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2W2P Normally Closed	GPM	PSI	LPM	BAR	MODEL	PAGE
	5	3000	19	207	MA-S2A	6
	5	4000	19	276	HA-S2A	8
	8	3500	30	241	PB-S2A	12
	12	5000	45	350	HB-S2A	14
	15	3500	57	241	DE-S2A	18
	15	4000	57	276	HE-S2A	20
	25	3000	95	207	TT-S2A	24
	30	3500	114	241	SJ-S2A	26
	8	3500	30	241	PB-S2B	28
	12	5000	45	350	HB-S2B	30
	15	3500	57	241	DE-S2B	32
	25	3000	95	207	TT-S2B	34
	25	5000	95	345	HT-S2B	36
	30	3500	114	241	SJ-S2B	38
	2,5	1500	9,5	103	MA-S2F	10
	6	2500	23	172	PB-S2F	16
	10	1000	38	69	DE-S2F	22
	0,20	3000	0,76	207	MA-S2E	42
	12	3600	45	250	PB-S2I	44
	4	3000	15	207	DE-S2I	46
	12	5000	45	350	HB-S2L	48
	12	3000	45	207	DE-S2L	50
	1,5	3000	5,7	207	MA-S2G	54
	4	4000	15	276	HA-S2G	56
	8	3000	30	207	PB-S2G	58
	8	3000	30	207	DE-S2G	60
15	4000	57	276	HE-S2G	62	

2W2P Normally Open	GPM	PSI	LPM	BAR	MODEL	PAGE
	5	3000	19	207	MA-S2C	66
	10	3500	38	241	PB-S2C	68
	12	5000	45	350	HB-S2C	70
	15	3500	57	241	DE-S2C	74
	30	3000	114	241	TT-S2C	76
	40	3000	151	207	SJ-S2C	78
	10	3500	38	241	PB-S2D	80
	12	5000	45	350	HB-S2D	82
	15	3500	57	241	DE-S2D	84
	30	3000	114	207	TT-S2D	86
	40	3000	151	207	SJ-S2D	88
	8	2000	30	138	PB-S2J	72
	12	5000	45	350	HB-S2K	90
	3	3000	11	207	MA-S2H	94
	3	4000	11	276	HA-S2H	96
	5	3000	19	207	PB-S2H	98
	8	3500	30	245	DE-S2H	100
8	4000	30	276	HE-S2H	102	

Note: Model M* = Serie "Mini" cavity 5/8-18 UNF (SAE 7)
 Model P* = Serie "Power" cavity 3/4-16 UNF (SAE 8)
 Model D* = Serie "Delta" cavity 7/8-14 UNF (SAE 10)
 Model T* = Serie "Tecnord" cavity 1 1/16-12 UNF (SAE 12)
 Model S* = Serie "Super" cavity 1 5/16-12 UNF (SAE 16)
 Model H* = High pressure serie (different sizes)
 Transmission & Brake: special serie for low pressure applications

3W2P Normally Open	GPM	PSI	LPM	BAR	MODEL	PAGE	
	1	3000	3,8	207	MC-S3A	106	
	2	4000	8	276	HC-S3A	108	
	3	3000	11	207	PP-S3A	110	
	10	3000	38	207	DF-S3A	112	
	10	4500	38	315	HF-S3A	114	
	8	3000	30	207	DF-S3B	116	
	8	4000	30	276	HF-S3B	118	
	15	5000	57	345	HU-S3E	120	
	15	5000	57	345	HU-S3F	122	
	3	4000	1,13	276	HC-S3P	124	
	3	3000	11	207	PP-S3X	126	
	3	3000	11	207	PP-S3D	128	
	Transmission & Brake						
	3	1000	11	70	TC-S3A	198	
	6	1000	23	70	TF-S3A	200	
6	1000	23	70	TF-S3D	202		
6	1000	23	70	IF-S3A	206		
6	1000	23	70	IF-S3D	208		

4W2P Spool	GPM	PSI	LPM	BAR	MODEL	PAGE
	1	3000	4	207	MD-S4A	132
	1,5	4000	6	276	HD-S4A	134
	4	3000	15	207	PQ-S4A	136
	10	3000	38	207	DG-S4A	138
	10	4000	38	276	HG-S4A	140
	15	5000	57	345	HV-S4A	142
Transmission & Brake						
5	1000	19	70	TG-S4A	204	
5	1000	20	70	IG-S4A	210	
1,5	3000	6	207	MD-S4B	144	
3	4000	11	276	HD-S4B	146	
4	3000	15	207	PQ-S4B	148	
10	3000	38	207	DG-S4B	150	
10	4000	38	276	HG-S4B	152	
4	3000	15	207	PQ-S4C	154	
8	3000	30	207	DG-S4C	156	
8	4000	30	276	HG-S4C	158	
2,5	3000	9	207	PQ-S4D	160	
6	3000	23	207	DG-S4D	162	
8	4000	30	276	HG-S4D	164	
6	3000	23	207	DG-S4E	166	
8	4000	30	276	HG-S4E	168	
15	5000	57	345	HV-S4E	170	
6	3000	23	207	DG-S4F	172	
6	4000	23	276	HG-S4F	174	

4W3P Spool	GPM	PSI	LPM	BAR	MODEL	PAGE
	5	3000	19	207	PQ-S4M	178
	6,5	3000	25	207	DG-S4M	180
	5	3000	19	207	PQ-S4N	182
	6	3000	23	207	DG-S4N	184
	5	3000	19	207	PQ-S4O	186
	8	3000	30	207	DG-S4O	188
	5	3000	19	207	PQ-S4P	190
	8	3000	30	207	DG-S4P	192
	6	3000	23	207	DG-S4S	194

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SECTION/Description	Pages
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2 Way 2 Position Normally Closed Poppet Valves

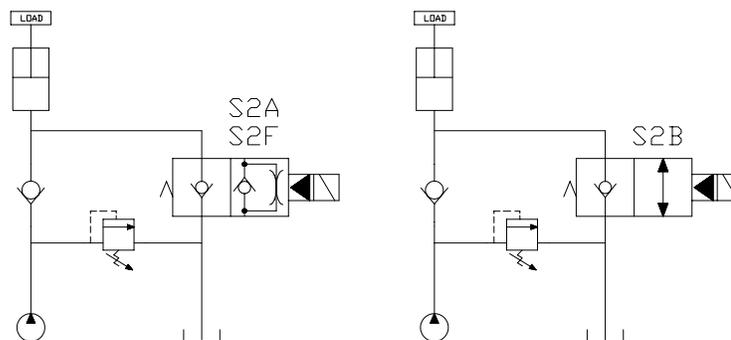
2W2P Normally Closed	GPM	PSI	LPM	BAR	MODEL	PAGE
	5	3000	19	207	MA-S2A	6
	5	4000	19	276	HA-S2A	8
	8	3500	30	241	PB-S2A	12
	12	5000	45	350	HB-S2A	14
	15	3500	57	241	DE-S2A	18
	15	4000	57	276	HE-S2A	20
	25	3000	95	207	TT-S2A	24
	30	3500	114	241	SJ-S2A	26
	8	3500	30	241	PB-S2B	28
	12	5000	45	350	HB-S2B	30
	15	3500	57	241	DE-S2B	32
	25	3000	95	207	TT-S2B	34
	25	5000	95	345	HT-S2B	36
	30	3500	114	241	SJ-S2B	38
	2,5	1500	9,5	103	MA-S2F	10
	6	2500	23	172	PB-S2F	16
	10	1000	38	69	DE-S2F	22

Typical Schematic

Typical application for the S2A is load holding and lowering in a Lift, Check and Dump circuit.

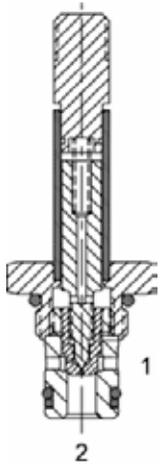
Typical application for the S2B is load holding and lowering when free flow in both directions is required to float the cylinder.

Typical application for the S2F is load holding and lowering of a cylinder in low pressure application where the soft seat gives better leakage control.



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MA-S2A Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

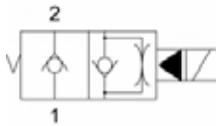
OPERATION

When de-energized the MA-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

FEATURES

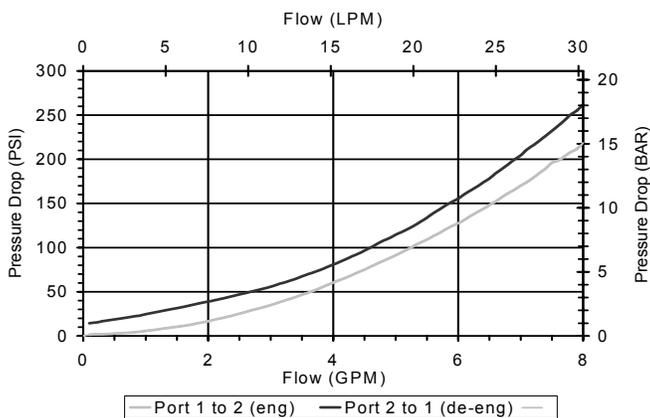
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

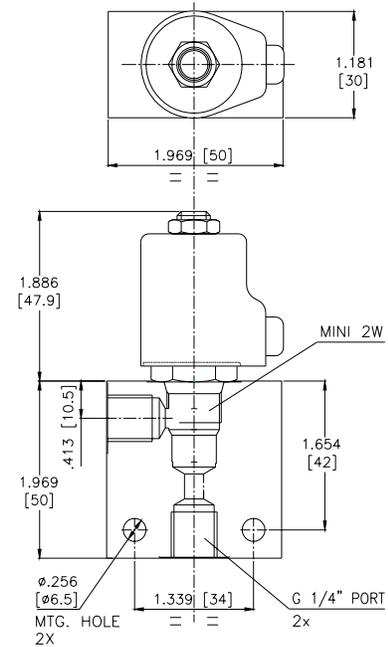
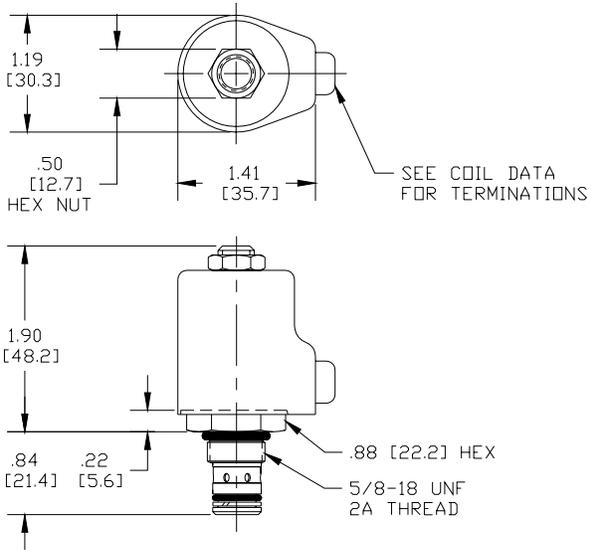


VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 2W
Cavity Tools kit (form tool, reamer, tap)	40500003
Seal Kit (Buna)	21191000

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DIMENSIONS



ORDERING INFORMATION

MA-S2A -

OPTIONS

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

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

"M" COIL TERMINATION

- Double Lead **DL**
- (* several types of termination can be attached on leads on request)
- DIN 43650 (Hirschman) – (AC&DC) **HC**

Blank

- N** Without Body
- G** 1/4" BSP Ports
- G** #6 SAE Ports

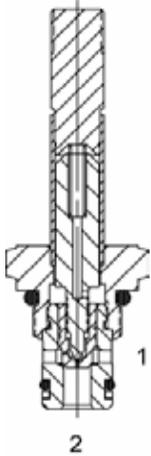
VOLTAGE (*other voltages available on request)

- 12** 12 VDC
- 24** 24 VDC
- 22** 220 VAC with molded full wave rectifier

Approximate Coil Weight: .30 lbs (.14 kg)

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HA-S2A Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with free reverse flow de-energized.

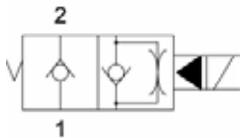
OPERATION

When de-energized the HA-S2A blocks flow from (1) to (2) and allows flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

FEATURES

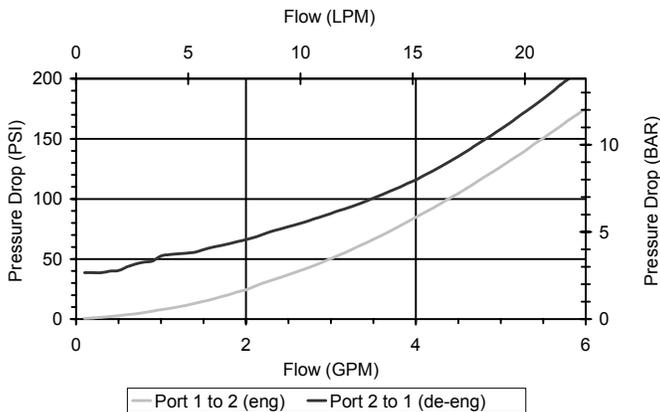
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design (for most common termination, see coil page).
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

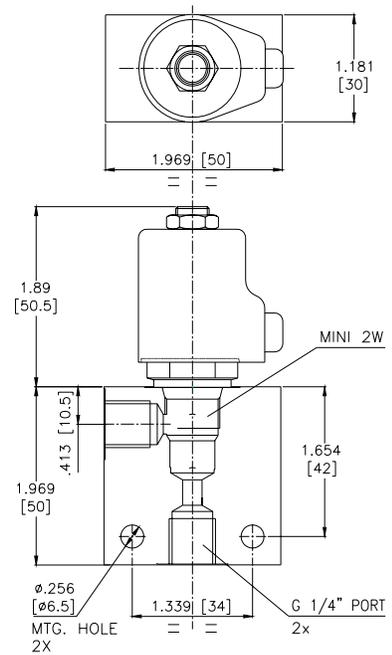
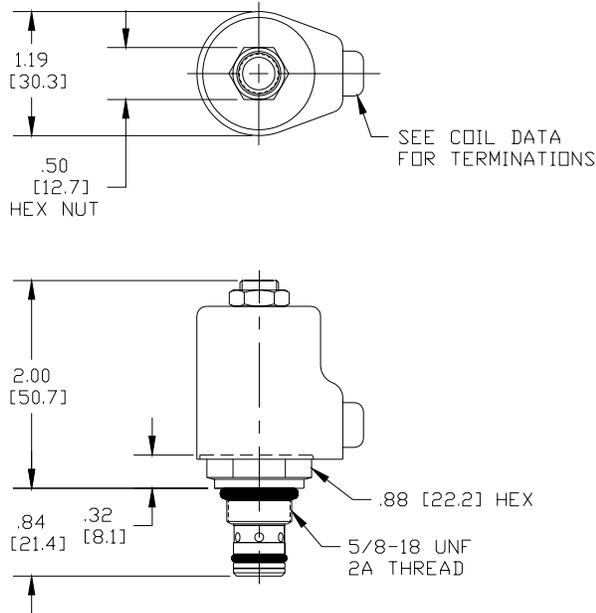


VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	4000 PSI (276 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	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 2W
Cavity Tools kit (form tool, reamer, tap)	40500003
Seal Kit	21191000

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DIMENSIONS



ORDERING INFORMATION

HA-S2A - - - -

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

BODIES
 Without Body
 1/4" BSP Ports
 #6 SAE Ports

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

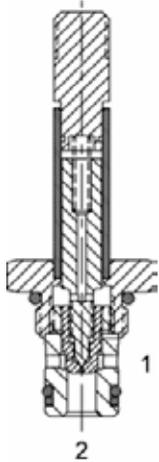
VOLTAGE (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC with molded full wave rectifier

"M" COIL TERMINATION
 Double Lead **DL**
 (* several types of termination can be attached on leads on request)
 DIN 43650 (Hirschman) - (AC&DC) **HC**

Approximate Coil Weight: .30 lbs (14 kg)

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MA-S2F Pilot Operated Poppet, 2 Way Normally Closed, Soft Seat



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally closed, pilot operated soft seat poppet valve with reverse flow de-energized.

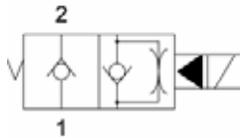
OPERATION

When de-energized the MA-S2F blocks flow from (1) to (2) and allows free reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

FEATURES

- Soft seat for ultra low leakage.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

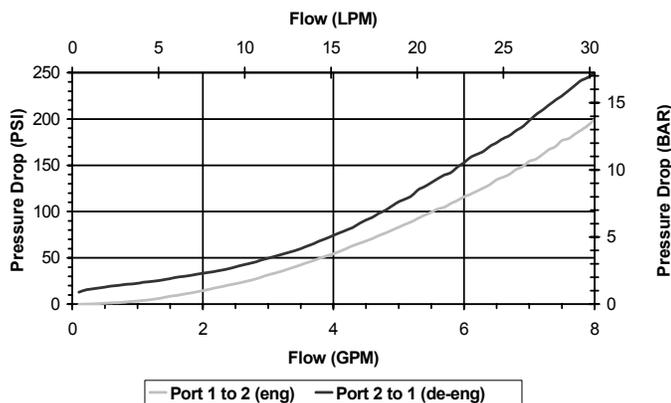
HYDRAULIC SYMBOL



Operational shift limit 2.5 GPM (9.5 LPM).
For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

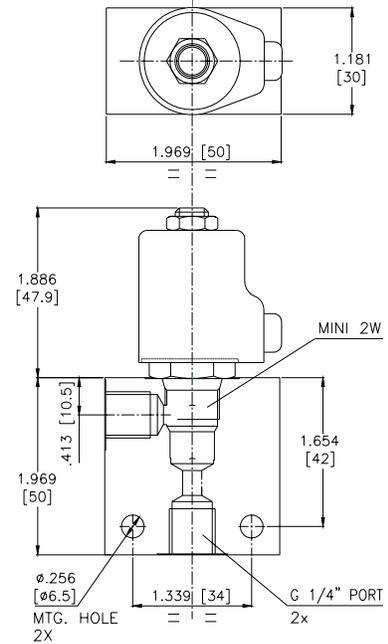
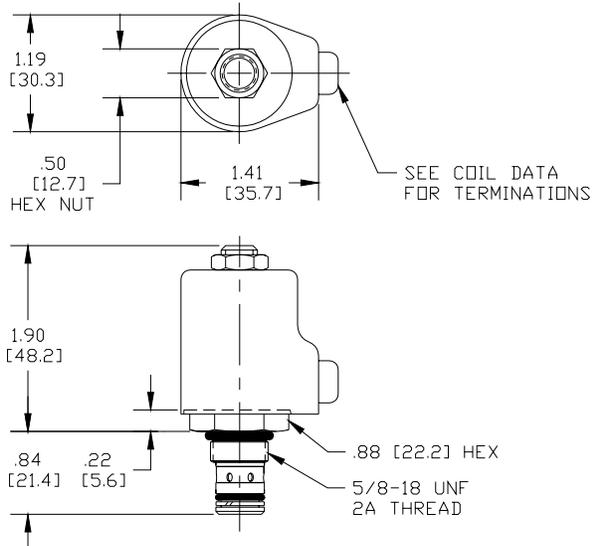


VALVE SPECIFICATIONS

Maximum 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	.12 lbs. (.05 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 2W
Cavity Tools kit (form tool, reamer, tap)	40500003
Seal Kit	21191000

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DIMENSIONS



ORDERING INFORMATION

MA-S2F - - -

OPTIONS

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

BODIES

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

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

"M" COIL TERMINATION

(All DC Except as Noted)

Double Lead **DL**

(* several types of termination can be attached on leads on request)

DIN 43650 (Hirschmann) **HC**

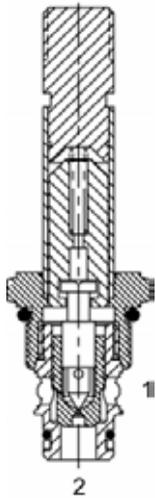
VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC with molded full wave rectifier

Approximate Coil Weight: .30 lbs (.14 kg)

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PB-S2A Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

OPERATION

When de-energized the PB-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1).

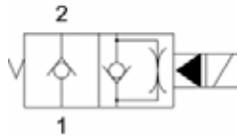
When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

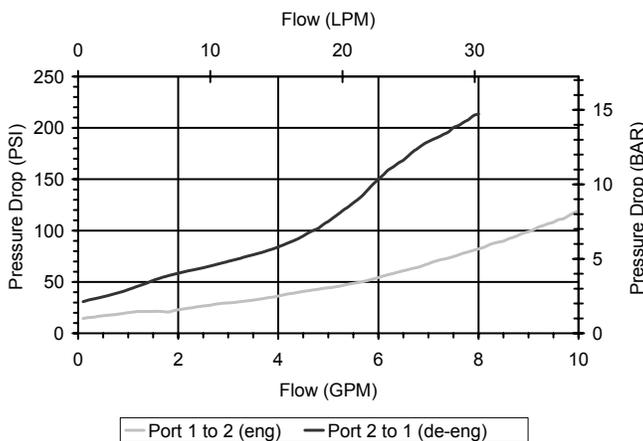
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

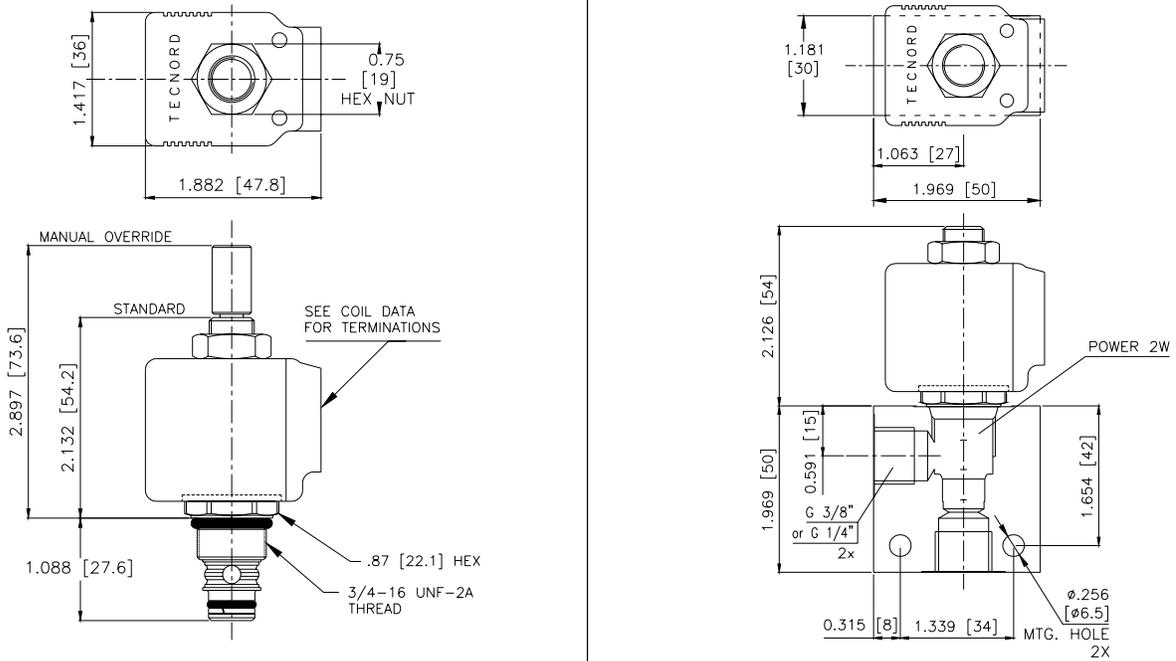


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 2W
Cavity Tools kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



ORDERING INFORMATION

PB-S2A

OPTIONS					
Buna Standard	00			Blank	BODIES
Viton Standard	V0			N	Without Body
Buna, Override, Detent	0M			N1	1/4" BSP Ports
Viton, Override, Detent	VM			S	3/8" BSP Ports
Buna, Screen	A0				#6 SAE Ports
Viton, Screen	W0				
Buna, Override, Nondetent	B1			12	VOLTAGE (*other voltages available on request)
Viton, Override, Nondetent	V1			24	12 VDC
Buna, Screen, Override, Nondetent	B3			22	24 VDC
Buna, Screen, Override, Detent	B4				220 VAC without internal rectifier
Viton, Screen, Override, Non-Detent	V3				
Viton, Screen, Override, Detent	V4				

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

"K" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
(*several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

PIA
PID
PIJ
PIM

IMMERSION PROOF "P" TYPE
"I" Coil AMP Superseal - Integral
"I" Coil Deutsch – Integral DT04-2P
"I" Coil AMP Jr. Timer - Integral
"I" Coil Metri-Pack – Integral

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HB-S2A Pilot Operated Poppet, 2 Way Normally Closed

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

OPERATION

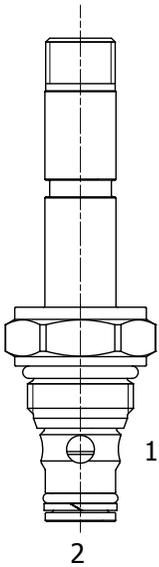
When de-energized the HB-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1).

When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

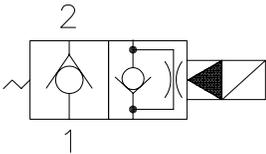
MANUAL OVERRIDE OPTION: to override, turn the manual override screw counter-clockwise. To release, turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

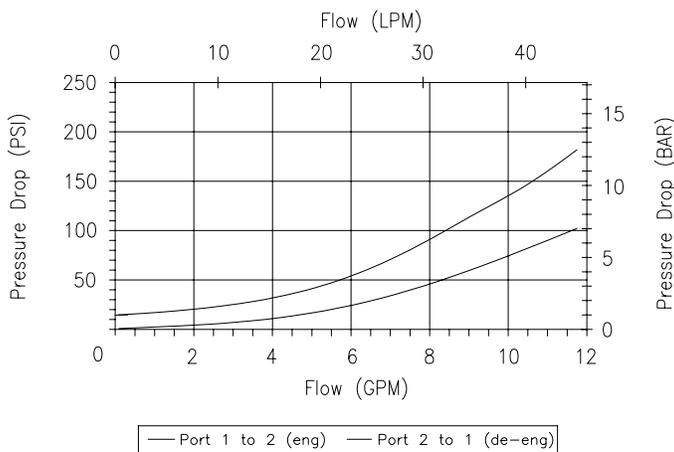


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

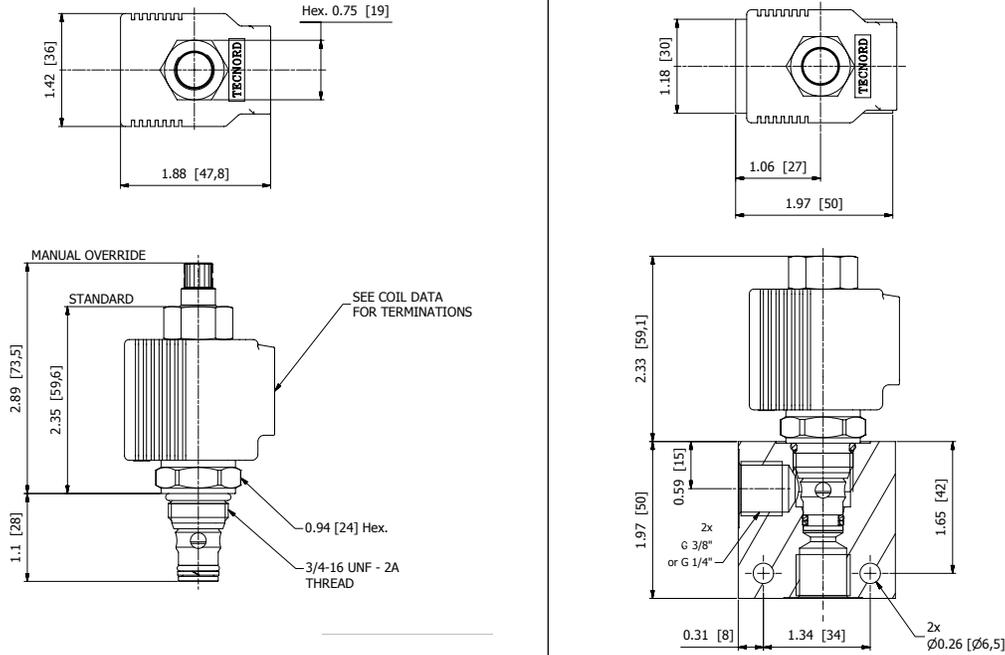


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	5000 PSI (350 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min at 5000 PSI (350 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 210°F (-40° to 100°C)
	BUNA seals
	-4° to 250°F (-20° to 120°C)
	VITON seals
Weight	.29 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	41-47 Nm (30-35 ft-lbs)
Coil Nut Torque Requirements	4-6 Nm (3-4.5 ft-lbs)
Cavity	POWER 2W
Cavity Tools Kit	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



ORDERING INFORMATION

HB - S2A - - - -

OPTIONS

Standard, Buna	00
Viton	V0
Buna, Screw Override	OK
Viton, Screw Override	VK

BODIES

Blank	Without Body
N	1/4" BSP Ports (aluminum)
N1	3/8" BSP Ports (aluminum)
S	#6 SAE Ports
H	1/4" BSP Ports (steel)
H1	3/8" BSP Ports (steel)
Aluminum bodies only for use up to 250 bar	

VOLTAGE (consult factory for other voltages)

12	12 VDC
24	24 VDC
26	26 VDC

"P" TYPE "J" COIL TERMINATION

JA "J" Coil AMP Superseal - Integral	JJ "J" Coil AMP Jr. Time - Integral	JL "J" Coil Double Lead
JD "J" Coil Deutsch - Integral DT04-2P		JH "J" Coil DIN 43650 (Hirschman)

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2F Pilot Operated Poppet, 2 Way Normally Closed, Soft Seat

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally closed, pilot operated soft seat poppet valve with reverse flow de-energized.

OPERATION

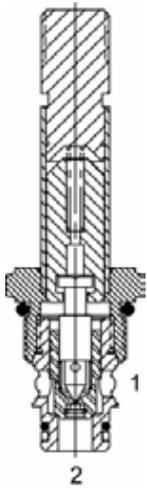
When de-energized the PB-S2F blocks flow from (1) to (2) and allows reverse flow from (2) to (1).

When energized the valve allows flow from (1) to (2) and restrict flow from (2) to (1).

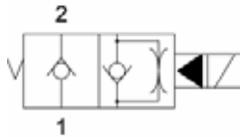
OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

- Soft seat for ultra low leakage.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.



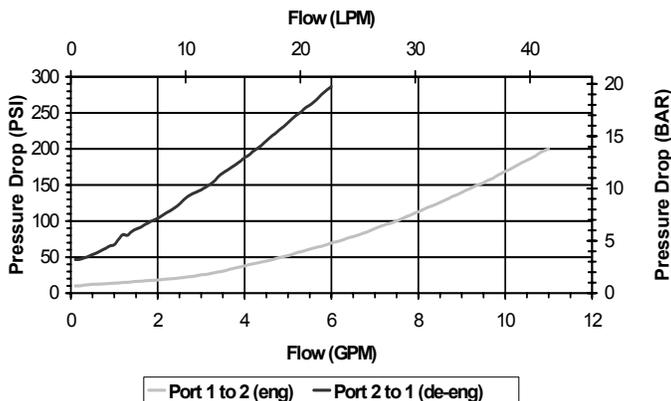
HYDRAULIC SYMBOL



Operational shift limit is 6 GPM.
For shifted performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

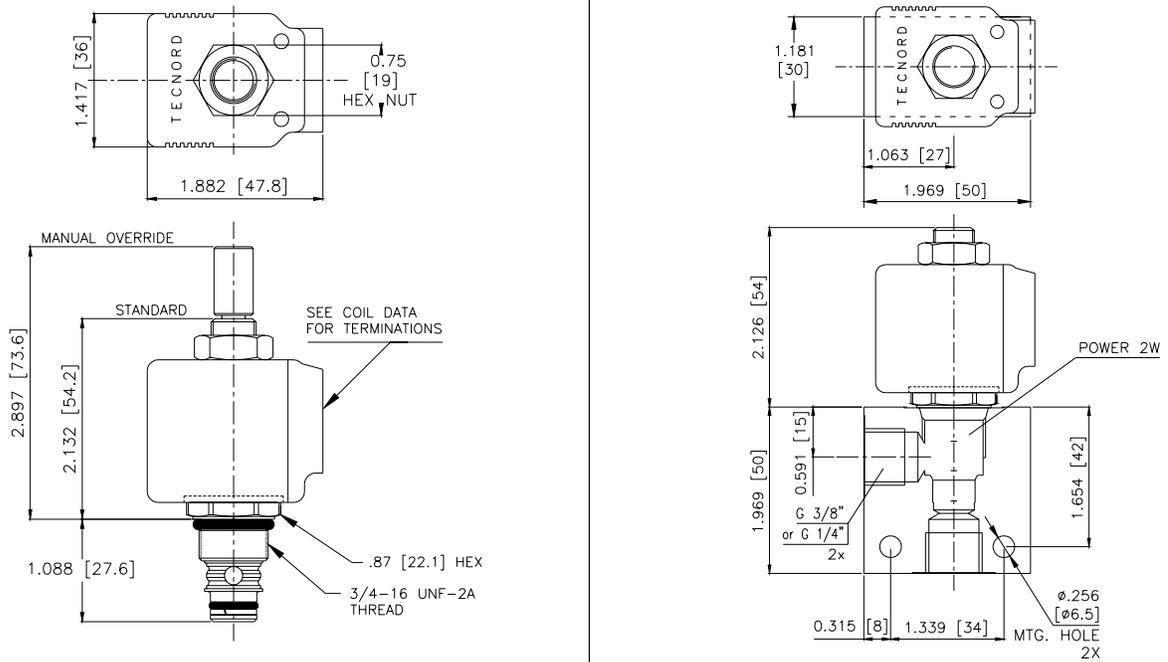


VALVE SPECIFICATIONS

Maximum Flow	6 GPM (23 LPM)
Rated Operating Pressure	2500 PSI (172 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	.19 lbs. (.08 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

PB-S2F

OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	1/4" BSP Ports
Buna, Override, Detent	0M			N1	3/8" BSP Ports
Viton, Override, Detent	VM			S	#6 SAE Ports
Buna, Screen	A0				
Viton, Screen	W0				
Buna, Override, Nondetent	B1			12	VOLTAGE (*other voltages available on request)
Viton, Override, Nondetent	V1			24	12 VDC
Buna, Screen, Override, Nondetent	B3			22	24 VDC
Buna, Screen, Override, Detent	B4				220 VAC without internal rectifier
Viton, Screen, Override, Non-detent	V3				
Viton, Screen, Override, Detent	V4				

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

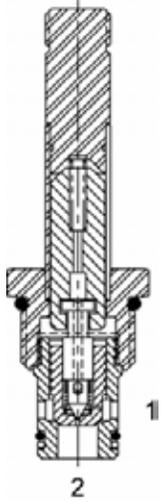
"K" COIL TERMINATION
(All DC Except as Noted)

DL Double Lead (*several types of termination can be attached on leads on request)	HC DIN 43650 (Hirschmann) – (AC & DC)	PIA "I" Coil AMP Superseal - Integral
	DI Deutsch – Integral DT04-2P	PID "I" Coil Deutsch - Integral DT04-2P
		PIJ "I" Coil AMP Jr. Timer - Integral
		PIM "I" Coil Metri-Pack - Integral

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2A Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

OPERATION

When de-energized the DE-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1).

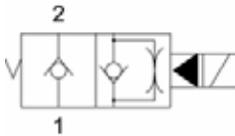
When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise

FEATURES

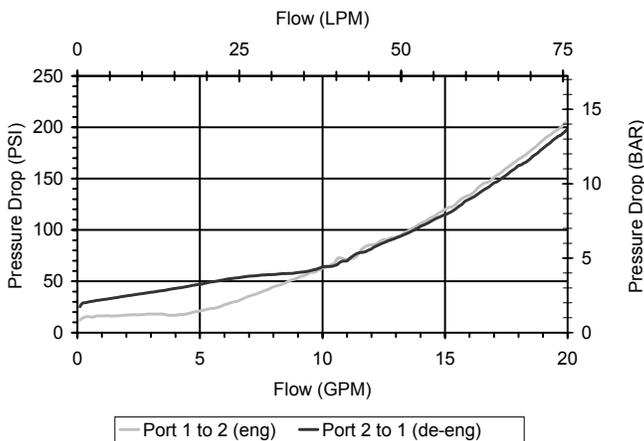
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "1" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

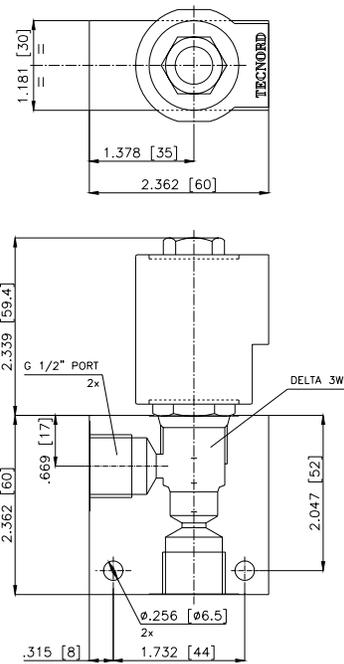
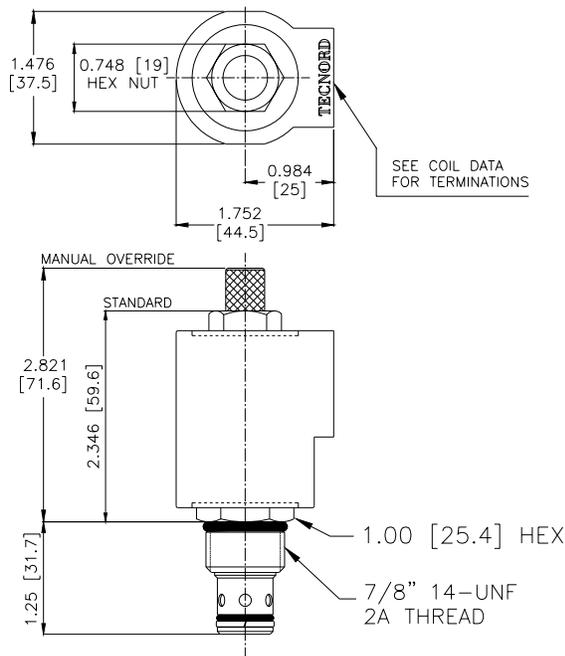


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

DE-S2A - - -

OPTIONS	
Buna Standard	00
Viton Standard	V0
Buna, Override	0M
Viton, Override	VM
Buna & Screen	A0
Viton & Screen	W0
Buna, Screen, Override	B3
Viton, Screen, Override	V3

BODIES	
Blank	N
1/2" BSP Ports	S
#8 SAE Ports	

VOLTAGE (*other voltages available on request)	
12 VDC	12
24 VDC	24
220 VAC without internal rectifier	22

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

"V" COIL TERMINATION (All DC Except as Noted)

DL	Double Lead (* several types of termination can be attached on leads on request)
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HC	DIN 43650 (Hirschman) – (AC & DC)
DI	Deutsch – Integral DT04-2P

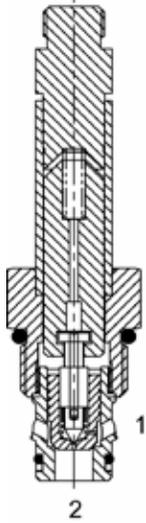
DIA
DID
DIJ
DIM

IMMERSION PROOF "D" TYPE	
"I" Coil AMP Superseal - Integral	DIA
"I" Coil Deutsch – Integral DT04-2P	DID
"I" Coil AMP Jr. Timer - Integral	DIJ
"I" Coil Metri-Pack – Integral	DIM

Approximate Coil Weight: .56 lbs (.25 kg)

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.

