MECHANICAL FLOW CONTROLS

W 40 / 2017

Delta Power Company

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mail: delta@delta-power.com • **www.delta-power.com**

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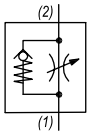
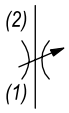
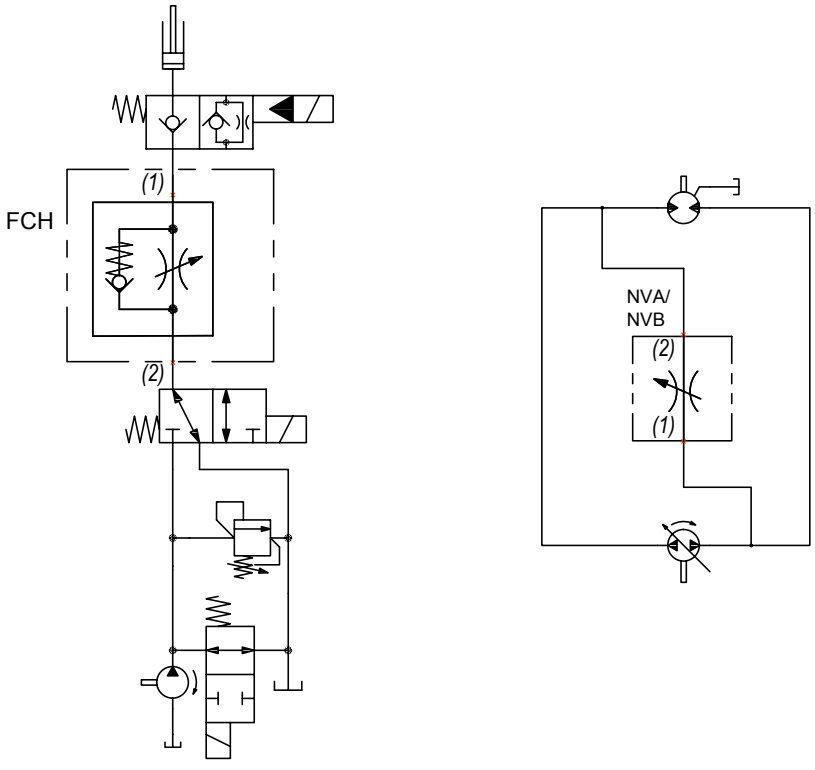
NEEDLE VALVES – FLOW RESTRICTORS

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	12	3500	45	241	7/8-14	**DE-FCH**	MF4
	6	3500	23	241	5/8-18	**MA-NVA**	MF6
	6	3500	23	241	3/4-16	**PB-NVA**	MF8
	10	3500	38	241	7/8-14	**DE-NVA**	MF10
	35	5000	132	345	1 1/16-12	**HT-NVA**	MF12
	40	3500	151	241	1 5/16-12	**SJ-NVA**	MF14
	3	3500	11	241	3/4-16	**PB-NVB**	MF16
	15	3500	57	241	7/8-14	**DE-NVB**	MF18

TYPICAL SCHEMATIC

Typical application for an NVA/NVB is to meter flow to an actuator. In the example shown, the valve is used to allow a hydraulic motor to be manually unloaded, so that the vehicle can be towed.

Typical application for the FCH is to meter flow in one direction while allowing free flow in the opposite direction.



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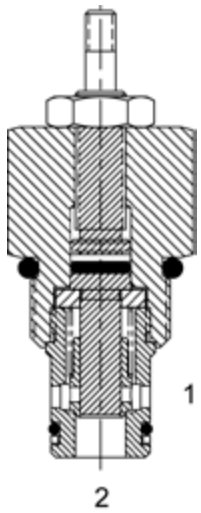
DE-FCH ADJUSTABLE FLOW CONTROL VALVE, SPOOL TYPE, FREE REVERSE FLOW



DESCRIPTION

10 size, 7/8-14 thread, “Delta” adjustable needle flow control valve with free reverse flow.

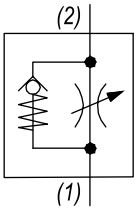
OPERATION

The DE-FCH increases its orifice value from fully closed to fully open by turning screw counterclockwise. When adjusted open the valves regulates flow (1) to (2). When fully closed the valve restricts flow from (1) to (2).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

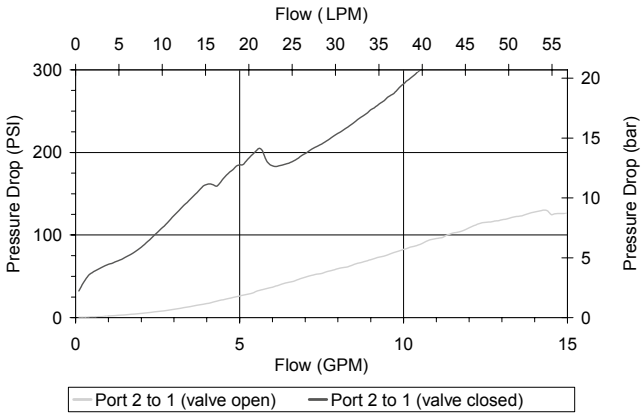


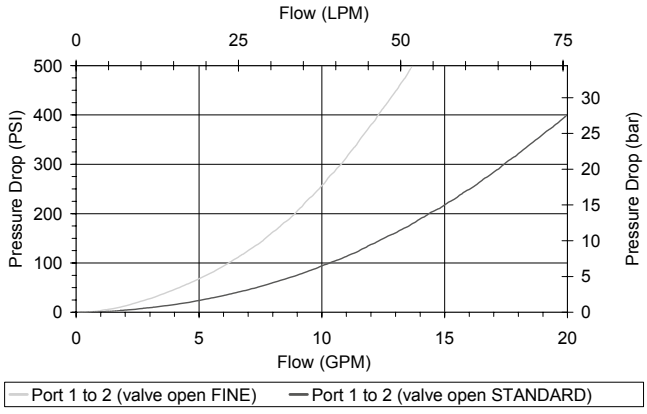
VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.32 lbs (.15 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

PERFORMANCE

Actual Test Data (Cartridge Only)





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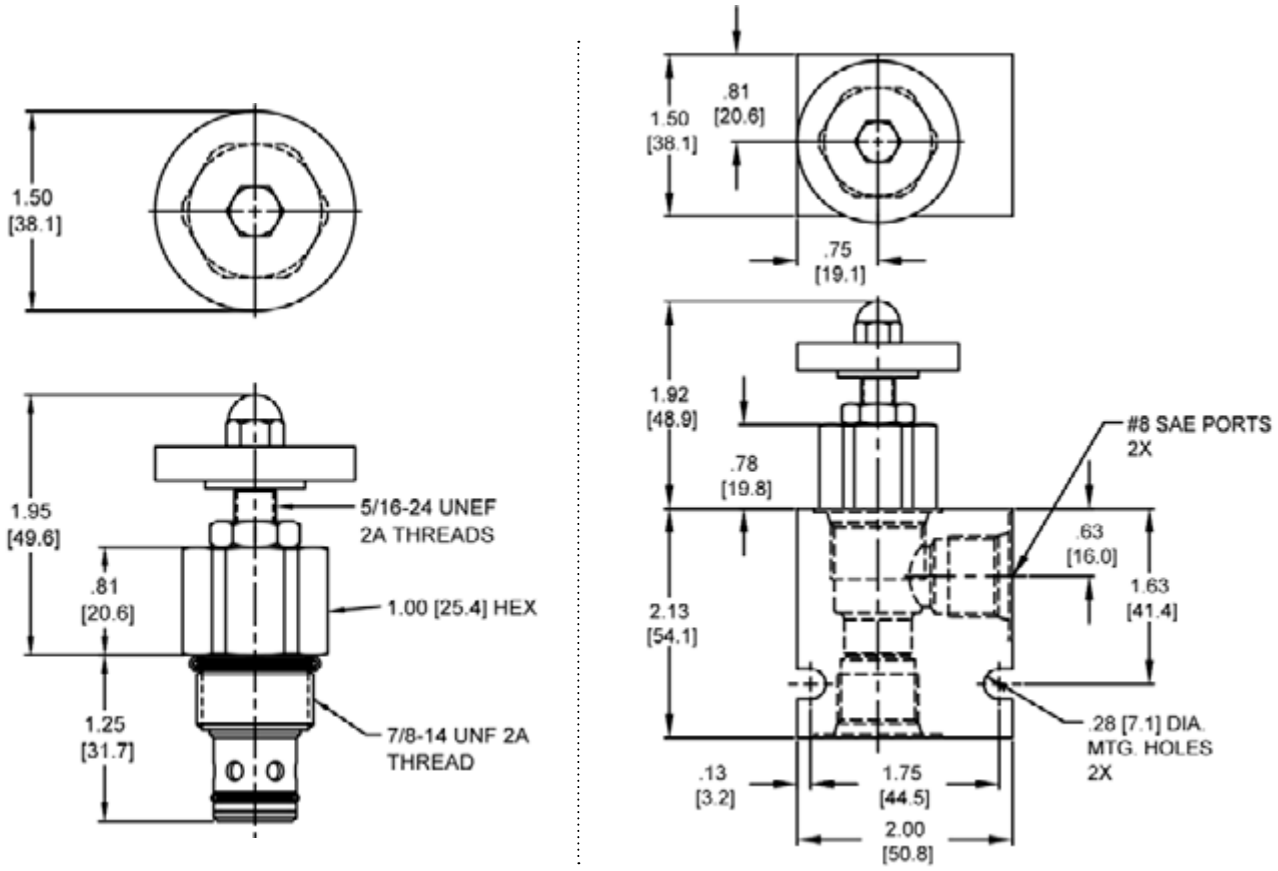
DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCH – _____ **–** _____ **–** _____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**
Buna, Screen	**A0**
Viton, Screen	**W0**
Buna, Screen, Knob	**AK**
Viton, Screen, Knob	**WK**

Note: use screen only if flow direction is from (1) to (2).

ADJUSTMENTS

FINE	Fine Adjustment
STRD	Standard Adjustment

BODIES

Blank	Without Body
N	3/8" NPT Ports
S	#8 SAE Ports

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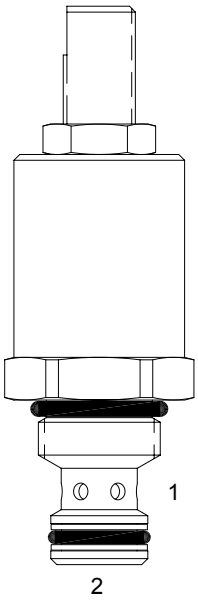
MA-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

7 size, 5/8-18 thread, “Mini” series, needle flow control valve.

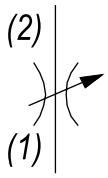
OPERATION

The MA-NVA adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

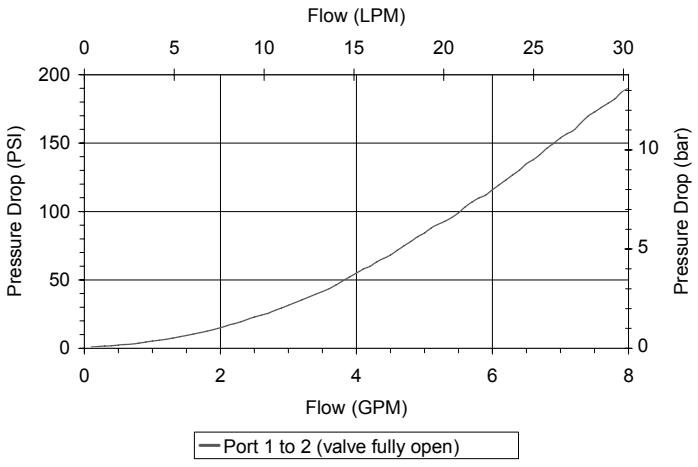
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.24 lbs (.11 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Cavity	MINI 2W
Cavity Form Tool (Finishing)	40500003
Seal Kit	21191202

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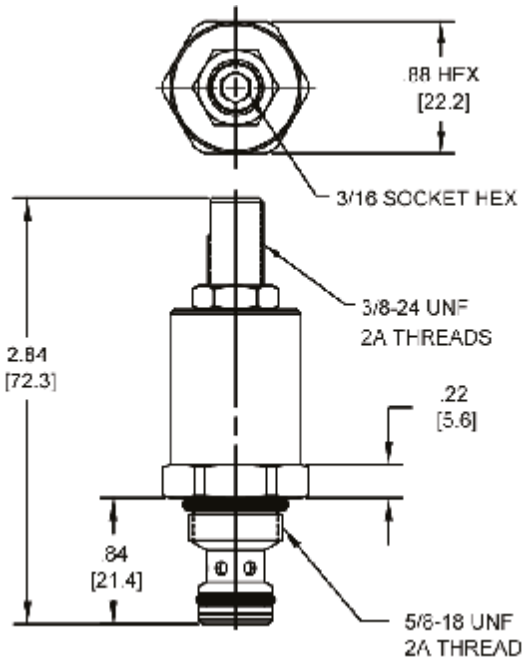
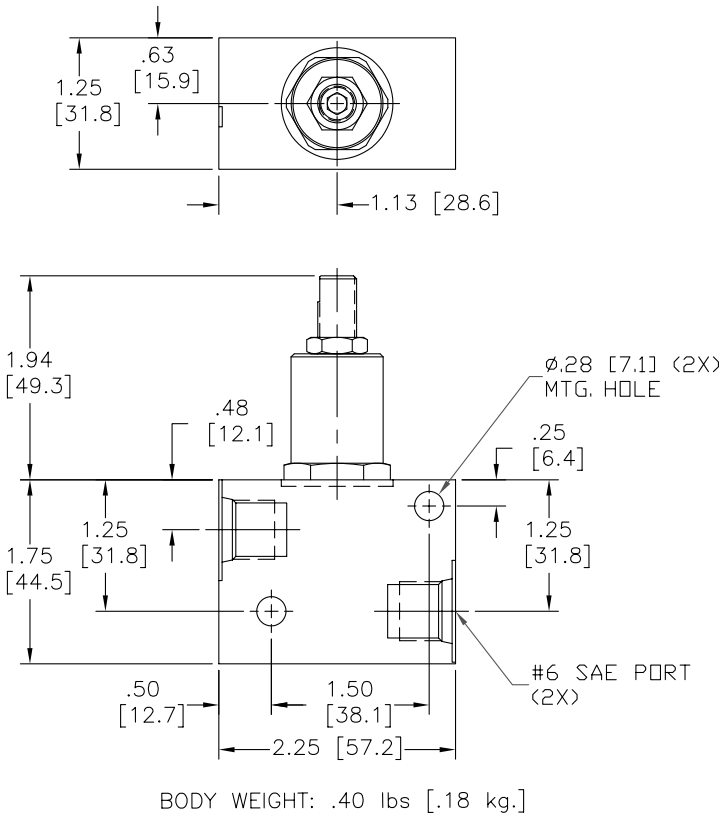
DIMENSIONS





Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

MA-NVA – _____ **–** _____

OPTIONS		BODIES	
Buna Standard	**00**	**Blank**	Without Body
Viton Standard	**V0**	**N**	1/4" NPTF Ports
Buna, Knob	**0K**	**S**	#6 SAE Ports
Viton, Knob	**VK**		

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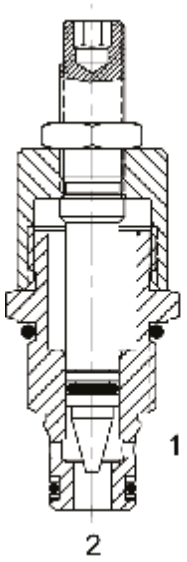
PB-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

8 size, 3/4-16 thread, “Power” series, needle flow control.

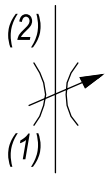
OPERATION

The PB-NVA adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow from (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

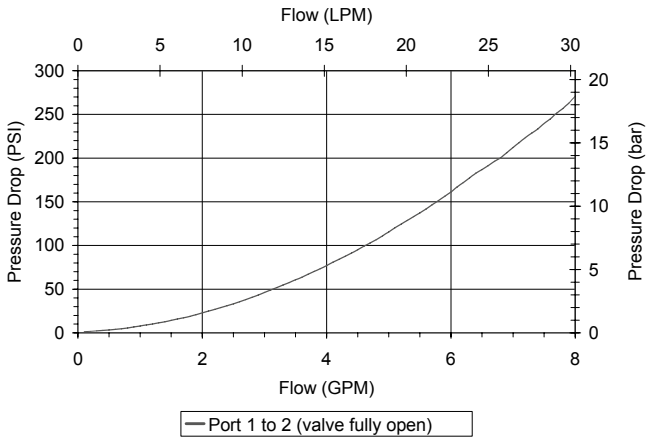
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.22 lbs (.10 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Cavity	POWER 2W
Cavity Form Tool (Finishing)	40500005
Seal Kit	21191102

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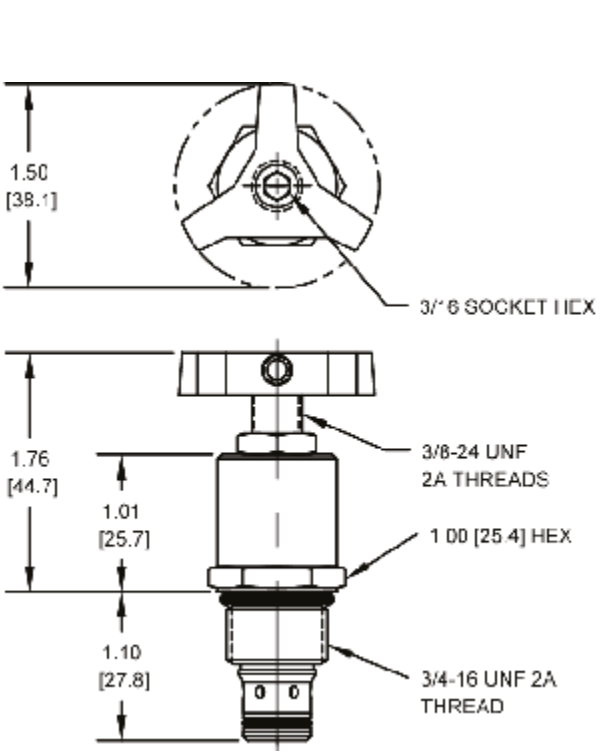
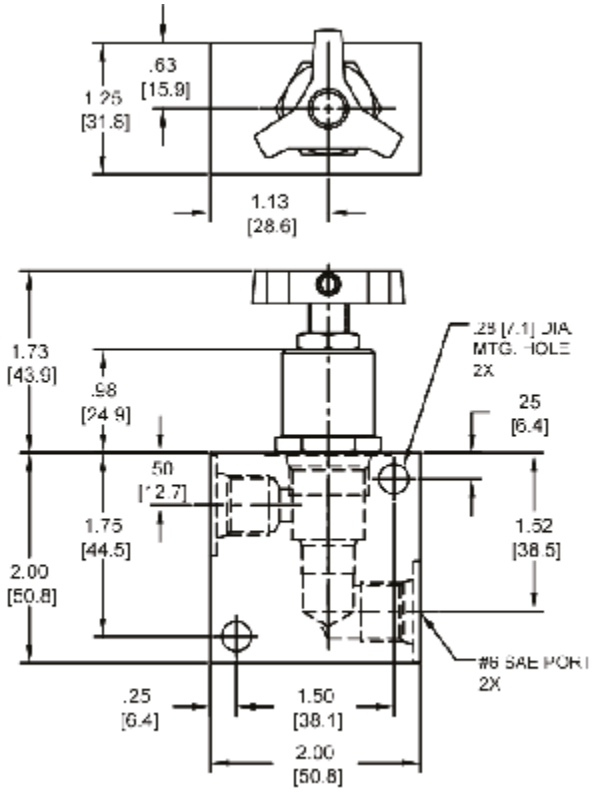
DIMENSIONS





Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-NVA – _____ **–** _____

OPTIONS	
Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**
Buna, Screen	**A0**
Viton, Screen	**W0**
Buna, Screen, Knob	**AK**
Viton, Screen, Knob	**WK**

BODIES	
Blank	Without Body
N	1/4" NPTF Ports
S	#6 SAE Ports

Note: use screen only if flow direction is from (1) to (2).

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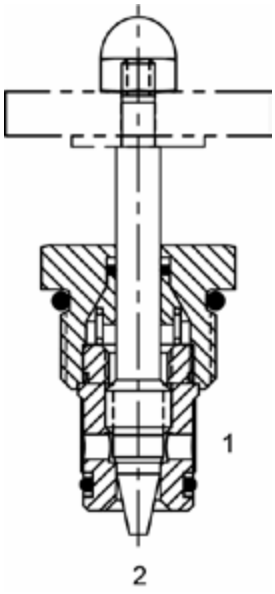
DE-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE, FINE ADJUST



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series fine adjust needle flow control valve.

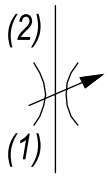
OPERATION

The DE-NVA adjusts from fully open to fully closed by turning adjusting screw counterclockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

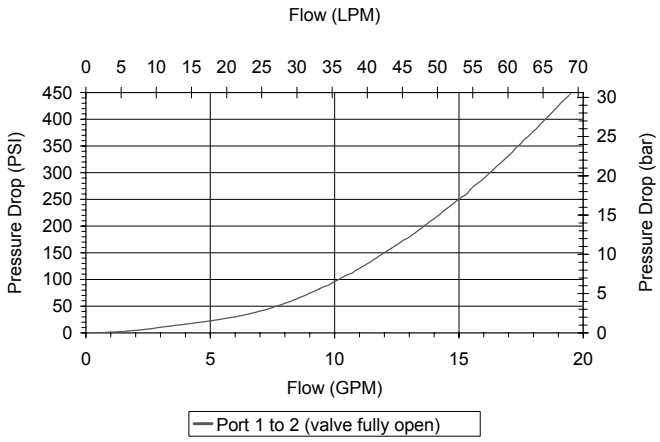
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.19 lbs (.09 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191202

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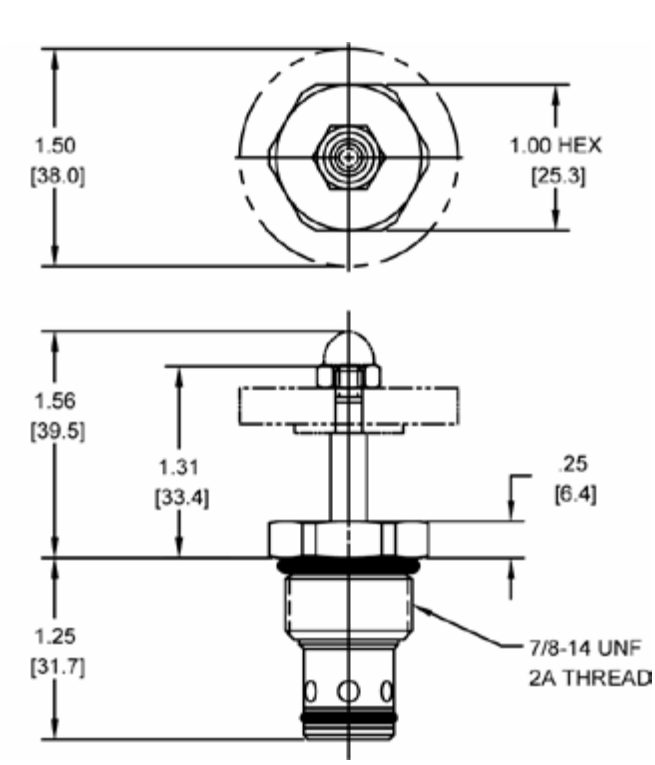
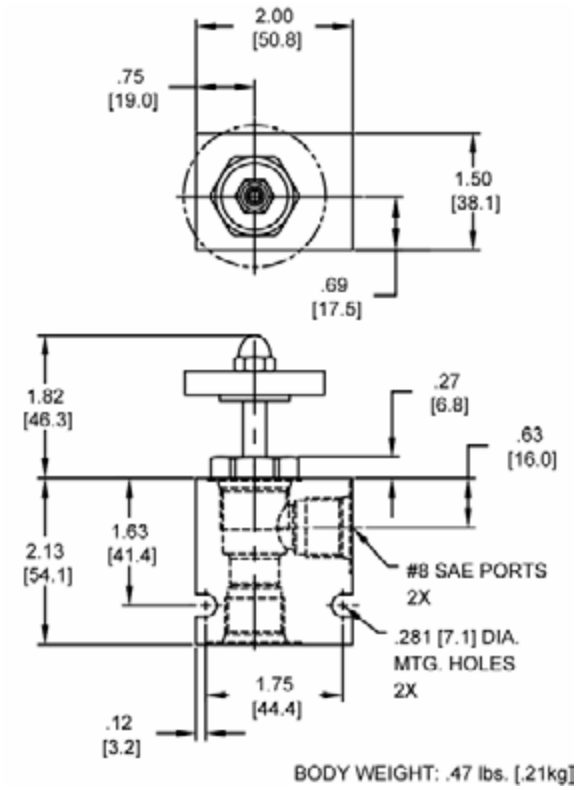
DIMENSIONS





Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-NVA – _____ – _____

OPTIONS	
Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**
Buna, Screen	**A0**
Viton, Screen	**W0**
Buna, Screen, Knob	**AK**
Viton, Screen, Knob	**WK**

Note: use screen only if flow direction is from (1) to (2).

BODIES	
Blank	Without Body
N	3/8" NPTF Ports
S	#8 SAE Ports

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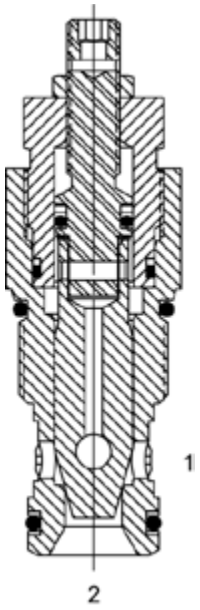
HT-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

"High Pressure" 12 size, 1 1/16-12 thread, "Tecnord" series, needle flow control valve.

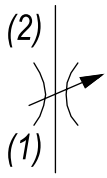
OPERATION

The HT-NVA adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

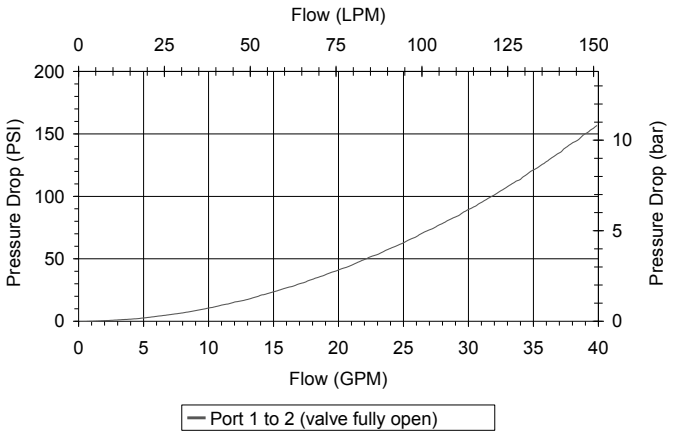
HYDRAULIC SYMBOL



Valves with the knob option are NOT to be adjusted under pressure.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	35 GPM (132 LPM)
Rated Operating Pressure	5000 PSI (345 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.72 lbs (.32 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	70 ft-lbs (95 Nm)
Cavity	TECNORD 2W
Cavity Form Tool (Finishing)	40500032
Seal Kit	21191302

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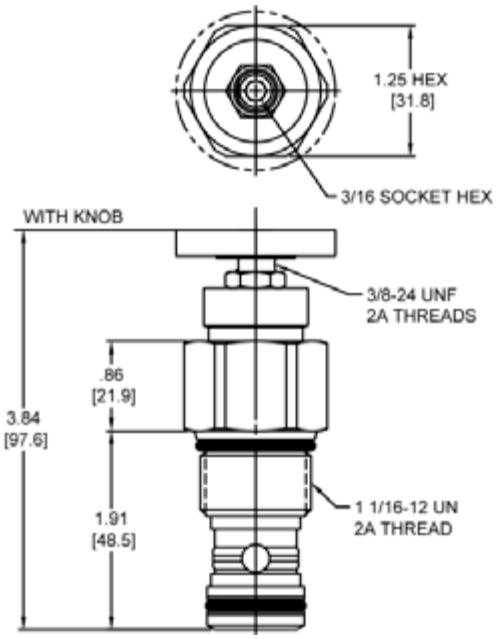
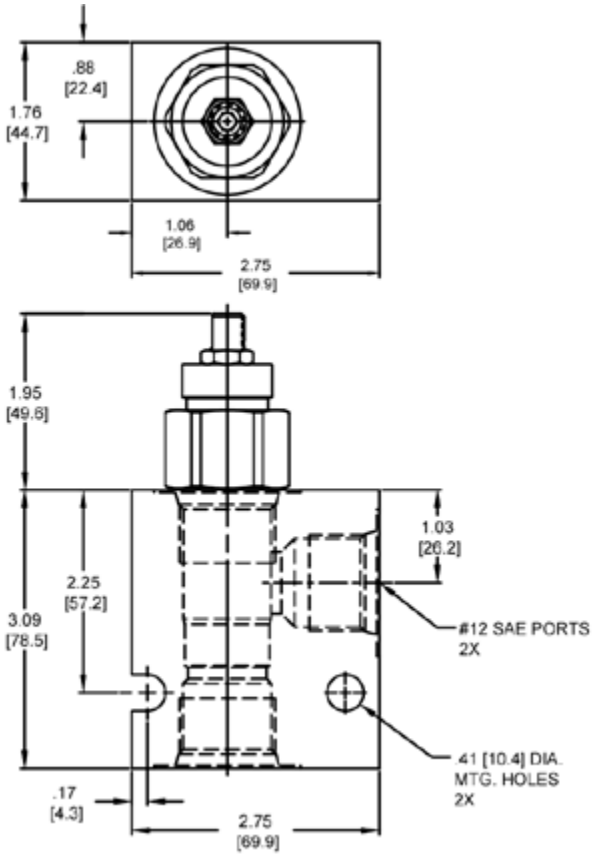
DIMENSIONS





Body Weight: 3.71 lbs (1.68 kg)

ORDERING INFORMATION

HT-NVA – _____ **–** _____

OPTIONS	
Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**
Buna, Screen	**A0**
Viton, Screen	**W0**
Buna, Screen, Knob	**AK**
Viton, Screen, Knob	**WK**

Note: use screen only if flow direction is from (1) to (2).

BODIES	
Blank	Without Body
S	#12 SAE Ports

Delta Power Company
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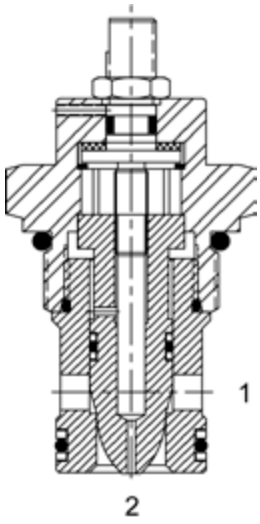
SJ-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

16 size, 1 5/16-12 thread, “Super” series, needle flow control valve.

