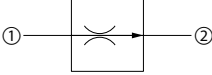
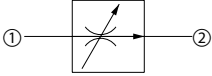
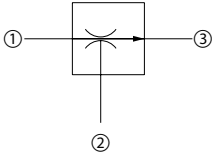
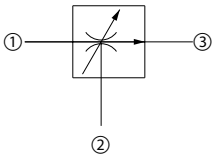
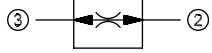


Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP308-1	SDC08-2	Flow control (restrictive, pressure compensated, fixed)	15 l/min [4 US gal/min]	210 bar [3000 psi]	07.7
	CP300-1	SDC10-2		23 l/min [6 US gal/min]	210 bar [3000 psi]	07.8
	CP301-1	CP12-2		60 l/min [16 US gal/min]	210 bar [3000 psi]	07.9

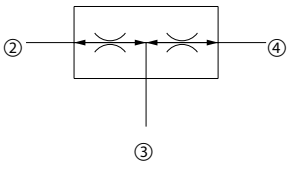
Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP308-2	SDC08-2	Flow control (restrictive, pressure compensated, ltd. adj.)	15 l/min [4 US gal/min]	210 bar [3000 psi]	07.10
	CP300-2	SDC10-2		23 l/min [6 US gal/min]	210 bar [3000 psi]	07.11
	VR 06	NCS06/2		30 l/min [8 US gal/min]	315 bar [4500 psi]	07.12
	VR 12	NCS12/2		60 l/min [16 US gal/min]	315 bar [4500 psi]	07.13

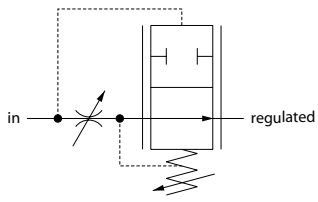
Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP310-1	SDC10-3	Flow control (priority, pressure compensated, fixed)	23 l/min [6 US gal/min]	210 bar [3000 psi]	07.14
	VRF 06	NCS06/3		30 l/min [8 US gal/min]	315 bar [4500 psi]	07.15
	CP311-1	CP12-3		45 l/min [12 US gal/min]	210 bar [3000 psi]	07.16
	CP312-1	SDC16-3		65 l/min [17 US gal/min]	210 bar [3000 psi]	07.17

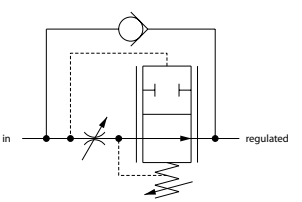
Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP310-2	SDC10-3	Flow control (priority, pressure compensated, ltd. adj.)	23 l/min [6 US gal/min]	210 bar [3000 psi]	07.18
	VRC 06	NCS06/3		50 l/min [13 US gal/min]	315 bar [4500 psi]	07.19
	VRC 12	NCS12/3		100 l/min [26 US gal/min]	315 bar [4500 psi]	07.20

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP300-6	SDC10-3	Flow control (bi-directional, pressure compensated)	23 l/min [6 US gal/min]	210 bar [3000 psi]	07.21

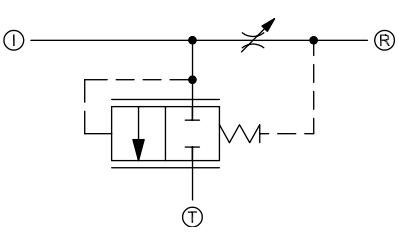
\* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

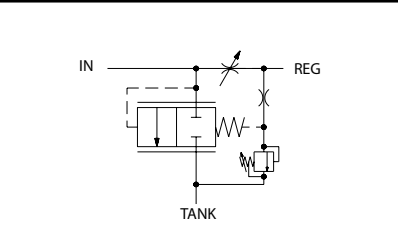
Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	VDF 06	NCS06/4	Flow divider/combiner	45 l/min [12 US gal/min]	210 bar [3000 psi]	07.22
	CP340-1	SDC10-4		45 l/min [12 US gal/min]	210 bar [3000 psi]	07.23
	CP341-1	CP12-4		75 l/min [20 US gal/min]	210 bar [3000 psi]	07.24
	CP342-1	CP16-4		150 l/min [40 US gal/min]	210 bar [3000 psi]	07.25
	CP342-3	CP16-4		150 l/min [40 US gal/min]	450 bar [6500 psi]	07.26
	CP343-1	SDC20-4		340 l/min [90 US gal/min]	210 bar [3000 psi]	07.27

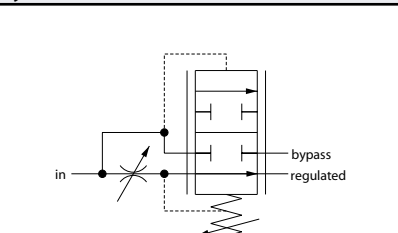
Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	2F74	none	Flow control (restrictive, pressure compensated, fully adjustable)	30 l/min [8 US gal/min]	210 bar [3000 psi]	07.28
	2F75	none		60 l/min [16 US gal/min]	210 bar [3000 psi]	07.29
	2F76	none		95 l/min [25 US gal/min]	210 bar [3000 psi]	07.30
	2F77	none		190 l/min [50 US gal/min]	210 bar [3000 psi]	07.31

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	2FC74	none	Flow control (restrictive, pressure compensated, fully adjustable, with free reverse flow)	30 l/min [8 US gal/min]	210 bar [3000 psi]	07.32
	2FC75	none		60 l/min [16 US gal/min]	210 bar [3000 psi]	07.33
	2FC76	none		95 l/min [25 US gal/min]	210 bar [3000 psi]	07.34
	2FC77	none		190 l/min [50 US gal/min]	210 bar [3000 psi]	07.35

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

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	2F84	none	Flow control (bypass, pressure compensated, fully adjustable)		210 bar [3000 psi]	07.36
	2F85	none			210 bar [3000 psi]	07.37
	2F86	none			210 bar [3000 psi]	07.38
	2F87	none			210 bar [3000 psi]	07.39

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page	
	2FA84	none	Flow control (bypass, pressure compensated, fully adjustable, with integral relief valve)	30 l/min [8 US gal/min]	210 bar [3000 psi]	07.40	
	2FA85	none			60 l/min [16 US gal/min]	210 bar [3000 psi]	07.41
	2FA86	none			95 l/min [25 US gal/min]	210 bar [3000 psi]	07.42
	2FA87	none			190 l/min [50 US gal/min]	210 bar [3000 psi]	07.43

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page	
	2F94	none	Flow control (priority, pressure compensated, fully adjustable)	30 l/min [8 US gal/min]	210 bar [3000 psi]	07.44	
	2F95	none			60 l/min [16 US gal/min]	210 bar [3000 psi]	07.45
	2F96	none			95 l/min [25 US gal/min]	210 bar [3000 psi]	07.46
	2F97	none			190 l/min [50 US gal/min]	210 bar [3000 psi]	07.47

\* 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



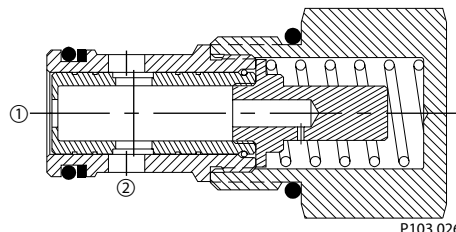
F102 003

#### 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 +/- 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.

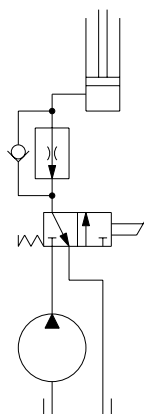
Restrictive-type flow control valves can be used in meter-in or meter-out applications to control actuator speeds.

#### Restricted-type pressure compensated flow control valve



P103 026

#### Actuator speed control circuit



P103 051

## Cartridge Valves Technical Information

### Flow control valves

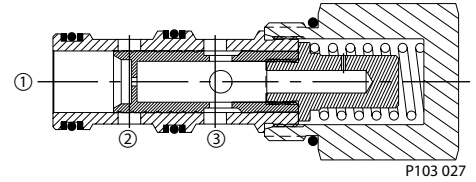
### Application notes

#### 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.

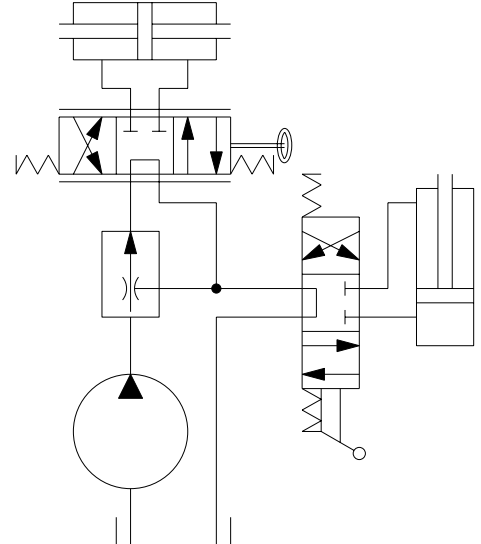
Priority-type flow control valves are used in meter-in applications. A common application is to direct a fixed flow rate to a priority function, such as steering, while secondary flow is available to other intermittent functions.

#### Priority-type pressure compensated flow control valve



P103 027

#### Steering priority circuit



P103 053

## Cartridge Valves Technical Information

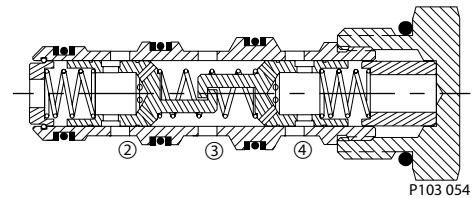
## Flow control valves

## Application notes

**FLOW DIVIDER /  
COMBINER**

Flow divider/combiners are pressure 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  $\pm 10\%$  ( $\pm 2.2$  l/min [ $\pm 0.58$  US gal/min]) per leg. With an input flow of 8.0 l/min [2.1 US gal/min], the flow division will be  $4.0 \pm 2.2$  l/min [ $1.1 \pm 0.58$  US gal/min] per leg.

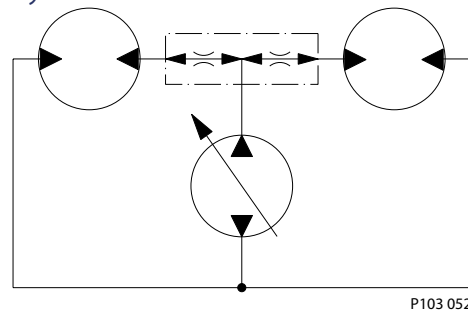
Flow divider / combiner



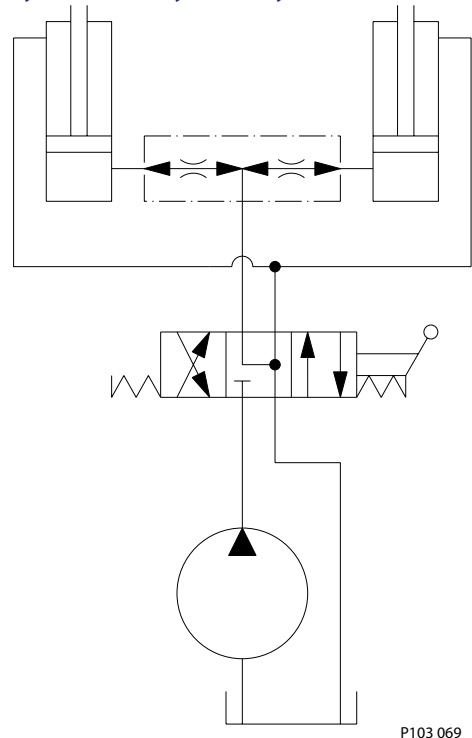
Common applications for flow divider/combiners include:

- 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

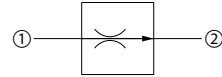
## Flow control valves

### CP308-1

#### OPERATION

This valve is a fixed pressure compensated flow control valve.

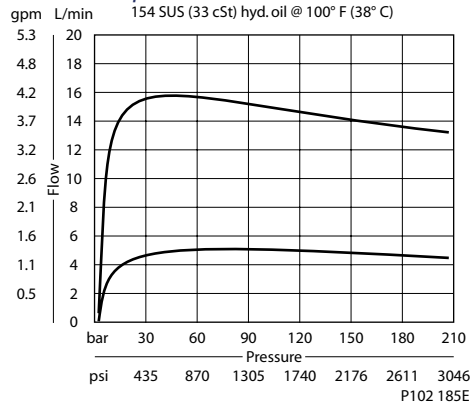
Schematic



P102 183E

#### SPECIFICATIONS

##### Theoretical performance



##### Specifications

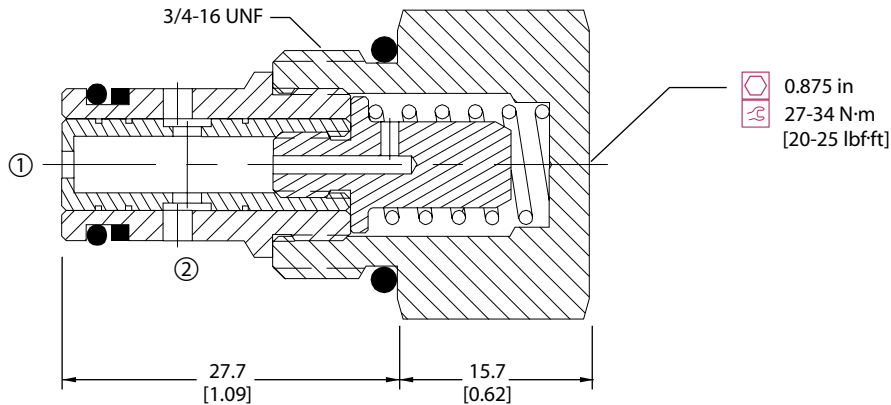
Rated pressure	210 bar [3000 psi]
Max regulated flow	15 l/min [4 US gal/min]
Weight	0.08 kg [0.17 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.3-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-15.1 l/min [1.8-4 US gal/min]
Cavity	SDC08-2

Flow control valves  
CP308-1

#### DIMENSIONS

mm [in]

##### Cross-sectional view



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#### ORDERING INFORMATION

**CP308 - 1 - B - 6S - 1.0**

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

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# Cartridge Valves Technical Information

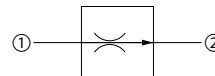
## Flow control valves

### CP300-1

### OPERATION

This valve is a fixed pressure compensated flow control valve.

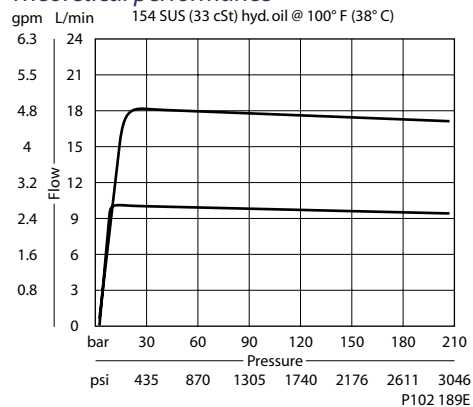
Schematic



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### SPECIFICATIONS

#### Theoretical performance



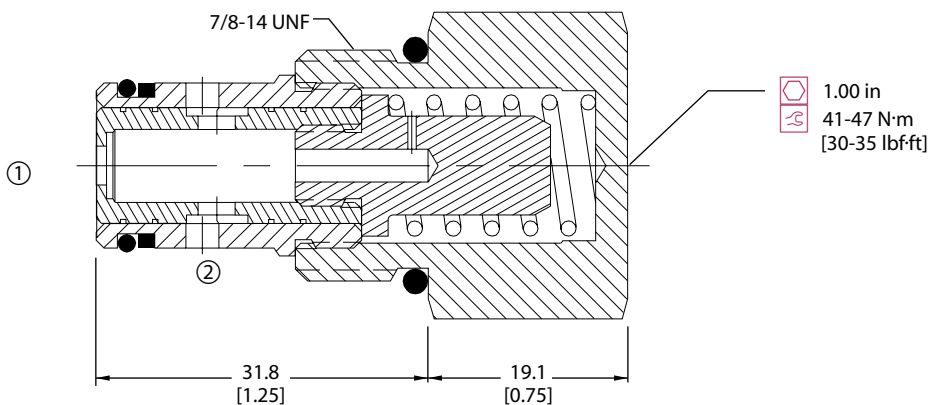
#### Specifications

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

### DIMENSIONS

mm [in]

#### Cross-sectional view



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### ORDERING INFORMATION

**CP300 - 1 - B - 8S - 2.5**

<b>Seals</b>	<b>Seal kit</b>	<b>Regulated Flow</b>	L/min [US gal/min]
B = Buna-N V = Viton	120015 120016		
<b>Housing and ports</b>	<b>Housing P/N</b>		
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		

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# Cartridge Valves Technical Information

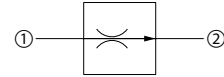
## Flow control valves

### CP301-1

#### OPERATION

This valve is a fixed pressure compensated flow control valve.

