



QUICK SELECTION GUIDE

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Mechanical Directional Controls

Direct Acting Check Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	5	3500	19	245	MA-CVA	8
	15	3500	57	245	DE-CVA	10
	15	5000	57	345	HE-CVA	12
	35	5000	132	345	HT-CVA	14
	40	3500	151	245	SJ-CVA	16
	10	3500	38	245	DE-CVB	18
	10	3500	38	245	PB-CVC	20
	8	3500	30	245	DE-CVC	22
	15	3500	57	245	DE-CVR	24
	35	5000	132	345	HT-CVR	26
	2,5	1500	9,5	103	MA-CVS	28
	5	3500	19	245	PB-CVS	30
	10	1000	38	69	DE-CVS	32
	1	3500	4	245	QS-CVL	34

Pilot to Open Check Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	6	3500	23	245	PP-CPB	38
	8	3500	30	245	DF-CPB	40
	10	3500	38	245	DF-CPC	42

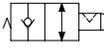
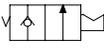
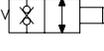
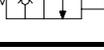
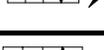
Pilot to Close Check Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3500	38	245	DF-CPD	46
	20	3500	76	245	SL-CPD	48

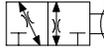
Check Valves with Thermal Relief

	GPM	PSI	LPM	BAR	MODEL	PAGE
	15	4000	57	276	DE-CVT	52

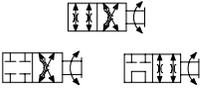
2W2P Manual Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3500	45	245	PB-MCA	56
	20	3500	76	245	DE-MCA	58
	20	1500	76	103	DE-MCF	60
	20	3500	76	245	DE-MCS	62
	20	3500	76	245	DE-MCB	64
						
	8	3500	30	245	PB-MCI	66
	8	3500	30	245	PB-MCL	68
	15	3500	57	245	DE-MCL	70
	20	3000	76	207	DE-M2G	72
	1	4000	4	276	HB-MCP	74

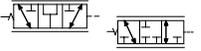
3W2P Manual Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3000	45	207	DF-M3A	78

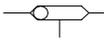
4W2P Manual Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3000	38	207	DG-M4A	82
	15	3000	57	207	DG-M4B	84
	12	3000	45	207	DG-M4C	86

Pilot to Shift Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	40	3500	154	245	SO-PTS	90
	40	3500	151	245	SO-PTT	92

Shuttle Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	6	3500	23	245	PP-CSB	96
	8	3500	30	245	DF-CSB	98
	1	3500	4	245	QS-CSB	100

Rotary Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	40	3000	151	207	SJ-MRA	104

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Pressure Controls

Direct Acting Relief Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3500	45	245	DE-RCA	110
	5	3000	19	207	MA-RVA	112
	6	3500	23	245	PB-RVA	114
	8	4000	30	276	DE-RVA	116
	6	3500	23	245	PB-RWA	118
	8	4000	30	276	DE-RWA	120

Differential Area Relief Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	15	3500	57	245	DE-RCD	122
	8	3500	30	245	PB-RVD	124
	15	4000	57	276	DE-RVD	126
	8	3500	30	245	PB-RWD	128
	15	4000	57	276	DE-RWD	130

Pilot Operated Relief Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	20	4000	76	276	DE-RVP	134
	20	4000	76	276	HT-RVP	136
	15	4000	57	276	DE-RVR	138
	40	3500	151	245	SJ-RVR	140
	15	4000	57	276	DE-RWP	142
	15	4000	57	276	DE-RWR	144
	20	4000	76	276	QR-RVP	146

Crossover Relief Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	15	4000	57	276	DE-RVB	150
	15	4000	57	276	DE-RVC	152

Pressure Compensated Regulator Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE	
	8	3500	30	245	DF-CP2	156	
	19	3500	70	245	QC-CP2	158	
	10	3500	38	245	DF-TCS	162	
	10	3500	38	245	DF-PCR	166	
	40	3500	151	245	TR-PCA	168	
	40	3500	151	245	SL-PCA	170	
	33	3500	120	245	QC-CP3	172	
	10	3500	38	245	DG-TCB	176	

Pressure Reducing/Relieving Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	4000	38	276	DF-PRP	180
	20	3000	76	207	SK-PRP	182
	10	4000	38	276	DF-PWP	184

Sequence Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3000	38	207	DG-PSA	188
	10	3000	38	207	DG-PSC	190
	10	3000	38	207	DG-PSI	192
	10	3000	38	207	DG-PSO	194
	12	3000	45	207	DG-PSS	196
	10	3000	38	207	DF-PWE	198
	8	3000	30	207	DF-PWI	200

Shut Down Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	15	4500	57	310	DE-PSD	204

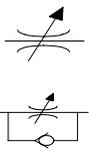
Unloading Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	1	4000	3,8	276	DF-PUV	208

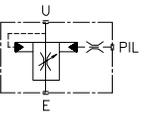
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Flow Controls

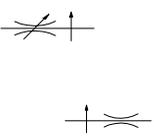
Flow Restrictors, Adjustable (Needle Valves)

	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3500	45	245	DE-FCH	214
	6	3500	23	245	MA-NVA	216
	6	3500	23	245	PB-NVA	218
	10	3500	38	245	DE-NVA	220
	35	5000	133	345	HT-NVA	222
	40	3500	151	245	SJ-NVA	224
	3	3500	11	245	PB-NVB	226
	15	3500	57	245	DE-NVB	228

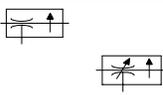
External Pilot Flow Restrictors

	GPM	PSI	LPM	BAR	MODEL	PAGE
	16	3500	55	245	QP-RIP-32	232
	32	3500	110	245	QP-RIP-48	234

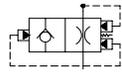
Pressure Compensated Flow Regulator Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	3	3000	11	207	MA-FCA	238
	4	3500	15	245	PB-FCA	240
	8	3500	30	245	DE-FCA	242
	20	5000	76	345	HT-FCA	244
	25	3500	95	245	SJ-FCA	246
	8	3500	30	245	DE-FCB	248
	8	3500	30	245	DE-FCC	250
	8	3500	30	245	DE-FCF	252

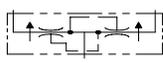
Priority Flow Regulator Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3000	38	207	DF-FCP	256
	10	3000	38	207	DF-FCQ	258
	25	3000	95	207	SK-FCQ	260

Velocity Fuses

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3500	38	245	DE-CVF	264

Flow Divider/Combiner Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3500	45	245	DG-FDA	268
	30	3500	114	245	SN-FDA	270
	12	3500	45	245	DG-FDB	272
	12	3500	45	245	DG-FDH	274
	12	3500	45	245	DG-FDT	276

Logic Elements

	GPM	PSI	LPM	BAR	MODEL	PAGE
	40	3500	151	245	SL-PLA	280
	40	3500	151	245	SL-PLB	282
	40	3500	151	245	SL-PLC	284

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Shuttle Valves	95
Rotary Valves	103

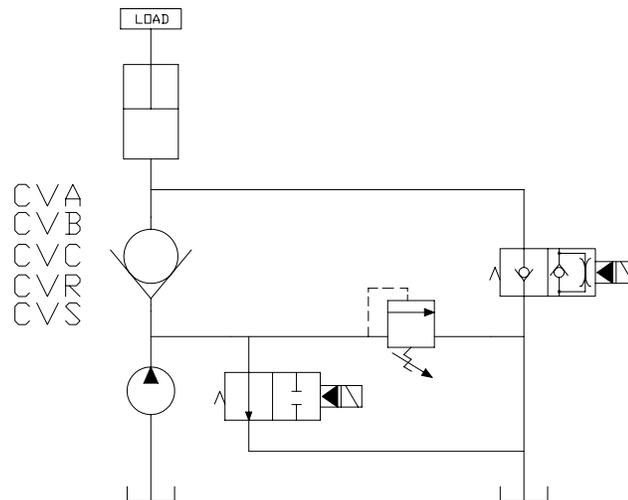
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Direct Acting Check Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	5	3500	19	245	MA-CVA	8
	15	3500	57	245	DE-CVA	10
	15	5000	57	345	HE-CVA	12
	35	5000	132	345	HT-CVA	14
	40	3500	151	245	SJ-CVA	16
	10	3500	38	245	DE-CVB	18
	10	3500	38	245	PB-CVC	20
	8	3500	30	245	DE-CVC	22
	15	3500	57	245	DE-CVR	24
	35	5000	132	345	HT-CVR	26
	2.5	1500	9.5	103	MA-CVS	28
	5	3500	19	245	PB-CVS	30
	10	1000	38	69	DE-CVS	32
	1	3500	4	245	QS-CVL	34

Typical Schematic

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

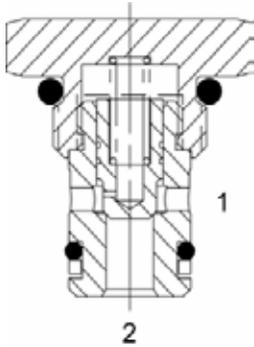


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MA-CVA Direct Acting Check Valve, Poppet

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

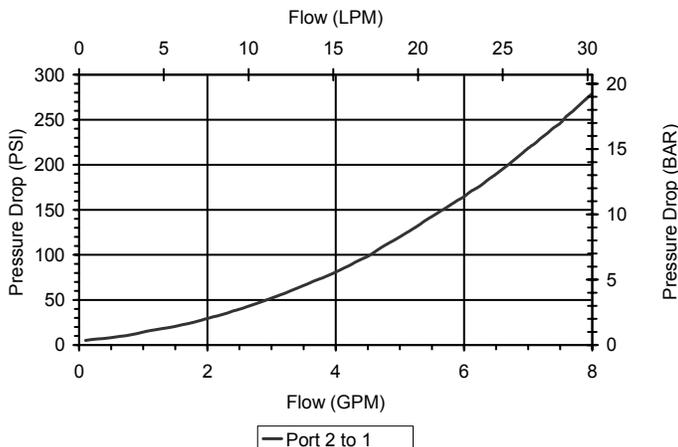
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

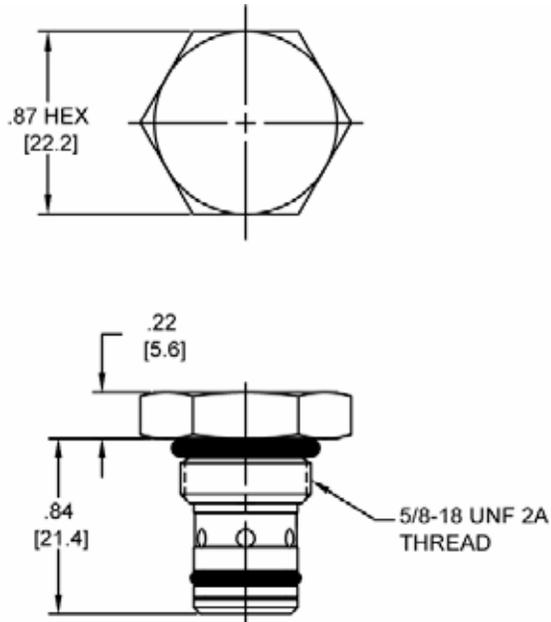


VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500003
Seal Kit	21191000

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DIMENSIONS



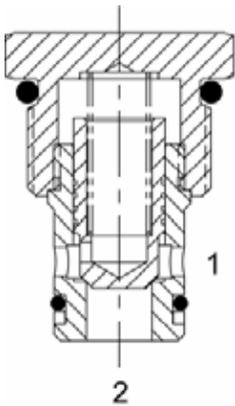
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

MA-CVA -		-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			N 1/4" BSP Ports
				S #6 SAE Ports
				CRACK PRESSURE
		0005		5 PSI
		0020		20 PSI
				±10%

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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

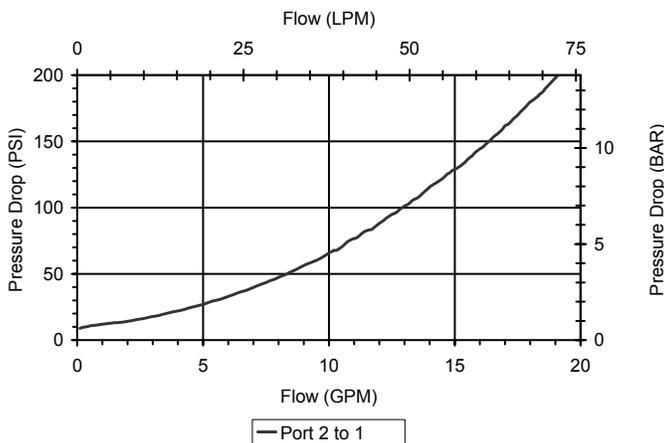
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

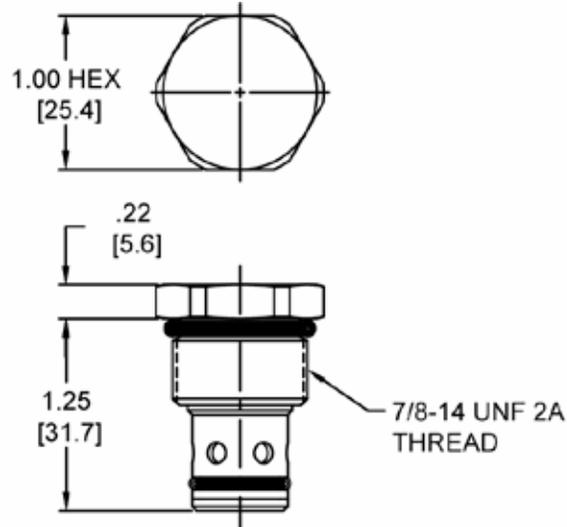


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191000

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DIMENSIONS



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

ORDERING INFORMATION

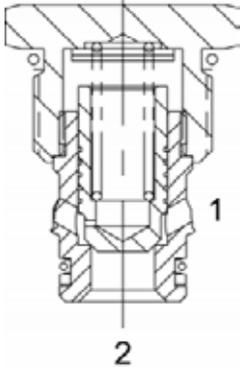
DE-CVA		-	-	-	-
OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	3/8" BSP Ports
				S	#8 SAE Ports
					CRACK PRESSURE
			0010		10 PSI
			0035		35 PSI
			0070		70 PSI
			0100		100 PSI
					± 10%

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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

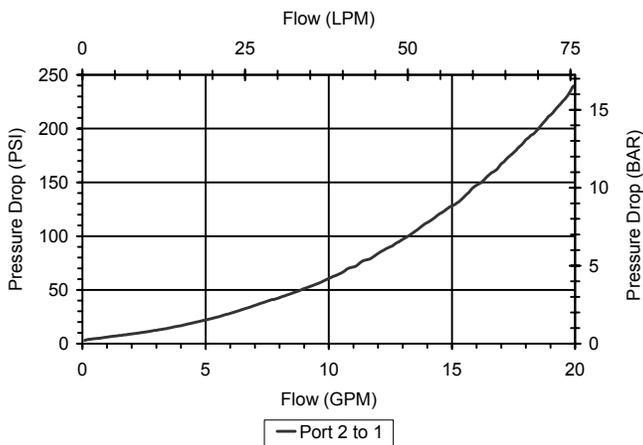
- Hardened parts for long life and low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

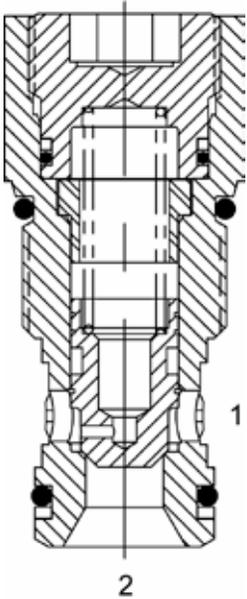


VALVE SPECIFICATIONS

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 Temperature 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	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191000

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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

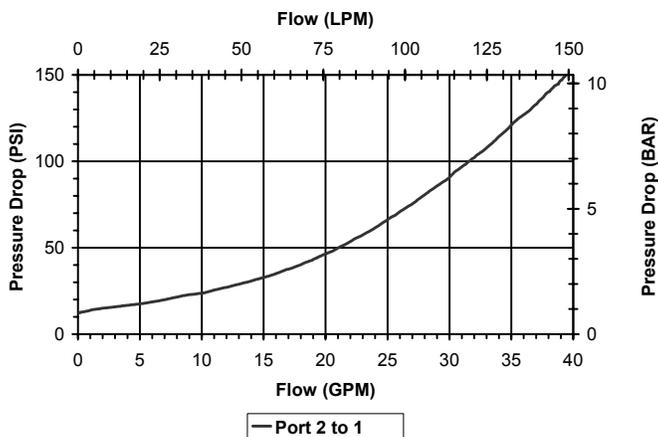
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

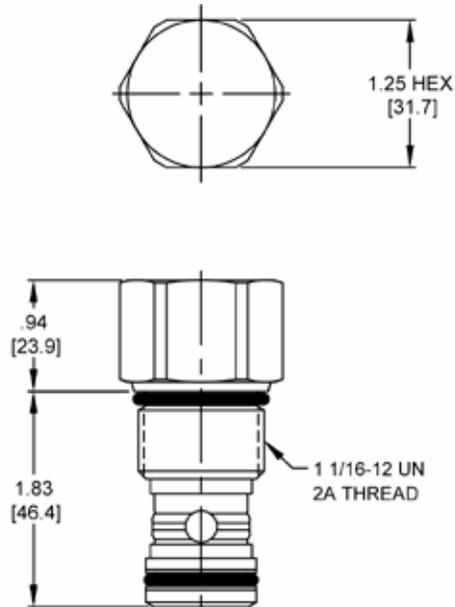


VALVE SPECIFICATIONS

Nominal Flow	35 GPM (132 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500032
Seal Kit	21191300

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DIMENSIONS



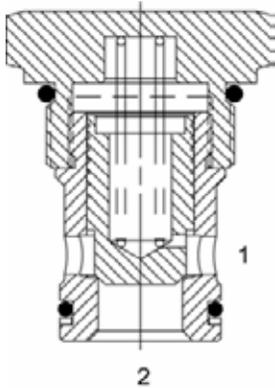
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

HT-CVA -		-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			N Without Body
				S 3/4" BSP Ports
				#12 SAE Ports
			0010	CRACK PRESSURE
			0030	10 PSI
			0050	30 PSI
				50 PSI
				±10%

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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

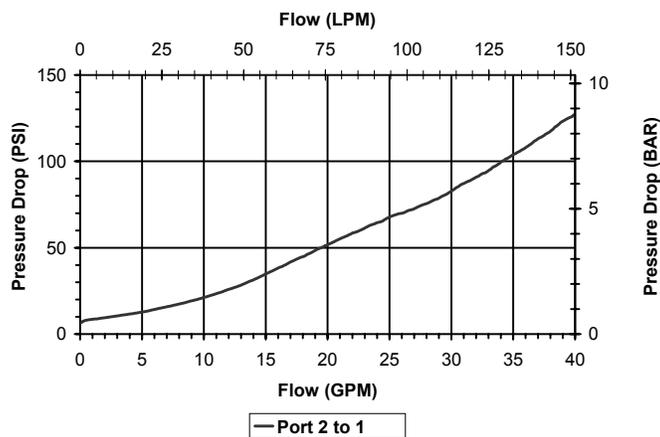
- Hardened parts for long life and low leakage.
- Industry common cavity.
- Optional bias springs for backpressure application flexibility.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

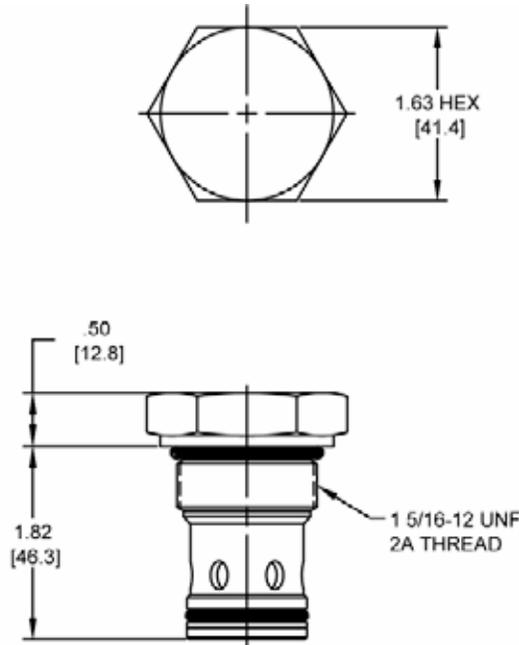


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500017
Seal Kit	21191400

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

DIMENSIONS



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

ORDERING INFORMATION

SJ-CVA -		-	-	-
<u>OPTIONS</u>				<u>BODIES</u>
Buna Standard	00		Blank	Without Body
Viton Standard	V0		N	3/4" BSP Ports
			S	#12 SAE Ports
			<u>CRACK PRESSURE</u>	
		0005	5 PSI	
		0010	10 PSI	
		0030	30 PSI	
		0050	50 PSI	
			±10%	

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.

DE-CVB Direct Acting Check Valve, Ball

DESCRIPTION

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

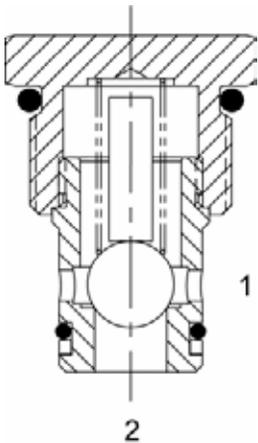
OPERATION

The DE-CVB allows free flow passage from (2) to (1), and blocks flow from (1) to (2).

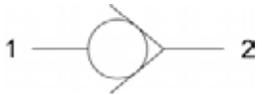
The cartridge has a fully guided check poppet, which is spring-biased closed, until sufficient pressure is applied at (2) to open to (1).

FEATURES

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

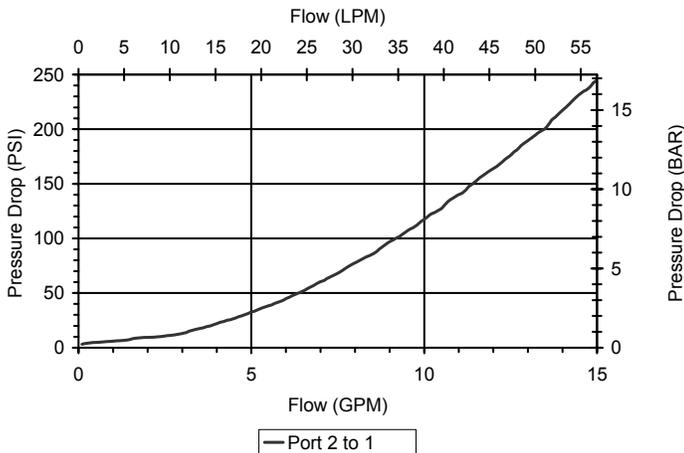


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

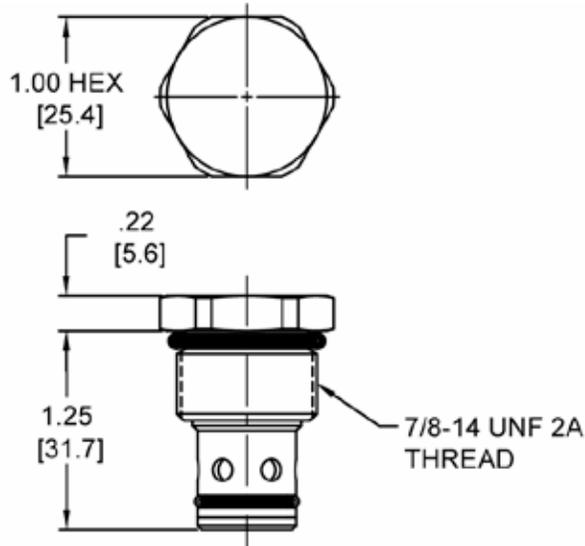


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191000

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DIMENSIONS



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

ORDERING INFORMATION

DE-CVB -		-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			N 3/8" BSP Ports
				S #8 SAE Ports
			CRACK PRESSURE	
		0005	05 PSI	
		0015	15 PSI	
			± 10%	

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.

PB-CVC Direct Acting Check Valve, Guided Ball

DESCRIPTION

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

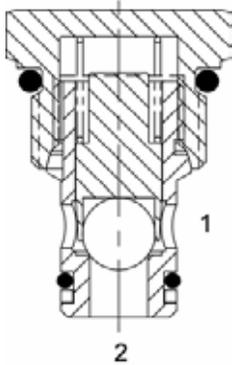
OPERATION

The PB-CVC allows free flow passage from (2) to (1), and blocks flow from (1) to (2).

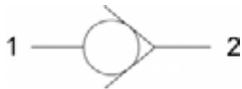
The cartridge has a fully guided check poppet, which is spring-biased closed, until sufficient pressure applied at (2) to open to (1).

FEATURES

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



HYDRAULIC SYMBOL

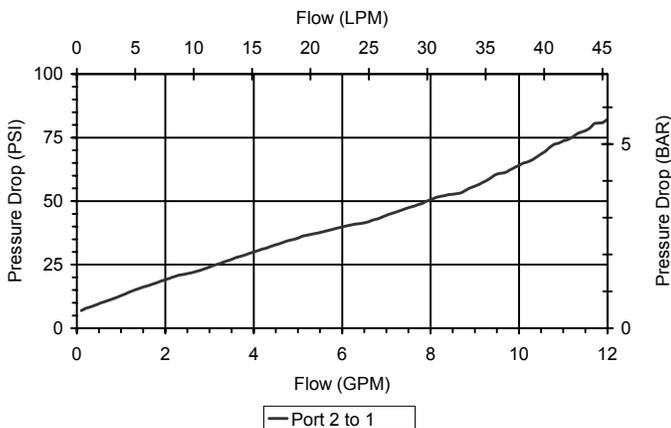


PERFORMANCE

Actual Test Data (Cartridge Only)

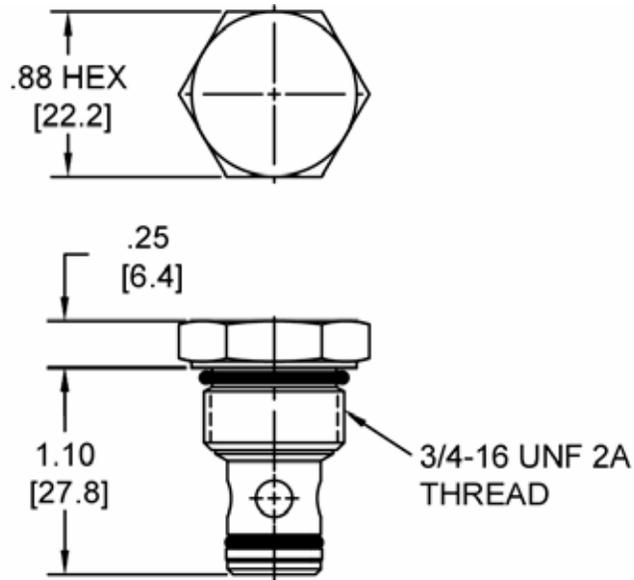
VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191100



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DIMENSIONS



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

ORDERING INFORMATION

PB-CVC - - - - -		
OPTIONS		BODIES
Buna Standard	00	Blank
Viton Standard	V0	Without Body
		N 1/4" BSP Ports
		S #6 SAE Ports
		CRACK PRESSURE
	0005	5 PSI
	0020	20 PSI
	0030	30 PSI
	0050	50 PSI
		±10%

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.

DE-CVC Direct Acting Check Valve, Guided Ball

DESCRIPTION

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

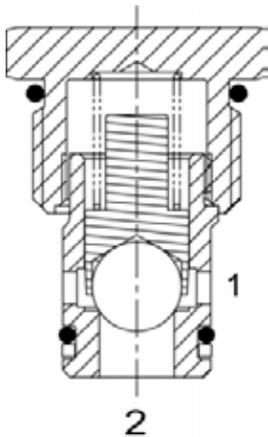
OPERATION

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 back-pressure application flexibility.
- Fully guided ball assembly.
- Industry common cavity.

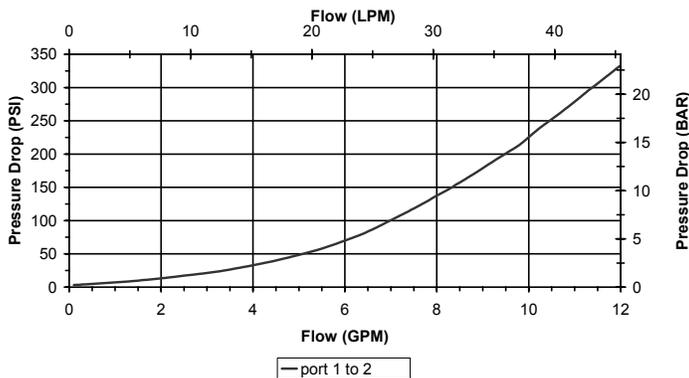


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

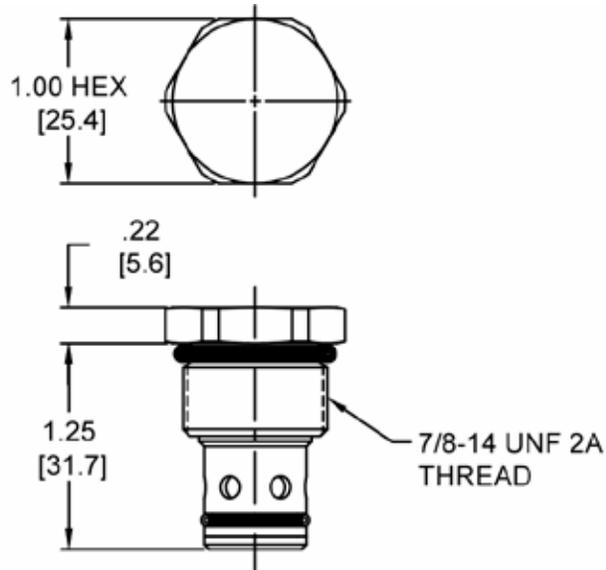


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.15 lbs (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Cavity	DELTA 2W
Cavity Form Tool (Finishing)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

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

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DE-CVR Reverse Flow Check Valve, Poppet

DESCRIPTION

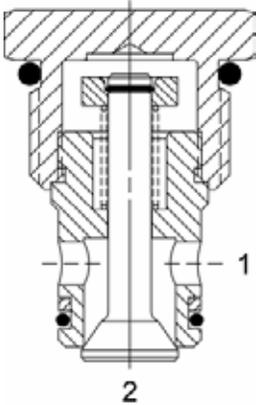
10 size, 7/8-14 thread, "Delta" series, reverse flow check valve.

OPERATION

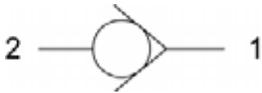
The DE-CVR allows free flow (1) to (2) and blocks flow from (2) to (1).

FEATURES

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

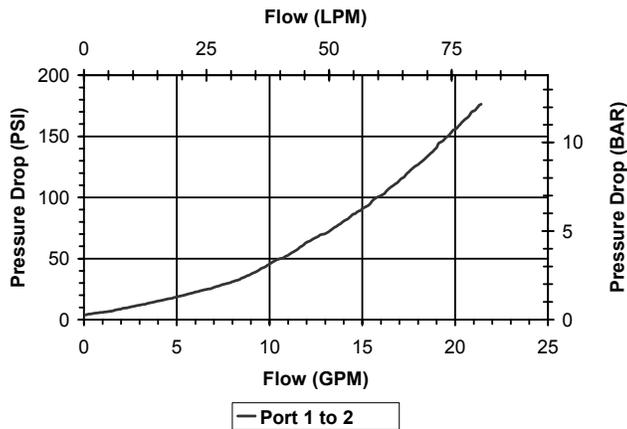


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

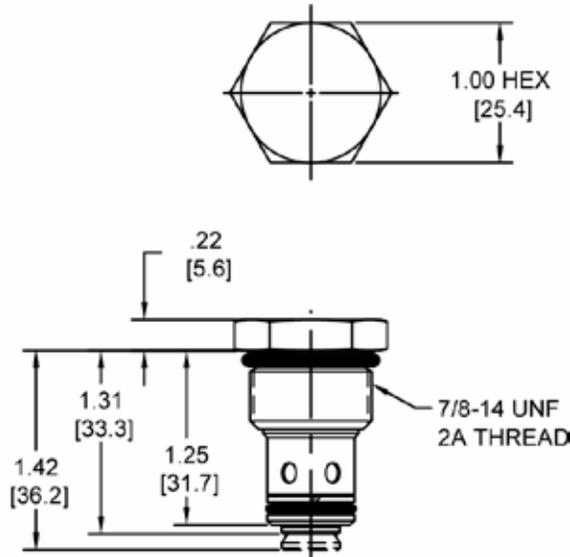


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191204

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DIMENSIONS



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

ORDERING INFORMATION

DE-CVR		-	-	-	-
OPTIONS					
Buna Standard	00				
Viton Standard	V0				
					BODIES
				Blank	Without Body
				N	3/8" BSP Ports
				S	#8 SAE Ports
					CRACK PRESSURE
			0005		5 PSI
			0025		25 PSI
					±10%

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.

HT-CVR Reverse Flow Check Valve, Poppet

DESCRIPTION

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

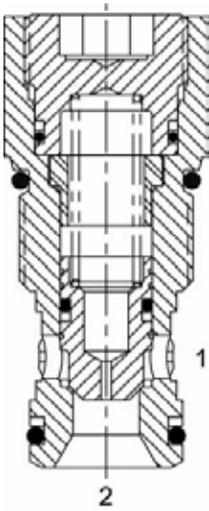
OPERATION

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.

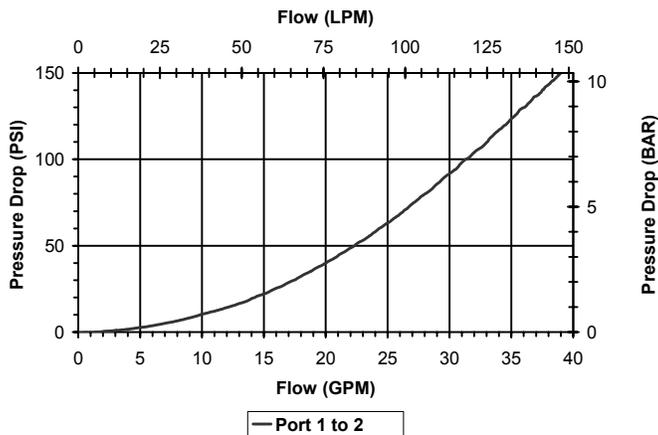


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

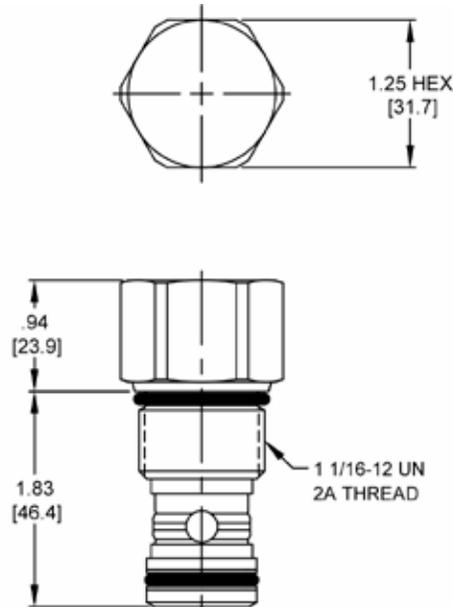


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500032
Seal Kit	21191300

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DIMENSIONS



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

ORDERING INFORMATION

HT-CVR -		-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			Without Body
				N 3/4" BSP Ports
				S #12 SAE Ports
				CRACK PRESSURE
		0010		10 PSI
		0030		30 PSI
		0050		50 PSI
				±10%

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.

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.

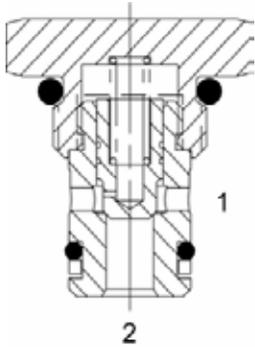
OPERATION

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.

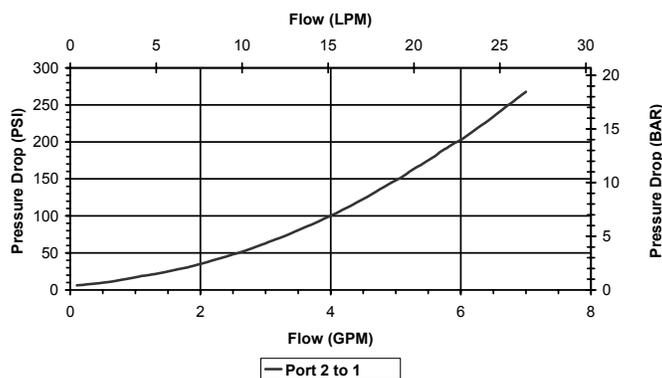


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

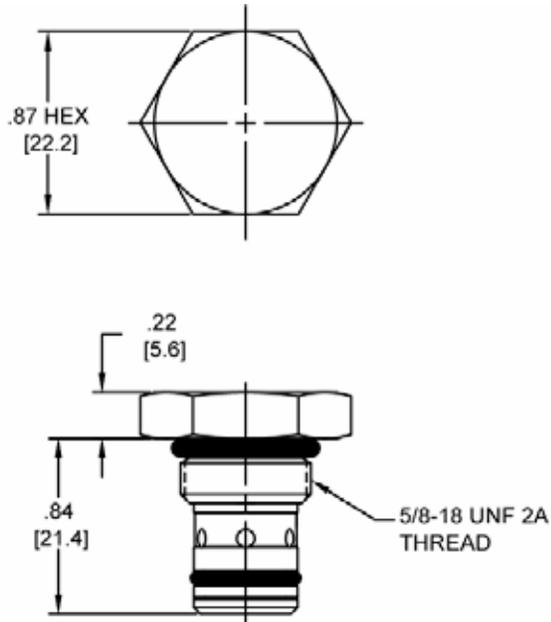


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500003
Seal Kit	21191000

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DIMENSIONS



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

ORDERING INFORMATION

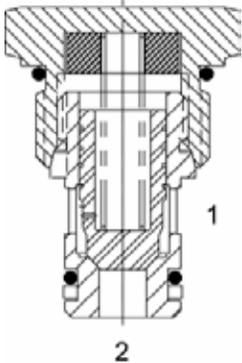
MA-CVS -		-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			N 1/4" BSP Ports
				S #6 SAE Ports
			CRACK PRESSURE	
		0005	5 PSI	
		0020	20 PSI	
			±10%	

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.

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

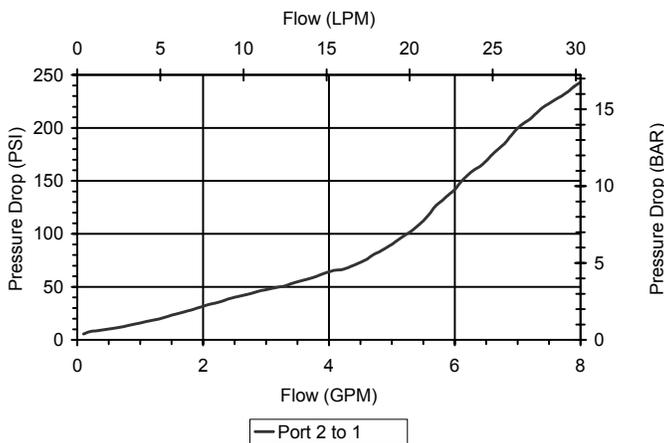
- Soft seat for ultra low leakage.
- Optional bias springs for backpressure application flexibility.
- Fully guided poppet assembly.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

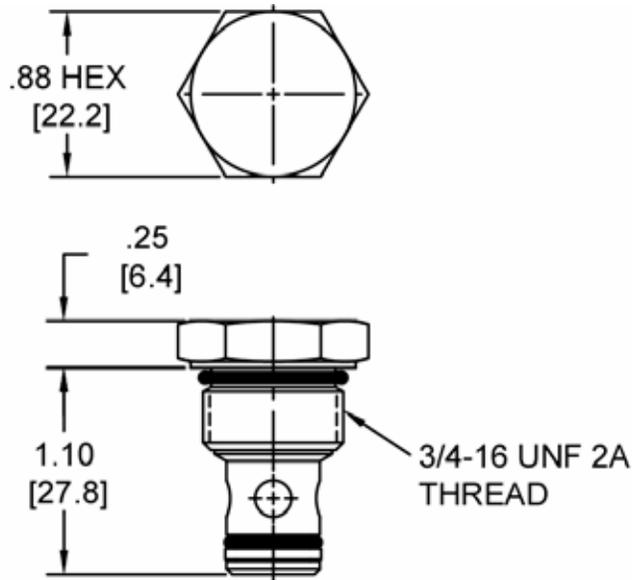


VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Typical Internal Leakage (150 SSU)	Negligible
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-35° to 200°F (-37° to 93°C)
Weight	.09 lbs (.04 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	POWER 2W
Cavity Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



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

ORDERING INFORMATION

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

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.

DE-CVS Direct Acting Check Valve, Soft Seat, Poppet

DESCRIPTION

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

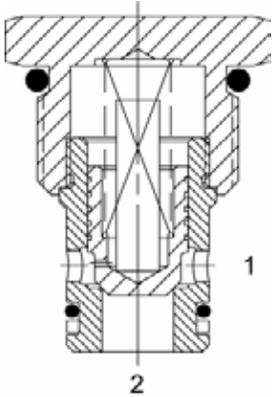
OPERATION

The DE-CVS allows flow to pass from (2) to (1) and blocks flow from (1) to (2).

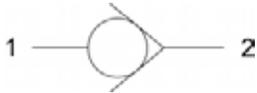
The cartridge has a fully guided check poppet, which is spring-biased closed until sufficient pressure is applied at (2) to open to (1).

FEATURES

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

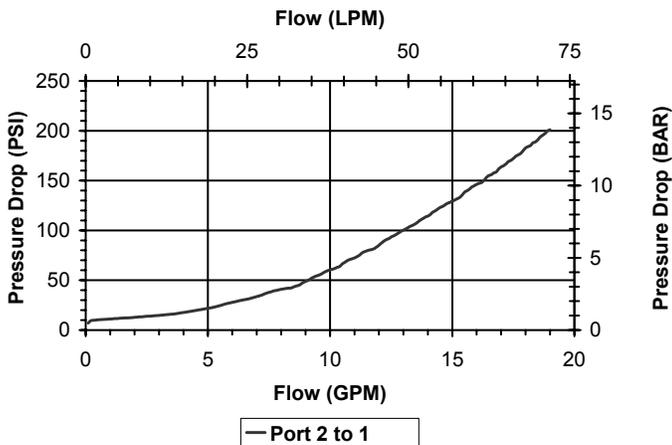


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

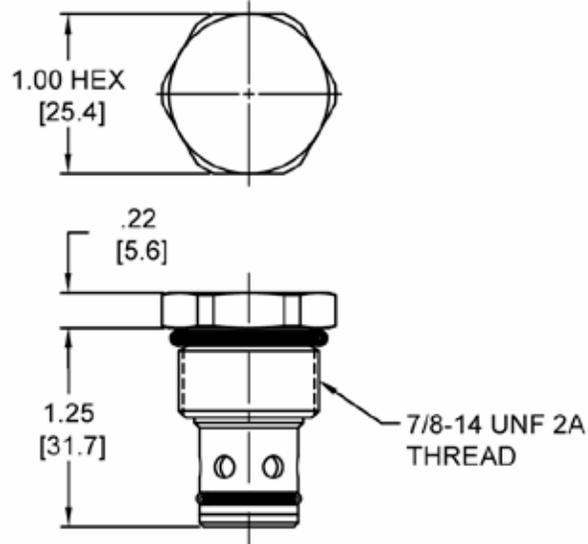


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	1000 PSI (69 bar)
Typical Internal Leakage (150 SSU)	Negligible
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

DE-CVS -		-	-	-	-
OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	3/8" BSP Ports
				S	#8 SAE Ports
			0010	CRACK PRESSURE	
				10 PSI	
				±15%	

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.

QS-CVL Check Valve, Insert Type

DESCRIPTION

Special cavity, insert type, direct acting check valve.

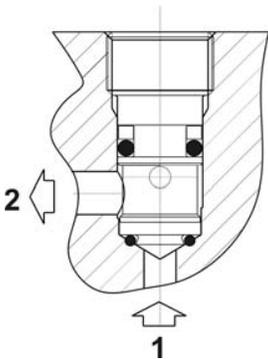
OPERATION

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

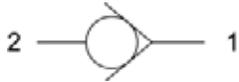
The valve is commonly used on load sensing lines to sense the working pressure of the functions of the circuit. The check valve is without spring inside.

FEATURES

- Hardened parts for long life.

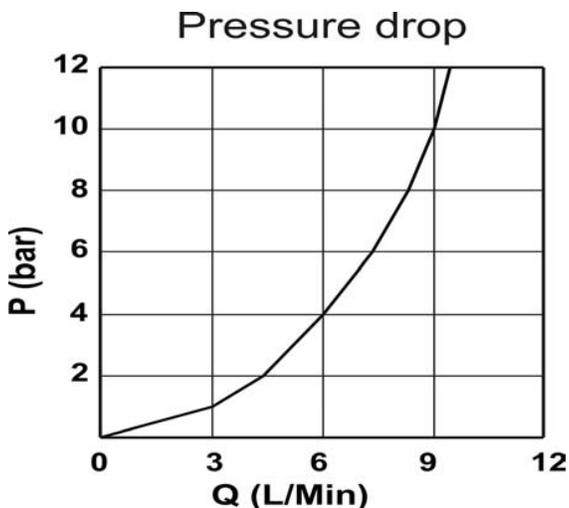


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

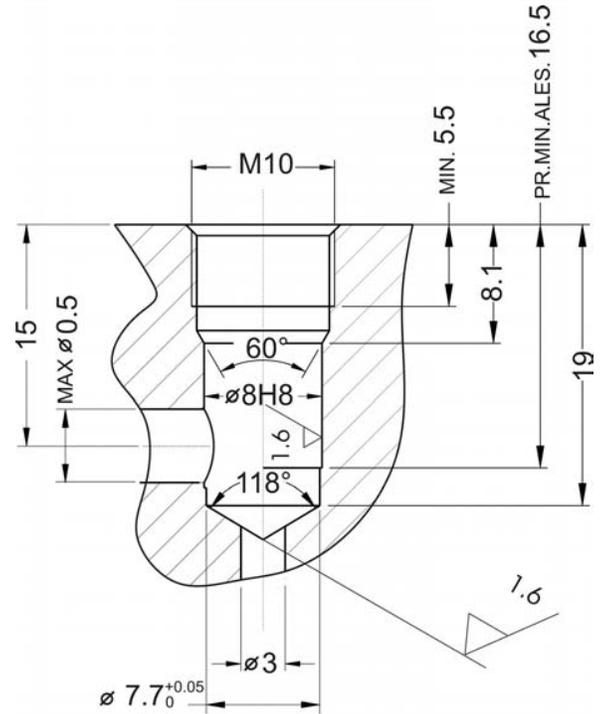
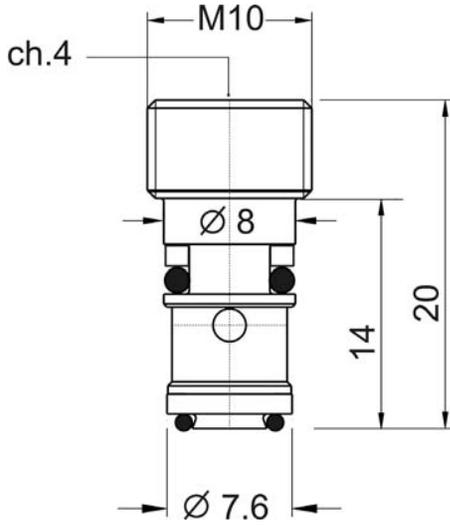


VALVE SPECIFICATIONS

Nominal Flow	1 GPM (4 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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

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.

DIMENSIONS



Cavity - T 151

ORDERING INFORMATION

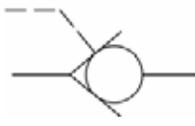
QS-CVL - - 00

OPTIONS

Buna Standard 00
 Viton Standard V0

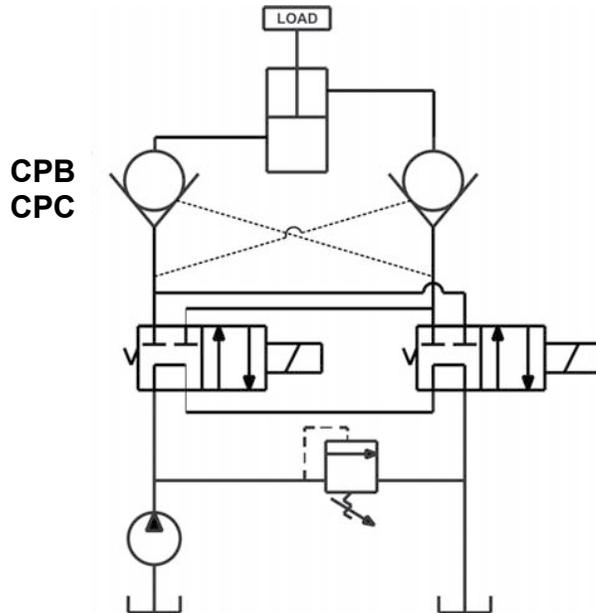
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Pilot to Open Check Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	6	3500	23	245	PP-CPB	38
	8	3500	30	245	DF-CPB	40
	10	3500	38	245	DF-CPC	42

Typical Schematic

Typical application for the CPD is in a regenerative circuit such as a baler or refuse compactor. The valve allows flow from the rod end of the cylinder to regenerate with pump flow to increase cylinder speed.



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.

PP-CPB Pilot Operated Check Valve, Guided Ball

DESCRIPTION

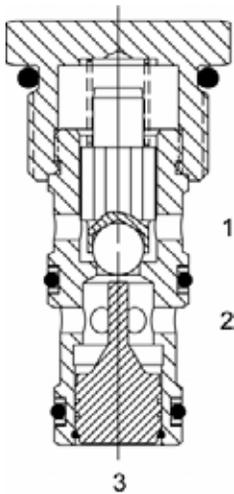
8 size, 3/4-16 thread, "Power" series, pilot operated, ball check valve.

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.



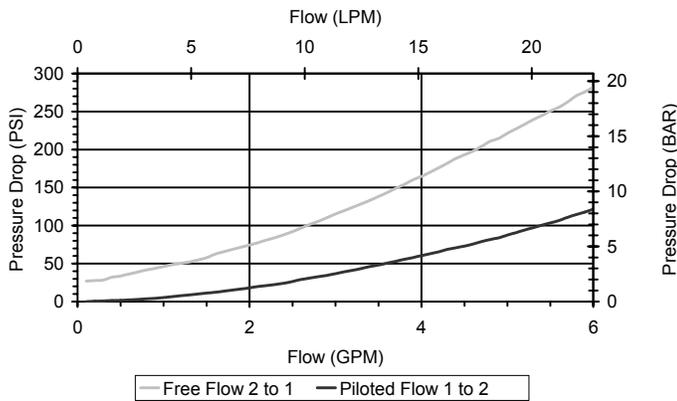
HYDRAULIC SYMBOL



For sealed pilot piston consult factory.

PERFORMANCE

Actual Test Data (Cartridge Only)

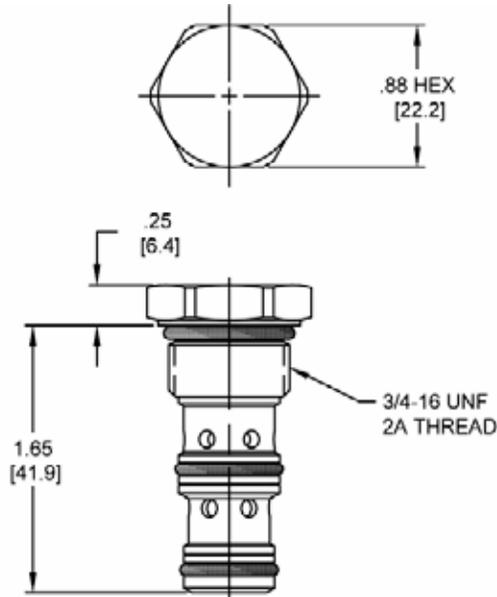


VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM) 1 to 2 4 GPM (15 LPM) 2 to 1
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500024
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.

DIMENSIONS



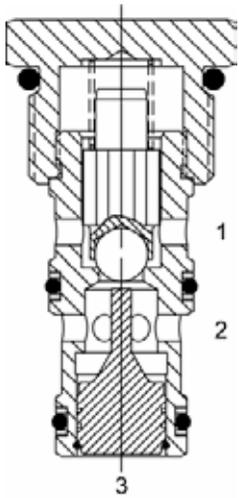
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

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

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.

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.

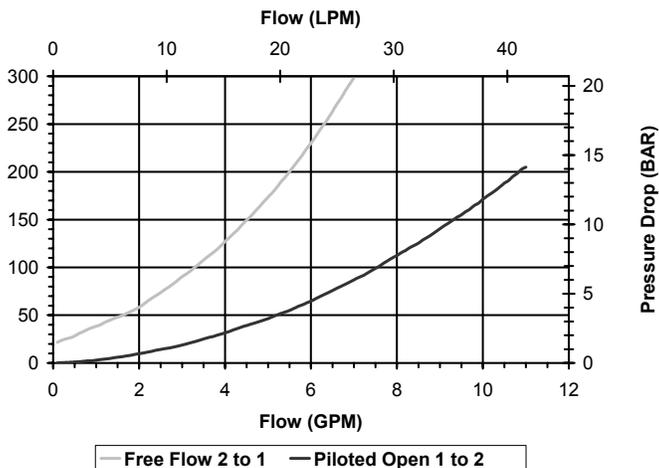
HYDRAULIC SYMBOL



For sealed pilot piston consult factory.

PERFORMANCE

Actual Test Data (Cartridge Only)

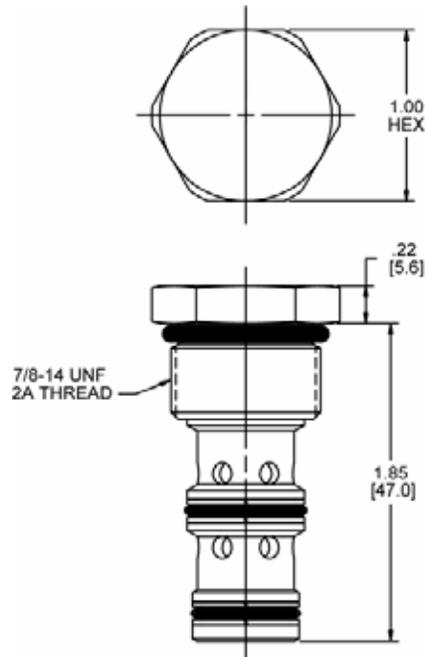


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM) 1 to 2 5 GPM (19 LPM) 2 to 1
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 (40.6Nm)
Cavity	DELTA 3W
Cavity Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	21191202

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DIMENSIONS



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

ORDERING INFORMATION

DF-CPB		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0				N 3/8" BSP Ports
					S #6 SAE Ports
			0025		CRACK PRESSURE
					25 PSI
					±10%

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.

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

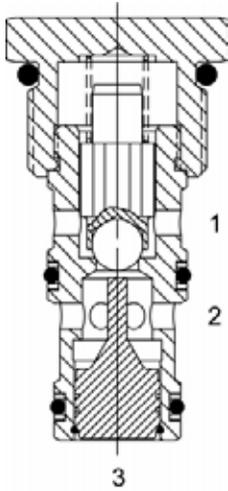
The DF-CPC allows free flow to pass from (2) to (1) and blocks flow from (1) to (2). When pilot pressure is applied to port (3) the valve allows free flow from (1) to (2).

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.



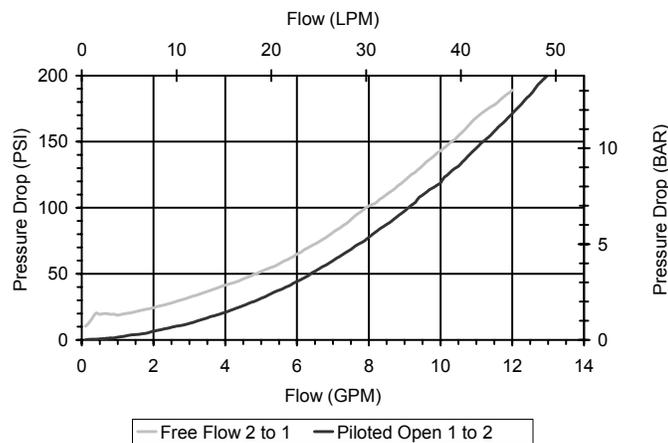
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)

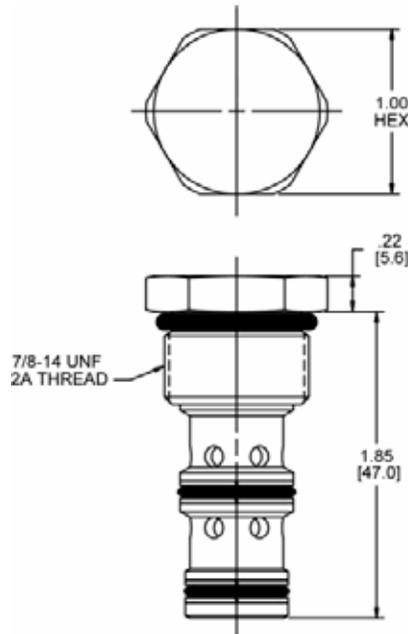


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.19 lbs (.08 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 3W
Cavity Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	21191202

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DIMENSIONS



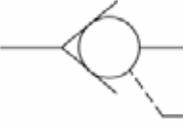
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DF-CPC		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0				N ¼" BSP Ports
					S #6 SAE Ports
			0025		CRACK PRESSURE
					25 PSI
					±10%

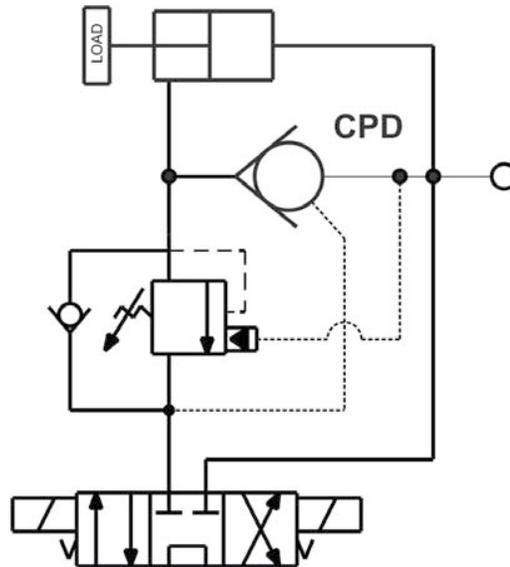
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Pilot to Close Check Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3500	38	245	DF-CPD	46
	20	3500	76	245	SL-CPD	48

Typical Schematic

Typical application for the CPD is in a regenerative circuit such as a baler or refuse compactor. The valve allows flow from the rod end of the cylinder to regenerate with pump flow to increase cylinder speed.



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.

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).

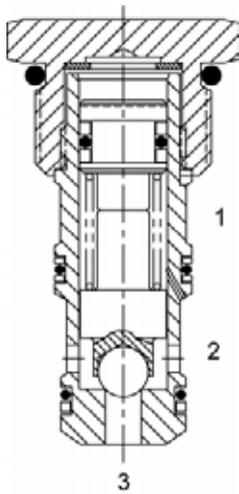
The cartridge has various "pilot ratios" (see options).

Example: 1/4 for 4:1 of the load pressure held at (3) is required at (1) to close the valve.

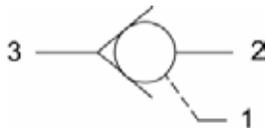
The check is spring biased to assure holding in static or no-load conditions.

FEATURES

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



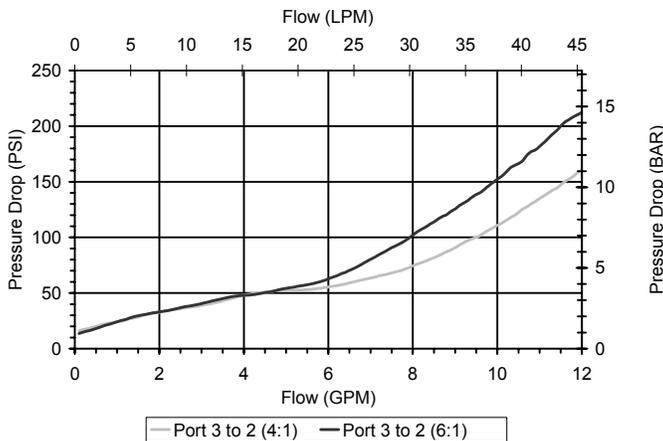
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)

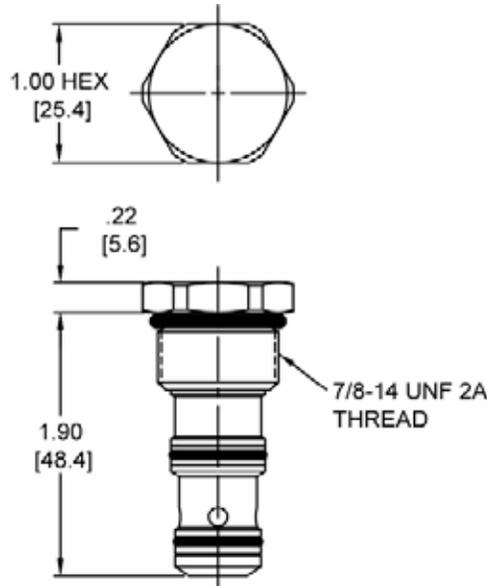


VALVE SPECIFICATIONS

Maximum Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	21191202

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DIMENSIONS



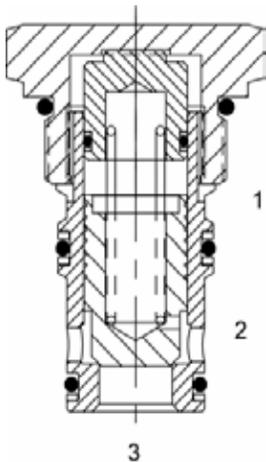
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DF-CPD -		-	-	-	
OPTIONS					BODIES
Buna, 4:1 Ratio	04			Blank	Without Body
Buna, 6:1 Ratio	06			N	1/4" BSP Ports
Viton, 4:1 Ratio	V4			S	#6 SAE Ports
Viton, 6:1 Ratio	V6				
				CRACK PRESSURE	
			0015	15 PSI	
			0025	25 PSI	
			0050	50 PSI	
			0075	75 PSI	
			0100	100 PSI	
				±10%	

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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).

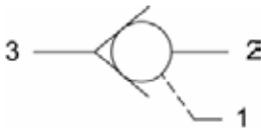
The cartridge has a 2:1 pilot ratio, meaning that at least one half of the load pressure held at (3) is required at (1) to close the valve.

The check is spring biased to assure holding in static or no-load conditions.

FEATURES

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

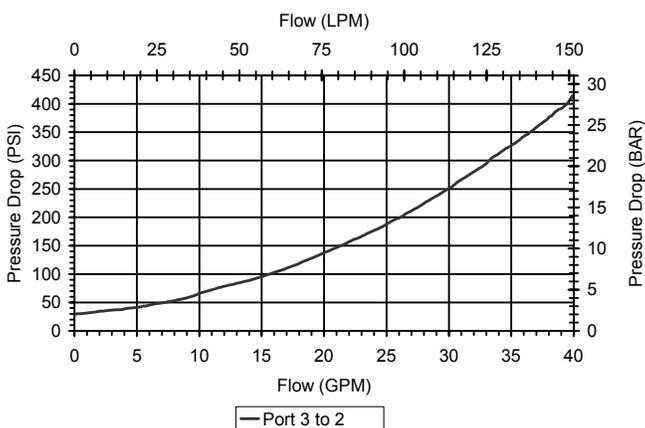
HYDRAULIC SYMBOL



Special higher bias spring values available. Consult factory.

PERFORMANCE

Actual Test Data (Cartridge Only)

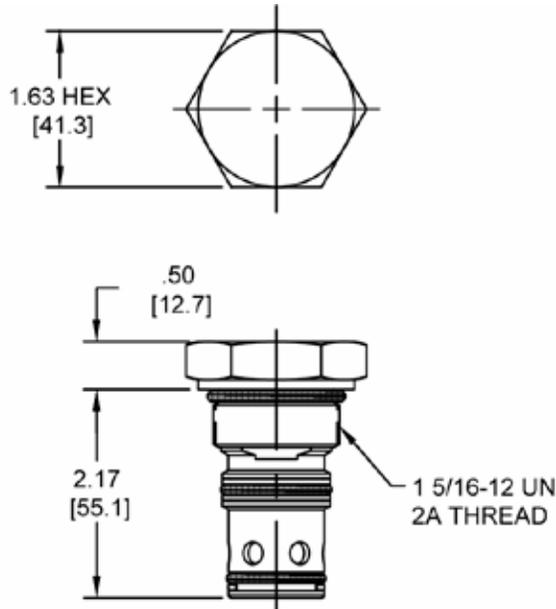


VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500021
Seal Kit	21191404

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.

