

MECHANICAL DIRECTIONAL CONTROLS



DIRECT ACTING CHECK VALVES	MD3
PILOT TO OPEN AND DOUBLE PO CHECK VALVES	MD37
MANUAL VALVES	MD55
PILOT TO SHIFT VALVES	MD77
SHUTTLE VALVES	MD95
ROTARY VALVES	MD105

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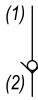




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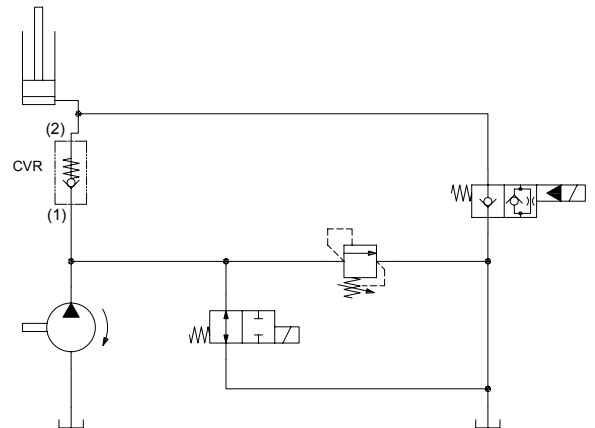
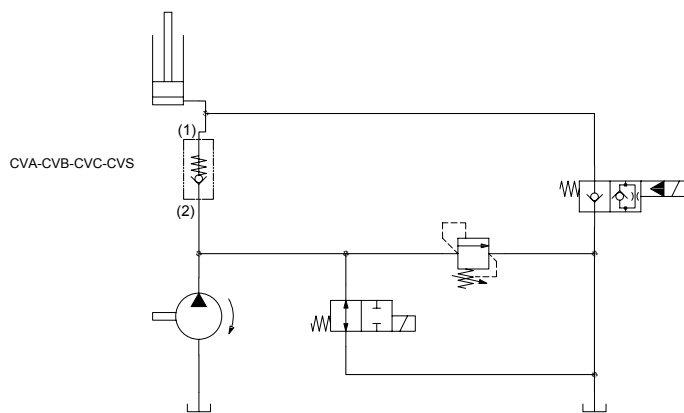
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DIRECT ACTING CHECK VALVES

	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
	1	3500	4	241	Special	QS-CVL	MD24
	15	3500	57	241	7/8-14	DE-CVR	MD26
	35	5000	132	345	1 1/16-12	HT-CVR	MD28
 SOFT SEAT	2.5	1500	9.5	103	5/8-18	MA-CVS	MD30
	5	3500	19	241	3/4-16	PB-CVS	MD32
	10	1000	38	70	7/8-14	DE-CVS	MD34

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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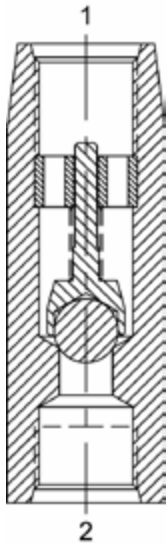


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IM-CVA INLINE CHECK VALVE



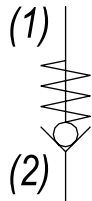
DESCRIPTION

#8 SAE, inline check valve.

OPERATION

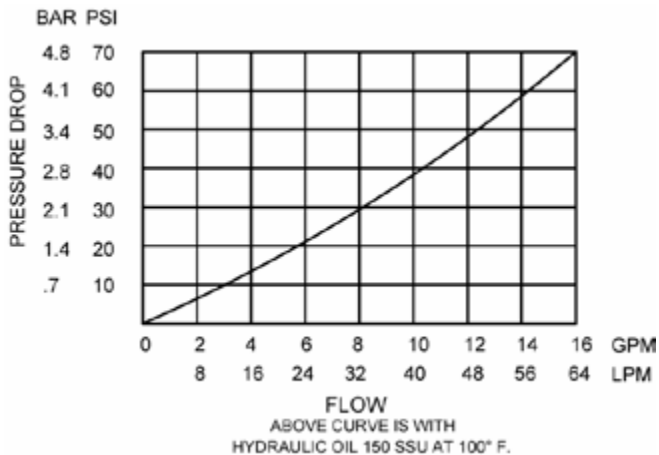
The IM-CVA allows flow from (2) to (1), while normally blocking oil flow from (1) to (2). The valve has a guided check ball, which is spring-biased closed until sufficient pressure is applied at (2) to open to (1).

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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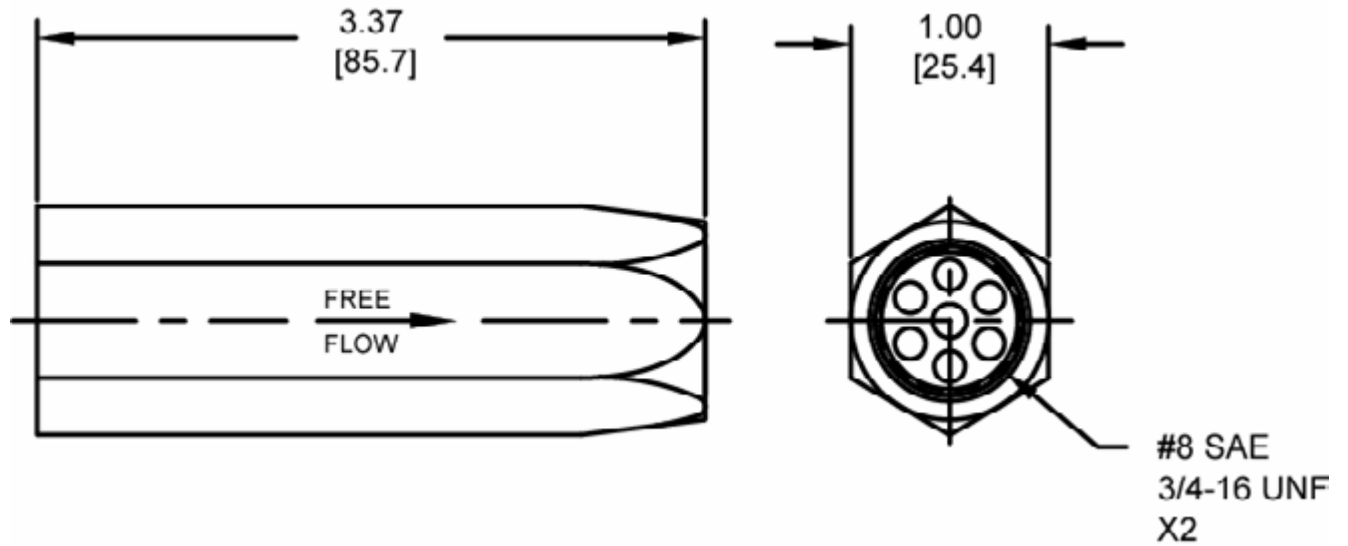


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DIMENSIONS



ORDERING INFORMATION

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

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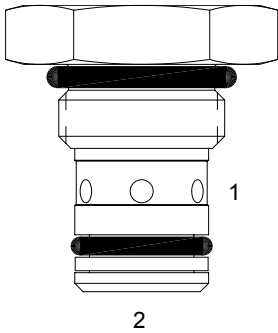


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MA-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

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

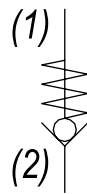
OPERATION

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

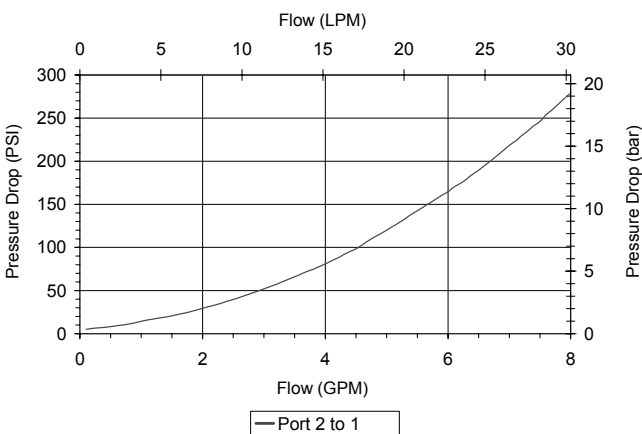
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet.
- Industry common cavity.

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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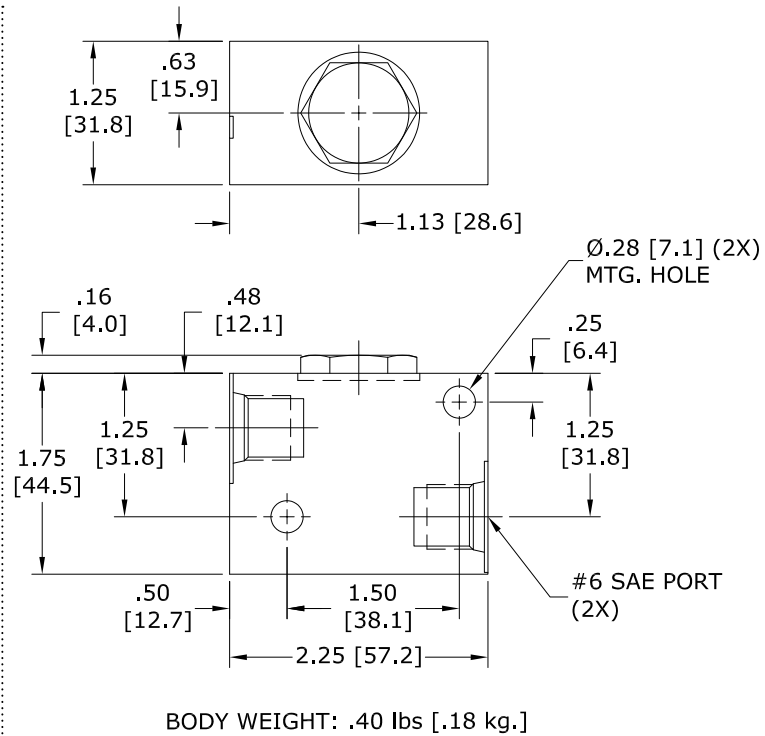
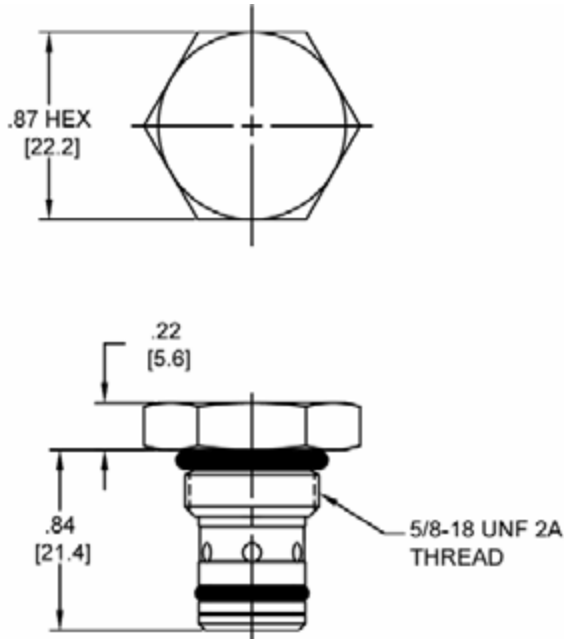


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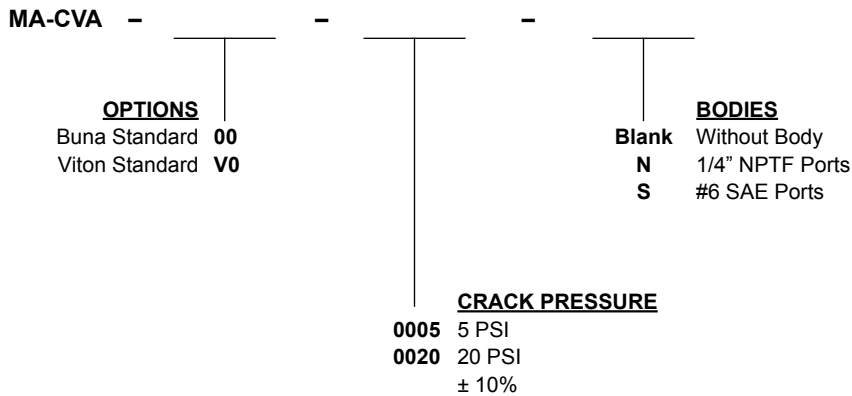
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DIMENSIONS



Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION



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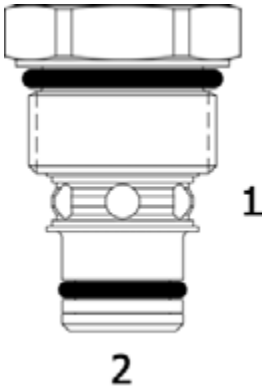


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HB-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

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

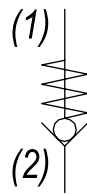
OPERATION

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

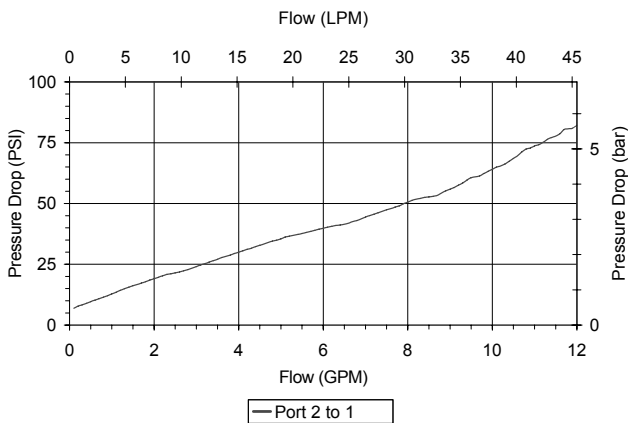
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.

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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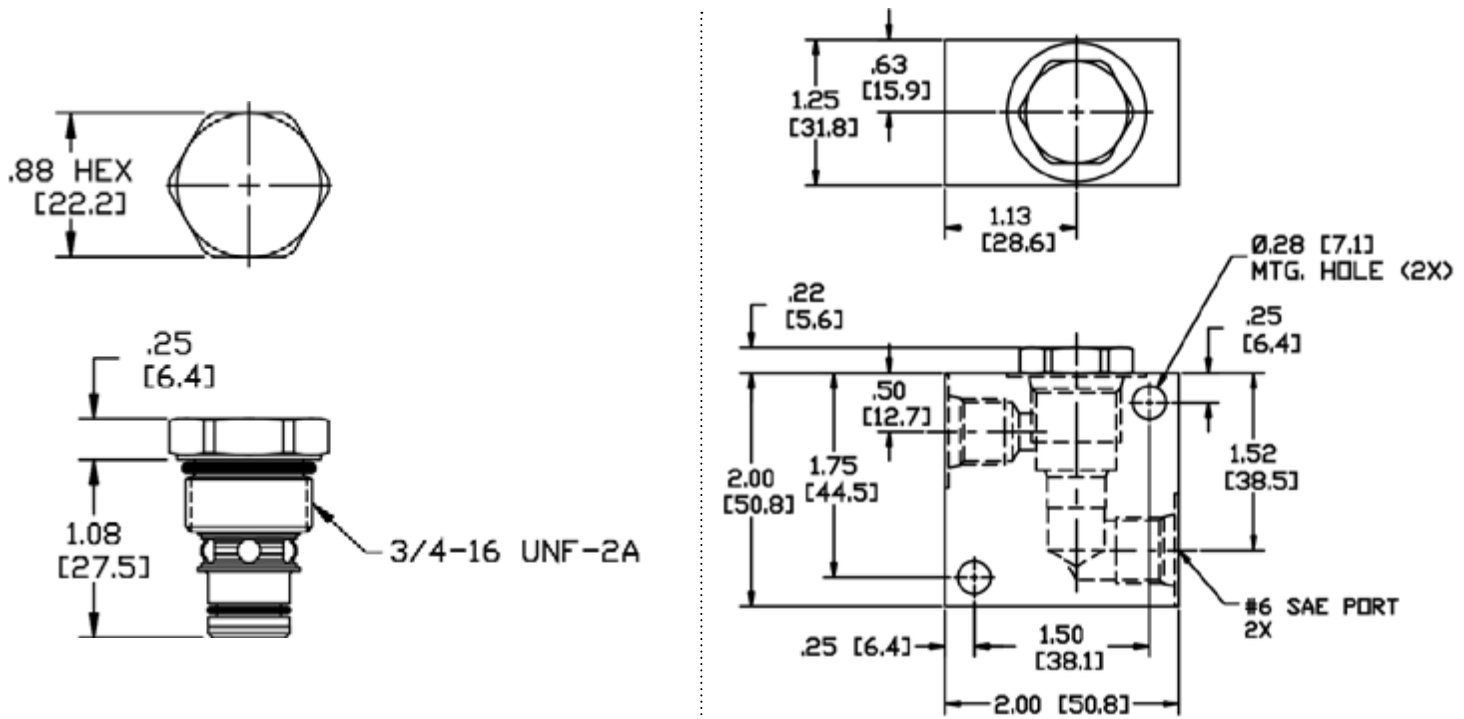


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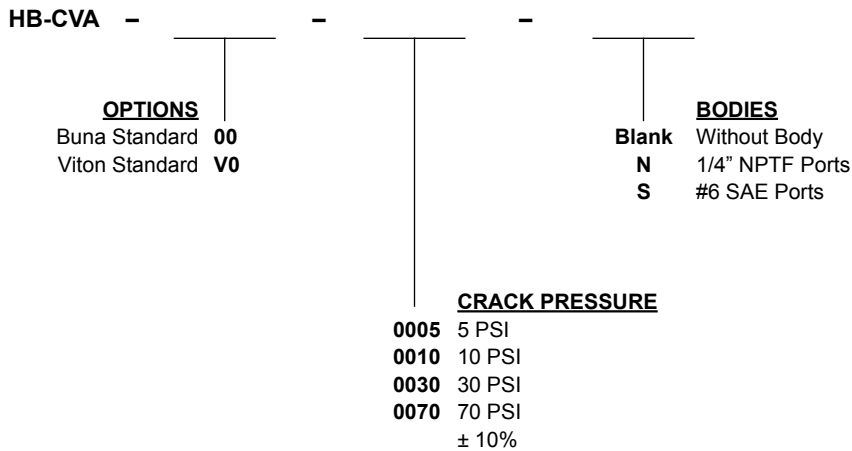
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DIMENSIONS



Body Weight: .40 lbs (.18 kg)

ORDERING INFORMATION



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

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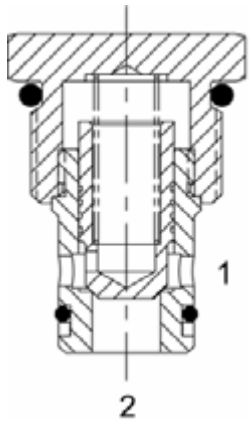


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DE-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

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

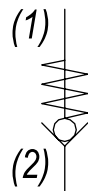
OPERATION

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.

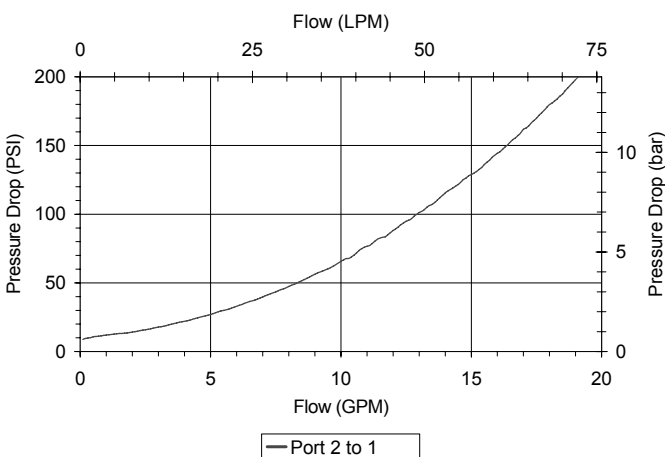
HYDRAULIC SYMBOL



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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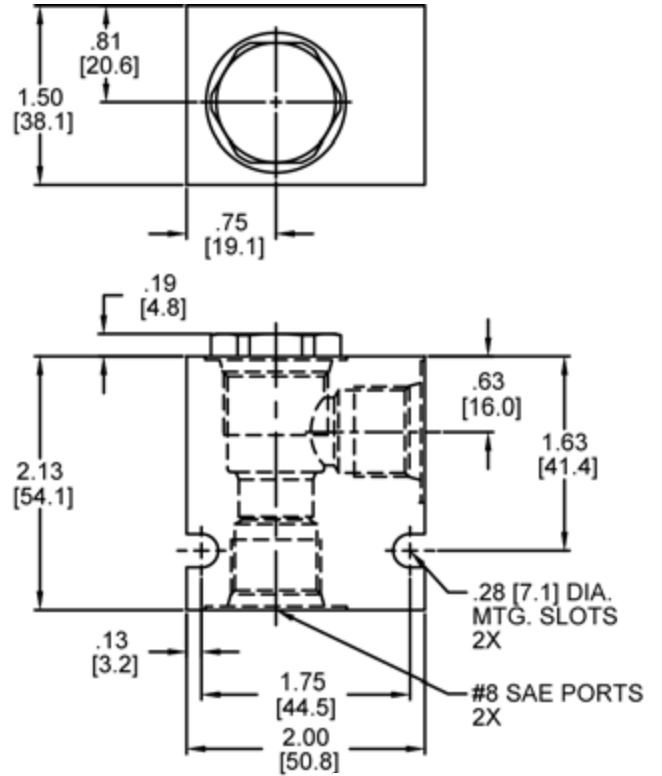
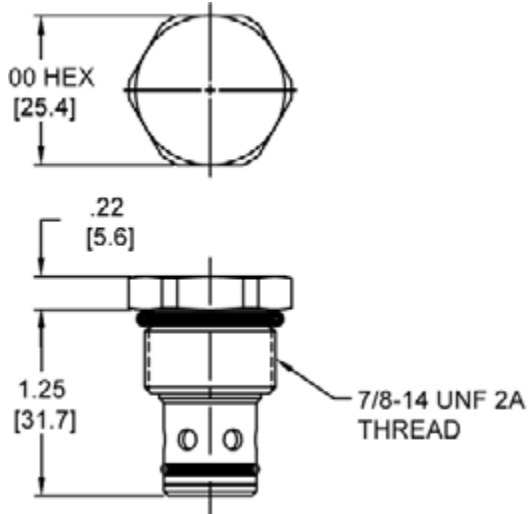


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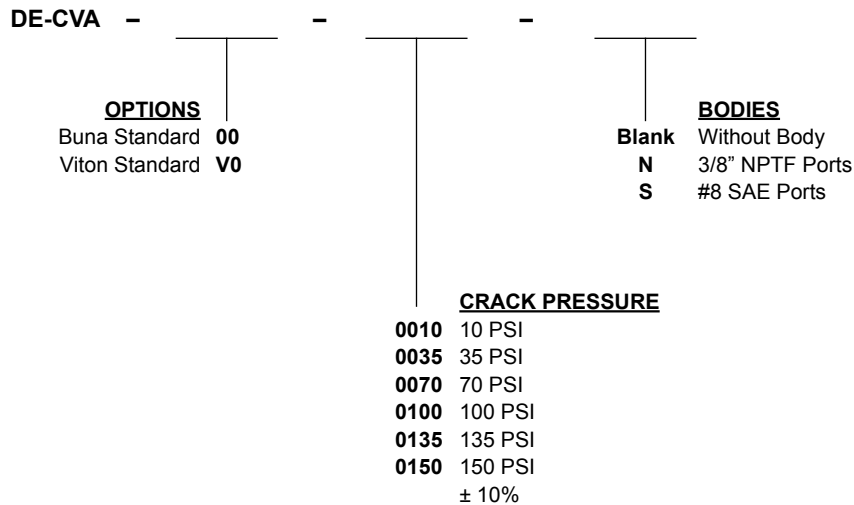
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

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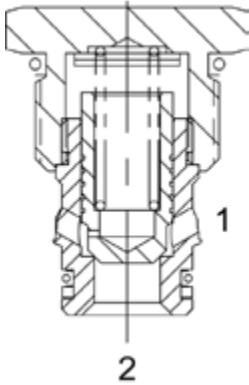


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HE-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

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

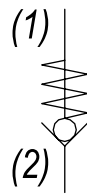
OPERATION

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.

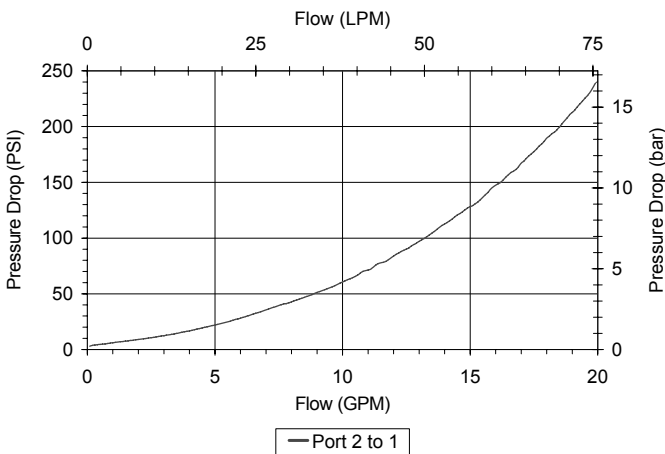
HYDRAULIC SYMBOL



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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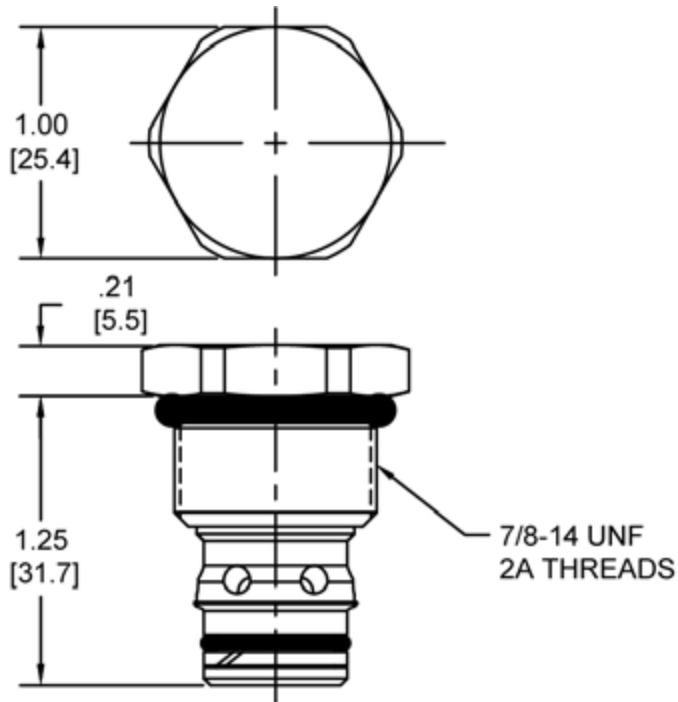


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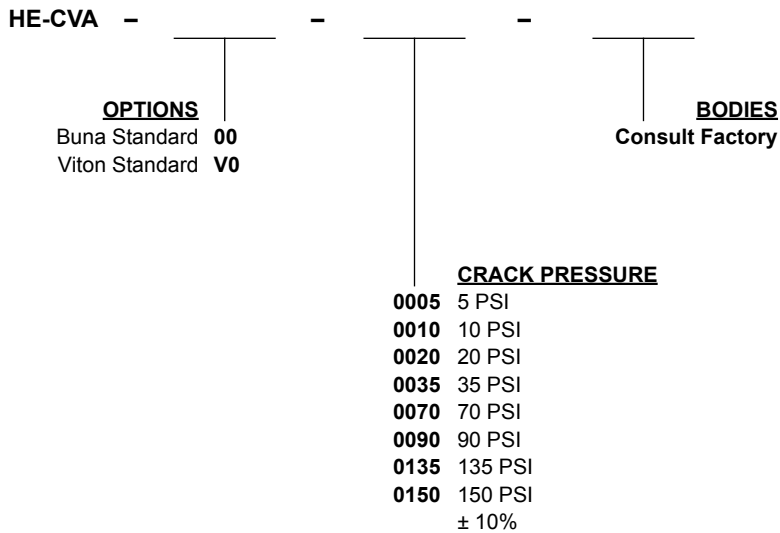


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DIMENSIONS



ORDERING INFORMATION



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

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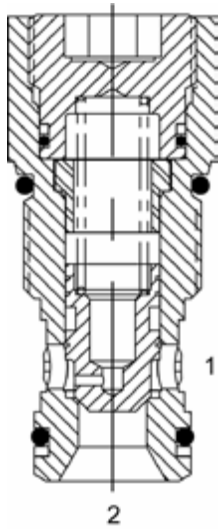


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HT-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

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

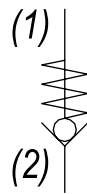
OPERATION

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

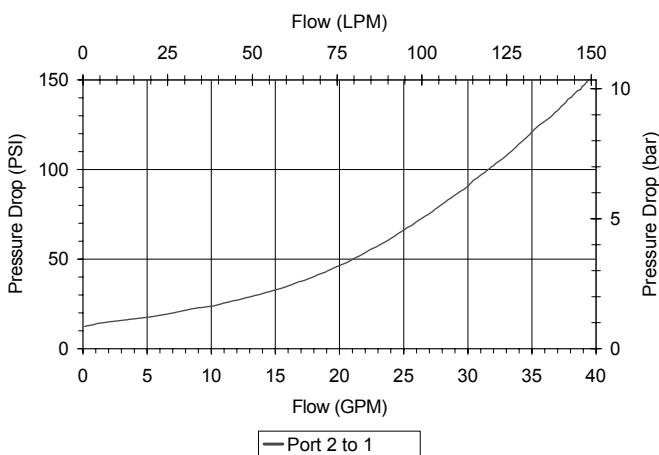
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

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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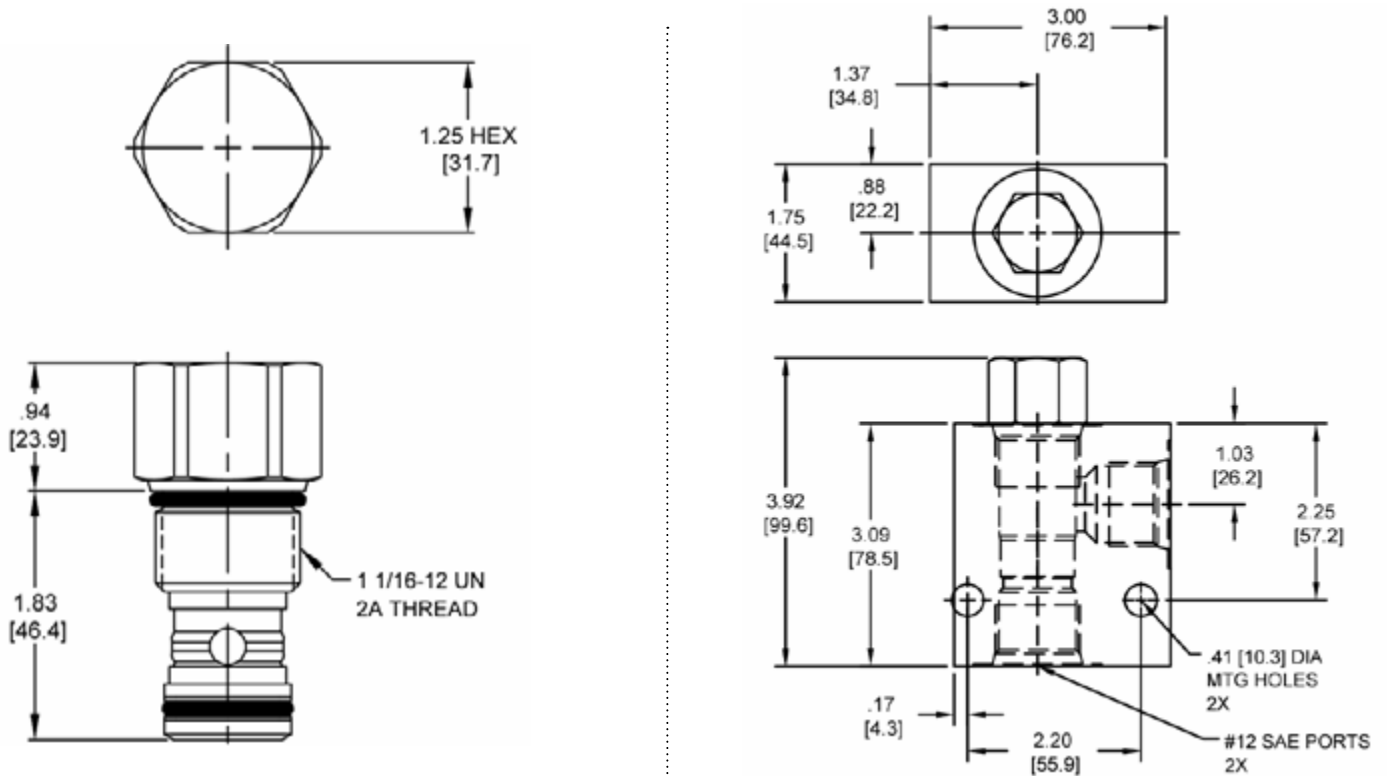


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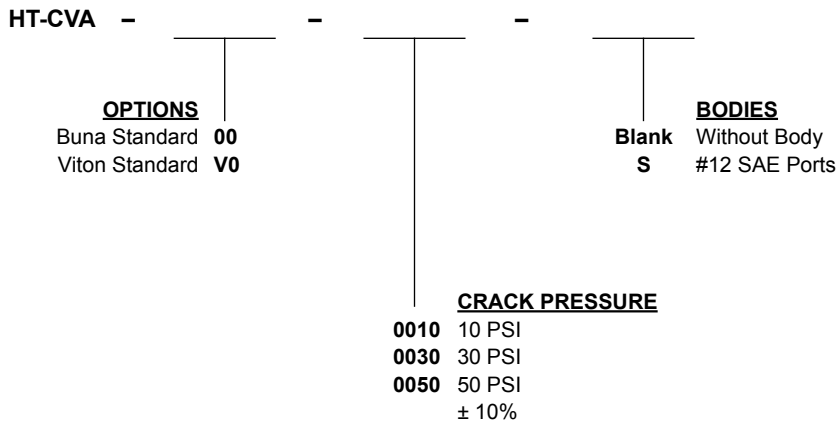
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DIMENSIONS



Body Weight: 3.71 lbs (1.68 kg)

ORDERING INFORMATION



W14 / 2018

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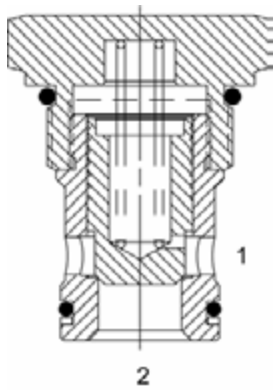


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SJ-CVA DIRECT ACTING CHECK VALVE, POPPET



DESCRIPTION

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

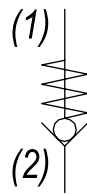
OPERATION

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

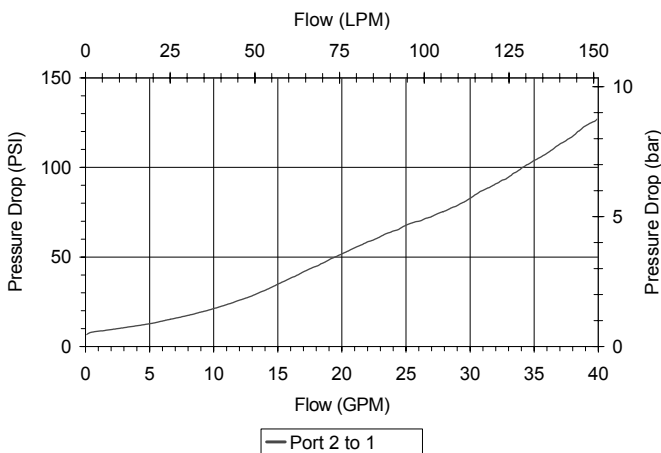
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

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

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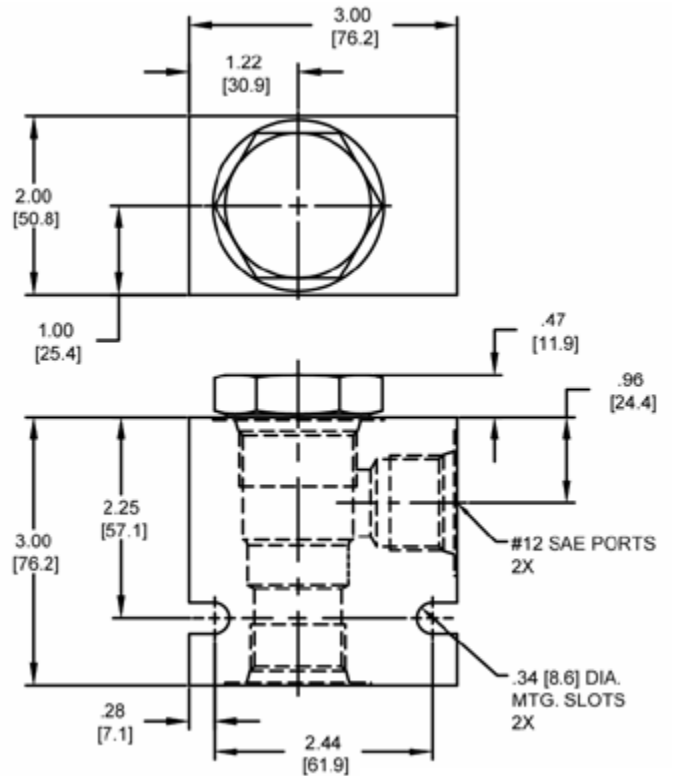
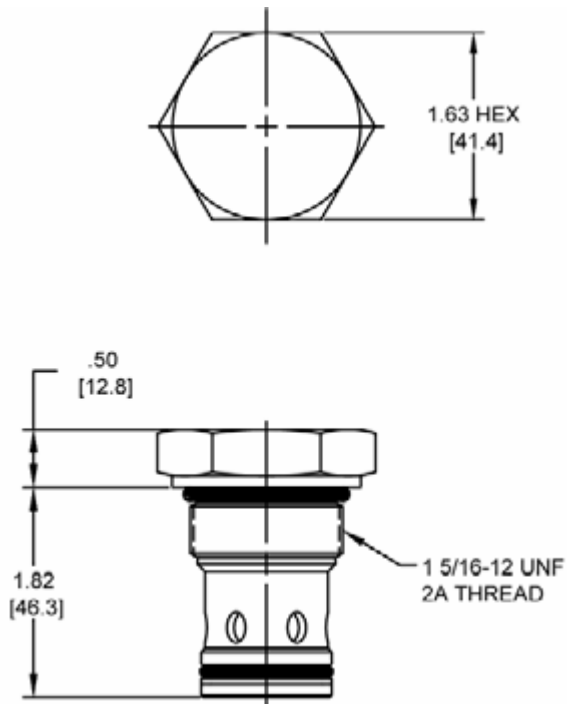


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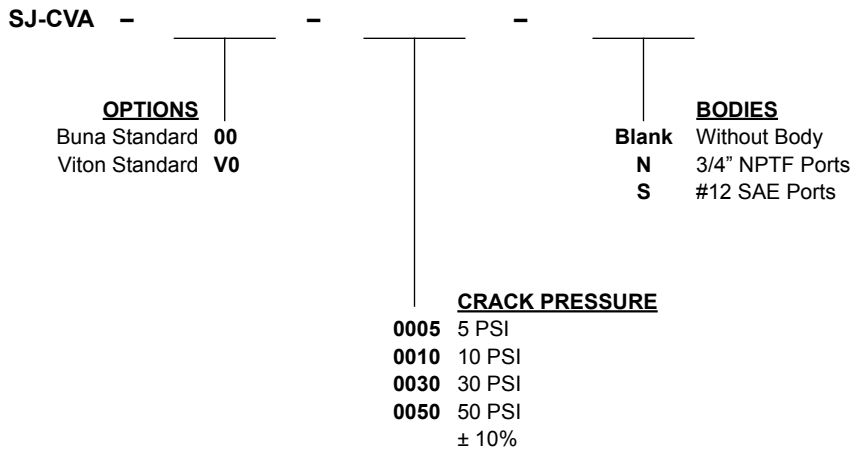
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DIMENSIONS



Body Weight: 1.29 lbs (.58 kg)

ORDERING INFORMATION



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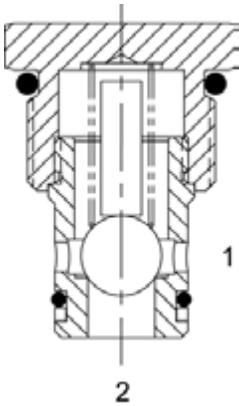


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DE-CVB DIRECT ACTING CHECK VALVE, BALL



DESCRIPTION

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

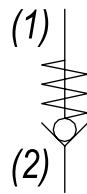
OPERATION

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

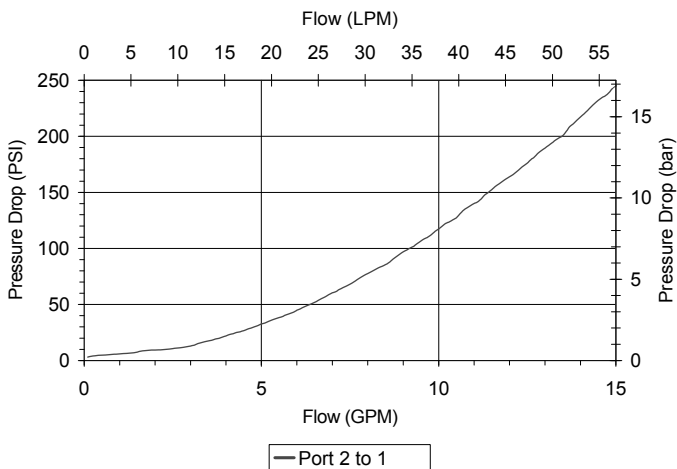
- Hardened seat for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Industry common cavity.

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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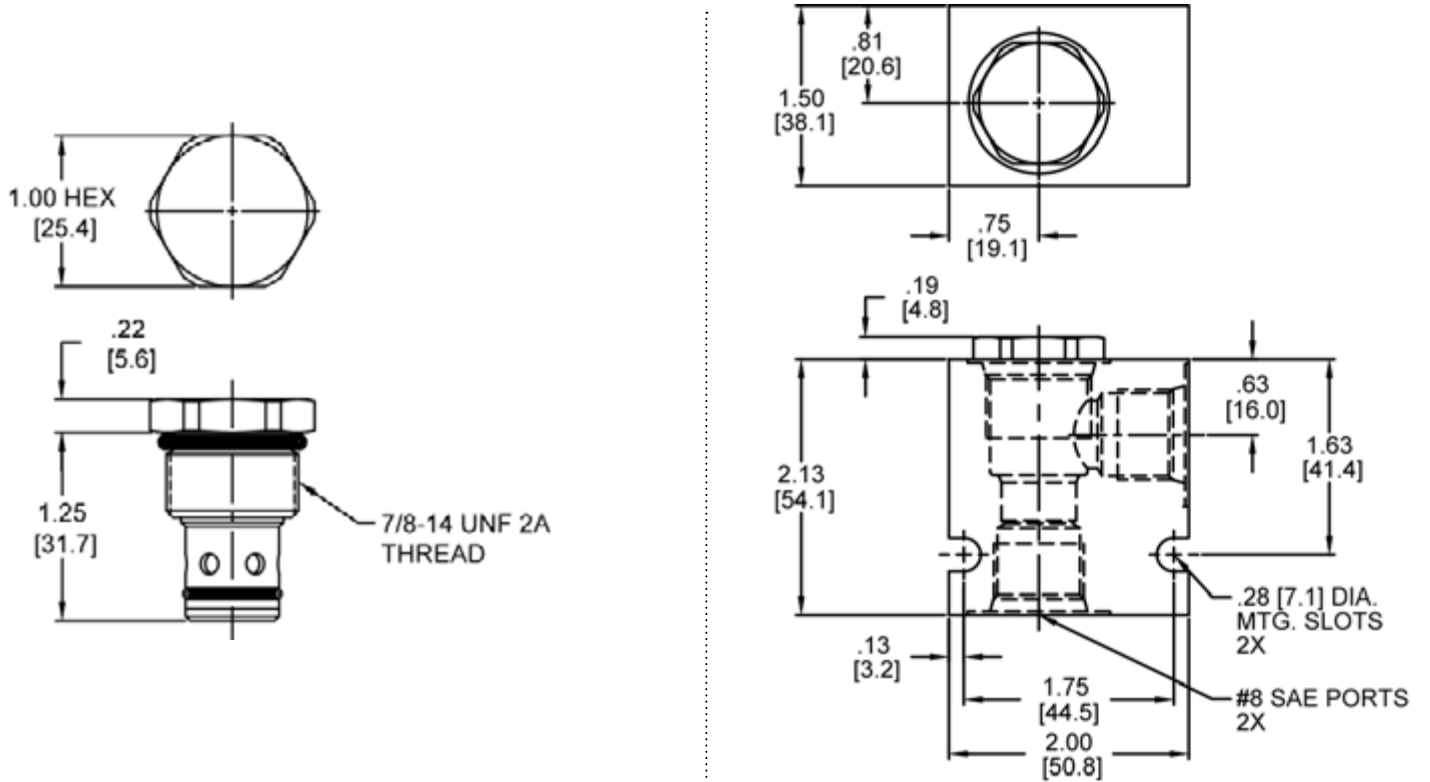


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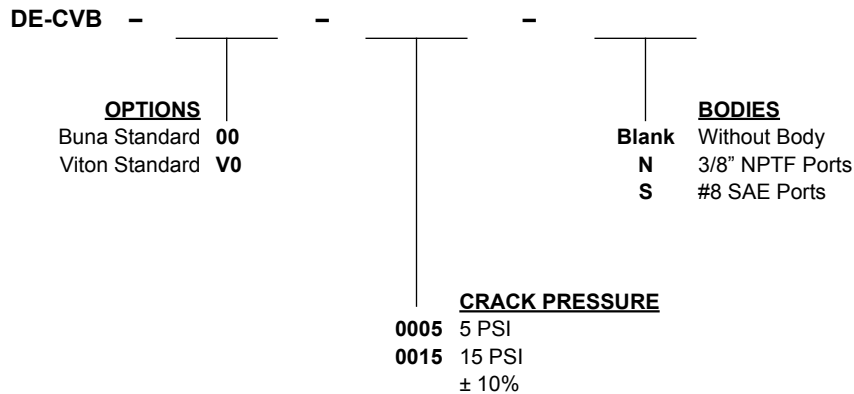
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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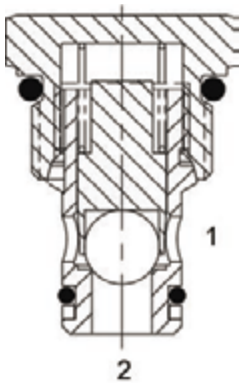


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PB-CVC DIRECT ACTING CHECK VALVE, GUIDED BALL



DESCRIPTION

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

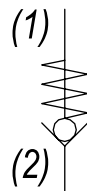
OPERATION

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

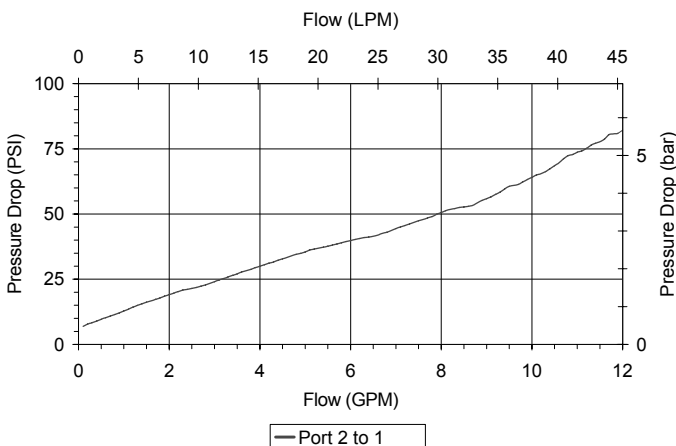
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided ball assembly.
- Industry common cavity.

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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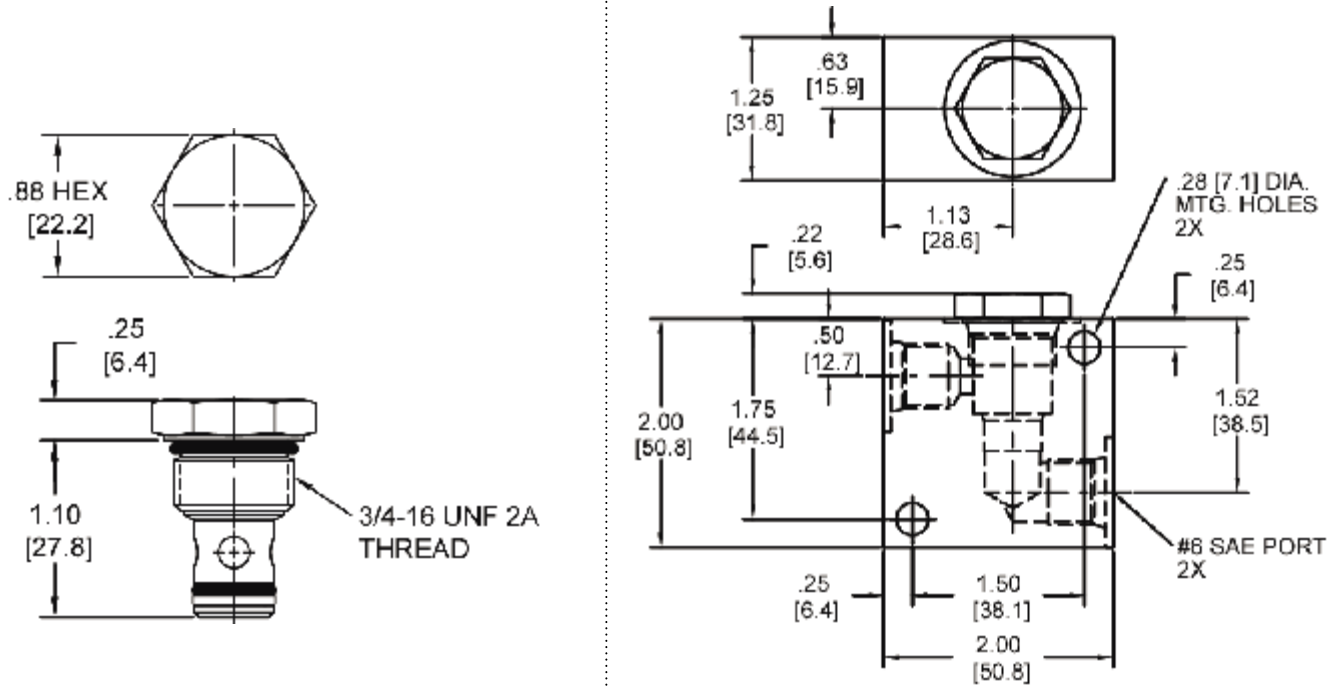


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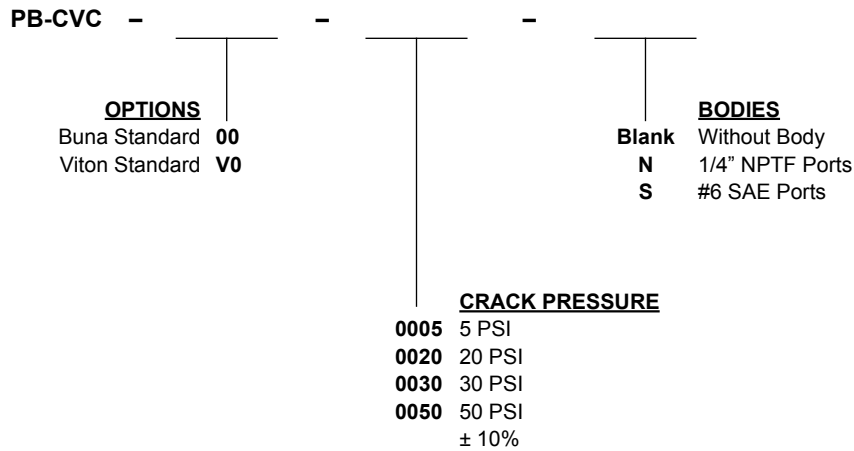
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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION



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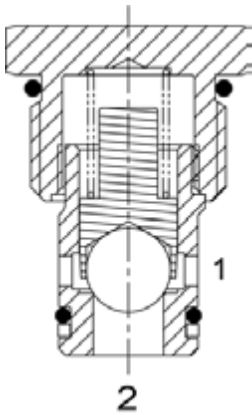


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DE-CVC DIRECT ACTING CHECK VALVE, GUIDED BALL



DESCRIPTION

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

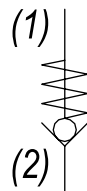
OPERATION

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

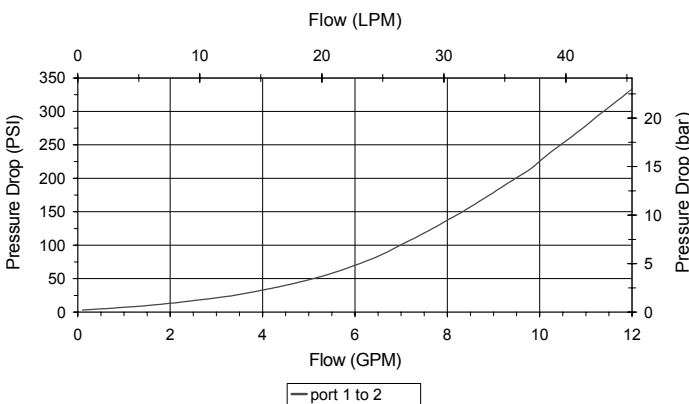
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided ball assembly.
- Industry common cavity.

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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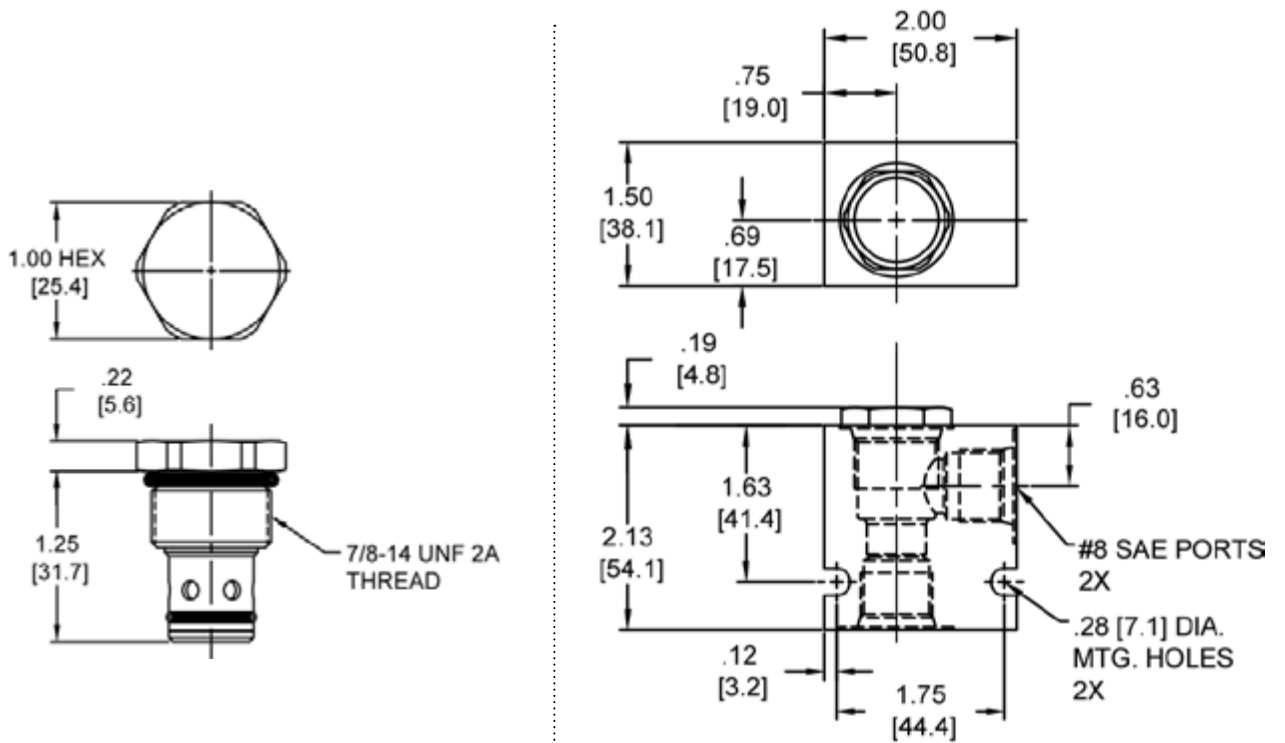


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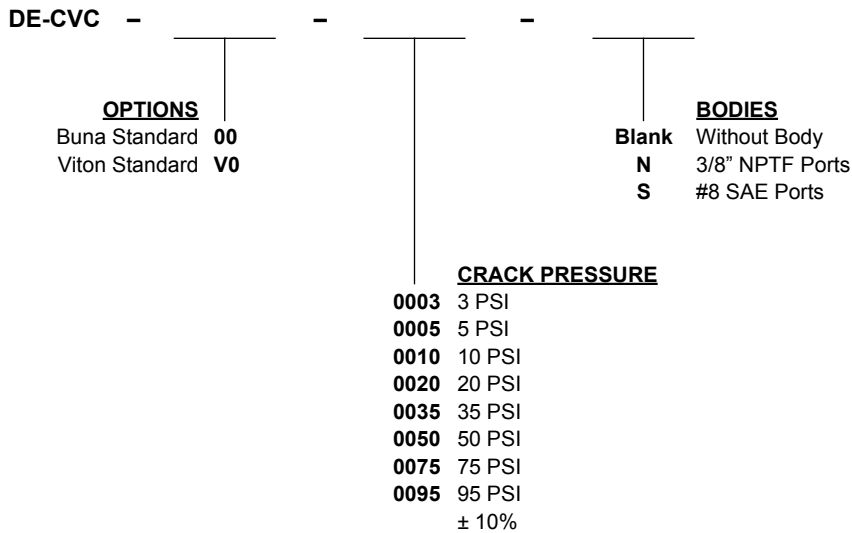
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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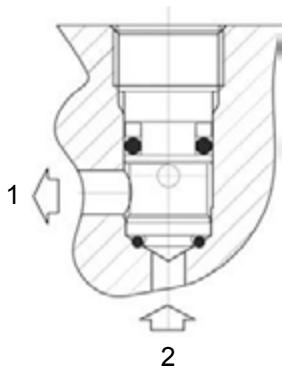


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QS-CVL CHECK VALVE, INSERT TYPE



DESCRIPTION

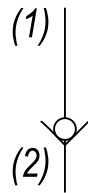
Special cavity, insert type, direct acting check valve.

OPERATION

The QS-CVL allows free flow passage from (2) to (1).

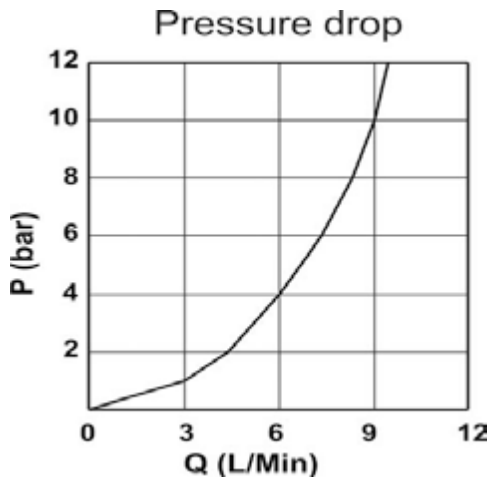
The valve is commonly used on load sensing lines to sense the working pressure of the functions of the circuit. The check valve is without spring inside.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	1 GPM (4 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	.16 lbs (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	10 - 12 Nm
Cavity	T151
Cavity Tools Kit (form tool, reamer, tap)	K-T151

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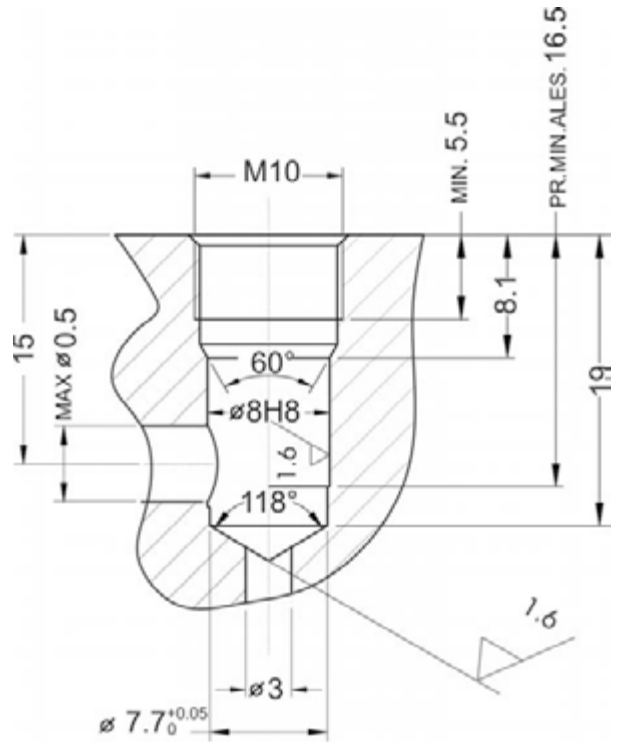
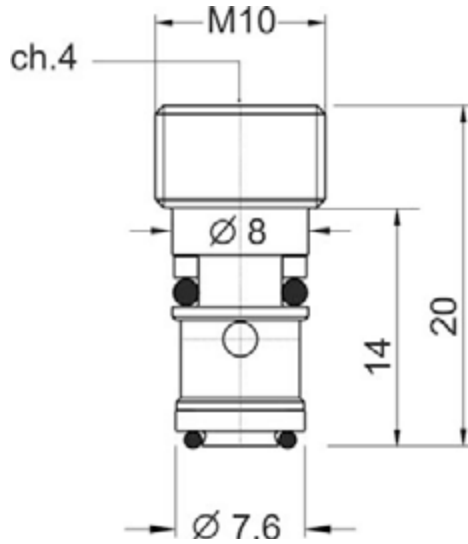


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DIMENSIONS



ORDERING INFORMATION

QS-CVL - - 00

OPTIONS

Buna Standard 00
 Viton Standard V0

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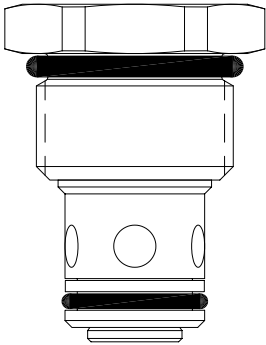


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DE-CVR REVERSE FLOW CHECK VALVE, POPPET



DESCRIPTION

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

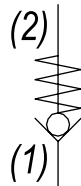
OPERATION

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

FEATURES

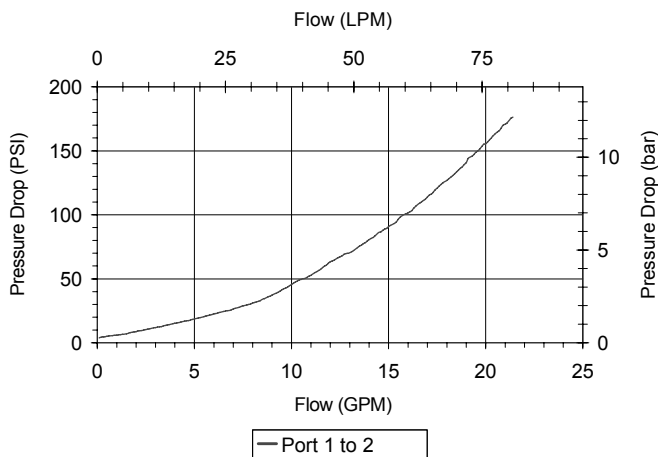
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

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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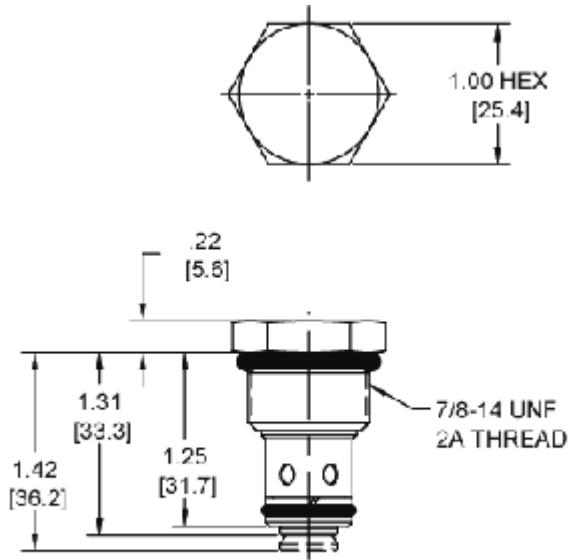


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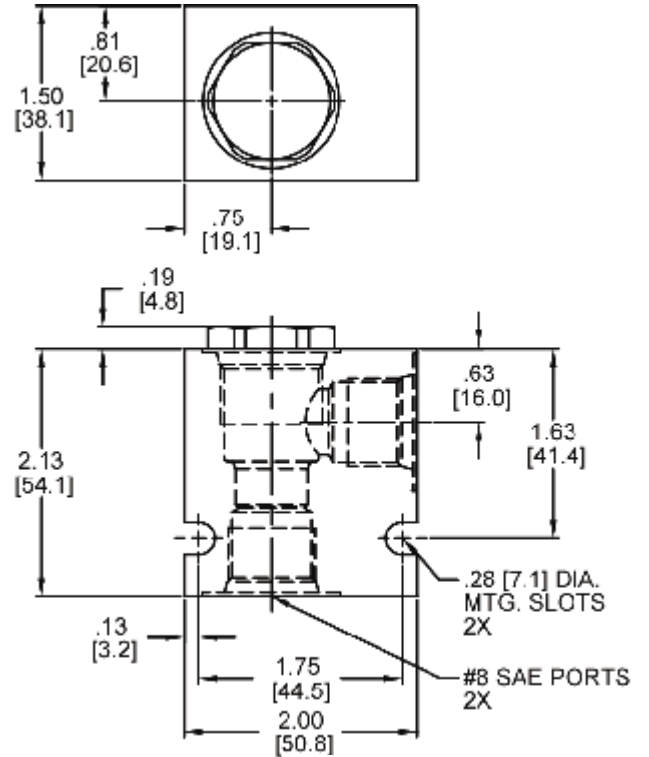


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DIMENSIONS

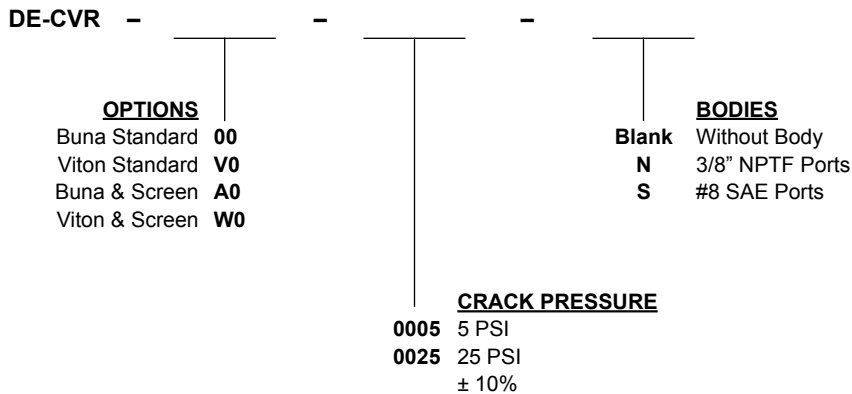


MINIMUM .563 DIAMETER PREDRILL 1.53 DEEP REQUIRED.



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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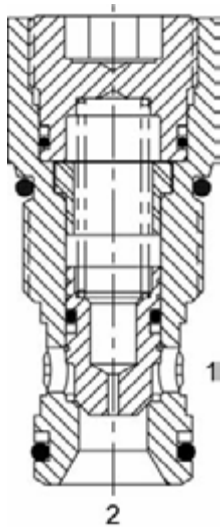


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HT-CVR REVERSE FLOW CHECK VALVE, POPPET



DESCRIPTION

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

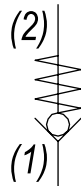
OPERATION

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

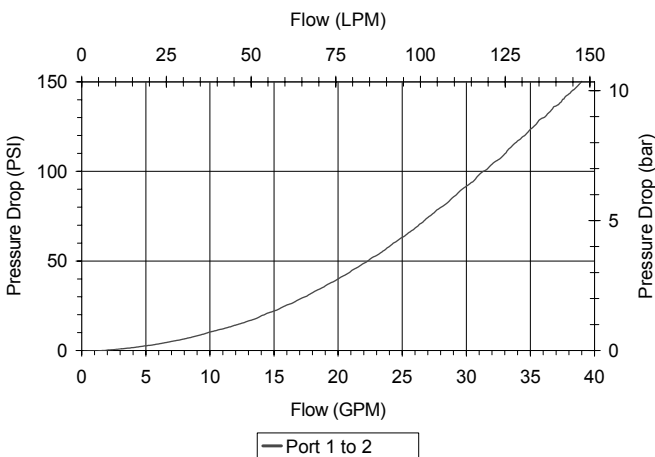
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

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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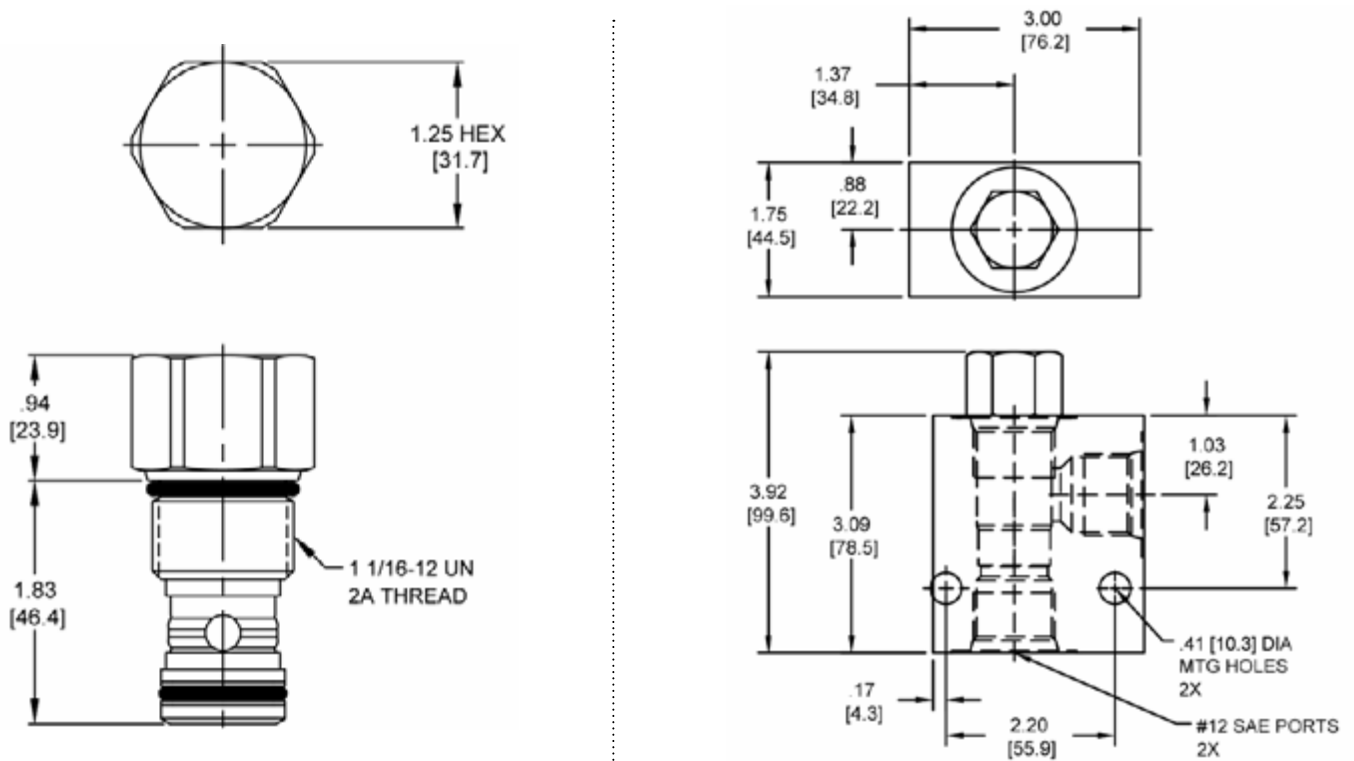


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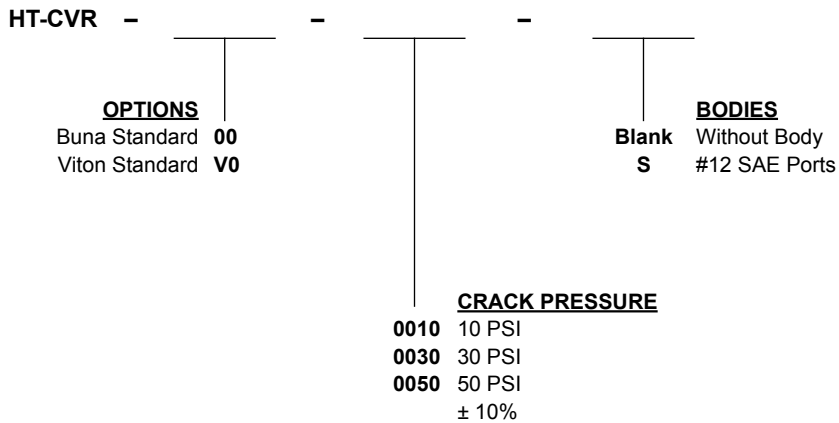
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DIMENSIONS



Body Weight: 3.71 lbs (1.68 kg)

ORDERING INFORMATION



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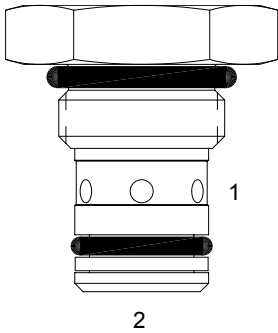


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MA-CVS DIRECT ACTING CHECK VALVE, SOFT SEAT, POPPET



DESCRIPTION

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

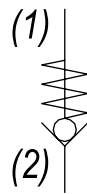
OPERATION

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

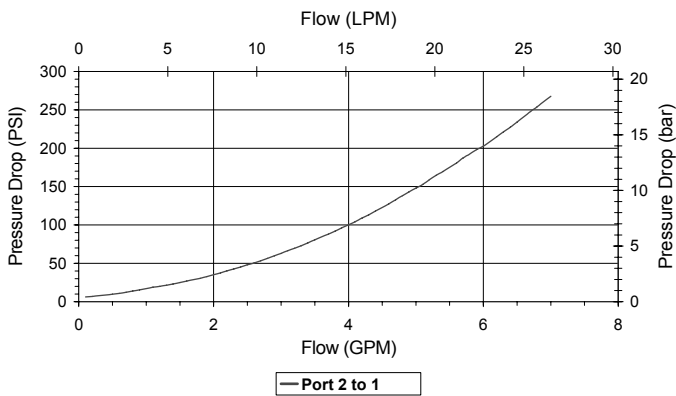
- Soft seat for ultra low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet.

HYDRAULIC SYMBOL



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 160°F (0° to 70°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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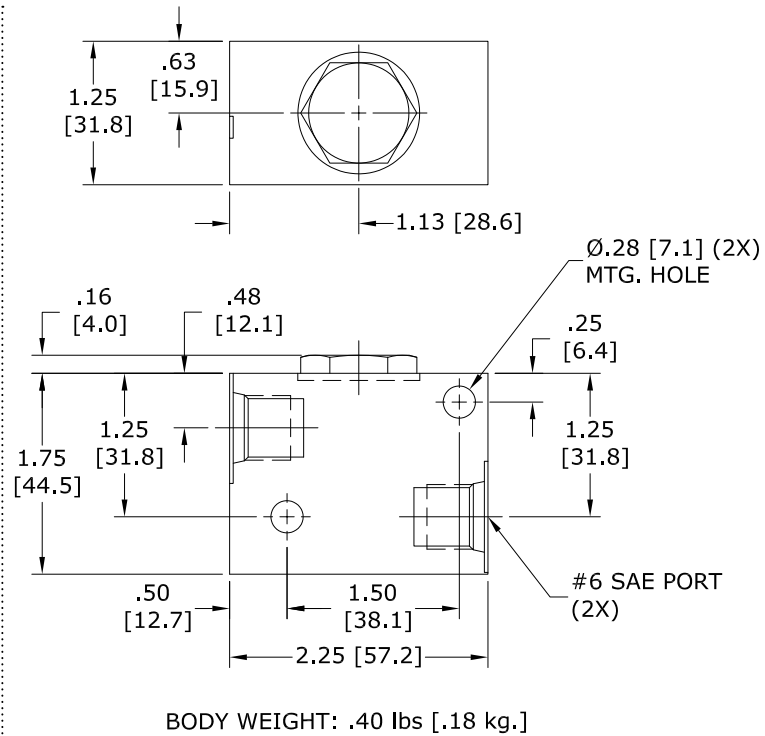
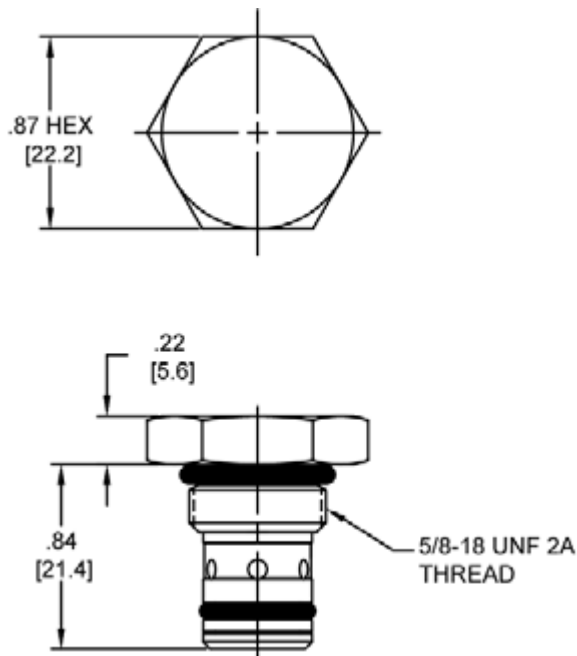


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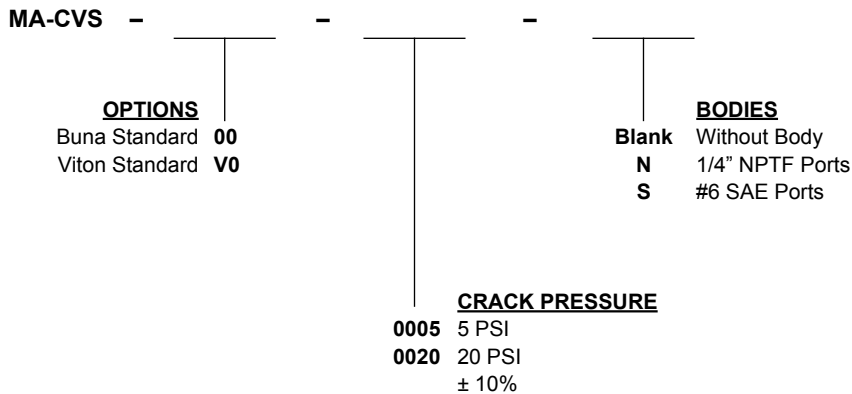
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DIMENSIONS



Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION



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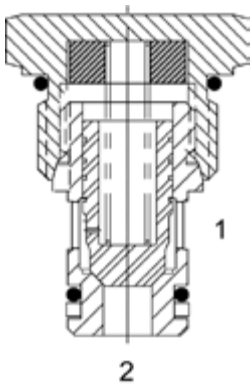


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PB-CVS DIRECT ACTING CHECK VALVE, SOFT SEAT, POPPET



DESCRIPTION

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

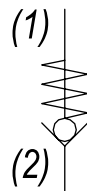
OPERATION

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.

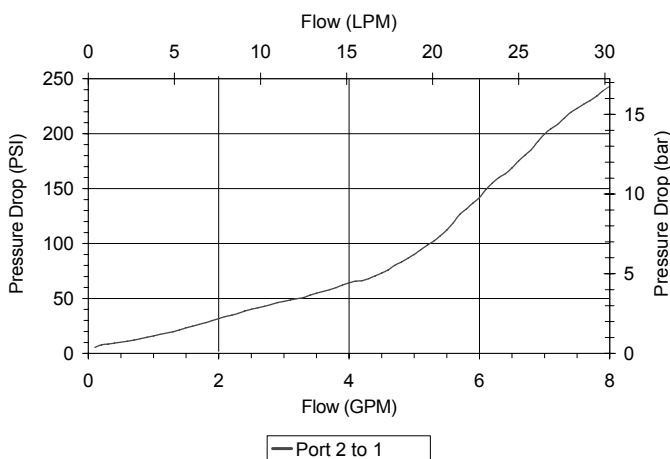
HYDRAULIC SYMBOL



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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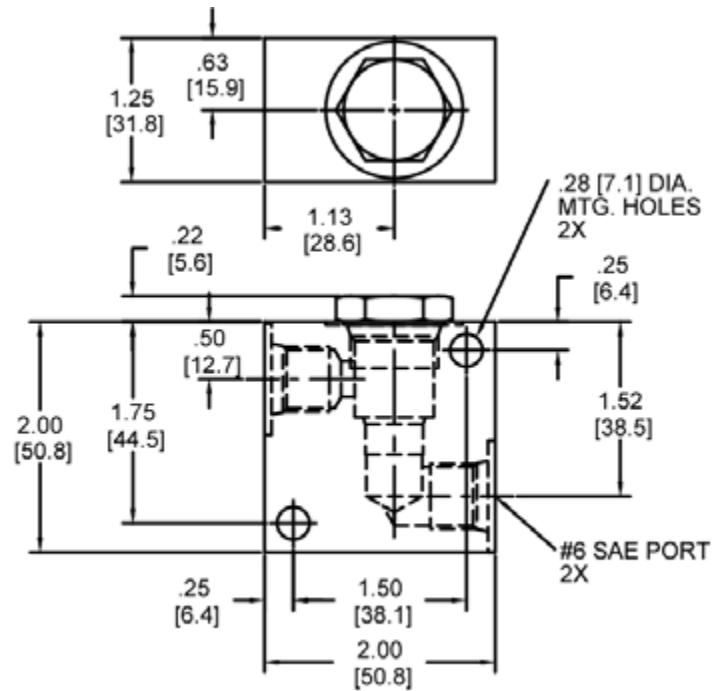
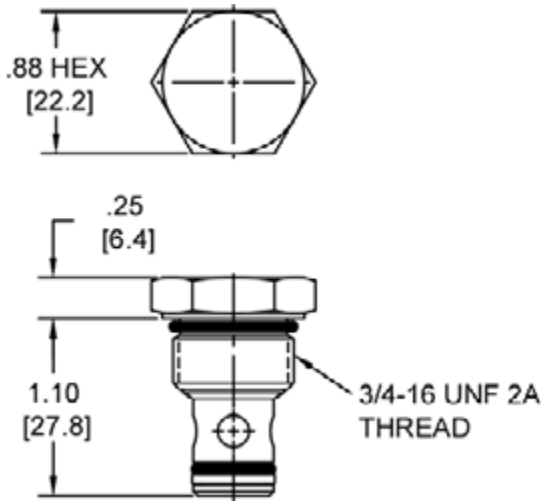


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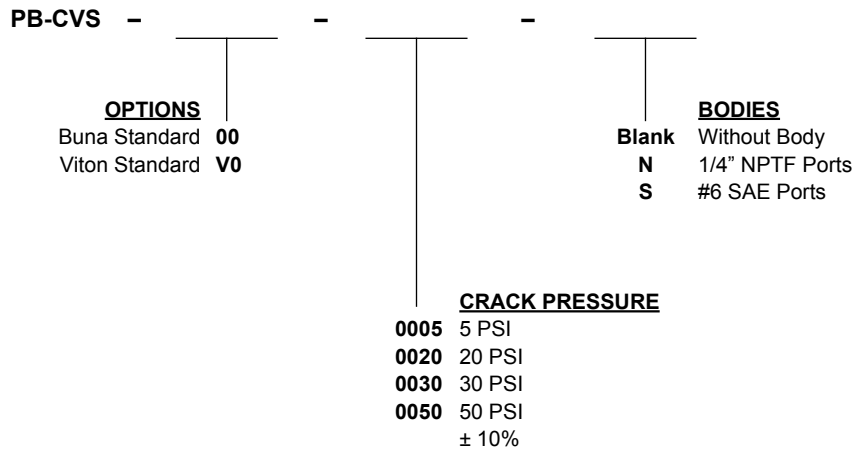
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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION



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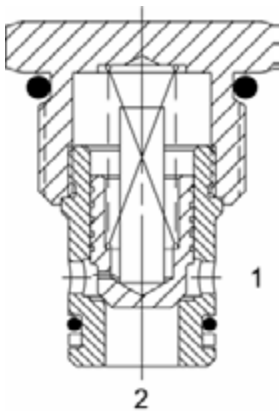


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DE-CVS DIRECT ACTING CHECK VALVE, SOFT SEAT, POPPET



DESCRIPTION

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

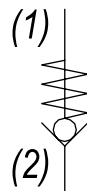
OPERATION

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.

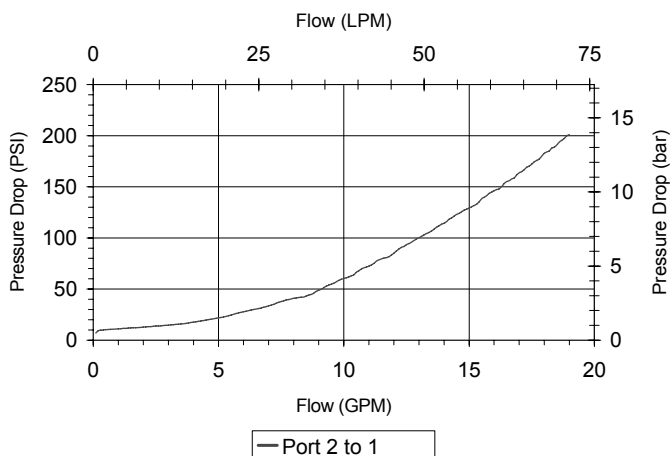
HYDRAULIC SYMBOL



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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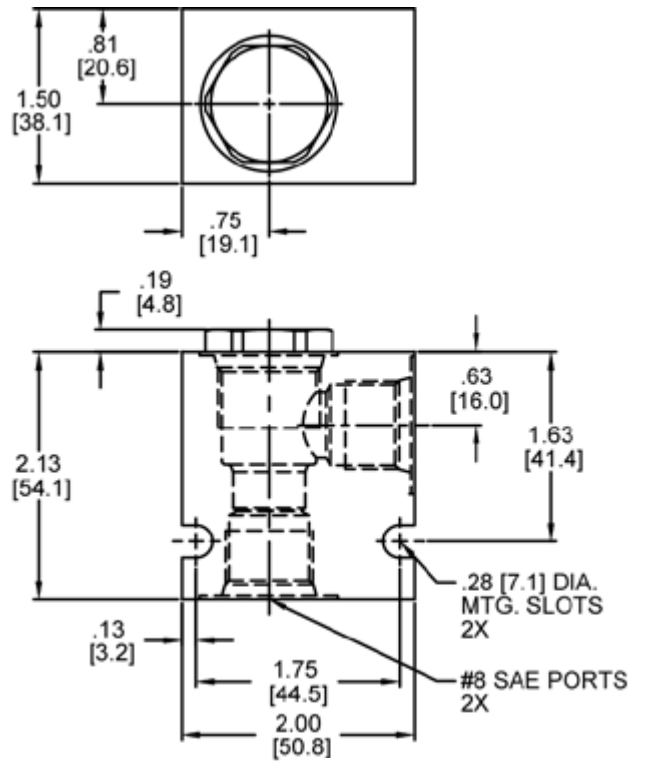
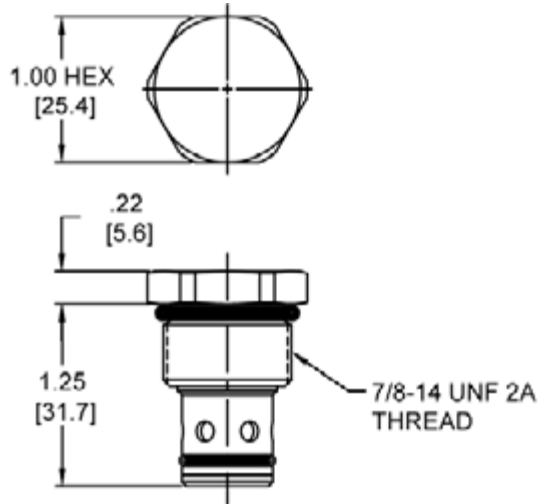


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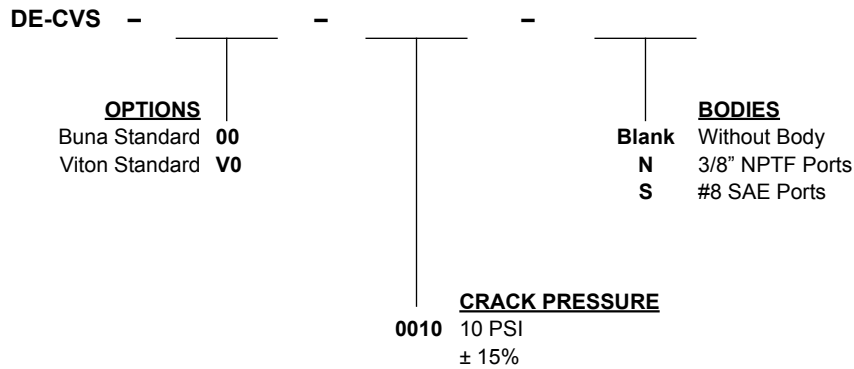
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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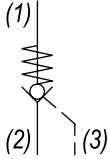


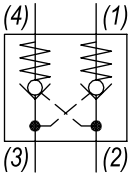
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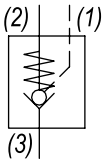


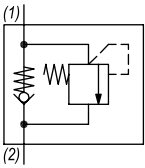
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PILOT TO OPEN AND DOUBLE PO CHECK VALVES

PILOT TO OPEN CHECK VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	6	3500	23	241	3/4-16	PP-CPB	MD38
	8	3500	30	241	7/8-14	DF-CPB	MD40
	10	3500	38	241	7/8-14	DF-CPC	MD42

DOUBLE PO CHECK VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	5	3000	19	207	3/4-16	PQ-CDP	MD44
	8	3000	30	207	7/8-14	DG-CDP	MD46

PILOT TO CLOSE CHECK VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3500	38	241	7/8-14	DF-CPD	MD48
	20	3500	76	241	1 5/16-12	SL-CPD	MD50

CHECK VALVES WITH THERMAL RELIEF	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	15	4000	57	276	7/8-14	DE-CVT	MD52

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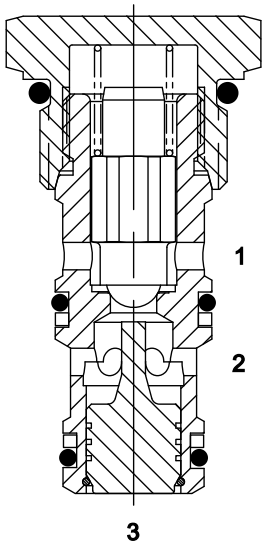


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PP-CPB PILOT OPERATED CHECK VALVE, GUIDED BALL



DESCRIPTION

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

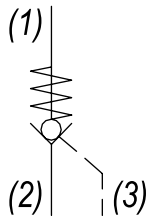
OPERATION

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.

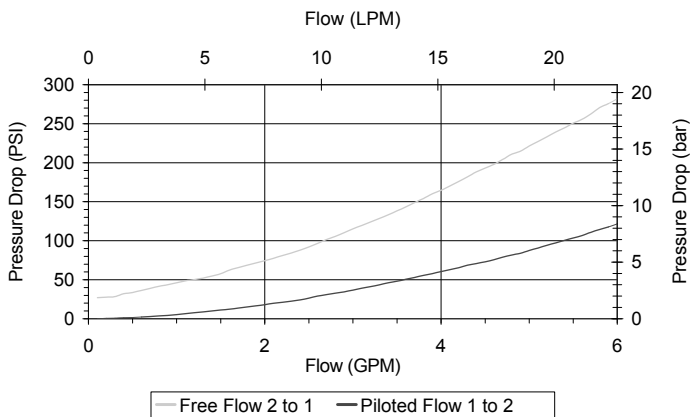
HYDRAULIC SYMBOL



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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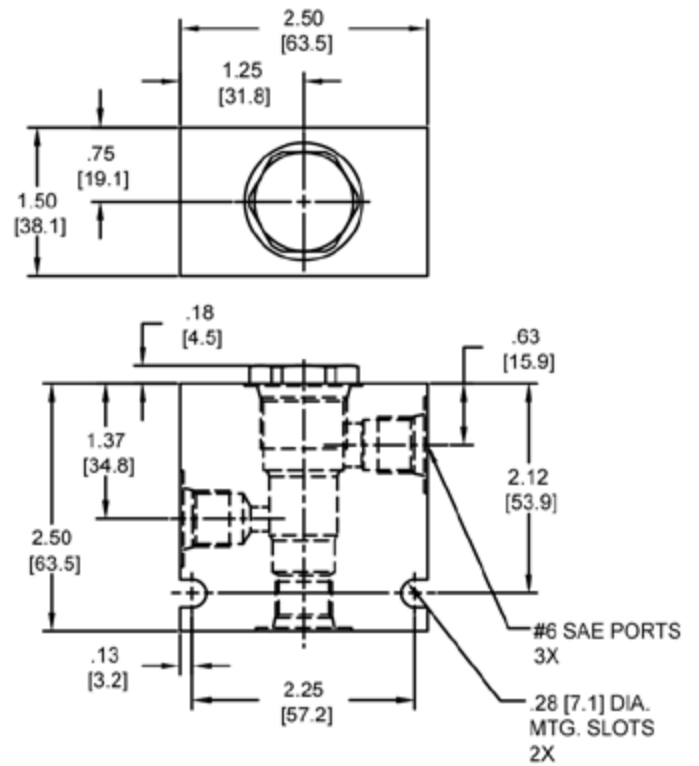
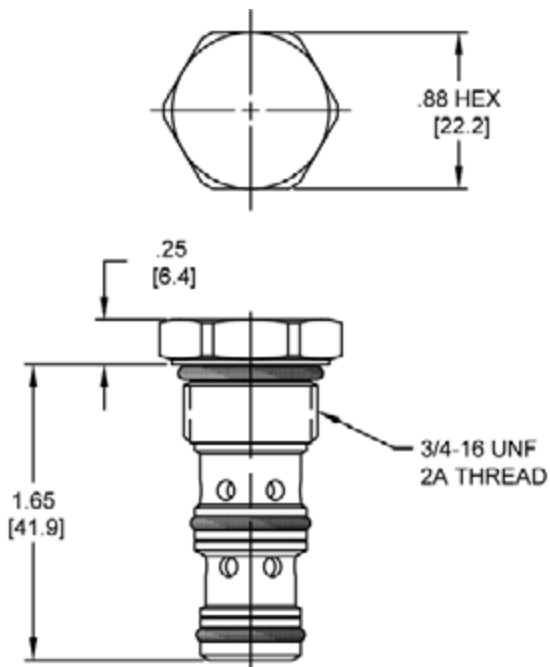


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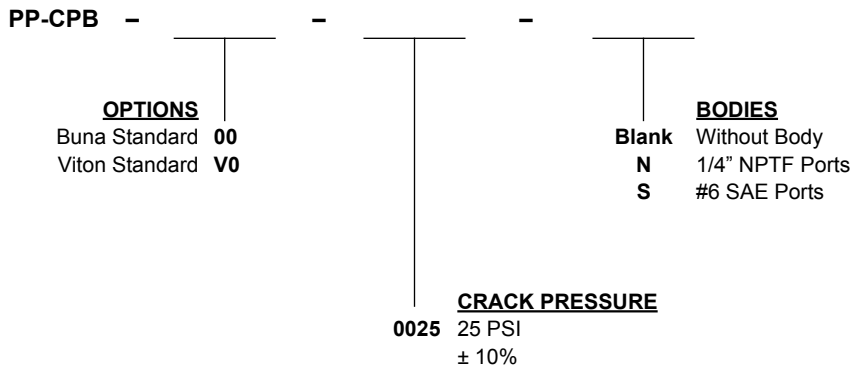


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DIMENSIONS



ORDERING INFORMATION



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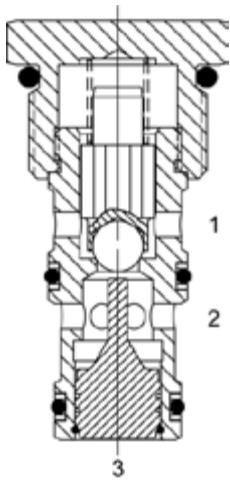


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DF-CPB PILOT OPERATED CHECK VALVE, GUIDED BALL



DESCRIPTION

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

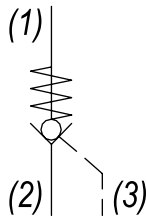
OPERATION

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.

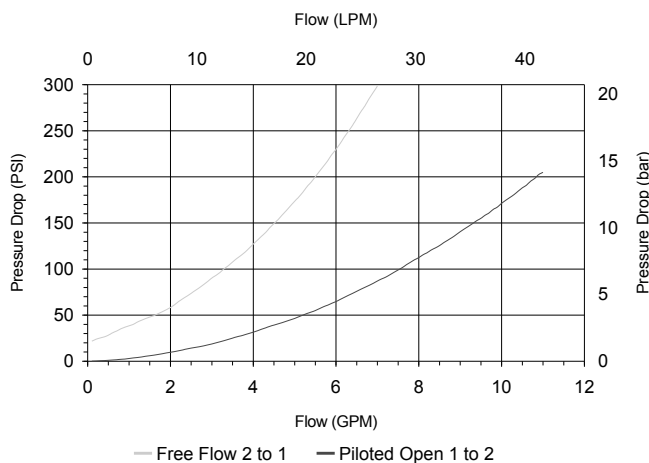
HYDRAULIC SYMBOL



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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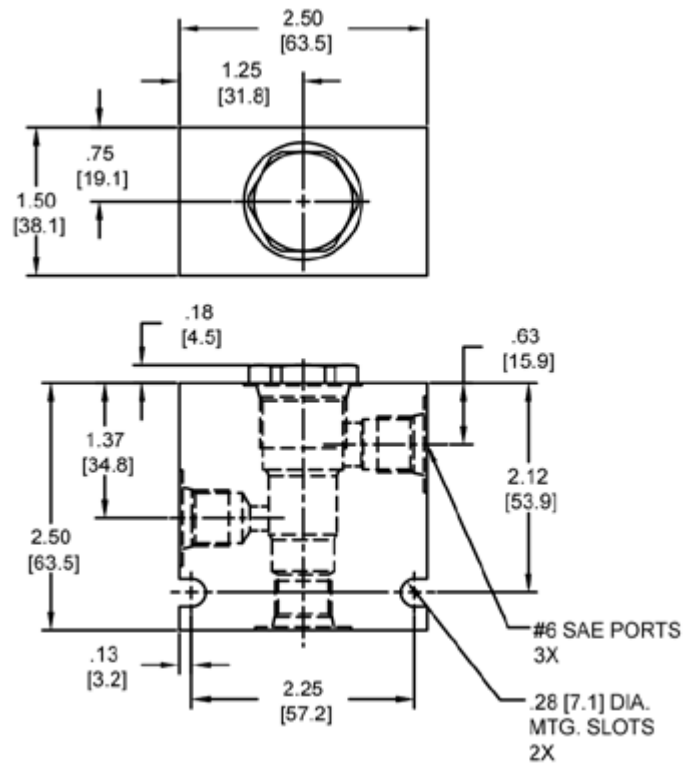
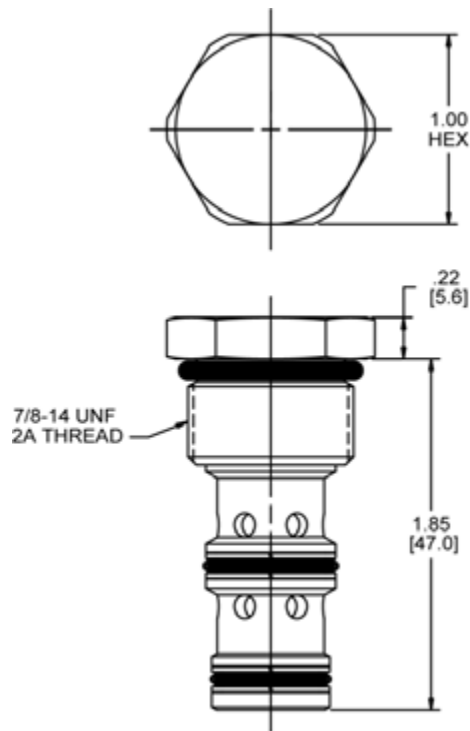


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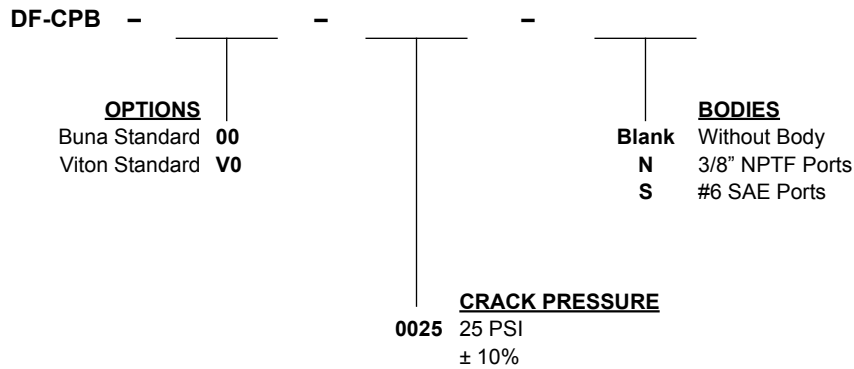


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DIMENSIONS



ORDERING INFORMATION



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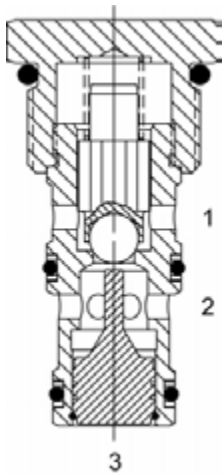


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DF-CPC PILOT TO OPEN, CHECK VALVE, GUIDED BALL



DESCRIPTION

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

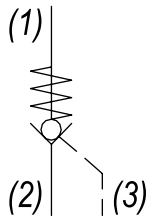
OPERATION

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.

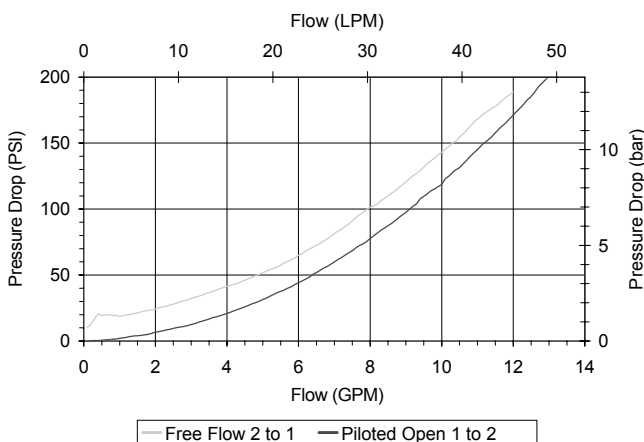
HYDRAULIC SYMBOL



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

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.

