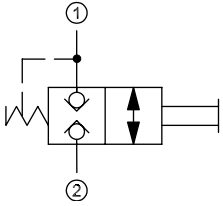
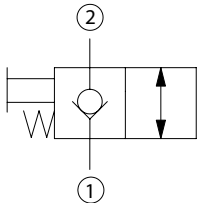
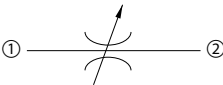
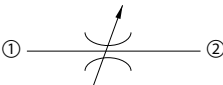


Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CE06	NCS06/2	Manual valve	20 l/min [5 US gal/min]	315 bar [4500 psi]	12.4
	CP600-2	SDC10-2		50 l/min [13 US gal/min]	210 bar [3000 psi]	12.5

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP600-1	SDC10-2	Manually operated poppet valve	68 l/min [18 US gal/min]	207 bar [3002 psi]	12.6

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP611-2	CP12-2	Needle valve	115 l/min [30 US gal/min]	210 bar [3000 psi]	12.7
	CP618-1	SDC08-2		25 l/min [7 US gal/min]	210 bar [3000 psi]	12.8
	CP618-2	SDC08-2		45 l/min [12 US gal/min]	210 bar [3000 psi]	12.9
	CP610-1	SDC10-2		50 l/min [13 US gal/min]	210 bar [3000 psi]	12.10
	CP610-2	SDC10-2		50 l/min [13 US gal/min]	210 bar [3000 psi]	12.11
	CP612-1	SDC16-2		190 l/min [50 US gal/min]	210 bar [3000 psi]	12.12
	CP612-2	SDC16-2		190 l/min [50 US gal/min]	210 bar [3000 psi]	12.13
	CP613-1	SDC20-2		380 l/min [100 US gal/min]	210 bar [3000 psi]	12.14

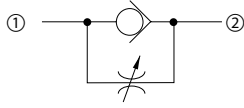
Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP618-6	SDC08-2	Needle valve (fine metering)	10 l/min [3 US gal/min]	210 bar [3000 psi]	12.15

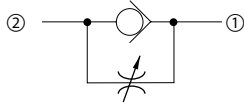
\* Flow ratings are based on a pressure drop of 7 bar [100 psi] unless otherwise noted. They are for comparison purposes only.

## Cartridge Valves Technical Information

## Needle valves

## Quick reference

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP610-4	SDC10-2	Needle valve (free reverse flow)	53 l/min [14 US gal/min]	210 bar [3000 psi]	12.16

Symbol	Model No.	Cavity	Description	Flow*	Pressure	Page
	RVE 06	NCS06/2	Needle valve (free reverse flow)	40 l/min [11 US gal/min]	315 bar [4500 psi]	12.17
	CP610-7	SDC10-2		55 l/min [15 US gal/min]	210 bar [3000 psi]	12.18

\* 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

## Needle valves

## Application notes

## NEEDLE VALVES

Needle valves provide adjustable, non-compensated flow control. They are available with standard or fine adjust, and with a variety of knob adjusting options.

## Needle valves

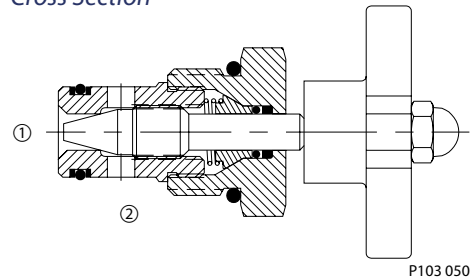


F102 008

Common applications for needle valves include:

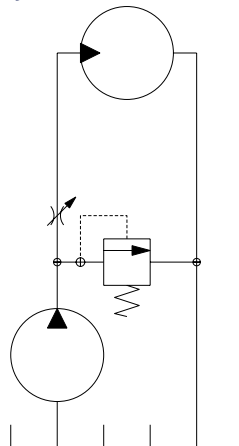
- Manually adjustable flow control, with or without an external pressure compensator.
- Manual directional control or load lowering in the event of electrical failure or machine power loss.