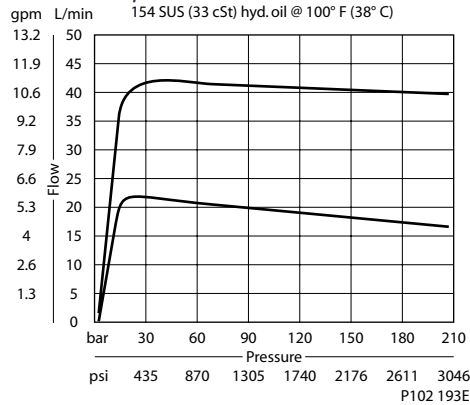
Schematic



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#### SPECIFICATIONS

##### Theoretical performance



##### Specifications

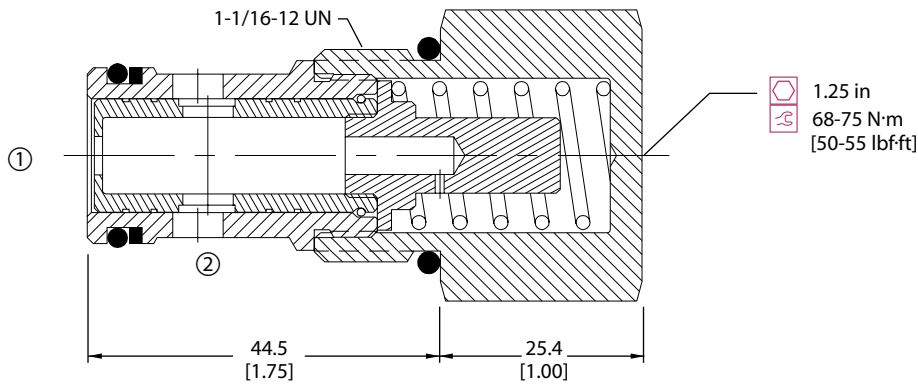
Rated pressure	210 bar [3000 psi]
Max regulated flow	57 l/min [15 US gal/min]
Weight	0.24 kg [0.52 lb]
Accuracy ± 15%	1.9-7.5 l/min [0.5-2 US gal/min]
± 10%	7.6-56.8 l/min [2-15 US gal/min]
Cavity	CP12-2

Flow control valves  
CP301-1

#### DIMENSIONS

mm [in]

##### Cross-sectional view



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#### ORDERING INFORMATION

**CP301 - 1 - B - 12S - 10.0**

<b>Seals</b>	<b>Seal kit</b>		
B = Buna-N	120017		
V = Viton	120018		
<b>Housing and ports</b>	<b>Housing P/N</b>	<b>Regulated Flow</b>	
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

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# Cartridge Valves Technical Information

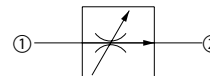
## Flow control valves

### CP308-2

### OPERATION

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

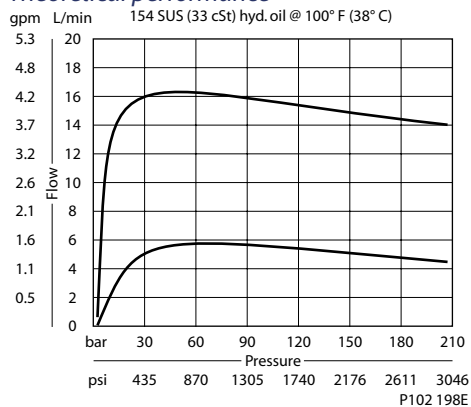
Schematic



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### SPECIFICATIONS

#### Theoretical performance



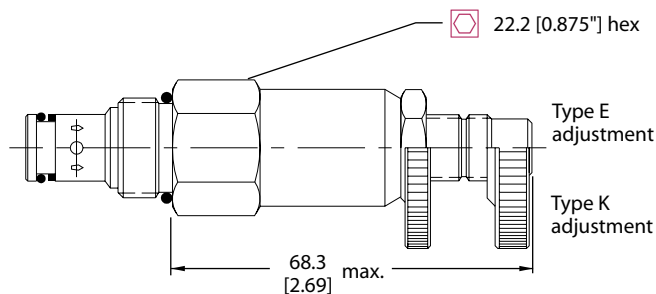
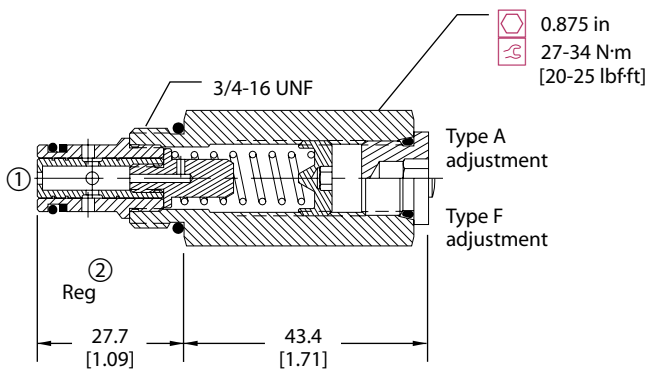
#### Specifications

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

### DIMENSIONS

mm [in]

#### Cross-sectional view



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### ORDERING INFORMATION

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

<p><b>Seals</b></p> <p>B = Buna-N</p> <p>V = Viton</p>	<p><b>Seal kit</b></p> <p>120221</p> <p>120222</p>	<p><b>Regulated Flow</b></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><b>Housing and ports</b></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><b>Housing P/N</b></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><b>Adjustment option</b></p> <p>A = Internal</p> <p>E = External</p> <p>F = Tamper resistant</p> <p>K = Knob</p>

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# Cartridge Valves Technical Information

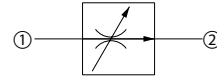
## Flow control valves

### CP300-2

#### OPERATION

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

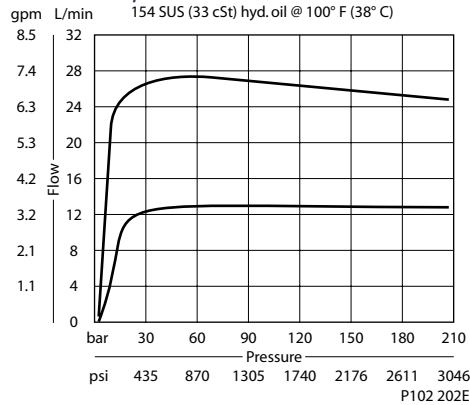
Schematic



P102 196E

#### SPECIFICATIONS

#### Theoretical performance



#### Specifications

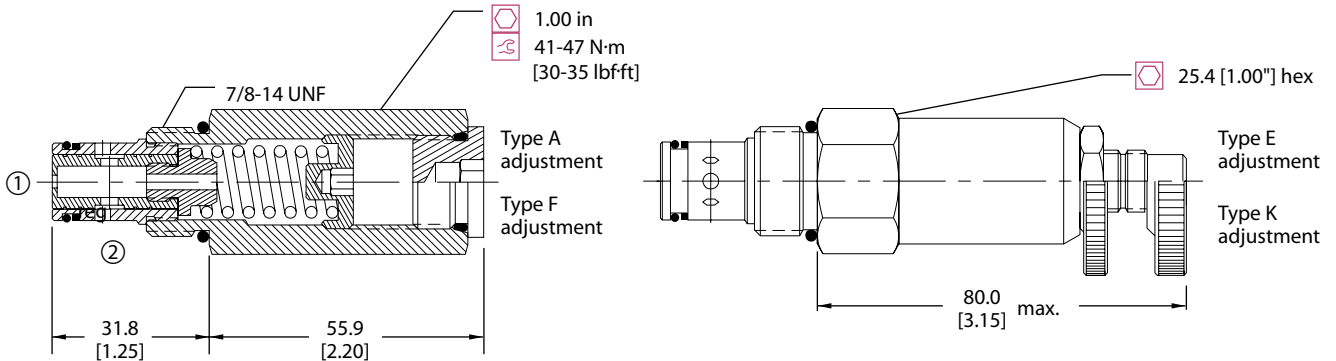
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.24 kg [0.52 lb]
Accuracy ± 20%	0.5-2.2 l/min [0.1-0.5 US gal/min]
± 15%	2.3-6.8 l/min [0.5-1.5 US gal/min]
± 10%	6.8-27.3 l/min [1.5-6 US gal/min]
Cavity	SDC10-2

Flow control valves  
CP300-2

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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#### ORDERING INFORMATION

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

**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



# Cartridge Valves Technical Information

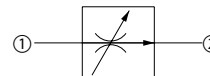
## Flow control valves

### VR 06

#### OPERATION

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

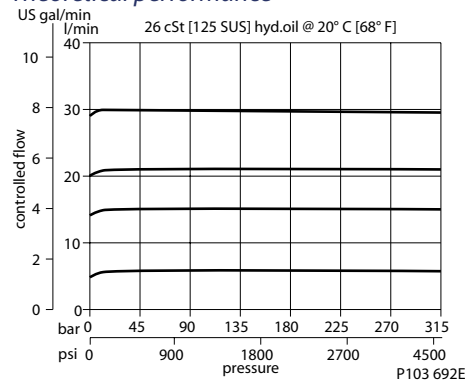
#### Schematic



P102 196E

#### SPECIFICATIONS

#### Theoretical performance



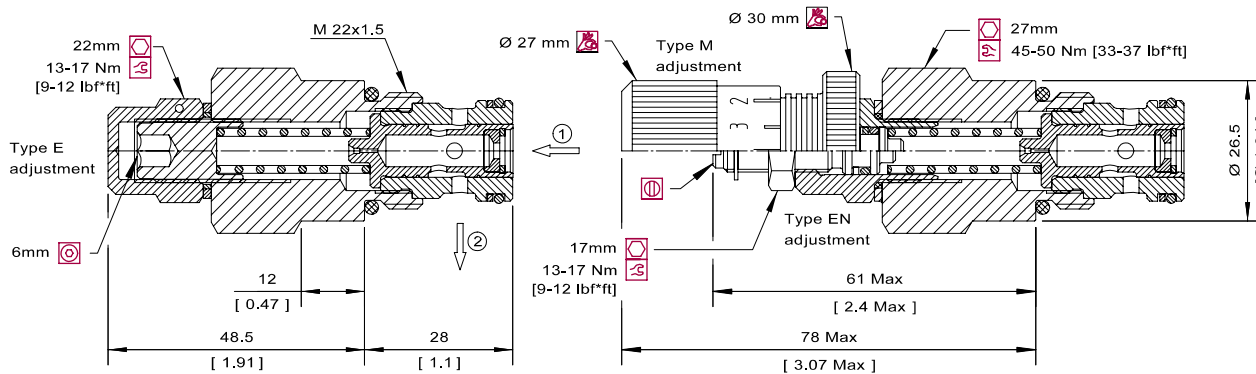
#### Specifications

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

#### 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

**Seals**  
 V = Viton  
 Omit = Buna-N

**Seal kit**  
 230000380  
 230000060

**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

**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

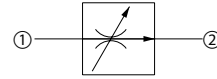
## Flow control valves

### VR 12

#### OPERATION

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

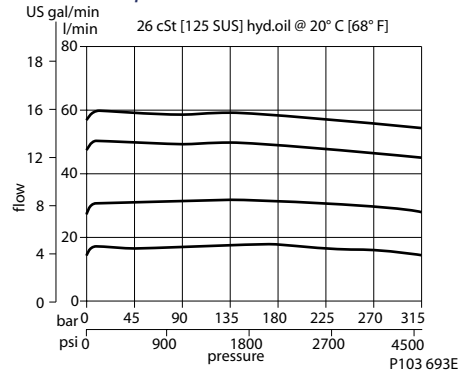
#### Schematic



P102 196E

#### SPECIFICATIONS

#### Theoretical performance



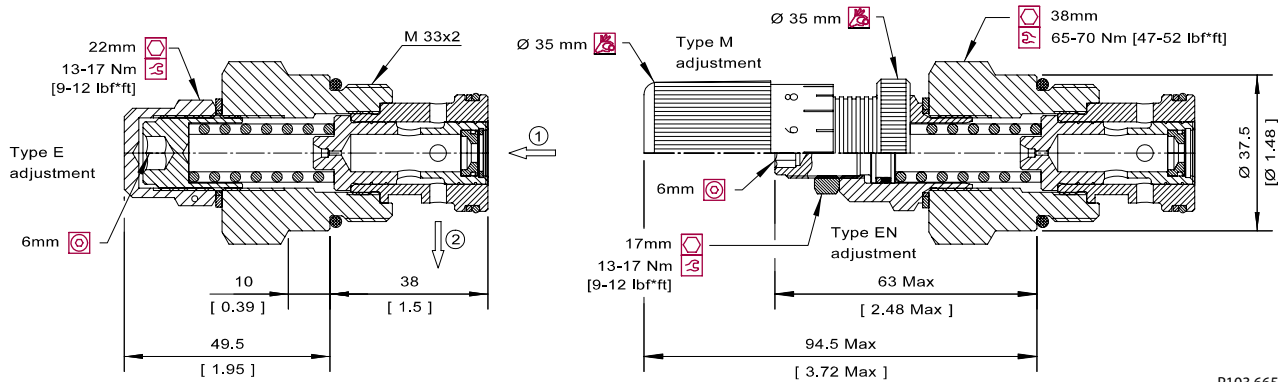
#### Specifications

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



#### 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

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# Cartridge Valves Technical Information

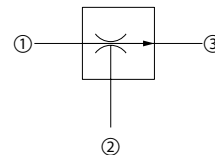
## Flow control valves

### CP310-1

#### OPERATION

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

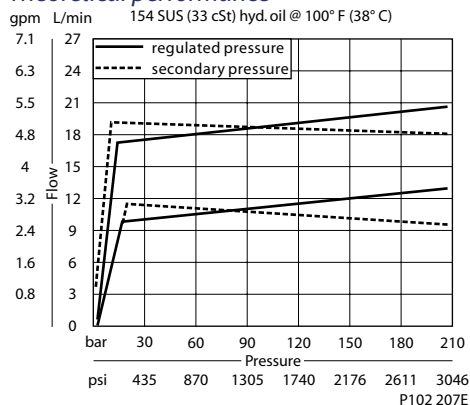
#### Schematic



P102 205E

#### SPECIFICATIONS

#### Theoretical performance



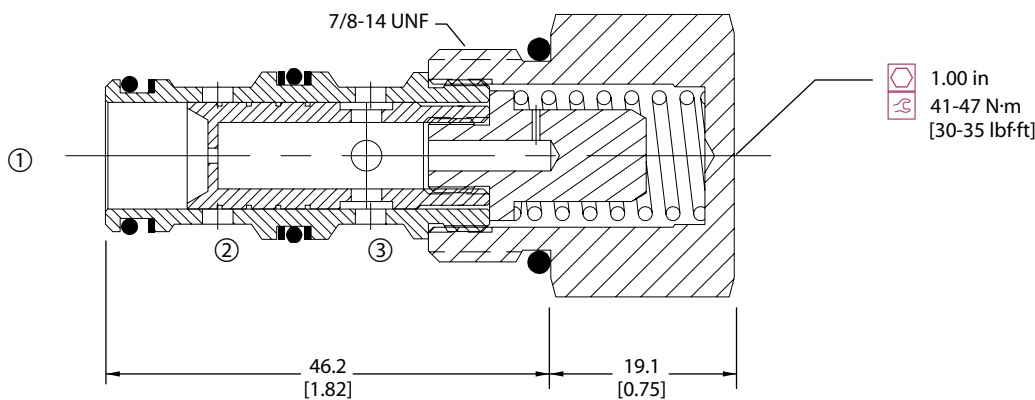
#### Specifications

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

#### DIMENSIONS

mm [in]

#### Cross-sectional view



P102 206E

#### ORDERING INFORMATION

**CP310 - 1 - B - 8S - 2.5**

<b>Seals</b>	<b>Seal kit</b>	<b>Regulated Flow</b>	L/min [US gal/m]
B = Buna-N V = Viton	120240 120241		
<b>Housing and ports</b>	<b>Housing P/N</b>		
00 = 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		