HE-S2A Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

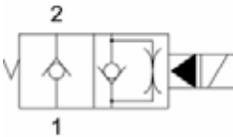
OPERATION

When de-energized the HE-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

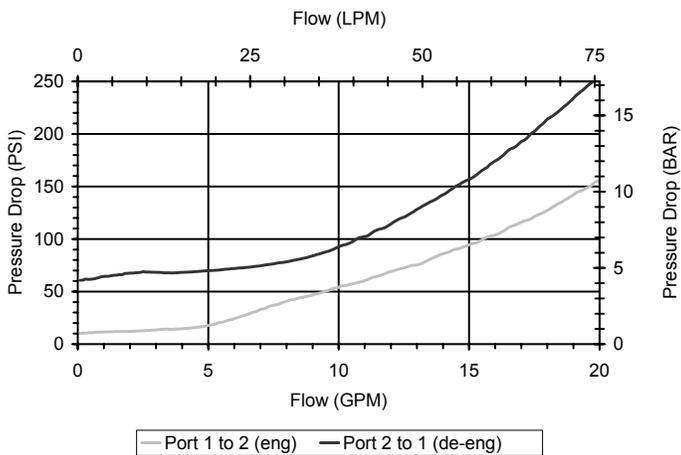
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)

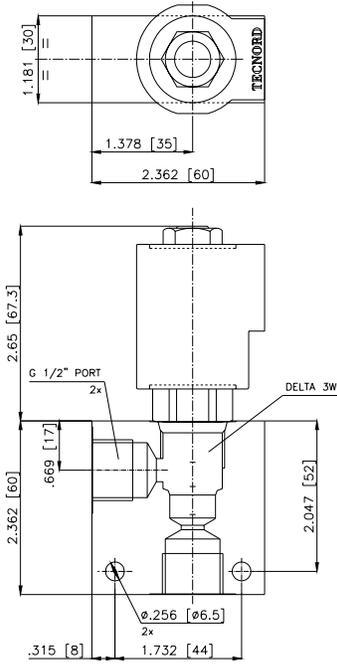
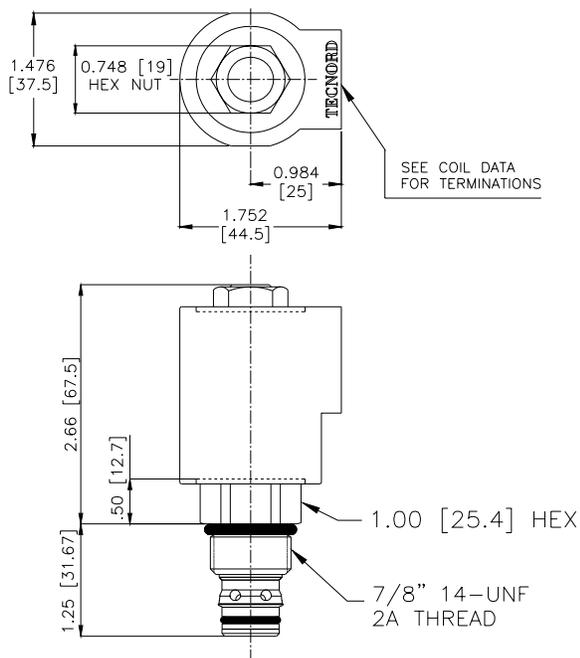


VALVE SPECIFICATIONS

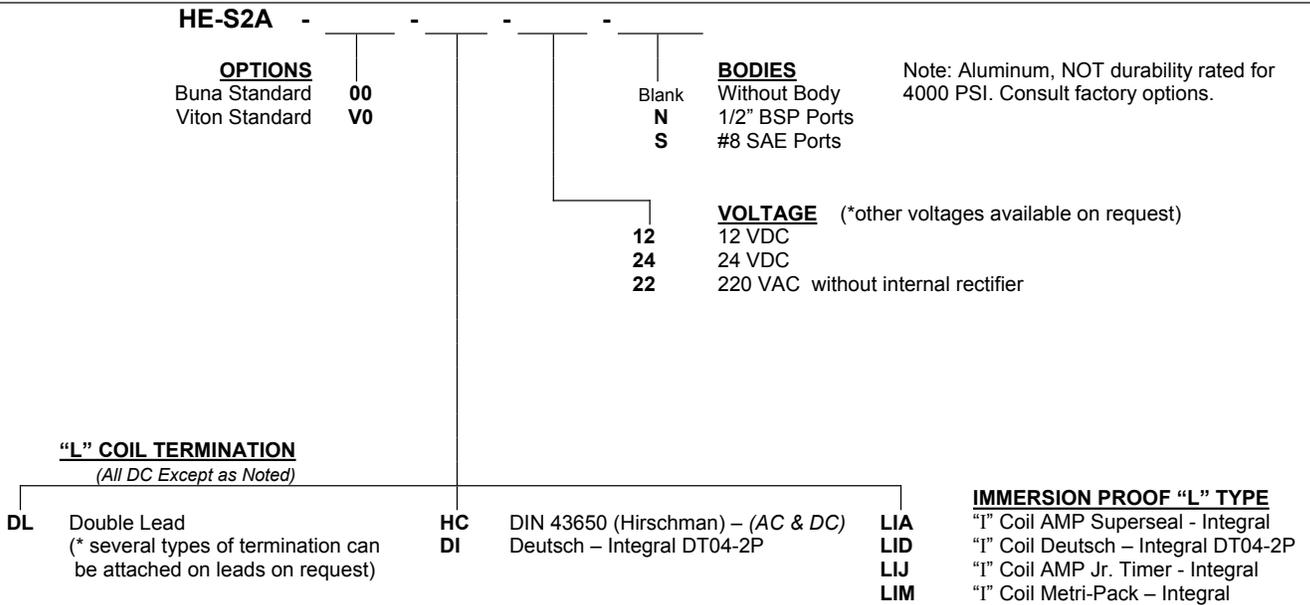
Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.39 lbs. (.17 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 2W
Cavity Tools kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



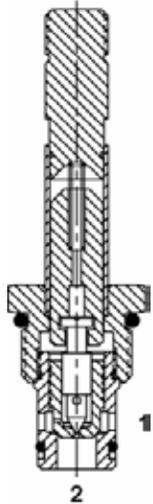
ORDERING INFORMATION



Approximate Coil Weight: .69 lbs (.31 kg)

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DE-S2F Pilot Operated Poppet, 2 Way Normally Closed, Soft Seat



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally closed, pilot operated soft seat poppet valve with reverse flow de-energized.

OPERATION

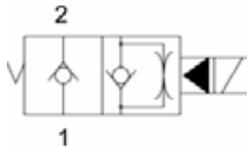
When de-energized the DE-S2F blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) but restricts reverse flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

- Soft seat for ultra low leakage.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

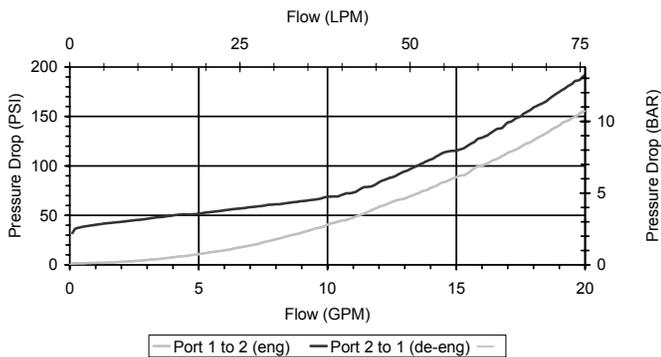
HYDRAULIC SYMBOL



Operational shift limit 10 GPM (38 LPM).
For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

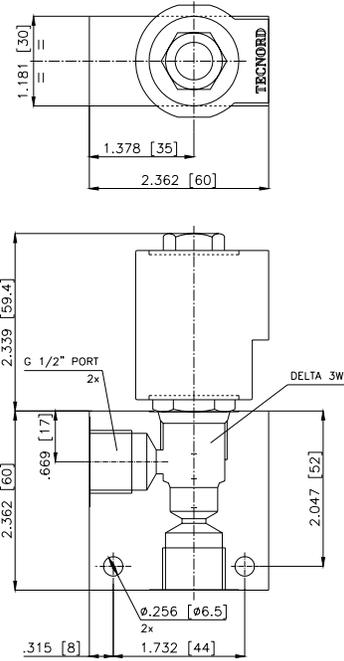
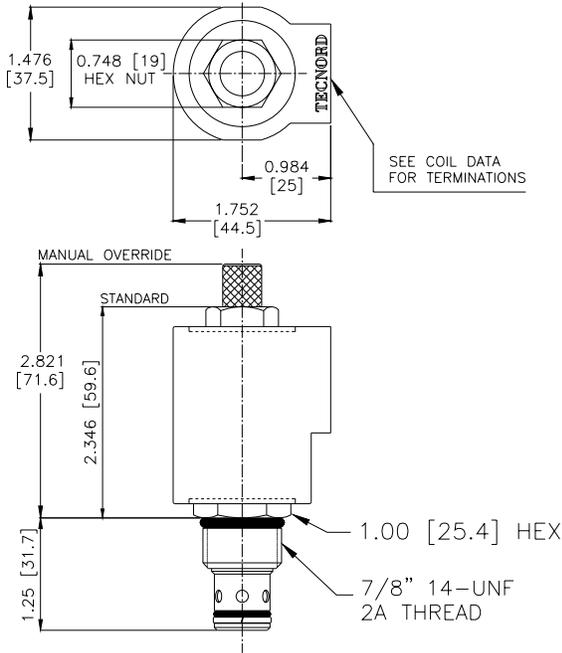


VALVE SPECIFICATIONS

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	.25 lbs. (.11 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

DE-S2F -		-	-	-	-
OPTIONS					
Buna Standard	00			Blank	BODIES
Viton Standard	V0			N	Without Body
Buna, Override	0M			S	1/2" BSP Ports
Viton, Override	VM				#8 SAE Ports
Buna & Screen	A0				
Viton & Screen	W0				
Buna, Screen, Override	B3			12	VOLTAGE (*other voltages available on request)
Viton, Screen, Override	V3			24	12 VDC
				22	24 VDC
					220 VAC without internal rectifier

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

"V" COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
(* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

DIA
DID
DIJ
DIM

IMMERSION PROOF "D" TYPE
"I" Coil AMP Superseal - Integral
"I" Coil Deutsch – Integral DT04-2P
"I" Coil AMP Jr. Timer - Integral
"I" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

TT-S2A Pilot Operated Poppet, 2 Way Normally Closed

DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnorm" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

OPERATION

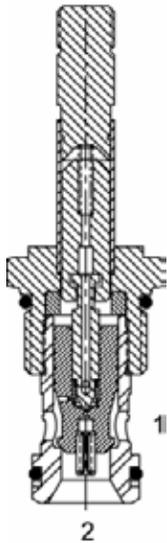
When de-energized the TT-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1).

When energized the valve allows flow from (1) to (2) and restricts flow from (2) to (1).

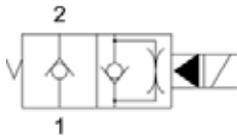
OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

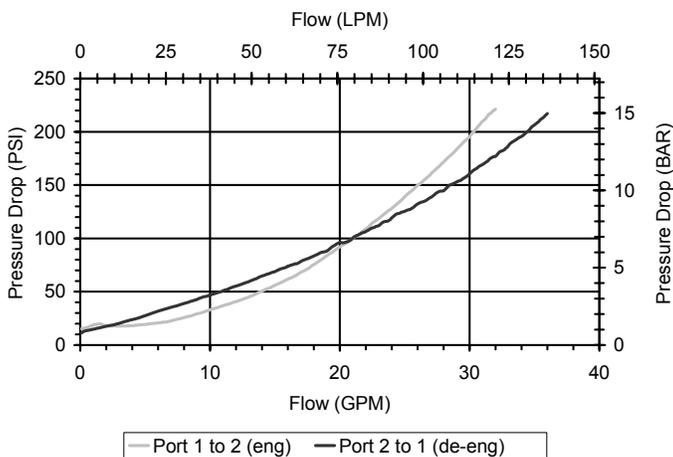


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

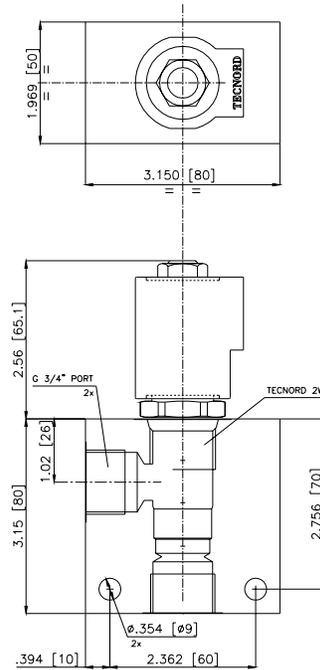
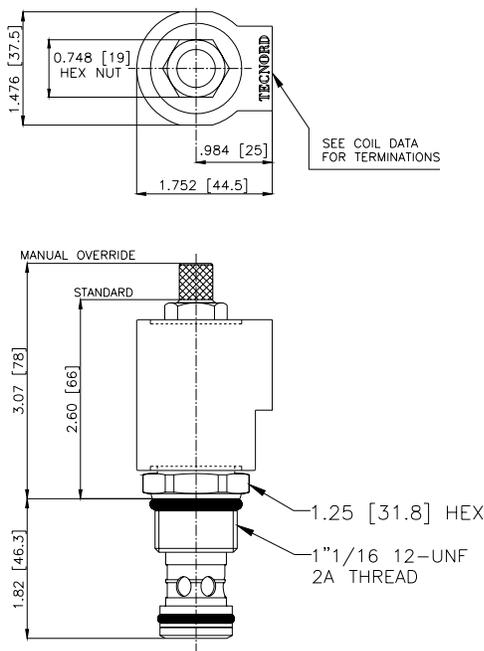


VALVE SPECIFICATIONS

Nominal Flow	25 GPM (95 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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	50 ft-lbs (67.8 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

TT-S2A

<p>OPTIONS</p> <p>Buna, Standard 00</p> <p>Viton, Standard V0</p> <p>Buna, Override OM</p> <p>Viton, Override VM</p> <p>Buna, Screen A0</p> <p>Viton, Screen W0</p> <p>Buna, Override, Non-detent B1</p> <p>Viton, Override, Non-detent V1</p> <p>Buna, Screen, Override, Non-detent B3</p> <p>Buna, Screen, Override, Detent B4</p> <p>Viton, Screen, Override, Non-detent V3</p> <p>Viton, Screen, Override, Detent V4</p>	<p>BODIES</p> <p>Blank</p> <p>N 3/4" BSP Ports</p> <p>S #12 SAE Ports</p>	<p>VOLTAGE (*other voltages available on request)</p> <p>12 12 VDC</p> <p>24 24 VDC</p> <p>22 220 VAC without internal rectifier</p>
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Note: Use screen only if flow direction is from (1) to (2).

"V" COIL TERMINATION (All DC Except as Noted)

DL Double Lead
(*several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)

DI Deutsch - Integral DT04-2P

DIA "I" Coil AMP Superseal - Integral

DID "I" Coil Deutsch – Integral DT04-2P

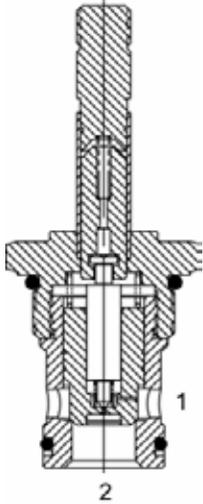
DIJ "I" Coil AMP Jr. Timer - Integral

DIM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S2A Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow de-energized.

OPERATION

When de-energized the SJ-S2A blocks flow from (1) to (2) and allows reverse flow from (2) to (1).

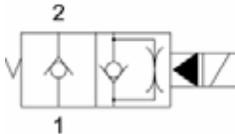
When energized the valve allows flow from (1) to (2) and restricted flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

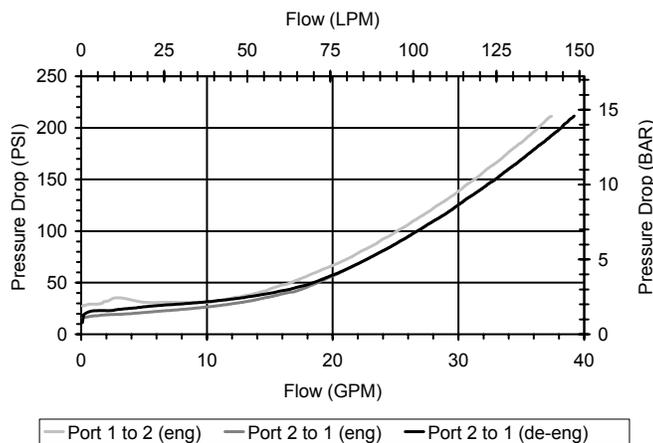
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

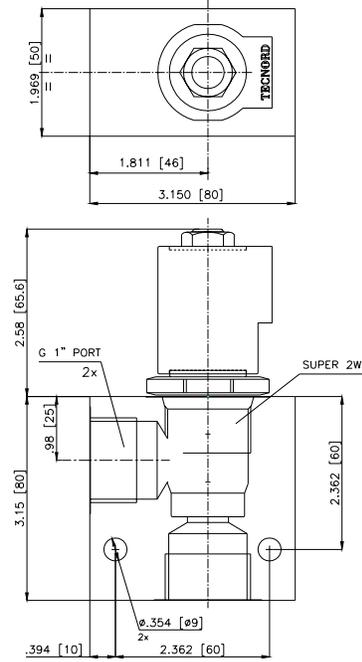
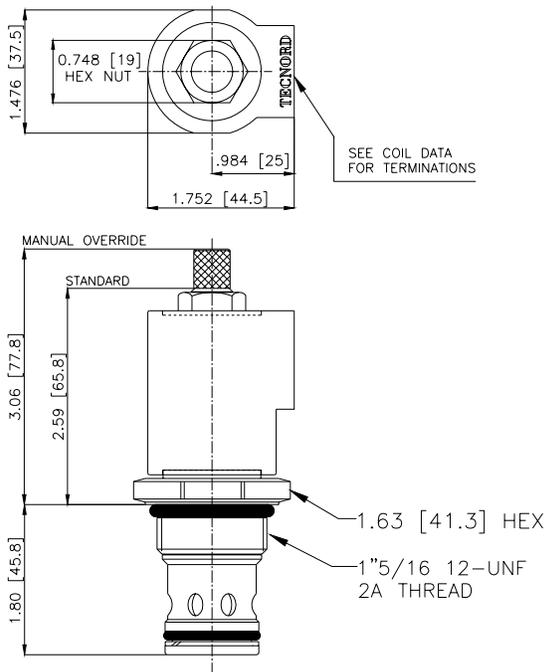


VALVE SPECIFICATIONS

Nominal Flow	30 GPM (114 LPM)
Rated Operating Pressure	3500 PSI (241 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	.72 lbs. (.32 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

SJ-S2A - - - -

OPTIONS

- Buna Standard **00**
- Viton Standard **V0**
- Buna, Override, Detent **0M**
- Viton, Override, Detent **VM**
- Buna, Override, Nondetent **B1**
- Viton, Override, Nondetent **V1**

- Blank **N**
- S**

BODIES

- Without Body
- 1" BSP Ports
- #12 SAE Ports

VOLTAGE (*other voltages available on request)

- 12** 12 VDC
- 24** 24 VDC
- 22** 220 VAC without internal rectifier

"V" COIL TERMINATION

(All DC Except as Noted)

- DL** Double Lead
(*several types of termination can be attached on leads on request)

- HC** DIN 43650 (Hirschman) – (AC & DC)
- DI** Deutsch – Integral DT04-2P

- DIA**
- DID**
- DIJ**
- DIM**

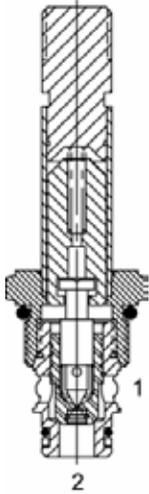
IMMERSION PROOF "D" TYPE

- "I" Coil AMP Superseal - Integral
- "I" Coil Deutsch – Integral DT04-2P
- "I" Coil AMP Jr. Timer - Integral
- "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S2B Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

OPERATION

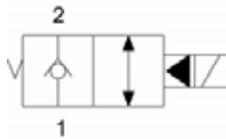
When de-energized the PB-S2B blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

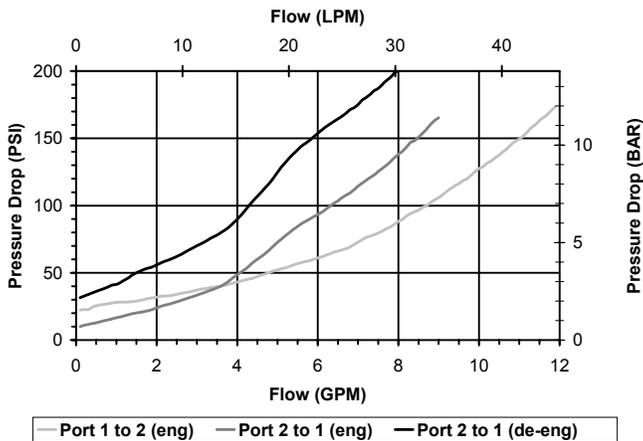
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

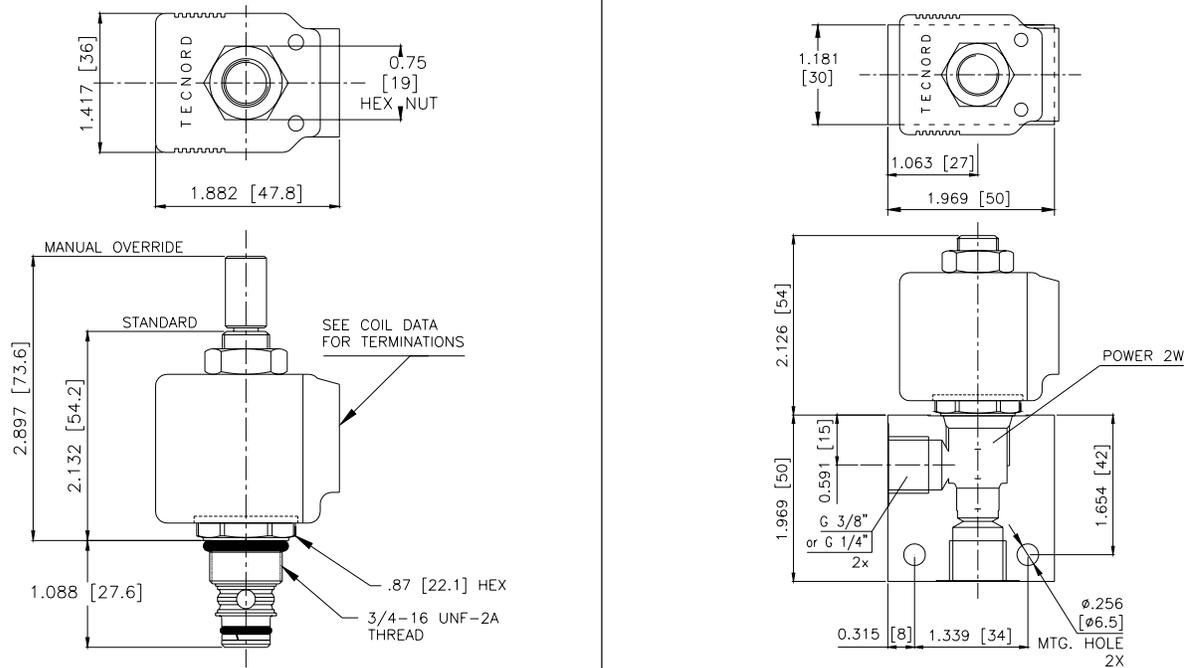


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 2W
Cavity Tools kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



ORDERING INFORMATION

PB-S2B -

OPTIONS					BODIES
Buna Standard	00				Without Body
Viton Standard	V0			N	1/4" BSP Ports
Buna, Override, Detent	0M			N1	3/8" BSP Ports
Viton, Override, Detent	VM			S	#6 SAE Ports
Buna, Screen	A0				
Viton, Screen	W0				
Buna, Override, Nondetent	B1			12	12 VDC
Viton, Override, Nondetent	V1			24	24 VDC
Buna, Screen, Override, Nondetent	B3			22	220 VAC without internal rectifier
Buna, Screen, Override, Detent	B4				
Viton, Screen, Override, Non-detent	V3				
Viton, Screen, Override, Detent	V4				

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

"K" COIL TERMINATION (All DC Except as Noted)

DL	Double Lead (*several types of termination can be attached on leads on request)	HC	DIN 43650 (Hirschman) - (AC & DC)	PIA	IMMERSION PROOF "P" TYPE "I" Coil AMP Superseal - Integral "I" Coil Deutsch - Integral DT04-2P "I" Coil AMP Jr. Timer - Integral "I" Coil Metri-Pack - Integral
		DI	Deutsch - Integral DT04-2P	PID	
				PIJ	
				PIM	

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2B Pilot Operated, 2 Way Normally Closed with Reversed Flow Energized

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

OPERATION

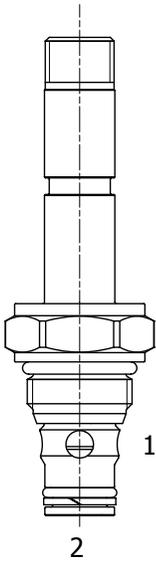
When de-energized the HB-S2B blocks flow from (1) to (2) and allows reverse flow from (2) to (1).

When energized the valve allows flow from (1) to (2) and from (2) to (1).

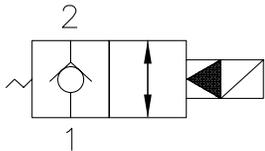
MANUAL OVERRIDE OPTION: to override, turn the manual override screw counter-clockwise. To release, turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

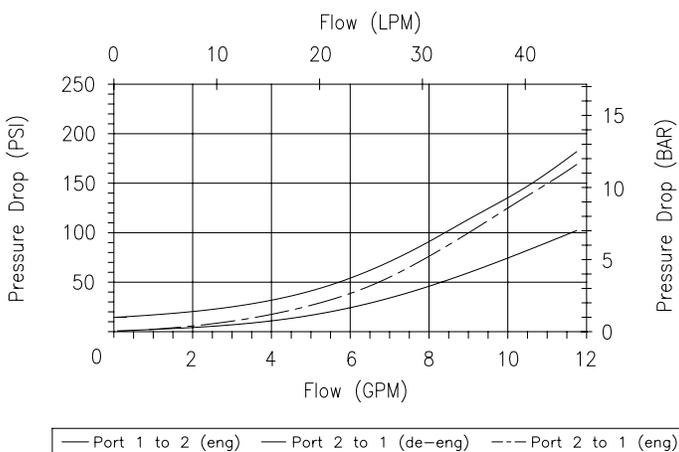


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

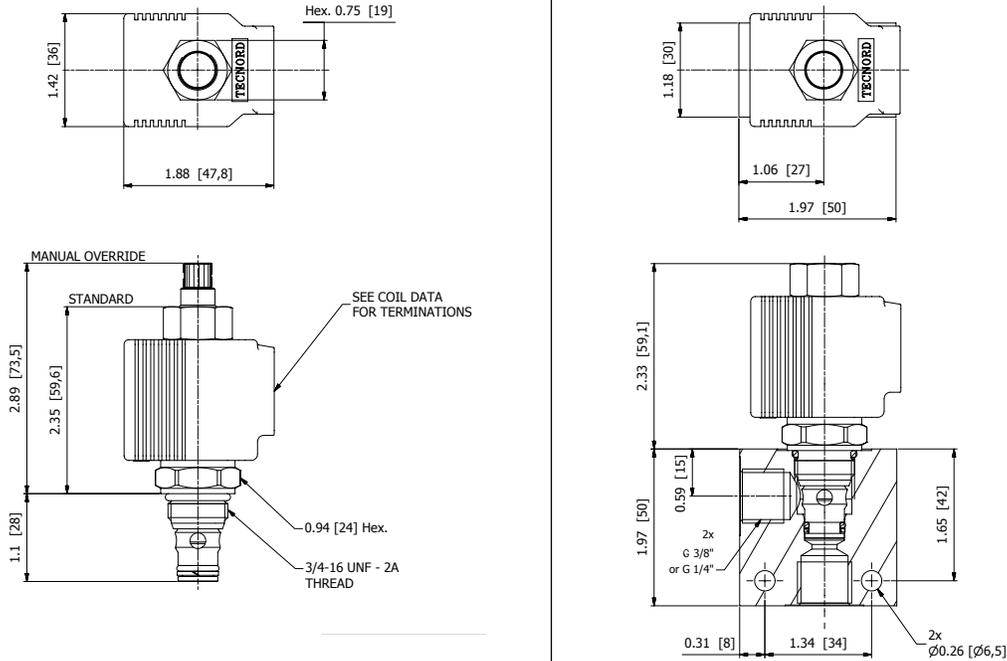


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	5000 PSI (350 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min at 5000 PSI (350 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 210°F (-40° to 100°C)
	BUNA seals
	-4° to 250°F (-20° to 120°C)
	VITON seals
Weight	.29 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	41-47 Nm (30-35 ft-lbs)
Coil Nut Torque Requirements	4-6 Nm (3-4.5 ft-lbs)
Cavity	POWER 2W
Cavity Tools Kit	40500005
Seal Kit	21191100

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DIMENSIONS



ORDERING INFORMATION

HB - S2B - - - -

OPTIONS	
Standard, Buna	00
Viton	V0
Buna, Screw Override	OK
Viton, Screw Override	VK

BODIES	
Blank	Without Body
N	1/4" BSP Ports (aluminum)
N1	3/8" BSP Ports (aluminum)
S	#6 SAE Ports
H	1/4" BSP Ports (steel)
H1	3/8" BSP Ports (steel)
Aluminum bodies only for use up to 250 bar	

VOLTAGE (consult factory for other voltages)	
12	12 VDC
24	24 VDC
26	26 VDC

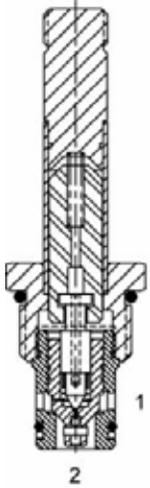
"P" TYPE "J" COIL TERMINATION

JA "J" Coil AMP Superseal - Integral	JJ "J" Coil AMP Jr. Time - Integral	JL "J" Coil Double Lead
JD "J" Coil Deutsch - Integral DT04-2P		JH "J" Coil DIN 43650 (Hirschman)

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2B Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

OPERATION

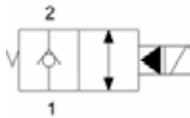
When de-energized the DE-S2B acts as a check valve, allowing flow to pass from (2) to (1), while blocking flow from (1) to (2). When energized the valve opens allowing flow to pass from (1) to (2).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

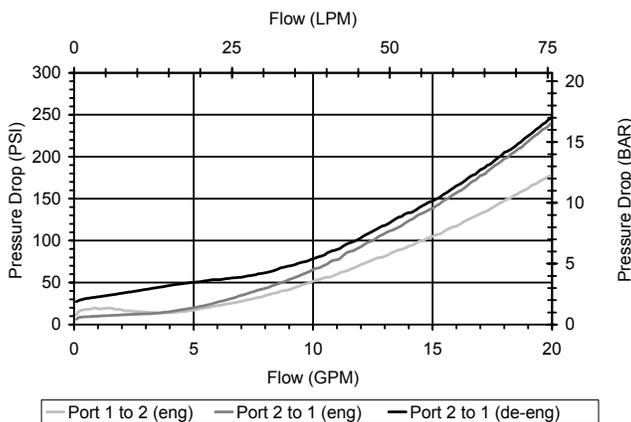
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

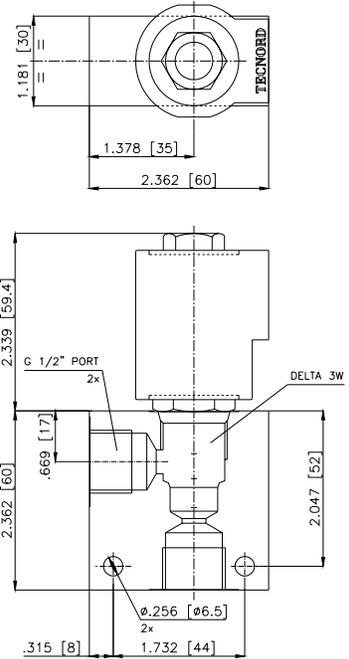
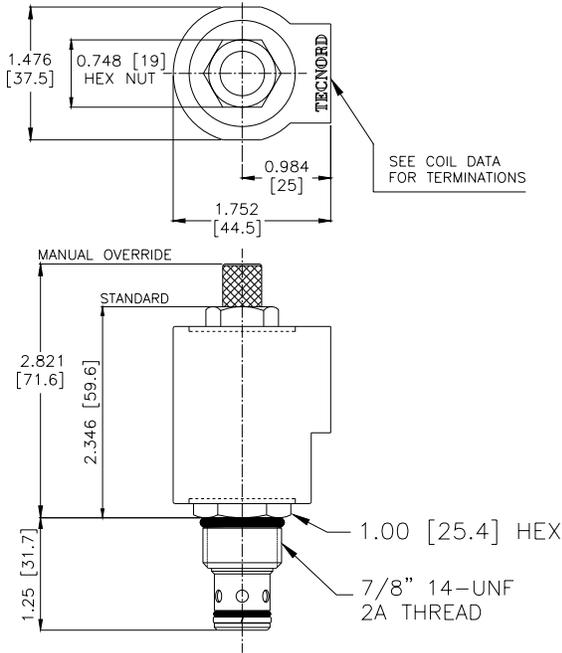


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 2W
Cavity Tools kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



ORDERING INFORMATION

DE-S2B

OPTIONS	
Buna Standard	00
Viton Standard	V0
Buna, Override	0M
Viton, Override	VM
Buna & Screen	A0
Viton & Screen	W0
Buna, Screen, Override	B3
Viton, Screen, Override	V3

BODIES	
Blank	N
1/2" BSP Ports	S
#8 SAE Ports	

VOLTAGE (*other voltages available on request)

12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

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

"V" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
(* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

DIA
DID
DIJ
DIM

IMMERSION PROOF "D" TYPE

"I" Coil AMP Superseal - Integral
"I" Coil Deutsch – Integral DT04-2P
"I" Coil AMP Jr. Timer - Integral
"I" Coil Metri-Pack – Integral

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.

TT-S2B Pilot Operated Poppet, 2 Way Normally Closed

DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnord" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

OPERATION

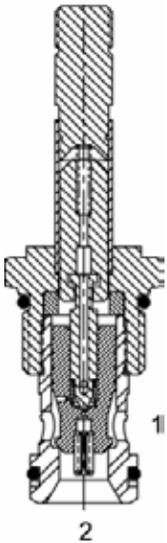
When de-energized the TT-S2B blocks flow from (1) to (2) and allows reverse flow from (2) to (1).

When energized the valve allows flow from (1) to (2) and from (2) to (1).

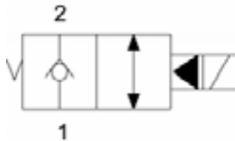
OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

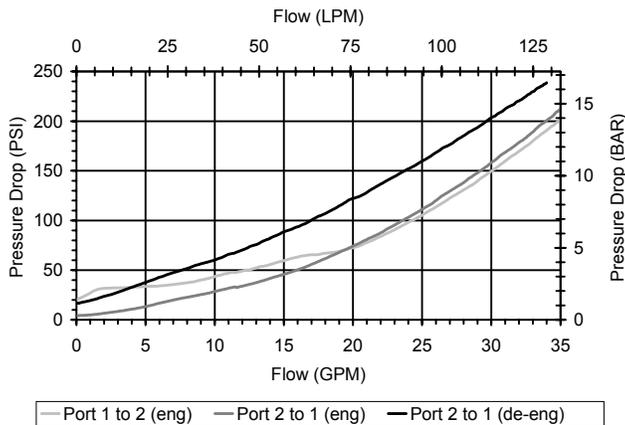


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

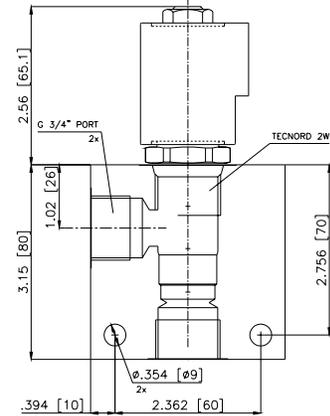
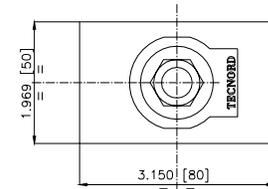
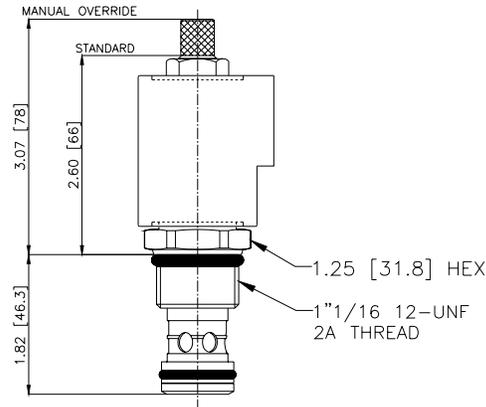
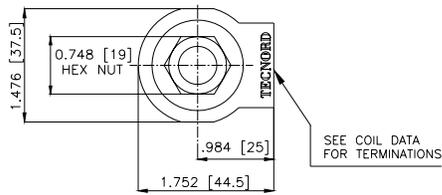


VALVE SPECIFICATIONS

Nominal Flow	25 GPM (95 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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	50 ft-lbs (67.8 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	TECNORD 2W
Cavity Tools kit (form tool, reamer, tap)	40500032
Seal Kit	21191300

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DIMENSIONS



ORDERING INFORMATION

TT-S2B -

OPTIONS	
Buna Standard	00
Viton Standard	V0
Buna, Override	0M
Viton, Override	VM
Buna & Screen	A0
Viton & Screen	W0
Buna, Override, Non-detent	B1
Viton, Override, Non-detent	V1
Buna, Screen, Override, Non-detent	B3
Buna, Screen, Override, Detent	B4
Viton, Screen, Override, Non-detent	V3
Viton, Screen, Override, Detent	V4

BODIES	
Blank	
N	3/4" BSP Ports
S	#12 SAE Ports

VOLTAGE (*other voltages available on request)	
12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

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

"V" COIL TERMINATION (All DC Except as Noted)

DL	Double Lead (*several types of termination can be attached on leads on request)
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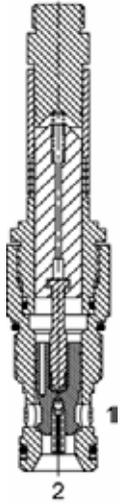
HC	DIN 43650 (Hirschman) - (AC & DC)
DI	Deutsch - Integral DT04-2P

DIA	"I" Coil AMP Superseal - Integral
DID	"I" Coil Deutsch - Integral DT04-2P
DIJ	"I" Coil AMP Jr. Timer - Integral
DIM	"I" Coil Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S2B Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

"High pressure" 12 size, 1 1/16-12 thread, "Tecnord" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

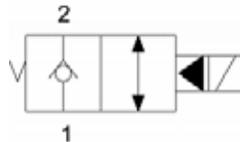
OPERATION

When de-energized the HT-S2B blocks flow from (1) to (2) and allows reverse flow from (2) to (1). When energized the valve allows flow from (1) to (2) and from (2) to (1).