## Cross Section

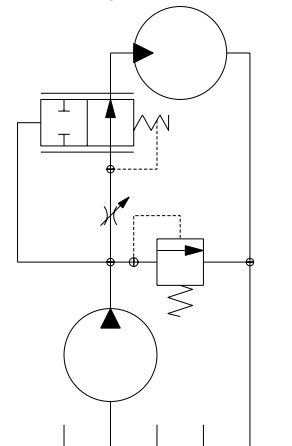


P103 050

## Manually adjustable flow control



## Manually adjustable flow control with pressure compensation



P103 049



# Cartridge Valves Technical Information

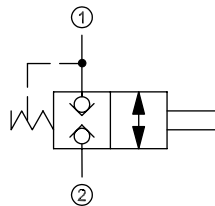
## Needle valves

### CE06

#### OPERATION

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

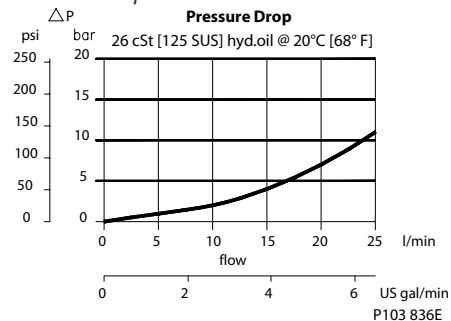
#### Schematic



P104551E

#### SPECIFICATIONS

#### Theoretical performance



#### Specifications

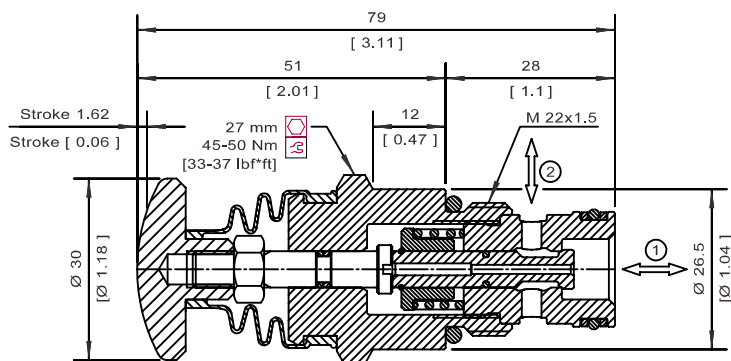
Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	20 l/min [5 US gal/min]
Weight	0.20 kg [0.44 lb]
Cavity	NCS06/2

Needle valves  
CE06

#### DIMENSIONS

mm [in]

#### Cross-sectional view



#### ORDERING INFORMATION

CE 06 - 00 - V

**Seals**  
 V = Viton 230000380  
 Omit = Buna-N 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 837E



# Cartridge Valves Technical Information

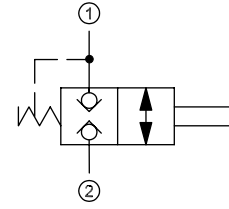
## Needle valves

### CP600-2

#### OPERATION

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

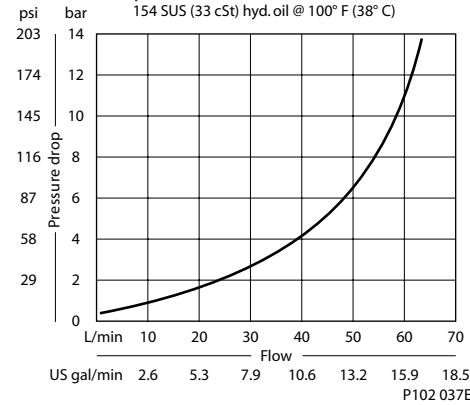
#### Schematic



P104 551E

#### SPECIFICATIONS

#### Theoretical performance



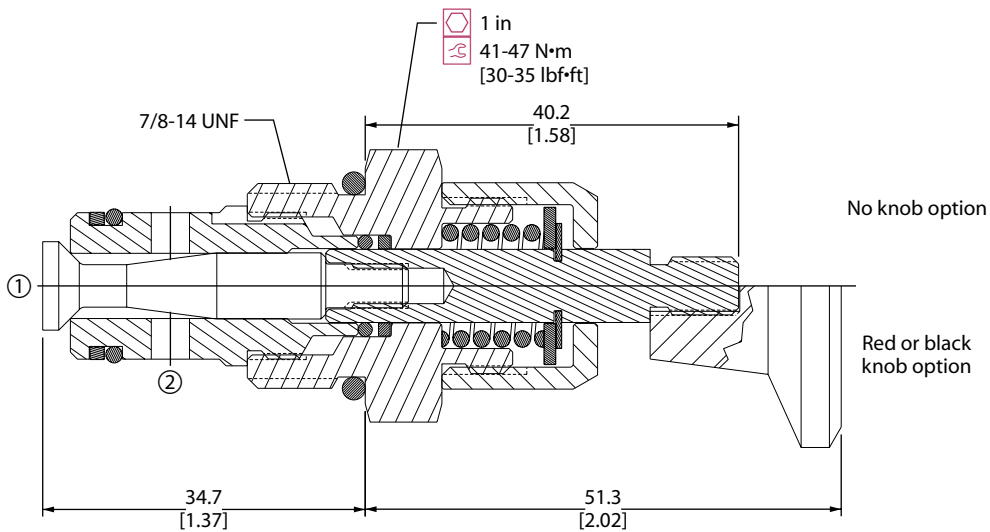
#### Specifications

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

#### DIMENSIONS

mm [in]

#### Cross-sectional view



#### ORDERING INFORMATION

CP600 - 2 - B - 8S - 10 - B

- 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
- Housing P/N**
  - No Housing
  - SDC10-2-DG-3B
  - SDC10-2-DG-4B
  - CP10-2-6S
  - CP10-2-8S
- Seal kit**
  - 120015
  - 120016
- Knob option**
  - 0 = No knob (1/4-28 UNF threads)
  - B = Black knob
  - R = Red knob
- Spring load**
  - 10 = 44 N [10 lbf]
  - 15 = 67 N [15 lbf]