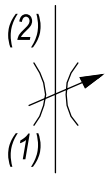
OPERATION

The SJ-NVA adjusts from fully open to fully closed by turning the adjustment screw clockwise. When adjusted open the valves regulates flow (1) to (2) or (2) to (1). When fully closed the valve blocks flow from (1) to (2) or (2) to (1).

FEATURES

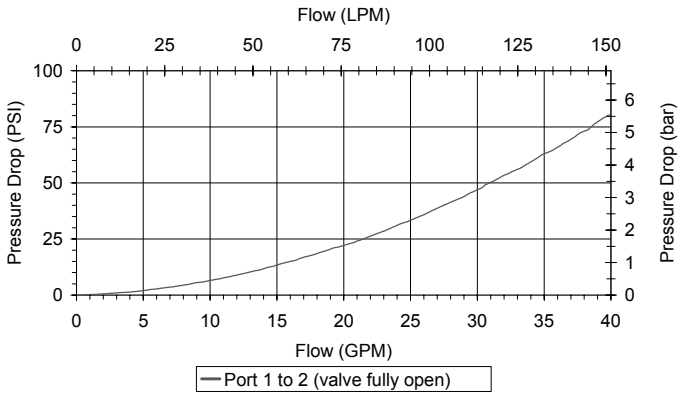
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-35° to 200°F (-37.2° to 93.3°C)
Weight	.83 lbs (.37 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 2W
Cavity Form Tool (Finishing)	40500017
Seal Kit	21191402

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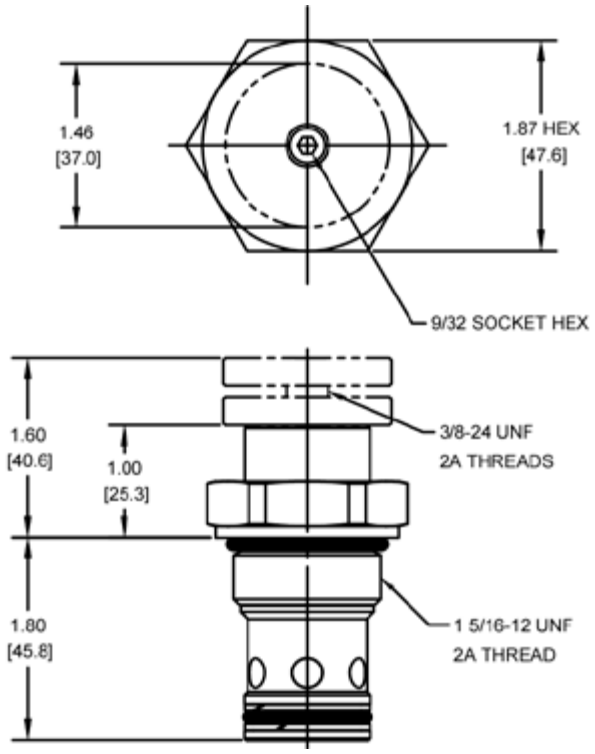
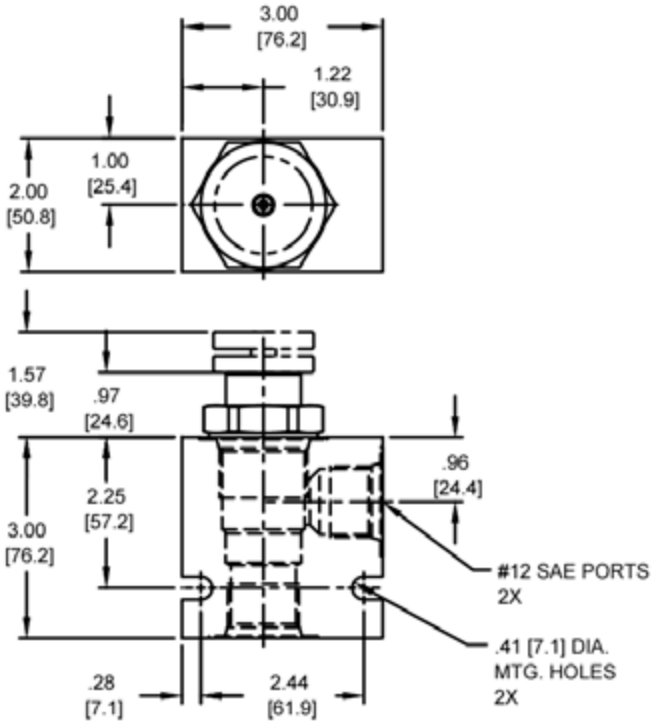
DIMENSIONS





Body Weight: 1.29 lbs (.58 kg)

ORDERING INFORMATION

SJ-NVA – ____ – ____

OPTIONS		BODIES	
Buna Standard	**00**	**Blank**	Without Body
Viton Standard	**V0**	**N**	3/4" NPT Ports
Buna, Knob	**0K**	**S**	#12 SAE Ports
Viton, Knob	**VK**		
Buna, Internally Adj.	**0I**		
Viton, Internally Adj.	**VI**		
Buna, Tamper Proof	**0T**		
Viton, Tamper Proof	**VT**		

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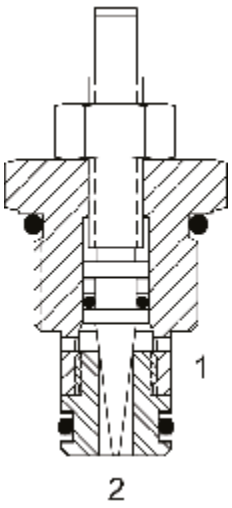
PB-NVB ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE, FINE ADJUST



DESCRIPTION

8 size, 3/4-16 thread, “Power” series, fine adjust needle flow control.

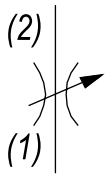
OPERATION

The PB-NVB adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

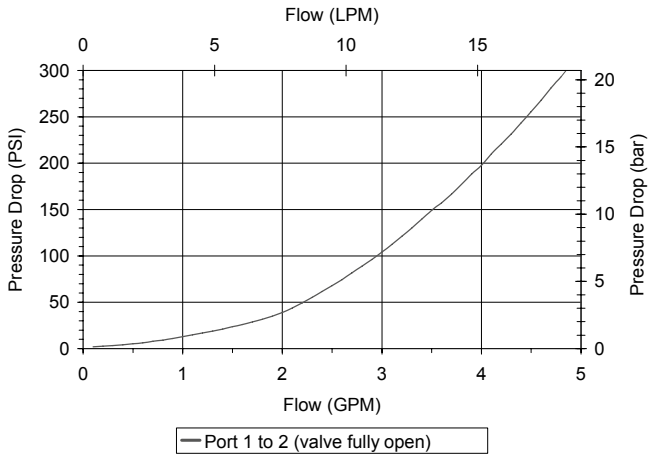
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	3 GPM (11 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.13 lbs (.06 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	POWER 2W
Cavity Form Tool (Finishing)	40500005
Seal Kit	21191102

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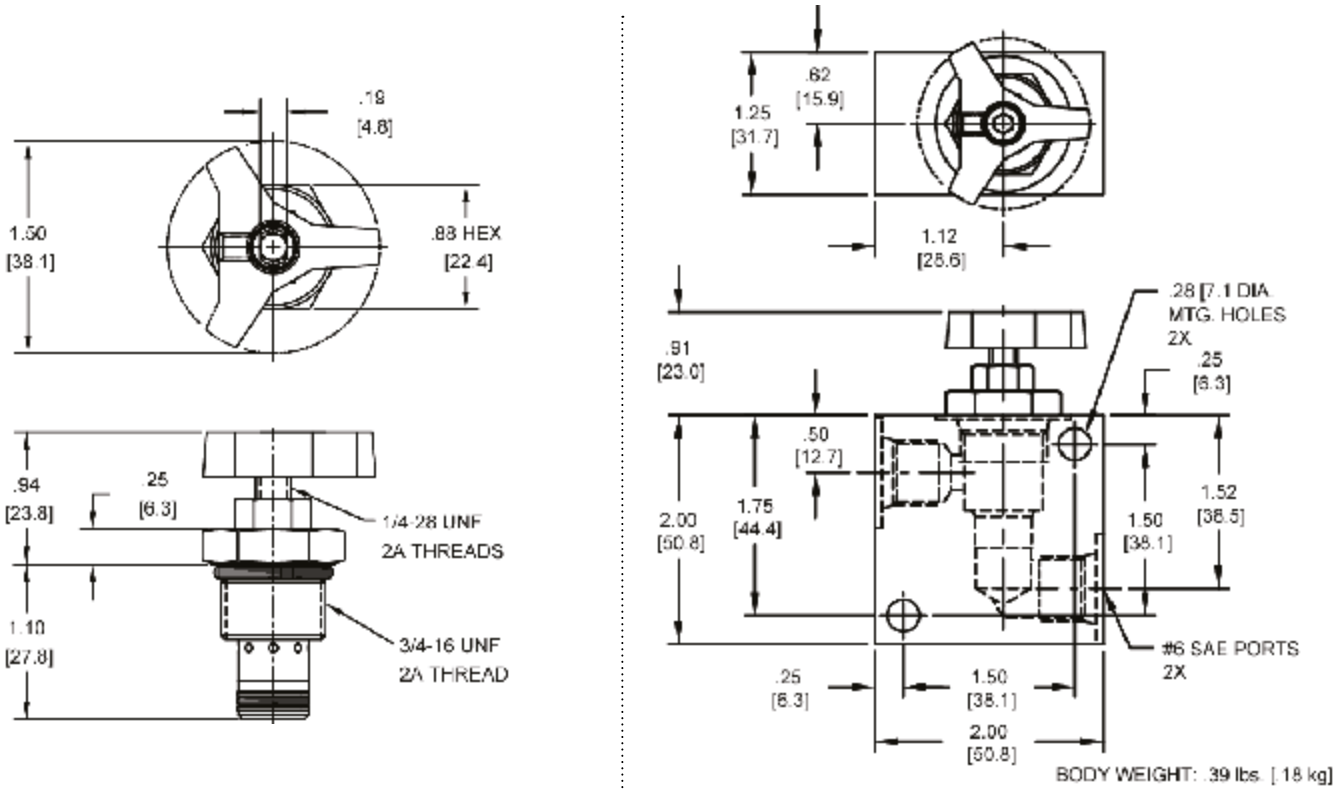
DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-NVB – ____ – ____

OPTIONS	
Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**
Buna, Screen	**A0**
Viton, Screen	**W0**
Buna, Screen, Knob	**AK**
Viton, Screen, Knob	**WK**

Note: use screen only if flow direction is from (1) to (2).

BODIES	
Blank	Without Body
N	1/4" NPTF Ports
S	#6 SAE Ports

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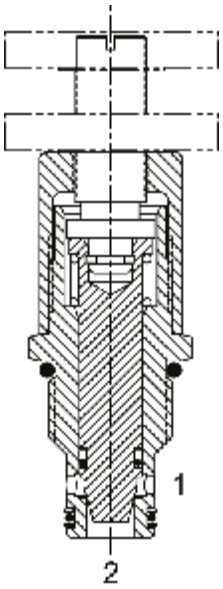
DE-NVB ADJUSTABLE FLOW CONTROL VALVE, COARSE ADJUST



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, course adjust needle flow control valve.

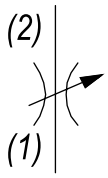
OPERATION

The DE-NVB adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

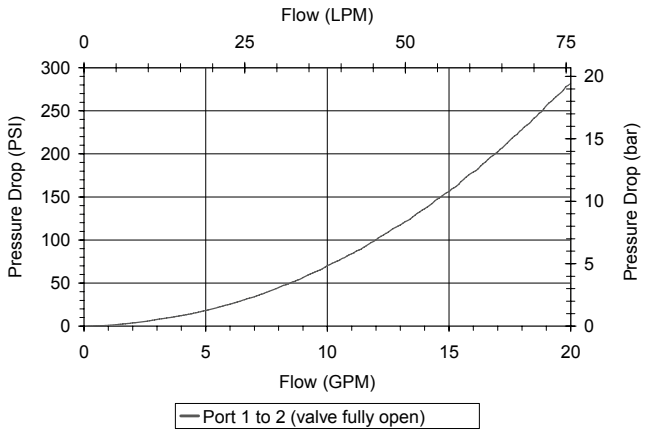
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.47 lbs (.21 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191202

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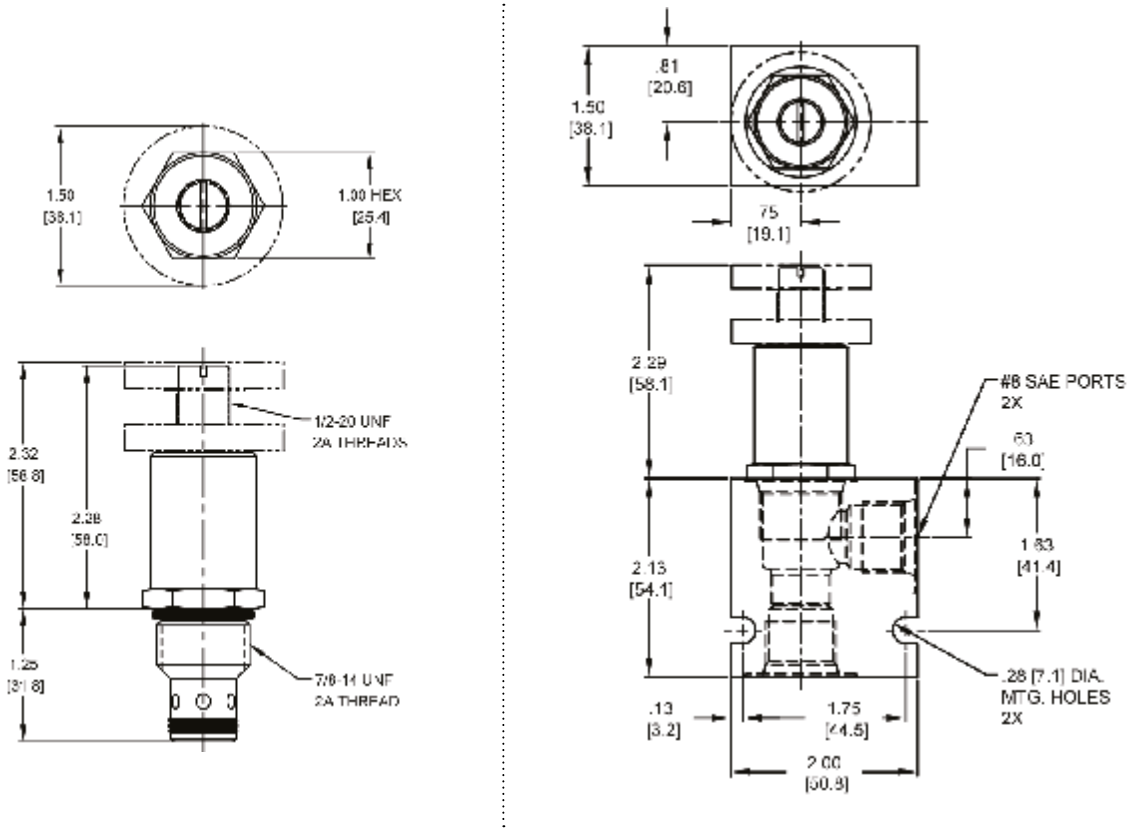
DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-NVB – ____ – ____

OPTIONS	
Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**
Buna, Screen	**A0**
Viton, Screen	**W0**
Buna, Screen, Knob	**AK**
Viton, Screen, Knob	**WK**

Note: use screen only if flow direction is from (1) to (2).

BODIES	
Blank	Without Body
N	3/8" NPT Ports
S	#8 SAE Ports

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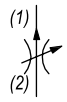
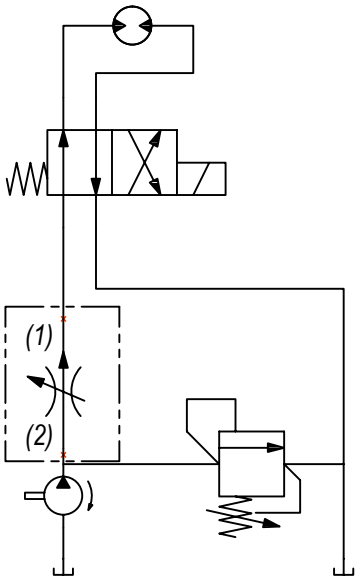
PRESSURE COMPENSATED FLOW REGULATOR VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	3	3000	11	207	5/8-18	**MA-FCA**	MF22
	4	3500	15	241	3/4-16	**PB-FCA**	MF24
	8	3500	30	241	7/8-14	**DE-FCA**	MF26
	8	3500	30	241	7/8-14	**DE-FCC**	MF28
	20	5000	76	345	1 1/16 -12	**HT-FCA**	MF30
	25	3500	95	241	1 5/16 -12	**SJ-FCA**	MF32
	8	3500	30	241	7/8-14	**DE-FCB**	MF34
	8	3500	30	241	7/8-14	**DE-FCF**	MF36
	25	3500	95	241	1 5/16 -12	**SJ-FCF**	MF38

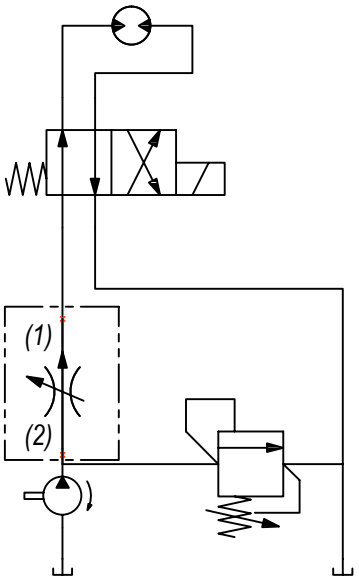
TYPICAL SCHEMATIC

Typical application for the FCA, FCB, FCC and FCF is for actuator speed control. The FCB and FCF valves have fixed, non-adjustable settings. The FCA and FCC versions are adjustable.

FCA
FCC



FCB
FCF



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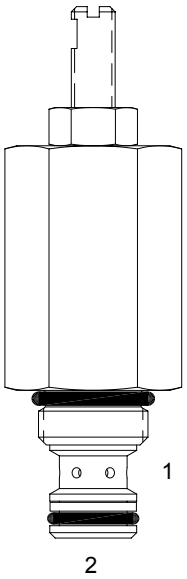
MA-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

7 size, 5/8-18 thread, “Mini” series, pressure compensated, flow control valve.

OPERATION

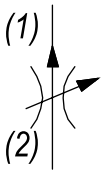
The cartridge maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control differential spring load can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential from (2) to (1) greater than 200 PSI with accurate flow maintenance from 200 to 3000 PSI (14 to 207 bar). Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL

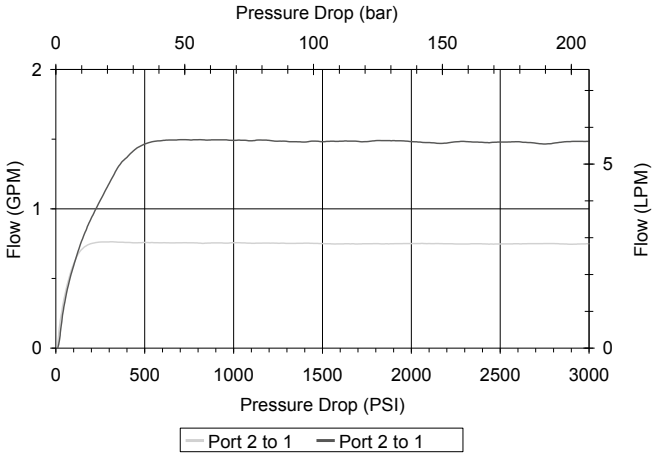


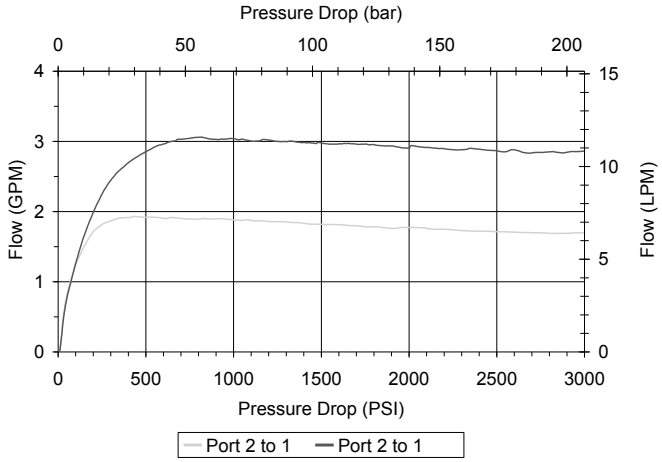
VALVE SPECIFICATIONS

Nominal Flow	3 GPM (11 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.29 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Cavity	MINI 2W
Cavity Form Tool (Finishing)	40500003
Seal Kit	21191000

PERFORMANCE

Actual Test Data (Cartridge Only)





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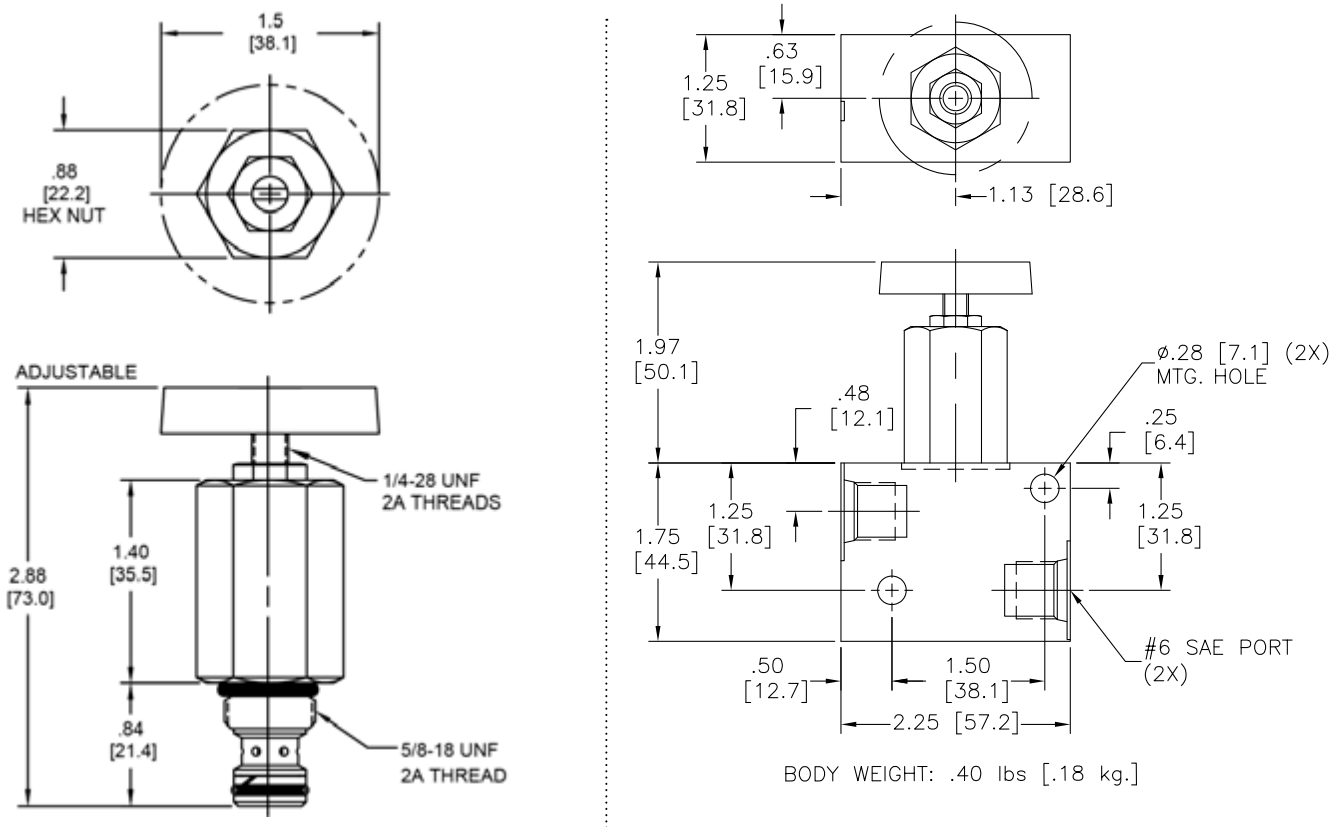
DIMENSIONS



Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

MA-FCA – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**

FLOW

0.17	.08 - .17 GPM
00.5	.25 - .5 GPM
00.9	.5 - .9 GPM

BODIES

Blank	Without Body
N	1/4" NPTF Ports
S	#6 SAE Ports

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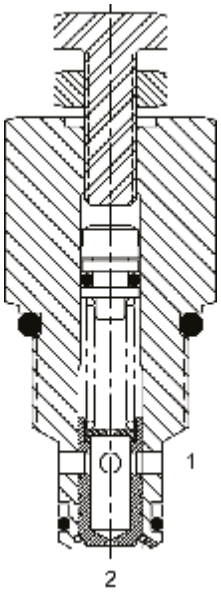
PB-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

8 size, 3/4-16 thread, “Power” series, pressure compensated, flow control valve.

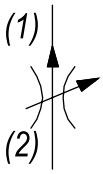
OPERATION

The cartridge maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control differential spring load can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential from (2) to (1), greater than 200 PSI (14 bar), with accurate flow maintenance from 200 to 3500 PSI (14 to 241 bar). Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

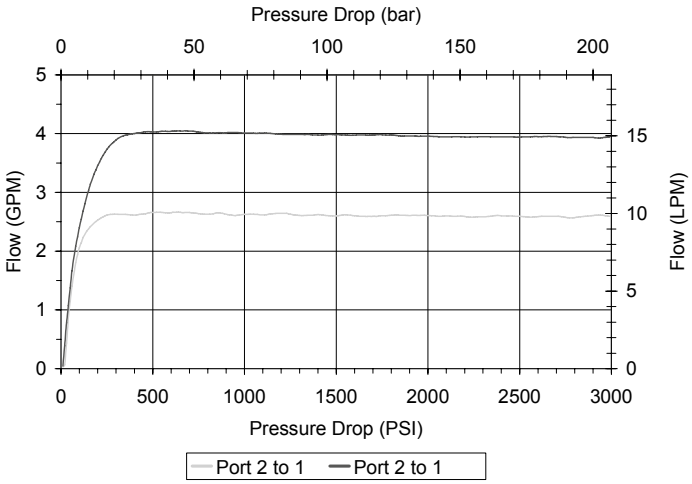
HYDRAULIC SYMBOL



Best stability is obtained with adjustment at highest flow.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	4 GPM (15 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.26 lbs (.12 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Cavity	POWER 2W
Cavity Form Tool (Finishing)	40500005
Seal Kit	21191100

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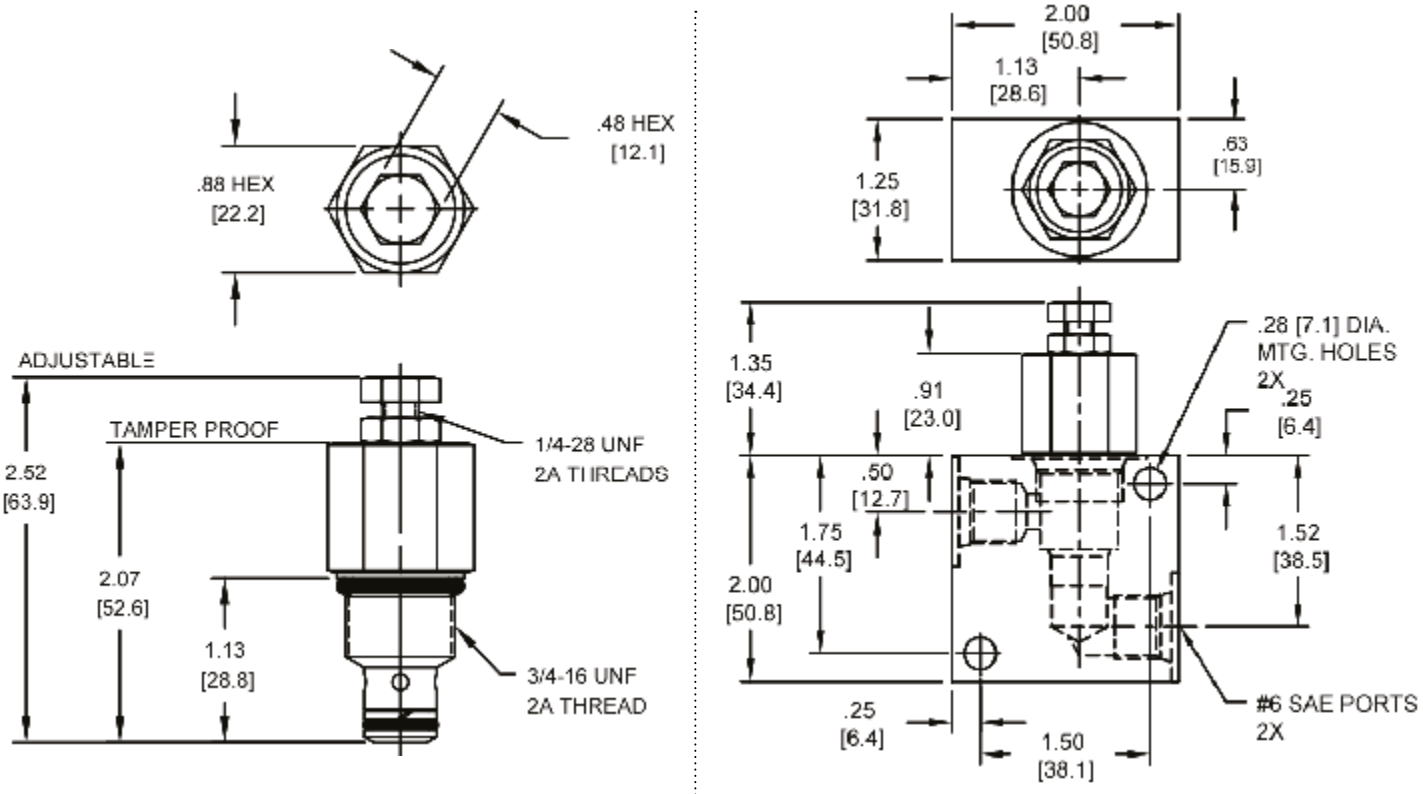
DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-FCA – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**
Buna, Tamper Proof	**0T**
Viton, Tamper Proof	**VT**

FLOW

0.45	.25 - .45 GPM
0.75	.45 - .75 GPM
1.35	.75 - 1.35 GPM
2.65	1.35 - 2.65 GPM
4.00	2.65 - 4.00 GPM

Tamper Proof
Fill in Digit Pressure Setting
Example: 02.0 - 2 GPM

BODIES

Blank	Without Body
N	1/4" NPTF Ports
S	#6 SAE Ports

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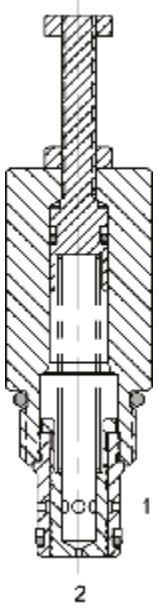
DE-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, pressure compensated, flow control valve.

