

FC

Flow Control Valves



Danfoss

Flow Control Valves

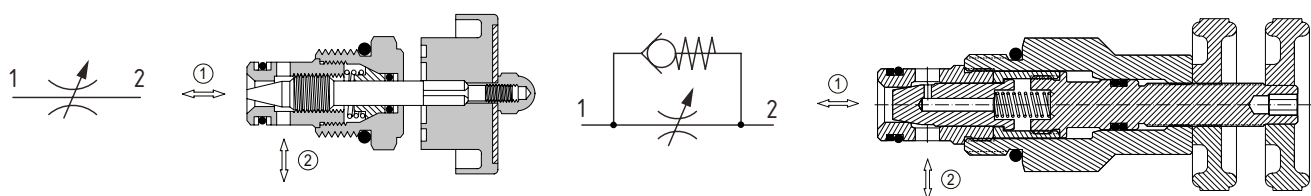
Application Notes

Basic Operation: Flow Control Valves

There are two main types of flow control valves: non-compensated and compensated. Non-compensated valves feature an adjustable orifice, where the flow across the valve depends on the pressure differential and the size of the orifice. These valves can also include an integrated reverse flow check valve. Pressure compensated valves include an orifice that works in conjunction with a compensator. These can be two ported (restrictive type) or three ported (priority type), which gives the option of a priority, controlled flow with excess flow available to be used for secondary functions. Spool type flow divider / combiner valves are also available, which feature two spools that are linked mechanically, ensuring equal flow and individual compensation. Velocity fuses are valves that close when a pre-determined pressure drop across an orifice is reached.

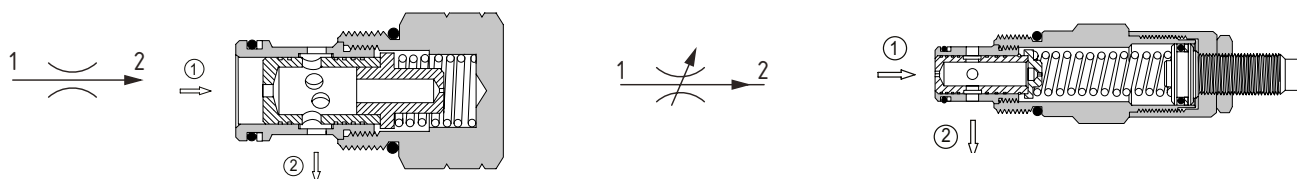
Needle Valves

Needle valves provide a means to vary a restriction and provide a pressure drop or control a flow from port 1 to 2 or port 2 to 1. The flow is a function of the effective orifice between the two ports. In the case of valves with a reverse flow check, the integral check allows for free flow past the orifice and the restriction is unidirectional. This is ideal when meter out or meter in control is required, such as limiting the speed of an actuator. These valves require the excess flow to pass across a relief valve upstream or a pump compensator to maintain a fixed pressure drop across the valve.



Pressure Compensated, Restrictive Type Flow Control Valves

Valves of this type allow a flow from port 1 through an orifice in the center of the spool, causing a pressure differential. This differential causes the spool to move back against a spring and restrict flow out of the valve at port 2. If the pressure differential changes, the spool will compensate and further restrict or open the flow out at port 2. In this way, a constant pressure drop is maintained across the orifice and therefore the flow remains constant. Partially adjustable versions of this type of valve change the spring force, allowing for variable flow through the valve. The adjustment is ideal for fine-tuning the flow in an application to improve accuracy, but it does not allow the valve to be closed completely.



Pressure Compensated, Restrictive Type Flow Control Valves with Reverse Free Flow

These valves are pressure compensated and fully adjustable, which allow the operator to completely close the line between ports 1 and 2. A reverse free flow check is also built into the design from port 2 to 1. The adjustable orifice is independent of the compensating spool, which senses the pressure difference across the orifice and moves to control the outlet flow by restriction the exit holes to port 2.

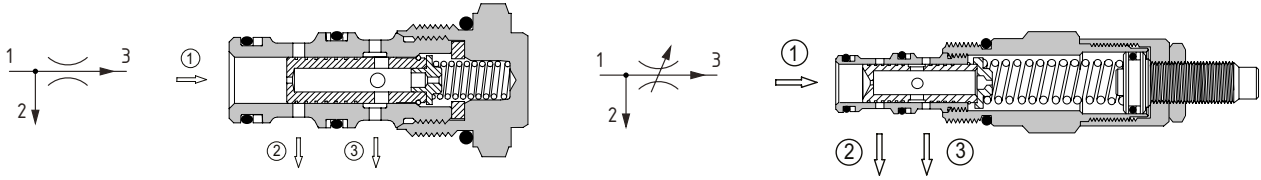


Flow Control Valves

Application Notes

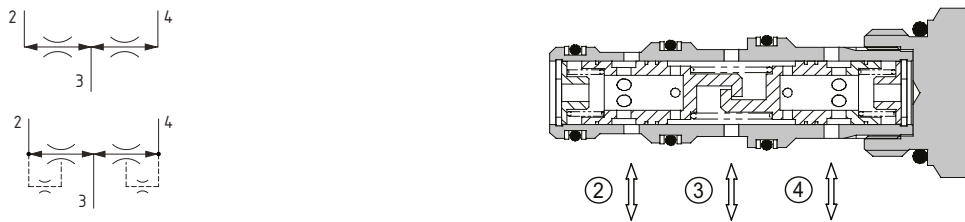
Pressure Compensated, Priority Type Flow Control Valves

These valves are pressure compensated, three ported, priority type flow regulators. Once the flow setting is reached from port 1 to port 3, excess flow is diverted to port 2 and can be used in a separate part of the circuit. These valves can be used to ensure braking or steering systems have priority flow or to divert a controlled or limited flow to attachment circuits. These valves are available in fixed, partially, or fully adjustable versions.



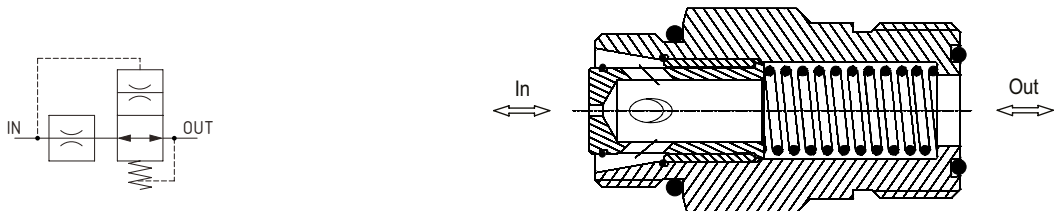
Flow Dividers / Combiners Pressure Compensated

These valves are pressure compensated spool-type flow divider/combiners. They split an inlet flow into two, maintaining the division independent of changes in pressure. They can also combine two flows accommodating changes in pressure. For transmission applications, a synchronizing version is available that allows a make-up flow through orifices within the valve to allow motors to rotate at different speeds when the vehicle is turning.



Velocity Fuses

These valves are normally open and designed to close when the flow setting is reached. Depending on the design, the valve will close completely or to a pre-determined low flow. When installed into or next to an actuator, they can protect against catastrophic hose failure. An accelerating load will be slowed if the speed corresponds to a flow greater than the set flow. The valve will only open when the load pressure drops to less than the spring pressure (typically around 5.5 bar [80psi])



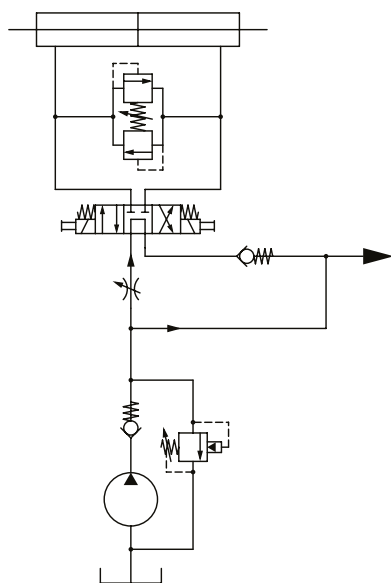
Flow Control Valves

Application Notes

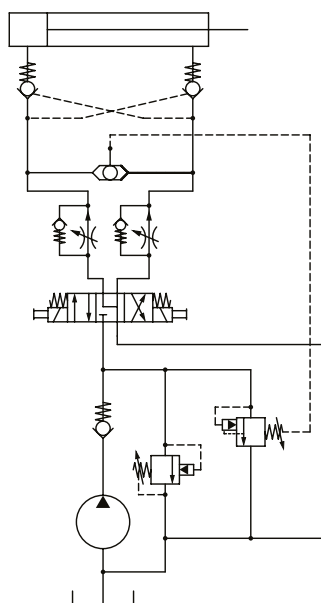
Application Recommendations

- Using any two ported needle valve or flow control as a meter out device on the rod side of a cylinder may cause intensification to a level equal to the cylinder ratio.
- When using priority type flow controls, blocking the bypass flow port will cause the valve to function as a restrictive type valve.
- Blocking the regulated port on a priority type valve will cause the valve to close all ports.
- On a priority type valve, flow will not be compensated until the setting is reached and oil begins to pass to the bypass flow port.
- Flow dividers will close both outlet ports if one becomes blocked, except for a small make up flow in the opposite port.
- Overflowing flow dividers can cause spool breakages.
- Applying flow dividers below the selected flow setting will reduce the accuracy of the valve. Unless otherwise specified, it is not recommended to use a flow divider below 50% of the inlet flow for the specified flow setting.
- Partially adjustable flow control valves do not completely block the flow. For applications requiring this functionality, fully adjustable versions must be used.

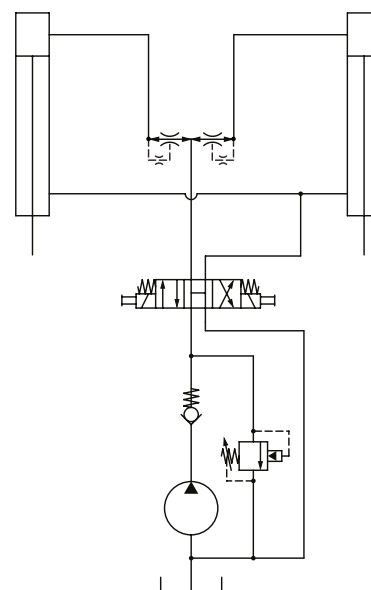
Typical Applications



▲ Priority flow



▲ Speed control



▲ Synchronization

Flow Control Valves

Quick Reference

Needle Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	NV1-8	SDC08-2	Needle Valve, Fully Adjustable	11 l/min [3 US gpm]	350 bar [5000 psi]	8
	CP618-6	SDC08-2	Needle valve, Fully Adjustable, Fine Metering	11 l/min [3 US gpm]	310 bar [4500 psi]	9
	NV1-10	SDC10-2	Needle valve, Fully Adjustable, Fine Metering	30 l/min [8 US gpm]	250 bar [3600 psi]	10
	FCV7-10-NV	SDC10-2	Needle Valve, Fully Adjustable	45 l/min [12 US gpm]	210 bar [3000 psi]	11
	FCV7-10-NVF	SDC10-2	Needle valve, Fully Adjustable, Fine Metering	38 l/min [10 US gpm]	210 bar [3000 psi]	12
	FCV11-12	C-12-2	Needle Valve, Fully Adjustable	114 l/min [30 US gpm]	350 bar [5000 psi]	13
	FCV6-16	SDC16-2	Needle Valve, Fully Adjustable	208 l/min [55 US gpm]	210 bar [3000 psi]	14
	CP613-1	SDC20-2	Needle Valve, Fully Adjustable	380 l/min [100 US gpm]	210 bar [3000 psi]	15

Needle Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	FCV7-10	SDC10-2	Needle Valve, Fully Adjustable with Reverse Free Flow	45 l/min [12 US gpm]	210 bar [3000 psi]	16
	CP610-7	SDC10-2	Needle Valve, Fully Adjustable, Fine Metering with Reverse Free Flow	55 l/min [14 US gpm]	350 bar [5000 psi]	17

Flow Control Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP308-1	SDC08-2	Flow Control, Fixed, Pressure Compensated, Restrictive Type	15 l/min [4 US gpm]	210 bar [3000 psi]	18
	FR5-8	SDC08-2	Flow Control, Fixed, Pressure Compensated, Restrictive Type	9.5 l/min [2.5 US gpm]	350 bar [5000 psi]	19
	FR5-10	SDC10-2	Flow Control, Fixed, Pressure Compensated, Restrictive Type	23 l/min [6 US gpm]	350 bar [5000 psi]	20
	CP301-1	CP12-2	Flow Control, Fixed, Pressure Compensated, Restrictive Type	57 l/min [15 US gpm]	210 bar [3000 psi]	21
	FR1-16	SDC16-2	Flow Control, Fixed, Pressure Compensated, Restrictive Type	114 l/min [30 US gpm]	210 bar [3000 psi]	22
	FR1-20	SDC20-2	Flow Control, Fixed, Pressure Compensated, Restrictive Type	227 l/min [60 US gpm]	210 bar [3000 psi]	23


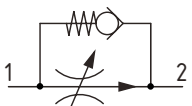
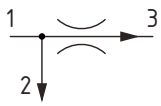
Flow Control Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	SC 10	N/A	Flow Control, Insert Type, Fixed, Pressure Compensated, Restrictive Type	16 l/min [4.2 US gpm]	210 bar [3000 psi]	24
	SC 13	N/A	Flow Control, Insert Type, Fixed, Pressure Compensated, Restrictive Type	47 l/min [12.4 US gpm]	210 bar [3000 psi]	25

Flow Control Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP300-6	SDC10-3	Flow Control, Fixed, Pressure Compensated, Restrictive Type, Bi-directional	23 l/min [6 US gpm]	210 bar [3000 psi]	26
	FCH10-BD	SDC10-3	Flow Control, Fixed, Pressure Compensated, Restrictive Type, Bi-directional	23 l/min [6 US gpm]	350 bar [5000 psi]	27

*Flow ratings are for reference only. Refer to individual product page for performance information.

Flow Control Valves

Quick Reference

Flow Control Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP308-2	SDC08-2	Flow Control, Partially Adjustable, Pressure Compensated, Restrictive Type	15 l/min [4 US gpm]	210 bar [3000 psi]	28
	FR2-10	SDC10-2	Flow Control, Partially Adjustable, Pressure Compensated, Restrictive Type	38 l/min [10 US gpm]	210 bar [3000 psi]	29
	FR2-16	SDC16-2	Flow Control, Partially Adjustable, Pressure Compensated, Restrictive Type	114 l/min [30 US gpm]	210 bar [3000 psi]	30
Flow Control Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	2CFRC60	A7447	Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow	60 l/min [16 US gpm]	350 bar [5000 psi]	31
	HFCV10-RT	SDC10-2	Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow	11.4 l/min [3 US gpm]	350 bar [5000 psi]	32
	HFCV10-HRT	SDC10-2	Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow	45 l/min [12 US gpm]	350 bar [5000 psi]	33
	FAR1-12	C-12-2	Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow	95 l/min [25 US gpm]	350 bar [5000 psi]	34
	FAR1-16	SDC16-2	Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow	114 l/min [30 US gpm]	350 bar [5000 psi]	35
Flow Control Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	PFR5-8	SDC08-3	Flow Control, Fixed, Pressure Compensated, Priority Type	9.5 l/min [2.5 US gpm]	350 bar [5000 psi]	36
	VRF 06	NCS06/3	Flow Control, Fixed, Pressure Compensated, Priority Type	30 l/min [8 US gpm]	315 bar [4600 psi]	37
	PFR15-10	SDC10-3	Flow Control, Fixed, Pressure Compensated, Priority Type	38 l/min [10 US gpm]	350 bar [5000 psi]	38
	CP311-1	CP12-3	Flow Control, Fixed, Pressure Compensated, Priority Type	45 l/min [12 US gpm]	210 bar [3000 psi]	39
	PFR11-12	C-12-3	Flow Control, Fixed, Pressure Compensated, Priority Type	76 l/min [20 US gpm]	350 bar [5000 psi]	40
	CP312-1	SDC16-3	Flow Control, Fixed, Pressure Compensated, Priority Type	65 l/min [17 US gpm]	210 bar [3000 psi]	41
	PFR11-16	SDC16-3	Flow Control, Fixed, Pressure Compensated, Priority Type	114 l/min [30 US gpm]	350 bar [5000 psi]	42

*Flow ratings are for reference only. Refer to individual product page for performance information.

Flow Control Valves

Quick Reference

Flow Control Valves	Model No.	Cavity	Description	Flow*	Pressure	Page
	2CFP60	CVA27-04	Flow Control, Fully Adjustable, Pressure Compensated, Priority Type	60 l/min [16 US gpm]	350 bar [5000 psi]	43
	PFR2-10	SDC10-3	Flow Control, Partially Adjustable, Pressure Compensated, Priority Type	38 l/min [10 US gpm]	210 bar [3000 psi]	44
	PFR12-10	SDC10-3	Flow Control, Partially Adjustable, Pressure Compensated, Priority Type	38 l/min [10 US gpm]	350 bar [5000 psi]	45
	PFR12-12	C-12-3	Flow Control, Partially Adjustable, Pressure Compensated, Priority Type	76 l/min [20 US gpm]	350 bar [5000 psi]	46
	VRC 06	NCS06/3	Flow Control, Partially Adjustable, Pressure Compensated, Priority Type	30 l/m [8 US gpm]	315 bar [4600 psi]	47
	VRC 12	NCS12/3	Flow Control, Partially Adjustable, Pressure Compensated, Priority Type	73 l/min [19 US gpm]	315 bar [4600 psi]	48
	PFR2-16	SDC16-3	Flow Control, Partially Adjustable, Pressure Compensated, Priority Type	114 l/min [30 US gpm]	210 bar [3000 psi]	49
	PFR12-16	SDC16-3	Flow Control, Partially Adjustable, Pressure Compensated, Priority Type	114 l/min [30 US gpm]	350 bar [5000 psi]	50
Flow Dividers/Combiners	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP340-1/1S	SDC10-4	Flow Divider/Combiner, Fixed Ratio, Flow Synchronizing Option	45 l/min [12 US gpm]	210 bar [3000 psi]	51
	2CFD50/A2X	SDC10-4	Flow Divider/Combiner, Fixed Ratio, Flow Synchronizing Option	40 l/min [11 US gpm]	350 bar [5000 psi]	52
	CP342-1/1S	SDC16-4	Flow Divider/Combiner, Fixed Ratio, Flow Synchronizing Option	150 l/min [40 US gpm]	210 bar [3000 psi]	53
Flow Dividers/Combiners	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP341-1	CP12-4	Flow Divider/Combiner, Fixed Ratio	76 l/min [20 US gpm]	210 bar [3000 psi]	54
	CP342-3	SDC16-4	Flow Divider/Combiner, Fixed Ratio	150 l/min [40 US gpm]	450 bar [6500 psi]	55
	CP343-1	SDC20-4	Flow Divider/Combiner, Fixed Ratio	340 l/min [90 US gpm]	210 bar [3000 psi]	56
Velocity Fuses	Model No.	Cavity	Description	Flow*	Pressure	Page
	VF11-10	SDC10-2	Velocity Fuse	23 l/min [6 US gpm]	350 bar [5000 psi]	57
Velocity Fuses	Model No.	Cavity	Description	Flow*	Pressure	Page
	CP330-3	#10 SAE Port	Velocity Fuse, In-line	110 l/min [29 US gpm]	210 bar [3000 psi]	58

*Flow ratings are for reference only. Refer to individual product page for performance information.

Flow Control Valves

NV1-8

Needle Valve, Fully Adjustable

350 bar [5000 psi] • 11 l/min [3 US gpm]

DESCRIPTION AND OPERATION

This needle valve is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjustment screw decreases the flow setting until it is completely closed. The setting can be locked by tightening lock nut or knob on the adjustment screw.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	11 l/min [3 US gpm]
Leakage	5 drops/min @ 350 bar [5000 psi]
Weight	0.07 kg [0.15 lb]
Cavity	SDC08-2

MODEL CODE

NV1 - 8 - V - S - S - 4T

Seal Option

Code	Seal Kit
Omit - Buna - N	02-165875
V - Viton	02-165877

Adjustment Option

S - External
C - Tamper Resistant
K - Knob

Housing Material

Omit - No housing
S - Steel
A - Aluminium

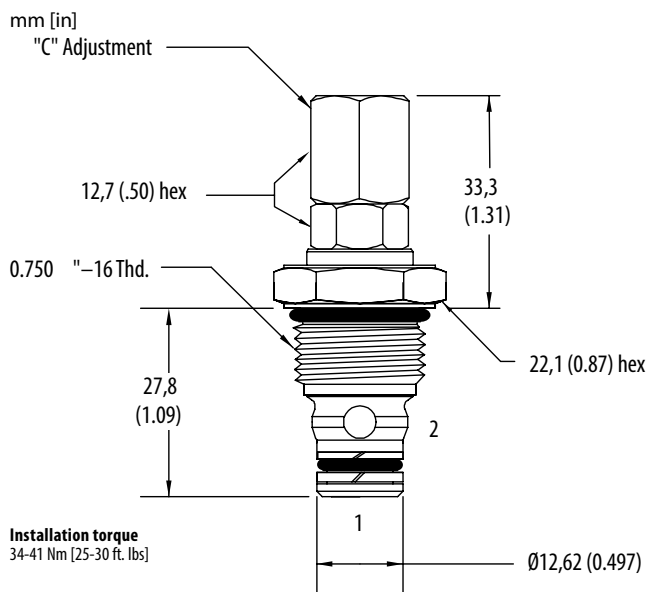
Housing

Code	Ports	Aluminium Heavy duty	Aluminium Heavy duty
0	No housing		
4T	#4 SAE	02-160730	02-160736
6T	#6 SAE	02-160731	02-160737
8T	#8 SAE	02-160732	02-160738
2G	1/4" BSP	02-160727	02-160733
3G	3/8" BSP	02-160728	02-160734

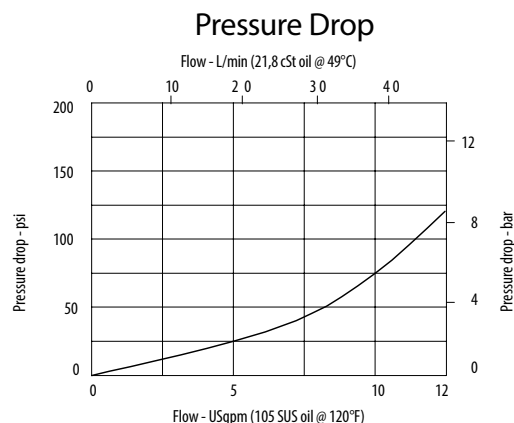
* Aluminium bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

DIMENSIONS



PERFORMANCE CURVES



Flow Control Valves

CP618-6

Needle valve, Fully Adjustable, Fine Metering

310 bar [4500 psi] • 11 l/min [3 US gpm]

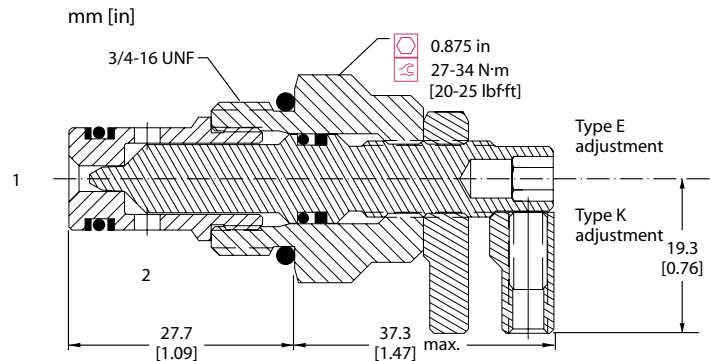
DESCRIPTION AND OPERATION

This needle valve with fine metering is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjustment screw decreases the flow setting until it is completely closed. The setting can be locked by tightening lock nut or knob on the adjustment screw.

