



Cartridge Valves Technical Information

Sequence Valves

Quick Reference

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-8	SDC10-3	Sequence Valve, 2-Way,	55 l/min [14 US gal/min]	210 bar [3000 psi]	06.8
	CP241-8	CP12-3S	Normally Closed	150 l/min [39 US gal/min]	40 bar [600 psi]	06.9

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-21	SDC10-3	Sequence Valve, Pilot Operated Spool	45 l/min [12 US gal/min]	350 bar [5000 psi]	06.10
	CP241-21	CP12-3S		75 l/min [20 US gal/min]	350 bar [5000 psi]	06.11

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-2	SDC10-3	Sequence Valve, 2-Way, Normally Closed, External Pilot, Internal Drain	35 l/min [9 US gal/min]	210 bar [3000 psi]	06.12

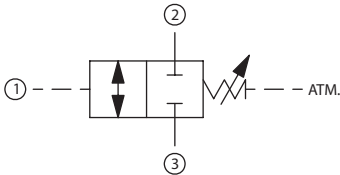
Kick Down Type	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-22	SDC10-3	Sequence Valve, Kick-Down Type	45 l/min [12 US gal/min]	350 bar [5000 psi]	06.13

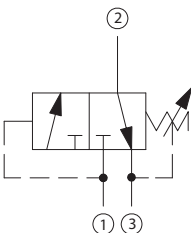
Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDP 06/NA	NCS06/3	Sequence Valve, 2-Way, Normally Open	25 l/min [7 US gal/min]	315 bar [4500 psi]	06.14

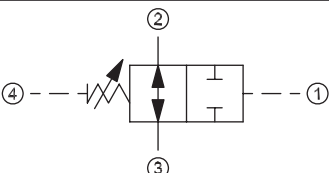
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

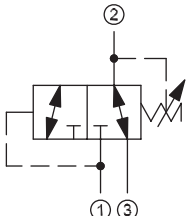
Cartridge Valves Technical Information
 Sequence Valves
 Quick Reference

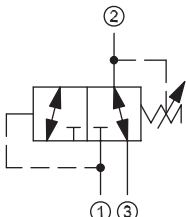
Sequence Valves
Quick reference

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDP 06/NC	NCS06/3	Sequence Valve, 2-Way, Normally Closed	25 l/min [7 US gal/min]	315 bar [4500 psi]	06.15

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-5	SDC10-4	Sequence Valve, 2-Way, Normally Open	25 l/min [7 US gal/min]	210 bar [3000 psi]	06.16

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-1	SDC10-3	Sequence Valve, 2-Way, Normally Open	25 l/min [7 US gal/min]	210 bar [3000 psi]	06.17

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-9	SDC10-3	Sequence Valve, 3-Way	20 l/min [5 US gal/min]	210 bar [3000 psi]	06.18

Sequence	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDP 06/4201	NCS06/4	Sequence Valve, 3-Way	22 l/min [6 US gal/min]	315 bar [4500 psi]	06.19

* 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

Sequence Valves

Quick Reference

Unloading	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDB 06-CN	NCS06/3	Unloading Valve, Differential Area,	80 l/min [21 US gal/min]	350 bar [5000 psi]	06.20
	VDB 12-CN	NCS12/3	Pilot Operated, Atmospheric Vented	160 l/min [42 US gal/min]	350 bar [5000 psi]	06.21

Unloading	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDB 06-EN	NCS06/3	Unloading Valve, Differential Area,	80 l/min [21 US gal/min]	350 bar [5000 psi]	06.22
	VDB 12-EN	NCS12/3	Pilot Operated	160 l/min [42 US gal/min]	350 bar [5000 psi]	06.23

Unloading	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP240-30	SDC10-3	Unloading Valve, Direct Acting, Pilot Operated	4 l/min [1 US gal/min]	210 bar [3000 psi]	06.24

Unloading	Model No.	Cavity	Description	Flow*	Pressure	Page
	AUV 06	NCS06/4	Unloading Valve, Pilot Operated, Spool	50 l/min [13 US gal/min]	250 bar [3600 psi]	06.25

* 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

Sequence Valves

Application Notes

Sequence valves
Application notes

SEQUENCE VALVES

As the name implies, sequence valves control a sequence of operations. Sequence valves usually use a pressure signal to shift a spool, thereby opening or closing a flow path at a pre-set pressure.

Sequence valves



F102 013

DIRECT-ACTING SEQUENCE VALVES

Direct-acting sequence valves are spool-type valves with a spring force holding the spool closed. When inlet pressure exceeds the spring setting, the spool shifts to direct flow to a second function.

Direct-acting sequence valves come in a variety of configurations:

- Internally-piloted with external drain
- Internally-piloted with internal drain
- Externally-piloted with internal drain

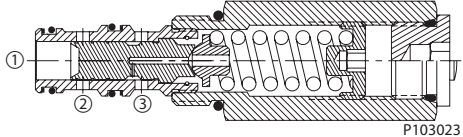
Direct-acting sequence valves are best suited for fairly constant flow and lower pressures.

PILOT-OPERATED SEQUENCE VALVES

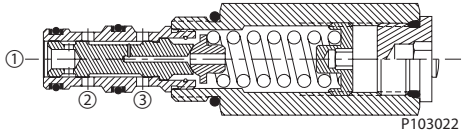
Also available are pilot-operated sequence valves that have an internal pilot and an external drain.

Pilot-operated sequence valves are best suited for higher and more widely varying flows, and higher pressures.

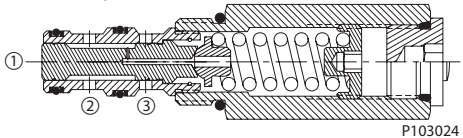
Internal-pilot with external drain



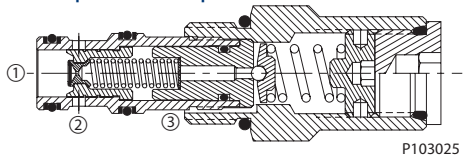
Internal-pilot with internal drain



External-pilot with internal drain



Pilot operated sequence valve



Cartridge Valves Technical Information

Sequence Valves

Application Notes

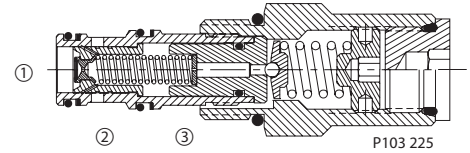
KICK-DOWN SEQUENCE VALVES

Another type of pilot-operated sequence valve is commonly known as a kick-down sequence valve. The kick-down sequence valve blocks flow at 1 until sufficient pressure exists at 1 to force the pilot poppet off its seat. This creates a pressure differential across the spool that causes the spool to shift and open flow from 1 to 2. The spool will remain open until flow through the valve is shut off.

A common application for a kick-down sequence valve is as a safety device in circuits where overloading or overheating could cause damage if pressure is held for an extended period of time.

Another type of sequence valve is

Kick-down sequence valve



UNLOADING VALVES

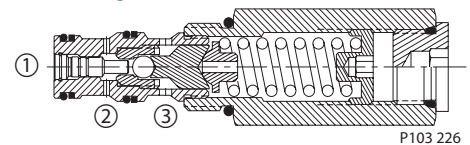
commonly known as an unloading valve. The unloading valve blocks flow at 2 until sufficient pressure exists at 1 to pilot the poppet open against the pre-determined spring setting and allow flow from 2 to 3. If the pressure at 1 drops below the pilot ratio value multiplied by the pre-determined spring setting the valve will close, blocking flow at 2.

Various pilot ratio values are available; consult catalog sheets for details.

An unloading valve is typically used to *unload* a pump outlet to tank at a minimum pressure drop, resulting in higher system efficiencies with less heat generation.

Unloading valves

Unloading valve





Cartridge Valves Technical Information

Sequence Valves

Application Notes

Sequence valves
Application notes

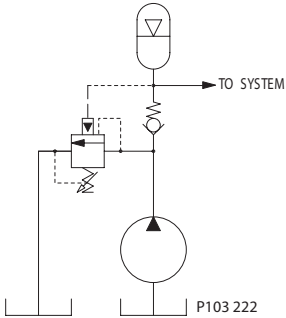
APPLICATIONS

Common applications for unloading valves include:

Sequence valves

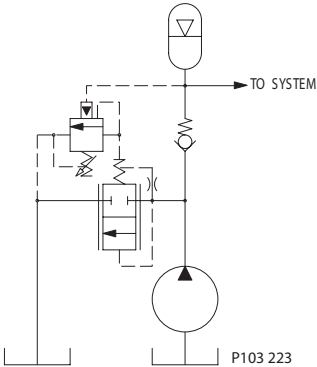
- Pump unloading in an accumulator charging system

Accumulator charging/unloading valve



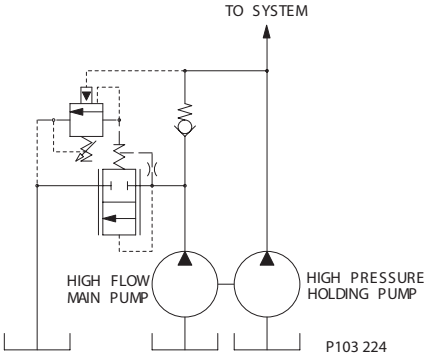
- For higher flow rates the unloading valve may be used to pilot a larger logic element

Accumulator charging/unloading pilot valve



- Pump unloading in a 2 pump high-low circuit

High-low pump unloading

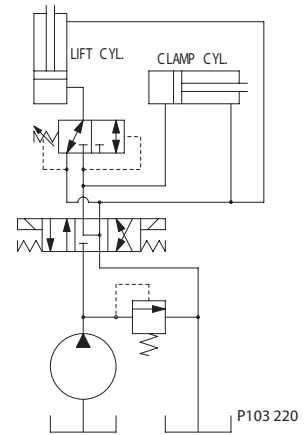


**APPLICATIONS
 (continued)**

Both direct-acting and pilot-operated sequence valves have many common applications including:

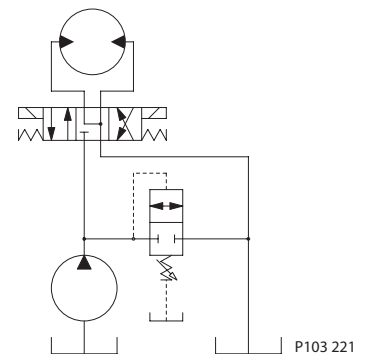
- Providing a sequenced series of operations such as in a clamp and lift circuit

Clamp & lift circuit



- Use as a relief valve where the return line has high or varying backpressure. The independent spring chamber drain line provides a relief setting unaffected by downstream pressure.

Sequence valve as relief



Sequence valves
 Application notes



Cartridge Valves Technical Information

Sequence Valves

Sequence

CP240-8

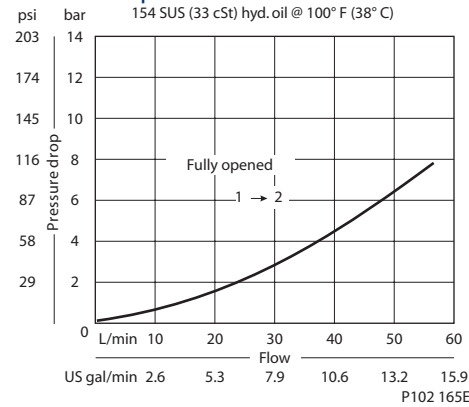
Sequence valves
CP240-8

OPERATION

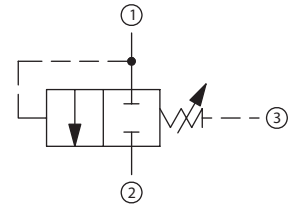
Valve blocks flow from 1 to 2 until sufficient pressure is applied at 1

SPECIFICATIONS

Theoretical performance



Schematic



P102 164E

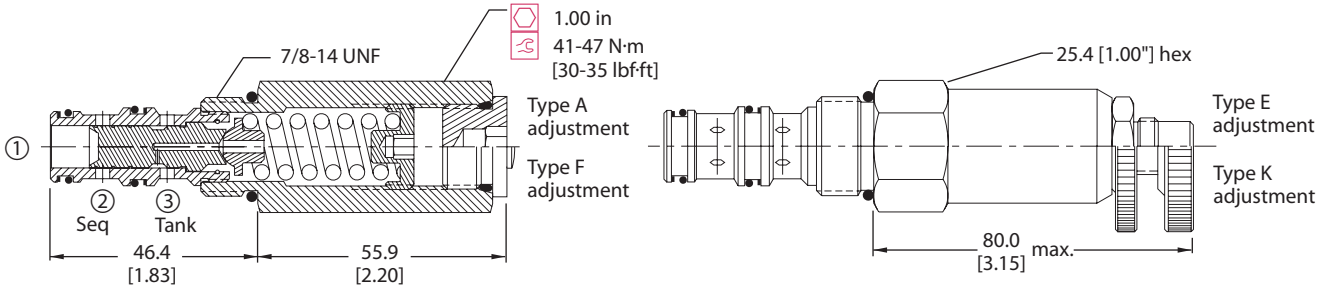
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	55 l/min [14 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 163E

ORDERING INFORMATION

CP240 - 8 - B - 6S - A - C-050

Seals B = Buna-N V = Viton	Seal kit 120027 120028	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	Adjustment option A = Internal E = External F = Tamper resistant K = Knob	Crack pressure Code x 10 = psi Example: 100 = 1000 psi	Pressure range <table border="0"> <tr> <td>A =</td> <td>4-28</td> <td>bar</td> <td>[psi]</td> </tr> <tr> <td>Std. setting</td> <td>17</td> <td></td> <td>[50-400]</td> </tr> <tr> <td>B =</td> <td>5-55</td> <td></td> <td>[250]</td> </tr> <tr> <td>Std. setting</td> <td>28</td> <td></td> <td>[75-800]</td> </tr> <tr> <td>C =</td> <td>7-97</td> <td></td> <td>[400]</td> </tr> <tr> <td>Std. setting</td> <td>69</td> <td></td> <td>[100-1400]</td> </tr> <tr> <td>D =</td> <td>34-166</td> <td></td> <td>[1000]</td> </tr> <tr> <td>Std. setting</td> <td>103</td> <td></td> <td>[500-2400]</td> </tr> <tr> <td></td> <td></td> <td></td> <td>[1500]</td> </tr> </table>	A =	4-28	bar	[psi]	Std. setting	17		[50-400]	B =	5-55		[250]	Std. setting	28		[75-800]	C =	7-97		[400]	Std. setting	69		[100-1400]	D =	34-166		[1000]	Std. setting	103		[500-2400]				[1500]
A =	4-28	bar	[psi]																																							
Std. setting	17		[50-400]																																							
B =	5-55		[250]																																							
Std. setting	28		[75-800]																																							
C =	7-97		[400]																																							
Std. setting	69		[100-1400]																																							
D =	34-166		[1000]																																							
Std. setting	103		[500-2400]																																							
			[1500]																																							

P102 167E



Cartridge Valves Technical Information

Sequence Valves

Sequence

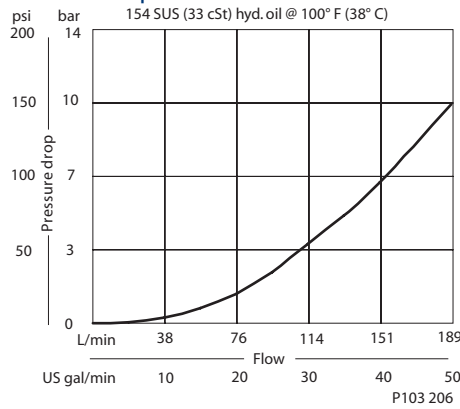
CP241-8

OPERATION

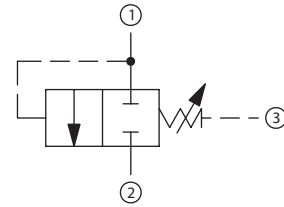
Valve blocks flow from 1 to 2 until sufficient pressure is applied at 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 164E

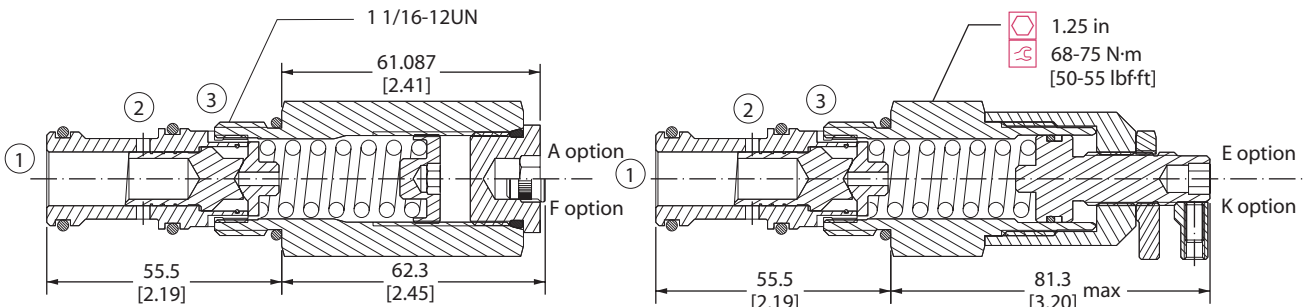
Specifications

Rated pressure	40 bar [600 psi]
Rated flow at 7 bar [100 psi]	150 l/min [39 US gal/min]
Weight	0.41 kg [0.90 lb]
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 626E

ORDERING INFORMATION

CP241-8-B-10S-A-C-050

Seals B= Buna-N V= Viton	Seal kit 120680 120681	Housing and ports 0 = No Housing 4B = Al, 1/2 BSP 6B = Al, 3/4 BSP 10S = Al, #10 SAE 12S = Al, #12 SAE Other housings available	Pressure range A = 1-10 bar [13-150 psi] B = 3.4-28 bar [50-400 psi] C = 5.5-41 bar [80-600 psi]	Pressure setting Code x 10psi (0.69 bar) Example: 050 = 500 psi (35 bar)	Adjustment option A = Internal E = External F = Tamper resistant K = Knob	Housing P/N No Housing CP12-3S-4B/2B CP12-3S-6B/2B CP12-3S-10S/4S CP12-3S-12S/4S
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Sequence valves
CP241-8



Cartridge Valves Technical Information

Sequence Valves

Sequence

CP240-21

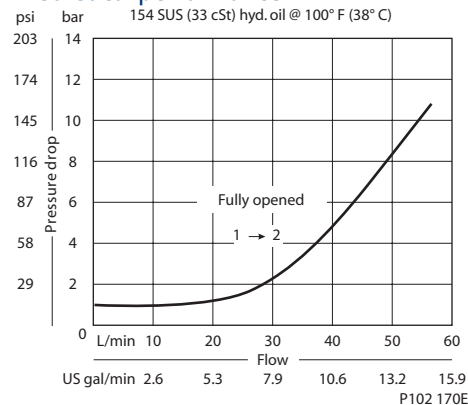
Sequence valves
CP240-21

OPERATION

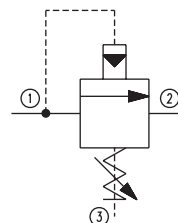
Valve is a pilot-operated sequence valve that blocks flow from 1 to 2 until sufficient pressure is applied at 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 168E

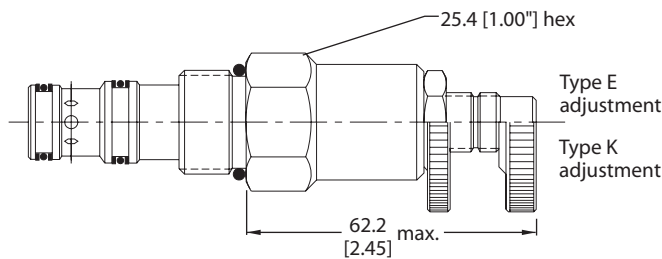
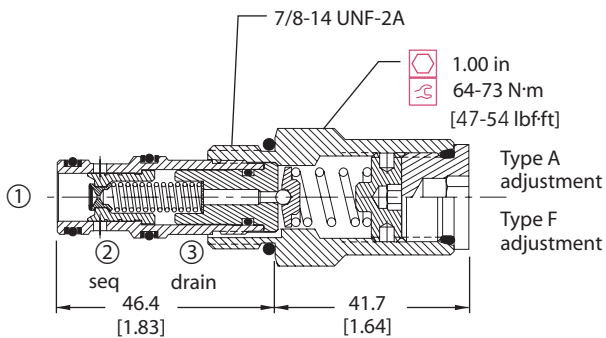
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.23 kg [0.51 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 169E

ORDERING INFORMATION

CP240 - 21 - B - 6S - A - C - 150

Seals B = Buna-N V = Viton	Seal kit 120009 120010	Crack pressure Code x 10 = psi Example: 150 = 1500 psi
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	Pressure range A = 14-55 bar [200-800] [psi] Std. setting 28 [400] B = 21-103 [300-1500] Std. setting 69 [1000] C = 28-207 [400-3000] Std. setting 103 [1500] D = 28-345 [400-5000] Std. setting 103 [1500]
Adjustment option A = Internal E = External F = Tamper resistant K = Knob		

P102 172E



Cartridge Valves Technical Information

Sequence Valves

Sequence

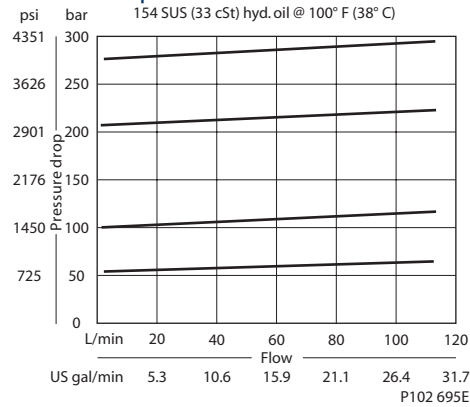
CP241-21

OPERATION

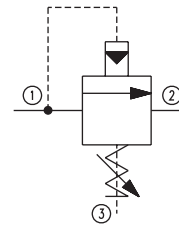
Valve is a pilot-operated sequence valve that blocks flow from 1 to 2 until sufficient pressure is applied at 1.

SPECIFICATIONS

Theoretical performance



Schematic



P102 168E

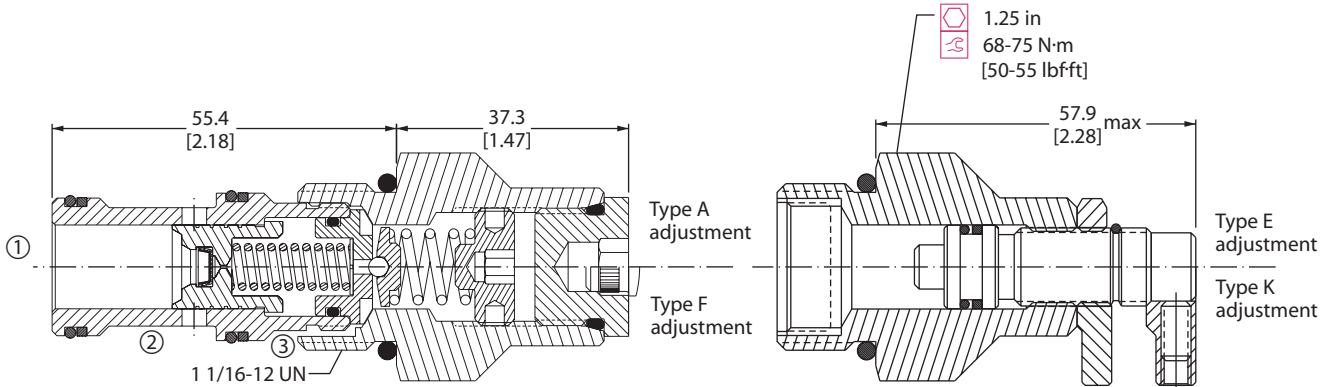
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	75 l/min [20 US gal/min]
Weight	0.17 kg [0.37 lb]
Cavity	CP12-3S

DIMENSIONS

mm [in]

Cross-sectional view



P102 696E

ORDERING INFORMATION

CP241 - 21 - B - 6S - A - C - 150

Seals
B = Buna-N
V = Viton

Seal kit
120335
120336

Housing and ports
0 = No Housing
4B = Al, 1/2 BSP
6B = Al, 3/4 BSP
10S = Al, #10 SAE
12S = Al, #12 SAE

Housing P/N
No Housing
CP12-3S-4B/2B
CP12-3S-6B/2B
CP12-3S-10S/4S
CP12-3S-12S/4S

Adjustment option
A = Internal
E = External
F = Tamper resistant
K = Knob

Crack pressure
Code x 10 = psi
Example: 150 = 1500 psi

Pressure range

Code	bar	[psi]
A	14-55	[200-800]
Standard	28	[400]
B	21-103	[300-1500]
Standard	69	[1000]
C	28-207	[400-3000]
Standard	103	[1500]
D	28-345	[400-5000]
Standard	103	[1500]

P102 697E



Cartridge Valves Technical Information

Sequence Valves

Sequence

CP240-2

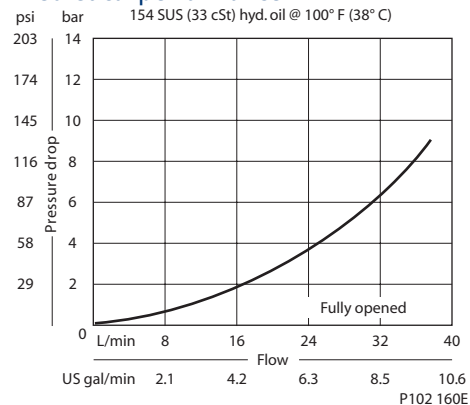
Sequence valves
CP240-2

OPERATION

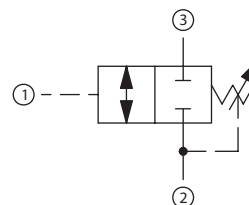
Valve blocks between 2 and 3 until sufficient pilot pressure is applied at 1 to open the valve. Note that pressure at 2 is additive to the spring setting.

SPECIFICATIONS

Theoretical performance



Schematic



P102 159E

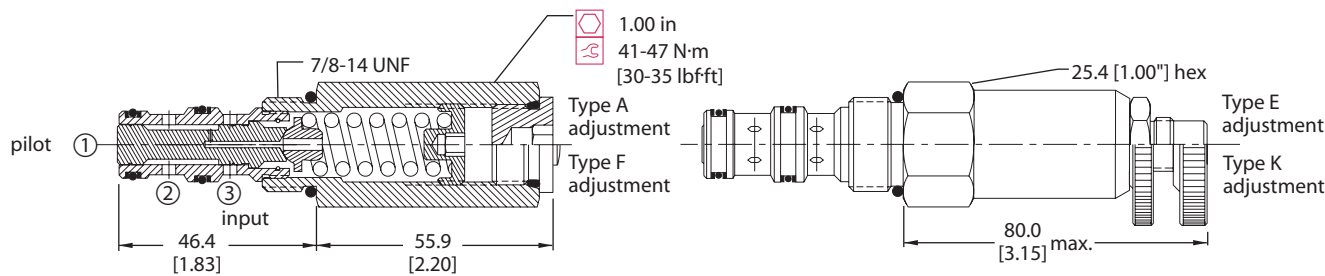
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	35 l/min [9 US gal/min]
Weight	0.24 kg [0.52 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP240 - 2 - B - 6S - A - C - 100

- Seals**
B = Buna-N
V = Viton
- 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
- Adjustment option**
A = Internal
E = External
F = Tamper resistant
K = Knob
- Seal kit**
120009
120010
- Housing P/N**
No Housing
SDC10-3-SE-3B
SDC10-3-SE-4B
CP10-3-6S
CP10-3-8S
- Crack pressure**
Code x 10 = psi
Example: 100 = 1000 psi
- Pressure range**
A = 4-28 bar [50-400 psi]
Std. setting 17 [250]
B = 5-55 bar [75-800 psi]
Std. setting 28 [400]
C = 7-97 bar [100-1400 psi]
Std. setting 69 [1000]
D = 34-166 bar [500-2400 psi]
Std. setting 103 [1500]

P102 162E



Cartridge Valves Technical Information

Sequence Valves

Kick Down Type

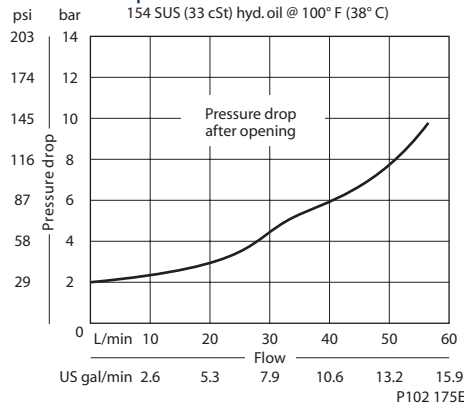
CP240-22

OPERATION

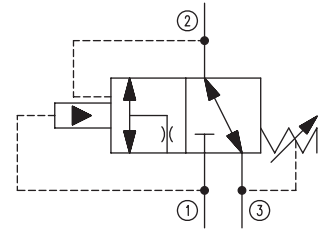
This is a "kick-down" type sequence valve that blocks flow from 1 to 2 until sufficient pressure is applied at 1. Once open, the valve remains open until flow is completely shut off.