DIMENSIONS



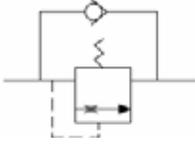
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

SL-CPD -		-	-	-
OPTIONS				
Buna, 2:1 Ratio	02			Blank
Viton, 2:1 Ratio	V2			N
				S
				BODIES
				Without Body
				3/4" BSP Ports
				#12 SAE Ports
				CRACK PRESSURE
		0015		15 PSI
		0025		25 PSI
		0050		50 PSI
		0075		75 PSI
		0100		100 PSI
				±10%

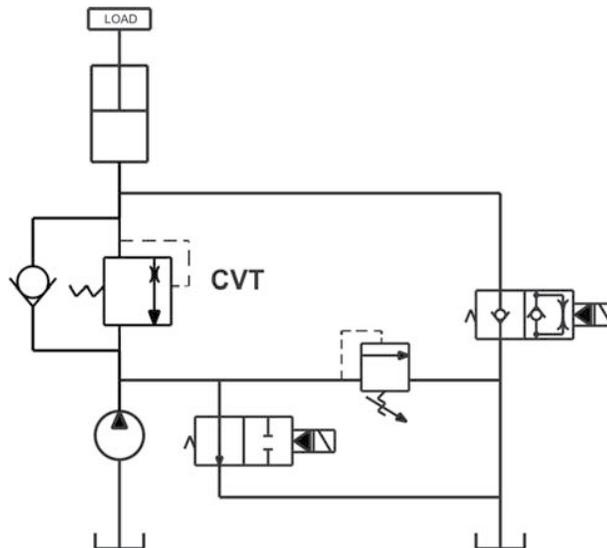
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Check Valves with Thermal Relief

	GPM	PSI	LPM	BAR	MODEL	PAGE
	15	4000	57	276	DE-CVT	52

Typical Schematic

Typical application for the CVT is a relief to protect system from damage due to thermal expansion on load holding circuits.



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.

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).

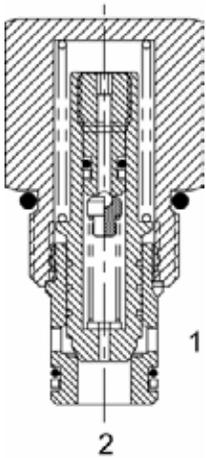
If the pressure at (1) exceeds the thermal relief valve setting, a small amount of oil will be allowed to pass from (1) to (2), preventing cylinder damage from excessive pressure.

The cartridge has a fully guided poppet, which is spring biased closed until sufficient pressure is applied at (2) to open to (1).

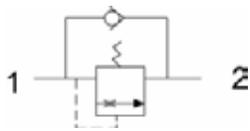
Note: the relief valve feature is not intended for use in dynamic pressure limiting applications. Consult factory.

FEATURES

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



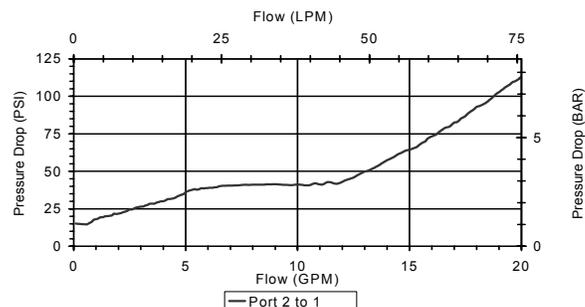
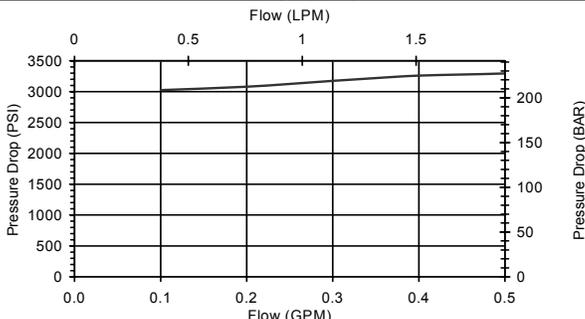
HYDRAULIC SYMBOL



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)

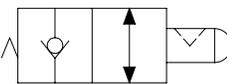
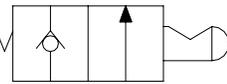
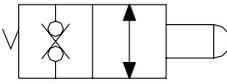
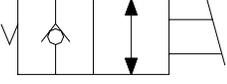
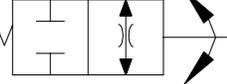
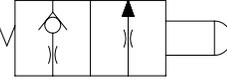


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

2 Way 2 Position Manual Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3500	45	245	PB-MCA	56
	20	3500	76	245	DE-MCA	58
	20	1500	76	103	DE-MCF	60
	20	3500	76	245	DE-MCS	62
	20	3500	76	245	DE-MCB	64
	8	3500	30	245	PB-MCI	66
	8	3500	30	245	PB-MCL	68
	15	3500	57	245	DE-MCL	70
	20	3000	76	207	DE-M2G	72
	1	4000	4	276	HB-MCP	74

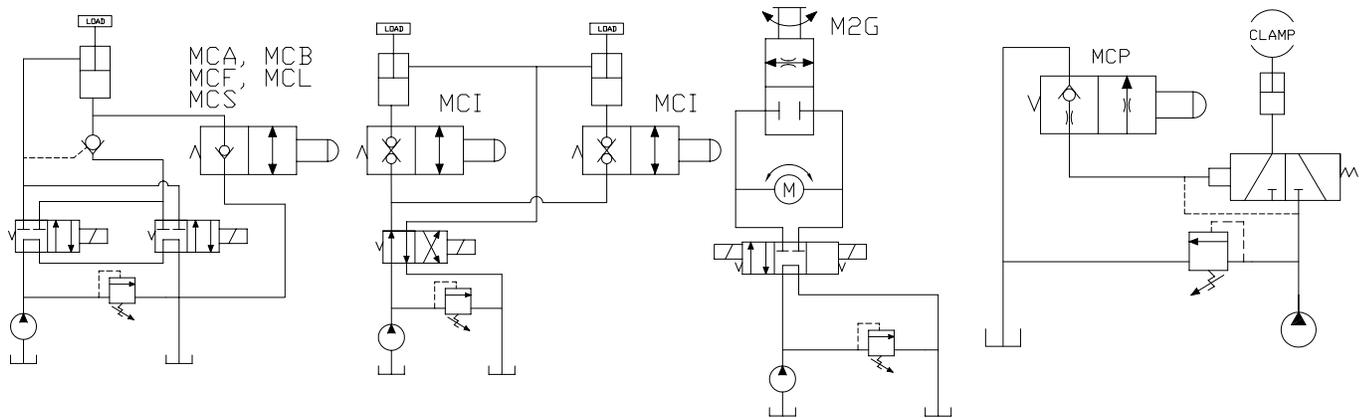
Typical Schematic

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.



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.

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

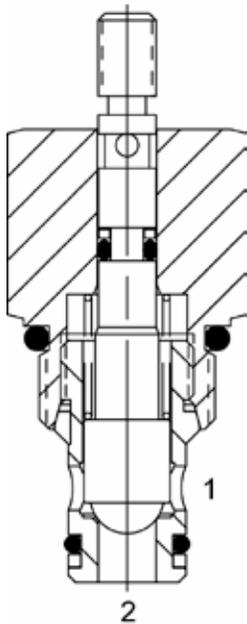
The PB-MCA blocks flow from (1) to (2) until an operator pulls the shaft outward.

The bias spring (see option page for pressure) allows for backpressure at (2) before the valve will open.

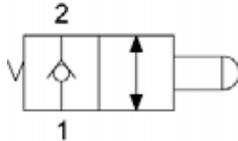
Note: pressure at port (2) will act directly on the poppet and spring.
Port (2) is intended to be a tank port only.

FEATURES

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



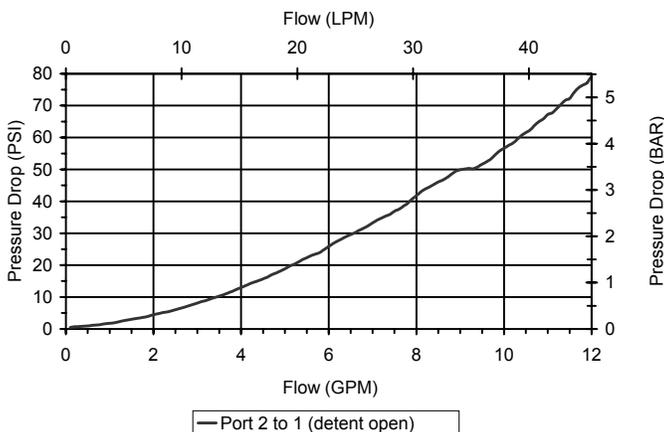
HYDRAULIC SYMBOL



65 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.

PERFORMANCE

Actual Test Data (Cartridge Only)

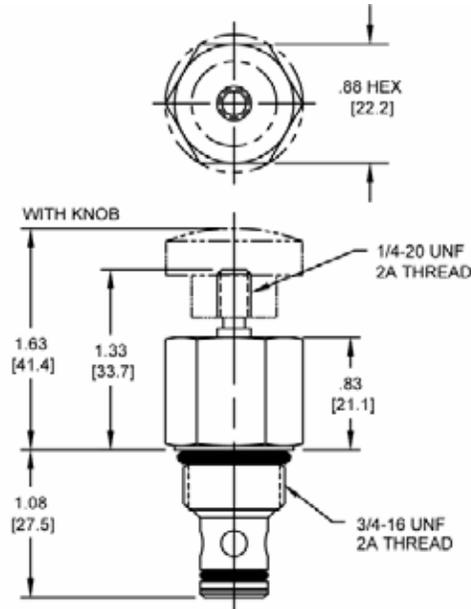


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

WARNING: The specifications/application data shown in our catalogs and data sheets is 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.

DIMENSIONS



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

ORDERING INFORMATION

PB-MCA		-	-	-	-
<u>OPTIONS</u>					<u>BODIES</u>
Buna Standard	00				Blank
Viton Standard	V0				N 1/4" BSP PORTS
Buna, Screen	A0				S #6 SAE PORTS
Viton, Screen	W0				
Buna, Knob	0K				
Viton, Knob	VK				<u>SPRING BIAS PRESSURE</u>
Buna, Knob, Screen	AK		0075		75 PSI
Viton, Knob, Screen	WK		0150		150 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.

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.

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

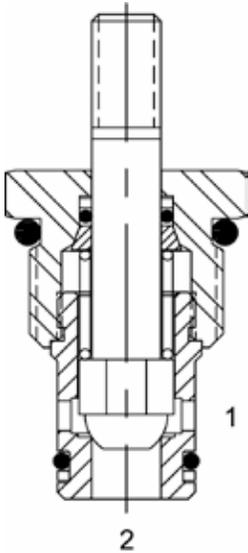
The DE-MCA blocks flow from (1) to (2) until an operator pulls the shaft outward.

The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

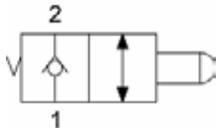
Note: pressure at port (2) will directly act on the poppet and spring.
Port (2) is intended to be a tank port only.

FEATURES

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



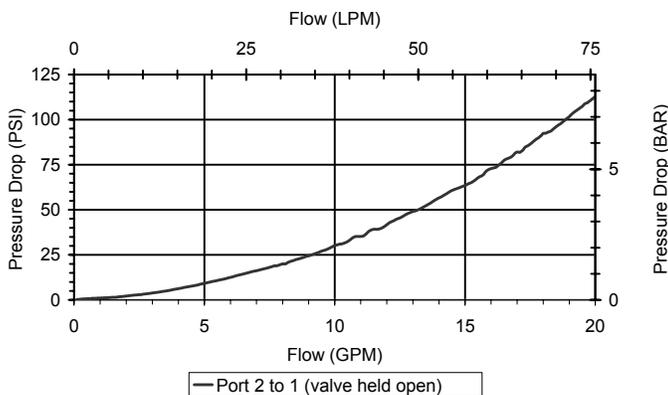
HYDRAULIC SYMBOL



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)

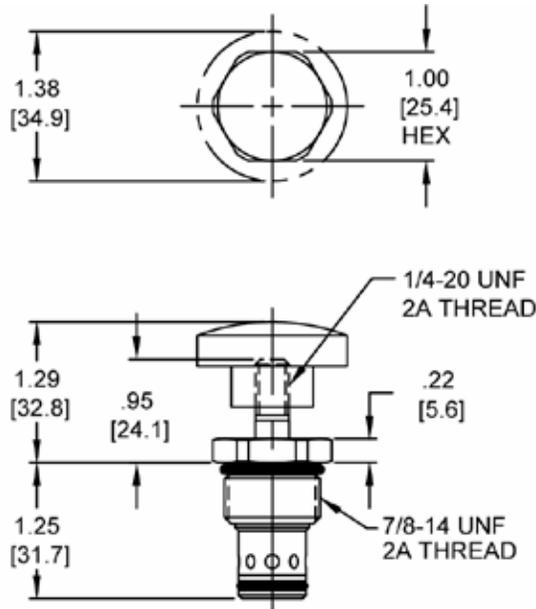


VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



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

ORDERING INFORMATION

DE-MCA -		-	-	-	
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				Without Body
Buna, Screen	A0				N 3/8" BSP Ports
Viton, Screen	W0				S #8 SAE Ports
Buna, Knob	0K				
Viton, Knob	VK		0065		SPRING BIAS PRESSURE
Buna, Knob, Screen	AK		0160		65 PSI
Viton, Knob, Screen	WK				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.

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.

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

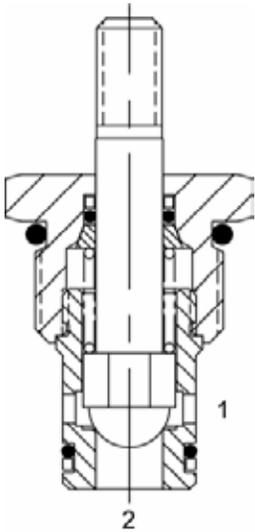
The DE-MCF blocks flow from (1) to (2) until an operator pulls the shaft outward.

The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

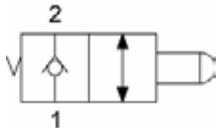
Note: pressure at port (2) will directly act on the spool and spring. Port (2) is intended to be a tank port only.

FEATURES

- Hardened parts for long life.
- Industry common cavity.
- Soft seat for ultra low leakage.

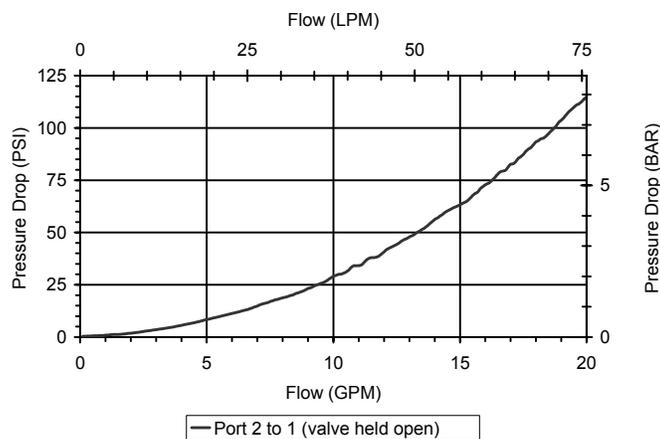


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

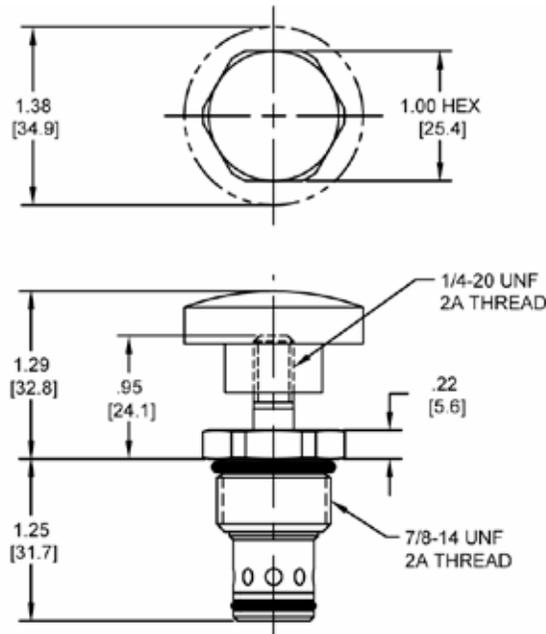


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

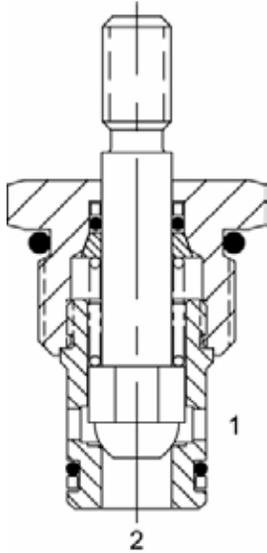
DE-MCF		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N
Buna, Knob	0K				S
Viton, Knob	VK				
Buna, Screen	A0				SPRING BIAS PRESSURE
Viton, Screen	W0		0065		65 PSI
Buna, Knob, Screen	AK				
Viton, Knob, Screen	WK				

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.

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.

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.

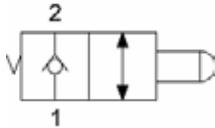
The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

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.

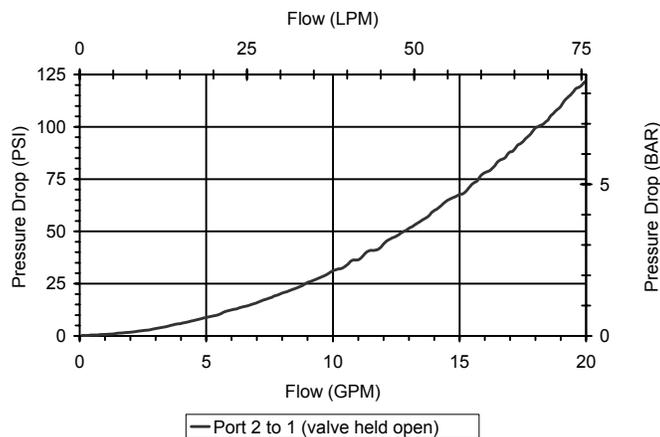
HYDRAULIC SYMBOL



Stainless Steel Shaft.

PERFORMANCE

Actual Test Data (Cartridge Only)

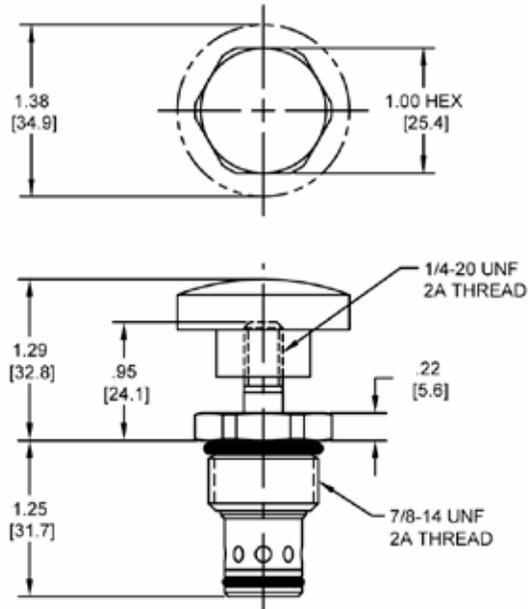


VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



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

ORDERING INFORMATION

DE-MCS		-	-	-	-
OPTIONS					
Buna Standard	00				
Viton Standard	V0				
Buna, Screen	A0				
Viton, Screen	W0				
Buna, Knob	0K				
Viton, Knob	VK		0065		
Buna, Knob, Screen	AK		0160		
Viton, Knob, Screen	WK				
					BODIES
					Blank
					N 3/8" BSP Ports
					S #8 SAE Ports
					SPRING BIAS
					65 PSI
					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.

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.

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

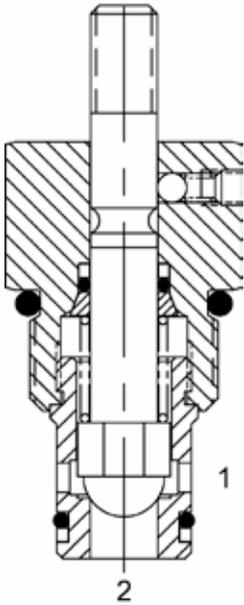
The DE-MCB blocks flow from (1) to (2) until an operator pulls the shaft outward.

The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

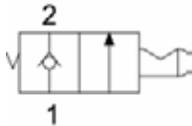
Note: pressure at port (2) will directly act on the spool and spring. Port (2) is intended to be a tank port only.

FEATURES

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



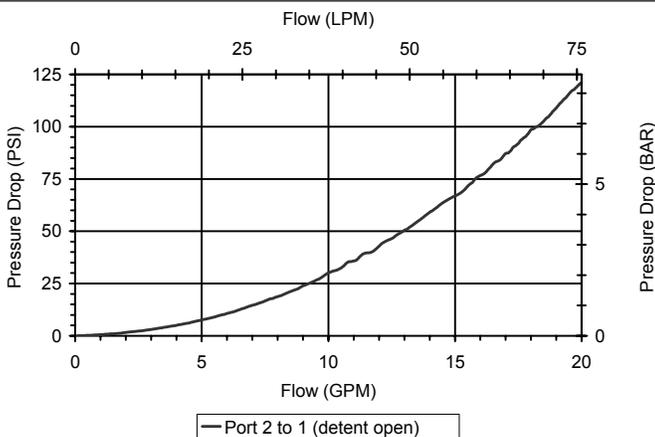
HYDRAULIC SYMBOL



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.

PERFORMANCE

Actual Test Data (Cartridge Only)

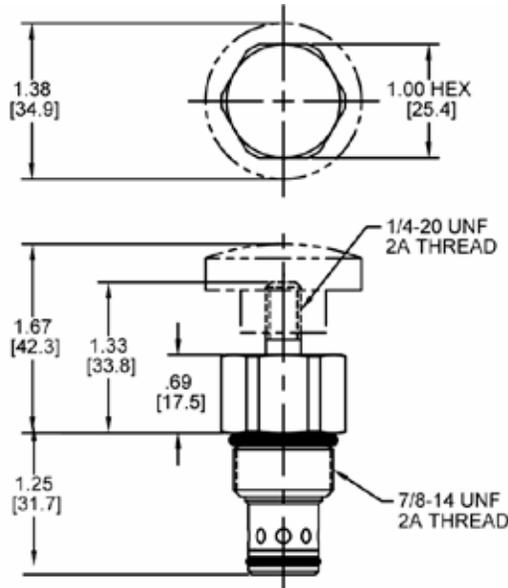


VALVE SPECIFICATIONS

Nominal Flow	20 GPM (76 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

DE-MCB		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N 3/8" BSP Ports
Buna, Screen	A0				S #8 SAE Ports
Viton, Screen	W0				
Buna, Knob	0K				SPRING BIAS PRESSURE
Viton, Knob	VK		0065		65 PSI
Buna, Knob, Screen	AK		0160		160 PSI
Viton, Knob, Screen	WK				

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.

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.

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

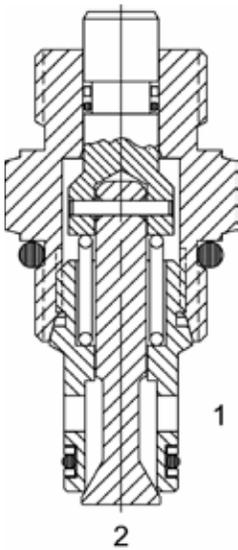
The PB-MCI blocks flow from (2) to (1) until sufficient force is applied to button to overcome spring bias and load force.

Actuation Force Required	
No Pressure	7 lbs (3,2 kg)
Side Pressure	7 lbs + (P1 (psi) x .009)
Nose Pressure	7 lbs + (P2 (psi) x .076)

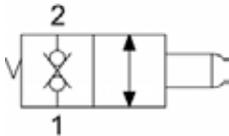
Note: (Ø.437) cavity predrill depth must be 1.312 minimum from spotface.

FEATURES

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

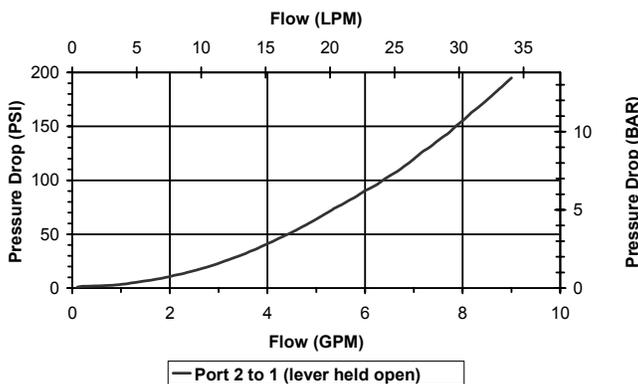


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

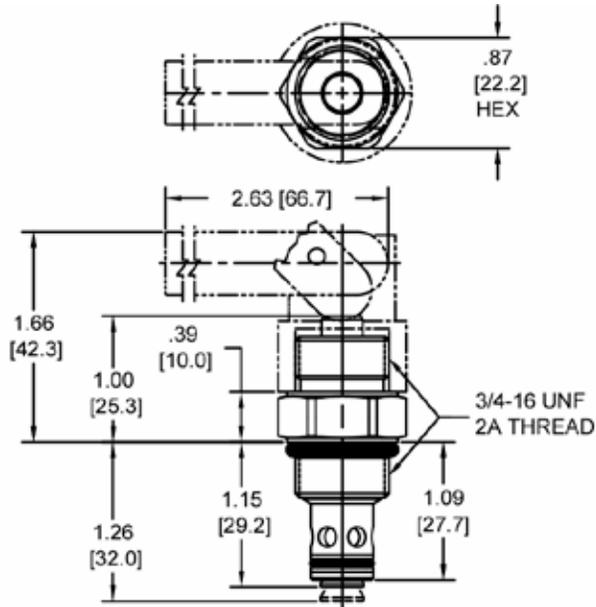


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191102

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DIMENSIONS



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

ORDERING INFORMATION

PB-MCI		-	-	-
OPTIONS				BODIES
Buna Standard	00		Blank	Without Body
Viton Standard	V0		N	1/4" BSP Ports
Buna, Lever	0K		S	#6 SAE Ports
Viton, Lever	VK			
Buna, Screen	A0			
Viton, Screen	W0			

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

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

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

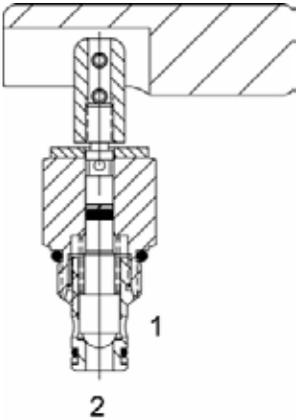
The PB-MCL blocks flow from (1) to (2) until an operator pulls the handle upward.

The bias spring (see option page for pressure) allows for back-pressure at (2) before the valve will open.

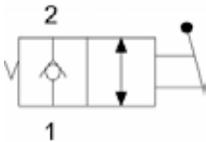
Note: pressure at port (2) will directly act on the spool and spring.
Port (2) is intended to be a tank port only.

FEATURES

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

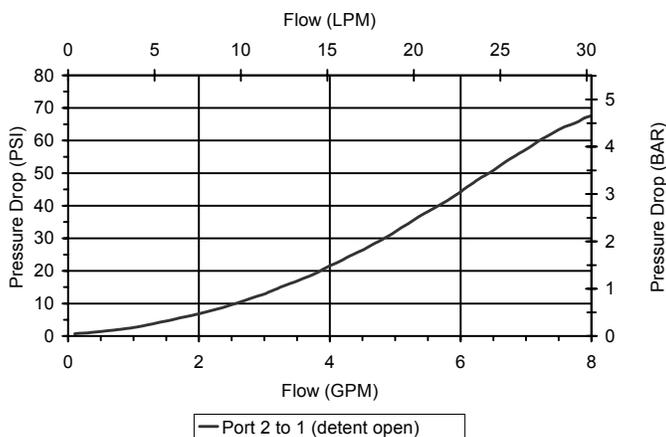


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

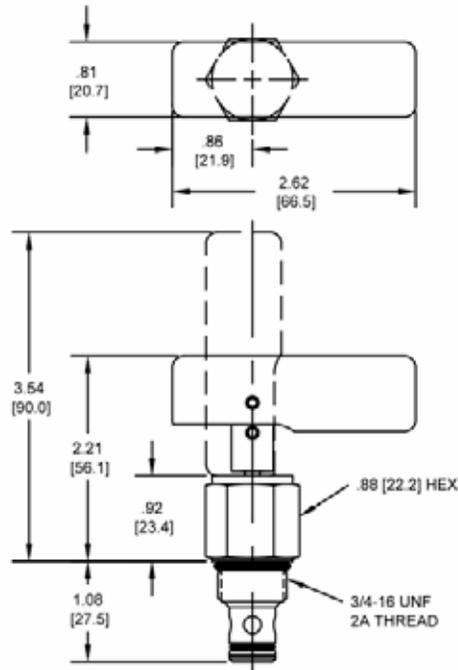


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191101

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DIMENSIONS



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

ORDERING INFORMATION

PB-MCL		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				Without Body
Buna, Screen	A0				N 1/4" BSP PORTS
Viton, Screen	W0				S #6 SAE PORTS
					SPRING BIAS PRESSURE
			0075		75 PSI
			0150		150 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.

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.

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.

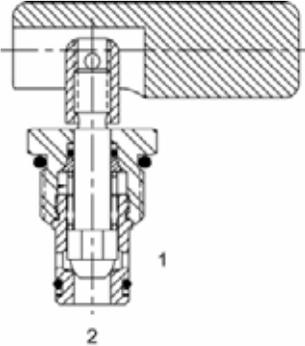
The bias spring allows for backpressure at (2) before the valve will open (see option page for pressure).

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

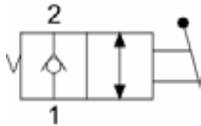
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

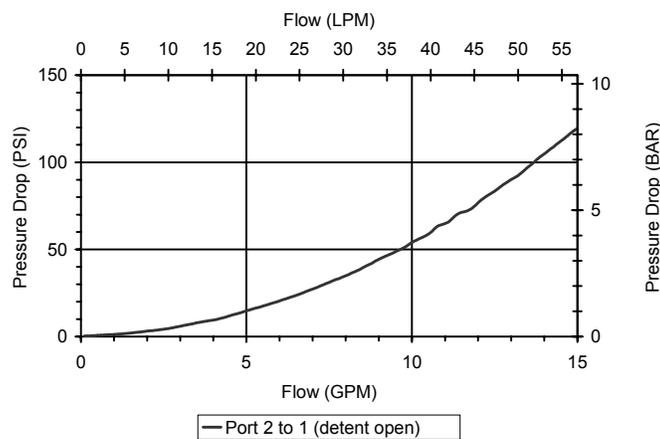


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

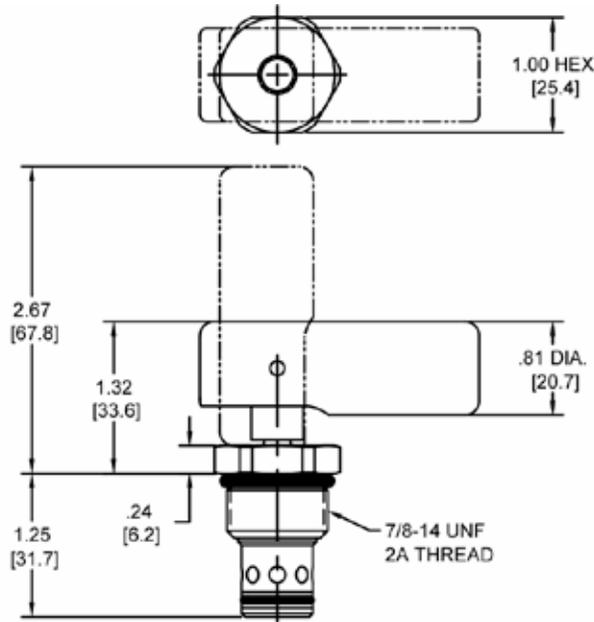


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.15 lbs (.15 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191201

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.

DIMENSIONS



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

ORDERING INFORMATION

DE-MCL		-	-	-	-
OPTIONS					BODY
Buna Standard	00				Blank
Viton Standard	V0				N 3/8" BSP Ports
Buna, Screen	A0				S #8 SAE Ports
Viton, Screen	W0				
Buna, Knob	OK				SPRING BIAS PRESSURE
Viton, Knob	VK		0065		65 PSI
Buna, Knob, Screen	AK		0160		165 PSI
Viton, Knob, Screen	WK				

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.

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.

DE-M2G Manual Rotary Spool Valve, 2 Way Normally Closed

DESCRIPTION

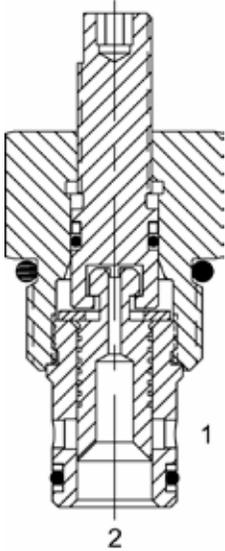
10 size, 7/8-14 thread, "Delta" series, manual rotary spool valve, 2 way normally closed.

OPERATION

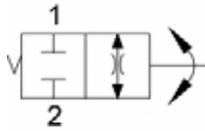
The DE-M2G when rotated clockwise (fully closed position) blocks flow from (1) to (2) and (2) to (1). When rotated counterclockwise (fully open position), the cartridge allows flow from (1) to (2) and (2) to (1).

FEATURES

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



HYDRAULIC SYMBOL

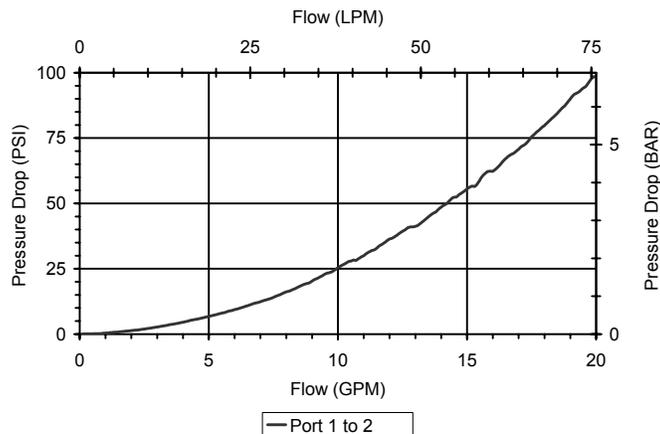


May be used as a metering product. Valve has approximately 3.5 turns of adjustment from fully open to fully closed.

See Chart for fully open pressure drop.

PERFORMANCE

Actual Test Data (Cartridge Only)

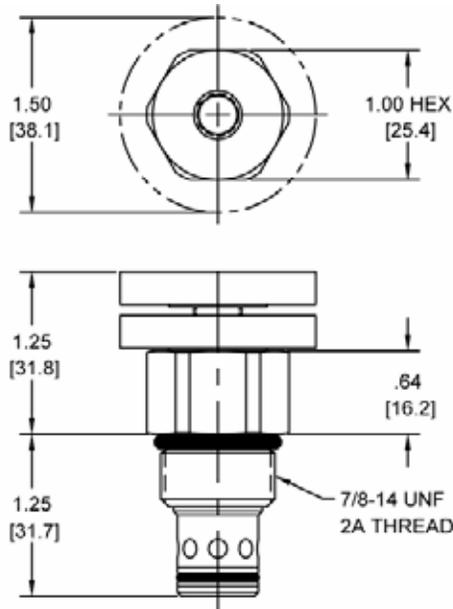


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
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.

DIMENSIONS



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

ORDERING INFORMATION

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

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

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.

HB-MCP 2 Way Manual Valve, Normally Closed, Push Type

DESCRIPTION

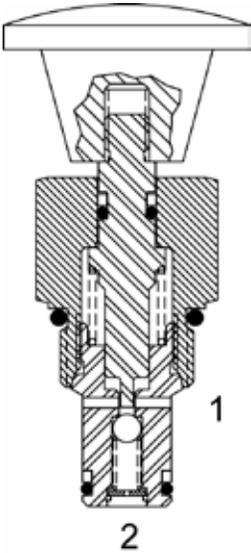
8 size, 3/4-16 thread, "Power" series, manual valve, 2 way normally closed, push type.

OPERATION

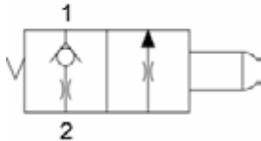
The HB-MCP blocks flow from (2) to (1) until an operator pushes the knob in allowing pressure at port #2 to drop to port #1 pressure.

FEATURES

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



HYDRAULIC SYMBOL

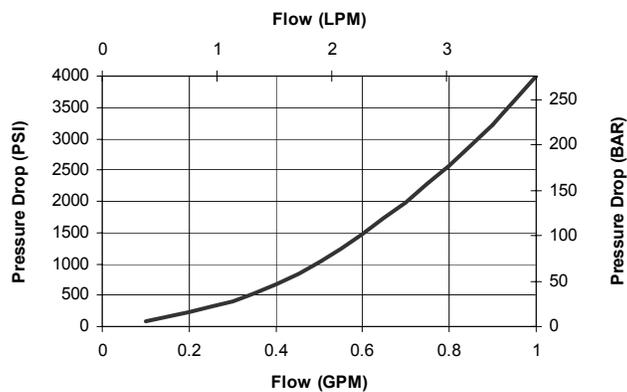


Good as a pilot dump valve.

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)



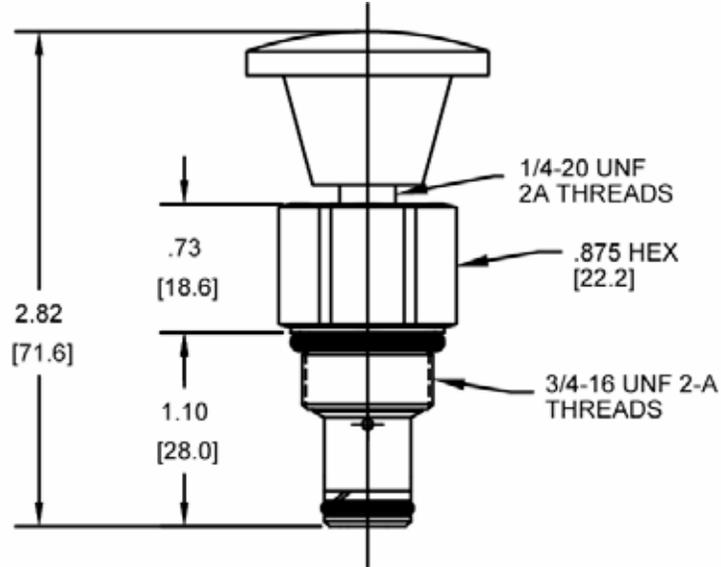
- Port 2 to 1

VALVE SPECIFICATIONS

Nominal Flow	1 GPM (4 LPM)
Max. Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	Negligible
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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

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.

DIMENSIONS



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

ORDERING INFORMATION

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

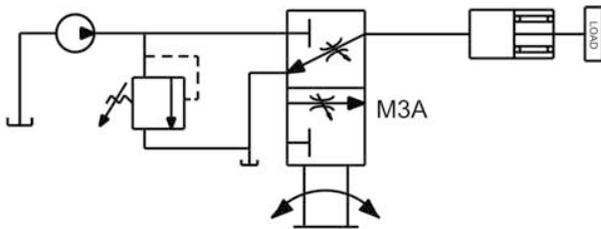
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

3 Way 2 Position Manual Valves

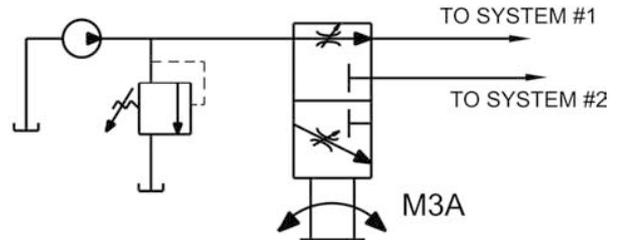
	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3000	45	207	DF-M3A	78

Typical Schematic

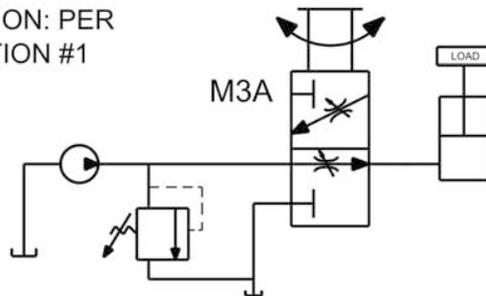
Typical application for a M3A depends on the porting used. The M3A can be used in a clutch application with porting option #1, for a single acting cylinder control with porting option #2, and for a selector application with porting option #3.



CLUTCH APPLICATION: PER PORTING OPTION #1



SELECTOR APPLICATION: PER PORTING OPTION #3



SINGLE ACTING CYLINDER CONTROL: PER PORTING OPTION #2

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

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

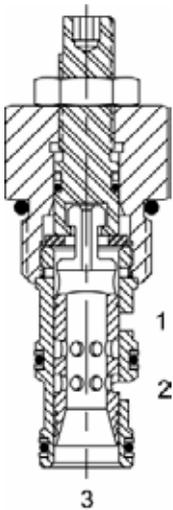
The DF-M3A when rotated fully to the clockwise position, the cartridge directs flow from (3) to (2) or (2) to (3) and blocks flow at (1).

When rotated fully to the counterclockwise position, the cartridge directs flow from (1) to (3) or (3) to (1) and blocks flow at (2).

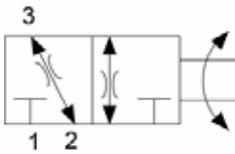
All ports are closed in transition.

FEATURES

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



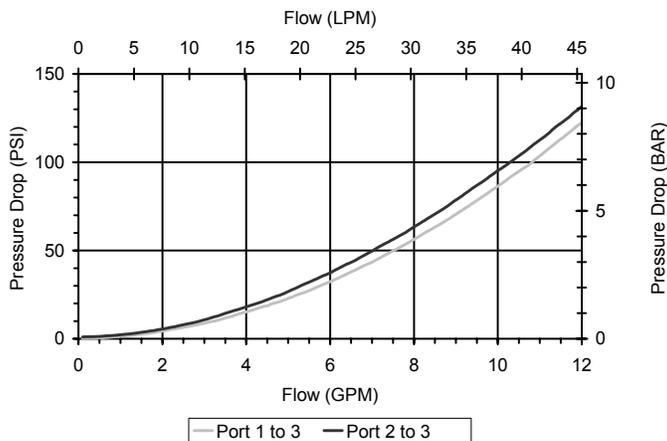
HYDRAULIC SYMBOL



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)

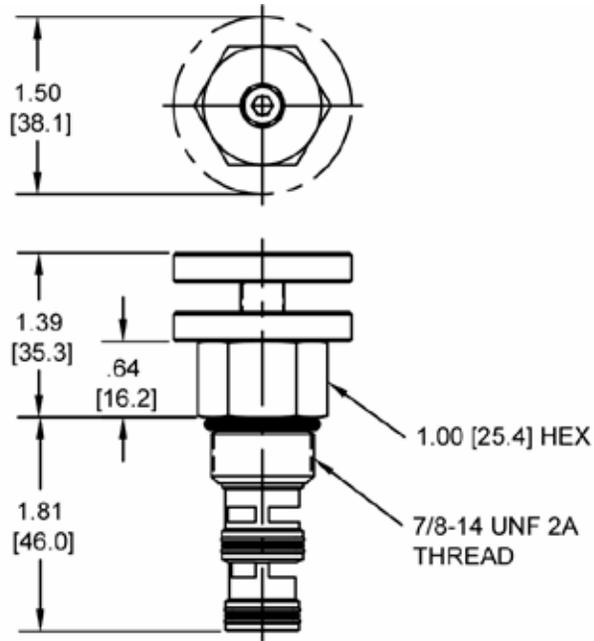


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	21191210

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DIMENSIONS



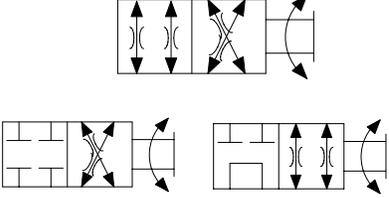
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DF-M3A - - -			
OPTIONS			BODIES
Buna Standard	00	Blank	Without Body
Viton Standard	V0	N	1/4" BSP Ports
Buna, Knob	OK	S	#6 SAE Ports
Viton, Knob	VK		

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.

4 Way 2 Position Manual Valves

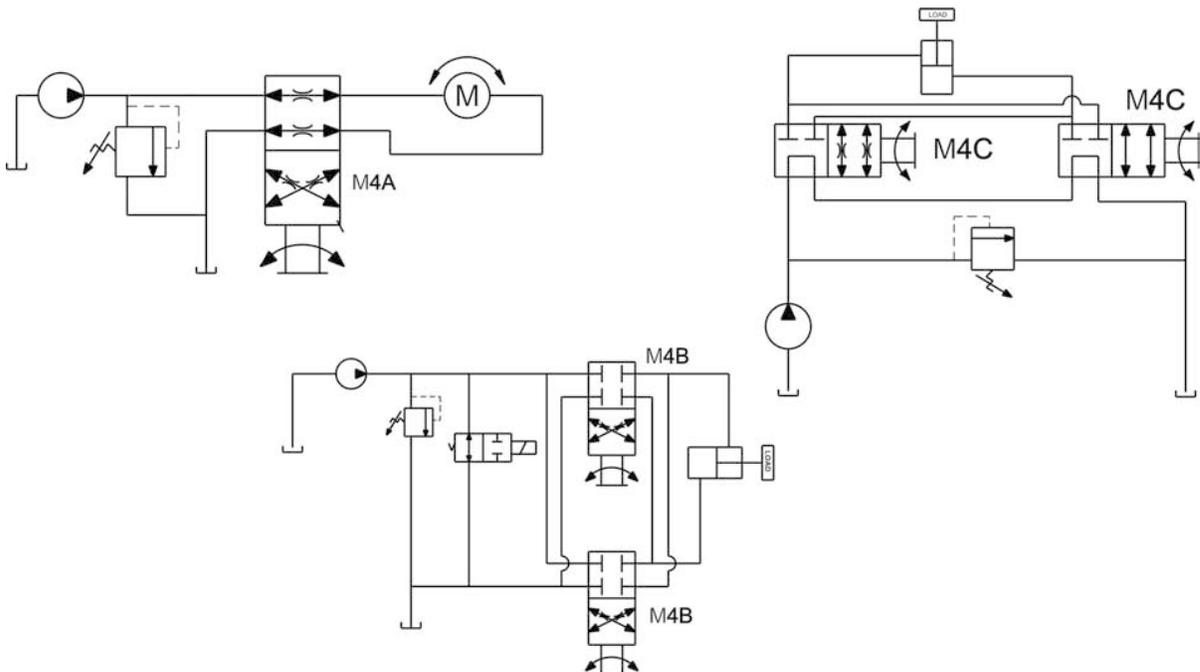
	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3000	38	207	DG-M4A	82
	15	3000	57	207	DG-M4B	84
	12	3000	45	207	DG-M4C	86

Typical Schematic

Typical application for the M4A is directional motor control.

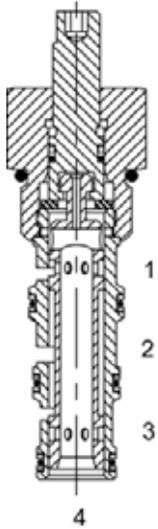
Typical application for the M4B is directional cylinder control in a parallel circuit.

Typical application for the M4C is directional cylinder control in a series circuit.



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.

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).

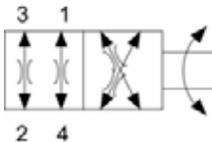
When rotated fully to counterclockwise position, the cartridge directs flow between (3) to (4) and (1) to (2).

All ports are closed in transition.

FEATURES

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

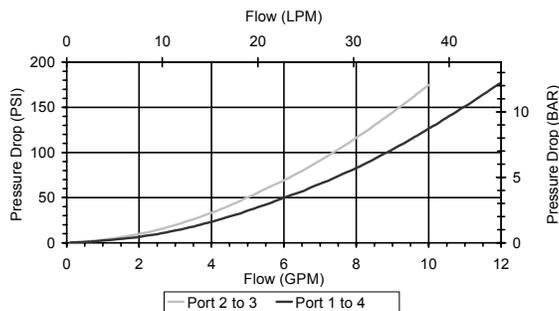
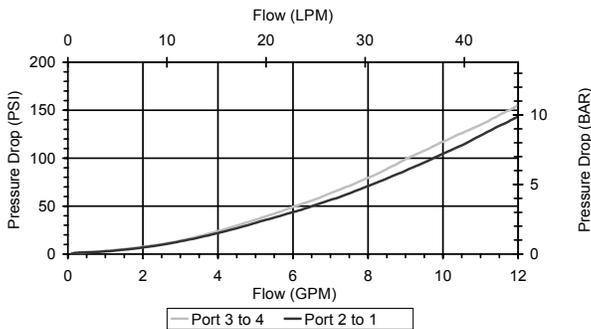
HYDRAULIC SYMBOL



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)

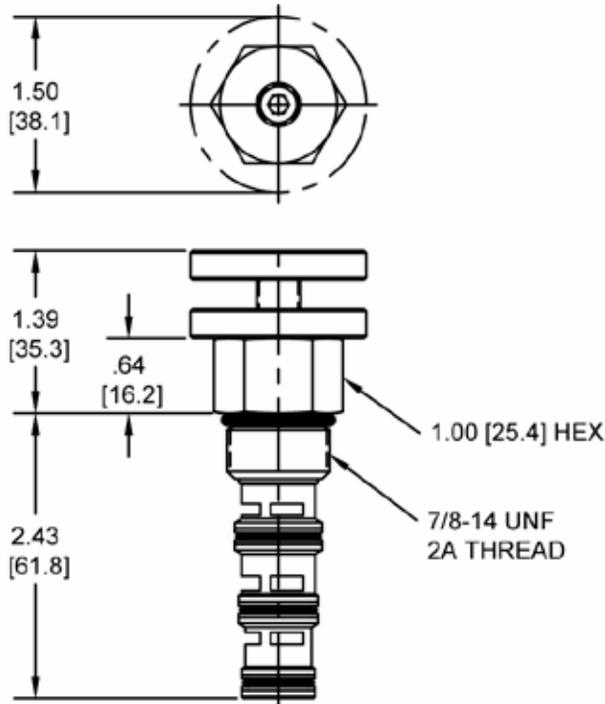


VALVE SPECIFICATIONS

Nominal Flow	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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



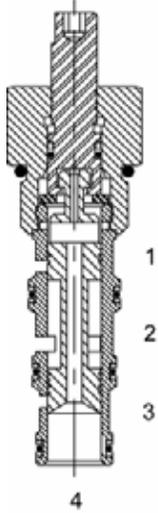
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

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

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.

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

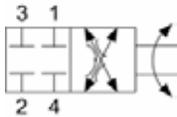
The DG-M4B when rotated fully to clockwise position, this valve blocks flow at all ports.

When rotated fully total 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.

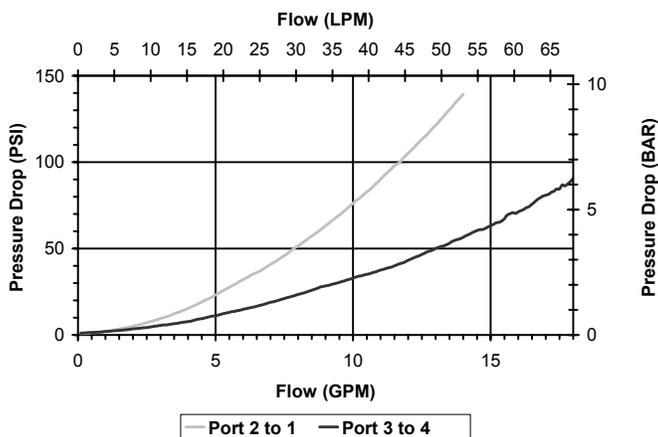
HYDRAULIC SYMBOL



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)

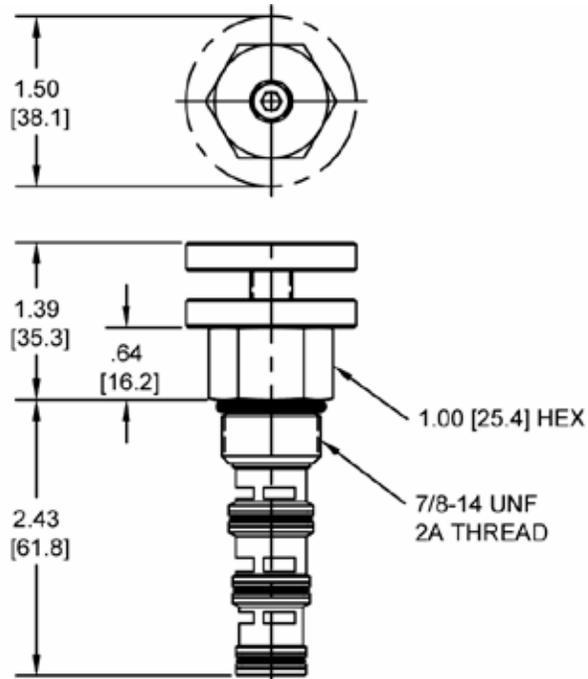


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



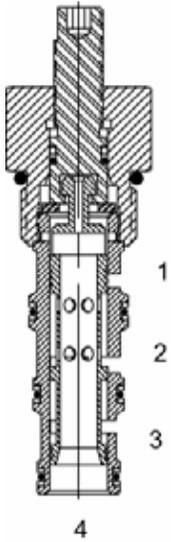
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

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

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.

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).

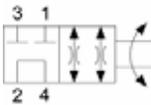
When rotated fully total counterclockwise position, the cartridge allows flow between (2) and (3) and between (1) and (4).

All ports are closed in transition.

FEATURES

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

HYDRAULIC SYMBOL

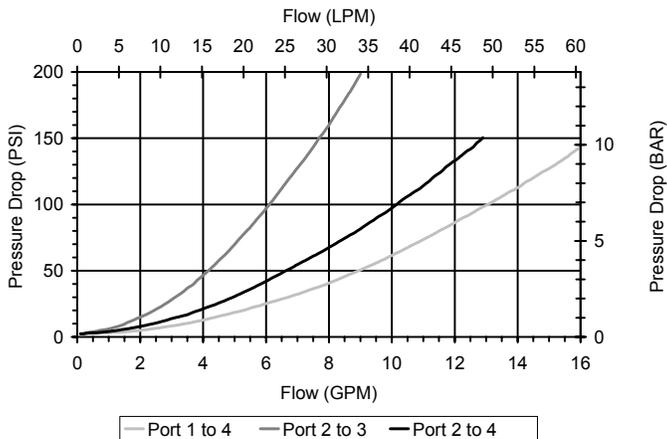


May be used as metering product. Valve has approximately 3.5 turns adjustment from extreme clockwise fully to counterclockwise positions.

See chart for fully open and fully closed pressure drop.

PERFORMANCE

Actual Test Data (Cartridge Only)

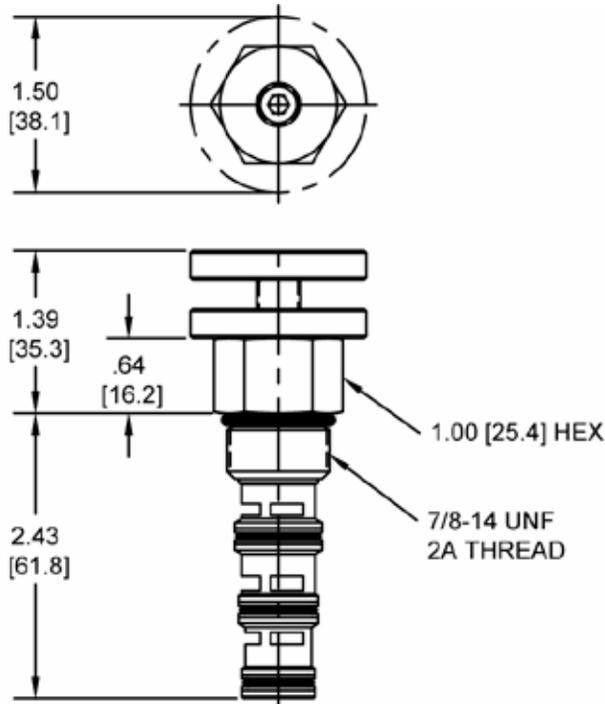


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



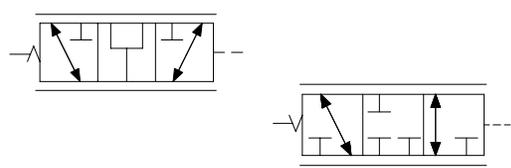
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

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

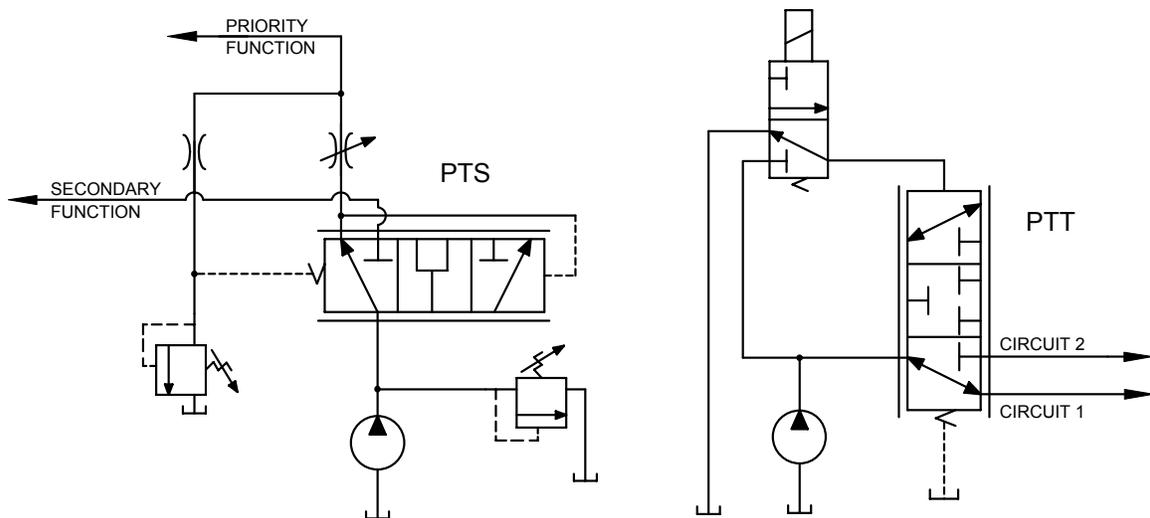
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Pilot to Shift Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	40	3500	151	245	SO-PTS	90
	40	3500	151	245	SO-PTT	92

Typical Schematic

Typical application for a 3 way pilot to shift: PTS is used as a priority flow control valve and PTT is used as a selector valve.



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

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.

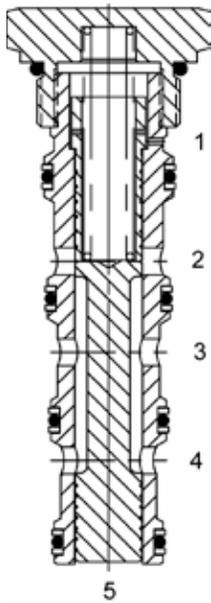
With application of a remote pilot signal at (5), the valve's spool shifts to allow flow between ports (2) and (3), while port (4) is blocked. During transition ports (2), (3), and (4) are open.

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.

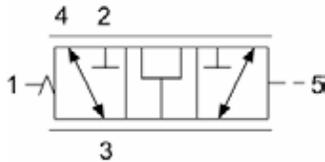
Pressure at (1) will affect required pilot pressure.

FEATURES

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



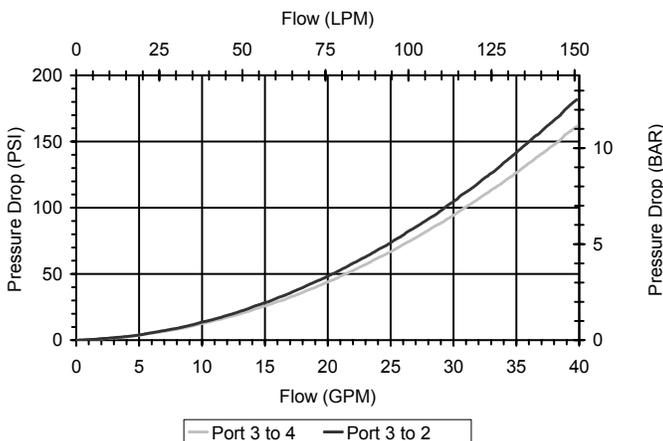
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)

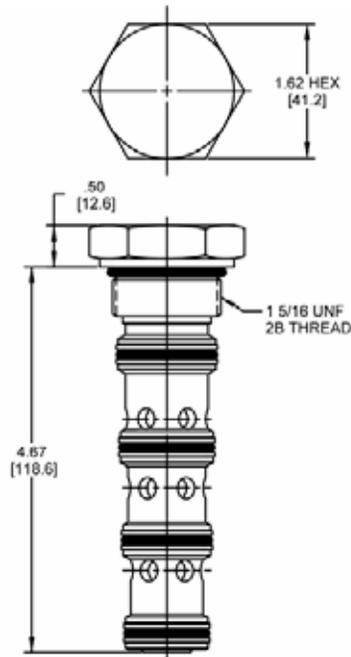


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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
Cavity Tools Kit (form tool, reamer, tap)	40500038
Seal Kit	21191410

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.

DIMENSIONS



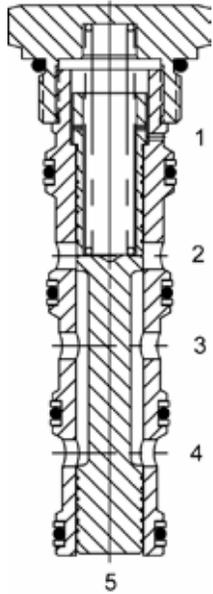
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

SO-PTS		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0				3/4" BSP Ports
					#12 SAE Ports
					SPRING BIAS
				0070	70 PSI
				0150	150 PSI
					±10%

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.

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.

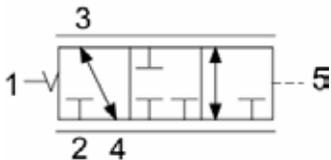
The spring chamber is vented to the tank through port (1). The vented spring chamber allows the valve to be fully pressurized at ports (2), (3), and (4) without affecting required pilot pressure.

Pressure at (1) will affect required pilot pressure.

FEATURES

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

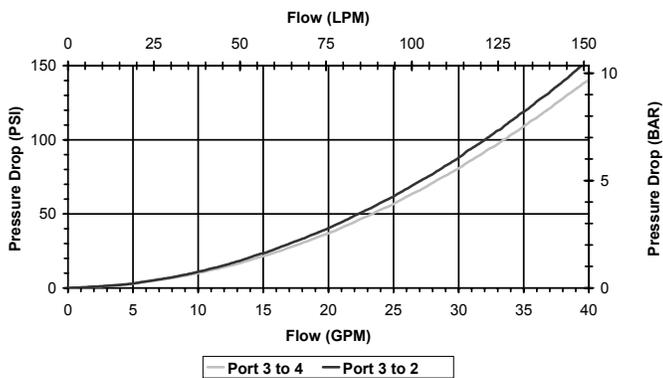
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)

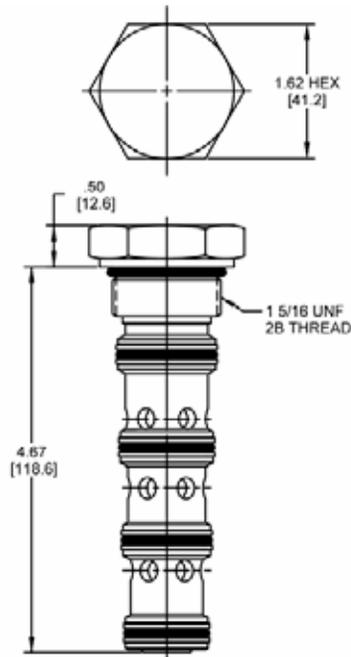


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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
Cavity Tools Kit (form tool, reamer, tap)	40500038
Seal Kit	21191410

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.