SCHEMATIC



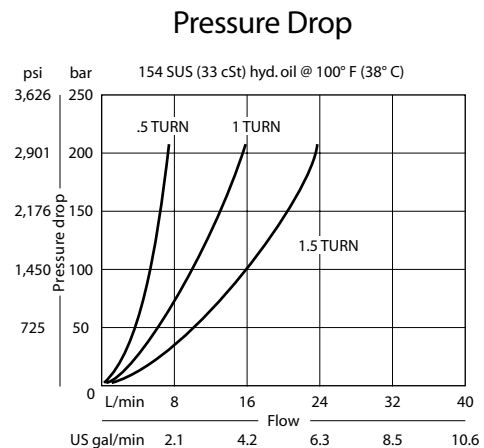
DIMENSIONS



PERFORMANCE DATA

Rated pressure	310 bar [4500 psi]
Rated flow	11 l/min [3 US gpm]
Leakage	6 drops/min @ Rated pressure
Weight	0.12 kg [0.26 lb]
Cavity	SDC08-2

PERFORMANCE CURVES



MODEL CODE

CP618 - 6 - B - 6S - K

Seal Option

Code	Seal Kit
B - Buna - N	120227
V - Viton	120228

Adjustment Option

E - External
K - Knob

Housing

Code	Ports	Housing Model Code
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

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

NV1-10

Needle valve, Fully Adjustable, Fine Metering

210 bar [3000 psi] • 45 l/min [12 US gpm]

DESCRIPTION AND OPERATION

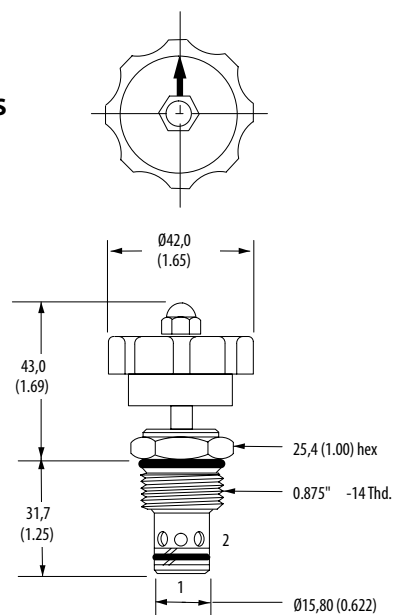
This needle valve with fine metering is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjustment screw decreases the flow setting until it is completely closed.

SCHEMATIC



DIMENSIONS

mm [in]

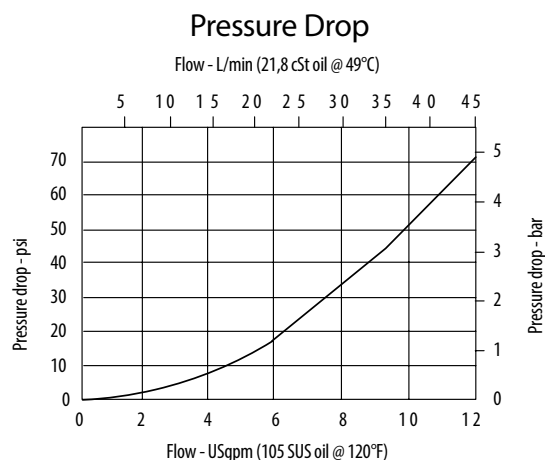


Installation Torque:
47-54 Nm [35-40 ft. lbs]

PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	45 l/min [12 US gpm]
Leakage	5 drops/min @ 210 bar [3000 psi]
Weight	0.11 kg [0.24 lb]
Cavity	SDC10-2

PERFORMANCE CURVES



MODEL CODE

NV1 - 10 - V - K - 0

Seal Option

Code	Seal Kit
Omit - Buna - N	565806
V - Viton	889627

Adjustment Option

K - Knob [black]
R - Knob [red]

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty
0	No housing		
3B	3/8" BSP	02-175462	-
6T	#6 SAE	566151	-
2G	1/4" BSP	-	876702
3G	3/8" BSP	-	876703
6H	#6 SAE	-	876700
8H	#8 SAE	-	876701

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

FCV7-10-NVF

Needle valve, Fully Adjustable, Fine Metering

210 bar [3000 psi] • 38 l/min [10 US gpm]

DESCRIPTION AND OPERATION

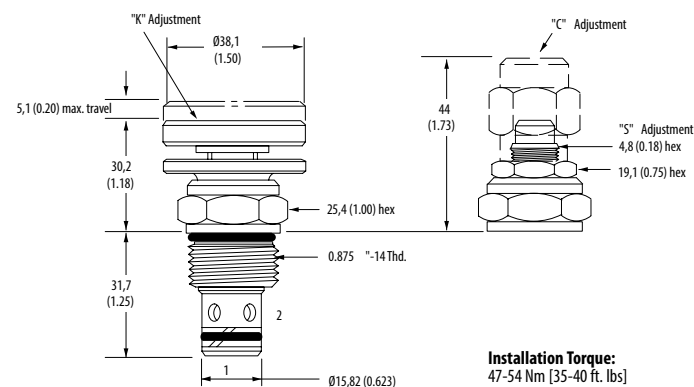
This needle valve with fine metering is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjustment screw decreases the flow setting until it is completely closed. The setting can be locked by tightening lock nut or knob on the adjustment screw.

SCHEMATIC



DIMENSIONS

mm [in]

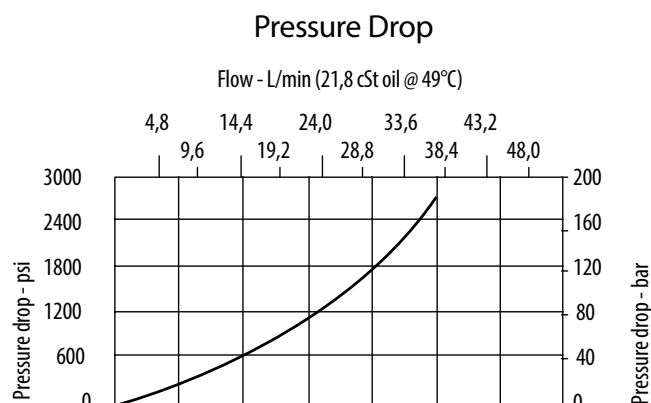


Installation Torque:
47-54 Nm [35-40 ft. lbs]

PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	38 l/min [10 US gpm]
Weight	0.11 kg [0.24 lb]
Cavity	SDC10-2

PERFORMANCE CURVES



MODEL CODE

FCV7 - 10 - V - C - 0 - NVF

Seal Option

Code	Seal Kit
Omit-Buna - N	565806
V-Viton	889627

Adjustment Option

C - Tamper Resistant
K - Knob
S - External

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty
0	No housing		
3B	3/8" BSP	02-175462	-
6T	#6 SAE	566151	-
2G	1/4" BSP	-	876702
3G	3/8" BSP	-	876703
6H	#6 SAE	-	876700
8H	#8 SAE	-	876701

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

FCV11-12

Needle Valve, Fully Adjustable

350 bar [5000 psi] • 114 l/min [30 US gpm]

DESCRIPTION AND OPERATION

This needle valve is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjustment screw decreases the flow setting until it is completely closed. The setting can be locked by tightening lock nut or knob on the adjustment screw.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	114 l/min [30 US gpm]
Leakage	5 drops/min @ 210 bar [3000 psi]
Weight	0.24 kg [0.54 lb]
Cavity	C-12-2/C-12-2U

MODEL CODE

FCV11 - 12 - V - S - A - 10T - U - NV

Seal Option

Code	Seal Kit
Omit - Buna - N	02-165889
V - Viton	02-165888

Adjustment Option

S - External
K - Knob

Housing Material

Omit - No housing
A - Aluminium
S - Steel

Cavity

Omit - Cavity without undercut
U - Cavity with undercut

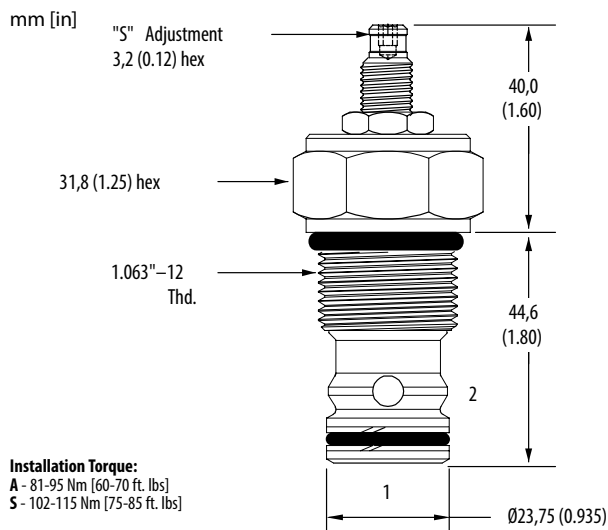
Housing

Code	Ports	C-12-2U Aluminium Heavy duty	C-12-2 Aluminium Heavy duty	C-12-2U Steel Heavy duty	C-12-2 Steel Heavy duty
0	No housing				
10T	#10 SAE	02-160641	02-160640	02-169817	02-169744
12T	#12 SAE	02-160645	02-160644	02-169790	02-169782
4G	1/2" BSP	02-161116	02-161118	02-172512	02-172062
6G	3/4" BSP	02-161115	02-161117	02-162922	02-169665

* Aluminium bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

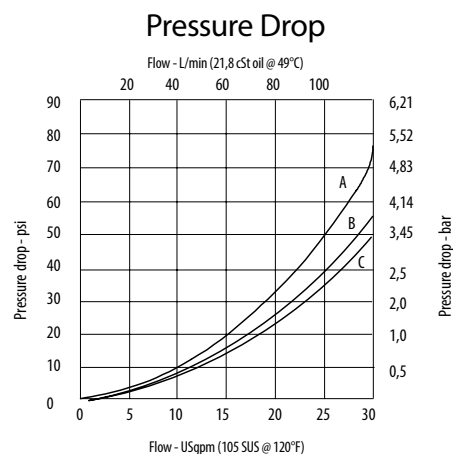
DIMENSIONS



Installation Torque:

A - 81-95 Nm [60-70 ft. lbs]
S - 102-115 Nm [75-85 ft. lbs]

PERFORMANCE CURVES



A - Cartridge with C-12-2 valve body, full open

B - Cartridge with C-12-2U valve body, full open • C - Cartridge only, full open

Flow Control Valves

FCV6-16

Needle Valve, Fully Adjustable

210 bar [3000 psi] • 208 l/min [55 US gpm]

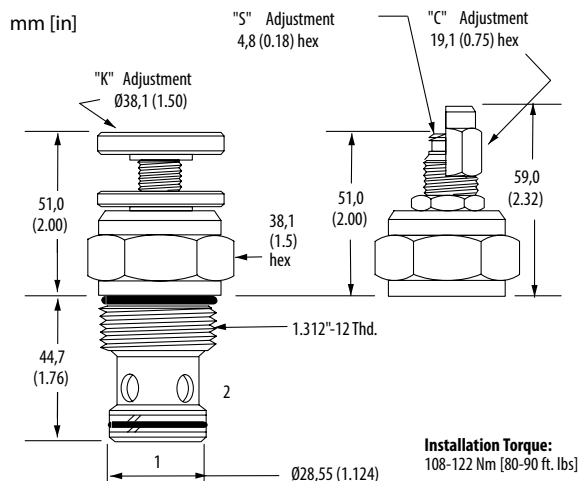
DESCRIPTION AND OPERATION

This needle valve is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjustment screw decreases the flow setting until it is completely closed. The setting can be locked by tightening lock nut or knob on the adjustment screw.

SCHEMATIC



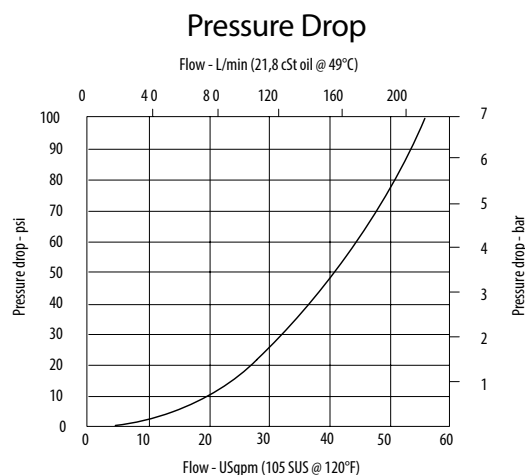
DIMENSIONS



PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	208 l/min [55 US gpm]
Leakage	Port 2 to 1: 5 drops/min @ 210 bar [3000 psi]
Weight	0.37 kg [0.81 lb]
Cavity	SDC16-2

PERFORMANCE CURVES



MODEL CODE

FCV6 - 16 - V - C - 0 - NV

Seal Option

Code	Seal Kit
Omit-Buna - N	889631
V-Viton	889635

Adjustment Option

C - Tamper Resistant
K - Knob
S - External

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty
0	No housing		
6B	3/4" BSP	02-175463	-
12T	#12 SAE	566149	-
4G	1/2" BSP	-	876716
6G	3/4" BSP	-	876718
10H	#10 SAE	-	876717
12H	#12 SAE	-	566113

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

CP613-1

Needle Valve, Fully Adjustable

210 bar [3000 psi] • 380 l/min [100 US gpm]

DESCRIPTION AND OPERATION

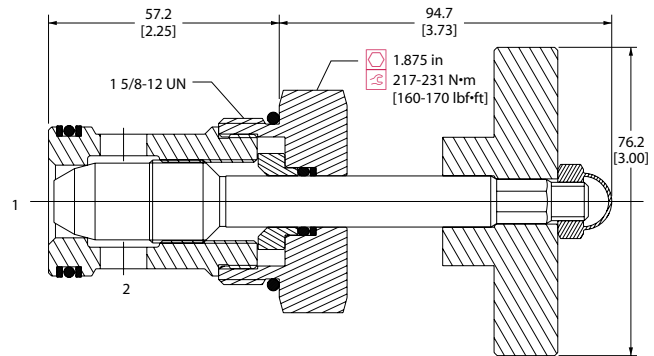
This needle valve is a variable orifice used to create a pressure drop when flow passes from port 1 to 2 or port 2 to 1. Clockwise rotation of the adjustment screw decreases the flow setting until it is completely closed.

SCHEMATIC



DIMENSIONS

mm [in]

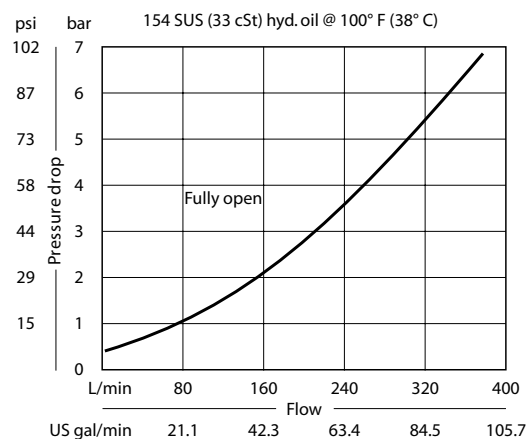


PERFORMANCE DATA

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

PERFORMANCE CURVES

Pressure Drop



MODEL CODE

CP613 - 1 - B - 16S

Seal Option

Code	Seal Kit
B-Buna - N	120172
V-Viton	120173

Housing

Code	Ports & Material	Housing Model Code
0	No Housing	No Housing
8B	AL, 1 BSP	CP20-2-8B
10B	AL, 1-1/4 BSP	CP20-2-10B
16S	AL, #16 SAE	CP20-2-16S
20S	AL, #20 SAE	CP20-2-20S

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

FCV7-10

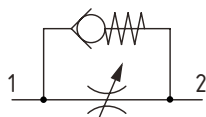
Needle Valve, Fully Adjustable with Reverse Free Flow

210 bar [3000 psi] • 45 l/min [12 US gpm]

DESCRIPTION AND OPERATION

This is a needle valve with a reverse free flow check. It is a variable orifice used to create a pressure drop when flow passes from port 2 to 1, while allowing free flow when flow passes from 1 to 2. Clockwise rotation of the adjustment screw decreases the flow setting until it is completely closed. The setting can be locked by tightening lock nut or knob on the adjustment screw.

SCHEMATIC

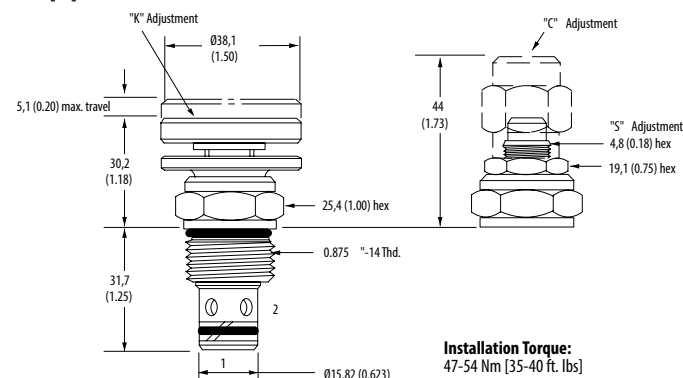


PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	45 l/min [12 US gpm]
Weight	0.11 kg [0.25 lbs]
Cavity	SDC10-2

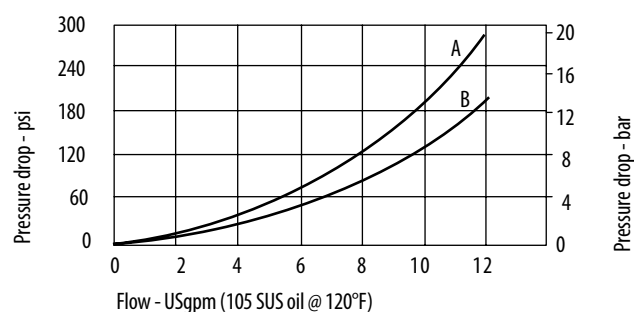
DIMENSIONS

mm [in]



PERFORMANCE CURVES

Pressure Drop



A - Flow from port 2 to 1 • B - Flow from port 1 to 2

MODEL CODE

FCV7 - 10 - V - C - 3B - FF

Seal Option

Code	Seal Kit
Omit-Buna - N	565806
V-Viton	889627

Adjustment Option

C- Tamper Resistant
K - Knob
S - External

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty
0	No housing		
3B	3/8" BSP	02-175462	-
6T	#6 SAE	566151	-
2G	1/4" BSP	-	876702
3G	3/8" BSP	-	876703
6H	#6 SAE	-	876700
8H	#8 SAE	-	876701

Flow Range

Code	l/min	US gpm
FF	0-45	[0-12]
10	0-6.6	[0-1.75]
20	0-14	[0-3.75]
40	0-27	[0-7.25]

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].
* Additional housings available

Flow Control Valves

CP610-7

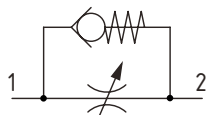
Needle Valve, Fully Adjustable, Fine Metering with Reverse Free Flow

350 bar [5000 psi] • 55 l/min [14 US gpm]

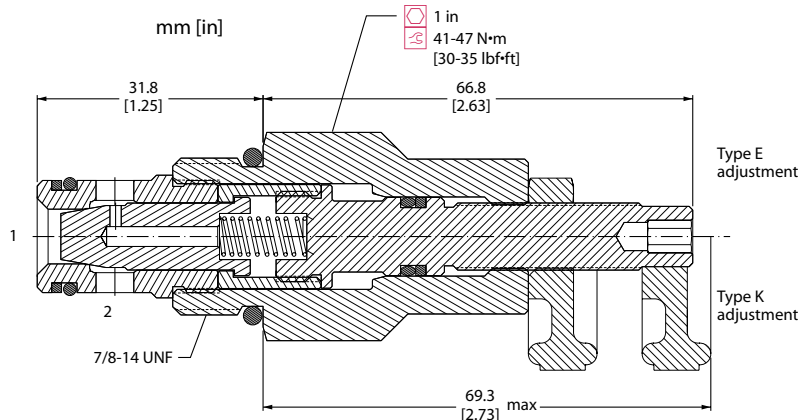
DESCRIPTION AND OPERATION

This is a needle valve with a reverse free flow check. It is a variable orifice used to create a pressure drop when flow passes from port 2 to 1, while allowing free flow when flow passes from 1 to 2. Clockwise rotation of the adjustment screw decreases the flow setting until it is completely closed. The setting can be locked by tightening lock nut or knob on the adjustment screw.