SPECIFICATIONS

Theoretical performance



Schematic



P102 173E

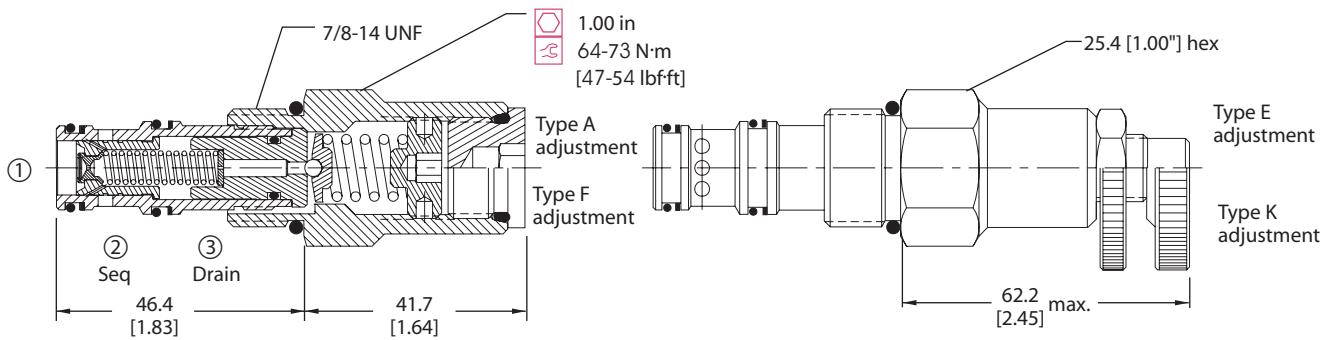
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.19 kg [0.42 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 174E

ORDERING INFORMATION

CP240 - 22 - B - 6S - A - C - 150

- Seals**
 - B = Buna-N
 - V = Viton
- Seal kit**
 - 120027
 - 120028
- Housing and ports**
 - 0 = No Housing
 - SE3B = Al, 3/8 BSP
 - SE4B = Al, 1/2 BSP
 - 6S = Al, #6 SAE
 - 8S = Al, #8 SAE
- Housing P/N**
 - No Housing
 - SDC10-3-SE-3B
 - SDC10-3-SE-4B
 - CP10-3-6S
 - CP10-3-8S
- Adjustment option**
 - A = Internal
 - E = External
 - F = Tamper resistant
 - K = Knob
- Crack pressure**
 - Code x 10 = psi
 - Example: 150 = 1500 psi
- Pressure range**

Option	bar	[psi]
A	14-55	[200-800]
Standard B	28	[400]
Standard C	21-103	[300-1500]
Standard D	69	[1000]
Standard E	28-207	[400-3000]
Standard F	103	[1500]
Standard G	28-345	[400-5000]
Standard H	103	[1500]

P102 177E

Sequence valves CP240-22



Cartridge Valves Technical Information

Sequence Valves

Sequence

VDP 06/NA

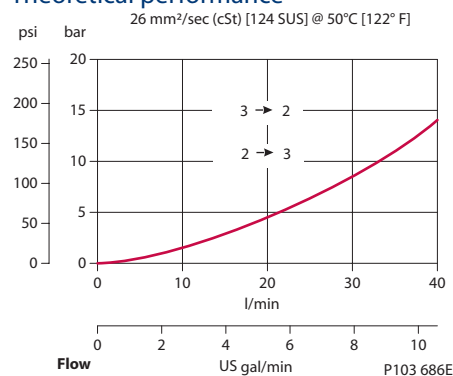
Sequence valves
VDP 06/NA

OPERATION

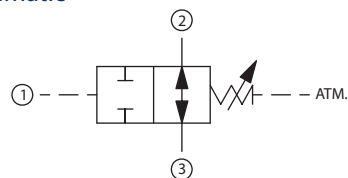
This is a direct-acting, normally-open, spool-type sequence valve with external pilot and atmospheric vent.

SPECIFICATIONS

Theoretical performance



Schematic



P103 521

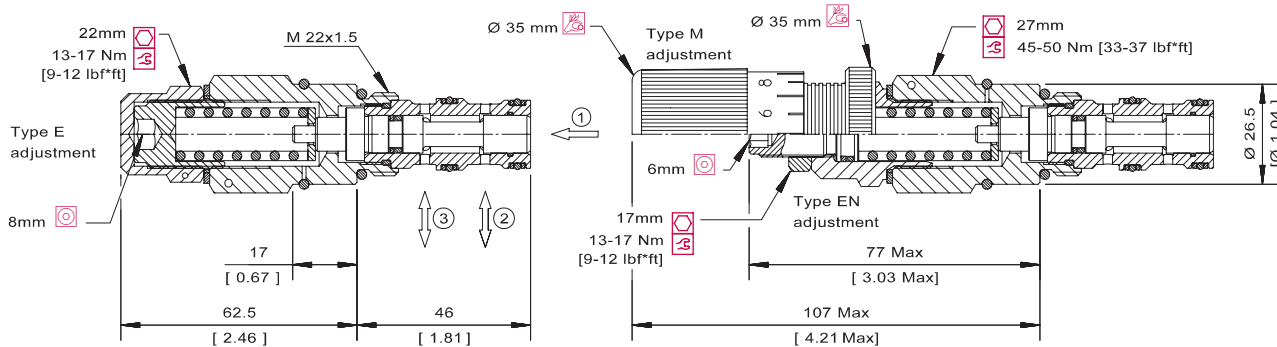
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 659

ORDERING INFORMATION

VDP 06 / NA - EN - 1 - 00 - V

Type of adjustment

E = Internal screw
EN = External screw
M = Handwheel

Setting range

1 = 15-40 bar [217-580 psi]
2 = 30-120 bar [435-3046 psi]
3 = 105-190 bar [1523-2756 psi]

Seals

V = Viton
Omit = Buna-N

Seal kit

230000590
230000430

Housing and ports

00 = No Housing
SE3/8 = AL, 3/8 BSP
SE1/2 = AL, 1/2 BSP
SE6S = AL, #6 SAE
SE8S = AL, #8 SAE
Other housings available

Housing P/N

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

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

P103 713E



Cartridge Valves Technical Information

Sequence Valves

Sequence

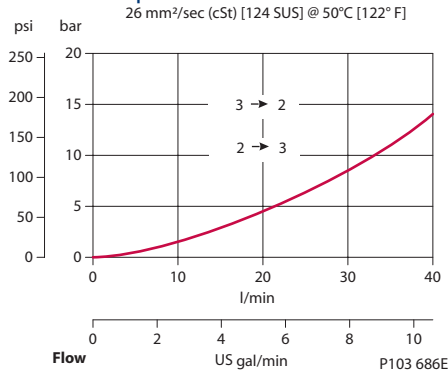
VDP 06/NC

OPERATION

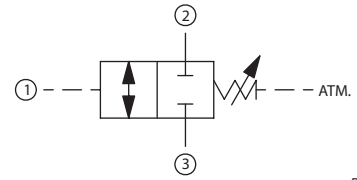
This is a direct-acting, normally-closed, spool-type sequence valve with external pilot and atmospheric vent.

SPECIFICATIONS

Theoretical performance



Schematic



P103 528

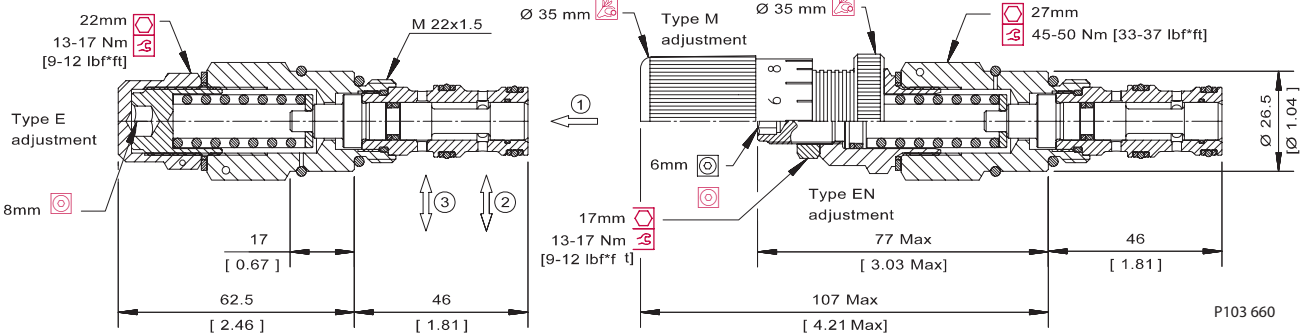
Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VDP 06 / NC - EN - 1 - 00 - V

Adjustment

E = Internal screw
EN = External screw
M = Handwheel

Setting range

1 = 15-40 bar [217-580 psi]
2 = 30-120 bar [435-1740 psi]
3 = 105-190 bar [1523-2756 psi]

Seals

V = Viton
Omit = Buna-N

Housing and ports

00 = No Housing
SE3/8 = AL, 3/8 BSP
SE1/2 = AL, 1/2 BSP
SE6S = AL, #6 SAE
SE8S = AL, #8 SAE
Other housings available

Seal kit

230000059
230000430

Housing P/N

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

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

P103 714E



Cartridge Valves Technical Information

Sequence Valves

Sequence

CP240-5

Sequence valves
CP240-5

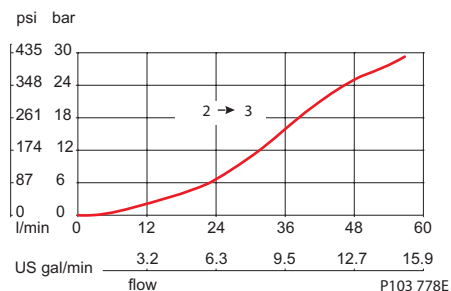
OPERATION

Valve allows flow between 2 and 3 until sufficient pressure is applied at 1 to close the valve. Note that pressure at 4 is additive to the spring setting.

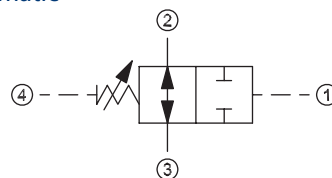
SPECIFICATIONS

Theoretical performance

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



Schematic



P103 520

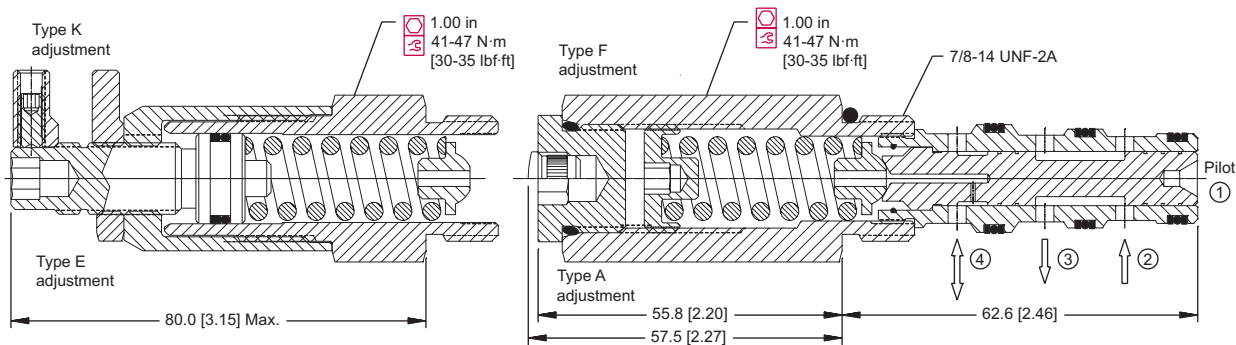
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.26 kg [0.57 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P103 745

ORDERING INFORMATION

CP240-5-V-L3B-A-B-050

<p>Seals</p> <p>Seal kit</p> <p>B = Buna-N 120023</p> <p>V = Viton 120024</p>	<p>Housing and ports</p> <p>0 = No Housing</p> <p>L3B = AL, 3/8 BSP</p> <p>L4B = AL, 1/2 BSP</p> <p>6S = AL, #6 SAE</p> <p>8S = AL, #8 SAE</p> <p>Other housings available</p>	<p>Housing P/N</p> <p>No Housing SDC10-4-L-3B</p> <p>SDC10-4-L-4B</p> <p>SDC10-4-6S</p> <p>SDC10-4-8S</p>	<p>Sequence Pressure</p> <p>Code x 0.69 = bar</p> <p>[Code x 10 = psi]</p> <p>Example: 050 = 34.5 bar [500 psi]</p> <p>Pressure range</p> <table border="0"> <tr> <td>bar</td> <td>[psi]</td> </tr> <tr> <td>A = 3.4 - 27.6</td> <td>[50 - 400]</td> </tr> <tr> <td>B = 4.8 - 55.2</td> <td>[70 - 800]</td> </tr> <tr> <td>C = 6.9 - 96.5</td> <td>[100 - 1400]</td> </tr> <tr> <td>D = 34.5 - 165.5</td> <td>[500 - 2400]</td> </tr> </table> <p>Adjustment option</p> <p>A = Internal</p> <p>E = External</p> <p>F = Tamper resistant</p> <p>K = Knob</p>	bar	[psi]	A = 3.4 - 27.6	[50 - 400]	B = 4.8 - 55.2	[70 - 800]	C = 6.9 - 96.5	[100 - 1400]	D = 34.5 - 165.5	[500 - 2400]
bar	[psi]												
A = 3.4 - 27.6	[50 - 400]												
B = 4.8 - 55.2	[70 - 800]												
C = 6.9 - 96.5	[100 - 1400]												
D = 34.5 - 165.5	[500 - 2400]												

P103 779E



Cartridge Valves Technical Information

Sequence Valves

Sequence

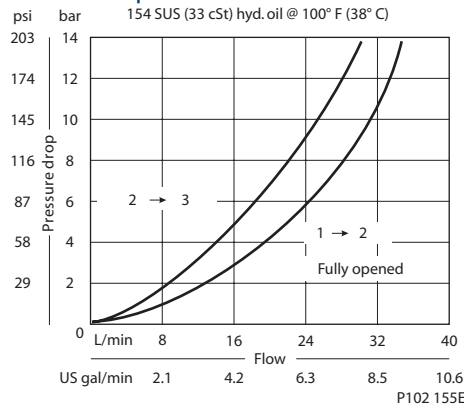
CP240-1

OPERATION

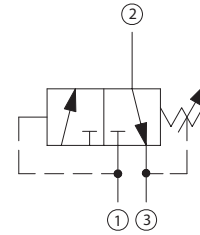
This valve is a direct acting, spool type sequence valve with internal pilot. This valve allows flow from 2 to 3 and blocks 1. At reaching the sequence pressure 1 is opened to 2.

SPECIFICATIONS

Theoretical performance



Schematic



P102 153E

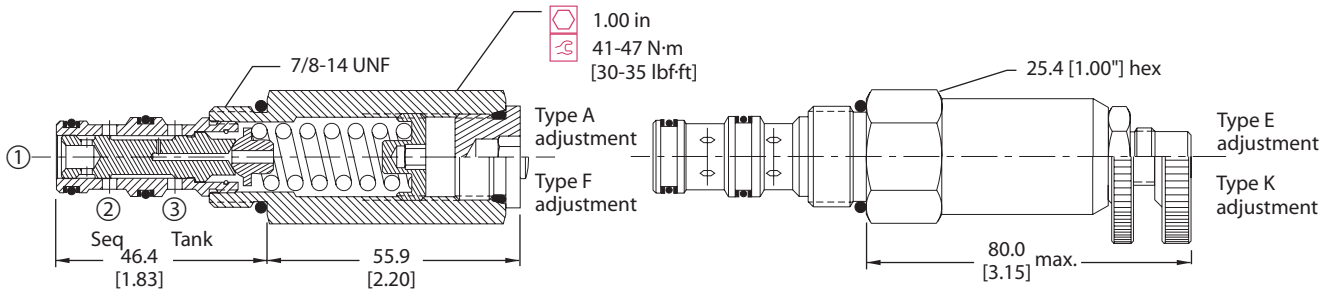
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Weight	0.25 kg [0.56 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 154E

ORDERING INFORMATION

CP240 - 1 - B - 6S - A - C - 100

- 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
- Housing P/N**
 - No Housing
 - SDC10-3-SE-3B
 - SDC10-3-SE-4B
 - CP10-3-6S
 - CP10-3-8S
- Adjustment option**
 - A = Internal
 - E = External
 - F = Tamper resistant
 - K = Knob
- Crack pressure**
 - Code x 10 = psi
 - Example: 100 = 1000 psi
- Pressure range**
 - A = 4-28 bar [50-400 psi]
 - Std. setting B = 17 [250]
 - B = 5-55 bar [75-800]
 - Std. setting C = 28 [400]
 - C = 7-97 bar [100-1400]
 - Std. setting D = 69 [1000]
 - D = 34-166 bar [500-2400]
 - Std. setting E = 103 [1500]

P102 157E



Cartridge Valves Technical Information

Sequence Valves

Sequence

CP240-9

Sequence valves
CP240-9

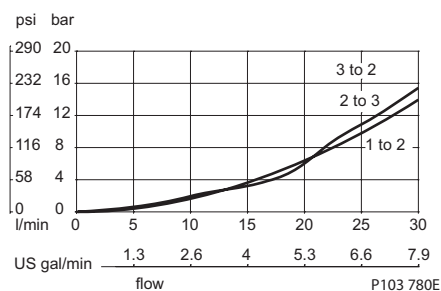
OPERATION

This valve drains 3 to 2 when the pressure at 1 is below the spring setting, and connects 1 to 2 when the pressure at 1 exceeds the spring setting. Note that pressure at 2 is additive to the spring setting.

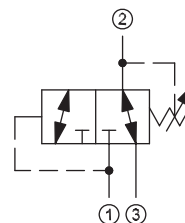
SPECIFICATIONS

Theoretical performance

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



Schematic



P103 526

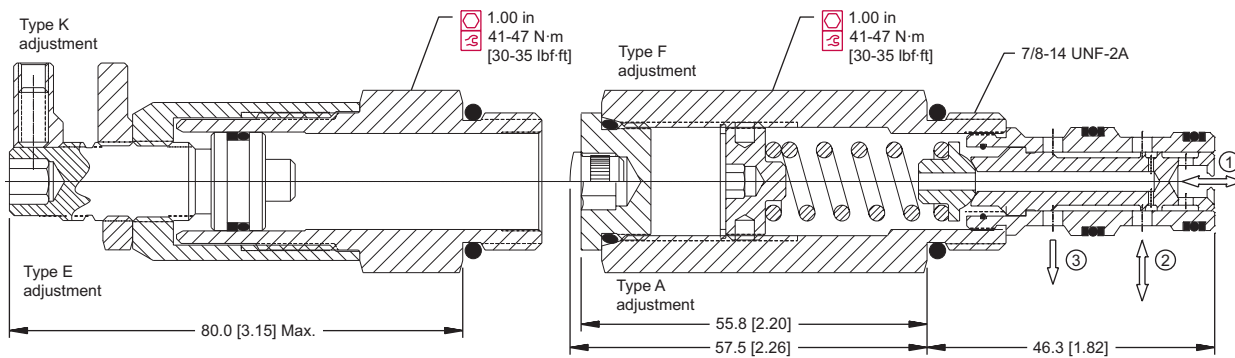
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.24 kg [0.52 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P103 746

ORDERING INFORMATION

CP240-9-B-6S-E-A-020

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	Crack Pressure Code x 0.69 = bar [Code x 10 = psi] Example: 020 = 14 bar [200 psi]	Pressure range bar [psi] A = 6.9 - 27.6 [100 - 400] B = 20.7 - 55.2 [300 - 800] C = 20.7 - 96.5 [300 - 1400] D = 68.9 - 165.5 [1000 - 2400]	Adjustment option A = Internal E = External F = Tamper resistant K = Knob
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P103 781E



Cartridge Valves Technical Information

Sequence Valves

Sequence

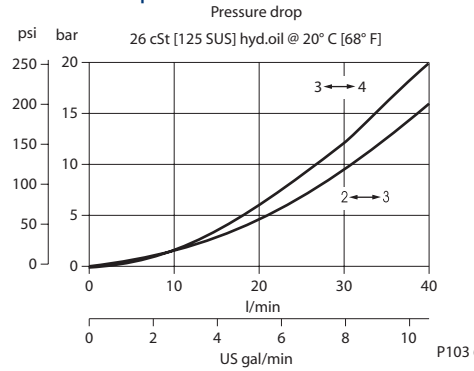
VDP 06/4201

OPERATION

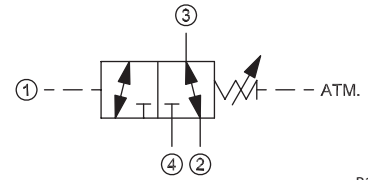
This is a direct-acting, spool-type sequence valve with external pilot and atmospheric vent.

SPECIFICATIONS

Theoretical performance



Schematic

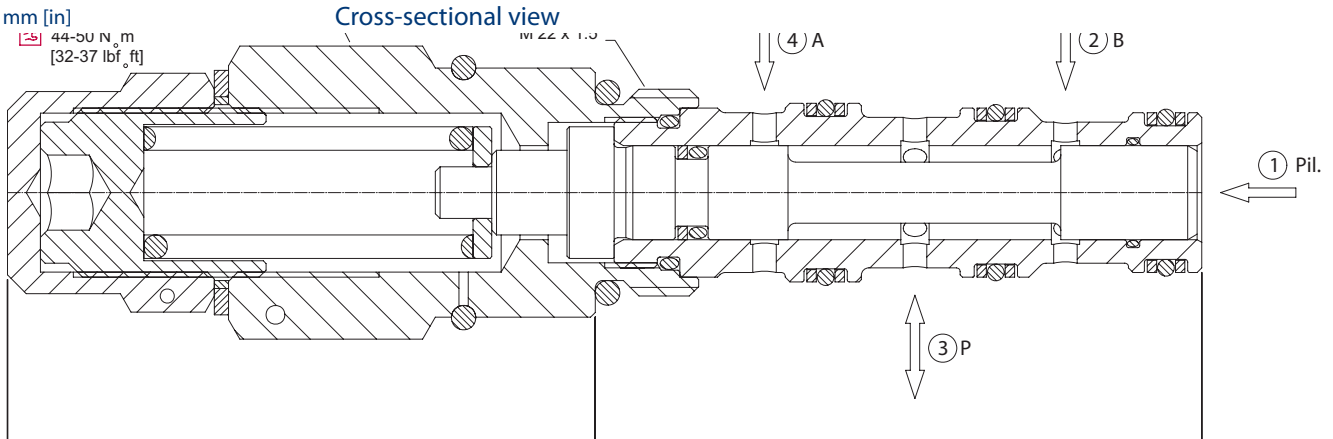


P103 527

Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	22 l/min [6 US gal/min]
Weight	0.28 kg [0.62 lb]
Cavity	NCS06/4

DIMENSIONS



ORDERING INFORMATION

VDP 06 / 42 01 - M - 1 - 00 - V

Adjustment

- E = Internal screw
- EN = External screw
- M = Handwheel

Setting range

- 1 = 15 - 40 bar [220-580 psi]
- 2 = 30 - 120 bar [430-1740 psi]
- 3 = 105 - 190 bar [1520-2750 psi]

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

Seals

- V = Viton
- Omit = Buna-N

Housing and ports

- 00 = No Housing
- L3/8 = AL, 3/8 BSP
- L1/2 = AL, 1/2 BSP
- L6S = AL, #6 SAE
- L8S = AL, #8 SAE
- Other housings available

Seal kit

- 230000350
- 230000080

Housing P/N

- No Housing
- NCS06/4-L-3/8
- NCS06/4-L-1/2
- NCS06/4-L-6S
- NCS06/4-L-8S

P103 712E



Cartridge Valves Technical Information

Sequence Valves

Unloading

VDB 06-CN

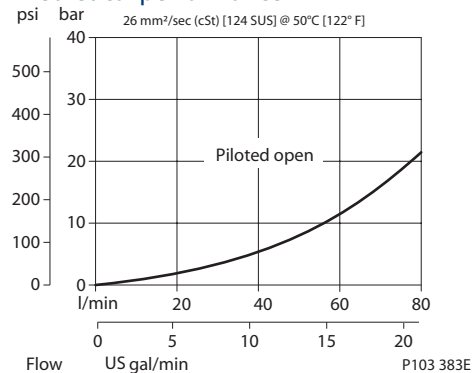
Sequence valves
VDB 06-CN

OPERATION

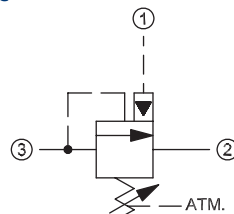
This is a pilot-operated, atmospherically-vented, unloading valve.

SPECIFICATIONS

Theoretical performance



Schematic



P103 523

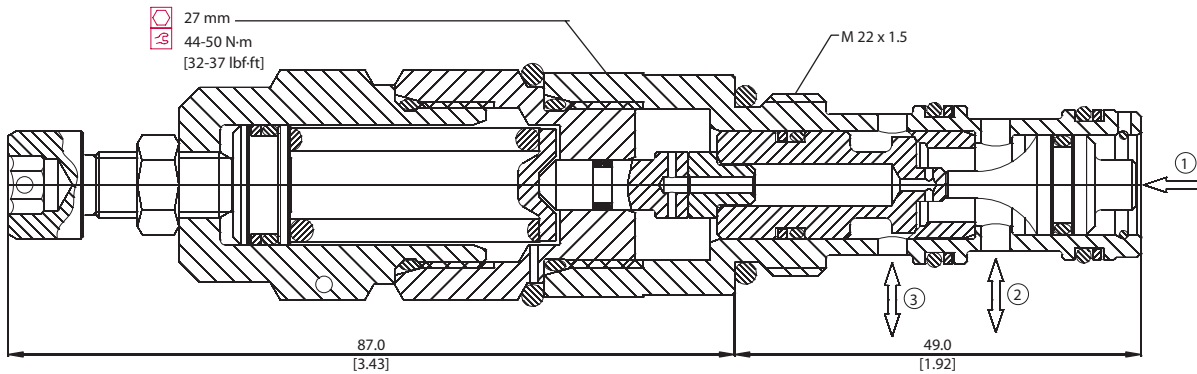
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	80 l/min [21 US gal/min]
Weight	0.29 kg [0.64 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 407

ORDERING INFORMATION

VDB 06-CN - 2 - A - 00 - V

Setting range

- 1 = 25 - 140 bar [362 - 2031 psi]
- 2 = 70 - 210 bar [1015 - 3046 psi]
- 3 = 105 - 350 bar [1523 - 5076 psi]

Pilot ratio

- A = 7.1 : 1
- B = 4.1 : 1
- E = 1 : 1

Seals

- V = Viton
- Omit = Buna-N

Seal kit

- 230000110
- 230000070

Housing and ports

- 00 = No Housing
- SE3/8 = AL, 3/8 BSP
- SE1/2 = AL, 1/2 BSP
- SE6S = AL, #6 SAE
- SE8S = AL, #8 SAE
- Other housings available

Housing P/N

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

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

P103 408E



Cartridge Valves Technical Information

Sequence Valves

Unloading

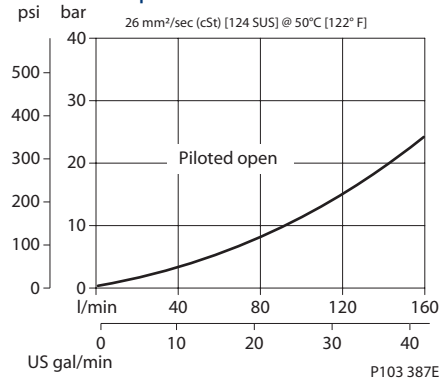
VDB 12-CN

OPERATION

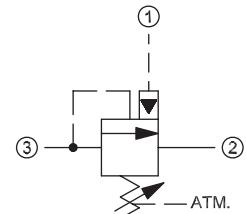
This is a pilot-operated, atmospherically-vented, unloading valve.

