

MECHANICAL DIRECTIONAL CONTROLS



DIRECT ACTING CHECK VALVES MD3

PILOT TO OPEN AND DOUBLE PO CHECK VALVES MD35

MANUAL VALVES MD55

PILOT TO SHIFT VALVES MD77

SHUTTLE VALVES MD95

ROTARY VALVES MD103

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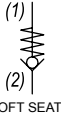


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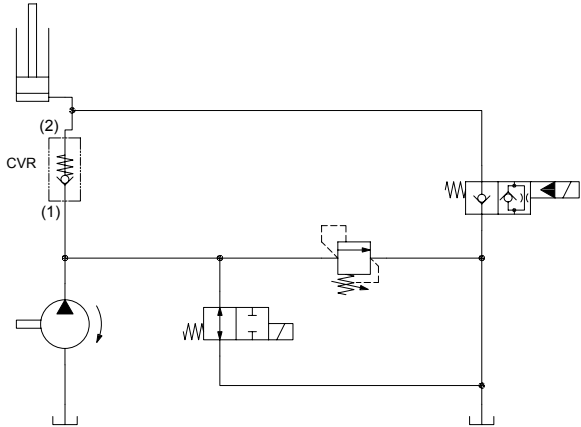
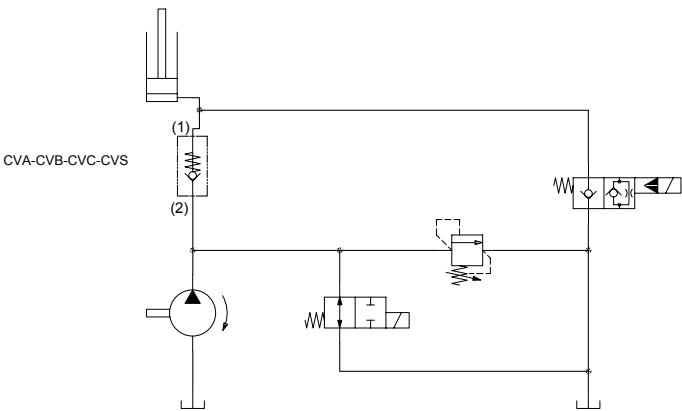
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DIRECT ACTING CHECK VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	8	3000	30	207	5/8-18	IM-CVA	MD4
	5	3500	19	241	5/8-18	MA-CVA	MD6
	10	4350	38	300	3/4-16	HB-CVA	MD8
	15	3500	57	241	7/8-14	DE-CVA	MD10
	15	5000	57	345	7/8-14	HE-CVA	MD12
	35	5000	132	345	1 1/16-12	HT-CVA	MD14
	40	3500	151	241	1 5/16-12	SJ-CVA	MD16
	10	3500	38	241	7/8-14	DE-CVB	MD18
	10	3500	38	241	3/4-16	PB-CVC	MD20
	8	3500	30	241	7/8-14	DE-CVC	MD22
	15	3500	57	241	7/8-14	DE-CVR	MD24
	35	5000	132	345	1 1/16-12	HT-CVR	MD26
	2.5	1500	9.5	103	5/8-18	MA-CVS	MD28
	5	3500	19	241	3/4-16	PB-CVS	MD30
	10	1000	38	70	7/8-14	DE-CVS	MD32

TYPICAL SCHEMATIC

Typical application for the CVA, CVB, CVC, CVR, and CVS is load holding in a lift, check, or dump circuit.



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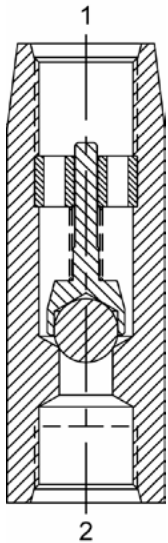


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IM-CVA INLINE CHECK VALVE



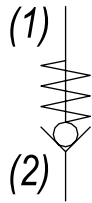
DESCRIPTION

#8 SAE, inline check valve.

OPERATION

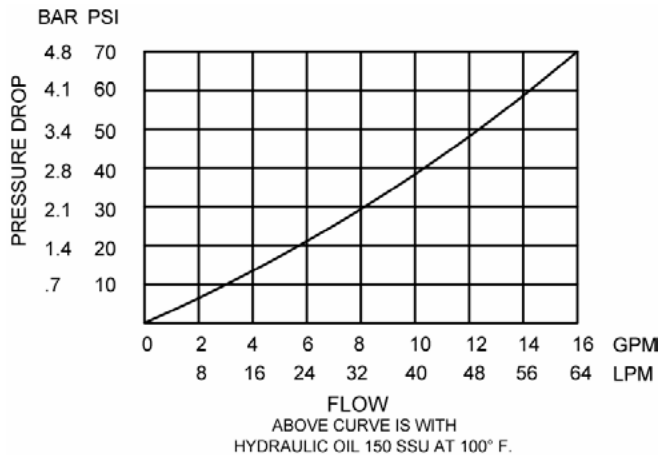
The IM-CVA allows flow from (2) to (1), while normally blocking oil flow from (1) to (2). The valve has a guided check ball, which is spring-biased closed until sufficient pressure is applied at (2) to open to (1).

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 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	.53 lbs (.24 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid

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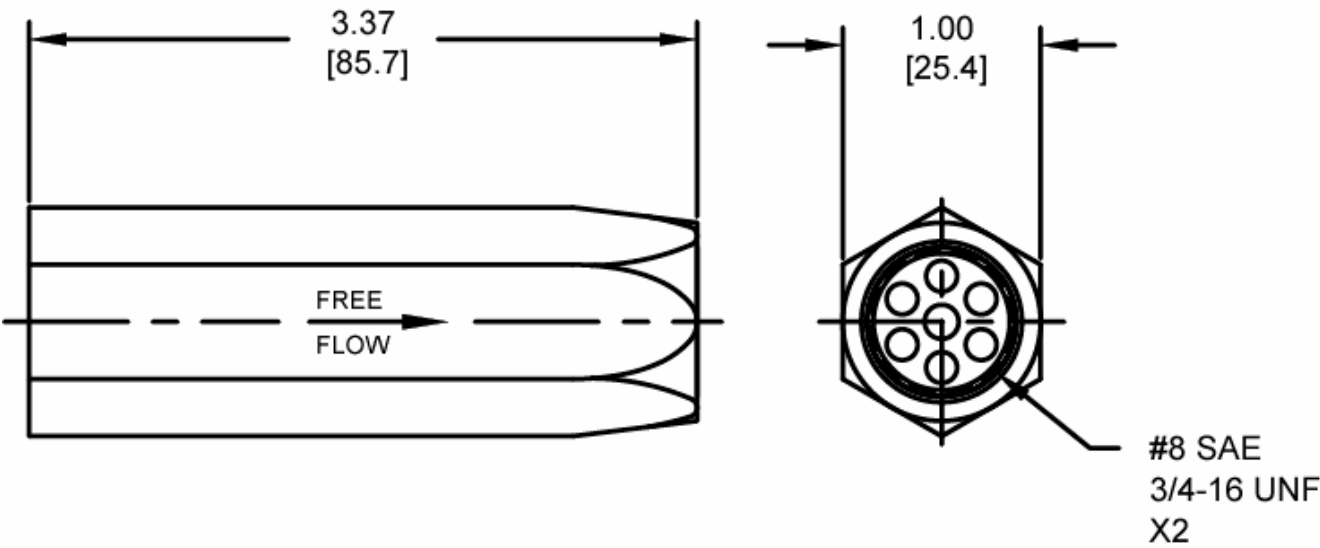


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DIMENSIONS



ORDERING INFORMATION

IM-CVA		-	-
<u>OPTIONS</u>			<u>CRACK PRESSURE</u>
Buna Standard	00	0005	5 PSI
		0025	25 PSI
		0050	50 PSI
		0075	75 PSI

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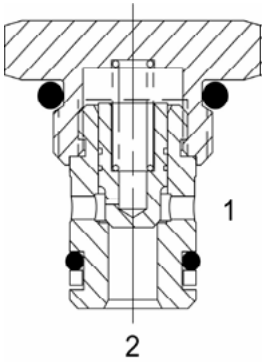


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MA-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, direct acting check valve.

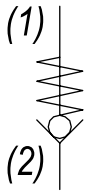
OPERATION

The MA-CVA allows flow passage from (2) to (1), while normally blocking oil flow from (1) to (2). The cartridge has a fully guided poppet, which is spring-biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

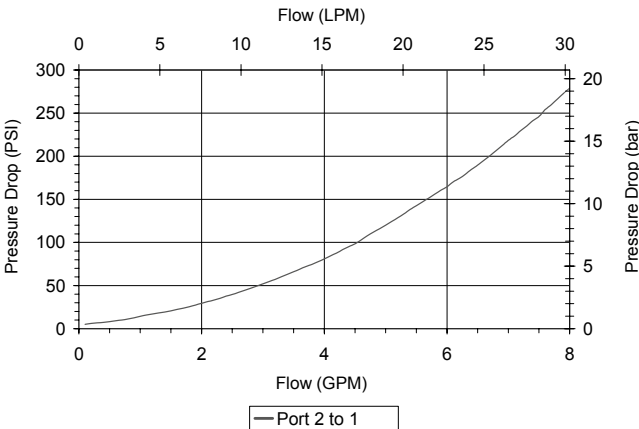
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 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	.08 lbs (.03 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

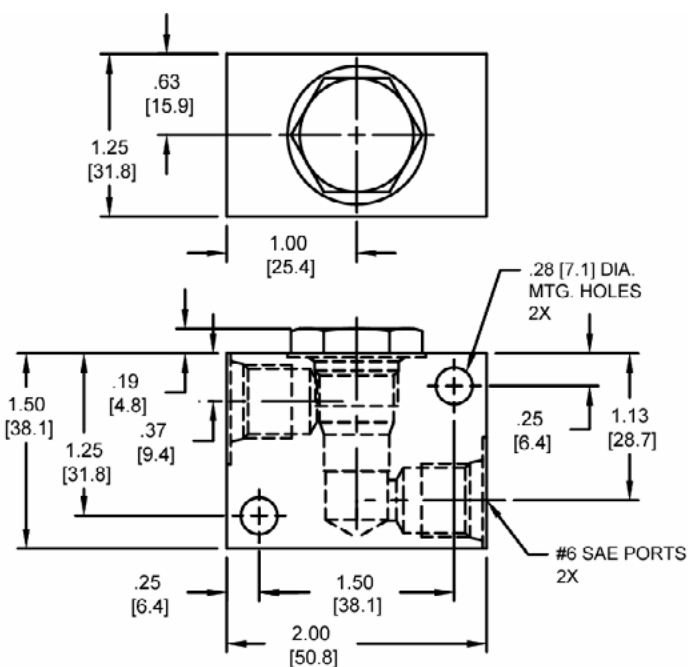
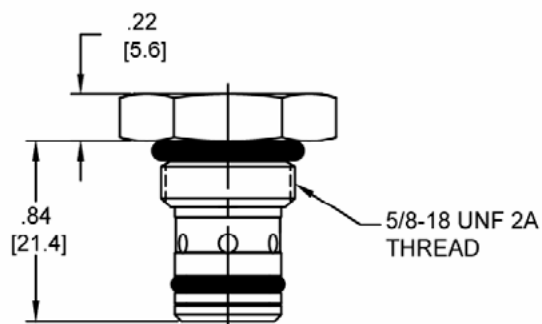
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Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

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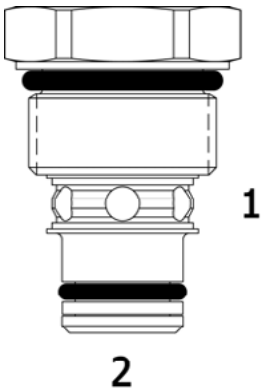


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HB-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

“High Pressure” 8 size, 3/4-16 thread, “Power” series, direct acting check valve.

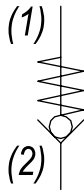
OPERATION

The HB-CVA allows free flow passage from (2) to (1), and blocks flow from (1) to (2). The cartridge has a fully guided check poppet, which is spring-biased closed until sufficient pressure is applied at (2) to open to (1).

FEATURES

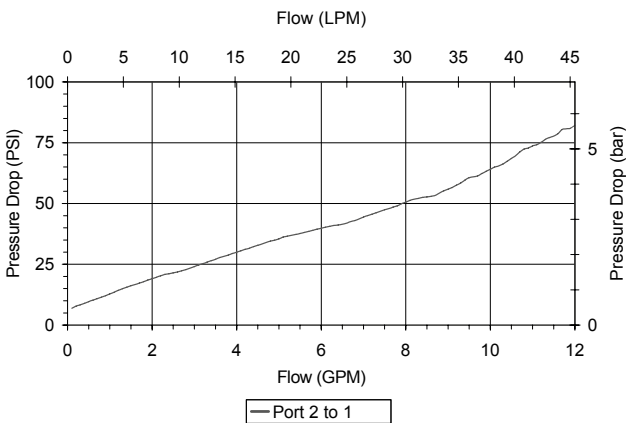
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	4350 PSI (300 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	.10 lbs (.05 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	35 ft-lbs (47 Nm)
Cavity	POWER 2W
Cavity Form Tool (Finishing)	40500005
Seal Kit	21191100

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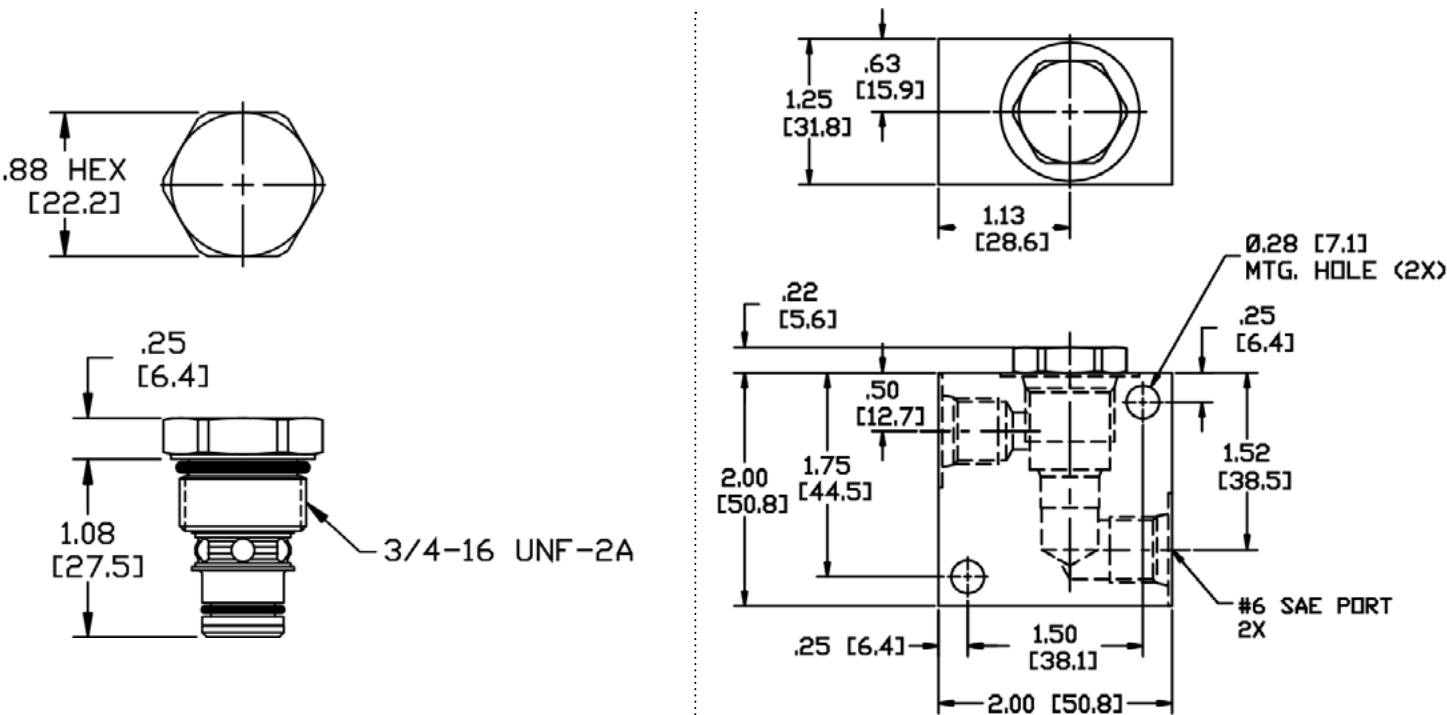


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DIMENSIONS



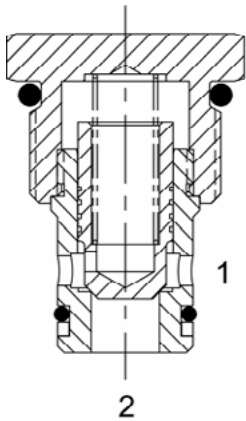
Body Weight: .40 lbs (.18 kg)

ORDERING INFORMATION

HB-CVA		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N
					S
					CRACK RESSURE
					0005 5 PSI
					0010 10 PSI
					0030 30 PSI
					0070 70 PSI
					± 10%

Note: Aluminum, NOT durability rated for 4350 PSI. Consult factory for options.

DE-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, direct acting check valve.

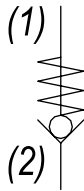
OPERATION

The DE-CVA allows free flow passage from (2) to (1), and blocks flow from (1) to (2). The cartridge has a fully guided check poppet, which is spring-biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.

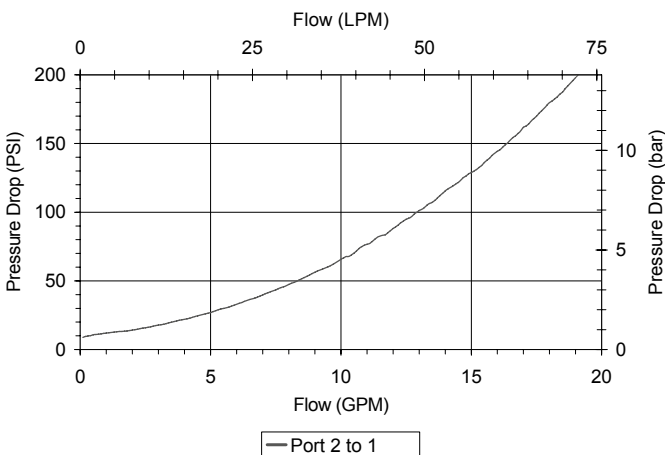
HYDRAULIC SYMBOL



Drop-In pilot pistons can be used (except the 135 and 150 PSI version) to create P.O. Check Valve Function, see the Hydraulic Integrated Circuits section for details.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 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	.15 lbs (.07 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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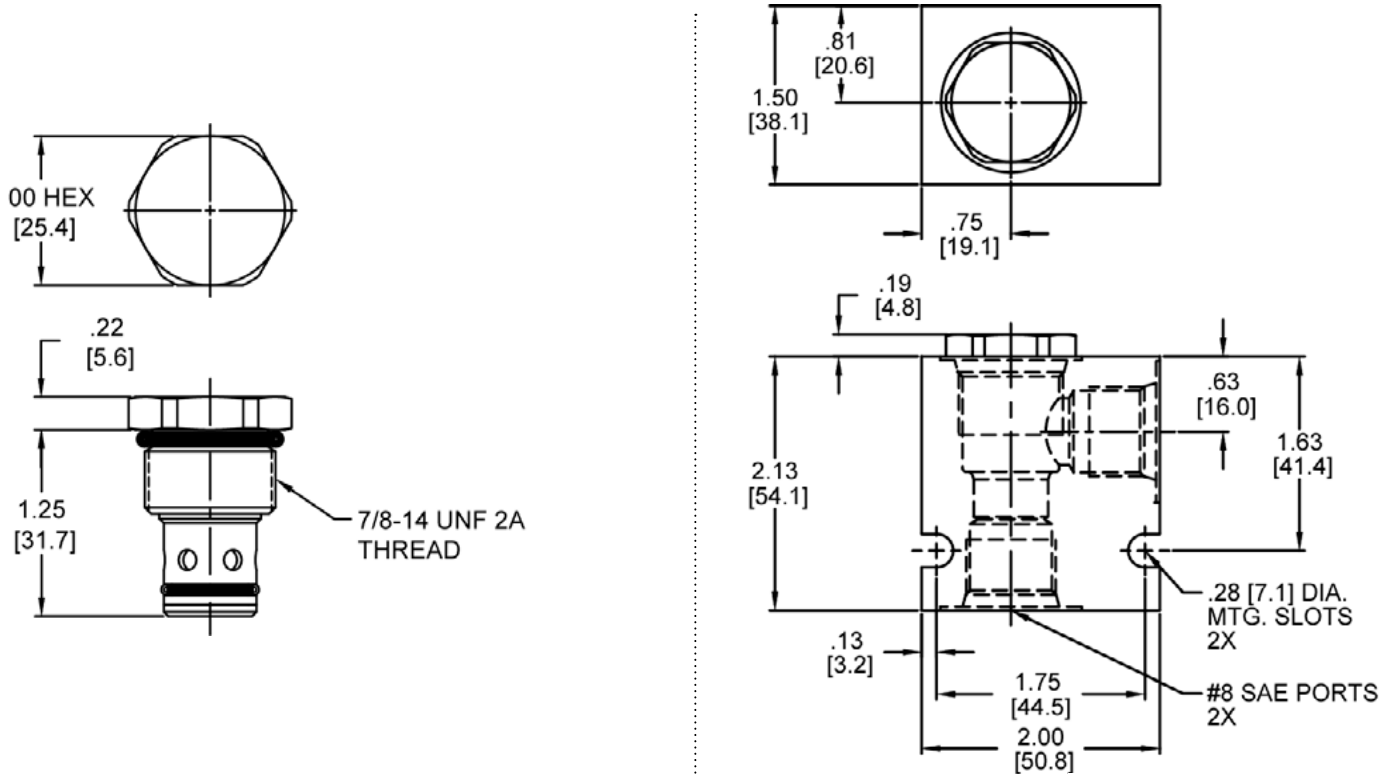


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-CVA		-	-	-	-
OPTIONS					
Buna Standard	00				
Viton Standard	V0				
BODIES					
Blank					
N	3/8" NPTF Ports				
S	#8 SAE Ports				
CRACK RESSURE					
0010	10 PSI				
0035	35 PSI				
0070	70 PSI				
0100	100 PSI				
0135	135 PSI				
0150	150 PSI				
	± 10%				

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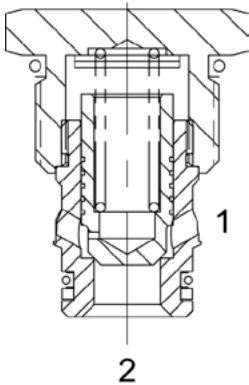


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HE-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

“High Pressure” 10 size, 7/8-14 thread, “Delta” series, direct acting check valve.

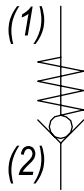
OPERATION

The HE-CVA allows free flow passage from (2) to (1), and blocks flow from (1) to (2). The cartridge has a fully guided check poppet, which is spring-biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.

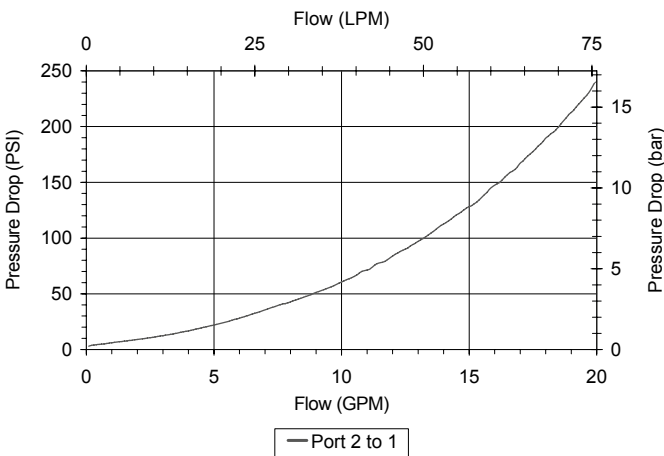
HYDRAULIC SYMBOL



Drop-In pilot pistons can be used (except the 135 and 150 PSI version) to create P.O. Check Valve Function, see the Hydraulic Integrated Circuits section for details.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	5000 PSI (345 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	1.23 lbs (.56 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	50 ft-lbs (67.8 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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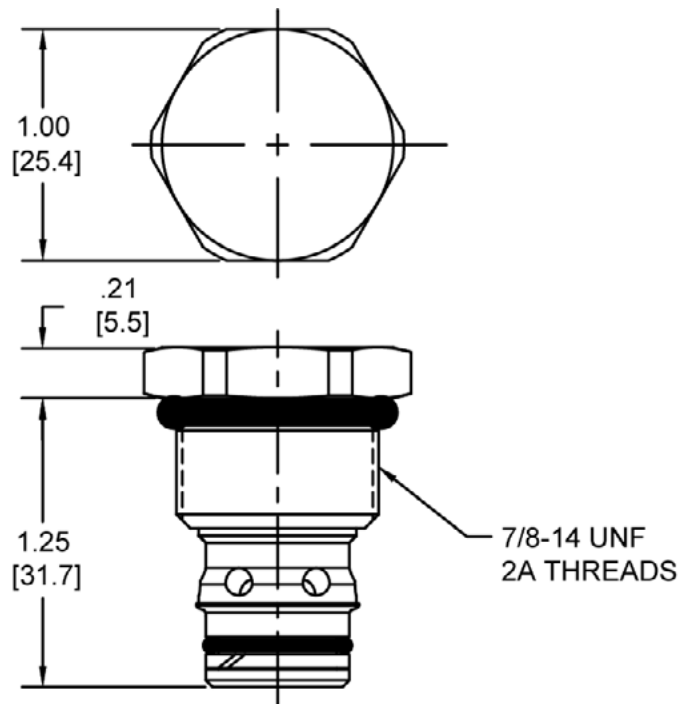


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DIMENSIONS



ORDERING INFORMATION

HE-CVA	-	-	-	-
OPTIONS				BODIES
Buna Standard	00			Consult Factory
Viton Standard	V0			
			CRACK RESSURE	
			0005	5 PSI
			0010	10 PSI
			0020	20 PSI
			0035	35 PSI
			0070	70 PSI
			0090	90 PSI
			0135	135 PSI
			0150	150 PSI
				± 10%

WARNING
DO NOT USE ALUMINUM BODY
HIGH PRESSURE (5000 PSI) PRODUCT

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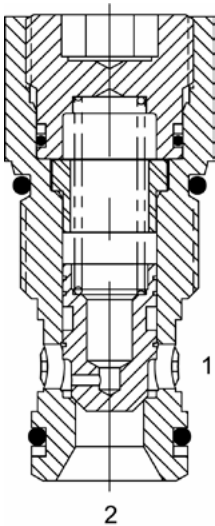


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HT-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

“High Pressure” 12 size, 1 1/16-12 thread, “Tecnord” series, direct acting check valve.

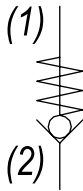
OPERATION

The HT-CVA allows flow passage from (2) to (1), while normally blocking oil flow from (1) to (2). The cartridge has a fully guided poppet, which is spring biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

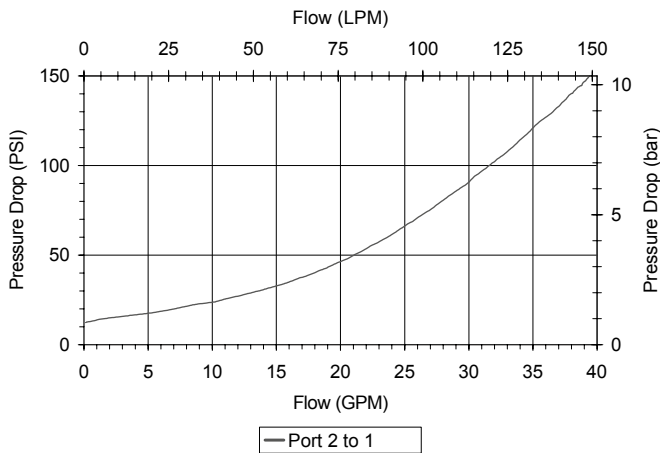
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	35 GPM (132 LTR/M)
Rated Operating Pressure	5000 PSI (345 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	.55 lbs (.25 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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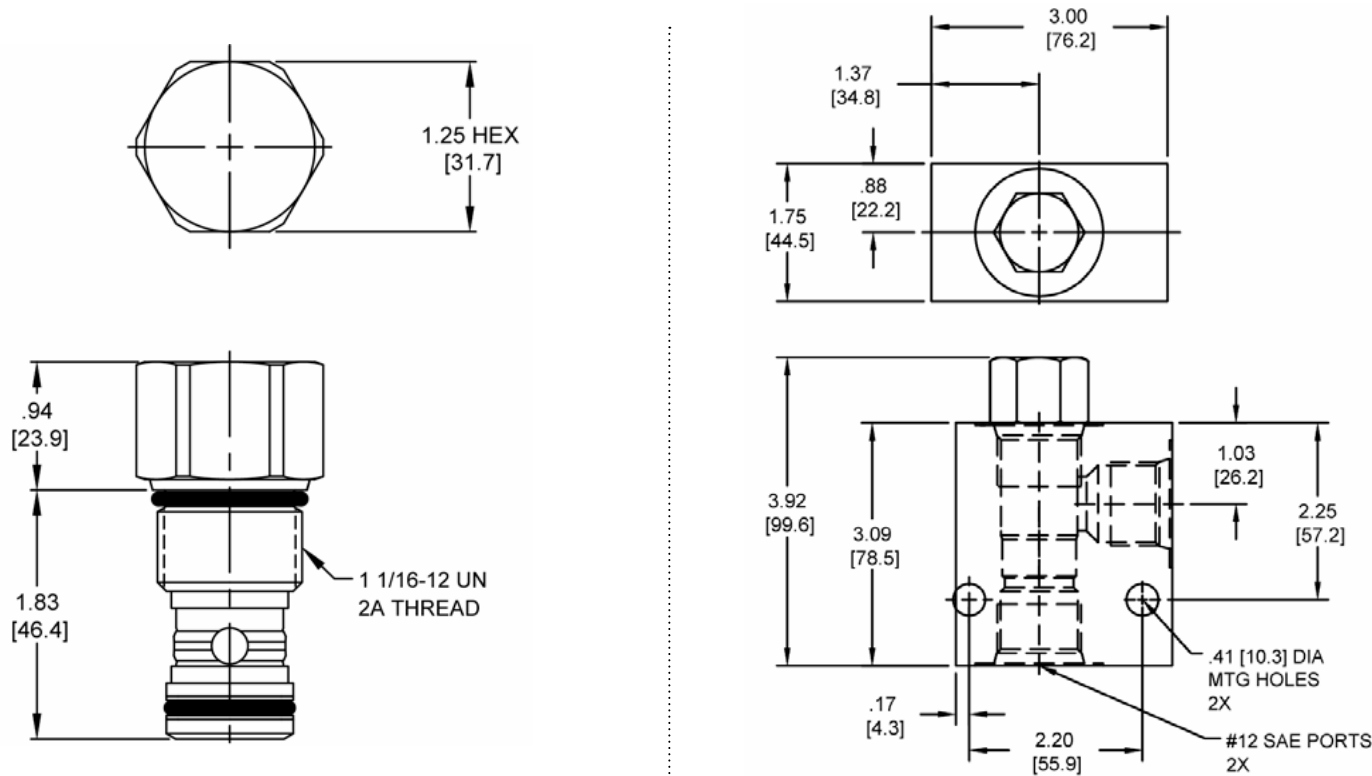


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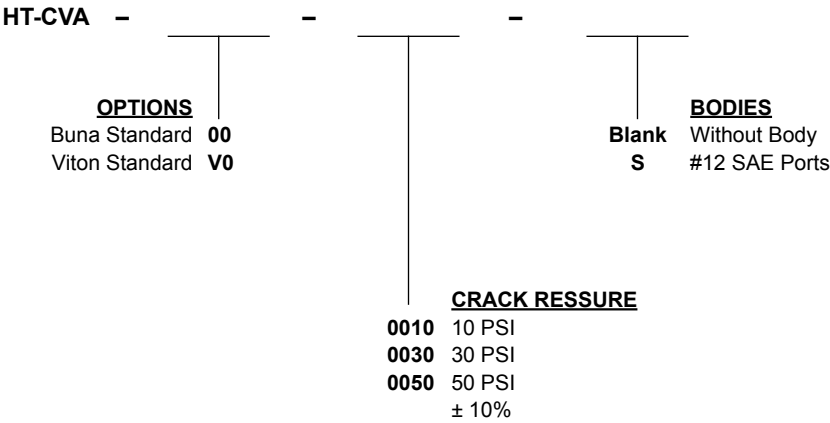
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DIMENSIONS



Body Weight: 3.71 lbs (1.68 kg)

ORDERING INFORMATION



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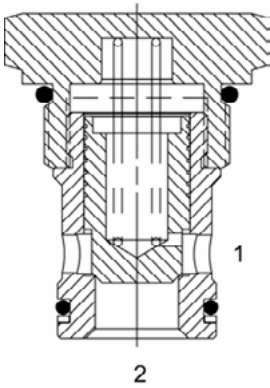


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SJ-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, direct acting check valve.

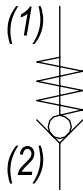
OPERATION

The SJ-CVA allows free flow from (2) to (1) and blocks flow from (1) to (2). The cartridge has a fully guided poppet, which is spring-biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

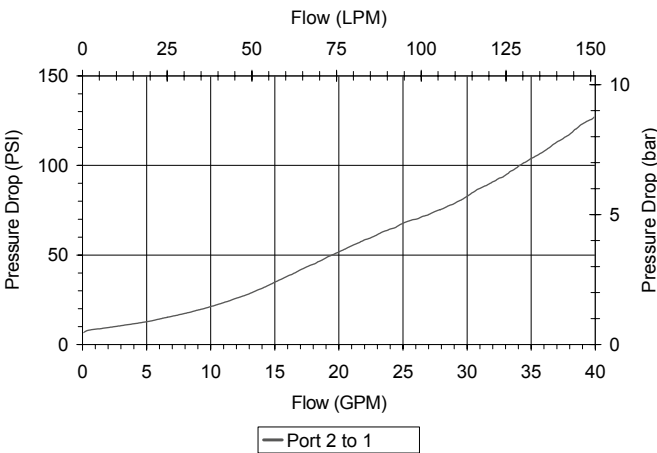
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 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	.67 lbs (.30 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

WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

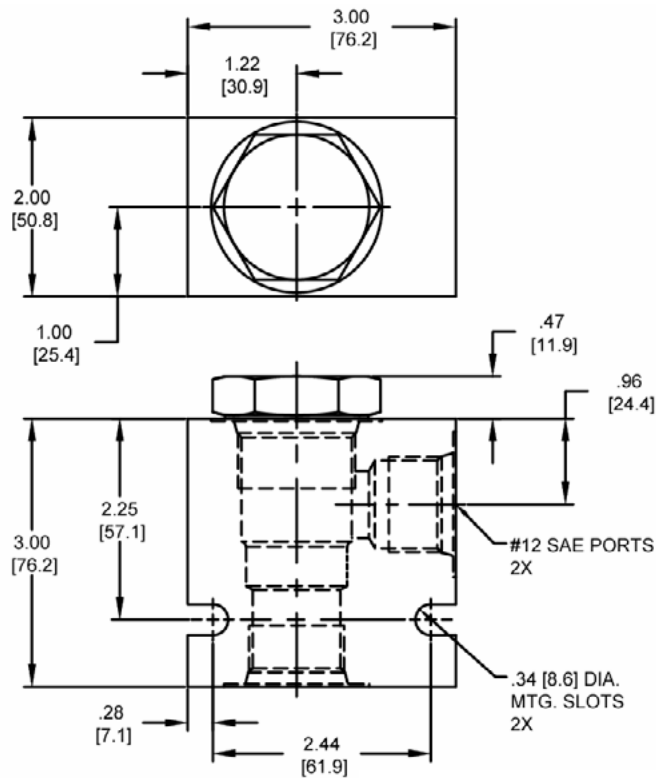
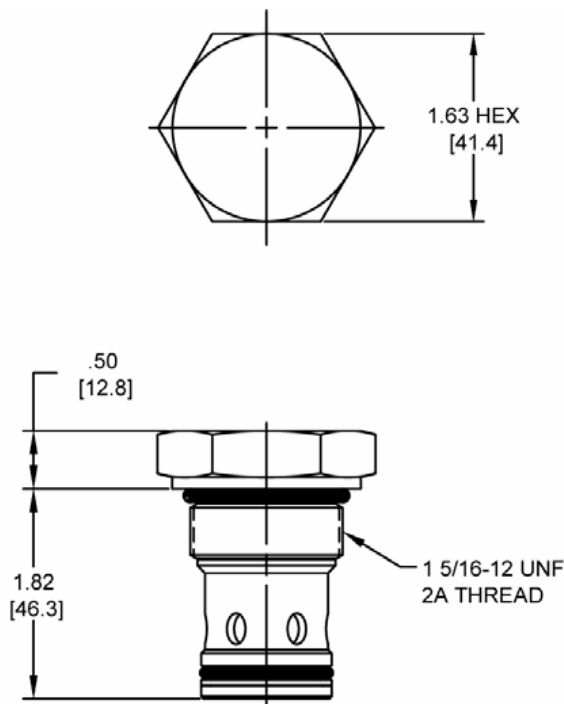


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DIMENSIONS



Body Weight: 1.29 lbs (.58 kg)

ORDERING INFORMATION

SJ-CVA		-	-	-	-
		OPTIONS		BODIES	
		Buna Standard		Blank	
		Viton Standard		N	
		00		S	
		V0			
				CRACK RESSURE	
				0005	
				0010	
				0030	
				0050	
				± 10%	

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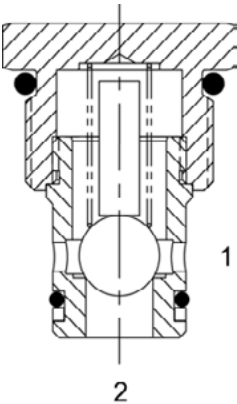


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DE-CVB DIRECT ACTING CHECK VALVE, BALL



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, direct acting, check valve.

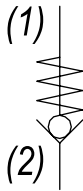
OPERATION

The DE-CVB allows free flow passage from (2) to (1), and blocks flow from (1) to (2). The cartridge has a hardened ball, which is spring-biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

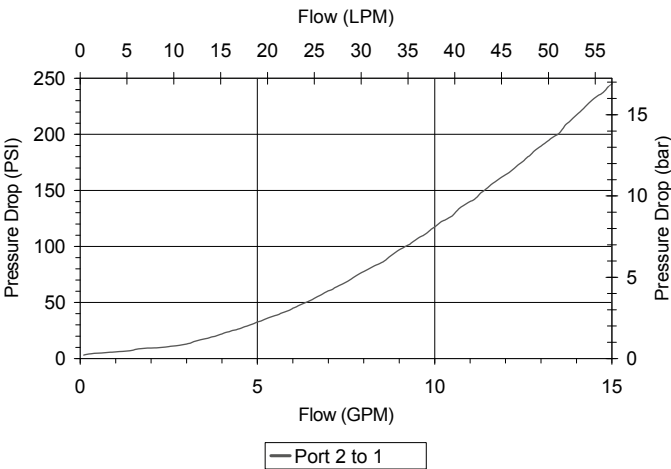
- Hardened seat for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
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	.14 lbs (.06 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	21191000

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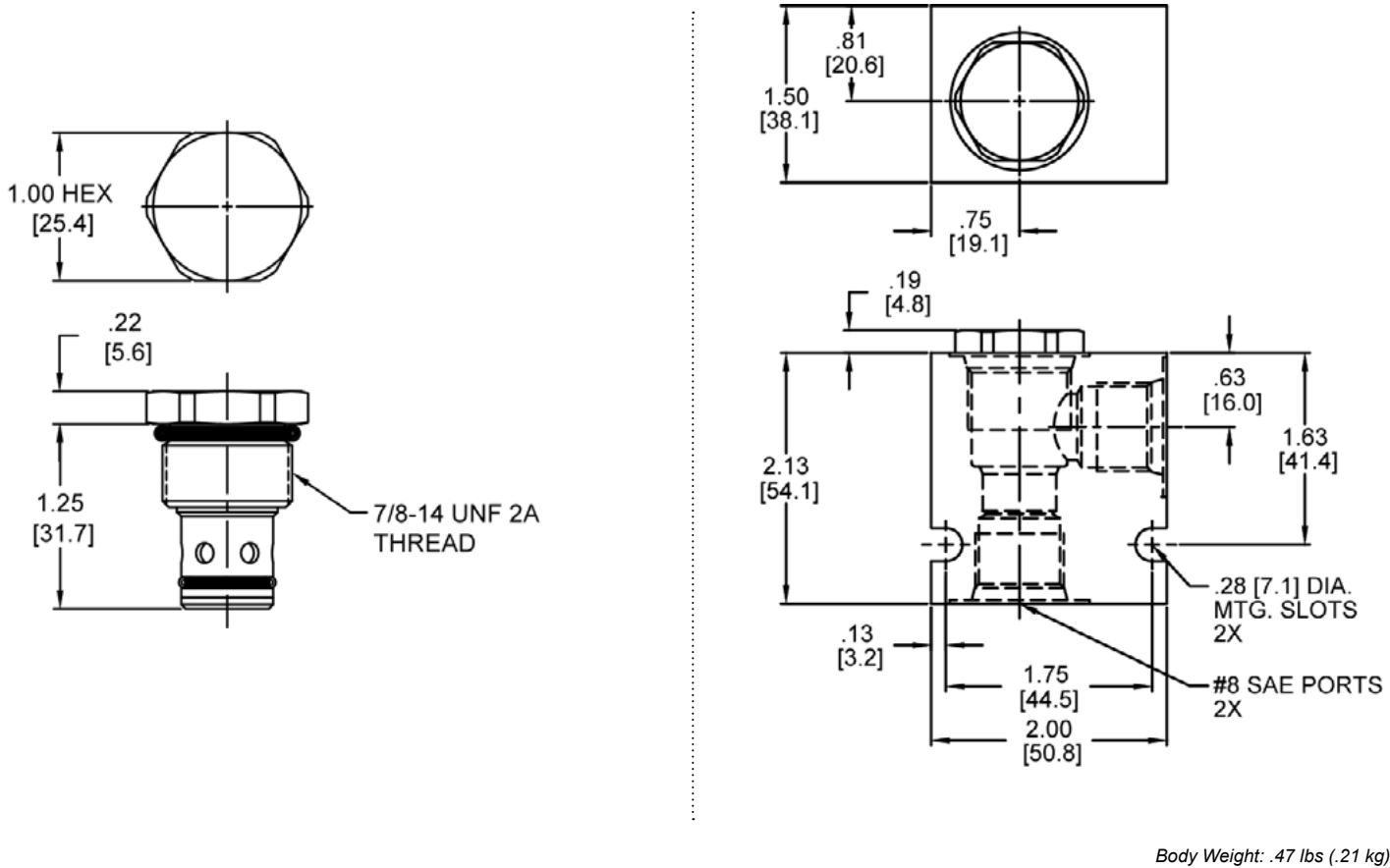


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DIMENSIONS



ORDERING INFORMATION

DE-CVB	-	-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			N
				S
				CRACK RESSURE
			0005	5 PSI
			0015	15 PSI
				± 10%

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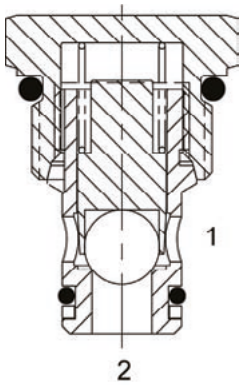


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PB-CVC DIRECT ACTING CHECK VALVE, GUIDED BALL



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, direct acting check valve.

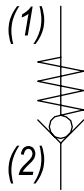
OPERATION

The PB-CVC allows free flow passage from (2) to (1), and blocks flow from (1) to (2). The cartridge has a fully guided hardened ball, which is spring-biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

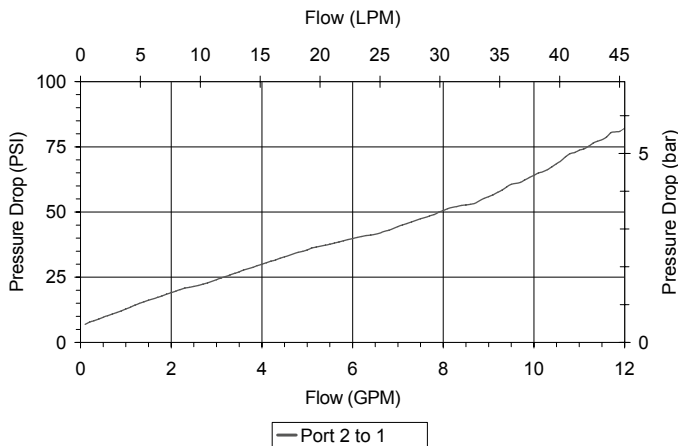
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided ball assembly.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
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	.10 lbs (.05 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

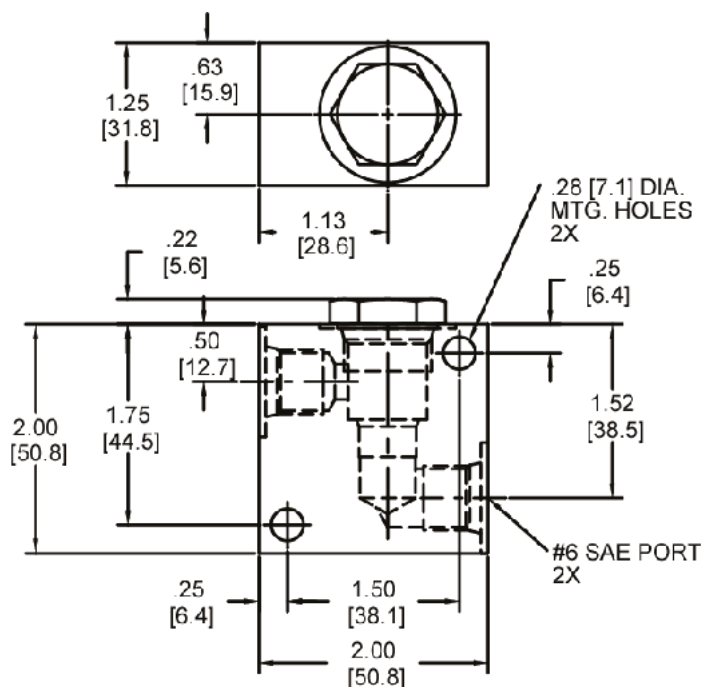
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ORDERING INFORMATION

0005	5 PSI
0020	20 PSI
0030	30 PSI
0050	50 PSI
	± 10%

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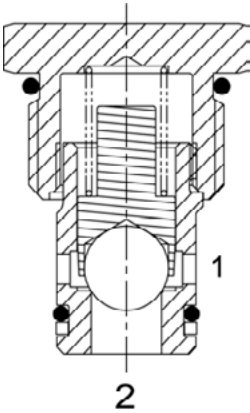
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Company**

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DE-CVC DIRECT ACTING CHECK VALVE, GUIDED BALL



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, direct acting check valve.

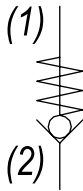
OPERATION

The DE-CVC allows free flow passage from (2) to (1), and blocks flow from (1) to (2). The cartridge has a fully guided hardened ball, which is spring-biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

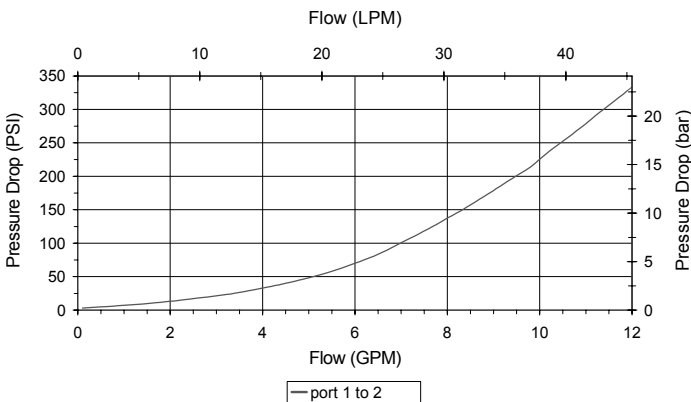
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided ball assembly.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 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	.15 lbs (.07 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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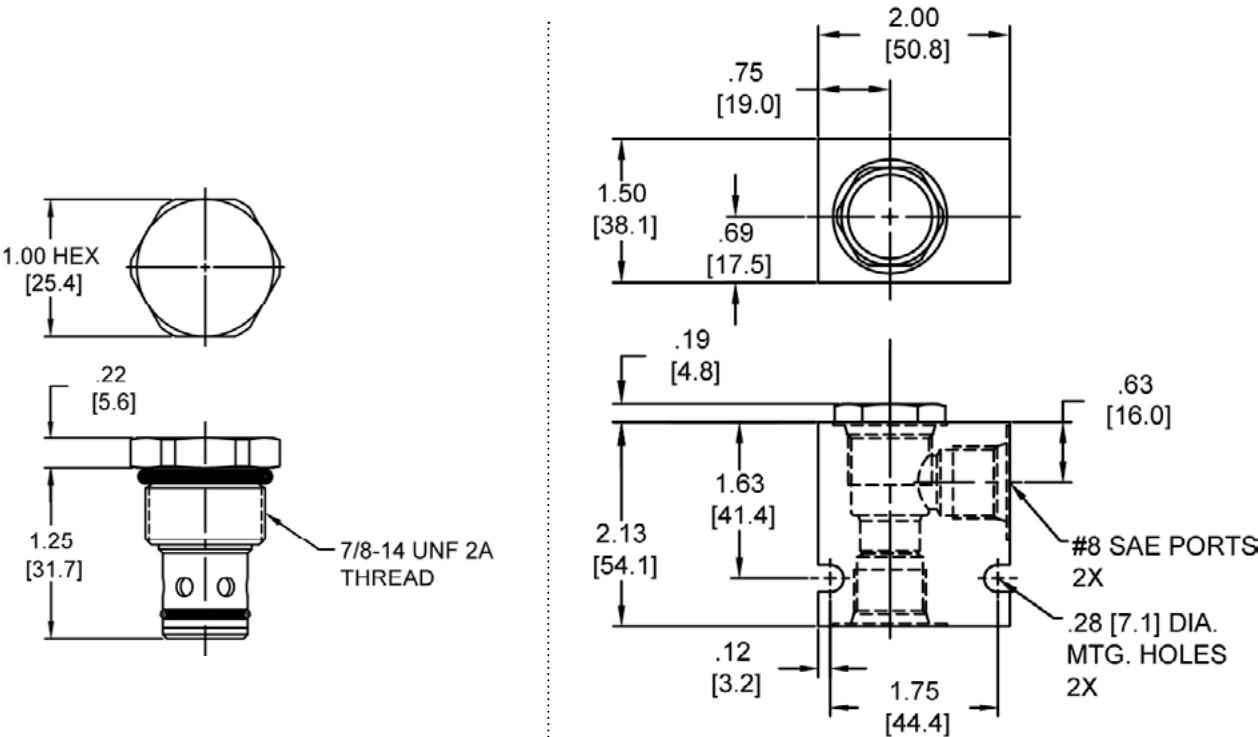


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-CVC	-	-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			N
				S
				Without Body
				3/8" NPTF Ports
				#8 SAE Ports
				CRACK RESSURE
				0003 3 PSI
				0005 5 PSI
				0010 10 PSI
				0020 20 PSI
				0035 35 PSI
				0050 50 PSI
				0075 75 PSI
				0095 95 PSI
				± 10%

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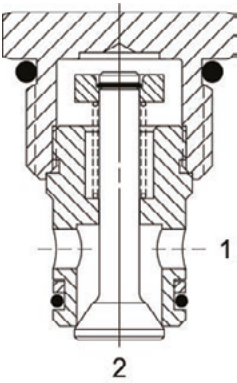


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DE-CVR REVERSE FLOW CHECK VALVE, POPPET



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, reverse flow check valve.

OPERATION

The DE-CVR allows free flow (1) to (2) and blocks flow from (2) to (1).

FEATURES

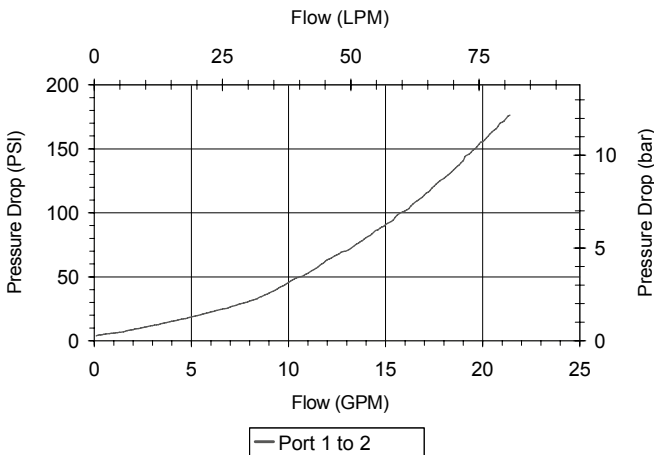
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 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	.15 lbs (.07 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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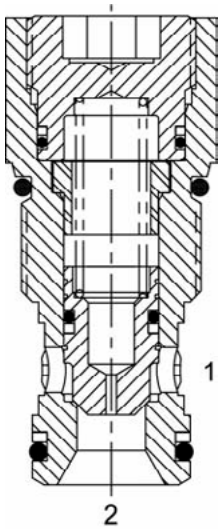


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HT-CVR REVERSE FLOW CHECK VALVE, POPPET



DESCRIPTION

“High Pressure” 12 size, 1 1/16-12 thread, “Tecnord” series, reverse flow check valve.

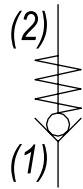
OPERATION

The HT-CVR allows free flow from (1) to (2) and blocks flow from (2) to (1). The cartridge has a fully guided poppet, which is spring biased closed, until sufficient pressure is applied at (1) to open to (2).

FEATURES

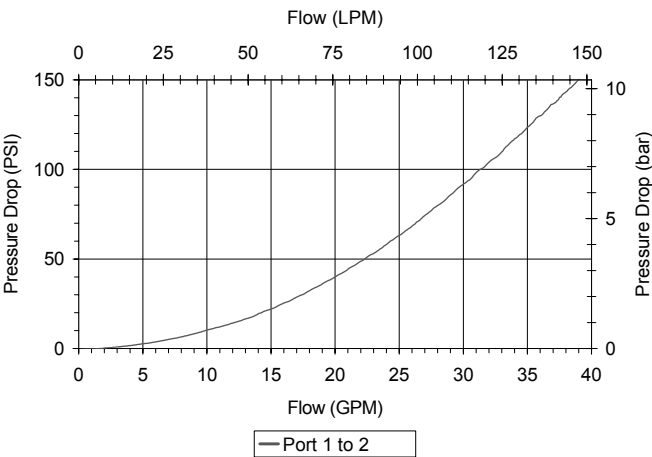
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	35 GPM (132 LPM)
Rated Operating Pressure	5000 PSI (345 bar)
Typical Internal Leakage (150 SSU)	0-8 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	.55 lbs (.25 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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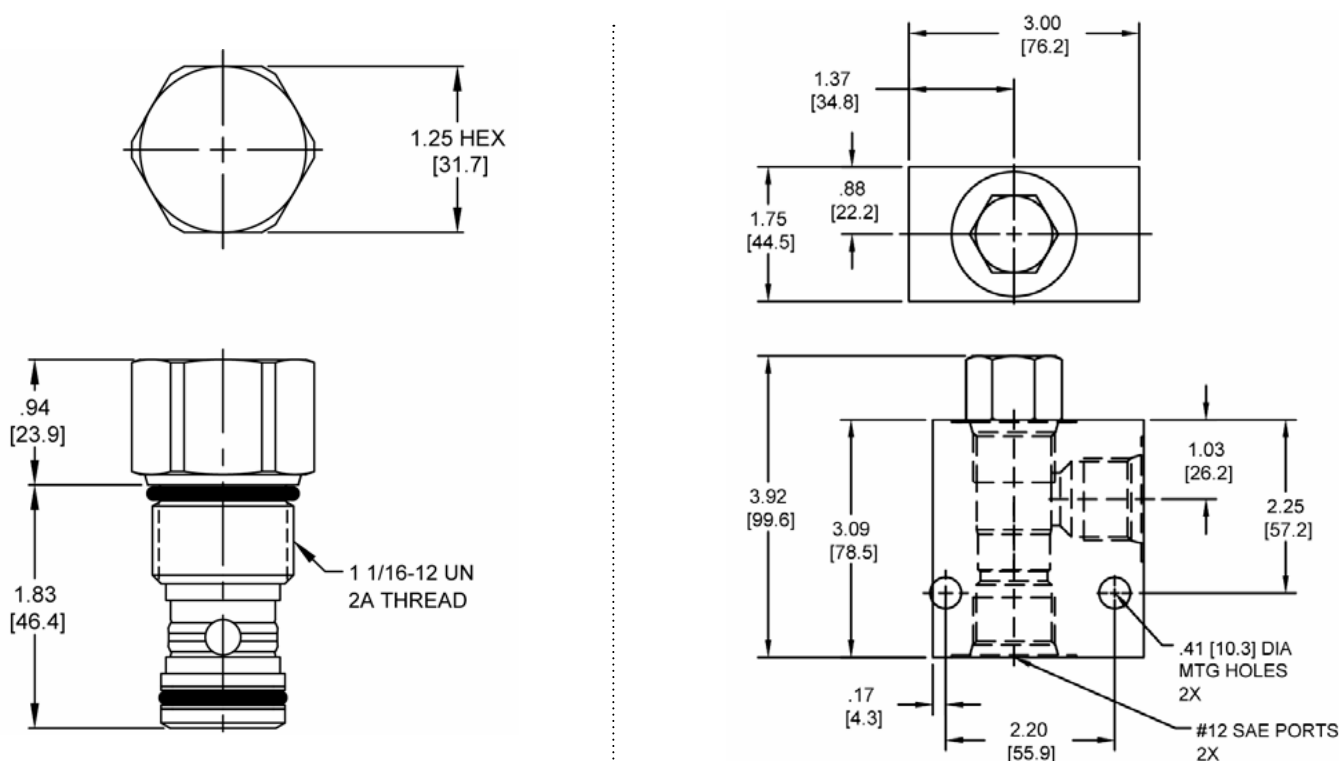


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DIMENSIONS



Body Weight: 3.71 lbs (1.68 kg)

ORDERING INFORMATION

HT-CVR

-	-	-
<p><u>OPTIONS</u></p> <p>Buna Standard 00</p> <p>Viton Standard V0</p>	<p> </p> <p>-----</p> <p> </p>	<p><u>BODIES</u></p> <p>Blank Without Body</p> <p>S #12 SAE Ports</p>
	<p> </p>	
	<p><u>CRACK RESSURE</u></p> <p>0010 10 PSI</p> <p>0030 30 PSI</p> <p>0050 50 PSI</p> <p> ± 10%</p>	

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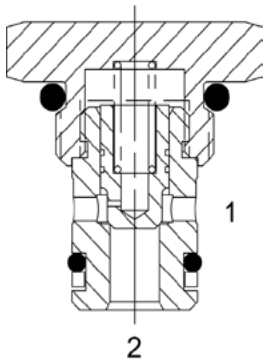


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MA-CVS DIRECT ACTING CHECK VALVE, SOFT SEAT, POPPET



DESCRIPTION

7 size, 5/8-18 Thread, "Mini" series, direct acting check valve, soft seat, poppet.

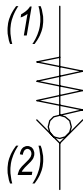
OPERATION

The MA-CVS allows free flow (2) to (1) and blocks flow from (1) to (2). The cartridge has a fully guided poppet, which is spring-biased closed, until sufficient pressure is applied at (2) to open (1).

FEATURES

- Soft seat for ultra low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet.

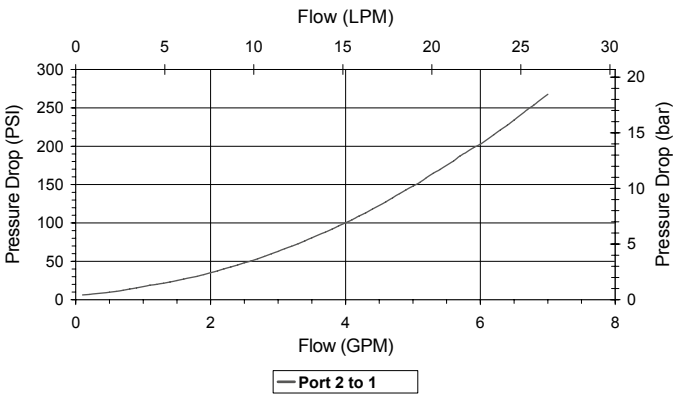
HYDRAULIC SYMBOL



Drop-in Pilot Pistons are NOT RECOMMENDED for this valve.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	2.5 GPM (9.5 LPM)
Rated Operating Pressure	1500 PSI (103 bar)
Typical Internal Leakage (150 SSU)	Negligible
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-32° to 120°F (0° to 49°C)
Weight	.08 lbs (.03 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

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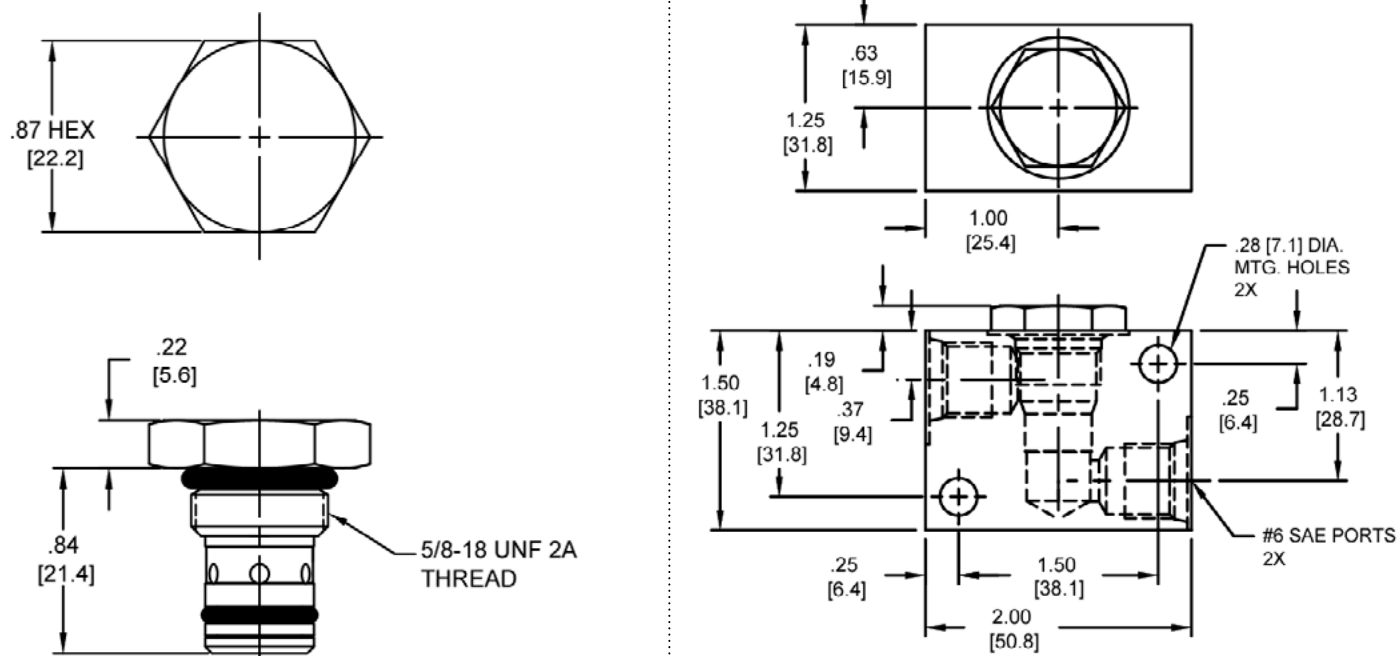


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DIMENSIONS



Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

MA-CVS		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N
					S
					CRACK RESSURE
				0005	5 PSI
				0020	20 PSI
					± 10%

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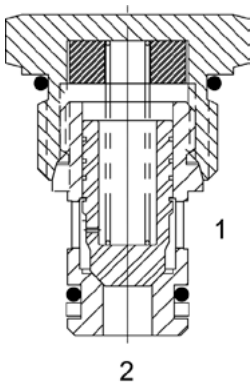


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PB-CVS DIRECT ACTING CHECK VALVE, SOFT SEAT, POPPET



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, direct acting check valve, soft seat, poppet.

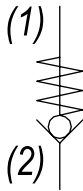
OPERATION

The PB-CVS allows free flow passage from (2) to (1), and blocks flow from (1) to (2). The cartridge has a fully guided poppet, which is spring-biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

- Soft seat for ultra low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.

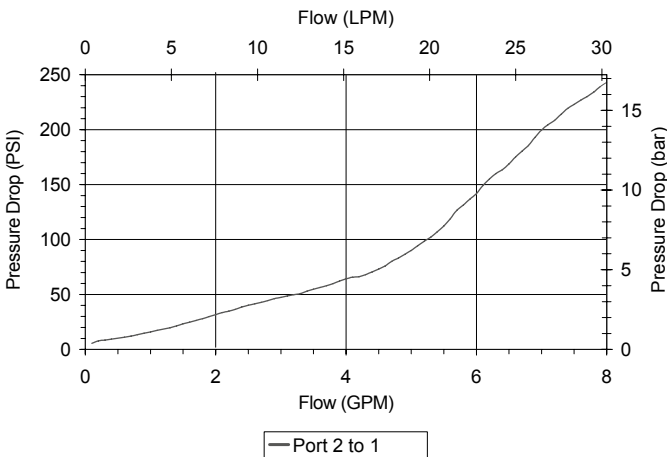
HYDRAULIC SYMBOL



Drop-in Pilot Pistons are NOT RECOMMENDED for this valve.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	Negligible
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-32° to 120°F (0° to 49°C)
Weight	.09 lbs (.04 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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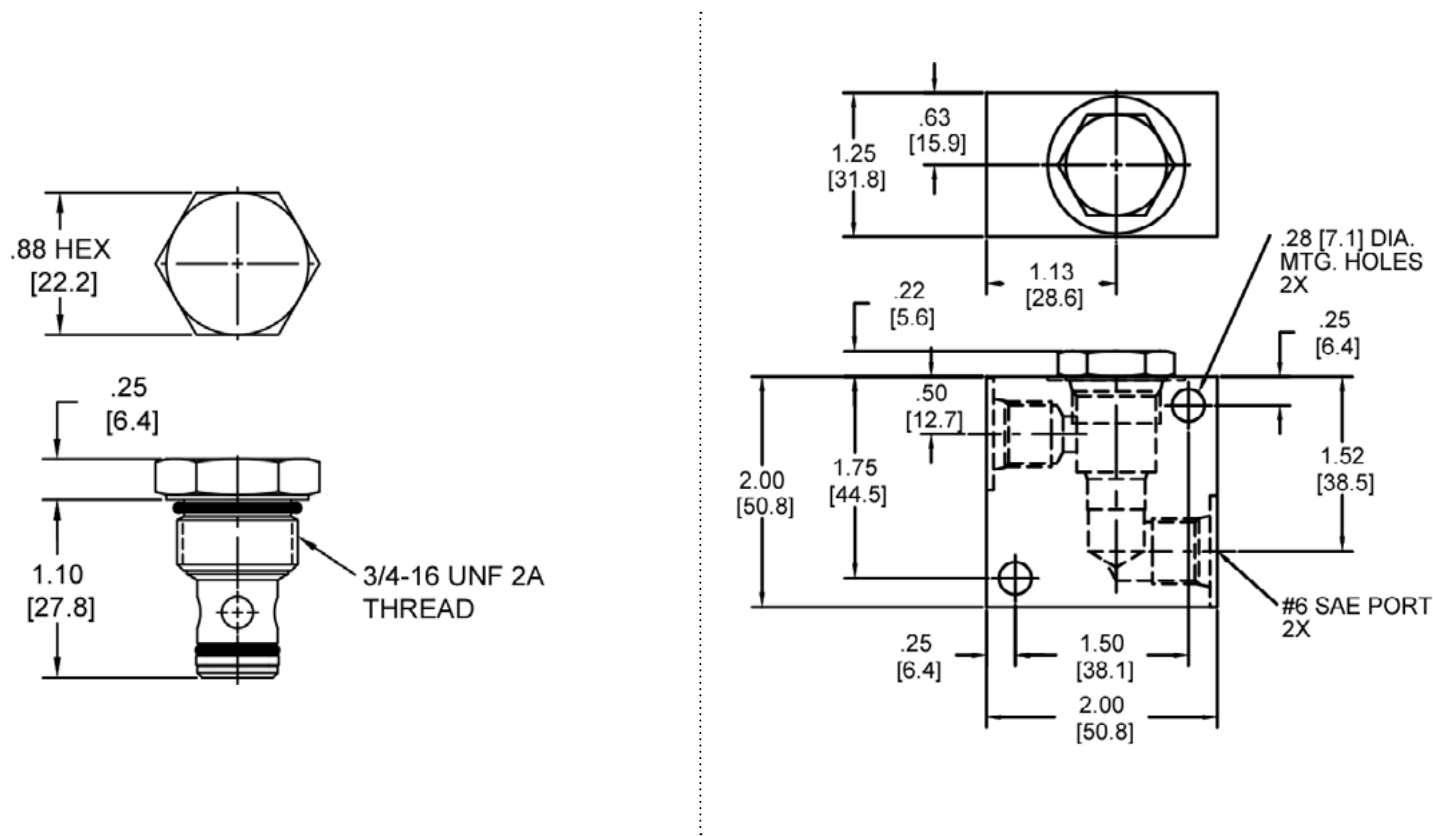


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-CVS	-	-	-	-
<u>OPTIONS</u>			<u>BODIES</u>	
Buna Standard	00		Blank	Without Body
Viton Standard	V0		N	1/4" NPTF Ports
			S	#6 SAE Ports
			<u>CRACK RESSURE</u>	
		0005	5 PSI	
		0020	20 PSI	
		0030	30 PSI	
		0050	50 PSI	
			± 10%	

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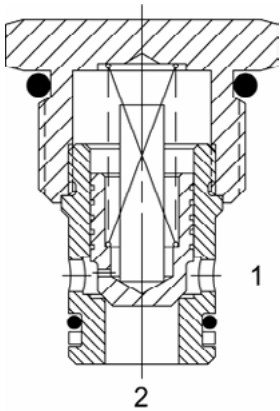
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DE-CVS DIRECT ACTING CHECK VALVE, SOFT SEAT, POPPET**DESCRIPTION**

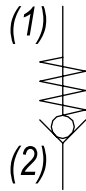
10 size, 7/8-14 thread, "Delta" series, soft seat check valve.

OPERATION

The DE-CVS allows flow to pass from (2) to (1) and blocks flow from (1) to (2). The cartridge has a fully guided check poppet, which is spring-biased closed until sufficient pressure is applied at (2) to open to (1).

FEATURES

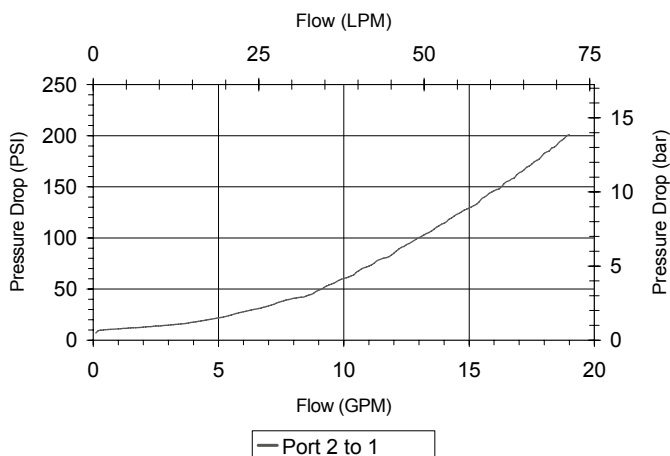
- Soft seat for ultra low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

HYDRAULIC SYMBOL

Drop-In pilot pistons are NOT RECOMMENDED for this valve. If you would like to create P.O. Check Valve Function, please use the CVA valve and/or see the Hydraulic Integrated Circuits section for details.

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	10 GPM (38 LTR/N)
Rated Operating Pressure	1000 PSI (70 bar)
Typical Internal Leakage (150 SSU)	Negligible
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-32° to 160°F (0° to 70°C)
Weight	.14 lbs (.06 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

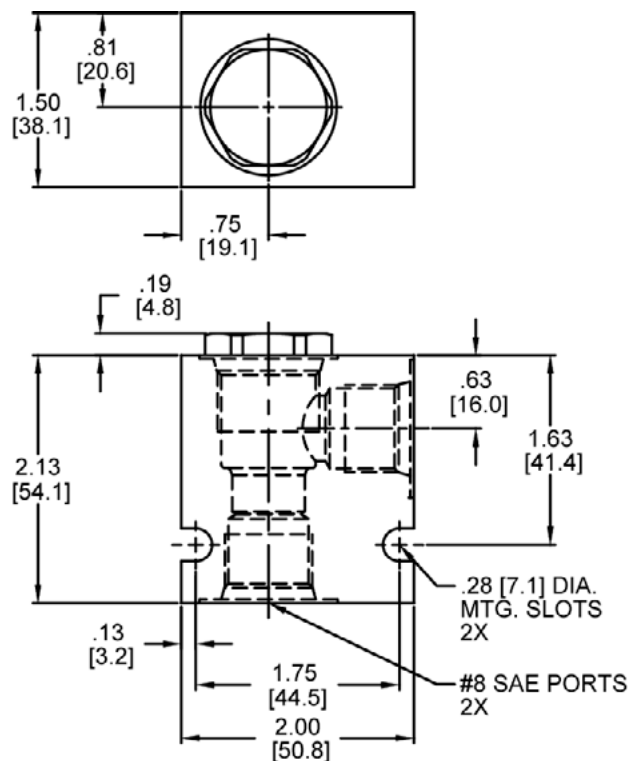
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ORDERING INFORMATION

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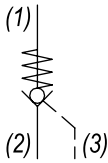


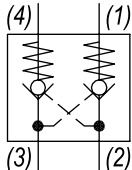
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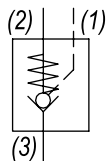
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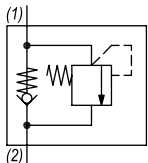
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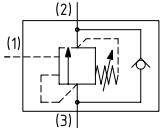
PILOT TO OPEN AND DOUBLE PO CHECK VALVES

PILOT TO OPEN CHECK VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	6	3500	23	241	3/4-16	PP-CPB	MD36
	8	3500	30	241	7/8-14	DF-CPB	MD38
	10	3500	38	241	7/8-14	DF-CPC	MD40

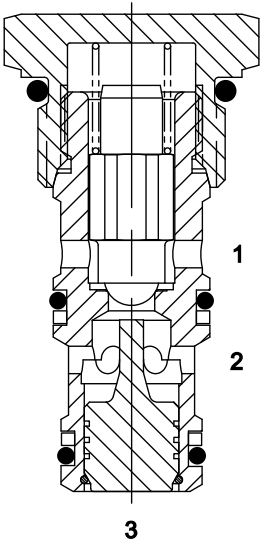
DOUBLE PO CHECK VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	5	3000	19	207	3/4-16	PQ-CDP	MD42
	8	3000	30	207	7/8-14	DG-CDP	MD44

PILOT TO CLOSE CHECK VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3500	38	241	7/8-14	DF-CPD	MD46
	20	3500	76	241	1 5/16-12	SL-CPD	MD48

CHECK VALVES WITH THERMAL RELIEF	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	15	4000	57	276	7/8-14	DE-CVT	MD50

LOAD HOLDING VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	15	4000	57	276	M20 X 1.5	QS-CBS	MD52

PP-CPB PILOT OPERATED CHECK VALVE, GUIDED BALL



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, pilot operated, ball check valve.

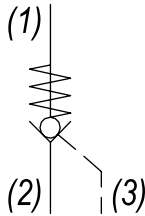
OPERATION

The PP-CPB allows free flow to pass from (2) to (1) and blocks flow from (1) to (2). When pilot pressure is applied to port (3) the valve allows free flow from (1) to (2).

FEATURES

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

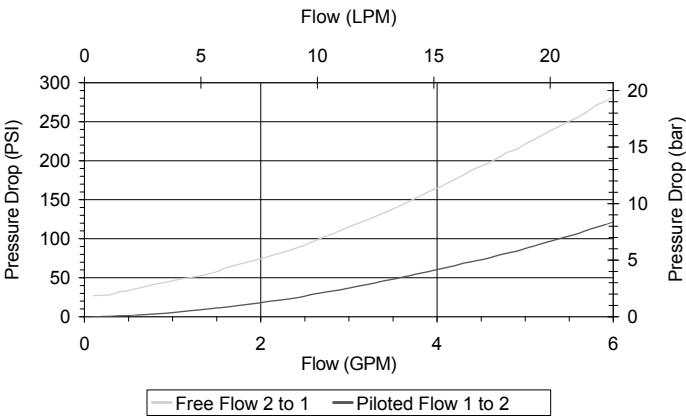
HYDRAULIC SYMBOL



For sealed pilot piston consult factory.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LTR/M) from (1) to (2) 4 GPM (15 LTR/M) from (2) to (1)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Pilot Ratio	4:1
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	.14 lbs (.06 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Cavity	POWER 3W
Cavity Form Tool (Finishing)	40500024
Seal Kit	21191108

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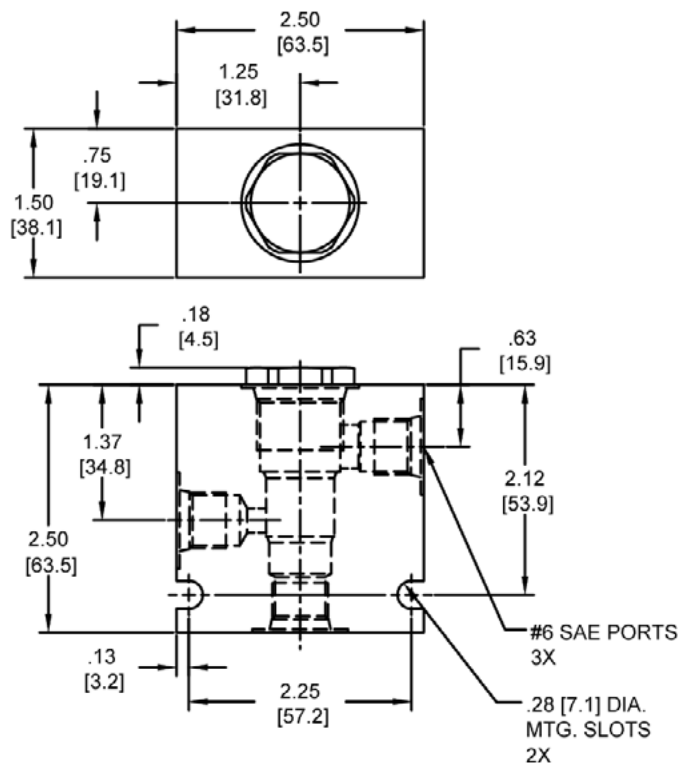
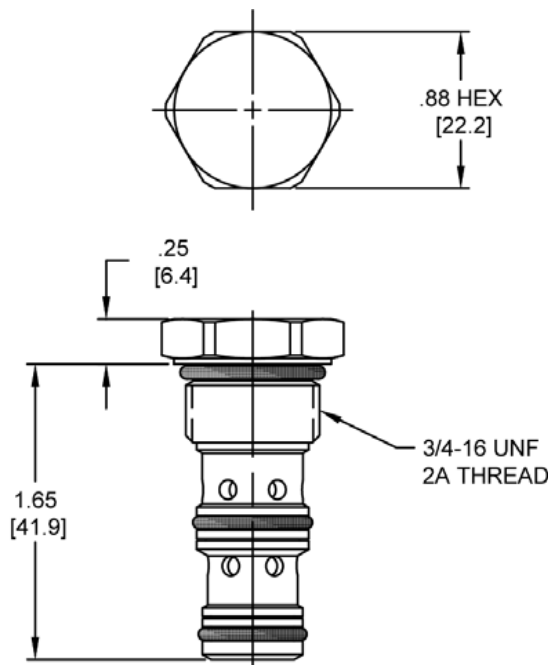


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DIMENSIONS



ORDERING INFORMATION

PP-CPB	-	-	-	-
OPTIONS		BODIES		
Buna Standard	00	Blank	Without Body	
Viton Standard	V0	N	1/4" NPTF Ports	
		S	#6 SAE Ports	
		CRACK RESSURE		
		0025	25 PSI	
			± 10%	

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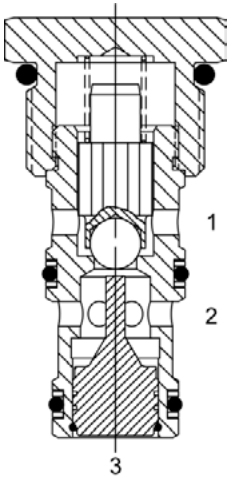


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DF-CPB PILOT OPERATED CHECK VALVE, GUIDED BALL



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pilot operated, ball check valve.

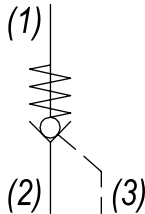
OPERATION

The DF-CPB allows free flow to pass from (2) to (1) and blocks flow from (1) to (2). When pilot pressure is applied to port (3) the valve allows free flow from (1) to (2).

FEATURES

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

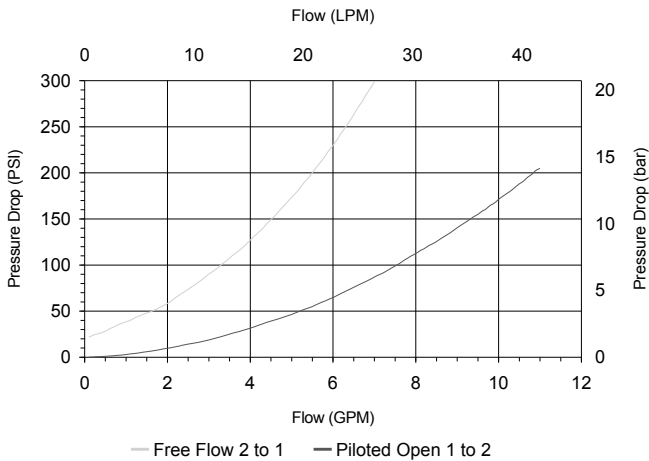
HYDRAULIC SYMBOL



For sealed pilot piston consult factory.
0.030" to 0.060" diameter orifice recommended
in the feed line to port #3.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LTR/M) from (1) to (2) 5 GPM (19 LTR/M) from (2) to (1)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Pilot Ratio	4:1
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 3W
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191202

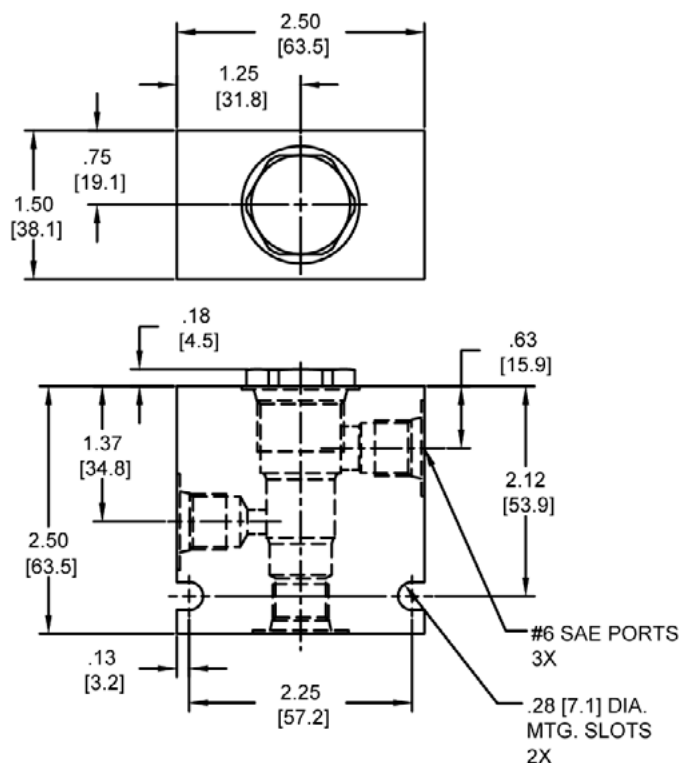
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ORDERING INFORMATION

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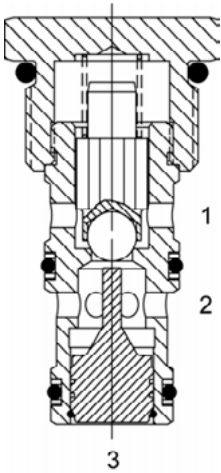
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DF-CPC PILOT TO OPEN, CHECK VALVE, GUIDED BALL



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pilot to open, ball check valve.

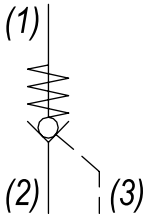
OPERATION

The DF-CPC allows free flow to pass from (2) to (1) and blocks flow from (1) to (2). When pilot pressure is applied to port (3) the valve allows free flow from (1) to (2). The cartridge has a 2:1 pilot ratio, meaning that at least one half of the load pressure held at (1) is required at (3) to open the valve. The check is spring biased to assure holding in static or no-load conditions.

FEATURES

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

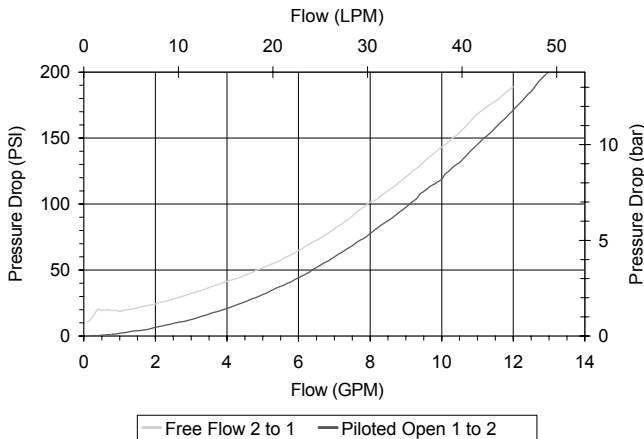
HYDRAULIC SYMBOL



Special higher bias spring values available.
Consult factory. For sealed pilot piston consult
factory.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Pilot Ratio	2:1
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 3W
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191202

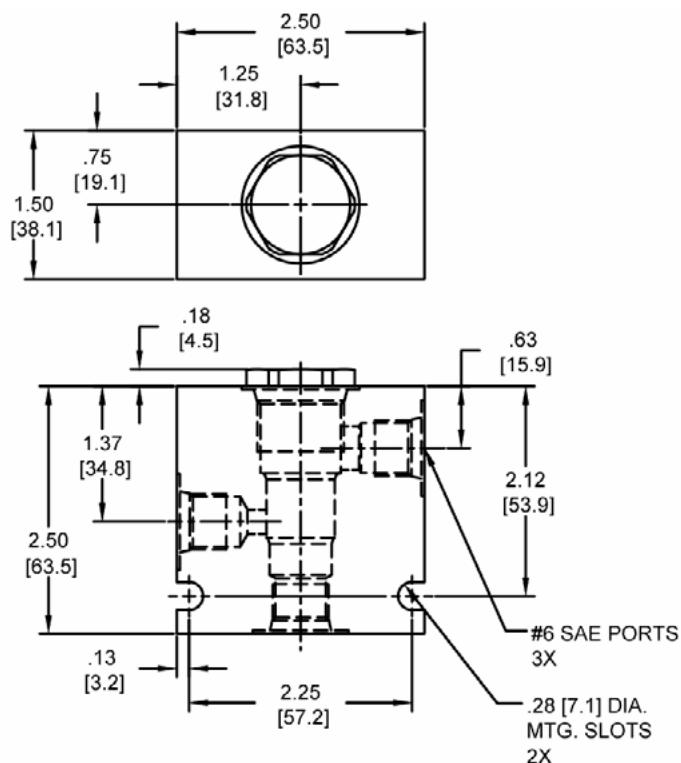
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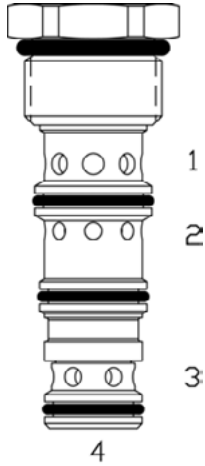
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PQ-CDP DOUBLE PILOT OPERATED CHECK VALVE**DESCRIPTION**

8 size, 3/4-16 thread, "Power" series, double pilot operated check valve.

OPERATION

The PQ-CDP allows flow to pass from (3) to (4) and (2) to (1). The valve blocks flow from (4) to (3) and from (1) to (2). Blocked flow is released when pilot pressure is applied to the port opposite of (3) and/or (2) respectively. The valve has a 3:1 pilot ratio, so at least 1/3 of the load pressure at port (4) or (1) is required at the pilot line ports "ports (4) or (1) respectively" to open the flow passage to allow flow from port (4) or (1) respectively. The check spring biased at 20 PSI (1.4 bar) to assure holding in the static or no-load conditions.

FEATURES

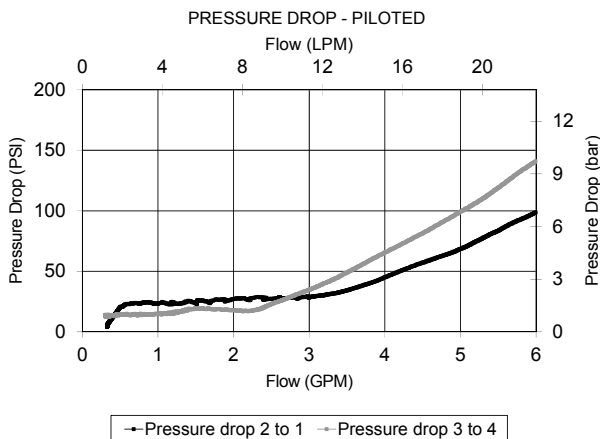
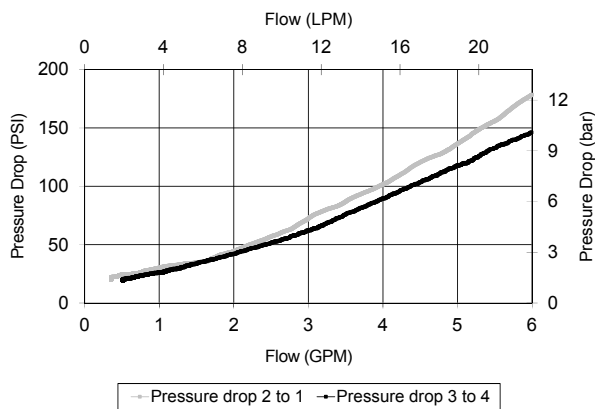
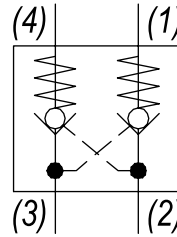
- Hardened parts for long life.
- Industry common cavity.



Great for "in Cylinder" use application.

PERFORMANCE

Actual Test Data (Cartridge Only)

**HYDRAULIC SYMBOL****VALVE SPECIFICATIONS**

Nominal Flow	5 GPM (19 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	.12 lbs (.05 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Cavity	POWER 4W
Cavity Form Tool (Finishing)	40500029
Seal Kit	21191112

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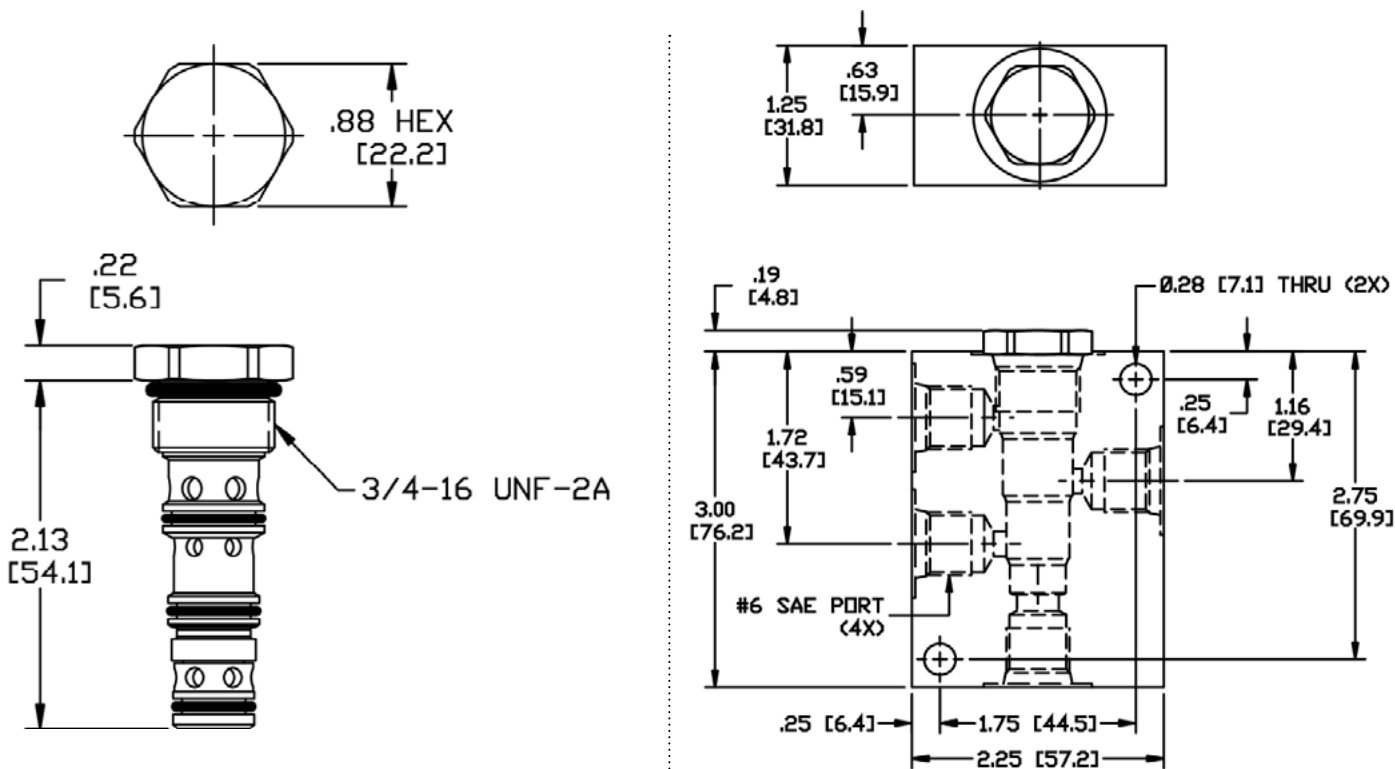


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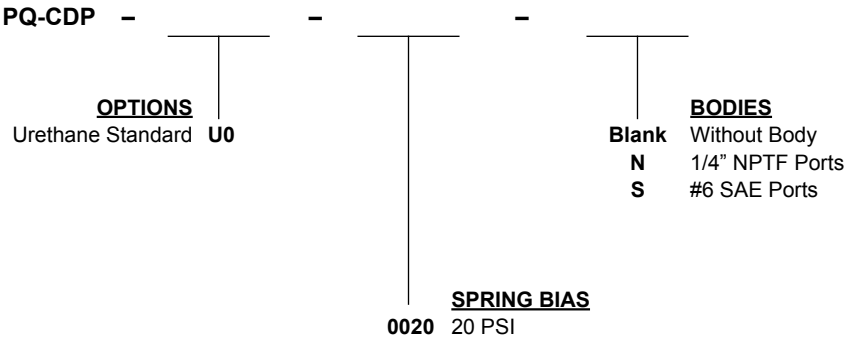
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DIMENSIONS



ORDERING INFORMATION



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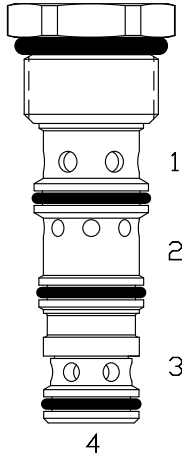
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DG-CDP DOUBLE PILOT OPERATED CHECK VALVE**DESCRIPTION**

10 size, 7/8 -14 thread, "Delta" series, double pilot operated check valve.

OPERATION

The DG-CDP allows flow to pass from (3) to (4) and (2) to (1). The valve blocks flow from (4) to (3) and from (1) to (2). Blocked flow is released when pilot pressure is applied to the port opposite of (3) and/or (2) respectively. The valve has a 3:1 pilot ratio, so at least 1/3 of the load pressure at port (4) or (1) is required at the pilot line ports "ports (4) or (1) respectively" to open the flow passage to allow flow from port (4) or (1) respectively. The check spring biased at 20 PSI (1.4 bar) to assure holding in the static or no-load conditions.

FEATURES

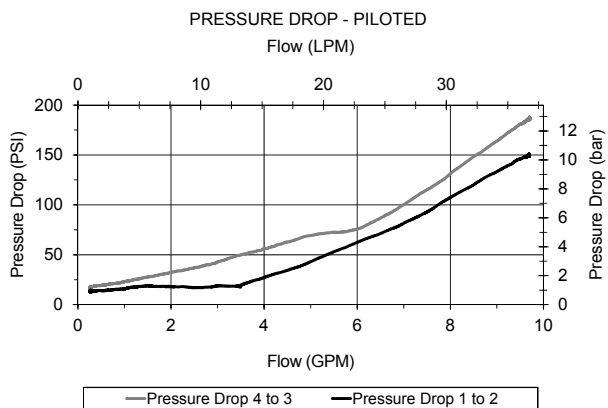
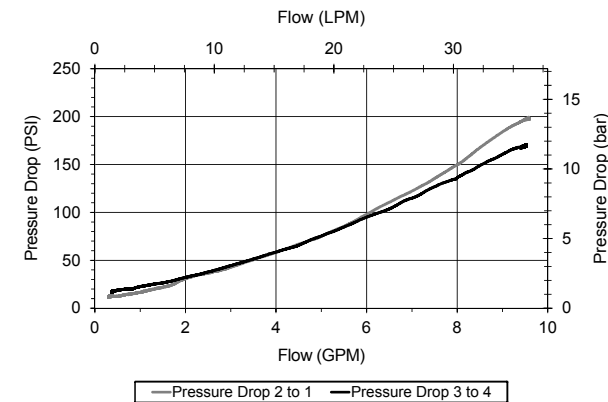
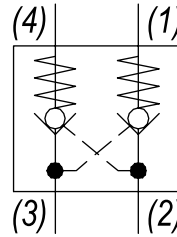
- Hardened parts for long life.
- Industry common cavity.



Great for "in Cylinder" use application.

PERFORMANCE

Actual Test Data (Cartridge Only)

**HYDRAULIC SYMBOL****VALVE SPECIFICATIONS**

Nominal Flow	8 GPM (30 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	.20 lbs (.09 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	21191216

WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

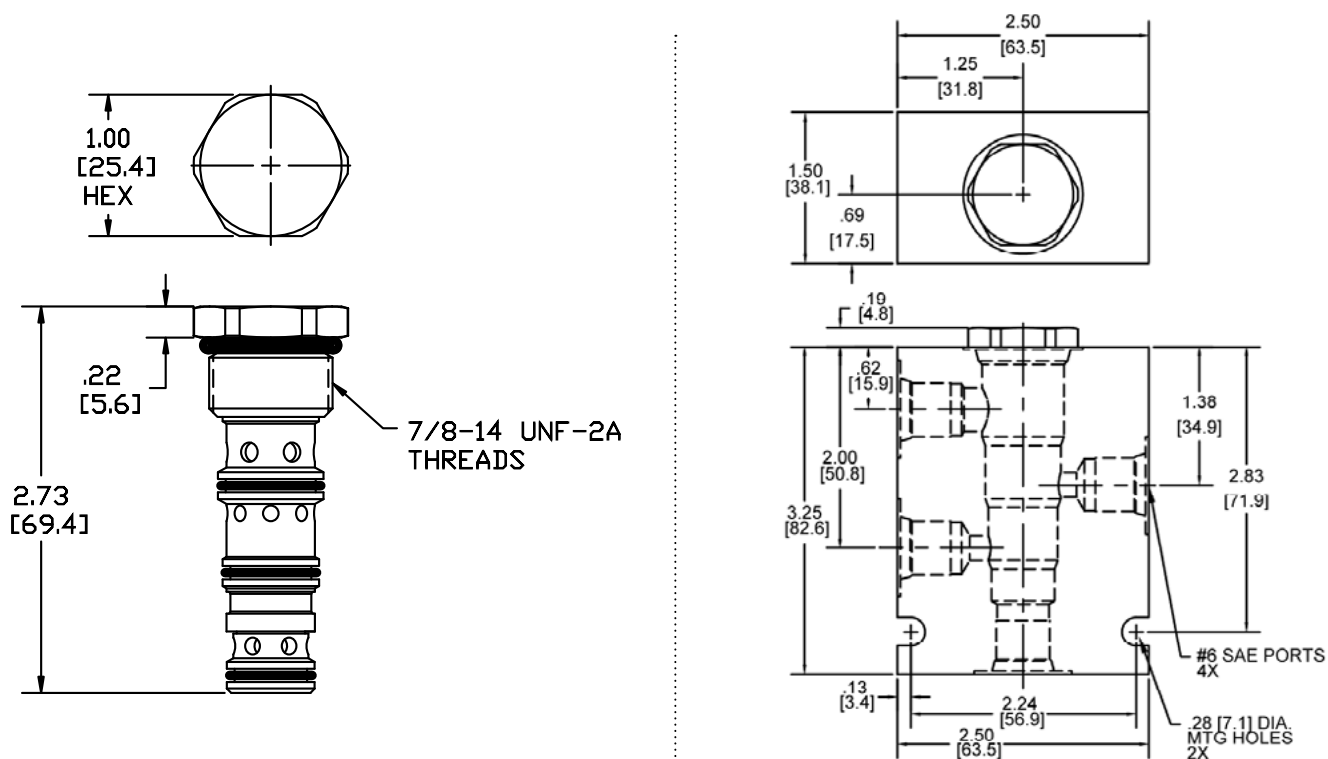


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-CDP - - - -

<u>OPTIONS</u>		<u>BODIES</u>
Urethane Standard	U0	Blank Without Body
		N 1/4" NPTF Ports
		S #6 SAE Ports
	0020	<u>SPRING BIAS</u>
		20 PSI

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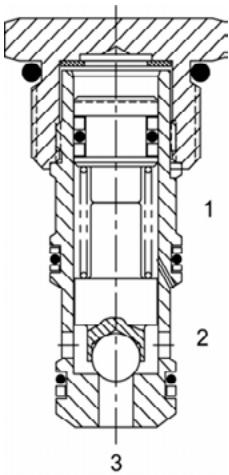


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DF-CPD PILOT TO CLOSE CHECK VALVE, GUIDED BALL



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pilot to close, ball check valve.

OPERATION

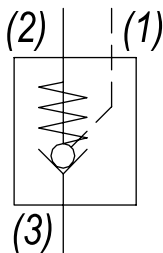
The DF-CPD allows free flow from (3) to (2), and blocks flow from (2) to (3). Flow will be blocked from (3) to (2) when sufficient pressure is applied at (1). The cartridge has various "pilot ratios" (see options).

Example: 1/4 for 4:1 of the load pressure held at (3) is required at (1) to close the valve. The check is spring biased to assure holding in static or no-load conditions.