SCHEMATIC



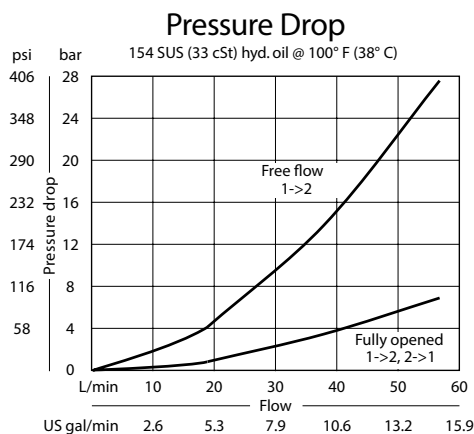
DIMENSIONS



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	55 l/min [14 US gpm]
Weight	0.18 kg [0.40 lb]
Cavity	SDC10-2

PERFORMANCE CURVES



MODEL CODE

CP610 - 7 - B - 8S - K

Seal Option

Code	Seal Kit
B-Buna - N	120015
V-Viton	120016

Adjustment Option

E - External
K - Knob

Housing

Code	Ports&Material	Housing Model Code
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

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

CP308-1

Flow Control, Fixed, Pressure Compensated, Restrictive Type

210 bar [3000 psi] • 15 l/min [4 US gpm]

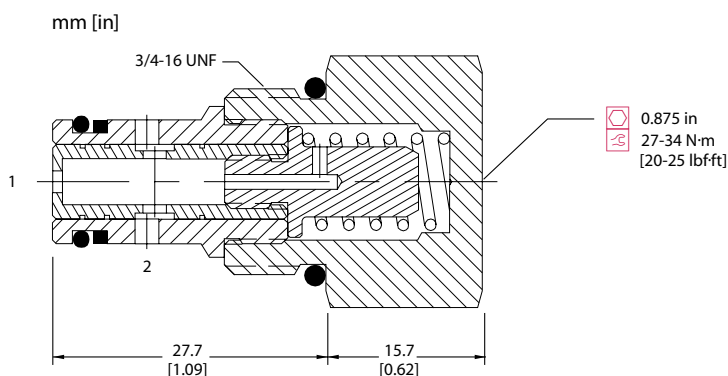
DESCRIPTION AND OPERATION

This is a fixed, restrictive type, pressure compensated flow control valve, where the flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC



DIMENSIONS

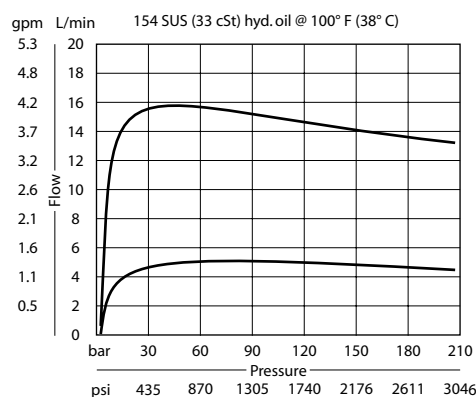


PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	15 l/min [4 US gpm]
Flow Range	0.4-15.0 l/min [0.1-4.0 US gpm]
	0.4-1.88 l/min [0.1-0.49 US gpm] ± 20%
Flow Accuracy	1.89-5.67 l/min [0.5-1.49 US gpm] ± 15%
	5.68-15.1 l/min [1.5-4.0 US gpm] ± 10%
Weight	0.08 kg [0.17 lb]
Cavity	SDC08-2

PERFORMANCE CURVES

Flow Compensation



MODEL CODE

CP308 - 1 - B - 6S - 1.0

Seal Option

Code	Seal Kit
B -Buna - N	120221
V -Viton	120022

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
1.0	4.0	1.0

Housing

Code	Ports & Material	Housing Model Code
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

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

FR5-8

Flow Control, Fixed, Pressure Compensated, Restrictive Type

350 bar [5000 psi] • 9.5 l/min [2.5 US gpm]

DESCRIPTION AND OPERATION

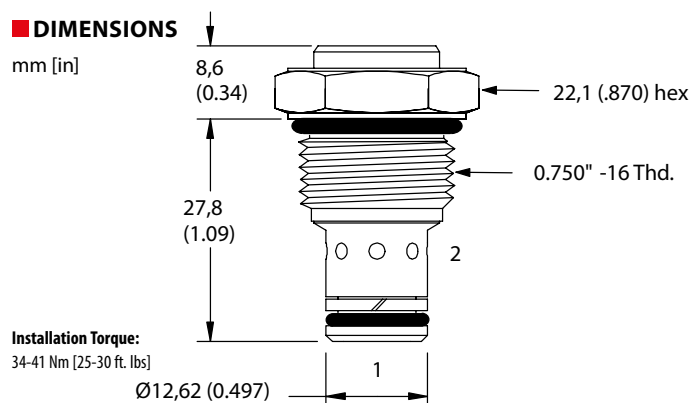
This is a fixed, restrictive type, pressure compensated flow control valve, where the flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC



DIMENSIONS

mm [in]

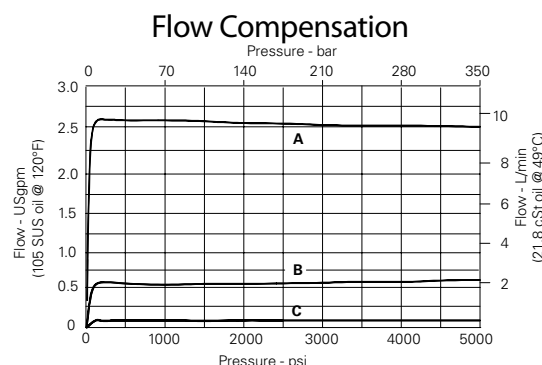


Installation Torque:
34-41 Nm [25-30 ft. lbs]

PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	9.5 l/min [2.5 US gpm]
Flow Range	0.4-9.5 l/min [0.1-2.5 US gpm]
Flow Accuracy	0.4–1.9 l/min [0.1–0.49 US gpm] ±20% @ 210 bar [3000 psi]
	0.4–1.9 l/min [0.1–0.49 US gpm] ±40% @ 350 bar [3000 psi]
	1.9–5.7 l/min [0.5–1.49 US gpm] ±15% @ 350 bar [5000 psi]
	5.7–9.5 l/min [1.5–2.5 US gpm] ±10% @ 350 bar [5000 psi]
Weight	0.05 kg [0.12 lbs]
Cavity	SDC08-2

PERFORMANCE CURVES



A - 9,5 L/min (2.5 USgpm) • B - 1,9 L/min (0.5 USgpm)
C - 0,4 l/min (0.1 USgpm)

MODEL CODE

FR 5 - 8 - V - F - A - 4T - 1.0

Seal Option

Code	Seal Kit
Omit-Buna - N	02-165875
V-Viton	02-165877

Adjustment Option

F - Fixed

Housing Material

Omit - No housing
A - Aluminium
S - Steel

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
1.0	4.0	1.0

Housing

Code	Ports	Aluminium Heavy duty	Steel Heavy duty
0	No housing		
4T	#4 SAE	02-160730	02-160736
6T	#6 SAE	02-160731	02-160737
8T	#8 SAE	02-160732	02-160738
2G	1/4" BSP	02-160727	02-160733
3G	3/8" BSP	02-160728	02-160734

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

FR5-10

Flow Control, Fixed, Pressure Compensated, Restrictive Type

350 bar [5000 psi] • 23 l/min [6 US gpm]

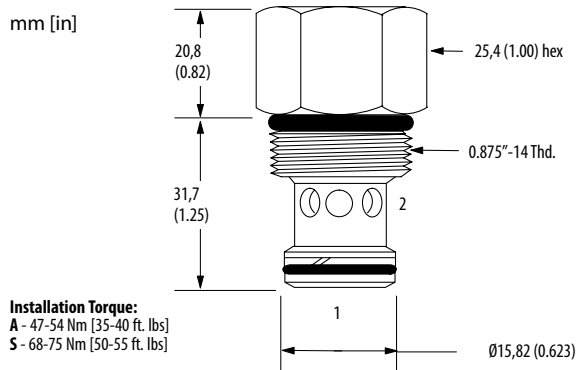
DESCRIPTION AND OPERATION

This is a fixed, restrictive type, pressure compensated flow control valve, where the flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC



DIMENSIONS

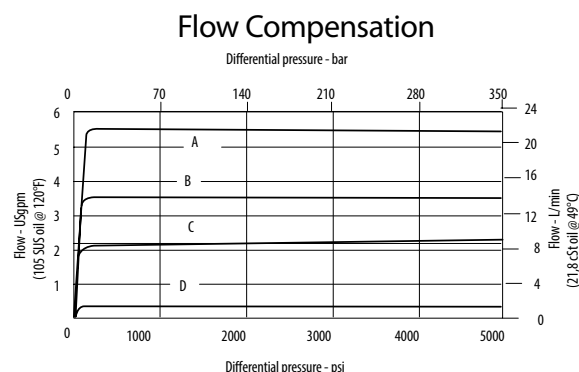


Installation Torque:
A - 47-54 Nm [35-40 ft. lbs]
S - 68-75 Nm [50-55 ft. lbs]

PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	23 l/min [6 US gpm]
Flow Range	0.4-23 l/min [0.1-6 US gpm]
Flow Accuracy	0.4-1.9 l/min [0.1-0.49 US gpm] $\pm 20\%$ @ 210 bar [3000 psi]
	0.4-1.9 l/min [0.1-0.49 US gpm] $\pm 40\%$ @ 350 bar [5000 psi]
	1.9-5.7 l/min [0.5-1.49 US gpm] $\pm 15\%$ @ 350 bar [5000 psi]
	5.7-22.7 l/min [1.5-6 US gpm] $\pm 10\%$ @ 350 bar [5000 psi]
Weight	0.12 kg [0.26 lb]
Cavity	SDC10-2

PERFORMANCE CURVES



A - 21 l/min (5.5 US gpm) • B - 13.3 l/min (3.5 US gpm)
C - 7.8 l/min (2.0 US gpm) • D - 0.95 l/min (0.25 US gpm)

MODEL CODE

FR 5 - 10 - V - F - A - 3B - 1.0

Seal Option

Code	Seal Kit
Omit - Buna - N	565803
V - Viton	566086

Adjustment Option

F - Fixed

Housing Material

Omit - No housing
A - Aluminium
S - Steel

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
1.0	4.0	1.0

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty	Steel Heavy duty
0	No housing			
3B	3/8" BSP	02-175462		
2G	1/4" BSP		876702	02-175102
3G	3/8" BSP		876703	02-175103
6H	#6 SAE		876700	
8H	#8 SAE		876701	
6T	#6 SAE	566151		02-175100
8T	#8 SAE			02-175101

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

CP301-1

Flow Control, Fixed, Pressure Compensated, Restrictive Type

210 bar [3000 psi] • 57 l/min [15 US gpm]

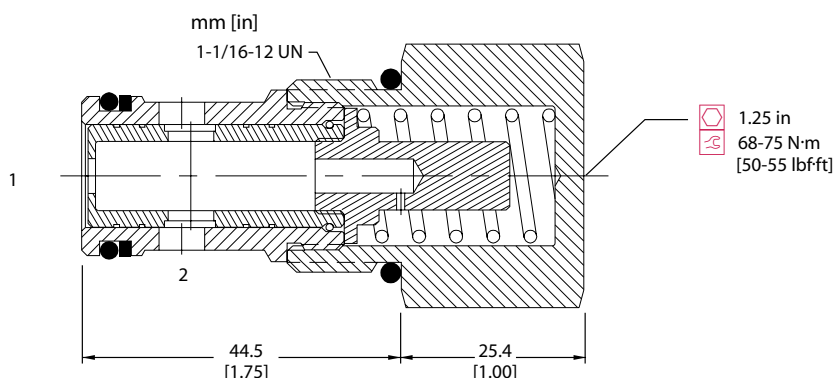
DESCRIPTION AND OPERATION

This is a fixed, restrictive type, pressure compensated flow control valve, where the flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC



DIMENSIONS

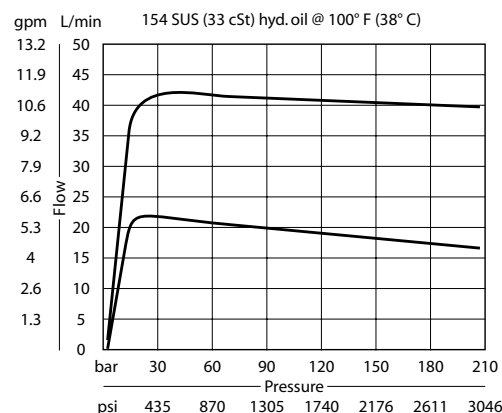


PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	57 l/min [15 US gpm]
Flow range	1.9-56.8 l/min [0.5-15 US gpm]
Flow Accuracy	1.9-7.5 l/min [0.5-1.99 US gpm] ± 20% 7.6-56.8 l/min [2-15 US gpm] ± 15%
Weight	0.24 kg [0.52 lb]
Cavity	CP12-2

PERFORMANCE CURVES

Flow Compensation



MODEL CODE

CP301 - 1 - B - 12S - 10.0

Seal Option

Code	Seal Kit
B-Buna - N	120017
V-Viton	120018

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
10.0	38.0	10.0

Housing

Code	Ports & Material	Housing Model Code
0	No Housing	No Housing
4B	AL, 1/2 BSP	CP-12-2-4B
6B	AL, 3/4 BSP	CP-12-2-6B
10S	AL, #10 SAE	CP-12-2-10S
12S	AL, #12 SAE	CP-12-2-12S

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

FR1-16

Flow Control, Fixed, Pressure Compensated, Restrictive Type

210 bar [3000 psi] • 114 l/min [30 US gpm]

DESCRIPTION AND OPERATION

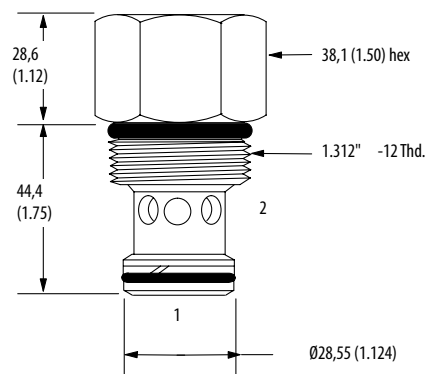
This is a fixed, restrictive type, pressure compensated flow control valve, where the flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC



DIMENSIONS

mm [in]

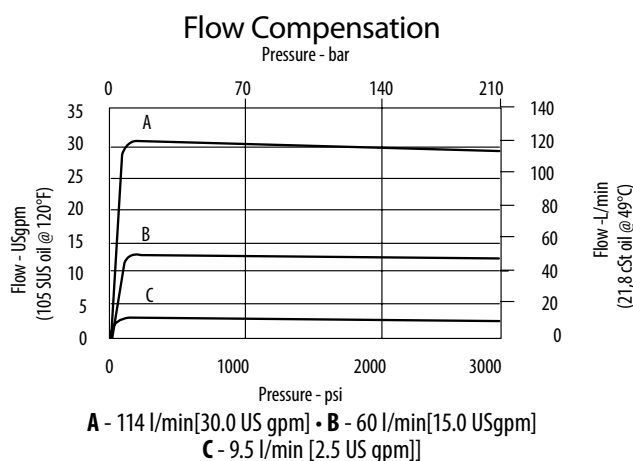


Installation Torque:
108-122 Nm [80-90 ft. lbs]

PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	114 l/min [30 US gpm]
Flow range	1.9-114 l/min [0.5-30 US gpm]
Flow accuracy	1.9-10.9 l/min [0.5-2.9 US gpm] ±15% 11.4-114 l/min [3-30 US gpm] ±10%
Weight	0.33 kg [0.72 lb]
Cavity	SDC16-2

PERFORMANCE CURVES



MODEL CODE

FR 1 - 16 - V - F - 0 - 15.0

Seal Option

Code	Seal Kit
Omit-Buna - N	565810
V-Viton	880609

Adjustment Option

F - Fixed

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
15.0	57.0	15.0

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty
0	No housing		
6B	3/4" BSP	02-175463	-
12T	#12 SAE	566149	-
4G	1/2" BSP	-	876716
6G	3/4" BSP	-	876718
10H	#10 SAE	-	876717
12H	#12 SAE	-	566113

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

FR1-20

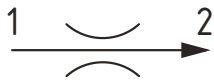
Flow Control, Fixed, Pressure Compensated, Restrictive Type

210 bar [3000 psi] • 227 l/min [60 US gpm]

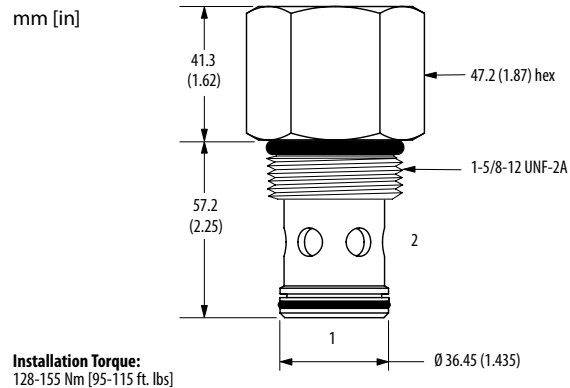
DESCRIPTION AND OPERATION

This is a fixed, restrictive type, pressure compensated flow control valve, where the flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC



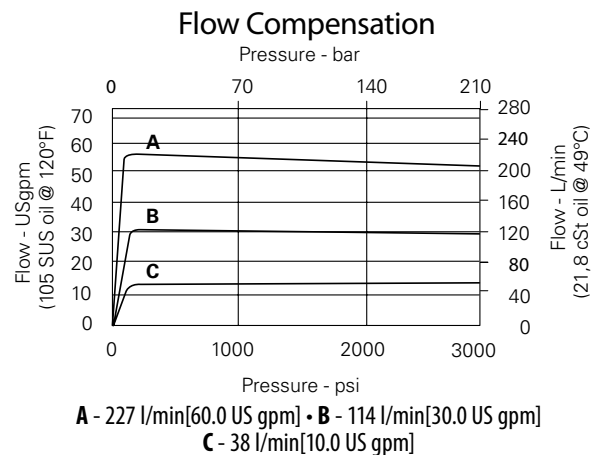
DIMENSIONS



PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	227 l/min [60 US gpm]
Flow range	3.8-227 l/min [1.0-60 US gpm]
Flow accuracy	3.8–18.5 l/min [1–4.9 US gpm] ±15% 19–227 l/min [5–60 US gpm] ±10%
Weight	0.82 kg [1.8 lb]
Cavity	SDC20-2

PERFORMANCE CURVES



MODEL CODE

FR 1 - 20 - V - F - 0 - 10.0

Seal Option

Code	Seal Kit
Omit-Buna - N	889615
V-Viton	889619

Adjustment Option

F - Fixed

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
10.0	38.0	10.0

Housing

Code	Ports	Housing Model Code	
		Aluminum standard duty	Aluminum heavy duty
0	No Housing		
8B	1" BSP	02-175464	-
16T	#16 SAE	566409	-
6G	3/4" BSP	-	876732
8G	1" BSP	-	876734
12H	#12 SAE	-	876733
16H	#16 SAE	-	876735

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

SC 10

Flow Control, Insert Type, Fixed, Pressure Compensated, Restrictive Type

210 bar [3000 psi] • 16 l/min [4.2 US gpm]

DESCRIPTION AND OPERATION

This is an insert type, fixed, restrictive type, pressure compensated flow control valve, where the flow from port A will remain constant regardless of the pressure difference across the valve. Flow enters at port B and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC

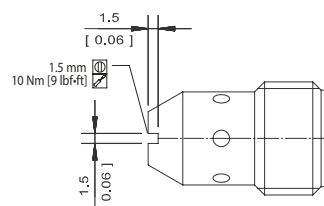
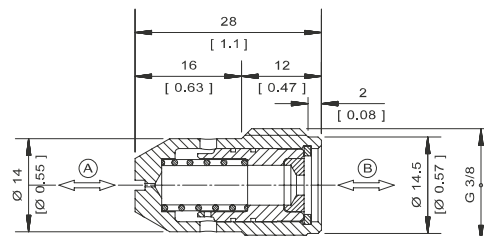


PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	16 l/min [4.2 US gpm]
Flow range	2.0-16.0 l/min [0.53-4.2 US gpm]
Weight	0.023 kg [0.05 lb]
Cavity	1/2" BSP (Consult factory)

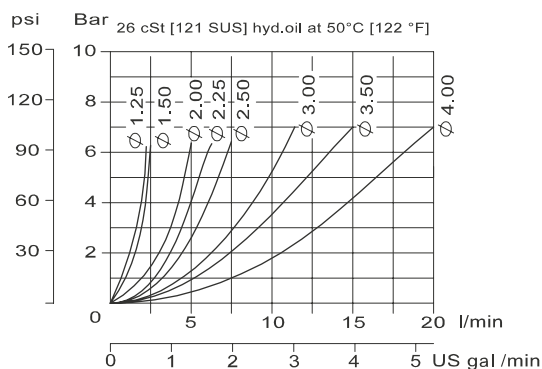
DIMENSIONS

mm [in]

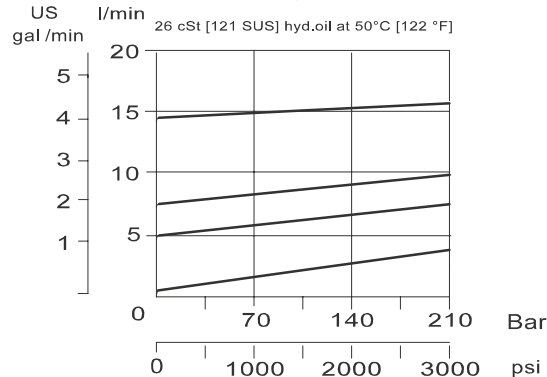


PERFORMANCE CURVES

Pressure Drop from A \Rightarrow B



Flow Compensation



MODEL CODE

SC10 - 1.25 - G - 00

Orifice Size

Code - Orifice Size in mm

Flow at 100 bar [1450 psi]

Code	l/min	US gpm
1.25	2.0	[0.53]
1.50	3.0	[0.79]
2.00	4.0	[1.06]
2.25	5.0	[1.32]
2.50	6.0	[1.59]
3.00	9.0	[2.38]
3.50	11.0	[2.91]
4.00	16.0	[4.23]

Housing

Code	Ports
00	No housing
L	3/8 BSP

Flow Control Valves

SC 13

Flow Control, Insert Type, Fixed, Pressure Compensated, Restrictive Type

210 bar [3000 psi] • 47 l/min [12.4 US gpm]

DESCRIPTION AND OPERATION

This is an insert type, fixed, restrictive type, pressure compensated flow control valve, where the flow from port A will remain constant regardless of the pressure difference across the valve. Flow enters at port B and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC

