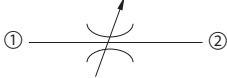



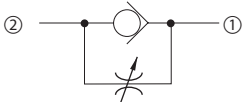
Cartridge Valves Technical Information

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

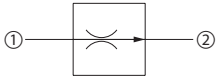
Needle Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP610-7	SDC10-2	Needle Valve, Bi-Directional, Fine Metering, Reverse Free Flow	55 l/min [15 US gal/min]	210 bar [3000 psi]	7.17

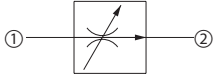
* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

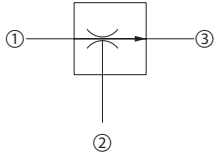
Cartridge Valves Technical Information

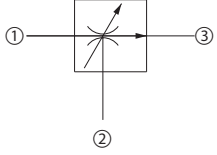
Flow Control Valves

Quick reference

Pressure-Compensated, 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 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 onrol 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



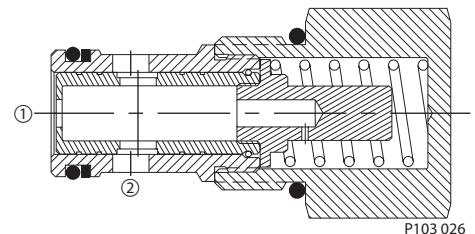
F102 003

RESTRICTED-TYPE PRESSURE COMPENSATED

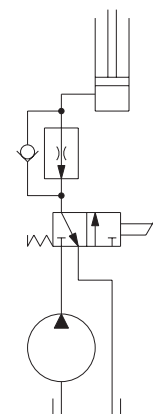
Restrictive-type pressure compensated flow control valves are two-ported valves that maintain a constant flow rate from 1 to 2 regardless of load pressure changes in the circuit downstream of 2. The control orifice in the spool is factory set to the flow specification. The valve begins to respond to 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 $\pm 10\%$ 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



Actuator speed control circuit



P103 051

Cartridge Valves Technical Information

Flow Control Valves

Application notes

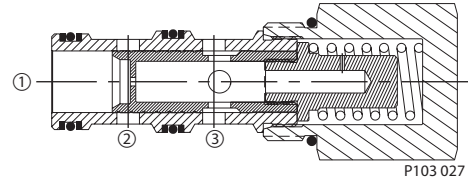
PRIORITY-TYPE PRESSURE COMPENSATED

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.

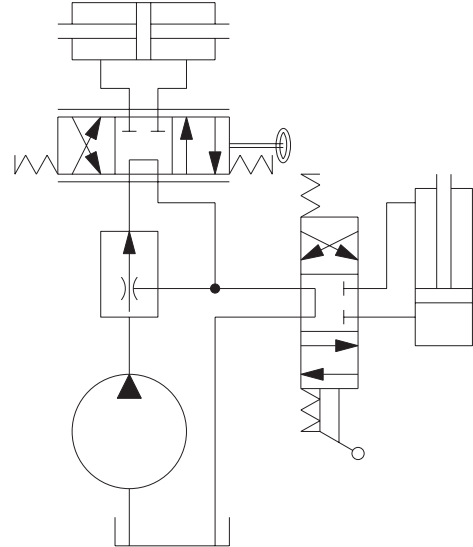
Flow divider/combiners are pressure

Priority-type pressure compensated flow control valve



P103 027

Steering priority circuit



P103 053

Cartridge Valves Technical Information

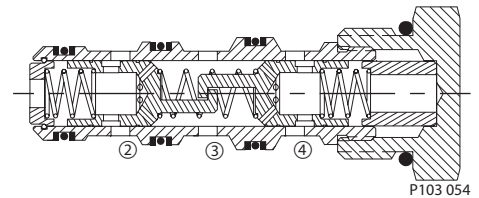
Flow Control Valves

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.

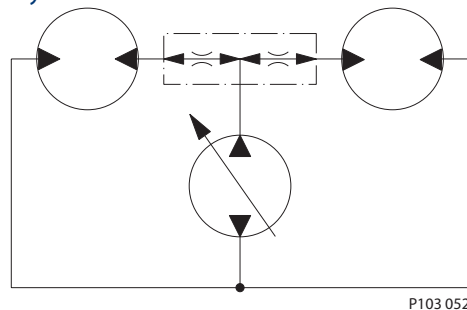
Flow divider / combiner



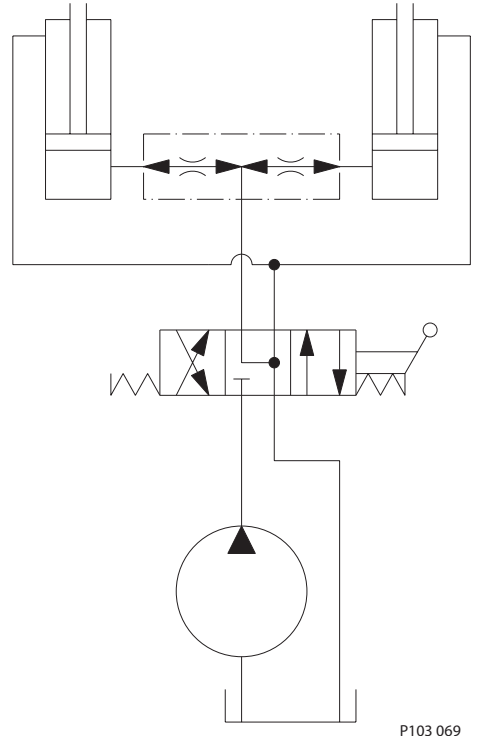
Common applications for flow divider/combiners include:

- 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





Cartridge Valves Technical Information

Flow Control Valves

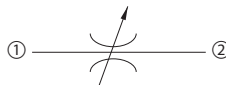
Needle Valves

CP618-6

OPERATION

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

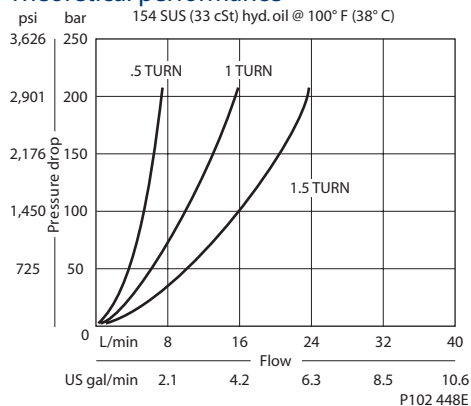
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

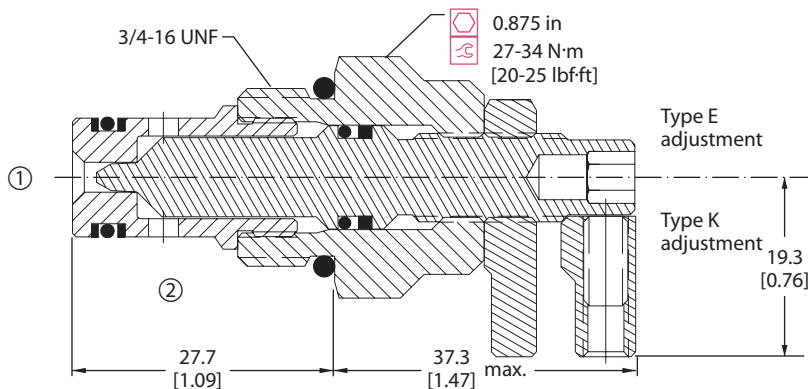
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	10 l/min [3 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.12 kg [0.26 lb]
Cavity	SDC08-2

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.

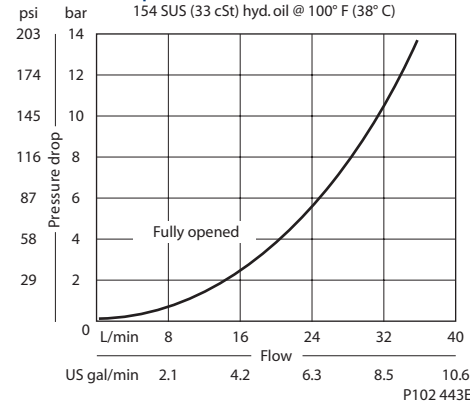
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

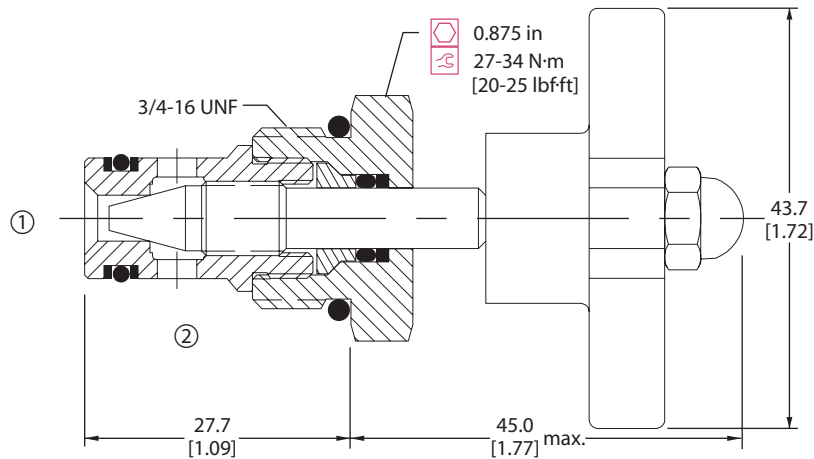
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	25 l/min [7 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.07 kg [0.15 lb]
Cavity	SDC08-2

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 120227		
V = Viton	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			

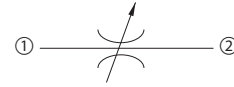
P102 452E

Cartridge Valves Technical Information
Flow Control Valves
Needle Valves
CP618-2

OPERATION

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

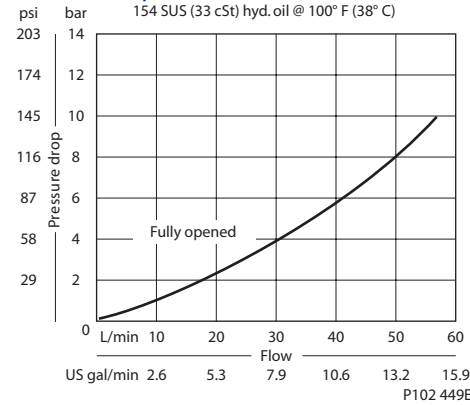
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

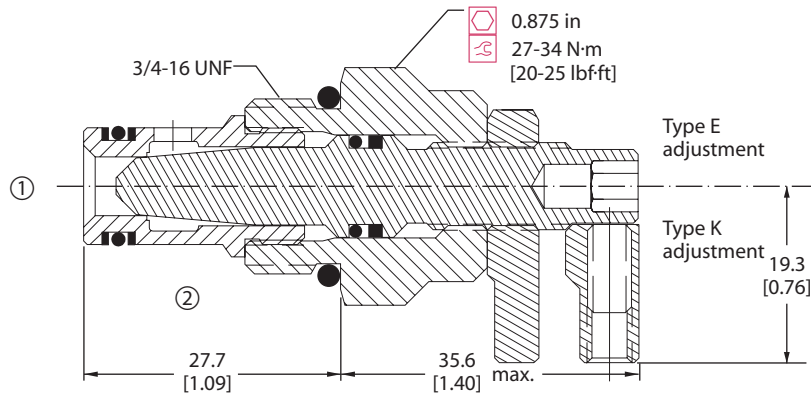
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.09 kg [0.20 lb]
Cavity	SDC08-2

Flow control valves
CP618-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 441E

ORDERING INFORMATION

CP618 - 2 - B - 6S - K

Seals
B = Buna-N
V = Viton

Seal kit
120227
120228

Housing and ports
0 = No Housing
DG2B = AL, 1/4 BSP
DG3B = AL, 3/8 BSP
DG4S = AL, #4 SAE
DG6S = AL, #6 SAE
Other housings available

Housing P/N
No Housing
SDC08-2-DG-2B
SDC08-2-DG-2B
CP08-2-4S
CP08-2-6S

Adjustment option
E = External adjustment
K = Knob adjustment

P102 459E



Cartridge Valves Technical Information

Flow Control Valves

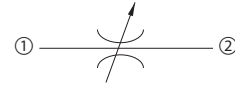
Needle Valves

CP610-1

OPERATION

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

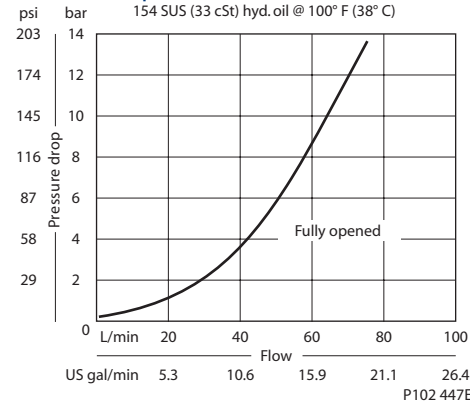
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

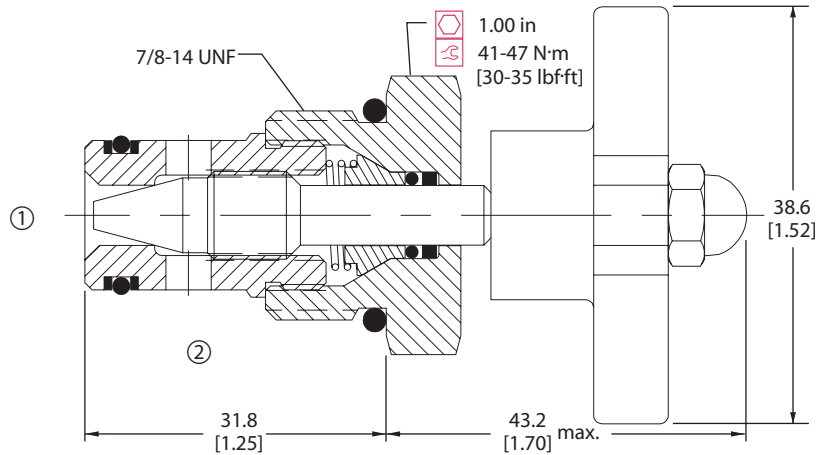
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.10 kg [0.22 lb]
Cavity	SDC10-2

Flow control valves
CP610-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 439E

ORDERING INFORMATION

CP610 - 1 - B - 8S - B

Seals		Seal kit		Knob option
B = Buna-N		120073		B = Black
V = Viton		120074		R = Red
Housing and ports		Housing P/N		
0 = No Housing		No Housing		
DG3B = AL, 3/8 BSP		SDC10-2-DG-3B		
DG4B = AL, 1/2 BSP		SDC10-2-DG-4B		
6S = AL, #6 SAE		CP10-2-6S		
8S = AL, #8 SAE		CP10-2-8S		
Other housings available				

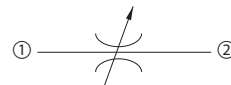
P102 457E

Cartridge Valves Technical Information
 Flow Control Valves
 Needle Valves
 CP610-2