OPERATION

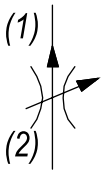
The DE-FCA maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control (see options for ranges) differential spring load can be set to customer flow specification. The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice greater than 100 PSI (6.9 bar), with accurate flow maintenance from 100 to 3500 PSI (6.9 to 241 bar). Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL

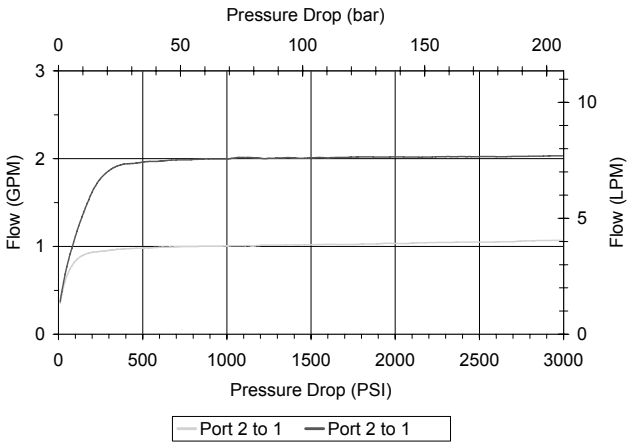


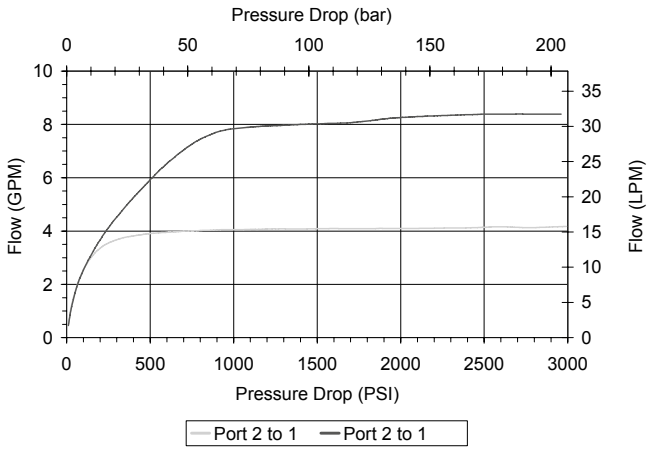
VALVE SPECIFICATIONS

Maximum Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.49 lbs (.22 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

PERFORMANCE

Actual Test Data (Cartridge Only)





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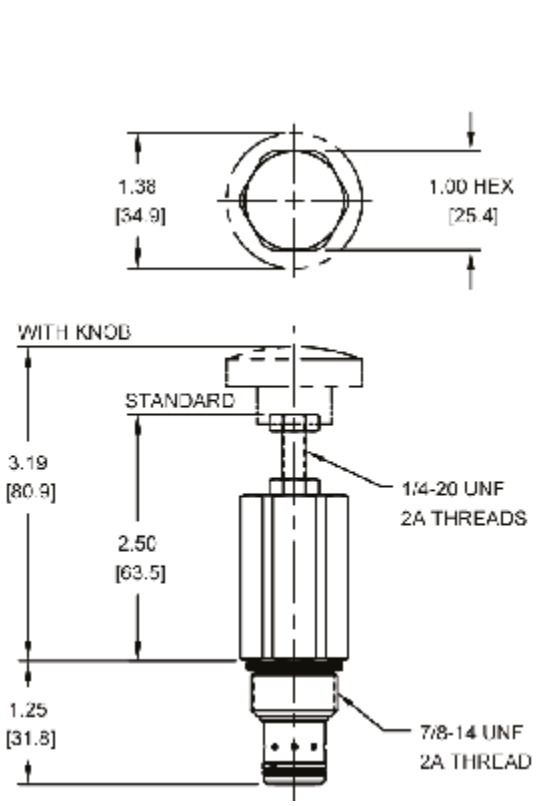
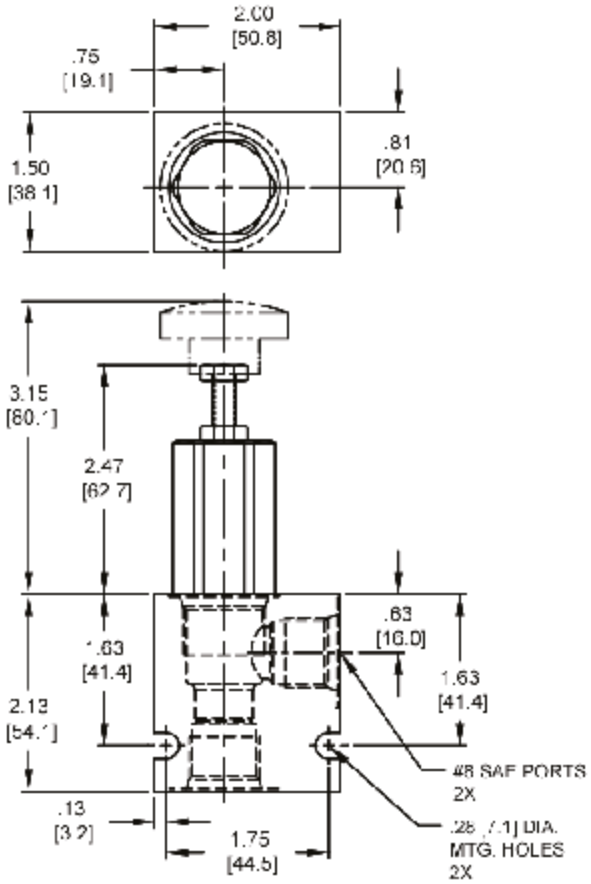
DIMENSIONS





Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCA – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**

FLOW

01.0	.5-1 GPM
02.0	1-2 GPM
04.0	2-4 GPM
08.0	4-8 GPM

BODIES

Blank	Without Body
N	3/8" NPTF Ports
S	#8 SAE Ports

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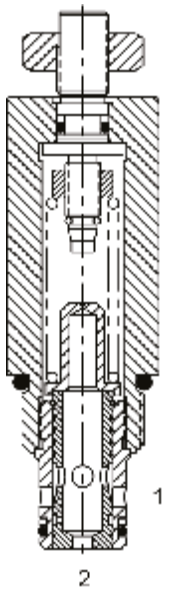
DE-FCC ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, pressure compensated, flow control valve.

OPERATION

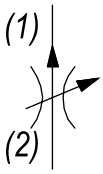
The DE-FCC maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control orifice can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice. Consult chart to see regulation at high and low adjustment settings. Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

Lowest pressure drop is obtained with adjustment at lowest setting.

HYDRAULIC SYMBOL

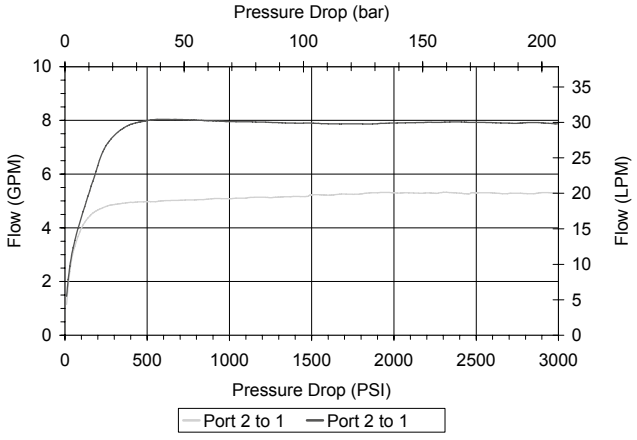


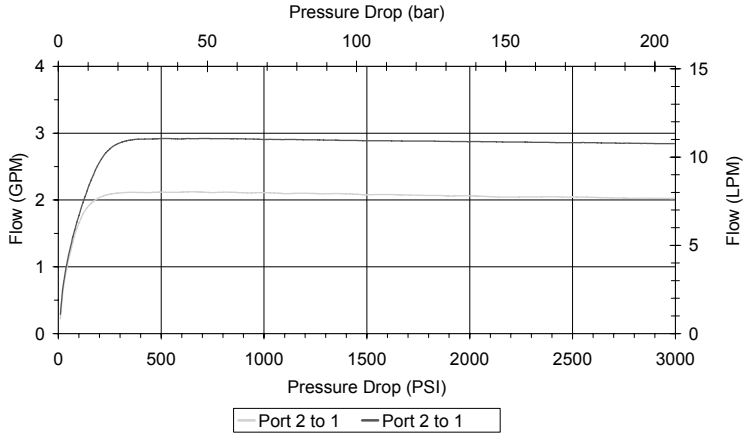
PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Max Regulated Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.51 lbs (.23 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200





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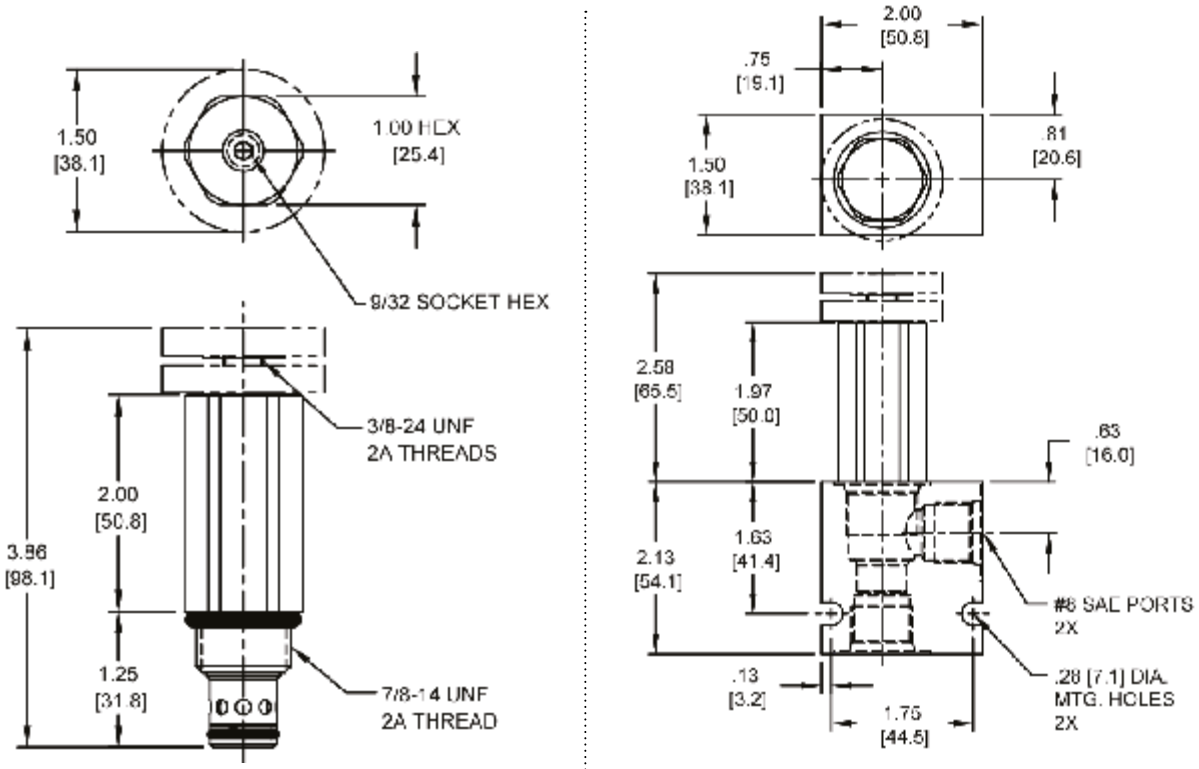
DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCC – _____ – _____ – _____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**

FLOW

1.16	.80-1.16 GPM
1.62	1.16-1.62 GPM
2.09	1.62-2.09 GPM
2.90	2.09-2.90 GPM
3.82	2.90-3.82 GPM
5.00	3.82-5.00 GPM
8.00	5.00-8.00 GPM

BODIES

Blank	Without Body
N	3/8" NPTF Ports
S	#8 SAE Ports

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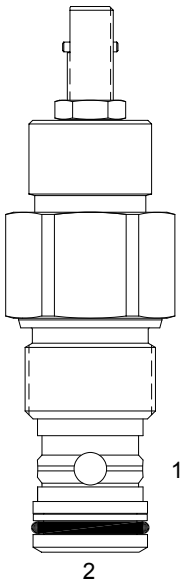
HT-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

"High Pressure" 12 size, 1 1/16 -12 thread, "Tecnord" series, pressure compensated, flow control valve.

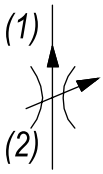
OPERATION

The HT-FCA maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control orifice can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice. Consult chart to see regulation at high and low adjustment settings. Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the adjustment screw.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

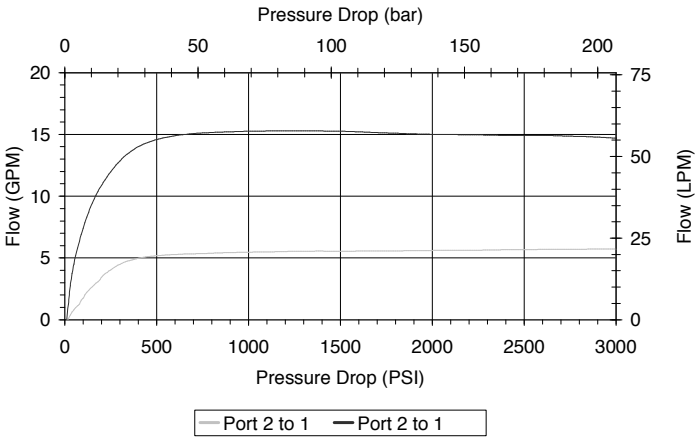
HYDRAULIC SYMBOL



Valve can adjust down to approximately 1 GPM. Optimum flow regulation performance achieved when pressure differential is between 500 & 2500 PSI from port (2) to (1).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Max Regulated Flow	18 GPM (68 LPM)
Rated Operating Pressure	5000 PSI (345 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.73 lbs (.33 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	70 ft-lbs (95 Nm)
Cavity	TECNORD 2W
Cavity Form Tool (Finishing)	40500032
Seal Kit	21191300

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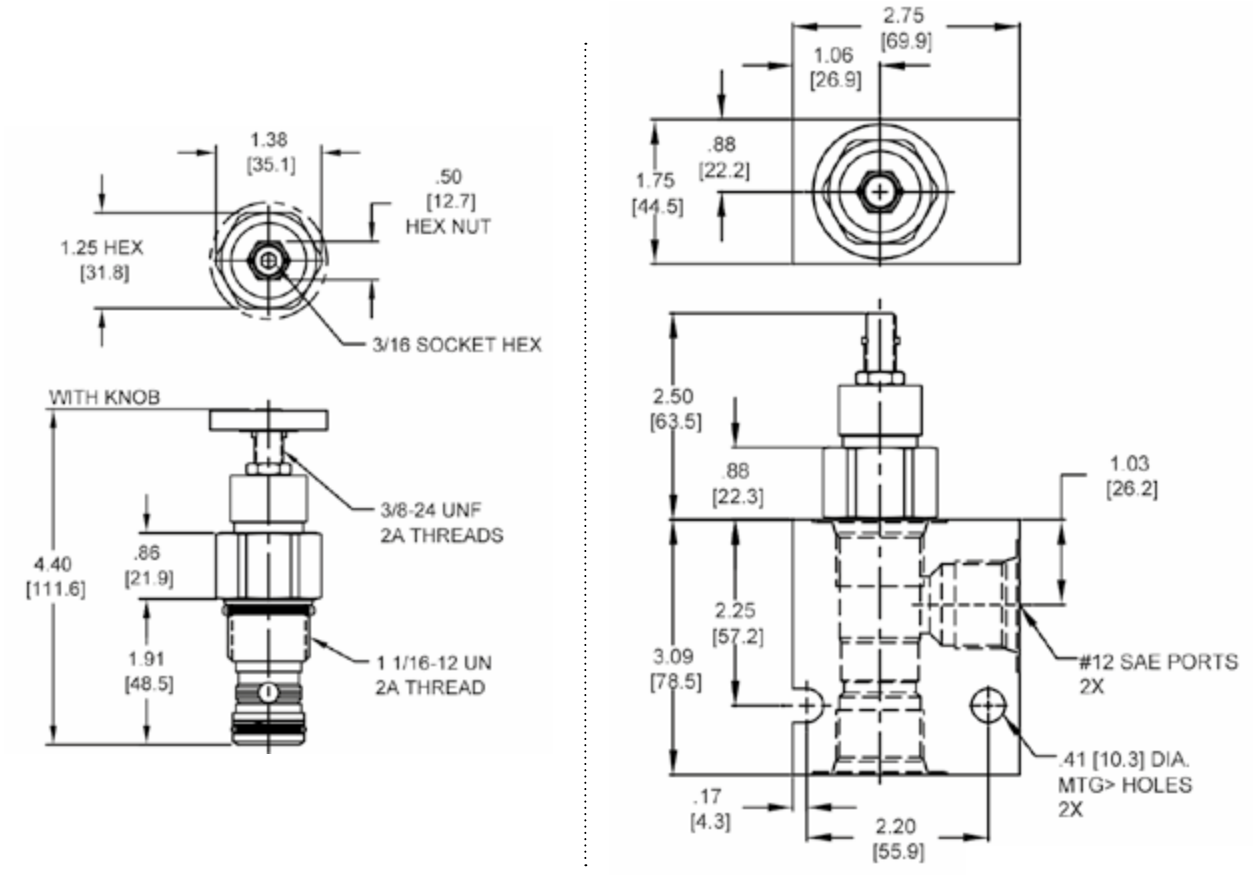
DIMENSIONS



Body Weight: 3.7 lbs (1.7 kg)

ORDERING INFORMATION

HT-FCA – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**

FLOW

XXXX 0-18 GPM

Preset & Tamper Proof
Example: 0015 - 15 GPM ±10%

BODIES

Blank	Without Body
S	#12 SAE Ports

Note: aluminum NOT durability rated for 4000 PSI. Consult factory for options.

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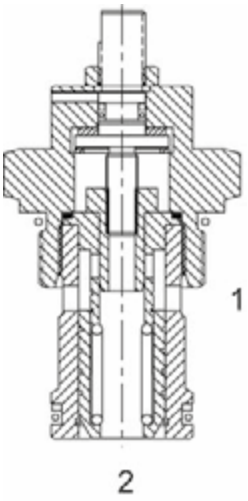
SJ-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

16 size, 1 5/16 -12 thread, “Super” series, pressure compensated, flow control valve.

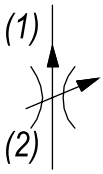
OPERATION

The SJ-FCA maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control orifice can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice. Consult chart to see regulation at high and low adjustment settings. Reverse flow (1) to (2) returns through the control orifice and is non-compensated. The regulated flow increases from low to high with clockwise rotation of the adjustment knob.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

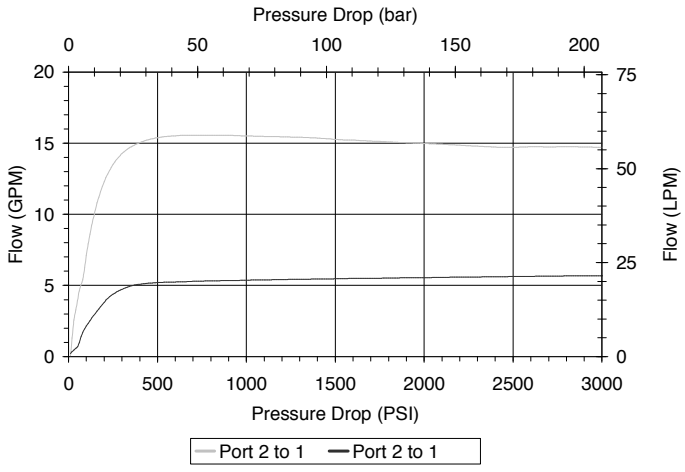
HYDRAULIC SYMBOL



“Fully Adjustable,” Valve can be adjusted down to leakage flow.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	25 GPM (95 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.89 lbs (.40 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 2W
Cavity Form Tool (Finishing)	40500017
Seal Kit	21191400

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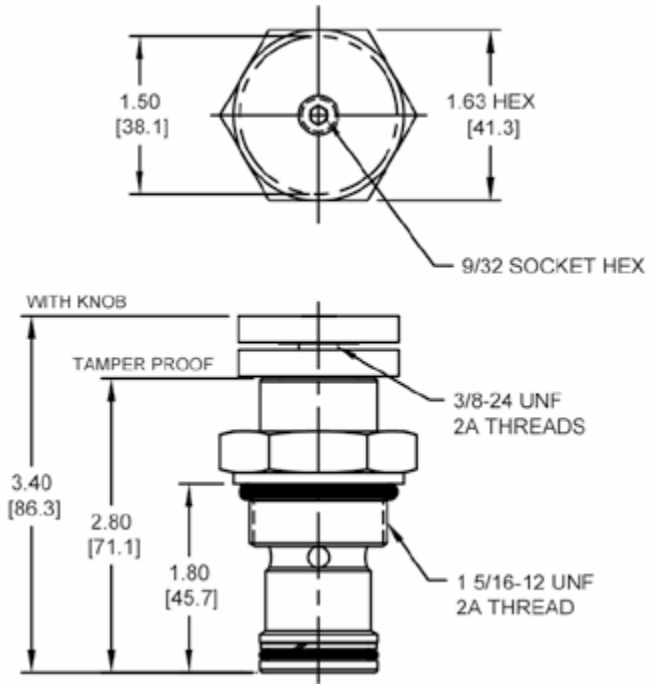
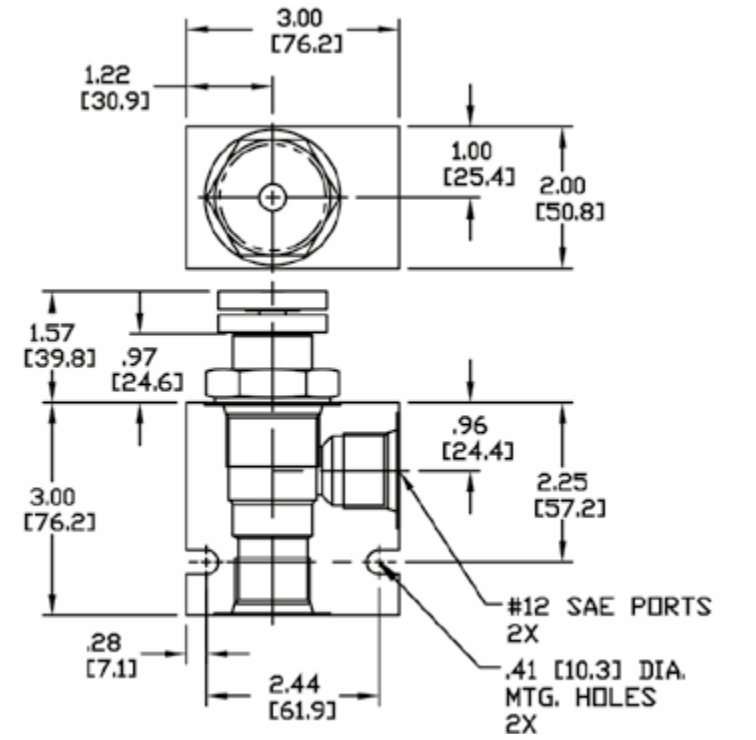
DIMENSIONS





Body Weight: 1.29 lbs (.59 kg)

ORDERING INFORMATION

SJ-FCA – _____ – _____ – _____

OPTIONS

Buna, External Adj. w/locknut	**00**
Viton, External Adj. w/locknut	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**
Buna, Internally Adj.	**0I**
Viton, Internally Adj.	**VI**
Buna, Tamper Proof	**0T**
Viton, Tamper Proof	**VT**

FLOW SETTING

XXXX 0-25 GPM

Preset & Tamper Proof
Example: 0015 – 15 GPM ±10%

BODIES

Blank	Without Body
N	3/4" NPT Ports
S	#12 SAE Ports

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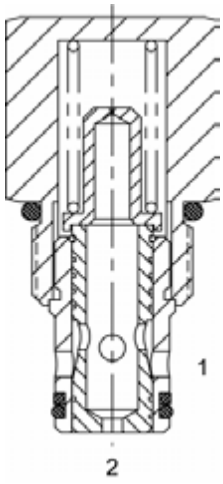
DE-FCB FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, fixed pressure compensated, flow control valve.

OPERATION

The DE-FCB maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice, in excess of the spring load. Consult chart for regulation performance. Reverse flow (1) to (2) returns through the control orifice and is non-compensated.

FEATURES

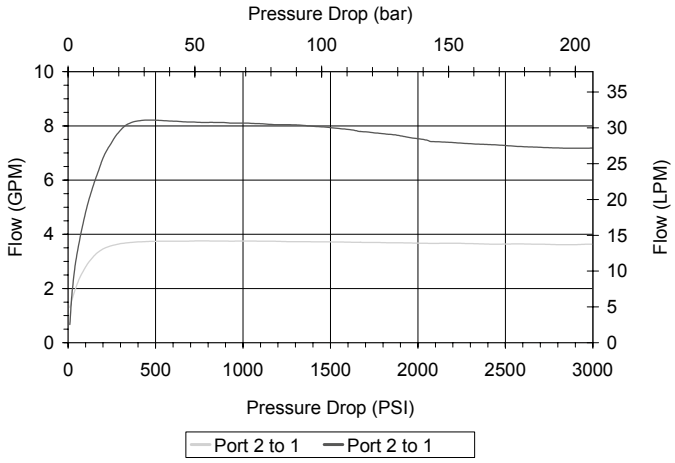
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

Low pressure drop version for low differential circuits.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Max Regulated Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.29 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191204

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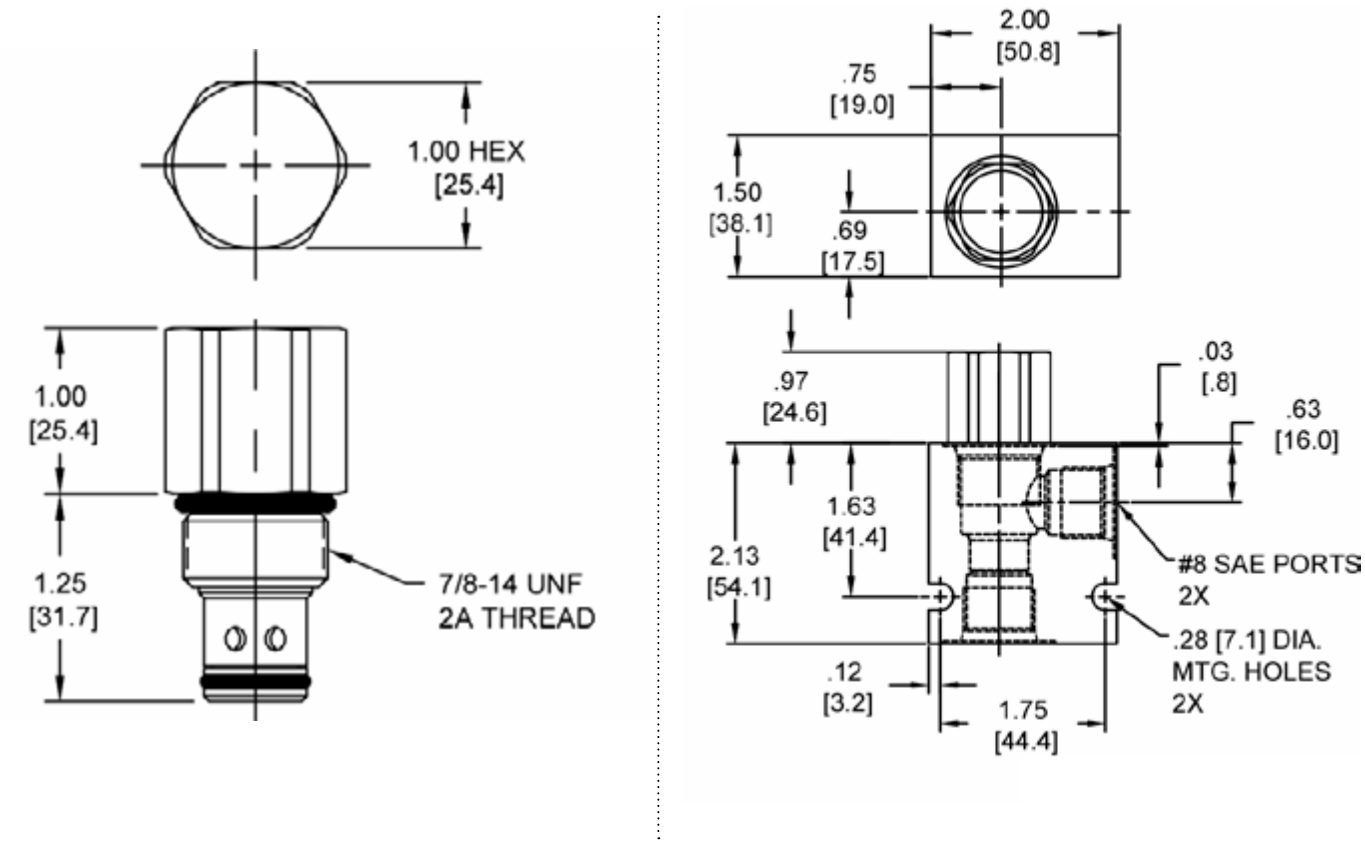
DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCB – _____ – _____ – _____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

FLOW SETTING

01.0	1 GPM
02.0	2 GPM
03.0	3 GPM
04.0	4 GPM
05.0	5 GPM
06.0	6 GPM
07.0	7 GPM
08.0	8 GPM
	± 15%

BODIES

Blank	Without Body
N	3/8" NPT Ports
S	#8 SAE Ports

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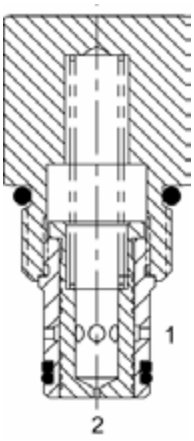
DE-FCF FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, fixed pressure compensated, flow control valve.

OPERATION

The DE-FCF maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice, in excess of the spring load. Consult chart for regulation performance. Reverse flow (1) to (2) returns through the control orifice and is non-compensated.