FEATURES

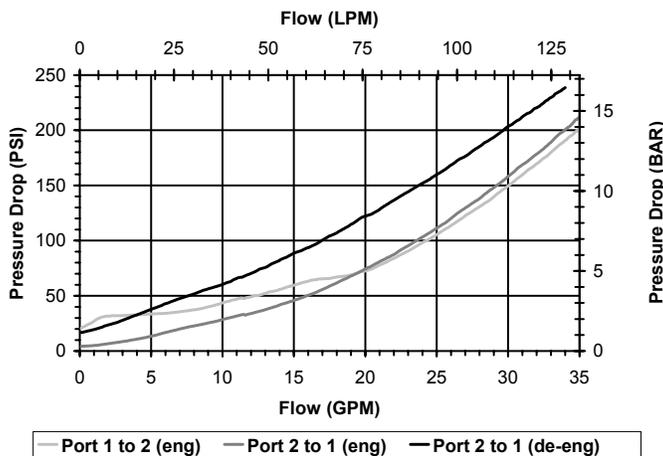
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

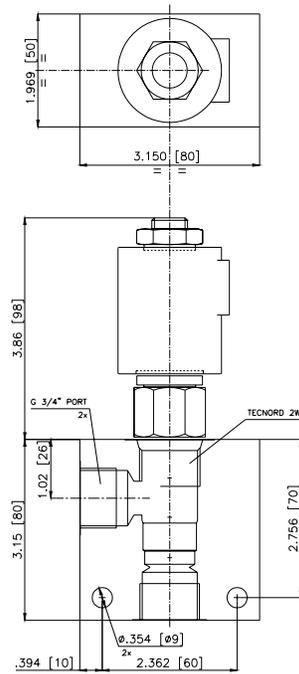
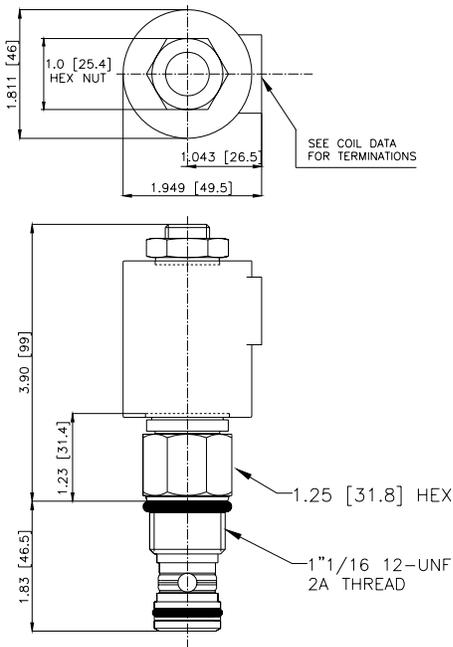


VALVE SPECIFICATIONS

Nominal Flow	25 GPM (95 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	.94 lbs. (.43 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	50 ft-lbs (67.8 Nm)
Coil Nut Torque Requirements	5-7 ft-lbs (6.8-9.5 Nm)
Cavity	TECNORD 2W
Cavity Tools kit (form tool, reamer, tap)	40500032
Seal Kit	21191301

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DIMENSIONS



ORDERING INFORMATION

HT-S2B - - - -

OPTIONS

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

Blank **N**
#12 SAE Ports **S**

BODIES

Without Body
3/4" BSP Ports
#12 SAE Ports

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

VOLTAGE (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"T" COIL TERMINATION

(All DC Except as Noted)

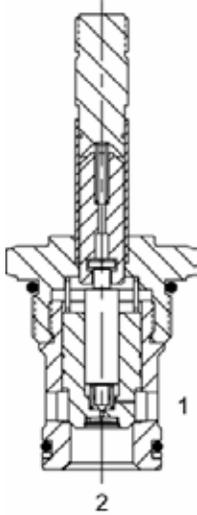
Double Lead **DL**

(*several types of termination can be attached on leads on request)
DIN 43650 (Hirschman) - (AC/DC) **HC**

Approximate Coil Weight: .78 lbs (.35 kg)

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-S2B Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, solenoid operated, 2 way normally closed, pilot operated poppet valve with reverse flow energized and de-energized.

OPERATION

When de-energized the SJ-S2B blocks flow from (1) to (2) and allows reverse flow from (2) to (1).

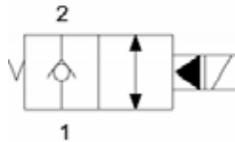
When energized the valve allows flow from (1) to (2) and from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

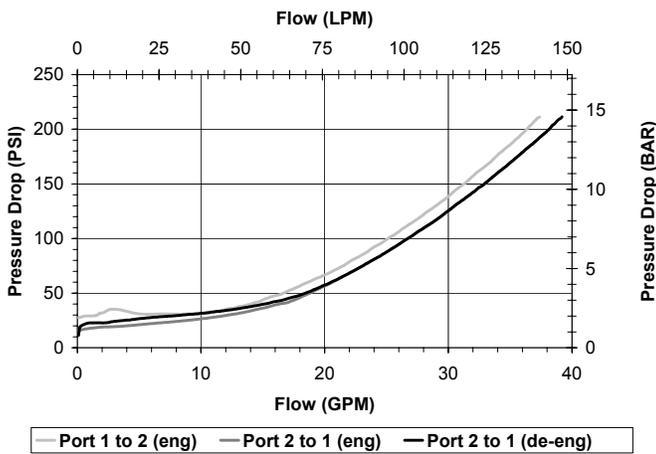
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

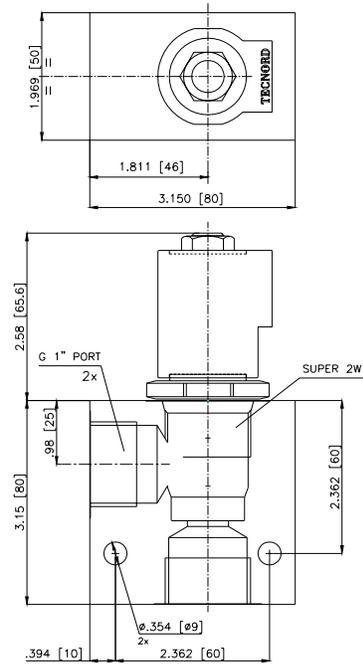
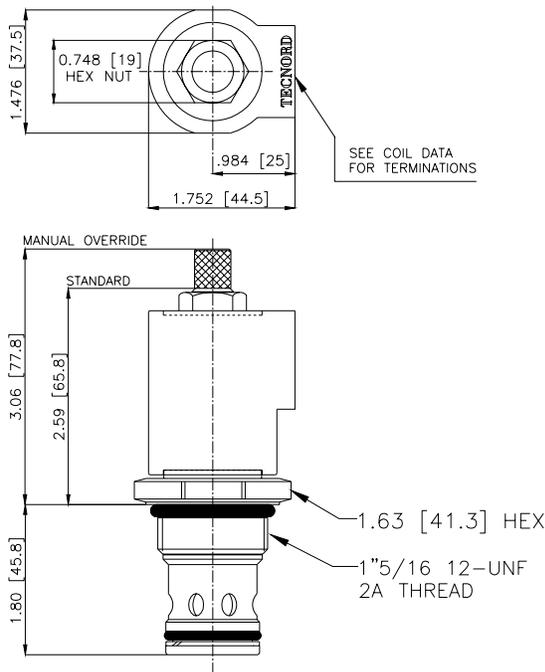


VALVE SPECIFICATIONS

Nominal Flow	30 GPM (114 LPM)
Rated Operating Pressure	3500 PSI (241 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	.72 lbs. (.32 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	SUPER 2W
Cavity Tools kit (form tool, reamer, tap)	40500017
Seal Kit	21191401

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DIMENSIONS



ORDERING INFORMATION

SJ-S2B

OPTIONS	
Buna Standard	00
Viton Standard	V0
Buna, Override, Detent	0M
Viton, Override, Detent	VM
Buna, Override, Non-detent	B1
Viton, Override, Non-detent	V1
Buna, Screen, Override, Non-detent	B3
Viton, Screen, Override, Non-detent	V3
Buna, Screen, Override, Detent	B4
Viton, Screen, Override, Detent	V4

BODIES	
Blank	
N	1" BSP Ports
S	#12 SAE Ports

VOLTAGE (*other voltages available on request)	
12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

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

"V" COIL TERMINATION (All DC Except as Noted)

DL	Double Lead (*several types of termination can be attached on leads on request)
----	--

HC	DIN 43650 (Hirschman) – (AC & DC)
DI	Deutsch – Integral DT04-2P

DIA	1" Coil AMP Superseal - Integral
DID	1" Coil Deutsch – Integral DT04-2P
DIJ	1" Coil AMP Jr. Timer - Integral
DIM	1" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

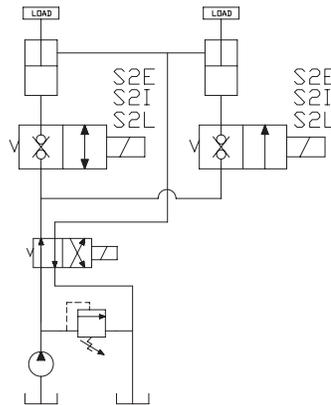
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

2 Way 2 Position Normally Closed Bi-Directional Valves

2W2P Normally Closed	GPM	PSI	LPM	BAR	MODEL	PAGE
	0,20	3000	0,76	207	MA-S2E	42
	12	3600	45	250	PB-S2I	44
	4	3000	15	207	DE-S2I	46
	12	5000	45	350	HB-S2L	48
	12	3000	45	207	DE-S2L	50

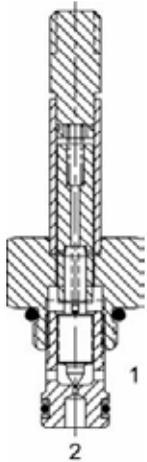
Typical Schematic

Typical application for the S2E, S2I, and S2L is where load holding in both directions is required.



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-S2E Poppet, 2 Way Normally Closed, Bi-Directional



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally closed, bi-directional poppet valve.

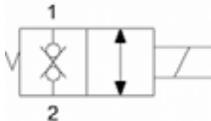
OPERATION

When de-energized the MA-S2E blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

FEATURES

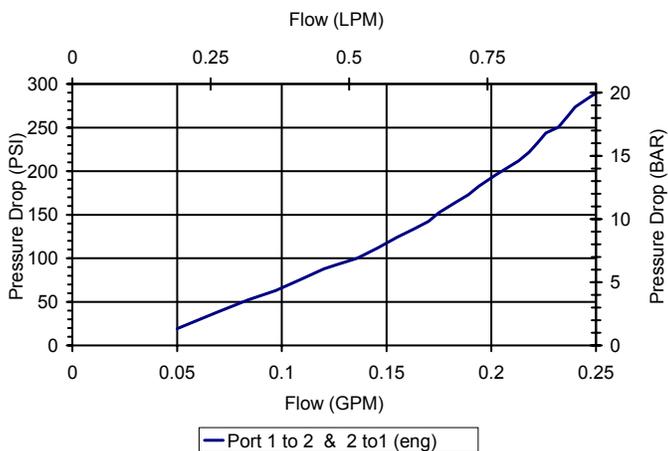
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

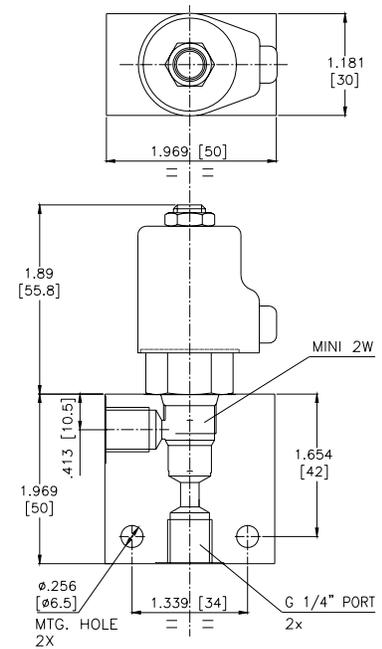
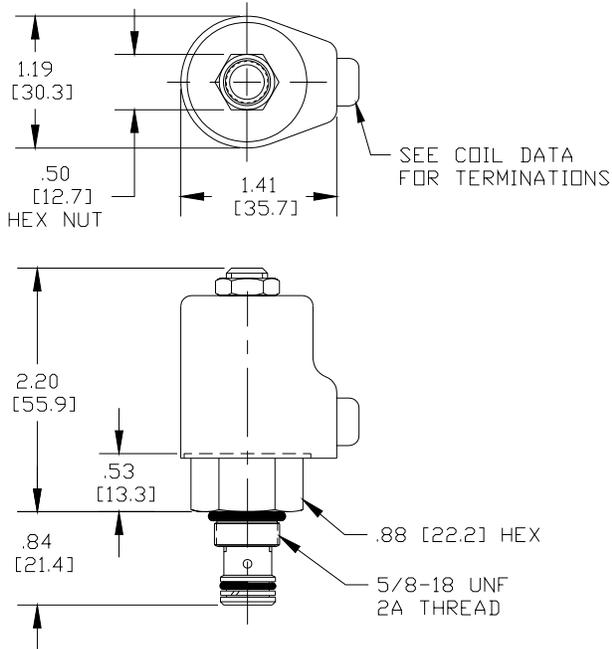


VALVE SPECIFICATIONS

Nominal Flow	.20 GPM (.76 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	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	.18 lbs. (.08 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 2W
Cavity Tools kit (form tool, reamer, tap)	40500003
Seal Kit	21191003

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DIMENSIONS



ORDERING INFORMATION

MA-S2E - - -

OPTIONS

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

Blank **N**
S

BODIES

Without Body
 1/4" BSP Ports
 #6 SAE Ports

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

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC with molded full wave rectifier

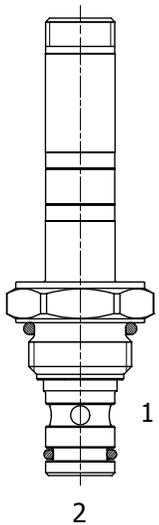
"M" COIL TERMINATION

Double Lead **DL**
 (* several types of termination can be attached on leads on request)
 DIN 43650 (Hirschmann) **HC**

Approximate Coil Weight: .30 lbs (.14 kg)

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-S2I Direct Acting Poppet, 2 Way Normally Closed



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally closed, bi-directional poppet valve.

OPERATION

When de-energized the PB-S2I blocks flow from (1) to (2) and from (2) to (1). When energized the valve allows flow from (1) to (2) and from (2) to (1).

PUSH TYPE MANUAL OVERRIDE OPTION: to override, push the manual override button.

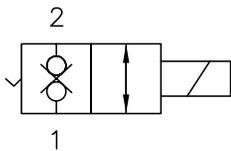
SCREW TYPE MANUAL OVERRIDE OPTION: to override, turn clockwise the manual override screw.

To release, turn the manual override screw counter-clockwise.

FEATURES

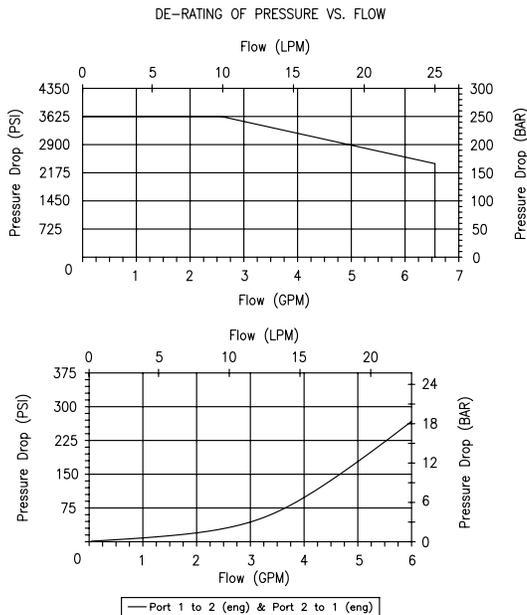
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

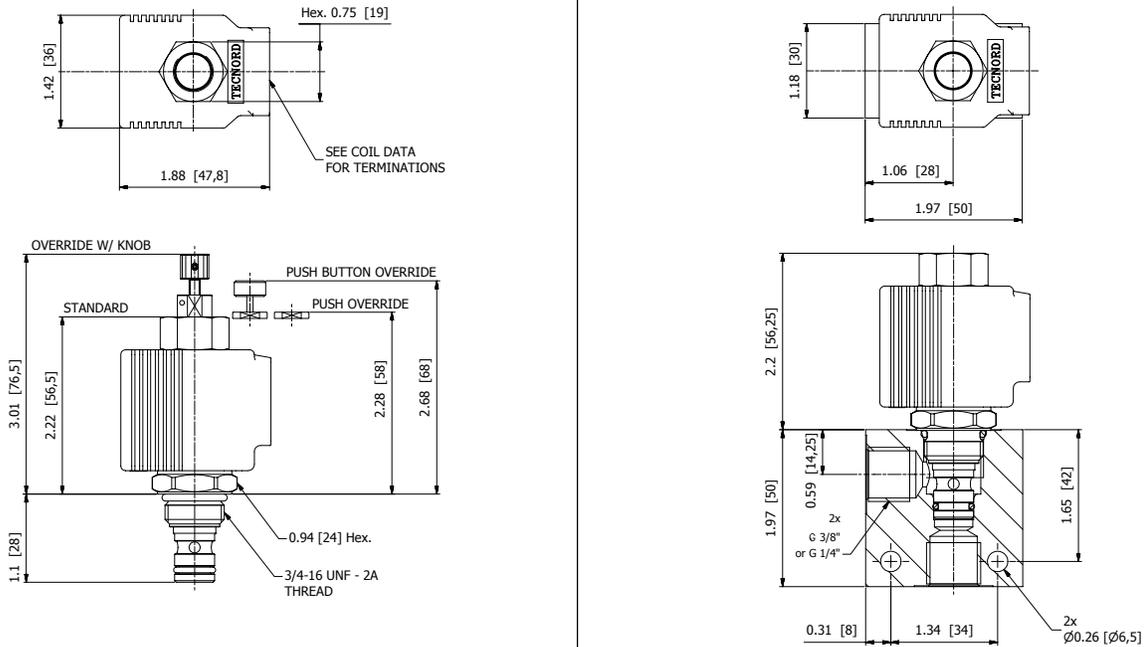


VALVE SPECIFICATIONS

Nominal Flow	4 GPM (15 LPM)
Rated Operating Pressure	3600 PSI (250 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min at 3600 PSI (250 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 210°F (-40° to 100°C) BUNA seals -4° to 250°F (-20° to 120°C) VITON seals
Weight	.29 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	41-47 Nm (30-35 ft-lbs)
Coil Nut Torque Requirements	4-6 Nm (3-4.5 ft-lbs)
Cavity	POWER 2W
Cavity Tools Kit	40500005
Seal Kit	21191100

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DIMENSIONS



ORDERING INFORMATION

PB - S2I - - - -

OPTIONS

Standard, Buna	00
Viton	V0
Buna, Push Pin Override	0P
Viton, Push Pin Override	VP
Buna, Push Button Override	0B
Viton, Push Button Override	VB
Buna, Screw Override	0K
Viton, Screw Override	VK

BODIES

Blank	Without Body
N	1/4" BSP Ports (aluminum)
N1	3/8" BSP Ports (aluminum)
S	#6 SAE Ports
H	1/4" BSP Ports (steel)
H1	3/8" BSP Ports (steel)
Aluminum bodies only for use up to 250 bar	

VOLTAGE (others available on request)

12	12 VDC
24	24 VDC
26	26 VDC

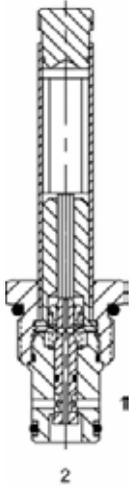
"P" TYPE "J" COIL TERMINATION

JA "J" Coil AMP Superseal - Integral	JJ "J" Coil AMP Jr. Time - Integral	JL "J" Coil Double Lead
JD "J" Coil Deutsch - Integral DT04-2P		JH "J" Coil DIN 43650 (Hirschman)

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2I Pilot Operated Poppet, 2 Way Normally Closed



DESCRIPTION

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

OPERATION

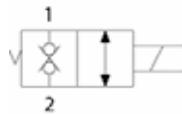
When de-energized the DE-S2I blocks flow from (1) to (2) or (2) to (1). When energized the valve allows flow from (1) to (2) or (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise. To release turn the manual override screw counter-clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "1" Coil: Weatherproof, Thermal Shock, Immersion Safe.

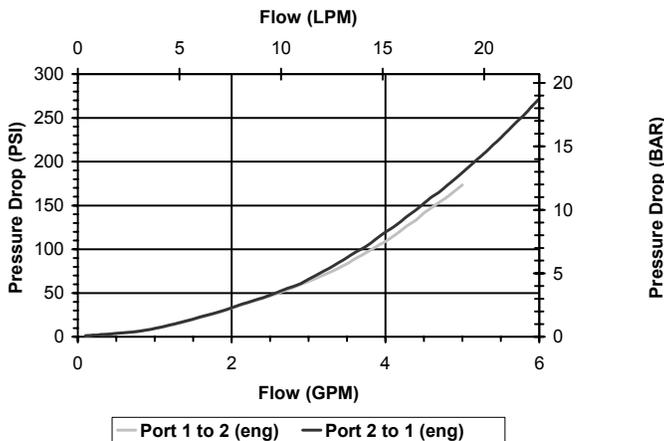
HYDRAULIC SYMBOL



For higher flow uses DE S2L.

PERFORMANCE

Actual Test Data (Cartridge Only)

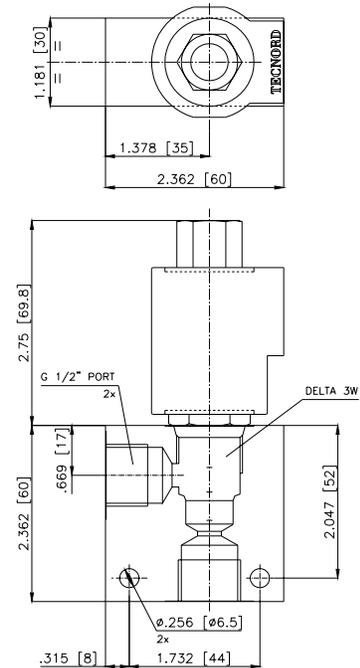
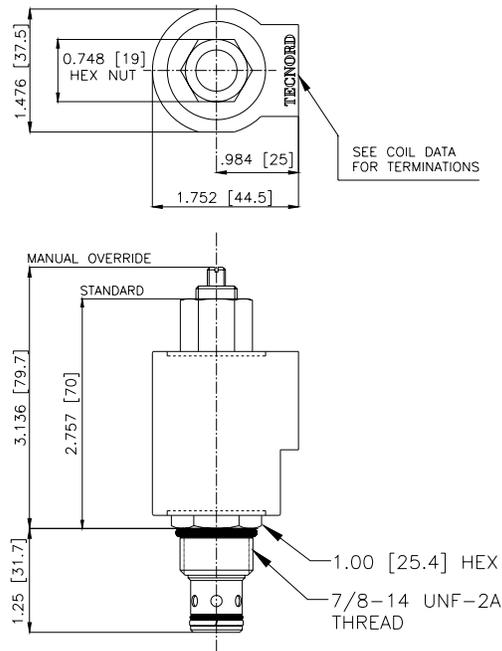


VALVE SPECIFICATIONS

Nominal Flow	4 GPM (15 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	0-10 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.21 lbs. (.09 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (6.8 Nm)
Cavity	DELTA 2W
Cavity Tools kit (form tool, reamer, tap)	40500000
Seal Kit	21191202

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DIMENSIONS



ORDERING INFORMATION

DE-S2I - - -

OPTIONS	
Buna Standard	00
Viton Standard	V0
Buna, Override, Detent	0M
Viton, Override, Detent	VM
Buna, Override, Knob	OK
Viton, Override, Knob	VK
Buna, Screen	A0
Viton, Screen	W0
Buna, Screen, Override	B2
Viton, Screen, Override	V2
Buna, Screen, Override, Knob	B5
Viton, Screen, Override, Knob	V5

BODIES	
Blank	
N	1/2" BSP Ports
S	#6 SAE Ports

VOLTAGE (*other voltages available on request)	
12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

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

"V" COIL TERMINATION (All DC Except as Noted)

DL	Double Lead (* several types of termination can be attached on leads on request)
----	---

HC	DIN 43650 (Hirschman) - (AC & DC)
DI	Deutsch - Integral DT04-2P

DIA
DID
DIJ
DIM

IMMERSION PROOF "D" TYPE	
"I"	Coil AMP Superseal - Integral
"I"	Coil Deutsch - Integral DT04-2P
"I"	Coil AMP Jr. Timer - Integral
"I"	Coil Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S2L Piloted Operated Poppet, 2 Way Double Lock Normally Closed

DESCRIPTION

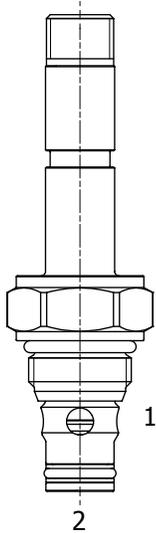
8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way double lock normally closed pilot operated, bi-directional poppet valve.

OPERATION

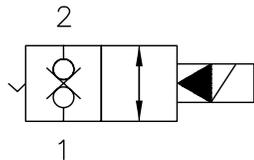
When de-energized the HB-S2L blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

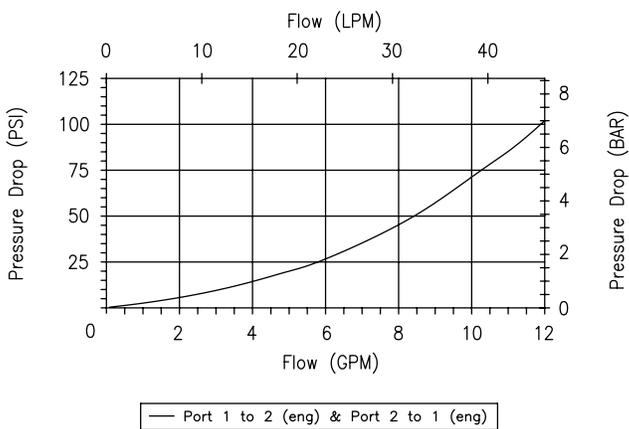


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

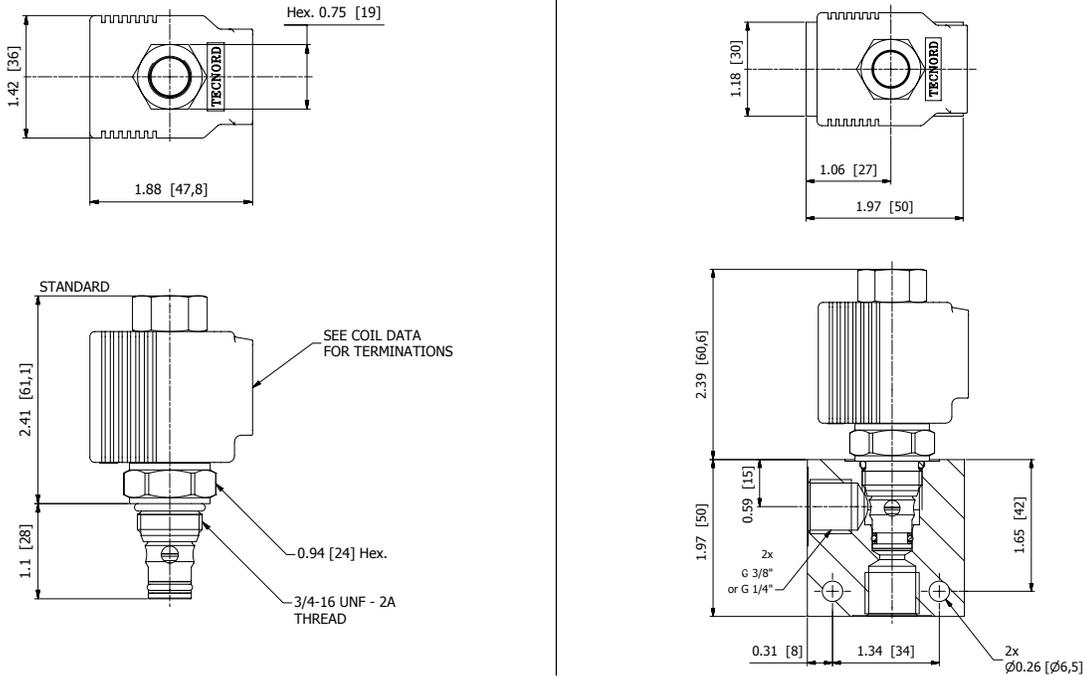


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	5000 PSI (350 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min at 5000 PSI (350 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 210°F (-40° to 100°C) BUNA seals -4° to 250°F (-20° to 120°C) VITON seals
Weight	.29 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	41-47 Nm (30-35 ft-lbs)
Coil Nut Torque Requirements	4-6 Nm (3-4.5 ft-lbs)
Cavity	POWER 2W
Cavity Tools Kit	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



ORDERING INFORMATION

HB - S2L -

OPTIONS
Standard, Buna 00
Viton V0

BODIES
Blank
N
N1
S
H
H1

Without Body
1/4" BSP Ports (aluminum)
3/8" BSP Ports (aluminum)
#6 SAE Ports
1/4" BSP Ports (steel)
3/8" BSP Ports (steel)
Aluminum bodies only for use up to 250 bar

VOLTAGE (consult factory for other voltages)
12 12 VDC
24 24 VDC
26 26 VDC

"P" TYPE "J" COIL TERMINATION

JA "J" Coil AMP Superseal - Integral
JD "J" Coil Deutsch - Integral DT04-2P

JJ "J" Coil AMP Jr. Time - Integral

JL "J" Coil Double Lead
JH "J" Coil DIN 43650 (Hirschman)

Approximate Coil Weight: .42 lbs (.19 kg)

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.

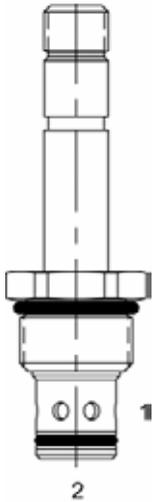
DE-S2L Piloted Operated Poppet, 2 Way Normally Closed, Bi-Directional

DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally closed, bi-directional poppet valve.

OPERATION

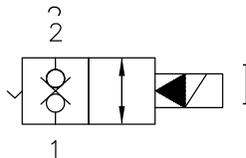
When de-energized the DE-S2L blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).



FEATURES

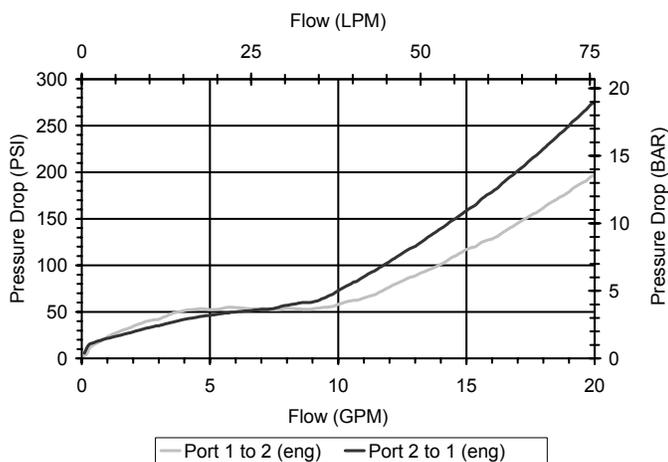
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "1" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

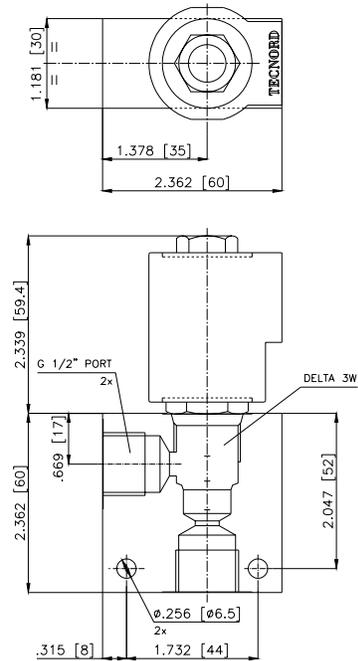
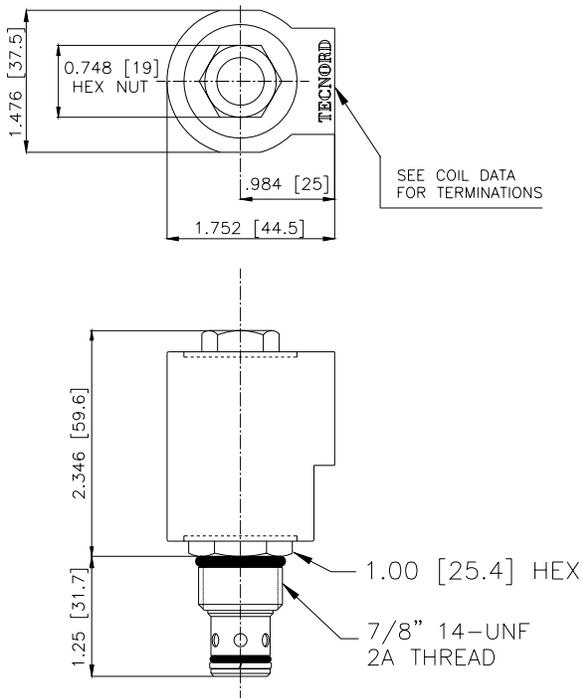


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	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	.26 lbs. (.12 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 2W
Cavity Tools kit (form tool, reamer, tap)	40500000
Seal Kit	21191202

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DIMENSIONS



ORDERING INFORMATION

DE-S2L - - -

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

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

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

VOLTAGE (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"V" COIL TERMINATION
 (All DC Except as Noted)

DL Double Lead
 (* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF "D" TYPE
DIA "I" Coil AMP Superseal - Integral
DID "I" Coil Deutsch – Integral DT04-2P
DIJ "I" Coil AMP Jr. Timer - Integral
DIM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

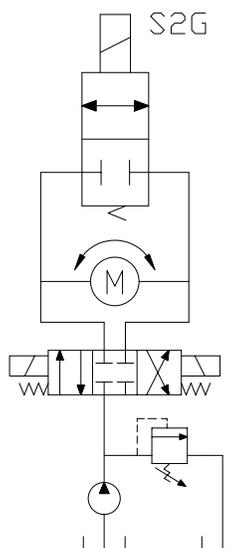
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

2 Way 2 Position Normally Closed Spool Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	1,5	3000	5,7	207	MA-S2G	54
	4	4000	15	276	HA-S2G	56
	8	3000	30	207	PB-S2G	58
	8	3000	30	207	DE-S2G	60
	15	4000	57	276	HE-S2G	62

Typical Schematic

Typical application for the S2G is locking or braking of a fluid motor.



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-S2G Direct Acting Spool, 2 Way Normally Closed

DESCRIPTION

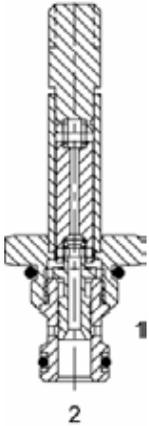
7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally closed, spool valve.

OPERATION

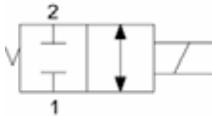
When de-energized the MA-S2G blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

FEATURES

- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.



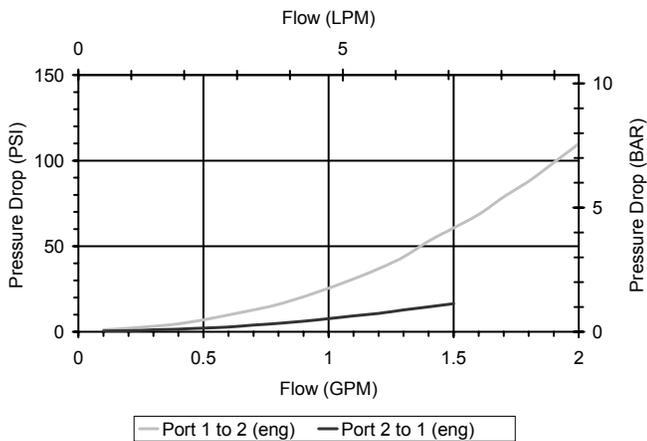
HYDRAULIC SYMBOL



For higher flow or pressure see HA-S2G.

PERFORMANCE

Actual Test Data (Cartridge Only)

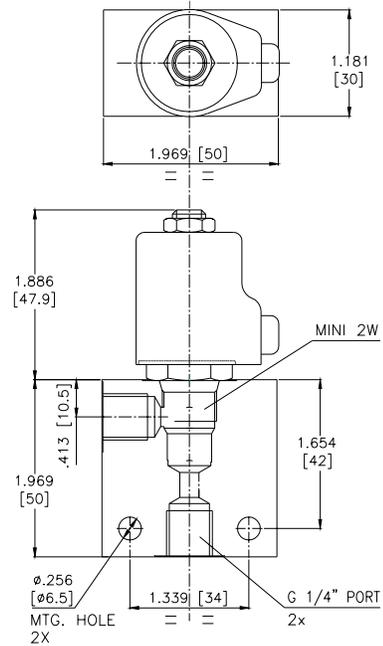
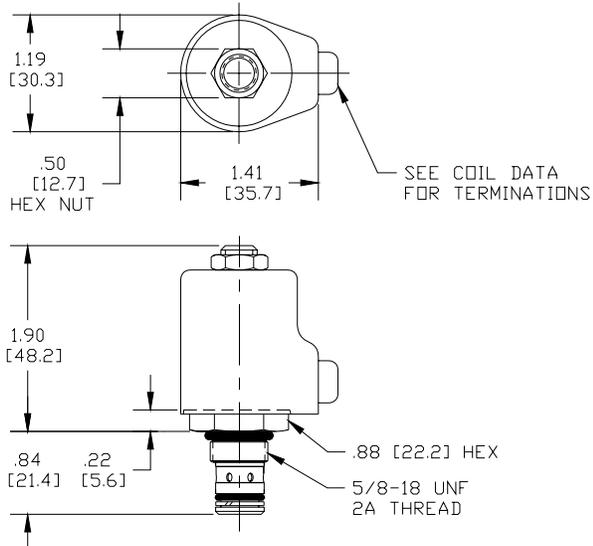


VALVE SPECIFICATIONS

Nominal Flow	1.5 GPM (5.7 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	.12 lbs. (.05 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (6.8 Nm)
Cavity	MINI 2W
Cavity Tools kit (form tool, reamer, tap)	40500003
Seal Kit	21191002

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

MA-S2G - - - - -

OPTIONS

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

- Blank **N**
- S**

BODIES

- Without Body
- 1/4" BSP Ports
- #6 SAE Ports

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

VOLTAGE (*other voltages available on request)

- 12** 12 VDC
- 24** 24 VDC
- 22** 220 VAC with molded full wave rectifier

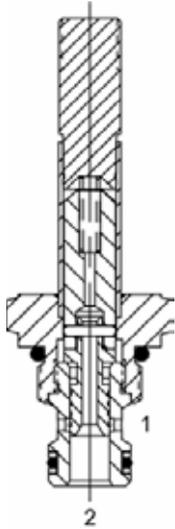
"M" COIL TERMINATION

- Double Lead **DL**
- (* several types of termination can be attached on leads on request)
- DIN 43650 (Hirschman) – (AC&DC) **HC**

Approximate Coil Weight: .30 lbs (.14 kg)

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.

HA-S2G Direct Acting Spool, 2 Way Normally Closed



DESCRIPTION

"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally closed, spool valve with free reverse.