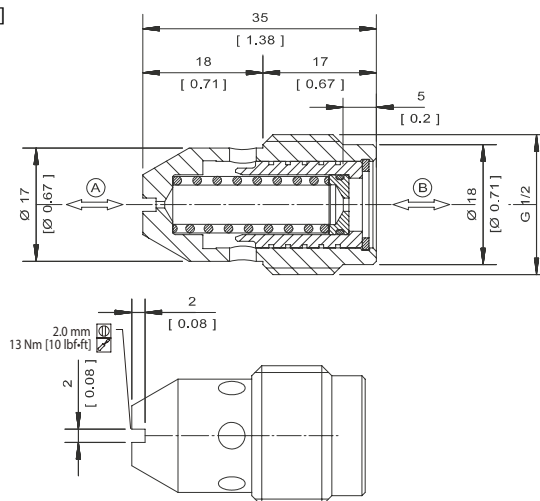


PERFORMANCE DATA

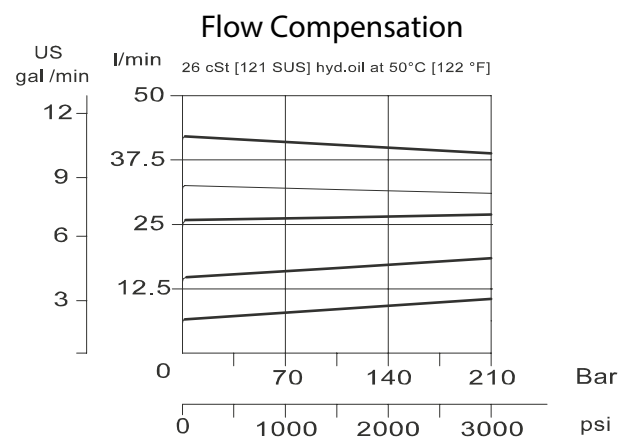
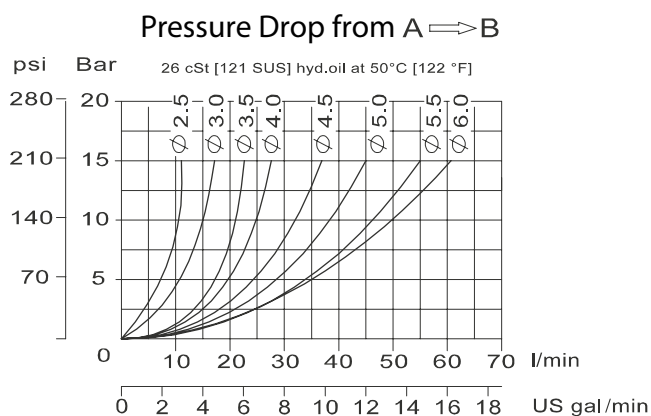
Rated pressure	210 bar [3000 psi]
Rated flow	47 l/min [12.4 US gpm]
Flow range	9-47 l/min [2.38-12.4 US gpm]
Weight	0.045 kg [0.01 lb]
Cavity	3/8" BSP (Consult factory)

DIMENSIONS

mm [in]



PERFORMANCE CURVES



MODEL CODE

SC13 - 4.50 - G - 00

Orifice Size

Code - Orifice Size in mm

Flow at 100 bar [1450 psi]

Code	l/min	[US gpm]
2.50	9	[2.38]
3.00	12	[3.17]
3.50	17	[4.49]
4.00	21	[5.55]
4.50	27	[7.13]
5.00	32	[8.45]
5.50	40	[10.57]
6.00	47	[12.42]

Housing

Code	Ports
00	No housing
L	1/2 BSP

Flow Control Valves

CP300-6

Flow Control, Fixed, Pressure Compensated, Restrictive Type, Bi-directional

210 bar [3000 psi] • 23 l/min [6 US gpm]

DESCRIPTION AND OPERATION

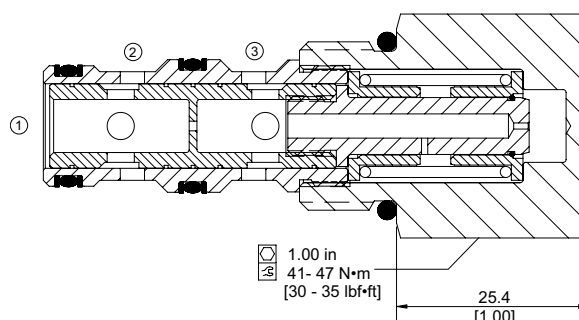
This is a fixed, restrictive type, bi-directional pressure compensated flow control valve, where the outlet flow will remain constant regardless of the direction of flow. Flow enters at port 2 or port 3 and passes across a fixed orifice in the spool creating a pressure drop. This causes the spool to move back against a spring, which then restricts the outlet flow at port 3 or port 2 respectively. Port 1 must be blocked for proper operation.

SCHEMATIC



DIMENSIONS

mm [in]

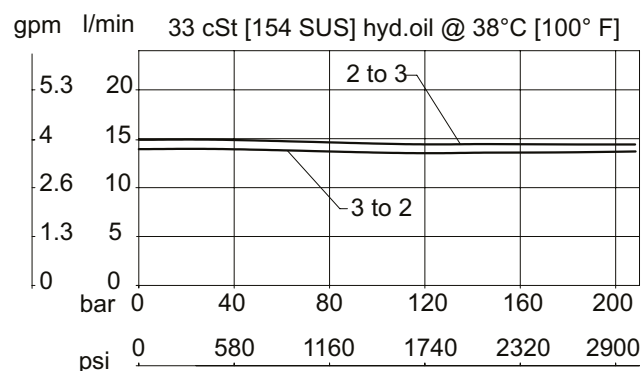


PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	23 l/min [6 US gpm]
Flow range	0.4-23 l/min [0.1-6 US gpm]
Flow accuracy	0.4-1.88 l/min [0.1-0.49 US gpm] ± 20%
	1.89-23 l/min [0.49-6.0 US gpm] ± 15%
Weight	0.13 kg [0.29 lb]
Cavity	SDC10-3

PERFORMANCE CURVES

Flow Compensation



MODEL CODE

CP300 - 6 - B - 8S - 2.5

Seal Option

Code	Seal Kit
B-Buna-N	120009
V-Viton	120010

Housing

Code	Ports&Material	Housing Model Code
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

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
2.5	9.5	[2.5]

Flow Control Valves

FCH10-BD

Flow Control, Fixed, Pressure Compensated, Restrictive Type, Bi-directional

350 bar [5000 psi] • 23 l/min [6 US gpm]

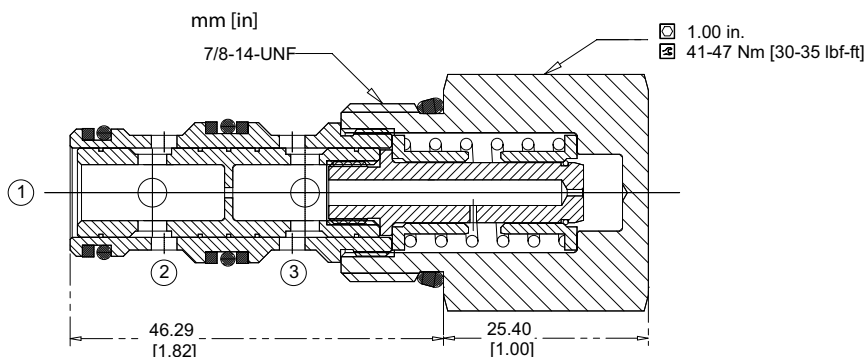
DESCRIPTION AND OPERATION

This is a fixed, restrictive type, bi-directional pressure compensated flow control valve, where the outlet flow will remain constant regardless of the direction of flow. Flow enters at port 2 or port 3 and passes across a fixed orifice in the spool creating a pressure drop. This causes the spool to move back against a spring, which then restricts the outlet flow at port 3 or port 2 respectively. Port 1 must be blocked for proper operation.

SCHEMATIC



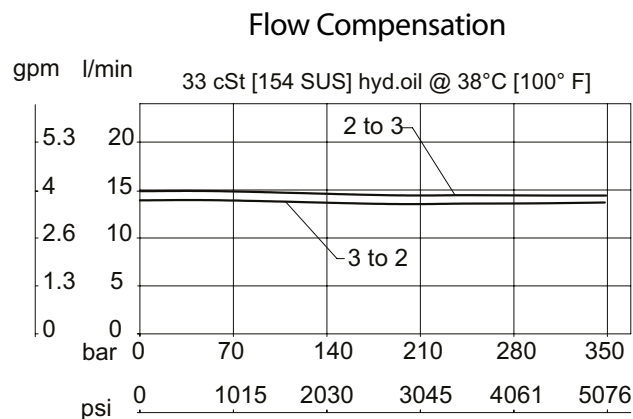
DIMENSIONS



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	23 l/min [6 US gpm]
Flow range	0.4-22.7 l/min [0.1-6 US gpm]
Flow accuracy	0.4-1.88 l/min [0.1-0.49 US gpm] ± 20% 1.89-23 l/min [0.49-6 US gpm] ± 15%
Weight	0.14 kg [0.34 lb]
Cavity	SDC10-3

PERFORMANCE CURVES



MODEL CODE

FCH10 - BD - 0.4 - U - 00

Flow Setting

Code - Flow in l/min
Specify in 1.0 lpm increments within flow range
Example

Code	l/min	[US gpm]
0.4	0.4	[0.1]

Seal Option

Code	Seal Kit
U-Urethane	120726

Housing

Code	Ports&Material	Housing Model Code
00	No Housing	No Housing
DG-3B	AL, 3/8 BSP	SDC10-3-DG-3B
DG-4B	AL, 1/2 BSP	SDC10-3-DG-4B
6S	AL, #6 SAE	CP10-3-6S
8S	AL, #8 SAE	CP10-3-8S

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

CP308-2

Flow Control, Partially Adjustable, Pressure Compensated, Restrictive Type

210 bar [3000 psi] • 15 l/min [4 US gpm]

DESCRIPTION AND OPERATION

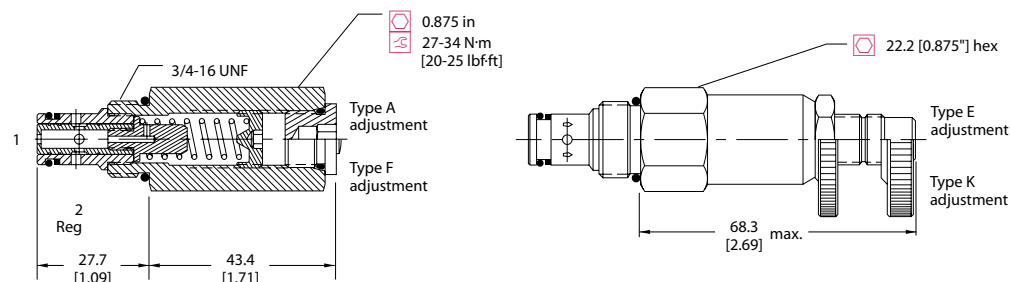
This is a partially adjustable, restrictive type, pressure compensated flow control valve, where the flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC



DIMENSIONS

mm [in]

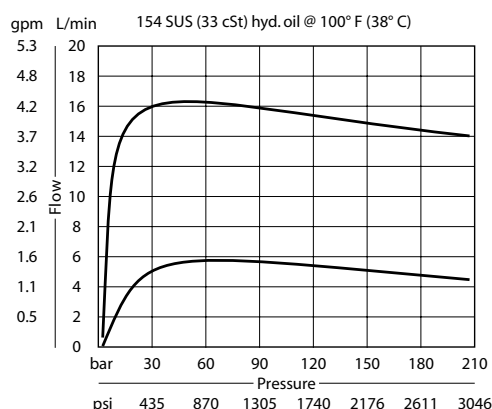


PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	15 l/min [4 US gpm]
Flow range	0.4-15.1 l/min [0.1-4 US gpm]
	0.4-1.88 l/min [0.1-0.49 US gpm] ± 20%
Flow accuracy	1.89-5.67 l/min [0.5-1.49 US gpm] ± 15%
	5.68-15 l/min [1.5-4 US gpm] ± 10%
Flow Adjustment Range	± 25% of nominal setting
Weight	0.15 kg [0.32 lb]
Cavity	SDC08-2

PERFORMANCE CURVES

Flow Compensation



MODEL CODE

CP308 - 2 - B - 6S - A - 4.0

Seal Option

Code	Seal Kit
B-Buna - N	120221
V-Viton	120222

Housing

Code	Ports&Material	Housing Model Code
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

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
4.0	15.1	[4.0]

Adjustment Option

A - Internal
E - External
F - Tamper resistant
K - Knob

Flow Control Valves

FR2-10

Flow Control, Partially Adjustable, Pressure Compensated, Restrictive Type

210 bar [3000 psi] • 38 l/min [10 US gpm]

DESCRIPTION AND OPERATION

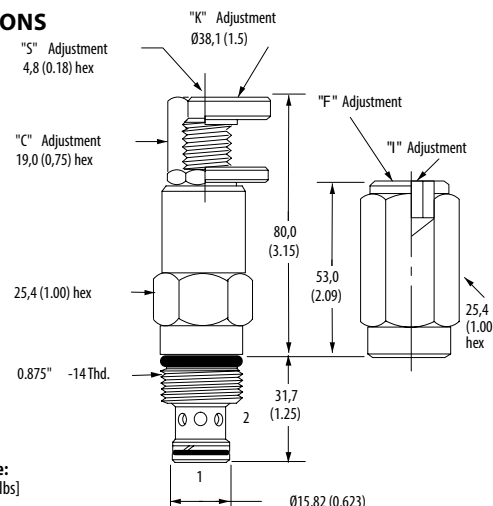
This is a partially adjustable, restrictive type, pressure compensated flow control valve, where the flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC



DIMENSIONS

mm [in]

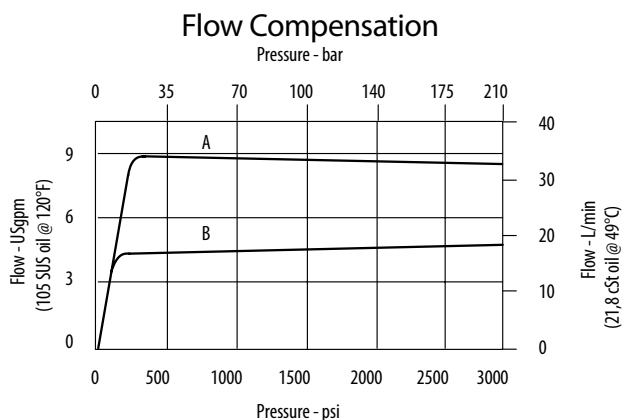


Installation Torque:
47-54 Nm [35-40 ft. lbs]

PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	38 l/min [10 US gpm]
Flow range	0.4-38 l/min [0.1-10 US gpm]
Flow accuracy	0.4-1.9 l/min [0.1-0.49 US gpm] ±20% 1.9-7.5 l/min [0.5-1.99 US gpm] ±15% 7.6-37.8 l/min [2.0-10 US gpm] ±10%
Weight	0.22 kg [0.48 lb]
Cavity	SDC10-2

PERFORMANCE CURVES



MODEL CODE

FR 2 - 10 - V - C - 0 - 5.0

Seal Option

Code	Seal Kit
Omit-Buna - N	565803
V-Viton	566086

Adjustment Option

C - Tamper Resistant
F - Fixed
I - Internal
K - Knob
S - External

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
5.0	18.9	5.0

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty
0	No housing		
3B	3/8" BSP	02-175462	-
6T	#6 SAE	566151	-
2G	1/4" BSP	-	876702
3G	3/8" BSP	-	876703
6H	#6 SAE	-	876700
8H	#8 SAE	-	876701

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

FR2-16

Flow Control, Partially Adjustable, Pressure Compensated, Restrictive Type

210 bar [3000 psi] • 114 l/min [30 US gpm]

DESCRIPTION AND OPERATION

This is a partially adjustable, restrictive type, pressure compensated flow control valve, where the flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	114 l/min [30 US gpm]
Flow range	1.9–114 l/min [0.5–30 US gpm]
Flow accuracy	1.9–10.9 l/min [0.5–2.9 US gpm] ±15% 11.4–114 l/min [3–30 US gpm] ±10%
Weight	0.71 kg [1.57 lb]
Cavity	SDC16-2

MODEL CODE

FR 2 - 16 - V - C - 0 - 10.0

Seal Option

Code	Seal Kit
O mit-Buna - N	565810
V -Viton	889609

Adjustment Option

C - Tamper Resistant
K - Knob
S - External
Y - Knob [Stainless]

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
10.0	38.0	10.0

Housing

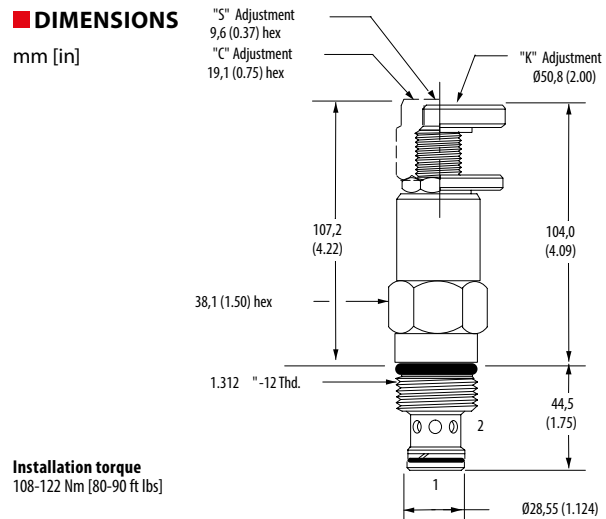
Code	Ports	Aluminium Standard duty	Aluminium Heavy duty
0	No housing		
6B	3/4" BSP	02-175463	-
12T	#12 SAE	566149	-
4G	1/2" BSP	-	876716
6G	3/4" BSP	-	876718
10H	#10 SAE	-	876717
12H	#12 SAE	-	876713

* Aluminium bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

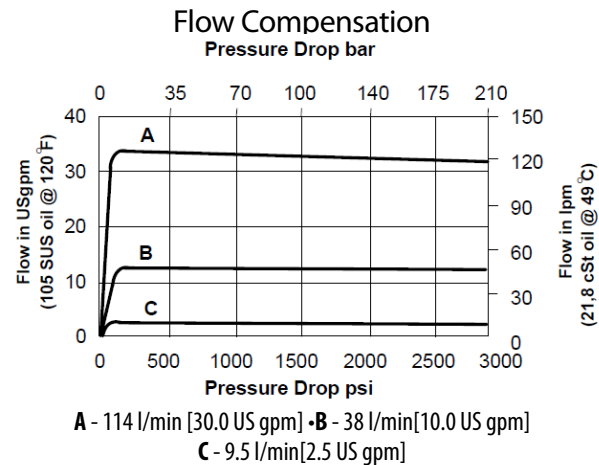
DIMENSIONS

mm [in]



Installation torque
108-122 Nm [80-90 ft lbs]

PERFORMANCE CURVES



Flow Control Valves

2CFRC60

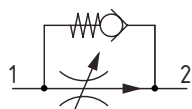
Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow

350 bar [5000 psi] • 60 l/min [16 US gpm]

DESCRIPTION AND OPERATION

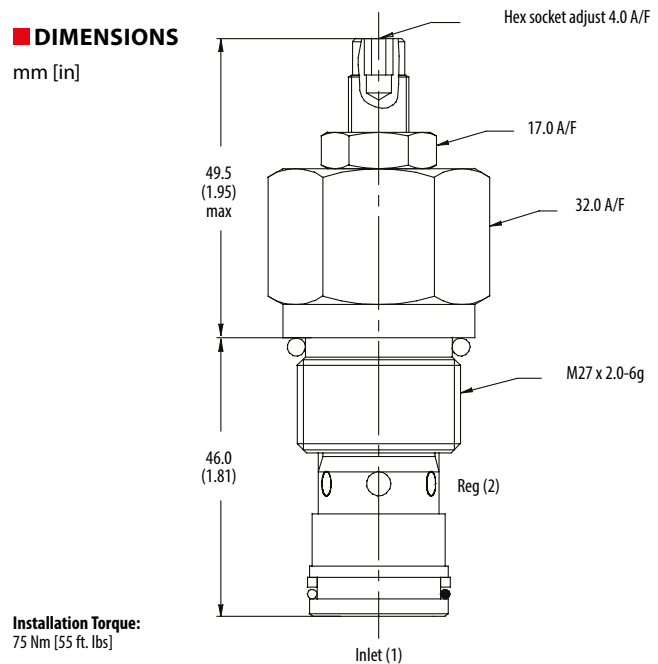
This is a fully adjustable, restrictive type, pressure compensated flow control valve from port 1 to 2 with a reverse free flow check from port 2 to 1. The flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across an adjustable orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Flow from port 2 to 1 passes freely across an integral check valve.

SCHEMATIC



DIMENSIONS

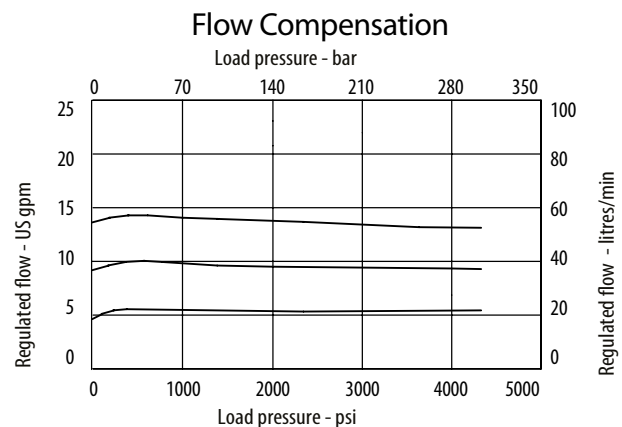
mm [in]



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	60 l/min [16 US gpm]
Flow range	4-60 l/min [1-16 US gpm]
Weight	0.29 kg [0.64 lb]
Cavity	A7447

PERFORMANCE CURVES



MODEL CODE

2CFRC65 - P - 4W - 4 - S - 377 - 30

Basic Code

2CFRC60 - No housing
2CFRC65 - Cartridge and housing

Adjustment Option

P - External
R - Knob

Housing

Code	Ports	Aluminum	Steel
Omit	No Housing		
4W	1/2" BSP	B7418	B13663
8T	#1/2 SAE	B10712	B11565

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].
* Additional housings available

Flow Range

Code	l/min	US gpm
4	4-40	[1.0-10.5]
Standard Setting	30	[7.9]
6	6-60	[1.6-15.9]
Standard Setting	40	[10.5]

Flow Setting

Code - Flow in l/min
Specify in 1.0 lpm increments within flow range
Example

Code	l/min	[US gpm]
30	30	7.9

Housing Material

Omit - Aluminum/No housing
377 - Steel

Seal Option

Code	Seal Kit
S - Buna-N	SK578
SV - Viton	SK578V

Flow Control Valves

HFCV10-RT

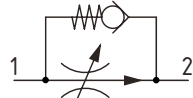
Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow

350 bar [5000 psi] • 11.4 l/min [3 US gpm]

DESCRIPTION AND OPERATION

This is a fully adjustable, restrictive type, pressure compensated flow control valve from port 1 to 2 with a reverse free flow check from port 2 to 1. The flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across an adjustable orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Flow from port 2 to 1 passes freely across an integral check valve.