P102 209E



# Cartridge Valves Technical Information

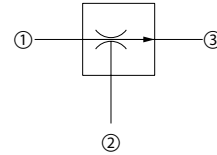
## Flow control valves

### VRF 06

#### OPERATION

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

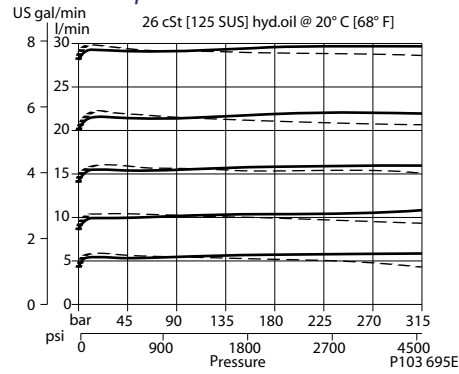
Schematic



P102 205E

#### SPECIFICATIONS

Theoretical performance



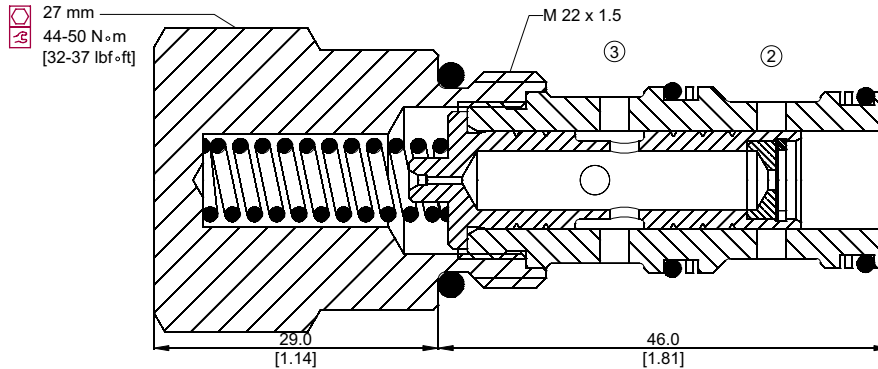
Specifications

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



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#### ORDERING INFORMATION

VRF 06 - 1.5 - SE3/8 - V

Orifice size	Orifice	flow
	L/min	[US gal/min]
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
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 722E



# Cartridge Valves Technical Information

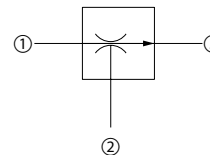
## Flow control valves

### CP311-1

#### OPERATION

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

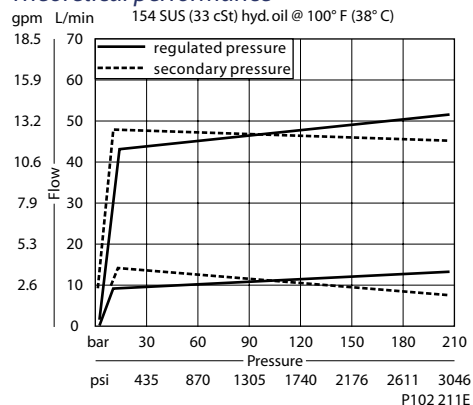
Schematic



P102 205E

#### SPECIFICATIONS

#### Theoretical performance



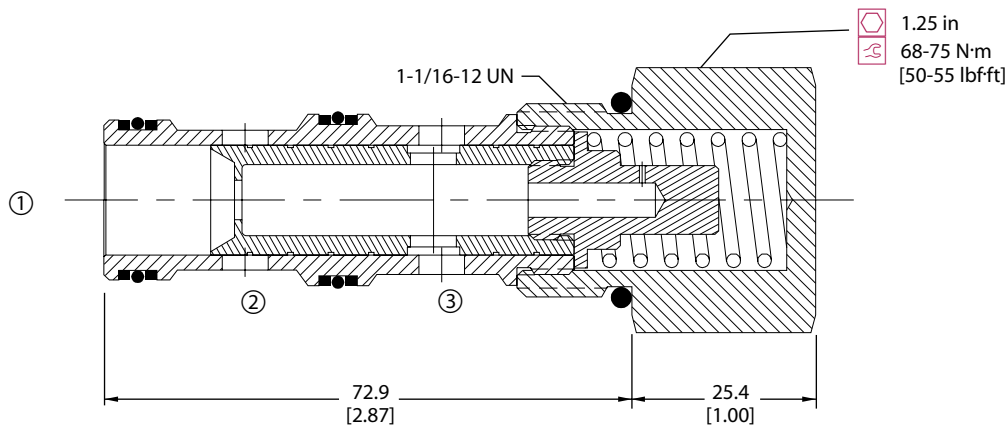
#### Specifications

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

#### DIMENSIONS

mm [in]

#### Cross-sectional view



P102 210E

#### ORDERING INFORMATION

**CP311 - 1 - B - 12S - 10.0**

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

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Flow control valves CP311-1





# Cartridge Valves Technical Information

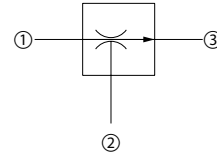
## Flow control valves

### CP312-1

#### OPERATION

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

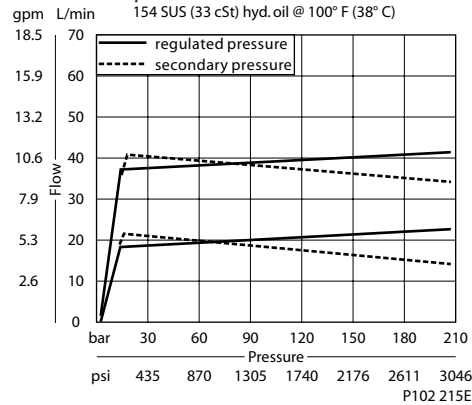
#### Schematic



P102 205E

#### SPECIFICATIONS

#### Theoretical performance



#### Specifications

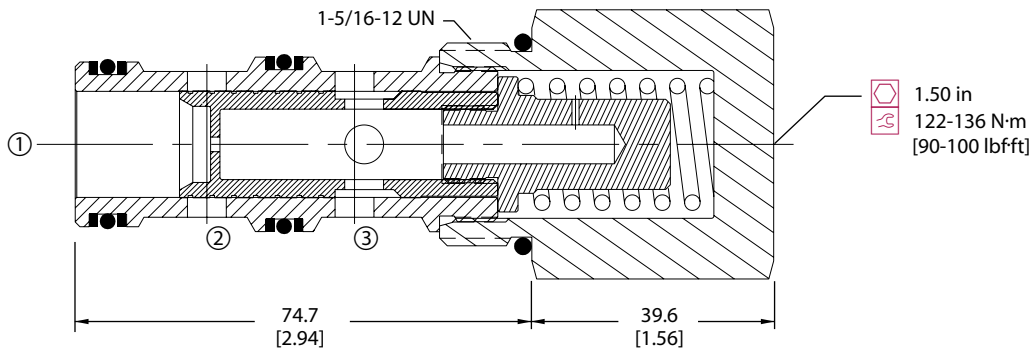
Rated pressure	210 bar [3000 psi]
Max regulated flow	64 l/min [17 US gal/min]
Max inlet flow	130 l/min [34 US gal/min]
Weight	0.53 kg [1.17 lb]
Accuracy ± 15%	1.9-7.5 l/min [0.5-2 US gal/min]
± 10%	7.6-64.3 l/min [2-17 US gal/min]
Cavity	SDC16-3

Flow control valves  
CP312-1

#### DIMENSIONS

mm [in]

#### Cross-sectional view



P102 214E

#### ORDERING INFORMATION

**CP312 - 1 - B - 16S - 10.0**

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

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# Cartridge Valves Technical Information

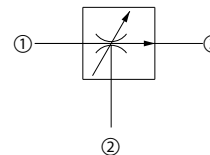
## Flow control valves

### CP310-2

#### OPERATION

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

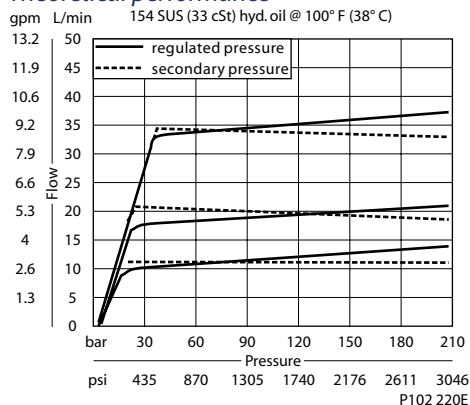
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



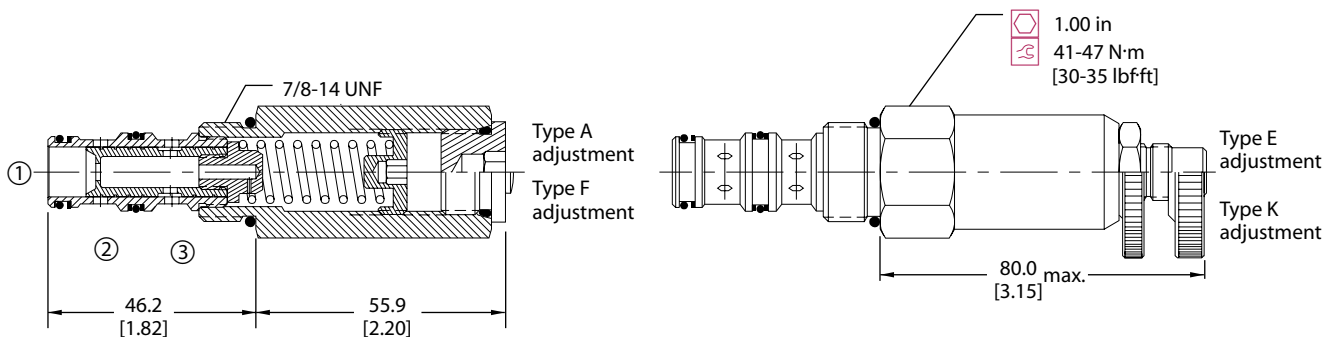
#### Specifications

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

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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#### ORDERING INFORMATION

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

<p><b>Seals</b> B = Buna-N V = Viton</p> <p><b>Seal kit</b> 120240 120241</p> <p><b>Housing and ports</b> 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><b>Housing P/N</b> No Housing SDC10-3-SE-3B SDC10-3-SE-4B CP10-3-6S CP10-3-8S</p>	<p><b>Regulated Flow</b></p> <table border="0"> <tr> <td>L/min</td> <td>[US gal/min]</td> </tr> <tr> <td>0.1 = .4</td> <td>[0.1]</td> </tr> <tr> <td>To</td> <td></td> </tr> <tr> <td>6.0 = 22.7</td> <td>[6.0]</td> </tr> </table> <p><b>Adjustment option</b> A = Internal E = External F = Tamper resistant K = Knob</p>	L/min	[US gal/min]	0.1 = .4	[0.1]	To		6.0 = 22.7	[6.0]
L/min	[US gal/min]									
0.1 = .4	[0.1]									
To										
6.0 = 22.7	[6.0]									

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# Cartridge Valves Technical Information

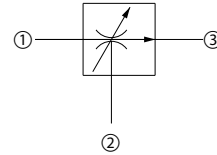
## Flow control valves

### VRC 06

#### OPERATION

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

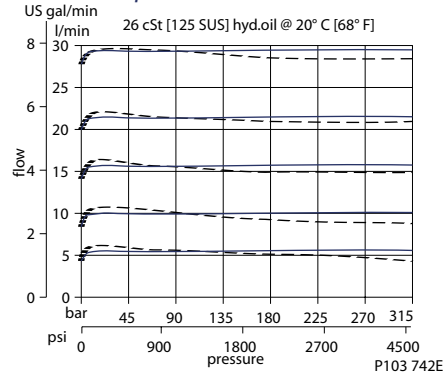
Schematic



P102 218E

#### SPECIFICATIONS

#### Theoretical performance



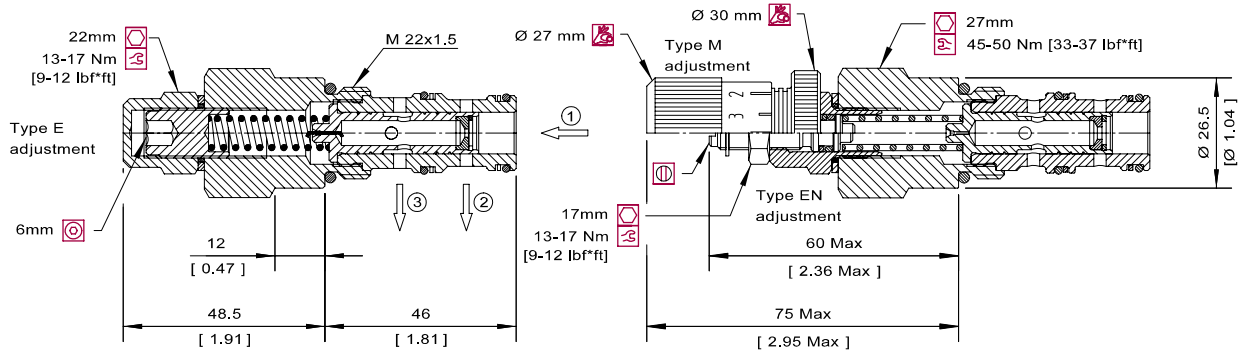
#### Specifications

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

#### 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  
 SE65 = AL, #6 SAE  
 SE85 = AL, #8 SAE  
 Other housings available

**Housing P/N**  
 No Housing  
 NCS06/3-SE-3/8  
 NCS06/3-SE-1/2  
 NCS06/3-SE-65  
 NCS06/3-SE-85

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# Cartridge Valves Technical Information

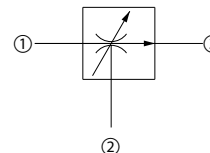
## Flow control valves

### VRC 12

#### OPERATION

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

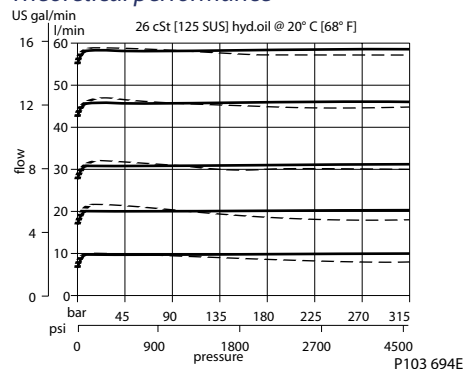
#### Schematic



P102 218E

#### SPECIFICATIONS

#### Theoretical performance



#### Specifications

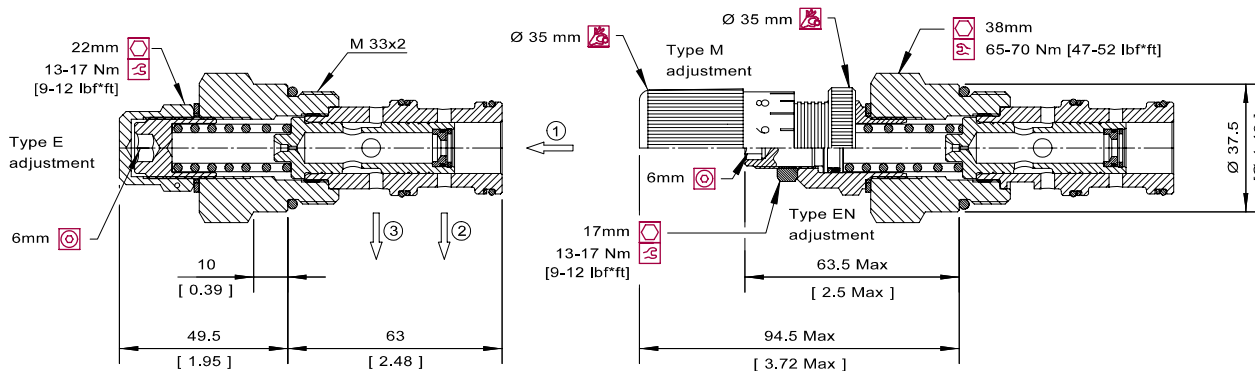
Rated pressure	315 bar [4500 psi]
Max regulated flow	73 l/min [19 US gal/min]
Max inlet flow	100 l/min [26 US gal/min]
Weight	0.50 kg [1.10 lb]
Cavity	NCS12/3

Flow control valves  
VRC 12

#### DIMENSIONS

#### Cross-sectional view

mm [in]



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

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# Cartridge Valves Technical Information