FEATURES

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

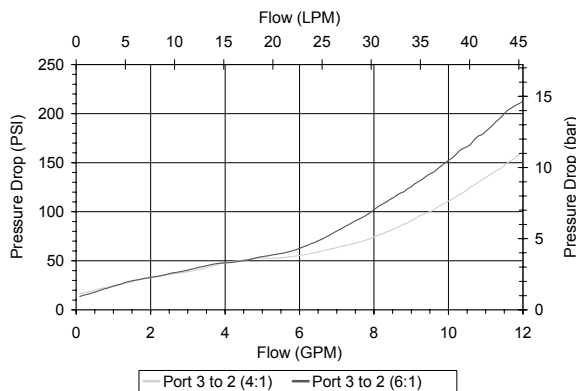
HYDRAULIC SYMBOL



*Consult chart for flow operation of each model.
Special higher bias spring values available.
Consult factory.*

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Maximum Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	50 drops/min from (2) to (3) 5 drops/min from (3) to (2) when port (1) is piloted
Pilot Ratio	(see options)
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	.20 lbs (.09 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	21191202

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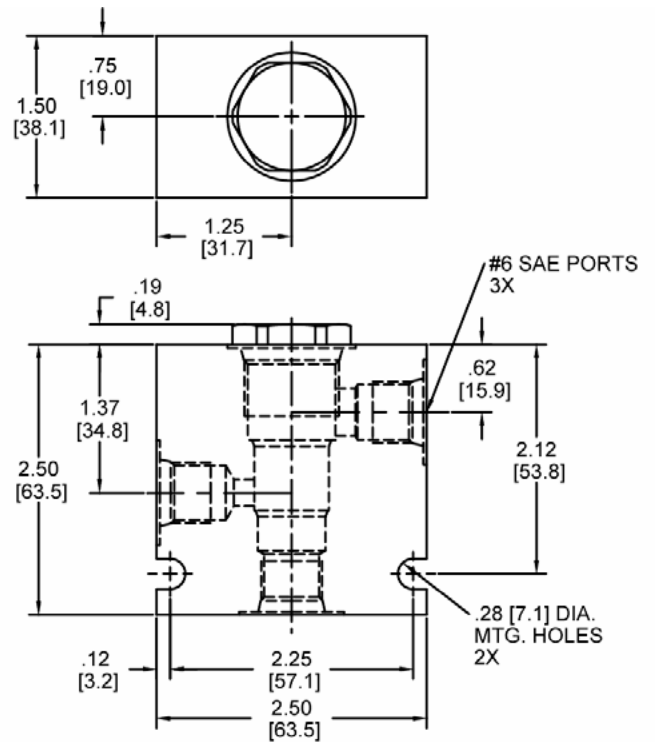
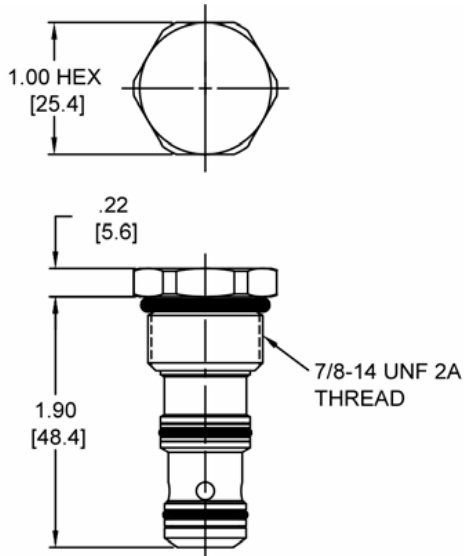


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-CPD		-	-	-	-
OPTIONS					BODIES
Buna, 4:1 Ratio	04				Blank
Buna, 6:1 Ratio	06				N
Viton, 4:1 Ratio	V4				S
Viton, 6:1 Ratio	V6				
					CRACK RESSURE
					0015 15 PSI
					0025 25 PSI
					0050 50 PSI
					0075 75 PSI
					0100 100 PSI
					± 10%

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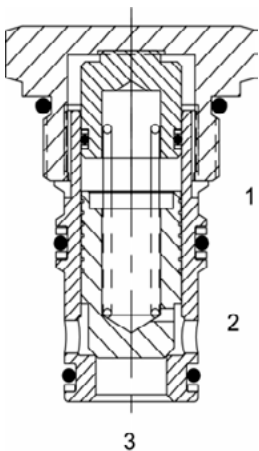


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SL-CPD PILOT TO CLOSE CHECK VALVE, POPPET



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, pilot to close, poppet check valve.

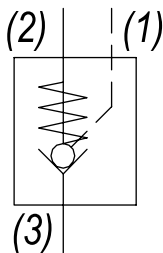
OPERATION

The SL-CPD allows free flow from (3) to (2), and blocks flow from (2) to (3). Flow will be blocked from (3) to (2) when sufficient pressure is applied at (1). The cartridge has a 2:1 pilot ratio, meaning that at least one half of the load pressure held at (3) is required at (1) to close the valve. The check is spring biased to assure holding in static or no-load conditions.

FEATURES

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

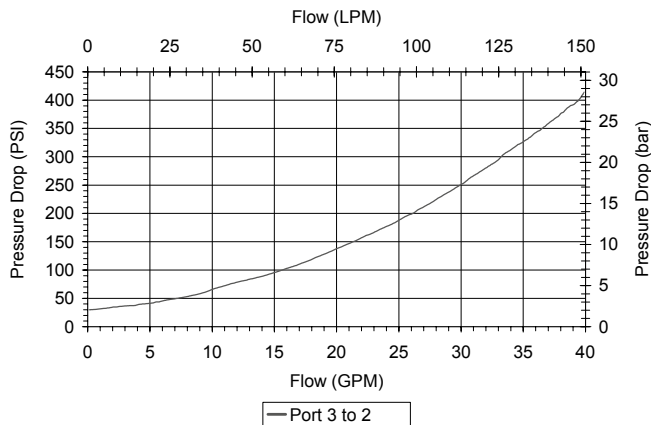
HYDRAULIC SYMBOL



*Special higher bias spring values available.
Consult factory.*

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	5 drops/min
Pilot Ratio	2:1
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	.68 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	21191404

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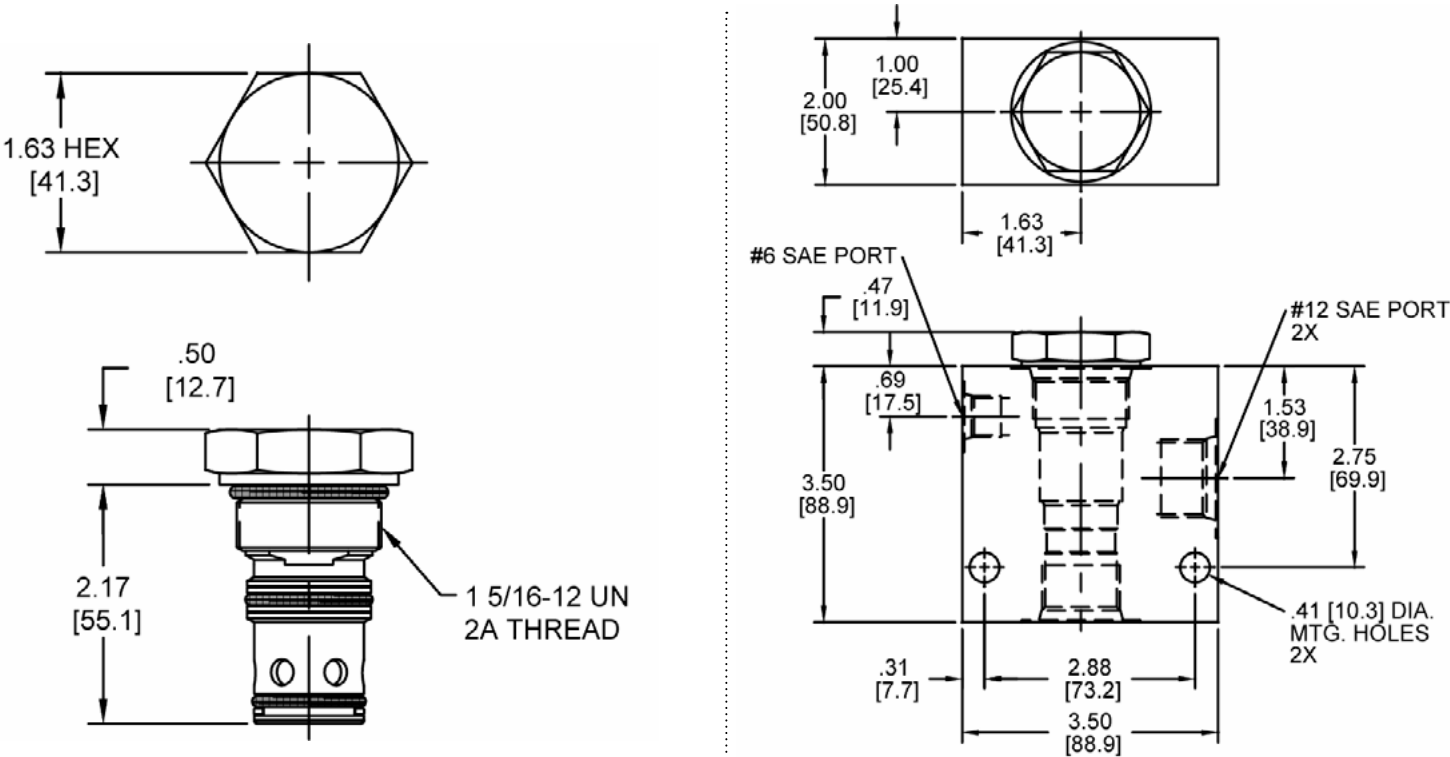


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-CPD	-	-	-	-
OPTIONS		BODIES		
Buna, 2:1 Ratio 02		Blank S		
Viton, 2:1 Ratio V2		Without Body #12 SAE Ports		
		CRACK RESURE		
		0015 15 PSI		
		0025 25 PSI		
		0050 50 PSI		
		0075 75 PSI		
		0100 100 PSI		
		± 10%		

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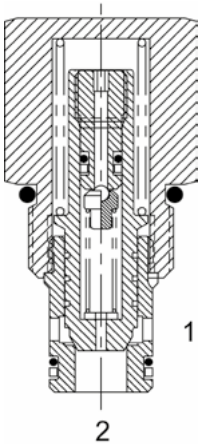
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DE-CVT DIRECT ACTING CHECK VALVE THERMAL RELIEF, POPPET**DESCRIPTION**

10 size, 7/8-14 thread, "Delta" series, direct acting check valve with thermal relief.

OPERATION

The DE-CVT allows free flow passage from (2) to (1), and blocks flow from (1) to (2). If the pressure at (1) exceeds the thermal relief valve setting, a small amount of oil will be allowed to pass from (1) to (2), preventing cylinder damage from excessive pressure. The cartridge has a fully guided poppet, which is spring biased closed until sufficient pressure is applied at (2) to open to (1).

Note: the relief valve feature is not intended for use in dynamic pressure limiting applications. Consult factory.

FEATURES

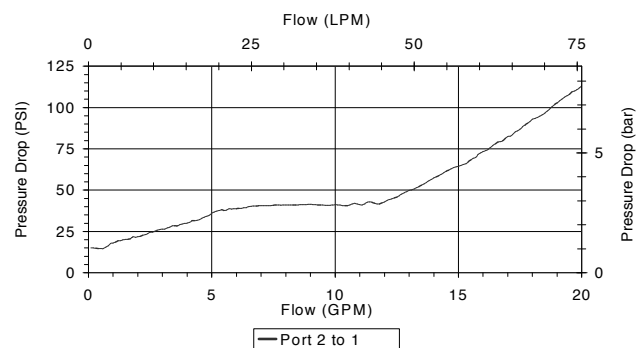
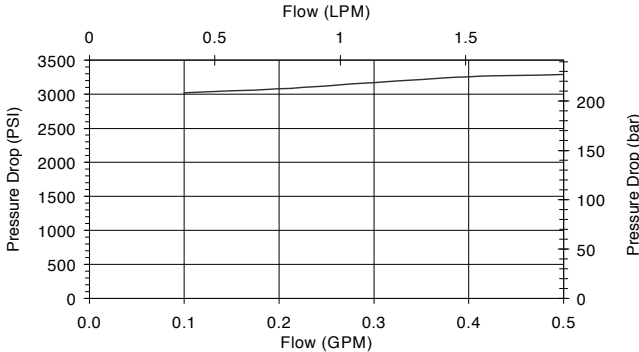
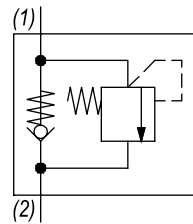
- Hardened parts for long life.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.



Nominal flow rating is 15 GPM for free flow port (2) to (1). Consult chart for free flow differential pressure. Thermal relief is cyclic rated to 0.1 GPM. Port (1) to (2) chart demonstrates override characteristics for a typical thermal relief application.

PERFORMANCE

Actual Test Data (Cartridge Only)

**HYDRAULIC SYMBOL****VALVE SPECIFICATIONS**

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	4000 PSI (276 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	.31 lbs (.14 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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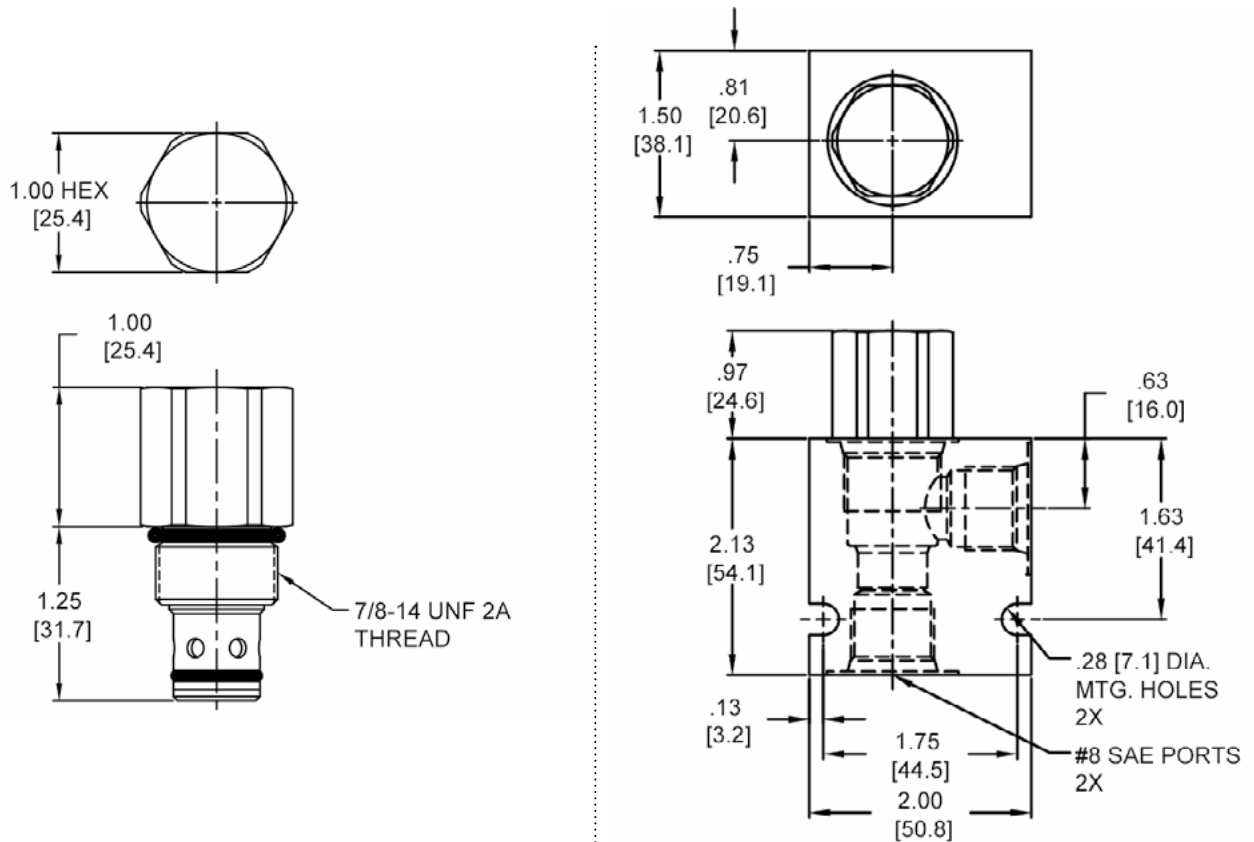


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-CVT - - - -			
OPTIONS		BODIES	
Buna Standard	00	Blank	Without Body
Viton Standard	V0	N	3/8" NPTF Ports
		S	#8 SAE Ports
PRESSURE SETTING		VOLTAGE	
	1000 PSI 1	0020	20 PSI
	2000 PSI 2	0100	100 PSI
	3000 PSI 3		± 10%
	4000 PSI 4		

WARNING
DO NOT USE ALUMINUM BODY
HIGH PRESSURE (4000 PSI) PRODUCT

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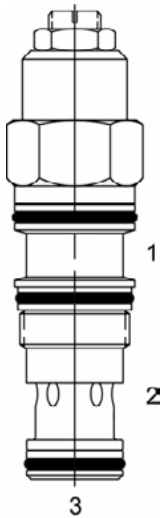


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QS-CBS COUNTERBALANCE VALVE, 3:1 RATIO



DESCRIPTION

M20 X 1.5 thread, counterbalance valve, 3:1 ratio.

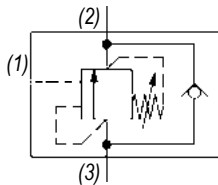
OPERATION

The QS-CBS check valve allows free flow from the directional valve (2) to the load (1) while a direct-acting, pilot-assisted relief valve controls flow from port (3) to port (2). Pilot assist at port 1 lowers the effective setting of the relief valve at a rate determined by the pilot ratio (3:1).

FEATURES

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

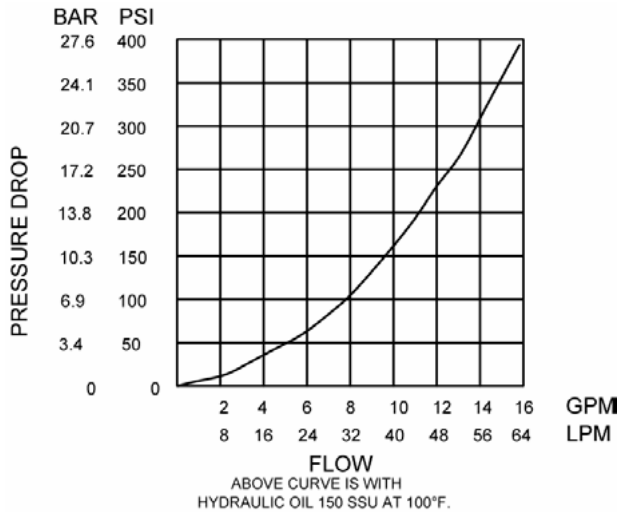
HYDRAULIC SYMBOL



Counterbalance valves with pilot assist are meant to control an overrunning load. Other names for this valve include motion control valve and over center valve.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	4000 PSI (276 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	.33 lbs (.15 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	QS SPECIAL 3W
Cavity Form Tool (Finishing)	40500012
Seal Kit	21170016

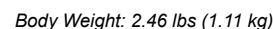
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ORDERING INFORMATION

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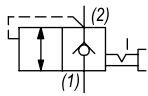
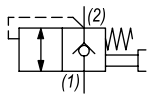
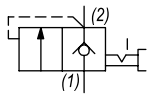
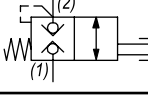
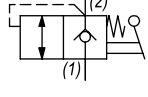
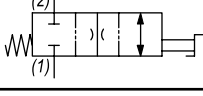
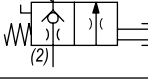


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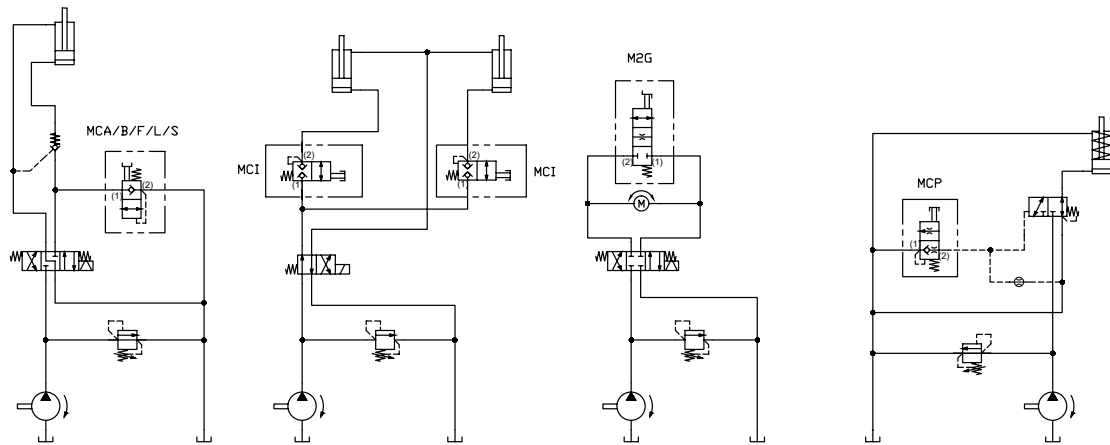
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2 WAY 2 POSITION MANUAL VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	12	3500	45	241	3/4-16	PB-MCA	MD56
	15	3500	57	241	7/8-14	DE-MCA	MD58
	20	1500	76	103	7/8-14	DE-MCF	MD60
	20	3500	76	241	7/8-14	DE-MCS	MD62
	20	3500	76	241	7/8-14	DE-MCB	MD64
	8	3500	30	241	3/4-16	PB-MCI	MD66
	8	3500	30	241	3/4-16	PB-MCL	MD68
	15	3500	57	241	7/8-14	DE-MCL	MD70
	20	3000	76	207	7/8-14	DE-M2G	MD72
	1	4000	4	276	3/4-16	HB-MCP	MD74

TYPICAL SCHEMATIC

Typical application for MCA, MCB, MCF, MCL, and MCS is an emergency lowering device. Typical application for the MCI is a selector circuit when load holding is required in both directions. Typical application for the M2G is adjustable speed control or full bypass of fluid motor. Typical application for the MCP is a pilot dump valve.



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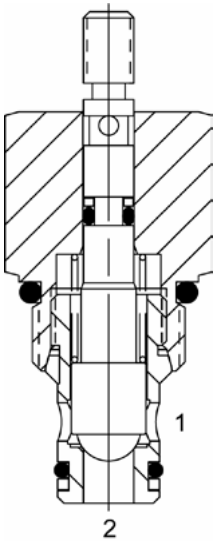


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PB-MCA MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL TYPE



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, manual poppet, 2 way normally closed, pull type valve.

OPERATION

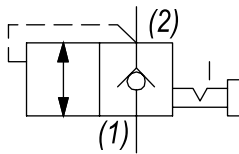
The PB-MCA blocks flow from (1) to (2) until an operator pulls the shaft outward. The bias spring (see option page for pressure) allows for backpressure at (2) before the valve will open.

Note: pressure at port (2) will act directly on the poppet and spring. Port (2) is intended to be a tank port only.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

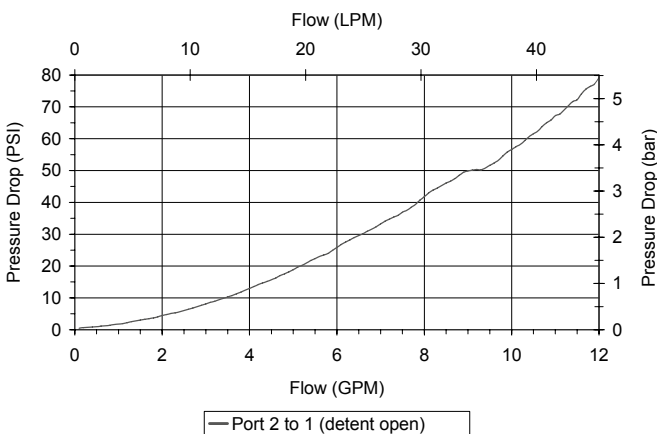
HYDRAULIC SYMBOL



75 PSI bias provides comfortable effort where return line is near zero. 150 PSI option may be difficult to pull, if tank pressure is near zero. Pressure above SPRING BIAS PRESSURE at port (2) may cause valve to self open.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LTR/M)
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	.21 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	21191100

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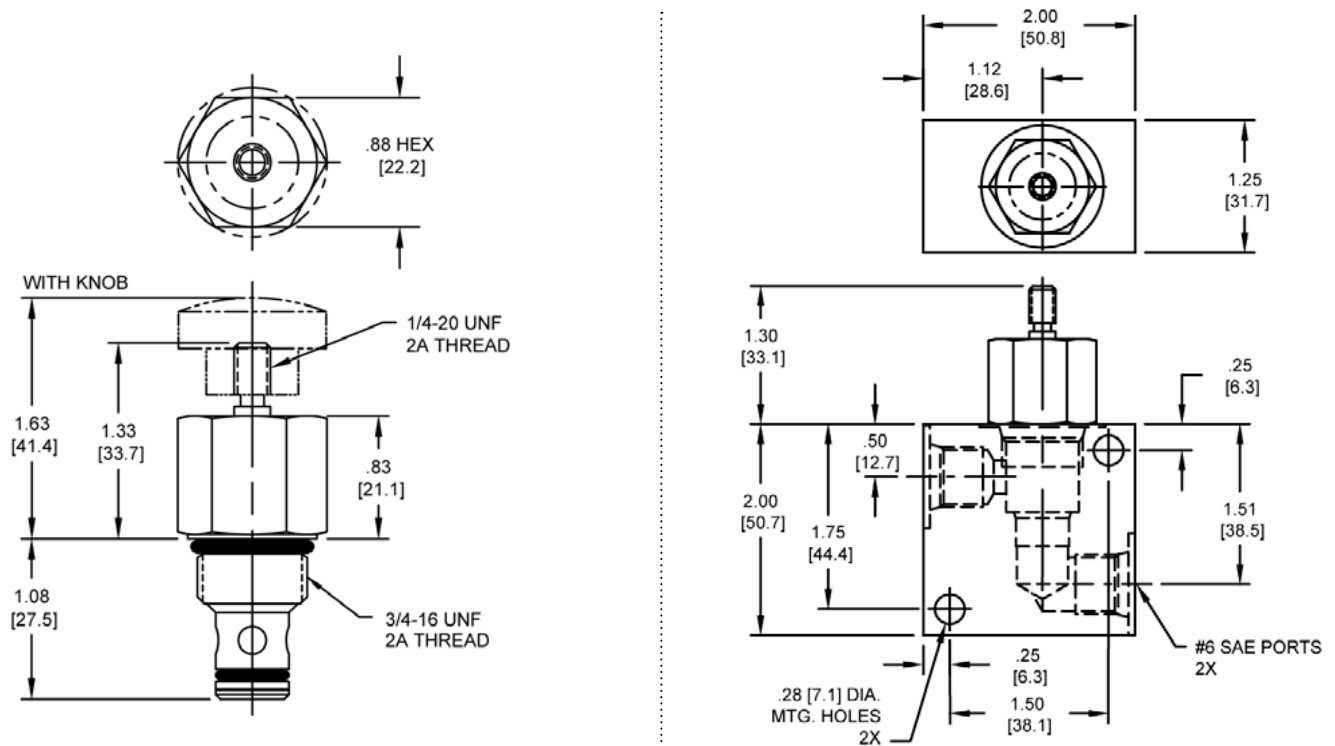


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-MCA -

OPTIONS

Buna Standard **00**
 Viton Standard **V0**
 Buna, Screen **A0**
 Viton, Screen **W0**
 Buna, Knob **0K**
 Viton, Knob **VK**
 Buna, Knob, Screen **AK**
 Viton, Knob, Screen **WK**
 Buna, Detent **0D**
 Viton, Detent **VD**
 Buna, Screen, Detent **AD**
 Viton, Screen, Detent **WD**
 Buna, Knob, Detent **1D**
 Viton, Knob, Detent **2D**
 Buna, Knob, Screen, Detent **3D**
 Viton, Knob, Screen, Detent **4D**

BODIES

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

SPRING BIAS PRESSURE

0075 75 PSI
0150 150 PSI

Note: pressure above SPRING BIAS PRESSURE at port (2) may cause valve to self open.

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

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DE-MCA MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL TYPE**DESCRIPTION**

10 size, 7/8-14 thread, "Delta" series, manual poppet valve, 2 way normally closed, pull type.

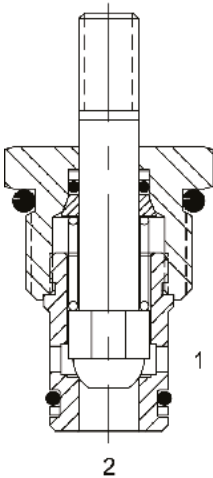
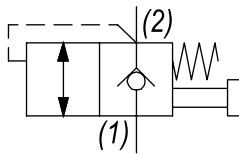
OPERATION

The DE-MCA blocks flow from (1) to (2) until an operator pulls the shaft outward. The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

Note: pressure at port (2) will directly act on the poppet and spring. Port (2) is intended to be a tank port only.

FEATURES

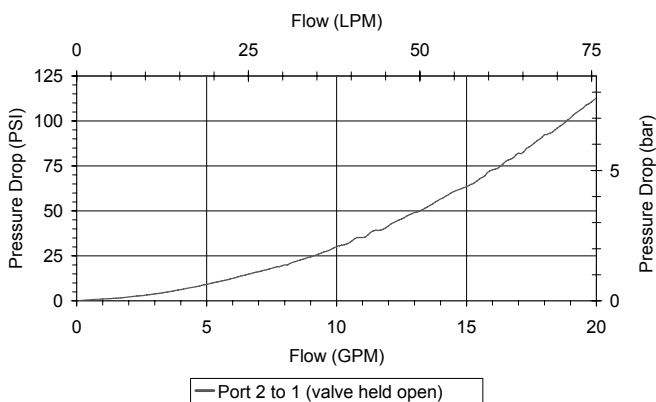
- Hardened parts for long life.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

**HYDRAULIC SYMBOL**

65 PSI bias provides comfortable effort where return line is near zero. 160 PSI option may be difficult to pull, if tank pressure is near zero.

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	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
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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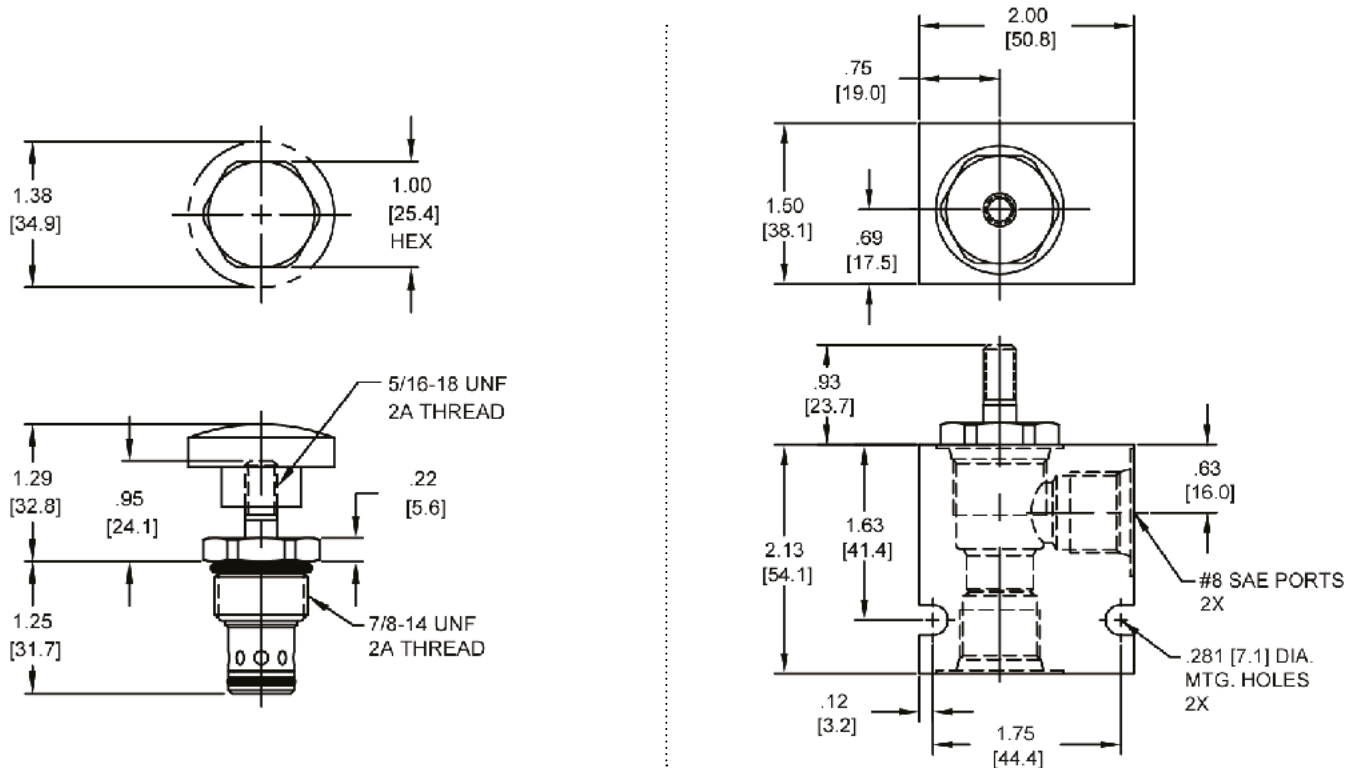


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-MCA -

OPTIONS

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

SPRING BIAS PRESSURE

0065 65 PSI
0160 160 PSI

Note: pressure above SPRING BIAS PRESSURE
 at port (2) may cause valve to self open.

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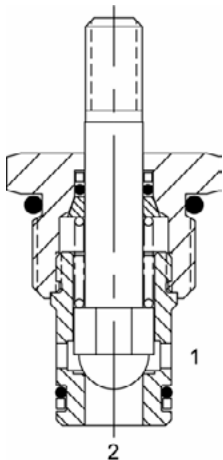


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DE-MCF MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL TYPE, SOFT SEAT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, manual poppet valve, 2 way normally closed, pull type, soft seat.

OPERATION

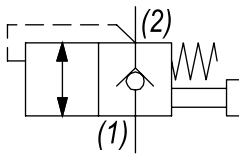
The DE-MCF blocks flow from (1) to (2) until an operator pulls the shaft outward. The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

Note: pressure at port (2) will directly act on the spool and spring. Port (2) is intended to be a tank port only.

FEATURES

- Soft seat for ultra low leakage.
- Industry common cavity.

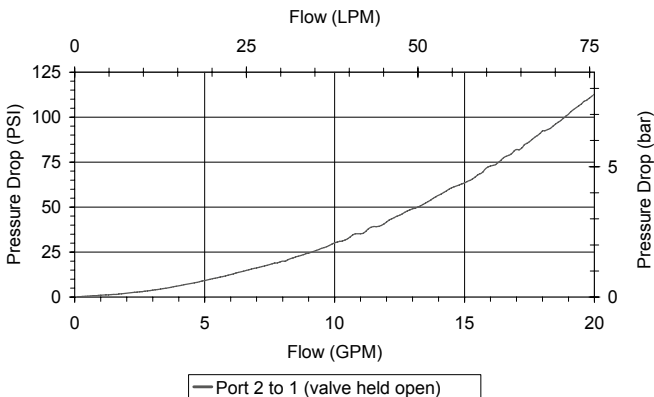
HYDRAULIC SYMBOL



Pressure above SPRING BIAS PRESSURE at port (2) may cause valve to self open.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	1500 PSI (103 bar)
Typical Internal Leakage (150 SSU)	Negligible
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-32° to 160°F (0° to 70°C)
Weight	.14 lbs (.06 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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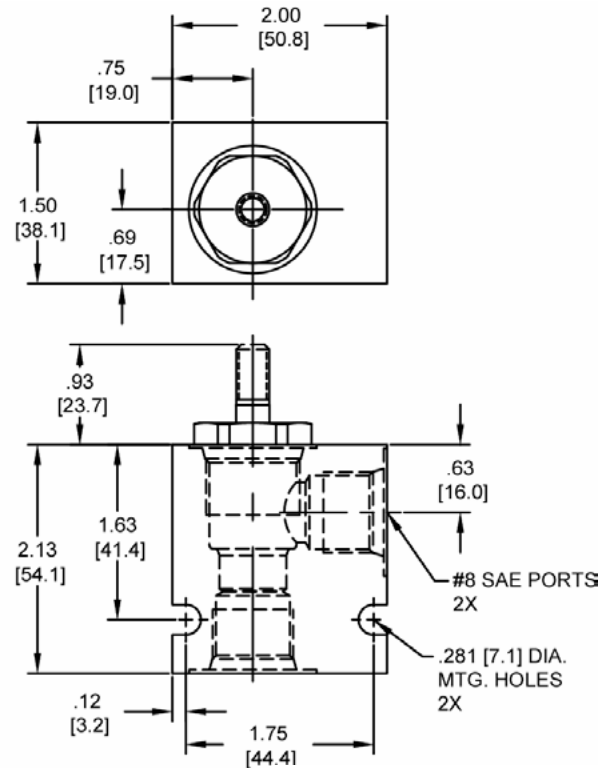
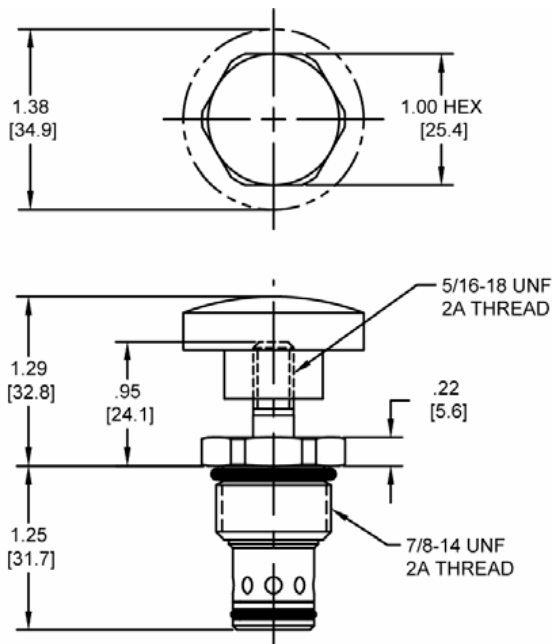


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-MCF -

OPTIONS

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

BODIES

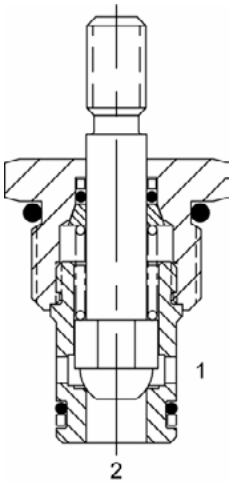
Blank	Without Body
N	3/8" NPTF Ports
S	#8 SAE Ports

SPRING BIAS PRESSURE

0065 65 PSI

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

Note: pressure above SPRING BIAS PRESSURE at port (2) may cause valve to self open.

DE-MCS MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL TYPE, CORROSION RESISTANT**DESCRIPTION**

10 size, 7/8-14 thread, "Delta" series, manual poppet valve, 2 way normally closed, pull type, corrosion resistant.

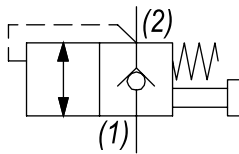
OPERATION

The DE-MCS blocks flow from (1) to (2) until an operator pulls the shaft outward. The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

Note: pressure at port (2) will directly act on the spool and spring. Port (2) is intended to be a tank port only.

FEATURES

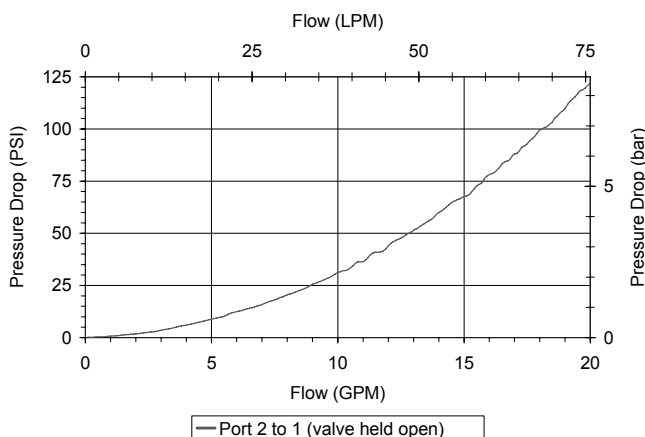
- Hardened parts for long life.
- Industry common cavity.
- Corrosion resistant.
- Optional bias springs for backpressure application flexibility.

HYDRAULIC SYMBOL

65 PSI bias provides comfortable effort where return line is near zero. 160 PSI option may be difficult to pull, if tank pressure is near zero. Stainless Steel Shaft. Pressure above SPRING BIAS PRESSURE at port (2) may cause valve to self open.

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	20 GPM (76 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	.75 lbs (.34 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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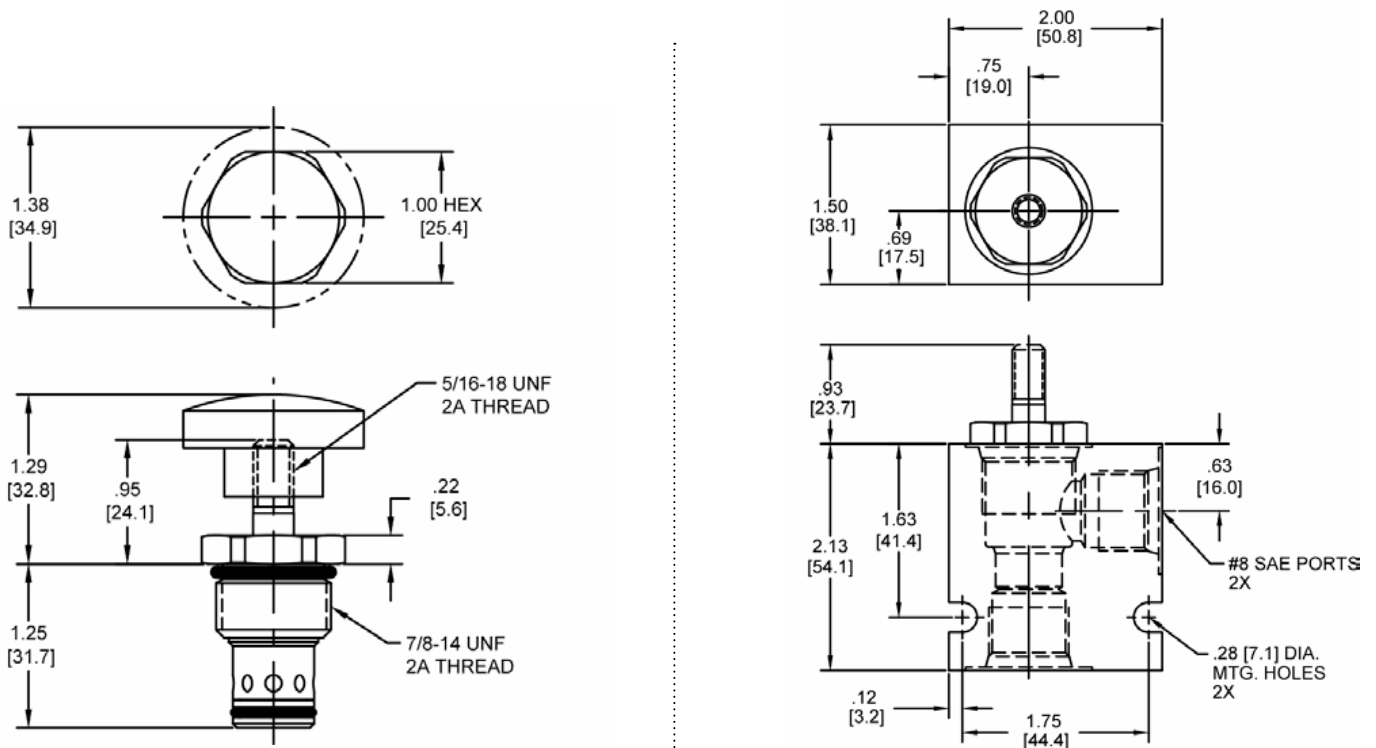


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-MCS -

OPTIONS

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

SPRING BIAS PRESSURE

0065 65 PSI
0160 160 PSI

Note: pressure above SPRING BIAS PRESSURE
 at port (2) may cause valve to self open.

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DE-MCB MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL, DETENT

DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, manual poppet valve, 2 way normally closed, pull with detent.

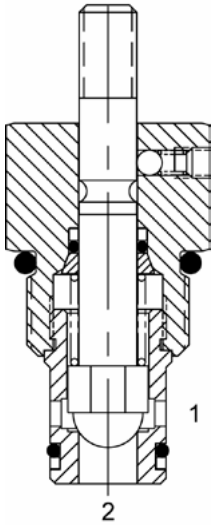
OPERATION

The DE-MCB blocks flow from (1) to (2) until an operator pulls the shaft outward. The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

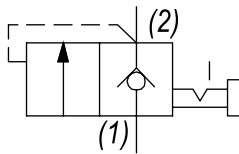
Note: pressure at port (2) will directly act on the spool and spring. Port (2) is intended to be a tank port only.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.



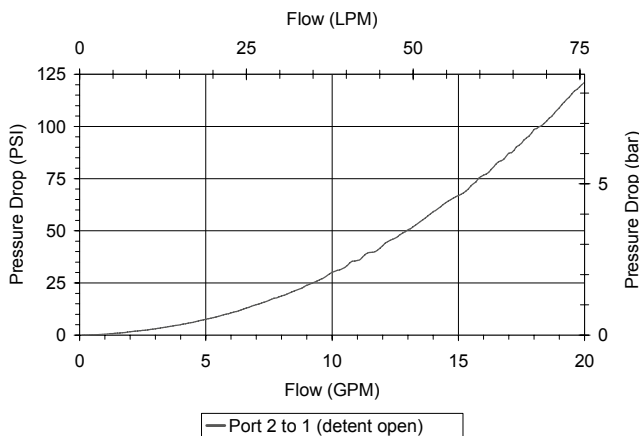
HYDRAULIC SYMBOL



65 PSI bias provides comfortable effort where return line is near zero. 160 PSI option may be difficult to pull, if tank pressure is near zero. Pressure above SPRING BIAS PRESSURE at port (2) may cause valve to self open.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	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	.28 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	21191200

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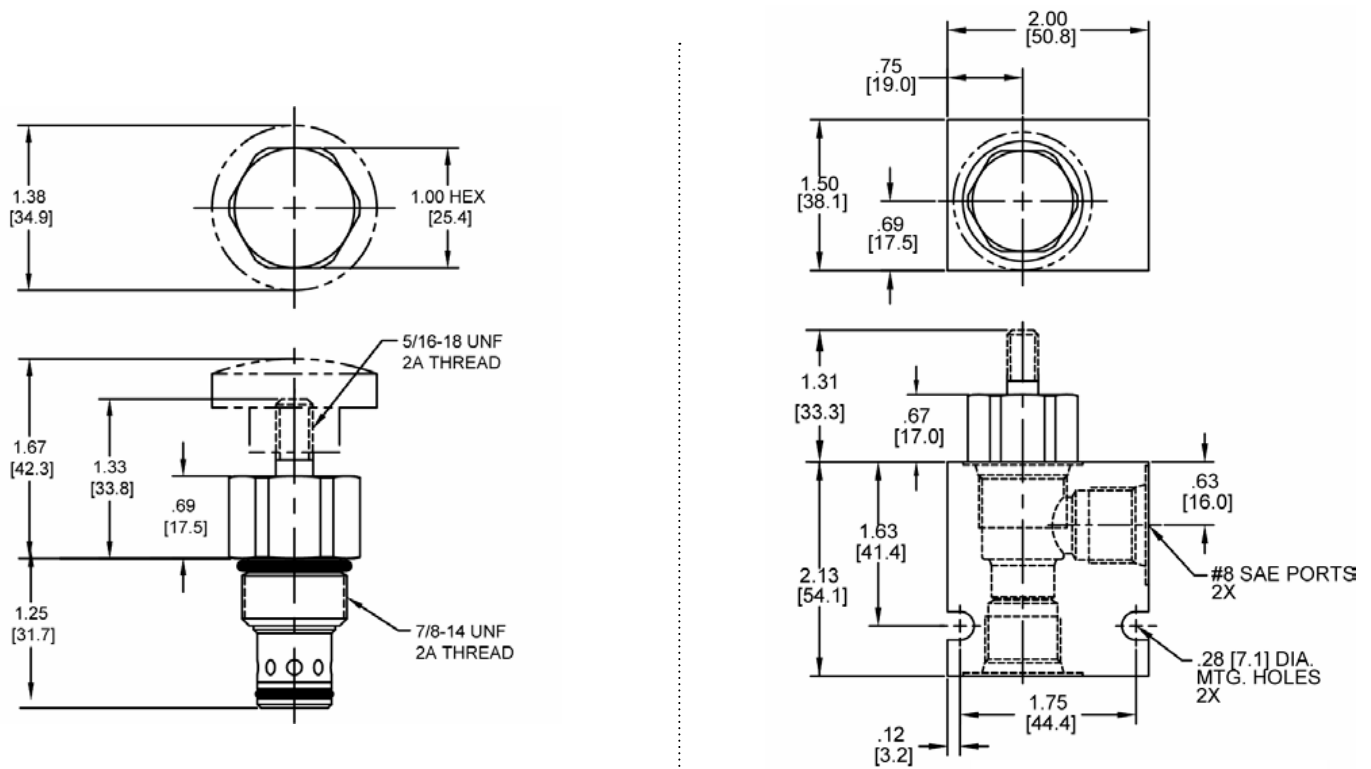


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-MCB -

OPTIONS

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

SPRING BIAS PRESSURE

0065 65 PSI
0160 160 PSI

Note: pressure above SPRING BIAS PRESSURE
 at port (2) may cause valve to self open.

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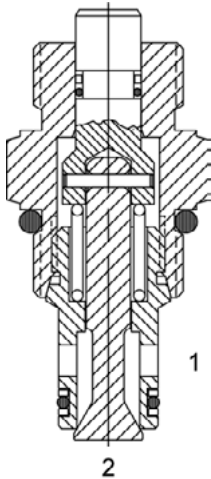
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PB-MCI MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PUSH TYPE**DESCRIPTION**

8 size, 3/4-16 thread, "Power" series, manual poppet, 2 way normally closed, push type valve.

OPERATION

The PB-MCI blocks flow from (2) to (1) until sufficient force is applied to button to overcome spring bias and load force.

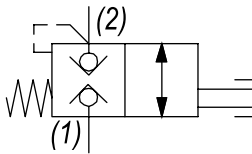
**Actuation Force Required**

No Pressure	7 lbs
Side Pressure	$7 + (P1 \times .009)$
Nose Pressure	$7 + (P1 \times .076)$

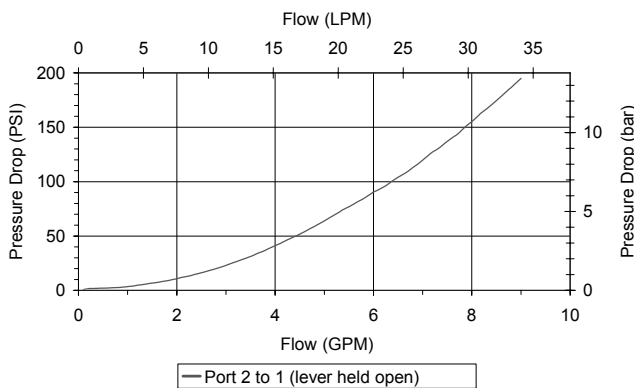
Note: ($\varnothing .437$) cavity predrill depth must be 1.312 minimum from spotface.

FEATURES

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

HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	Consult Factory
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	21191102

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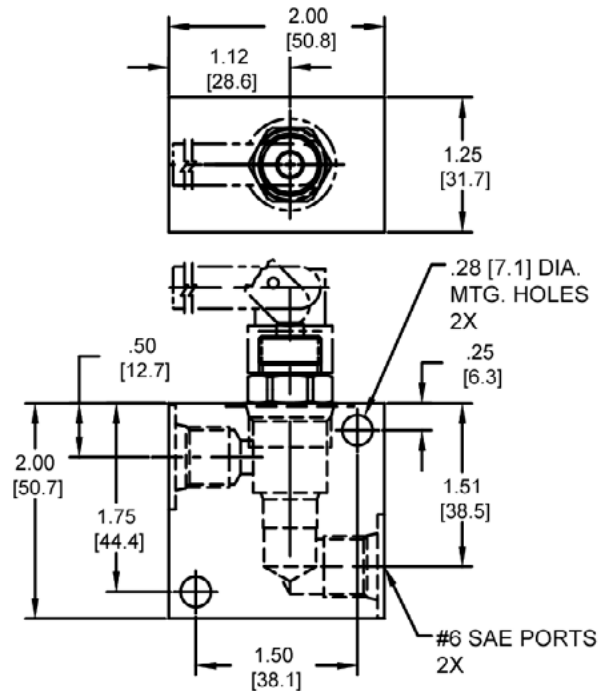
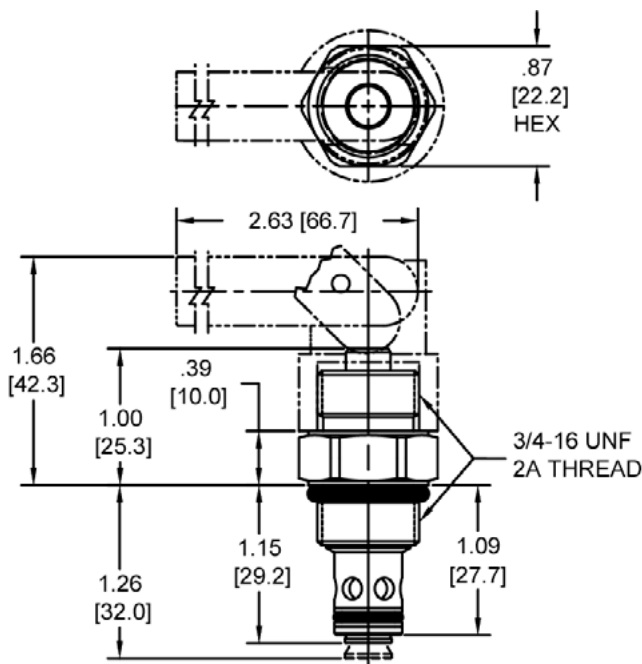


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-MCI - -

OPTIONS

Buna Standard **00**
 Viton Standard **V0**
 Buna, Screen **A0**
 Viton, Screen **W0**
 Buna, Lever **0L**
 Viton, Lever **VL**
 Buna, Screen, Lever **AL**
 Viton, Screen, Lever **WL**

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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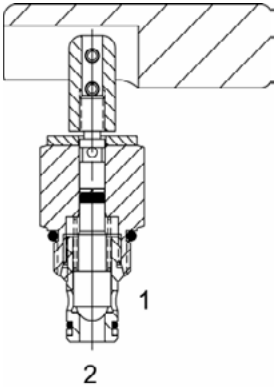


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PB-MCL MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL TYPE, LEVER



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, manual poppet, 2 way normally closed, pull type valve with lever.

OPERATION

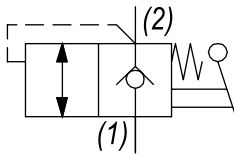
The PB-MCL blocks flow from (1) to (2) until an operator pulls the handle upward. The bias spring (see option page for pressure) allows for backpressure at (2) before the valve will open.

Note: Pressure at port (2) will directly act on the spool and spring. Port (2) is intended to be a tank port only.

FEATURES

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

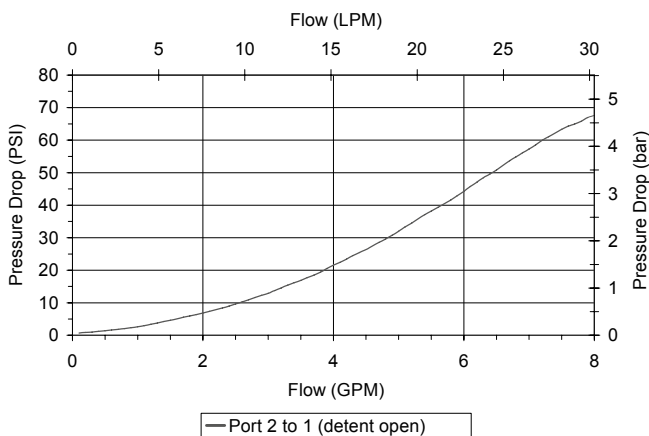
HYDRAULIC SYMBOL



Pressure above *SPRING BIAS PRESSURE* at port (2) may cause valve to self open.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LTR/M)
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	.33 lbs (.15 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	21191101

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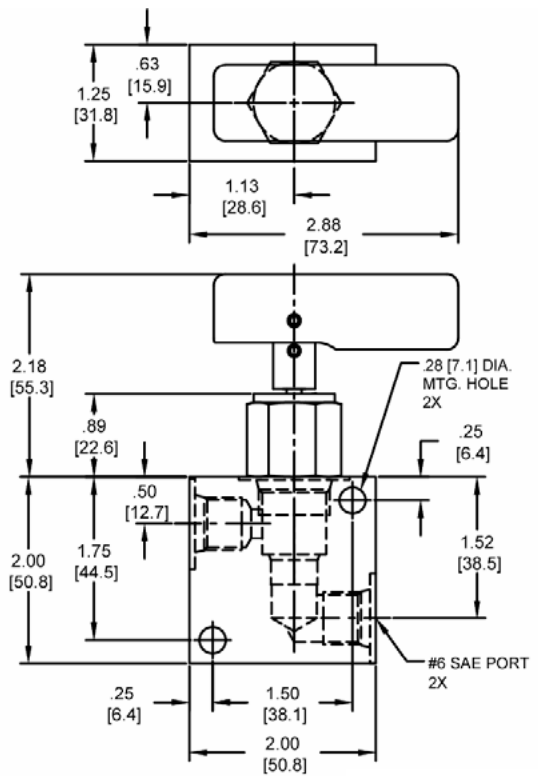
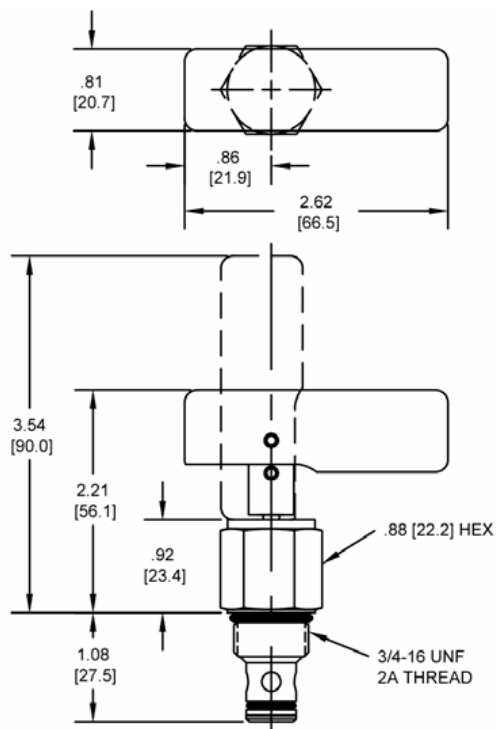


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-MCL - - -

OPTIONS

Buna Standard **00**
 Viton Standard **V0**
 Buna, Screen **A0**
 Viton, Screen **W0**

BODIES

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

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

SPRING BIAS PRESSURE

0075 75 PSI
0150 150 PSI

Note: pressure above **SPRING BIAS PRESSURE**
 at port (2) may cause valve to self open.

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DE-MCL NORMALLY CLOSED MANUAL, PULL VALVE

DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, normally closed, manual pull valve.

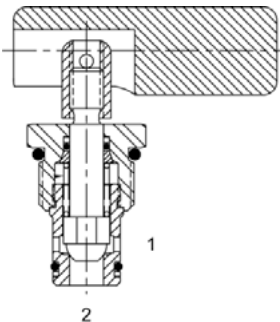
OPERATION

The DE-MCL blocks flow from (1) to (2) until an operator pulls the shaft outward. The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

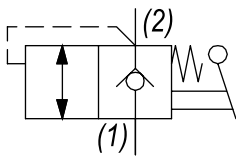
Note: pressure at port (2) will directly act on the spool and spring. Port (2) is intended to be a tank port only. The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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



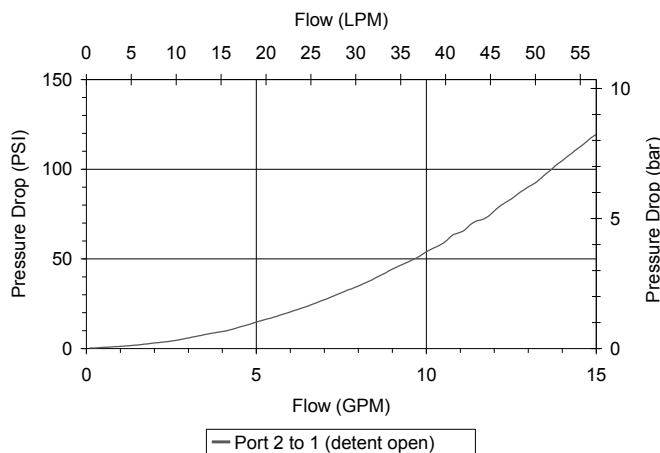
HYDRAULIC SYMBOL



Pressure above *SPRING BIAS PRESSURE* at port (2) may cause valve to self open.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	5 drops/min (82 ml/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	.15 lbs (.07 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	21191201

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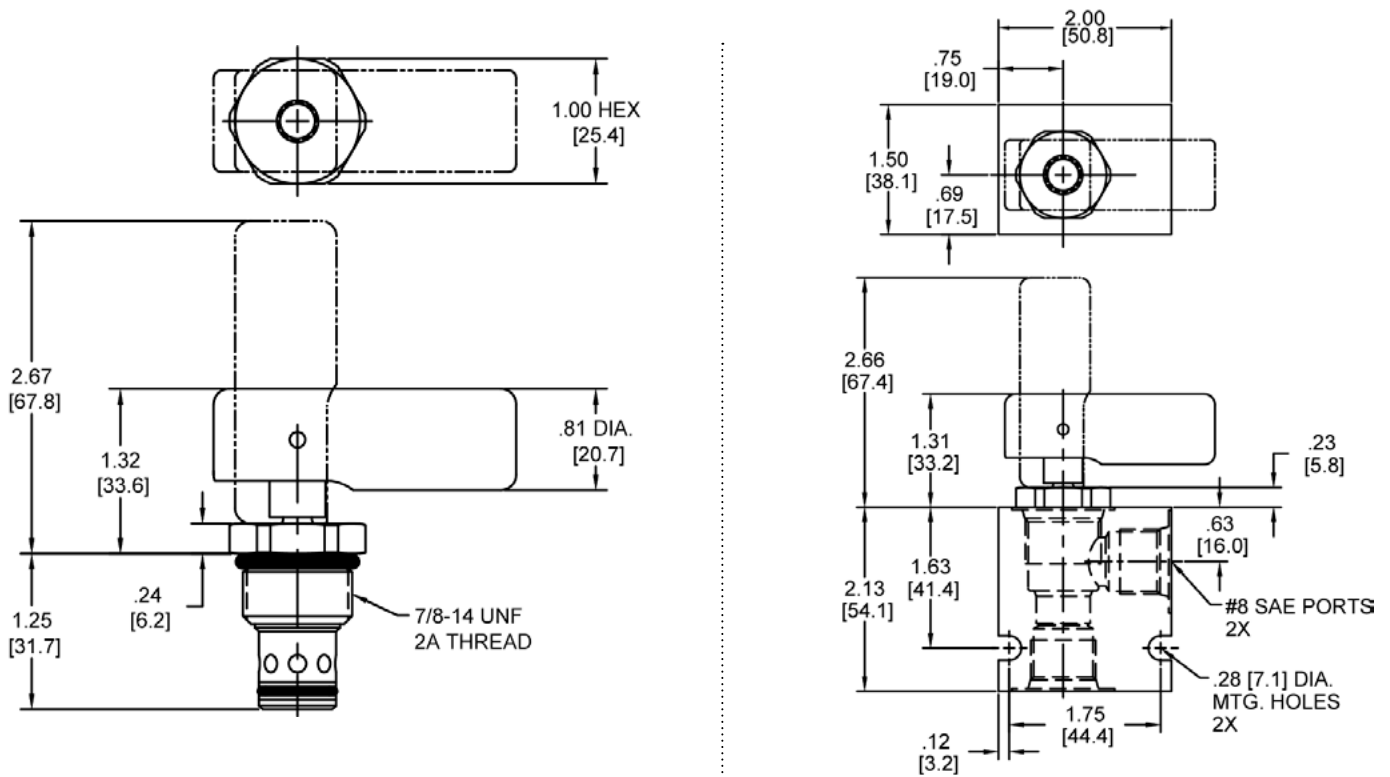


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-MCL - - -

OPTIONS

Buna Standard **00**
 Viton Standard **V0**
 Buna, Screen **A0**
 Viton, Screen **W0**

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

SPRING BIAS PRESSURE

0065 65 PSI
0160 165 PSI

Note: pressure above **SPRING BIAS PRESSURE**
 at port (2) may cause valve to self open.

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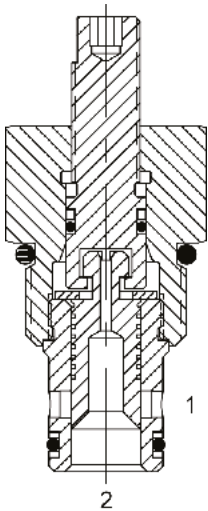


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DE-M2G MANUAL ROTARY SPOOL VALVE, 2 WAY NORMALLY CLOSED



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, manual rotary spool valve, 2 way normally closed.

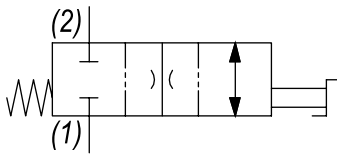
OPERATION

The DE-M2G when rotated clockwise (fully closed position) blocks flow from (1) to (2) and (2) to (1). When rotated counterclockwise (fully open position), the cartridge allows flow from (1) to (2) and (2) to (1).

FEATURES

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

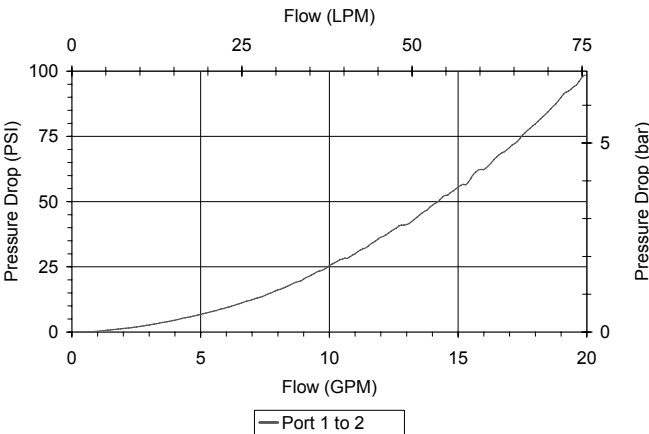
HYDRAULIC SYMBOL



May be used as a metering product. Valve has approximately 3.5 turns of adjustment from fully open to fully closed. See Chart for fully open pressure drop.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu/in per min (82 ml/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	.27 lbs (.12 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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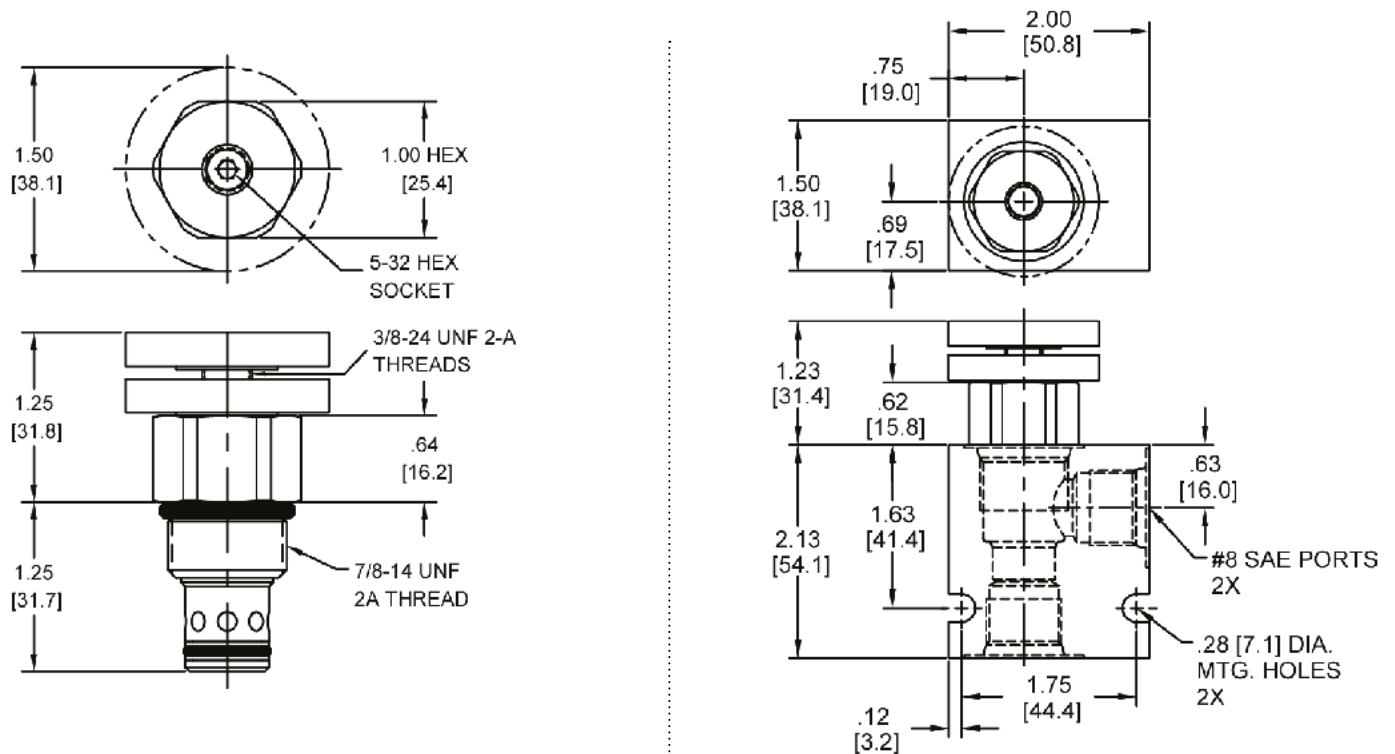


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-M2G -

OPTIONS

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

BODIES

Blank
N 3/8" NPTF Ports
S #8 SAE Ports

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

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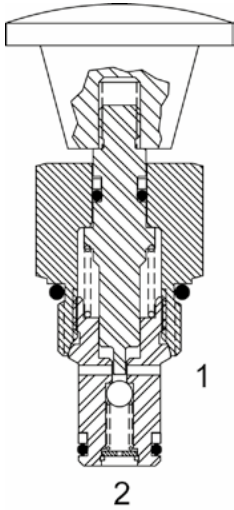
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HB-MCP 2 WAY MANUAL VALVE, NORMALLY CLOSED, PUSH TYPE**DESCRIPTION**

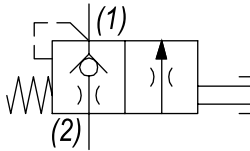
8 size, 3/4-16 thread, "Power" series, manual valve, 2 way normally closed, push type.

OPERATION

The HB-MCP blocks flow from (2) to (1) until an operator pushes the knob in allowing pressure at port #2 to drop to port #1 pressure.

FEATURES

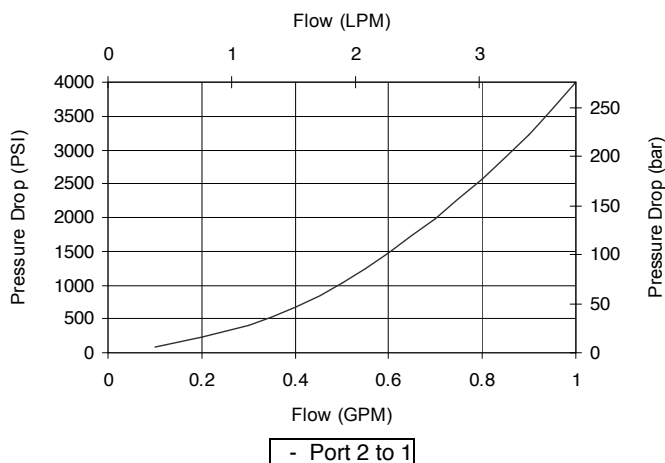
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

Good as a pilot dump valve. Port #1 should be limited to <500 PSI to allow actuation (50 lbs), Port #2 actuation load at 4000 PSI (50 lbs).

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	1 GPM (4 LPM)
Max. Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	32° to 160°F (0° to 70°C)
Weight	.14 lbs (.06 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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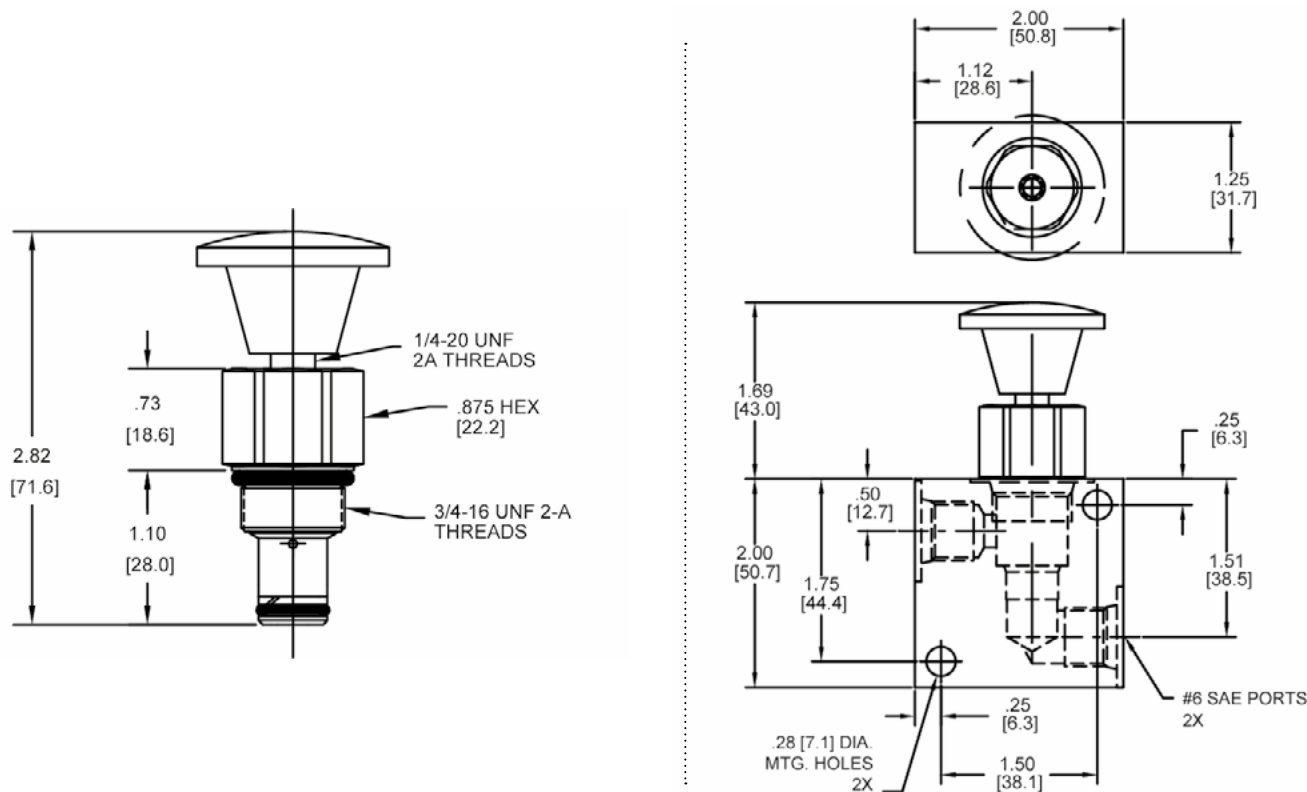


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

HB-MCP		-	-
<u>OPTIONS</u>			<u>BODIES</u>
Buna, Knob	OK		Blank
Viton, Knob	VK		N
			S
			Without Body
			1/4" NPTF Ports
			#6 SAE Ports

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

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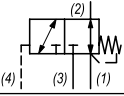
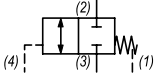
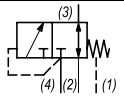
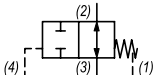
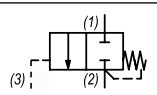
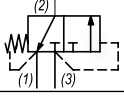
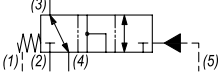
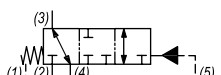


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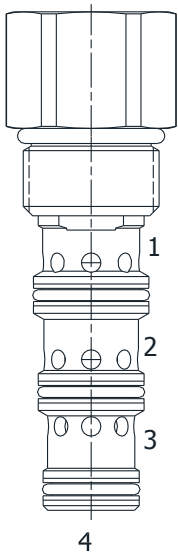
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PILOT TO SHIFT VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	4000	38	276	7/8-14	HG-PDA	MD78
	10	4000	38	276	7/8-14	HG-PDC	MD80
	10	3000	38	207	7/8-14	HG-PDI	MD82
	10	4000	38	276	7/8-14	HG-PDO	MD84
	10	4000	38	276	7/8-14	HF-PDE	MD86
	10	3000	38	207	7/8-14	HF-PDI	MD88
	40	3500	151	241	1 5/16	SO-PTS	MD90
	40	3500	151	241	1 5/16	SO-PTT	MD92

HG-PDA
 PILOTED DIRECTIONAL VALVE, 4 WAY NORMALLY CLOSED



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 4 way piloted directional valve.

OPERATION

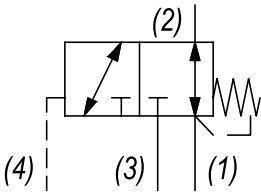
The HG-PDA in neutral (un-piloted), allows flow between (2) and (1) bi-directionally, while blocking at (3). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge redirects flow from (2) to (1), to (2) to (3).

Note: that the backpressure value at (1) must be added to the selected pressure setting to determine pilot pressure necessary to shift valve to second position.

FEATURES

- Hardened parts for long life.
- Industry common cavity

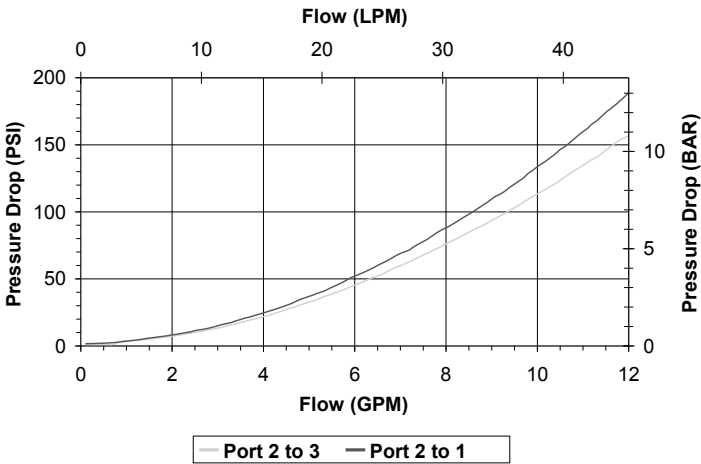
HYDRAULIC SYMBOL



.030 to .060 diameter orifice recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LTR/M)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (82 ml/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	.63 lbs (.28 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	40 ft-lbs (40.6 Nm)
Cavity	DELTA 4W
Cavity Form Tool (Finishing)	40500002
Seal Kit	21191214

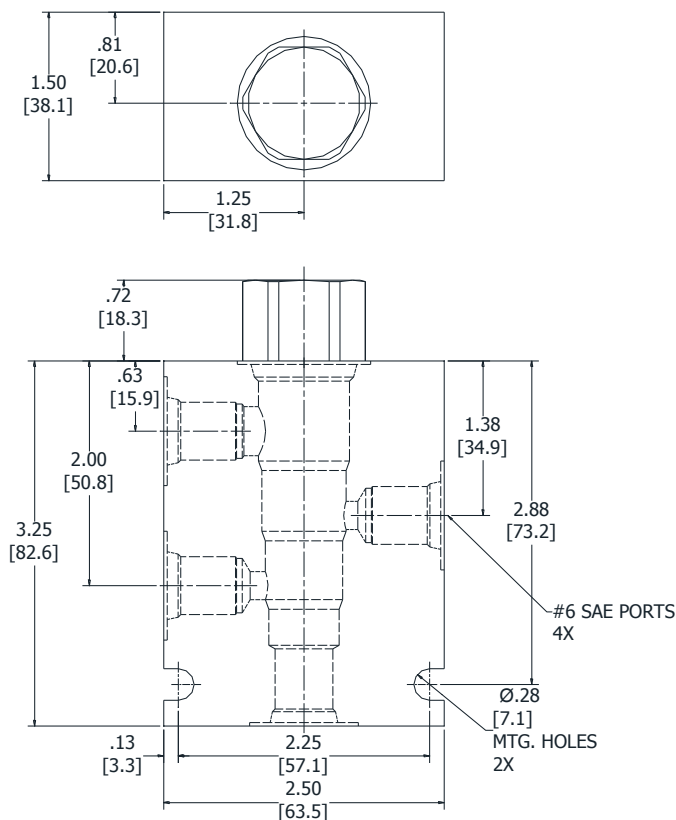
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Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

HG-PDA -

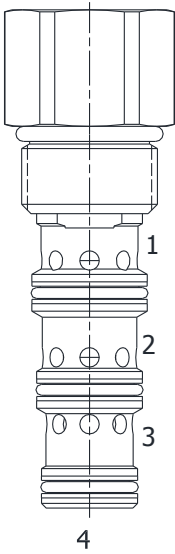
Buna Standard	00
Viton Standard	V0

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

PRESSURE SETTINGS

0040	40 PSI
0080	80 PSI
0160	160 PSI

HG-PDC PILOTED DIRECTIONAL VALVE, 2 WAY NORMALLY CLOSED



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 2 way normally closed piloted directional valve.

OPERATION

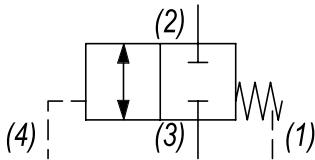
The HG-PDC in neutral (unpiloted), blocks flow between (2) and (3). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge allows flow from (2) to (3).

Note: that the backpressure value at (1) must be added to the selected pressure setting to determine pilot pressure necessary to shift valve to second position.

FEATURES

- Hardened parts for long life.
- Industry common cavity

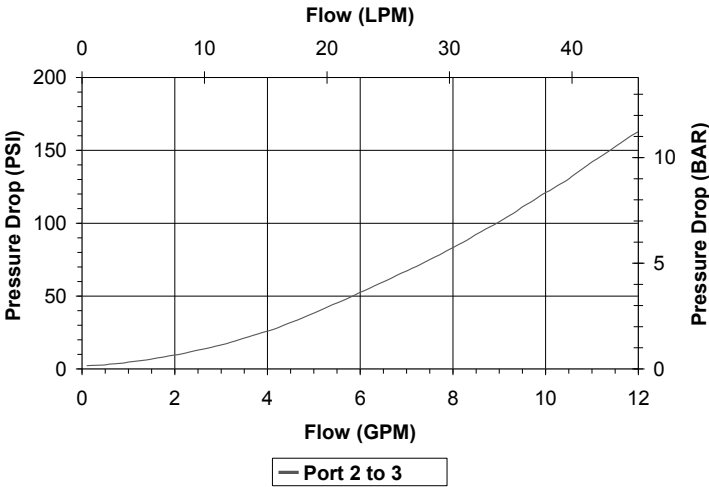
HYDRAULIC SYMBOL



.030 to .060 diameter orifice recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (82 ml/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	.63 lbs (.28 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	40 ft-lbs (40.6 Nm)
Cavity	DELTA 4W
Cavity Form Tool (Finishing)	40500002
Seal Kit	21191214

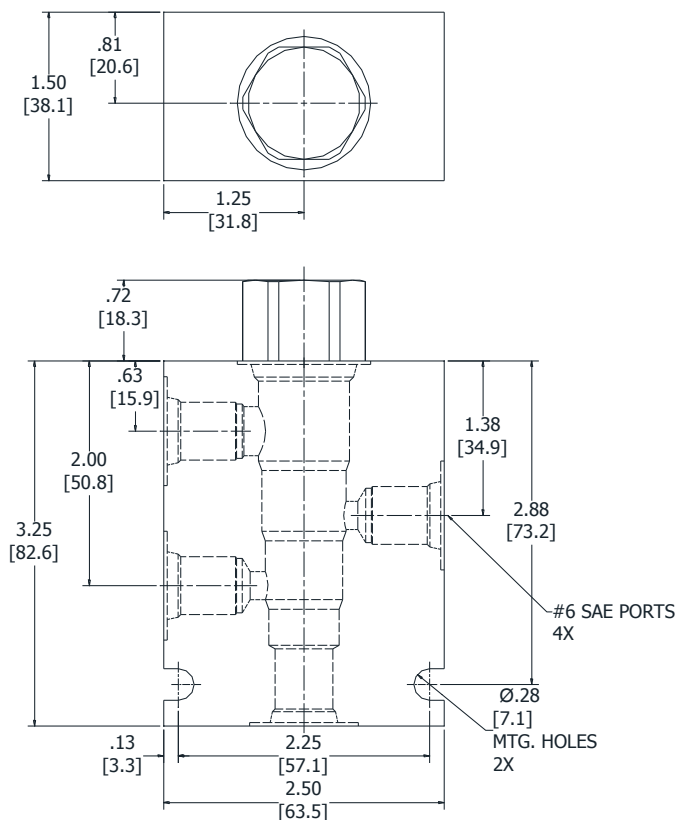
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Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

HG-PDC -

OPTIONS

Buna Standard	00
Viton Standard	V0

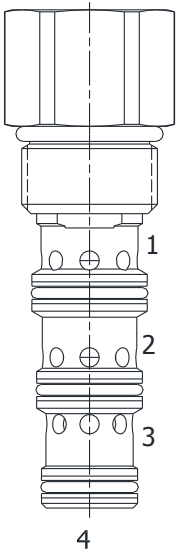
BODIES

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

PRESSURE SETTINGS

0040	40 PSI
0080	80 PSI
0160	160 PSI

HG-PDI
 PILOTED DIRECTIONAL VALVE, 3 WAY NORMALLY OPEN



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 3 way normally open piloted directional valve.

OPERATION

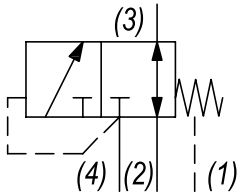
The HG-PDI in neutral (un-piloted), allows flow between (3) and (2) bi-directional, while blocking at (4). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge shifts to close (3) to (2), while opening (4) to (3).

Note: that the backpressure value at (1) must be added to the selected pressure setting to determine pilot pressure necessary to shift valve to second position.

FEATURES

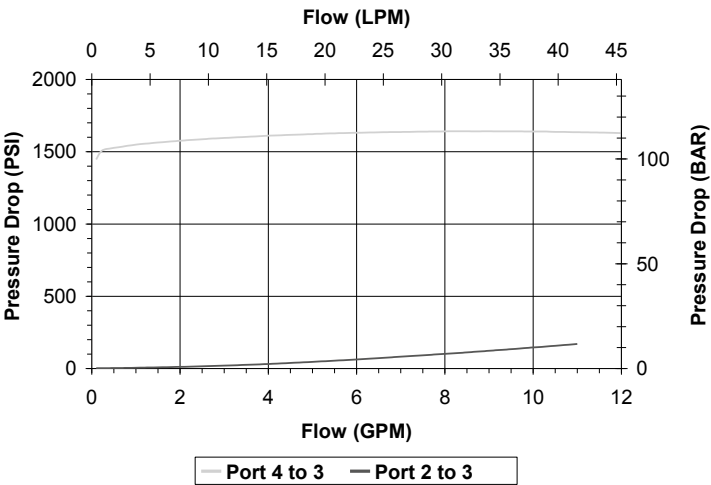
- Hardened parts for long life.
- Industry common cavity

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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	.63 lbs (.28 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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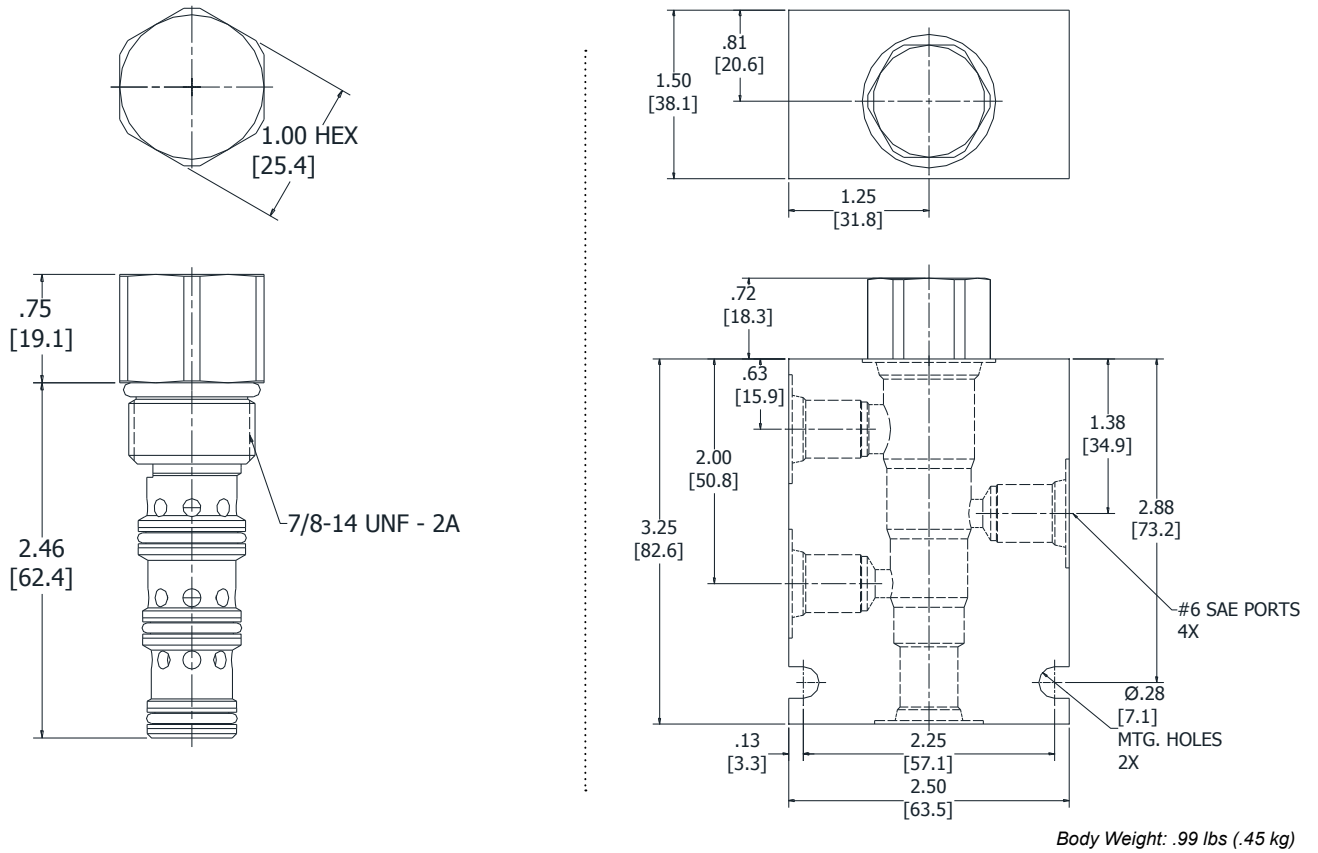


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DIMENSIONS



ORDERING INFORMATION

HG-PDI - - - -			
OPTIONS		BODIES	
Buna Standard	00	Blank	Without Body
Viton Standard	V0	N	1/4" NPTF Ports
		S	#6 SAE Ports
		PRESSURE SETTINGS	
0055	55 PSI		
0080	80 PSI		
0160	160 PSI		

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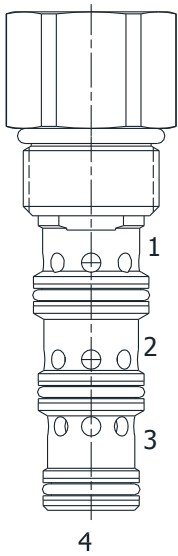


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HG-PDO
 PILOTED DIRECTIONAL VALVE, 2 WAY NORMALLY OPEN



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 2 way normally open piloted directional valve.

OPERATION

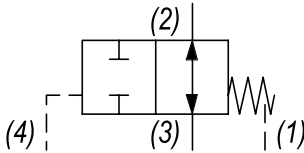
The HG-PDO in neutral (un-piloted), allows flow between (2) and (3) bi-directionally.
 The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge blocks flow from (2) to (3).

Note: that the backpressure value at (1) must be added to the selected pressure setting to determine pilot pressure necessary to shift valve to second position.

FEATURES

- Hardened parts for long life.
- Industry common cavity

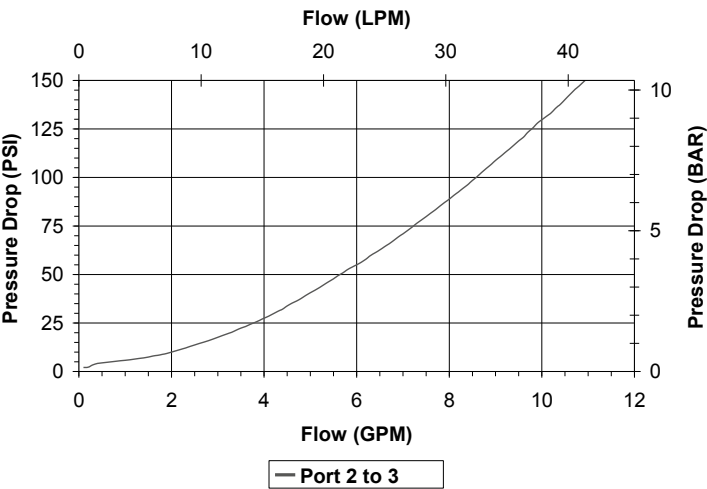
HYDRAULIC SYMBOL



.030 to .060 diameter orifice recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LTR/M)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (82 ml/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	.62 lbs (.28 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	40 ft-lbs (40.6 Nm)
Cavity	DELTA 4W
Cavity Form Tool (Finishing)	40500002
Seal Kit	21191214

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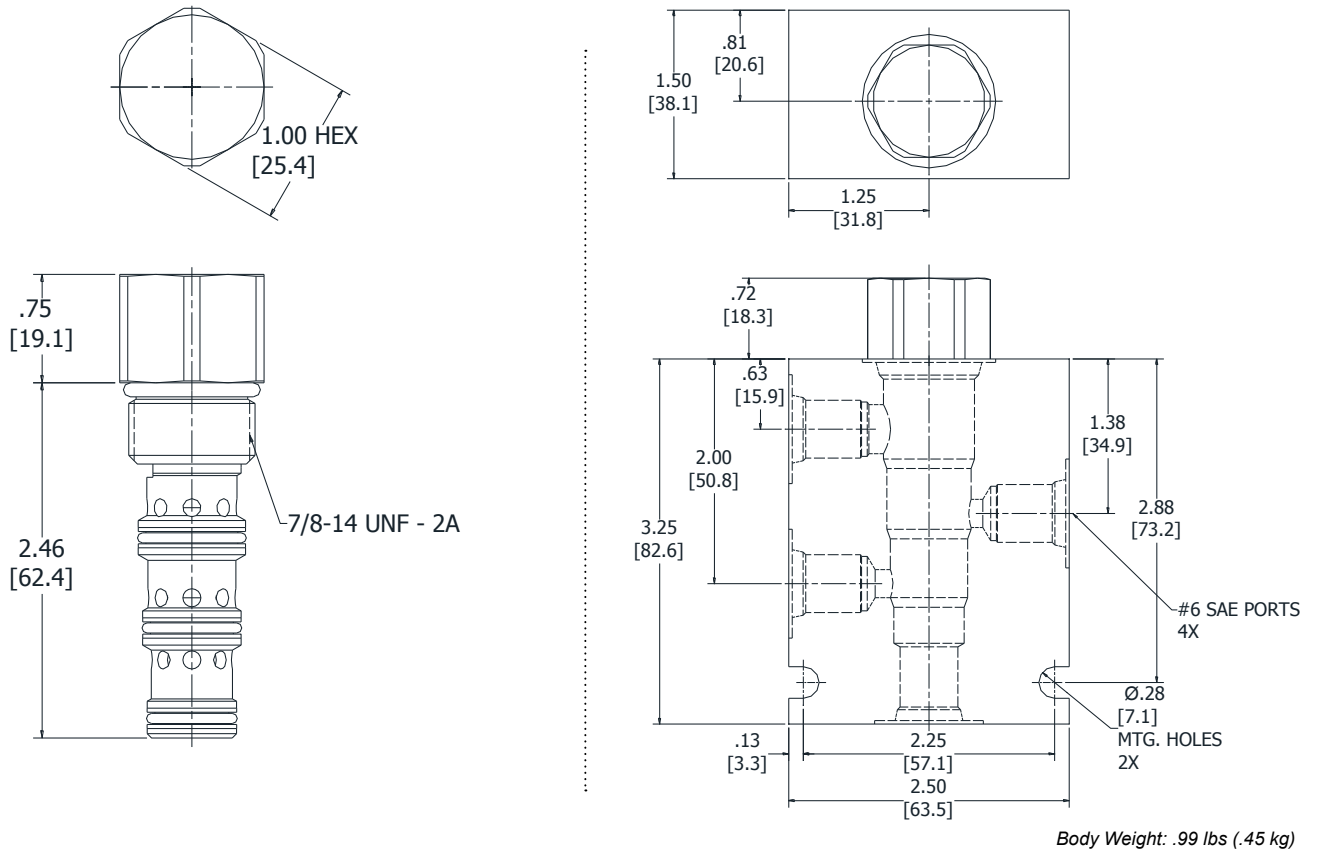


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DIMENSIONS



ORDERING INFORMATION

HG-PDO -		-		-		-	
		OPTIONS				BODIES	
		Buna Standard 00				Blank Without Body	
		Viton Standard V0				N 1/4" NPTF Ports	
						S #6 SAE Ports	
						PRESSURE SETTINGS	
						0040 40 PSI	
						0080 80 PSI	
						0160 160 PSI	

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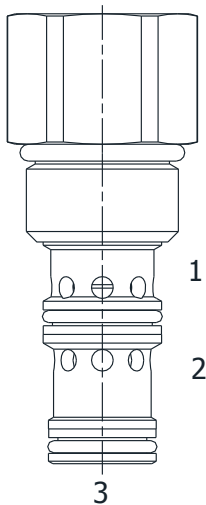


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HF-PDE PILOTED DIRECTIONAL VALVE, NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, external pilot normally closed, piloted directional valve.

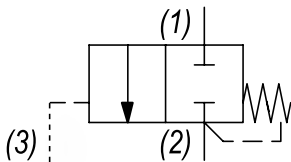
OPERATION

The HF-PDE blocks flow at ports (2) and (1). On attainment of a predetermined pressure at (3) the valve shifts to allow flow from (1) to (2).

FEATURES

- Hardened parts for long life.
- Industry common cavity

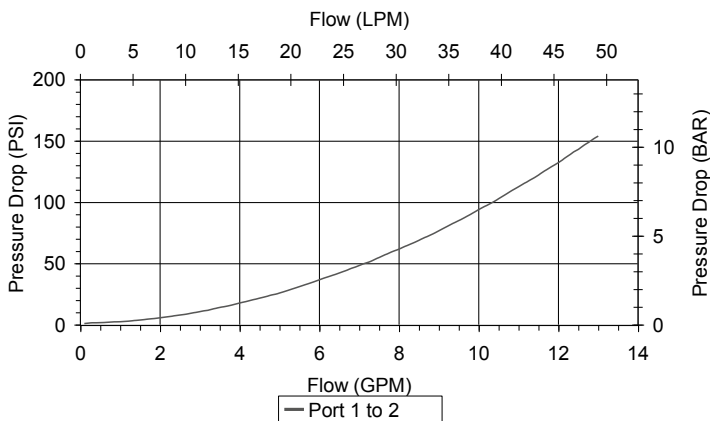
HYDRAULIC SYMBOL



.030 to .060 diameter orifice recommended beneath port (3).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (82 ml/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	40 ft-lbs (40.6 Nm)
Cavity	DELTA 3W
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191206

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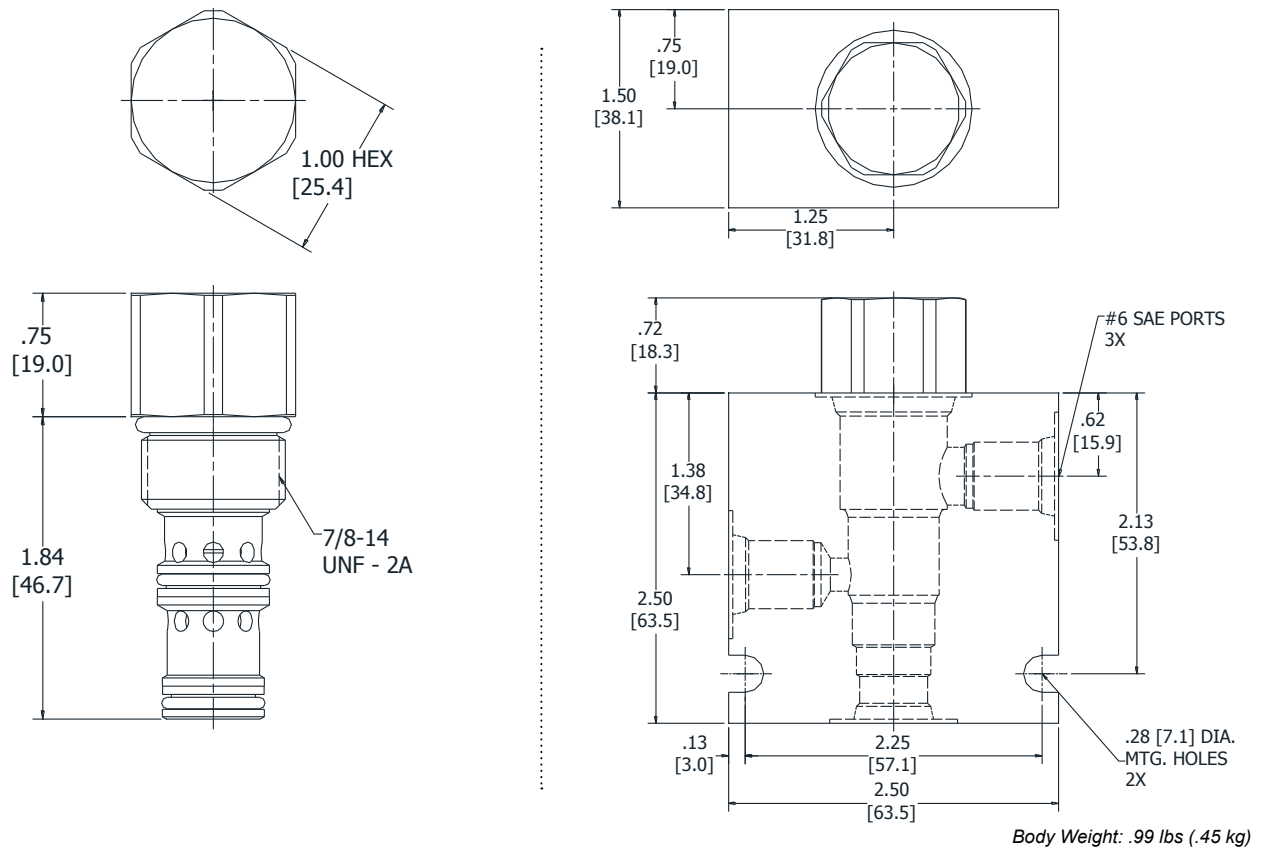


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DIMENSIONS



ORDERING INFORMATION

HF-PDE -

OPTIONS

Buna Standard	00
Viton Standard	V0

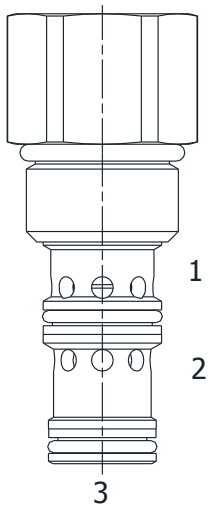
BODIES

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

PRESSURE SETTINGS

0050	50 PSI
0095	95 PSI
0165	165 PSI

HF-PDI PILOTED DIRECTIONAL VALVE, INTERNAL PILOT AND DRAIN



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, internal pilot and drain, piloted directional valve.