SCHEMATIC



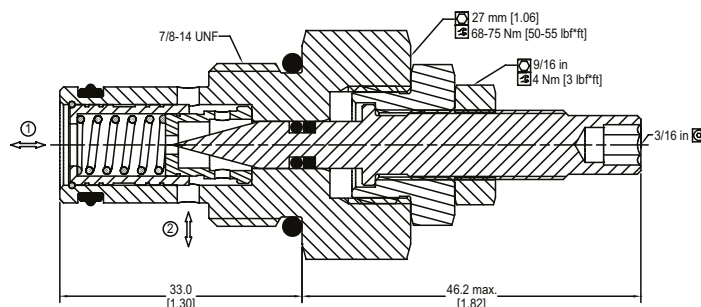
PERFORMANCE DATA

Rated pressure*	350 bar [5000 psi]
Rated flow	11.4 l/min [3 US gpm]
Flow range	0.4-11.4 l/min [0.1-3.0 US gpm]
Flow accuracy	+/- 12%
Leakage	40 ml/min@ rated pressure
Weight	0.17 kg [0.37 lb]
Cavity	SDC10-2

* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

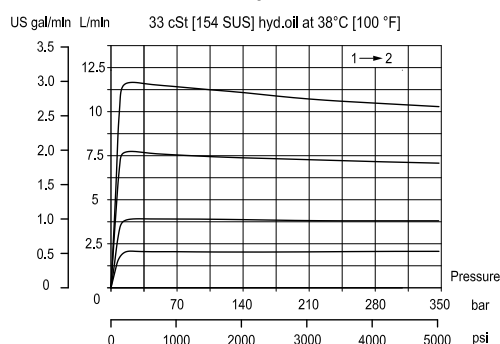
DIMENSIONS

mm [in]

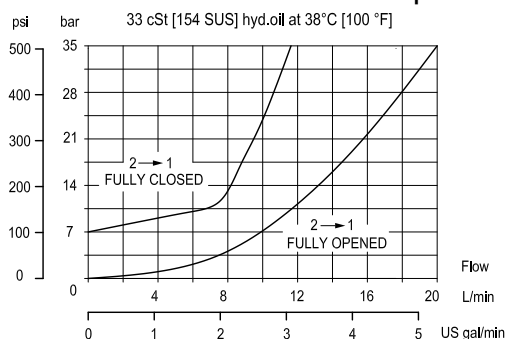


PERFORMANCE CURVES

Flow Compensation



Reverse Flow Pressure Drop



MODEL CODE

HFCV10 - RT - P - E - 4.0 - 00

Seal Option

Code	Seal Kit
P-Polyurethane Single Seal	11132135
V-Viton	354000819

Adjustment Option

E - External
K - Knob

Flow Setting

Code - Flow in l/min
Specify in 1.0 lpm increments within flow range
Example

Code	l/min	[US gpm]
4.0	4.0	1.0

Housing

Code	Ports & Material	Housing Model Code
00	No housing	No Body
DG3B	3/8 BSP, AL	SDC10-2-DG3B
DG4B	1/2 BSP, AL	SDC10-2-DG4B
S4B	1/2 BSP, DUCTILE	CP10-2-S4B
6S	#6 SAE, AL	CP10-2-6S
8S	#8 SAE, AL	CP10-2-8S
S8S	#8 SAE, DUCTILE	CP10-2-S8S

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

HFCV10-HRT

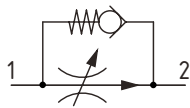
Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow

350 bar [5000 psi] • 45 l/min [12 US gpm]

DESCRIPTION AND OPERATION

This is a fully adjustable, restrictive type, pressure compensated flow control valve from port 1 to 2 with a reverse free flow check from port 2 to 1. The flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across an adjustable orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Flow from port 2 to 1 passes freely across an integral check valve.

SCHEMATIC

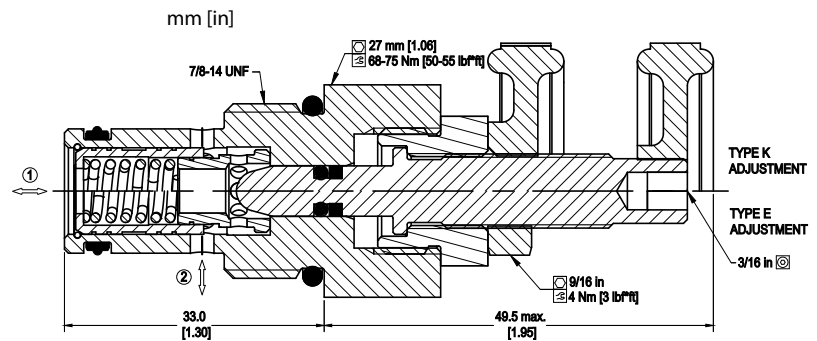


PERFORMANCE DATA

Rated pressure*	350 bar [5000 psi]
Rated flow	45 l/min [12 US gpm]
Flow range	4.0-45 l/min [1.0-12.0 US gpm]
Flow accuracy	+/- 12%
Leakage	40 ml/min@ rated pressure
Weight	0.17 kg [0.37 lb]
Cavity	SDC10-2

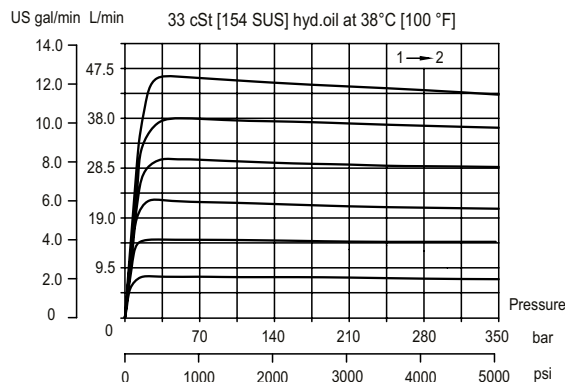
* Rated Pressure based on NFPA fatigue test standards (at 1 Million Cycles).

DIMENSIONS

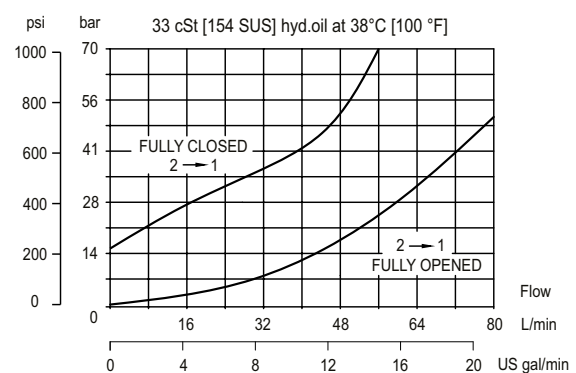


PERFORMANCE CURVES

Flow Compensation



Reverse Flow Pressure Drop



MODEL CODE

HFCV10 - HRT - P - E - 8.0 - 00

Seal Option

Code	Seal Kit
P-Polyurethane Single Seal	11132135
V-Viton	354000819

Adjustment Option

E - External
K - Knob

Flow Setting

Code - Flow in l/min
Specify in 1.0 lpm increments within flow range
Example

Code	l/min	[US gpm]
8.0	8.0	2.1

Housing

Code	Ports & Material	Housing Model Code
00	No housing	No Body
DG3B	3/8 BSP, AL	SDC10-2-DG3B
DG4B	1/2 BSP, AL	SDC10-2-DG4B
S4B	1/2 BSP, DUCTILE	CP10-2-S4B
6S	#6 SAE, AL	CP10-2-6S
8S	#8 SAE, AL	CP10-2-8S
S8S	#8 SAE, DUCTILE	CP10-2-S8S

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

FAR1-12

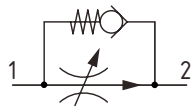
Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow

350 bar [5000 psi] • 95 l/min [25 US gpm]

DESCRIPTION AND OPERATION

This is a fully adjustable, restrictive type, pressure compensated flow control valve from port 1 to 2 with a reverse free flow check from port 2 to 1. The flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across an adjustable orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Flow from port 2 to 1 passes freely across an integral check valve.

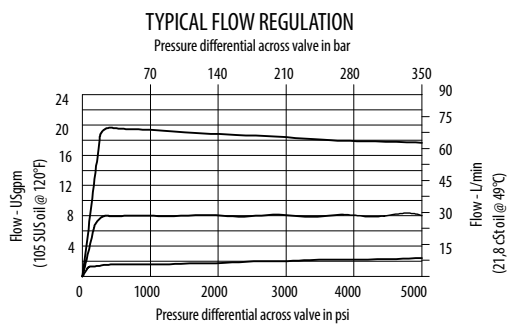
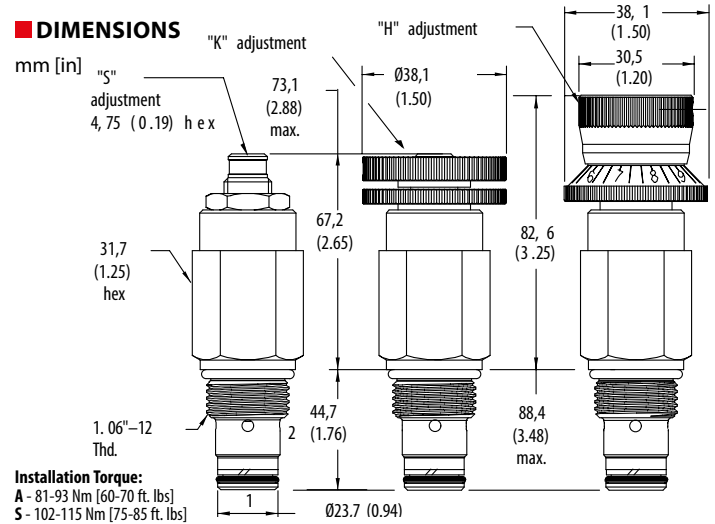
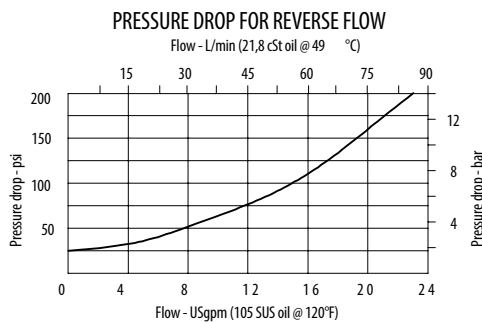
SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	95 l/min [25 US gpm]
Flow range	1.5-94.6 l/min [0.4-25 US gpm] up to 210 bar [3000 psi] 1.5-87.1 l/min [0.4-23 US gpm] up to 350 bar [5000 psi]
Flow accuracy	1.5-3.8 l/min [1.4-1.0 US gpm] ±20% @5000 psi 3.8-56.8 l/min [1-15 US gpm] ±10% @5000 psi
Reverse check crack pressure	1.7 bar [25 psi]
Weight	0.43 kg [0.95 lb]
Cavity	C-12-2/C-12-2U

PERFORMANCE CURVES



MODEL CODE

FAR1 - 12 - V - H - A - 10T - U - 10.0

Seal Option

Code	Seal Kit
Omit - Buna - N	02-181304
V - Viton	02-181305

Adjustment Option

H - Calibrated Knob
K - Knob
S - External

Housing Material

Omit - No housing
A - Aluminium
S - Steel

Housing

Code	Ports	C-12-2U Aluminium Standard duty	C-12-2 Aluminium Heavy duty	C-12-2U Steel Heavy duty	C-12-2 Steel Heavy duty
0	No housing				
10T	#10 SAE	02-160641	02-160640	02-169817	02-169744
12T	#12 SAE	02-160645	02-160644	02-169790	02-169782
4G	1/2" BSP	02-161116	02-161118	02-172512	02-172062
6G	3/4" BSP	02-161115	02-161117	02-162922	02-169665

* Aluminium bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Code - Flow in US gpm
Omit - Set at 10 US gpm
Specify in 0.5 gpm increments within flow range
Example

Code	l/min	[US gpm]
10	38.0	10.0

Cavity

Omit - Cavity without undercut
U - Cavity with undercut

Flow Control Valves

FAR1-16

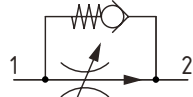
Flow Control, Fully Adjustable, Pressure Compensated, Restrictive Type with Reverse Free Flow

350 bar [5000 psi] • 114 l/min [30 US gpm]

DESCRIPTION AND OPERATION

This is a fully adjustable, restrictive type, pressure compensated flow control valve from port 1 to 2 with a reverse free flow check from port 2 to 1. The flow from port 2 will remain constant regardless of the pressure difference across the valve. Flow enters at port 1 and passes across an adjustable orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Flow from port 2 to 1 passes freely across an integral check valve.

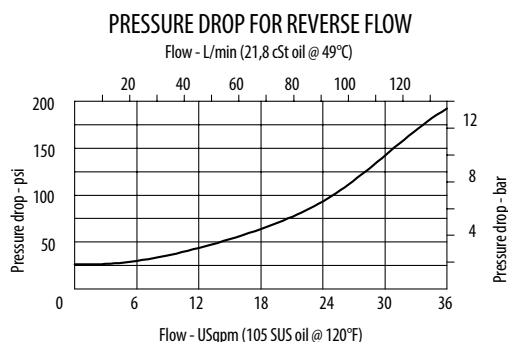
SCHEMATIC



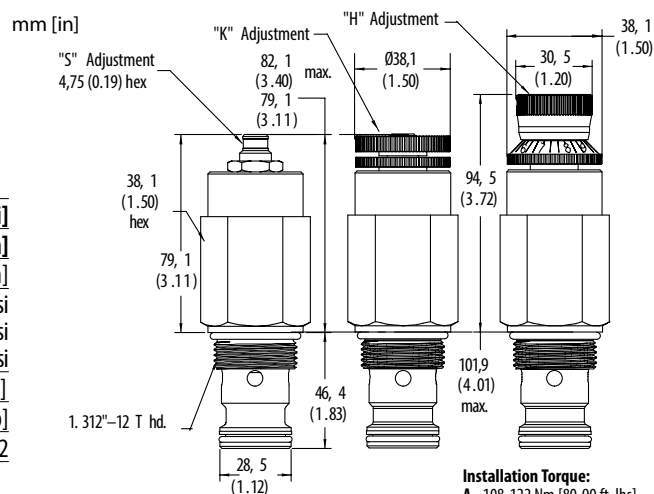
PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	114 l/min [30 US gpm]
Flow range	3.8-114 l/min [1.0-30 US gpm]
Flow accuracy	3.8–15.1 l/min [1.0–4.0 US gpm] ±30% @5000 psi 5.1–30.3 l/min [above 4.0–8.0 US gpm] ±20% @5000 psi 30.3–113.6 l/min [above 8.0–30 US gpm] ±10% @5000 psi
Reverse Check Crack Pressure	1.7 bar [25 psi]
Weight	0.67 kg [1.48 lb]
Cavity	SDC16-2

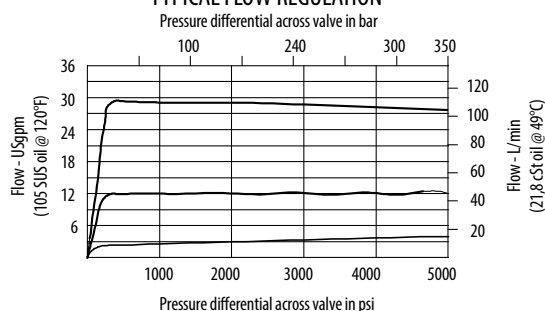
PERFORMANCE CURVES



DIMENSIONS



TYPICAL FLOW REGULATION



MODEL CODE

FAR1 - 16 - V - H - A - 4G - 10.0

Seal Option

Code	Seal Kit
Omit-Buna - N	565810
V-Viton	889609

Adjustment Option

H - Calibrated Knob
K - Knob
S - External

Housing Material

Omit - No housing
A - Aluminium
S - Steel

Flow Setting

Code - Flow in US gpm
Omit - Set at 10 US gpm
Specify in 0.5 gpm increments within flow range
Example

Code	l/min	[US gpm]
10.0	38.0	10.0

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty	Steel Heavy duty
Omit	No housing			
4G	1/2" BSP	-	876716	02-175106
6B	3/4" BSP	02-175463	-	-
6G	3/4" BSP	-	876718	02-175107
10T	#10 SAE	-	-	-
10H	#10 SAE	-	876717	02-175104
12T	#12 SAE	566149	-	-
12H	#12 SAE	-	566113	02-175105

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

PFR5-8

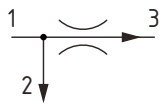
Flow Control, Fixed, Pressure Compensated, Priority Type

350 bar [5000 psi] • 10 l/min [2.6 US gpm]

DESCRIPTION AND OPERATION

This is a fixed, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	9.5 l/min [2.5 US gpm]
Max inlet flow	15.1 l/min [4.0 US gpm]
Flow range	0.4-9.5 l/min [0.1-2.5 US gpm]
Flow accuracy	0.4-1.9 l/min [0.1-0.49 US gpm] ±20% @ 210 bar [3000 psi]
	0.4-1.9 l/min [0.1-0.49 US gpm] ±40% @ 350 bar [5000 psi]
	1.9-5.7 l/min [0.5-1.49 US gpm] ±15% @ 350 bar [5000 psi]
	5.7-9.5 l/min [1.5-2.5 US gpm] ±10% @ 350 bar [5000 psi]
Weight	0.07 kg [0.15 lb]
Cavity	SDC08-3

MODEL CODE

PFR5 - 8 - V - F - S - 4T - 1.0

Seal Option

Code

Omit-Buna - N 02-173427

V-Viton 02-173434

Adjustment Option

F - Fixed

Housing Material

Omit - No housing

S - Steel

A - Aluminium

Flow Setting

Code - Flow in US gpm

Specify in 0.1 gpm increments within flow range

Example

Code	l/min	[US gpm]
1.0	4.0	1.0

Housing

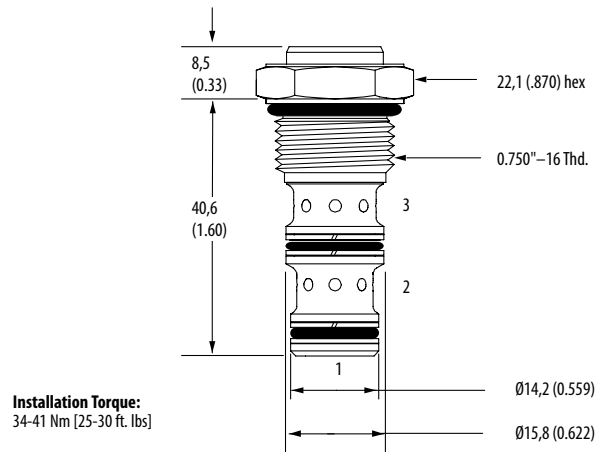
Code	Ports	Aluminium Heavy duty	Steel Heavy duty
0	No housing		
4T	#4 SAE	02-160741	02-160745
6T	#6 SAE	02-160742	02-160746
2G	1/4" BSP	02-160739	02-160743
3G	3/8" BSP	02-160740	02-160744

* Aluminium bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

DIMENSIONS

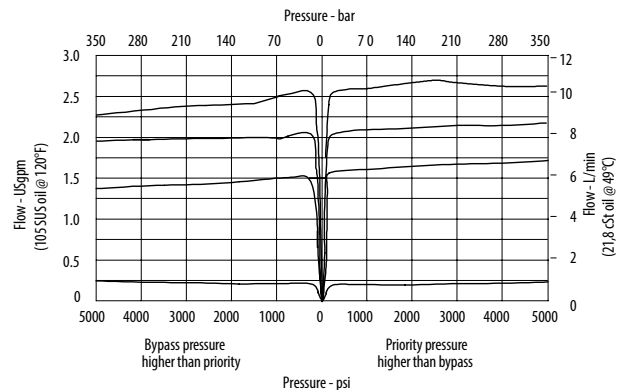
mm [in]



Installation Torque:
34-41 Nm [25-30 ft. lbs]

PERFORMANCE CURVES

Flow Compensation



Flow Control Valves

VRF 06

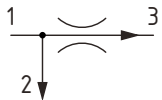
Flow Control, Fixed, Pressure Compensated, Priority Type

315 bar [4600 psi] • 25 l/min [7 US gpm]

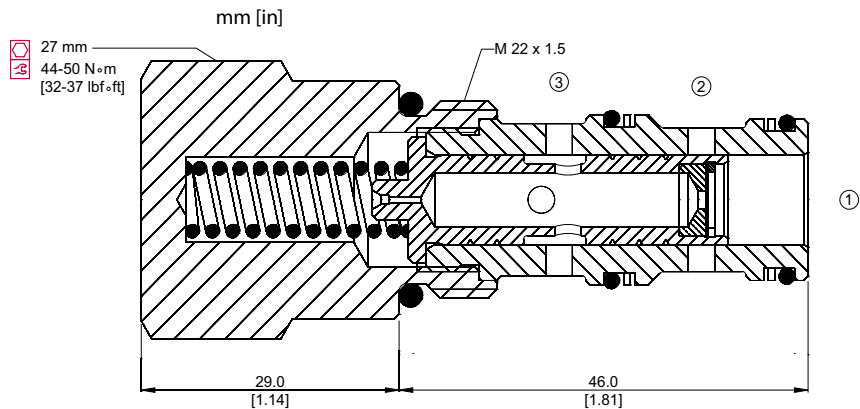
DESCRIPTION AND OPERATION

This is a fixed, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



DIMENSIONS

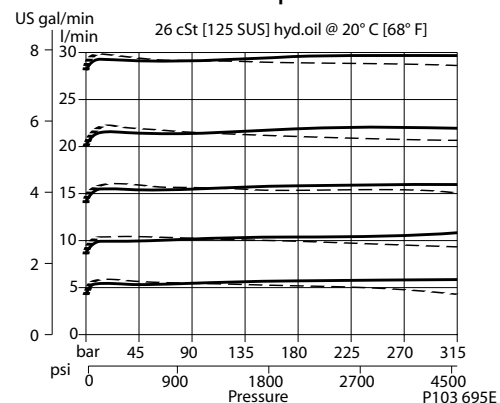


PERFORMANCE DATA

Rated pressure	315 bar [4600 psi]
Rated flow	25 l/min [7 US gpm]
Max inlet flow	50 l/min [13 US gpm]
Flow range	1.5-25 l/min [0.4-7 US gpm]
Flow accuracy	+/- 10%
Weight	0.19 kg [0.42 lb]
Cavity	NCS06/3

PERFORMANCE CURVES

Flow Compensation



MODEL CODE

VRF 06 - 1.50 - SE3/8 - V

Orifice Size

Code - Orifice Size in mm

Flow Setting		
Code	l/min	[US gpm]
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]

Seal Option

Code	Seal Kit
V-Viton	230000110
Omit-Buna-N	230000070

Housing

Code	Ports & Material	Housing Model Code
00	No Housing	No Housing
SE3/8	AL, 3/8 BSP	NCS06/3-SE-3/8
SE1/2	AL, 1/2 BSP	NCS06/3-SE-1/2
SE65	AL, #6 SAE	NCS06/3-SE-65
SE85	AL, #8 SAE	NCS06/3-SE-85

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

PFR15-10

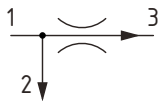
Flow Control, Fixed, Pressure Compensated, Priority Type

350 bar [5000 psi] • 38 l/min [10 US gpm]

DESCRIPTION AND OPERATION

This is a fixed, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	38 l/min [10 US gpm]
Max inlet flow	64 l/min [17 US gpm]
Flow range	0.4-38 l/min [0.1-10 US gpm]
Flow accuracy	0.4-1.9 l/min [0.1-0.49 US gpm] ±40% 2.0-38 l/min [0.5-10 US gpm] ±15%
Weight	0.13 kg [0.28 lb]
Cavity	SDC10-3

MODEL CODE

PFR15 - 10 - V - F - S - 2G - 1.0

Seal Option

Code	Seal Kit
Omit-Buna - N	565804
V-Viton	889599

Adjustment Option

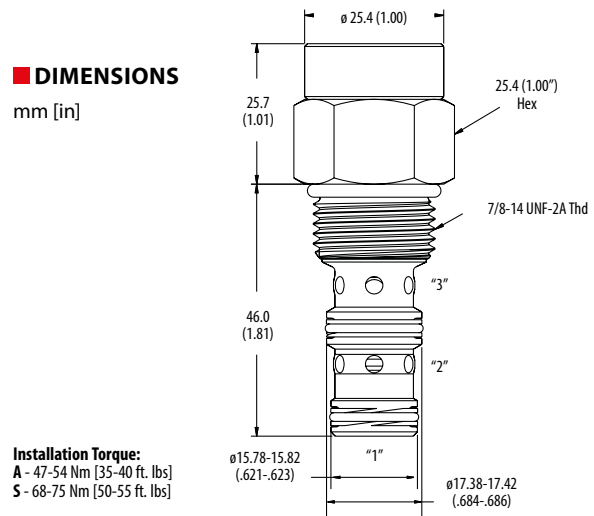
F - Fixed

Housing Material

Omit - No housing
S - Steel
A - Aluminium

DIMENSIONS

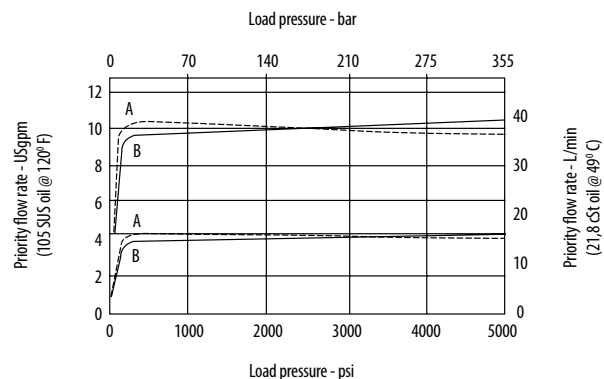
mm [in]



Installation Torque:
A - 47-54 Nm [35-40 ft. lbs]
S - 68-75 Nm [50-55 ft. lbs]

PERFORMANCE CURVES

Flow Compensation



A - Port 3, priority (regulated outlet) pressurized.
B - Port 2, (bypass outlet) pressurized.