P102 765E



# Cartridge Valves Technical Information

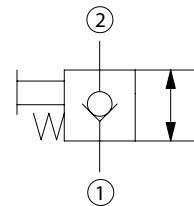
## Needle valves

### CP600-1

#### OPERATION

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

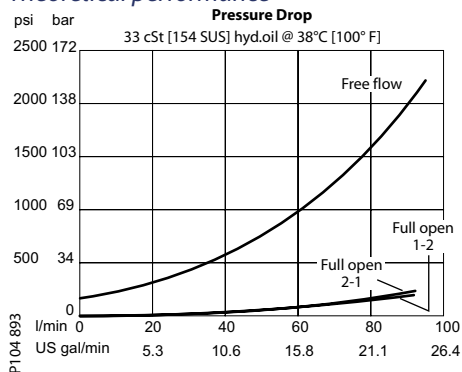
#### Schematic



P104 891

#### SPECIFICATIONS

#### Theoretical performance



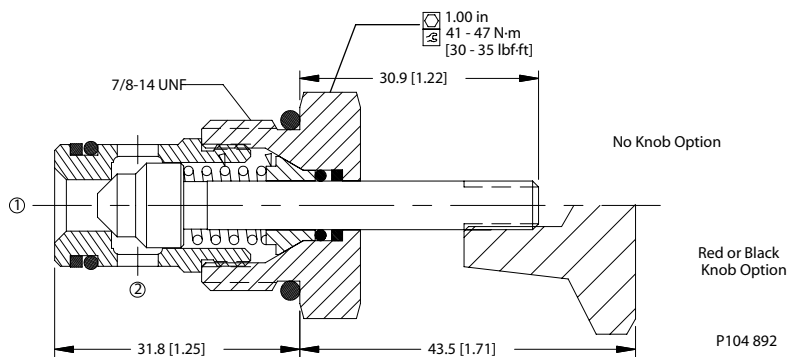
#### Specifications

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

#### DIMENSIONS

mm [in]

#### Cross-sectional view



P104 892

#### ORDERING INFORMATION

**CP600-1-B-6S-00-K**

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

P104 894

Needle valves CP600-1



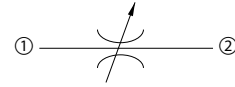
# Cartridge Valves Technical Information

## Needle valves CP611-2

### OPERATION

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

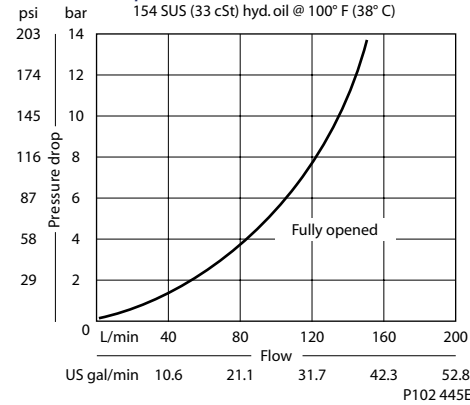
### Schematic



P102 460E

### SPECIFICATIONS

#### Theoretical performance



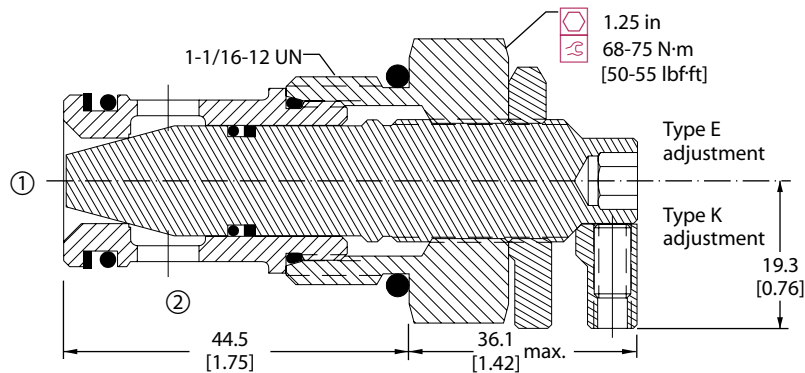
#### Specifications

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

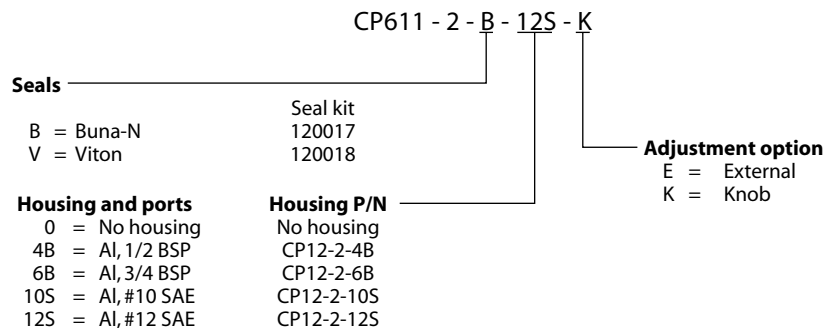
### DIMENSIONS

mm [in]