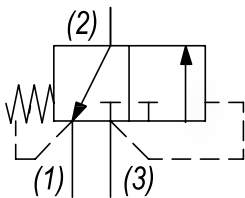
OPERATION

The HF-PDI blocks flow at (3) and allows flow from (2) to (1). On attainment of a predetermined pressure at (3) the valve shifts to allow flow from (3) to (2) and block flow at (1).

FEATURES

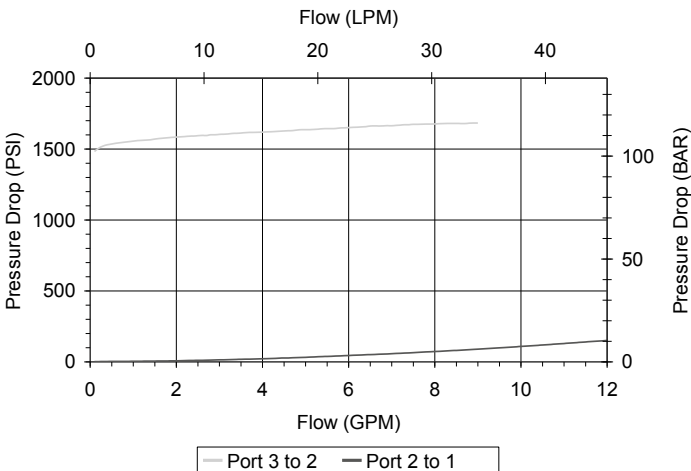
- Hardened parts for long life.
- Industry common cavity

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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 3W
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191206

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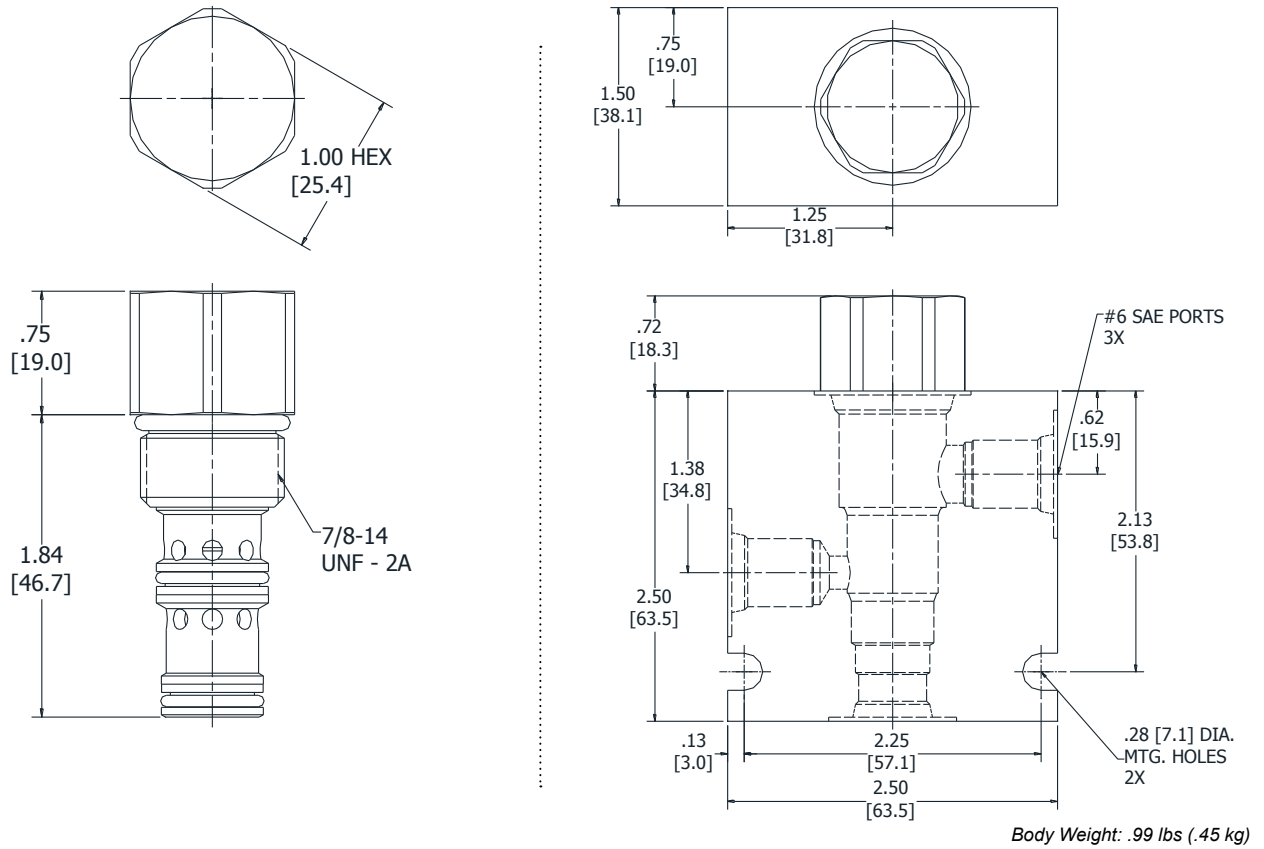


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DIMENSIONS



ORDERING INFORMATION

HF-PDI -		-		-		-	
		OPTIONS				BODIES	
		Buna Standard 00				Blank Without Body	
		Viton Standard V0				N 1/4" NPTF Ports	
						S #6 SAE Ports	
						PRESSURE SETTINGS	
						0050 50 PSI	
						00100 100 PSI	

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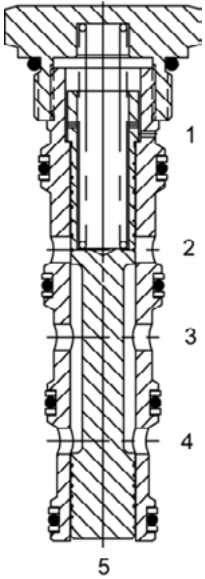


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SO-PTS PILOT TO SHIFT, 3 WAY VALVE, OPEN TRANSITION



DESCRIPTION

16 size, 1 5/16 -12 thread, "Super" series, pilot to shift, 3 way valve, open transition.

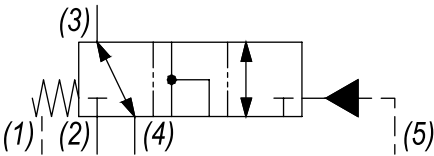
OPERATION

In neutral the SO-PTS allows flow between ports (3) and (4), port (2) is blocked. With application of a remote pilot signal at (5), the valve's spool shifts to allow flow between ports (2) and (3), while port (4) is blocked. During transition ports (2), (3), and (4) are open. The spring chamber is vented to the tank through port (1). The vented spring chamber allows the valve to be fully pressurized at ports (2), (3), and (4) without affecting required pilot pressure. Pressure at (1) will affect required pilot pressure.

FEATURES

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

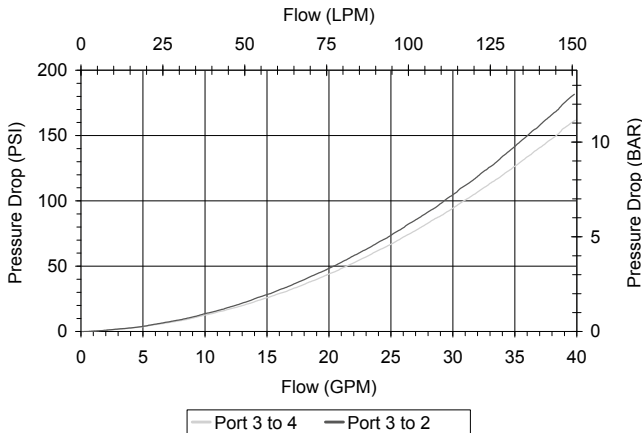
HYDRAULIC SYMBOL



A rate limiting orifice less than .060" diameter is recommended at port (5).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LTR/M)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	10 cu in/min (164 ml/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	1.11 lbs (.50 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 5W SHORT
Cavity Form Tool (Finishing)	40500020
Seal Kit	21191410

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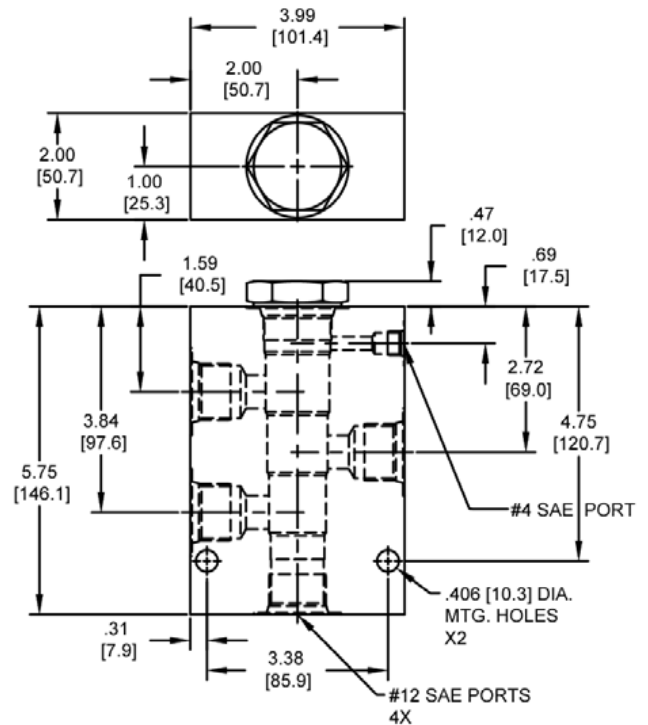
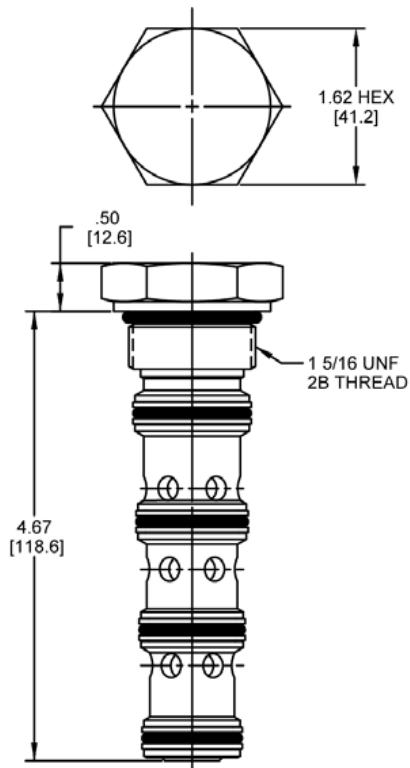


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DIMENSIONS



Body Weight: 3.76 lbs (1.62 kg)

ORDERING INFORMATION

SO-PTS -

OPTIONS

Buna Standard	00
Viton Standard	V0

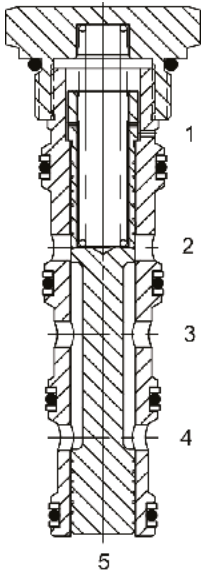
BODIES

Blank S	Without Body #12 SAE Ports
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SPRING BIAS

0070	70 PSI
0150	150 PSI
	± 10%

SO-PTT PILOT TO SHIFT, 3 WAY VALVE, CLOSED TRANSITION



DESCRIPTION

16 size, 1 5/16 -12 thread, "Super" series, pilot to shift, 3 way valve, closed transition.

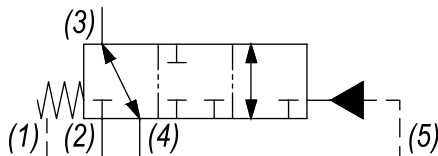
OPERATION

In neutral the SO-PTT allows flow between ports (3) and (4), port (2) is blocked. With application of a remote pilot signal at (5), the valve's spool shifts to allow flow between ports (2) and (3), while port (4) is blocked. During transition all ports are closed. The spring chamber is vented to the tank through port (1). The vented spring chamber allows the valve to be fully pressurized at ports (2), (3), and (4) without affecting required pilot pressure. Pressure at (1) will affect required pilot pressure.

FEATURES

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

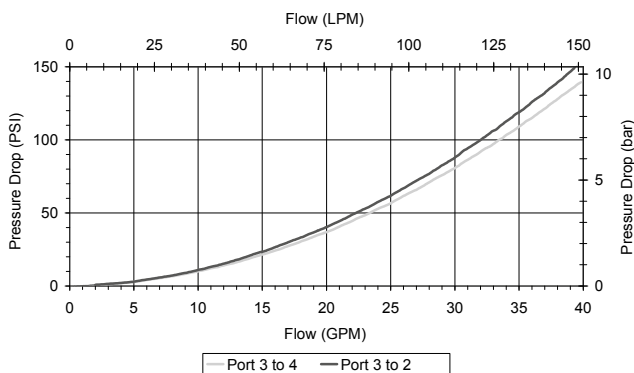
HYDRAULIC SYMBOL



A rate limiting orifice less than .060" diameter is recommended at port (5).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LTR/M)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	10 cu in/min (164 ml/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	1.08 lbs (.49 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 5W SHORT
Cavity Form Tool (Finishing)	40500020
Seal Kit	21191410

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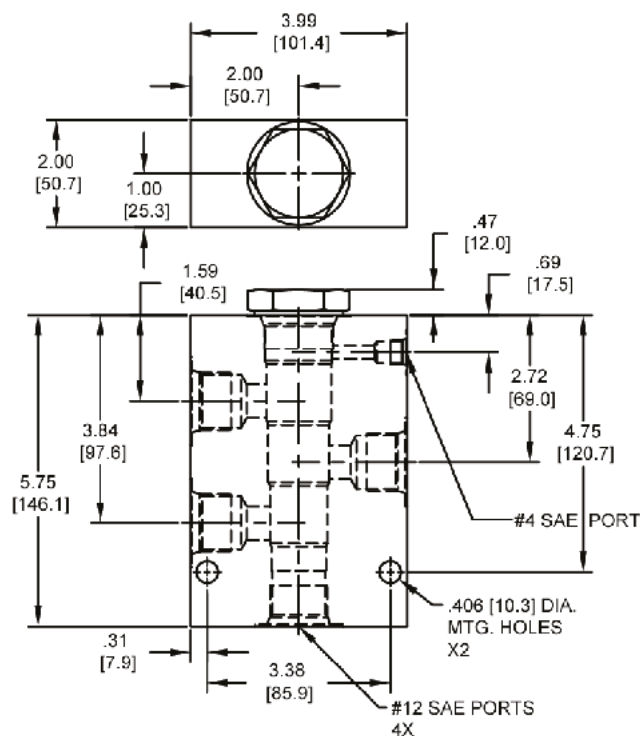
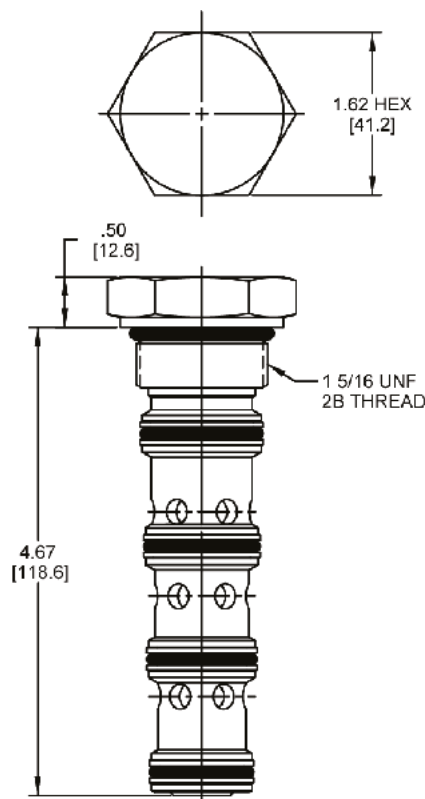


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DIMENSIONS



Body Weight: 3.76 lbs (1.62 kg)

ORDERING INFORMATION

SO-PTT -

OPTIONS

Buna Standard	00
Viton Standard	V0

BODIES

Blank S	Without Body #12 SAE Ports
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SPRING BIAS

0070	70 PSI
0150	150 PSI
	± 10%

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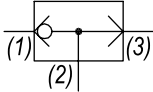


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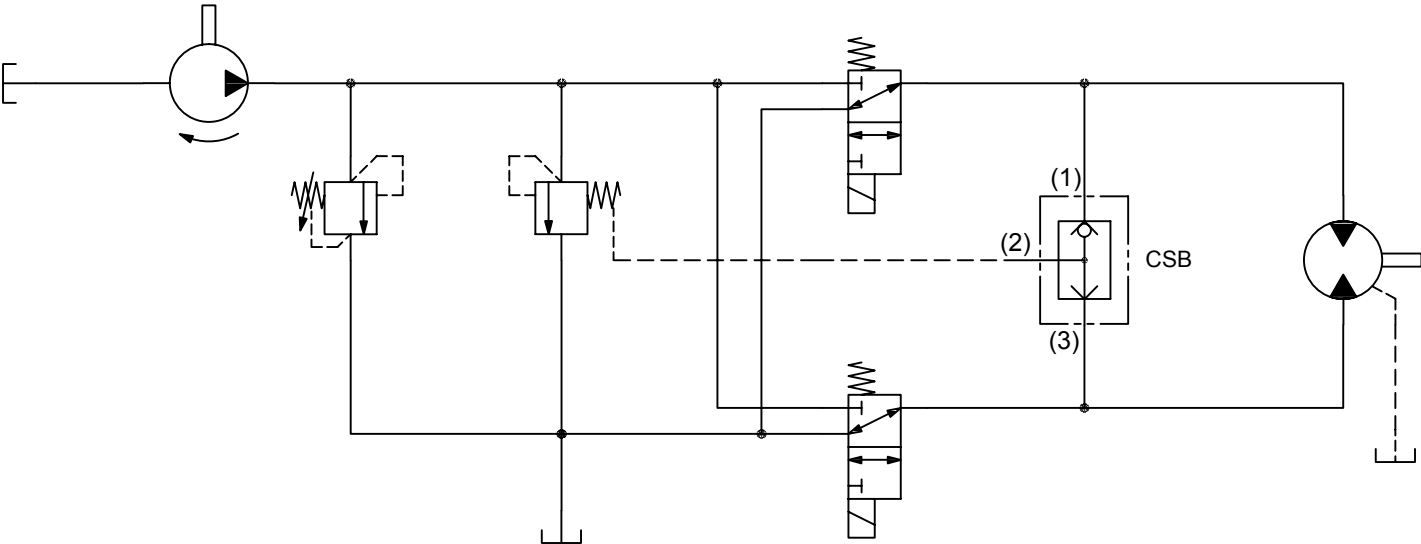
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SHUTTLE VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3500	38	241	9/16-18	IM-CSB	MD96
	6	3500	23	241	3/4-16	PP-CSB	MD98
	8	3500	30	241	7/8-14	DF-CSB	MD100

TYPICAL SCHEMATIC

Typical application for the CSB is to provide load sense to a pressure compensator valve.



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IM-CSB INLINE SHUTTLE VALVE

DESCRIPTION

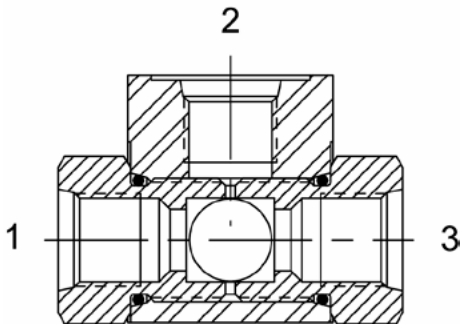
#6 SAE, inline shuttle valve.

OPERATION

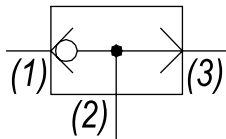
The IM-CSB allows flow from the higher pressure of (1) or (3) to (2). The valve is commonly used as a load sense to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure released hydraulic brake.

FEATURES

- Hardened parts for long life.

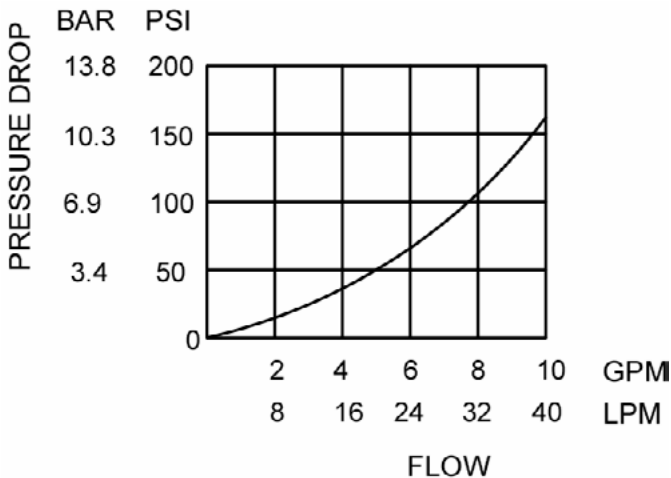


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



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

VALVE SPECIFICATIONS

Nominal Flow Max	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	1 cu in/min (16 ml/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	.28 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid

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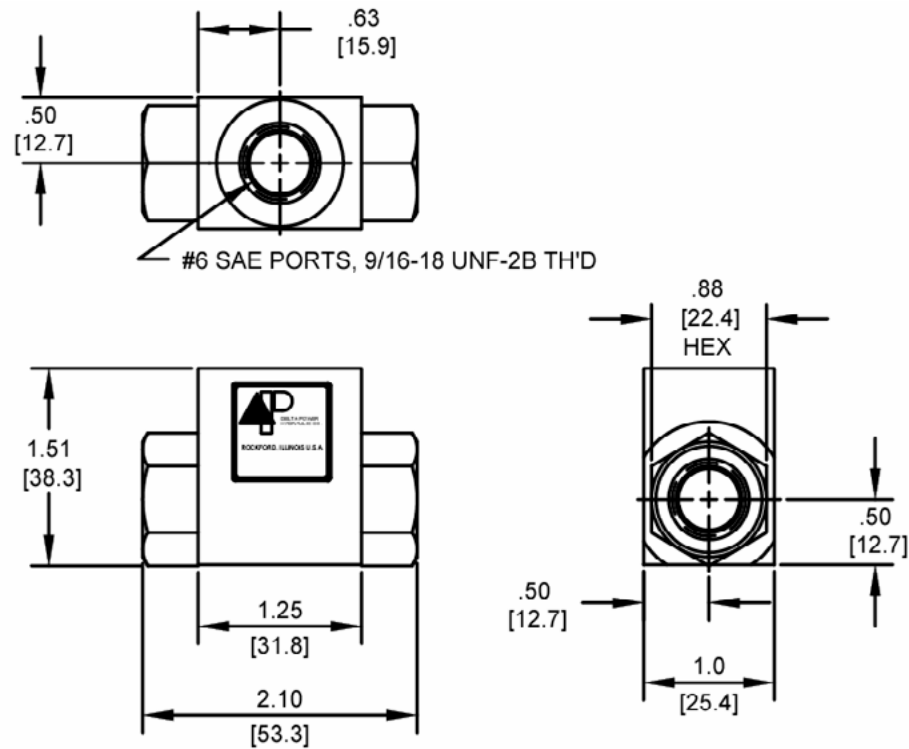


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DIMENSIONS



ORDERING INFORMATION

IM-CSB -

OPTIONS

Buna Standard **00**

Viton Standard **V0**

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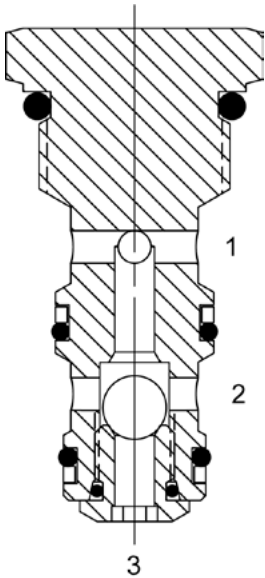


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PP-CSB SHUTTLE VALVE



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, shuttle valve.

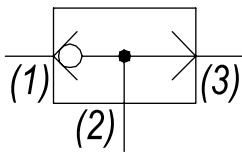
OPERATION

The PP-CSB allows flow from the higher pressure of (1) or (3) to (2). The valve is commonly used as a load sense to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure released hydraulic brake.

FEATURES

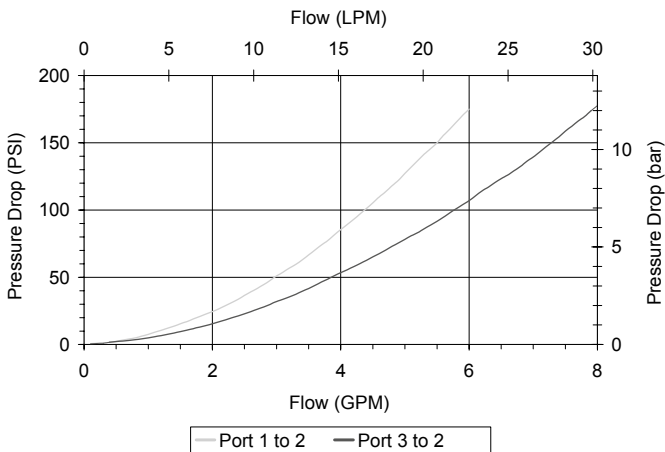
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LTR/M)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	1 cu in/min (16 ml/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
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Cavity	POWER 3W
Cavity Form Tool (Finishing)	40500024
Seal Kit	21191104

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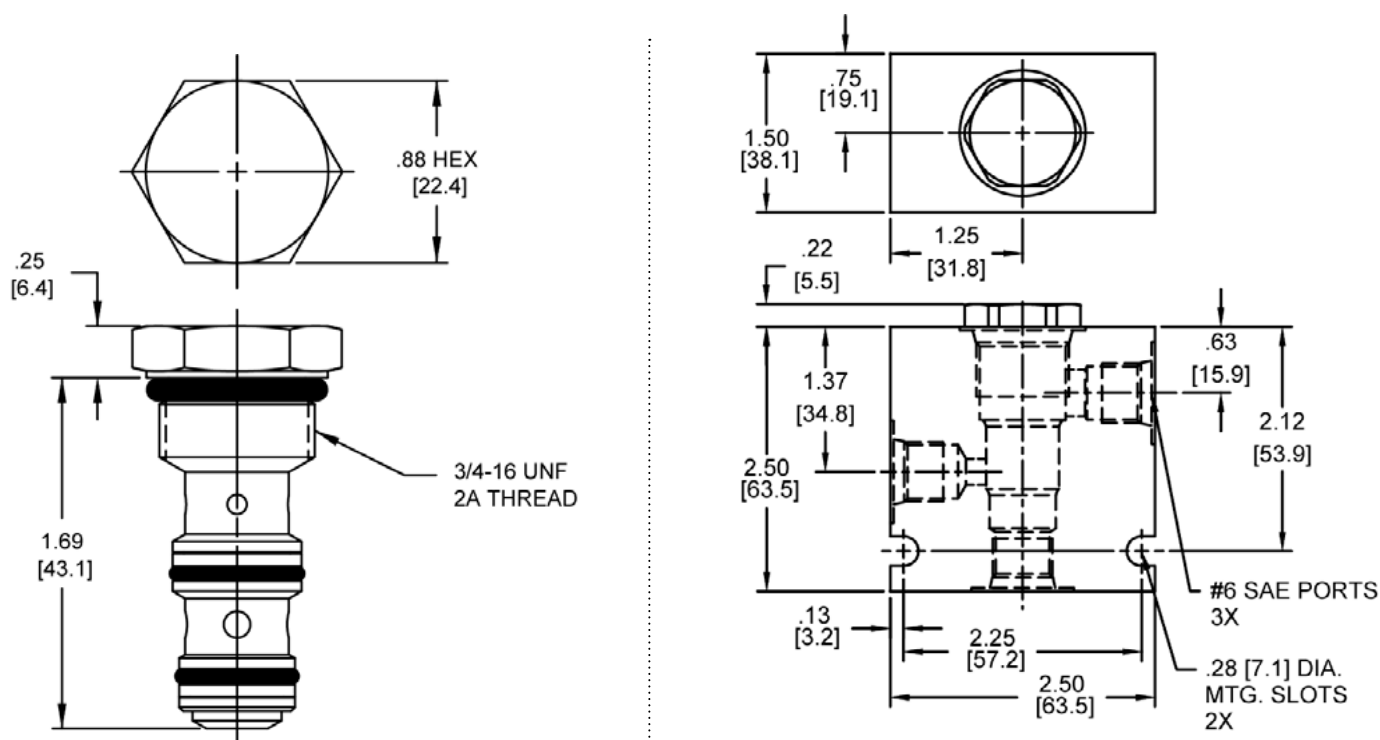


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DIMENSIONS



Body Weight: .56 lbs (.25 kg)

ORDERING INFORMATION

PP-CSB -

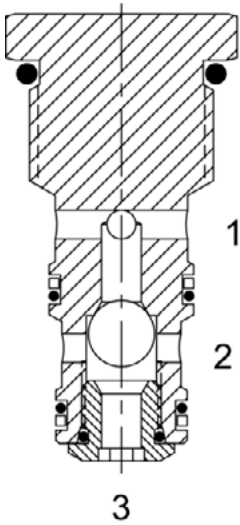
OPTIONS

Buna, Standard	00
Viton, Standard	V0

BODIES

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

DF-CSB SHUTTLE VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, shuttle valve.

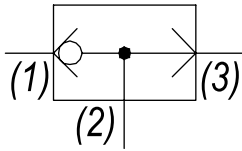
OPERATION

The DF-CSB allows flow from the higher pressure of (1) or (3) to (2). The valve is commonly used as a load sense to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure-released hydraulic brake.

FEATURES

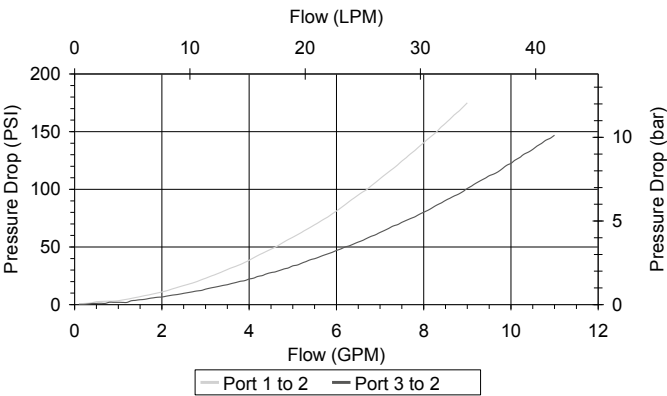
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	1 cu in/min (16 ml/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	.22 lbs (.10 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

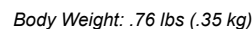
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ORDERING INFORMATION

DF-CSB —

OPTIONS

Buna Standard	00
Viton Standard	V0

BODIES

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

Blank (leave this box blank)

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ROTARY VALVES

2W2P	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	40	3000	151	207	1 5/16-12	SJ-MRA	MD104

3W2P	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	12	3000	45	207	7/8-14	DF-M3A	MD106

4W2P	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3000	38	207	7/8-14	DG-M4A	MD108
	15	3000	57	207	7/8-14	DG-M4B	MD110
	12	3000	45	207	7/8-14	DG-M4C	MD112

6W2P	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	25	3000	95	207	7/8-14	QS-MRS	MD114

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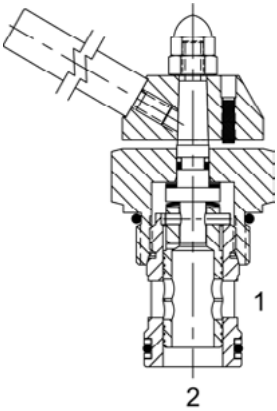


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SJ-MRA MANUAL ROTARY SPOOL VALVE, 2 WAY



DESCRIPTION

16 size, 1 5/16-12, "Super" series, manual rotary spool valve.

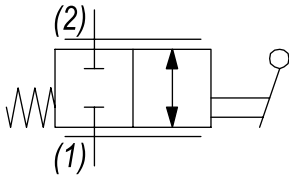
OPERATION

The SJ-MRA regulates flow from (1) to (2) or (2) to (1). Counter-clockwise Rotation of 90° adjusts valve from fully closed to fully open.

FEATURES

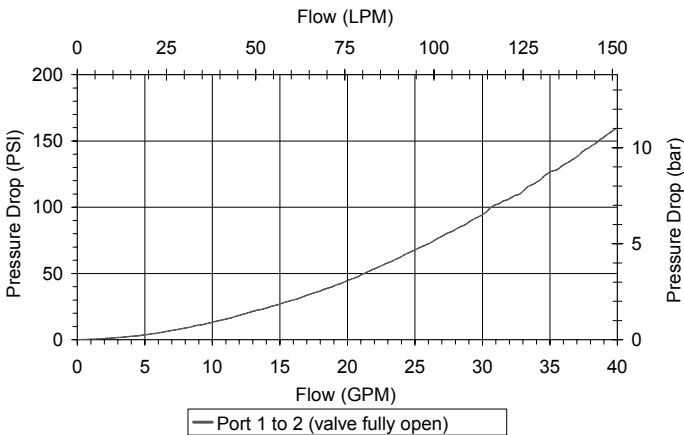
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LTR/M)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	15 cu in/min (246 ml/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	1.13 lbs (.51 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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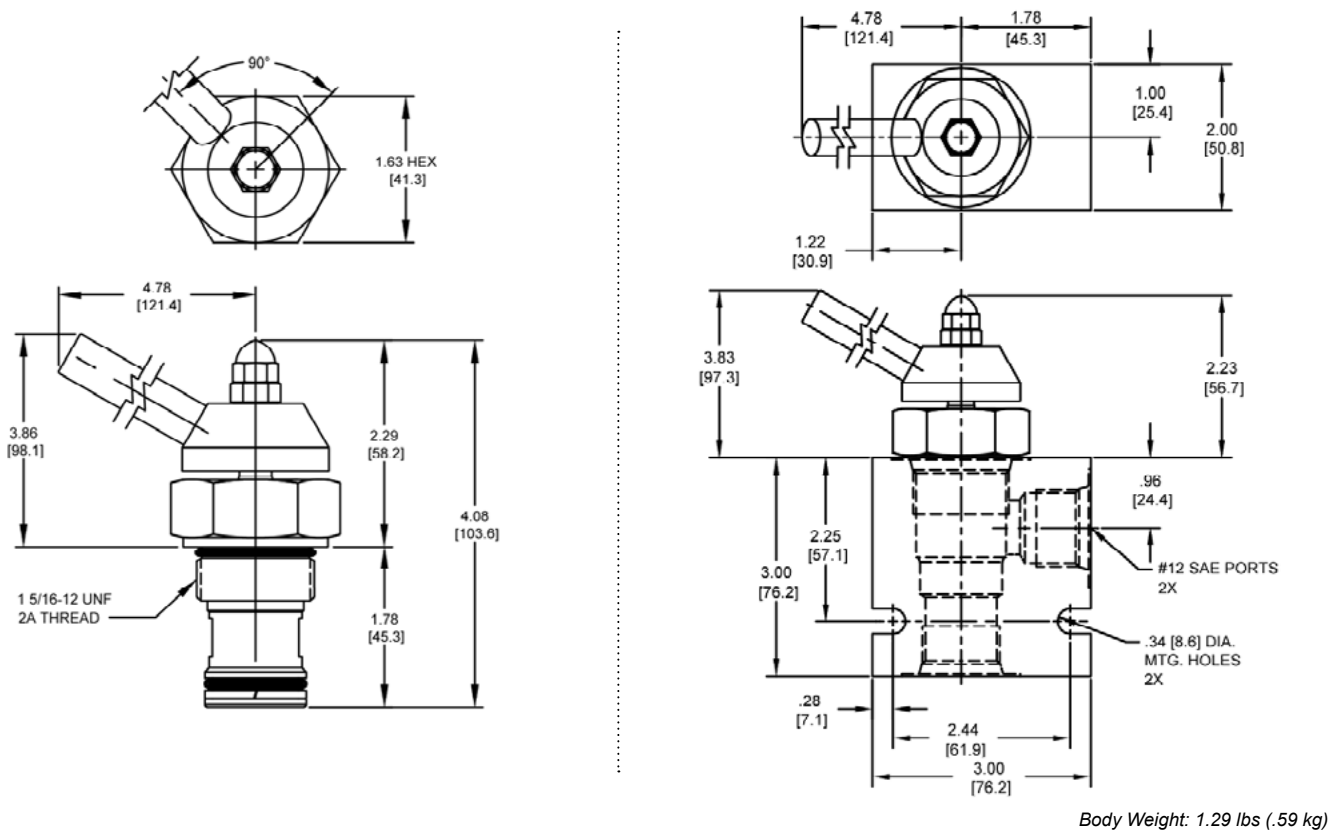


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DIMENSIONS



ORDERING INFORMATION

SJ-MRA - -			
		OPTIONS	BODIES
Buna, Standard	00	Blank	Without Body
Viton, Standard	V0	N	3/4" NPTF Ports
		S	#12 SAE Ports

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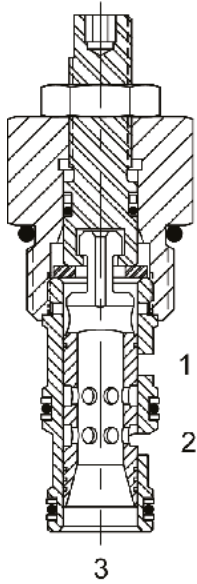
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DF-M3A MANUAL ROTARY SPOOL VALVE, 3 WAY 2 POSITION**DESCRIPTION**

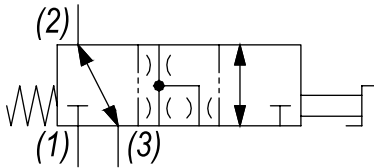
10 size, 7/8-14 thread, "Delta" series, 3 way 2 position, manual rotary spool valve.

OPERATION

The DF-M3A when rotated fully to the clockwise position, the cartridge directs flow from (3) to (2) or (2) to (3) and blocks flow at (1). When rotated fully to the counterclockwise position, the cartridge directs flow from (1) to (3) or (3) to (1) and blocks flow at (2). All ports are closed in transition.

FEATURES

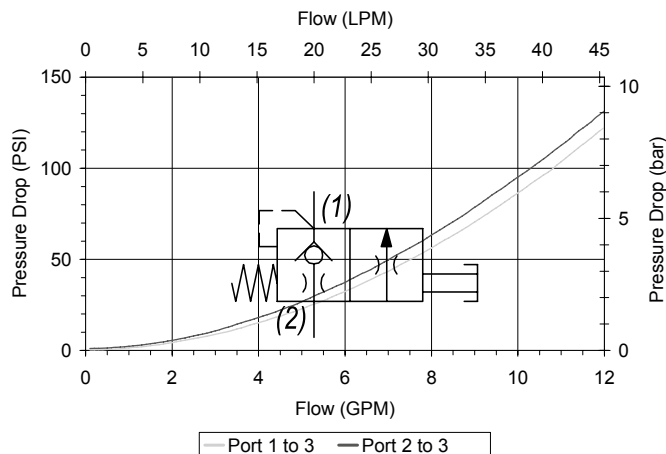
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

May be used as metering product. Valve has approximately 3.5 turns adjustment from extreme clockwise fully to counterclockwise positions. See chart for pressure drop in both positions.

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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	.49 lbs (.22 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	21191210

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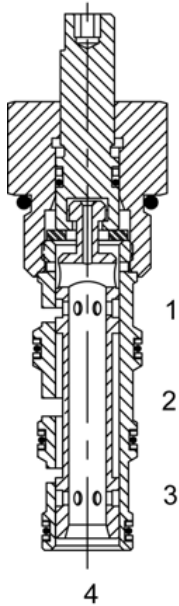
ORDERING INFORMATION

DF-M3A - -

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

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

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DG-M4A MANUAL SPOOL ROTARY VALVE, 4 WAY 2 POSITION, CRISS CROSS**DESCRIPTION**

10 size, 7/8-14 thread, "Delta" series, manual rotary spool valve, 4 way 2 position, criss cross.

OPERATION

The DG-M4A, when rotated fully to clockwise position, the cartridge directs flow between (2) to (3) and (1) to (4). When rotated fully to counterclockwise position, the cartridge directs flow between (3) to (4) and (1) to (2). All ports are closed in transition.

FEATURES

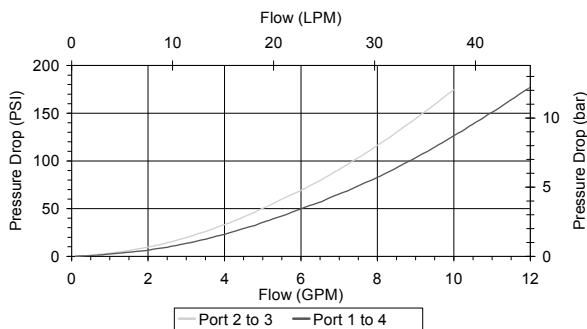
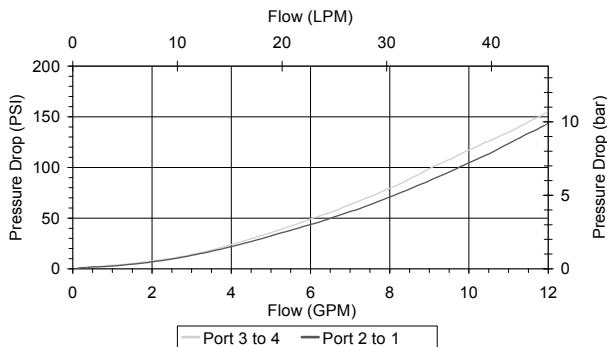
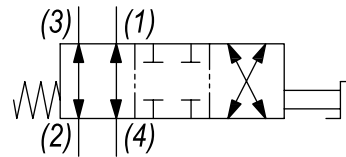
- Hardened parts for long life.
- Industry common cavity.



May be used as metering product. Valve has approximately 3.5 turns adjustment from extreme clockwise fully to counterclockwise positions. See chart for pressure drop in both positions.

PERFORMANCE

Actual Test Data (Cartridge Only)

**HYDRAULIC SYMBOL****VALVE SPECIFICATIONS**

Nominal Flow	10 GPM (38 LPM)
	8 GPM (30 LPM) from (2) to (3)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
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 4W
Cavity Form Tool (Finishing)	40500002
Seal Kit	21191214

WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

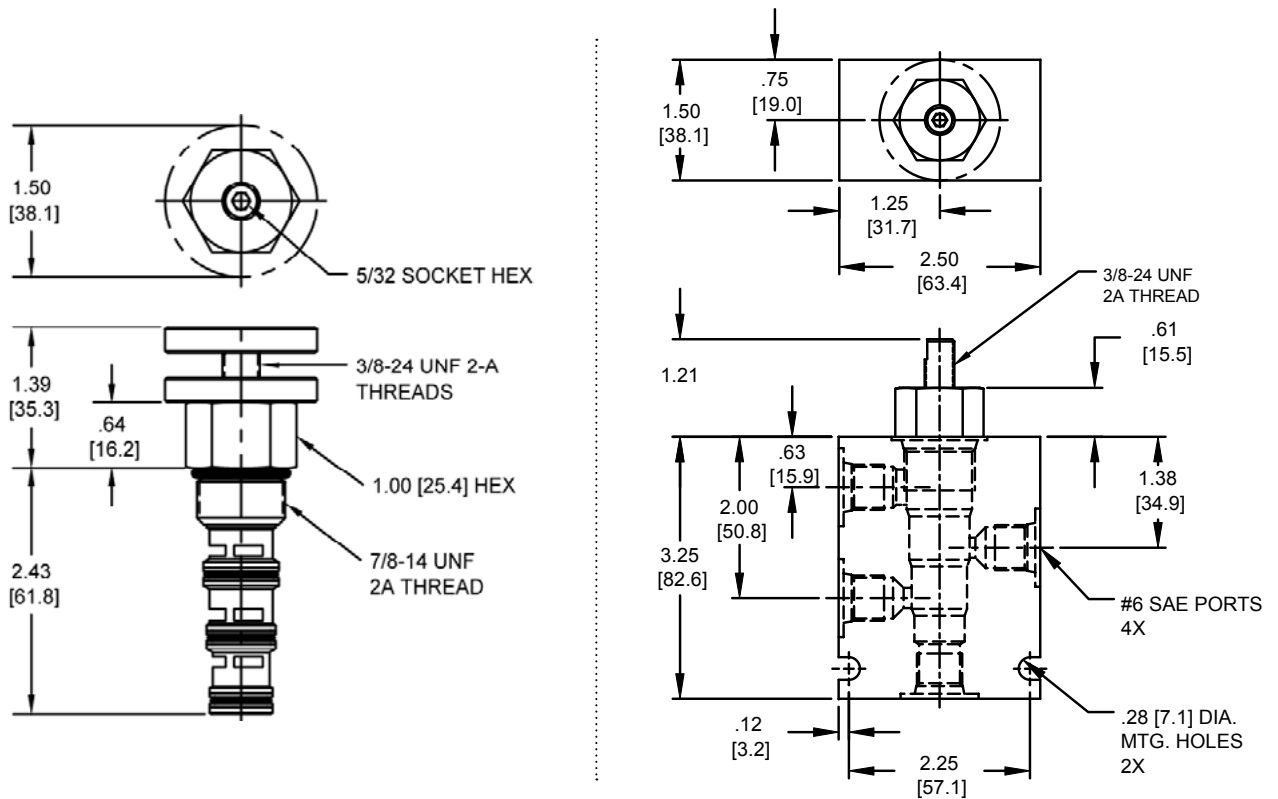


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-M4A -

OPTIONS

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

BODIES

Blank
N 1/4" NPTF Ports
S #6 SAE Ports

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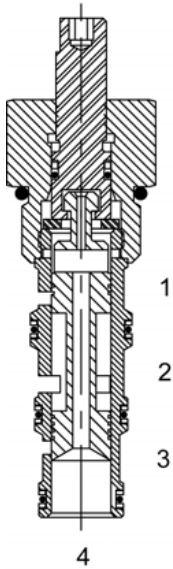
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DG-M4B MANUAL ROTARY SPOOL VALVE, 4 WAY 2 POSITION, CLOSED CENTER**DESCRIPTION**

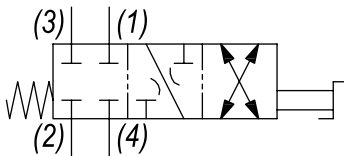
10 size, 7/8-14 thread, "Delta" series, 4 way 2 position, manual rotary spool valve, closed center.

OPERATION

The DG-M4B when rotated fully to clockwise position, this valve blocks flow at all ports. When rotated fully to counterclockwise position, the cartridge directs flow between (2) and (1), as well as (3) and (4).

FEATURES

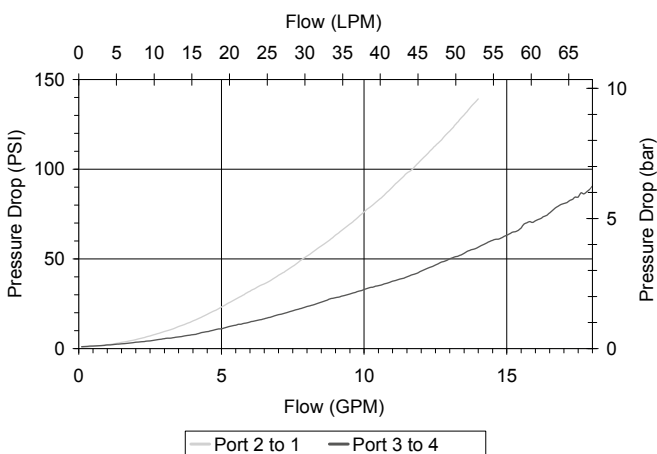
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

May be used as metering product. Valve has approximately 3.5 turns adjustment from extreme clockwise fully to counterclockwise positions. See chart for pressure drop.

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
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	.33 lbs (.15 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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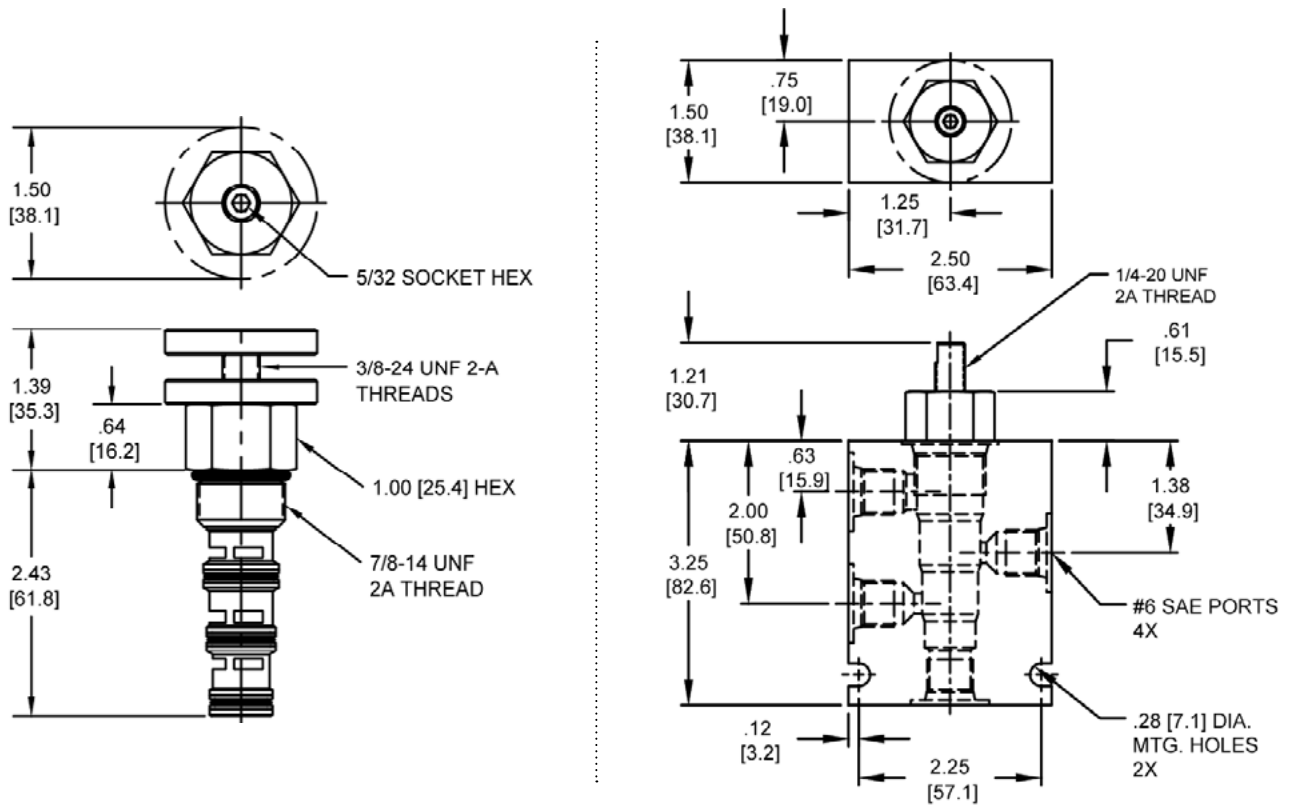


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-M4B -

OPTIONS

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

BODIES

Blank
N 1/4" NPTF Ports
S #6 SAE Ports

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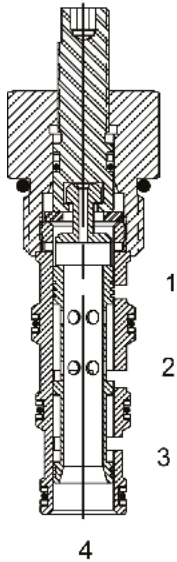
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.



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DG-M4C MANUAL ROTARY SPOOL VALVE, 4 WAY 2 POSITION, TANDEM CENTER**DESCRIPTION**

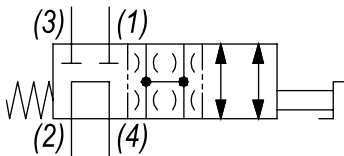
10 size, 7/8-14 thread, "Delta" series, 4 way 2 position, manual rotary spool valve tandem center.

OPERATION

The DG-M4C when rotated fully to clockwise position, the cartridge allows flow from (2) to (4) and blocks flow at (1) and (3). When rotated fully total counterclockwise position, the cartridge allows flow between (2) and (3) and between (1) and (4). All ports are closed in transition.

FEATURES

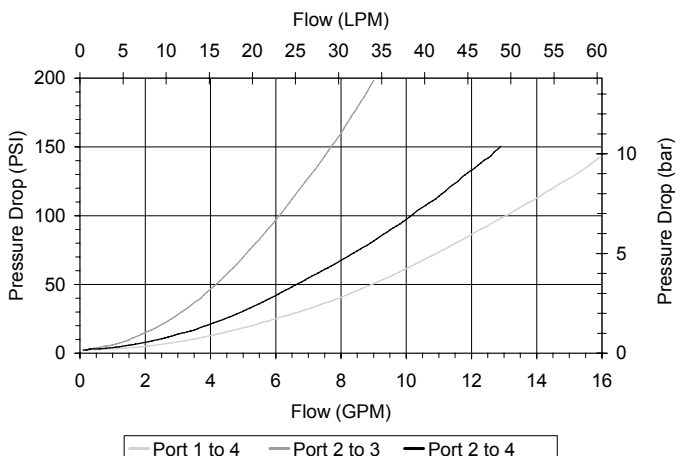
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

May be used as metering product. Valve has approximately 3.5 turns adjustment from extreme clockwise fully to counterclockwise positions. See chart for fully open and fully closed pressure drop.

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	12 GPM (45 LPM)
	8 GPM (30 LPM) from (2) to (3)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
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	.52 lbs (.23 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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DG-M4C **—**

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

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

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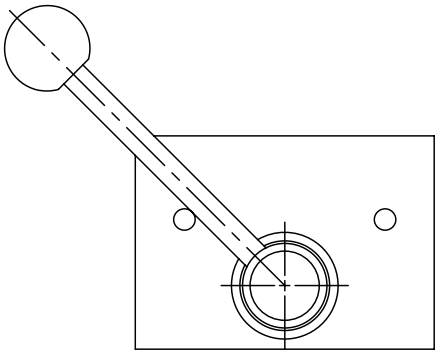
QS-MRS ROTARY SELECTOR VALVE

DESCRIPTION

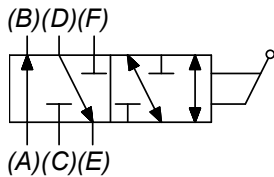
6 port rotary selector valve.

OPERATION

The QS-MRS when rotated counter-clockwise allows flow from (A) to (B) & (D) to (E) and blocks (C) & (F). When rotated clockwise, the valve directs flow from (C) to (B) & (F) to (E) and block flow at (A) & (D).



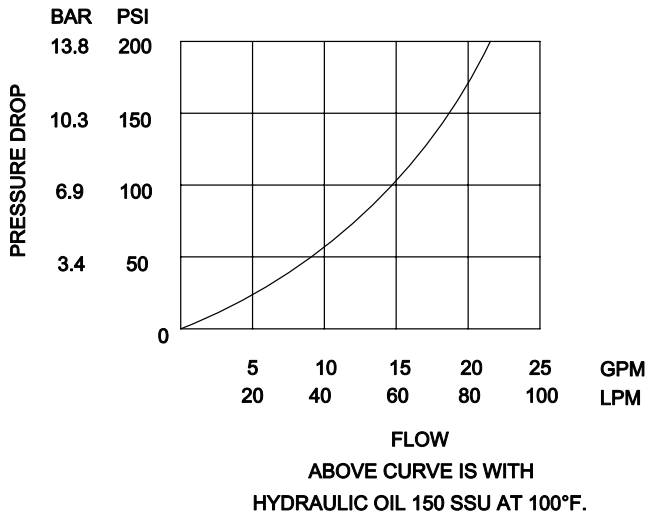
HYDRAULIC SYMBOL



May be used as metering product. All ports closed in transition. See chart for fully open and fully closed pressure drop.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	25 GPM (95 LTR/M)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	1 cu in/min (16 ml/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	3.42 lbs (1.55 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid

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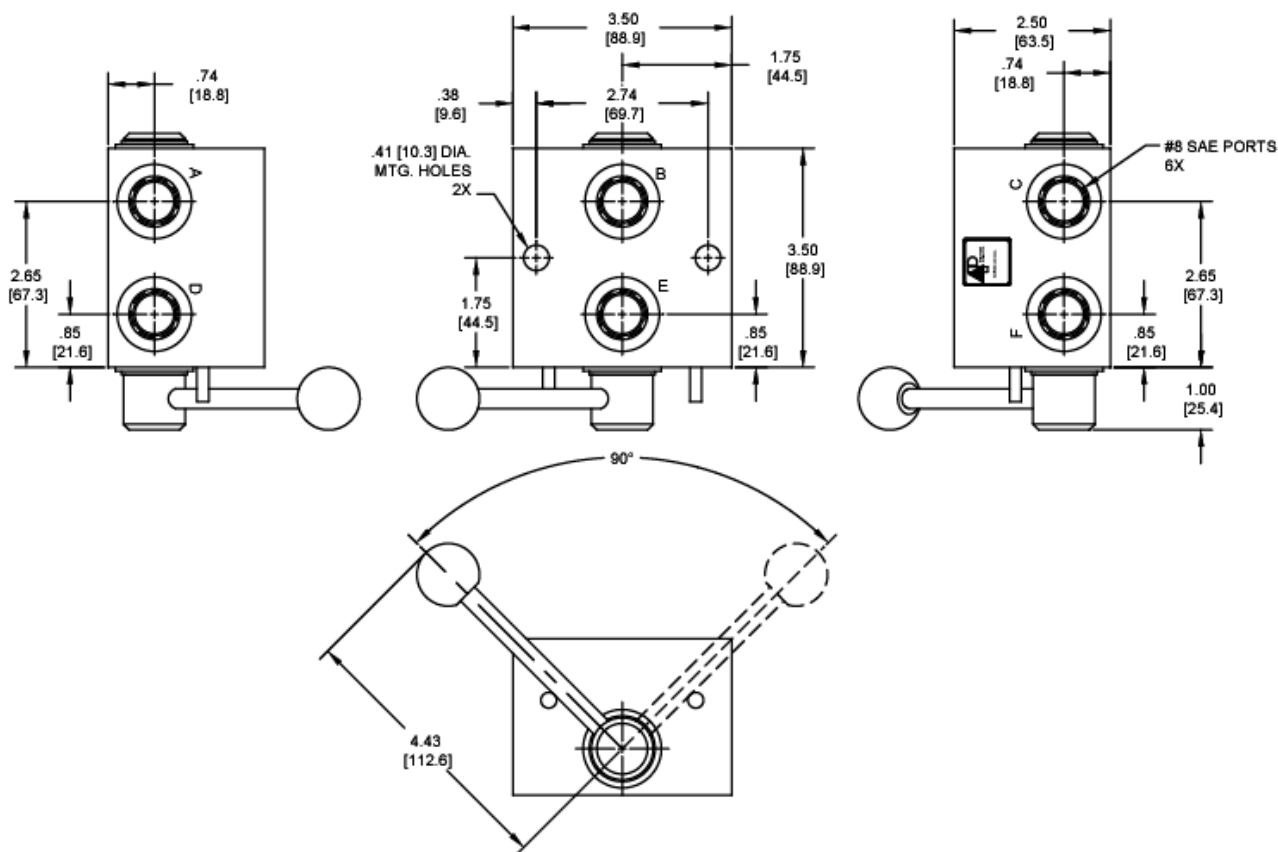


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DIMENSIONS



ORDERING INFORMATION

QS-MRS		-		-	
<u>OPTIONS</u>					<u>BODIES</u>
Buna Standard	00			N	1/2" NPT Ports
Viton Standard	V0			S	#8 SAE Ports

W 7 / 2017

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MECHANICAL FLOW CONTROLS



FLOW RESTRICTORS, ADJUSTABLE (NEEDLE VALVES) MF3

PRESSURE COMPENSATED FLOW REGULATOR VALVES MF21

PRIORITY FLOW REGULATOR VALVES MF47

VELOCITY FUSES MF71

FLOW DIVIDER/COMBINER VALVES MF77

LOGIC ELEMENTS MF89

HAND PUMPS MF97

W6 / 2020

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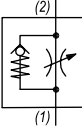


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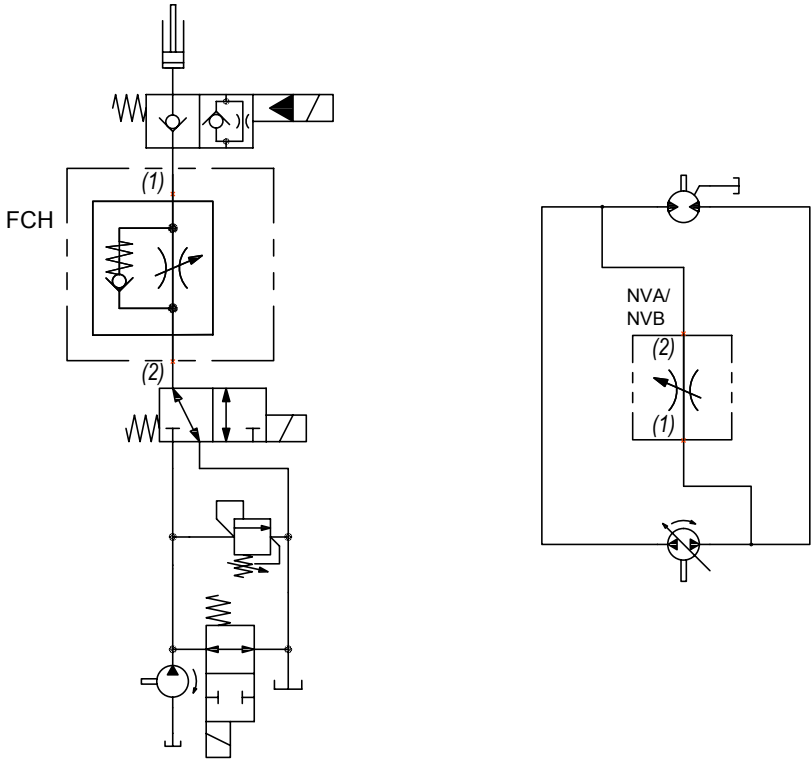
NEEDLE VALVES – FLOW RESTRICTORS

	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.



W6 / 2020

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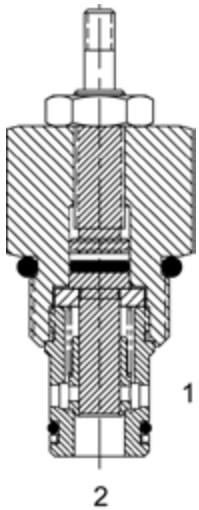


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DE-FCH ADJUSTABLE FLOW CONTROL VALVE, SPOOL TYPE, FREE REVERSE FLOW



DESCRIPTION

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

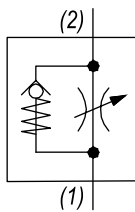
OPERATION

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

FEATURES

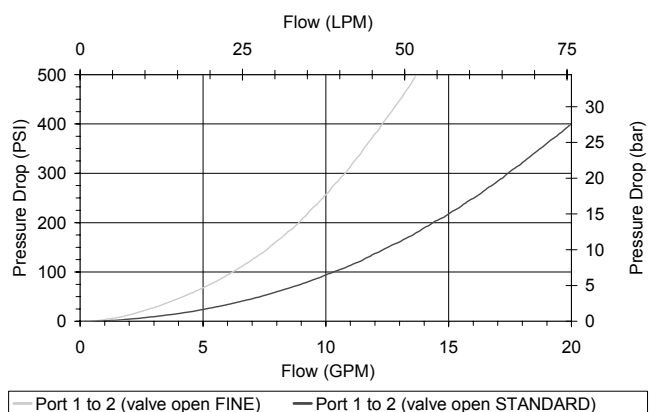
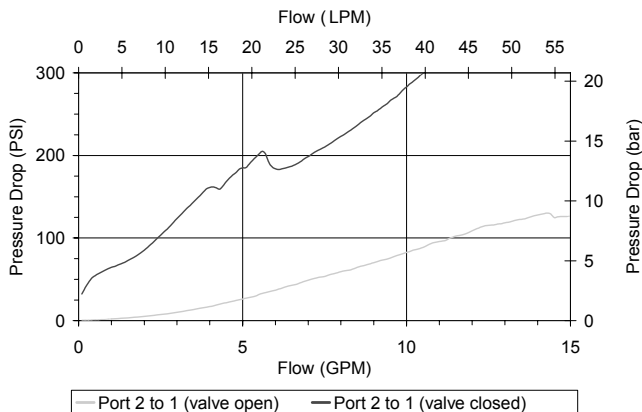
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



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

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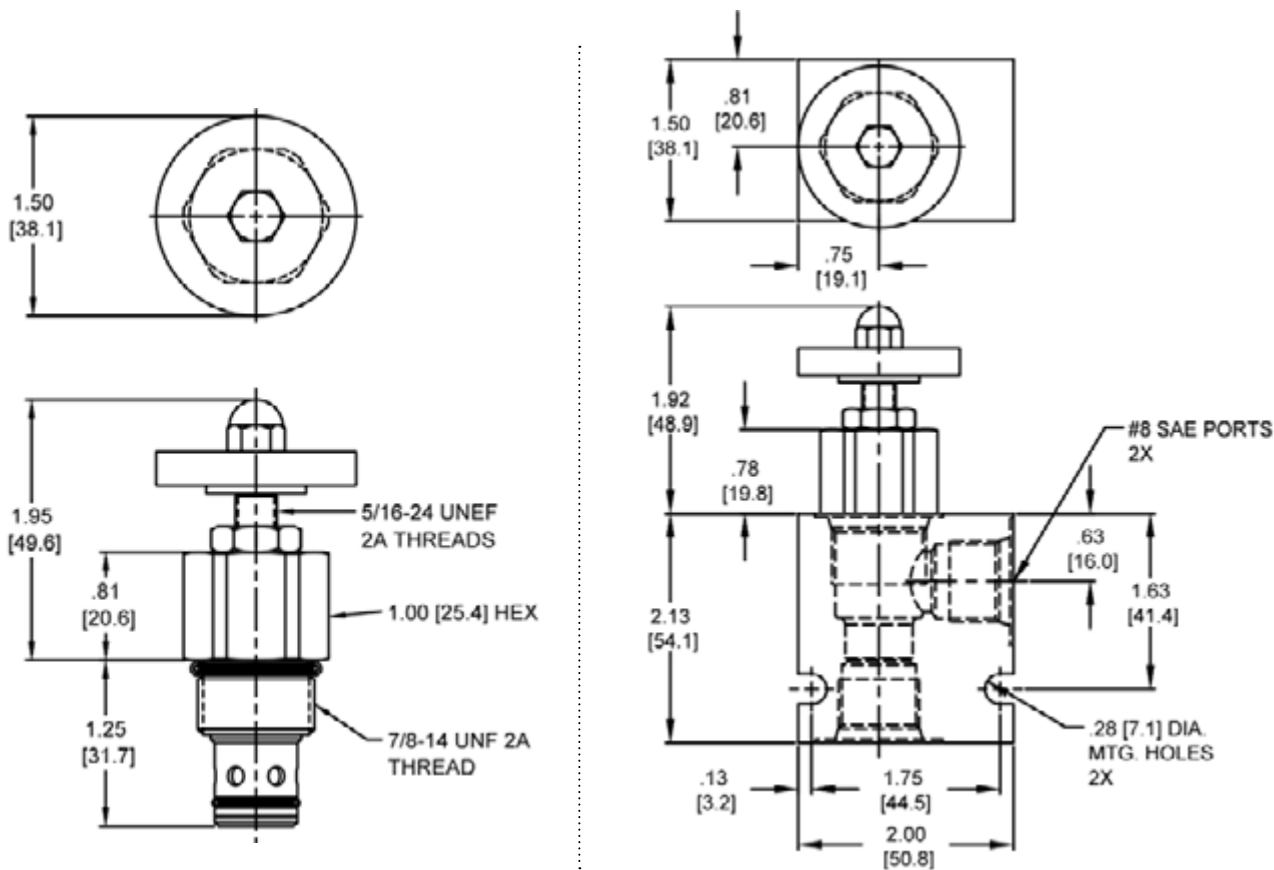


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCH	-	-	-	-
<u>OPTIONS</u>			<u>BODIES</u>	
Buna Standard	00		Blank	Without Body
Viton Standard	V0		N	3/8" NPT Ports
Buna, Knob	0K		S	#8 SAE Ports
Viton, Knob	VK			
Buna, Screen	A0			
Viton, Screen	W0			
Buna, Screen, Knob	AK			
Viton, Screen, Knob	WK			
		<u>ADJUSTMENTS</u>		
		FINE	Fine Adjustment	
		STRD	Standard Adjustment	

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

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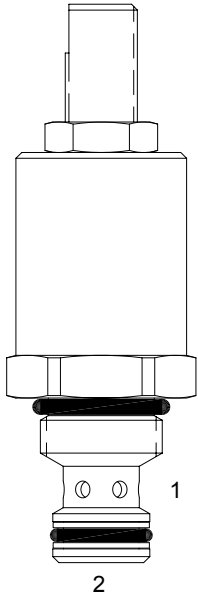
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MA-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE**DESCRIPTION**

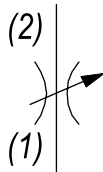
7 size, 5/8-18 thread, "Mini" series, needle flow control valve.

OPERATION

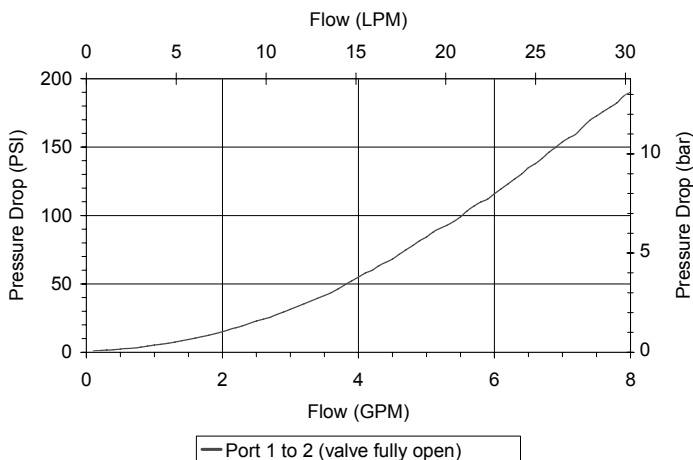
The MA-NVA adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

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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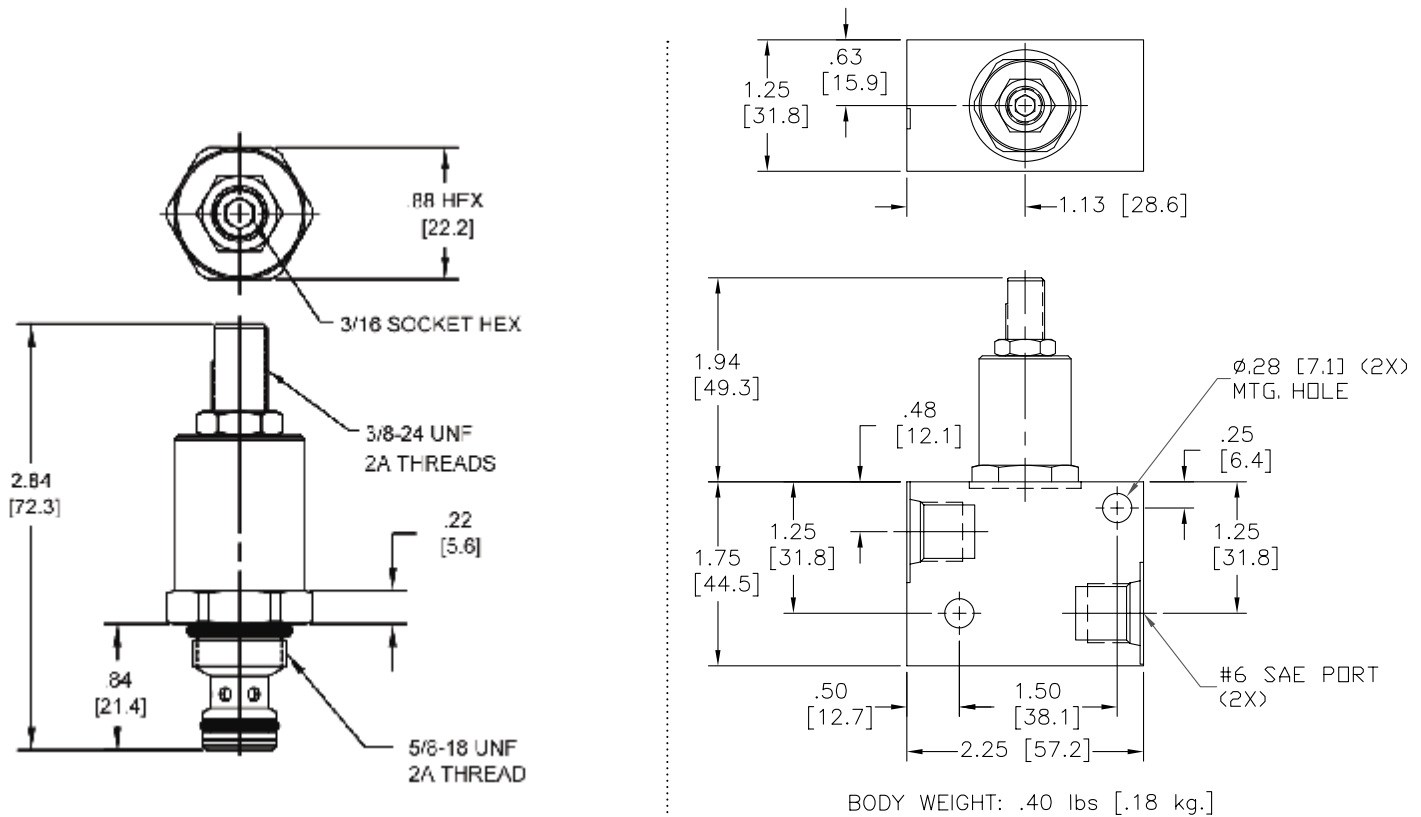


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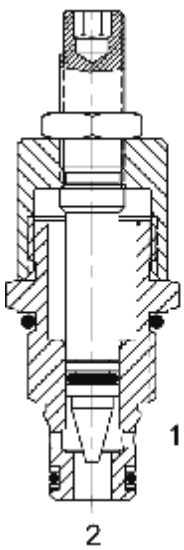
DIMENSIONS



Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

MA-NVA	-		-	
<u>OPTIONS</u>				<u>BODIES</u>
Buna Standard	00		Blank	Without Body
Viton Standard	V0		N	1/4" NPTF Ports
Buna, Knob	0K		S	#6 SAE Ports
Viton, Knob	VK			

PB-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE**DESCRIPTION**

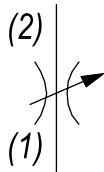
8 size, 3/4-16 thread, "Power" series, needle flow control.

OPERATION

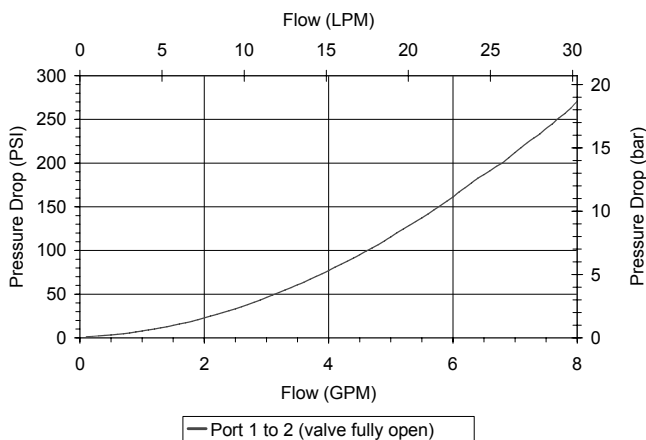
The PB-NVA adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow from (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

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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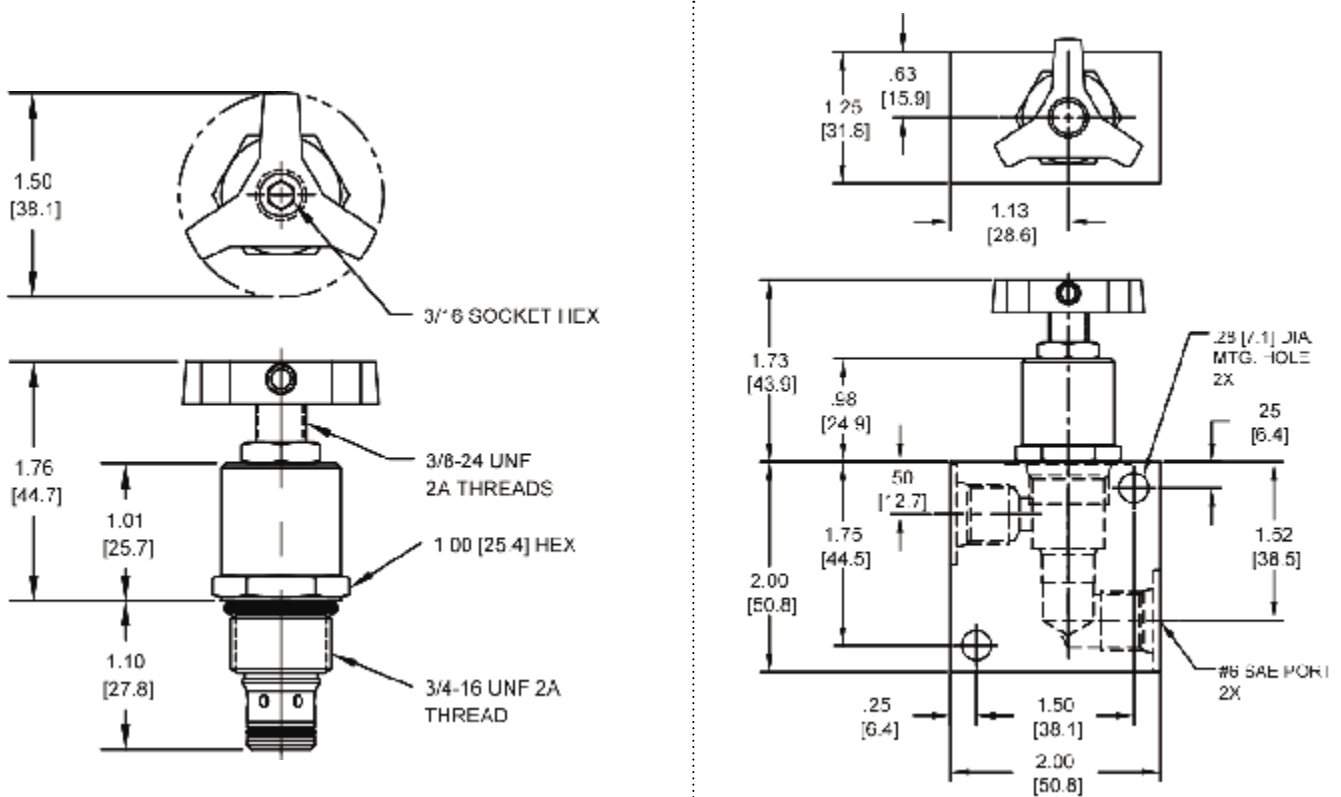


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-NVA - -

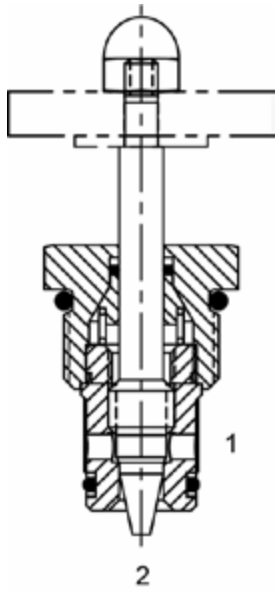
OPTIONS

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).

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

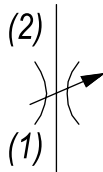
10 size, 7/8-14 thread, "Delta" series fine adjust needle flow control valve.

OPERATION

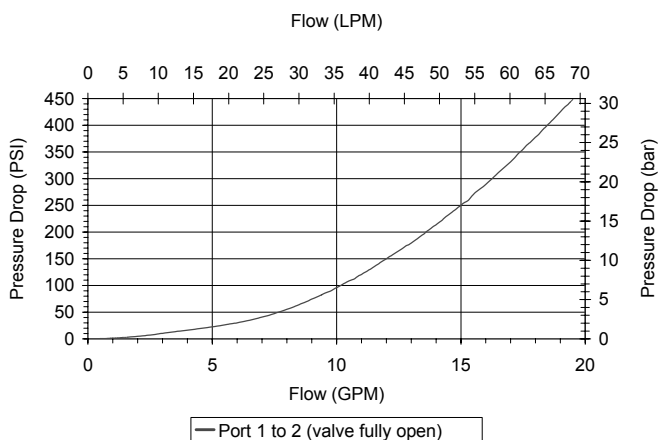
The DE-NVA adjusts from fully open to fully closed by turning adjusting screw counterclockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

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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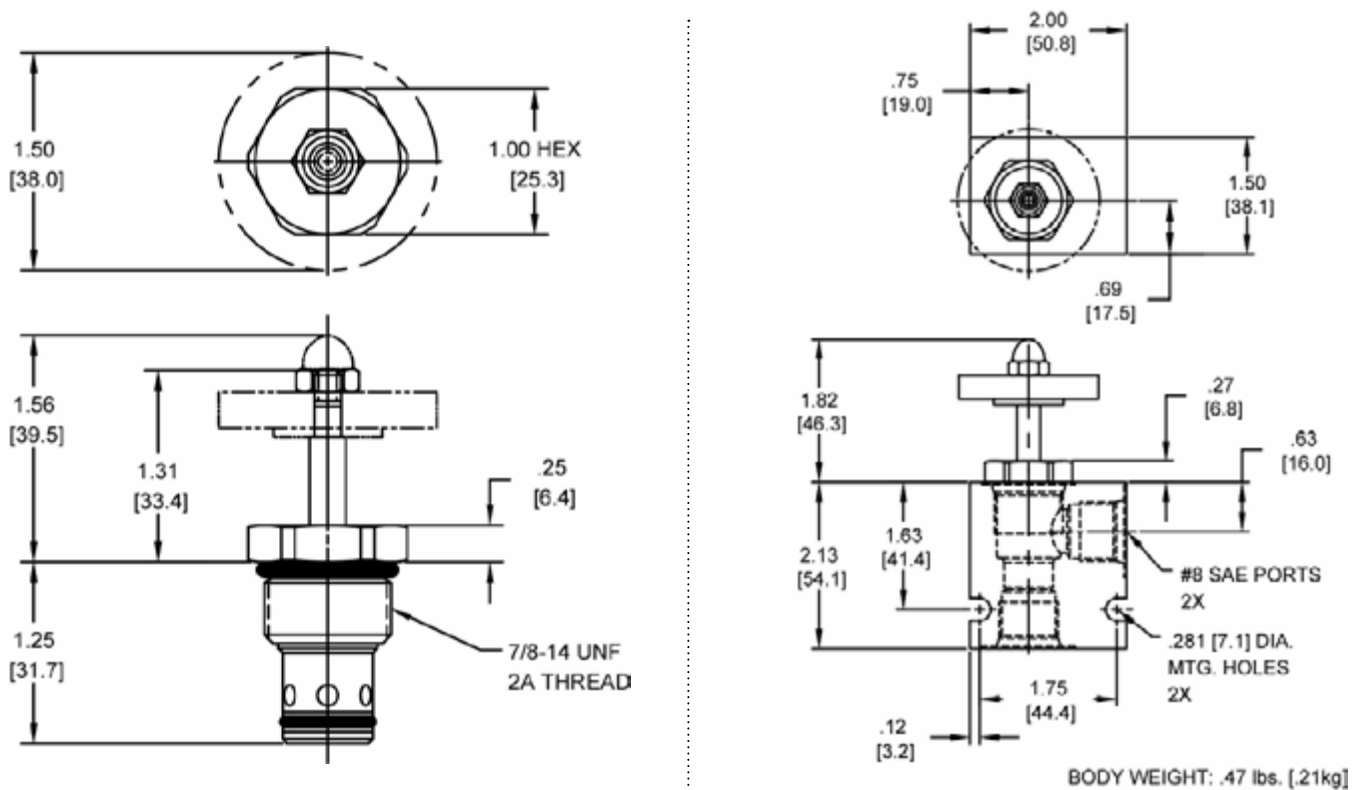


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-NVA -

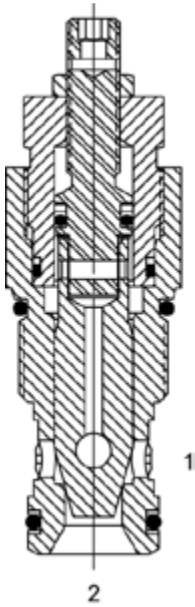
OPTIONS

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

BODIES

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

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

HT-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE**DESCRIPTION**

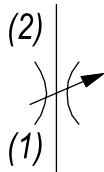
"High Pressure" 12 size, 1 1/16-12 thread, "Tecnord" series, needle flow control valve.

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

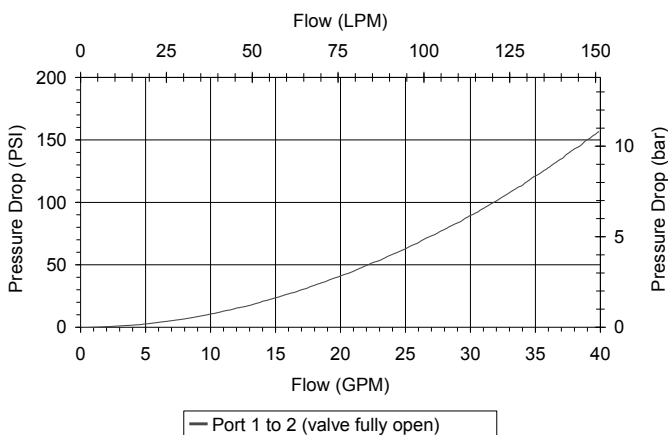
- Hardened parts for long life.
- Industry common cavity.

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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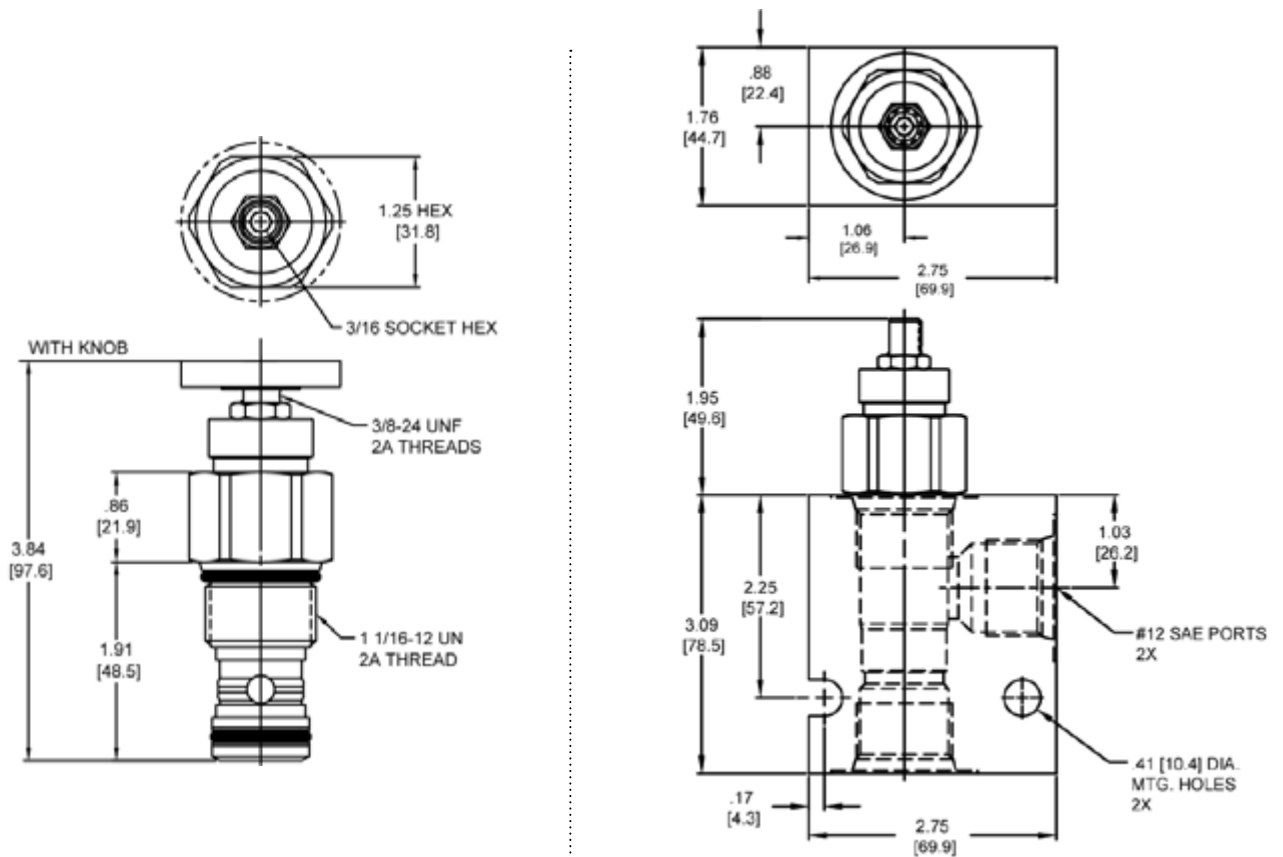


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DIMENSIONS



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

BODIES

Blank S	Without Body #12 SAE Ports
------------	-------------------------------

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

SJ-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE**DESCRIPTION**

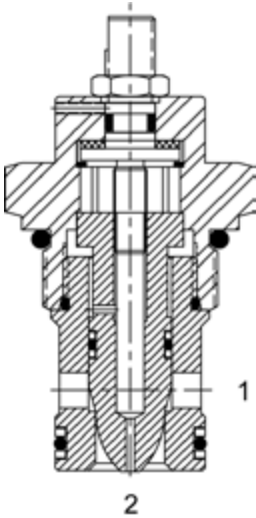
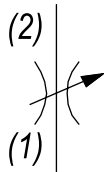
16 size, 1 5/16-12 thread, "Super" series, needle flow control valve.

OPERATION

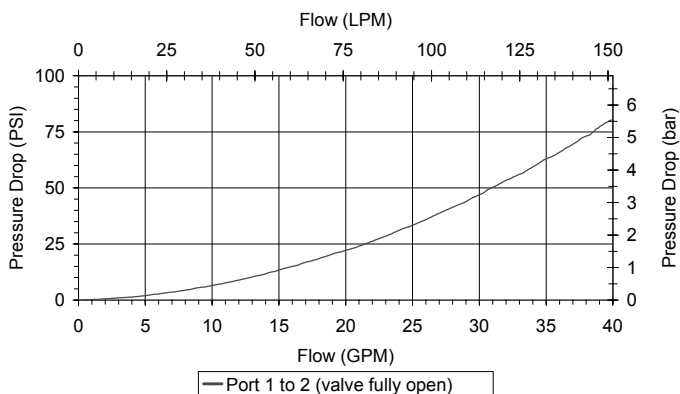
The SJ-NVA adjusts from fully open to fully closed by turning the adjustment screw clockwise. When adjusted open the valve regulates flow (1) to (2) or (2) to (1). When fully closed the valve blocks flow from (1) to (2) or (2) to (1).

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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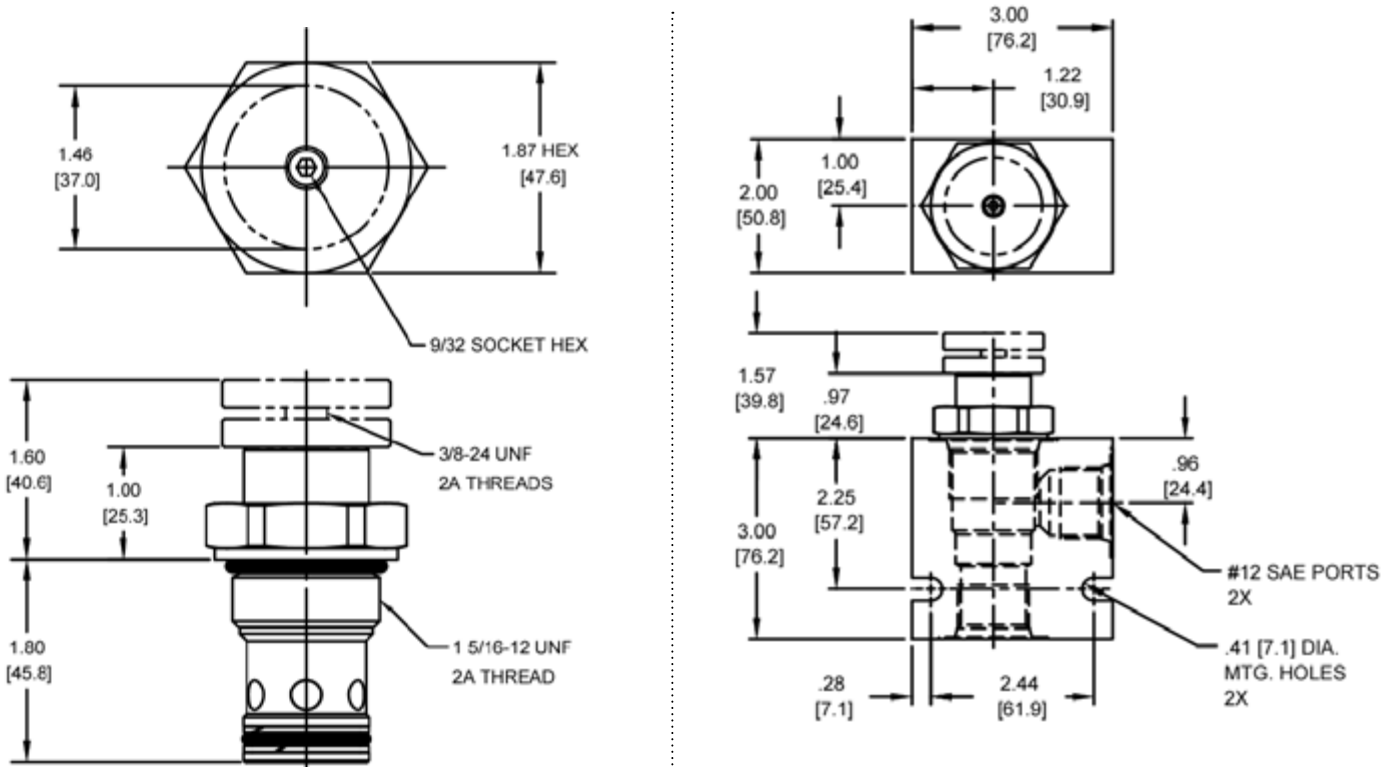


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DIMENSIONS



Body Weight: 1.29 lbs (.58 kg)

ORDERING INFORMATION

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

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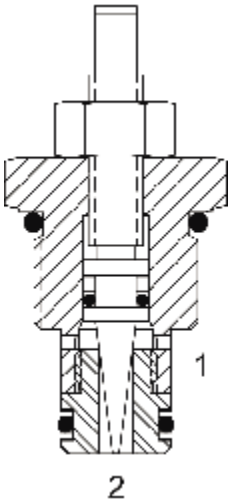
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.



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

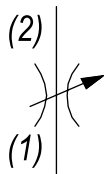
8 size, 3/4-16 thread, "Power" series, fine adjust needle flow control.

OPERATION

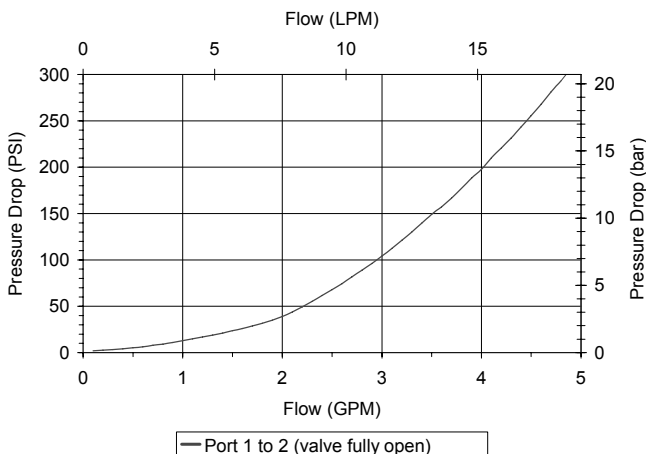
The PB-NVB adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

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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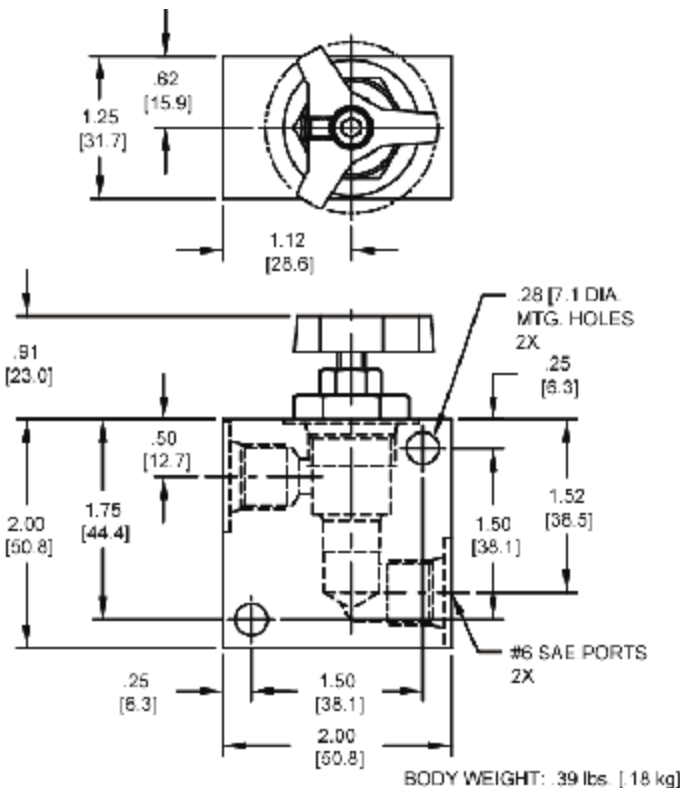
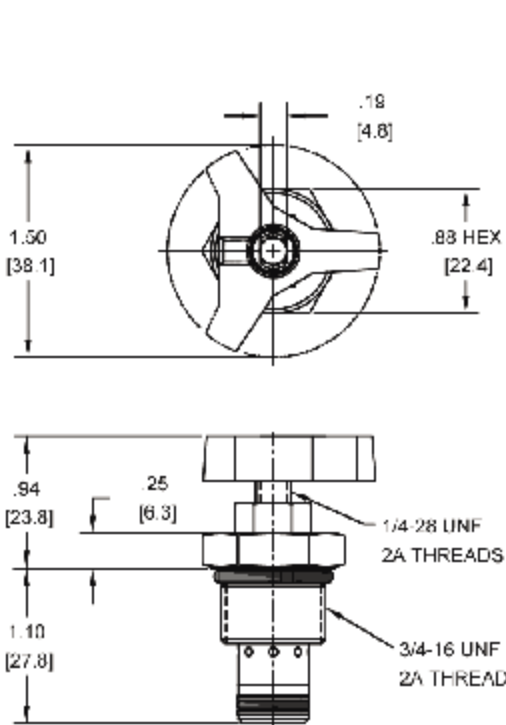


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DIMENSIONS

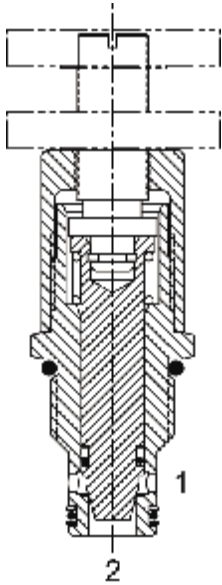


Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-NVB - -	
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	
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).

DE-NVB ADJUSTABLE FLOW CONTROL VALVE, COARSE ADJUST**DESCRIPTION**

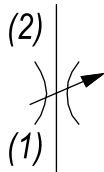
10 size, 7/8-14 thread, "Delta" series, coarse adjust needle flow control valve.