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
1.0	4.0	1.0

Housing

Code	Ports	Aluminium Heavy duty	Steel
0	No housing		
2G	1/4" BSP	876705	
3G	3/8" BSP	876714	
6H	#6 SAE	876704	
8H	#8 SAE	876711	
2G	1/4" BSP		02-175127
3G	3/8" BSP		02-175128
6T	#6 SAE		02-175124
8T	#8 SAE		02-175125

* Aluminium bodies are to be used for pressures less than 210 bar [3000 psi].
* Additional housings available

Flow Control Valves

CP311-1

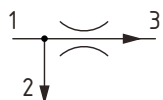
Flow Control, Fixed, Pressure Compensated, Priority Type

210 bar [3000 psi] • 45 l/min [12 US gpm]

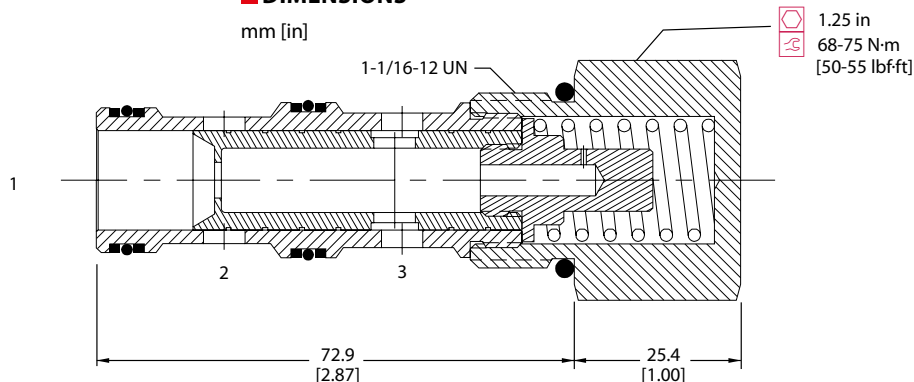
DESCRIPTION AND OPERATION

This is a fixed, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



DIMENSIONS

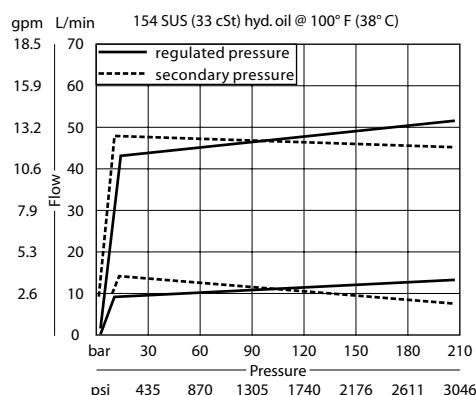


PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	45 l/min [12 US gpm]
Max inlet flow	95 l/min [25 US gpm]
Flow range	1.9-45.4 l/min [0.5-12 US gpm]
Flow accuracy	1.9-7.5 l/min [0.5-1.99 US gpm] ± 15%
	7.6-45.4 l/min [2-12 US gpm] ± 10%
Weight	0.28 kg [0.61 lb]
Cavity	CP12-3

PERFORMANCE CURVES

Flow Compensation



MODEL CODE

CP311 - 1 - B - 12S - 12.0

Seal Option

Code	Seal Kit
B-Buna-N	120053
V-Viton	120052

Housing

Code	Ports&Material	Housing Model Code
0	No Housing	No Housing
4B	AL, 1/2 BSP	CP12-3-4B
6B	AL, 3/4 BSP	CP12-3-6B
10S	AL, #10 SAE	CP12-3-10S
12S	AL, #12 SAE	CP12-3-12S

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
12.0	45.0	12.0

Flow Control Valves

PFR11-12

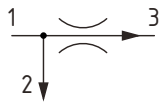
Flow Control, Fixed, Pressure Compensated, Priority Type

350 bar [5000 psi] • 76 l/min [20 US gpm]

DESCRIPTION AND OPERATION

This is a fixed, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	76 l/min [20 US gpm]
Max inlet flow	114 l/min [30 US gpm]
Flow range	1.9-76 l/min [0.5-20 US gpm]
Flow accuracy	+/- 15%
Weight	0.25 kg [0.55 lb]
Cavity	C-12-3

MODEL CODE

PFR11 - 12 - V - F - A - 4G - 20.0

Seal Option

Code	Seal Kit
Omit - Buna - N	9900171
V - Viton	9900172

Adjustment Option

F - Fixed

Housing Material

Omit - No housing
A - Aluminum
S - Steel

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
20.0	76.0	20.0

Housing

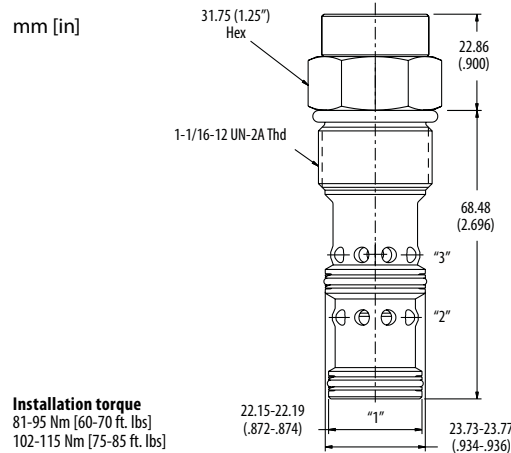
Code	Ports	Housing Model Code	
		Aluminium	Steel
0	No housing		
4G	1/2" BSP	02-161817	
6G	3/4" BSP	02-161816	
10H	#10 SAE	02-160642	
12H	#12 SAE	02-160646	
4G	1/2" BSP		02-169815
6G	3/4" BSP		02-169814
10T	#10 SAE		02-161070
12T	#12 SAE		02-169816

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

DIMENSIONS

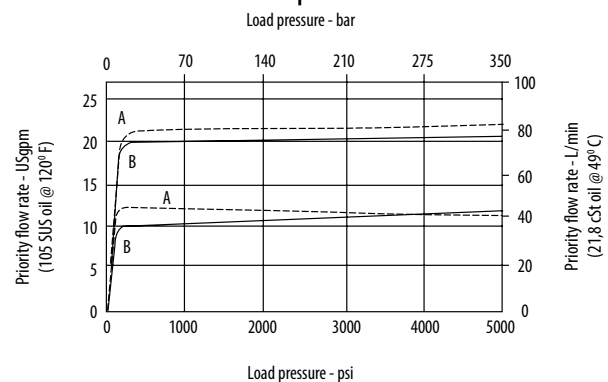
mm [in]



Installation torque
81-95 Nm [60-70 ft. lbs]
102-115 Nm [75-85 ft. lbs]

PERFORMANCE CURVES

Flow Compensation



A - Port 3, priority (regulated outlet) pressurized.
B - Port 2, (bypass outlet) pressurized.

Flow Control Valves

CP312-1

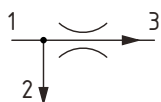
Flow Control, Fixed, Pressure Compensated, Priority Type

210 bar [3000 psi] • 65 l/min [17 US gpm]

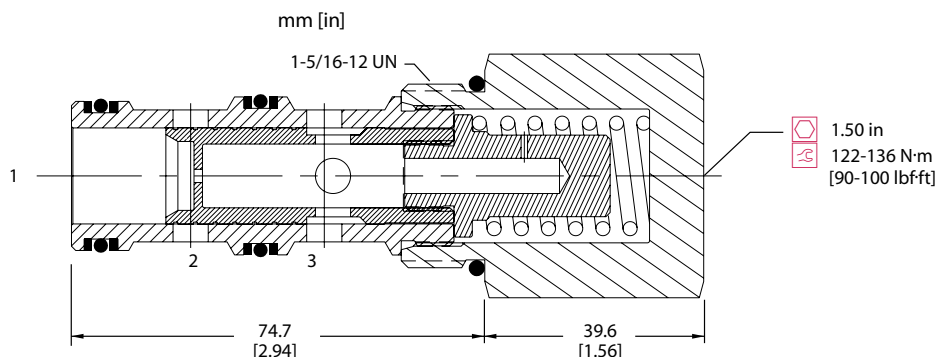
DESCRIPTION AND OPERATION

This is a fixed, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



DIMENSIONS

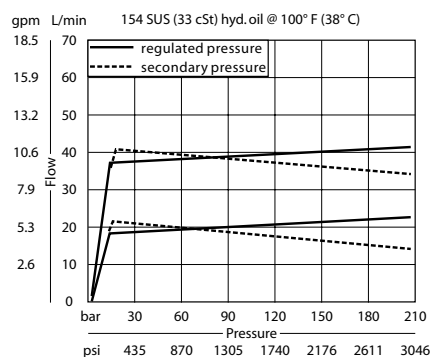


PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	65 l/min [17 US gpm]
Max inlet flow	130 l/min [34 US gpm]
Flow range	1.9-64.3 l/min [0.5-17 US gpm]
Flow accuracy	1.9-7.5 l/min [0.5-2 US gpm] ± 15%
	7.6-64.3 l/min [2-17 US gpm] ± 10%
Weight	0.53 kg [1.17 lb]
Cavity	SDC16-3

PERFORMANCE CURVES

Flow Compensation



MODEL CODE

CP312 - 1 - B - 16S - 10.0

Seal Option

Code	Seal Kit
B-Buna-N	120202
V-Viton	120203

Housing

Code	Ports&Material	Housing Model Code
0	No housing	No Housing
HE6B	3/4 BSP, AL	SDC16-3-HE-6B
HE8B	1 BSP, AL	SDC16-3-HE-8B
12S	#12 SAE, AL	CP16-3-12S
16S	#16 SAE, AL	CP16-3-16S

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
10.0	40	10.0

Flow Control Valves

PFR11-16

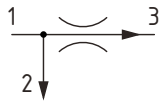
Flow Control, Fixed, Pressure Compensated, Priority Type

350 bar [5000 psi] • 114 l/min [30 US gpm]

DESCRIPTION AND OPERATION

This is a fixed, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	114 l/min [30 US gpm]
Max inlet flow	151 l/min [40 US gpm]
Flow range	1.9- 114 l/min [0.5- 30 US gpm]
Flow accuracy	1.9-10.9 l/min [0.5-2.9 US gpm] ±15% 11.4-114 l/min [3-30 US gpm] ±10%
Weight	0.38 kg [0.84 lb]
Cavity	SDC16-3

MODEL CODE

PFR11 - 16 - V - F - A - 12T - 1.0

Seal Option

Code	Seal Kit
Omit-Buna - N	565811
V-Viton	889610

Adjustment Option

F - Fixed

Housing Material

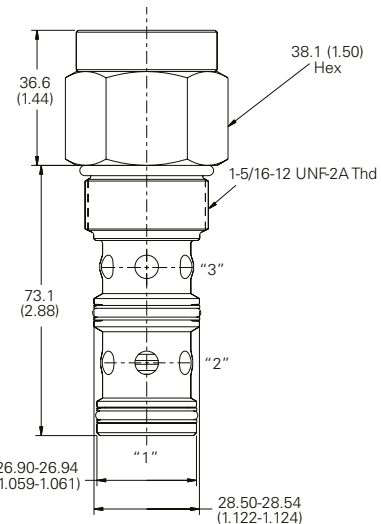
Omit - No housing
A - Aluminum
S - Steel

DIMENSIONS

mm [in]

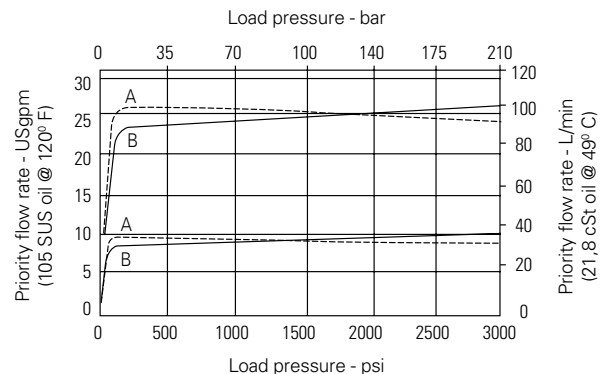
Installation torque

A - 108-122 Nm [80-90 ft. lbs]
S - 136-149.6 Nm [100-110 ft. lbs]



PERFORMANCE CURVES

Flow Compensation



A - Port 3, priority (regulated outlet) pressurized.
B - Port 2, (bypass outlet) pressurized.

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
1.0	4.0	1.0

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty	Steel
0	No housing			
6B	3/4" BSP	02-175465		
12T	#12 SAE	566152		
10H	#10 SAE		876721	
12H	#12 SAE		876723	
4G	1/2" BSP		876720	
6G	3/4" BSP		876722	
4G	1/2" BSP			02-175131
6G	3/4" BSP			02-175132
10T	#10 SAE			02-175129
12T	#12 SAE			02-175130

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

2CFP60

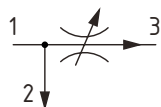
Flow Control, Partially Adjustable, Pressure Compensated, Priority Type

350 bar [5000 psi] • 60 l/min [16 US gpm]

DESCRIPTION AND OPERATION

This is a fully adjustable, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across an adjustable orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC

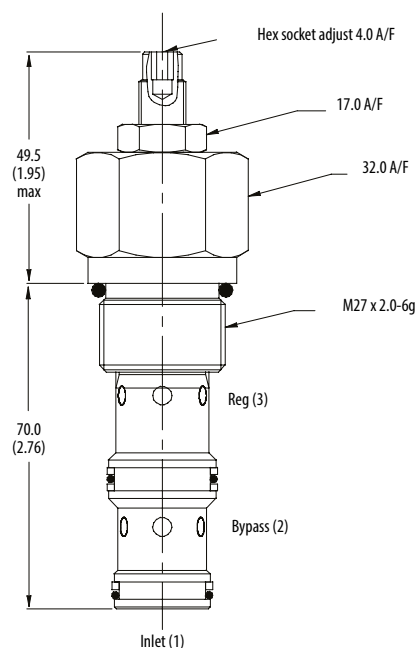


PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	60 l/min [16 US gpm]
Flow range	4-60 l/min [1-16 US gpm]
Weight	0.38 kg [0.84 lb]
Cavity	CVA27-04

DIMENSIONS

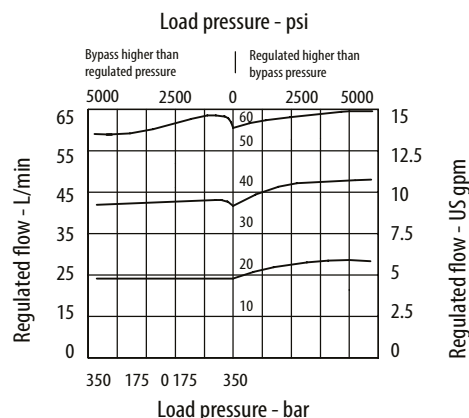
mm [in]



Installation torque
75 Nm [55 ft. lbs]

PERFORMANCE CURVES

Flow Compensation



MODEL CODE

2CFP65 - P - 4W - 4 - S - 377 - 30

Basic Code

2CFP60 - No Housing
2CFP65 - Cartridge and housing

Adjustment Option

P - External
R - Knob

Housing

Code	Ports	Aluminium	Steel
Omit	No Housing		
4W	1/2" BSP	B12631	B13664
8T	1/2" BSP	B10820	B11566

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].
* Additional housings available

Flow Range

Code	l/min	US gpm
4	4-40	[1.0-10.5]
Standard Setting	30	[7.9]
6	6-60	[1.6-15.9]
Standard Setting	40	[10.5]

Flow Setting

Code - Flow in l/min
Specify in 1.0 lpm increments within flow range
Example

Code	l/min	[US gpm]
30	30	7.9

Housing Material

Omit - Aluminum/No housing
377 - Steel

Seal Option

Code	Seal kit
S - Buna-N	SK579
SV - Viton	SK579V



Flow Control Valves

PFR12-10

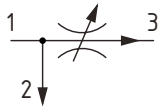
Flow Control, Partially Adjustable, Pressure Compensated, Priority Type

350 bar [5000 psi] • 38 l/min [10 US gpm]

DESCRIPTION AND OPERATION

This is a partially adjustable, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC

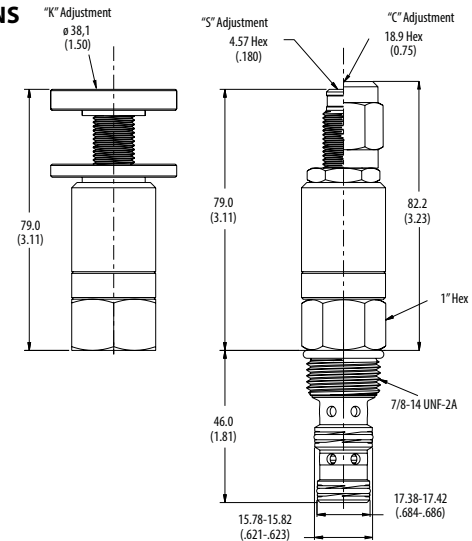


PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	38 l/min [10 US gpm]
Max inlet flow	64 l/min [17 US gpm]
Flow range	0.4-37.8 l/min [0.1-10 US gpm]
Flow accuracy	0.4-1.9 l/min [0.1-0.49 US gpm] ±20%
	1.9-7.5 l/min [0.5-1.99 US gpm] ±15%
	7.6-37.8 l/min [2.0-10.0 US gpm] ±10%
Weight	0.25 kg [0.54 lb]
Cavity	SDC10-3

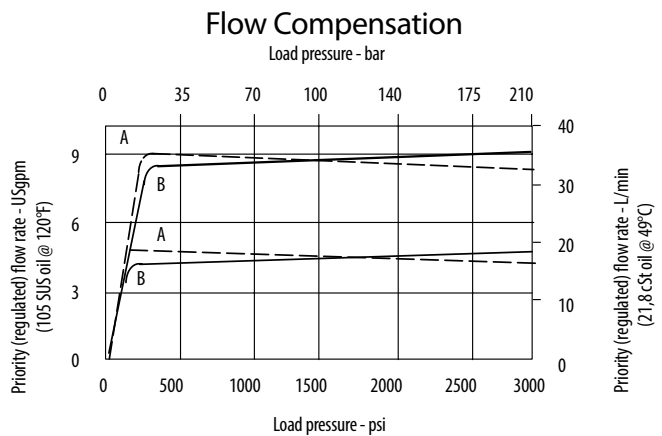
DIMENSIONS

mm [in]



Installation torque
47-54 Nm [35-40 ft. lbs]

PERFORMANCE CURVES



A - Port 3, priority (regulated outlet) pressurized.

B - Port 2, (bypass outlet) pressurized.