OPERATION

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

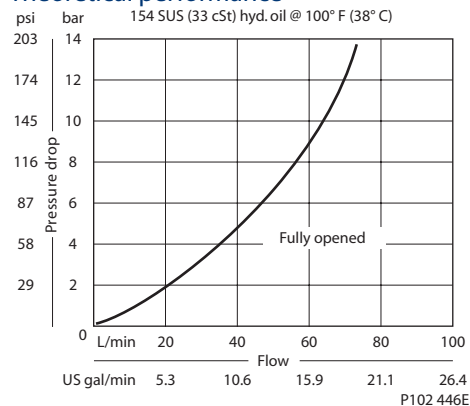
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance

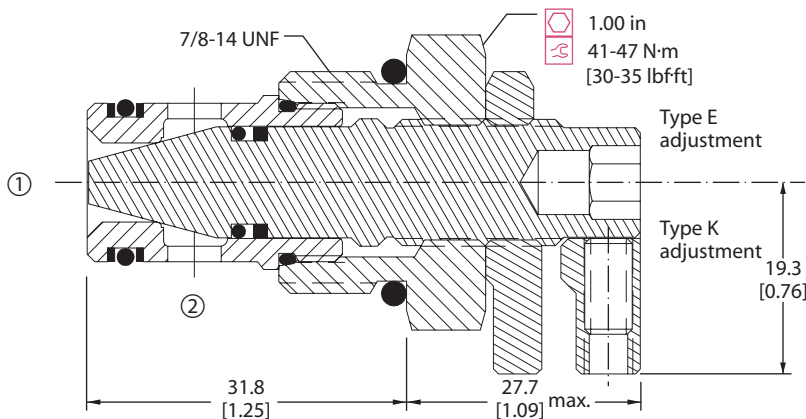


Specifications

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

P102 446E

Cross-sectional view



P102 438E

DIMENSIONS

mm [in]

ORDERING INFORMATION

CP610 - 2 - 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
 120073
 120074

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 456E



Cartridge Valves Technical Information

Flow Control Valves

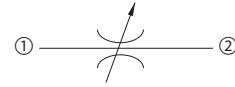
Needle Valves

CP611-2

OPERATION

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

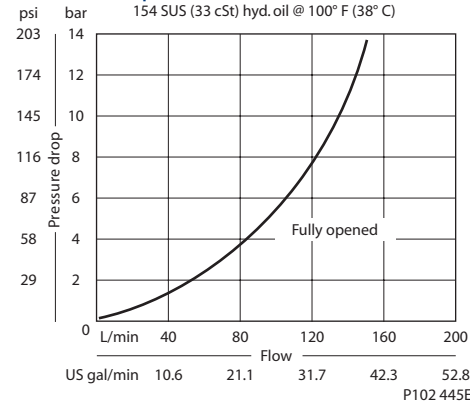
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

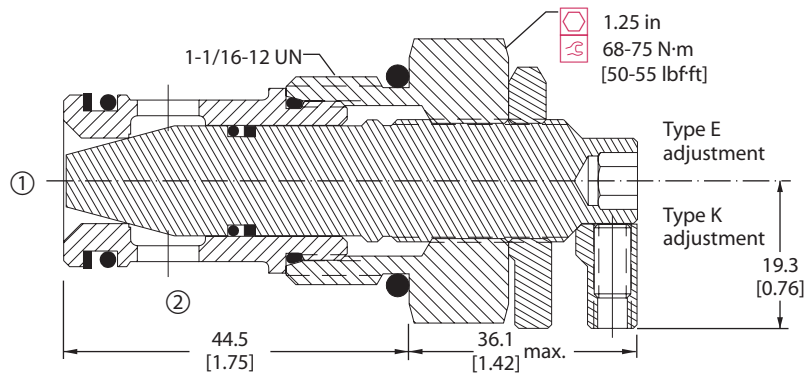
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	115 l/min [30 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.26 kg [0.57 lb]
Cavity	CP12-2

Flow control valves
CP611-2

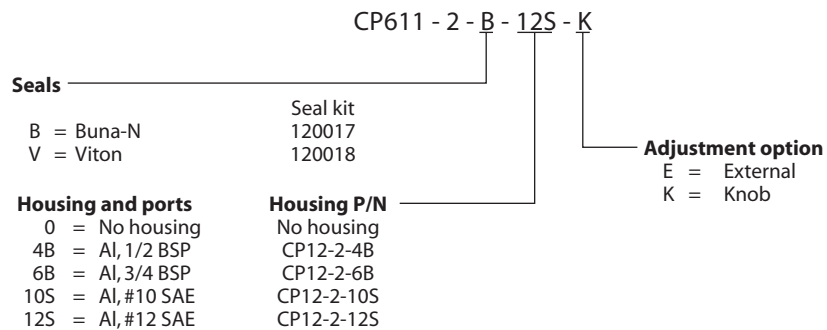
DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION



P102 454E



Cartridge Valves Technical Information

Flow Control Valves

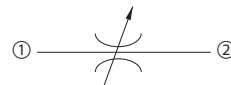
Needle Valves

CP612-1

OPERATION

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

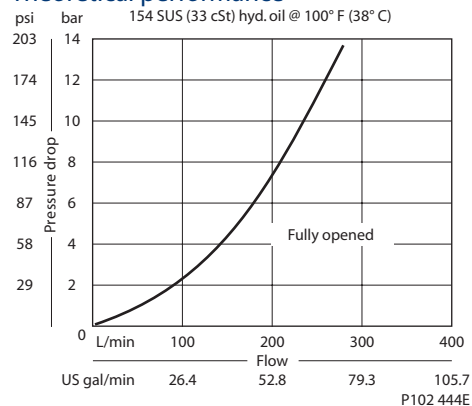
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

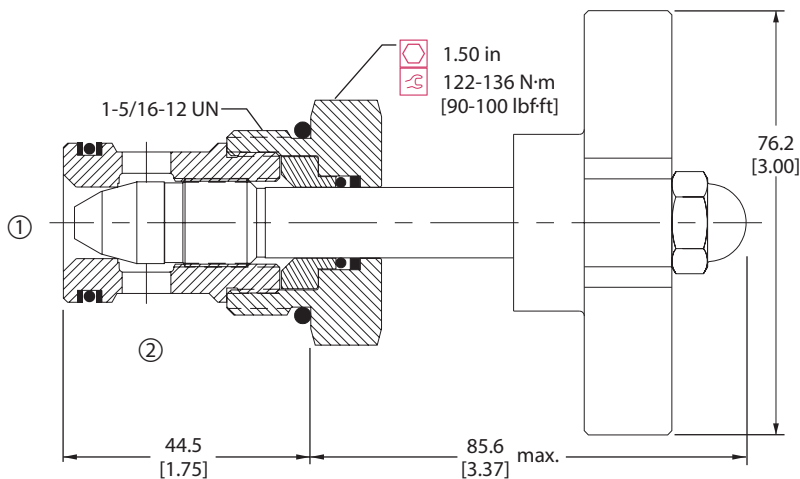
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.31 kg [0.68 lb]
Cavity	SDC16-2

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

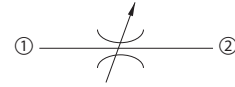
Needle Valves

CP612-2

OPERATION

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

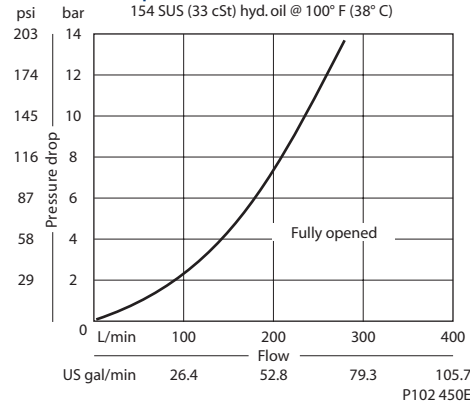
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

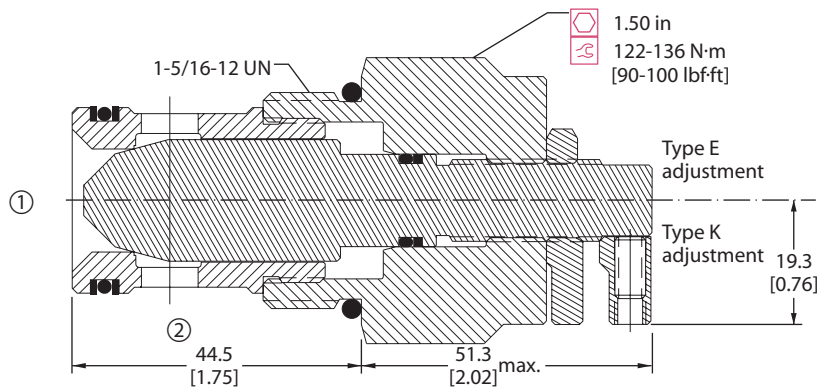
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	190 l/min [50 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.48 kg [1.06 lb]
Cavity	SDC16-2

Flow control valves CP612-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 442E

ORDERING INFORMATION

CP612 - 2 - B - 16S - K

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

Adjustment option

- E = External
- K = Knob

P102 451E



Cartridge Valves Technical Information

Flow Control Valves

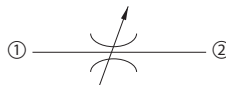
Needle Valves

CP613-1

OPERATION

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

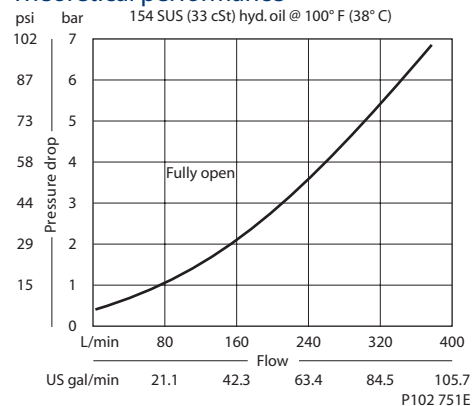
Schematic



P102 460E

SPECIFICATIONS

Theoretical performance



Specifications

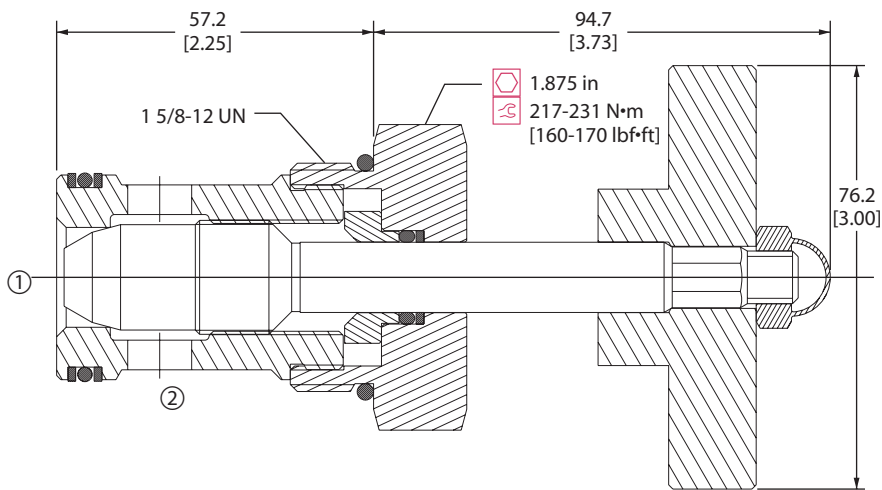
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	380 l/min [100 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.85 kg [1.87 lb]
Cavity	SDC20-2

Flow control valves CP613-1

DIMENSIONS

mm [in]

Cross-sectional view



P102 692

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

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

P102 693E



Cartridge Valves Technical Information

Flow Control Valves

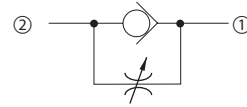
Needle Valves

CP610-7

OPERATION

This valve is an adjustable orifice with free reverse flow.

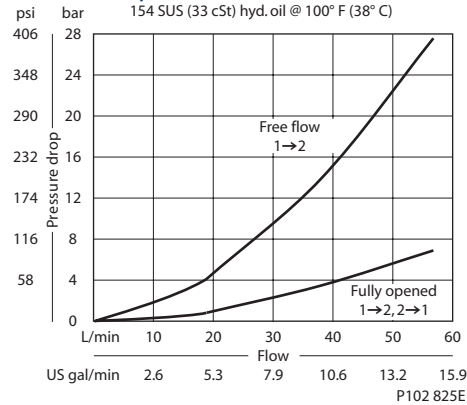
Schematic



P102 824

SPECIFICATIONS

Theoretical performance



Specifications

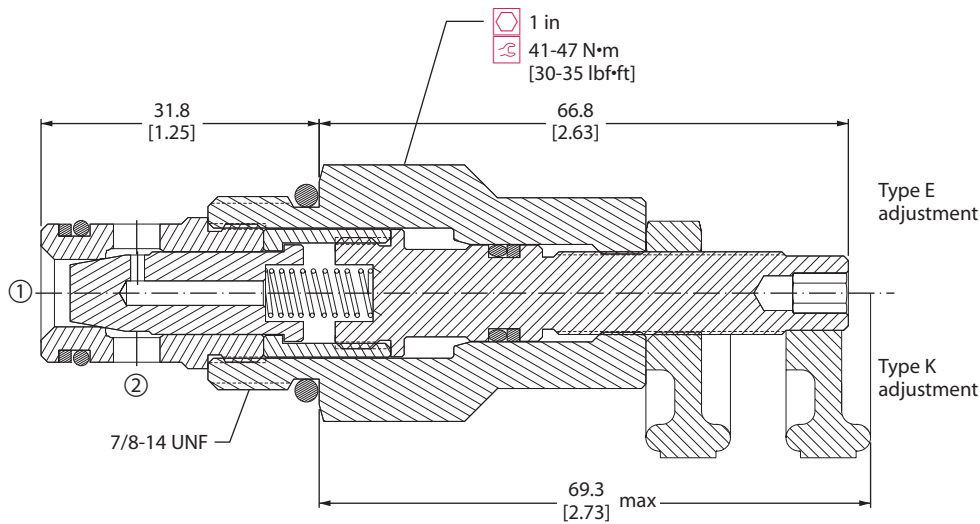
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	55 l/min [15 US gal/min]
Leakage	30 drops/min @ Rated pressure
Weight	0.18 kg [0.40 lb]
Cavity	SDC10-2

Flow control valves
CP610-7

DIMENSIONS

mm [in]

Cross-sectional view



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

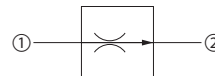
Pressure-Compensated, Restrictive Flow Control

CP308-1

OPERATION

This valve is a fixed pressure compensated flow control valve.