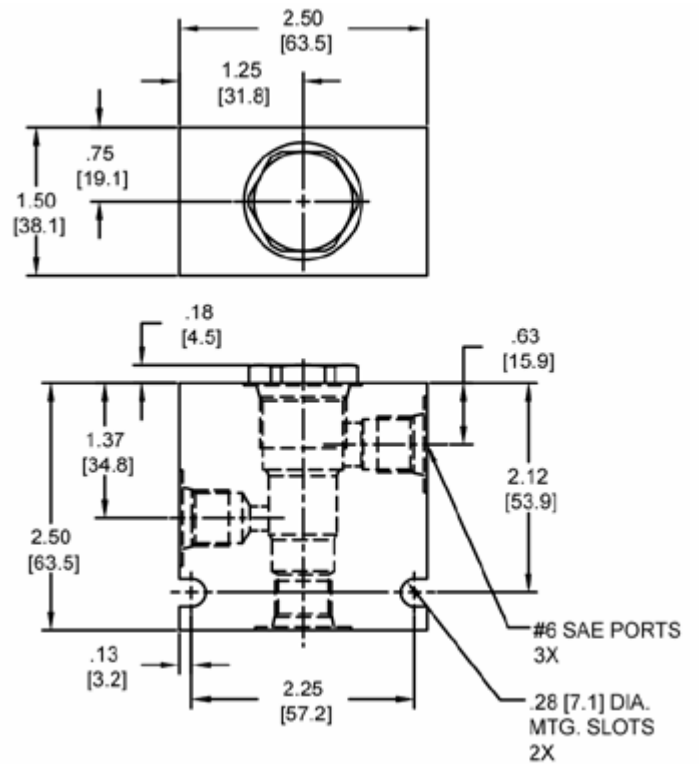
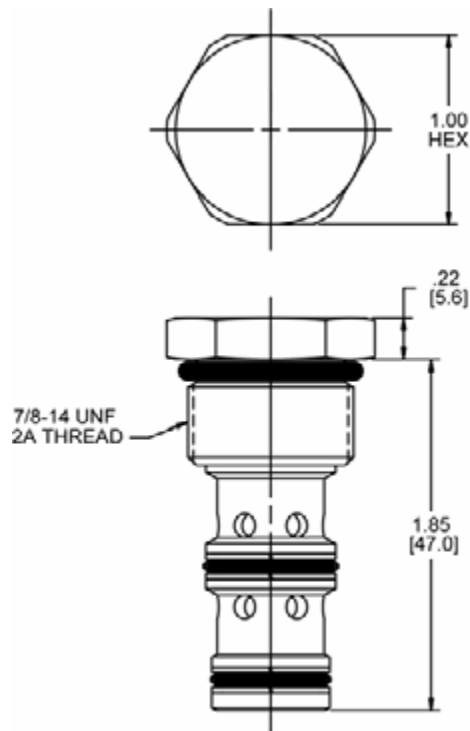


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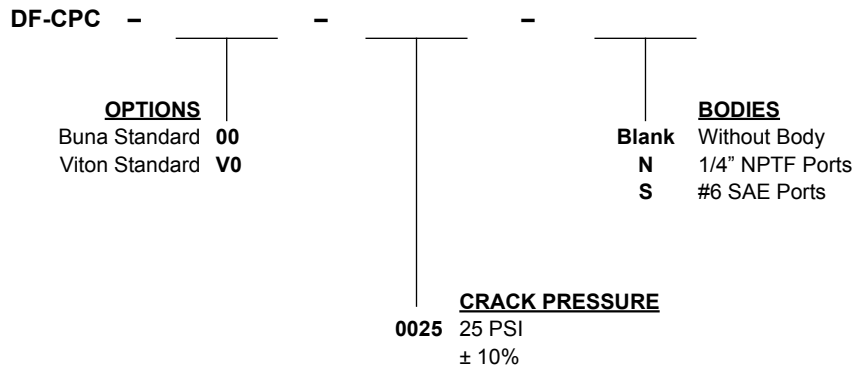


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DIMENSIONS



ORDERING INFORMATION



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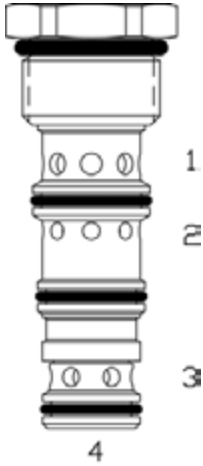


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PQ-CDP DOUBLE PILOT OPERATED CHECK VALVE



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

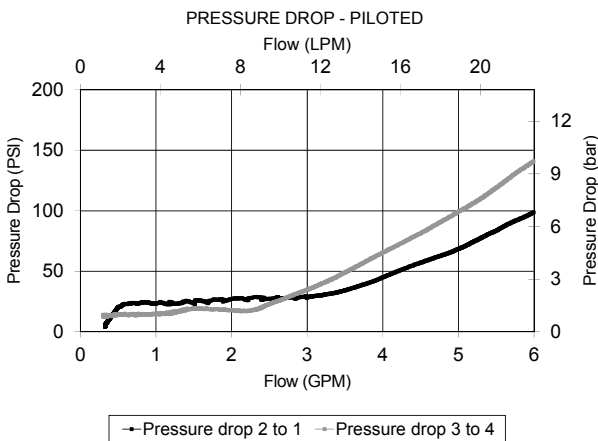
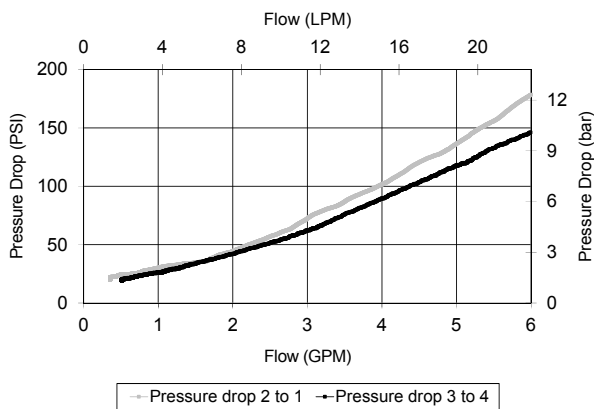
- Hardened parts for long life.
- Industry common cavity.



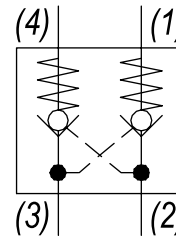
Great for "in Cylinder" use application.

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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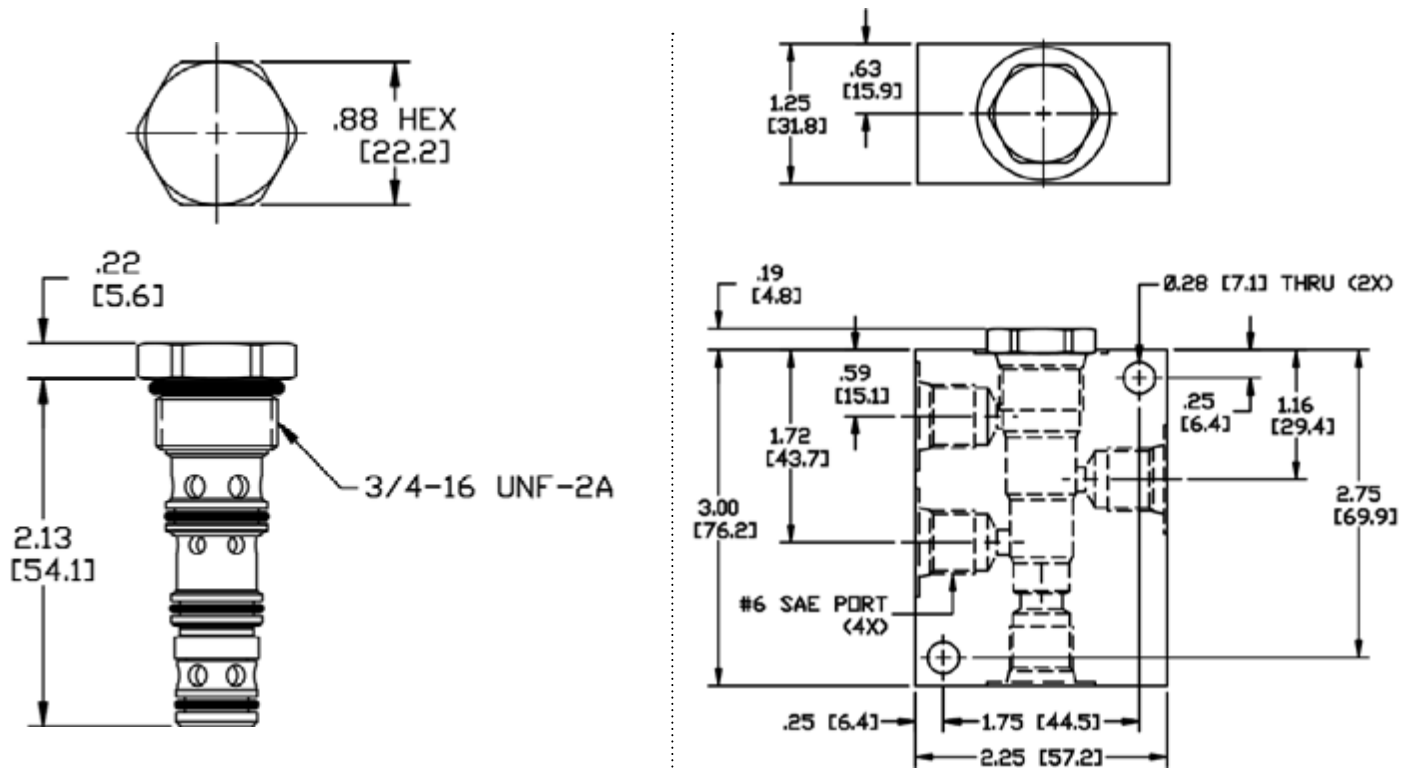


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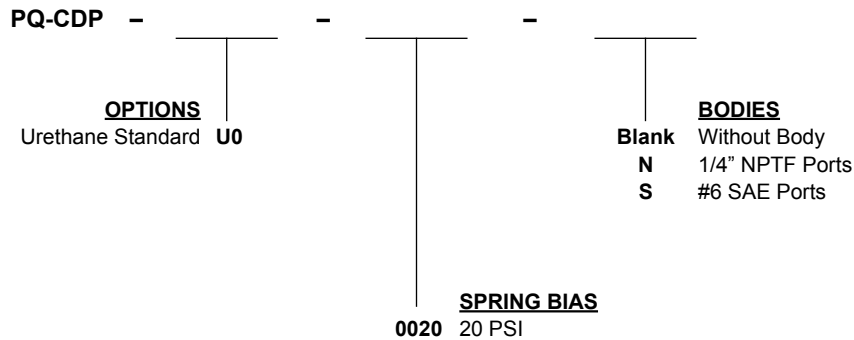


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DIMENSIONS



ORDERING INFORMATION



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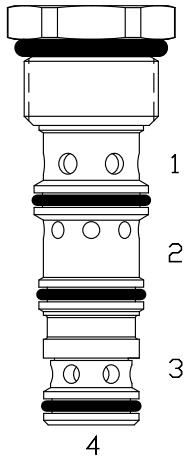


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DG-CDP DOUBLE PILOT OPERATED CHECK VALVE



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

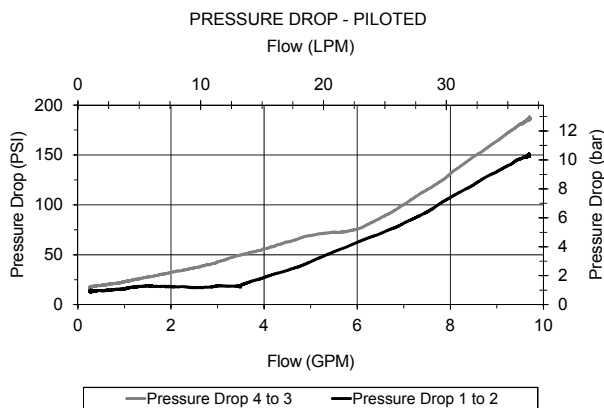
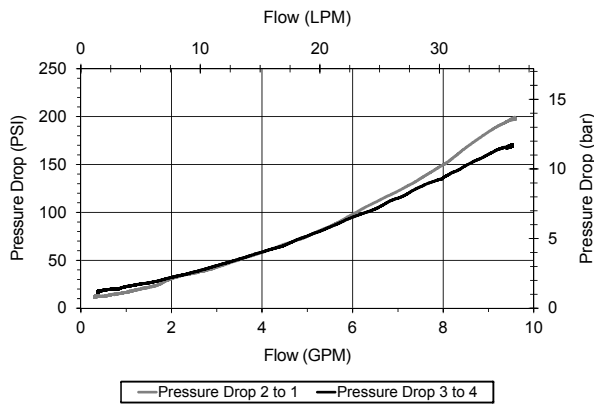
- Hardened parts for long life.
- Industry common cavity.



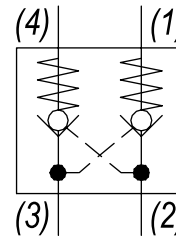
Great for "in Cylinder" use application.

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

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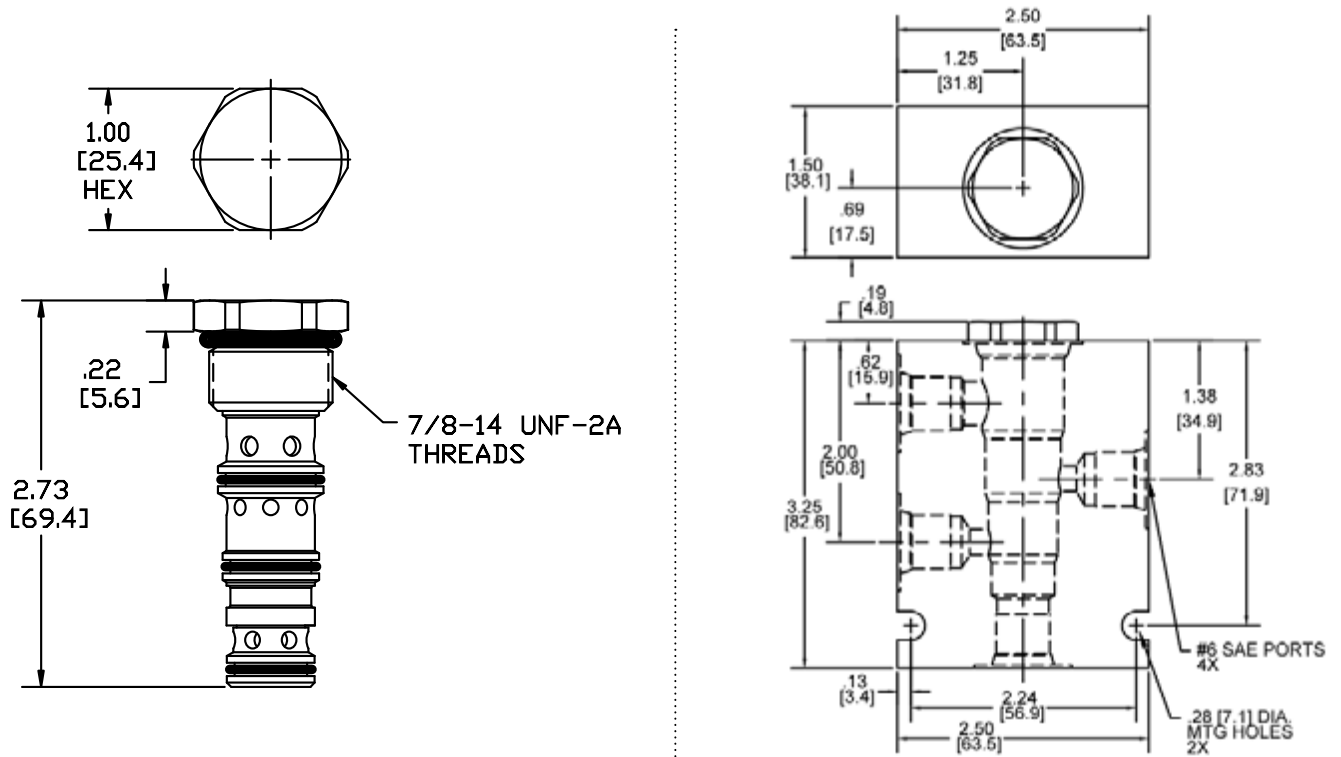


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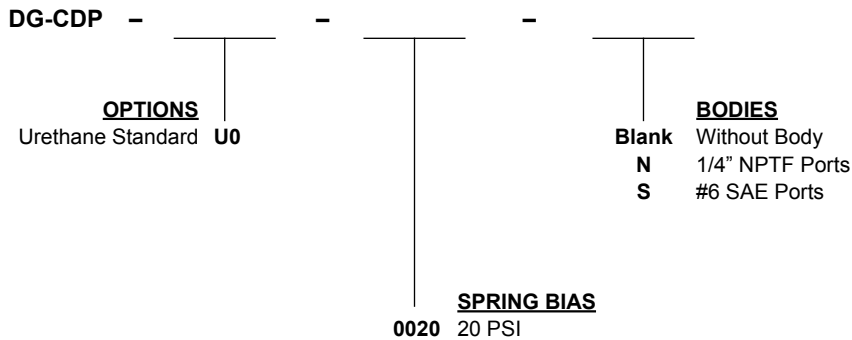
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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



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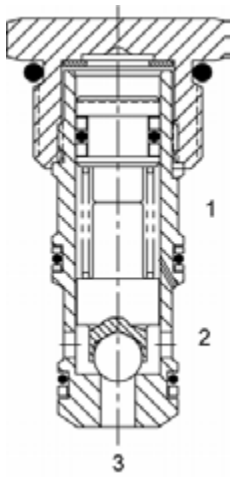


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DF-CPD PILOT TO CLOSE CHECK VALVE, GUIDED BALL



DESCRIPTION

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

OPERATION

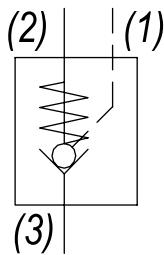
The DF-CPD allows free flow from (3) to (2), and blocks flow from (2) to (3). Flow will be blocked from (3) to (2) when sufficient pressure is applied at (1). The cartridge has various "pilot ratios" (see options).

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.

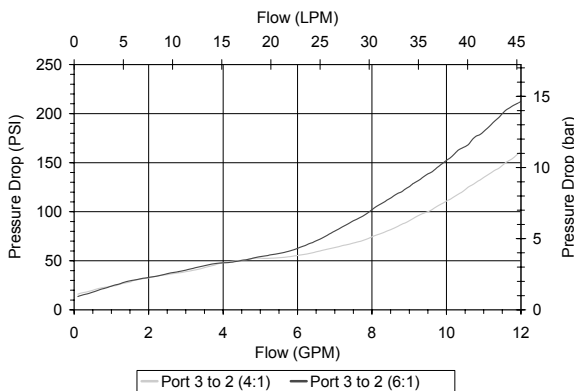
HYDRAULIC SYMBOL



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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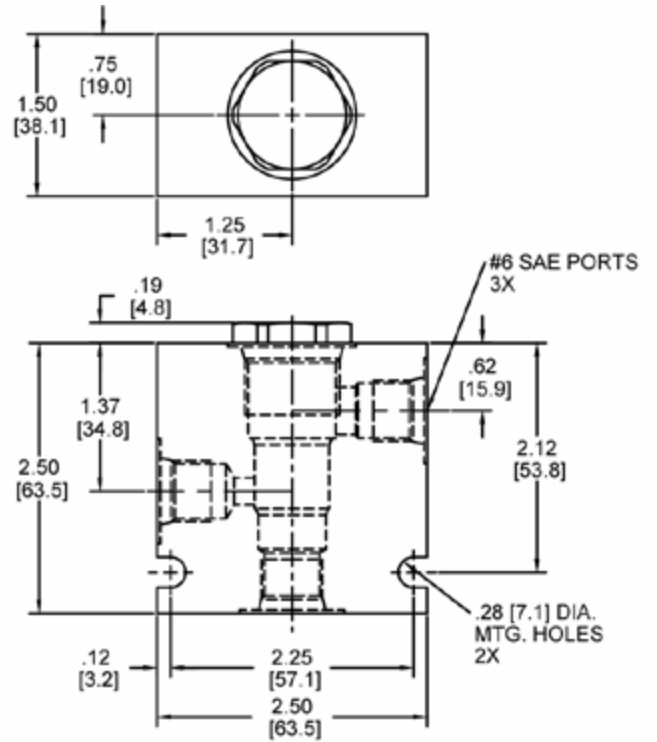
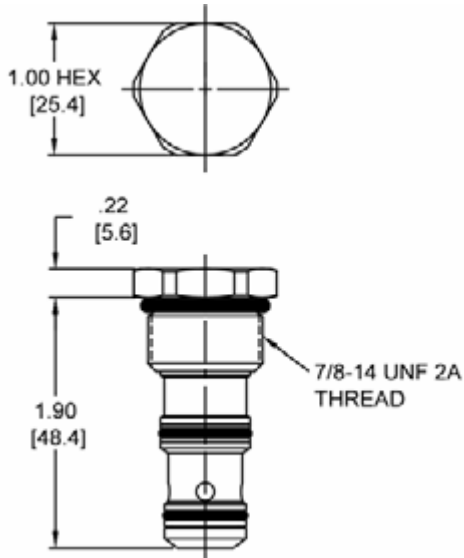


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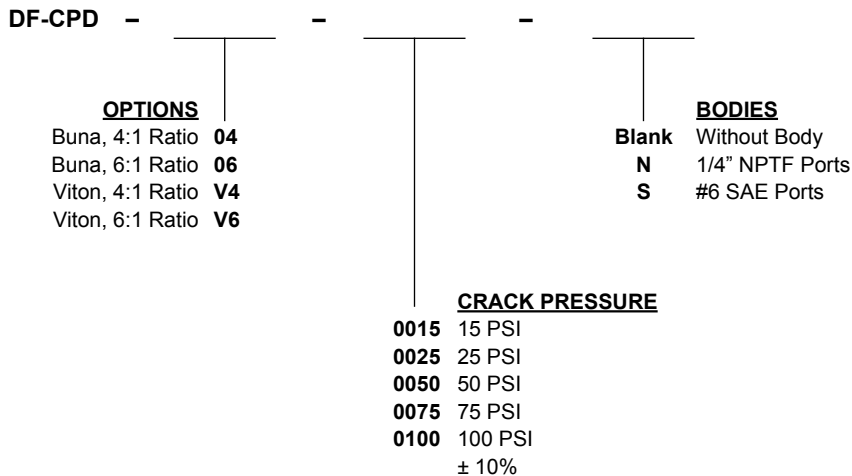
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



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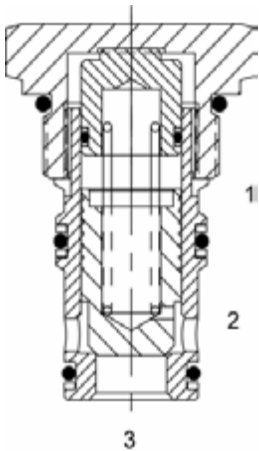


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SL-CPD PILOT TO CLOSE CHECK VALVE, POPPET



DESCRIPTION

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

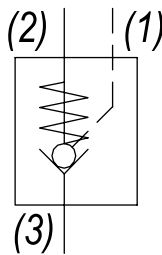
OPERATION

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.

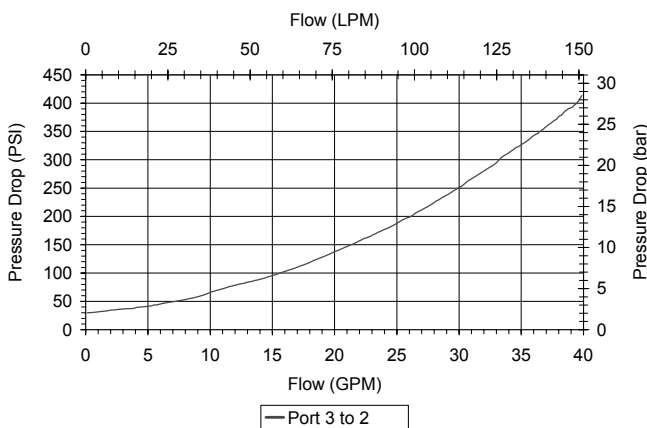
HYDRAULIC SYMBOL



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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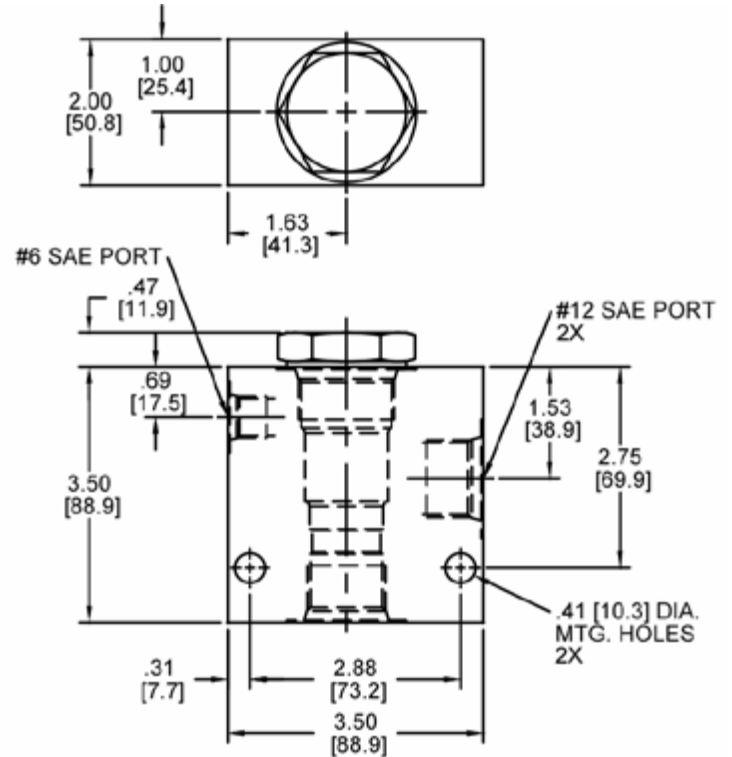
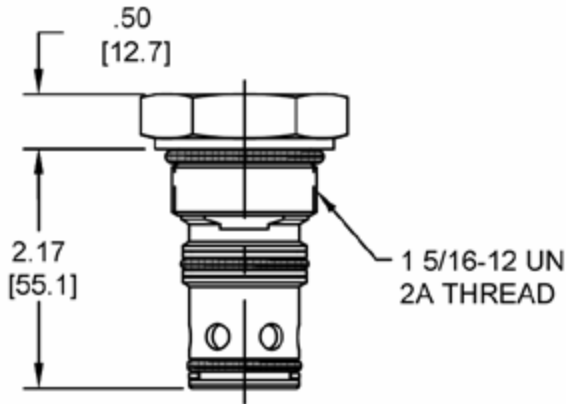
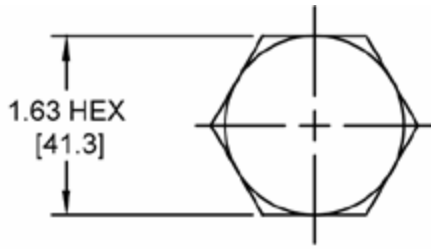


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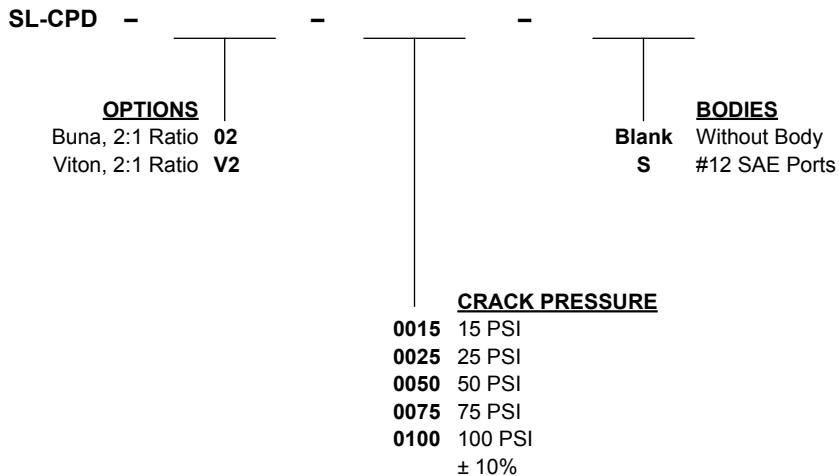
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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION



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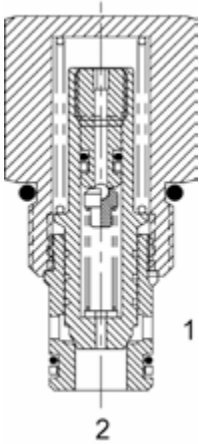


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DE-CVT DIRECT ACTING CHECK VALVE THERMAL RELIEF, POPPET



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

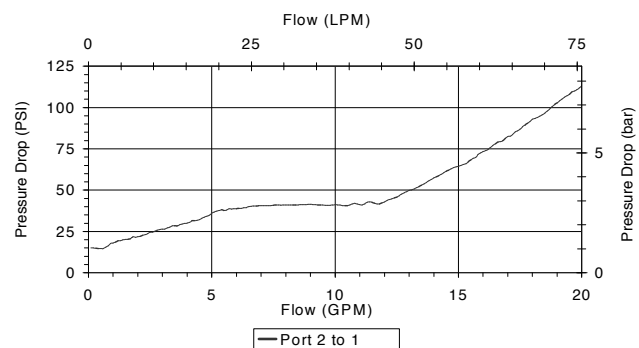
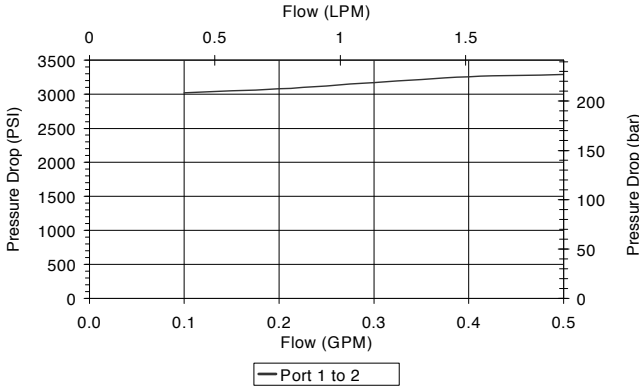
- Hardened parts for long life.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.



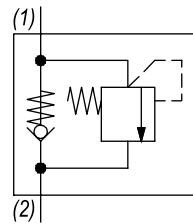
Nominal flow rating is 15 GPM for free flow port (2) to (1). Consult chart for free flow differential pressure. Thermal relief is cyclic rated to 0.1 GPM. Port (1) to (2) chart demonstrates override characteristics for a typical thermal relief application.

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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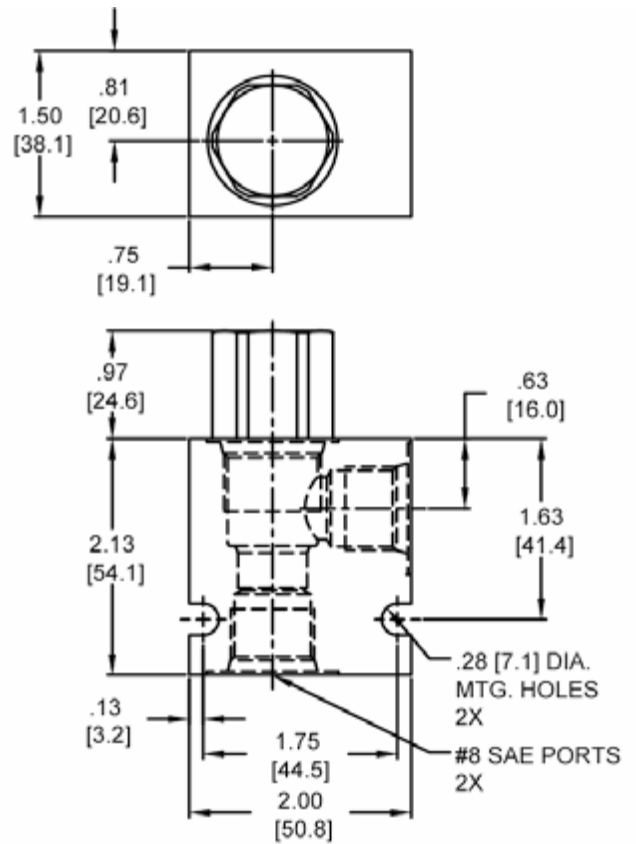
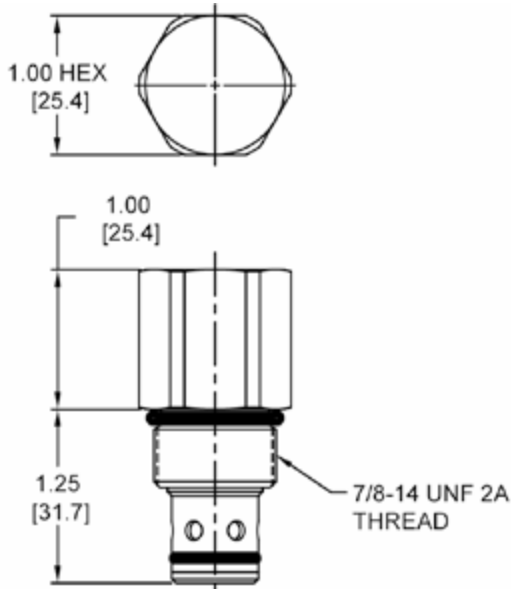


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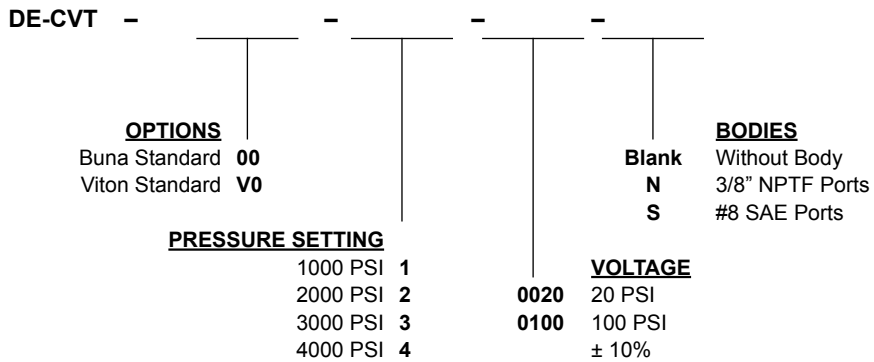
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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

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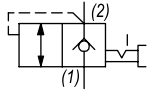
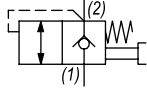
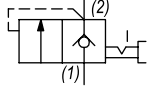
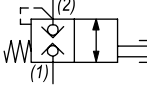
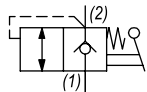
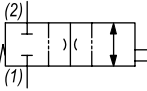
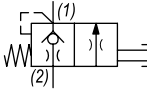


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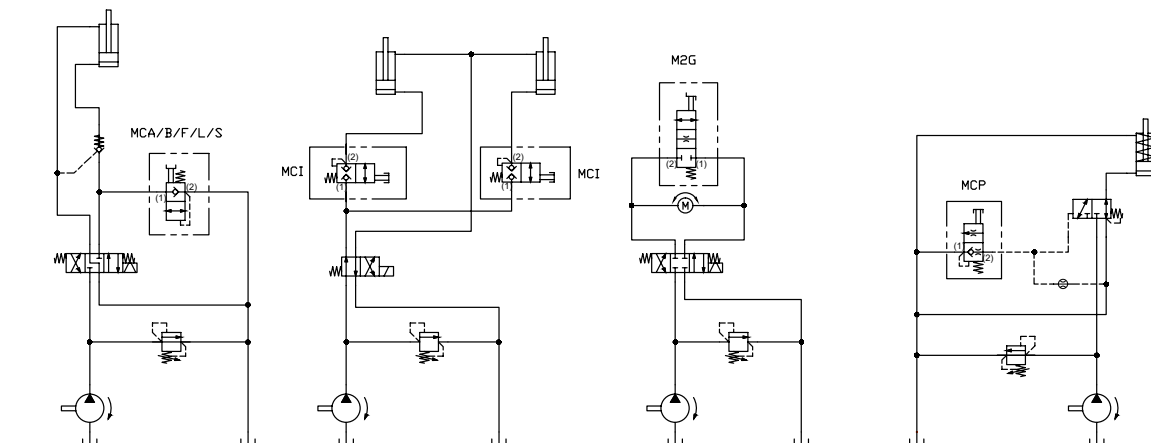
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2 WAY 2 POSITION MANUAL VALVES

	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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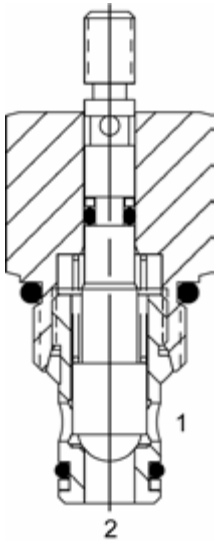


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PB-MCA MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL TYPE



DESCRIPTION

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

OPERATION

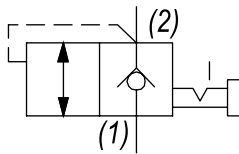
The PB-MCA blocks flow from (1) to (2) until an operator pulls the shaft outward. The bias spring (see option page for pressure) allows for backpressure at (2) before the valve will open.

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.

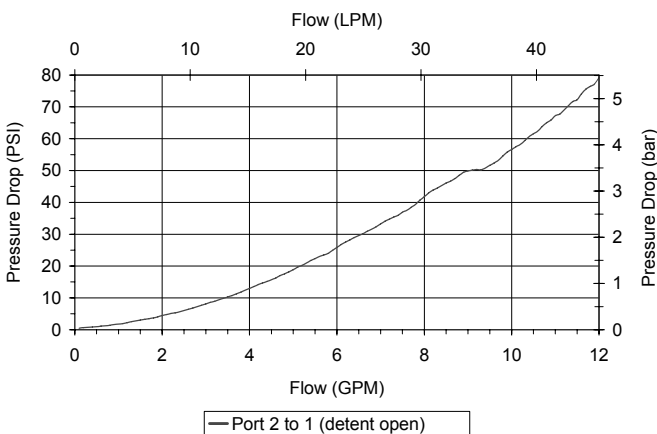
HYDRAULIC SYMBOL



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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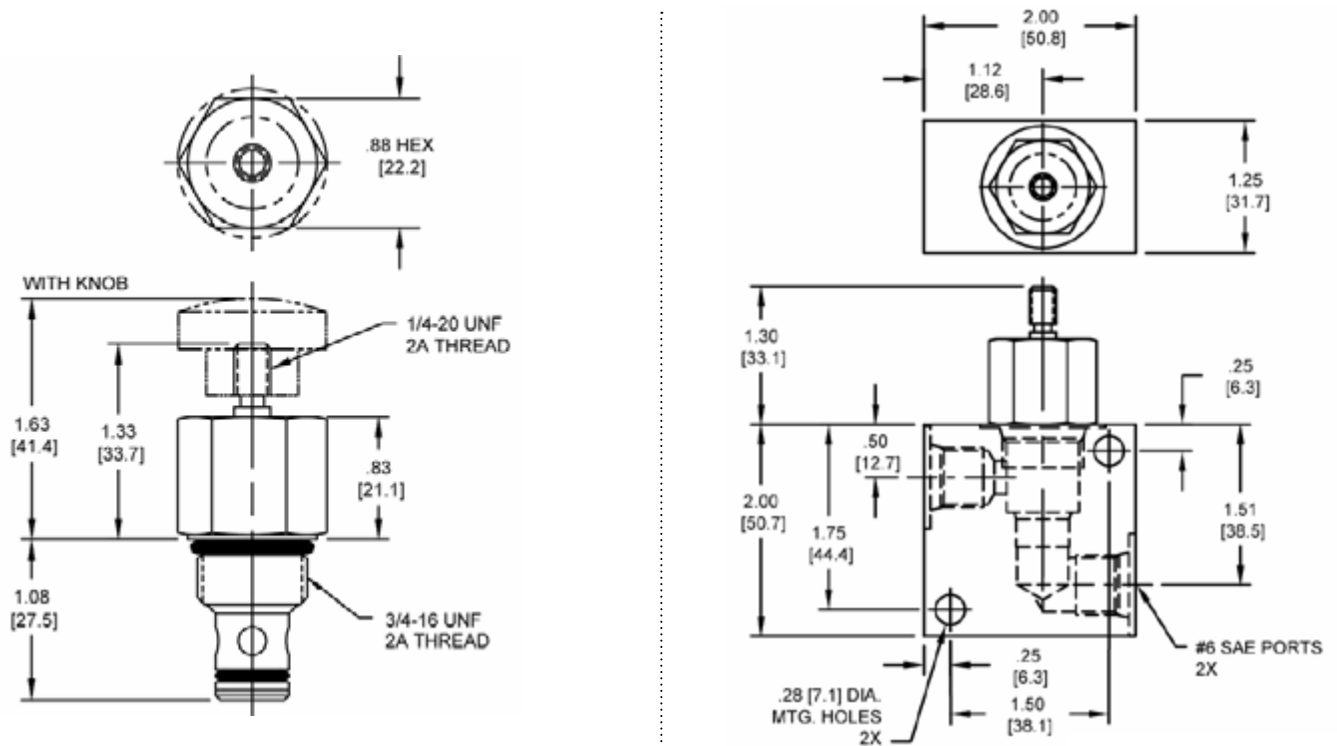


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DIMENSIONS



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.

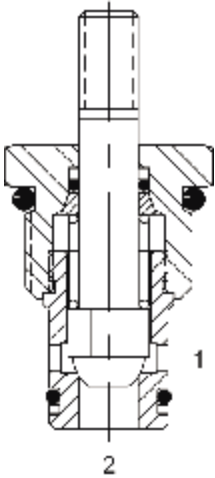
OPERATION

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).

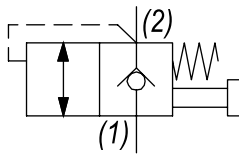
Note: pressure at port (2) will directly act on the poppet and spring. Port (2) is intended to be a tank port only.

FEATURES

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



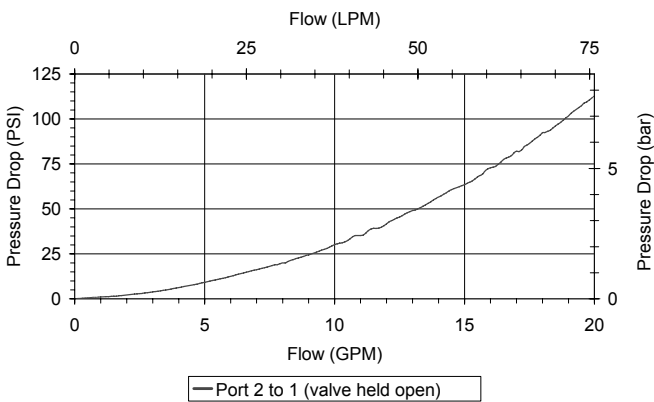
HYDRAULIC SYMBOL



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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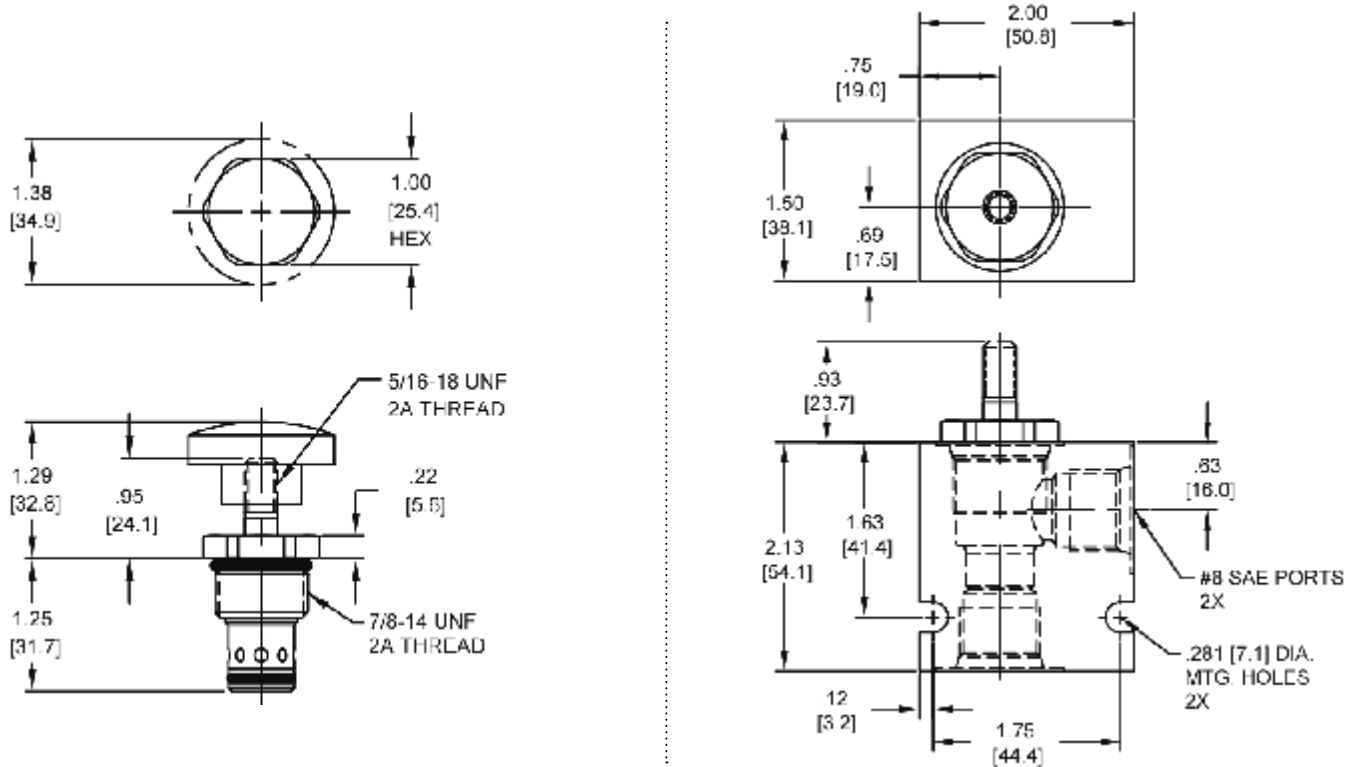


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DIMENSIONS



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 **OK**
- 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
- 0160** 160 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.

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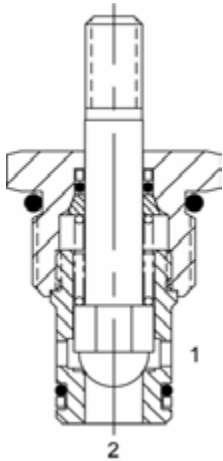


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DE-MCF MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL TYPE, SOFT SEAT



DESCRIPTION

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

OPERATION

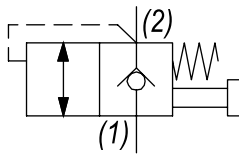
The DE-MCF blocks flow from (1) to (2) until an operator pulls the shaft outward. The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

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.

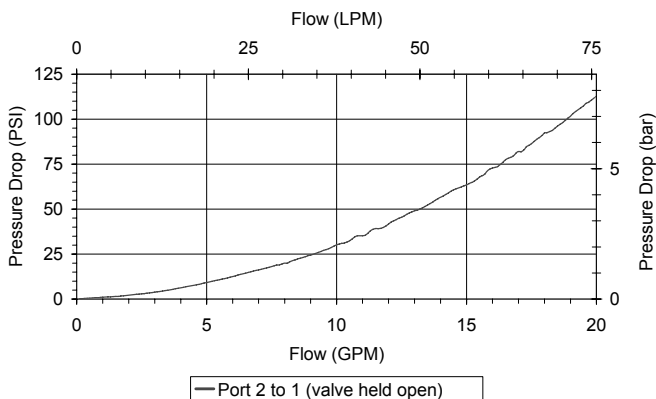
HYDRAULIC SYMBOL



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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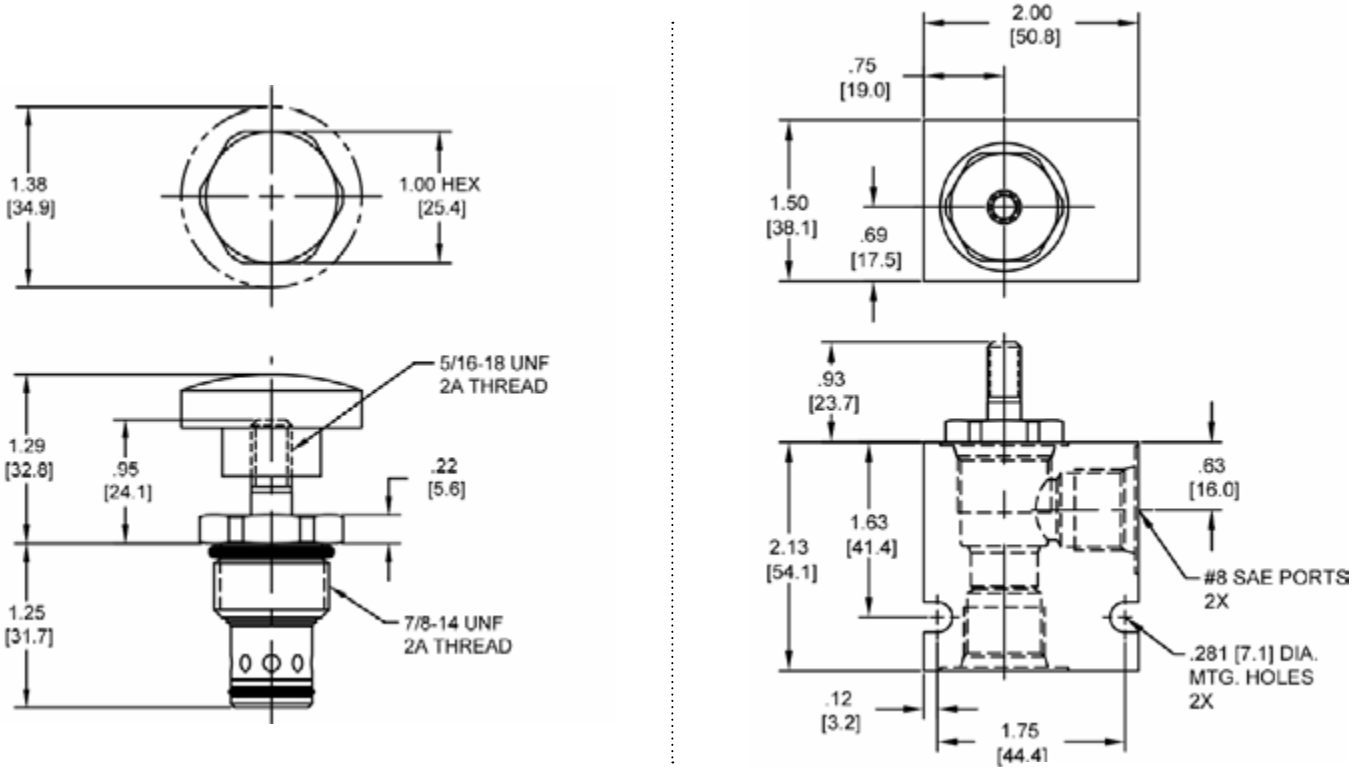


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

<p>DE-MCF -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Screen A0</p> <p>Viton, Screen W0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p> <p>Buna, Knob, Screen AK</p> <p>Viton, Knob, Screen WK</p>	<p>-</p> <p>-</p> <p>-</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 3/8" NPTF Ports</p> <p>S #8 SAE Ports</p> <p>SPRING BIAS PRESSURE</p> <p>0065 65 PSI</p>
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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.

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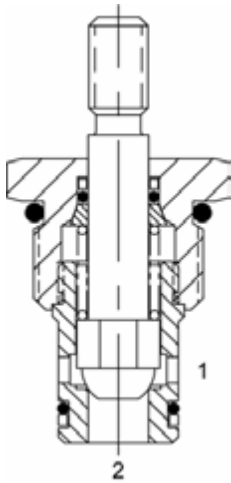


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DE-MCS MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL TYPE, CORROSION RESISTANT



DESCRIPTION

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

OPERATION

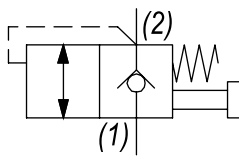
The DE-MCS blocks flow from (1) to (2) until an operator pulls the shaft outward. The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

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.

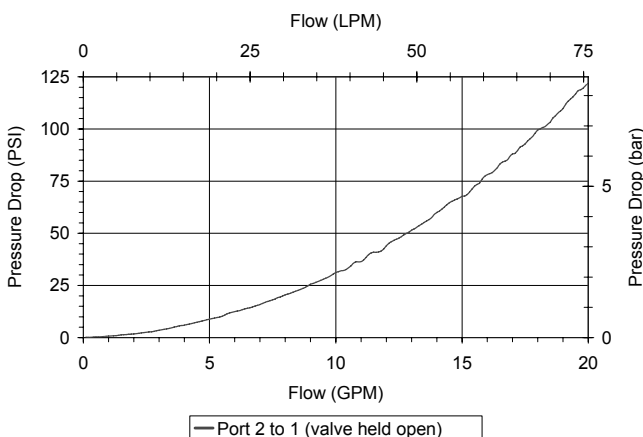
HYDRAULIC SYMBOL



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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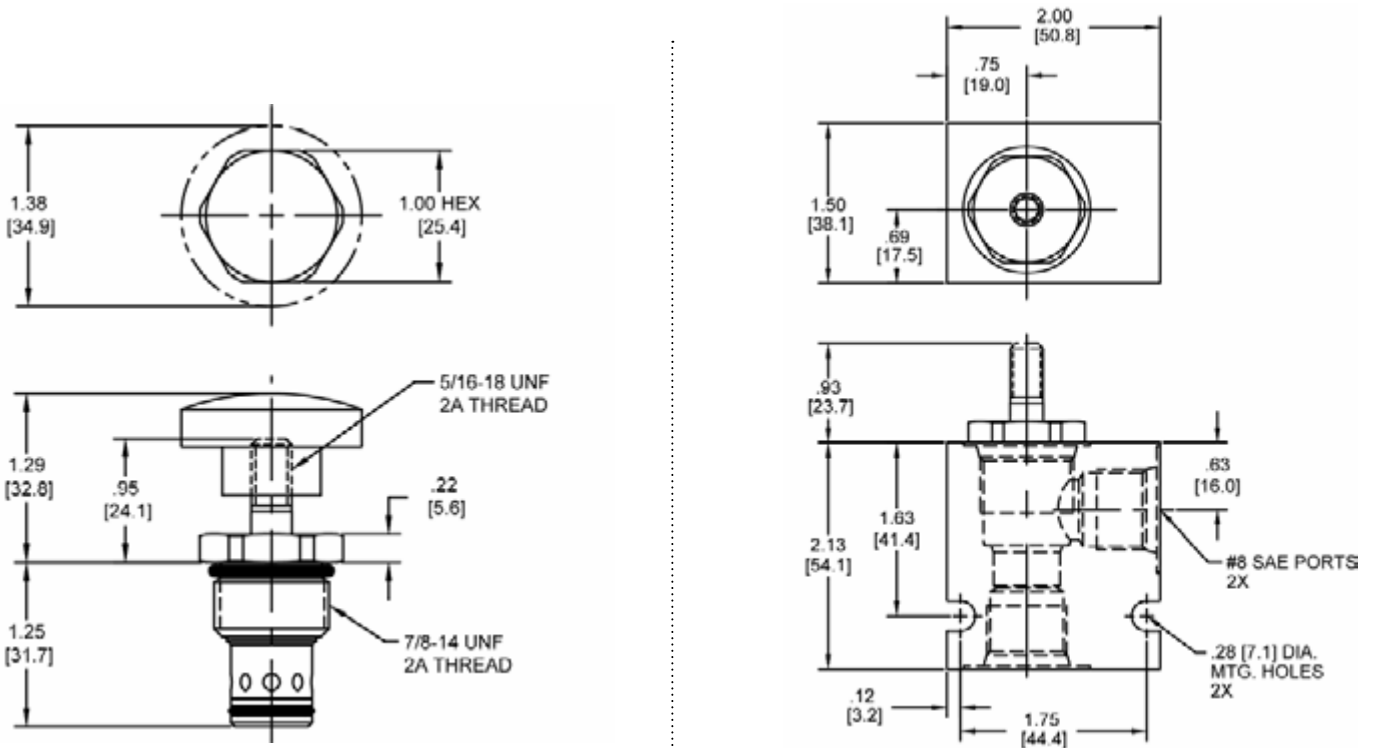


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DIMENSIONS



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**

BODIES

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

SPRING BIAS PRESSURE

- 0065** 65 PSI
- 0160** 160 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.

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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.

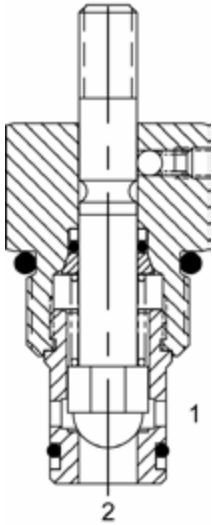
OPERATION

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).

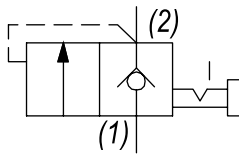
Note: pressure at port (2) will directly act on the spool and spring. Port (2) is intended to be a tank port only.

FEATURES

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



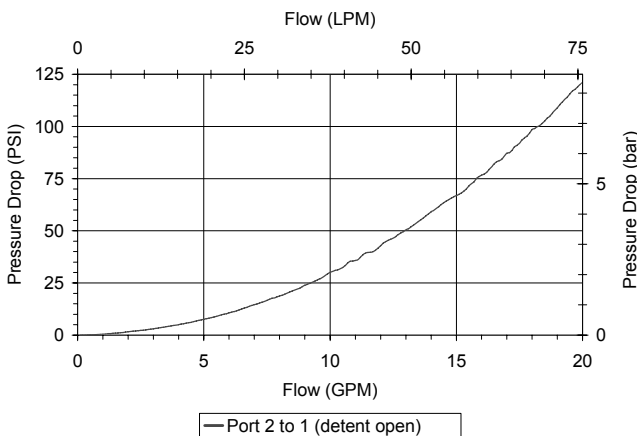
HYDRAULIC SYMBOL



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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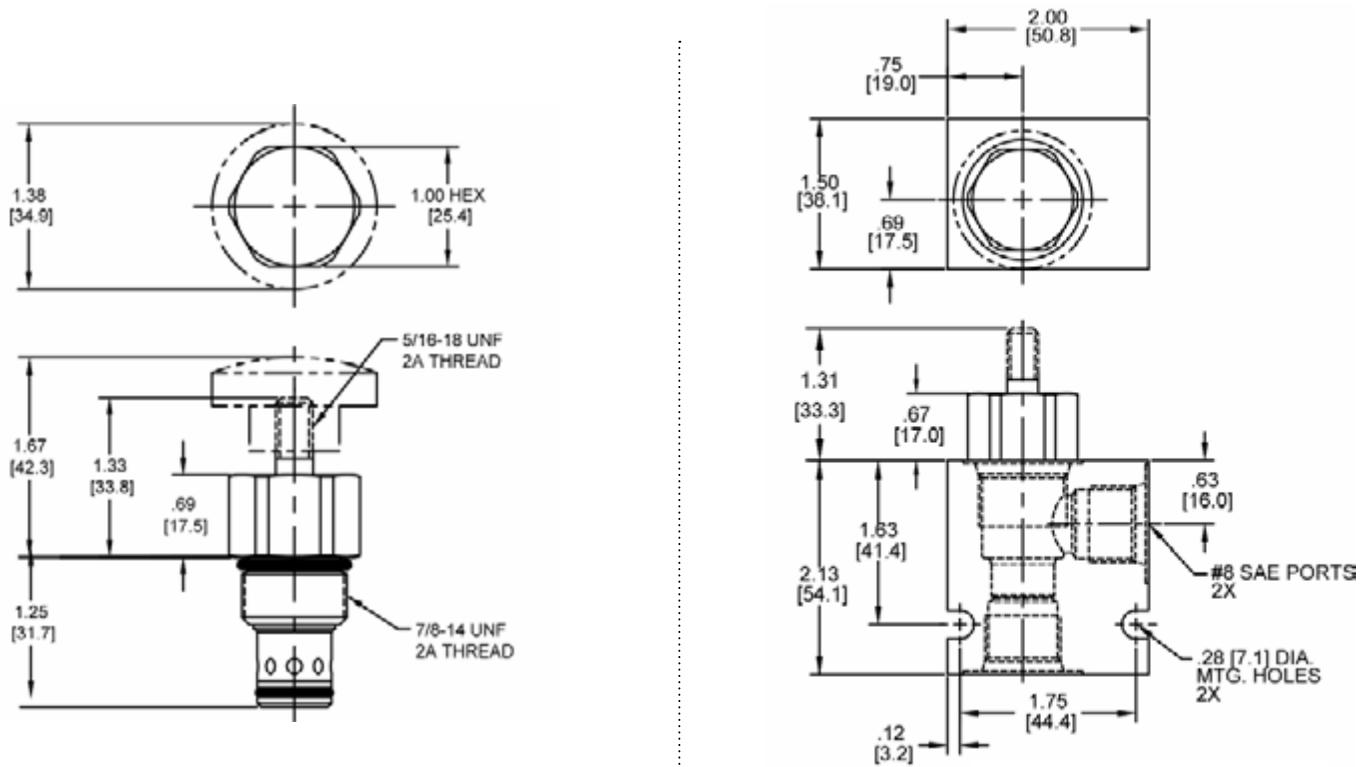


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DIMENSIONS



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**

BODIES

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

SPRING BIAS PRESSURE

- 0065** 65 PSI
- 0160** 160 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.

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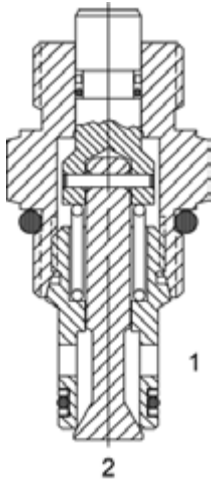
PB-MCI MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PUSH TYPE

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.



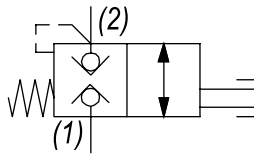
Actuation Force Required	
No Pressure	7 lbs
Side Pressure	7 + (P1 x .009)
Nose Pressure	7 + (P1 x .076)

Note: (Ø .437) cavity predrill depth must be 1.312 minimum from spotface.

FEATURES

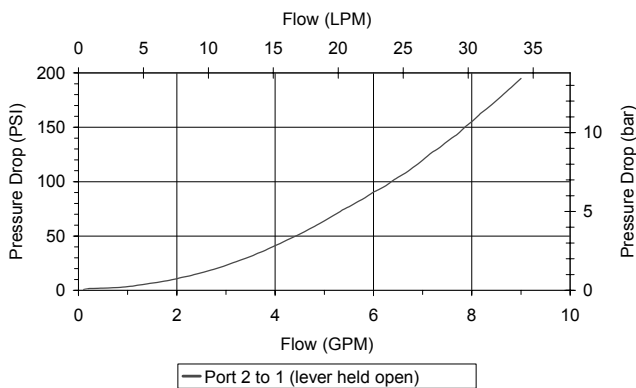
- Hardened parts for long life.
- Industry common cavity.

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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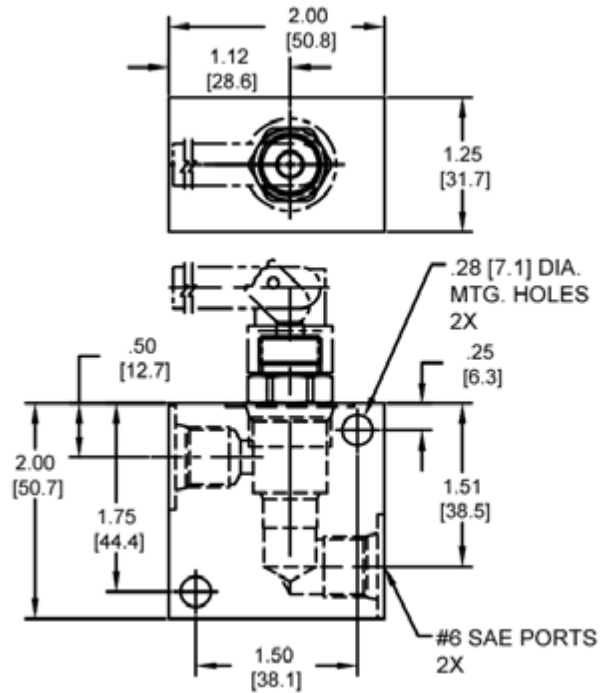
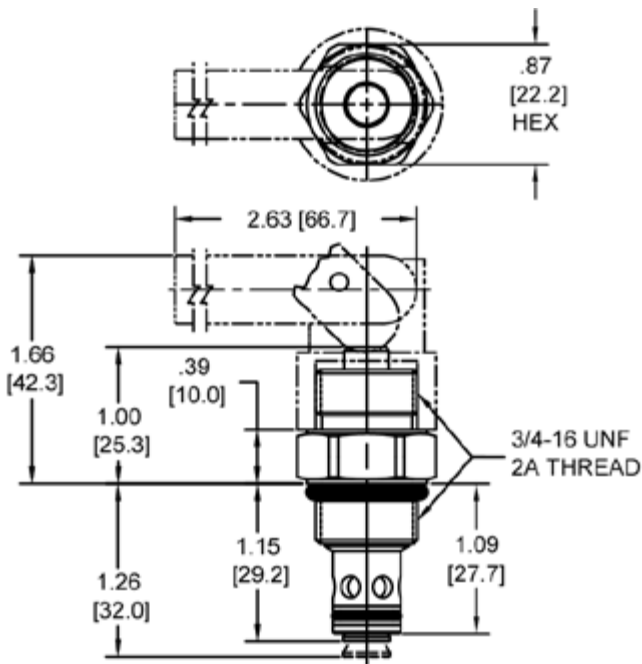


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-MCI		-	-
	OPTIONS		BODIES
	Buna Standard	00	Blank Without Body
	Viton Standard	V0	N 1/4" NPTF Ports
	Buna, Screen	A0	S #6 SAE Ports
	Viton, Screen	W0	
	Buna, Lever	0L	
	Viton, Lever	VL	
	Buna, Screen, Lever	AL	
	Viton, Screen, Lever	WL	

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

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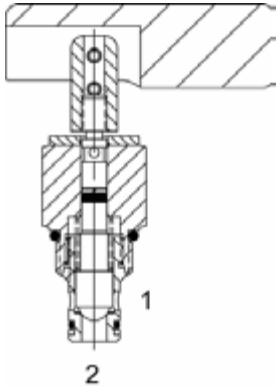


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PB-MCL MANUAL POPPET VALVE, 2 WAY NORMALLY CLOSED, PULL TYPE, LEVER



DESCRIPTION

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

OPERATION

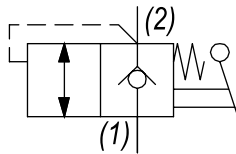
The PB-MCL blocks flow from (1) to (2) until an operator pulls the handle upward. The bias spring (see option page for pressure) allows for backpressure at (2) before the valve will open.

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.

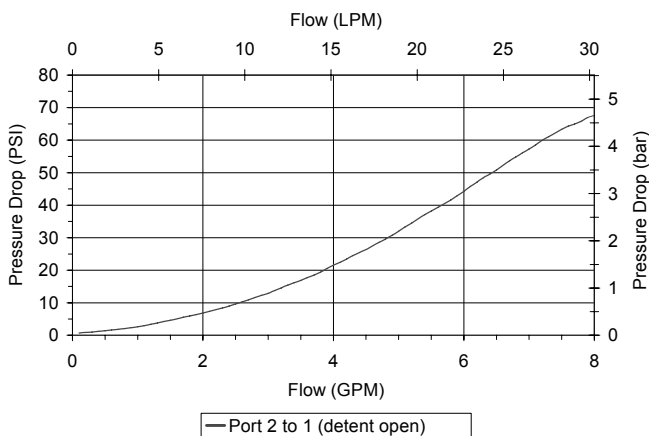
HYDRAULIC SYMBOL



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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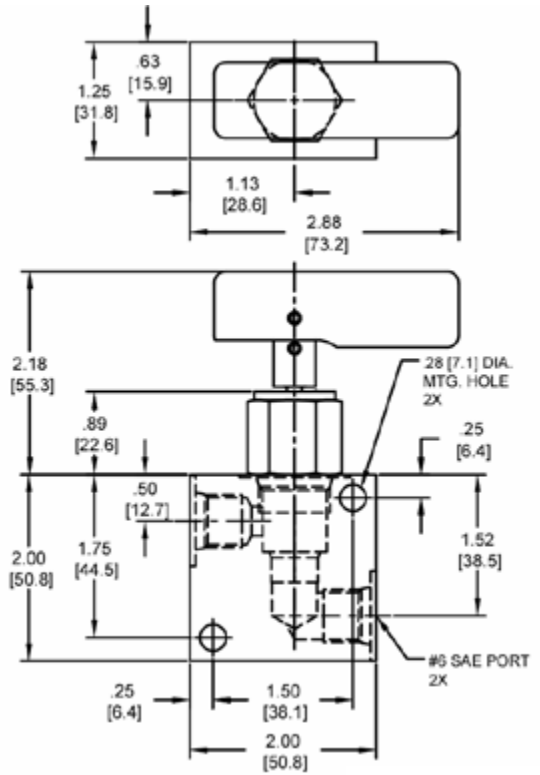
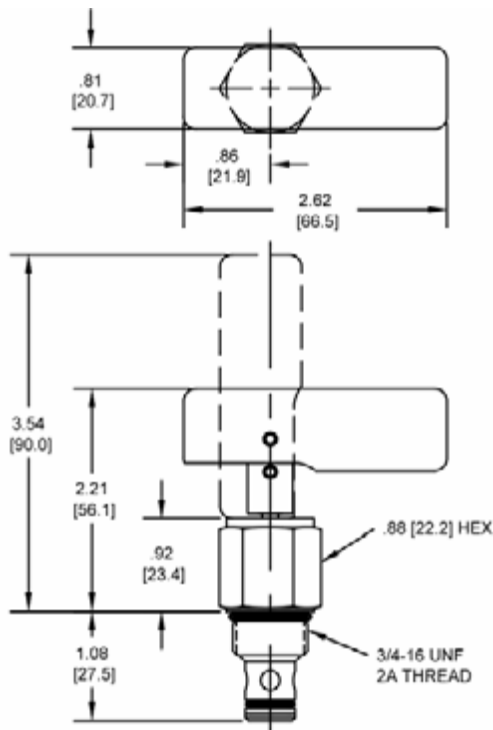


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DIMENSIONS



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.

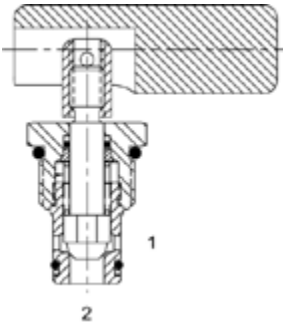
OPERATION

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).

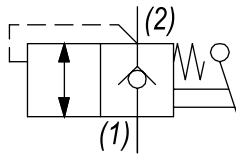
Note: pressure at port (2) will directly act on the spool and spring. Port (2) is intended to be a tank port only. The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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



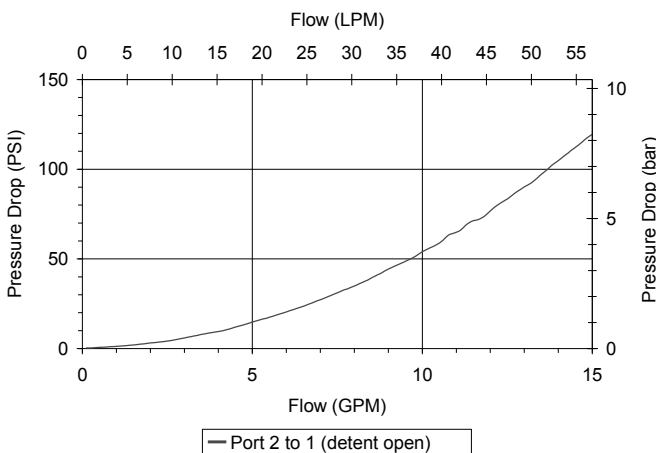
HYDRAULIC SYMBOL



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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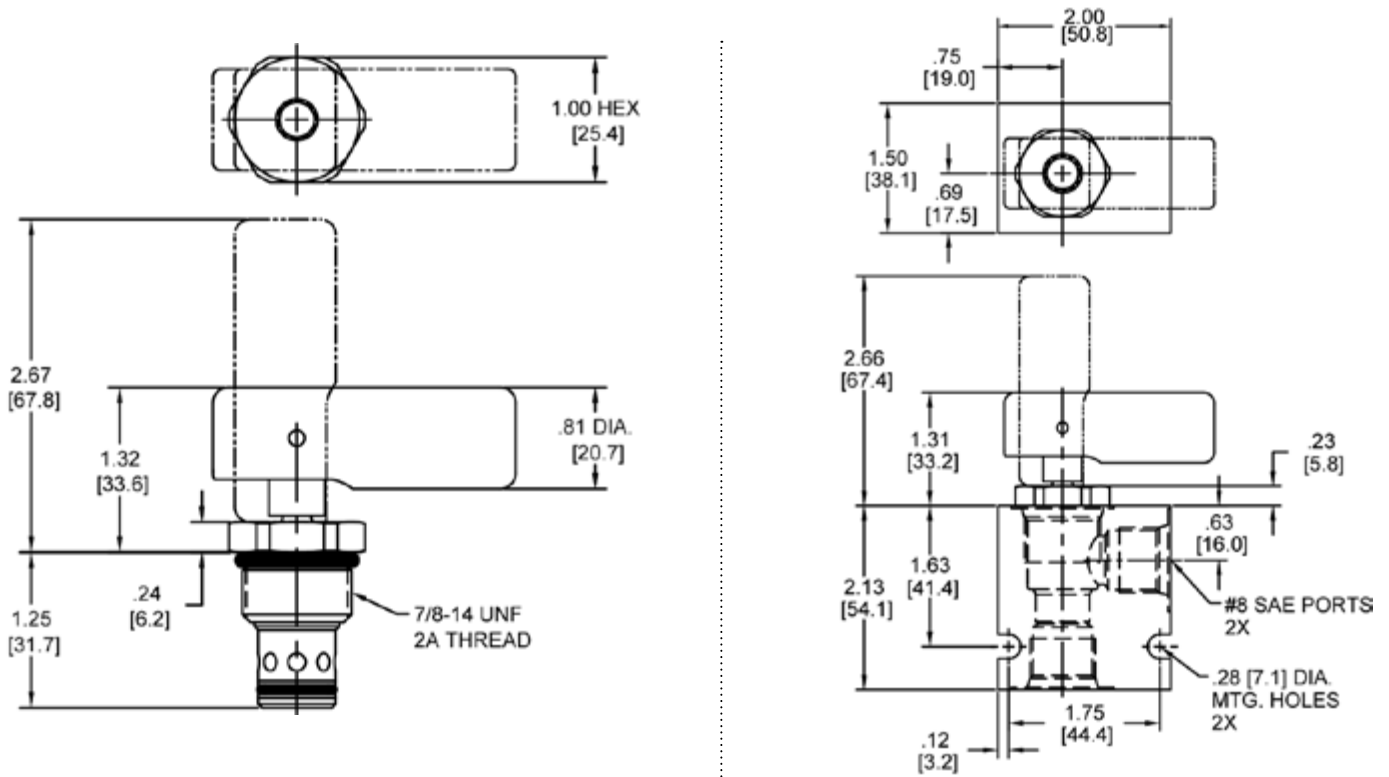


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DIMENSIONS



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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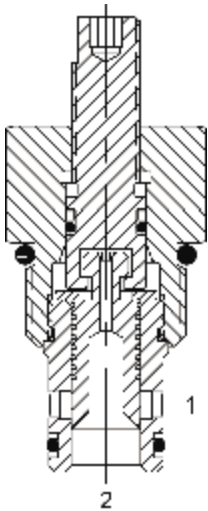


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DE-M2G MANUAL ROTARY SPOOL VALVE, 2 WAY NORMALLY CLOSED



DESCRIPTION

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

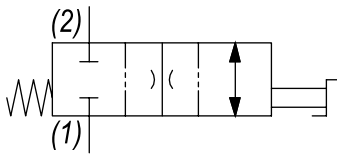
OPERATION

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.

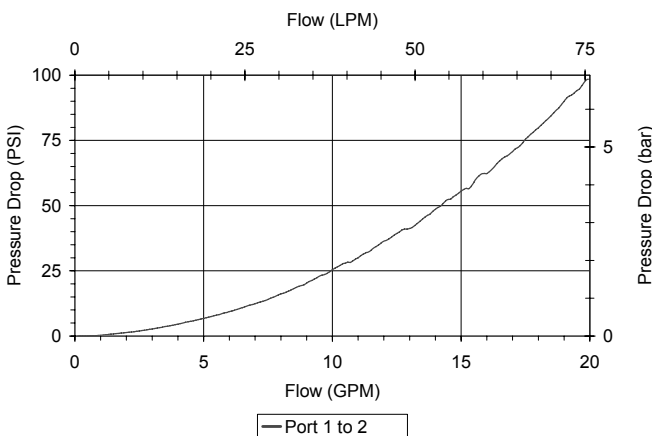
HYDRAULIC SYMBOL



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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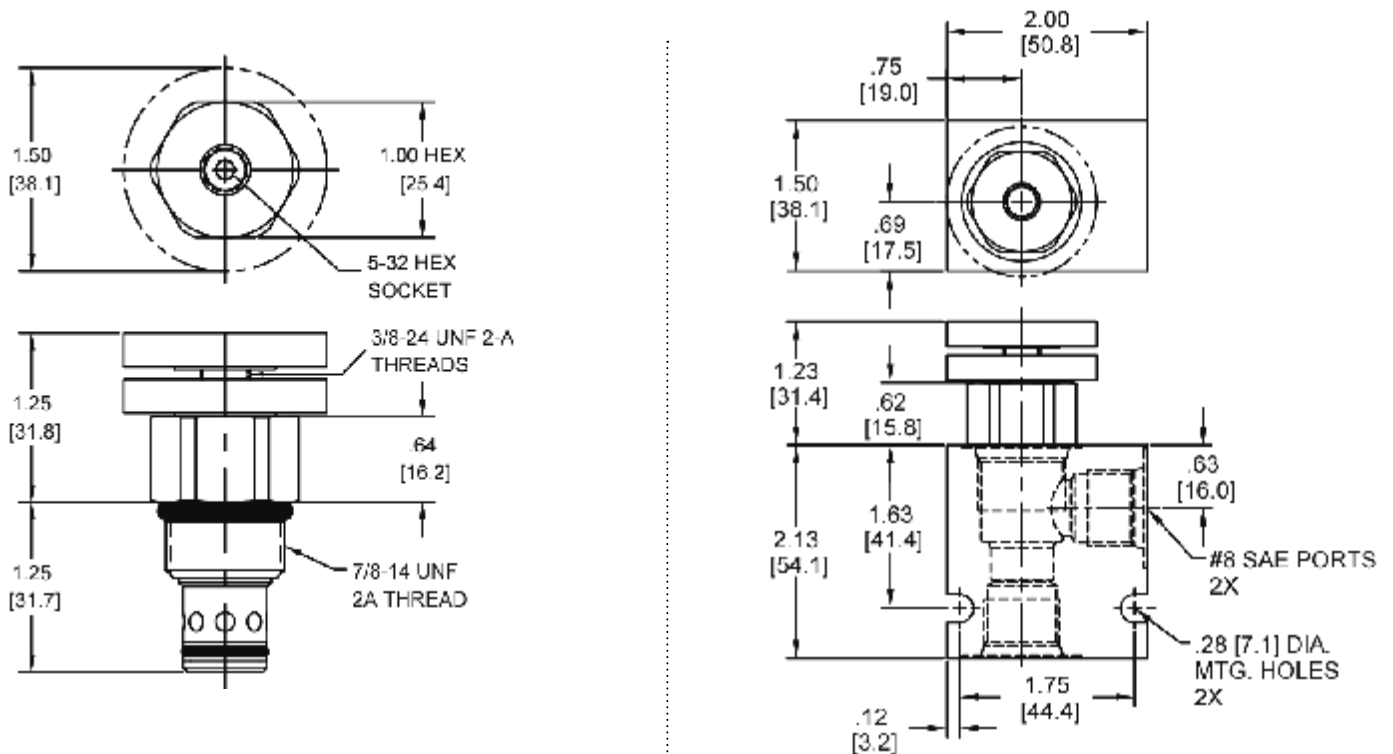


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

<p>DE-M2G -</p>	<p>-</p>	<p>-</p>
<p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Screen A0</p> <p>Viton, Screen W0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p> <p>Buna, Knob, Screen AK</p> <p>Viton, Knob, Screen WK</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 3/8" NPTF Ports</p> <p>S #8 SAE Ports</p>	

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

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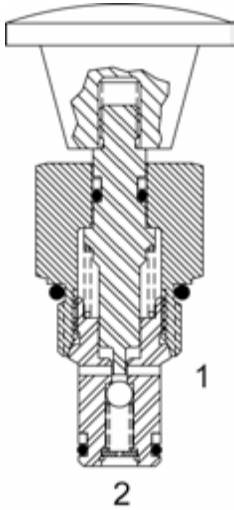


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HB-MCP 2 WAY MANUAL VALVE, NORMALLY CLOSED, PUSH TYPE



DESCRIPTION

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

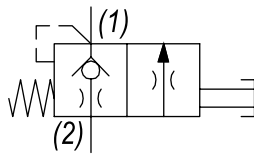
OPERATION

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.

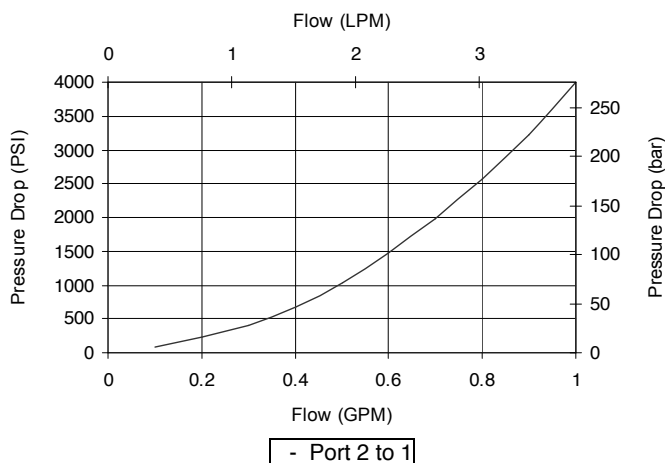
HYDRAULIC SYMBOL



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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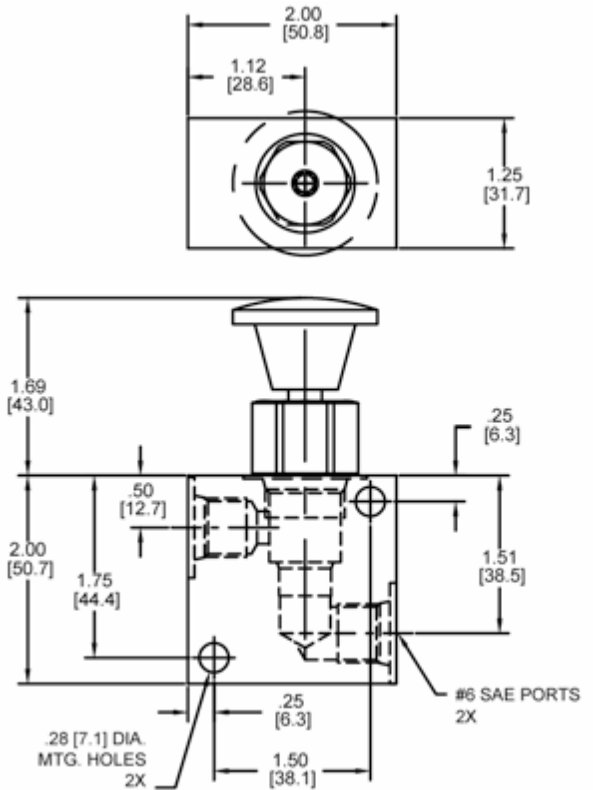
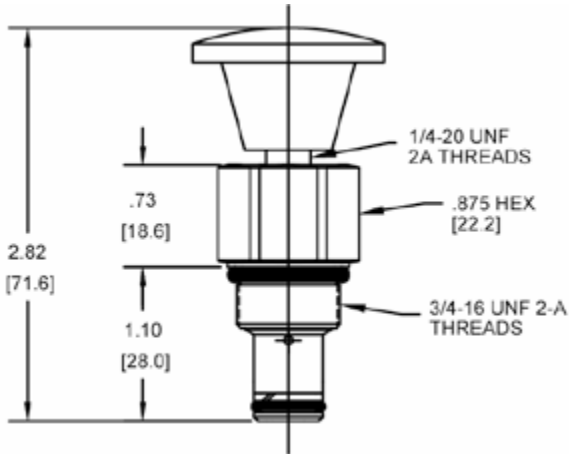


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

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

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

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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	DG-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	DF-PDI	MD88
	40	3500	151	241	1 5/16	SO-PTS	MD90
	40	3500	151	241	1 5/16	SO-PTT	MD92

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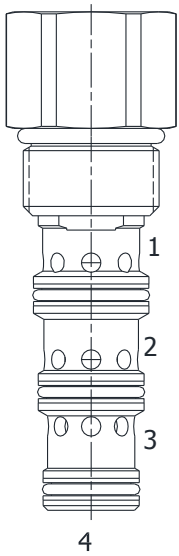


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HG-PDA PILOTED DIRECTIONAL VALVE, 4 WAY NORMALLY CLOSED



DESCRIPTION

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

OPERATION

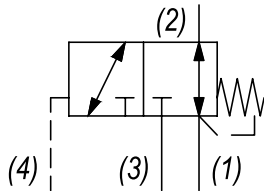
The HG-PDA in neutral (un-piloted), allows flow between (2) and (1) bi-directionally, while blocking at (3). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge redirects flow from (2) to (1), to (2) to (3).

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

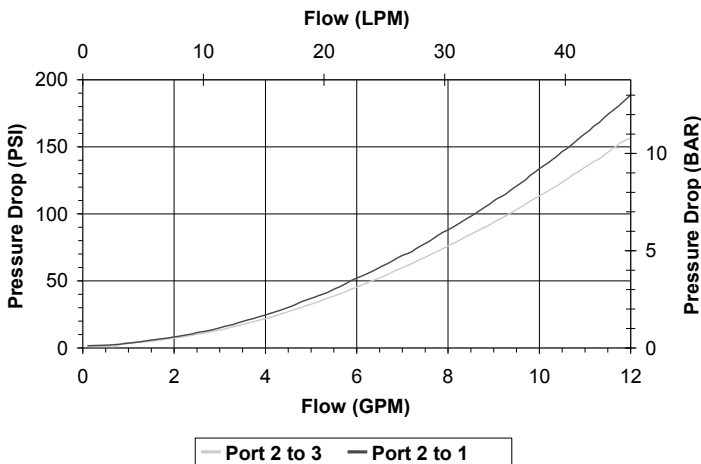
HYDRAULIC SYMBOL



.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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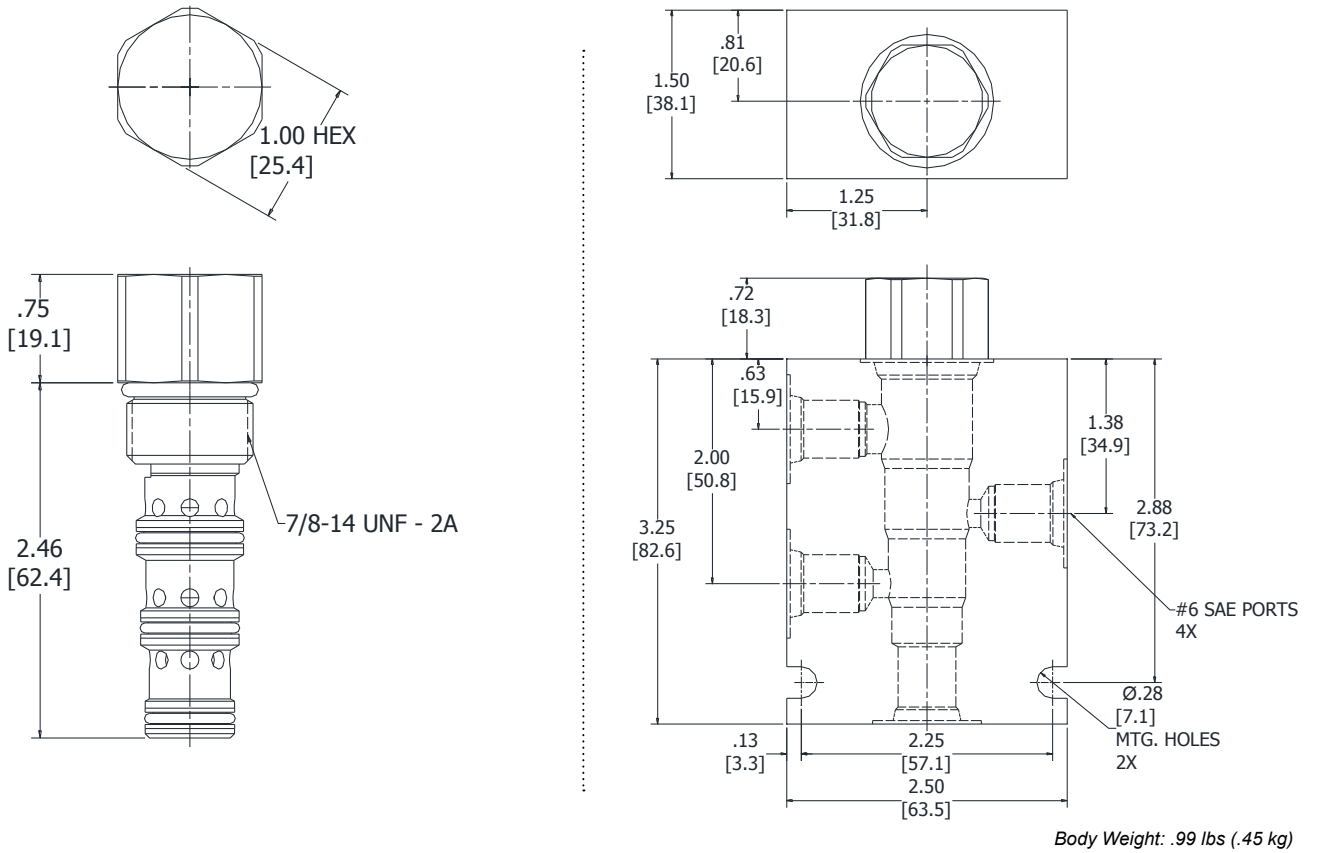


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DIMENSIONS



ORDERING INFORMATION

HG-PDA -		-	-	-
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			

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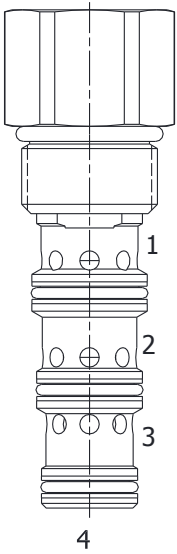


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HG-PDC PILOTED DIRECTIONAL VALVE, 2 WAY NORMALLY CLOSED



DESCRIPTION

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

OPERATION

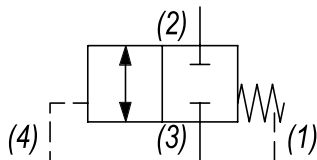
The HG-PDC in neutral (unpiloted), blocks flow between (2) and (3). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge allows flow from (2) to (3).

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

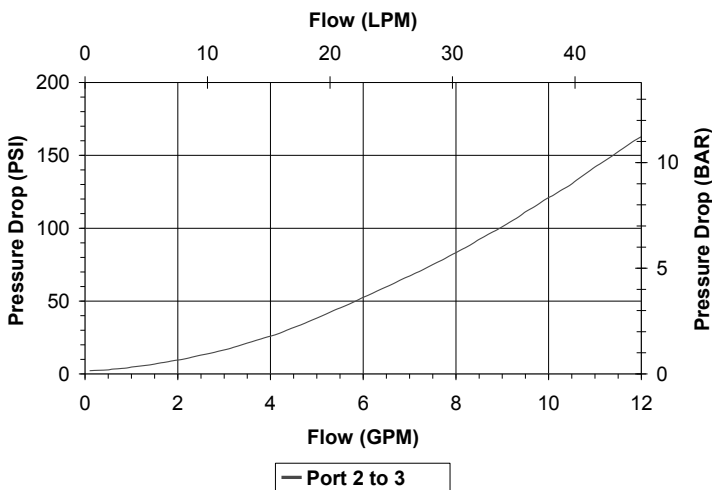
HYDRAULIC SYMBOL



.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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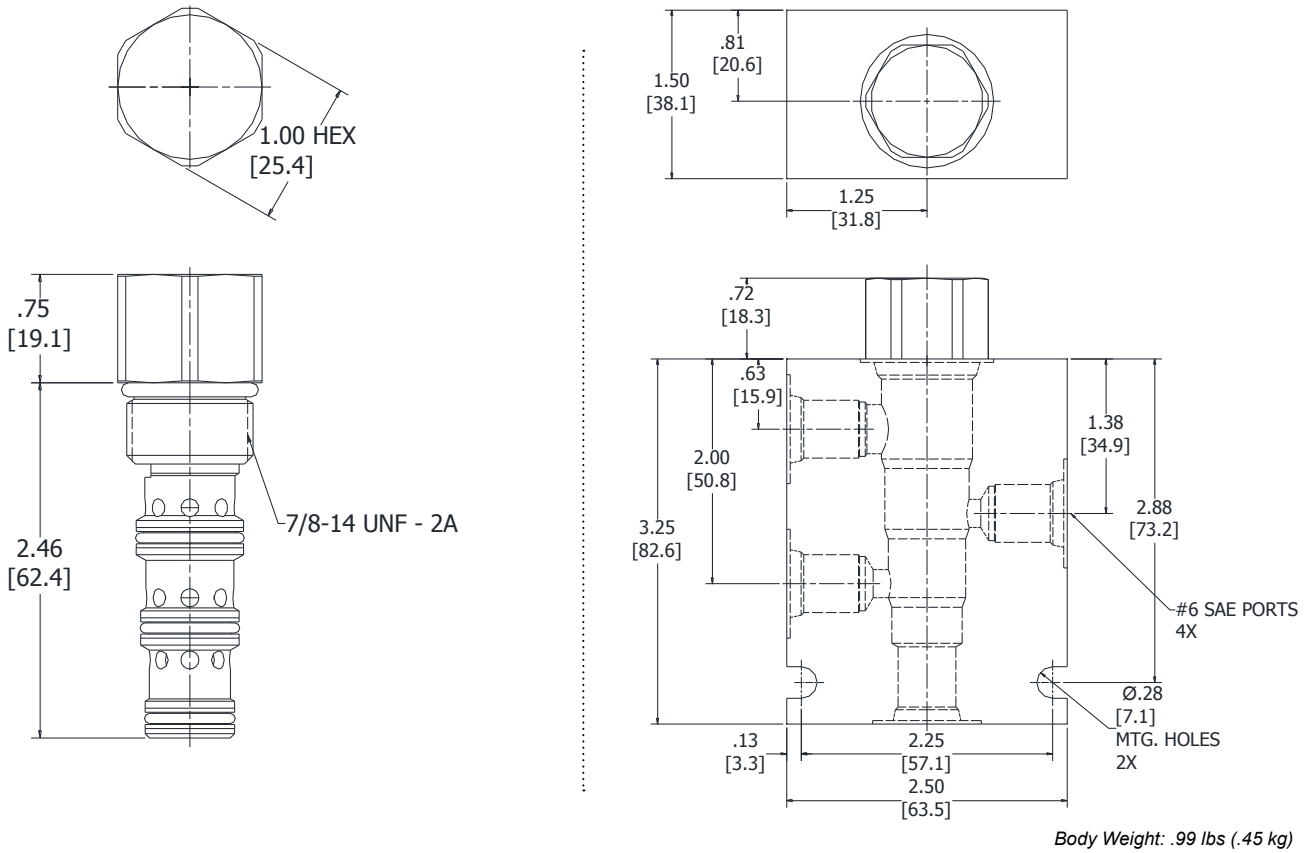


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DIMENSIONS



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			

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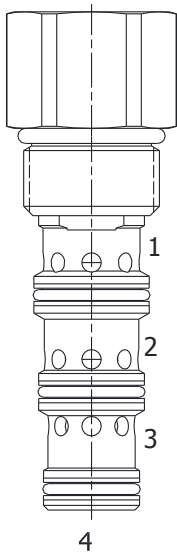


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DG-PDI PILOTED DIRECTIONAL VALVE, 3 WAY NORMALLY OPEN



DESCRIPTION

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

OPERATION

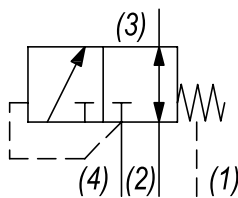
The DG-PDI in neutral (un-piloted), allows flow between (3) and (2) bidirectional, while blocking at (4). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge shifts to close (3) to (2), while opening (4) to (3).

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

FEATURES

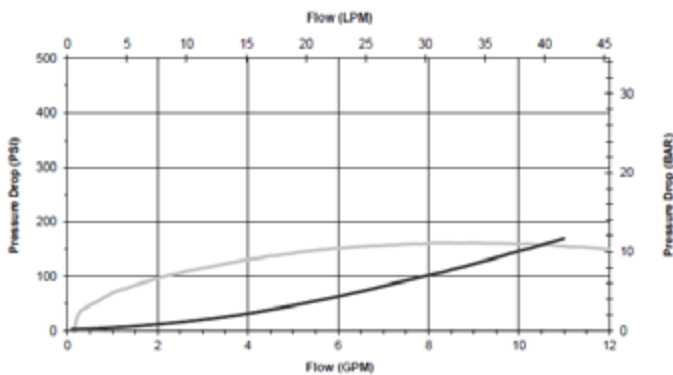
- Hardened parts for long life.
- Industry common cavity

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 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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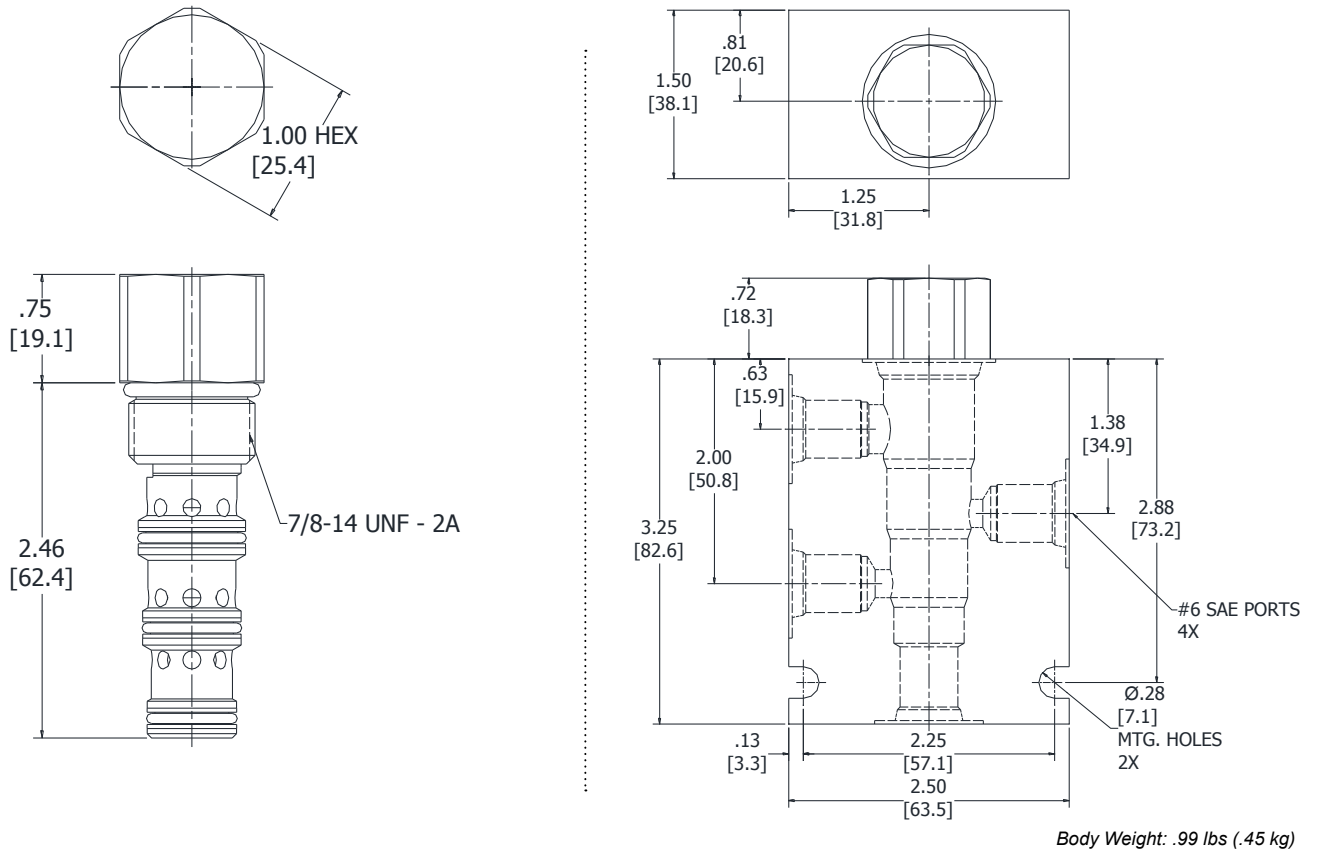


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DIMENSIONS



ORDERING INFORMATION

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

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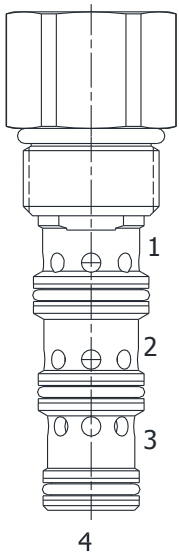


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HG-PDO PILOTED DIRECTIONAL VALVE, 2 WAY NORMALLY OPEN



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.

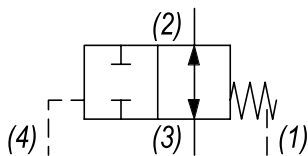
The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge blocks flow from (2) to (3).