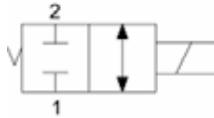
OPERATION

When de-energized the HA-S2G blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design (for most common terminations, see coil page).
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

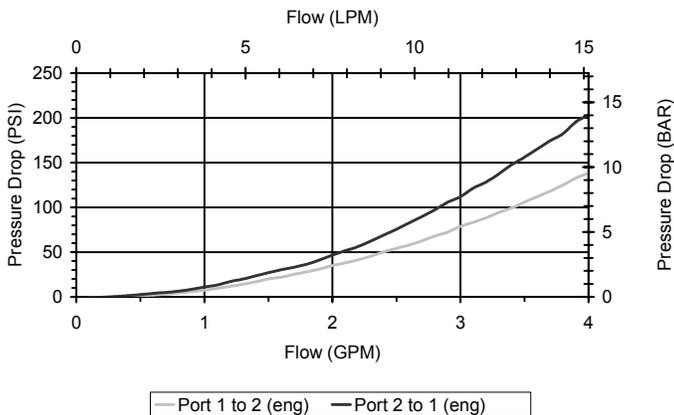
HYDRAULIC SYMBOL



Operation shift limit 2 GPM (8 LPM).
For shifted performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

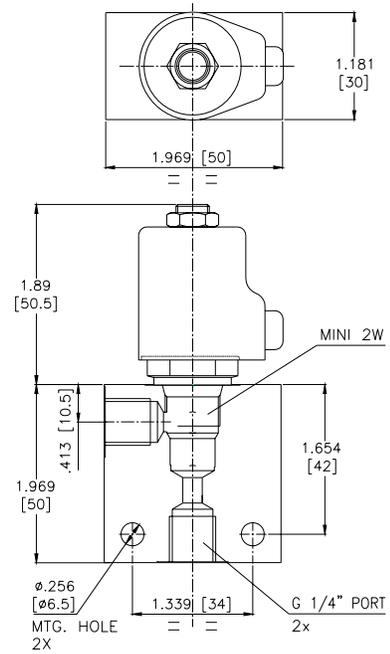
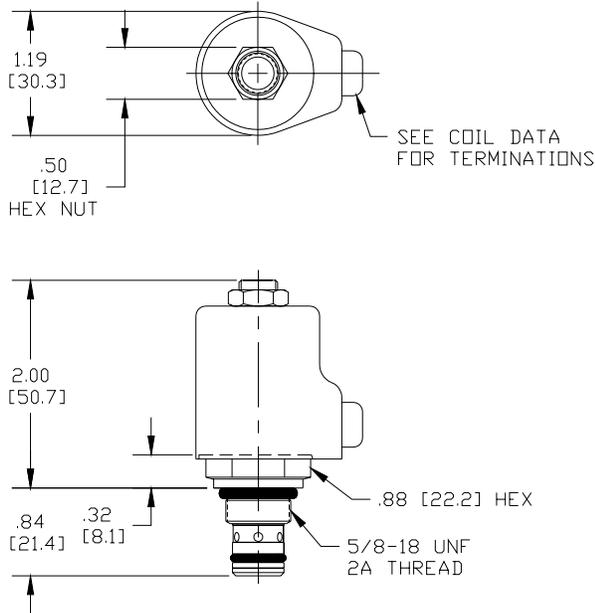


VALVE SPECIFICATIONS

Maximum Flow	4 GPM (15 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (131 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	.14 lbs. (.06 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 2W
Cavity Tools kit (form tool, reamer, tap)	40500003
Seal Kit	21191002

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

HA-S2G - - - -

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

Blank **N**
S

BODIES
 Without Body
 1/4" BSP Ports
 #6 SAE Ports

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

12
24
22

VOLTAGE (*other voltages available on request)
 12 VDC
 24 VDC
 220 VAC with molded full wave rectifier

"M" COIL TERMINATION

Double Lead **DL**
 (* several types of termination can be attached on leads on request)
 DIN 43650 (Hirschman) - (AC&DC) **HC**

Approximate Coil Weight: .30 lbs (.14 kg)

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-S2G Direct Acting Spool, 2 Way Normally Closed

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally closed, spool valve.

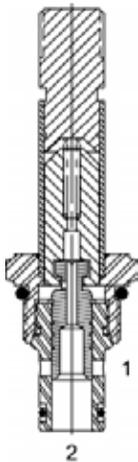
OPERATION

When de-energized the PB-S2G blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

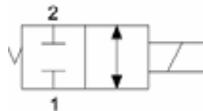
OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.



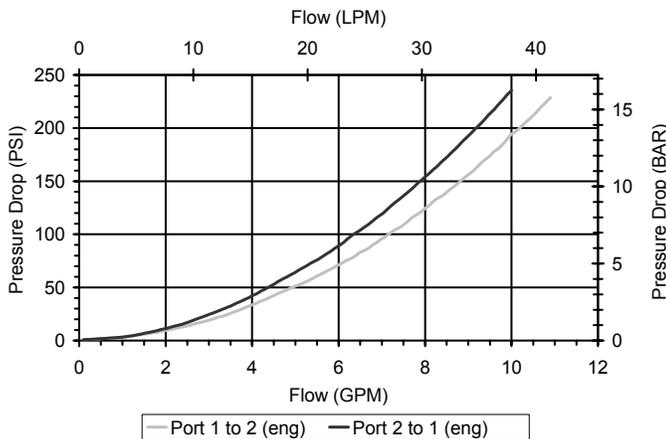
HYDRAULIC SYMBOL



Operational shift limit in 2 to 1 direction is 4 GPM.
For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

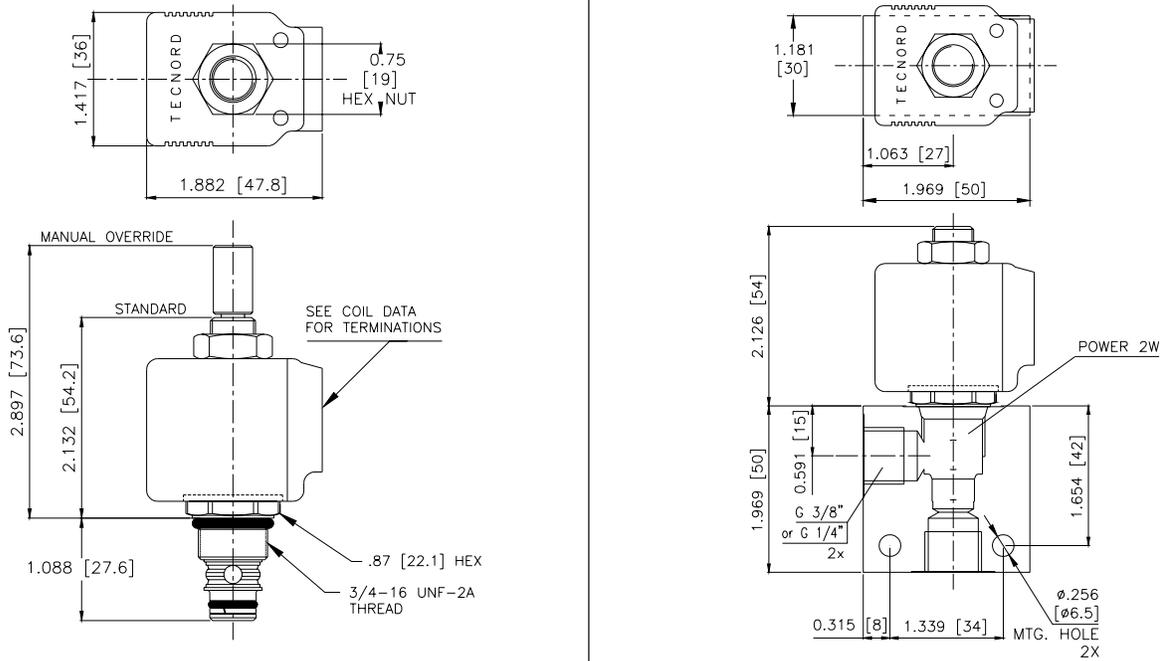


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM) from (1) to (2) 4 GPM (15 LPM) from (2) to (1)
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	.19 lbs. (.09 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

PB-S2G - - - -

OPTIONS					BODIES
Buna Standard	00				Blank
Viton Standard	V0				N 1/4" BSP Ports
Buna, Override, Detent	0M				N1 3/8" BSP Ports
Viton, Override, Detent	VM				S #6 SAE Ports
Buna, Screen	A0				
Viton, Screen	W0				VOLTAGE (*other voltages available on request)
Buna, Override, Nondetent	B1			12	12 VDC
Viton, Override, Nondetent	V1			24	24 VDC
Buna, Screen, Override, Nondetent	B3			22	220 VAC without internal rectifier
Buna, Screen, Override, Detent	B4				
Viton, Screen, Override, Non-detent	V3				
Viton, Screen, Override, Detent	V4				

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

"K" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead (*several types of termination can be attached on leads on request)	HC DIN 43650 (Hirschman) – (AC & DC)	PIA
	DI Deutsch – Integral DT04-2P	PID
		PIJ
		PIM

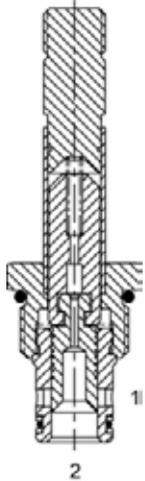
IMMERSION PROOF "P" TYPE

- "I" Coil AMP Superseal - Integral
- "I" Coil Deutsch – Integral DT04-2P
- "I" Coil AMP Jr. Timer - Integral
- "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2G Direct Acting Spool, 2 Way Normally Closed



DESCRIPTION

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

OPERATION

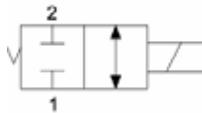
When de-energized the DE-S2G blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

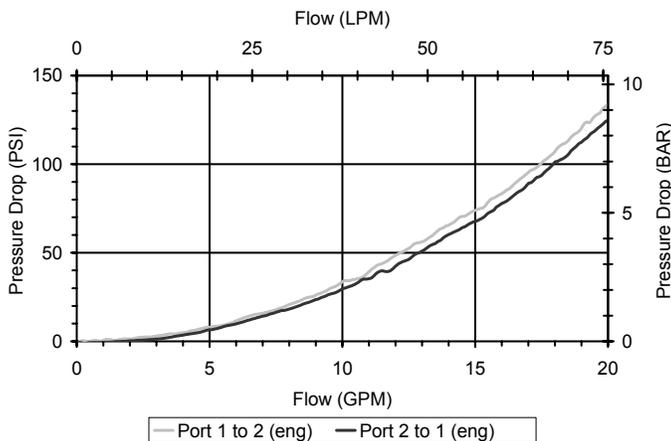
HYDRAULIC SYMBOL



Operational shift limit 8 GPM (30 LPM) and 5 GPM (19 LPM).
For shifted flow performance consult chart.
For higher flow or pressure see HE-S2G.

PERFORMANCE

Actual Test Data (Cartridge Only)

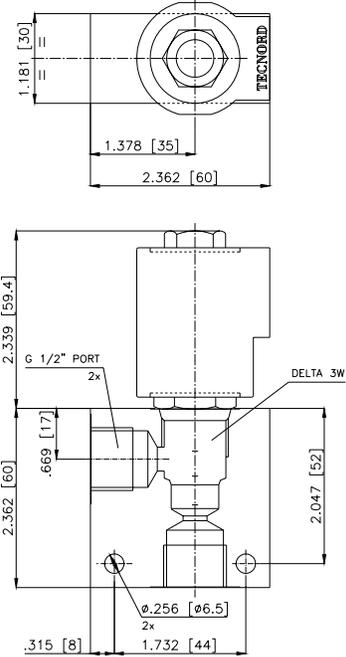
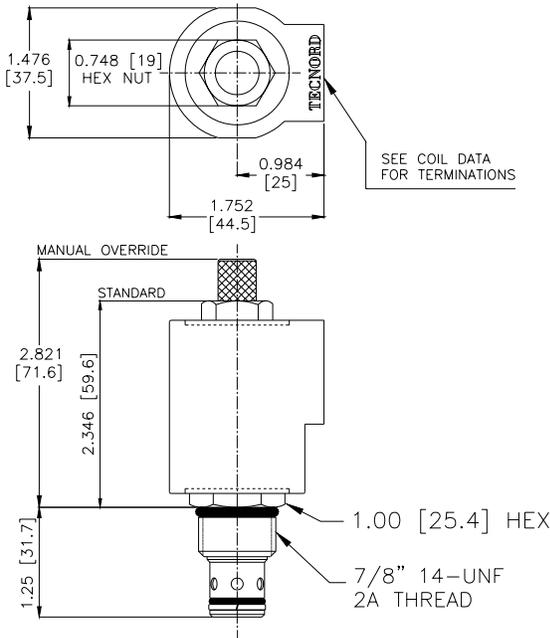


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM) from (1) to (2) 5 GPM (19 LPM) from (2) to (1)
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	.26 lbs. (.12 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

DE-S2G - - - -

- OPTIONS**
- Buna Standard **00**
 - Viton Standard **V0**
 - Buna, Override **0M**
 - Viton, Override **VM**
 - Buna, Screen **A0**
 - Viton, Screen **W0**
 - Buna, Screen, Override **B3**
 - Viton, Screen, Override **V3**

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

- VOLTAGE** (*other voltages available on request)
- 12** 12 VDC
 - 24** 24 VDC
 - 22** 220 VAC without internal rectifier

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

"V" COIL TERMINATION
(All DC Except as Noted)

- DL** Double Lead
(* several types of termination can be attached on leads on request)

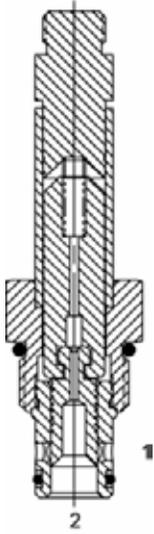
- HC** DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

- DIA** "I" Coil AMP Superseal - Integral
DID "I" Coil Deutsch – Integral DT04-2P
DIJ "I" Coil AMP Jr. Timer - Integral
DIM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

HE-S2G Direct Acting Spool, 2 Way Normally Closed



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally closed, spool valve.

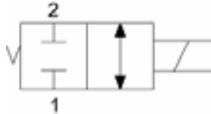
OPERATION

When de-energized the HE-S2G blocks flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

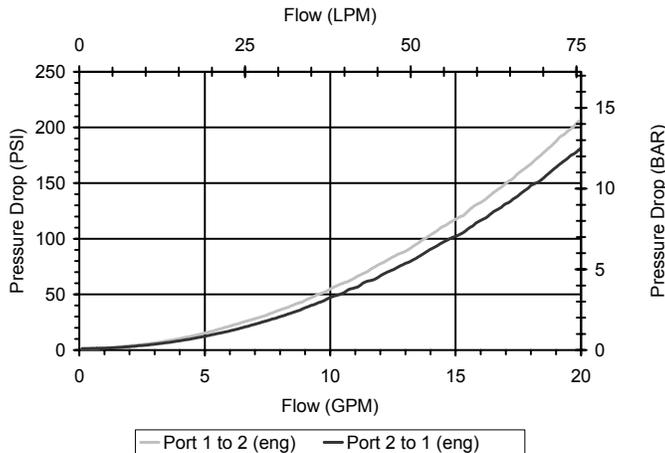
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)

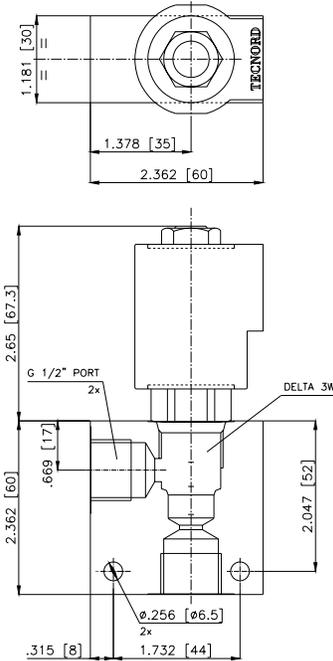
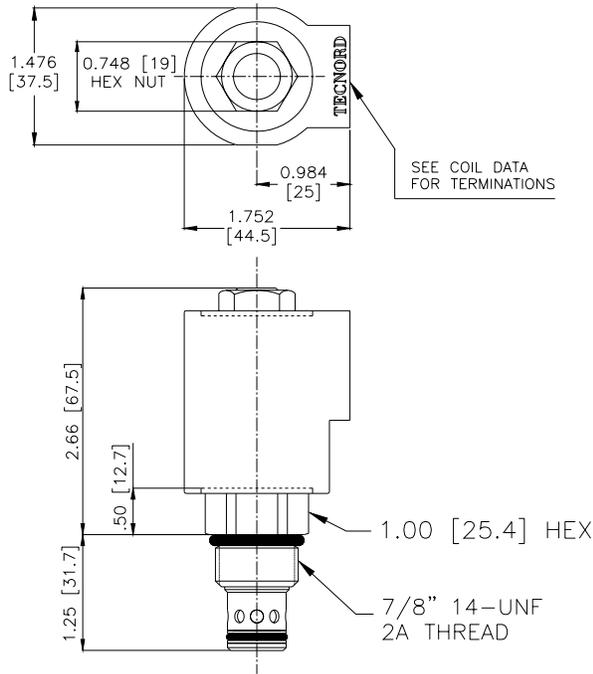


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM) from (1) to (2) 6 GPM (23 LPM) from (2) to (1)
Max Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (131 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	.39 lbs. (.17 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

HE-S2G - - - -

OPTIONS
 Buna Standard **00**
 Viton Standard **VO**

Blank
N
S

BODIES
 Without Body
 1/2" BSP Ports
 #8 SAE Ports

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

VOLTAGE (*other voltages on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"L" COIL TERMINATION
 (All DC Except as Noted)

DL Double Lead
 (* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

LIA "I" Coil AMP Superseal - Integral
LID "I" Coil Deutsch – Integral DT04-2P
LIJ "I" Coil AMP Jr. Timer - Integral
LIM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .69 lbs (.31 kg)

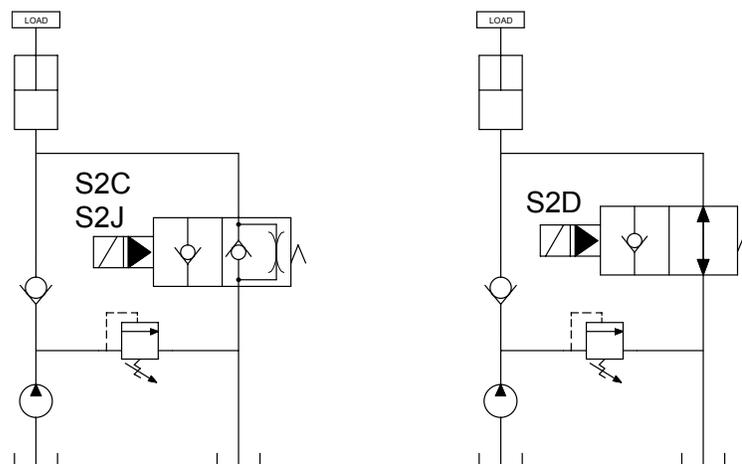
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

2 Way 2 Position Normally Open Poppet Valves

2W2P Normally Open	GPM	PSI	LPM	BAR	MODEL	PAGE
	5	3000	19	207	MA-S2C	66
	10	3500	38	241	PB-S2C	68
	12	5000	45	350	HB-S2C	70
	15	3500	57	241	DE-S2C	74
	30	3000	114	241	TT-S2C	76
	40	3000	151	207	SJ-S2C	78
	10	3500	38	241	PB-S2D	80
	12	5000	45	350	HB-S2D	82
	15	3500	57	241	DE-S2D	84
	30	3000	114	207	TT-S2D	86
	40	3000	151	207	SJ-S2D	88
Soft Seat 	8	2000	30	138	PB-S2J	72
	12	5000	45	350	HB-S2K	90

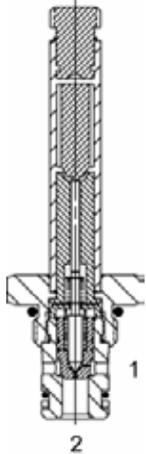
Typical Schematic

Typical application for the S2C is a pump unloading circuit when high flow and low pressure drop is required.
 Typical application for the S2D is for when free flow is required in both directions to float the cylinder.
 Typical application for the S2J is for low pressure applications where the soft seat gives better leakage 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-S2C Pilot Operated Poppet, 2 Way Normally Open



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

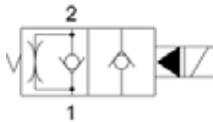
OPERATION

When de-energized the MA-S2C allows flow from (1) to (2) and restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) and allows flow from (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

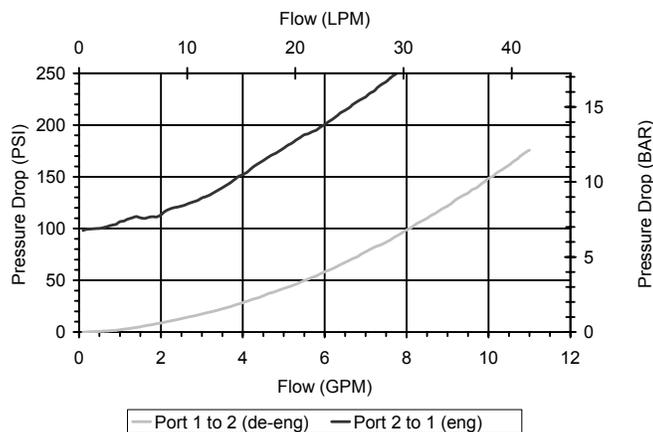
HYDRAULIC SYMBOL



Operational shift limit 5 GPM (19 LPM) from (1) to (2) energized. For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

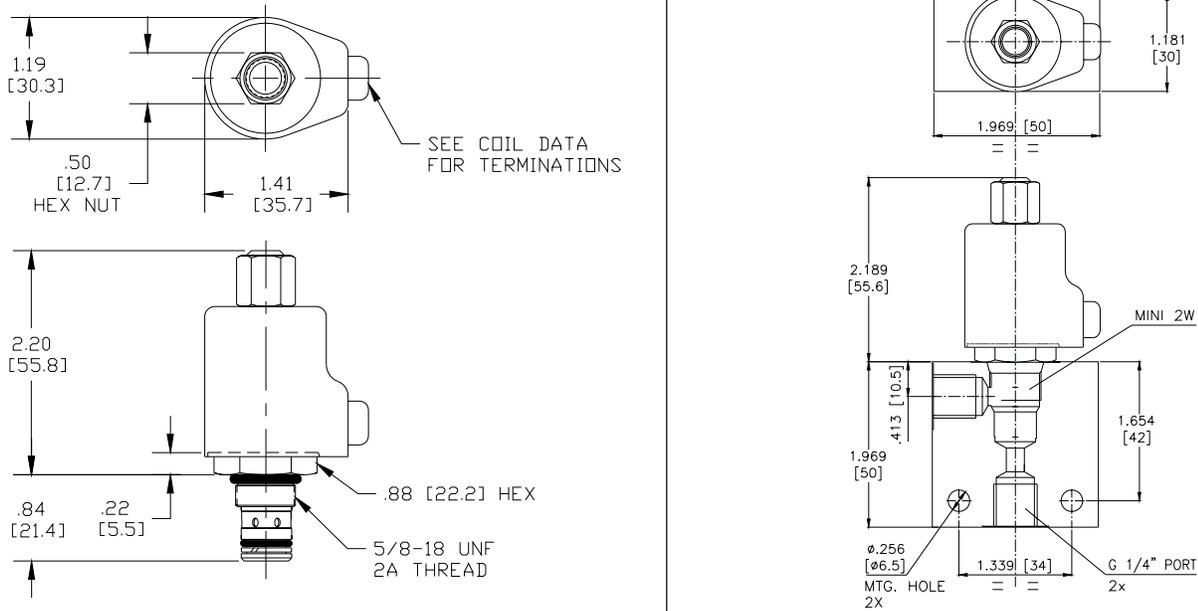


VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 2W
Cavity Tools kit (form tool, reamer, tap)	40500003
Seal Kit (Buna)	21191001

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

MA-S2C - - - -

OPTIONS

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

Blank **N**
S

BODIES

Without Body
 1/4" BSP Ports
 #6 SAE Ports

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

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC with molded full wave rectifier

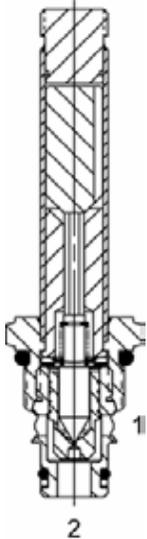
"M" COIL TERMINATION

Double Lead **DL**
 (*several types of termination can be attached on leads on request)
 DIN 43650 (Hirschman) – (AC & DC) **HC**

Approximate Coil Weight: .30 lbs (.14 kg)

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-S2C Pilot Operated Poppet, 2 Way Normally Open



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

OPERATION

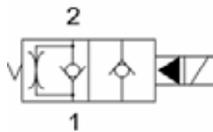
When de-energized the PB-S2C allows flow from (1) to (2) and restricted flow from (2) to (1). When energized the valve blocks flow from (1) to (2) and allows flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise. To release turn the manual override screw counter-clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

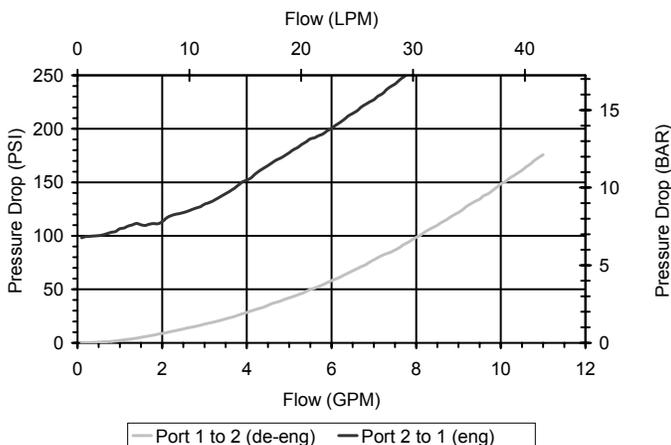
HYDRAULIC SYMBOL



Unshifted limit 10 GPM (38 LPM) from (1) to (2) when deenergized. For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

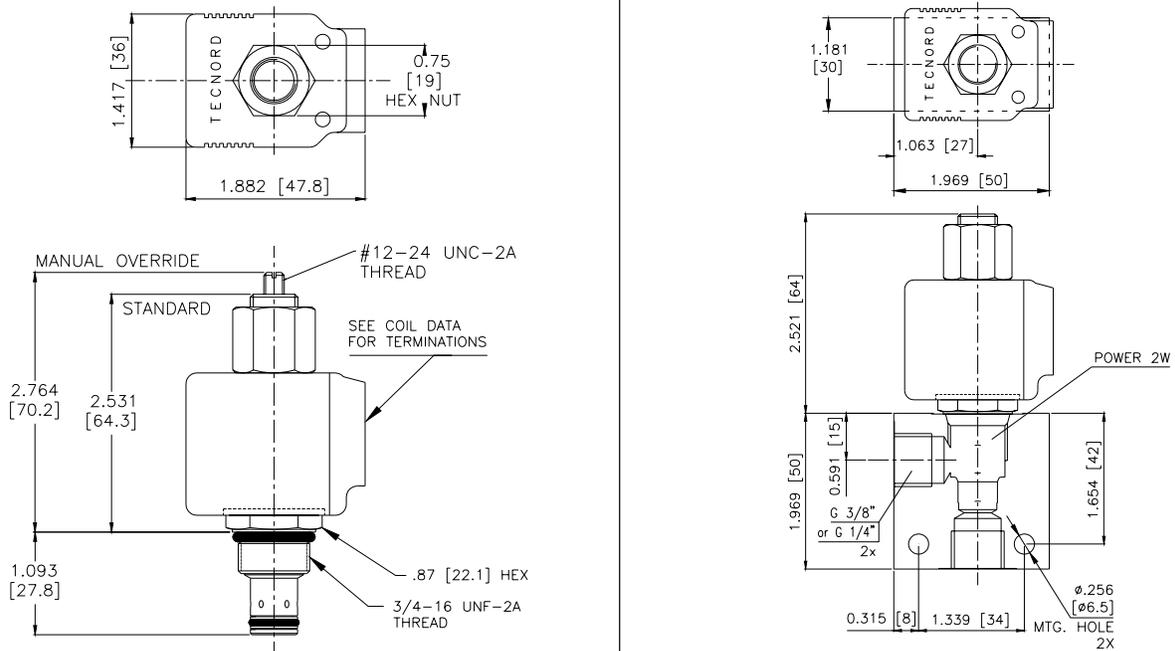


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 2W
Cavity Tools kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



ORDERING INFORMATION

PB-S2C - - -

OPTIONS Buna Standard 00 Viton Standard V0 Buna, Override, Detent 0M Viton, Override, Detent VM Buna, Override, Knob OK Viton, Override, Knob VK Buna, Screen A0 Viton, Screen W0 Buna, Screen, Override B2 Viton, Screen, Override V2 Buna, Screen, Override, Knob B5 Viton, Screen, Override, Knob V5		Blank N N1 S	BODIES Without Body 1/4" BSP Ports 3/8" BSP Ports #6 SAE Ports
Note: Use screen only if flow direction is from (1) to (2).		VOLTAGE (*other voltages available on request) 12 12 VDC 24 24 VDC 22 220 VAC without internal rectifier	
"K" COIL TERMINATION (All DC Except as Noted)		DL Double Lead (*several types of termination can be attached on leads on request)	HC DIN 43650 (Hirschman) – (AC & DC) DI Deutsch – Integral DT04-2P
		PIA PID PIJ PIM	IMMERSION PROOF "P" TYPE "I" Coil AMP Superseal - Integral "I" Coil Deutsch – Integral DT04-2P "I" Coil AMP Jr. Timer - Integral "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2C Pilot Operated Poppet, 2 Way Normally Open

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally open, pilot operated poppet valve with reverse flow energized.

OPERATION

When de-energized the HB-S2C allows flow from (1) to (2) and restricted flow from (2) to (1).

When energized the valve blocks flow from (1) to (2) and allows flow from (2) to (1).

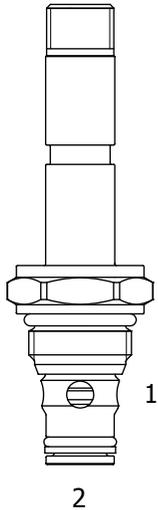
PUSH TYPE MANUAL OVERRIDE OPTION: to override, push the manual override button.

SCREW TYPE MANUAL OVERRIDE OPTION: to override, turn the manual override screw clockwise.

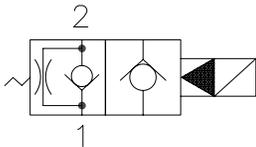
To release, turn the manual override screw counter-clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

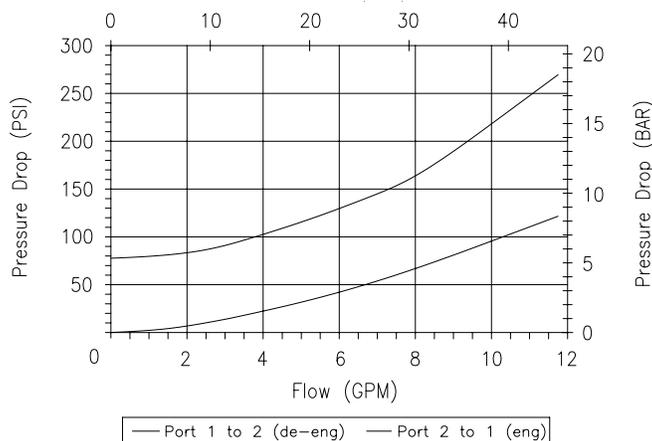


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

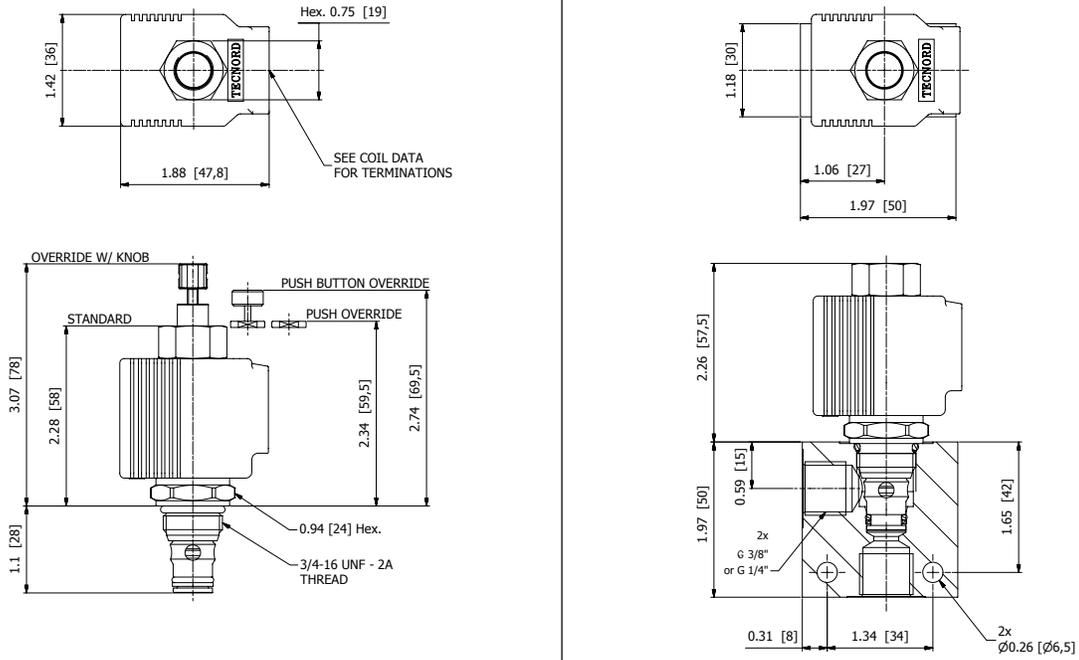


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	5000 PSI (350 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min at 5000 PSI (350 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 210°F (-40° to 100°C)
Temperature Range	BUNA seals -4° to 250°F (-20° to 120°C) VITON seals
Weight	.29 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	41-47 Nm (30-35 ft-lbs)
Coil Nut Torque Requirements	4-6 Nm (3-4.5 ft-lbs)
Cavity	POWER 2W
Cavity Tools Kit	40500005
Seal Kit	21191100

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DIMENSIONS



ORDERING INFORMATION

HB - S2C - - - -

OPTIONS

Standard, Buna	00
Viton	V0
Buna, Push Pin Override	0P
Viton, Push Pin Override	VP
Buna, Push Button Override	0B
Viton, Push Button Override	VB
Buna, Screw Override	0K
Viton, Screw Override	VK

BODIES

Blank	Without Body
N	1/4" BSP Ports (aluminum)
N1	3/8" BSP Ports (aluminum)
S	#6 SAE Ports
H	1/4" BSP Ports (steel)
H1	3/8" BSP Ports (steel)
Aluminum bodies only for use up to 250 bar	

VOLTAGE (consult factory for other voltages)

12	12 VDC
24	24 VDC
26	26 VDC

"P" TYPE "J" COIL TERMINATION

JA "J" Coil AMP Superseal - Integral	JJ "J" Coil AMP Jr. Time - Integral	JL "J" Coil Double Lead
JD "J" Coil Deutsch - Integral DT04-2P		JH "J" Coil DIN 43650 (Hirschman)

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2J Pilot Operated Poppet, 2 Way Normally Open, Soft Seat

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally open, pilot operated soft seat poppet valve with free reverse flow energized.

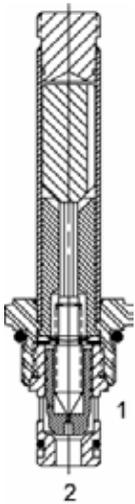
OPERATION

When de-energized the PB-S2J allows flow from (1) to (2) and restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) and allows free flow from (2) to (1).

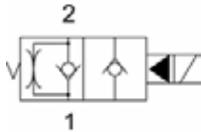
OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise. To release turn the manual override screw counter-clockwise.

FEATURES

- Soft seat for ultra low leakage.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.



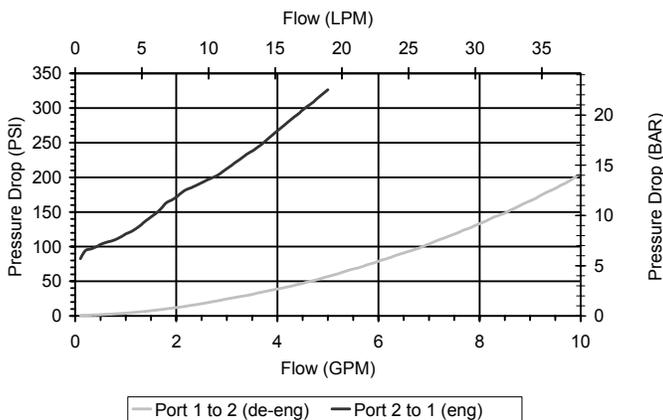
HYDRAULIC SYMBOL



Unshifted limit 6 GPM (23 LPM) from (1) to (2) energized. For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

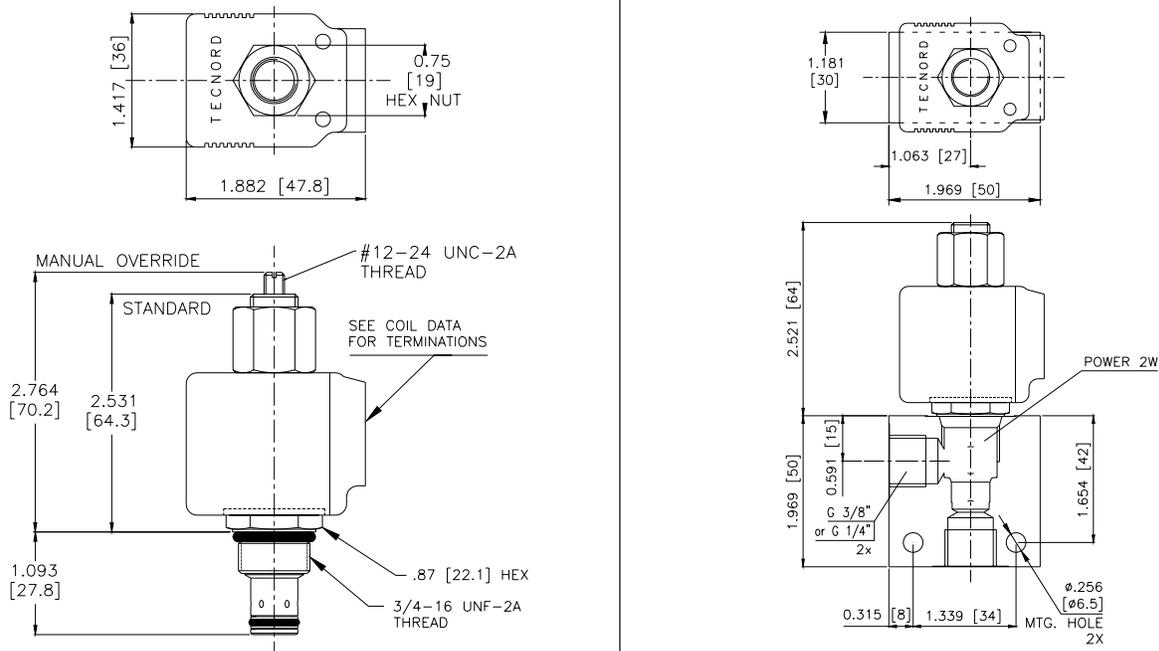


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	2000 PSI (138 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	.21 lbs. (.10 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 2W
Cavity Tools kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



ORDERING INFORMATION

PB-S2J - - -

- OPTIONS**
- Buna Standard **00**
 - Viton Standard **V0**
 - Buna, Override, Detent **0M**
 - Viton, Override, Detent **VM**
 - Buna, Screen **A0**
 - Viton, Screen **W0**
 - Buna, Screen Override **B2**
 - Viton, Screen, Override **V2**

- BODIES**
- Blank
 - N** 1/4" BSP Ports
 - N1** 3/8" BSP Ports
 - S** #6 SAE Ports

- VOLTAGE** (*other voltages available on request)
- 12** 12 VDC
 - 24** 24 VDC
 - 22** 220 VAC without internal rectifier

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

"K" COIL TERMINATION
(All DC Except as Noted)

- DL** Double Lead
(*several types of termination can be attached on leads on request)

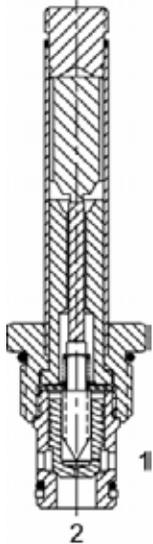
- HC** DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

- PIA** "I" Coil AMP Superseal - Integral
PID "I" Coil Deutsch – Integral DT04-2P
PIJ "I" Coil AMP Jr. Timer - Integral
PIM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .42 lbs (.19 kg)

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DE-S2C Pilot Operated Poppet, 2 Way Normally Open



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

OPERATION

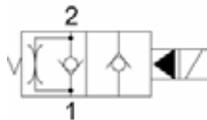
When de-energized the DE-S2C allows flow to pass from (1) to (2), but restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise. To release turn the manual override screw counter-clockwise.