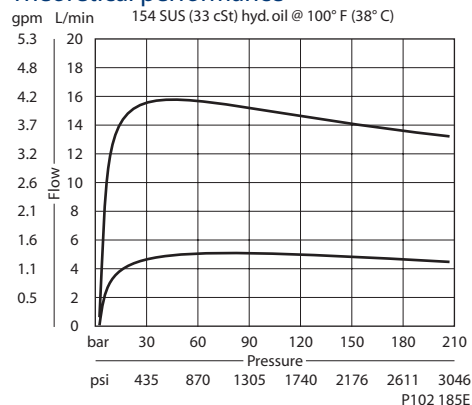
Schematic



P102 183E

SPECIFICATIONS

Theoretical performance



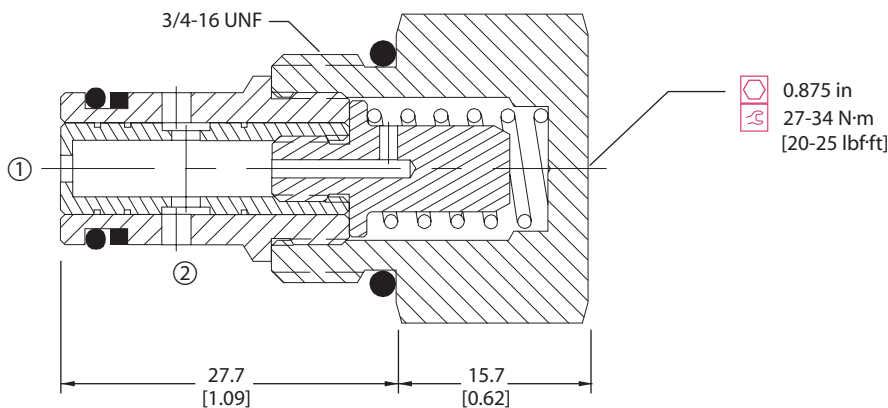
Specifications

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		
B = Buna-N	120221		
V = Viton	120022		
Housing and ports	Housing P/N	Regulated Flow	
0 = No Housing	No Housing	L/min [US gal/min]	
DG2B = Al, 1/4 BSP	SDC08-2-DG-2B	0.1 = .4 [0.1]	
DG3B = Al, 3/8 BSP	SDC08-2-DG-3B	To	
4S = Al, #4 SAE	CP08-2-4S	4.0 = 15.1 [4.0]	
6S = Al, #6 SAE	CP08-2-6S		

Other housings available

P102 187E

CP308-1
Flow control valves



Cartridge Valves Technical Information

Flow Control Valves

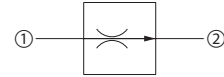
Pressure-Compensated, Restrictive Flow Control

CP300-1

OPERATION

This valve is a fixed pressure compensated flow control valve.

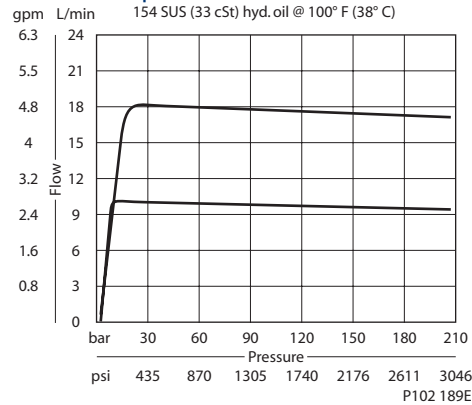
Schematic



P102 183E

SPECIFICATIONS

Theoretical performance



Specifications

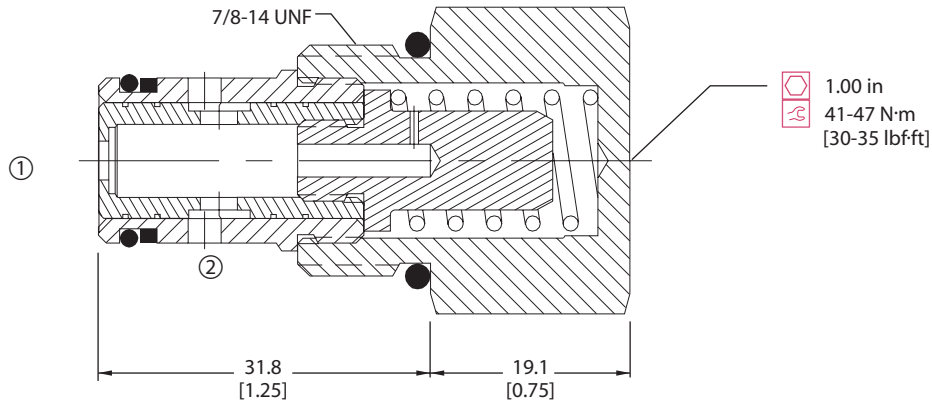
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.12 kg [0.26 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-22.7 l/min [1.8-6 US gal/min]
Cavity	SDC10-2

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

P102 191E



Cartridge Valves Technical Information

Flow Control Valves

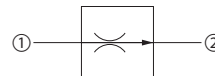
Pressure-Compensated, Restrictive Flow Control

CP301-1

OPERATION

This valve is a fixed pressure compensated flow control valve.

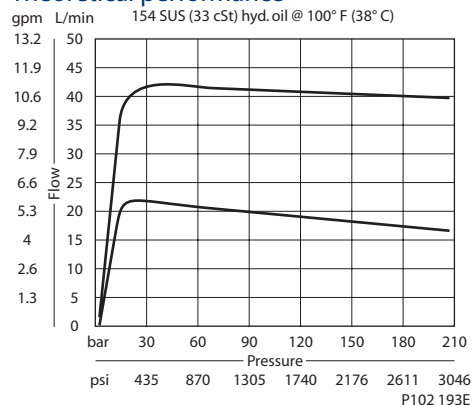
Schematic



P102 183E

SPECIFICATIONS

Theoretical performance



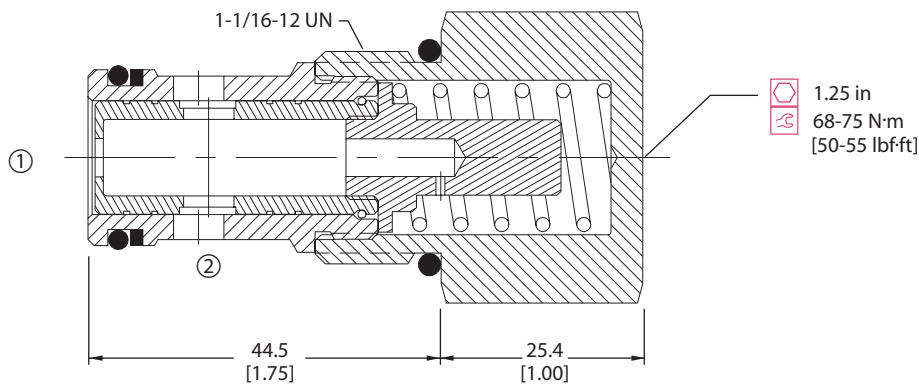
Specifications

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

Other housings available

P102 195E



Cartridge Valves Technical Information

Flow Control Valves

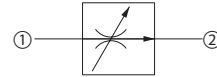
Pressure-Compensated, Restrictive Flow Control

CP308-2

OPERATION

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

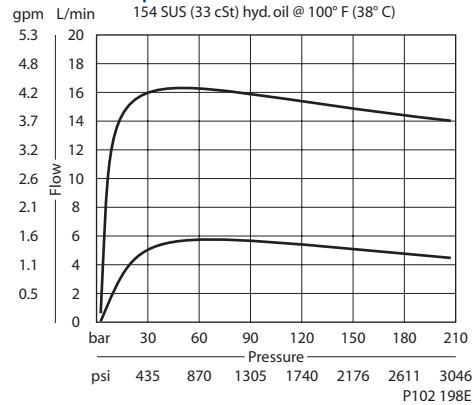
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



Specifications

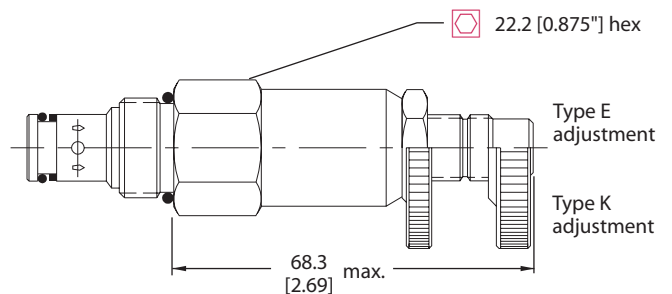
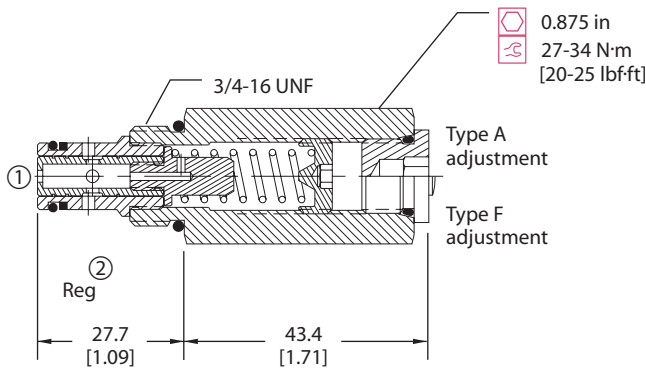
Rated pressure	210 bar [3000 psi]
Max regulated flow	15 l/min [4 US gal/min]
Weight	0.15 kg [0.32 lb]
Cavity	SDC08-2

Flow control valves
CP308-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 197E

ORDERING INFORMATION

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

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

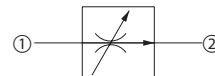
P102 200E

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.

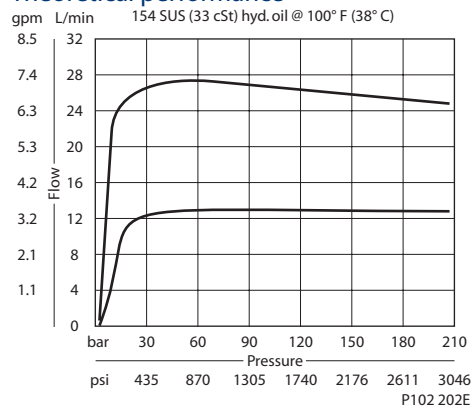
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



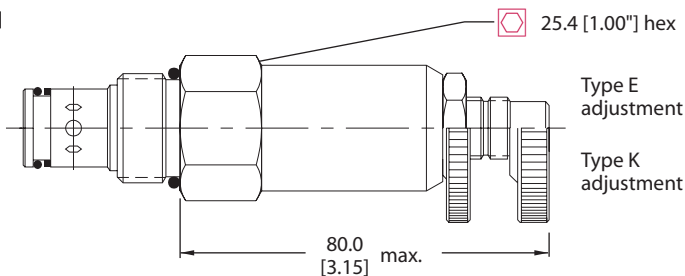
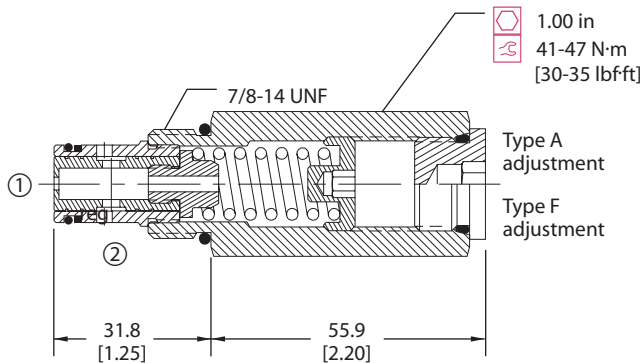
Specifications

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

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

CP300 - 2 - B - 8S - A - 2.5



Cartridge Valves Technical Information

Flow Control Valves

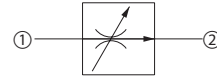
Pressure-Compensated, Restrictive Flow Control

VR 06

OPERATION

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

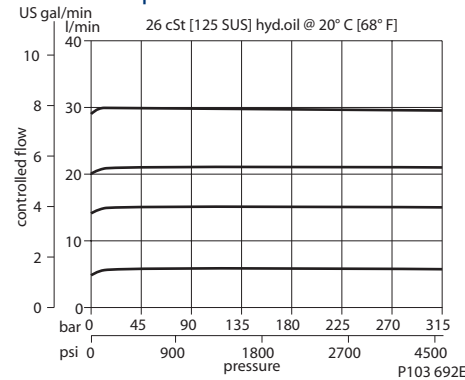
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



Specifications

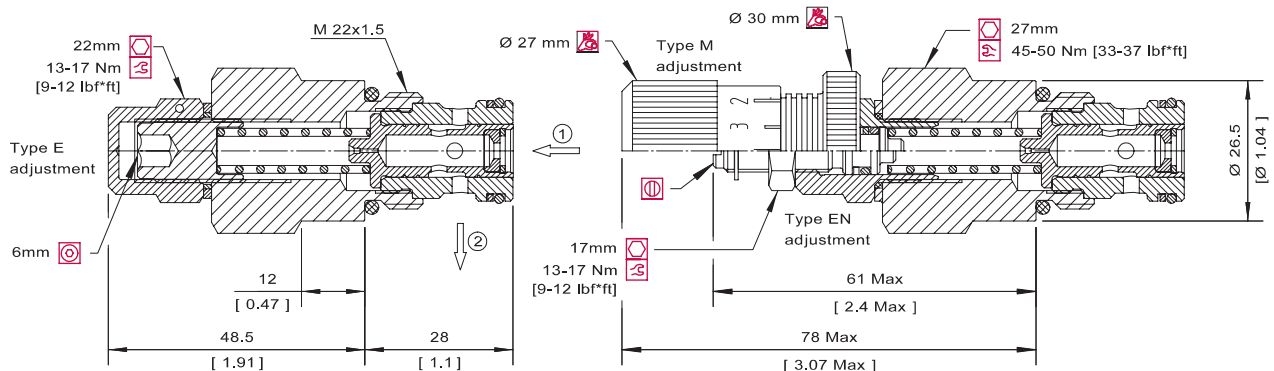
Rated pressure	315 bar [4500 psi]
Max regulated flow	30 l/min [8 US gal/min]
Weight	0.19 kg [0.42 lb]
Cavity	NCS06/2

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
- DG6S = AL, #6 SAE
- DG8S = AL, #8 SAE
- Other housings available

Housing P/N

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

P103 718E



Cartridge Valves Technical Information

Flow Control Valves

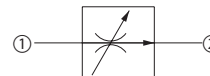
Pressure-Compensated, Restrictive Flow Control

VR 12

OPERATION

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

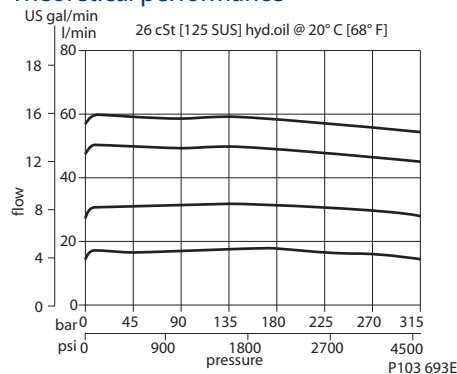
Schematic



P102 196E

SPECIFICATIONS

Theoretical performance



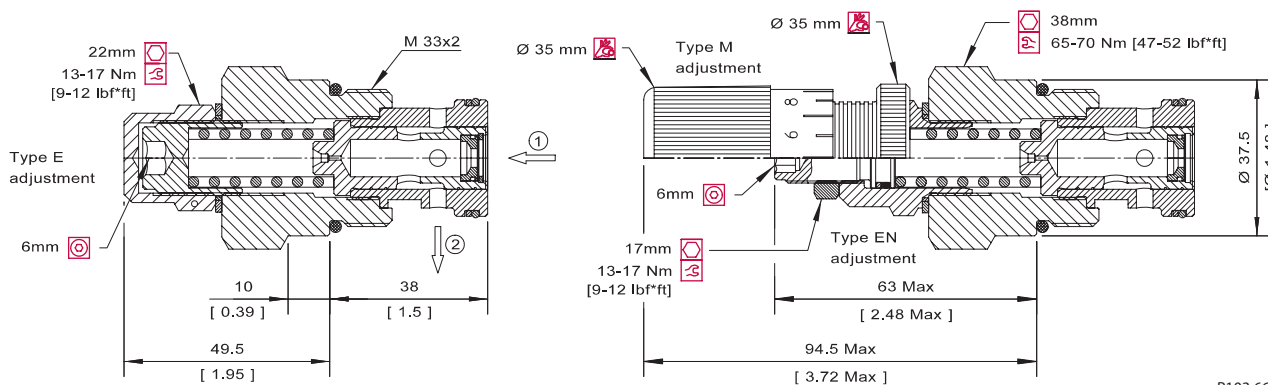
Specifications

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

DIMENSIONS

mm [in]