DIMENSIONS



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

ORDERING INFORMATION

SO-PTT		-	-	-	-
OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			S	#12 SAE Ports
				0070	SPRING BIAS
				0150	70 PSI
					150 PSI
					±10%

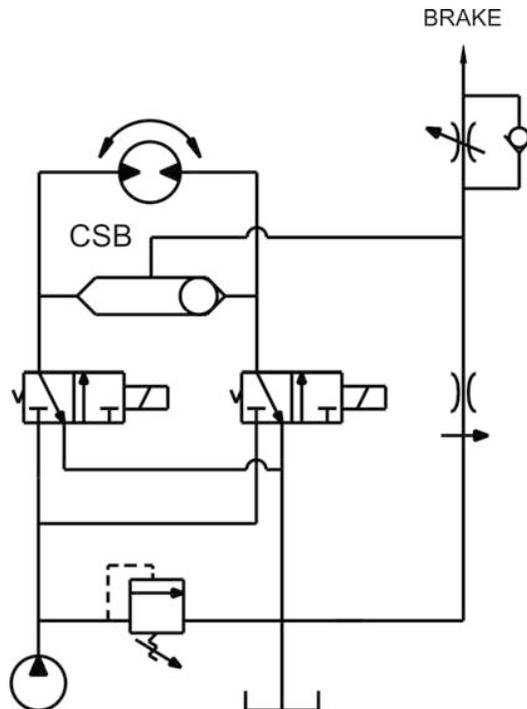
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Shuttle Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	6	3500	23	245	PP-CSB	96
	8	3500	30	245	DF-CSB	98
	1	3500	4	245	QS-CSB	100

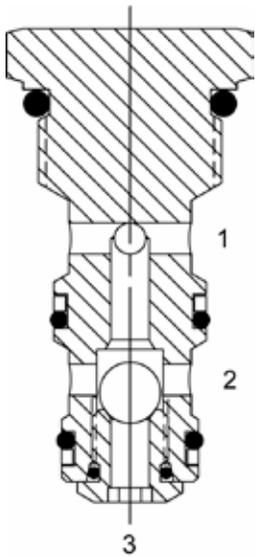
Typical Schematic

Typical application for the CSB is load sense in a motor circuit with a spring loaded brake.



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.

PP-CSB Shuttle Valve



DESCRIPTION

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

OPERATION

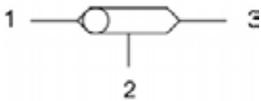
The PP-CSB allows flow from the higher pressure of (1) or (3) to (2).

The valve is commonly used as a load sense to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure released hydraulic brake.

FEATURES

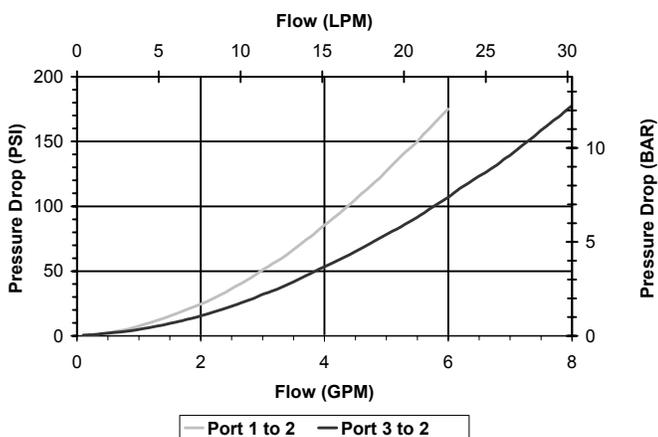
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

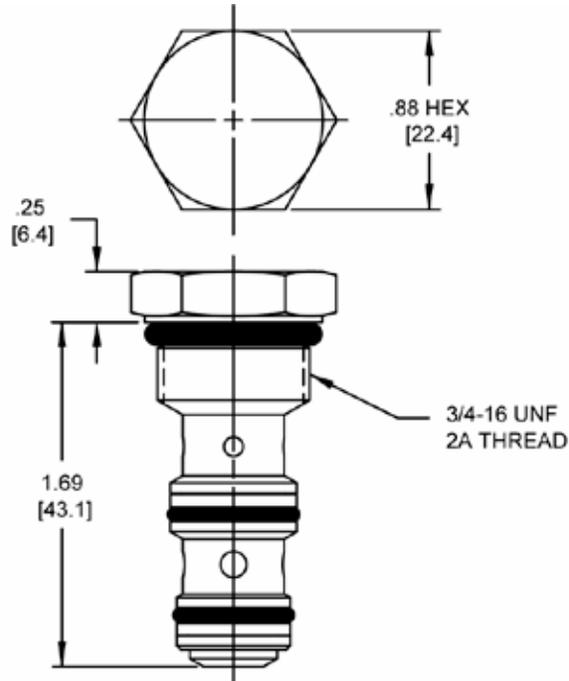


VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500024
Seal Kit	21191104

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.

DIMENSIONS



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

ORDERING INFORMATION

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

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.

DF-CSB Shuttle Valve

DESCRIPTION

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

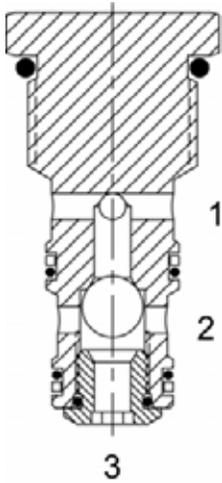
OPERATION

The DF-CSB allows flow from the higher pressure of (1) or (3) to (2).

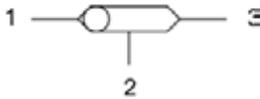
The valve is commonly used as a load sense to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure-released hydraulic brake.

FEATURES

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

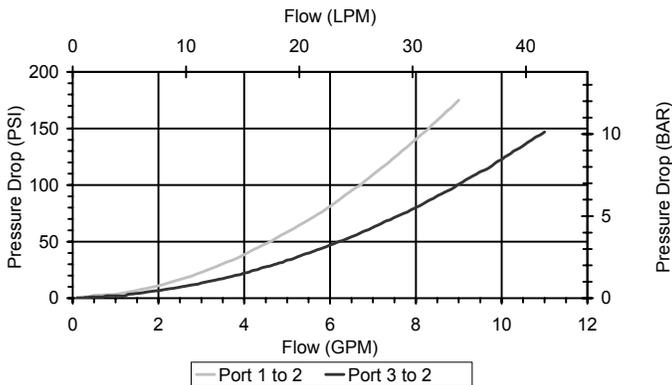


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

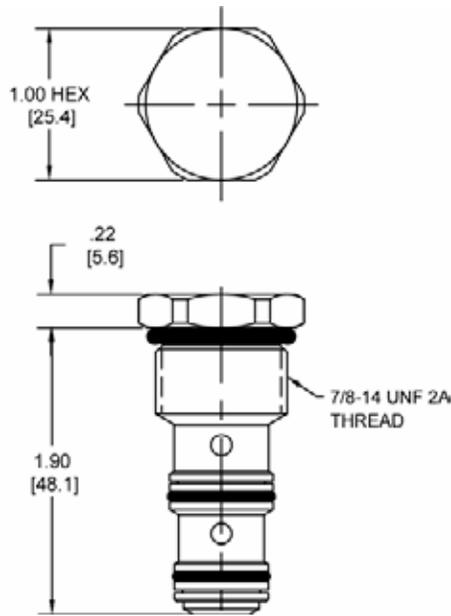


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	21191206

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

DIMENSIONS



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

ORDERING INFORMATION

DF-CSB -		-	-	-	
OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	1/4" BSP Ports
				S	#6 SAE Ports
			Blank	Leave this box blank	

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.

QS-CSB Shuttle Valve, Insert Type

DESCRIPTION

Special cavity, insert type, shuttle valve.

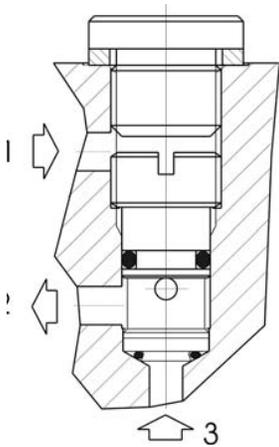
OPERATION

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.

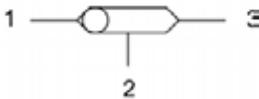
The valve is commonly used as a load sense to direct oil from the pressure side of a bidirectional hydraulic motor to a pressure released hydraulic brake.

FEATURES

- Hardened parts for long life.

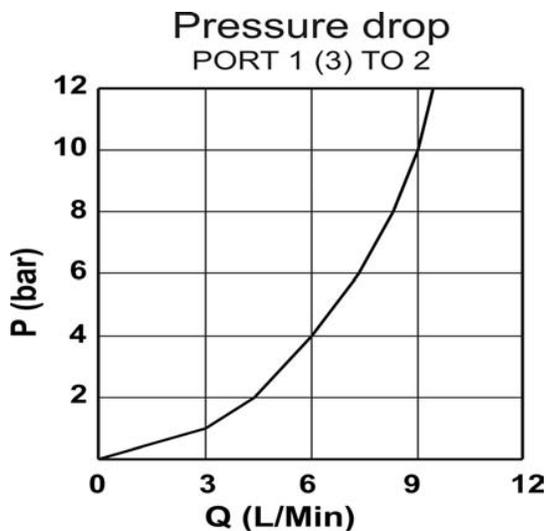


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

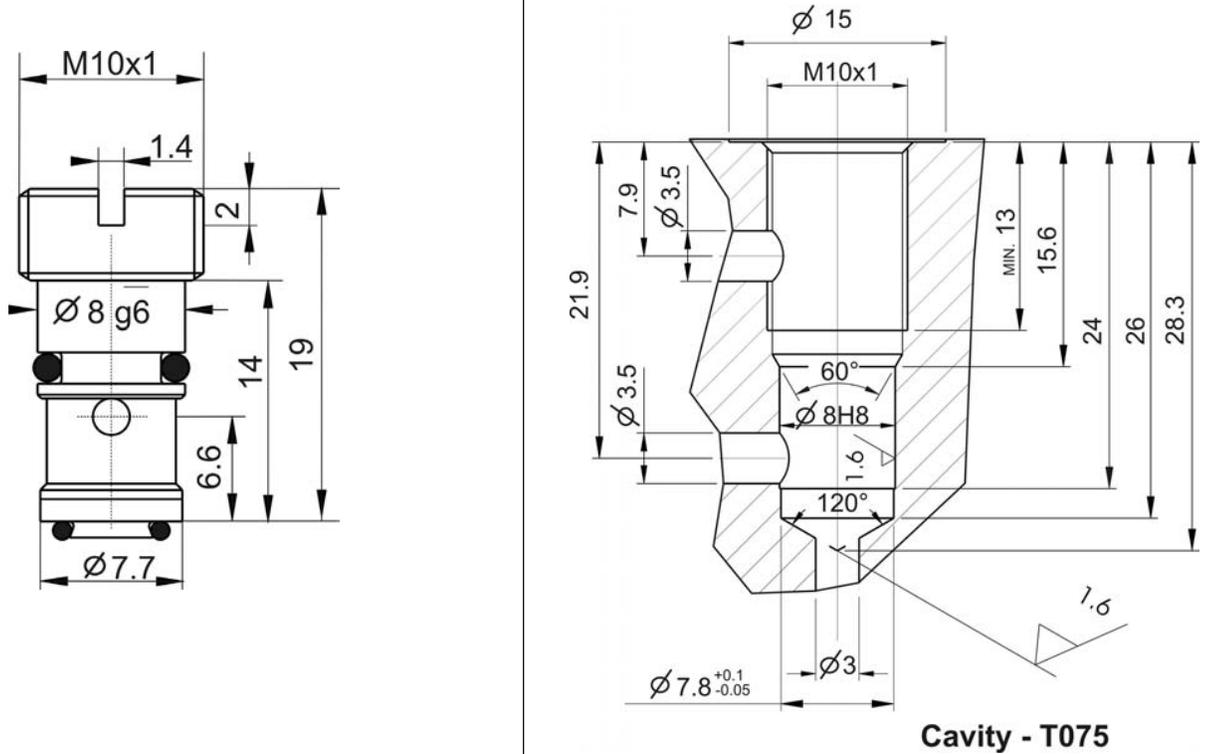


VALVE SPECIFICATIONS

Nominal Flow	1 GPM (4 LPM)
Rated Operating Pressure	3500 PSI (245 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 Temperature 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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DIMENSIONS



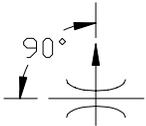
ORDERING INFORMATION

QS-CSB - - 00

OPTIONS
 Buna Standard 00
 Viton Standard V0

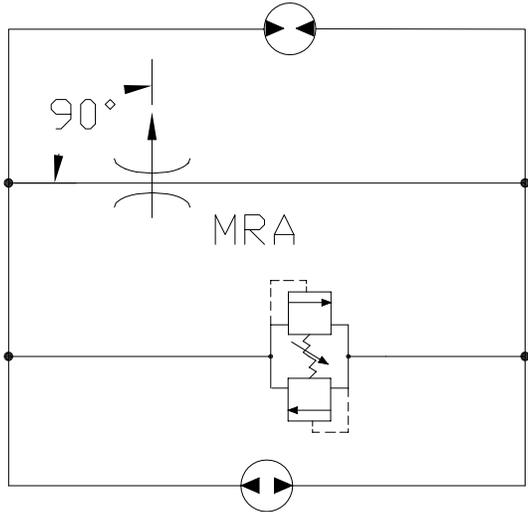
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Rotary Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	40	3000	151	207	SJ-MRA	104

Typical Schematic

Typical application for the MRA is a emergency by-pass flow in a closed loop system.



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.

SJ-MRA Manual Rotary Spool Valve, 2 Way

DESCRIPTION

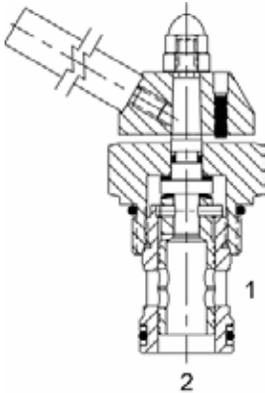
16 size, 1 5/16-12, "Super" series, manual rotary spool valve.

OPERATION

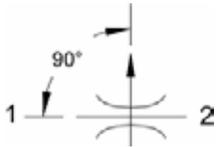
The SJ-MRA regulates flow from (1) to (2) or (2) to (1). Counter-clockwise Rotation of 90° adjusts valve from fully open to fully closed.

FEATURES

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

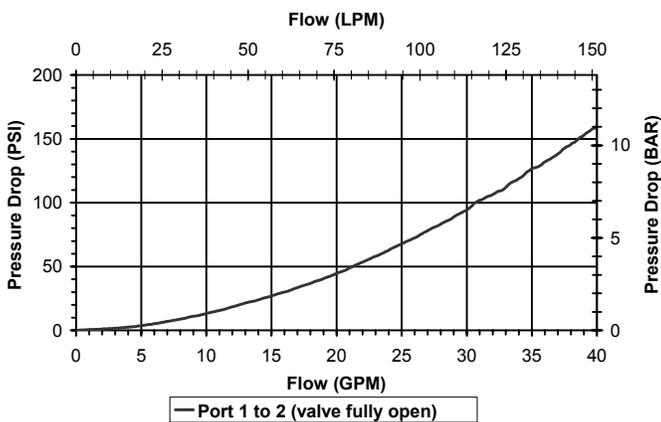


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

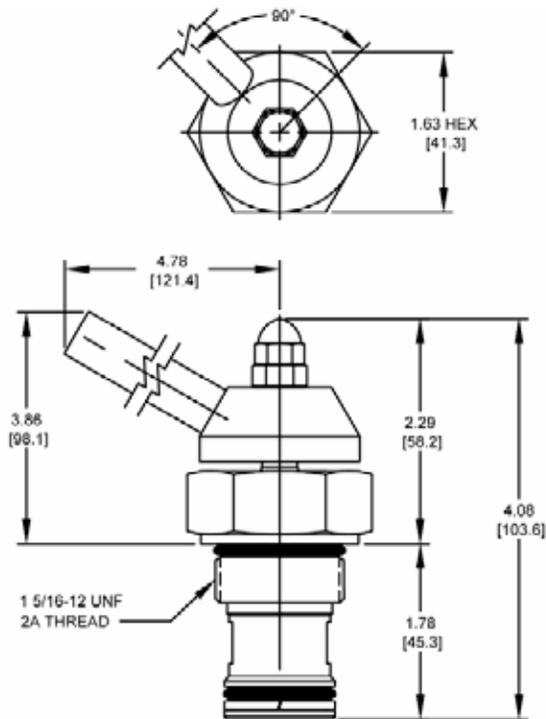


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	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 Temperature 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	30 ft-lbs (40.6 Nm)
Cavity	SUPER 2W
Cavity Tools Kit (form tool, reamer, tap)	40500017
Seal Kit	21191402

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DIMENSIONS



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

ORDERING INFORMATION

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

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.

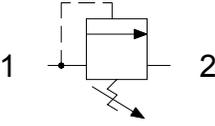


SECTION/Description	Pages
Direct Acting and Differential Area Relief Valves	109
Pilot Operated Relief Valves	133
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2 Way Compensating/Reducing Valvs	155
2 Way Restrictive Type Compensators	161
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4 Way Priority Type Compensators with By-Pass Line	175
Pressure Reducing/Relieving Valves	179
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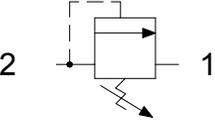
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Direct Acting and Differential Area Relief Valves

Direct Acting Relief Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3500	45	245	DE-RCA	110
	5	3000	19	207	MA-RVA	112
	6	3500	23	245	PB-RVA	114
	4	4000	30	276	DE-RVA	116
	6	3500	23	245	PB-RVA	118
	8	4000	30	276	DE-RVA	120

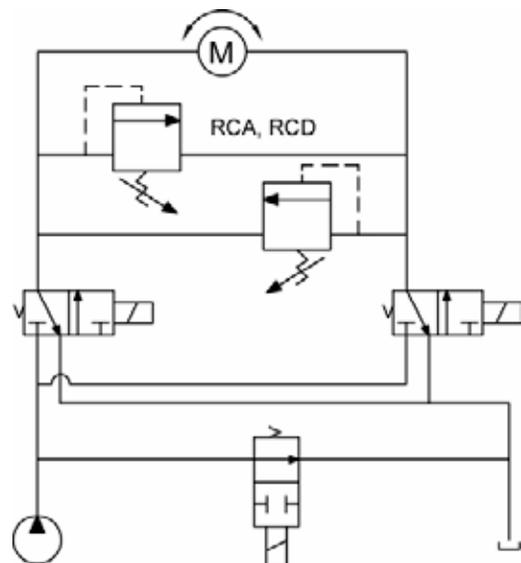
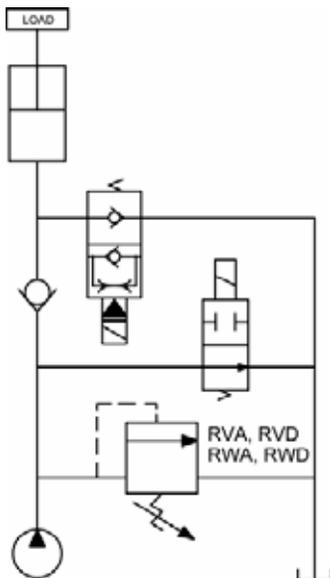
Differential Area Relief Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	15	3500	57	245	DE-RCD	122
	8	3500	30	245	PB-RVD	124
	15	4000	57	276	DE-RVD	126
	8	3500	30	245	PB-RVD	128
	15	4000	57	276	DE-RVD	130

Typical Schematic

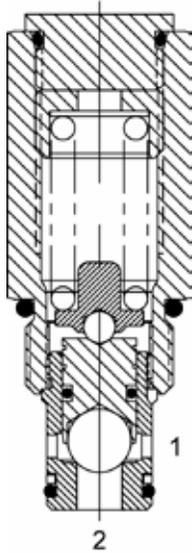
Typical application for the RVA, RVD, RWA, RWD is to protect pump and system.

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



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.

DE-RCA Guided Ball, Direct Acting Relief Valve



DESCRIPTION

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

OPERATION

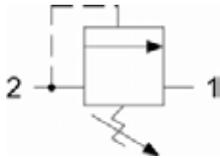
The DE-RCA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1).

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

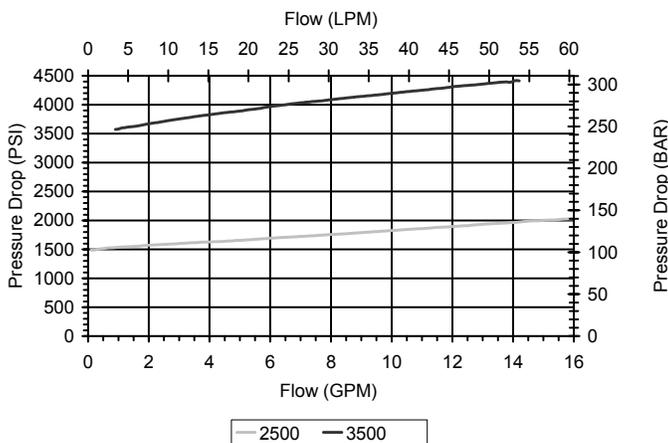
HYDRAULIC SYMBOL



Installation space saving product.
Cannot be field adjusted.

PERFORMANCE

Actual Test Data (Cartridge Only)

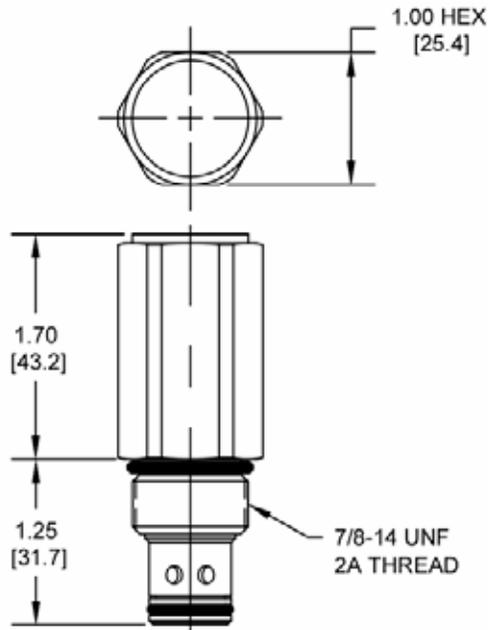


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



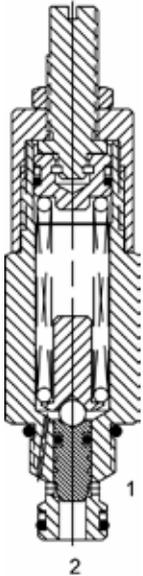
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DE-RCA		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0			Blank	3/8" BSP Ports
				N	#8 SAE Ports
				S	
					PRESSURE RANGE/SETTING
			2500		100-2500 PSI
			3500		250-3500 PSI

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.

MA-RVA Direct Acting Relief Valve



DESCRIPTION

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

OPERATION

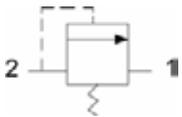
The MA-RVA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1).

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

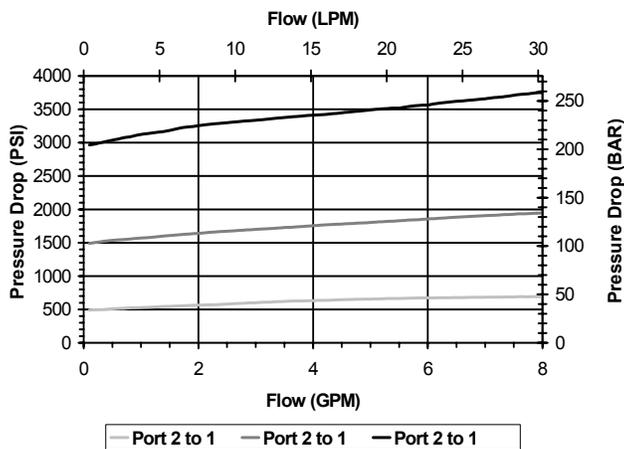
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

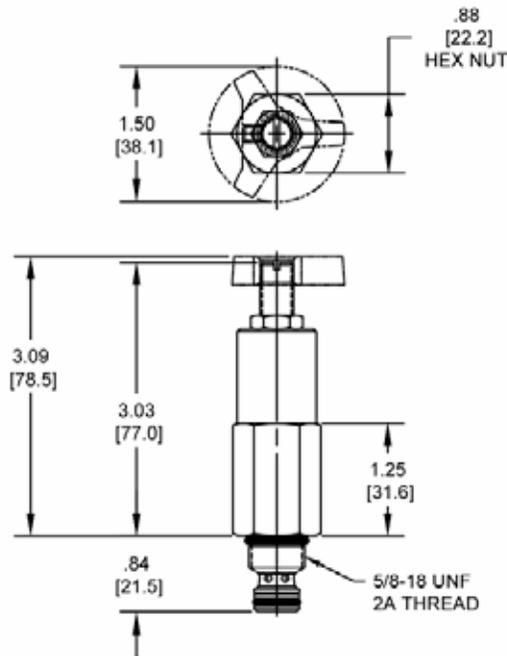


VALVE SPECIFICATIONS

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 Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.39 lbs (1.7kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Cavity	MINI 2W
Cavity Tools Kit (form tool, reamer, tap)	40500003
Seal Kit	21191000

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.

DIMENSIONS



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

ORDERING INFORMATION

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

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.

PB-RVA Direct Acting Relief Valve

DESCRIPTION

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

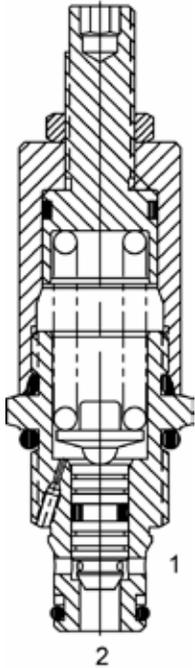
OPERATION

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).

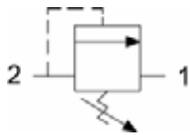
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

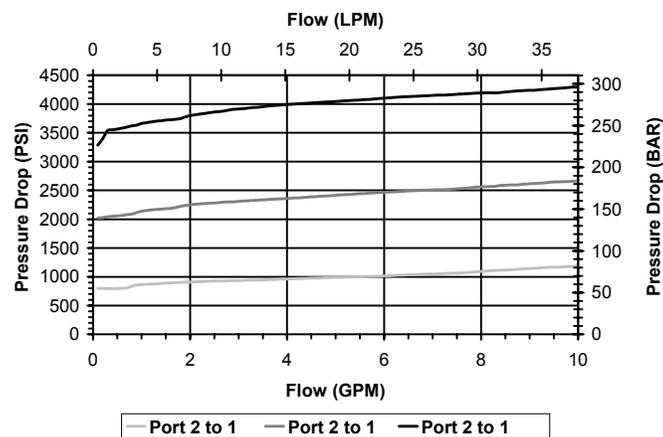


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

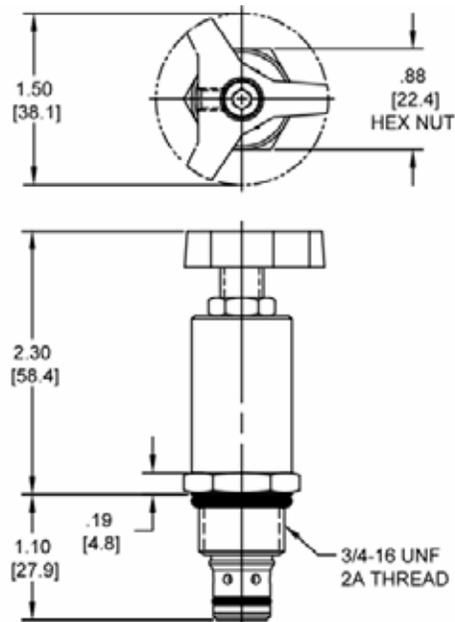


VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



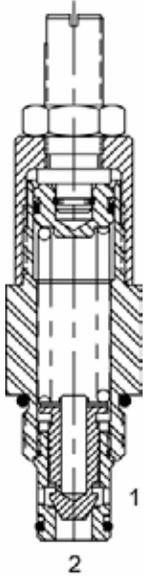
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

PB-RVA - - - - -			
OPTIONS			BODIES
Buna Standard	00		Blank
Viton Standard	V0		N 1/4" BSP Ports
Buna, Knob	0K		S #6 SAE Ports
Viton, Knob	VK		
		PRESSURE RANGE/SETTING	
		0800	0-800 PSI
		2000	800-2000 PSI
		3500	2000-3500 PSI

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.

DE-RVA Direct Acting Relief Valve



DESCRIPTION

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

OPERATION

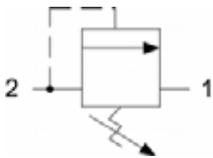
The DE-RVA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1).

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

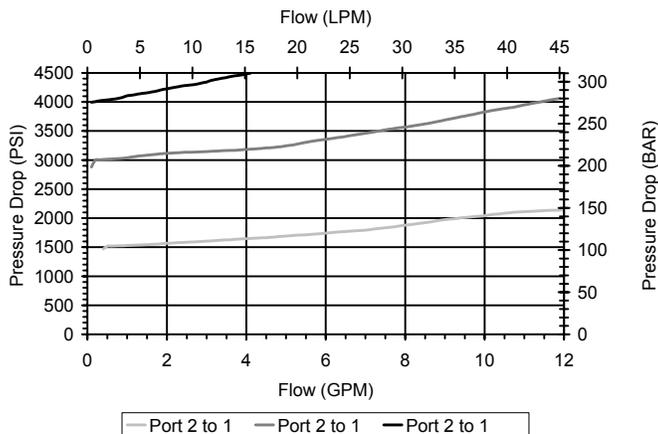
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

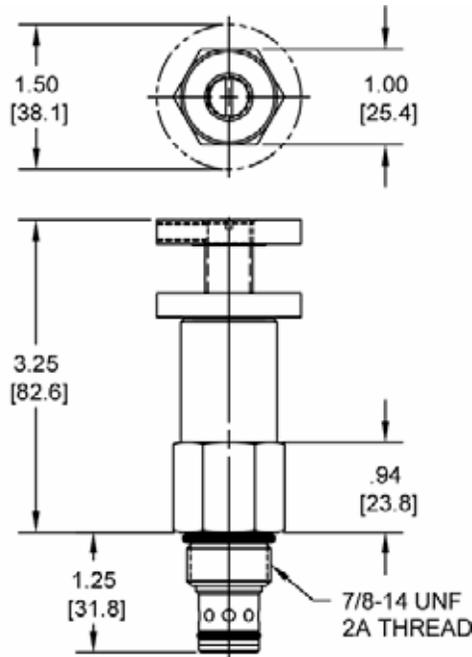


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



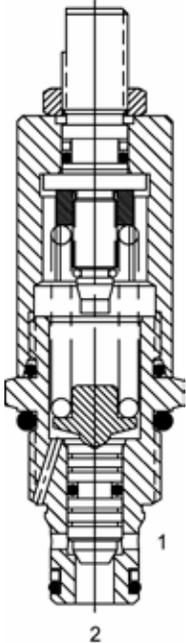
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DE-RVA		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				Without Body
Buna, Knob	0K				N 3/8" BSP Ports
Viton, Knob	VK				S #8 SAE Ports
					PRESSURE RANGE/SETTING
			1500		200-1500 PSI
			3000		1500-3000 PSI
			4000		2500-4000 PSI

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.

PB-RWA Direct Acting Relief Valve



DESCRIPTION

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

OPERATION

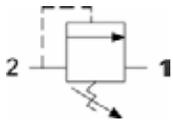
The PB-RWA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1).

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

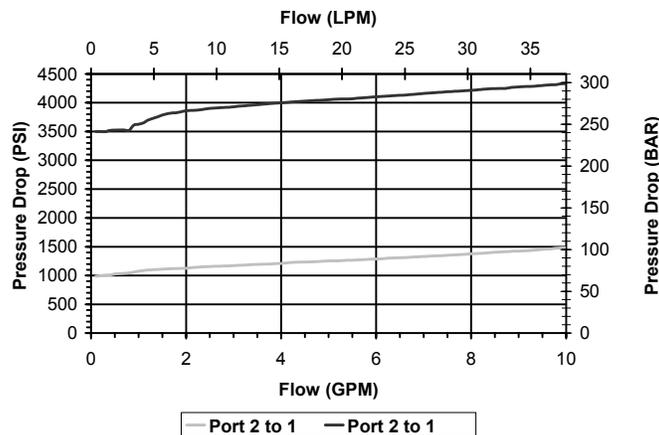
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

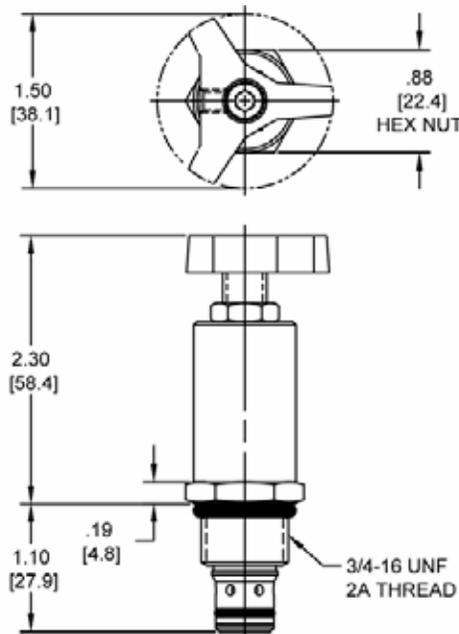


VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



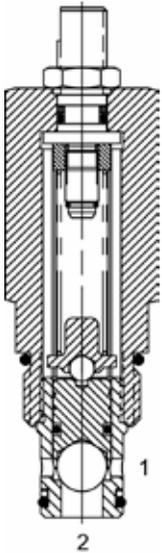
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

PB-RWA - - - -			
	OPTIONS		BODIES
External Adj. W/Locknut Buna	00		Blank
External Adj. W/Locknut Viton	V0		N
Buna, Knob	0K		S
Viton, Knob	VK		Without Body
Internal Adj. Buna	0I		1/4" BSP Ports
Internal Adj. Viton	VI		#6 SAE Ports
Tamper Proof Buna	0T		
Tamper Proof Viton	VT		
		1000	PRESSURE RANGE/SETTING
		3500	Ext./Int. Adjustable
			100-1000 PSI
			500-3500 PSI
			Tamper Proof
			Fill in 4 Digit Pressure Setting
			Example: 0500-500 PSI

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.

DE-RWA Direct Acting Relief Valve



DESCRIPTION

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

OPERATION

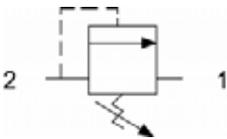
The DE-RWA blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the poppet to open and allow metered flow from (2) to (1).

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

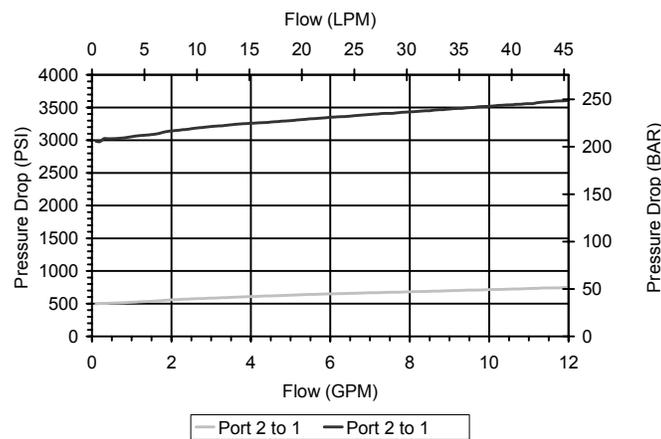
HYDRAULIC SYMBOL



For critical leakage applications consult factory.

PERFORMANCE

Actual Test Data (Cartridge Only)

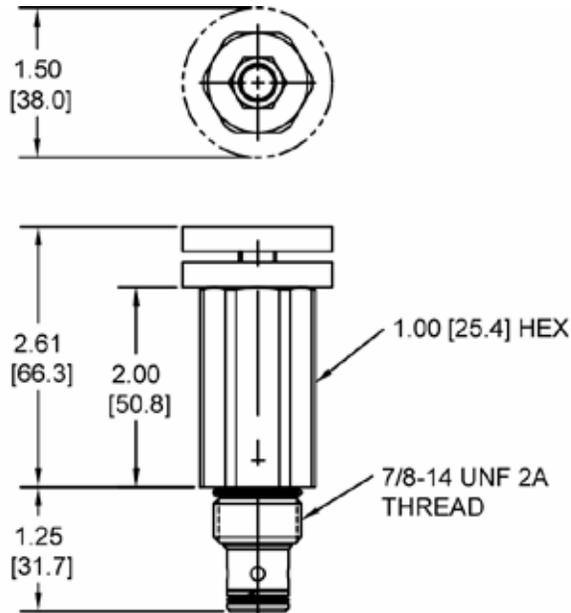


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

DE-RWA - - -			
	OPTIONS		BODIES
External Adj. W/Locknut, Buna	00	Blank	Without Body
External Adj. W/Locknut, Viton	V0	N	3/8" BSP Ports
Buna, Knob	0K	S	#8 SAE Ports
Viton, Knob	VK		
Internally Adj. Buna	0I		
Internally Adj. Viton	VI		
Tamper Proof, Buna	0T		
Tamper Proof, Viton	VT		
		0500	PRESSURE RANGE/SETTING
		3000	Ext./Int. Adjustment
		5000	100-500 PSI
			100-3000 PSI
			3000-5000 PSI
			Tamper Proof
			Fill In 4 Digit Pressure Setting
			Example: 0500-500 PSI

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.

DE-RCD Differential Area Relief Valve

DESCRIPTION

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

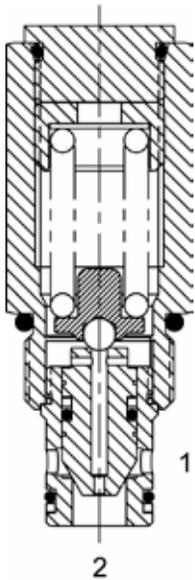
OPERATION

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).

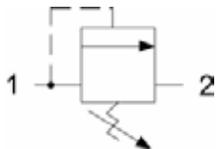
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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



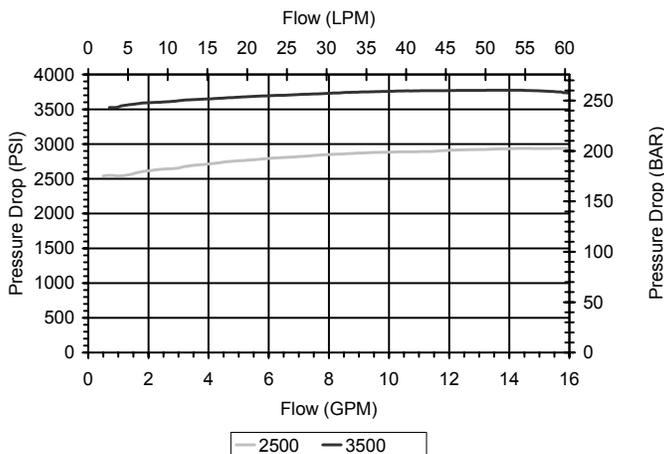
HYDRAULIC SYMBOL



Installation Space Saving Product.
Cannot be field adjusted.

PERFORMANCE

Actual Test Data (Cartridge Only)

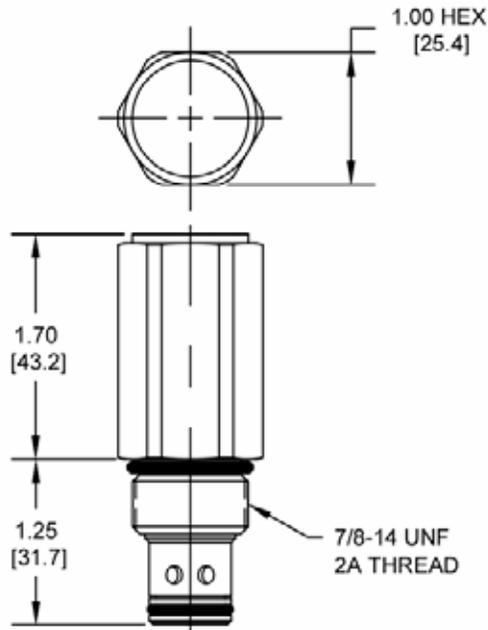


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

DE-RCD -		-	-	-	
OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	3/8" BSP Ports
				S	#8 SAE Ports
					PRESSURE RANGE/SETTING
			2500		100-2500 PSI
			3500		250-3500 PSI

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PB-RVD Differential Area Relief Valve

DESCRIPTION

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

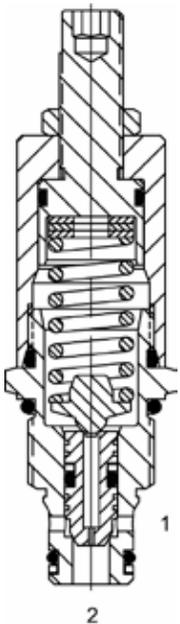
OPERATION

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).

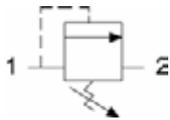
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

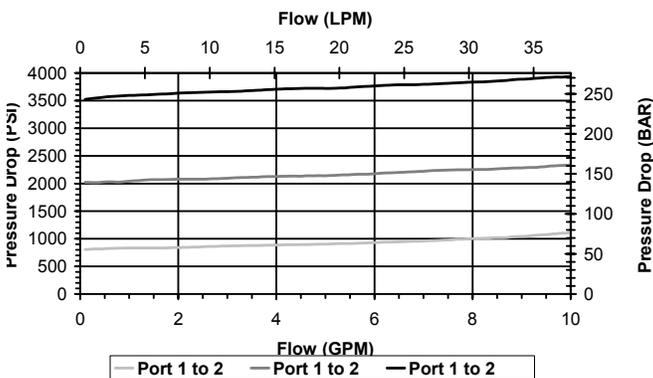


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

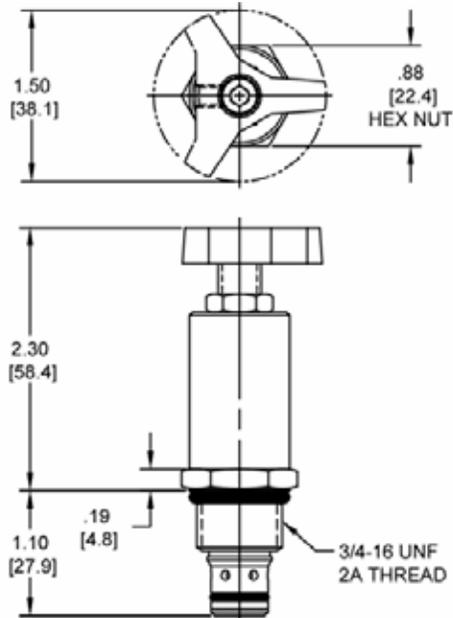


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



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

ORDERING INFORMATION

PB-RVD -		-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank
Viton Standard	V0			N 1/4" BSP Ports
Buna, Knob	0K			S #6 SAE Ports
Viton, Knob	VK			
			0800	PRESSURE RANGE/SETTING
			2000	0-800 PSI
			3500	800-2000 PSI
				2000-3500 PSI

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.

DE-RVD Differential Area Relief Valve

DESCRIPTION

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

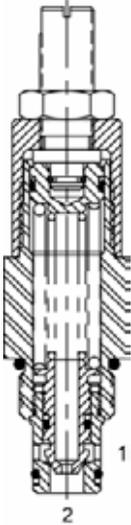
OPERATION

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).

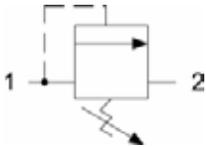
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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



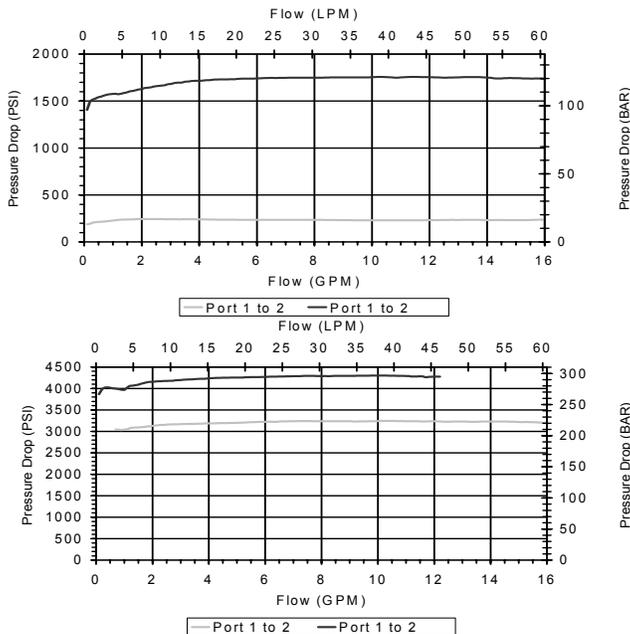
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)

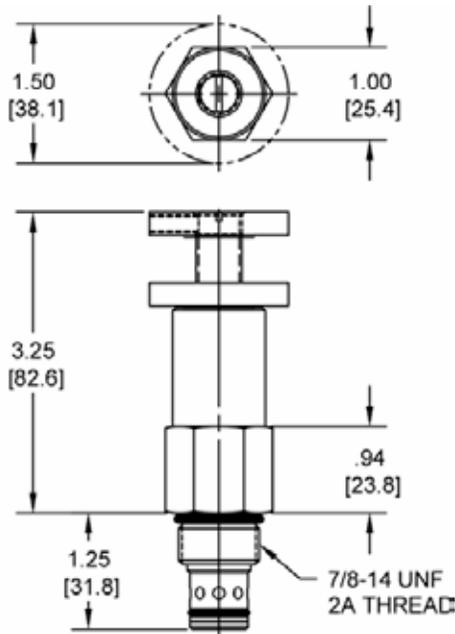


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

DE-RVD - - -

<u>OPTIONS</u>	
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

<u>BODIES</u>	
Blank	Without Body
N	3/8" BSP Ports
S	#8 SAE Ports

PRESSURE RANGE/SETTING

0200	50-200 PSI
1500	200-1500 PSI
3000	1500-3000 PSI
4000	2500-4000 PSI

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

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

PB-RWD Differential Area Relief Valve

DESCRIPTION

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

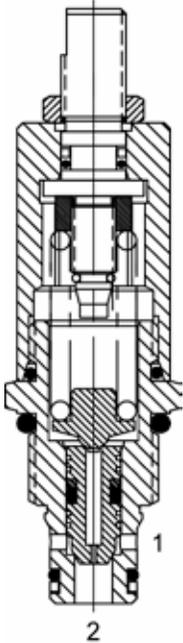
OPERATION

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).

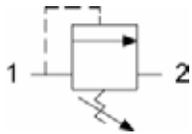
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

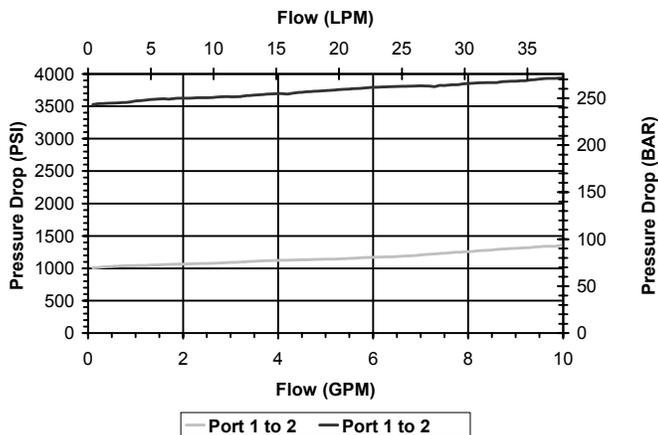


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

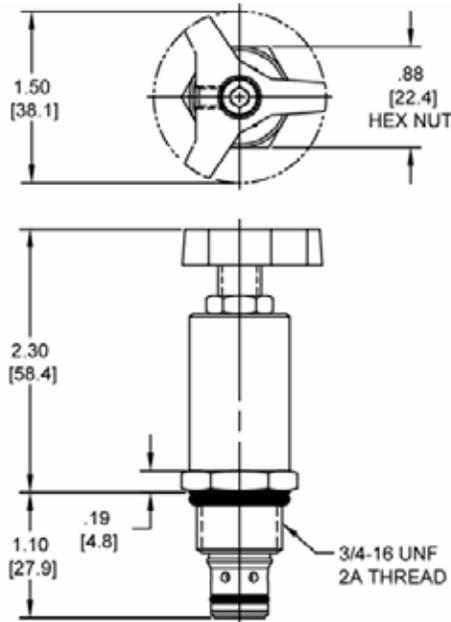


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



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

ORDERING INFORMATION

PB-RWD - - - - -			
	OPTIONS		BODIES
External Adj. W/Locknut Buna	00		Blank
External Adj. W/Locknut Viton	V0		N Without Body
Buna, Knob	0K		S 1/4" BSP Ports
Viton, Knob	VK		#6 SAE Ports
Internal Adj. Buna	0I		
Internal Adj. Viton	VI		
Tamper Proof Buna	0T		
Tamper Proof Viton	VT		
		1000	PRESSURE RANGE/SETTING
		3500	Ext./Int. Adjustable
			100-1000 PSI
			500-3500 PSI
			Tamper Proof
			Fill in 4 Digit Pressure Setting
			Example: 0500-500 PSI

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.

DE-RWD Differential Area Relief Valve



DESCRIPTION

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

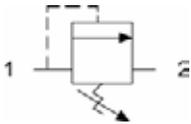
OPERATION

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

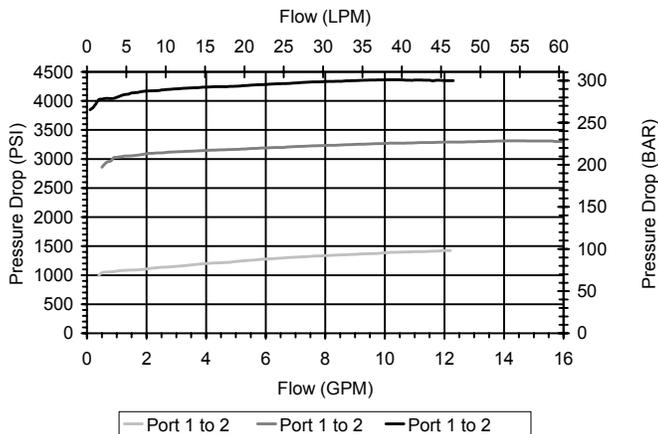
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

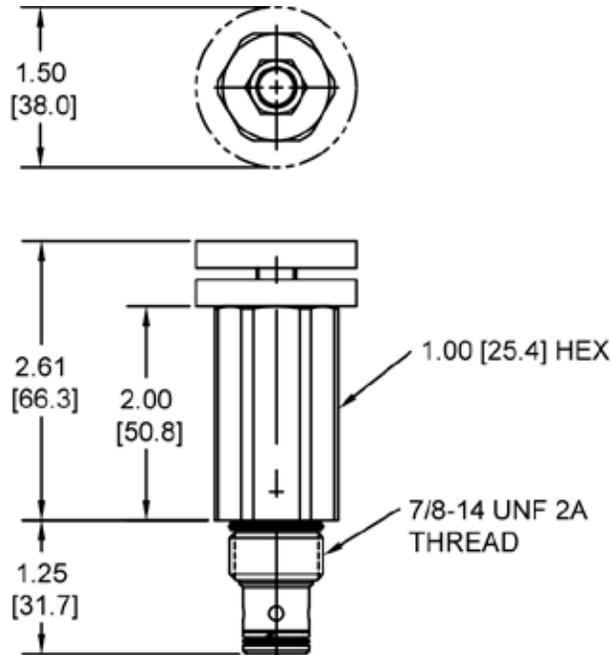


VALVE SPECIFICATIONS

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 Temperature 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)
Coil Nut Torque Requirements	6 ft-lbs (8.1 Nm) Maximum
Cavity	DELTA 2W
Cavity Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

DE-RWD		-	-	-	-
	OPTIONS				BODIES
External Adj. W/Locknut, Buna	00			Blank	Without Body
External Adj. W/Locknut, Viton	V0			N	3/8" BSP Ports
Buna, Knob	0K			S	#8 SAE Ports
Viton, Knob	VK				
Internally Adj. Buna	0I				
Internally Adj. Viton	VI				
Tamper Proof, Buna	0T				
Tamper Proof, Viton	VT				
		0500			
		3000			
		4000			
				PRESSURE RANGE/SETTING	
				Ext./Int. Adjustment	
				100-500 PSI	
				100-3000 PSI	
				3000-4000 PSI	
				Tamper Proof	
				Fill In 4 Digit Pressure Setting	
				Example: 0500-500 PSI	

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.

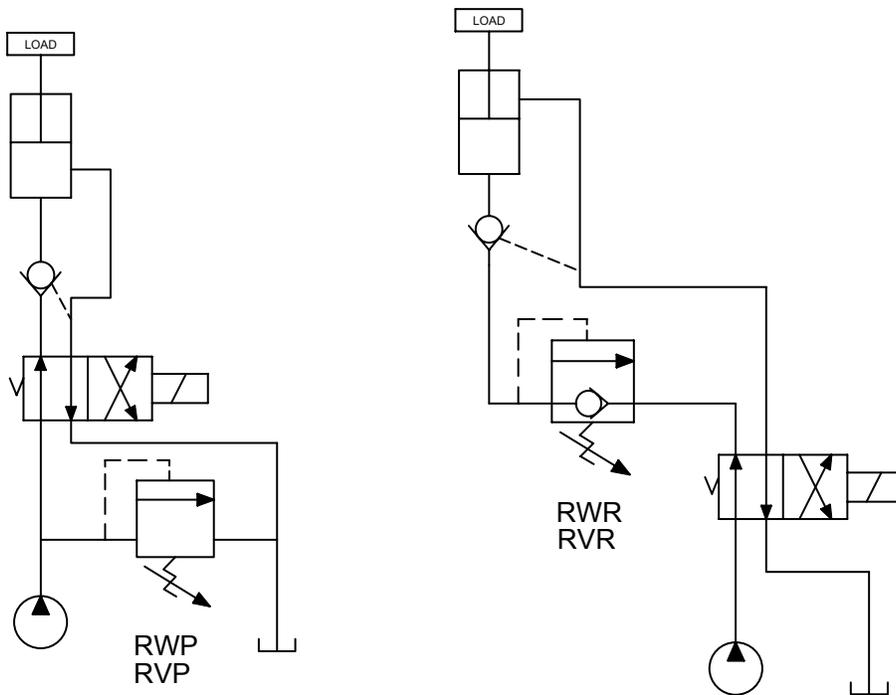
Pilot Operated Relief Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	20	4000	76	276	DE-RVP	134
	20	4000	76	276	HT-RVP	136
	15	4000	57	276	DE-RVR	138
	40	3500	151	245	SJ-RVR	140
	15	4000	57	276	DE-RWP	142
	15	4000	57	276	DE-RWR	144
	20	4000	76	276	QR-RVP	146

Typical Schematic

Typical application for the RVP and RWP is to protect pump or system.

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



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

DE-RVP Pilot Operated Relief Valve

DESCRIPTION

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

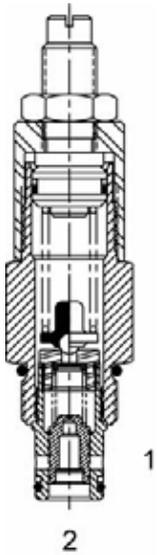
OPERATION

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).

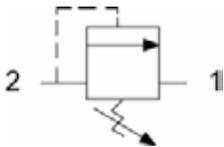
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

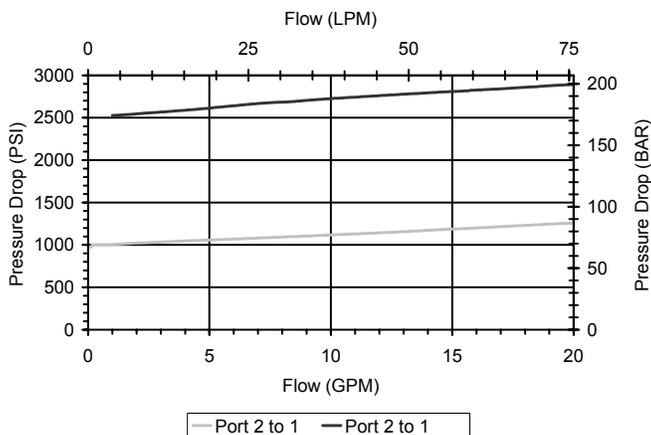


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

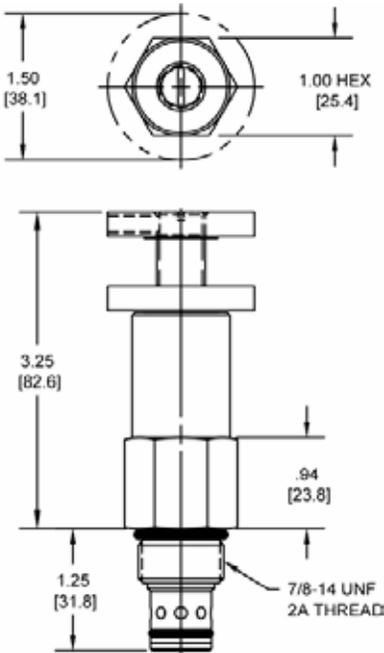


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



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

ORDERING INFORMATION

DE-RVP		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N 3/8" BSP Ports
Buna, Knob	0K				S #8 SAE Ports
Viton, Knob	VK				
			4000		PRESSURE RANGE/SETTING
					100-4000 PSI

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.

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).

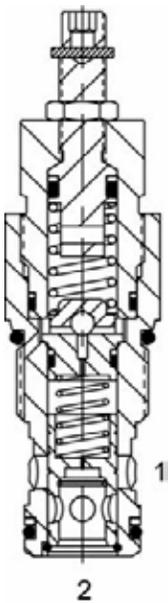
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

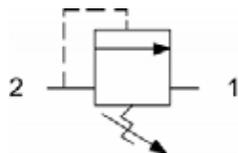
- Hardened parts for long life.
- Industry common cavity.



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



HYDRAULIC SYMBOL

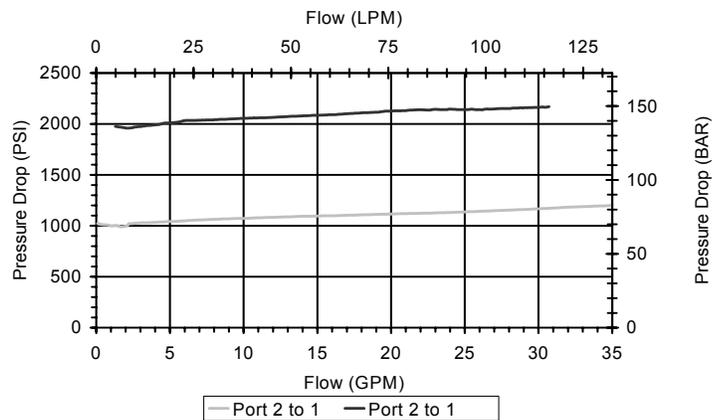
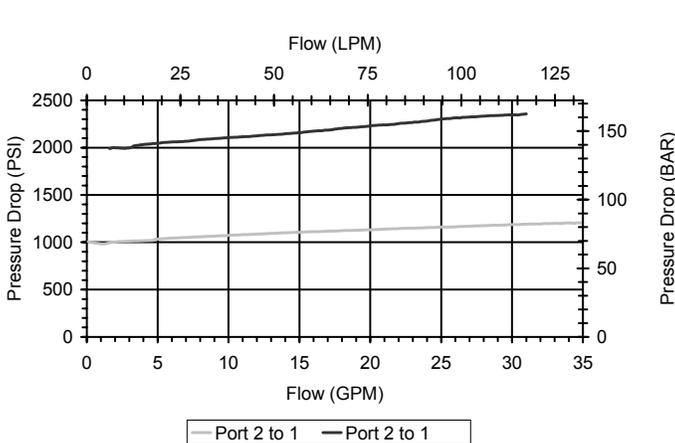


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500032
Seal Kit	21191300

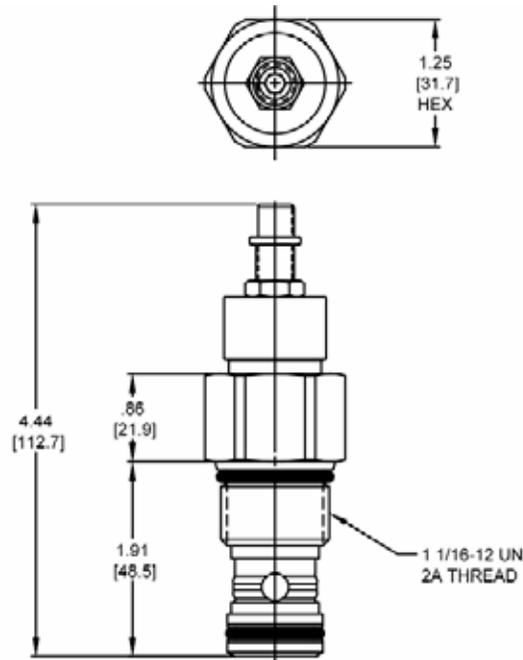
PERFORMANCE

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.

DIMENSIONS



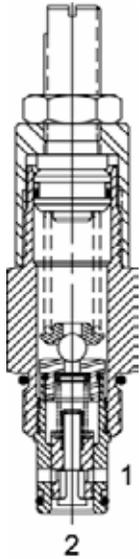
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

HT-RVP -		-	-	-	
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0			Blank	3/4" BSP Ports
Buna, Knob	0K			N	#12 SAE Ports
Viton, Knob	VK			S	
			5000		PRESSURE SETTING
					100-5000 PSI

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.

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

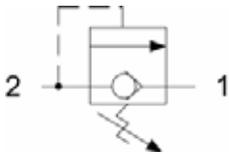
The DE-RVR blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage open, allowing the main stage to shift, opening (2) to (1).

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.

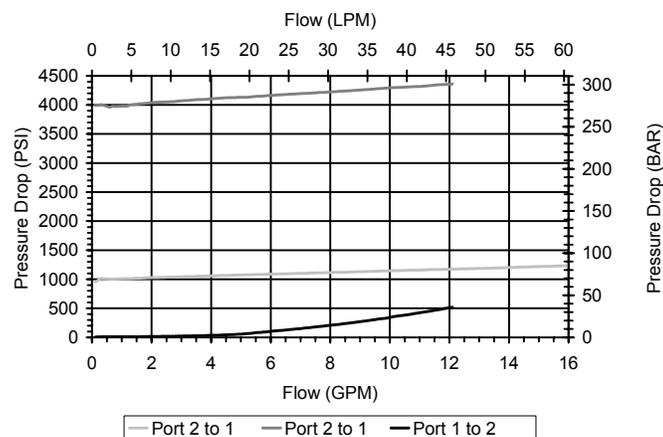
HYDRAULIC SYMBOL



Consult Chart for flow capacity port 1 to 2.

PERFORMANCE

Actual Test Data (Cartridge Only)

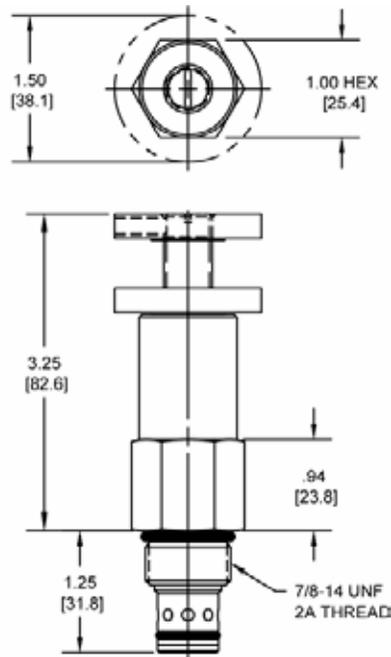


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



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

ORDERING INFORMATION

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

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.

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

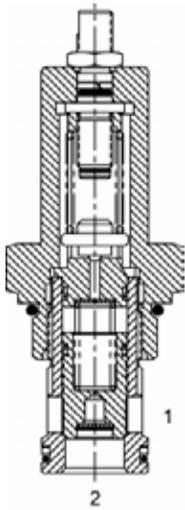
The SJ-RVR blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage off its seat, allowing the main stage spool to shift, opening (2) to (1).

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).