#### Cross-sectional view



### ORDERING INFORMATION



P102 454E

Needle valves  
CP611-2



# Cartridge Valves Technical Information

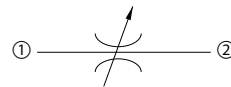
## Needle valves

### CP618-1

#### OPERATION

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

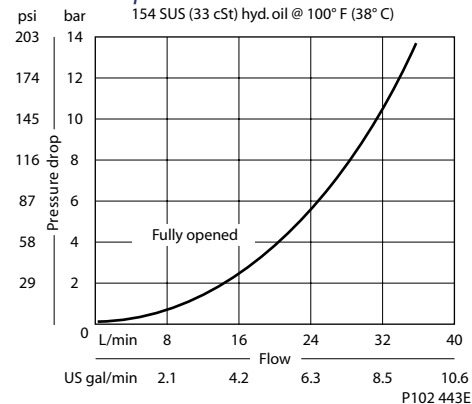
#### Schematic



P102 460E

#### SPECIFICATIONS

#### Theoretical performance



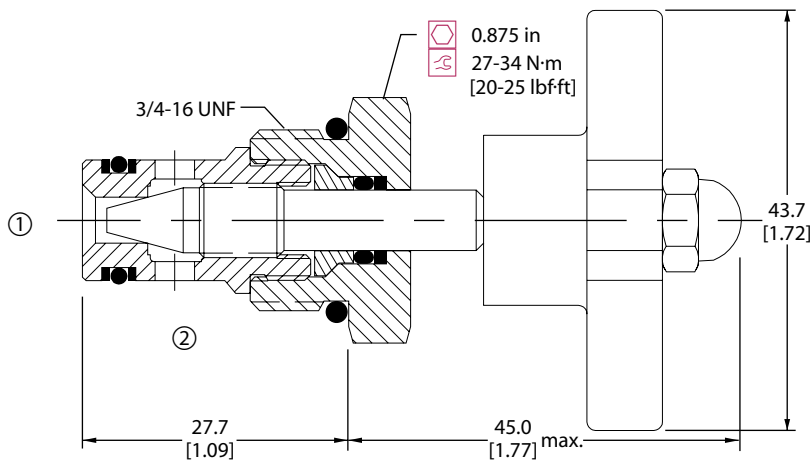
#### Specifications

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

#### DIMENSIONS

mm [in]

#### Cross-sectional view



P102 434E

#### ORDERING INFORMATION

CP618 - 1 - B - 6S - B

**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

**Knob option**

- B = Black
- R = Red

P102 452E

Needle valves CP618-1





# Cartridge Valves Technical Information

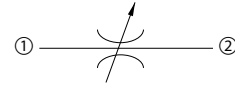
## Needle valves

### CP618-2

#### OPERATION

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

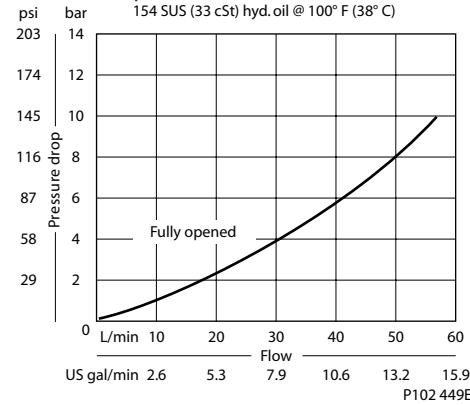
Schematic



P102 460E

#### SPECIFICATIONS

##### Theoretical performance



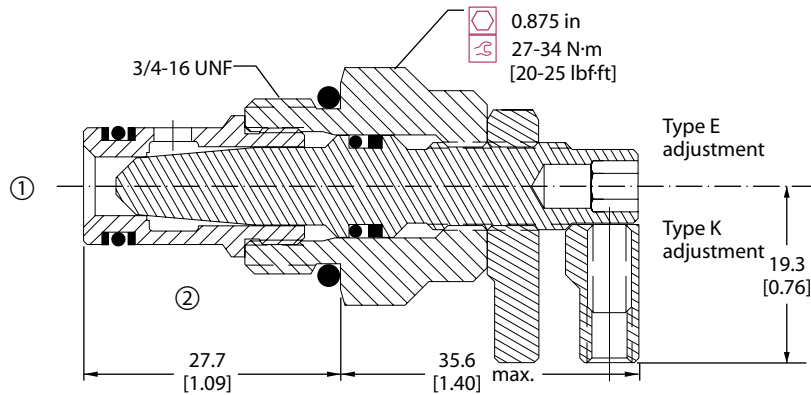
##### Specifications

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

#### DIMENSIONS

mm [in]

##### Cross-sectional view



P102 441E

#### ORDERING INFORMATION

CP618 - 2 - B - 6S - K

**Seals**

- B = Buna-N
- V = Viton

**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

**Seal kit**

- 120227
- 120228

**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

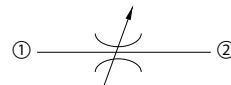
## Needle valves

### CP610-1

#### OPERATION

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

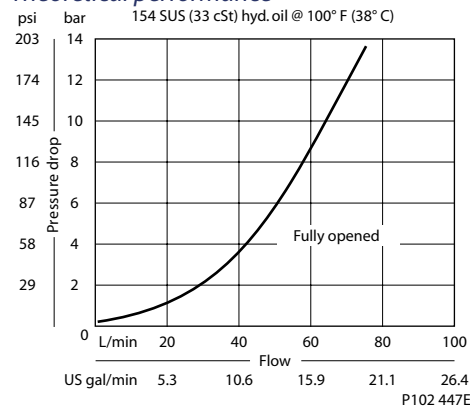
Schematic



P102 460E

#### SPECIFICATIONS

##### Theoretical performance



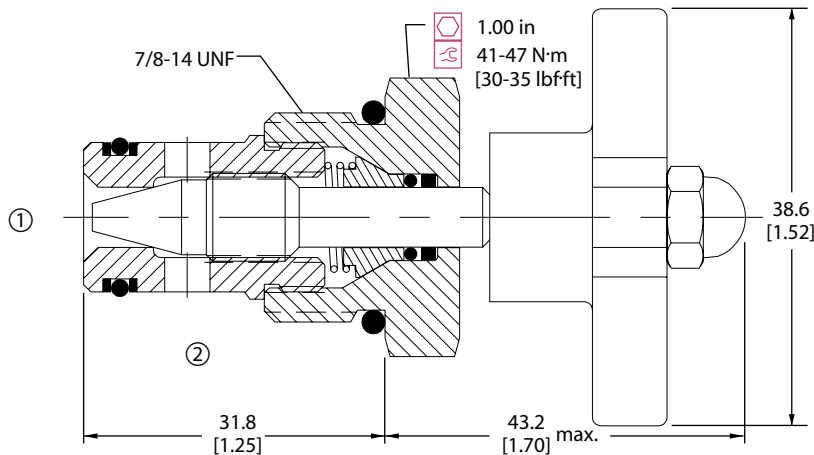
##### Specifications

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

#### DIMENSIONS

mm [in]