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

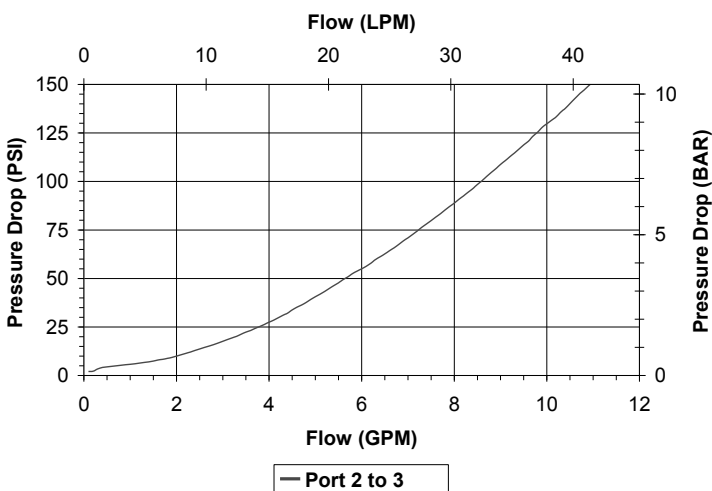
HYDRAULIC SYMBOL



.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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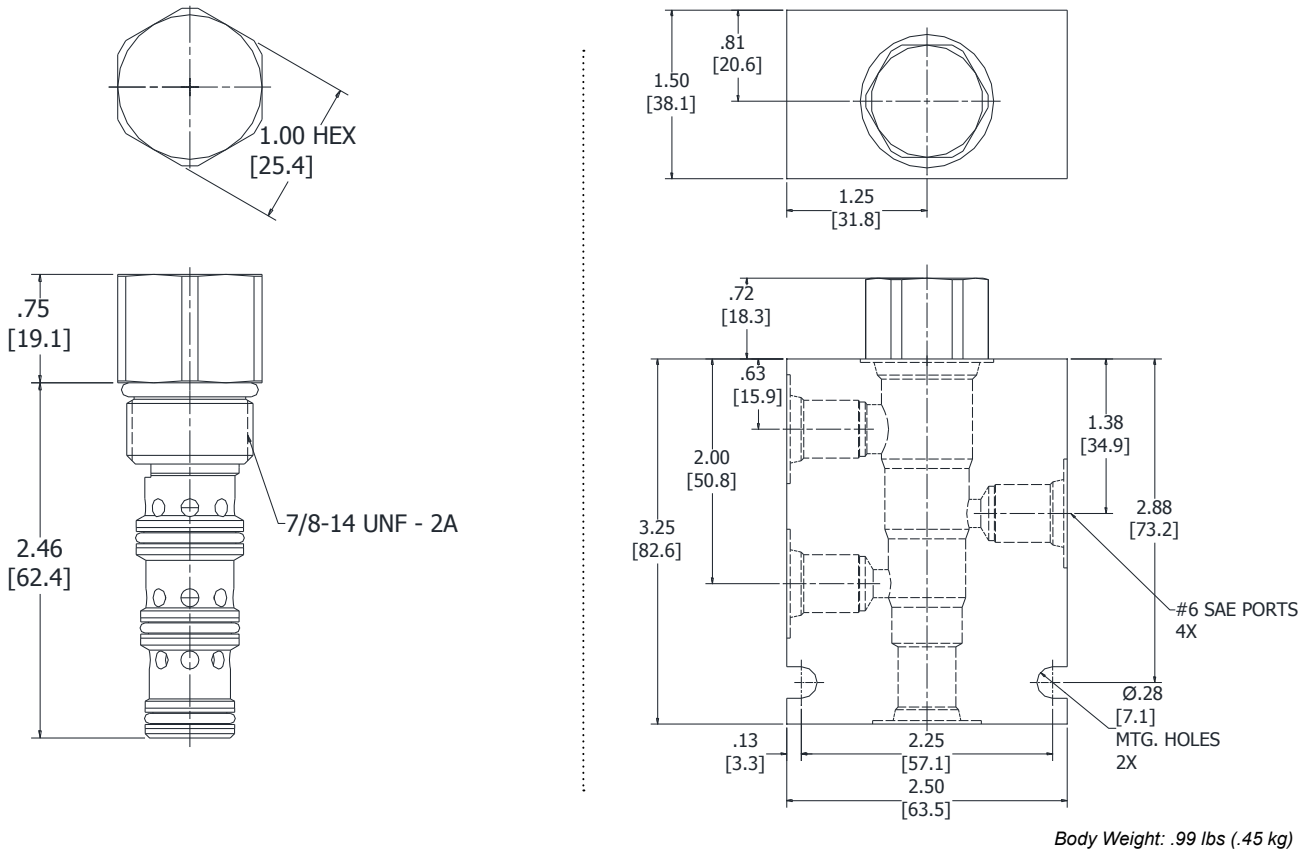


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DIMENSIONS



ORDERING INFORMATION

HG-PDO -		-	-	-
OPTIONS				
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			

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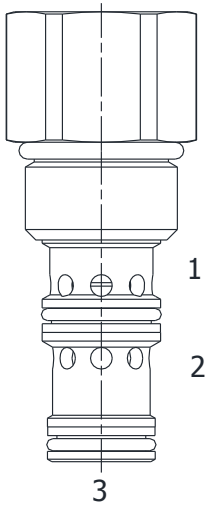


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HF-PDE PILOTED DIRECTIONAL VALVE, NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

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

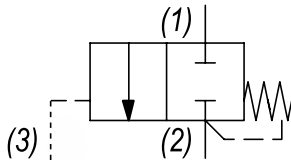
OPERATION

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

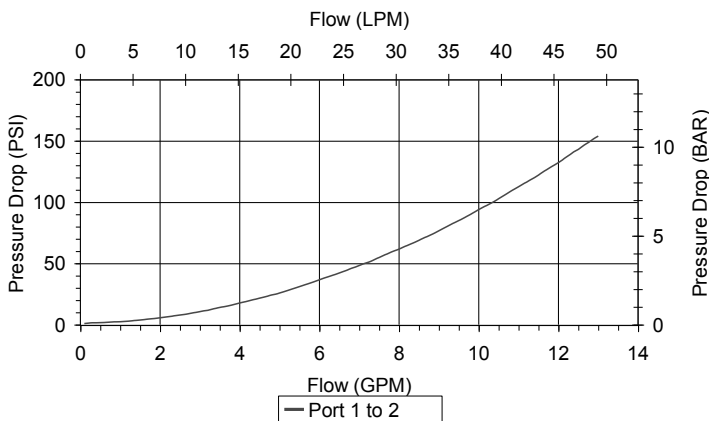
HYDRAULIC SYMBOL



.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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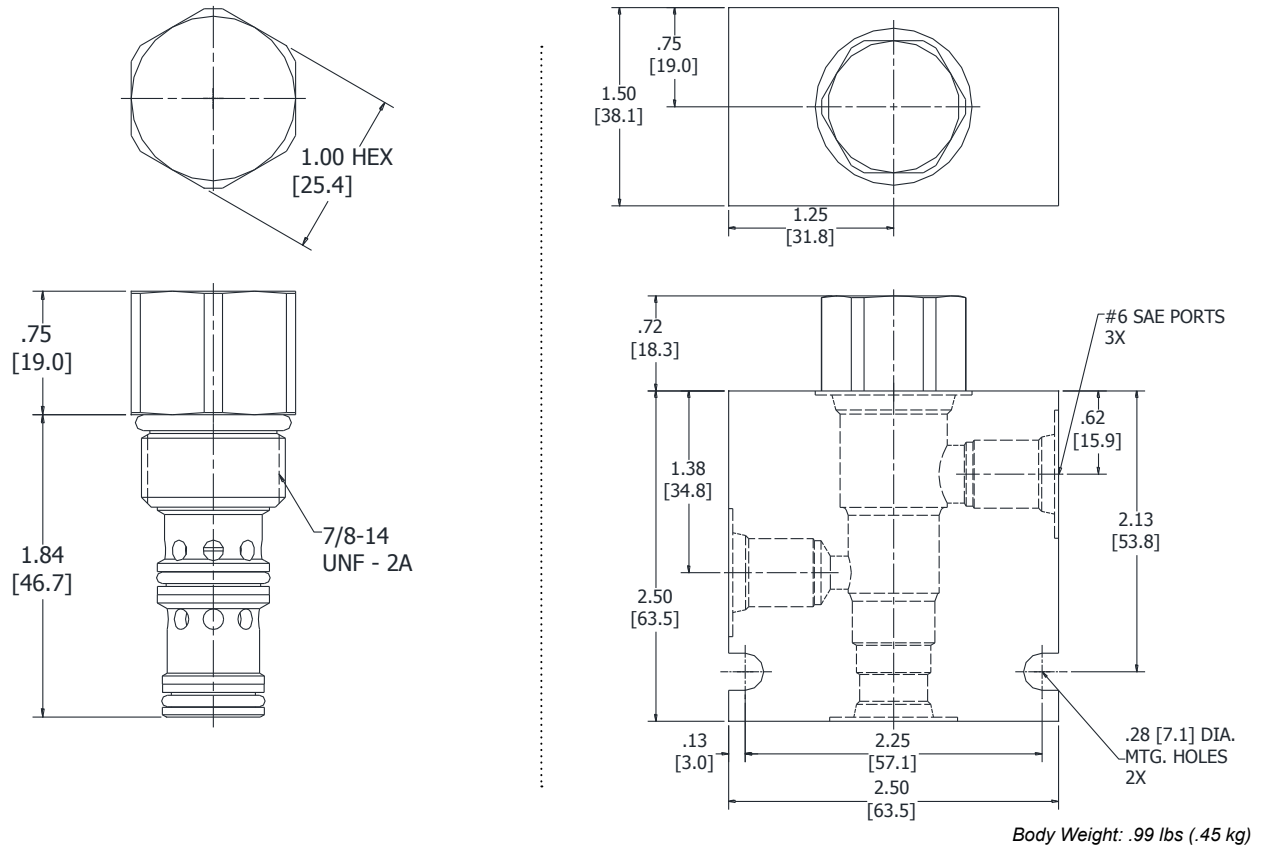


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DIMENSIONS



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			

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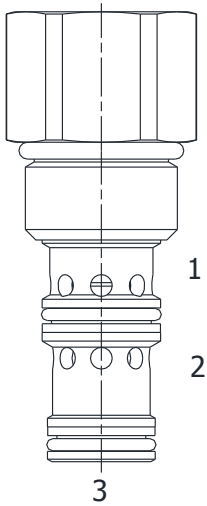


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DF-PDI PILOTED DIRECTIONAL VALVE, INTERNAL PILOT AND DRAIN



DESCRIPTION

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

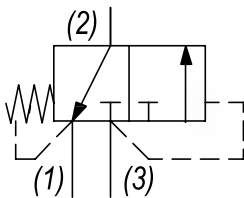
OPERATION

The DF-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

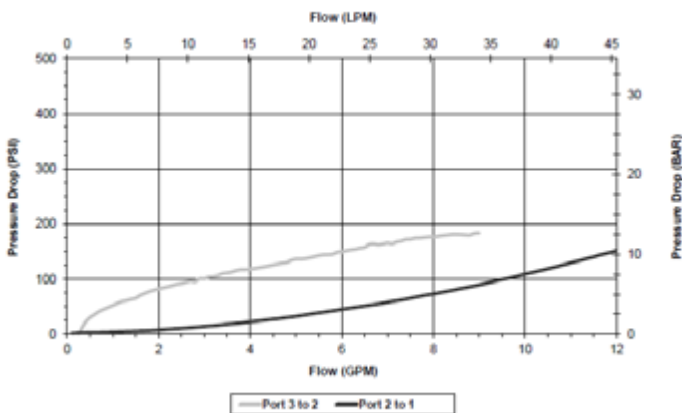
- Hardened parts for long life.
- Industry common cavity

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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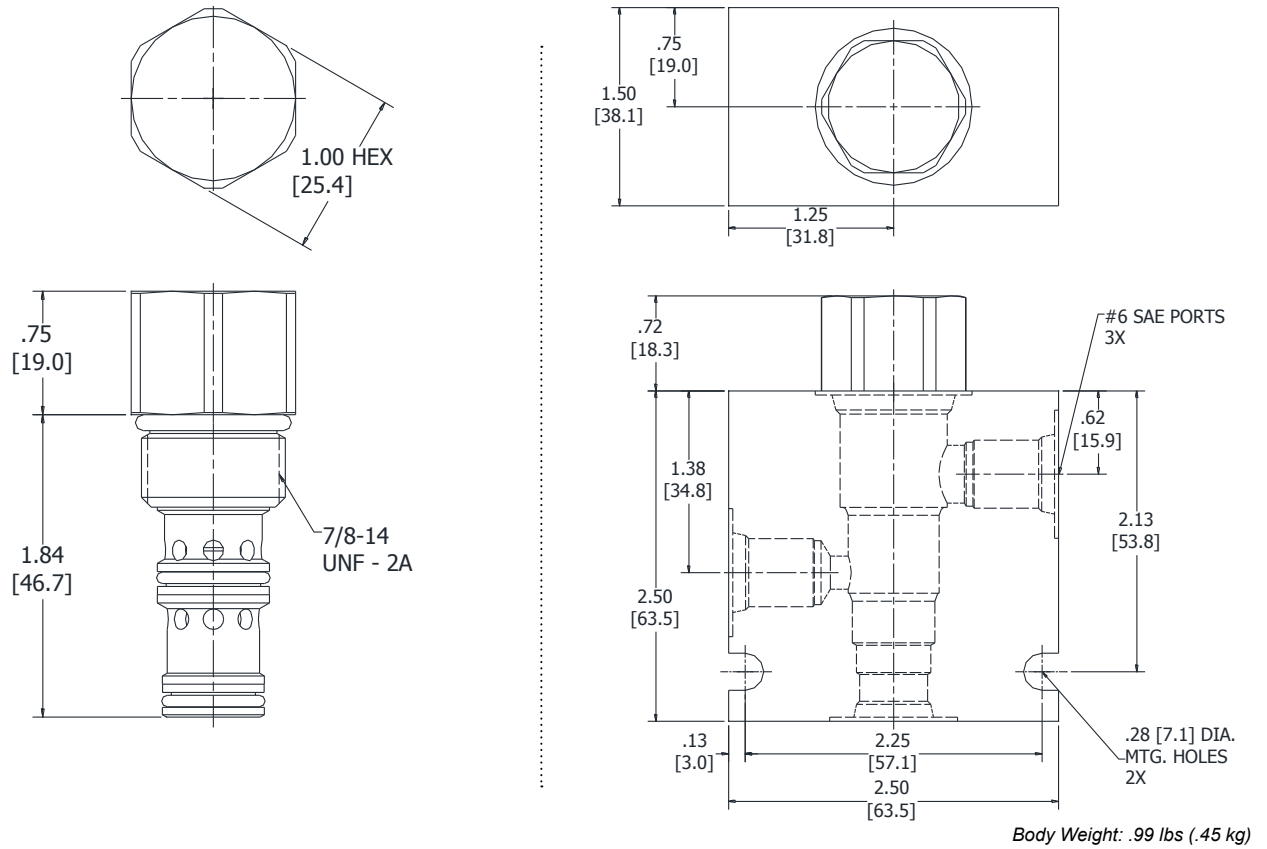


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DIMENSIONS



ORDERING INFORMATION

DF-PDI	-	-	-	-
	OPTIONS			BODIES
	Buna Standard	00		Blank
	Viton Standard	V0		N
				S
				PRESSURE SETTINGS
			0050	50 PSI
			0100	100 PSI

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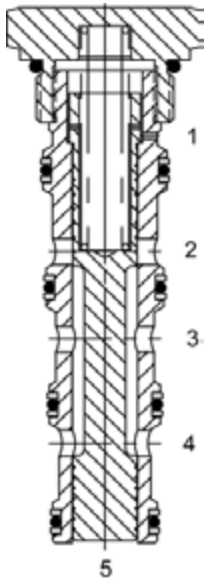


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SO-PTS PILOT TO SHIFT, 3 WAY VALVE, OPEN TRANSITION



DESCRIPTION

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

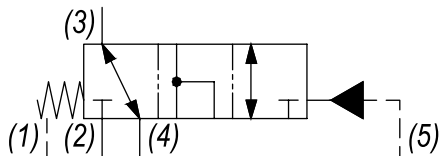
OPERATION

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.

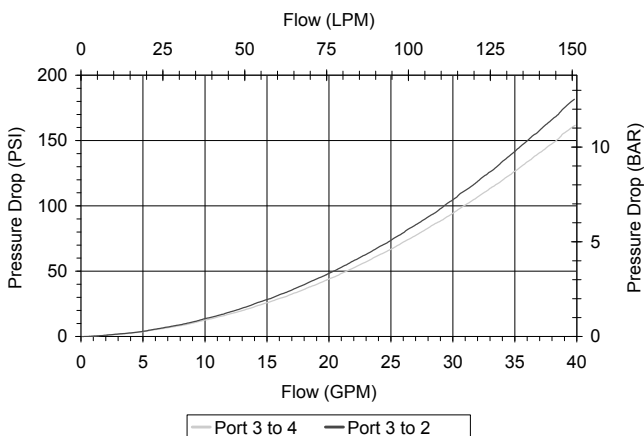
HYDRAULIC SYMBOL



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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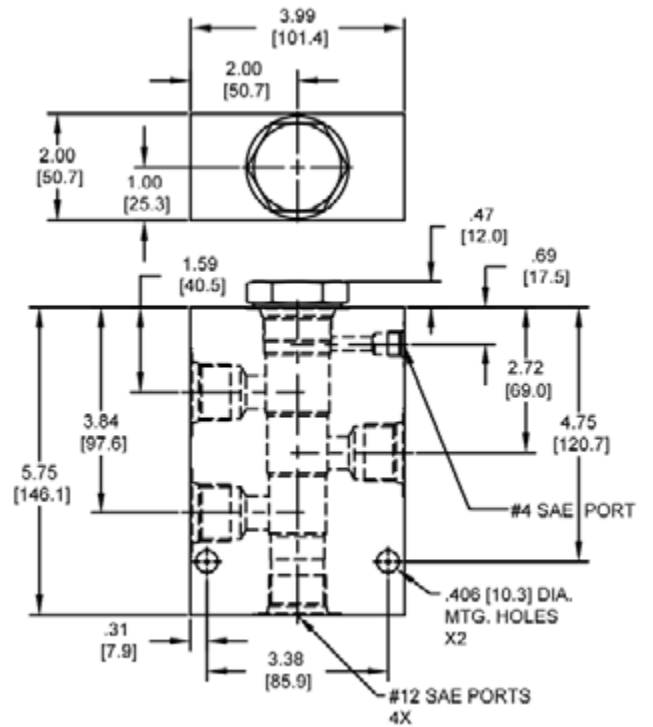
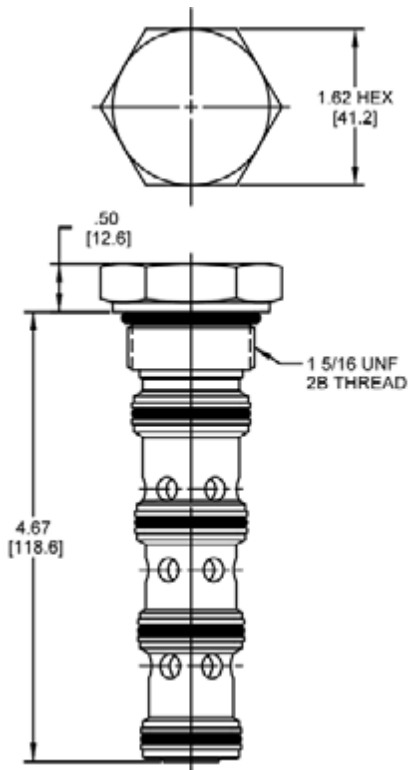


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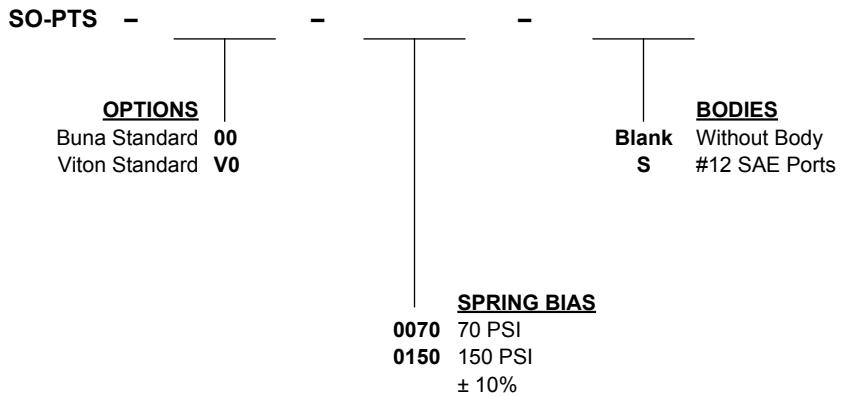
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DIMENSIONS



Body Weight: 3.76 lbs (1.62 kg)

ORDERING INFORMATION



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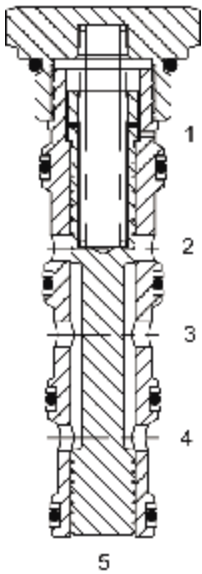


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SO-PTT PILOT TO SHIFT, 3 WAY VALVE, CLOSED TRANSITION



DESCRIPTION

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

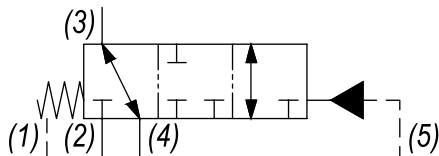
OPERATION

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.

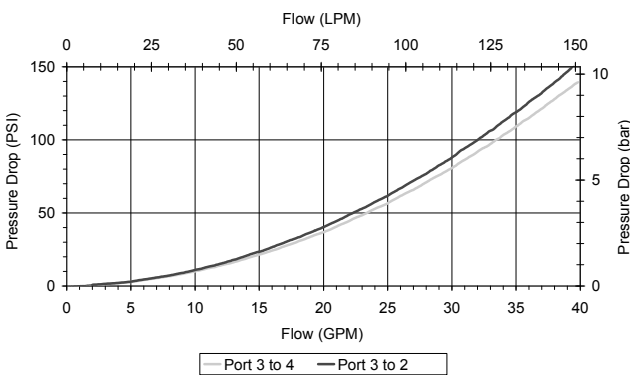
HYDRAULIC SYMBOL



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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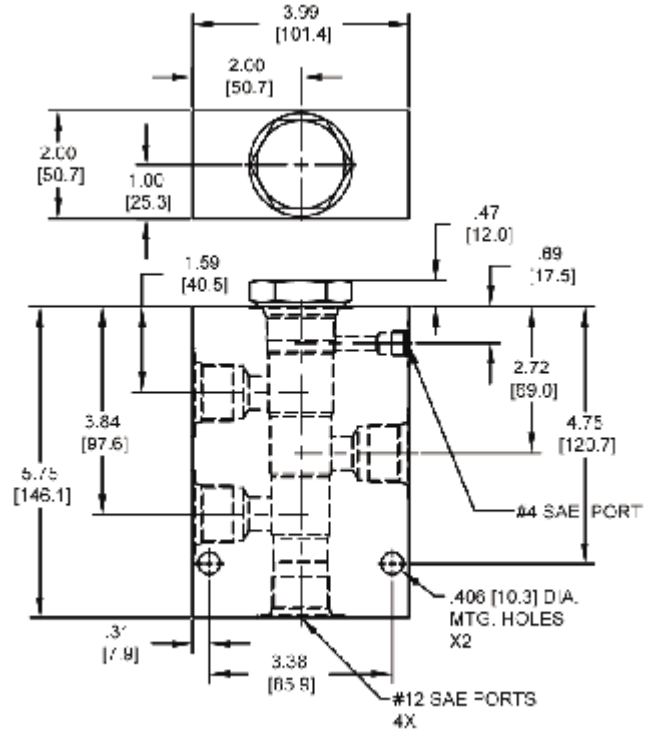
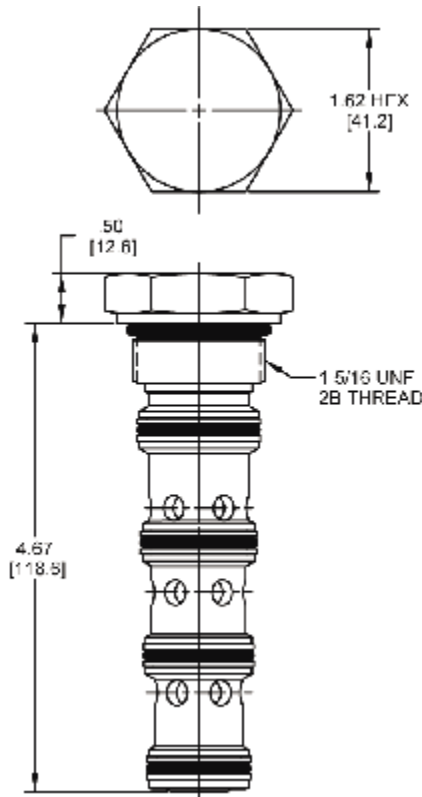


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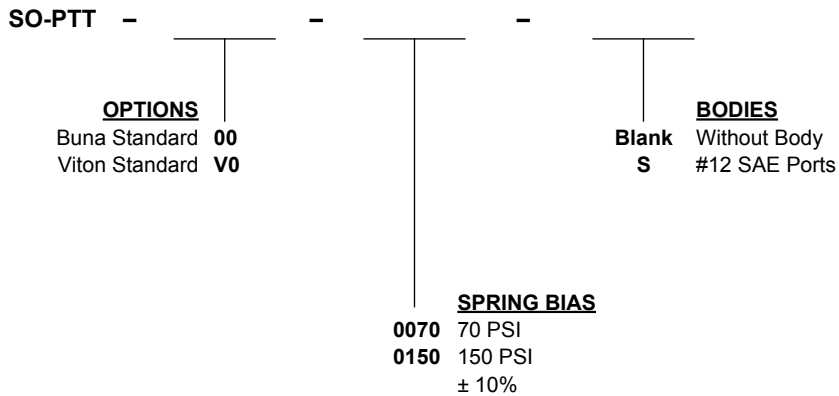
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DIMENSIONS



Body Weight: 3.76 lbs (1.62 kg)

ORDERING INFORMATION



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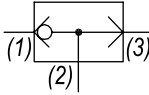


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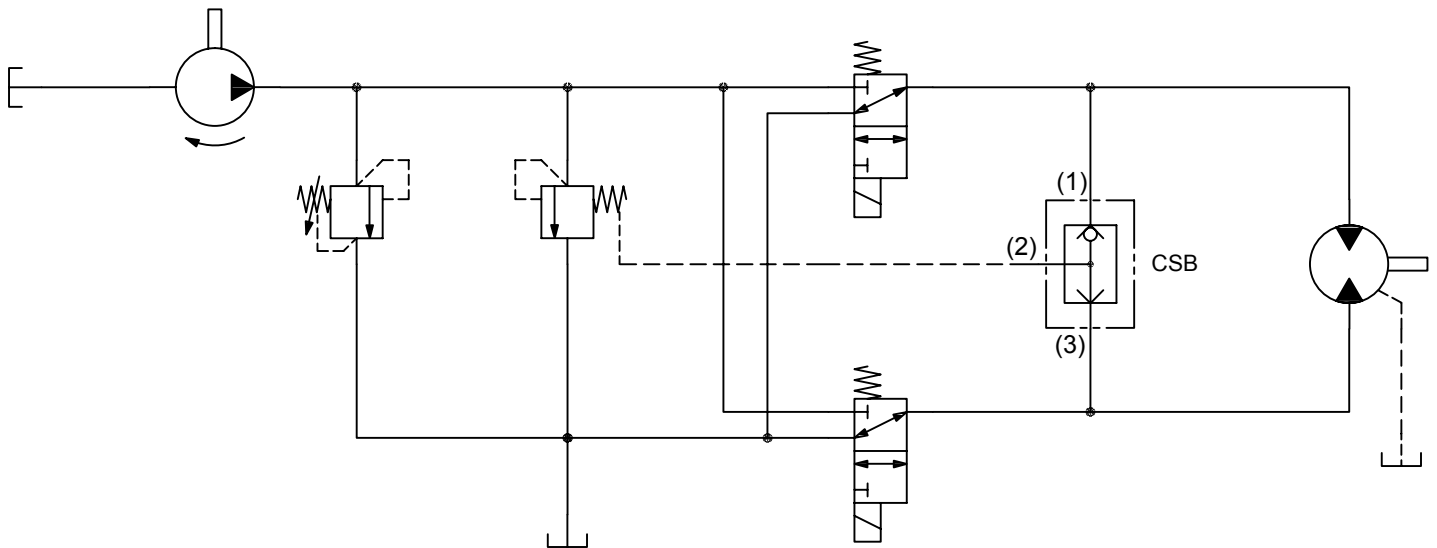
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SHUTTLE VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3500	38	241	9/16-18	IM-CSB	MD96
	1	3500	4	241	Special	QS-CSB	MD98
	6	3500	23	241	3/4-16	PP-CSB	MD100
	8	3500	30	241	7/8-14	DF-CSB	MD102

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

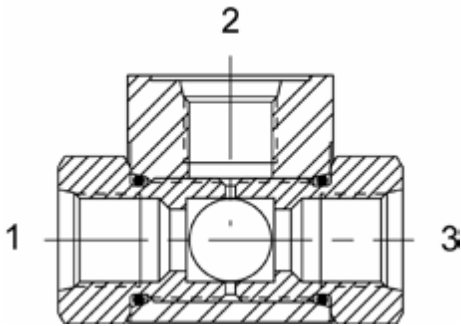
#6 SAE, inline shuttle valve.

OPERATION

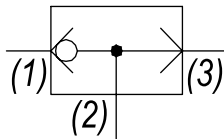
The IM-CSB allows flow from the higher pressure of (1) or (3) to (2). The valve is commonly used as a load sense to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure released hydraulic brake.

FEATURES

- Hardened parts for long life.

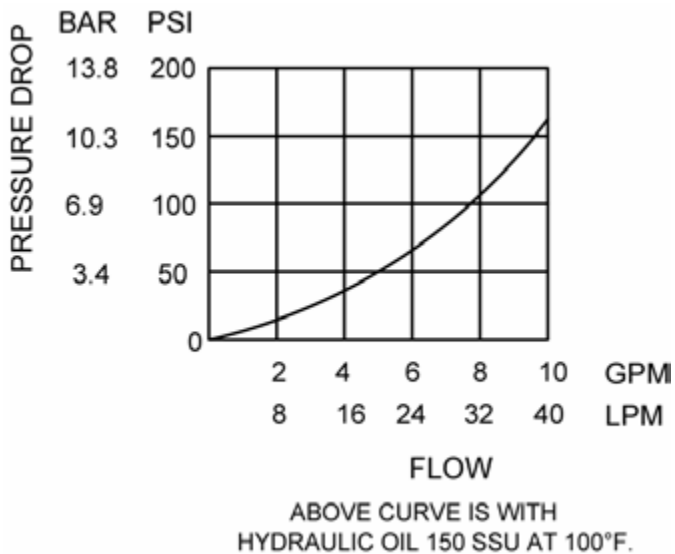


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



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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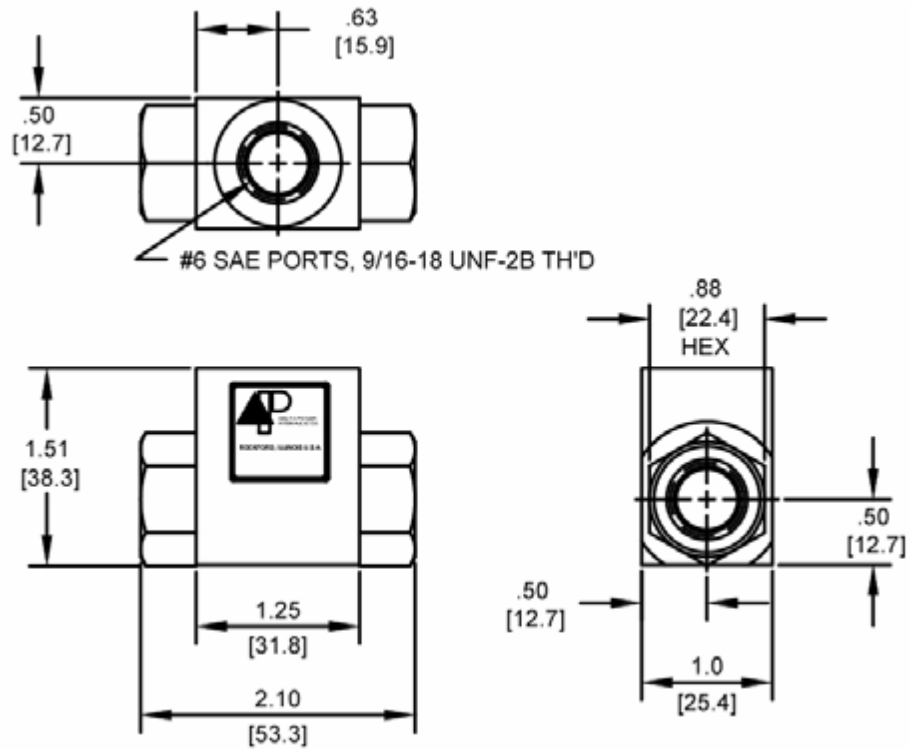


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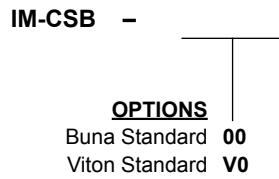


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DIMENSIONS



ORDERING INFORMATION



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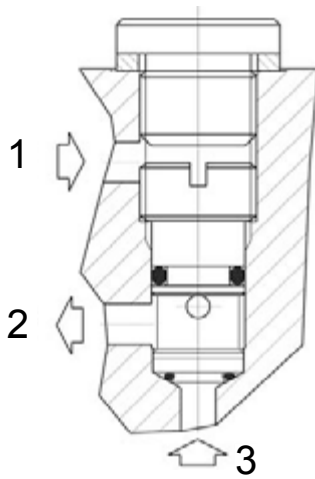


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QS-CSB SHUTTLE VALVE, INSERT TYPE



DESCRIPTION

Special cavity, insert type, shuttle valve.

OPERATION

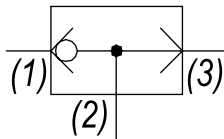
The QS-CSB allows flow from the higher pressure of (1) or (3) to (2). QS-CSB is an insert type valve, cavity must be plugged with a M10x1 plug.

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

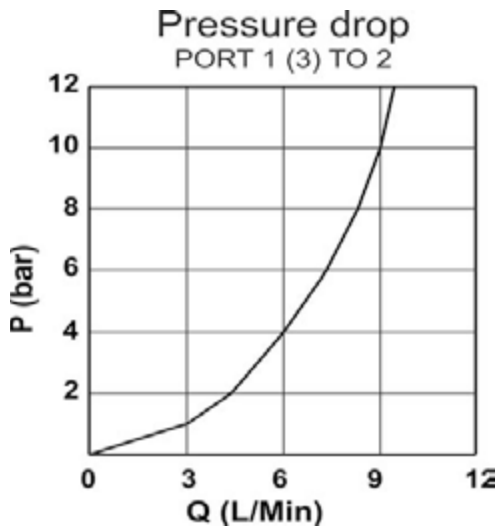
- Hardened parts for long life.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	1 GPM (4 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	.16 lbs (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	10 - 12 Nm
Cavity	T075
Cavity Tools Kit (form tool, reamer, tap)	K-T075

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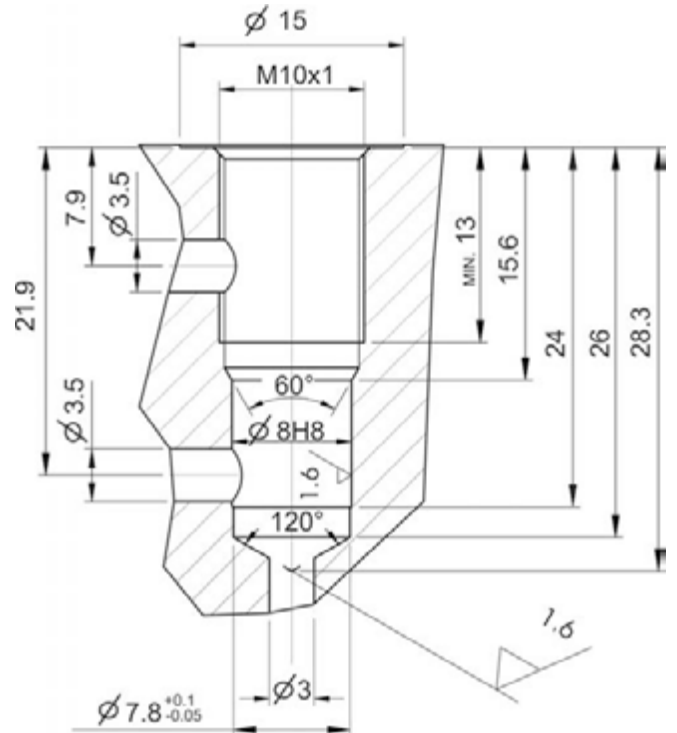
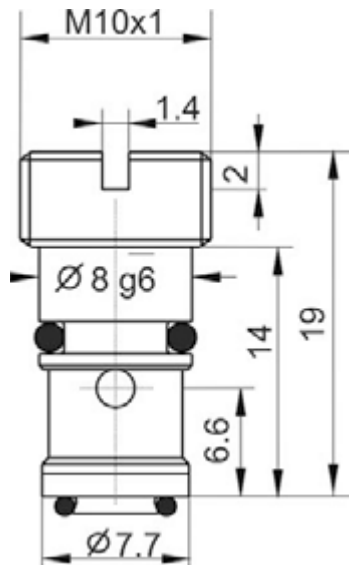


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DIMENSIONS



ORDERING INFORMATION

QS-CSB - - 00

OPTIONS

Buna Standard 00
 Viton Standard V0

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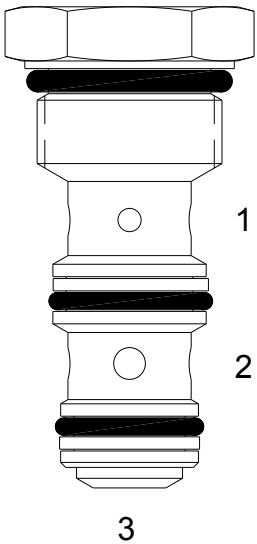


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PP-CSB SHUTTLE VALVE



DESCRIPTION

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

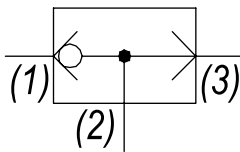
OPERATION

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.

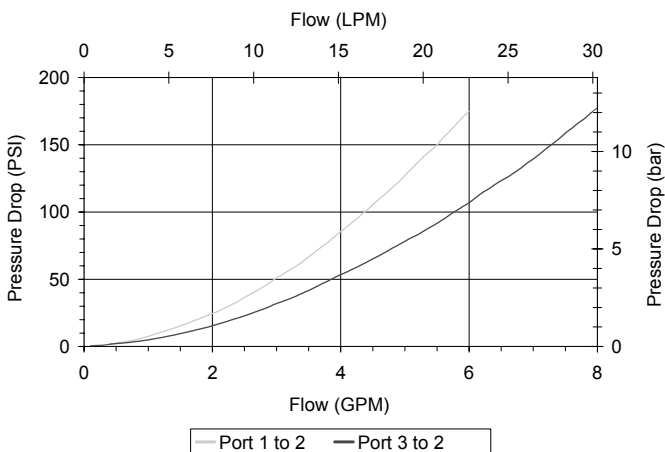
HYDRAULIC SYMBOL



*Tangency connections to cavity are not recommended.
Inlet to port (2) is not recommended.
Do not use orifice disk under cartridge valve.*

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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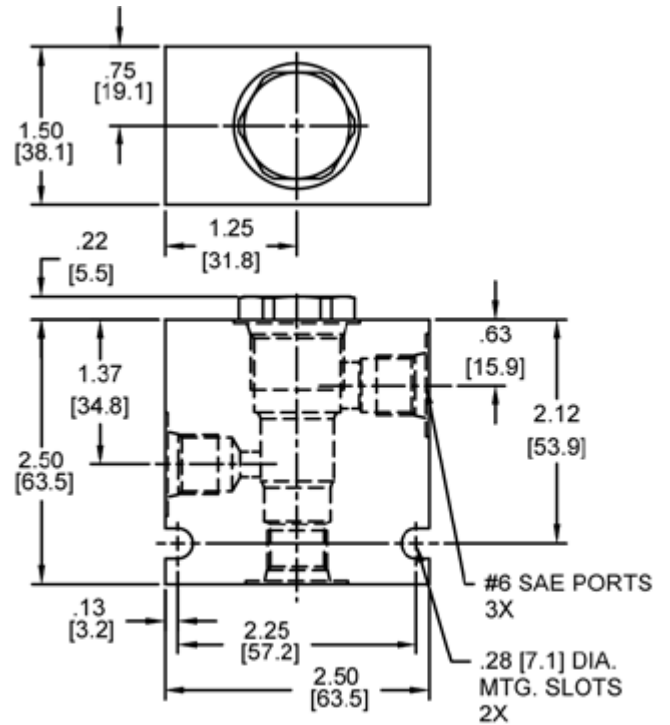
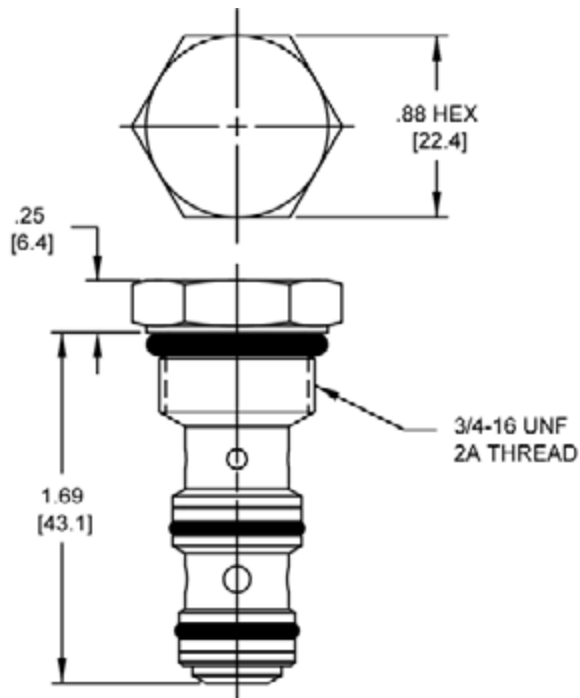


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DIMENSIONS



Body Weight: .56 lbs (.25 kg)

ORDERING INFORMATION

PP-CSB		-	-
OPTIONS			BODIES
Buna, Standard	00	Blank	Without Body
Viton, Standard	V0	N	1/4" NPTF Ports
		S	#6 SAE Ports

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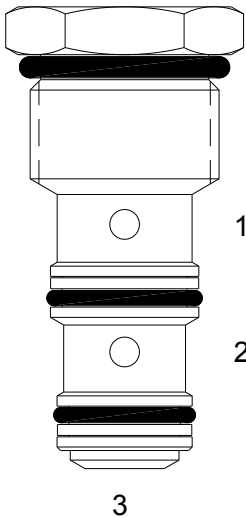


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DF-CSB SHUTTLE VALVE



DESCRIPTION

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

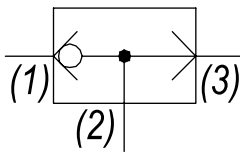
OPERATION

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.

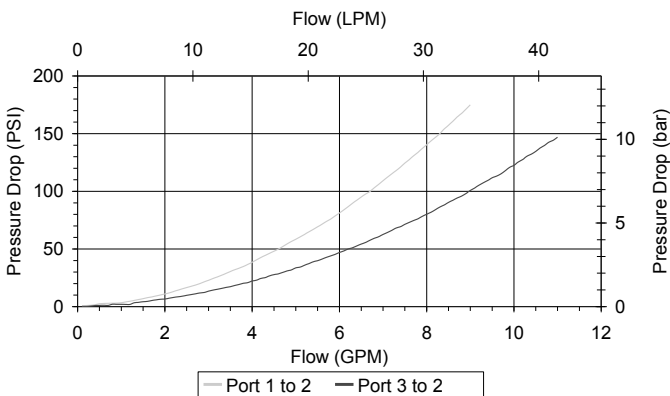
HYDRAULIC SYMBOL



*Tangency connections to cavity are not recommended.
Inlet to port (2) is not recommended.
Do not use orifice disk under cartridge valve.*

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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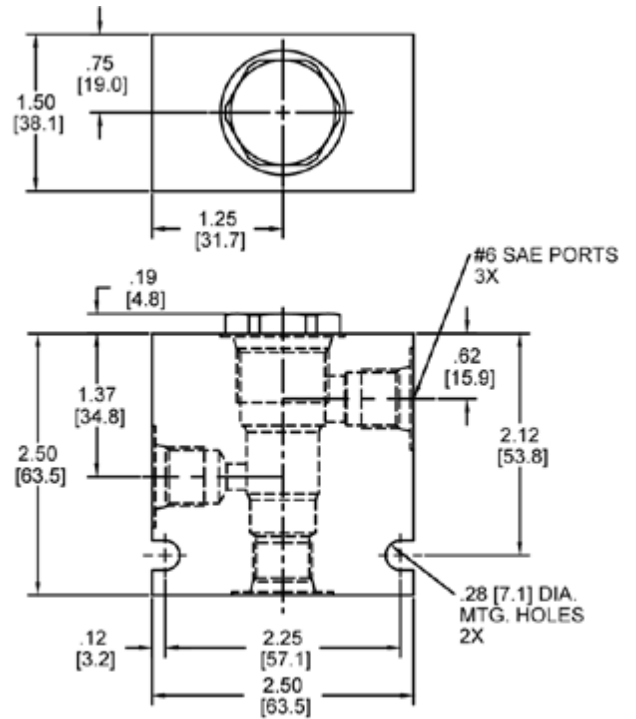
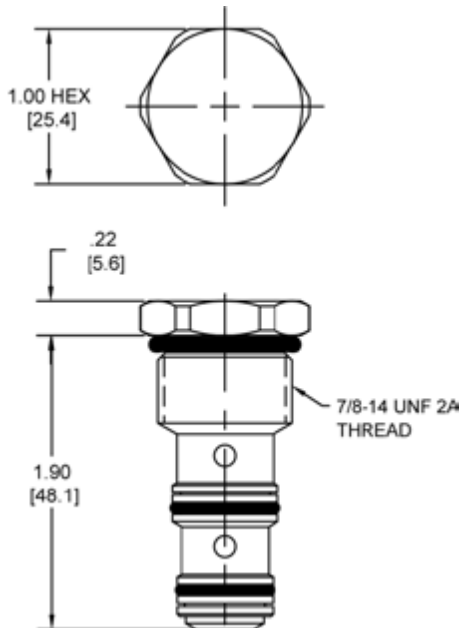


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

<p>DF-CSB -</p>	<p>-</p>	<p>-</p>
<p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 1/4" NPTF Ports</p> <p>S #6 SAE Ports</p>	

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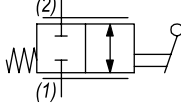


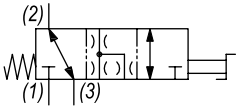
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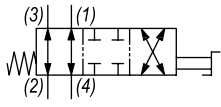
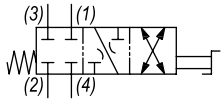
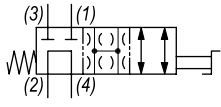


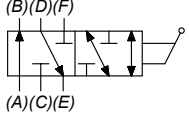
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ROTARY VALVES

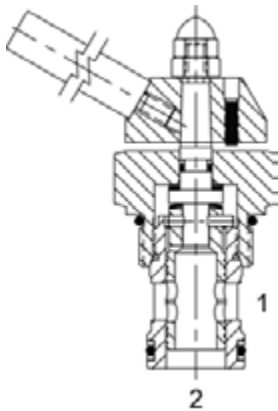
2W2P	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	40	3000	151	207	1 5/16-12	SJ-MRA	MD106

3W2P	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	12	3000	45	207	7/8-14	DF-M3A	MD108

4W2P	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3000	38	207	7/8-14	DG-M4A	MD110
	15	3000	57	207	7/8-14	DG-M4B	MD112
	12	3000	45	207	7/8-14	DG-M4C	MD114

6W2P	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	25	3000	95	207	7/8-14	QS-MRS	MD116

SJ-MRA MANUAL ROTARY SPOOL VALVE, 2 WAY



DESCRIPTION

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

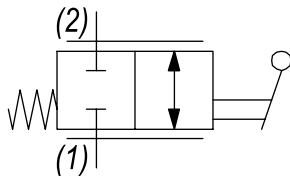
OPERATION

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

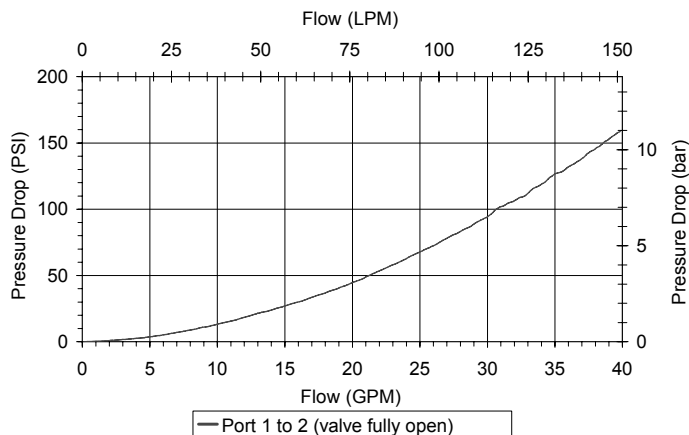
- Hardened parts for long life.
- Industry common cavity.

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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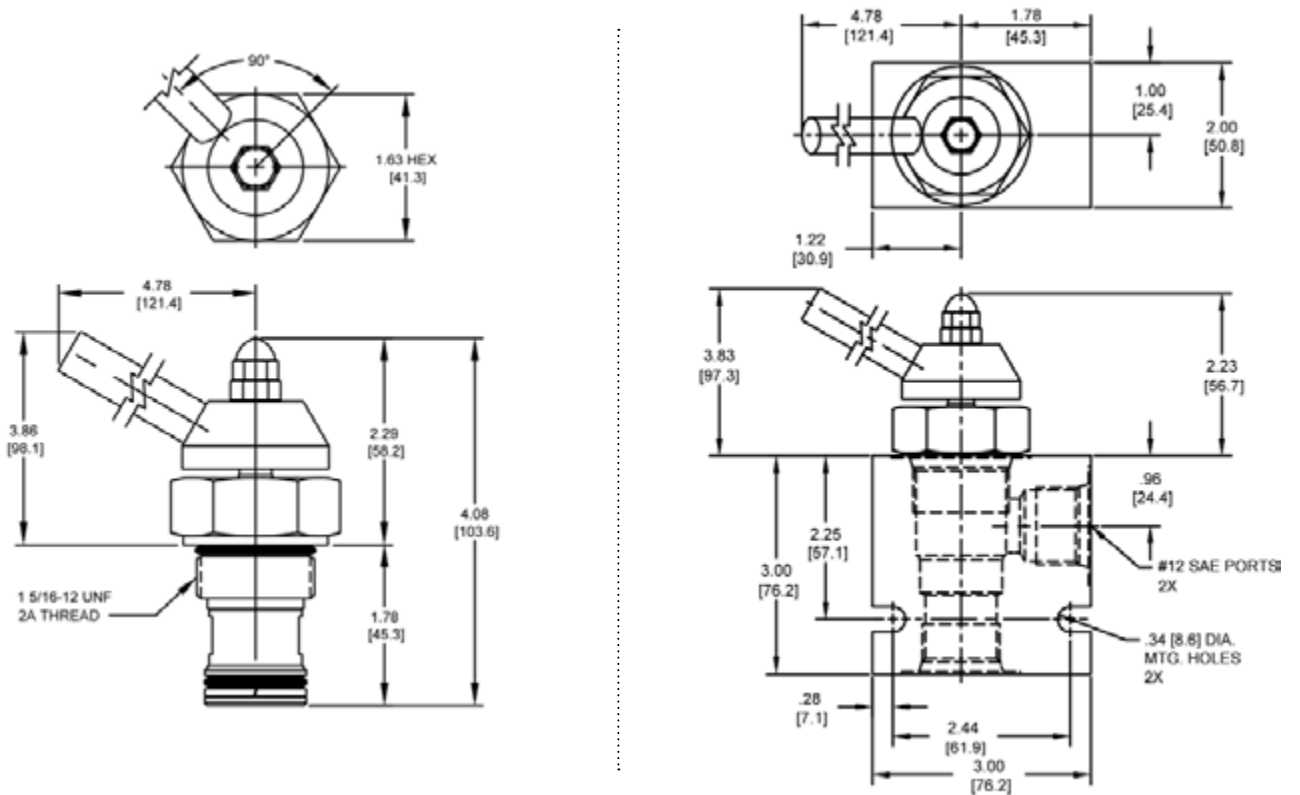


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DIMENSIONS



Body Weight: 1.29 lbs (.59 kg)

ORDERING INFORMATION

SJ-MRA		-	-
	OPTIONS		BODIES
Buna, Standard	00		Blank
Viton, Standard	V0		N 3/4" NPTF Ports
			S #12 SAE Ports

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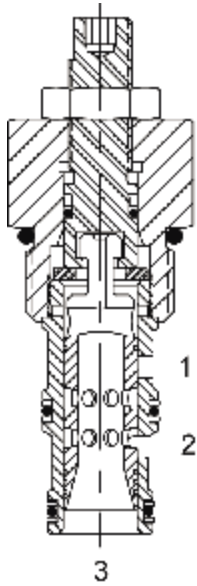


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DF-M3A MANUAL ROTARY SPOOL VALVE, 3 WAY 2 POSITION



DESCRIPTION

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

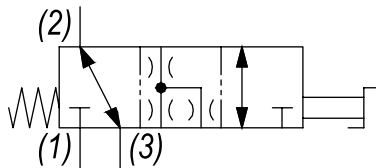
OPERATION

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.

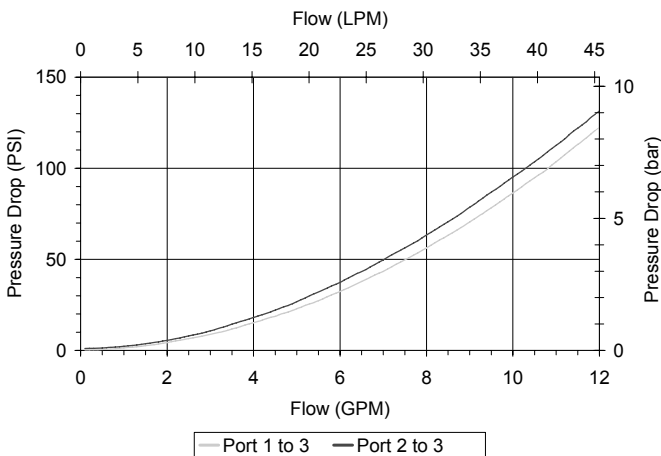
HYDRAULIC SYMBOL



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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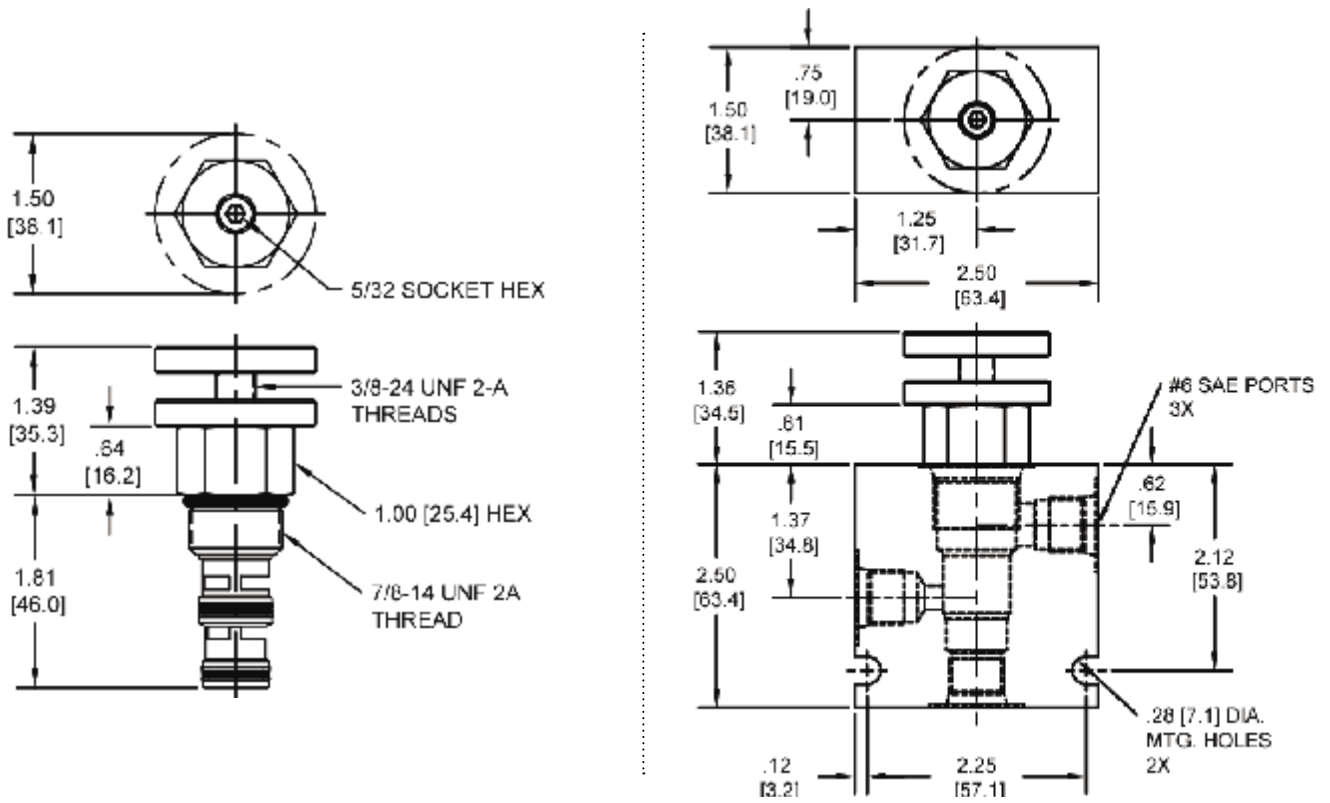


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DIMENSIONS



Body Weight: .60 lbs (.27 kg)

ORDERING INFORMATION

<p>DF-M3A - -</p>	<p>OPTIONS</p> <p>Buna, Standard 00</p> <p>Viton, Standard V0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 1/4" NPTF Ports</p> <p>S #6 SAE Ports</p>
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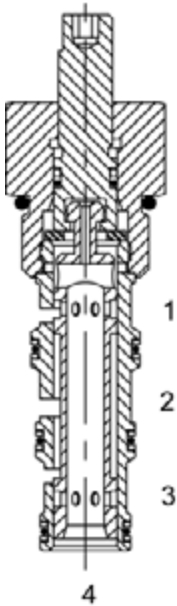


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DG-M4A MANUAL SPOOL ROTARY VALVE, 4 WAY 2 POSITION, CRISS CROSS



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

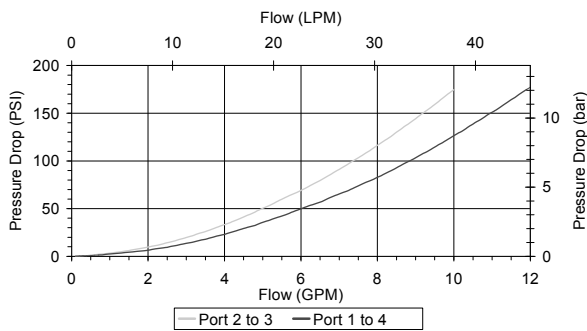
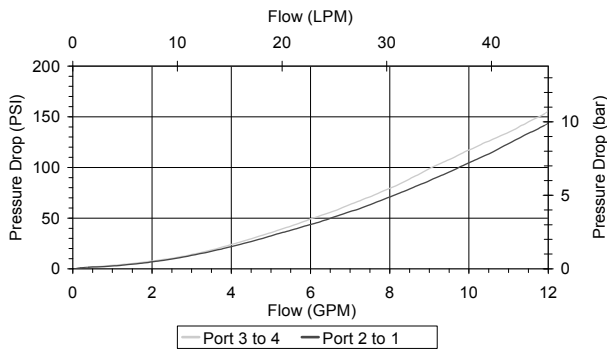
- Hardened parts for long life.
- Industry common cavity.



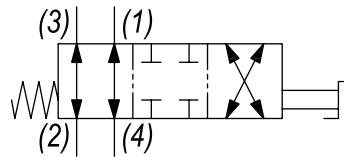
May be used as metering product. Valve has approximately 3.5 turns adjustment from extreme clockwise fully to counterclockwise positions. See chart for pressure drop in both positions.

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

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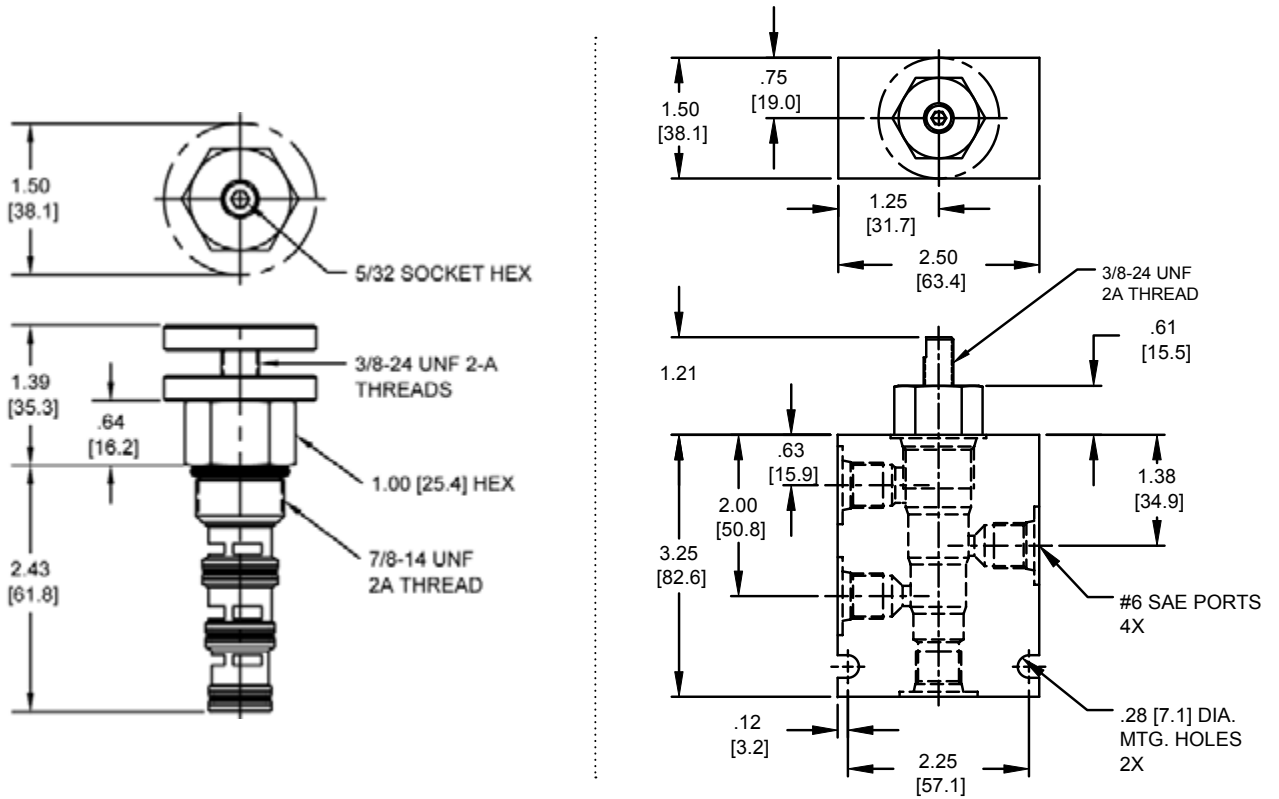


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-M4A		-	-
	OPTIONS		BODIES
Buna, Standard	00		Blank
Viton, Standard	V0		Without Body
Buna, Knob	OK		N 1/4" NPTF Ports
Viton, Knob	VK		S #6 SAE Ports

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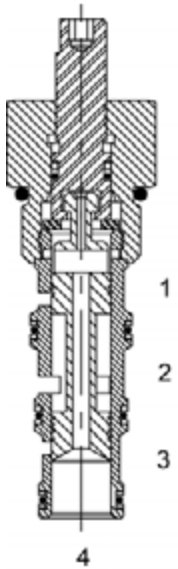


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DG-M4B MANUAL ROTARY SPOOL VALVE, 4 WAY 2 POSITION, CLOSED CENTER



DESCRIPTION

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

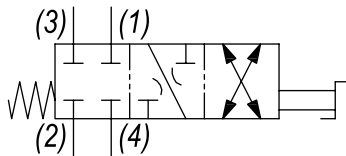
OPERATION

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.

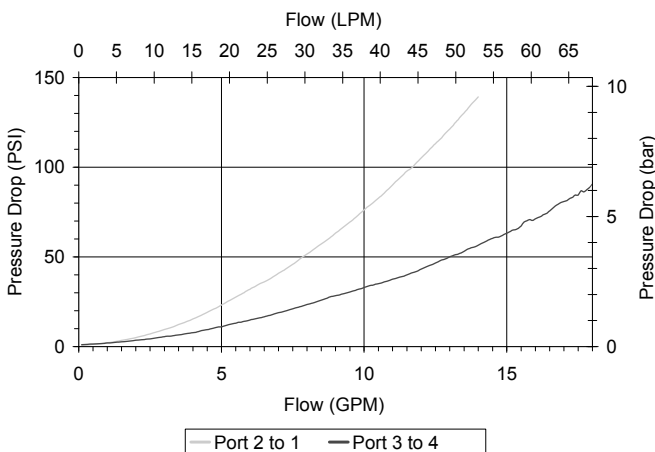
HYDRAULIC SYMBOL



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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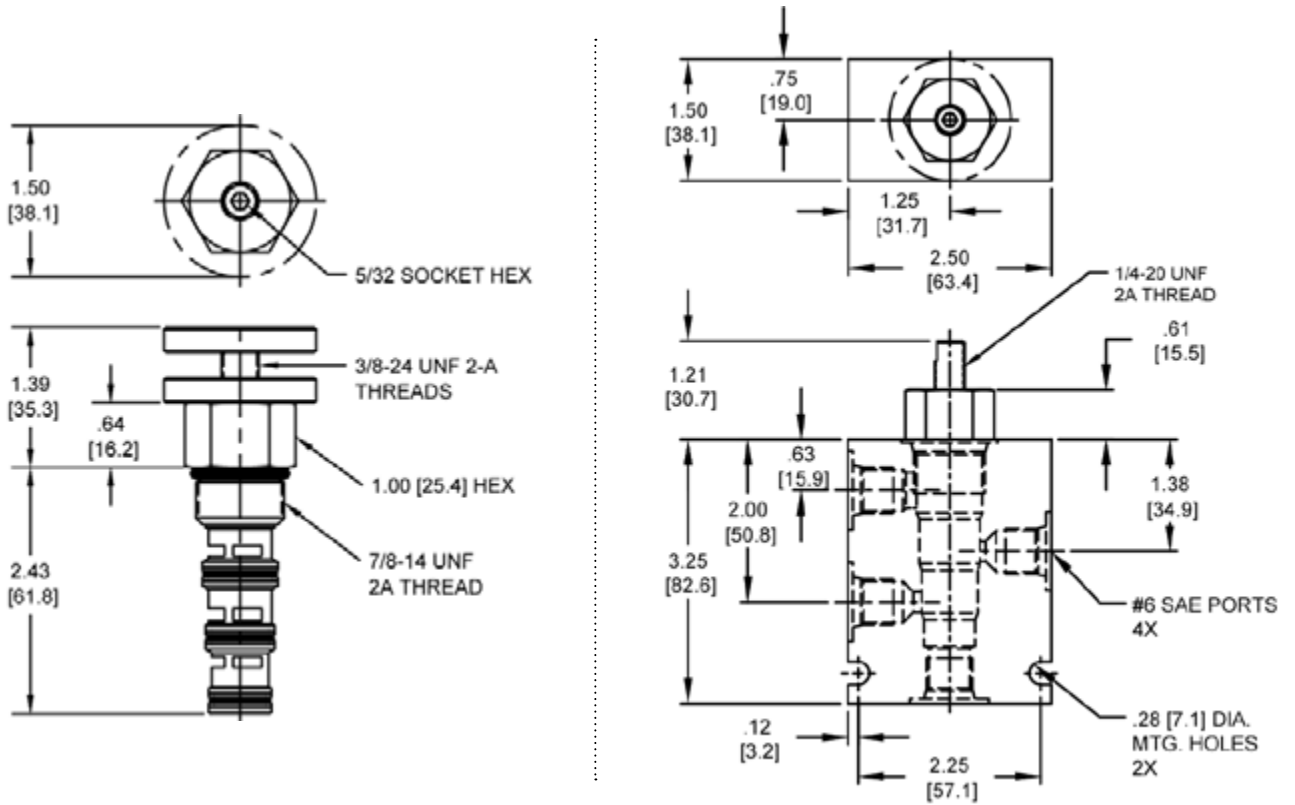


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-M4B		-	-
	OPTIONS		BODIES
Buna, Standard	00		Blank
Viton, Standard	V0		Without Body
Buna, Knob	0K		N 1/4" NPTF Ports
Viton, Knob	VK		S #6 SAE Ports

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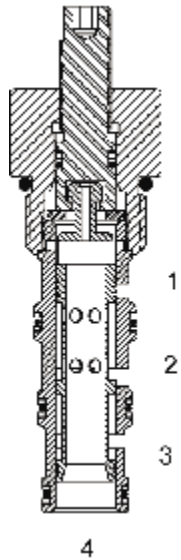


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DG-M4C MANUAL ROTARY SPOOL VALVE, 4 WAY 2 POSITION, TANDEM CENTER



DESCRIPTION

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

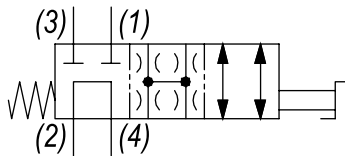
OPERATION

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.

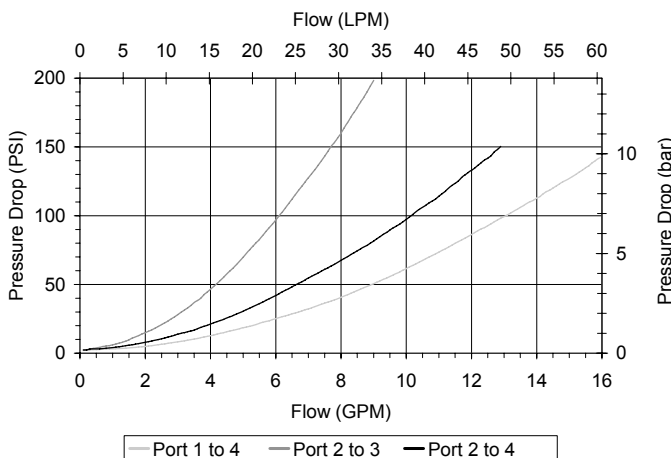
HYDRAULIC SYMBOL



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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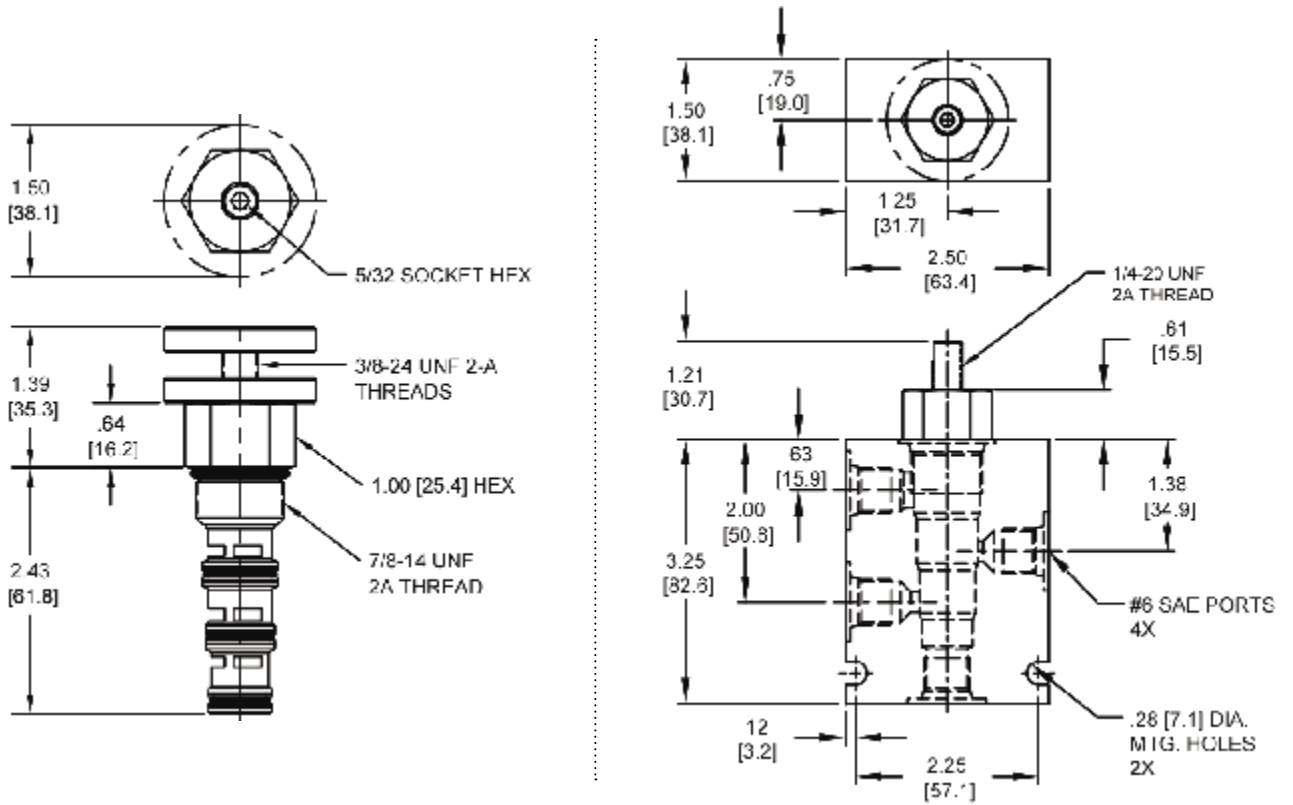


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-M4C -		-	-
	OPTIONS		BODIES
Buna, Standard	00	Blank	Without Body
Viton, Standard	V0	N	1/4" NPTF Ports
Buna, Knob	0K	S	#6 SAE Ports
Viton, Knob	VK		

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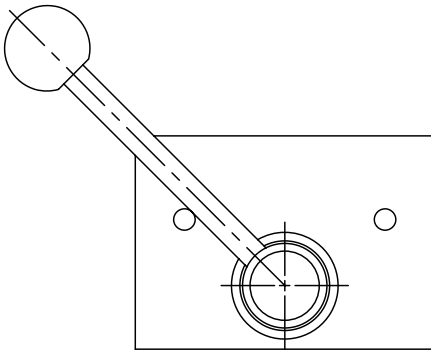
QS-MRS ROTARY SELECTOR VALVE

DESCRIPTION

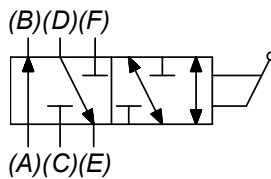
6 port rotary selector valve.

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).



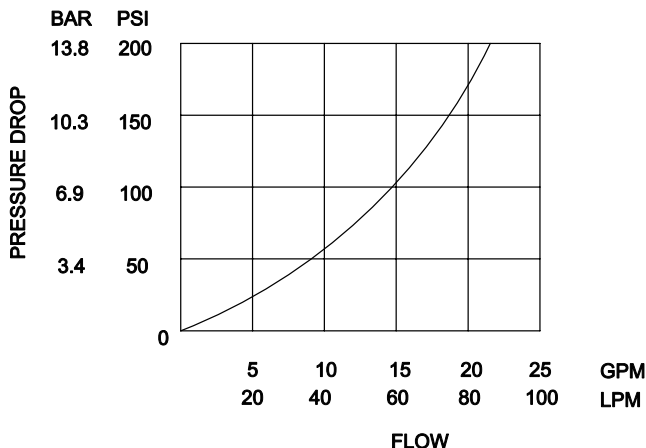
HYDRAULIC SYMBOL



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)



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

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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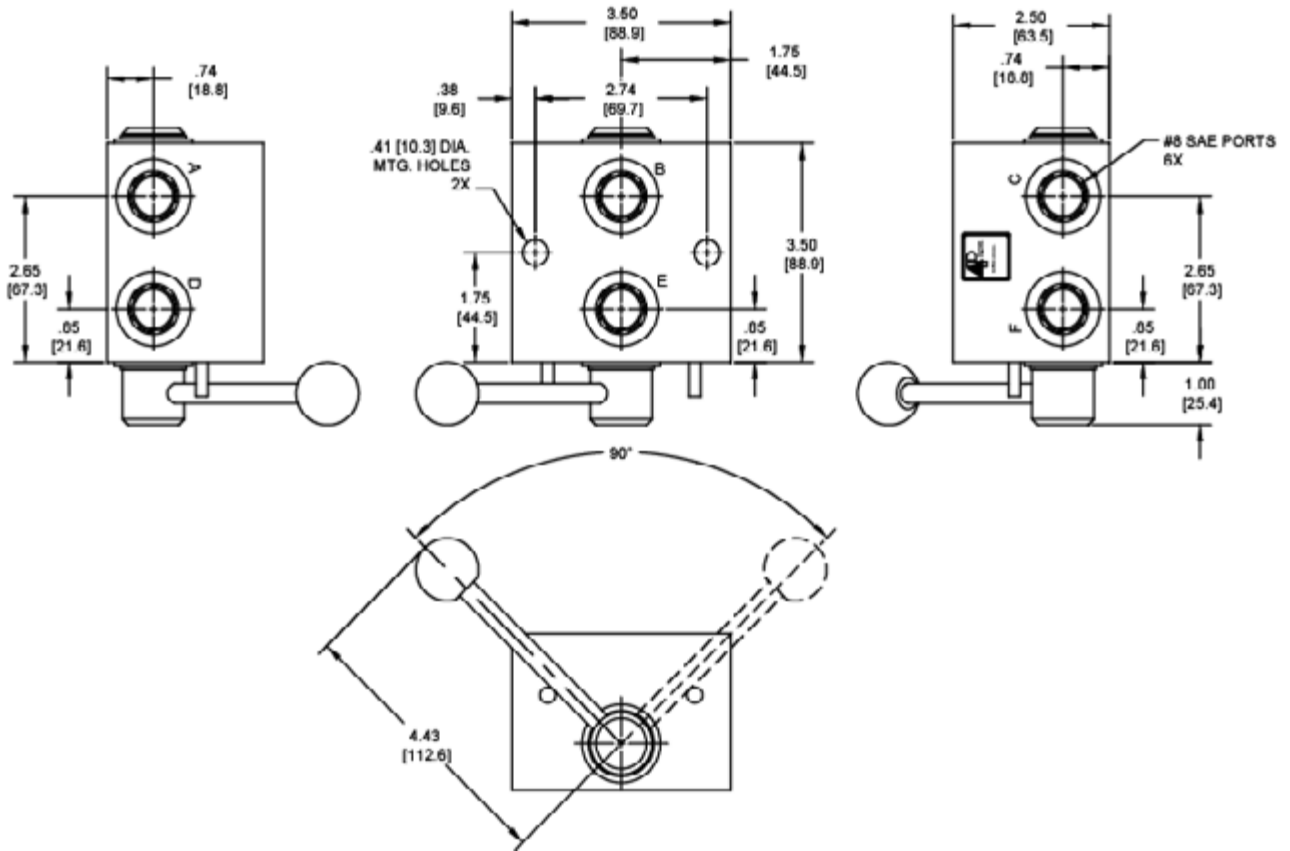


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DIMENSIONS



ORDERING INFORMATION

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

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MECHANICAL FLOW CONTROLS



FLOW RESTRICTORS, ADJUSTABLE (NEEDLE VALVES) MF3

PRESSURE COMPENSATED FLOW REGULATOR VALVES MF21

PRIORITY FLOW REGULATOR VALVES MF41

VELOCITY FUSES MF51

FLOW DIVIDER/COMBINER VALVES MF57

LOGIC ELEMENTS MF69

HAND PUMPS MF77

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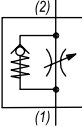



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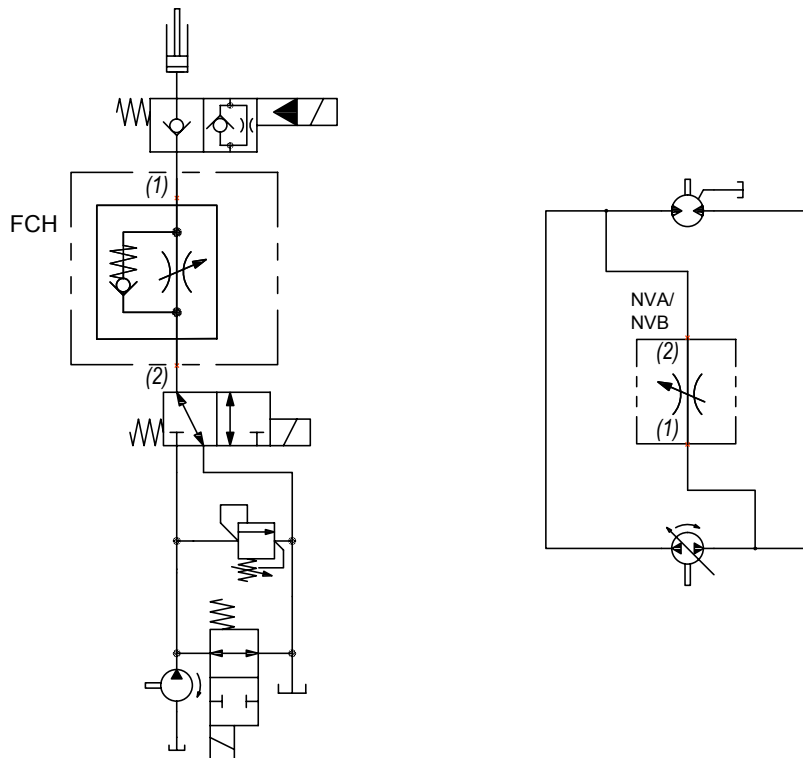
NEEDLE VALVES – FLOW RESTRICTORS

	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.



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

DESCRIPTION

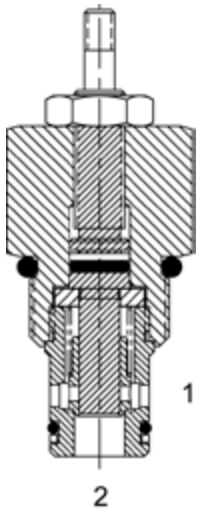
10 size, 7/8-14 thread, "Delta" adjustable needle flow control valve with free reverse flow.

OPERATION

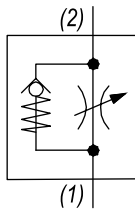
The DE-FCH increases its orifice value from fully closed to fully open by turning screw counterclockwise. When adjusted open the valves regulates flow (1) to (2). When fully closed the valve restricts flow from (1) to (2).

FEATURES

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

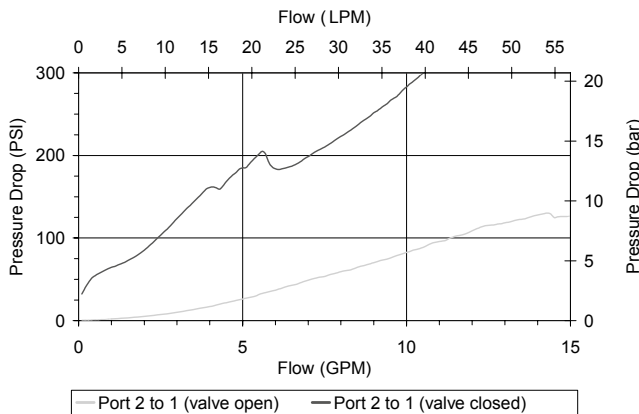


HYDRAULIC SYMBOL



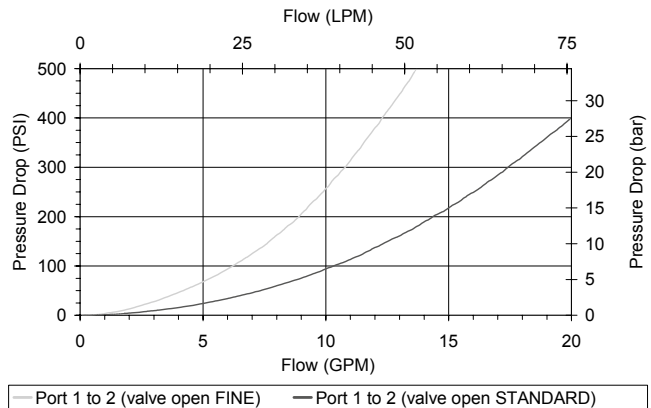
PERFORMANCE

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



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.

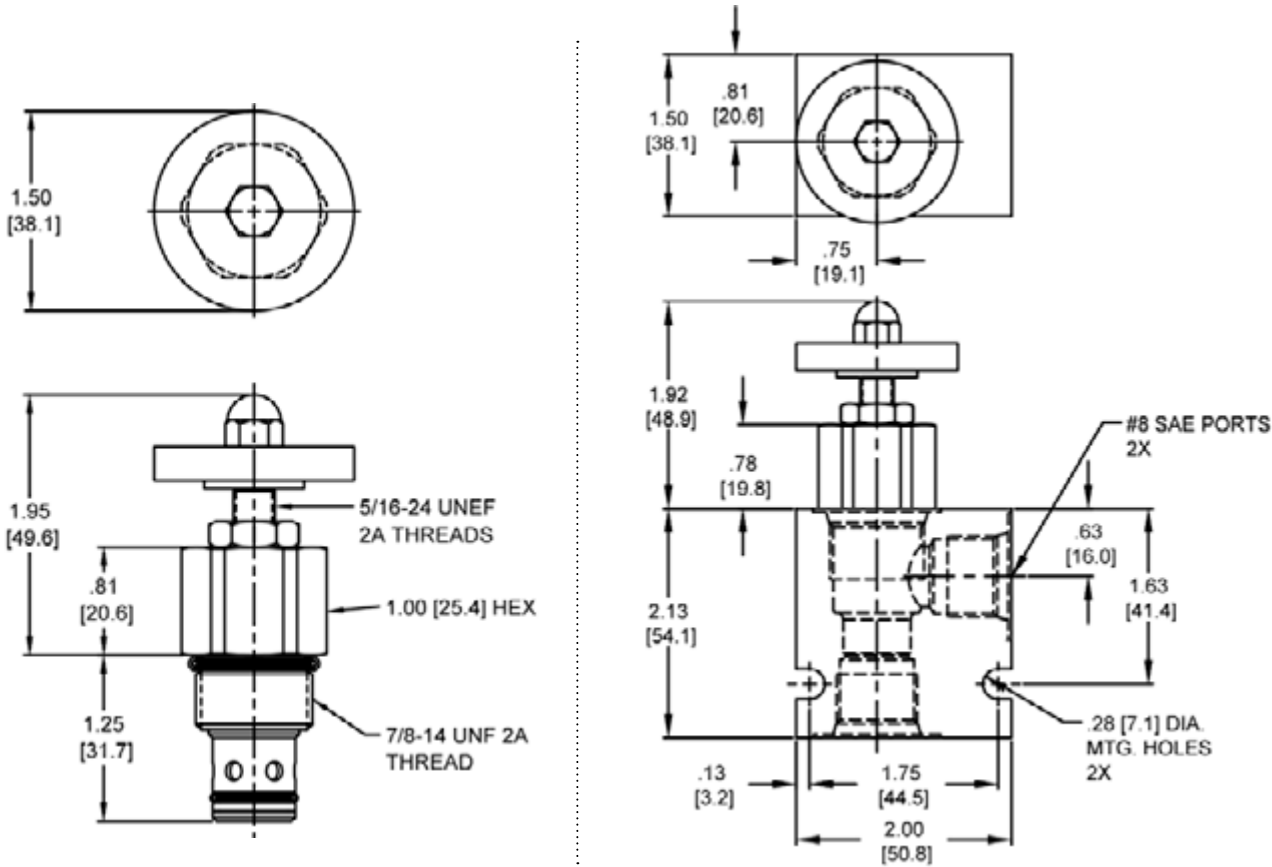


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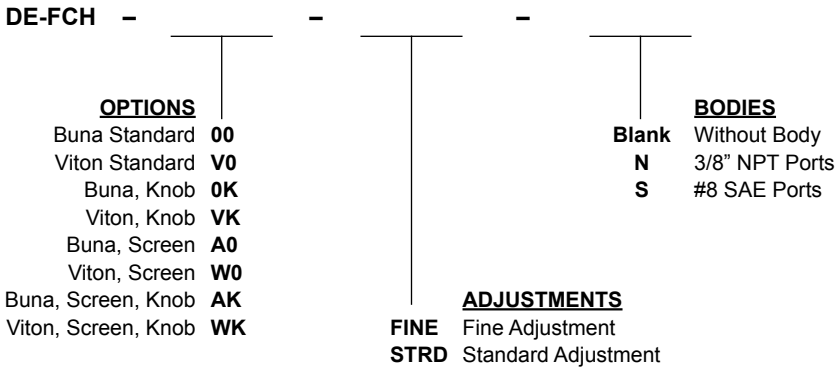
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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

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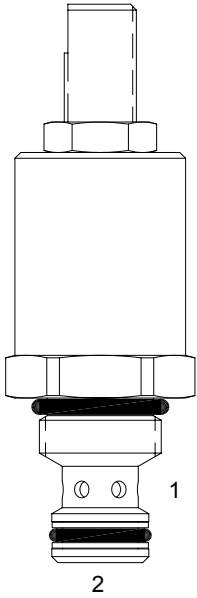


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MA-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

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

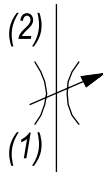
OPERATION

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

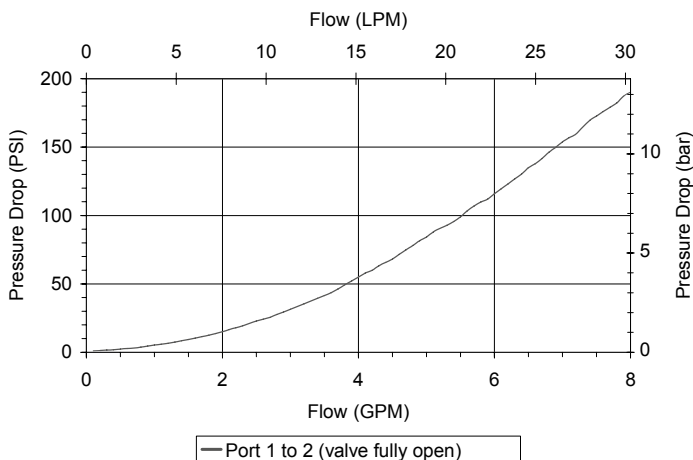
- Hardened parts for long life.
- Industry common cavity.

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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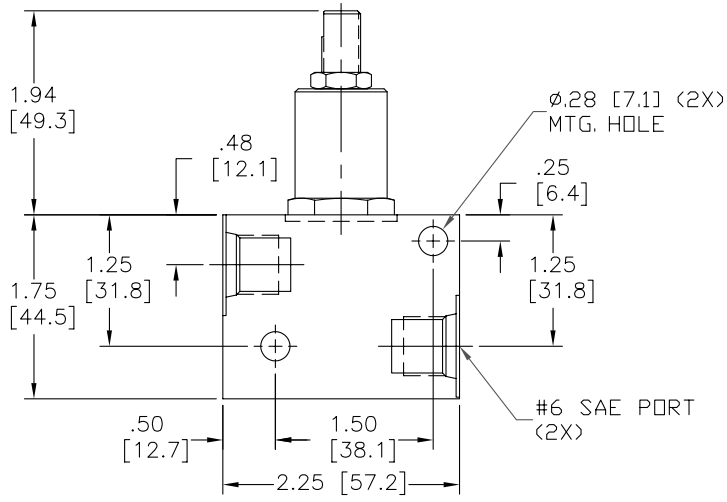
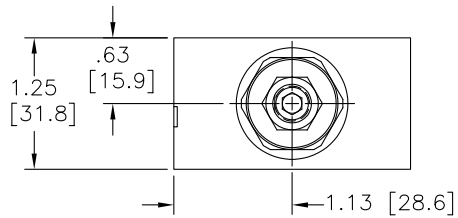
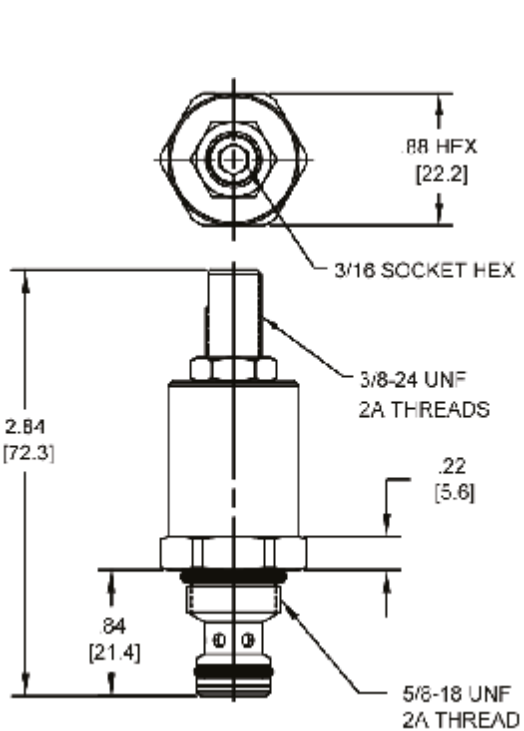


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DIMENSIONS



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

Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

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

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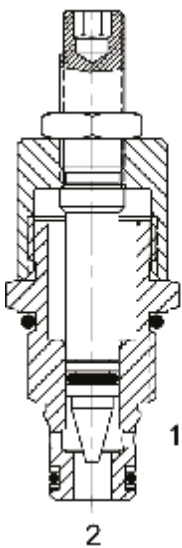


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PB-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

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

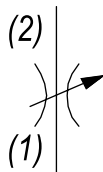
OPERATION

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

FEATURES

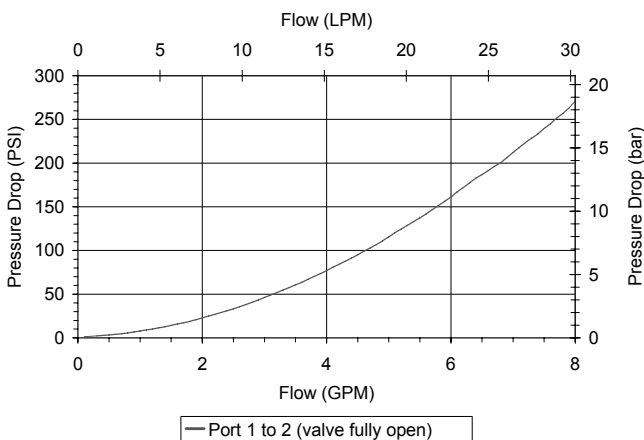
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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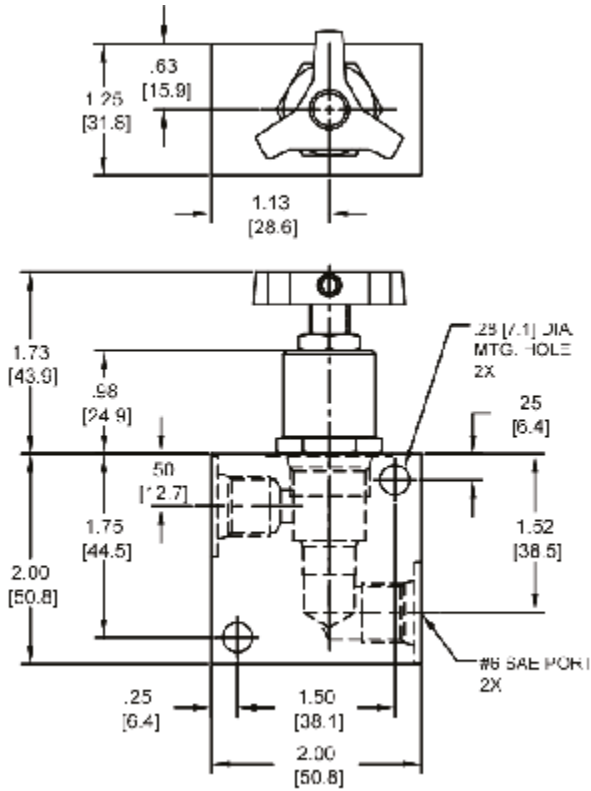
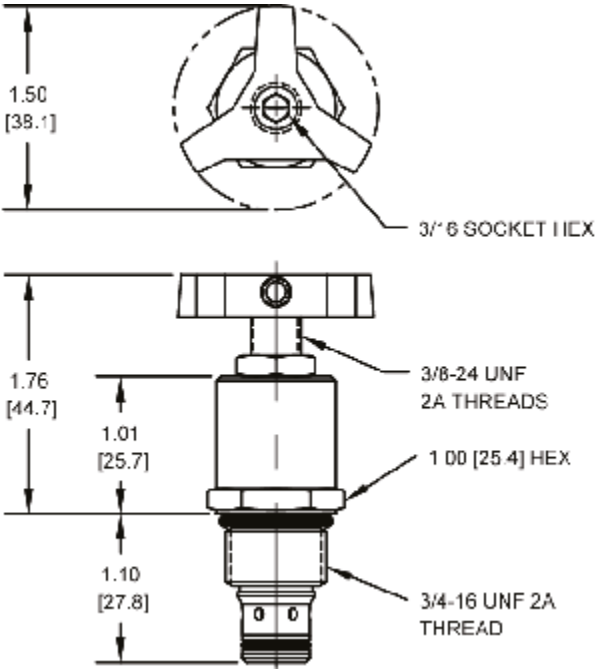


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

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

W/23 / 2018 **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.

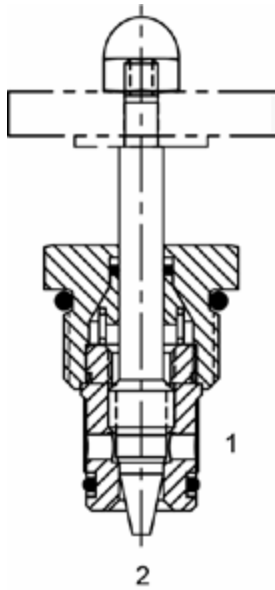


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DE-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE, FINE ADJUST



DESCRIPTION

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

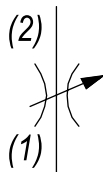
OPERATION

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

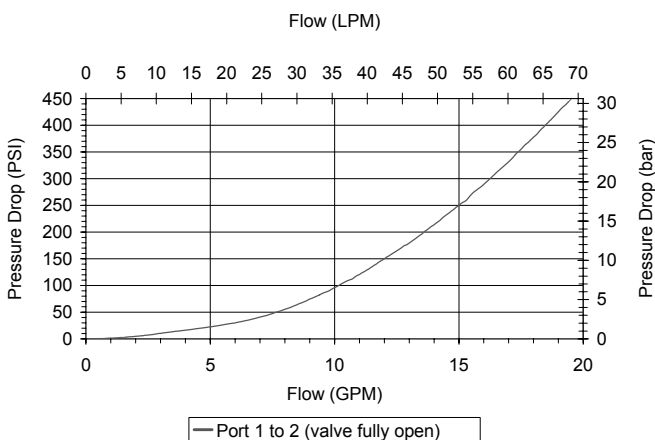
- Hardened parts for long life.
- Industry common cavity.