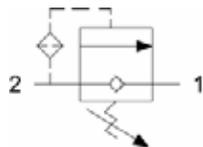
The Cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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



HYDRAULIC SYMBOL

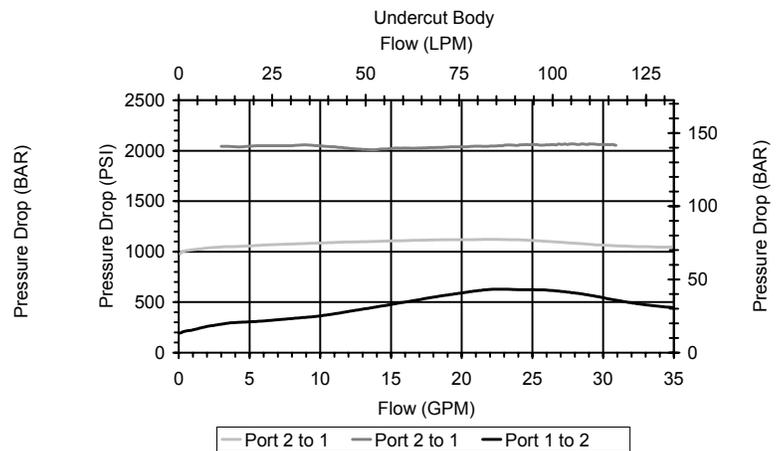
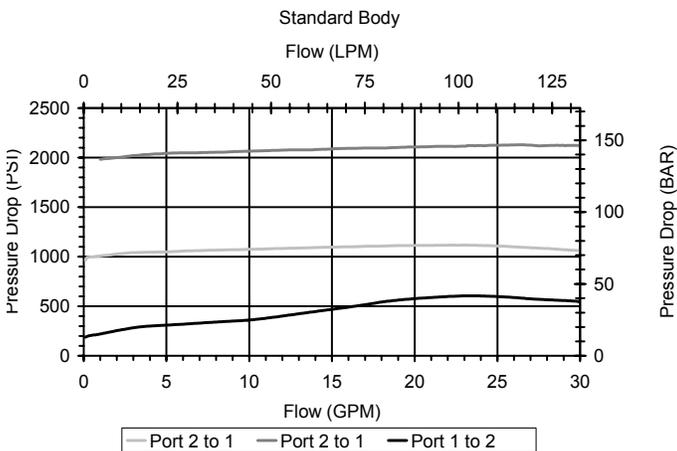


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit	40500017 (form tool, reamer, tap)
Seal Kit	21191400

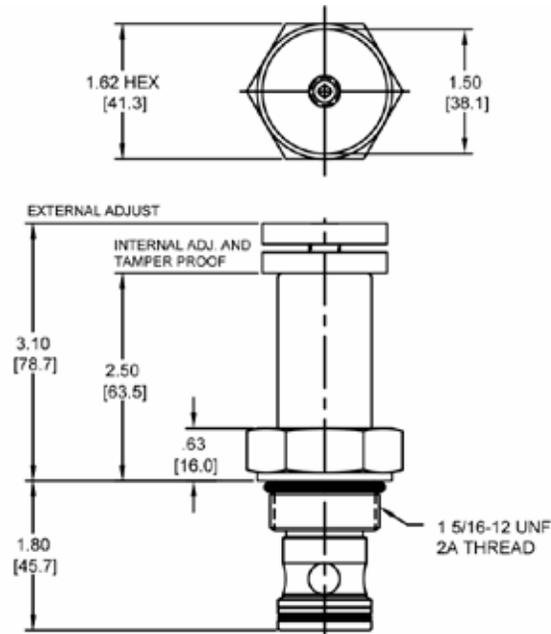
PERFORMANCE

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.

DIMENSIONS



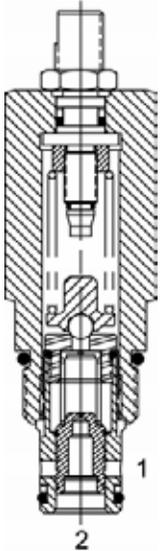
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

SJ-RVR -		-	-	-	
OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	3/4" BSP Ports
Buna, Knob	0K			S	#12 SAE Ports
Viton, Knob	VK				
			3500		PRESSURE SETTING
					500 - 3500 PSI
					TAMPER PROOF (fill in 4 digit pressure setting)
					Example: 0500-500 PSI

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.

DE-RWP Pilot Operated Relief Valve



DESCRIPTION

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

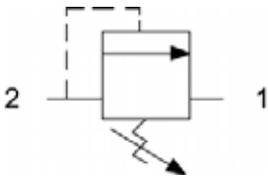
OPERATION

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

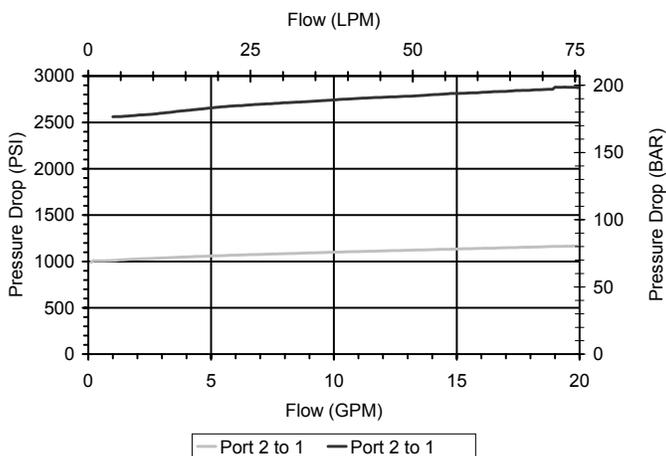
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

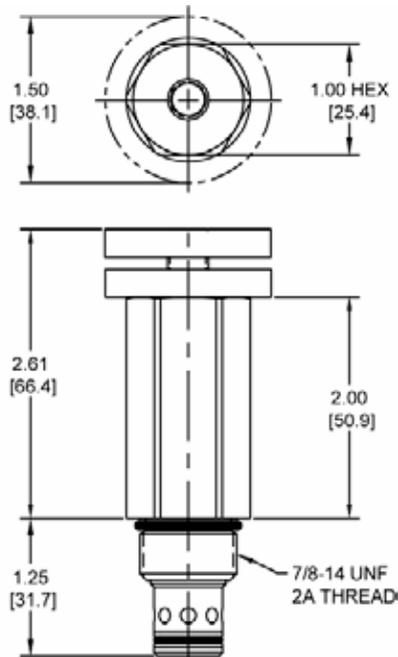


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

DE-RWP		-	-	-	
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0				3/8" BSP Ports
Buna, Knob	0K				#8 SAE Ports
Viton, Knob	VK				
Internally Adj. Buna	0I				
Internally Adj. Viton	VI				
Tamper Proof Buna	0T				
Tamper Proof Viton	VT				
			4000		
					PRESSURE RANGE/SETTING
					1000-4000 PSI
					Tamper Proof
					Fill in 4 Digit Pressure Setting
					Example: 0500-500 PSI

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.

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.

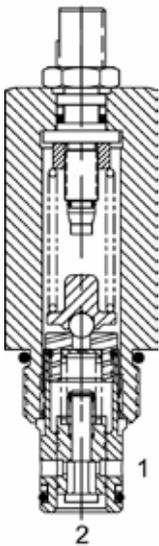
OPERATION

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).

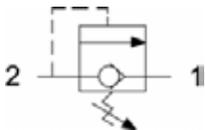
The relief flow path is from (2) to (1). Free reverse flow, from (1) to (2), occurs when the pressure at (1) is at least 10 PSI (.7 bar) higher than at port (2).

FEATURES

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



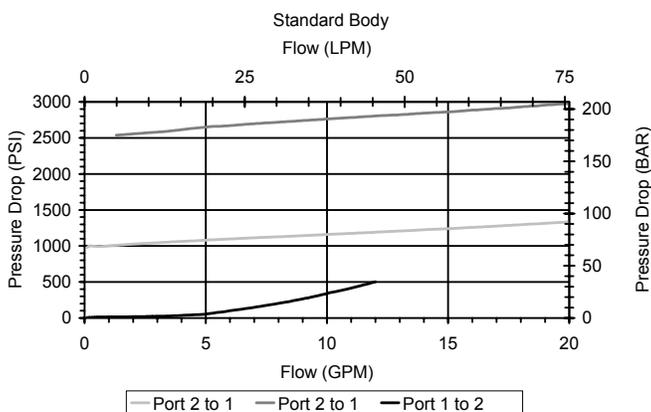
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)

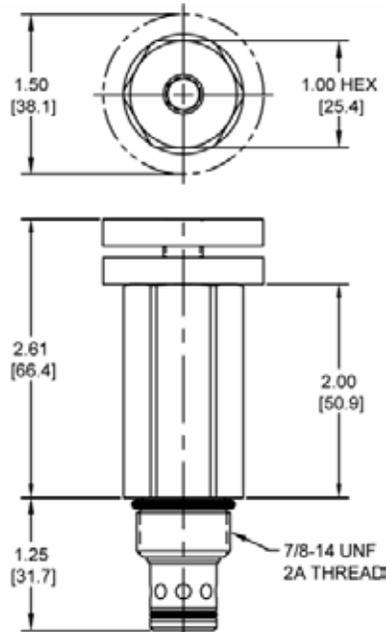


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

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

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.

QR-RVP Pilot Operated Relief Valve

DESCRIPTION

Special cavity, pilot operated relief valve.

OPERATION

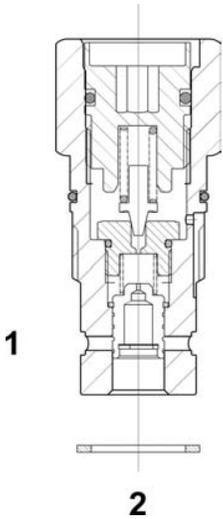
The QR-RVP blocks flow from (2) to (1) until sufficient pressure is present at (2) to force the pilot stage open, allowing the main stage to shift, opening (2) to (1).

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

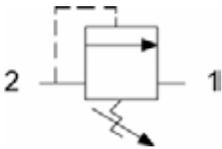
A copper washer (26x20x1,5 mm) is needed on the bottom of the cavity.

FEATURES

- Hardened parts for long life.
- Low cost construction.
- Tamper proof setting.

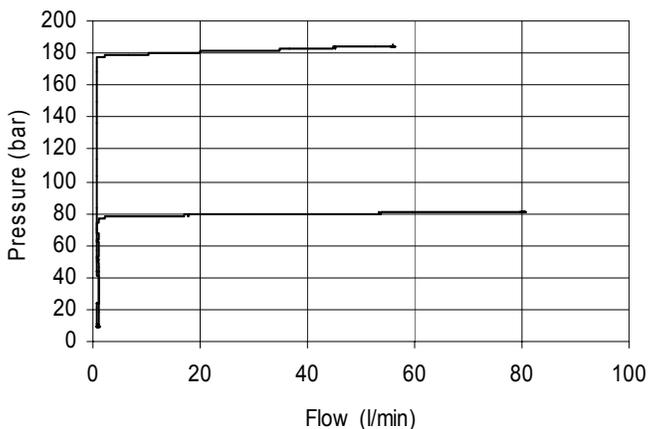


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

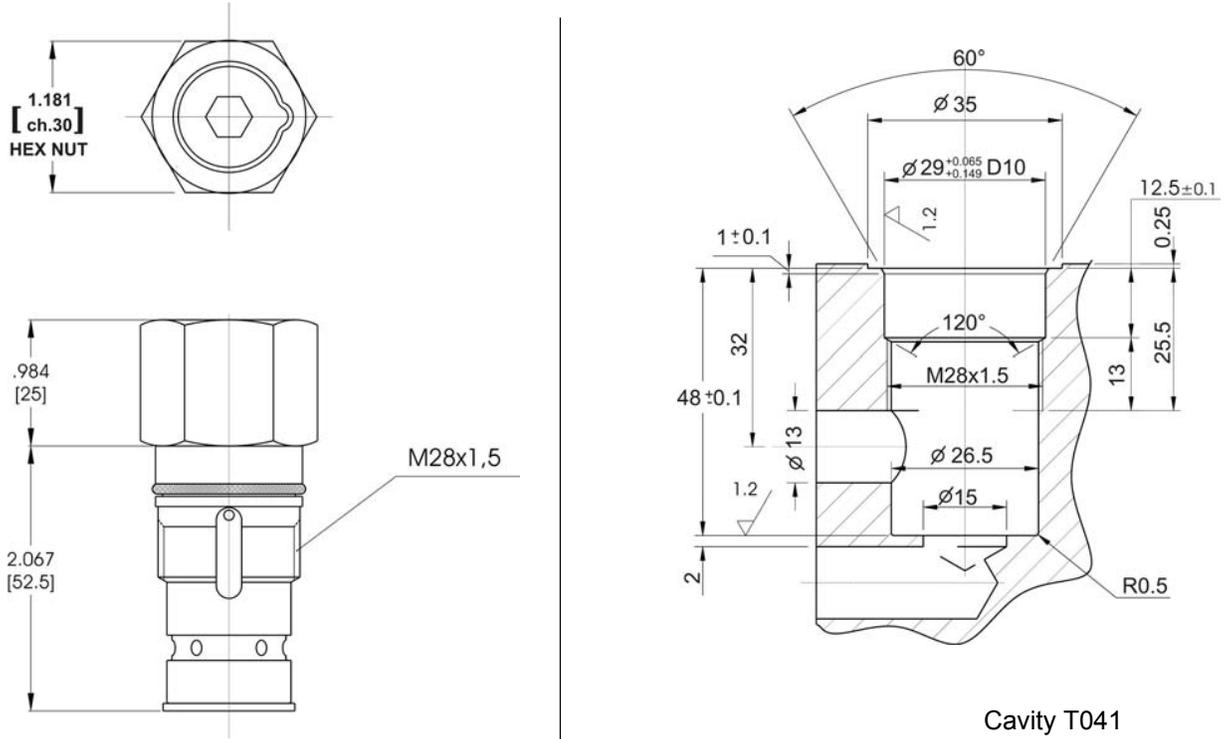


VALVE SPECIFICATIONS

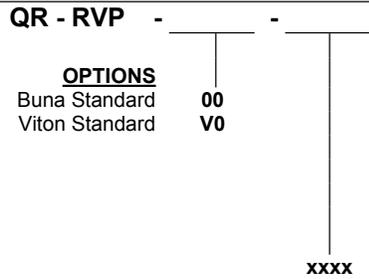
Nominal Flow	20 GPM (76 LPM)
Setting range	40 – 300 bar
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.56 lbs (.25 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	T041
Cavity Tools Kit (form tool, reamer, tap)	K-T041

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DIMENSIONS

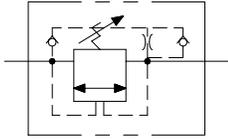


ORDERING INFORMATION



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.

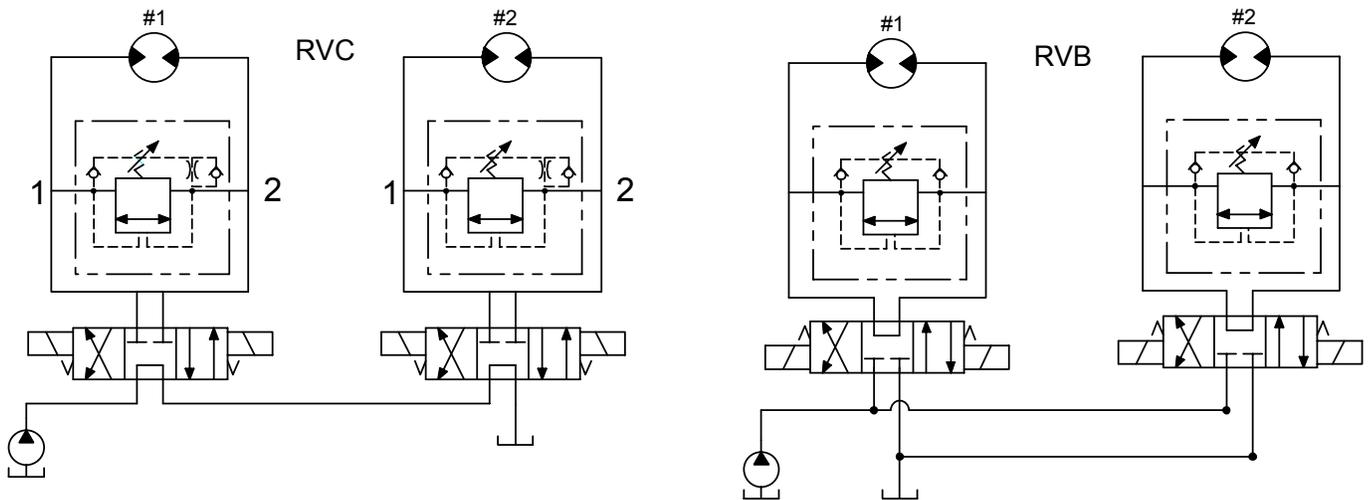
Crossover Relief Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	15	4000	57	276	DE-RVB	150
	15	4000	57	276	DE-RVC	152

Typical Schematic

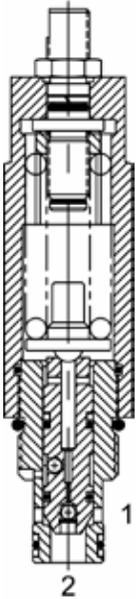
Typical application for the RVC is in a series circuit where a load on motor #2 causes back pressure on motor #1 and relief valve #1. Vent in port 2 of RV 1 allows spring to maintain proper load on motor #1 even though back pressure is present. Port 2 pressure into spring chamber to offset back pressure.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



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.

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.

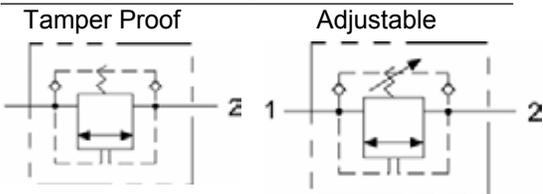
For correlation purposes, pre-set value will be measured at port (2). Pressure at port (1) will not vary more than ±300 PSI from the port (2) value.

The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

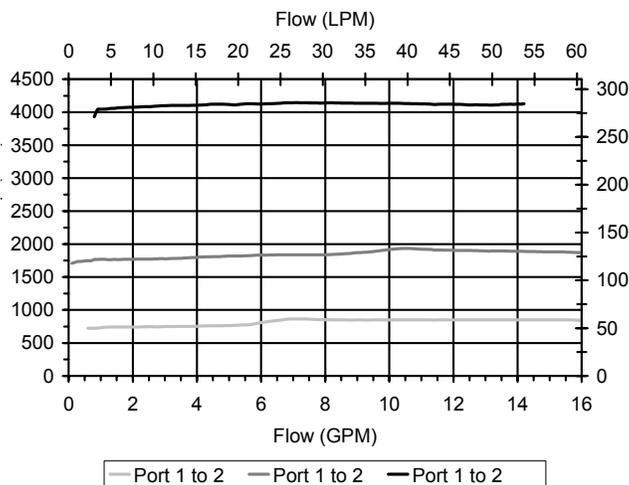
HYDRAULIC SYMBOL



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

PERFORMANCE

Actual Test Data (Cartridge Only)

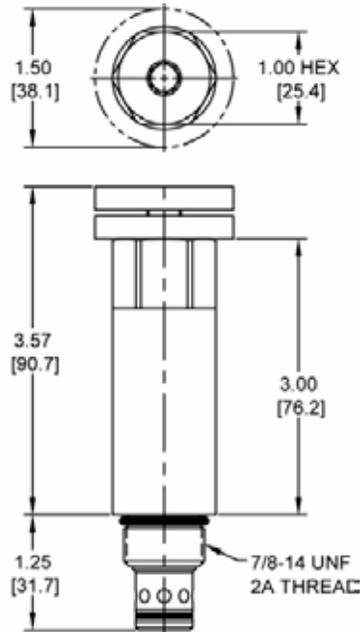


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
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.

DIMENSIONS



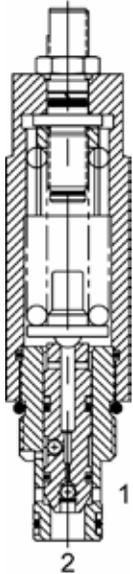
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

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

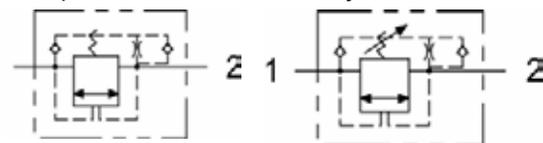
FEATURES

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

HYDRAULIC SYMBOL

Tamper Proof

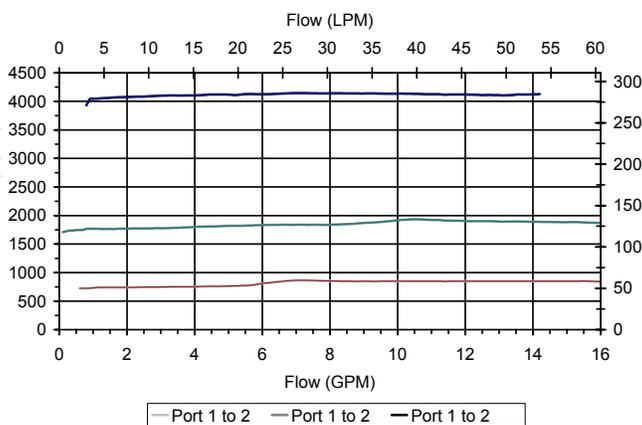
Adjustable



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)

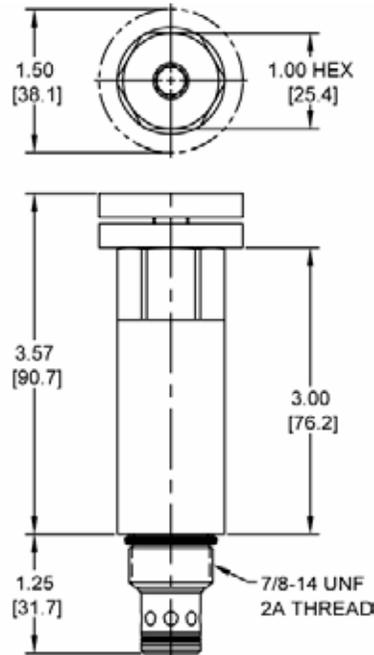


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM) FROM (2) TO (1) 20 GPM (76LPM) 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
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.

DIMENSIONS



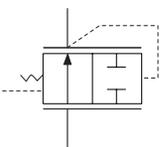
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DE-RVC		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0				1/2" BSP Ports
Buna, Knob	0K				#8 SAE Ports
Viton, Knob	VK				
					Blank
					N
					S
					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

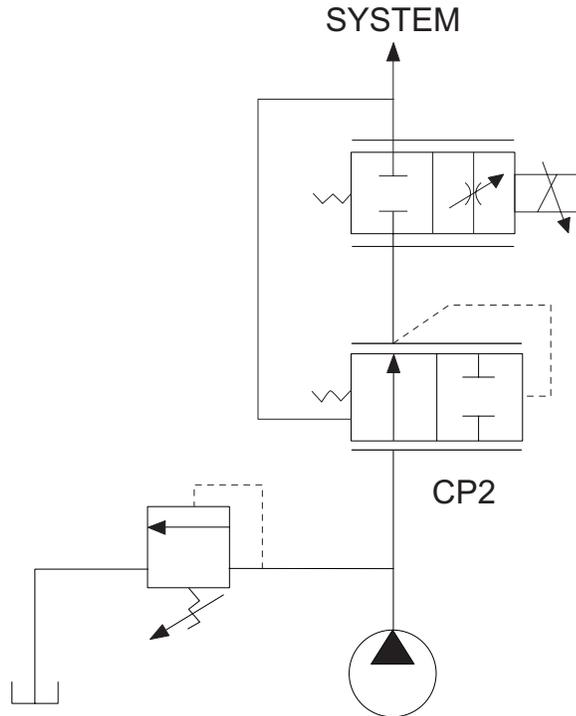
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

2 Way Compensating/Reducing Valves

	GPM	PSI	LPM	BAR	MODEL	CAVITY	PAGE
	8	3500	30	245	DF-CP2	7/8" - 14 UNF	156
	19	3500	70	245	QC-CP2	Special	158

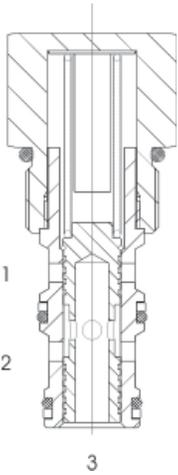
TYPICAL SCHEMATIC

Typical application for the CP2 is in a proportional circuit to achieve pressure compensated flow control. The pressure compensator is located upstream of the orifice and is spring biased to an open position.



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.

DF-CP2 Pressure Compensating/Reducing Valve



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, 2 ways pressure compensating/reducing valve.

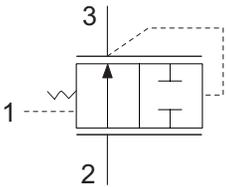
OPERATION

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.

HYDRAULIC SYMBOL



VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 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

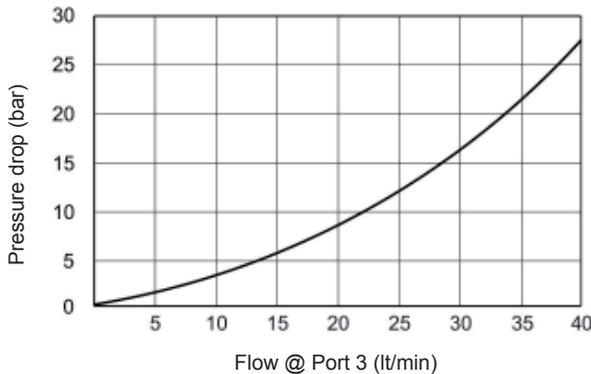


Pressure compensator for 2 way flow control, typically used with an external orifice inline with port (3). Port (1) should sense upstream pressure of orifice.

PERFORMANCE

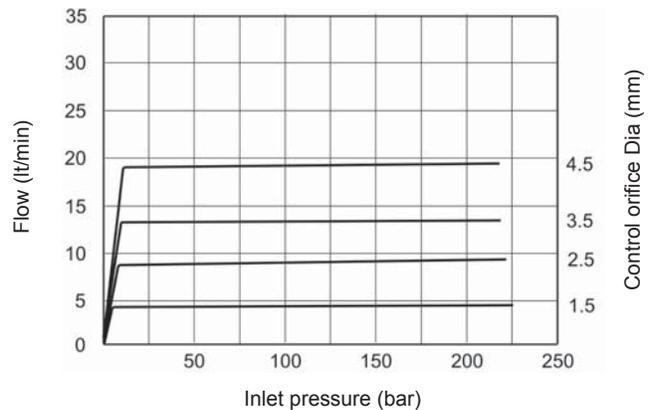
ACTUAL TEST DATA (CARTRIDGE ONLY)

PRESSURE DROP (bar) vs. FLOW (lt/min)
For various pressure compensator settings (bar)



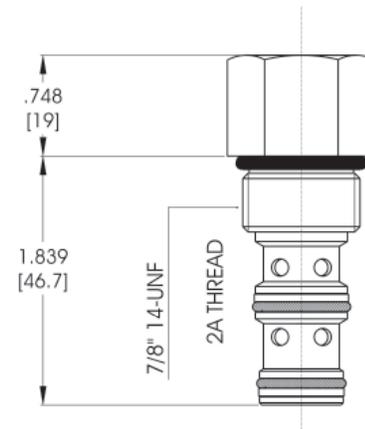
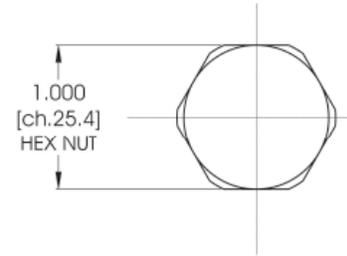
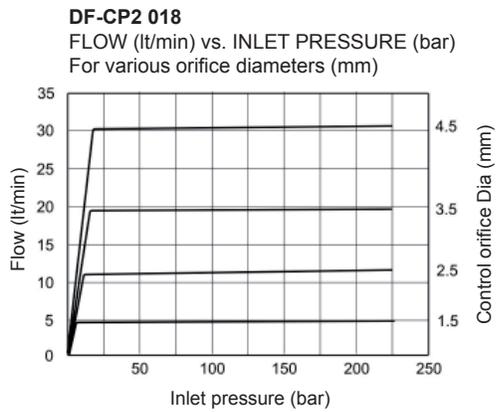
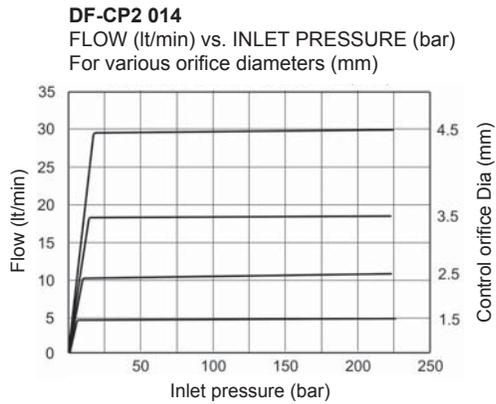
DF-CP2 008

FLOW (lt/min) vs. INLET PRESSURE (bar)
For various orifice diameters (mm)



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DIMENSIONS



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

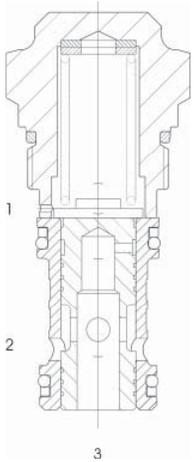
ORDERING INFORMATION

DF-CP2		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank Without Body
Viton Standard	V0				N 3/8" BSP Ports
					S #6 SAE Ports
				PRESSURE SETTINGS	
			008	8 bar (115 psi)	
			014	14 bar (200 psi)	
			018	18 bar (260 psi)	

Differential Pressure Across
 External Controlling Orifice

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.

QC-CP2 Pressure Compensating/Reducing Valve



DESCRIPTION

Special cavity, 2 ways pressure compensating/reducing valve.

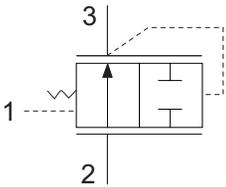
OPERATION

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.

HYDRAULIC SYMBOL



VALVE SPECIFICATIONS

Nominal Flow	19 GPM (70 LPM)
Rated Operating Pressure	3500 PSI (245 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
Cavity Tools Kit (form tool, reamer, tap)	K-T031
Seal Kit	210902012

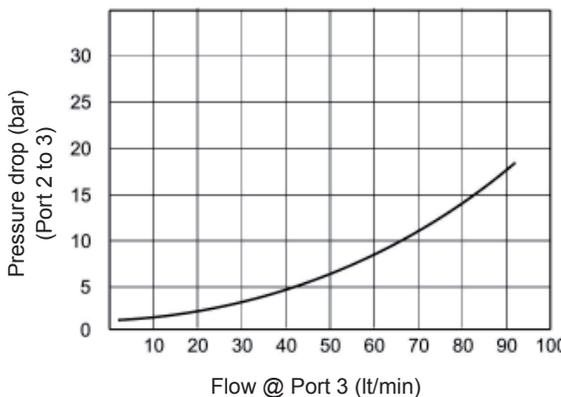


Pressure compensator for 2 way flow control, typically used with an external orifice inline with port (3). Port (1) should sense upstream pressure of orifice.

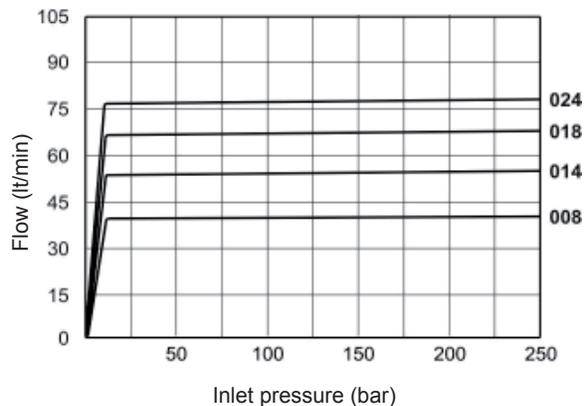
PERFORMANCE

ACTUAL TEST DATA (CARTRIDGE ONLY)

PRESSURE DROP (bar) vs. FLOW (lt/min)

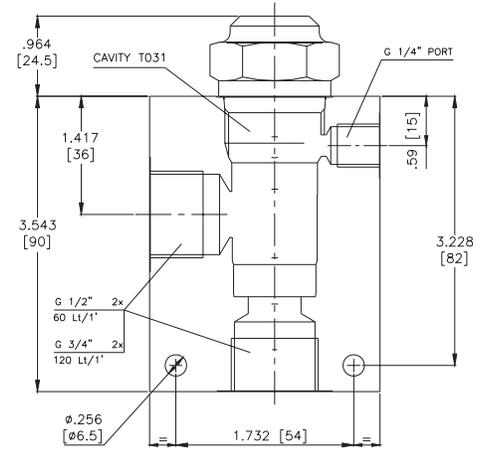
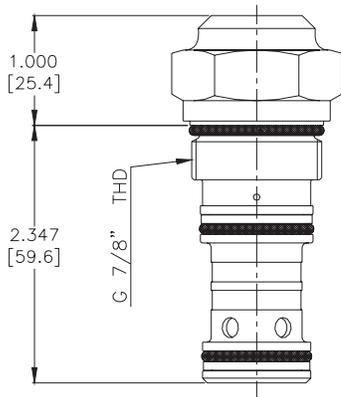
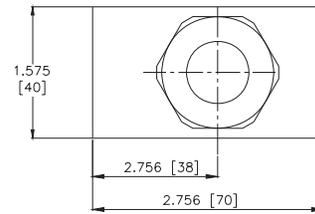
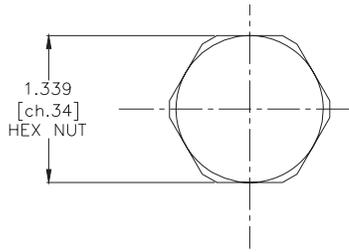


FLOW (lt/min) vs. INLET PRESSURE (bar)
For various press. compensator valve settings
Re: control orifice diameter: 5.5 mm



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DIMENSIONS



ORDERING INFORMATION

QC-CP2 - - -

OPTIONS

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

BODIES

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

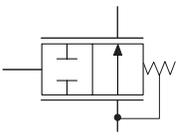
PRESSURE SETTINGS

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

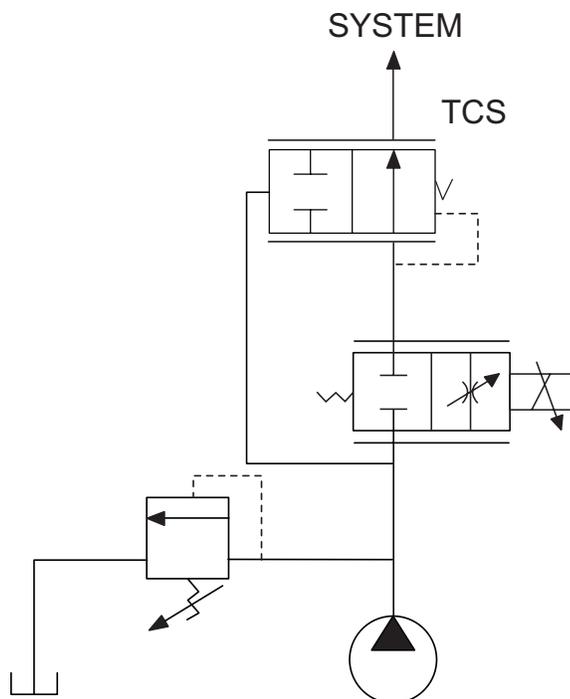
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

2 Way Restrictive Type Compensators

	GPM	PSI	LPM	BAR	MODEL	CAVITY	PAGE
	10	3500	38	245	DF-TCS	7/8" - 14 UNF	162

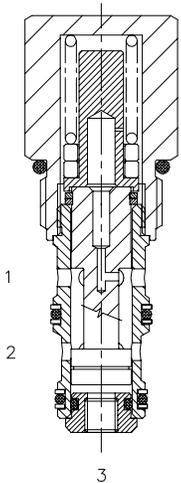
TYPICAL SCHEMATIC

Typical application for the TCS is in a proportional circuit to achieve pressure compensated flow control. The pressure compensator is located downstream of the proportional valve and is spring biased to an open position.



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.

DF-TCS Pressure Compensating Valve, Restrictive Type



DESCRIPTION

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

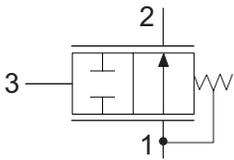
OPERATION

The DC-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.

HYDRAULIC SYMBOL



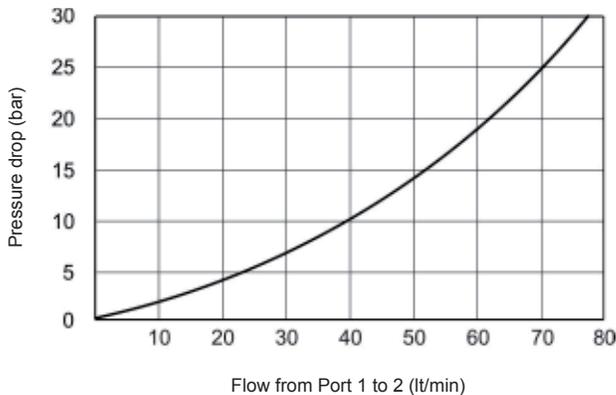
Pressure compensator for 2 way flow control, typically used with an external orifice inline with port (1). Port (3) should sense downstream pressure of orifice.

VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (245 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

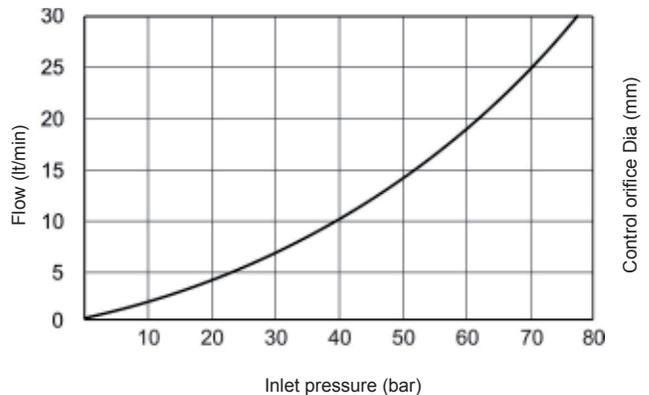
PERFORMANCE

PRESSURE DROP (bar) vs. FLOW (lt/min)
For various pressure compensator settings (bar)



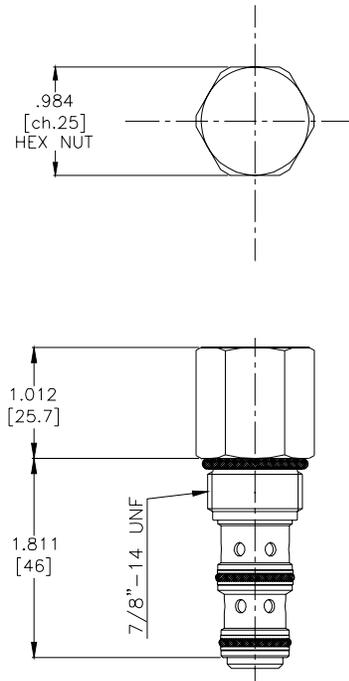
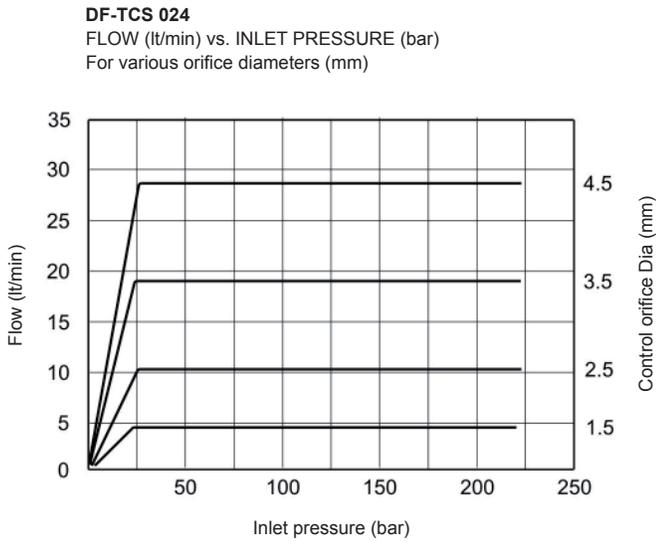
DF-TCS 008

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.

DIMENSIONS



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

ORDERING INFORMATION

DF-TCS	-	-	-	-
	OPTIONS			BODIES
	Buna Standard	00		Blank Without Body
	Viton Standard	V0		N 3/8" BSP Ports
				S #6 SAE Ports
			PRESSURE SETTINGS	
			008 8 bar (115 psi)	
			024 24 bar (340 psi)	

Differential Pressure Across
 External Controlling Orifice

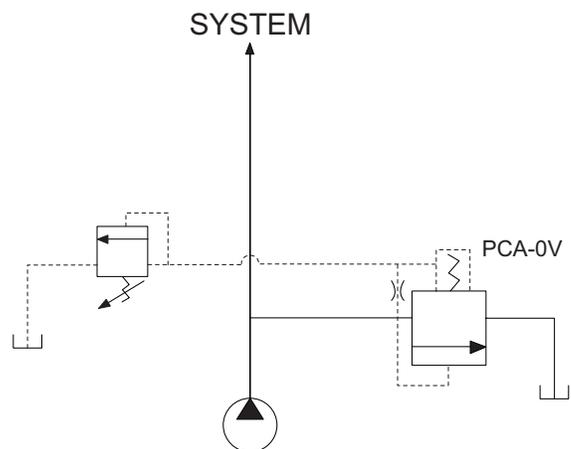
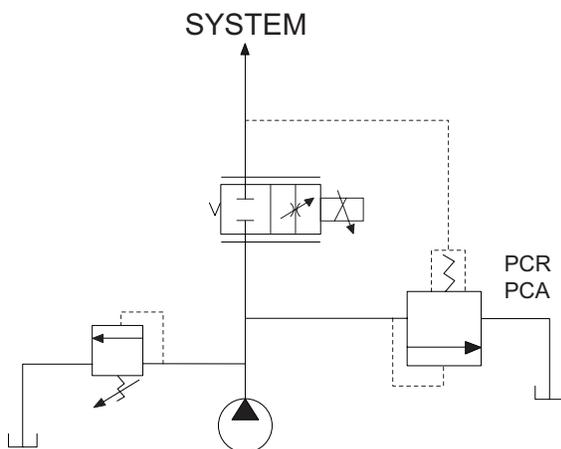
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

2 Way By-Pass Type for 3 Way Flow Control

	GPM	PSI	LPM	BAR	MODEL	CAVITY	PAGE
	10	3500	38	245	DF-PCR	7/8" – 14 UNF	166
	40	3500	151	245	TR-PCA	1 1/16" – 12 UNF	168
	40	3500	151	245	SL-PCA	1 5/16" – 12 UNF	170
	33	3500	120	245	QC-CP3	Special	172

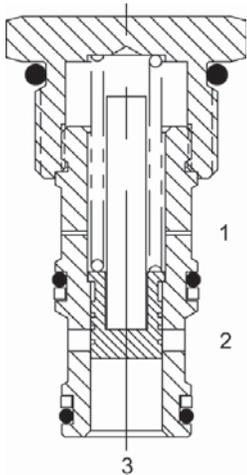
TYPICAL SCHEMATIC

Typical application for the PCR, PCA and CP3 is in a proportional circuit to achieve pressure compensated flow control or as main stage of a ventable relief valve. The pressure compensator is by-pass located and is spring biased to a closed position. The PCA-0V version is commonly used as main stage of a ventable relief valve.



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

DF-PCR Pressure Compensating Valve, By-Pass Type for 3 Way Flow Control



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 by-pass leg at (2) as long as pressure at (2) is less than (1).

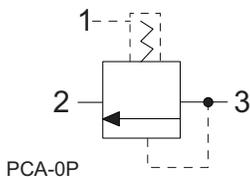
The valve's spool maintains a constant differential pressure across an external orifice, thereby regulating the hydraulic flow rate from (3) to (2). (See options table for pressure ranges).

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.
- Industry common cavity.
- Spring range from 3 to 21 bar.

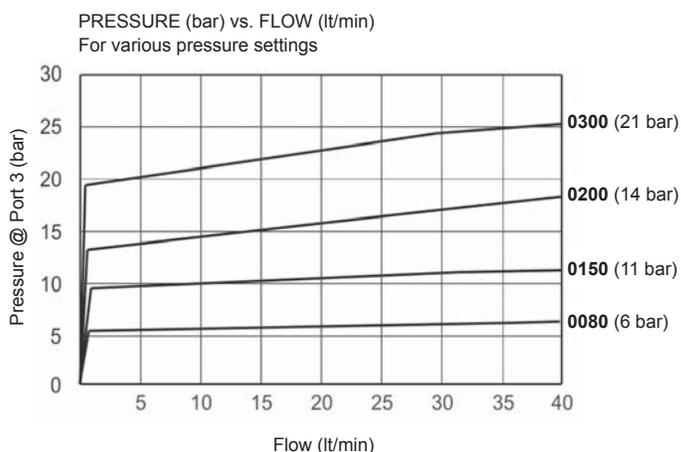
HYDRAULIC SYMBOL



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. Can be used as a logic element.

PERFORMANCE

ACTUAL TEST DATA (CARTRIDGE ONLY)

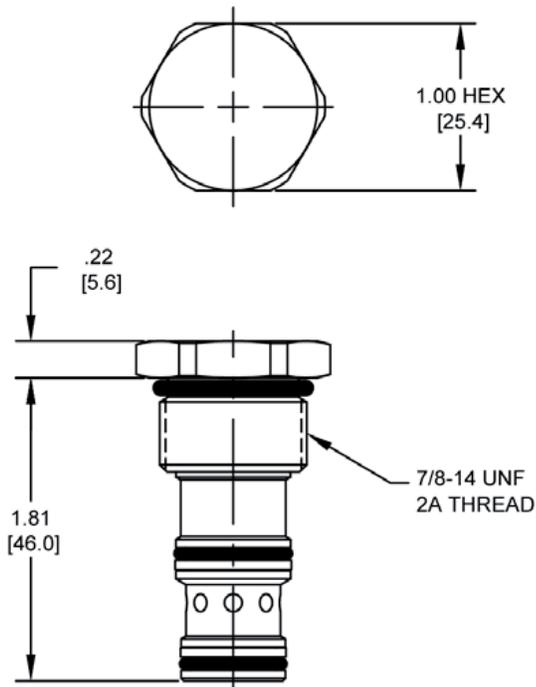


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Typical Internal Leakage (150 SSU)	35 ml/min @ 250 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 (.08 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	45 ft-lbs (33 Nm)
Cavity	Delta 3W
Cavity Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	21191206

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

DIMENSIONS



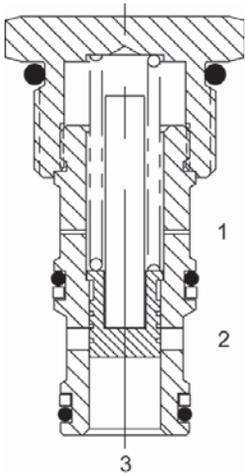
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DF-PCR	-	-	-	-
	OPTIONS			BODIES
	Buna Standard OP			Blank Without Body
	Viton Standard VP			N 3/8" BSP Ports
				S #6 SAE Ports
			PRESSURE SETTINGS	
			0040 3 bar (40 psi)	
			0080 6 bar (80 psi)	
			0150 11 bar (155 psi)	
			0200 14 bar (200 psi)	
			0300 21 bar (300 psi)	

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.

TR-PCA Pressure Compensating Valve, By-Pass Type for 3 Way Flow Control



DESCRIPTION

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

OPERATION

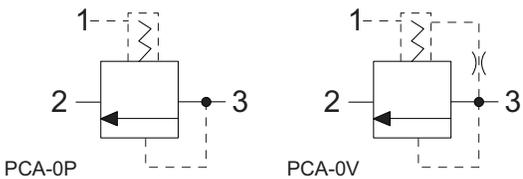
The TR-PCA-0P with an orifice between ports (3) and (1) maintains a constant flow rate from (3) regardless of load pressure changes in the system upstream of (3), or in the by-pass leg at (2) as long as pressure at (2) is less than (1).

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.
- Spring range from 20 to 230 psi.

HYDRAULIC SYMBOL



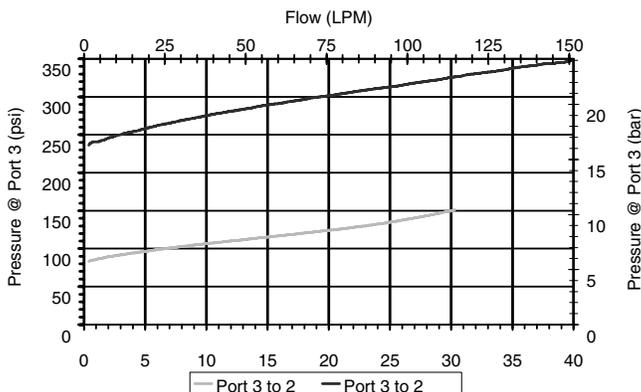
Can be used as a logic element.

TR-PCA-0P is commonly used as a by-pass 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)

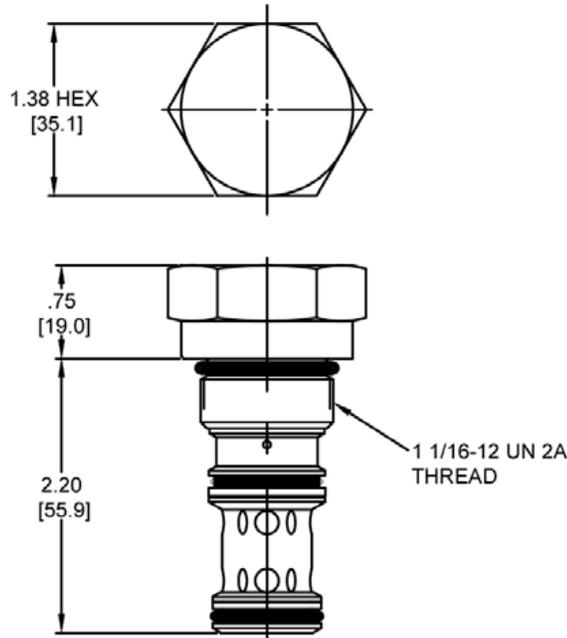


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 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	Tecnorm 3W
Cavity Tools Kit	
(form tool, reamer, tap)	40500034
Seal Kit	21191306

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.

DIMENSIONS



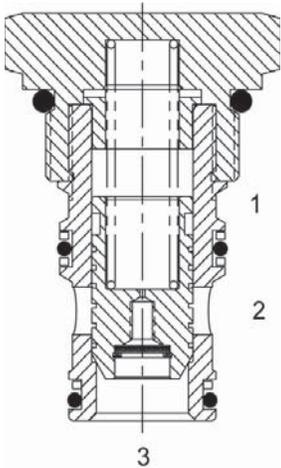
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

TR-PCA - - -		
OPTIONS		BODIES
Buna, Pilot to Close	0P	Blank Without Body
Buna, Vent to Open	0V	N 3/4" BSP Ports
Viton, Pilot to Close	VP	S #12 SAE Ports
Viton, Vent to Open	VV	
	Δ P SETTINGS @ 1 GPM with Pilot Vented	
	0020 1.4 bar (20 psi)	
	0050 3.5 bar (50 psi)	
	0090 6.3 bar (90 psi)	
	0150 10.5 bar (150 psi)	
	0230 16.1 bar (230 psi)	
	±10%	

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SL-PCA Pressure Compensating Valve, By-Pass Type for 3 Way Flow Control



DESCRIPTION

12 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 by-pass leg at (2) as long as pressure at (2) is less than (1).

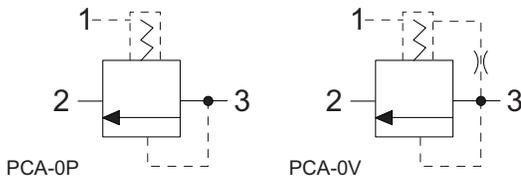
The valve's spool maintains a constant differential pressure across the external orifice, thereby regulating the hydraulic flow rate across the external orifice. (See options table for pressure ranges).

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.

HYDRAULIC SYMBOL



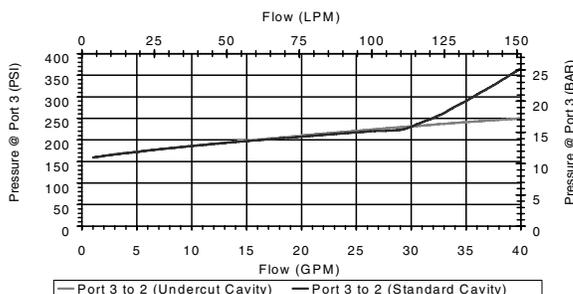
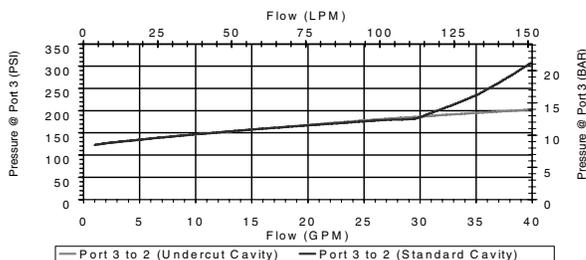
Can be used as a logic element.

SL-PCA-0P is commonly used as a by-pass 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).

PERFORMANCE

ACTUAL TEST DATA (CARTRIDGE ONLY)

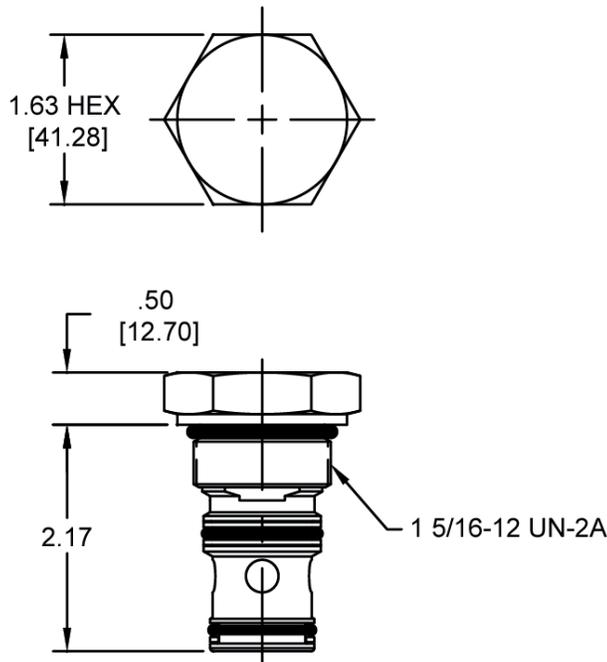


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 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 3W Short
Cavity Tools Kit (form tool, reamer, tap)	40500021
Seal Kit	21191406

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DIMENSIONS



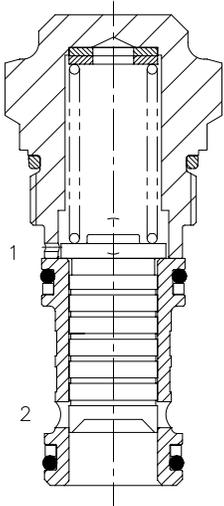
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

SL-PCA - - -		
<u>OPTIONS</u>		<u>BODIES</u>
Buna, Pilot to Close	0P	Blank Without Body
Buna, Vent to Open	0V	N 3/4" BSP Ports
Viton, Pilot to Close	VP	S #12 SAE Ports
Viton, Vent to Open	VV	
Buna, Pilot to Close	0B	
Buna, Vent to Open	0C	
Viton, Pilot to Close	VB	
Viton, Vent to Open	VC	
		Δ P SETTINGS @ 1 GPM with Pilot Vented
	0020	1.4 bar (20 psi)
	0050	3.5 bar (50 psi)
	0100	7 bar (100 psi)
	0150	10.5 bar (150 psi)
		±20%

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QC-CP3 Pressure Compensating Valve, By-Pass Type for 3 Way Flow Control



DESCRIPTION

Special cavity, pressure compensating valve, by-pass 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).

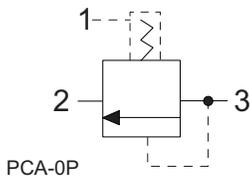
The valve's spool maintains a constant differential pressure across an external orifice, thereby regulating the hydraulic flow rate from (3) to (2). (See options table for pressure ranges).

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.

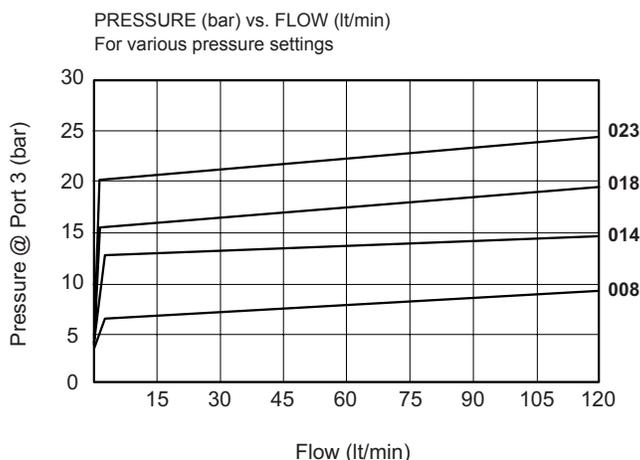
HYDRAULIC SYMBOL



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)

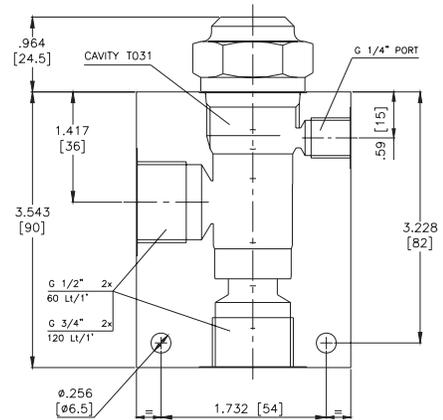
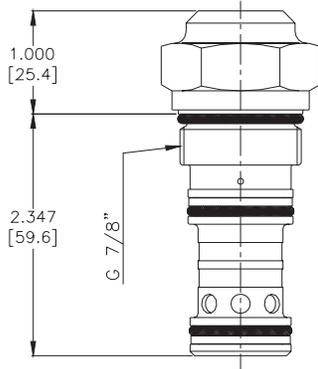
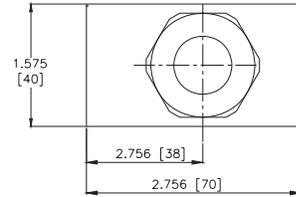
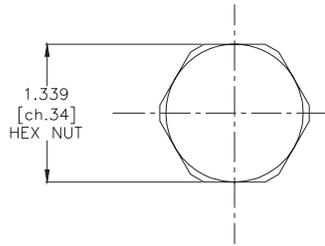


VALVE SPECIFICATIONS

Nominal Flow	33 GPM (120 LPM)
Rated Operating Pressure	3500 PSI (245 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
Cavity Tools Kit (form tool, reamer, tap)	K-T031
Seal Kit	210902321

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DIMENSIONS



ORDERING INFORMATION

QC-CP3 - - -

OPTIONS

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

BODIES

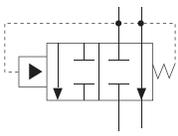
Blank Without Body
N 1/2" BSP Ports
S #8 SAE

PRESSURE SETTING

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

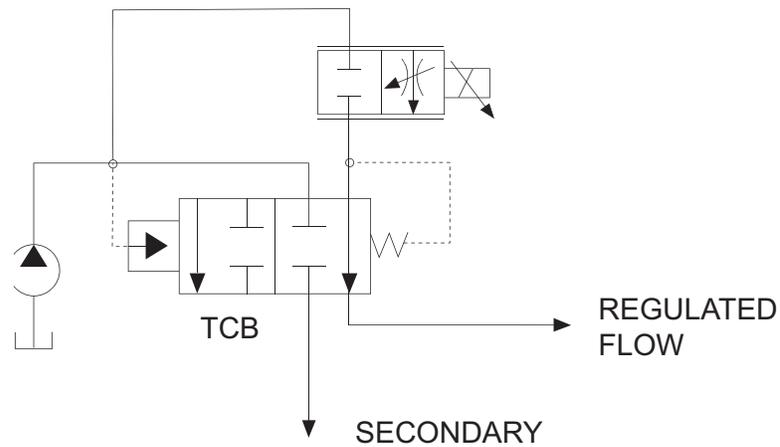
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

4 Way Priority Type Compensator with By-Pass Line

	GPM	PSI	LPM	BAR	MODEL	CAVITY	PAGE
	10	3500	38	245	DG-TCB	7/8" – 14 UNF	176

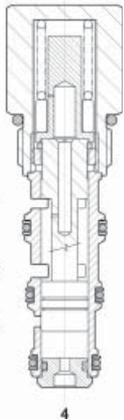
TYPICAL SCHEMATIC

Typical application for the TCB is in a proportional circuit to achieve pressure compensated flow control. The pressure compensator is located downstream of the proportional valve to achieve a pressure compensated flow control on the priority line, opening a secondary by-pass line, when the differential pressure becomes too high, for all flow in excess of that demanded the control orifice.



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DG-TCB Pressure Compensating Valve, Restrictive Type with By-Pass



DESCRIPTION

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

OPERATION

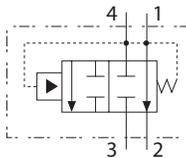
The DG-TCB allows pressure compensated or proportional flow from (1) to (2) regulated by the pressure differential across (1) and (4) with a by-pass of (4) to (3).

The spring chamber is constantly connected at (1).

FEATURES

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

HYDRAULIC SYMBOL

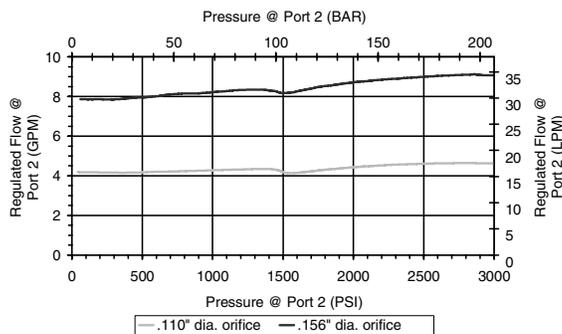


By-pass line (3) can be pressurized.

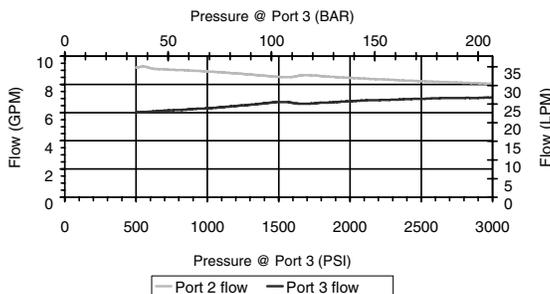
PERFORMANCE

ACTUAL TEST DATA (CARTRIDGE ONLY WITH 150 PSI SPRING)

10 gpm supply flow, .110" orifice, 150 psi spring - 15 gpm supply flow, .156" orifice, 150 psi spring - 1500 psi load on port 3



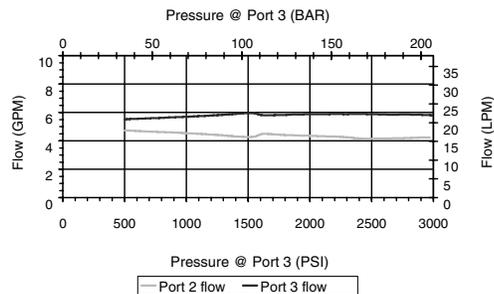
priority port 2 load: 1500-1700 psi, .156" dia orifice, 15 gpm supply
not intended for differential pressure > 1500 psi port 4 to port 3



VALVE SPECIFICATIONS

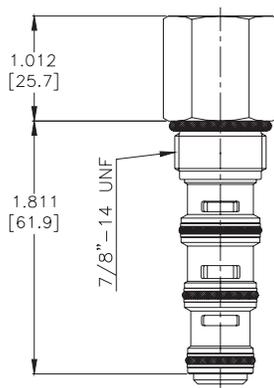
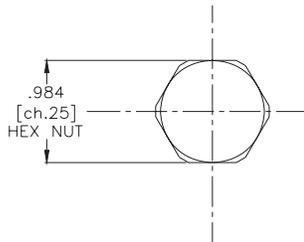
Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temp. Range	-40° to 250°F (-40° to 120°C)
Weight	.38 lbs (.17 kg)
Operating 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

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



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DIMENSIONS



(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

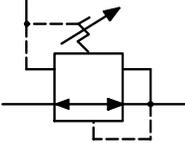
PRESSURE SETTINGS

014 10.5 bar (150 psi)
020 20 bar (285 psi)
032 32 bar (460 psi)

Differential Pressure Across
External Controlling Orifice

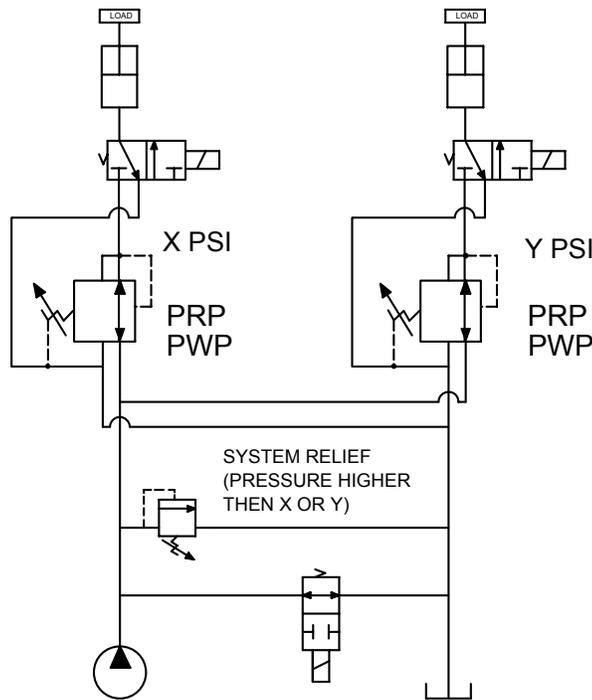
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Pressure Reducing / Relieving Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	4000	38	276	DF-PRP	180
	20	3000	76	207	SK-PRP	182
	10	4000	38	276	DF-PWP	184

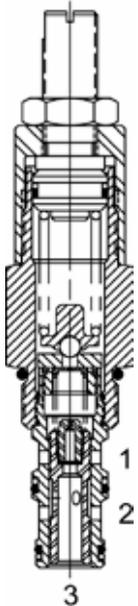
Typical Schematic

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



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.