SPECIFICATIONS

Theoretical performance



Schematic



P103 523

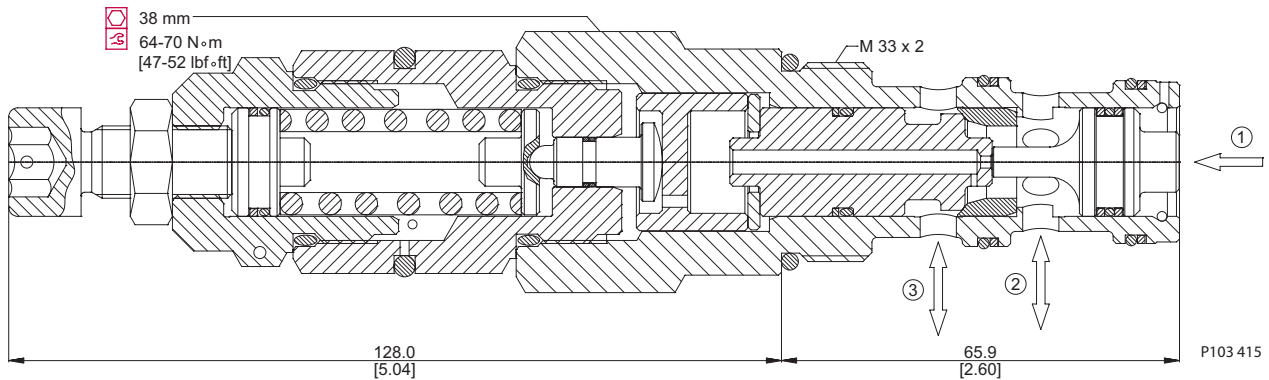
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	160 l/min [42 US gal/min]
Weight	0.93 kg [2.05 lb]
Cavity	NCS12/3

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

VDB 12-CN - 2 - A - 00 - V

Setting range

Pilot ratio A

- 1 = 25 - 170 bar [363-2466 psi]
- 2 = 70 - 250 bar [1015-3626 psi]
- 3 = 105 - 350 bar [1523-5076 psi]

Pilot ratio B

- 1 = 25 - 120 bar [363-1740 psi]
- 2 = 60 - 200 bar [870-2900 psi]
- 3 = 90 - 280 bar [1305-4061 psi]

Pilot ratio

- A = 6.9 : 1
- B = 4.7 : 1

Seals

- V = Viton
- Omit = Buna-N

Housing and ports

- 00 = No Housing
- SE1/2 = AL, 1/2 BSP
- SE3/4 = AL, 3/4 BSP
- SE8S = AL, #8 SAE
- SE12S = AL, #12 SAE
- Other housings available

Seal kit

- 230000360
- 230000130

Housing P/N

- No Housing
- NCS12/3-SE-1/2
- NCS12/3-SE-3/4
- NCS12/3-SE-8S
- NCS12/3-SE-12S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

P103 416E



Cartridge Valves Technical Information

Sequence Valves

Unloading

VDB 06-EN

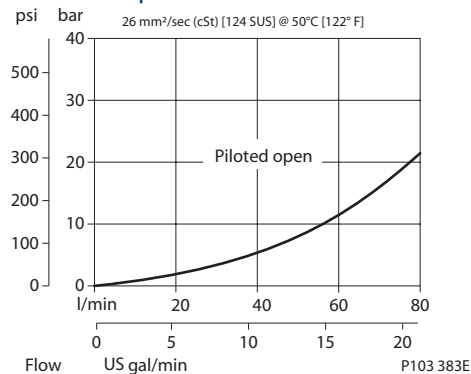
Sequence valves
VDB 06-EN

OPERATION

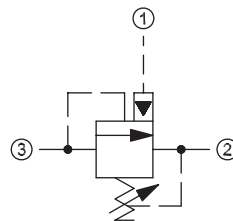
This is a pilot-operated unloading valve.

SPECIFICATIONS

Theoretical performance



Schematic



P103 522

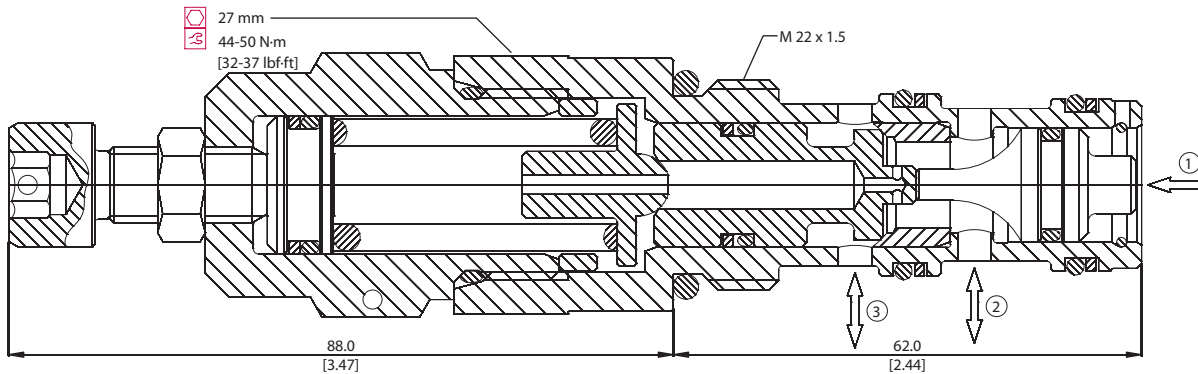
Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	80 l/min [21 US gal/min]
Weight	0.21 kg [0.46 lb]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 409

ORDERING INFORMATION

VDB 06-EN - 2 - A - SE3/8 - V

Setting range

- 1 = 25 - 140 bar [362 - 2031 psi]
- 2 = 70 - 210 bar [1015 - 3046 psi]
- 3 = 105 - 350 bar [1523 - 5076 psi]

Pilot ratio

- A = 7.1 : 1
- B = 4.1 : 1
- E = 1 : 1

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

Seals

- V = Viton
- Omit = Buna-N

Seal kit

- 230000110
- 230000070

Housing and ports

- 00 = No Housing
- SE3/8 = AL, 3/8 BSP
- SE1/2 = AL, 1/2 BSP
- SE6S = AL, #6 SAE
- SE8S = AL, #8 SAE
- Other housings available

Housing P/N

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

P103 384E



Cartridge Valves Technical Information

Sequence Valves

Unloading

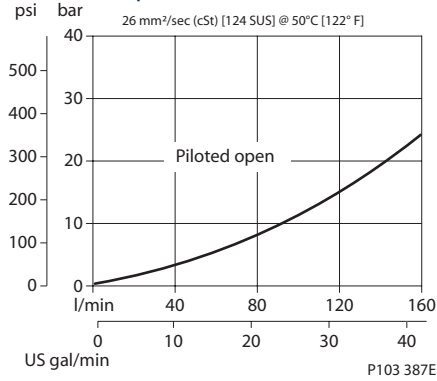
VDB 12-EN

OPERATION

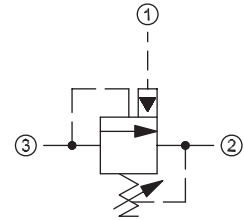
This is a pilot-operated unloading valve.

SPECIFICATIONS

Theoretical performance



Schematic



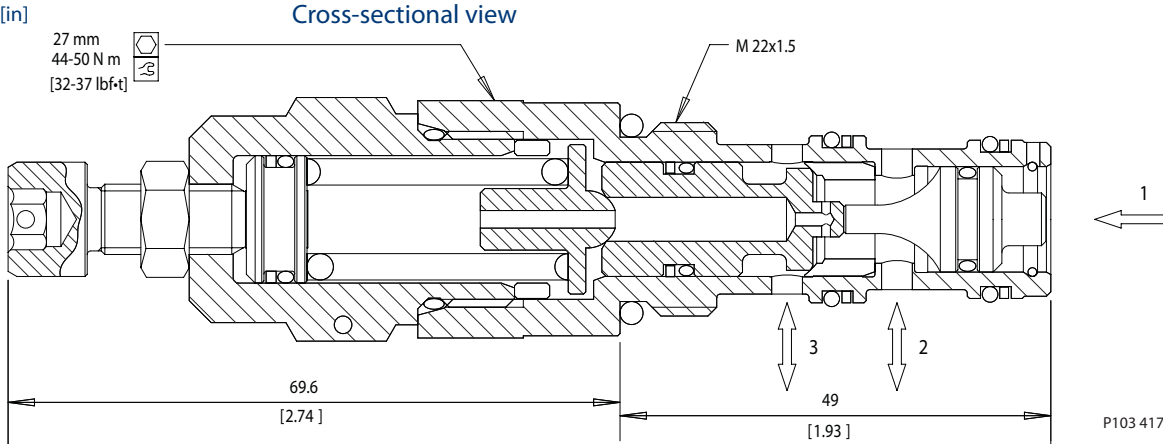
P103 522

Specifications

Rated pressure	350 bar [5000 psi]
Rated flow	160 l/min [42 US gal/min]
Weight	0.70 kg [1.54 lb]
Cavity	NCS12/3

DIMENSIONS

mm [in]



ORDERING INFORMATION

VDB 12-EN - 2 - A - 00 - V

Setting range

Pilot ratio A

- 1 = 25 - 170 bar [363-2466 psi]
- 2 = 70 - 250 bar [1015-3626 psi]
- 3 = 105 - 350 bar [1523-5076 psi]

Pilot ratio B

- 1 = 25 - 120 bar [363-1740 psi]
- 2 = 60 - 200 bar [870-2900 psi]
- 3 = 90 - 280 bar [1305-4061 psi]

Pilot ratio

- A = 6.9 : 1
- B = 4.7 : 1

Seals

- V = Viton
- Omit = Buna-N

Housing and ports

- 00 = No Housing
- SE1/2 = AL, 1/2 BSP
- SE3/4 = AL, 3/4 BSP
- SE85 = AL, #8 SAE
- SE12S = AL, #12 SAE
- Other housings available

Seal kit

- 230000360
- 230000130

Housing P/N

- No Housing
- NCS12/3-SE-1/2
- NCS12/3-SE-3/4
- NCS12/3-SE-85
- NCS12/3-SE-12S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative

P103 388E



Cartridge Valves Technical Information

Sequence Valves

Unloading

CP240-30

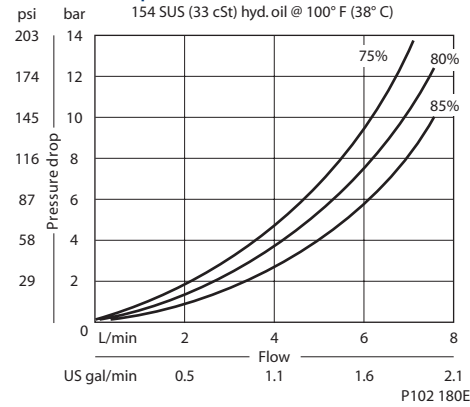
Sequence Valves
CP240-30

OPERATION

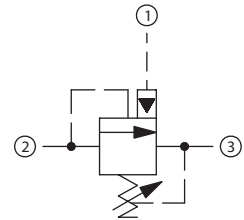
This is a normally-closed sequence valve that loads and unloads a system at a pre-determined ratio.

SPECIFICATIONS

Theoretical performance



Schematic



P102 178E

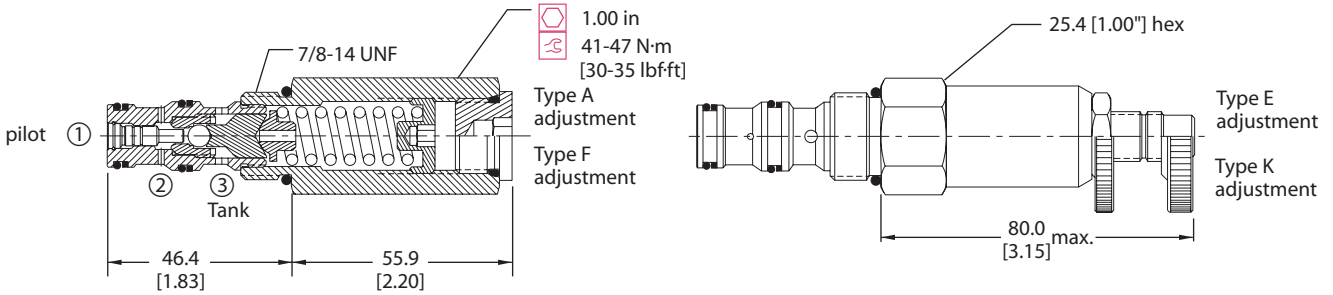
Specifications

Rated pressure	210 bar [3000 psi]
Maximum flow	4 l/min [1 US gal/min]
Weight	0.24 kg [0.53 lb]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 179E

ORDERING INFORMATION

CP240 - 30 - B - 6S - A - B - 75-150

- Seals**
B = Buna-N
V = Viton
- Seal kit**
120027
120028
- 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
- Adjustment option**
A = Internal
E = External
F = Tamper resistant
K = Knob
- Crack pressure**
Code x 10 = psi
Example: 150 = 1500 psi
- Pressure ratio**
75 = 75%
80 = 80%
85 = 85%
- Pressure range**
A = 34-138 bar [500-2000] [psi]
Std. setting 69 [1000]
B = 62-207 bar [900-3000] [psi]
Std. setting 103 [1500]

P102 182E



Cartridge Valves Technical Information

Sequence Valves

Unloading

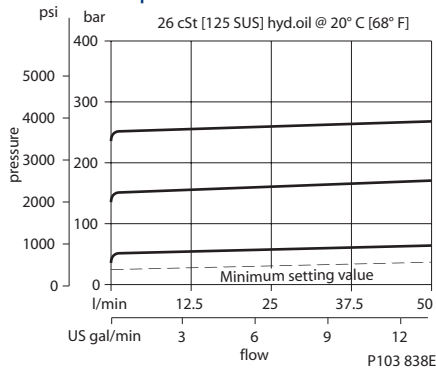
AUV 06

OPERATION

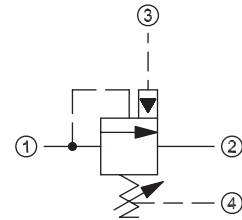
This is a normally-closed sequence valve that loads and unloads a system at a pre-determined ratio.

SPECIFICATIONS

Theoretical performance



Schematic



P103 519

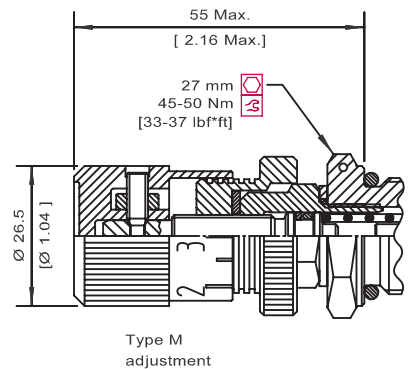
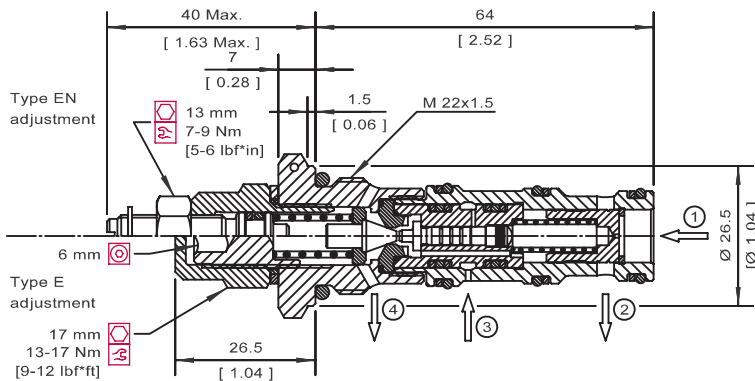
Specifications

Rated pressure	250 bar [3600 psi]
Rated flow	50 l/min [13 US gal/min]
Weight	0.22 kg [0.49 lb]
Cavity	NCS06/4

DIMENSIONS

mm [in]

Cross-sectional view



P103 898E

ORDERING INFORMATION

AUV 06 - EN - 1 - A - L3/8 - V

Adjustment

E = Internal screw
EN = External screw
M = Handwheel

Setting range

1 = 10-70 bar [145-1015 psi]
2 = 30-140 bar [435-2031 psi]
3 = 70-210 bar [1015-3046 psi]

Pressure ratio

A = 85%

Seals

V = Viton
Omit = Buna-N

Seal kit

230000350
230000080

Housing and ports

00 = No Housing
L3/8 = AL, 3/8 BSP
L1/2 = AL, 1/2 BSP
L6S = AL, #6 SAE
L8S = AL, #8 SAE
Other housings available

Housing P/N

No Housing
NCS06/4-L-3/8
NCS06/4-L-1/2
NCS06/4-L-6S
NCS06/4-L-8S

To order this valve with a specific factory setting, contact your Sauer-Danfoss representative P103 839E



Cartridge Valves Technical Information

Sequence Valves

Notes



Cartridge Valves Technical Information

Flow Control Valves

Quick reference

Needle Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP618-6	SDC08-2	Needle Valve, Bi-Directional, Fine Metering	10 l/min [3 US gal/min]	210 bar [3000 psi]	7.8

Needle Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP618-1	SDC08-2	Needle Valve, Bi-Directional	25 l/min [7 US gal/min]	210 bar [3000 psi]	7.9
	CP618-2	SDC08-2		45 l/min [12 US gal/min]	210 bar [3000 psi]	7.10
	CP610-1	SDC10-2		50 l/min [13 US gal/min]	210 bar [3000 psi]	7.11
	CP610-2	SDC10-2		50 l/min [13 US gal/min]	210 bar [3000 psi]	7.12
	CP611-2	CP12-2		115 l/min [30 US gal/min]	210 bar [3000 psi]	7.13
	CP612-1	SDC16-2		190 l/min [50 US gal/min]	210 bar [3000 psi]	7.14
	CP612-2	SDC16-2		190 l/min [50 US gal/min]	210 bar [3000 psi]	7.15
	CP613-1	SDC20-2		380 l/min [100 US gal/min]	210 bar [3000 psi]	7.16

Needle Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP610-7	SDC10-2	Needle Valve, Bi-Directional, Fine Metering, Reverse Free Flow	55 l/min [15 US gal/min]	210 bar [3000 psi]	7.17

Flow control valves
Quick reference

* 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

Flow Control Valves

Quick reference

Flow control valves
Quick reference

Pressure-Compensated, Restrictive Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP308-1	SDC08-2	Flow Control Valve, Fixed Setting, Restrictive Type	15 l/min [4 US gal/min]	210 bar [3000 psi]	07.18
	CP300-1	SDC10-2		23 l/min [6 US gal/min]	210 bar [3000 psi]	07.19
	CP301-1	CP12-2		60 l/min [16 US gal/min]	210 bar [3000 psi]	07.20

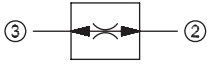
Pressure-Compensated, Restrictive Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP308-2	SDC08-2	Flow Control Valve, Adjustable, Restrictive Type	15 l/min [4 US gal/min]	210 bar [3000 psi]	07.21
	CP300-2	SDC10-2		23 l/min [6 US gal/min]	210 bar [3000 psi]	07.22
	VR 06	NCS06/2		30 l/min [8 US gal/min]	315 bar [4500 psi]	07.23
	VR 12	NCS12/2		60 l/min [16 US gal/min]	315 bar [4500 psi]	07.24

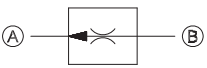
Pressure-Compensated, Priority Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP310-1	SDC10-3	Flow Control Valve, Fixed Setting, Priority Type	23 l/min [6 US gal/min]	210 bar [3000 psi]	07.25
	VRF 06	NCS06/3		30 l/min [8 US gal/min]	315 bar [4500 psi]	07.26
	CP311-1	CP12-3		45 l/min [12 US gal/min]	210 bar [3000 psi]	07.27
	CP312-1	SDC16-3		65 l/min [17 US gal/min]	210 bar [3000 psi]	07.28

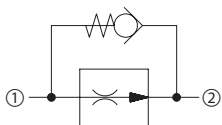
Pressure-Compensated, Priority Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP310-2	SDC10-3	Flow Control Valve, Adjustable, Priority Type	23 l/min [6 US gal/min]	210 bar [3000 psi]	07.29
	VRC 06	NCS06/3		50 l/min [13 US gal/min]	315 bar [4500 psi]	07.30
	VRC 12	NCS12/3		100 l/min [26 US gal/min]	315 bar [4500 psi]	07.31

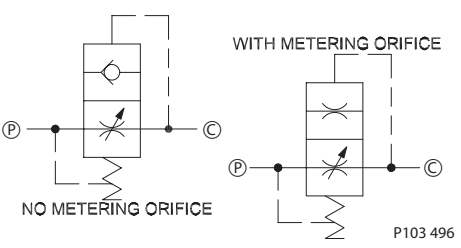
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

Cartridge Valves Technical Information
 Flow Control Valves
 Quick reference

Pressure-Compensated, Priority Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP300-6	SDC10-3	Flow Control Valve, Fixed Setting,	23 l/min [6 US gal/min]	210 bar [3000 psi]	07.32
	FCH10-BD	SDC10-3	Bi-Directional	23 l/min [6 US gal/min]	350 bar [5076 psi]	07.33

In-line	Model No.	Cavity	Description	Flow*	Pressure	Page
	SC 10	none	Flow Control Valve, In-line	16 l/min [4 US gal/min]	210 bar [3000 psi]	07.34
	SC 13	none		47 l/min [12 US gal/min]	210 bar [3000 psi]	07.35

In-line	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP9014-1	none	Load Lowering Valve	113 l/min [30 US gal/min]	210 bar [3000 psi]	07.36

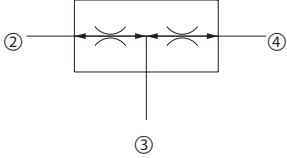
In-line	Model No.	Cavity	Description	Flow*	Pressure	Page
	BC 06	none	Velocity Fuse	30 l/min [8 US gal/min]	210 bar [3000 psi]	07.37
	BC 10	none		60 l/min [16 US gal/min]	210 bar [3000 psi]	07.38
	BC 13	none		85 l/min [22 US gal/min]	210 bar [3000 psi]	07.39

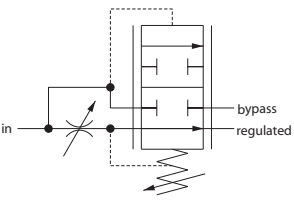
Flow control valves
 Quick reference

* 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
 Flow Control Valves
 Quick reference

Flow control valves
 Quick reference

Flow Divider/Combiner	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP340-1	SDC10-4	Flow Divider, Divider/Combiner	45 l/min [12 US gal/min]	210 bar [3000 psi]	07.40
	VDF 06	NCS06/4		45 l/min [12 US gal/min]	210 bar [3000 psi]	07.41
	CP341-1	CP12-4		75 l/min [20 US gal/min]	210 bar [3000 psi]	07.42
	CP342-1	CP16-4		150 l/min [40 US gal/min]	210 bar [3000 psi]	07.43
	CP342-3	CP16-4		150 l/min [40 US gal/min]	450 bar [6500 psi]	07.44
	CP343-1	SDC20-4		340 l/min [90 US gal/min]	210 bar [3000 psi]	07.45

Pressure-Compensated, Priority Flow Control	Model No.	Cavity	Description	Flow*	Pressure	Page
	2F94-01	none	Flow control Valve, Catalog HIC	30 l/min [8 US gal/min]	210 bar [3000 psi]	07.46
	2F95-01	none		60 l/min [16 US gal/min]	210 bar [3000 psi]	07.47
	2F96-01	none		95 l/min [25 US gal/min]	210 bar [3000 psi]	07.48
	2F97-01	none		190 l/min [50 US gal/min]	210 bar [3000 psi]	07.49

* 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
 Flow Control Valves
 Application notes

OVERVIEW

Pressure compensated flow control valves are used to limit or regulate flow. Three basic types of cartridges are available; restrictive-type, priority-type, and divider/combiner type. Combination valves in manifolds for additional features such as fully adjustable flow or free reverse flow are also available.

Flow control valves



F102 003

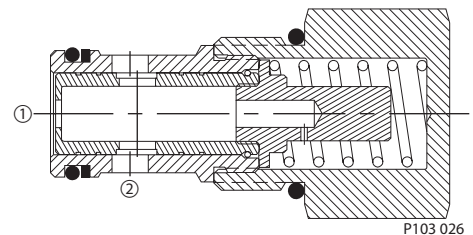
Flow control valves
 Application notes

RESTRICTED-TYPE PRESSURE COMPENSATED

Restrictive-type pressure compensated flow control valves are two-ported valves that maintain a constant flow rate from 1 to 2 regardless of load pressure changes in the circuit downstream of 2. The control orifice in the spool is factory set to the flow specification. The valve begins to respond to load changes when flow through the valve creates a pressure differential across the control orifice of approximately 7 bar [100 psi], and accurately maintains flow within +/- 10% across the range of 35-207 bar [500-3000 psi]. Reverse flow from 2 to 1 returns through the control orifice and is non-compensated.

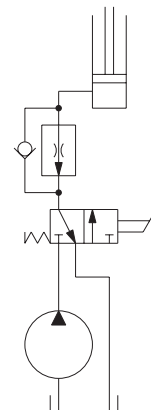
Restrictive-type flow control valves can be used in meter-in or meter-out applications to control actuator speeds.

Restricted-type pressure compensated flow control valve



P103 026

Actuator speed control circuit



P103 051

Cartridge Valves Technical Information

Flow Control Valves

Application notes

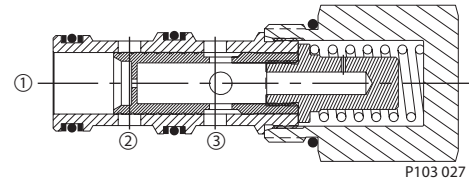
PRIORITY-TYPE PRESSURE COMPENSATED

Priority-type pressure compensated flow control valves are three-ported valves that maintain a constant flow rate from 1 to 3 regardless of load pressure changes in the priority circuit downstream of 3 or in the bypass circuit downstream of 2. The control orifice in the spool is factory set to the flow specification. The valve begins to respond to load pressure changes when flow to 3 creates a pressure differential across the control orifice of approximately 7 bar [100 psi]. The valve accurately maintains flow to the priority circuit across the range of 35-207 bar [500-3000 psi], with any excess inlet flow bypassing to 2. Note that both 2 and 3 may be fully and independently pressurized. Also note that if 2 is blocked, the valve will function as a restrictive-type flow control.

Priority-type flow control valves are used in meter-in applications. A common application is to direct a fixed flow rate to a priority function, such as steering, while secondary flow is available to other intermittent functions.

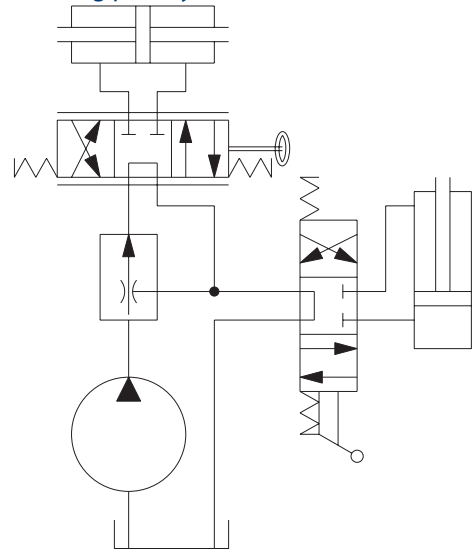
Flow divider/combiners are pressure

Priority-type pressure compensated flow control valve



P103 027

Steering priority circuit



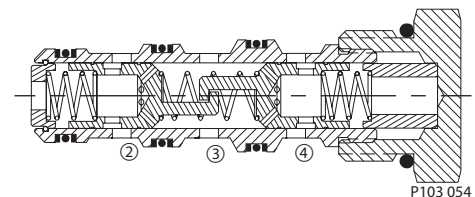
P103 053

Cartridge Valves Technical Information
 Flow Control Valves
 Application notes

FLOW DIVIDER / COMBINER

compensated valves. When the valve is functioning as a divider, it will divide input flow from 3 to the two outputs at 2 and 4 according to a preset ratio. This ratio is unaffected by pressure. When the valve is functioning as a combiner, it will combine the flow from the two inputs from 2 and 4 into one output at 3. Note that a flow divider/combiner is specified with a nominal flow rate for each leg. When operating with flow rates higher than specified, the dividing and combining ratios will be maintained, but at a cost of higher pressure drop and associated heat generation. When operating with lower flow rates than specified, the dividing and combining ratios are also maintained, but at a cost of accuracy. For example, a 22 l/min [5.8 US gal/min] : 22 l/min [5.8 US gal/min] flow divider will divide flow in a 50:50 ratio with an accuracy of $\pm 10\%$ (± 2.2 l/min [± 0.58 US gal/min]) per leg. With an input flow of 8.0 l/min [2.1 US gal/min], the flow division will be 4.0 ± 2.2 l/min [1.1 ± 0.58 US gal/min] per leg.