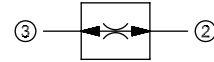
## Flow control valves

### 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.

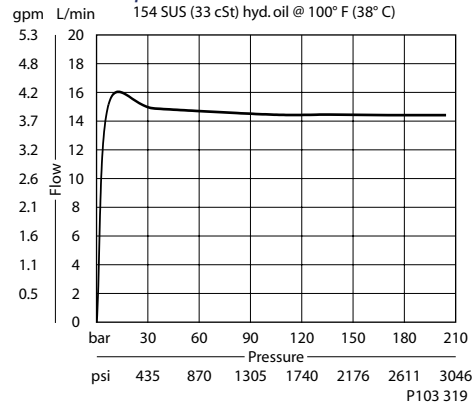
Schematic



P103 508

#### SPECIFICATIONS

##### Theoretical performance



##### Specifications

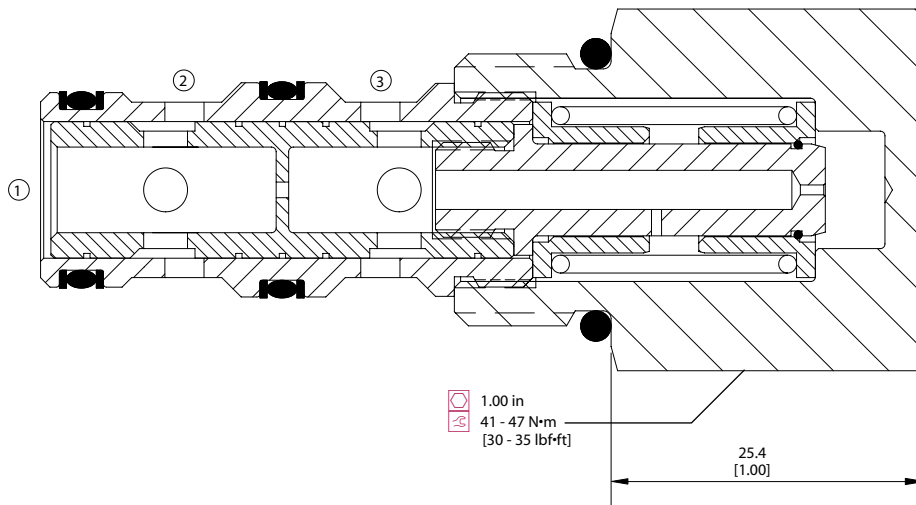
Rated pressure	210 bar [3000 psi]
Max regulated flow	23 l/min [6 US gal/min]
Weight	0.13 kg [0.29 lb]
Accuracy ± 20%	0.4-2.2 l/min [0.1-0.6 US gal/min]
± 15%	2.4-6.8 l/min [0.6-1.8 US gal/min]
± 10%	6.9-23 l/min [1.8-6 US gal/min]
Cavity	SDC10-3

Flow control valves  
CP300-6

#### DIMENSIONS

mm [in]

##### Cross-sectional view



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#### ORDERING INFORMATION

CP300 - 6 - B - 8S - 2.5

<b>Seals</b>	<b>Seal kit</b>
B = Buna-N	120009
V = Viton	120010
<b>Housing and ports</b>	<b>Housing P/N</b>
0 = No Housing	No Housing
SE3B = Al, 3/8 BSP	SDC10-3-SE-3B
SE4B = Al, 1/2 BSP	SDC10-3-SE-4B
6S = Al, #6 SAE	CP10-3-6S
8S = Al, #8 SAE	CP10-3-8S
Other housings available	

##### Regulated Flow

L/min	[US gal/min]
0.1	= 0.4 [0.1]
6.0	= 23.0 [6.0]

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# Cartridge Valves Technical Information

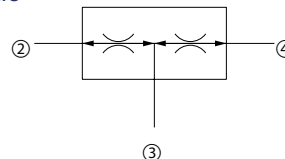
## Flow control valves

### VDF 06

#### OPERATION

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

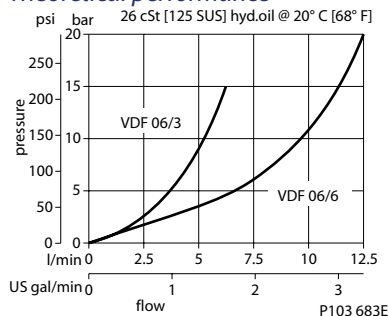
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



#### Specifications

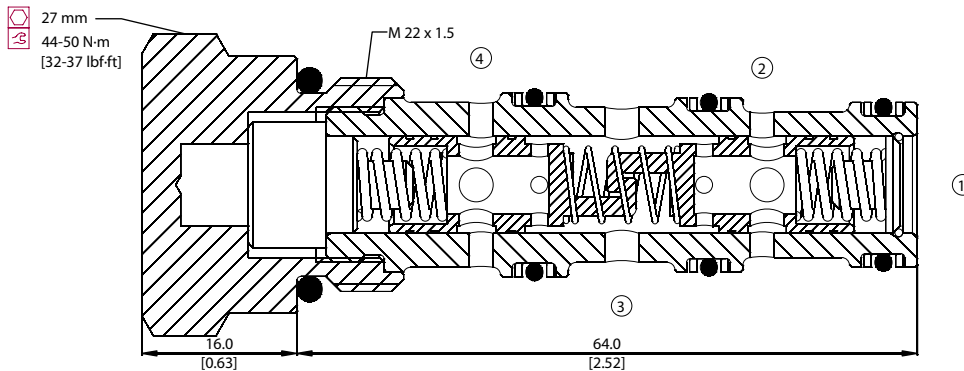
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.15 kg [0.33 lb]
Cavity	NCS06/4

Flow control valves  
VDF 06

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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#### 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

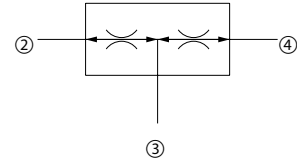
## Flow control valves

### CP340-1

### OPERATION

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

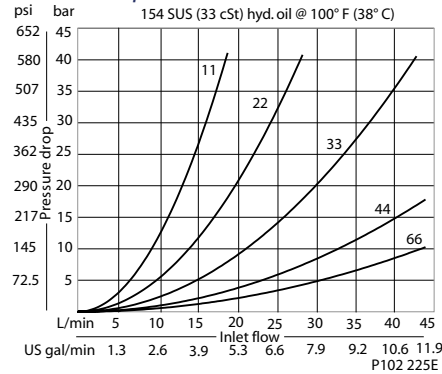
### Schematic



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### SPECIFICATIONS

#### Theoretical performance



### Specifications

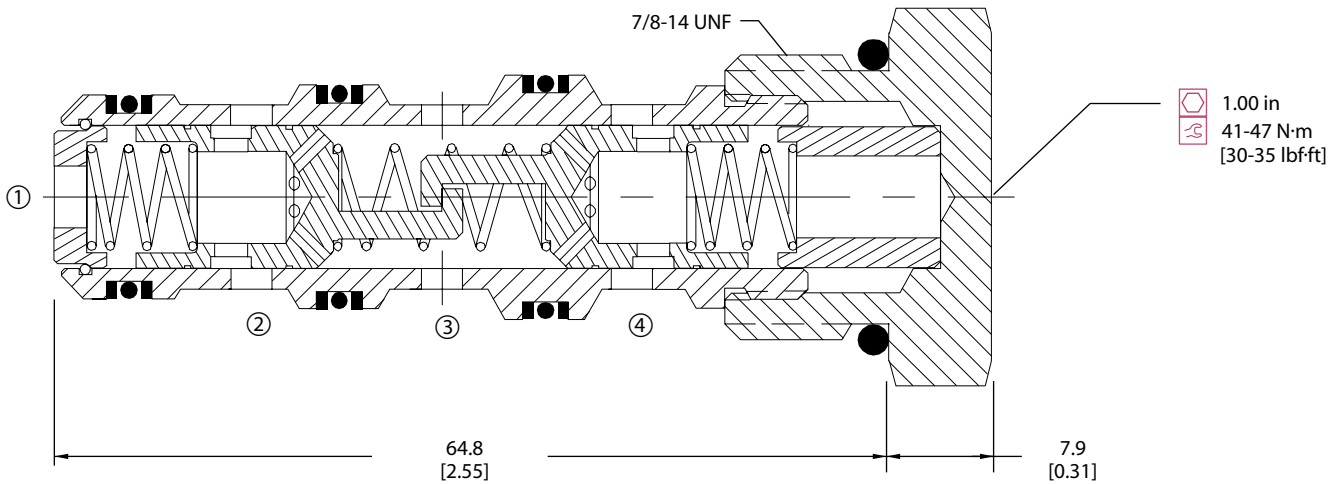
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	45 l/min [12 US gal/min]
Weight	0.11 kg [0.24 lb]
Cavity	SDC10-4

Flow control valves CP340-1

### DIMENSIONS

mm [in]

#### Cross-sectional view



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### ORDERING INFORMATION

**CP340 - 1 - B - 6S - 44**

<b>Seals</b>	<b>Seal kit</b>	<b>Flow settings</b>	
B = Buna-N	120023	Code	Flow ratio
V = Viton	120024		Port 2:Port 4
<b>Housing and ports</b>	<b>Housing P/N</b>		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]

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# Cartridge Valves Technical Information

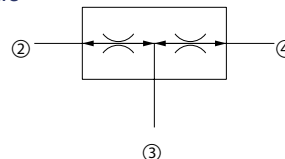
## Flow control valves

### CP341-1

#### OPERATION

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

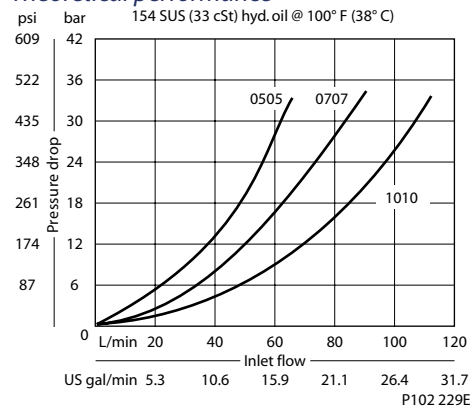
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



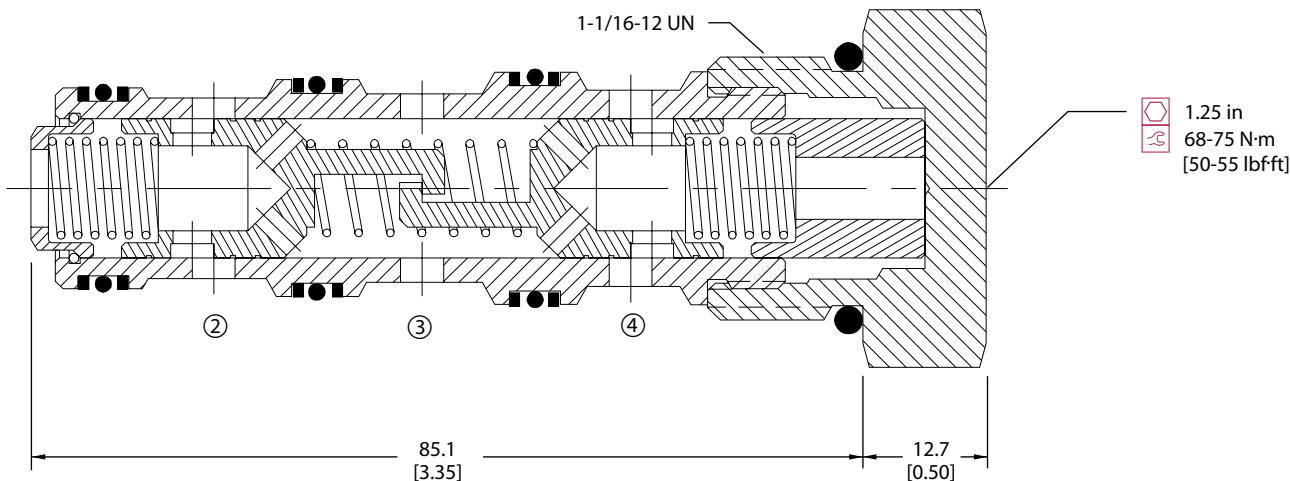
#### Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	75 l/min [20 US gal/min]
Weight	0.23 kg [0.50 lb]
Cavity	CP12-4

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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#### ORDERING INFORMATION

#### CP341 - 1 - B - 10S - 0707

#### 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

#### 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]

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# Cartridge Valves Technical Information

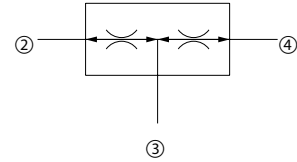
## Flow control valves

### CP342-1

#### OPERATION

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

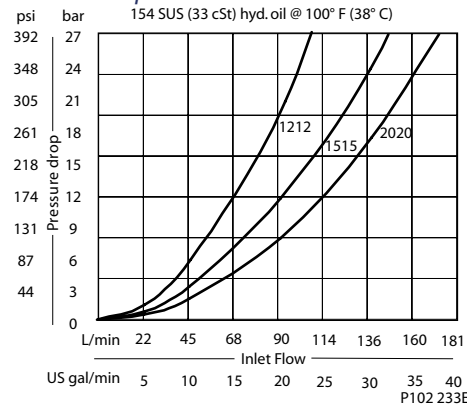
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



#### Specifications

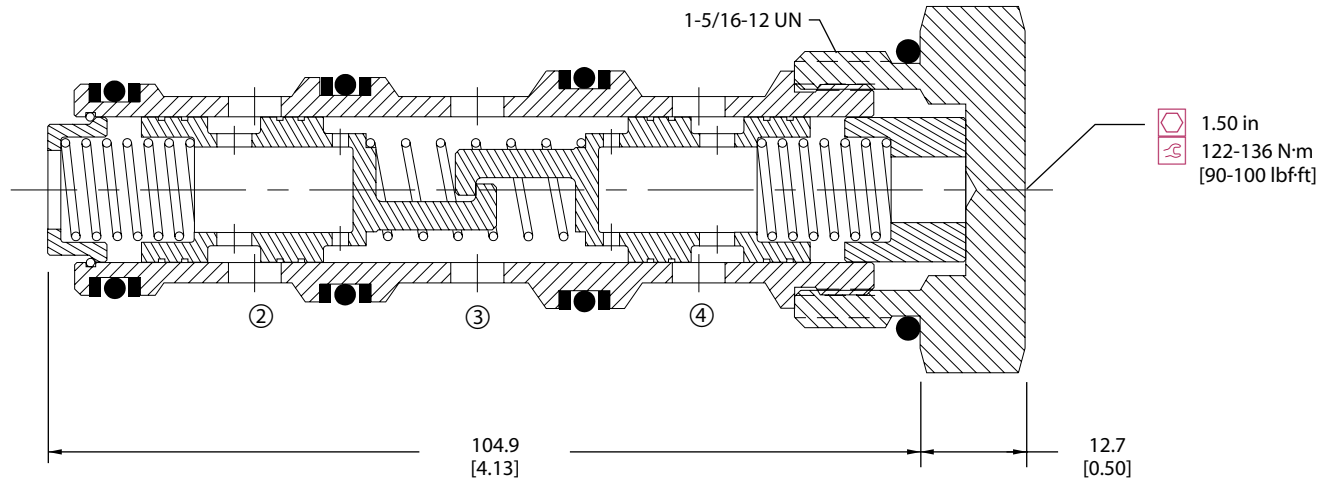
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	150 l/min [40 US gal/min]
Weight	0.37 kg [0.81 lb]
Cavity	CP16-4

Flow control valves  
CP342-1

#### DIMENSIONS

mm [in]

#### Cross-sectional view



#### ORDERING INFORMATION

**CP342 - 1 - B - 16S - 1515**

<b>Seals</b>	<b>Seal kit</b>	<b>Flow settings</b>	
B = Buna-N	120025	Code	Flow ratio
V = Viton	120026		Port 2:Port 4
<b>Housing and ports</b>	<b>Housing P/N</b>		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]

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# Cartridge Valves Technical Information

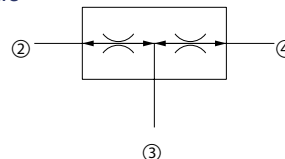
## Flow control valves

### CP342-3

#### OPERATION

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

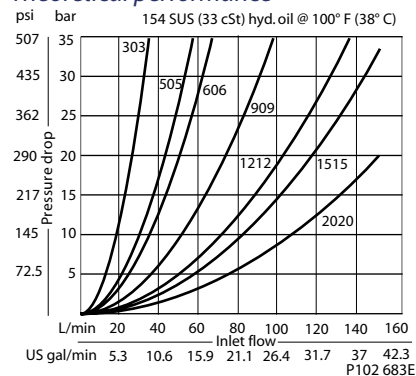
#### Schematic



P102 223

#### SPECIFICATIONS

#### Theoretical performance



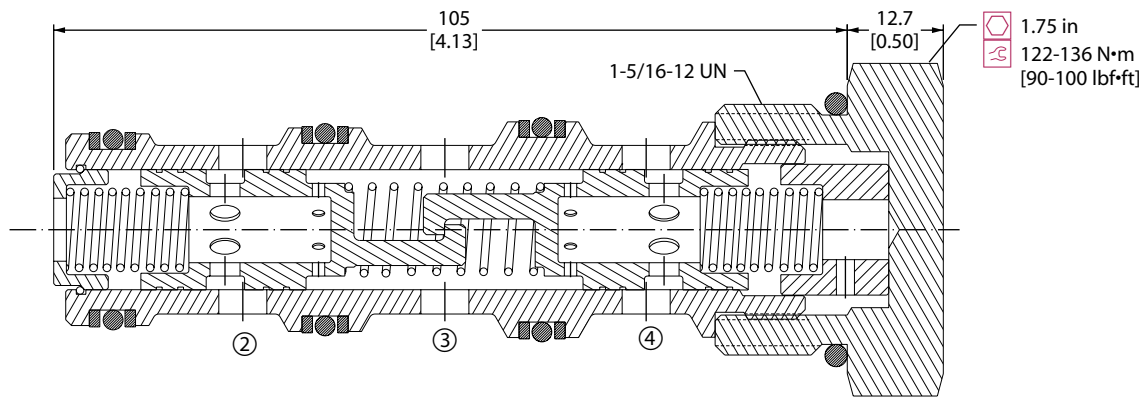
#### Specifications

Rated pressure	450 bar [6500 psi]
Rated flow at 7 bar [100 psi]	150 l/min [40 US gal/min]
Weight	0.37 kg [0.81 lb]
Cavity	CP16-4