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.

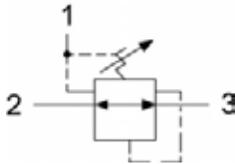
If valve and pressure at port (3) exceeds setting, spool shift to open passage at port (1), thereby regulating pressure at port (3) by relieving excess flow.

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



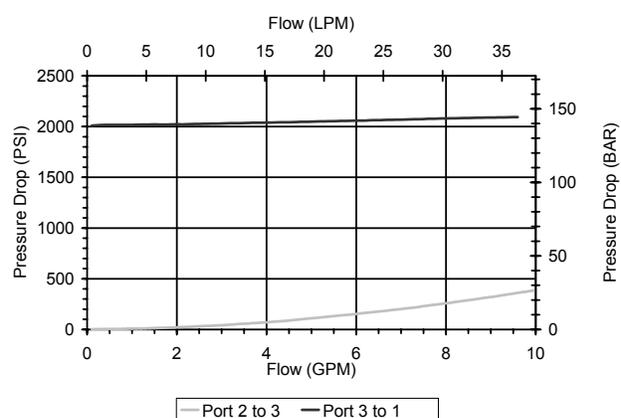
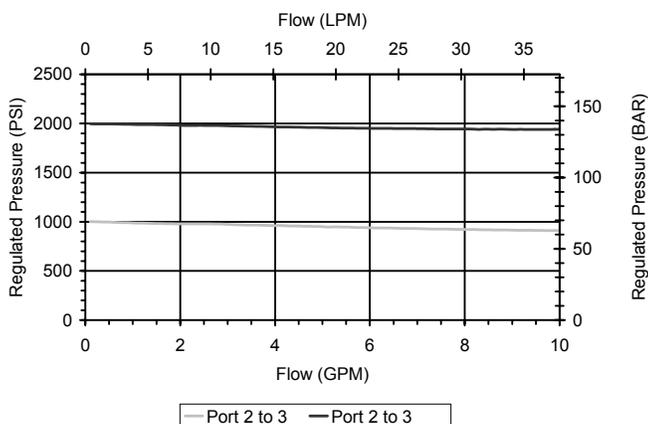
Regulated pressure at port 3

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	21191206

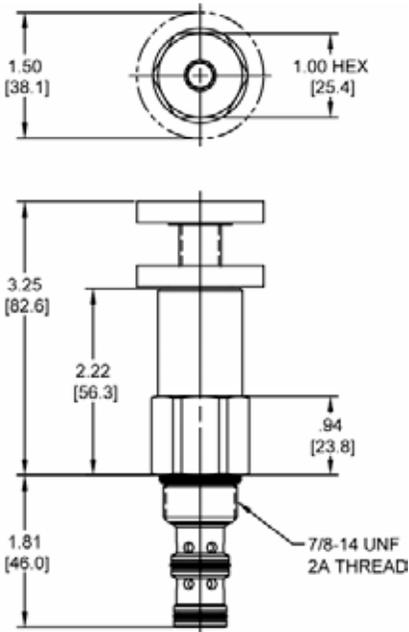
PERFORMANCE

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.

DIMENSIONS



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

ORDERING INFORMATION

DF-PRP		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0			Blank	3/8" BSP Ports
Buna, Knob	0K			N	#6 SAE Ports
Viton, Knob	VK			S	
			3000		PRESSURE RANGE
					100-3000 PSI

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.

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).

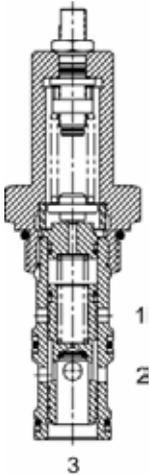
When a pre-determined pressure is reached at (3), the spool shifts to restrict input flow at (2), thereby reducing (restricting) flow.

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.

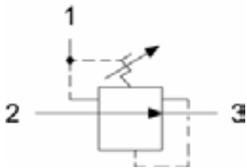
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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

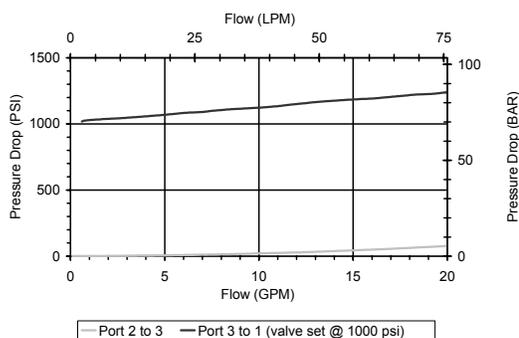
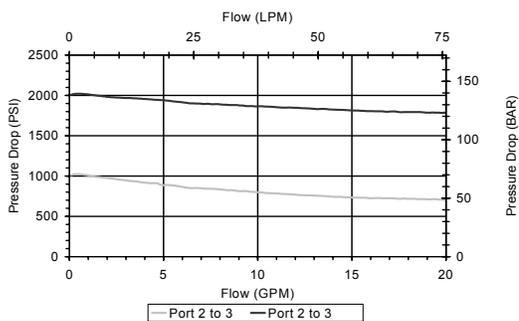


HYDRAULIC SYMBOL



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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500018
Seal Kit	21191406

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.

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).

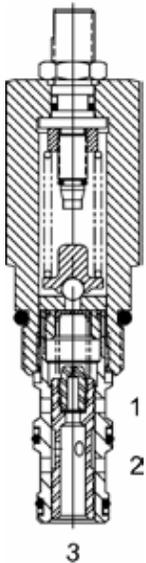
When a pre-determined pressure is reached at (3), the spool shifts to restrict input flow at (2), thereby reducing (restricting) flow.

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.

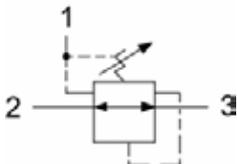
The cartridge offers smooth transition in response to load changes in common hydraulic circuits.

FEATURES

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



HYDRAULIC SYMBOL

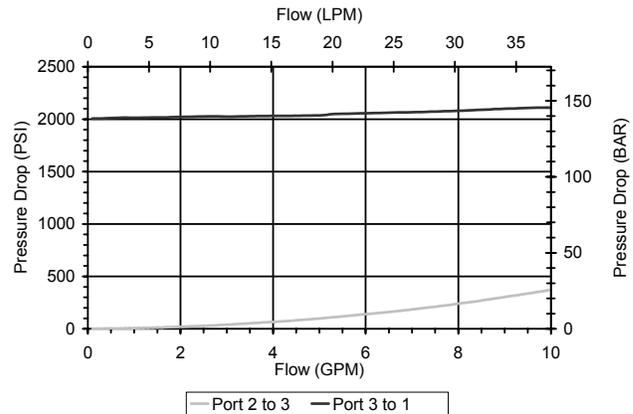
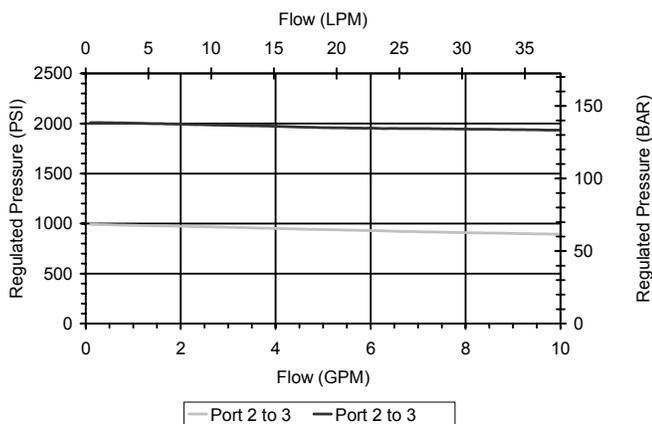


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, remaer, tap)	40500001
Seal Kit	21191206

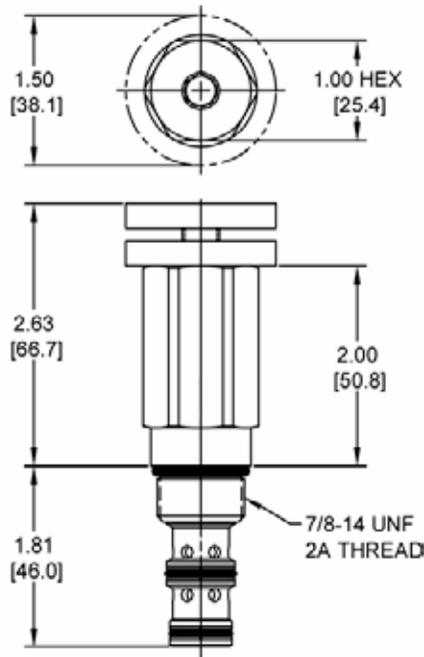
PERFORMANCE

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.

DIMENSIONS



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

ORDERING INFORMATION

DF-PWP		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0				3/8" BSP Ports
Buna, Knob	0K				#6 SAE Ports
Viton, Knob	VK				
Internally Adj. Buna	0I				
Internally Adj. Viton	VI				
Tamper Proof Buna	0T				
Tamper Proof Viton	VT				
			4000		
					PRESSURE RANGE/SETTING
					Ext./Int. Adjustable
					100-4000 PSI
					Tamper Proof
					Fill in 4 Digit Pressure Setting
					Example: 0500-500 PSI

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.

Sequence Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3000	38	207	DG-PSA	188
	10	3000	38	207	DG-PSC	190
	10	3000	38	207	DG-PSI	192
	10	3000	38	207	DG-PSO	194
	12	3000	45	207	DG-PSS	196
	10	3000	38	207	DF-PWE	198
	8	3000	30	207	DF-PWI	200

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).

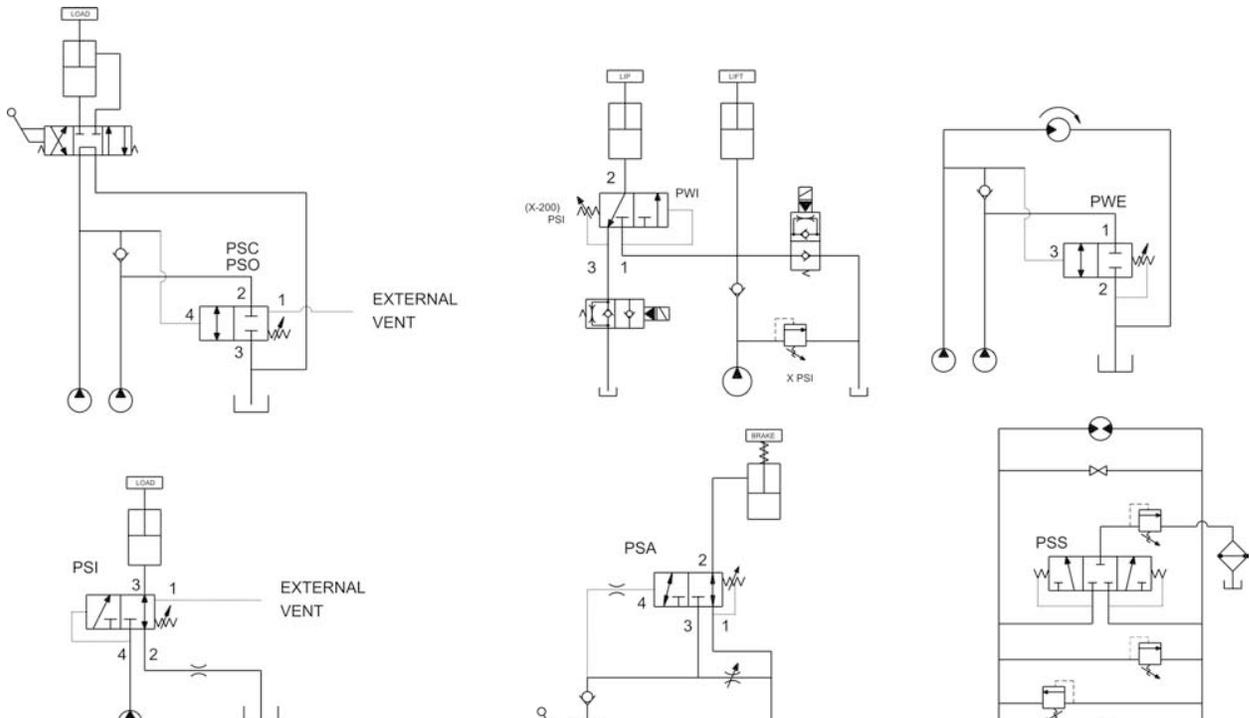
Typical application for the PWI sequence valve is for controlling the lip on a dock leveler.

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).

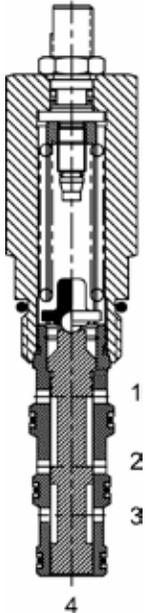
Typical application for the PSA sequence valve is a hydraulic brake release of a spring loaded single acting cylinder.

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.



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.

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) bi-directionally, while blocking at (3).

The spring chamber is constantly vented at (1).

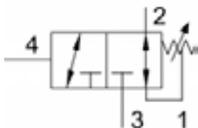
On attainment of a predetermined pressure at (4), the cartridge shifts to close (1) to (2), while opening (2) to (3).

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 3000 PSI (207 bar).
- Hardened parts for long life.
- Industry common cavity.

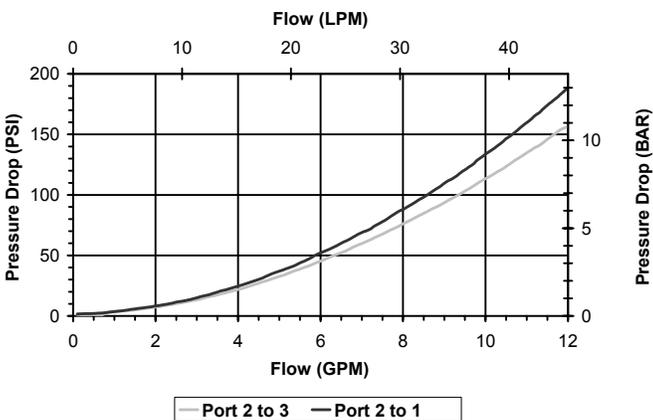
HYDRAULIC SYMBOL



Orifice 0,8-1,4 mm Dia. recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)

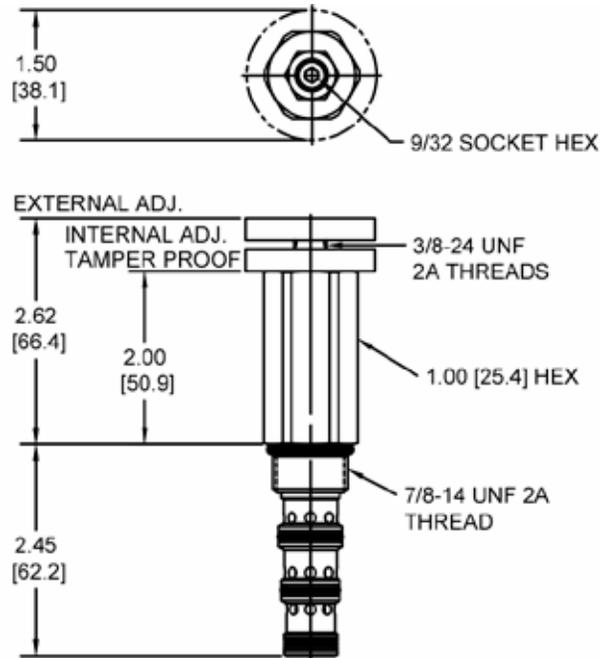


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



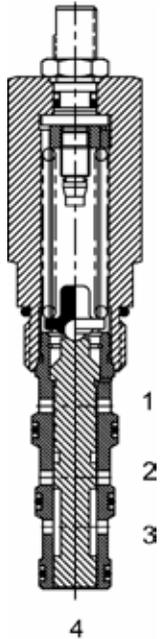
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DG-PSA - - - - -		
OPTIONS		BODIES
Buna Standard	00	Blank
Viton Standard	V0	Without Body
Buna, Knob	0K	N 1/4" BSP Ports
Viton, Knob	VK	S #6 SAE Ports
		PRESSURE RANGE
	0425	50-425 PSI
	1500	425-1500 PSI
	2000	1500-2000 PSI
		TAMPER PROOF
		Fill in 4 Digit Pressure Setting
		Example: 0500-500 PSI

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.

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).

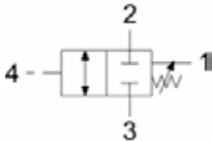
On attainment of a predetermined pressure at (4), the cartridge shifts to allow flow from (3) to (2).

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

FEATURES

- Optional spring ranges to 3000 PSI (207 bar).
- Hardened parts for long life.
- Industry common cavity.

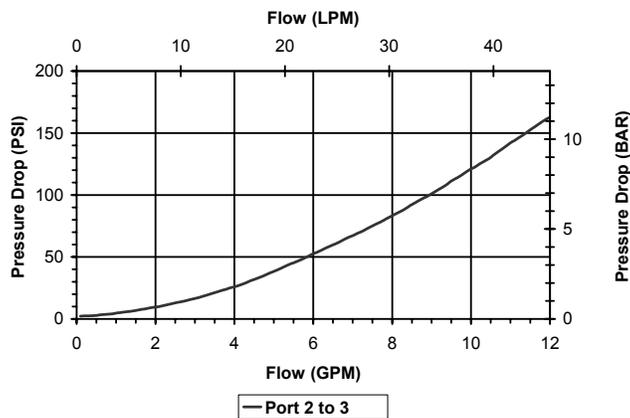
HYDRAULIC SYMBOL



Orifice 0,8-1,4 mm Dia. recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)

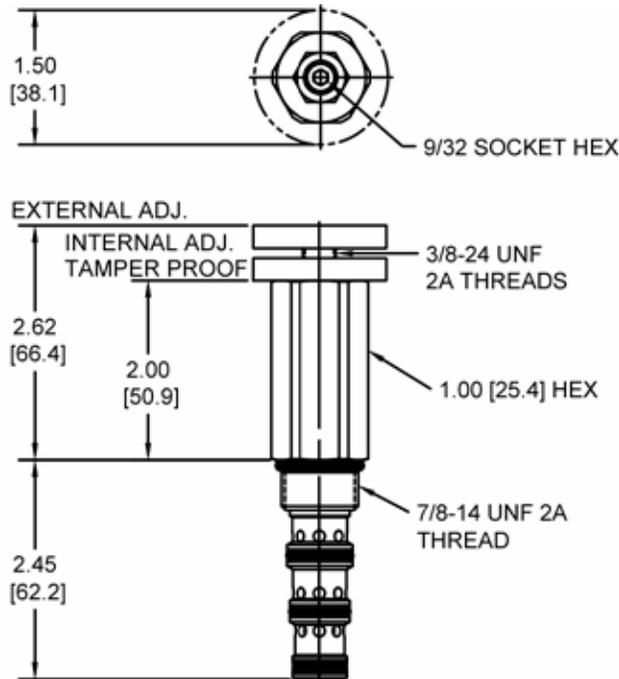


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



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

ORDERING INFORMATION

DG-PSC - - - - -		
OPTIONS		BODIES
Buna Standard	00	Blank
Viton Standard	V0	Without Body
Buna, Knob	0K	N 3/8" BSP Ports
Viton, Knob	VK	S #6 SAE Ports
		PRESSURE RANGE
	0425	50-425 PSI
	1500	425-1500 PSI
	2000	1500-2000 PSI
		TAMPER PROOF
		Fill in 4 Digit Pressure Setting
		Example: 0500-500 PSI

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.

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) bi-directional, while blocking at (4).

The spring chamber is constantly vented at (1).

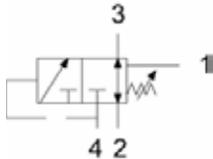
On attainment of a predetermined pressure at (4), the cartridge shifts to close (3) to (2), while opening (4) to (3).

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

FEATURES

- Optional spring ranges to 3000 PSI (207 bar).
- Hardened parts for long life.
- Industry common cavity.

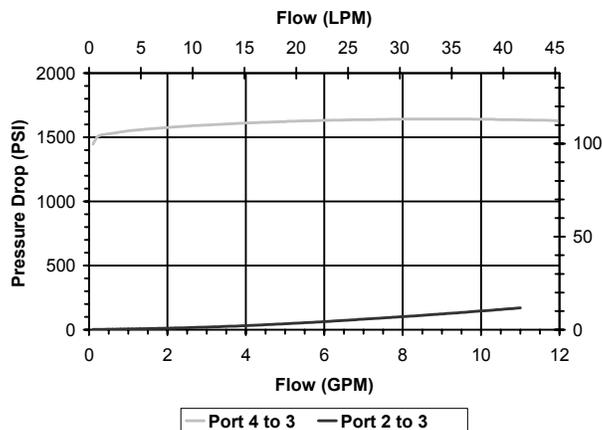
HYDRAULIC SYMBOL



Not recommended for port (4) pressures more than 10% of valve range selected.
If application creates abrupt pressure changes at port (4), an orifice at port (4) may be necessary.

PERFORMANCE

Actual Test Data (Cartridge Only)

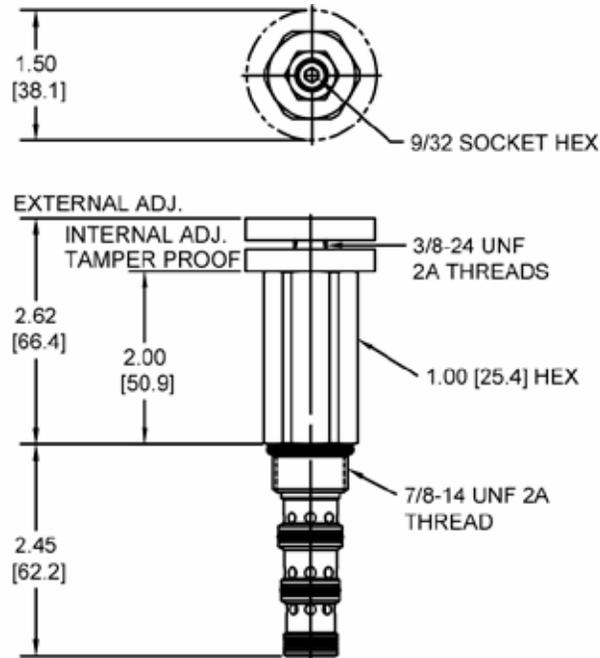


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

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DIMENSIONS



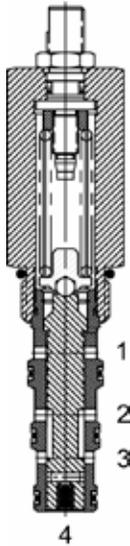
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DG-PSI - - - - -		
OPTIONS		BODIES
Buna Standard	00	Blank
Viton Standard	V0	Without Body
Buna, Knob	0K	N 3/8" BSP Ports
Viton, Knob	VK	S #6 SAE Ports
		PRESSURE RANGE
	0425	50-425 PSI
	1500	425-1500 PSI
	2000	1500-2000 PSI
		TAMPER PROOF
		Fill in 4 Digit Pressure Setting
		Example: 0500-500 PSI

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.

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).

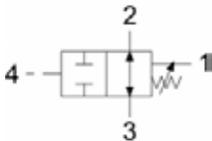
On attainment of a predetermined pressure at (4), the cartridge shifts to block flow from (3) to (2).

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 3000 PSI (207 bar).
- Hardened parts for long life.
- Industry common cavity.

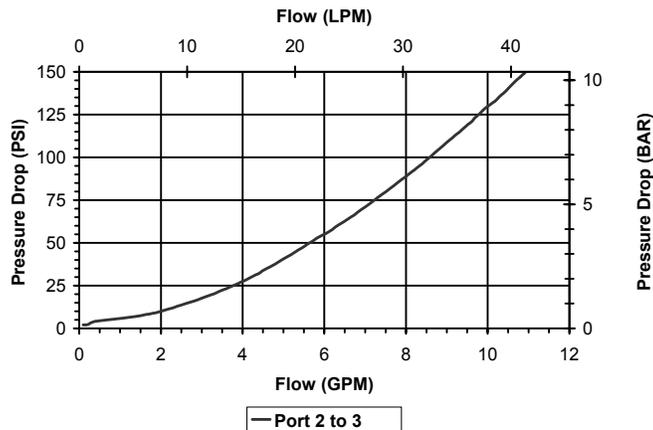
HYDRAULIC SYMBOL



Orifice 0,8-1,4 mm Dia. recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)

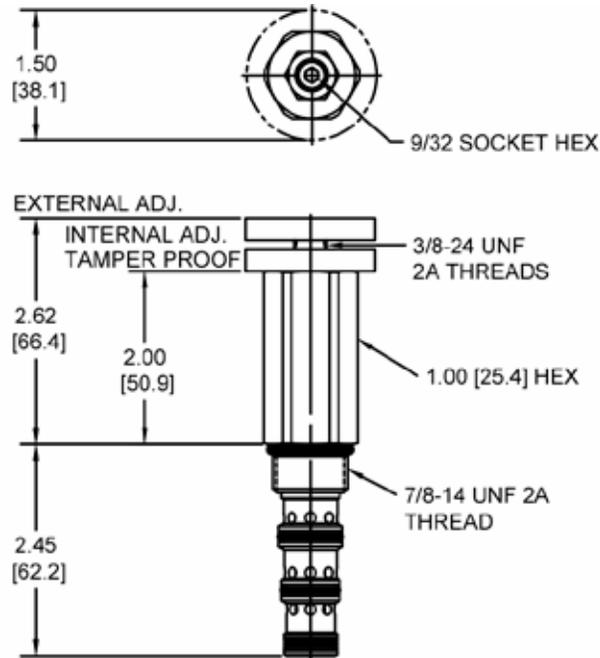


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

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DIMENSIONS



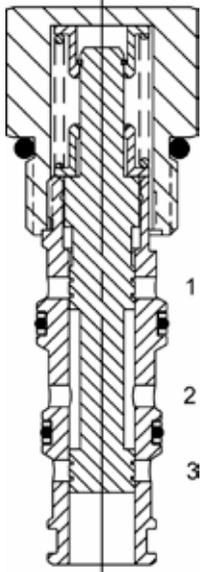
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DG-PSO - - - - -		
OPTIONS		BODIES
Buna Standard	00	Blank
Viton Standard	V0	Without Body
Buna, Knob	0K	N 3/8" BSP Ports
Viton, Knob	VK	S #6 SAE Ports
		PRESSURE RANGE
	0425	50-425 PSI
	1500	425-1500 PSI
	2000	1500-2000 PSI
		TAMPER PROOF
		Fill in 4 Digit Pressure Setting
		Example: 0500-500 PSI

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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.

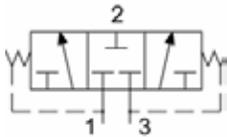
The Valve is spring bias neutral, relying solely on the internal pilot pressure signal to shift to either side.

The DG-PSS is closed in transition.

FEATURES

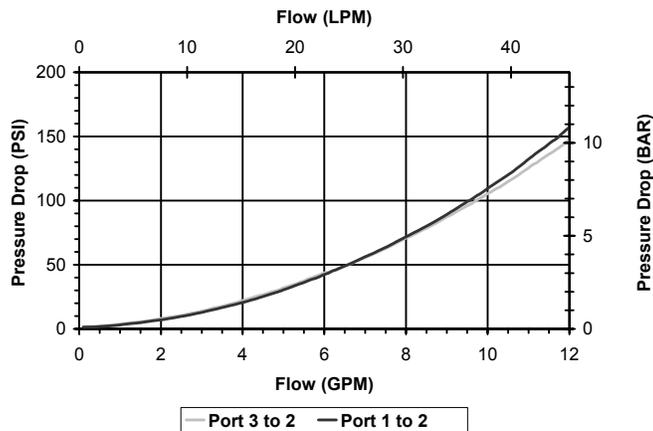
- Hardened parts for long life.
- Industry common cavity.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

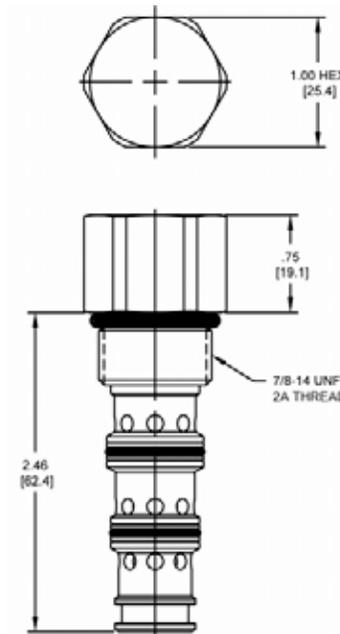


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500002
Seal Kit	21191212

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DIMENSIONS



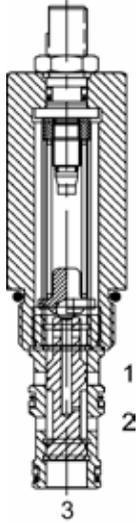
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DG-PSS -		-	-	-
<u>OPTIONS</u>				<u>BODIES</u>
Buna Standard	00			Blank
Viton Standard	V0			N Without Body
				S 3/8" BSP Ports
				#6 SAE Ports
			<u>CRACK PRESSURE</u>	
		0040	40 PSI	
		0080	80 PSI	
		0120	120 PSI	
		0160	160 PSI	
		0000	0 PSI (NO SPRING)	

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.

DF-PWE Sequence Valve, Normally Closed, External Pilot



DESCRIPTION

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

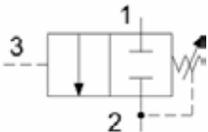
OPERATION

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 3000 PSI (207 PSI).
- Industry common Cavity.

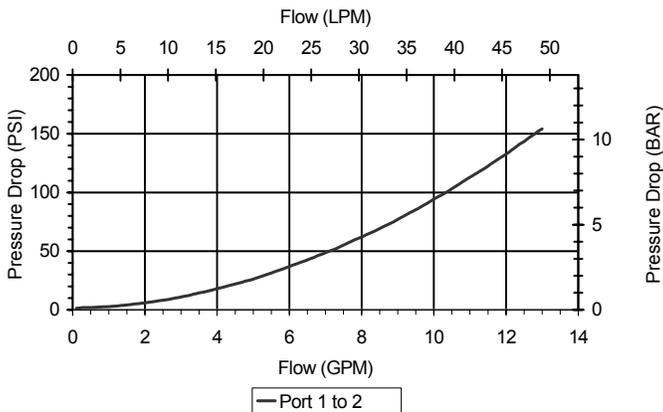
HYDRAULIC SYMBOL



Orifice 0,8-1,4 mm Dia. recommended beneath port (4).

PERFORMANCE

Actual Test Data (Cartridge Only)

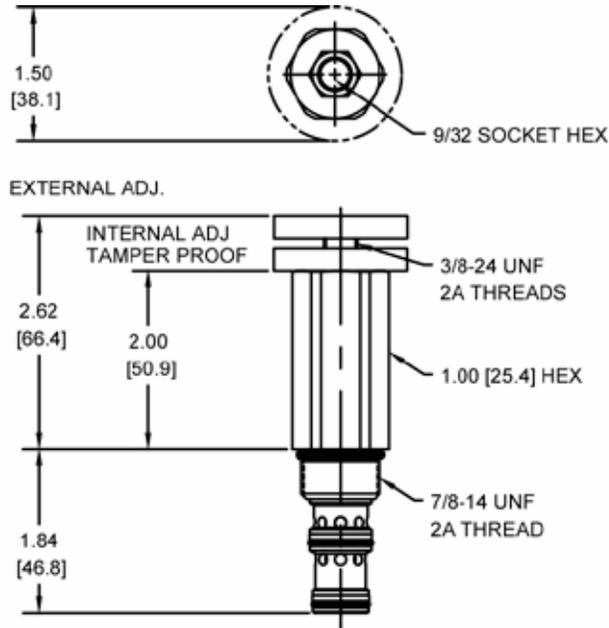


VALVE SPECIFICATIONS

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 Temperature 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 Tool Kit (form tool, reamer, tap)	40500001
Seal Kit	21191206

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DIMENSIONS



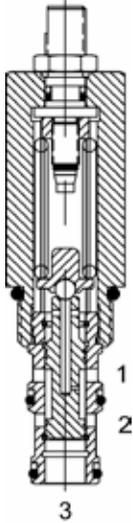
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DF-PWE		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank Without Body
Viton Standard	V0				N 3/8" BSP Ports
Buna, Knob	0K				S #6 SAE Ports
Viton, Knob	VK				
Internal Adj. Buna	0I				
Internal Adj. Viton	VI				
Tamper Proof Buna	0T	0425			PRESSURE RANGE
Tamper Proof Viton	VT	1500			50-425 PSI
		2000			425-1500 PSI
					1500-2000 PSI
					TAMPER PROOF
					Fill in 4 Digit Pressure Setting
					Example: 0500-500 PSI

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.

DF-PWI Sequence Valve, Internal Pilot and Drain



DESCRIPTION

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

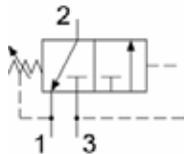
OPERATION

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 3000 PSI (207 PSI).
- Industry common Cavity.

HYDRAULIC SYMBOL

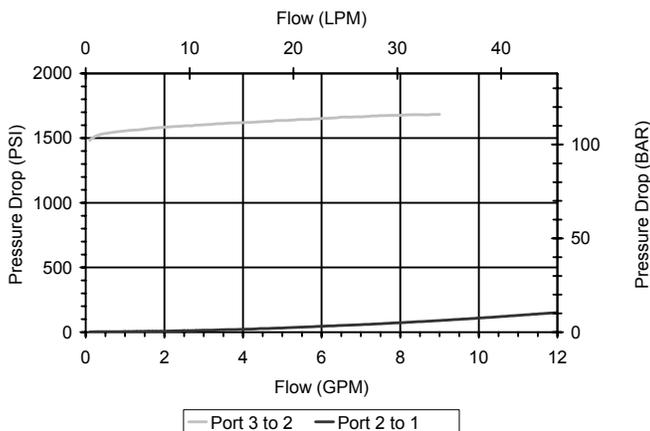


Not recommended for port (3) pressures more than 10% of the spring range selected.

If application creates abrupt pressure changes at port (3), an orifice at port (3) may be necessary.

PERFORMANCE

Actual Test Data (Cartridge Only)

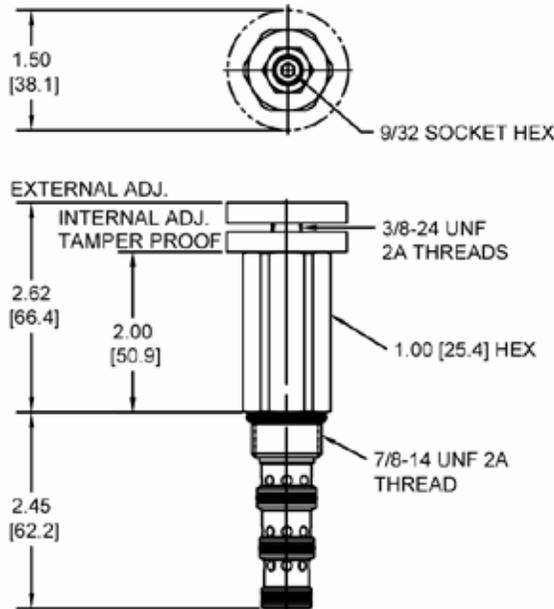


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500001
Seal Kit	21191206

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DIMENSIONS



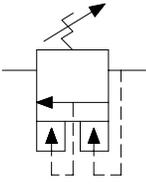
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DF-PWI - - -			
OPTIONS			BODIES
Buna Standard	00		Blank
Viton Standard	V0		Without Body
Buna, Knob	0K		N 3/8" BSP Ports
Viton, Knob	VK		S #6 SAE Ports
Internal Adj. Buna	0I		
Internal Adj. Viton	VI		
Tamper Proof Buna	0T	0425	PRESSURE RANGE
Tamper Proof Viton	VT	1500	50-425 PSI
		2000	425-1500 PSI
			1500-2000 PSI
			TAMPER PROOF
			Fill in 4 Digit Pressure Setting
			Example: 0500-500PSI

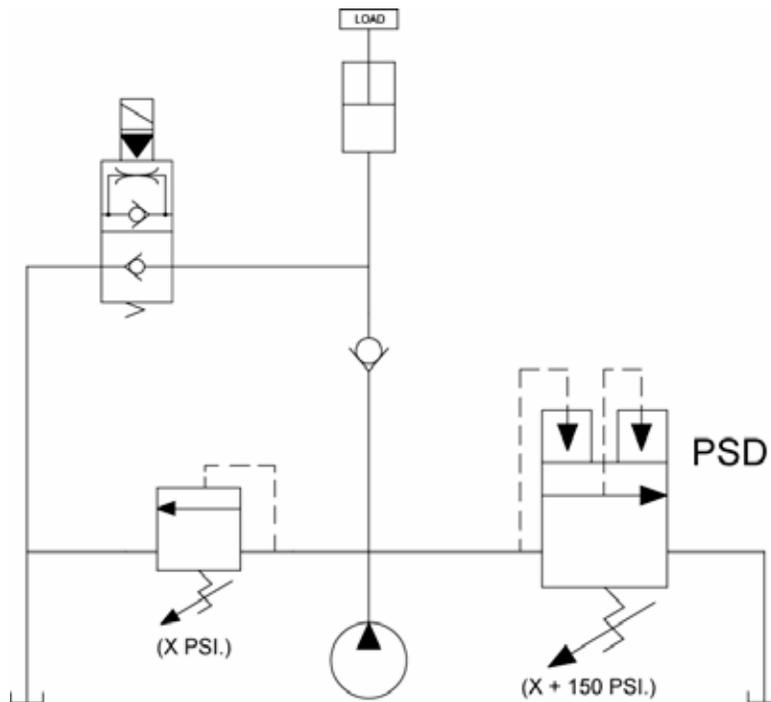
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Shut Down Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	15	4500	57	310	DE-PSD	204

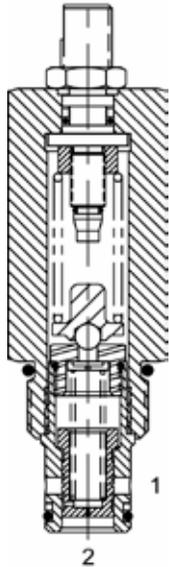
Typical Schematic

Typical application for the PSD is a system protector, like a relief valve, but once this valve opens it will not reseat until the pressure at port 2 is drained off. This valve is not to be used as a load holding device.



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.

DE-PSD Pressure Shut Down Valve



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, pressure shut down valve.

OPERATION

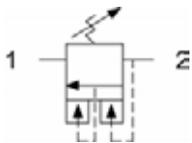
The DE-PSD blocks flow from (2) to (1) until sufficient pressure is present at (2) to open the pilot, thereby forcing the spool to open and allowing flow from (2) to (1).

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.

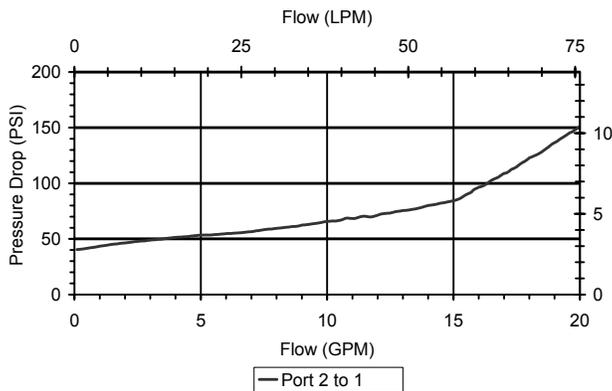
HYDRAULIC SYMBOL



Usually the valve requires flow to be reduced to near zero before the valve will reset.

PERFORMANCE

Actual Test Data (Cartridge Only)

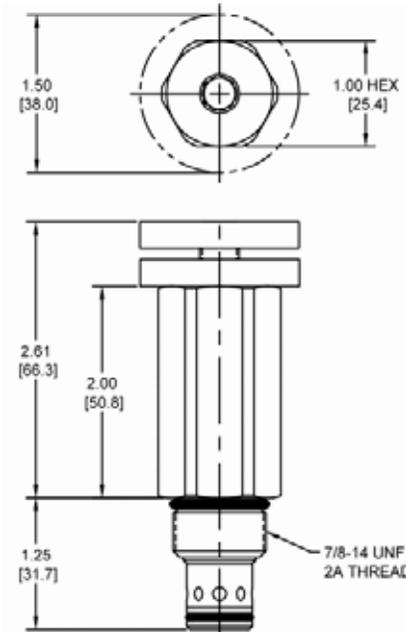


VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



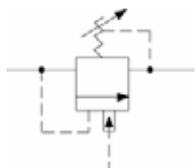
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DE-PSD		-	-	-	
OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0				1/2" BSP Ports
Buna, Knob	0K				#8 SAE Ports
Viton, Knob	VK				
Internally Adj. Buna	0I				
Internally Adj. Viton	VI		3000		
Tamper Proof Buna	0T		4500		
Tamper Proof Viton	VT				
					PRESSURE RANGE/SETTING
					100-3000 PSI
					3000-4500 PSI

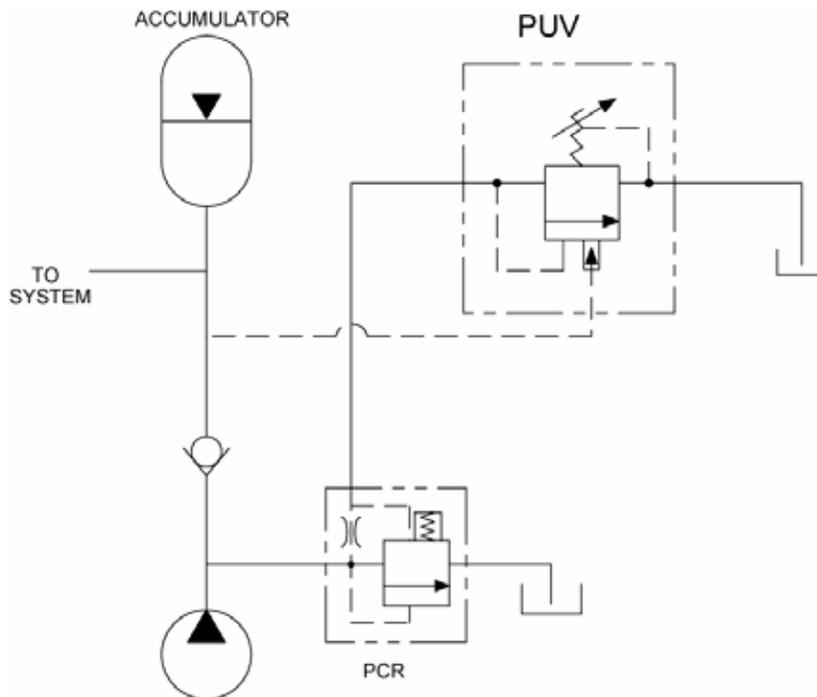
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Unloading Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	1	4000	3,8	276	DF-PUV	208

Typical Schematic

Typical application for the PUV is for pump unloading in an accumulator system. When the PUV setting is reached, the PUV opens, venting the PCR valves pilot signal. This unloads the pump until accumulator system pressure drops to 80% of the PUV setting. The PUV closes which blocks the PCR pilot signal to recharge the accumulator and the cycle is repeated. NOTE: Max. PUV flow 1 GPM.



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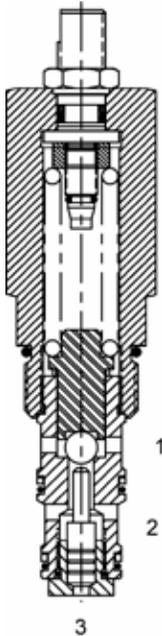
DF-PUV Pilot Operated Unloading Valve

DESCRIPTION

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

OPERATION

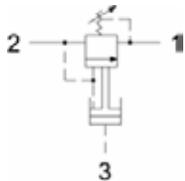
The DF-PUV blocks all ports until pressure at port (2) exceeds pressure setting, or pressure at port (3) is above 80% of pressure setting.



FEATURES

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

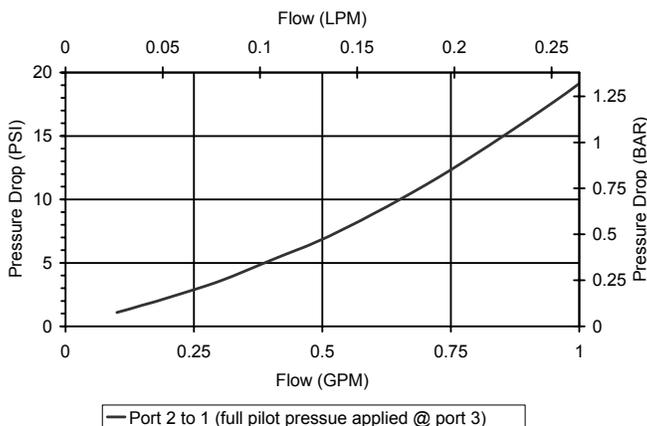
HYDRAULIC SYMBOL



Typical circuits require an orifice to be placed at ports (2) and (3).

PERFORMANCE

Actual Test Data (Cartridge Only)

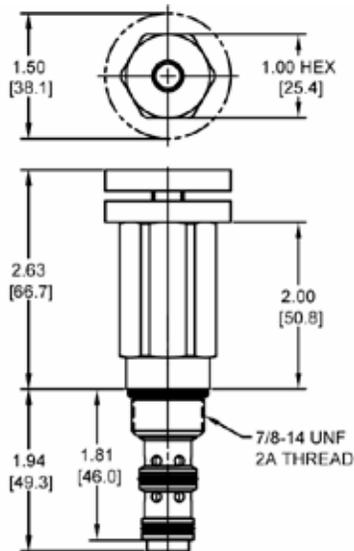


VALVE SPECIFICATIONS

Nominal Flow	1 GPM (3.8 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Loading Pressure as % of Unloading Pressure	80% (Ex. If the PUV cracks at 3000 PSI, it will reseal at 2400 PSI)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tool Kit (form tool, reamer, tap)	40500001 (min. pre-drill .563 dia.)
Seal Kit	21191206

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DIMENSIONS



NOTE: .563 DIA. MINIMUM CAVITY PREDRILL REQUIRED

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

ORDERING INFORMATION

DF-PUV -		-	-	-	
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N 1/4" BSP Ports
Buna, Knob	0K				S #6 SAE Ports
Viton, Knob	VK				
Internally Adj. Buna	0I				
Internally Adj. Viton	VI				
Tamper Proof Buna	0T		3000		
Tamper Proof Viton	VT				
					PRESSURE RANGE/SETTING
					Ext./Int. Adjustable
					300-3000 PSI
					Tamper Proof
					Fill in 4 Digit Pressure Setting
					Example: 0500-500 PSI

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.



SECTION/Description	Pages
Flow Restrictors, Adjustable (Needle Valves)	213
External Pilot Flow Restrictors	231
Pressure Compensated Flow Regulator Valves	237
Priority Flow Regulator Valves	255
Velocity Fuses	263
Flow Divider/Combiner Valves	267
Logic Elements	279

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.

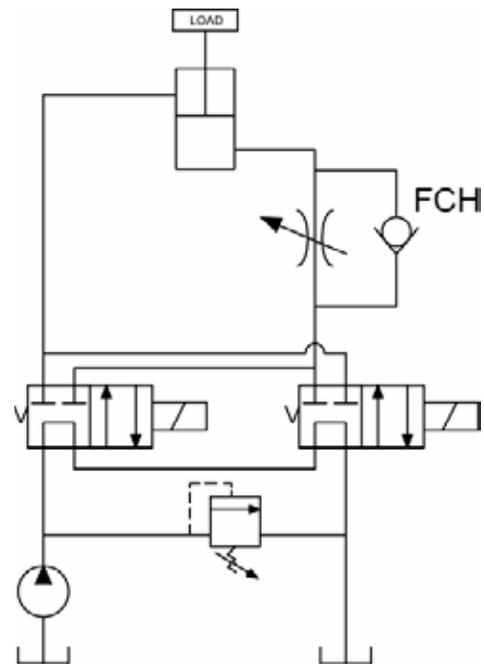
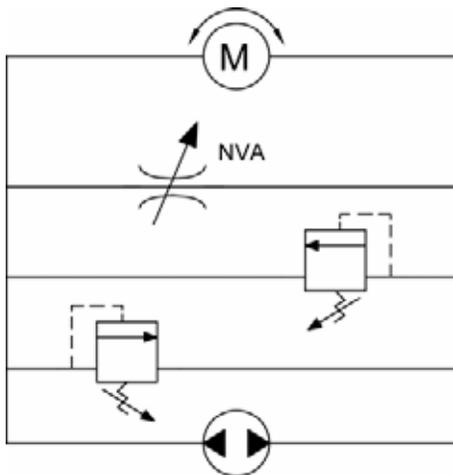
Flow Restrictors, Adjustable (Needle Valves)

	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3500	45	245	DE-FCH	214
	6	3500	23	245	MA-NVA	216
	6	3500	23	245	PB-NVA	218
	10	3500	38	245	DE-NVA	220
	35	5000	133	345	HT-NVA	222
	40	3500	151	245	SJ-NVA	224
	3	3500	11	245	PB-NVB	226
	15	3500	57	245	DE-NVB	228

Typical Schematic

Typical application for the NVA is to meter flow giving speed or full bypass control of a fluid motor.

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



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.

DE-FCH Adjustable Flow Control Valve, Spool Type, Free Reverse Flow

DESCRIPTION

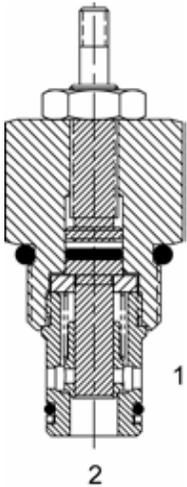
10 size, 7/8-14 thread, "Delta" adjustable needle flow control valve with free reverse flow.

OPERATION

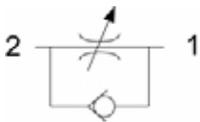
The DE-FCH increases its orifice value from fully closed to fully open by turning screw counterclockwise. When adjusted open the valve regulates flow (1) to (2). When fully closed the valve restricts flow from (1) to (2).

FEATURES

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

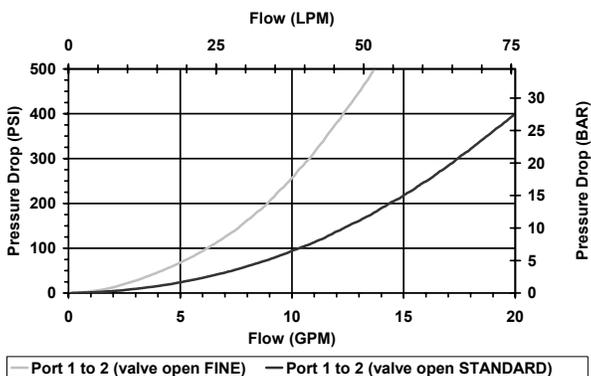
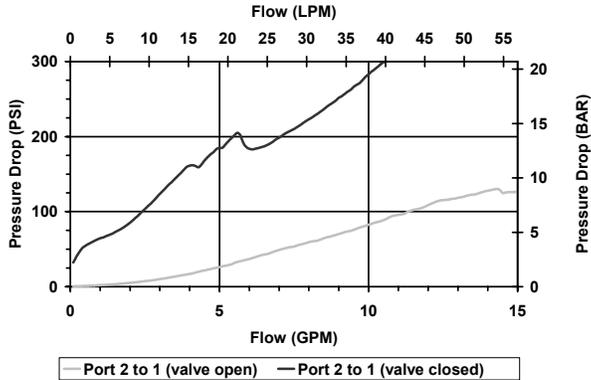


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

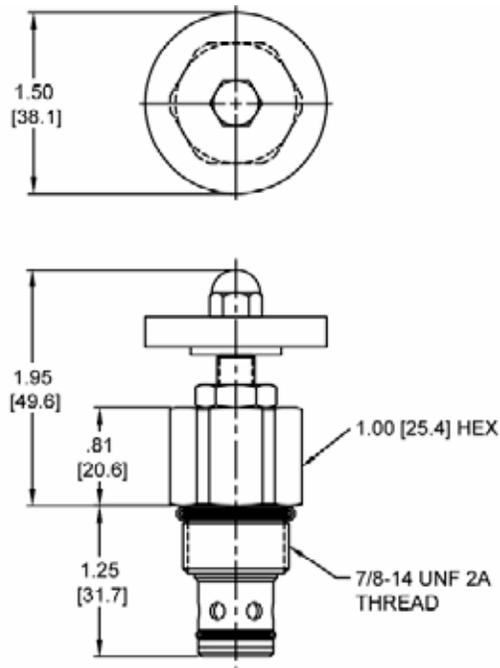


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



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

ORDERING INFORMATION

DE-FCH		-	-	
OPTIONS				BODIES
Buna Standard	00		Blank	Without Body
Viton Standard	V0		N	3/8" BSP 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).

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.

MA-NVA Adjustable Flow Control Valve, Needle Type

DESCRIPTION

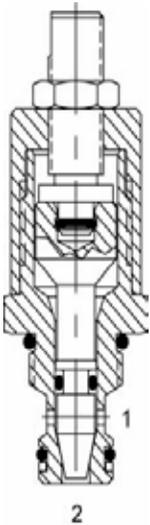
7 size, 5/8-18 thread, "Mini" series, needle flow control valve.

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.

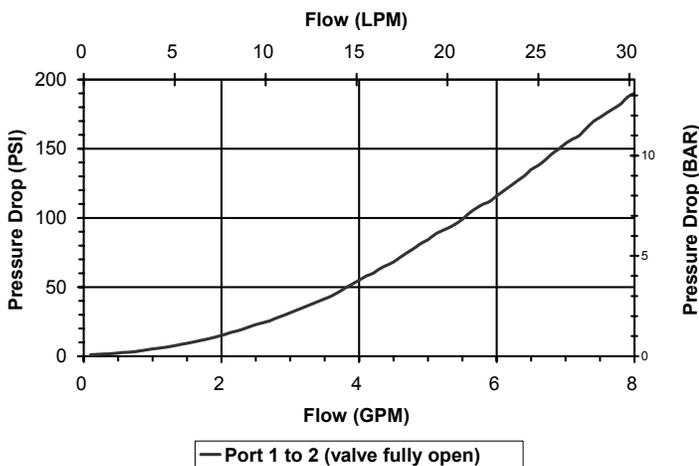


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

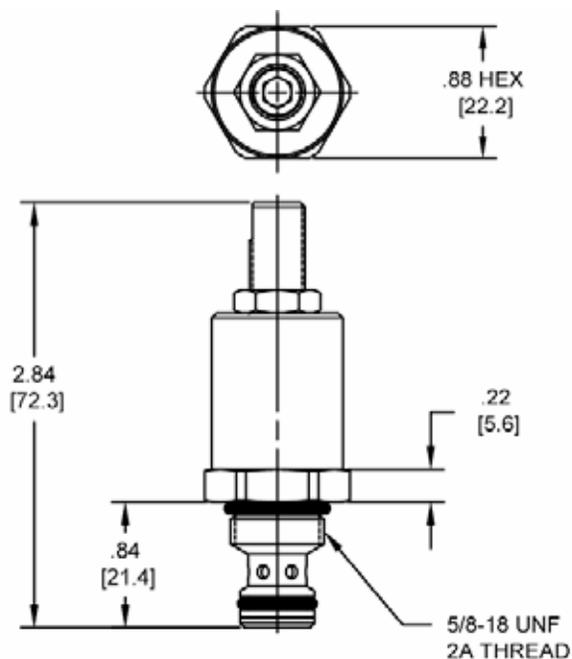


VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500003
Seal Kit	21191202

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DIMENSIONS



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

ORDERING INFORMATION

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

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.

PB-NVA Adjustable Flow Control Valve, Needle Type

DESCRIPTION

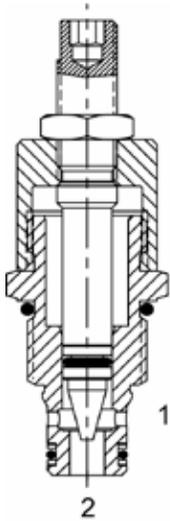
8 size, 3/4-16 thread, "Power" series, needle flow control.

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.

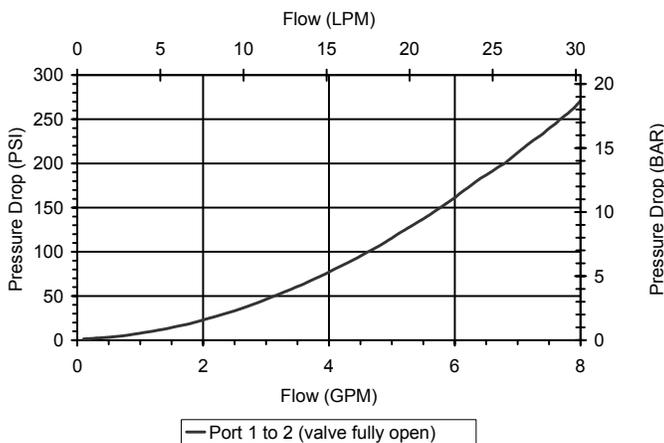


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

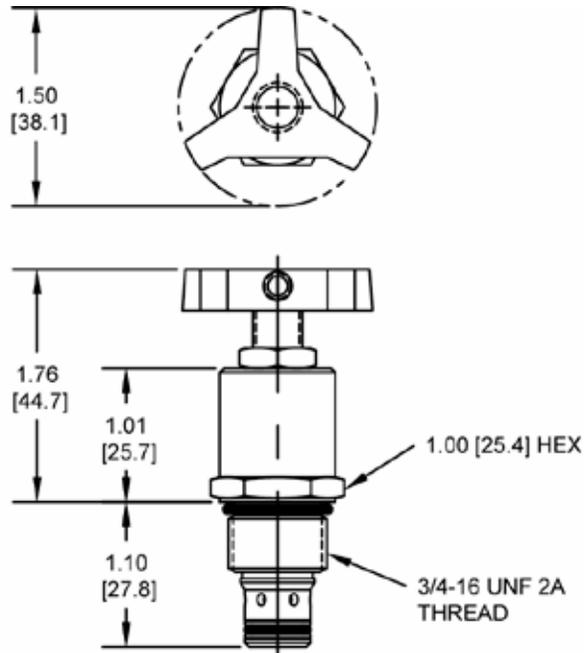


VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191102

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DIMENSIONS



(for bodies style and sizes see section “Accessories”)

ORDERING INFORMATION

PB-NVA		-	-	
	OPTIONS			BODIES
Buna Standard	00		Blank	Without Body
Viton Standard	V0		N	1/4" BSP Ports
Buna, Knob	OK		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).

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.

DE-NVA Adjustable Flow Control Valve, Needle Type

DESCRIPTION

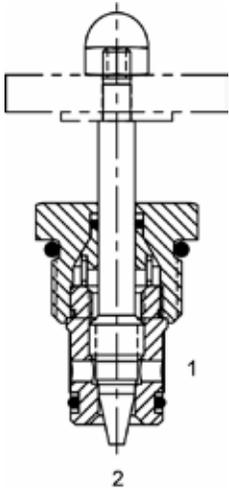
10 size, 7/8-14 thread, "Delta" series needle flow control valve.

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.

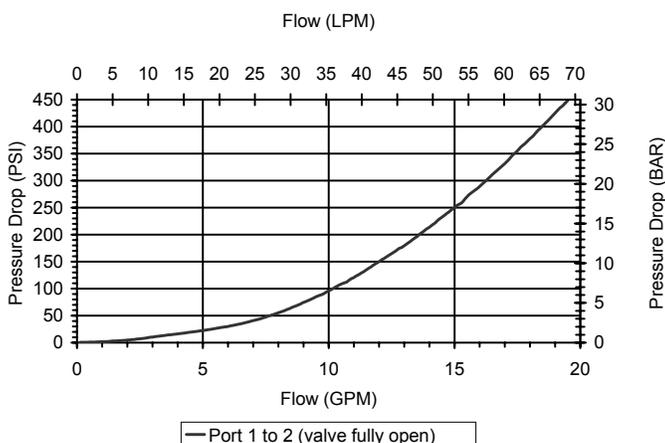


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

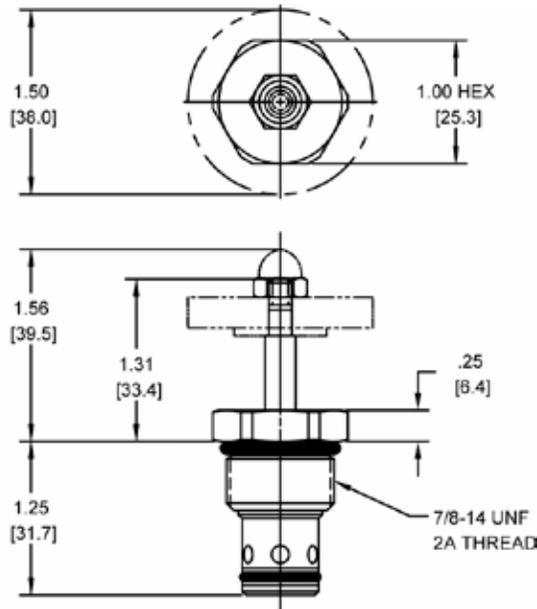


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191202

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DIMENSIONS



(for bodies style and sizes see section “Accessories”)

ORDERING INFORMATION

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

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

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.

HT-NVA Adjustable Flow Control Valve, Needle Type

DESCRIPTION

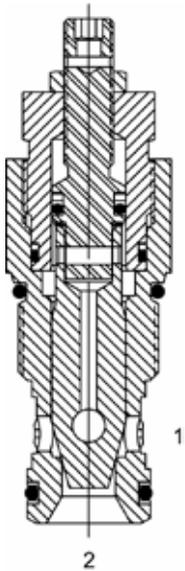
"High Pressure" 12 size, 1 1/16-12 thread, "Tecnorm" series, needle flow control valve.

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.



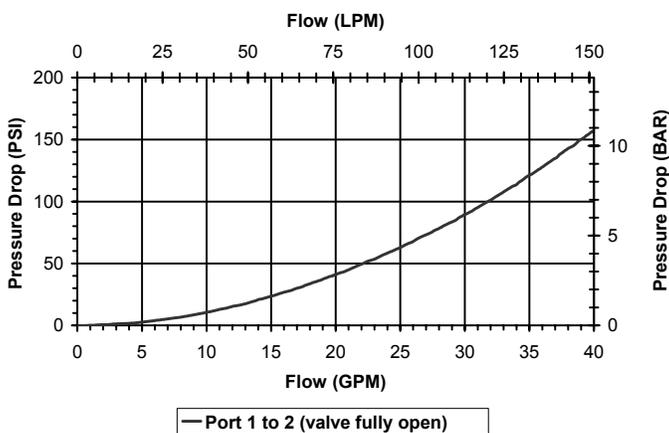
HYDRAULIC SYMBOL



Note: valves with the knob option are NOT to be adjusted under pressure.