FEATURES

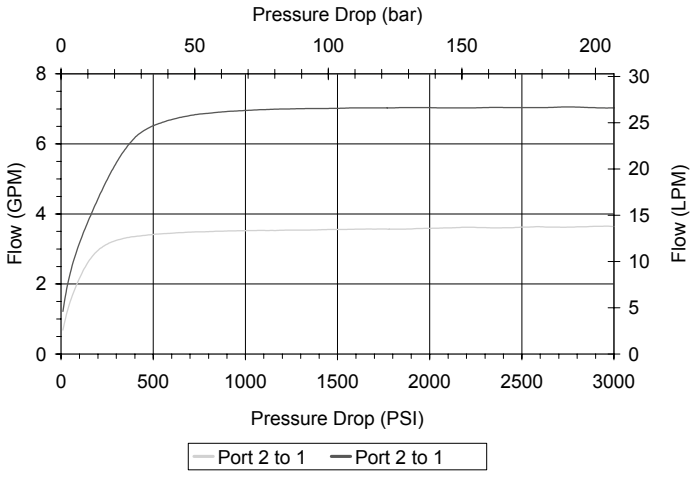
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

Best stability version for high differential circuits.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Maximum Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.32 lbs (.15 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191204

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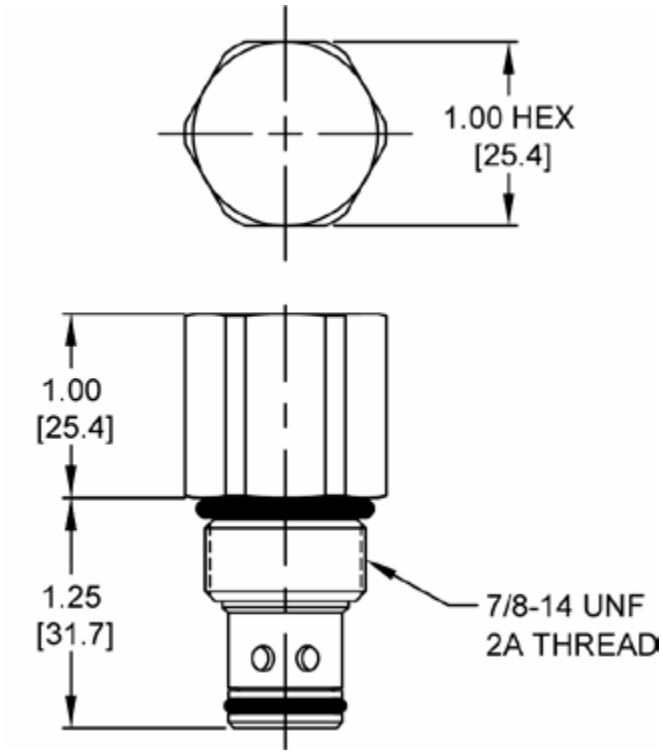
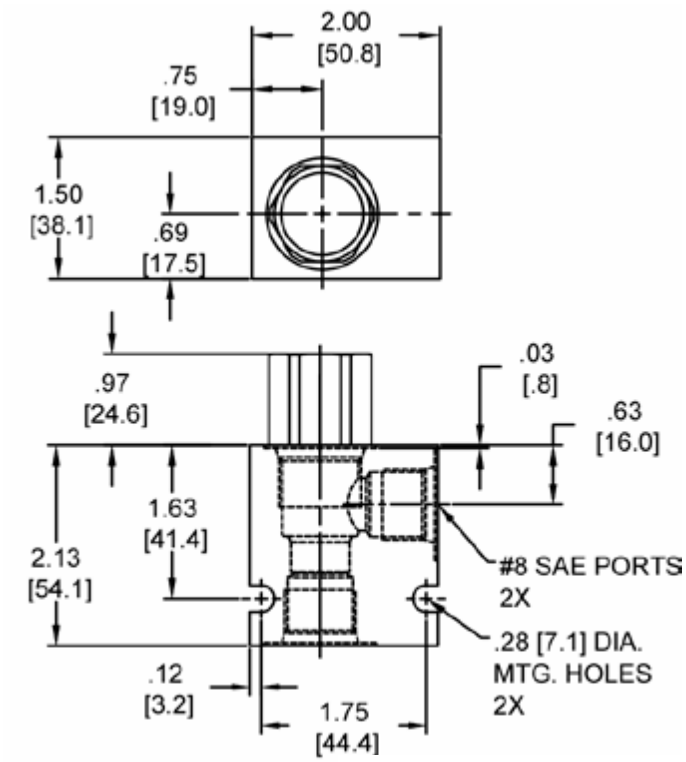
DIMENSIONS





Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCF – _____ – _____ – _____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

FLOW SETTING

01.0	1 GPM
02.0	2 GPM
03.0	3 GPM
04.0	4 GPM
05.0	5 GPM
06.0	6 GPM
07.0	7 GPM
08.0	8 GPM
	± 15%

BODIES

Blank	Without Body
N	3/8" NPT Ports
S	#8 SAE Ports

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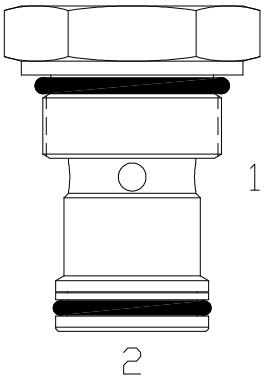
SJ-FCF FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

16 size, 1 5/16-12 thread, “Super” series, fixed pressure compensated, flow control valve.

OPERATION

The SJ-FCF maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice, in excess of the spring load. Consult chart for regulation performance. Reverse flow (1) to (2) returns through the control orifice and is non-compensated.

FEATURES

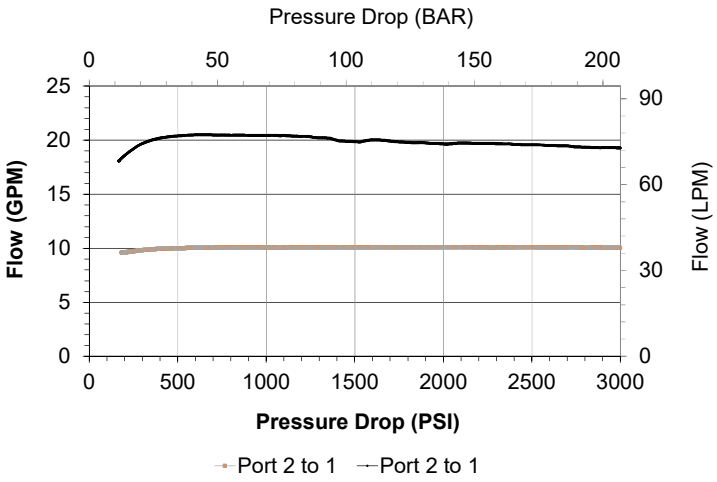
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

For adjustable setting see SJ-FCA.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Flow Rate	As specified from 5-25 GPM (19-95 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.65 lbs (.29 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 2W
Cavity Form Tool (Finishing)	40500017
Seal Kit	21191400

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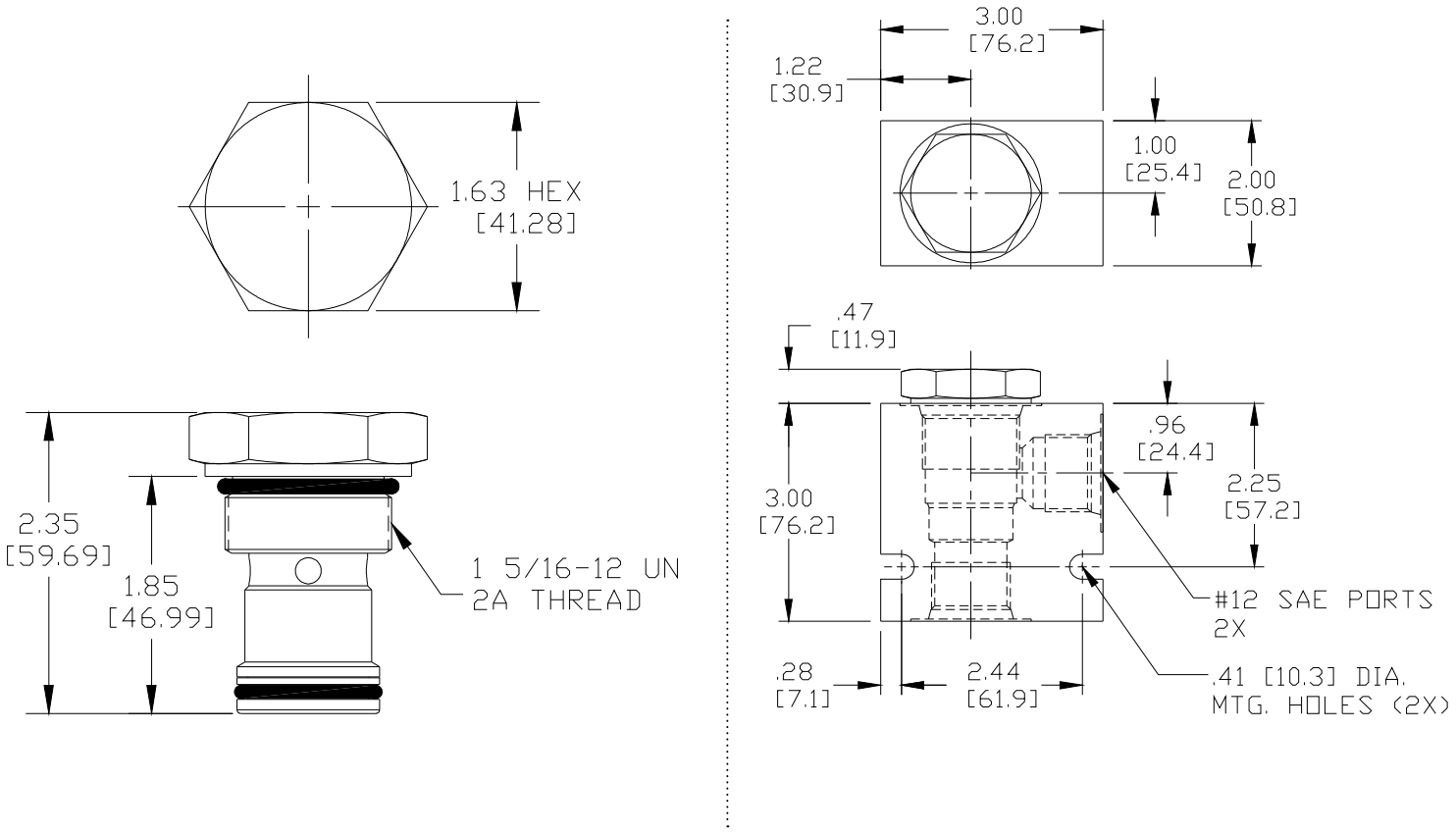
DIMENSIONS



Body Weight: 1.29 lbs (.59 kg)

ORDERING INFORMATION

SJ-FCF – _____ – _____ – _____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

FLOW SETTING

0010	10 GPM
0025	25 GPM

Additional flow settings available upon request

BODIES

Blank	Without Body
N	¾ NPT Ports
S	#12 SAE Ports

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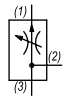
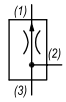
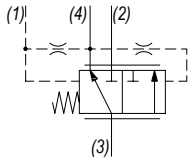
PRIORITY FLOW REGULATOR VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3000	38	207	7/8-14	**DF-FCQ**	MF42
	25	3000	95	207	1 5/16-12	**SK-FCQ**	MF44
	10	3000	38	207	7/8-14	**DF-FCP**	MF46
	25	3000	95	207	1 5/16-12	**SK-FCP**	MF48

LS STEERING PRIORITY

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	20	3000	76	207	7/8-14	**SO-PDS**	MF50

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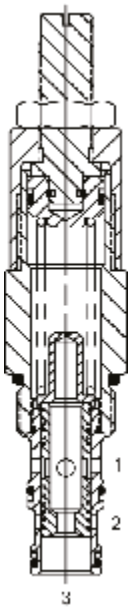
DF-FCQ ADJUSTABLE PRIORITY FLOW CONTROL VALVE



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, adjustable priority flow control valve.

OPERATION

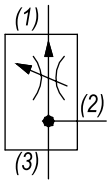
The DF-FCQ allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

Test data shown on this sheet, for condition of port (2) to tank. Data on next page, for condition of port (3) to tank.

HYDRAULIC SYMBOL

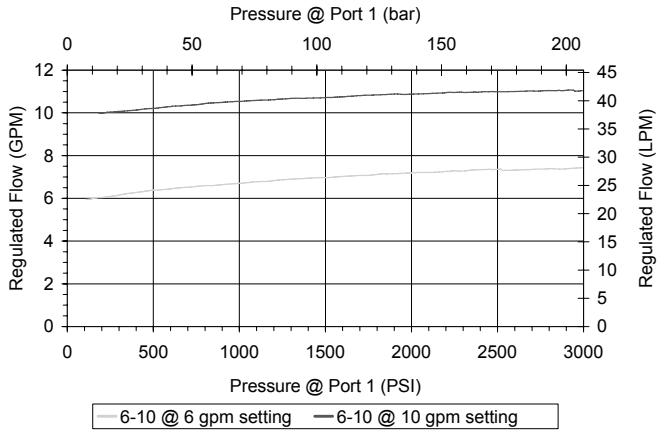


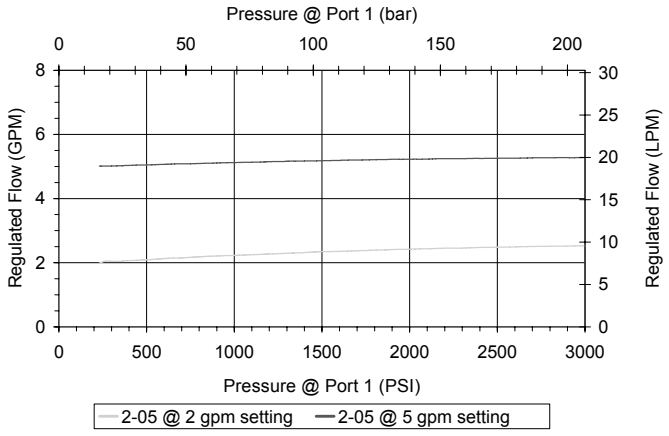
VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.56 lbs (.25 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 3W
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191206

PERFORMANCE

Actual Test Data (Cartridge Only)





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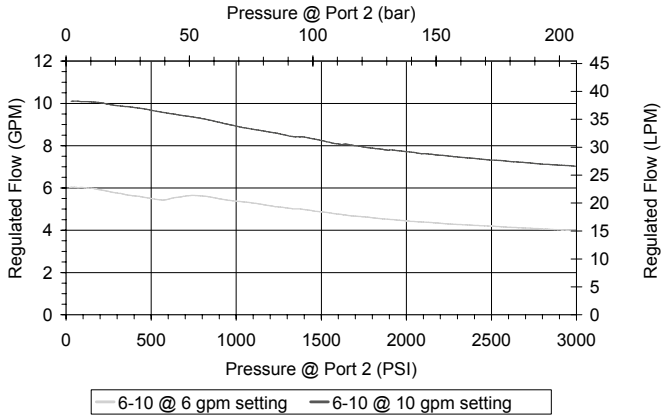
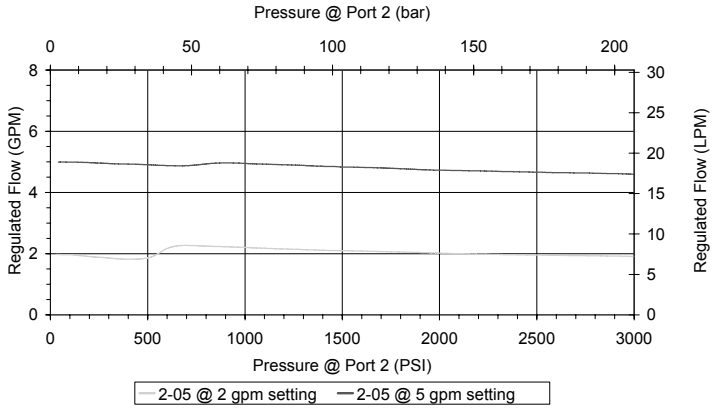
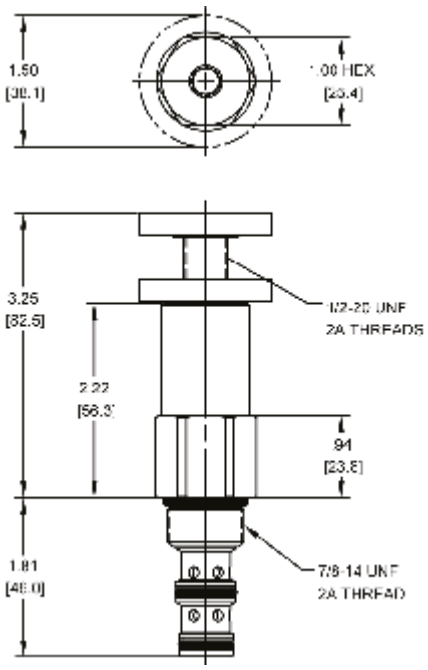
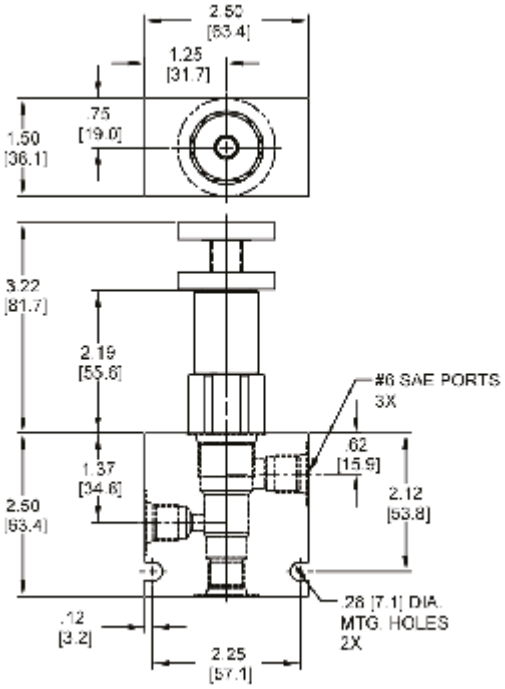




DIMENSIONS





Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-FCQ – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**

FLOW RANGE

2-05	2 to 5 GPM
6-10	6 to 10 GPM

BODIES

Blank	Without Body
N	1/4" NPTF Ports
S	#6 SAE Ports

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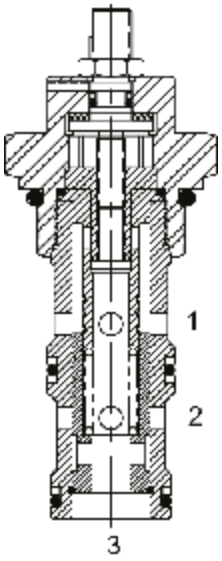
SK-FCQ ADJUSTABLE PRIORITY FLOW CONTROL VALVE



DESCRIPTION

16 size, 1 5/16-12 thread, “Super” series, adjustable priority flow control valve.

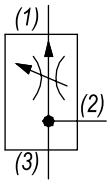
OPERATION

The SK-FCQ allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2). The spring chamber is constantly vented at (1).

FEATURES

- Hardened cage and spool for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

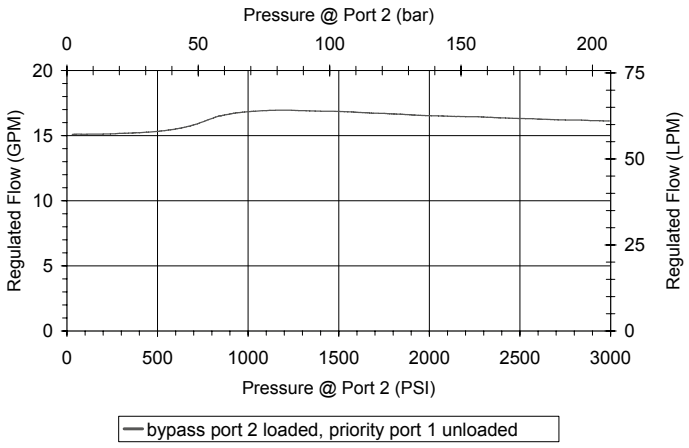


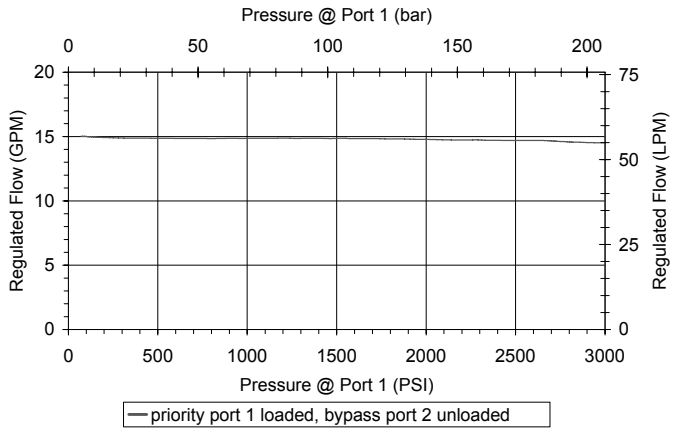
VALVE SPECIFICATIONS

Max Regulated Flow	25 GPM (95 LPM)
Rated Operating Pressure	500-3000 PSI (34-207 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.96 lbs (.44 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 3W
Cavity Form Tool (Finishing)	40500018
Seal Kit	21191404

PERFORMANCE

Actual Test Data (Cartridge Only)





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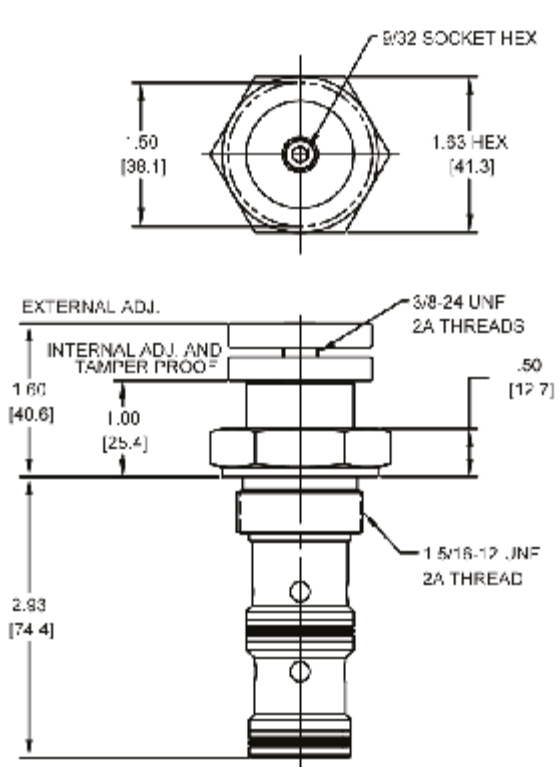
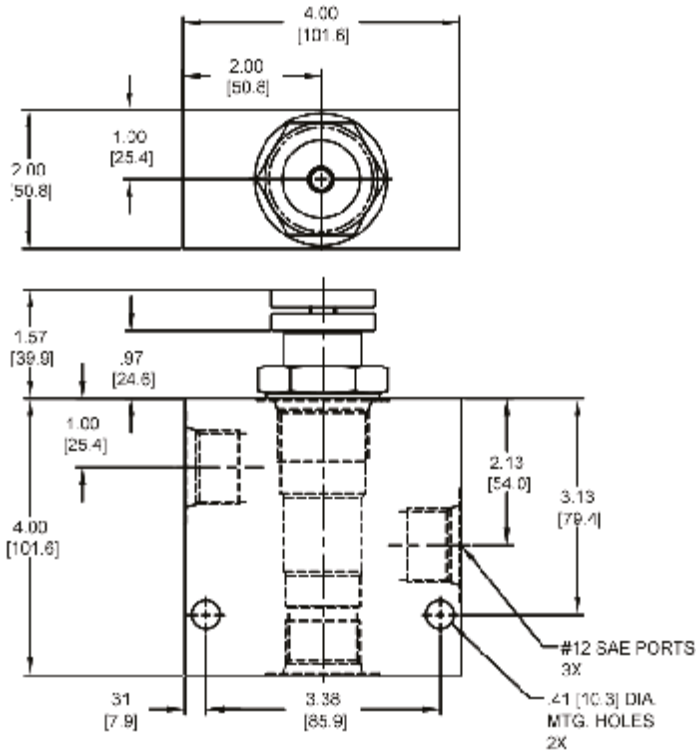
DIMENSIONS





Body Weight: 2.46 lbs (1.11 kg)

ORDERING INFORMATION

SK-FCQ – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**
Buna, Knob	**0K**
Viton, Knob	**VK**
Buna, Internally Adj.	**0I**
Viton, Internally Adj.	**VI**
Buna, Tamper Proof	**0T**
Viton, Tamper Proof	**VT**

FLOW SETTING

XXXX 1 to 25 GPM

Preset & Tamper Proof
Example: 0015 - 15 GPM ±10%

BODIES

Blank	Without Body
N	3/4" NPTF Ports
S	#12 SAE Ports

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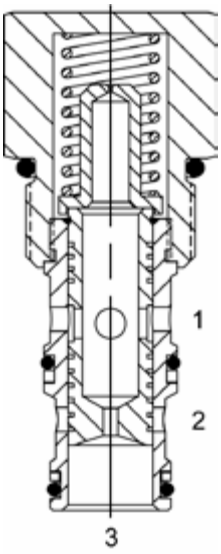
DF-FCP FIXED PRIORITY FLOW CONTROL VALVE



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, fixed priority flow control valve.

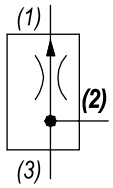
OPERATION

The DF-FCP allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2). The spring chamber is constantly vented at (1).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

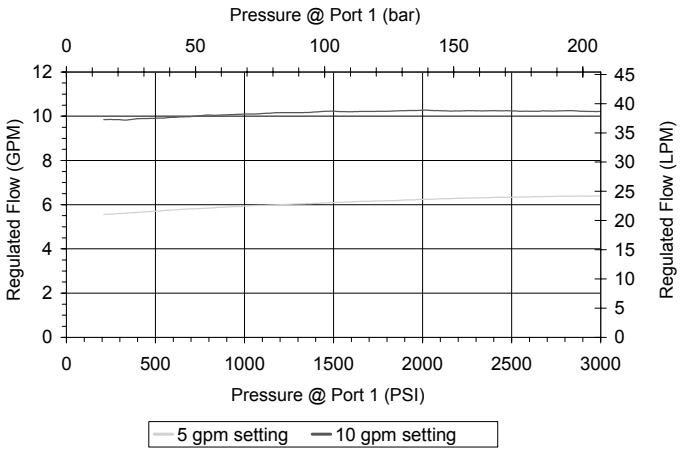


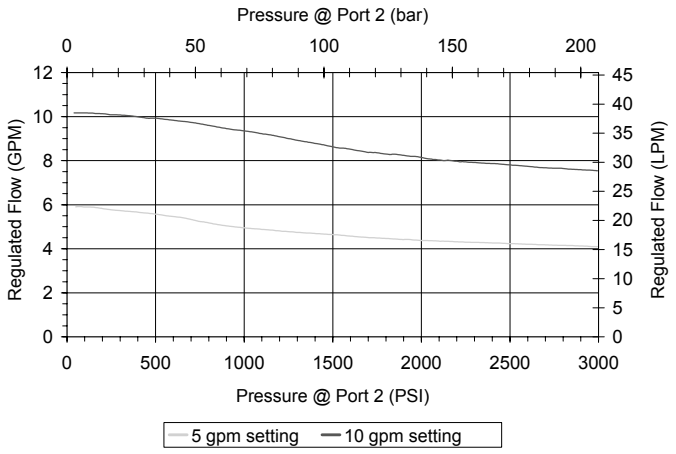
VALVE SPECIFICATIONS

Maximum Flow	10 GPM (38 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.26 lbs (.12 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 3W
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191206

PERFORMANCE

Actual Test Data (Cartridge Only)





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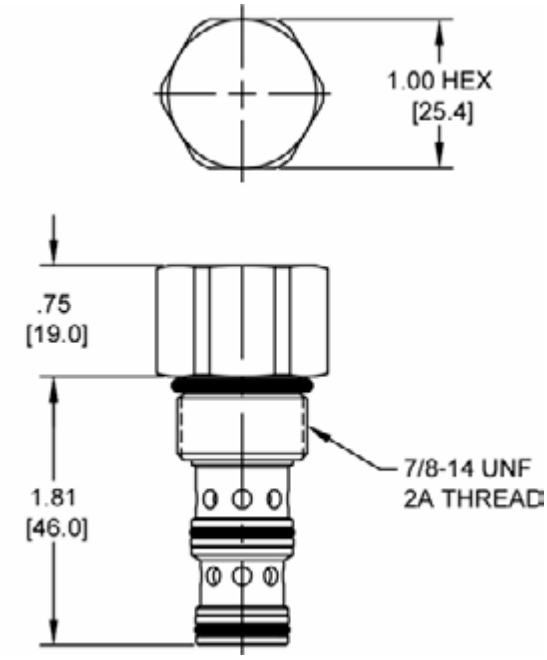
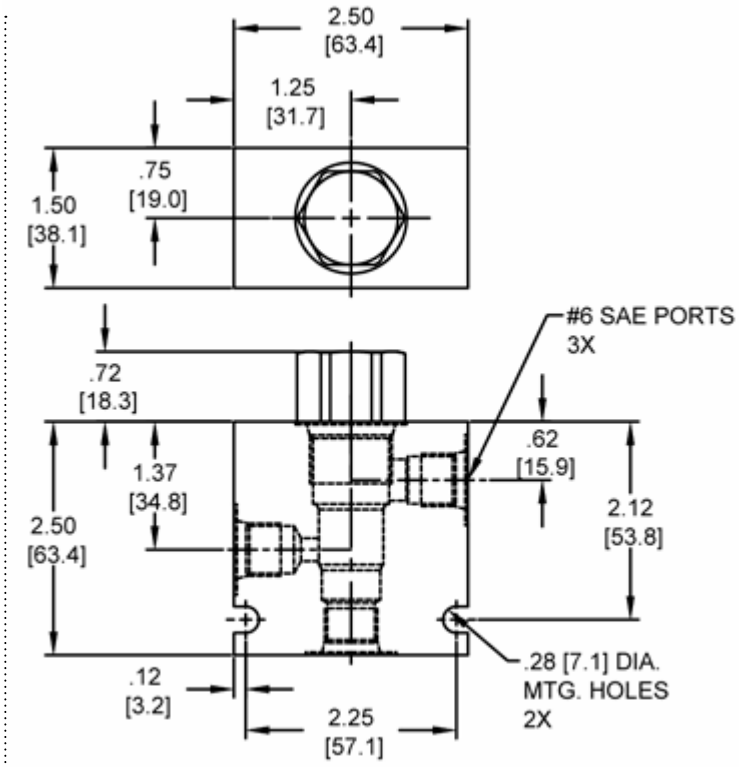
DIMENSIONS





Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-FCP – _____ – _____ – _____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

FLOW SETTING

01.0	1 GPM
02.0	2 GPM
03.0	3 GPM
04.0	4 GPM
05.0	5 GPM
06.0	6 GPM
07.0	7 GPM
08.0	8 GPM
09.0	9 GPM
10.0	10 GPM ± 15%

BODIES

Blank	Without Body
N	1/4" NPTF Ports
S	#6 SAE Ports

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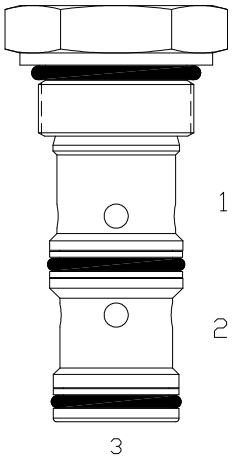
SK-FCP FIXED PRIORITY FLOW CONTROL VALVE



DESCRIPTION

16 size, 1 5/16-12 thread, “Super” series, fixed priority flow control valve.

OPERATION

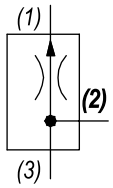
The SK-FCP allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2). The spring chamber is constantly vented at (1).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

For adjustable setting see SK-FCQ.