MODEL CODE

PFR12 - 10 - V - C - A - 2G - 1.0

Seal Option

Code	Seal Kit
Omit - Buna - N	565804
V - Viton	889599

Adjustment Option

C - Tamper Resistant
K - Knob
S - External

Housing Material

Omit - No housing
A - Aluminum
S - Steel

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
1.0	4.0	1.0

Housing

Code	Ports	Aluminium Heavy duty	Steel
0	No housing		
2G	1/4" BSP	876705	
3G	3/8" BSP	876714	
6H	#6 SAE	876704	
8H	#8 SAE	876711	
2G	1/4" BSP		02-175127
3G	3/8" BSP		02-175128
6T	#6 SAE		02-175124
8T	#8 SAE		02-175125

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

PFR12-12

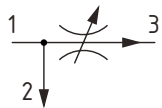
Flow Control, Partially Adjustable, Pressure Compensated, Priority Type

350 bar [5000 psi] • 76 l/min [20 US gpm]

DESCRIPTION AND OPERATION

This is a partially adjustable, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	76 l/min [20 US gpm]
Max inlet flow	114 l/min [30 US gpm]
Flow range	1.9-76 l/min [0.5-20 US gpm]
Flow accuracy	± 15%
Weight	0.32 kg [0.70 lb]
Cavity	C-12-3

MODEL CODE

PFR12 - 12 - V - C - A - 4G - 1.0

Seal Option

Code	Seal Kit
Omit - Buna - N	9900171
V - Viton	9900172

Adjustment Option

C - Tamper Resistant
K - Knob
S - External

Housing Material

Omit - No housing
A - Aluminum
S - Steel

Flow Setting

Code - Flow in US gpm
 Specify in 0.1 gpm increments within flow range
 Example

Code	l/min	[US gpm]
1.0	4.0	1.0

Housing

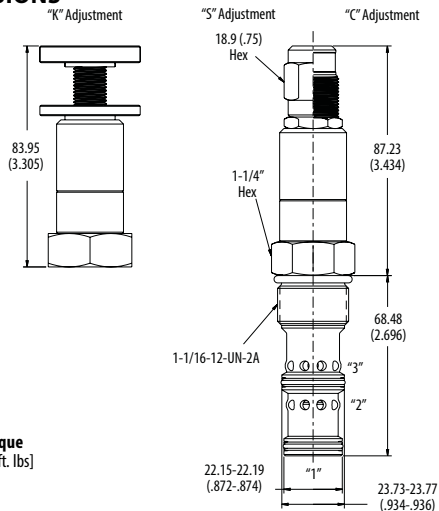
Code	Ports	Aluminium Heavy duty	Steel
0	No housing		
4G	1/2" BSP	02-161817	
6G	3/4" BSP	02-161816	
10H	#10 SAE	02-160642	
12H	#12 SAE	02-160646	
4G	1/2" BSP		02-169815
6G	3/4" BSP		02-169814
10T	#10 SAE		02-161070
12T	#12 SAE		02-169816

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

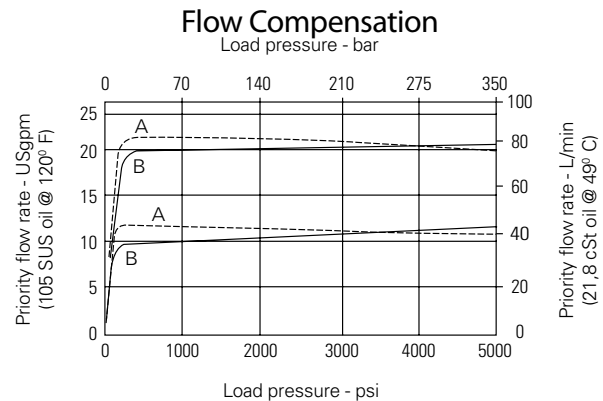
DIMENSIONS

mm [in]



Installation torque
 47-54 Nm [35-40 ft. lbs]

PERFORMANCE CURVES



A - Port 3, priority (regulated outlet) pressurized
B - Port 2, (bypass outlet) pressurized.

Flow Control Valves

VRC 06

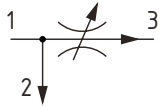
Flow Control, Partially Adjustable, Pressure Compensated, Priority Type

315 bar [4600 psi] • 30 l/min [8 US gpm]

DESCRIPTION AND OPERATION

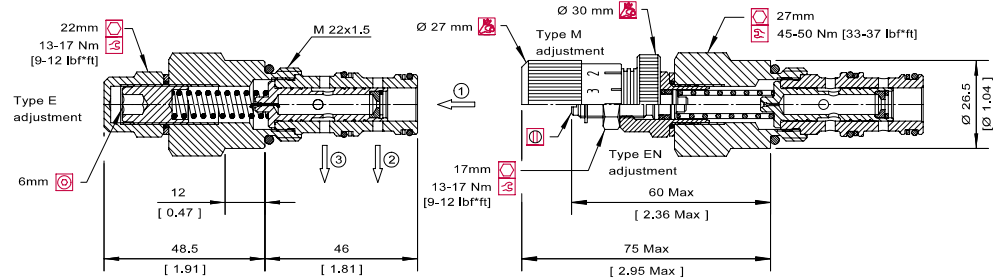
This is a partially adjustable, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



DIMENSIONS

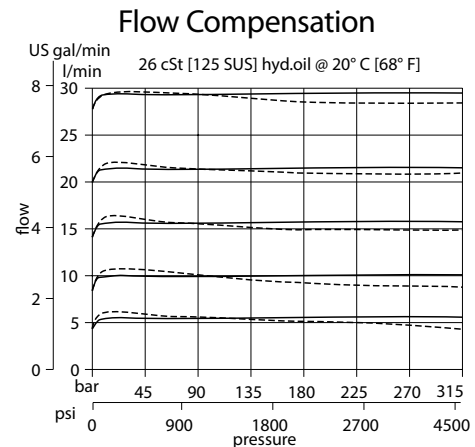
mm [in]



PERFORMANCE DATA

Rated pressure	315 bar [4600 psi]
Rated flow	30 l/min [8 US gpm]
Max inlet flow	50 l/min [13 US gpm]
Flow range	1-30 l/min [0.4-8 US gpm]
Weight	0.21 kg [0.46 lb]
Cavity	NCS06/3

PERFORMANCE CURVES



MODEL CODE

VRC 06 - EN - 2.0 - SE3/8 - V - 4.0

Adjustment Option

E - Internal
EN - External
M - Calibrated Knob

Orifice Size

Code - Orifice size in mm

Flow Range		
Code	l/min	[US gpm]
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]

Flow Setting

Code - Flow in l/min
Specify in 1.0 lpm increments within flow range
Example

Code	l/min	[US gpm]
4.0	4.0	[1.0]

Seal Option

Code	Seal Kit
V-Viton	230000110
Omit-Buna-N	230000070

Housing

Code	Ports&Material	Housing Model Code
0	No Housing	No Housing
SE3/8	AL, 3/8 BSP	NCS06/3-SE-3/8
SE1/2	AL, 1/2 BSP	NCS06/3-SE-1/2
SE6S	AL, #6 SAE	NCS06/3-SE-6S
SE8S	AL, #8 SAE	NCS06/3-SE-8S

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

VRC 12

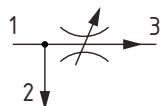
Flow Control, Partially Adjustable, Pressure Compensated, Priority Type

315 bar [4600 psi] • 73 l/min [19 US gpm]

DESCRIPTION AND OPERATION

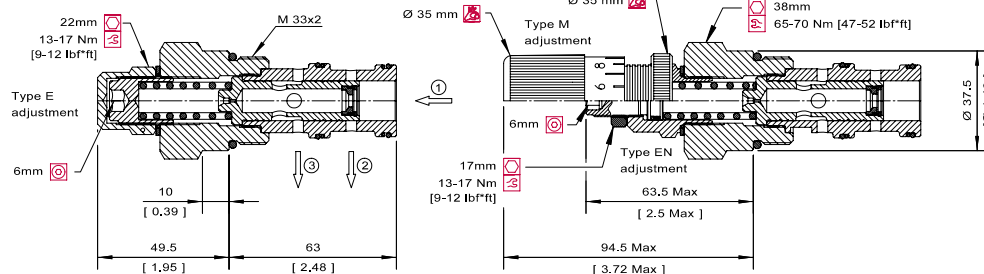
This is a partially adjustable, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



DIMENSIONS

mm [in]

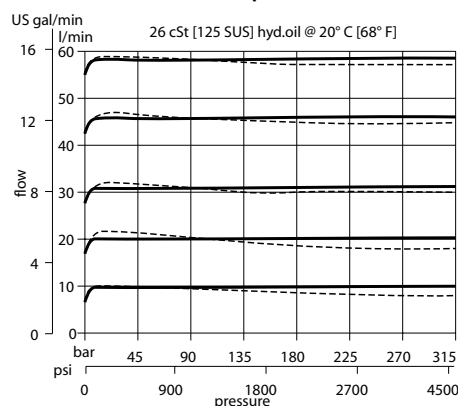


PERFORMANCE DATA

Rated pressure	315 bar [4600 psi]
Rated flow	73 l/min [19 US gpm]
Max inlet flow	100 l/min [26 US gpm]
Flow range	2.5-73 l/min [0.7-19 US gpm]
Weight	0.50 kg [1.10 lb]
Cavity	NCS12/3

PERFORMANCE CURVES

Flow Compensation



MODEL CODE

VRC 12 - EN - 1.5 - SE1/2 - V - 4.0

Adjustment Option

E - Internal
EN - External
M - Calibrated Knob

Orifice Size

Code - Orifice Size in mm

Flow Range

Code	l/min	[US gpm]
1.50	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]

Housing

Code	Ports&Material	Housing Model Code
00	No Housing	No Housing
SE1/2	AL, 1/2 BSP	NCS12/3-SE-1/2
SE3/4	AL, 3/4 BSP	NCS12/3-SE-3/4
SE85	AL, #8 SAE	NCS12/3-SE-85
SE125	AL, #12 SAE	NCS12/3-SE-125

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Code - Flow in l/min
Specify in 1.0 lpm increments within flow range
Example

Code	l/min	[US gpm]
4.0	4.0	1.0

Seal Option

Code	Seal Kit
V-Viton	230000360
Omit-Buna-N	230000130

Flow Control Valves

PFR2-16

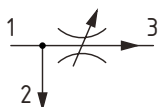
Flow Control, Partially Adjustable, Pressure Compensated, Priority Type

210 bar [3000 psi] • 114 l/min [30 US gpm]

DESCRIPTION AND OPERATION

This is a partially adjustable, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The regulated flow will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC



PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	114 l/min [30 US gpm]
Max inlet flow	151 l/min [40 US gpm]
Flow range	1.9-114 l/min [0.5-30 US gpm]
Flow accuracy	1.9-10.9 l/min [0.5-2.9 US gpm] ±15% 11.4-114 l/min [3-30 US gpm] ±10%
Weight	0.43 kg [0.95 lb]
Cavity	SDC16-3

MODEL CODE

PFR2 - 16 - V - C - 0 - 30.0

Seal Option

Code	Seal Kit
Omit - Buna - N	565811
V - Viton	889610

Adjustment Option

C - Tamper Resistant
K - Knob
S - External

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
30.0	114.0	30.0

Housing

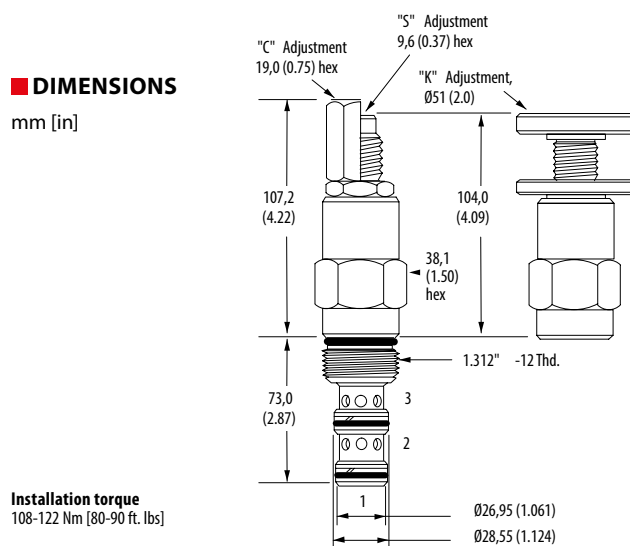
Code	Ports	Aluminium Standard duty	Aluminium Heavy duty
0	No housing		
12T	#12 SAE	566152	
6B	3/4" BSP	02-175465	
10H	#10 SAE		876721
12H	#12 SAE		876723
4G	1/2" BSP		876720
6G	3/4" BSP		876722

* Aluminium bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

DIMENSIONS

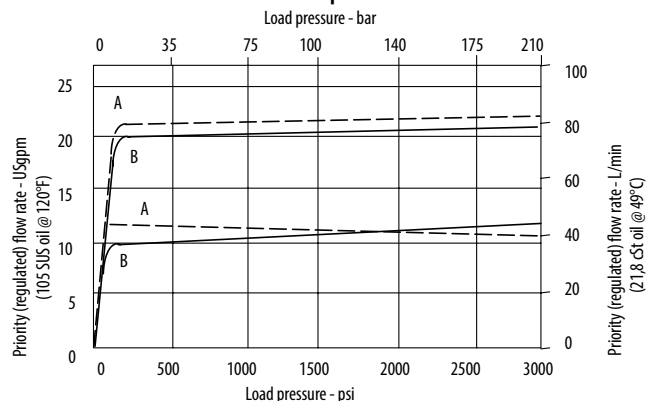
mm [in]



Installation torque
108-122 Nm [80-90 ft. lbs]

PERFORMANCE CURVES

Flow Compensation



A - Port 3, priority (regulated) outlet pressurized

B - Port 2, bypass outlet pressurized

Flow Control Valves

PFR12-16

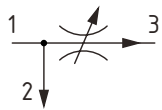
Flow Control, Partially Adjustable, Pressure Compensated, Priority Type

350 bar [5000 psi] • 114 l/min [30 US gpm]

DESCRIPTION AND OPERATION

This is a partially adjustable, priority type, pressure compensated flow control valve, where the flow from port 3 will remain constant regardless of the pressure difference across the valve, while excess flow passes from port 1 to 2. Flow enters at port 1 and passes across a fixed orifice in the spool, which creates a pressure drop. This causes the spool to move back against the spring, which then restricts the outlet flow. Port 1 then opens to port 2 to allow excess flow to pass. The Flow Setting will always take priority and remains constant if the working pressure is higher in either port 2 or port 3.

SCHEMATIC

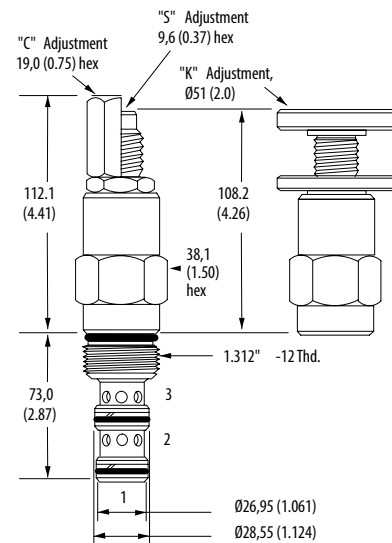


PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	114 l/min [30 US gpm]
Max inlet flow	151 l/min [40 US gpm]
Flow range	1.9-114 l/min [0.5-30 US gpm]
Flow accuracy	1.9-10.9 l/min [0.5-2.9 US gpm] ±15% 11.4-114 l/min [3-30 US gpm] ±10%
Weight	0.43 kg [0.95 lb]
Cavity	SDC16-3

DIMENSIONS

mm [in]

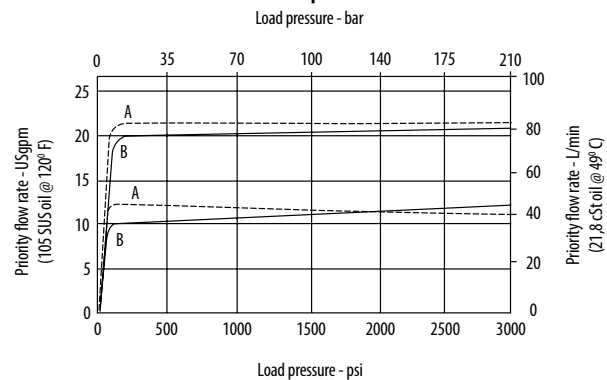


Installation torque

A - 108-122 Nm [80-90 ft. lbs]
S - 136-149,6 Nm [100-110 ft. lbs]

PERFORMANCE CURVES

Flow Compensation



A - Port 3, priority (regulated outlet) pressurized. • B - Port 2, (bypass outlet) pressurized.

MODEL CODE

PFR12 - 16 - V - C - A - 10H - 30.0

Seal Option

Code	Seal Kit
Omit-Buna - N	889632
V-Viton	889636

Adjustment Option

C - Tamper Resistant
K - Knob
S - External

Housing Material

Omit - No housing
A - Aluminum
S - Steel

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
30.0	114.0	30.0

Housing

Code	Ports	Aluminium Heavy duty	Steel
0	No housing		
10H	#10 SAE	876721	
12H	#12 SAE	876723	
4G	1/2" BSP	876720	
6G	3/4" BSP	876722	
4G	1/2" BSP		02-175131
6G	3/4" BSP		02-175132
10T	#10 SAE		02-175129
12T	#12 SAE		02-175130

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

CP340-1 /1S

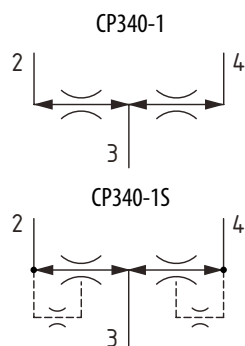
Flow Divider/Combiner, Fixed Ratio, Flow Synchronizing Option

210 bar [3000 psi] • 45 l/min [12 US gpm]

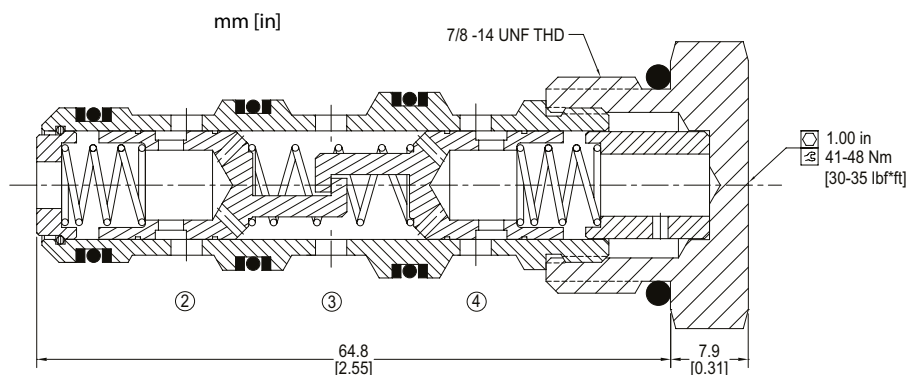
DESCRIPTION AND OPERATION

This is a fixed ratio flow divider/combiner valve. In dividing mode, flow enters port 3 and passes across two fixed orifices in linked spools. If the pressure drop through one orifice is higher than the other, then the spools will move together to restrict the flow in the lower pressure outlet port. This maintains equal pressure drops across the spools, thus maintaining the flow division in the outlet ports. In combining mode, flow will enter ports 2 and 4 pass through the orifices, which causes the spools to move to restrict the higher-pressure inlet and maintain equal pressure drops and equal flow into the valve. The CP340-1S provides synchronizing flow to the opposite port in the event that one port is completely blocked.

SCHEMATIC



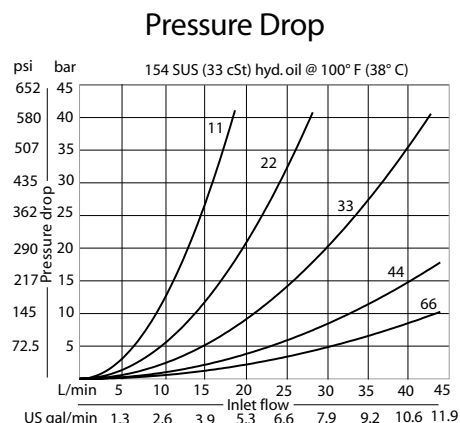
DIMENSIONS



PERFORMANCE DATA

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

PERFORMANCE CURVES



MODEL CODE

CP340 - 1 - B - 6S - 44

Flow Synchronization Option

1 - Without synchronization
1S - With synchronization

Seal Option

Code	Seal Kit
B-Buna-N	120023
V-Viton	120024

Housing

Code	Ports&Material	Housing Model Code
0	No housing	No Housing
3B	3/8 BSP, AL	CP10-4-2B-X1
4B	1/2 BSP, AL	CP10-4-3B-X1
6S	#6 SAE, AL	CP10-4-6S-X1
8S	#8 SAE, AL	CP10-4-8S-X1

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Code	Flow Ratio	Total Flow
11	1:1	7.6 l/min [2 US gpm]
22	1:1	15 l/min [4 US gpm]
33	1:1	23 l/min [6 US gpm]
36	1:2	34 l/min [9 US gpm]
44	1:1	30 l/min [8 US gpm]
46	2:3	38 l/min [10 US gpm]
63	2:1	34 l/min [9 US gpm]
64	3:2	38 l/min [10 US gpm]
66	1:1	45 l/min [12 US gpm]

Flow Control Valves

2CFD50 / A2X

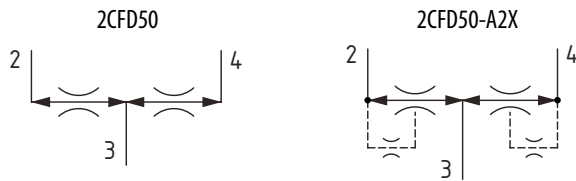
Flow Divider/Combiner, Fixed Ratio, Flow Synchronizing Option

350 bar [5000 psi] • 40 l/min [11 US gpm]

DESCRIPTION AND OPERATION

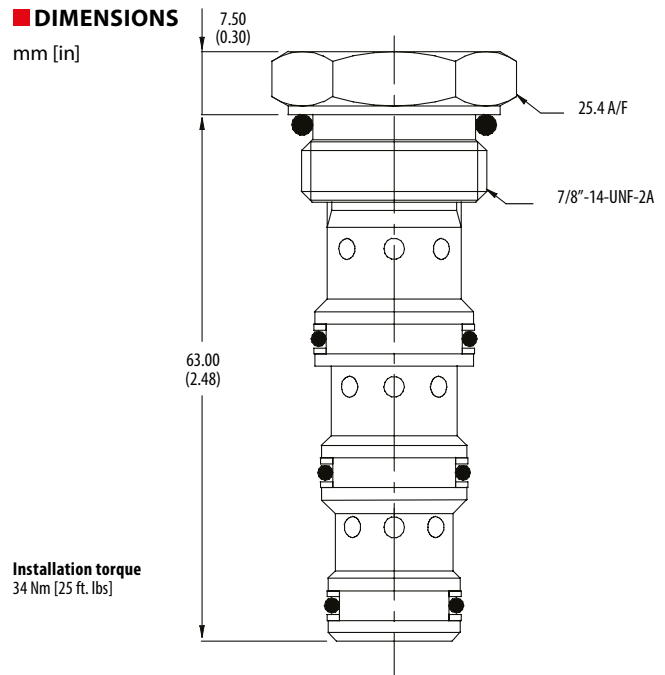
This is a fixed ratio flow divider/combiner valve. In dividing mode, flow enters port 3 and passes across two fixed orifices in linked spools. If the pressure drop through one orifice is higher than the other, then the spools will move together to restrict the flow in the lower pressure outlet port. This maintains equal pressure drops across the spools, thus maintaining the flow division in the outlet ports. In combining mode, flow will enter ports 2 and 4 pass through the orifices, which causes the spools to move to restrict the higher-pressure inlet and maintain equal pressure drops and equal flow into the valve. The A2X version has extra orifice in the sleeve to allow make up flow when needed in transmission circuits.