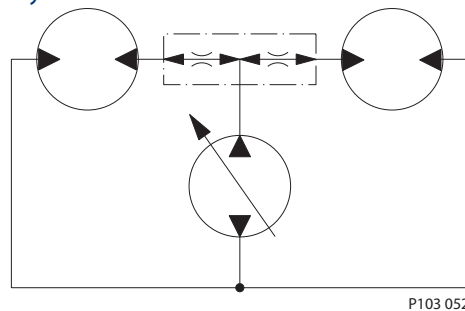
Flow divider / combiner



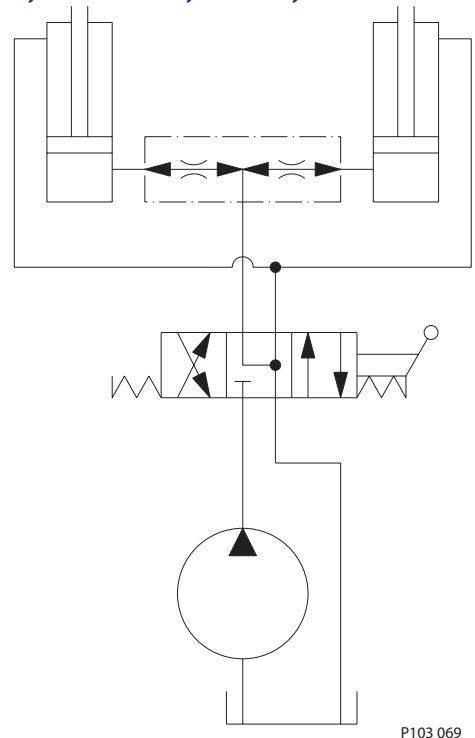
Common applications for flow divider/combiners include:

- Combining flow (forward) or dividing flow (reverse) to hydraulic wheel motors for vehicle drive application. Note that an external orifice is added to allow more flow to one motor than the other while turning a corner (not shown).
- Synchronizing motion of hydraulic cylinders. Note that if circuit operation results in a blockage of one cylinder port, the other port will also close. Consult factory for details.

Hydraulic wheel motor circuit



Synchronized hydraulic cylinders circuit



Flow control valves
Application notes



Cartridge Valves Technical Information

Flow Control Valves

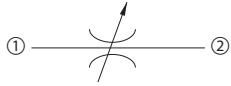
Needle Valves

CP618-6

OPERATION

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

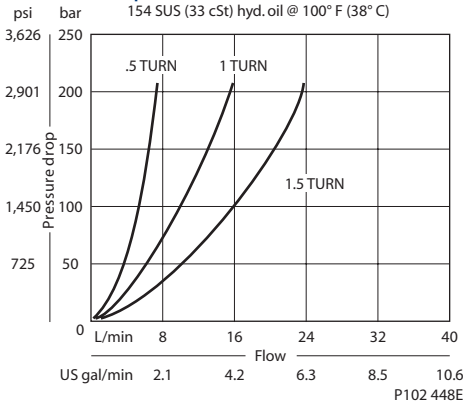
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

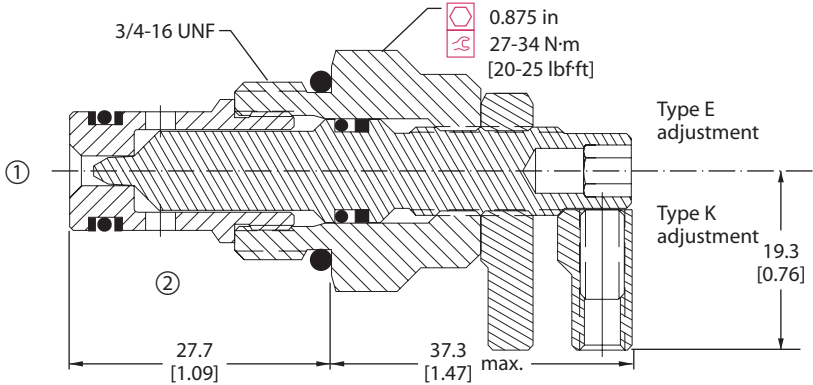
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.12 kg [0.26 lb]
Cavity	SDC08-2

CP618-6 Flow control valves

DIMENSIONS

mm [in]

Cross-sectional view



P102 440E

ORDERING INFORMATION

CP618 - 6 - B - 6S - K

Seals			
B = Buna-N		Seal kit	
V = Viton		120227	
		120228	
Housing and ports		Housing P/N	Adjustment option
0 = No Housing		No Housing	E = External
DG2B = AL, 1/4 BSP		SDC08-2-DG-2B	K = Knob
DG3B = AL, 3/8 BSP		SDC08-2-DG-3B	
DG4S = AL, #4 SAE		CP08-2-4S	
DG6S = AL, #6 SAE		CP08-2-6S	
Other housings available			

P102 458E



Cartridge Valves Technical Information

Flow Control Valves

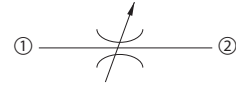
Needle Valves

CP618-1

OPERATION

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

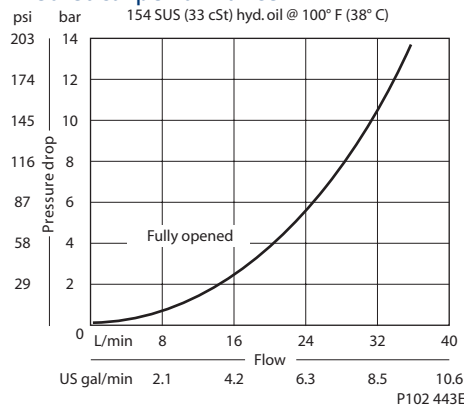
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

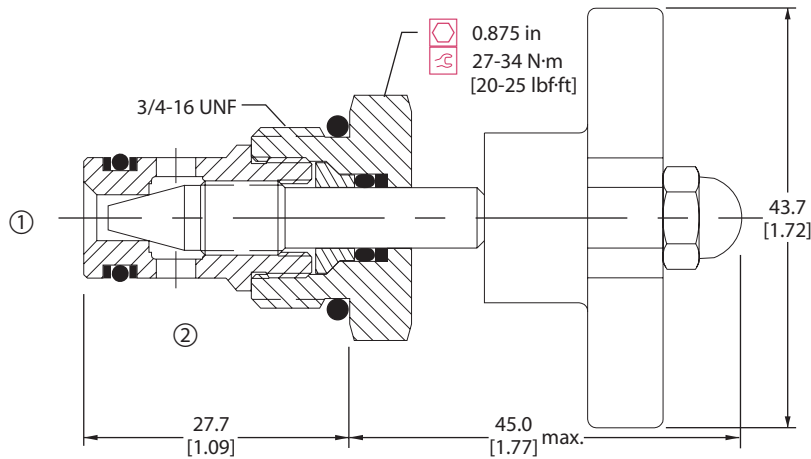
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.07 kg [0.15 lb]
Cavity	SDC08-2

Flow control valves
CP618-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 434E

ORDERING INFORMATION

CP618 - 1 - B - 6S - B

Seals			
B = Buna-N	Seal kit		
V = Viton	120227		
	120228		
Housing and ports	Housing P/N	Knob option	
0 = No Housing	No Housing	B = Black	
DG2B = AL, 1/4 BSP	SDC08-2-DG-2B	R = Red	
DG3B = AL, 3/8 BSP	SDC08-2-DG-2B		
DG4S = AL, #4 SAE	CP08-2-4S		
DG6S = AL, #6 SAE	CP08-2-6S		
Other housings available			

P102 452E



Cartridge Valves Technical Information

Flow Control Valves

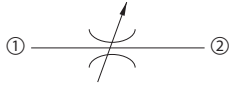
Needle Valves

CP618-2

OPERATION

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

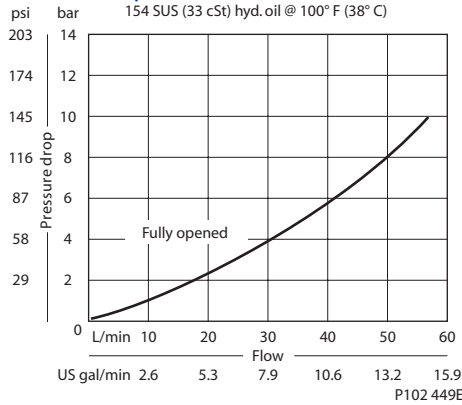
Schematic



P102 460E

SPECIFICATIONS

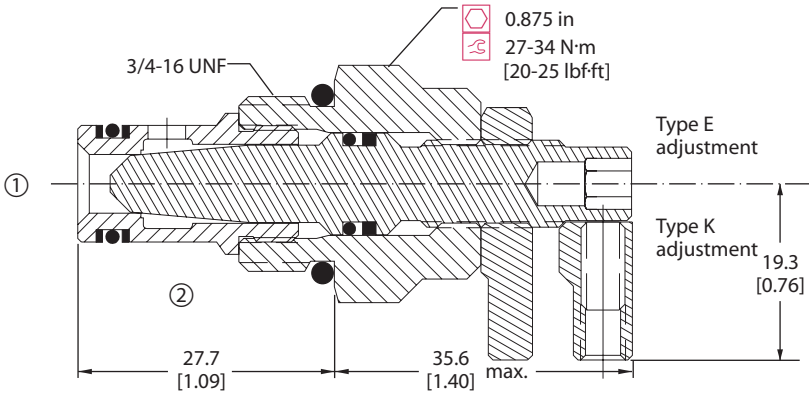
Theoretical performance



Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.09 kg [0.20 lb]
Cavity	SDC08-2

Cross-sectional view



P102 441E

DIMENSIONS

mm [in]

ORDERING INFORMATION

CP618 - 2 - B - 6S - K

Seals		Seal kit		Adjustment option
B = Buna-N		120227		E = External adjustment
V = Viton		120228		K = Knob adjustment
Housing and ports		Housing P/N		
0 = No Housing		No Housing		
DG2B = AL, 1/4 BSP		SDC08-2-DG-2B		
DG3B = AL, 3/8 BSP		SDC08-2-DG-2B		
DG4S = AL, #4 SAE		CP08-2-4S		
DG6S = AL, #6 SAE		CP08-2-6S		
Other housings available				

P102 459E

Flow control valves
CP618-2



Cartridge Valves Technical Information

Flow Control Valves

Needle Valves

CP610-1

OPERATION

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

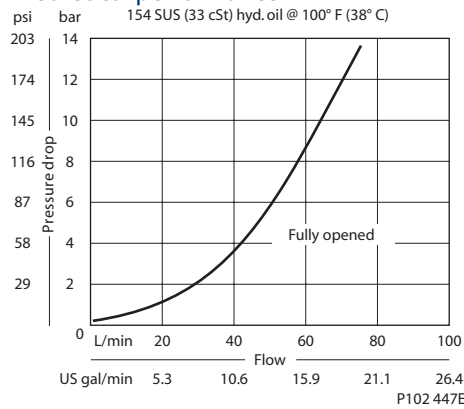
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

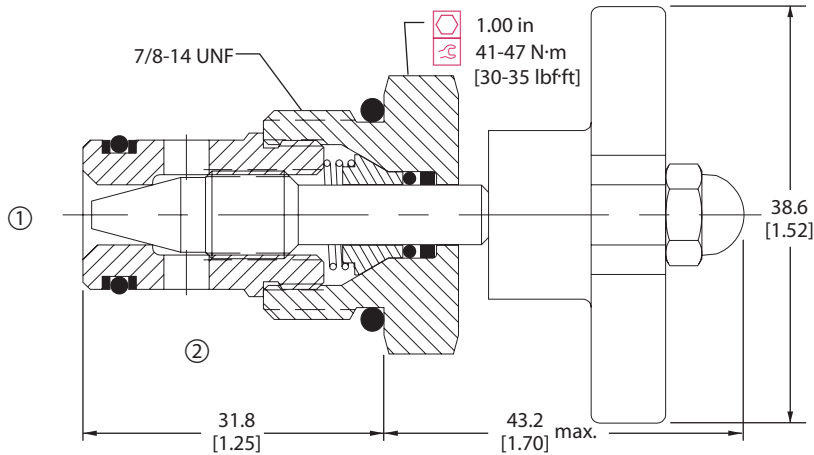
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.10 kg [0.22 lb]
Cavity	SDC10-2

Flow control valves CP610-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 439E

ORDERING INFORMATION

CP610 - 1 - B - 8S - B

Seals			
B = Buna-N		Seal kit 120073	
V = Viton		120074	
Housing and ports		Housing P/N	Knob option
0 = No Housing		No Housing	B = Black
DG3B = AL, 3/8 BSP		SDC10-2-DG-3B	R = Red
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			

P102 457E



Cartridge Valves Technical Information

Flow Control Valves

Needle Valves

CP610-2

OPERATION

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

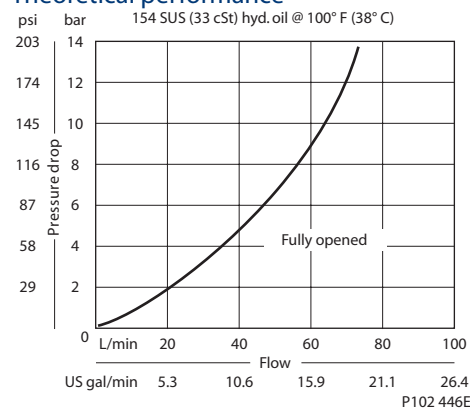
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



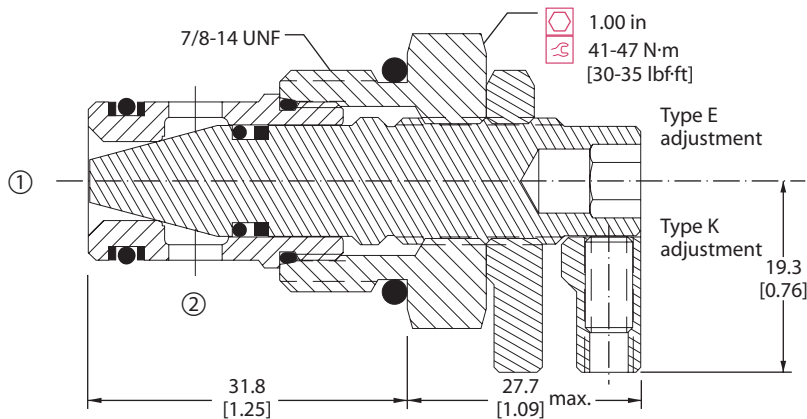
Specifications

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	0.13 kg [0.29 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP610 - 2 - B - 8S - K

Seals

- B = Buna-N
- V = Viton

Seal kit

- 120073
- 120074

Housing and ports

- 0 = No Housing
- DG3B = AL, 3/8 BSP
- DG4B = AL, 1/2 BSP
- 6S = AL, #6 SAE
- 8S = AL, #8 SAE

Housing P/N

- No Housing
- SDC10-2-DG-3B
- SDC10-2-DG-4B
- CP10-2-6S
- CP10-2-8S

Adjustment option

- E = External
- K = Knob

Other housings available

P102 456E



Cartridge Valves Technical Information

Flow Control Valves

Needle Valves

CP611-2

OPERATION

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

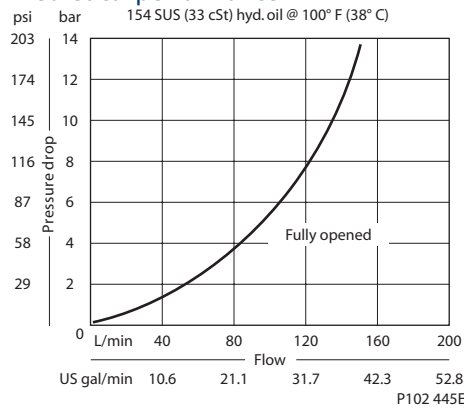
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

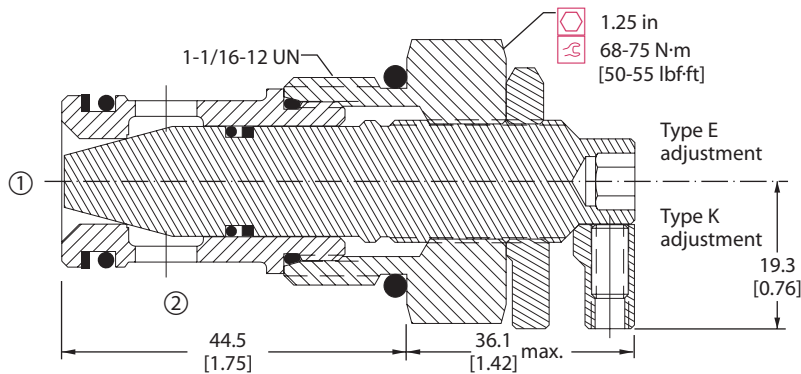
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.26 kg [0.57 lb]
Cavity	CP12-2

Flow control valves
CP611-2

DIMENSIONS

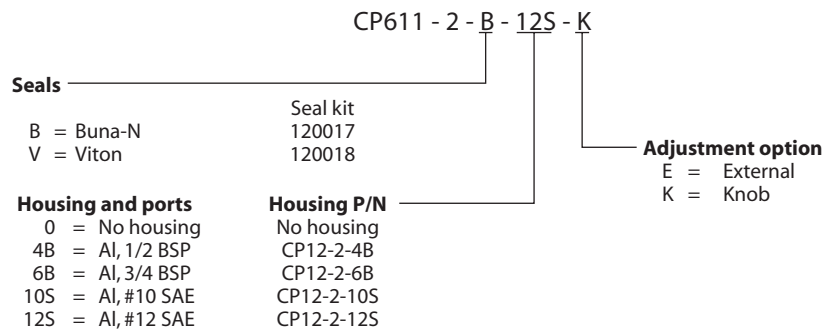
mm [in]

Cross-sectional view



P102 436E

ORDERING INFORMATION



P102 454E



Cartridge Valves Technical Information

Flow Control Valves

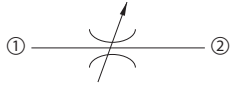
Needle Valves

CP612-1

OPERATION

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

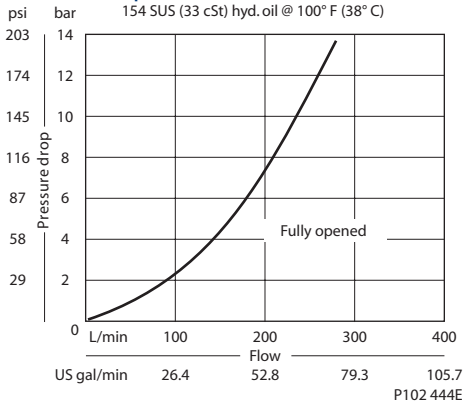
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

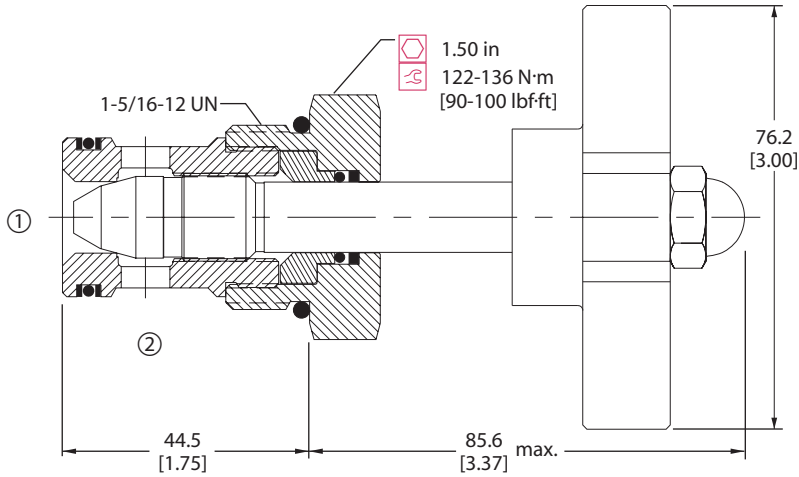
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.31 kg [0.68 lb]
Cavity	SDC16-2

Flow control valves CP612-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 435E

ORDERING INFORMATION

CP612 - 1 - B - 16S

Seals

- B = Buna-N
- V = Viton

- Seal kit
120567
120568

Housing and ports

- 0 = No Housing
- DG6B = AL, 3/4 BSP
- DG8B = AL, 1 BSP
- 12S = AL, #12 SAE
- 16S = AL, #16 SAE
- Other housings available

Housing P/N

- No Housing
- SDC16-2-DG-6B
- SDC16-2-DG-8B
- SDC16-2-12S
- SDC16-2-16S

P102 453E



Cartridge Valves Technical Information

Flow Control Valves

Needle Valves

CP612-2

OPERATION

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

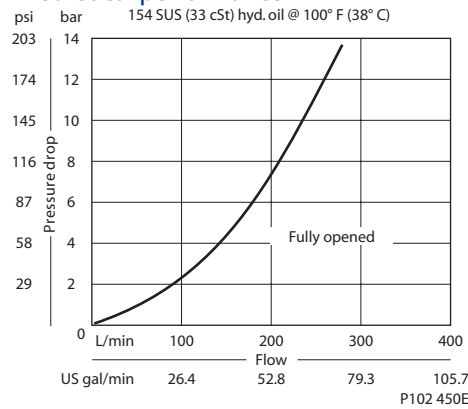
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

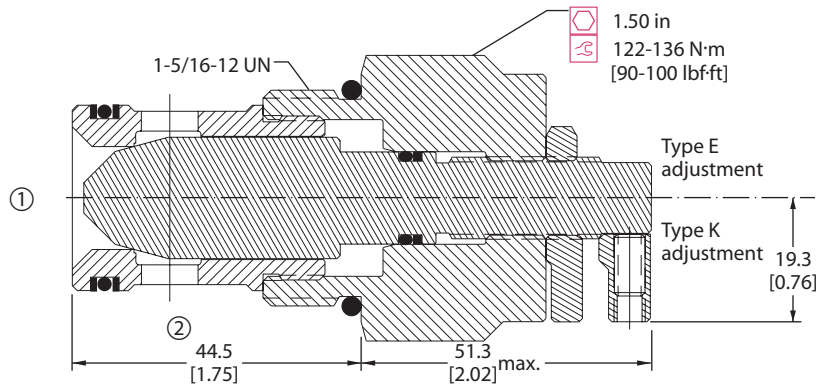
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.48 kg [1.06 lb]
Cavity	SDC16-2

Flow control valves
CP612-2

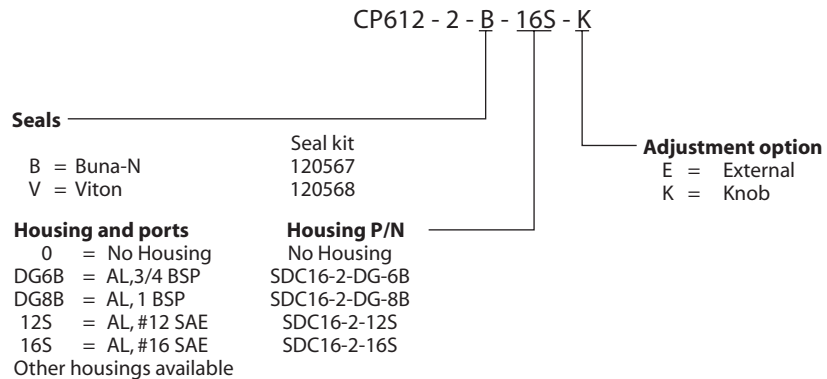
DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION



P102 451E



Cartridge Valves Technical Information

Flow Control Valves

Needle Valves

CP613-1

OPERATION

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

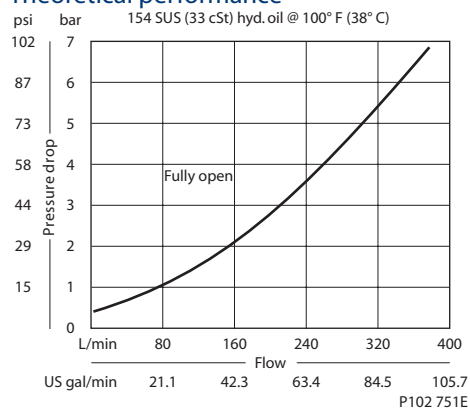
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



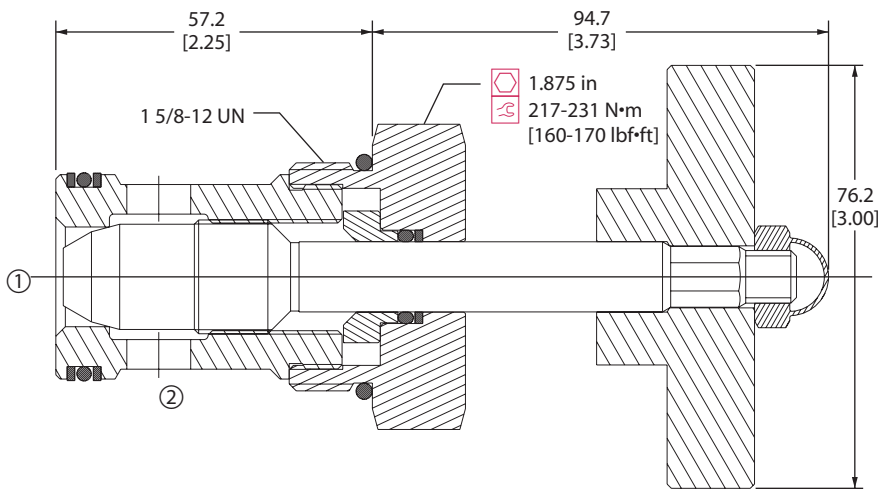
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	380 l/min [100 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.85 kg [1.87 lb]
Cavity	SDC20-2

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP613-1-B-16S

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

Housing P/N

- No Housing
- CP20-2-8B
- CP20-2-10B
- CP20-2-16S
- CP20-2-20S

Seals

- | | |
|------------|-----------|
| | Seal kits |
| B = Buna-N | 120172 |
| V = Viton | 120173 |

P102 693E



Cartridge Valves Technical Information

Flow Control Valves

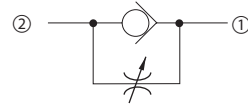
Needle Valves

CP610-7

OPERATION

This valve is an adjustable orifice with free reverse flow.

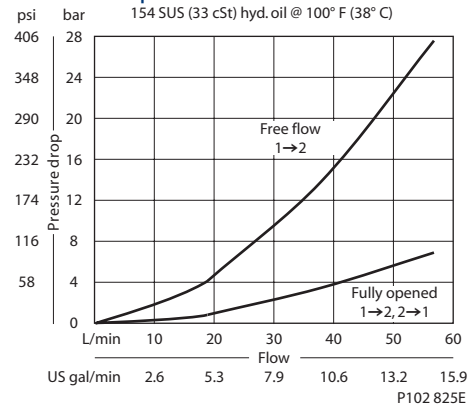
Schematic



P102 824

SPECIFICATIONS

Theoretical performance



Specifications

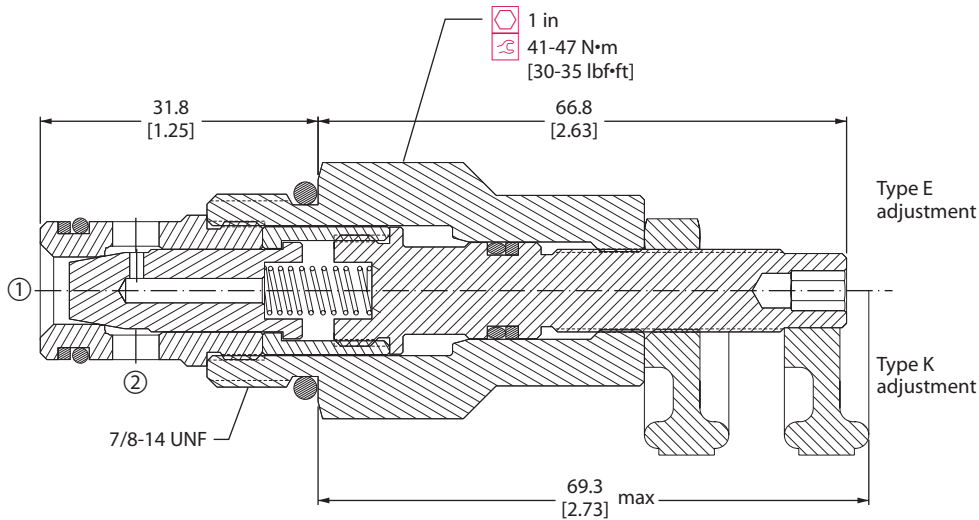
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	55 l/min [15 US gal/min]
Leakage	30 drops/min @ Rated pressure
Weight	0.18 kg [0.40 lb]
Cavity	SDC10-2

Flow control valves CP610-7

DIMENSIONS

mm [in]

Cross-sectional view



P102 762

ORDERING INFORMATION

CP610 - 7 - B - 8S - K

Seals

- B = Buna-N
- V = Viton

Housing and ports

- 0 = No Housing
- DG3B = AL, 3/8 BSP
- DG4B = AL, 1/2 BSP
- 6S = AL, #6 SAE
- 8S = AL, #8 SAE
- Other housings available

Seal kit

120015

120016

Housing P/N

- No Housing
- SDC10-2-DG-3B
- SDC10-2-DG-4B
- CP10-2-6S
- CP10-2-8S

Adjustment option

- E = External
- K = Knob

P102 763E



Cartridge Valves Technical Information

Flow Control Valves

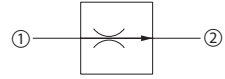
Pressure-Compensated, Restrictive Flow Control

CP308-1

OPERATION

This valve is a fixed pressure compensated flow control valve.