PERFORMANCE

Actual Test Data (Cartridge Only)

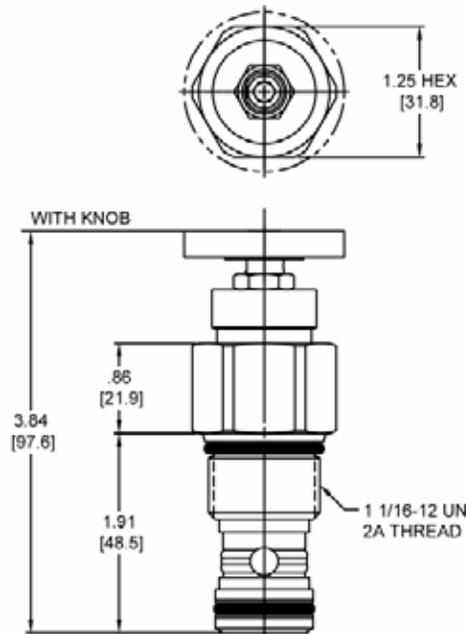


VALVE SPECIFICATIONS

Nominal Flow	35 GPM (133 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 Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.72 lbs (.32 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	50 ft-lbs (67.8 Nm)
Cavity	TECNORD 2W
Cavity Tools Kit (form tool, reamer, tap)	40500032
Seal Kit	21191302

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DIMENSIONS



(for bodies style and sizes see section “Accessories”)

ORDERING INFORMATION

HT-NVA -		-	-
OPTIONS			BODIES
Buna Standard	00	Blank	Without Body
Viton Standard	V0	N	3/4" BSP Ports
Buna, Screen	A0	S	#12 SAE Ports
Viton, Screen	W0		
Buna, Knob	0K		
Viton, Knob	VK		
Buna, Screen, Knob	AK		
Viton, Screen, Knob	WK		

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

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

SJ-NVA Adjustable Flow Control Valve, Needle Type

DESCRIPTION

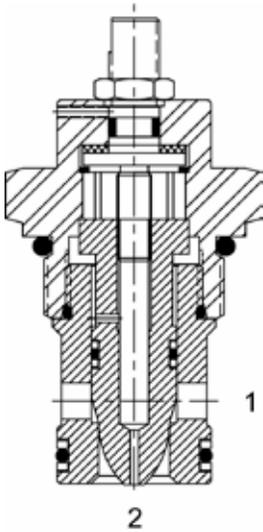
16 size, 1 5/16-12 thread, "Super" series, needle flow control valve.

OPERATION

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

FEATURES

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

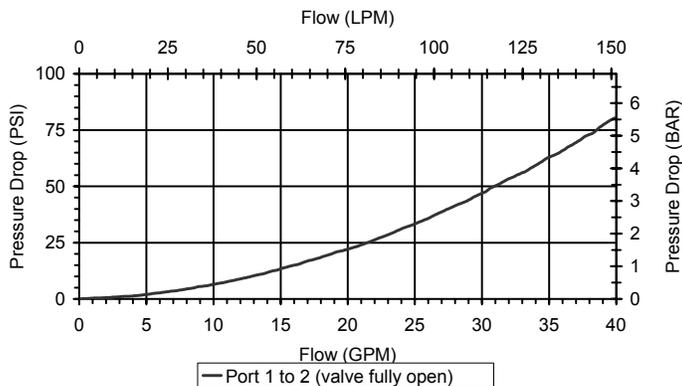


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

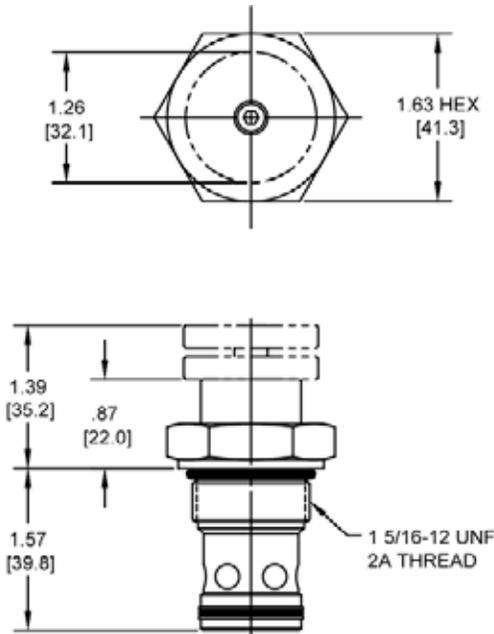


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500017
Seal Kit	21191402

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.

DIMENSIONS



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

ORDERING INFORMATION

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

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.

PB-NVB Adjustable Flow Control Valve, Needle Type, Fine Adjust

DESCRIPTION

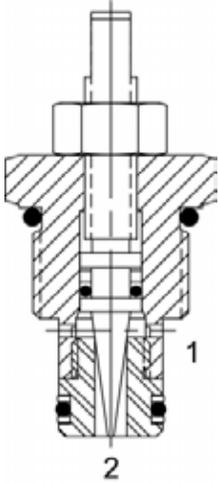
8 size, 3/4-16 thread, "Power" series, fine adjust needle flow control.

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.

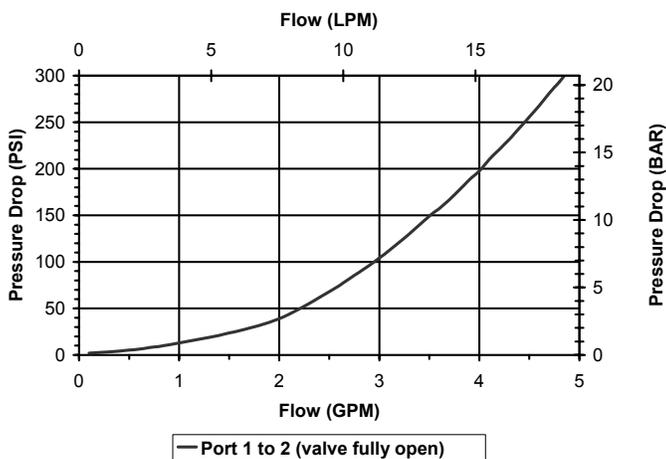


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

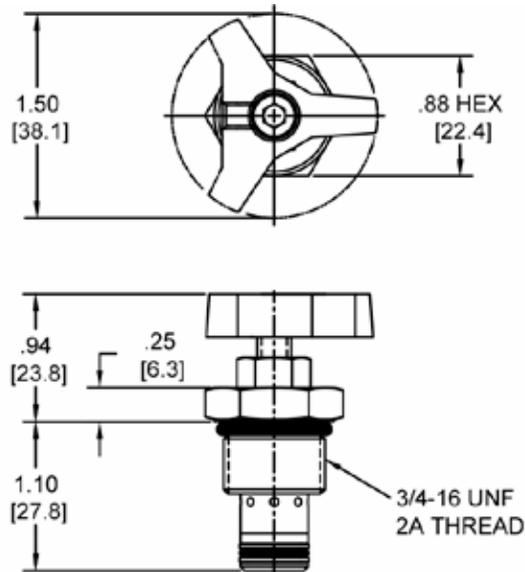


VALVE SPECIFICATIONS

Nominal Flow	3 GPM (11 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191102

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.

DIMENSIONS



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

ORDERING INFORMATION

PB-NVB - - -			
OPTIONS			BODIES
Buna Standard	00	Blank	Without Body
Viton Standard	V0	N	1/4" BSP 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).

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.

DE-NVB Adjustable Flow Control Valve, Coarse Adjust

DESCRIPTION

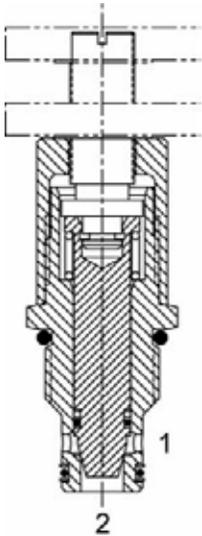
10 size, 7/8-14 thread, "Delta" series, coarse adjust needle flow control valve.

OPERATION

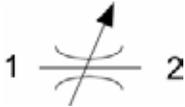
The DE-NVB adjusts from fully open to fully closed by turning adjusting screw clockwise. When adjusted open the valve allows flow (1) to (2) and (2) to (1). When fully closed the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

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

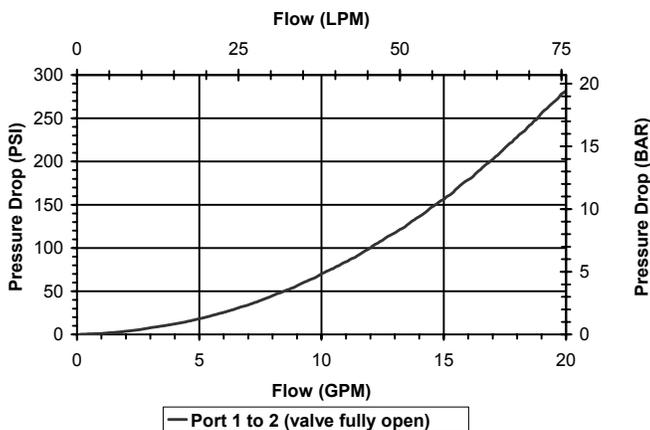


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

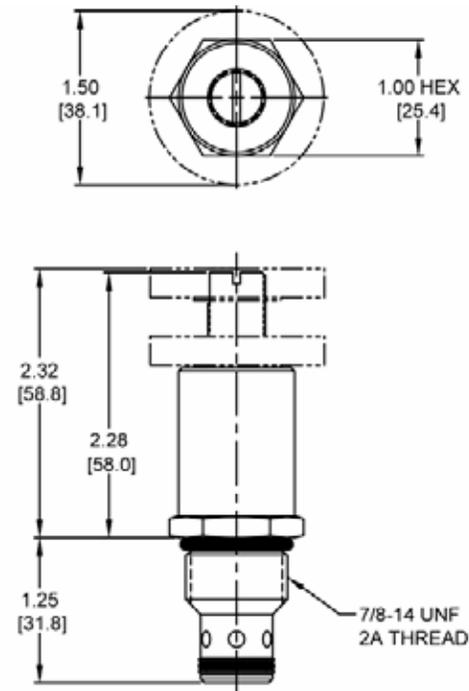


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191202

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DIMENSIONS



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

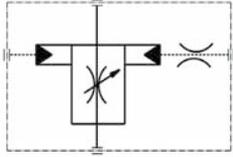
ORDERING INFORMATION

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

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

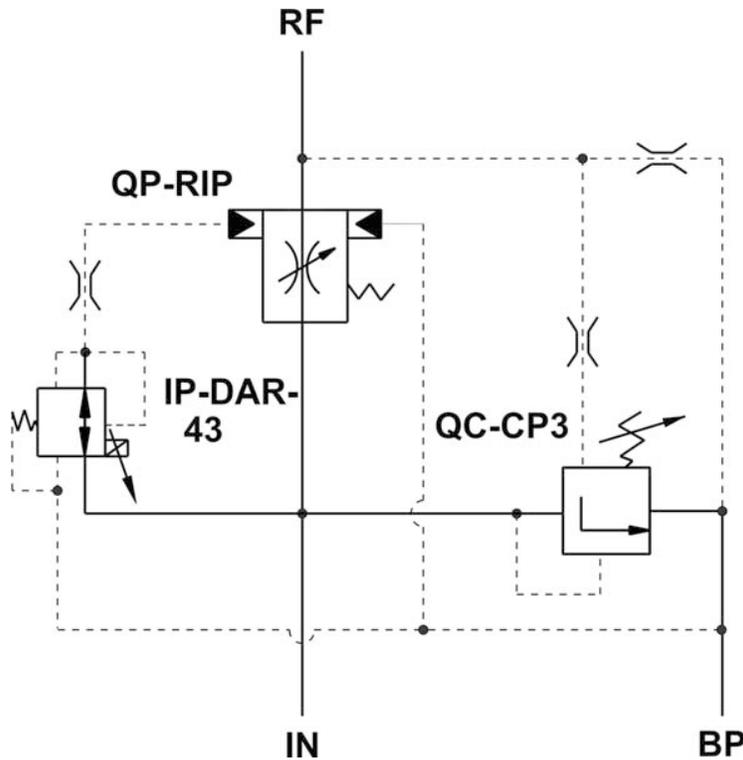
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

External Pilot Flow Restrictors

	GPM	PSI	LPM	BAR	MODEL	PAGE
	16	3500	55	245	QP-RIP-32	232
	32	3500	110	245	QP-RIP-48	234

Typical Schematic

Typical application for the QP-RIP is in combination with a proportional pressure reducing valve on the piloting line. Flow will increase proportionally to the pressure supplied by the proportional valve.



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

QP-RIP-32 External Pilot Flow Restrictor

DESCRIPTION

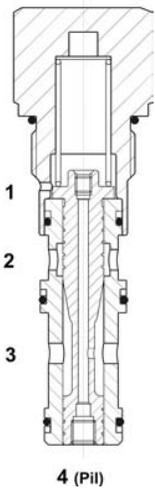
Special cavity, pilot operated flow restrictor.

OPERATION

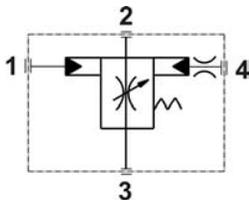
The QP-RIP-32 allows flow from (3) to (2) regulated by a pilot pressure present at (4), variable from 2,5 to 15 bar. Increase the pilot pressure will increase the flow through the valve, according to the curves. Using a proportional pressure reducing cartridge to pilot the QP-RIP-32, a complete proportional flow regulator (not compensated) is attained.

FEATURES

- Hardened parts for long life.



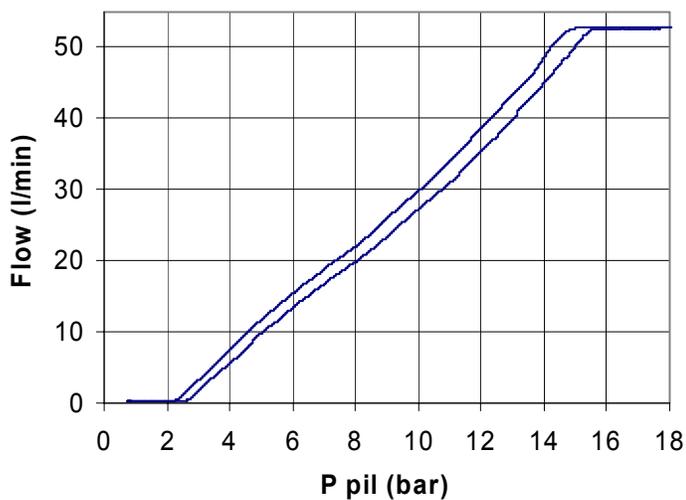
HYDRAULIC SYMBOL



Spring chamber (1) must be constantly drained to tank. Ideal proportional pressure reducing valve to generate the piloting pressure is the TECNORD type IP DAR 43.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Max Flow	16 GPM (55 LPM)
Max Inlet Pressure	3500 PSI (245 bar)
Pilot pressure range	35 – 140 PSI (2,5 – 10 bar)
Max internal leakage	35 cc/min @ 250 bar
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.63 lbs (.29 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	24 ft-lbs (45 Nm)
Cavity	T032
Cavity Tools Kit (form tool, reamer, tap)	K-T032

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.

QP-RIP-48 External Pilot Flow Restrictor

DESCRIPTION

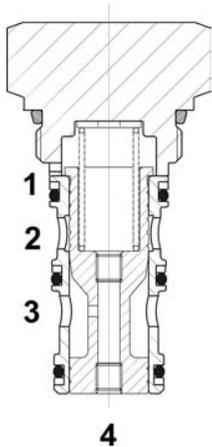
Special cavity, pilot operated flow proportional control valve.

OPERATION

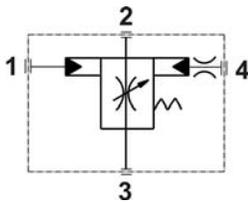
The QP-RIP-48 allows flow from (3) to (2) regulated by a pilot pressure present at (4), variable from 2,5 to 22 bar. Increase the pilot pressure will increase the flow through the valve, according to the curves. Using a proportional pressure reducing cartridge to pilot the QP-RIP-48, a complete proportional flow regulator (not compensated) is attained.

FEATURES

- Hardened parts for long life.



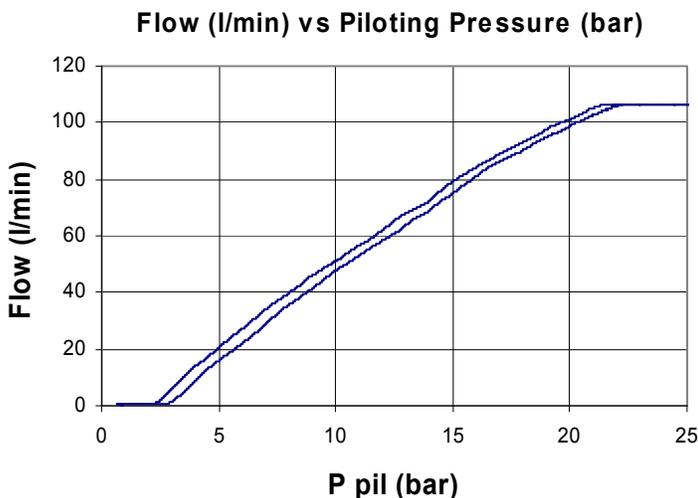
HYDRAULIC SYMBOL



Spring chamber (1) must be constantly drained to tank. Ideal proportional pressure reducing valve to generate the piloting pressure is the TECNORD type IP DAR 43.

PERFORMANCE

Actual Test Data (Cartridge Only)

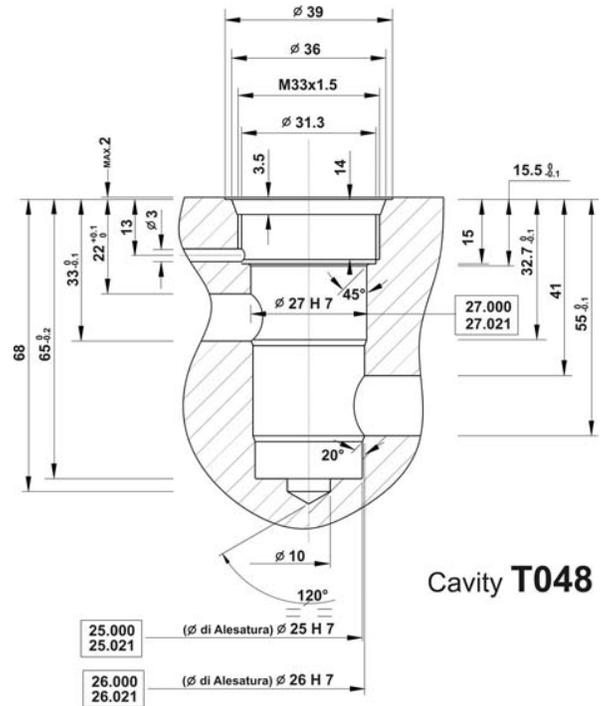
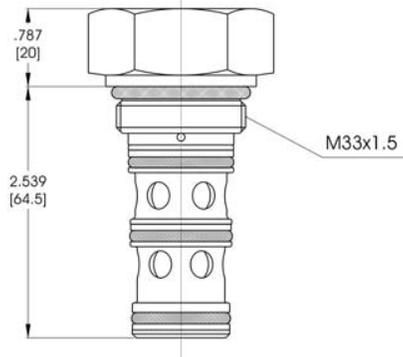
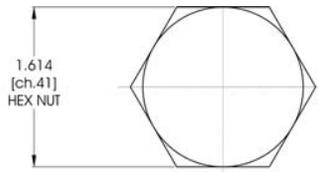


VALVE SPECIFICATIONS

Max Flow	32 GPM (110 LPM)
Max Inlet Pressure	3500 PSI (245 bar)
Pilot pressure range	35 – 315 PSI (2,5 – 22 bar)
Max internal leakage	35 cc/min @ 250 bar
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-25° to +95°C
Weight	.63 lbs (.29 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	24 ft-lbs (45 Nm)
Cavity	T048
Cavity Tools Kit (form tool, reamer, tap)	K-T048

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.

DIMENSIONS



ORDERING INFORMATION

QP-RIP-48 -

00
V0

OPTIONS

Buna Standard
Viton Standard

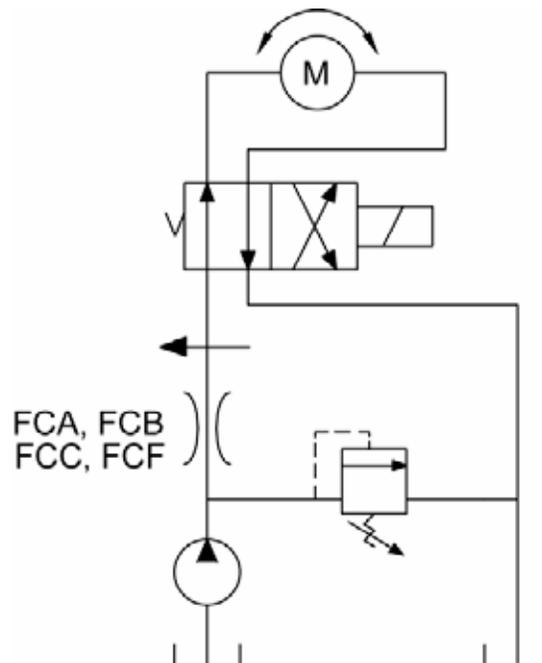
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Pressure Compensated Flow Regulator Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	3	3000	11	207	MA-FCA	238
	4	3500	15	245	PB-FCA	240
	8	3500	30	245	DE-FCA	242
	20	5000	76	345	HT-FCA	244
	25	3500	95	245	SJ-FCA	246
	8	3500	30	245	DE-FCB	248
	8	3500	30	245	DE-FCC	250
	8	3500	30	245	DE-FCF	252

Typical Schematic

Typical application for the FCA, FCB, FCC, and the FCF is for motor speed control.



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.

MA-FCA Adjustable Flow Control Valve, Pressure Compensated

DESCRIPTION

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

OPERATION

The MA-FCA 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).

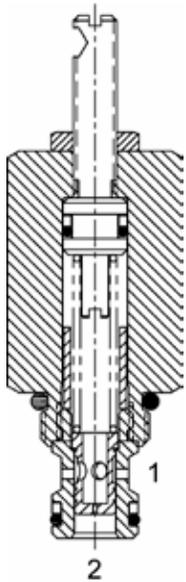
The valve begins to respond to load changes when the flow through the valve creates a pressure differential from (2) to (1) greater than 200 PSI with accurate flow maintenance from 200 to 3000 PSI (14 to 207 bar).

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.

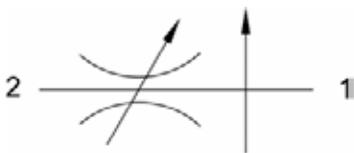
FEATURES

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



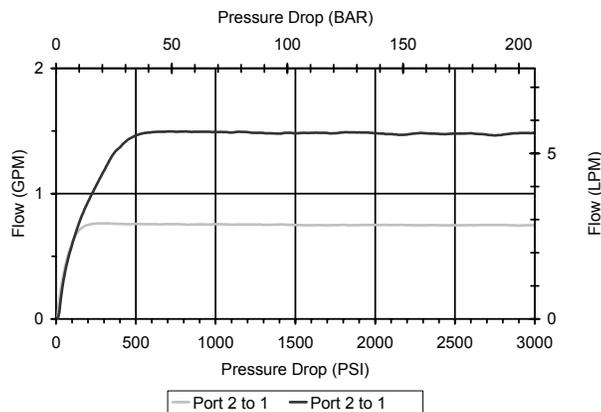
Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL



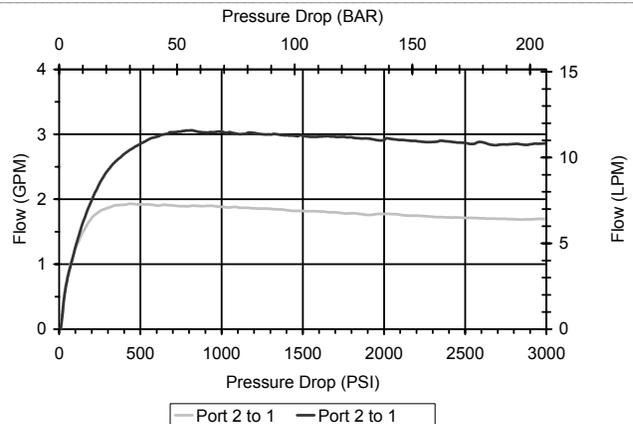
PERFORMANCE

Actual Test Data (Cartridge Only)



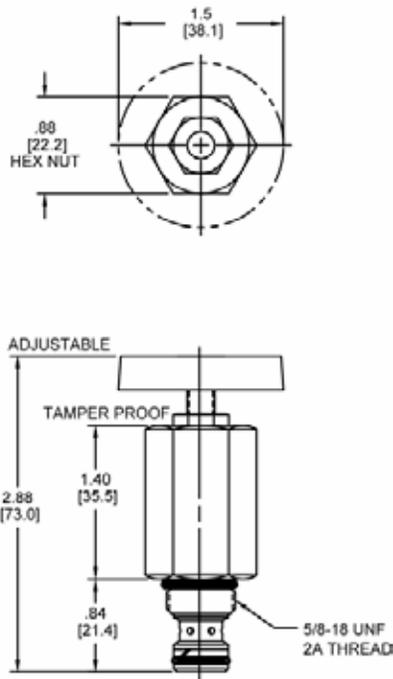
VALVE SPECIFICATIONS

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 Temperature 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 Tools Kit (form tool, reamer, tap)	40500003
Seal Kit	21191000



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.

DIMENSIONS



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

ORDERING INFORMATION

MA-FCA - - - -			
OPTIONS			BODIES
Buna Standard	00		Blank Without Body
Viton Standard	V0		N 1/4" BSP Ports
Buna, Knob	0K		S #6 SAE Ports
Viton, Knob	VK		
		FLOW	
		0.17	.08 - .17 GPM (1,3 - 1,6 LPM)
		00.5	.25 - .5 GPM (0,9 - 1,9 LPM)
		00.9	.5 - .9 GPM (1,9 - 3,4 LPM)
		01.5	.75 - 1.5 GPM (2,8 - 5,7 LPM)
		02.9	1.9 - 3.0 GPM (7,2 - 11,3 LPM)
		TAMPER PROOF	
			Fill in Digit Flow Setting
			Example: 02.0-2 GPM

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.

PB-FCA Adjustable Flow Control Valve, Pressure Compensated

DESCRIPTION

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

OPERATION

The PB-FCA 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).

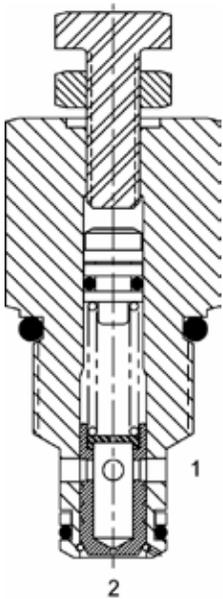
The valve begins to respond to load changes when the flow through the valve creates a pressure differential from (2) to (1), greater than 200 PSI (14 bar), with accurate flow maintenance from 200 to 3500 PSI (14 to 245 bar).

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.

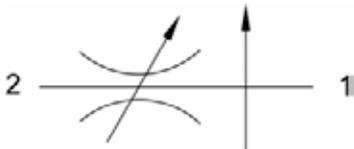
FEATURES

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



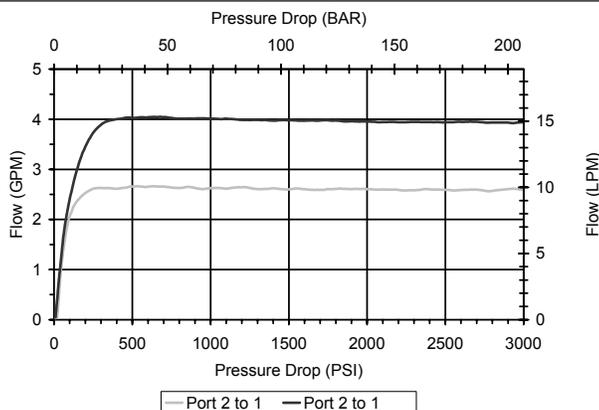
Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

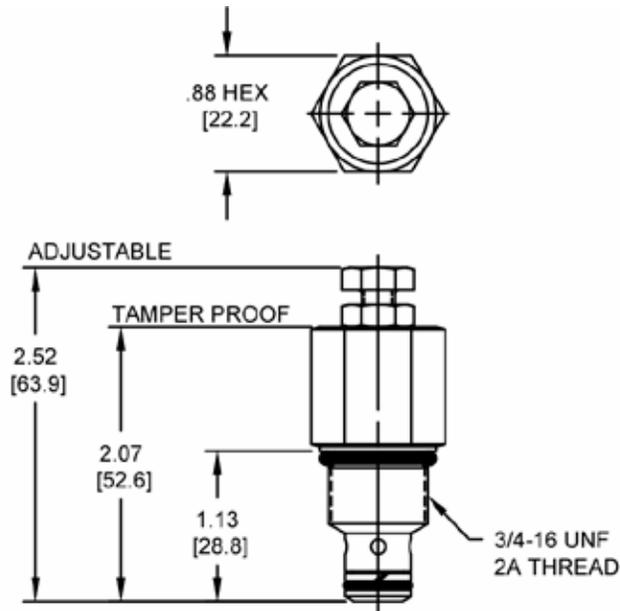


VALVE SPECIFICATIONS

Nominal Flow	4 GPM (15 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 (33.8 Nm)
Cavity	POWER 2W
Cavity Tools Kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



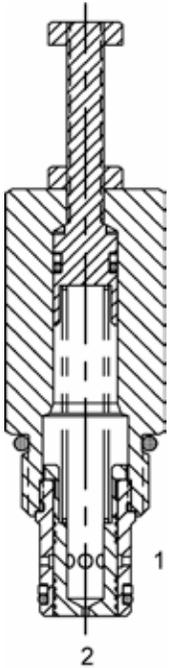
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

PB-FCA -		-	-	-	-
OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	1/4" BSP Ports
Buna Tamper Proof	0T			S	#6 SAE Ports
Viton Tamper Proof	VT				
				FLOW	
		0.45	.25 - .45 GPM (0,9 - 1,7 LPM)		
		0.75	.45 - .75 GPM (1,7 - 2,8 LPM)		
		1.35	.75 - 1.35 GPM (2,8 - 4,9 LPM)		
		2.65	1.35 - 2.65 GPM (4,9 - 10 LPM)		
		4.00	2.65 - 4.00 GPM (10 - 15,1 LPM)		
				TAMPER PROOF	
				Fill in Digit Flow Setting	
				Example: 02.0-2 GPM	

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.

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 245 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.

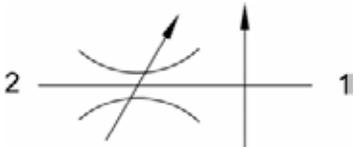
FEATURES

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



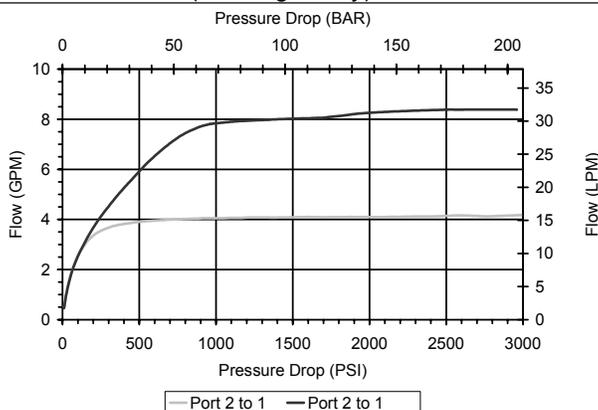
Best stability is obtained with adjustment at highest flow.

HYDRAULIC SYMBOL



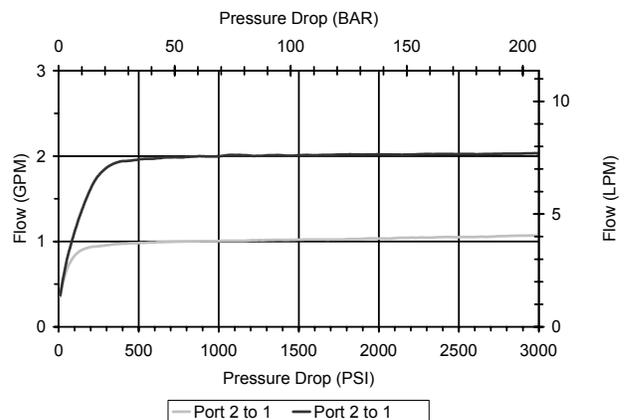
PERFORMANCE

Actual Test Data (Cartridge Only)



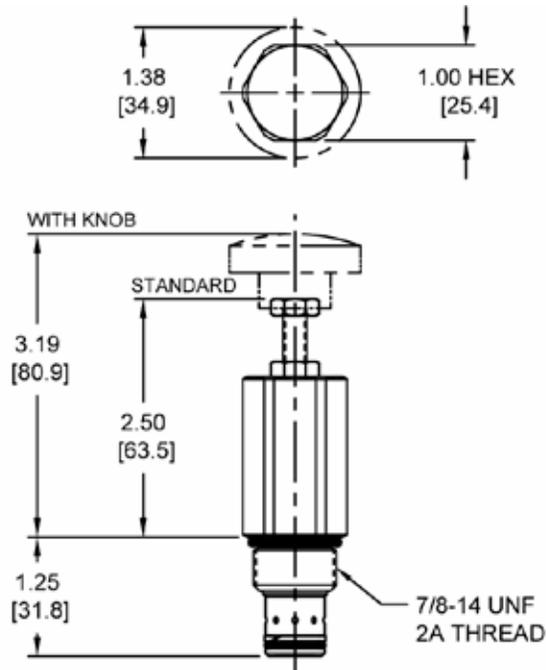
VALVE SPECIFICATIONS

Max Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.49 lbs (.22 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



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

ORDERING INFORMATION

DE-FCA - - - -		
OPTIONS		BODIES
Buna Standard	00	Blank
Viton Standard	V0	N Without Body
Buna, Knob	0K	S 3/8" BSP Ports
Viton, Knob	VT	#8 SAE Ports
		FLOW
	01.0	.5-1 GPM (1,9 - 3,8 LPM)
	02.0	1-2 GPM (3,8 - 7,6 LPM)
	04.0	2-4 GPM (7,6 -15,1 LPM)
	08.0	4-8 GPM (15,1 - 30,2 LPM)
		TAMPER PROOF
		Fill in Digit Flow Setting
		Example: 02.0-2 GPM

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.

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).

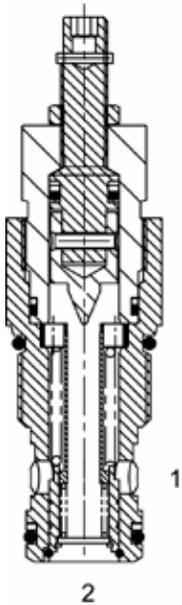
The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice. Consult chart to see regulation at high and low adjustment settings.

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.



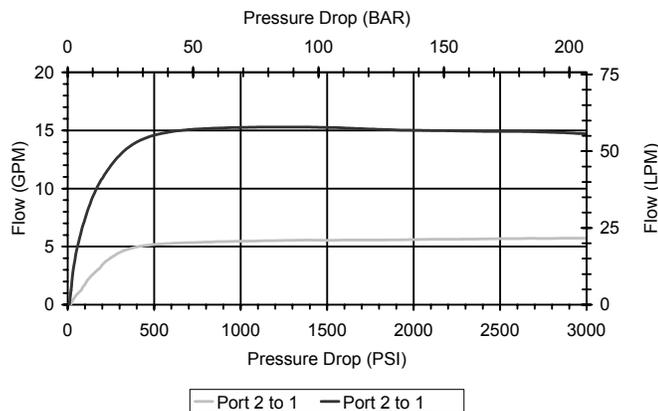
“Fully Adjustable”.
Valve can adjust down to leakage flow.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

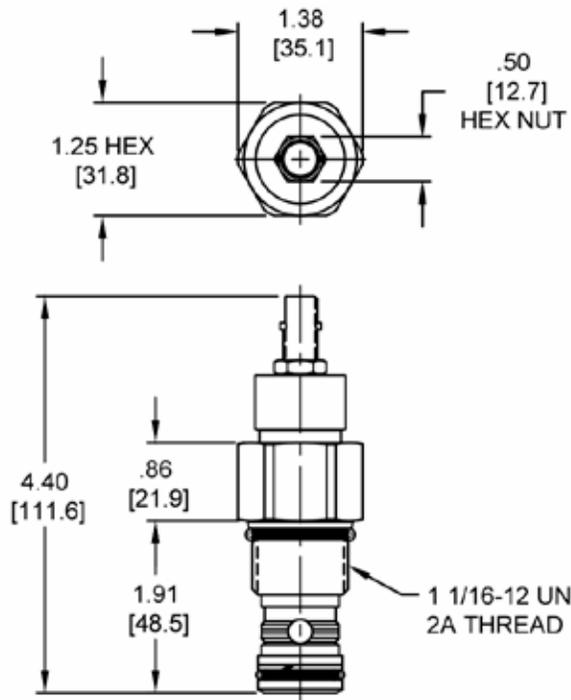


VALVE SPECIFICATIONS

Max Regulated 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 Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.73 lbs (.33 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	50 ft-lbs (67.8 Nm)
Cavity	TECNORD 2W
Cavity Tools Kit (form tool, reamer, tap)	40500032
Seal Kit	21191300

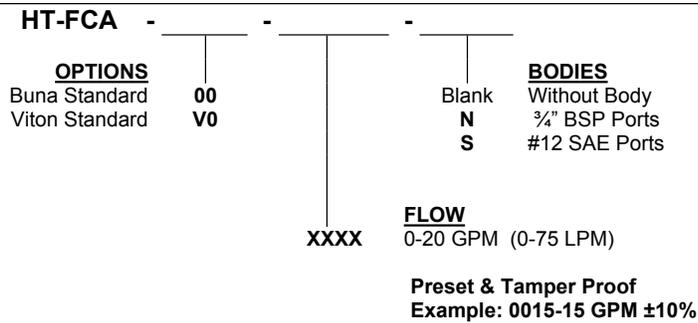
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

DIMENSIONS



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

ORDERING INFORMATION



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.

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).

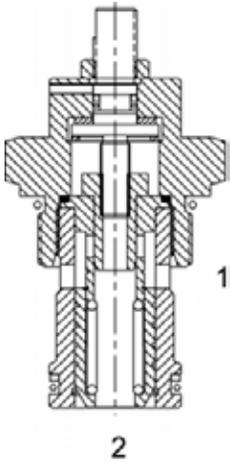
The valve begins to respond to load changes when the flow through the valve creates a pressure differential across the control orifice. Consult chart to see regulation at high and low adjustment settings.

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.



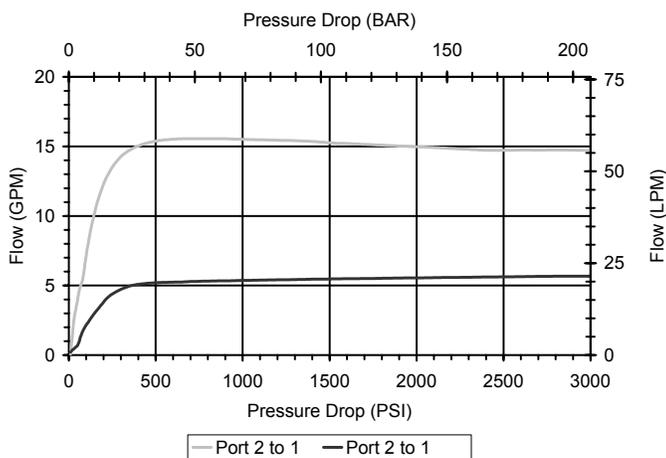
"Fully Adjustable".
Valve can be adjusted down to leakage flow.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

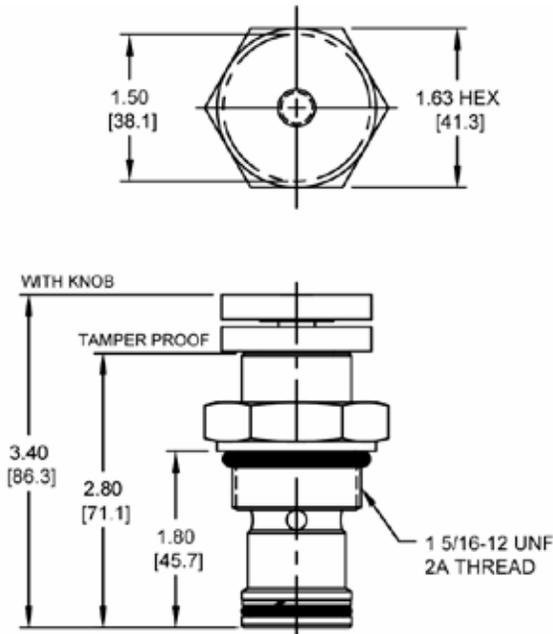


VALVE SPECIFICATIONS

Nominal Flow	25 GPM (95 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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
Seal Kit	21191400

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

DIMENSIONS



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

ORDERING INFORMATION

SJ-FCA -		-	-	-	-
OPTIONS					BODIES
External Adj. w/locknut Buna	00			Blank	Without Body
External Adj. w/locknut Viton	V0			N	3/4" BSP Ports
Buna, Knob	0K			S	#12 SAE Ports
Viton, Knob	VK				
Internally Adj. Buna	0I				
Internally Adj. Viton	VI				
Tamper Proof Buna	0T				
Tamper Proof Viton	VT				
		XXXX			
				FLOW SETTING	
					0-25 GPM (0-95 LPM)
				Preset & Tamper Proof	
				Example: 0015-15 GPM ±10%	

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.

DE-FCB Fixed Flow Control Valve, Pressure Compensated

DESCRIPTION

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

OPERATION

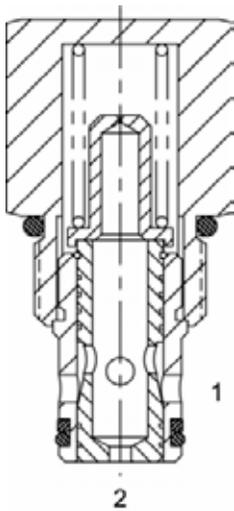
The DE-FCB maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1).

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.

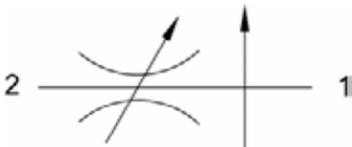
Reverse flow (1) to (2) returns through the control orifice and is non-compensated.

FEATURES

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



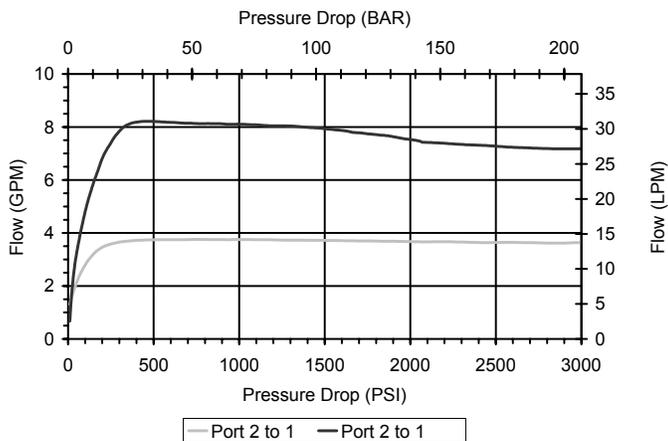
HYDRAULIC SYMBOL



Low pressure drop version for low differential circuits.

PERFORMANCE

Actual Test Data (Cartridge Only)

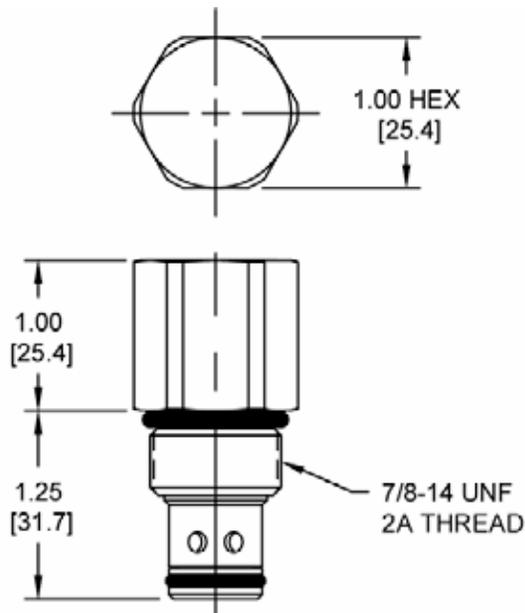


VALVE SPECIFICATIONS

Max Regulated Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.29 lbs (.13kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191204

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DIMENSIONS



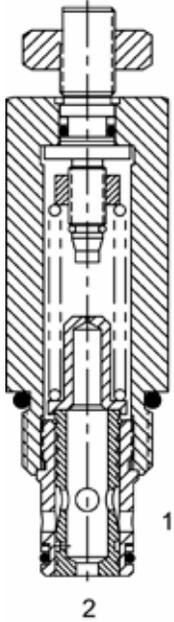
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DE-FCB		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank Without Body
Viton Standard	V0				N 3/8" BSP Ports
					S #8 SAE Ports
					FLOW SETTING
			01.0		1 GPM (3,8 LPM)
			02.0		2 GPM (7,6 LPM)
			03.0		3 GPM (11,3 LPM)
			04.0		4 GPM (15,1 LPM)
			05.0		5 GPM (18,9 LPM)
			06.0		6 GPM (22,7 LPM)
			07.0		7 GPM (26,5 LPM)
			08.0		8 GPM (30,2 LPM)
					+/- 15%

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.

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.

VALVE SPECIFICATIONS

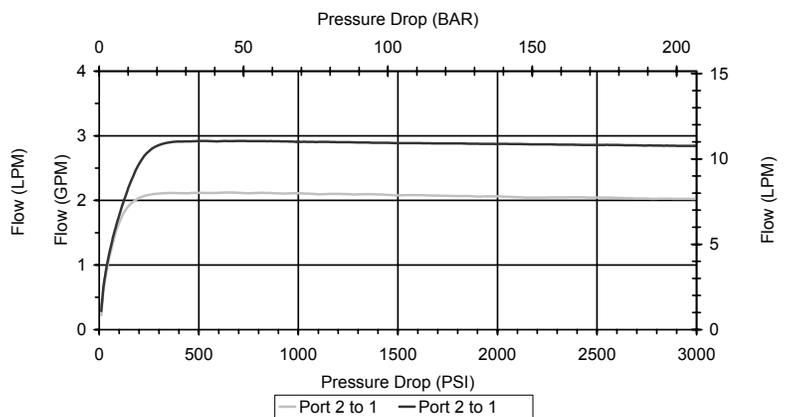
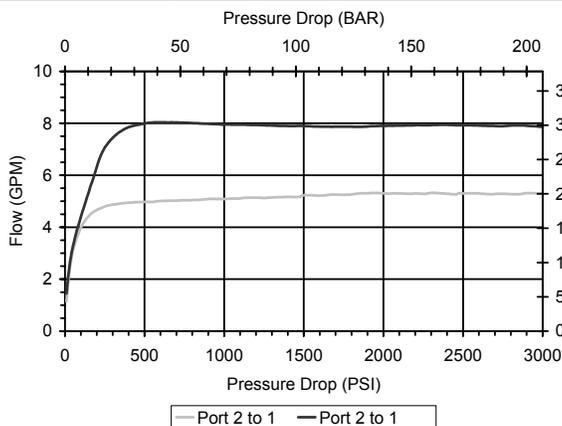
Max Regulated Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.51 lbs (.23 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

HYDRAULIC SYMBOL



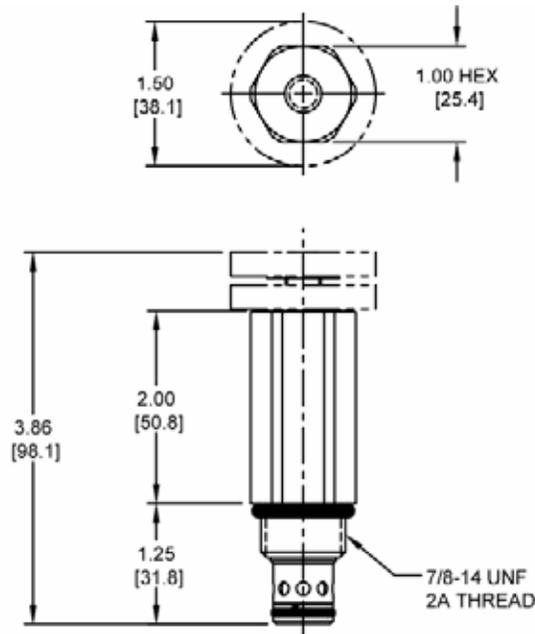
PERFORMANCE

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.

DIMENSIONS



(for bodies style and sizes see section “Accessories”)

ORDERING INFORMATION

DE - FCC		-	-	-	-
OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	3/8" BSP Ports
Buna, Knob	0K			S	#8 SAE Ports
Viton, Knob	VT				
				FLOW	
		1.16			.80-1.16 GPM (3 - 4,4, LPM)
		1.62			1.16-1.62 GPM (4,4 - 6,1 LPM)
		2.09			1.62-2.09 GPM (6,1 - 7,9 LPM)
		2.90			2.09-2.90 GPM (7,9 - 11 LPM)
		3.82			2.90-3.82 GPM (11 - 14,4 LPM)
		5.00			3.82-5.00 GPM (14,4 - 18,9 LPM)
		8.00			5.00-8.00 GPM (18,9 - 30,2 LPM)

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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

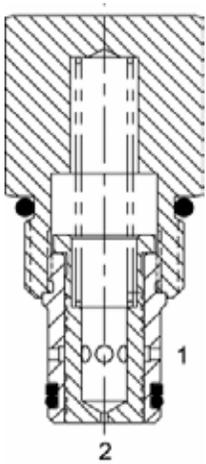
The DE-FCF maintains a constant flow rate out of (1) regardless of load pressure changes in the circuit downstream of (1).

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.

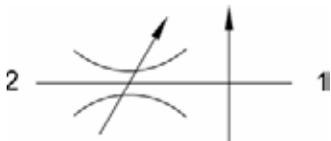
Reverse flow (1) to (2) returns through the control orifice and is non-compensated.

FEATURES

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



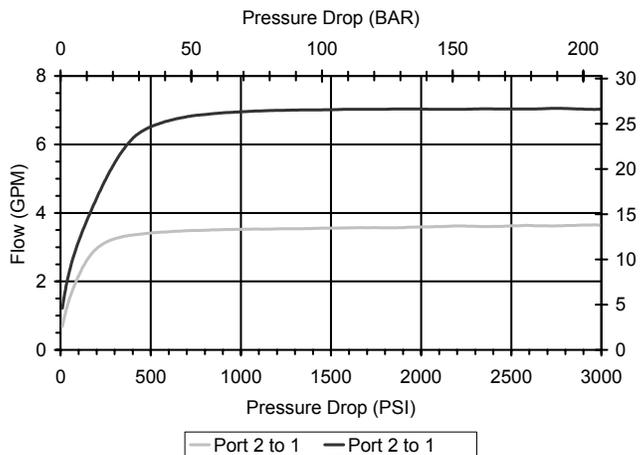
HYDRAULIC SYMBOL



Best stability version for high differential circuits.

PERFORMANCE

Actual Test Data (Cartridge Only)

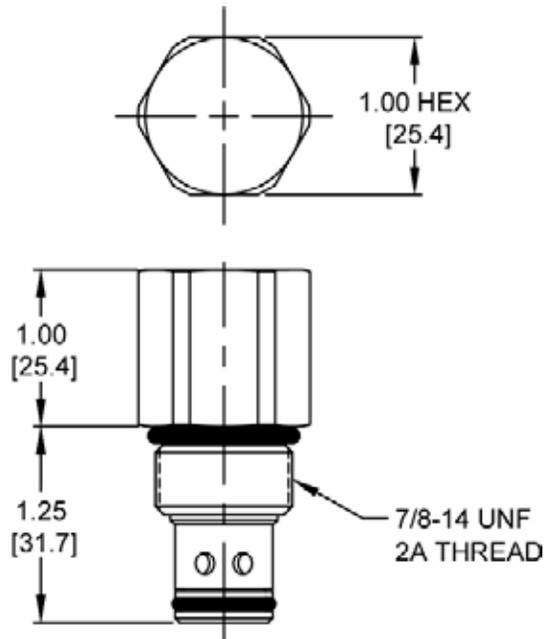


VALVE SPECIFICATIONS

Max Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.32 lbs (.14 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Cavity	DELTA 2W
Cavity Tools Kit (form tool, reamer, tap)	40500000
Seal Kit	21191204

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DIMENSIONS



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

ORDERING INFORMATION

DE-FCF - - -			
OPTIONS			BODIES
Buna Standard	00	Blank	Without Body
Viton Standard	V0	N	3/8" BSP Ports
		S	#8 SAE Ports
			FLOW SETTING
		01.0	1 GPM (3,8 LPM)
		02.0	2 GPM (7,6 LPM)
		03.0	3 GPM (11,3 LPM)
		04.0	4 GPM (15,1 LPM)
		05.0	5 GPM (18,9 LPM)
		06.0	6 GPM (22,7 LPM)
		07.0	7 GPM (26,5 LPM)
		08.0	8 GPM (30,2 LPM)
			+/- 15%

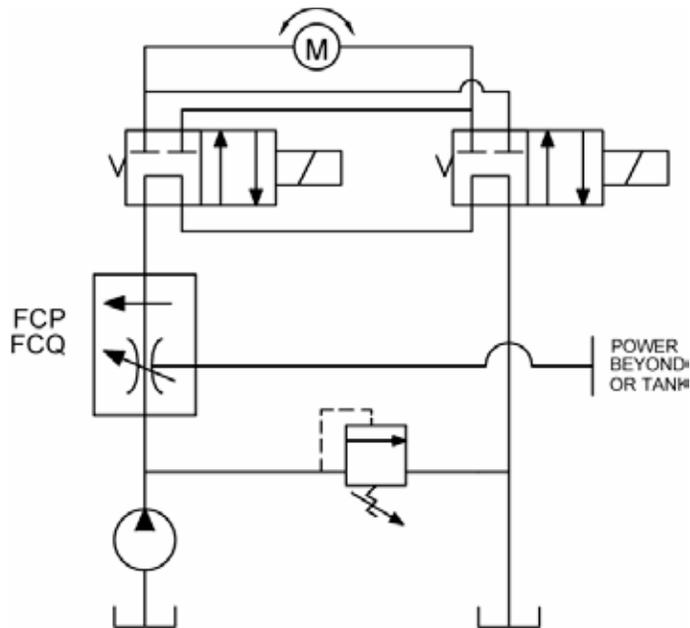
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Priority Flow Regulator Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3000	38	207	DF-FCP	256
	10	3000	38	207	DF-FCQ	258
	25	3000	95	207	SK-FCQ	260

Typical Schematic

Typical application for the FCP and FCQ is priority flow to the main circuit with balance of flow to tank or power beyond.



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DF-FCP Fixed Priority Flow Control Valve

DESCRIPTION

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

OPERATION

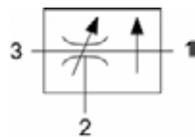
The DF-FCP allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2).

The spring chamber is constantly vented at (1).

FEATURES

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

HYDRAULIC SYMBOL

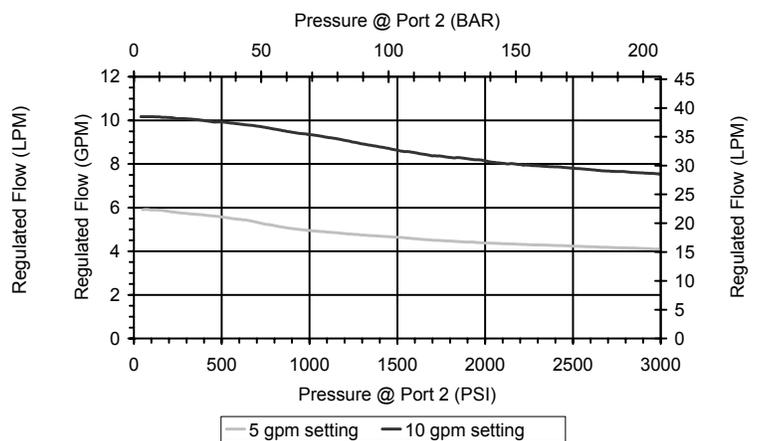
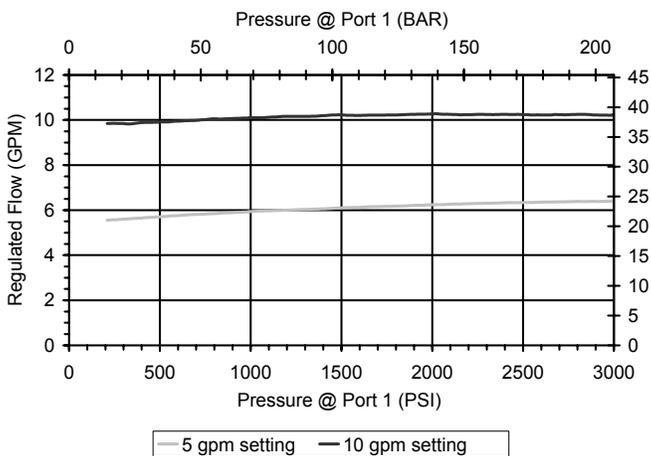


VALVE SPECIFICATIONS

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

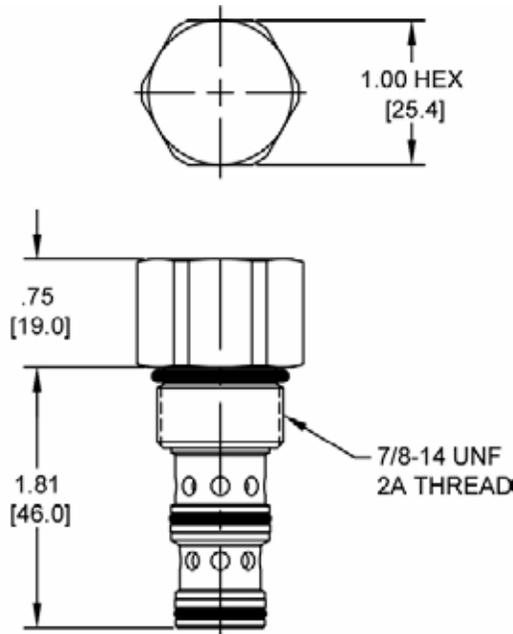
PERFORMANCE

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.

DIMENSIONS



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

ORDERING INFORMATION

DF-FCP -		-	-	-
OPTIONS				BODIES
Buna Standard	00			Blank Without Body
Viton Standard	V0			N 1/4" BSP Ports
				S #6 SAE Ports
			FLOW SETTING	
		01.0	1 GPM (3,8 LPM)	
		02.0	2 GPM (7,6 LPM)	
		03.0	3 GPM (11,3 LPM)	
		04.0	4 GPM (15,1 LPM)	
		05.0	5 GPM (18,9 LPM)	
		06.0	6 GPM (22,7 LPM)	
		07.0	7 GPM (26,5 LPM)	
		08.0	8 GPM (30,2 LPM)	
		09.0	9 GPM (34 LPM)	
		10.0	10 GPM (38 LPM)	
			±15%	

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.

DF-FCQ Adjustable Priority Flow Control Valve

DESCRIPTION

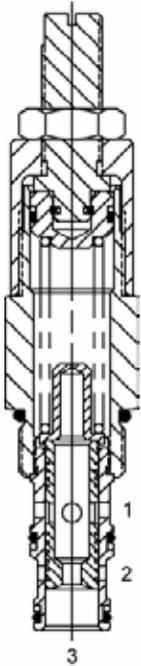
10 size, 7/8-14 thread, "Delta" series, adjustable priority flow control valve.

OPERATION

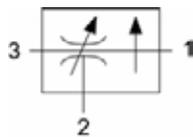
The DF-FCQ allows pressure compensated flow from (3) to (1) regulated by the pressure present at (3). Excess flow bypasses out (2).

FEATURES

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



HYDRAULIC SYMBOL



VALVE SPECIFICATIONS

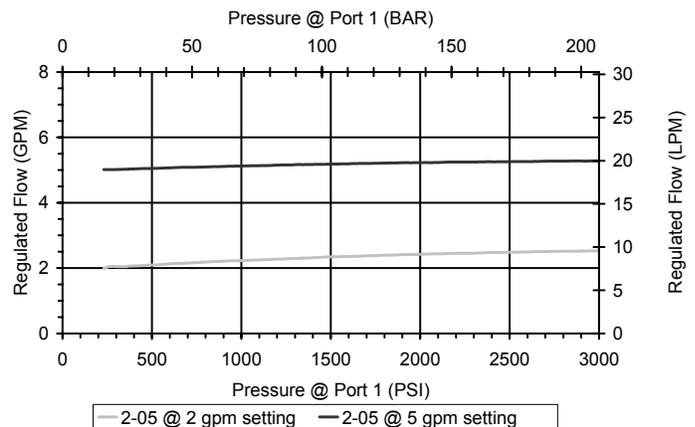
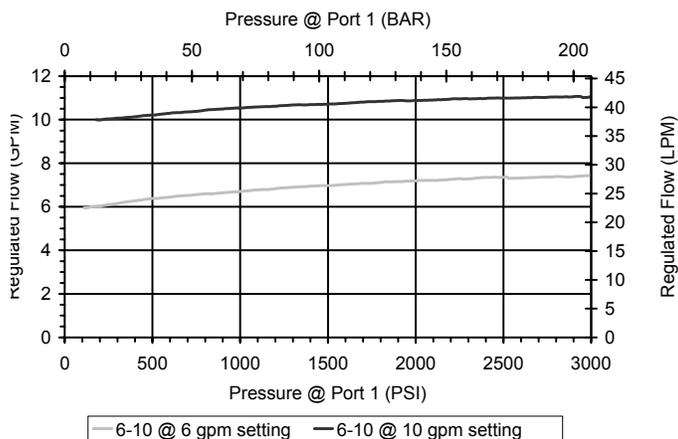
Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.56 lbs (.25 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque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



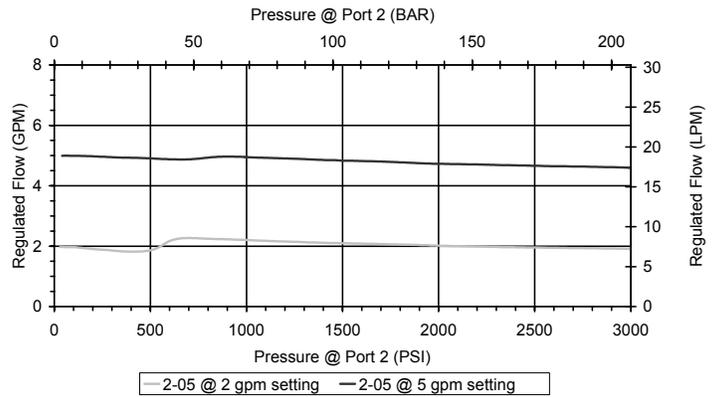
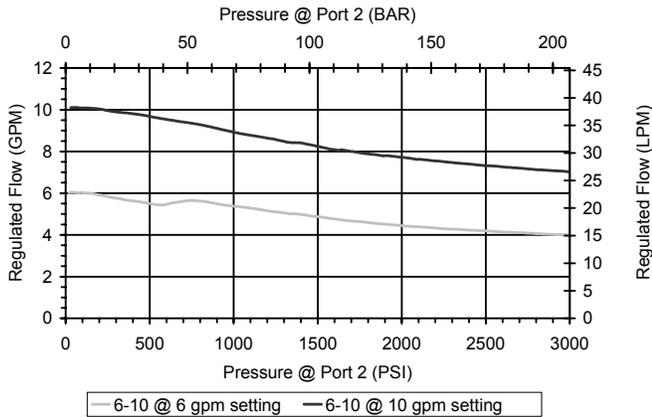
Test data shown on this sheet, for condition of port (2) to tank. Data on next page, for condition of port (3) to tank.

PERFORMANCE

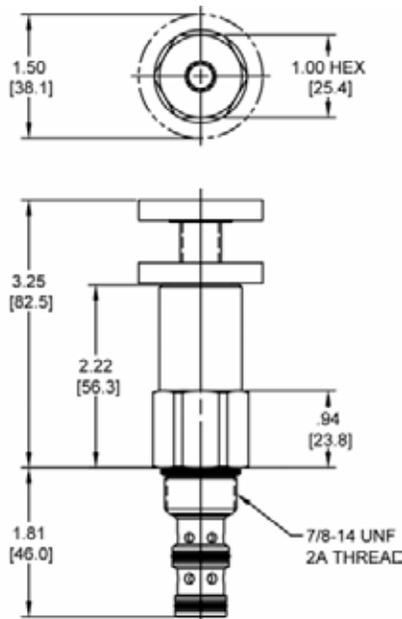
Actual Test Data (Cartridge Only)



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.



DIMENSIONS



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

ORDERING INFORMATION

DF-FCQ - - - -		
OPTIONS		BODIES
Buna Standard	00	Blank
Viton Standard	V0	N 1/4" BSP Ports
Buna, Knob	OK	S #6 SAE Ports
Viton, Knob	VK	
		FLOW RANGE
	2-05	2 to 5 GPM (7,6-18,9 LPM)
	6-10	6 to 10 GPM (22,7-38 LPM)

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.

SK-FCQ Adjustable Priority Flow Control Valve

DESCRIPTION

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

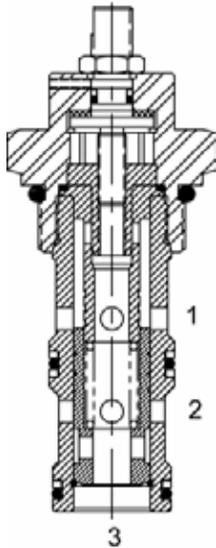
OPERATION

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

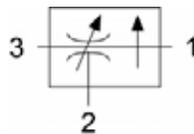
The spring chamber is constantly vented at (1).