FEATURES

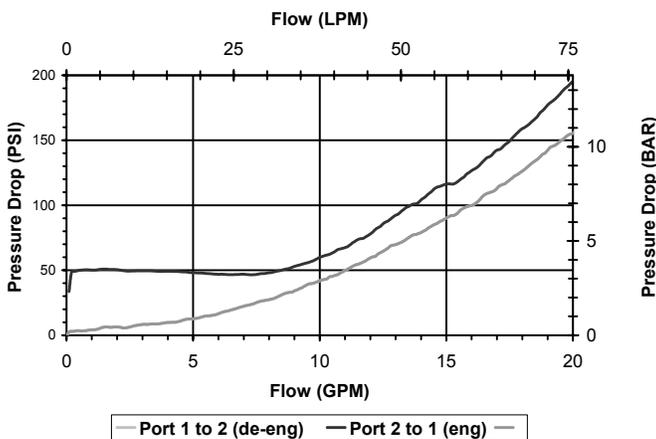
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "1" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridges Only)

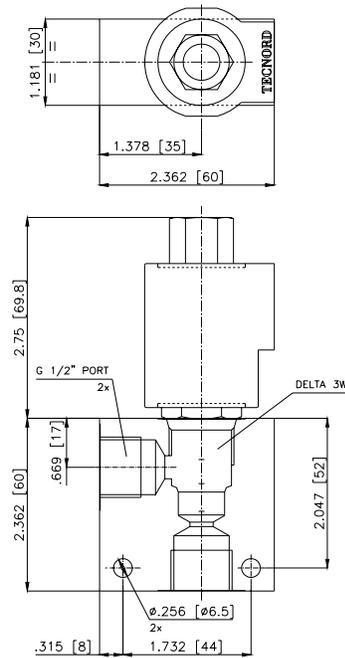
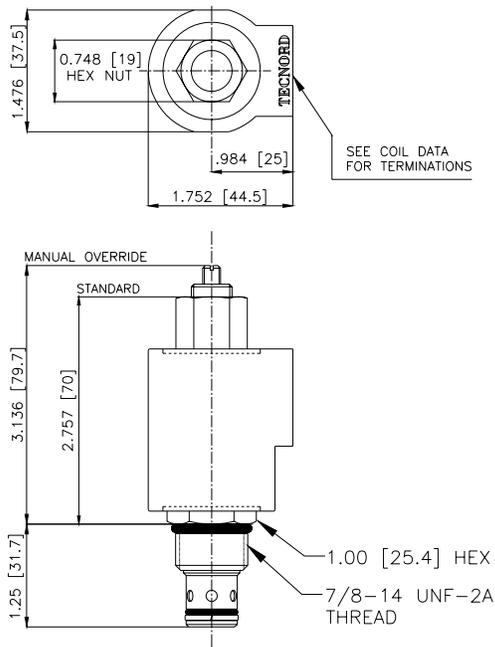


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 2W
Cavity Tools kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



ORDERING INFORMATION

DE-S2C - - -

<p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Override 0M</p> <p>Viton, Override VM</p> <p>Buna, Override, Knob OK</p> <p>Viton, Override, Knob VK</p> <p>Buna, Screen A0</p> <p>Viton, Screen W0</p> <p>Buna, Screen, Override B2</p> <p>Viton, Screen, Override V2</p> <p>Buna, Screen, Override, Knob B5</p> <p>Viton, Screen, Override, Knob V5</p>	<p>BODIES</p> <p>Blank</p> <p>N 1/2" BSP Ports</p> <p>S #8 SAE Ports</p>	<p>VOLTAGE (*other voltages available on request)</p> <p>12 12 VDC</p> <p>24 24 VDC</p> <p>22 220 VAC without internal rectifier</p>
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Note: Use screen only if flow direction is from (1) to (2).

"V" COIL TERMINATION
(All DC Except as Noted)

DL Double Lead
(* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschmann) – (AC & DC)

DI Deutsch – Integral DT04-2P

DIA "I" Coil AMP Superseal - Integral

DID "I" Coil Deutsch – Integral DT04-2P

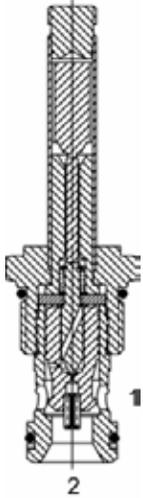
DIJ "I" Coil AMP Jr. Timer - Integral

DIM "I" Coil Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

TT-S2C Pilot Operated Poppet, 2 Way Normally Open



DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnorm" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

OPERATION

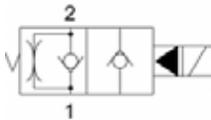
When de-energized the TT-S2C allows flow to pass from (1) to (2), but restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise. To release turn the manual override screw counter-clockwise.

FEATURES

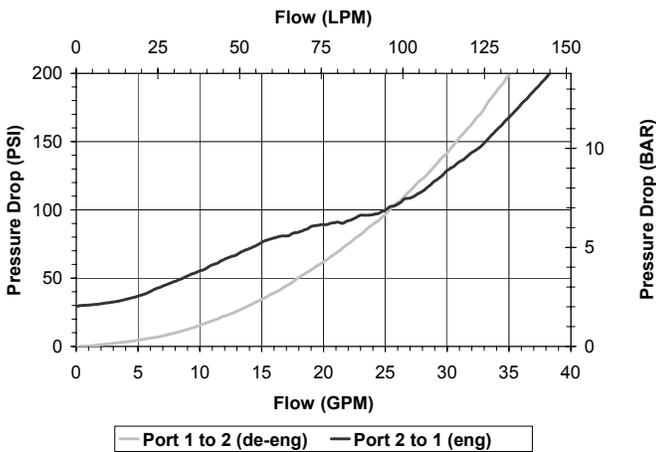
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridges Only)

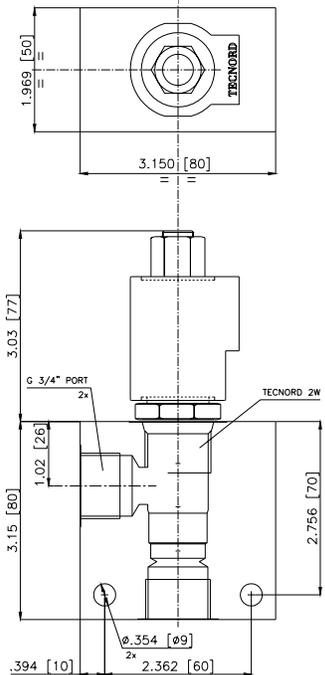
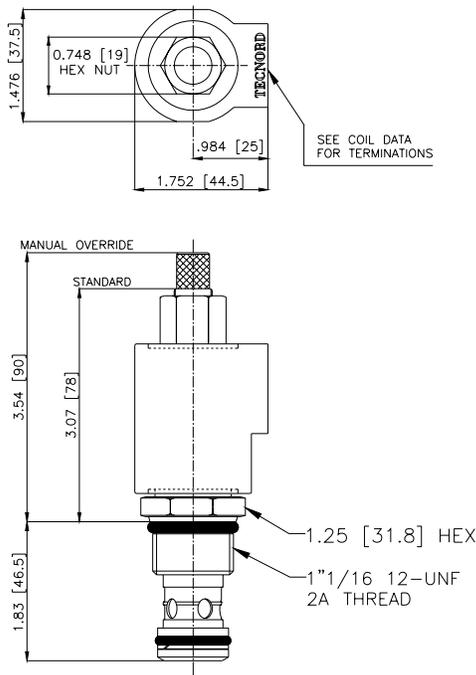


VALVE SPECIFICATIONS

Nominal Flow	30 GPM (114 LPM)
Rated Operating Pressure	3000 PSI (241 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	.51 lbs. (.23 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	50 ft-lbs (67.8 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

TT-S2C - - - -

- OPTIONS**
- Buna Standard **00**
 - Viton Standard **V0**
 - Buna, Override, Knob **0K**
 - Viton, Override, Knob **VK**
 - Buna, Screen **A0**
 - Viton, Screen **W0**
 - Buna, Screen, Override, Knob **B5**
 - Viton, Screen, Override, Knob **V5**

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

- VOLTAGE** (*other voltages available on request)
- 12** 12 VDC
 - 24** 24 VDC
 - 22** 220 VAC without internal rectifier

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

"V" COIL TERMINATION
(All DC Except as Noted)

- DL** Double Lead
(*several types of termination can be attached on leads on request)

- HC** DIN 43650 (Hirschmann) – (AC & DC)
DI Deutsch - Integral DT04-2P

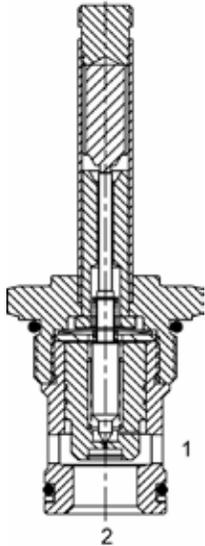
- DIA**
DID
DIJ
DIM

- IMMERSION PROOF "D" TYPE**
- "I" Coil AMP Superseal - Integral
 - "I" Coil Deutsch – Integral DT04-2P
 - "I" Coil AMP Jr. Timer - Integral
 - "I" Coil Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S2C Pilot Operated Poppet, 2 Way Normally Open



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized.

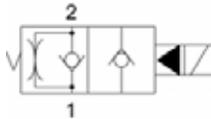
OPERATION

When de-energized the SJ-S2C allows flow to pass from (1) to (2), but restricts flow from (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (2) to (1).

FEATURES

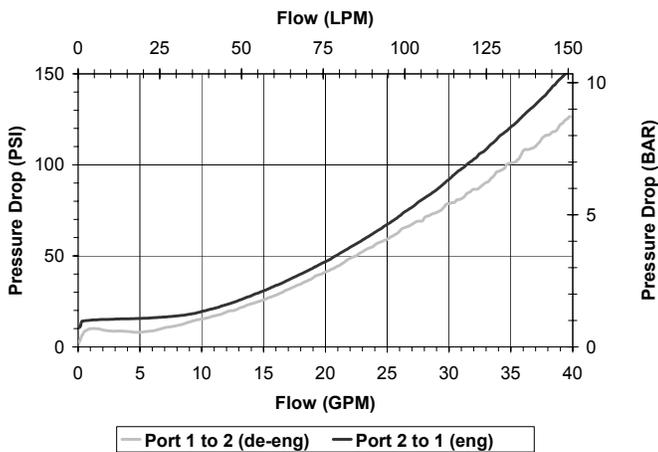
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridges Only)

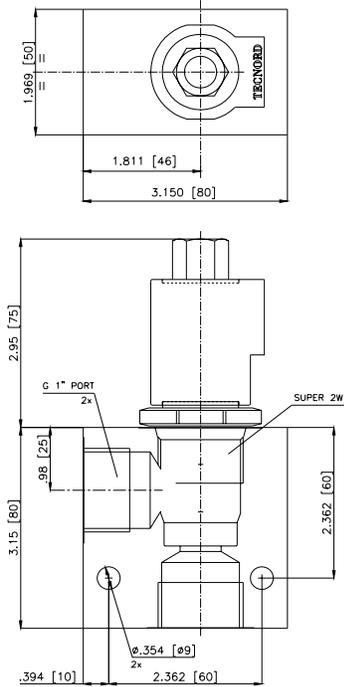
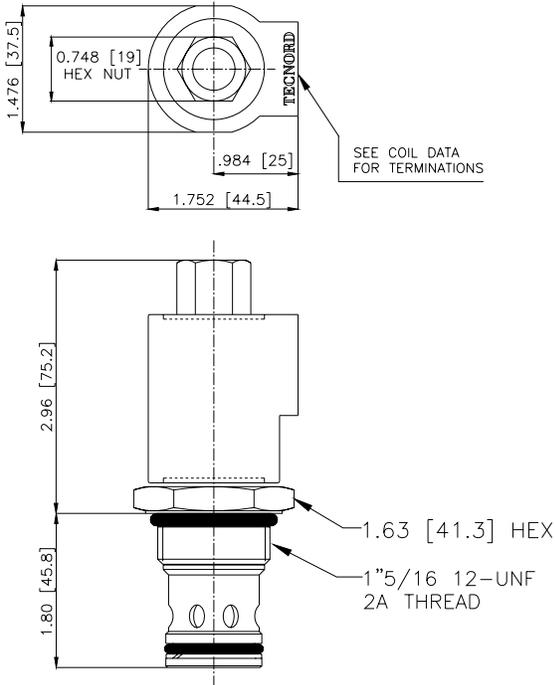


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	0-10 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.74 lbs. (.33 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (121 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

SJ-S2C - - - - -

OPTIONS

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

BODIES

- Blank
- N** 1" BSP Ports
- S** #12 SAE Ports

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

VOLTAGE (*other voltages available on request)

- 12** 12 VDC
- 24** 24 VDC
- 22** 220 VAC without internal rectifier

"V" COIL TERMINATION

(All DC Except as Noted)

- DL** Double Lead (*several types of termination can be attached on leads on request)

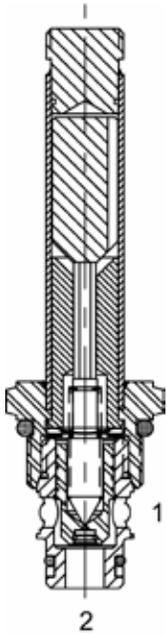
- HC** Din 43650 (Hirschmann) – (AC & DC)
- DI** Deutsch – Integral DT04—2P

- DIA** "I" Coil AMP Superseal – Integral
- DID** "I" Coil Deutsch – Integral DT04-2P
- DIJ** "I" Coil AMP Jr. Timer – Integral
- DIM** "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S2D Pilot Operated Poppet, 2 Way Normally Open



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized and de-energized.

OPERATION

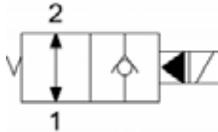
When de-energized the PB-S2D allows flow from (1) to (2) or (2) to (1). When energized the valve blocks flow from (1) to (2) and allows flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise. To release turn the manual override screw counter-clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

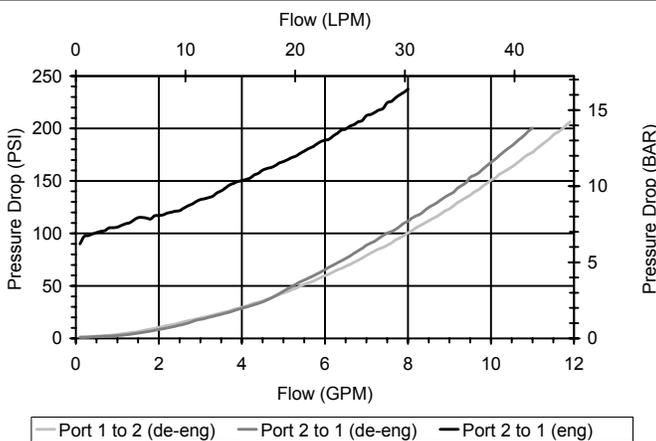
HYDRAULIC SYMBOL



Unshifted limit of 10 GPM (38 LPM) from (1) to (2) energized and from (2) to (1) de-energized.
For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

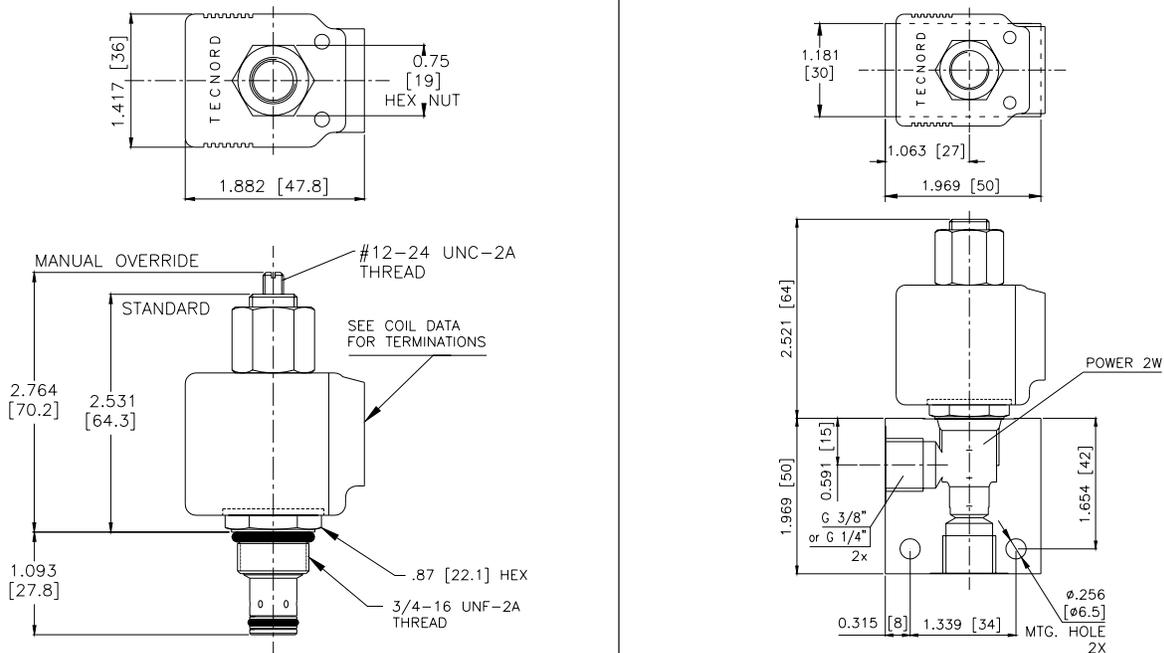


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 2W
Cavity Tools kit (form tool, reamer, tap)	40500005
Seal Kit	21191100

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DIMENSIONS



ORDERING INFORMATION

PB-S2D - - -

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Override, Detent	0M
Viton, Override, Detent	VM
Buna, Override, Knob	OK
Viton, Override, Knob	VK
Buna, Screen	A0
Viton, Screen	W0
Buna, Screen, Override	B2
Viton, Screen, Override	V2
Buna, Screen, Override, Knob	B5
Viton, Screen, Override, Knob	V5

BODIES

Blank	
N	1/4" BSP Ports
N1	3/8" BSP Ports
S	#6 SAE Ports

VOLTAGE (*other voltages available on request)

12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

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

"K" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
(*several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) - (AC & DC)
DI Deutsch - Integral DT04-2P

PIA
PID
PIJ
PIM

IMMERSION PROOF "P" TYPE

"I" Coil AMP Superseal - Integral
"I" Coil Deutsch - Integral DT04-2P
"I" Coil AMP Jr. Timer - Integral
"I" Coil Metri-Pack - Integral

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2D Pilot Operated Poppet, 2 Way Normally Open with Reverse Flow De-Energized

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally open, pilot operated poppet valve with reverse flow energized and de-energized.

OPERATION

When de-energized the HB-S2D allows flow from (1) to (2) or from (2) to (1). When energized the valve blocks flow from (1) to (2) and allows flow from (2) to (1).

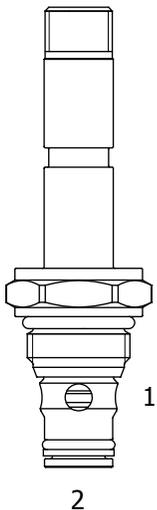
PUSH TYPE MANUAL OVERRIDE OPTION: to override, push the manual override button.

SCREW TYPE MANUAL OVERRIDE OPTION: to override, turn the manual override screw clockwise.

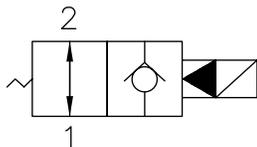
To release, turn the manual override screw counter-clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

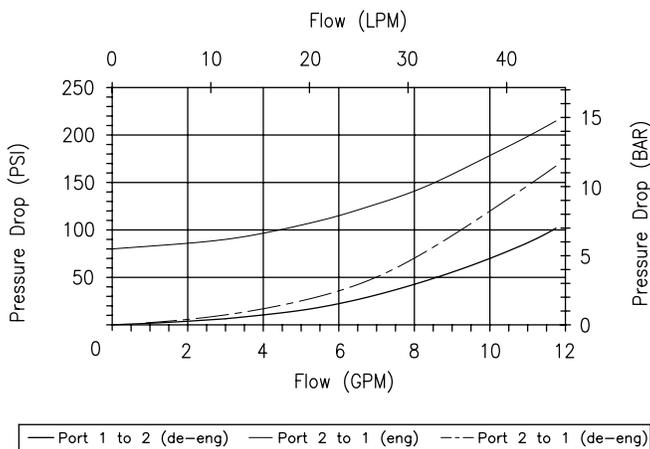


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

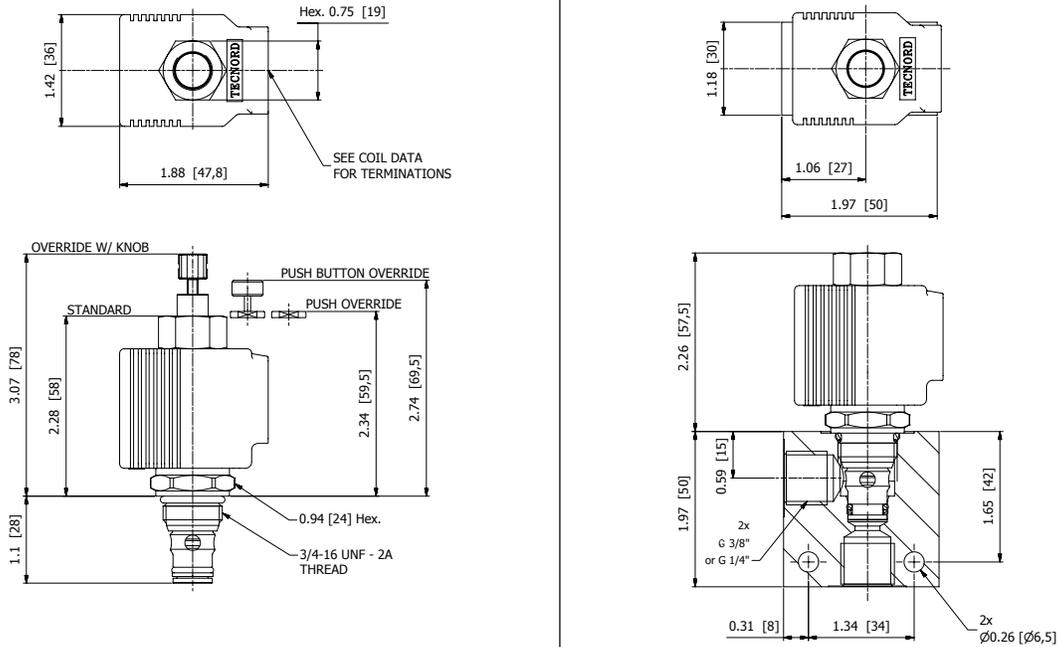


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	5000 PSI (350 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min at 5000 PSI (350 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 210°F (-40° to 100°C) BUNA seals -4° to 250°F (-20° to 120°C) VITON seals
Weight	.29 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	41-47 Nm (30-35 ft-lbs)
Coil Nut Torque Requirements	4-6 Nm (3-4.5 ft-lbs)
Cavity	POWER 2W
Cavity Tools Kit	40500005
Seal Kit	21191100

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DIMENSIONS



ORDERING INFORMATION

HB - S2D

<u>OPTIONS</u>	
Standard, Buna	00
Viton	V0
Buna, Push Pin Override	0P
Viton, Push Pin Override	VP
Buna, Push Button Override	0B
Viton, Push Button Override	VB
Buna, Screw Override	0K
Viton, Screw Override	VK

<u>BODIES</u>	
Blank	Without Body
N	1/4" BSP Ports (aluminum)
N1	3/8" BSP Ports (aluminum)
S	#6 SAE Ports
H	1/4" BSP Ports (steel)
H1	3/8" BSP Ports (steel)
Aluminum bodies only for use up to 250 bar	

<u>VOLTAGE</u> (consult factory for other voltages)	
12	12 VDC
24	24 VDC
26	26 VDC

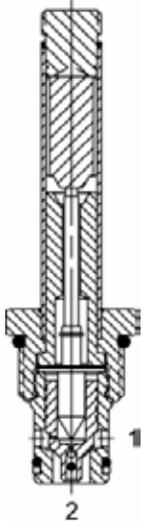
"P" TYPE "J" COIL TERMINATION

JA "J" Coil AMP Superseal - Integral	JJ "J" Coil AMP Jr. Time - Integral	JL "J" Coil Double Lead
JD "J" Coil Deutsch - Integral DT04-2P		JH "J" Coil DIN 43650 (Hirschman)

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2D Pilot Operated Poppet, 2 Way Normally Open



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized and de-energized.

OPERATION

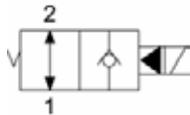
When de-energized the DE-S2D allows flow to pass from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise. To release turn the manual override screw counter-clockwise.

FEATURES

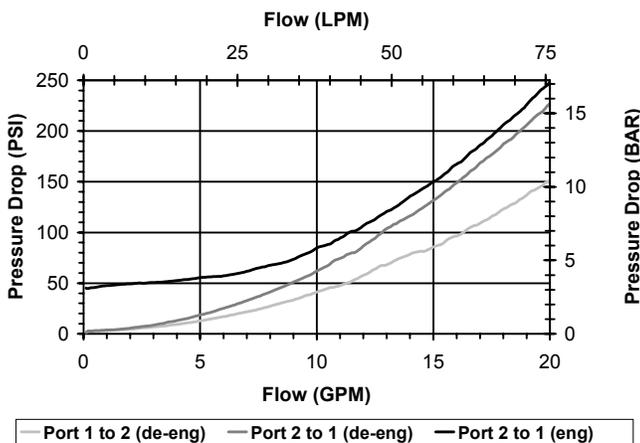
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

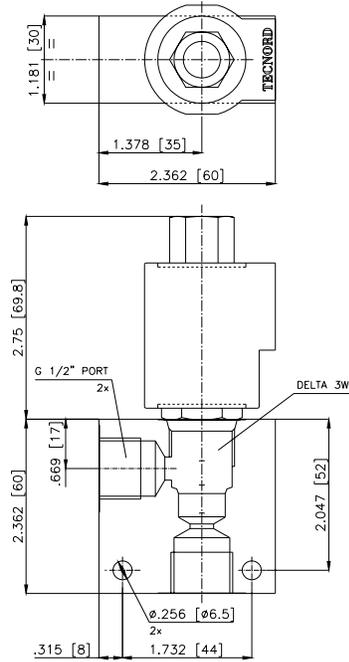
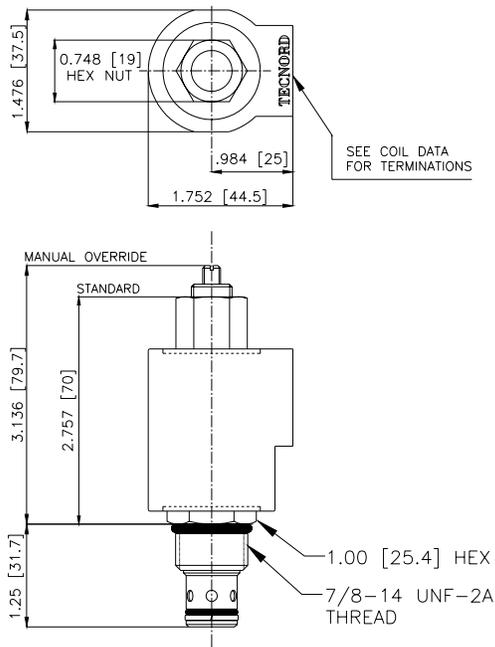


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	3500 PSI (241 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 2W
Cavity Tools kit (form tool, reamer, tap)	40500000
Seal Kit	21191200

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DIMENSIONS



ORDERING INFORMATION

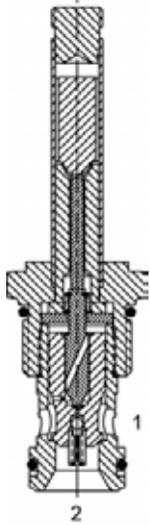
DE-S2D - - -

OPTIONS					BODIES
Buna Standard	00			Blank	Without Body
Viton Standard	V0			N	1/2" BSP Ports
Buna, Override	0M			S	#8 SAE Ports
Viton, Override	VM				
Buna, Override, Knob	OK				
Viton, Override, Knob	VK				
Buna, Screen	A0			12	12 VDC
Viton, Screen	W0			24	24 VDC
Buna, Screen, Override	B2			22	220 VAC without internal rectifier
Viton, Screen, Override	V2				
Buna, Screen, Override, Knob	B5				
Viton, Screen, Override, Knob	V5				
Note: Use screen only if flow direction is from (1) to (2).					
"V" COIL TERMINATION (All DC Except as Noted)					
DL	Double Lead (* several types of termination can be attached on leads on request)	HC	DIN 43650 (Hirschmann) – (AC & DC)	DIA	IMMERSION PROOF "D" TYPE
		DI	Deutsch – Integral DT04-2P	DID	"I" Coil AMP Superseal - Integral
				DIJ	"I" Coil Deutsch – Integral DT04-2P
				DIM	"I" Coil AMP Jr. Timer - Integral
					"I" Coil Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

TT-S2D Pilot Operated Poppet, 2 Way Normally Open



DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnorm" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized and de-energized.

OPERATION

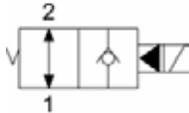
When de-energized the TT-S2D allows flow to pass from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw clockwise. To release turn the manual override screw counter-clockwise.

FEATURES

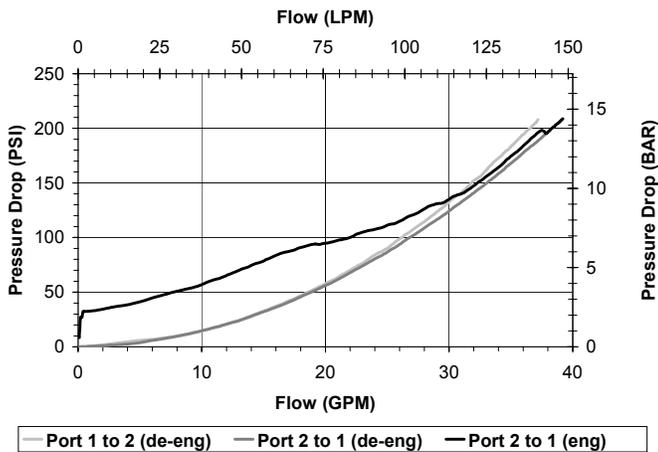
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

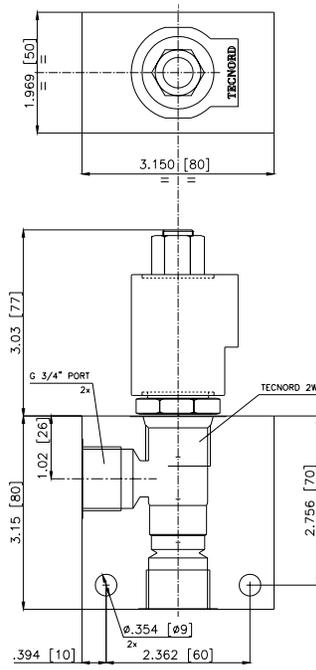
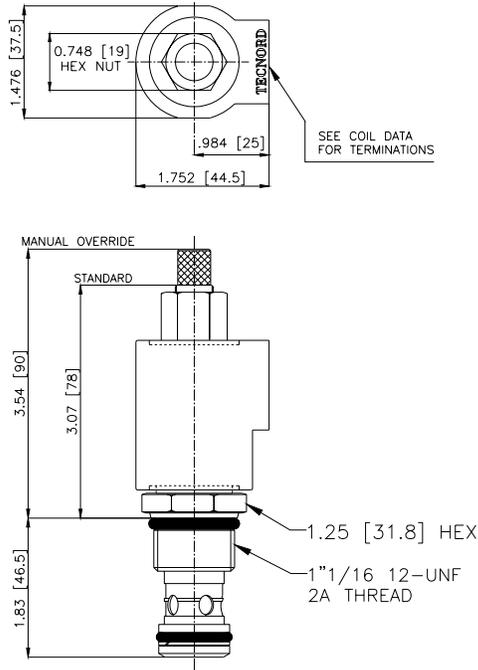


VALVE SPECIFICATIONS

Nominal Flow	30 GPM (114 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	0-10 drops/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating 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	50 ft-lbs (67.8 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (4.5-8.1 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



ORDERING INFORMATION

TT-S2D -

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Override, Knob	OK
Viton, Override, Knob	VK
Buna, Screen	A0
Viton, Screen	W0
Buna, Screen, Override, Knob	B5
Viton, Screen, Override, Knob	V5

BODIES

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

VOLTAGE (*other voltages available on request)

12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

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

"V" COIL TERMINATION

(All DC Except as Noted)

DL	Double Lead (*several types of termination can be attached on leads on request)
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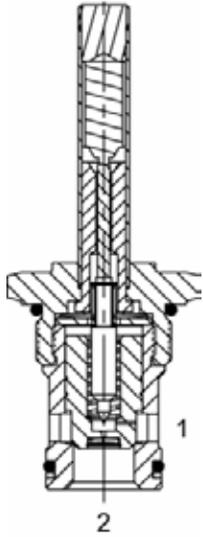
HC	DIN 43650 (Hirschmann) – (AC & DC)
DI	Deutsch – Integral DT04-2P

DIA	"1" Coil AMP Superseal - Integral
DID	"1" Coil Deutsch – Integral DT04-2P
DIJ	"1" Coil AMP Jr. Timer - Integral
DIM	"1" Coil Metri-Pack- Integral

Approximate Coil Weight: .74 lbs (.33 kg)

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-S2D Pilot Operated Poppet, 2 Way Normally Open



DESCRIPTION

16 size, 1 5/16-12 thread, "Super" series, solenoid operated, 2 way normally open, pilot operated poppet valve with free reverse flow energized and de-energized.

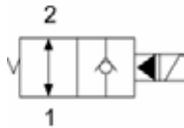
OPERATION

When de-energized the SJ-S2D allows flow to pass from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) but allows free reverse flow from (2) to (1).

FEATURES

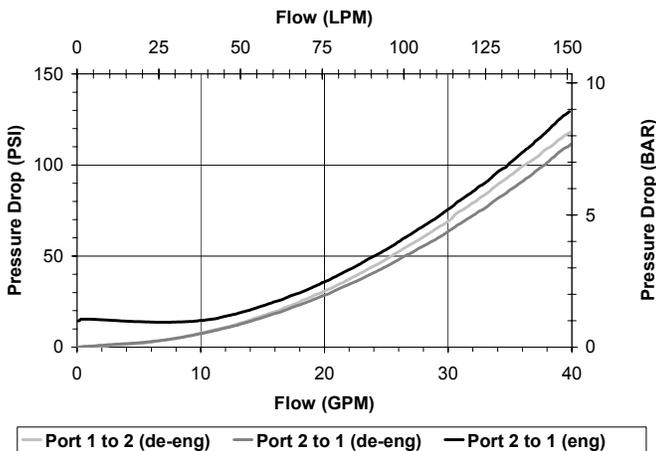
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

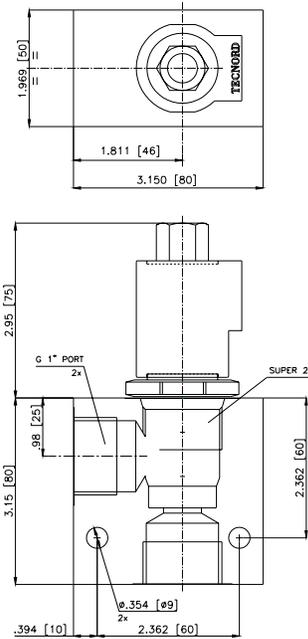
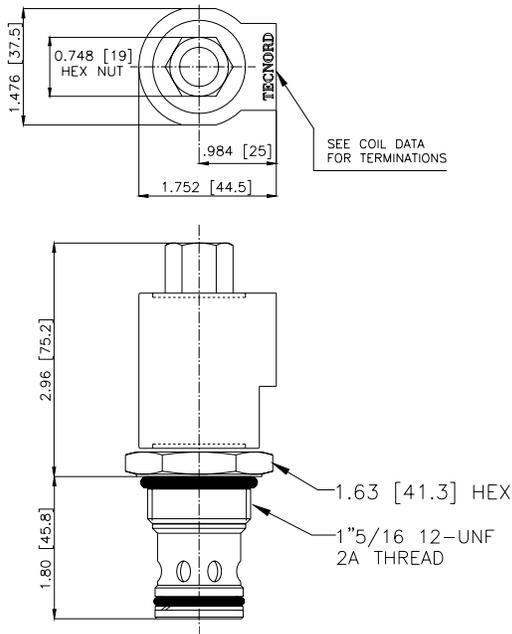


VALVE SPECIFICATIONS

Nominal Flow	40 GPM (151 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	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	.74 lbs. (.33 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	90 ft-lbs (122 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

SJ-S2D - - - -

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

BODIES
 Blank
N 1" BSP Ports
S #12 SAE Ports

VOLTAGE (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

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

"V" COIL TERMINATION
 (All DC Except as Noted)

DL Double Lead
 (*several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschmann) - (AC & DC)
DI Deutsch - Integral DT04-2P

DIA
DID
DIJ
DIM

IMMERSION PROOF "D" TYPE
"I" Coil AMP Superseal Integral
"I" Coil Deutsch Integral DT04-2P
"I" Coil AMP Jr. Timer - Integral
"I" Coil Metri-Pack Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S2K Piloted Operated Poppet, 2 Way Double Lock Normally Open

DESCRIPTION

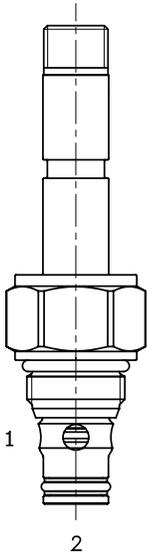
8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way double lock normally open, pilot operated bi-directional poppet valve.