Cross-sectional view



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

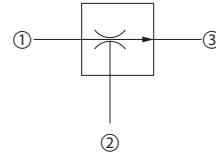
Pressure-Compensated, Priority Flow Control

CP310-1

OPERATION

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

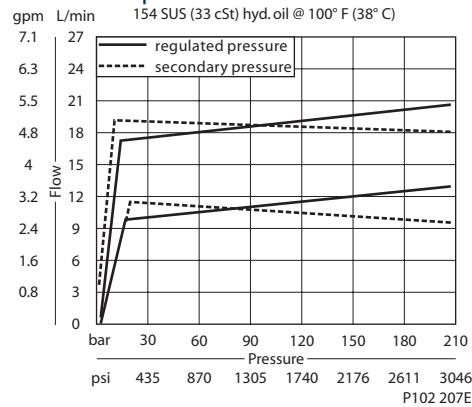
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



Specifications

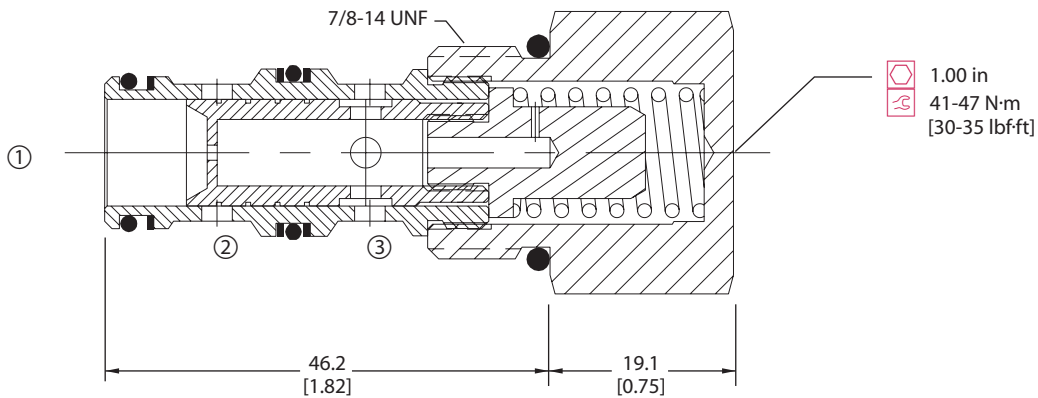
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Max inlet flow	38 l/min [10 US gal/min]
Weight	0.13 kg [0.29 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-22.7 l/min [1.8-6 US gal/min]
Cavity	SDC10-3

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]
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		
		0.1 = 0.4 [0.1]	
		6.0 = 22.7 [6.0]	

P102 209E



Cartridge Valves Technical Information

Flow Control Valves

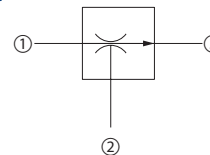
Pressure-Compensated, Priority Flow Control

VRF 06

OPERATION

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

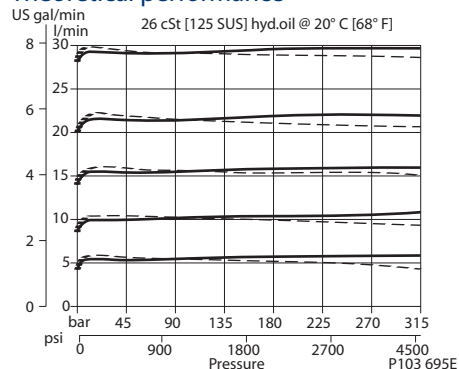
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



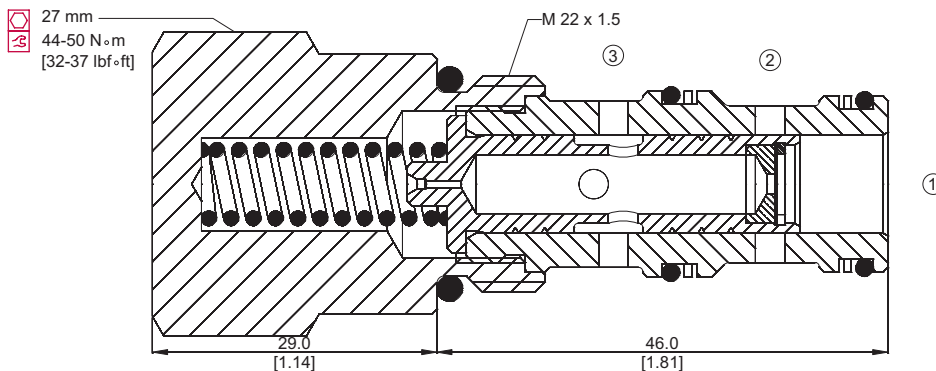
Specifications

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

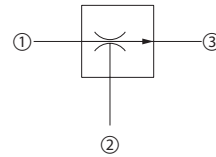
Pressure-Compensated, Priority Flow Control

CP311-1

OPERATION

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

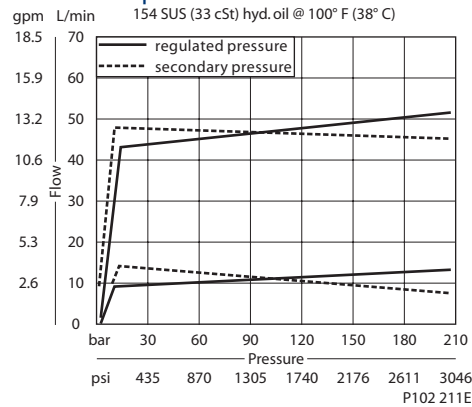
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



Specifications

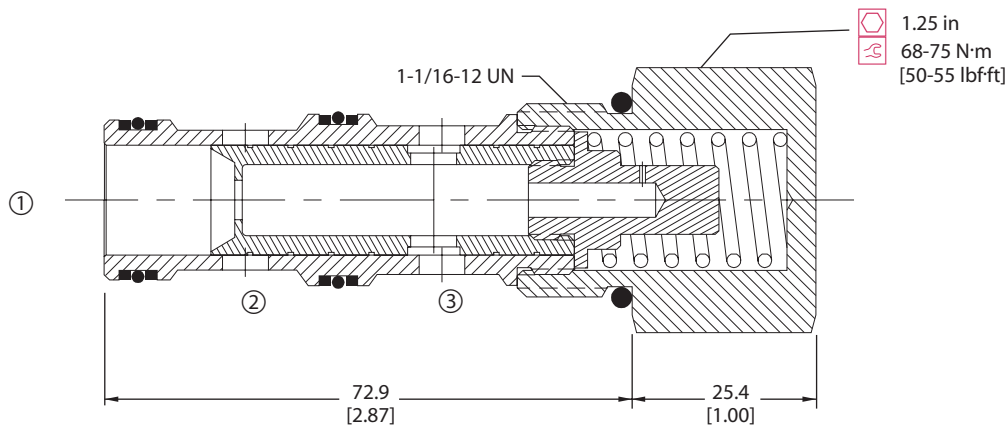
Rated pressure	210 bar [3000 psi]
Max regulated flow	45 l/min [12 US gal/min]
Max inlet flow	95 l/min [25 US gal/min]
Weight	0.28 kg [0.61 lb]
Accuracy ± 15%	1.9-7.5 l/min [0.5-2 US gal/min]
± 10%	7.6-45.4 l/min [2-12 US gal/min]
Cavity	CP12-3

Flow control valves
CP311-1

DIMENSIONS

mm [in]

Cross-sectional view



ORDERING INFORMATION

CP311 - 1 - B - 12S - 10.0

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

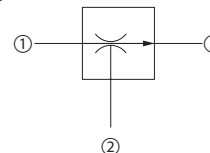
Pressure-Compensated, Priority Flow Control

CP312-1

OPERATION

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

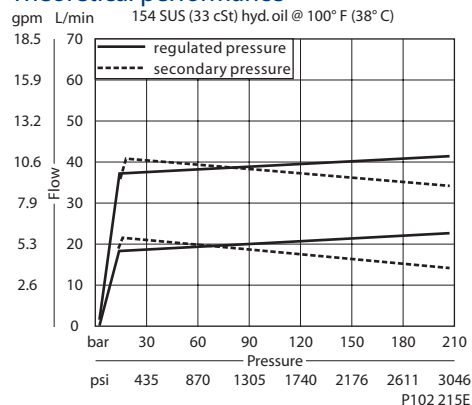
Schematic



P102 205E

SPECIFICATIONS

Theoretical performance



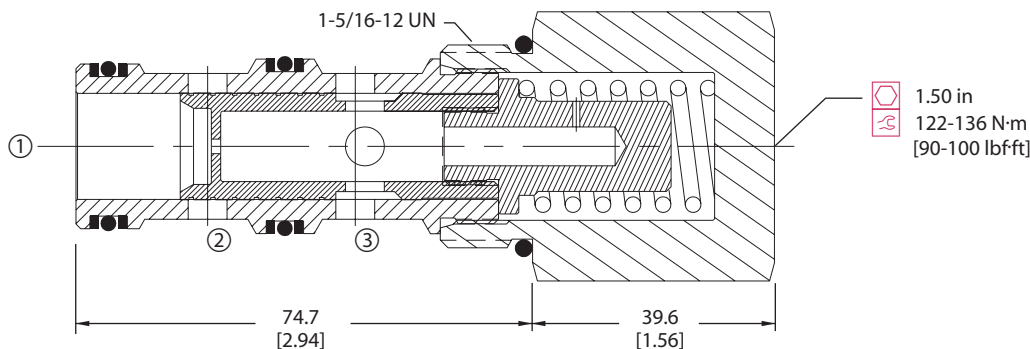
Specifications

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

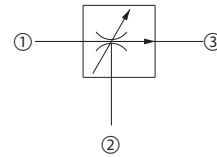
Pressure-Compensated, Priority Flow Control

CP310-2

OPERATION

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

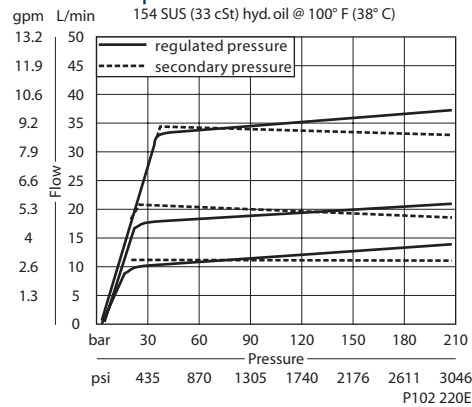
Schematic



P102 218E

SPECIFICATIONS

Theoretical performance



Specifications

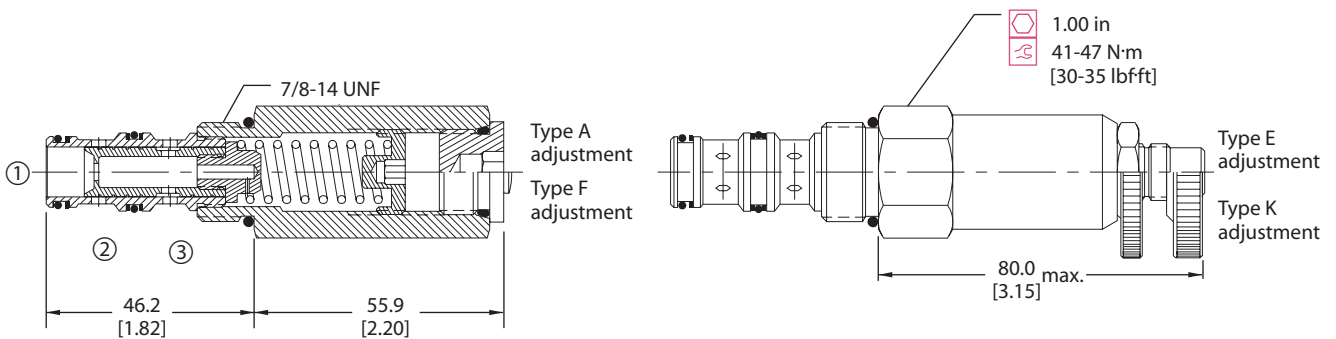
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Max inlet flow	38 l/min [10 US gal/min]
Weight	0.24 kg [0.52 lb]
Cavity	SDC10-3

Flow control valves
CP310-2

DIMENSIONS

mm [in]

Cross-sectional view



P102 219E

ORDERING INFORMATION

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

Seals
B = Buna-N
V = Viton

Seal kit
120240
120241

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

Regulated Flow
L/min [US gal/min]
0.1 = .4 [0.1]
To
6.0 = 22.7 [6.0]

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

P102 222E



Cartridge Valves Technical Information

Flow Control Valves

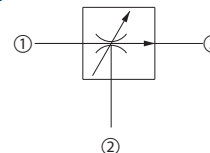
Pressure-Compensated, Priority Flow Control

VRC 06

OPERATION

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

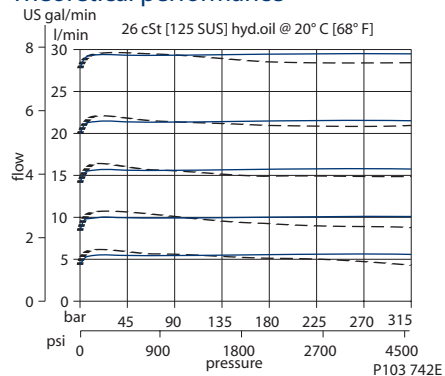
Schematic



P102 218E

SPECIFICATIONS

Theoretical performance



Specifications

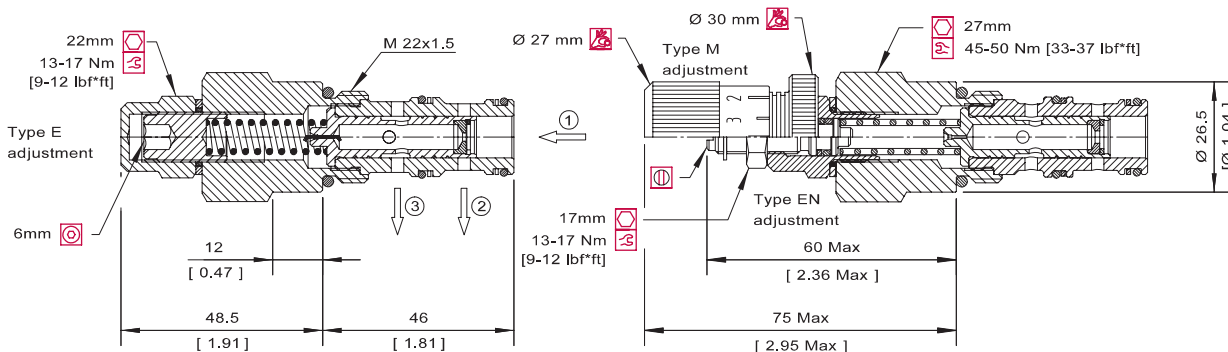
Rated pressure	315 bar [4500 psi]
Max regulated flow	30 l/min [8 US gal/min]
Max inlet flow	50 l/min [13 US gal/min]
Weight	0.21 kg [0.46 lb]
Cavity	NCS06/3