OPERATION

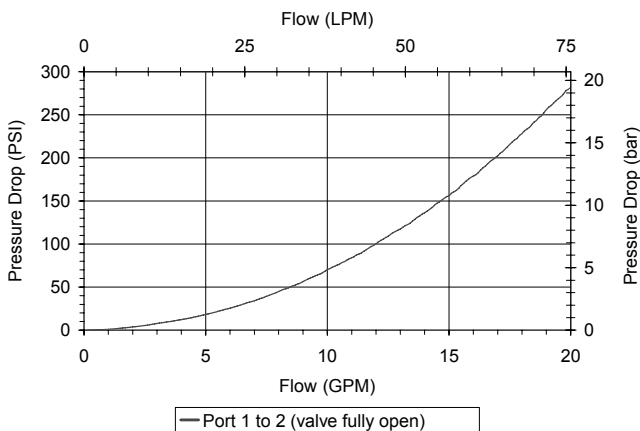
The DE-NVB adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

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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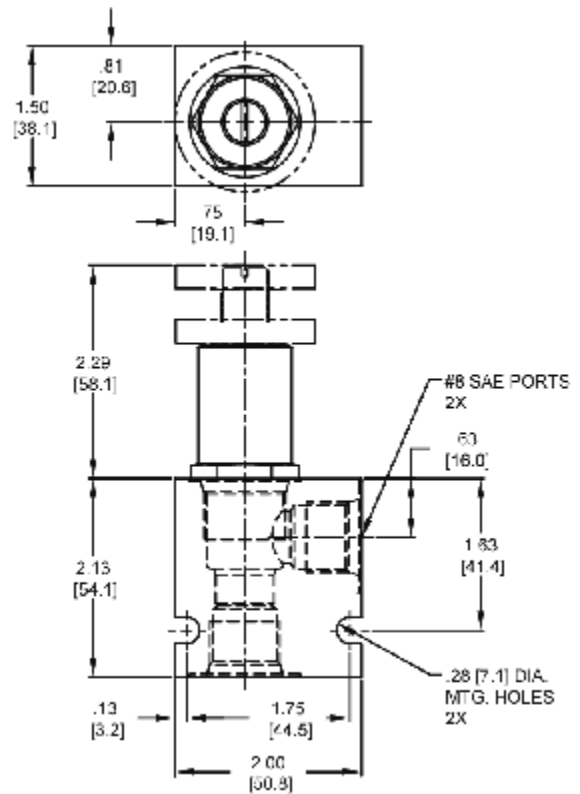
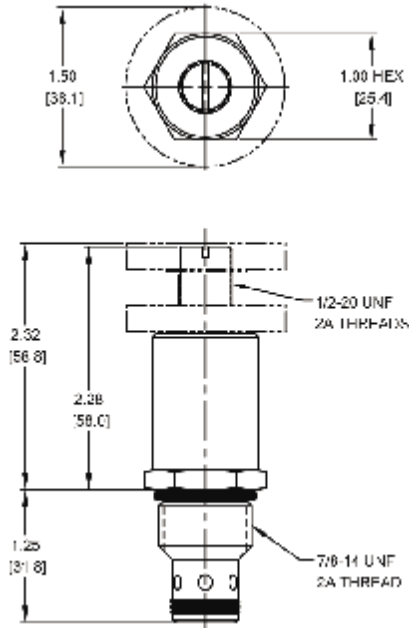


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DIMENSIONS



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**

BODIES

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

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

WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.





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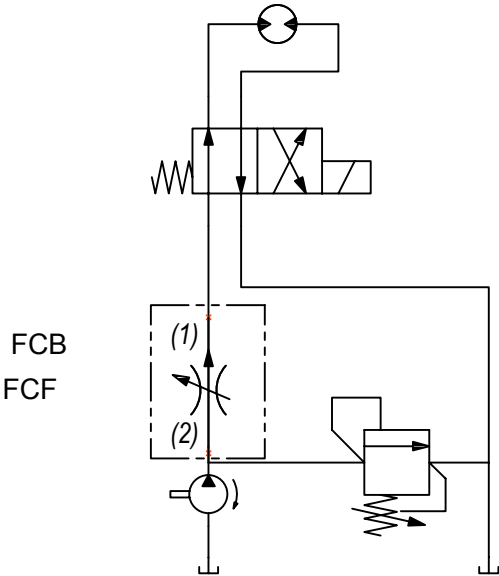
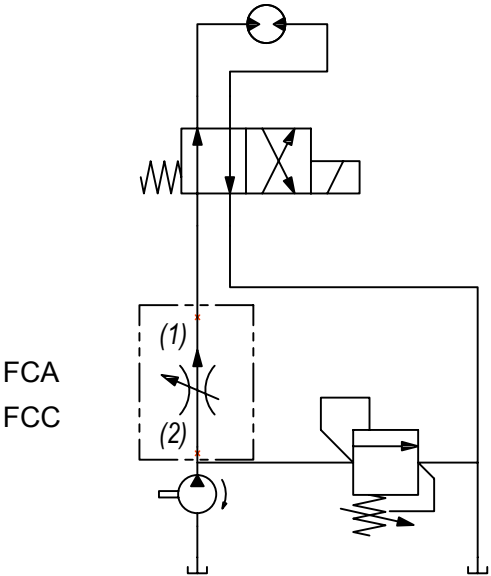
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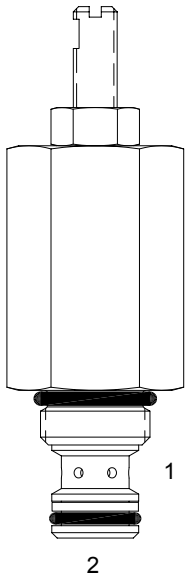
PRESSURE COMPENSATED FLOW REGULATOR VALVES

	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	22	241	3/4-16	PB-FCC	MF28
	8	3500	30	241	7/8-14	DE-FCC	MF30
	12	3500	45	241	7/8-14	DE-FAR	MF32
	18	5000	68	345	1 1/16 -12	HT-FCA	MF34
	25	3500	95	241	1 5/16 -12	SJ-FCA	MF36
	8	3500	30	241	7/8-14	DE-FCB	MF38
	6	3500	23	241	3/4-16	PB-FCF	MF40
	8	3500	30	241	7/8-14	DE-FCF	MF42
	25	3500	95	241	1 5/16 -12	SJ-FCF	MF44

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.



MA-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

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

OPERATION

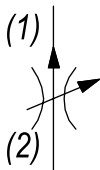
The cartridge maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control differential spring load can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through 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

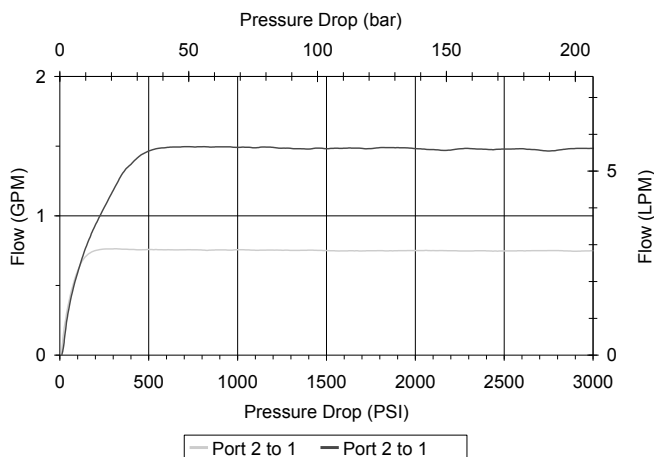
- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.



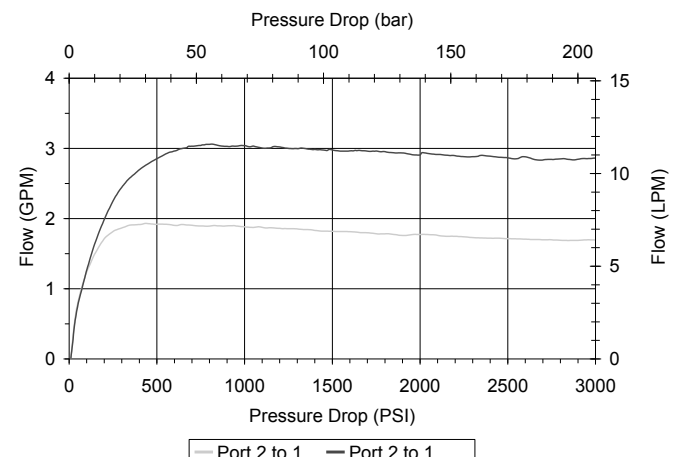
Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

**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



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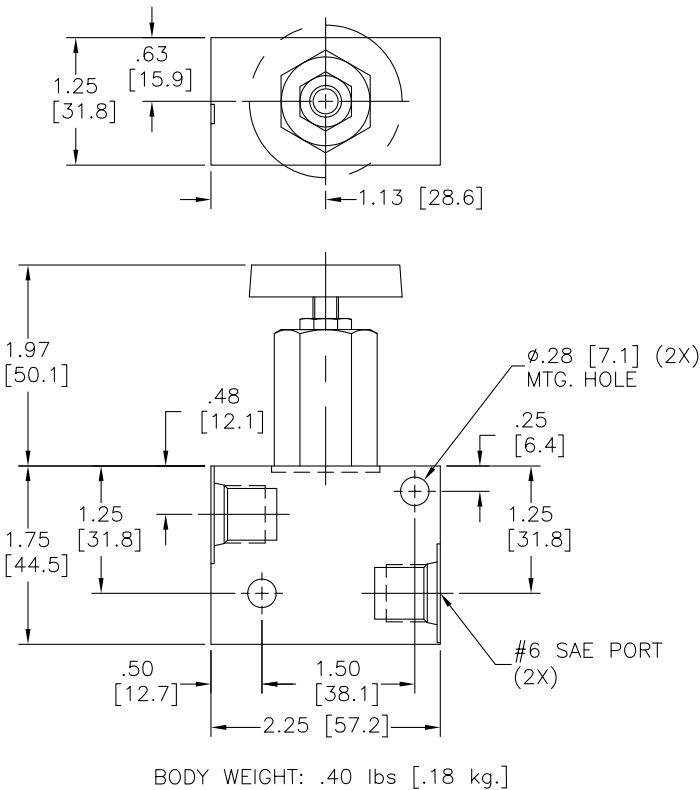
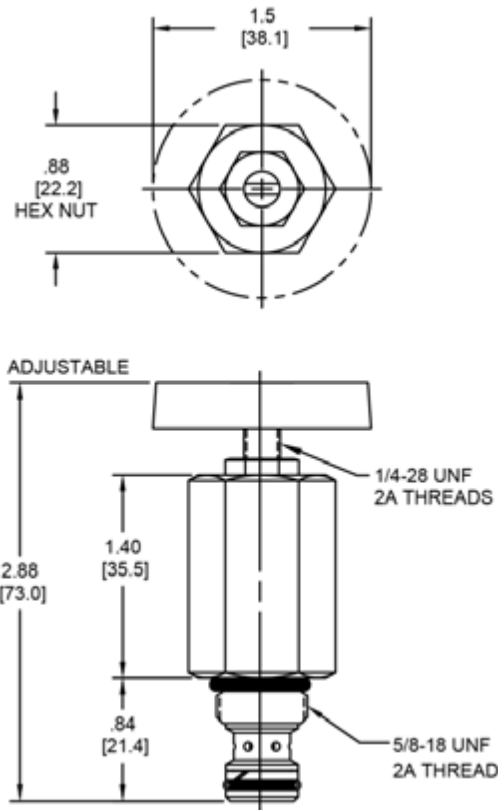


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DIMENSIONS

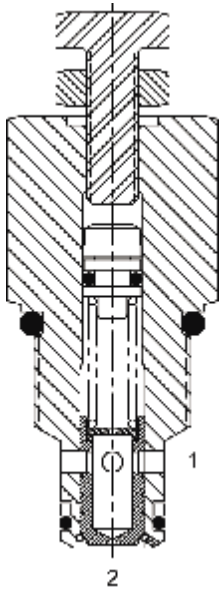


BODY WEIGHT: .40 lbs [.18 kg.]

Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

MA-FCA -		-		-		-	
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						
				FLOW			
		0.17		.08 - .17 GPM			
		00.5		.25 - .5 GPM			
		00.9		.5 - .9 GPM			

PB-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

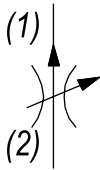
8 size, 3/4-16 thread, "Power" series, pressure compensated, flow control valve.

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

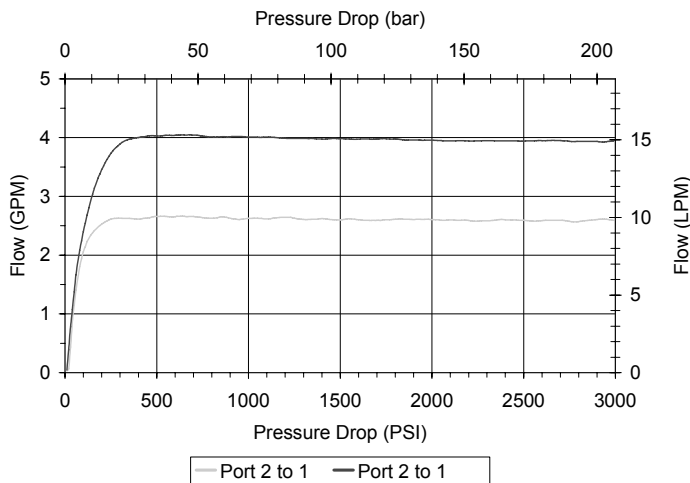
- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

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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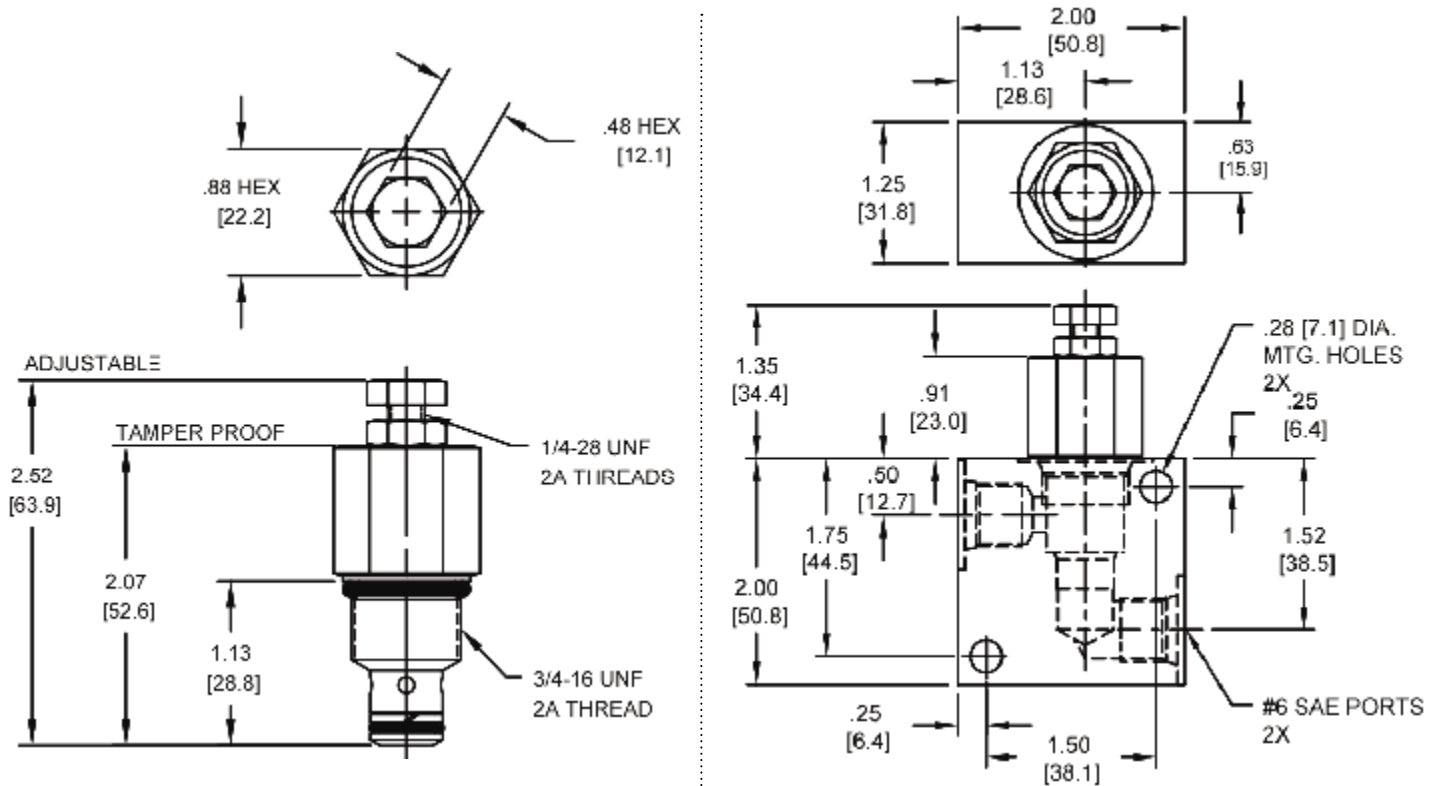


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-FCA		OPTIONS		BODIES	
		Buna Standard	00	Blank	Without Body
		Viton Standard	V0	N	1/4" NPTF Ports
		Buna, Tamper Proof	0T	S	#6 SAE Ports
		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

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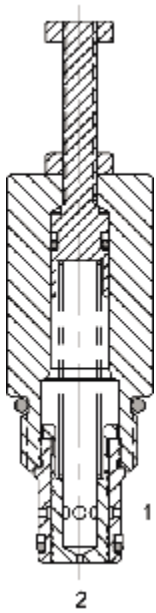


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DE-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



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.

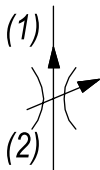
FEATURES

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



Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL

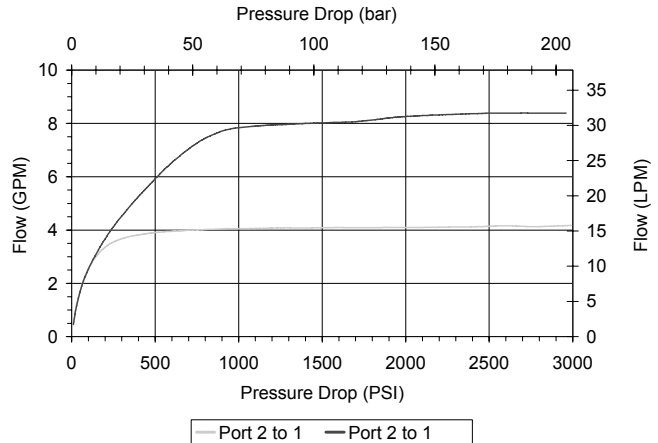
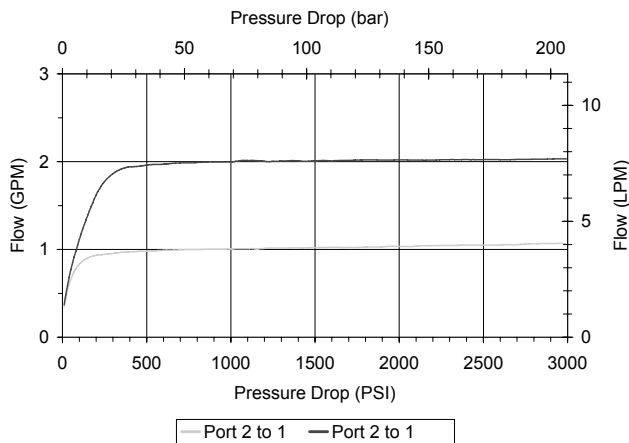


PERFORMANCE

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	.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



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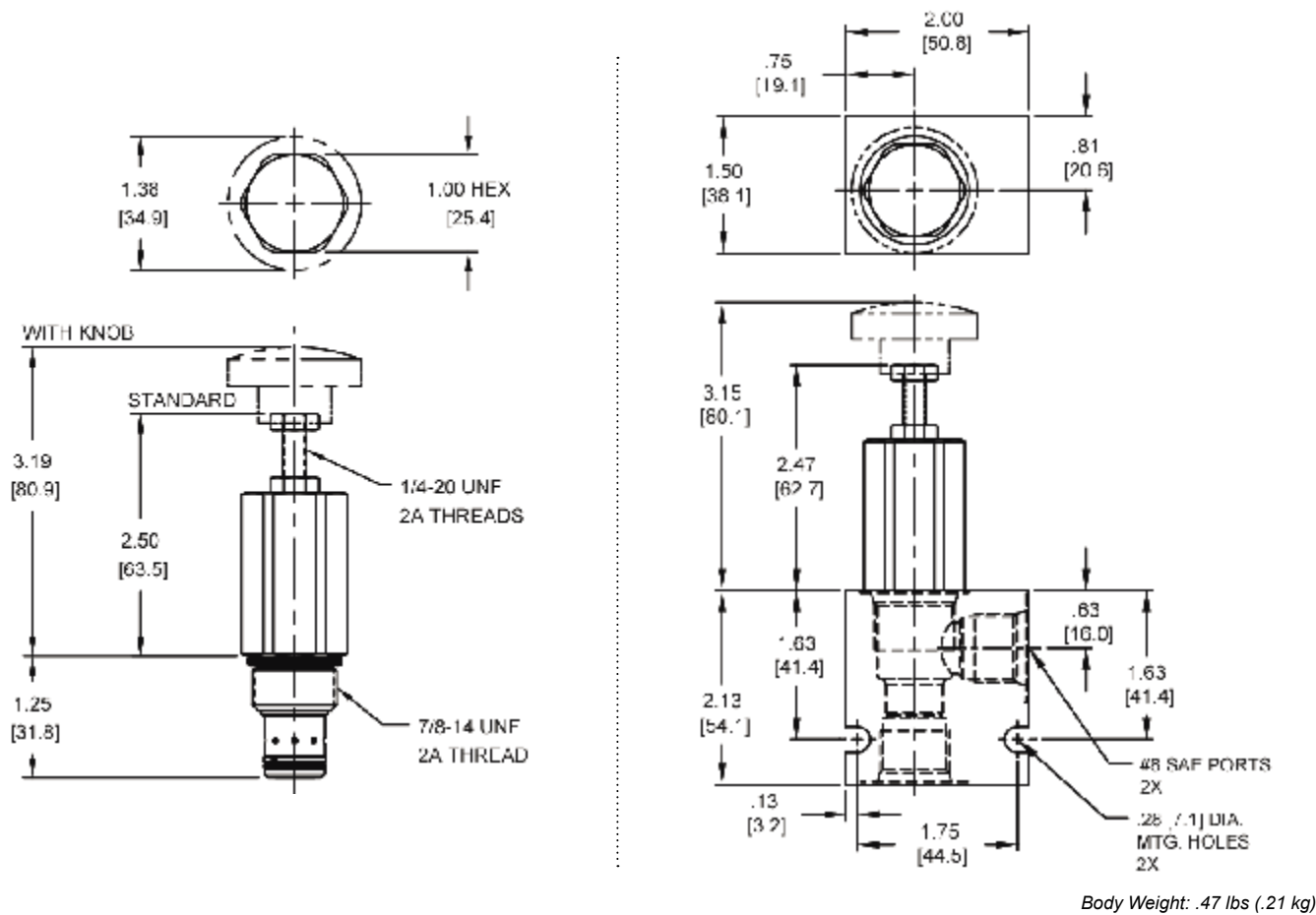


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCA	-	-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			N
Buna, Knob	0K			S
Viton, Knob	VK			
		FLOW		
		01.0	.5-1 GPM	
		02.0	1-2 GPM	
		04.0	2-4 GPM	
		08.0	4-8 GPM	

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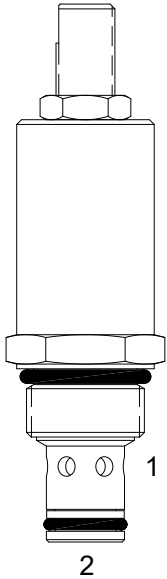
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PB-FCC ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

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

OPERATION

The PB-FCC maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1).

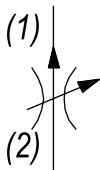
The adjustable control differential spring load can be set to customer flow specification (see options for ranges).

The valve begins to respond to load changes when the flow through the valve creates a pressure differential from (2) to (1) across the control orifice. Consult graph 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

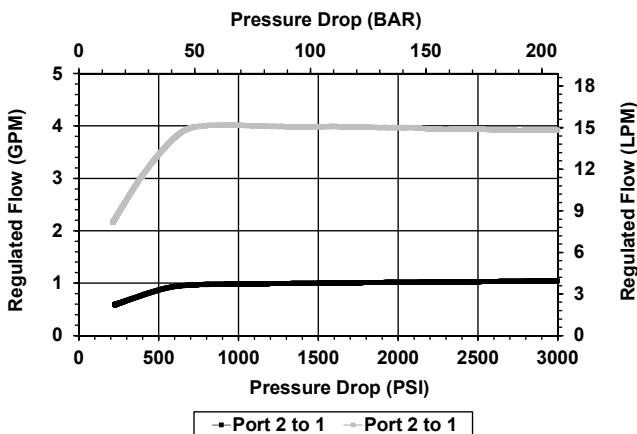
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL

Best stability is obtained with adjustment at highest flow.

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	5 GPM (19 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

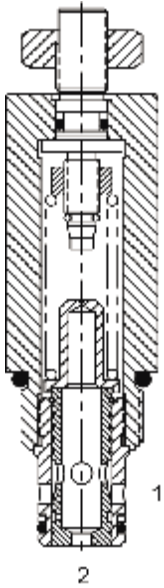
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DE-FCC ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

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

OPERATION

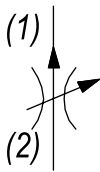
The DE-FCC maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1). The adjustable control orifice can be set to customer flow specification (see options for ranges). The valve begins to respond to load changes when the flow through the valve creates 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

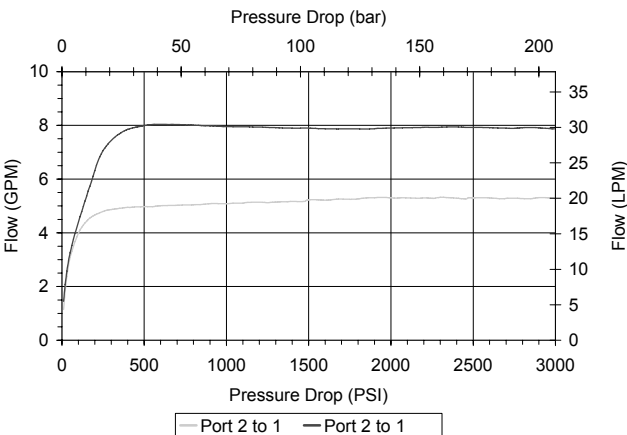
- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.



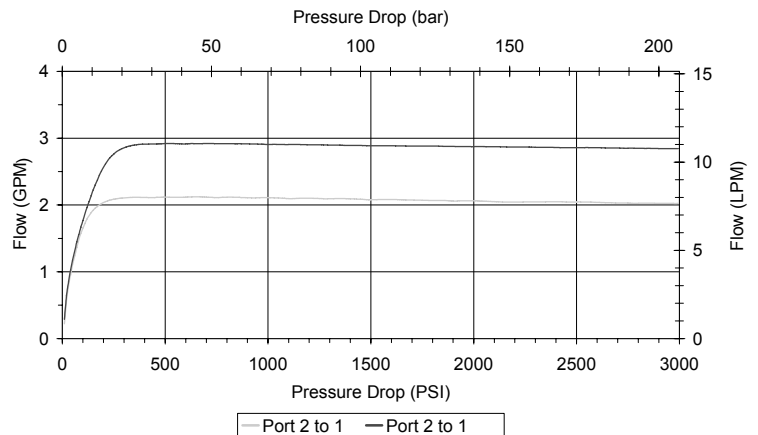
Lowest pressure drop is obtained with adjustment at lowest setting.

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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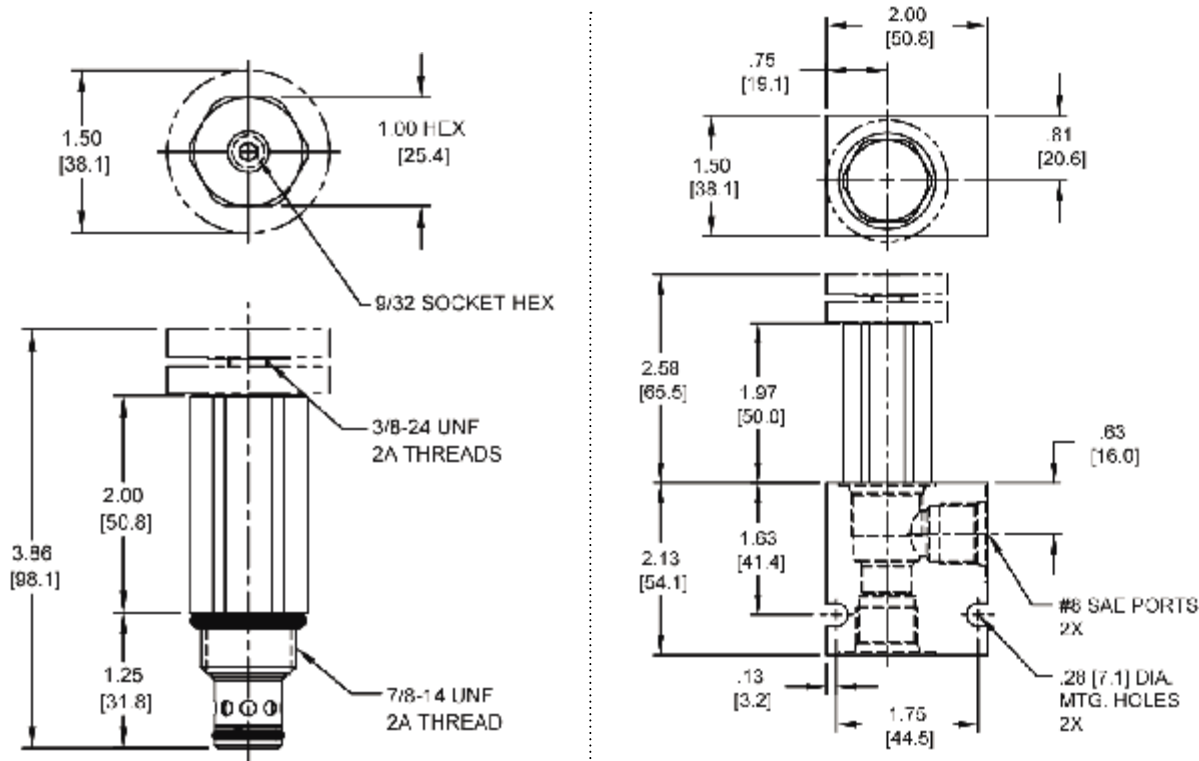


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCC		- - -		- - -	
OPTIONS				BODIES	
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	3/8" NPTF Ports
Buna, Knob	OK			S	#8 SAE Ports
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			

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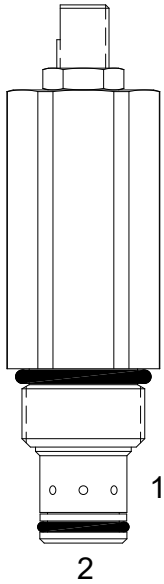
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DE-FAR FULLY ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

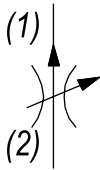
10 size, 7/8-14 thread, "Delta" series, pressure compensated, fully adjustable flow control valve.

OPERATION

The DE-FAR 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. 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 counterclockwise rotation of the adjustment knob.

FEATURES

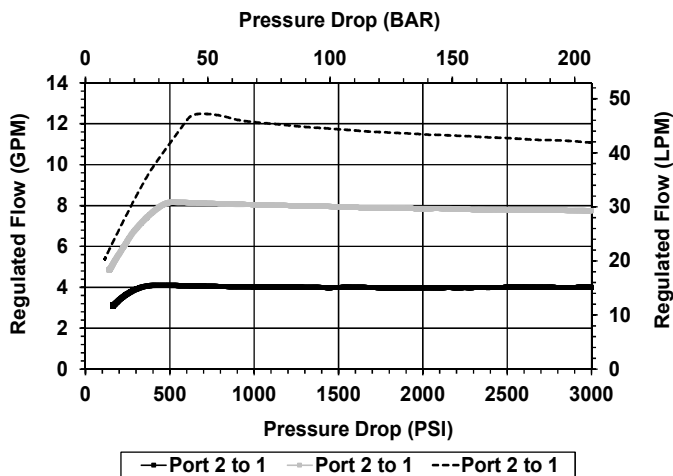
- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

HYDRAULIC SYMBOL

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

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Max Regulated Flow	12 GPM (45 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
Seal Kit	21191200

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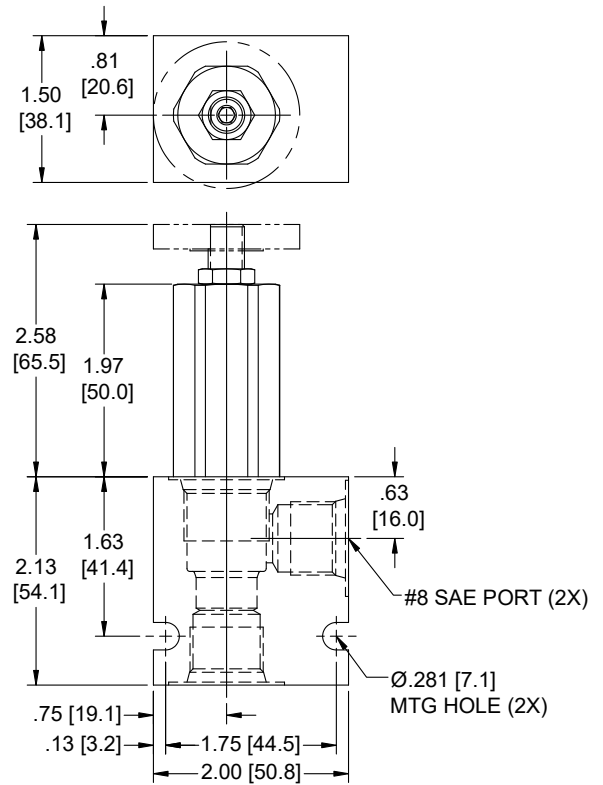
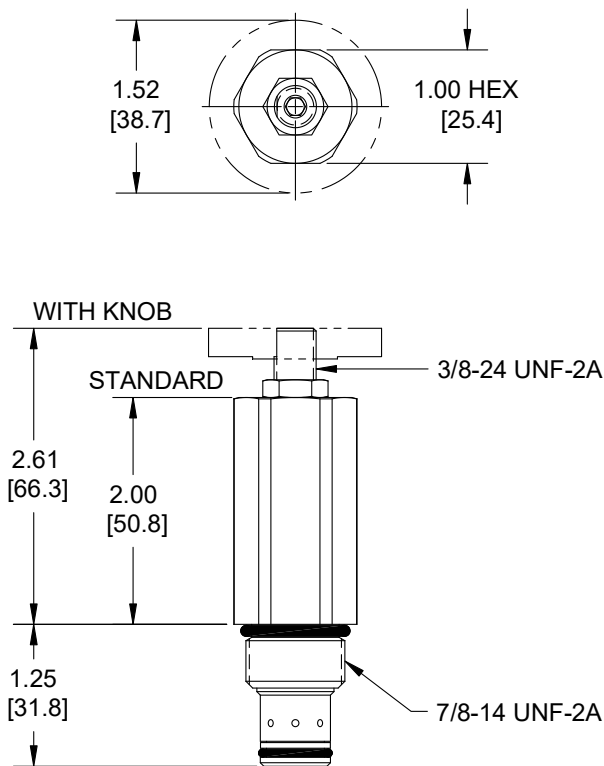


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DIMENSIONS



Body Weight: 47 lbs (.21 kg)

ORDERING INFORMATION

DE-FAR -

OPTIONS

Buna, External Adj. w/locknut	00
Viton, External Adj. w/locknut	V0
Buna, Knob	0K
Viton, Knob	VK

BODIES

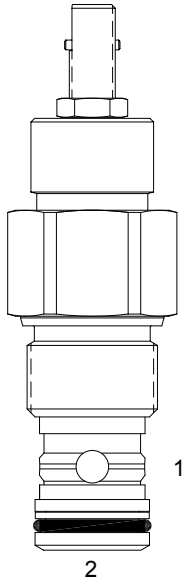
Blank	Without Body
N	3/8 NPTF Ports
S	#8 SAE Ports

FLOW SETTING

XXXX 0-12 GPM

Preset

Example: 0005 = 5 GPM $\pm 10\%$

HT-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

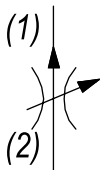
"High Pressure" 12 size, 1 1/16 -12 thread, "Tecnord" series, pressure compensated, flow control valve.

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

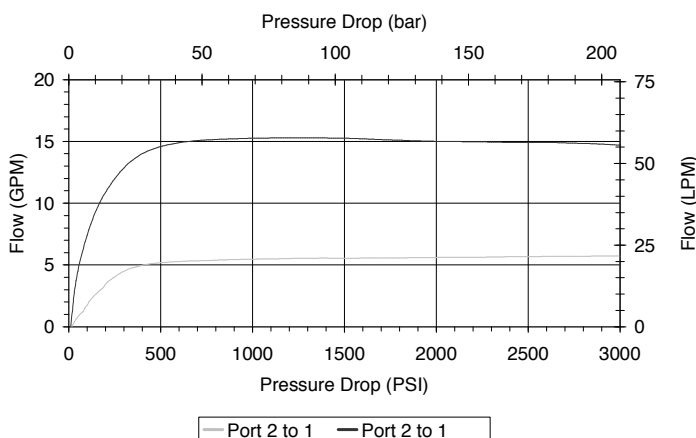
- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

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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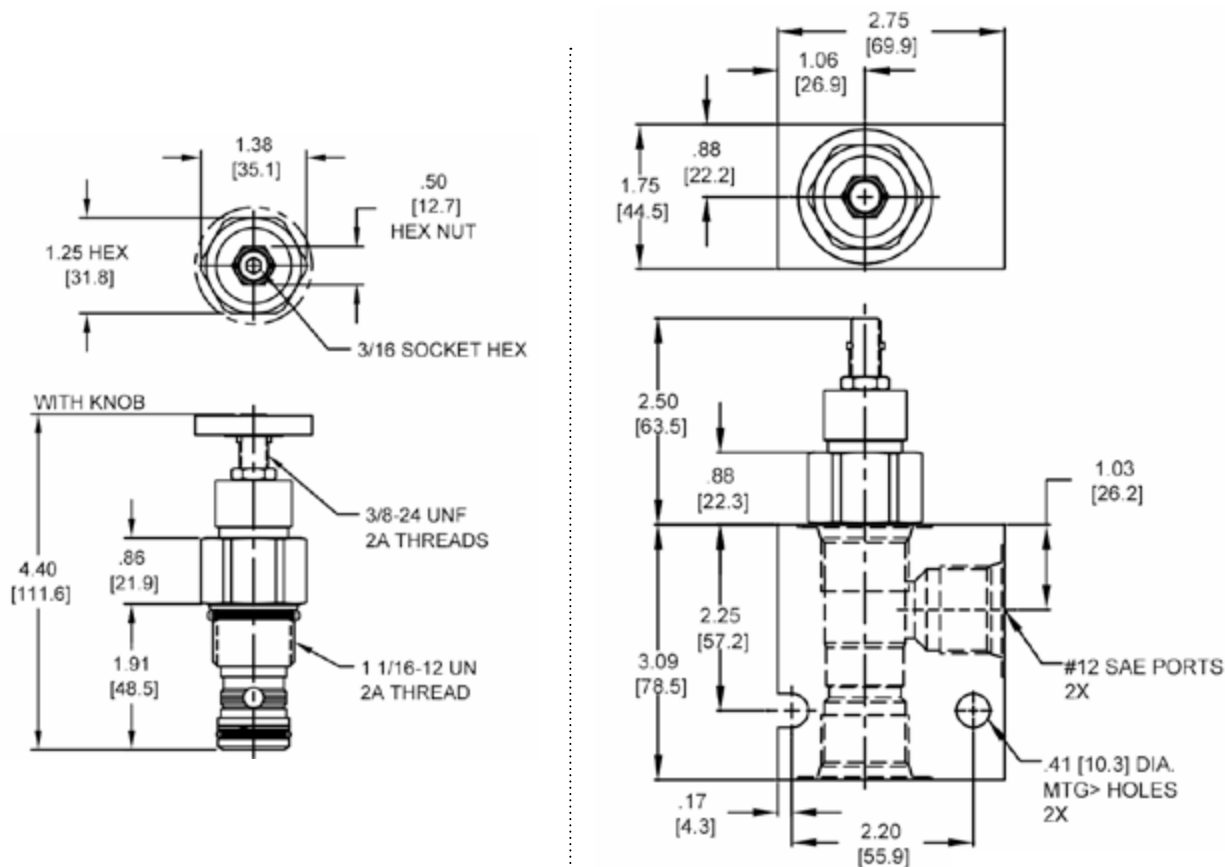


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DIMENSIONS



Body Weight: 3.7 lbs (1.7 kg)

ORDERING INFORMATION

HT-FCA	-	-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			S
Buna, Knob	0K			
Viton, Knob	VK			
			FLOW	
			XXXX	0-18 GPM
				Preset & Tamper Proof
				Example: 0015 - 15 GPM ±10%

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

SJ-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

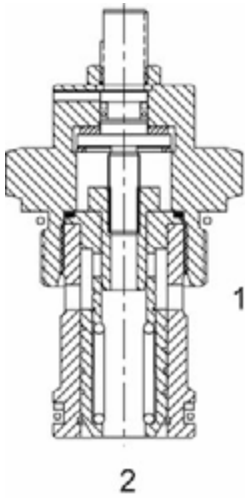
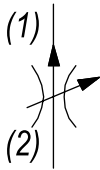
16 size, 1 5/16 -12 thread, "Super" series, pressure compensated, flow control valve.

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

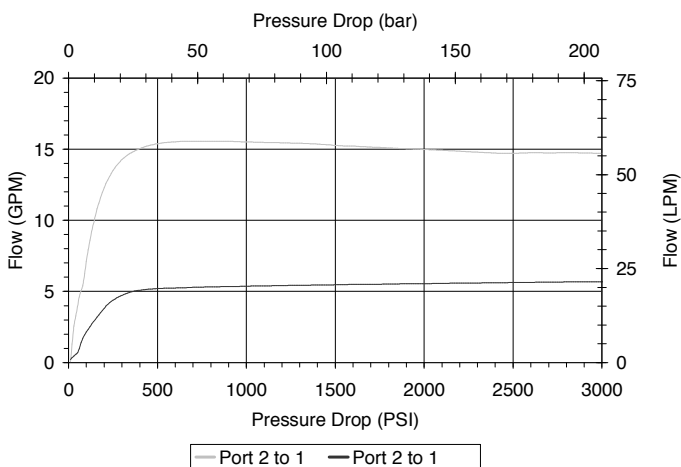
- Hardened parts for long life.
- Industry common cavity.
- Fine low-torque adjustment.

**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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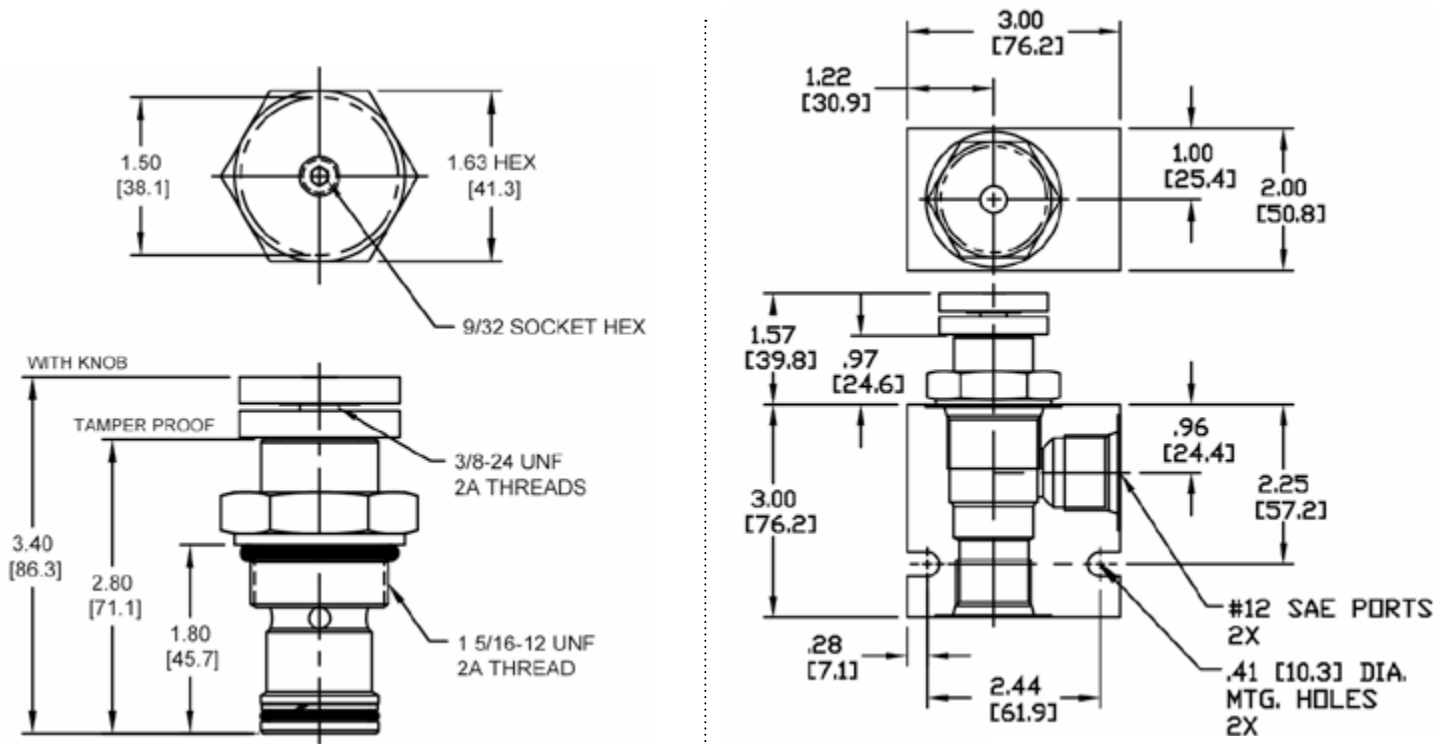


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DIMENSIONS



Body Weight: 1.29 lbs (.59 kg)

ORDERING INFORMATION

SJ-FCA		-	-	-	-
OPTIONS					BODIES
Buna, External Adj. w/locknut	00				Blank
Viton, External Adj. w/locknut	V0				N
Buna, Knob	0K				S
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%

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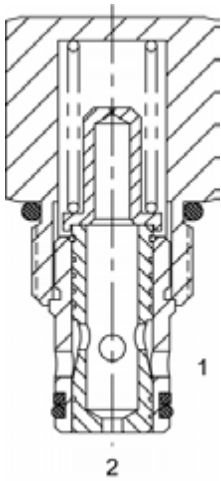
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DE-FCB FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

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

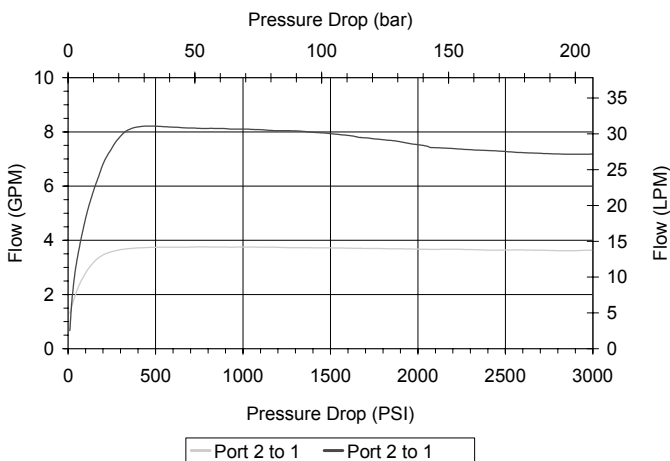
- Hardened parts for long life.
- Industry common cavity.

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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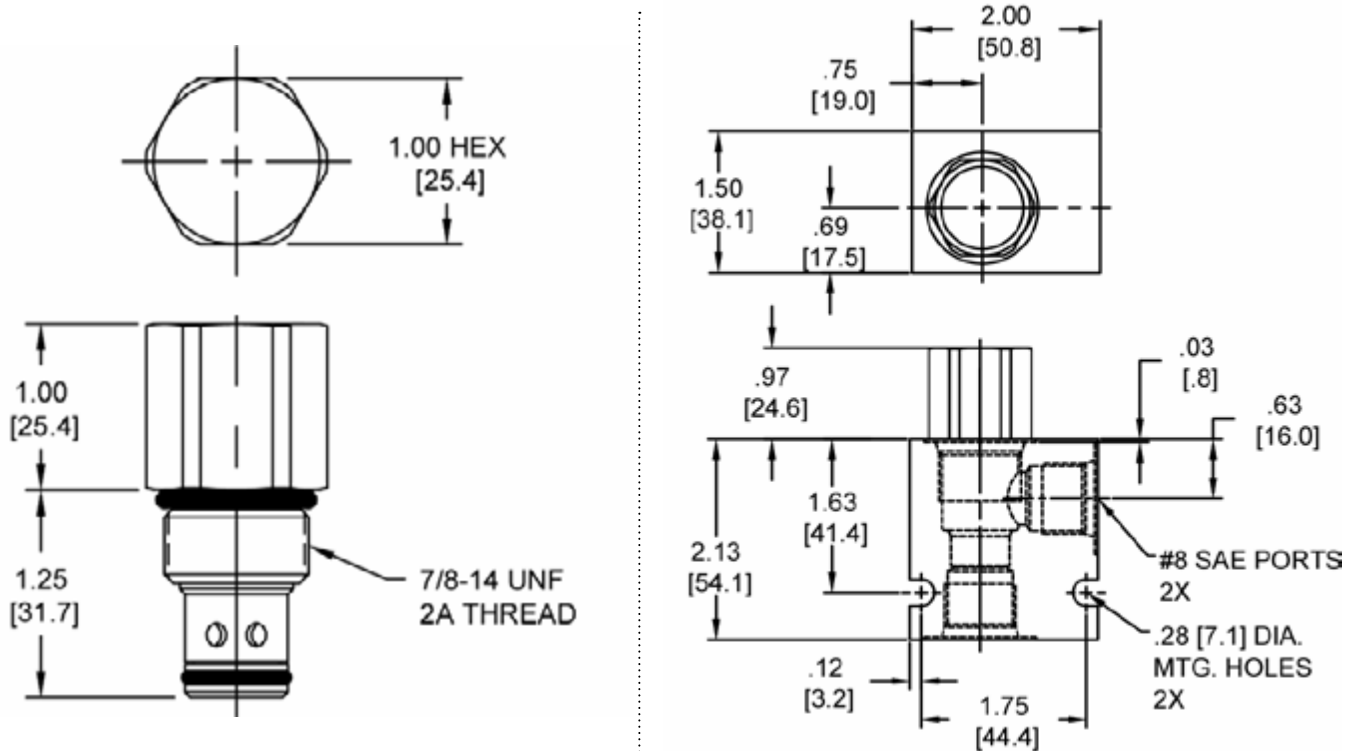


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCB	-	-	-
<u>OPTIONS</u>			<u>BODIES</u>
Buna Standard	00		Blank Without Body
Viton Standard	V0		N 3/8" NPT Ports
			S #8 SAE Ports
		<u>FLOW SETTING</u>	
		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%

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PB-FCF FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

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

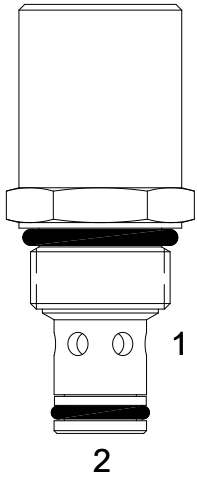
OPERATION

The PB-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 graph 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	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	.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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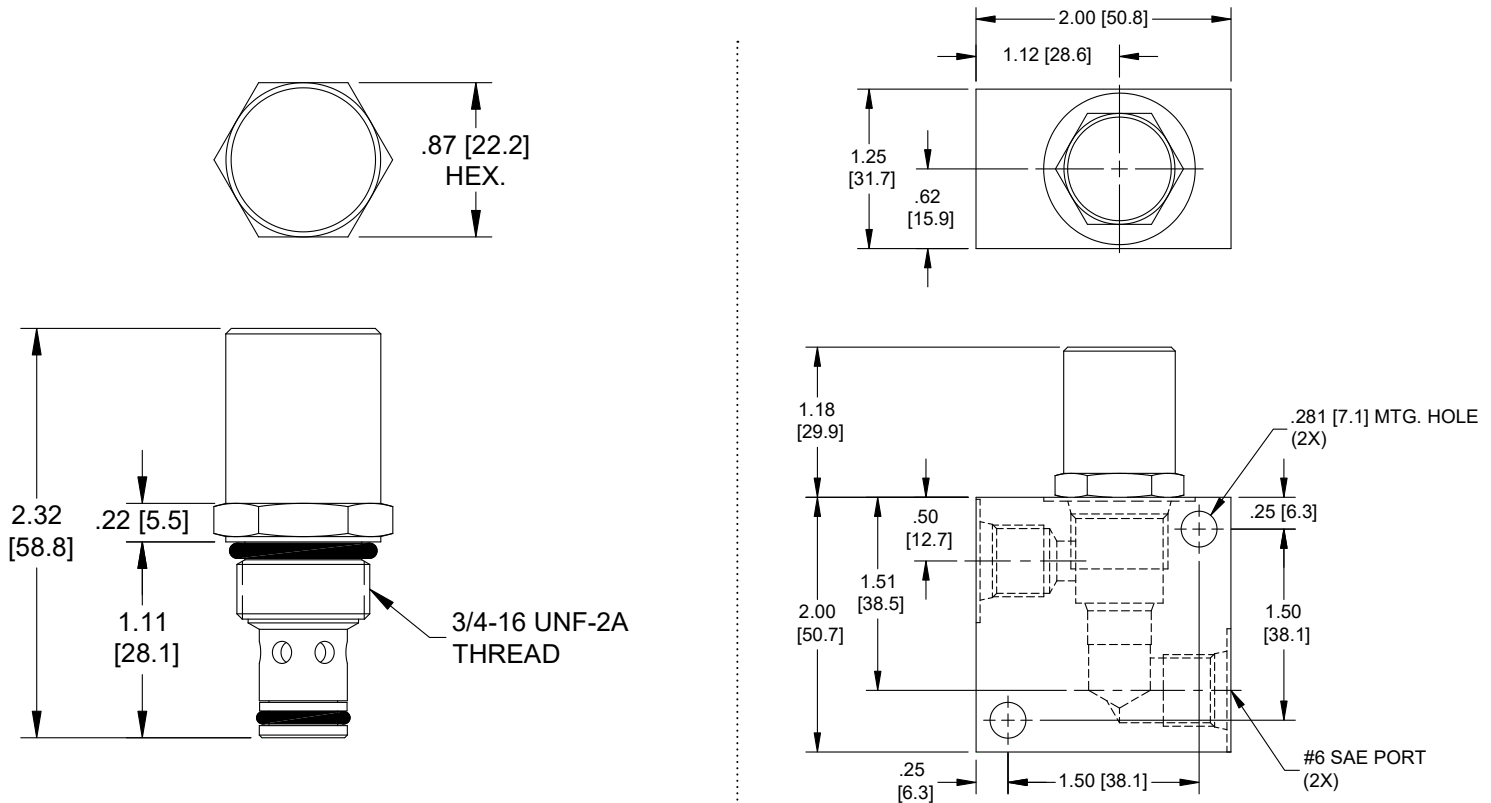


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-FCF	-	-	-
<u>OPTIONS</u>			<u>BODIES</u>
Buna Standard	00		Blank Without Body
Viton Standard	V0		N 1/4 NPTF Ports
			S #6 SAE Ports
			<u>FLOW SETTING</u>
		01.0	1 GPM
		02.0	2 GPM
		03.0	3 GPM
		04.0	4 GPM
		05.0	5 GPM
		06.0	6 GPM
			± 15%

DE-FCF FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

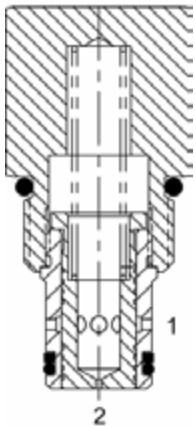
10 size, 7/8-14 thread, "Delta" series, fixed pressure compensated, flow control valve.

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

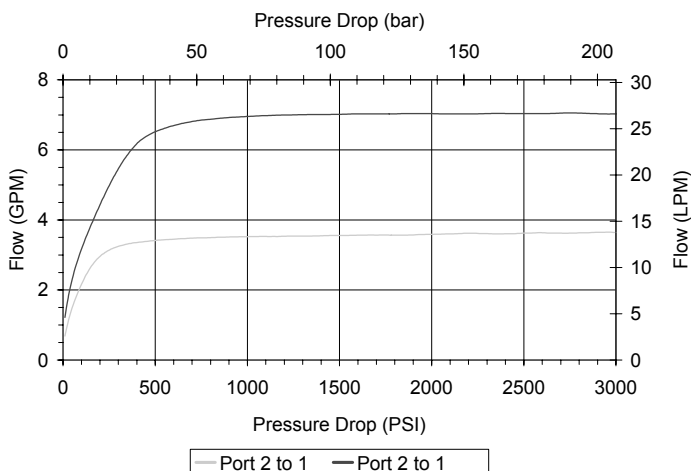
- Hardened parts for long life.
- Industry common cavity.

**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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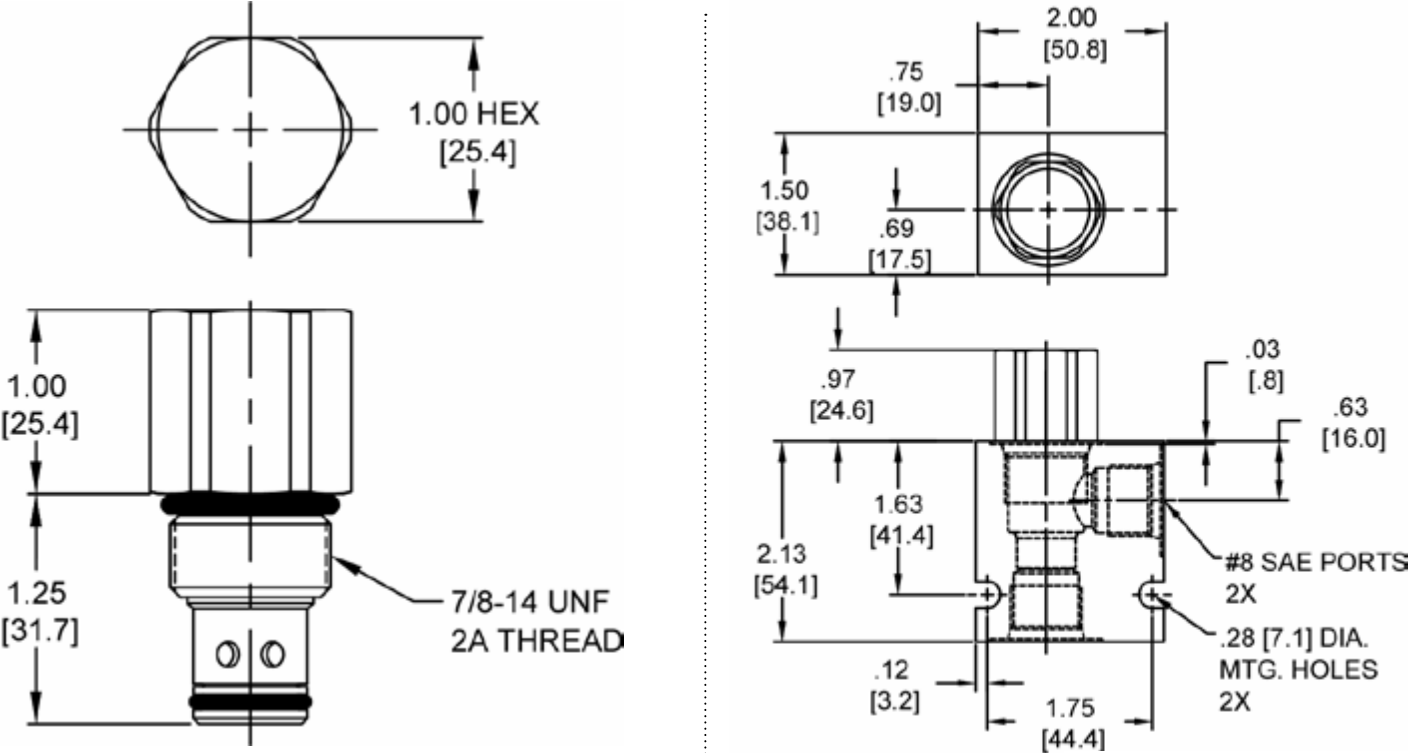


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCF	-	-	-	-
		OPTIONS		BODIES
		Buna Standard	00	Blank
		Viton Standard	V0	N
				S
				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%

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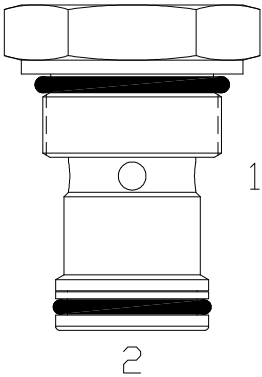
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SJ-FCF FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED**DESCRIPTION**

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

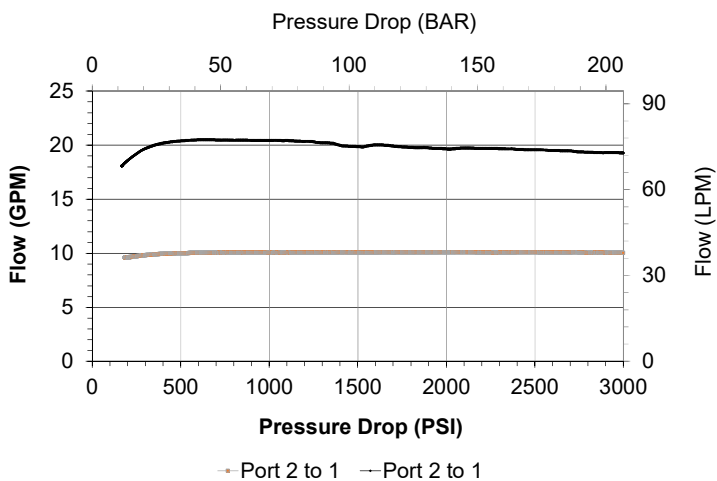
- Hardened parts for long life.
- Industry common cavity.

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

WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

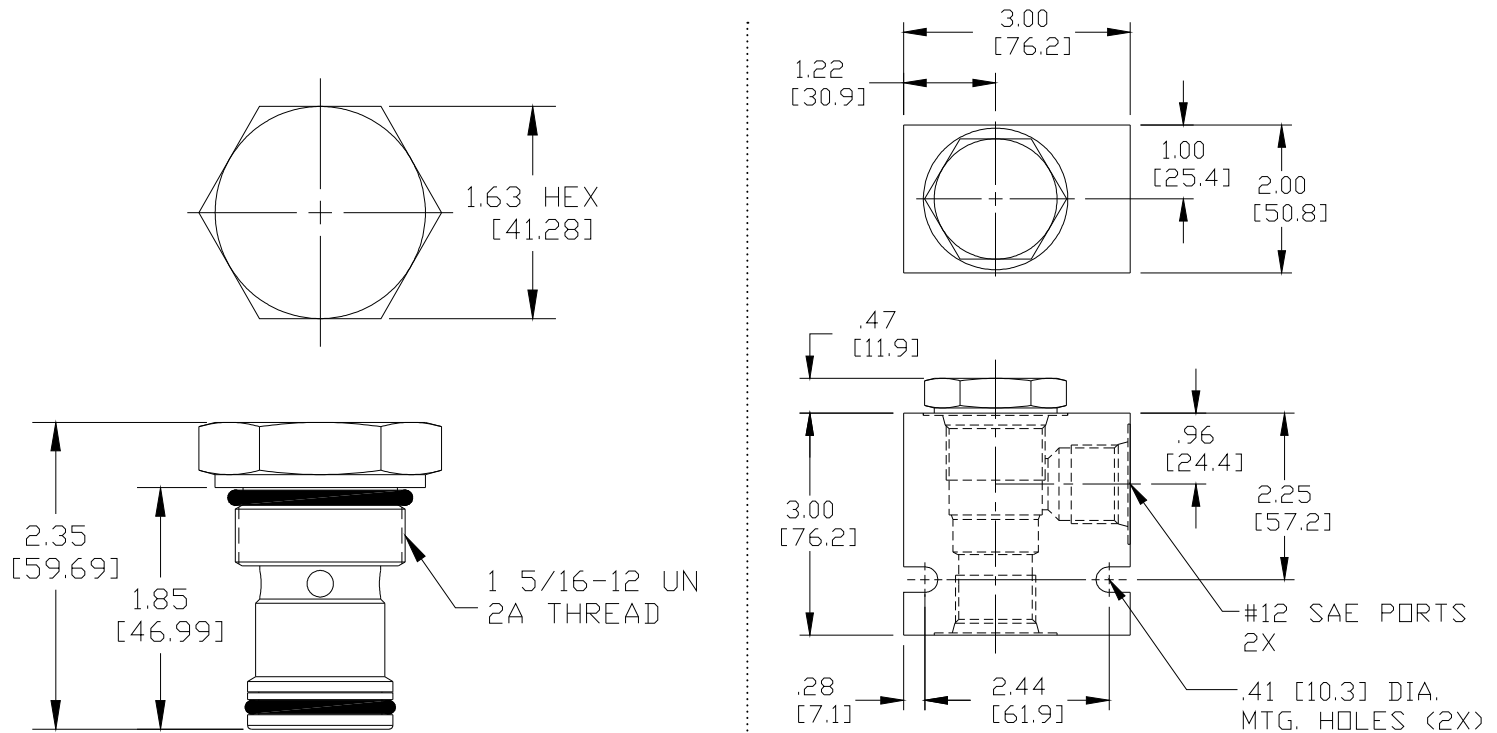


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DIMENSIONS



Body Weight: 1.29 lbs (.59 kg)

ORDERING INFORMATION

SJ-FCF - - -		
		OPTIONS
Buna Standard	00	
Viton Standard	V0	
		BODIES
Blank		Without Body
N		¼ NPT Ports
S		#12 SAE Ports
		FLOW SETTING
0010	10 GPM	
0025	25 GPM	

Additional flow settings available upon request

WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

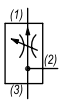
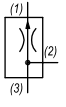


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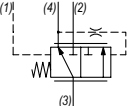
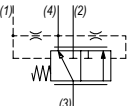
TECNORD

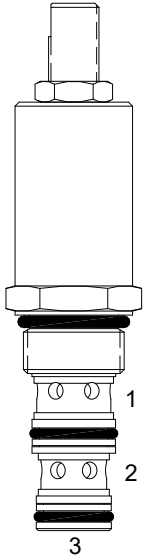
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PRIORITY FLOW REGULATOR VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	5	3500	19	241	3/4-16	PP-FCQ	MF48
	10	3000	38	207	7/8-14	DF-FCQ	MF50
	10	3000	38	207	7/8-14	DF-FAP	MF52
	25	3000	95	207	1 5/16-12	SK-FCQ	MF54
	5	3500	19	241	3/4-16	PP-FCP	MF56
	10	3000	38	207	7/8-14	DF-FCP	MF58
	25	3000	95	207	1 5/16-12	SK-FCP	MF60

LS STEERING PRIORITY

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	9	3000	34	207	7/8-14	DG-PDS	MF62
	20	3000	76	207	1 5/16-12	SO-PDS	MF64
	9	3000	34	207	7/8-14	DG-PDD	MF66
	20	3000	76	207	1 5/16-12	SO-PDD	MF68

PP-FCQ ADJUSTABLE PRIORITY FLOW CONTROL VALVE**DESCRIPTION**

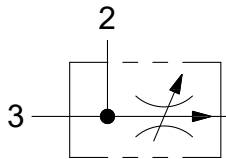
8 size, 3/4-16 thread, "Power" series, adjustable priority flow control valve.

OPERATION

The PP-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.

HYDRAULIC SYMBOL

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

PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 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	.56 lbs (.25 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (33.8 Nm)
Cavity	POWER 3W
Cavity Form Tool (Finishing)	40500024
Seal Kit	21191106

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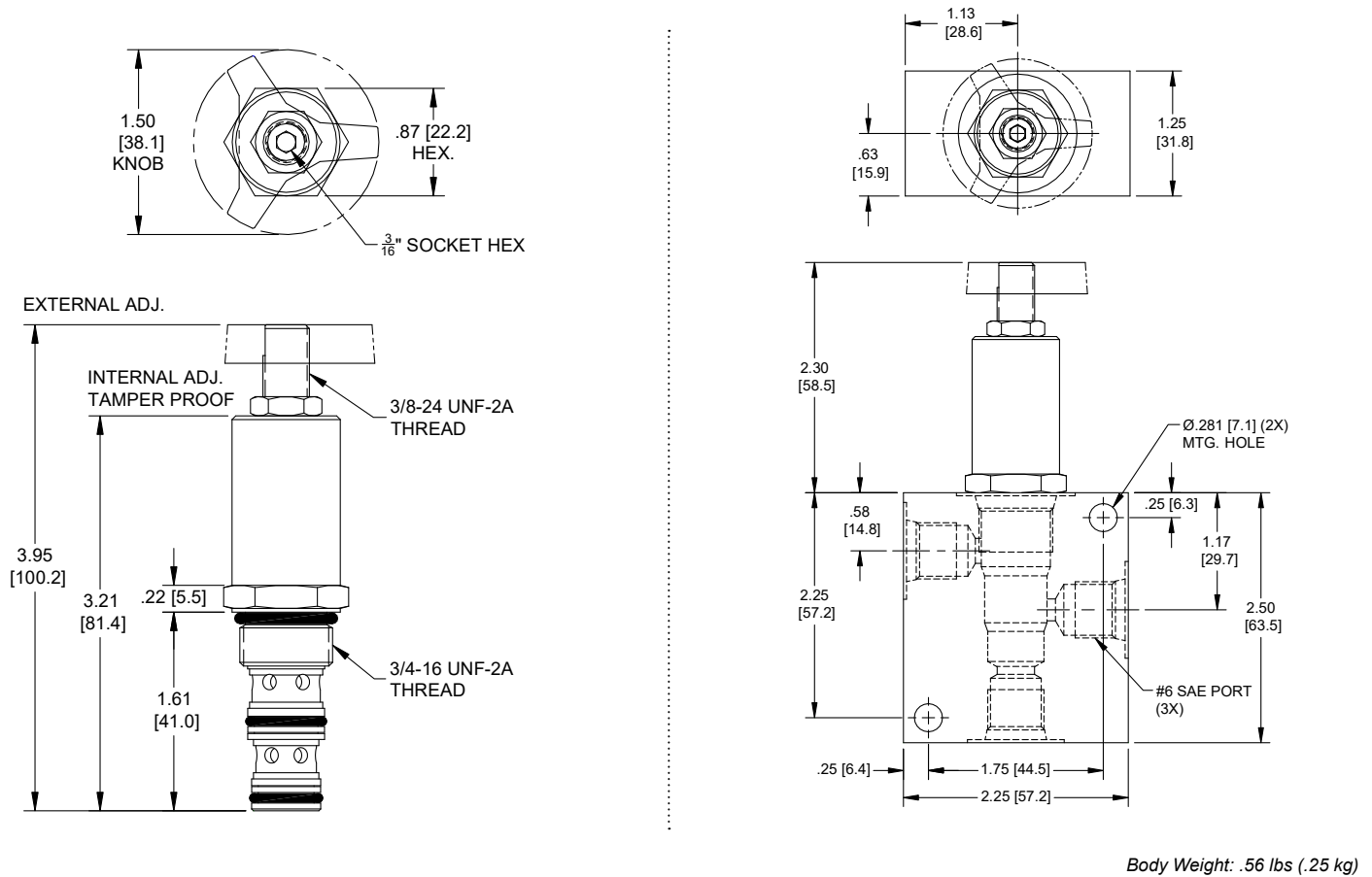


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DIMENSIONS



ORDERING INFORMATION

PP-FCQ -

OPTIONS

External Adjust w/Locknut, Buna **00**
 External Adjust w/Locknut, Viton **V0**
 Knob, Buna **0K**
 Knob, Viton **VK**
 Internal Adjust, Buna **0I**
 Internal Adjust, Viton **VI**
 Tamper Proof, Buna **0T**
 Tamper Proof, Viton **VT**

BODIES

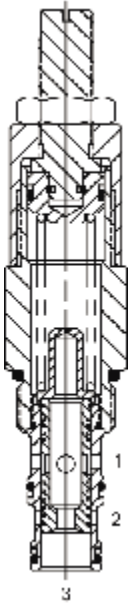
Blank Without Body
N 1/4" NPTF Ports
S #6 SAE Ports

FLOW

0.50 .25 - .50 GPM
0.75 .50 - .75 GPM
1.25 .75 - 1.25 GPM
2.50 1.25 - 2.50 GPM
5.00 2.50 - 5.00 GPM

Tamper Proof

Fill in 4 Digit Flow Setting
 Example: 01.0 - 1.0 GPM

DF-FCQ ADJUSTABLE PRIORITY FLOW CONTROL VALVE**DESCRIPTION**

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

OPERATION

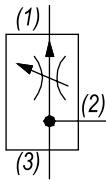
The DF-FCQ allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2).

FEATURES

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



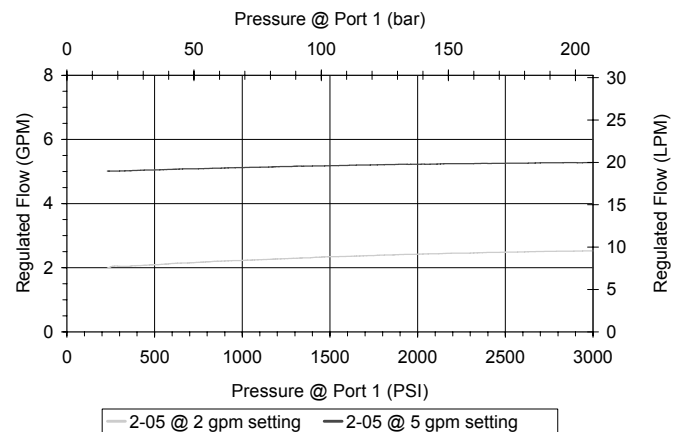
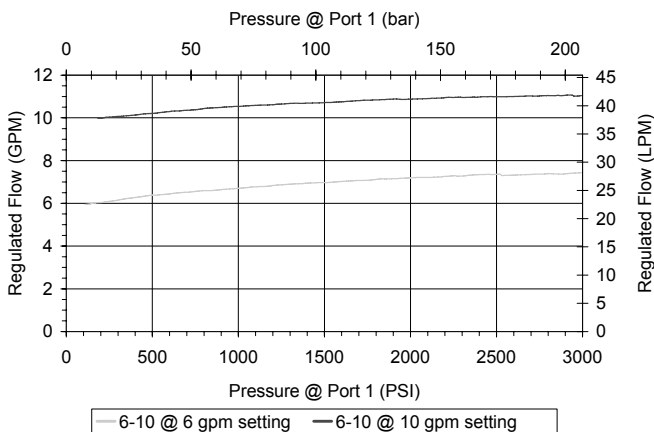
Test data shown on this sheet, for condition of port (2) to tank. Data on next page, for condition of port (3) to tank.

HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

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
Cartridge Form Tool (Finishing)	40500001
Seal Kit	21191206



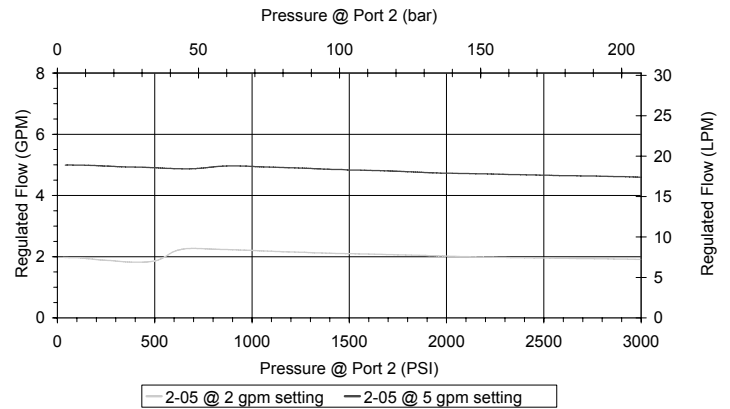
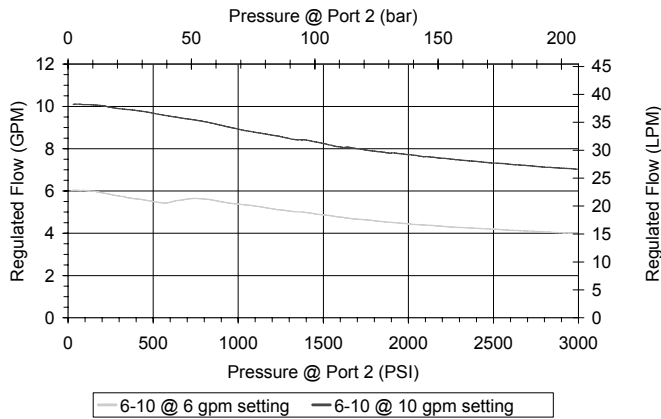
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.



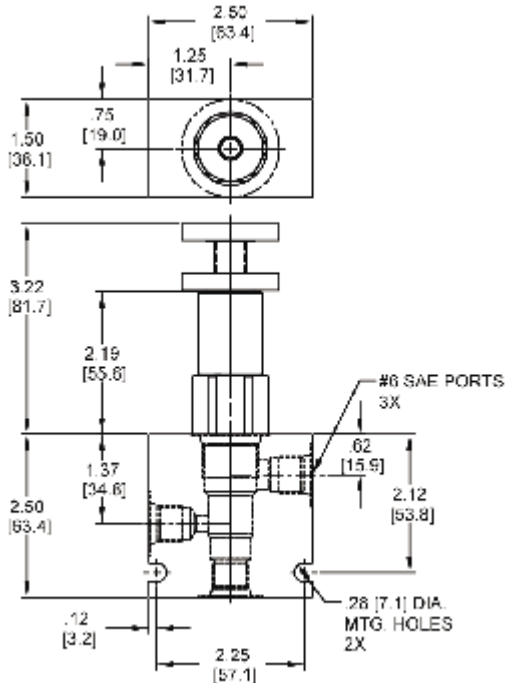
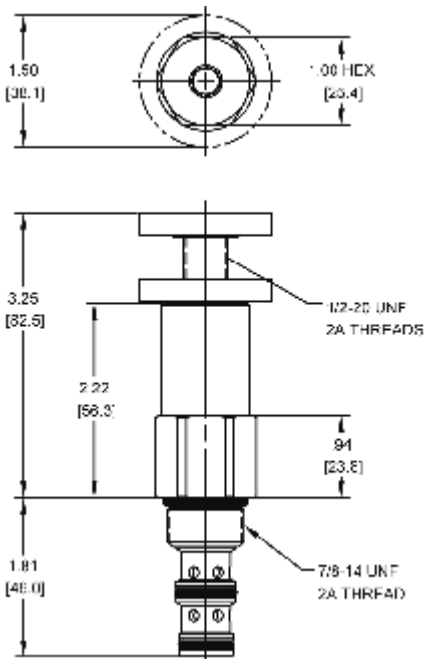
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-FCQ -

OPTIONS

Buna Standard **00**
 Viton Standard **V0**
 Buna, Knob **OK**
 Viton, Knob **VK**

BODIES

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

FLOW RANGE

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

W6 / 2020

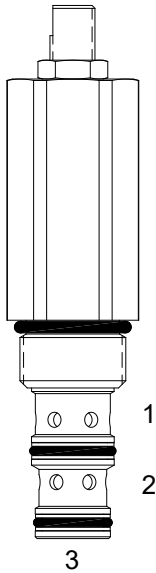
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DF-FAP FULLY ADJUSTABLE PRIORITY FLOW CONTROL VALVE WITH BYPASS**DESCRIPTION**

10 size, 7/8-14 thread, "Delta" series, fully adjustable priority flow control valve with bypass.

OPERATION

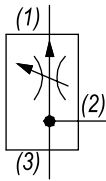
The DF-FAP allows pressure compensated flow from (3) to (1), regulated by the pressure present at (3). Excess flow bypasses out (2). Can be used as a restrictive pressure compensated flow control when the bypass port (2) is blocked.

FEATURES

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



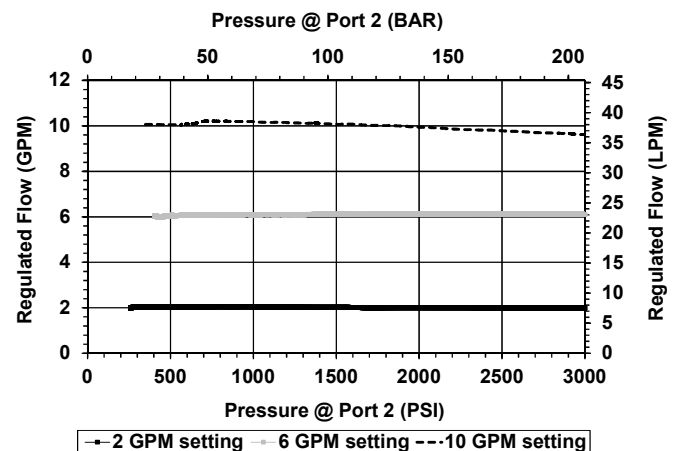
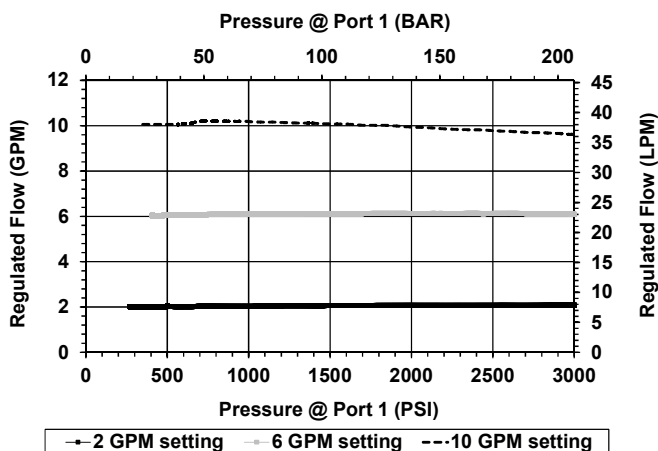
When used as a bypass flow control in applications where the priority flow will be blocked by external valving, bypass pressure drop will increase unless a small amount of leakage is provided for the priority port. Consult factory.

HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Max Regulated 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	.40 lbs (.18 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	21191210



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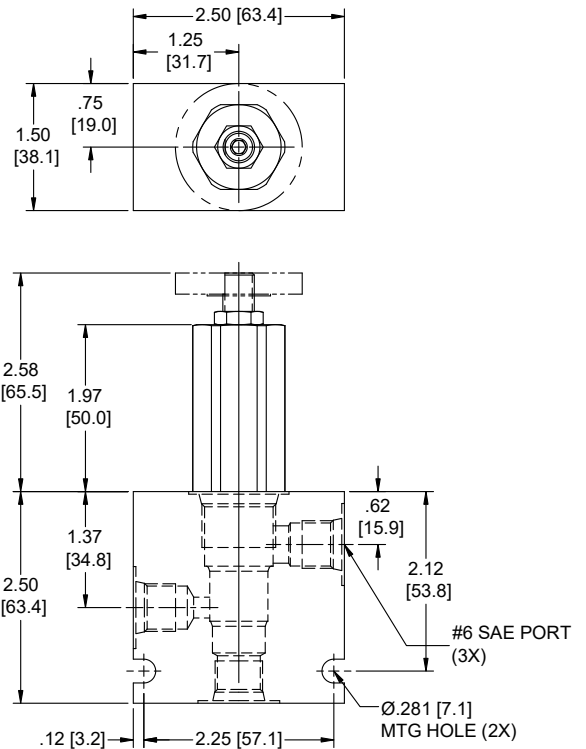
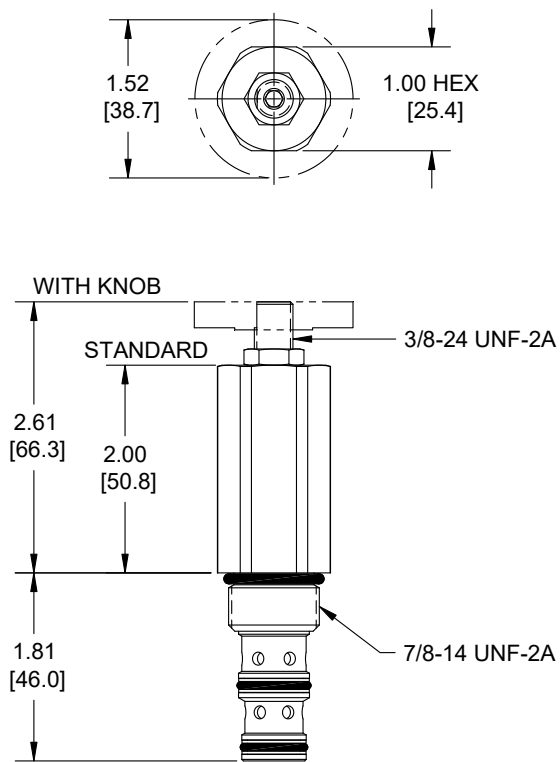


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DIMENSIONS

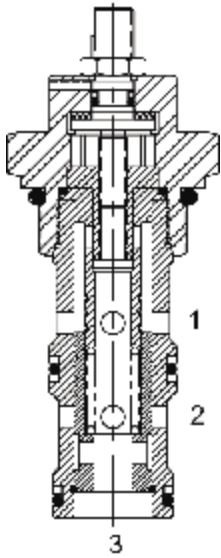


Body Weight: .60 lbs (.27 kg)

ORDERING INFORMATION

DF-FAP	-	-	-
<u>OPTIONS</u>			<u>BODIES</u>
Buna Standard	00		Blank Without Body
Viton Standard	V0		N 3/4" NPTF Ports
Buna, Knob	0K		S #12 SAE Ports
Viton, Knob	VK		
		<u>FLOW SETTING</u>	
		XXXX 1 to 10 GPM	

Preset & Tamper Proof
Example: 0005 - 5 GPM $\pm 10\%$

SK-FCQ ADJUSTABLE PRIORITY FLOW CONTROL VALVE**DESCRIPTION**

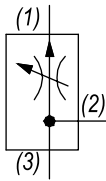
16 size, 1 5/16-12 thread, "Super" series, adjustable priority flow control valve.

OPERATION

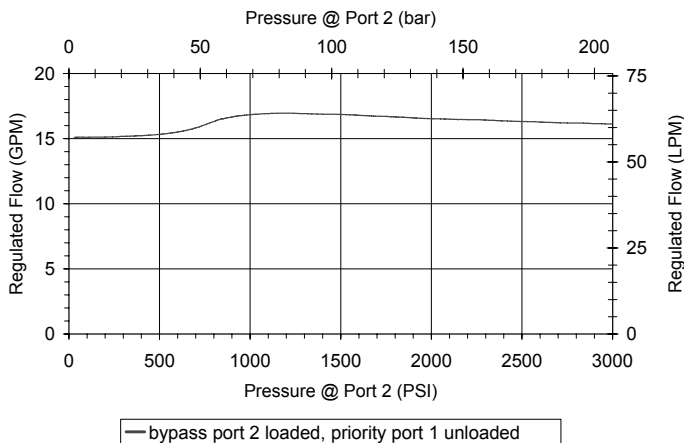
The SK-FCQ allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2). The spring chamber is constantly vented at (1).

FEATURES

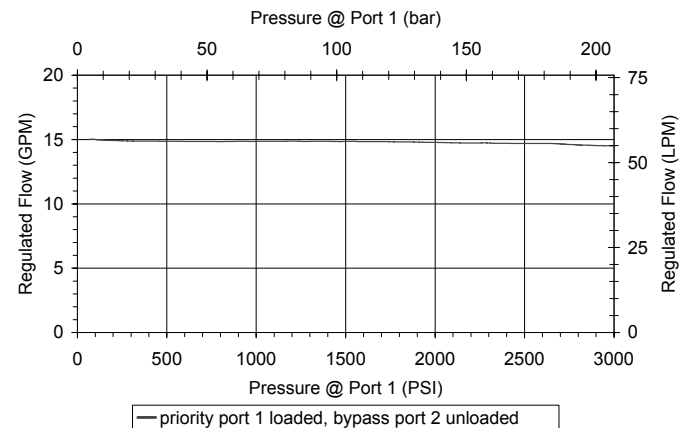
- Hardened cage and spool for long life.
- Industry common cavity.

HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

**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



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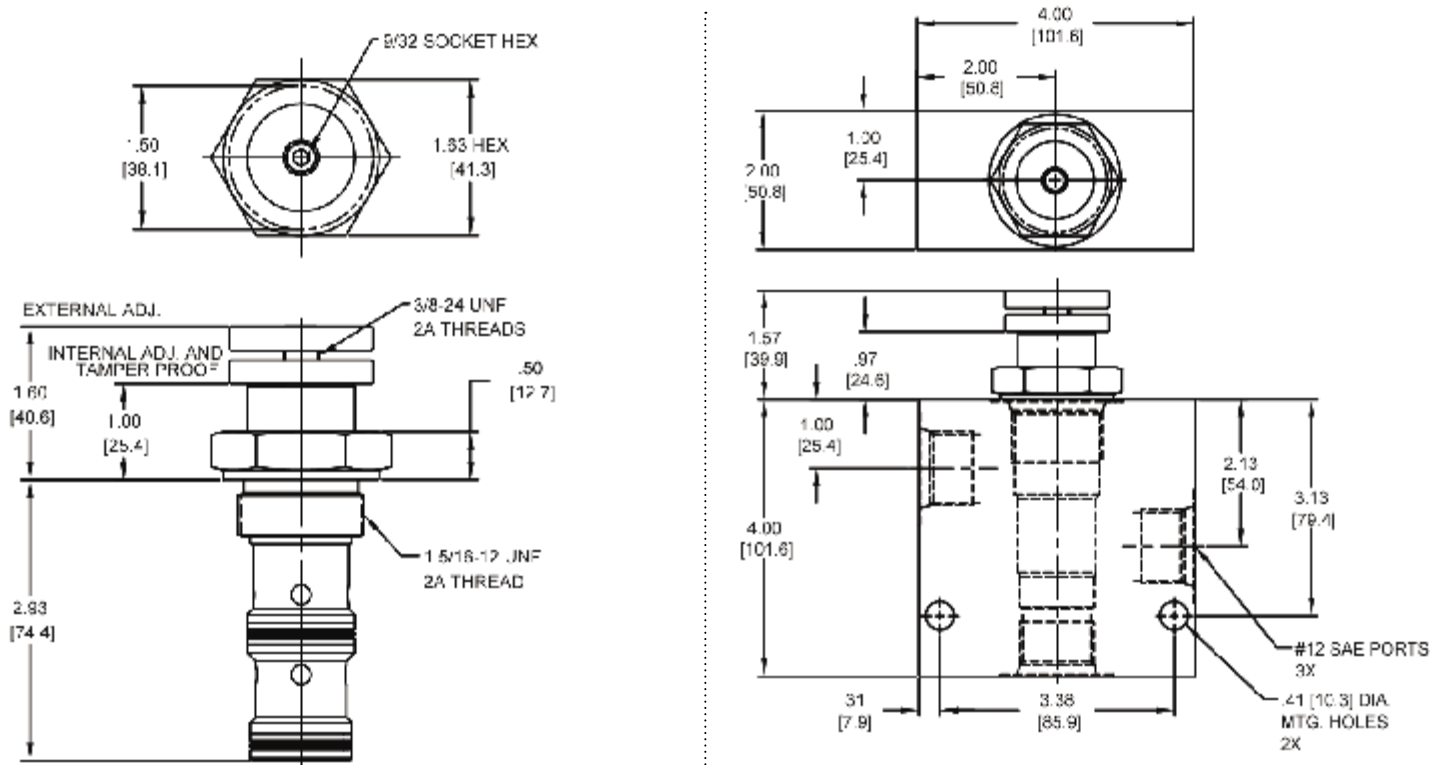


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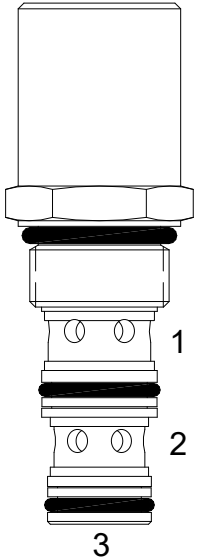
DIMENSIONS



Body Weight: 2.46 lbs (1.11 kg)

ORDERING INFORMATION

SK-FCQ - - -	
OPTIONS	BODIES
Buna Standard 00	Blank Without Body
Viton Standard V0	N 3/4" NPTF 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	
	FLOW SETTING
	XXXX 1 to 25 GPM
	Preset & Tamper Proof
	Example: 0015 - 15 GPM ±10%

PP-FCP FIXED PRIORITY FLOW CONTROL VALVE**DESCRIPTION**

8 size, 3/4-16 thread, "Power" series, fixed priority flow control valve.

OPERATION

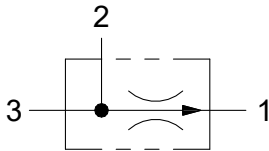
The PP-FCP allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2).

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**PERFORMANCE**

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Maximum Flow	5 GPM (19 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	.56 lbs (.25 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Cavity	POWER 3W
Cavity Form Tool (Finishing)	40500024
Seal Kit	21191106

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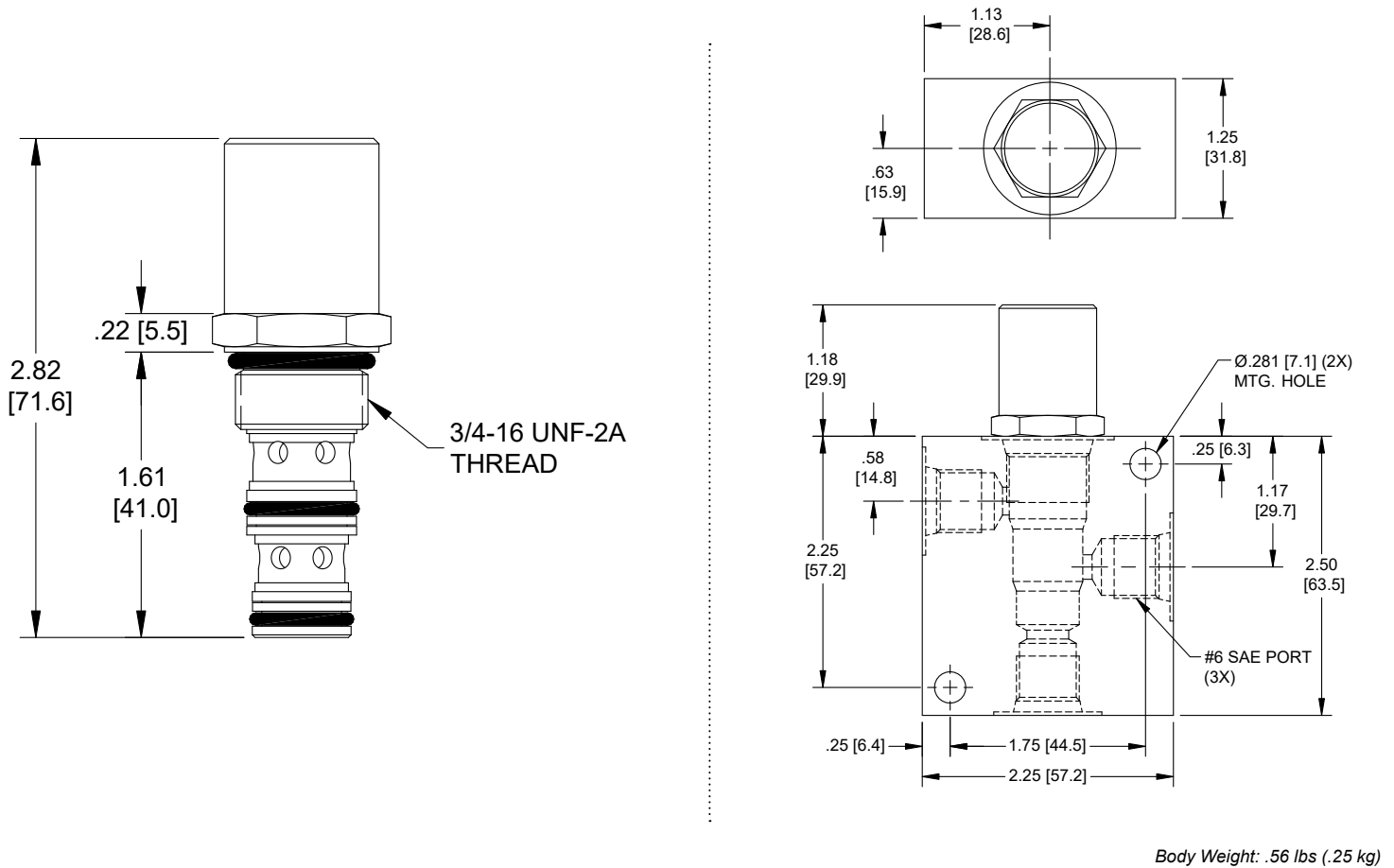


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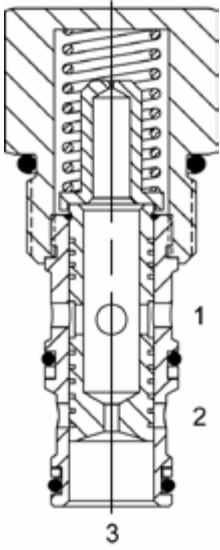
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DIMENSIONS



ORDERING INFORMATION

PP-FCP	-	-	-
<u>OPTIONS</u>			<u>BODIES</u>
Buna Standard	00		Blank Without Body
Viton Standard	V0		N 1/4 NPTF Ports
			S #6 SAE Ports
		<u>FLOW SETTING</u>	
		01.0	1 GPM
		02.0	2 GPM
		03.0	3 GPM
		04.0	4 GPM
		05.0	5 GPM
			± 15%

DF-FCP FIXED PRIORITY FLOW CONTROL VALVE**DESCRIPTION**

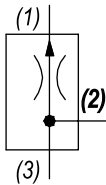
10 size, 7/8-14 thread, "Delta" series, fixed priority flow control valve.

OPERATION

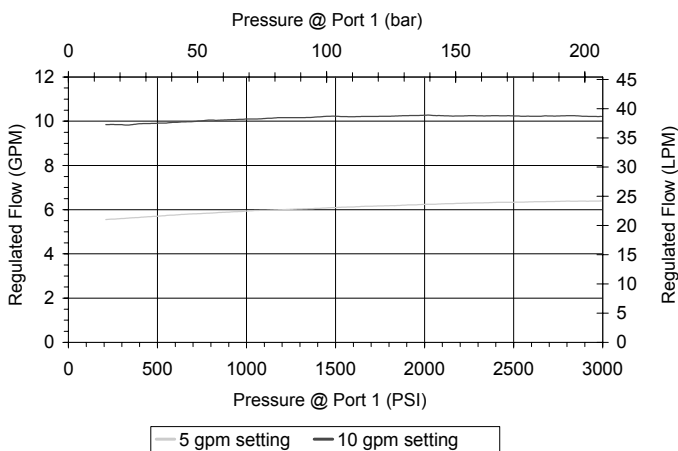
The DF-FCP allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2). The spring chamber is constantly vented at (1).

FEATURES

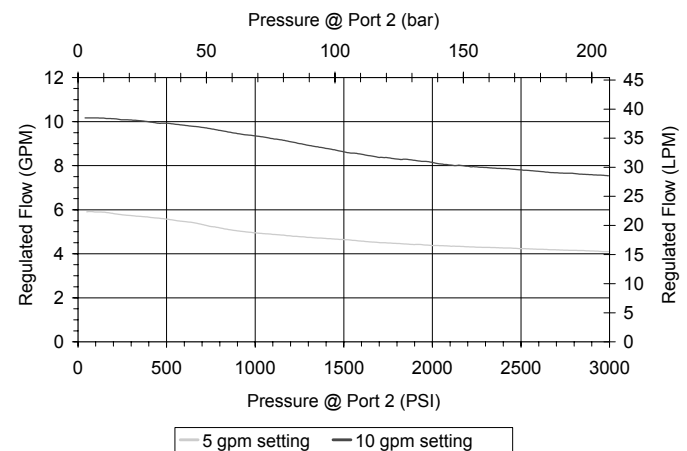
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

**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



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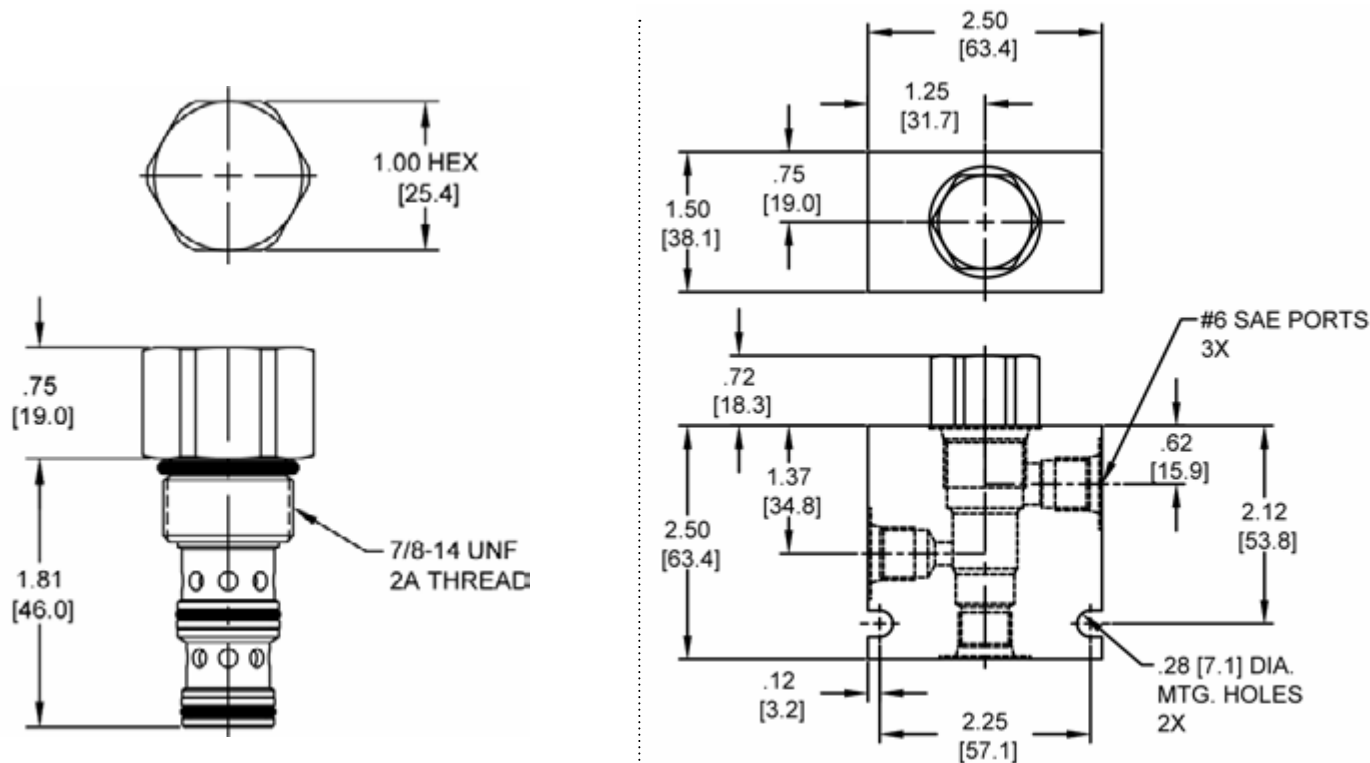


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-FCP		-		-		-		-	
OPTIONS								BODIES	
Buna Standard	00							Blank	Without Body
Viton Standard	V0							N	1/4" NPTF Ports
								S	#6 SAE Ports
								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%	

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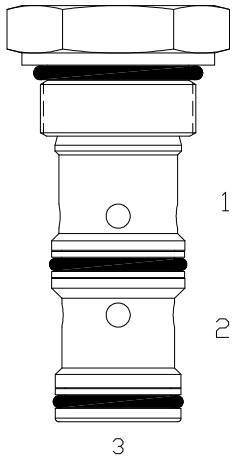
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SK-FCP FIXED PRIORITY FLOW CONTROL VALVE**DESCRIPTION**

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

OPERATION

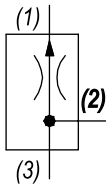
The SK-FCP allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2). The spring chamber is constantly vented at (1).