##### Cross-sectional view



P102 439E

#### ORDERING INFORMATION

CP610 - 1 - B - 8S - B

**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

**Housing P/N**

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

**Seal kit**

- 120073
- 120074

**Knob option**

- B = Black
- R = Red

P102 457E

Needle valves CP610-1



# Cartridge Valves Technical Information

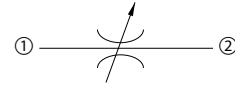
## Needle valves

### CP610-2

#### OPERATION

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

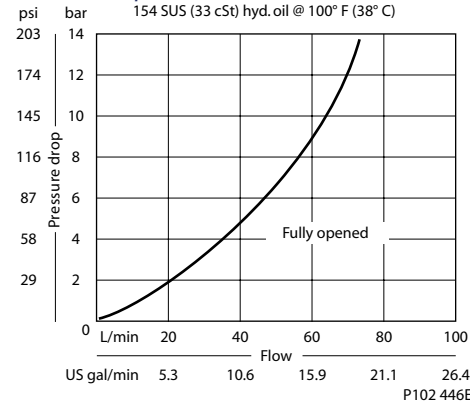
Schematic



P102 460E

#### SPECIFICATIONS

##### Theoretical performance



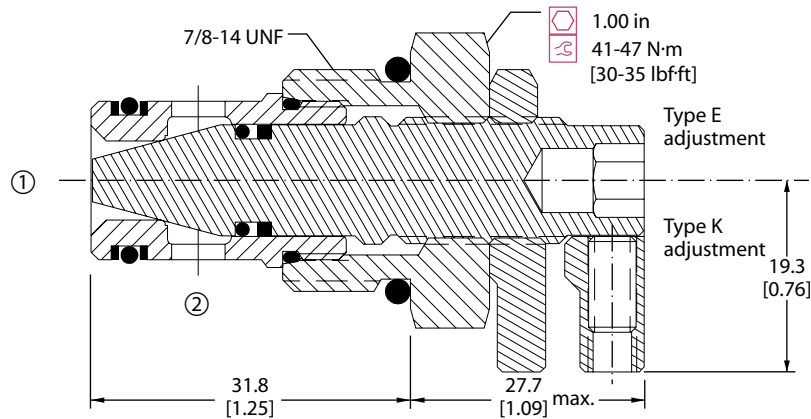
##### Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	50 l/min [13 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-2

#### DIMENSIONS

mm [in]

##### Cross-sectional view



#### ORDERING INFORMATION

CP610 - 2 - B - 8S - K

<b>Seals</b>			
B = Buna-N		Seal kit	120073
V = Viton			120074
<b>Housing and ports</b>		<b>Housing P/N</b>	
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			
		<b>Adjustment option</b>	
		E = External	
		K = Knob	