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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#### ORDERING INFORMATION

CP342-3-U-16S-0505		Flow settings	Flow ratio	Total flow
Seals	Seal kit	Code	Port 2:Port 4	
U = Urethane	120677	0303	1:1	23 L/min [6 gpm]
		0505	1:1	38 L/min [10 gpm]
		0606	1:1	45 L/min [12 gpm]
		0909	1:1	68 L/min [18 gpm]
		1212	1:1	91 L/min [24 gpm]
		1515	1:1	114 L/min [30 gpm]
		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]

Housing and ports	Housing P/N
0 = No Housing	No Housing
S6B = Al, 3/4 BSP	CP16-4-S6B-X1
S8B = Al, 1 BSP	CP16-4-S8B-X1
S12S = Al, #12 SAE	CP16-4-S12S-X1
S16S = Al, #16 SAE	CP16-4-S16S-X1
Other housings available	

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# Cartridge Valves Technical Information

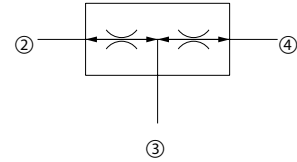
## Flow control valves

### CP343-1

#### OPERATION

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

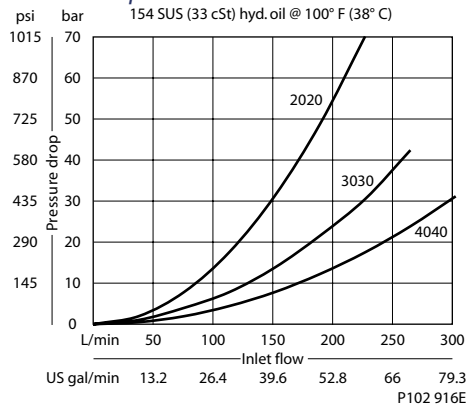
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



#### Specifications

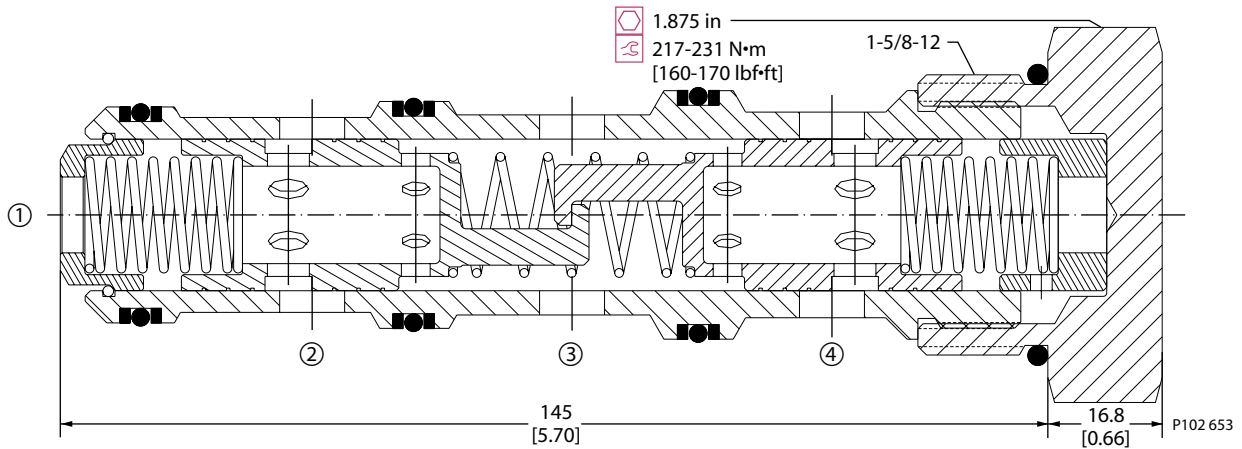
Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	340 l/min [90 US gal/min]
Weight	1.13 kg [2.50 lb]
Cavity	SDC20-4

Flow control valves  
CP343-1

#### DIMENSIONS

mm [in]

#### Cross-sectional view



#### ORDERING INFORMATION

CP343-1-B-16S-4545

#### Housing and ports

		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

	Seal kit
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]

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# Cartridge Valves Technical Information

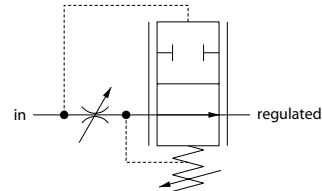
## Flow control valves

### 2F74

### OPERATION

This valve is a fully adjustable pressure compensated flow control valve.

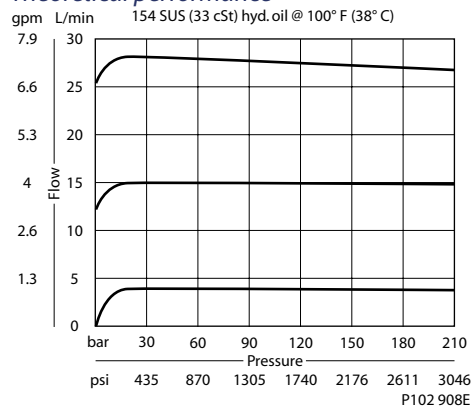
Schematic



P102 667E

### SPECIFICATIONS

Theoretical performance



Specifications

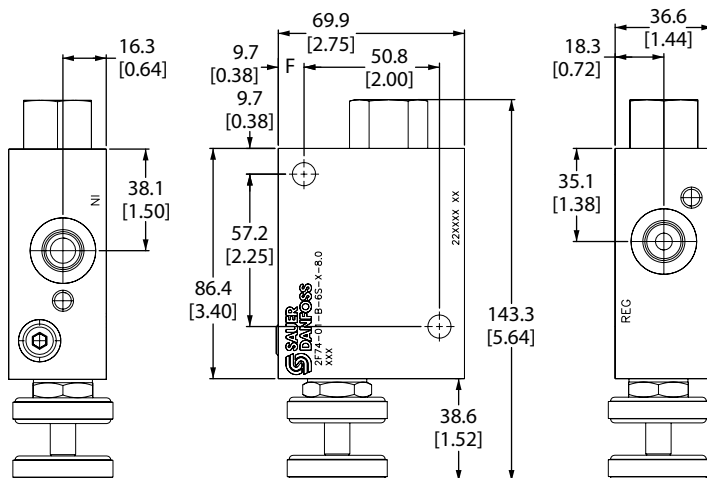
Rated pressure	210 bar [3000 psi]
Max regulated flow	30 l/min [8 US gal/min]
Weight	0.66 kg [1.46 lb]
Cavity	none

Flow control valves  
2F74

### DIMENSIONS

mm [in]

Cross-sectional view



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### ORDERING INFORMATION

2F74-01-B-6S-E-8

**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  
Consult Factory

**Adjustment range**  
Code = 0-8 gpm

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# Cartridge Valves Technical Information

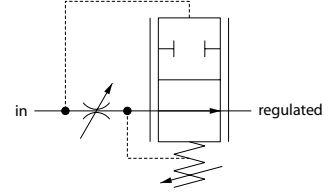
## Flow control valves

### 2F75

#### OPERATION

This valve is a fully adjustable pressure compensated flow control valve.

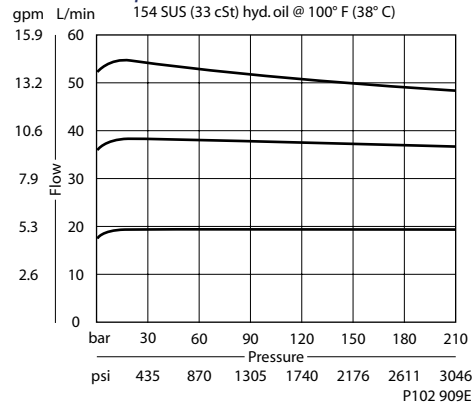
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



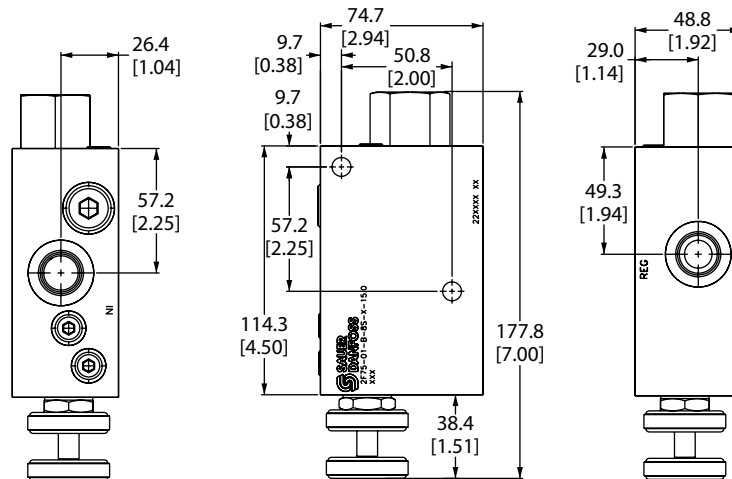
#### Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	60 l/min [16 US gal/min]
Weight	0.66 kg [1.46 lb]
Cavity	none

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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#### ORDERING INFORMATION

2F75-01-B-8S-E-15

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

P102 637E



# Cartridge Valves Technical Information

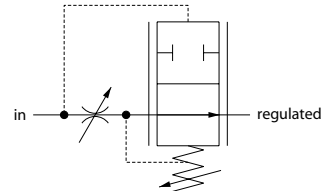
## Flow control valves

### 2F76

#### OPERATION

This valve is a fully adjustable pressure compensated flow control valve.

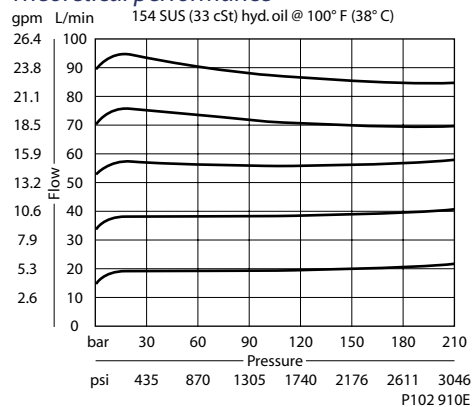
Schematic



P102 667E

#### SPECIFICATIONS

#### Theoretical performance



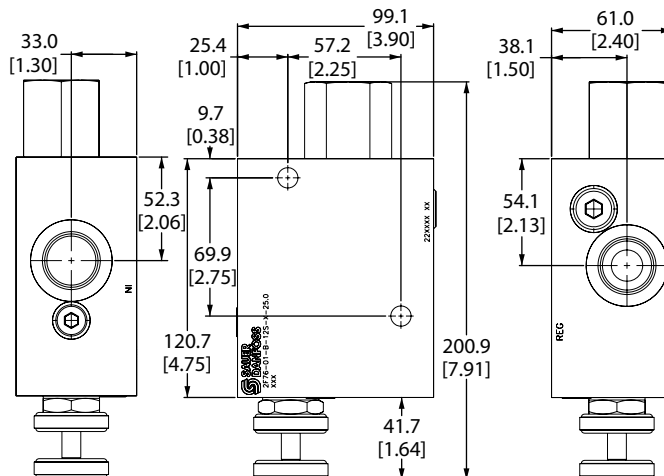
#### Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	95 l/min [25 US gal/min]
Weight	0.79 kg [1.74 lb]
Cavity	none

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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#### ORDERING INFORMATION

2F76-01-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



# Cartridge Valves Technical Information

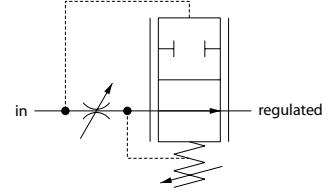
## Flow control valves

### 2F77

### OPERATION

This valve is a fully adjustable pressure compensated flow control valve.

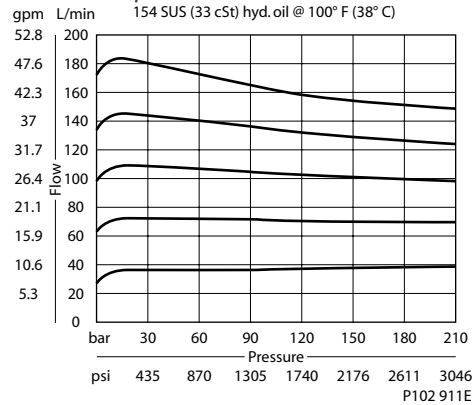
Schematic



P102 667E

### SPECIFICATIONS

#### Theoretical performance



#### Specifications

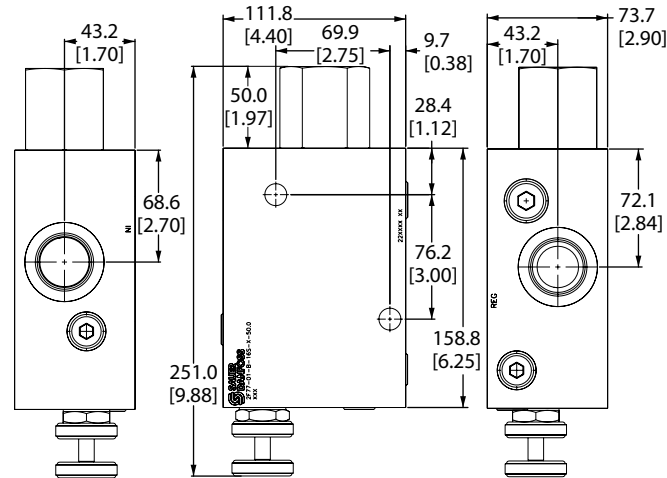
Rated pressure	210 bar [3000 psi]
Max regulated flow	190 l/min [50 US gal/min]
Weight	1.45 kg [3.20 lb]
Cavity	none

Flow control valves  
2F77

### DIMENSIONS

mm [in]

#### Cross-sectional view



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### ORDERING INFORMATION

2F77-01-B-16S-E-50

- Adjustment range**  
Code = 0-50 gpm
- 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

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# Cartridge Valves Technical Information

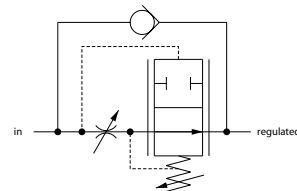
## Flow control valves

### 2FC74

#### OPERATION

This valve is a fully adjustable pressure compensated flow control with free reverse flow.

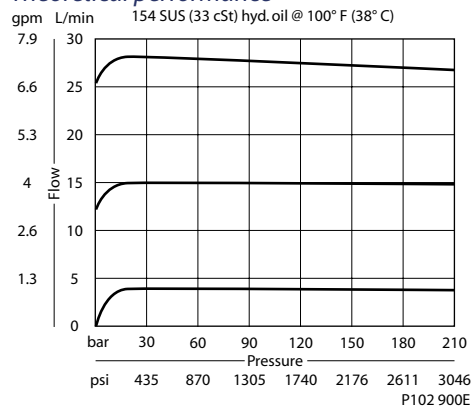
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



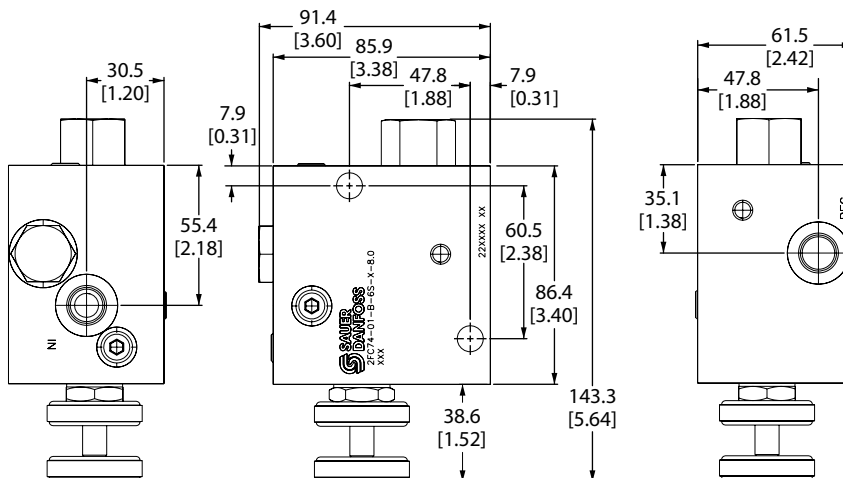
#### Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	30 l/min [8 US gal/min]
Weight	0.79 kg [1.74 lb]
Cavity	none

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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#### ORDERING INFORMATION

2FC74-01-B-6S-E-8.0

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

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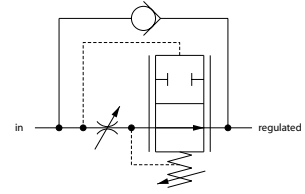
# Cartridge Valves Technical Information

## Flow control valves 2FC75

### OPERATION

This valve is a fully adjustable pressure compensated flow control with free reverse flow.