FEATURES

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



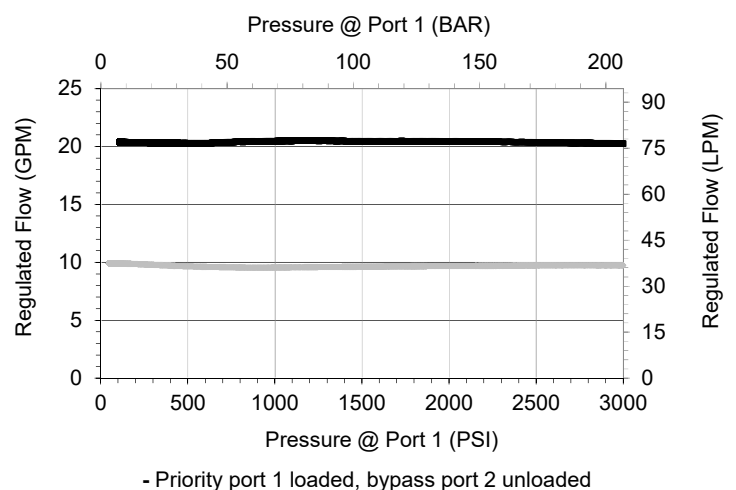
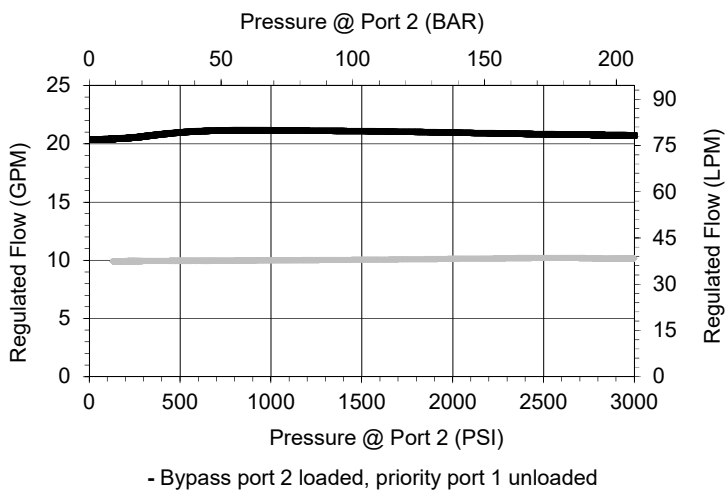
For adjustable setting see SK-FCQ.

HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

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



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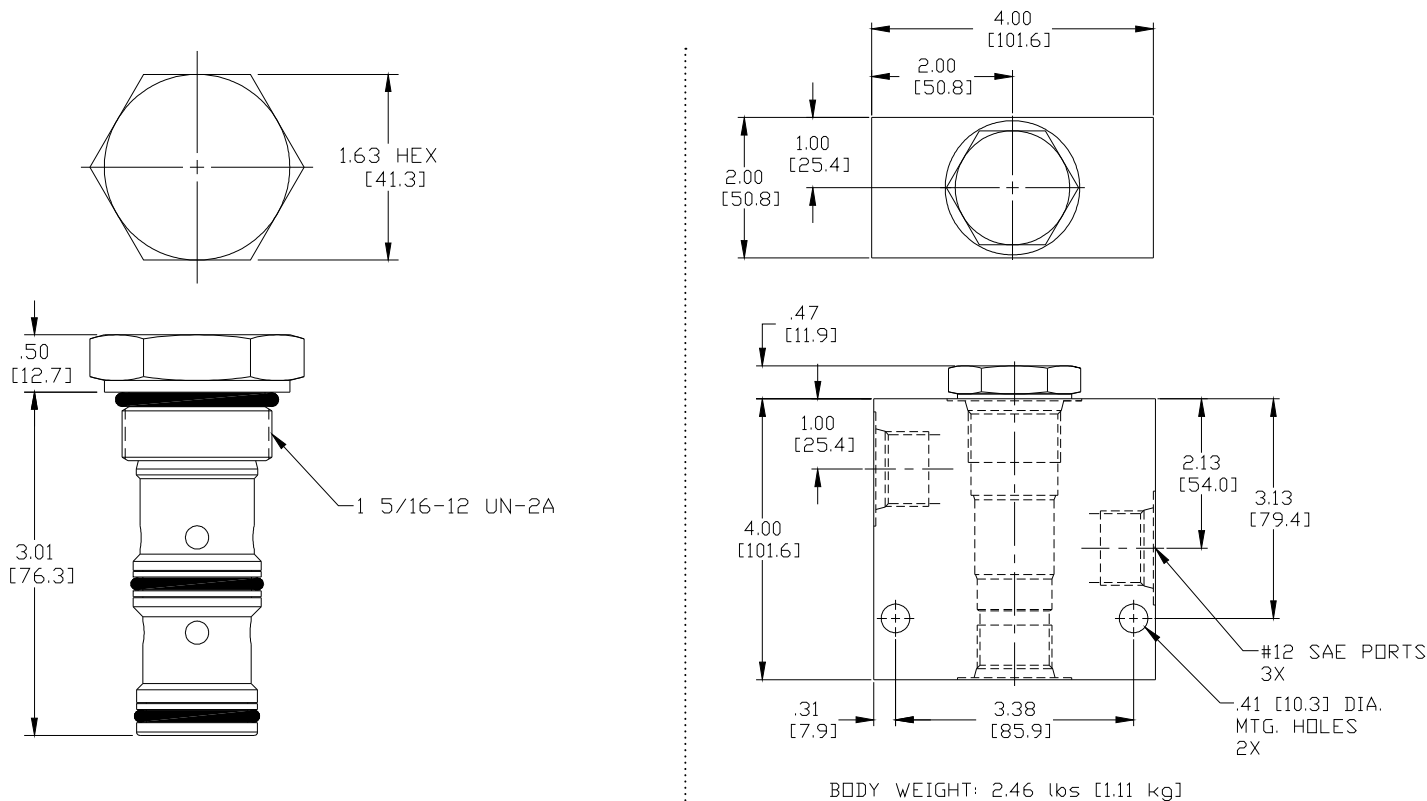


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DIMENSIONS



Body Weight: 2.46 lbs (1.11 kg)

ORDERING INFORMATION

SK-FCP		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N
					S
					FLOW SETTING
				001	
				0	10 GPM
				002	
				5	25 GPM

Additional flow settings available upon request

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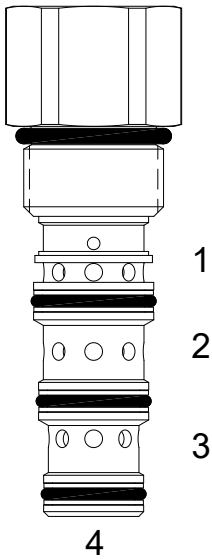
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DG-PDS STEERING PRIORITY FLOW CONTROL VALVE WITH STATIC LOAD SENSE**DESCRIPTION**

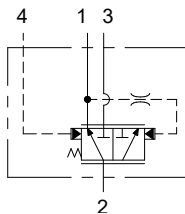
10 size, 7/8-14 thread, "Delta" series, steering priority flow control valve with static load sense.

OPERATION

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

FEATURES

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

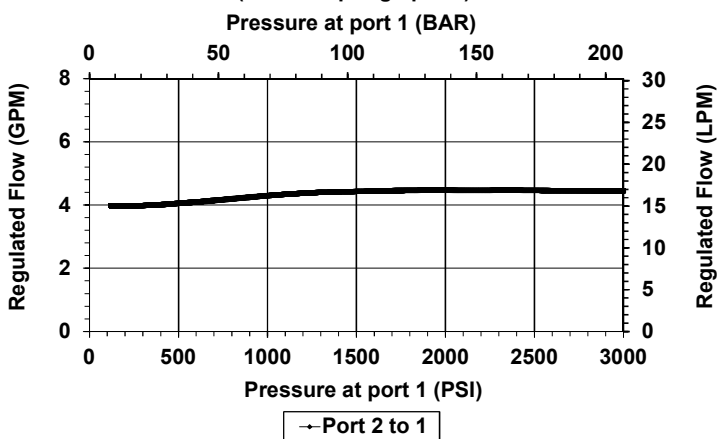
HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

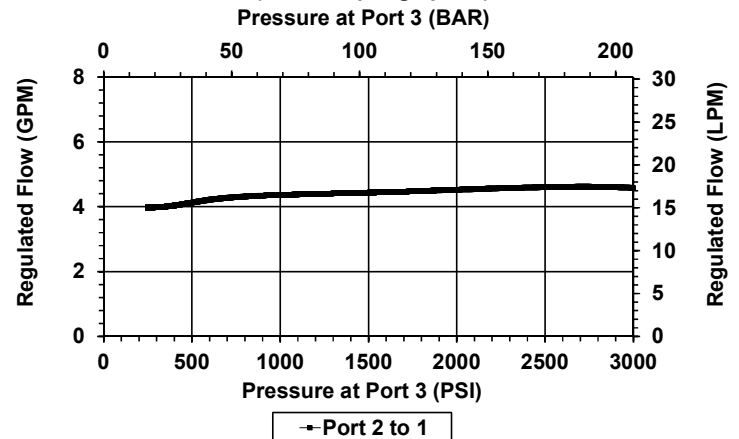
VALVE SPECIFICATIONS

Max Regulated Flow	9 GPM (34 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	0.38 lbs (.17 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

Priority port 1 loaded, bypass port 3 unloaded
(100 PSI spring option)



Bypass port 3 loaded, priority port 1 unloaded
(100 PSI spring option)



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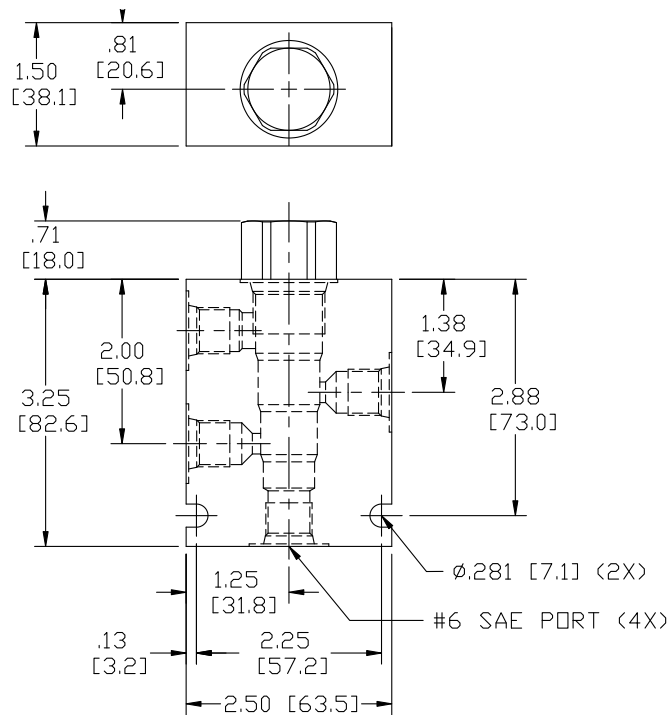
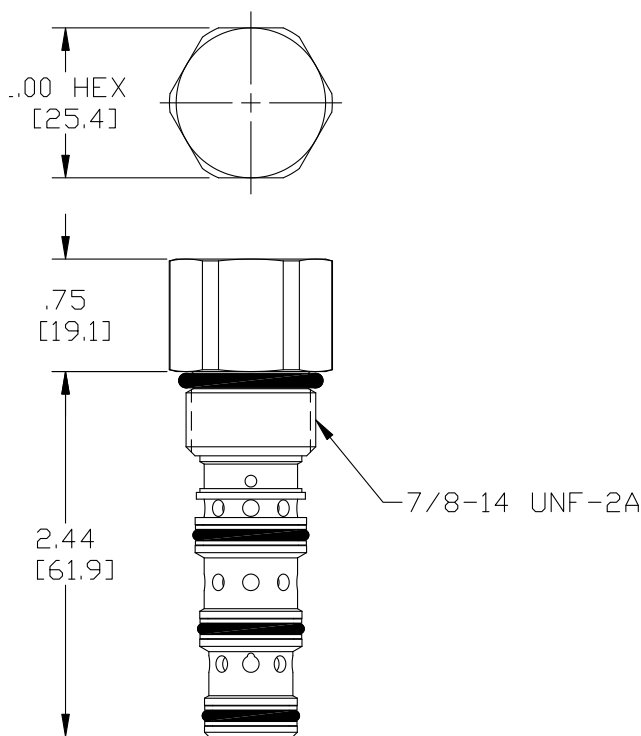


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PDS -

OPTIONS

Buna Standard **00**
Viton Standard **V0**
Buna Standard, Screen **A0**
Viton Standard, Screen **W0**

Screen located at CF (1) port

BODIES

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

PRESSURE SETTING

0100 120 PSI
0150 300 PSI
0250 250 PSI

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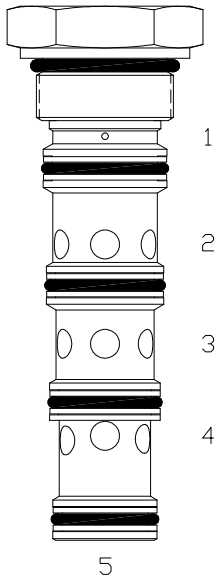
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SO-PDS STEERING PRIORITY FLOW CONTROL VALVE WITH STATIC LOAD SENSE**DESCRIPTION**

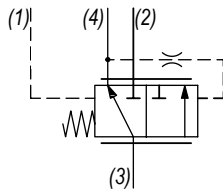
16 size, 1 5/16-12 thread, "Super" series, steering priority flow control valve with static load sense.

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.

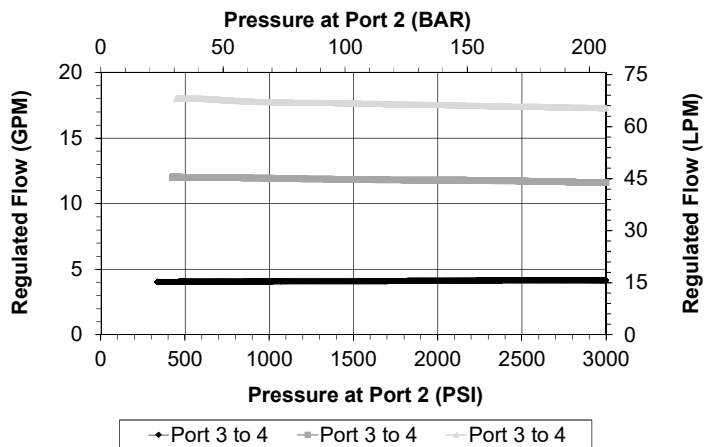
HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

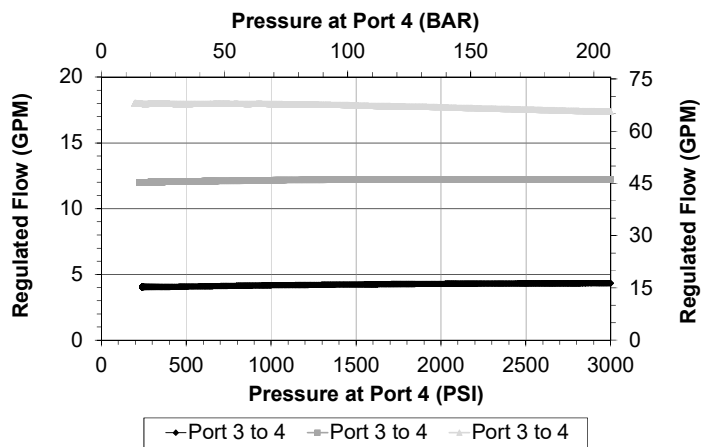
VALVE SPECIFICATIONS

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	1.05 lbs (.48 kg)
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



WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

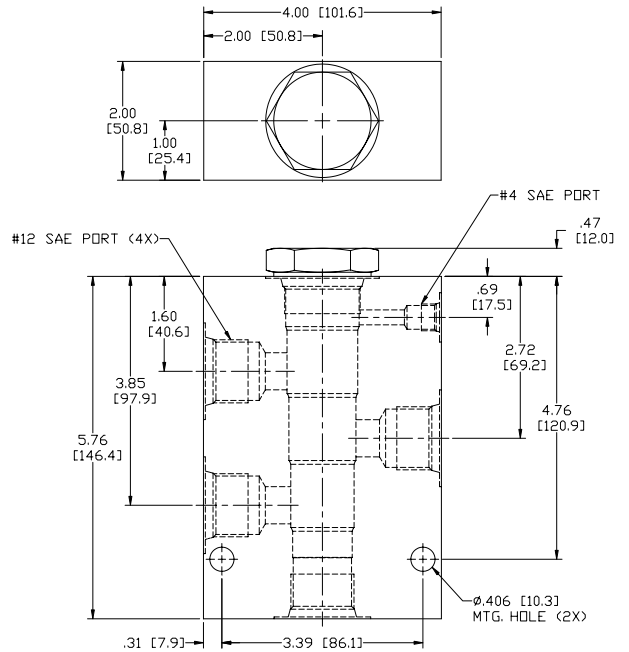
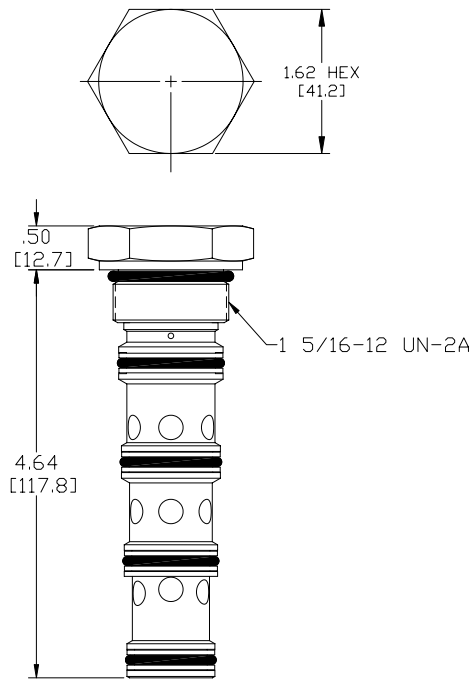


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DIMENSIONS



Body Weight: 3.76 lbs (1.62 kg)

ORDERING INFORMATION

SO-PDS	-	-	-
	└──	└──	└──
	│	│	│
<u>OPTIONS</u>			<u>BODIES</u>
Buna Standard 00			Blank Without Body
Viton Standard V0			N 3/4 NPTF Ports
			S #12 SAE Ports
		<u>PRESSURE SETTING</u>	
		0120 120 PSI	
		0300 300 PSI	

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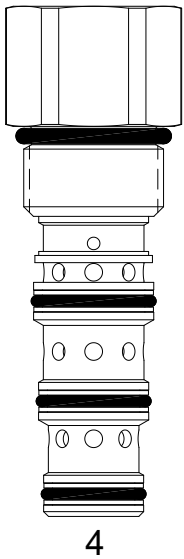
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DG-PDD STEERING PRIORITY FLOW CONTROL VALVE WITH DYNAMIC LOAD SENSE**DESCRIPTION**

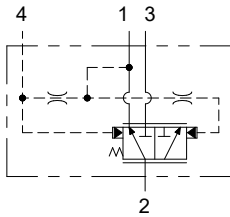
10 size, 7/8-14 thread, "Delta" series, steering priority flow control valve with dynamic load sense.

OPERATION

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

FEATURES

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

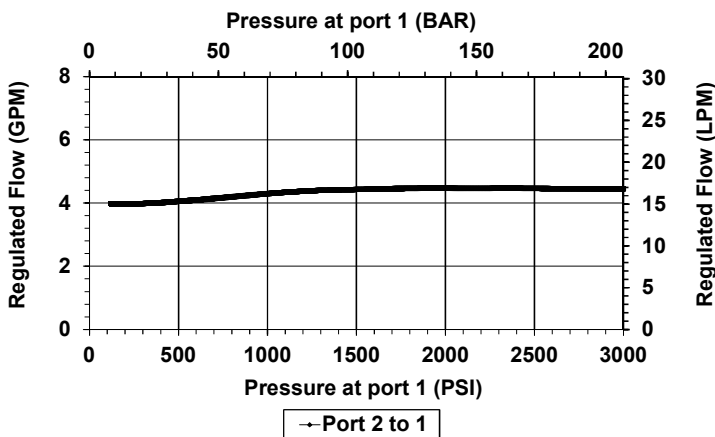
HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

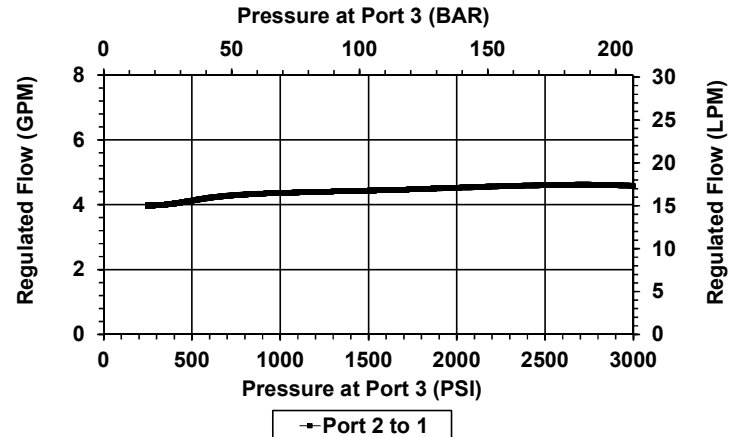
VALVE SPECIFICATIONS

Max Regulated Flow	9 GPM (34 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	0.38 lbs (.17 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

Priority port 1 loaded, bypass port 3 unloaded
(100 PSI spring option)



Bypass port 3 loaded, priority port 1 unloaded
(100 PSI spring option)



WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

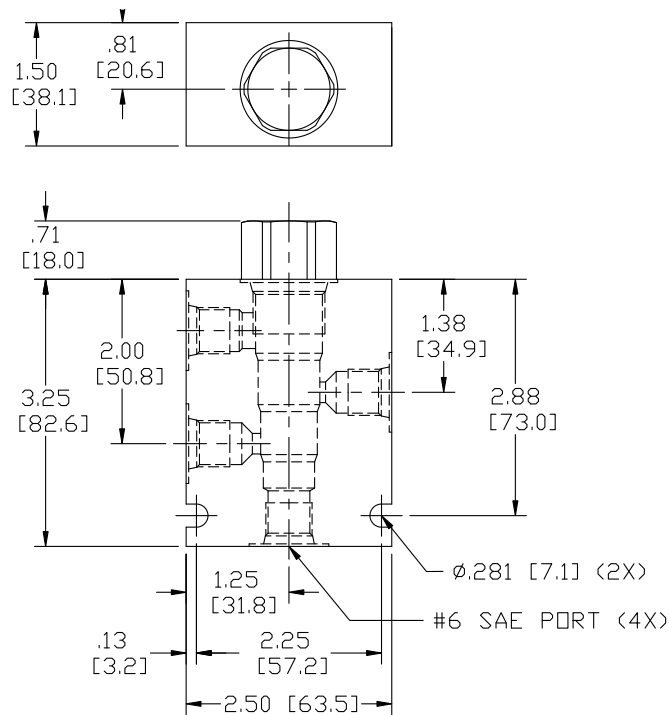
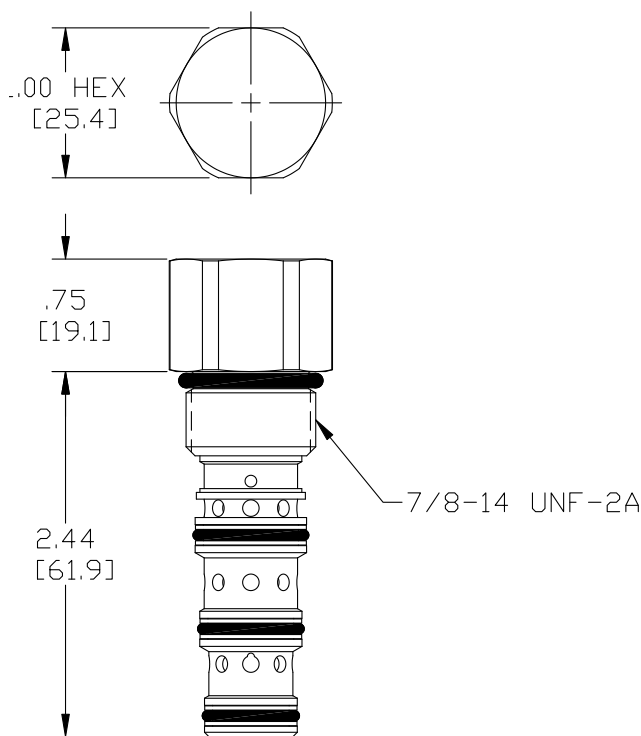


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PDS -

OPTIONS

Buna Standard **00**
Viton Standard **V0**
Buna Standard, Screen **A0**
Viton Standard, Screen **W0**

Screen located at CF (1) port

BODIES

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

PRESSURE SETTING

0100 120 PSI
0150 300 PSI
0250 250 PSI

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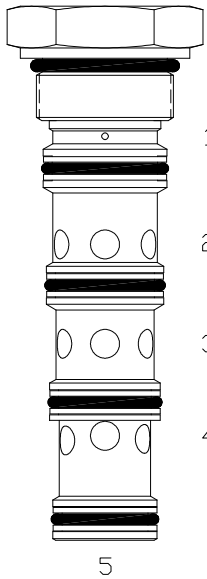
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SO-PDD STEERING PRIORITY FLOW CONTROL VALVE WITH DYNAMIC LOAD SENSE**DESCRIPTION**

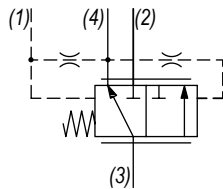
16 size, 1 5/16-12 thread, "Super" series, steering priority flow control valve with dynamic load sense.

OPERATION

The SO-PDD 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.

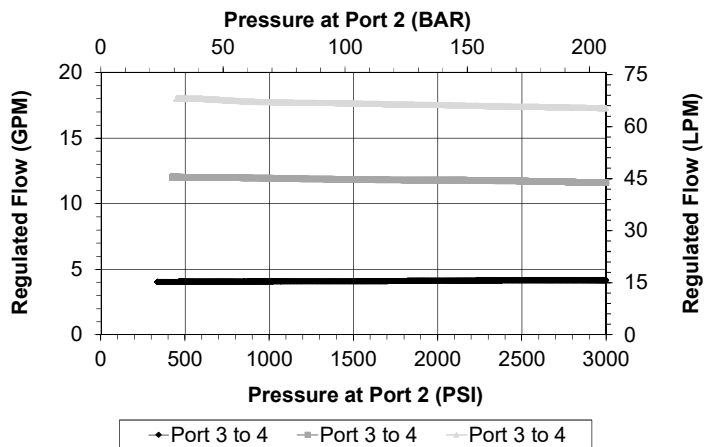
HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)

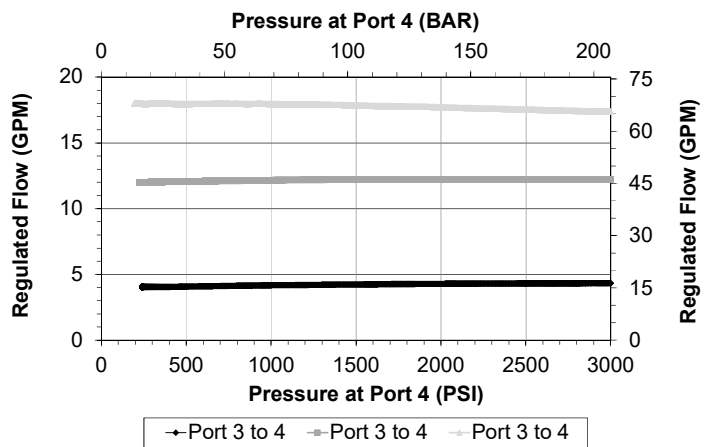
VALVE SPECIFICATIONS

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	1.05 lbs (.48 kg)
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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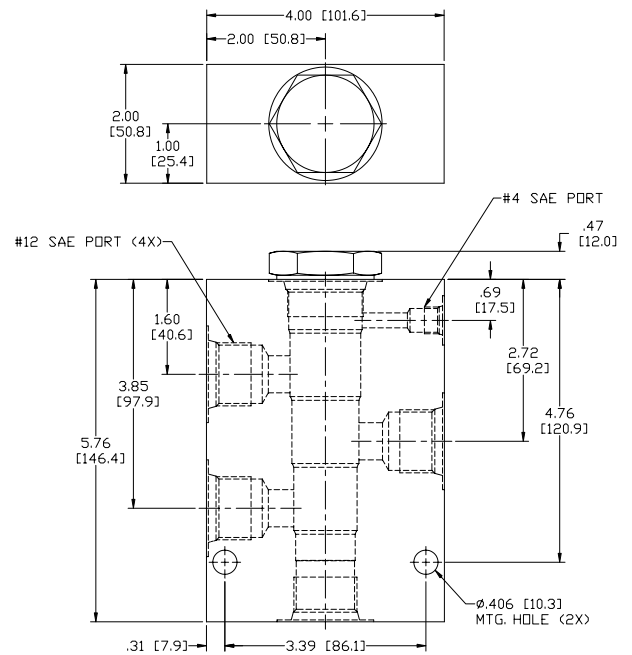
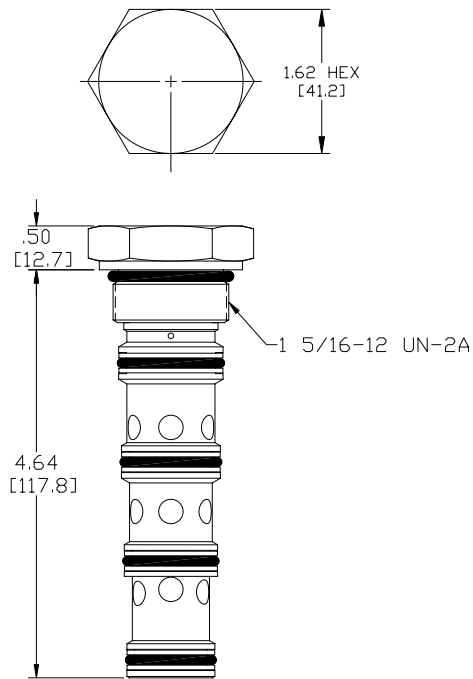


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DIMENSIONS



Body Weight: 3.76 lbs (1.62 kg)

ORDERING INFORMATION

SO-PDD		-	-	-
<u>OPTIONS</u>				<u>BODIES</u>
Buna Standard	00			Blank Without Body
Viton Standard	V0			N 3/4 NPTF Ports
				S #12 SAE Ports
			<u>PRESSURE SETTING</u>	
			0120	120 PSI
			0300	300 PSI

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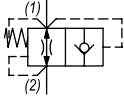


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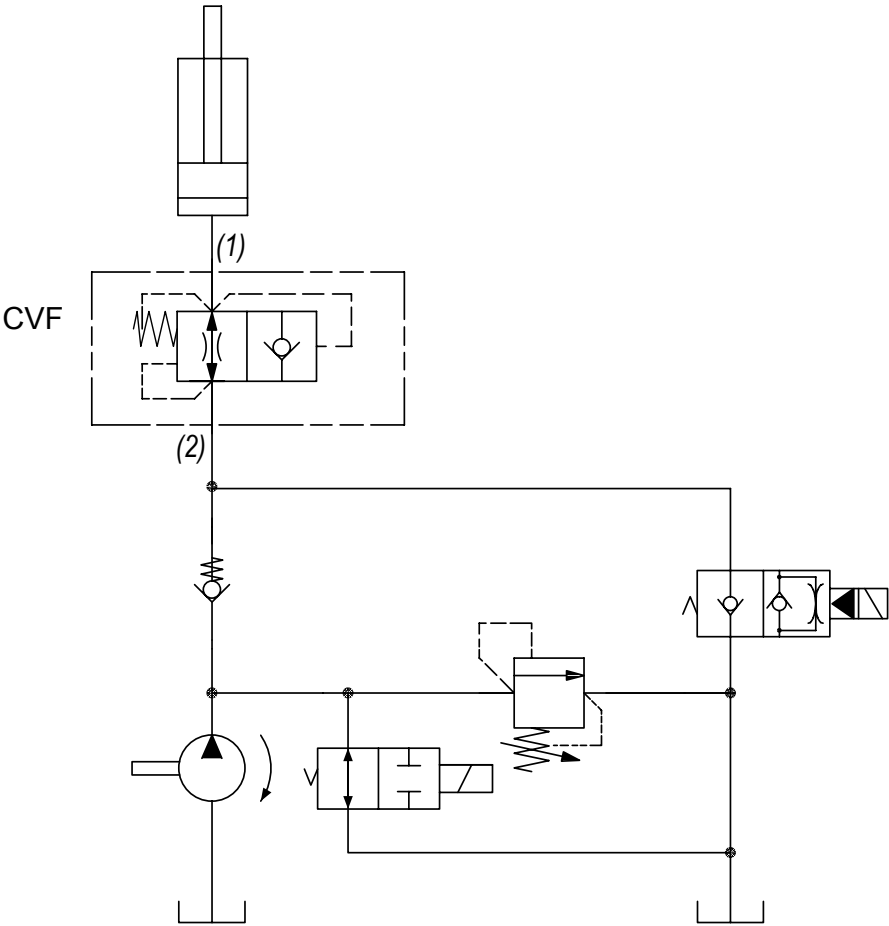
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VELOCITY FUSES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	6	3500	23	241	7/8-14	IM-CVF	MF72
	10	3500	38	241	7/8-14	DE-CVF	MF74

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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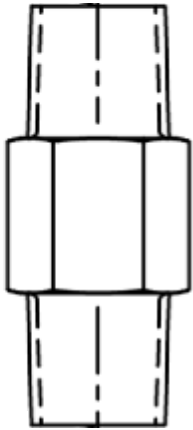
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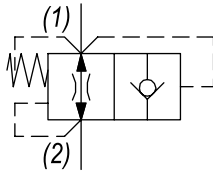
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IM-CVF INLINE VELOCITY FUSE**DESCRIPTION**

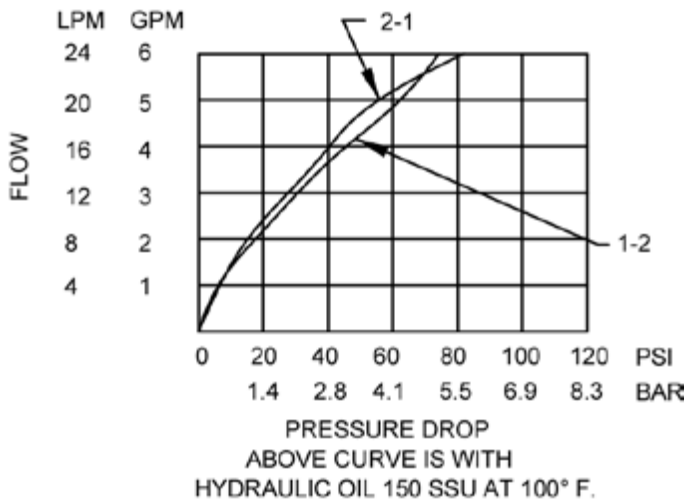
3/8 NPTF thread, inline velocity fuse.

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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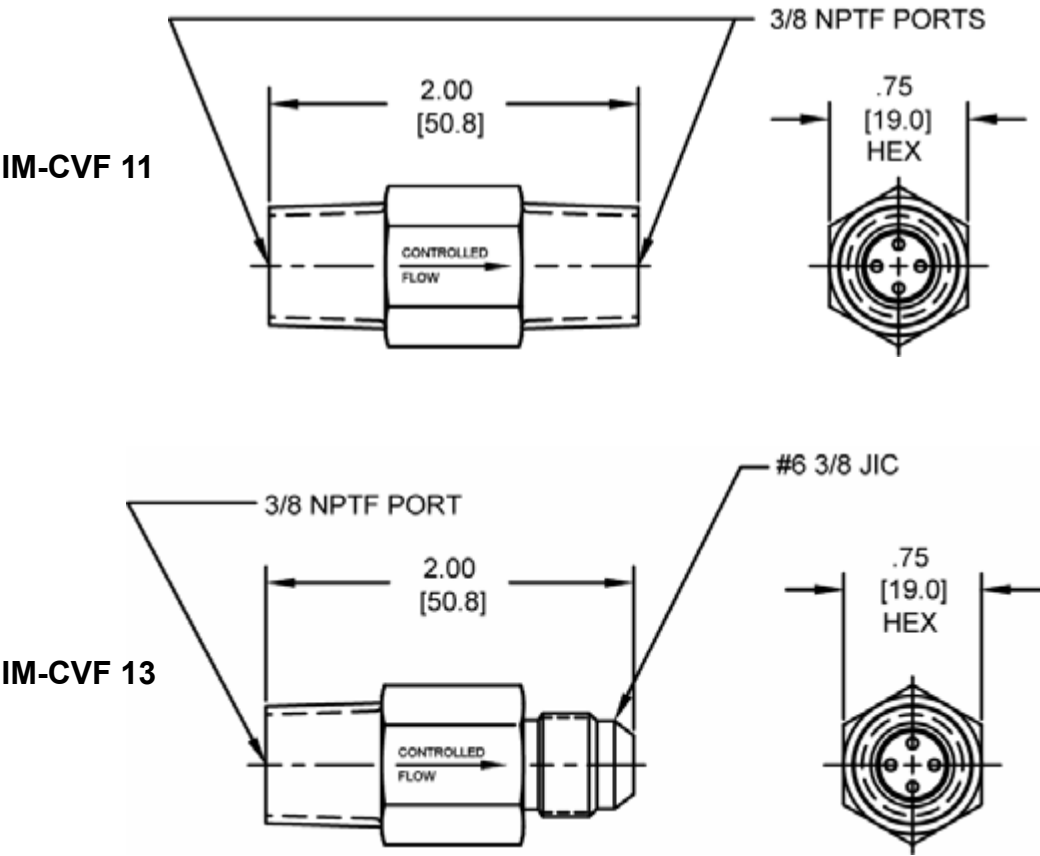


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DIMENSIONS



ORDERING INFORMATION

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

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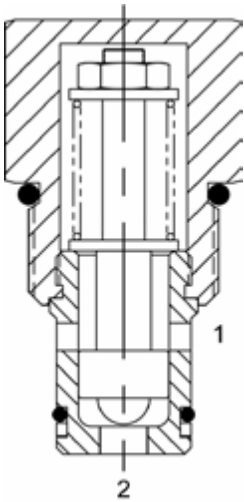
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DE-CVF VELOCITY FUSE**DESCRIPTION**

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

OPERATION

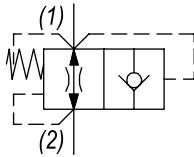
The DE-CVF allows flow to pass from (1) to (2). When velocity exceeds the flow setting the valve shifts and blocks flow from (1) to (2). Valve acts like a fixed orifice when passing flow from (2) to (1).

FEATURES

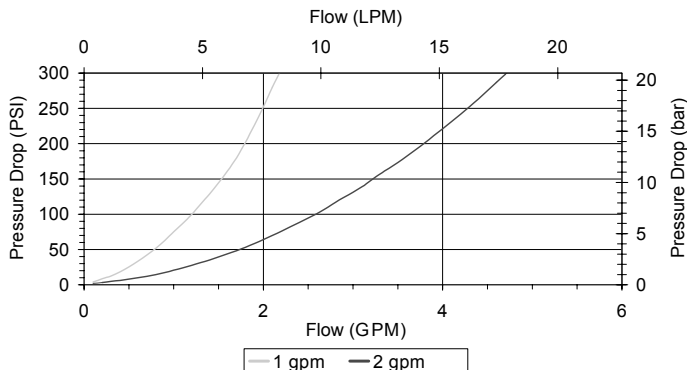
- Hardened parts for long life.
- Industry common cavity.



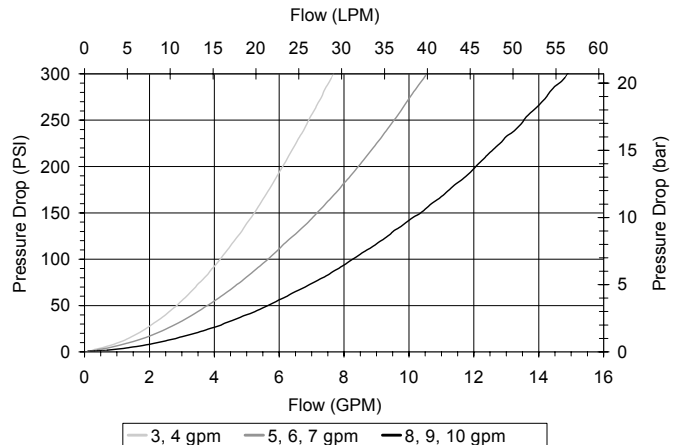
Curves identify pressure drop in port (2) to (1) direction (non-fuse). Fuse pressure drop is similar at fuse flow, until fuse takes effect (~75-100 PSID).

HYDRAULIC SYMBOL**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	.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



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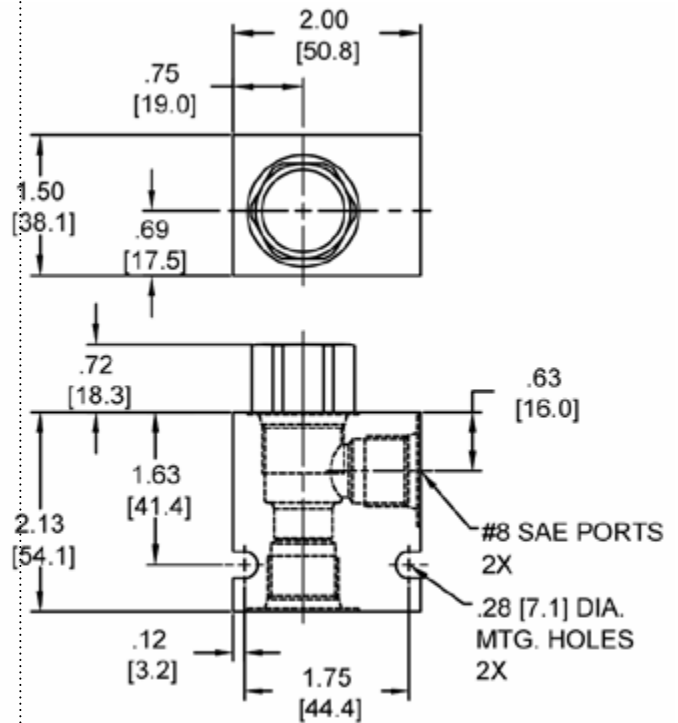
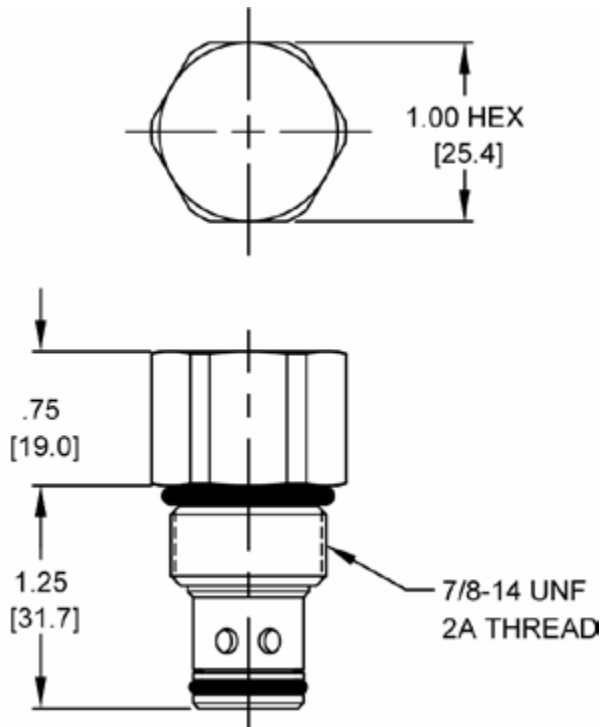


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-CVF	-	-	-
<u>OPTIONS</u> Buna Standard 00 Viton Standard V0		<u>BODIES</u> Blank Without Body N 3/8" NPTF Ports S #8 SAE Ports	
		<u>FLOW SETTING</u> 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%	

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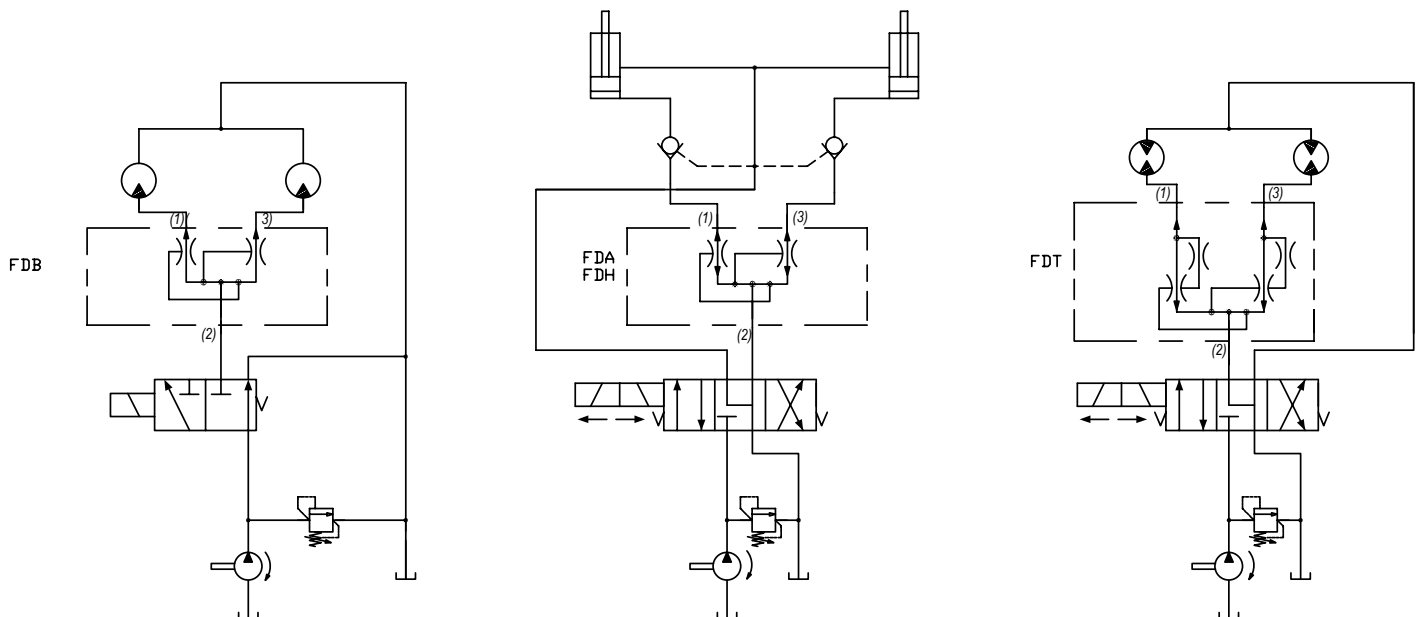
FLOW DIVIDER/COMBINER VALVES

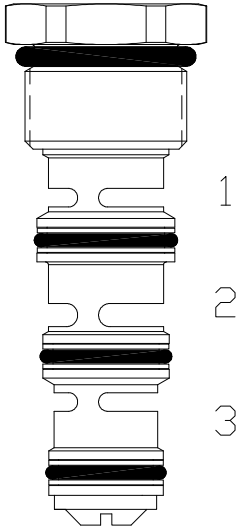
	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	12	3500	45	241	7/8-14	DG-FDA	MF78
	40	3500	151	241	1 5/16-12	SN-FDA	MF80
	12	3500	45	241	7/8-14	DG-FDB	MF82
	12	3500	45	241	7/8-14	DG-FDH	MF84
	12	3500	45	241	7/8-14	DG-FDT	MF86

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.



DG-FDA FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE**DESCRIPTION**

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

OPERATION

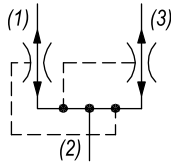
In the dividing mode, the DG-FDA will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. The DG-FDA will combine input flows from ports (3) and (1), to port (2) by the same ratio. Should circuit operation result in a blockage of either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

FEATURES

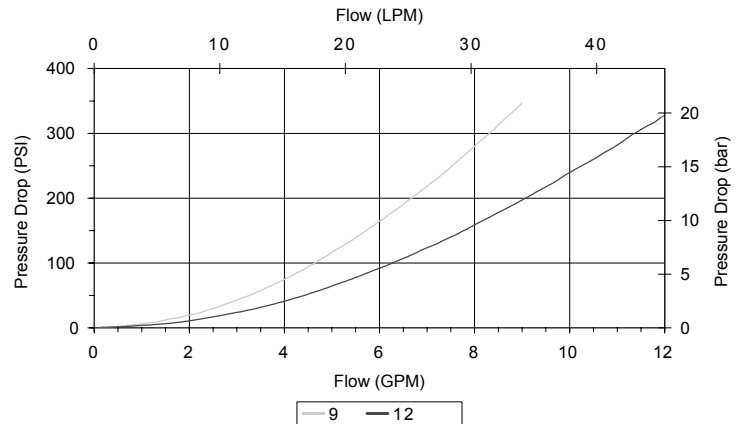
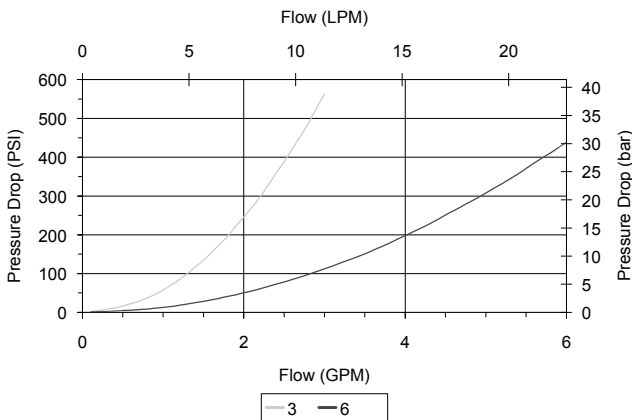
- Hardened parts for long life.
- Industry common cavity.



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

HYDRAULIC SYMBOL**PERFORMANCE**

Actual Test Data (Cartridge Only)



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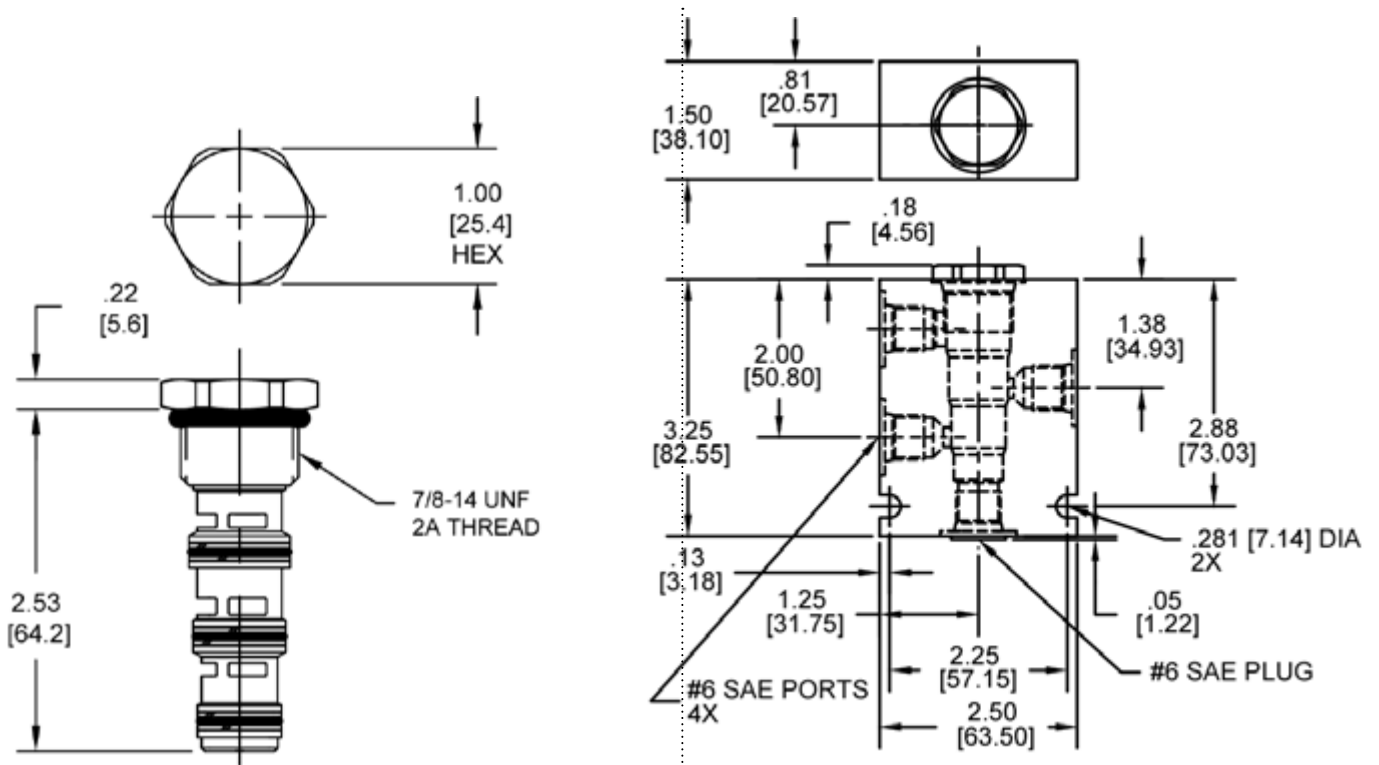


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DIMENSIONS



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
70-30	70
72-28	72
80-20	80
86-14	86

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

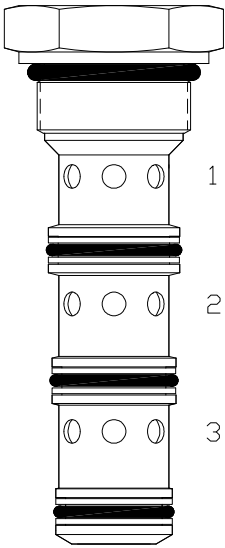
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SN-FDA FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE**DESCRIPTION**

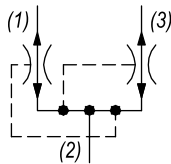
16 size, 1 5/16-12 thread "Super Series," spool-type flow divider/combiner valve.

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

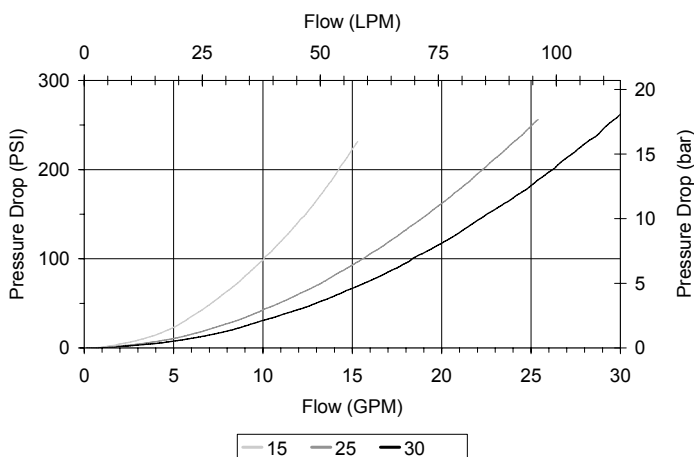
- Hardened parts for long life.
- Industry common cavity.

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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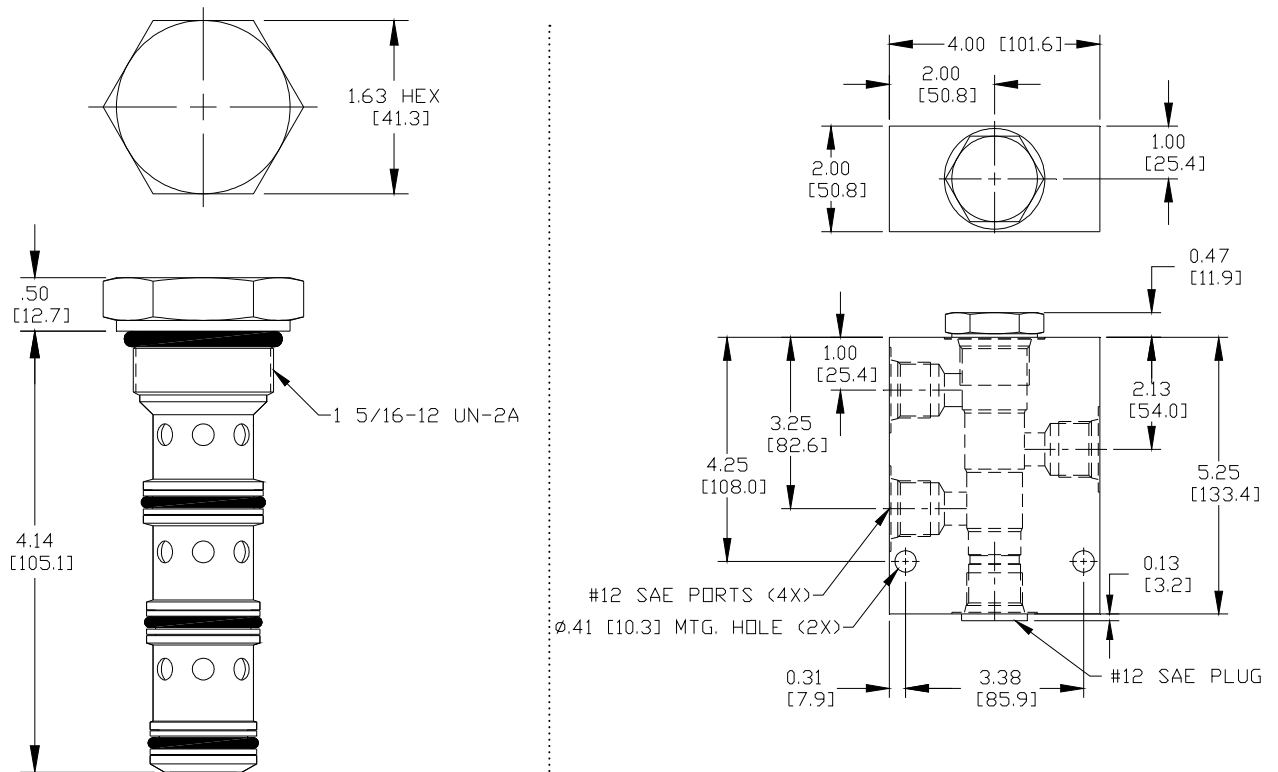


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DIMENSIONS



Body Weight: 3.21 lbs (1.46 kg)

ORDERING INFORMATION

SN-FDA -

OPTIONS

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

SPLITS

#1 #3

25-75	25
35-65	35
40-60	40
50-50	50
60-40	60
65-35	65
75-25	75

Consult factory for additional splits

BODIES

Blank Without Body
S #12 SAE Ports
Note: must use 4-way body

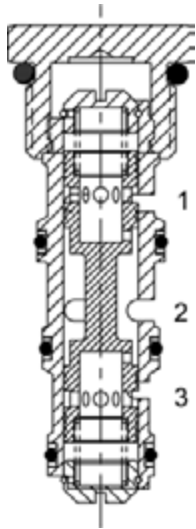
INLET FLOW

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

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
15	35-65, 65-35	15.0 GPM
25	25-75, 40-60, 60-40, 75-25	25.0 GPM
30	35-65, 65-35	30.0 GPM

DG-FDB FLOW DIVIDER VALVE, SPOOL TYPE**DESCRIPTION**

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

OPERATION

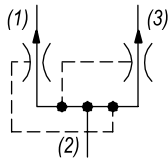
The DG-FDB will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure. Should circuit operation result in a blockage of either (3) or (1), the opposite port may also close under certain conditions. Should this potential exist, consult the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

FEATURES

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



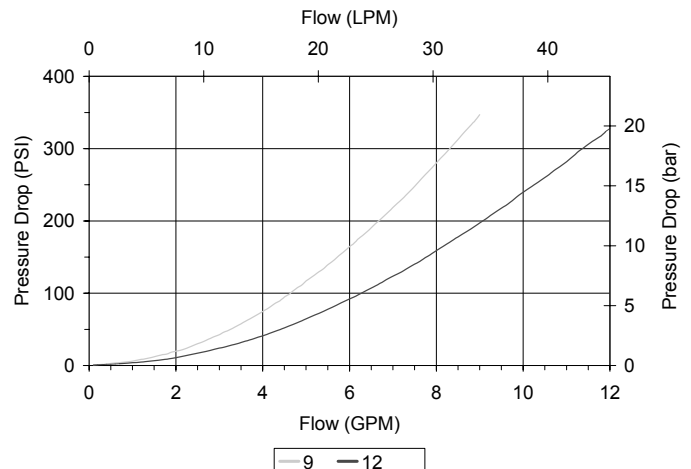
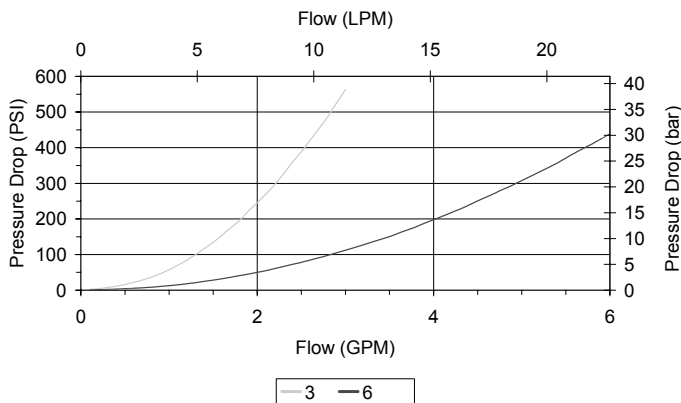
DO NOT EXCEED MAXIMUM FLOW PER MODEL.

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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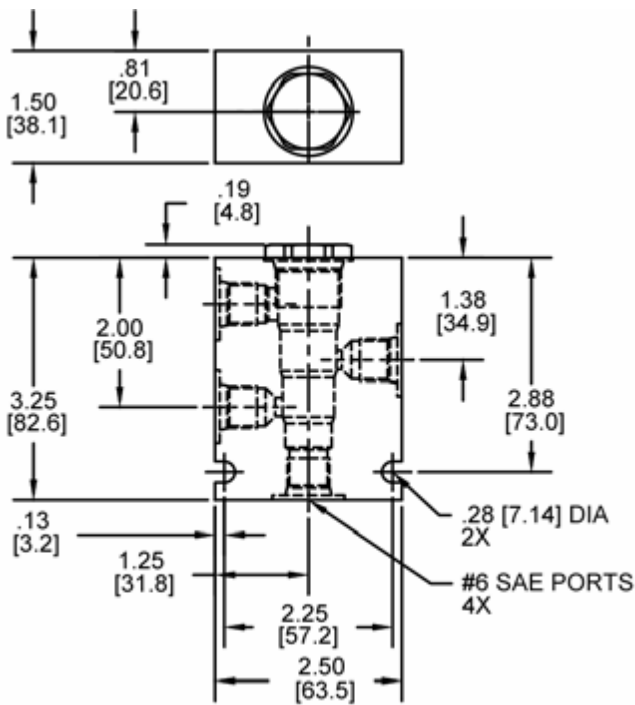
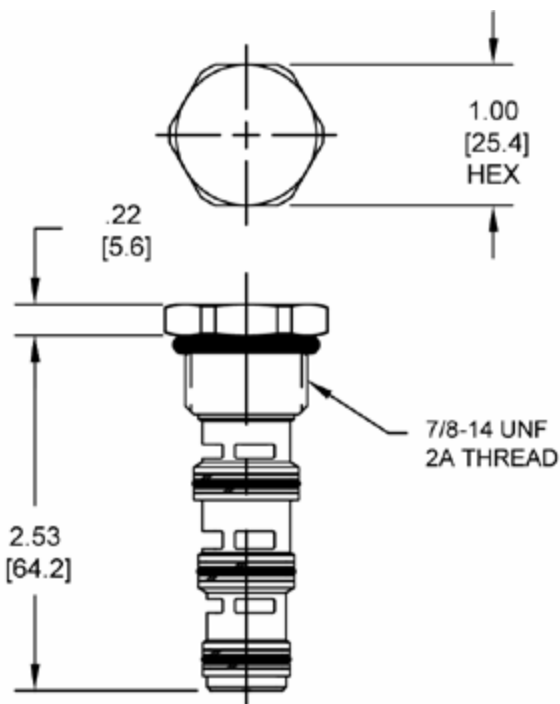


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-FDB		-	-	-	-	-
OPTIONS						BODIES
Buna Standard	00					Without Body
Viton Standard	V0					1/4" NPT Ports
						#6 SAE Ports
						Note: must use 4-way body
SPLITS						INLET FLOW
50-50	50			03	2-3 GPM	
Consult factory for splits other than 50-50				06	3-6 GPM	
				09	6-9 GPM	
				12	9-12 GPM	

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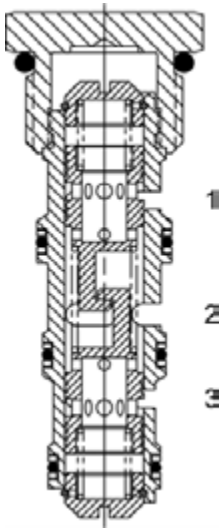
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DG-FDH FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE**DESCRIPTION**

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

OPERATION

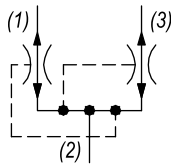
In the dividing mode, the DG-FDH will divert input flow from port (2) to ports (3) and (1), based on the ratio specified with a high degree of accuracy, regardless of operating pressure. The DG-FDH will combine input flows from ports (3) and (1), to port (2) by the same ratio. Should circuit operation 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.



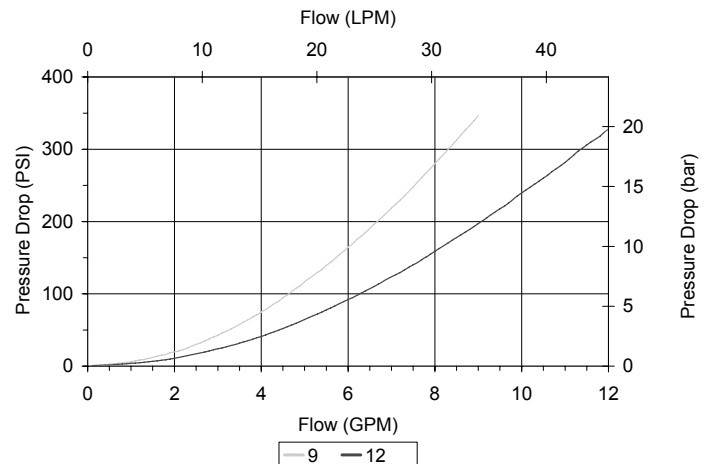
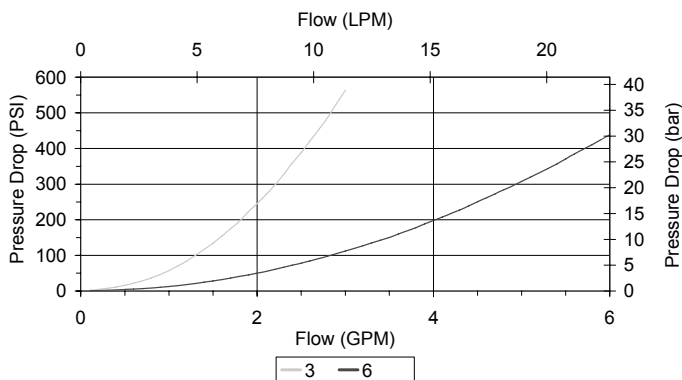
DO NOT EXCEED MAXIMUM FLOW PER MODEL.
The DG-FDH should be considered if the DG-FDA does not provide the required accuracy.

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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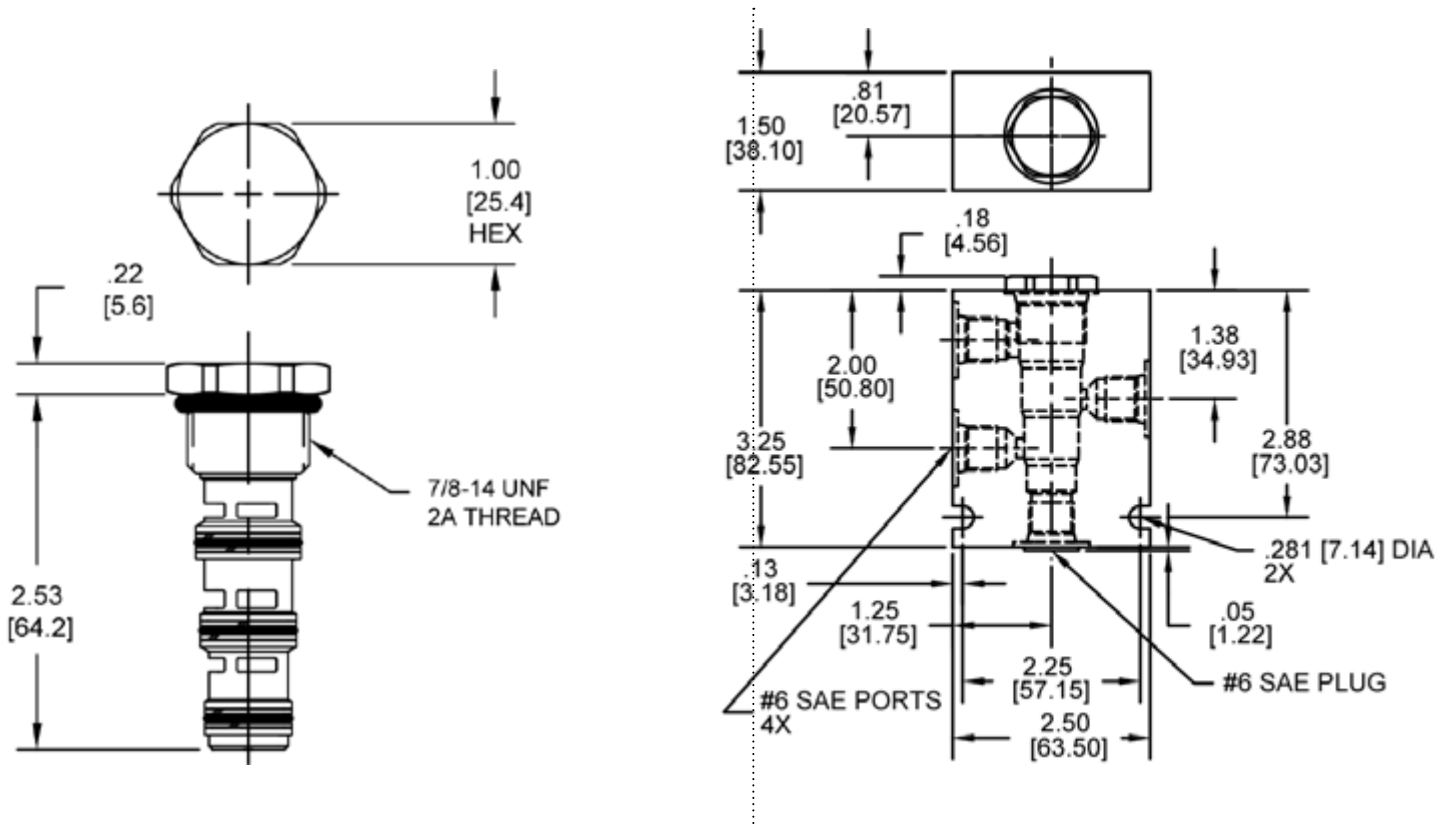


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-FDH		-	-	-	-	-	-
OPTIONS							BODIES
Buna Standard	00						Blank
Viton Standard	V0						N
							S
SPLITS							INLET FLOW
50-50	50						03 2-3 GPM
Consult factory for splits other than 50-50							06 3-6 GPM
							09 6-9 GPM
							12 9-12 GPM

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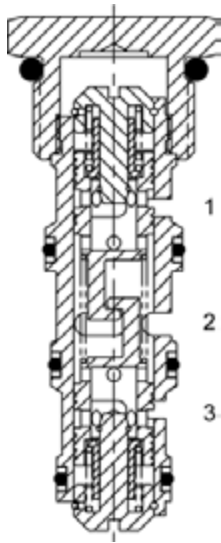


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DG-FDT FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



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.

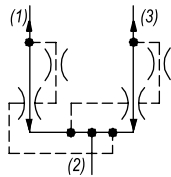


DO NOT EXCEED MAXIMUM FLOW PER MODEL
Use where wheel slip (or "drag") needs to be accomplished.



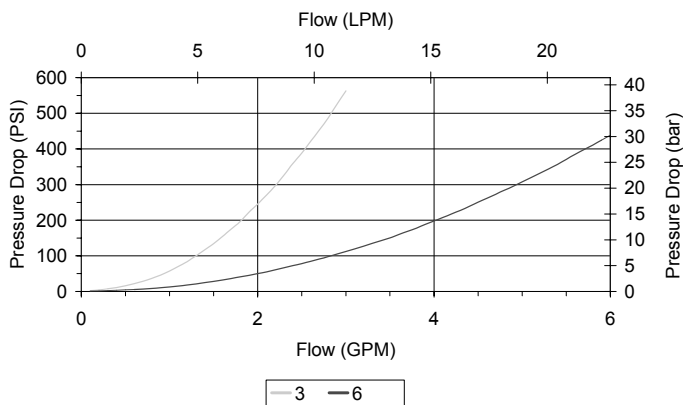
TRACTION FLOW W/1 LEG UNLOADED
2-3 GPM valve - 0.4 GPM
3-6 GPM valve - 0.7 GPM
6-9 GPM valve - 1.1 GPM
9-12 GPM valve - 1.5 GPM

HYDRAULIC SYMBOL



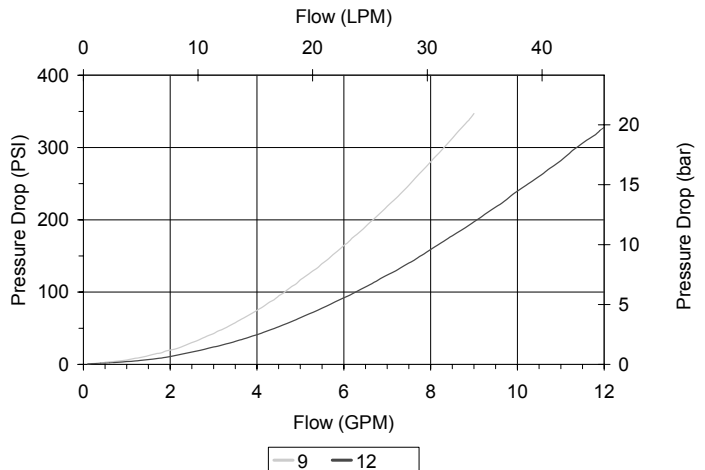
PERFORMANCE

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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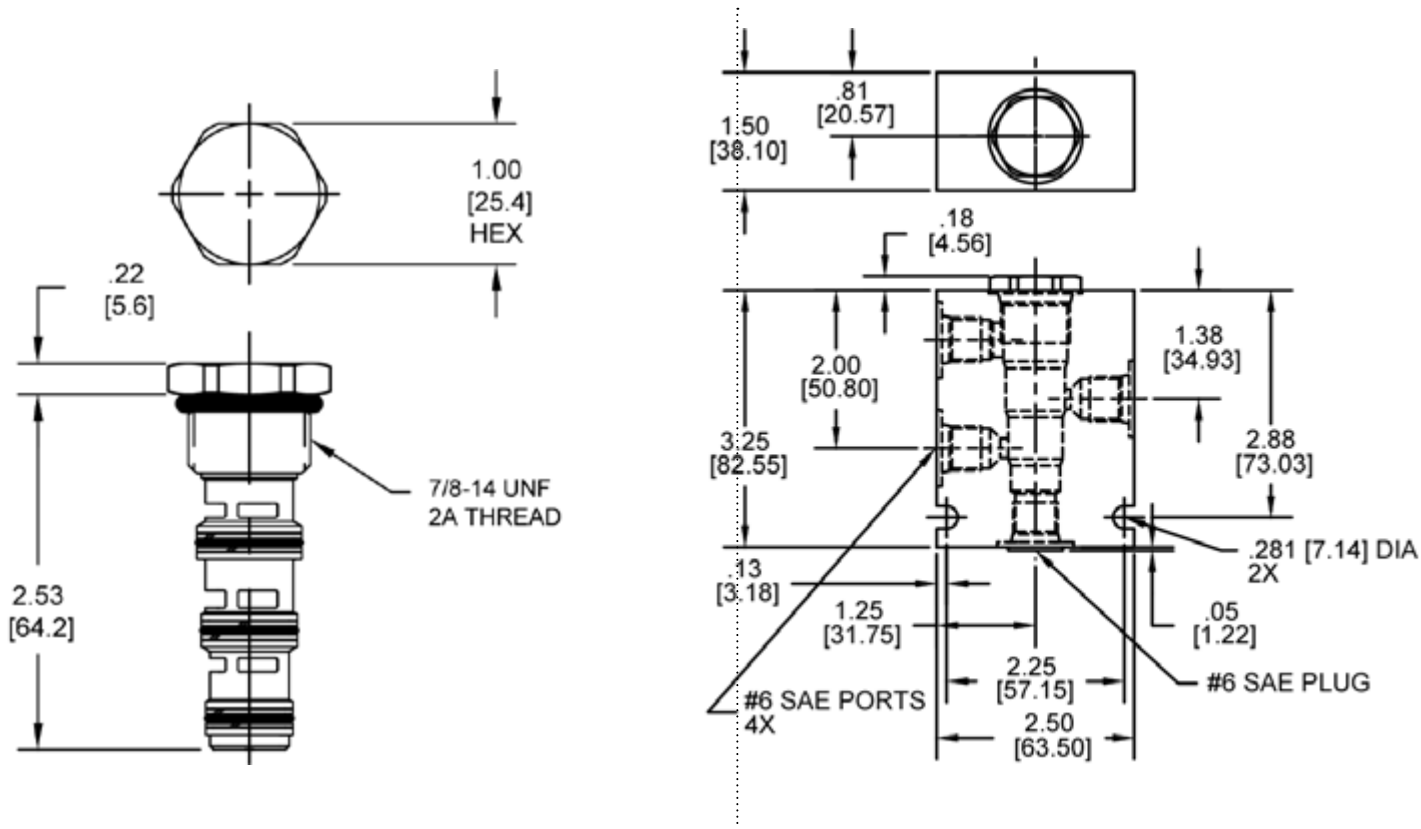


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-FDT		-	-	-	-	-	-
OPTIONS							BODIES
Buna Standard	00						Without Body
Viton Standard	V0						1/4" NPT Ports
							#6 SAE Ports
							Note: must use 4-way body
SPLITS							INLET FLOW
50-50	50					03	2-3 GPM
Consult factory for splits other than 50-50						06	3-6 GPM
						09	6-9 GPM
						12	9-12 GPM

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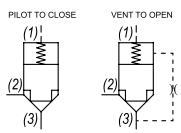
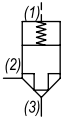


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LOGIC ELEMENTS

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	40	3500	151	241	1 5/16-12	SL-PLA	MF90
	40	3500	151	241	1 5/16-12	SL-PLB	MF92
	40	3500	151	241	1 5/16-12	SL-PLC	MF94

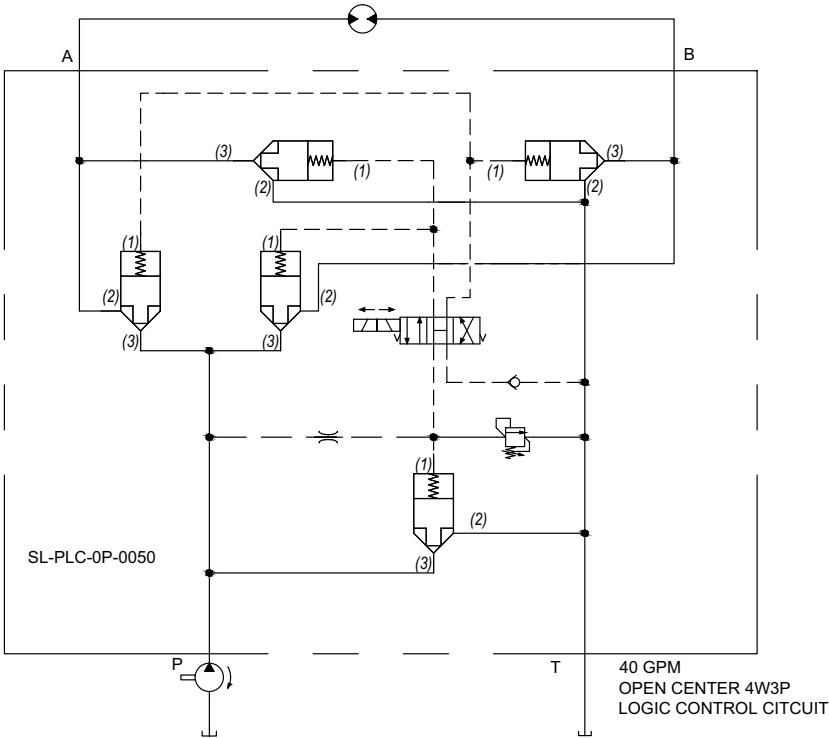
TYPICAL SCHEMATIC

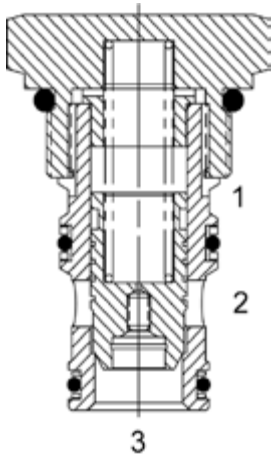
Typical application for the PLA, PLB, and PLC is to provide the main stage of a high-flow capacity on/off function. A low flow solenoid valve is generally used to provide pilot control.

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**.



SL-PLA SUPER SERIES, LOGIC VALVE**DESCRIPTION**

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

OPERATION

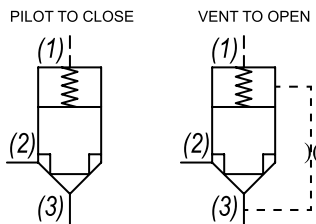
The SL-PLA with an orifice between ports (3) and (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system upstream of (3), or in the bypass leg at (2) as long as pressure at (2) is less than (1). Used for basic blocking applications.

FEATURES

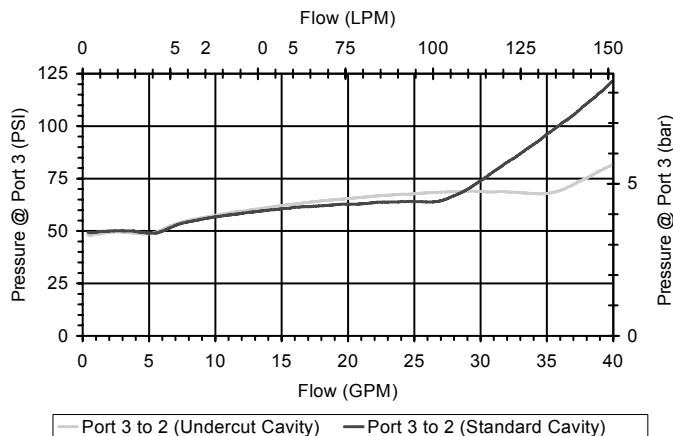
- Hardened parts for long life.
- Industry common cavity.



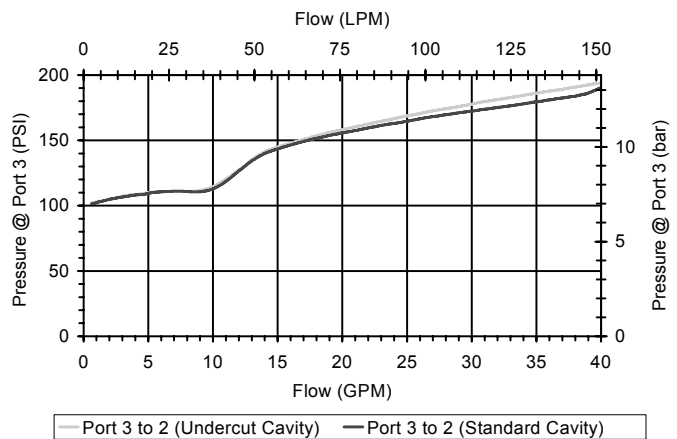
For bidirectional applications see SL-PLC.
For metering see SLPCA or SL-PCB.

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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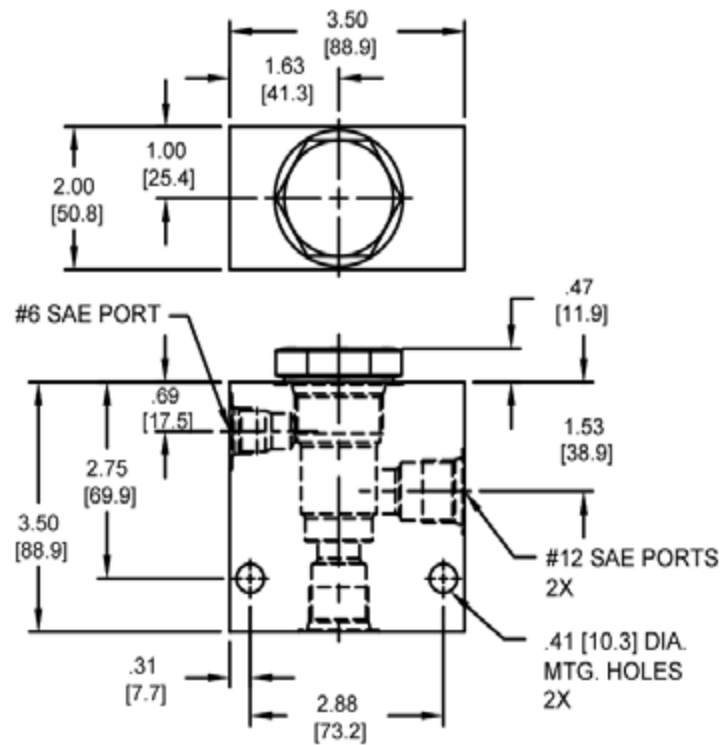
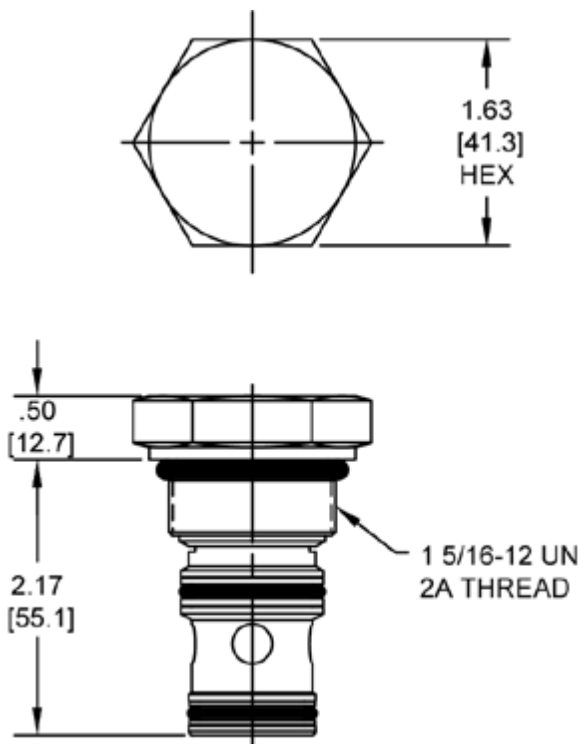


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PLA - - - -			
OPTIONS		BODIES	
Buna, Pilot to Close	0P	Blank	Without Body
Viton, Pilot to Close	VP	S	#12 SAE Ports
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

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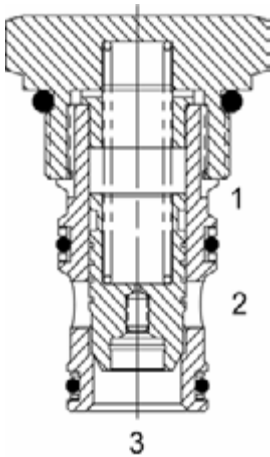
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SL-PLB SUPER SERIES, LOGIC VALVE**DESCRIPTION**

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

OPERATION

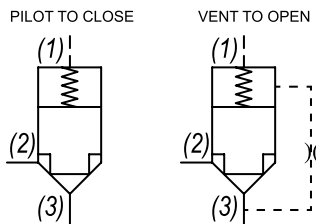
The SL-PLB with an orifice between ports (3) and (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system upstream of (3), or in the bypass leg at (2) as long as pressure at (2) is less than (1). Used for basic blocking applications.

FEATURES

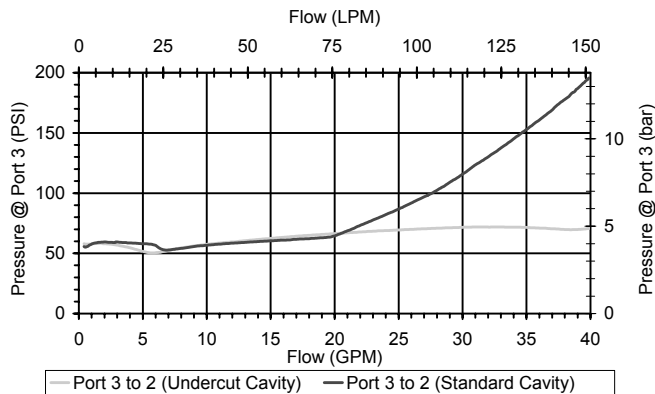
- Hardened parts for long life.
- Industry common cavity.



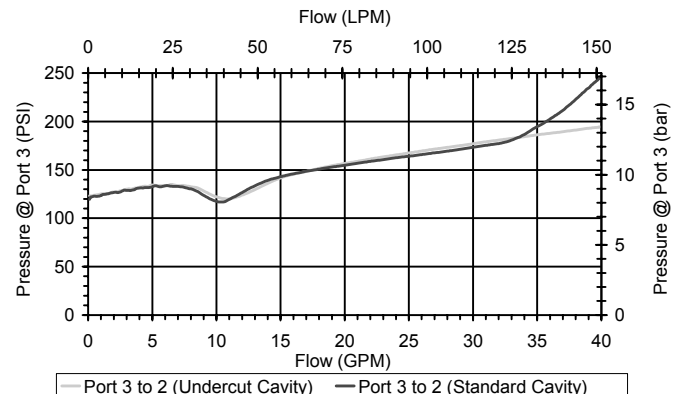
For bidirectional applications see SL-PLC.
For metering see SLPCA or SL-PCB.

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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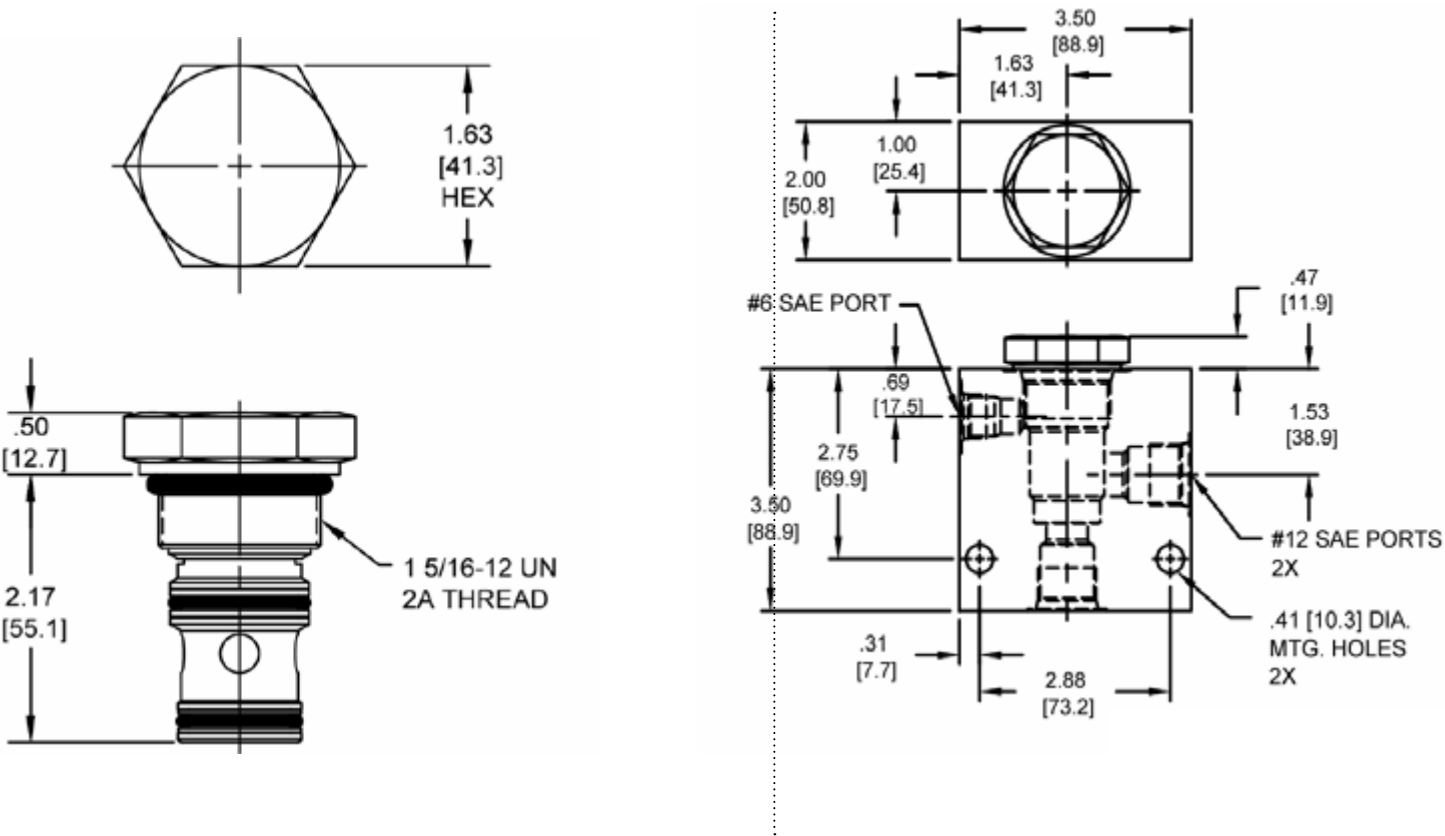


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PLB		-	-	-	-
OPTIONS					BODIES
Buna, Pilot to Close	OP				Blank
Viton, Pilot to Close	VP				S
Buna, Vent to Open	OV				
Viton, Vent to Open	VV				
Buna, Pilot to Close w/seals	OB				
Viton, Pilot to Close w/seals	VB				
Buna, Vent to Open w/seals	OC				
Viton, Vent to Open w/seals	VC				
					PRESSURE SETTING
				0020	20 PSI
				0050	50 PSI
				0100	100 PSI
				0150	150 PSI

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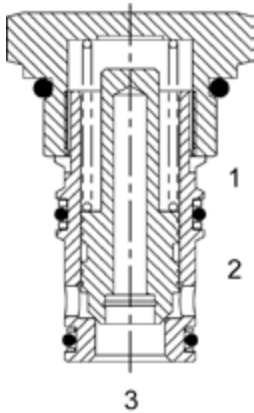
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SL-PLC SUPER SERIES, LOGIC VALVE**DESCRIPTION**

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

OPERATION

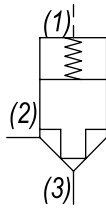
The SL-PLC with an orifice between ports (3) and (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system upstream of (3), or in the bypass leg at (2) as long as pressure at (2) is less than (1). Used for basic bidirectional blocking applications.

FEATURES

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



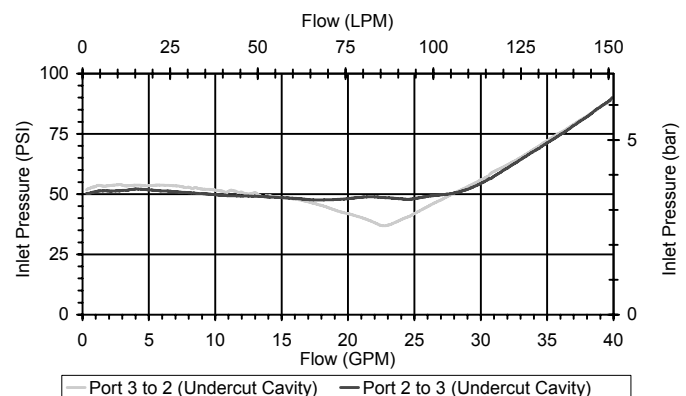
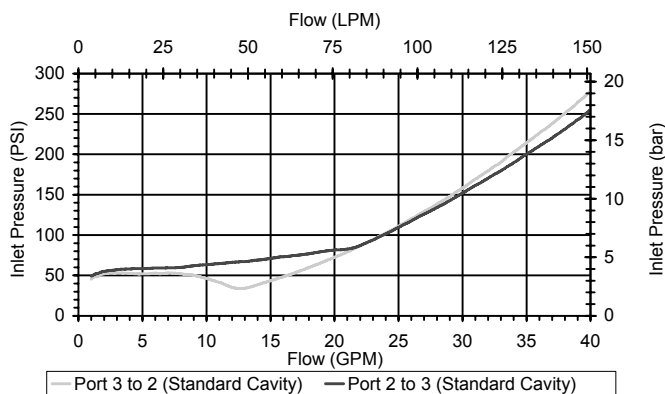
For metering see SL-PCA or SL-PCB.

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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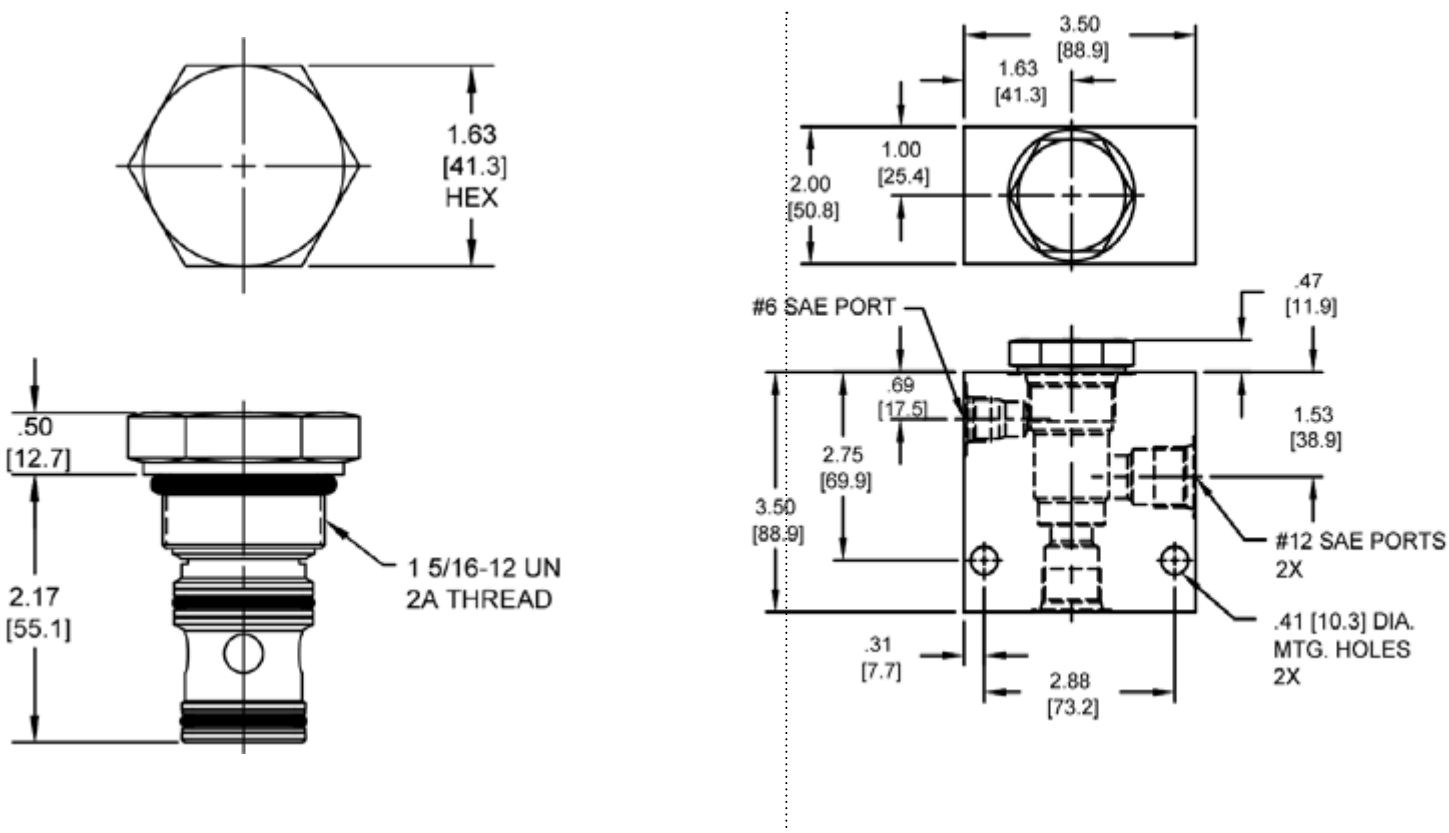


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PLC	-	-	-	-	-
OPTIONS					BODIES
Buna, Pilot to Close	0P				Blank
Viton, Pilot to Close	VP				S
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

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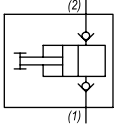
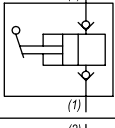
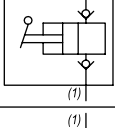
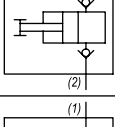
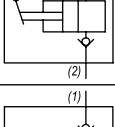
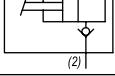


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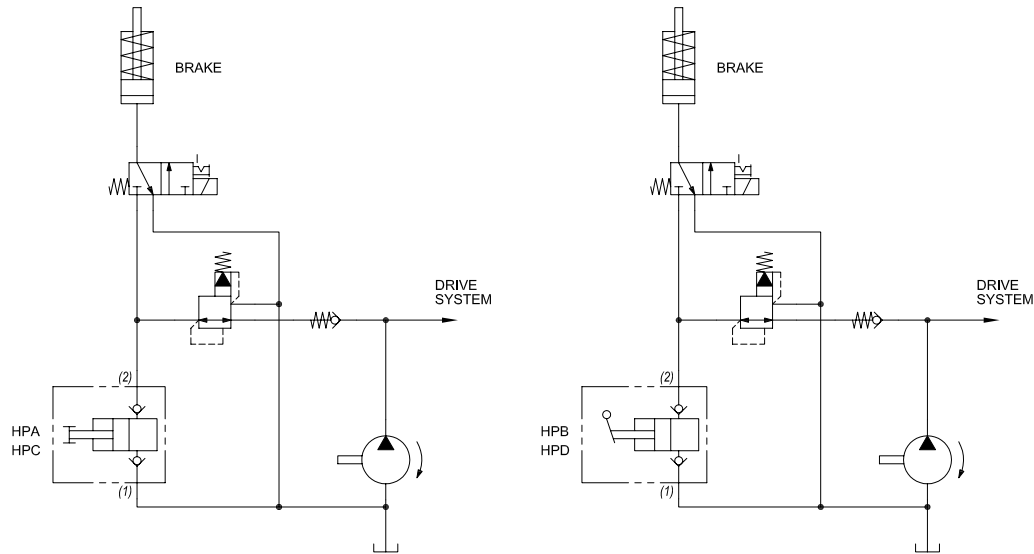
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HAND PUMPS

	cu in/stroke	PSI	cc/stroke	BAR	CAVITY	MODEL	PAGE
	0.35	500	5.8	34	7/8-14	DE-HPA	MF98
	0.39	3000	6.4	207	7/8-14	DE-HPB	MF100
	0.39	3000	6.4	207	7/8-14	DE-HPE	MF102
	0.35	500	5.8	34	7/8-14	DE-HPC	MF104
	0.39	3000	6.4	207	7/8-14	DE-HPD	MF106
	0.39	3000	6.4	207	7/8-14	DE-HPF	MF108

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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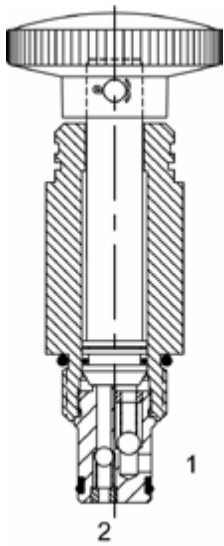
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DE-HPA HAND PUMP**DESCRIPTION**

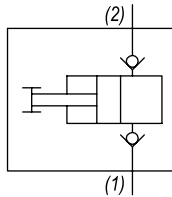
10 size, 7/8-14 thread, "Delta" series, cartridge type, plunger hand pump.