VRC 06 Flow control valves

DIMENSIONS

mm [in]

Cross-sectional view



P103 741

ORDERING INFORMATION

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

<p>Type of adjustment</p> <p>E = Internal screw EN = External screw M = Handwheel</p>	<p>Seals</p> <p>V = Viton Omit = Buna-N</p>	<p>Seal kit</p> <p>230000110 230000070</p>															
<p>Orifice size</p> <table border="1"> <thead> <tr> <th>mm</th> <th>L/min</th> <th>[US gal/m]</th> </tr> </thead> <tbody> <tr> <td>1.25</td> <td>= 1-4</td> <td>[0.3-1.1]</td> </tr> <tr> <td>2.0</td> <td>= 3-10</td> <td>[0.8-2.5]</td> </tr> <tr> <td>3.0</td> <td>= 6-20</td> <td>[1.6-5.3]</td> </tr> <tr> <td>3.5</td> <td>= 10-30</td> <td>[2.6-7.9]</td> </tr> </tbody> </table> <p>other orifices available consult factory</p>	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]	<p>Housing and ports</p> <p>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</p>	<p>Housing P/N</p> <p>No Housing NCS06/3-SE-3/8 NCS06/3-SE-1/2 NCS06/3-SE-6S NCS06/3-SE-8S</p>
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]															

P103 720E



Cartridge Valves Technical Information

Flow Control Valves

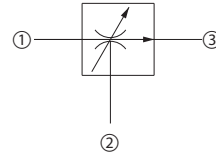
Pressure-Compensated, Priority Flow Control

VRC 12

OPERATION

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

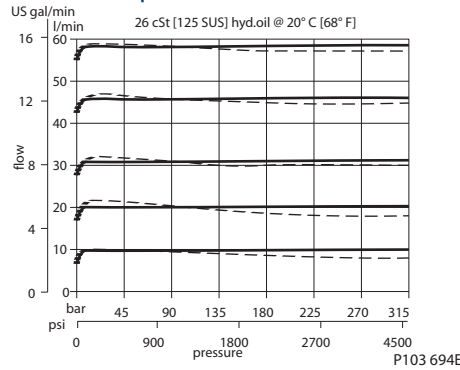
Schematic



P102 218E

SPECIFICATIONS

Theoretical performance



Specifications

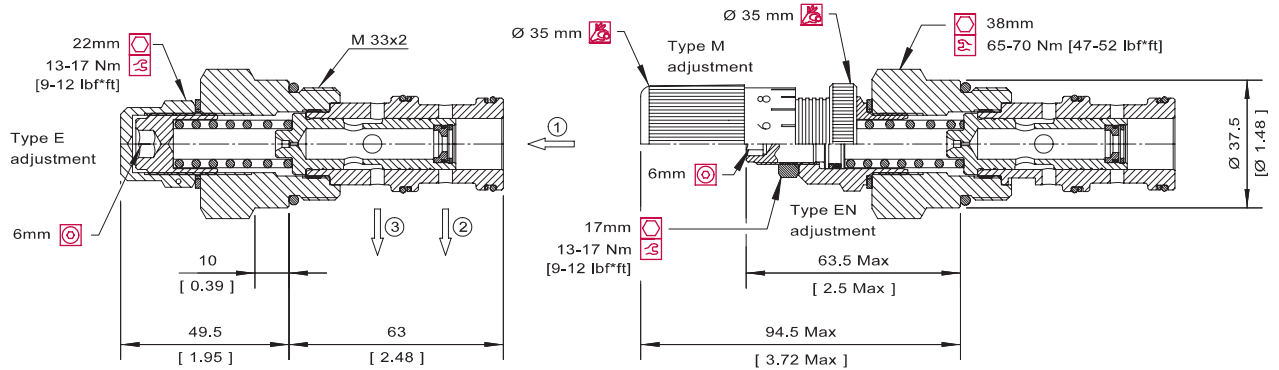
Rated pressure	315 bar [4500 psi]
Max regulated flow	73 l/min [19 US gal/min]
Max inlet flow	100 l/min [26 US gal/min]
Weight	0.50 kg [1.10 lb]
Cavity	NCS12/3

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
SE8S = 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

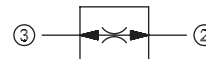
Pressure-Compensated, Priority Flow Control

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.

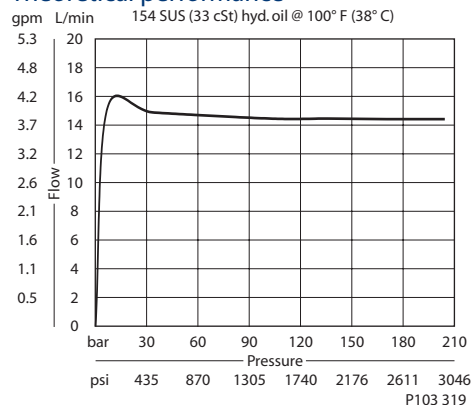
Schematic



P103 508

SPECIFICATIONS

Theoretical performance



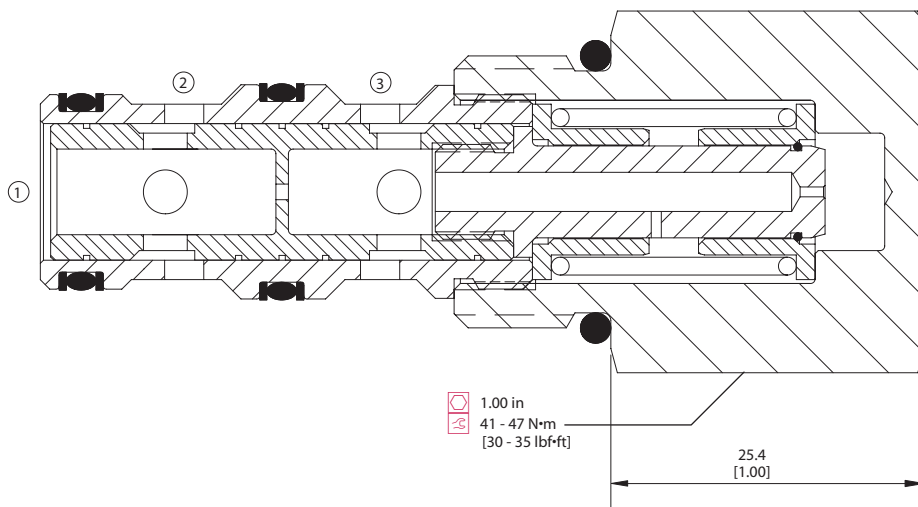
Specifications

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

<p>Seals B = Buna-N V = Viton</p>	<p>Seal kit 120009 120010</p>	<p>Regulated Flow</p> <table border="0"> <tr> <td>L/min</td> <td>[US gal/min]</td> </tr> <tr> <td>0.1</td> <td>= 0.4 [0.1]</td> </tr> <tr> <td>6.0</td> <td>= 23.0 [6.0]</td> </tr> </table>	L/min	[US gal/min]	0.1	= 0.4 [0.1]	6.0	= 23.0 [6.0]
L/min	[US gal/min]							
0.1	= 0.4 [0.1]							
6.0	= 23.0 [6.0]							
<p>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</p>	<p>Housing P/N No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S</p>							

P103 255

Flow control valves CP300-6



Cartridge Valves Technical Information

Flow Control Valves

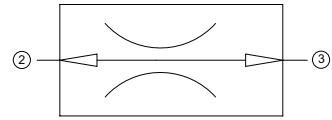
Pressure-Compensated, Priority Flow Control

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



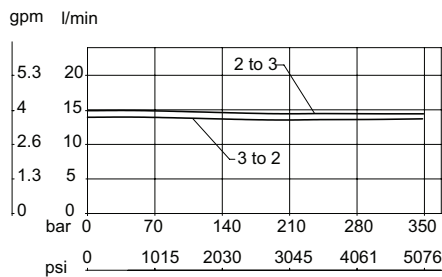
P108 378E

SPECIFICATIONS

Theoretical performance

Performance

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



P108 379E

Specifications

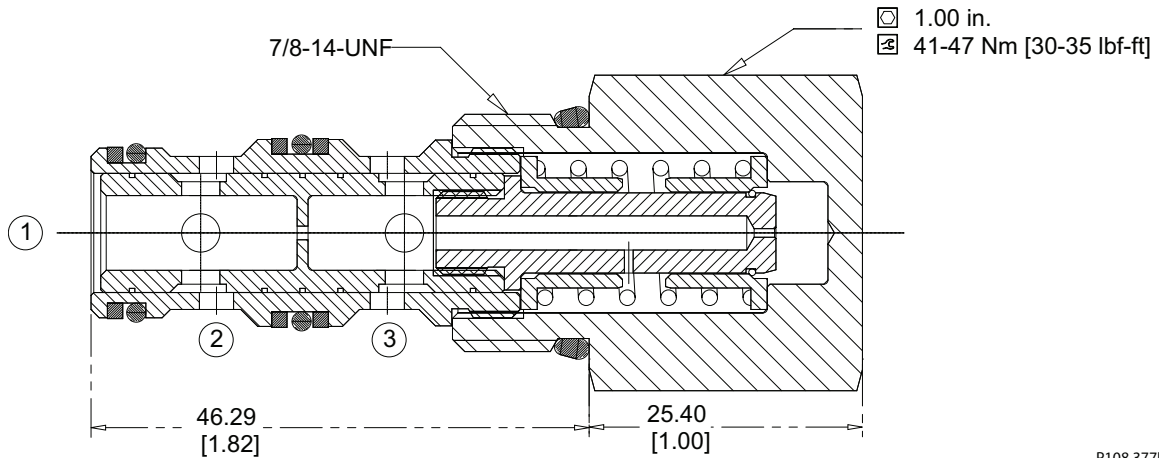
Rated pressure	350 bar [5075 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.14 kg [0.34 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-22.7 l/min [0.6-6.0 US gal/min]
Cavity	SDC10-3

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

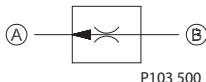
In-line

SC 10

OPERATION

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

Schematic



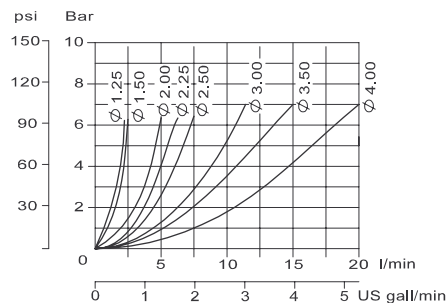
SPECIFICATIONS

Specifications

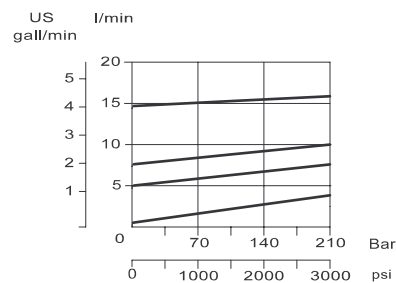
Pressure rating	210 bar [3000 psi]
Max regulated flow	16 l/min [4.2 US gal/min]
Cavity	Consult factory

Theoretical performance

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

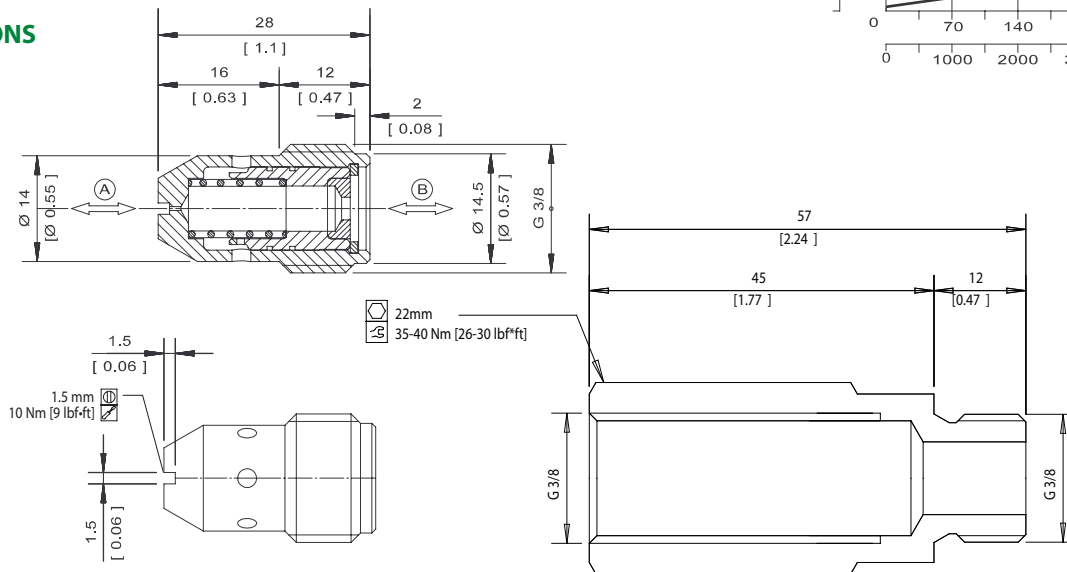


Variation in controlled flow from B \Rightarrow A according to pressure
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



P103 941E

DIMENSIONS



P103 926E

ORDERING INFORMATION

SC10 - 1.25 - G - 00

Orifice diameter mm	Flow at 100 bar [1450 psi] l/min [US gal/min]	Notes
1.25	2.0[0.53]	00 = Cartridge only L = 3/8 BSP
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

Cartridge Valves Technical Information

Flow Control Valves

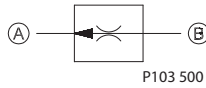
In-line

SC 13

OPERATION

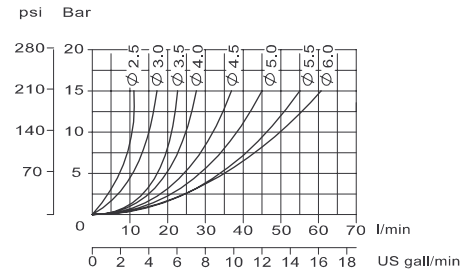
This is an in-line restrictive type flow control valve.