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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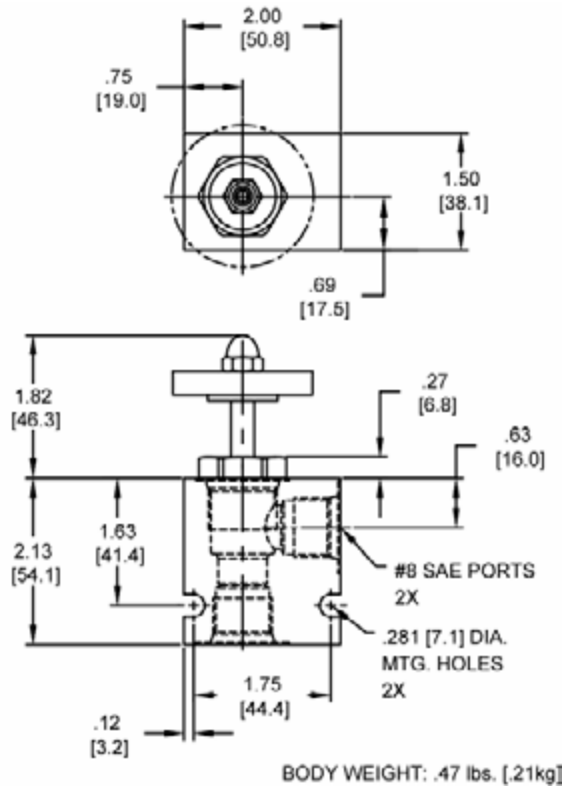
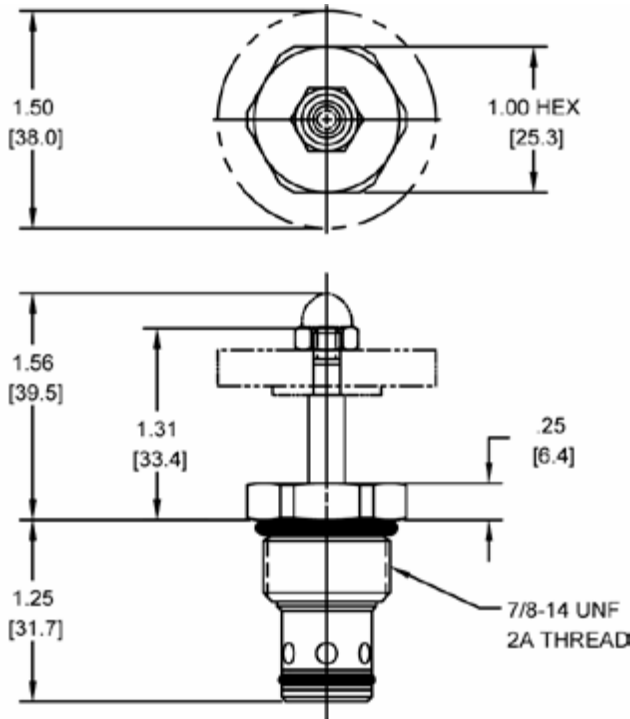


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-NVA	-	-	-
OPTIONS			BODIES
Buna Standard	00		Blank
Viton Standard	V0		N 3/8" NPTF 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		

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

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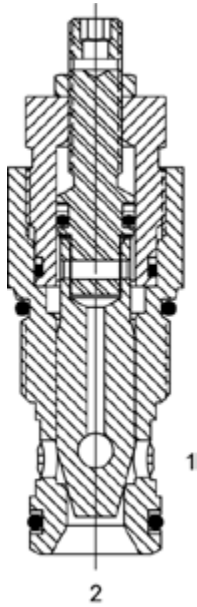


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HT-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE



DESCRIPTION

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

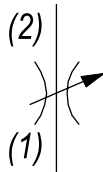
OPERATION

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

FEATURES

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

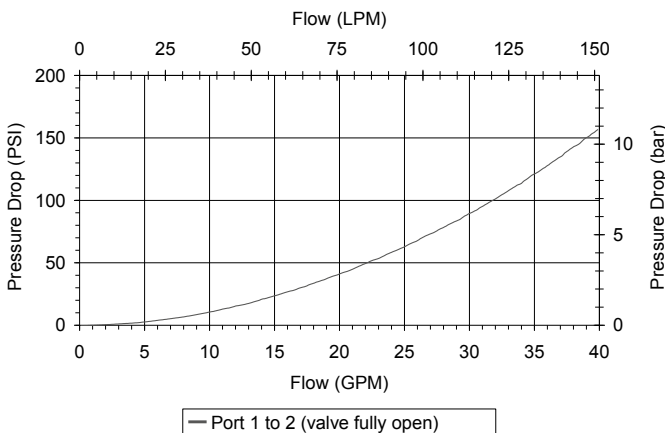
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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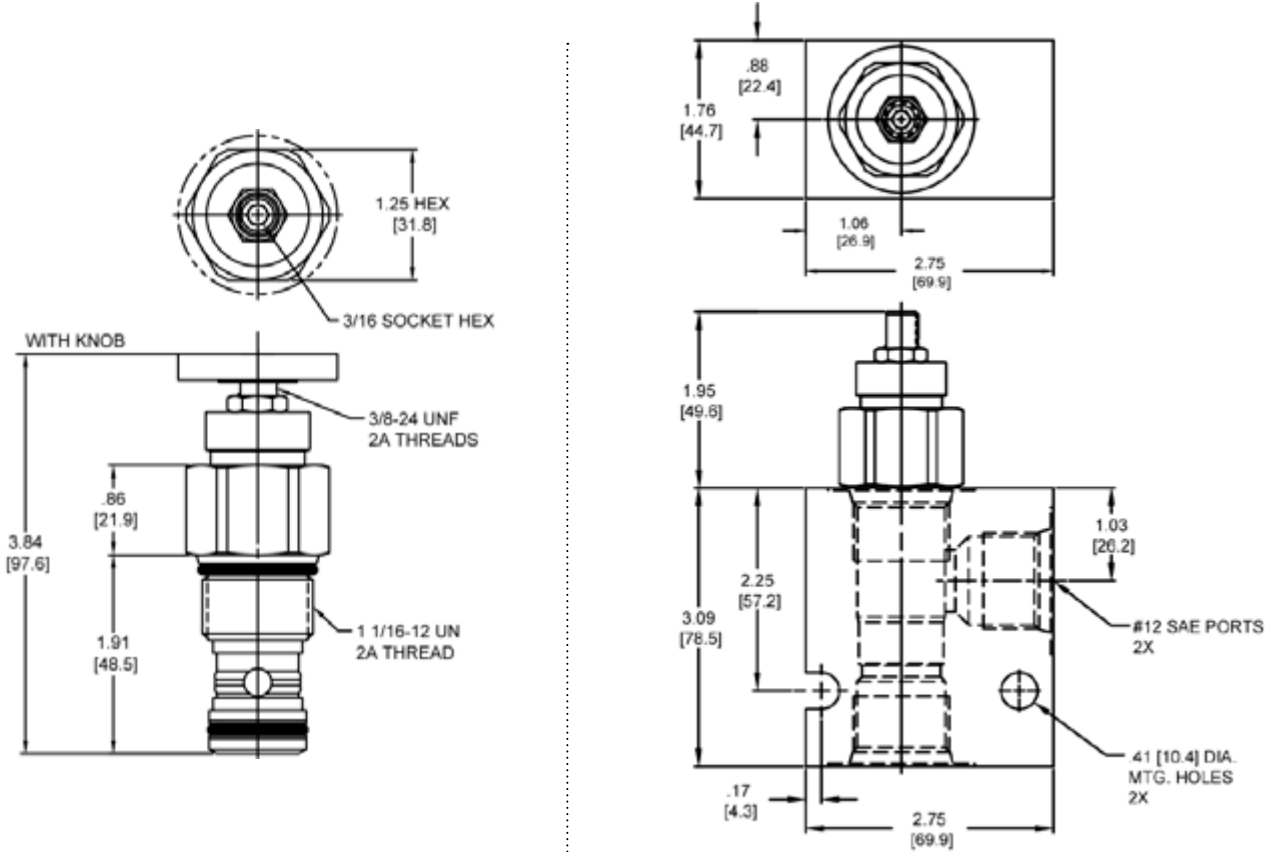


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DIMENSIONS



Body Weight: 3.71 lbs (1.68 kg)

ORDERING INFORMATION

<p>HT-NVA -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p> <p>Buna, Screen A0</p> <p>Viton, Screen W0</p> <p>Buna, Screen, Knob AK</p> <p>Viton, Screen, Knob WK</p>	<p>-</p> <p>BODIES</p> <p>Blank Without Body</p> <p>S #12 SAE Ports</p>
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Note: use screen only if flow direction is from (1) to (2).

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SJ-NVA ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE

DESCRIPTION

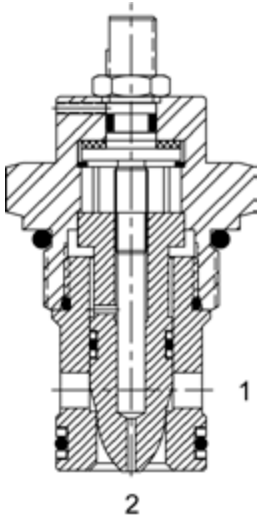
16 size, 1 5/16-12 thread, "Super" series, needle flow control valve.

OPERATION

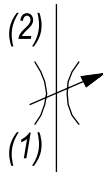
The SJ-NVA adjusts from fully open to fully closed by turning the adjustment screw clockwise. When adjusted open the valves regulates flow (1) to (2) or (2) to (1). When fully closed the valve blocks flow from (1) to (2) or (2) to (1).

FEATURES

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

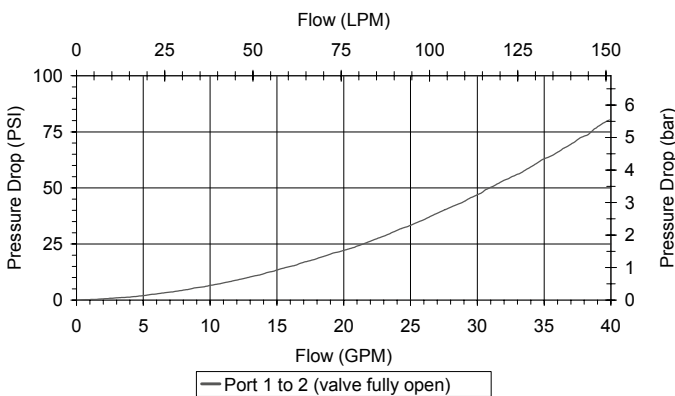


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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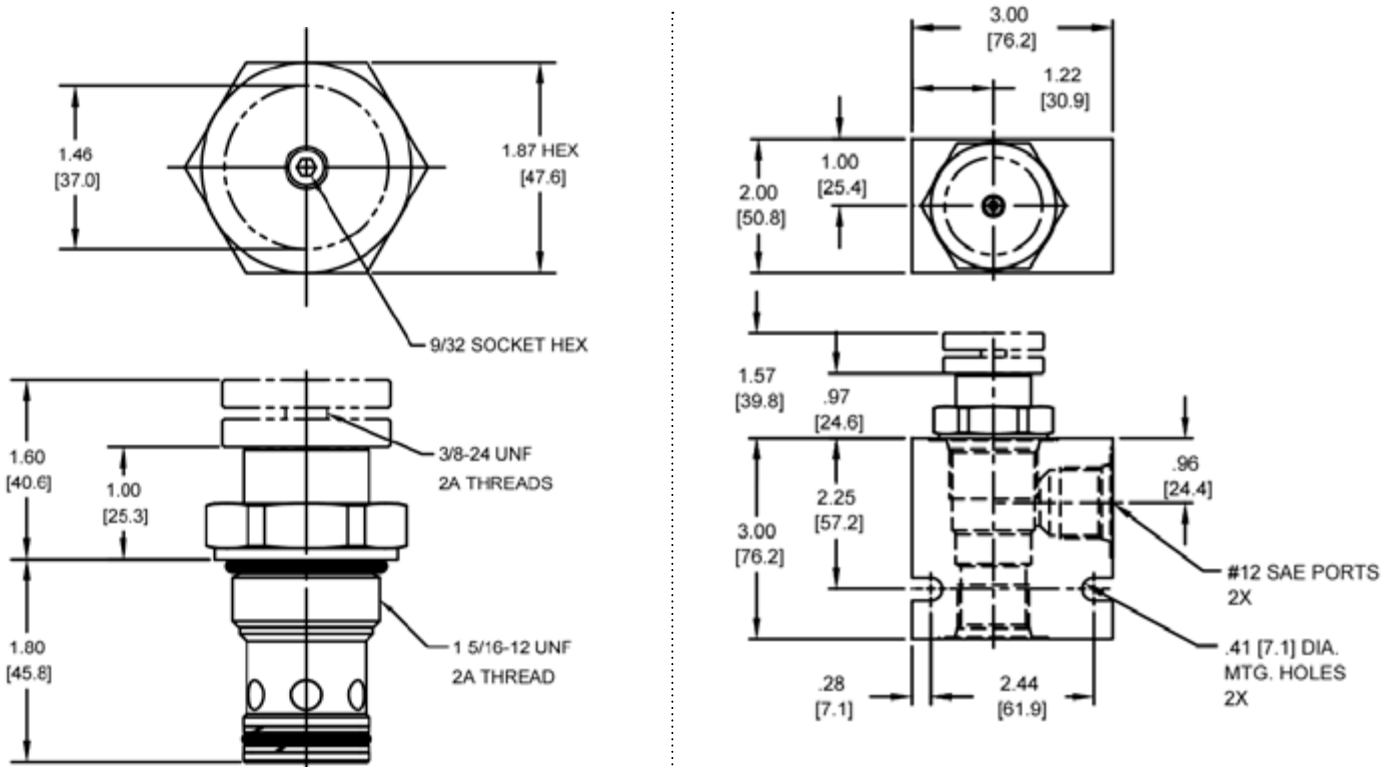


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DIMENSIONS



Body Weight: 1.29 lbs (.58 kg)

ORDERING INFORMATION

<p>SJ-NVA -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p> <p>Buna, Internally Adj. 0I</p> <p>Viton, Internally Adj. VI</p> <p>Buna, Tamper Proof 0T</p> <p>Viton, Tamper Proof VT</p>	<p>-</p> <p>-</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 3/4" NPT Ports</p> <p>S #12 SAE Ports</p>
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PB-NVB ADJUSTABLE FLOW CONTROL VALVE, NEEDLE TYPE, FINE ADJUST

DESCRIPTION

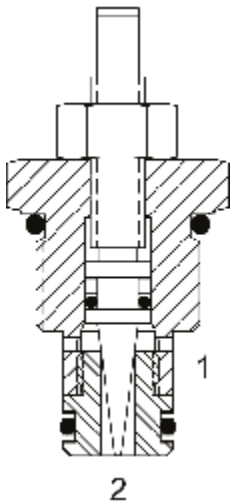
8 size, 3/4-16 thread, "Power" series, fine adjust needle flow control.

OPERATION

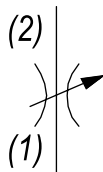
The PB-NVB adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

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

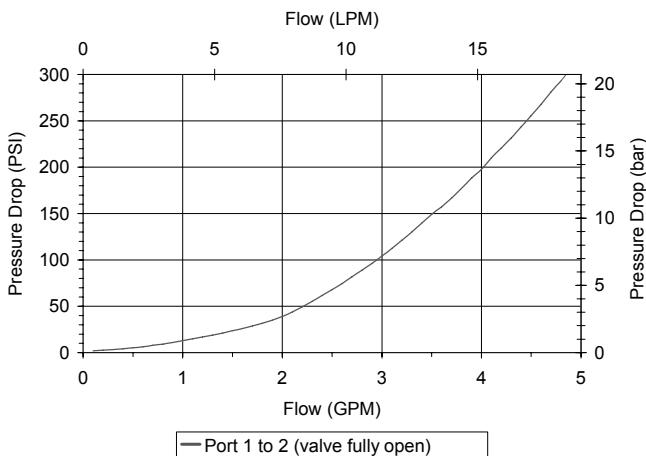


HYDRAULIC SYMBOL



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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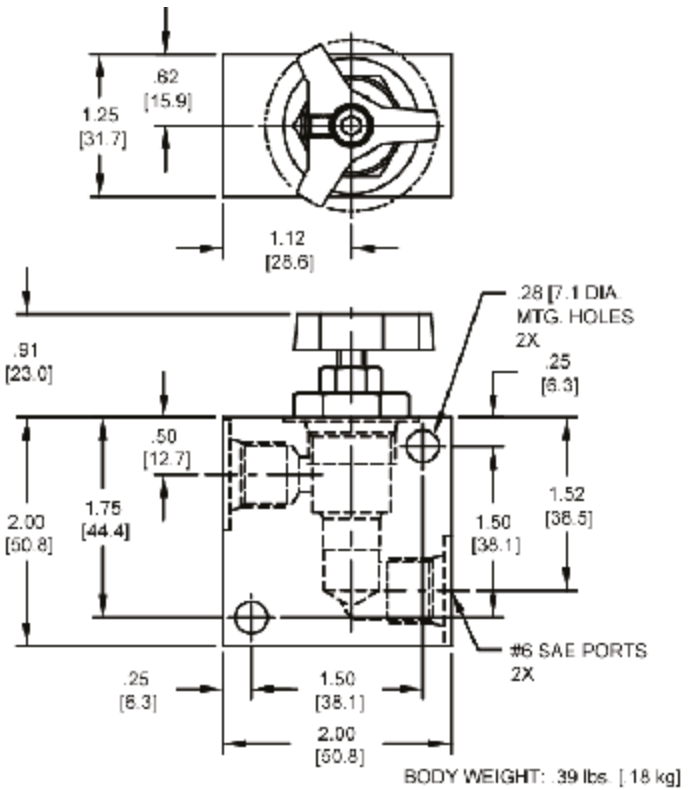
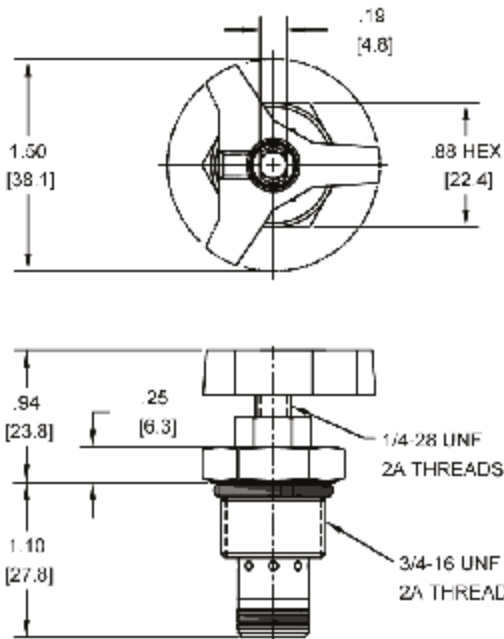


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DIMENSIONS



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).

W/23/2018

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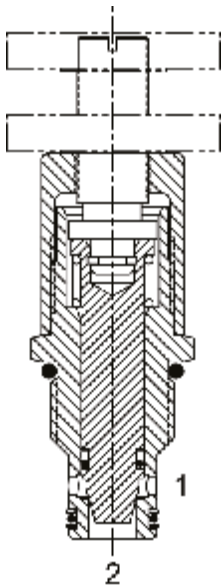


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DE-NVB ADJUSTABLE FLOW CONTROL VALVE, COARSE ADJUST



DESCRIPTION

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

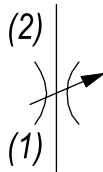
OPERATION

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

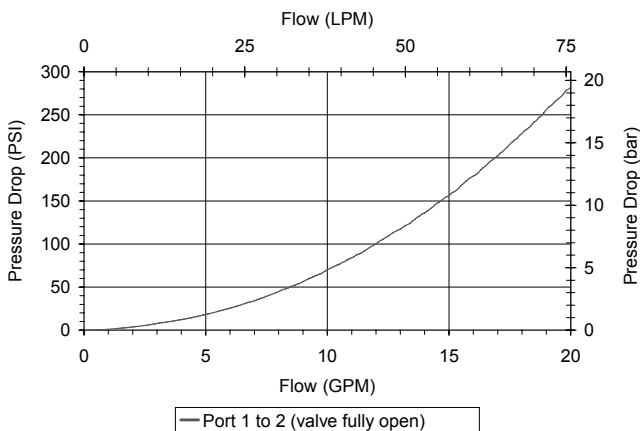
- Hardened parts for long life.
- Industry common cavity.

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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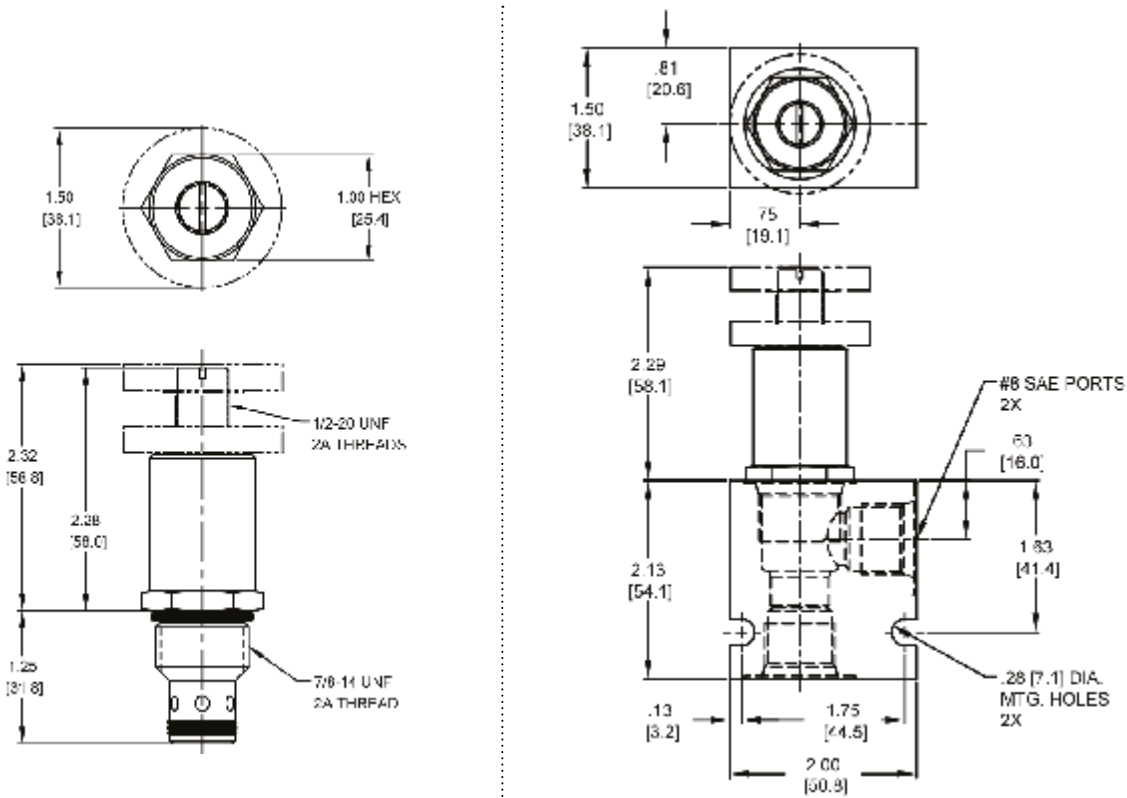


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-NVB	-	-	-
	OPTIONS		BODIES
	Buna Standard	00	Blank
	Viton Standard	V0	Without Body
	Buna, Knob	0K	N 3/8" NPT Ports
	Viton, Knob	VK	S #8 SAE Ports
	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).

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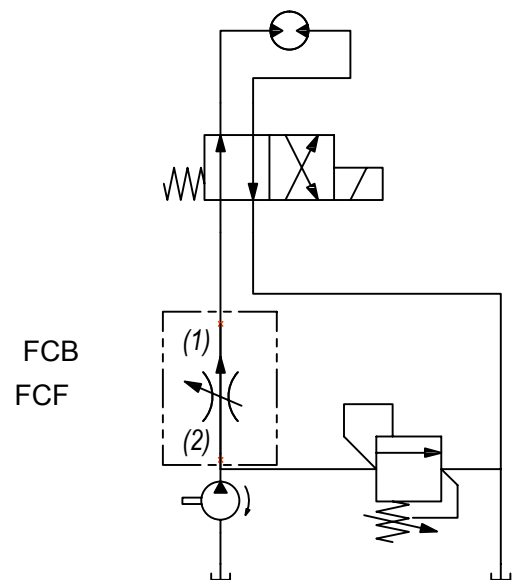
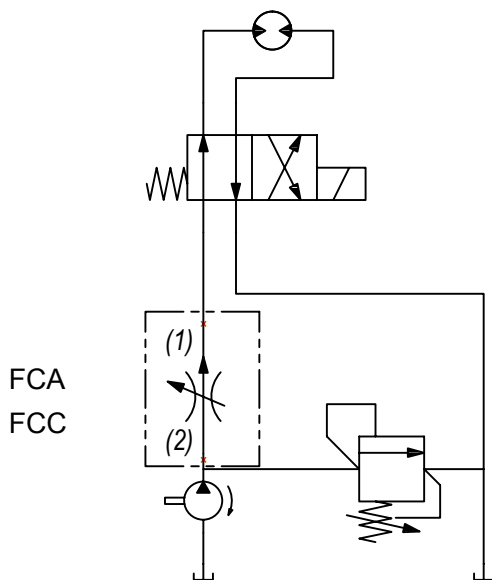
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PRESSURE COMPENSATED FLOW REGULATOR VALVES

	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	30	241	7/8-14	DE-FCC	MF28
	20	5000	76	345	1 1/16 -12	HT-FCA	MF30
	25	3500	95	241	1 5/16 -12	SJ-FCA	MF32
	8	3500	30	241	7/8-14	DE-FCB	MF34
	8	3500	30	241	7/8-14	DE-FCF	MF36
	25	3500	95	241	1 5/16 -12	SJ-FCF	MF38

TYPICAL SCHEMATIC

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



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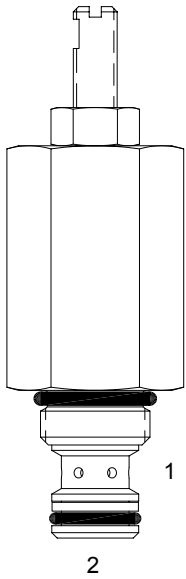


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MA-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

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

OPERATION

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

FEATURES

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



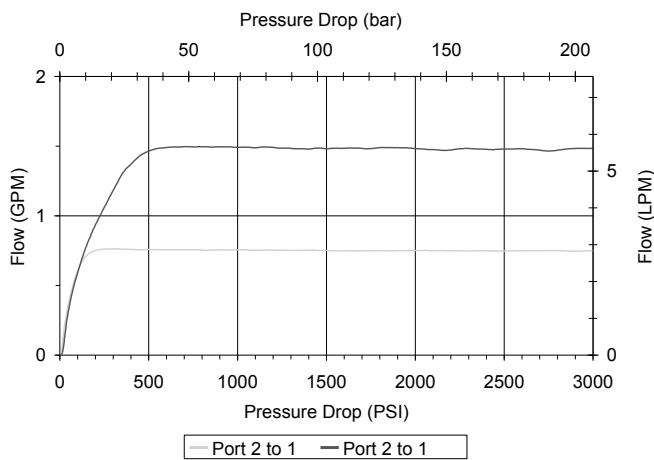
Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL



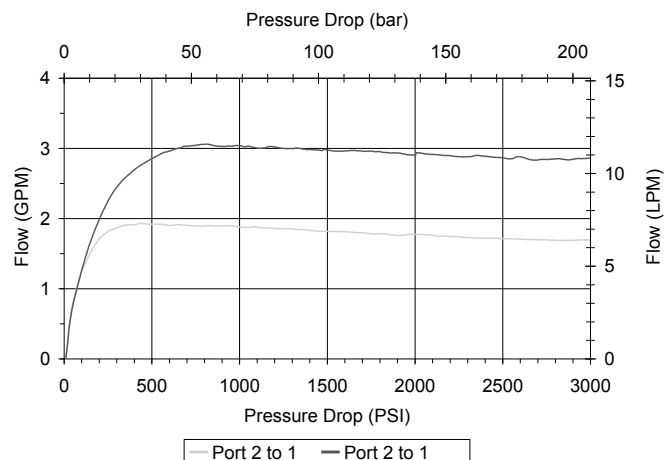
PERFORMANCE

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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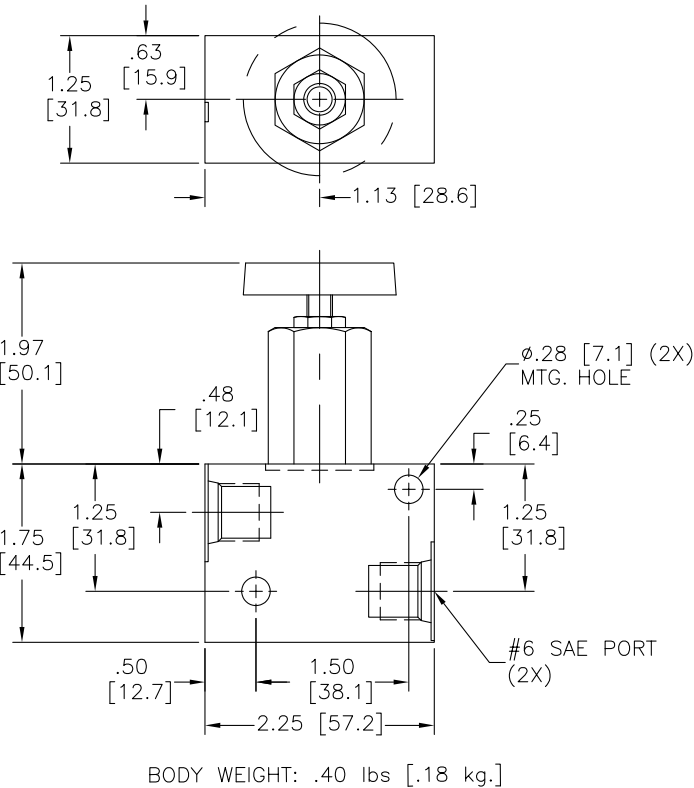
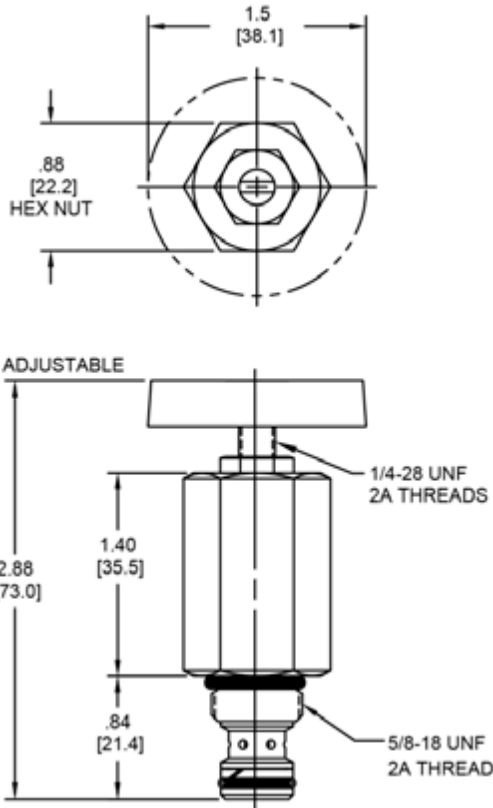


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DIMENSIONS



Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

<p>MA-FCA -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 1/4" NPTF Ports</p> <p>S #6 SAE Ports</p>	<p>FLOW</p> <p>0.17 .08 - .17 GPM</p> <p>00.5 .25 - .5 GPM</p> <p>00.9 .5 - .9 GPM</p>
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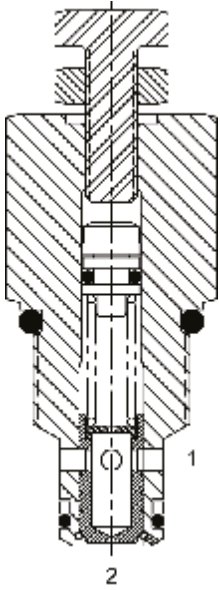


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PB-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

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

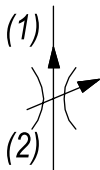
OPERATION

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

FEATURES

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

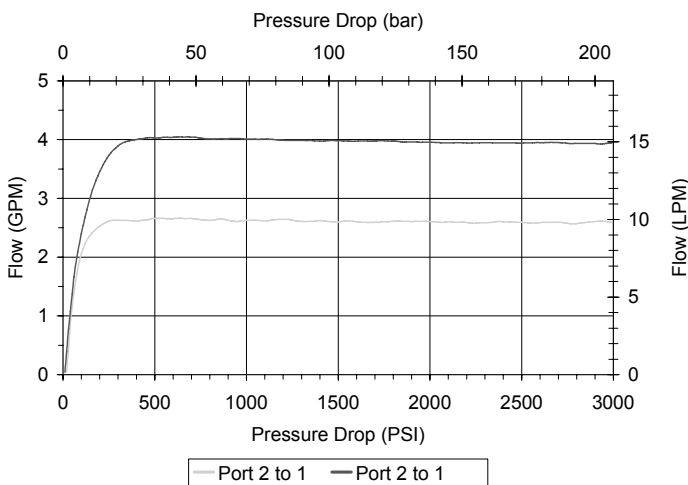
HYDRAULIC SYMBOL



Best stability is obtained with adjustment at highest flow.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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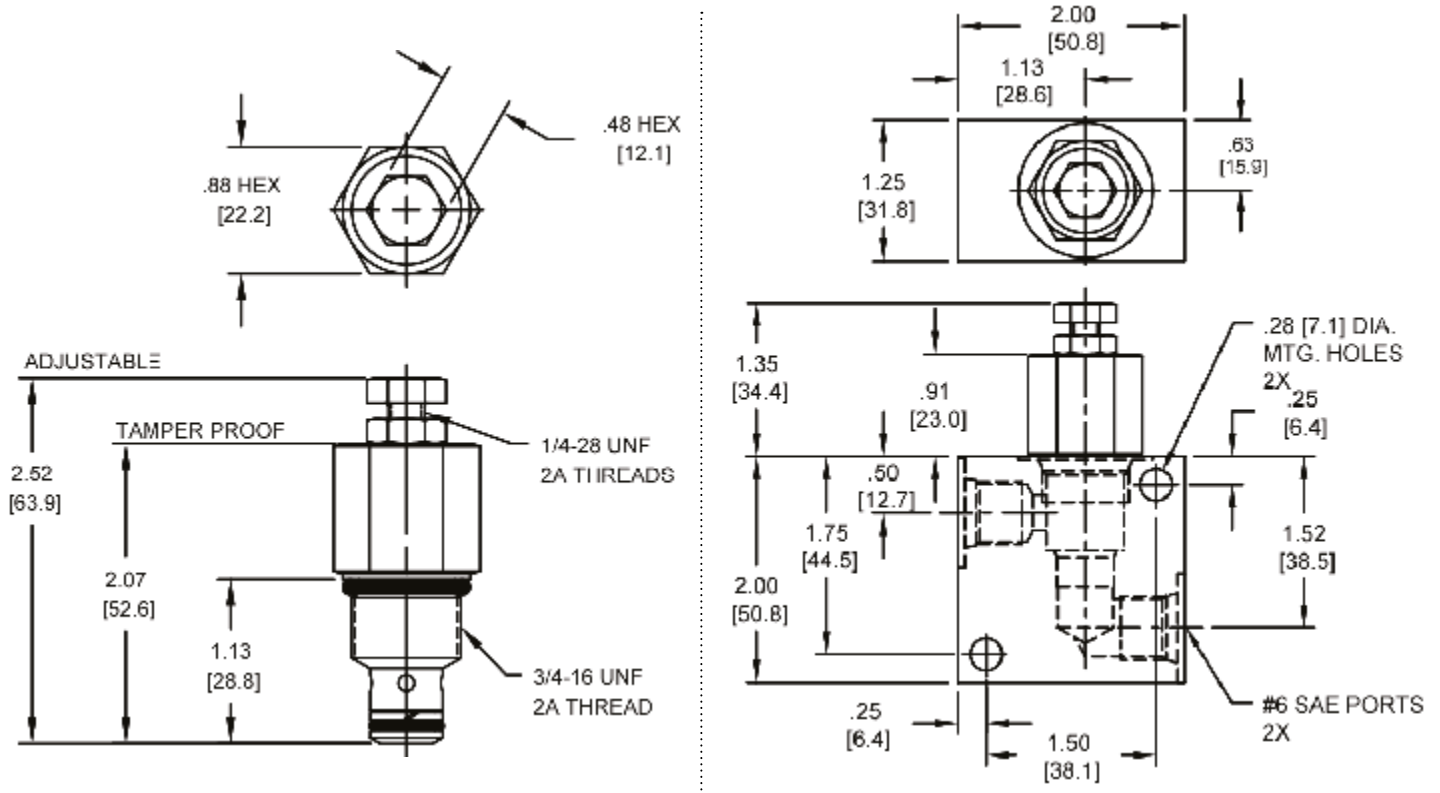


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

<p>PB-FCA - - -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Tamper Proof 0T</p> <p>Viton, Tamper Proof VT</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 1/4" NPTF Ports</p> <p>S #6 SAE Ports</p>
<p>FLOW</p> <p>0.45 .25 - .45 GPM</p> <p>0.75 .45 - .75 GPM</p> <p>1.35 .75 - 1.35 GPM</p> <p>2.65 1.35 - 2.65 GPM</p> <p>4.00 2.65 - 4.00 GPM</p>	

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

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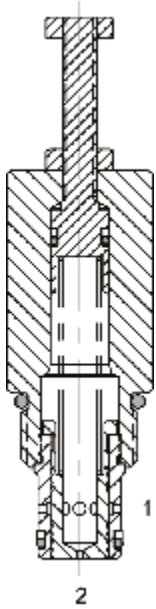


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DE-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



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.

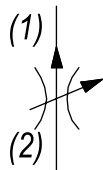
FEATURES

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



Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL

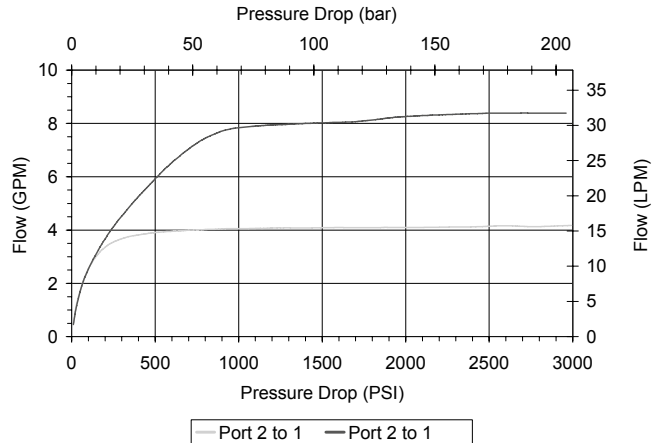
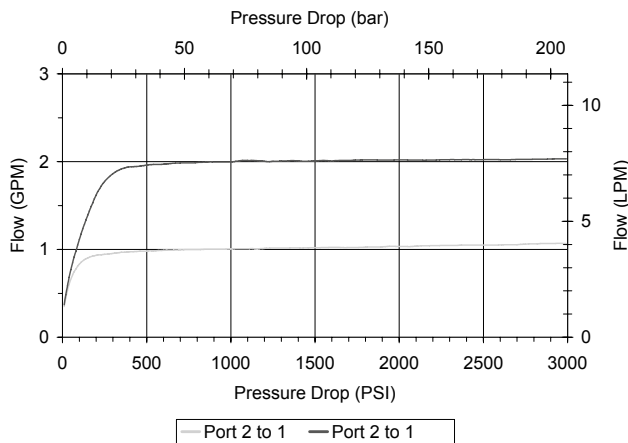


PERFORMANCE

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
Cartridge Form Tool (Finishing)	40500000
Seal Kit	21191200



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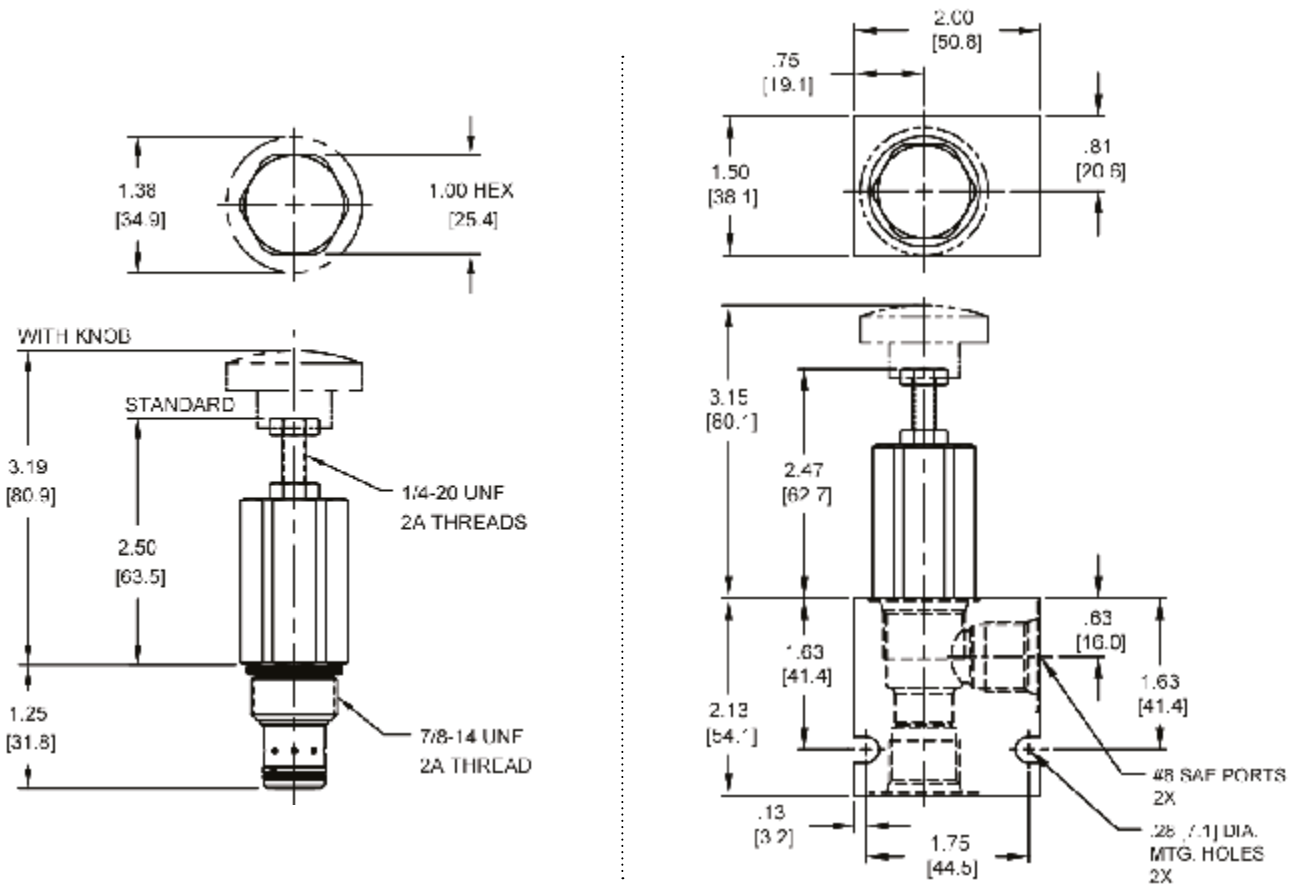


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-FCA -		-	-	-	-
OPTIONS					
Buna Standard	00				
Viton Standard	V0				
Buna, Knob	0K				
Viton, Knob	VK				
BODIES					
Blank	Without Body				
N	3/8" NPTF Ports				
S	#8 SAE Ports				
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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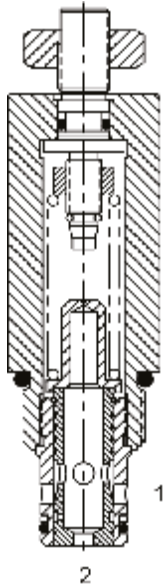


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DE-FCC ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED



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.



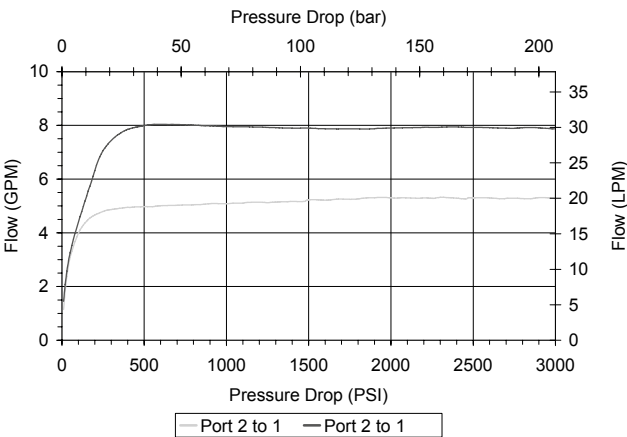
Lowest pressure drop is obtained with adjustment at lowest setting.

HYDRAULIC SYMBOL



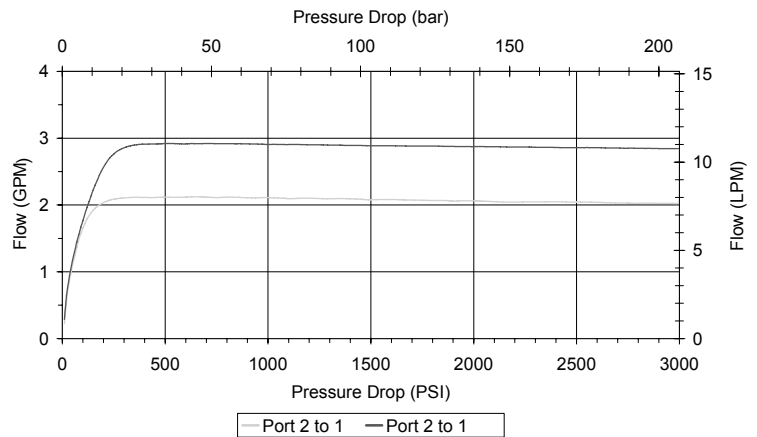
PERFORMANCE

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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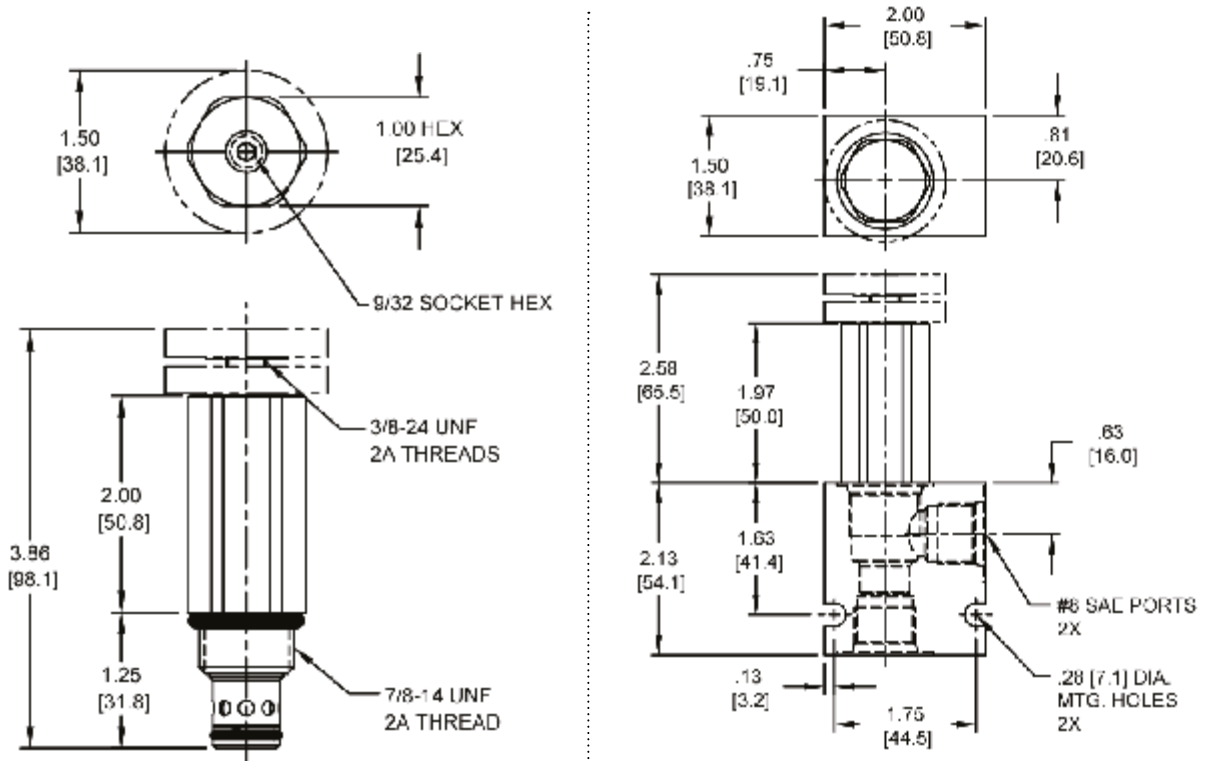


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DIMENSIONS



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	0K				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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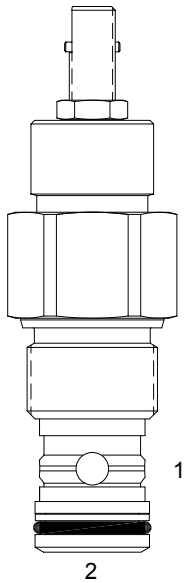


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 mail: delta@delta-power.com • www.delta-power.com



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 mail: tecnord@tecnord.com • www.tecnord.com

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.

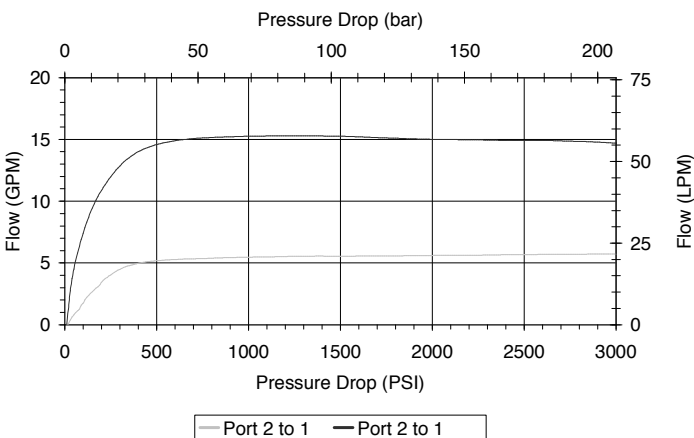
HYDRAULIC SYMBOL



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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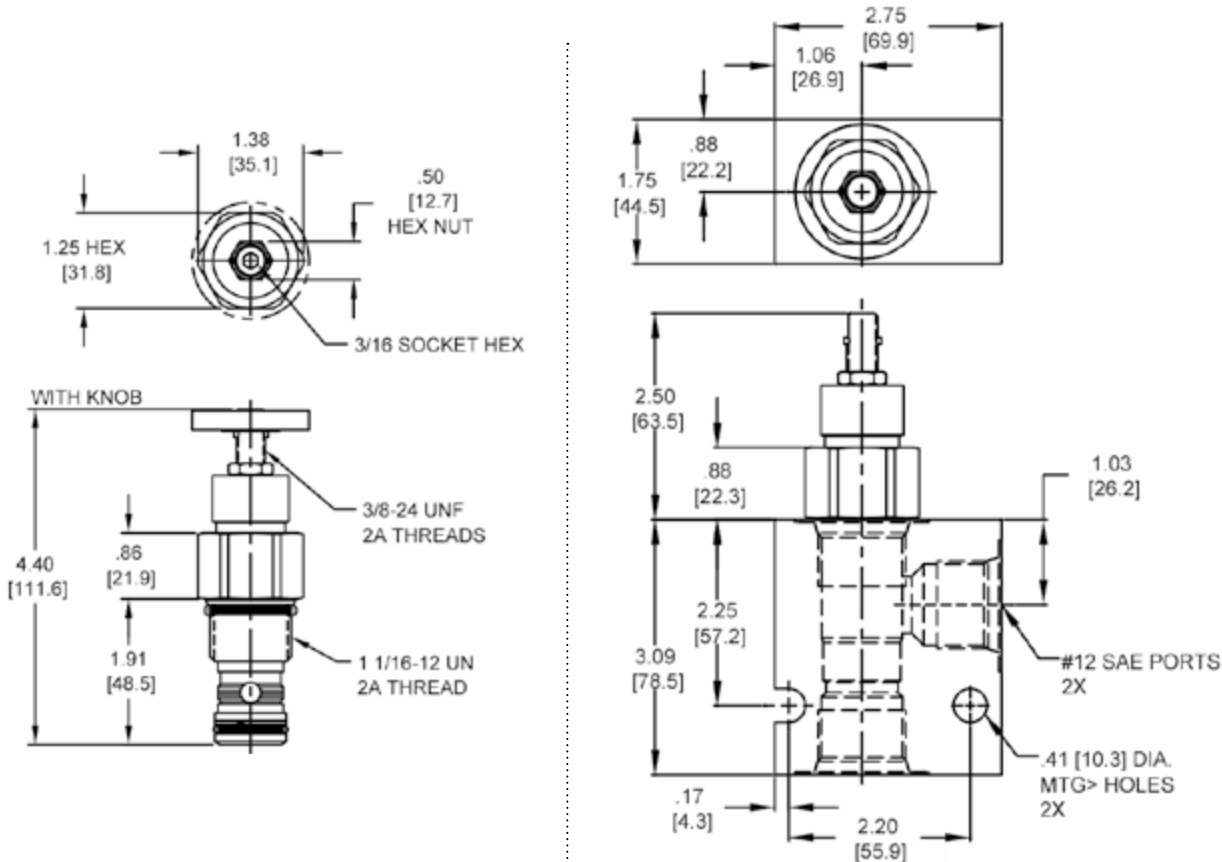


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DIMENSIONS



Body Weight: 3.7 lbs (1.7 kg)

ORDERING INFORMATION



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

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

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SJ-FCA ADJUSTABLE FLOW CONTROL VALVE, PRESSURE COMPENSATED

DESCRIPTION

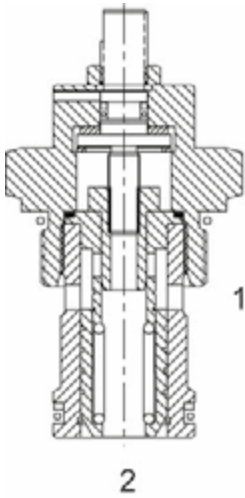
16 size, 1 5/16 -12 thread, "Super" series, pressure compensated, flow control valve.

OPERATION

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

FEATURES

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



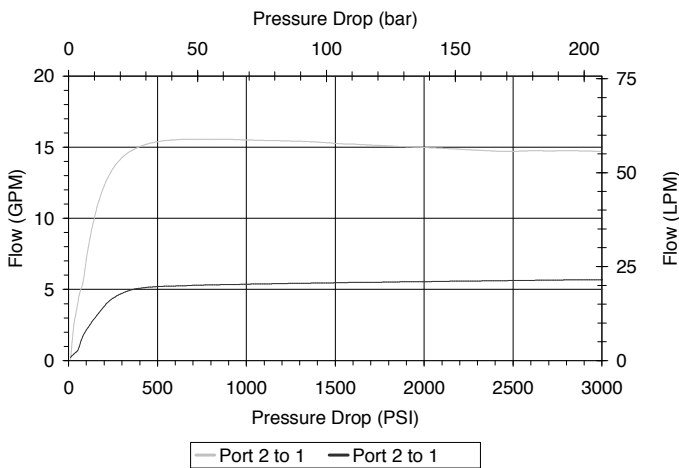
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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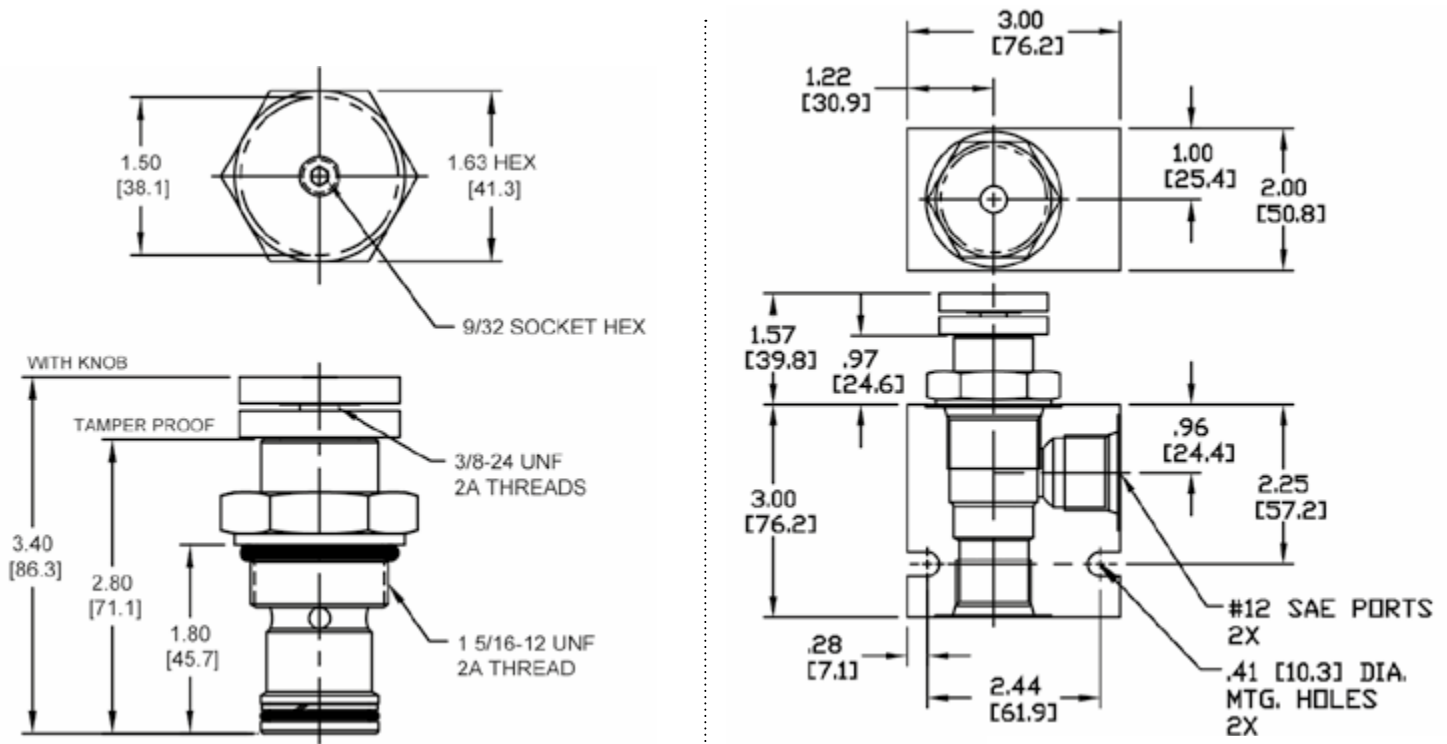


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DIMENSIONS



Body Weight: 1.29 lbs (.59 kg)

ORDERING INFORMATION

SJ-FCA - - -

OPTIONS

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

BODIES

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

FLOW SETTING

XXXX 0-25 GPM

Preset & Tamper Proof

Example: 0015 - 15 GPM ±10%

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DE-FCB FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED

DESCRIPTION

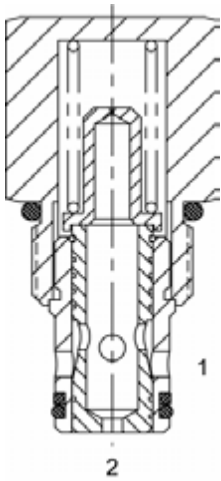
10 size, 7/8-14 thread, "Delta" series, fixed pressure compensated, flow control valve.

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.



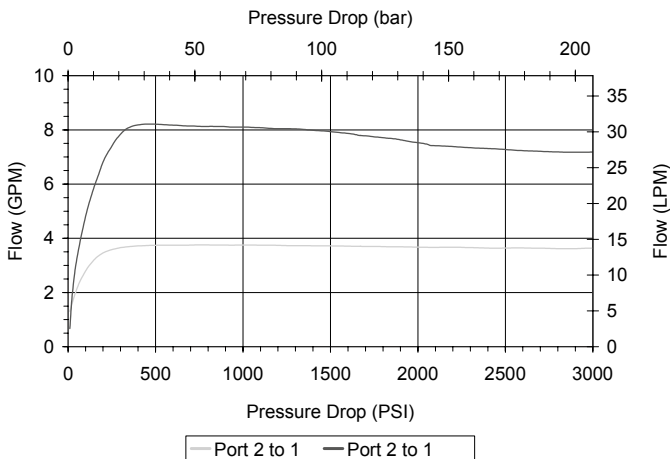
HYDRAULIC SYMBOL



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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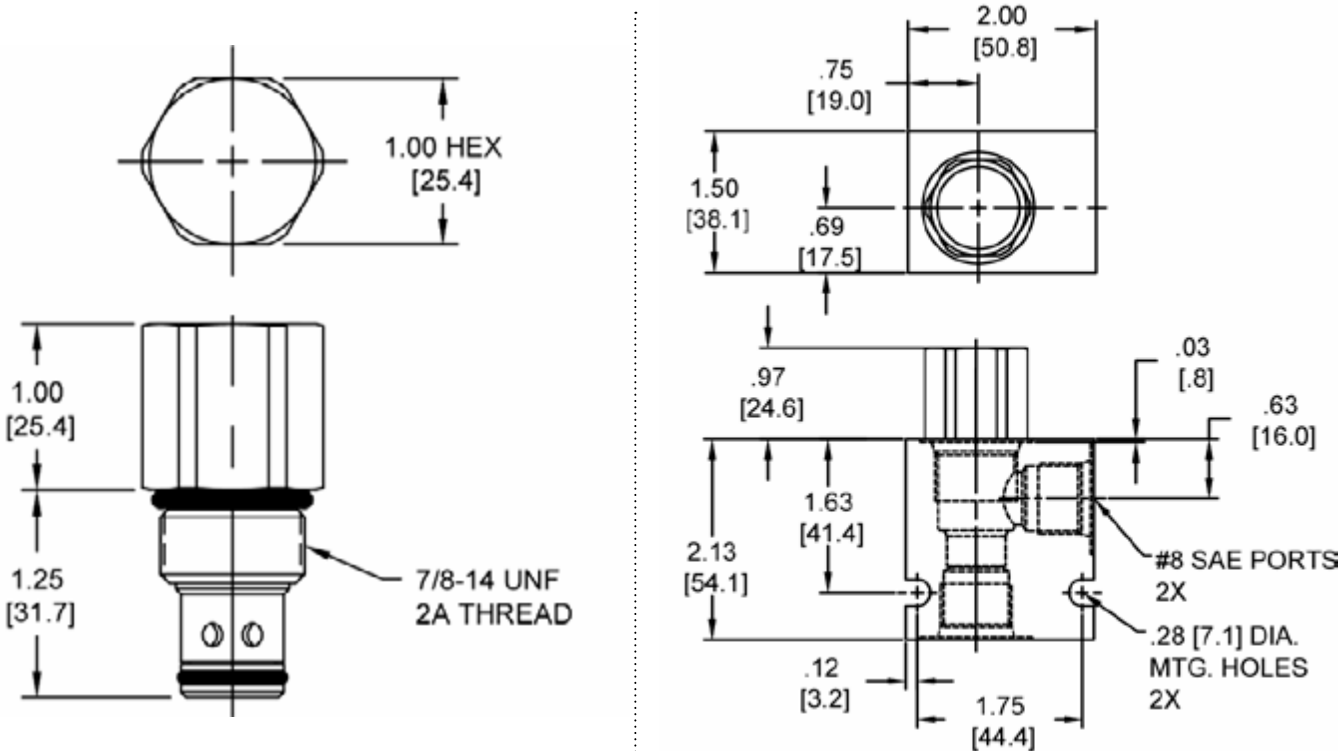


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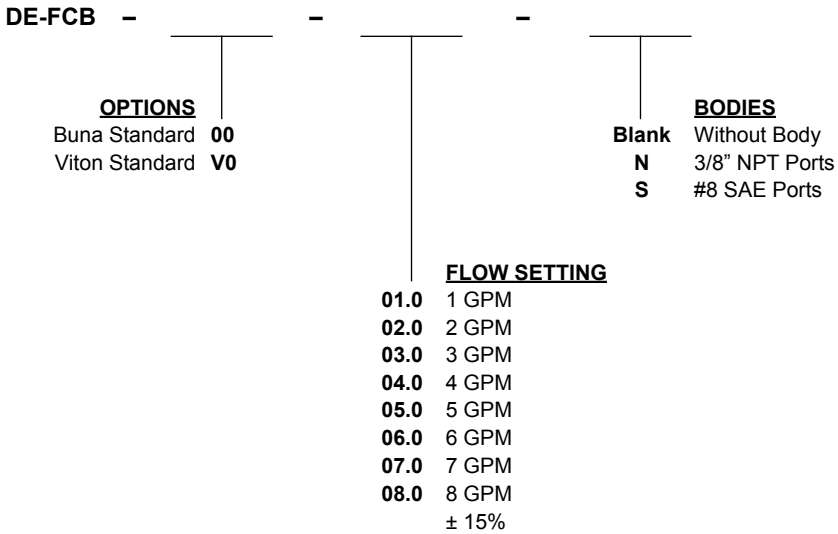
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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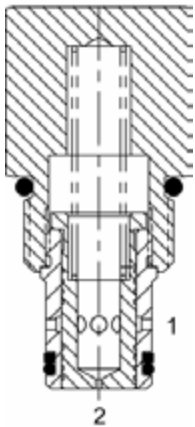


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DE-FCF FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED



DESCRIPTION

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

OPERATION

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

FEATURES

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

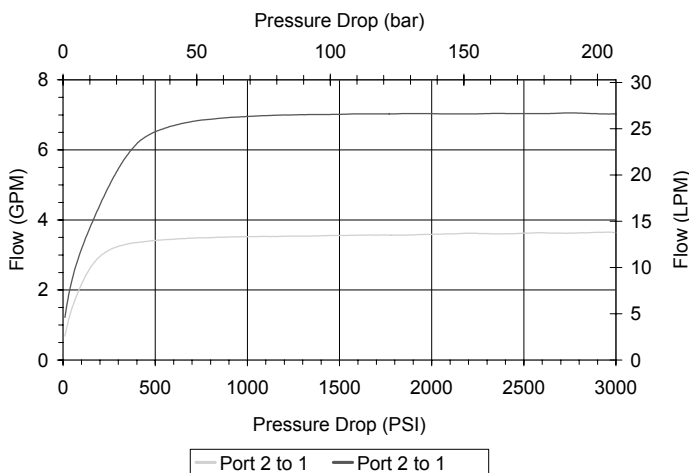
HYDRAULIC SYMBOL



Best stability version for high differential circuits.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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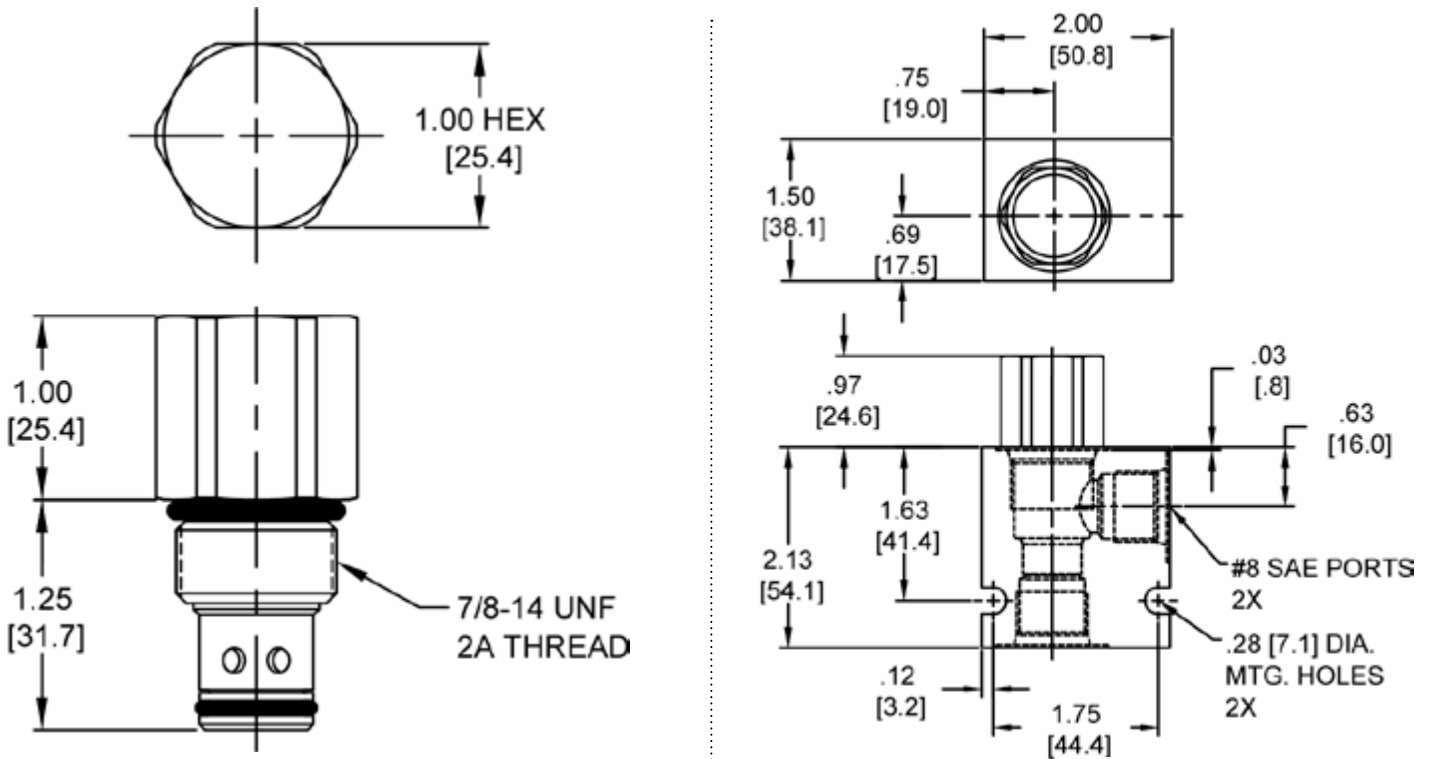


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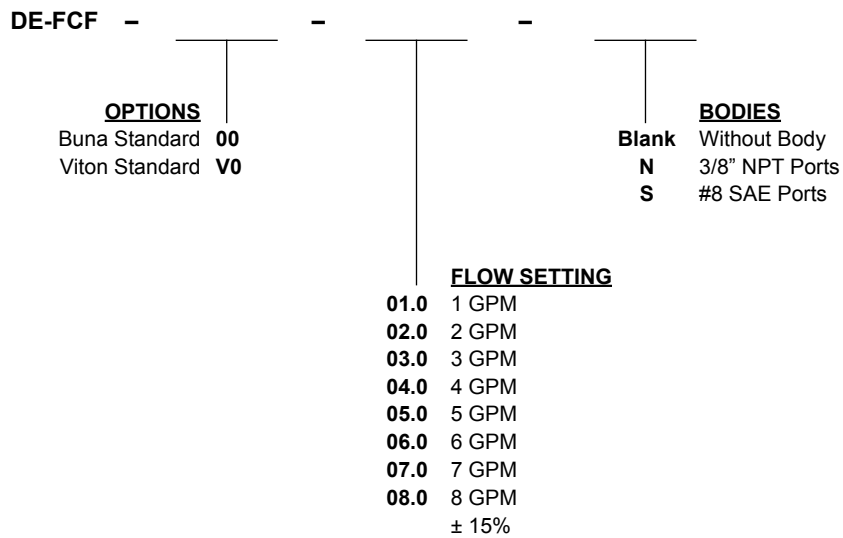
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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SJ-FCF FIXED FLOW CONTROL VALVE, PRESSURE COMPENSATED

DESCRIPTION

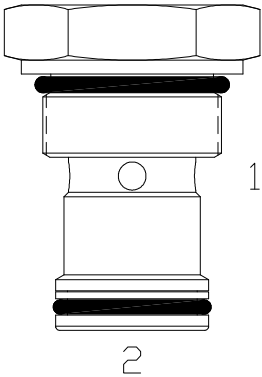
16 size, 1 5/16-12 thread, "Super" series, fixed pressure compensated, flow control valve.

OPERATION

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

FEATURES

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



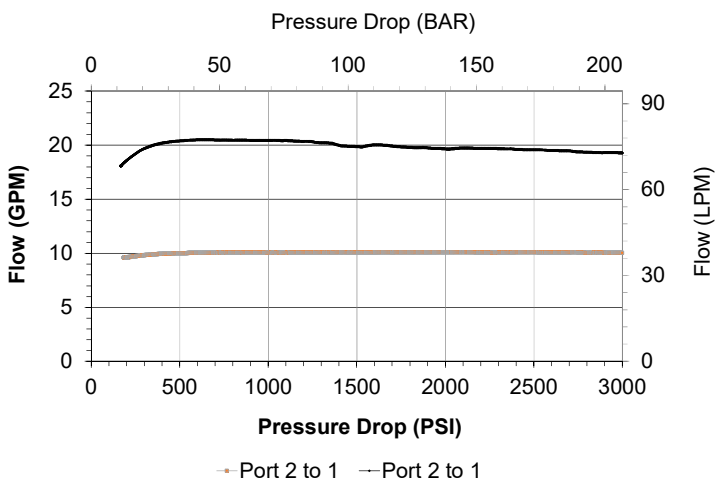
HYDRAULIC SYMBOL



For adjustable setting see SJ-FCA.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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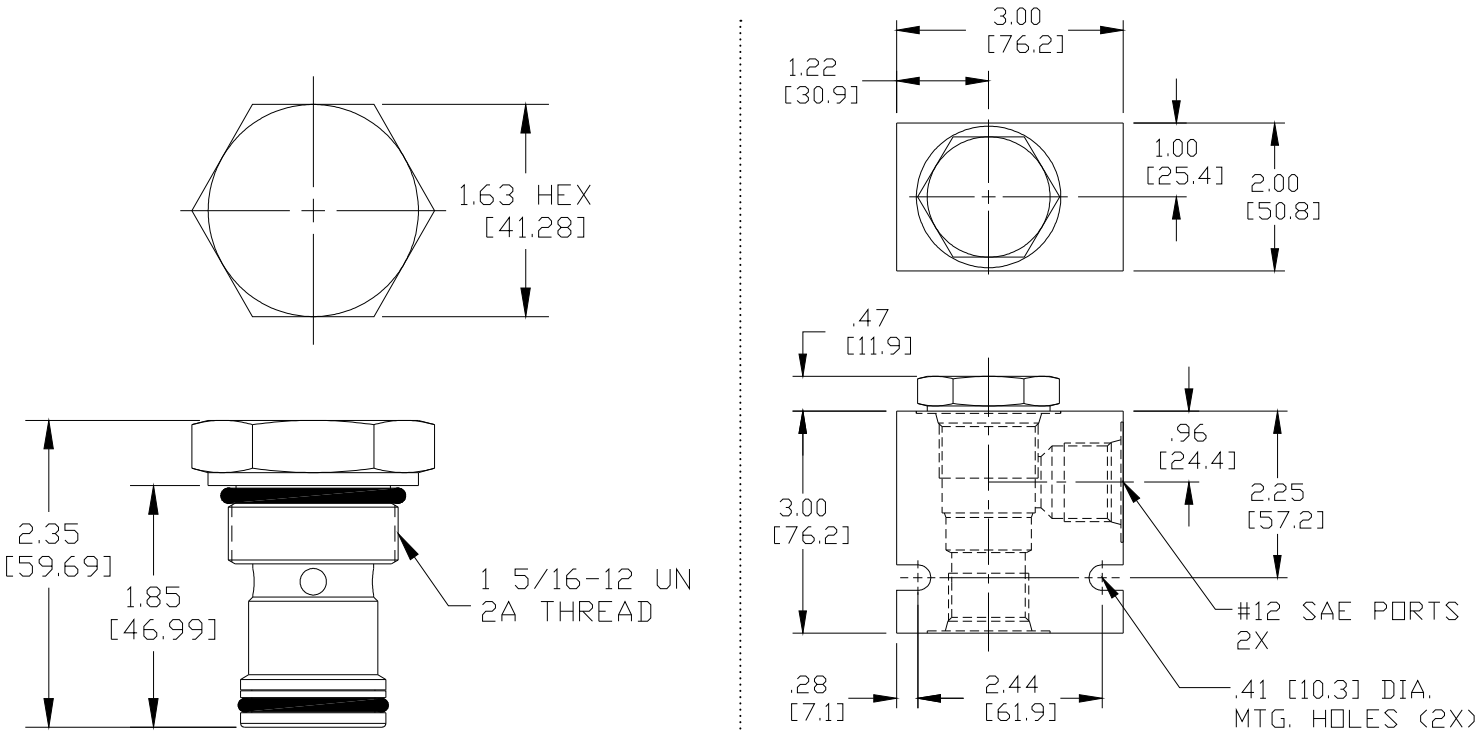


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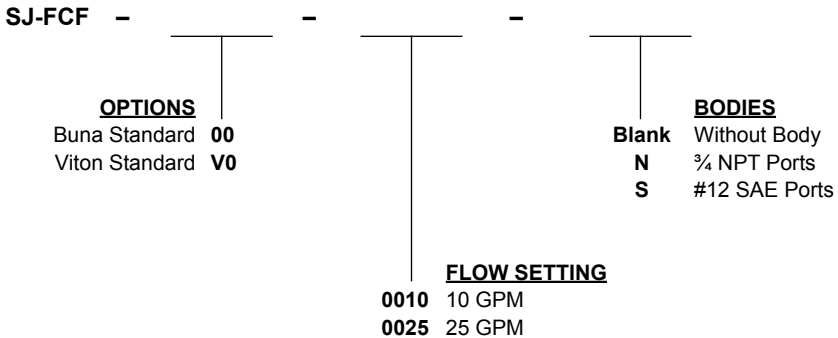
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DIMENSIONS



Body Weight: 1.29 lbs (.59 kg)

ORDERING INFORMATION



Additional flow settings available upon request

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PRIORITY FLOW REGULATOR VALVES

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

LS STEERING PRIORITY

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	20	3000	76	207	1 5/16-12	SO-PDS	MF50
	20	3000	76	207	1 5/16-12	SO-PDD	MF52

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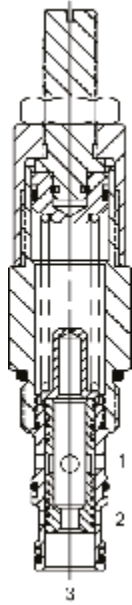


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DF-FCQ ADJUSTABLE PRIORITY FLOW CONTROL VALVE



DESCRIPTION

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

OPERATION

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

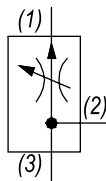
FEATURES

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



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

HYDRAULIC SYMBOL

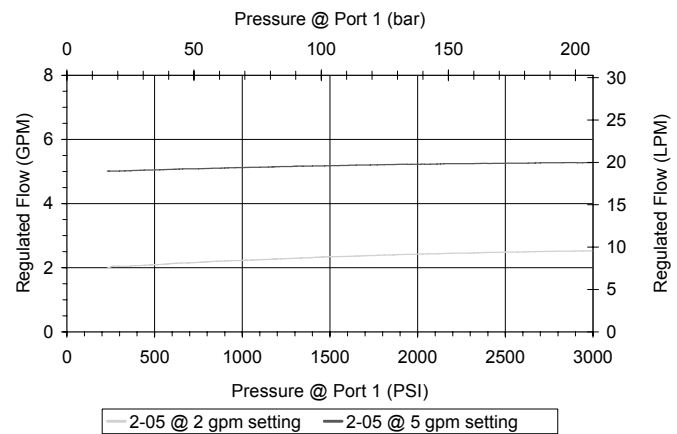
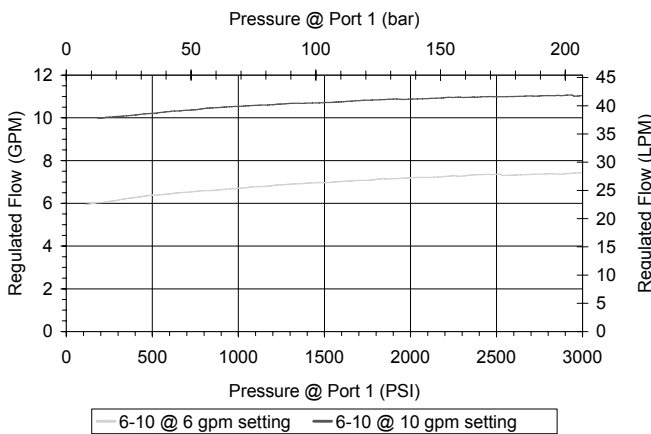


PERFORMANCE

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
Cavity Form Tool (Finishing)	40500001
Seal Kit	21191206



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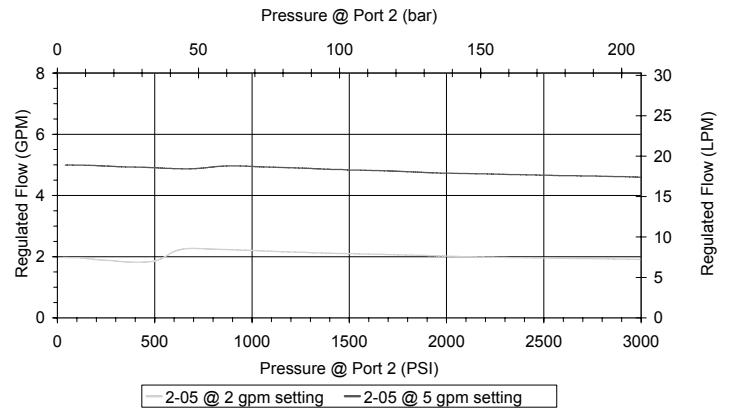
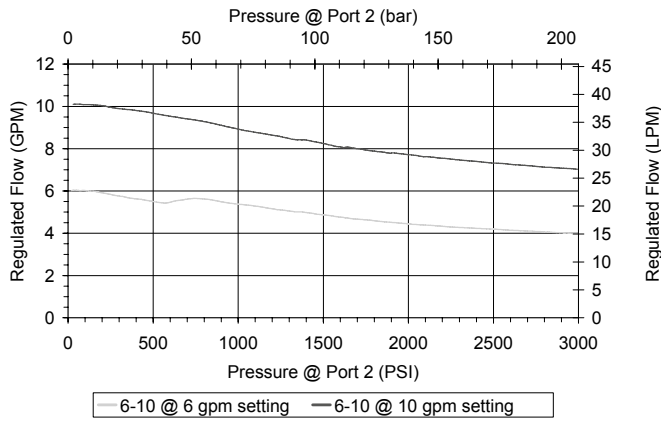


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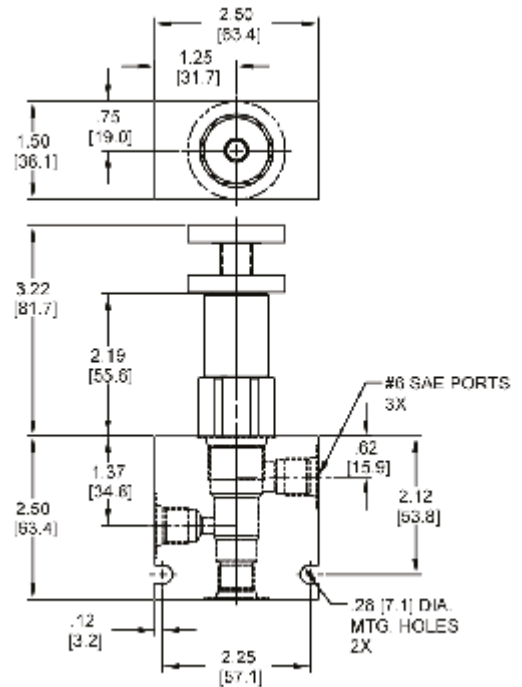
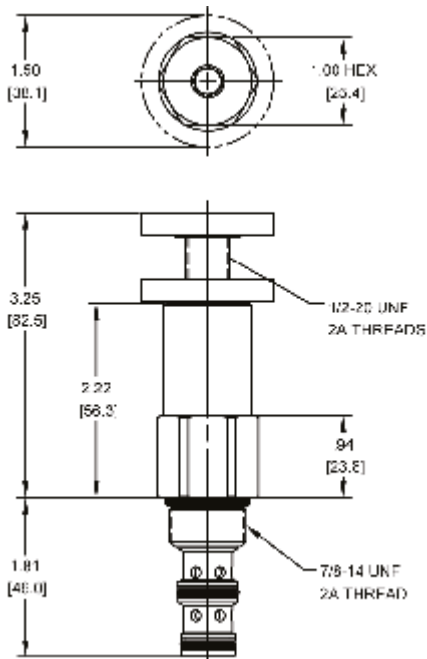


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MECHANICAL FLOW CONTROLS



DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

<p>DF-FCQ -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Knob OK</p> <p>Viton, Knob VK</p>	<p>-</p> <p>-</p> <p>-</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 1/4" NPTF Ports</p> <p>S #6 SAE Ports</p> <p>FLOW RANGE</p> <p>2-05 2 to 5 GPM</p> <p>6-10 6 to 10 GPM</p>
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SK-FCQ ADJUSTABLE PRIORITY FLOW CONTROL VALVE

DESCRIPTION

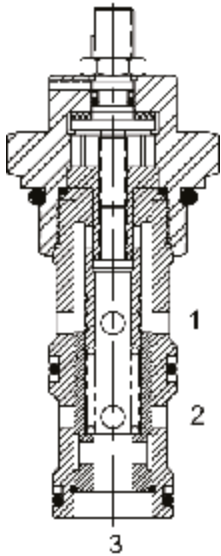
16 size, 1 5/16-12 thread, "Super" series, adjustable priority flow control valve.

OPERATION

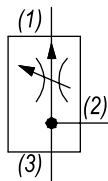
The SK-FCQ allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2). The spring chamber is constantly vented at (1).

FEATURES

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

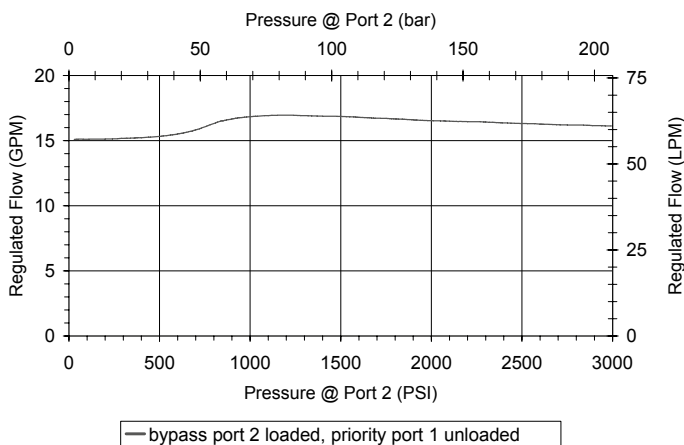


HYDRAULIC SYMBOL



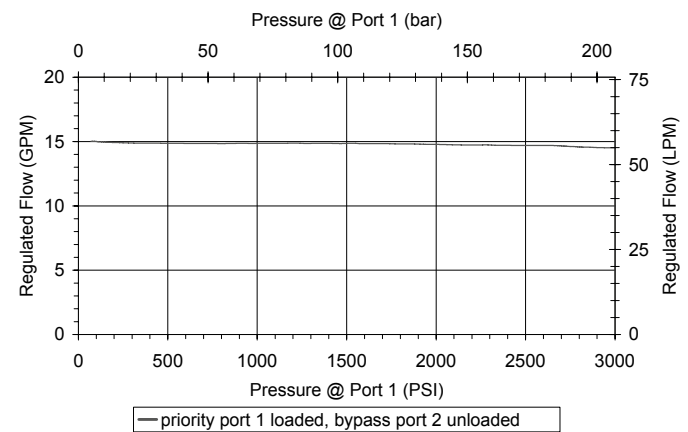
PERFORMANCE

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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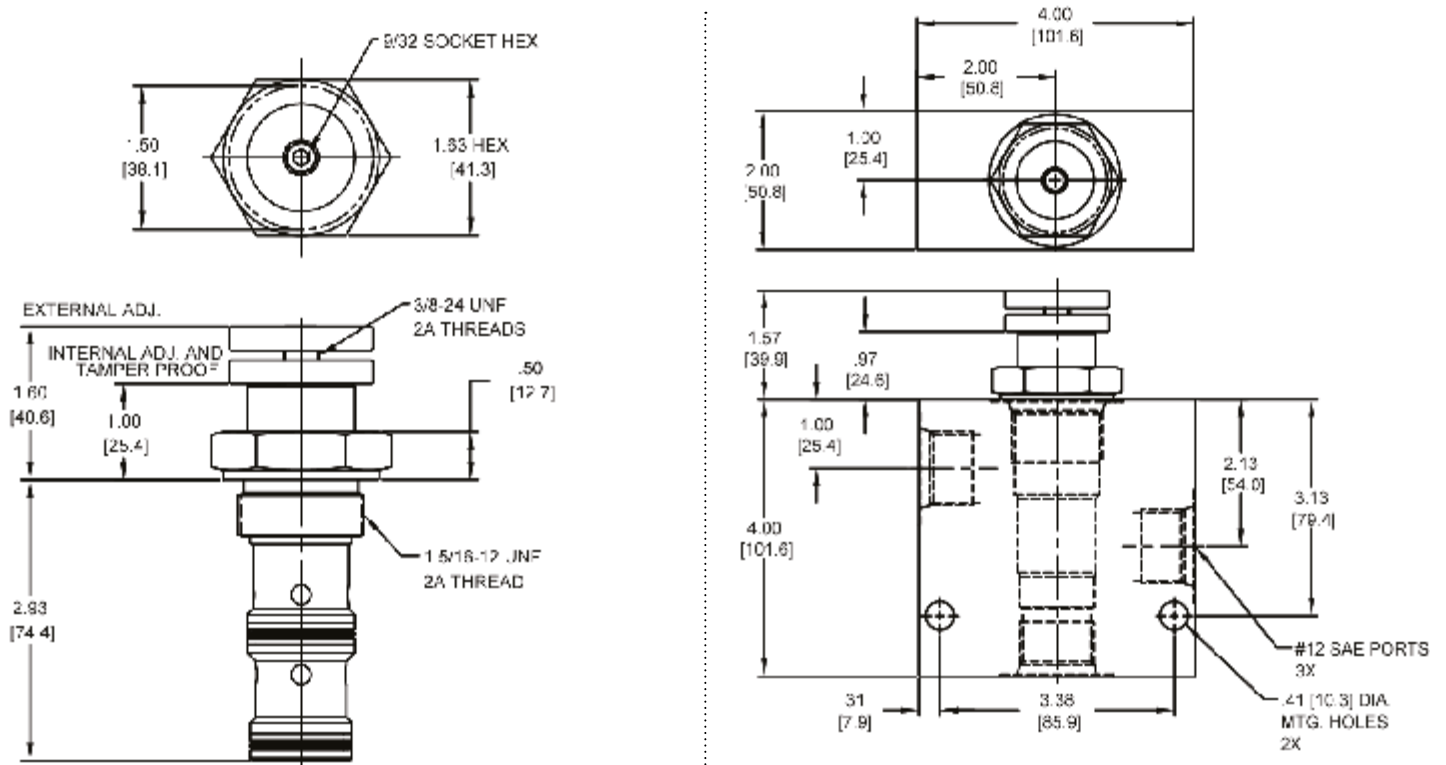


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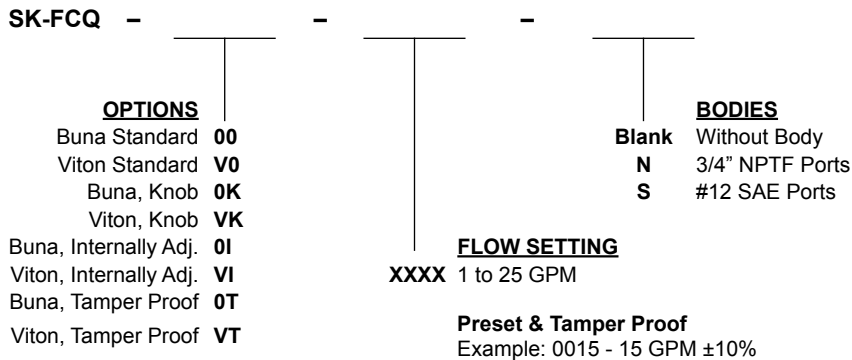
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DIMENSIONS



Body Weight: 2.46 lbs (1.11 kg)

ORDERING INFORMATION



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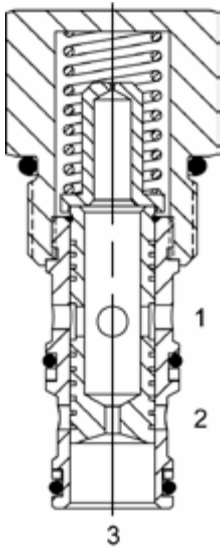


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DF-FCP FIXED PRIORITY FLOW CONTROL VALVE



DESCRIPTION

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

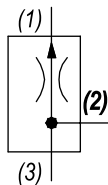
OPERATION

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

FEATURES

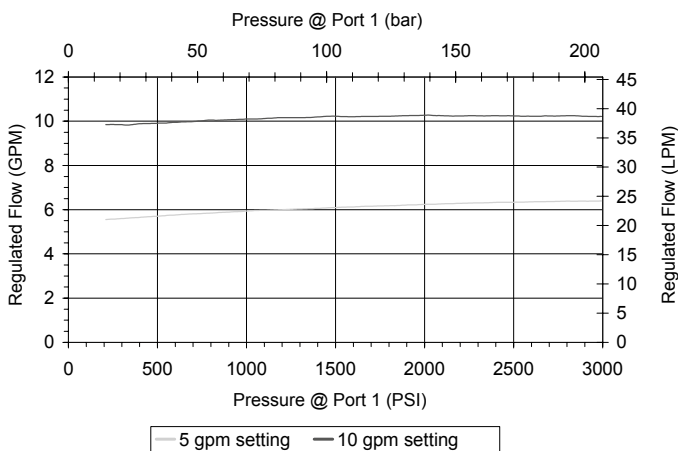
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



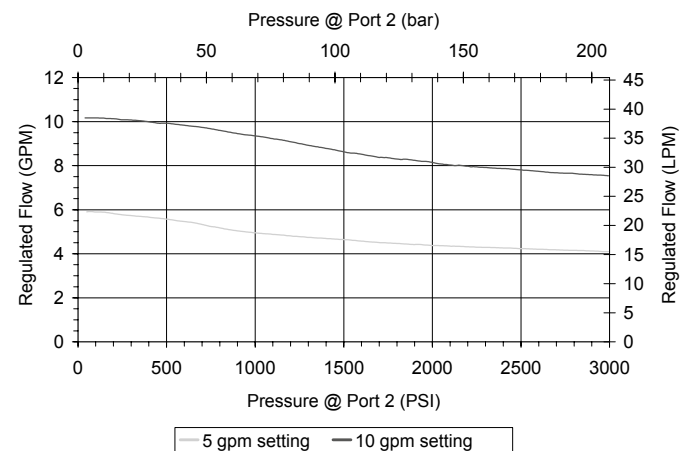
PERFORMANCE

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
Cartridge Form Tool (Finishing)	40500001
Seal Kit	21191206



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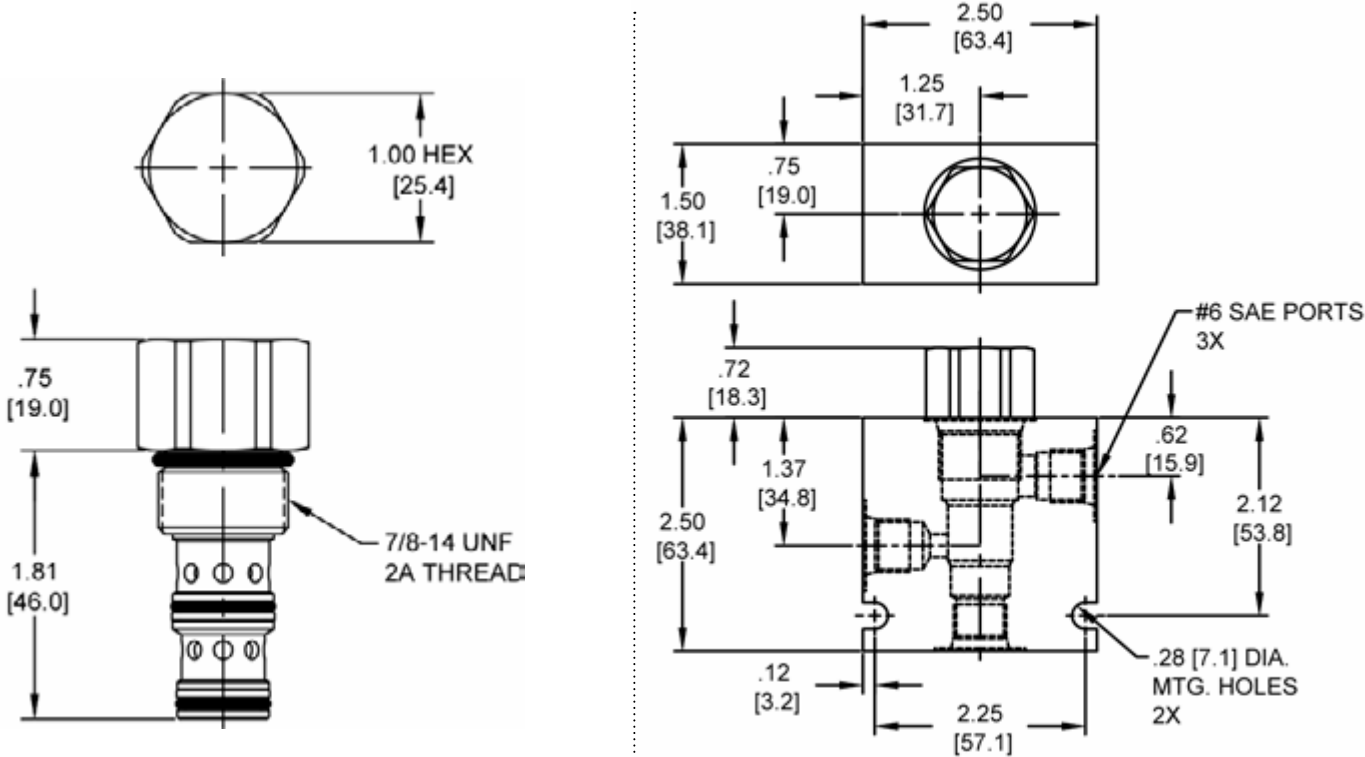


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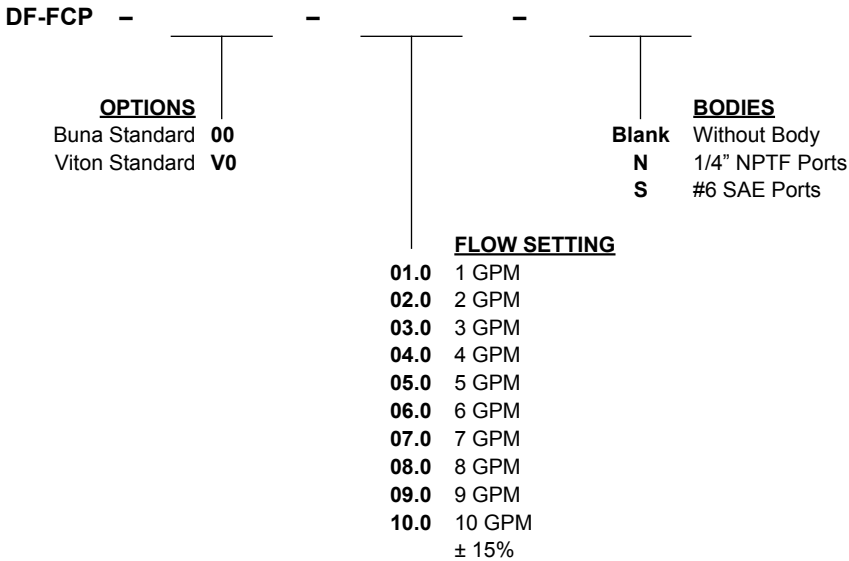
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



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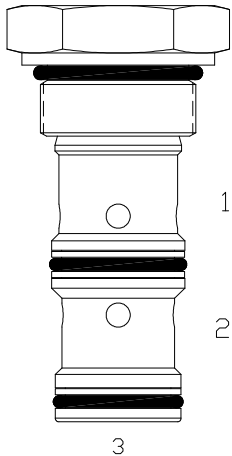


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SK-FCP FIXED PRIORITY FLOW CONTROL VALVE



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).

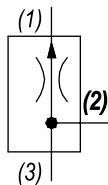
FEATURES

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



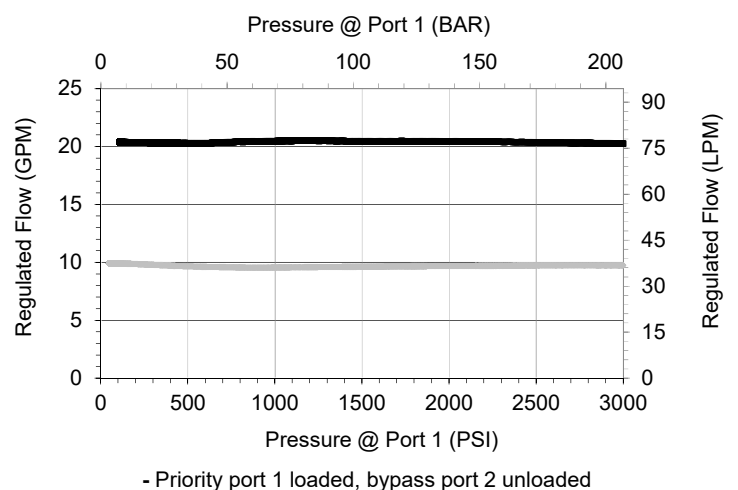
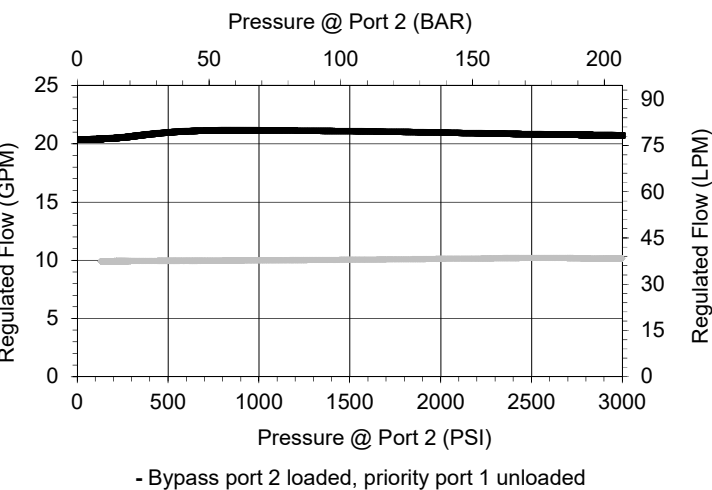
For adjustable setting see SK-FCQ.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



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.