FEATURES

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



HYDRAULIC SYMBOL

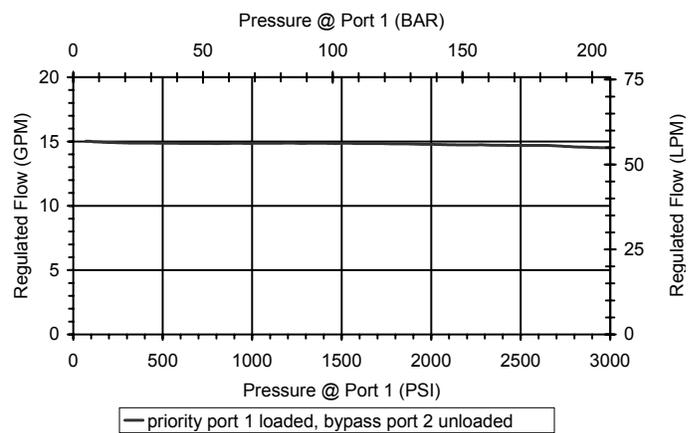
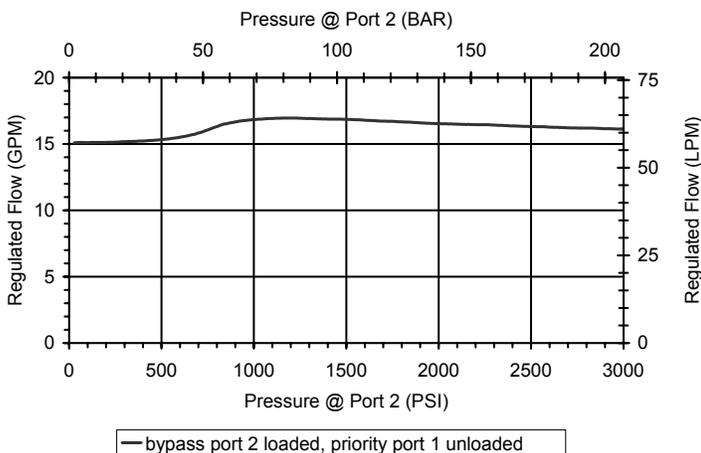


VALVE SPECIFICATIONS

Max Regulated Flow	25 GPM (95 LPM)
Rated Operating Pressure	500-3000 PSI (34-207 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500018
Seal Kit	21191404

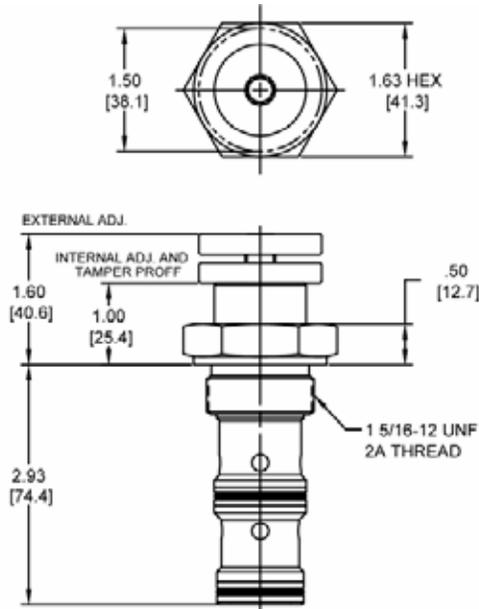
PERFORMANCE

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.

DIMENSIONS



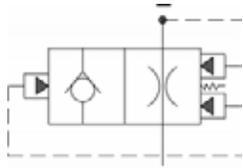
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

SK-FCQ		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank Without Body
Viton Standard	V0				N 3/4" BSP Ports
Buna, Knob	0K				S #12 SAE Ports
Viton, Knob	VK				
Internally Adj. Buna	0I				FLOW SETTING
Internally Adj. Viton	VI		XXXX		1 to 25 GPM (4-95 LPM)
Tamper Proof Buna	0T				Preset & Tamper proof
Tamper Proof Viton	VT				Example: 015-15 GPM ±10%

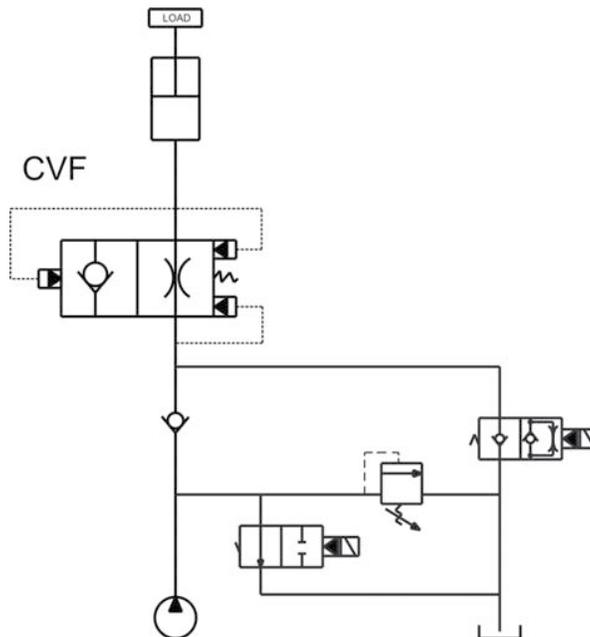
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Velocity Fuses

	GPM	PSI	LPM	BAR	MODEL	PAGE
	10	3500	38	245	DE-CVF	264

Typical Schematic

Typical application for the CVF is to be mounted directly in the bottom of the cylinder and sized 1-2 GPM higher than the lowering speed. Therefore the load will not free fall in the event of line damage. Valve will not re-open until pressure is bled off of port #1.



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.

DE-CVF Velocity Fuse

DESCRIPTION

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

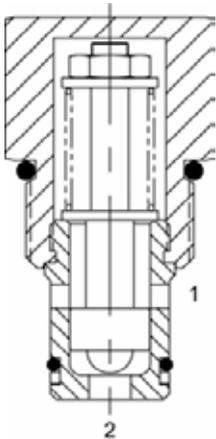
OPERATION

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).

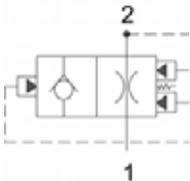
Valve acts like a fixed orifice when passing flow from (2) to (1).

FEATURES

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



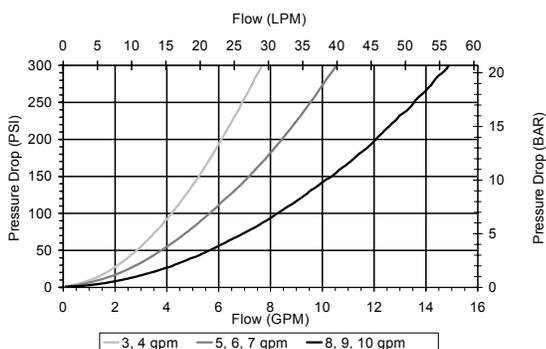
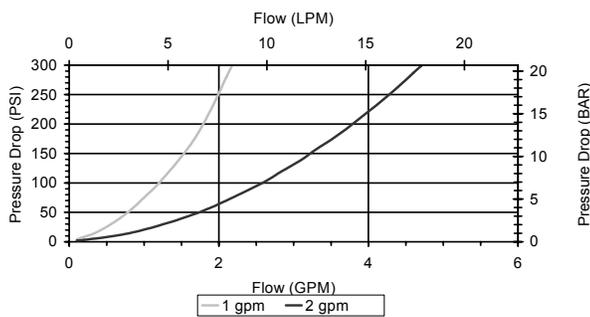
HYDRAULIC SYMBOL



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).

PERFORMANCE

Actual Test Data (Cartridge Only)

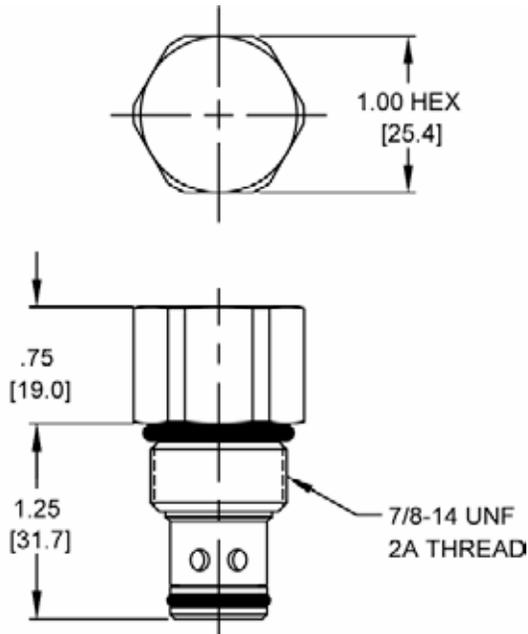


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



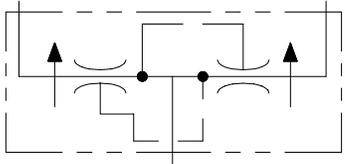
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION

DE-CVF		-	-	-	-
OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N Without Body
					S 3/8" BSP Ports
					#8 SAE Ports
					FLOW SETTING
			01.0		1 GPM (3,8 LPM)
			02.0		2 GPM (7,6 LPM)
			03.0		3 GPM (11,3 LPM)
			04.0		4 GPM (15,1 LPM)
			05.0		5 GPM (18,9 LPM)
			06.0		6 GPM (22,7 LPM)
			07.0		7 GPM (26,5 LPM)
			08.0		8 GPM (30,2 LPM)
			09.0		9 GPM (34 LPM)
			10.0		10 GPM (38 LPM)
					± 10%

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.

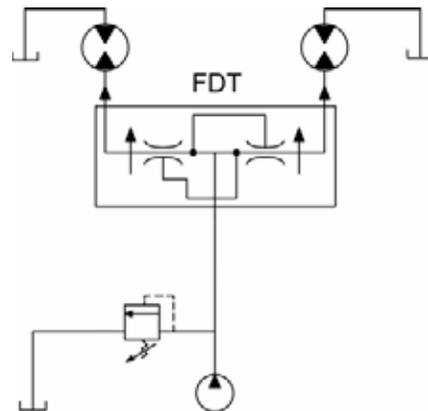
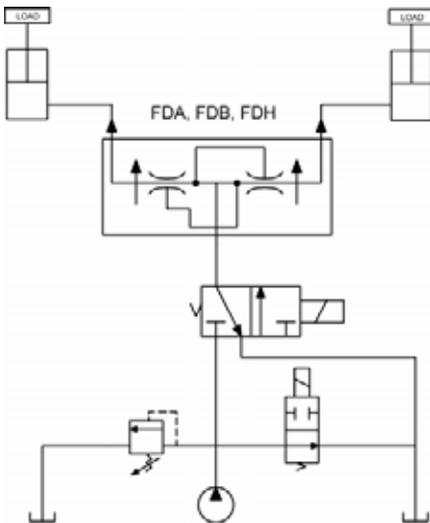
Flow Divider / Combiner Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	12	3500	45	245	DG-FDA	268
	30	3500	114	245	SN-FDA	270
	12	3500	45	245	DG-FDB	272
	12	3500	45	245	DG-FDH	274
	12	3500	45	245	DG-FDT	276

Typical Schematic

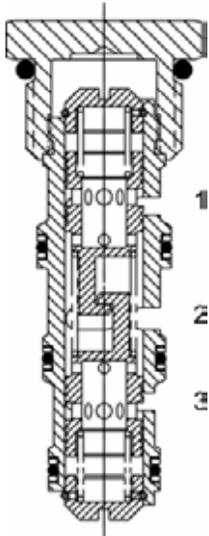
Typical application for the FDA, FDB, and FDH is to synchronize two independent cylinders or hydraulic motors in both directions.

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



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.

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.

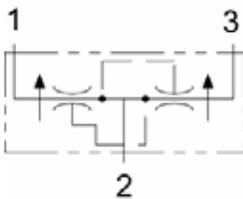
FEATURES

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



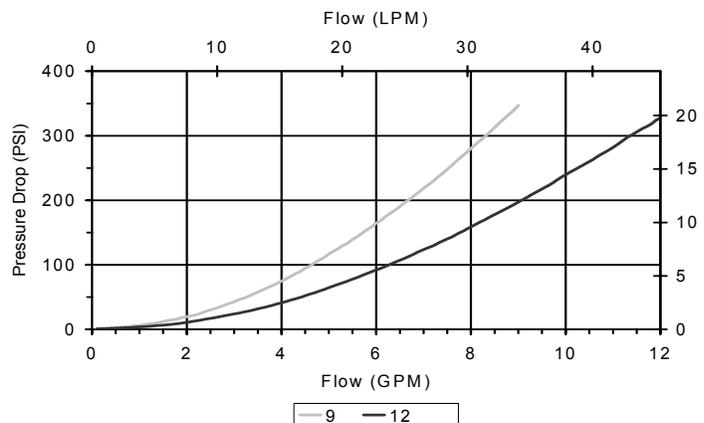
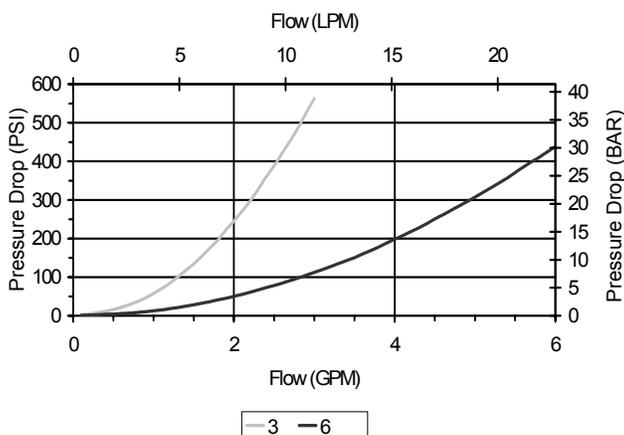
Do not exceed maximum flow per mode.
For higher accuracy flow ratio, use DG-FDH.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

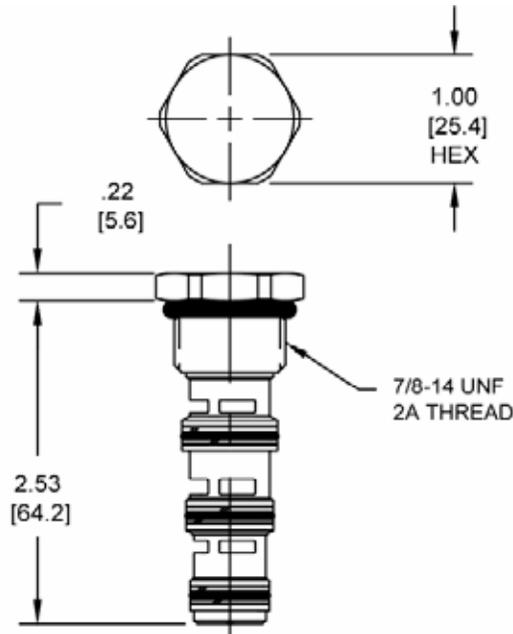


VALVE SPECIFICATIONS

Maximum Flow	12 GPM (45 LPM)
Accuracy on Flow Splits	+/- 10% of Max. Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

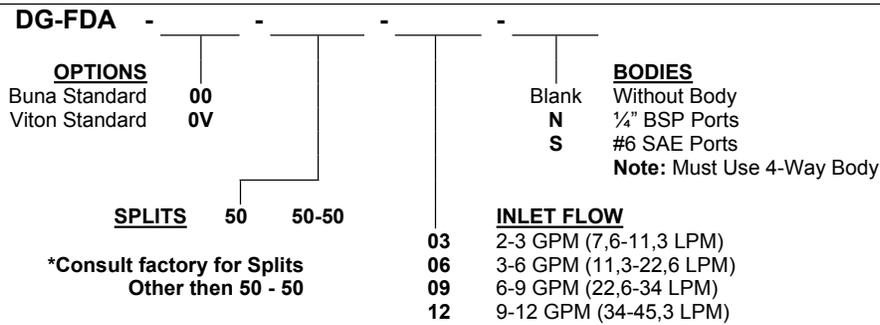
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

DIMENSIONS



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

ORDERING INFORMATION



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.

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

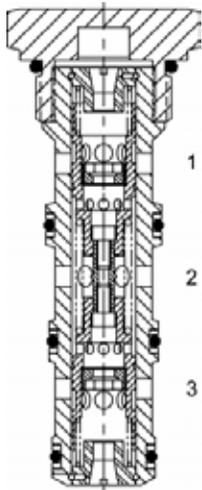
In the dividing mode, the SN-FDA will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure.

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.

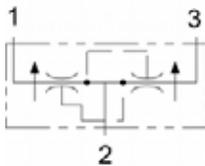
FEATURES

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



Do not exceed maximum flow per model.

HYDRAULIC SYMBOL

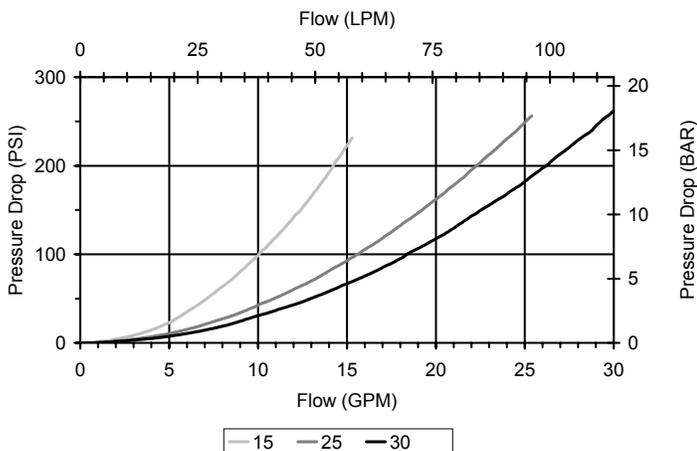


VALVE SPECIFICATIONS

Nominal Flow	30 GPM (114 LPM)
Accuracy on Flow Splits	+/- 10% of Max. Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500019

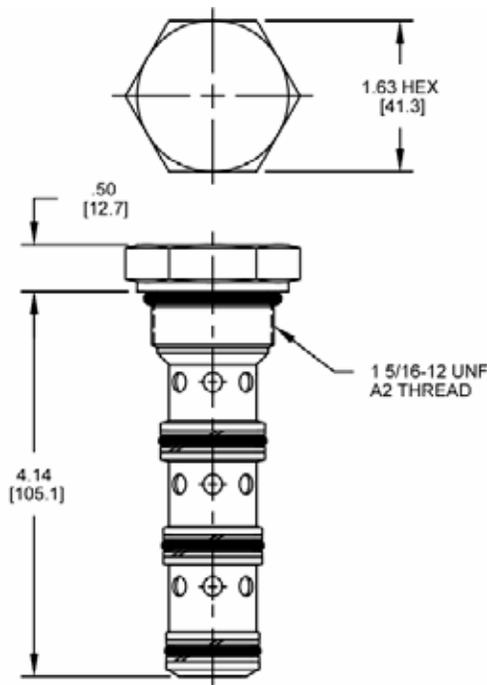
PERFORMANCE

Actual Test Data (Cartridge Only)



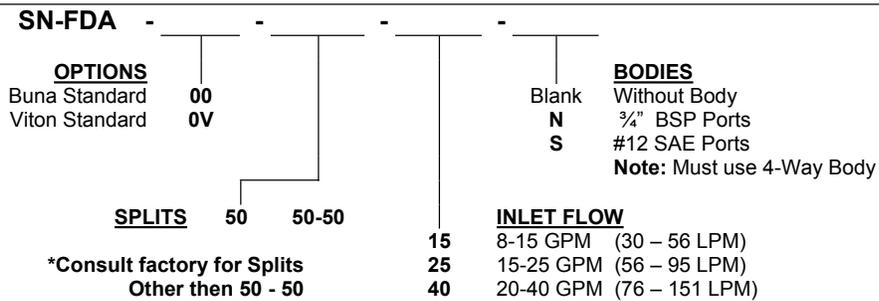
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

DIMENSIONS



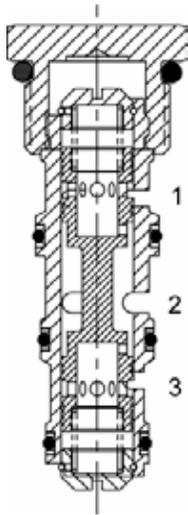
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION



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.

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.

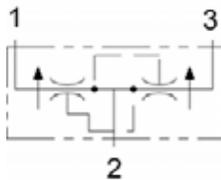
FEATURES

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



Do not exceed maximum flow per model.

HYDRAULIC SYMBOL

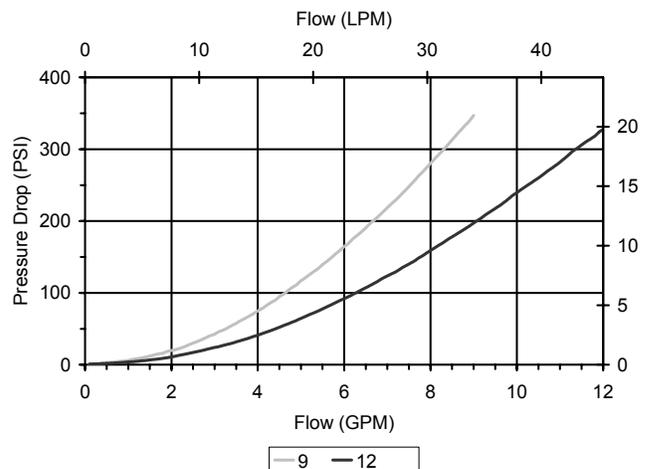
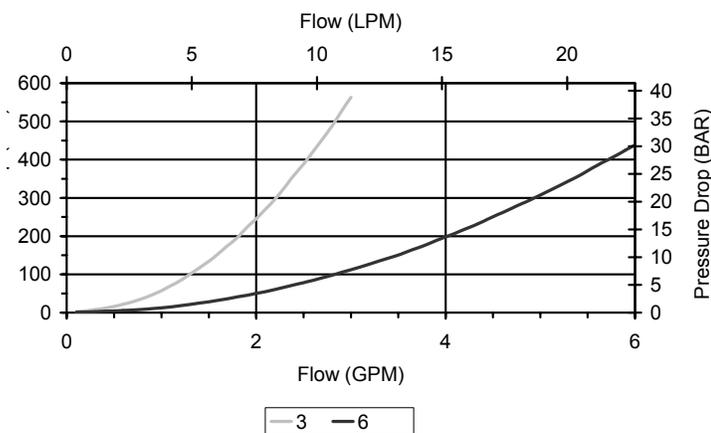


VALVE SPECIFICATIONS

Maximum Flow	12 GPM (45 LPM)
Accuracy on Flow Splits	+/- 10% of Max. Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

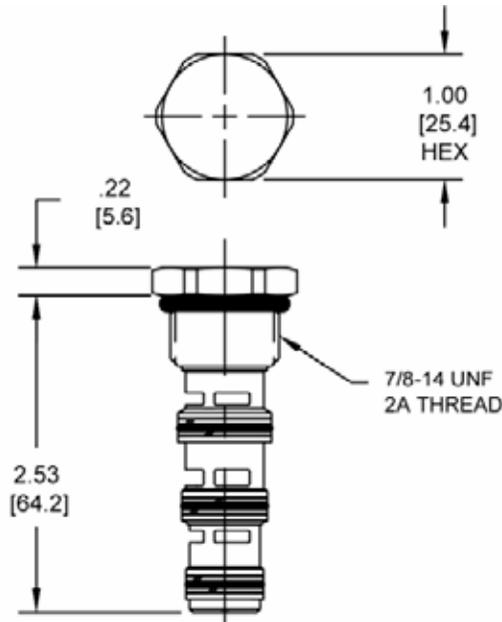
PERFORMANCE

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.

DIMENSIONS



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

ORDERING INFORMATION

DG-FDB - - - - -			
OPTIONS			BODIES
Buna Standard	00		Without Body
Viton Standard	0V		3/8" BSP Ports
			#6 SAE Ports
			Note: Must Use 4-Way Body
SPLITS	50	50-50	INLET FLOW
			03 2-3 GPM (7,6-11,3 LPM)
			06 3-6 GPM (11,3-22,6 LPM)
			09 6-9 GPM (22,6-34 LPM)
			12 9-12 GPM (34-45,3 LPM)

*Consult factory for Splits
Other than 50 - 50

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.

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

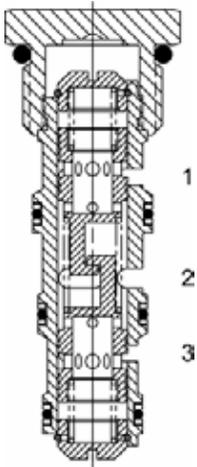
In the dividing mode, the DG-FDH will divert input flow from port (2) to ports (3) and (1), based on the ratio specified with a high degree of accuracy, regardless of operating pressure.

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.

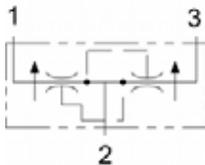
FEATURES

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



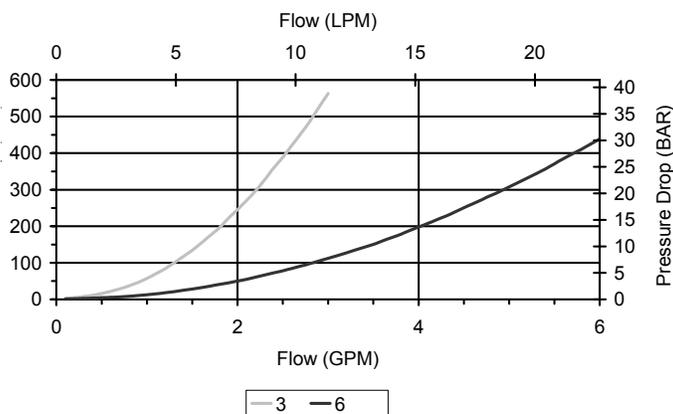
Do not exceed maximum flow per model. The DG-FDH should be considered when the DG-FDA does not provide the required accuracy.

HYDRAULIC SYMBOL



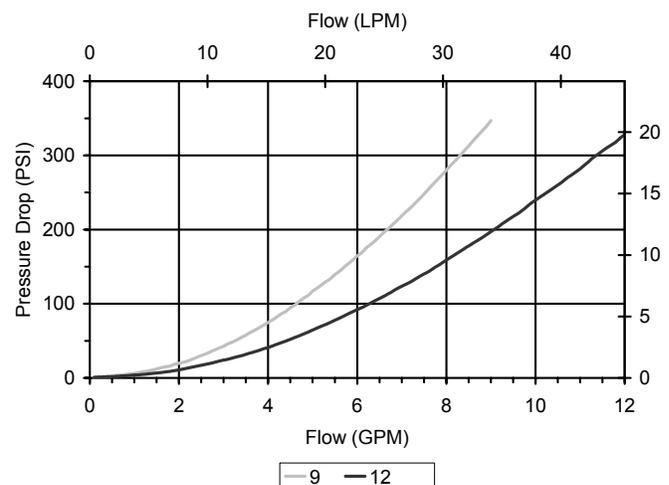
PERFORMANCE

Actual Test Data (Cartridge Only)



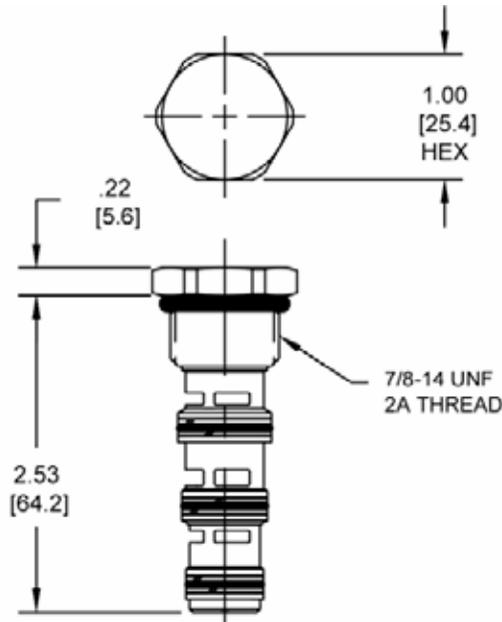
VALVE SPECIFICATIONS

Maximum Flow	12 GPM (45 LPM)
Accuracy on Flow Splits	+/- 4% of Max. Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	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.

DIMENSIONS



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

ORDERING INFORMATION

DG-FDH - - - - -			
OPTIONS			BODIES
Buna Standard	00		Blank
Viton Standard	0V		N 1/4" BSP Ports
			S #6 SAE Ports
			Note: Must Use 4-Way Body
	SPLITS	50	INLET FLOW
		50-50	03 2-3 GPM (7,6-11,3 LPM)
			06 3-6 GPM (11,3-22,6 LPM)
			09 6-9 GPM (22,6-34 LPM)
			12 9-12 GPM (34-45,3 LPM)

*Consult factory for Splits
Other than 50 - 50

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.

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

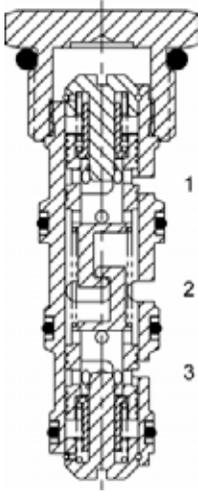
In the dividing mode, the DG-FDT will divert input flow from port (2) to ports (3) and (1), based on the ratio specified, regardless of operating pressure.

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

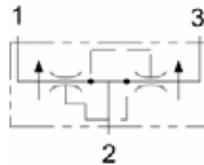
- Hardened parts for long life.
- Industry common cavity.



Do not exceed maximum flow per model.

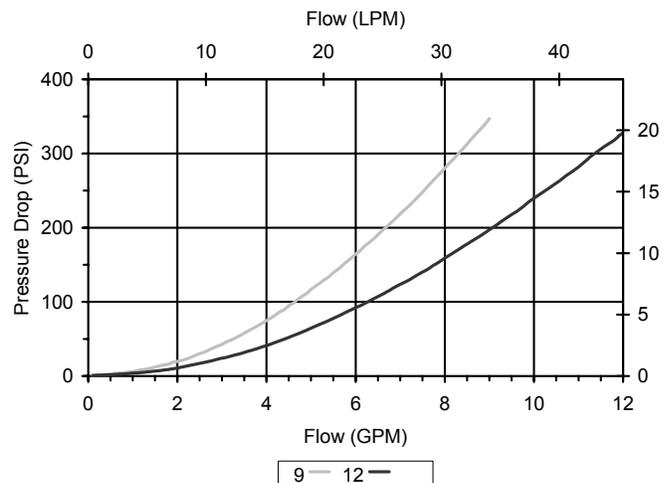
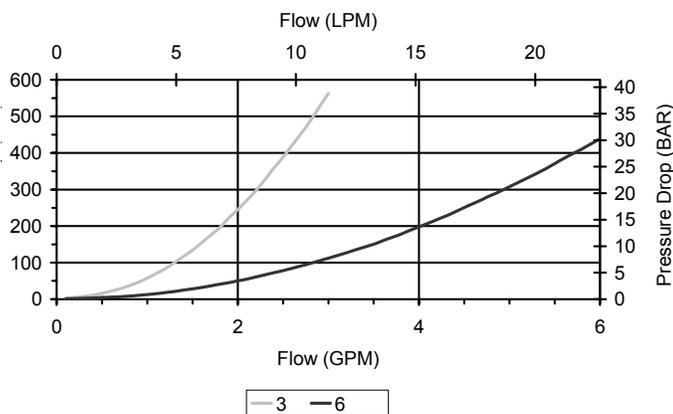
Use where wheel slip (or "drag") needs to be accomplished.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

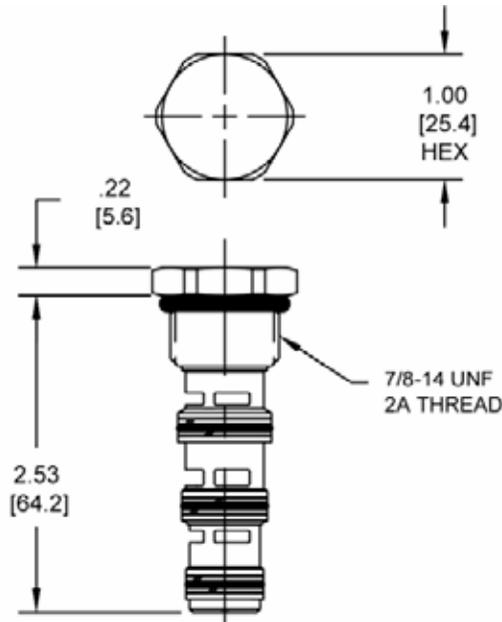


VALVE SPECIFICATIONS

Maximum Flow	12 GPM (45 LPM)
Accuracy on Flow Splits	+/- 10% of Max. Rated Inlet Flow
Maximum Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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 Tools Kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

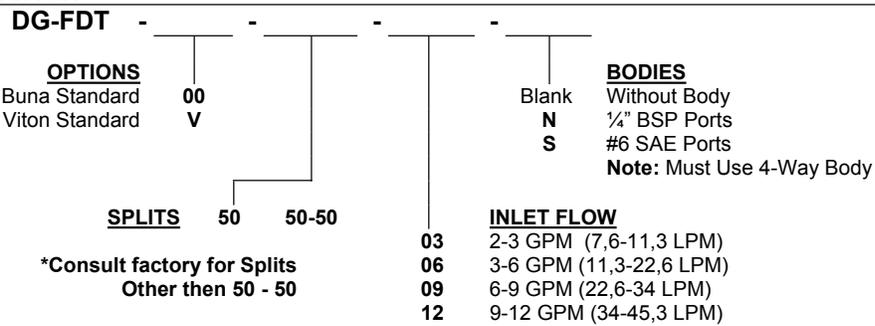
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

DIMENSIONS



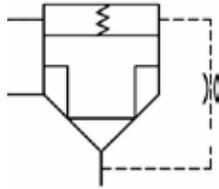
(for bodies style and sizes see section "Accessories")

ORDERING INFORMATION



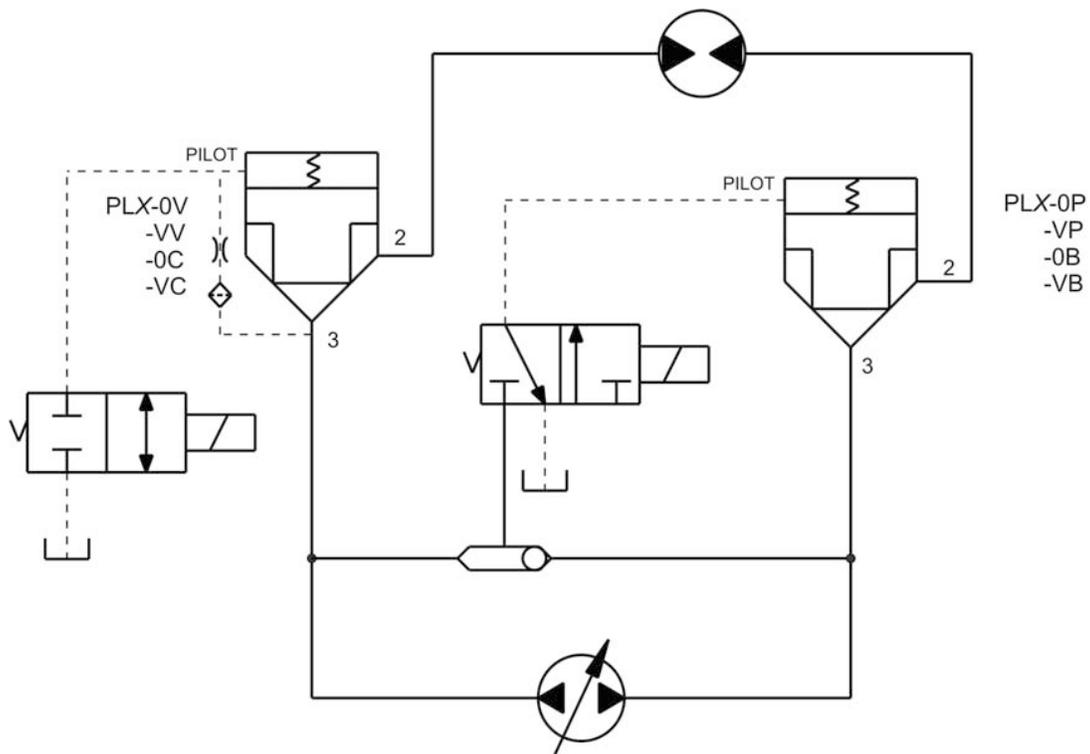
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Logic Elements

	GPM	PSI	LPM	BAR	MODEL	PAGE
	40	3500	151	245	SL-PLA	280
	40	3500	151	245	SL-PLB	282
	40	3500	151	245	SL-PLC	284

Typical Schematic

Typical application for the PLA, PLB, and PLC is on a circuit as bi-directional pilot operated 2 way valve with either vent to open or pilot to close from an external source.



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.

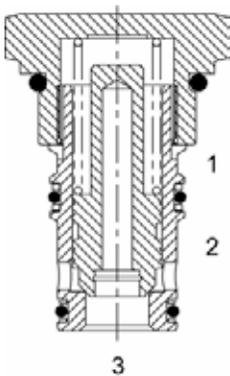
SL-PLA Super Series, Logic Valve

DESCRIPTION

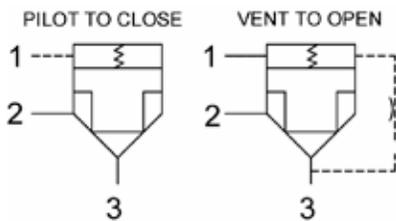
16 size, 1 5/16-12 thread, "Super" series, logic valve.

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.



HYDRAULIC SYMBOL



FEATURES

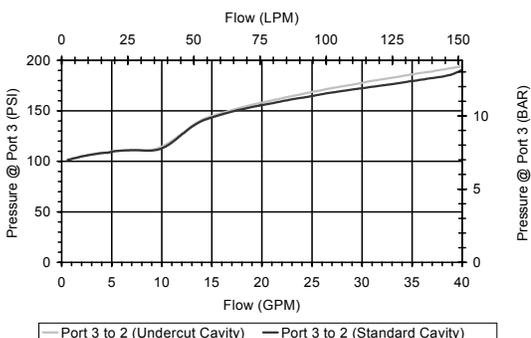
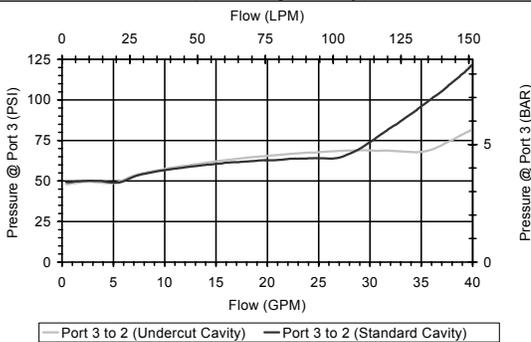
- Hardened parts for long life.
- Industry common cavity.



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

PERFORMANCE

Actual Test Data (Cartridge Only)

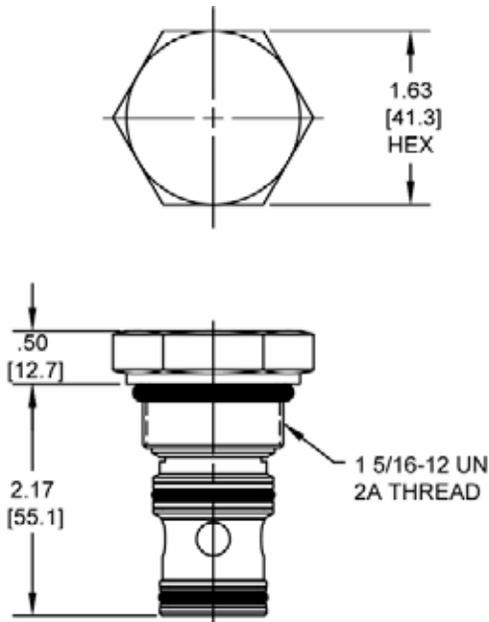


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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.

DIMENSIONS



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

ORDERING INFORMATION

SL-PLA		-	-	-	-
OPTIONS					BODIES
Buna Pilot to Close	0P				Blank
Buna Vent to Open	0V				S
Viton Pilot to Close	VP				Without Body
Viton Vent to Open	VV				#12 SAE Ports
Buna Pilot to Close w/seals	0B				
Buna Vent to Open w/seals	0C	0020			PRESSURE SETTING
Viton Pilot to Close w/seals	VB	0050			20 PSI (1,4 bar)
Viton Vent to Open w/seals	VC	0100			50 PSI (3,5 bar)
		0150			100 PSI (7 bar)
					150 PSI (10,5 bar)

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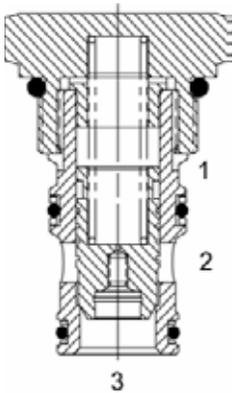
SL-PLB Super Series, Logic Valve

DESCRIPTION

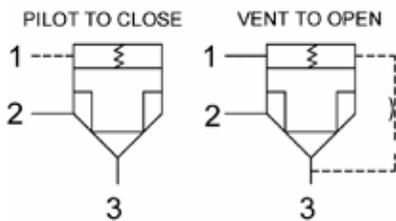
16 size, 1 5/16-12 thread, "Super" series, logic valve.

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.



HYDRAULIC SYMBOL



FEATURES

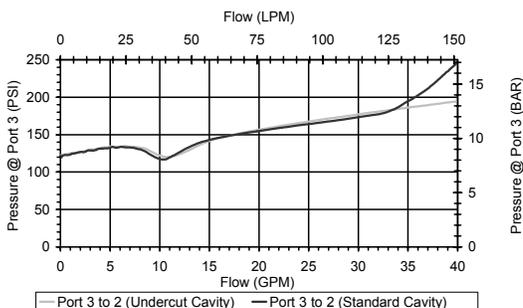
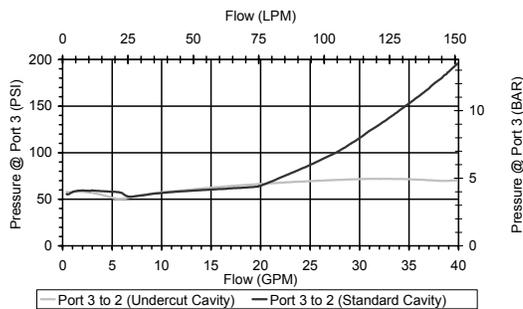
- Hardened parts for long life.
- Industry common cavity.



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

PERFORMANCE

Actual Test Data (Cartridge Only)

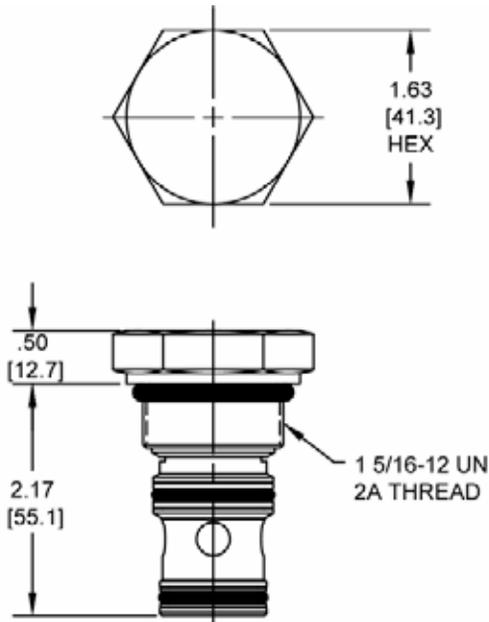


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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

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.

DIMENSIONS



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

ORDERING INFORMATION

SL-PLB		-	-	-	-
OPTIONS					BODIES
Buna Pilot to Close	0P			Blank	Without Body
Buna Vent to Open	0V			N	3/4" BSP Ports
Viton Pilot to Close	VP				
Viton Vent to Open	VV				
Buna Pilot to Close w/seals	0B				
Buna Vent to Open w/seals	0C	0020			PRESSURE SETTING
Viton Pilot to Close w/seals	VB	0050			20 PSI (1,4 bar)
Viton Vent to Open w/seals	VC	0100			50 PSI (3,5 bar)
		0150			100 PSI (7 bar)
					150 PSI (10,5 bar)

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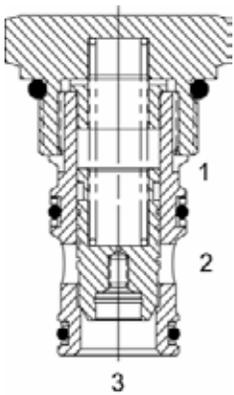
SL-PLC Super Series, Logic Valve

DESCRIPTION

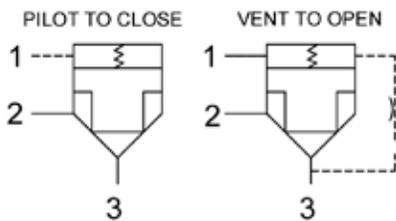
16 size, 1 5/16-12 thread, "Super" series, logic valve.

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.



HYDRAULIC SYMBOL



FEATURES

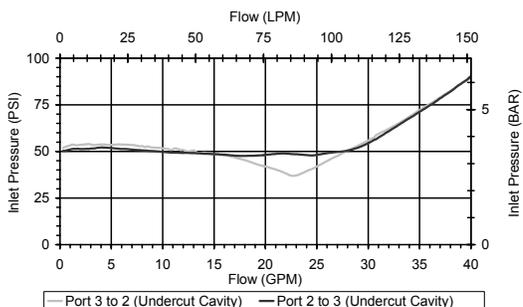
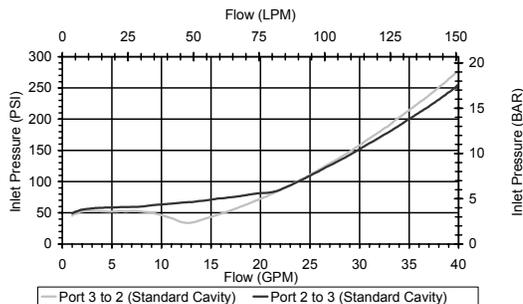
- Hardened parts for long life.
- Industry common cavity.



For metering see SL-PCA or SL-PCB.

PERFORMANCE

Actual Test Data (Cartridge Only)

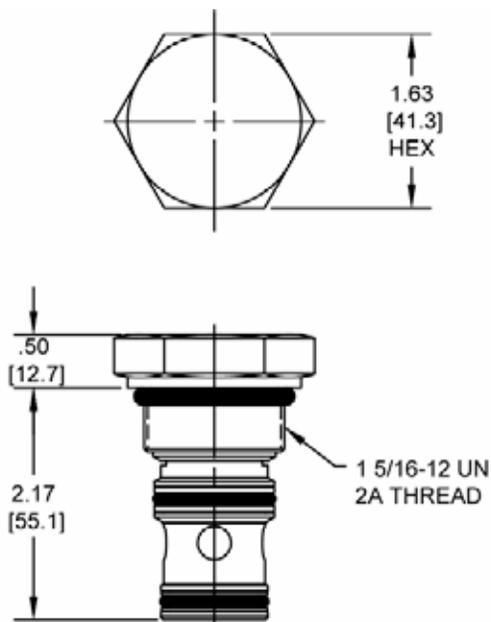


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3500 PSI (245 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature 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

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.

DIMENSIONS



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

ORDERING INFORMATION

SL-PLC		-	-	-	-
OPTIONS					BODIES
Buna Pilot to Close	0P			Blank	Without Body
Buna Vent to Open	0V			N	3/4" BSP Ports
Viton Pilot to Close	VP				
Viton Vent to Open	VV				
Buna Pilot to Close w/seals	0B				
Buna Vent to Open w/seals	0C		0020		PRESSURE SETTING
Viton Pilot to Close w/seals	VB		0050		20 PSI (1,4 bar)
Viton Vent to Open w/seals	VC		0100		50 PSI (3,5 bar)
			0150		100 PSI (7 bar)
					150 PSI (10,5 bar)

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.



SECTION/Description Pages

Valve Bodies	288
Cavity Plugs	290
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WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Valve Bodies

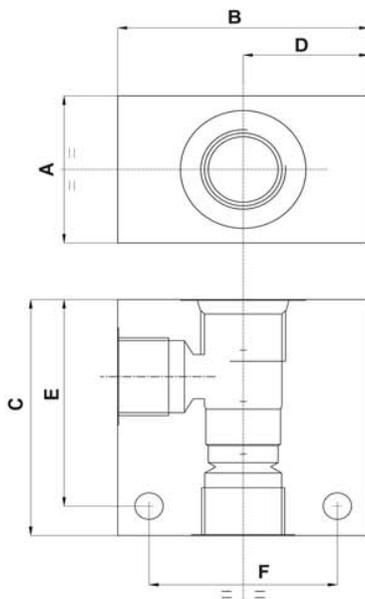
Standard Bodies

Port Size	P/N	Style / Size	Dimensions					
			A	B	C	D	E	F
1/4 BSP	13.1011.001	2W-5/8	30	50	50	25	42	34
#6 SAE	13.1011.141	2W-5/8	30	50	50	25	42	34
1/4 BSP	13.1011.002	3W-5/8	30	50	60	25	52	34
#6SAE	13.1011.142	3W-5/8	30	50	60	25	52	34
1/4 BSP	13.1011.003	4W-5/8	30	60	70	30	62	44
#6 SAE	13.1011.143	4W-5/8	30	60	70	30	62	44
1/4 BSP	13.1011.124	2W-3/4	30	50	50	23	42	34
3/8 BSP	13.1011.125	2W-3/4	30	50	50	23	42	34
#6 SAE	13.1011.144	2W-3/4	30	50	50	23	42	34
1/4 BSP	13.1011.126	3W-3/4	30	60	70	30	52	44
3/8 BSP	13.1011.127	3W-3/4	30	60	70	30	52	44
#6 SAE	13.1011.145	3W-3/4	30	60	70	30	52	44
1/4 BSP	13.1011.128	4W-3/4	30	60	80	30	72	44
3/8 BSP	13.1011.129	4W-3/4	30	60	80	30	72	44
#6 SAE	13.1011.146	4W-3/4	30	60	80	30	72	44
3/8 BSP	13.1011.116	2W-7/8	30	60	60	25	52	44
1/2 BSP	13.1011.115	2W-7/8	30	60	60	25	52	44
#8 SAE	13.1011.147	2W-7/8	30	60	60	25	52	44
3/8 BSP	13.1011.118	3W-7/8	30	60	70	30	62	44
#6 SAE	13.1011.148	3W-7/8	30	60	70	30	62	44
3/8 BSP	13.1011.121	4W-7/8	30	60	85	30	77	44
#6 SAE	13.1011.149	4W-7/8	30	60	85	30	77	44
3/4 BSP	13.1011.130	2W-1 1/16	50	80	80	40	70	60
#12 SAE	13.1011.138	2W-1 1/16	50	80	80	40	70	60
3/4 BSP	13.1011.131	3W-1 1/16	50	80	100	40	80	60
3/4 BSP	13.1011.151	3W-1 1/16 SHORT	50	80	85	40	75	60
#12 SAE	13.1011.139	3W-1 1/16	50	80	100	40	80	60
1/2 BSP	13.1011.132	4W-1 1/16	50	80	125	40	100	50
#10 SAE	13.1011.140	4W-1 1/16	50	80	125	40	100	50
1/2 BSP	13.1011.152	5W-1 1/16 SHORT	50	80	135	40	115	60
3/4 BSP	13.1011.008	2W-1 5/16	50	80	80	34	60	60
#12 SAE	13.1011.137	2W-1 5/16	50	80	80	34	60	60
3/4 BSP	13.1011.153	3W-1 5/16	50	80	100	40	80	60
3/4 BSP	13.1011.155	3W-1 5/16 SHORT	50	90	85	45	65	70
#12 SAE	13.1011.154	3W-1 5/16	50	80	100	40	80	60
3/4 BSP	13.1011.157	4W-1 5/16	50	80	130	40	110	60
#12 SAE	13.1011.158	4W-1 5/16	50	80	130	40	110	60
3/4 BSP	13.1011.159	5W-1 5/16	50	80	160	40	140	60
3/4 BSP	13.1011.160	5W-1 5/16 SHORT	50	90	145	45	125	70
#12 SAE	13.1011.161	5W-1 5/16	50	80	160	40	140	60

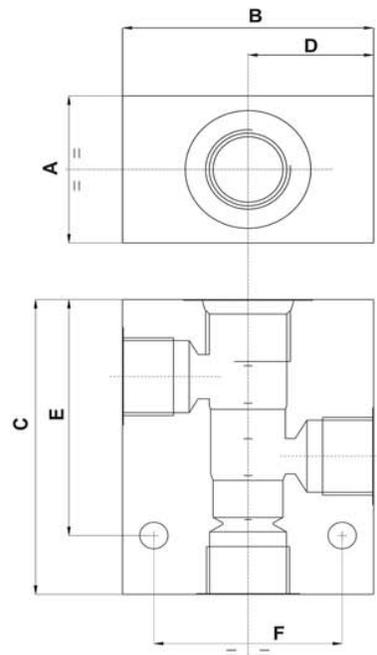
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Valve Bodies

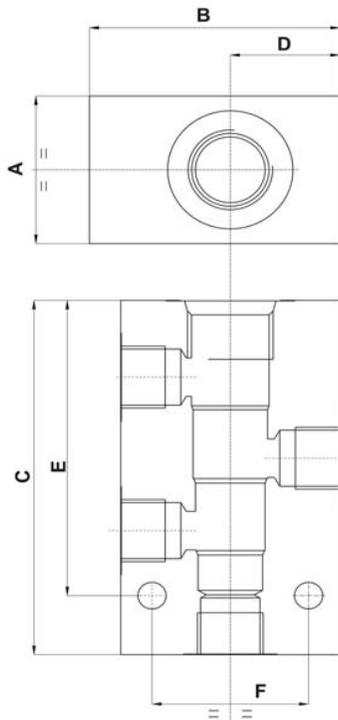
2 ways



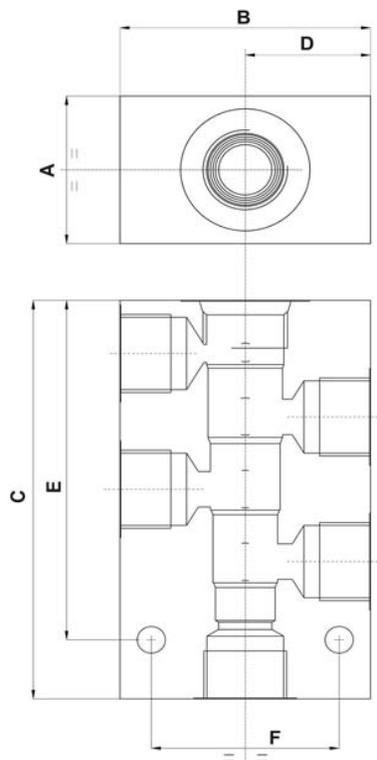
3 ways



4 ways



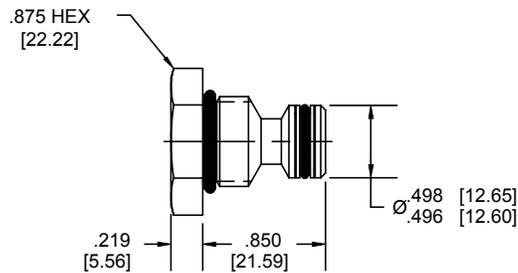
5 ways



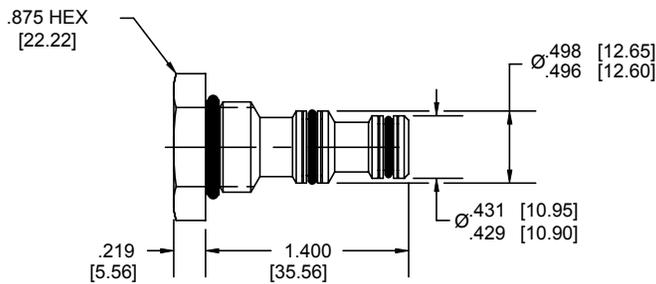
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Mini Series Cavity Plugs

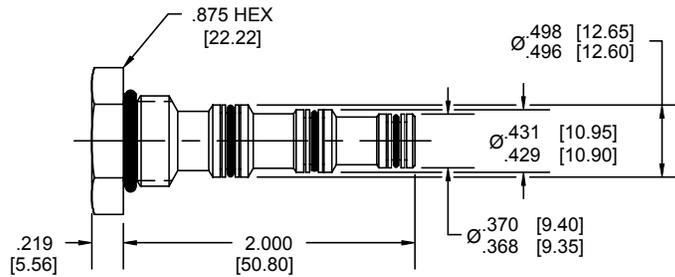
NOTE: DIMENSIONS IN BRACKETS ARE MILLIMETERS



2W 2P CAVITY PLUG
MA SERIES



3W 2P CAVITY PLUG
MC SERIES



4W 2P CAVITY PLUG
MD SERIES

ORDERING INFORMATION

Standard Model Number

2 Way
3 Way
4 Way

MA
MC
MD

00
V0

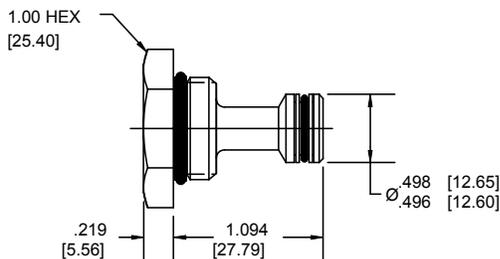
Options

Standard Buna
Standard Viton

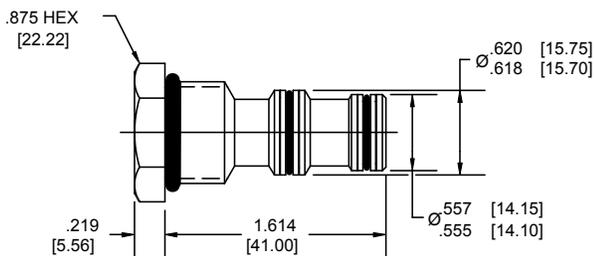
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Power Series Cavity Plugs

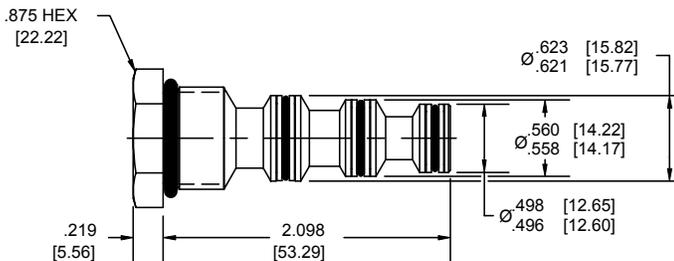
NOTE: DIMENSIONS IN BRACKETS ARE MILLIMETERS



2W 2P CAVITY PLUG
PB SERIES



3W 2P CAVITY PLUG
PP SERIES



4W 2P CAVITY PLUG
PQ SERIES

ORDERING INFORMATION

Standard Model Number

2 Way
3 Way
4 Way

PB
PP
PQ

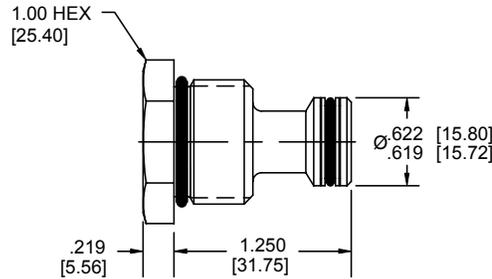
Options

00 Standard Buna
V0 Standard Viton

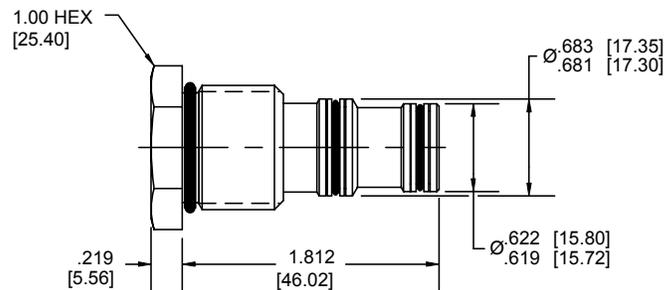
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Delta Series Cavity Plugs

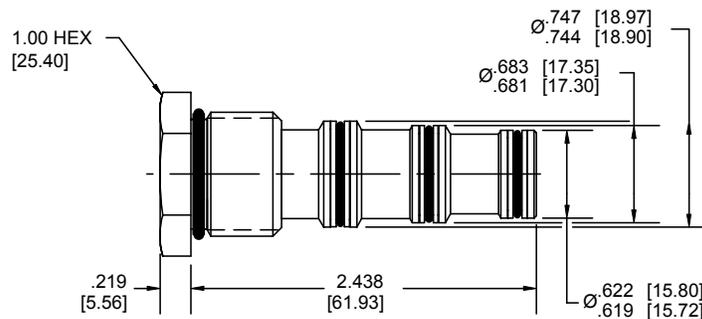
NOTE: DIMENSIONS IN BRACKETS ARE MILLIMETERS



2W 2P CAVITY PLUG
DE SERIES



3W 2P CAVITY PLUG
DF SERIES



4W 2P CAVITY PLUG
DG SERIES

ORDERING INFORMATION

Standard Model Number

2 Way
3 Way
4 Way

DE
DF
DG

00
V0

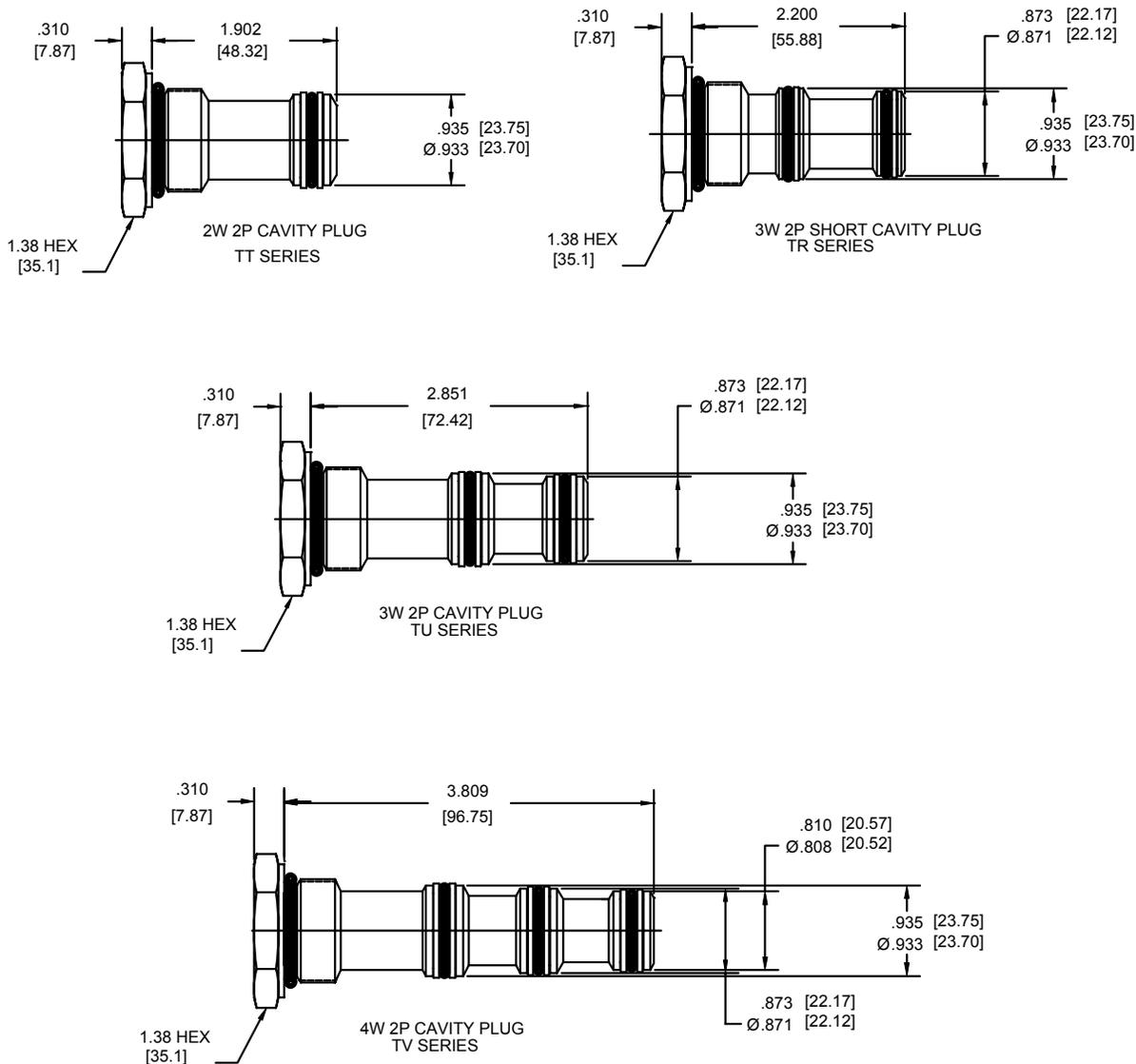
Options

Standard Buna
Standard Viton

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.