HYDRAULIC SYMBOL

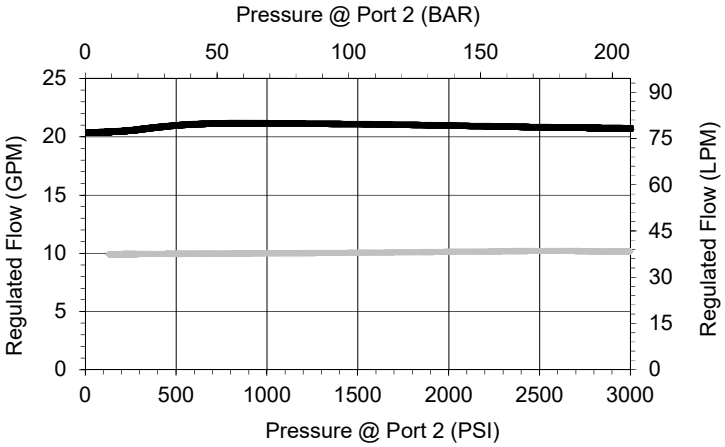


VALVE SPECIFICATIONS

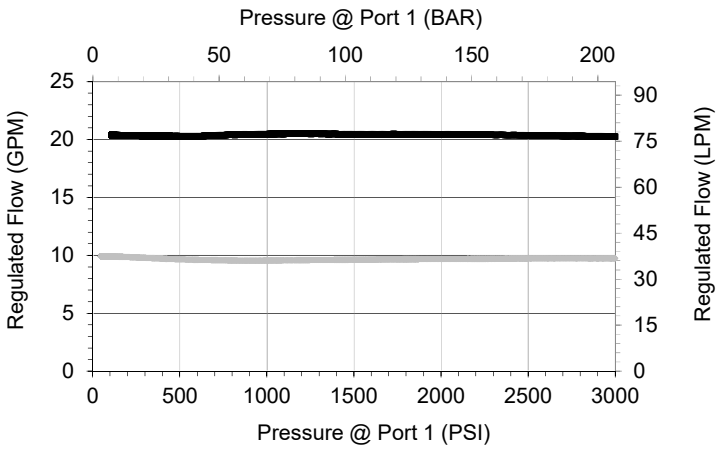
Priority Flow Rate	As specified from 5-25 GPM (19-95 LPM)
Rated Operating Pressure	500-3000 PSI (34-207 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.85 lbs (.39 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 3W
Cavity Form Tool (Finishing)	40500018
Seal Kit	21191404

PERFORMANCE

Actual Test Data (Cartridge Only)



- Bypass port 2 loaded, priority port 1 unloaded



- Priority port 1 loaded, bypass port 2 unloaded

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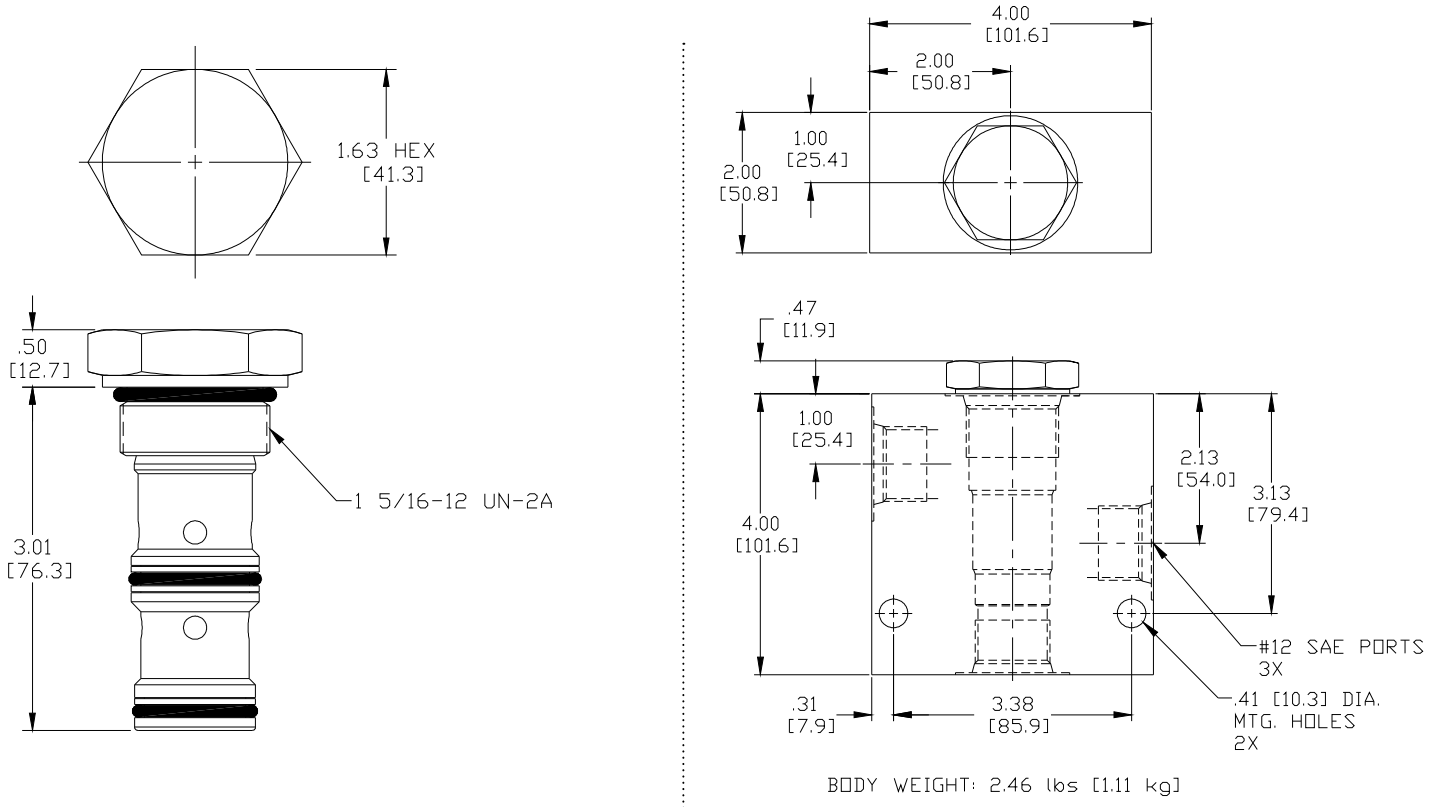
DIMENSIONS



Body Weight: 2.46 lbs (1.11 kg)

ORDERING INFORMATION

SK-FCP – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

FLOW SETTING

001	
0	10 GPM
002	
5	25 GPM

Additional flow settings available upon request

BODIES

Blank	Without Body
N	3/4 NPTF Ports
S	#12 SAE Ports

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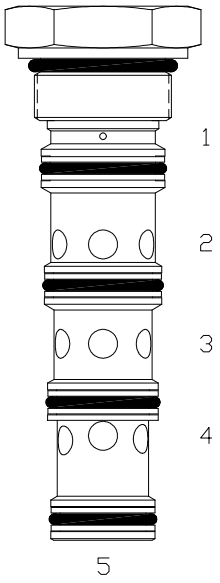
SO-PDS STEERING PRIORITY FLOW CONTROL VALVE WITH DYNAMIC LOAD SENSE



DESCRIPTION

16 size, 1 5/16-12 thread, “Super” series, steering priority flow control valve with dynamic load sense.

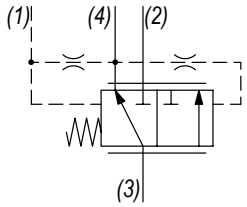
OPERATION

The SO-PDS allows priority flow from (3) to (4) regardless of load pressure at either port (2) or port (4). Excess flow bypasses out (2). Port (1) is the load sense port.

FEATURES

- Hardened cage and spool for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



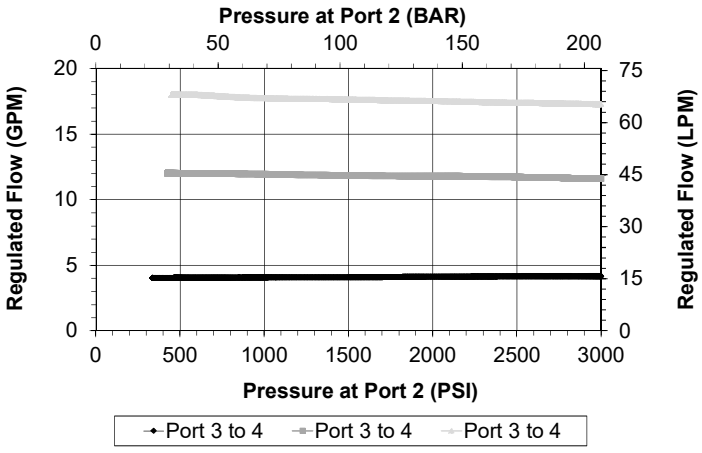
PERFORMANCE

Actual Test Data (Cartridge Only)

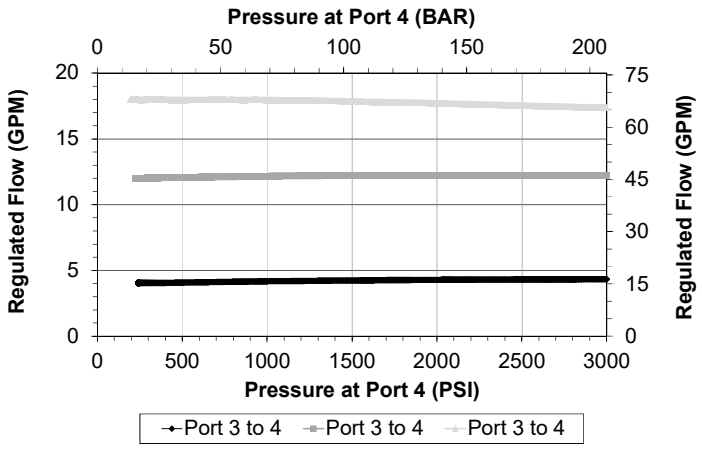
VALVE SPECIFICATIONS

Max Regulated Flow	20 GPM (76 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 5WS
Cavity Form Tool (Finishing)	40500020
Seal Kit	21191410

Bypass port 2 loaded, priority port 4 unloaded



Priority port 4 loaded, bypass port 2 unloaded



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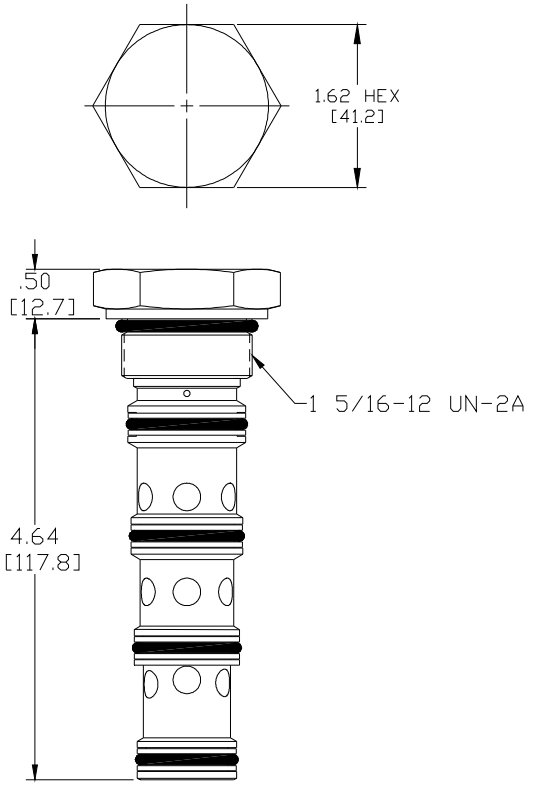
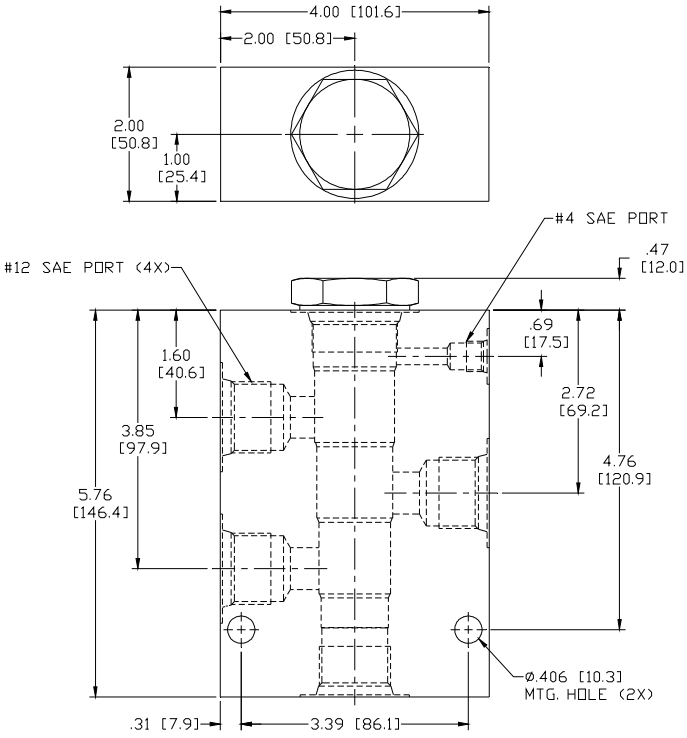
DIMENSIONS





Body Weight: 3.76 lbs (1.62 kg)

ORDERING INFORMATION

SO-PDS – _____ – _____ – _____

OPTIONS
Buna Standard **00**
Viton Standard **V0**

FLOW SETTING
XXXX 120 PSI
300 PSI

BODIES
Blank Without Body
N 3/4 NPTF Ports
S #12 SAE Ports

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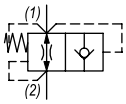
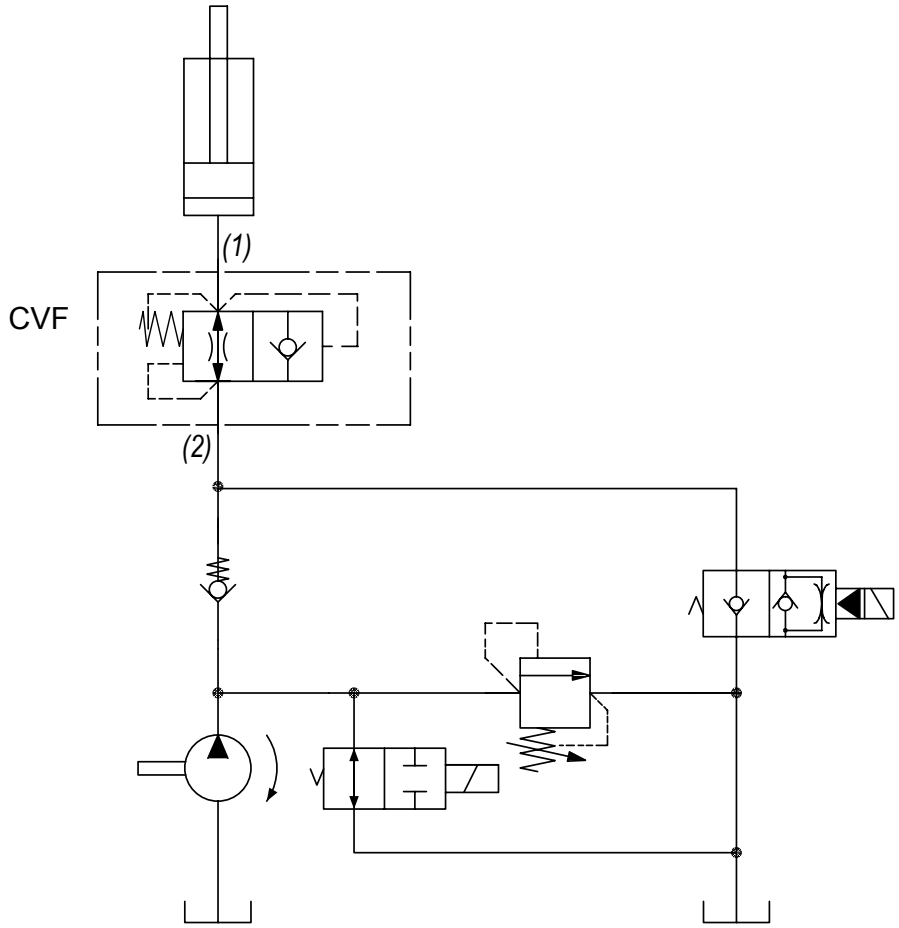
VELOCITY FUSES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	6	3500	23	241	7/8-14	**IM-CVF**	MF54
	10	3500	38	241	7/8-14	**DE-CVF**	MF56

TYPICAL SCHEMATIC

Typical application for the CVF is to prevent cylinder free fall in the event of a hose or plumbing failure. The valve is usually mounted directly in the bottom of the cylinder, and sized 1-2 GPM higher than the normal lowering speed. The valve will not re-open until pressure is bled off of port #1.



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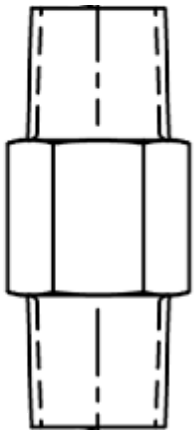
IM-CVF INLINE VELOCITY FUSE



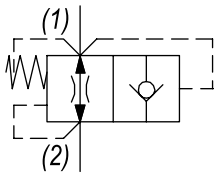
DESCRIPTION

3/8 NPTF thread, inline velocity fuse.

OPERATION

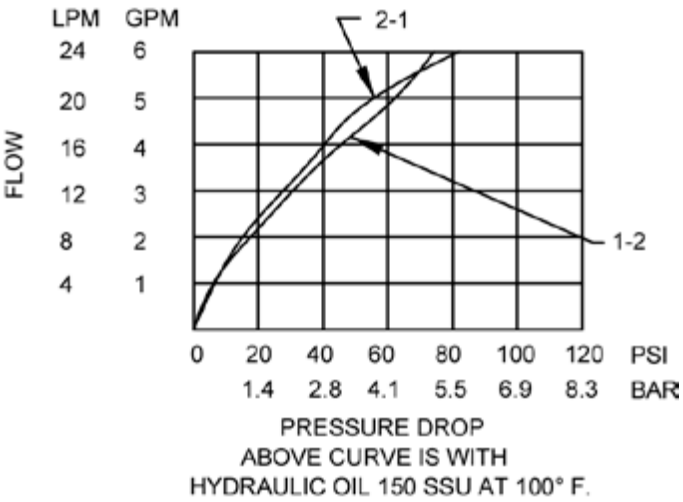
The IM-CVF allows flow to pass between (1) and (2). When oil velocity from (1) to (2) exceeds the flow setting, the valve shifts and blocks flow from (1) to (2).

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS - IM-CVF 11

Nominal Flow Max	6 GPM (23 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.18 lbs (.08 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid

VALVE SPECIFICATIONS - IM-CVF 13

Nominal Flow Max	6 GPM (23 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.16 lbs (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid

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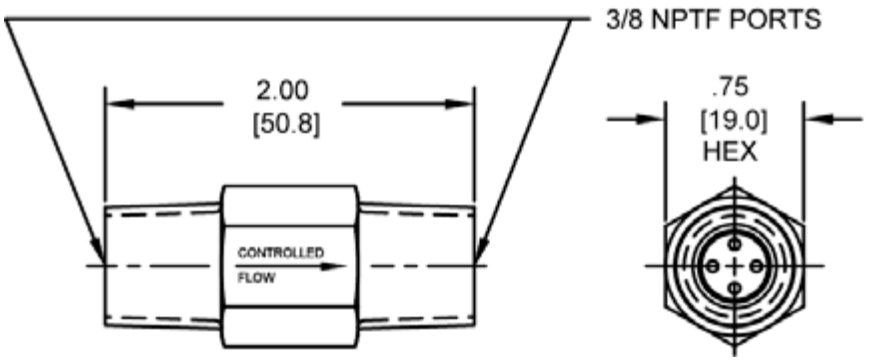
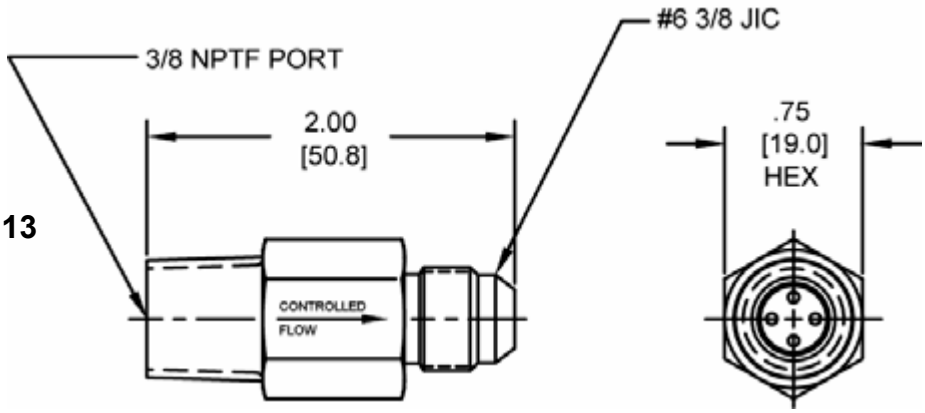
DIMENSIONS

IM-CVF 11



IM-CVF 13



ORDERING INFORMATION

DE-CVF – _____ – _____ –

	FLOW SETTINGS	
11	**01.0**	1 PSI
13	**02.0**	2 PSI
	03.0	3 PSI
	04.0	4 PSI
	05.0	5 PSI
	06.0	6 PSI

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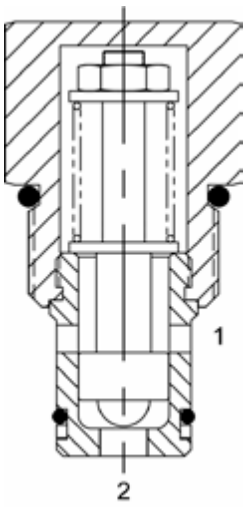
DE-CVF VELOCITY FUSE



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, velocity fuse valve.

OPERATION

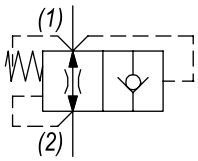
The DE-CVF allows flow to pass from (1) to (2). When velocity exceeds the flow setting the valve shifts and blocks flow from (1) to (2). Valve acts like a fixed orifice when passing flow from (2) to (1).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

Curves identify pressure drop in port (2) to (1) direction (non-fuse). Fuse pressure drop is similar at fuse flow, until fuse takes effect (~75-100 PSID).

HYDRAULIC SYMBOL

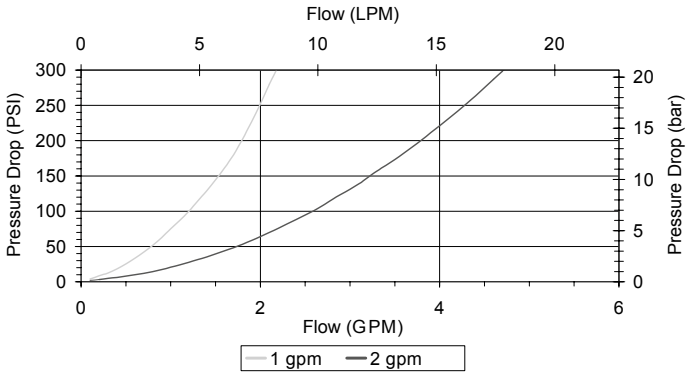


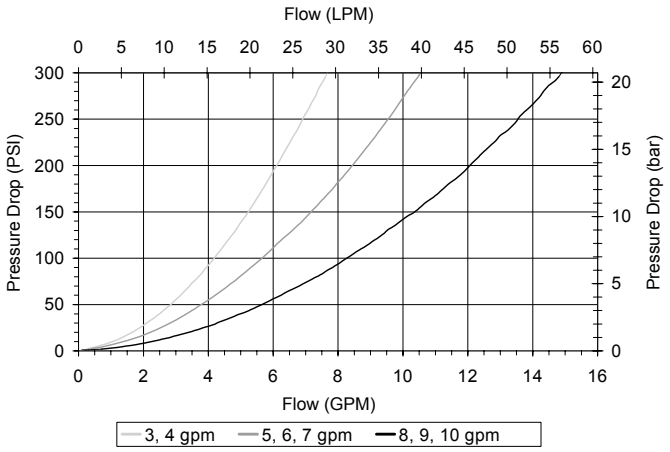
VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.25 lbs (.11 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

PERFORMANCE

Actual Test Data (Cartridge Only)





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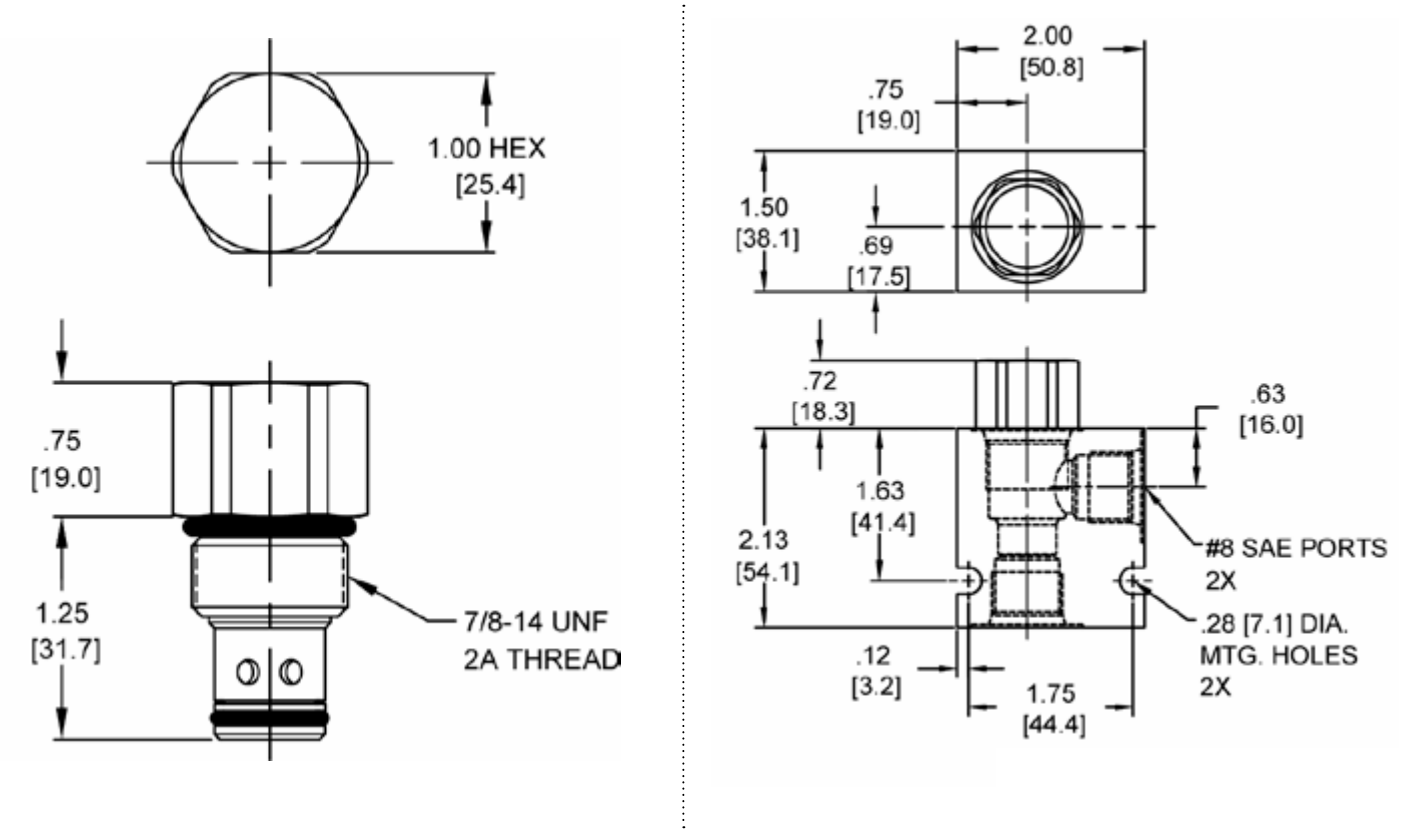
DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-CVF – _____ – _____ – _____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

FLOW SETTING

01.0	1 GPM
02.0	2 GPM
03.0	3 GPM
04.0	4 GPM
05.0	5 GPM
06.0	6 GPM
07.0	7 GPM
08.0	8 GPM
09.0	9 GPM
10.0	10 GPM ± 15%

BODIES

Blank	Without Body
N	3/8" NPTF Ports
S	#8 SAE Ports

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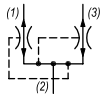
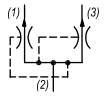
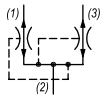
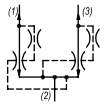
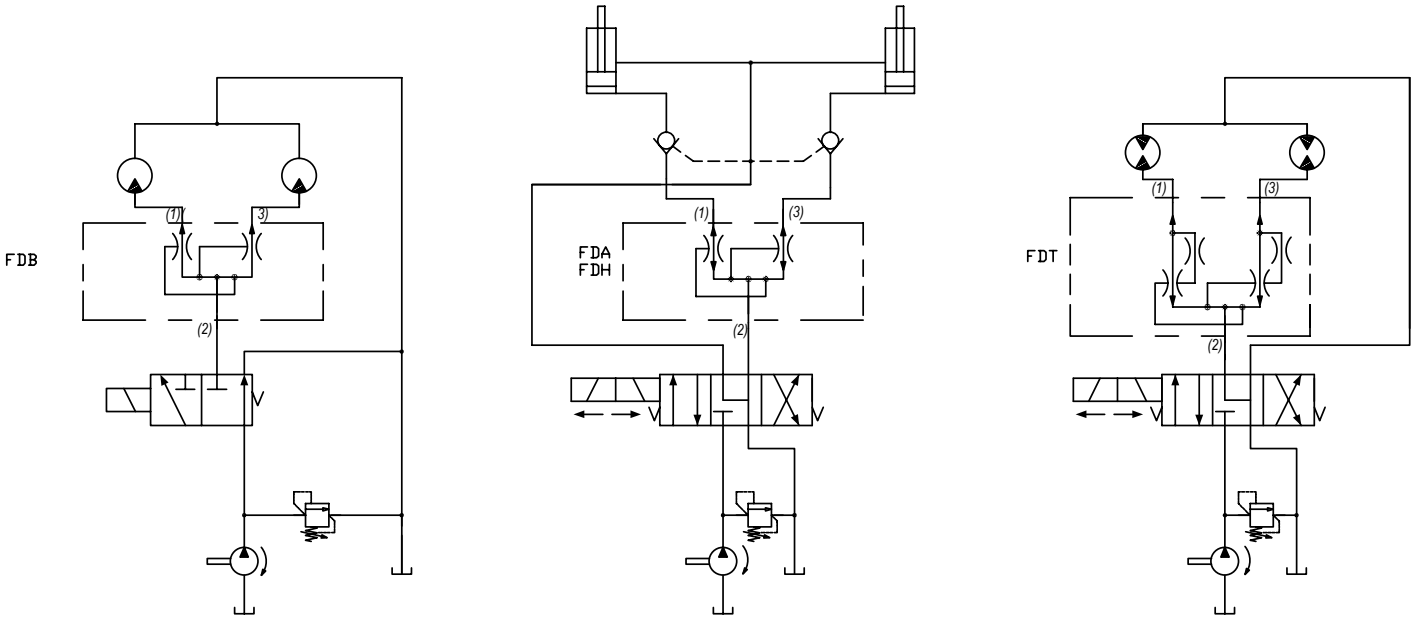
FLOW DIVIDER/COMBINER VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	12	3500	45	241	7/8-14	**DG-FDA**	MF60
	40	3500	151	241	1 5/16-12	**SN-FDA**	MF62
	12	3500	45	241	7/8-14	**DG-FDB**	MF64
	12	3500	45	241	7/8-14	**DG-FDH**	MF66
	12	3500	45	241	7/8-14	**DG-FDT**	MF68

TYPICAL SCHEMATIC

Typical application for the FDA and FDH is to synchronize two independent cylinders or hydraulic motors in both directions. The FDB is a flow divider only. It cannot be used in combine mode.