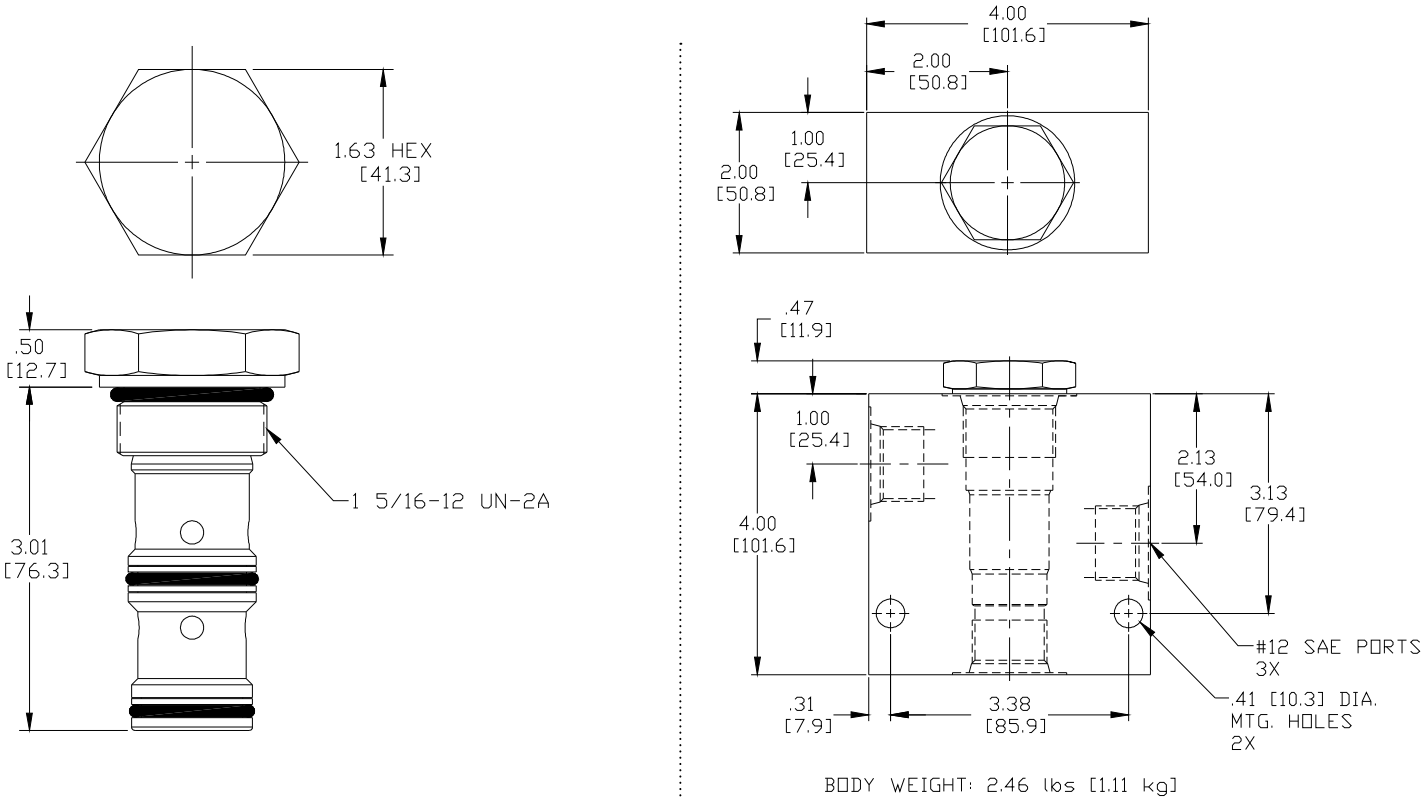


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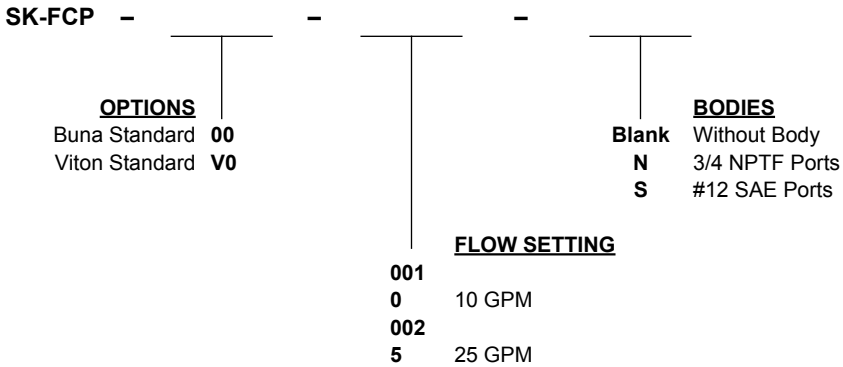
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DIMENSIONS



Body Weight: 2.46 lbs (1.11 kg)

ORDERING INFORMATION



Additional flow settings available upon request

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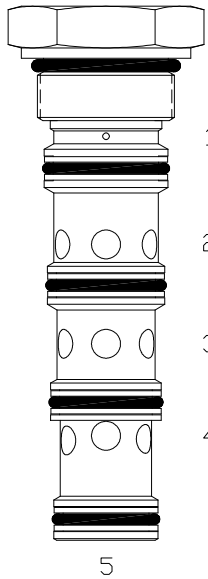


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SO-PDS STEERING PRIORITY FLOW CONTROL VALVE WITH STATIC LOAD SENSE



DESCRIPTION

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

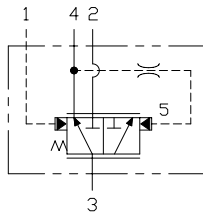
OPERATION

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



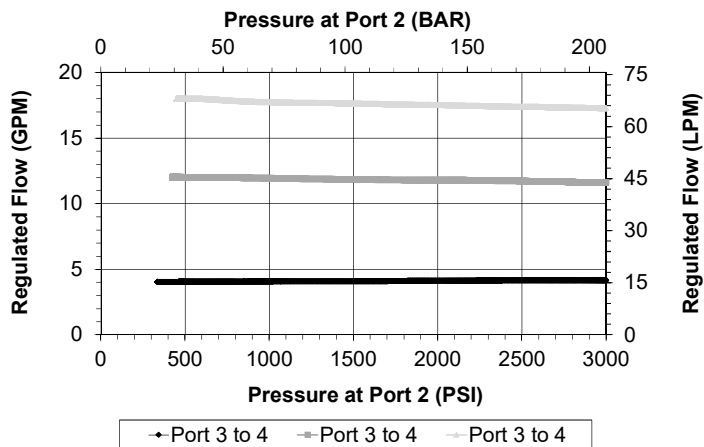
PERFORMANCE

Actual Test Data (Cartridge Only)

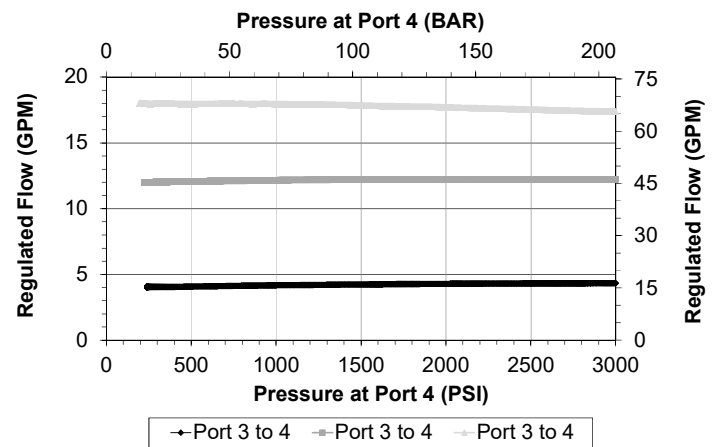
VALVE SPECIFICATIONS

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



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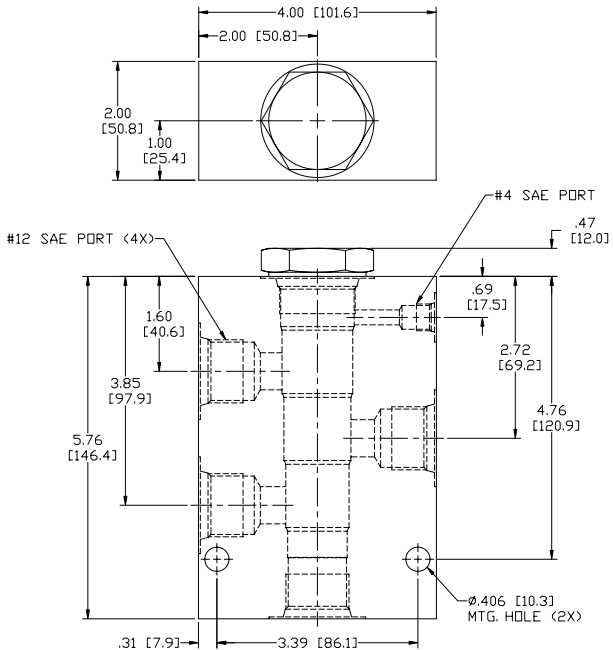
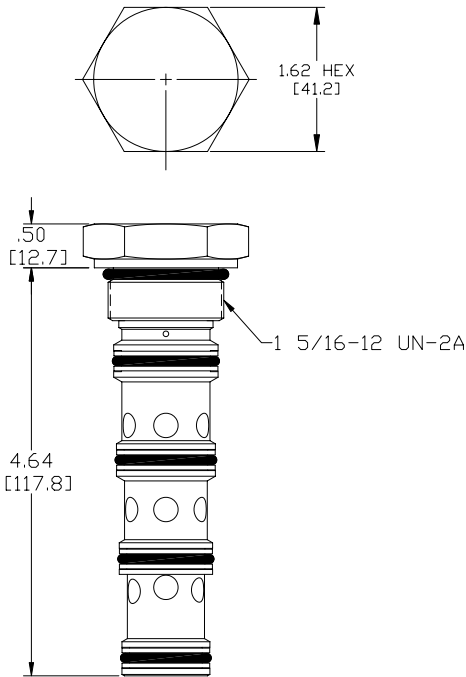


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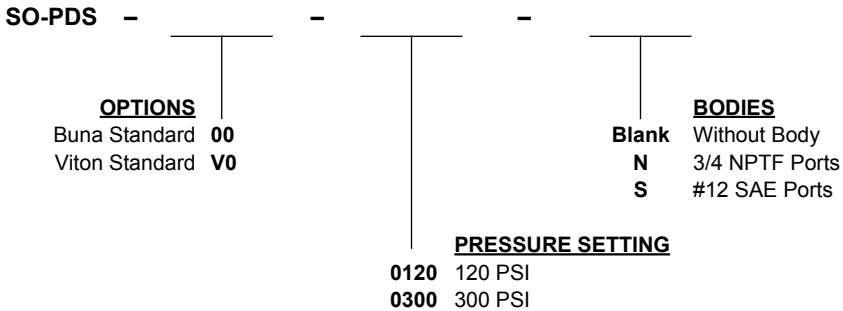
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DIMENSIONS



Body Weight: 3.76 lbs (1.62 kg)

ORDERING INFORMATION



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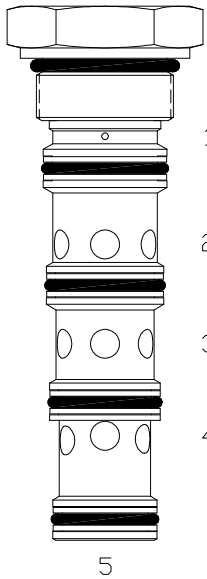


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SO-PDD STEERING PRIORITY FLOW CONTROL VALVE WITH DYNAMIC LOAD SENSE



DESCRIPTION

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

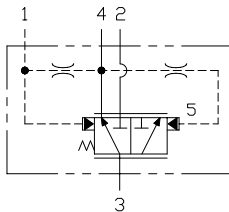
OPERATION

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



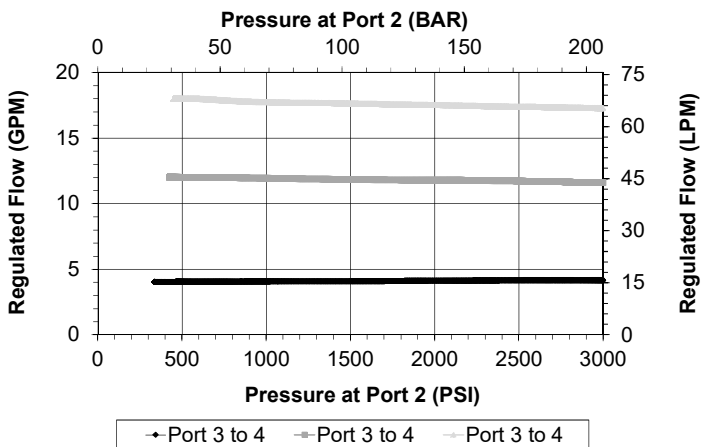
PERFORMANCE

Actual Test Data (Cartridge Only)

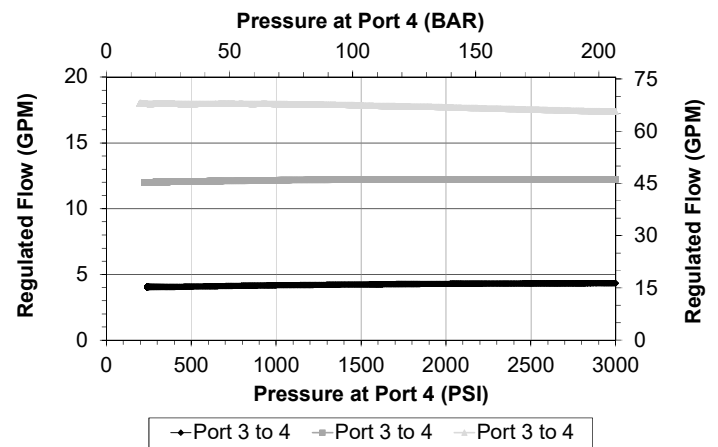
VALVE SPECIFICATIONS

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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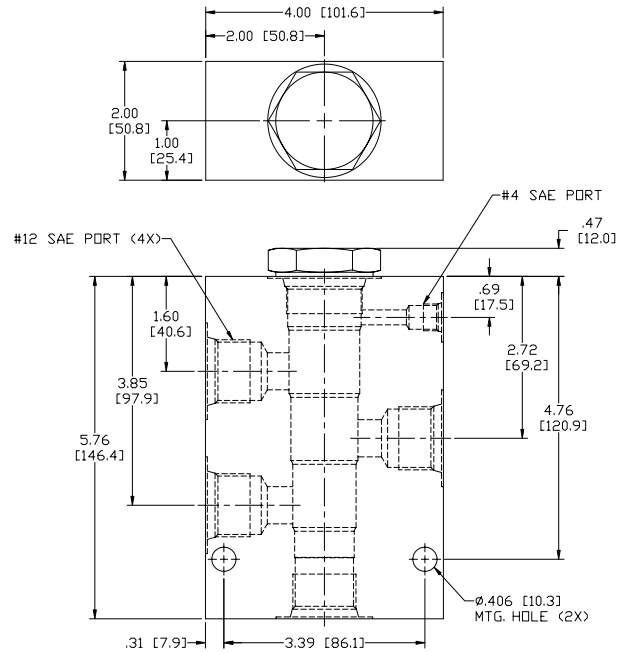
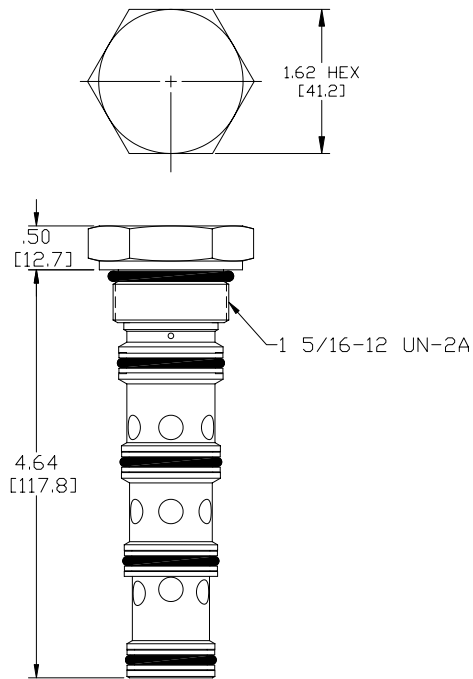


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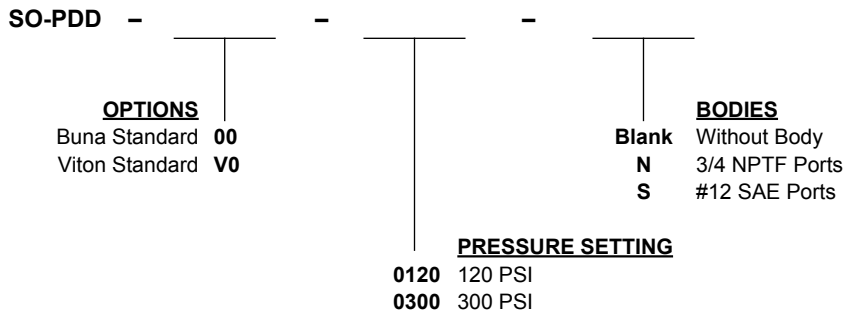
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DIMENSIONS



Body Weight: 3.76 lbs (1.62 kg)

ORDERING INFORMATION



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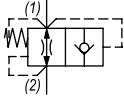


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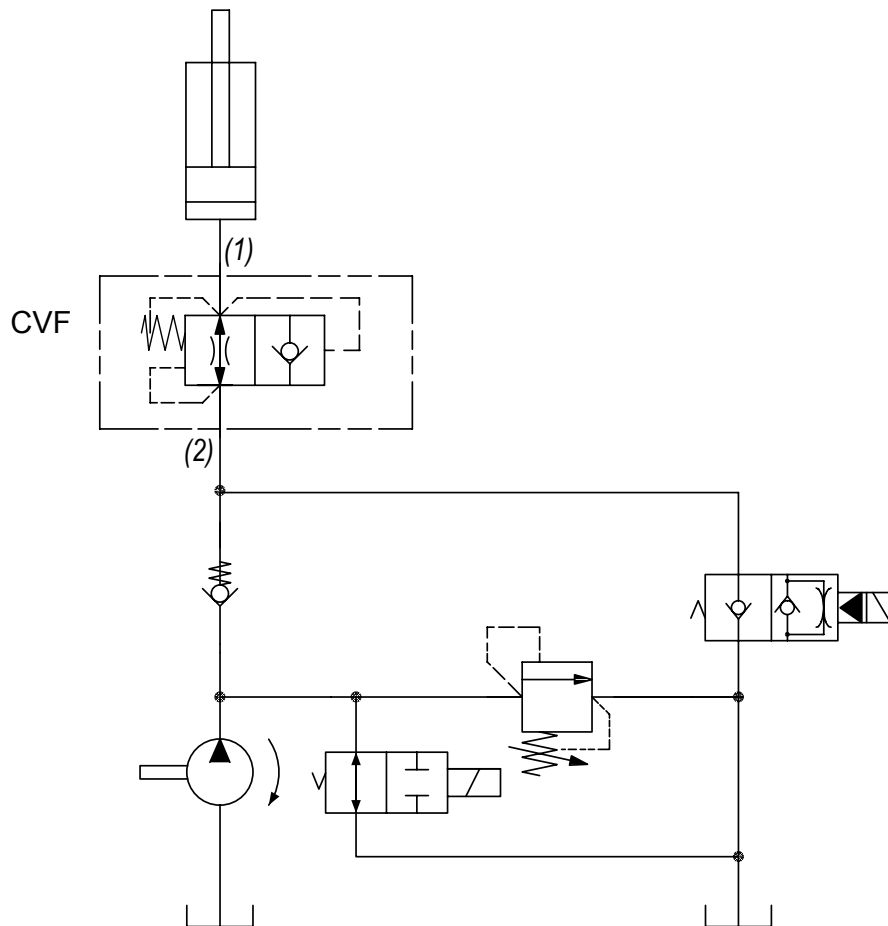
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VELOCITY FUSES

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

TYPICAL SCHEMATIC

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



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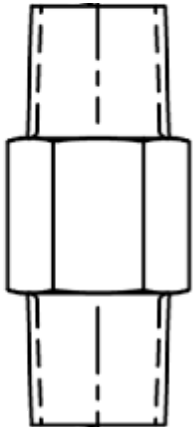


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IM-CVF INLINE VELOCITY FUSE



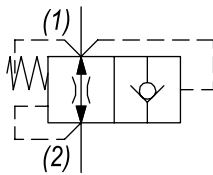
DESCRIPTION

3/8 NPTF thread, inline velocity fuse.

OPERATION

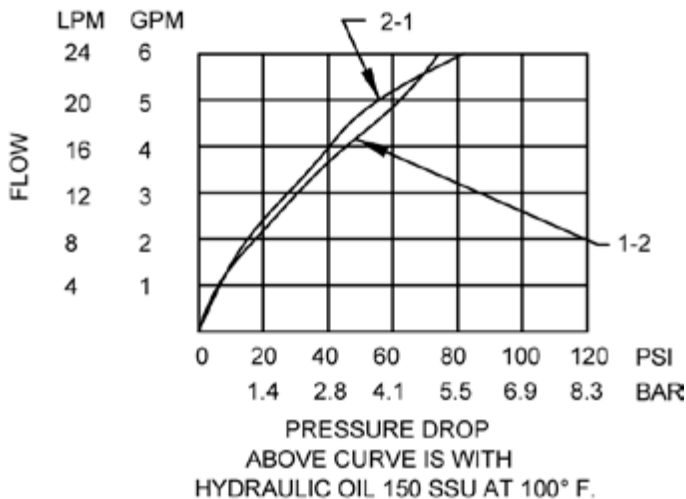
The IM-CVF allows flow to pass between (1) and (2). When oil velocity from (1) to (2) exceeds the flow setting, the valve shifts and blocks flow from (1) to (2).

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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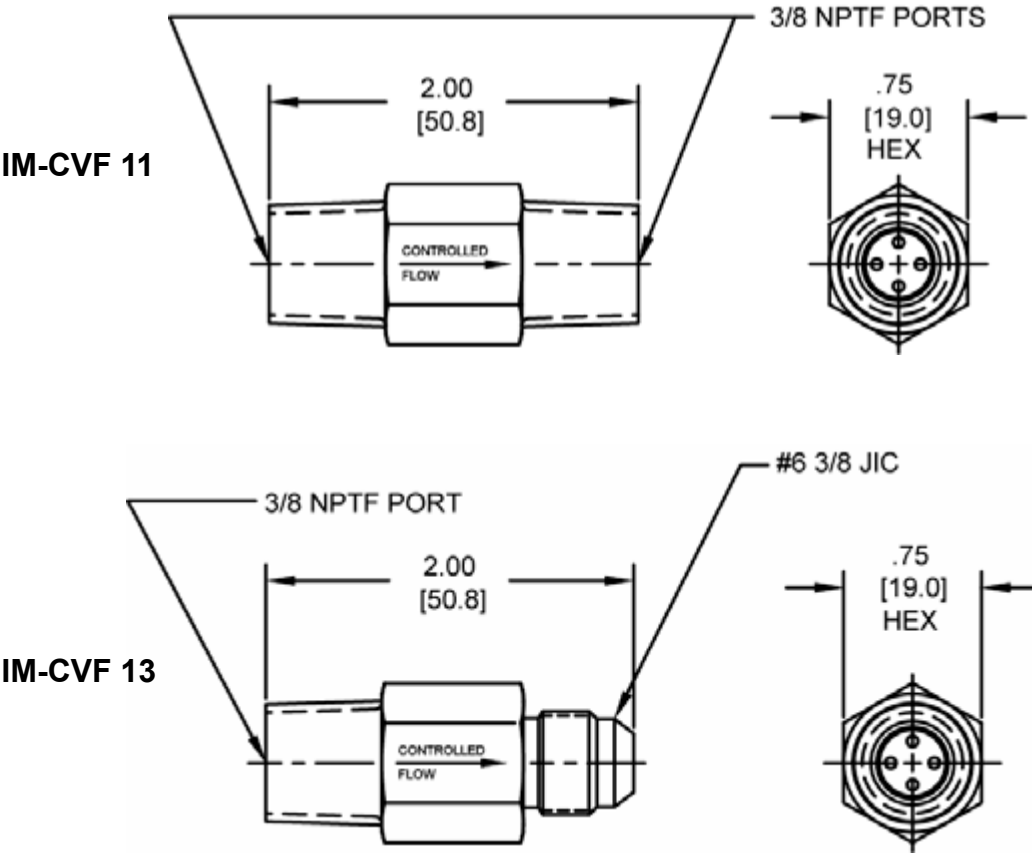


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DIMENSIONS



ORDERING INFORMATION

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

FLOW SETTINGS

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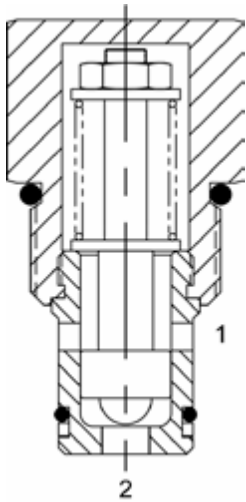


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DE-CVF VELOCITY FUSE



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).

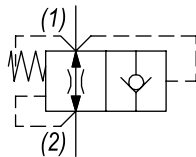
FEATURES

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



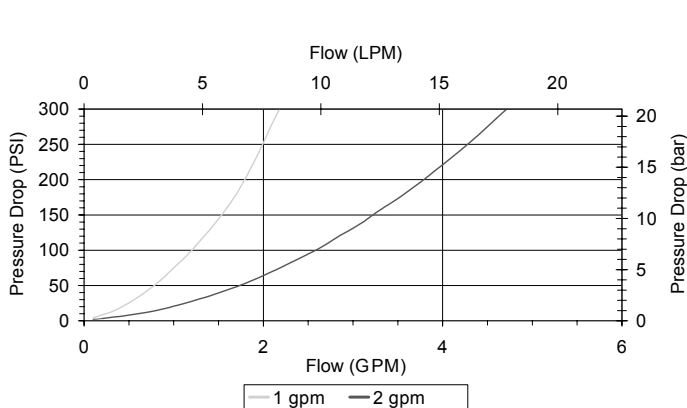
Curves identify pressure drop in port (2) to (1) direction (non-fuse). Fuse pressure drop is similar at fuse flow, until fuse takes effect (~75-100 PSID).

HYDRAULIC SYMBOL



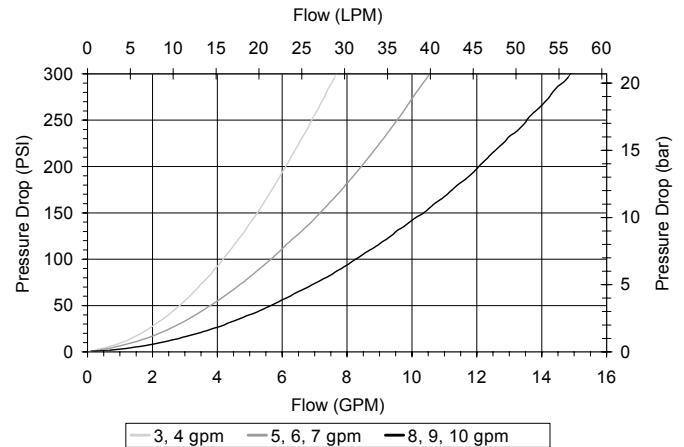
PERFORMANCE

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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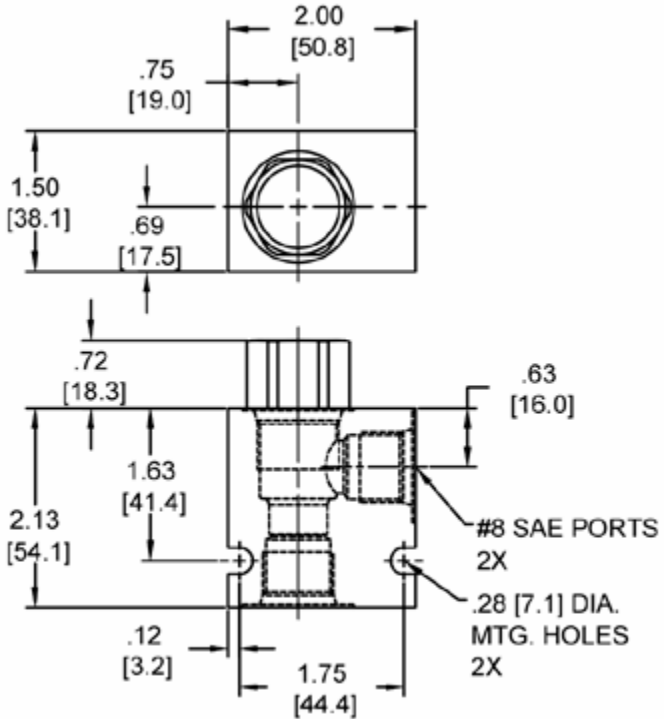
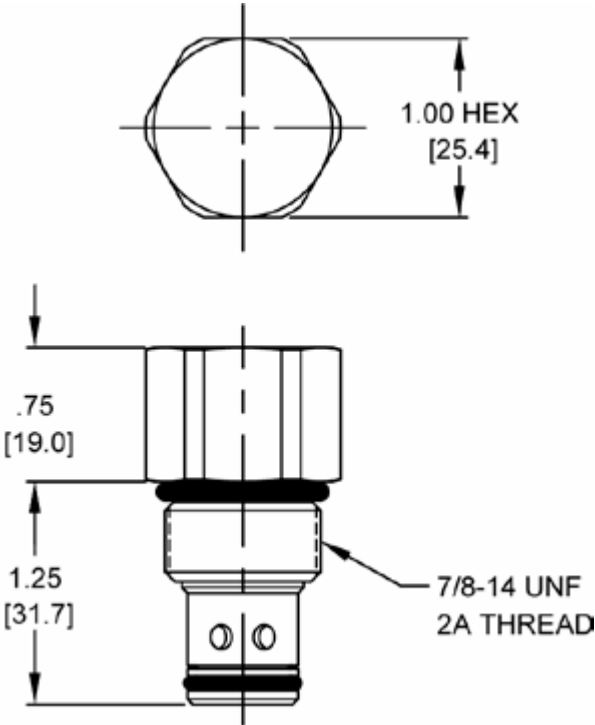


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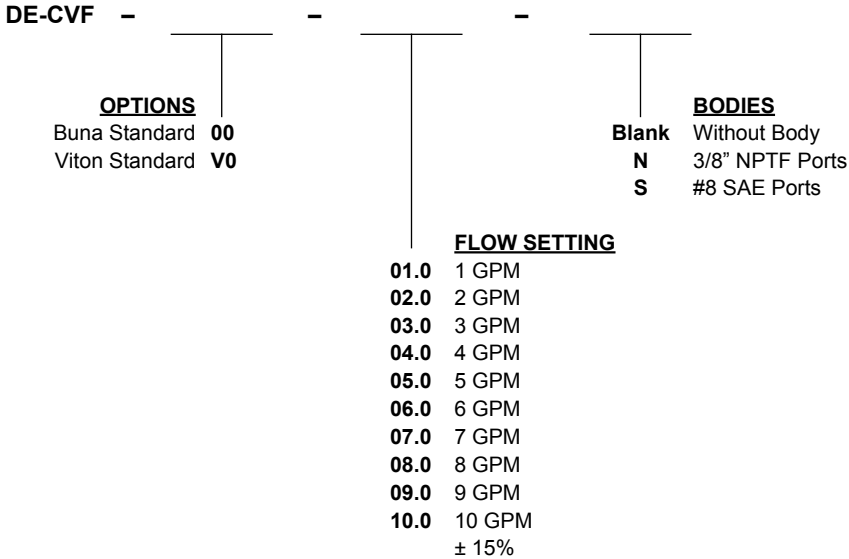
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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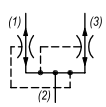
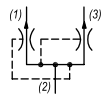
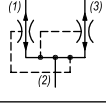
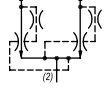


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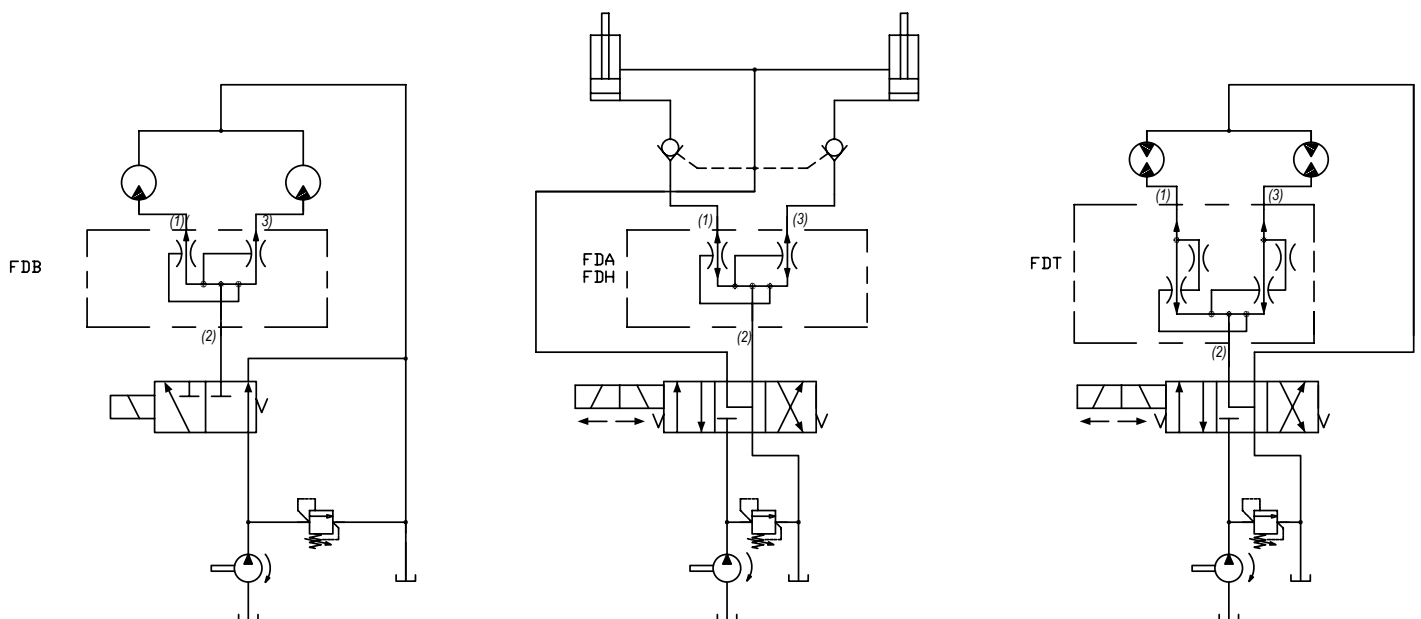
FLOW DIVIDER/COMBINER VALVES

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

TYPICAL SCHEMATIC

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

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



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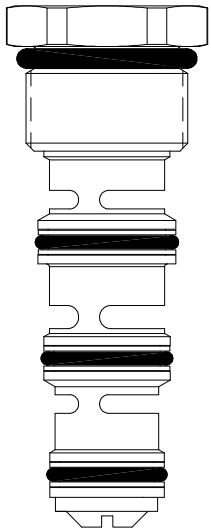


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DG-FDA FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

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

OPERATION

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

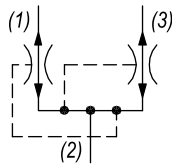
FEATURES

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



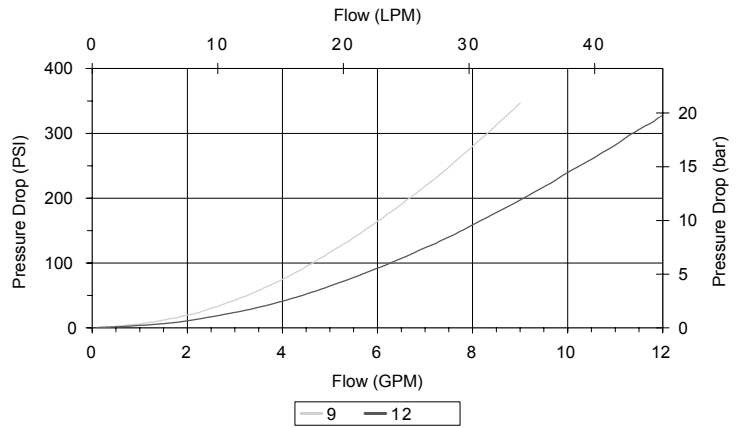
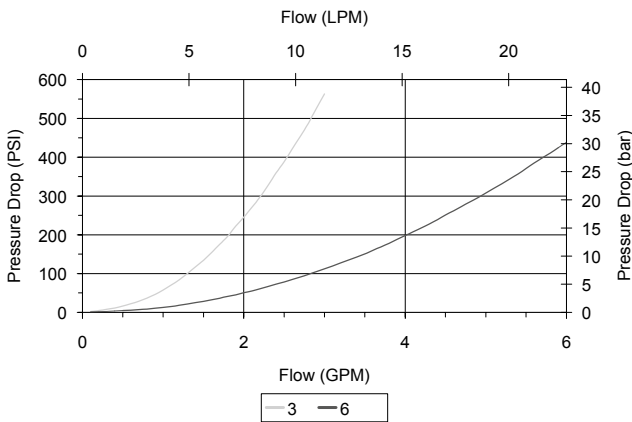
DO NOT EXCEED MAXIMUM FLOW PER MODEL
For higher accuracy flow ratio, use DG-FDH.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)



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.

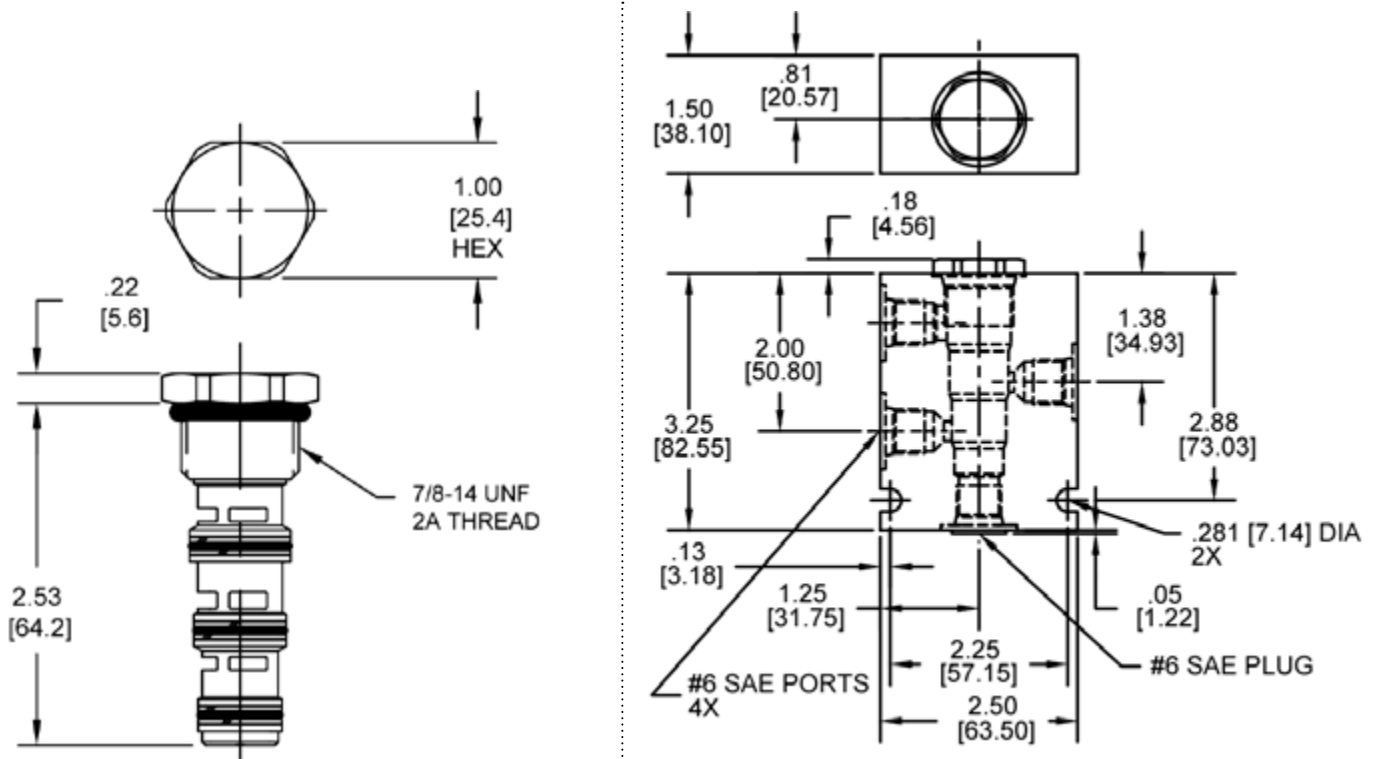


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-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	
04	30-70, 70-30	4.0 GPM
06	20-80, 80-20	6.0 GPM
07	14-86, 36-64, 64-36, 86-14	7.0 GPM
09	28-72, 72-28	9.0 GPM
10	40-60, 60-40	10.0 GPM

Consult factory for additional splits

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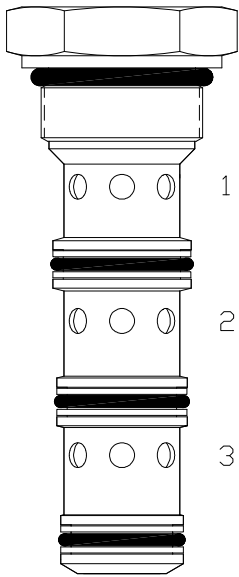


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SN-FDA FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



DESCRIPTION

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

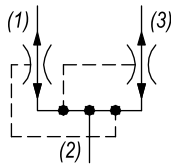
OPERATION

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.

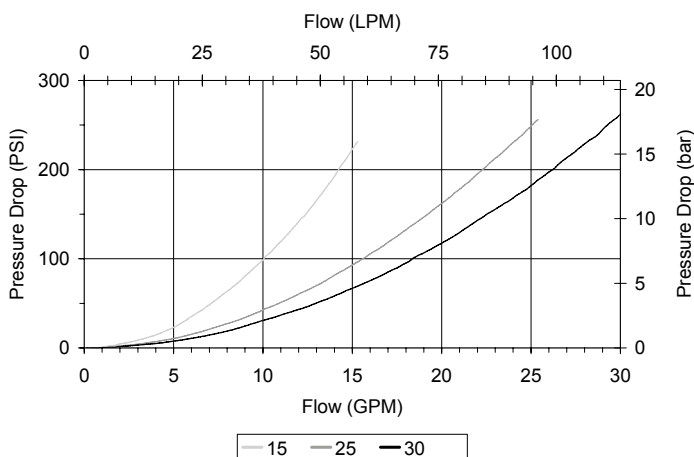
HYDRAULIC SYMBOL



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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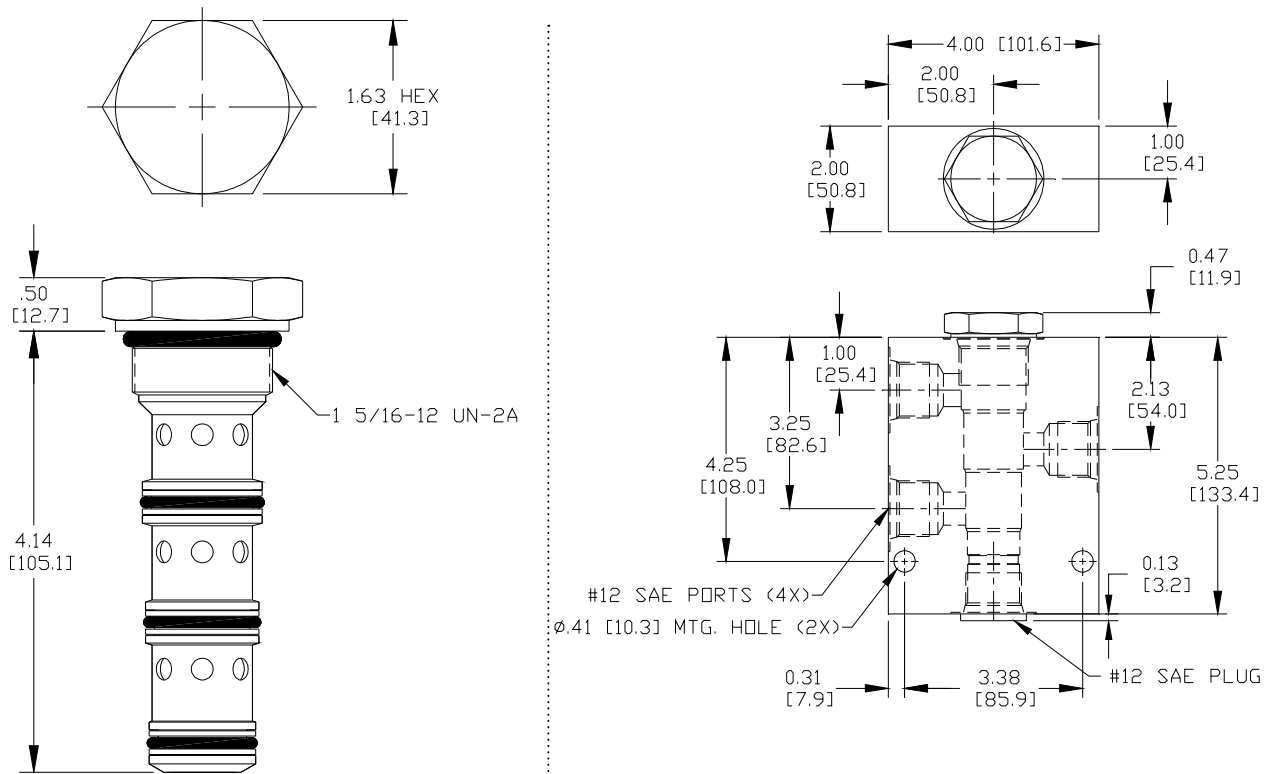


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DIMENSIONS



Body Weight: 3.21 lbs (1.46 kg)

ORDERING INFORMATION

SN-FDA - - - - -

OPTIONS

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

BODIES

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

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

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

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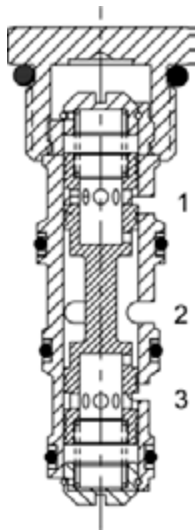


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DG-FDB FLOW DIVIDER VALVE, SPOOL TYPE



DESCRIPTION

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

OPERATION

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

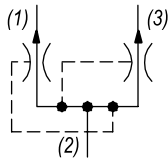
FEATURES

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



DO NOT EXCEED MAXIMUM FLOW PER MODEL.

HYDRAULIC SYMBOL

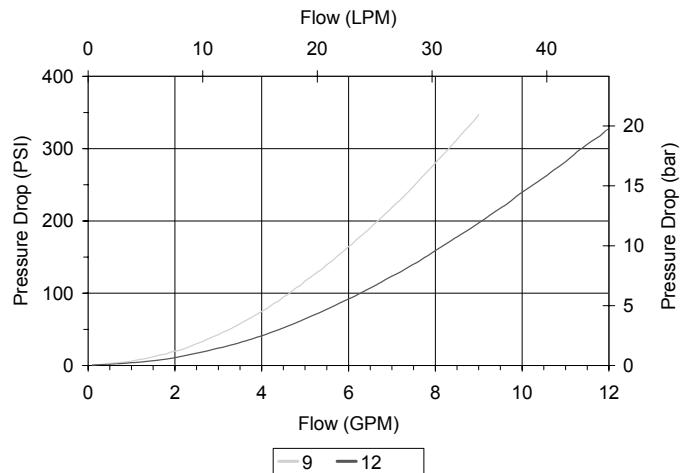
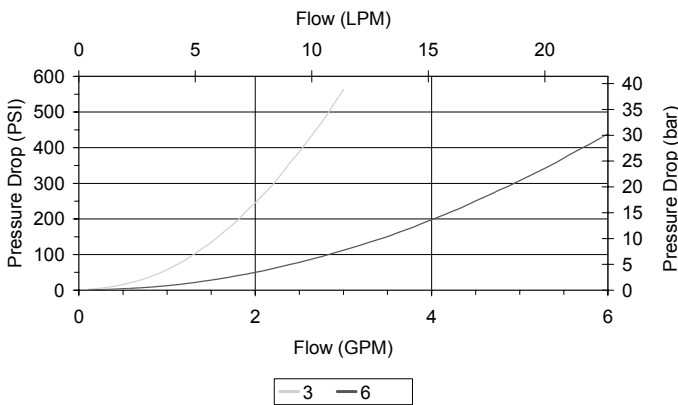


PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

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



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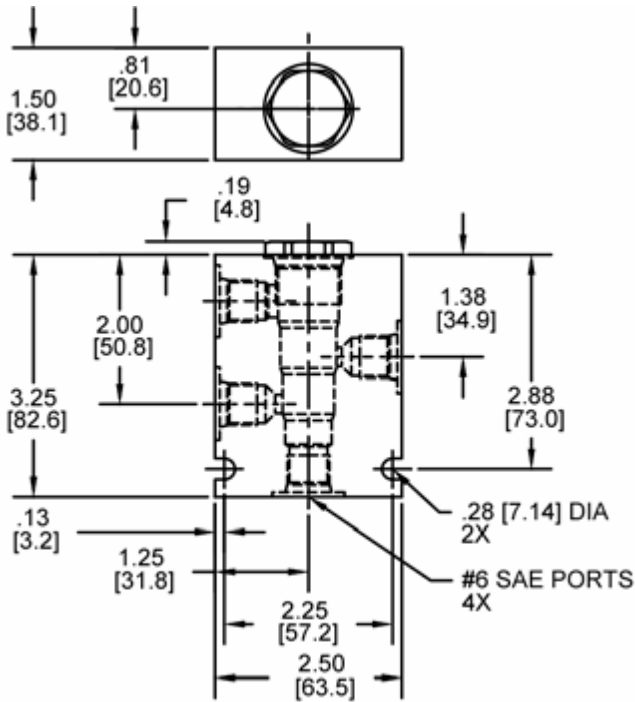
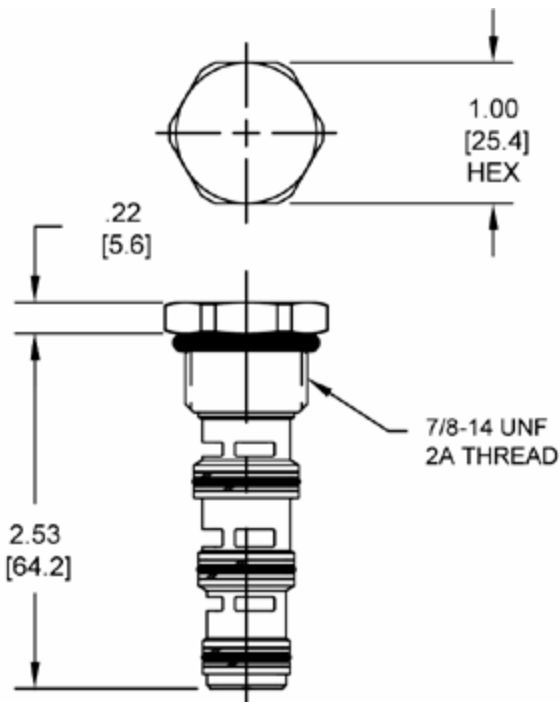


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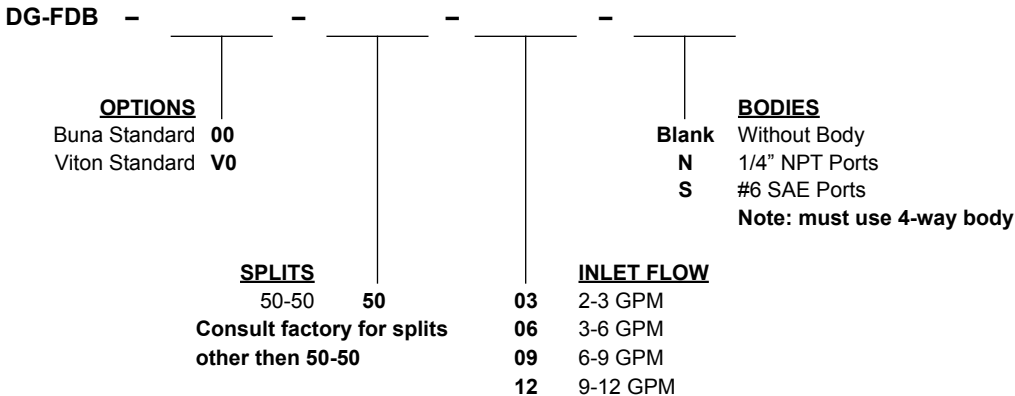
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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



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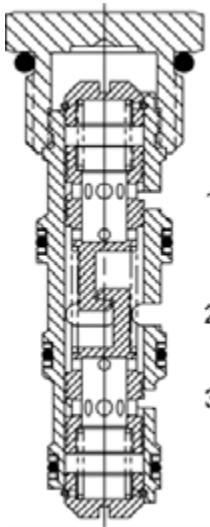


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DG-FDH FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



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.

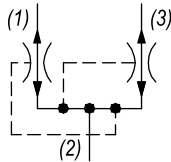
FEATURES

- 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

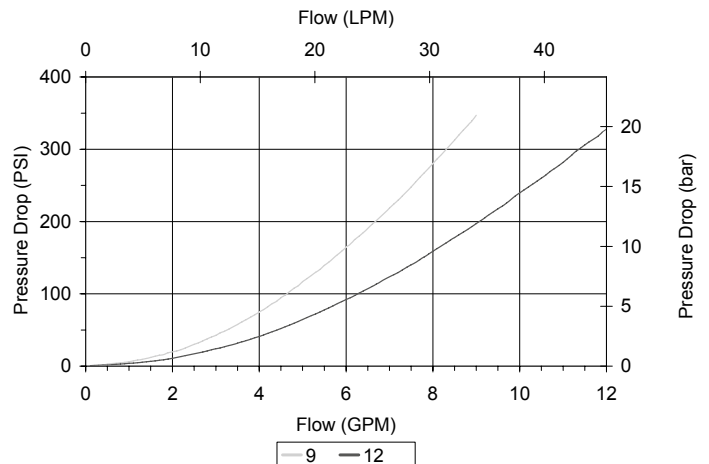
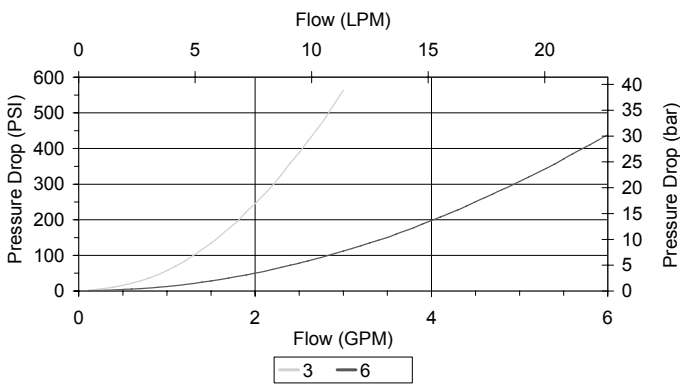


PERFORMANCE

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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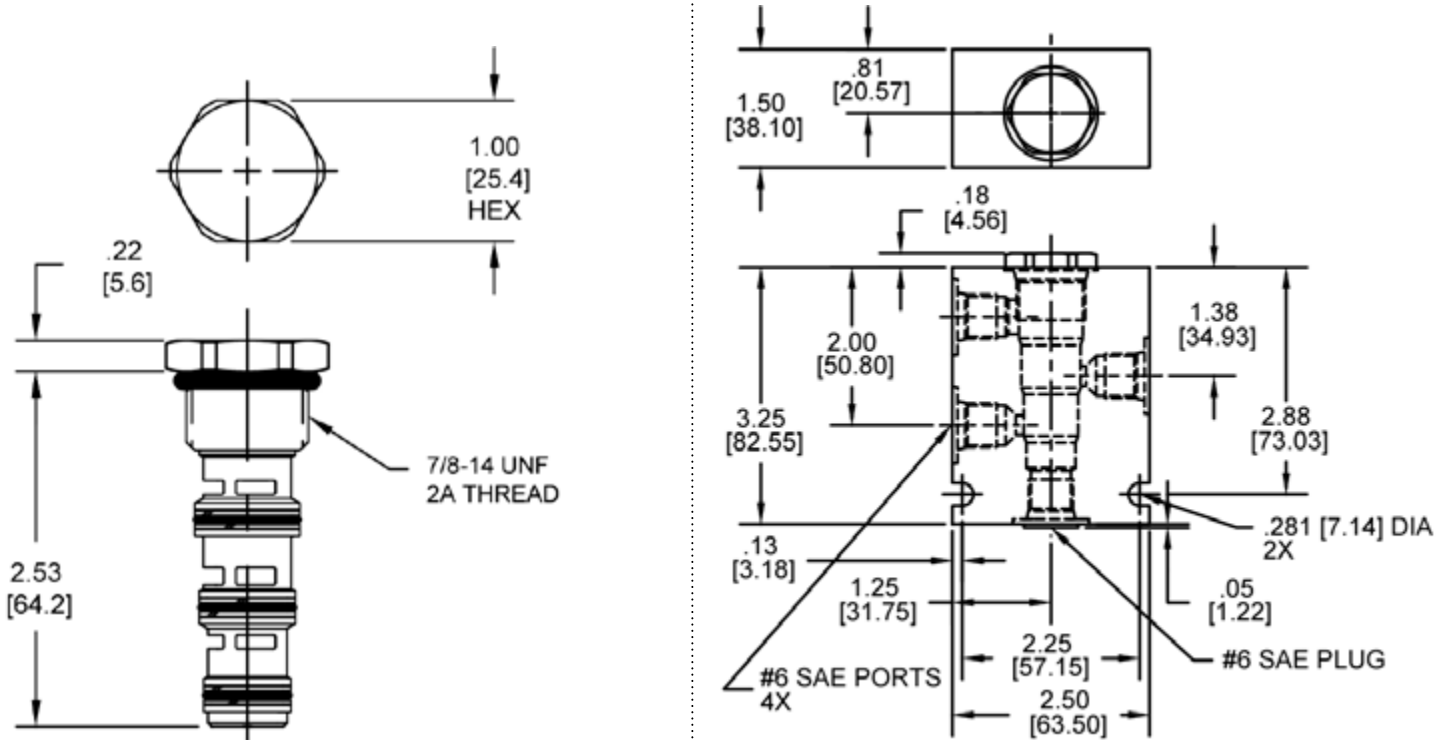


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

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

W 23 / 2018 **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.

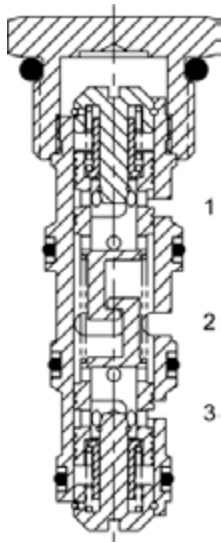


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DG-FDT FLOW DIVIDER / COMBINER VALVE, SPOOL TYPE



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.

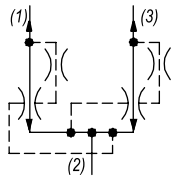


*DO NOT EXCEED MAXIMUM FLOW PER MODEL
Use where wheel slip (or "drag") needs to be accomplished.*



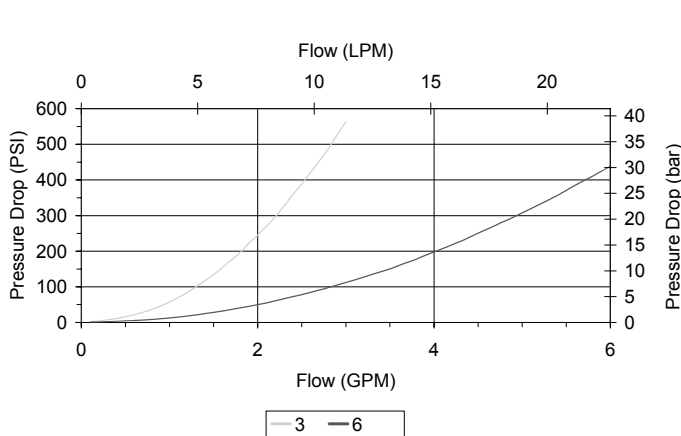
*TRACTION FLOW W/1 LEG UNLOADED
2-3 GPM valve - 0.4 GPM
3-6 GPM valve - 0.7 GPM
6-9 GPM valve - 1.1 GPM
9-12 GPM valve - 1.5 GPM*

HYDRAULIC SYMBOL



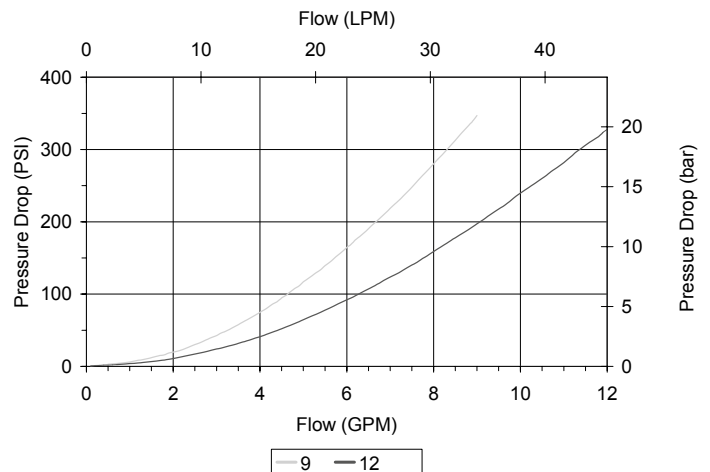
PERFORMANCE

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



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.

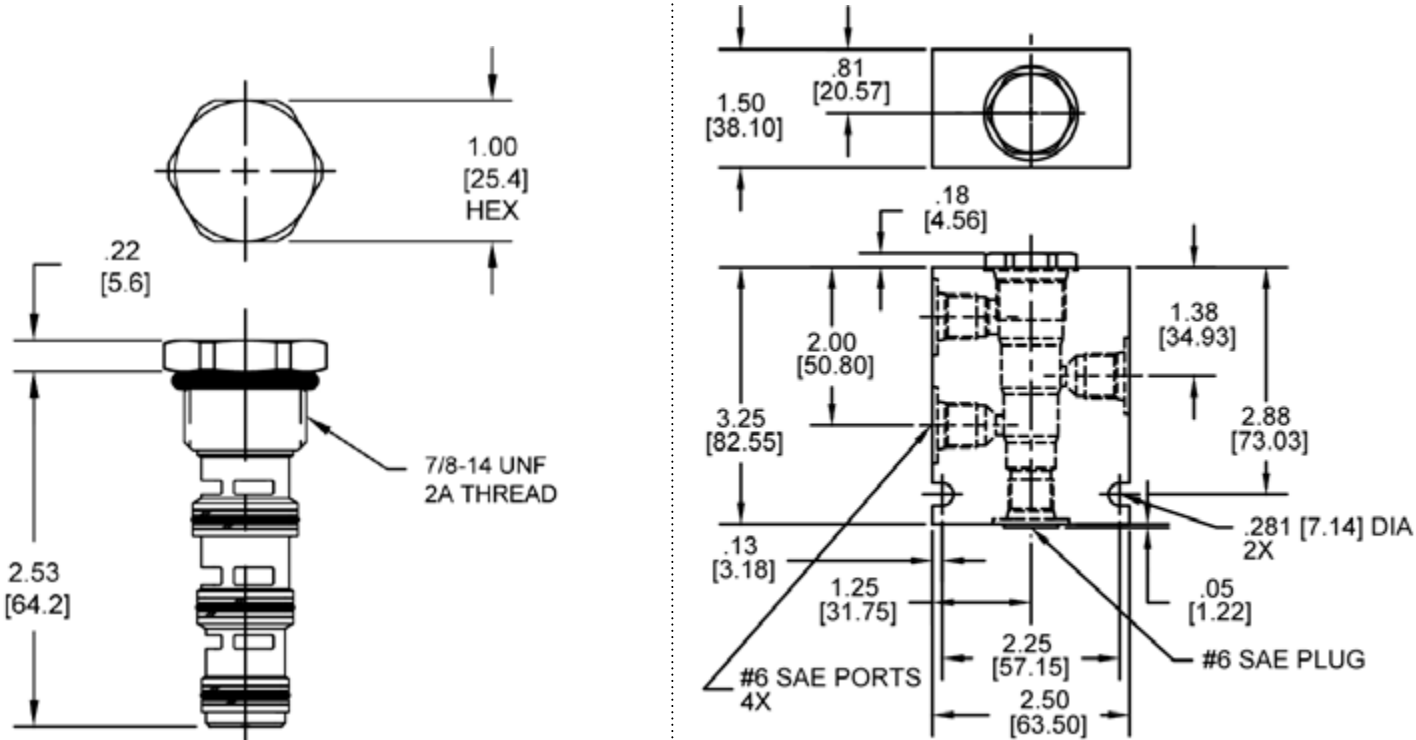


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

DG-FDT -		-	-	-	-	-
OPTIONS						BODIES
Buna Standard	00					Blank
Viton Standard	V0					N 1/4" NPT Ports
						S #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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LOGIC ELEMENTS

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

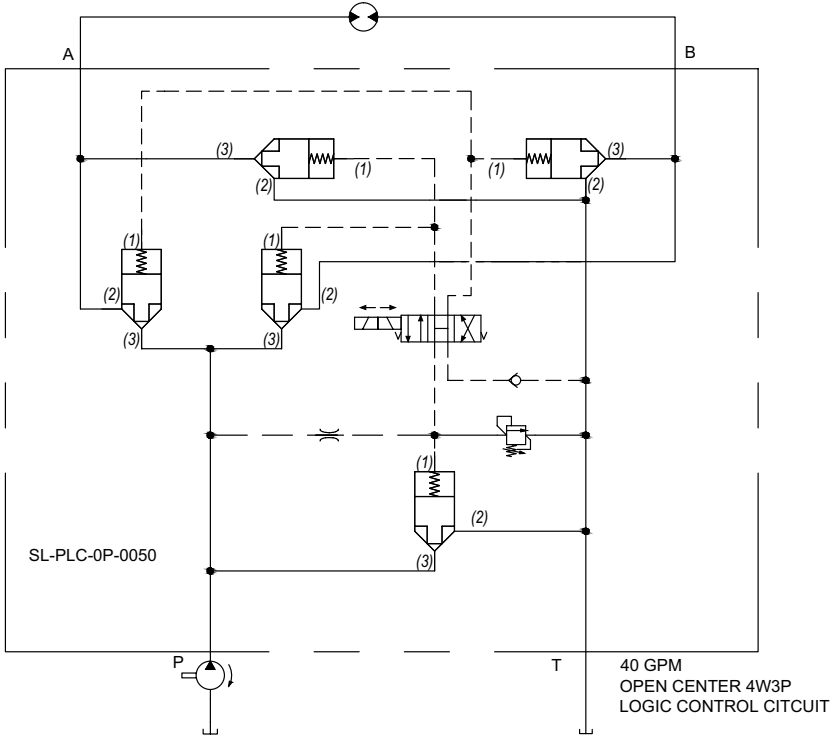
TYPICAL SCHEMATIC

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

The PLA and PLB are intended for flow in one direction only, whereas the PLC can be used for bi-directional operation.

The differing pilot ratios between the three valves affect pressure drop versus flow, and **opening pressure versus pilot pressure**.

The differing pilot ratios between the three valves affect pressure drop versus flow, and **opening pressure as a function of pilot pressure**.



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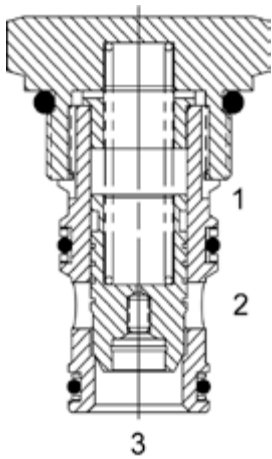


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SL-PLA SUPER SERIES, LOGIC VALVE



DESCRIPTION

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

OPERATION

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

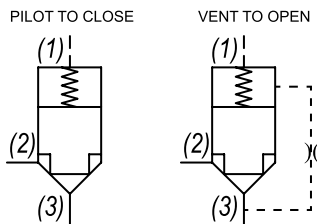
FEATURES

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



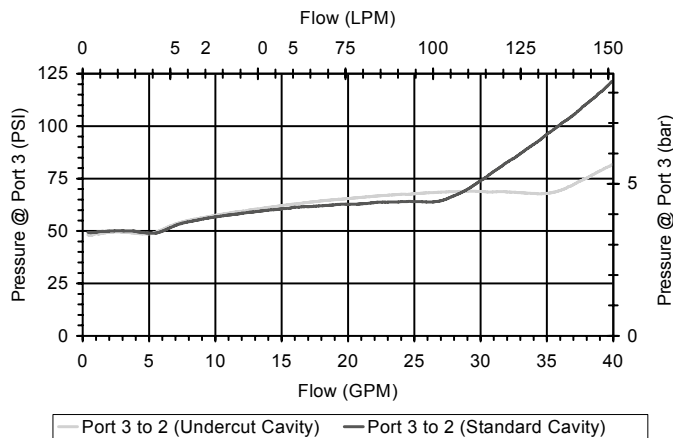
For bidirectional applications see SL-PLC.
For metering see SLPCA or SL-PCB.

HYDRAULIC SYMBOL



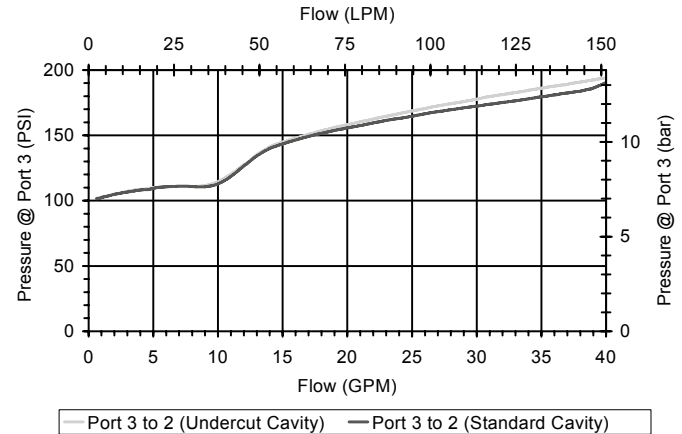
PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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



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.

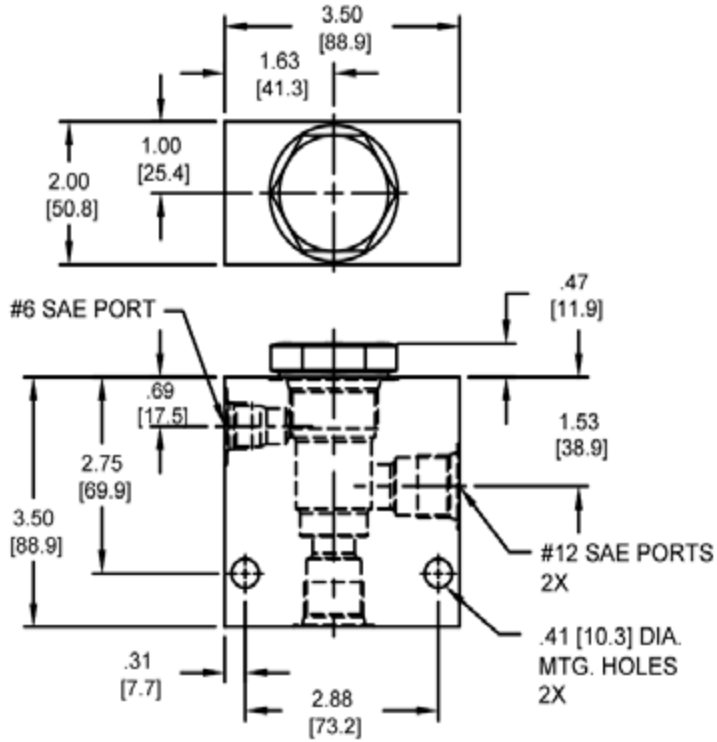
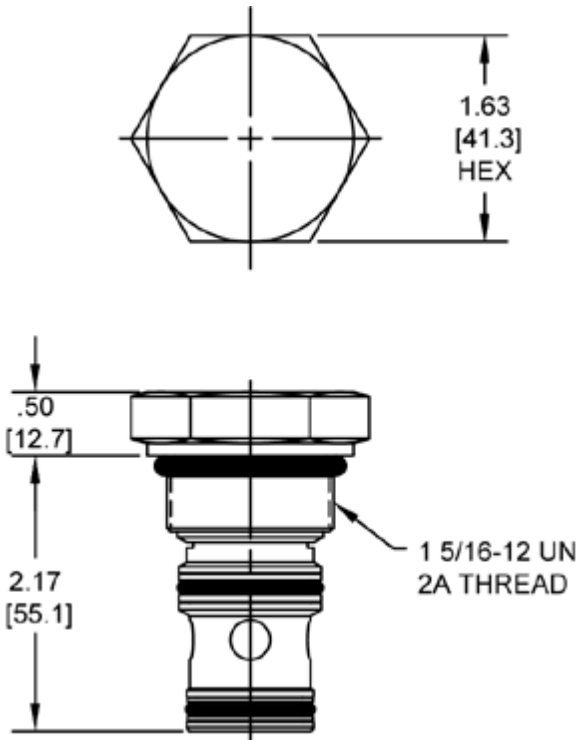


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

<p>SL-PLA -</p> <p>OPTIONS</p> <p>Buna, Pilot to Close 0P</p> <p>Viton, Pilot to Close VP</p> <p>Buna, Vent to Open 0V</p> <p>Viton, Vent to Open VV</p> <p>Buna, Pilot to Close w/seals 0B</p> <p>Viton, Pilot to Close w/seals VB</p> <p>Buna, Vent to Open w/seals 0C</p> <p>Viton, Vent to Open w/seals VC</p>	<p>-</p> <p>-</p> <p>-</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>S #12 SAE Ports</p> <p>PRESSURE SETTING</p> <p>0020 20 PSI</p> <p>0050 50 PSI</p> <p>0100 100 PSI</p> <p>0150 150 PSI</p>
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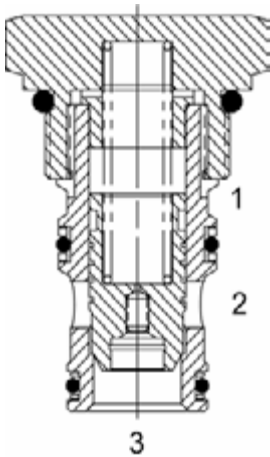


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SL-PLB SUPER SERIES, LOGIC VALVE



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.

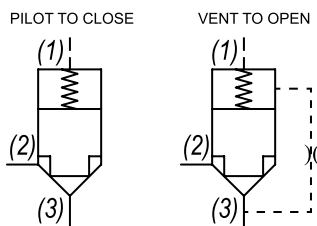
FEATURES

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



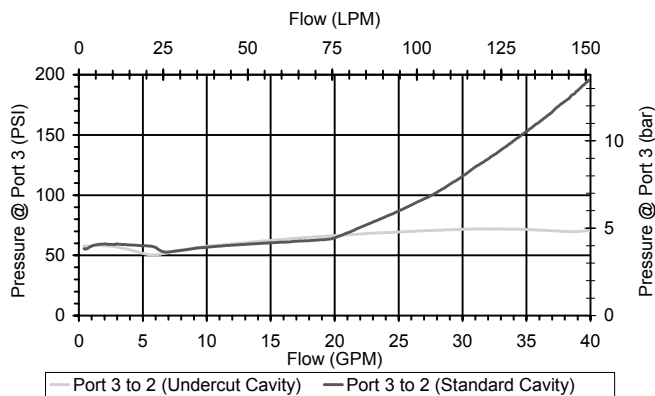
For bidirectional applications see SL-PLC.
For metering see SLPCA or SL-PCB.

HYDRAULIC SYMBOL



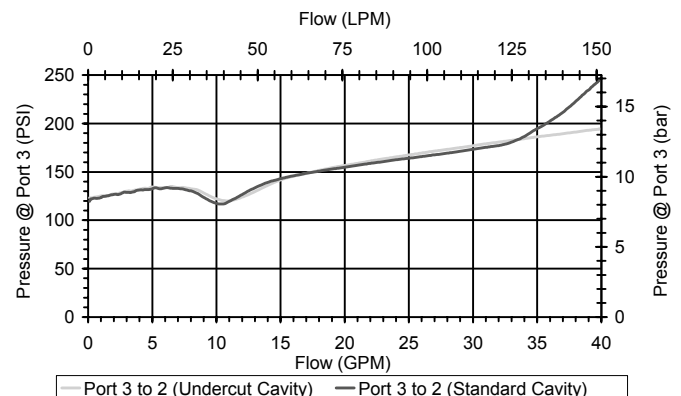
PERFORMANCE

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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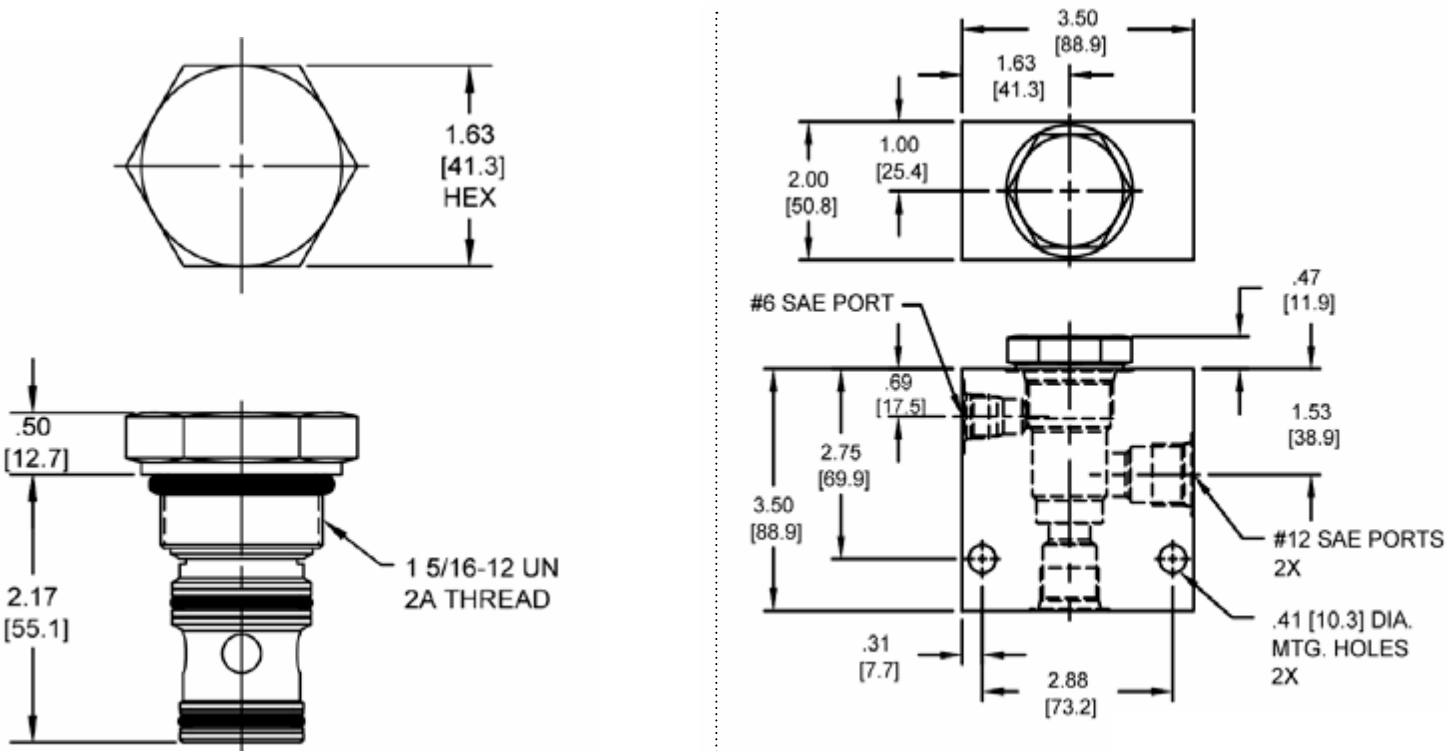


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

<p>SL-PLB -</p> <p>OPTIONS</p> <p>Buna, Pilot to Close OP</p> <p>Viton, Pilot to Close VP</p> <p>Buna, Vent to Open OV</p> <p>Viton, Vent to Open VV</p> <p>Buna, Pilot to Close w/seals OB</p> <p>Viton, Pilot to Close w/seals VB</p> <p>Buna, Vent to Open w/seals OC</p> <p>Viton, Vent to Open w/seals VC</p>	<p>-</p> <p>-</p> <p>-</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>S #12 SAE Ports</p> <p>PRESSURE SETTING</p> <p>0020 20 PSI</p> <p>0050 50 PSI</p> <p>0100 100 PSI</p> <p>0150 150 PSI</p>
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SL-PLC SUPER SERIES, LOGIC VALVE

DESCRIPTION

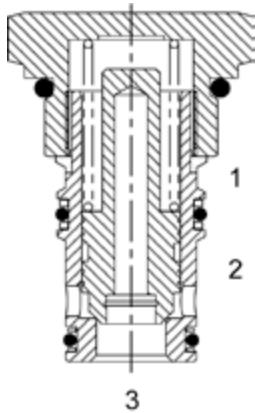
16 size, 1 5/16-12 thread, "Super" series, logic valve.

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.

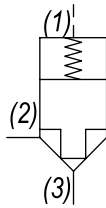
FEATURES

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



For metering see SL-PCA or SL-PCB.

HYDRAULIC SYMBOL

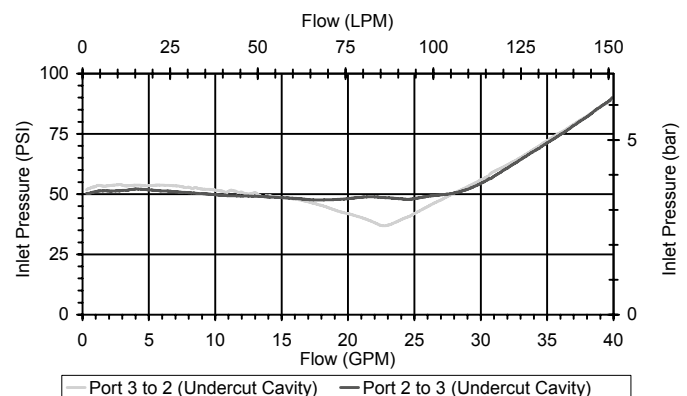
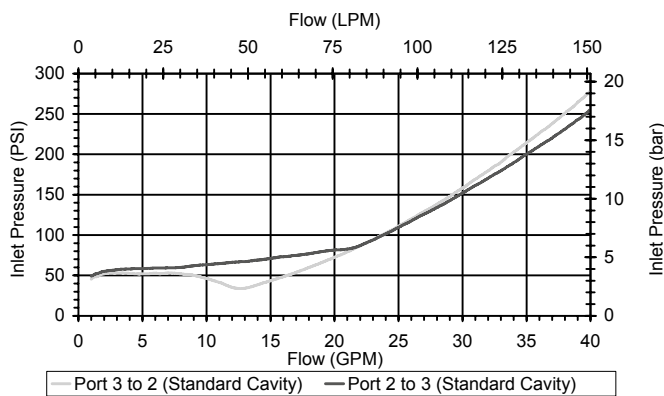


PERFORMANCE

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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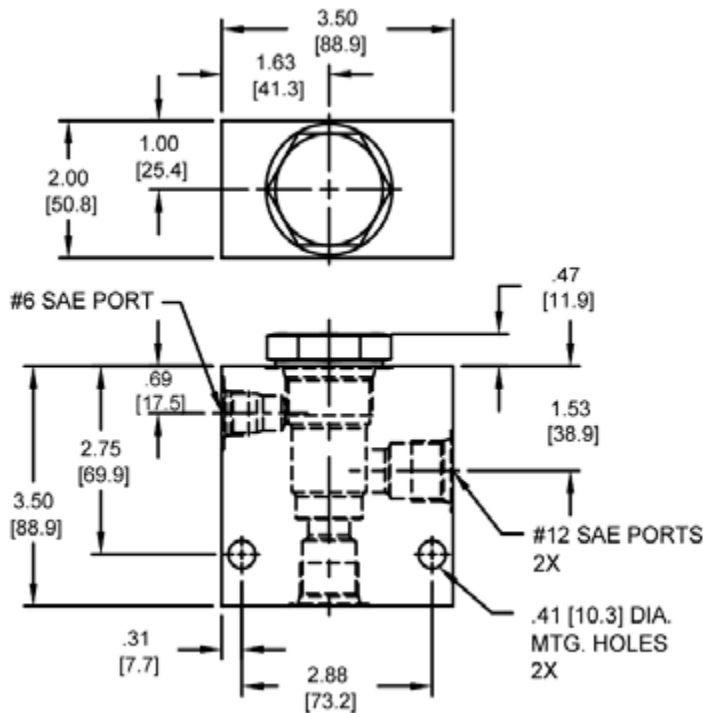
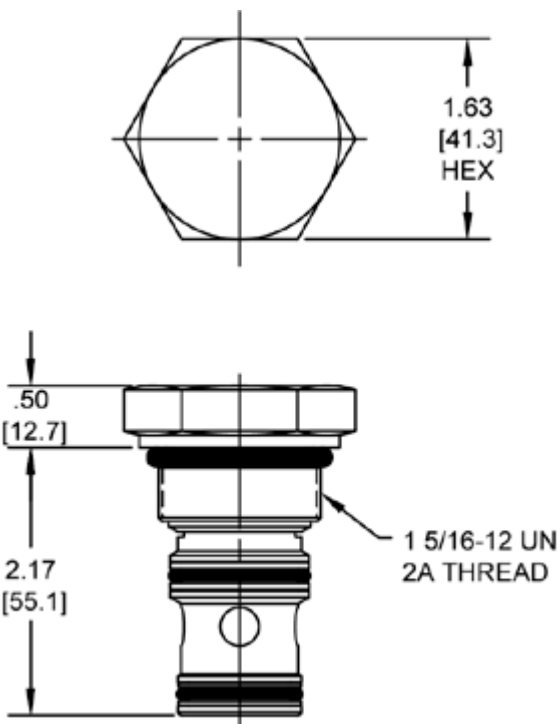


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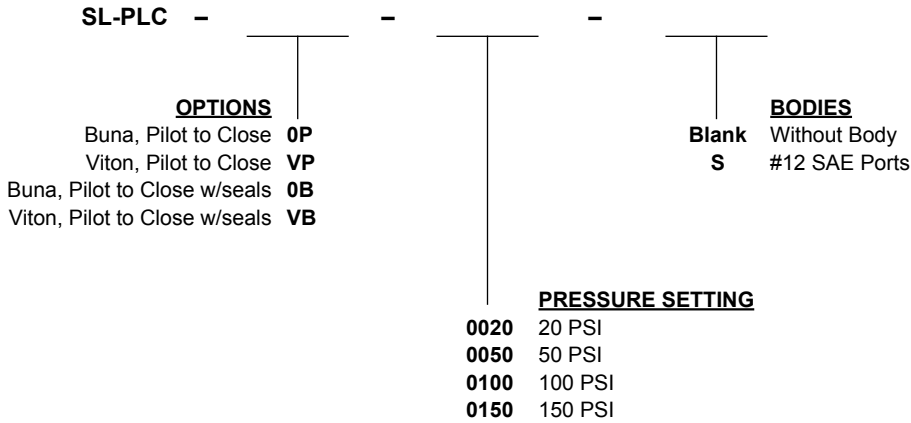
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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION



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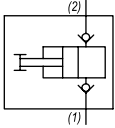
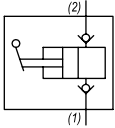
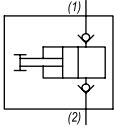
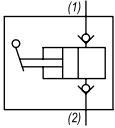


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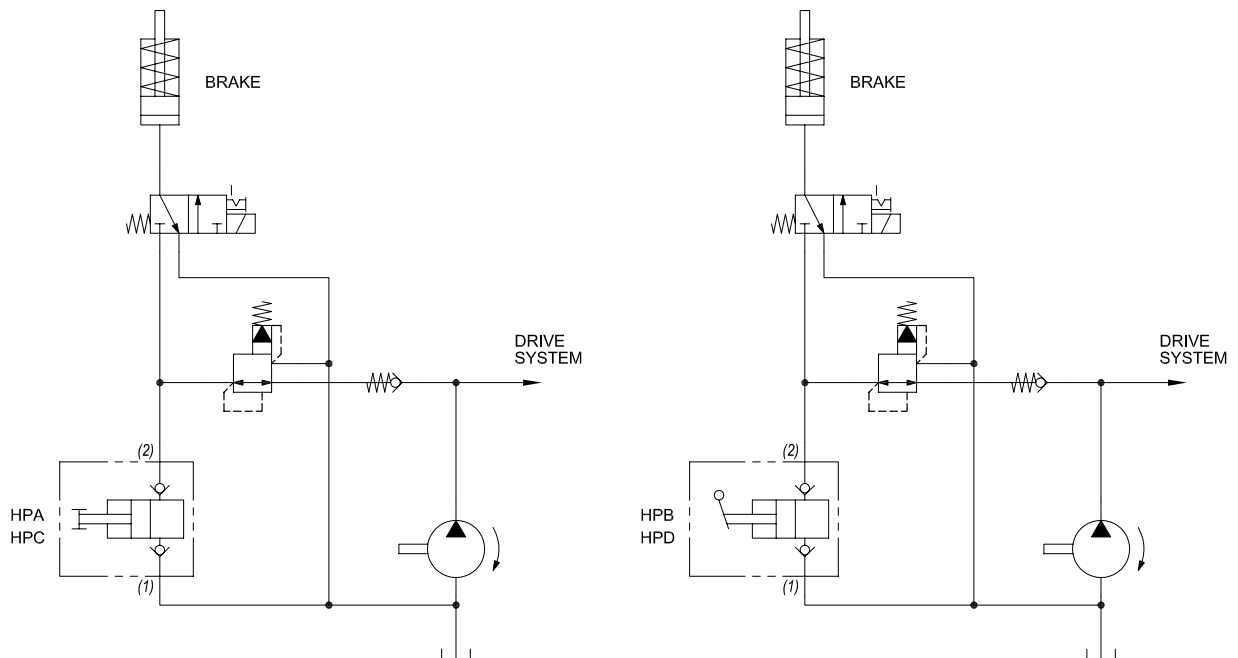
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HAND PUMPS

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

TYPICAL SCHEMATIC

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



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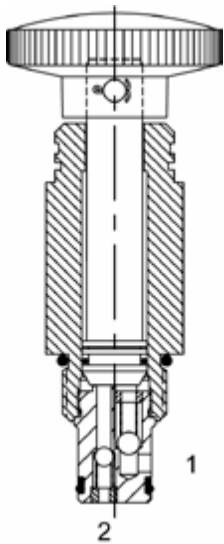


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DE-HPA HAND PUMP



DESCRIPTION

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

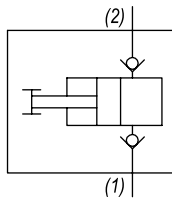
OPERATION

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.

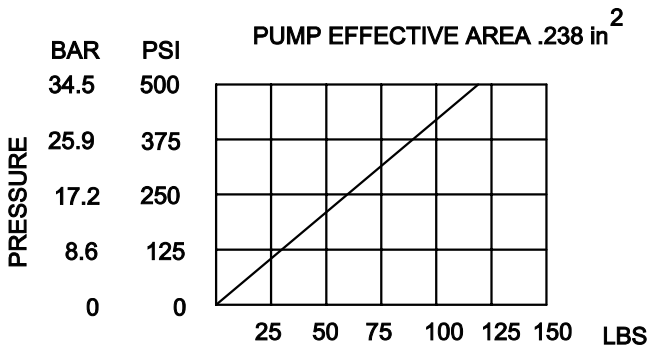
HYDRAULIC SYMBOL



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.

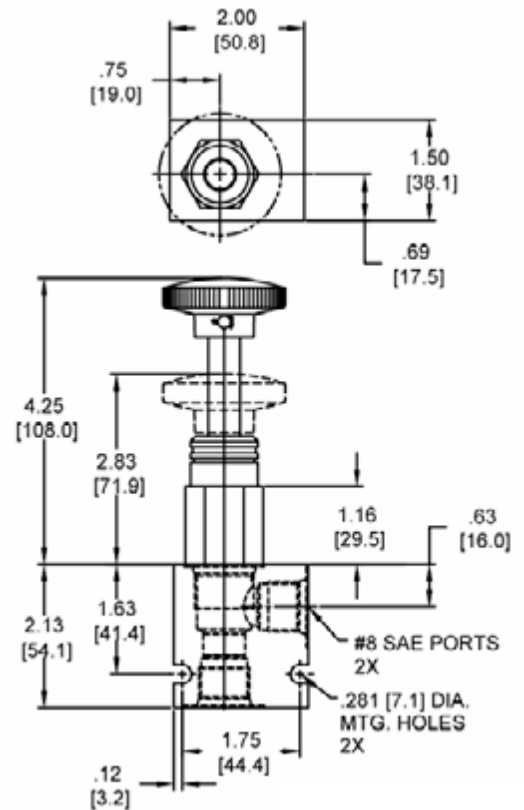
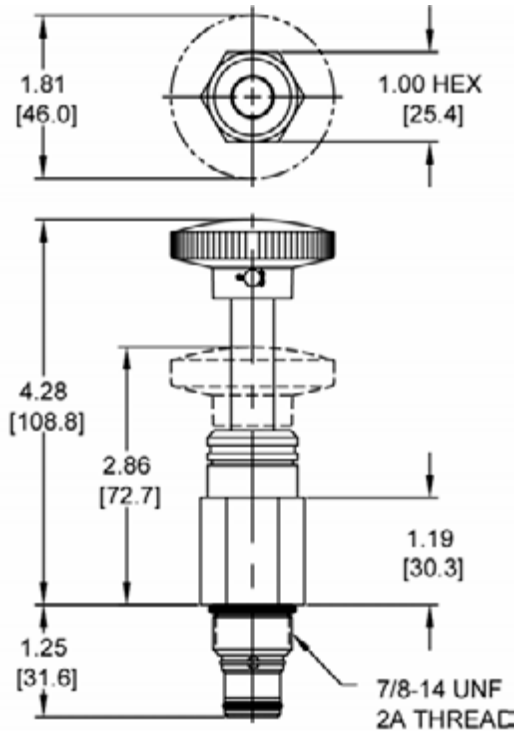


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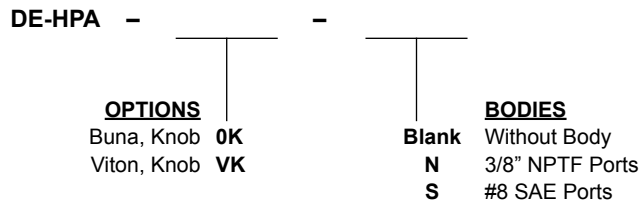
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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION



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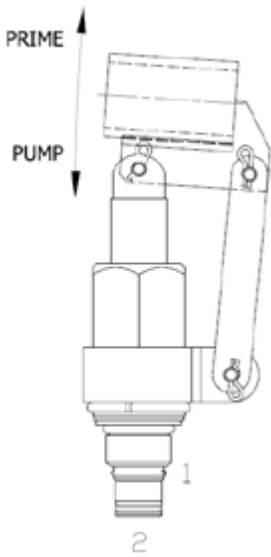


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 mail: delta@delta-power.com • www.delta-power.com



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DE-HPB HAND PUMP, PUSH TO PUMP TYPE



DESCRIPTION

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

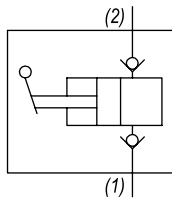
OPERATION

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

FEATURES

- Large displacement per stroke.
- Industry common cavity.

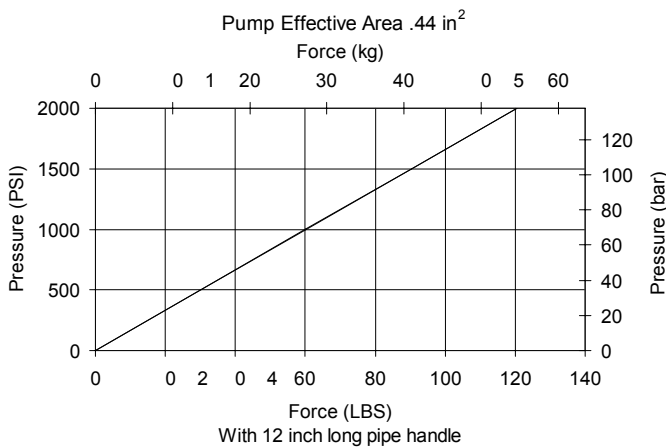
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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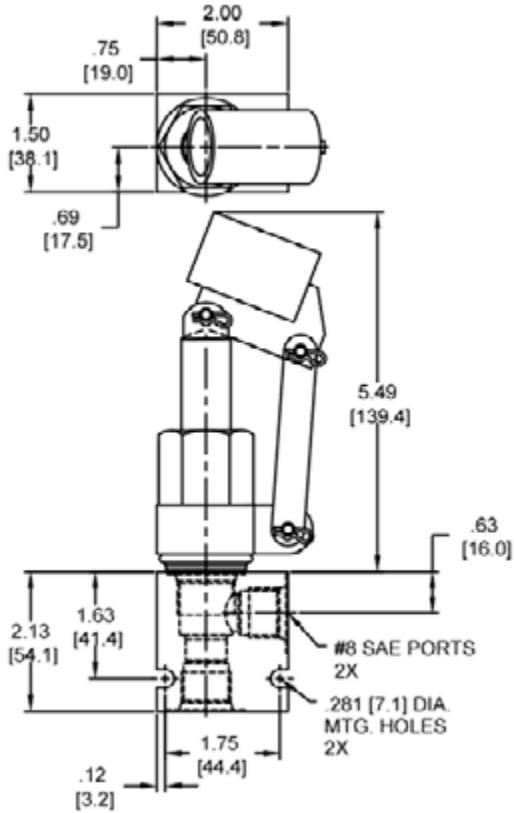
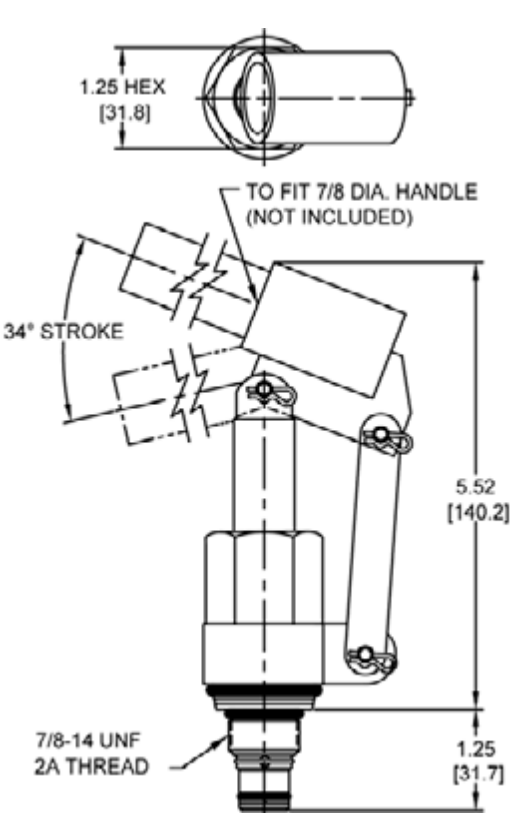


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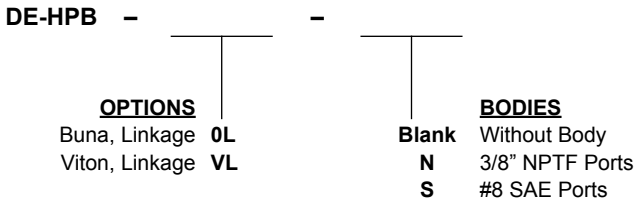
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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION



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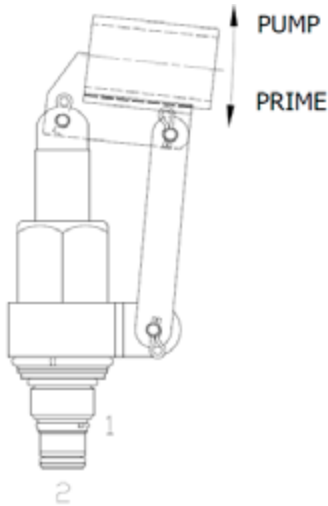


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DE-HPE HAND PUMP , PULL TO PUMP TYPE



DESCRIPTION

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

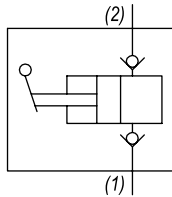
OPERATION

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.

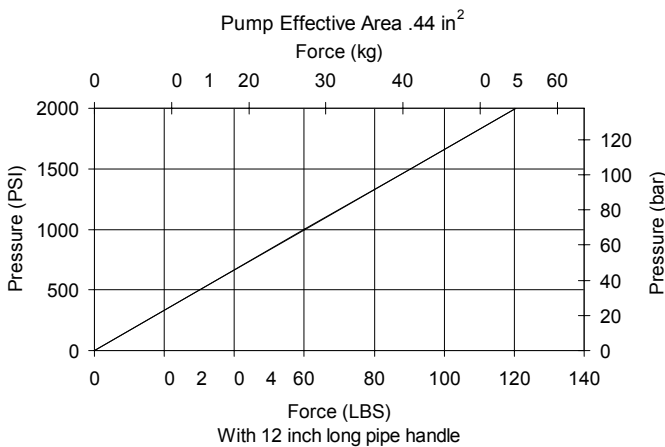
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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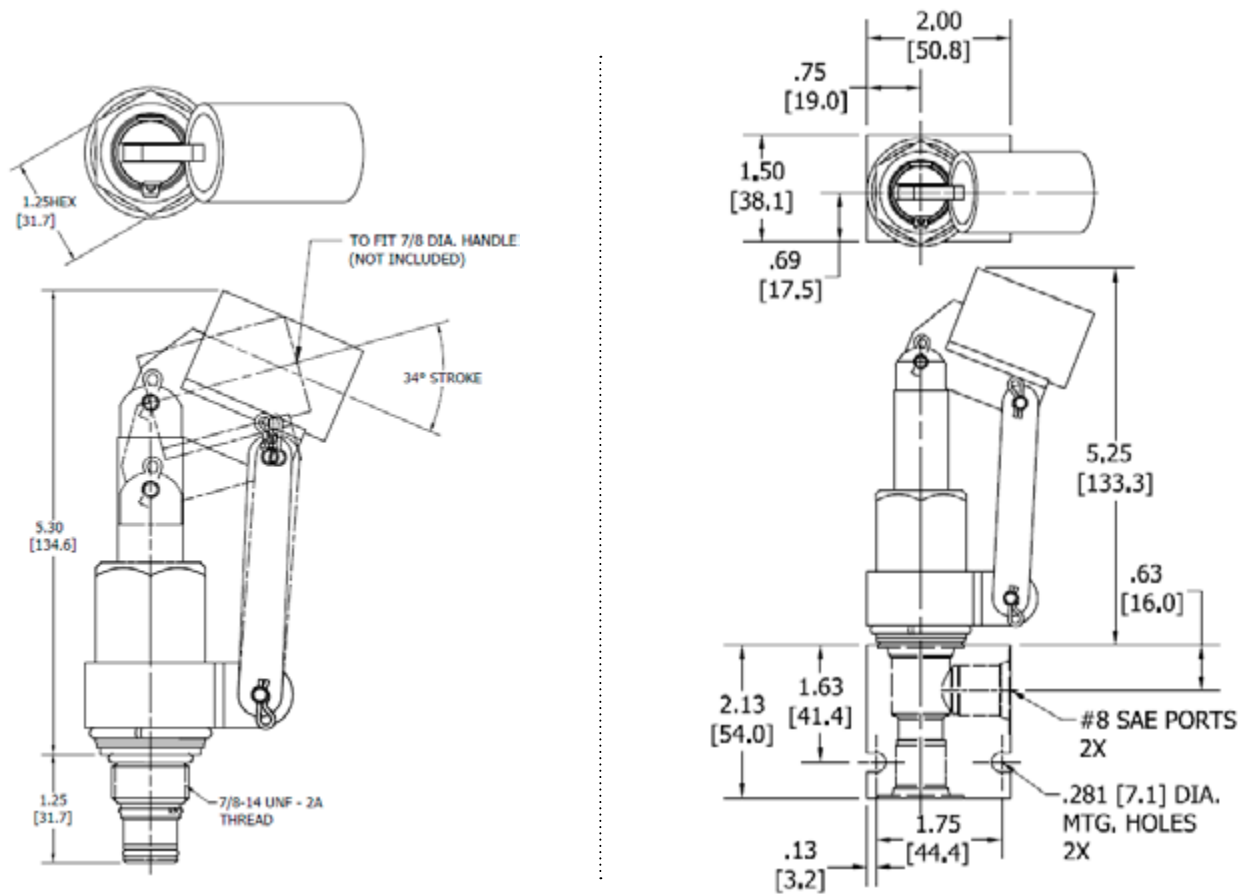


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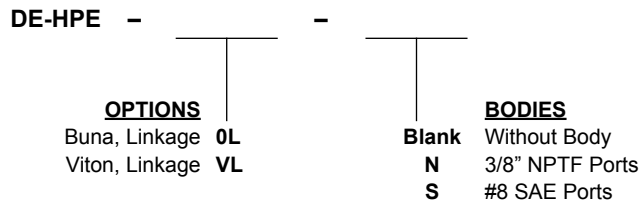
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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION



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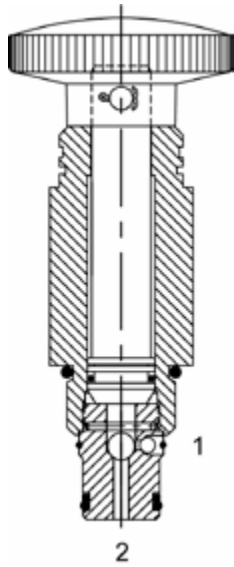


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DE-HPC HAND PUMP



DESCRIPTION

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

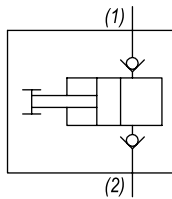
OPERATION

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

FEATURES

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

HYDRAULIC SYMBOL

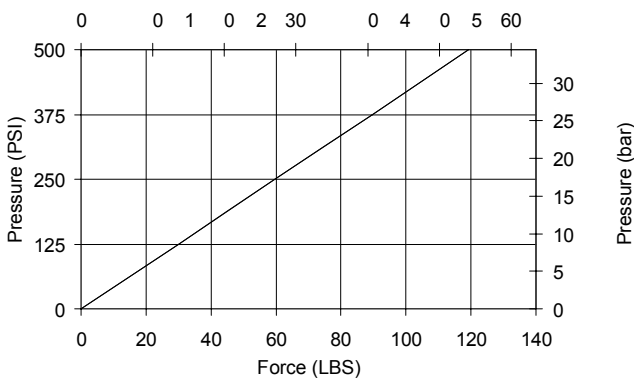


This product is not intended as a load holding device.