OPERATION

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

FEATURES

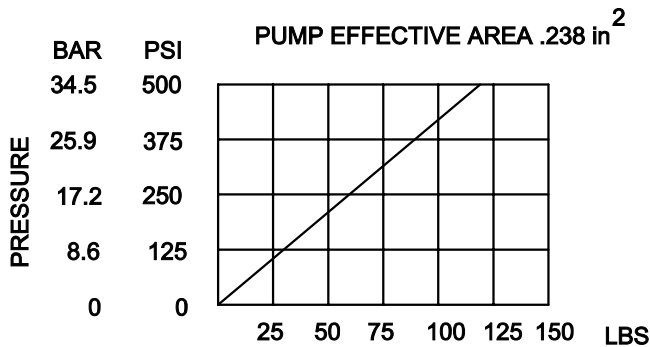
- Hardened parts for long life.
- Industry common cavity.

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

WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

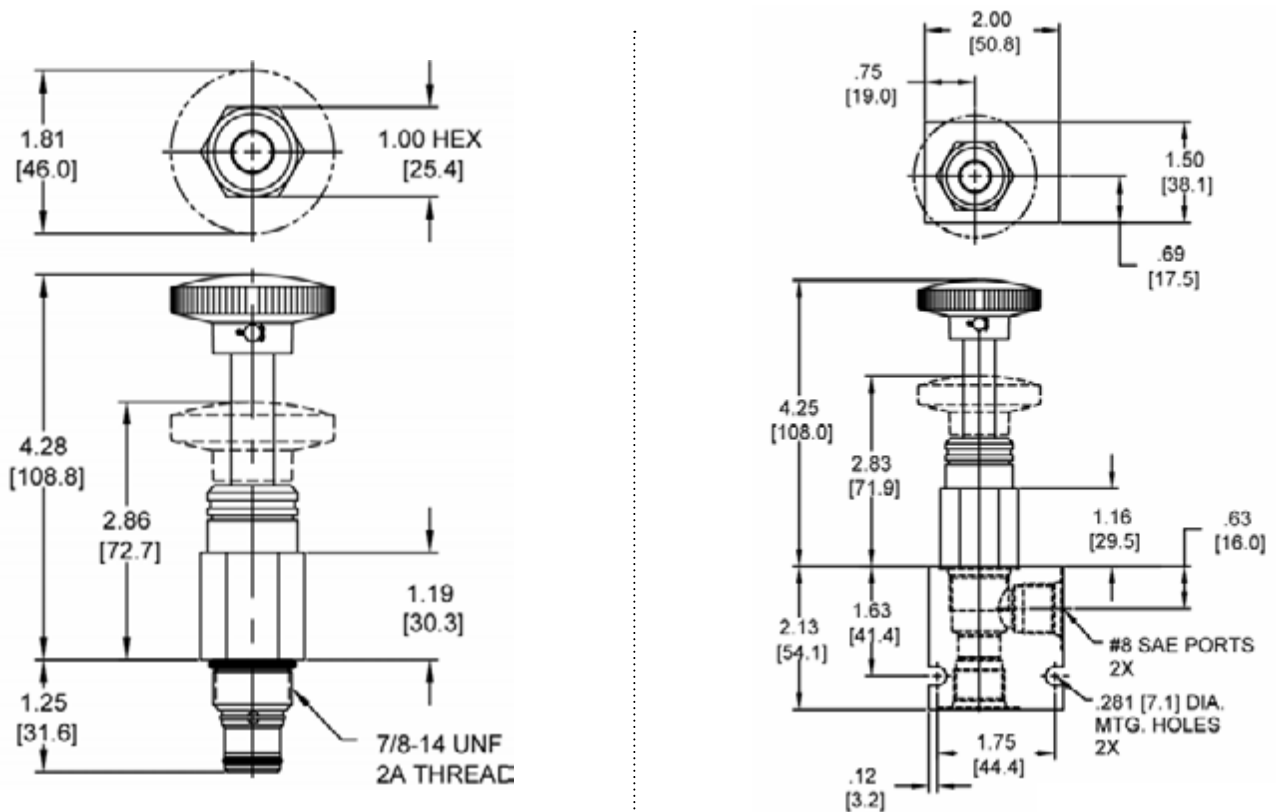


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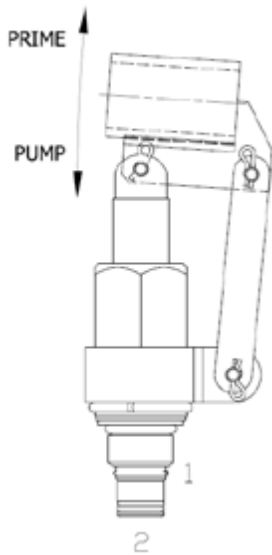
DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPA	-		-	
		└───		└───
		<u>OPTIONS</u>		<u>BODIES</u>
		Buna, Knob OK	Blank	Without Body
		Viton, Knob VK	N	3/8" NPTF Ports
			S	#8 SAE Ports

DE-HPB HAND PUMP, PUSH TO PUMP TYPE**DESCRIPTION**

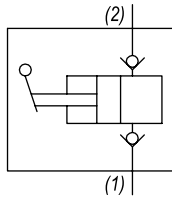
10 size, 7/8-14 thread, "Delta" series, screw in, cartridge type, hand pump.

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

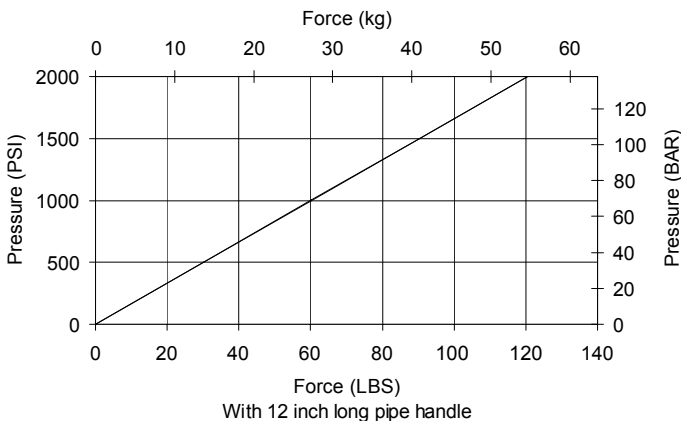
- Large displacement per stroke.
- Industry common cavity.

HYDRAULIC SYMBOL

*This product is not intended as a load holding device. **Linkage is not to be removed.** 36" Maximum handle length.*

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	.39 cu in/stroke
Rated Operating Pressure	3000 PSI (207 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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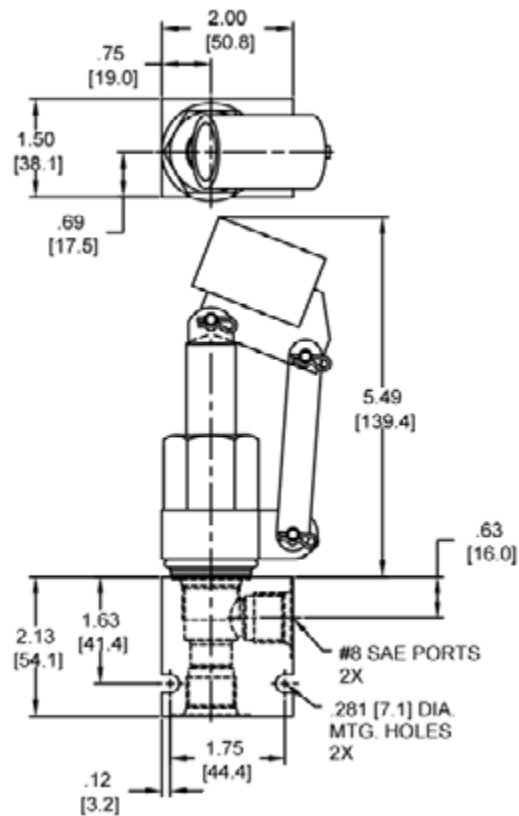
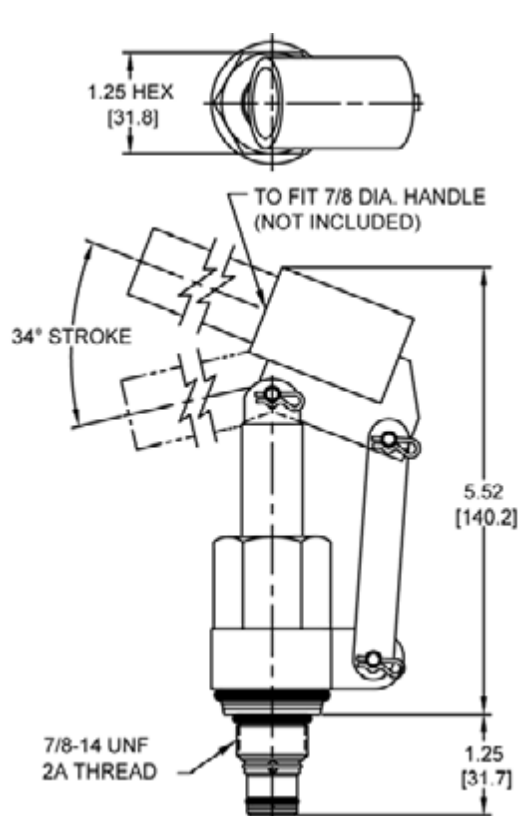


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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPB	-	-	-
	OPTIONS		BODIES
	Buna, Linkage OL		Without Body
	Viton, Linkage VL	Blank	3/8" NPTF Ports
		N	#8 SAE Ports
		S	

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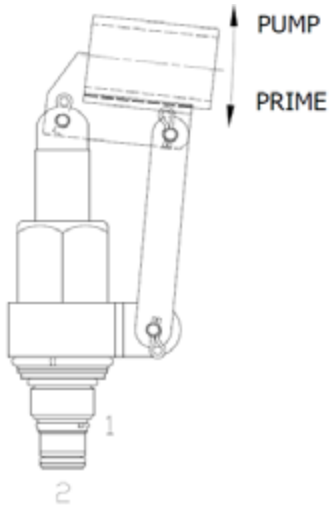
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DE-HPE HAND PUMP, PULL TO PUMP TYPE**DESCRIPTION**

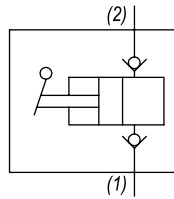
10 size, 7/8-14 thread, "Delta" series, screw in, cartridge type, hand pump.

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

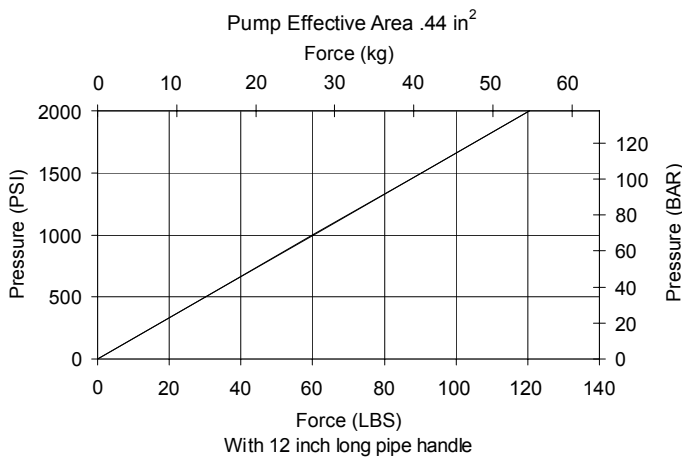
- Large displacement per stroke.
- Industry common cavity.

HYDRAULIC SYMBOL

*This product is not intended as a load holding device. **Linkage is not to be removed.** 36" Maximum handle length.*

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	.39 cu in/stroke
Rated Operating Pressure	3000 PSI (207 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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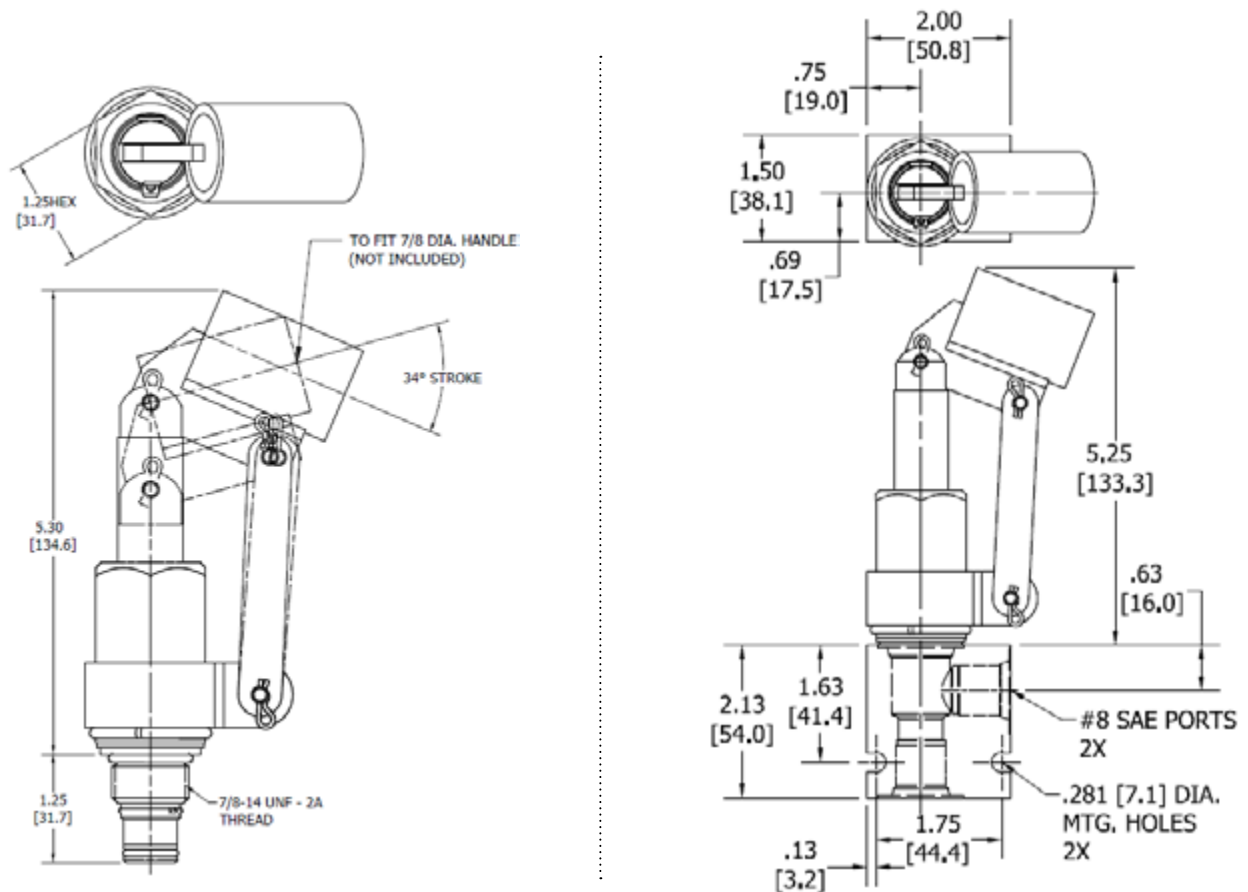


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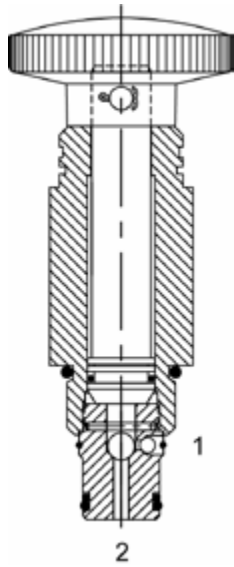
DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPE	-		-	
OPTIONS				BODIES
Buna, Linkage	OL		Blank	Without Body
Viton, Linkage	VL		N	3/8" NPTF Ports
			S	#8 SAE Ports

DE-HPC HAND PUMP**DESCRIPTION**

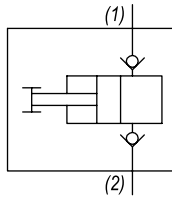
10 size, 7/8-14 thread, "Delta" series, cartridge type, plunger hand pump.

OPERATION

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

FEATURES

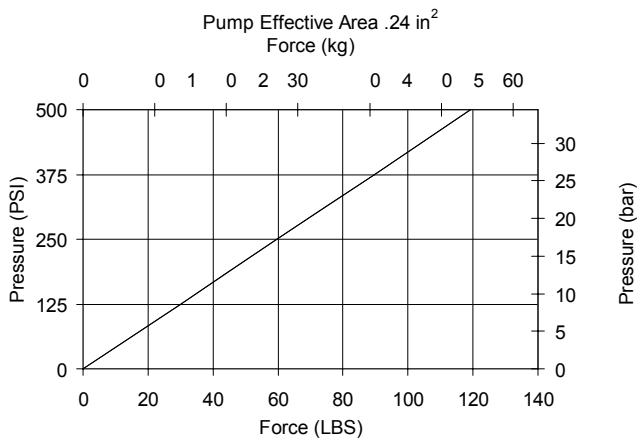
- Small profile.
- Industry common cavity.
- Large displacement per stroke.

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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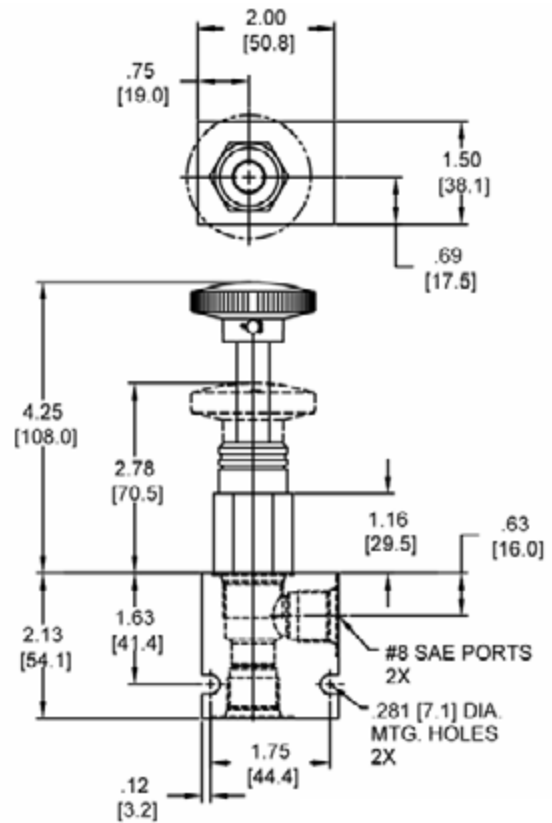
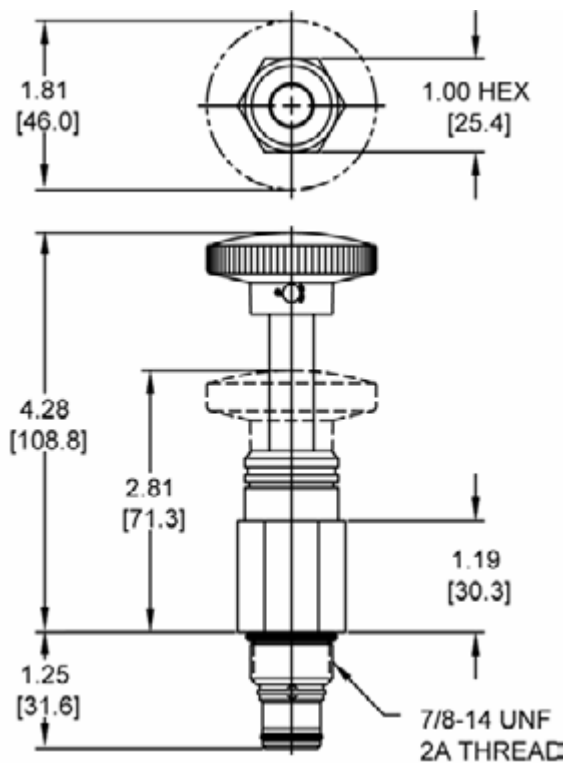


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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

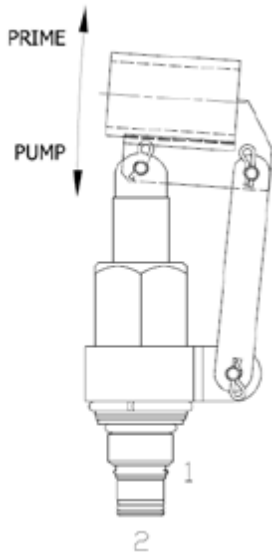
DE-HPC –

OPTIONS

Buna, Knob	OK
Viton, Knob	VK

BODIES

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

DE-HPD HAND PUMP, PUSH TO PUMP TYPE**DESCRIPTION**

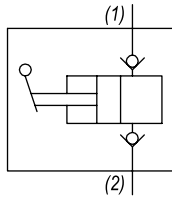
10 size, 7/8-14 thread, "Delta" series, cartridge type, hand pump.

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

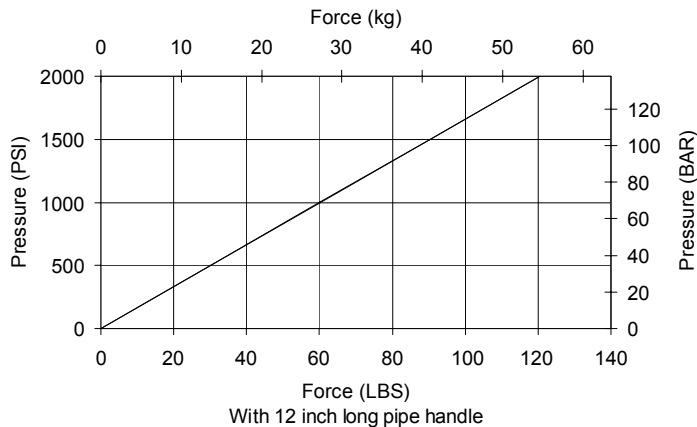
- Large displacement per stroke.
- Industry common cavity.

HYDRAULIC SYMBOL

*This product is not intended as a load holding device. **Linkage is not to be removed.** 36" Maximum handle length.*

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	.39 cu in/stroke
Rated Operating Pressure	3000 PSI (207 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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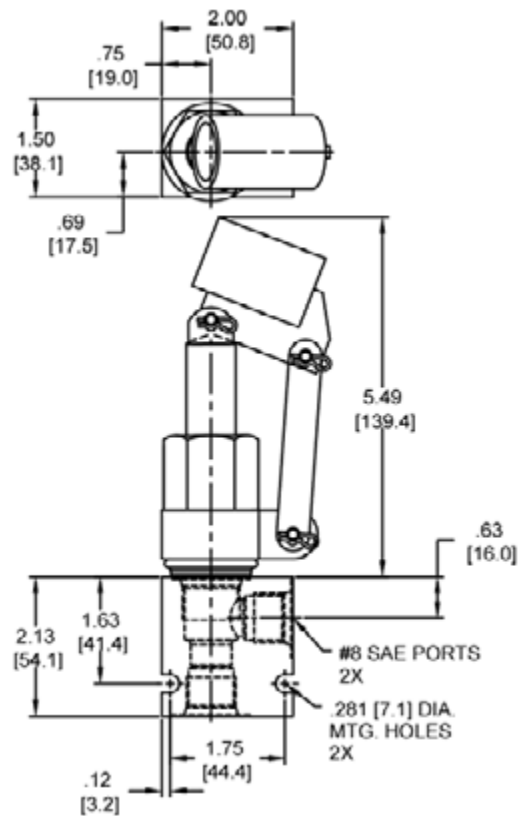
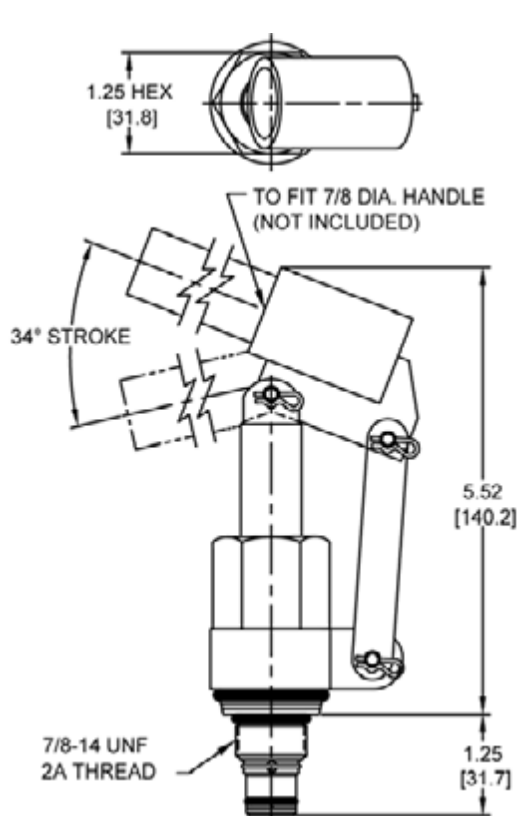


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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPD		-	-
		OPTIONS	BODIES
		Buna, Linkage	Without Body
		Viton, Linkage	3/8" NPTF Ports
		Blank	#8 SAE Ports
		N	
		S	

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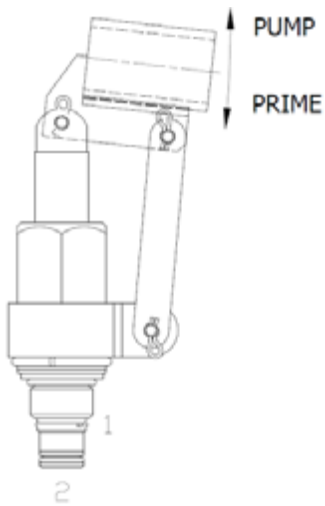
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DE-HPF HAND PUMP, PULL TO PUMP TYPE**DESCRIPTION**

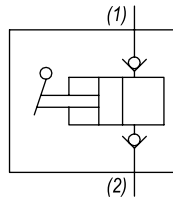
10 size, 7/8-14 thread, "Delta" series, cartridge type, hand pump.

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

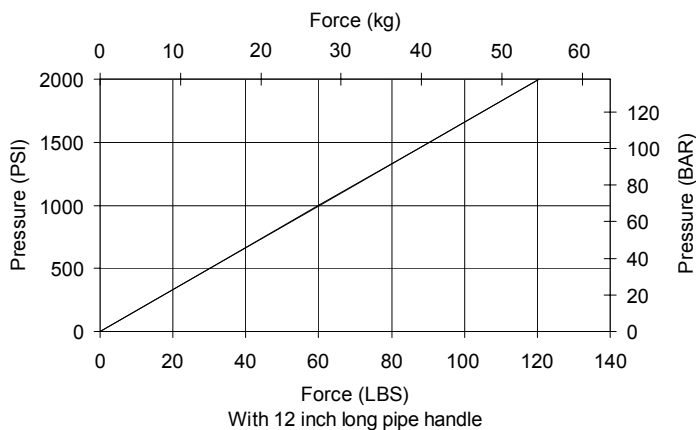
- Large displacement per stroke.
- Industry common cavity.

HYDRAULIC SYMBOL

*This product is not intended as a load holding device. **Linkage is not to be removed.** 36" Maximum handle length.*

PERFORMANCE

Actual Test Data (Cartridge Only)

**VALVE SPECIFICATIONS**

Nominal Flow	.39 cu in/stroke
Rated Operating Pressure	3000 PSI (207 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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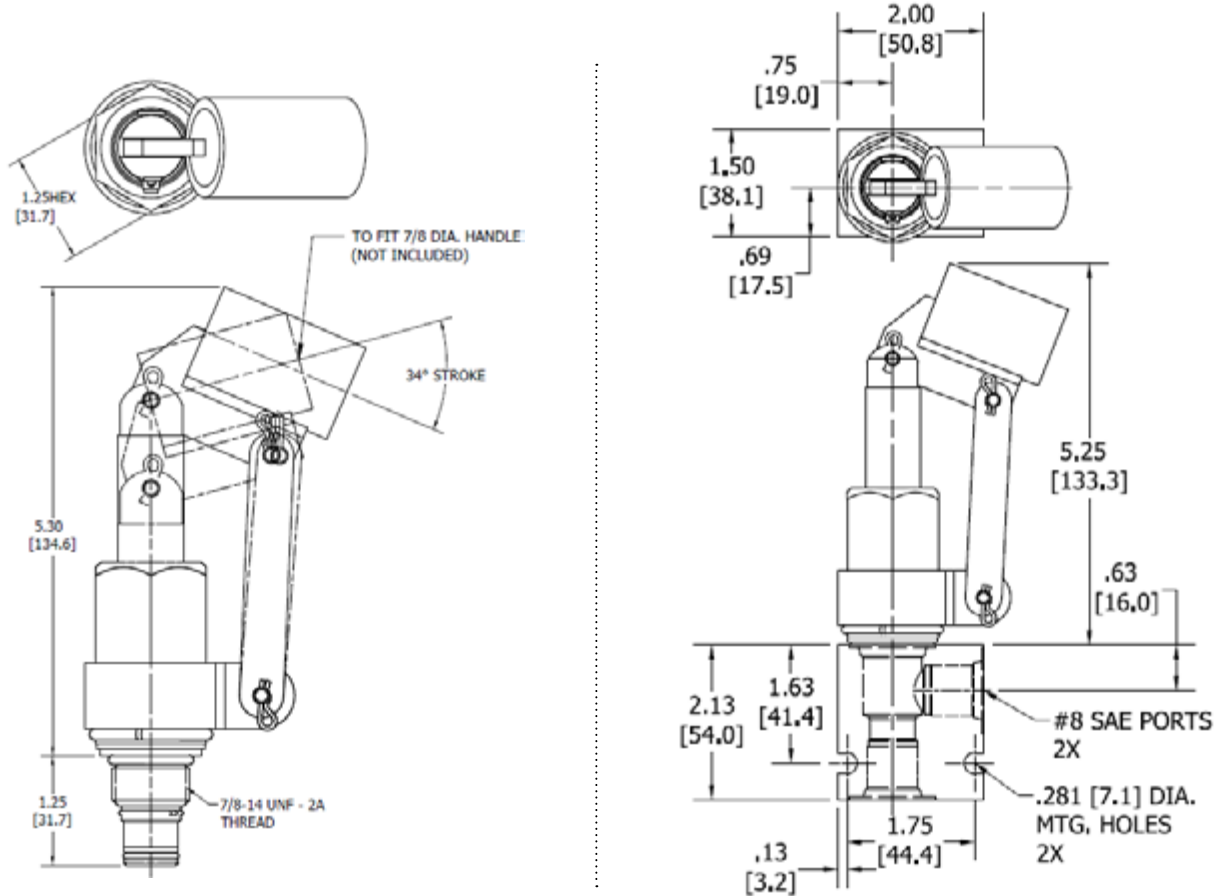


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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION

DE-HPF	-		-	
		└───		└───
		OPTIONS		BODIES
		Buna, Linkage OL	Blank	Without Body
		Viton, Linkage VL	N	3/8" NPTF Ports
			S	#8 SAE Ports

MECHANICAL PRESSURE CONTROLS



DIRECT ACTING AND DIFFERENTIAL AREA RELIEF VALVES	MP3
PILOT OPERATED RELIEF VALVES	MP31
CROSSOVER RELIEF VALVES	MP47
PRESSURE COMPENSATED REGULATOR VALVES	MP53
PRESSURE REDUCING/RELIEVING VALVES	MP87
SEQUENCE VALVES	MP95
SHUT DOWN VALVES	MP119

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


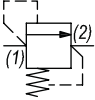
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DIRECT ACTING AND DIFFERENTIAL AREA RELIEF VALVES

DIRECT ACTING RELIEF VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	12	3500	45	241	7/8-14	DE-RCA	MP4
	5	3000	19	207	5/8-18	MA-RVA	MP6
	6	3500	23	241	3/4-16	PB-RVA	MP8
	8	4000	30	276	7/8-14	DE-RVA	MP10
	6	3500	23	241	3/4-16	PB-RWA	MP12
	8	4000	30	276	7/8-14	DE-RWA	MP14
	20	4000	76	276	7/8-14	DE-RWF	MP16

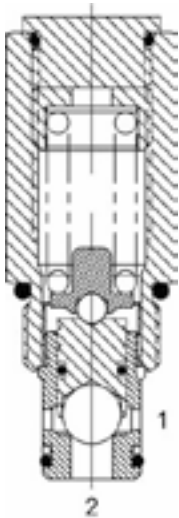
DIFFERENTIAL AREA RELIEF VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	15	3500	57	241	7/8-14	DE-RCD	MP18
	8	3500	30	241	3/4-16	PB-RVD	MP20
	15	4000	57	276	7/8-14	DE-RVD	MP22
	40	5000	151	345	7/8-14	HE-RVD	MP24
	8	3500	30	241	3/4-16	PB-RWD	MP26
	15	4000	57	276	7/8-14	DE-RWD	MP28

TYPICAL SCHEMATIC

Typical application for the RVA, RVD, RWA, RWD is to protect pump and system.

Typical application for the RCA and RCD is cross over relief to protect motor in both directions, where lowest possible price is desired.

DE-RCA GUIDED BALL, DIRECT ACTING RELIEF VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, direct acting relief valve.

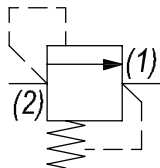
OPERATION

The DE-RCA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

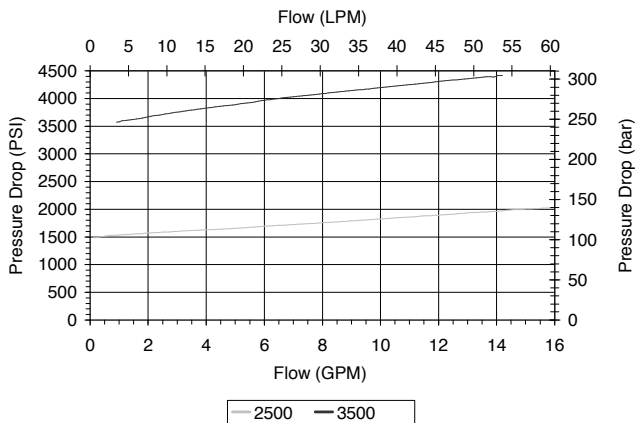
HYDRAULIC SYMBOL



Installation Space Saving Product. Cannot be field adjusted. Not recommended for crossover relief valve applications, use DE-RWA.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 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	.38 lbs (.17 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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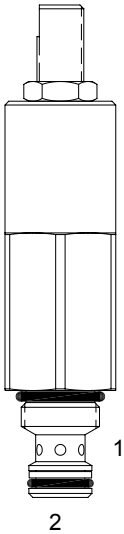


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MA-RVA DIRECT ACTING RELIEF VALVE



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, direct acting relief valve.

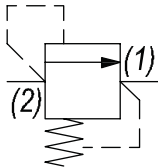
OPERATION

The MA-RVA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

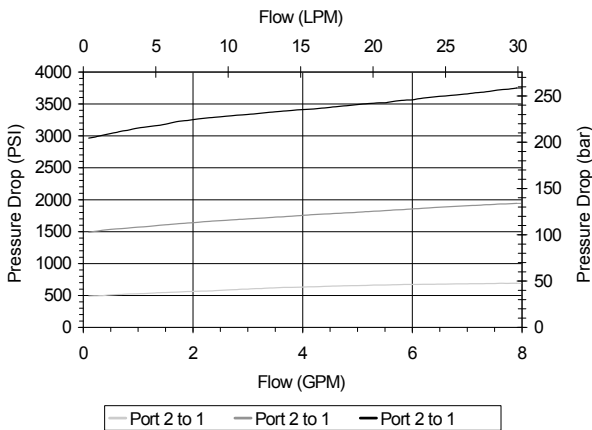
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 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	.39 lbs (.17 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

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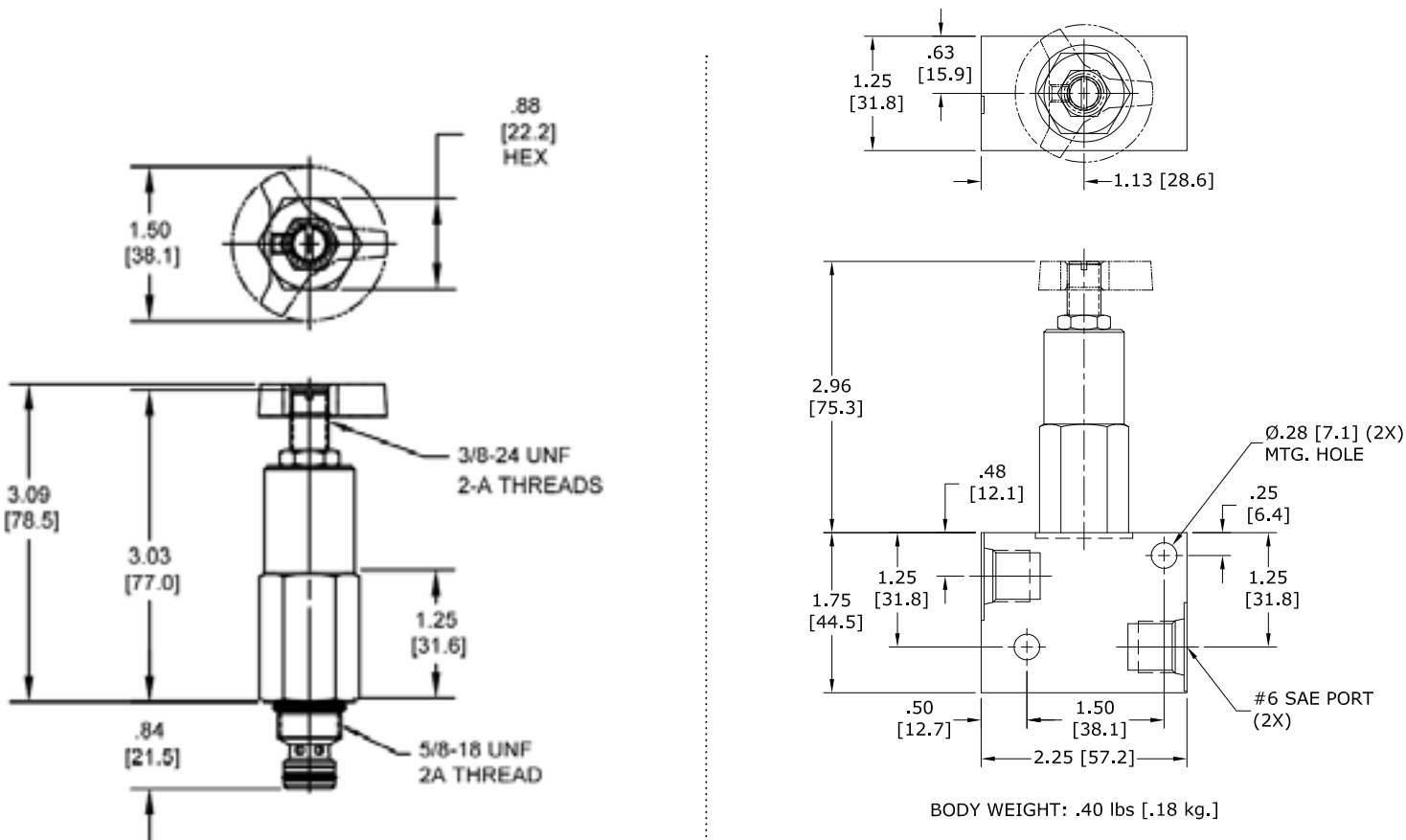


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DIMENSIONS



Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

MA-RVA		-		-		-	
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						
				PRESSURE RANGE			
				0500	100 - 500 PSI		
				1500	500 - 1500 PSI		
				3000	1500 - 3000 PSI		

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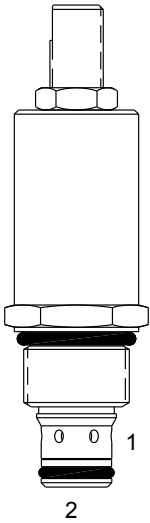


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PB-RVA DIRECT ACTING RELIEF VALVE



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, direct acting relief valve.

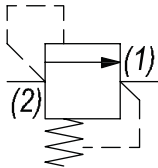
OPERATION

The PB-RVA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

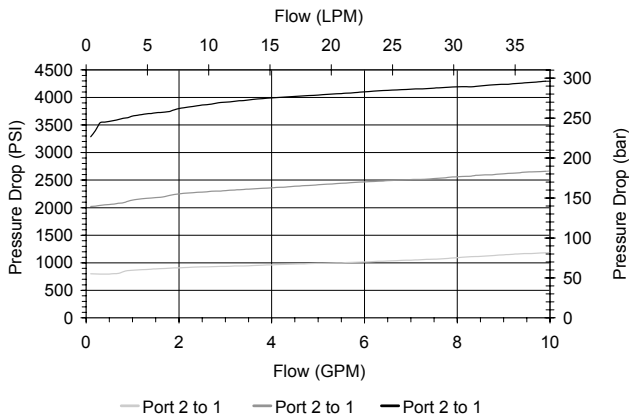
HYDRAULIC SYMBOL



Pressure at port (1) must not exceed 2500 PSI.

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	.30 lbs (.14 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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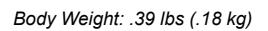


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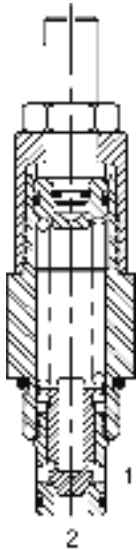
ORDERING INFORMATION



0800	100 - 800 PSI
2000	800 - 2000 PSI
3500	2000 - 3500 PSI

Page MP9

DE-RVA DIRECT ACTING RELIEF VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, direct acting relief valve.

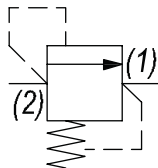
OPERATION

The DE-RVA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

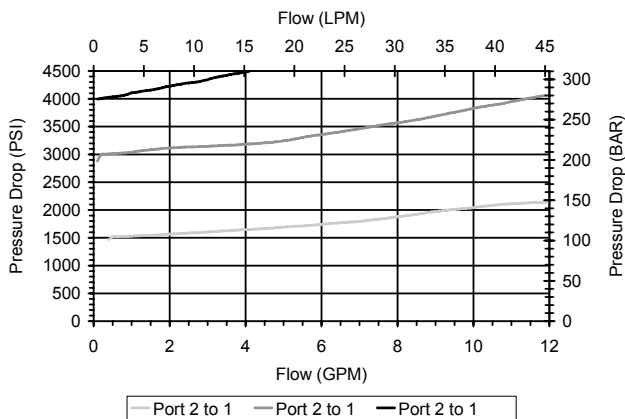
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	4 GPM (15.6 LPM) 4000 PSI 8 GPM (30 LPM) 3000 PSI
Rated Operating Pressure	4000 PSI (276 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 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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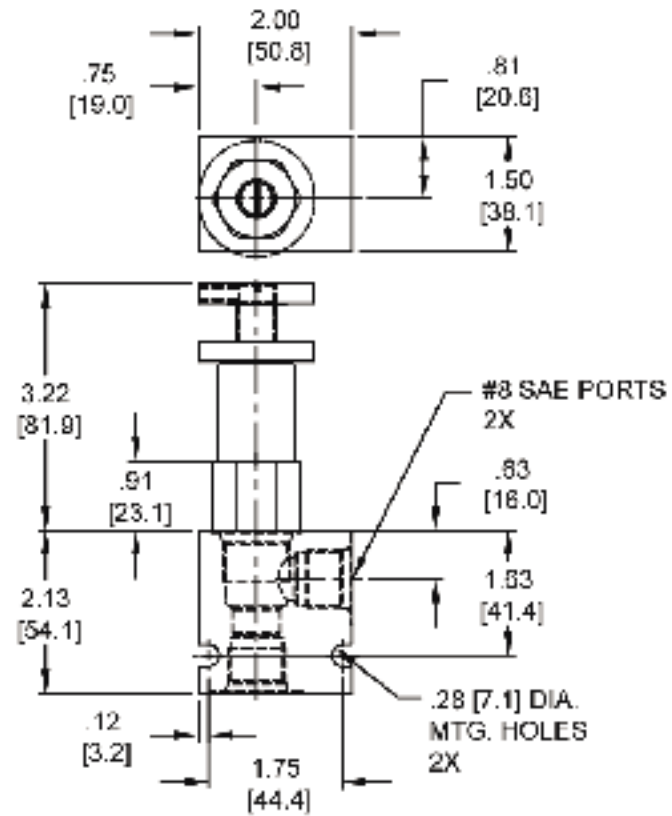
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Technical drawing of a 1/2-20 UNF 2A threaded plug. The drawing includes a top view and a side view with the following dimensions:

- Top View:
 - Overall diameter: 1.50 [38.1]
 - Inner hole diameter: 1.00 [25.4]
- Side View:
 - Total height: 3.25 [82.6]
 - Threaded section height: .94 [23.8]
 - Bottom section height: 1.25 [31.8]
 - Thread specifications: 1/2-20 UNF 2A THREADS and 7/8-14 UNF 2A THREAD

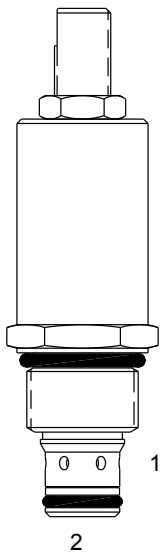


ORDERING INFORMATION

1500	200 - 1500 PSI
3000	1500 - 3000 PSI
4000	2500 - 4000 PSI

Page MP11

PB-RWA DIRECT ACTING RELIEF VALVE



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, direct acting relief valve.

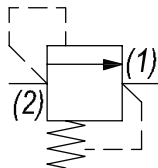
OPERATION

The PB-RWA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

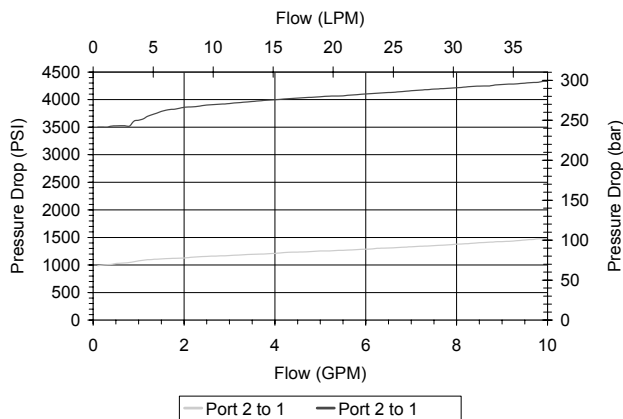
HYDRAULIC SYMBOL



Pressure at port (1) must not exceed 2500 PSI.

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	.31 lbs (.14 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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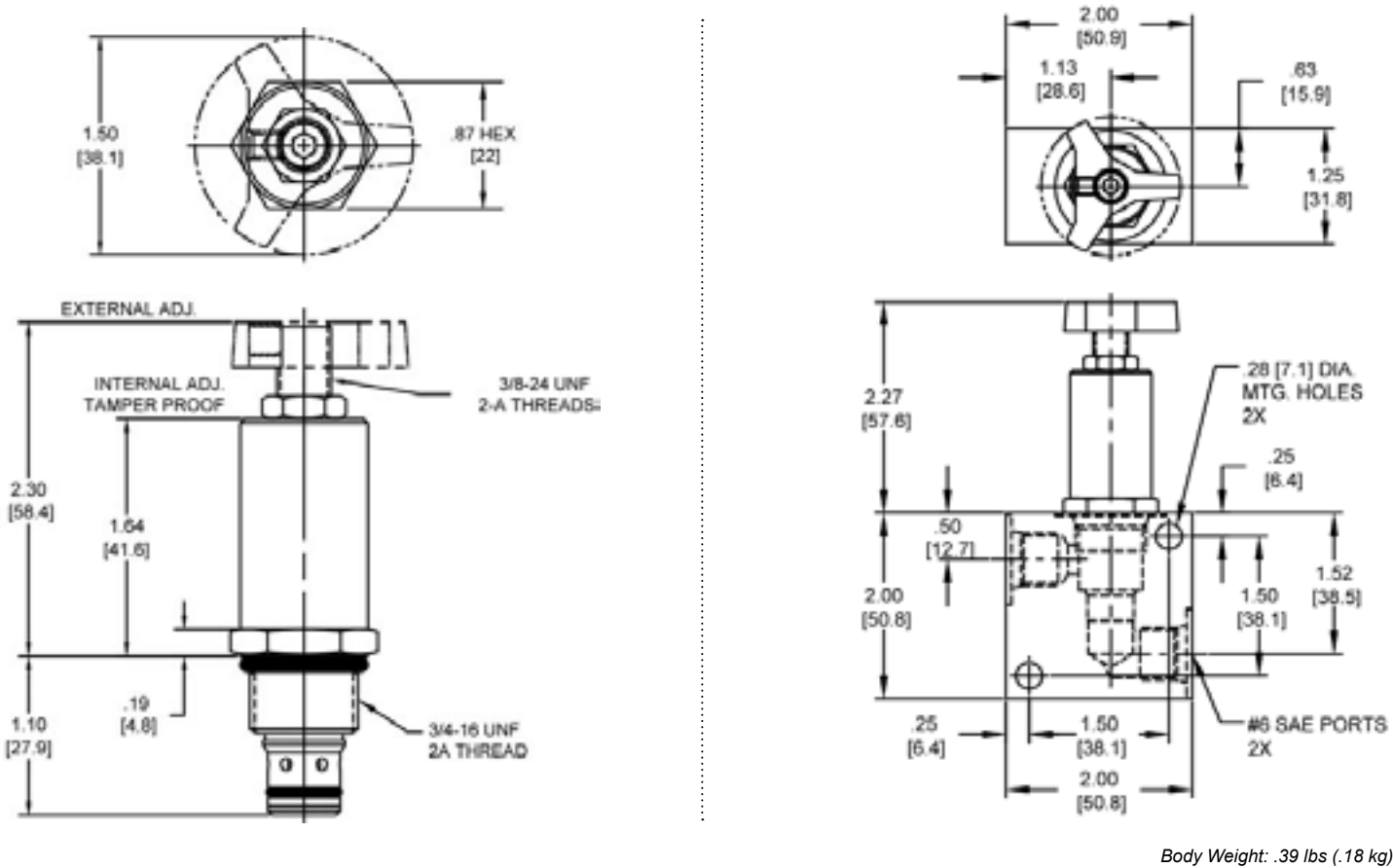


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DIMENSIONS



ORDERING INFORMATION

PB-RWA		-		-		-		-	
OPTIONS								BODIES	
External Adj. W/Locknut Buna	00							Blank	Without Body
External Adj. W/Locknut Viton	V0							N	1/4" NPTF Ports
Buna, Knob	0K							S	#6 SAE Ports
Viton, Knob	VK								
Internal Adjust Buna	0I								
Internal Adjust Viton	VI								
Tamper Proof Buna	0T								
Tamper Proof Viton	VT								
								PRESSURE RANGE/SETTING	
								Ext./Int. Adjustment	
								1000 100 - 1000 PSI	
								3500 500 - 3500 PSI	

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

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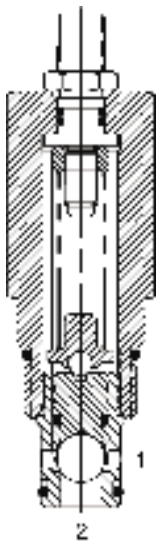


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DE-RWA DIRECT ACTING RELIEF VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, direct acting relief valve.

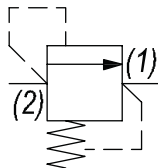
OPERATION

The DE-RWA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

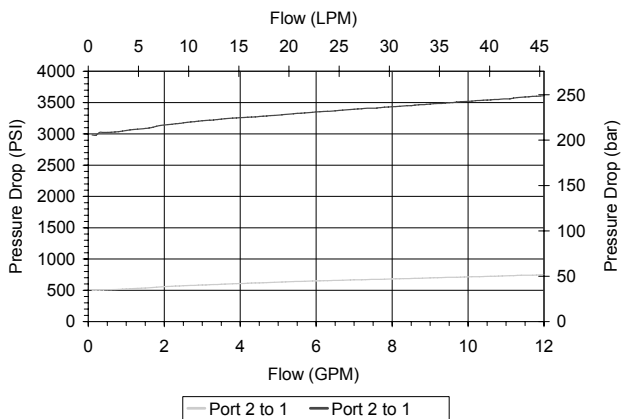
HYDRAULIC SYMBOL



For critical leakage applications consult factory.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	4000 PSI (276 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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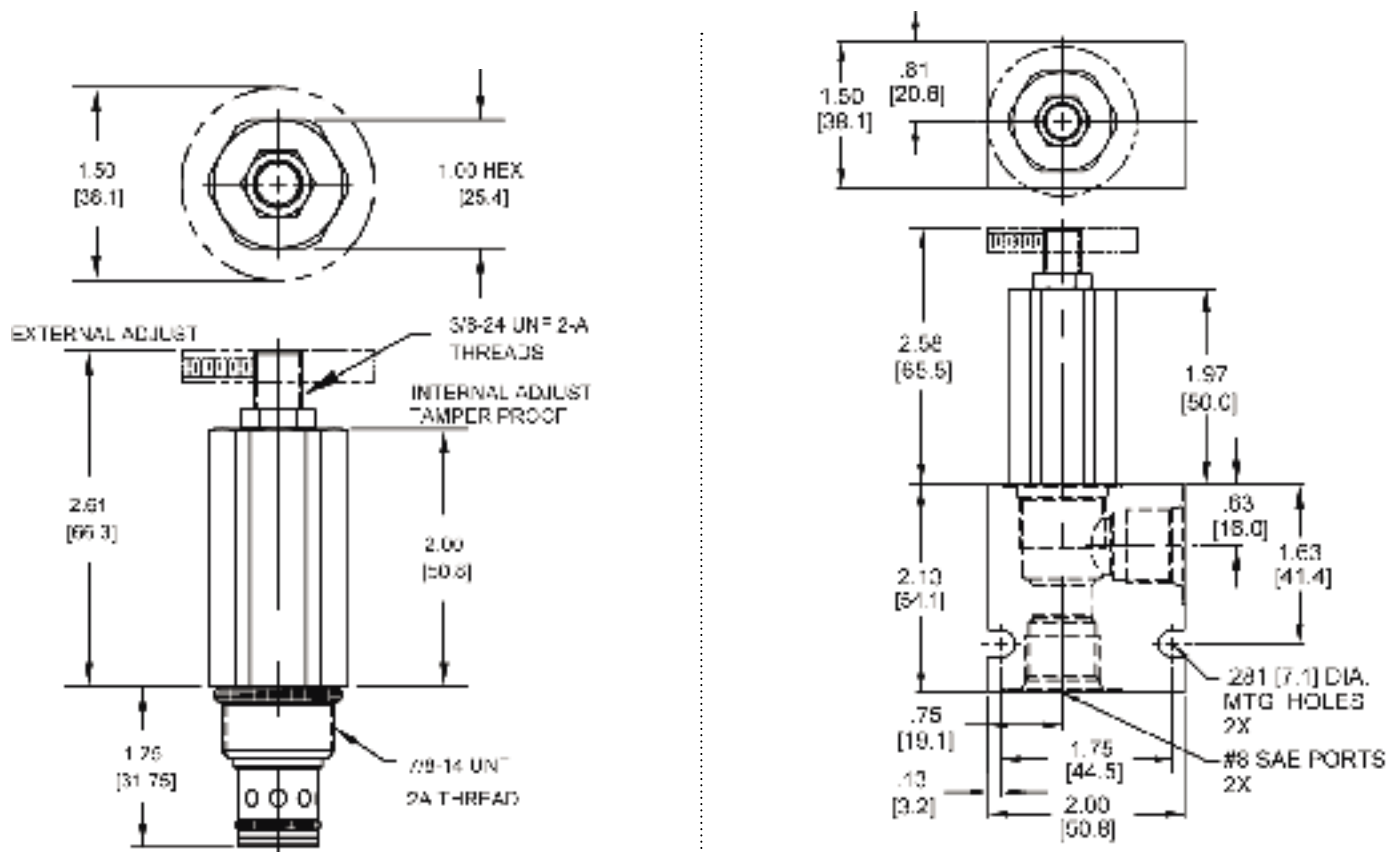


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RWA -

OPTIONS

- Buna, External Adj. W/Locknut **00**
- Viton, External Adj. W/Locknut **V0**
- Buna, Knob **0K**
- Viton, Knob **VK**
- Buna, Internal Adjust **0I**
- Viton, Internal Adjust **VI**
- Buna, Tamper Proof **0T**
- Viton, Tamper Proof **VT**

BODIES

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

PRESSURE RANGE/SETTING

Ext./Int. Adjustment

- 0500** 100 - 500 PSI
- 3000** 100 - 3000 PSI
- 4000** 3000 - 4000 PSI

Tamper Proof

Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

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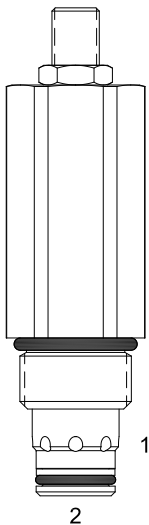


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DE-RWF DIRECT ACTING RELIEF VALVE – FAST RESPONSE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, direct acting relief valve.

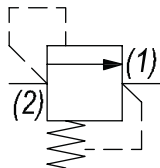
OPERATION

The DE-RWF blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

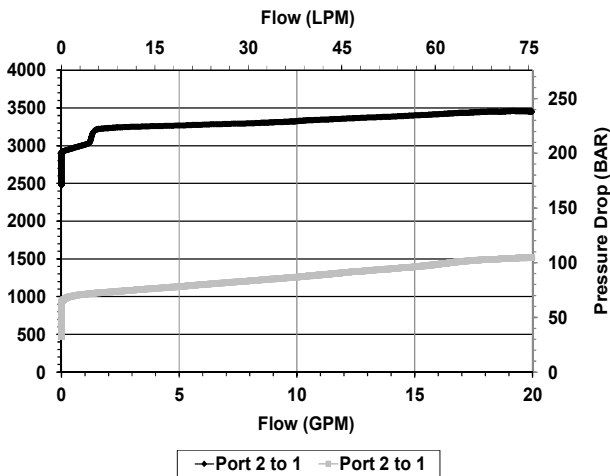
HYDRAULIC SYMBOL



*Fast response direct acting poppet style relief valve.
For critical leakage applications consult factory.*

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	4000 PSI (276 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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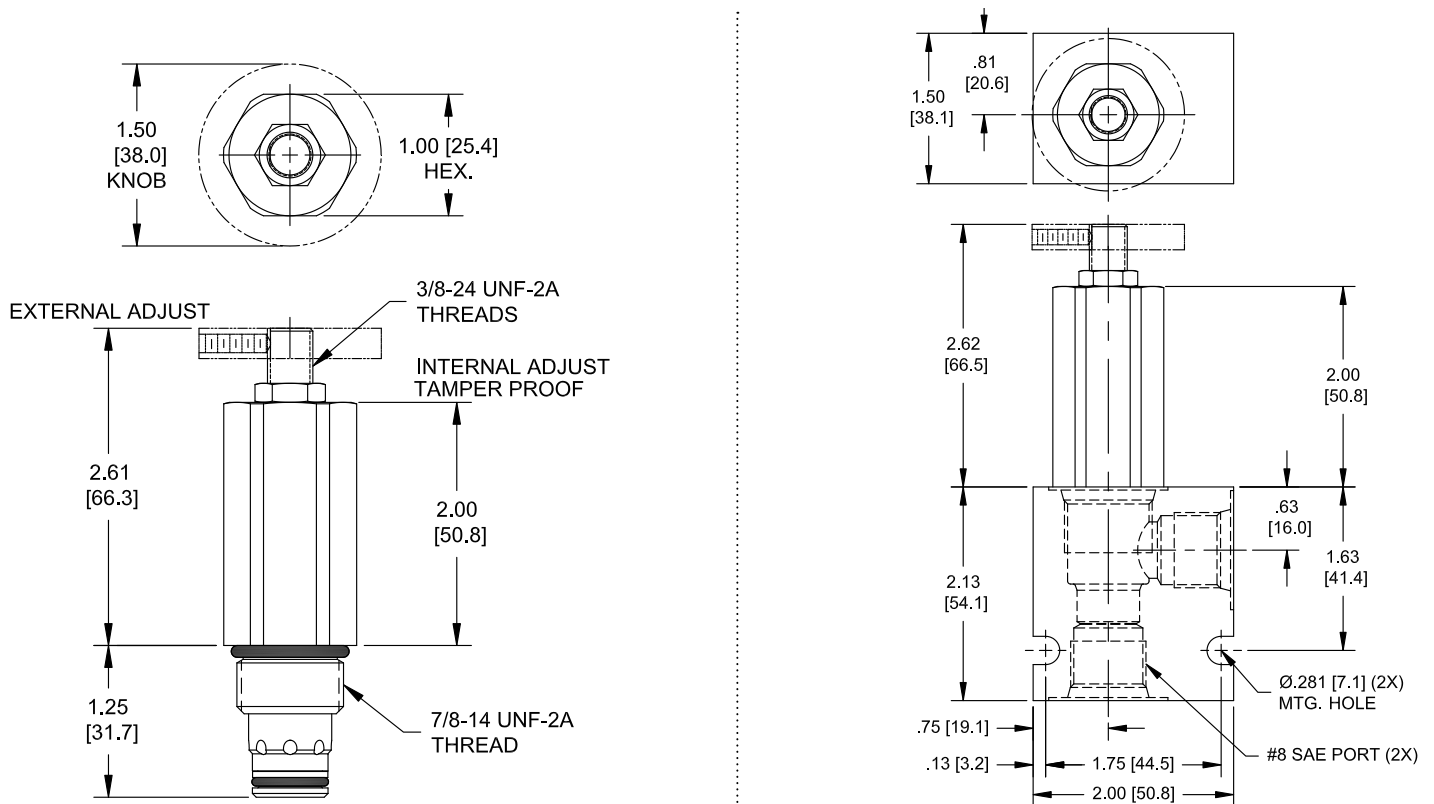


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RWF -

OPTIONS

Buna, External Adj. W/Locknut **00**
 Viton, External Adj. W/Locknut **V0**
 Buna, Knob **0K**
 Viton, Knob **VK**
 Buna, Internal Adjust **0I**
 Viton, Internal Adjust **VI**
 Buna, Tamper Proof **0T**
 Viton, Tamper Proof **VT**

BODIES

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

PRESSURE RANGE/SETTING

Ext./Int. Adjustment

0500 100 - 500 PSI
3000 500 - 3000 PSI
4000 2000 - 4000 PSI

Tamper Proof

Fill in 4 Digit Pressure Setting
 Example: 2500 - 2500 PSI

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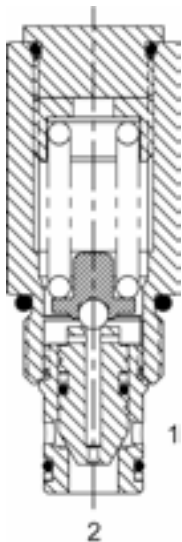


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DE-RCD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, differential area relief valve.

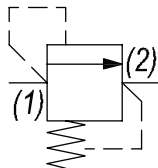
OPERATION

The DE-RCD blocks flow from (1) to (2) until sufficient pressure is present at (1) to force the poppet to open and allow metered flow from (1) to (2). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

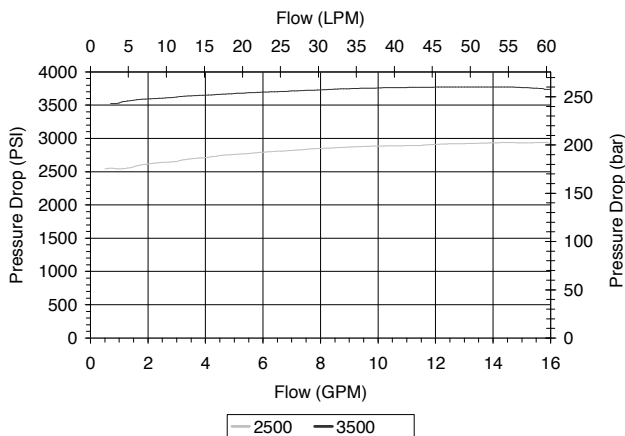
HYDRAULIC SYMBOL



Installation Space Saving Product. Cannot be field adjusted. Not recommended for crossover relief valve applications, use DE-RWD.

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	.37 lbs (.17 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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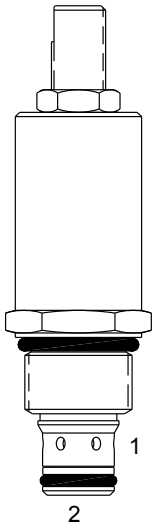


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PB-RVD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, differential area relief valve.

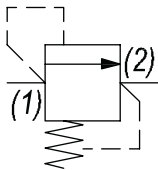
OPERATION

The PB-RVD blocks flow from (1) to (2) until sufficient pressure is present at (1) to force the poppet to open and allow metered flow from (1) to (2). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

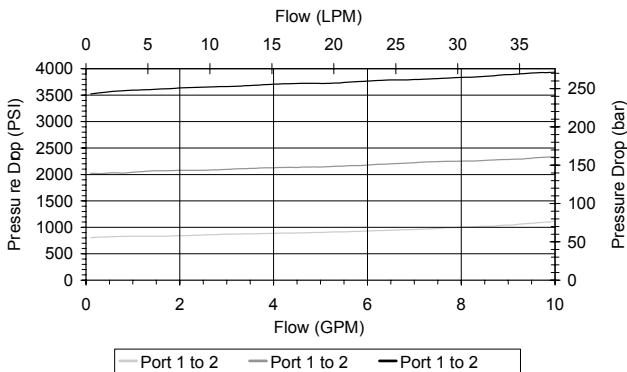
HYDRAULIC SYMBOL



Pressure at port (2) must not exceed 2500 PSI.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal 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	.31 lbs (.14 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

WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

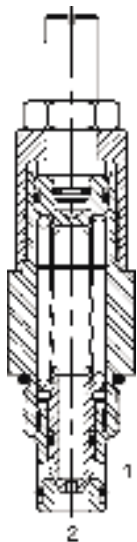


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DE-RVD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, differential area relief valve.

OPERATION

The DE-RVD blocks flow from (1) to (2) until sufficient pressure is present at (1) to force the poppet to open and allow metered flow from (1) to (2). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

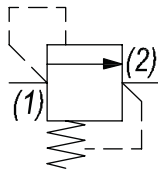
FEATURES

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



*Low PSI/turn adjustment.
Good pressure vs. flow characteristic.*

HYDRAULIC SYMBOL

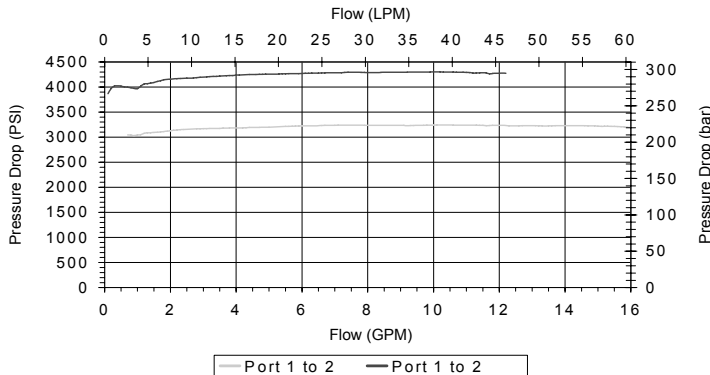
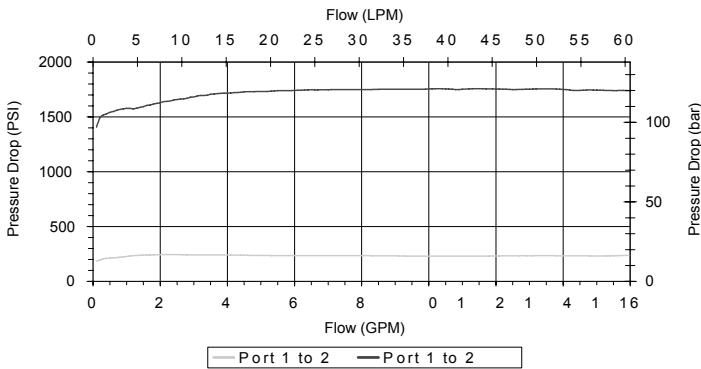


PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	4000 PSI (276 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	.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



WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

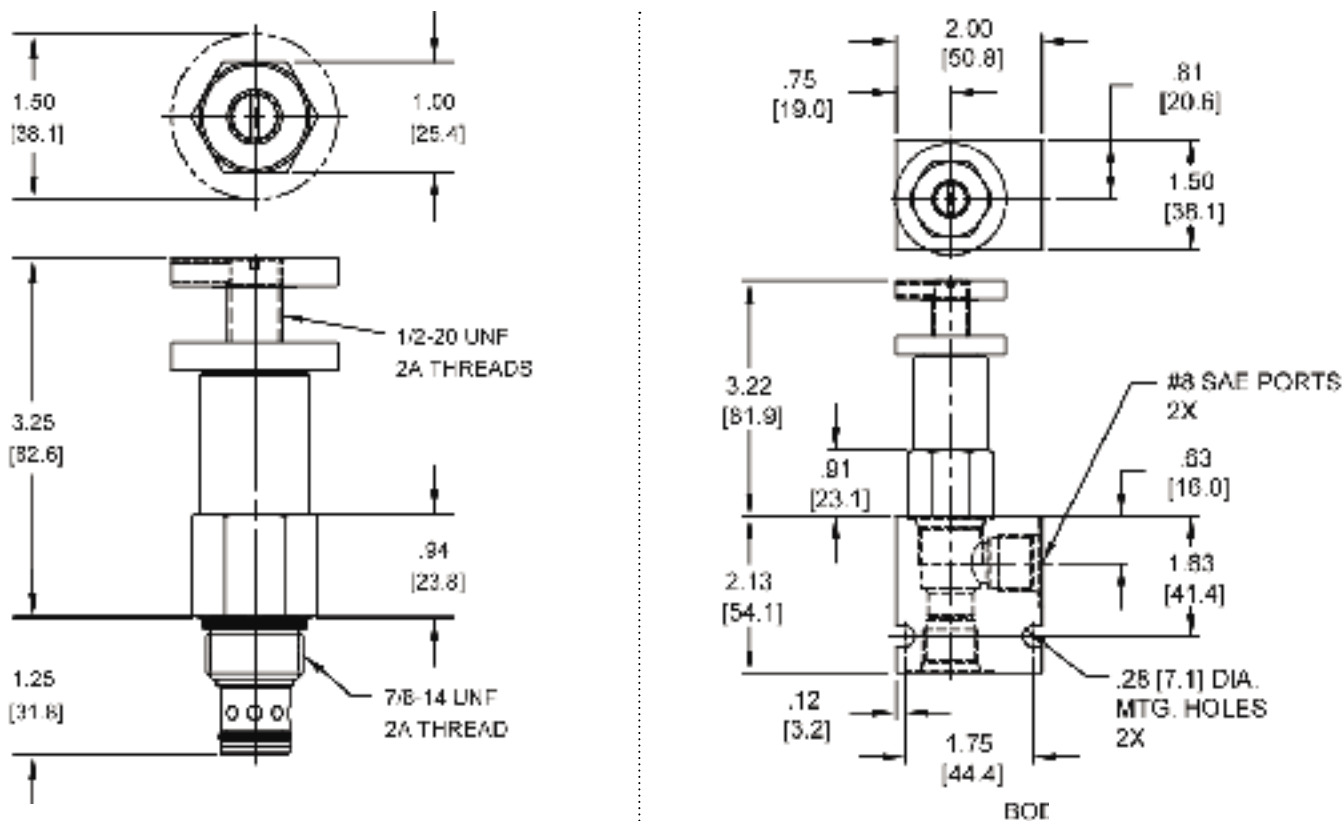


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RVD	-	-	-	-
<u>OPTIONS</u>		<u>BODIES</u>		
Buna Standard	00	Blank	Without Body	
Viton Standard	V0	N	3/8" NPTF Ports	
Buna, Screen	A0	S	#8 SAE Ports	
Viton, Screen	W0			
Buna, Knob	OK			
Viton, Knob	VK			
Buna, Knob, Screen	AK			
Viton, Knob, Screen	WK			
		<u>PRESSURE RANGE/SETTING</u>		
		0200	50 - 200 PSI	
		1500	200 - 1500 PSI	
		3000	1500 - 3000 PSI	
		4000	2500 - 4000 PSI	

only if flow direction
is from (1) to (2).

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

W19 / 2020

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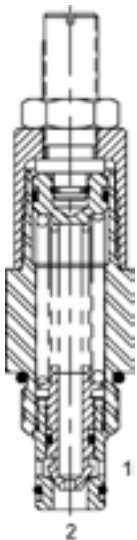


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HE-RVD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, differential area relief valve.

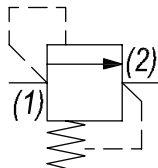
OPERATION

The HE-RVD blocks flow from (1) to (2) until sufficient pressure is present at (1) to force the poppet to open and allow metered flow from (1) to (2). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

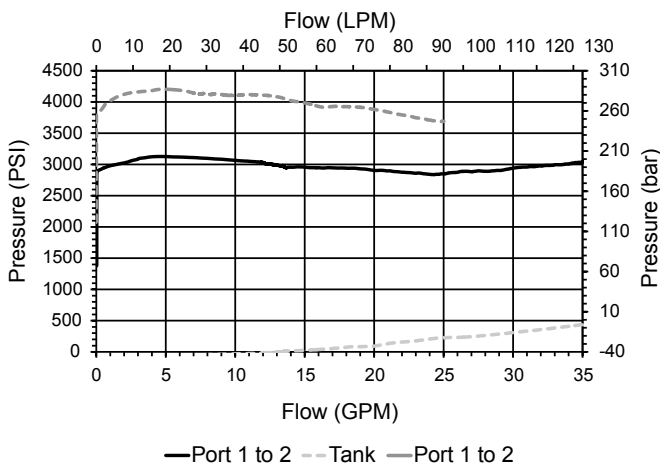
HYDRAULIC SYMBOL



*Good pressure vs. flow characteristic.
Recommended Return Line Pressure as shown
on Performance Data Graph. Undercut Cavity
Recommended for Max flows (Consult Factory for
Details).*

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 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	.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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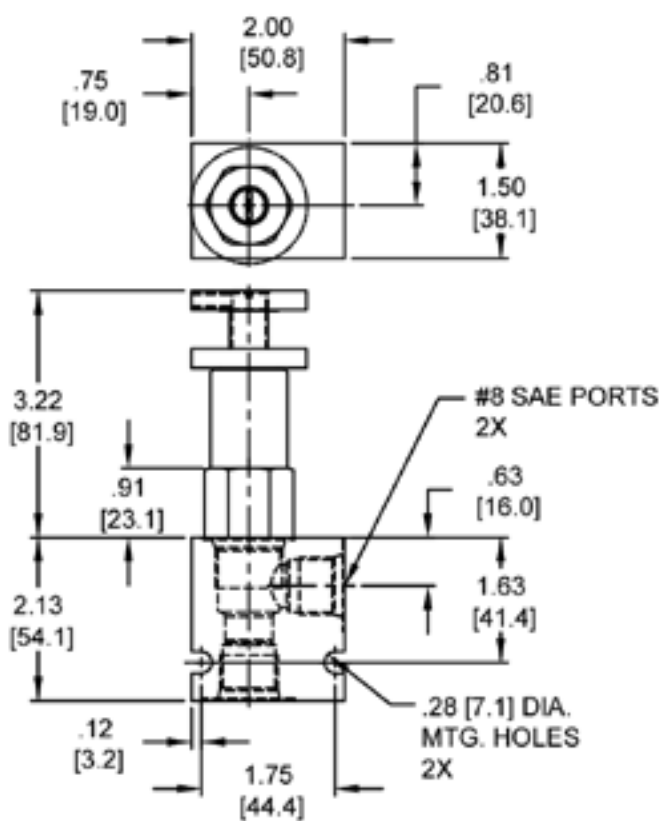
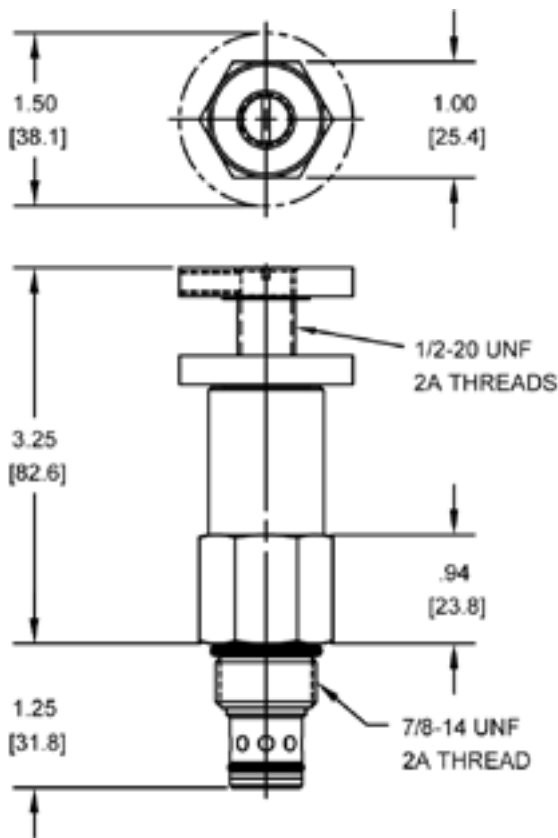


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

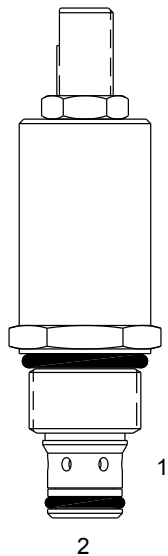
ORDERING INFORMATION

HE-RVD	-	-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			N
Buna, Screen	A0			S
Viton, Screen	W0			
Buna, Knob	OK			
Viton, Knob	VK			
Buna, Knob, Screen	AK			
Viton, Knob, Screen	WK			
			PRESSURE RANGE/SETTING	
		5000	1000 - 5000 PSI	

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

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

PB-RWD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, differential area relief valve.

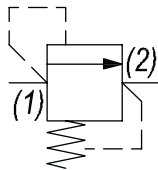
OPERATION

The PB-RWD blocks flow from (1) to (2) until sufficient pressure is present at (1) to force the poppet to open and allow metered flow from (1) to (2). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

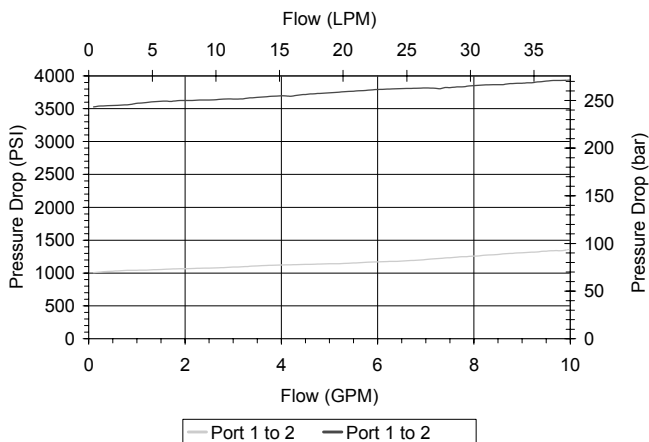
HYDRAULIC SYMBOL



Pressure at port (2) must not exceed 2500 PSI.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal 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	25 ft-lbs (34 Nm)
Cavity	POWER 2W
Cavity Form Tool (Finishing)	40500005
Seal Kit	21191100

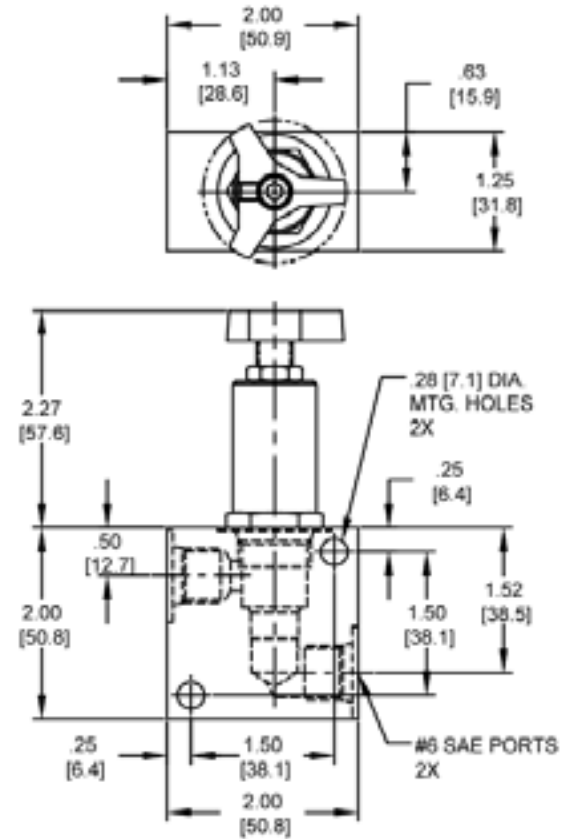
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.



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ORDERING INFORMATION

<u>OPTIONS</u>	
External Adj. W/Locknut Buna	00
External Adj. W/Locknut Viton	V0
Buna, Knob	0K
Viton, Knob	VK
Internal Adjust Buna	0I
Internal Adjust Viton	VI
Tamper Proof Buna	0T
Tamper Proof Viton	VT

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

1000	100 - 1000 PSI
3500	500 - 3500 PSI

Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI



**Delta Power
Company**

TECNORD

Page MP27

DE-RWD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, differential area relief valve.

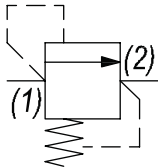
OPERATION

The DE-RWD blocks flow from (1) to (2) until sufficient pressure is present at (1) to force the poppet to open and allow metered flow from (1) to (2).

FEATURES

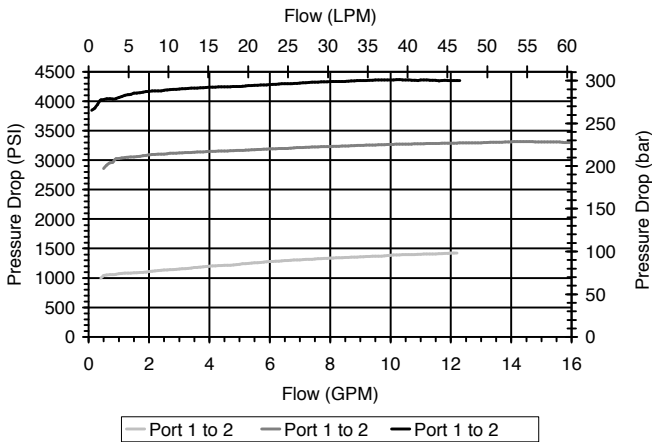
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	4000 PSI (276 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	.55 lbs (.25 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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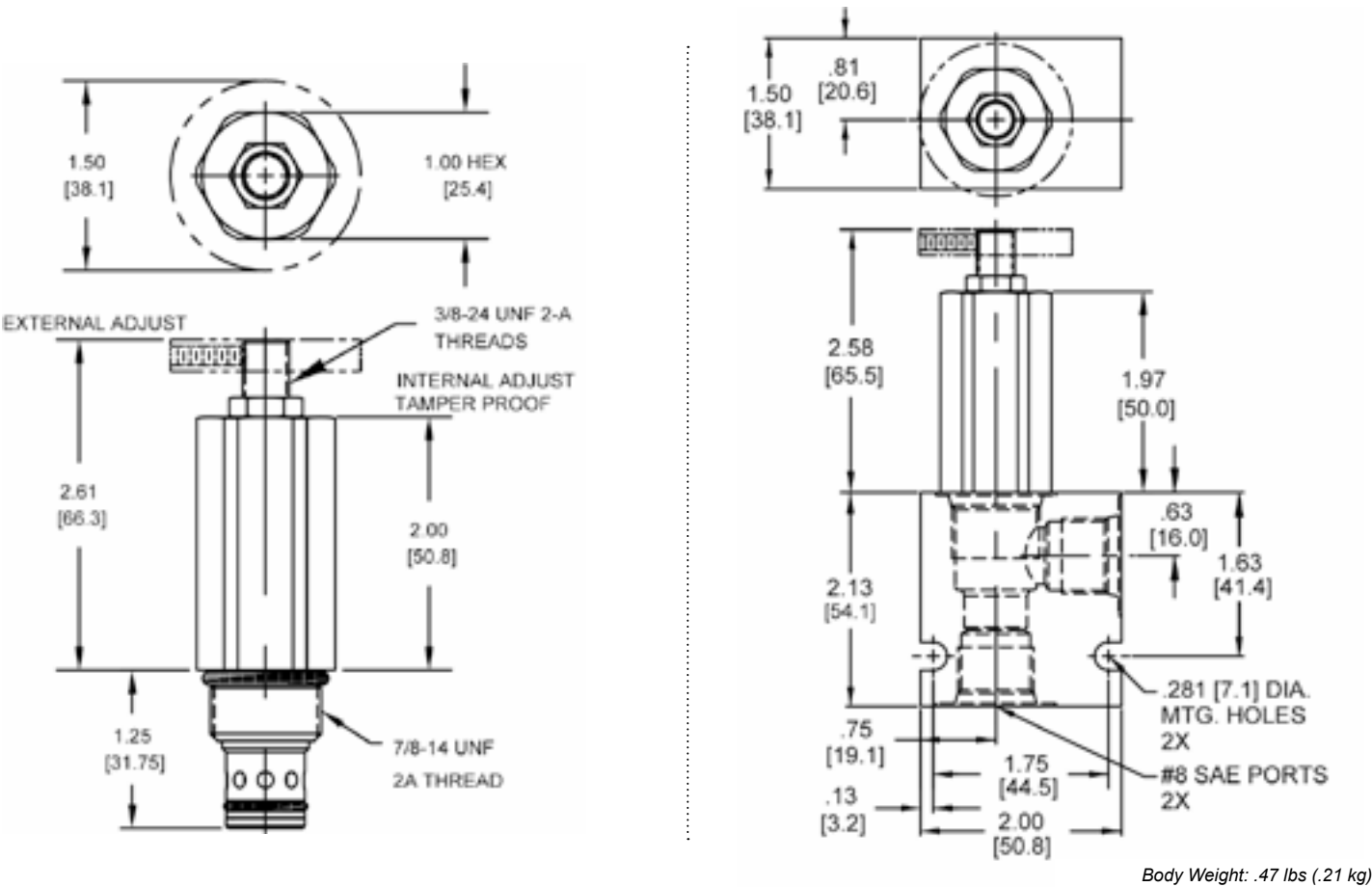


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DIMENSIONS



ORDERING INFORMATION

DE-RWD	-	-	-	-	-
		OPTIONS		BODIES	
		Buna, External Adj. W/Locknut 00		Blank Without Body	
		Viton, External Adj. W/Locknut V0		N 3/8" NPTF Ports	
		Buna, Knob 0K		S #8 SAE Ports	
		Viton, Knob VK			
		Buna, Internal Adjust 0I			
		Viton, Internal Adjust VI			
		Buna, Tamper Proof 0T			
		Viton, Tamper Proof VT			
				PRESSURE RANGE/SETTING	
				Ext./Int. Adjustable	
				1000 100 - 1000 PSI	
				3000 100 - 3000 PSI	
				4000 3000 - 4000 PSI	

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

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

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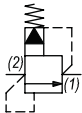
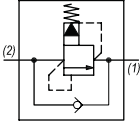
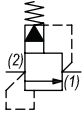
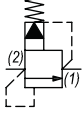
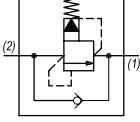


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PILOT OPERATED RELIEF VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	20	4000	76	276	7/8-14	DE-RVP	MP32
	20	5000	76	345	1 1/16-12	HT-RVP	MP34
	15	4000	57	276	7/8-14	DE-RVR	MP36
	40	3500	151	241	1 5/16-12	SJ-RVR	MP38
	15	4000	57	276	7/8-14	DE-RWP	MP40
	40	5000	151	345	7/8-14	HE-RWP	MP42
	15	4000	57	276	7/8-14	DE-RWR	MP44

TYPICAL SCHEMATIC

Typical application for the RVP and RWP is to protect pump or system. Typical application for the RWR and RVR, is to be used as counterbalance in a system where positive hydraulic locking is not required. In this schematic positive locking is done by using a P. O. check valve.

WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

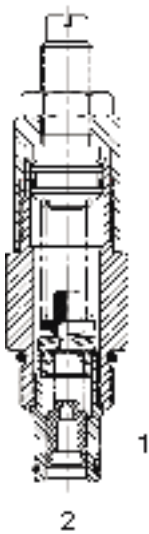


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DE-RVP PILOT OPERATED RELIEF VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pilot operated relief valve.

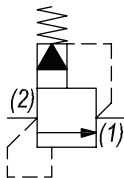
OPERATION

The DE-RVP blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage open, allowing the main stage to shift, opening (2) to (1). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

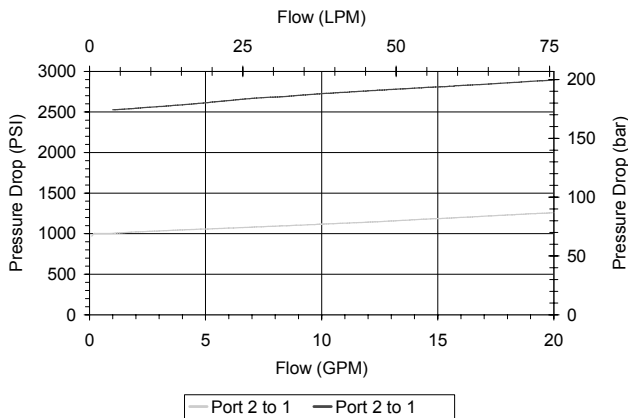
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	4000 PSI (276 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 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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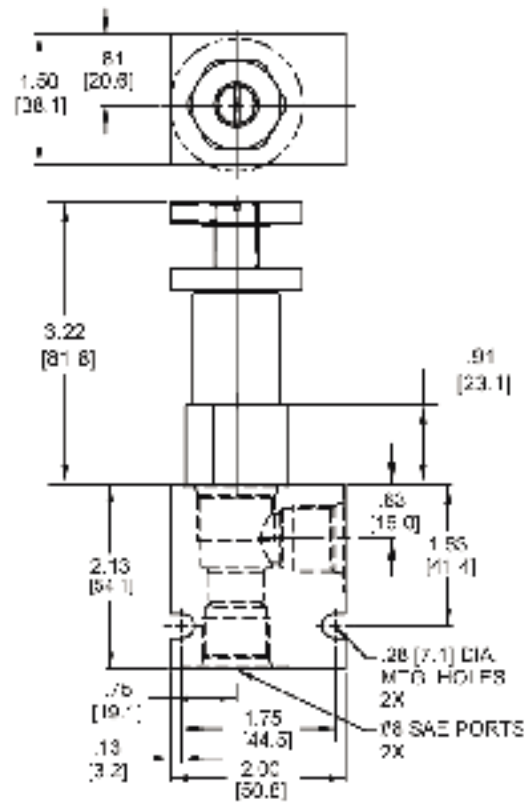
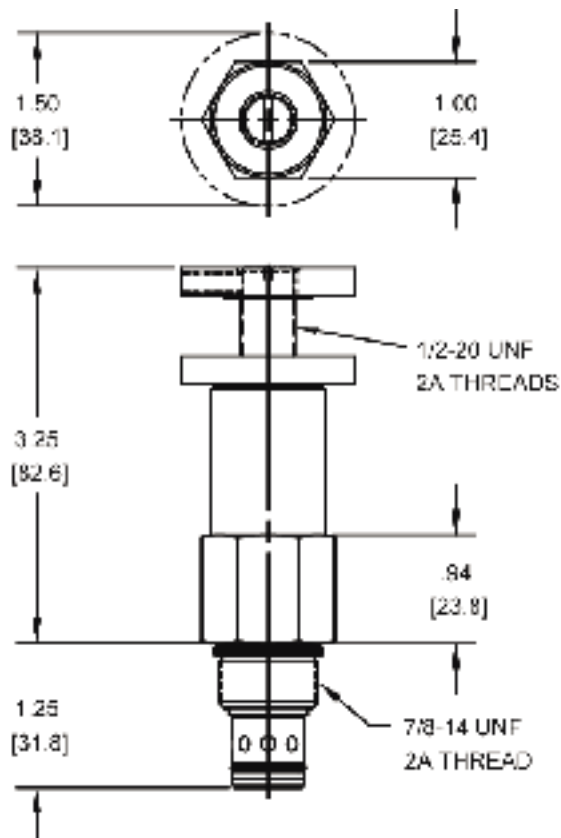


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DIMENSIONS

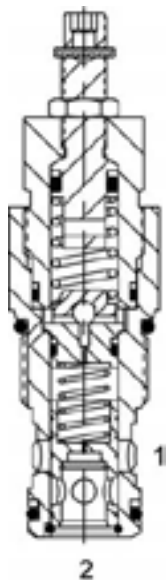


Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RVP		-	-	-
		├──	├──	├──
<u>OPTIONS</u>				<u>BODIES</u>
Buna Standard	00			Blank Without Body
Viton Standard	V0			N 3/8" NPTF Ports
Buna, Knob	0K			S #8 SAE Ports
Viton, Knob	VK			
		└──		
			<u>PRESSURE RANGE/SETTING</u>	
		4000	100 - 4000 PSI	

HT-RVP PILOT OPERATED RELIEF VALVE



DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnom" series, pilot operated relief valve.

OPERATION

The HT-RVP blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage off its seat, allowing the main stage spool to shift, opening (2) to (1). The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

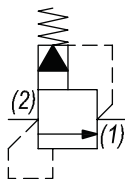
FEATURES

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



Undercut cavity recommended for circuits above 2500 PSI where flows go to 30 GPM.

HYDRAULIC SYMBOL

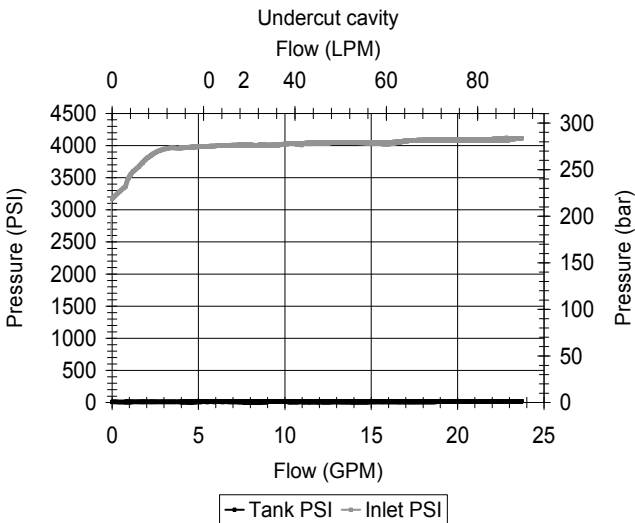
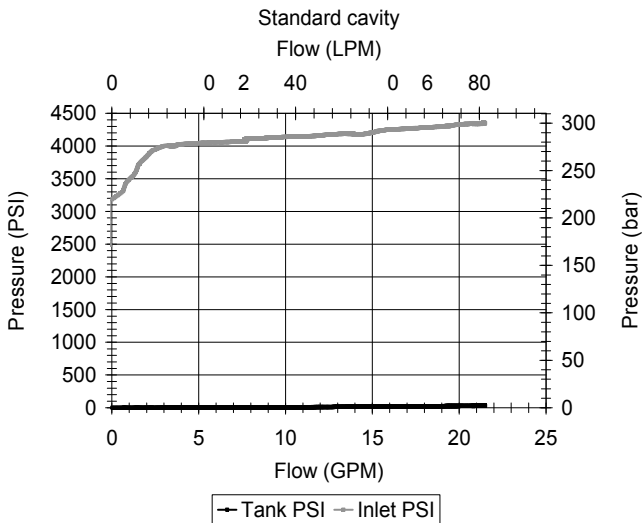


PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 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	1.13 lbs (.51 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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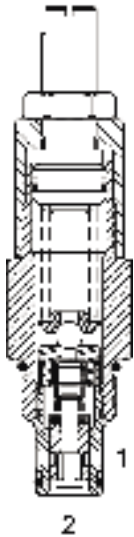


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DE-RVR PILOT OPERATED RELIEF VALVE, WITH REVERSE FLOW



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pilot operated relief valve with reverse flow.

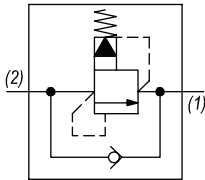
OPERATION

The DE-RVR blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage open, allowing the main stage to shift, opening (2) to (1). The relief flow path is from (2) to (1). Free reverse flow, from (1) to (2), occurs when the pressure at (1) is at least 10 PSI (.7 bar) higher than at port (2).

FEATURES

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

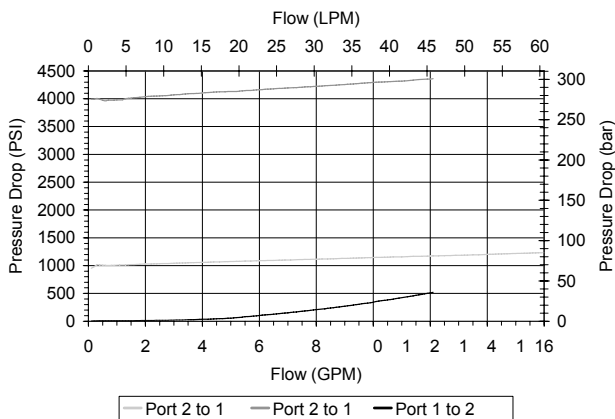
HYDRAULIC SYMBOL



Consult Chart for flow capacity port (1) to (2).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	4000 PSI (276 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 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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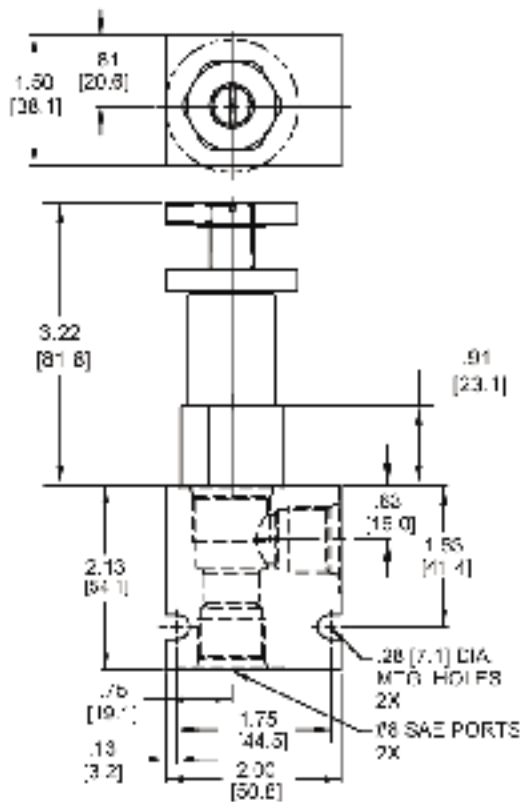
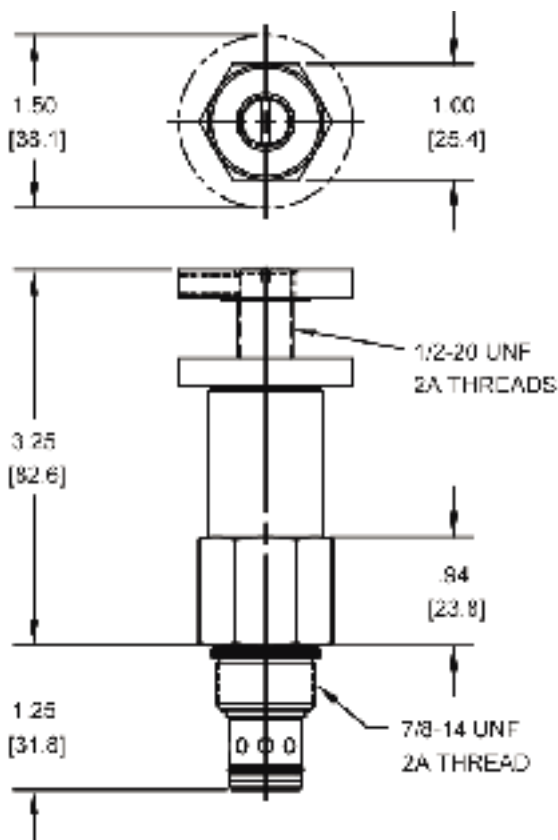


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RVR	-	-	-	-
	OPTIONS			BODIES
	Buna Standard 00			Blank Without Body
	Viton Standard V0			N 3/8" NPTF Ports
	Buna, Knob 0K			S #8 SAE Ports
	Viton, Knob VK			
			PRESSURE RANGE/SETTING	
			4000	100 - 4000 PSI

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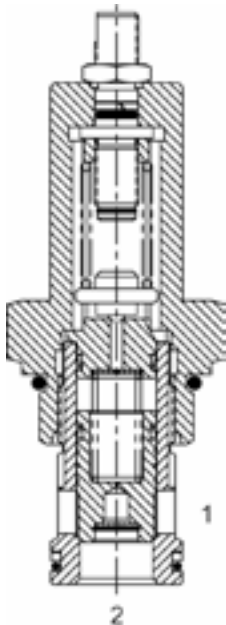


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SJ-RVR PILOT OPERATED RELIEF VALVE, WITH REVERSE FLOW



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, pilot operated relief valve with reverse flow.