OPERATION

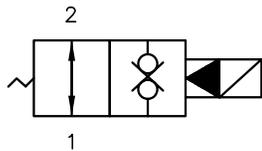
When de-energized the HB-S2K allows flow from (1) to (2) or from (2) to (1). When energized the valve blocks flow from (1) to (2) and allows flow from (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

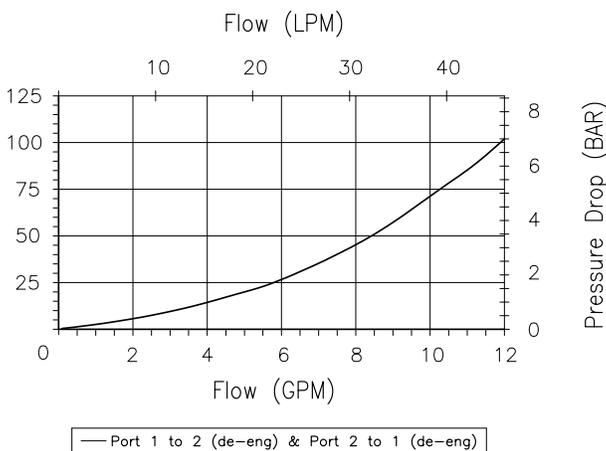


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

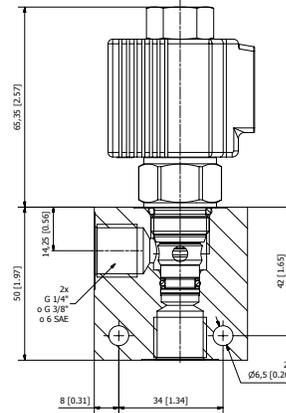
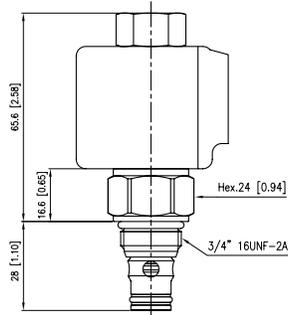
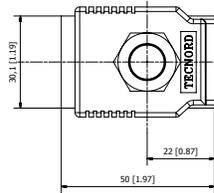
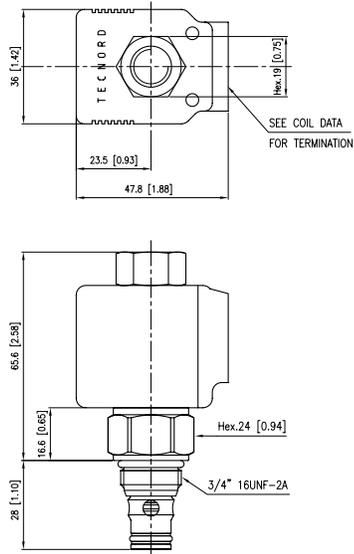


VALVE SPECIFICATIONS

Nominal Flow	12 GPM (45 LPM)
Rated Operating Pressure	5000 PSI (350 bar)
Typical Internal Leakage (150 SSU)	0-5 drops/min at 5000 PSI (350 bar)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 210°F (-40° to 100°C)
	BUNA seals
	-4° to 250°F (-20° to 120°C)
	VITON seals
Weight	.29 lbs (.13 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	41-47 Nm (30-35 ft-lbs)
Coil Nut Torque Requirements	4-6 Nm (3-4.5 ft-lbs)
Cavity	POWER 2W
Cavity Tools Kit	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



ORDERING INFORMATION

HB - S2K - - - -

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

BODIES
Blank Without Body
N 1/4" BSP Ports (aluminum)
N1 3/8" BSP Ports (aluminum)
S #6 SAE Ports
H 1/4" BSP Ports (steel)
H1 3/8" BSP Ports (steel)
Aluminum bodies only for use up to 250 bar

VOLTAGE (consult factory for other voltages)
12 12 VDC
24 24 VDC
26 26 VDC

"P" TYPE "J" COIL TERMINATION

JA "J" Coil AMP Superseal - Integral
JD "J" Coil Deutsch - Integral DT04-2P

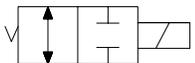
JJ "J" Coil AMP Jr. Time - Integral

JL "J" Coil Double Lead
JH "J" Coil DIN 43650 (Hirschman)

Approximate Coil Weight: .42 lbs (.19 kg)

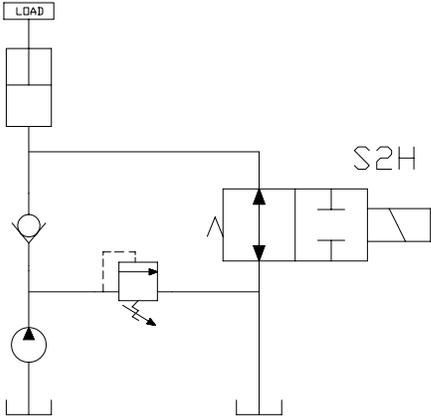
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

2 Way 2 Position Normally Open Spool Valves

	GPM	PSI	LPM	BAR	MODEL	PAGE
	3	3000	11	207	MA-S2H	94
	3	4000	11	276	HA-S2H	96
	5	3000	19	207	PB-S2H	98
	8	3500	30	245	DE-S2H	100
	8	4000	30	276	HE-S2H	102

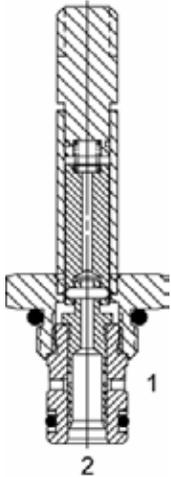
Typical Schematic

Typical application for the S2H is a pump unloading 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.

MA-S2H Direct Acting Spool, 2 Way Normally Open



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally open, spool valve.

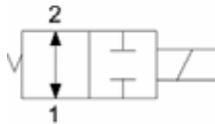
OPERATION

When de-energized the MA-S2H allows flow from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

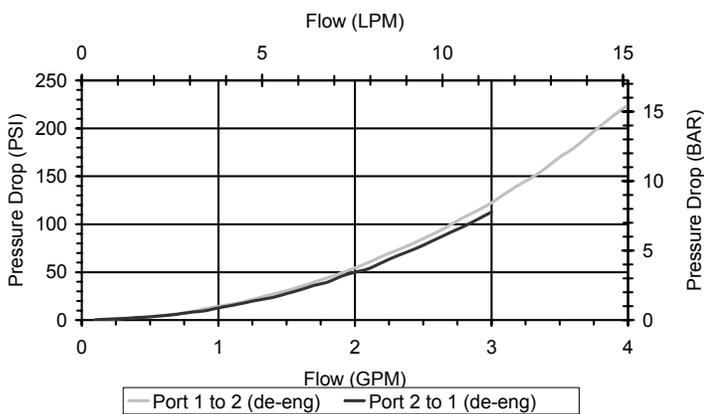
HYDRAULIC SYMBOL



HA-S2H should be specified where higher pressures or 2 to 1 shift operation is required.

PERFORMANCE

Actual Test Data (Cartridge Only)

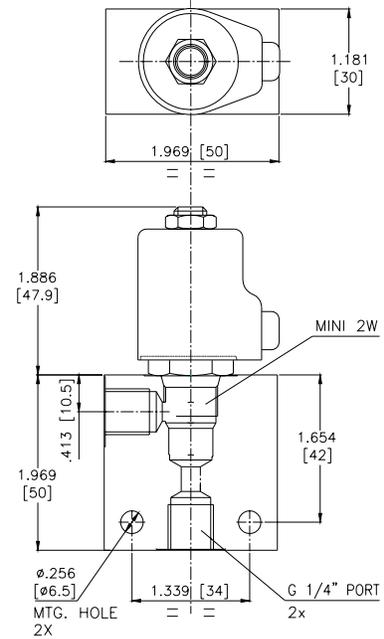
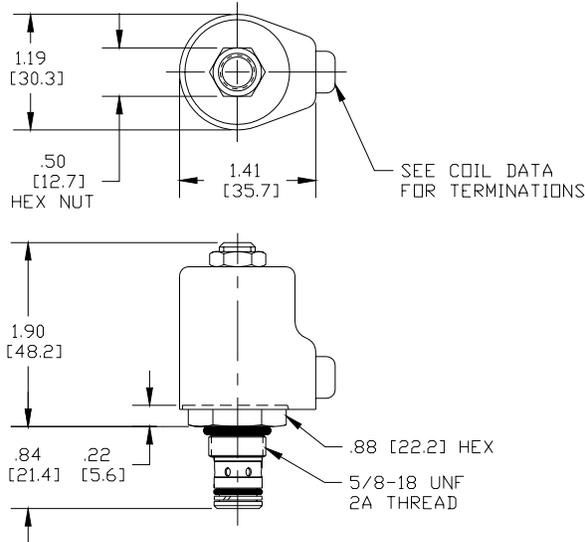


VALVE SPECIFICATIONS

Maximum Flow	3 GPM (11 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	.12 lbs. (.05 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (40 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 2W
Cavity Tools kit (form tool, reamer, tap)	40500003
Seal Kit	21191002

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

MA-S2H - - - -

OPTIONS

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

- BODIES**
- Blank **N**
 - 1/4" BSP Ports **S**
 - #6 SAE Ports

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

VOLTAGE (*other voltages available on request)

- 12** 12 VDC
- 24** 24 VDC
- 22** 220 VAC with molded full wave rectifier

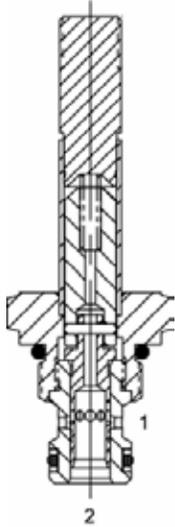
"M" COIL TERMINATION

- Double Lead **DL**
- (* several types of termination can be attached on leads on request)
- DIN 43650 (Hirschman) - (AC&DC) **HC**

Approximate Coil Weight: .30 lbs (.14 kg)

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.

HA-S2H Direct Acting Spool, 2 Way Normally Open



DESCRIPTION

"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 2 way normally open, spool valve.

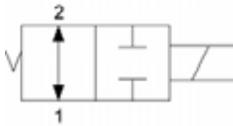
OPERATION

When de-energized the HA-S2H allows flow from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design (for most common terminations, see coil page).
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

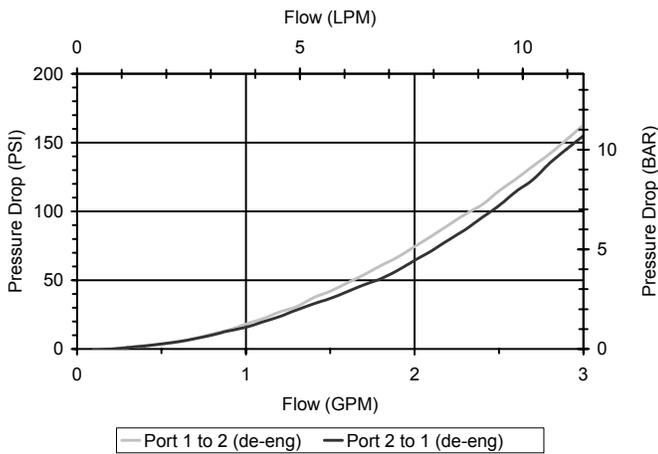
HYDRAULIC SYMBOL



Operational shift limit 2 GPM (8 LPM).
For shifted performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

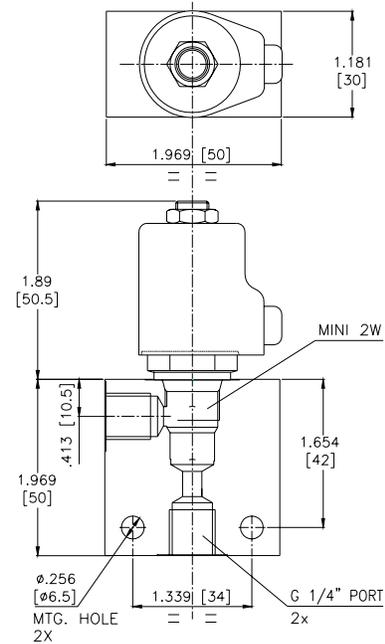
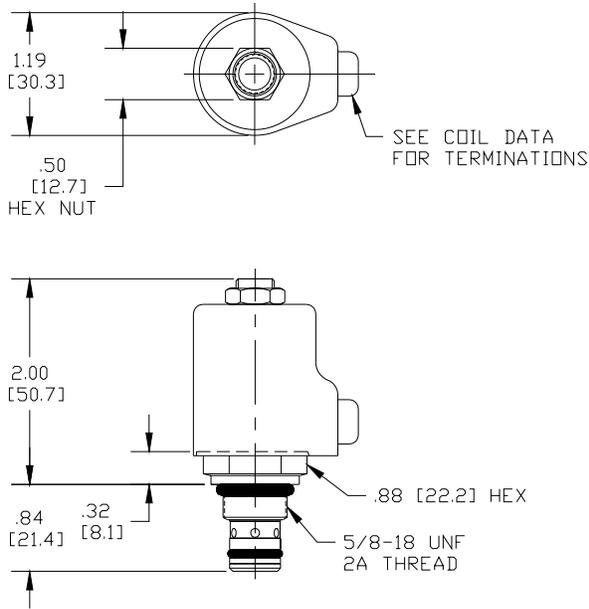


VALVE SPECIFICATIONS

Maximum Flow	3 GPM (11 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (131 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	.14 lbs. (.06 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 2W
Cavity Tools kit (form tool, reamer, tap)	40500003
Seal Kit	21191002

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

HA-S2H - - - -

OPTIONS

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

Blank **N**
S

BODIES

Without Body
 1/4" BSP Ports
 #6 SAE Ports

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC with molded full wave rectifier

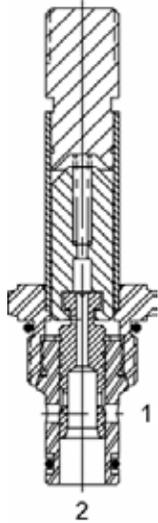
"M" COIL TERMINATION

Double Lead **DL**
 (* several types of termination can be attached on leads on request)
 DIN 43650 (Hirschman) **HC**

Approximate Coil Weight: .30 lbs (.14 kg)

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-S2H Direct Acting Spool, 2 Way Normally Open



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 2 way normally open, spool valve.

OPERATION

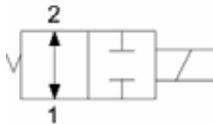
When de-energized the PB-S2H allows flow from (1) to (2) and (2) to (1). When energized the valve allows flow from (1) to (2) and (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

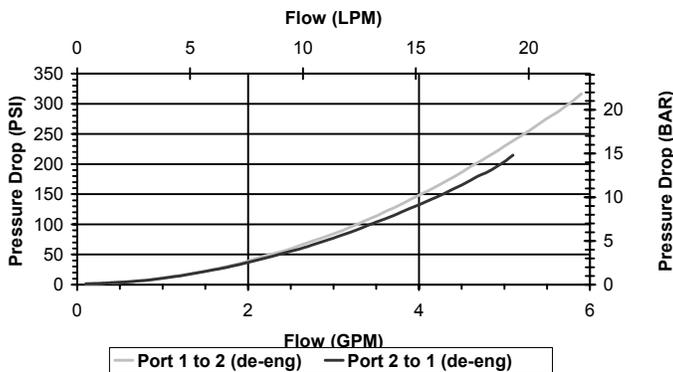
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "1" Coil: Weatherproof, Thermal Shock, Imersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

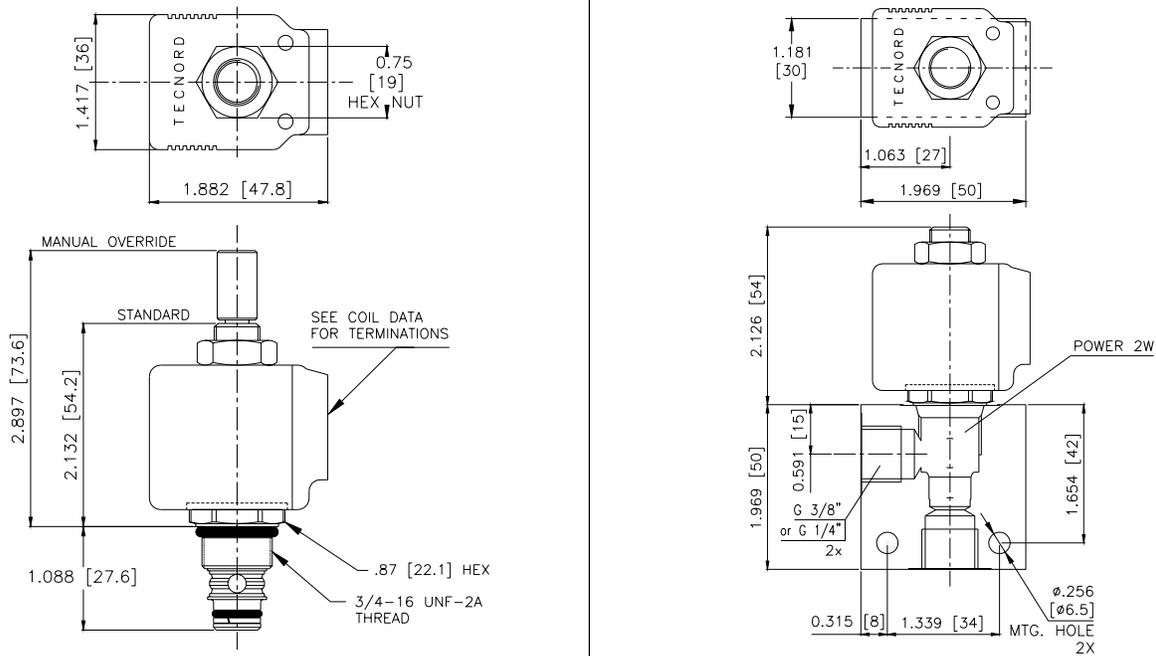


VALVE SPECIFICATIONS

Nominal Flow	5 GPM (19 LPM) from (1) to (2) 3 GPM (11 LPM) from (2) to (1)
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	.19 lbs. (.09 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

PB-S2H -

OPTIONS					
Buna Standard	00			Blank	BODIES
Viton Standard	V0			N	Without Body
Buna, Override, Detent	0M			N1	1/4" BSP Ports
Viton, Override, Detent	VM			S	3/8" BSP Ports
Buna, Screen	A0				#6 SAE Ports
Viton, Screen	W0				
Buna, Override, Nondetent	B1			12	VOLTAGE (*other voltages available on request)
Viton, Override, Nondetent	V1			24	12 VDC
Buna, Screen, Override, Nondetent	B3			22	24 VDC
Buna, Screen, Override, Detent	B4				220 VAC without internal rectifier
Viton, Screen, Override, Non-detent	V3				
Viton, Screen, Override, Detent	V4				

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

"K" COIL TERMINATION

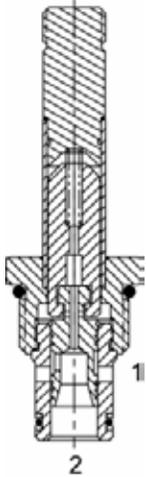
(All DC Except as Noted)

DL Double Lead (*several types of termination can be attached on leads on request)	HC Din 43650 (Hirschmann) – (AC & DC)	PIA	IMMERSION PROOF "P" TYPE
	DI Deutsch – Integral DT04-2P	PID	"I" Coil AMP Superseal - Integral
		PIJ	"I" Coil Deutsch – Integral DT04-2P
		PIM	"I" Coil AMP Jr. Timer – Integral
			"I" Coil Metri-Pack – Integral

Approximate Coil Weight: .42 lbs (.19 kg)

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-S2H Direct Acting Spool, 2 Way Normally Open



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally open, spool valve.

OPERATION

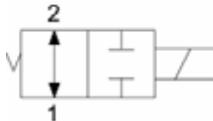
When de-energized the DE-S2H allows flow from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) and (2) to (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

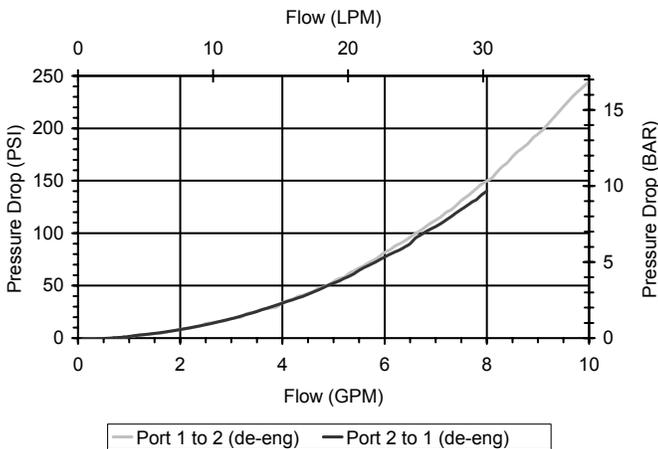
HYDRAULIC SYMBOL



For higher pressure systems see HE-S2H.

PERFORMANCE

Actual Test Data (Cartridge Only)

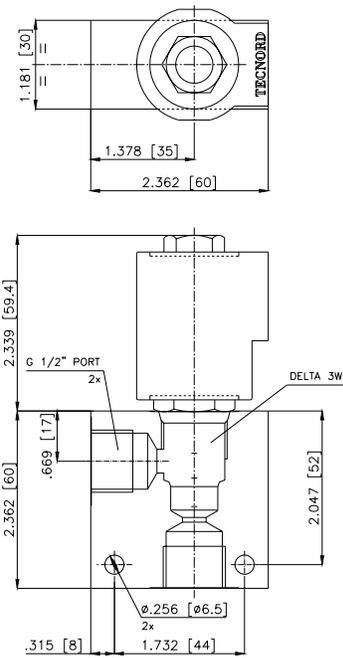
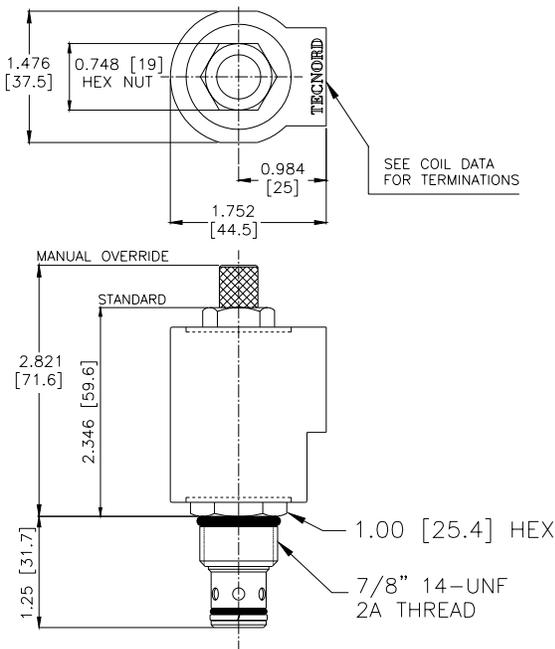


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM) from (1) to (2) 4 GPM (15 LPM) from (2) to (1)
Rated Operating Pressure	3500 PSI (245 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	.26 lbs. (.12 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 2W
Cavity Tools kit (form tool, reamer, tap)	40500000
Seal Kit	21191202

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DIMENSIONS



ORDERING INFORMATION

DE-S2H - - - -

- OPTIONS**
- Buna Standard **00**
 - Viton Standard **V0**
 - Buna, Override **0M**
 - Viton, Override **VM**
 - Buna, Screen **A0**
 - Viton, Screen **W0**
 - Buna, Screen, Override **B3**
 - Viton, Screen, Override **V3**

- BODIES**
- Blank
 - N** 1/2" BSP Ports
 - S** #8 SAE Ports

- VOLTAGE** (*other voltages available on request)
- 12** 12 VDC
 - 24** 24 VDC
 - 22** 220 VAC without internal rectifier

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

"V" COIL TERMINATION
(All DC Except as Noted)

- DL** Double Lead
(* several types of termination can be attached on leads on request)

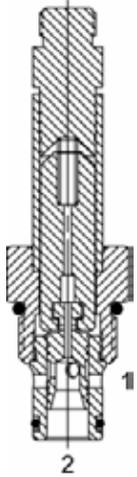
- HC** DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

- DIA** "I" Coil AMP Superseal - Integral
DID "I" Coil Deutsch – Integral DT04-2P
DIJ "I" Coil AMP Jr. Timer - Integral
DIM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .74 lbs (.33 kg)

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.

HE-S2H Direct Acting Spool, 2 Way Normally Open



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 2 way normally open, spool valve.

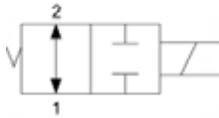
OPERATION

When de-energized the HE-S2H allows flow from (1) to (2) and (2) to (1). When energized the valve blocks flow from (1) to (2) and (2) to (1).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

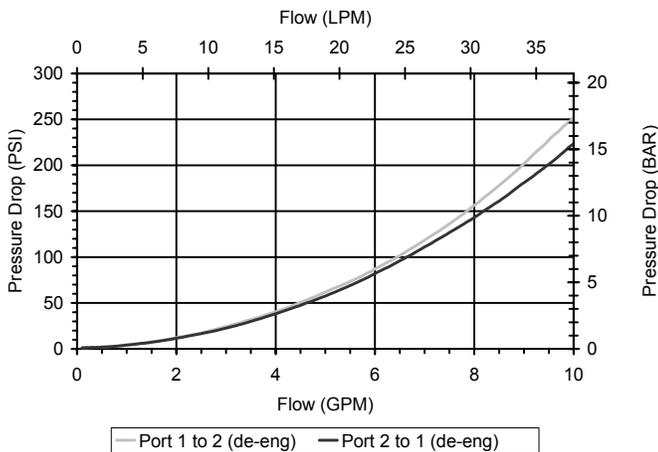
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)

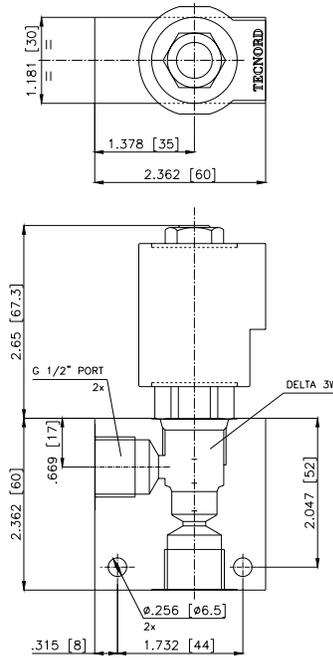
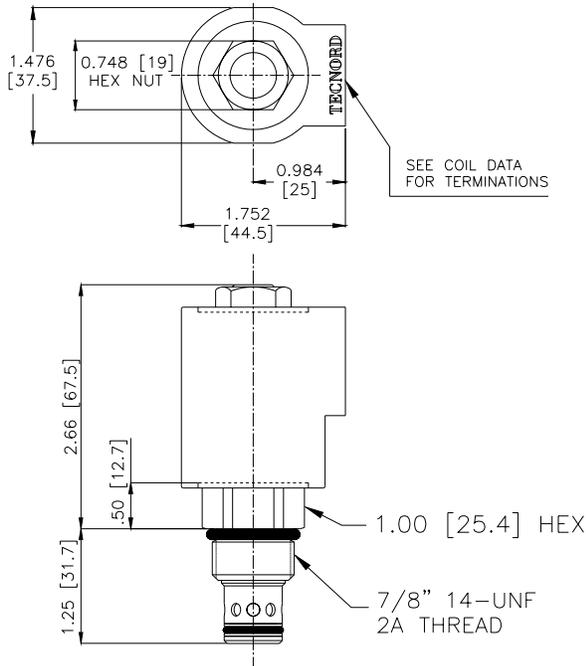


VALVE SPECIFICATIONS

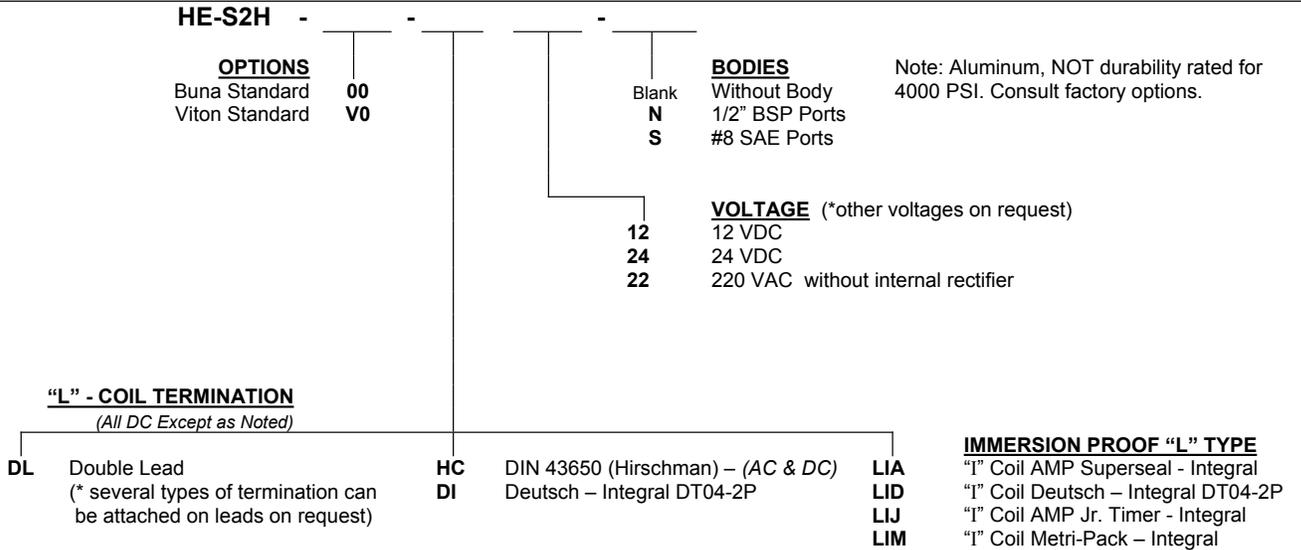
Maximum Flow	8 GPM (30 LPM) from 1 to 2 4 GPM (15 LPM) from 2 to 1
Max Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (131 ml/min)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.38 lbs. (.17 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION



Approximate Coil Weight: .56 lbs (.25 kg)

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 Spool Valves

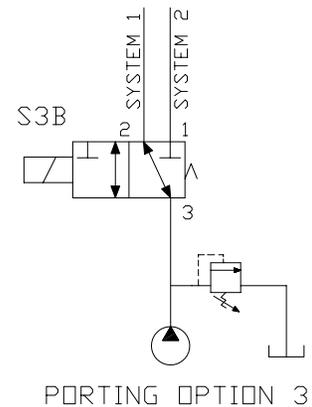
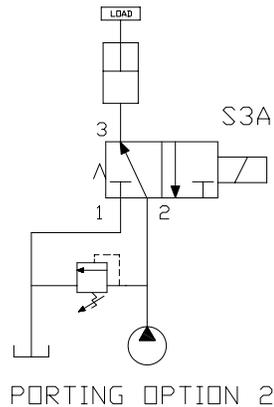
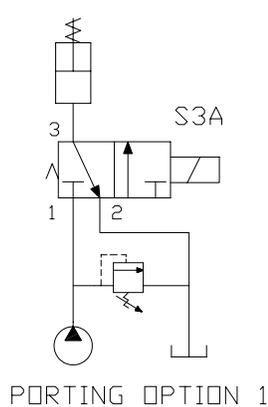
3W2P Normally Open	GPM	PSI	LPM	BAR	MODEL	PAGE
	1	3000	3,8	207	MC-S3A	106
	2	4000	8	276	HC-S3A	108
	3	3000	11	207	PP-S3A	110
	10	3000	38	207	DF-S3A	112
	10	4500	38	315	HF-S3A	114
	8	3000	30	207	DF-S3B	116
	8	4000	30	276	HF-S3B	118
	15	5000	57	345	HU-S3E	120
	15	5000	57	345	HU-S3F	122
	3	4000	1,13	276	HC-S3P	124
	3	3000	11	207	PP-S3X	126
	3	3000	11	207	PP-S3D	128

Typical Schematic

Typical application for porting option 1 is to operate a spring loaded hydraulic clutch.

Typical application for porting option 2 is single acting cylinder control in a gravity lower circuit.

Typical application for porting option 3 is a selector valve for two different systems or functions.



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.

MC-S3A Direct Acting Spool, 3 Way 2 Position



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, solenoid operated, 3 way 2 position, spool valve.

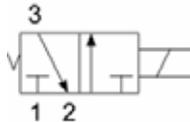
OPERATION

When de-energized the MC-S3A blocks flow at (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at (2).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



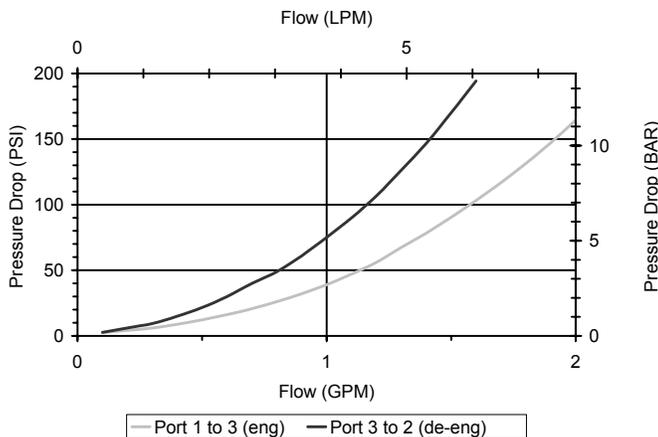
Operational shift limit 1 GPM (3.8 LPM) from (1) to (3) at 3000 PSI and 2 GPM (7.6 LPM) from (3) to (2) with no load.

For shifted flow performance consult chart.

For higher pressures or flows see HC-S3A.

PERFORMANCE

Actual Test Data (Cartridge Only)

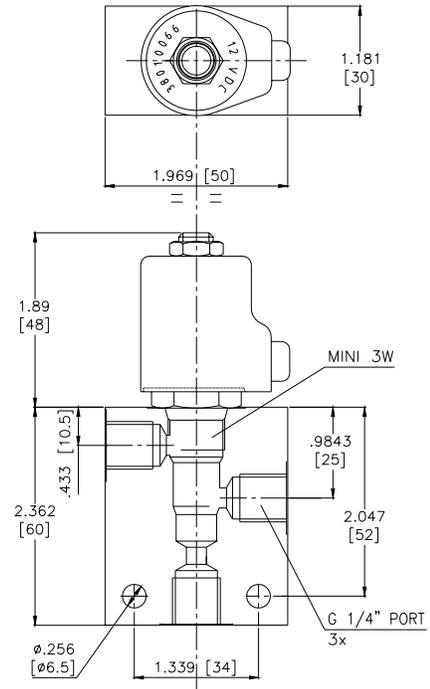
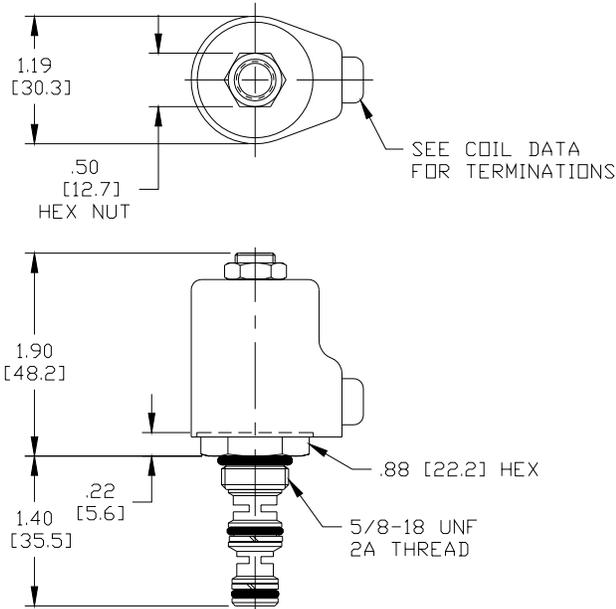


VALVE SPECIFICATIONS

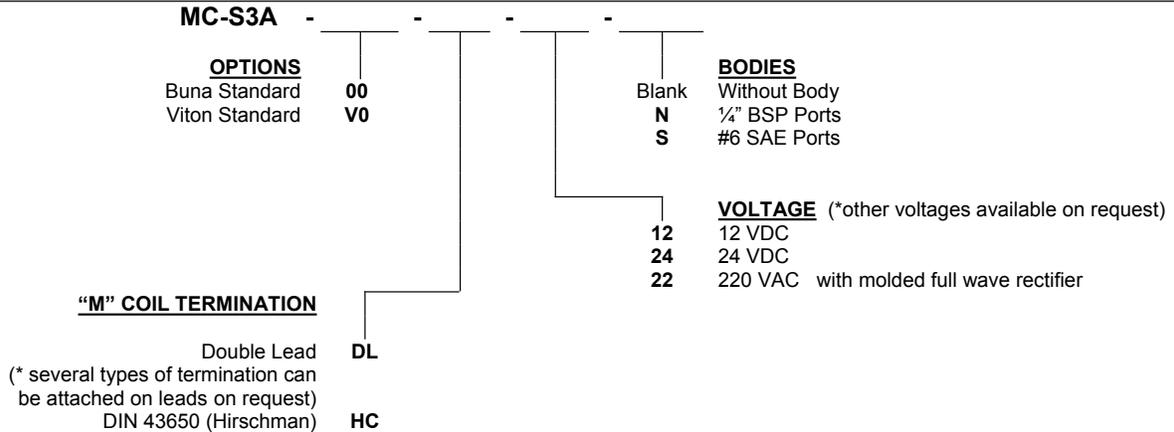
Nominal Flow	1 GPM (3.8 LPM) from (1) to (3) 2 GPM (7.6 LPM) from (3) to (2)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.14 lbs. (.06 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 3W
Cavity Tools kit (form tool, reamer, tap)	40500004
Seal Kit	21191004

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



Approximate Coil Weight: .30 lbs (.14 kg)

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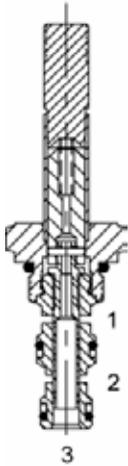
HC-S3A Direct Acting Spool, 3 Way 2 Position

DESCRIPTION

"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 3 way 2 position, spool valve.

OPERATION

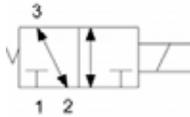
When de-energized the HC-S3A blocks flow at (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at (2).



FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design (for most common terminations, see coil page).
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

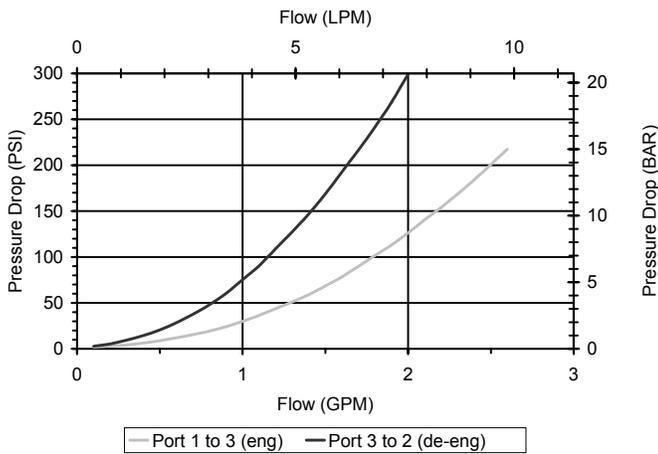
HYDRAULIC SYMBOL



Flow limited at 1.5 GPM for flow at port (3).