PERFORMANCE

Actual Test Data (Cartridge Only)

Pump Effective Area .24 in²
Force (kg)



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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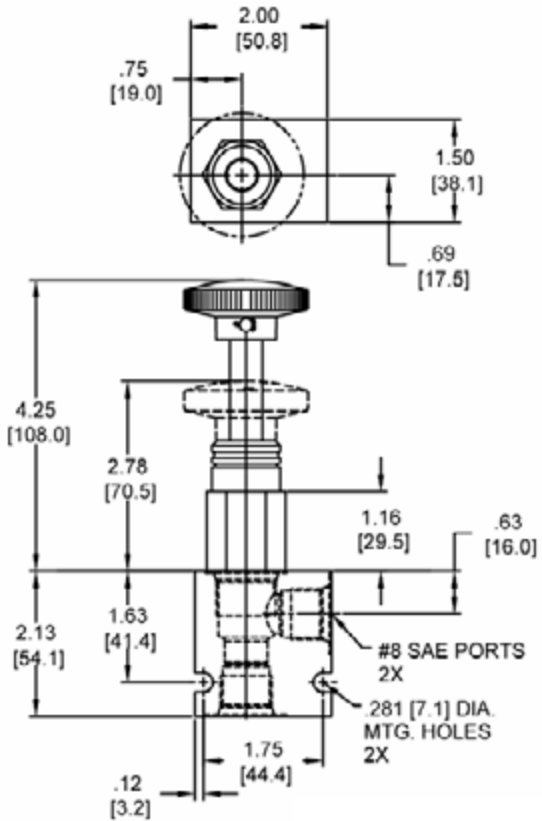
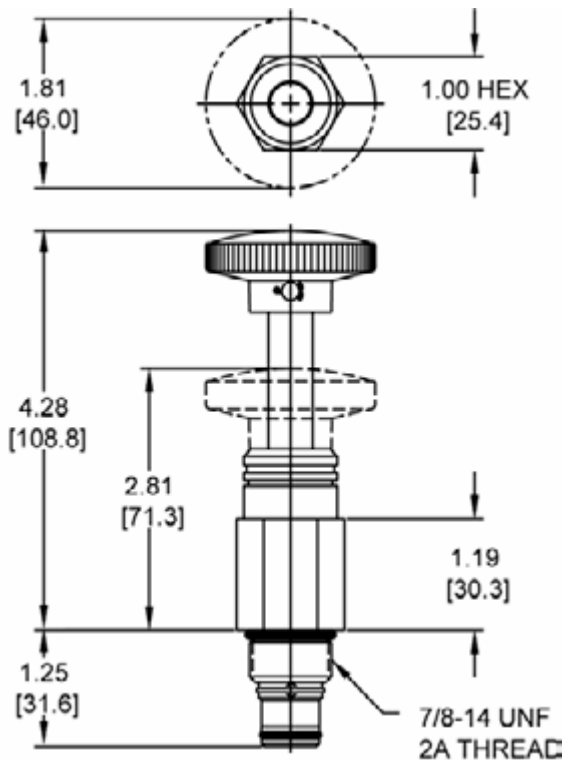


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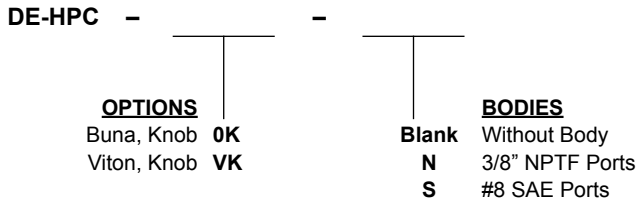
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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION



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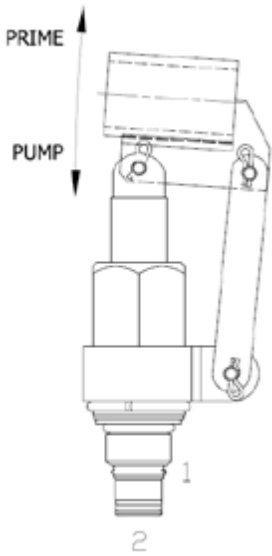


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DE-HPD HAND PUMP, PUSH TO PUMP TYPE



DESCRIPTION

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

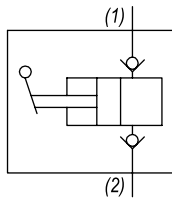
OPERATION

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

FEATURES

- Large displacement per stroke.
- Industry common cavity.

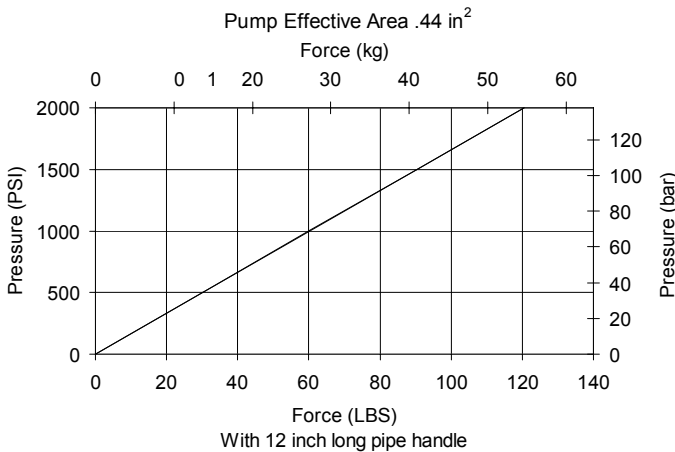
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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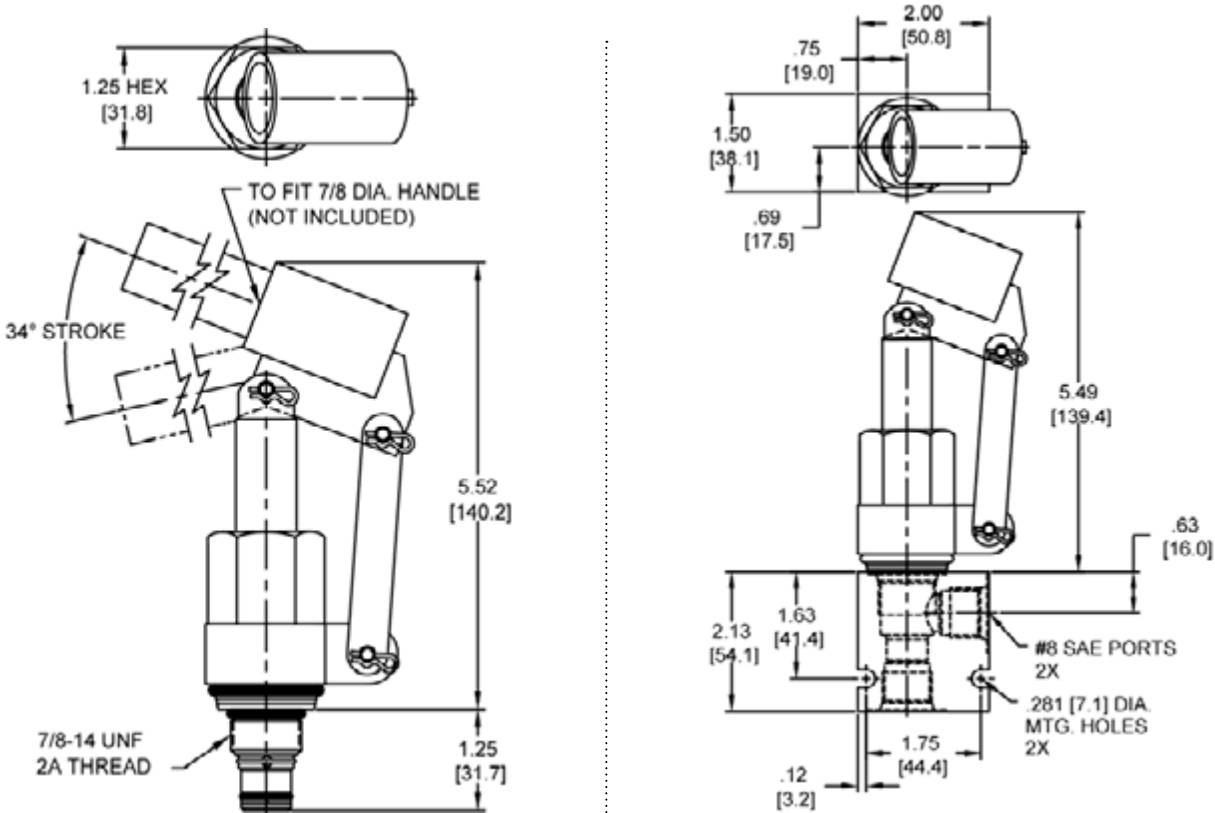


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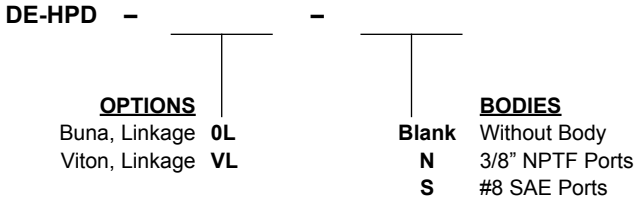
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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION



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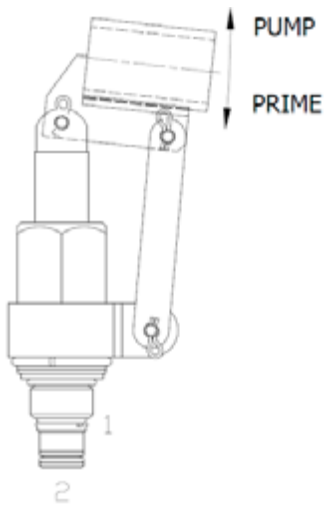


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DE-HPF HAND PUMP, PULL TO PUMP TYPE



DESCRIPTION

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

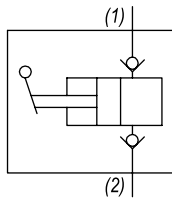
OPERATION

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.

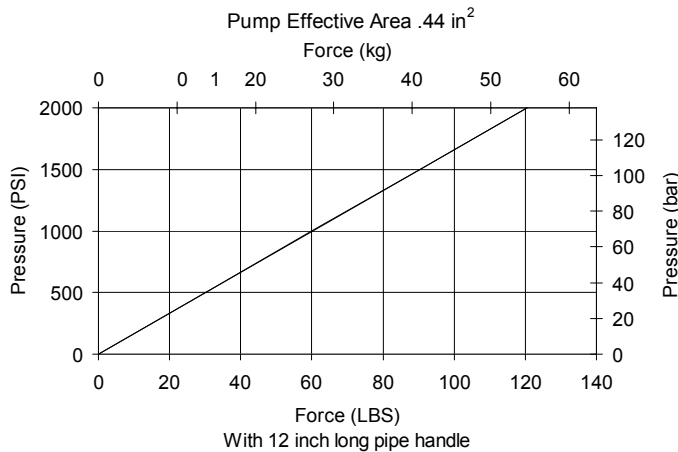
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

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

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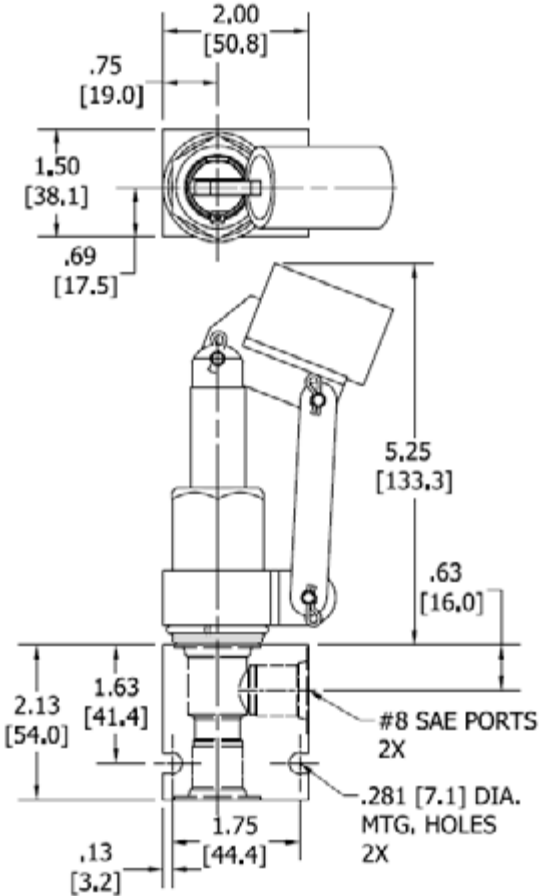
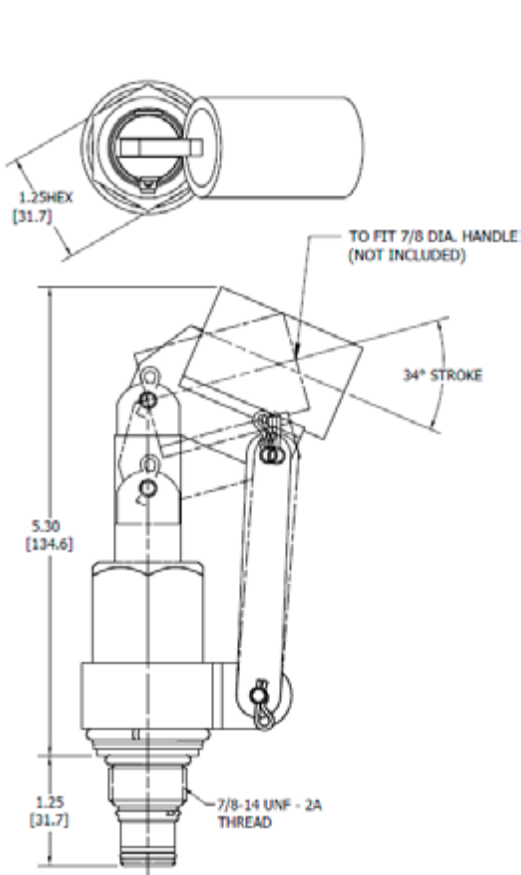


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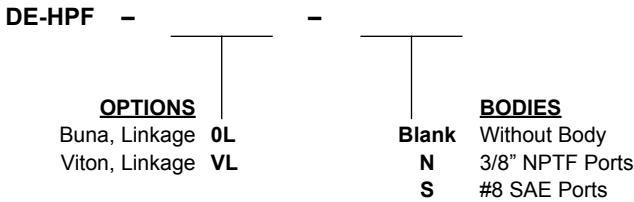
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DIMENSIONS



Body Weight: .47 lbs (21 kg)

ORDERING INFORMATION



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MECHANICAL PRESSURE CONTROLS



DIRECT ACTING AND DIFFERENTIAL AREA RELIEF VALVES	MP3
PILOT OPERATED RELIEF VALVES	MP29
CROSSOVER RELIEF VALVES	MP45
PRESSURE COMPENSATED REGULATOR VALVES	MP51
PRESSURE REDUCING/RELIEVING VALVES	MP85
SEQUENCE VALVES	MP93
SHUT DOWN VALVES	MP117

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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-RVA	MP12
	8	4000	30	276	7/8-14	DE-RVA	MP14

DIFFERENTIAL AREA RELIEF VALVES	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	15	3500	57	241	7/8-14	DE-RCD	MP16
	8	3500	30	241	3/4-16	PB-RVD	MP18
	15	4000	57	276	7/8-14	DE-RVD	MP20
	40	5000	151	345	7/8-14	HE-RVD	MP22
	8	3500	30	241	3/4-16	PB-RWD	MP24
	15	4000	57	276	7/8-14	DE-RWD	MP26

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.

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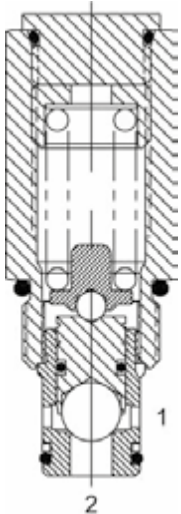


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DE-RCA GUIDED BALL, DIRECT ACTING RELIEF VALVE



DESCRIPTION

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

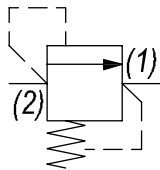
OPERATION

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.

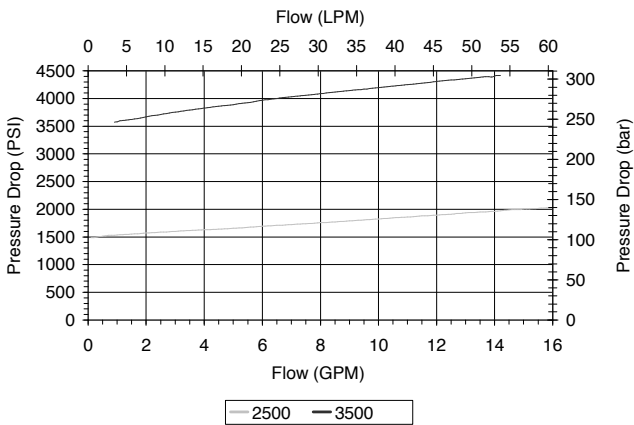
HYDRAULIC SYMBOL



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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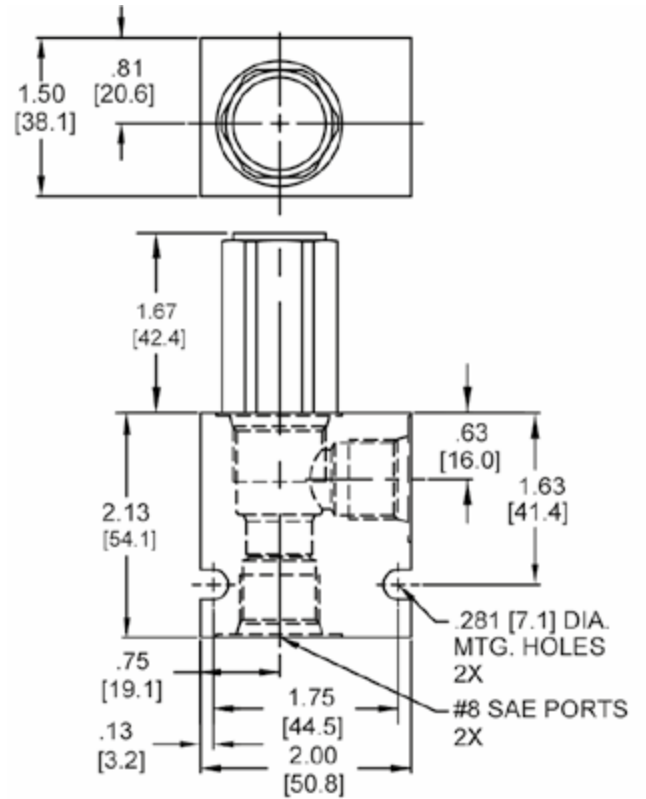
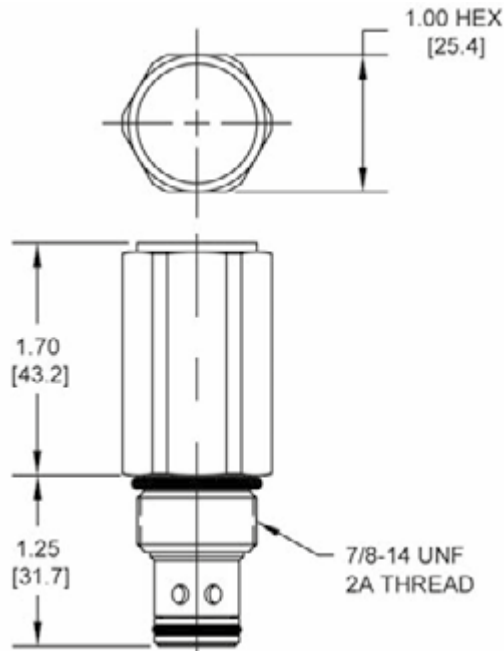


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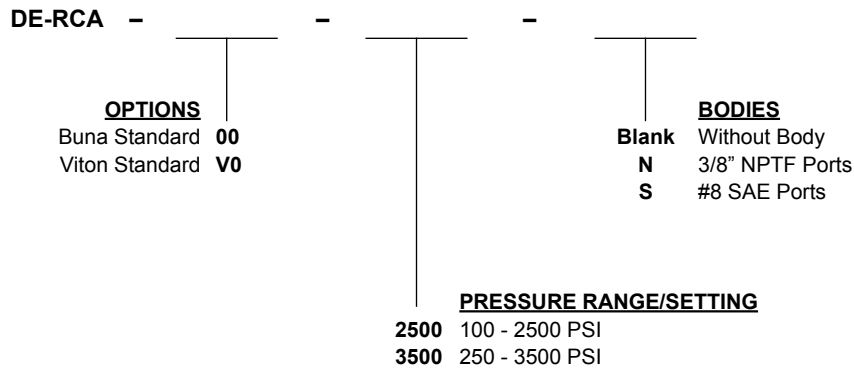
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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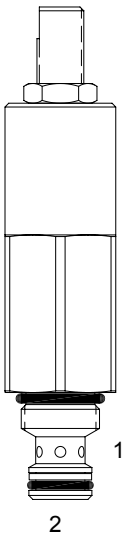


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MA-RVA DIRECT ACTING RELIEF VALVE



DESCRIPTION

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

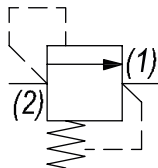
OPERATION

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

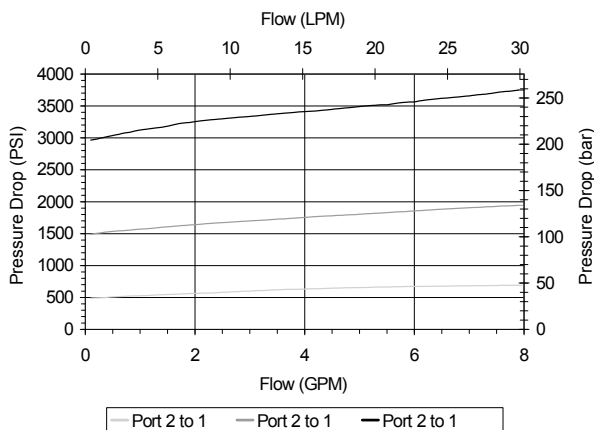
- Hardened parts for long life.
- Industry common cavity.

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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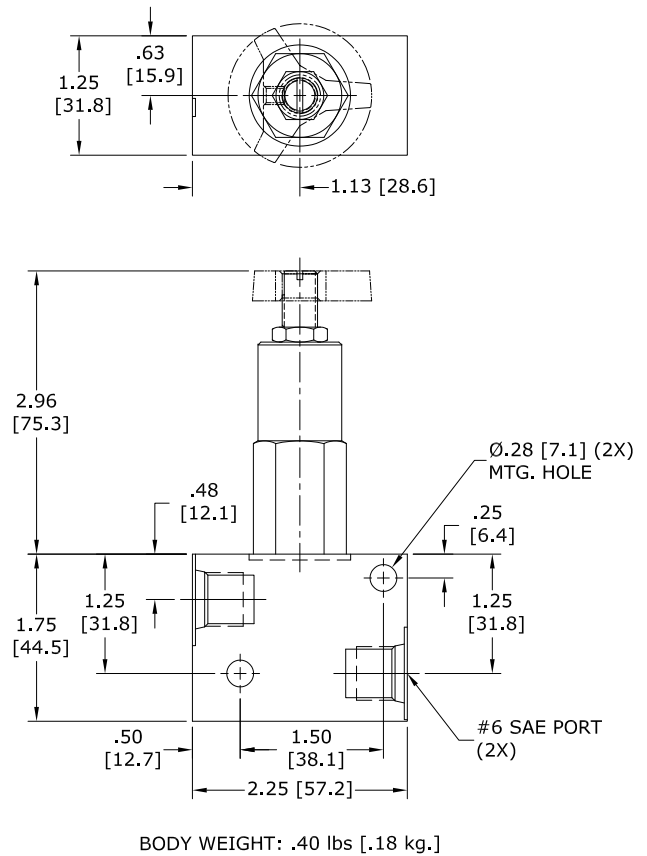
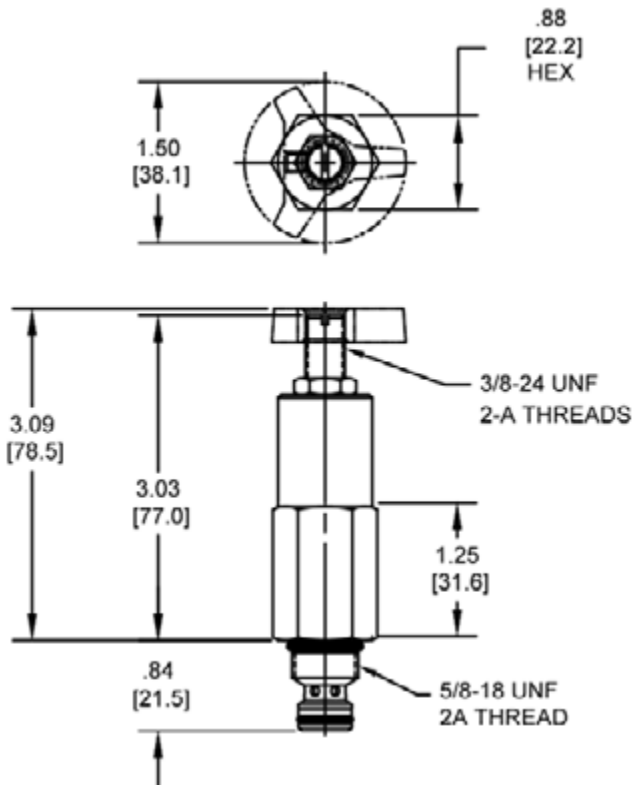


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DIMENSIONS



Body Weight: .29 lbs (.13 kg)

ORDERING INFORMATION

<p>MA-RVA -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 1/4" NPTF Ports</p> <p>S #6 SAE Ports</p>
<p>PRESSURE RANGE</p> <p>0500 100 - 500 PSI</p> <p>1500 500 - 1500 PSI</p> <p>3000 1500 - 3000 PSI</p>	

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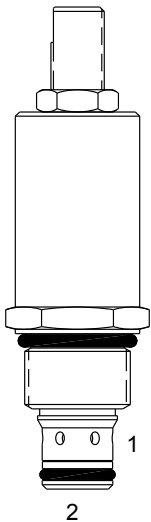


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PB-RVA DIRECT ACTING RELIEF VALVE



DESCRIPTION

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

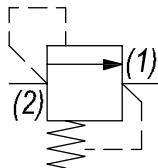
OPERATION

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.

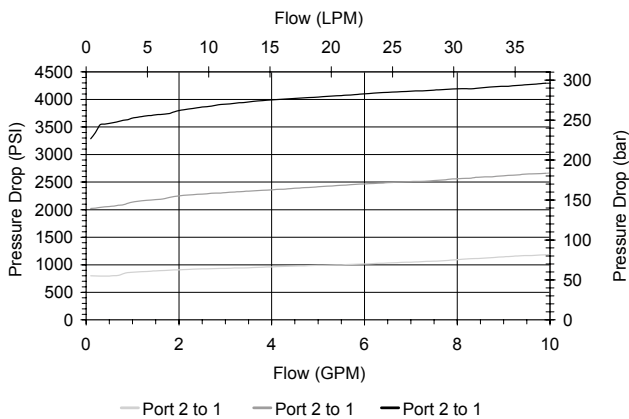
HYDRAULIC SYMBOL



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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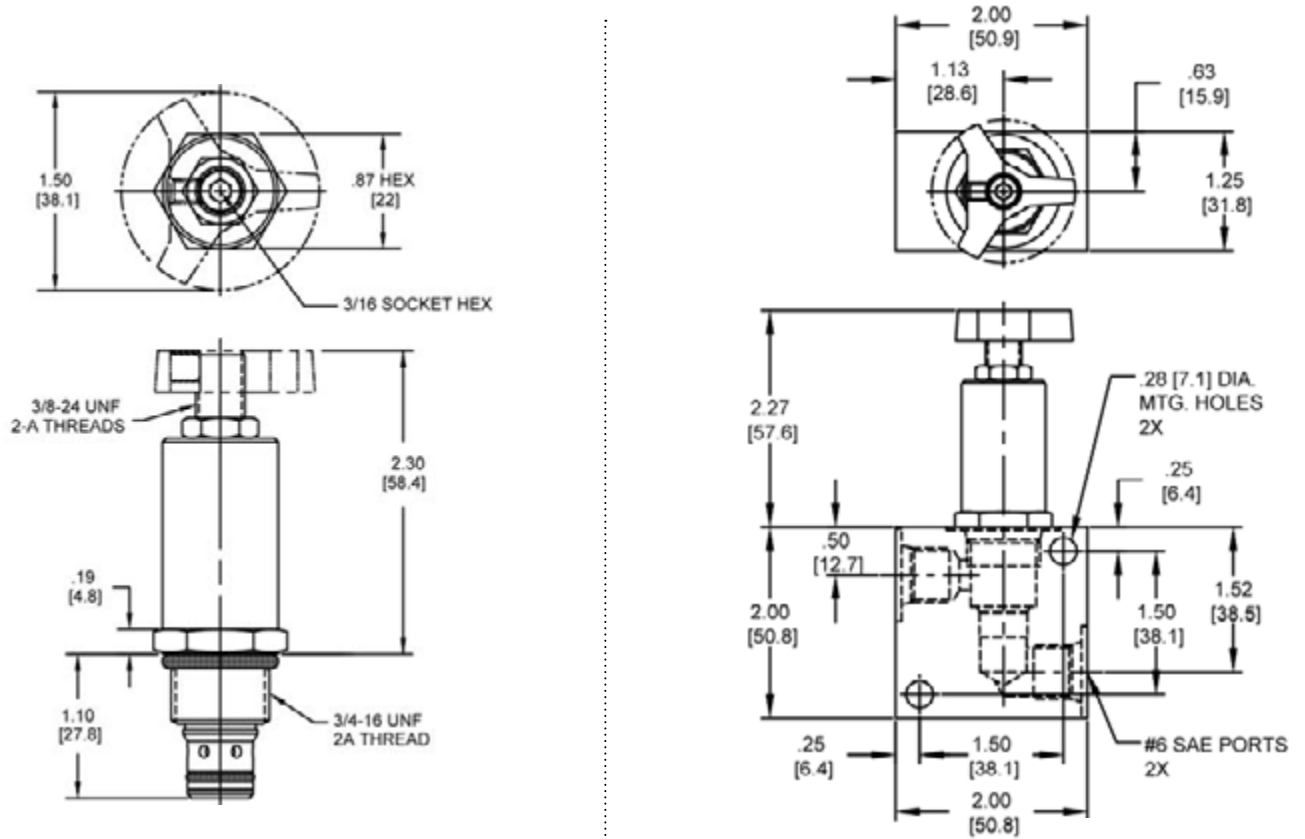


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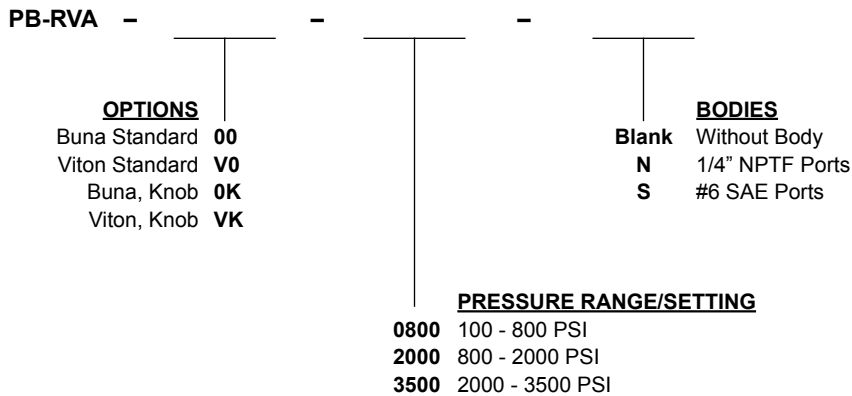
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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION



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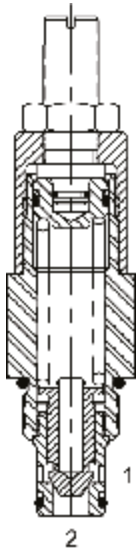


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DE-RVA DIRECT ACTING RELIEF VALVE



DESCRIPTION

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

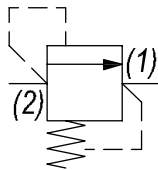
OPERATION

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

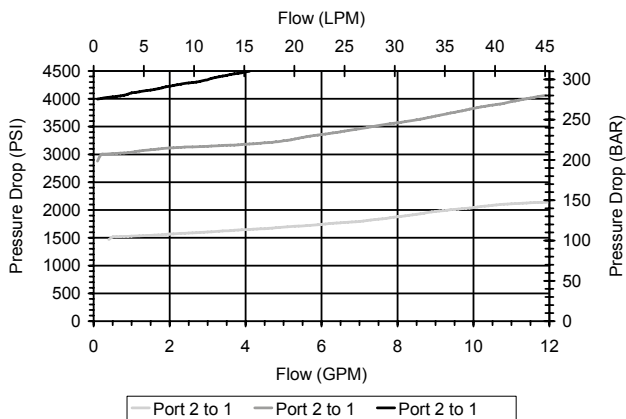
- Hardened parts for long life.
- Industry common cavity.

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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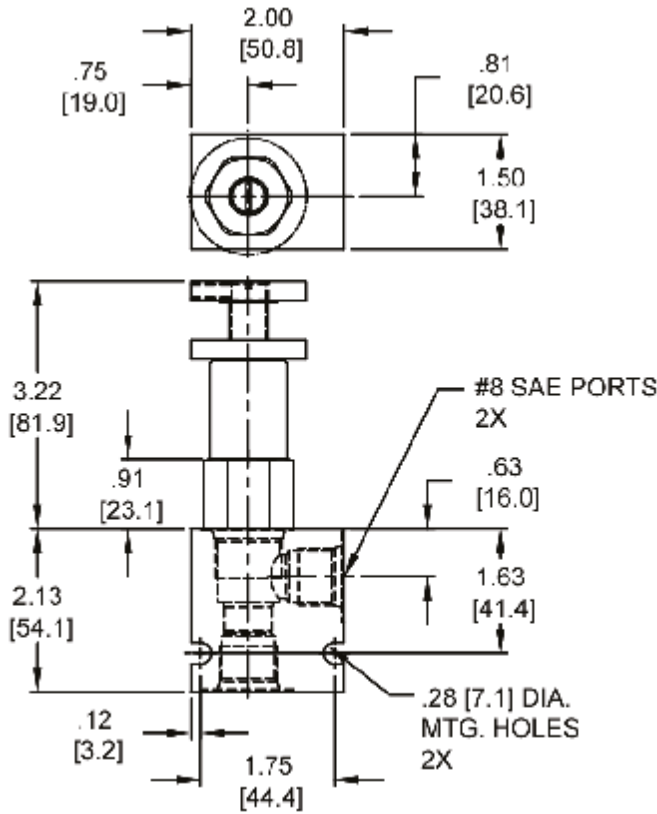
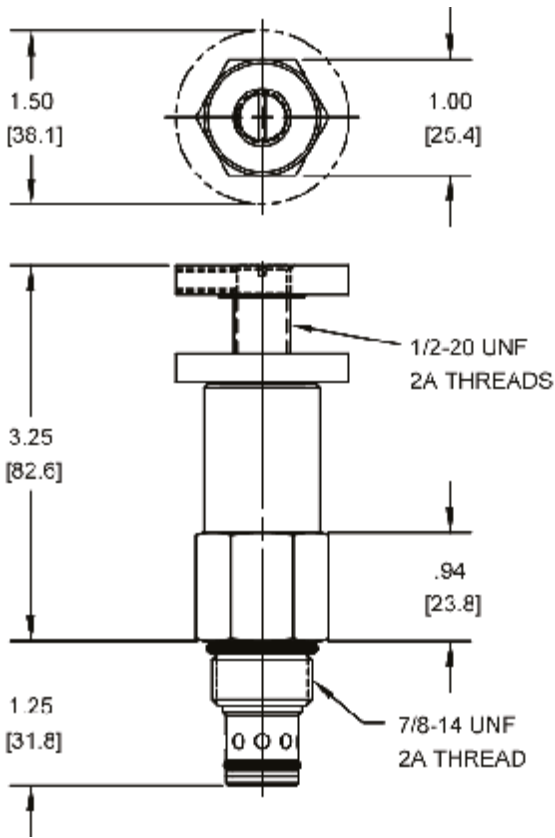


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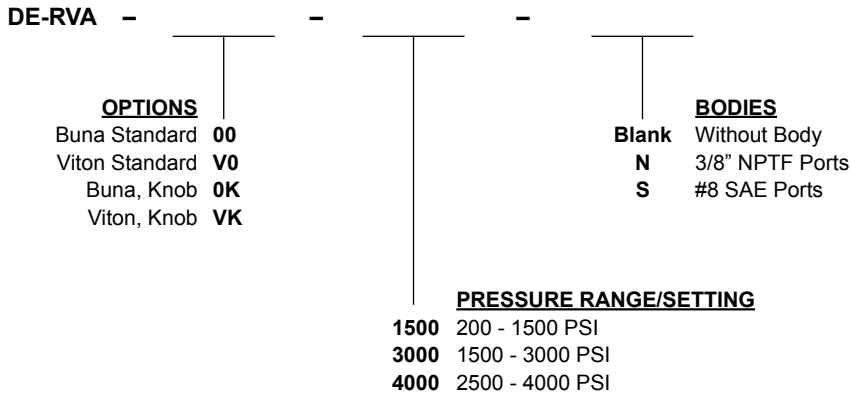
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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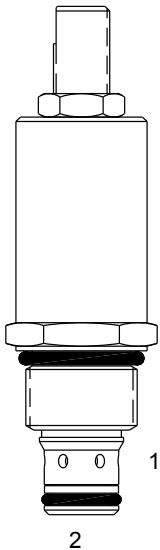


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PB-RWA DIRECT ACTING RELIEF VALVE



DESCRIPTION

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

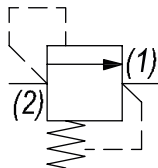
OPERATION

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.

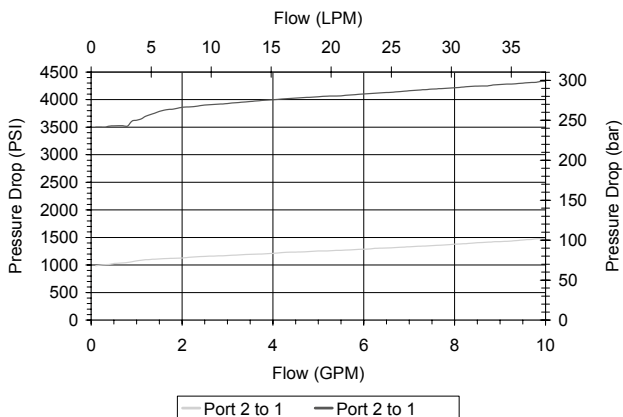
HYDRAULIC SYMBOL



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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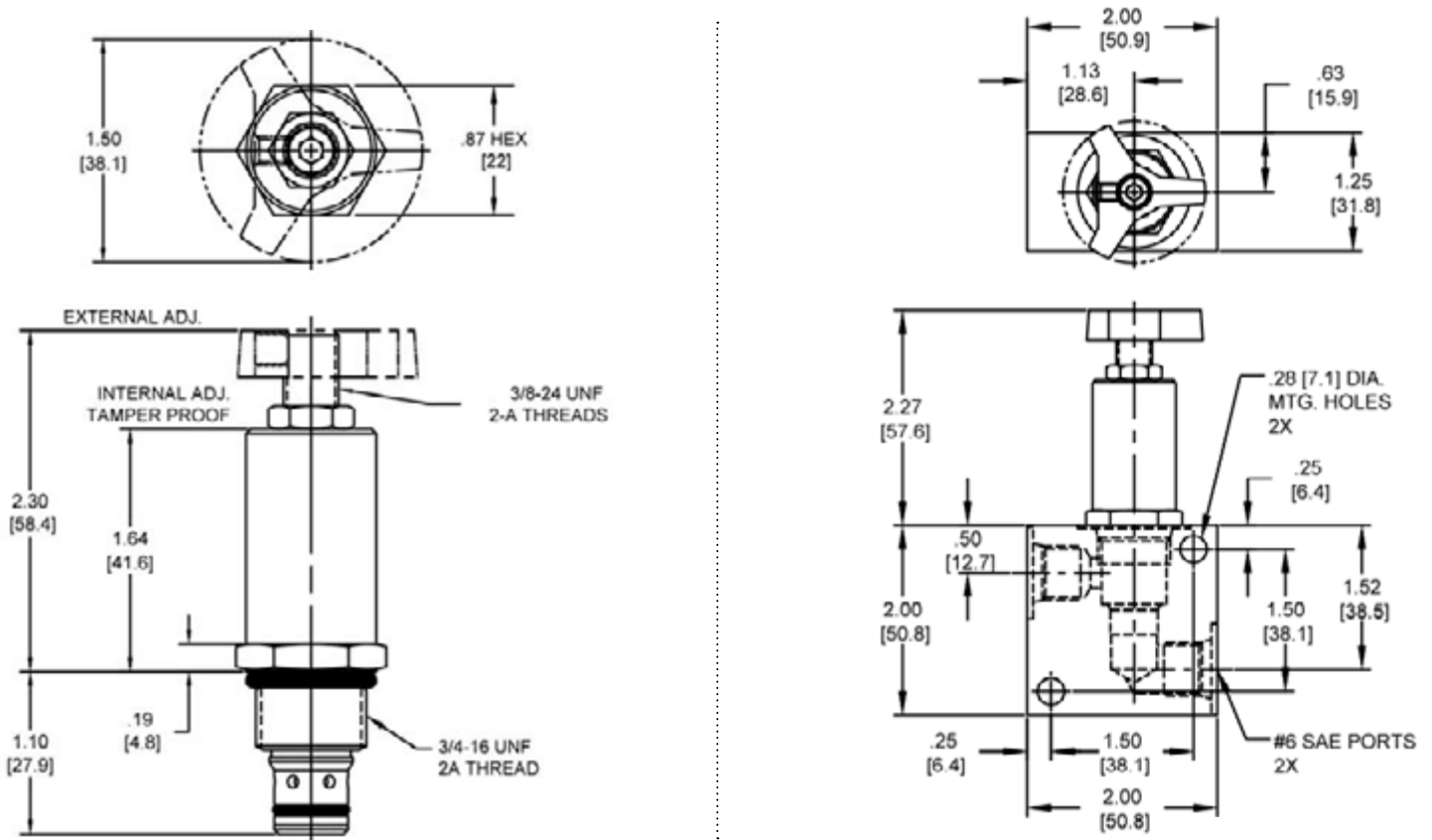


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-RWA - - -

OPTIONS

- 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**

BODIES

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

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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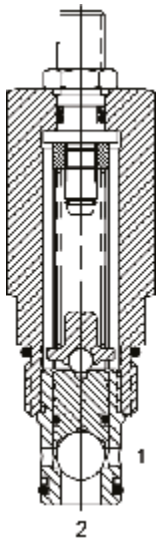


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DE-RWA DIRECT ACTING RELIEF VALVE



DESCRIPTION

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

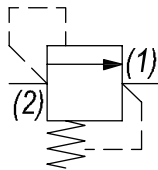
OPERATION

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.

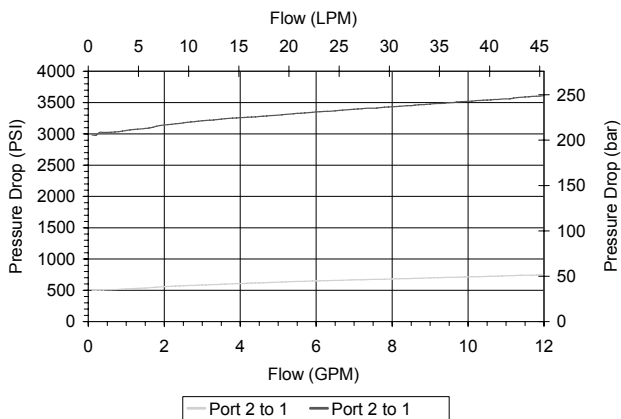
HYDRAULIC SYMBOL



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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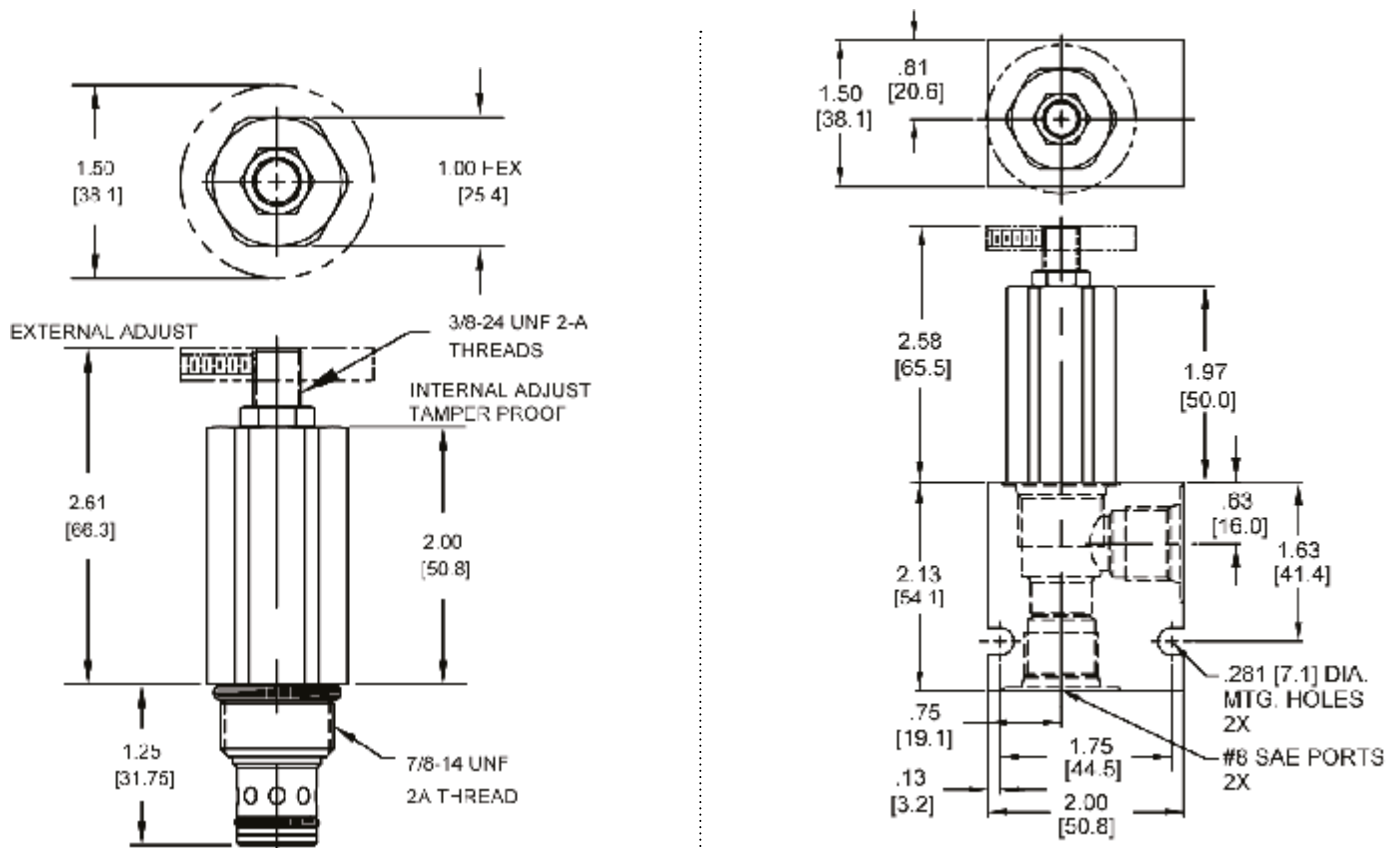


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DIMENSIONS



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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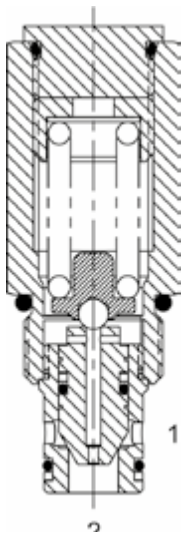


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DE-RCD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

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

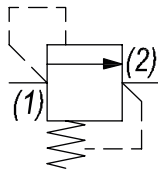
OPERATION

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.

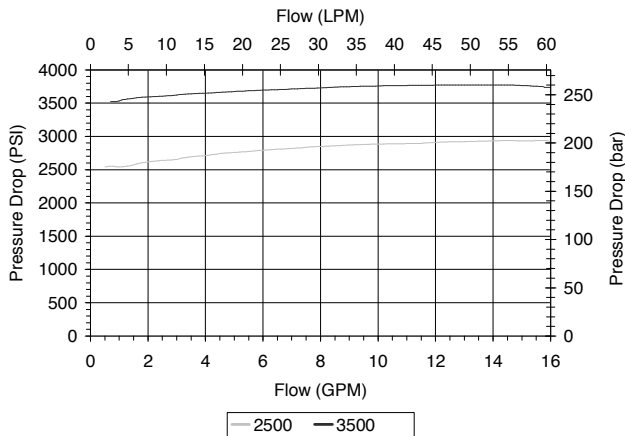
HYDRAULIC SYMBOL



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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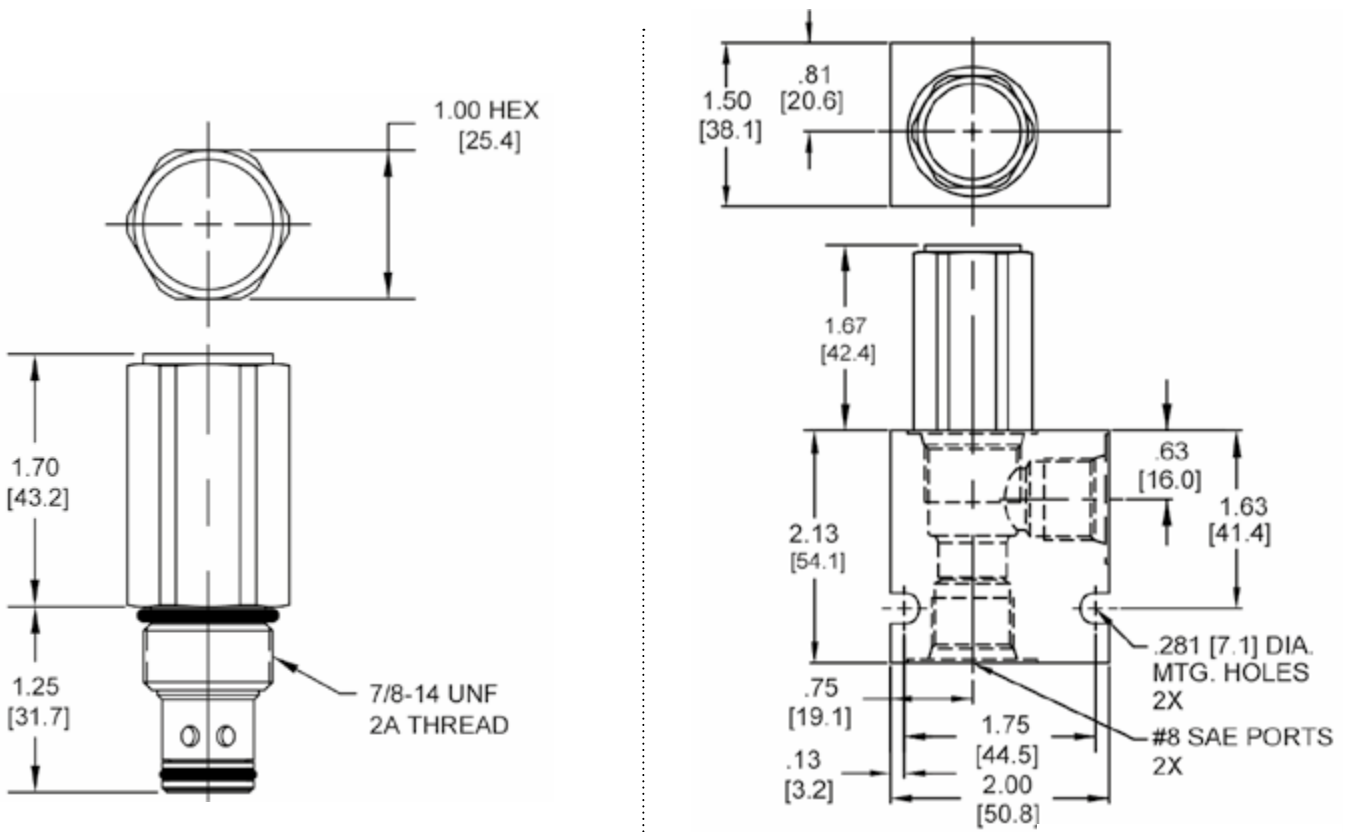


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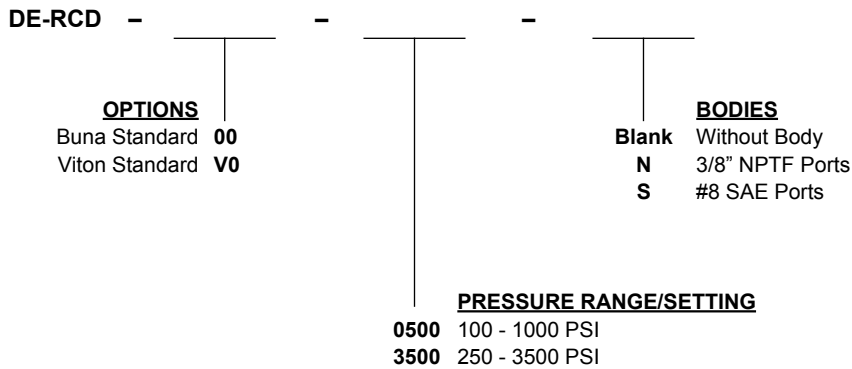
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



W 40 / 2017

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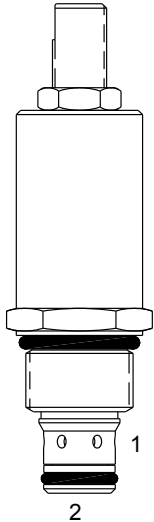


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PB-RVD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

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

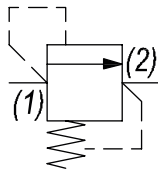
OPERATION

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.

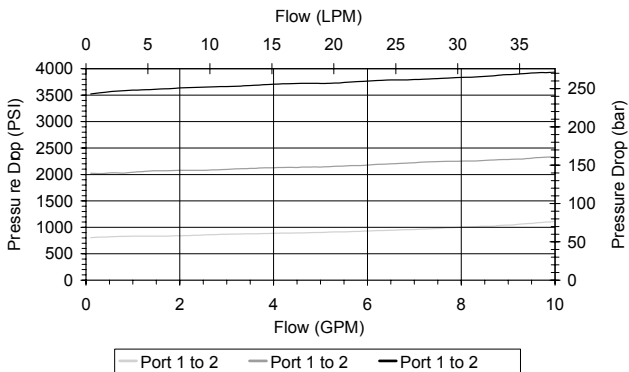
HYDRAULIC SYMBOL



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.

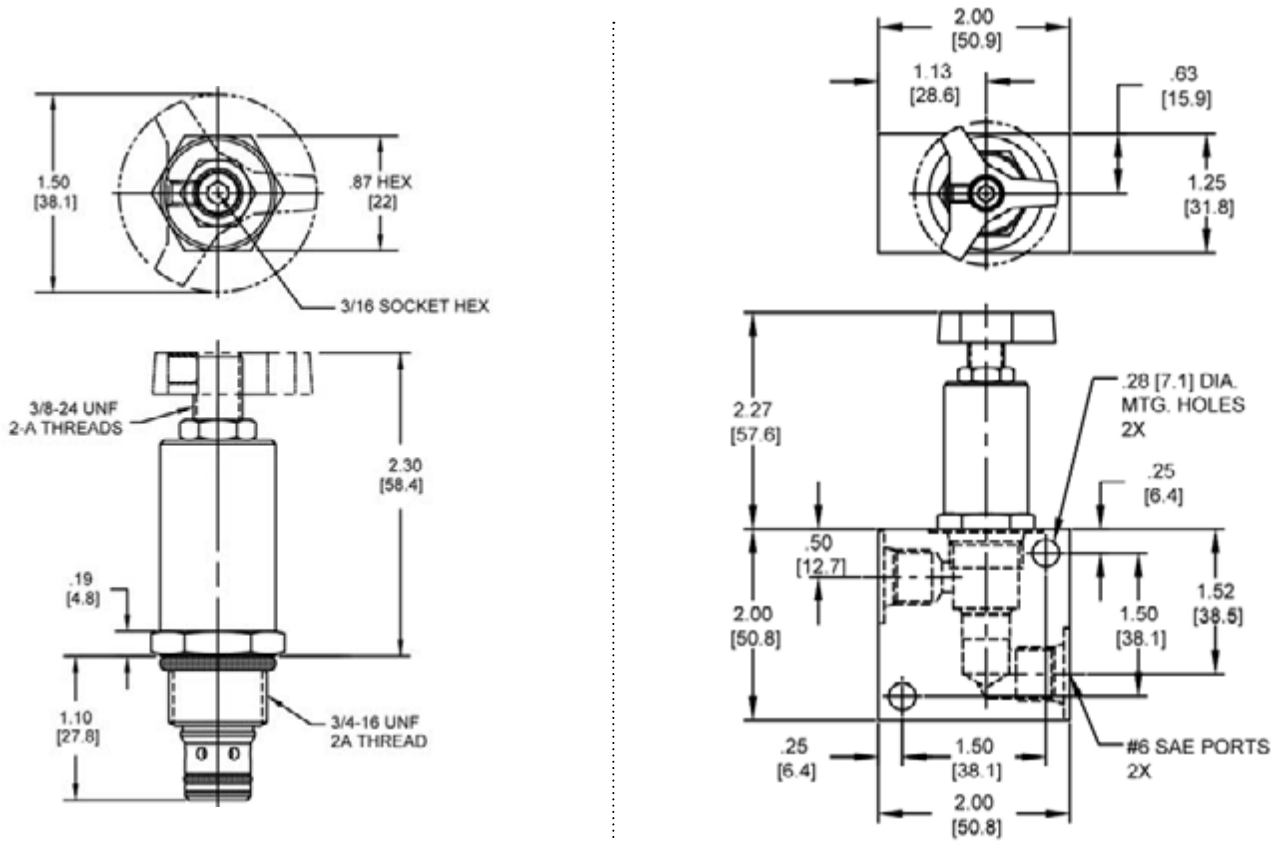


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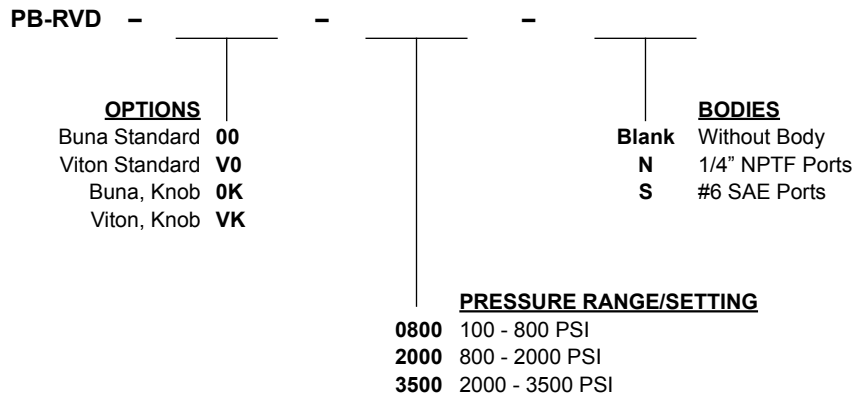
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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION



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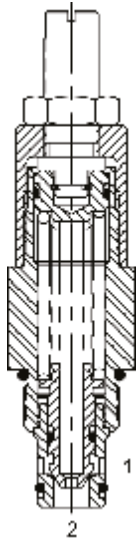


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DE-RVD DIFFERENTIAL AREA RELIEF VALVE



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.

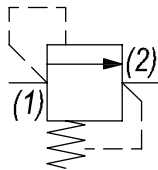
FEATURES

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



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

HYDRAULIC SYMBOL

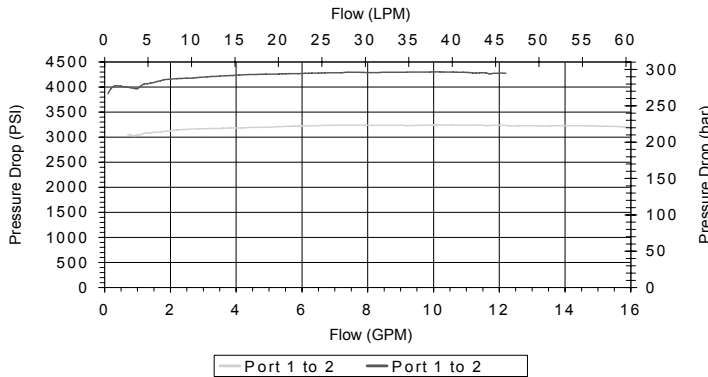
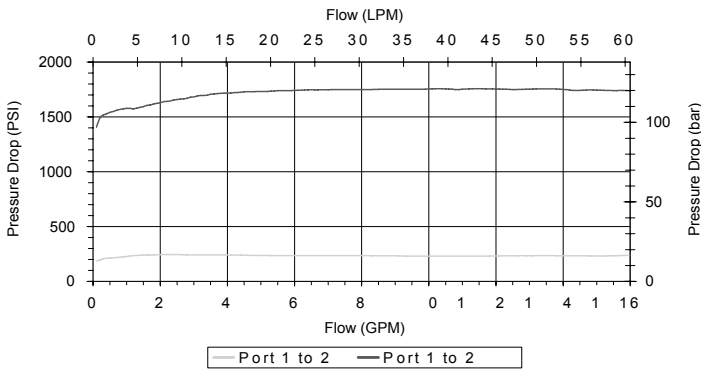


PERFORMANCE

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



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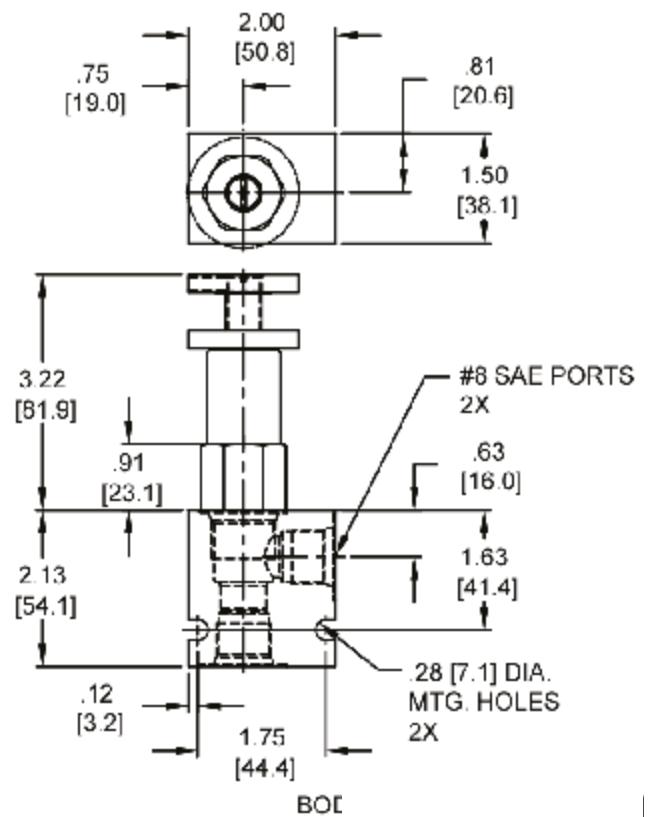
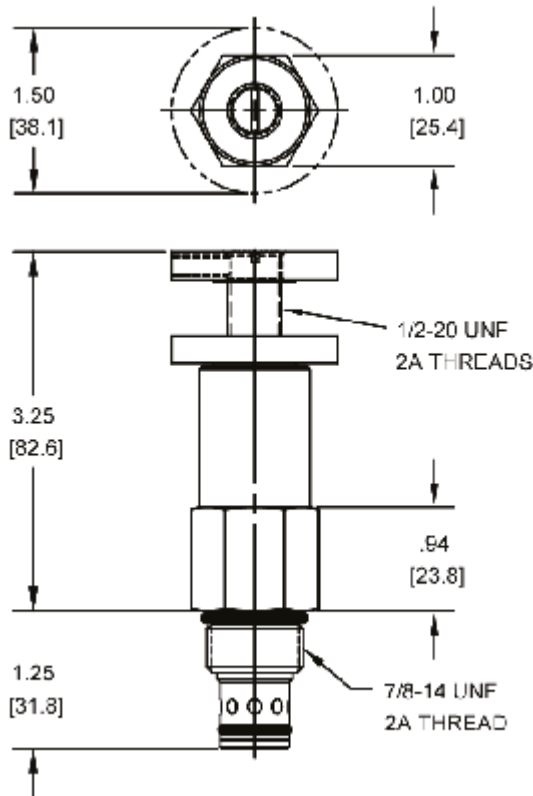


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

<p>DE-RVD -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Screen A0</p> <p>Viton, Screen W0</p> <p>Buna, Knob OK</p> <p>Viton, Knob VK</p> <p>Buna, Knob, Screen AK</p> <p>Viton, Knob, Screen WK</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 3/8" NPTF Ports</p> <p>S #8 SAE Ports</p>	<p>PRESSURE RANGE/SETTING</p> <p>0200 50 - 200 PSI</p> <p>1500 200 - 1500 PSI</p> <p>3000 1500 - 3000 PSI</p> <p>4000 2500 - 4000 PSI</p>
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Note: use screen only if flow direction is from (1) to (2).

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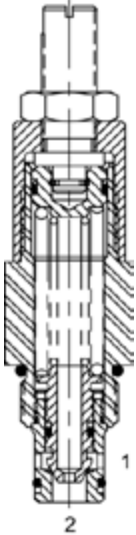


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HE-RVD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

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

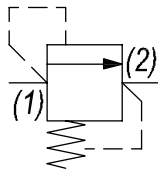
OPERATION

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.

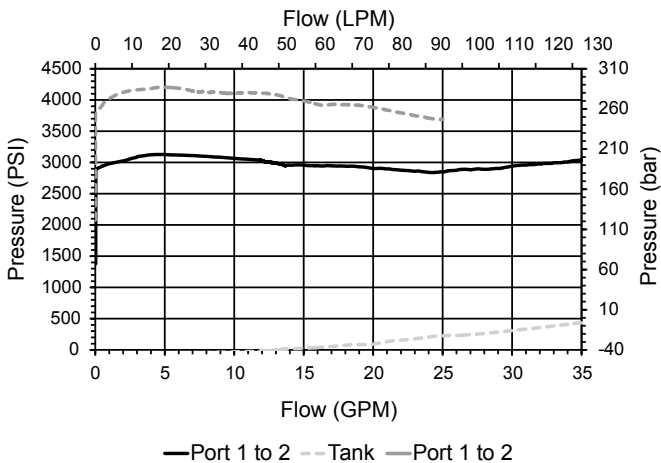
HYDRAULIC SYMBOL



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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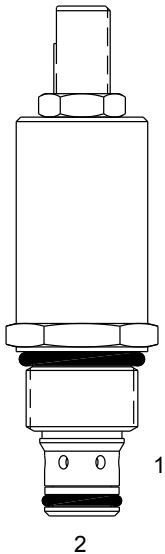
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PB-RWD DIFFERENTIAL AREA RELIEF VALVE



DESCRIPTION

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

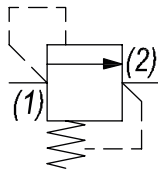
OPERATION

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.

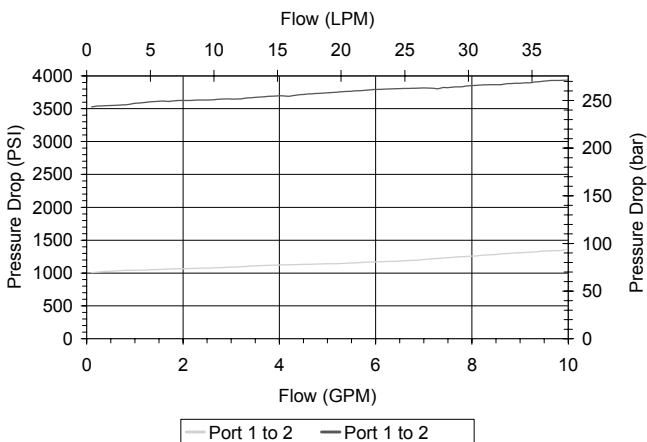
HYDRAULIC SYMBOL



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

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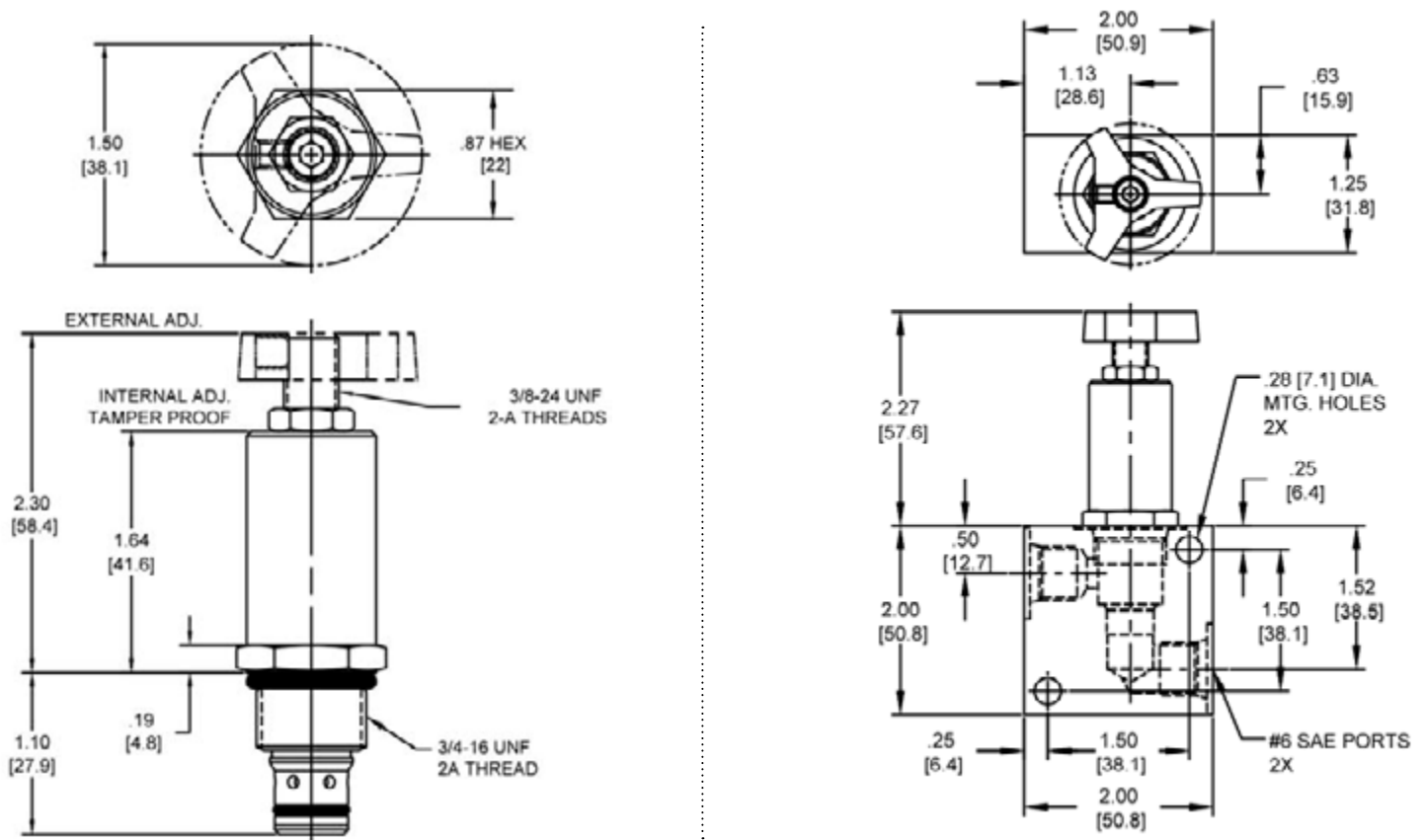


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DIMENSIONS



Body Weight: .39 lbs (.18 kg)

ORDERING INFORMATION

PB-RWD - - -

OPTIONS

- 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**

BODIES

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

PRESSURE RANGE/SETTING

Ext./Int. Adjustable

- 1000** 100 - 1000 PSI
- 3500** 500 - 3500 PSI

Tamper Proof

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

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DE-RWD DIFFERENTIAL AREA RELIEF VALVE

DESCRIPTION

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

OPERATION

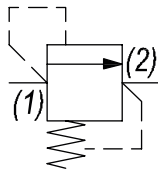
The DE-RWD blocks flow from (1) to (2) until sufficient pressure is present at (1) to force the poppet to open and allow metered flow from (1) to (2).

FEATURES

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

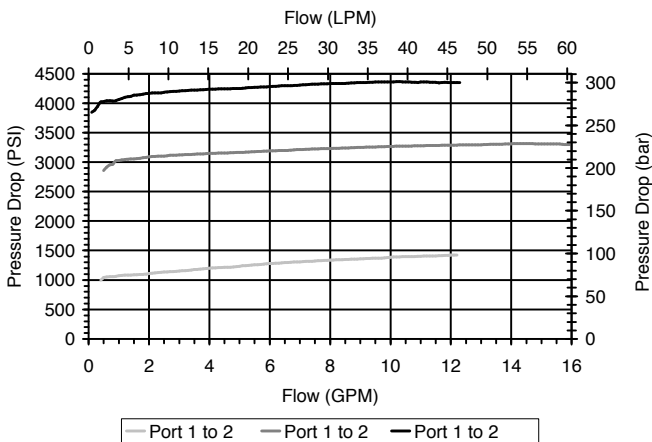


HYDRAULIC SYMBOL



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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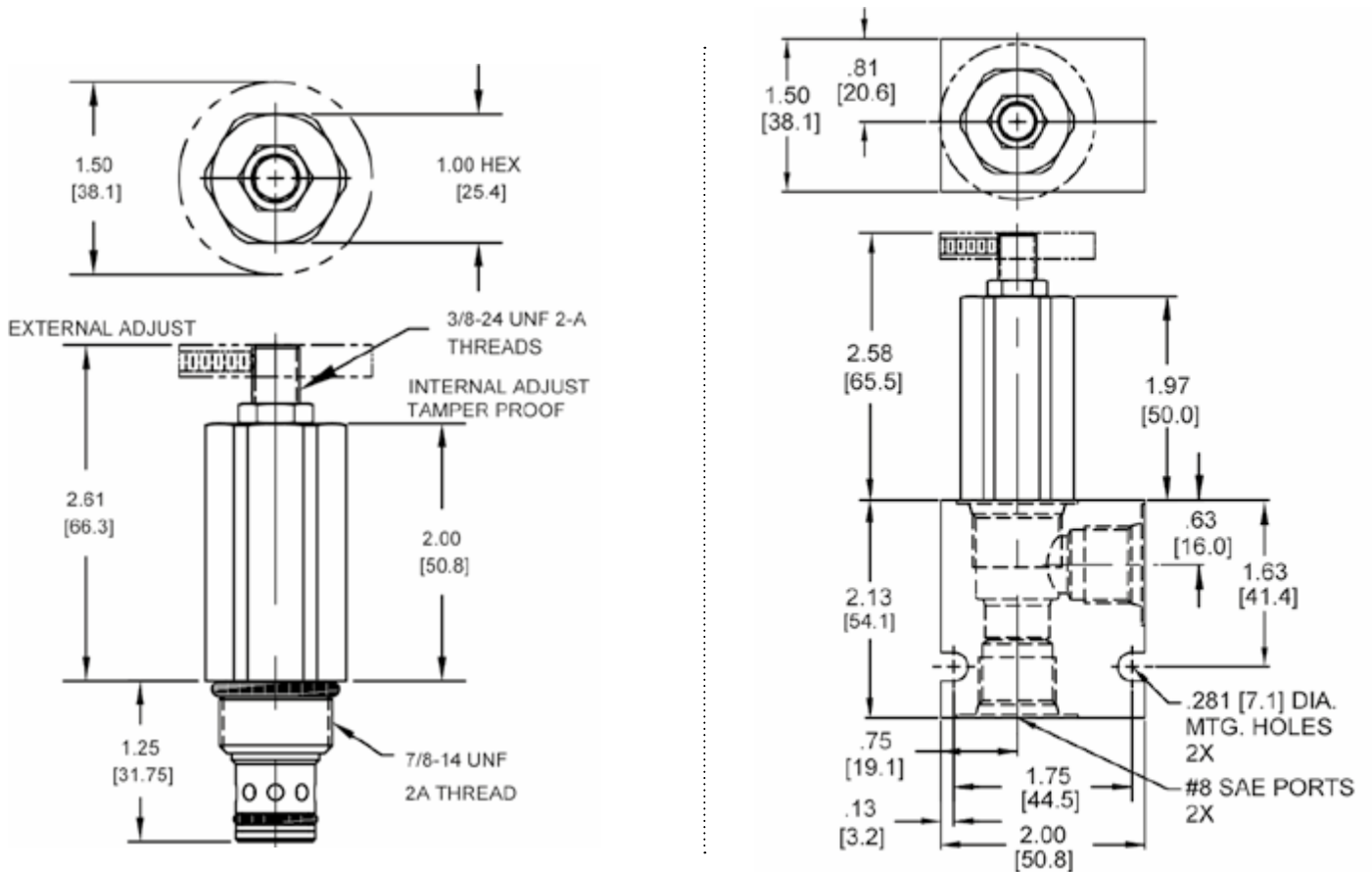


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RWD - - - -

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. 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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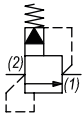
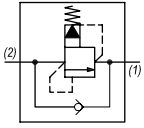
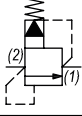
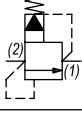
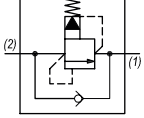


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PILOT OPERATED RELIEF VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	20	4000	76	276	7/8-14	DE-RVP	MP30
	20	5000	76	345	1 1/16-12	HT-RVP	MP32
	15	4000	57	276	7/8-14	DE-RVR	MP34
	40	3500	151	241	1 5/16-12	SJ-RVR	MP36
	15	4000	57	276	7/8-14	DE-RWP	MP38
	40	5000	151	345	7/8-14	HE-RWP	MP40
	15	4000	57	276	7/8-14	DE-RWR	MP42

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.

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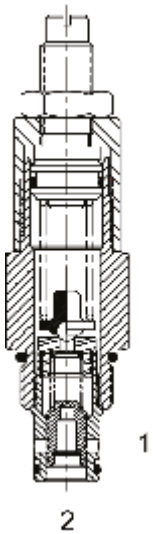


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DE-RVP PILOT OPERATED RELIEF VALVE



DESCRIPTION

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

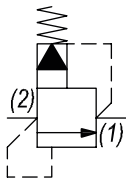
OPERATION

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

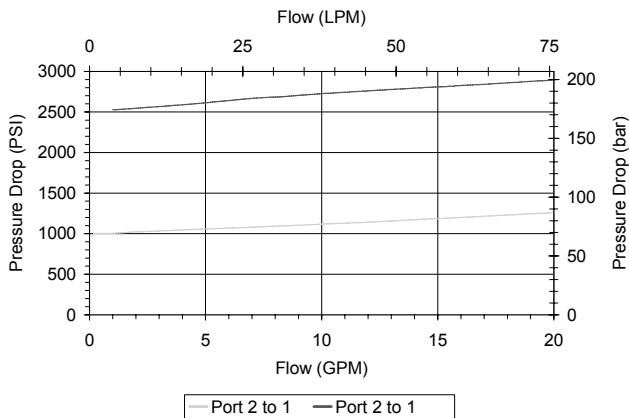
- Hardened parts for long life.
- Industry common cavity.

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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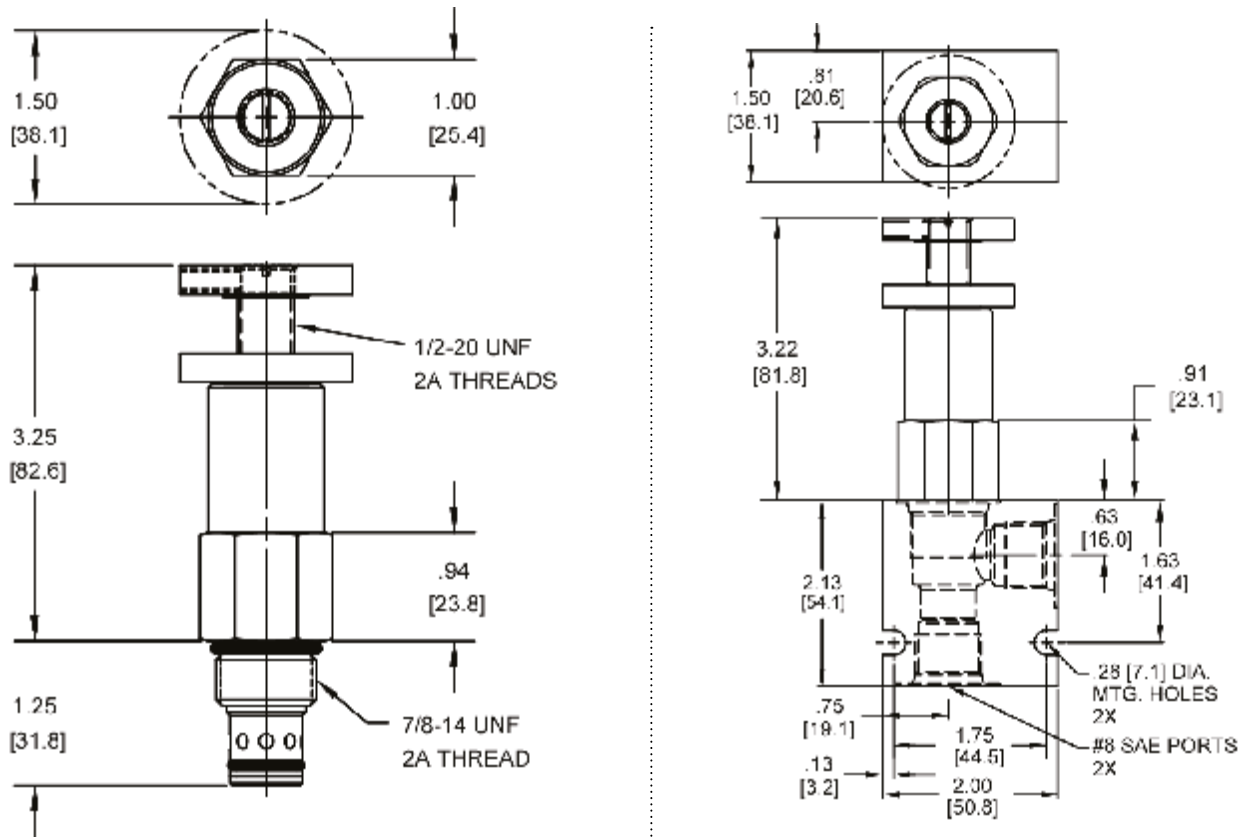


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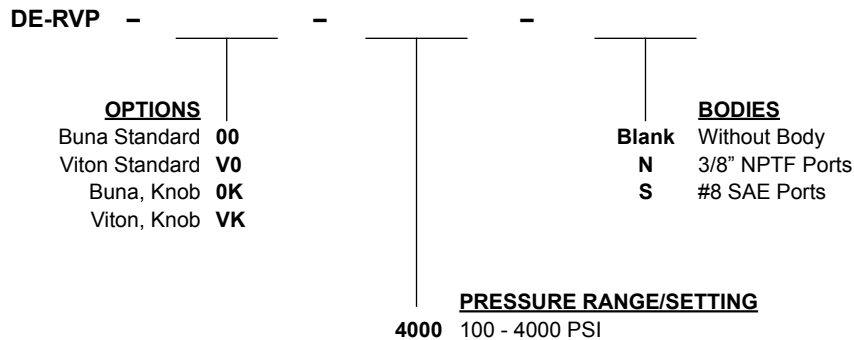
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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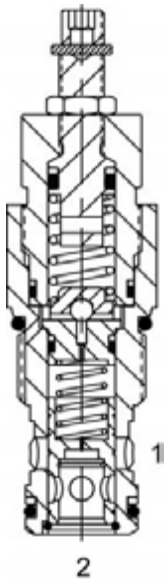


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HT-RVP PILOT OPERATED RELIEF VALVE



DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnord" 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.

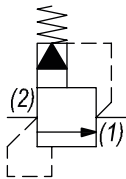
FEATURES

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



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

HYDRAULIC SYMBOL

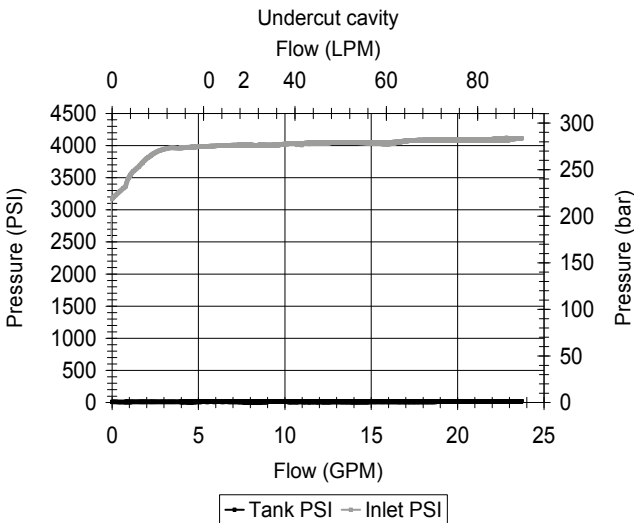
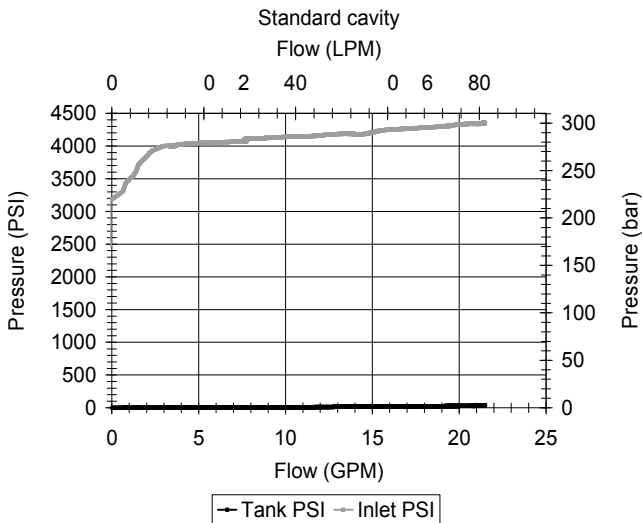


PERFORMANCE

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



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.

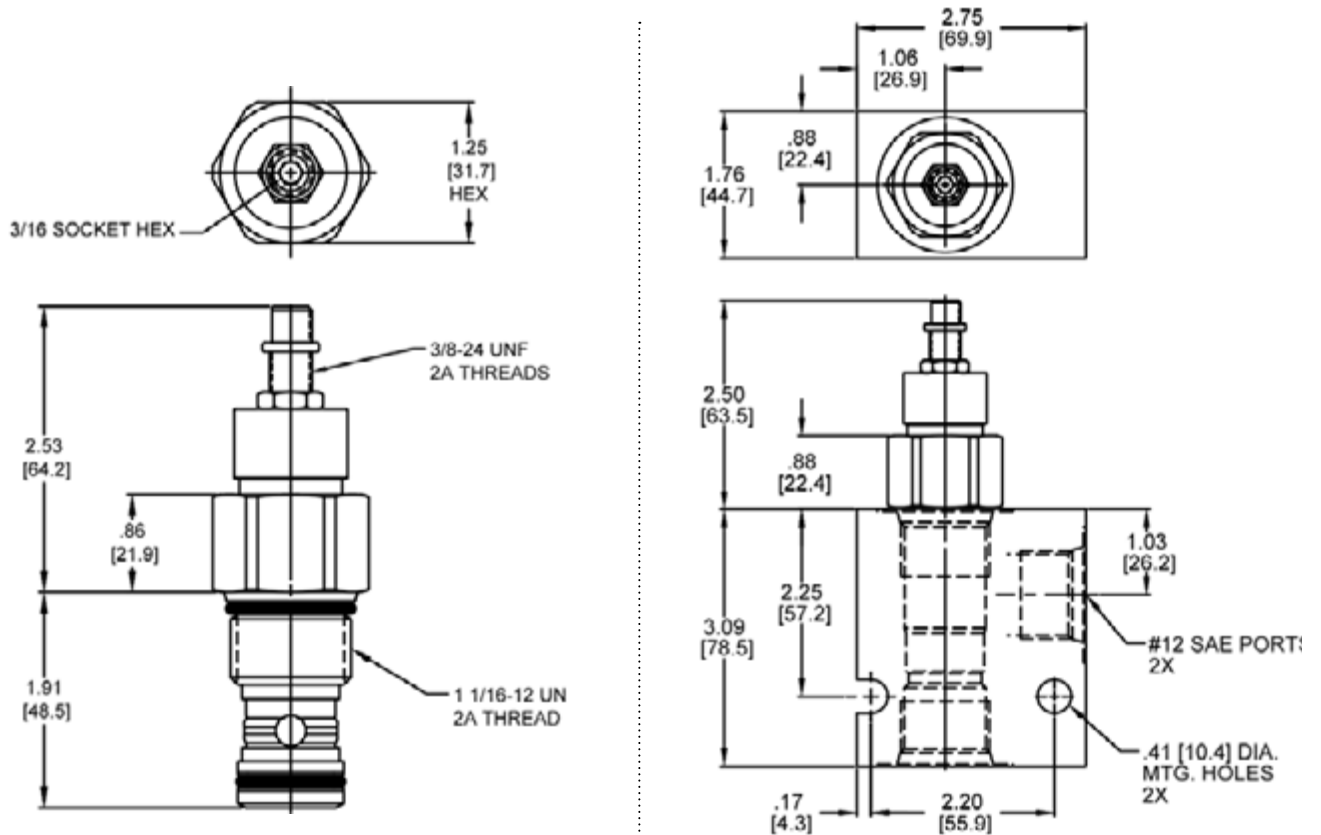


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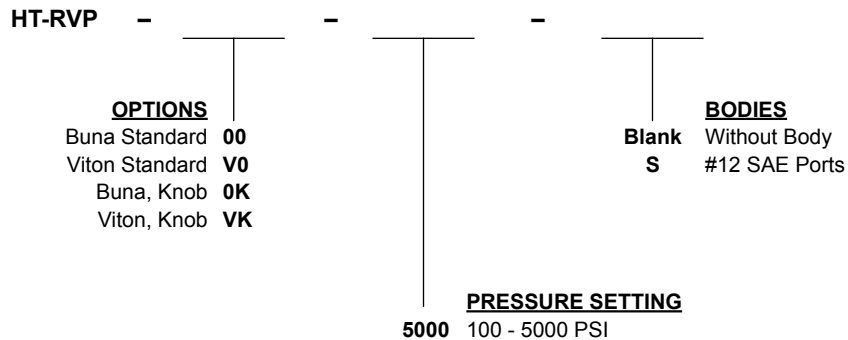
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DIMENSIONS



Body Weight: 3.71 lbs (1.68 kg)

ORDERING INFORMATION



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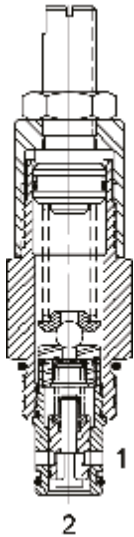


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DE-RVR PILOT OPERATED RELIEF VALVE, WITH REVERSE FLOW



DESCRIPTION

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

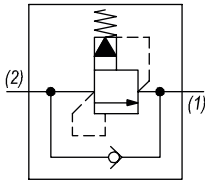
OPERATION

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.

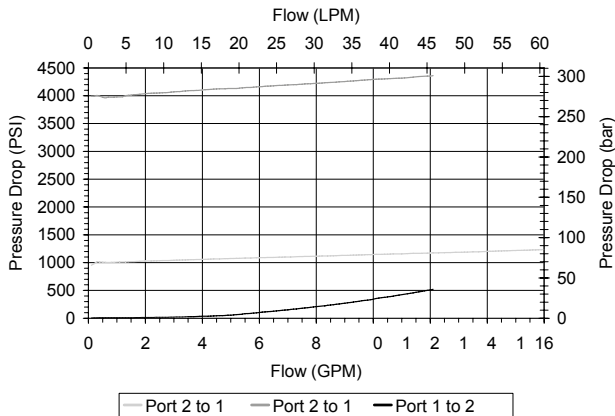
HYDRAULIC SYMBOL



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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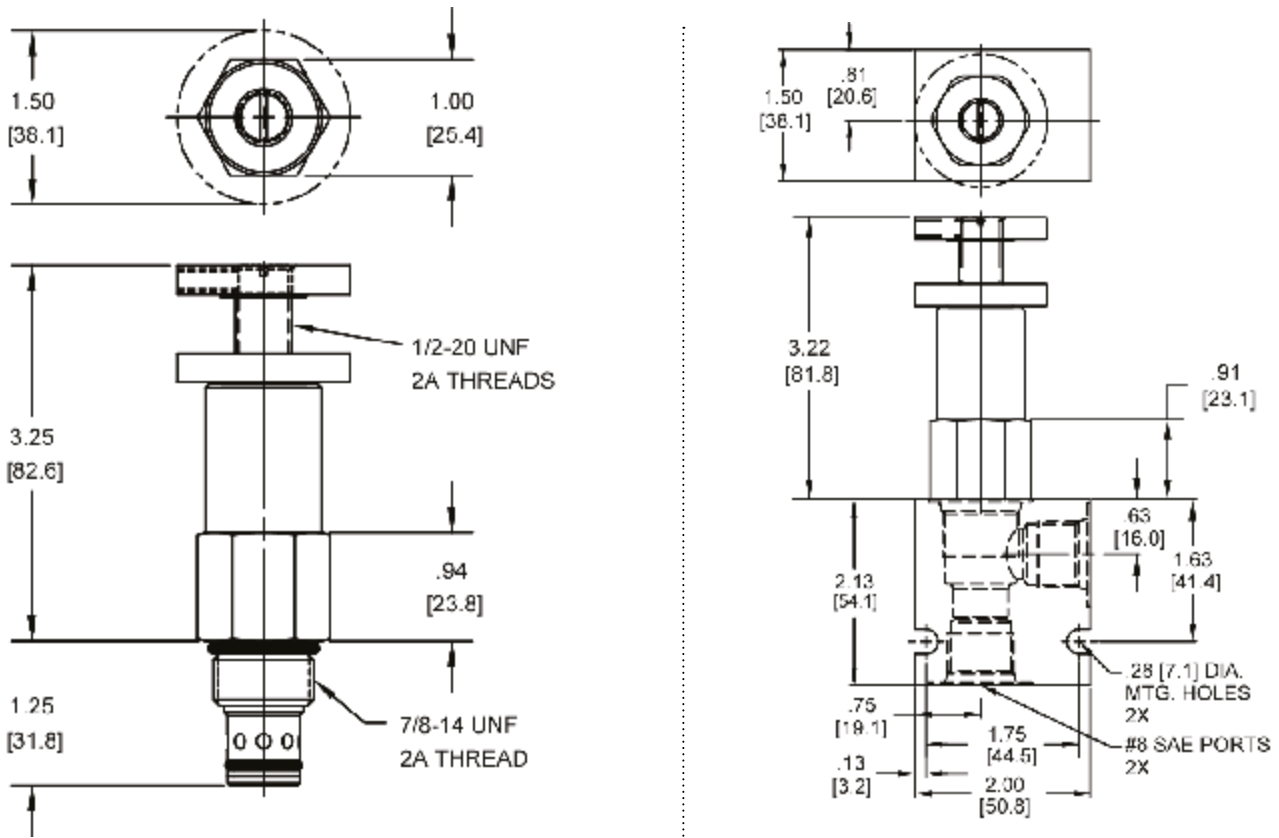


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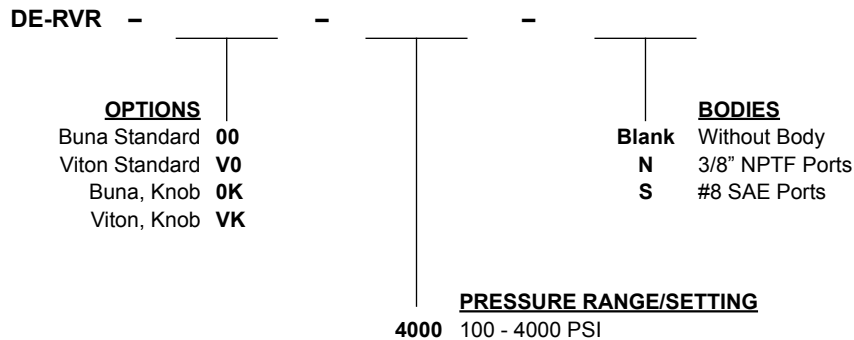
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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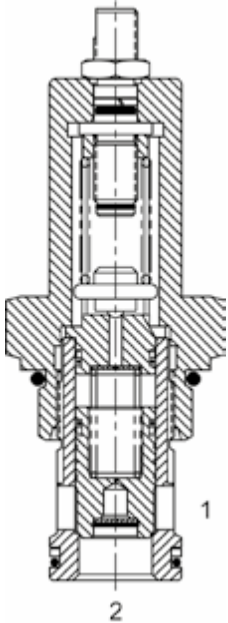


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SJ-RVR PILOT OPERATED RELIEF VALVE, WITH REVERSE FLOW



DESCRIPTION

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

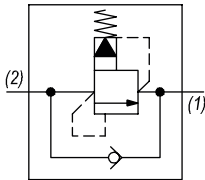
OPERATION

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

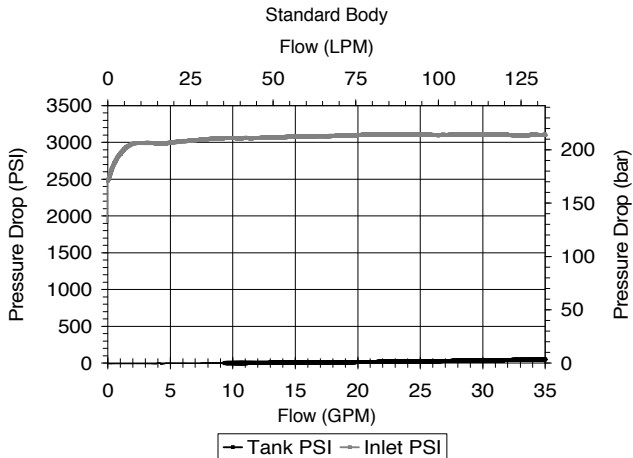
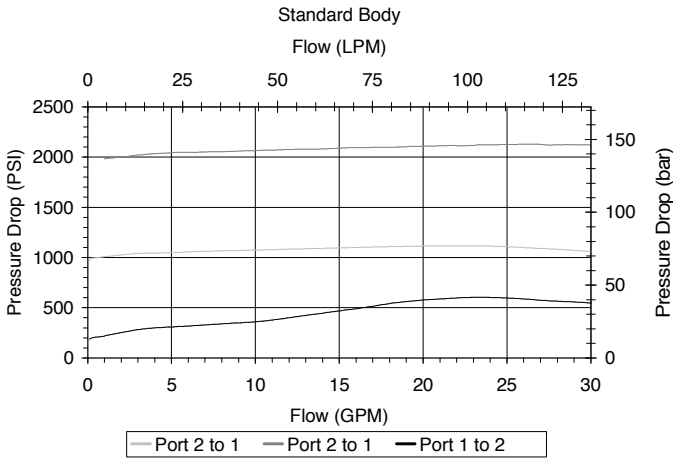


PERFORMANCE

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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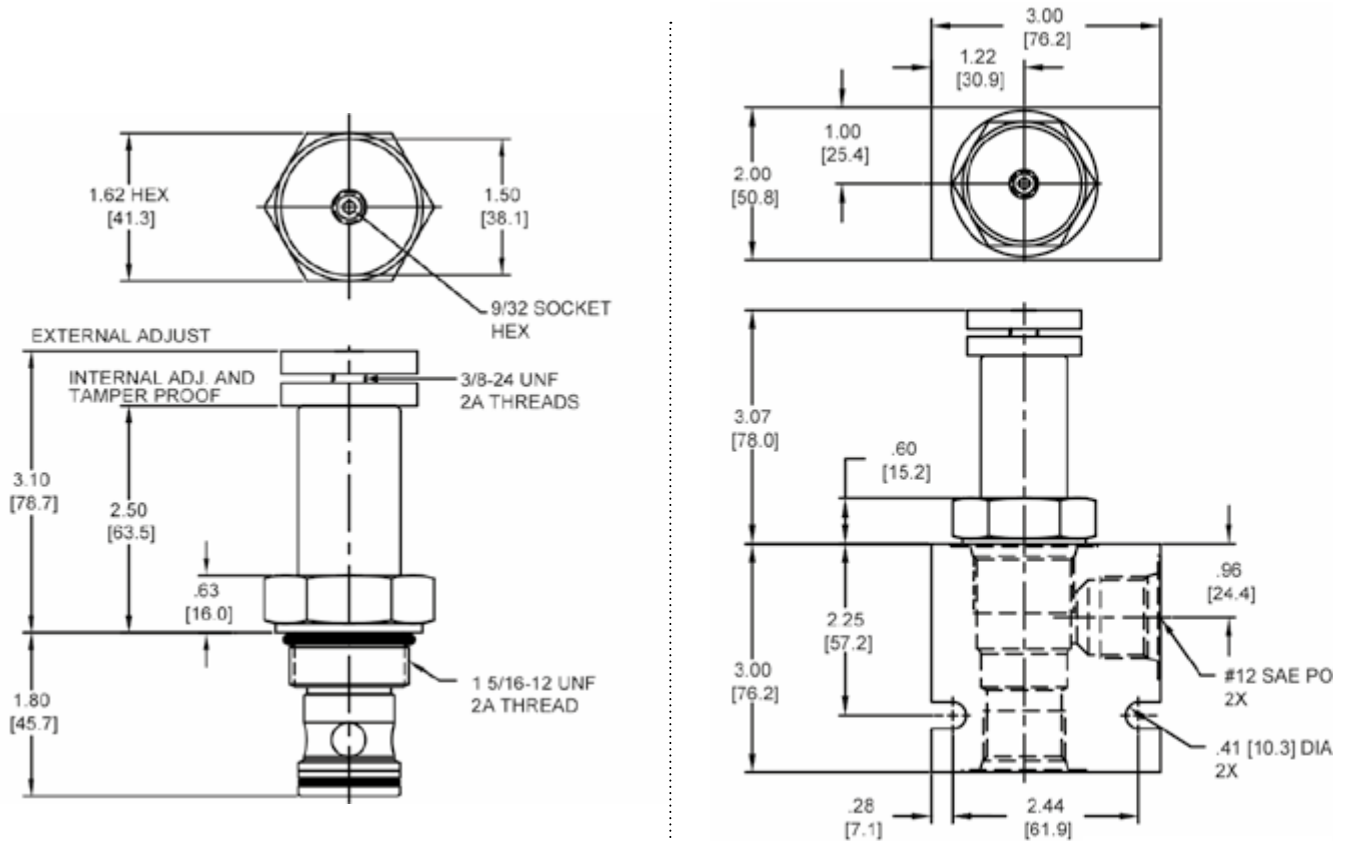


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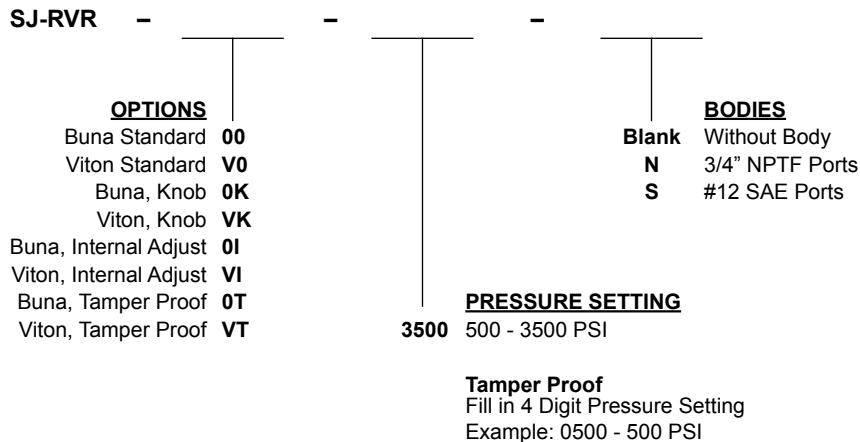
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DIMENSIONS



Body Weight: 1.29 lbs (.59 kg)

ORDERING INFORMATION



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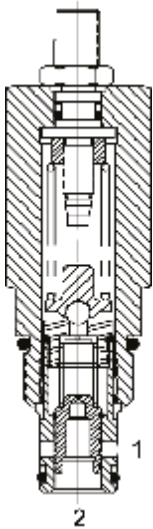


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DE-RWP PILOT OPERATED RELIEF VALVE



DESCRIPTION

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

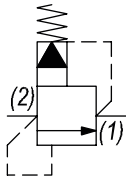
OPERATION

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

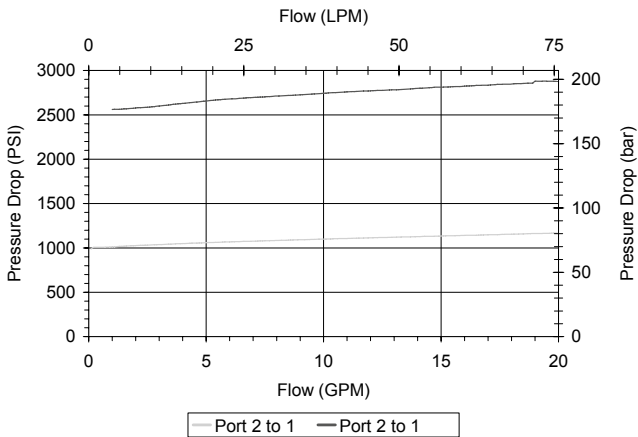
- Hardened parts for long life.
- Industry common cavity.