P102 456E



# Cartridge Valves Technical Information

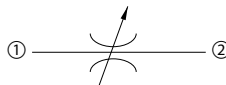
## Needle valves

### CP612-1

#### OPERATION

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

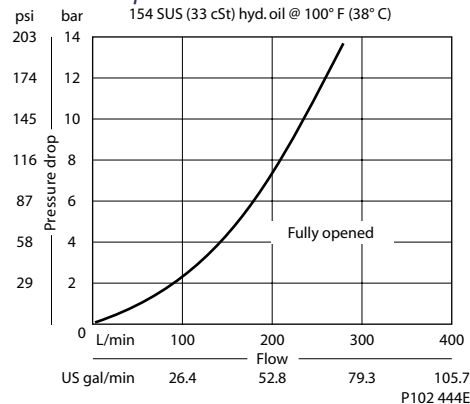
#### Schematic



P102 460E

#### SPECIFICATIONS

#### Theoretical performance



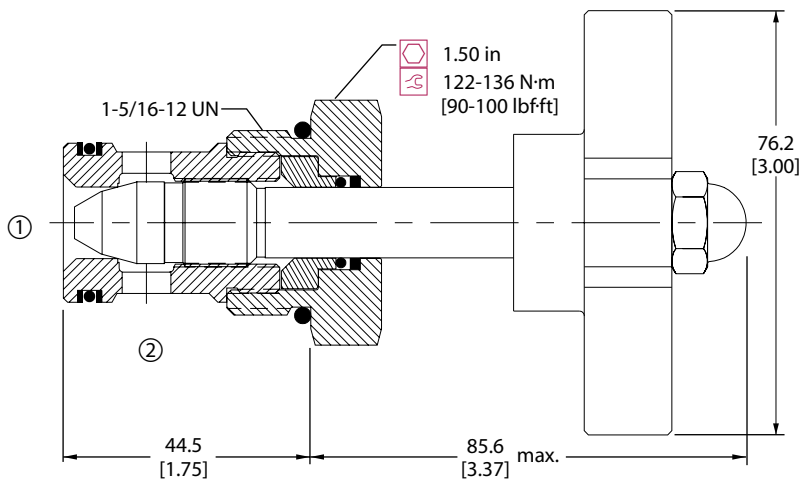
#### Specifications

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

#### 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

Needle valves  
CP612-1



# Cartridge Valves Technical Information

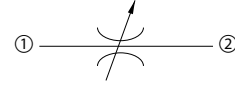
## Needle valves

### CP612-2

#### OPERATION

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

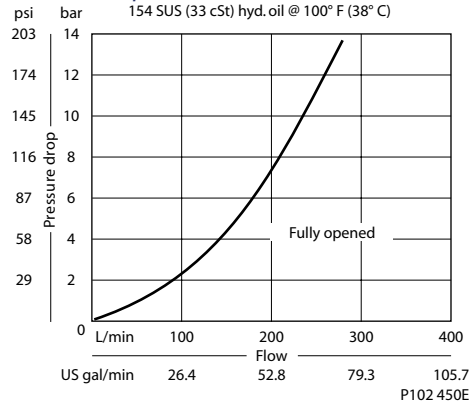
Schematic



P102 460E

#### SPECIFICATIONS

##### Theoretical performance



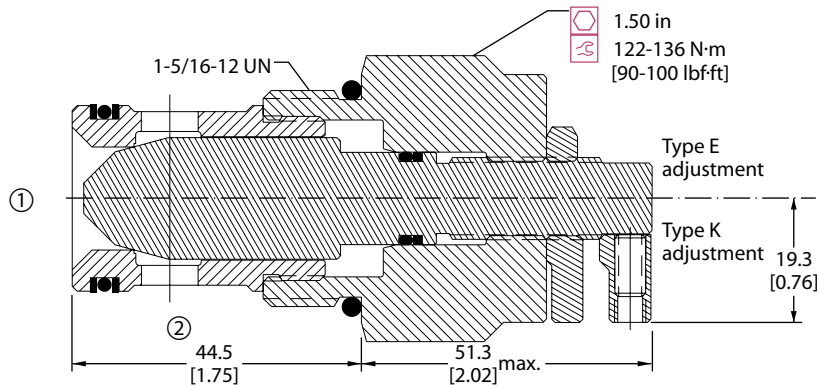
##### Specifications

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

#### 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

Needle valves CP612-2



# Cartridge Valves Technical Information

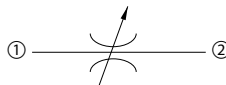
## Needle valves

### CP613-1

#### OPERATION

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

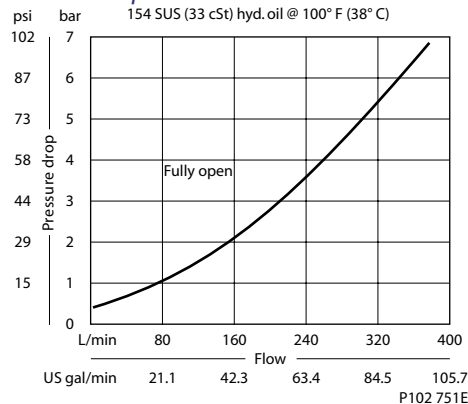
#### Schematic



P102 460E

#### SPECIFICATIONS

#### Theoretical performance



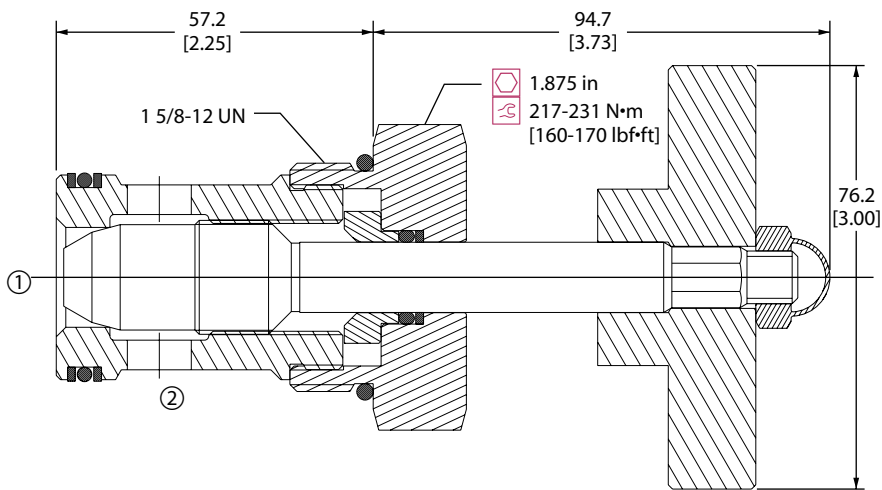
#### Specifications

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

#### DIMENSIONS

mm [in]

#### Cross-sectional view



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

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

P102 693E

Needle valves  
CP613-1



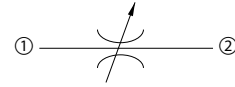
# Cartridge Valves Technical Information