Schematic



Theoretical performance

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

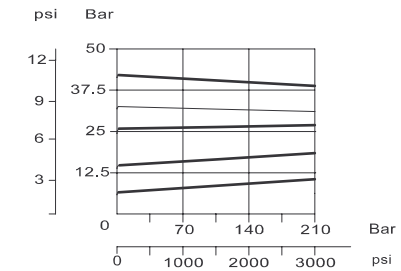


SPECIFICATIONS

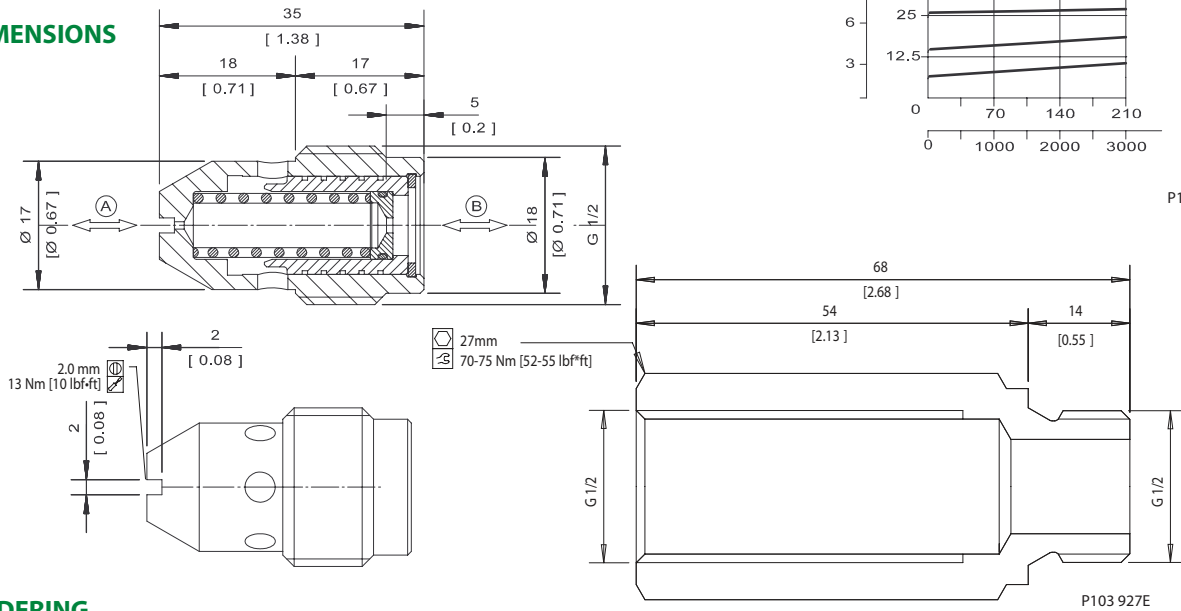
Specifications

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	Flow at 100 bar [1450 psi]
mm	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

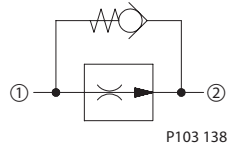
Cartridge Valves Technical Information
Flow Control Valves
In-line
CP9014-1

OPERATION

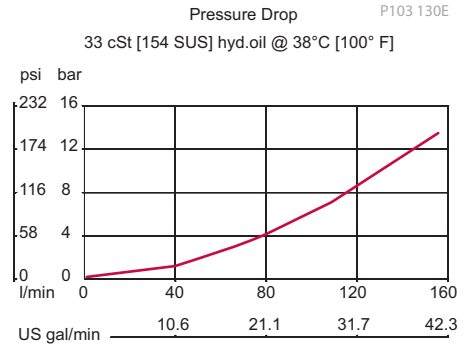
This is an in-line restrictive type flow control valve with free reverse flow.

SPECIFICATIONS

Schematic

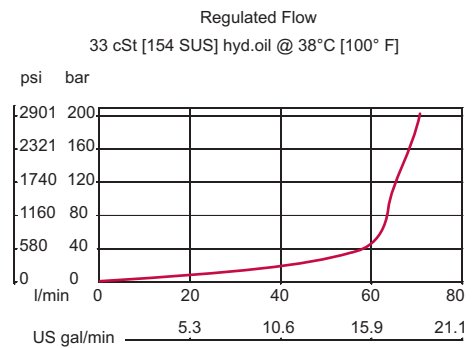


Specifications



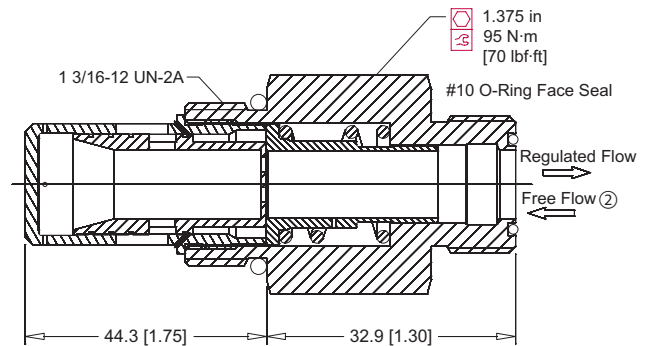
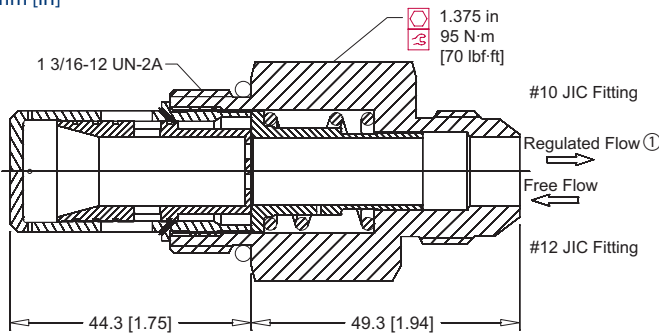
Specifications

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

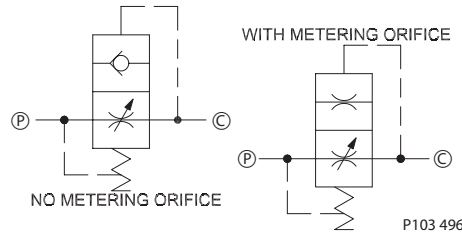
BC 06 Velocity Fuse

OPERATION

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

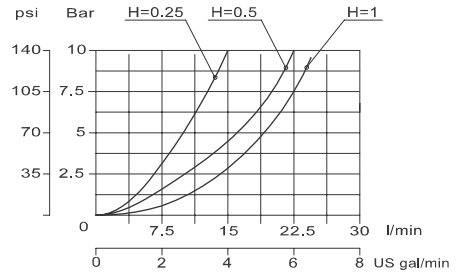
SPECIFICATIONS

Schematic



Theoretical performance

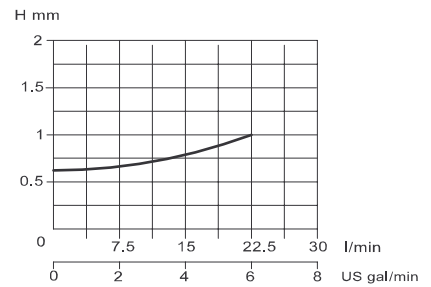
Pressure drop from P⇒C according to Adjustment H
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



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

Specifications

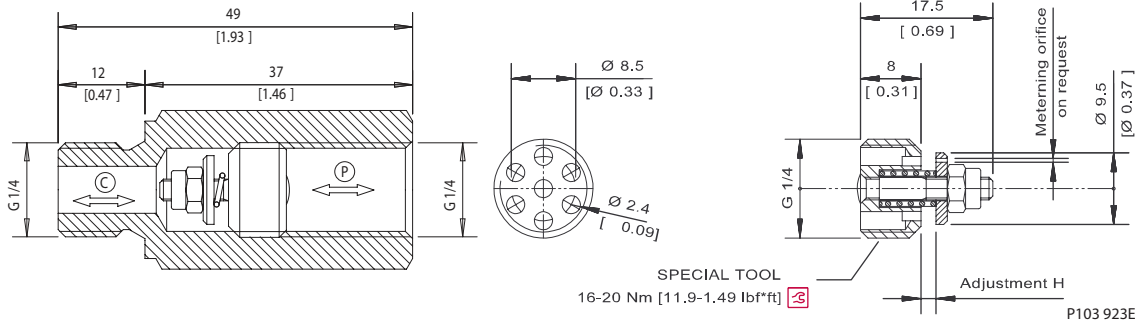
Pressure rating	210 bar [3000 psi]
Rated Free Flow at 7 bar [100 psi]	30 l/min [8 US gal/min]
Cavity	Consult factory



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

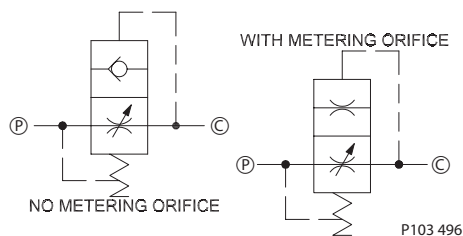
Cartridge Valves Technical Information
Flow Control Valves
In-line
BC 10 Velocity Fuse

OPERATION

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

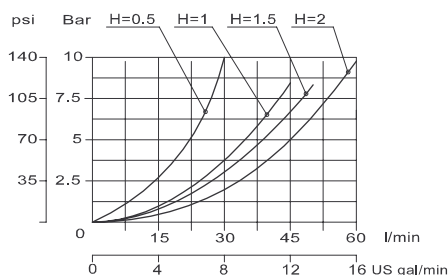
SPECIFICATIONS

Schematic



Theoretical performance

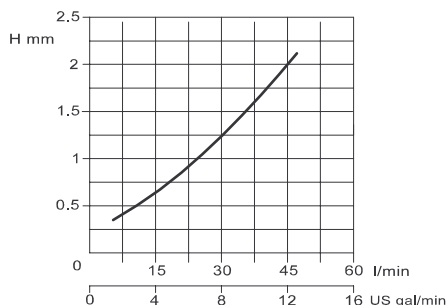
Pressure drop from $P \Rightarrow C$ according to Adjustment H
26 cSt [121 SUS] hyd.oil at 50°C [122 °F]



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

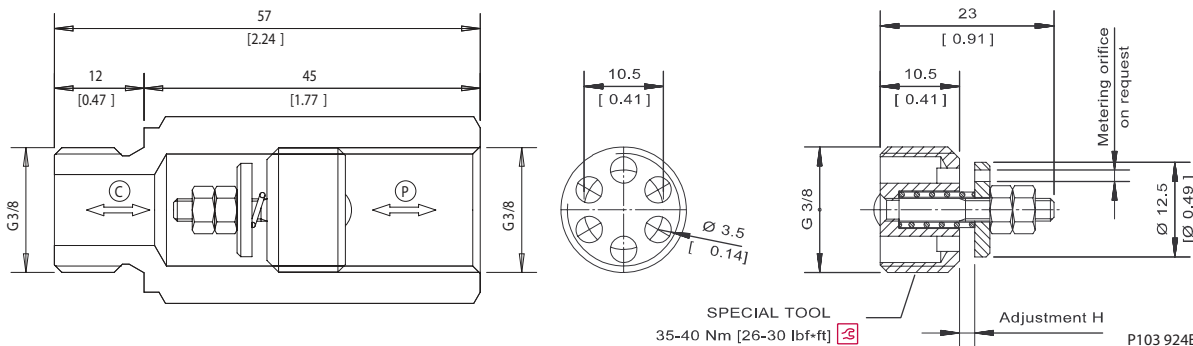
Values for adjustment H are guideline only, being conditioned by a variety of factors (oil temperature and viscosity, volume and flexibility of circuits).



Flow control valves
BC 10 Velocity Fuse

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 = 1.5mm [in]
 - 2.0 = 2.0mm [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

Cartridge Valves Technical Information

Flow Control Valves

In-line

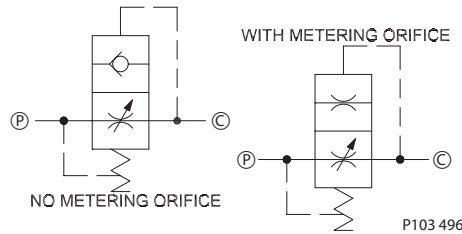
BC 13 Velocity Fuse

OPERATION

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

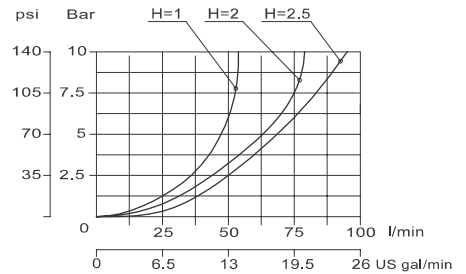
SPECIFICATIONS

Schematic

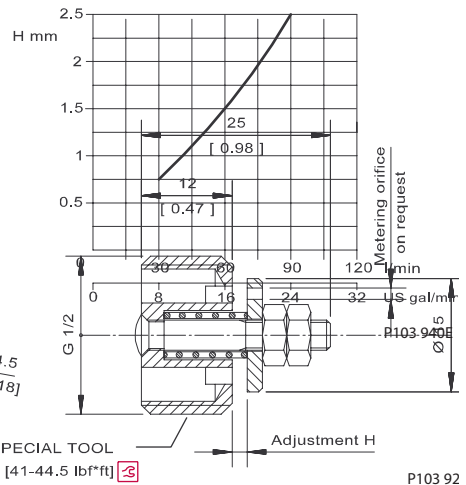


Theoretical performance

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

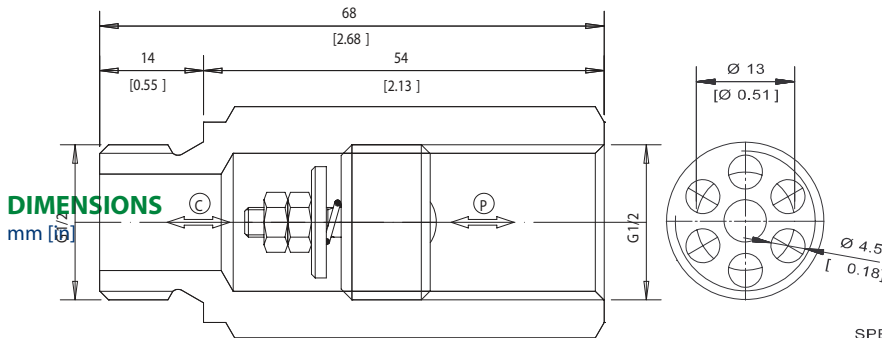


Values for adjustment H are guideline only, being conditioned by a variety of factors (oil temperature and viscosity, volume and flexibility of circuits).