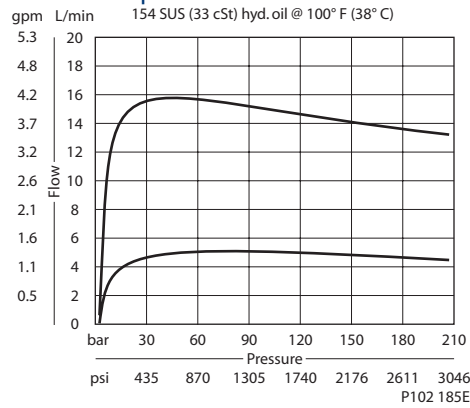
Schematic



P102 183E

SPECIFICATIONS

Theoretical performance



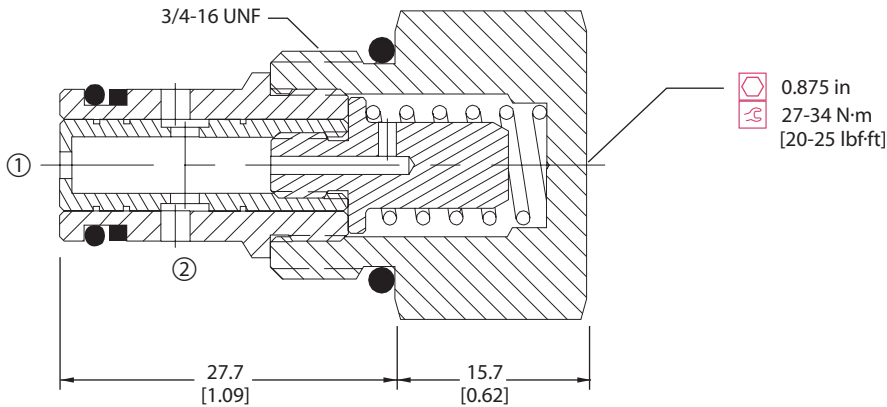
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	15 l/min [4 US gal/min]
Weight	0.08 kg [0.17 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-15.1 l/min [1.8-4 US gal/min]
Cavity	SDC08-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 184E

ORDERING INFORMATION

CP308 - 1 - B - 6S - 1.0

Seals	Seal kit		Regulated Flow	L/min [US gal/min]
B = Buna-N V = Viton	120221 120022			
Housing and ports	Housing P/N			
0 = No Housing DG2B = Al, 1/4 BSP DG3B = Al, 3/8 BSP 4S = Al, #4 SAE 6S = Al, #6 SAE Other housings available	No Housing SDC08-2-DG-2B SDC08-2-DG-3B CP08-2-4S CP08-2-6S			

P102 187E

Flow control valves
1-806-CDJ



Cartridge Valves Technical Information

Flow Control Valves

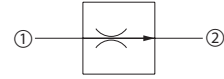
Pressure-Compensated, Restrictive Flow Control

CP300-1

OPERATION

This valve is a fixed pressure compensated flow control valve.

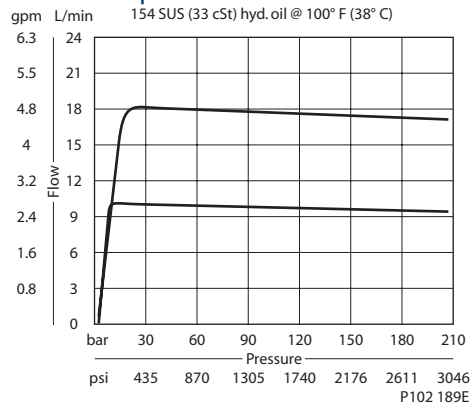
Schematic



P102 183E

SPECIFICATIONS

Theoretical performance



Specifications

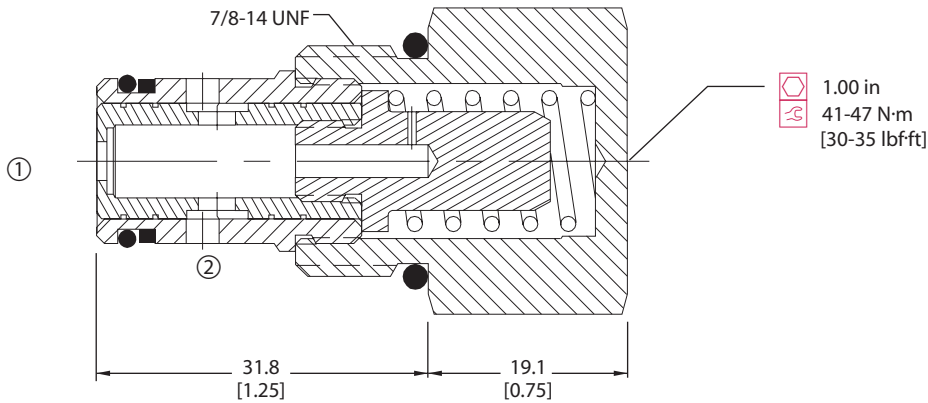
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.12 kg [0.26 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-22.7 l/min [1.8-6 US gal/min]
Cavity	SDC10-2

Flow control valves
CP300-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 188E

ORDERING INFORMATION

CP300 - 1 - B - 8S - 2.5

Seals	Seal kit	Regulated Flow
B = Buna-N V = Viton	120015 120016	
Housing and ports	Housing P/N	L/min [US gal/min]
0 = No Housing	No Housing	0.5 = 1 [0.5]
DG3B = Al, 3/8 BSP	SDC10-2-DG-3B	to
DG4B = Al, 1/2 BSP	SDC10-2-DG-4B	6.0 = 22.7 [6.0]
6S = Al, #6 SAE	CP10-2-6S	
8S = Al, #8 SAE	CP10-2-8S	
Other housings available		

P102 191E



Cartridge Valves Technical Information

Flow Control Valves

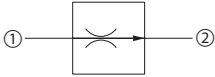
Pressure-Compensated, Restrictive Flow Control

CP301-1

OPERATION

This valve is a fixed pressure compensated flow control valve.

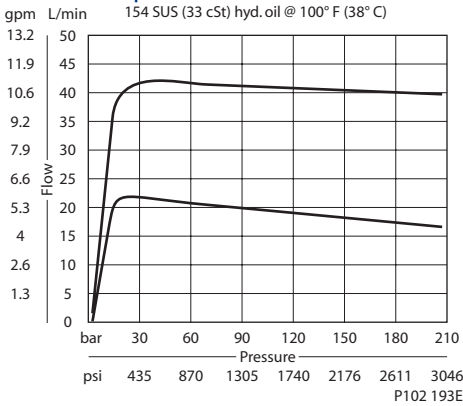
Schematic



P102 183E

SPECIFICATIONS

Theoretical performance



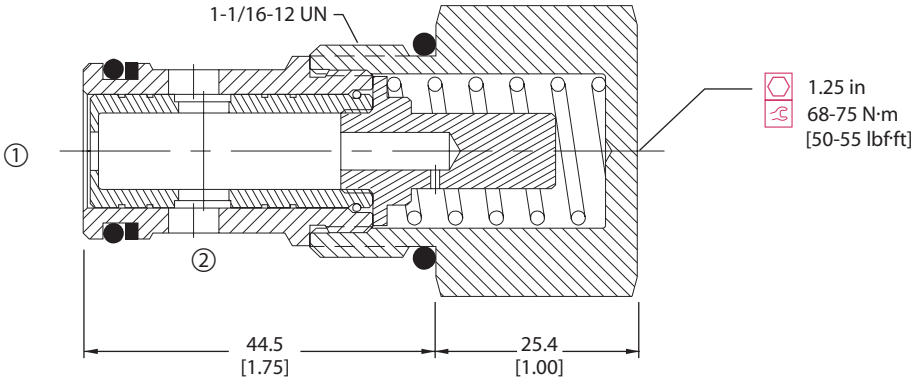
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	57 l/min [15 US gal/min]
Weight	0.24 kg [0.52 lb]
Accuracy ± 15%	1.9-7.5 l/min [0.5-2 US gal/min]
± 10%	7.6-56.8 l/min [2-15 US gal/min]
Cavity	CP12-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 192E

ORDERING INFORMATION

CP301 - 1 - B - 12S - 10.0

Seals	Seal kit	Regulated Flow
B = Buna-N V = Viton	120017 120018	
Housing and ports	Housing P/N	L/min [US gal/min]
0 = No Housing	No Housing	0.5 = 1.9 [0.5]
4B = Al, 1/2 BSP	CP12-2-4B	to
6B = Al, 3/4 BSP	CP12-2-6B	15.0 = 56.8 [15.0]
10S = Al, #10 SAE	CP12-2-10S	
12S = Al, #12 SAE	CP12-2-12S	

Other housings available

P102 195E

Flow control valves I-106CP



Cartridge Valves Technical Information

Flow Control Valves

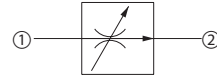
Pressure-Compensated, Restrictive Flow Control

CP308-2

OPERATION

This valve is a limited adjustment pressure compensated flow control valve.

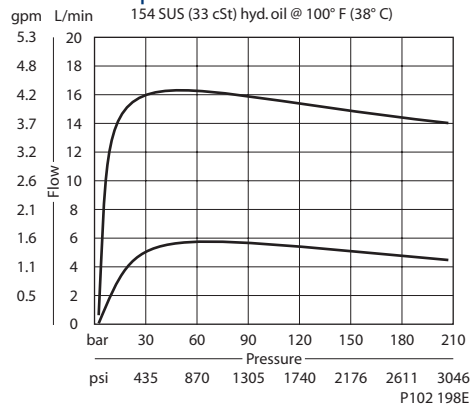
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



Specifications

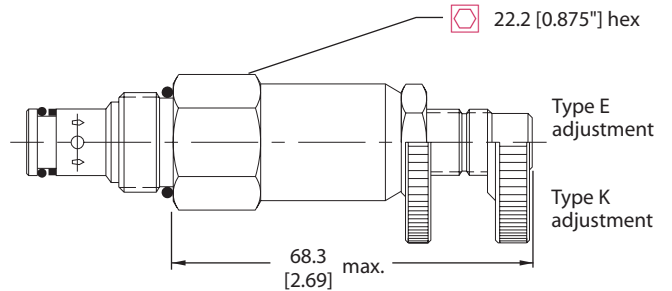
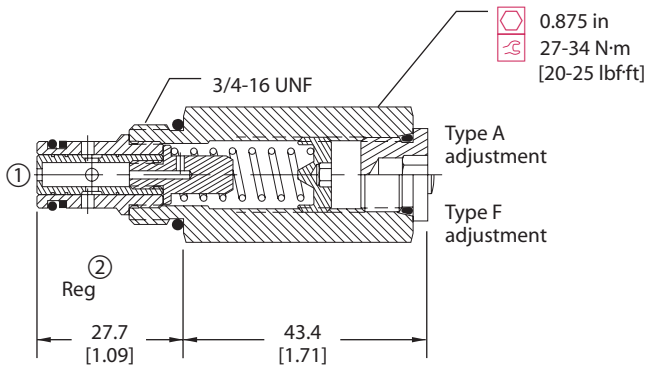
Rated pressure	210 bar [3000 psi]
Max regulated flow	15 l/min [4 US gal/min]
Weight	0.15 kg [0.32 lb]
Cavity	SDC08-2

Flow control valves
CP308-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 197E

ORDERING INFORMATION

CP308 - 2 - B - 6S - A - 1.0

<p>Seals</p> <p>B = Buna-N</p> <p>V = Viton</p>	<p>Seal kit</p> <p>120221</p> <p>120222</p>	<p>Regulated Flow</p> <p>L/min [US gal/min]</p> <p>0.1 = .4 [0.1]</p> <p>To</p> <p>4.0 = 15.1 [4.0]</p>
<p>Housing and ports</p> <p>0 = No Housing</p> <p>DG2B = Al, 1/4 BSP</p> <p>DG3B = Al, 3/8 BSP</p> <p>4S = Al, #4 SAE</p> <p>6S = Al, #6 SAE</p> <p>Other housings available</p>	<p>Housing P/N</p> <p>No Housing</p> <p>SDC08-2-DG-2B</p> <p>SDC08-2-DG-3B</p> <p>CP08-2-4S</p> <p>CP08-2-6S</p>	<p>Adjustment option</p> <p>A = Internal</p> <p>E = External</p> <p>F = Tamper resistant</p> <p>K = Knob</p>

P102 200E



Cartridge Valves Technical Information

Flow Control Valves

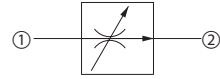
Pressure-Compensated, Restrictive Flow Control

CP300-2

OPERATION

This valve is a limited adjustment pressure compensated flow control valve.

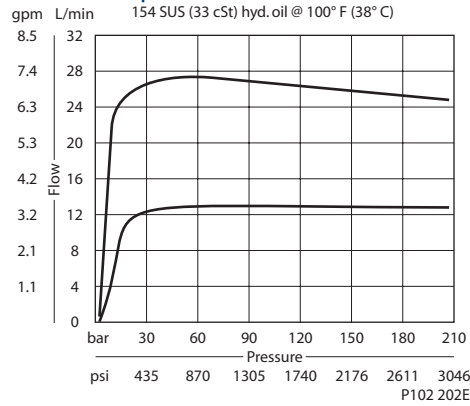
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



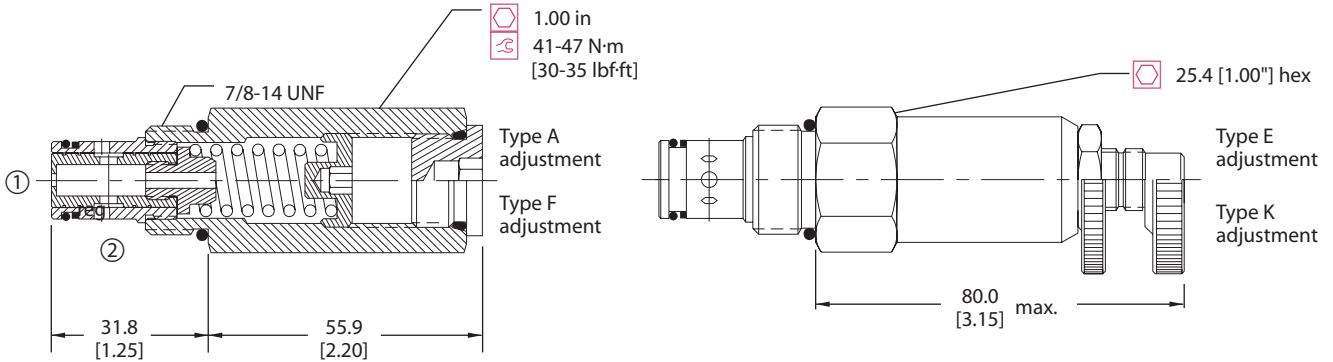
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.24 kg [0.52 lb]
Accuracy ± 20%	0.5-2.2 l/min [0.1-0.5 US gal/min]
± 15%	2.3-6.8 l/min [0.5-1.5 US gal/min]
± 10%	6.8-27.3 l/min [1.5-6 US gal/min]
Cavity	SDC10-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 201E

ORDERING INFORMATION

- Seals**
 B = Buna-N
 V = Viton
- Housing and ports**
 0 = No Housing
 DG3B = Al, 3/8 BSP
 DG4B = Al, 1/2 BSP
 6S = Al, #6 SAE
 8S = Al, #8 SAE
 Other housings available

- CP300 - 2 - B - 8S - A - 2.5**
- Seal kit**
 120015
 120016
- Housing P/N**
 No Housing
 SDC10-2-DG-3B
 SDC10-2-DG-4B
 CP10-2-6S
 CP10-2-8S

- Regulated Flow**
- | L/min | [US gal/min] |
|-------|--------------|
| 0.5 | 2.4 [0.5] |
| To | |
| 6.0 | 22.7 [6.0] |

- Adjustment option**
 A = Internal
 E = External
 F = Tamper resistant
 K = Knob

P102 204E



Cartridge Valves Technical Information

Flow Control Valves

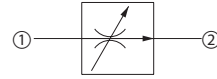
Pressure-Compensated, Restrictive Flow Control

VR 06

OPERATION

This valve is a limited adjustment, pressure compensated, restrictive-type flow control valve.

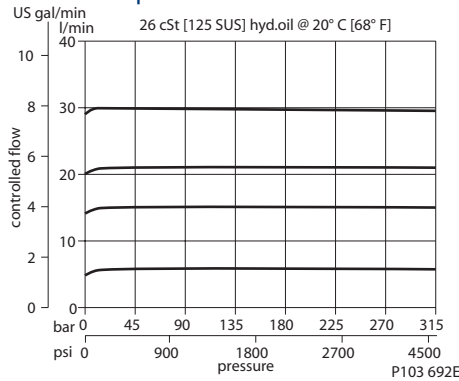
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



Specifications

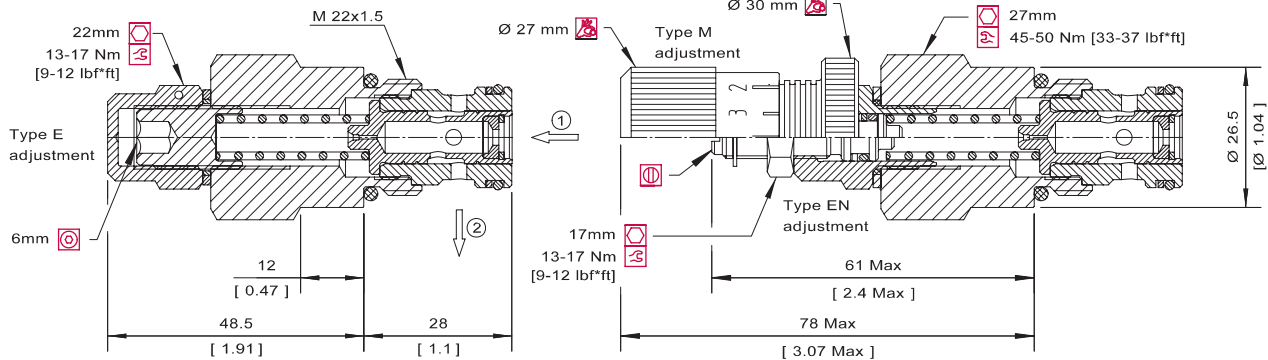
Rated pressure	315 bar [4500 psi]
Max regulated flow	30 l/min [8 US gal/min]
Weight	0.19 kg [0.42 lb]
Cavity	NCS06/2

Flow control valves
VR 06

DIMENSIONS

mm [in]

Cross-sectional view



P103 664

ORDERING INFORMATION

VR 06 - EN-1.25 - 00 - V

Adjustment

E = Internal screw
EN = External screw
M = Handwheel

Orifice size

mm	L/min	[US gal/m]
1.25	1-4	[0.3-1.1]
2.00	3-10	[0.8-2.6]
3.00	6-20	[1.6-5.3]
3.50	10-30	[2.6-7.9]

other orifices available
consult factory

Seals

V = Viton
Omit = Buna-N

Seal kit

230000380
230000060

Housing and ports

00 = No Housing
DG3/8 = AL, 3/8 BSP
DG1/2 = AL, 1/2 BSP
DG65 = AL, #6 SAE
DG85 = AL, #8 SAE
Other housings available

Housing P/N

No Housing
NCS06/2-DG-3/8
NCS06/2-DG-1/2
NCS06/2-DG-65
NCS06/2-DG-85

P103 718E



Cartridge Valves Technical Information

Flow Control Valves

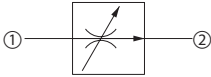
Pressure-Compensated, Restrictive Flow Control

VR 12

OPERATION

This valve is a limited adjustment, pressure compensated, restrictive-type flow control valve.

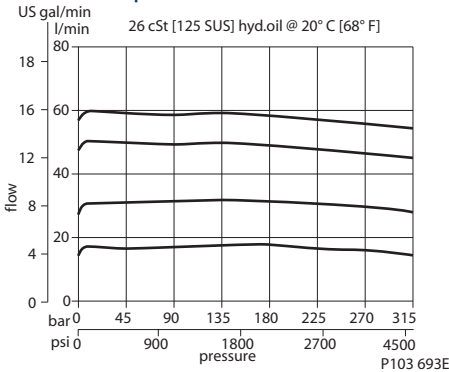
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



Specifications

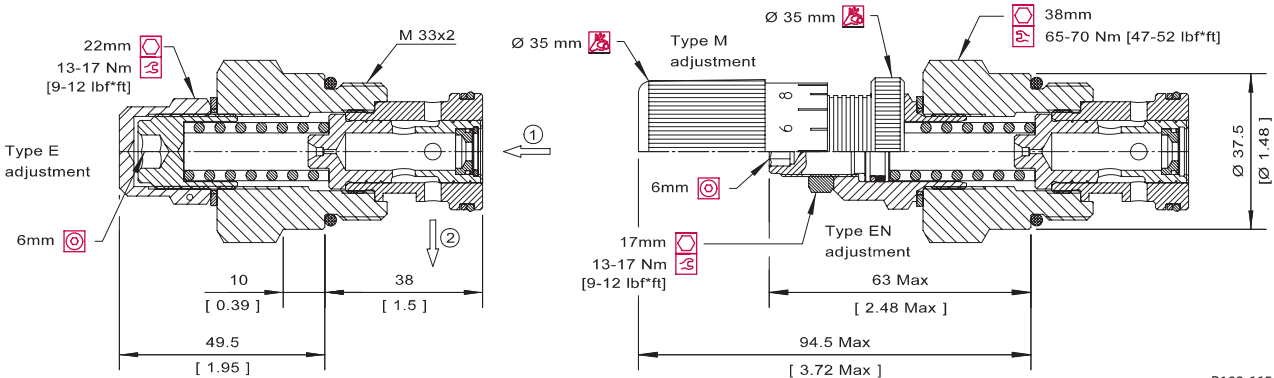
Rated pressure	315 bar [4500 psi]
Max regulated flow	60 l/min [16 US gal/min]
Weight	0.44 kg [0.97 lb]
Cavity	NCS12/2

Flow control valves

DIMENSIONS

Cross-sectional view

mm [in]



P103 665

ORDERING INFORMATION

VR 12 - EN-1.25 - 00 - V

Adjustment

- E = Internal screw
- EN = External screw
- M = Handwheel

Orifice size

mm	L/min	[US gal/m]
1.50	2.5-6.5	[0.7-1.7]
2.50	6-16	[1.6-4.2]
4.00	16-40	[4.2-10.6]
5.00	25-60	[6.6-15.8]

Seals

- V = Viton
- Omit = Buna-N

Seal kit

- 230000470
- 230000120

Housing and ports

- 00 = No Housing
- DG1/2 = AL, 1/2 BSP
- DG3/4 = AL, 3/4 BSP
- DG8S = AL, #8 SAE
- DG12S = AL, #12 SAE
- Other housings available

Housing P/N

- No Housing
- NCS12/2-DG-1/2
- NCS12/2-DG-3/4
- NCS12/2-DG-8S
- NCS12/2-DG-12S

P103 719E



Cartridge Valves Technical Information

Flow Control Valves

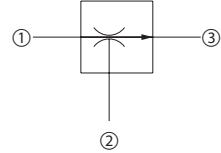
Pressure-Compensated, Priority Flow Control

CP310-1

OPERATION

This valve is a fixed, pressure compensated priority-type flow control valve.

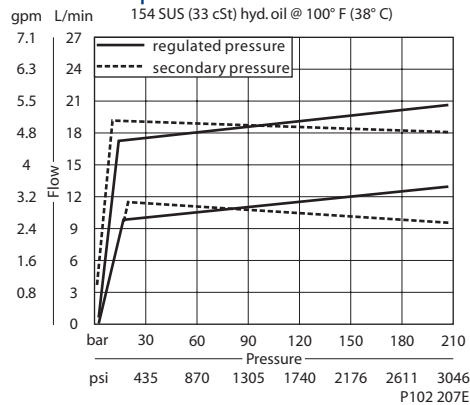
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



Specifications

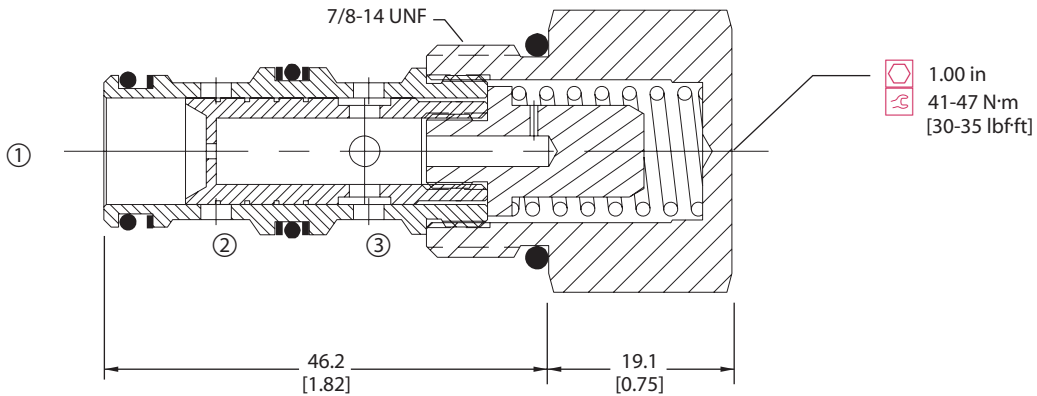
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Max inlet flow	38 l/min [10 US gal/min]
Weight	0.13 kg [0.29 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-22.7 l/min [1.8-6 US gal/min]
Cavity	SDC10-3

Flow control valves
CP310-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 206E

ORDERING INFORMATION

CP310-1-B-8S-2.5

Seals B = Buna-N V = Viton	Seal kit 120240 120241	Regulated Flow L/min [US gal/m] 0.1 = 0.4 [0.1] 6.0 = 22.7 [6.0]
Housing and ports 00 = 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	

P102 209E



Cartridge Valves Technical Information

Flow Control Valves

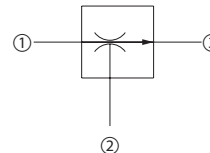
Pressure-Compensated, Priority Flow Control

VRF 06

OPERATION

This valve is a fixed, pressure compensated, priority-type flow control.