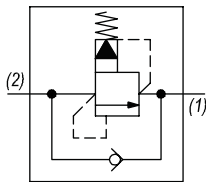
OPERATION

The SJ-RVR blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage off its seat, allowing the main stage spool to shift, opening (2) to (1). The relief flow path is from (2) to (1). Reverse flow, from (1) to (2), occurs when the pressure at (1) is at least 30 PSI (2.1 bar) higher than at port (2). The Cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

HYDRAULIC SYMBOL

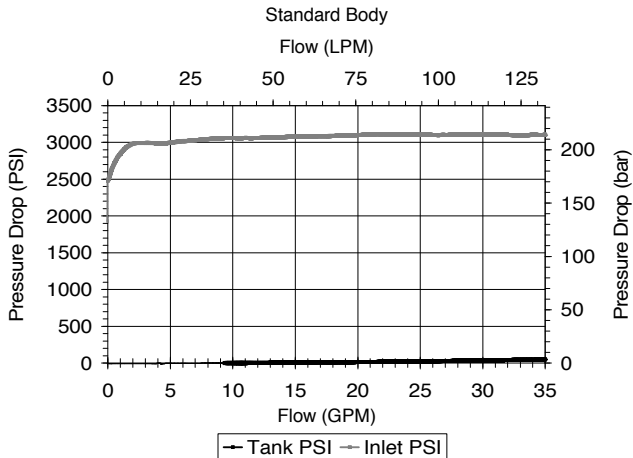
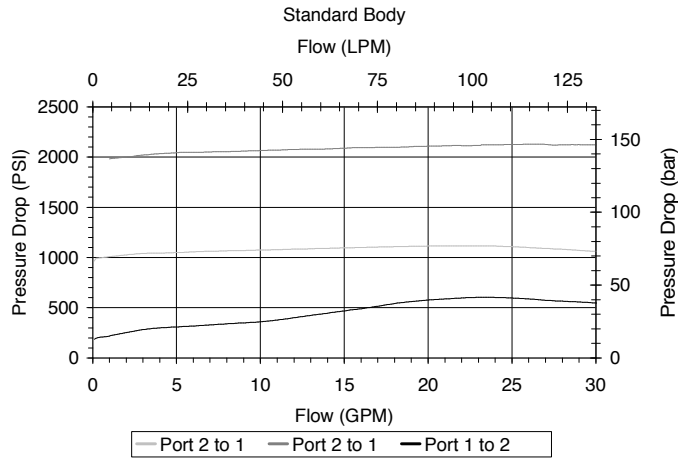


PERFORMANCE

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	-40° to 250°F (-40° to 120°C)
Weight	1.13 lbs (.51 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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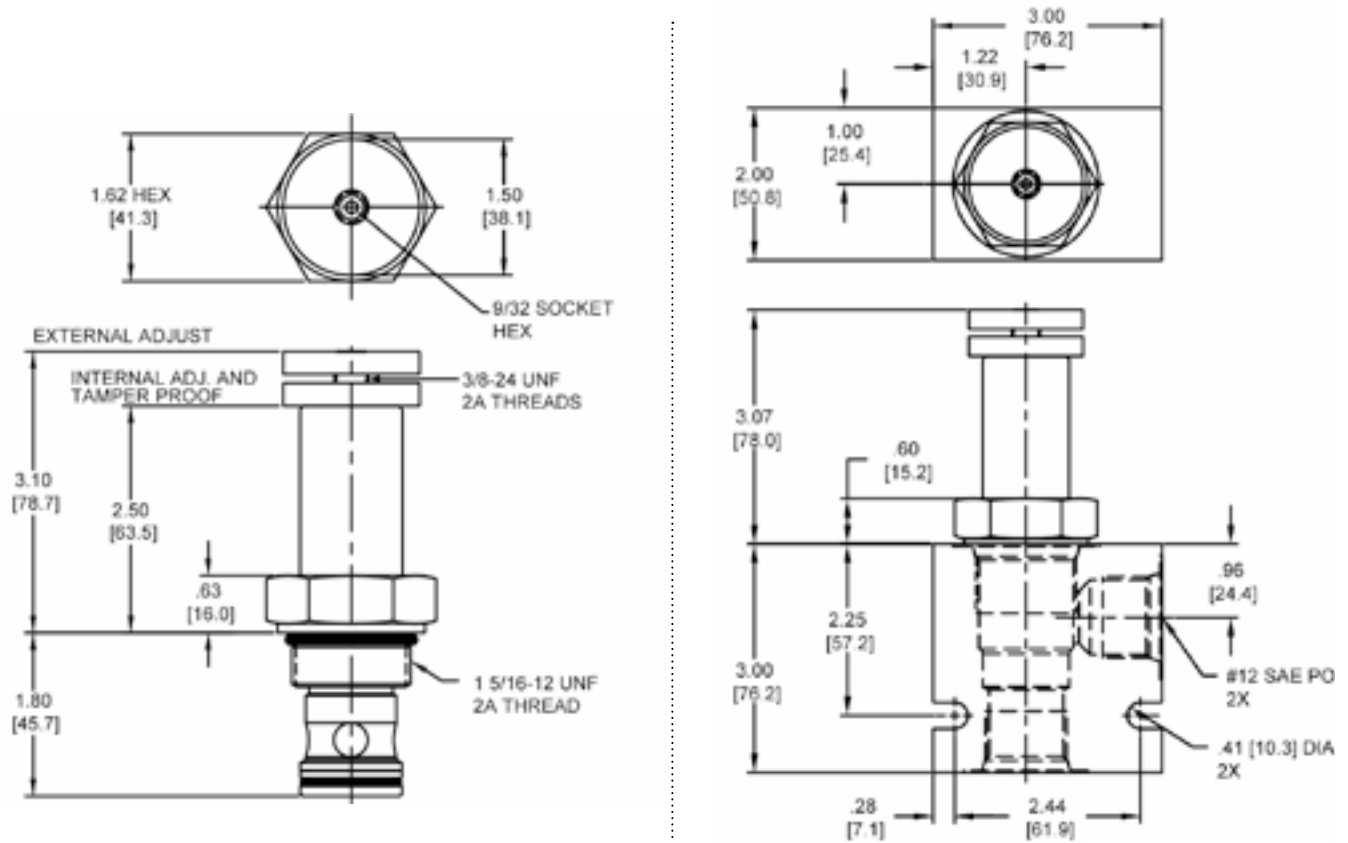


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DIMENSIONS



Body Weight: 1.29 lbs (.59 kg)

ORDERING INFORMATION

SJ-RVR

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Knob	0K
Viton, Knob	VK
Buna, Internal Adjust	0I
Viton, Internal Adjust	VI
Buna, Tamper Proof	0T
Viton, Tamper Proof	VT

BODIES

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

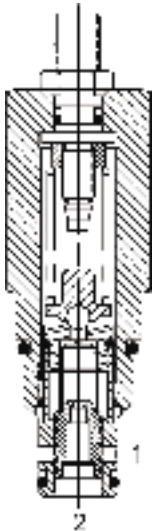
PRESSURE SETTING

3500	500 - 3500 PSI
-------------	----------------

Tamper Proof

Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

DE-RWP PILOT OPERATED RELIEF VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pilot operated relief valve.

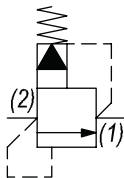
OPERATION

The DE-RWP blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage open, allowing the main stage to shift, opening (2) to (1).

FEATURES

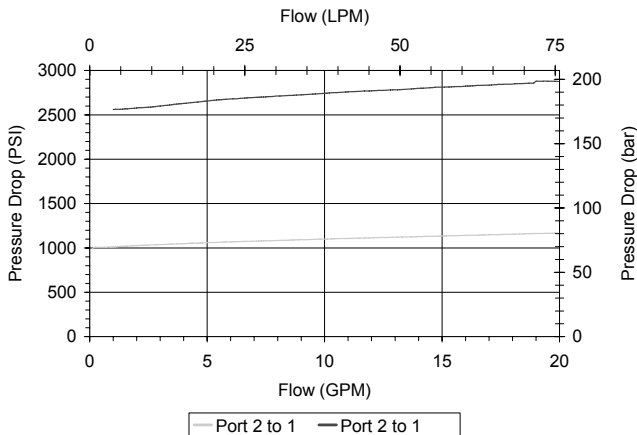
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	4000 PSI (276 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	.53 lbs (.24 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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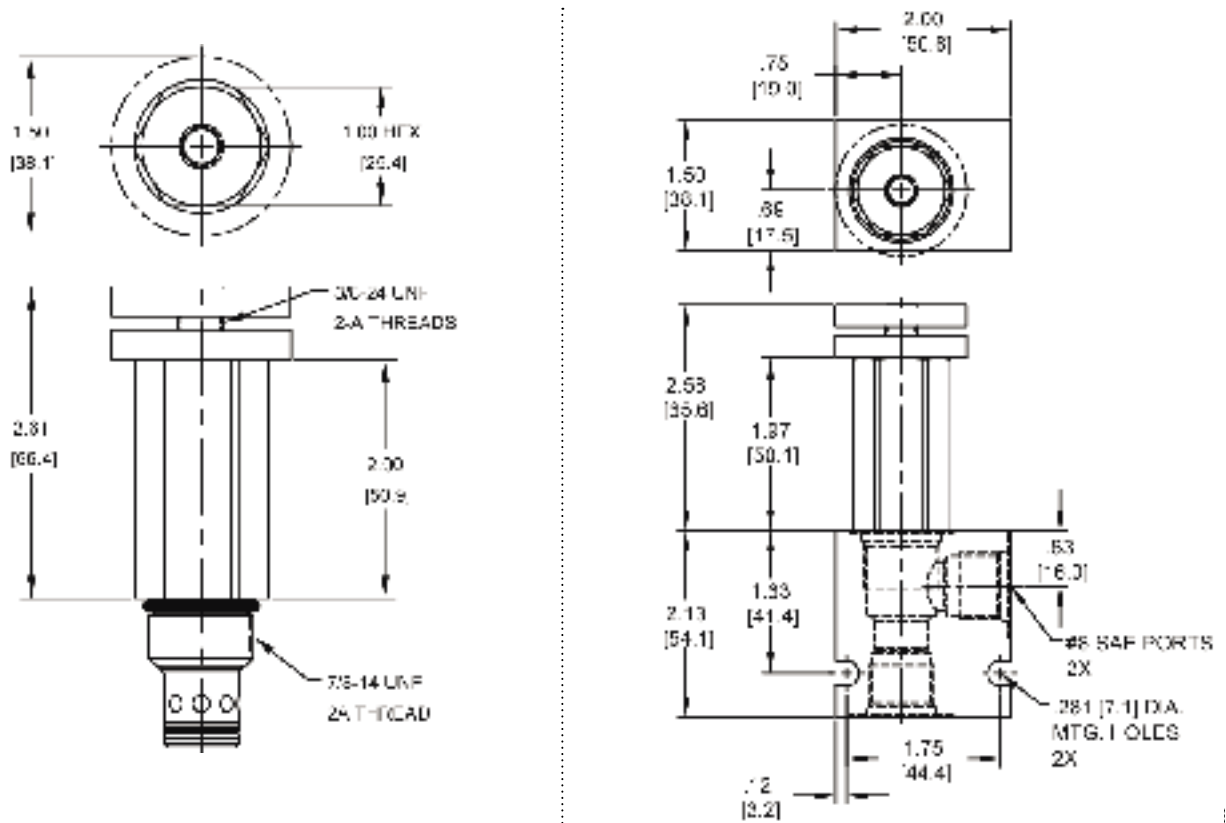


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RWP -

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Knob	0K
Viton, Knob	VK
Buna, Internal Adjust	0I
Viton, Internal Adjust	VI
Buna, Tamper Proof	0T
Viton, Tamper Proof	VT

BODIES

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

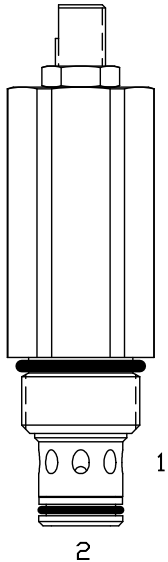
PRESSURE RANGE/SETTING

4000	1000 - 4000 PSI
-------------	-----------------

Tamper Proof

Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

HE-RWP RAPID RESPONSE, PILOT OPERATED RELIEF VALVE



DESCRIPTION

High Pressure, High Flow, Rapid Response, 10 size, 7/8-14 thread, "Delta" series, pilot operated relief valve.

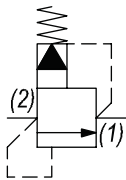
OPERATION

The HE-RWP blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage open, allowing the main stage to shift, opening (2) to (1).

FEATURES

- High pressure valve.
- Hardened parts for long life.
- Industry common cavity.
- Rapid response to sudden pressure application.
- Excellent regulation of pressure with flow (low override).

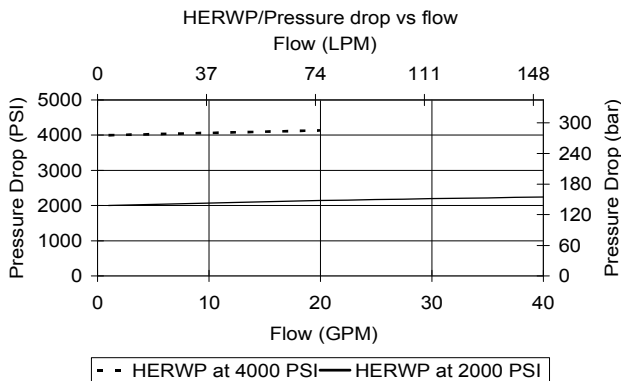
HYDRAULIC SYMBOL



This is a rapid response, high pressure relief valve with excellent high flow regulation. Consult factory for higher flow capacity cavity option.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 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	.53 lbs (.24 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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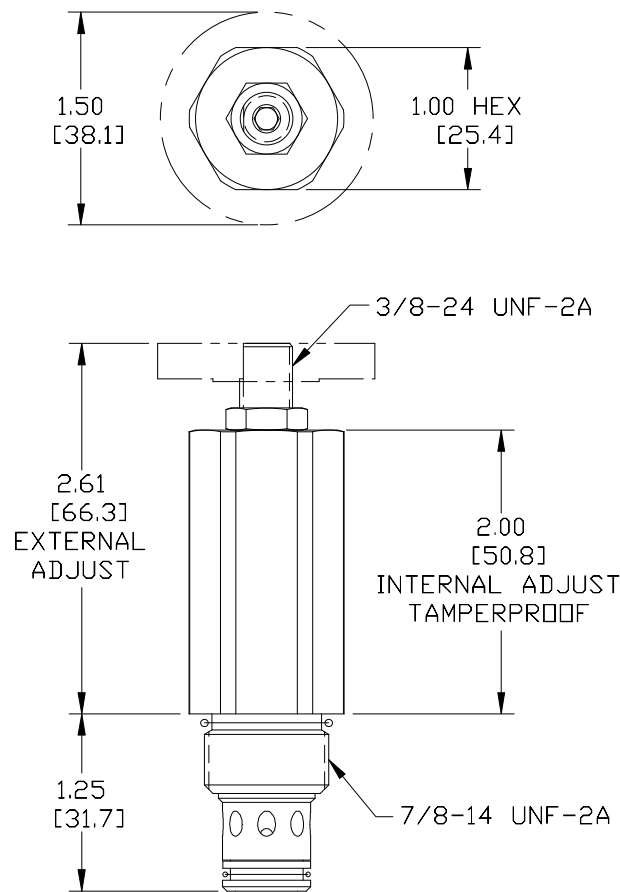


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DIMENSIONS



ORDERING INFORMATION

HE-RWP		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Consult Factory
Viton Standard	V0				
Buna, Knob	0K				
Viton, Knob	VK				
Buna, Internal Adjust	0I				
Viton, Internal Adjust	VI				
Buna, Tamper Proof	0T				
Viton, Tamper Proof	VT				
				PRESSURE RANGE/SETTING	
		5000	1000 - 5000 PSI		
				Tamper Proof	
				Fill in 4 Digit Pressure Setting	
				Example: 1500 - 1500 PSI	

WARNING
DO NOT USE ALUMINUM BODY
HIGH PRESSURE (5000 PSI) PRODUCT

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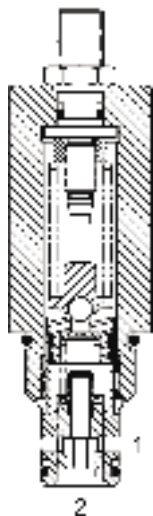


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DE-RWR PILOT OPERATED RELIEF VALVE, WITH REVERSE FLOW



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pilot operated relief valve with reverse flow.

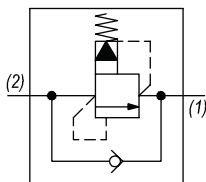
OPERATION

The DE-RWR blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage open, and allow metered flow from (2) to (1). The relief flow path is from (2) to (1). Free reverse flow, from (1) to (2), occurs when the pressure at (1) is at least 10 PSI (.7 bar) higher than at port (2).

FEATURES

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

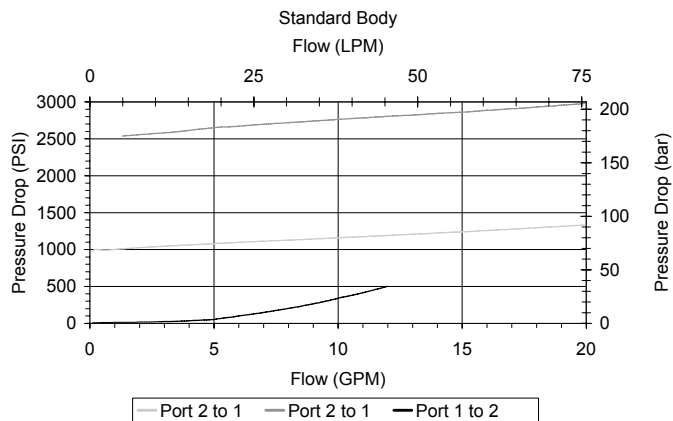
HYDRAULIC SYMBOL



Consult chart for flow capacity (1) to (2).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	4000 PSI (276 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	.53 lbs (.24 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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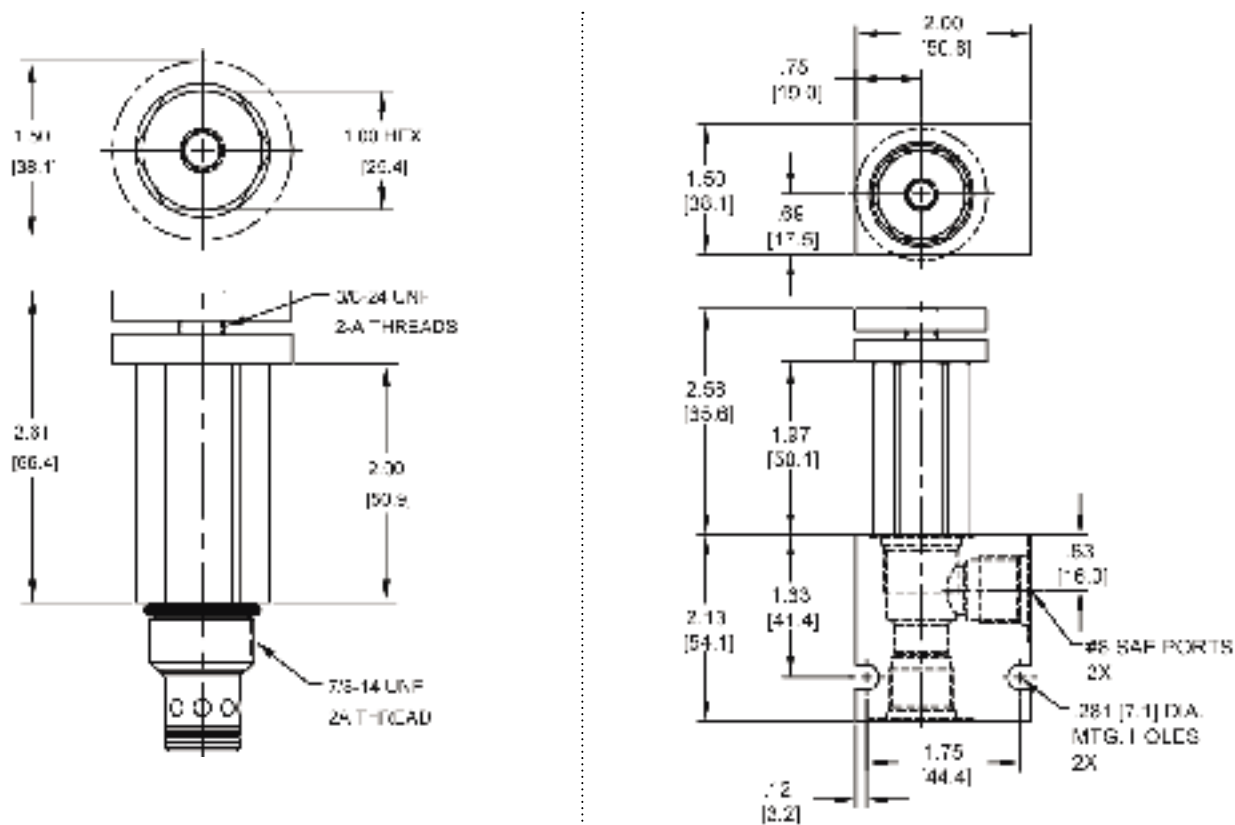


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RWR		OPTIONS		BODIES	
		Buna Standard	00	Blank	Without Body
		Viton Standard	V0	N	3/8" NPTF Ports
		Buna, Knob	0K	S	#8 SAE Ports
		Viton, Knob	VK		
		Buna, Internal Adjust	0I		
		Viton, Internal Adjust	VI		
		Buna, Tamper Proof	0T		
		Viton, Tamper Proof	VT		
				PRESSURE RANGE/SETTING	
				4000	1000 - 4000 PSI
				Tamper Proof	
				Fill in 4 Digit Pressure Setting	
				Example: 0500 - 500 PSI	

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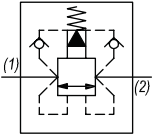
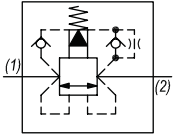


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CROSSOVER RELIEF VALVES

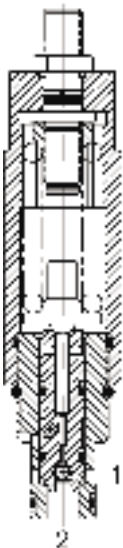
	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	15	4000	57	276	7/8-14	DE-RVB	MP48
	15	4000	57	276	7/8-14	DE-RVC	MP50

TYPICAL SCHEMATIC

Typical application for the RVC is in a series circuit where a load on motor #2 causes back pressure on motor #1 and relief valve #1. Vent in port (2) of RV 1 allows spring to maintain proper load on motor #1 even though back pressure is present. Port (2) pressure into spring chamber to offset back pressure. Vent at port (2) causes .2 GPM flow from port (2) to port (1).

Typical application for the RVB is in a parallel circuit where the load on motor #2 does not cause back pressure on motor #1. Relief valve maintains differential pressure across motor because one side of motor always goes to tank.

DE-RVB CROSSOVER RELIEF VALVE, FOR PARALLEL CIRCUITS



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, crossover relief valve for parallel circuit applications.

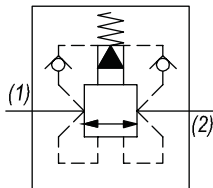
OPERATION

The DE-RVB is a direct-acting, cross over relief valve. When pressure at either port exceeds the nominal setting value, flow will be diverted to the opposite port. Back pressure at either port will affect the nominal setting of the opposite port on a 1:1 basis. For correlation purposes, pre-set value will be measured at port (2). Pressure at port (1) will not vary more than ± 300 PSI from the port (2) value. The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

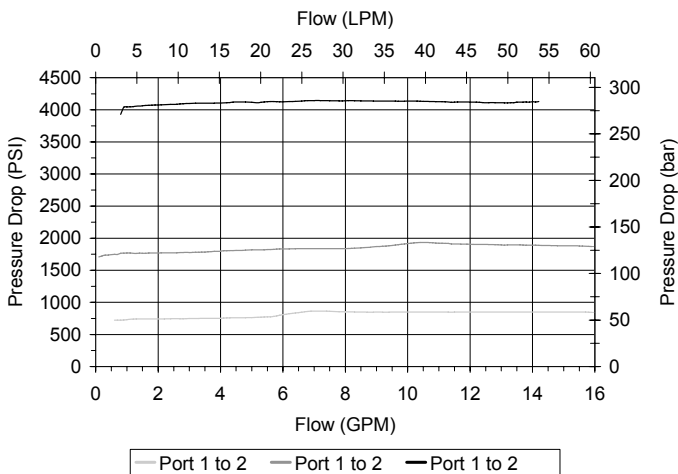
HYDRAULIC SYMBOL



The DE-RVB is designed for parallel circuit applications. For series circuits, use DE-RVC.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM) from (2) to (1) 20 GPM (76 LPM) from (1) to (2)
Rated Operating Pressure	4000 PSI (276 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	.80 lbs (.36 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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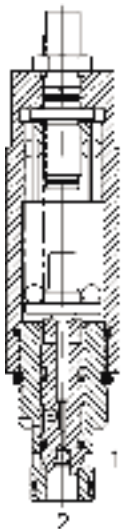


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DE-RVC CROSSOVER RELIEF VALVE, FOR SERIES CIRCUITS



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, crossover relief valve for series circuit application.

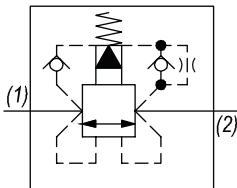
OPERATION

The DE-RVC is a direct-acting, cross over relief valve. When pressure at either port exceeds the nominal setting value, flow will be diverted to the opposite port. Back pressure at either port will affect the nominal setting of the opposite port on a 1:1 basis. For correlation purposes, pre-set value will be measured at port (2). Pressure at port (1) will not vary more than ± 300 PSI from the port (2) value. The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

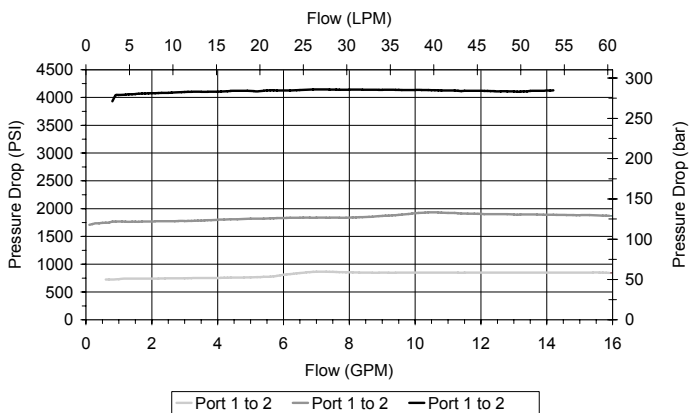
HYDRAULIC SYMBOL



The DE-RVC is designed for series circuit applications with controlled leakage between ports (2) and (1). For parallel circuits, use DE-RVB.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM) from (2) to (1) 20 GPM (76 LPM) from (1) to (2)
Rated Operating Pressure	4000 PSI (276 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	.80 lbs (.36 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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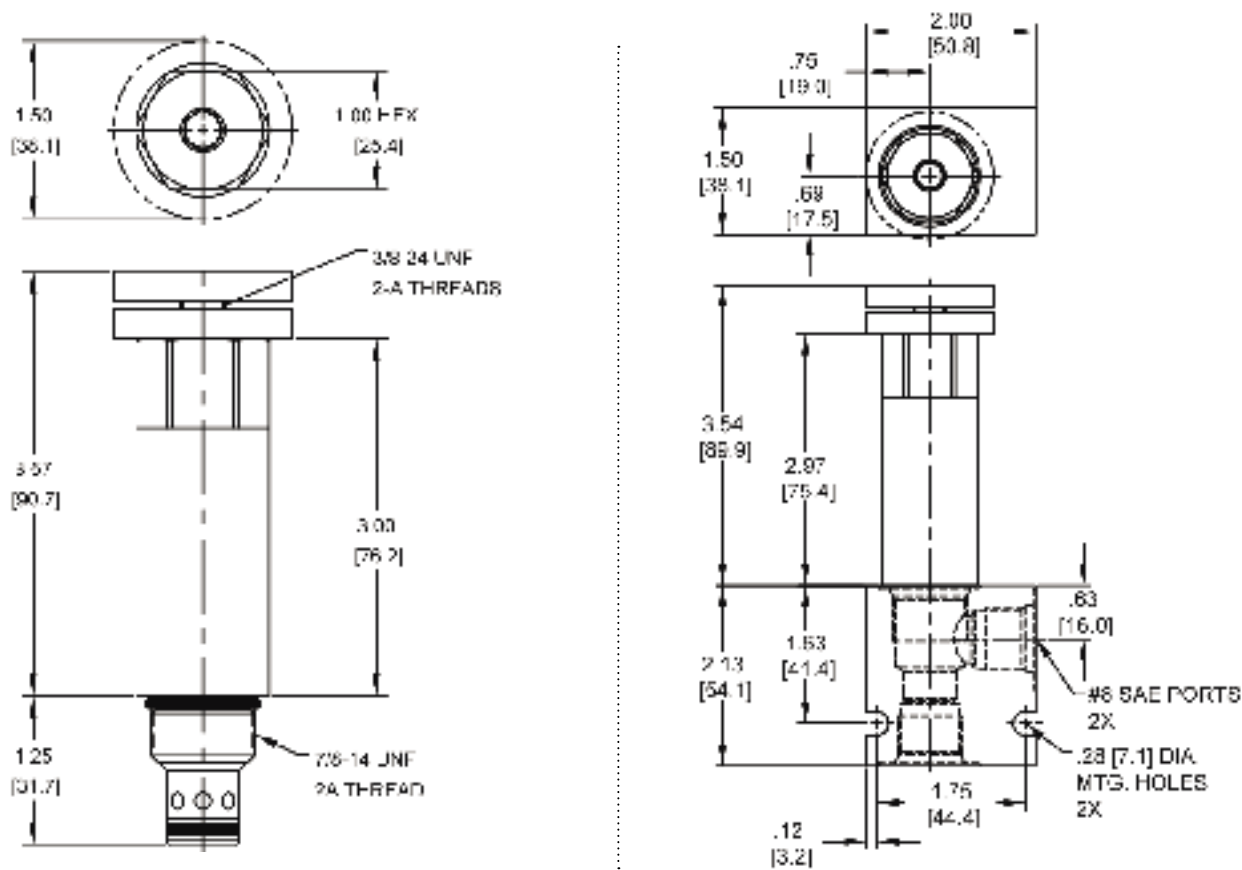


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RVC		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N
Buna, Knob	0K				S
Viton, Knob	VK				
Buna, Internal Adjust	0I				
Viton, Internal Adjust	VI				
Buna, Tamper Proof	0T				
Viton, Tamper Proof	VT				
					PRESSURE RANGE/SETTING
					Ext./Int. Adjustable
					0700 100 - 700 PSI
					1800 500 - 1800 PSI
					4000 1000 - 4000 PSI
					Tamper Proof
					Fill in 4 Digit Pressure Setting
					Example: 0500 - 500 PSI

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PRESSURE COMPENSATED REGULATOR VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3500	38	241	7/8-14	DF-PCR	MP54
	33	3500	120	241	Special	QC-CP3	MP56
	8	3500	30	241	3/4-16	PP-PCA	MP58
	40	3500	151	241	1 1/16-12	TR-PCA	MP60
	40	3500	151	241	1 5/16-12	SL-PCA	MP62
	10	3500	38	241	7/8-14	DG-PCB	MP64
	10	3500	38	241	7/8-14	DG-TCB	MP66
	8	3000	30	207	3/4-16	PP-PCC	MP68
	8	3500	30	241	7/8-14	DF-CP2	MP70
	19	3500	70	241	Special	QC-CP2	MP72
	20	3500	76	241	1 1/16-12	TR-PCC	MP74
	10	3500	38	241	7/8-14	DF-PCE	MP76
	40	3500	151	241	1 5/16-12	SL-PCE	MP78
	10	3500	38	241	7/8-14	DF-PCS	MP80
	10	3500	38	241	7/8-14	DF-TCS	MP82
	10	3500	38	241	7/8-14	DF-PCT	MP84

TYPICAL SCHEMATIC

These very flexible pressure compensator valves can regulate flow through many types of orifices: Electro-Proportional Orifices, Plate or Set Screw Orifices, Needle Valves &/or even across the pressure drop of other control valve (s). When using multiple compensating devices in the same circuit it is good practice to keep at least 50 PSID between their settings to reduce the likelihood of cross talking during dynamic events.

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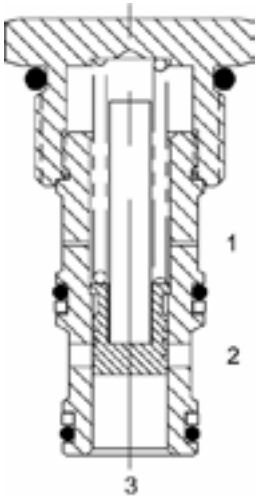


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DF-PCR PRESSURE COMPENSATING REGULATOR VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure compensating regulator valve.

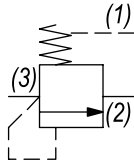
OPERATION

The DF-PCR-0P 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). The valve's spool maintains a constant differential pressure across an external orifice, thereby regulating the hydraulic flow rate from (3) to (2) (see options table for pressure ranges). When used with an orifice as described above, as a priority type regulator, delivering pump flow first to (3), then bypassing excess to (2). All ports may be fully pressurized. The DF-PCR-0V with a dump valve and a pilot relief valve at (1) acts as main stage of a ventable relief valve.

FEATURES

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

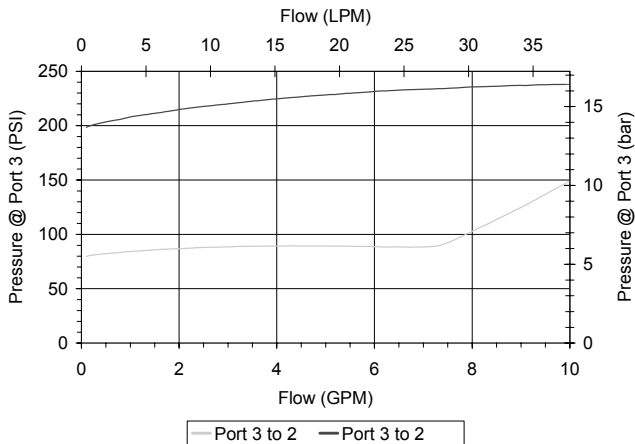
HYDRAULIC SYMBOL



Can be used as a logic element. DF-PCR-oP is commonly used as a bypass flow regulator (80 PSI recommended). DF-PCR-oV is commonly used as the main stage of a ventable relief valve (40 and 80 PSI recommended).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Seat Ratio	Area of Pilot is equal to the area at Port (3)
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 3W
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191206

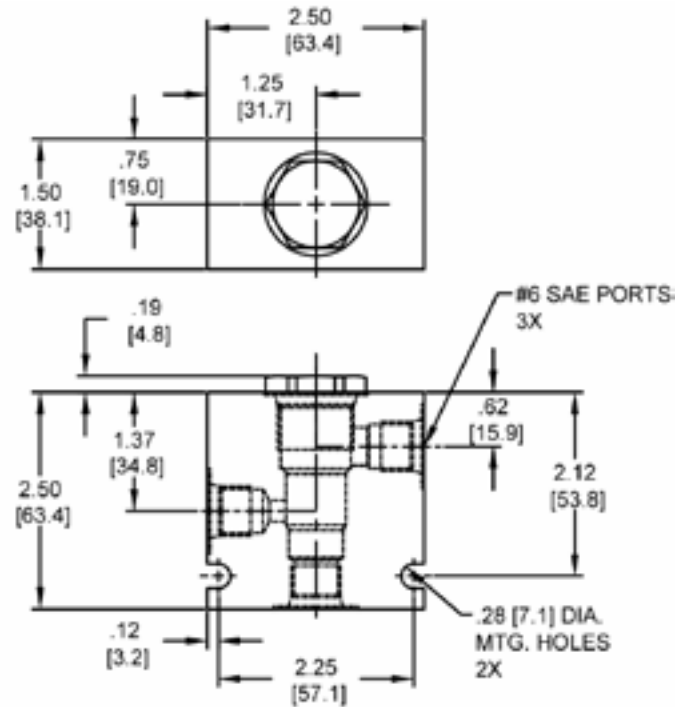
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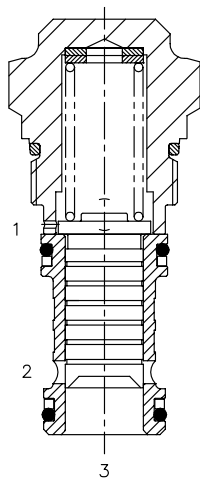
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ORDERING INFORMATION

Page MP55

QC-CP3 PRESSURE COMPENSATING VALVE, BYPASS TYPE FOR 3 WAY FLOW CONTROL



DESCRIPTION

Special cavity, pressure compensating valve, bypass type, for 3 way flow control, normally closed.

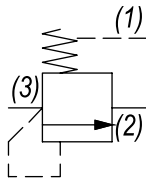
OPERATION

The QC-CP3 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). The valve's spool maintains a constant differential pressure across an external orifice, thereby regulating the hydraulic flow rate from (3) to (2), (see options table for pressure ranges). When used with an orifice as described above, as a priority type regulator, delivering pump flow first to (3), then bypassing excess to (2). All ports may be fully pressurized.

FEATURES

- Hardened parts for long life.
- Spring range from 8 to 24 bar.

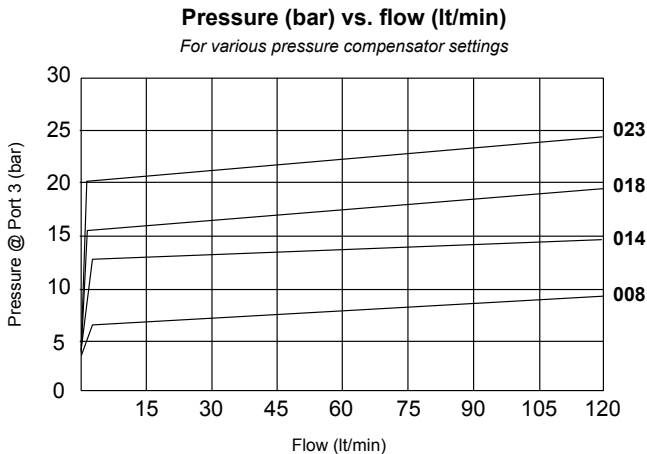
HYDRAULIC SYMBOL



Pressure compensator for 3 way flow control, typically used with an external orifice between ports (3) and (1). Port (1) should sense upstream pressure of orifice.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	33 GPM (120 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	35 ml/min @ 250 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	.35 lbs (.16 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	52 ft-lbs (70 Nm)
Cavity	T031 (Special)
Cavity Tools Kit (form tool, reamer, tap)	K-T031
Seal Kit	210902321

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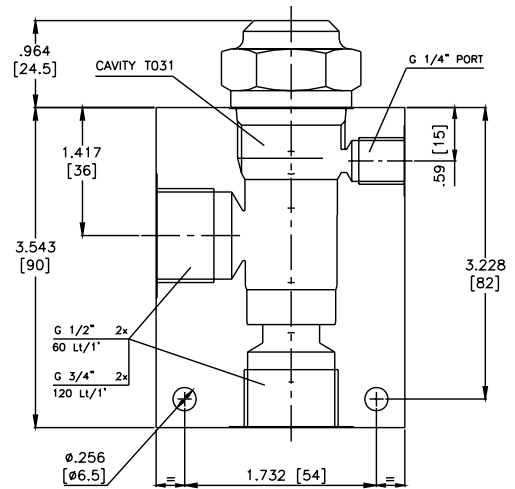
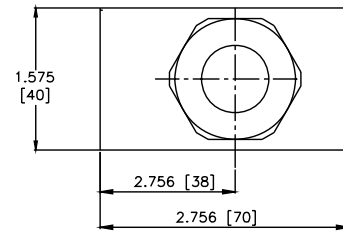
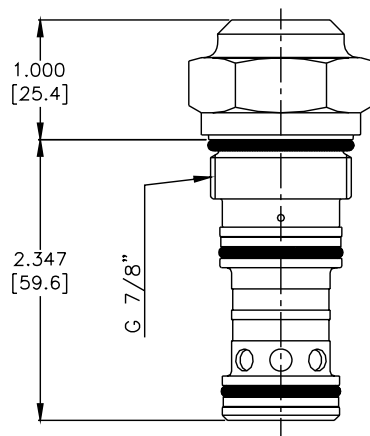
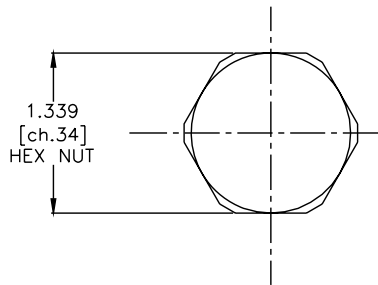


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DIMENSIONS



(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

QC-CP3 -

OPTIONS

Buna Standard	00
Viton Standard	V0

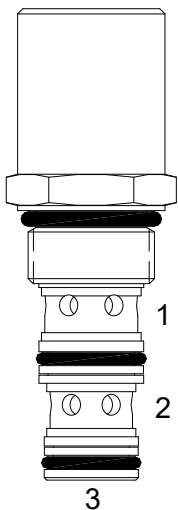
BODIES

Blank	Without Body
N	1/2" BSP Ports
S	#8 SAE Ports

PRESSURE SETTINGS

008 8 bar (115 PSI) @ 60 l/min
014 14 bar (200 PSI) @ 60 l/min
018 18 bar (260 PSI) @ 60 l/min
023 23 bar (330 PSI) @ 60 l/min

PP-PCA FIXED PRESSURE COMPENSATING REGULATOR VALVE



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, pressure compensating regulator valve.

OPERATION

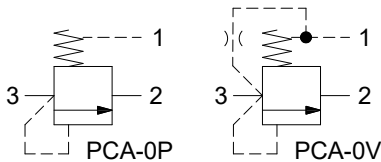
The PP-PCA-0P with an orifice between ports (3) and (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system upstream of (3), or in the bypass leg at (2) as long as pressure at (2) is less than (1).

The valves spool maintains a constant differential pressure across an external orifice, thereby regulating the hydraulic flow rate across this external orifice. (see options table for pressure ranges). When used with an orifice as described above, it functions as a priority type regulator, delivering pump flow first to the external orifice, then bypassing excess to (2). All ports may be fully pressurized. The PP-PCA-0V with a dump valve and a pilot relief valve at (1) acts as main stage of a ventable relief valve.

FEATURES

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

HYDRAULIC SYMBOL



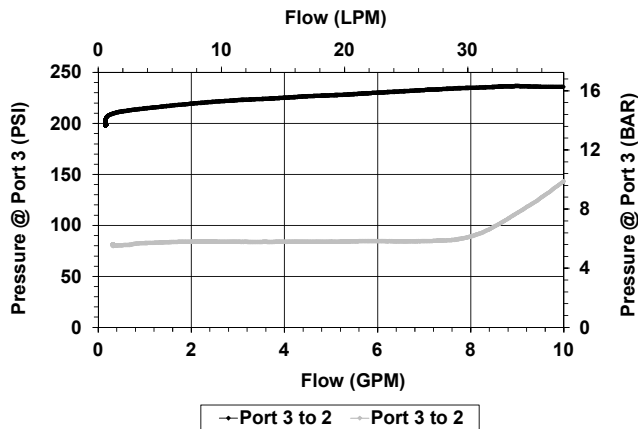
Can be used as a logic element.

PP-PCA-0P is commonly used as a bypass flow regulator (80 PSI recommended).

PP-PCA-0V is commonly used as the main stage of a ventable relief valve (40 and 80 PSI recommended).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Seat Ratio	Area of Pilot is equal to the area at Port (3)
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	25 ft-lbs (34 Nm)
Cavity	POWER 3W
Cavity Form Tool (Finishing)	40500024
Seal Kit	21191106

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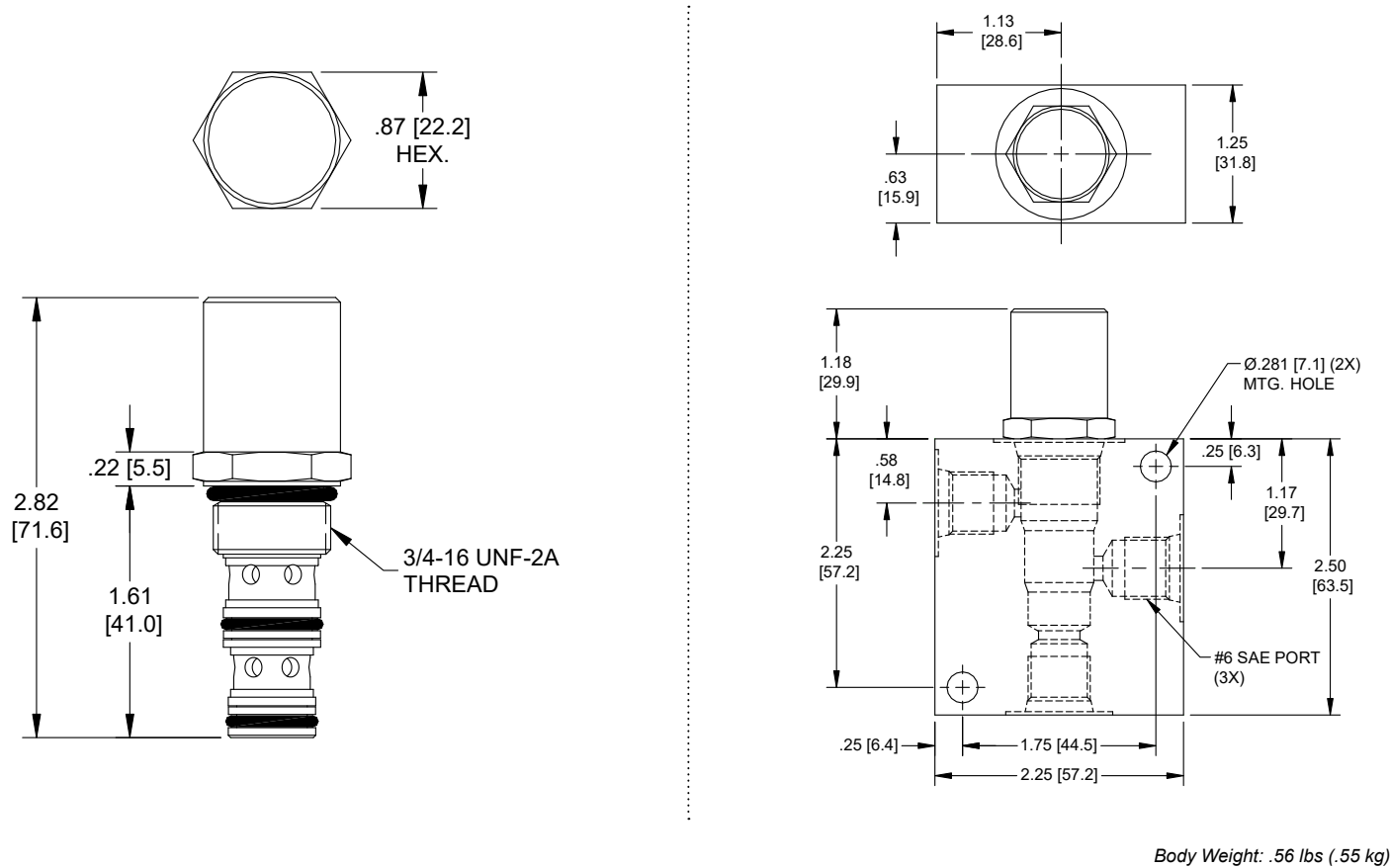


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DIMENSIONS



ORDERING INFORMATION

PP-PCA		-	-	-	-
OPTIONS					
Buna, Vent to Open	OV				
Buna, Pilot to Close	OP				
Viton, Vent to Open	VV				
Viton, Pilot to Close	VP				
BODIES					
Blank					
N	Without Body				
S	1/4" NPTF Ports				
	#6 SAE Ports				
PRESSURE SETTING					
0040	40 PSI				
0080	80 PSI				
0150	150 PSI				
0200	200 PSI				

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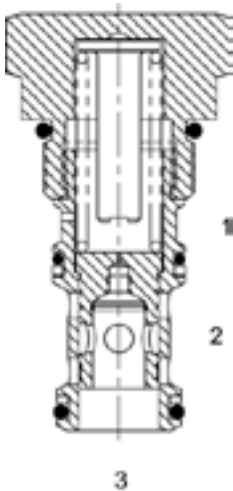


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TR-PCA PRESSURE COMPENSATING REGULATOR VALVE



DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnord" series, pressure compensating regulator valve.

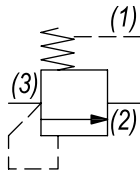
OPERATION

The TR-PCA-0P 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). The valve's spool maintains a constant differential pressure across an external orifice, thereby regulating the hydraulic flow rate across this external orifice (see options table for pressure ranges). When used with an orifice as described above, it functions as a priority type regulator, delivering pump flow first to the external orifice, then bypassing excess to (2). All ports may be fully pressurized. The TR-PCA-0V with a dump valve and a pilot relief valve at (1) acts as main stage of a ventable relief valve.

FEATURES

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

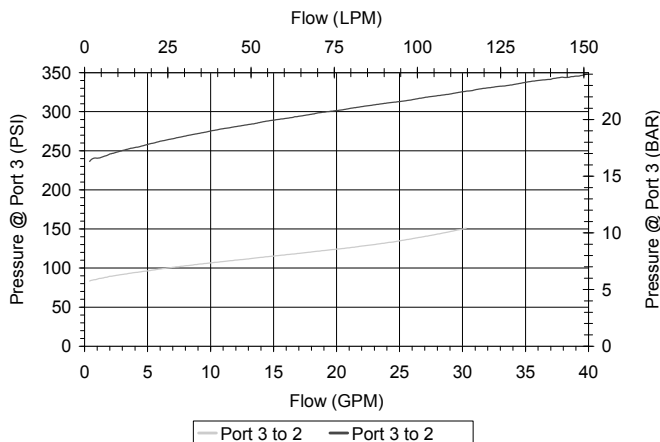
HYDRAULIC SYMBOL



Can be used as a logic element. TR-PCA-0P is commonly used as a bypass flow regulator (90 and 150 PSI recommended). TR-PCA-0V is commonly used as the main stage of a ventable relief valve (50 and 90 PSI recommended).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Seat Ratio	Area of Pilot is equal to the area at Port (3)
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	.54 lbs (.24 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	70 ft-lbs (95 Nm)
Cavity	TECNORD 3WS
Cavity Form Tool (Finishing)	40500033
Seal Kit	21191306

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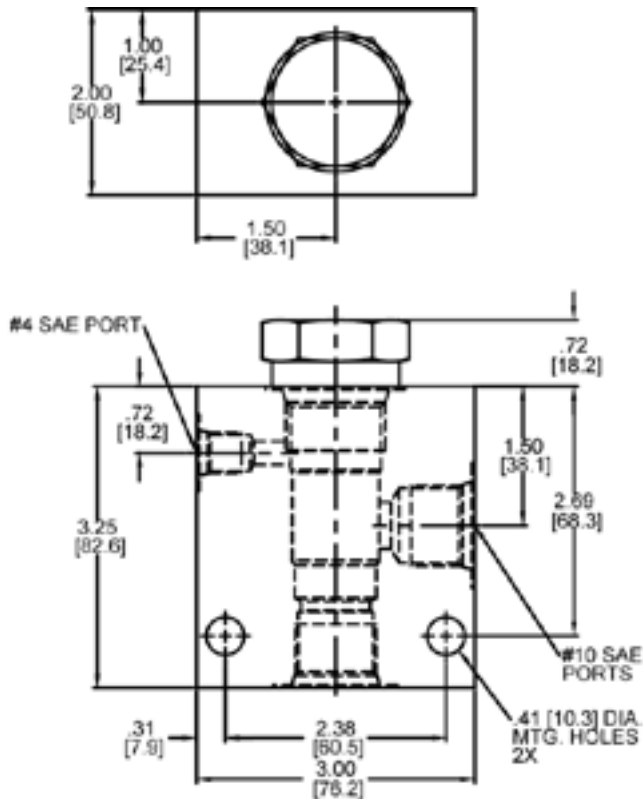
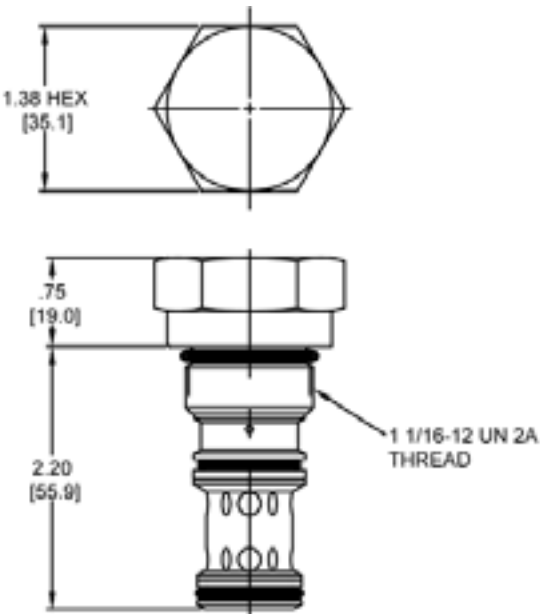


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DIMENSIONS



Body Weight: 1.56 lbs (.70 kg)

ORDERING INFORMATION

TR-PCA		-	-	-	-
OPTIONS					BODIES
Buna, Pilot to Close	0P				Blank
Viton, Pilot to Close	VP				S
Buna, Vent to Open	0V				
Viton, Vent to Open	VV				
					Δ P SETTING
					@ 1 GPM with Pilot Vented
					0020 20 PSI
					0050 50 PSI
					0090 90 PSI
					0150 150 PSI
					0230 230 PSI
					±10%

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SL-PCA PRESSURE COMPENSATING REGULATOR VALVE

DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, pressure compensating regulator valve.

OPERATION

The SL-PCA-0P with an external orifice between ports (3) and (1) maintains a constant flow rate across the external orifice, 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). The valve's spool maintains a constant differential pressure across the external orifice, thereby regulating the hydraulic flow rate across the external orifice (see options table for pressure ranges). When used with an orifice as described above, it functions as a priority type regulator, delivering pump flow first to the external orifice, then bypassing excess to (2). All ports may be fully pressurized. The SL-PCA-0V with a dump valve and a pilot relief valve at (1) acts as main stage of a ventable relief valve.

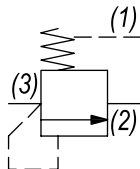
FEATURES

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



Can be used as a logic element. SL-PCA-0P is commonly used as a bypass flow regulator (100 PSI recommended). SL-PCA-0V is commonly used as the main stage of a ventable relief valve (50 and 100 PSI recommended).

HYDRAULIC SYMBOL

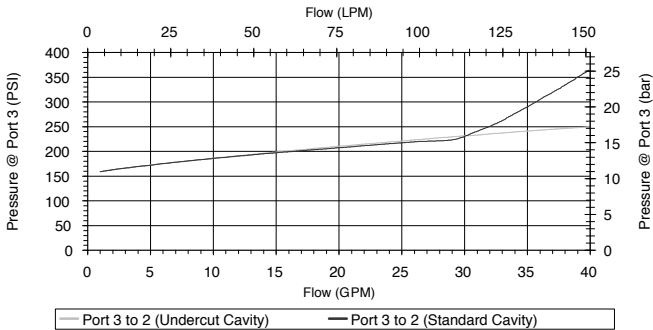
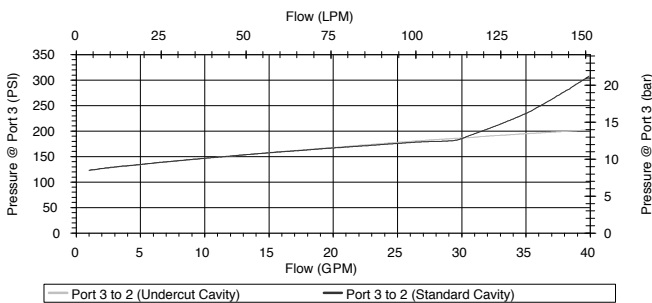


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Seat Ratio	Initially area of Pilot is 1.2 times the area at Port (3), then 1:1
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	.70 lbs (.32 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	21191406

PERFORMANCE

Actual Test Data (Cartridge Only)



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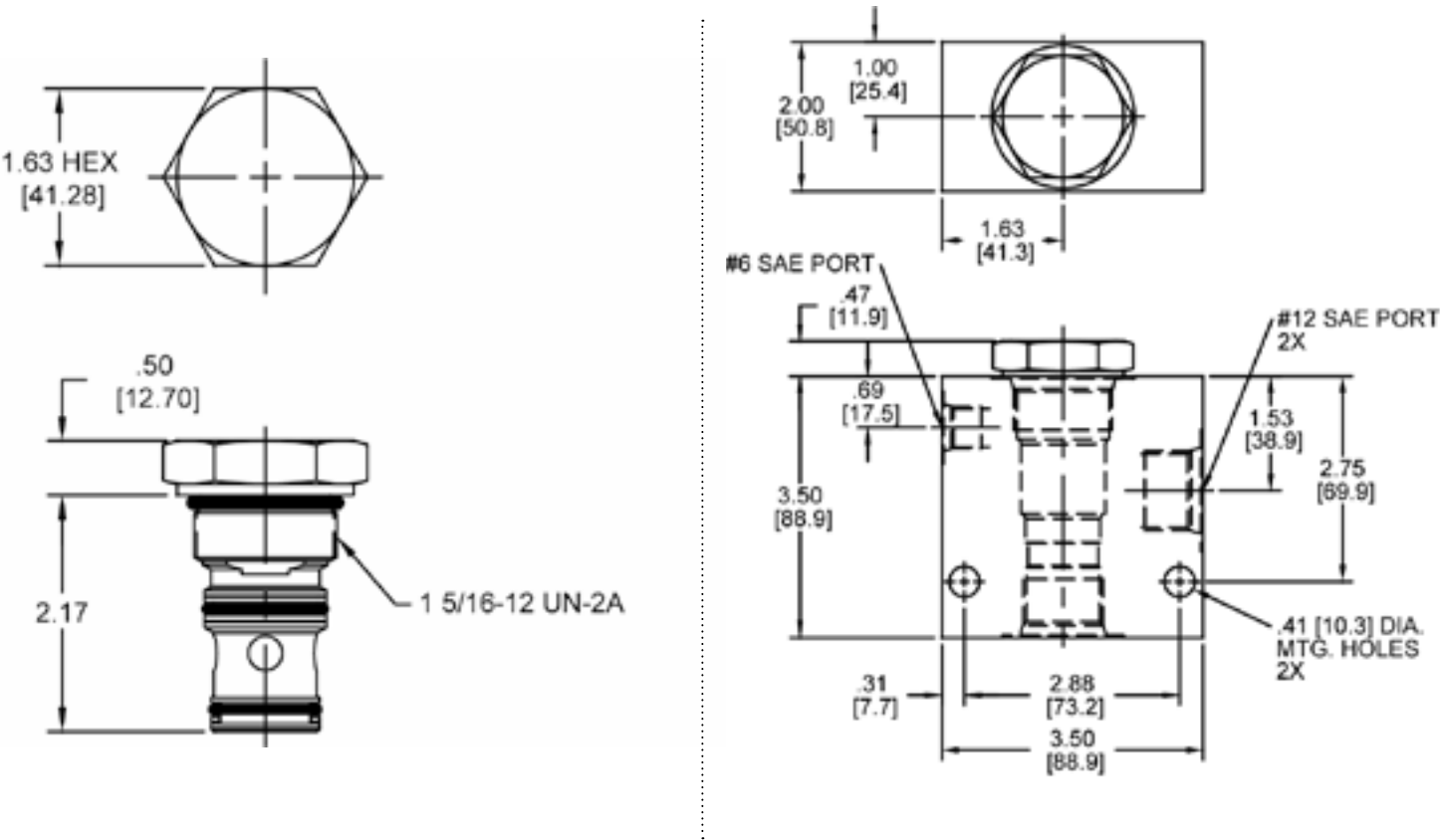


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PCA		-	-	-	-
OPTIONS					BODIES
Buna, Pilot to Close	OP				Blank
Viton, Pilot to Close	VP				S
Buna, Vent to Open	OV				
Viton, Vent to Open	VV				
Buna, Pilot to Close with Seals	OB				
Viton, Pilot to Close with Seals	VB				
Buna, Vent to Open with Seals	OC				
Viton, Vent to Open with Seals	VC				
					Δ P SETTING
					@ 1 GPM with Pilot Vented
					0020 20 PSI
					0050 50 PSI
					0100 100 PSI
					0150 150 PSI

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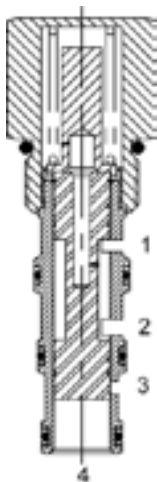


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DG-PCB PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE WITH BY-PASS



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure compensating valve, restrictive type with bypass.

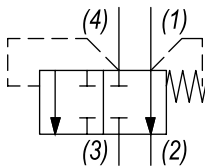
OPERATION

The DG-PCB allows pressure compensated or proportional flow from (1) to (2) regulated by the pressure differential across (1) and (4) with a bypass of (4) to (3). The spring chamber is constantly connected at (1).

FEATURES

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

HYDRAULIC SYMBOL

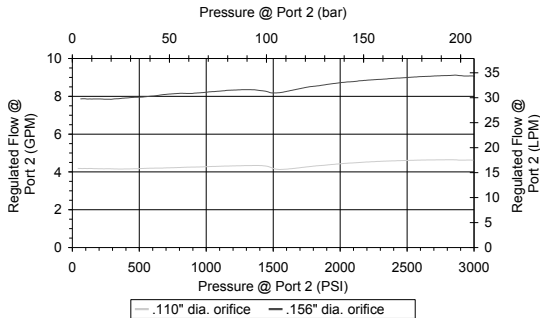


DG-PCB is not intended for differential pressure more than 1500 PSI from (4) to (3). Consult Factory for abrupt pressure change applications that exceed 1500 PSI, for alternative products.

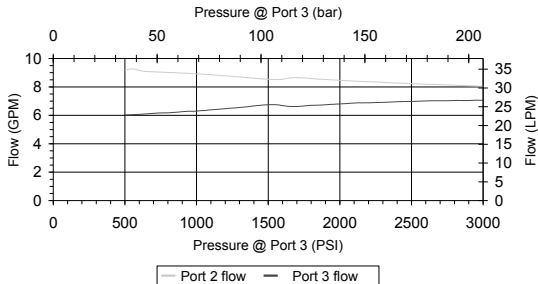
PERFORMANCE

Actual Test Data (Cartridge Only with 150 PSI Spring)

10 GPM Supply flow, .110" Orifice, 150 PSI spring
15 GPM Supply flow, .156" Orifice, 150 PSI spring - 1500 PSI load on port (3)



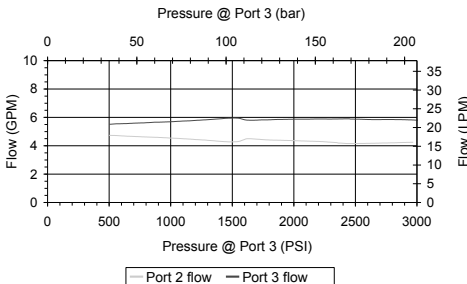
Priority port (2) load: 1500-1700 psi, .156" dia orifice, 15 gpm supply
not intended for differential pressure > 1500 psi port (4) to port (3)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
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	.38 lbs (.17 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

Priority port (2) load: 1500-1700 PSI, .110" dia orifice, 10 GPM supply
not intended for differential pressure > 1500 PSI port (4) to port (3)



WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

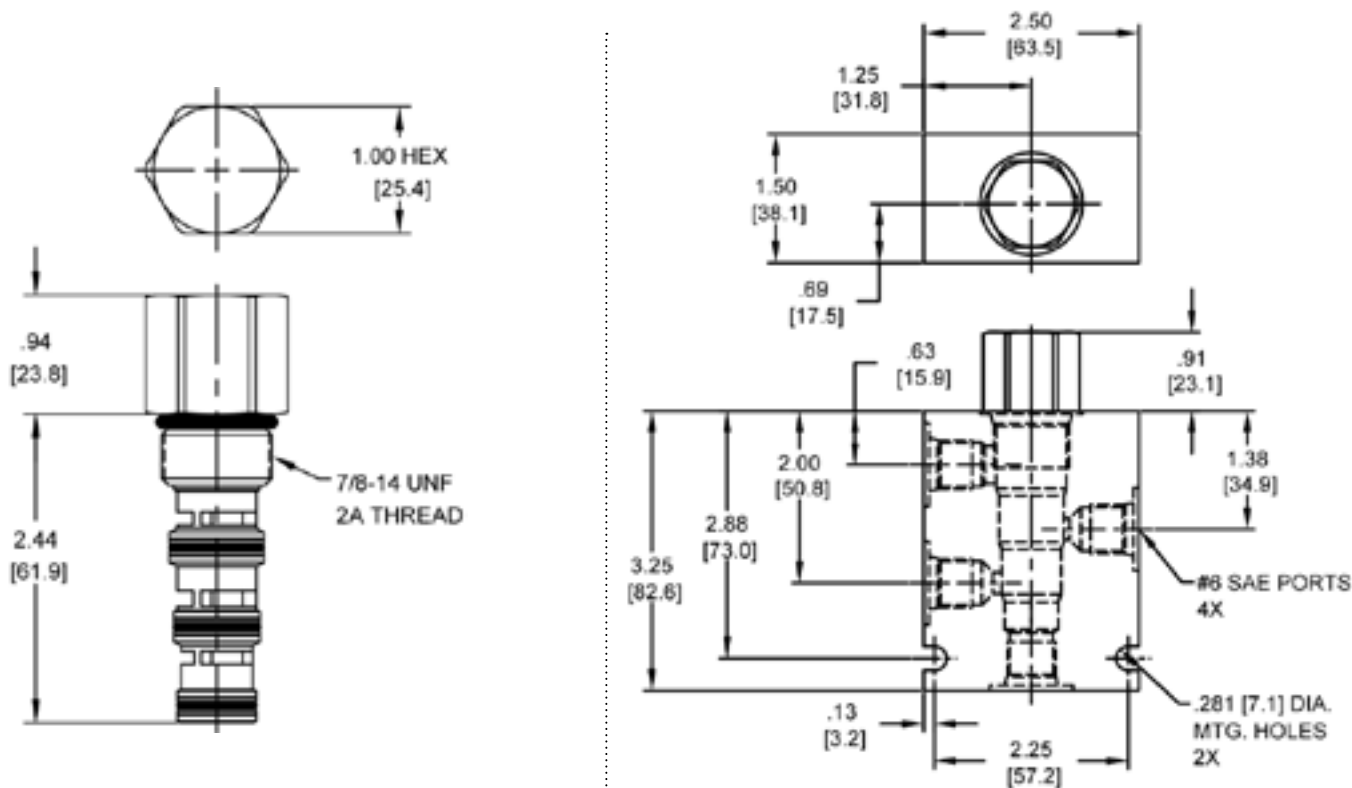


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PCB	-	-	-	-
<u>OPTIONS</u>			<u>BODIES</u>	
Buna Standard	00		Blank	Without Body
Viton Standard	V0		N	1/4" NPTF Ports
			S	#6 SAE Ports
<u>PRESSURE DIFFERENTIAL</u>				
	0150	150 PSI		
	0250	250 PSI		
Differential Pressure Across External Controlling Orifice				

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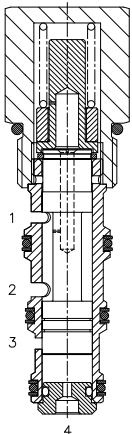


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DG-TCB PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE WITH BYPASS



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure compensating valve, restrictive type with bypass.

OPERATION

The DG-TCB allows pressure compensated or proportional flow from (1) to (2) regulated by the pressure differential across (1) and (4) with a bypass of (4) to (3). The spring chamber is constantly connected at (1).

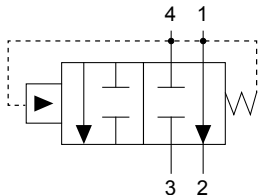
FEATURES

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



Bypass line (3) can be pressurized.

HYDRAULIC SYMBOL



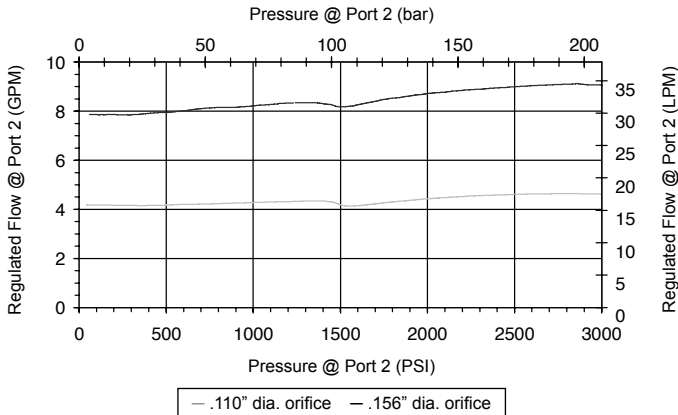
PERFORMANCE

Actual Test Data (Cartridge Only)

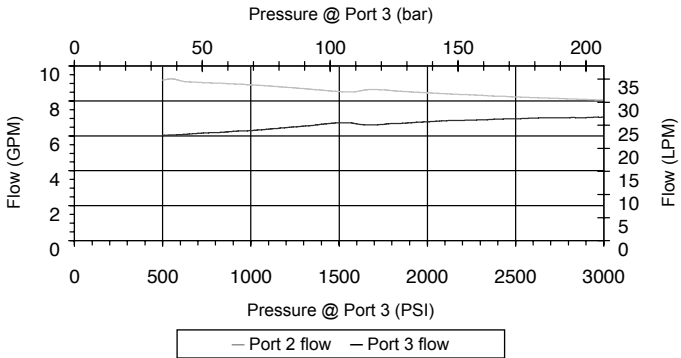
VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
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	.38 lbs (.17 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 4W
Cavity Tools Kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

10 GPM supply flow, .110" orifice, 150 PSI spring - 15 GPM supply flow,
.156" orifice, 150 PSI spring - 1500 PSI load on port 3



Priority port 2 load: 1500 - 1700 PSI, .156" dia orifice, 15 GPM supply
not intended for differential pressure > 1500 PSI port 4 to port 3



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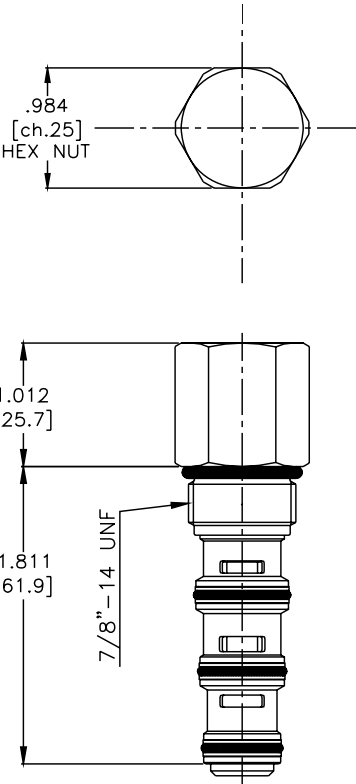
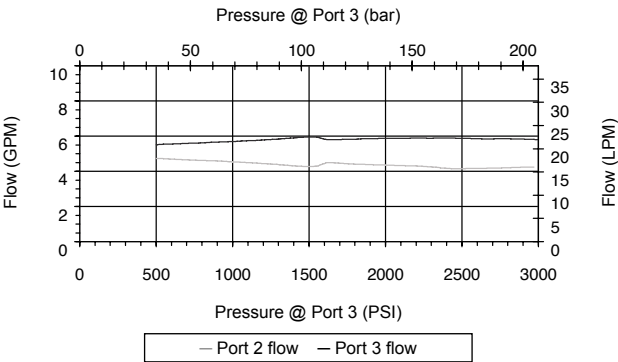
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DIMENSIONS

Priority port 2 load: 1500 - 1700 PSI, .110" dia orifice, 10 GPM supply
not intended for differential pressure > 1500 PSI port 4 to port 3



(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DG-TCB		-	-	-	-
		OPTIONS		BODIES	
		Buna Standard 00		Blank Without Body	
		Viton Standard V0		N 3/8" BSP Ports	
				S #6 SAE Ports	
				PRESSURE SETTINGS	
				014 14 bar (200 PSI)	
				020 20 bar (285 PSI)	
				032 32 bar (460 PSI)	

Differential Pressure Across
External Controlling Orifice

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PP-PCC FIXED PRESSURE COMPENSATING REGULATOR VALVE - RESTRICTIVE TYPE



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, pressure compensating regulator valve (restrictive type).

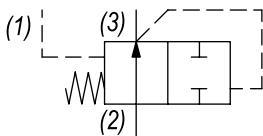
OPERATION

The PP-PCC-00 with an external orifice beyond port (3) and sensed by port (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system downstream of (3), or in the inlet at (2) as long as pressure at (3) is above (1) by more than spring setting chosen and pump supply is in excess of demand. The valve's spool maintains a constant differential pressure across an external orifice, thereby regulating the hydraulic flow rate across this external orifice (see options table for pressure ranges). When used with an orifice as described above, it functions as a restrictive type regulator, delivering pump flow through the external orifice. All ports may be fully pressurized.

FEATURES

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

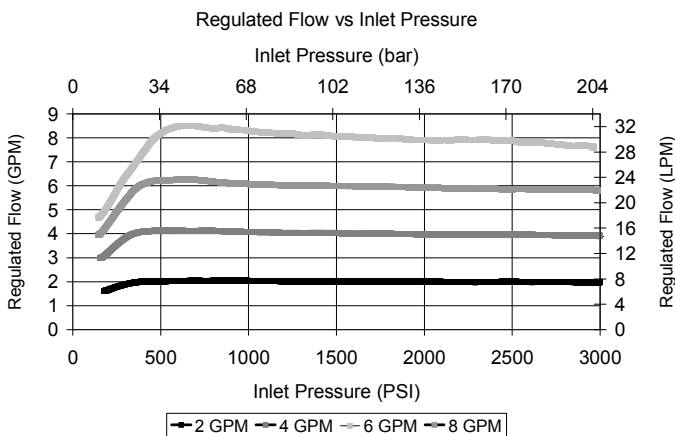
HYDRAULIC SYMBOL



Can be used as a logic element. Fixed setting pressure reducing valve. For adjustable setting see PP-PCD. PP-PCC-00-0100 is recommended for regulated flows up to 4.0 GPM only. PP-PCC-00-0220 is recommended for regulated flows up to 8.0 GPM. For fixed pressure reducing/relieving valve see PP-PCP.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Ratio	Area of Pilot is equal to the area at Port (3)
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	25 ft-lbs (34 Nm)
Cavity	POWER 3W
Cavity Form Tool (Finishing)	40500024
Seal Kit	21191111

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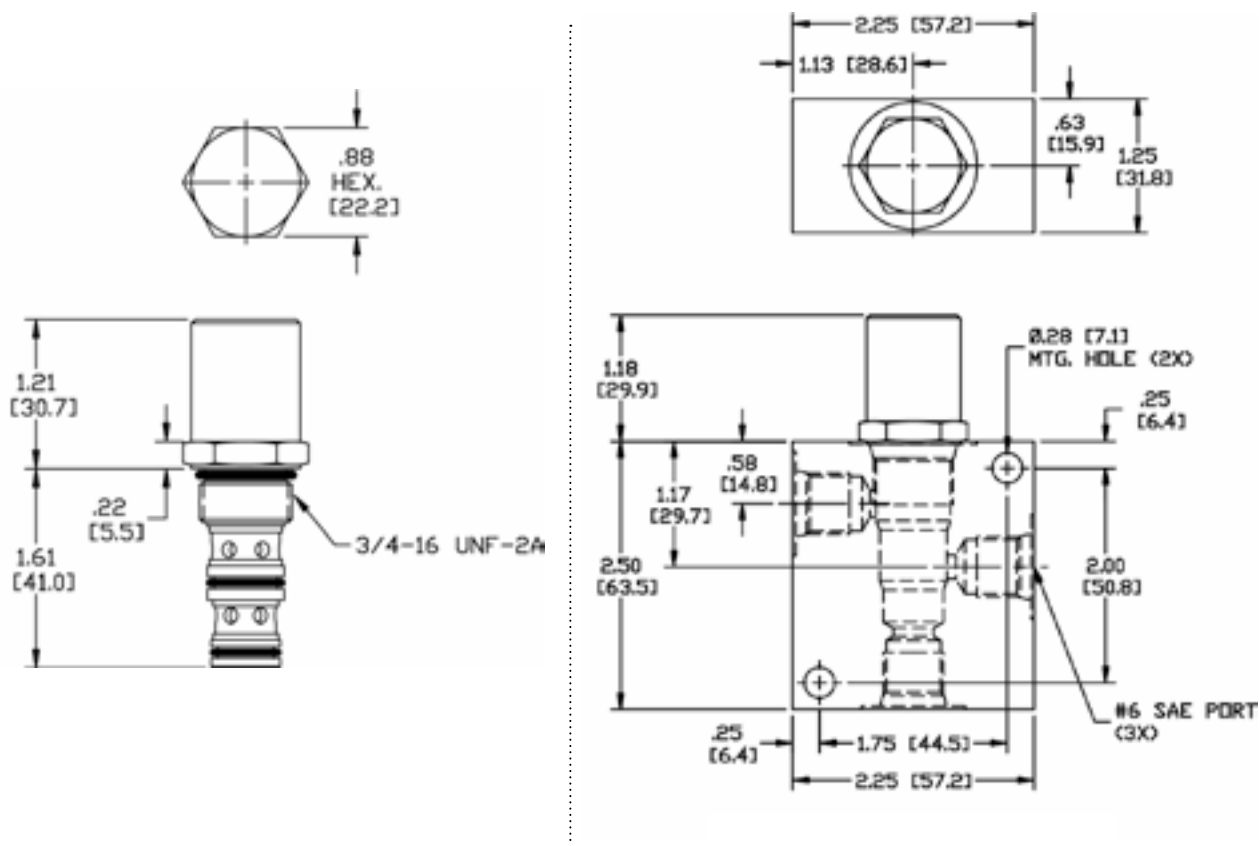


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DIMENSIONS



Body Weight: .56 lbs (.25 kg)

ORDERING INFORMATION

PP-PCC		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				S
*Urethane, Standard	U0				Without Body
Buna, Screen	A0				#6 SAE Ports
Viton, Screen	W0				
Urethane, Screen	Y0				
				A P SETTING	
				0100	100 PSI
				0220	220 PSI

*Urethane seals are recommended
when inlet pressures exceed 1500 PSI

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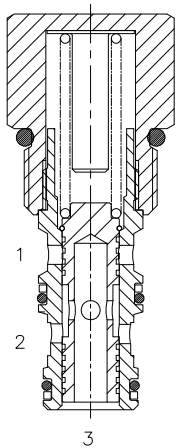


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DF-CP2 PRESSURE COMPENSATING/REDUCING VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 2 ways pressure compensating/reducing valve.

OPERATION

The DF-CP2 allows pressure compensated flow from (2) to (3) regulated by the pressure present at (1). Pressure differential between (3) and (1) is fixed at 8/14/18 bar (according to the pressure settings). These are minimum values, increasing with the flow because of the pressure drop through the valve (see graph). When used with (1) connected to a drain line, it works as pressure reducing valve.

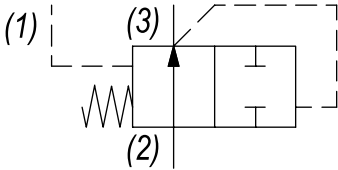
FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Spring range 8 to 18 bar.



Pressure compensator for 2 way flow control, typically used with an external orifice inline with port (3). Port (1) should sense upstream pressure of orifice.

HYDRAULIC SYMBOL



PERFORMANCE

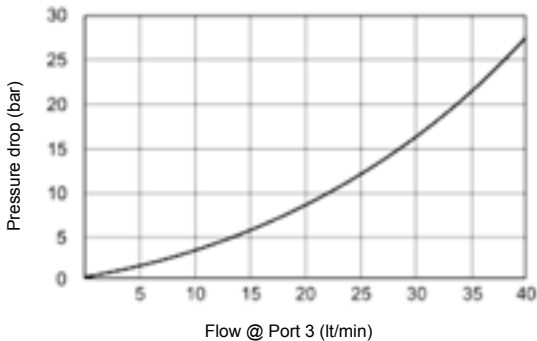
Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	35 ml/min @ 250 bar
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-25° to +95°C
Weight	.35 lbs (.16 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	33 ft-lbs (45 Nm)
Cavity	DELTA 3W
Cavity Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	210902025

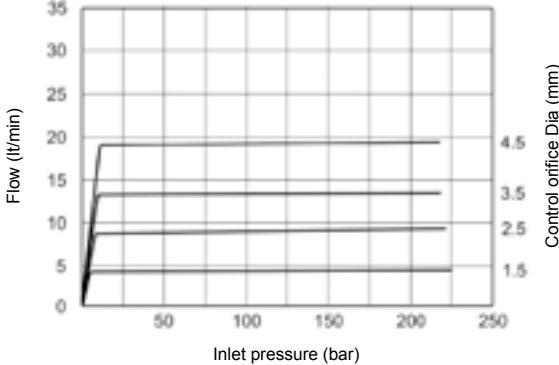
Pressure Drop (bar) vs. Flow (lt/min)

For various pressure compensator settings (bar)



DF-CP2 008 - Flow (lt/min) vs. inlet pressure (bar)

For various orifice diameters (mm)



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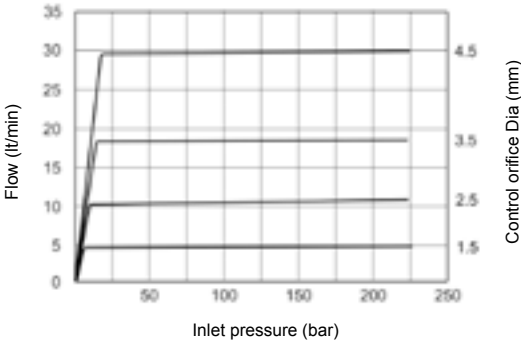
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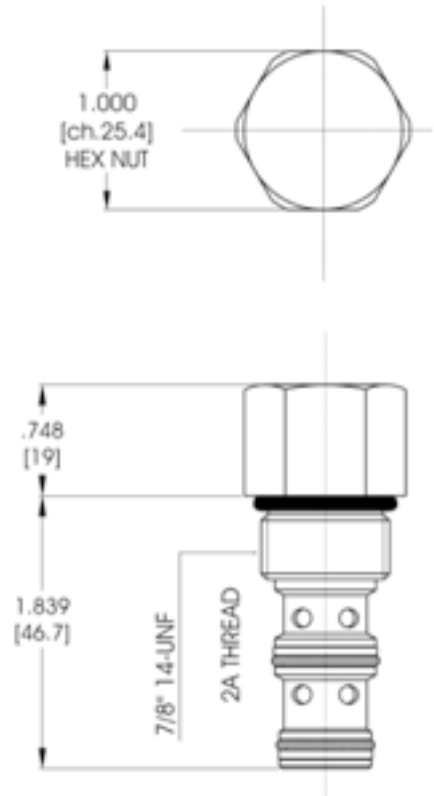
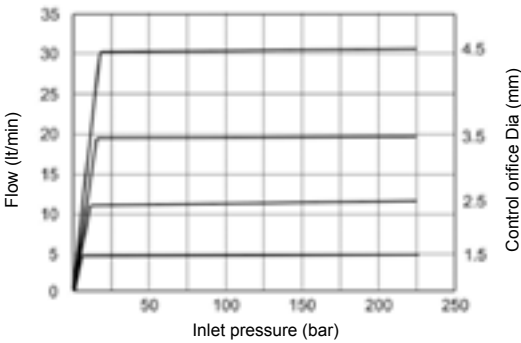
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DIMENSIONS

DF-CP2 014 - Flow (lt/min) vs. inlet pressure (bar)
For various orifice diameters (mm)



DF-CP2 018 - Flow (lt/min) vs. inlet pressure (bar)
For various orifice diameters (mm)



(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DF-CP2		-	-	-	-
		<u>OPTIONS</u>		<u>BODIES</u>	
		Buna Standard 00		Blank Without Body	
		Viton Standard V0		N 3/8" BSP Ports	
				S #6 SAE Ports	
		<u>PRESSURE SETTINGS</u>			
		008 8 bar (115 PSI)			
		014 14 bar (200 PSI)			
		018 18 bar (260 PSI)			

Differential Pressure Across
External Controlling Orifice

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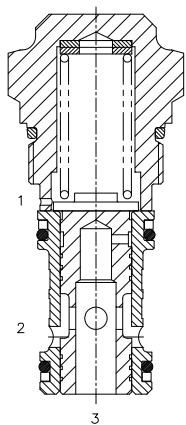


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QC-CP2 PRESSURE COMPENSATING/REDUCING VALVE



DESCRIPTION

Special cavity, 2 ways pressure compensating/reducing valve.

OPERATION

The QC-CP2 allows pressure compensated flow from (2) to (3) regulated by the pressure present at (1). Pressure differential between (3) and (1) is fixed at 8/14/18/24 bar (according to the pressure settings). These are minimum values, increasing with the flow because of the pressure drop through the valve (see graph). When used with (1) connected to a drain line, it works as a fix setting pressure reducing valve.

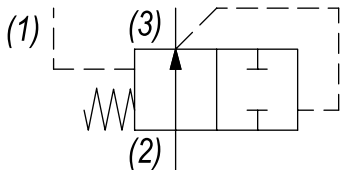
FEATURES

- Hardened parts for long life.
- Spring range 8 to 24 bar.



Pressure compensator for 2 way flow control, typically used with an external orifice inline with port (3). Port (1) should sense upstream pressure of orifice.

HYDRAULIC SYMBOL



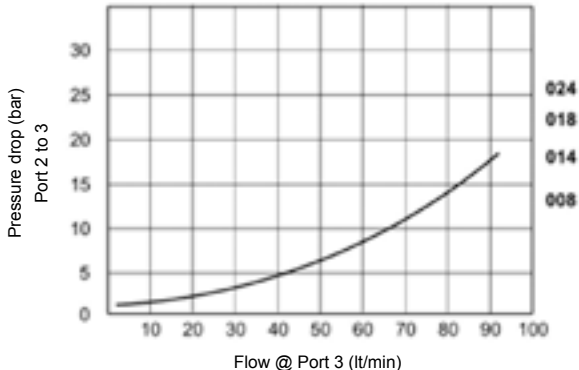
PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

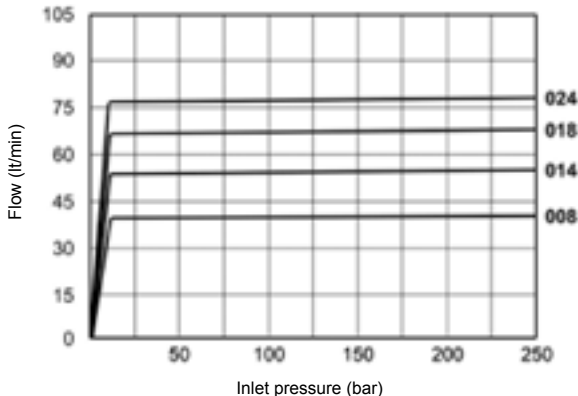
Nominal Flow	19 GPM (70 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	35 ml/min @ 250 bar
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.35 lbs (.16 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	52 ft-lbs (70 Nm)
Cavity	T031 (Special)
Cavity Tools Kit (form tool, reamer, tap)	K-T031
Seal Kit	210902012

Pressure drop (bar) vs. flow (lt/min)



Flow (lt/min) vs. inlet pressure (bar)

For various press. compensator valve settings - Re: control orifice diameter: 5.5 mm



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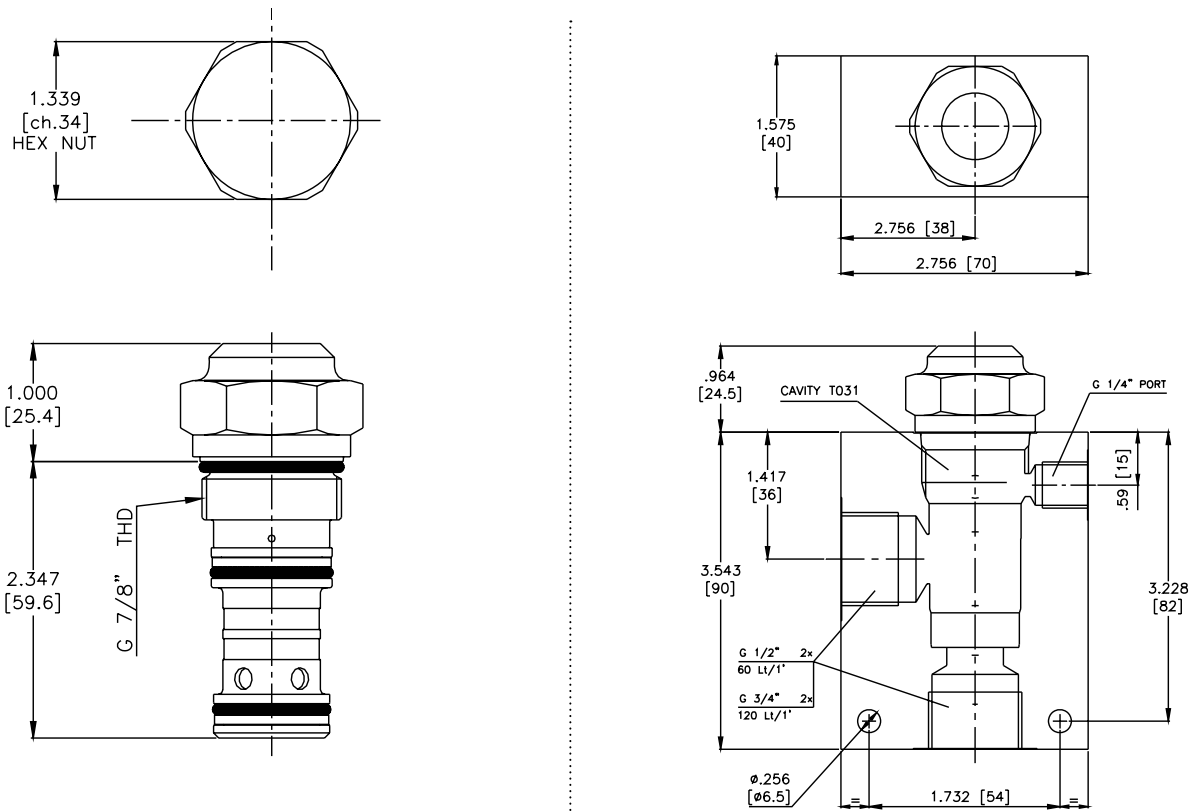


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DIMENSIONS



(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

QC-CP2		-	-	-	-
		OPTIONS		BODIES	
		Buna Standard 00		Blank Without Body	
		Viton Standard V0		N 1/2" BSP Ports	
				S #8 SAE Ports	
				PRESSURE SETTINGS	
				008 8 bar (115 PSI)	
				014 14 bar (200 PSI)	
				018 18 bar (260 PSI)	
				024 24 bar (340 PSI)	

Differential Pressure Across
External Controlling Orifice

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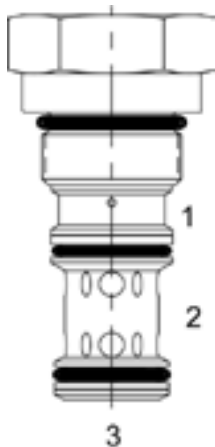


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TR-PCC PRESSURE COMPENSATING REGULATOR VALVE – RESTRICTIVE TYPE



DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnom" series, pressure compensating regulator valve (restrictive type).

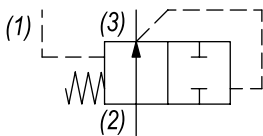
OPERATION

The TR-PCC with an external orifice beyond port (3) and sensed by port (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system downstream of (3), or in the inlet at (2) as long as pressure at (3) is greater than (1) by more than spring setting chosen and pump supply is in excess of demand. The valve's spool maintains a constant differential pressure across an external orifice, thereby regulating the hydraulic flow rate across this external orifice (see table for pressure ranges). When used with an orifice as described above, it functions as a restrictive type regulator, delivering pump flow through the external orifice. All ports may be fully pressurized.

FEATURES

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

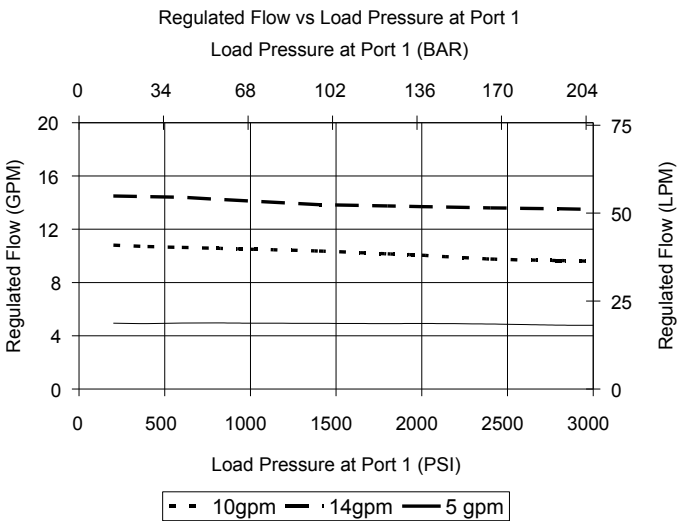
HYDRAULIC SYMBOL



Can be used as a logic element. Fixed setting pressure reducing valve. For adjustable setting see TR-PCD.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Seat Ratio	Area of Pilot is equal to the area at Port (3)
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	.54 lbs (.24 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	70 ft-lbs (95 Nm)
Cavity	TECNORD 3WS
Cavity Form Tool (Finishing)	40500033
Seal Kit	21191306

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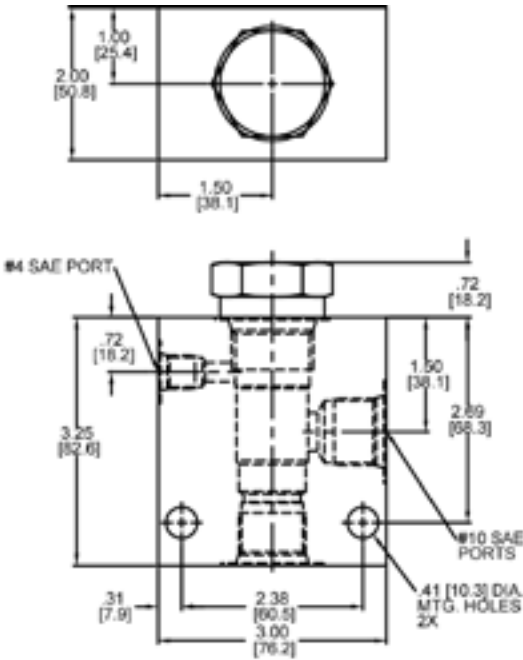
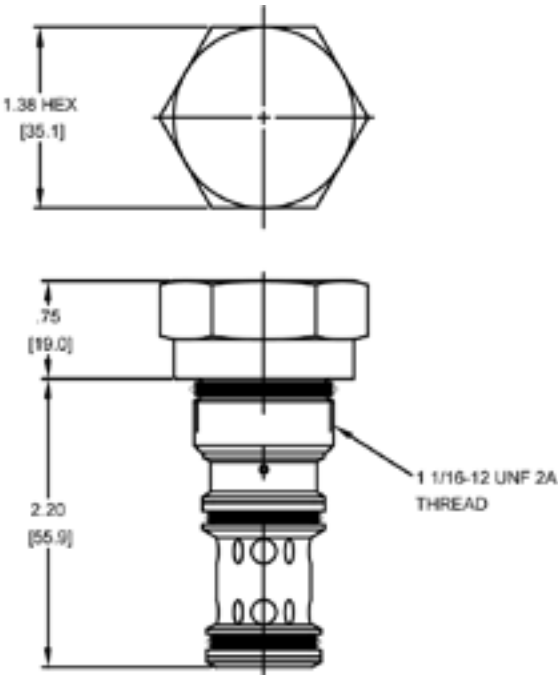


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DIMENSIONS



Body Weight: 1.56 lbs (.70 kg)

ORDERING INFORMATION

TR-PCC		-	-	-	-
OPTIONS					BODIES
Buna	OP				Blank
Viton	VP				S
					Δ P SETTING
					@ 1 GPM with Pilot Vented
					0080 80 PSI
					0150 150 PSI

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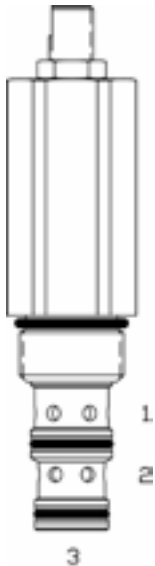


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DF-PCE ADJUSTABLE PRESSURE COMPENSATING VALVE, BYPASS TYPE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, spring adjustable pressure compensating valve, bypass type.

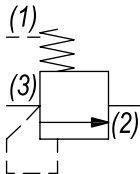
OPERATION

The DF-PCE with an external orifice in parallel with ports (3) and (1) maintains a constant flow rate across the external orifice, 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 greater than (1). The valve's spool maintains a constant differential pressure across an external orifice, thereby regulating the hydraulic flow rate across this external orifice (see table for pressure ranges). When used with an orifice as described above, it functions as a bypass type regulator, delivering pump flow through the external orifice.

FEATURES

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

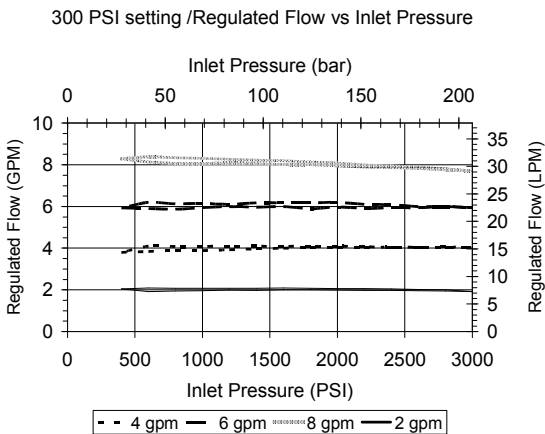
HYDRAULIC SYMBOL



Can be used as an adjustable logic element. Great as an adjustable pressure setting regulation device in brake, transmission & cooling systems, because the spring chamber is separately drained, the outlet can be used for lower pressure functions. For fixed version see DF-PCR-oP. For higher spring differential pressure ranges consult factory.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Seat Ratio	Area of Pilot is equal to the area at Port (3)
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	.52 lbs (.23 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	21191210

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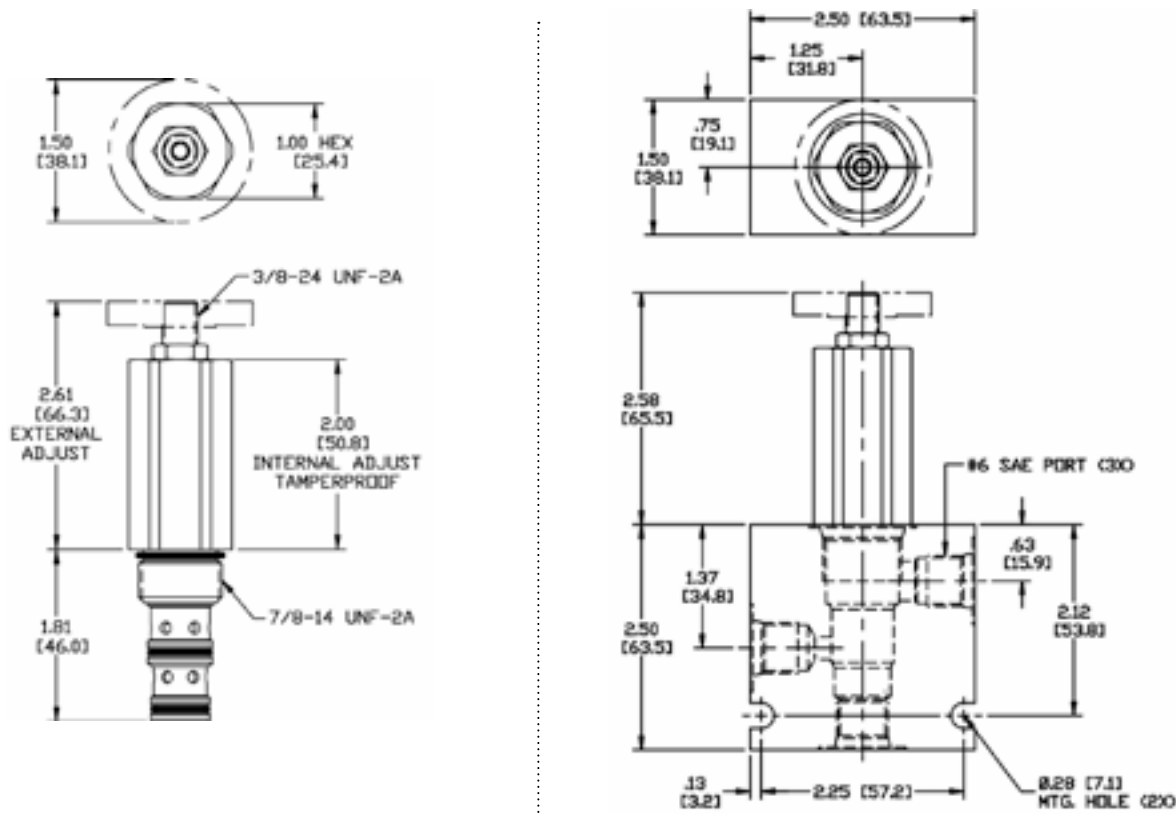


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-PCE		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		
		Buna, Internal Adjust	0I		
		Viton, Internal Adjust	VI		
		Buna, Tamper Proof	0T		
		Viton, Tamper Proof	VT		

PRESSURE RANGE

0300 100 - 300 PSI

Differential Pressure Across
External Controlling Orifice

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 0200 - 200 PSI

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SL-PCE ADJUSTABLE PRESSURE COMPENSATING REGULATOR VALVE



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, pressure compensating regulator valve.

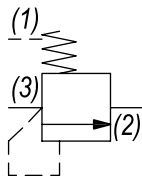
OPERATION

The SL-PCE with an external orifice in parallel with ports (3) and (1) maintains a constant flow rate across the external orifice, 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). The valve's spool maintains a constant differential pressure across the external orifice, thereby regulating the hydraulic flow rate across the external orifice (see options table for pressure ranges). When used with an orifice as described above, it functions as a priority type regulator, delivering pump flow first to the external orifice, then bypassing excess to (2). All ports may be fully pressurized.