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

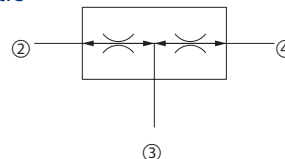
Flow Divider/Combiner

CP340-1

OPERATION

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

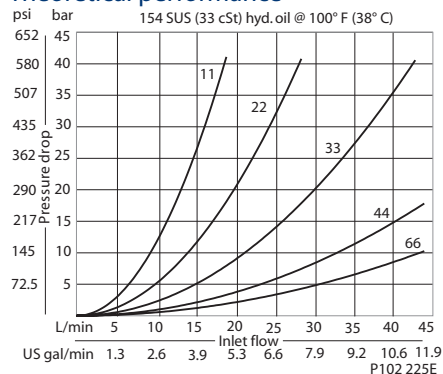
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



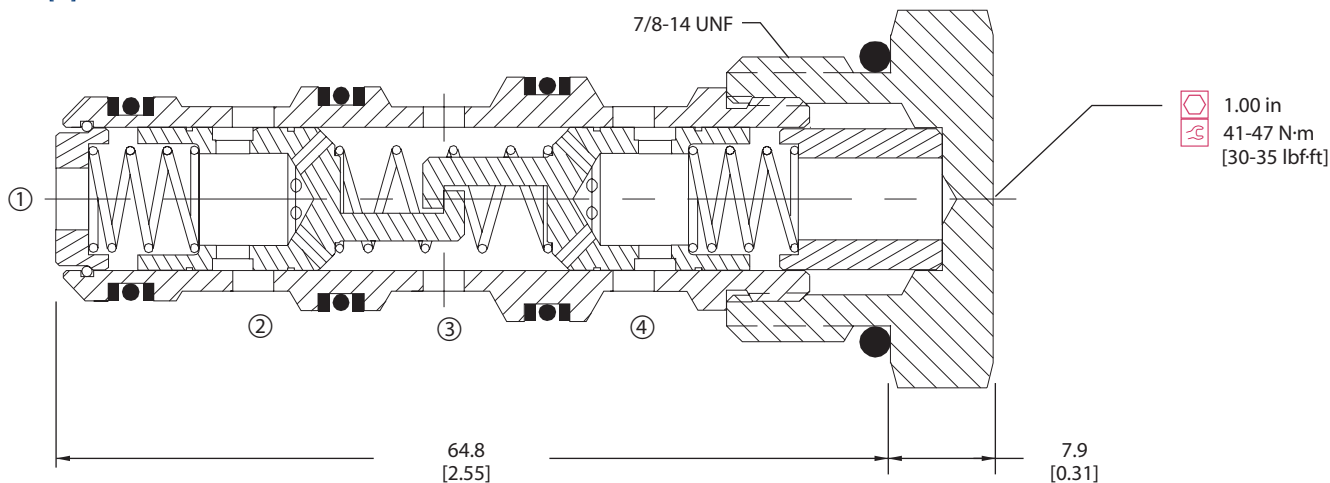
Specifications

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



ORDERING INFORMATION

CP340 - 1 - B - 6S - 44

Seals	Seal kit	Flow settings	
B = Buna-N	120023	Code	Flow ratio
V = Viton	120024		Port 2:Port 4
Housing and ports	Housing P/N		Total flow
0 = No Housing	No Housing	11	1:1 7.6 L/min [2 gpm]
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

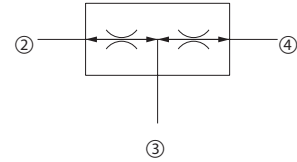
Flow Divider/Combiner

VDF 06

OPERATION

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

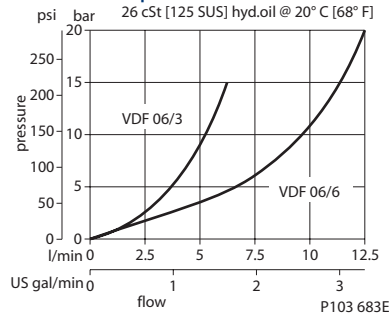
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



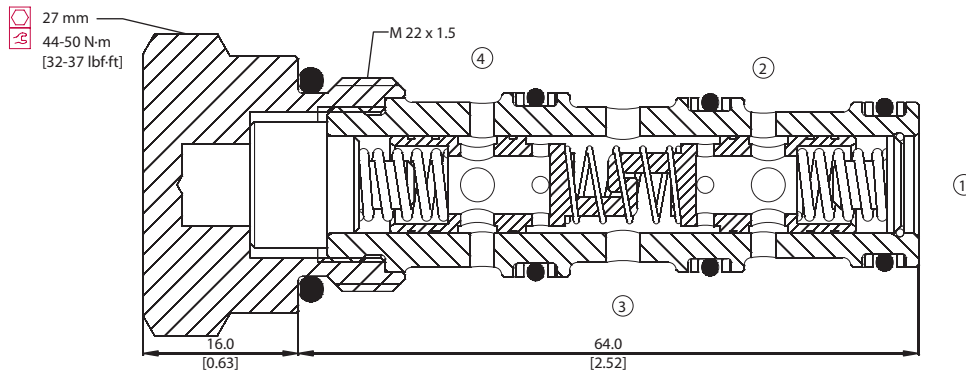
Specifications

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
V = Viton
Omit = Buna-N

Seal kit
230000350
230000610

Housing and ports
00 = No Housing
L3/8 = AL, 3/8 BSP
L3/4 = AL, 3/4 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

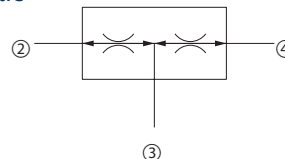
P103 710E

Cartridge Valves Technical Information
Flow Control Valves
Flow Divider/Combiner
CP341-1

OPERATION

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

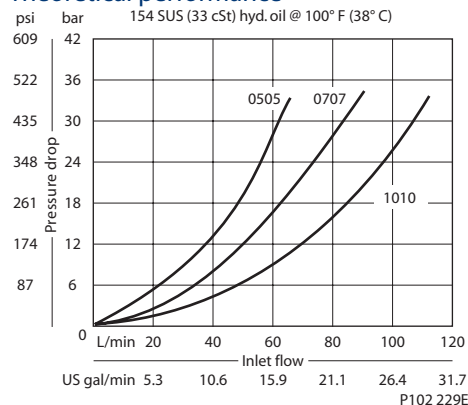
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



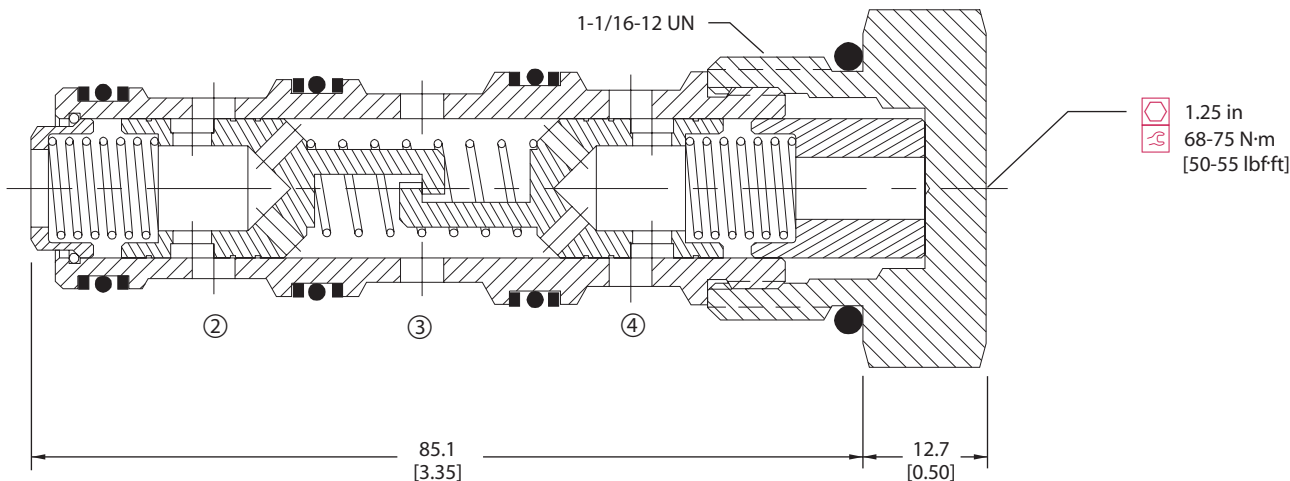
Specifications

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

Flow control valves
CP341-1

DIMENSIONS

Cross-sectional view



P102 228E

ORDERING INFORMATION

Seals

B = Buna-N
V = Viton

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

Seal kit

120262
120263

Housing P/N

No Housing
CP12-4-4B-X1
CP12-4-6B-X1
CP12-4-10S-X1
CP12-4-12S-X1

CP341 - 1 - B - 10S - 0707

Flow settings

Code	Flow ratio Port 2:Port 4	Total flow
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

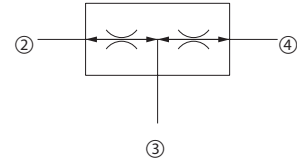
Flow Divider/Combiner

CP342-1

OPERATION

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

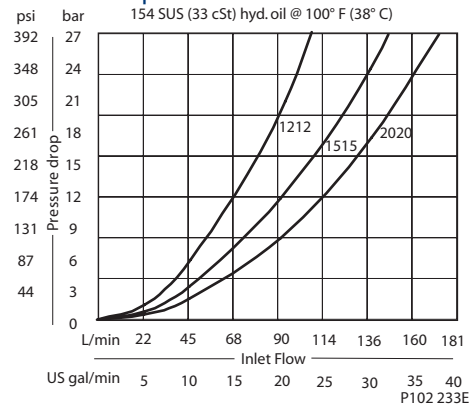
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



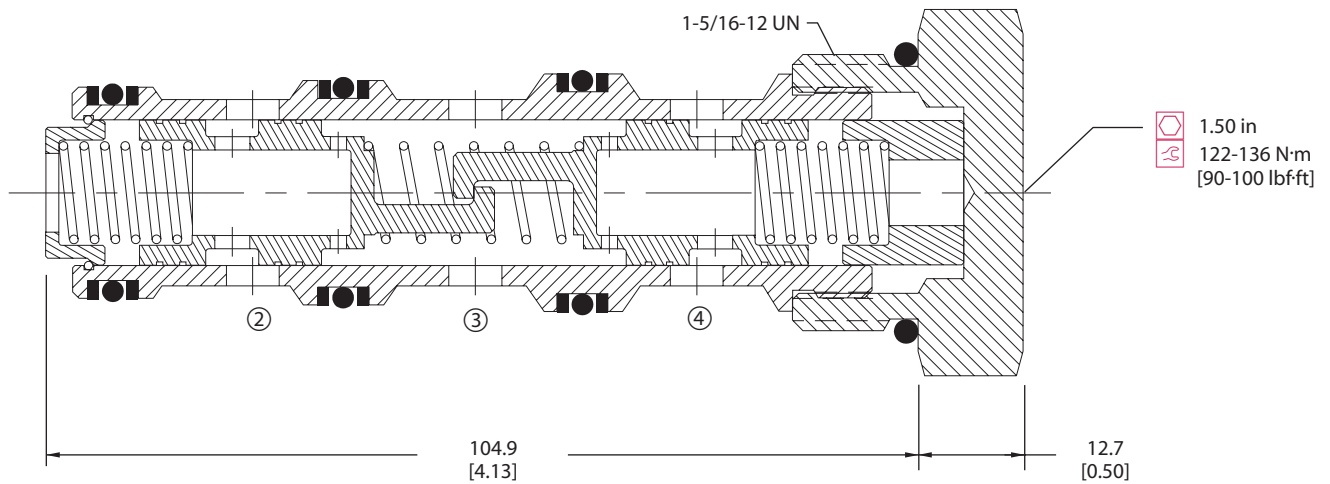
Specifications

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



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

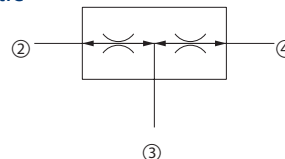
Flow Divider/Combiner

CP342-3

OPERATION

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

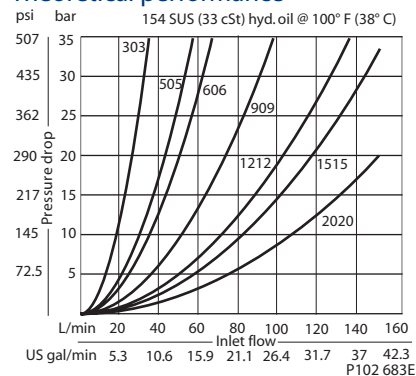
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



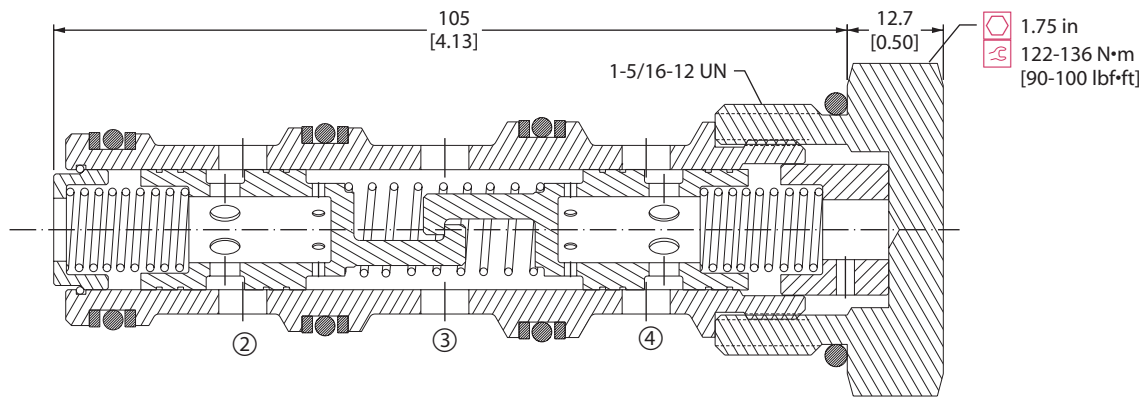
Specifications

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

Flow control valves
CP342-3

DIMENSIONS

Cross-sectional view



P102 652

ORDERING INFORMATION

		CP342-3-U-16S-0505		Flow settings	
				Code	Flow ratio Port 2:Port 4
				0303	1:1
				0505	1:1
				0606	1:1
				0909	1:1
				1212	1:1
				1515	1:1
				2020	1:1
				1220	3:5
				1215	4:5
				1520	3:4
				2012	5:3
				1512	5:4
				2015	4:3
				1020	1:2
				Total flow	
				23 L/min [6 gpm]	
				38 L/min [10 gpm]	
				45 L/min [12 gpm]	
				68 L/min [18 gpm]	
				91 L/min [24 gpm]	
				114 L/min [30 gpm]	
				151 L/min [40 gpm]	
				121 L/min [32 gpm]	
				102 L/min [27 gpm]	
				132 L/min [35 gpm]	
				121 L/min [32 gpm]	
				102 L/min [27 gpm]	
				132 L/min [35 gpm]	
				114 L/min [30 gpm]	