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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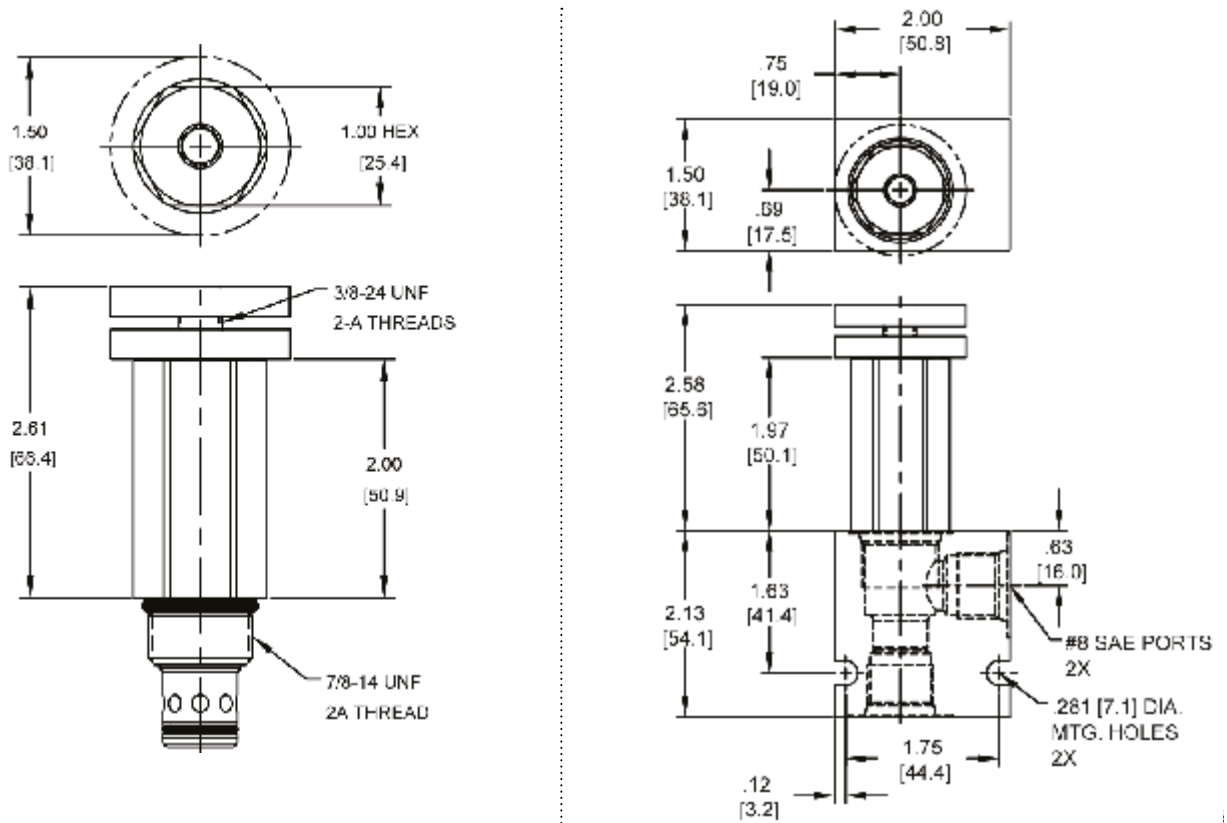


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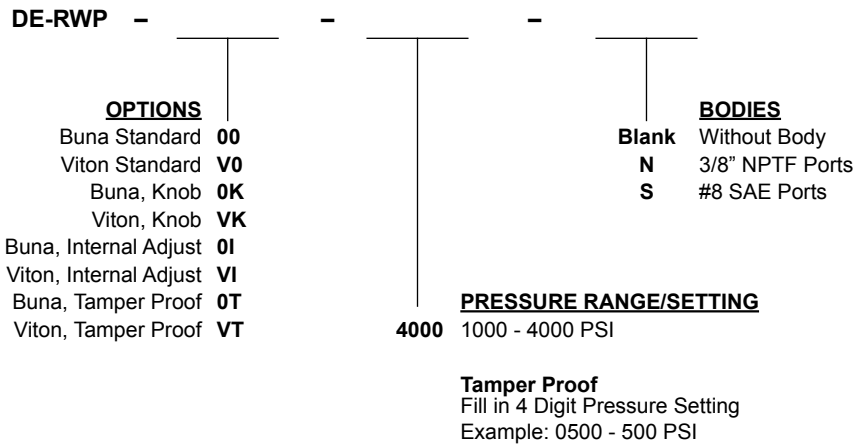
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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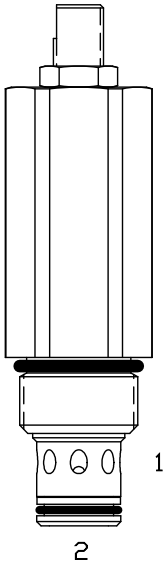


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HE-RWP RAPID RESPONSE, PILOT OPERATED RELIEF VALVE



DESCRIPTION

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

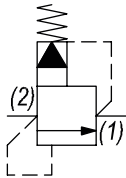
OPERATION

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).

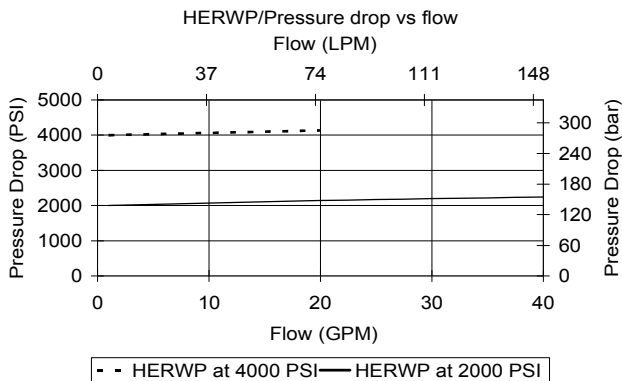
HYDRAULIC SYMBOL



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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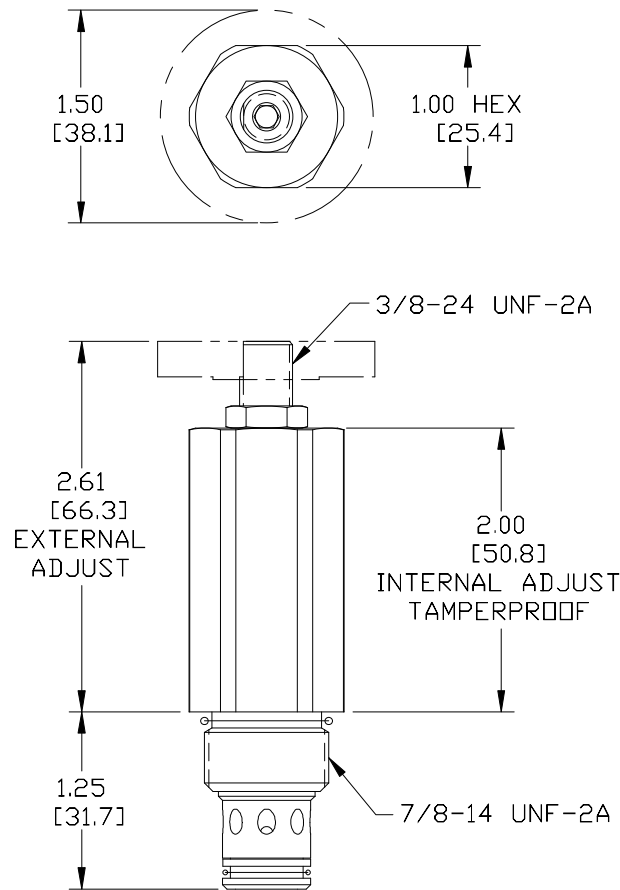


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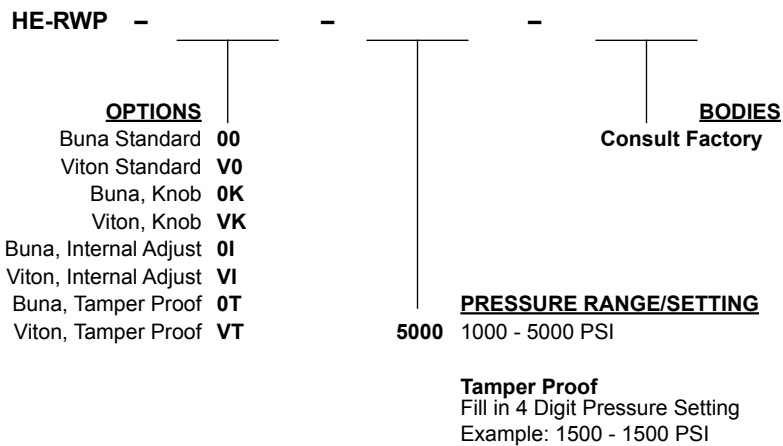


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DIMENSIONS



ORDERING INFORMATION



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

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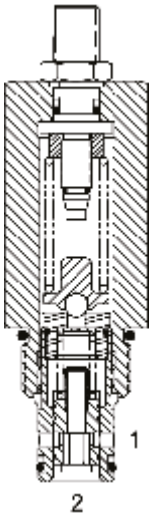


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DE-RWR PILOT OPERATED RELIEF VALVE, WITH REVERSE FLOW



DESCRIPTION

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

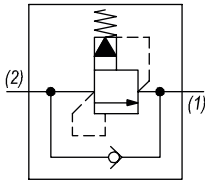
OPERATION

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.

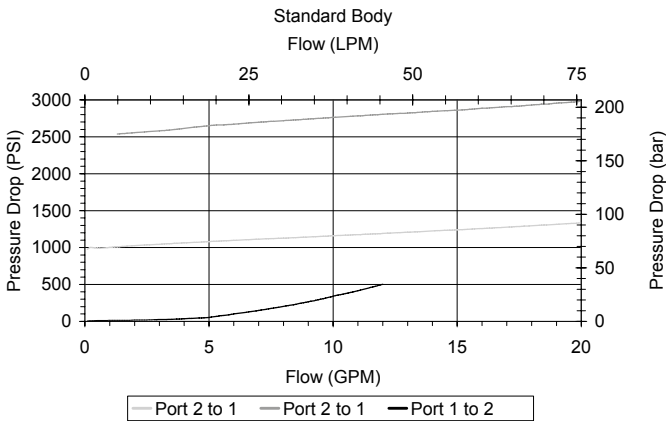
HYDRAULIC SYMBOL



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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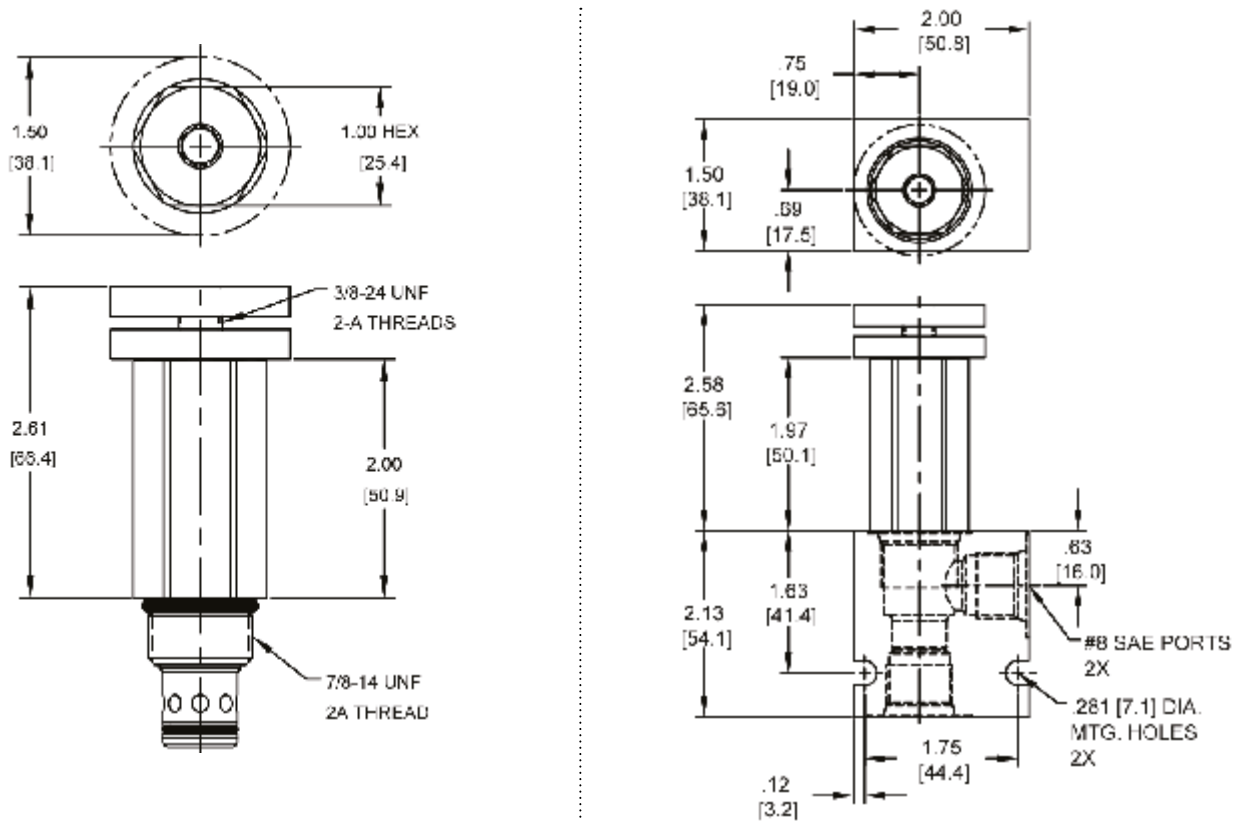


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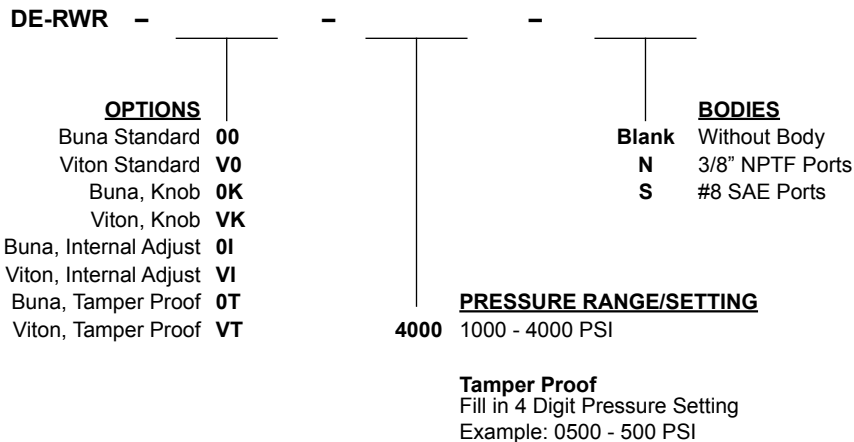
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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CROSSOVER RELIEF VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	15	4000	57	276	7/8-14	DE-RVB	MP46
	15	4000	57	276	7/8-14	DE-RVC	MP48

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.

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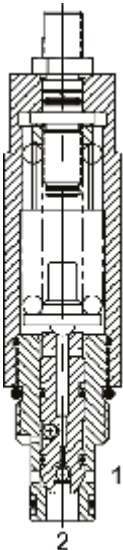


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DE-RVB CROSSOVER RELIEF VALVE, FOR PARALLEL CIRCUITS



DESCRIPTION

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

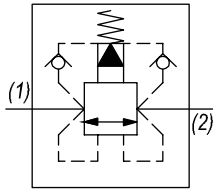
OPERATION

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.

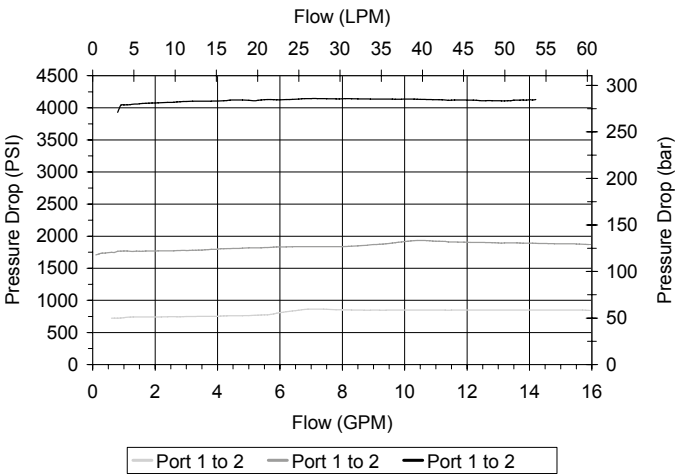
HYDRAULIC SYMBOL



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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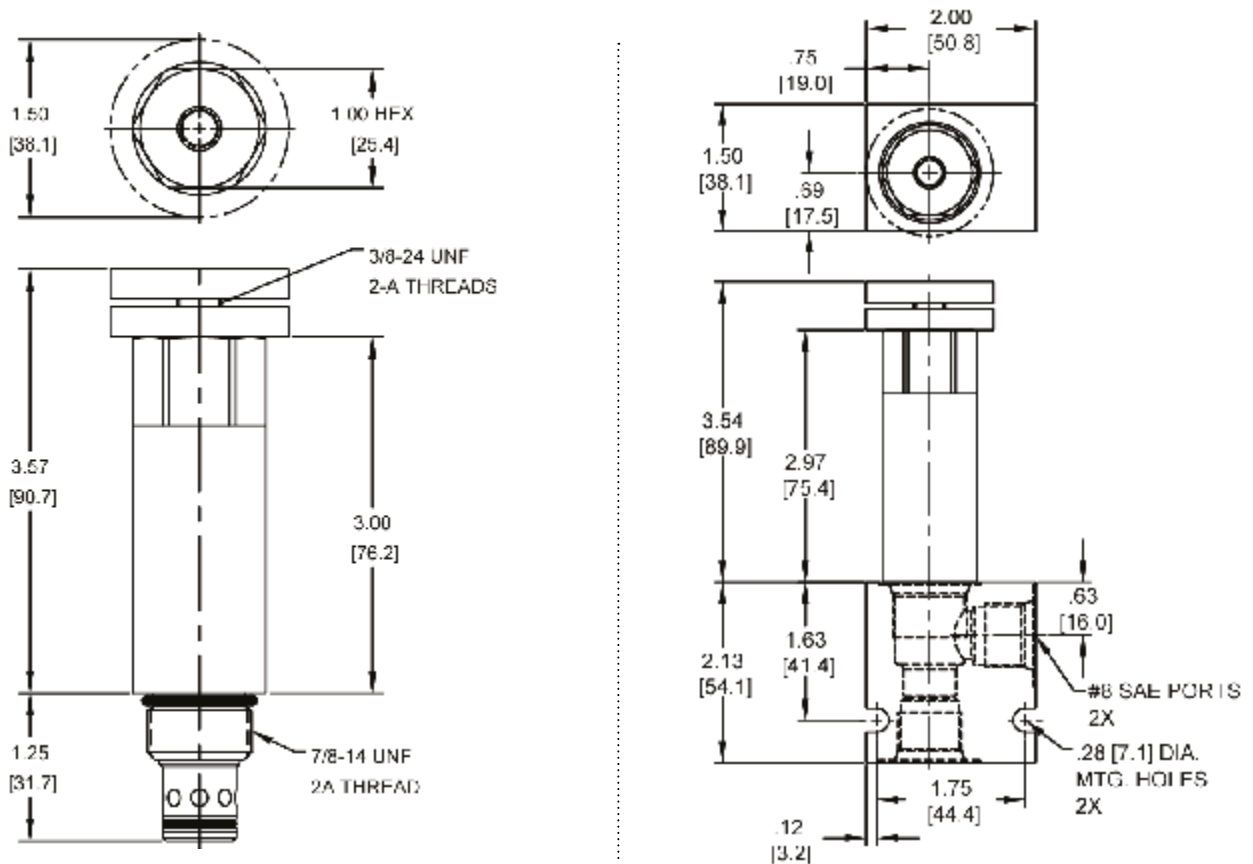


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

<p>DE-RVB - - - -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p> <p>Buna, Internal Adjust 0I</p> <p>Viton, Internal Adjust VI</p> <p>Buna, Tamper Proof 0T</p> <p>Viton, Tamper Proof VT</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 3/8" NPTF Ports</p> <p>S #8 SAE Ports</p>
--	---

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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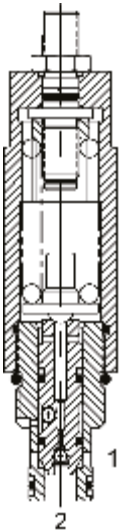


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DE-RVC CROSSOVER RELIEF VALVE, FOR SERIES CIRCUITS



DESCRIPTION

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

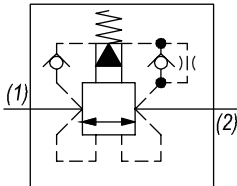
OPERATION

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.

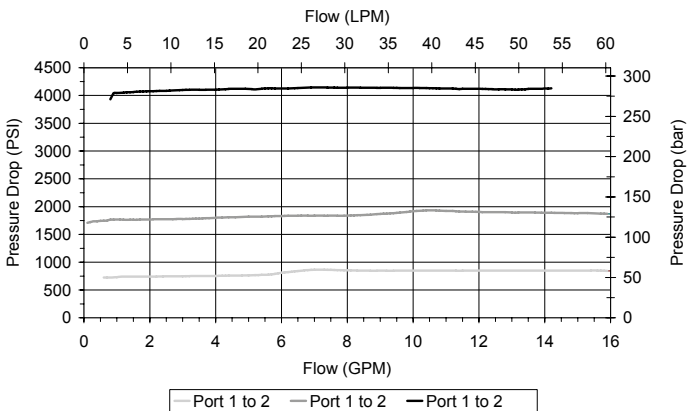
HYDRAULIC SYMBOL



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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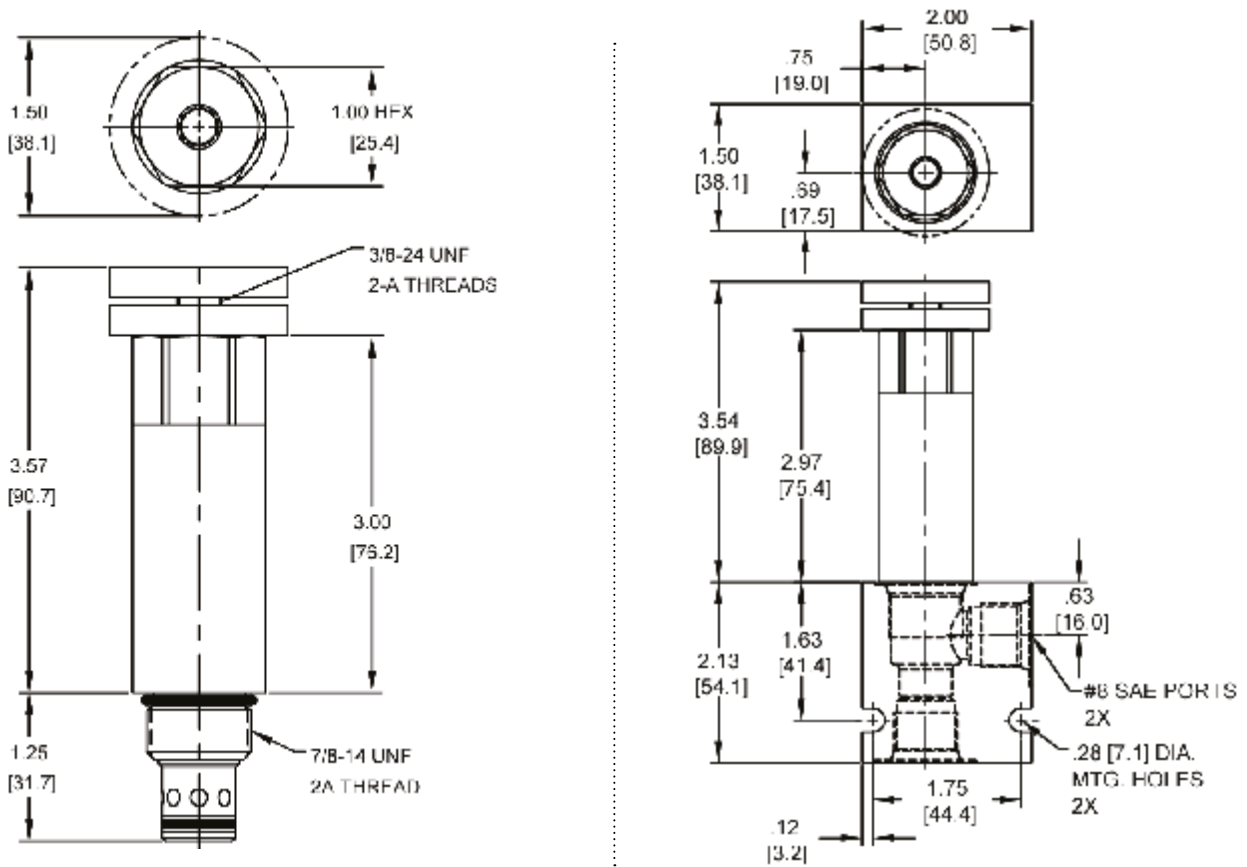


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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION

DE-RVC - - -

OPTIONS

- 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

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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

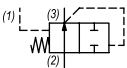

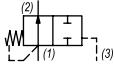
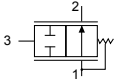
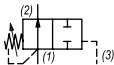


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PRESSURE COMPENSATED REGULATOR VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3500	38	241	7/8-14	DF-PCR	MP52
	40	3500	151	241	1 1/16-12	TR-PCA	MP54
	33	3500	120	241	Special	QC-CP3	MP56
	40	3500	151	241	1 5/16-12	SL-PCA	MP58
	10	3500	38	241	7/8-14	DG-PCB	MP60
	10	3500	38	241	7/8-14	DG-TCB	MP62
	40	3500	151	241	1 5/16-12	SL-PCB	MP64
	8	3000	30	207	3/4-16	PP-PCC	MP66
	8	3500	30	241	7/8-14	DF-CP2	MP68
	19	3500	70	241	Special	QC-CP2	MP70
	20	3500	76	241	1 1/16-12	TR-PCC	MP72
	10	3500	38	241	7/8-14	DF-PCE	MP74
	40	3500	151	241	1 5/16-12	SL-PCE	MP76
	10	3500	38	241	7/8-14	DF-PCS	MP78
	10	3500	38	241	7/8-14	DF-TCS	MP80
	10	3500	38	241	7/8-14	DF-PCT	MP82

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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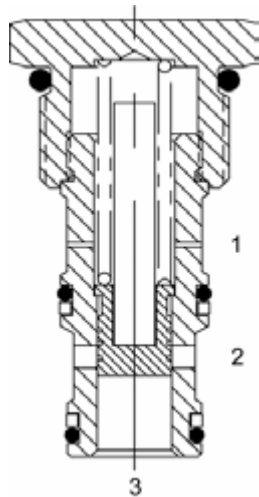


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DF-PCR PRESSURE COMPENSATING REGULATOR VALVE



DESCRIPTION

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

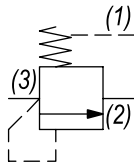
OPERATION

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.

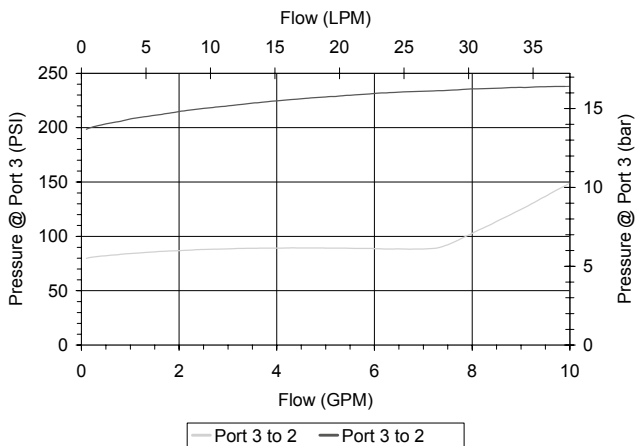
HYDRAULIC SYMBOL



Can be used as a logic element. DF-PCR-0P is commonly used as a bypass flow regulator (80 PSI recommended). DF-PCR-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	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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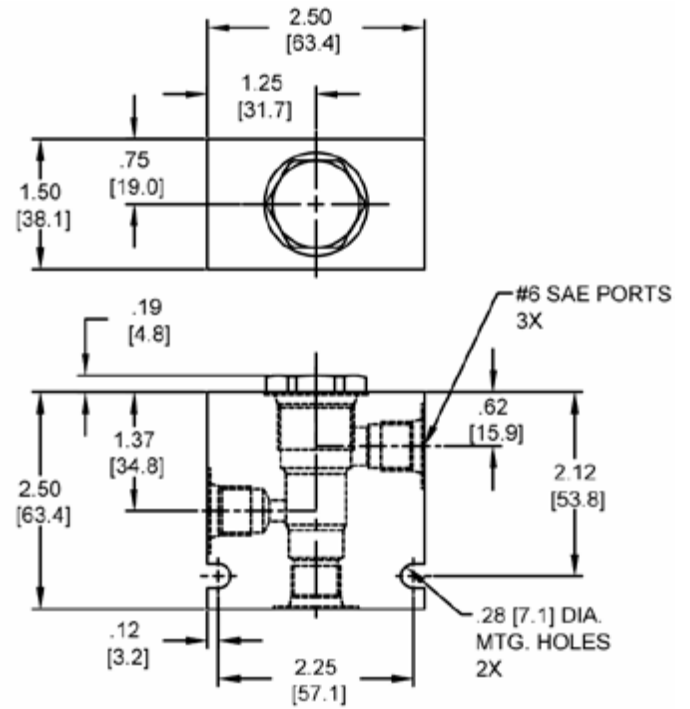
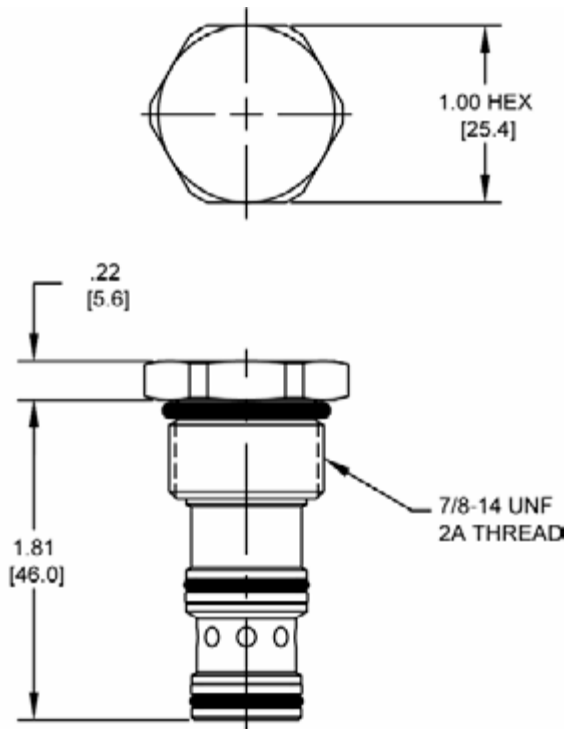


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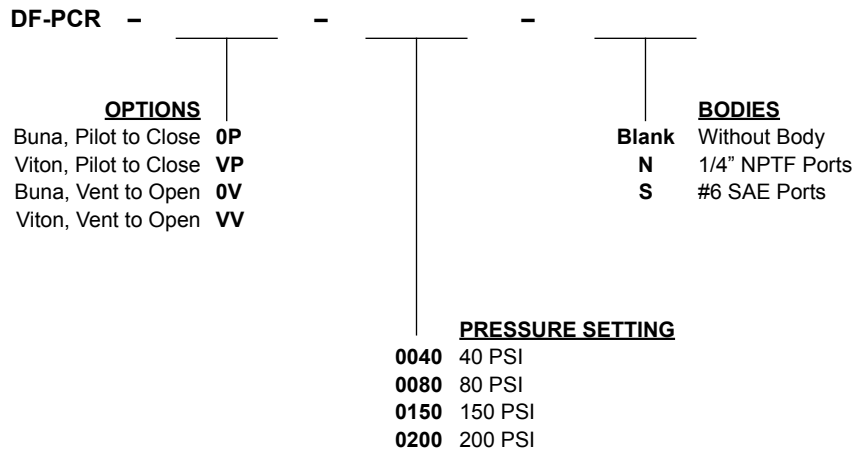
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



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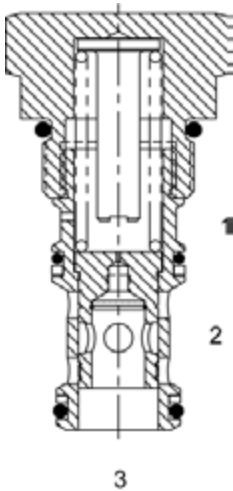


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TR-PCA PRESSURE COMPENSATING REGULATOR VALVE



DESCRIPTION

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

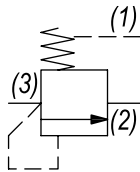
OPERATION

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.

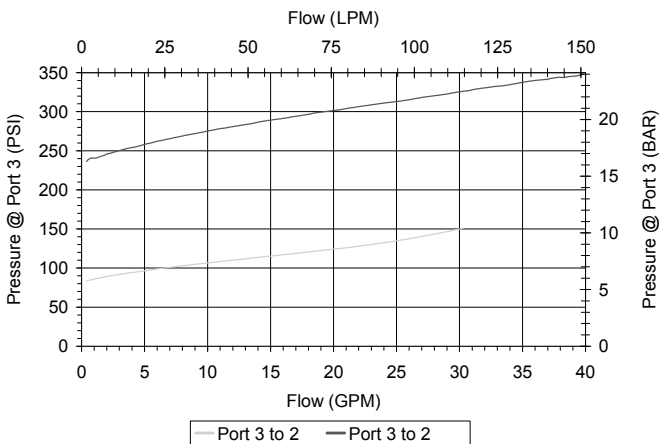
HYDRAULIC SYMBOL



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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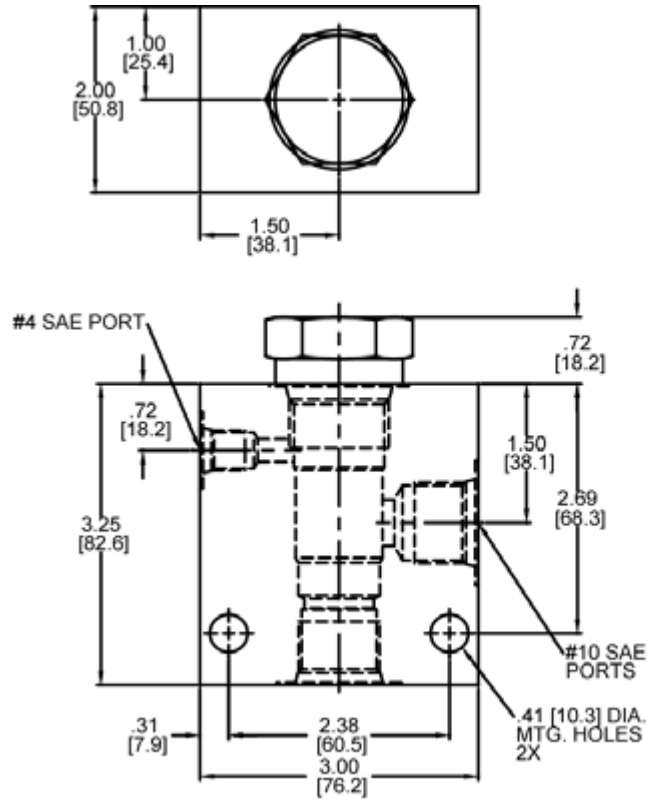
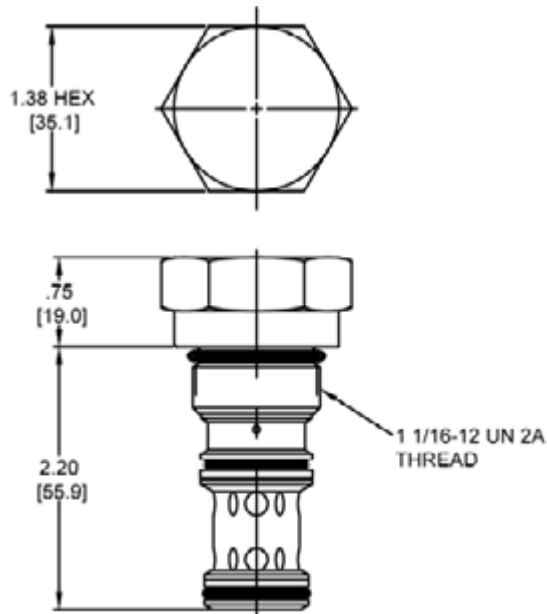


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DIMENSIONS



Body Weight: 1.56 lbs (.70 kg)

ORDERING INFORMATION

<p>TR-PCA -</p> <p>OPTIONS</p> <p>Buna, Pilot to Close OP</p> <p>Viton, Pilot to Close VP</p> <p>Buna, Vent to Open OV</p> <p>Viton, Vent to Open VV</p>	<p>-</p> <p>-</p> <p>-</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>S #10 SAE Ports</p> <p>Δ P SETTING</p> <p>@ 1 GPM with Pilot Vented</p> <p>0020 20 PSI</p> <p>0050 50 PSI</p> <p>0090 90 PSI</p> <p>0150 150 PSI</p> <p>0230 230 PSI</p> <p>±10%</p>
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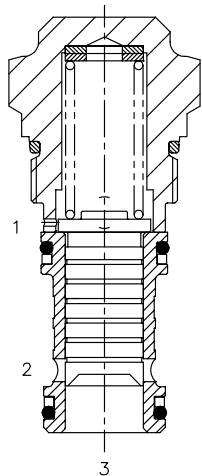


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QC-CP3 PRESSURE COMPENSATING VALVE, BYPASS TYPE FOR 3 WAY FLOW CONTROL



DESCRIPTION

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

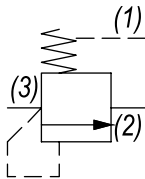
OPERATION

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.

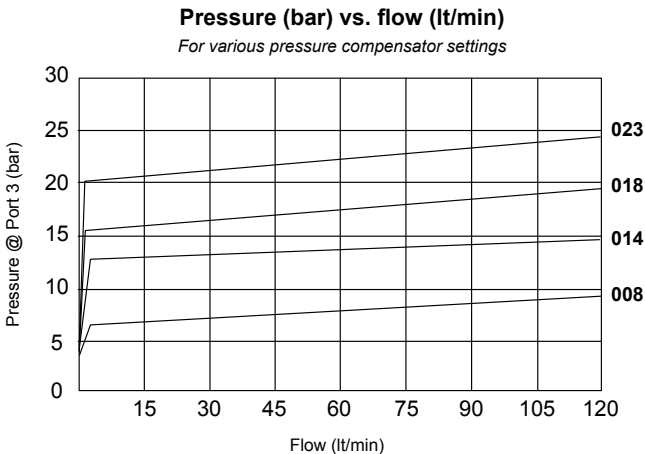
HYDRAULIC SYMBOL



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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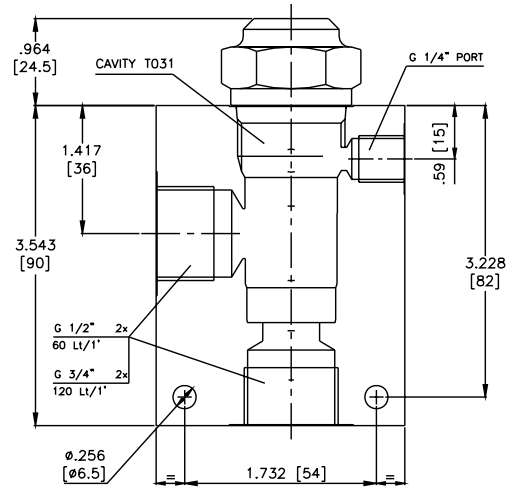
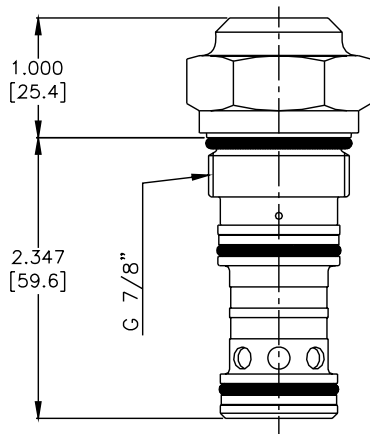
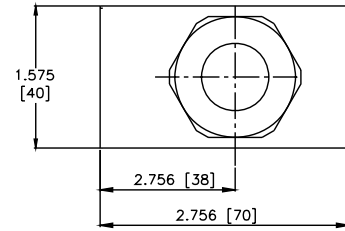
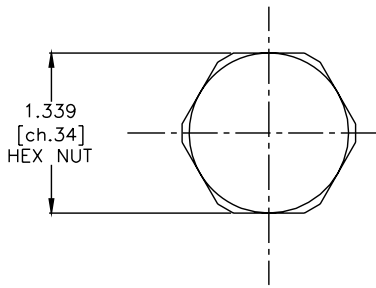


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DIMENSIONS



(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

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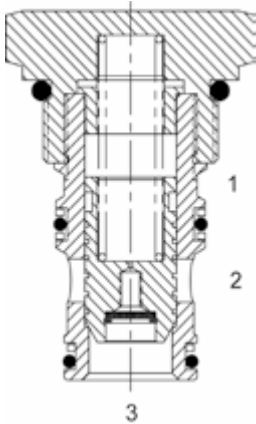


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SL-PCA PRESSURE COMPENSATING REGULATOR VALVE

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.

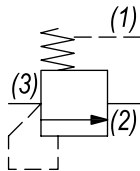
FEATURES

- 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

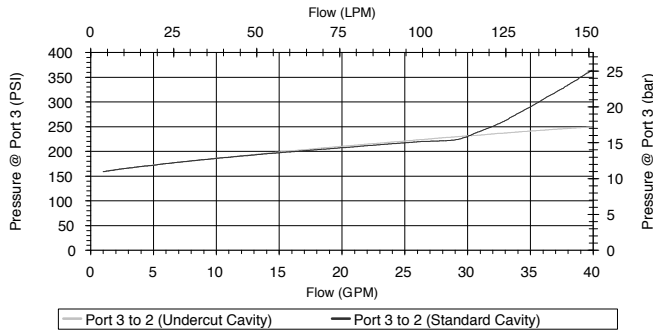
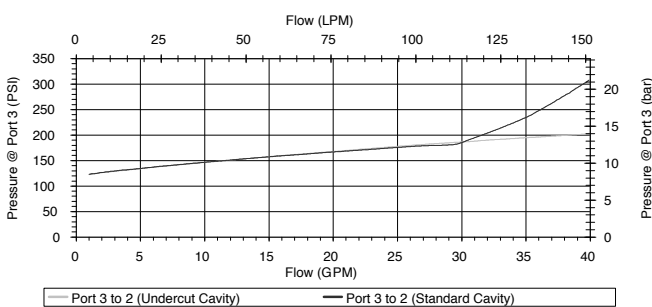


VALVE SPECIFICATIONS

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)



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.

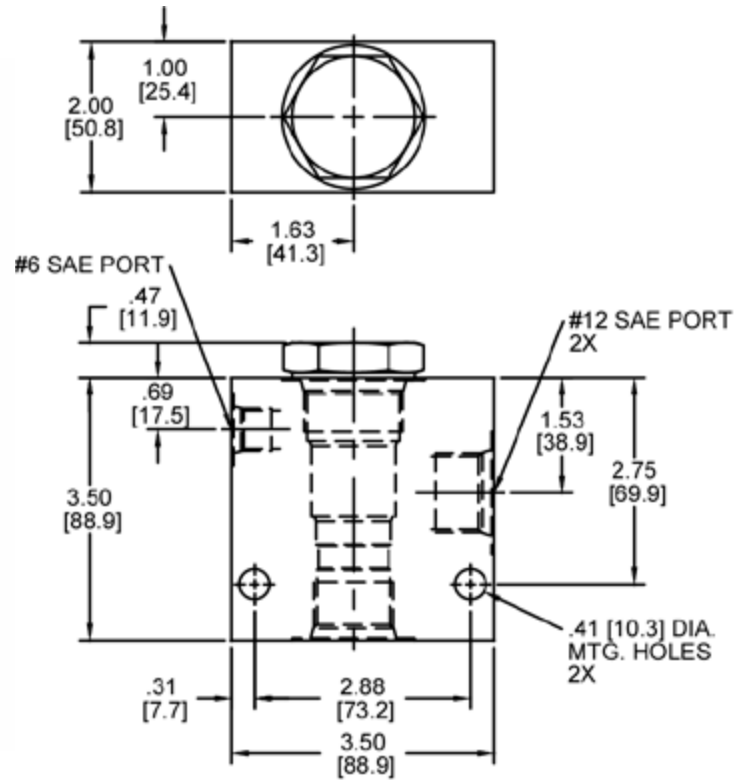
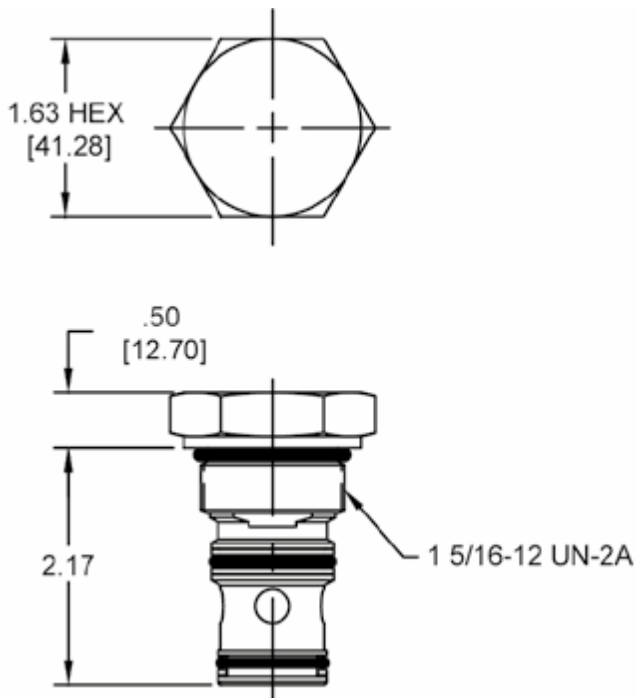


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PCA - - -

OPTIONS

- Buna, Pilot to Close **OP**
- Viton, Pilot to Close **VP**
- 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**

BODIES

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

Δ P SETTING

@ 1 GPM with Pilot Vented

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

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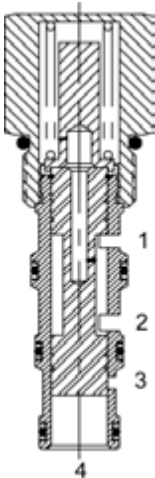


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DG-PCB PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE WITH BY-PASS



DESCRIPTION

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

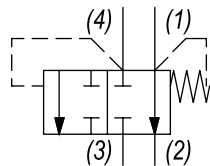
OPERATION

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

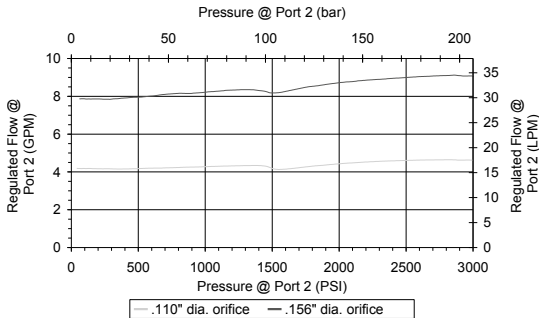


DG-PCB is not intended for differential pressure more than 1500 PSI from (4) to (3). Consult Factory for abrupt pressure change applications that exceed 1500 PSI, for alternative products.

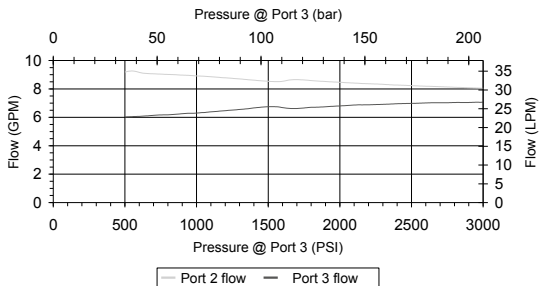
PERFORMANCE

Actual Test Data (Cartridge Only with 150 PSI Spring)

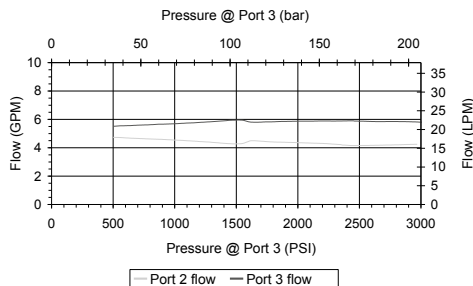
10 GPM Supply flow, .110" Orifice, 150 PSI spring
 15 GPM Supply flow, .156" Orifice, 150 PSI spring - 1500 PSI load on port (3)



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)



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)



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

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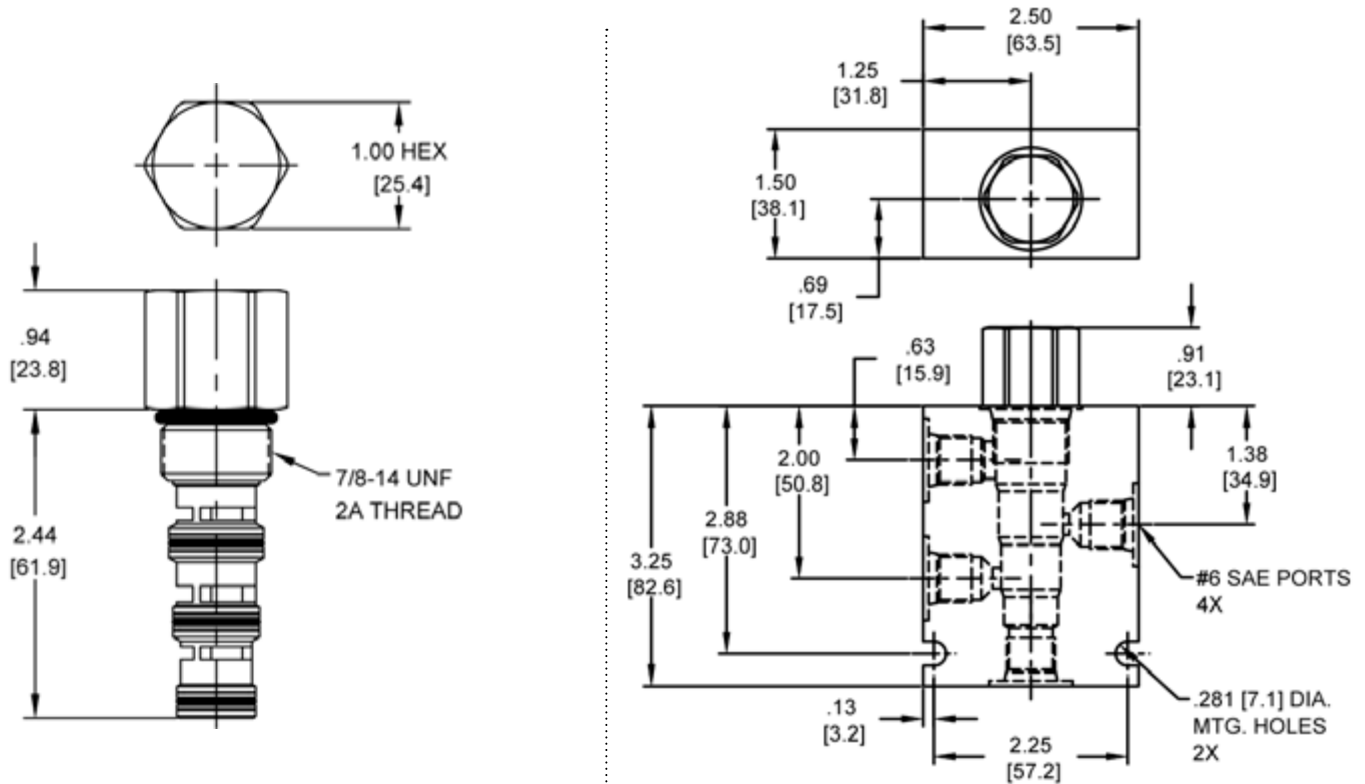


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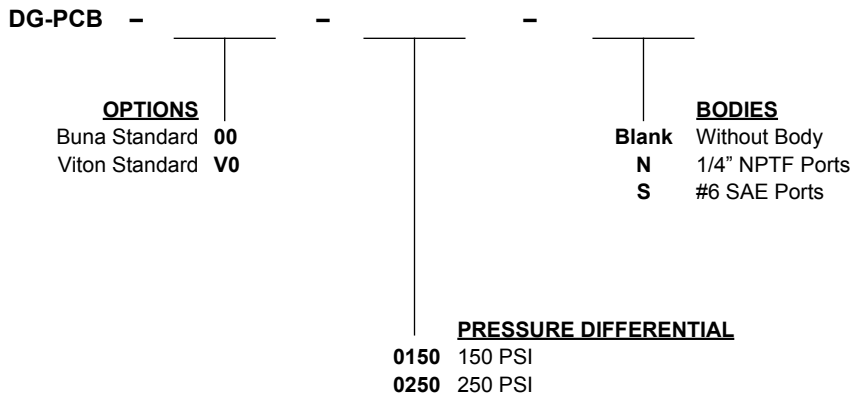
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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



Differential Pressure Across External Controlling Orifice

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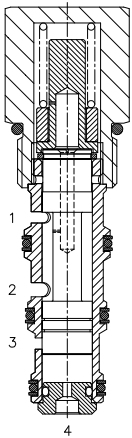


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DG-TCB PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE WITH BYPASS



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).

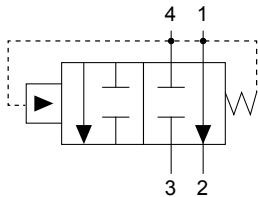
FEATURES

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



Bypass line (3) can be pressurized.

HYDRAULIC SYMBOL



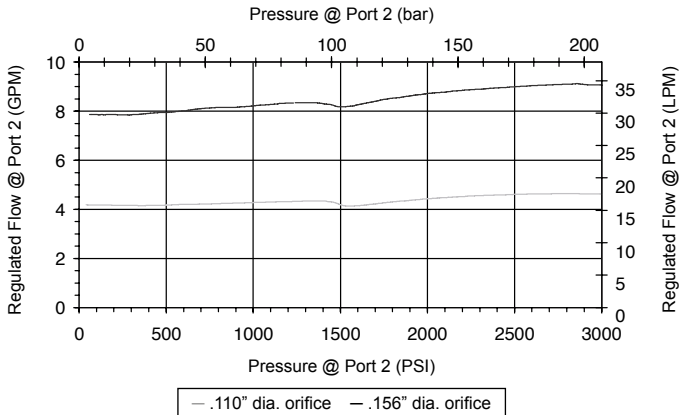
PERFORMANCE

Actual Test Data (Cartridge Only)

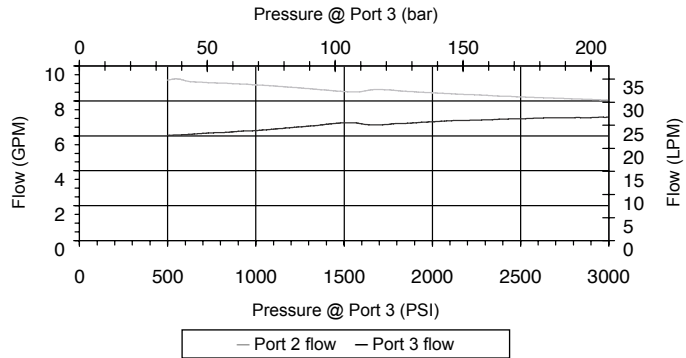
VALVE SPECIFICATIONS

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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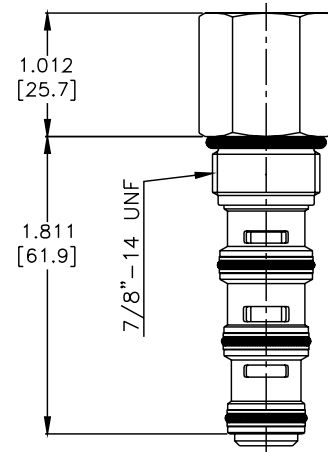
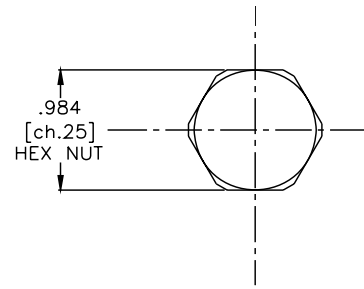
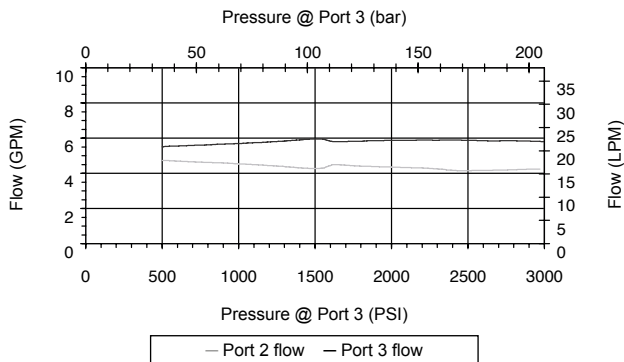
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DIMENSIONS

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

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

BODIES

- Blank** Without Body
- 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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SL-PCB PRESSURE COMPENSATING REGULATOR VALVE

DESCRIPTION

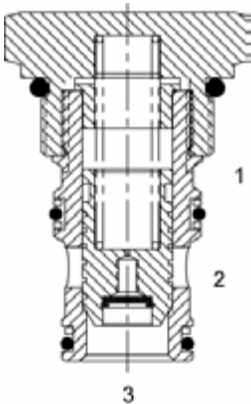
16 size, 1 5/16-12 thread, "Super" series, pressure compensating regulator valve.

OPERATION

The SL-PCB-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 internal orifice, thereby regulating the hydraulic flow rate from 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 SL-PCB-0V with a dump valve and a pilot relief valve at (1) acts as main stage of a ventable relief valve.

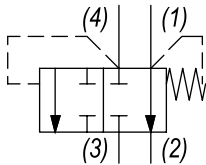
FEATURES

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



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

HYDRAULIC SYMBOL

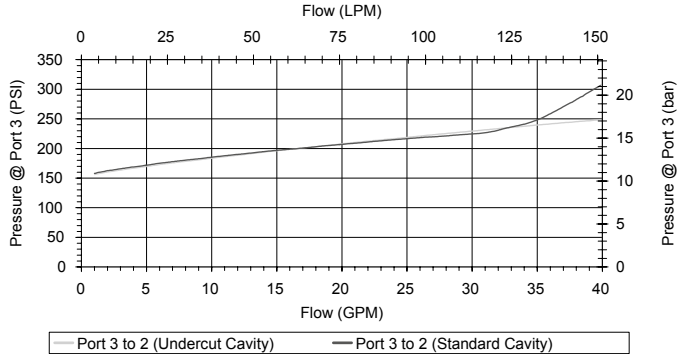
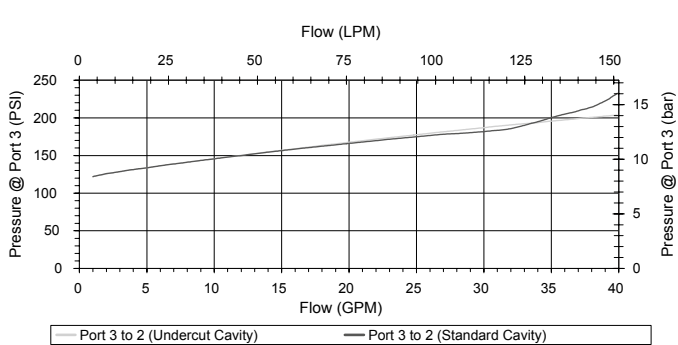


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Seat Ratio	Initially area of Pilot is 1.5 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	.71 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)	40500017
Seal Kit	21191406

PERFORMANCE

Actual Test Data (Cartridge Only)



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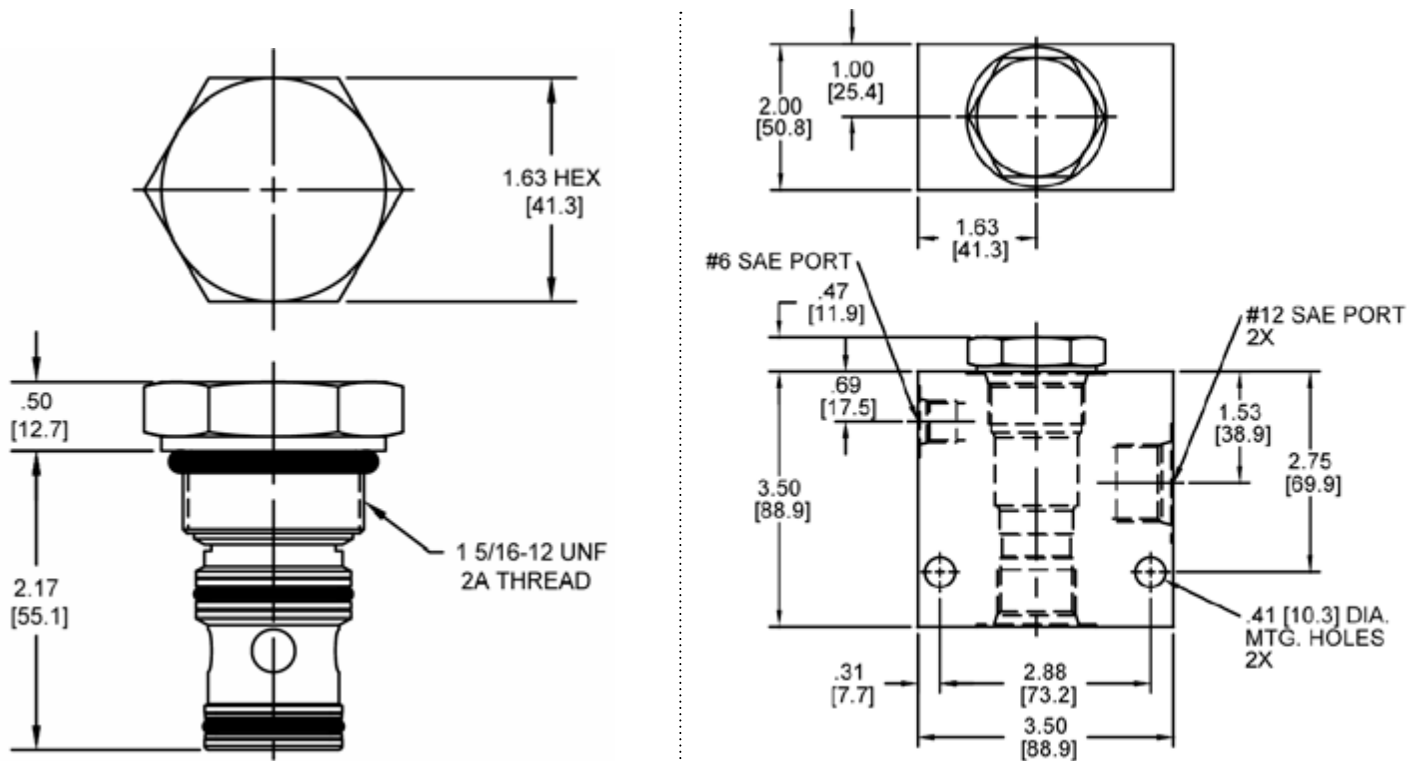


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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION

SL-PCB - - -

OPTIONS

- Buna, Pilot to Close **OP**
- Viton, Pilot to Close **VP**
- 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**

BODIES

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

Δ P SETTING

@ 1 GPM with Pilot Vented

- 0020** 20 PSI
- 0050** 50 PSI
- 0100** 100 PSI
- 0150** 150 PSI
- ±20%

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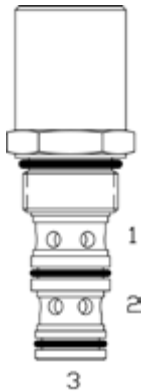


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PP-PCC FIXED PRESSURE COMPENSATING REGULATOR VALVE - RESTRICTIVE TYPE



DESCRIPTION

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

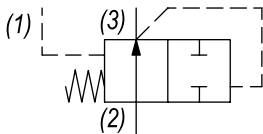
OPERATION

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.

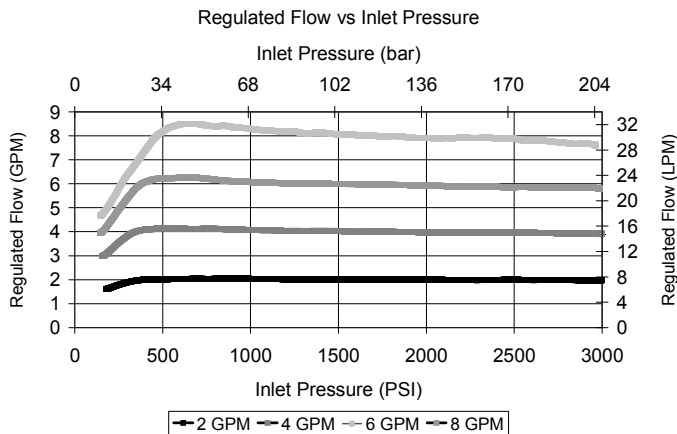
HYDRAULIC SYMBOL



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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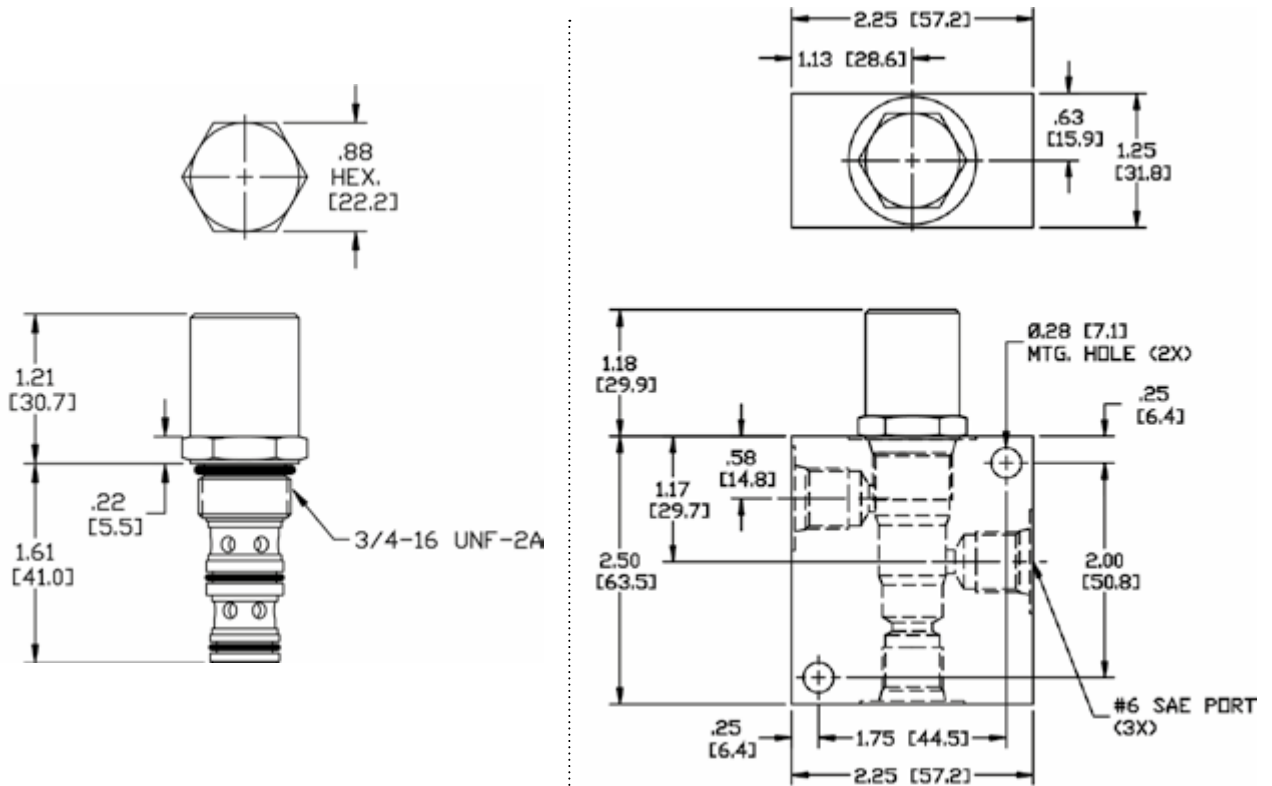


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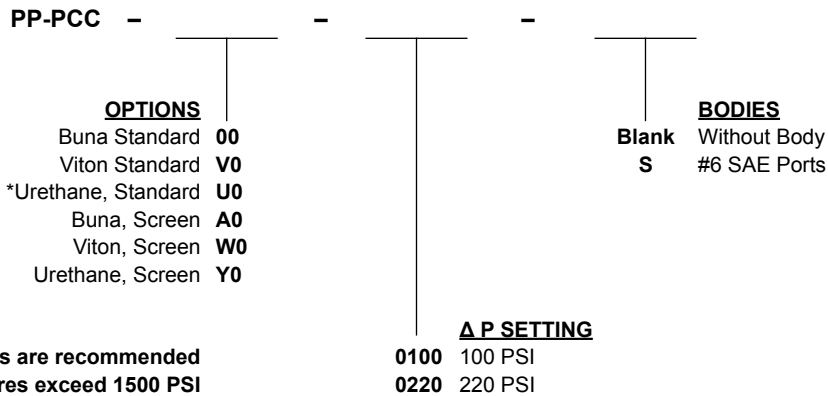
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DIMENSIONS



Body Weight: .56 lbs (.25 kg)

ORDERING INFORMATION



*Urethane seals are recommended when inlet pressures exceed 1500 PSI

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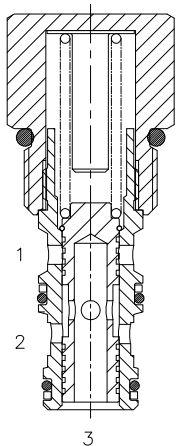


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DF-CP2 PRESSURE COMPENSATING/REDUCING VALVE



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.

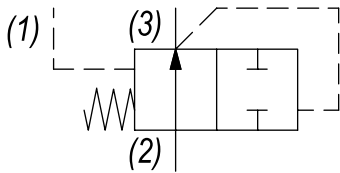
FEATURES

- 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

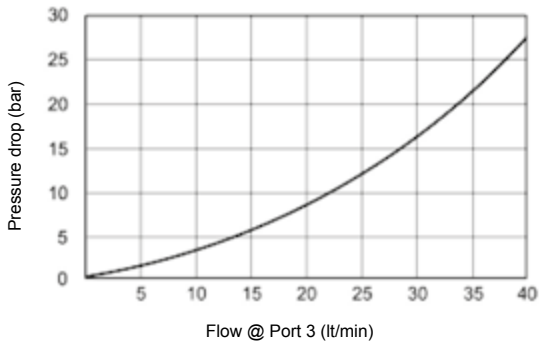
Actual Test Data (Cartridge Only)

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

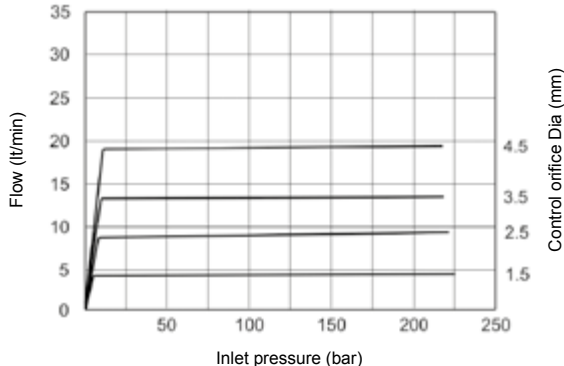
Pressure Drop (bar) vs. Flow (lt/min)

For various pressure compensator settings (bar)



DF-CP2 008 - Flow (lt/min) vs. inlet pressure (bar)

For various orifice diameters (mm)



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.



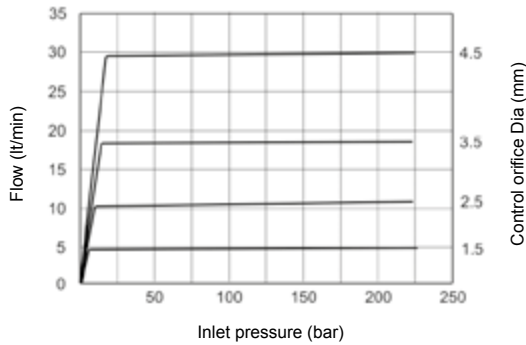
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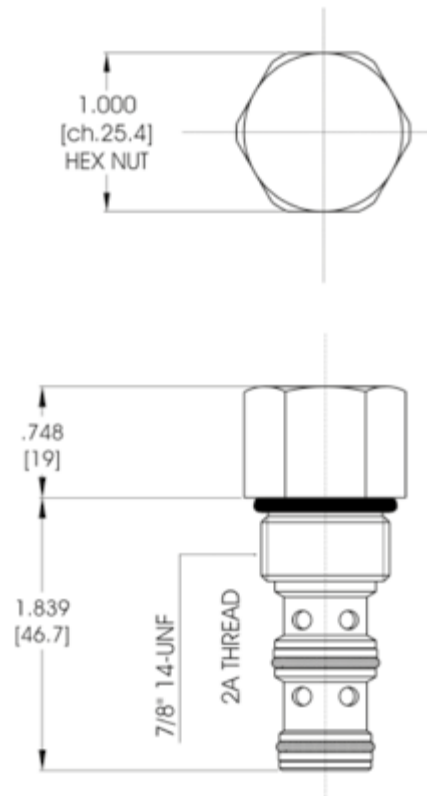
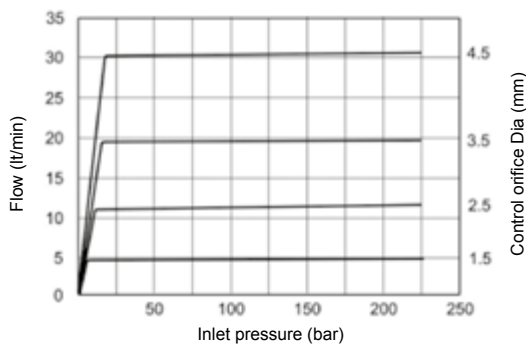
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DIMENSIONS

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 - - -

<p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 3/8" BSP Ports</p> <p>S #6 SAE Ports</p>
--	--

PRESSURE SETTINGS

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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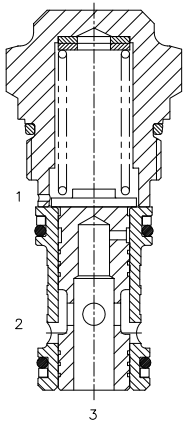


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QC-CP2 PRESSURE COMPENSATING/REDUCING VALVE



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.

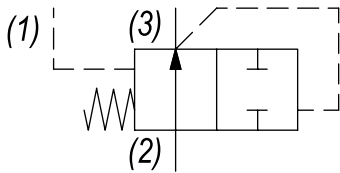
FEATURES

- 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



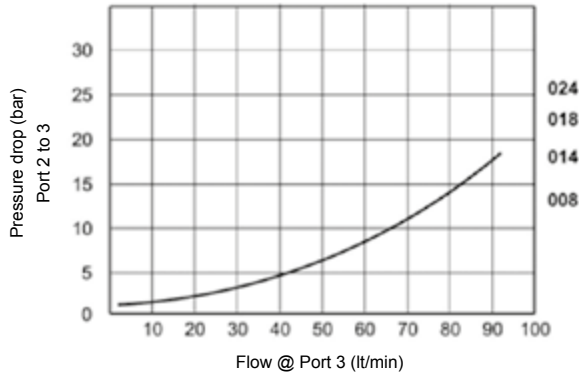
PERFORMANCE

Actual Test Data (Cartridge Only)

VALVE SPECIFICATIONS

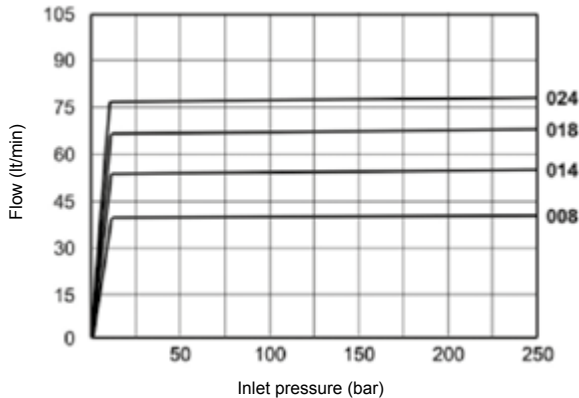
Nominal Flow	19 GPM (70 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	35 ml/min @ 250 bar
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.35 lbs (.16 kg)
Operating Fluid Media	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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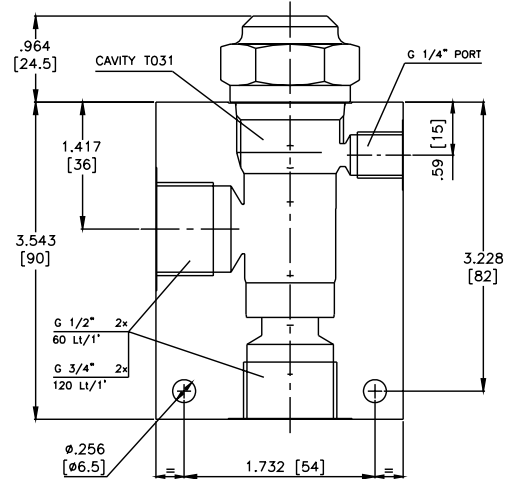
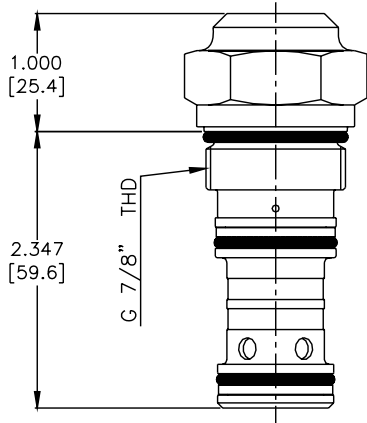
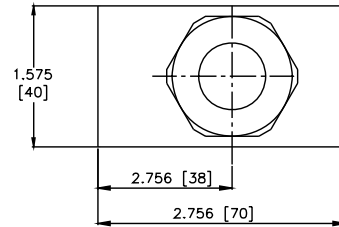
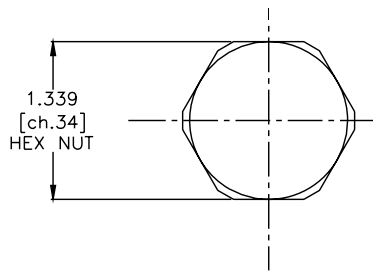


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DIMENSIONS



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

ORDERING INFORMATION

QC-CP2 -

OPTIONS

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)
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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TR-PCC PRESSURE COMPENSATING REGULATOR VALVE – RESTRICTIVE TYPE

DESCRIPTION

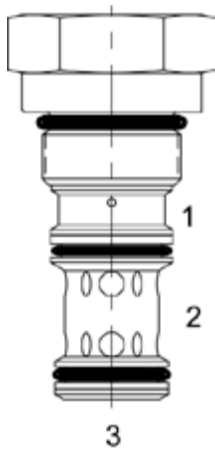
12 size, 1 1/16-12 thread, "Tecnorm" series, pressure compensating regulator valve (restrictive type).

OPERATION

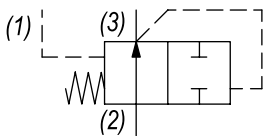
The TR-PCC with an external orifice beyond port (3) and sensed by port (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system downstream of (3), or in the inlet at (2) as long as pressure at (3) is greater than (1) by more than spring setting chosen and pump supply 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.



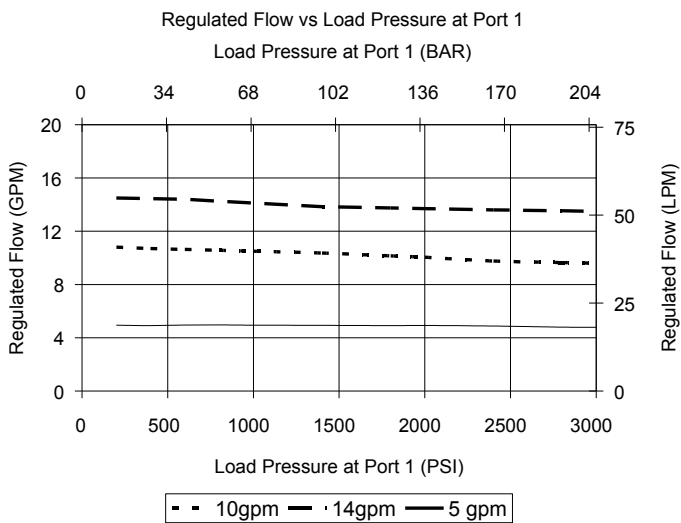
HYDRAULIC SYMBOL



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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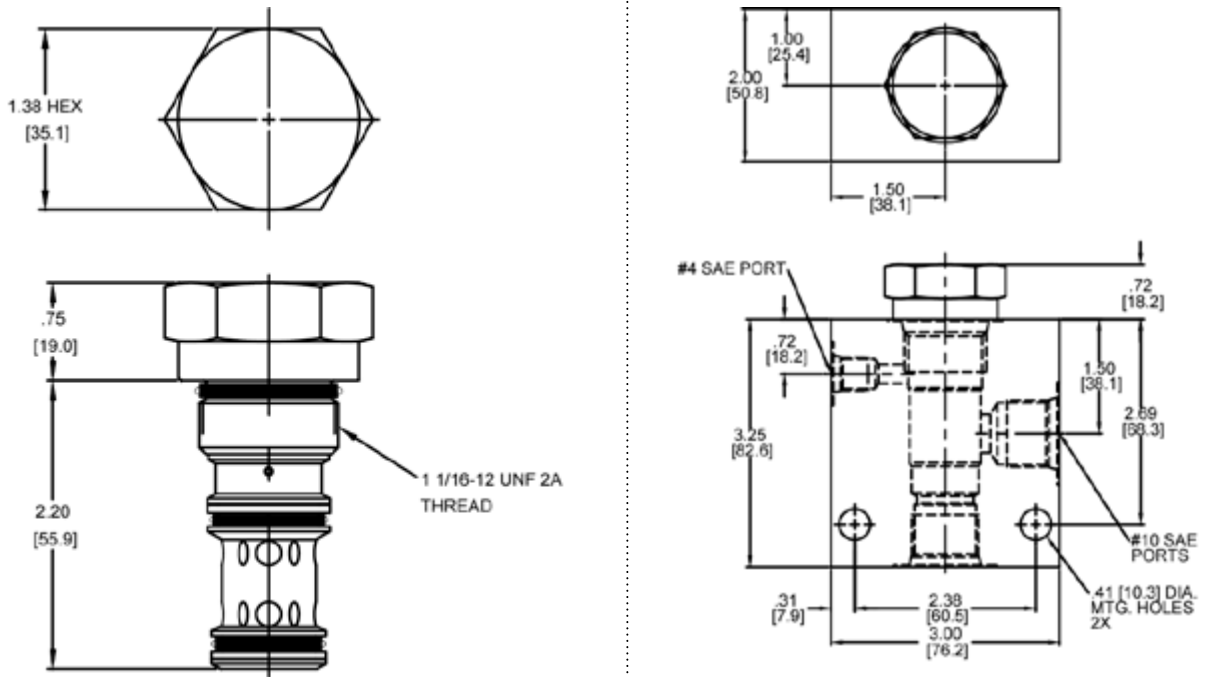


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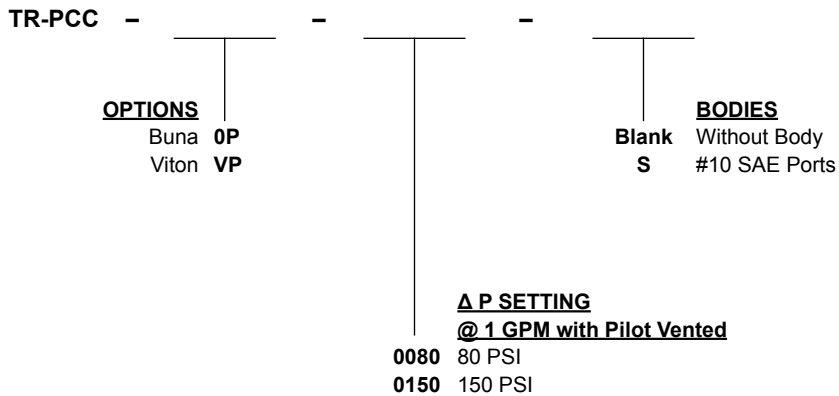
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DIMENSIONS



Body Weight: 1.56 lbs (.70 kg)

ORDERING INFORMATION



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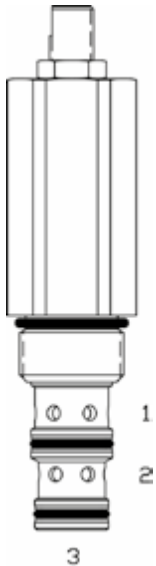


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DF-PCE ADJUSTABLE PRESSURE COMPENSATING VALVE, BYPASS TYPE



DESCRIPTION

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

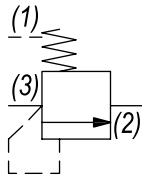
OPERATION

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.

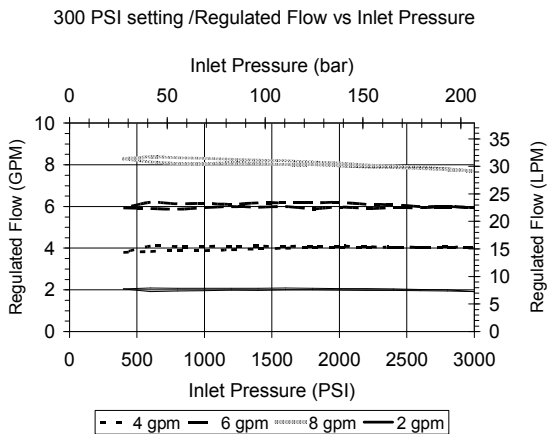
HYDRAULIC SYMBOL



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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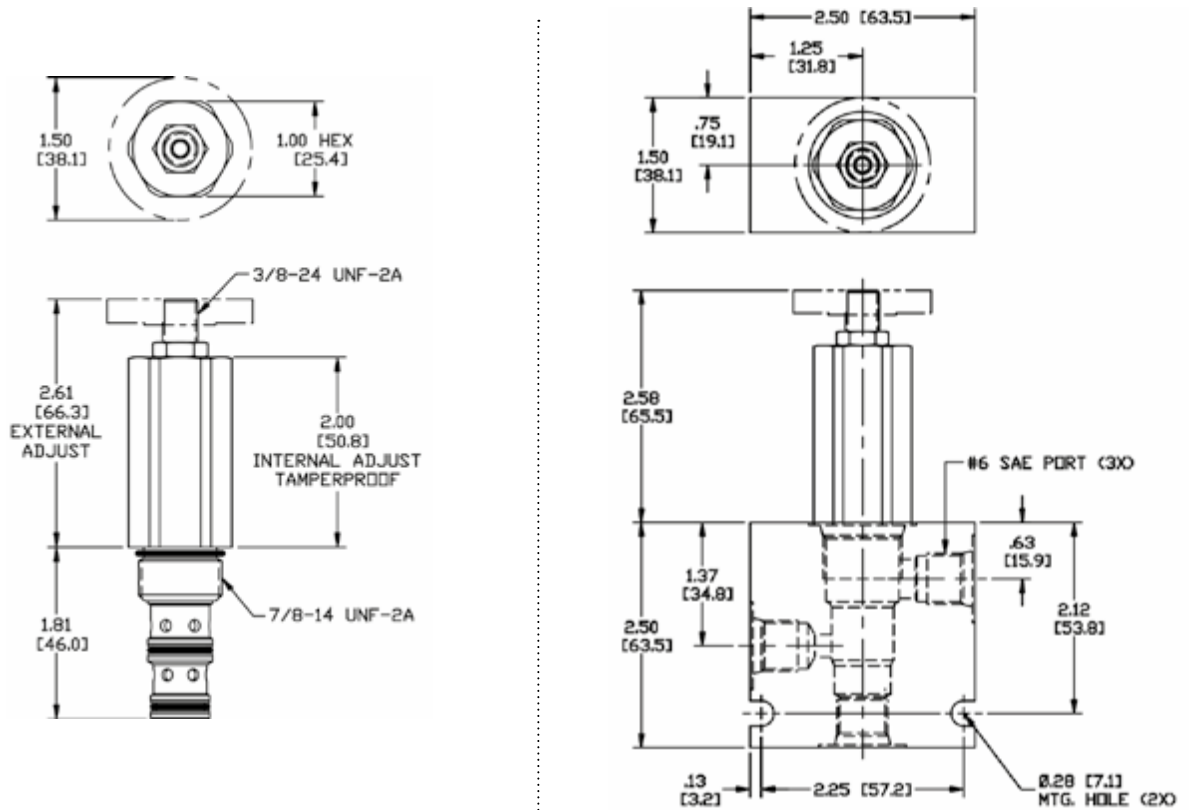


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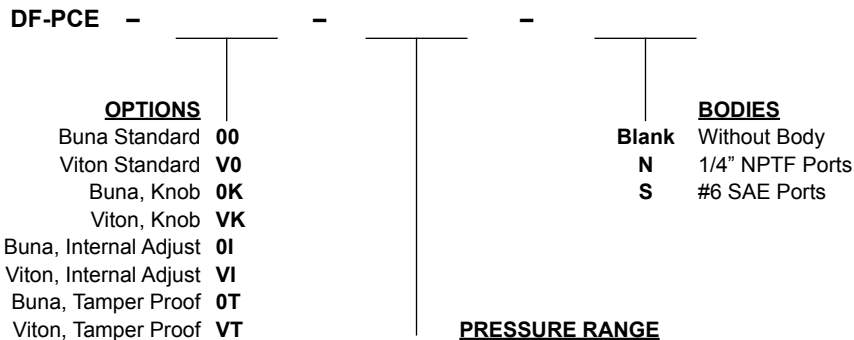
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



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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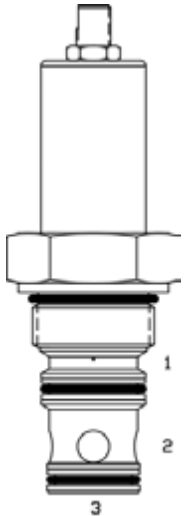


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SL-PCE ADJUSTABLE PRESSURE COMPENSATING REGULATOR VALVE



DESCRIPTION

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

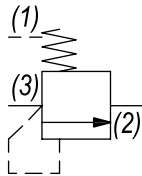
OPERATION

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.

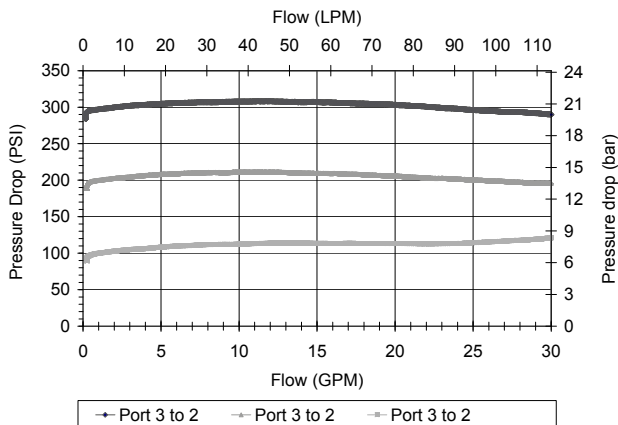
HYDRAULIC SYMBOL



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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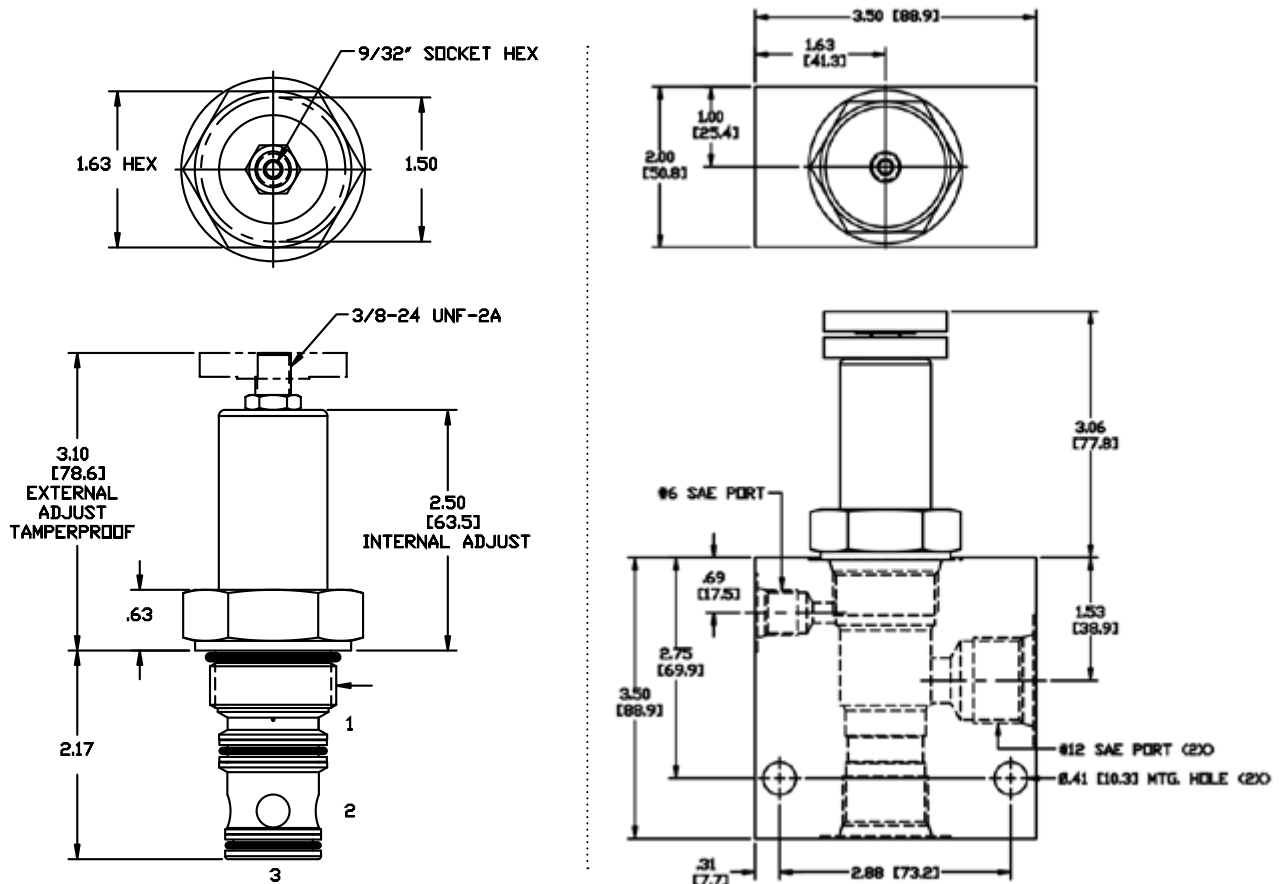


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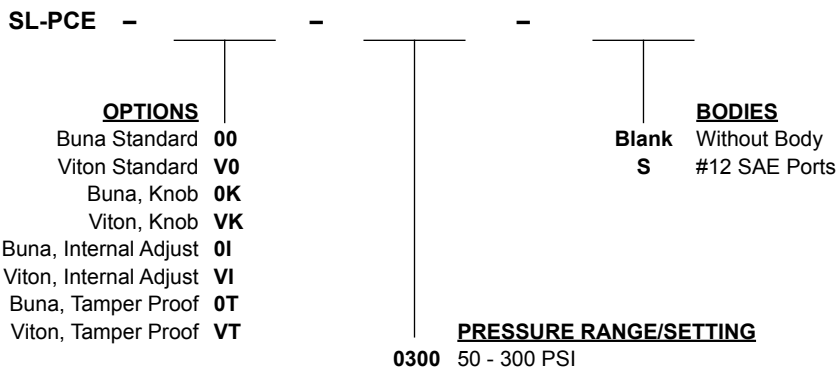
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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION



Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 0200 - 200 PSI

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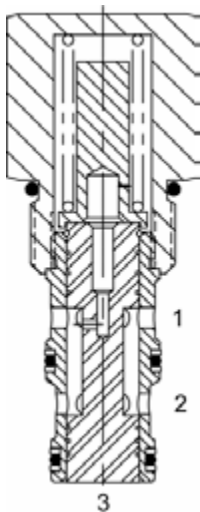


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DF-PCS PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE



DESCRIPTION

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

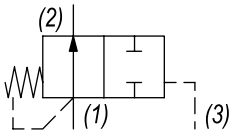
OPERATION

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.

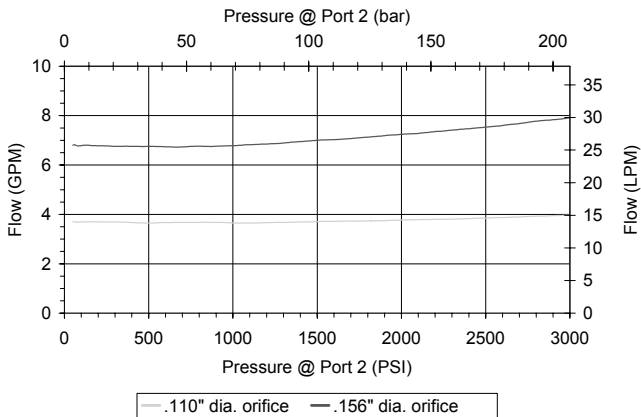
HYDRAULIC SYMBOL



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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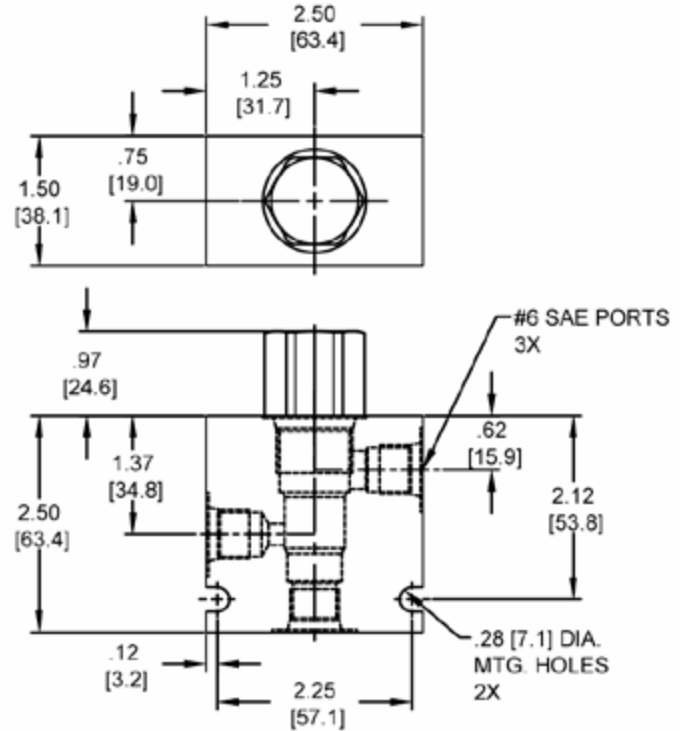
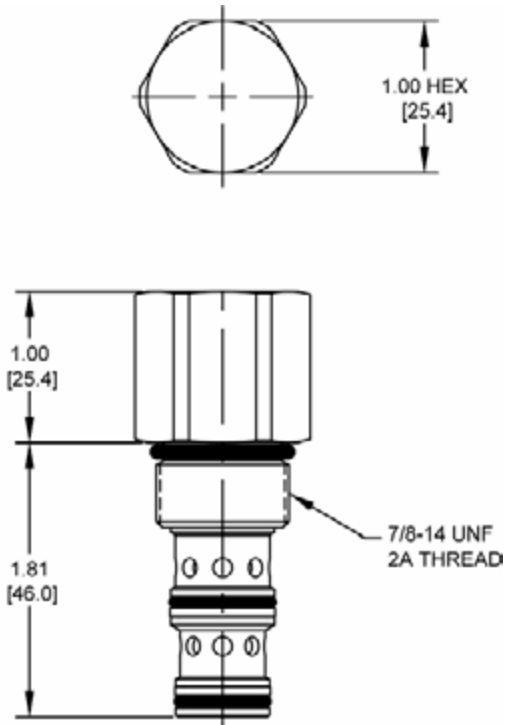


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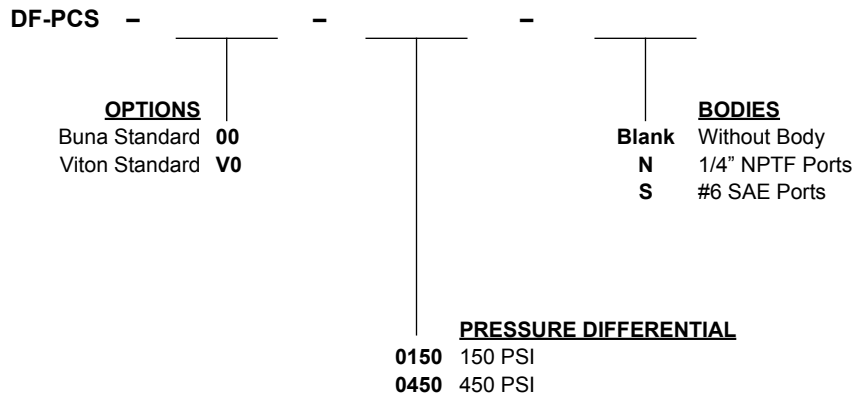
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



Differential Pressure Across External Controlling Orifice

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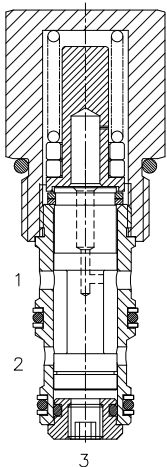


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DF-TCS PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE



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).