PERFORMANCE

Actual Test Data (Cartridge Only)

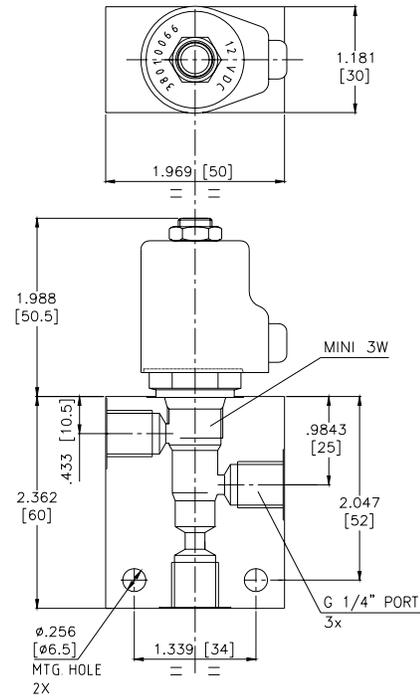
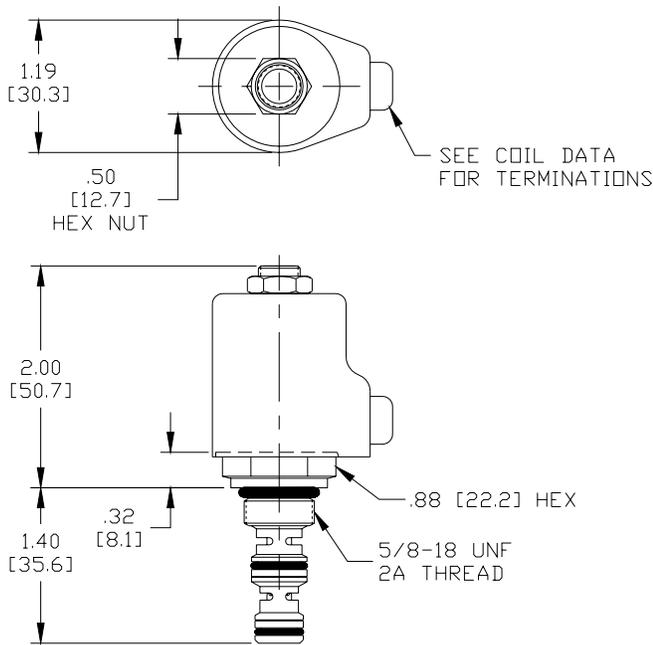


VALVE SPECIFICATIONS

Nominal Flow	2 GPM (8 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (131 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. (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 3W
Cavity Tools kit (form tool, reamer, tap)	40500004
Seal Kit	21191004

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DIMENSIONS



ORDERING INFORMATION

HC-S3A - - -

OPTIONS

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

Blank **N**
S

BODIES

Without Body
 1/4" BSP Ports
 #6 SAE Ports

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC with moulded full wave rectifier

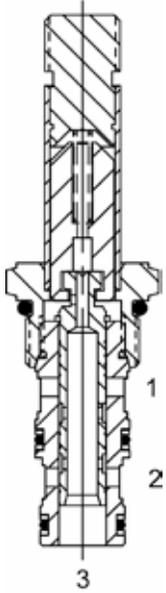
"M" COIL TERMINATION

Double Lead **DL**
 (* several types of termination can be attached on leads on request)
 DIN 43650 (Hirschman) **HC**

Approximate Coil Weight: .30 lbs (.14 kg)

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-S3A Direct Acting Spool, 3 Way 2 Position



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 3 way 2 position, spool valve.

OPERATION

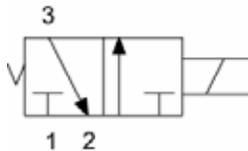
When de-energized the PP-S3A allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

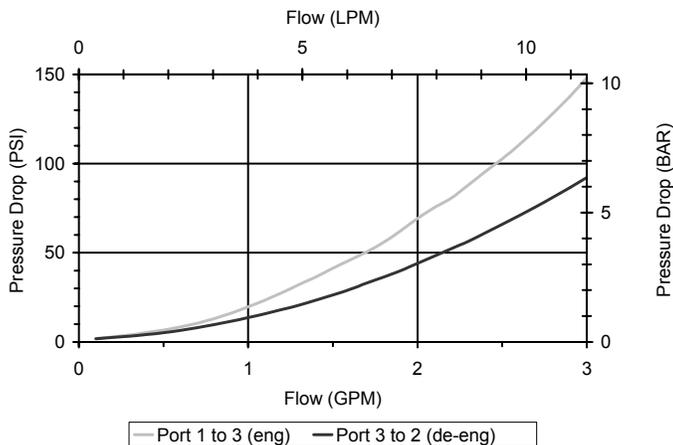
HYDRAULIC SYMBOL



Operational shift limit 3 GPM (11 LPM) from (1) to (3) at 3000 PSI (207 bar) and (3) to (2) with no load. For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

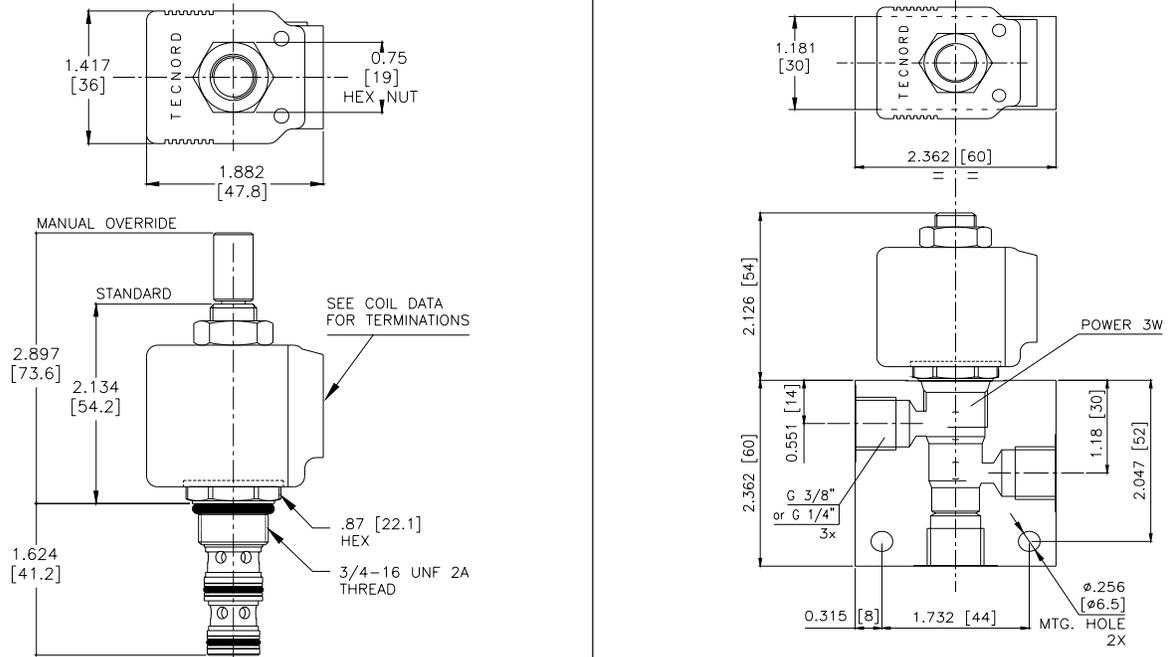


VALVE SPECIFICATIONS

Nominal Flow	3 GPM (11 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	.23 lbs. (.10 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 3W
Cavity Tools kit (form tool, reamer, tap)	40500024
Seal Kit	21191105

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DIMENSIONS



ORDERING INFORMATION

PP-S3A - - - -

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Override	0M
Viton, Override	VM
Buna, Screen	A0
Viton, Screen	W0
Buna, Override, Non-detent	B1
Viton, Override, Non-detent	V1
Buna, Screen, Override, Non-detent	B3
Buna, Screen, Override, Detent	B4
Viton, Screen, Override, Non-detent	V3
Viton, Screen, Override, Detent	V4

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

"K" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
(*several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

PIA "I" Coil AMP Superseal - Integral
PID "I" Coil Deutsch – Integral DT04-2P
PIJ "I" Coil AMP Jr. Timer - Integral
PIM "I" Coil Metri-Pack – Integral

BODIES

Blank	Without Body
N	1/4" BSP Ports
N1	3/8" BSP Ports
S	#6 SAE Ports

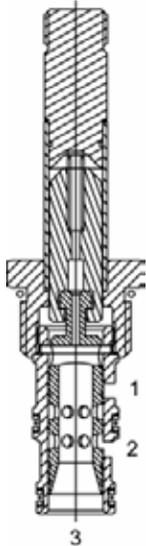
VOLTAGE (*other voltages available on request)

12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

Approximate Coil Weight: .42 lbs (.19 kg)

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-S3A Direct Acting Spool, 3 Way 2 Position



DESCRIPTION

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

OPERATION

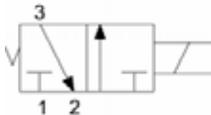
When de-energized the DF-S3A allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

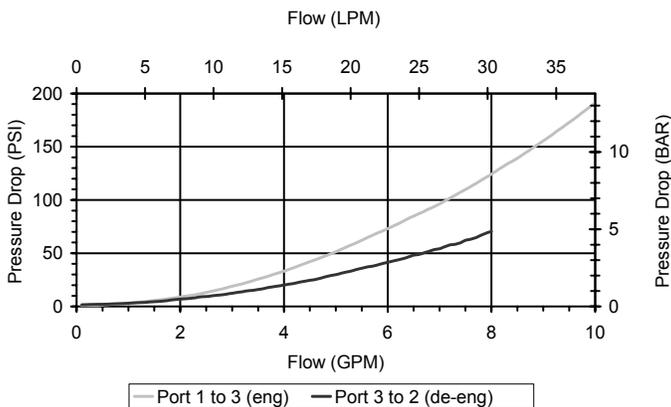
HYDRAULIC SYMBOL



Common lift/lower valve where load holding is not required. For higher pressures see HF-S3A.

PERFORMANCE

Actual Test Data (Cartridge Only)

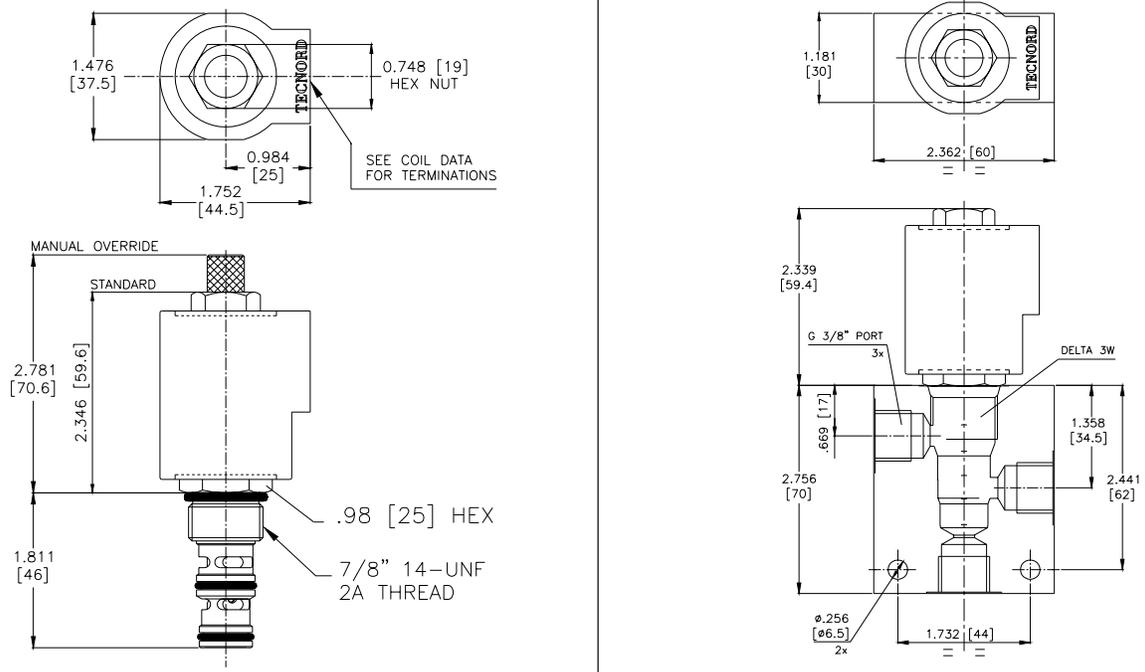


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu/in 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	.28 lbs. (.12 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 3W
Cavity Tools kit (form tool, reamer, tap)	40500001
Seal Kit	21191210

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DIMENSIONS



ORDERING INFORMATION

DF-S3A - - - - -

- OPTIONS**
- Buna Standard **00**
 - Viton Standard **V0**
 - Buna, Override **OM**
 - Viton, Override **VM**
 - Buna, Screen **A0**
 - Viton, Screen **W0**
 - Buna, Screen, Override **B3**
 - Viton, Screen, Override **V3**

- BODIES**
- Blank
 - N** 3/8" BSP Ports
 - S** #6 SAE Ports

- VOLTAGE** (*other voltages available on request)
- 12** 12 VDC
 - 24** 24 VDC
 - 22** 220 VAC without internal rectifier

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

"V" COIL TERMINATION

- DL** Double Lead
(* several types of termination can be attached on leads on request)

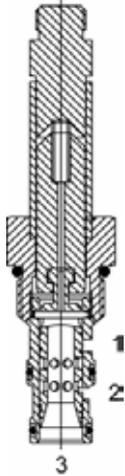
- HC** Din 43650 (Hirschman)
DI Deutsch – Integral DT04-2P

- DIA** "I" Coil AMP Superseal - Integral
DID "I" Coil - Deutsch – Integral DT04-2P
DIJ "I" Coil AMP Jr. Timer - Integral
DIM "I" Coil - Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

HF-S3A Direct Acting Spool, 3 Way 2 Position



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 3 way 2 position, spool valve.

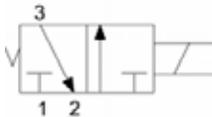
OPERATION

When de-energized the HF-S3A blocks flow at port (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "1" Coil: Weatherproof, Thermal Shock, Immersion Safe.

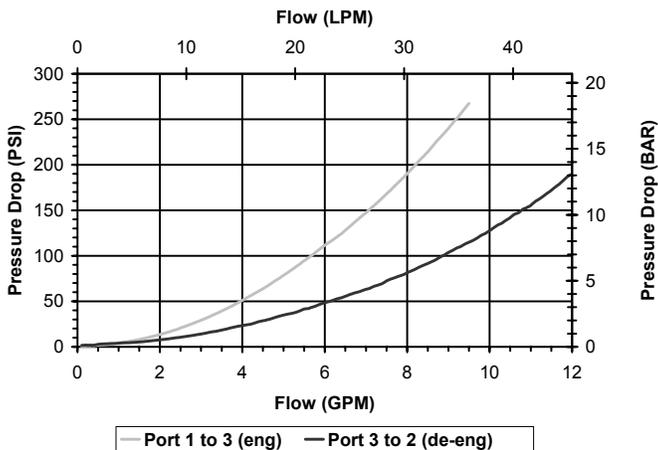
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)

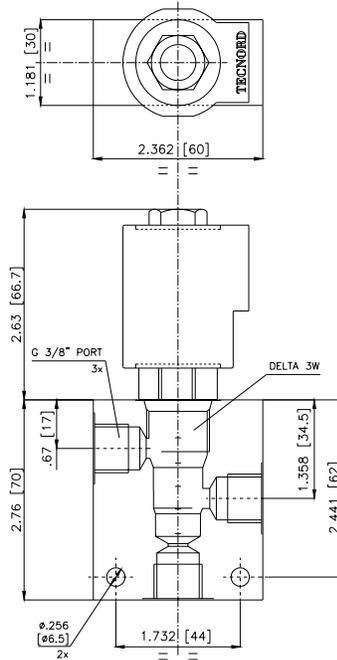
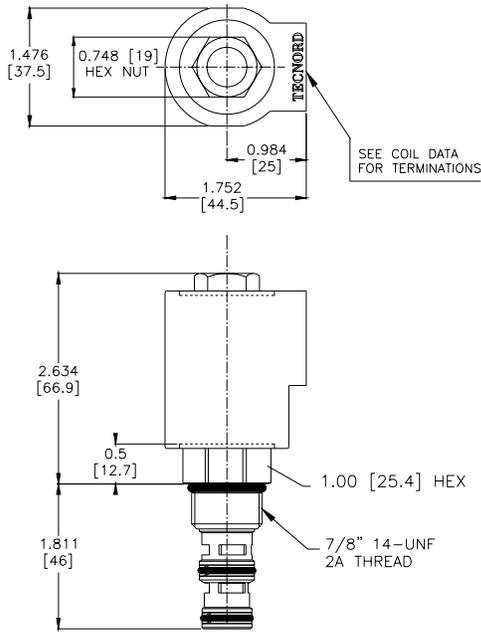


VALVE SPECIFICATIONS

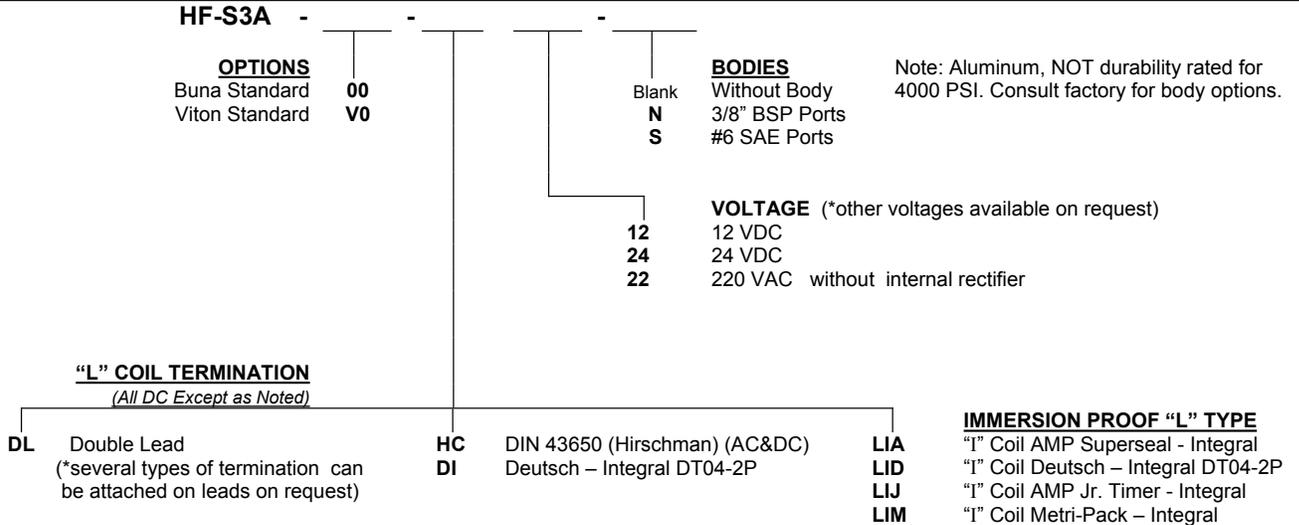
Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	4500 PSI (315 bar)
Typical Internal Leakage (150 SSU)	8 cu/in per min (131 ml/min)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.40 lbs. (.18 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 3W
Cavity Tools kit (form tool, reamer, tap)	40500001
Seal Kit	21191210

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DIMENSIONS



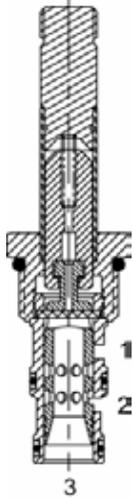
ORDERING INFORMATION



Approximate Coil Weight: .69 lbs (.31 kg)

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-S3B Direct Acting Spool, 3 Way 2 Position, Selector



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 3 way 2 position, selector spool valve.

OPERATION

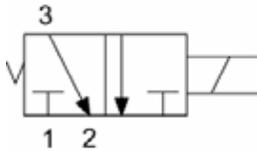
When de-energized the DF-S3B allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (3) to (1) and blocks flow at port (2).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "1" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



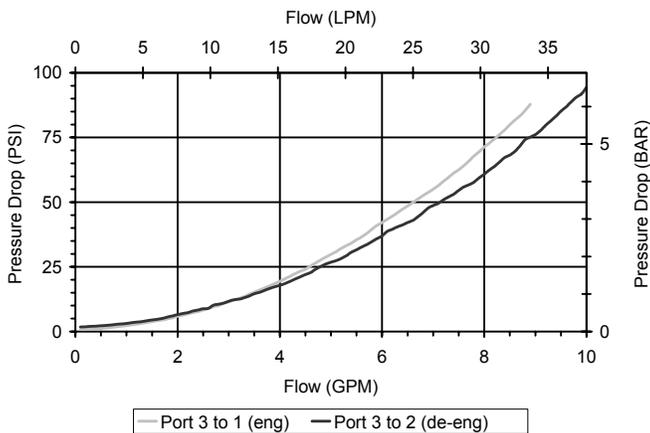
Trapped differentials above 1500 PSI from ports 2 to 1 can create shift issues near flow rating.

(Differentials to 3000 psi from 1 to 2 are not an issue.)

For higher pressures consult HF-S3B.

PERFORMANCE

Actual Test Data (Cartridge Only)

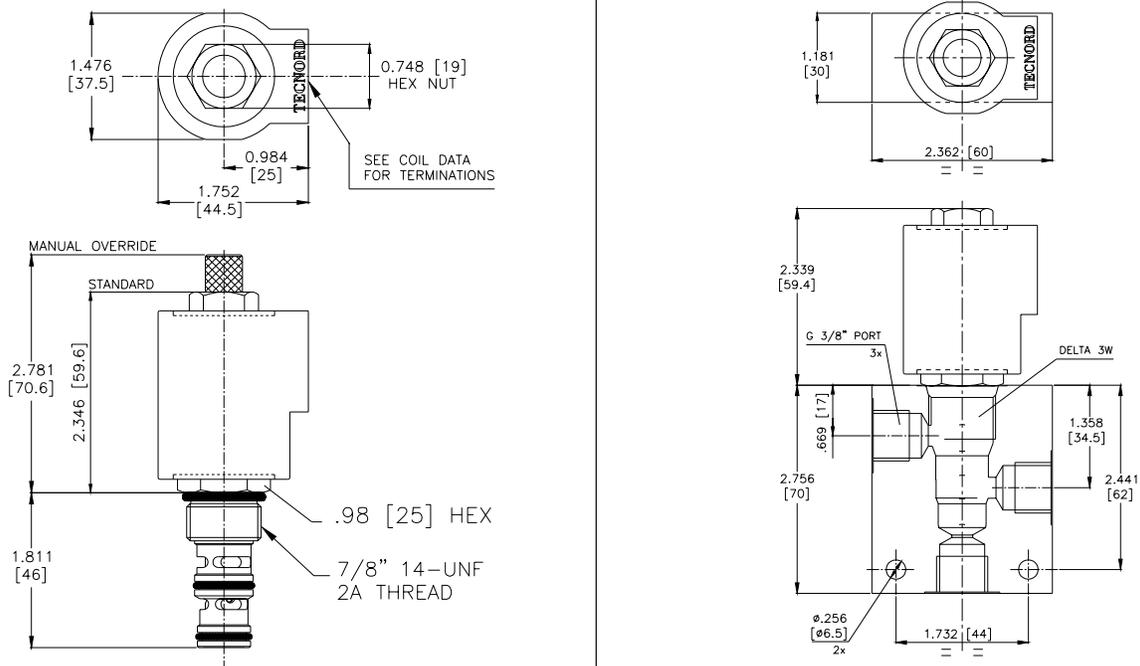


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu/in 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	.28 lbs. (.12 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 3W
Cavity Tools kit (form tool, reamer, tap)	40500001
Seal Kit	21191210

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

DF-S3B - - - -

OPTIONS

- Buna Standard **00**
- Viton Standard **V0**
- Buna, Override **OM**
- Viton, Override **VM**
- Buna, Screen **A0**
- Viton, Screen **W0**
- Buna, Screen, Override **B3**
- Viton, Screen, Override **V3**

- Blank
- N**
- S**

BODIES

- Without Body
- 3/8" BSP Ports
- #6 SAE Ports

VOLTAGE (*other voltages available on request)

- 12** 12 VDC
- 24** 24 VDC
- 22** 220 VAC without internal rectifier

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

"V" COIL TERMINATION

(All DC Except as Noted)

- DL** Double Leads
(*several types of termination can be attached on leads on request)
- HC** Din 43650 (Hirschman) - (AC & DC)
- DI** Deutsch - Integral DT04-2P

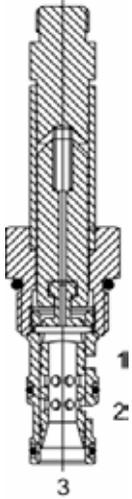
IMMERSION PROOF "D" TYPE

- "I"** Coil AMP Superseal - Integral
- "I"** Coil - Deutsch - Integral DT04-2P
- "I"** Coil AMP Jr. Timer - Integral
- "I"** Coil - Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

HF-S3B Direct Acting Spool, 3 Way 2 Position, Selector



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 3 way 2 position, selector spool valve.

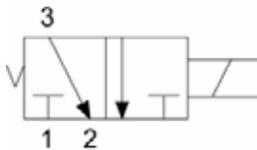
OPERATION

When de-energized the HF-S3B allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (3) to (1) and blocks flow at port (2).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

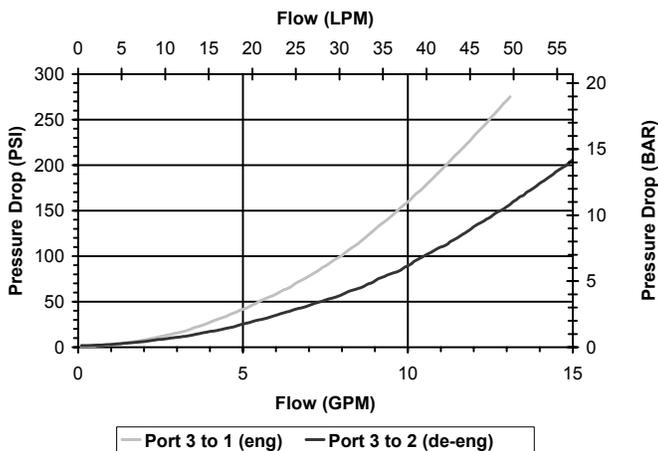
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)

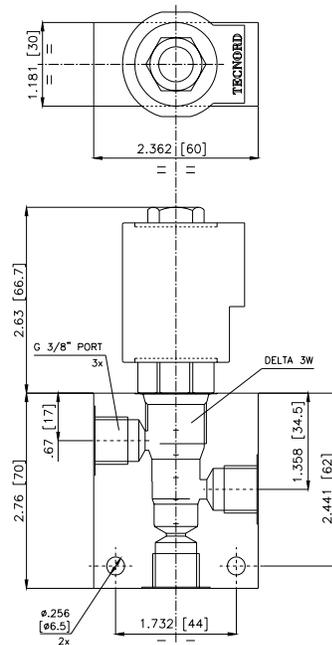
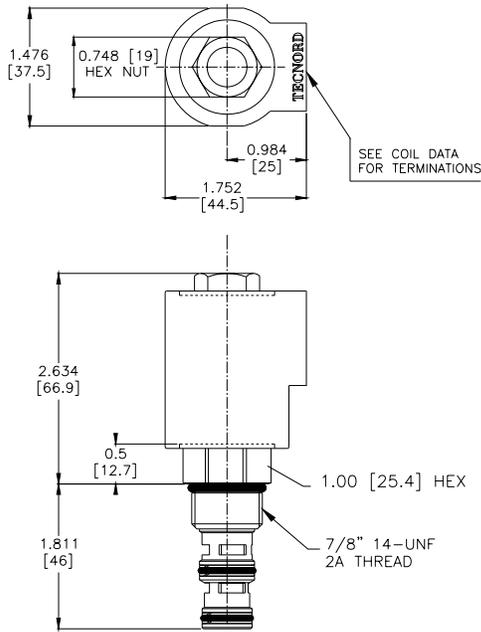


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu/in per min (131 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	.40 lbs. (.18 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 3W
Cavity Tools kit (form tool, reamer, tap)	40500001
Seal Kit	21191210

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

HF-S3B - - - -

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

Blank
N
S

BODIES
 Without Body
 3/8" BSP Ports
 #6 SAE Ports

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

VOLTAGE (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"L" COIL TERMINATION
 (All DC Except as Noted)

DL Double Lead
 (*several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF "L" TYPE
LIA "I" Coil AMP Superseal - Integral
LID "I" Coil Deutsch – Integral DT04-2P
LIJ "I" Coil AMP Jr. Timer - Integral
LIM "I" Coil Metri-Pack

Approximate Coil Weight: .69 lbs (.31 kg)

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.

HU-S3E Direct Acting Spool, 3 Way 2 Position, High Pressure



DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnord" series, solenoid operated, 3 way 2 position, spool valve.

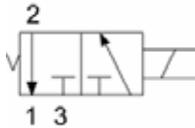
OPERATION

When de-energized the HU-S3E allows flow from (2) to (1) and blocks flow at port (3). When energized the valve allows flow from (3) to (2) and blocks flow at port (1).

FEATURES

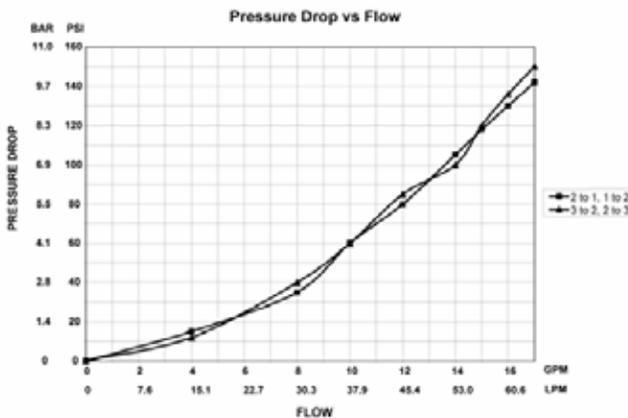
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



Common usage is inlet at port 3.
See HU-S3F for port 2 or port 1 inlet.

PERFORMANCE

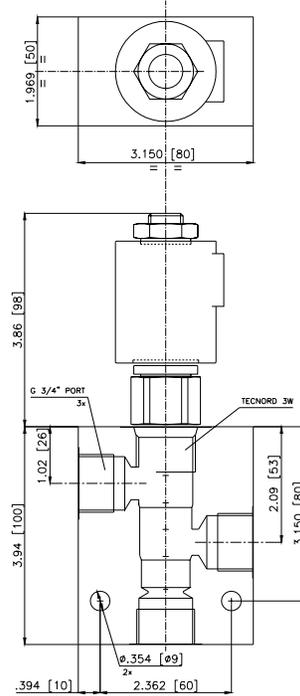
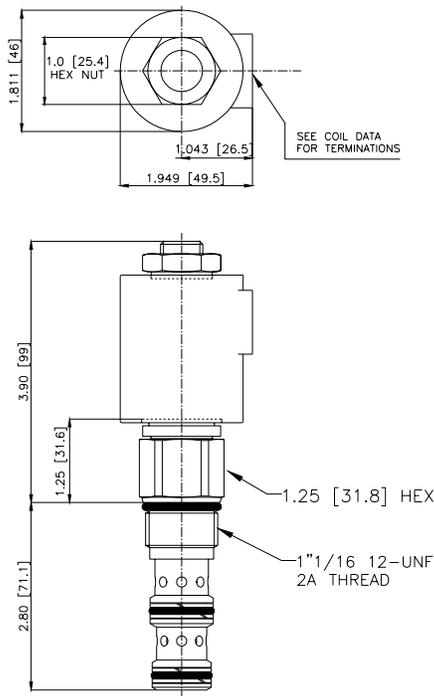


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	5000 PSI (345 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min @ 3000 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	1.01 lbs. (.46 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	50 ft-lbs (67.8 Nm)
Coil Nut Torque Requirements	5-7 ft-lbs (6.8-9.5 Nm)
Cavity	TECNORD 3W
Cavity Tools kit (form tool, reamer, tap)	40500034
Seal Kit	21191305

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

HU-S3E - - -

OPTIONS

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

Blank

N 3/4" BSP Ports
S #10 SAE Ports

BODIES

Without Body
 3/4" BSP Ports
 #10 SAE Ports

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"T" COIL TERMINATION

(All DC Except as Noted)

Double Lead **DL**

(*several types of termination can be attached on leads on request)

DIN 43650 (Hirschman) - (AC & DC) **HC**

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.

HU-S3F Direct Acting Spool, 3 Way 2 Position, High Pressure



DESCRIPTION

12 size, 1 1/16-12 thread, "Tecnord" series, solenoid operated, 3 way 2 position, spool valve.
This valve is recommend, if flow in port (1) or port (2).

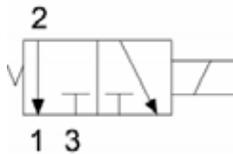
OPERATION

When de-energized the HU-S3F allows flow from (2) to (1) and blocks flow at port 3. When energized the valve allows flow from (2) to (3) and blocks flow at port (1).

FEATURES

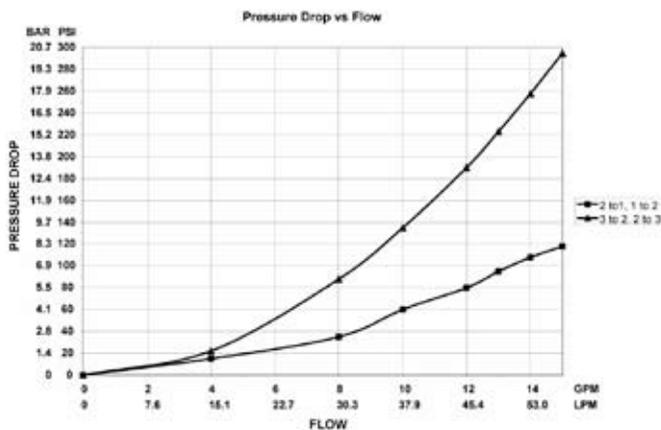
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



Common usage is inlet at port 1 or 2.
 See HU-S3E for port 3 inlet.

PERFORMANCE

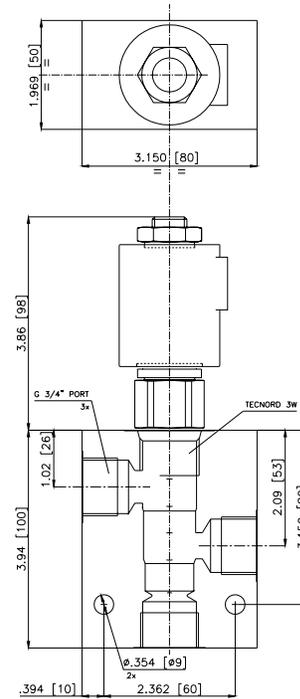
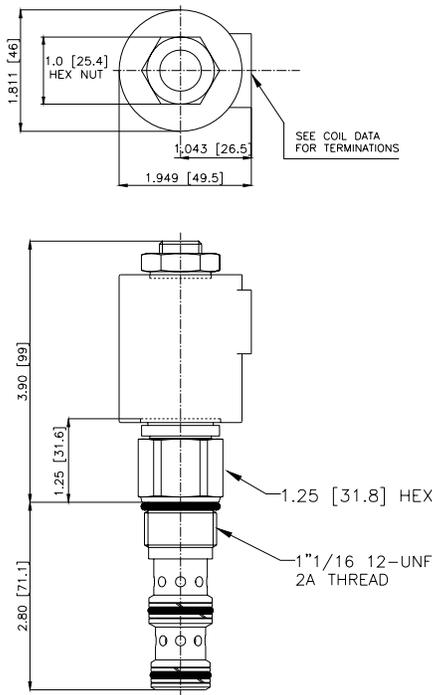


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	5000 PSI (345 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min @ 3000 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	1.01 lbs. (.46 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	50 ft-lbs (67.8 Nm)
Coil Nut Torque Requirements	5-7 ft-lbs (6.8-9.5 Nm) Maximum
Cavity	TECNORD 3W
Cavity Tool kit (form tool, reamer, tap)	40500034
Seal Kit	21191305

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

HU-S3F - - - -

OPTIONS

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

Blank **N**
S

BODIES

Without Body
 3/4" BSP Ports
 #10 SAE Ports

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"T" TYPE COIL TERMINATION

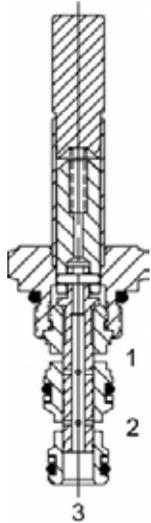
(All DC Except as Noted)

Double Lead **DL**

(*several types of termination can be attached on leads on request)
 DIN 43650 (Hirschman) - (AC & DC) **HC**

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.

HC-S3P Direct Acting Spool, 3 Way 2 Position, Pilot Control, Low Leakage



DESCRIPTION

"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 3 way 2 position, pilot control spool valve.

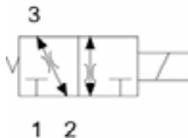
OPERATION

When de-energized the HC-S3P blocks flow at (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at (2).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design (for most common terminations, see coil page).
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

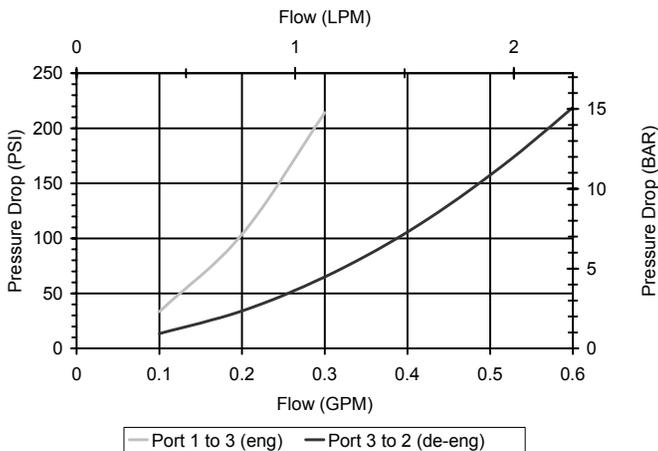
HYDRAULIC SYMBOL



Great for pilot control, low leakage.

PERFORMANCE

Actual Test Data (Cartridge Only)

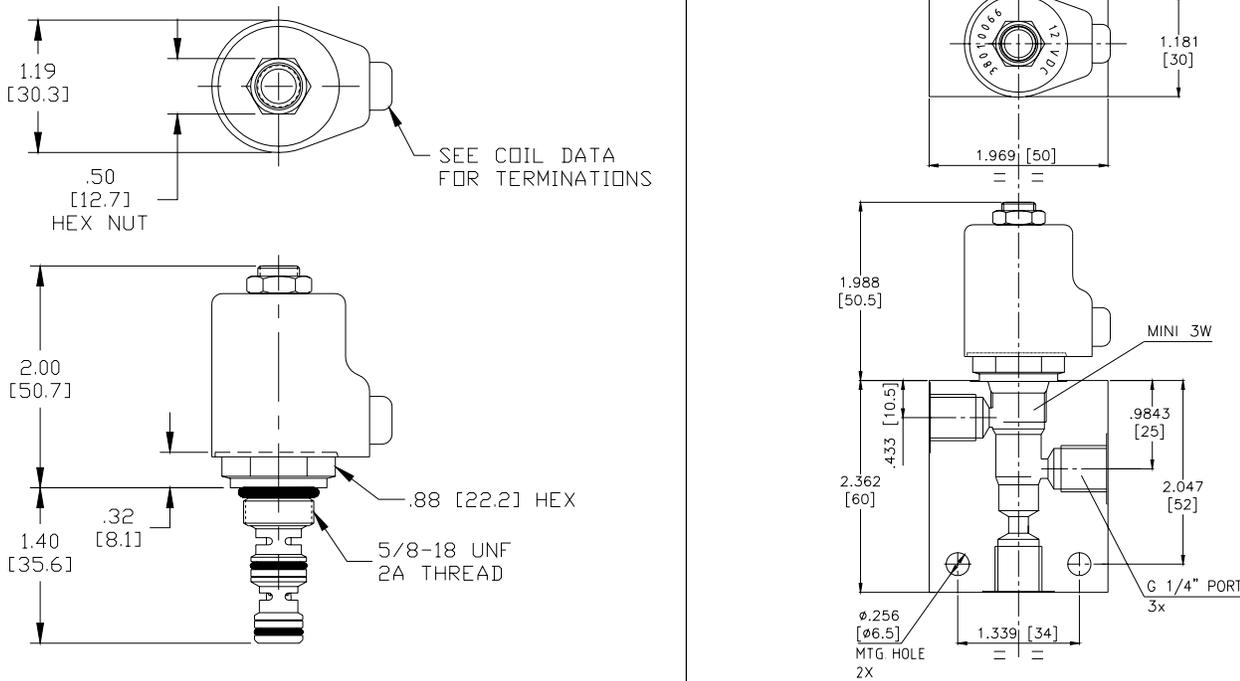


VALVE SPECIFICATIONS

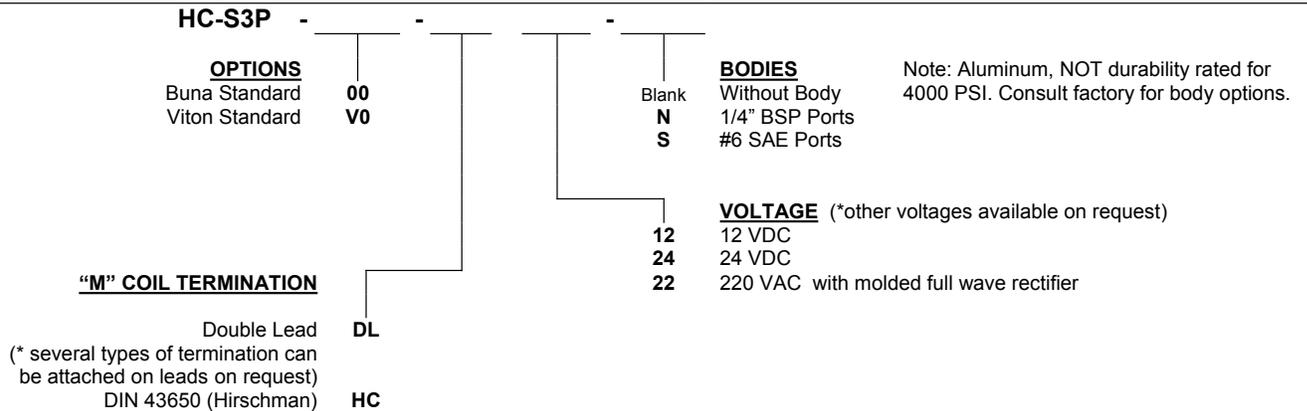
Nominal Flow	.3 GPM (1.13 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	3 cu in/min (49 ml/min)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.15 lbs. (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 3W
Cavity Tools kit (form tool, reamer, tap)	40500004
Seal Kit	21191004

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



Approximate Coil Weight: .30 lbs (.14 kg)

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-S3X Direct Acting Spool, 3 Way 2 Position, Selector

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 3 way 2 position, selector spool valve.

