 cm ³ /min [10 in ³ /min] @ Oil temperature range -20° to 80°C [-4° to 180°F]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



P103 286E

ORDERING INFORMATION

CP722-11-U-6B-040	
Seals	Seal kit
U = Urethane	120677
Housing and ports	Housing P/N
0 = No Housing	No Housing
6B = AL, 3/4 BSP	CP16-4-6B
8B = AL, 1 BSP	CP16-4-8B
12S = AL, #12 SAE	CP16-4-12S
16S = AL, #16 SAE	CP16-4-16S
Other housings available	
Shift pressure	
bar [psi]	
040 = 2.8 40	
080 = 5.5 80	

P103 287E

Cartridge Valves Technical Information

Directional Control Valves

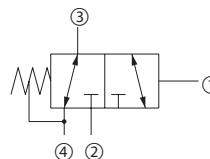
Hydraulic Piloted

CP722-5

OPERATION

This valve is a 3-way hydraulically piloted spool.

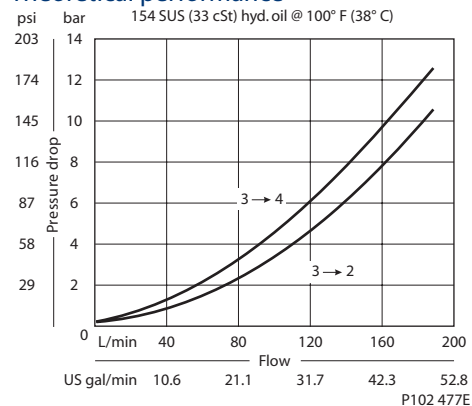
Schematic



P102 500E

SPECIFICATIONS

Theoretical performance



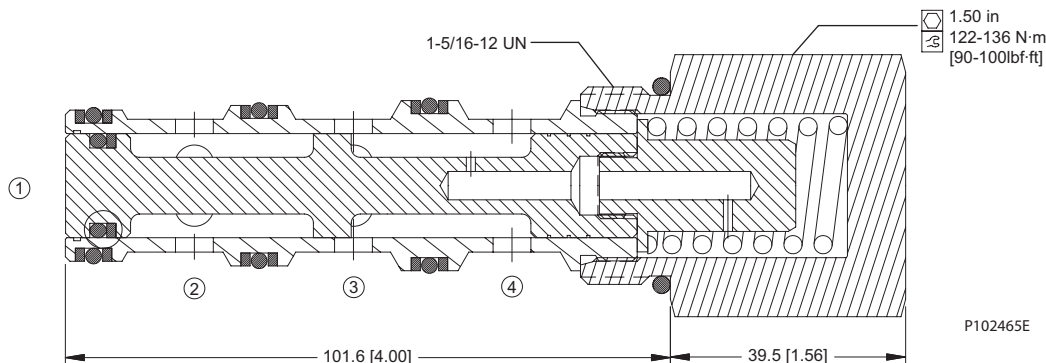
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	130 l/min [34 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP722 - 5 - B - 16S - 150 - S3

Seals

B = Buna-N
V = Viton

Seal kit
120025
120026

Housing and ports

0 = No Housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N

No Housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

Spool seals

S3 = No seal
S4 = Seal at bottom of spool

Shift pressure

	bar	[psi]
040	2.8	[40]
080	5.5	[80]
150	10.3	[150]

shift pressure assumes no seals

P102 013E

Cartridge Valves Technical Information

Directional Control Valves

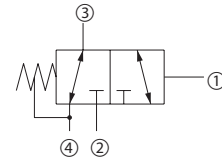
Hydraulic Piloted

CP723-5

OPERATION

This valve is a 3-way hydraulically piloted spool.