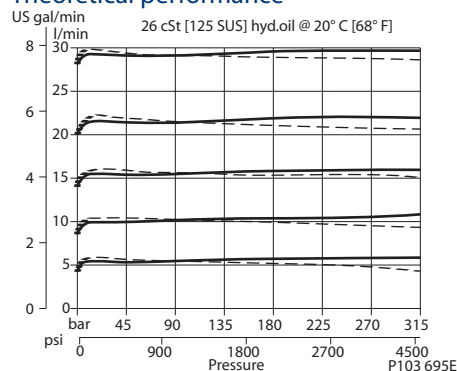
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



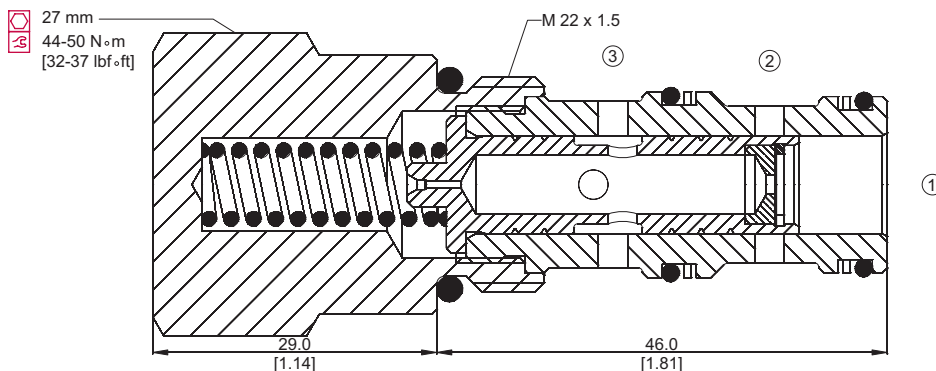
Specifications

Rated pressure	315 bar [4500 psi]
Max regulated flow	26 l/min [7 US gal/min]
Max inlet flow	50 l/min [13 US gal/min]
Weight	0.19 kg [0.42 lb]
Accuracy ± 10%	2.3-25.5 l/min [0.5-6.8 US gal/min]
Cavity	NCS06/3

DIMENSIONS

mm [in]

Cross-sectional view



P103 667

ORDERING INFORMATION

VRF 06 - 1.5 - SE3/8 - V

Orifice size				
Orifice	L/min	flow		
0.75	= 1.5	[0.4]		
1.00	= 2.0	[0.53]		
1.25	= 3.5	[0.92]		
1.50	= 4.5	[1.19]		
1.75	= 6	[1.58]		
2.00	= 9.0	[1.38]		
2.25	= 10	[2.64]		
2.50	= 12	[3.30]		
2.75	= 15	[3.96]		
3.00	= 18	[4.75]		
3.25	= 21.5	[5.68]		
3.50	= 25	[6.73]		

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

Housing and ports	Housing P/N
00 = No Housing	No Housing
SE3/8 = AL, 3/8 BSP	NCS06/3-SE-3/8
SE1/2 = AL, 1/2 BSP	NCS06/3-SE-1/2
SE6S = AL, #6 SAE	NCS06/3-SE-6S
SE8S = AL, #8 SAE	NCS06/3-SE-8S
Other housings available	

P103 722E



Cartridge Valves Technical Information

Flow Control Valves

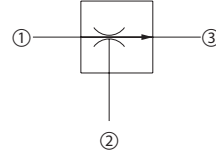
Pressure-Compensated, Priority Flow Control

CP311-1

OPERATION

This valve is a fixed, pressure compensated priority-type flow control valve.

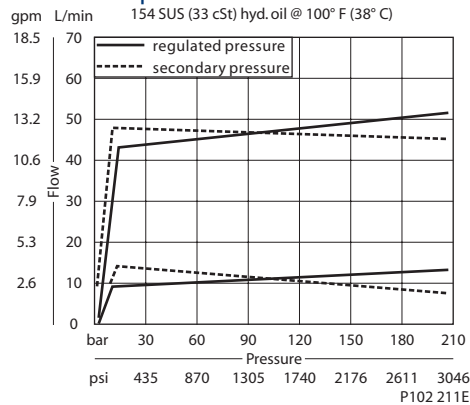
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



Specifications

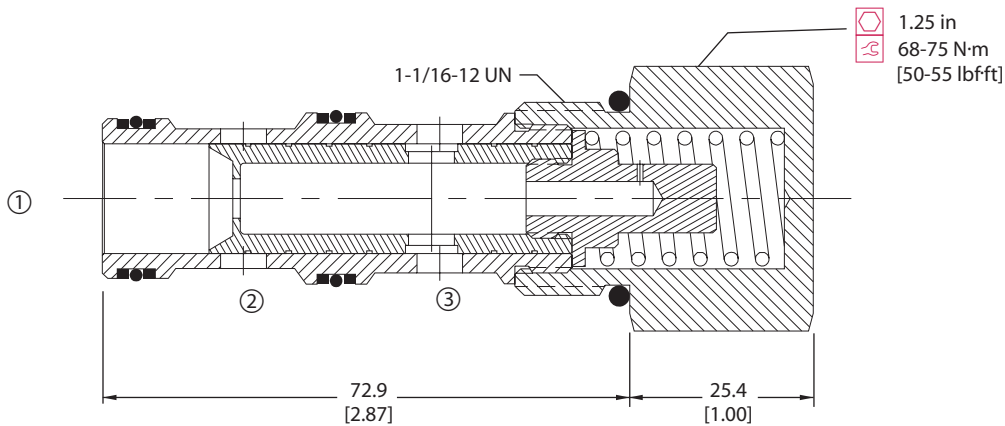
Rated pressure	210 bar [3000 psi]
Max regulated flow	45 l/min [12 US gal/min]
Max inlet flow	95 l/min [25 US gal/min]
Weight	0.28 kg [0.61 lb]
Accuracy ± 15%	1.9-7.5 l/min [0.5-2 US gal/min]
± 10%	7.6-45.4 l/min [2-12 US gal/min]
Cavity	CP12-3

Flow control valves
CP311-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 210E

ORDERING INFORMATION

CP311 - 1 - B - 12S - 10.0

Seals	Seal kit		
B = Buna-N	120053		
V = Viton	120052		
Housing and ports	Housing P/N	Regulated Flow	
0 = No Housing	No Housing	L/min	[US gal/min]
4B = Al, 1/2 BSP	CP12-3-4B	0.5 = 1.9	[0.5]
6B = Al, 3/4 BSP	CP12-3-6B	12.0 = 45.4	[12.0]
10S = Al, #10 SAE	CP12-3-10S		
12S = Al, #12 SAE	CP12-3-12S		
Other housings available			

P102 213E



Cartridge Valves Technical Information

Flow Control Valves

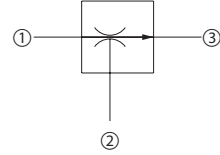
Pressure-Compensated, Priority Flow Control

CP312-1

OPERATION

This valve is a fixed, pressure compensated priority-type flow control valve.

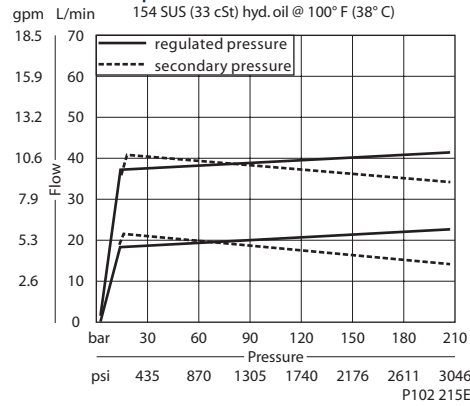
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



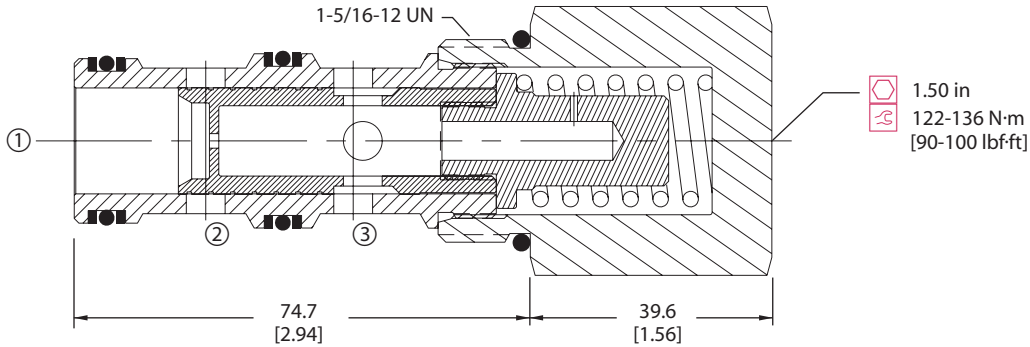
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	64 l/min [17 US gal/min]
Max inlet flow	130 l/min [34 US gal/min]
Weight	0.53 kg [1.17 lb]
Accuracy ± 15%	1.9-7.5 l/min [0.5-2 US gal/min]
± 10%	7.6-64.3 l/min [2-17 US gal/min]
Cavity	SDC16-3

DIMENSIONS

mm [in]

Cross-sectional view



P102 214E

ORDERING INFORMATION

CP312 - 1 - B - 16S - 10.0

Seals	B = Buna-N V = Viton	Seal kit	120202 120203	Regulated flow	L/min [US gal/min]
Housing and ports	0 = No Housing SE6B = Al, 3/4 BSP SE8B = Al, 1 BSP 12S = Al, #12 SAE 16S = Al, #16 SAE Other housings available	Housing P/N	No Housing SDC16-3-SE-6B SDC16-3-SE-8B CP16-3-12S CP16-3-12S	0.5 = 1.9 [0.5] To 17.0 = 64.3 [17.0]	

P102 217E

Flow control valves
CP312-1



Cartridge Valves Technical Information

Flow Control Valves

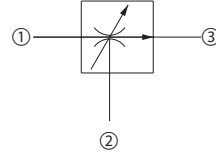
Pressure-Compensated, Priority Flow Control

CP310-2

OPERATION

This valve is a limited adjustment, pressure compensated, priority-type flow control valve.

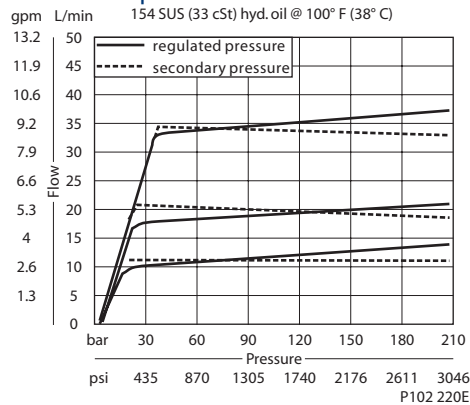
Schematic



P102 218E

SPECIFICATIONS

Theoretical performance



Specifications

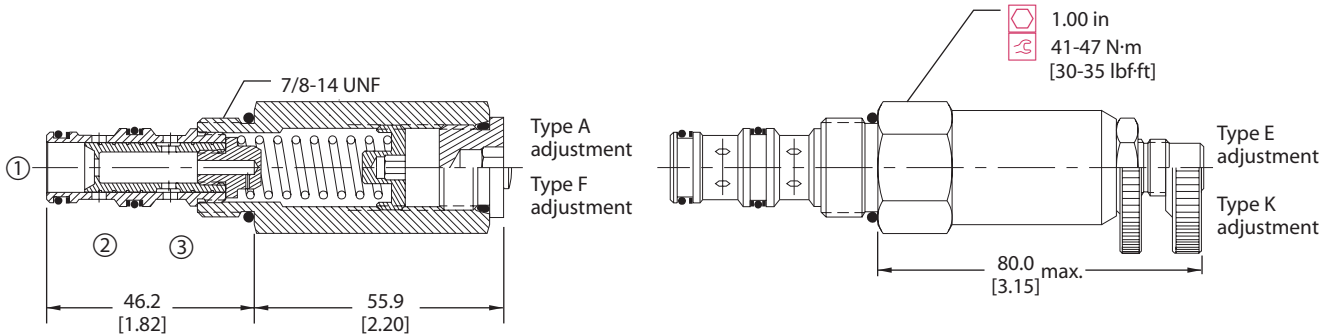
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Max inlet flow	38 l/min [10 US gal/min]
Weight	0.24 kg [0.52 lb]
Cavity	SDC10-3

Flow control valves CP310-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 219E

ORDERING INFORMATION

CP310-2-B-8S-A-2.5

<p>Seals</p> <p>B = Buna-N V = Viton</p>	<p>Seal kit</p> <p>120240 120241</p>	<p>Housing and ports</p> <p>0 = No Housing SE3B = Al, 3/8 BSP SE4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available</p>	<p>Housing P/N</p> <p>No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S</p>	<p>Regulated Flow</p> <p>L/min [US gal/min]</p> <p>0.1 = .4 [0.1] To 6.0 = 22.7 [6.0]</p>	<p>Adjustment option</p> <p>A = Internal E = External F = Tamper resistant K = Knob</p>
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P102 222E



Cartridge Valves Technical Information

Flow Control Valves

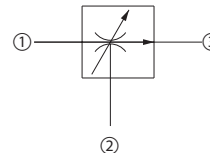
Pressure-Compensated, Priority Flow Control

VRC 06

OPERATION

This valve is a limited adjustment, pressure compensated, priority-type flow control valve.

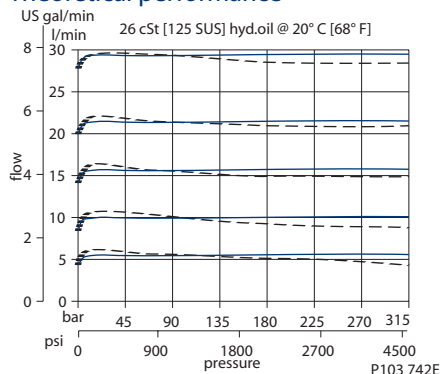
Schematic



P102 218E

SPECIFICATIONS

Theoretical performance



Specifications

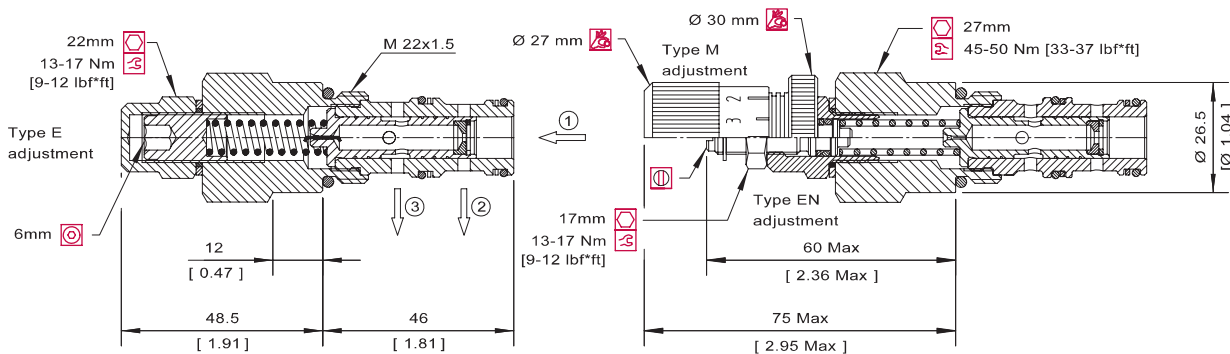
Rated pressure	315 bar [4500 psi]
Max regulated flow	30 l/min [8 US gal/min]
Max inlet flow	50 l/min [13 US gal/min]
Weight	0.21 kg [0.46 lb]
Cavity	NCS06/3

VRC 06 Flow control valves

DIMENSIONS

mm [in]

Cross-sectional view



P103 741

ORDERING INFORMATION

VRC 06 - EN-2.0 - SE3/8 - V

Type of adjustment

E = Internal screw
EN = External screw
M = Handwheel

Orifice size

mm	L/min	[US gal/m]
1.25	= 1-4	[0.3-1.1]
2.0	= 3-10	[0.8-2.5]
3.0	= 6-20	[1.6-5.3]
3.5	= 10-30	[2.6-7.9]

other orifices available consult factory

Seals

V = Viton
Omit = Buna-N

Seal kit

230000110
230000070

Housing and ports

00 = No Housing
SE3/8 = AL, 3/8 BSP
SE1/2 = AL, 1/2 BSP
SE6S = AL, #6 SAE
SE8S = AL, #8 SAE
Other housings available

Housing P/N

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

P103 720E



Cartridge Valves Technical Information

Flow Control Valves

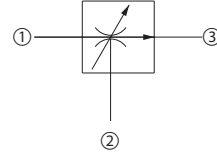
Pressure-Compensated, Priority Flow Control

VRC 12

OPERATION

This valve is a limited adjustment, pressure compensated, priority-type flow control valve.

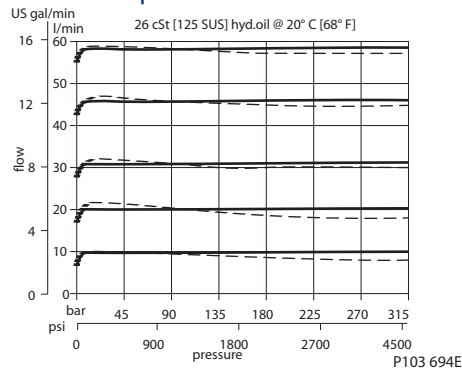
Schematic



P102 218E

SPECIFICATIONS

Theoretical performance



Specifications

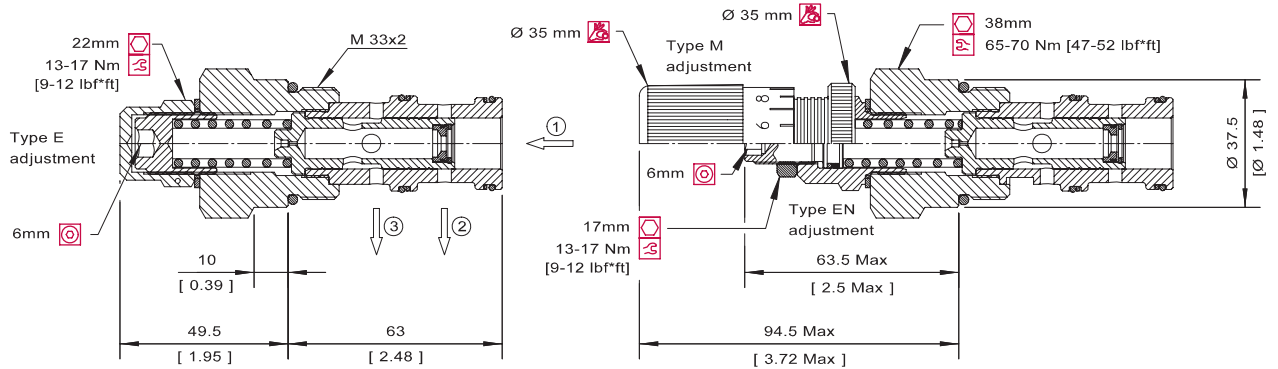
Rated pressure	315 bar [4500 psi]
Max regulated flow	73 l/min [19 US gal/min]
Max inlet flow	100 l/min [26 US gal/min]
Weight	0.50 kg [1.10 lb]
Cavity	NCS12/3

Flow control valves
VRC 12

DIMENSIONS

mm [in]

Cross-sectional view



P103 666

ORDERING INFORMATION

VRC 12 - EN-1.5 - SE1/2 - V

Adjustment

E = Internal screw
EN = External screw
M = Handwheel

Orifice size

mm	L/min	[US gal/min]
1.25	= 2.5-6.5	[0.7-1.7]
2.50	= 6-16	[1.6-4.2]
3.50	= 9-32	[2.4-8.4]
4.00	= 16-40	[4.2-10.6]
5.00	= 25-60	[6.6-15.8]
5.75	= 30-73	[7.9-19.3]

Seals

V = Viton
Omit = Buna-N

Seal kit

230000360
230000130

Housing and ports

00 = No Housing
SE1/2 = AL, 1/2 BSP
SE3/4 = AL, 3/4 BSP
SEBS = AL, #8 SAE
SE12S = AL, #12 SAE
Other housings available

Housing P/N

No Housing
NCS12/3-SE-1/2
NCS12/3-SE-3/4
NCS12/3-SE-8S
NCS12/3-SE-12S

P103 721E



Cartridge Valves Technical Information

Flow Control Valves

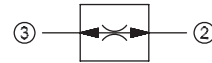
Pressure-Compensated, Priority Flow Control

CP300-6

OPERATION

This valve is a fixed setting, pressure compensated, bi-directional flow control valve. NOTE: Port 1 must be blocked for proper operation.

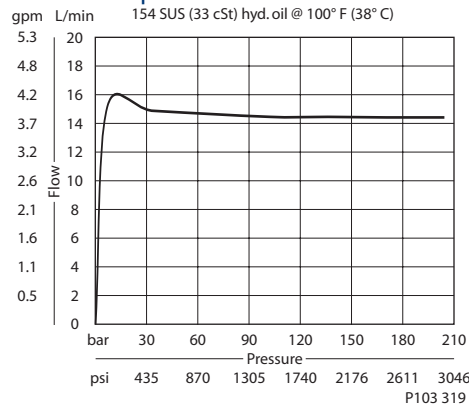
Schematic



P103 508

SPECIFICATIONS

Theoretical performance



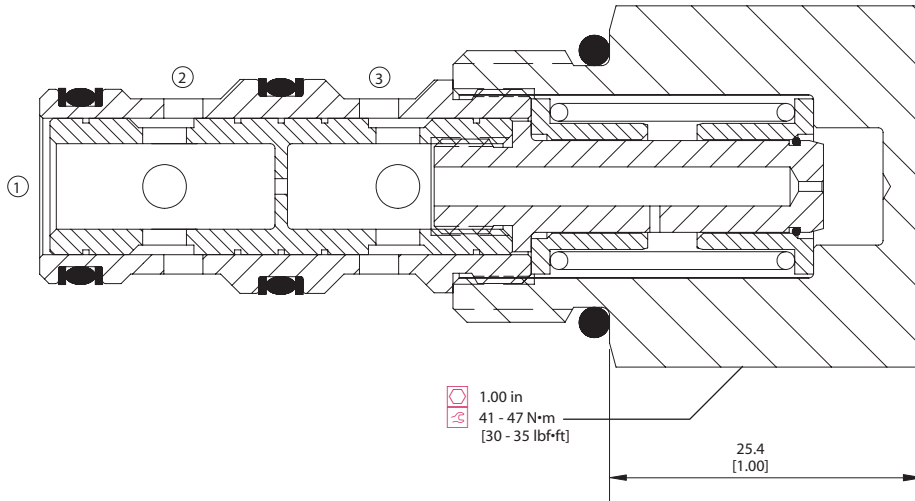
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.13 kg [0.29 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.4-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-23 l/min [1.8-6 US gal/min]
Cavity	SDC10-3

DIMENSIONS

mm [in]

Cross-sectional view



P103 256

ORDERING INFORMATION

CP300 - 6 - B - 8S - 2.5

Seals	Seal kit	Regulated Flow
B = Buna-N V = Viton	120009 120010	
Housing and ports	Housing P/N	L/min [US gal/min]
0 = No Housing SE3B = Al, 3/8 BSP SE4B = Al, 1/2 BSP 6S = Al, #6 SAE 8S = Al, #8 SAE Other housings available	No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S	0.1 = 0.4 [0.1] 6.0 = 23.0 [6.0]

P103 255



Cartridge Valves Technical Information

Flow Control Valves

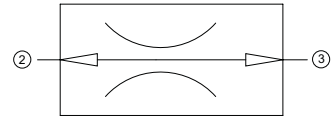
Pressure-Compensated, Priority Flow Control

FCH10-BD

OPERATION

This valve is a fixed setting, pressure compensated, bi-directional flow control valve. NOTE: Port 1 must be blocked for proper operation.

Schematic



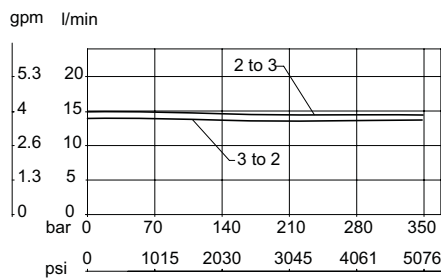
P108 378E

SPECIFICATIONS

Theoretical performance

Performance

33 cSt [154 SUS] hyd.oil @ 38°C [100° F]



P108 379E

Specifications

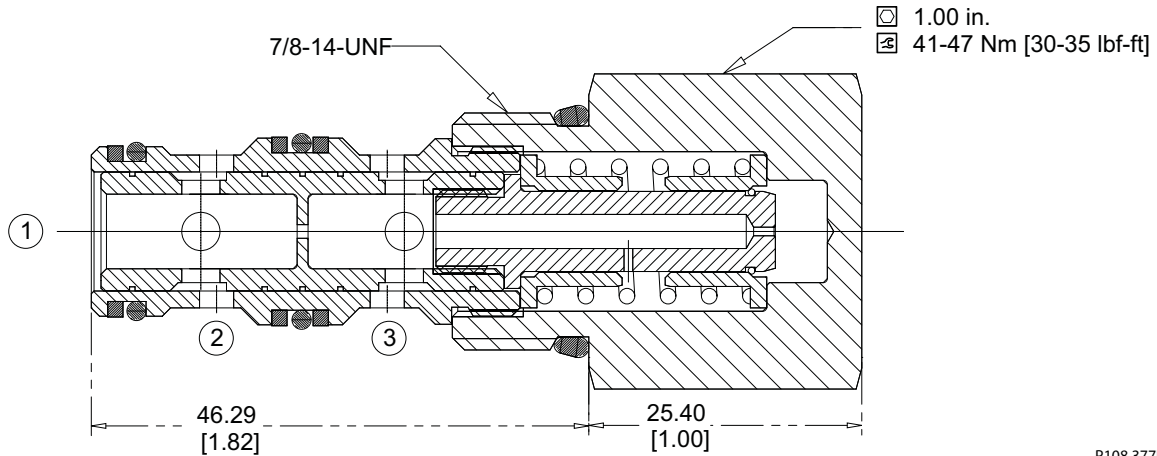
Rated pressure	350 bar [5075 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.14 kg [0.34 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-22.7 l/min [0.6-6.0 US gal/min]
Cavity	SDC10-3

Flow control valves
FCH10-BD

DIMENSIONS

mm [in]

Cross-sectional view



P108 377E

ORDERING INFORMATION

FCH10-BD-3.8-U-00

Regulated Flow
0.4 = 0.4 lpm [0.1 gpm]
to
22.7 = 22.7 lpm [6.0 gpm]

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

Housing Part #
No Housing
SDC10-3-DG-3B
SDC10-3-DG-4B
CP10-3-6S
CP10-3-8S

Seals
U = Urethane

Seal Kit
120726

P108 376E



Cartridge Valves Technical Information

Flow Control Valves

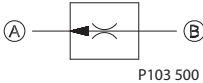
In-line

SC 10

OPERATION

This is an in-line restrictive type flow control valve.

Schematic



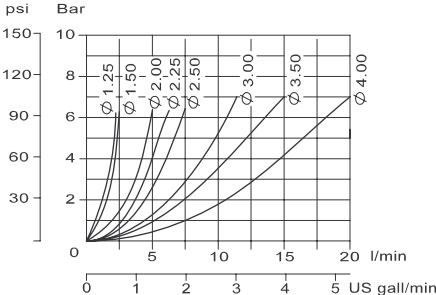
SPECIFICATIONS

Specifications

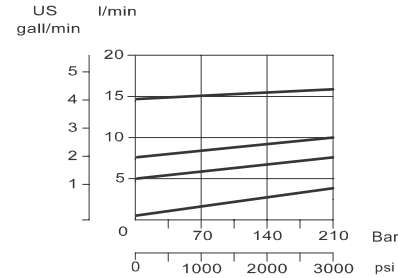
Pressure rating	210 bar [3000 psi]
Max regulated flow	16 l/min [4.2 US gal/min]
Cavity	Consult factory

Theoretical performance

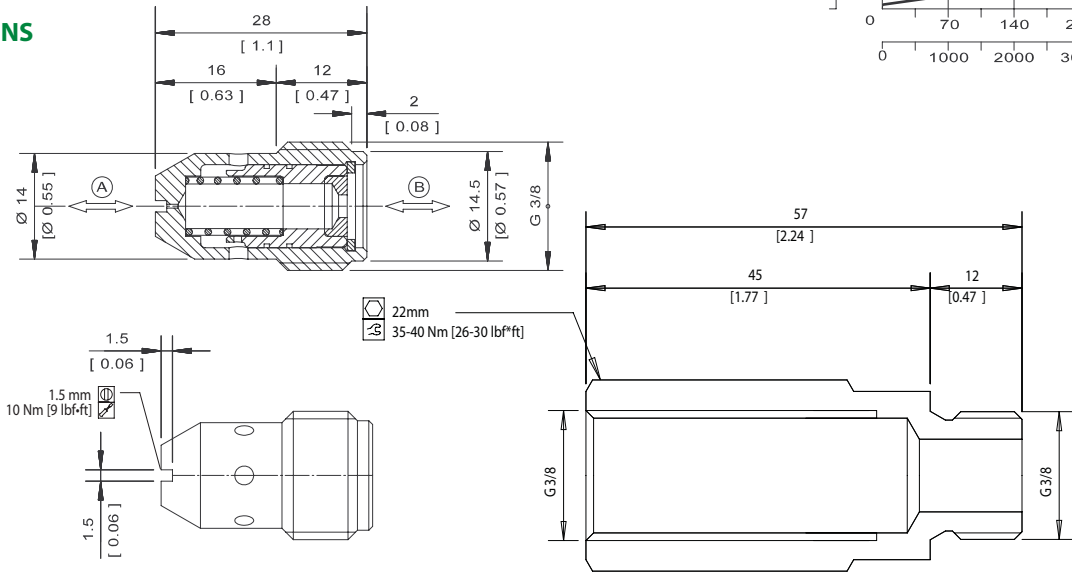
Pressure drop from A⇒B according to orifice diameter
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Variation in controlled flow from B⇒A according to pressure
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



DIMENSIONS



P103 941E

P103 926E

ORDERING INFORMATION

SC10 - 1.25 - G - 00

Orifice diameter	Flow at 100 bar [1450 psi]	00 = Cartridge only
mm	l/min [US gal/min]	L = 3/8 BSP
1.25 =	2.0[0.53]	
1.50 =	3.0[0.79]	
2.00 =	4.0[1.06]	
2.25 =	5.0[1.32]	
2.50 =	6.0[1.59]	
3.00 =	9.0[2.38]	
3.50 =	11.0[2.91]	
4.00 =	16.0[4.23]	

P103 851E

Flow control valves 01-35



Cartridge Valves Technical Information

Flow Control Valves

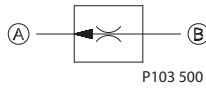
In-line

SC 13

OPERATION

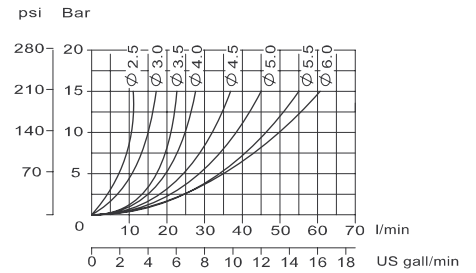
This is an in-line restrictive type flow control valve.