Typical application for the FDT is to provide positive traction for vehicle drive systems. If one leg loses load, the valve insures flow to the other leg.



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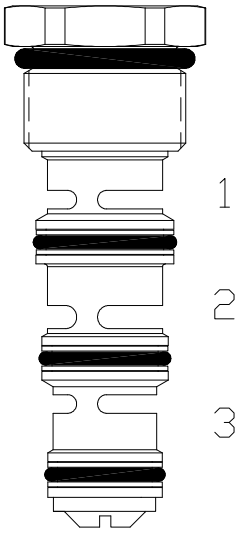
DG-FDA FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

10 size, 7/8-14 thread “Delta Series”, spool type, flow divider/combiner.

OPERATION

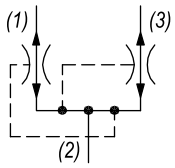
In the dividing mode, the DG-FDA will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. The DG-FDA will combine input flows from ports (3) and (1), to port (2) by the same ratio. Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

FEATURES

- Hardened parts for long life.
- Industry common cavity.

DO NOT EXCEED MAXIMUM FLOW PER MODEL
For higher accuracy flow ratio, use DG-FDH.

HYDRAULIC SYMBOL

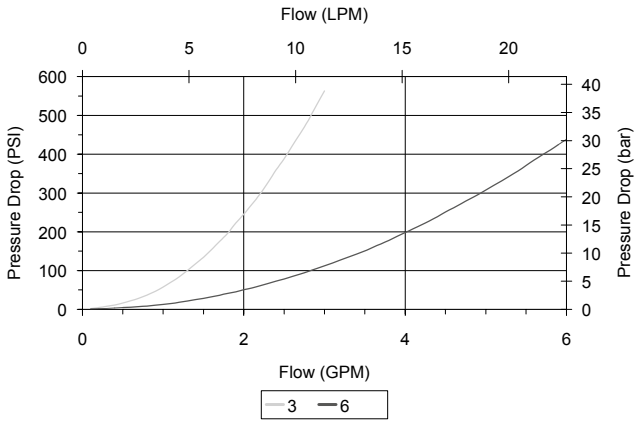


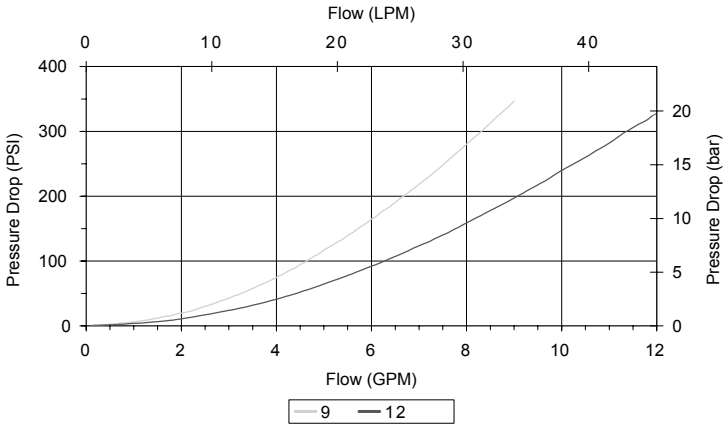
VALVE SPECIFICATIONS

Maximum Flow	12 GPM (45 LPM)
Accuracy on Flow Splits	±10% of Max Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.21 lbs (.10 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 4W
Cavity Form Tool (Finishing)	40500002
Seal Kit	21191214

PERFORMANCE

Actual Test Data (Cartridge Only)





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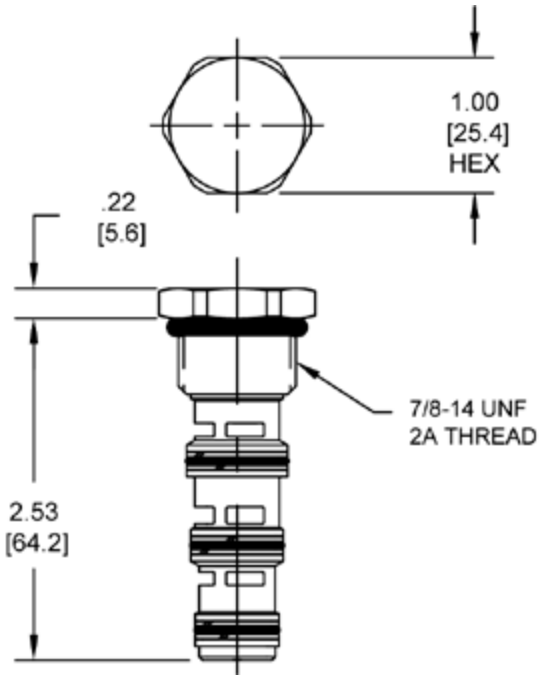
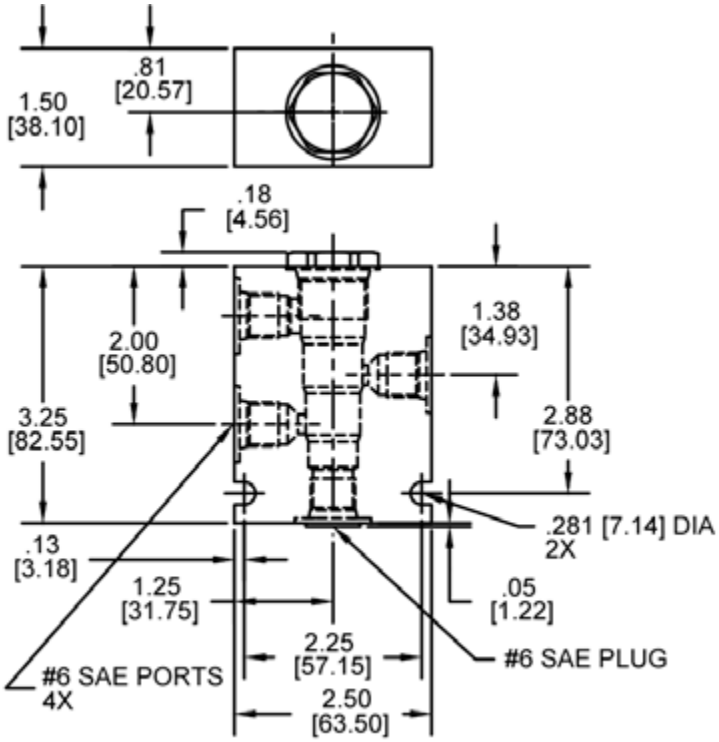
DIMENSIONS





Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-FDA – ____ – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

BODIES

Blank	Without Body
N	1/4 NPT Ports
S	#6 SAE Ports

Note: must use 4-way body

SPLITS

#1	#3	
14-86	**14**	
20-80	**20**	
28-72	**28**	
30-70	**30**	
36-64	**36**	
40-60	**40**	
50-50	**50**	
60-40	**60**	
64-36	**64**	**04**
70-30	**70**	**06**
72-28	**72**	**07**
80-20	**80**	**09**
86-14	**86**	**10**

INLET FLOW

03	2-3 GPM (50 only)
06	3-6 GPM (50 only)
09	6-9 GPM (50 only)
12	9-12 GPM (50 only)
**	**All non 50-50 split valves (see chart below for flow ratings)**

Maximum inlet flow for non 50-50 split valves	
Model code	**Maximum inlet flow**
30-70, 70-30	4.0 GPM
20-80, 80-20	6.0 GPM
14-86, 36-64, 64-36, 86-14	7.0 GPM
28-72, 72-28	9.0 GPM
40-60, 60-40	10.0 GPM

Consult factory for additional splits

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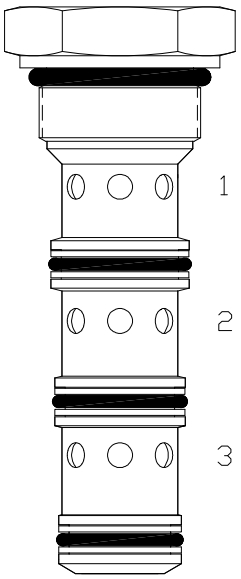
SN-FDA FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

16 size, 1 5/16-12 thread “Super Series,” spool-type flow divider/combiner valve.

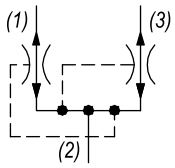
OPERATION

In the dividing mode, the SN-FDA will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. The SN-FDA will combine input flows from ports (3) and (1), to port (2) by same ratio. Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

FEATURES

- Hardened parts for long life.
- Industry common cavity.

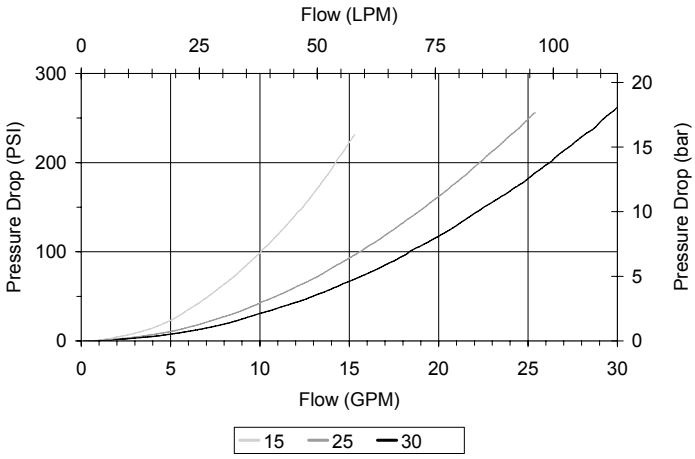
HYDRAULIC SYMBOL



DO NOT EXCEED MAXIMUM FLOW PER MODEL.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Accuracy on Flow Splits	±10% of Max Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.95 lbs (.43 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 4W
Cavity Form Tool (Finishing)	40500019
Seal Kit	21191413

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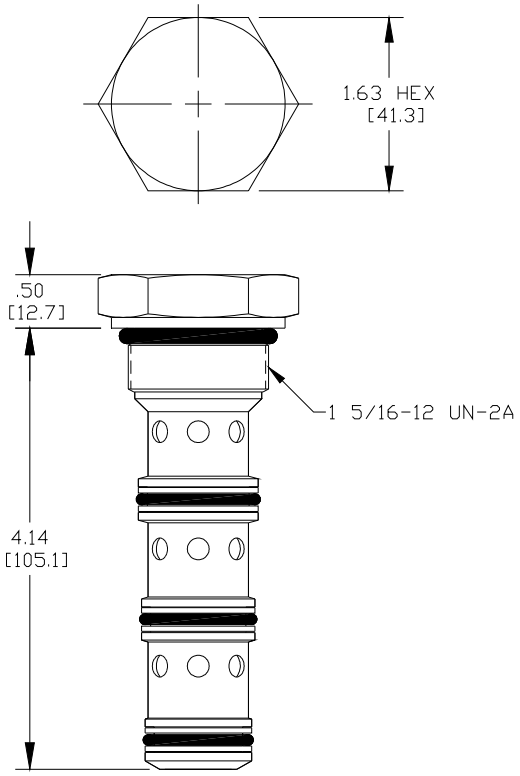
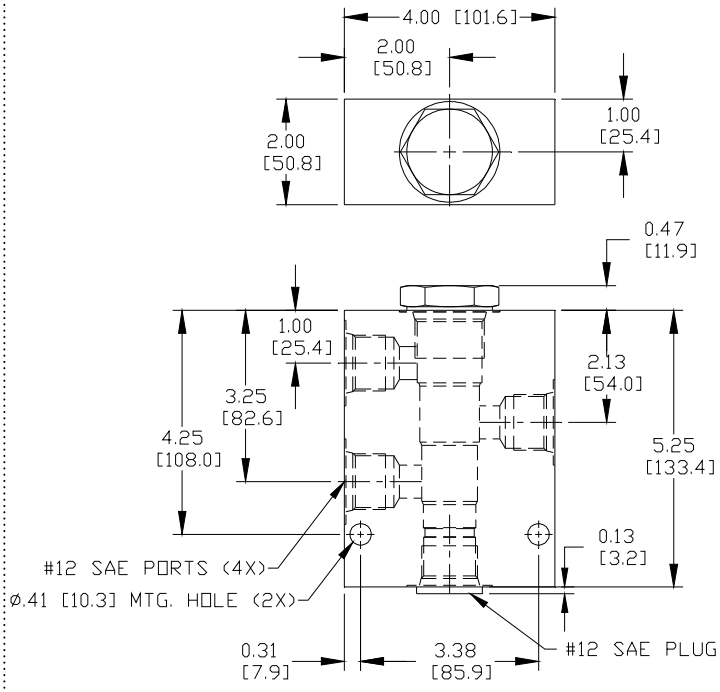
DIMENSIONS





Body Weight: 3.21 lbs (1.46 kg)

ORDERING INFORMATION

SN-FDA – ____ – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

BODIES

Blank	Without Body
S	#12 SAE Ports

Note: must use 4-way body

SPLITS

#1	#3	
35-65		**35**
40-60		**40**
50-50		**50**
60-40		**60**
65-35		**65**

Consult factory for additional splits

INLET FLOW

15	8-15 GPM
25	15-25 GPM
30	20-30 GPM
40	30-40 GPM ***Available as a 50-50 split only**

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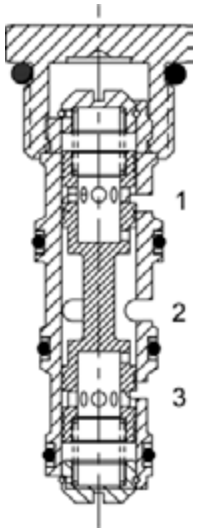
DG-FDB FLOW DIVIDER VALVE, SPOOL TYPE



DESCRIPTION

10 size, 7/8-14 thread “Delta Series”, spool type, flow divider.

OPERATION

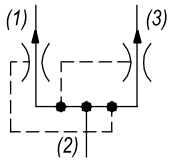
The DG-FDB will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

FEATURES

- Hardened parts for long life.
- Industry common cavity.

DO NOT EXCEED MAXIMUM FLOW PER MODEL.

HYDRAULIC SYMBOL

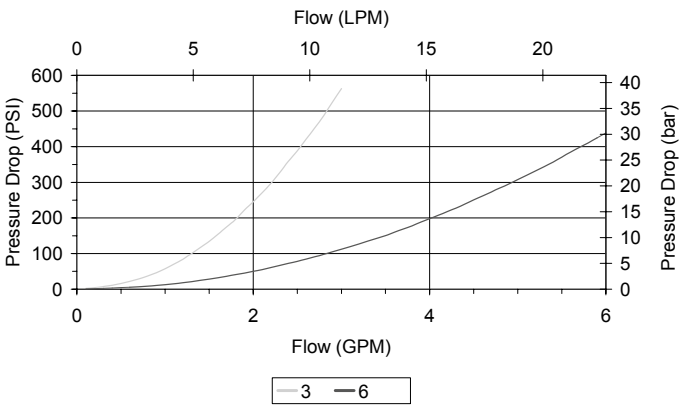


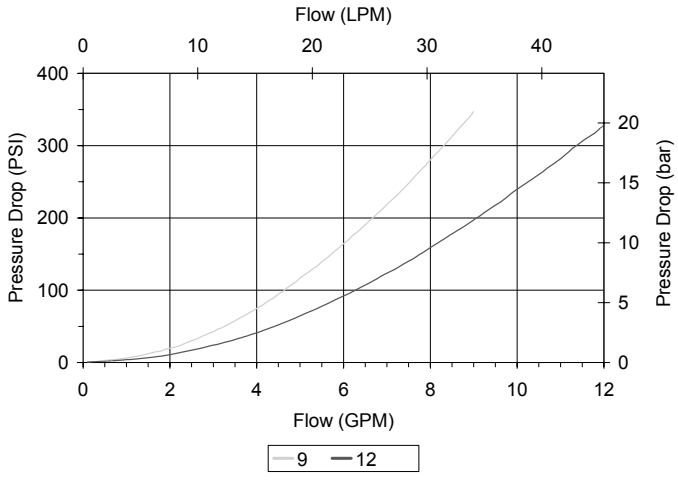
PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Maximum Flow	12 GPM (45 LPM)
Accuracy on Flow Splits	±10% of Max Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.21 lbs (.10 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 4W
Cavity Form Tool (Finishing)	40500002
Seal Kit	21191214





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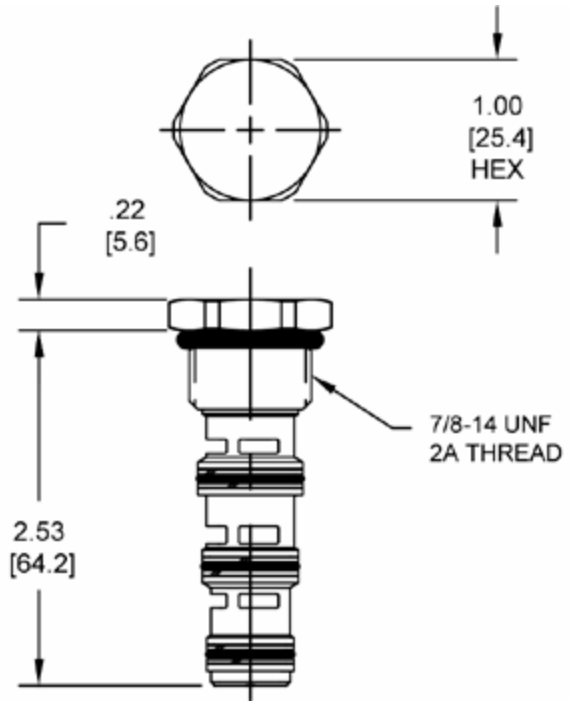
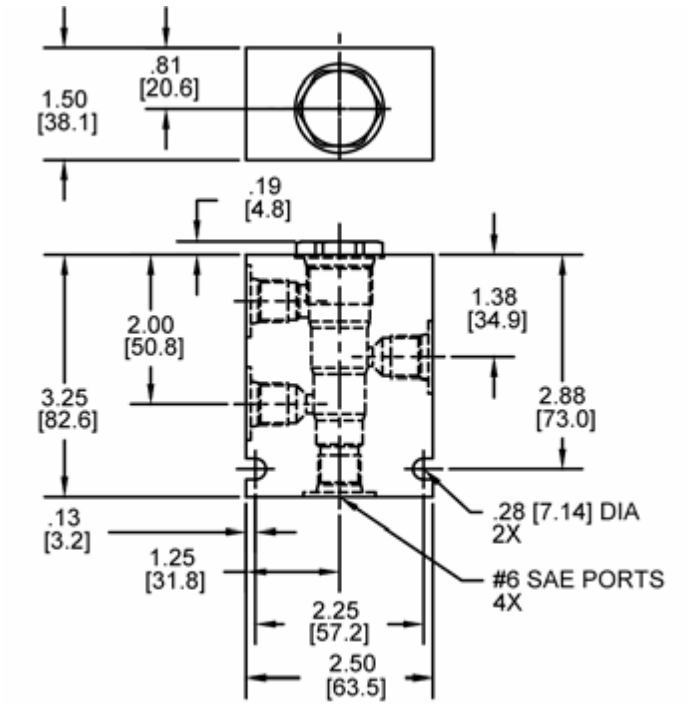
DIMENSIONS





Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-FDB – ____ – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

SPLITS

50-50	**50**
Consult factory for splits other then 50-50	

INLET FLOW

03	2-3 GPM
06	3-6 GPM
09	6-9 GPM
12	9-12 GPM

BODIES

Blank	Without Body
N	1/4" NPT Ports
S	#6 SAE Ports

Note: must use 4-way body

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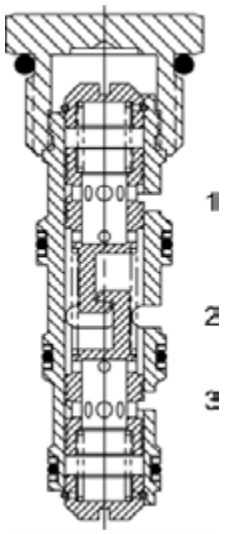
DG-FDH FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

"High Accuracy" 10 size, 7/8-14 thread "Delta Series", spool type, flow divider/combiner.

OPERATION

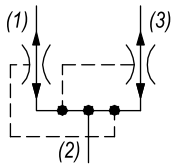
In the dividing mode, the DG-FDH will divert input flow from port (2) to ports (3) and (1), based on the ratio specified with a high degree of accuracy, regardless of operating pressure. The DG-FDH will combine input flows from ports (3) and (1), to port (2) by the same ratio. Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

FEATURES

- Hardened parts for long life.
- Industry common cavity.

DO NOT EXCEED MAXIMUM FLOW PER MODEL. The DG-FDH should be considered if the DG-FDA does not provide the required accuracy.

HYDRAULIC SYMBOL

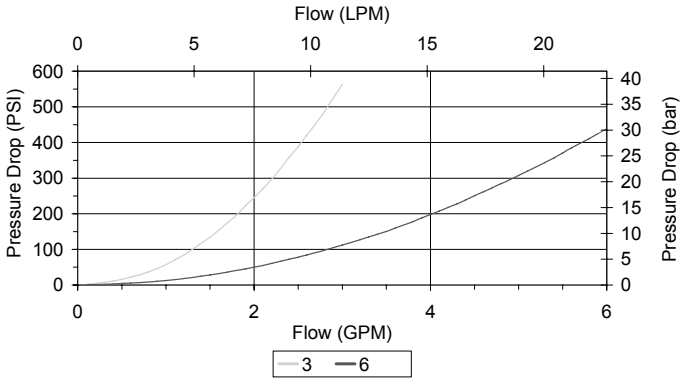


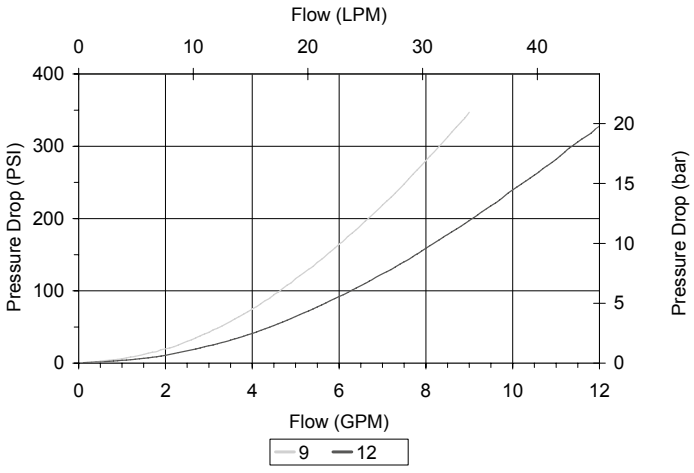
PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Maximum Flow	12 GPM (45 LPM)
Accuracy on Flow Splits	±4% of Max Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.21 lbs (.10 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 4W
Cavity Form Tool (Finishing)	40500002
Seal Kit	21191214





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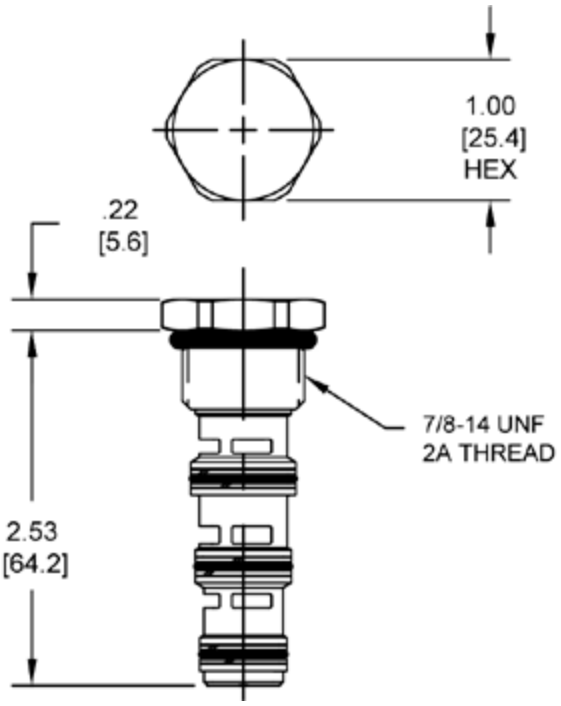
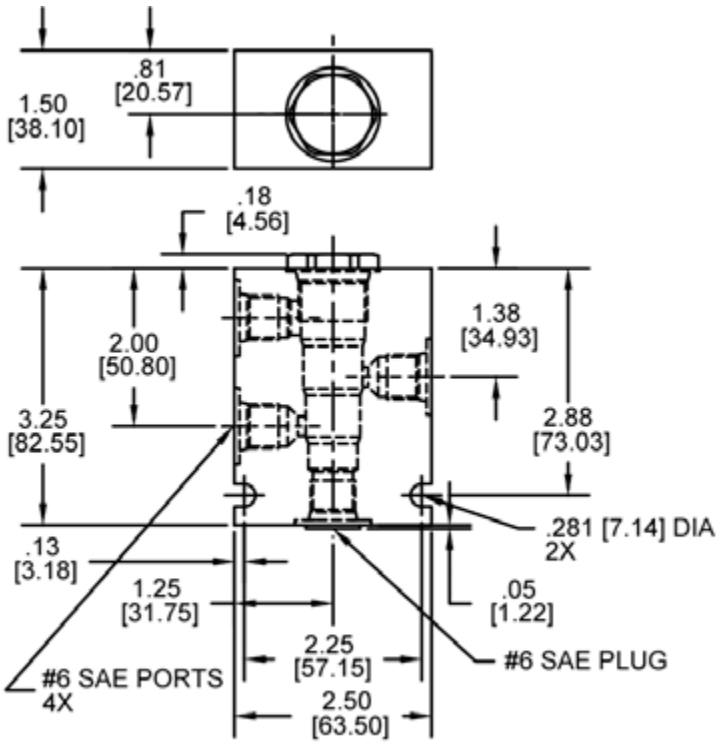
DIMENSIONS





Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-FDH – ____ – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

SPLITS

50-50	**50**
Consult factory for splits other then 50-50	

INLET FLOW

03	2-3 GPM
06	3-6 GPM
09	6-9 GPM
12	9-12 GPM

BODIES

Blank	Without Body
N	1/4” NPT Ports
S	#6 SAE Ports

Note: must use 4-way body

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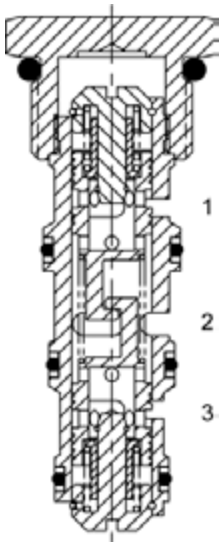
DG-FDT FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

10 size, 7/8-14 thread “Delta Series”, spool type, flow divider/combiner, positive traction valve.

OPERATION

In the dividing mode, the DG-FDT will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. The DG-FDT will combine input flows from ports (3) and (1). Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the factory.

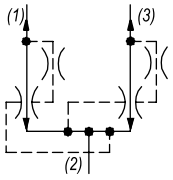
FEATURES

- Hardened parts for long life.
- Industry common cavity.

DO NOT EXCEED MAXIMUM FLOW PER MODEL
Use where wheel slip (or “drag”) needs to be accomplished.