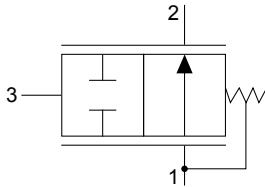
FEATURES

- 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



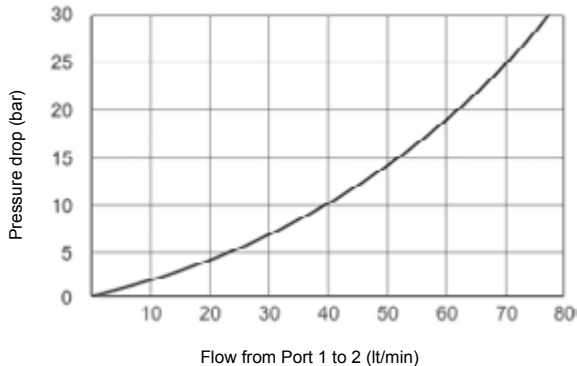
VALVE SPECIFICATIONS

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

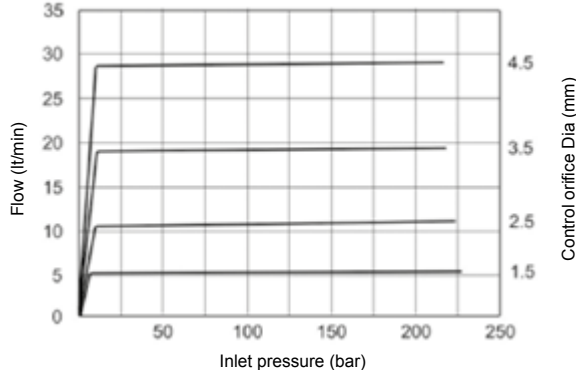
PERFORMANCE

Actual Test Data (Cartridge Only)

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)



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.



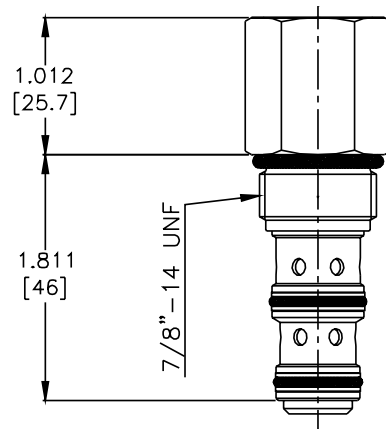
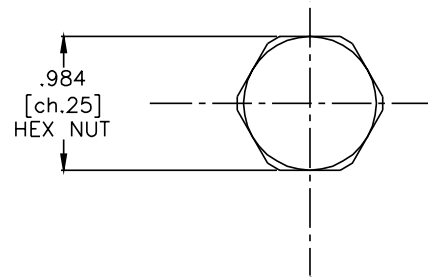
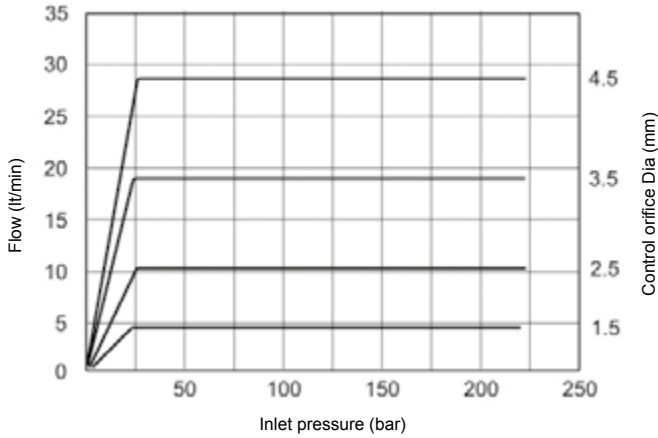
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DIMENSIONS

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

<p>DF-TCS - - -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 3/8" BSP Ports</p> <p>S #6 SAE Ports</p>
<p>PRESSURE SETTINGS</p> <p>008 8 bar (115 PSI)</p> <p>024 24 bar (340 PSI)</p>	
<p>Differential Pressure Across External Controlling Orifice</p>	

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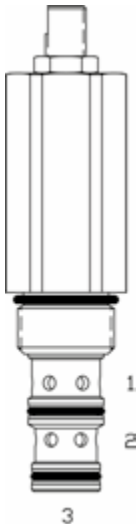


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DF-PCT ADJUSTABLE PRESSURE COMPENSATING VALVE, RESTRICTIVE TYPE



DESCRIPTION

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

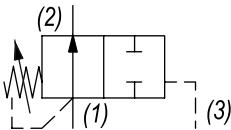
OPERATION

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.

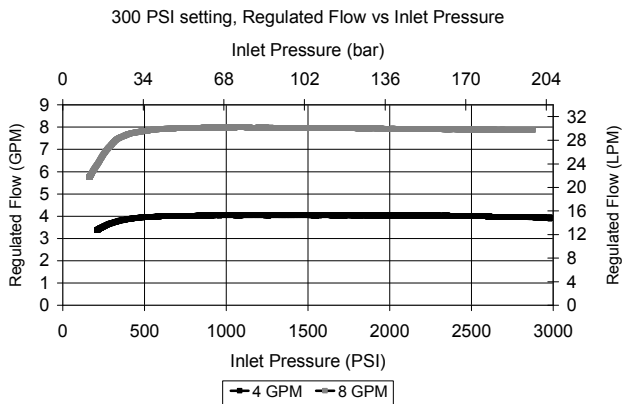
HYDRAULIC SYMBOL



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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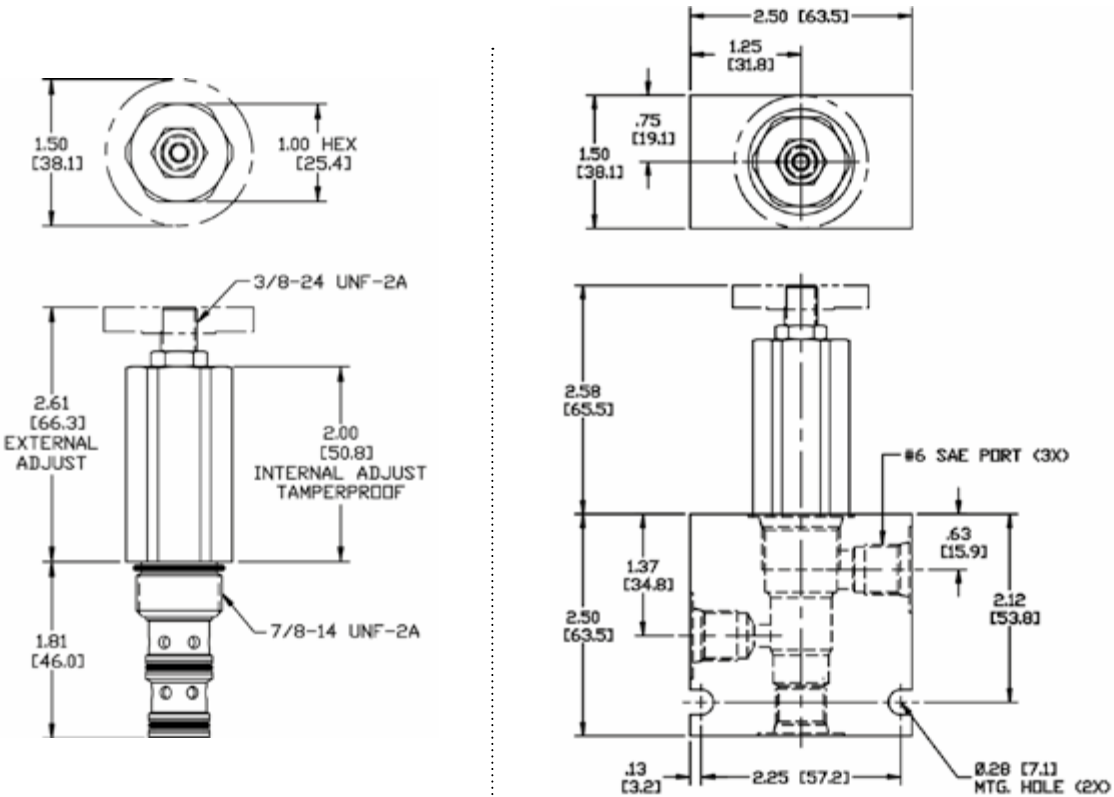


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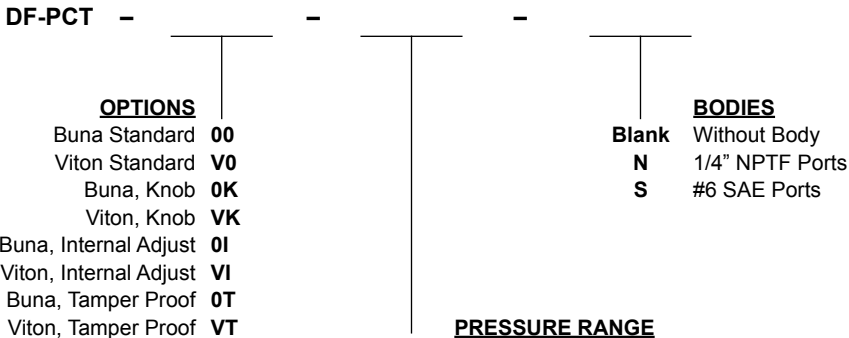
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



0300 **PRESSURE RANGE**
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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PRESSURE REDUCING/RELIEVING VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3000	38	207	7/8-14	DF-PRP	MP86
	20	3000	76	207	1 5/16-12	SK-PRP	MP88
	10	4000	38	276	7/8-14	DF-PWP	MP90

TYPICAL SCHEMATIC

Typical application for the PRP and PWP is multi-system pressure setting. System relief pressure must be greater than reduce pressure setting.

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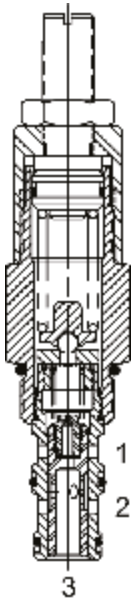


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DF-PRP PILOT OPERATED, PRESSURE REDUCING, RELIEVING VALVE



DESCRIPTION

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

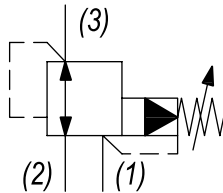
OPERATION

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

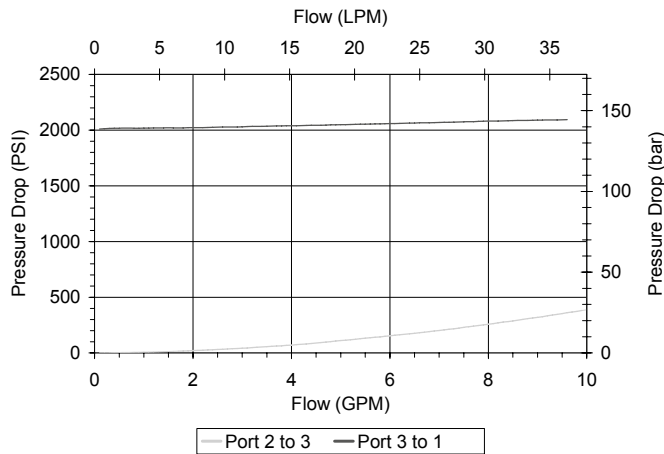
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



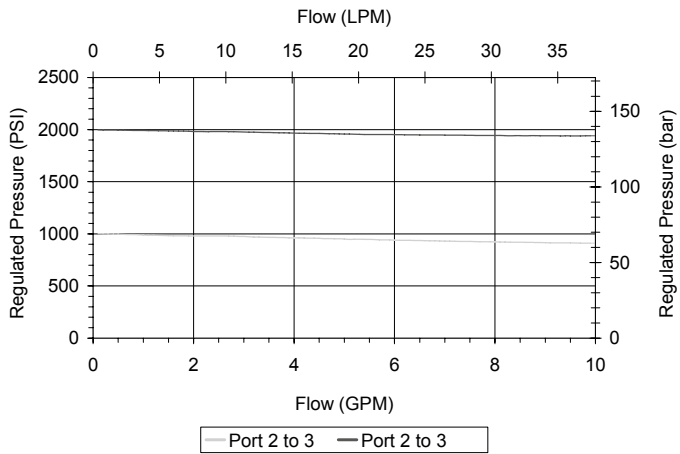
PERFORMANCE

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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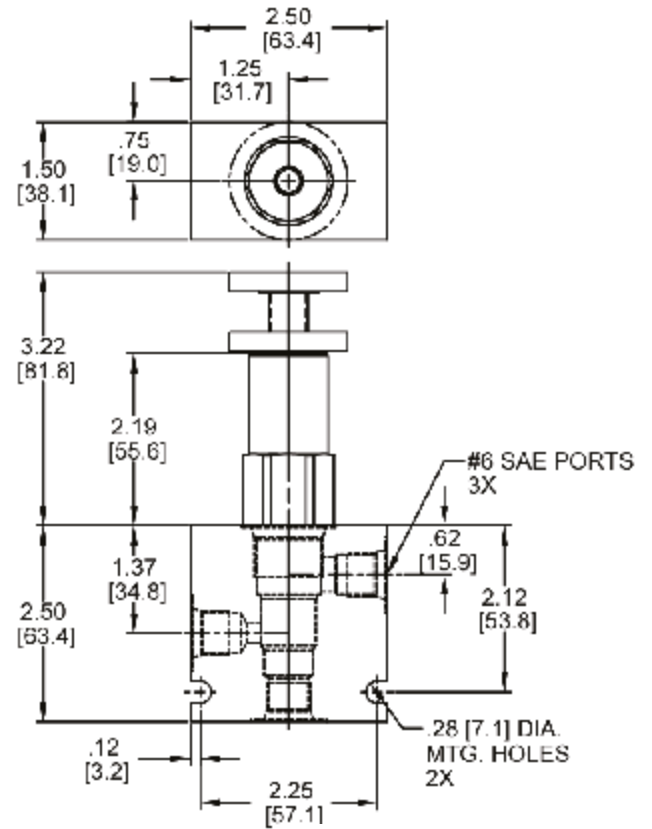
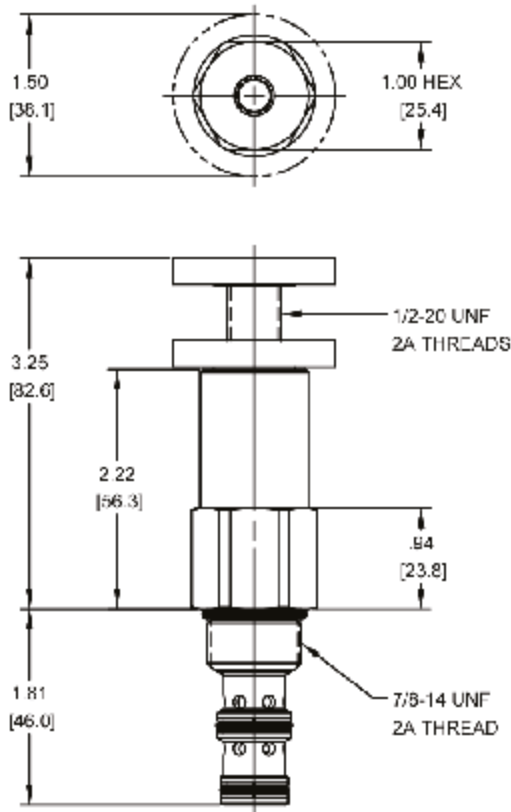


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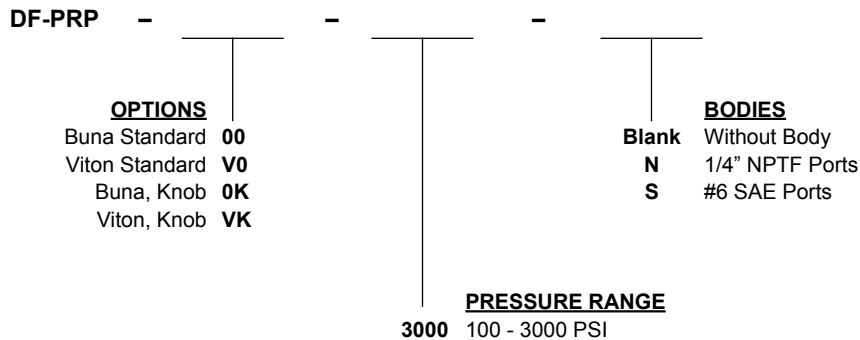
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



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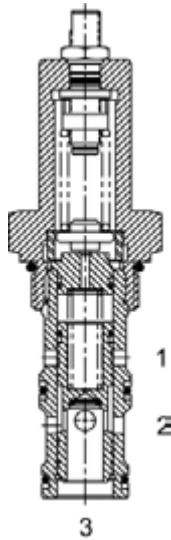


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SK-PRP PILOT OPERATED PRESSURE REDUCING, RELIEVING VALVE



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, pilot operated pressure reducing, relieving valve.

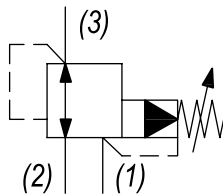
OPERATION

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

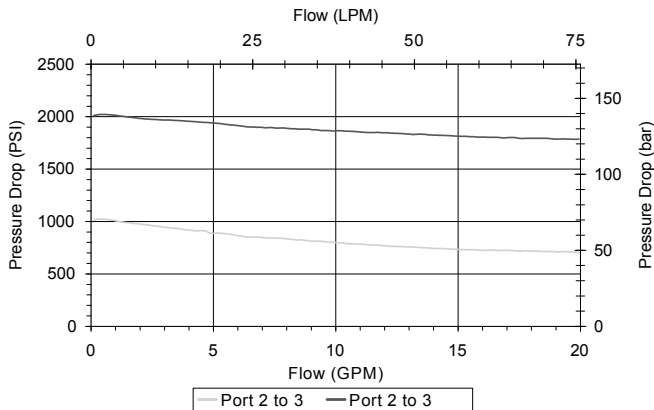
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



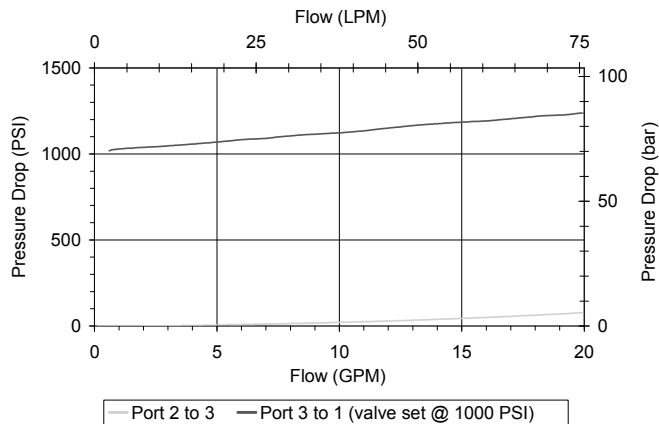
PERFORMANCE

Actual Test Data (Cartridge Only)



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



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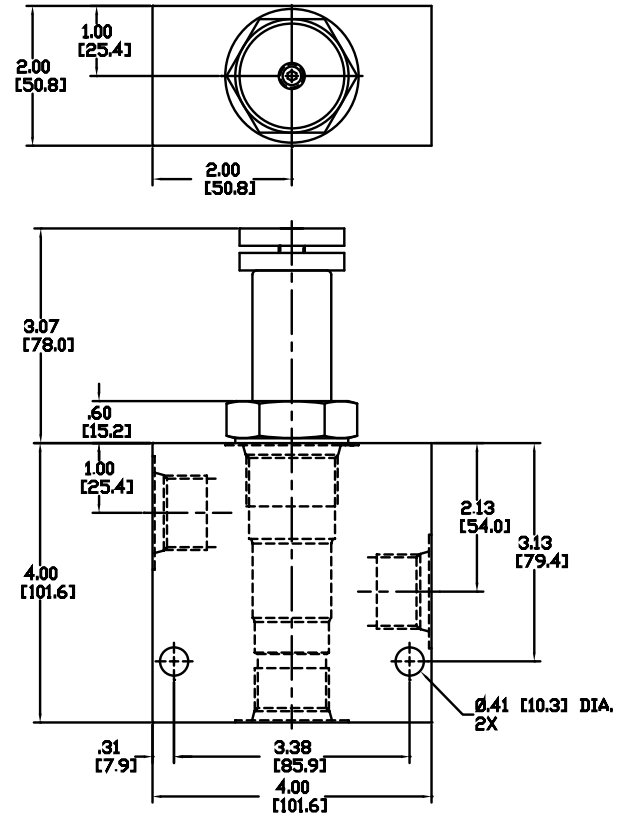
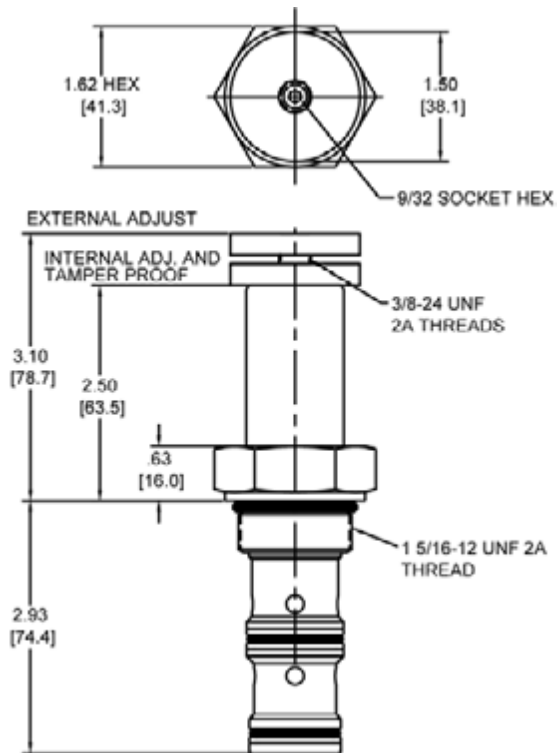


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DIMENSIONS



Body Weight: 2.46 lbs (1.11 kg)

ORDERING INFORMATION

<p>SK-PRP - - -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p> <p>Buna, Internal Adjust 0I</p> <p>Viton, Internal Adjust VI</p> <p>Buna, Tamper Proof 0T</p> <p>Viton, Tamper Proof VT</p>	<p>3000</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>S #12 SAE Ports</p> <p>PRESSURE RANGE/SETTING</p> <p>Ext./Int. Adjustable</p> <p>500 - 3000 PSI</p> <p>Tamper Proof</p> <p>Fill in 4 Digit Pressure Setting</p> <p>Example: 0500 - 500 PSI</p>
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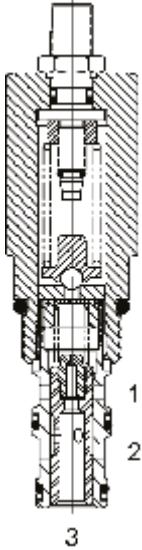


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DF-PWP PILOT OPERATED PRESSURE REDUCING, RELIEVING VALVE



DESCRIPTION

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

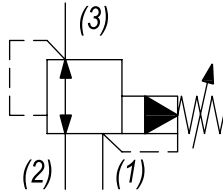
OPERATION

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

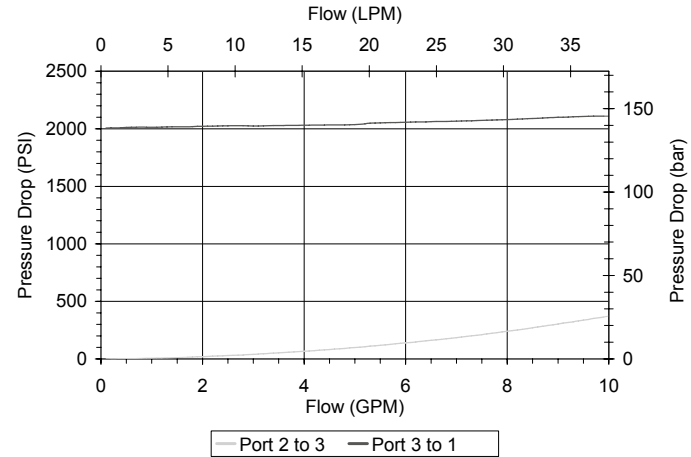
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



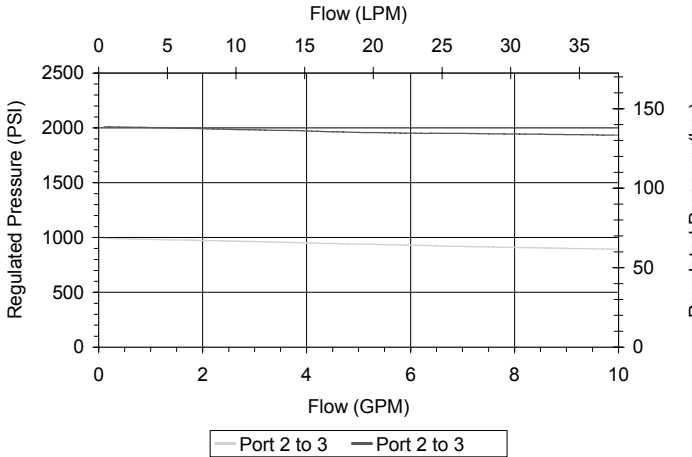
PERFORMANCE

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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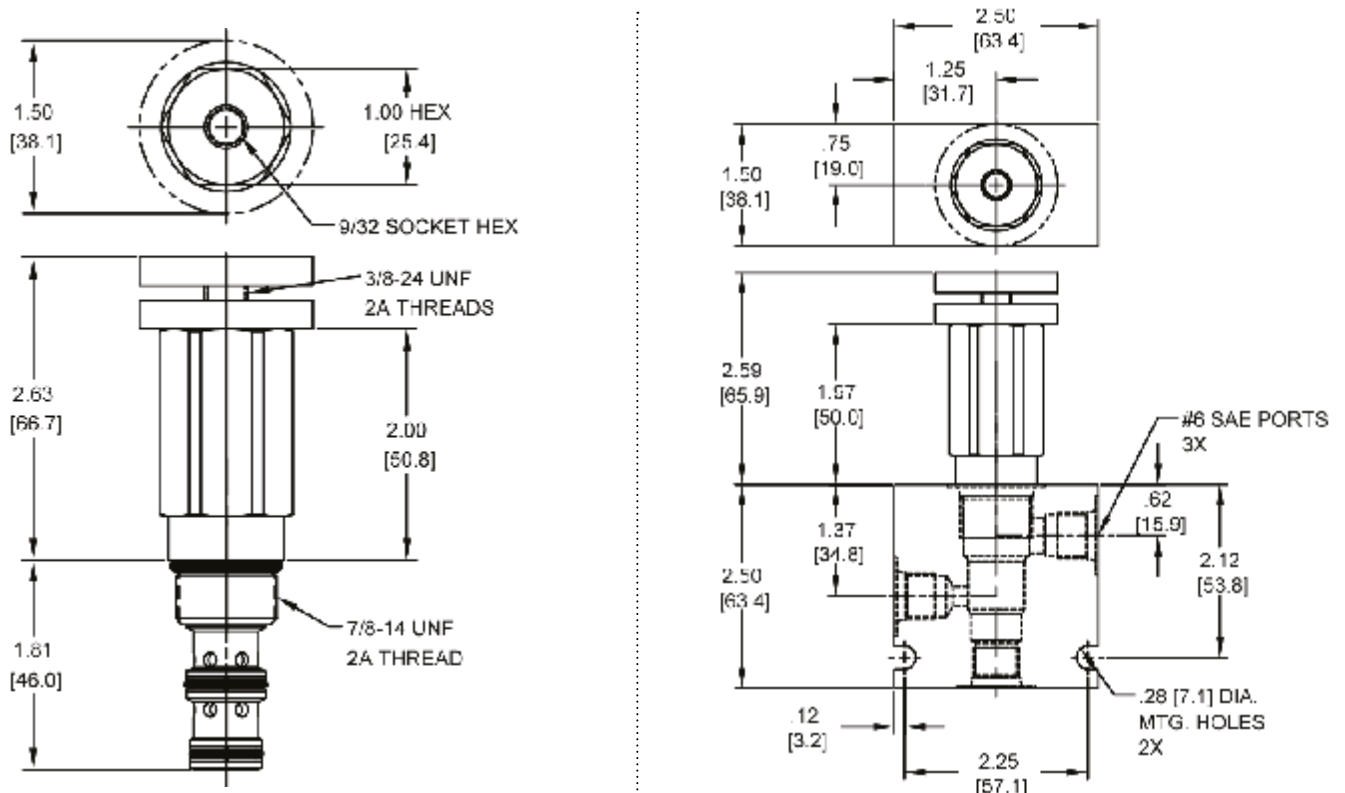


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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION

<p>DF-PWP - - -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p> <p>Buna, Internal Adjust 0I</p> <p>Viton, Internal Adjust VI</p> <p>Buna, Tamper Proof 0T</p> <p>Viton, Tamper Proof VT</p>	<p>4000</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 1/4" NPTF Ports</p> <p>S #6 SAE Ports</p> <p>PRESSURE RANGE/SETTING</p> <p>Ext./Int. Adjustable</p> <p>100 - 4000 PSI</p> <p>Tamper Proof</p> <p>Fill in 4 Digit Pressure Setting</p> <p>Example: 0500 - 500 PSI</p>
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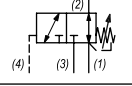
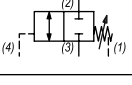
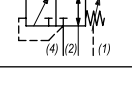
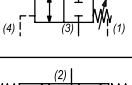
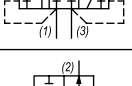
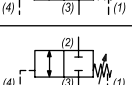
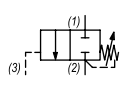
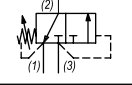
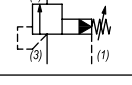
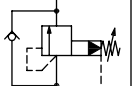
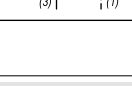


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SEQUENCE VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	10	3000	38	207	7/8-14	DG-PSA	MP94
	10	3000	38	207	7/8-14	DG-PSC	MP96
	10	3000	38	207	7/8-14	DG-PSI	MP98
	10	3000	38	207	7/8-14	DG-PSO	MP100
	12	3000	45	207	7/8-14	DG-PSS	MP102
	10	3000	38	207	7/8-14	DG-PTC	MP104
	10	3000	38	207	7/8-14	DG-PTO	MP106
	10	3000	38	207	7/8-14	DF-PWE	MP108
	8	3000	30	207	7/8-14	DF-PWI	MP110
	40	3500	151	241	1 5/16-12	SL-PWA	MP112
	40	3500	151	241	1 5/16-12	SL-PWB	MP114

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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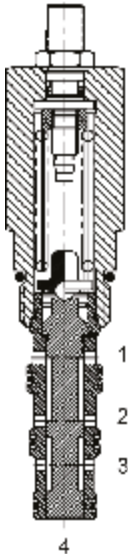


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DG-PSA SEQUENCE VALVE, 4 WAY NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 4 way external pilot sequence valve.

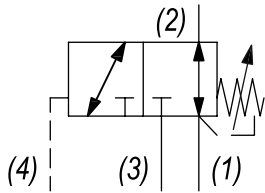
OPERATION

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.

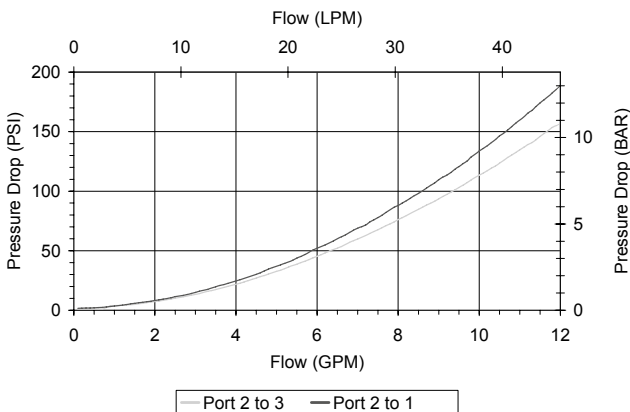
HYDRAULIC SYMBOL



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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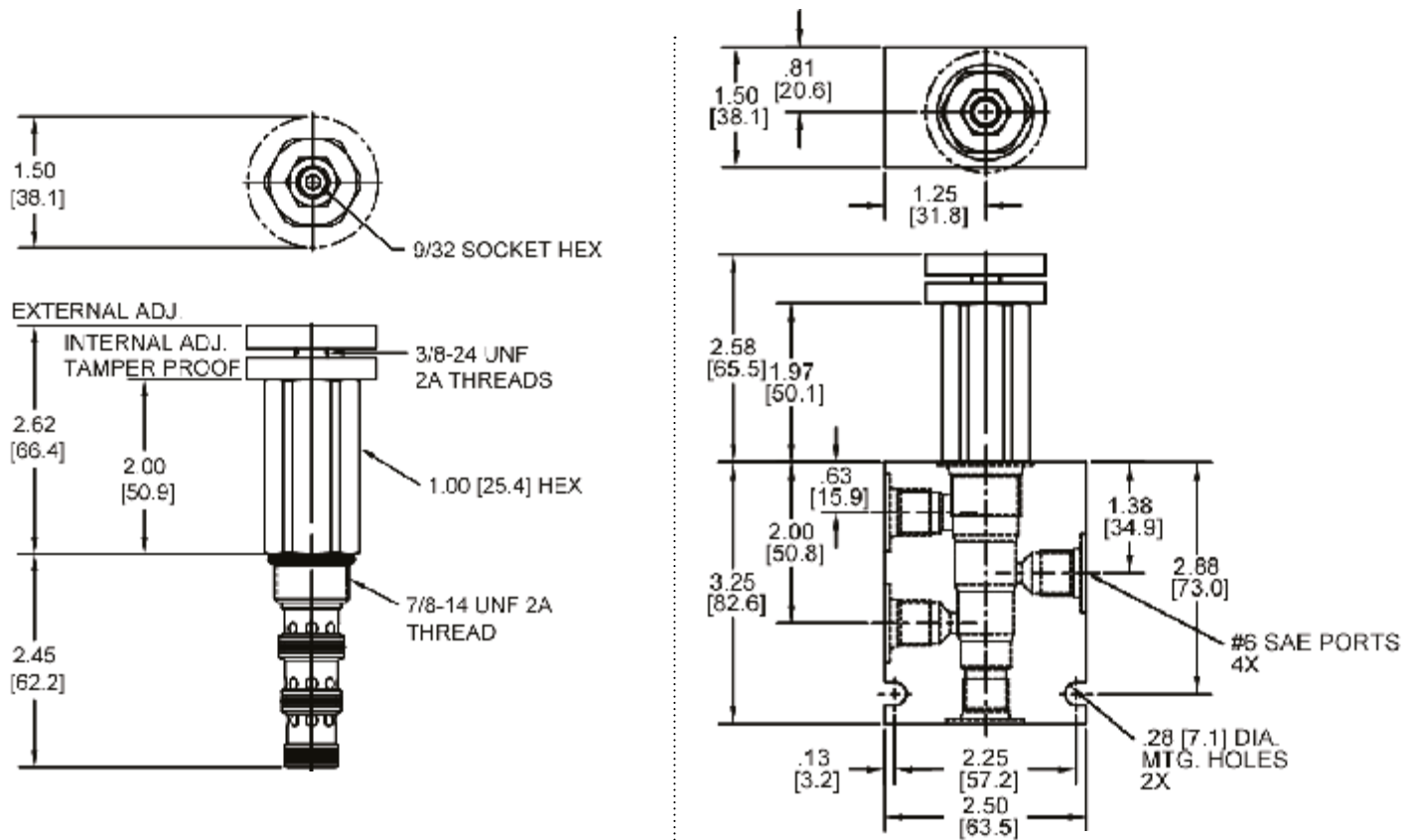


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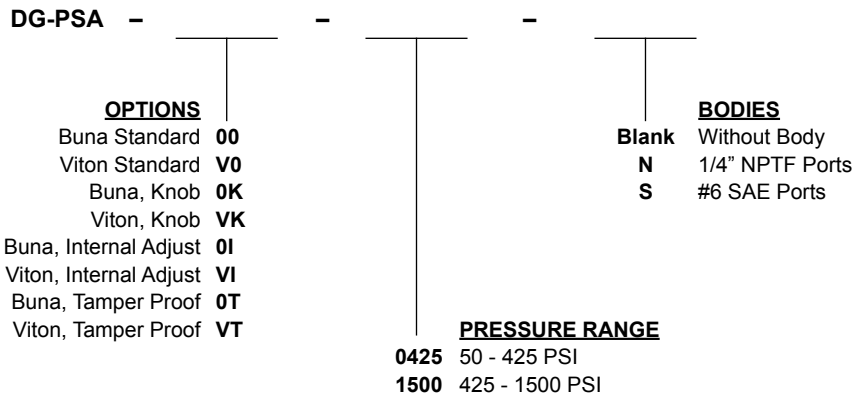
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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



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

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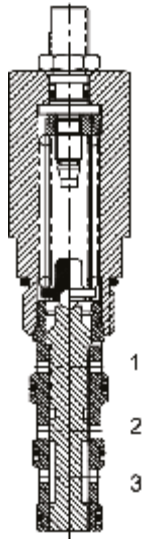


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DG-PSC SEQUENCE VALVE, 2 WAY NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 2 way normally closed sequence valve, external pilot.

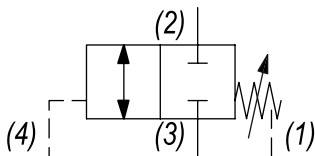
OPERATION

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.

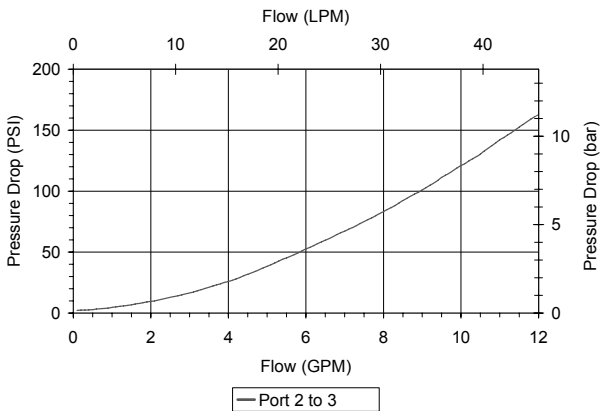
HYDRAULIC SYMBOL



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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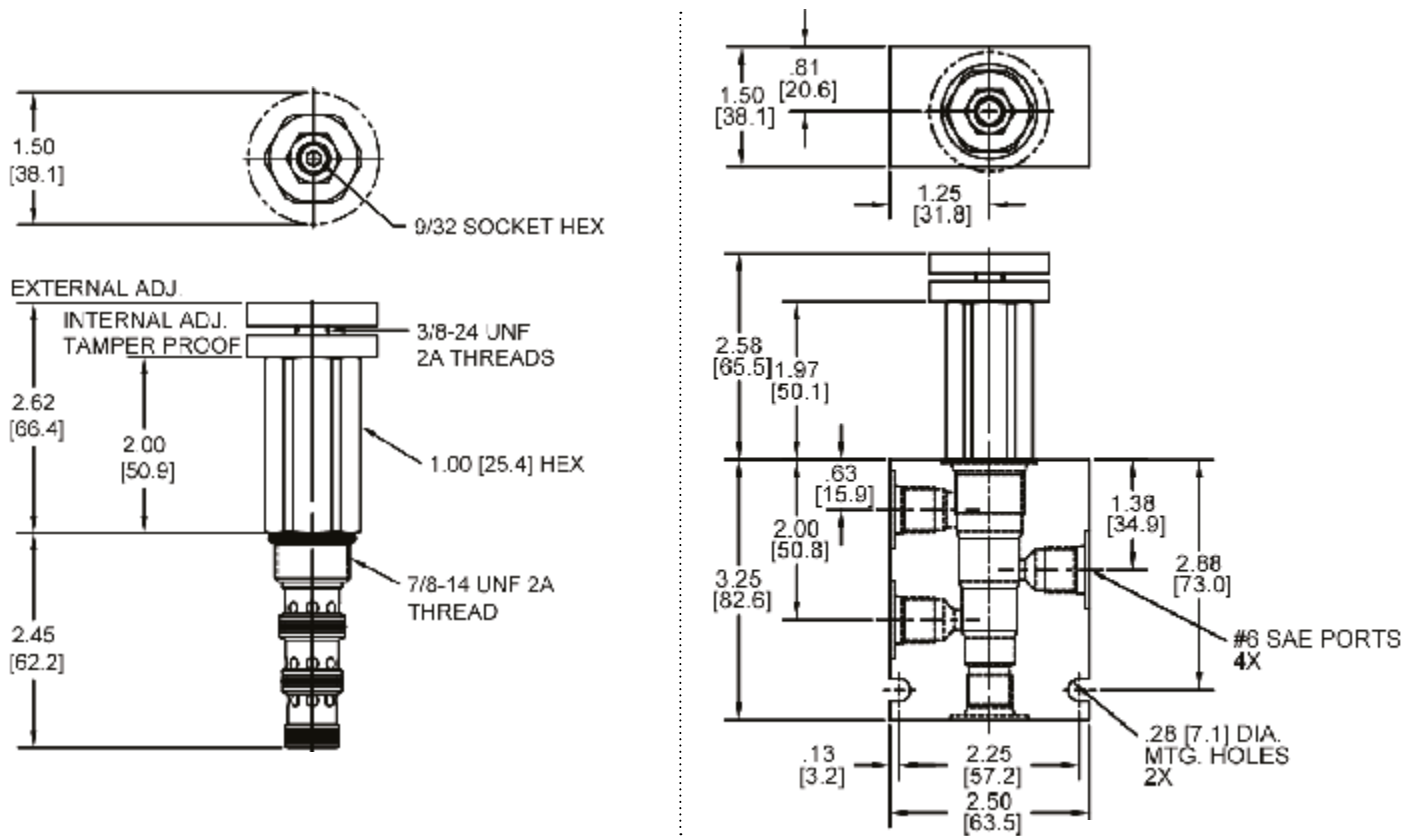


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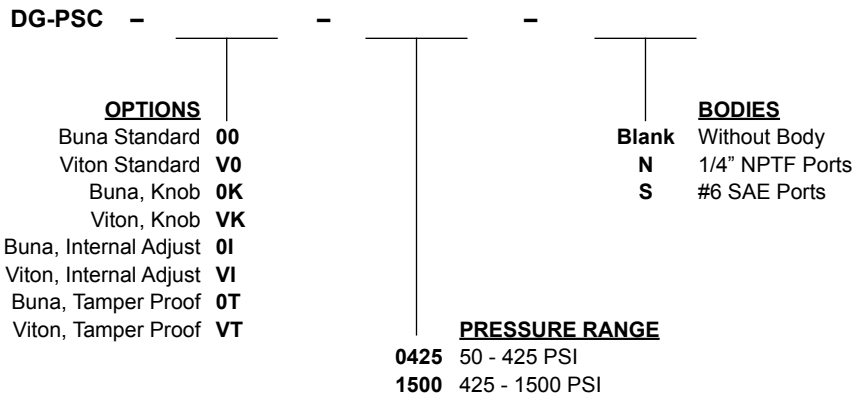
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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



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

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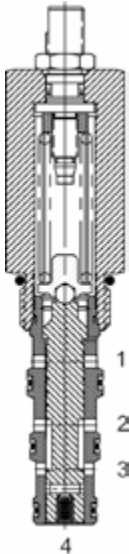


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DG-PSI SEQUENCE VALVE, 3 WAY NORMALLY OPEN, INTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 3 way normally open internal pilot sequence valve.

OPERATION

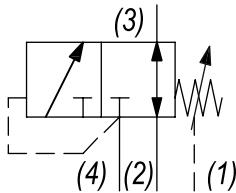
The DG-PSI in neutral (un-piloted), allows flow between (3) and (2) bidirectional, while blocking at (4). The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge shifts to close (3) to (2), while opening (4) to (3).

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

FEATURES

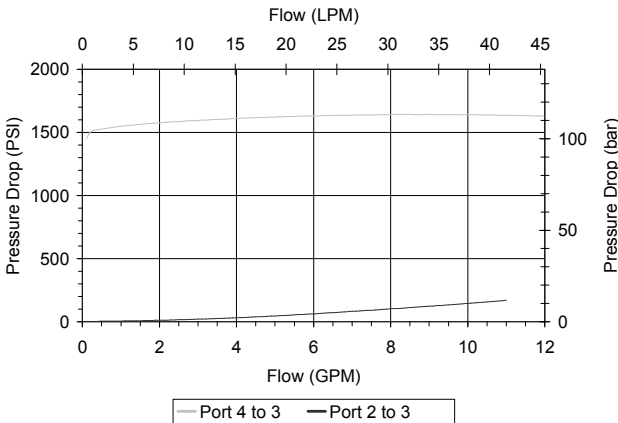
- Optional spring ranges to 1500 PSI (103 bar).
- Hardened parts for long life.
- Industry common cavity.

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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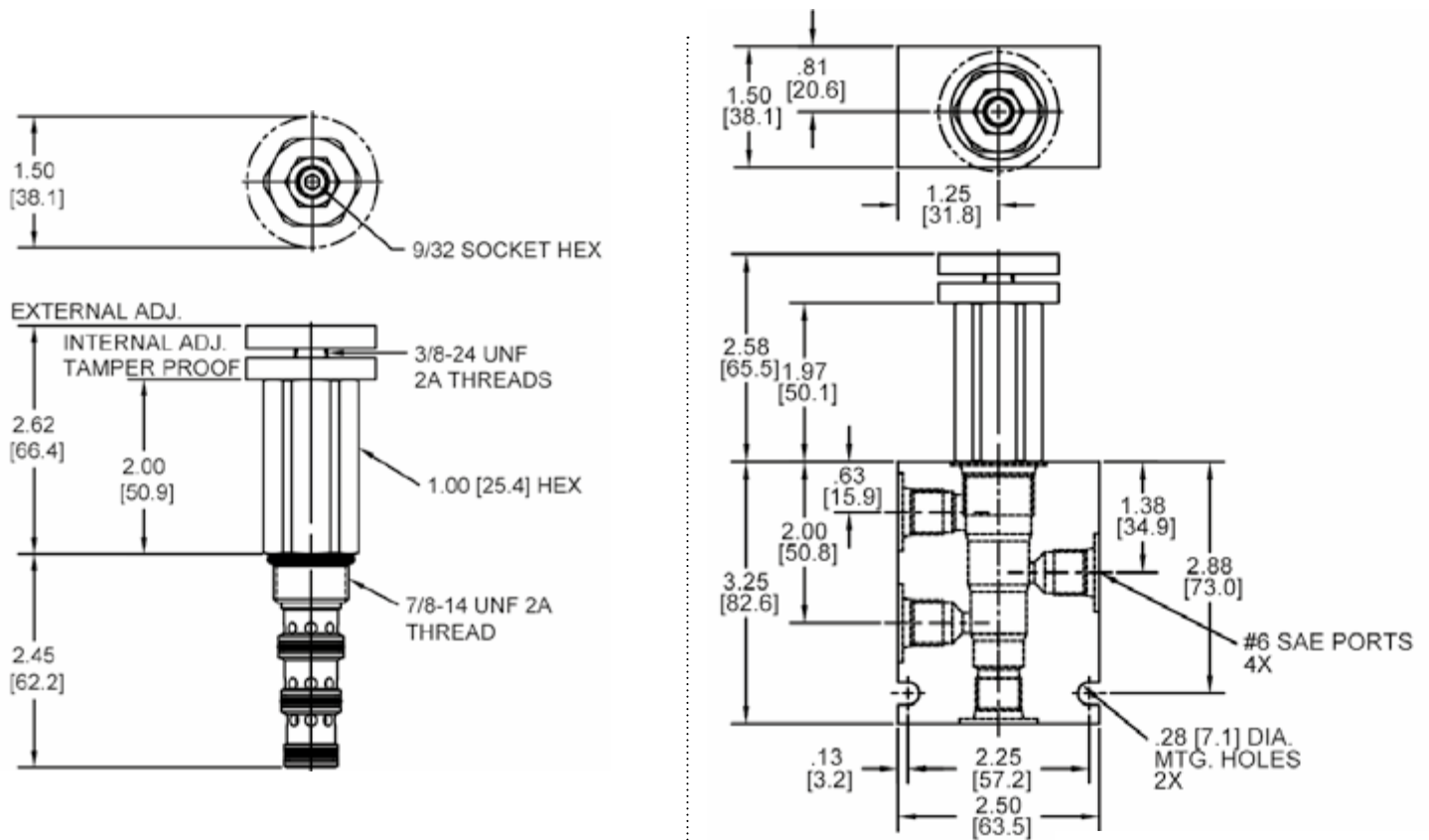


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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION

<p>DG-PSI - - -</p> <p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Knob 0K</p> <p>Viton, Knob VK</p> <p>Buna, Internal Adjust 0I</p> <p>Viton, Internal Adjust VI</p> <p>Buna, Tamper Proof 0T</p> <p>Viton, Tamper Proof VT</p>	<p>BODIES</p> <p>Blank Without Body</p> <p>N 1/4" NPTF Ports</p> <p>S #6 SAE Ports</p>
<p>PRESSURE RANGE</p> <p>0425 50 - 425 PSI</p> <p>1500 425 - 1500 PSI</p>	

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

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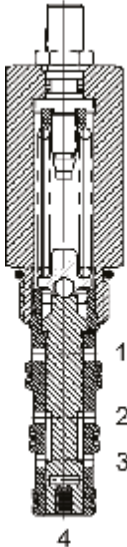


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DG-PSO SEQUENCE VALVE, 2 WAY NORMALLY OPEN, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 2 way normally open sequence valve, external pilot.

OPERATION

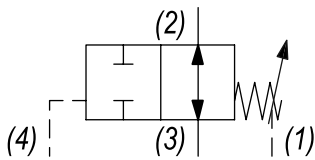
The DG-PSO in neutral (un-piloted), allows flow between (3) and (2) bi-directionally. The spring chamber is constantly vented at (1). On attainment of a predetermined pressure at (4), the cartridge shifts to block flow from (3) to (2).

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.

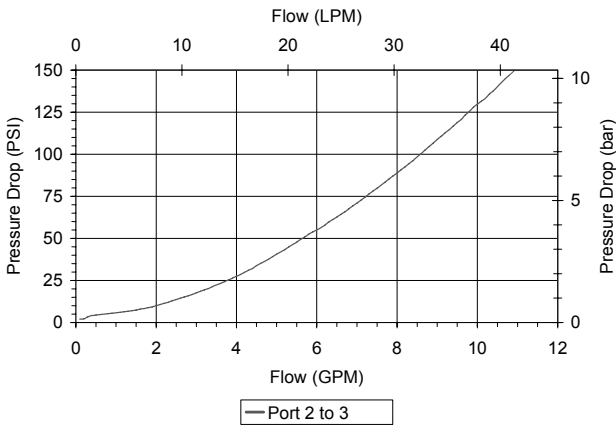
HYDRAULIC SYMBOL



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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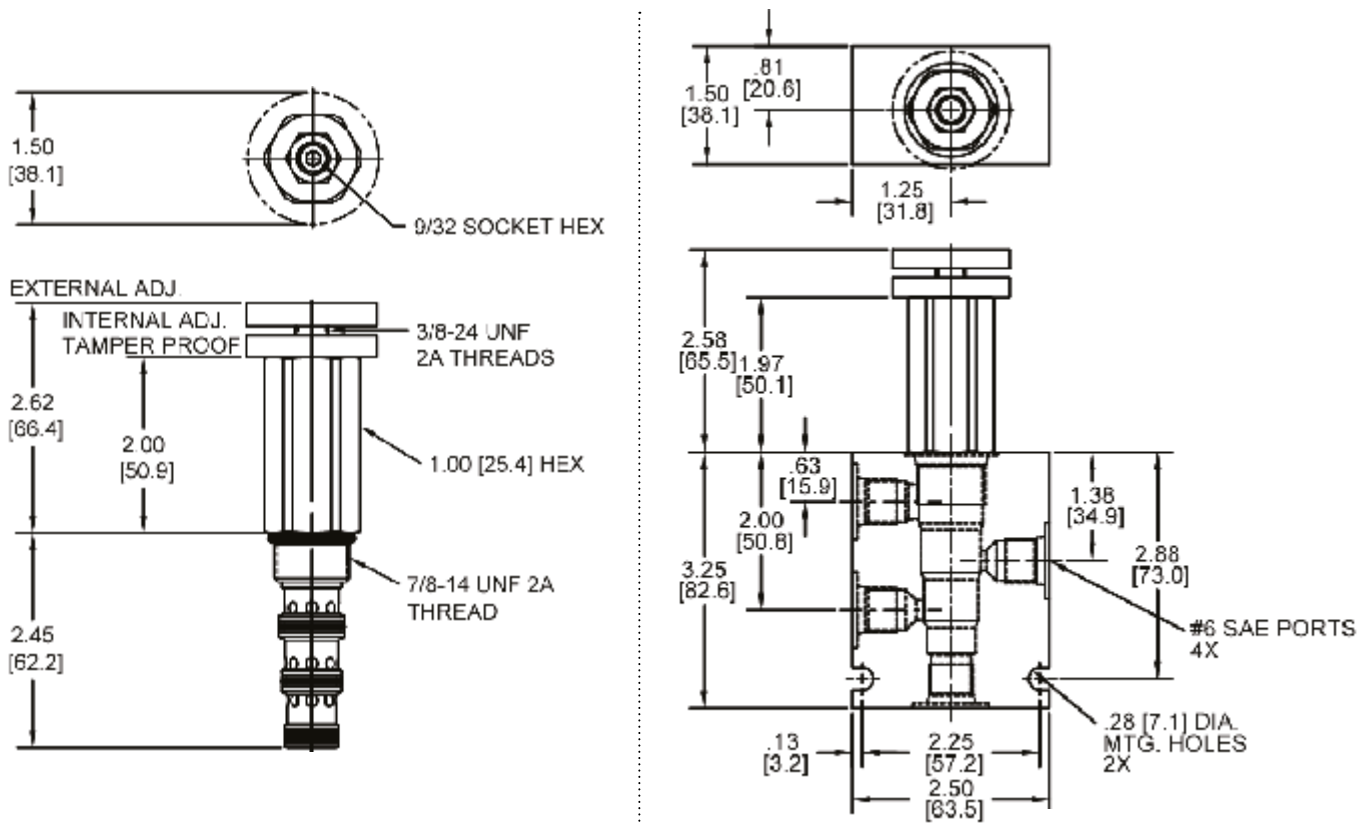


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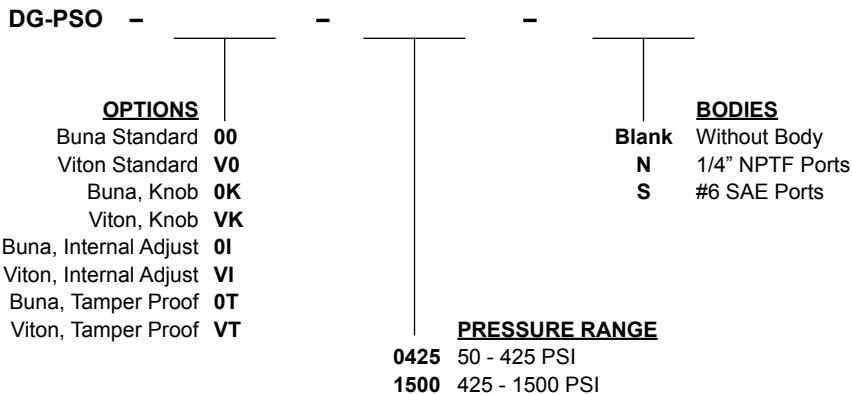
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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



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

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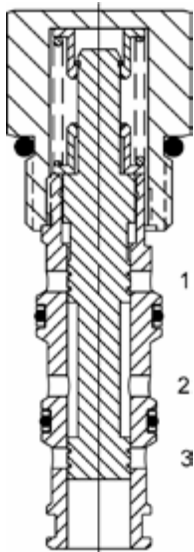


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DG-PSS HOT OIL SHUTTLE VALVE



DESCRIPTION

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

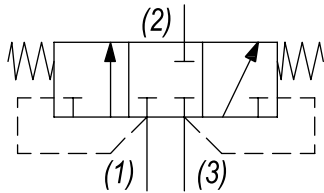
OPERATION

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

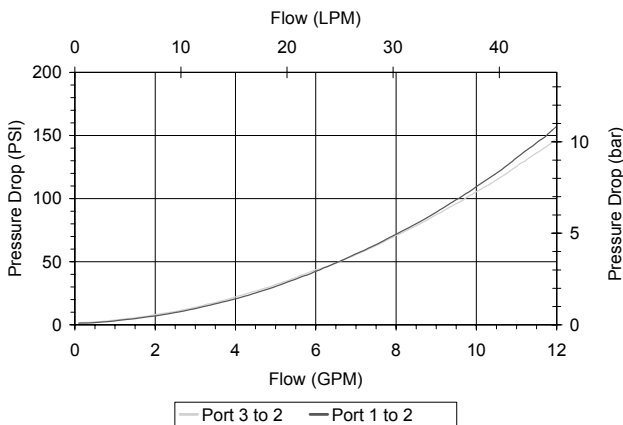
- Hardened parts for long life.
- Industry common cavity.

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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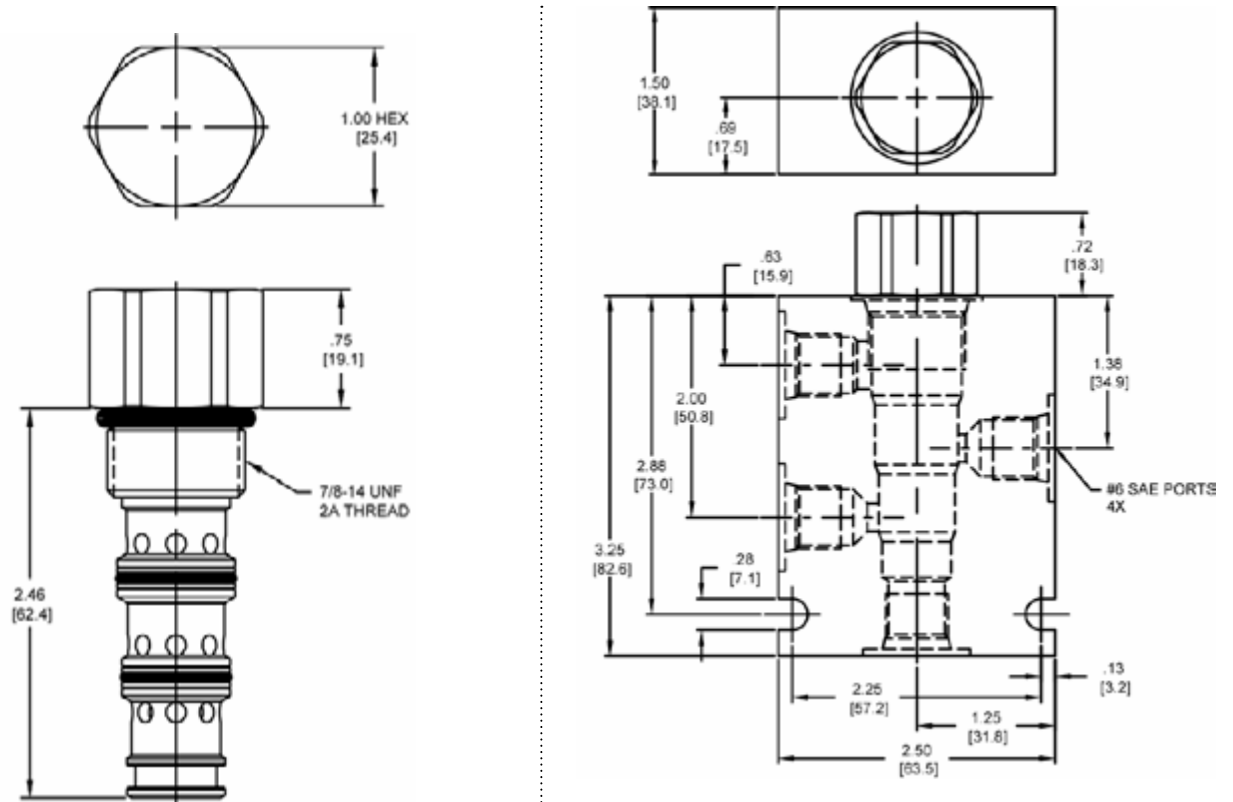


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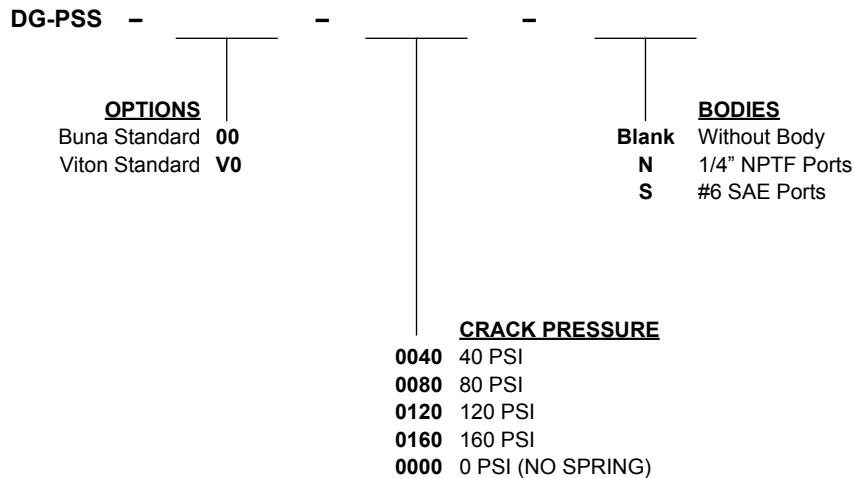
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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



W 40 / 2017

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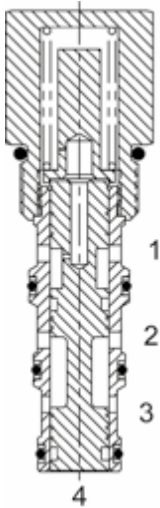


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DG-PTC SEQUENCE VALVE, NORMALLY OPEN, EXTERNAL PILOT



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, external pilot, normally open.

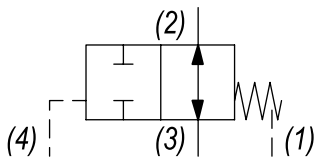
OPERATION

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.

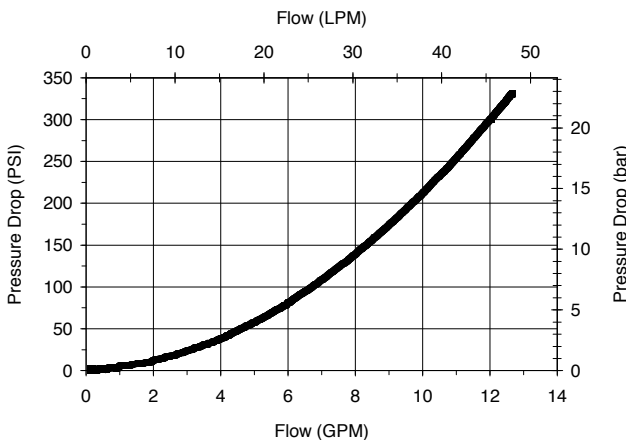
HYDRAULIC SYMBOL



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

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.

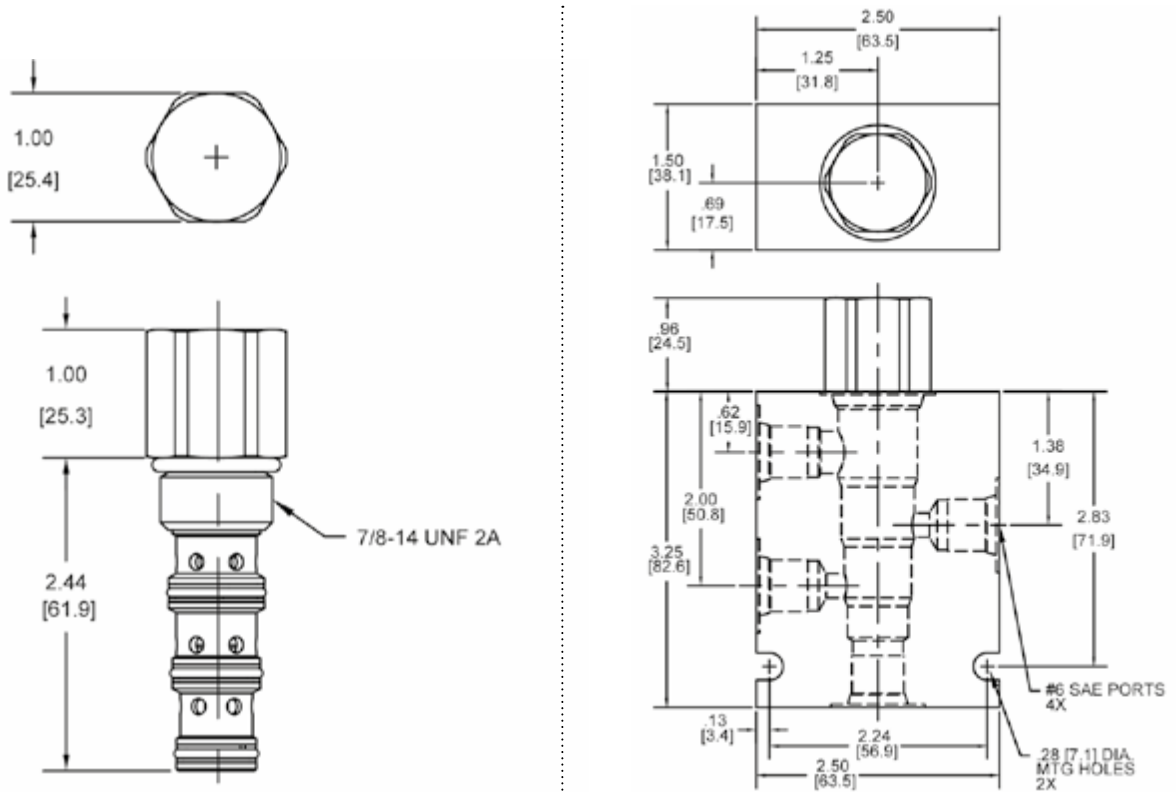


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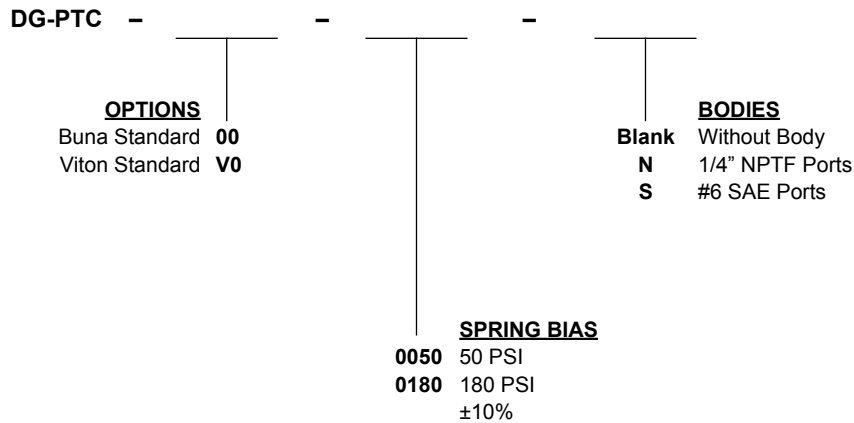
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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



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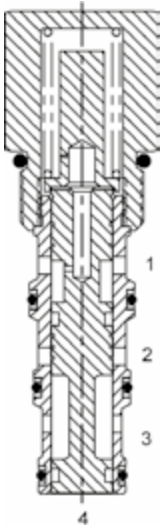


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DG-PTO SEQUENCE VALVE, NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

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

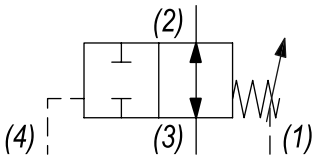
OPERATION

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.

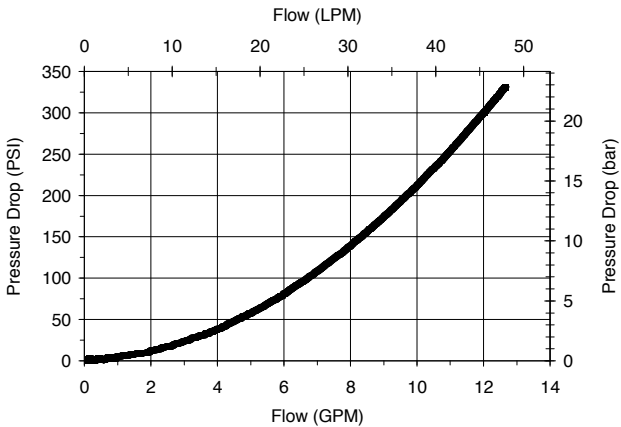
HYDRAULIC SYMBOL



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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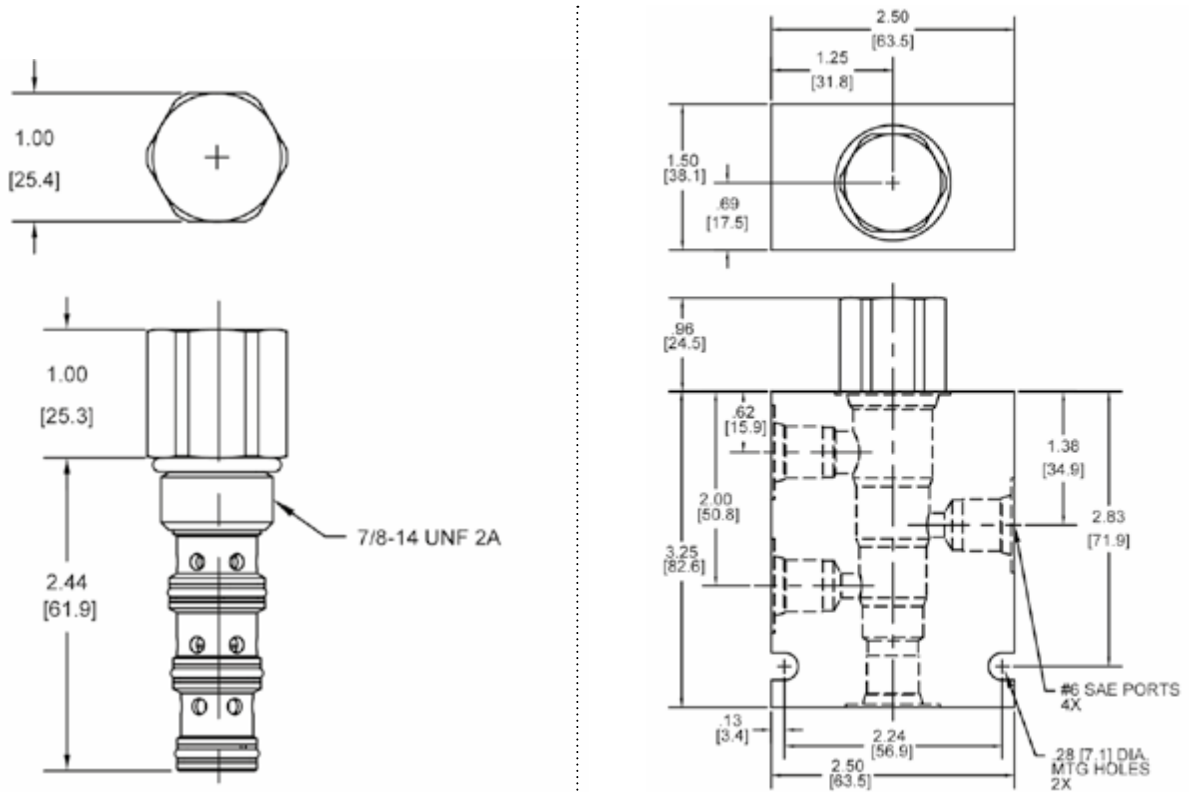


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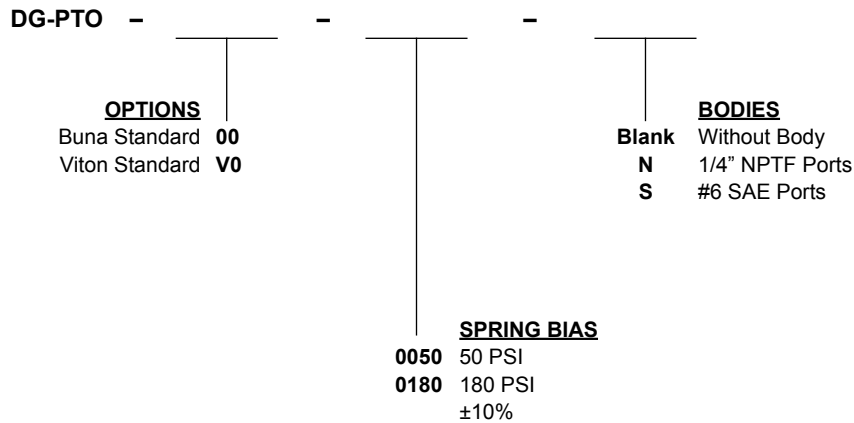
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DIMENSIONS



Body Weight: .99 lbs (.45 kg)

ORDERING INFORMATION



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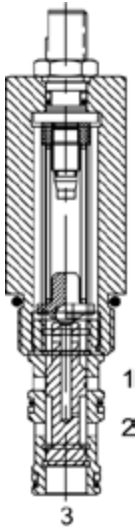


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DF-PWE SEQUENCE VALVE, NORMALLY CLOSED, EXTERNAL PILOT



DESCRIPTION

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

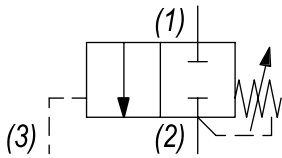
OPERATION

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.

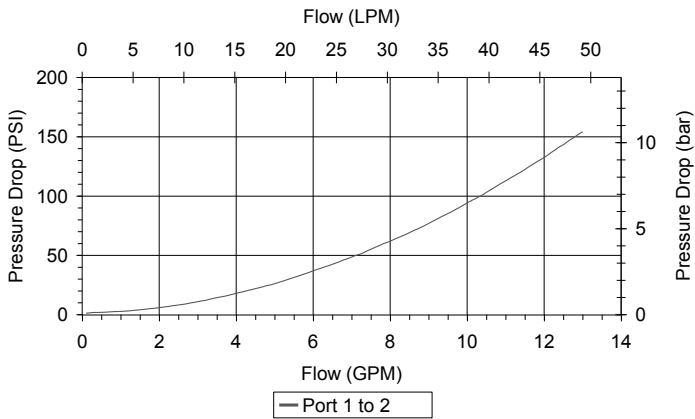
HYDRAULIC SYMBOL



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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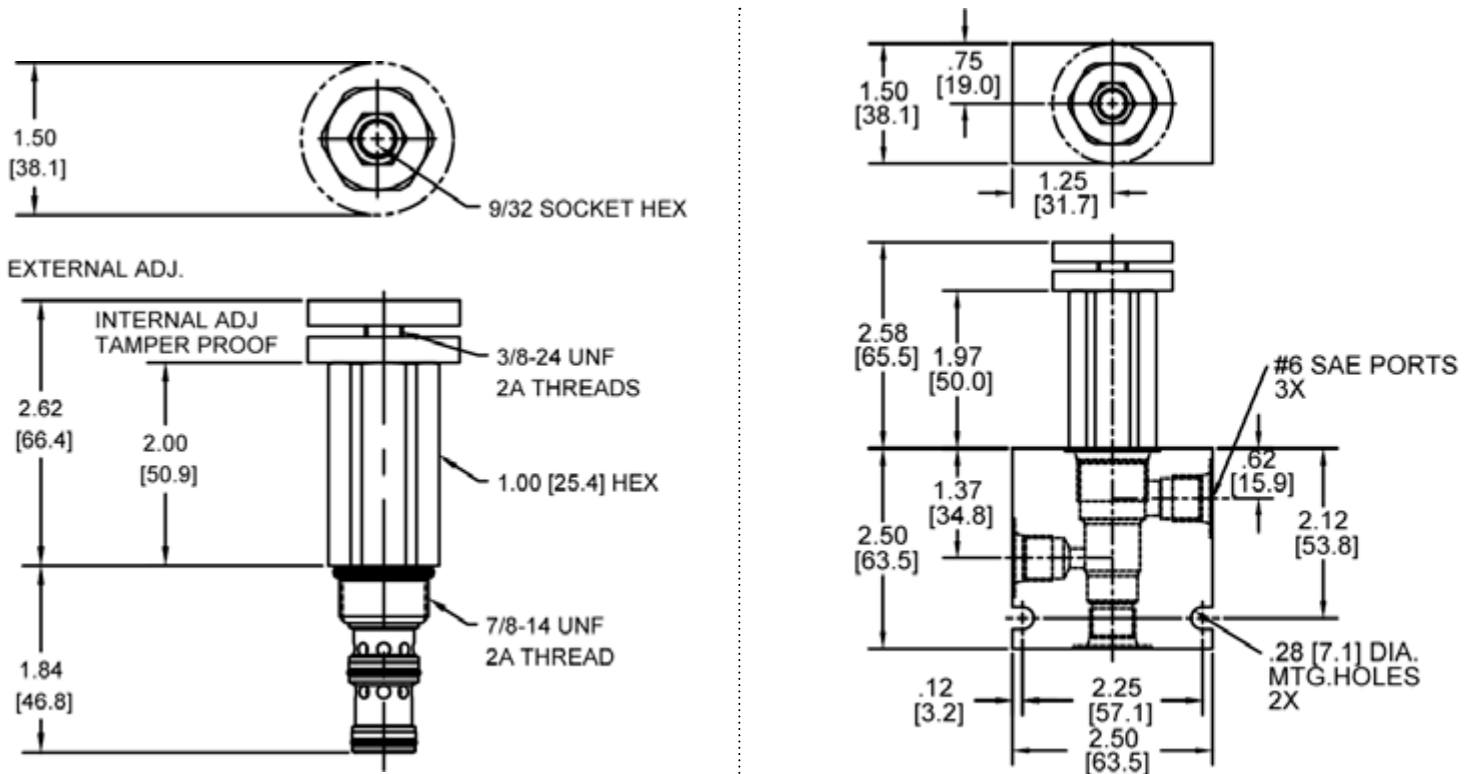


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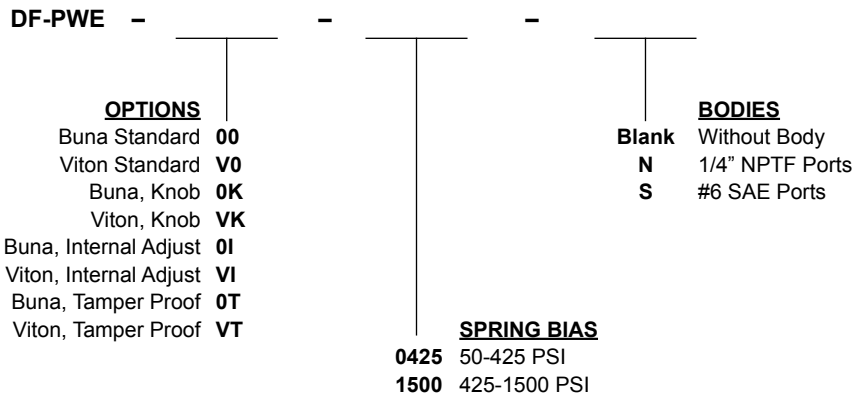
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



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

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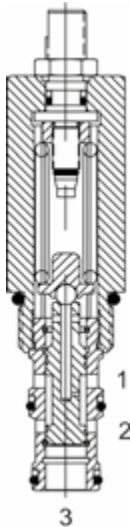


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DF-PWI SEQUENCE VALVE, INTERNAL PILOT AND DRAIN



DESCRIPTION

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

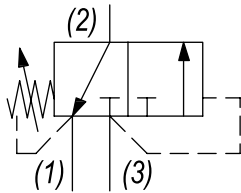
OPERATION

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

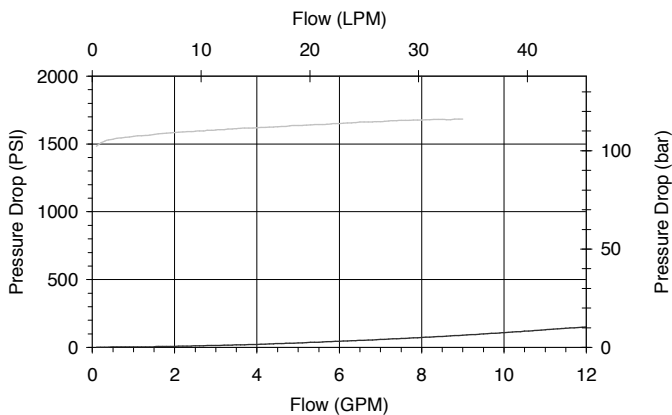
- Hardened parts for long life.
- Optional spring ranges to 1500 PSI (103 bar).
- Industry common Cavity.

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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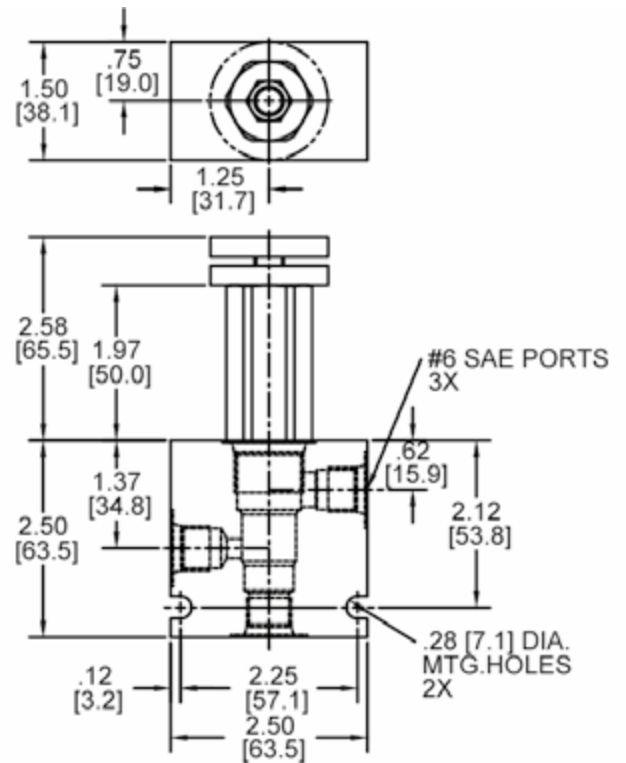
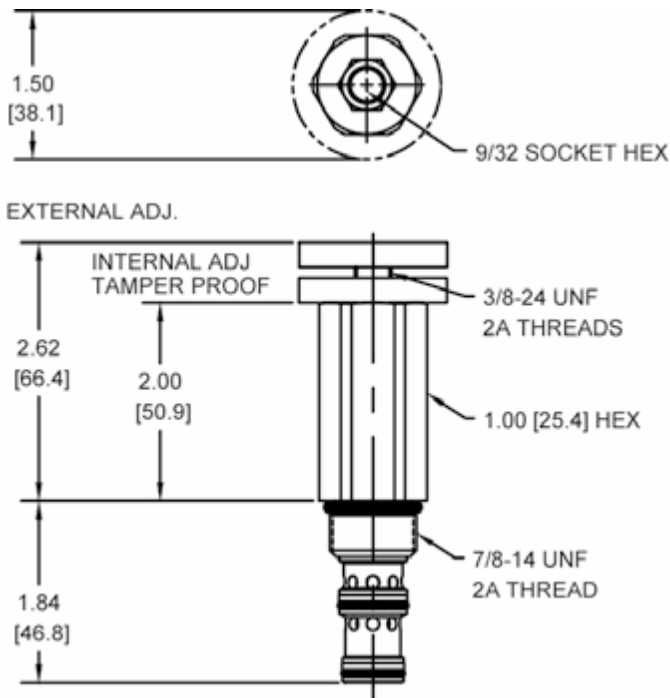


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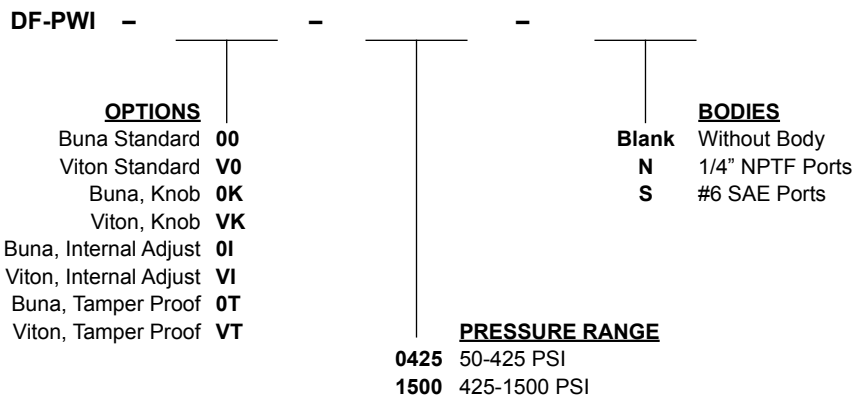
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DIMENSIONS



Body Weight: .76 lbs (.35 kg)

ORDERING INFORMATION



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

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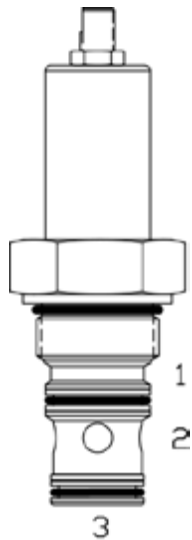


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SL-PWA SEQUENCE VALVE, NORMALLY CLOSED, INTERNAL PILOT



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, internal pilot normally closed, sequence valve.

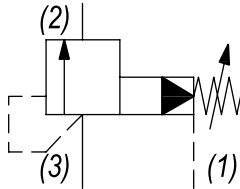
OPERATION

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

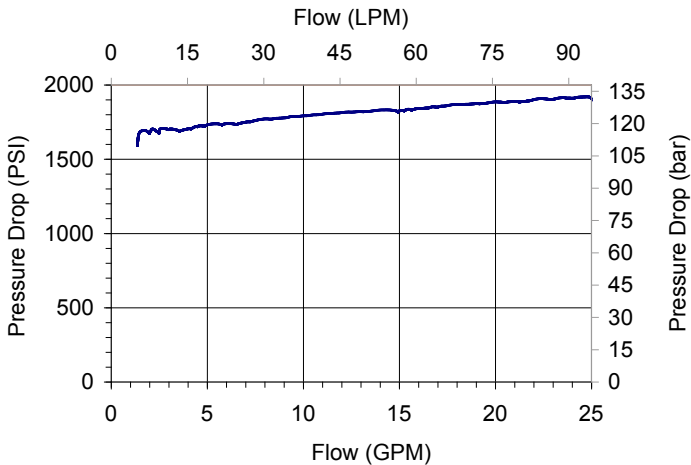
- Hardened parts for long life.
- Industry common cavity.

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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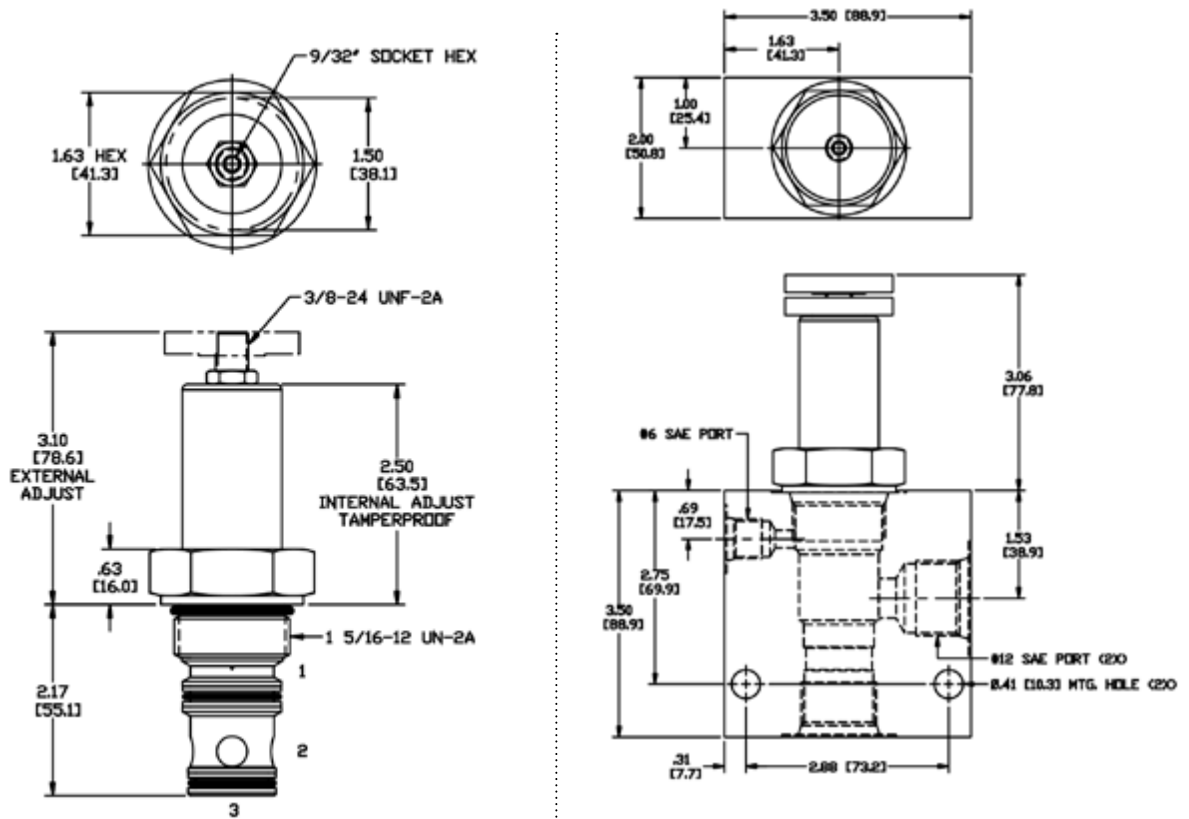


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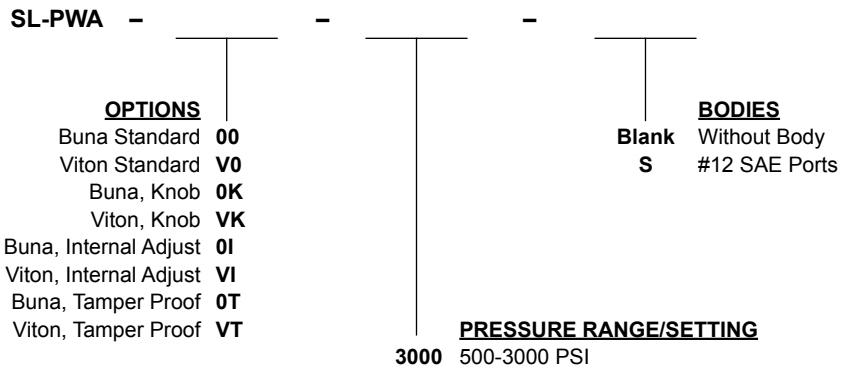
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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION



Tamper Proof
 Fill in 4 Digit Pressure Setting
 Example: 2000 = 2000 PSI

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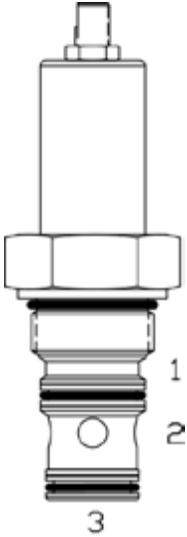


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SL-PWB SEQUENCE VALVE, NORMALLY CLOSED, INTERNAL PILOT WITH REVERSE FREE FLOW



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, internal pilot normally closed, sequence valve w/ reverse free flow.

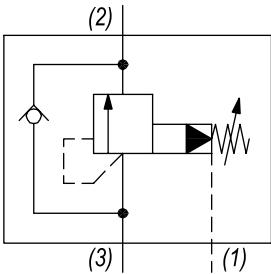
OPERATION

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

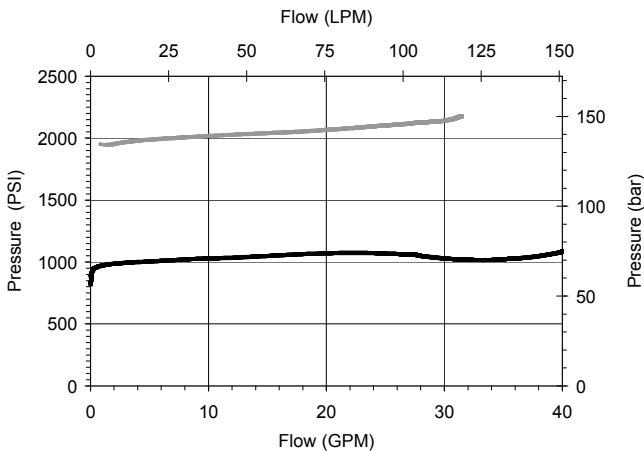
- Hardened parts for long life.
- Industry common cavity.

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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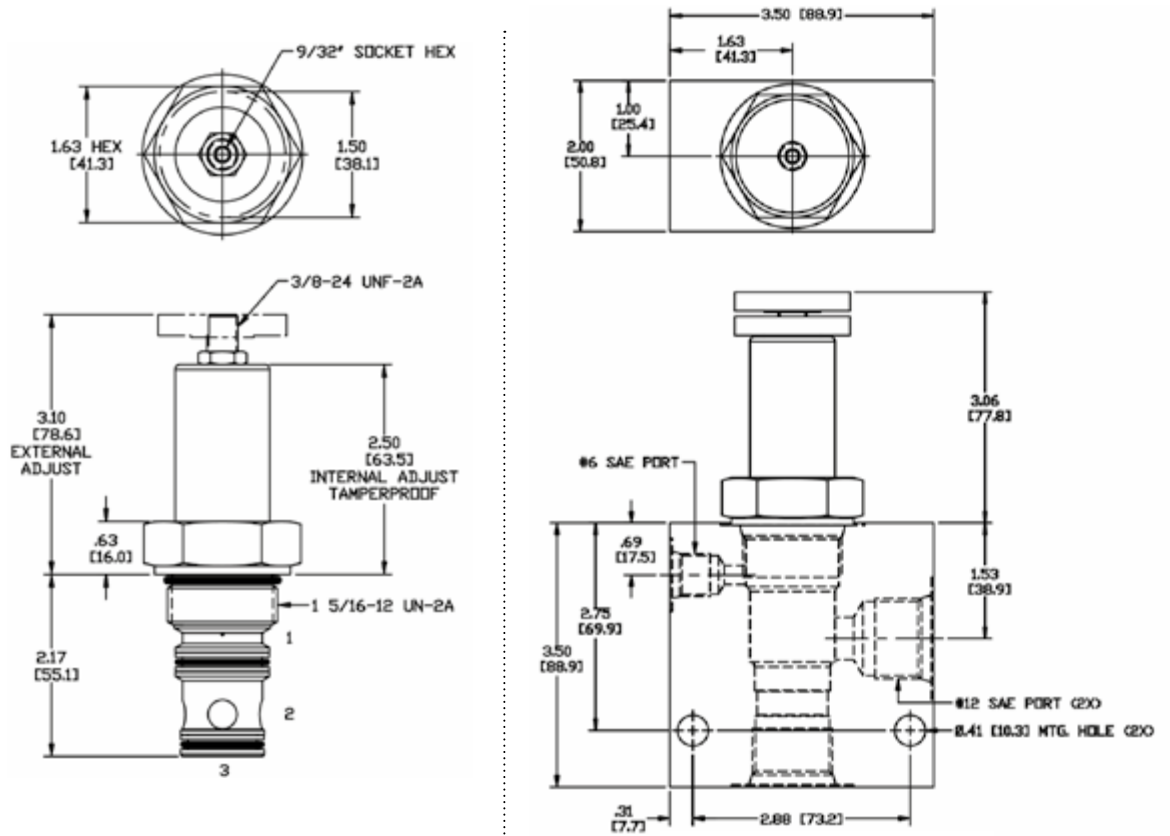


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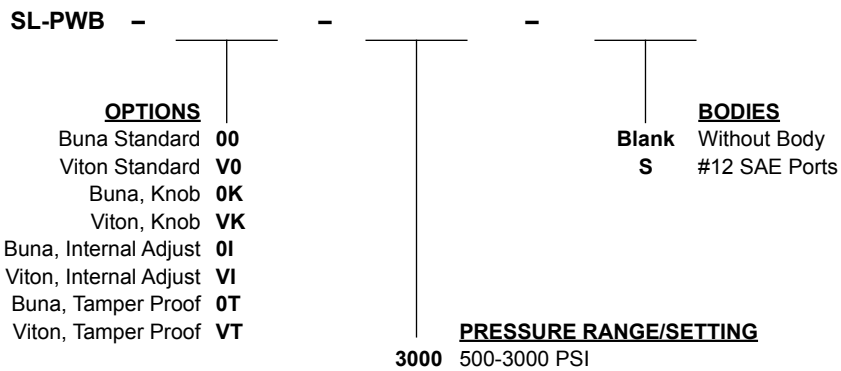
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DIMENSIONS



Body Weight: 1.89 lbs (.86 kg)

ORDERING INFORMATION



Tamper Proof
Fill in 4 Digit Pressure Setting
Example: 2000 = 2000 PSI

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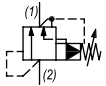
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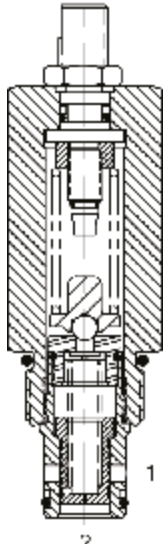
SHUT DOWN VALVES

	GPM	PSI	LPM	BAR	CAVITY	MODEL	PAGE
	15	4500	57	310	7/8-14	DE-PSD	MP118

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.

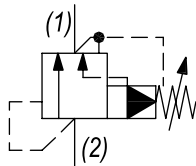
OPERATION

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.

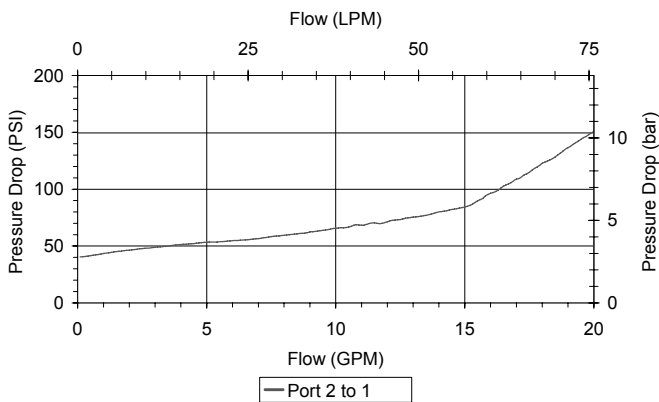
HYDRAULIC SYMBOL



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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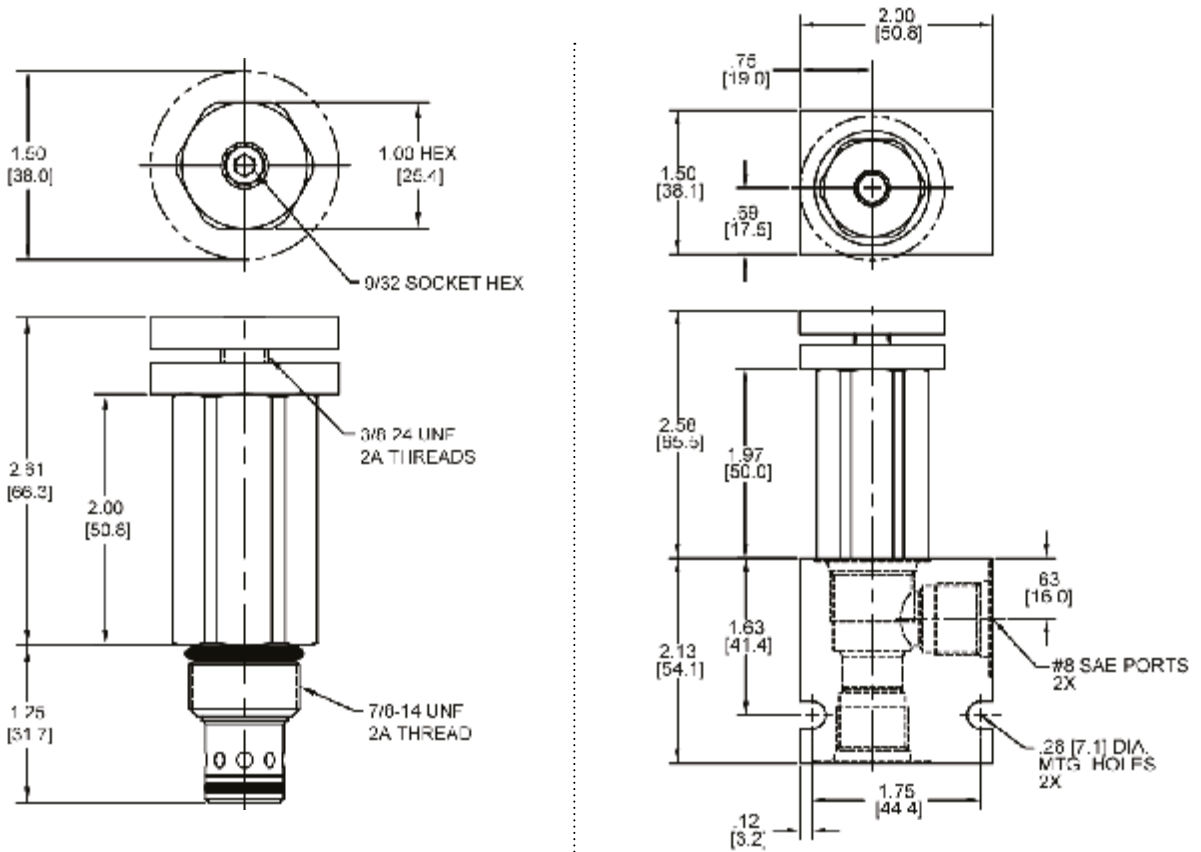


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 mail: delta@delta-power.com • www.delta-power.com



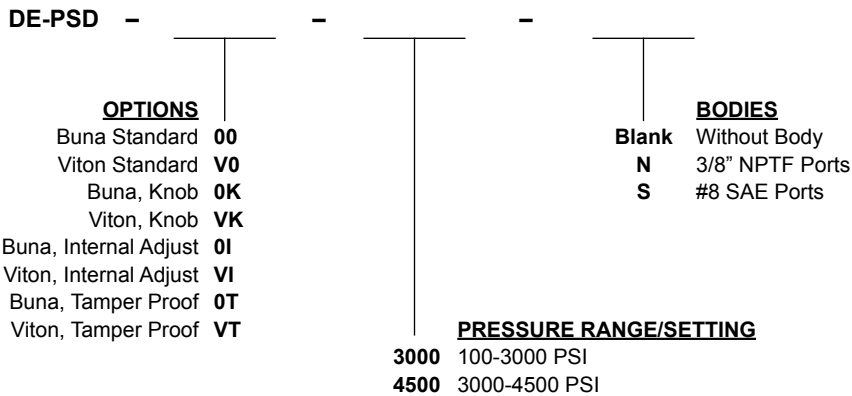
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DIMENSIONS



Body Weight: .47 lbs (.21 kg)

ORDERING INFORMATION



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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