P102 899E



Cartridge Valves Technical Information

Flow Control Valves

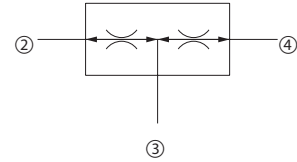
Flow Divider/Combiner

CP343-1

OPERATION

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

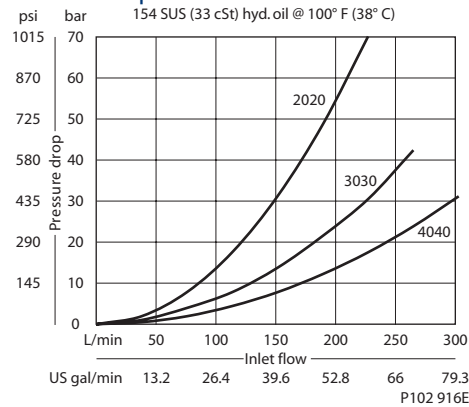
Schematic



P102 223

SPECIFICATIONS

Theoretical performance



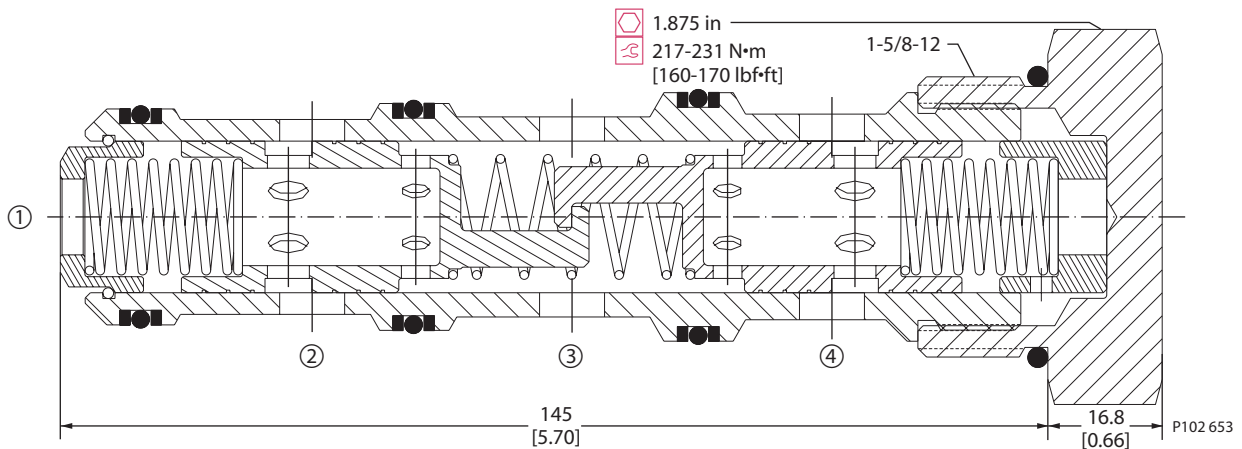
Specifications

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

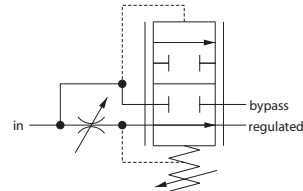
Catalog HIC

2F94-01

OPERATION

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

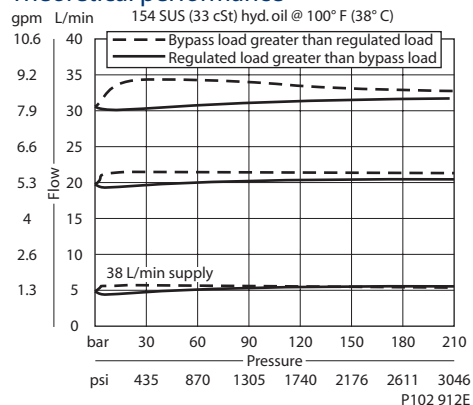
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



Specifications

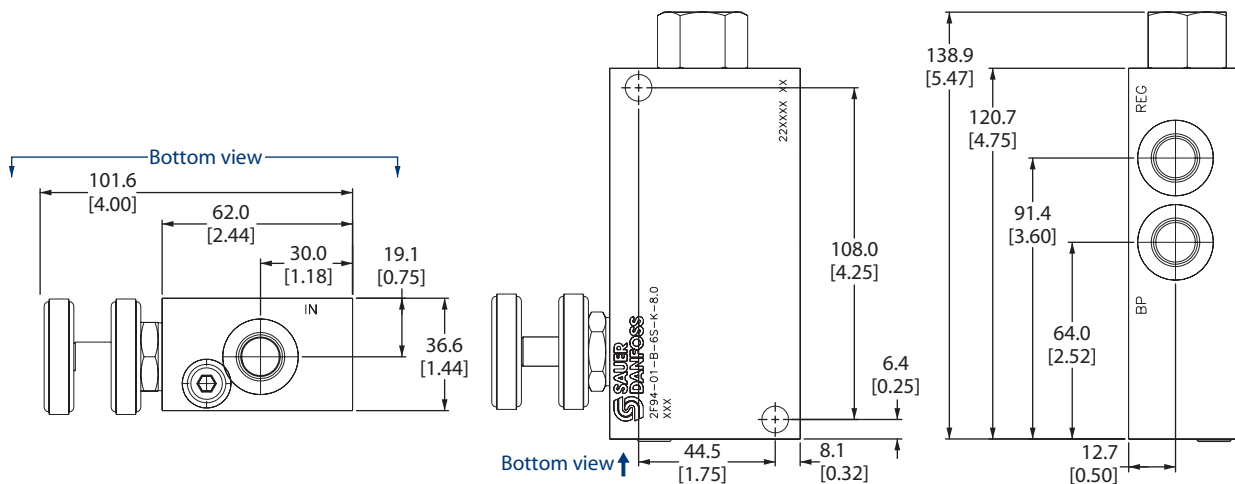
Rated pressure	210 bar [3000 psi]
Max regulated flow	30 l/min [8 US gal/min]
Max inlet flow	60 l/min [16 US gal/min]
Weight	1.00 kg [2.20 lb]
Cavity	none

Flow control valves
2F94

DIMENSIONS

mm [in]

Cross-sectional view



P102 678

ORDERING INFORMATION

2F94-01-B-6S-E-8.0

- Adjustment range**
Code = 0-8 gpm
- Adjustment options**
E = External adjustment
K = Knob adjustment
- Body and ports**
6S = Aluminum, #6 SAE
- Seals**
B = Buna-N
V = Viton
- Seal kits**
Consult Factory

P102 648E



Cartridge Valves Technical Information

Flow Control Valves

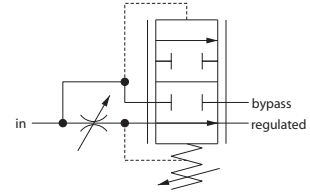
Catalog HIC

2F95-01

OPERATION

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

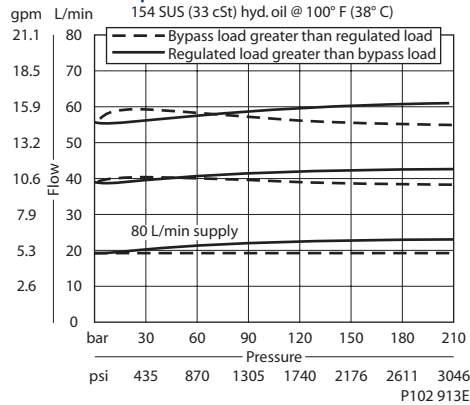
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



Specifications

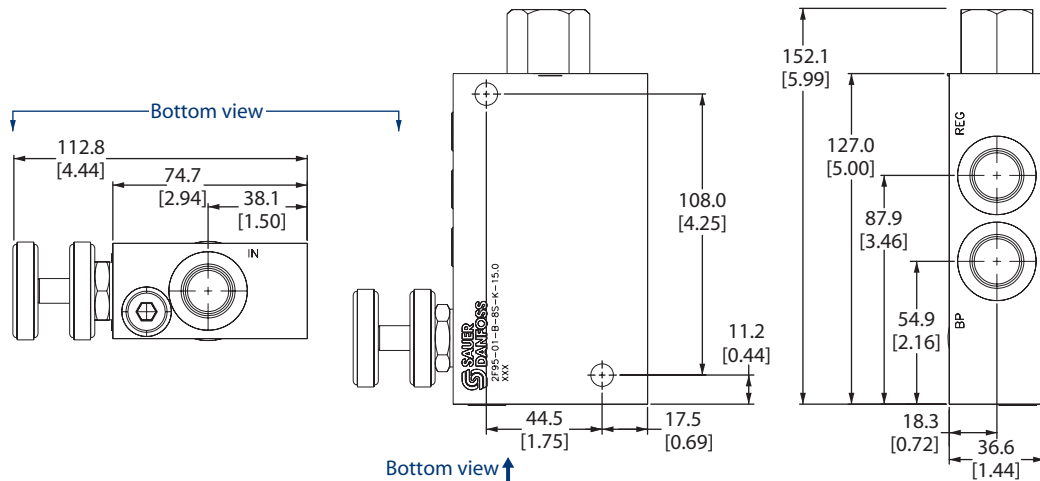
Rated pressure	210 bar [3000 psi]
Max regulated flow	60 l/min [16 US gal/min]
Max inlet flow	95 l/min [25 US gal/min]
Weight	1.00 kg [2.20 lb]
Cavity	none

Flow control valves
2F95

DIMENSIONS

mm [in]

Cross-sectional view



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

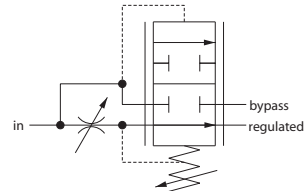
Catalog HIC

2F96-01

OPERATION

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

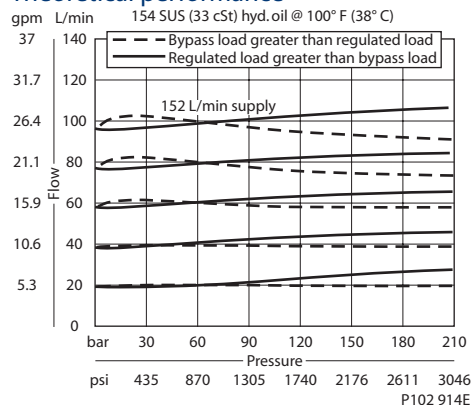
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



Specifications

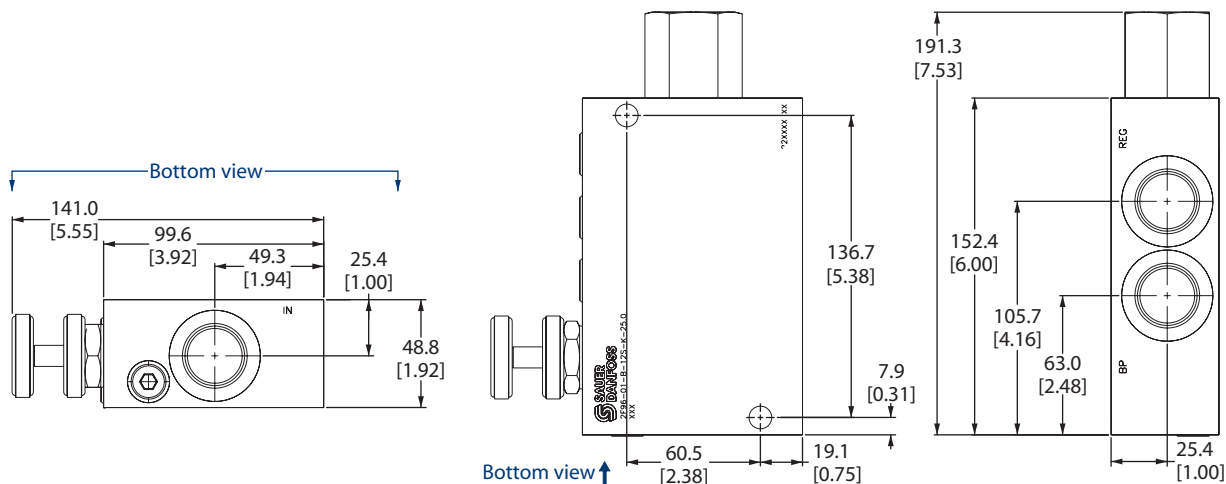
Rated pressure	210 bar [3000 psi]
Max regulated flow	95 l/min [25 US gal/min]
Max inlet flow	150 l/min [40 US gal/min]
Weight	1.77 kg [3.90 lb]
Cavity	none

Flow control valves
2F96

DIMENSIONS

mm [in]

Cross-sectional view



P102 680

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

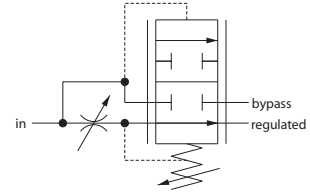
Catalog HIC

2F97-01

OPERATION

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

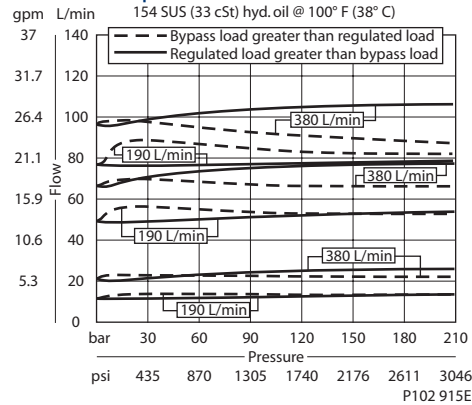
Schematic



P102 682

SPECIFICATIONS

Theoretical performance



Specifications

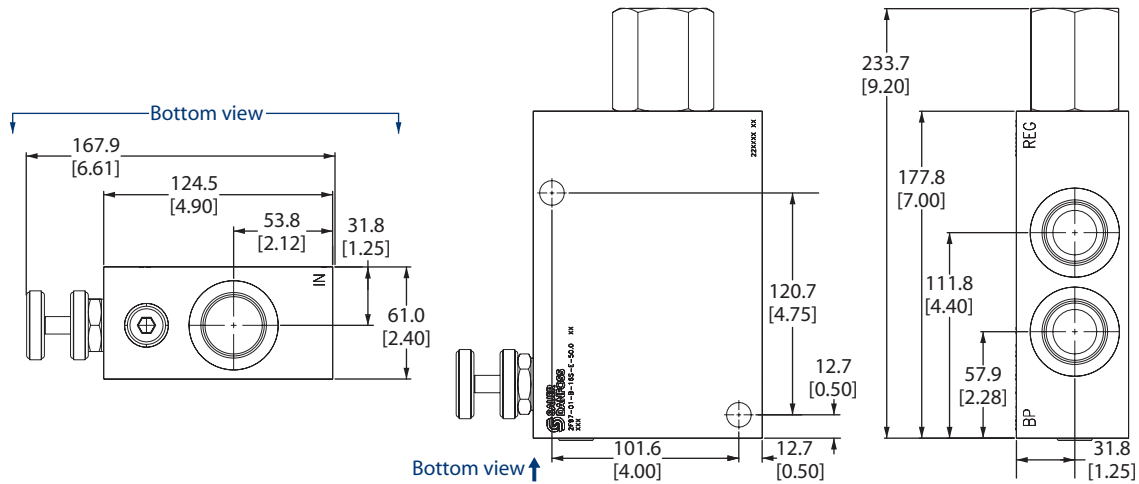
Rated pressure	210 bar [3000 psi]
Max regulated flow	190 l/min [50 US gal/min]
Max inlet flow	380 l/min [100 US gal/min]
Weight	3.81 kg [8.40 lb]
Cavity	none

Flow control valves
2F97

DIMENSIONS

mm [in]

Cross-sectional view



P102 681

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

Seal kits
 Consult Factory
 Consult Factory

Adjustment range
 Code = 0-50 gpm

P102 651E



Cartridge Valves Technical Information

Flow Control Valves

Notes