Schematic



Theoretical performance

Pressure drop from A ⇒ B according to orifice diameter
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]

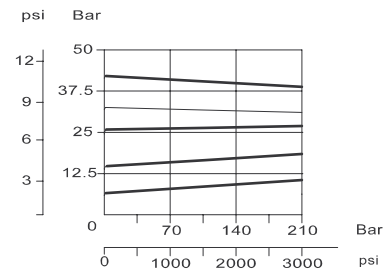


SPECIFICATIONS

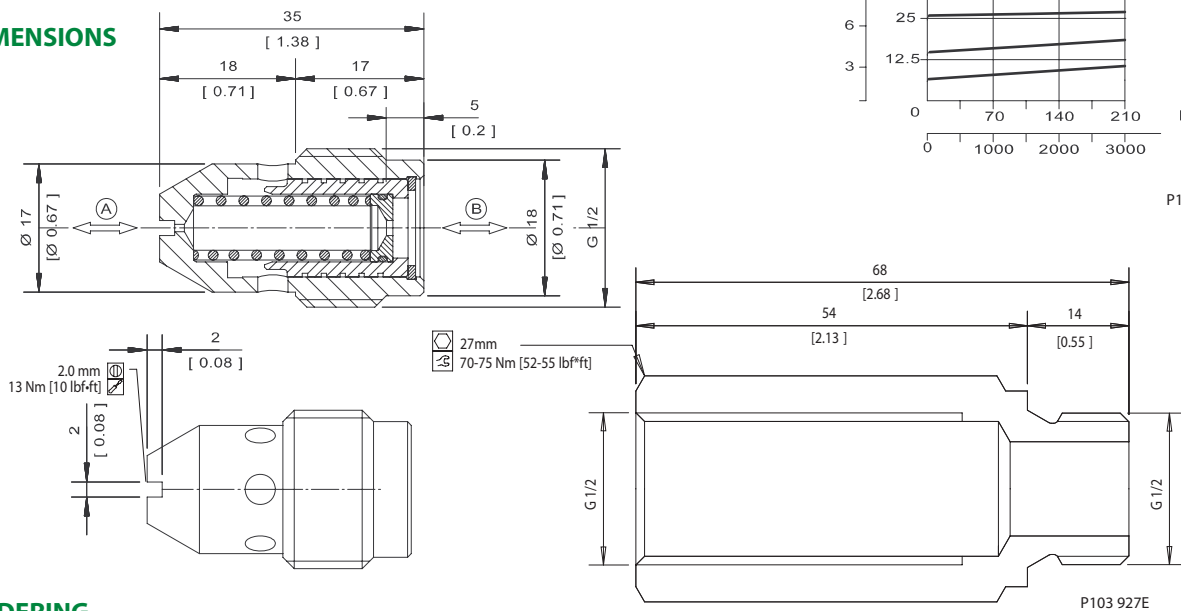
Specifications

Pressure rating	207 bar [3000 psi]
Max regulated flow	47 l/min [12 US gal/min]
Cavity	Consult factory

Variation in controlled flow from B ⇒ A according to pressure
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



DIMENSIONS



ORDERING INFORMATION

SC13/4.5 - G - 00

00 = Cartridge only
L = 1/2 BSP

Orifice diameter (mm)	Flow at 100 bar [1450 psi] (l/min [US gal/min])
2.5	9 [2.38]
3.0	12 [3.17]
3.5	17 [4.49]
4.0	21 [5.55]
4.5	27 [7.13]
5.0	32 [8.45]
5.5	40 [10.57]
6.0	47 [12.42]

P103 852E

Flow control valves SC 13



Cartridge Valves Technical Information

Flow Control Valves

In-line

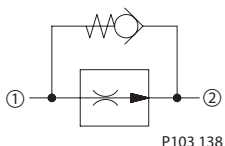
CP9014-1

OPERATION

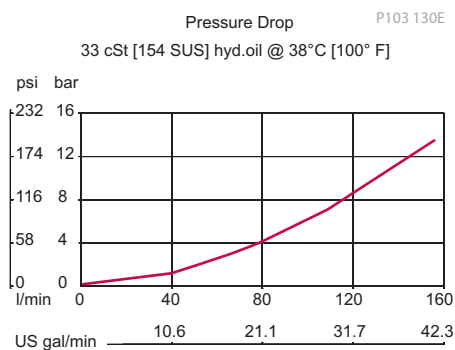
This is an in-line restrictive type flow control valve with free reverse flow.

SPECIFICATIONS

Schematic

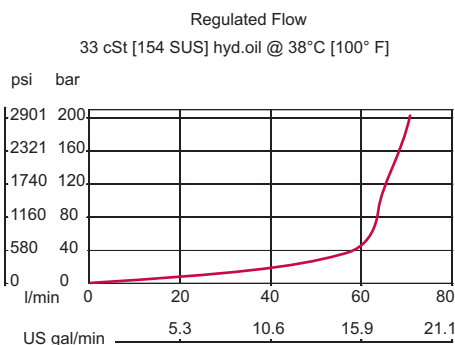


Specifications



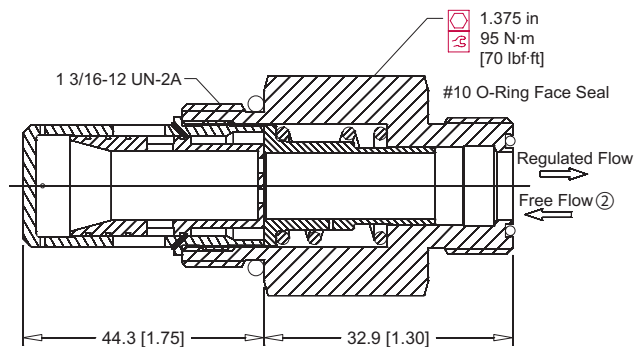
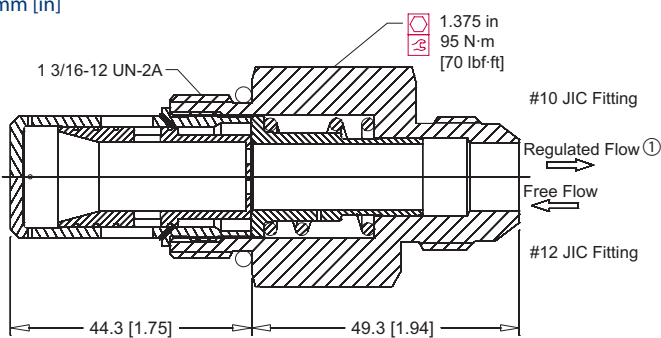
Specifications

Pressure rating	207 bar [3000 psi]
Rated Free Flow at 7 bar [100 psi]	113 l/min [30 US gal/min]
Max regulated flow	106 l/min [28 US gal/min]
Cavity	Modified SAE #14 port



DIMENSIONS

mm [in]



P103 126

ORDERING INFORMATION

CP9014-1-B-10-24

Seals
B = Buna-N
V = Viton

Seal kit
720025
720363

Flow Setting

Flow Setting	l/min	USgal/min
18	68.1	18
24	90.8	24
28	106.0	28

Consult factory for complete list of flows.

Connection (Port2)

10 = #10SAE37° JIC Fitting 7/8-14UNC-2A
12 = #12SAE37° JIC Fitting 11/16-12UN-2A
FS10 = #10SAEO-Ring Face Seal 17/16-12UN-2A

P103 134E



Cartridge Valves Technical Information

Flow Control Valves

In-line

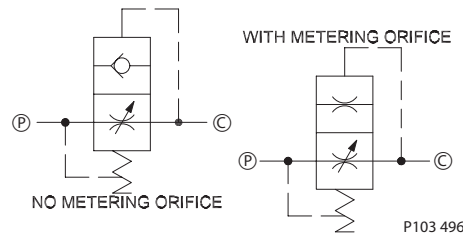
BC 06 Velocity Fuse

OPERATION

This is an in-line restrictive type flow control valve.

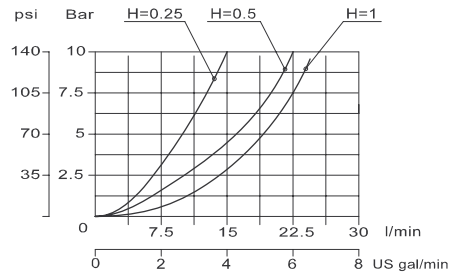
SPECIFICATIONS

Schematic



Theoretical performance

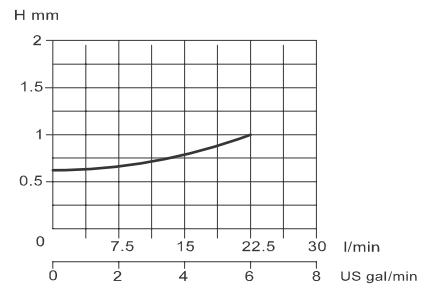
Pressure drop from P⇒C according to Adjustment H
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Values for adjustment H are guideline only, being conditioned by a variety of factors (oil temperature and viscosity, volume and flexibility of circuits).

Specifications

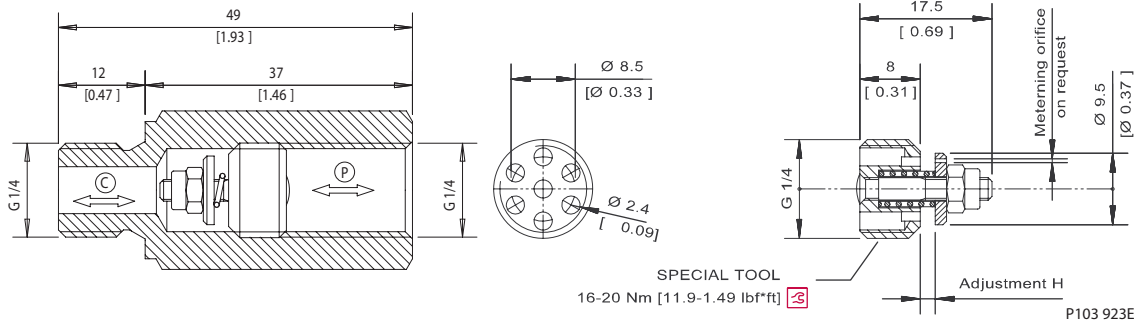
Pressure rating	210 bar [3000 psi]
Rated Free Flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Cavity	Consult factory



P104 568E

DIMENSIONS

mm [in]



ORDERING INFORMATION

BC 06 - 1.0 - G - 00 - S1.5

- Adjustment H
 - 00 = No factory adjustment
 - 0.25 = 0.25 mm [in]
 - 0.5 = 0.5 mm [in]
 - 1.0 = 1.0 mm [in]
 - 1.5 = 1.5 mm [in]
 - 2.0 = 2.0 mm [in]
- 00 = Cartridge only
 - L = 1/4 BSP
- Metering orifice
 - Omit = No orifice
 - S0.5 = 0.5 mm [in]
 - S0.7 = 0.7 mm [in]
 - S1.0 = 1.0 mm [in]
 - S1.5 = 1.5 mm [in]
 - S2.0 = 2.0 mm [in]

P103 853E

Flow control valves
BC13 Velocity Fuse

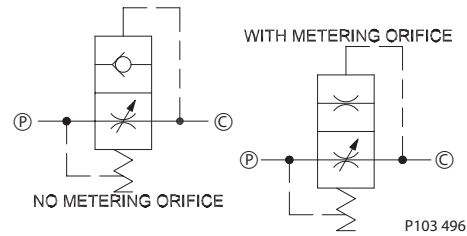
Cartridge Valves Technical Information
Flow Control Valves
In-line
BC 10 Velocity Fuse

OPERATION

This is an in-line restrictive type flow control valve.

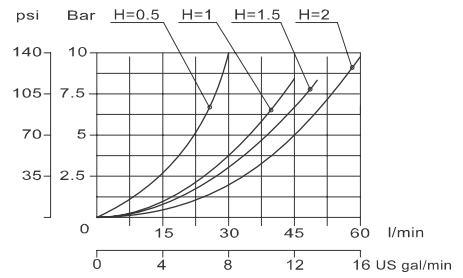
SPECIFICATIONS

Schematic

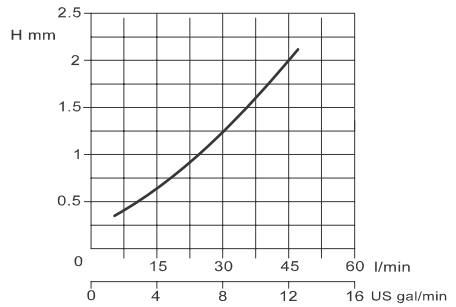


Theoretical performance

Pressure drop from P⇒C according to Adjustment H
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



Values for adjustment H are guideline only, being conditioned by a variety of factors (oil temperature and viscosity, volume and flexibility of circuits).

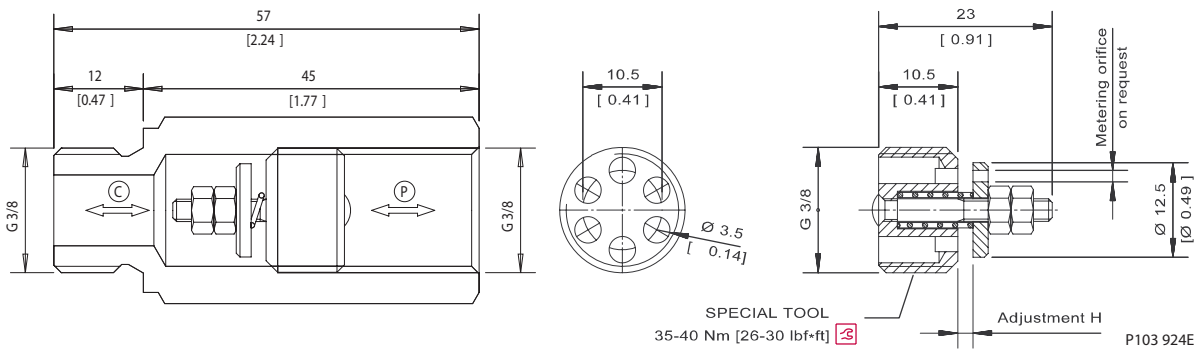


Specifications

Pressure rating	210 bar [3000 psi]
Rated Free Flow at 7 bar [100 psi]	60 l/min [16 US gal/min]
Cavity	Consult factory

DIMENSIONS

mm [in]



ORDERING INFORMATION

BC 10 - 1.0 - G - 00 - S1.5

Adjustment H
 00 = No factory adjustment
 0.25 = 0.25 mm [in]
 0.5 = 0.5 mm [in]
 1.0 = 1.0 mm [in]
 1.5 = 1.5 mm [in]
 2.0 = 2.0 mm [in]

Metering orifice
 Omit = No orifice
 S0.5 = 0.5 mm [in]
 S0.7 = 0.7 mm [in]
 S1.0 = 1.0 mm [in]
 S1.5 = 1.5 mm [in]
 S2.0 = 2.0 mm [in]

Coupling
 00 = Cartridge only
 L = 3/8 BSP

P103 847E



Cartridge Valves Technical Information

Flow Control Valves

In-line

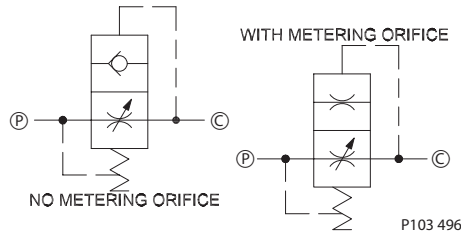
BC 13 Velocity Fuse

OPERATION

This is an in-line restrictive type flow control valve with free reverse flow.

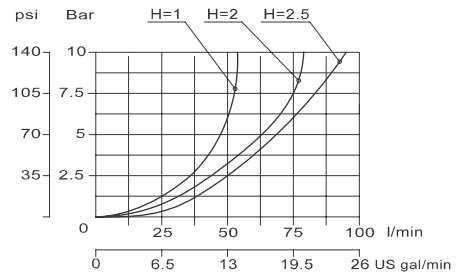
SPECIFICATIONS

Schematic

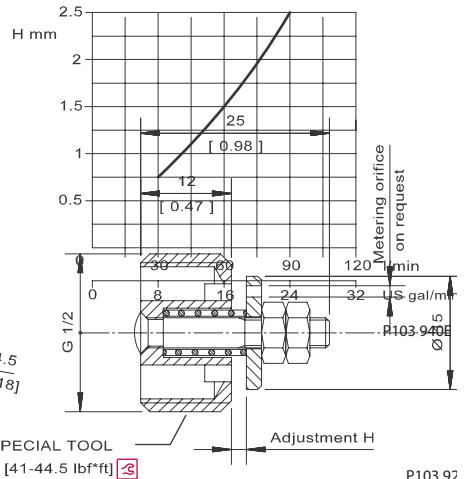


Theoretical performance

Pressure drop from P → C according to Adjustment H
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]

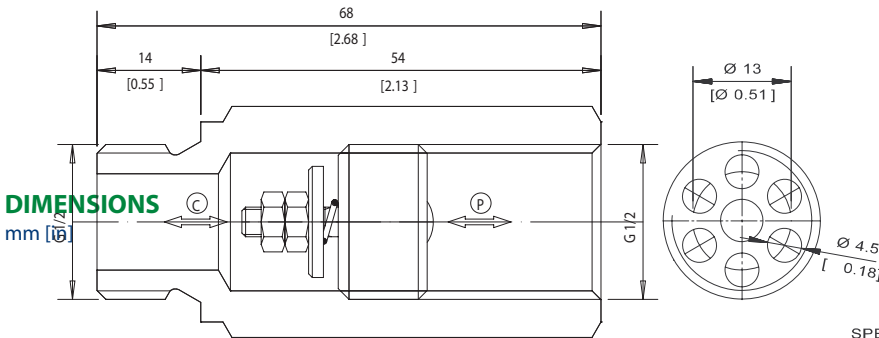


Values for adjustment H are guideline only, being conditioned by a variety of factors (oil temperature and viscosity, volume and flexibility of circuits).



Specifications

Pressure rating	210 bar [3000 psi]
Rated Free Flow at 7 bar [100 psi]	85 l/min [30 US gal/min]
Cavity	Consult factory



DIMENSIONS
mm [in]

ORDERING INFORMATION

BC 13 - 1.0 - G - 00 - S1.5

- Adjustment H**
- 00 = No factory adjustment
 - 0.25 = 0.25 mm [in]
 - 0.5 = 0.5 mm [in]
 - 1.0 = 1.0 mm [in]
 - 1.5 = 1.5 mm
 - 2.0 = 2.0 mm

- Metering orifice**
- Omit = No orifice
 - S0.5 = 0.5 mm [in]
 - S0.7 = 0.7 mm [in]
 - S1.0 = 1.0 mm [in]
 - S1.5 = 1.5 mm [in]
 - S2.0 = 2.0 mm [in]

- Coupling**
- 00 = Cartridge only
 - L = 3/8 BSP

P103 848E



Cartridge Valves Technical Information

Flow Control Valves

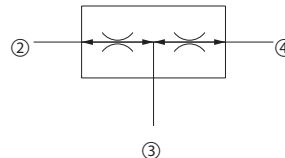
Flow Divider/Combiner

CP340-1

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

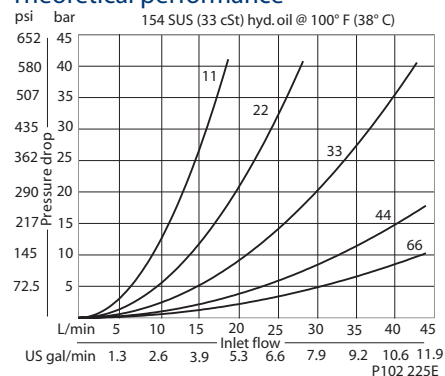
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



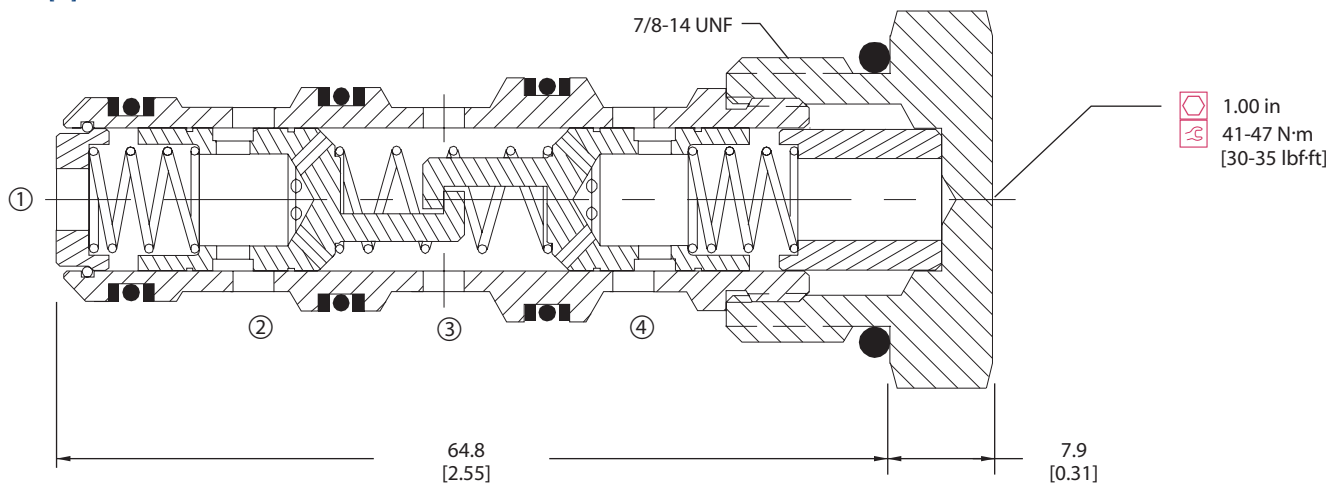
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.11 kg [0.24 lb]
Cavity	SDC10-4

DIMENSIONS

mm [in]

Cross-sectional view



P102 224E

ORDERING INFORMATION

CP340-1-B-6S-44

Seals	Seal kit	Housing and ports	Housing P/N	Code	Flow settings	Total flow
B = Buna-N	120023	0 = No Housing	No Housing	11	1:1	7.6 L/min [2 gpm]
V = Viton	120024	3B = Al, 3/8 BSP	CP10-4-2B-X1	22	1:1	15 L/min [4 gpm]
		4B = Al, 1/2 BSP	CP10-4-3B-X1	33	1:1	23 L/min [6 gpm]
		4S = Al, #4 SAE	CP10-4-4S-X1	36	1:2	34 L/min [9 gpm]
		6S = Al, #6 SAE	CP10-4-6S-X1	44	1:1	30 L/min [8 gpm]
		Other housings available		46	2:3	38 L/min [10 gpm]
				63	2:1	34 L/min [9 gpm]
				64	3:2	38 L/min [10 gpm]
				66	1:1	45 L/min [12 gpm]

P102 227E



Cartridge Valves Technical Information

Flow Control Valves

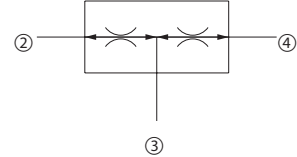
Flow Divider/Combiner

VDF 06

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

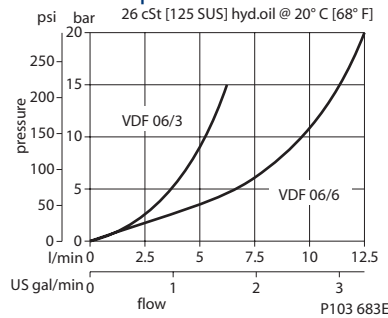
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



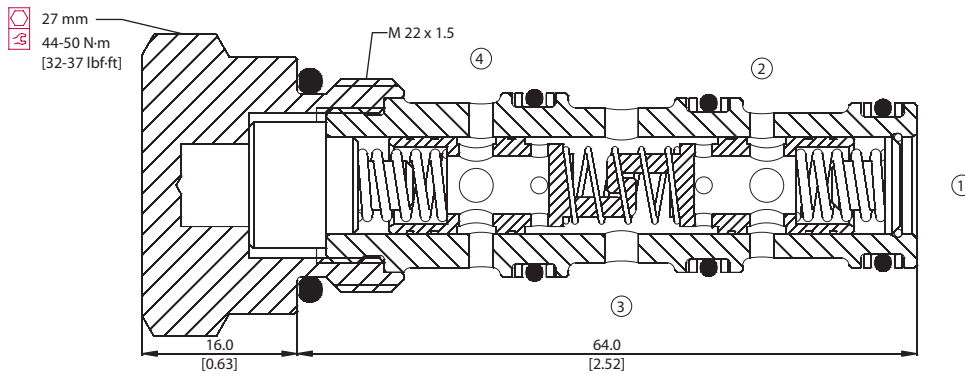
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	NCS06/4

Flow control valves
VDF 06

DIMENSIONS

Cross-sectional view



P103 656

ORDERING INFORMATION

VDF 06 - 10 - 00 - V

Flow rate

l/min [US gal/min]

3 = Min 3 [0.8] Max 6.5 [1.7]
6 = Min 6 [1.6] Max 12.5 [3.3]
10 = Min 10 [2.6] Max 25 [6.6]
25 = Min 22 [5.8] Max 45 [11.9]

Seals	Seal kit
V = Viton	230000350
Omit = Buna-N	230000610
Housing and ports	Housing P/N
00 = No Housing	No Housing
L3/8 = AL, 3/8 BSP	NCS06/4-L-3/8
L3/4 = AL, 3/4 BSP	NCS06/4-L-1/2
L6S = AL, #6 SAE	NCS06/4-L-6S
L8S = AL, #8 SAE	NCS06/4-L-8S
Other housings available	

P103 710E



Cartridge Valves Technical Information

Flow Control Valves

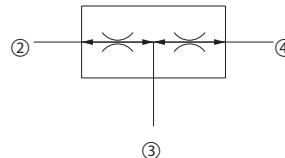
Flow Divider/Combiner

CP341-1

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

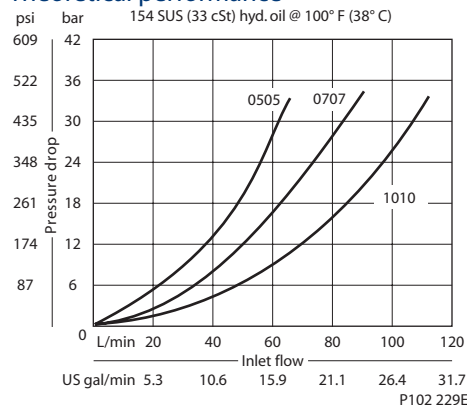
Schematic



P102 223

SPECIFICATIONS

Theoretical performance

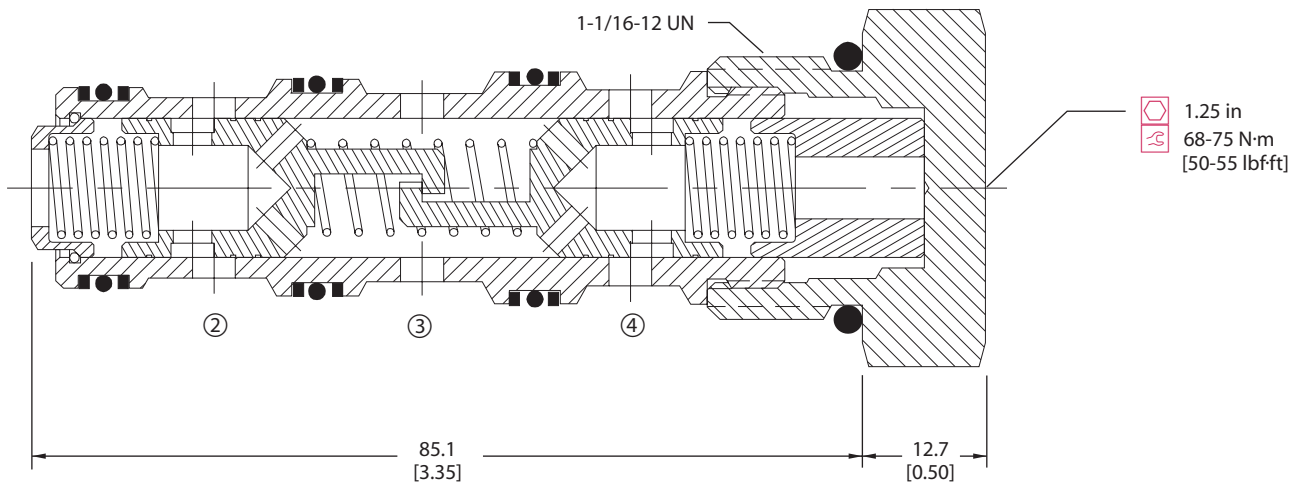


Specifications

Rated pressure	210 bar [3000 psi]
Rated flow [100 psi]	75 l/min [20 US gal/min]
Weight	0.23 kg [0.50 lb]
Cavity	CP12-4