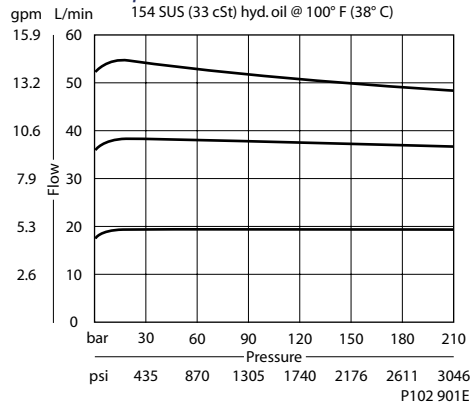
### Schematic



P102 668E

### SPECIFICATIONS

#### Theoretical performance



### Specifications

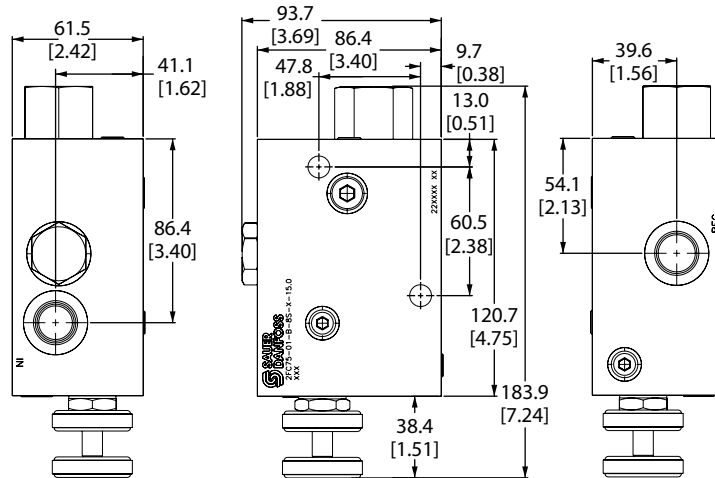
Rated pressure	210 bar [3000 psi]
Max regulated flow	60 l/min [16 US gal/min]
Weight	0.79 kg [1.74 lb]
Cavity	none

Flow control valves  
2FC75

### DIMENSIONS

mm [in]

#### Cross-sectional view



P102 670

### ORDERING INFORMATION

2FC75-01-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 641E



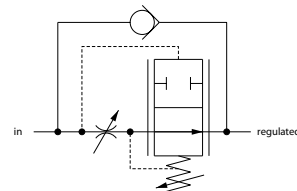
# Cartridge Valves Technical Information

## Flow control valves 2FC76

### OPERATION

This valve is a fully adjustable pressure compensated flow control with free reverse flow.

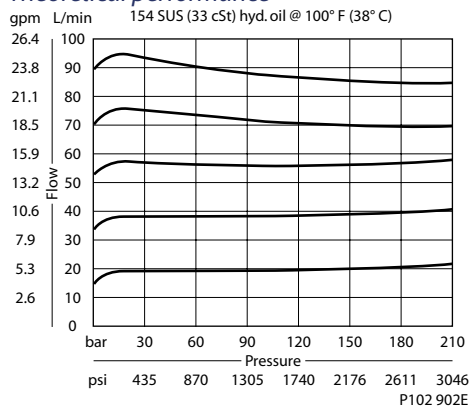
### Schematic



P102 668E

### SPECIFICATIONS

#### Theoretical performance



#### Specifications

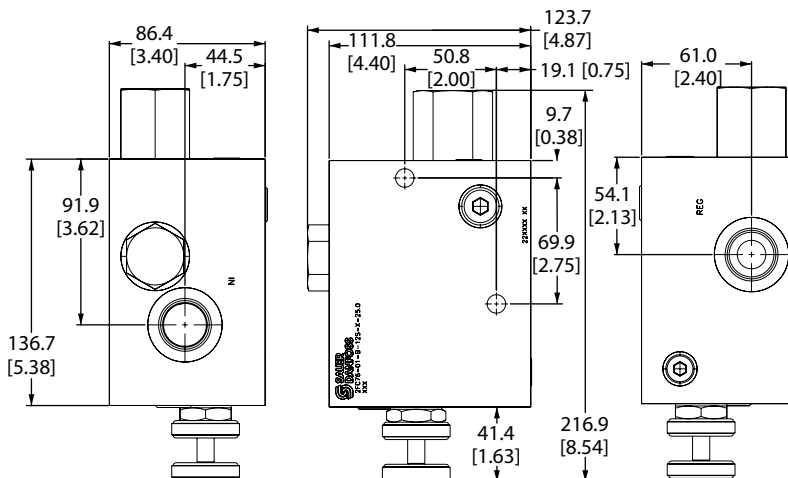
Rated pressure	210 bar [3000 psi]
Max regulated flow	95 l/min [25 US gal/min]
Weight	1.02 kg [2.25 lb]
Cavity	none

Flow control valves  
2FC76

### DIMENSIONS

mm [in]

#### Cross-sectional view



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### ORDERING INFORMATION

2FC76-01-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

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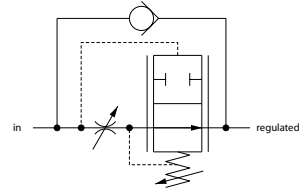
# Cartridge Valves Technical Information

## Flow control valves 2FC77

### OPERATION

This valve is a fully adjustable pressure compensated flow control with free reverse flow.

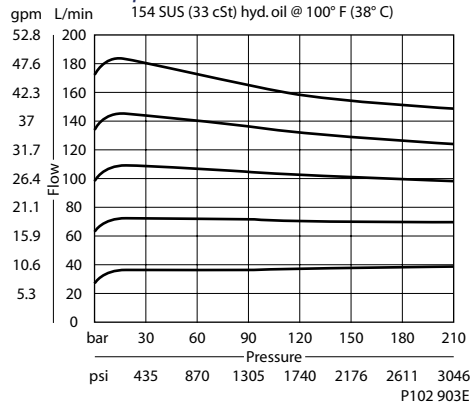
### Schematic



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### SPECIFICATIONS

#### Theoretical performance



### Specifications

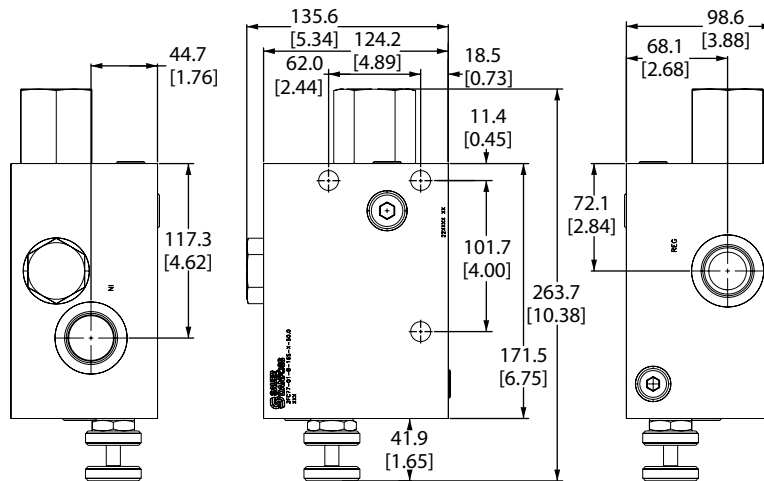
Rated pressure	210 bar [3000 psi]
Max regulated flow	190 l/min [50 US gal/min]
Weight	1.77 kg [3.90 lb]
Cavity	none

Flow control valves  
2FC77

### DIMENSIONS

mm [in]

#### Cross-sectional view



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### ORDERING INFORMATION

2FC77-01-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

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# Cartridge Valves Technical Information

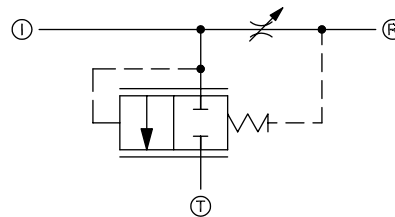
## Flow control valves

### 2F84

### OPERATION

This valve is a fully-adjustable, bypass-type, pressure compensated flow control.

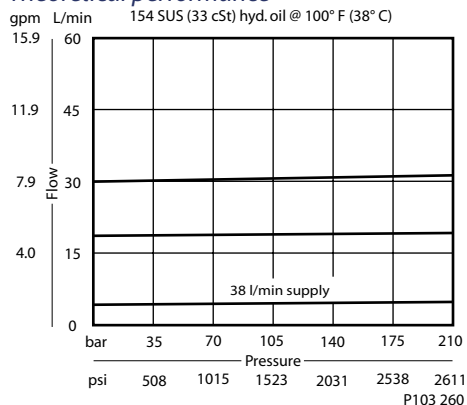
### Schematic



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### SPECIFICATIONS

#### Theoretical performance



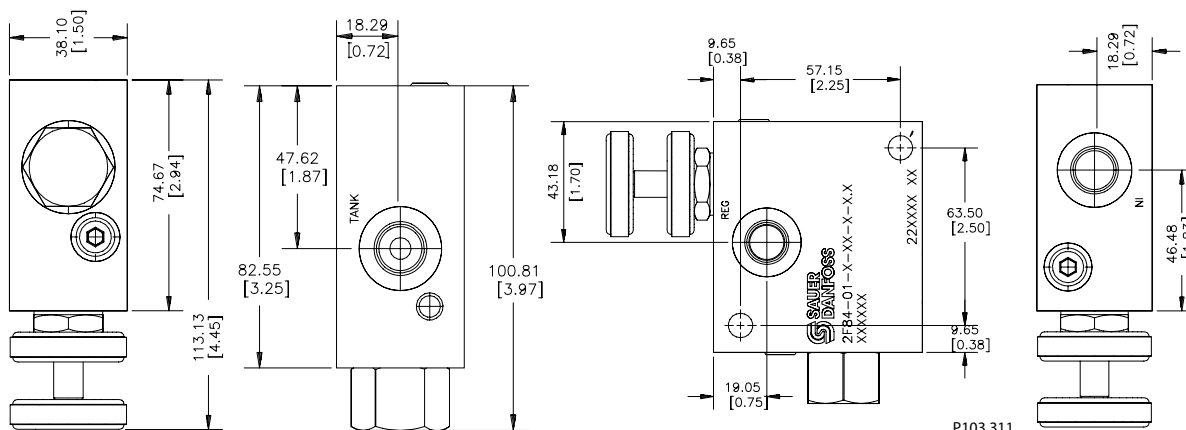
#### Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	30 l/min [8 US gal/min]
Max inlet flow	61 l/min [16 US gal/min]
Weight	0.79 kg [1.74 lb]
Cavity	none

### DIMENSIONS

mm [in]

#### Cross-sectional view



### ORDERING INFORMATION

2F84-01-B-6S-K-8.0

#### Adjustment options

E = External adjustment  
K = Knob adjustment

Replacement Nut 322417  
Replacement Jam Knob 322304,  
Adjustment Knob 322305

#### Body and Housing

6S = AL, #6 SAE  
3B = AL 3/8 BSP

#### Seals

B = Buna-N  
V = Viton

Seal kits  
Consult Factory  
Consult Factory

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# Cartridge Valves Technical Information

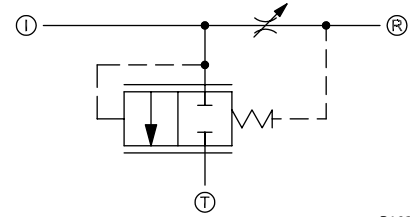
## Flow control valves

### 2F85

#### OPERATION

This valve is a fully-adjustable, bypass-type, pressure compensated flow control.

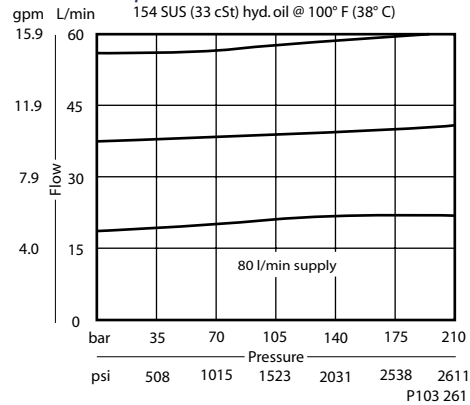
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



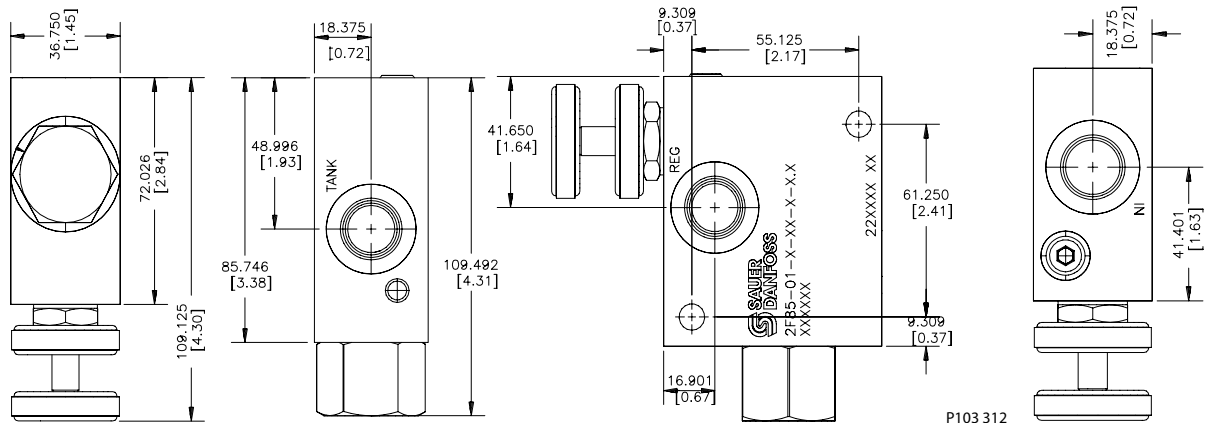
#### Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	61 l/min [16 US gal/min]
Max inlet flow	95 l/min [25 US gal/min]
Weight	0.79 kg [1.74 lb]
Cavity	none

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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#### ORDERING INFORMATION

2F85-01-B-8S-K-15.0

#### Adjustment options

- E = External Replacement Nut 322417
- K = Knob Replacement Jam Knob 322304, Adjustment Knob 322305

#### Body and Housing

- 8S = AL, #8 SAE
- 4B = AL, 1/2 BSP

#### Seals

- B = Buna-N Seal kits Consult Factory
- V = Viton Seal kits Consult Factory

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# Cartridge Valves Technical Information

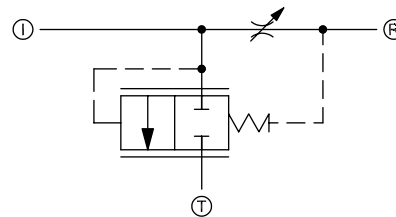
## Flow control valves

### 2F86

#### OPERATION

This valve is a fully-adjustable, bypass-type, pressure compensated flow control.