## Needle valves CP618-6

### OPERATION

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

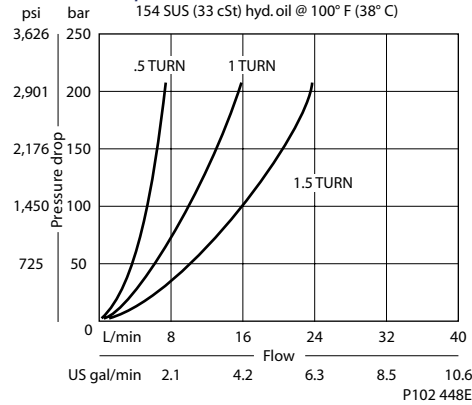
### Schematic



P102 460E

### SPECIFICATIONS

#### Theoretical performance



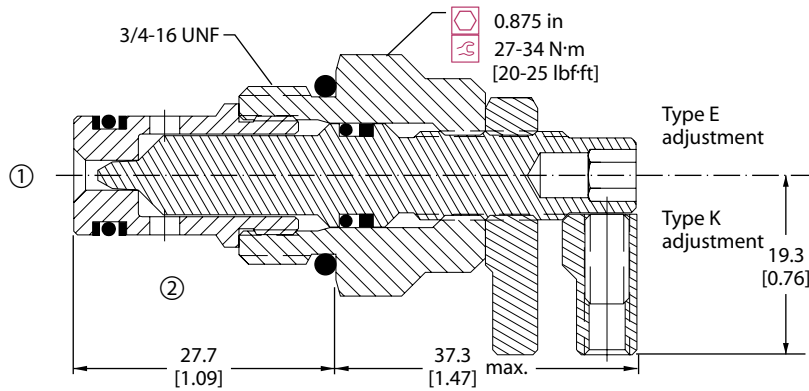
#### Specifications

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

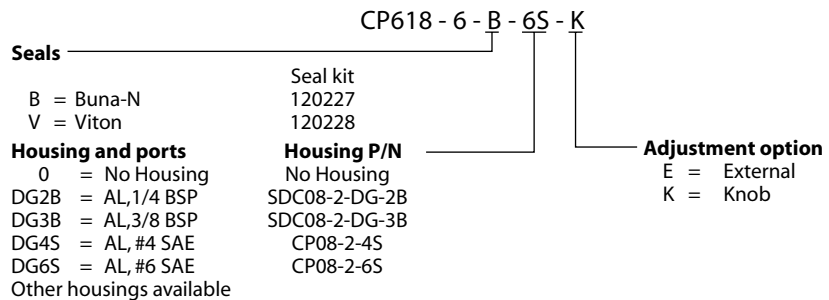
### DIMENSIONS

mm [in]

#### Cross-sectional view



### ORDERING INFORMATION



P102 458E

Needle valves  
CP618-6



# Cartridge Valves Technical Information

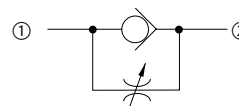
## Needle valves

### CP610-4

#### OPERATION

This valve is an adjustable orifice with free reverse flow.

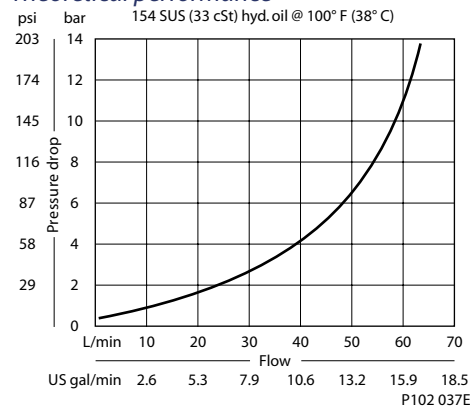
#### Schematic



P102 461E

#### SPECIFICATIONS

#### Theoretical performance



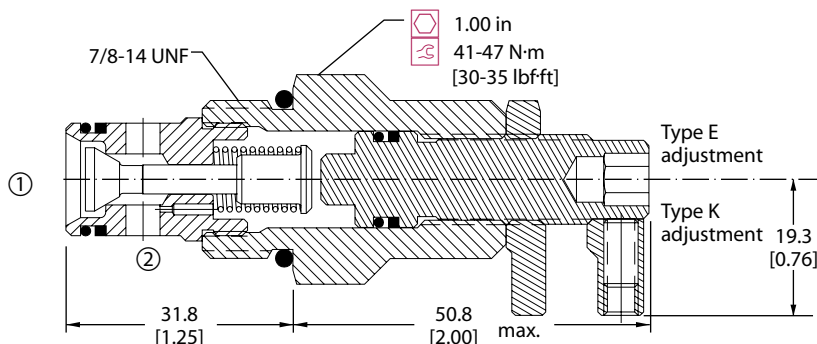
#### Specifications

Rated pressure	210 bar [3000 psi]
Rated flow at 7 bar [100 psi]	53 l/min [14 US gal/min]
Leakage	6 drops/min @ Rated pressure
Weight	0.16 kg [0.35 lb]
Cavity	SDC10-2

#### DIMENSIONS

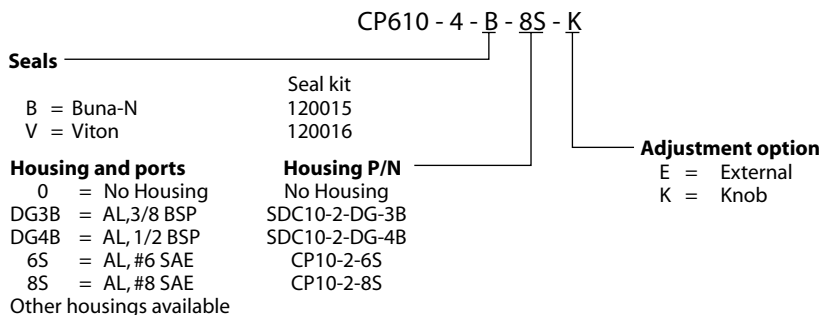
mm [in]

#### Cross-sectional view



P102 437E

#### ORDERING INFORMATION



P102 455E

Needle valves CP610-4





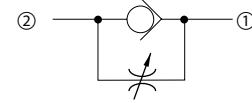
# Cartridge Valves Technical Information

## Needle valves RVE 06

### OPERATION

This valve is an adjustable orifice with free reverse flow.