Tecnord Series Cavity Plugs

NOTE: DIMENSIONS IN BRACKETS ARE MILLIMETERS



ORDERING INFORMATION

Standard Model Number

2 Way TT
 3 Way TU
 3 Way Short TR
 4 Way TV

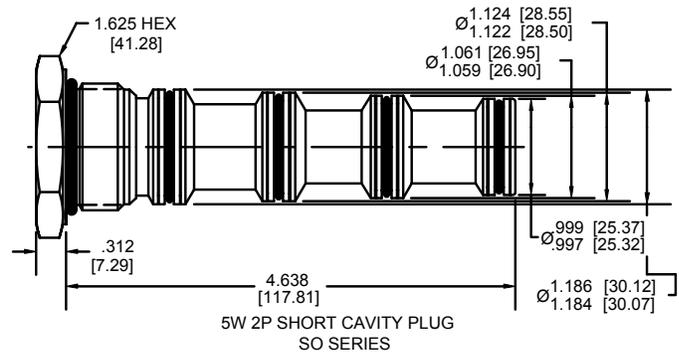
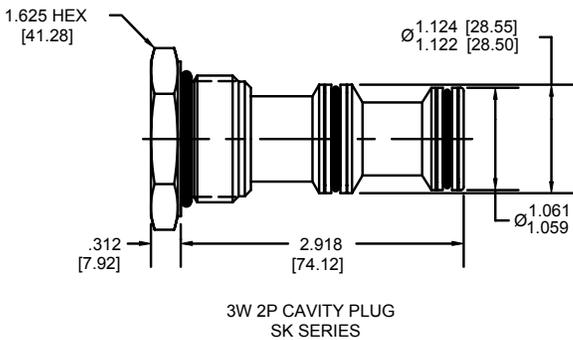
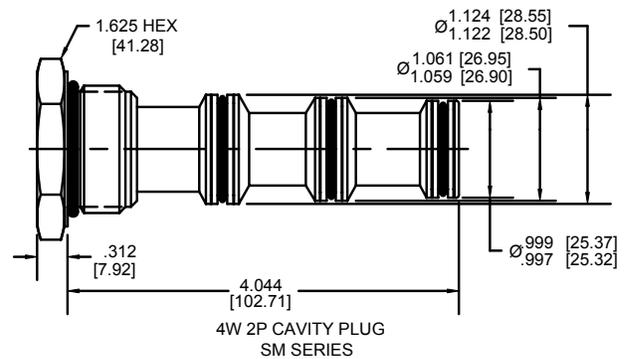
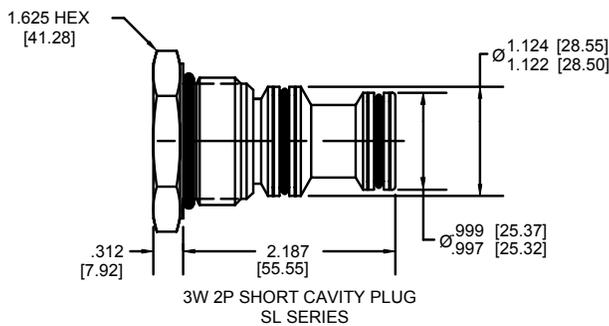
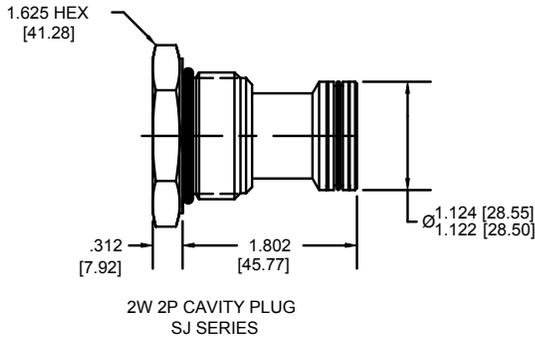
Options

00 Standard Buna
 V0 Standard Viton

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.

Super Series Cavity Plugs

NOTE: DIMENSIONS IN BRACKETS ARE MILLIMETERS



ORDERING INFORMATION

Standard Model Number

2 Way	SJ
3 Way Short	SL
3 Way	SK
4 Way	SM
5 Way Short	S0

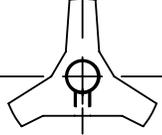
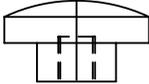
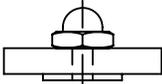
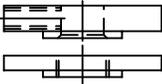
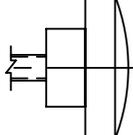
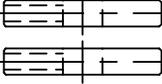
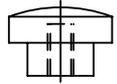
Options

00	Standard Buna
V0	Standard Viton

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Standard Knob Assemblies

See the price list to find the reference to the valve model.

	22020080 34502022 66700059	MINI SERIES
	34502000	DELTA SERIES
	22020005 34502006 36202008	DELTA SERIES
	22020004 34502004 34502003 66700027	DELTA SERIES
	34502003 66700027	DELTA SERIES
	34502008	DELTA SERIES
	22020049 34502017 34502017 66700059	DELTA SERIES SUPER SERIES
	34502024	POWER SERIES
	22020058 34502019 66700059	POWER SERIES

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.



SECTION/Description **Pages**

Cavity Data	298
General Cartridge Valve Installation Notes	317
Valve Mnemonic Code	318

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Cavity Data

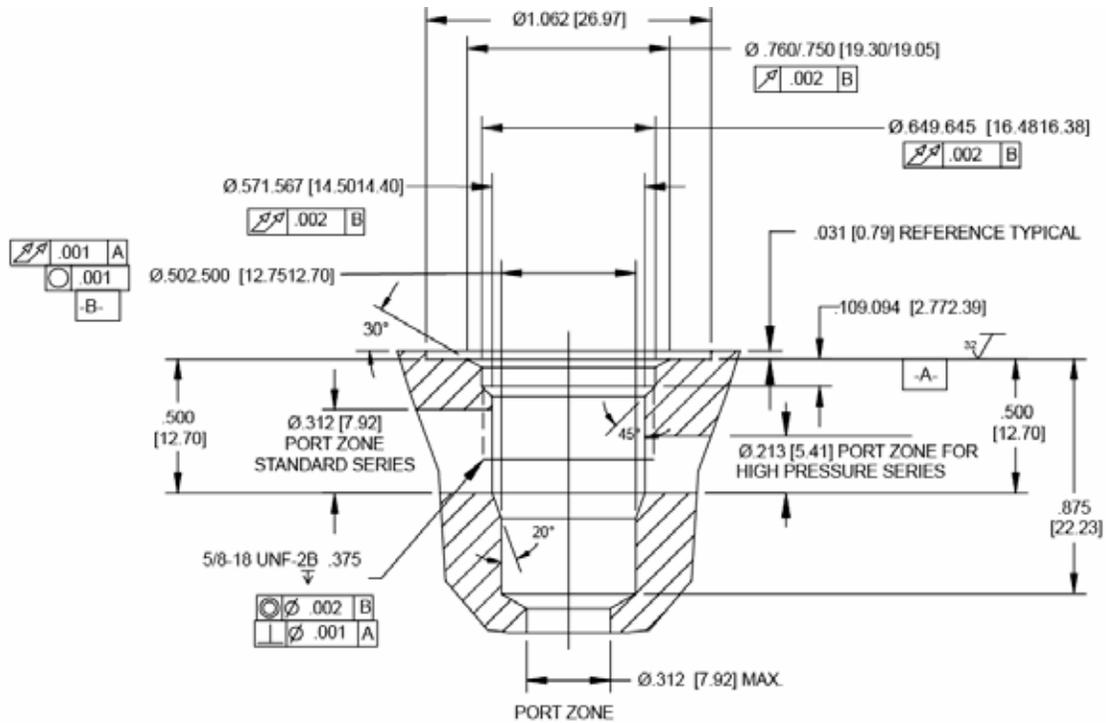
SERIES	SIZE	THREAD SIZE	TOOLS KIT	PAGE
MINI 2 WAY	7	5/8-18 UNF 2-B	40500003	299
MINI 3 WAY	7	5/8-18 UNF 2-B	40500004	300
MINI 4 WAY	7	5/8-18 UNF 2-B	40500006	301
POWER 2 WAY	8	3/4-16 UNF 2-B	40500005	302
POWER 3 WAY	8	3/4-16 UNF 2-B	40500024	303
POWER 4 WAY	8	3/4-16 UNF 2-B	40500029	304
DELTA 2 WAY	10	7/8-14 UNF 2-B	40500000	305
DELTA 3 WAY	10	7/8-14 UNF 2-B	40500001	306
DELTA 4 WAY	10	7/8-14 UNF 2-B	40500002	307
TECNORD 2 WAY	12	1 1/16-12 UNF 2-B	40500032	308
TECNORD 3 WAY	12	1 1/16-12 UNF 2-B	40500034	309
TECNORD 3 WAY SHORT	12	1 1/16-12 UNF 2-B	40500033	310
TECNORD 4 WAY	12	1 1/16-12 UNF 2-B	40500035	311
SUPER 2 WAY	16	1 5/16-12 UNF 2-B	40500017	312
SUPER 3 WAY	16	1 5/16-12 UNF 2-B	40500018	313
SUPER 3 WAY SHORT	16	1 5/16-12 UNF 2-B	40500021	314
SUPER 4 WAY	16	1 5/16-12 UNF 2-B	40500019	315
SUPER 5 WAY	16	1 5/16-12 UNF 2-B	40500038	316

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Mini 2W

DESCRIPTION

7 Size, 5/8-18 thread "Mini" series



NOTES:

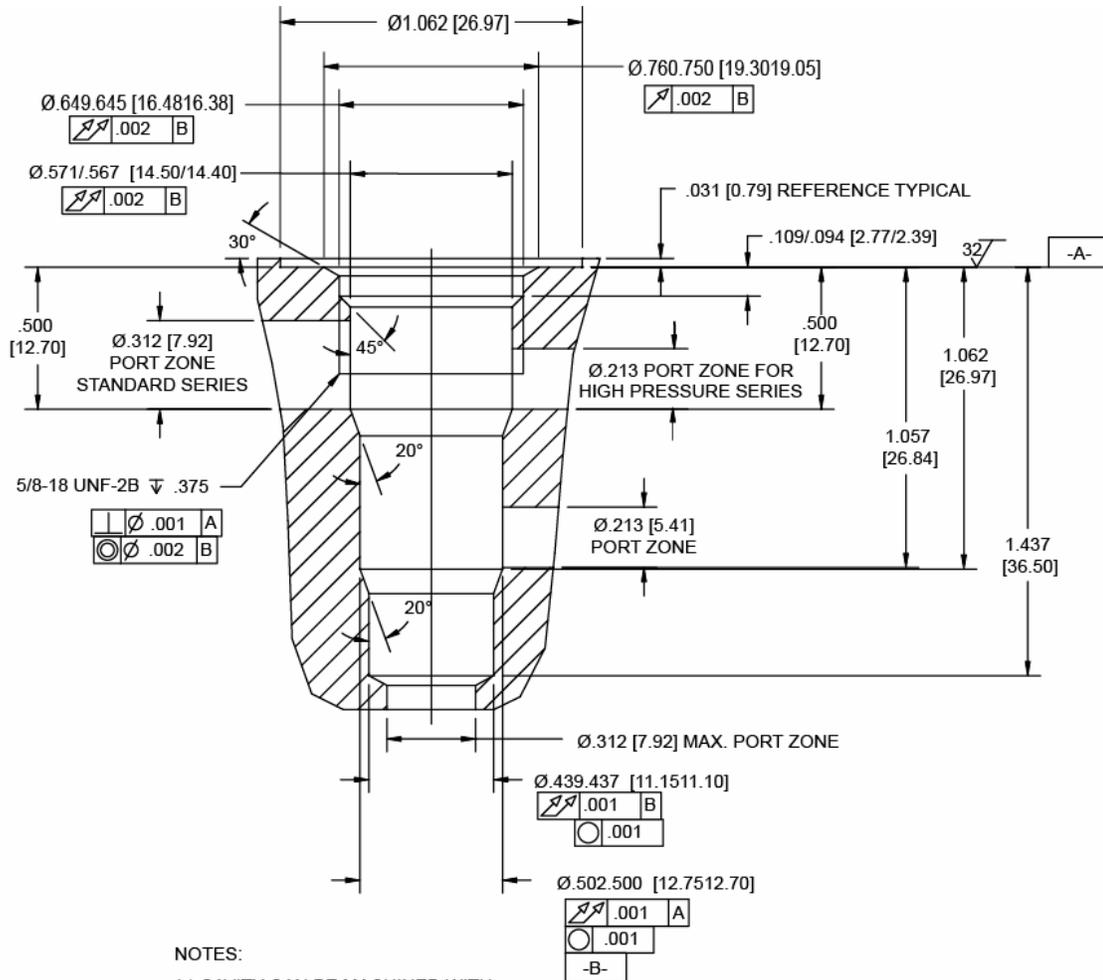
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500003.
- 2.) ALL MACHINED SURFACES TO BE $32 \sqrt{Ra}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.
- 4.) PORT ZONE IS $\varnothing .213$ MAXIMUM AT PORT #1 ONLY FOR HIGH PRESSURE SERIES MINI VALVES (HA-***-***).

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Mini 3W

DESCRIPTION

7 Size, 5/8-18 thread "Mini" series



NOTES:

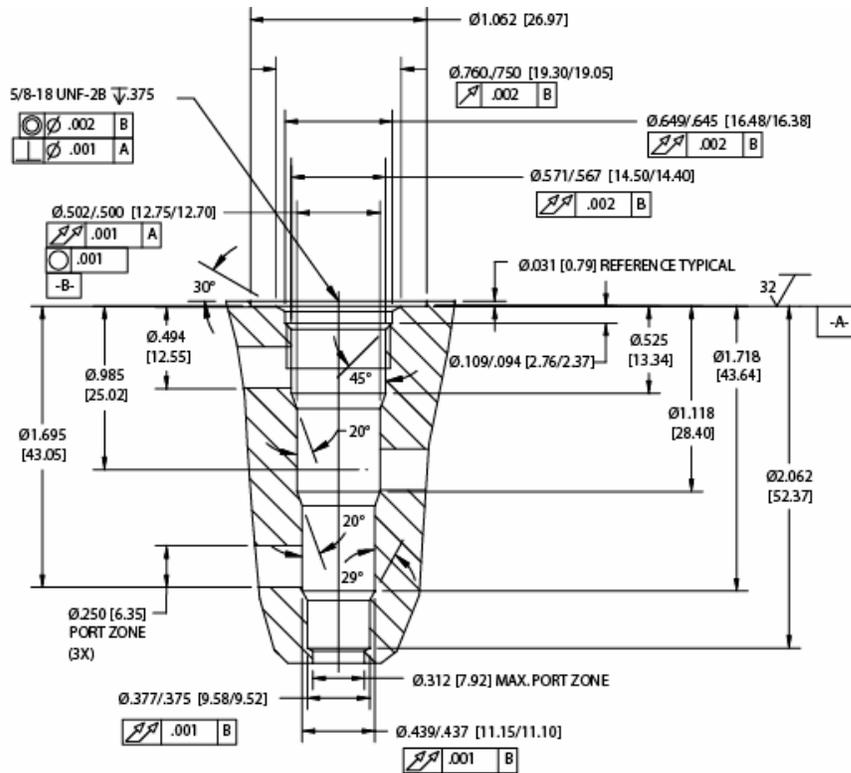
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500004.
- 2.) ALL MACHINED SURFACES TO BE $\sqrt{\text{Ra}} 32$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.
- 4.) PORT ZONE IS $\varnothing .213$ MAXIMUM AT PORT #1 ONLY FOR HIGH PRESSURE SERIES MINI VALVES (HA-***.**).

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Mini 4W

DESCRIPTION

7 Size, 5/8-18 thread "Mini" series



NOTES:

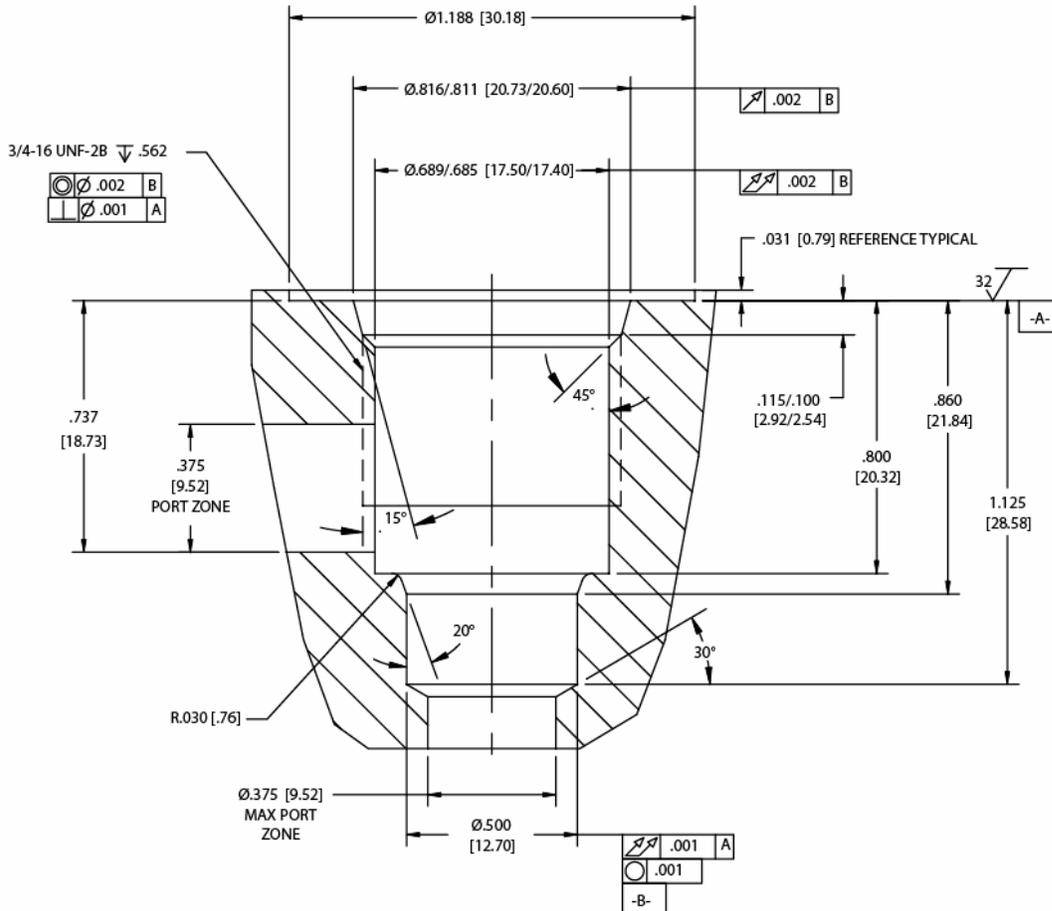
- 1) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500006.
- 2) ALL MACHINED SURFACES TO BE $\sqrt{32}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Power 2W

DESCRIPTION

8 Size, 3/4-16 thread "Power" series



NOTES:

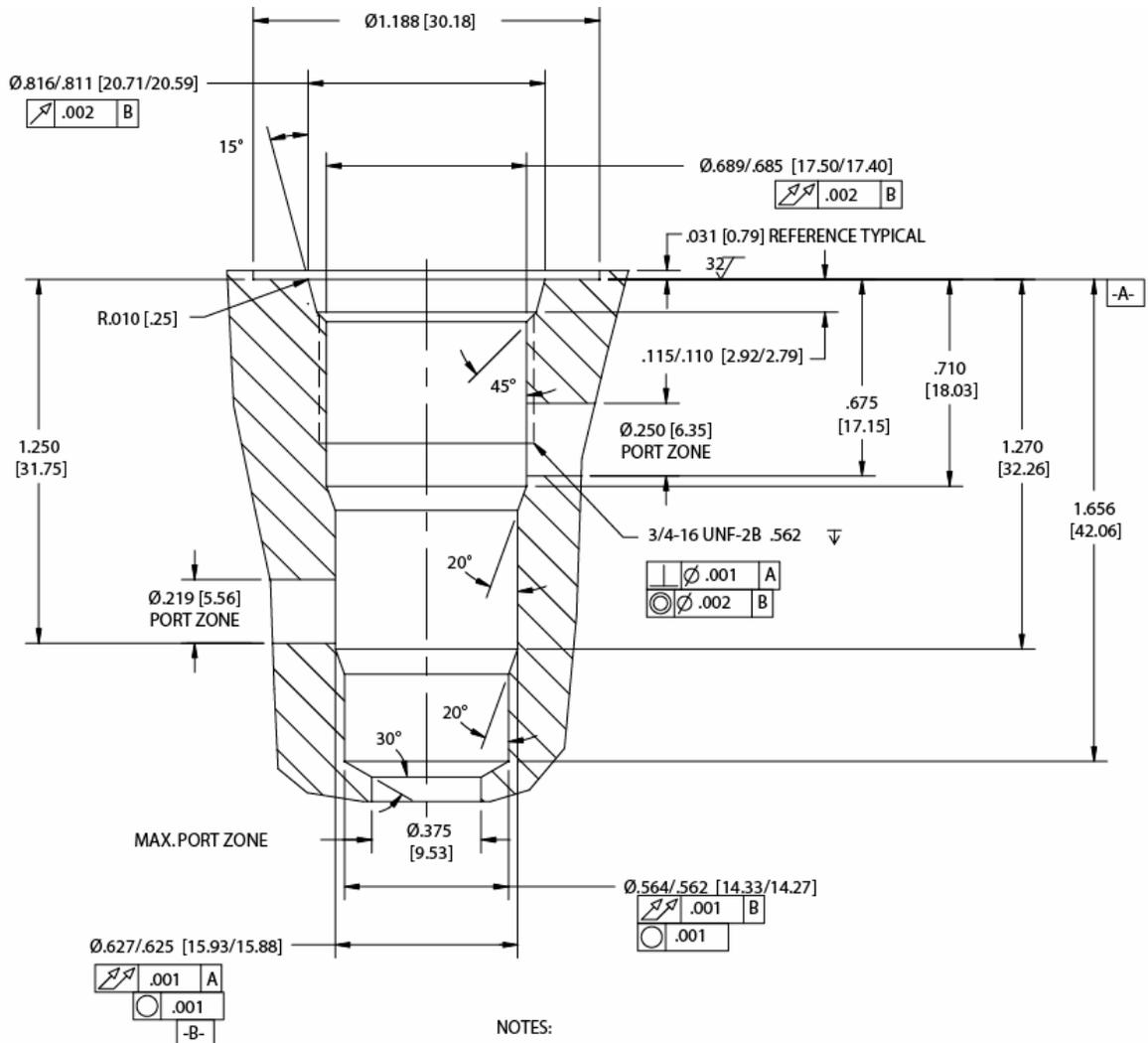
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500005.
- 2.) ALL MACHINED SURFACES TO BE $\sqrt{\text{A}}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Power 3W

DESCRIPTION

8 Size, 3/4-16 thread "Power" series



NOTES:

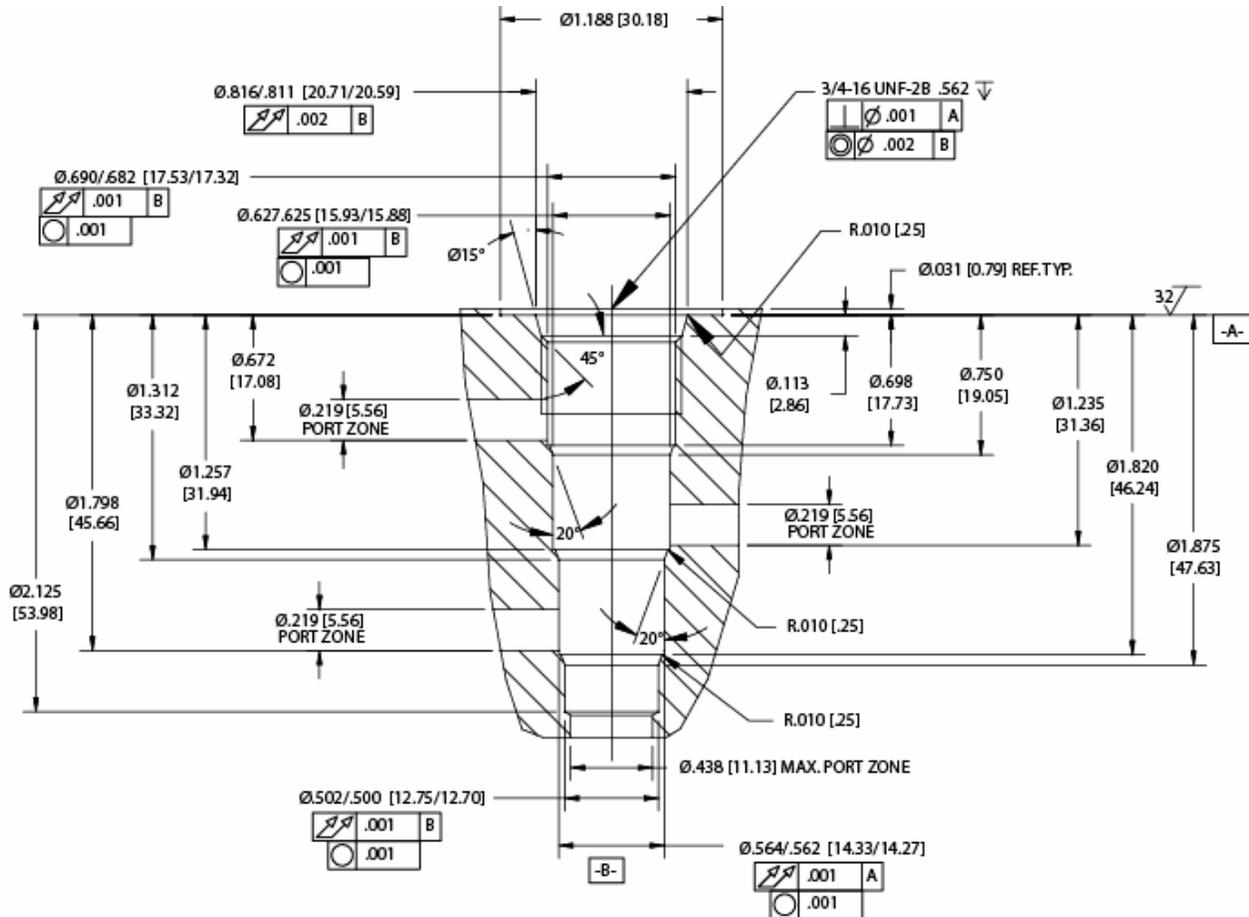
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500024.
- 2.) ALL MACHINED SURFACES TO BE $32^{\sqrt{V}}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Power 4W

DESCRIPTION

8 Size, 3/4-16 thread "Power" series



NOTES:

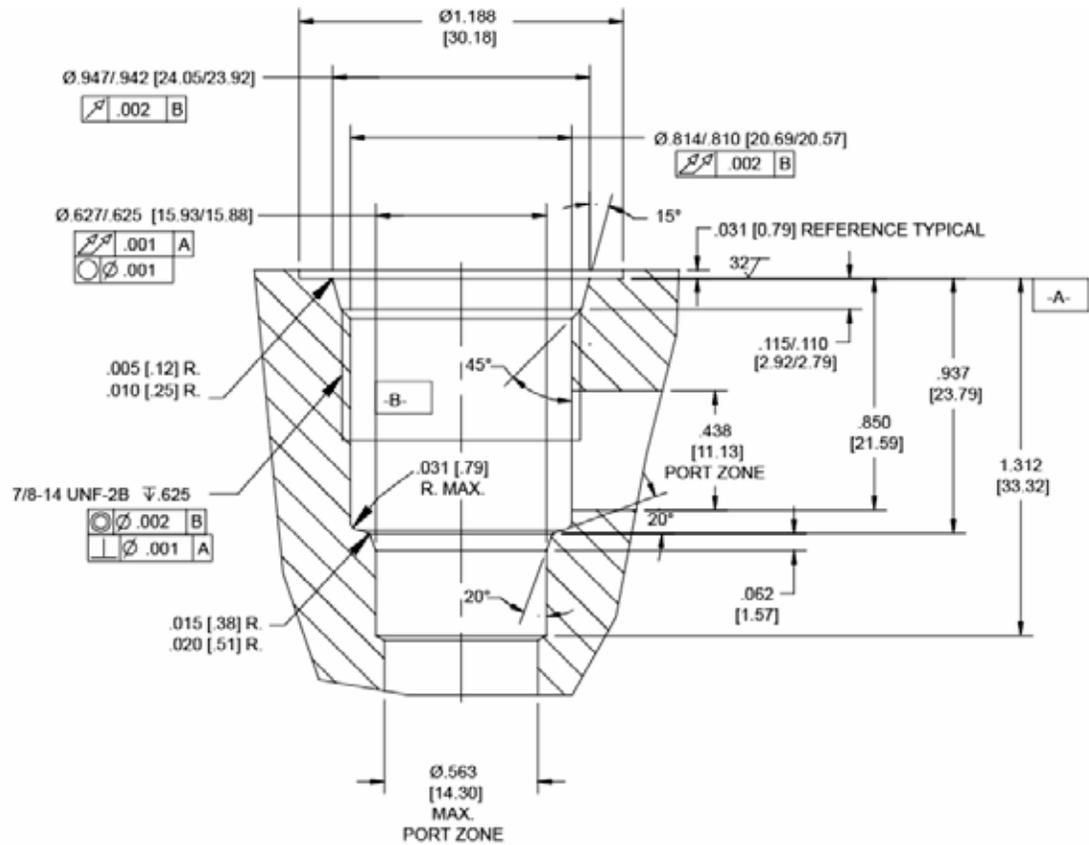
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #405 00029.
- 2.) ALL MACHINED SURFACES TO BE 32 FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Delta 2W

DESCRIPTION

10 Size, 7/8-14 thread "Delta" series



NOTES:

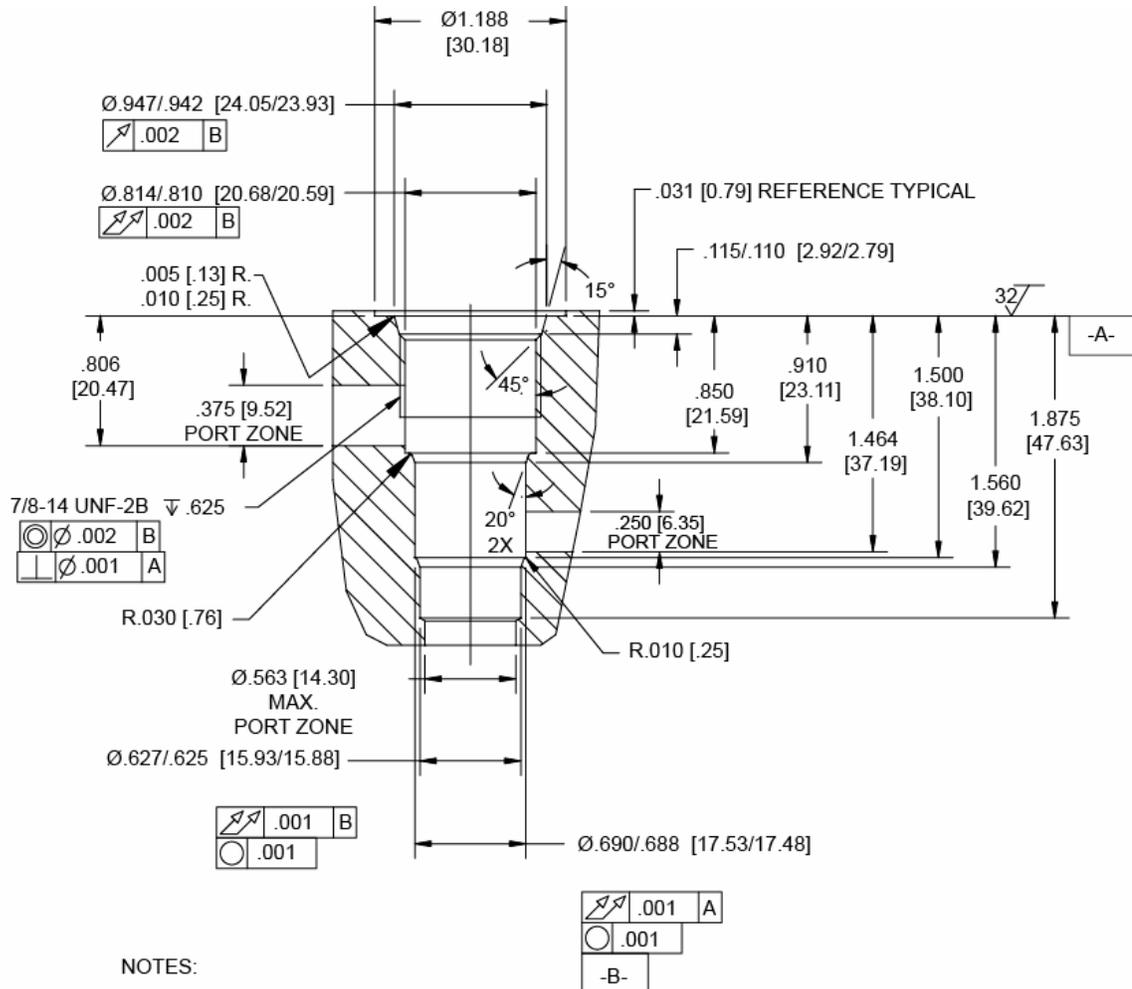
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500000.
- 2.) ALL MACHINED SURFACES TO BE $32\sqrt{}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Delta 3W

DESCRIPTION

10 Size, 7/8-14 thread "Delta" series



NOTES:

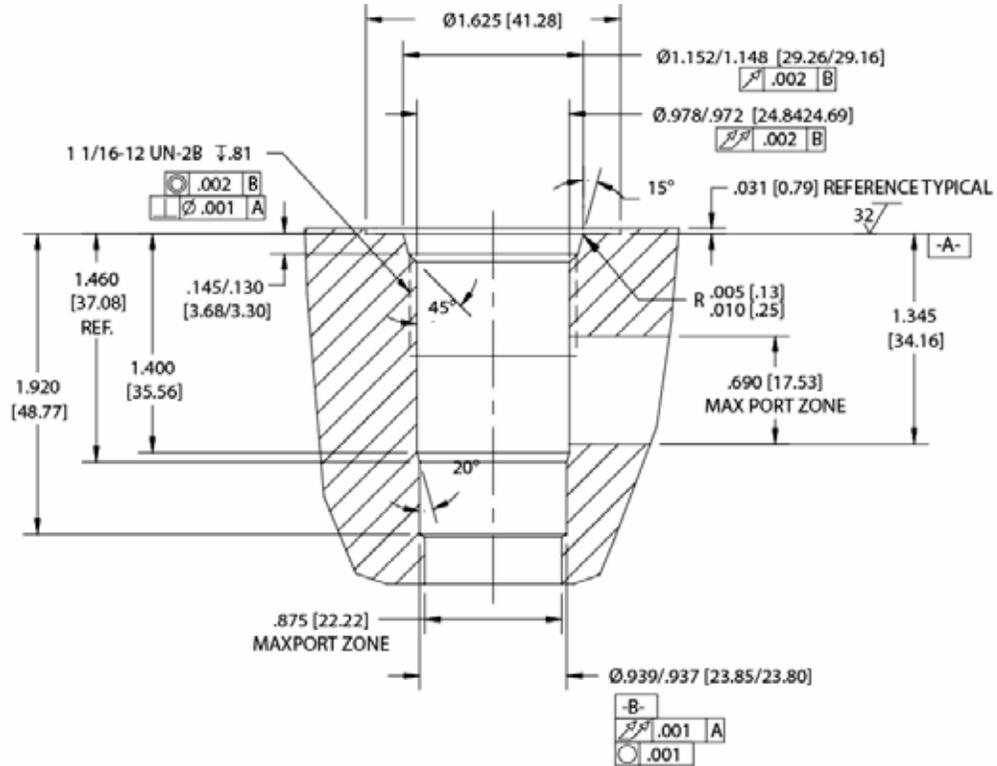
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500001.
- 2.) ALL MACHINED SURFACES TO BE $32\sqrt{\text{Rf}}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Tecnord 2W

DESCRIPTION

12 Size, 1 1/16-12 thread "Tecnord" series



NOTES:

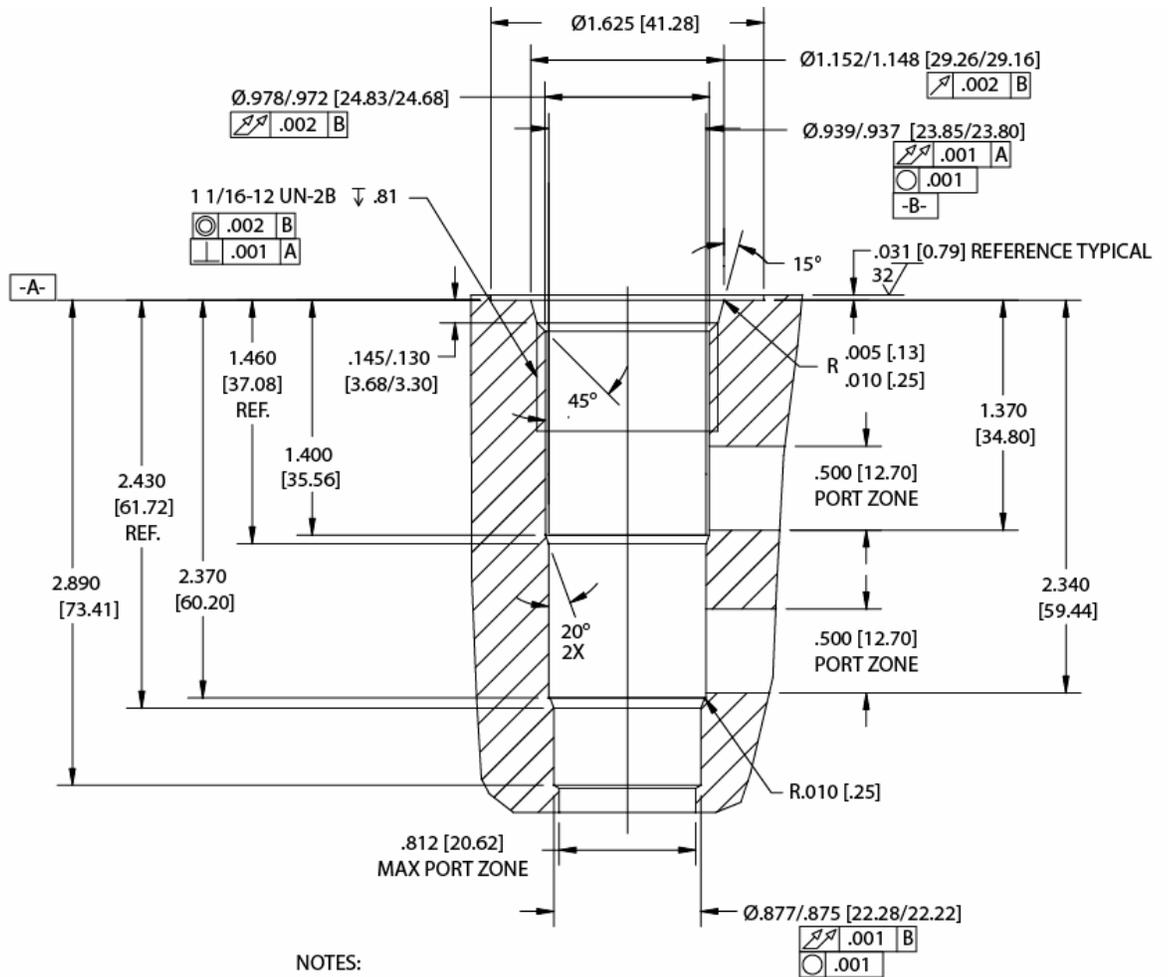
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500032.
- 2.) ALL MACHINED SURFACES TO BE $32\sqrt{\text{ }}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Tecnord 3W

DESCRIPTION

12 Size, 1 1/16-12 thread "Tecnord" series



NOTES:

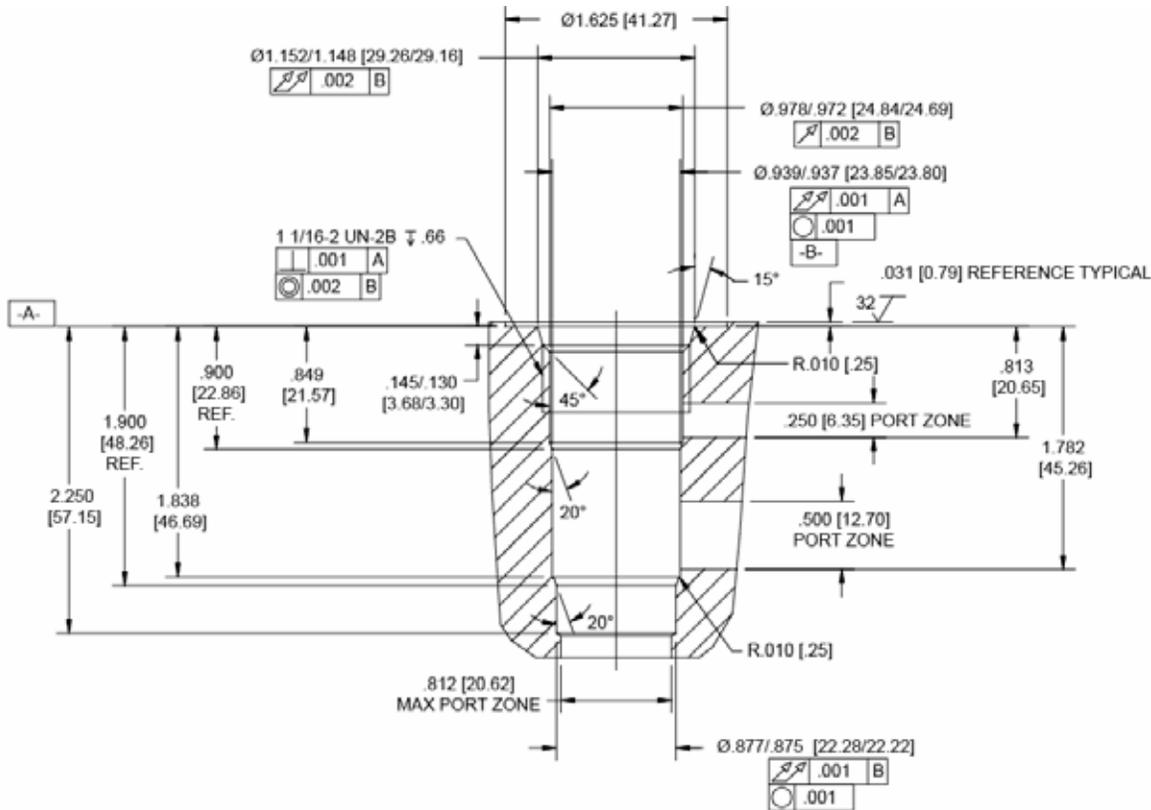
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500034.
- 2.) ALL MACHINED SURFACES TO BE $32\sqrt{}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Tecnord 3WS

DESCRIPTION

12 Size, 1 1/16-12 thread "Tecnord" series



NOTES:

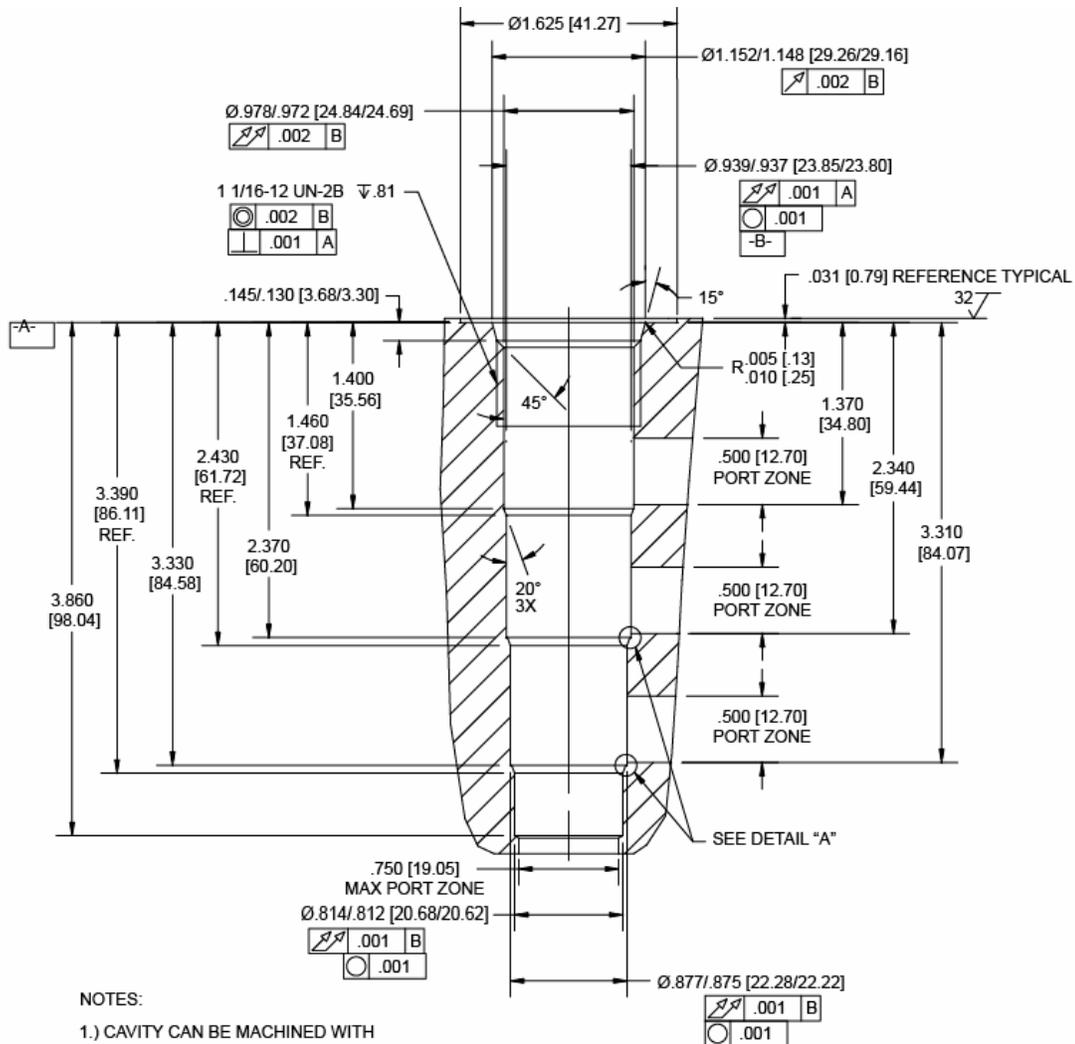
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500033.
- 2.) ALL MACHINED SURFACES TO BE $\sqrt{Ra} 0.001$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Tecnord 4W

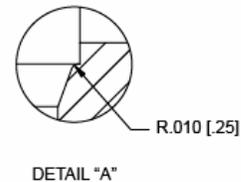
DESCRIPTION

12 Size, 1 1/16-12 thread "Tecnord" series



NOTES:

- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500035.
- 2.) ALL MACHINED SURFACES TO BE $32\sqrt{\text{ }}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

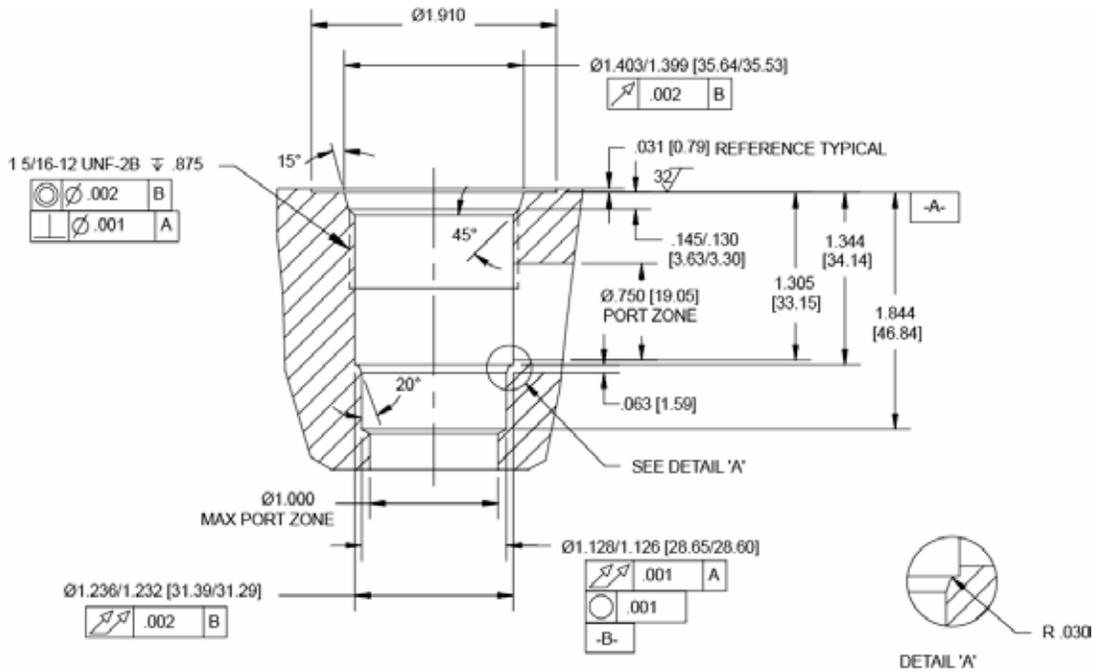


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Super 2W

DESCRIPTION

16 Size, 1 6/16-12 thread "Super" series



NOTES:

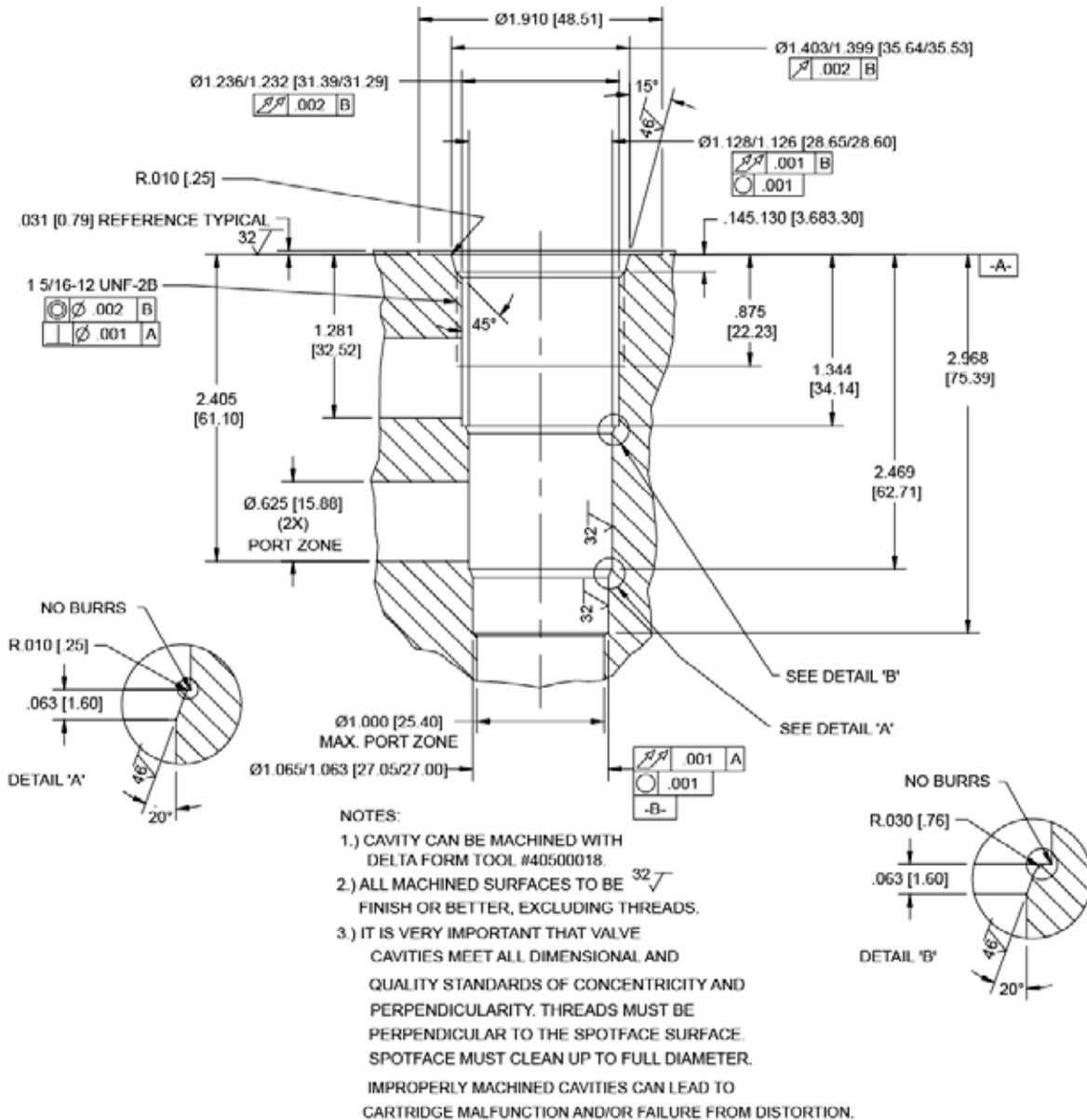
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500017.
- 2.) ALL MACHINED SURFACES TO BE $\sqrt{32}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Super 3W

DESCRIPTION

16 Size, 1/16-12 thread "Super" series

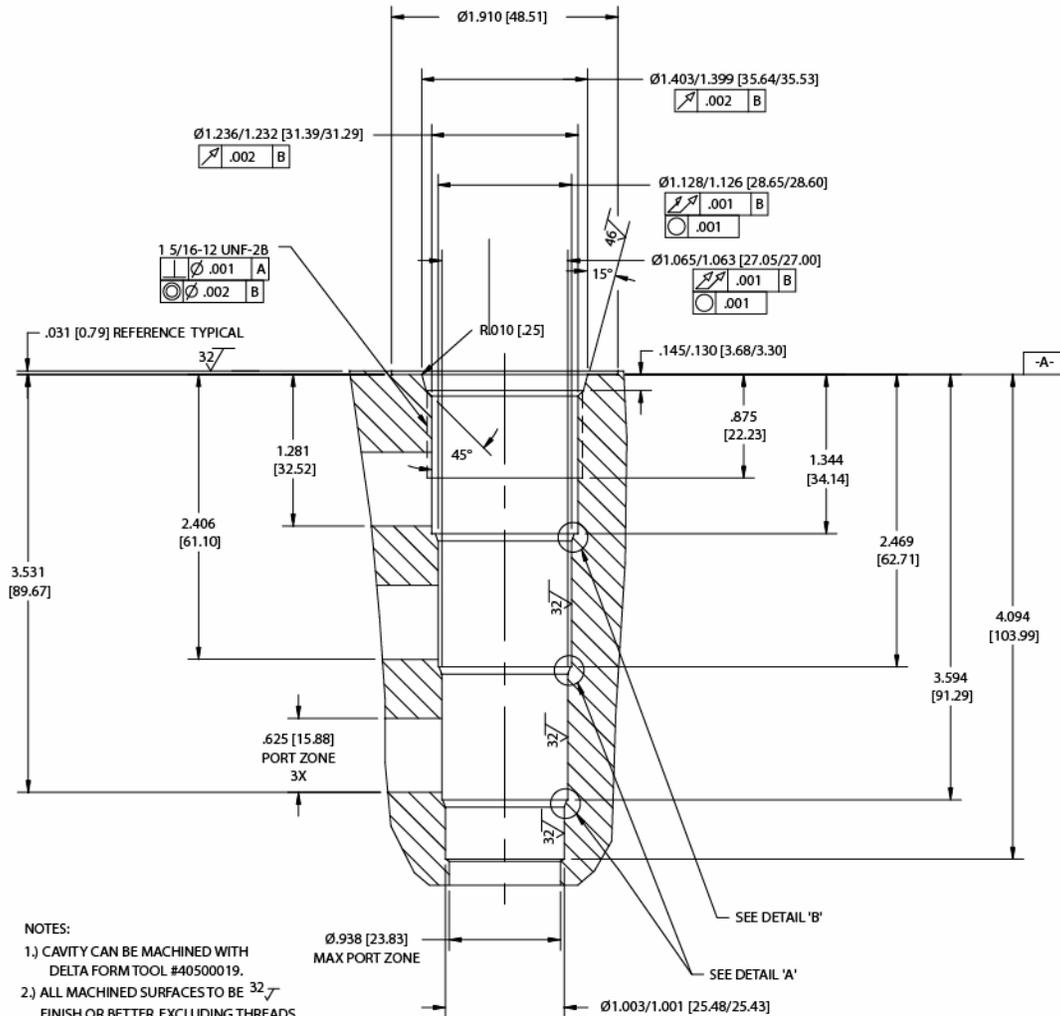


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Super 4W

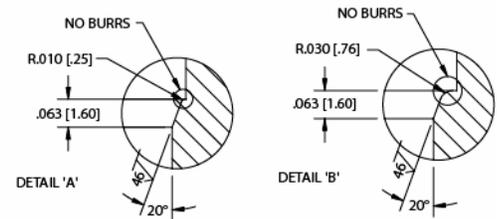
DESCRIPTION

16 Size, 1 6/16-12 thread "Super" series



NOTES:

- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500019.
- 2.) ALL MACHINED SURFACES TO BE 32 \sqrt FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

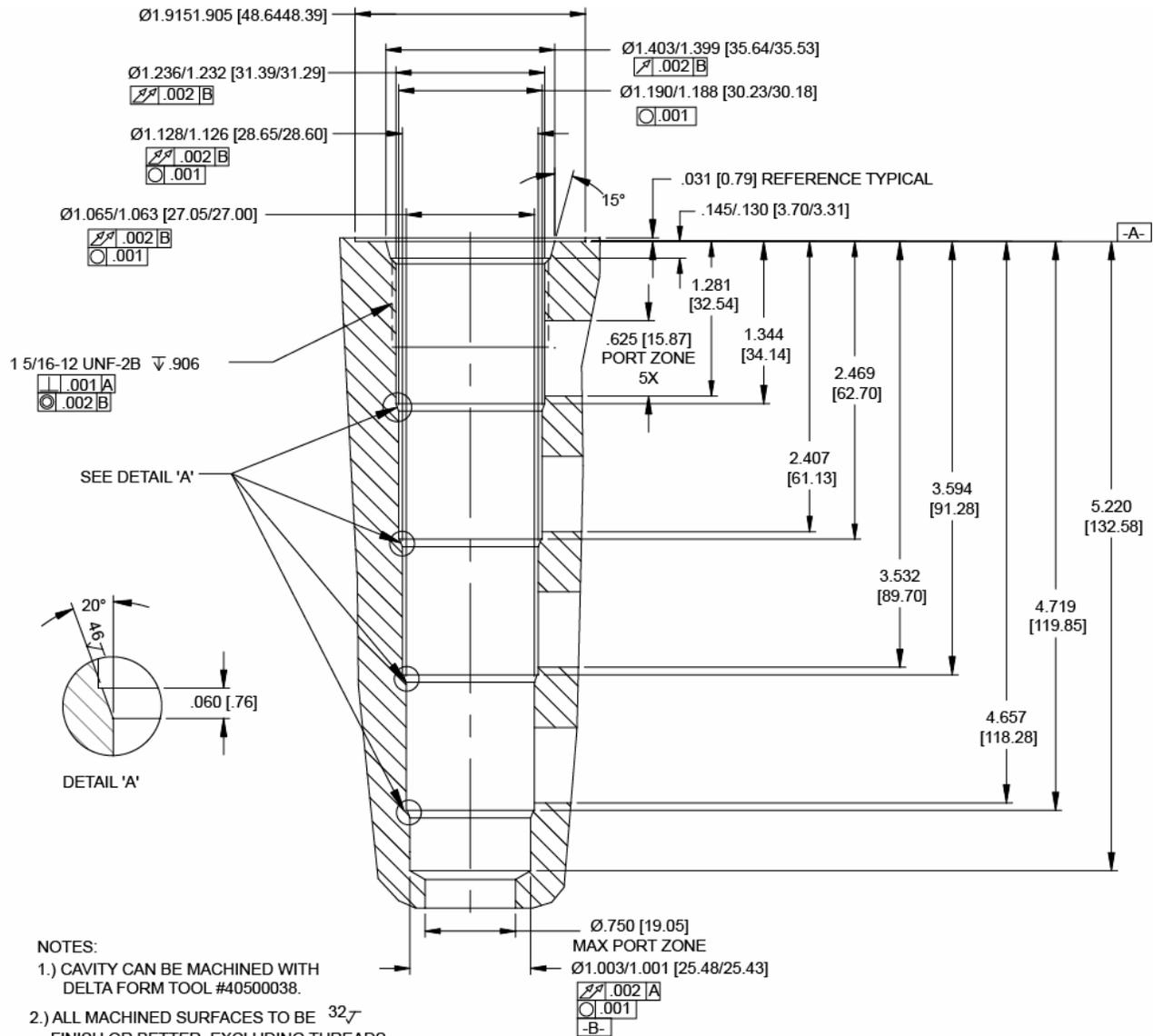


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Super 5W

DESCRIPTION

16 Size, 1 6/16-12 thread "Super" series

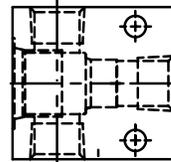
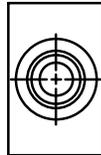


NOTES:

- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500038.
- 2.) ALL MACHINED SURFACES TO BE $\sqrt{32}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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General Installation Note



VALVE BODIES

Check the cartridge brochure to assure correct plumbing.

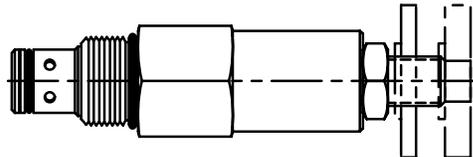
Inspect the cavity for burrs and any irregular machining which would damage O-rings at assembly.

Shims may be required behind the block for panel mounting.

ASSEMBLY

Dip the cartridge in clean oil before installing.

Screw the cartridge in by hand until the top O-ring is touching the manifold, then wrench tighten to the proper torque specification given below.



TORQUE SPECIFICATIONS

Final Cartridge Tightening

<u>Series</u>	
5/8 MINI	10-15 ft-lbs
3/4 POWER	20-25 ft-lbs
7/8 DELTA	25-30 ft lbs
1 1/16 TECNORD	60-70 ft-lbs
1 5/16 SUPER	80-90 ft-lbs

Adjusting Holding Parts:

<u>Part</u>	<u>Torques</u>
Nut	3-5 ft-lbs
Knob	3-5 ft-lbs
Cap	2-3 ft-lbs

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Valve Mnemonic Code

First letter is the valve Series.

M = MINI (5/8")
P = POWER (3/4")
D = DELTA (7/8")
T = TECNORD (1 1/16")
S = SUPER (1 5/16")

Q = SPECIALS

The second letter is the cavity.

	MINI	POWER	DELTA	TECNORD	SUPER
2 Way	A	B	E	T	J
3 Way	C	P	F	U	K
3 Way Short				R	L
4 Way	D	Q	G	V	N
5 Way Short				X	O
5 Way					I

S = SPECIAL

The third letter is the type of valve.

R = RELIEF
C = CHECK & LOAD HOLDING
N = NEEDLE
P = PRESSURE CONTROLLED

S = SOLENOID
M = MANUAL
F = FLOW CONTROL

The third, fourth, and fifth characters combined describe the valve function. It is these characters that are stamped on the valve.

EXAMPLES:

S2A = SOLENOID 2 WAY POPPET
S3A = SOLENOID 3 WAY SPOOL
S4A = SOLENOID 4 WAY CRISS SPOOL
RVA = RELIEF DIRECT ACTING

P2A = PROPORTIONAL 2 WAY
PRP = PRESSURE REDUCING
CVC = GUIDED BALL CHECK
FCH = FLOW CONT REV FLOW
NVB = NEEDLE COARSE ADJ

The sixth and seventh characters combined cover the o-ring, screen, override, knob, and other options.

EXAMPLE: **00** = STANDARD DEFAULT CONFIGURATION
VK = VITON O-RINGS, KNOB ADJUSTMENT
B3 = BUNA, SCREEN, OVERRIDE NONDETENT

The eighth through eleventh characters describe the flow range, or pressure range. Pressure or flow is specified as a range or a particular setting.

0005 = 5 PSI CRACK
1500 = 1500 MAX PRESS
03.0 = 3 G.P.M. MAX FLOW
6-10 = 6 TO 10 G.P.M. FLOW RANGE

The final character is the body port style.

N = BSP
S = SAE

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