FEATURES

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

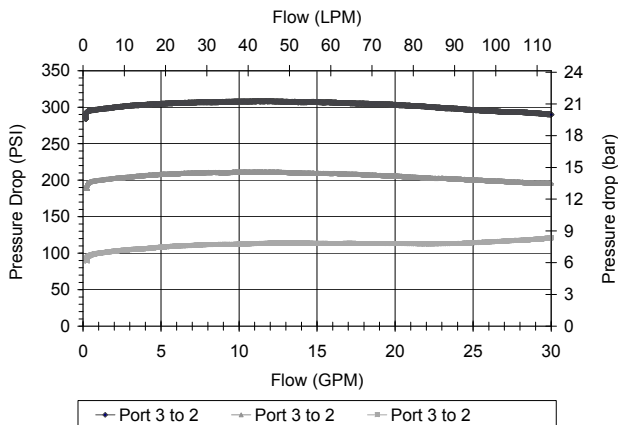
HYDRAULIC SYMBOL



Can be used as an adjustable logic element. Great as an adjustable pressure setting regulation device in brake, transmission & cooling systems. Because the spring chamber is separately drained, the outlet flow can be used for lower pressure functions. For fixed version see SL-PCA-oP. For higher spring differential pressure ranges consult factory.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Seat Ratio	Area of Pilot is equal to the area at Port (3)
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	1.15 lbs (.52 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	21191406

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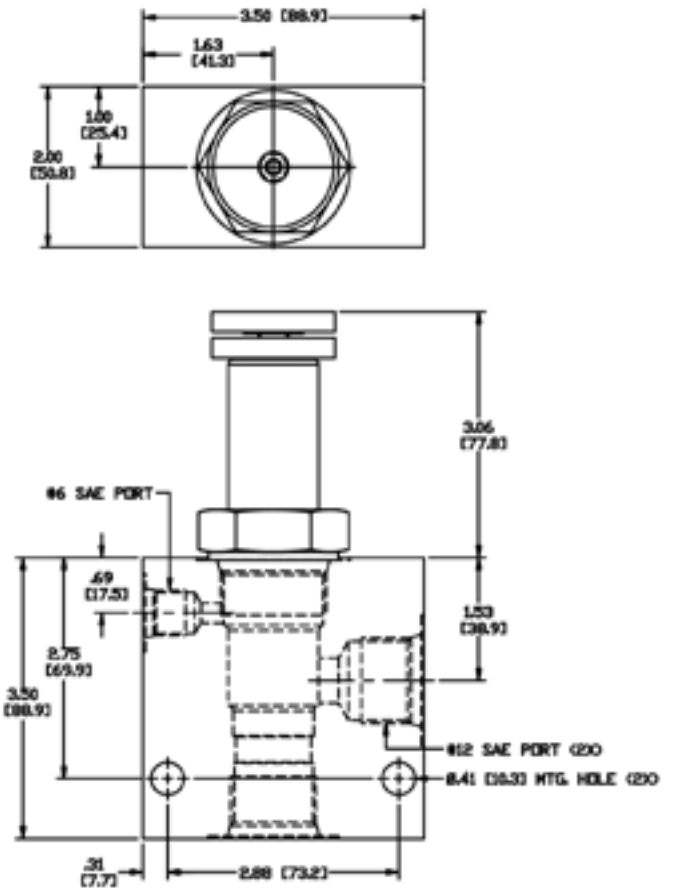


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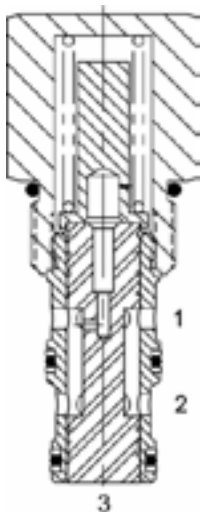
ORDERING INFORMATION



SL-PCE -

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DF-PCS PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure compensating valve, restrictive type.

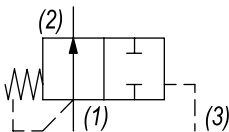
OPERATION

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

FEATURES

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

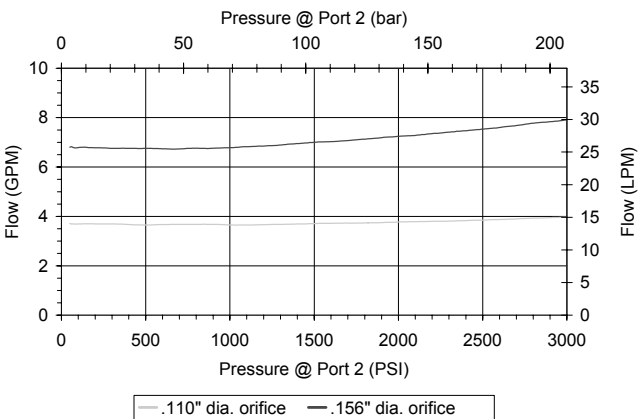
HYDRAULIC SYMBOL



Pressure compensator for flow control, typically used with an external orifice inline with port (1). Port (3) should sense upstream pressure of orifice.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
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	.35 lbs (.16 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	21191210

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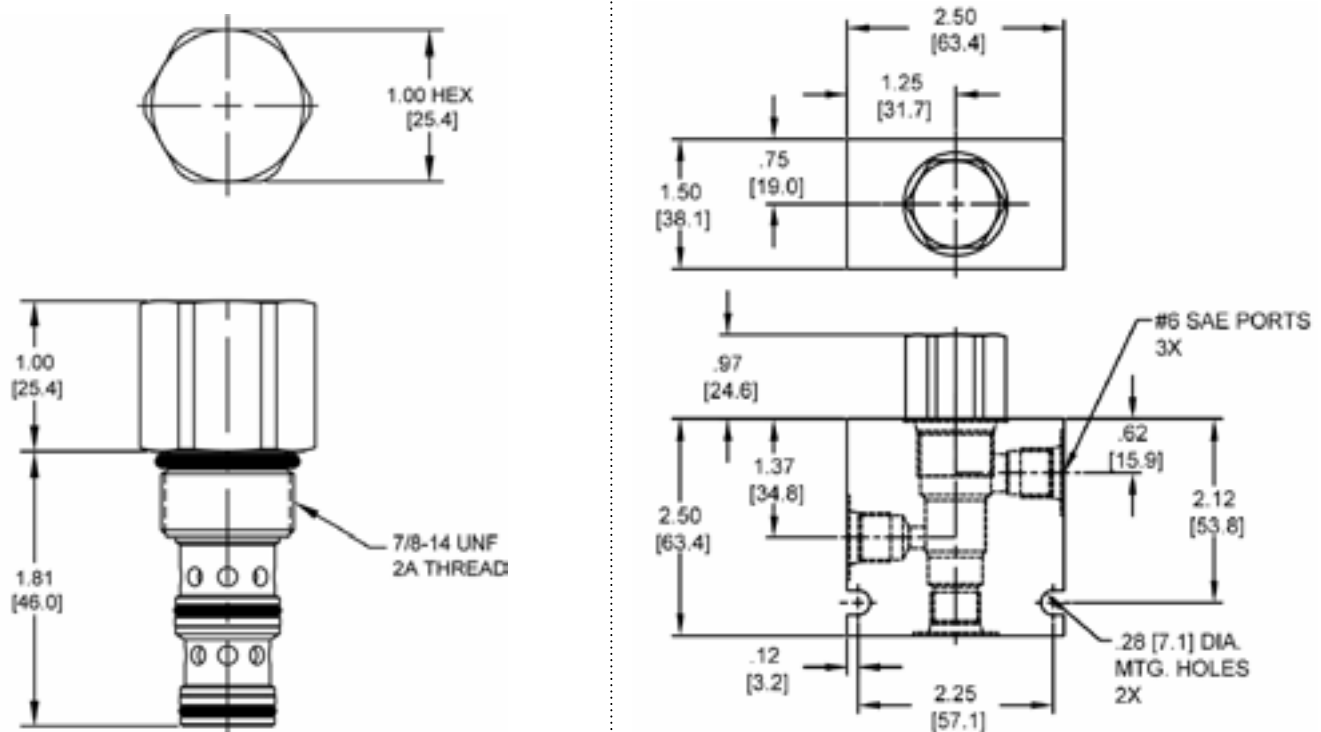


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-PCS		-	-	-	-
		OPTIONS		BODIES	
		Buna Standard		Blank	
		Viton Standard		N	
				S	
				PRESSURE DIFFERENTIAL	
				0150 150 PSI	
				0450 450 PSI	
				Differential Pressure Across	
				External Controlling Orifice	

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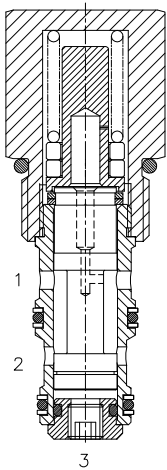


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DF-TCS PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure compensating valve, restrictive type.

OPERATION

The DF-TCS allows pressure compensated flow from (1) to (2) regulated the pressure present at (3). Pressure differential between (1) and (3) is fixed at 8/24 bar (according to the pressure settings). These are minimum values increasing with the flow because of the pressure drop through the valve (see graph).

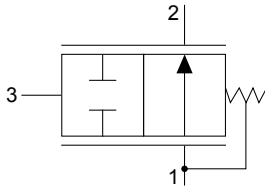
FEATURES

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



Pressure compensator for 2 way flow control, typically used with an external orifice inline with port (3). Port (1) should sense upstream pressure of orifice.

HYDRAULIC SYMBOL



PERFORMANCE

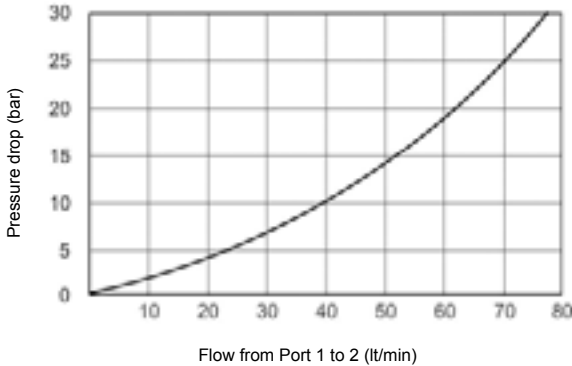
Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	35 ml/min @ 250 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	.35 lbs (.16 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	33 ft-lbs (45 Nm)
Cavity	DELTA 3W
Cavity Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	210902026

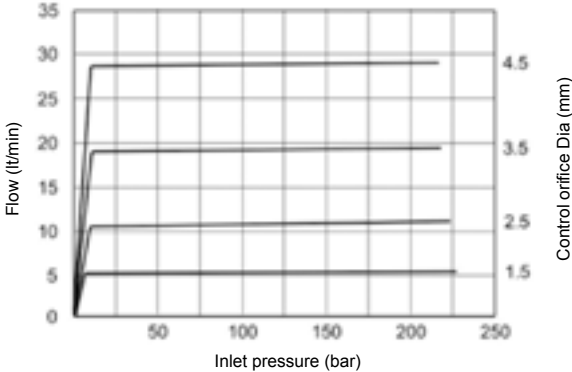
Pressure Drop (bar) vs. Flow (lt/min)

For various pressure compensator settings (bar)



DF-TCS 008 - Flow (lt/min) vs. inlet pressure (bar)

For various orifice diameters (mm)



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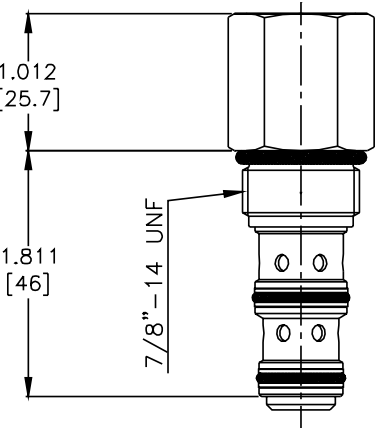
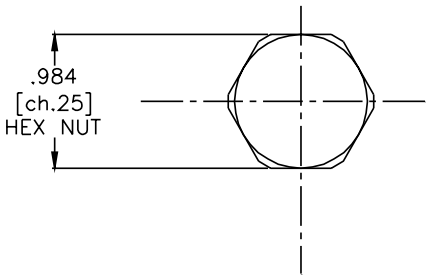
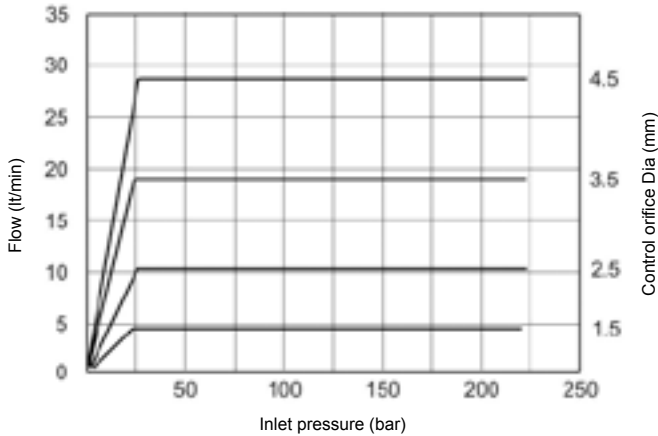
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DIMENSIONS

DF-TCS 024 - Flow (lt/min) vs. inlet pressure (bar)

For various orifice diameters (mm)



(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DF-TCS		-	-	-	-
		<u>OPTIONS</u>		<u>BODIES</u>	
		Buna Standard 00		Blank Without Body	
		Viton Standard V0		N 3/8" BSP Ports	
				S #6 SAE Ports	
		<u>PRESSURE SETTINGS</u>			
		008 8 bar (115 PSI)			
		024 24 bar (340 PSI)			
		Differential Pressure Across External Controlling Orifice			

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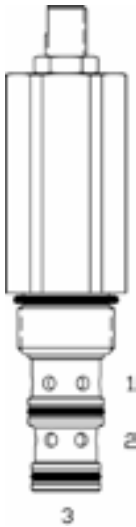


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DF-PCT ADJUSTABLE PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure compensating valve, restrictive type.

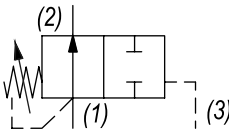
OPERATION

The DF-PCT with an external orifice in front of port (1) allows pressure compensated flow from (1) to (2), regulated by the pressure present at (3). The spring chamber is constantly vented at (1).

FEATURES

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

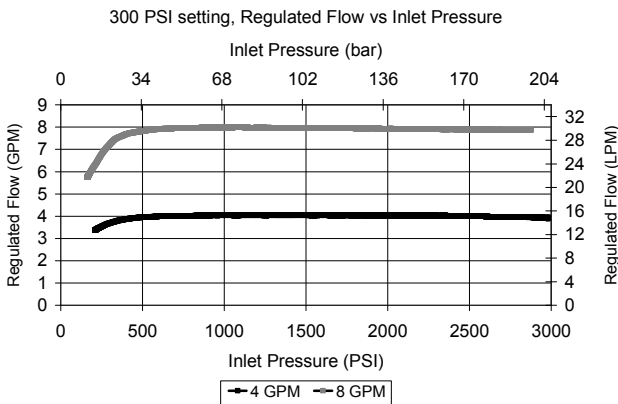
HYDRAULIC SYMBOL



Can be used as an adjustable logic element. For fixed version see DF-PCS. For higher spring differential pressure ranges consult factory.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
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	.60 lbs (.27 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	21191210

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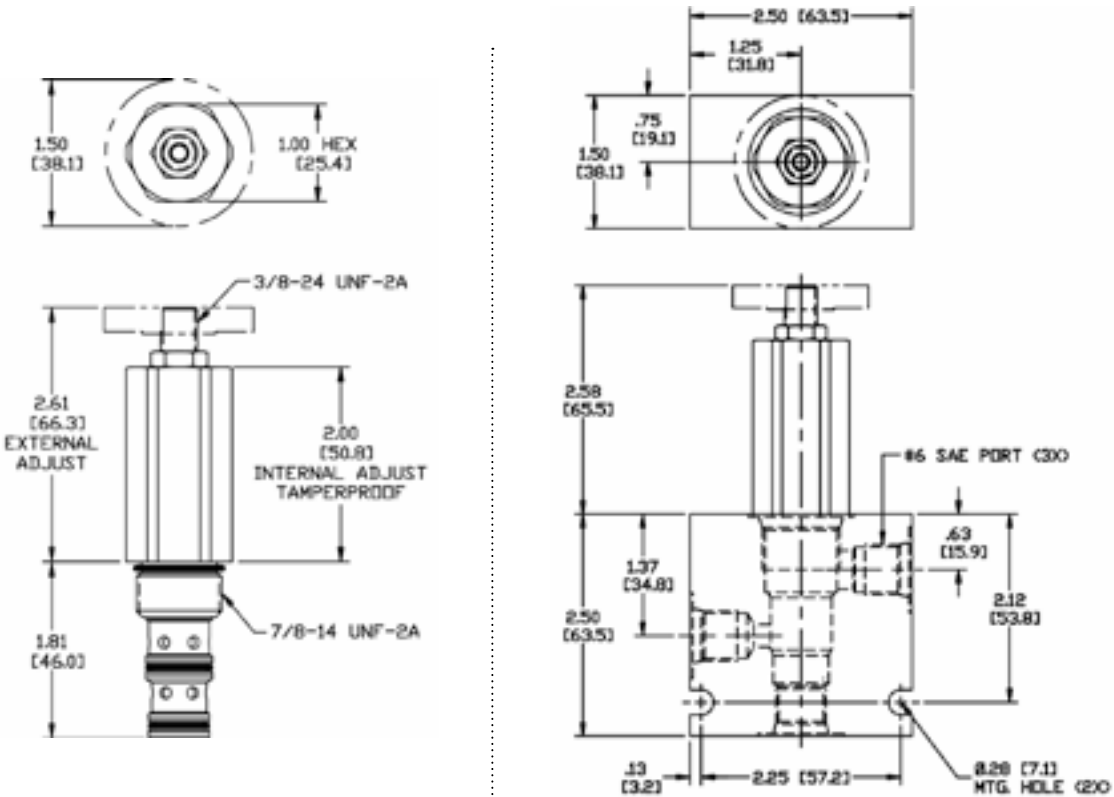


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-PCT	-	-	-	-
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			
Buna, Internal Adjust	0I			
Viton, Internal Adjust	VI			
Buna, Tamper Proof	0T			
Viton, Tamper Proof	VT			
		0300	50 - 300 PSI	

Differential Pressure Across
External Controlling Orifice

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 0200 - 200 PSI

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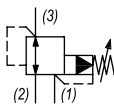


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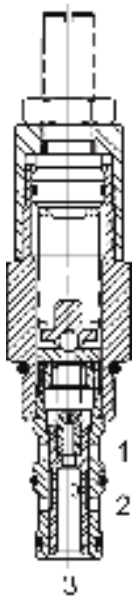
PRESSURE REDUCING/RELIEVING VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3000	38	207	7/8-14	DF-PRP	MP88
	20	3000	76	207	1 5/16-12	SK-PRP	MP90
	10	4000	38	276	7/8-14	DF-PWP	MP92

TYPICAL SCHEMATIC

Typical application for the PRP and PWP is multi-system pressure setting. System relief pressure must be greater than reduce pressure setting.

DF-PRP PILOT OPERATED, PRESSURE REDUCING, RELIEVING VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pilot operated, pressure reducing, relieving valve.

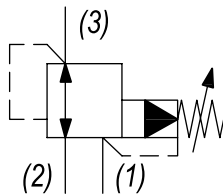
OPERATION

The DF-PRP in its steady state, allows flow to pass from (2) to (3), with the spring chamber constantly drained at (1). When a pre-determined pressure is reached at (3), the spool shifts to restrict input flow at (2), thereby reducing (restricting) flow. If valve and pressure at port (3) exceeds setting, spool shift to open passage at port (1), thereby regulating pressure at port (3) by relieving excess flow. The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

HYDRAULIC SYMBOL

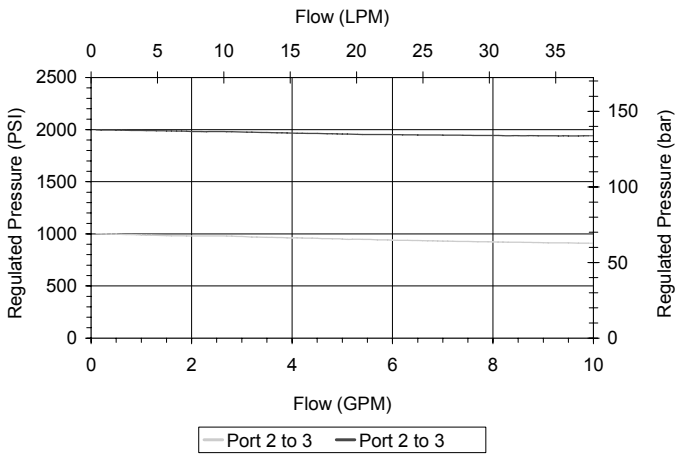
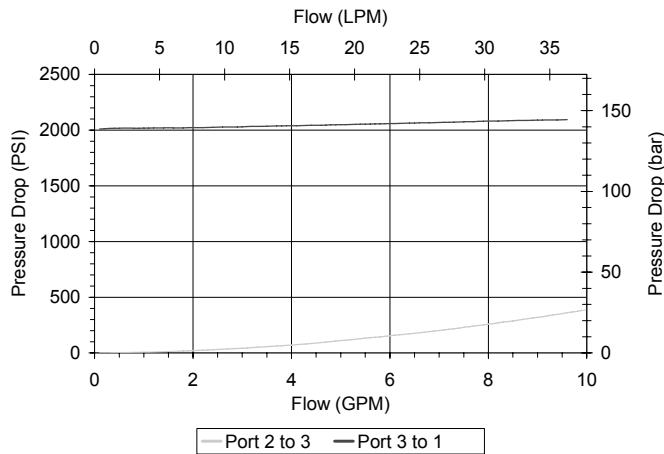


PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	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	.59 lbs (.27 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



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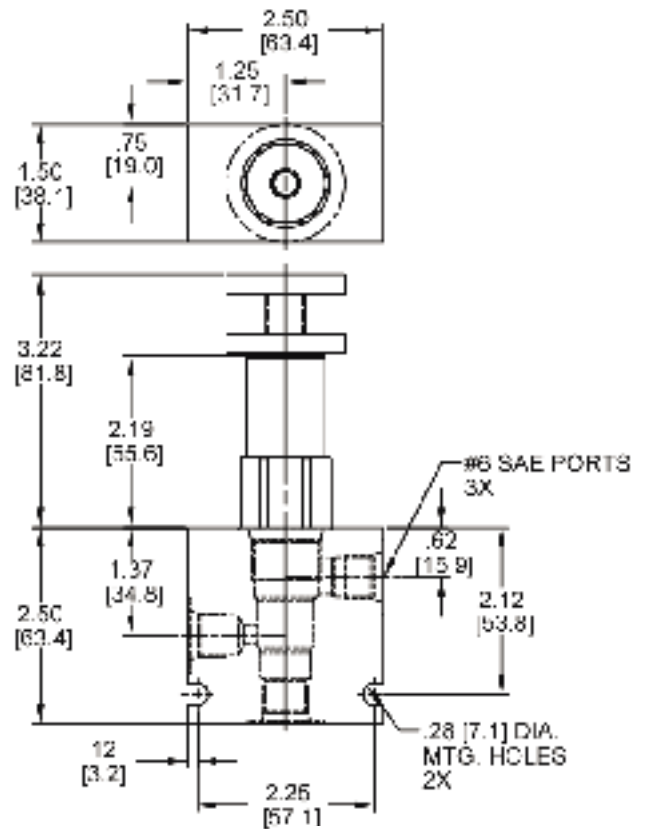


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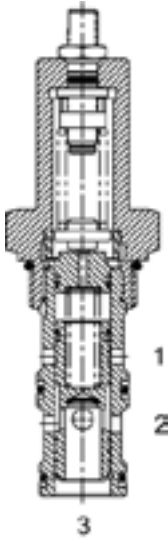
ORDERING INFORMATION



DF-PRP	-	-	-
	├──	├──	├──
	│	│	│
<u>OPTIONS</u>			<u>BODIES</u>
Buna Standard 00			Blank Without Body
Viton Standard V0			N 1/4" NPTF Ports
Buna, Knob 0K			S #6 SAE Ports
Viton, Knob VK			
		└──	
			<u>PRESSURE RANGE</u>
		3000	100 - 3000 PSI

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SK-PRP PILOT OPERATED PRESSURE REDUCING, RELIEVING VALVE



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, pilot operated pressure reducing, relieving valve.

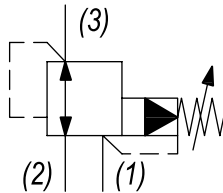
OPERATION

The SK-PRP in its steady state, allows flow to pass from (2) to (3), with the spring chamber constantly drained at (1). When a pre-determined pressure is reached at (3), the spool shifts to restrict input flow at (2), thereby reducing (restricting) flow. If the valve and pressure at port (3) exceeds setting, spool shifts to open passage at port (1), thereby regulating pressure at (3) by relieving excess flow. The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

HYDRAULIC SYMBOL

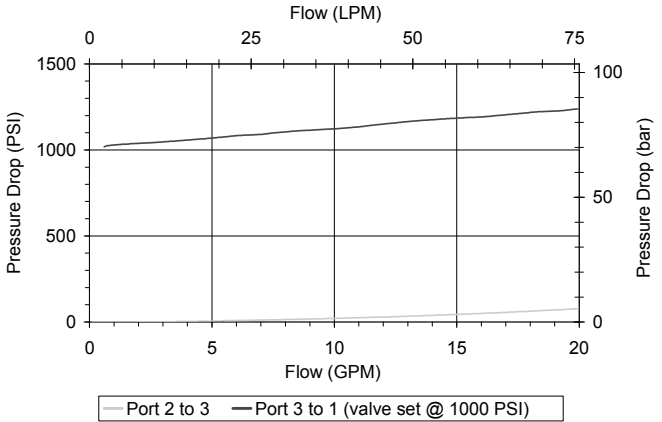
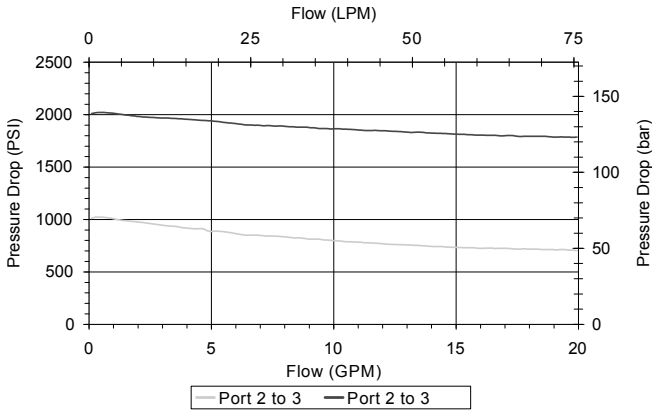


VALVE SPECIFICATIONS

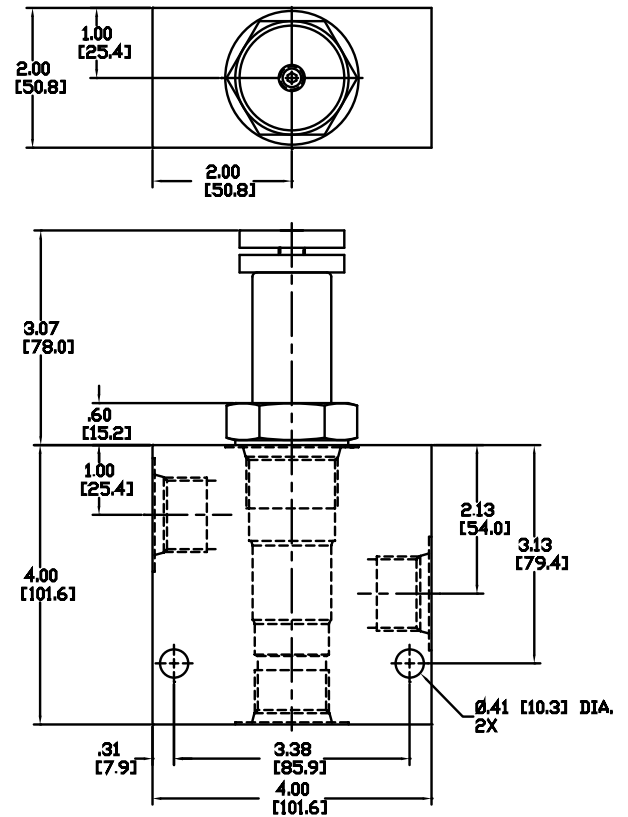
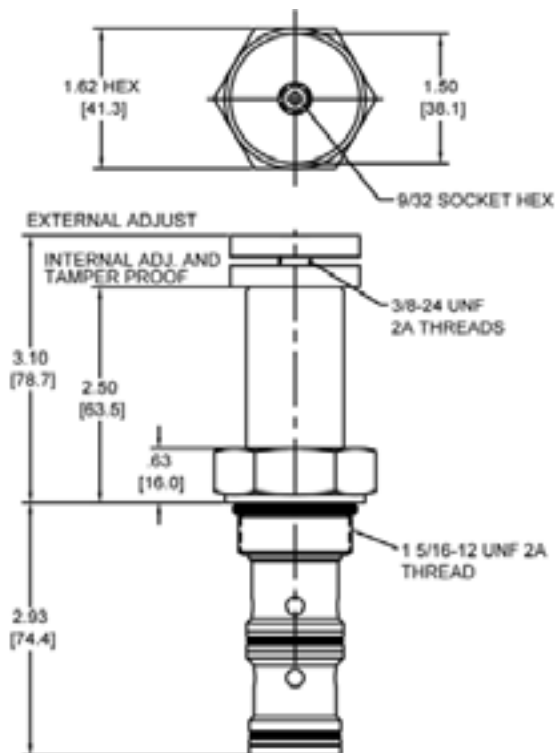
Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	500-3000 PSI (34-207 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	1.28 lbs (.58 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Cavity	SUPER 3W
Cavity Form Tool (Finishing)	40500018
Seal Kit	21191406

PERFORMANCE

Actual Test Data (Cartridge Only)



DIMENSIONS



Body Weight: 2.46 lbs (1.11 kg)

ORDERING INFORMATION

SK-PRP

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Knob	0K
Viton, Knob	VK
Buna, Internal Adjust	0I
Viton, Internal Adjust	VI
Buna, Tamper Proof	0T
Viton, Tamper Proof	VT

BODIES

Blank	Without Body
S	#12 SAE Ports

PRESSURE RANGE/SETTING

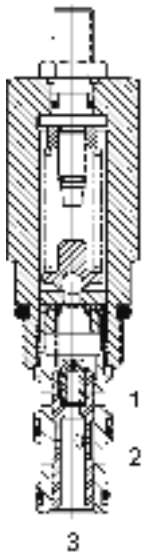
Ext./Int. Adjustable

3000 500 - 3000 PSI

Tamper Proof

Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

DF-PWP PILOT OPERATED PRESSURE REDUCING, RELIEVING VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pilot operated pressure reducing, relieving valve.

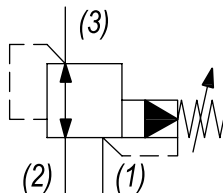
OPERATION

The DF-PWP in its steady state, allows flow to pass from (2) to (3), with the spring chamber constantly drained at (1). When a pre-determined pressure is reached at (3), the spool shifts to restrict input flow at (2), thereby reducing (restricting) flow. If valve and pressure at port (3) exceeds setting, spool shifts to open passage at port (1), thereby regulating pressure at port (3) by relieving excess flow. The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

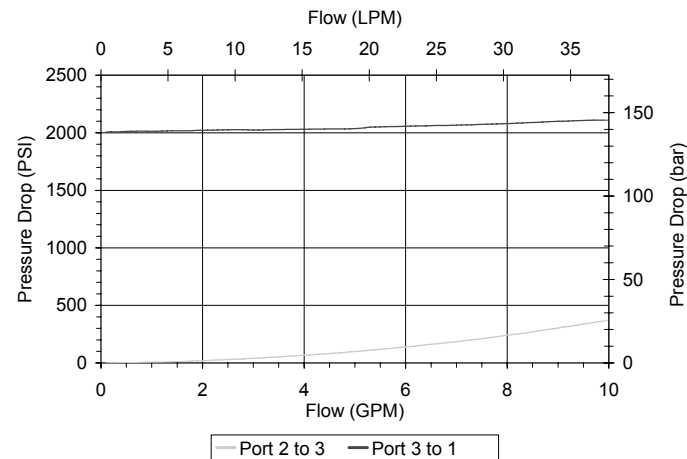
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



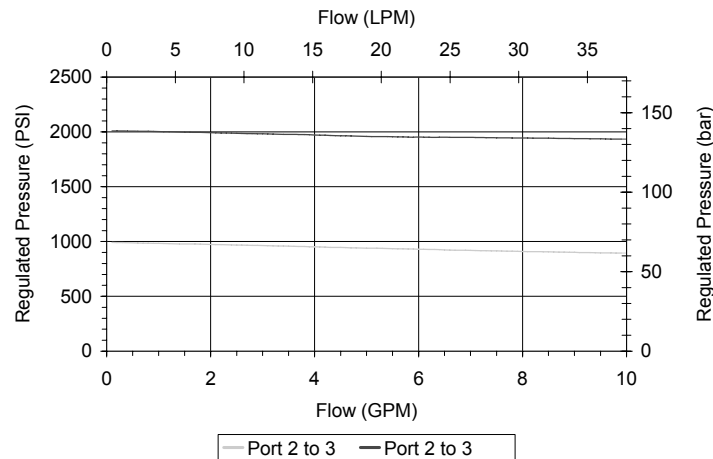
PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	4000 PSI (276 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	.57 lbs (.26 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



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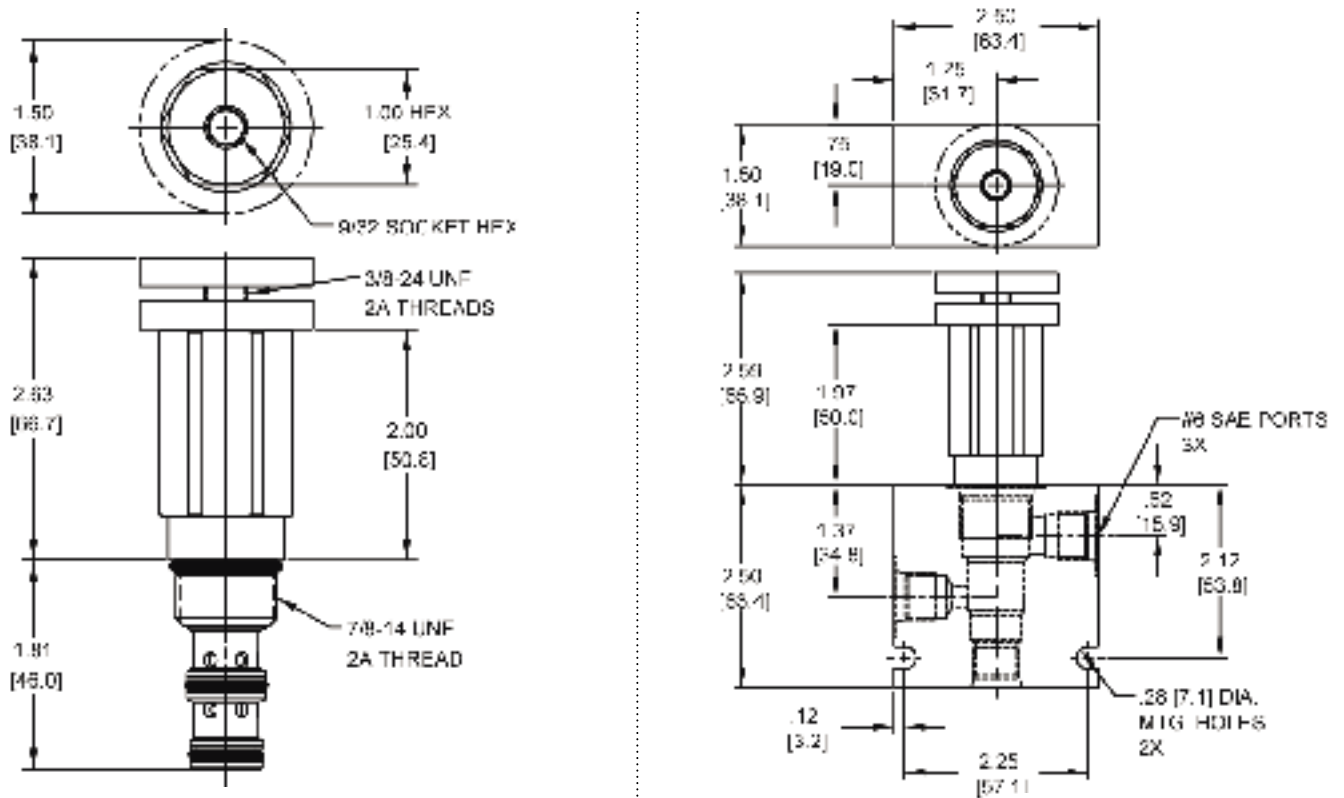


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-PWP

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Knob	0K
Viton, Knob	VK
Buna, Internal Adjust	0I
Viton, Internal Adjust	VI
Buna, Tamper Proof	0T
Viton, Tamper Proof	VT

BODIES

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

PRESSURE RANGE/SETTING

Ext./Int. Adjustable

4000 100 - 4000 PSI

Tamper Proof

Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

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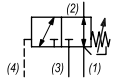
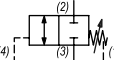
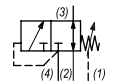
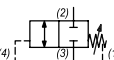
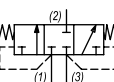
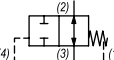
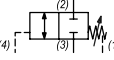
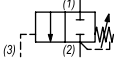
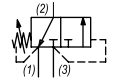
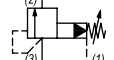
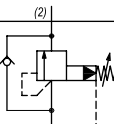


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SEQUENCE VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3000	38	207	7/8-14	DG-PSA	MP96
	10	3000	38	207	7/8-14	DG-PSC	MP98
	10	3000	38	207	7/8-14	DG-PSI	MP100
	10	3000	38	207	7/8-14	DG-PSO	MP102
	12	3000	45	207	7/8-14	DG-PSS	MP104
	10	3000	38	207	7/8-14	DG-PTC	MP106
	10	3000	38	207	7/8-14	DG-PTO	MP108
	10	3000	38	207	7/8-14	DF-PWE	MP110
	8	3000	30	207	7/8-14	DF-PWI	MP112
	40	3500	151	241	1 5/16-12	SL-PWA	MP114
	40	3500	151	241	1 5/16-12	SL-PWB	MP116

TYPICAL SCHEMATIC

Typical application for the PSO or PSC sequence valve is for a high/low application like a log splitter where the spring chamber can be vented externally (spring chamber pressure directly adds to the pilot pressure required to shift the valve). Typical application for the PWI sequence valve is for controlling the lip on a dock leveler. Typical application for the PWE sequence valve is for a high/low pump in a positive traction circuit where the valve automatically shifts to low speed high torque mode. Typical application for the PSI sequence valve is when starting against load where the spring chamber can be vented externally (spring chamber pressure directly adds to the pilot pressure required to shift the valve). Typical application for the PSA sequence valve is a hydraulic brake release of a spring loaded single acting cylinder. Typical application for the PSS hot oil shuttle is to divert fluid from the low pressure side of a closed loop hydrostatic transmission for cooling or filtering.

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DG-PSA SEQUENCE VALVE, 4 WAY NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 4 way external pilot sequence valve.

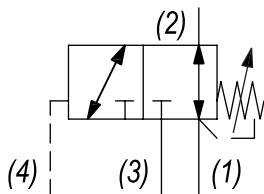
OPERATION

The DG-PSA in neutral (un-piloted), allows flow between (1) and (2) bidirectionally, while blocking at (3). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge shifts to close (1) to (2), while opening (2) to (3). Note that the backpressure value at (1) must be added to the selected pressure setting to determine pilot pressure necessary to open valve.

FEATURES

- Optional spring ranges to 1500 PSI (103 bar).
- Hardened parts for long life.
- Industry common cavity.

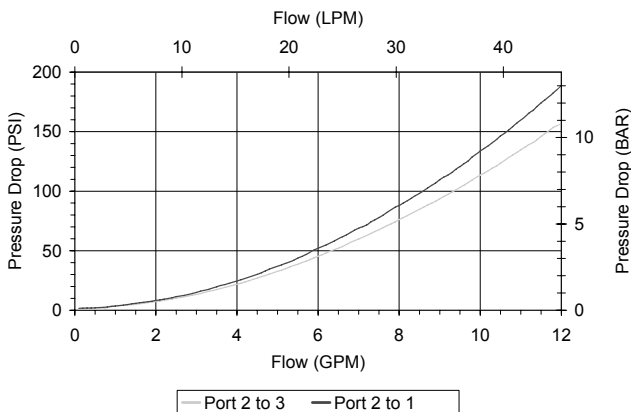
HYDRAULIC SYMBOL



Orifice .030 to .060 diameter recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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	.63 lbs (.28 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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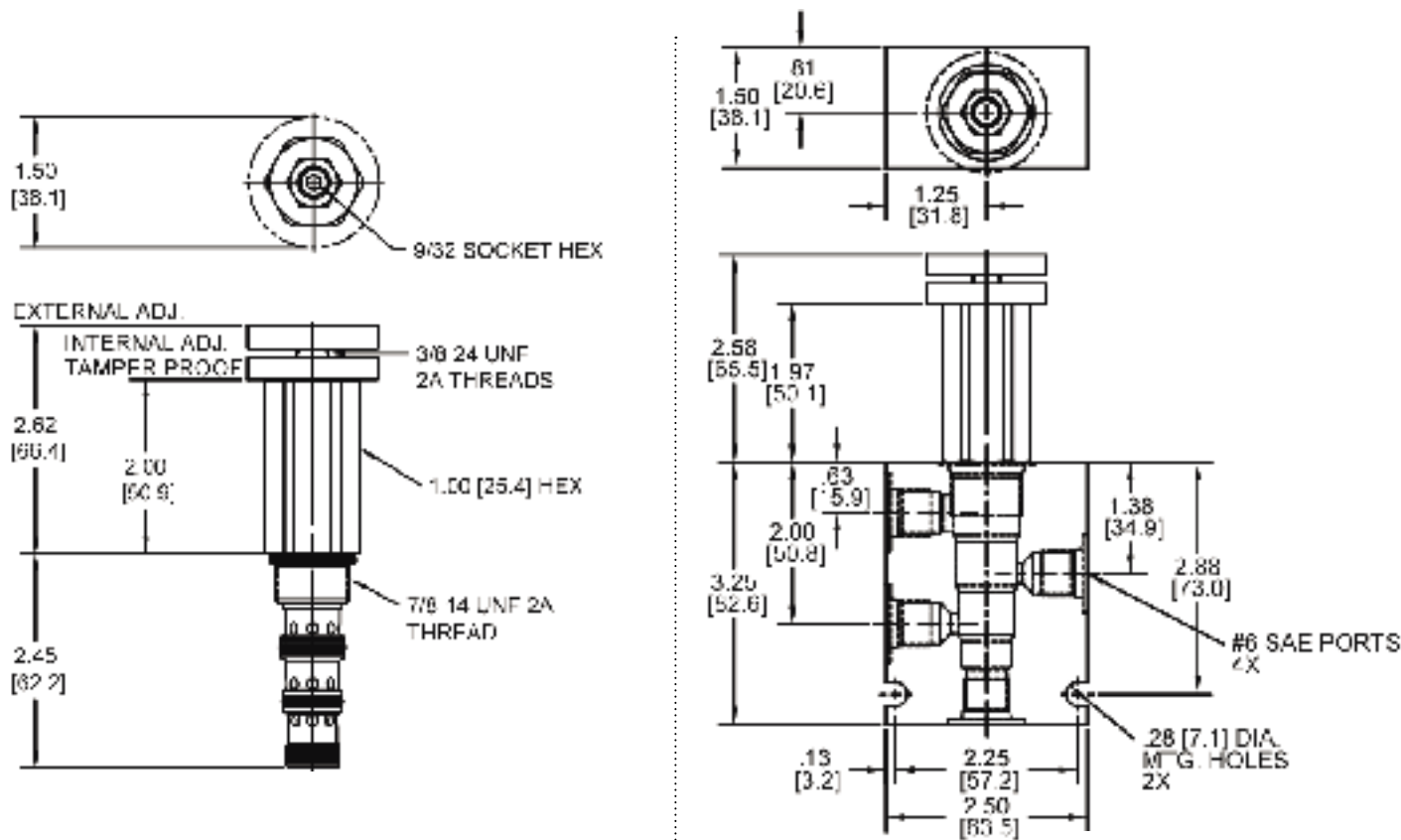


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PSA		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N
Buna, Knob	0K				S
Viton, Knob	VK				
Buna, Internal Adjust	0I				
Viton, Internal Adjust	VI				
Buna, Tamper Proof	0T				
Viton, Tamper Proof	VT				
					PRESSURE RANGE
					0425 50 - 425 PSI
					1500 425 - 1500 PSI

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

W19 / 2020

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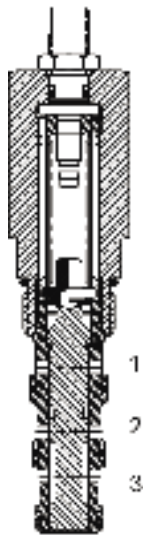


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DG-PSC SEQUENCE VALVE, 2 WAY NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 2 way normally closed sequence valve, external pilot.

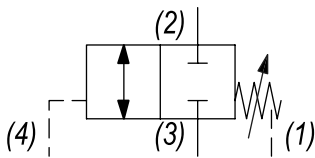
OPERATION

The DG-PSC in neutral (unpiloted), blocks flow between (3) and (2). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge shifts to allow flow from (3) to (2). Note that the backpressure value at (1) must be added to the selected pressure setting to determine pilot pressure.

FEATURES

- Optional spring ranges to 1500 PSI (103 bar).
- Hardened parts for long life.
- Industry common cavity.

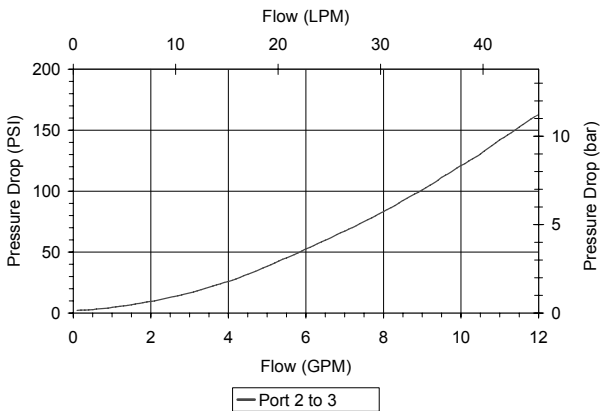
HYDRAULIC SYMBOL



Orifice .030 to .060 diameter recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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	.63 lbs (.28 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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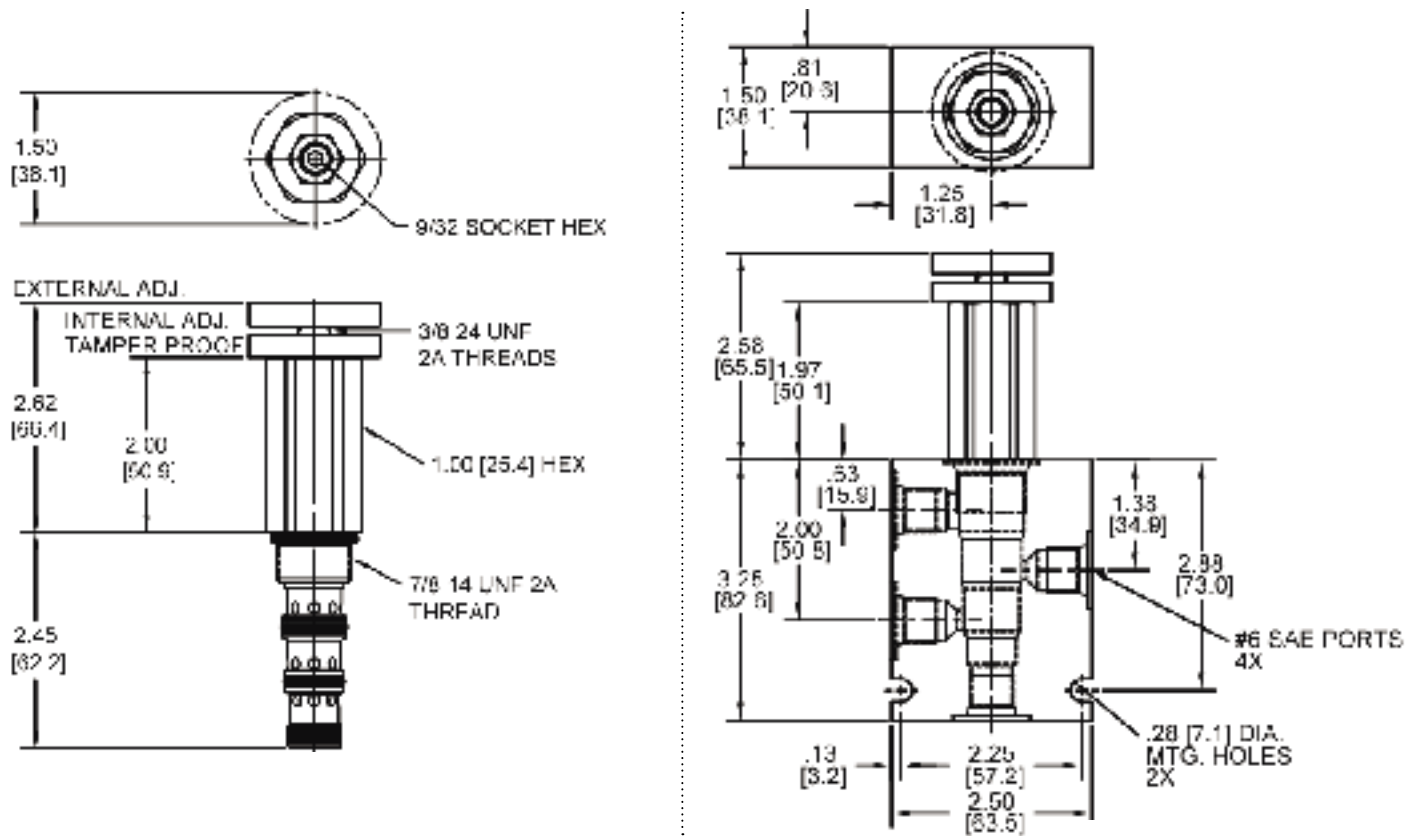


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PSC -

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Knob	0K
Viton, Knob	VK
Buna, Internal Adjust	0I
Viton, Internal Adjust	VI
Buna, Tamper Proof	0T
Viton, Tamper Proof	VT

BODIES

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

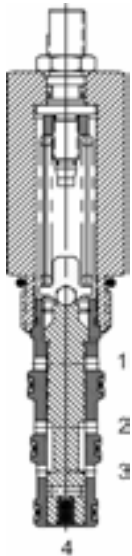
PRESSURE RANGE

0425	50 - 425 PSI
1500	425 - 1500 PSI

Tamper Proof

Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

DG-PSI SEQUENCE VALVE, 3 WAY NORMALLY OPEN, INTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 3 way normally open internal pilot sequence valve.

OPERATION

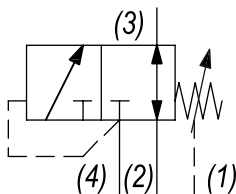
The DG-PSI in neutral (un-piloted), allows flow between (3) and (2) bidirectional, while blocking at (4). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge shifts to close (3) to (2), while opening (4) to (3).

Note: that the backpressure value at (1) must be added to the selected pressure setting to determine pilot pressure necessary to open valve.

FEATURES

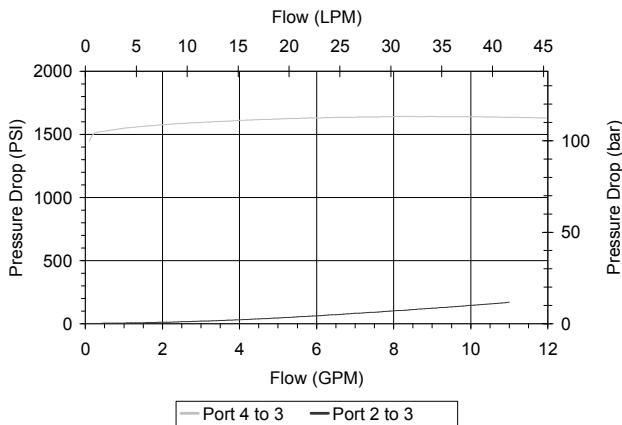
- Optional spring ranges to 1500 PSI (103 bar).
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LTR/M)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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	.63 lbs (.28 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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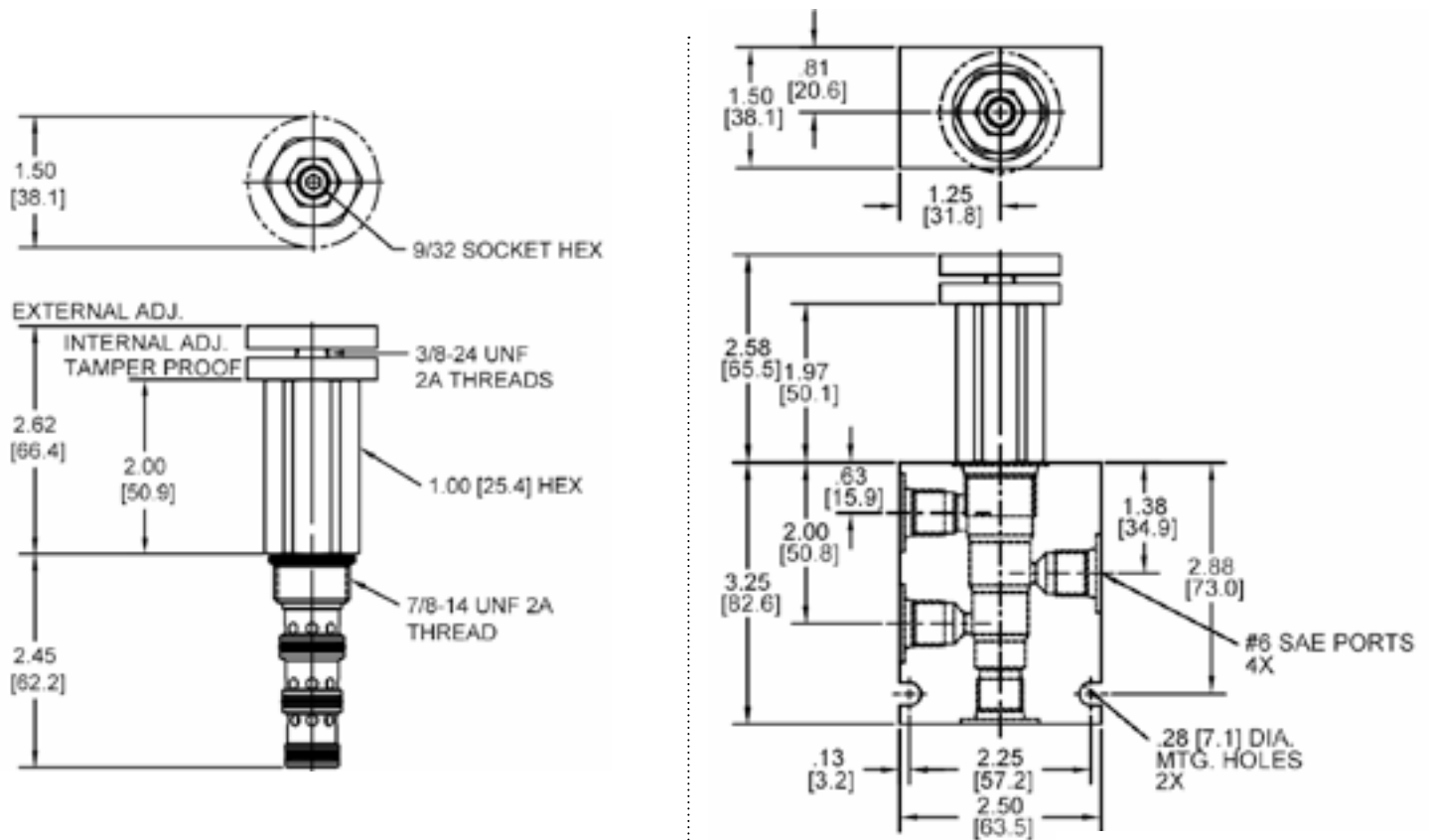


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PSI –

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Knob	0K
Viton, Knob	VK
Buna, Internal Adjust	0I
Viton, Internal Adjust	VI
Buna, Tamper Proof	0T
Viton, Tamper Proof	VT

BODIES

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

PRESSURE RANGE

0425	50 - 425 PSI
1500	425 - 1500 PSI

Tamper Proof

Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

DG-PSO SEQUENCE VALVE, 2 WAY NORMALLY OPEN, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 2 way normally open sequence valve, external pilot.

OPERATION

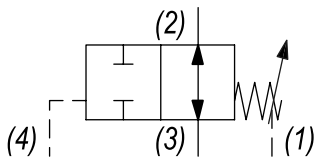
The DG-PSO in neutral (un-piloted), allows flow between (3) and (2) bi-directionally. The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge shifts to block flow from (3) to (2).

Note: that the backpressure value at (1) must be added to the selected pressure setting to determine pilot pressure necessary to close valve.

FEATURES

- Optional spring ranges to 1500 PSI (103 bar).
- Hardened parts for long life.
- Industry common cavity.

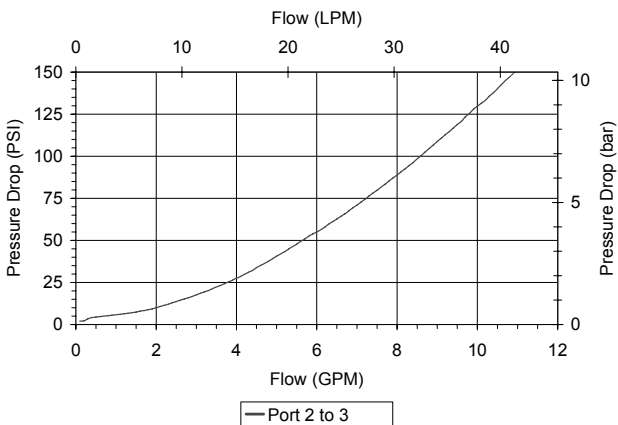
HYDRAULIC SYMBOL



Orifice .030 to .060 diameter recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LTR/M)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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	.62 lbs (.28 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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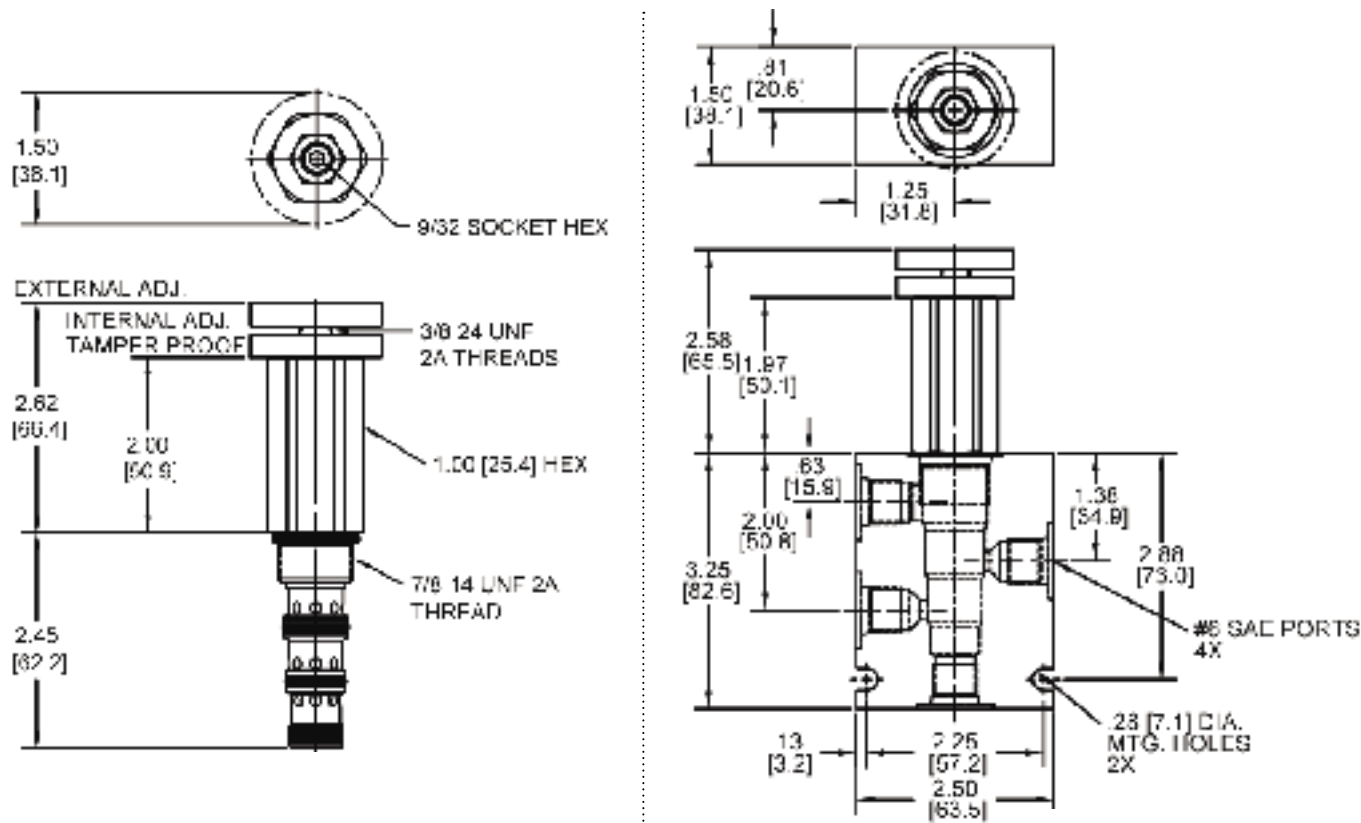


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PSO	-	-	-	-	-
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				
Buna, Internal Adjust	0I				
Viton, Internal Adjust	VI				
Buna, Tamper Proof	0T				
Viton, Tamper Proof	VT				
			PRESSURE RANGE		
			0425	50 - 425 PSI	
			1500	425 - 1500 PSI	

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

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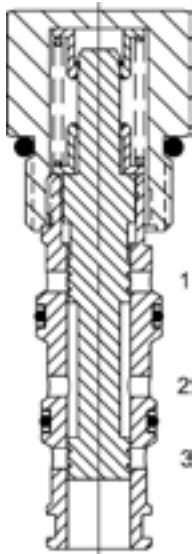


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DG-PSS HOT OIL SHUTTLE VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, hot oil shuttle valve.

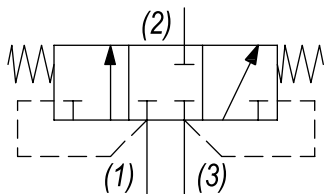
OPERATION

The DG-PSS, with internal piloting at port (1) or (3), oil will flow from the port opposite of the port piloted to port (2), thus removing oil from the low-pressure side for cooling or filtration purposes. The Valve is spring bias neutral, relying solely on the internal pilot pressure signal to shift to either side. The DG-PSS is closed in transition.

FEATURES

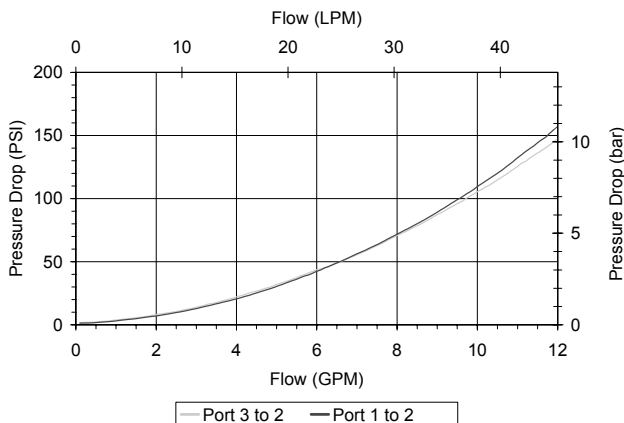
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LTR/M)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu/in per/min (82 ml/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	.34 lbs (.15 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	21191212

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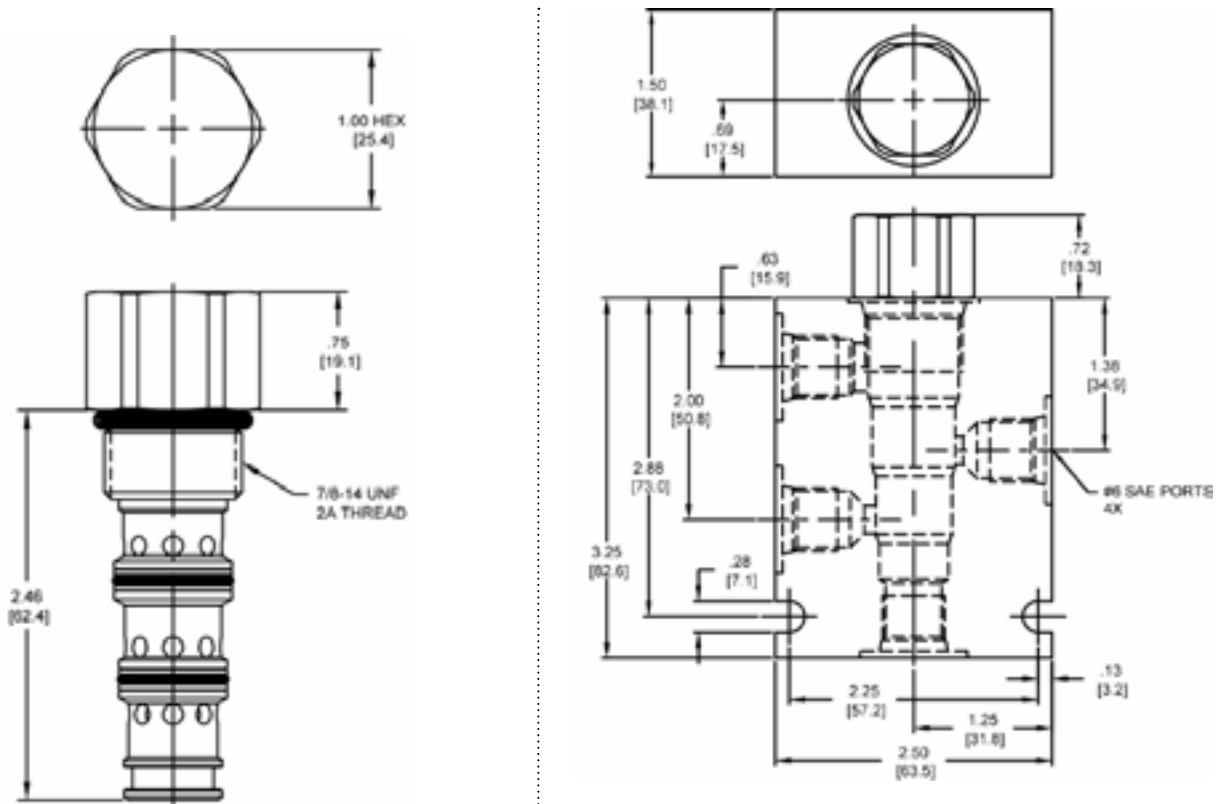


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PSS —

OPTIONS

Buna Standard	00
Viton Standard	V0

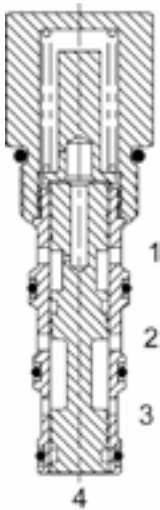
BODIES

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

CRACK PRESSURE

0040	40 PSI
0080	80 PSI
0120	120 PSI
0160	160 PSI
0000	0 PSI (NO SPRING)

DG-PTC SEQUENCE VALVE, NORMALLY OPEN, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, external pilot, normally open.

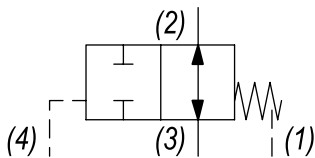
OPERATION

The DG-PTC allows flow at ports (3) and (2). On attainment of a predetermined pressure at port (4), the valve shifts to block flow from port (3) to (2). Spring Chamber is constantly vented to port (1).

FEATURES

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

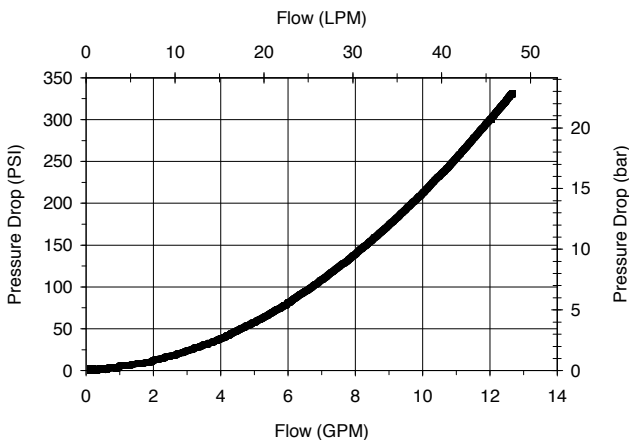
HYDRAULIC SYMBOL



Orifice .030 to .060 diameter recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LTR/M)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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	.39 lbs (.17 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	21191108

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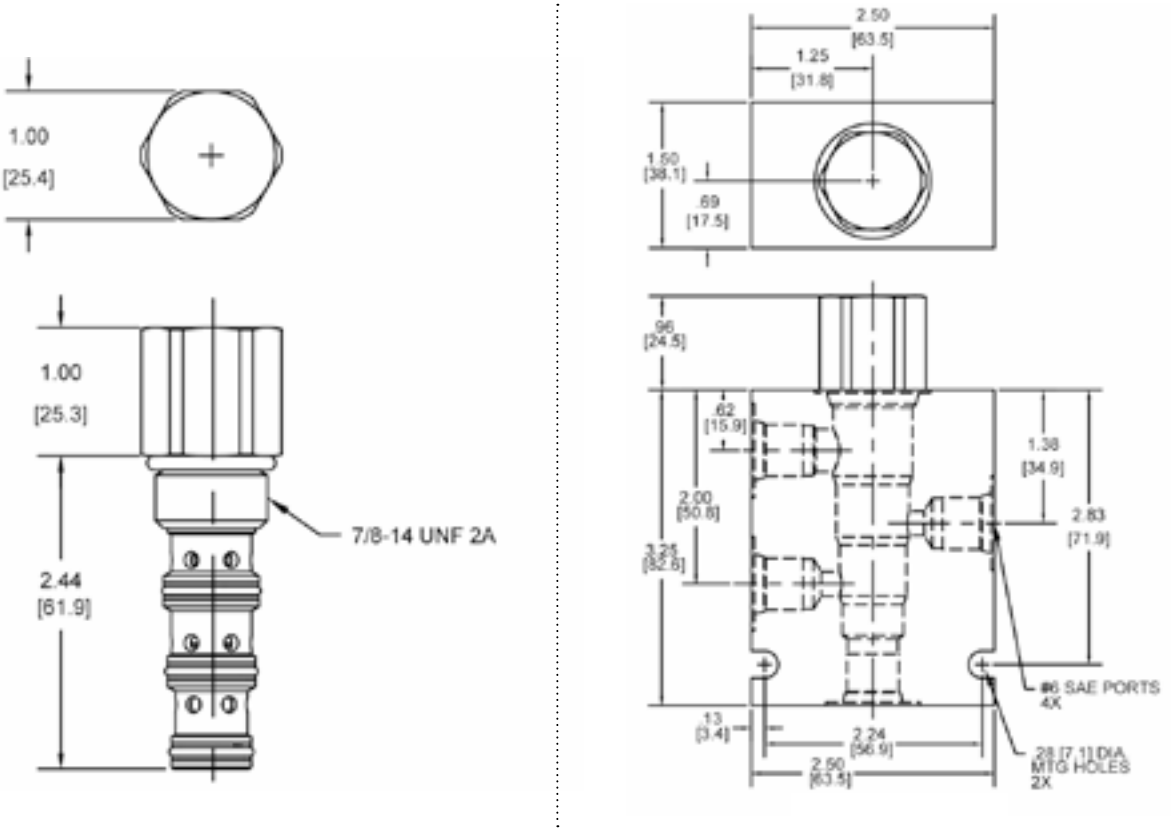


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PTC	-	-	-	-
<u>OPTIONS</u>		<u>BODIES</u>		
Buna Standard	00	Blank	Without Body	
Viton Standard	V0	N	1/4" NPTF Ports	
		S	#6 SAE Ports	
		<u>SPRING BIAS</u>		
		0050	50 PSI	
		0180	180 PSI	
			±10%	

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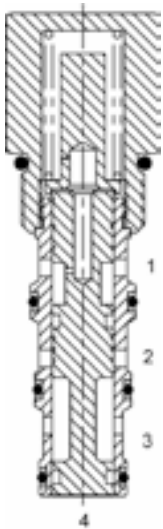


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DG-PTO SEQUENCE VALVE, NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, external pilot, normally closed.

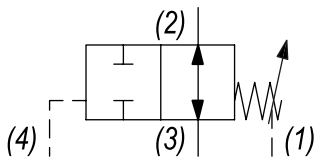
OPERATION

The DG-PTO blocks flow at ports (3) and (2). On attainment of a predetermined pressure at port (4), the valve shifts to allow flow from port (3) to (2). Spring Chamber is constantly vented to port (1).

FEATURES

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

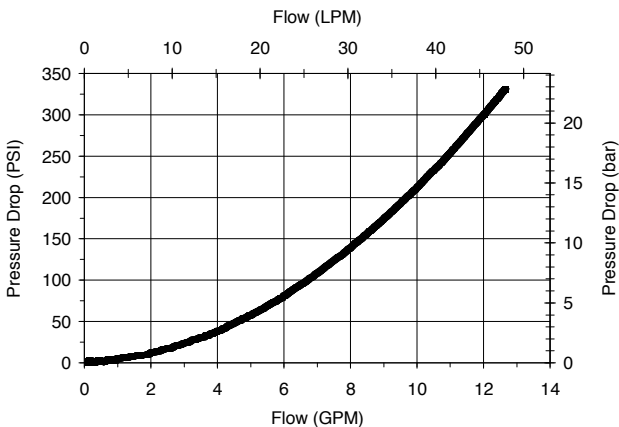
HYDRAULIC SYMBOL



Orifice .030 to .060 diameter recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LTR/M)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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	.39 lbs (.17 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	21191108

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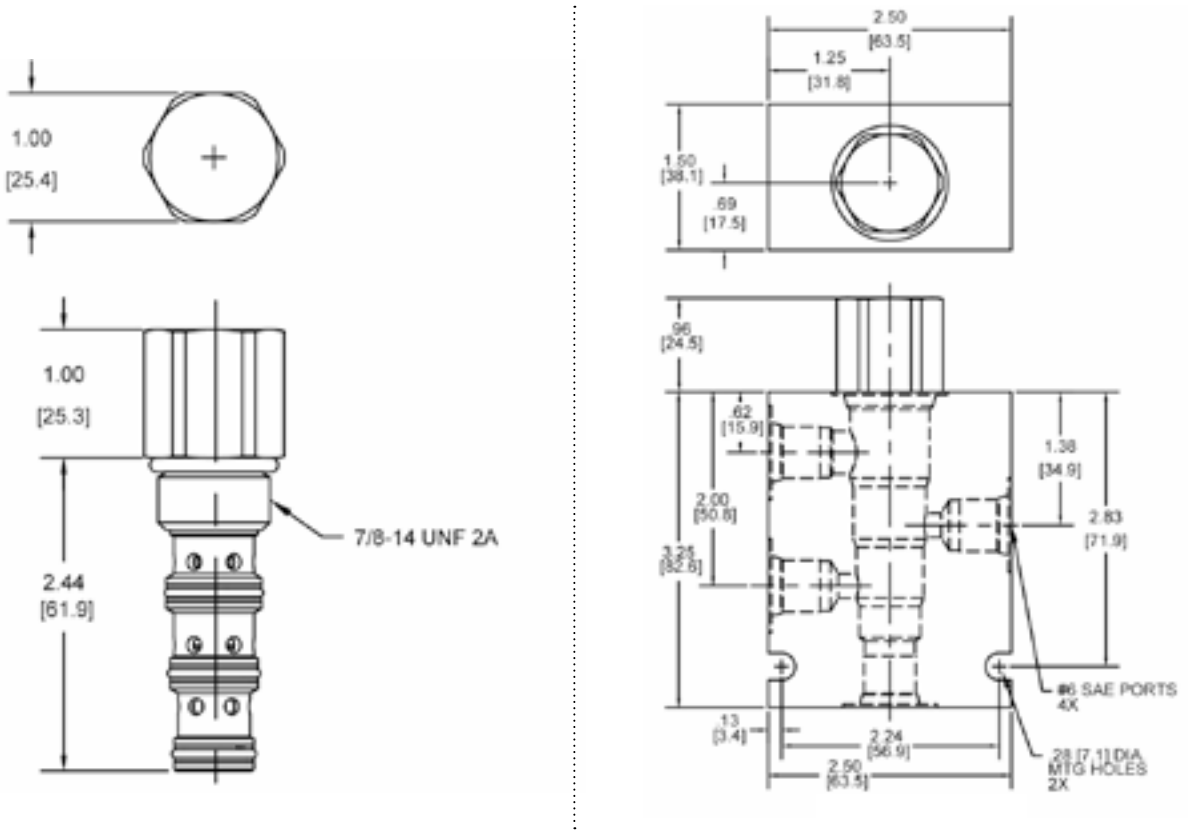


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-PTO	-	-	-	-
<u>OPTIONS</u>		<u>BODIES</u>		
Buna Standard	00	Blank	Without Body	
Viton Standard	V0	N	1/4" NPTF Ports	
		S	#6 SAE Ports	
		<u>SPRING BIAS</u>		
		0050	50 PSI	
		0180	180 PSI	
			±10%	

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DF-PWE SEQUENCE VALVE, NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, external pilot normally closed, sequence valve.

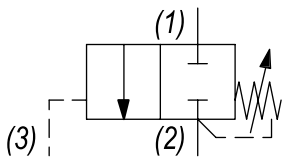
OPERATION

The DF-PWE blocks flow at ports (2) and (1). On attainment of a predetermined pressure at (3) the valve shifts to allow flow from (1) to (2).

FEATURES

- Hardened parts for long life.
- Optional spring ranges to 1500 PSI (103 bar).
- Industry common Cavity.

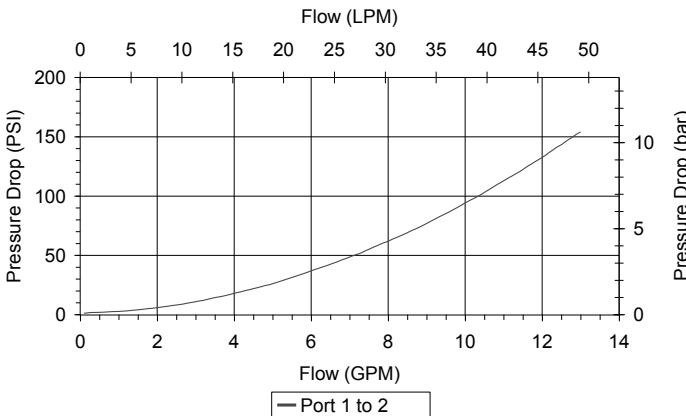
HYDRAULIC SYMBOL



Orifice .030 to .060 diameter recommended beneath port (3).

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LTR/M)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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 3W
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191206

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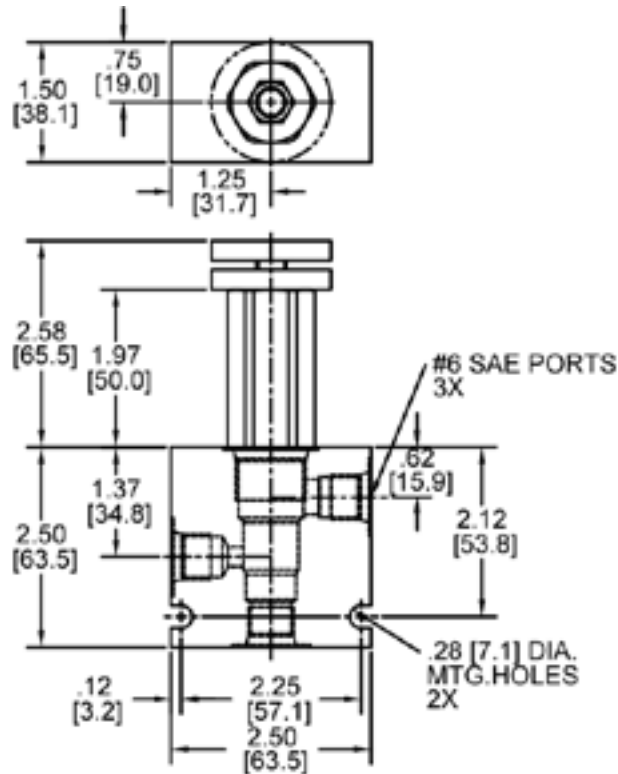
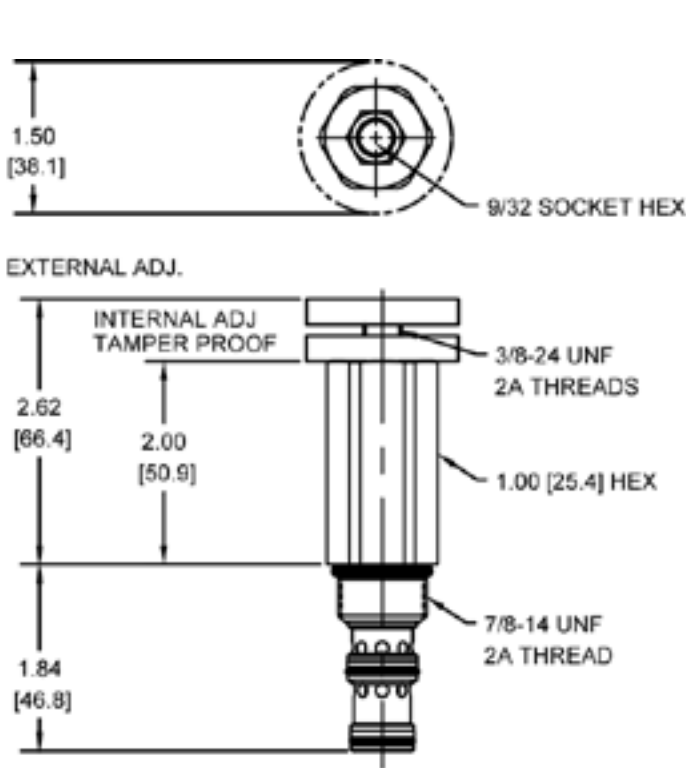


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-PWE	-	-	-	-	-
		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			
		Buna, Internal Adjust 0I			
		Viton, Internal Adjust VI			
		Buna, Tamper Proof 0T			
		Viton, Tamper Proof VT			
				SPRING BIAS	
				0425 50-425 PSI	
				1500 425-1500 PSI	

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

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DF-PWI SEQUENCE VALVE, INTERNAL PILOT AND DRAIN



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, internal pilot and drain, sequence valve.

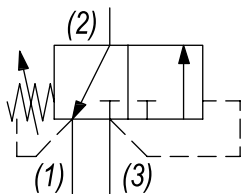
OPERATION

The DF-PWI blocks flow at (3) and allows flow from (2) to (1). On attainment of a predetermined pressure at (3) the valve shifts to allow flow from (3) to (2) and block flow at (1).

FEATURES

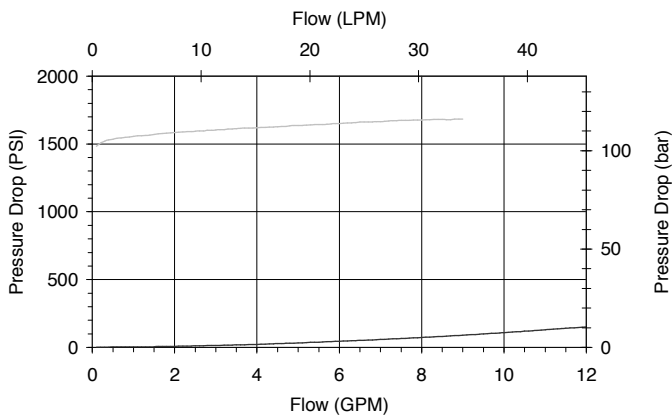
- Hardened parts for long life.
- Optional spring ranges to 1500 PSI (103 bar).
- Industry common Cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/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 3W
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191206

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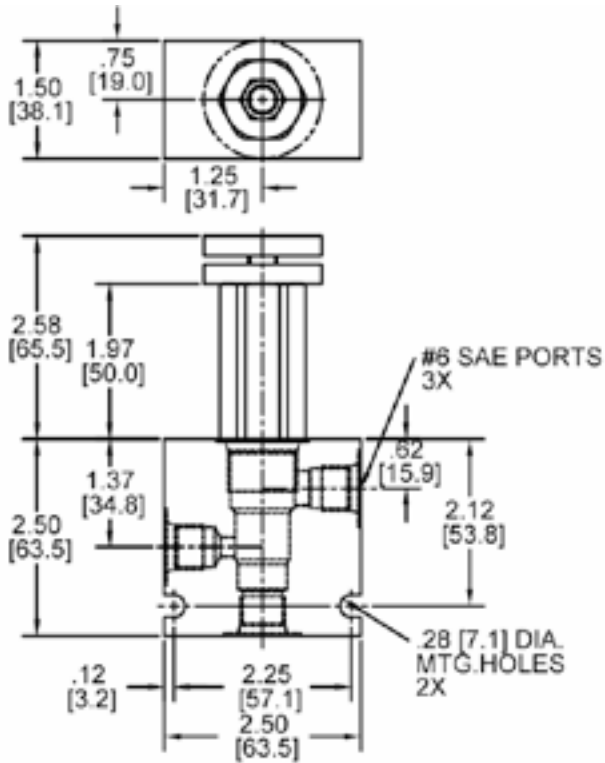
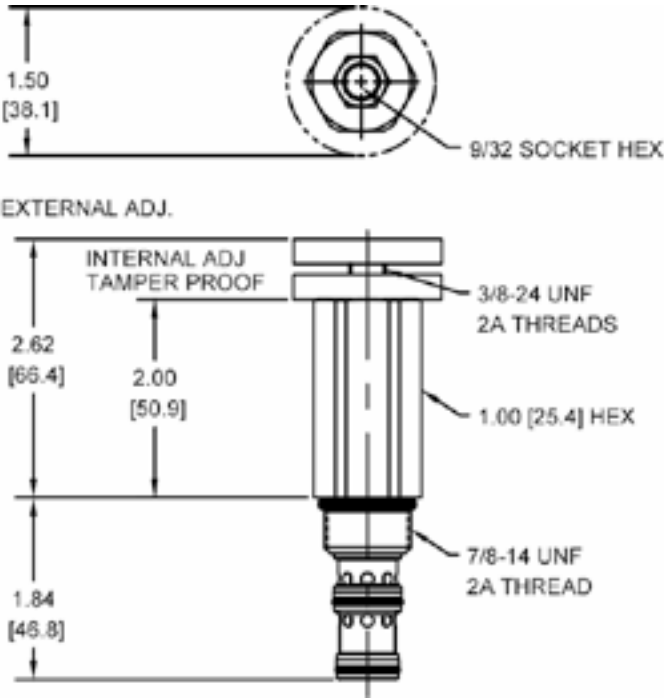


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

DF-PWI	-	-	-	-	-
		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			
		Buna, Internal Adjust 0I			
		Viton, Internal Adjust VI			
		Buna, Tamper Proof 0T			
		Viton, Tamper Proof VT			
				PRESSURE RANGE	
				0425 50-425 PSI	
				1500 425-1500 PSI	

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 0500 - 500 PSI

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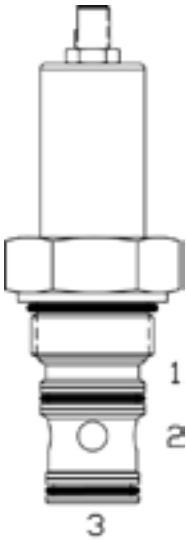


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SL-PWA SEQUENCE VALVE, NORMALLY CLOSED, INTERNAL PILOT



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, internal pilot normally closed, sequence valve.

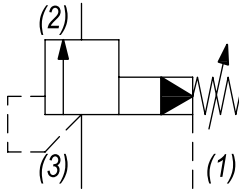
OPERATION

The SL-PWA blocks flow from ports (3) to (2). On attainment of a predetermined pressure at (3) the valve shifts to allow flow from (3) to (2). Port (1) should be a tank line.

FEATURES

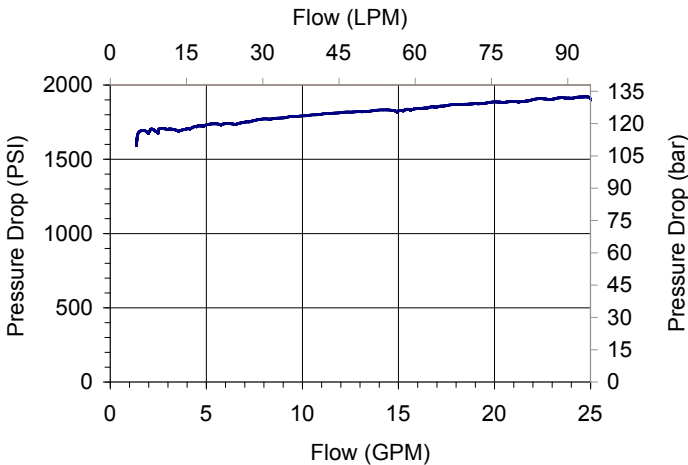
- Hardened parts for long life.
- Industry common cavity.

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	-40° to 250°F (-40° to 120°C)
Weight	1.15 lbs (.52 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	21191404

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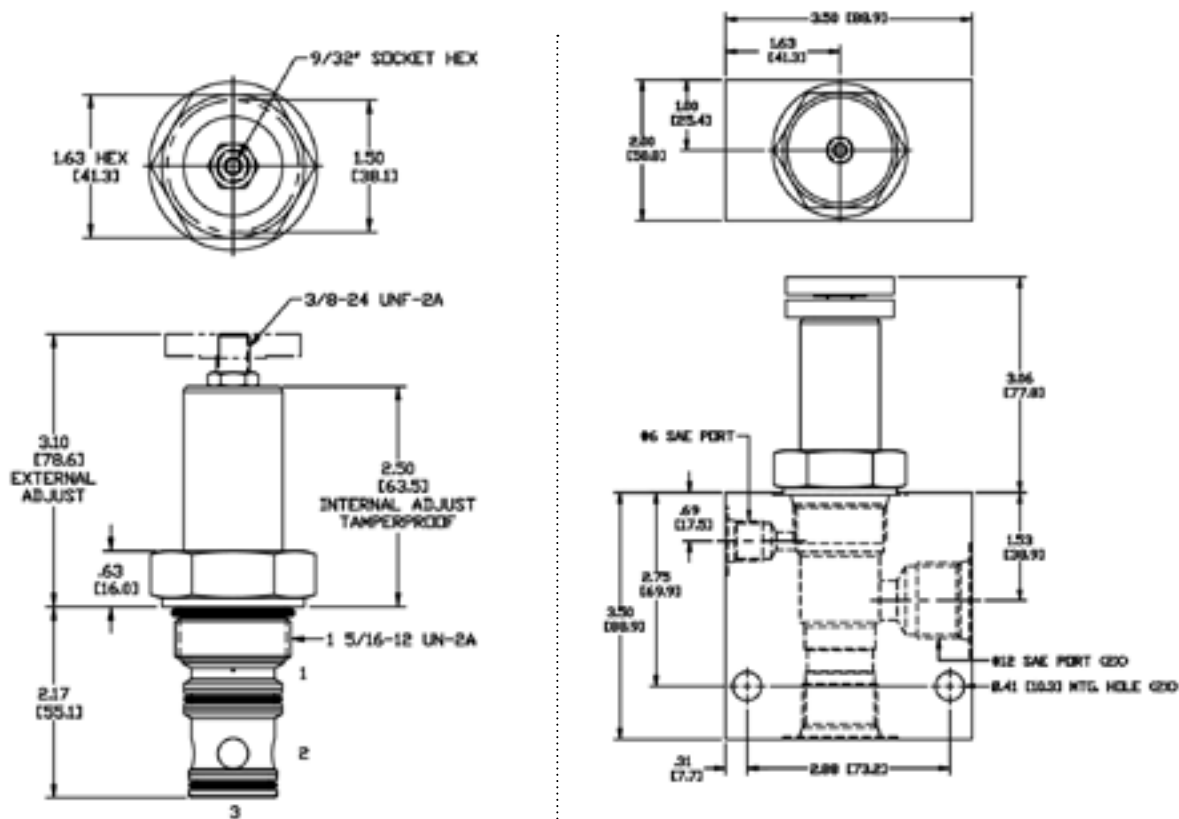


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DIMENSIONS



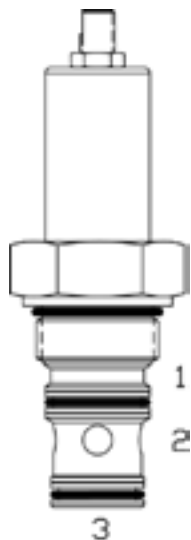
Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PWA		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				S
Buna, Knob	0K				
Viton, Knob	VK				
Buna, Internal Adjust	0I				
Viton, Internal Adjust	VI				
Buna, Tamper Proof	0T				
Viton, Tamper Proof	VT				
					PRESSURE RANGE/SETTING
		3000		500-3000 PSI	

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 2000 = 2000 PSI

SL-PWB SEQUENCE VALVE, NORMALLY CLOSED, INTERNAL PILOT WITH REVERSE FREE FLOW



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, internal pilot normally closed, sequence valve w/ reverse free flow.

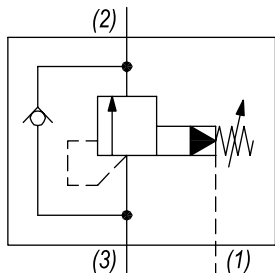
OPERATION

The SL-PWB blocks flow from ports (3) to (2). On attainment of a predetermined pressure at (3) the valve shifts to allow flow from (3) to (2). Port (1) should be a tank line. Reverse flow from (2) to (3) occurs when the pressure at port (2) is at least 45 PSI (3.1 bar) higher than at port (3).

FEATURES

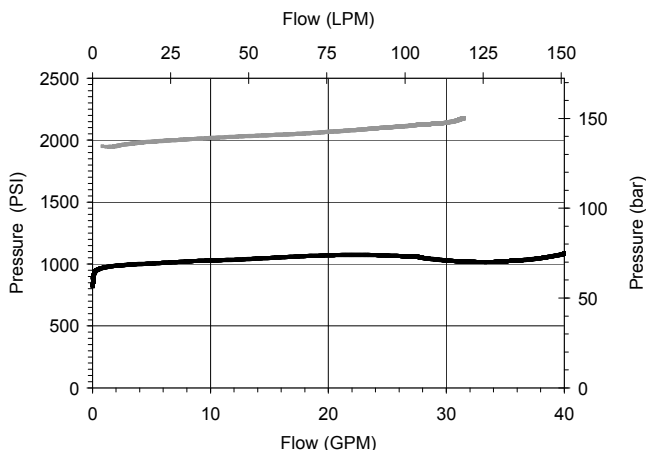
- Hardened parts for long life.
- Industry common cavity.

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	-40° to 250°F (-40° to 120°C)
Weight	1.15 lbs (.52 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	21191404

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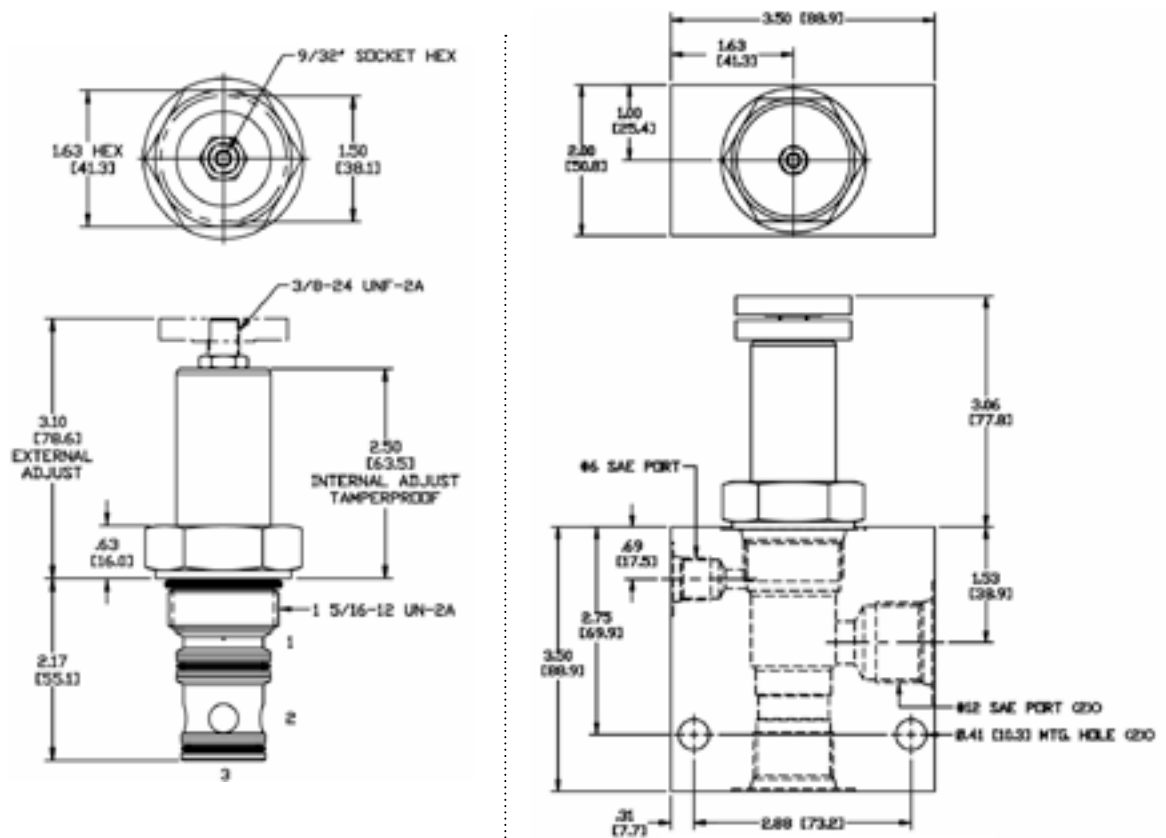


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PWB	-	-	-
	└──	└──	└──
<u>OPTIONS</u>			<u>BODIES</u>
Buna Standard	00		Blank Without Body
Viton Standard	V0		S #12 SAE Ports
Buna, Knob	0K		
Viton, Knob	VK		
Buna, Internal Adjust	0I		
Viton, Internal Adjust	VI		
Buna, Tamper Proof	0T		
Viton, Tamper Proof	VT		
		<u>PRESSURE RANGE/SETTING</u>	
		3000	500-3000 PSI

Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 2000 = 2000 PSI

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


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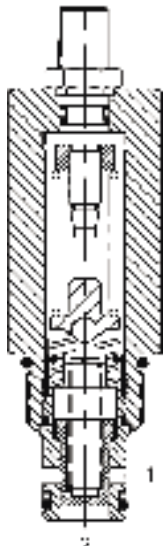
SHUT DOWN VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	15	4500	57	310	7/8-14	DE-PSD	MP120

TYPICAL SCHEMATIC

Typical application for the PSD is a system protector, like a relief valve, but once this valve opens it will not reseal until the pressure at port (2) is drained off. This valve is not to be used as a load holding device.

DE-PSD PRESSURE SHUT DOWN VALVE



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure shut down valve.

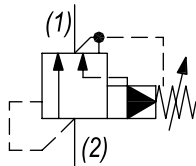
OPERATION

The DE-PSD blocks flow from (2) to (1) until sufficient pressure is present at (2) to open the pilot, thereby forcing the spool to open and allowing flow from (2) to (1). The valve stays open until the differential pressure from (2) to (1) decreases to less than 50 PSI (3.4 bar).

FEATURES

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

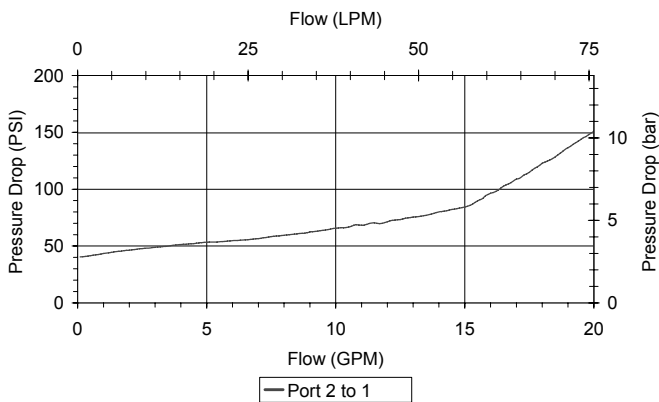
HYDRAULIC SYMBOL



Usually the valve requires flow to be reduced to near zero before the valve will reset.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	4500 PSI (310 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	.53 lbs (.24 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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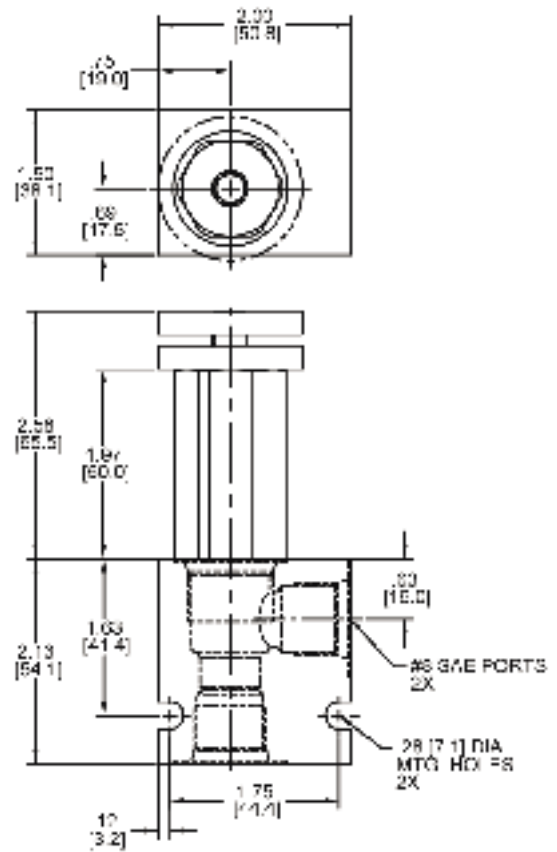
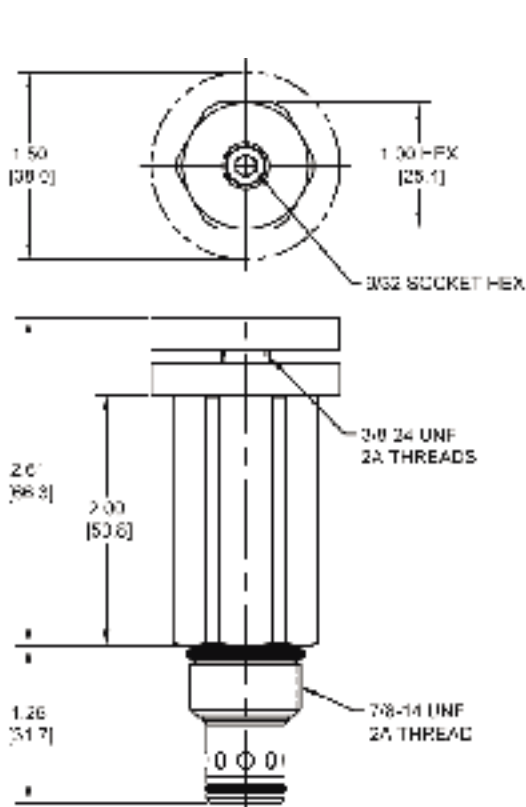


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-PSD -

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Knob	0K
Viton, Knob	VK
Buna, Internal Adjust	0I
Viton, Internal Adjust	VI
Buna, Tamper Proof	0T
Viton, Tamper Proof	VT

BODIES

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

PRESSURE RANGE/SETTING

3000	100-3000 PSI
4500	3000-4500 PSI

Tamper Proof

Fill in 4 Digit Pressure Setting
Example: 0500 = 500 PSI

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

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