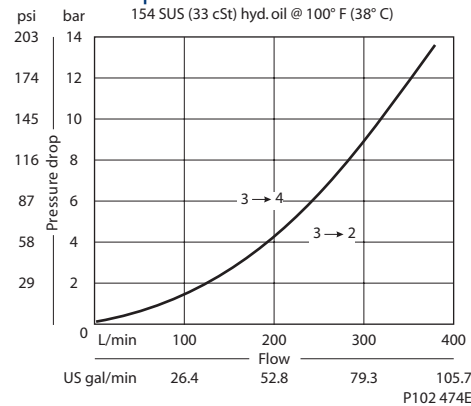
Schematic



P102 500E

SPECIFICATIONS

Theoretical performance



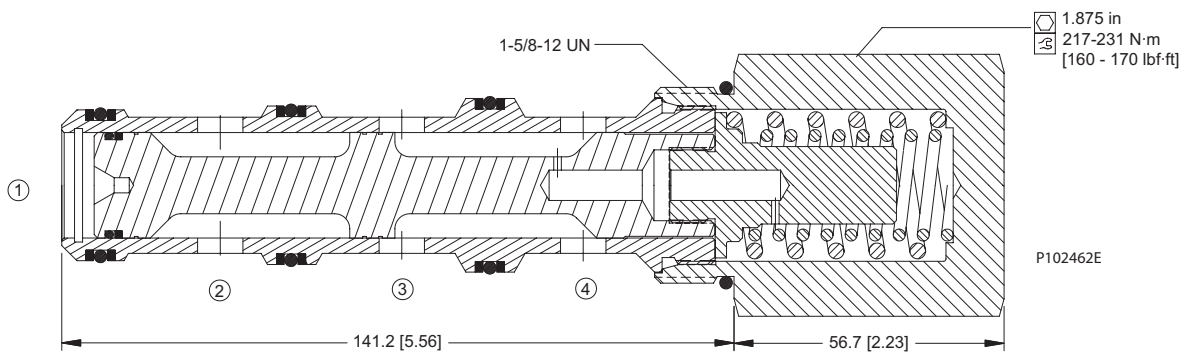
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	265 l/min [70 US gal/min]
Weight	1.22 kg [2.68 lb]
Cavity	SDC20-4

DIMENSIONS

mm [in]

Cross-sectional view



P102462E

 CP723-5
 Directional control valves

ORDERING INFORMATION

CP723 - 5 - B - 20S - 150 - S3

Seals

B = Buna-N
V = Viton

Housing and ports

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

Seal kit
120181
120182

Housing P/N

No Housing
CP20-4-8B
CP20-4-10B
CP20-4-16S
CP20-4-20S

Spool seals

S3 = No seal
S4 = Seal at bottom of spool

Shift pressure

	bar	[psi]
050	3.5	[50]
080	5.5	[80]
100	6.9	[100]
130	9.0	[130]
150	10.3	[150]

shift pressure assumes no seals

P102 018E

Cartridge Valves Technical Information

Directional Control Valves

Hydraulic Piloted

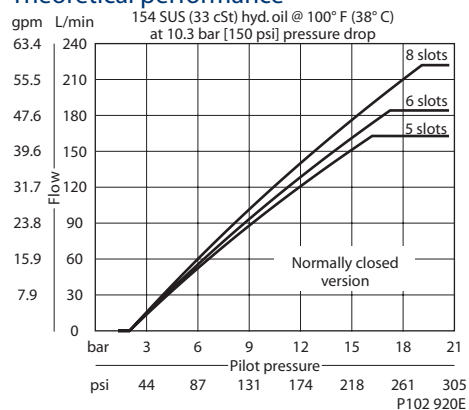
CP712-7

OPERATION

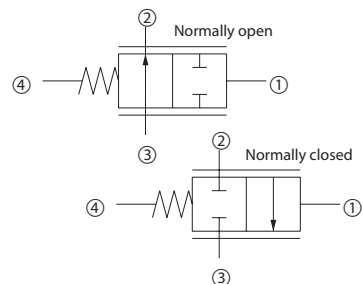
This valve is a hydraulically piloted proportional flow control.

SPECIFICATIONS

Theoretical performance



Schematic



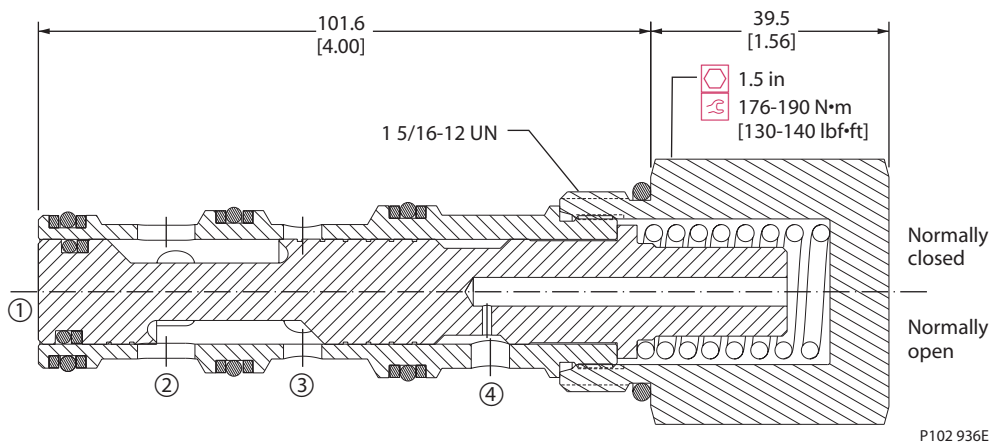
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 10 bar [150 psi]	220 l/min [58 US gal/min]
Weight	0.61 kg [1.34 lb]
Cavity	CP16-4

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP712-7-B-12S-C-5-S4

Spool seal

S3 = No spool seal
S4 = With spool seal

Spool configuration

C = Normally closed
O = Normally open

Sleeve option

5 = 5 slots
6 = 6 slots
8 = 8 slots

Seals

B = Buna-N
V = Viton

Seal kit
120025
120026

Housing and ports

0 = No Housing
6B = AL, 3/4 BSP
8B = AL, 1 BSP
12S = AL, #12 SAE
16S = AL, #16 SAE
Other housings available

Housing P/N

No Housing
CP16-4-6B
CP16-4-8B
CP16-4-12S
CP16-4-16S

P102 894E