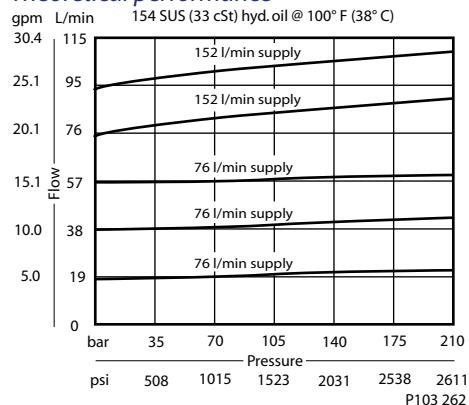
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



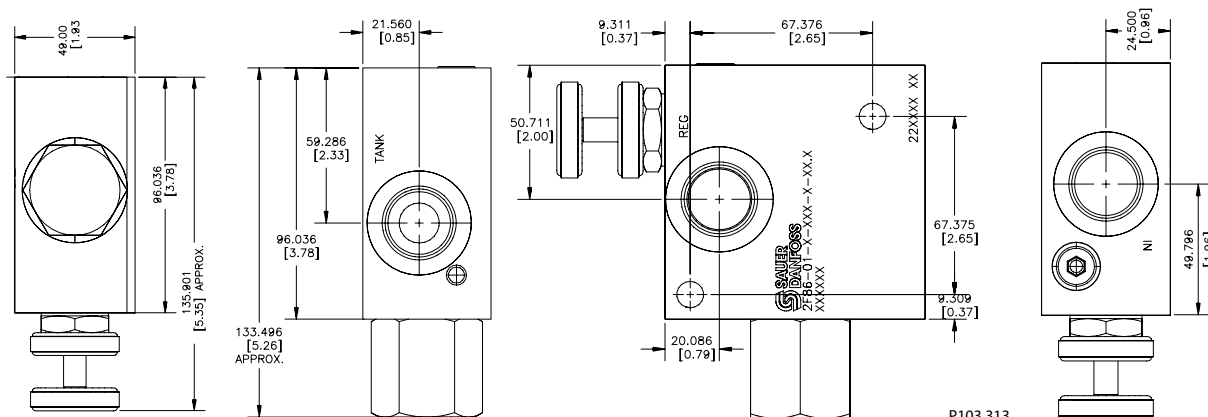
#### Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	95 l/min [25 US gal/min]
Max inlet flow	568 l/min [150 US gal/min]
Weight	0.00 kg [1.83 lb]
Cavity	none

#### DIMENSIONS

mm [in]

#### Cross-sectional view



#### ORDERING INFORMATION

2F86-01-B-12S-K-25.0

#### Adjustment options

- E = External Replacement Nut 322417
- K = Knob Replacement Jam Knob 322304, Adjustment Knob 322305

#### Body and Housing

- 12S = AL, #12 SAE
- 6B = AL, 3/4 BSP

#### Seals

- B = Buna-N Seal kits Consult Factory
- V = Viton Seal kits Consult Factory

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# Cartridge Valves Technical Information

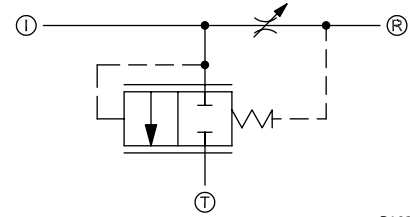
## Flow control valves

### 2F87

### OPERATION

This valve is a fully-adjustable, bypass-type, pressure compensated flow control.

### Schematic

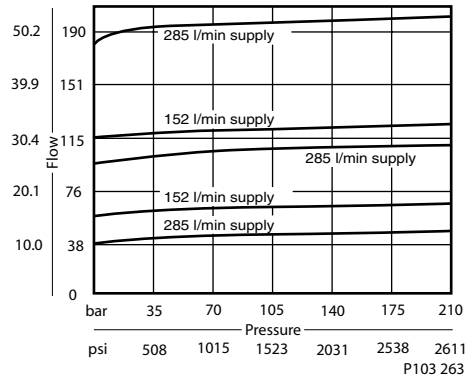


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### SPECIFICATIONS

#### Theoretical performance

gpm L/min 154 SUS (33 cSt) hyd. oil @ 100° F (38° C)



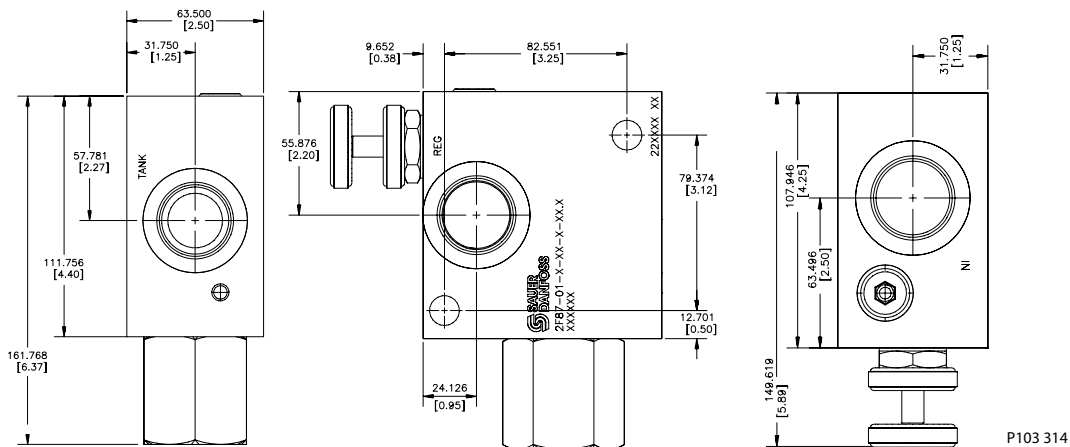
#### Specifications

Rated pressure	210 bar [3000 psi]
Max regulated flow	189 l/min [50 US gal/min]
Max inlet flow	284 l/min [75 US gal/min]
Weight	0.70 kg [1.54 lb]
Cavity	none

### DIMENSIONS

mm [in]

#### Cross-sectional view



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### ORDERING INFORMATION

2F87-01-B-16S-K-50.0

#### Adjustment options

- E = External Replacement Nut 322417
- K = Knob Replacement Jam Knob 322304, Adjustment Knob 322305

#### Body and Housing

- 16S = AL, #16 SAE
- 1B = AL, 1 BSP

#### Seals

- B = Buna-N Seal kits Consult Factory
- V = Viton Seal kits Consult Factory

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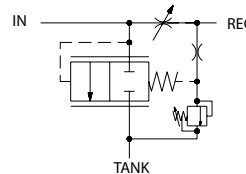
# Cartridge Valves Technical Information

## Flow control valves 2FA84

### OPERATION

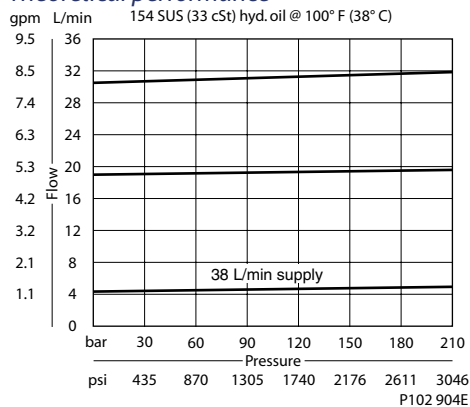
This valve is an adjustable, pressure compensated flow control with integral relief valve.

### Schematic



### SPECIFICATIONS

#### Theoretical performance



#### Specifications

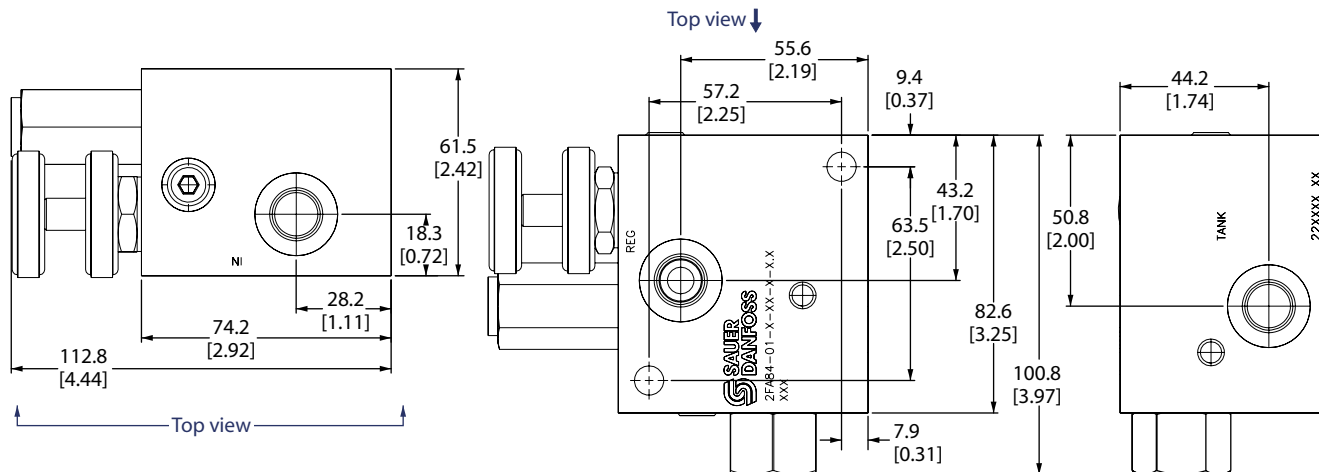
Rated pressure	210 bar [3000 psi]
Max regulated flow	31 l/min [8 US gal/min]
Max inlet flow	60 l/min [16 US gal/min]
Weight	0.79 kg [1.74 lb]
Cavity	none

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### DIMENSIONS

mm [in]

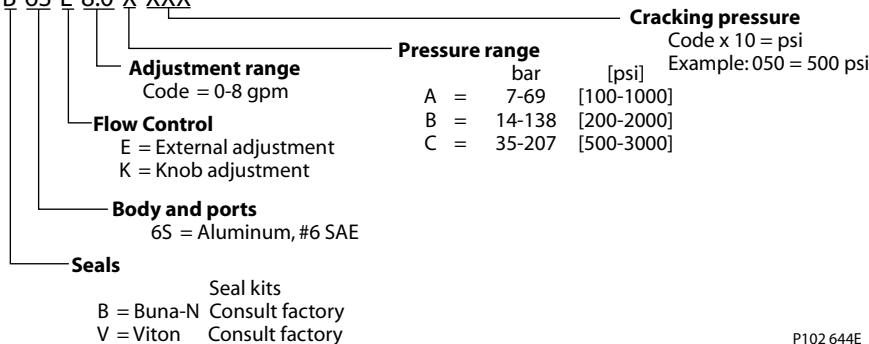
#### Cross-sectional view



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### ORDERING INFORMATION

2FA84-01-B-6S-E-8.0-X-XXX



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# Cartridge Valves Technical Information

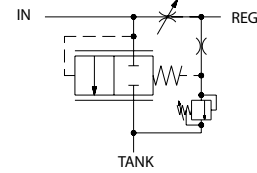
## Flow control valves

### 2FA85

#### OPERATION

This valve is an adjustable, pressure compensated flow control with integral relief valve.

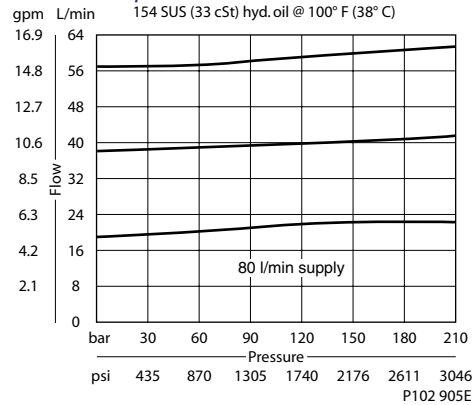
#### Schematic



P102 673E

#### SPECIFICATIONS

#### Theoretical performance



#### Specifications

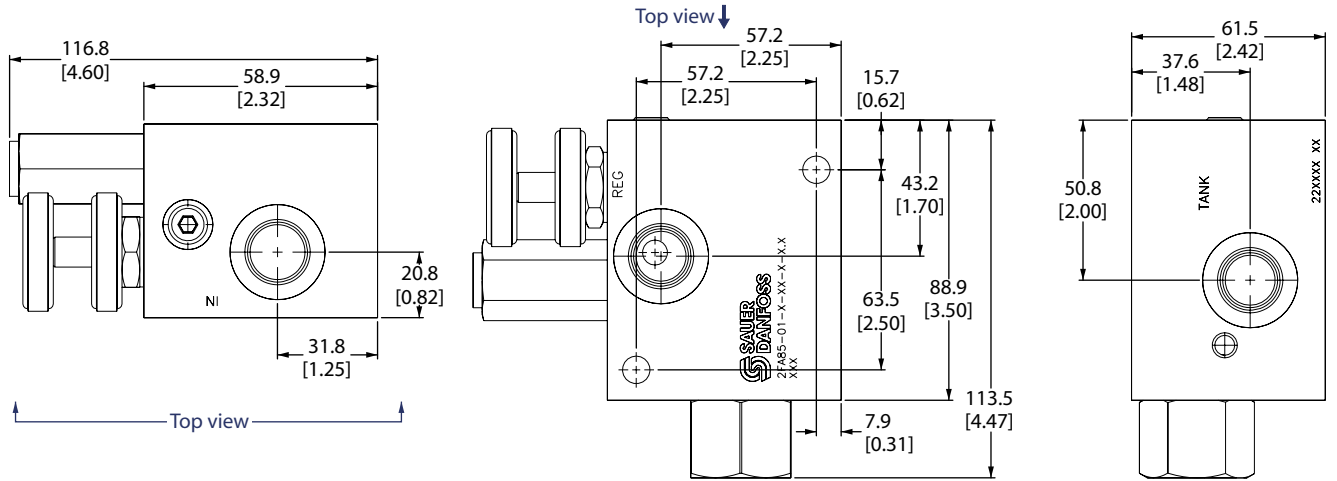
Rated pressure	210 bar [3000 psi]
Max regulated flow	60 l/min [16 US gal/min]
Max inlet flow	95 l/min [25 US gal/min]
Weight	0.79 kg [1.74 lb]
Cavity	none

Flow control valves  
2FA85

#### DIMENSIONS

mm [in]

#### Cross-sectional view



#### ORDERING INFORMATION

**2FA85-01-B-8S-E-15-X-XXX**

- Seals**
  - B = Buna-N
  - V = Viton
  - Seal kits Consult Factory
- Body and ports**
  - 8S = Aluminum, #8 SAE
- Flow Control**
  - E = External adjustment
  - K = Knob adjustment
- Cracking pressure**
  - Code x 10 = psi
  - Example: 050 = 500 psi
- Pressure range**
  - A = 7-69 [100-1000]
  - B = 14-138 [200-2000]
  - C = 35-207 [500-3000]
- Adjustment range**
  - Code = 0-15 gpm

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# Cartridge Valves Technical Information

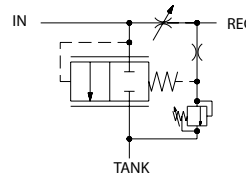
## Flow control valves

### 2FA86

#### OPERATION

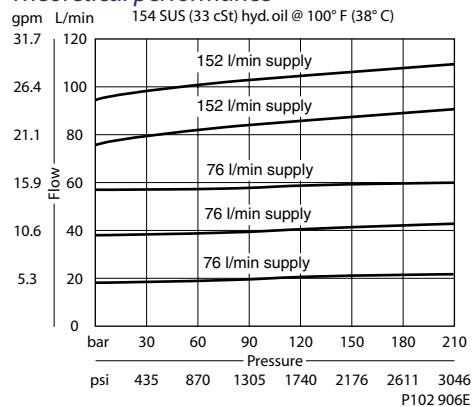
This valve is an adjustable, pressure compensated flow control with integral relief valve.

#### Schematic



#### SPECIFICATIONS

#### Theoretical performance



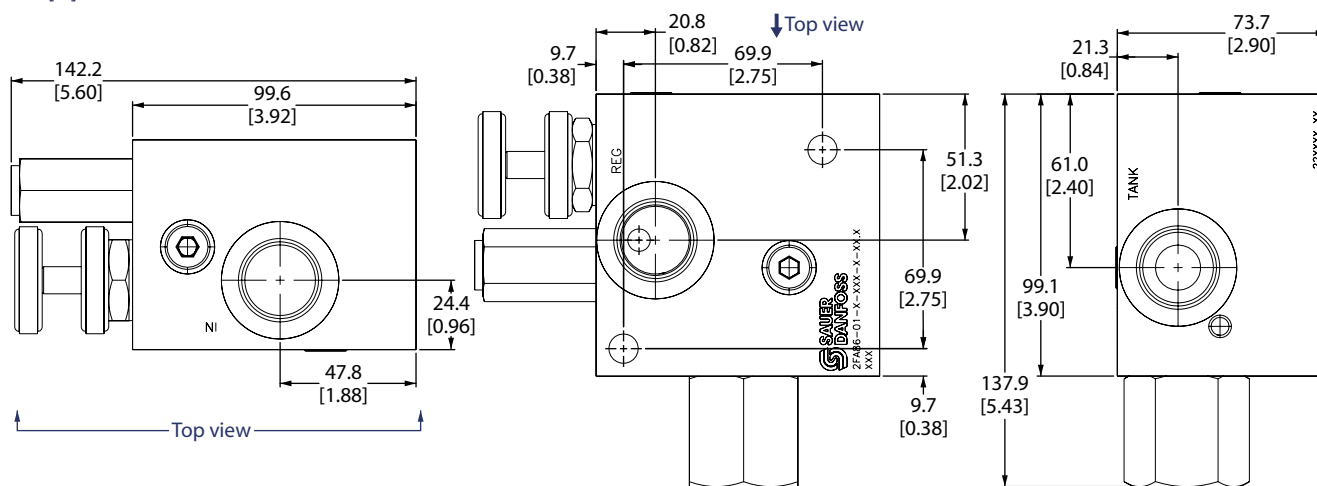
#### Specifications

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	0.83 kg [1.83 lb]
Cavity	none

#### DIMENSIONS

mm [in]

#### Cross-sectional view



#### ORDERING INFORMATION

**2FA86-01-B-12S-E-25-X-XXX**

- Seals**
  - B = Buna-N
  - V = Viton
  - Seal kits: Consult Factory
- Body and ports**
  - 12S = Aluminum, #12 SAE
- Flow Control**
  - E = External adjustment
  - K = Knob adjustment
- Cracking pressure**
  - Code x 10 = psi
  - Example: 050 = 500 psi
- Pressure range**
  - A = 7-69 [100-1000]
  - B = 14-138 [200-2000]
  - C = 35-207 [500-3000]
- Adjustment range**
  - Code = 0-25 gpm

Flow control valves 2FA86



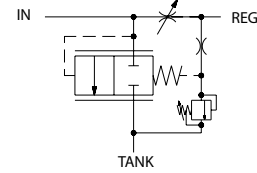
# Cartridge Valves Technical Information

## Flow control valves 2FA87

### OPERATION

This valve is an adjustable, pressure compensated flow control with integral relief valve.