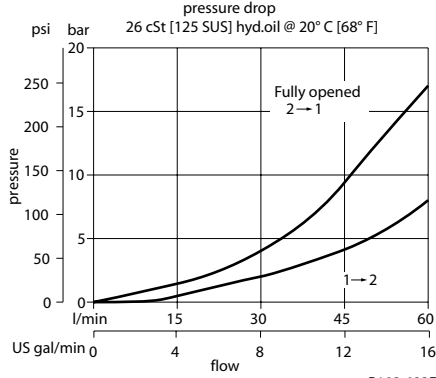
### Schematic



P102 824

### SPECIFICATIONS

#### Theoretical performance



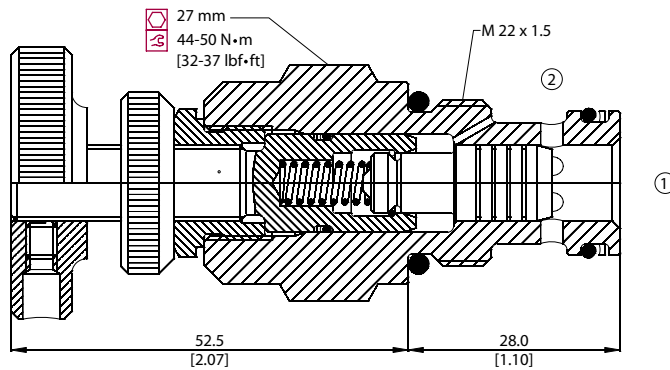
#### Specifications

Rated pressure	315 bar [4500 psi]
Rated flow at 7 bar [100 psi]	40 l/min [11 US gal/min]
Weight	0.21 kg [0.46 lb]
Cavity	NCS06/2

### DIMENSIONS

mm [in]

#### Cross-sectional view



P103 655

### ORDERING INFORMATION

**Adjustment option**  
ME = Handwheel

RVE 06 - ME - 00 - V

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

**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

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Needle valves  
RVE 06



# Cartridge Valves Technical Information

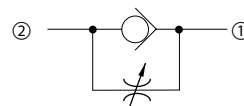
## Needle valves

### CP610-7

#### OPERATION

This valve is an adjustable orifice with free reverse flow.

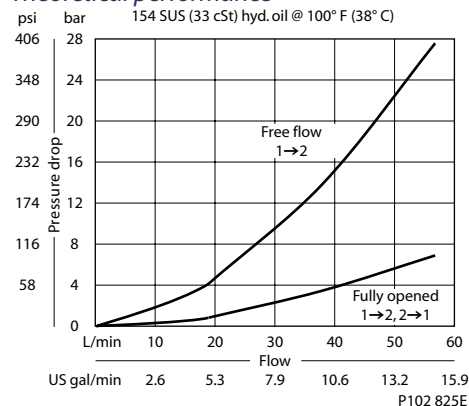
#### Schematic



P102 824

#### SPECIFICATIONS

#### Theoretical performance



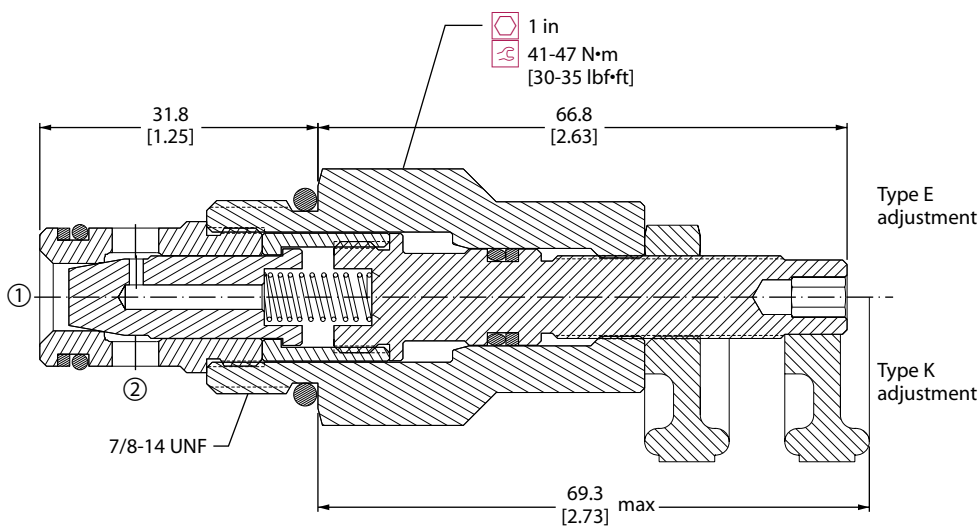
#### Specifications

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

#### 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

Needle valves  
CP610-7