TRACTION FLOW W/1 LEG UNLOADED
2-3 GPM valve - 0.4 GPM
3-6 GPM valve - 0.7 GPM
6-9 GPM valve - 1.1 GPM
9-12 GPM valve - 1.5 GPM

HYDRAULIC SYMBOL

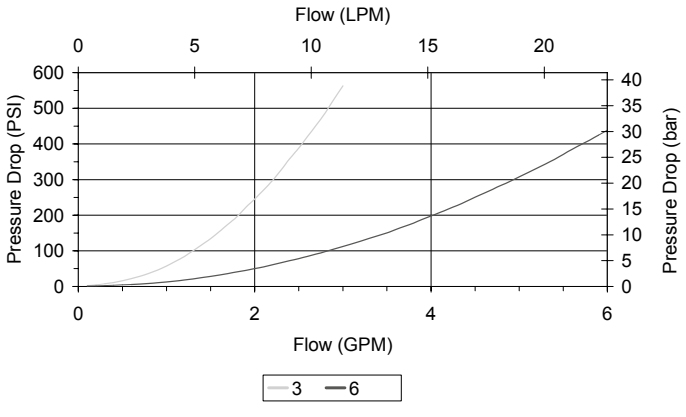


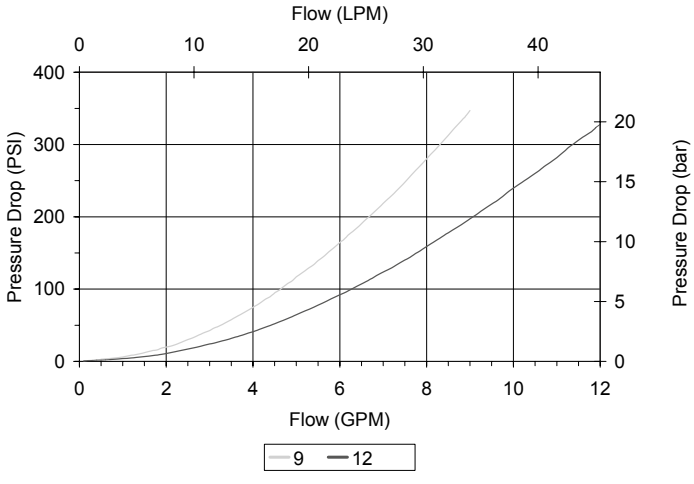
PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Maximum Flow	12 GPM (45 LPM)
Accuracy on Flow Splits	±10% of Max Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.22 lbs (.10 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 4W
Cavity Form Tool (Finishing)	40500002
Seal Kit	21191214





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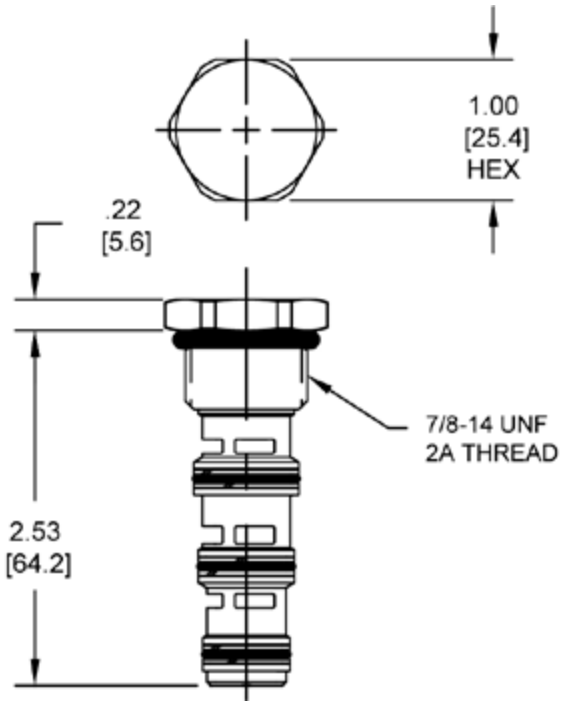
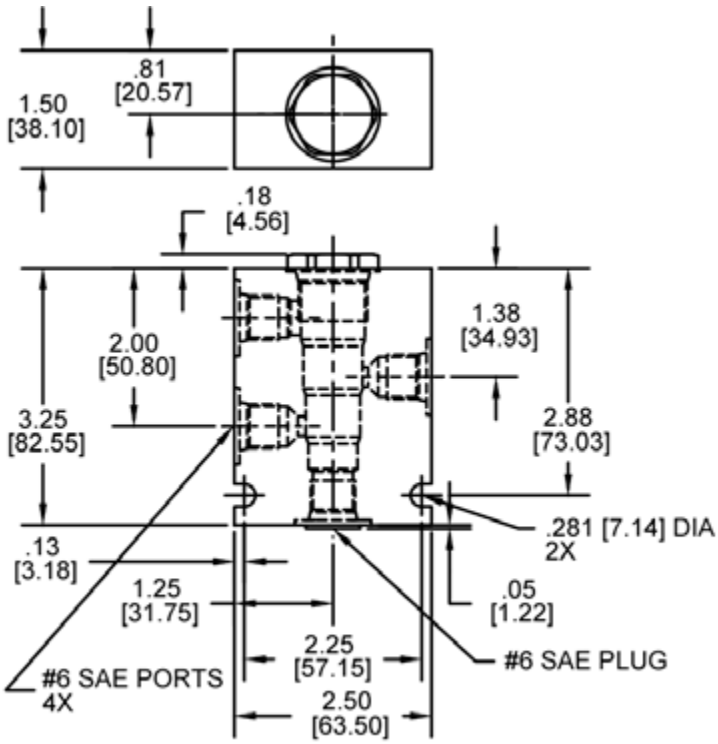
DIMENSIONS





Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-FDT – ____ – ____ – ____ – ____

OPTIONS

Buna Standard	**00**
Viton Standard	**V0**

SPLITS

50-50	**50**
Consult factory for splits other then 50-50	

INLET FLOW

03	2-3 GPM
06	3-6 GPM
09	6-9 GPM
12	9-12 GPM

BODIES

Blank	Without Body
N	1/4" NPT Ports
S	#6 SAE Ports

Note: must use 4-way body

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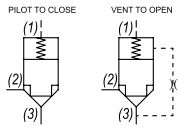
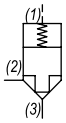
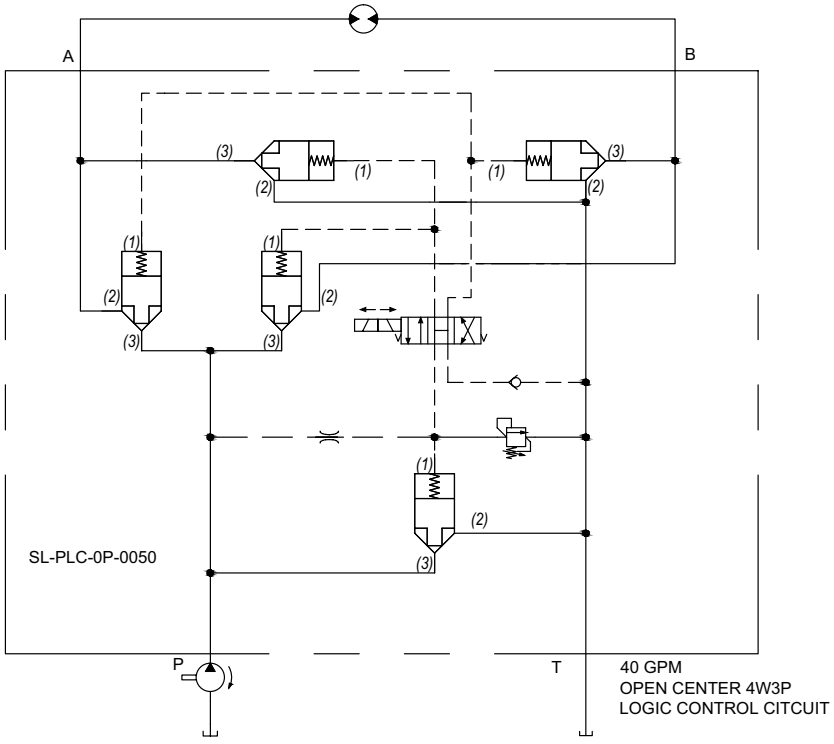
LOGIC ELEMENTS

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	40	3500	151	241	1 5/16-12	**SL-PLA**	MF72
	40	3500	151	241	1 5/16-12	**SL-PLB**	MF74
	40	3500	151	241	1 5/16-12	**SL-PLC**	MF76

TYPICAL SCHEMATIC

Typical application for the PLA, PLB, and PLC is to provide the main stage of a high-flow capacity on/off function. A low flow solenoid valve is generally used to provide pilot control.
The PLA and PLB are intended for flow in one direction only, whereas the PLC can be used for bi-directional operation.
The differing pilot ratios between the three valves affect pressure drop versus flow, and **opening pressure versus pilot pressure**.
The differing pilot ratios between the three valves affect pressure drop versus flow, and **opening pressure as a function of pilot pressure**.



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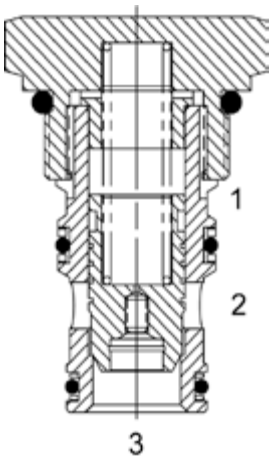
SL-PLA SUPER SERIES, LOGIC VALVE



DESCRIPTION

16 size, 1 5/16-12 thread, “Super” series, logic valve.

OPERATION

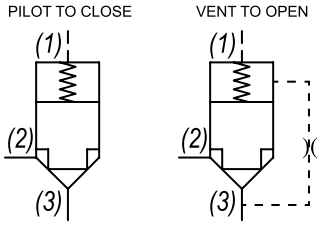
The SL-PLA with an orifice between ports (3) and (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system upstream of (3), or in the bypass leg at (2) as long as pressure at (2) is less than (1). Used for basic blocking applications.

FEATURES

- Hardened parts for long life.
- Industry common cavity.

For bidirectional applications see SL-PLC.
For metering see SLPCA or SL-PCB.

HYDRAULIC SYMBOL

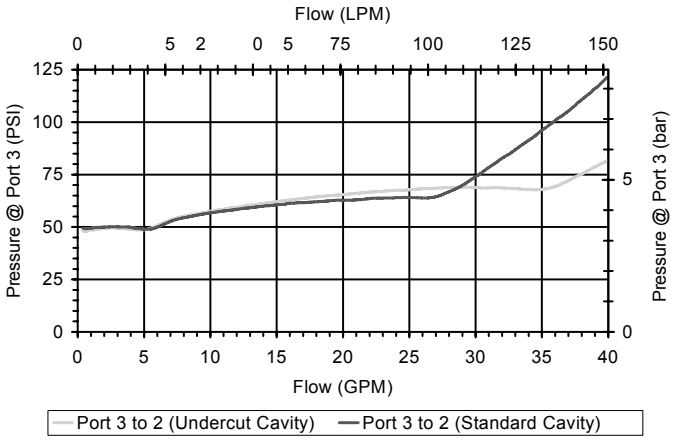


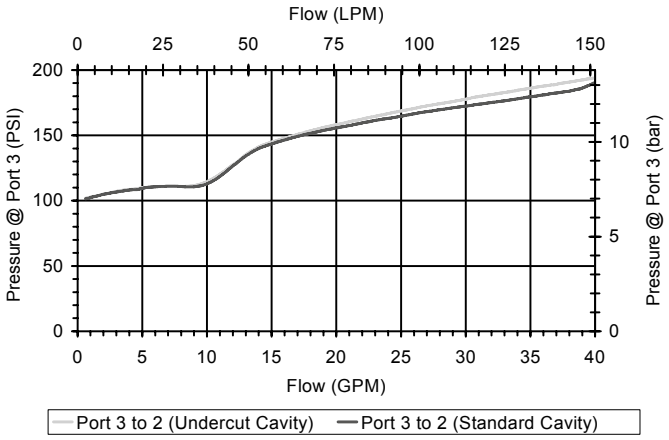
PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.69 lbs (.31 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 3WS
Cavity Form Tool (Finishing)	40500021
Seal Kit	21191409
Seat Ratio	Area of the pilot is 1.2 times the area of the seat at Port (3)





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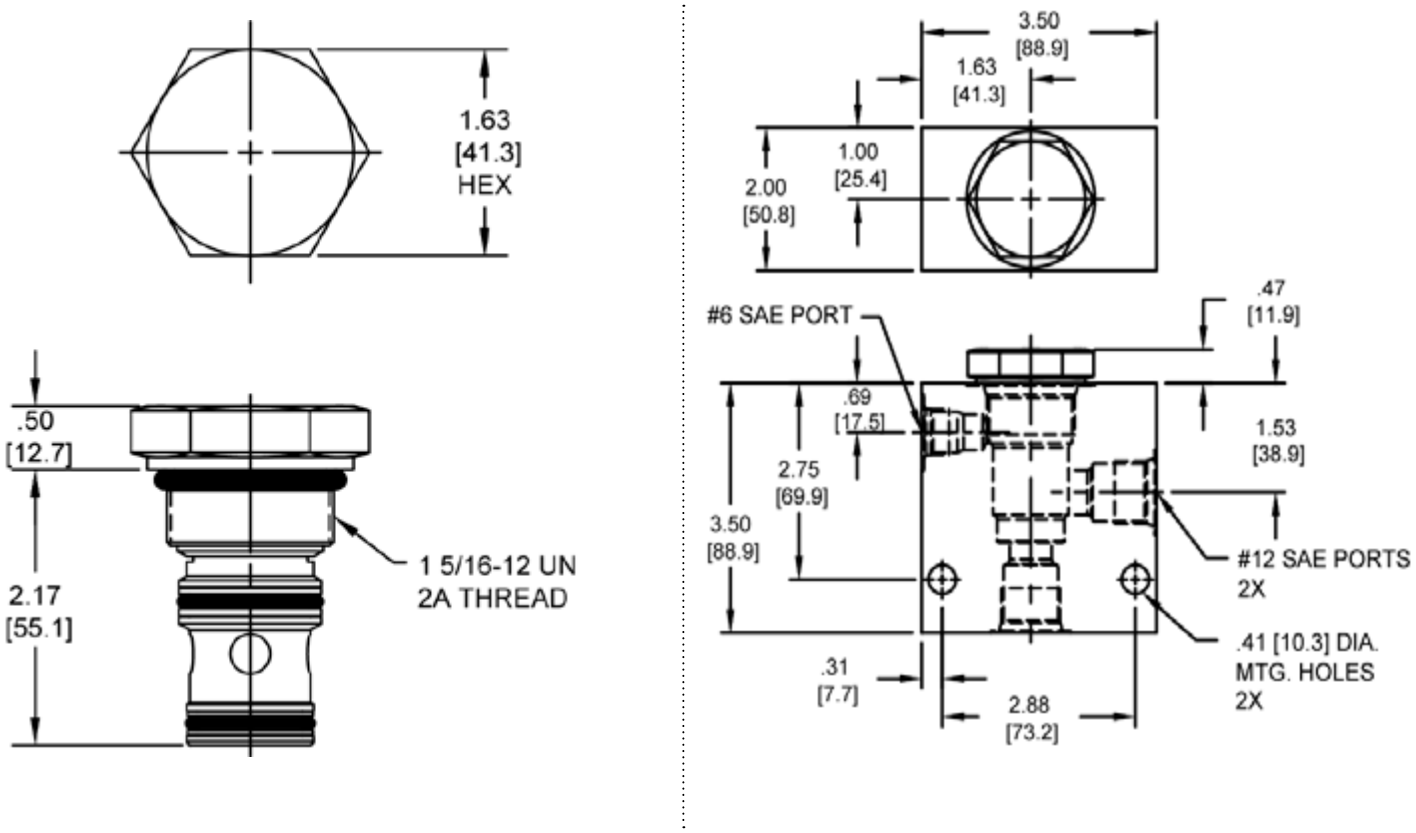
DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PLA – _____ – _____ – _____

OPTIONS

Buna, Pilot to Close	**0P**
Viton, Pilot to Close	**VP**
Buna, Vent to Open	**0V**
Viton, Vent to Open	**VV**
Buna, Pilot to Close w/seals	**0B**
Viton, Pilot to Close w/seals	**VB**
Buna, Vent to Open w/seals	**0C**
Viton, Vent to Open w/seals	**VC**

PRESSURE SETTING

0020	20 PSI
0050	50 PSI
0100	100 PSI
0150	150 PSI

BODIES

Blank	Without Body
S	#12 SAE Ports

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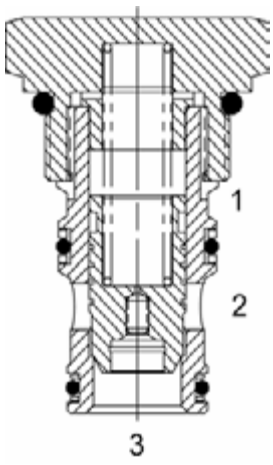
SL-PLB SUPER SERIES, LOGIC VALVE



DESCRIPTION

16 size, 1 5/16-12 thread, “Super” series, logic valve.

OPERATION

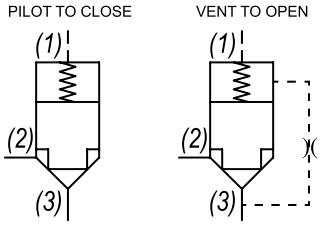
The SL-PLB with an orifice between ports (3) and (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system upstream of (3), or in the bypass leg at (2) as long as pressure at (2) is less than (1). Used for basic blocking applications.

FEATURES

- Hardened parts for long life.
- Industry common cavity.

For bidirectional applications see SL-PLC.
For metering see SLPCA or SL-PCB.

HYDRAULIC SYMBOL

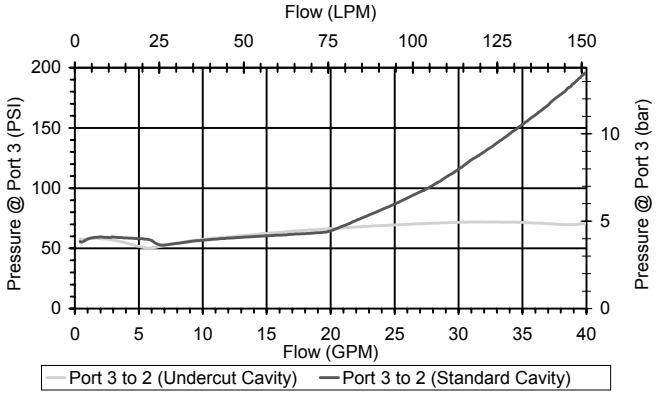


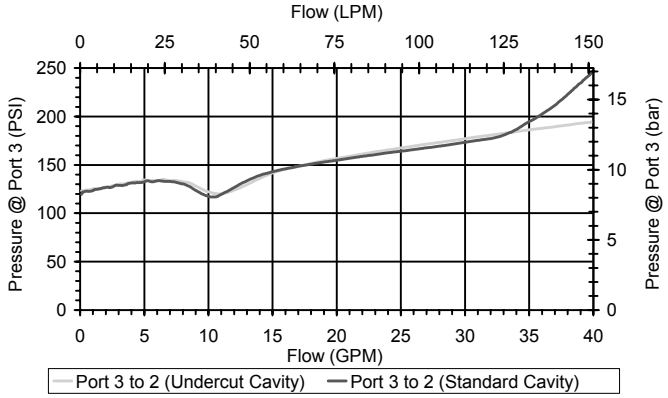
PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.69 lbs (.31 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 3WS
Cavity Form Tool (Finishing)	40500021
Seal Kit	21191409
Seat Ratio	Area of the pilot is 1.5 times the area of the seat at Port (3)





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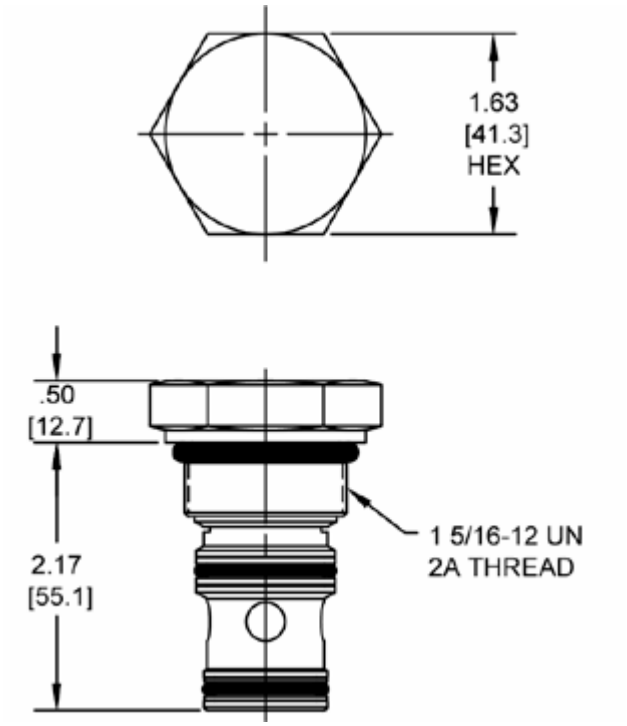
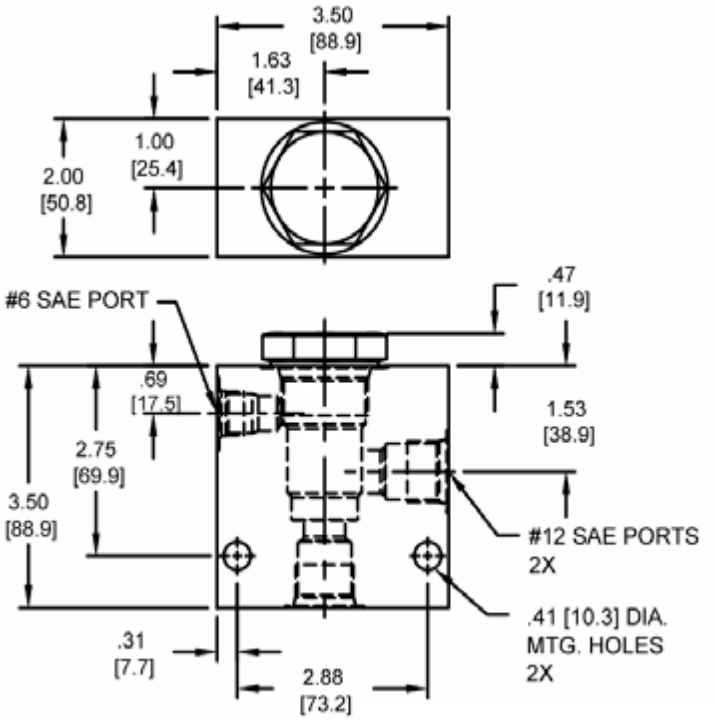
DIMENSIONS





Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PLB – _____ – _____ – _____

OPTIONS

Buna, Pilot to Close	**0P**
Viton, Pilot to Close	**VP**
Buna, Vent to Open	**0V**
Viton, Vent to Open	**VV**
Buna, Pilot to Close w/seals	**0B**
Viton, Pilot to Close w/seals	**VB**
Buna, Vent to Open w/seals	**0C**
Viton, Vent to Open w/seals	**VC**

PRESSURE SETTING

0020	20 PSI
0050	50 PSI
0100	100 PSI
0150	150 PSI

BODIES

Blank	Without Body
S	#12 SAE Ports

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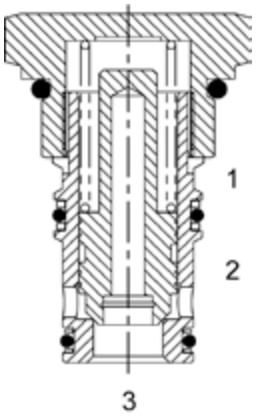
SL-PLC SUPER SERIES, LOGIC VALVE



DESCRIPTION

16 size, 1 5/16-12 thread, “Super” series, logic valve.

OPERATION

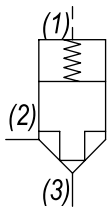
The SL-PLC with an orifice between ports (3) and (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system upstream of (3), or in the bypass leg at (2) as long as pressure at (2) is less than (1). Used for basic bidirectional blocking applications.

FEATURES

- Hardened parts for long life.
- Industry common cavity.

For metering see SL-PCA or SL-PCB.

HYDRAULIC SYMBOL

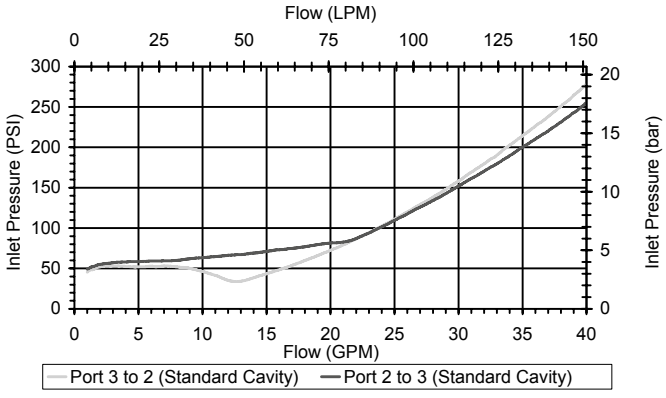


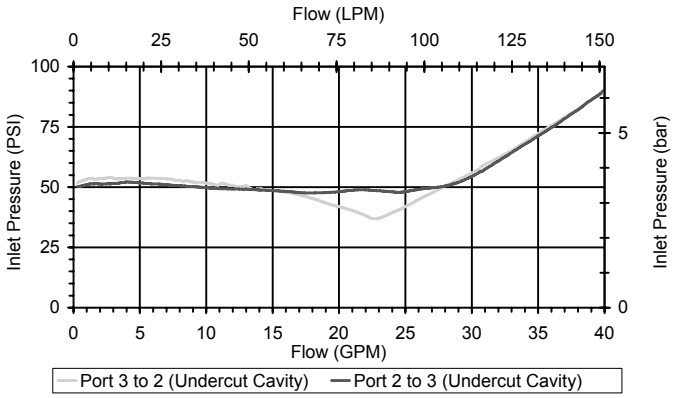
PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.65 lbs (.29 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 3WS
Cavity Form Tool (Finishing)	40500021
Seal Kit	21191409
Seat Ratio	Area of the pilot is 2 times the area of the seat at Port (3)





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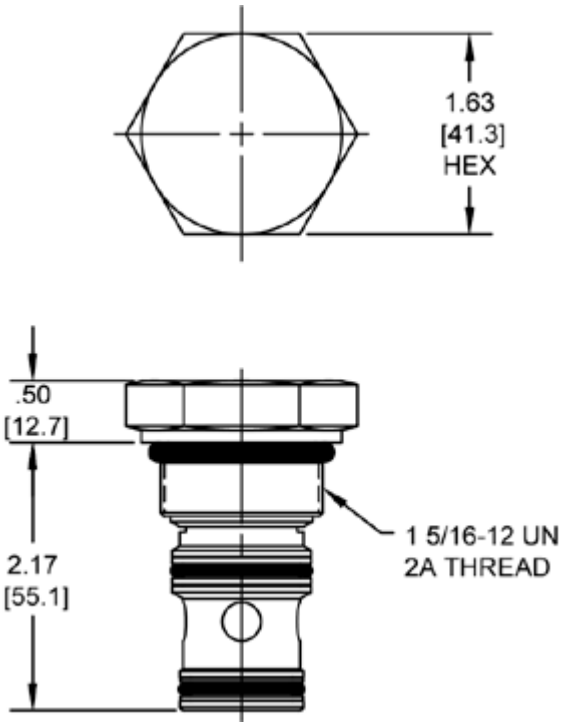
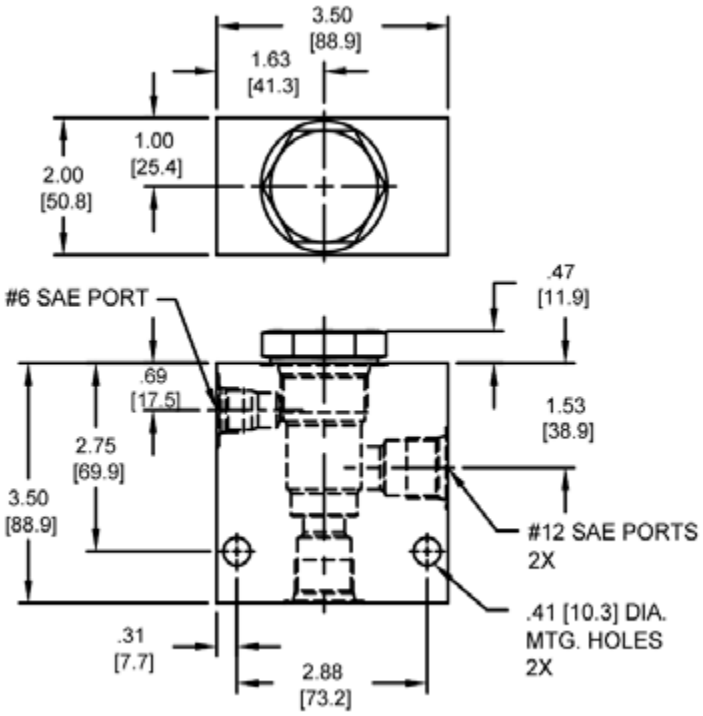
DIMENSIONS





Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PLC – _____ – _____ – _____

OPTIONS

Buna, Pilot to Close	**0P**
Viton, Pilot to Close	**VP**
Buna, Pilot to Close w/seals	**0B**
Viton, Pilot to Close w/seals	**VB**

PRESSURE SETTING

0020	20 PSI
0050	50 PSI
0100	100 PSI
0150	150 PSI

BODIES

Blank	Without Body
S	#12 SAE Ports

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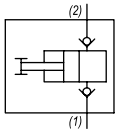
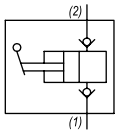
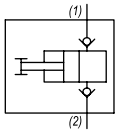
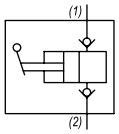
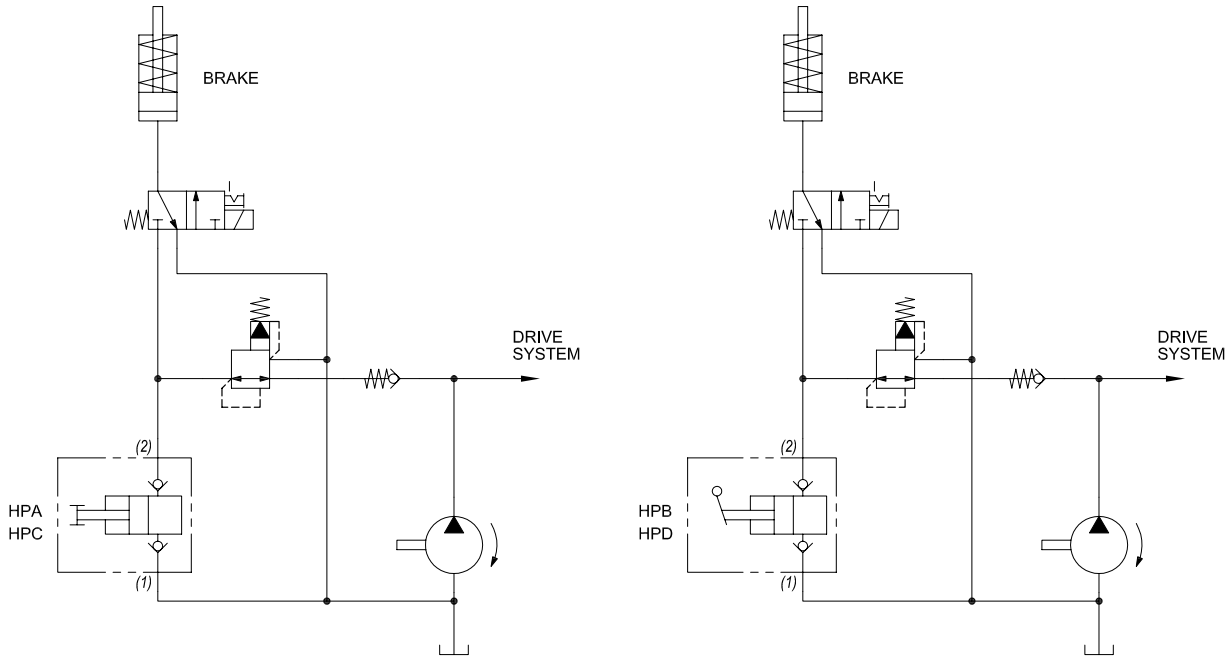
HAND PUMPS

	cu in/stroke	PSI	cc/stroke	BAR	CAVITY	MODEL	PAGE
	0.35	500	5.8	34	7/8-14	**DE-HPA**	MF80
	0.39	2000	6.4	138	7/8-14	**DE-HPB**	MF82
	0.39	2000	6.4	138	7/8-14	**DE-HPE**	MF84
	0.35	500	5.8	34	7/8-14	**DE-HPC**	MF86
	0.39	2000	6.4	138	7/8-14	**DE-HPD**	MF88
	0.39	2000	6.4	138	7/8-14	**DE-HPF**	MF90

TYPICAL SCHEMATIC

Typical application for the HPA, HPB, HPC, and HPD is to supply pressure to release parking brake for towing.



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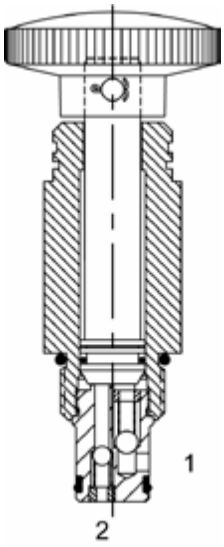
DE-HPA HAND PUMP



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, cartridge type, plunger hand pump.

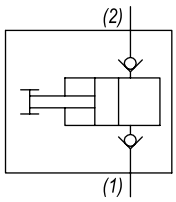
OPERATION

The DE-HPA hand pump when pulled primes thru Port (1) and when pushed pressurizes outlet port (2).

FEATURES

- Hardened parts for long life.
- Industry common cavity.