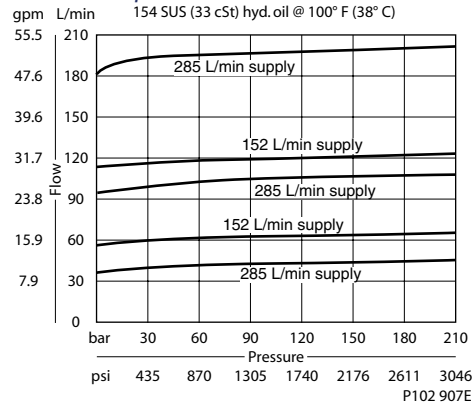
### Schematic



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### SPECIFICATIONS

#### Theoretical performance



#### Specifications

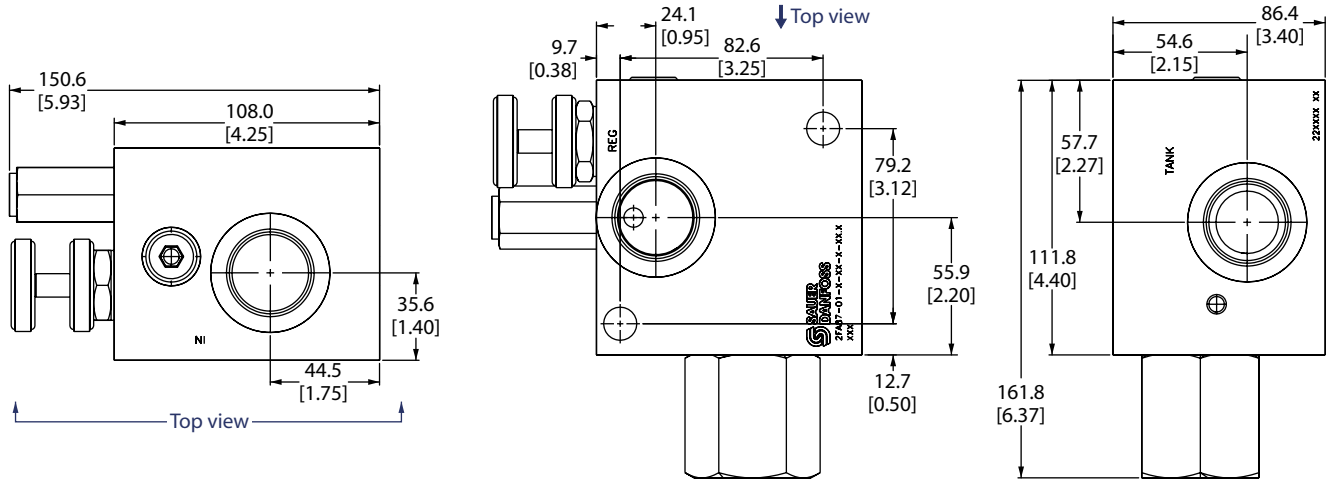
Rated pressure	210 bar [3000 psi]
Max regulated flow	190 l/min [50 US gal/min]
Max inlet flow	285 l/min [75 US gal/min]
Weight	1.54 kg [3.40 lb]
Cavity	none

Flow control valves  
2FA87

### DIMENSIONS

mm [in]

#### Cross-sectional view



### ORDERING INFORMATION

**2FA87-01-B-16S-E-50-X-XXX**

- Seals**
  - B = Buna-N
  - V = Viton
  - Seal kits: Consult Factory
- Body and ports**
  - 16S = Aluminum, #16 SAE
- Flow Control**
  - E = External adjustment
  - K = Knob adjustment
- Cracking pressure**
  - Code x 10 = psi
  - Example: 050 = 500 psi
- Pressure range**
  - A = 7-69 [100-1000]
  - B = 14-138 [200-2000]
  - C = 35-207 [500-3000]
- Adjustment range**
  - Code = 0-50 gpm

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# Cartridge Valves Technical Information

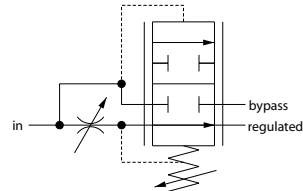
## Flow control valves

### 2F94

#### OPERATION

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

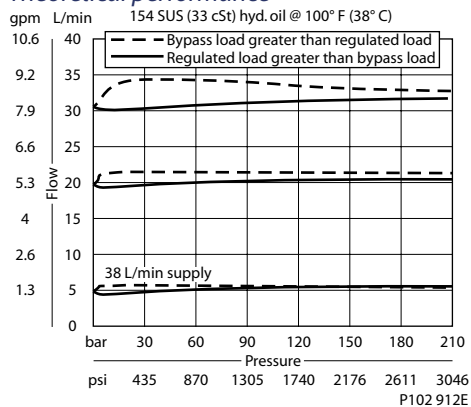
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



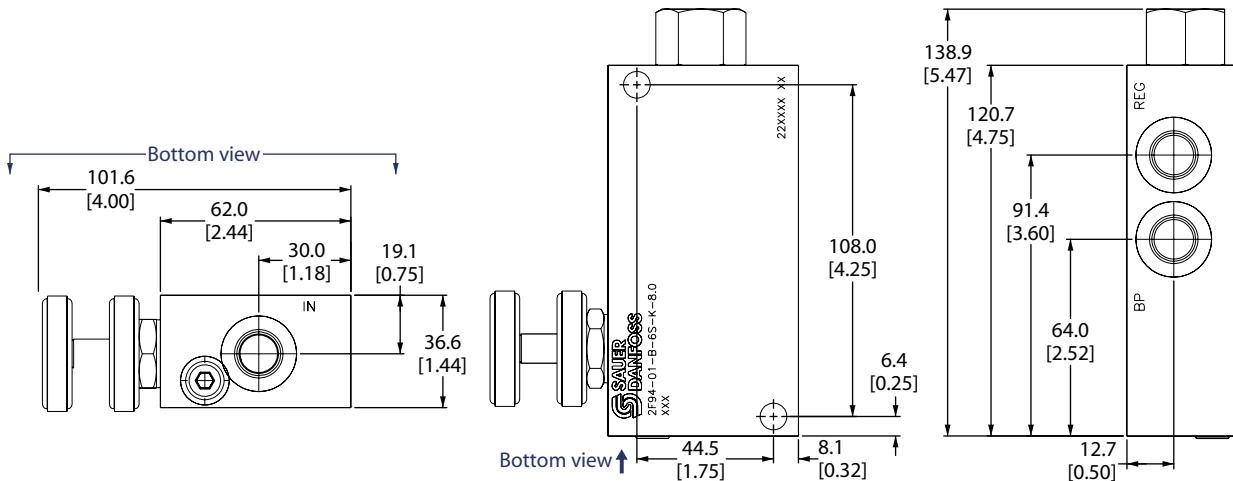
#### Specifications

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



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

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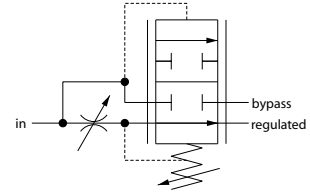
# Cartridge Valves Technical Information

## Flow control valves 2F95

### OPERATION

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

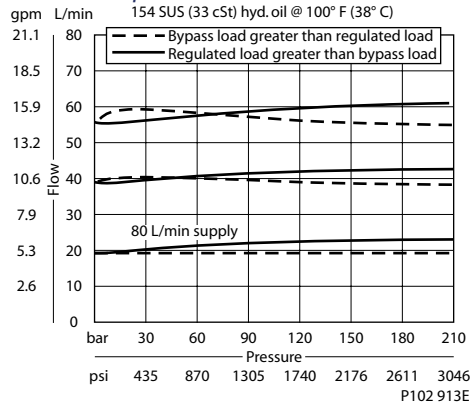
### Schematic



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### SPECIFICATIONS

#### Theoretical performance



#### Specifications

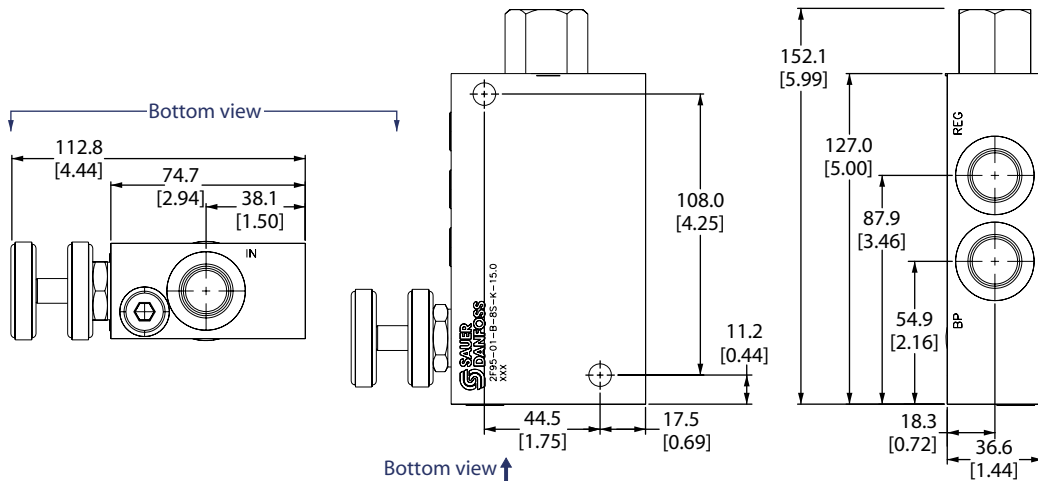
Rated pressure	210 bar [3000 psi]
Max regulated flow	60 l/min [16 US gal/min]
Max inlet flow	95 l/min [25 US gal/min]
Weight	1.00 kg [2.20 lb]
Cavity	none

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  
Consult Factory

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# Cartridge Valves Technical Information

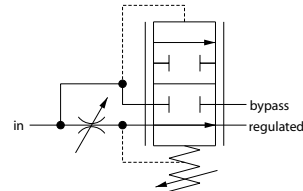
## Flow control valves

### 2F96

#### OPERATION

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

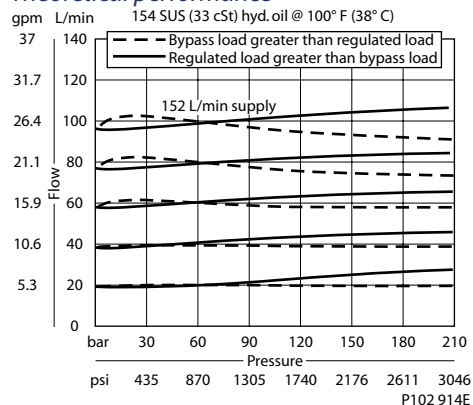
#### Schematic



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#### SPECIFICATIONS

#### Theoretical performance



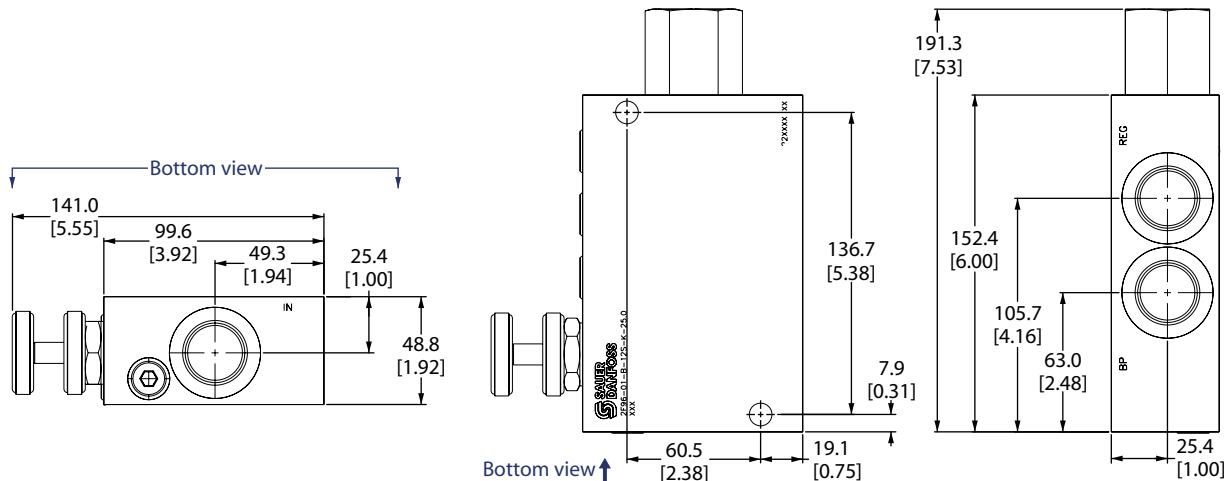
#### Specifications

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



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#### ORDERING INFORMATION

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

**Adjustment options**  
 E = External adjustment  
 K = Knob adjustment

**Body and ports**  
 12S = Aluminum, #12 SAE

**Seals**

B = Buna-N  
 V = Viton

Seal kits  
 Consult Factory  
 Consult Factory

**Adjustment range**  
 Code = 0-25 gpm

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# Cartridge Valves Technical Information

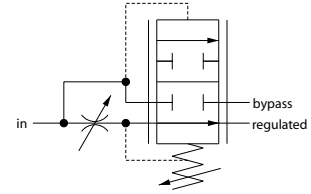
## Flow control valves

### 2F97

### OPERATION

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

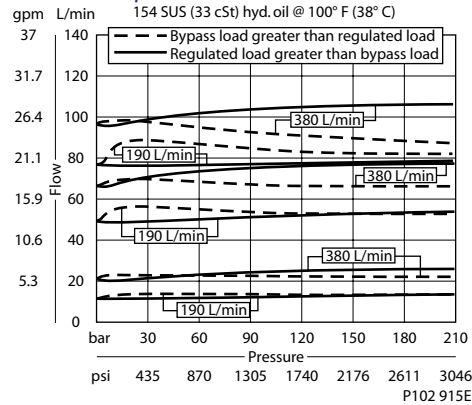
### Schematic



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### SPECIFICATIONS

#### Theoretical performance



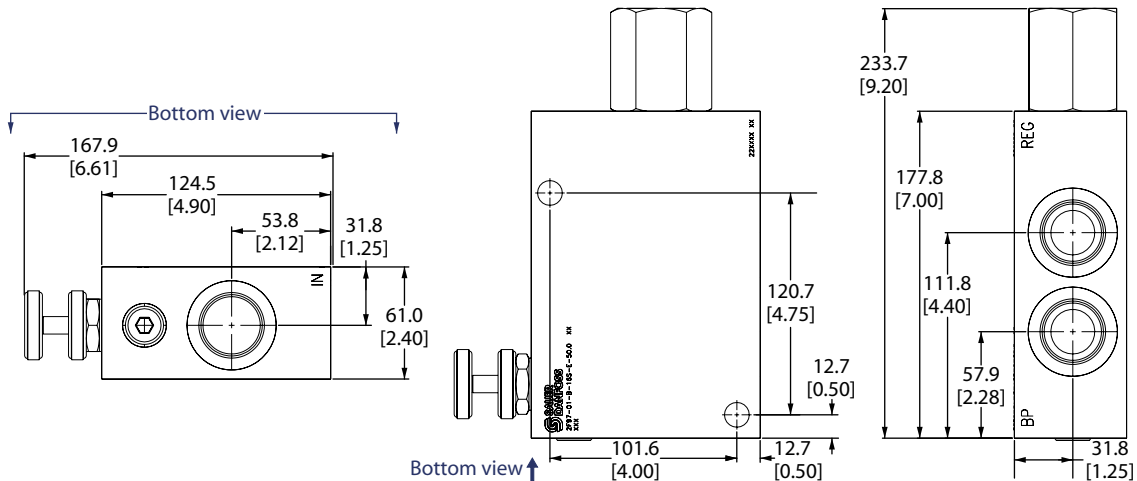
#### Specifications

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

### 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
- Adjustment range**  
 Code = 0-50 gpm
- Seal kits**  
 Consult Factory

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## Cartridge Valves Technical Information

### Flow control valves

#### Notes