SCHEMATIC



DIMENSIONS

mm [in]

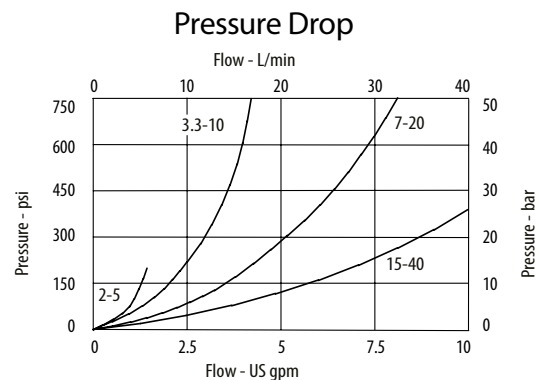


Installation torque
34 Nm [25 ft. lbs]

PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	40 l/min [11 US gpm]
Weight	0.11 kg [0.24 lb]
Cavity	SDC10-4

PERFORMANCE CURVES



MODEL CODE

2CFD50 - 4W - 40 - S - 377 - A2X

Basic Code

2CFD50 - No housing
2CFD55 - Cartridge and housing

Housing

Code	Ports	Aluminium	Steel
Omit	No Housing		
3W	3/8" BSP inlet and outlet	B19187	
4W	1/2" BSP inlet and outlet	B20816	
8T-6T	1/2" SAE inlet and 3/8" SAE outlet	B19185	B21935

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Synchronization Option

Omit - Without synchronization
A2X - With synchronization

Housing Material

Omit - Aluminum/No housing
377 - Steel

Seal Option

Code	Seal Kit
S-Buna-N	SK1065
SV-Viton	SK1065V

Inlet Flow Range

Code	Inlet Flow	
	l/min	[US gpm]
5	2-5	0.5-1.3
10	3.3 - 10	0.9-2.6
20	7-20	1.8-5.3
40	15-40	4.0-10.5

Flow ratio is 1:1. Additional flow ratios available.

Flow Control Valves

CP342-1 /1S

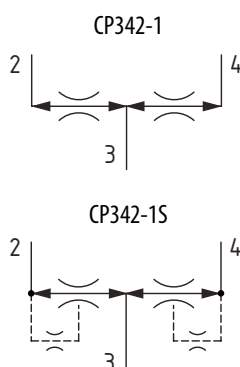
Flow Divider/Combiner, Fixed Ratio, Flow Synchronizing Option

210 bar [3000 psi] • 150 l/min [40 US gpm]

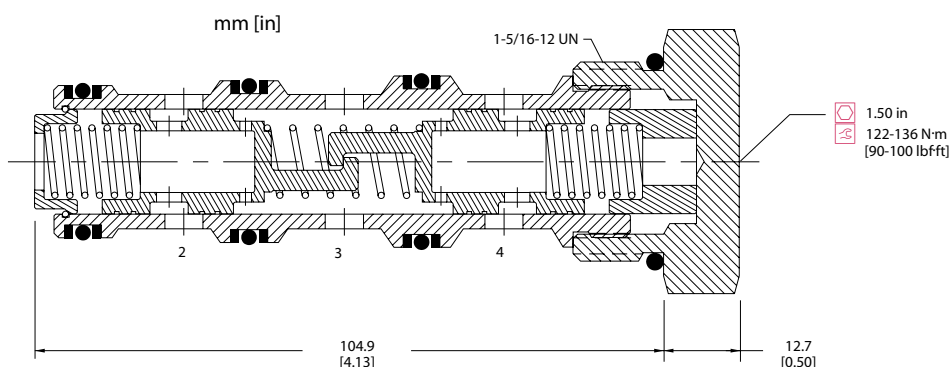
DESCRIPTION AND OPERATION

This is a fixed ratio flow divider/combiner valve. In dividing mode, flow enters port 3 and passes across two fixed orifices in linked spools. If the pressure drop through one orifice is higher than the other, then the spools will move together to restrict the flow in the lower pressure outlet port. This maintains equal pressure drops across the spools, thus maintaining the flow division in the outlet ports. In combining mode, flow will enter ports 2 and 4 pass through the orifices, which causes the spools to move to restrict the higher-pressure inlet and maintain equal pressure drops and equal flow into the valve. The CP342-1S provides synchronizing flow to the opposite port in the event that one port is completely blocked.

SCHEMATIC



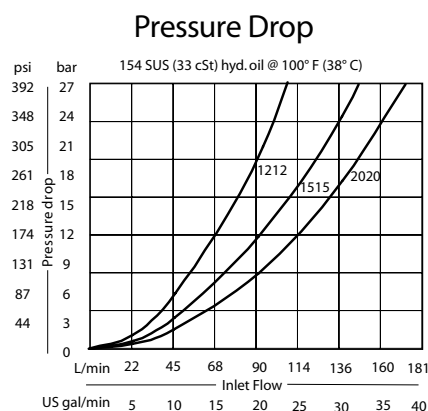
DIMENSIONS



PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	150 l/min [40 US gpm]
Weight	0.37 kg [0.81 lb]
Cavity	SDC16-4

PERFORMANCE CURVES



MODEL CODE

CP342 - 1 - B - 16S - 1515

Flow Synchronization Option

1 - Without synchronization
1S - With synchronization

Seal Option

Code	Seal Kit
B-Buna-N	120025
V-Viton	120026

Housing

Code	Ports & Material	Housing Model Code
0	No Housing	No Housing
6B	AL, 3/4 BSP	CP16-4-6B-X1
8B	AL, 1 BSP	CP16-4-8B-X1
12S	AL, #12 SAE	CP16-4-12S-X1
16S	AL, #16 SAE	CP16-4-16S-X1

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Flow Ratio

Code	Port 2: Port 4	Total Inlet Flow
1020	1:2	30 l/min [114 US gpm]
1212	1:1	24 l/min [91 US gpm]
1215	4:5	27 l/min [102 US gpm]
1220	3:5	32 l/min [121 US gpm]
1512	5:4	27 l/min [102 US gpm]
1515	1:1	30 l/min [114 US gpm]
1520	3:4	35 l/min [132 US gpm]
2012	5:3	32 l/min [121 US gpm]
2015	4:3	35 l/min [132 US gpm]
2020	1:1	40 l/min [151 US gpm]

Flow Control Valves

CP341-1

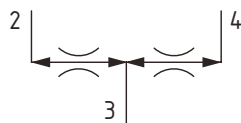
Flow Divider/Combiner, Fixed Ratio

210 bar [3000 psi] • 76 l/min [20 US gpm]

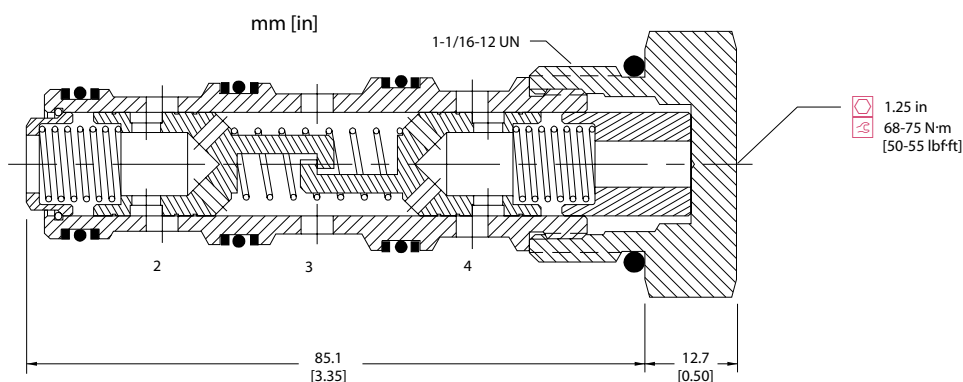
DESCRIPTION AND OPERATION

This is a fixed ratio flow divider/combiner valve. In dividing mode, flow enters port 3 and passes across two fixed orifices in linked spools. If the pressure drop through one orifice is higher than the other, then the spools will move together to restrict the flow in the lower pressure outlet port. This maintains equal pressure drops across the spools, thus maintaining the flow division in the outlet ports. In combining mode, flow will enter ports 2 and 4 pass through the orifices, which causes the spools to move to restrict the higher-pressure inlet and maintain equal pressure drops and equal flow into the valve.

SCHEMATIC



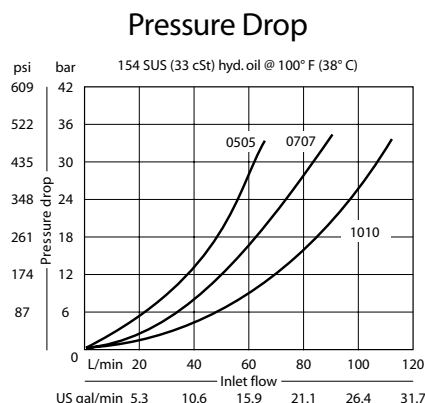
DIMENSIONS



PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	76 l/min [20 US gpm]
Weight	0.23 kg [0.50 lb]
Cavity	CP12-4

PERFORMANCE CURVES



MODEL CODE

CP341 - 1 - B - 10S - 0707

Seal Option

Code	Seal Kit
B-Buna-N	120262
V-Viton	120263

Housing

Code	Ports&Material	Housing Model Code
0	No Housing	No Housing
4B	AL, 1/2 BSP	CP12-4-4B-X1
6B	AL, 3/4 BSP	CP12-4-6B-X1
10S	AL, #10 SAE	CP12-4-10S-X1
12S	AL, #12 SAE	CP12-4-12S-X1

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Code	Port 2: Port 4	Total Inlet Flow
0505	1:1	38 l/min [10 US gpm]
0507	5:7	45 l/min [12 US gpm]
0510	1:2	57 l/min [15 US gpm]
0707	1:1	53 l/min [14 US gpm]
0710	7:10	64 l/min [17 US gpm]
1010	1:1	76 l/min [20 US gpm]

Flow Control Valves

CP342-3

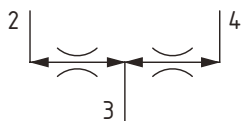
Flow Divider/Combiner, Fixed Ratio

450 bar [6500 psi] • 150 l/min [40 US gpm]

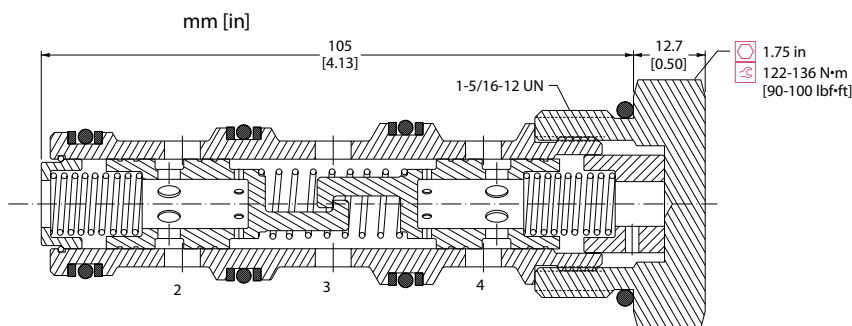
DESCRIPTION AND OPERATION

This is a fixed ratio flow divider/combiner valve. In dividing mode, flow enters port 3 and passes across two fixed orifices in linked spools. If the pressure drop through one orifice is higher than the other, then the spools will move together to restrict the flow in the lower pressure outlet port. This maintains equal pressure drops across the spools, thus maintaining the flow division in the outlet ports. In combining mode, flow will enter ports 2 and 4 pass through the orifices, which causes the spools to move to restrict the higher-pressure inlet and maintain equal pressure drops and equal flow into the valve.

SCHEMATIC



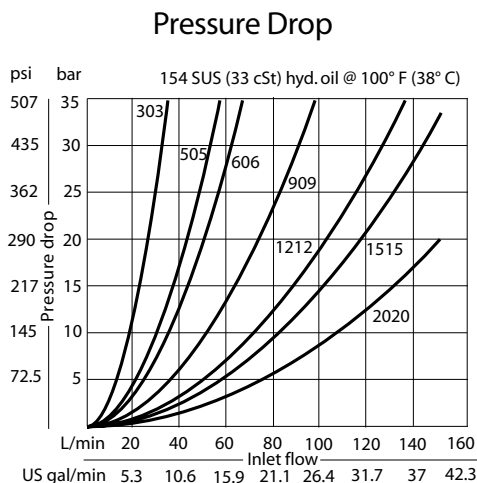
DIMENSIONS



PERFORMANCE DATA

Rated pressure	450 bar [6500 psi]
Rated flow	150 l/min [40 US gpm]
Weight	0.37 kg [0.81 lb]
Cavity	SDC16-4

PERFORMANCE CURVES



MODEL CODE

CP342 - 3 - U - S16S - 0505

Seal Option

Code	Seal Kit
U-Urethane	120677

Housing

Code	Ports&Material	Housing Model Code
0	No Housing	No Housing
S6B	Steel, 3/4 BSP	CP16-4-S6B-X1
S8B	Steel, 1 BSP	CP16-4-S8B-X1
S12S	Steel, #12 SAE	CP16-4-S12S-X1
S16S	Steel, #16 SAE	CP16-4-S16S-X1

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

Flow Ratio

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

Flow Control Valves

CP343-1

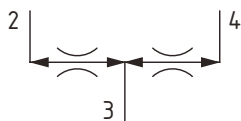
Flow Divider/Combiner, Fixed Ratio

210 bar [3000 psi] • 340 l/min [90 US gpm]

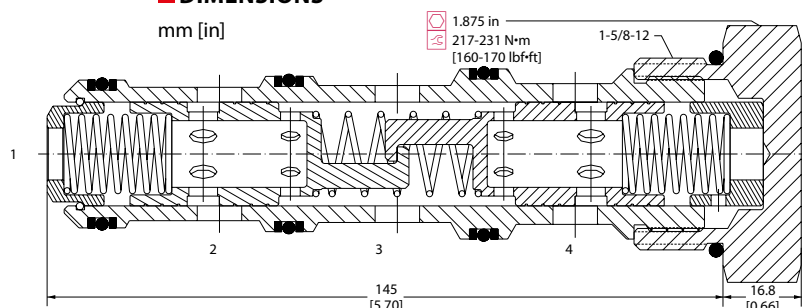
DESCRIPTION AND OPERATION

This is a fixed ratio flow divider/combiner valve. In dividing mode, flow enters port 3 and passes across two fixed orifices in linked spools. If the pressure drop through one orifice is higher than the other, then the spools will move together to restrict the flow in the lower pressure outlet port. This maintains equal pressure drops across the spools, thus maintaining the flow division in the outlet ports. In combining mode, flow will enter ports 2 and 4 pass through the orifices, which causes the spools to move to restrict the higher-pressure inlet and maintain equal pressure drops and equal flow into the valve.

SCHEMATIC



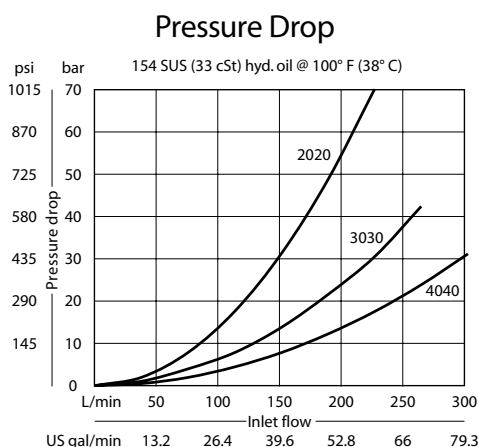
DIMENSIONS



PERFORMANCE DATA

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

PERFORMANCE CURVES



MODEL CODE

CP343 - 1 - B - 16S - 4545

Seal Option

Code	Seal Kit
B-Buna-N	120181
V-Viton	120182

Housing

Code	Ports&Material	Housing Model Code
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

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Setting

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

Flow Control Valves

VF11-10

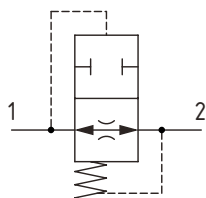
Velocity Fuse

350 bar [5000 psi] • 23 l/min [6 US gpm]

DESCRIPTION AND OPERATION

This is a velocity fuse, which closes when the set flow is exceeded. These valves are often used to prevent a load falling in the event of a total hose failure. The valve is normally open from port 1 to port 2. The valve closes when the pre-set flow is exceeded, and it will remain closed until the pressure at port 1 is reduced to less than 80 psi.

SCHEMATIC

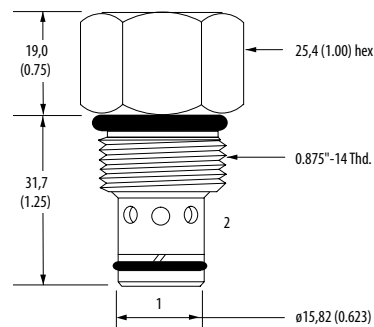


PERFORMANCE DATA

Rated pressure	350 bar [5000 psi]
Rated flow	23 l/min [6 US gpm]
Flow range	1.9–22.7 l/min [0.5–6.0 USgpm]
Weight	0.11 kg [0.25 lb]
Cavity	SDC10-2

DIMENSIONS

mm [in]

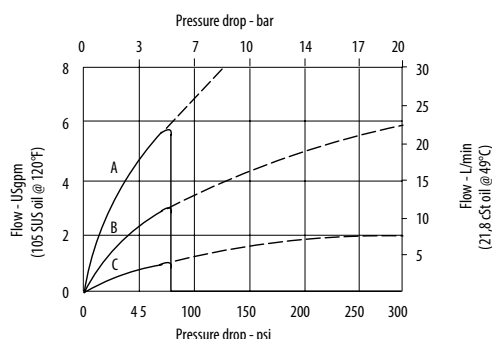


Installation torque

A - 47-54 Nm [35-40 ft. lbs]
S - 68-75 Nm [50-55 ft. lbs]

PERFORMANCE CURVES

Pressure Drop



A - 22.8 l/min (6 US gpm)
maximum flow setting

— Port 1 to 2,
fusing direction
Port 2 to 1, reverse
--- flow down to 0

B - 14.44 l/min (3 US gpm)
maximum flow setting

— Port 1 to 2,
fusing direction
Port 2 to 1, reverse
--- flow down to 0

C - 3.8 l/min (1 US gpm)
maximum flow setting

— Port 1 to 2,
fusing direction
Port 2 to 1, reverse
--- flow down to 0

MODEL CODE

VF11 - 10 - N - F - A - 3B - 6.0

Seal Option

Code	Seal Kit
Omit - Buna-N	656803
V-Viton	566086

Adjustment Option

F- Fixed

Housing Material

Omit - No housing
A - Aluminum
S - Steel

Flow Setting

Code - Flow in US gpm
Specify in 0.1 gpm increments within flow range
Example

Code	l/min	[US gpm]
6.0	23.0	6.0

Housing

Code	Ports	Aluminium Standard duty	Aluminium Heavy duty	Steel
0	No housing			
3B	3/8" BSP	02-175462	-	-
6T	#6 SAE	566151	-	-
2G	1/4" BSP	-	876702	-
3G	3/8" BSP	-	876703	-
6H	#6 SAE	-	876700	-
8H	#8 SAE	-	876701	-
6T	#6 SAE	-	-	02-175100
8T	#8 SAE	-	-	02-175101
2G	1/4" BSP	-	-	02-175102
3G	3/8" BSP	-	-	02-175103

* Aluminum bodies are to be used for pressures less than 210 bar [3000 psi].

* Additional housings available

Flow Control Valves

CP330-3

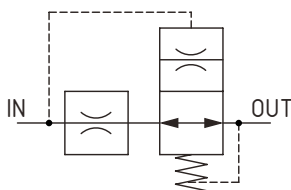
Velocity Fuse, In-line

210 bar [3000 psi] • 110 l/min [29 US gpm]

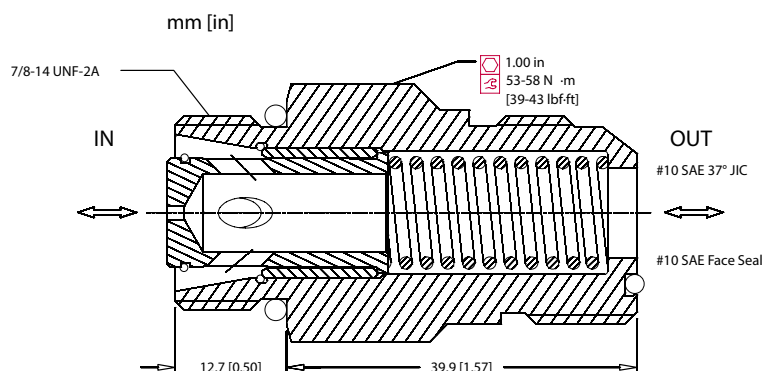
DESCRIPTION AND OPERATION

This is an in-line velocity fuse, which closes when the set flow is exceeded. These valves are often used to prevent a load falling in the event of a total hose failure. The valve closes when the pre-set flow is exceeded and then provides non-compensated, restrictive flow. It provides reverse free flow when operated in the opposite direction.

SCHEMATIC



DIMENSIONS

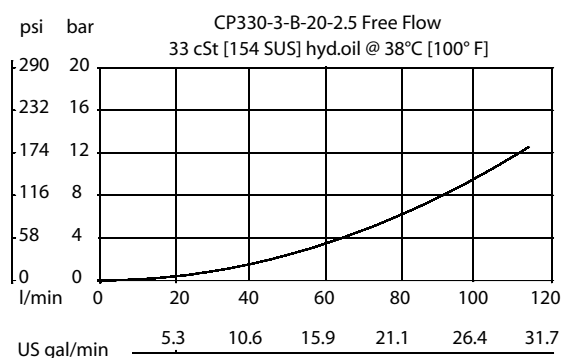


PERFORMANCE DATA

Rated pressure	210 bar [3000 psi]
Rated flow	110 l/min [29 US gpm]
Weight	0.12 kg [0.26 lb]
Cavity	#10 SAE Port

PERFORMANCE CURVES

Pressure Drop



MODEL CODE

CP330 - 3 - B - FS10 - 17 - 2.5

Seal Option

Code

B-Buna-N

V-Viton

Fitting Type

Omit- # 10 SAE 37° JIC

FS10- #10 SAE face seal

Bypass Flow @ 48 bar [700 psi]

Code	l/min	[US gpm]
2.5	9.5	2.5

Flow Setting

Code	l/min	[US gpm]
17	64.4	17
20	75.7	20
23	87.1	23
26	98.4	26
29	109.8	29

Danfoss