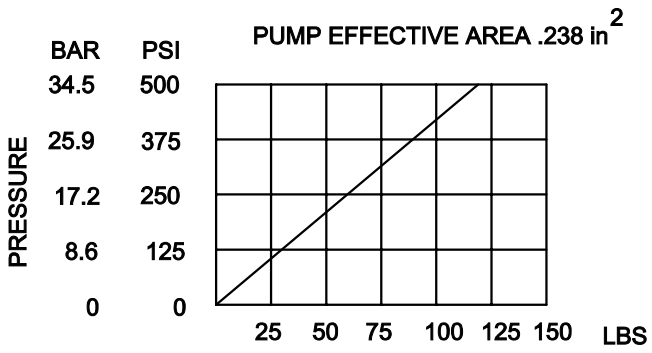
HYDRAULIC SYMBOL



This product is not intended as a load holding device.

PERFORMANCE

Actual Test Data (Cartridge Only)



FORCE

ABOVE CURVE IS WITH
HYDRAULIC OIL 150 SSU AT 100°F.

VALVE SPECIFICATIONS

Nominal Flow	.35 cu in/stroke
Rated Operating Pressure	500 PSI (34 bar)
Typical Internal Leakage (150 SSU)	0-10 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.57 lbs (.26 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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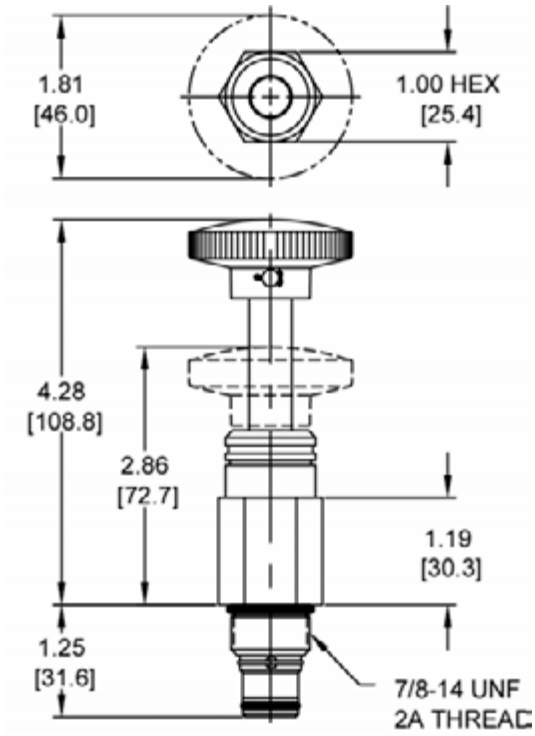
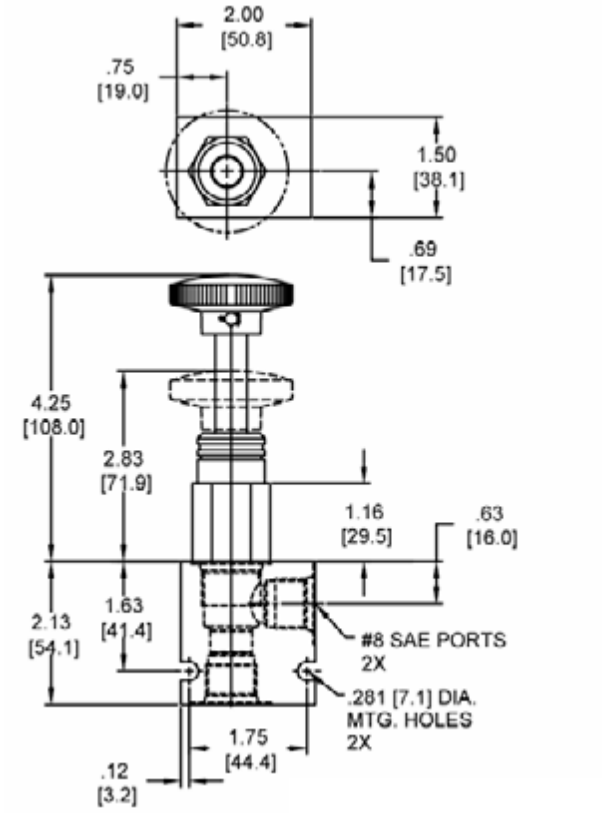
DIMENSIONS





Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPA – _____ **–** _____

OPTIONS		**BODIES**	
Buna, Knob	**0K**	**Blank**	Without Body
Viton, Knob	**VK**	**N**	3/8" NPTF Ports
		S	#8 SAE Ports

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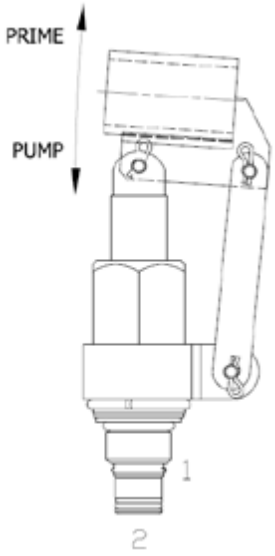
DE-HPB HAND PUMP, PUSH TO PUMP TYPE



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, screw in, cartridge type, hand pump.

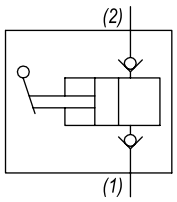
OPERATION

The DE-HPB hand pump when pipe handle is lifted, primes thru port (1) and when pushed provides flow pressure to outlet port (2).

FEATURES

- Large displacement per stroke.
- Industry common cavity.

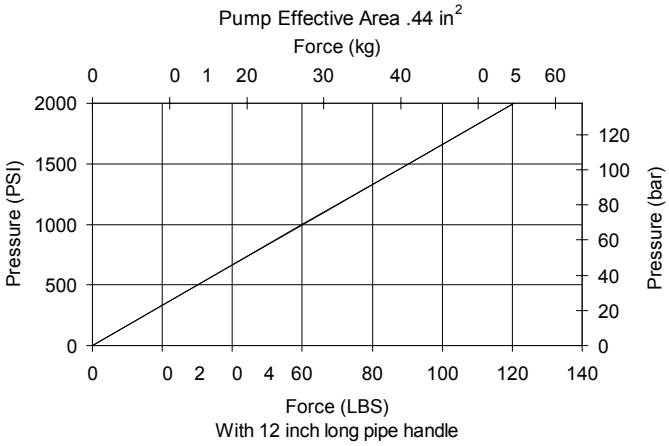
HYDRAULIC SYMBOL



This product is not intended as a load holding device. ***Linkage is not to be removed. 24” handle not supplied.***

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	.39 cu in/stroke
Rated Operating Pressure	2000 PSI (138 bar)
Typical Internal Leakage (150 SSU)	0-10 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	1.5 lbs (.69 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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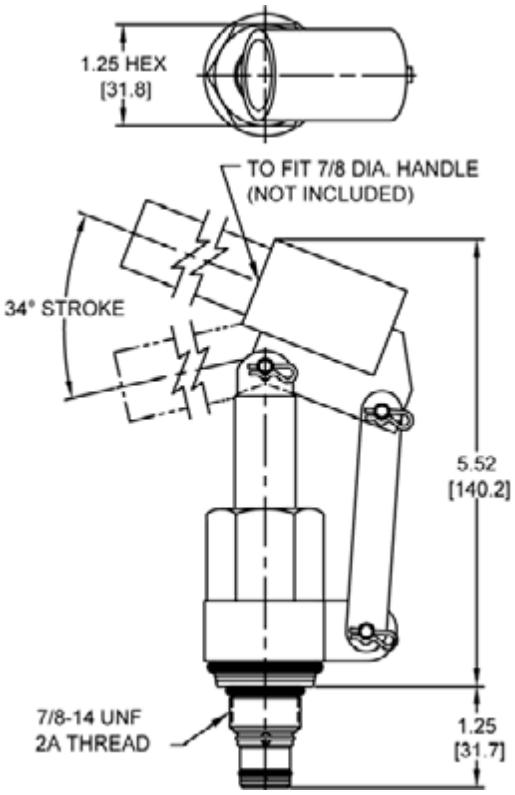
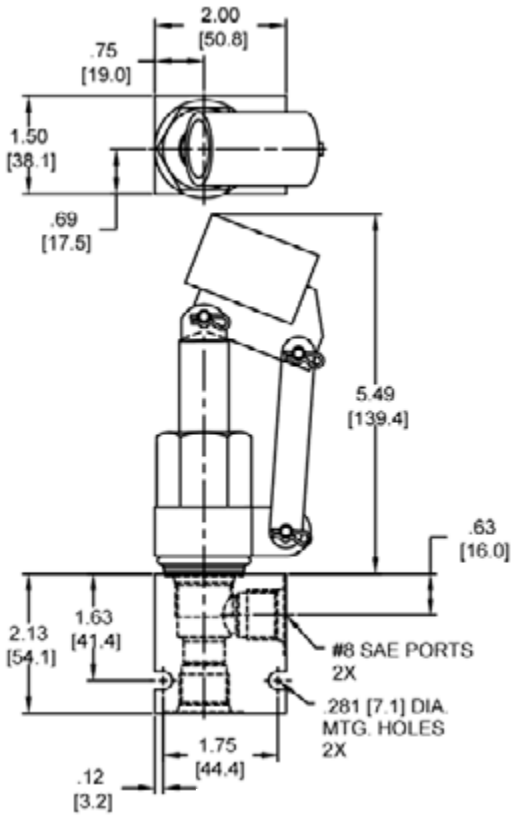
DIMENSIONS





Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPB – _____ **–** _____

OPTIONS		**BODIES**	
Buna, Linkage	**0L**	**Blank**	Without Body
Viton, Linkage	**VL**	**N**	3/8" NPTF Ports
		S	#8 SAE Ports

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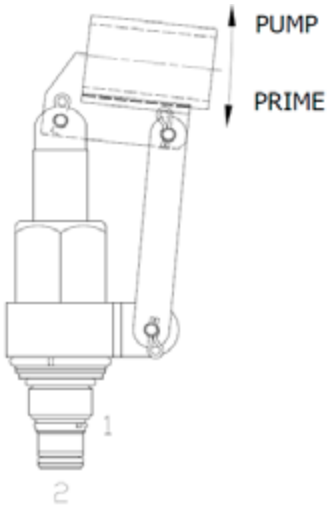
DE-HPE HAND PUMP , PULL TO PUMP TYPE



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, screw in, cartridge type, hand pump.

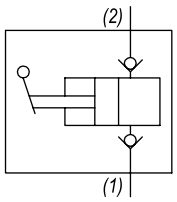
OPERATION

The DE-HPE hand pump when pipe handle is pushed, primes thru port (1) and when lifted provides flow pressure to outlet port (2).

FEATURES

- Large displacement per stroke.
- Industry common cavity.

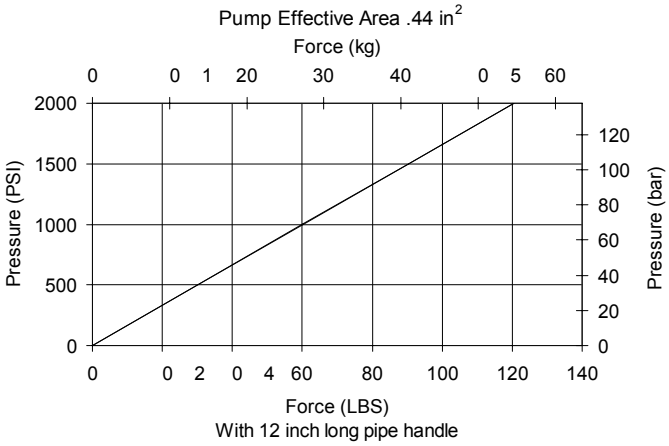
HYDRAULIC SYMBOL



This product is not intended as a load holding device. ***Linkage is not to be removed. 24” Maximum handle length.***

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	.39 cu in/stroke
Rated Operating Pressure	2000 PSI (138 bar)
Typical Internal Leakage (150 SSU)	0-10 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	1.5 lbs (.69 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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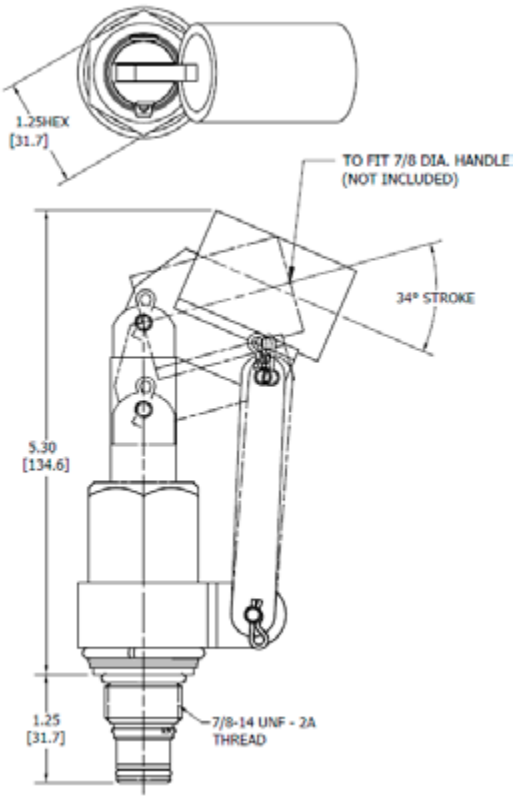
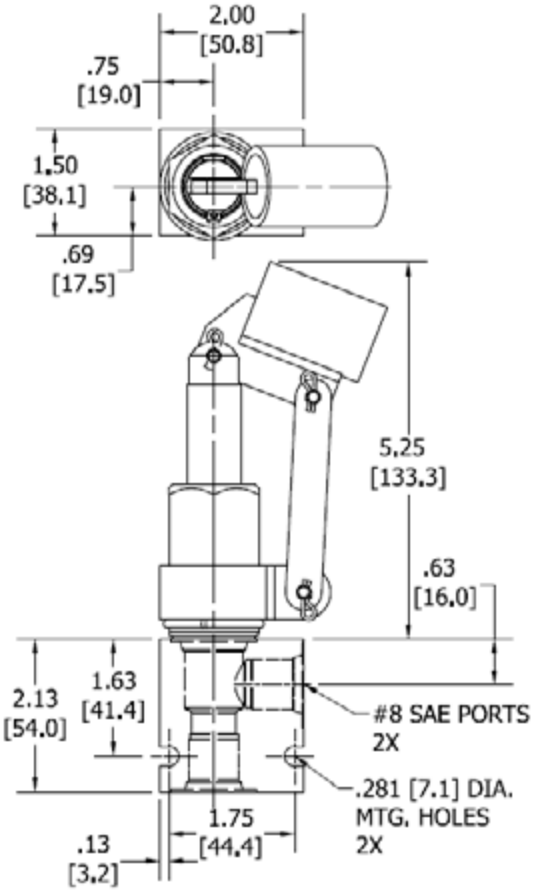
DIMENSIONS





Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPE – _____ **–** _____

OPTIONS		**BODIES**	
Buna, Linkage	**0L**	**Blank**	Without Body
Viton, Linkage	**VL**	**N**	3/8" NPTF Ports
		S	#8 SAE Ports

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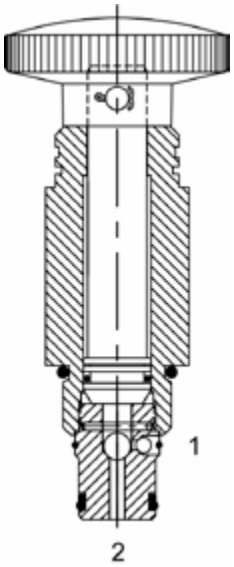
DE-HPC HAND PUMP



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, cartridge type, plunger hand pump.

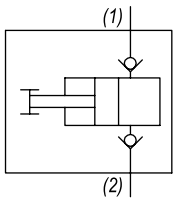
OPERATION

The DE-HPC hand pump when pulled primes thru port (2) and when pushed provide flow pressure to outlet port (1).

FEATURES

- Small profile.
- Industry common cavity.
- Large displacement per stroke.

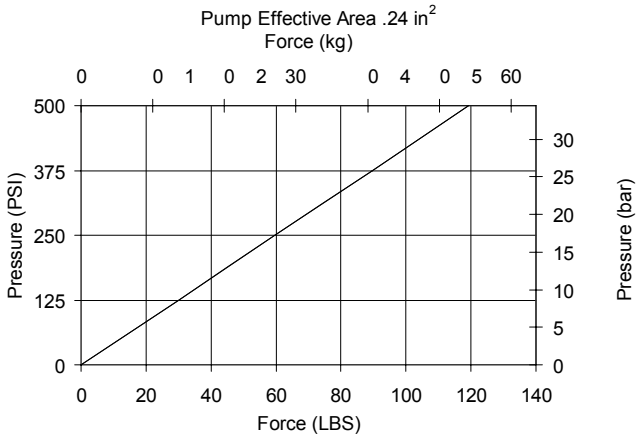
HYDRAULIC SYMBOL



This product is not intended as a load holding device.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	.35 cu in/stroke
Rated Operating Pressure	500 PSI (34 bar)
Typical Internal Leakage (150 SSU)	0-10 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.57 lbs (.26 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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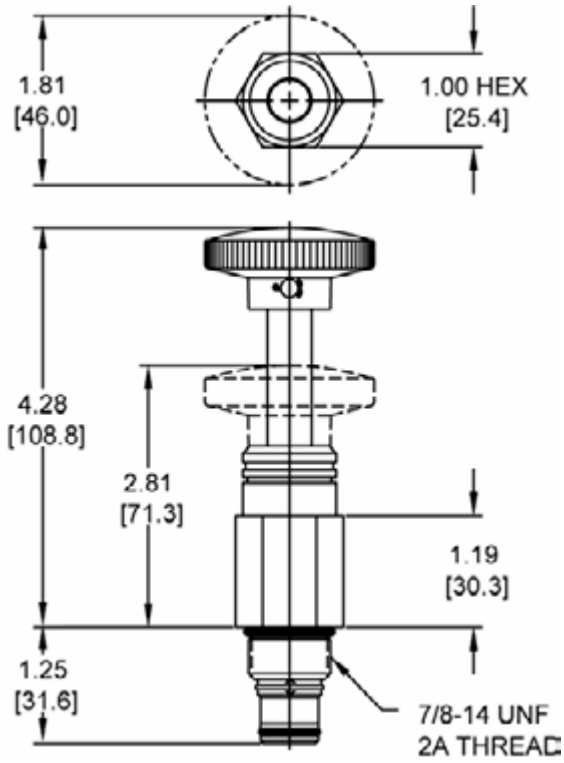
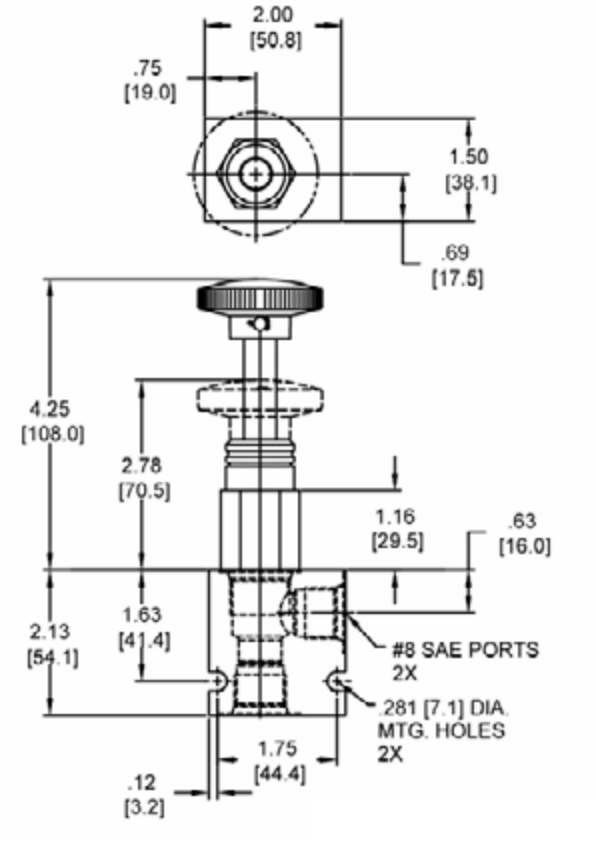
DIMENSIONS





Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPC – _____ **–** _____

OPTIONS		**BODIES**	
Buna, Knob	**0K**	**Blank**	Without Body
Viton, Knob	**VK**	**N**	3/8" NPTF Ports
		S	#8 SAE Ports

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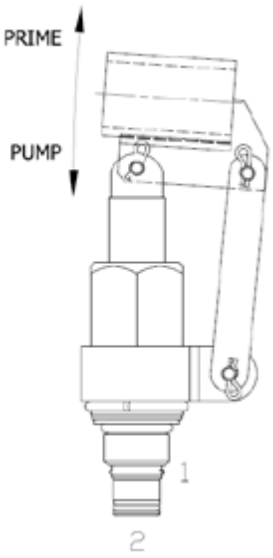
DE-HPD HAND PUMP, PUSH TO PUMP TYPE



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, cartridge type, hand pump.

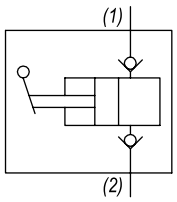
OPERATION

The DE-HPD hand pump when pipe handle is lifted, primes thru port (2) and when pushed provides flow pressure to outlet port (1).

FEATURES

- Large displacement per stroke.
- Industry common cavity.

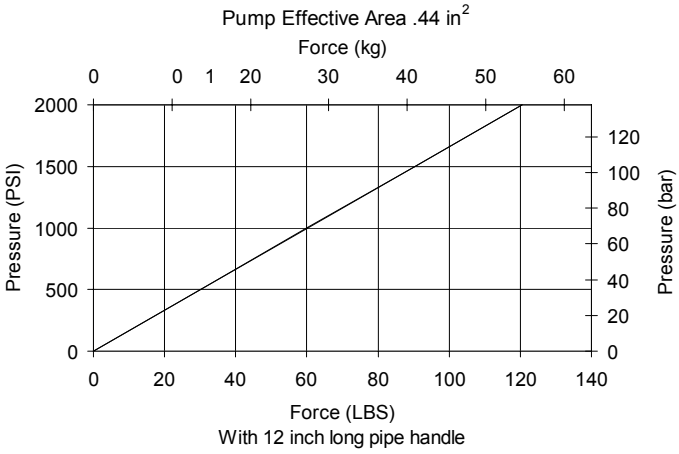
HYDRAULIC SYMBOL



This product is not intended as a load holding device. ***Linkage is not to be removed. 24” handle not supplied.***

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	.39 cu in/stroke
Rated Operating Pressure	2000 PSI (138 bar)
Typical Internal Leakage (150 SSU)	0-10 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	1.5 lbs (.69 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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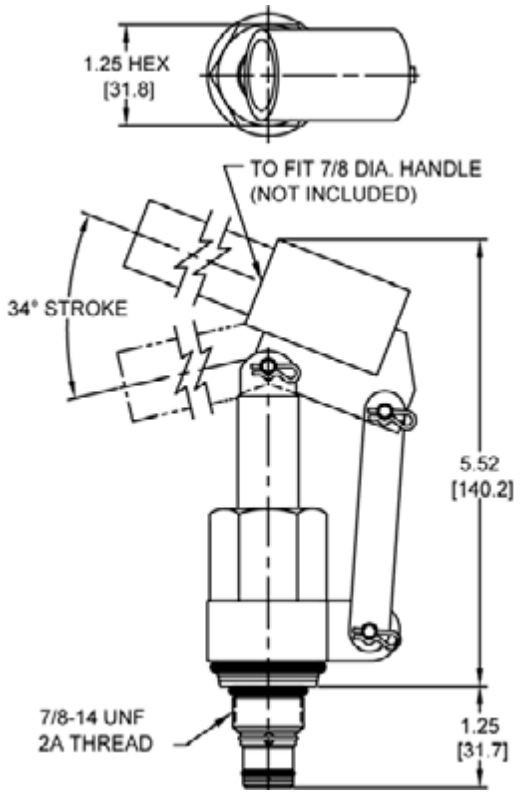
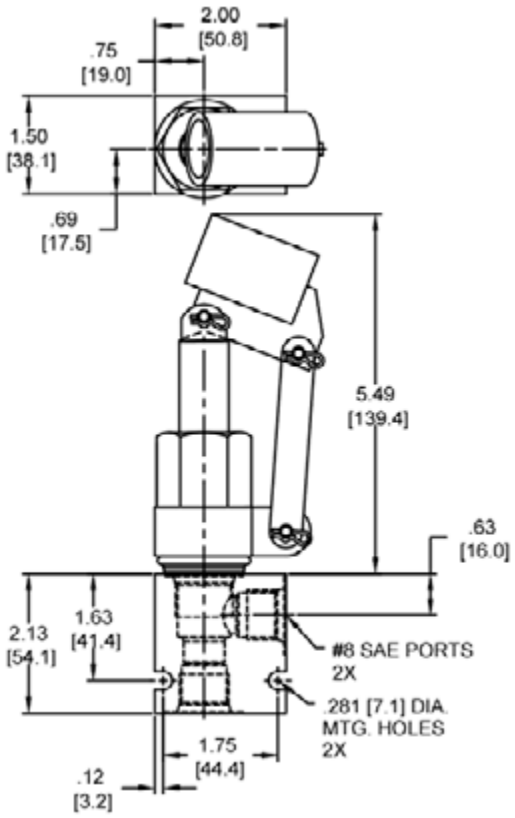
DIMENSIONS





Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPD – _____ **–** _____

OPTIONS		BODIES	
Buna, Linkage	**0L**	**Blank**	Without Body
Viton, Linkage	**VL**	**N**	3/8" NPTF Ports
		S	#8 SAE Ports

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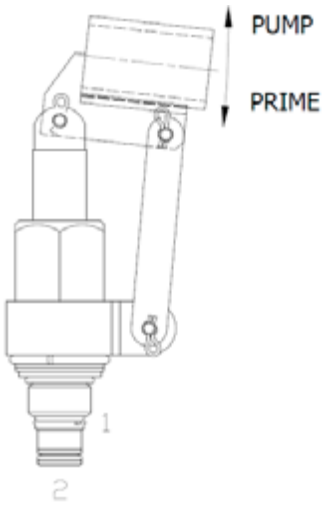
DE-HPF HAND PUMP, PULL TO PUMP TYPE



DESCRIPTION

10 size, 7/8-14 thread, “Delta” series, cartridge type, hand pump.

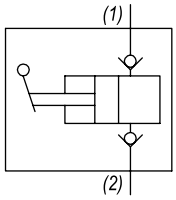
OPERATION

The DE-HPF hand pump when pipe handle is pushed, primes thru port (2) and when lifted provides flow pressure to outlet port (1).

FEATURES

- Large displacement per stroke.
- Industry common cavity.

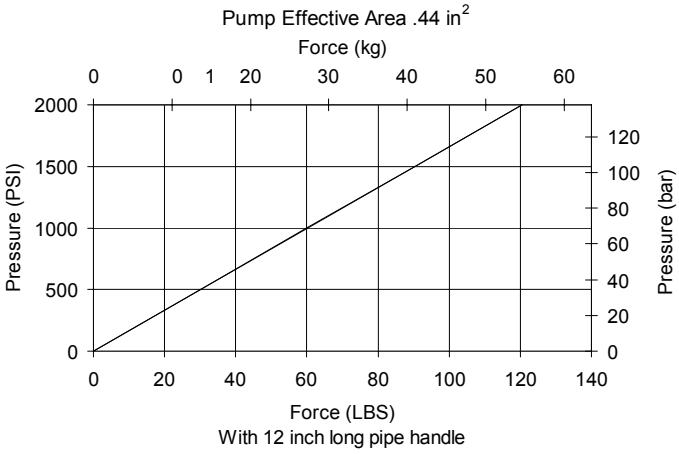
HYDRAULIC SYMBOL



This product is not intended as a load holding device. ***Linkage is not to be removed. 24” handle not supplied.***

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	.39 cu in/stroke
Rated Operating Pressure	2000 PSI (138 bar)
Typical Internal Leakage (150 SSU)	0-10 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	1.5 lbs (.69 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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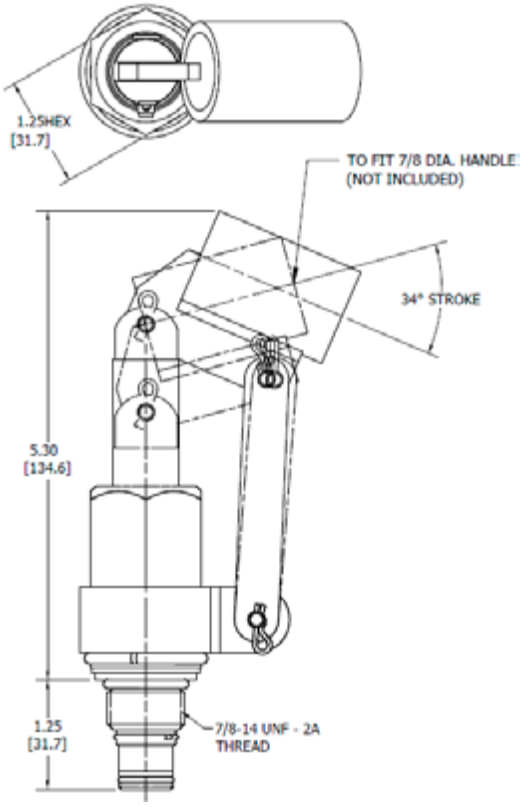
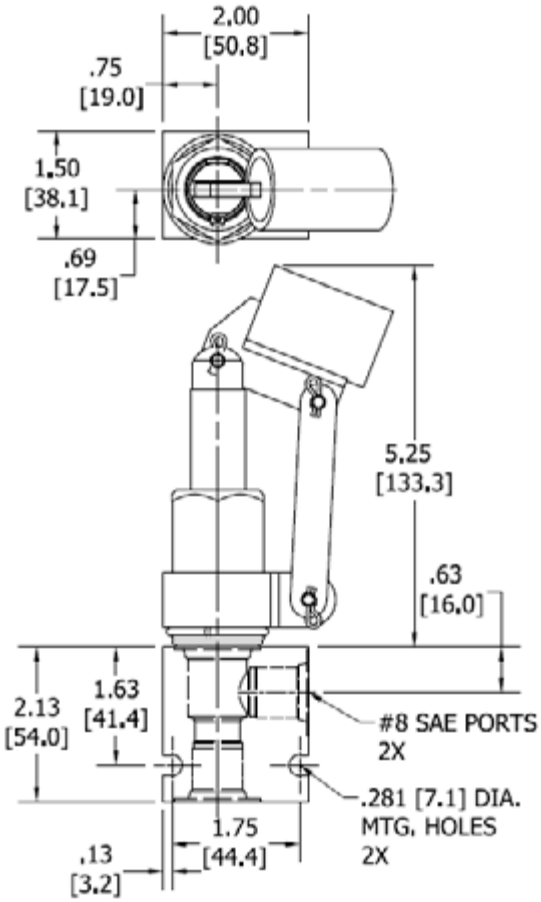
DIMENSIONS





Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPF – _____ **–** _____

OPTIONS		**BODIES**	
Buna, Linkage	**0L**	**Blank**	Without Body
Viton, Linkage	**VL**	**N**	3/8" NPTF Ports
		S	#8 SAE Ports

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