DIMENSIONS

Cross-sectional view



P102 228E

ORDERING INFORMATION

CP341 - 1 - B - 10S - 0707

Seals B = Buna-N V = Viton	Seal kit 120262 120263	Flow settings Code Flow ratio Total flow Port 2:Port 4
Housing and ports 0 = No Housing 4B = Al, 1/2 BSP 6B = Al, 3/4 BSP 10S = Al, #10 SAE 12S = Al, #12 SAE Other housings available	Housing P/N No Housing CP12-4-4B-X1 CP12-4-6B-X1 CP12-4-10S-X1 CP12-4-12S-X1	0505 1:1 38 L/min [10 gpm] 0507 5:7 45 L/min [12 gpm] 0510 1:2 57 L/min [15 gpm] 0707 1:1 53 L/min [14 gpm] 0710 7:10 64 L/min [17 gpm] 1010 1:1 76 L/min [20 gpm]

P102 231E



Cartridge Valves Technical Information

Flow Control Valves

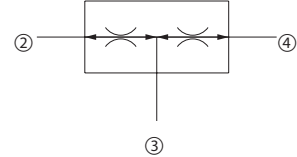
Flow Divider/Combiner

CP342-1

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

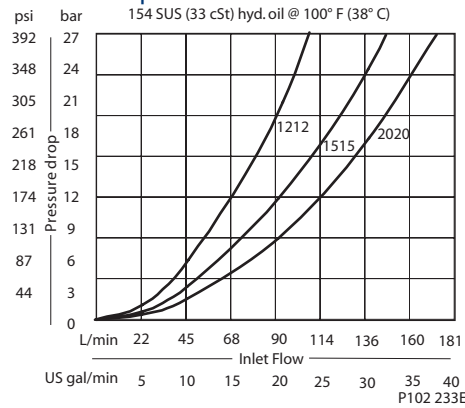
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



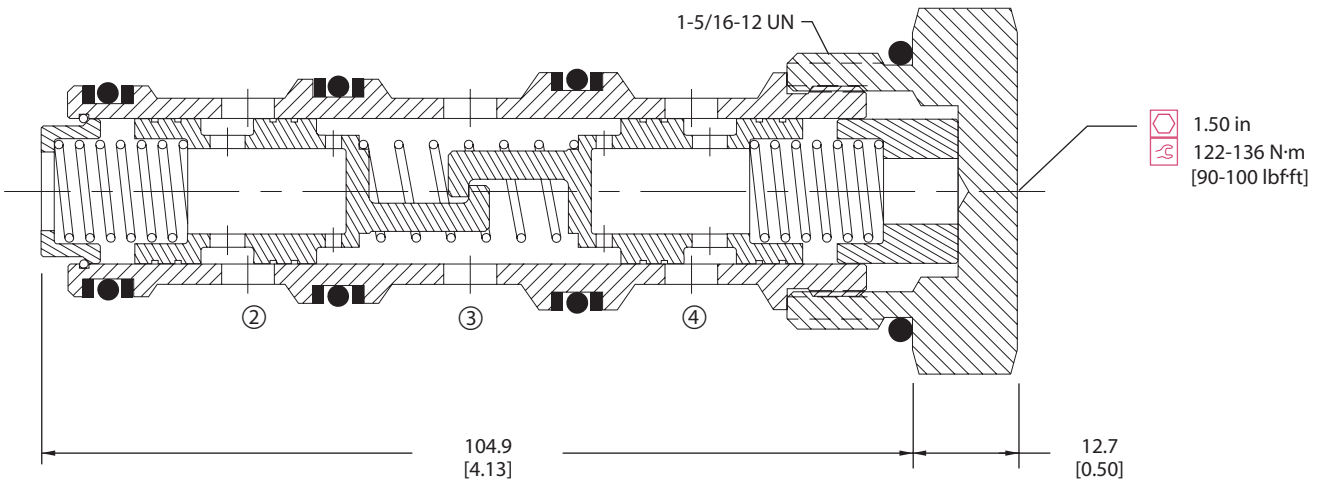
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow [100 psi]	150 l/min [40 US gal/min]
Weight	0.37 kg [0.81 lb]
Cavity	CP16-4

Flow control valves
CP342-1

DIMENSIONS

Cross-sectional view



P102 232E

ORDERING INFORMATION

CP342 - 1 - B - 16S - 1515

Seals	Seal kit	Flow settings	
B = Buna-N	120025	Code	Flow ratio
V = Viton	120026		Port 2:Port 4
Housing and ports	Housing P/N		Total flow
0 = No Housing	No Housing	1020	1:2 30 gpm [114 L/min]
6B = Al, 3/4 BSP	CP16-4-6B-X1	1212	1:1 24 gpm [91 L/min]
8B = Al, 1 BSP	CP16-4-8B-X1	1215	4:5 27 gpm [102 L/min]
12S = Al, #12 SAE	CP16-4-12S-X1	1220	3:5 32 gpm [121 L/min]
16S = Al, #16 SAE	CP16-4-16S-X1	1512	5:4 27 gpm [102 L/min]
Other housings available		1515	1:1 30 gpm [114 L/min]
		1520	3:4 35 gpm [132 L/min]
		2012	5:3 32 gpm [121 L/min]
		2015	4:3 35 gpm [132 L/min]
		2020	1:1 40 gpm [151 L/min]

P102 235E



Cartridge Valves Technical Information

Flow Control Valves

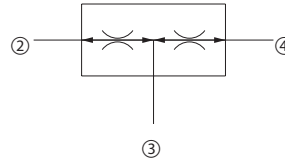
Flow Divider/Combiner

CP342-3

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

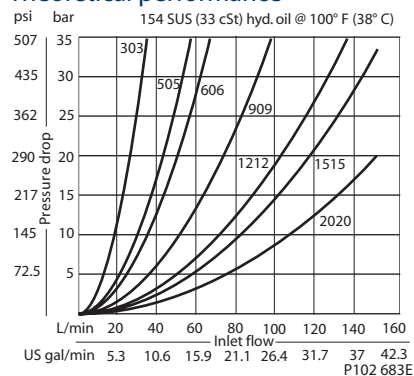
Schematic



P102 223

SPECIFICATIONS

Theoretical performance

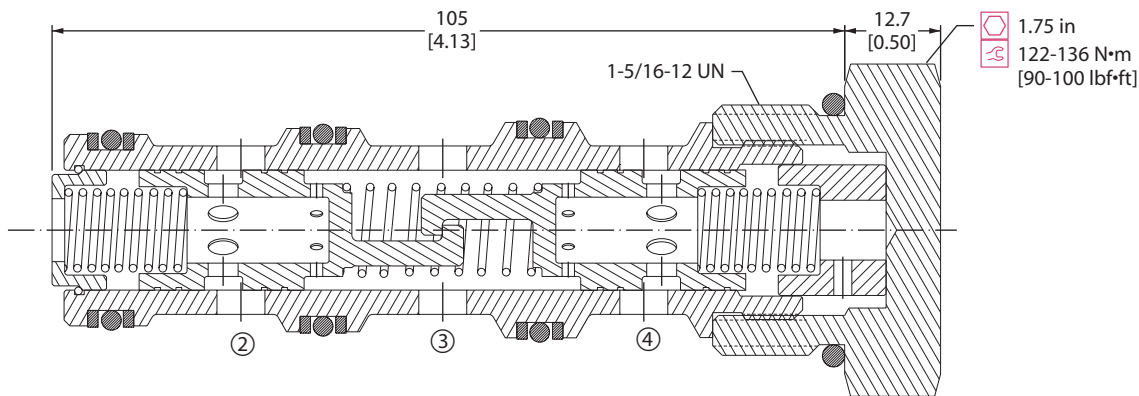


Specifications

Rated pressure	450 bar [6500 psi]
Rated flow	150 l/min [40 US gal/min]
[100 psi]	
Weight	0.37 kg [0.81 lb]
Cavity	CP16-4

DIMENSIONS

Cross-sectional view



P102 652

ORDERING INFORMATION

CP342-3-U-16S-0505

Seals	Seal kit	Flow settings	Flow ratio	Total flow
U = Urethane	120677	Code	Port 2:Port 4	
Housing and ports	Housing P/N	0303	1:1	23 L/min [6 gpm]
0 = No Housing	No Housing	0505	1:1	38 L/min [10 gpm]
S6B = Steel, 3/4 BSP	CP16-4-S6B-X1	0606	1:1	45 L/min [12 gpm]
S8B = Steel, 1 BSP	CP16-4-S8B-X1	0909	1:1	68 L/min [18 gpm]
i12S = Steel, #12 SAE	CP16-4-S12S-X1	1212	1:1	91 L/min [24 gpm]
i16S = Steel, #16 SAE	CP16-4-S16S-X1	1515	1:1	114 L/min [30 gpm]
Other housings available		2020	1:1	151 L/min [40 gpm]
		1220	3:5	121 L/min [32 gpm]
		1215	4:5	102 L/min [27 gpm]
		1520	3:4	132 L/min [35 gpm]
		2012	5:3	121 L/min [32 gpm]
		1512	5:4	102 L/min [27 gpm]
		2015	4:3	132 L/min [35 gpm]
		1020	1:2	114 L/min [30 gpm]

P102 899E



Cartridge Valves Technical Information

Flow Control Valves

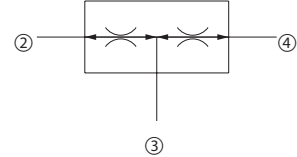
Flow Divider/Combiner

CP343-1

OPERATION

This valve is a fixed ratio, pressure compensated flow divider/combiner.

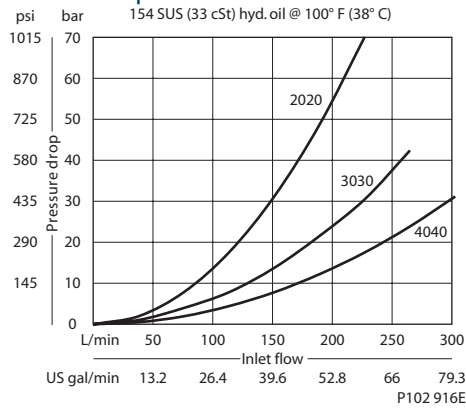
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



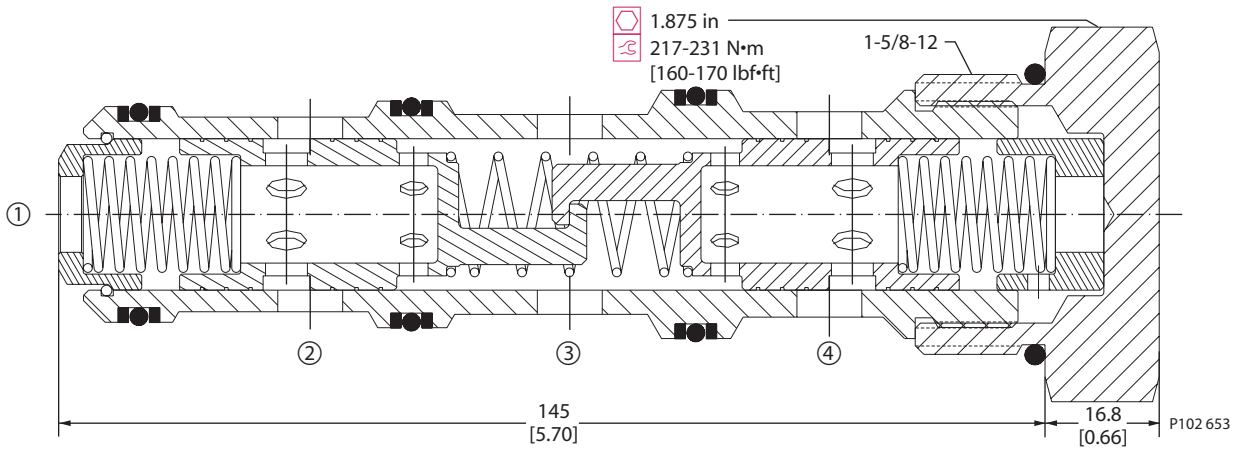
Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	340 l/min [90 US gal/min]
Weight	1.13 kg [2.50 lb]
Cavity	SDC20-4

Flow control valves CP343-1

DIMENSIONS

Cross-sectional view



ORDERING INFORMATION

CP343-1-B-16S-4545

Housing and ports

Code	Description	Housing P/N
0	No Housing	No Housing
8B	Al, 1 BSP	SDC20-4-8B-X1
10B	Al, 1-1/4 BSP	SDC20-4-10B-X1
16S	Al, #16 SAE	SDC20-4-16S-X1
20S	Al, #20 SAE	SDC20-4-20S-X1

Other housings available

Seals

Code	Material	Seal kit P/N
B	Buna-N	120181
V	Viton	120182

Flow settings

Code	Flow ratio Port 2:Port 4	Total flow
2020	1:1	151 L/min [40 gpm]
2525	1:1	189 L/min [50 gpm]
3030	1:1	227 L/min [60 gpm]
3535	1:1	265 L/min [70 gpm]
4020	2:1	227 L/min [60 gpm]
4040	1:1	303 L/min [80 gpm]
4530	3:2	284 L/min [75 gpm]
4545	1:1	341 L/min [90 gpm]

P102 898E



Cartridge Valves Technical Information

Flow Control Valves

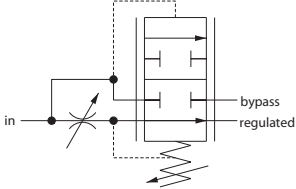
Catalog HIC

2F94-01

OPERATION

This valve is an adjustable, priority-type, pressure compensated flow control valve.

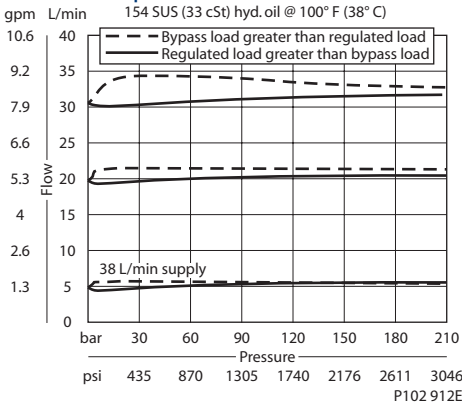
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



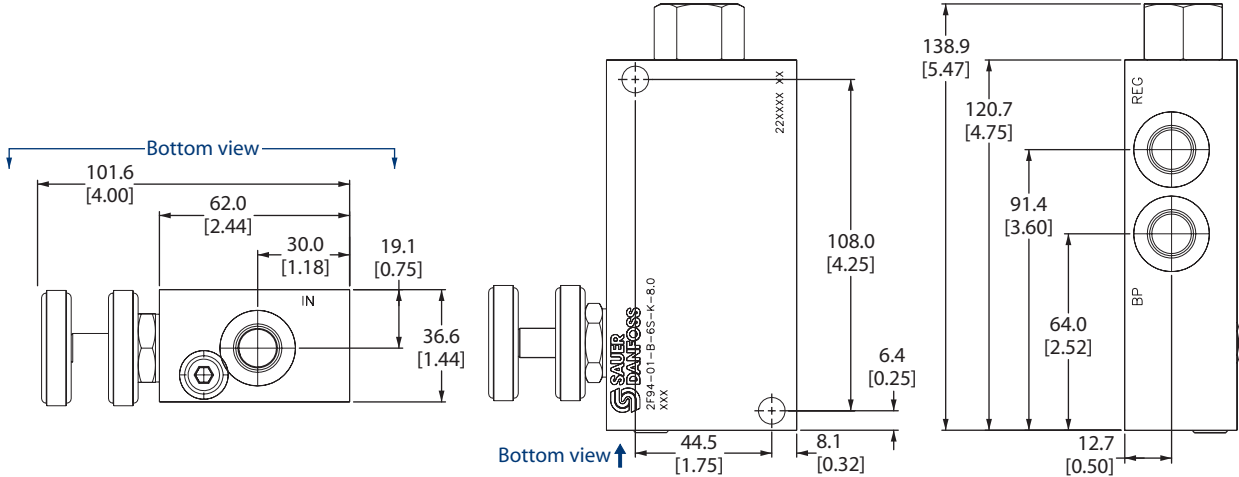
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	30 l/min [8 US gal/min]
Max inlet flow	60 l/min [16 US gal/min]
Weight	1.00 kg [2.20 lb]
Cavity	none

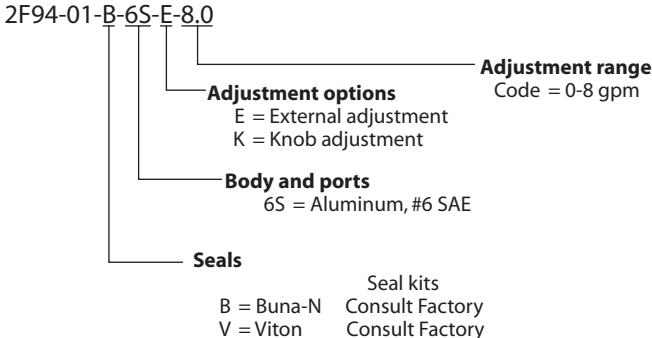
DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION



P102 648E

Flow control valves
2F94



Cartridge Valves Technical Information

Flow Control Valves

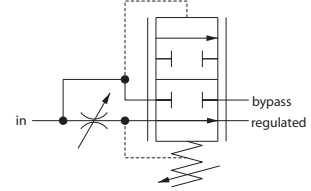
Catalog HIC

2F95-01

OPERATION

This valve is an adjustable, priority-type, pressure compensated flow control valve.

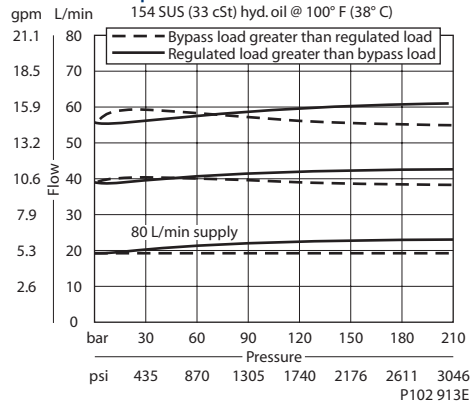
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



Specifications

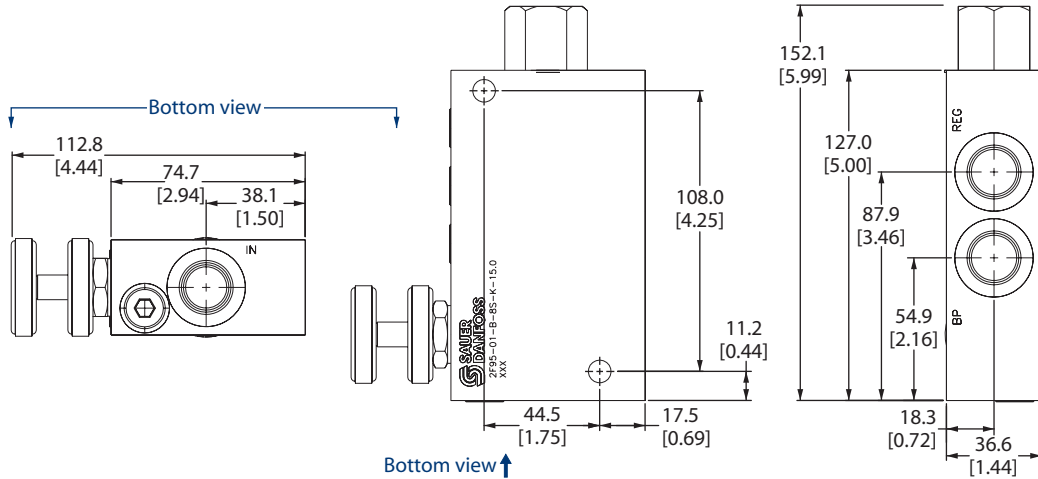
Rated pressure	210 bar [3000 psi]
Max regulated flow	60 l/min [16 US gal/min]
Max inlet flow	95 l/min [25 US gal/min]
Weight	1.00 kg [2.20 lb]
Cavity	none

Flow control valves
2F95

DIMENSIONS

mm [in]

Cross-sectional view



P102 679

ORDERING INFORMATION

2F95-01-B-8S-E-15

- Adjustment options**
E = External adjustment
K = Knob adjustment
- Body and ports**
8S = Aluminum, #8 SAE
- Seals**
B = Buna-N
V = Viton
- Adjustment range**
Code = 0-15 gpm
- Seal kits**
Consult Factory

P102 649E



Cartridge Valves Technical Information

Flow Control Valves

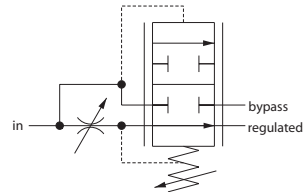
Catalog HIC

2F96-01

OPERATION

This valve is an adjustable, priority-type, pressure compensated flow control valve.

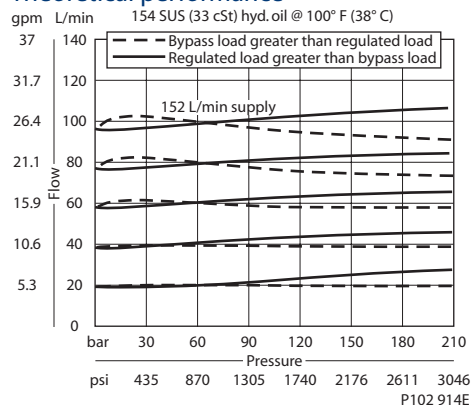
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



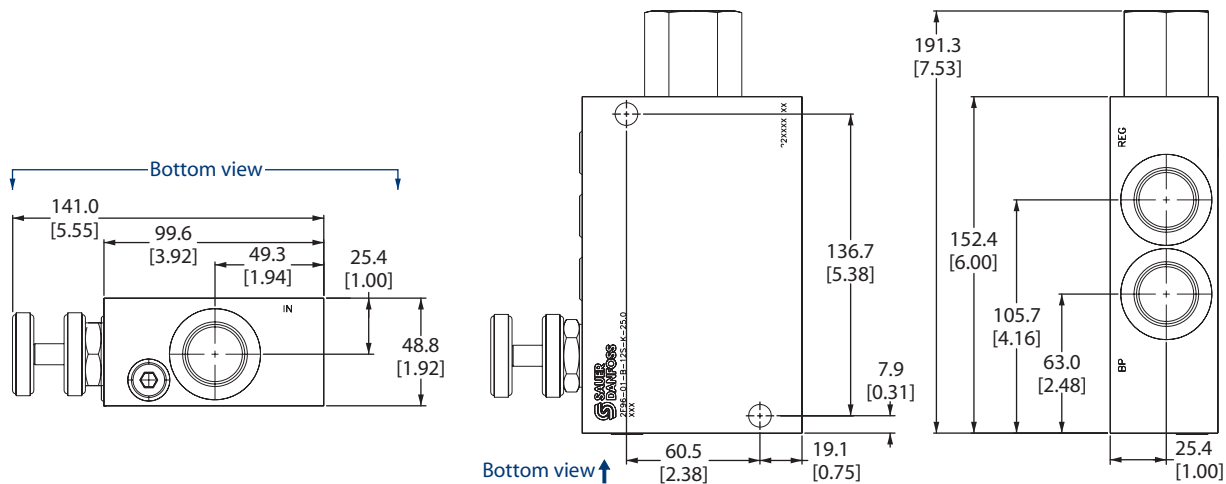
Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	95 l/min [25 US gal/min]
Max inlet flow	150 l/min [40 US gal/min]
Weight	1.77 kg [3.90 lb]
Cavity	none

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

2F96-01-B-12S-E-25

Adjustment options
E = External adjustment
K = Knob adjustment

Adjustment range
Code = 0-25 gpm

Body and ports
12S = Aluminum, #12 SAE

Seals

B = Buna-N
V = Viton

Seal kits
Consult Factory
Consult Factory

P102 650E



Cartridge Valves Technical Information

Flow Control Valves

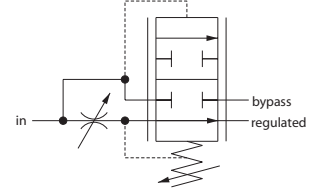
Catalog HIC

2F97-01

OPERATION

This valve is an adjustable, priority-type, pressure compensated flow control valve.

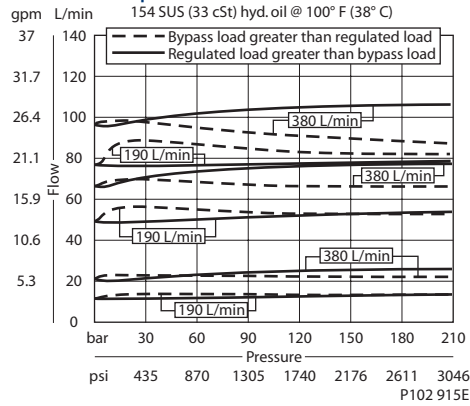
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



Specifications

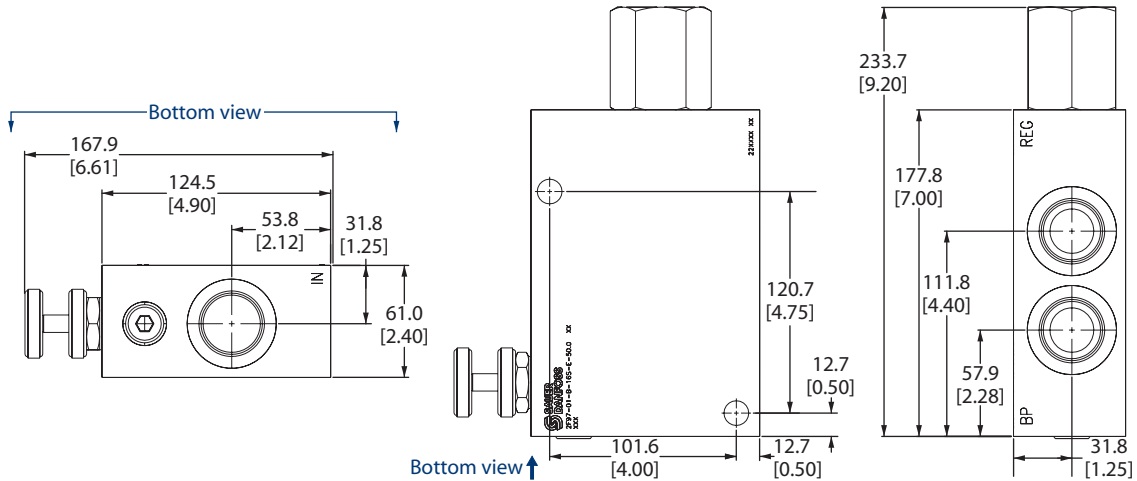
Rated pressure	210 bar [3000 psi]
Max regulated flow	190 l/min [50 US gal/min]
Max inlet flow	380 l/min [100 US gal/min]
Weight	3.81 kg [8.40 lb]
Cavity	none

Flow control valves
2F97

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

2F97-01-B-16S-E-50

- Adjustment options**
E = External adjustment
K = Knob adjustment
- Body and ports**
16S = Aluminum, #16 SAE
- Seals**
B = Buna-N
V = Viton
- Adjustment range**
Code = 0-50 gpm
- Seal kits**
Consult Factory

P102 651E



Cartridge Valves Technical Information

Flow Control Valves

Notes

Flow control valves