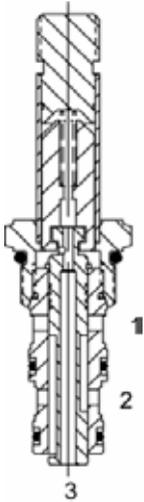
OPERATION

When de-energized the PP-S3X allows flow from (2) to (3) and blocks flow at port (1). When energized the valve allows flow from (2) to (1) and blocks flow at port (3).

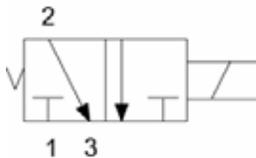
OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.



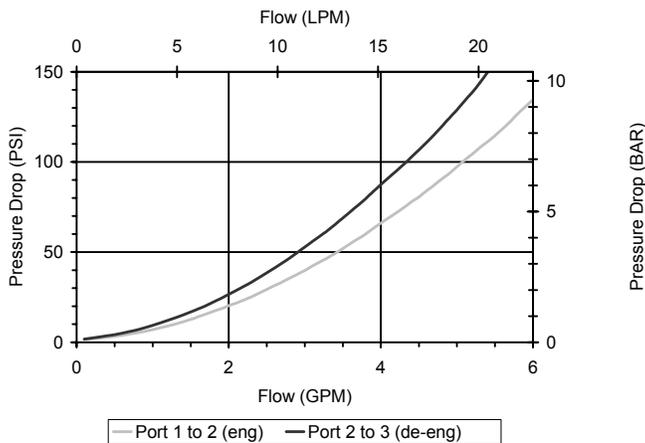
HYDRAULIC SYMBOL



Operational shift limit 3 GPM (11 LPM) from port 2.
Not recommended for port 3 inlet cavity.
For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

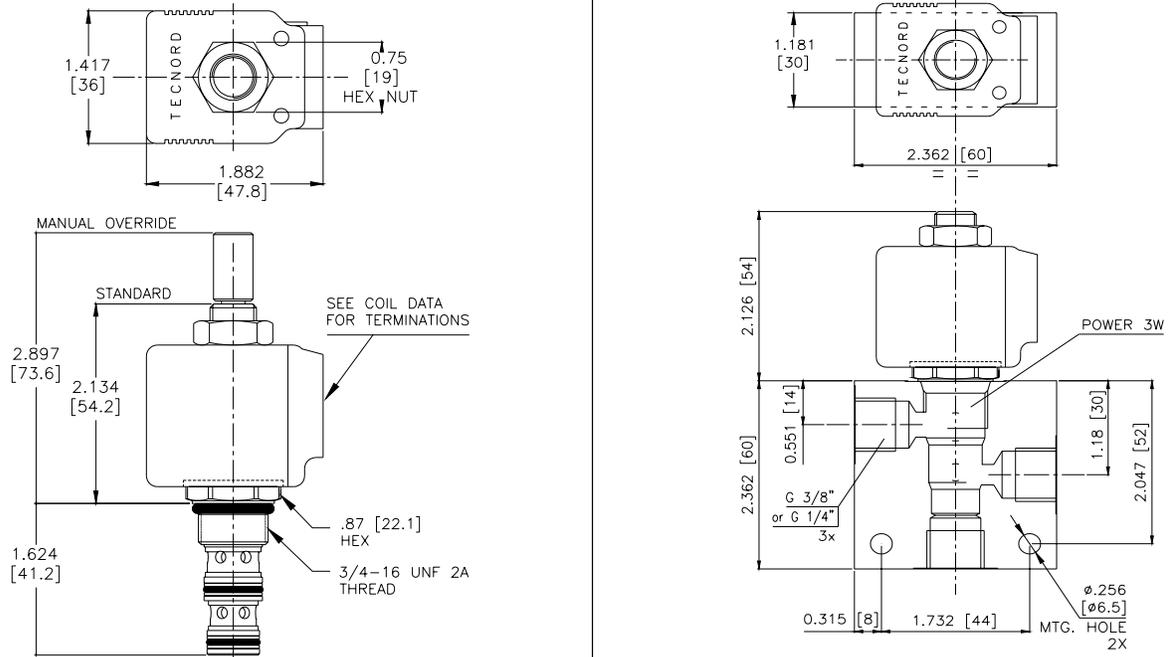


VALVE SPECIFICATIONS

Nominal Flow	3 GPM (11 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	.23 lbs. (.10 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 3W
Cavity Tools kit (form tool, reamer, tap)	40500024
Seal Kit	21191105

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

PP-S3X - - - -

OPTIONS

- Buna Standard **00**
- Viton Standard **V0**
- Buna, Override **0M**
- Viton, Override **VM**
- Buna, Screen **A0**
- Viton, Screen **W0**
- Buna, Override, Non-detent **B1**
- Viton, Override, Non-detent **V1**
- Buna, Screen, Override, Non-detent **B3**
- Buna, Screen, Override, Detent **B4**
- Viton, Screen, Override, Non-detent **V3**
- Viton, Screen, Override, Detent **V4**

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

"K" COIL TERMINATION

(All DC Except as Noted)

- DL** Double Lead
(*several types of termination can be attached on leads on request)

- HC** DIN 43650 (Hirschman) – (AC & DC)
- DI** Deutsch – Integral DT04-2P

BODIES

- Blank
- N** 1/4" BSP Ports
- N1** 3/8" BSP Ports
- S** #6 SAE Ports

VOLTAGE

- (*other voltages available on request)
- 12** 12 VDC
- 24** 24 VDC
- 22** 220 VAC without internal rectifier

- PIA**
- PID**
- PIJ**
- PIM**

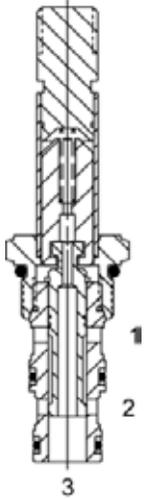
IMMERSION PROOF "P" TYPE

- "I" Coil AMP Superseal - Integral
- "I" Coil Deutsch – Integral DT04-2P
- "I" Coil AMP Jr. Timer - Integral
- "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .42 lbs (.19 kg)

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-S3D Direct Acting Spool, 3 Way 2 Position, Selector



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 3 way 2 position, selector spool valve.

OPERATION

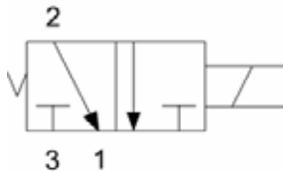
When de-energized the PP-S3D allows flow from (2) to (1) and blocks flow at port (3). When energized the valve allows flow from (2) to (3) and blocks flow at port (1).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

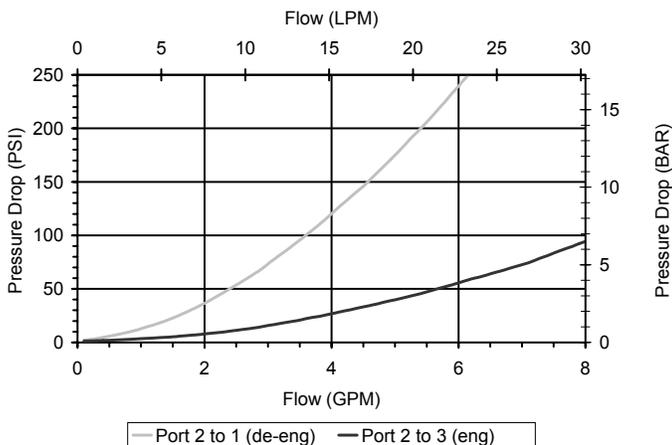
HYDRAULIC SYMBOL



Operational shift limit 3 GPM (11 LPM) from (2) or (3). Consult factory for flow in (1) that exceed 3 GPM. For shifted flow performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

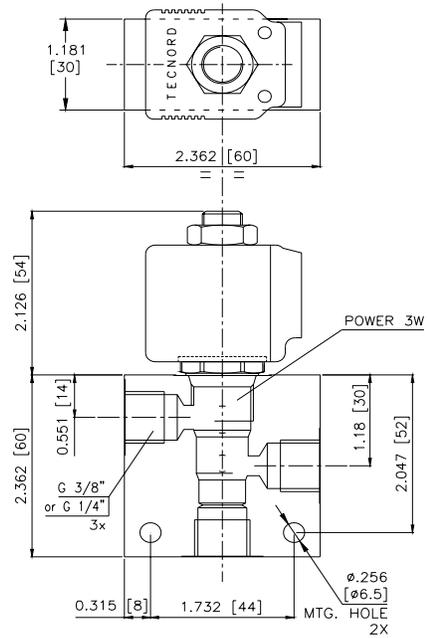
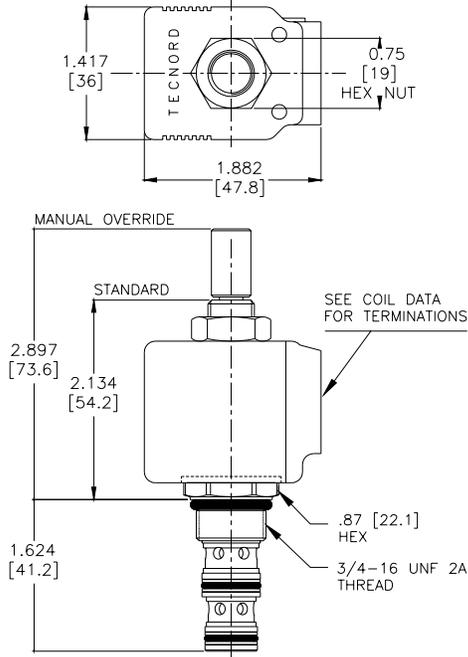


VALVE SPECIFICATIONS

Nominal Flow	3 GPM (11 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	.22 lbs. (.10 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 3W
Cavity Tools kit (form tool, reamer, tap)	40500024
Seal Kit	21191105

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

PP-S3D - - - -

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Override	0M
Viton, Override	VM
Buna, Screen	A0
Viton, Screen	W0
Buna, Override, Non-detent	B1
Viton, Override, Non-detent	V1
Buna, Screen, Override, Non-detent	B3
Buna, Screen, Override, Detent	B4
Viton, Screen, Override, Non-detent	V3
Viton, Screen, Override, Detent	V4

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

"K" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
(*several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

PIA
PID
PIJ
PIM

IMMERSION PROOF "P" TYPE

"I" Coil AMP Superseal - Integral
"I" Coil Deutsch – Integral DT04-2P
"I" Coil AMP Jr. Timer - Integral
"I" Coil Metri-Pack – Integral

BODIES

Blank	Without Body
N	1/4" BSP Ports
N1	3/8" BSP Ports
S	#6 SAE Ports

VOLTAGE (*other voltages available on request)

12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

Approximate Coil Weight: .42 lbs (.19 kg)

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 Spool Valves

4W2P Spool	GPM	PSI	LPM	BAR	MODEL	PAGE
	1	3000	4	207	MD-S4A	132
	1,5	4000	6	276	HD-S4A	134
	4	3000	15	207	PQ-S4A	136
	10	3000	38	207	DG-S4A	138
	10	4000	38	276	HG-S4A	140
	15	5000	57	345	HV-S4A	142
	1,5	3000	6	207	MD-S4B	144
	3	4000	11	276	HD-S4B	146
	4	3000	15	207	PQ-S4B	148
	10	3000	38	207	DG-S4B	150
	10	4000	38	276	HG-S4B	152
	4	3000	15	207	PQ-S4C	154
	8	3000	30	207	DG-S4C	156
	8	4000	30	276	HG-S4C	158
	2,5	3000	9	207	PQ-S4D	160
	6	3000	23	207	DG-S4D	162
	8	4000	30	276	HG-S4D	164
	6	3000	23	207	DG-S4E	166
	8	4000	30	276	HG-S4E	168
	15	5000	57	345	HV-S4E	170
	6	3000	23	207	DG-S4F	172
	6	4000	23	276	HG-S4F	174

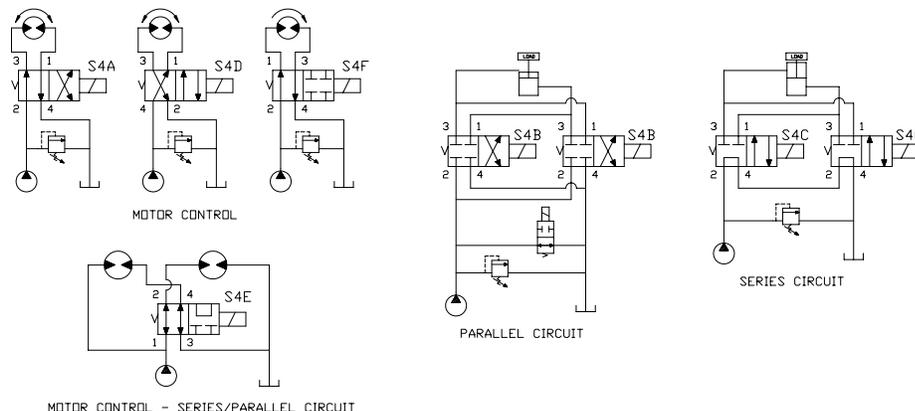
Typical Schematic

Typical application for the S4A, S4D, and S4F is directional motor or cylinder control.

Typical application for the S4B is directional motor or cylinder control in a parallel circuit.

Typical application for the S4C is directional motor or cylinder control in a series circuit.

Typical application for the S4E is motor control in a series/parallel 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.

MD-S4A Direct Acting Spool, 4 Way 2 Position

DESCRIPTION

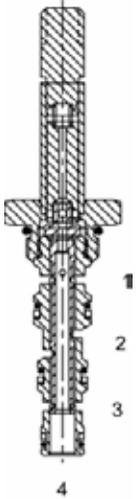
7 size, 5/8-18 thread, "Mini" series, solenoid operated, 4 way 2 position, spool valve.

OPERATION

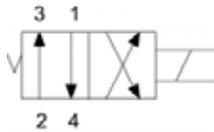
When de-energized the MD-S4A allows flow from (1) to (4) and (2) to (3). When energized the valve allow flow from (2) to (1) and (3) to (4).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.



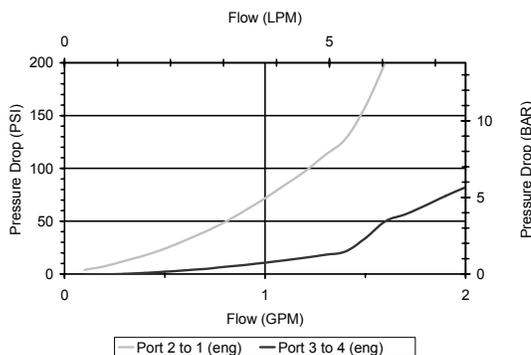
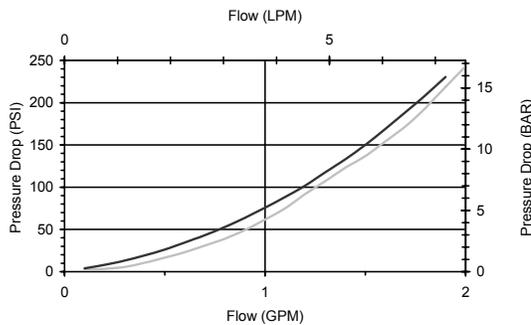
HYDRAULIC SYMBOL



Operational shift limit 1 GPM (3.8 LPM).
For shifted flow performance consult chart.
For higher pressures or flows see HD-S4A.

PERFORMANCE

Actual Test Data (Cartridge Only)

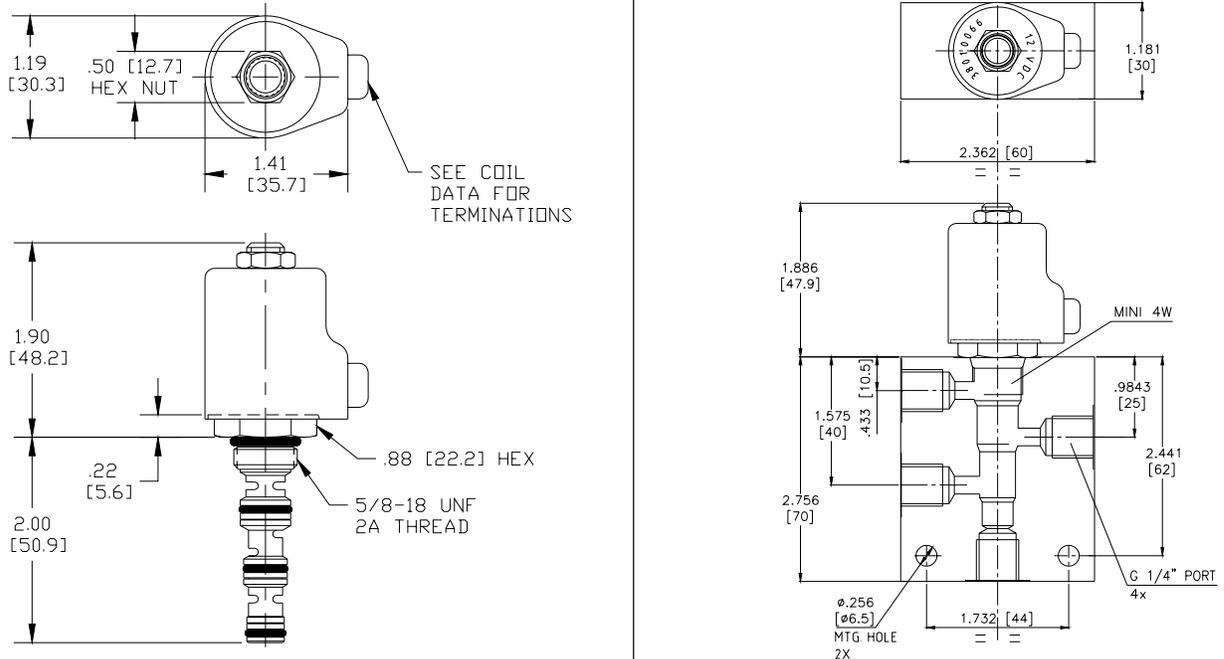


VALVE SPECIFICATIONS

Maximum Flow	1 GPM (4 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	.15 lbs. (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 4W
Cavity Tools kit (form tool, reamer, tap)	40500006
Seal Kit	21191008

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

MD-S4A -

OPTIONS

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

"M" COIL TERMINATION

Double Lead **DL**
 (* several types of termination can be attached on leads on request)
 DIN 43650 (Hirschman) **HC**

BODIES

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

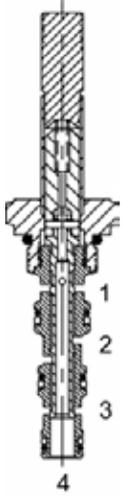
VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC with molded full wave rectifier

Approximate Coil Weight: .30 lbs (.14 kg)

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.

HD-S4A Direct Acting Spool, 4 Way 2 Position



DESCRIPTION

"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 4 way 2 position spool valve.

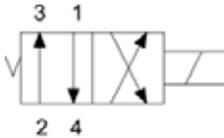
OPERATION

When de-energized the HD-S4A allows flow from (1) to (4) and (2) to (3). When energized the valve allows flow from (2) to (1) and (3) to (4).

FEATURES

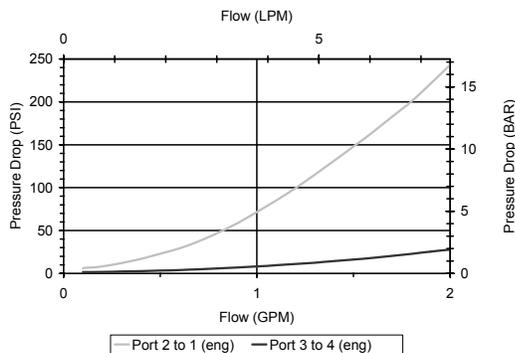
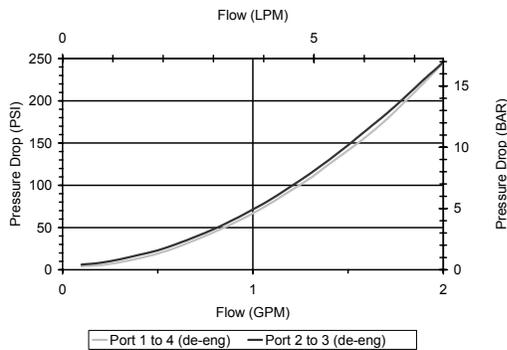
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design (for most common terminations, see coil page).
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

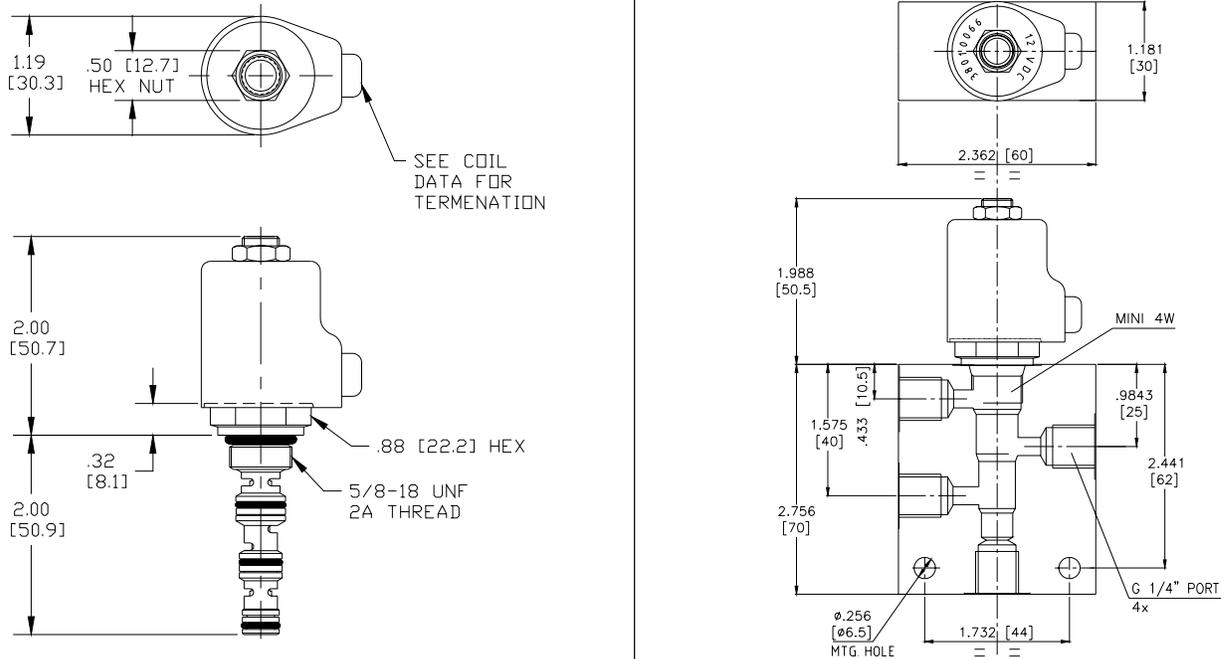


VALVE SPECIFICATIONS

Nominal Flow	1.5 GPM (6 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (131 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	.16 lbs. (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 4W
Cavity Tools kit (form tool, reamer, tap)	40500006
Seal Kit	21191008

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

HD-S4A - - - -

OPTIONS

Buna Standard
Viton Standard

00
V0

"M" COIL TERMINATION

Double Lead
(* several types of termination can be attached on leads on request)
DIN 43650 (Hirschman)

DL
HC

Blank
N
S

BODIES

Without Body
1/4" BSP Ports
#6 SAE Ports

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

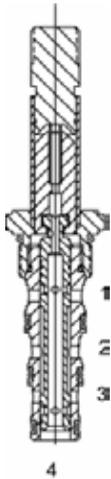
VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC with molded full wave rectifier

Approximate Coil Weight: .30 lbs (.14 kg)

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.

PQ-S4A Direct Acting Spool, 4 Way 2 Position



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 4 way 2 position, spool valve.

OPERATION

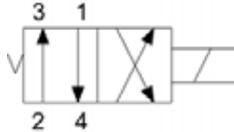
When de-energized the PQ-S4A allows flow from (1) to (4) and from (2) to (3). When energized the valve allows flow from (2) to (1) and from (3) to (4).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

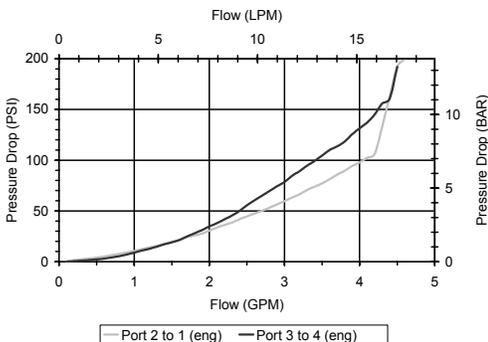
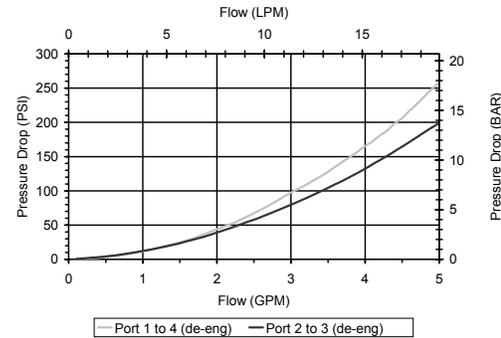
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "1" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

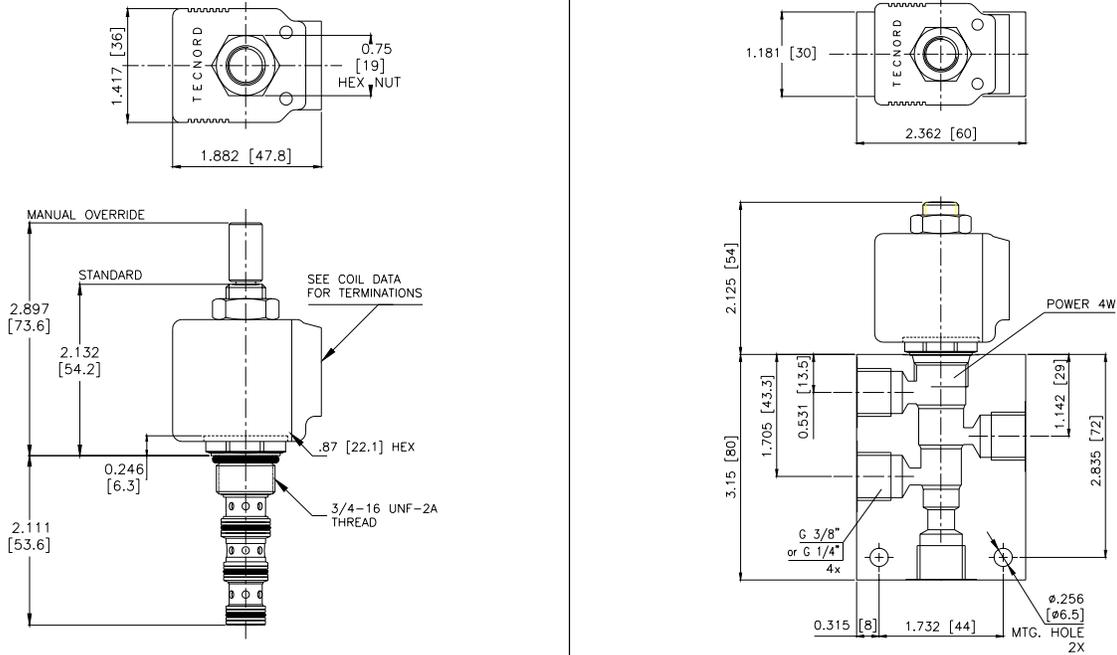


VALVE SPECIFICATIONS

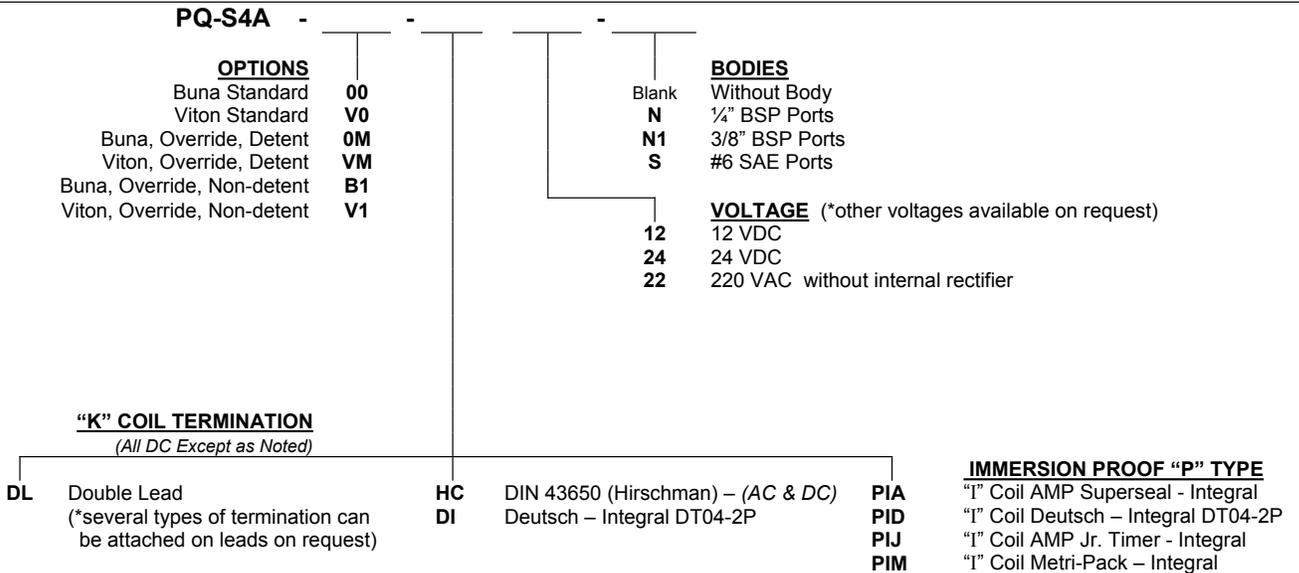
Nominal Flow	4 GPM (15 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.24 lbs. (.11 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 4 W
Cavity Tools kit (form tool, reamer, tap)	40500029
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



ORDERING INFORMATION



Approximate Coil Weight: .42 lbs (.19 kg)

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-S4A Direct Acting Spool, 4 Way 2 Position



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position, side flow spool valve.

OPERATION

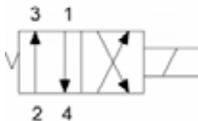
When de-energized the DG-S4A allows flow between (1) to (4) and (2) to (3). When energized the valve allows flow between (2) to (1) and (3) to (4).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

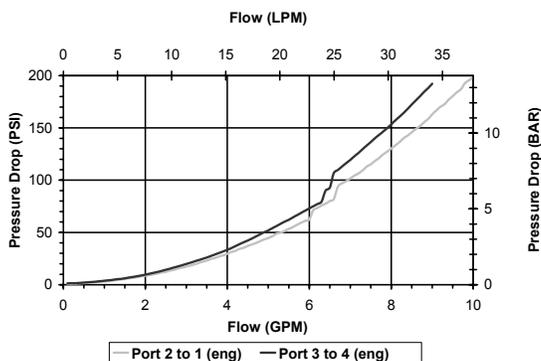
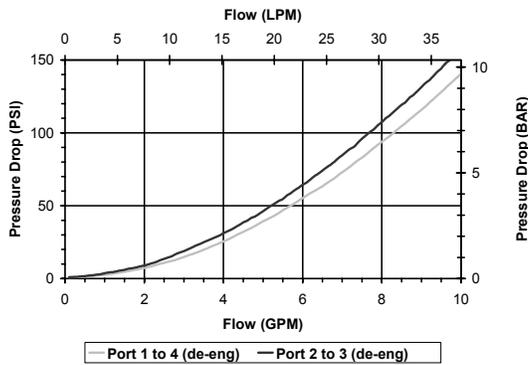
HYDRAULIC SYMBOL



For higher pressures see HG-S4A.

PERFORMANCE

Actual Test Data (Cartridge Only)

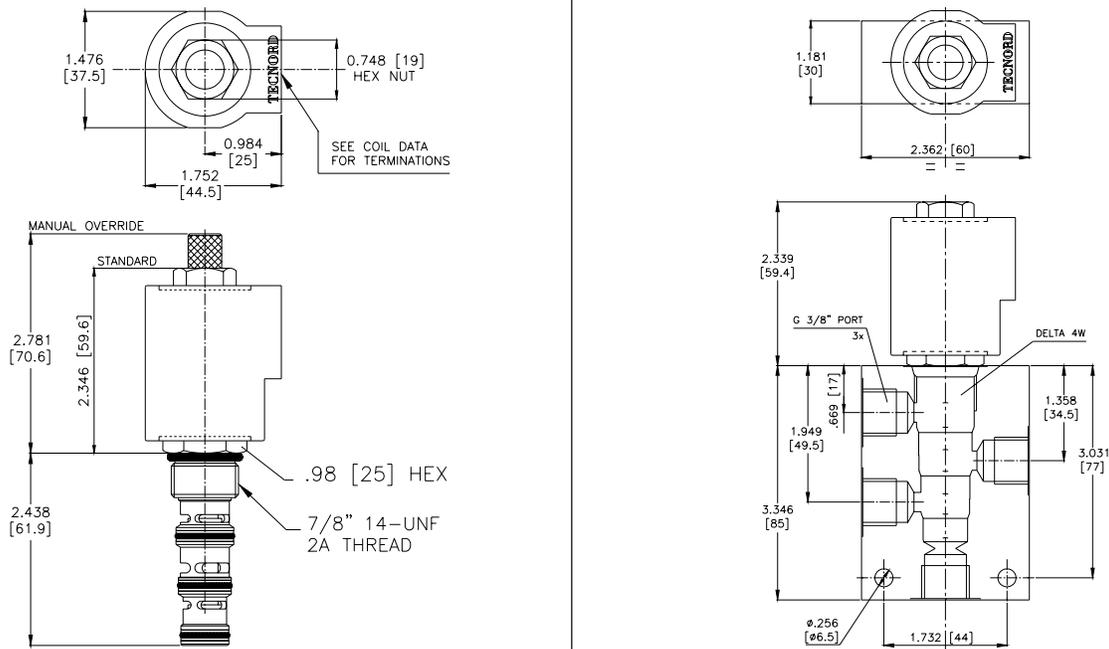


VALVE SPECIFICATIONS

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) 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)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm) Maximum
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

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DIMENSIONS



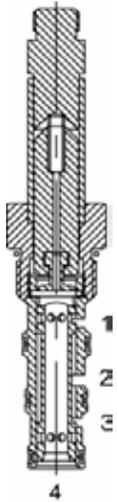
ORDERING INFORMATION

DG-S4A - - - -					
	OPTIONS			BODIES	
	Buna Standard	00		Blank	Without Body
	Viton Standard	V0		N	3/8" BSP Ports
	Buna, Override	0M		S	#6 SAE Ports
	Viton, Override	VM			
				VOLTAGE (*other voltages available on request)	
				12	12 VDC
				24	24 VDC
				22	220 VAC without internal rectifier
	"V" COIL TERMINATION				
	(All DC Except as Noted)				
DL	Double Lead (*several types of termination can be attached on leads on request)		HC	DIN 43650 (Hirschman) – (AC & DC)	DIA
			DI	Deutsch – Integral DT04-2P	DID
					DIJ
					DIM
					IMMERSION PROOF "D" TYPE
					"I" Coil AMP Superseal - Integral
					"I" Coil Deutsch – Integral DT04-2P
					"I" Coil AMP Jr. Timer - Integral
					"I" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

HG-S4A Direct Acting Spool, 4 Way 2 Position, Criss Cross



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, 4 way 2 position, side flow spool valve.

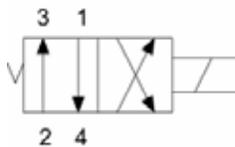
OPERATION

When de-energized the HG-S4A allows flow from (1) to (4) and from (2) to (3). When energized the valve allows flow from (2) to (1) and from (3) to (4).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

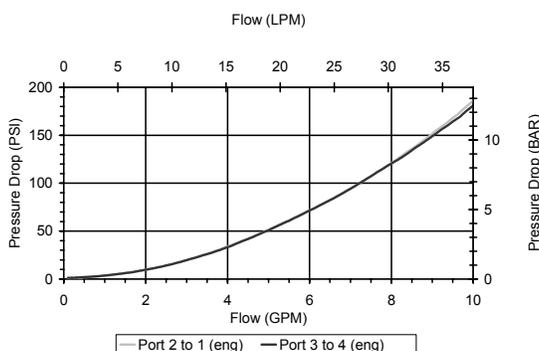
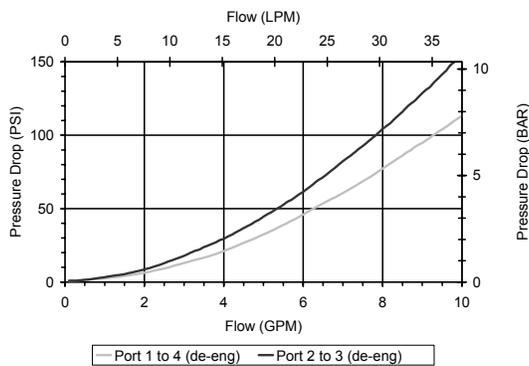
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)

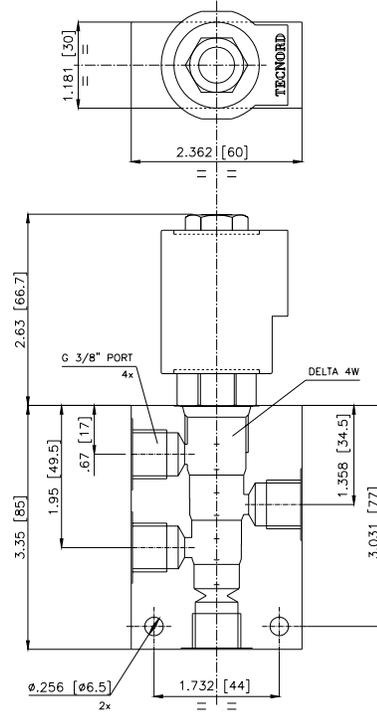
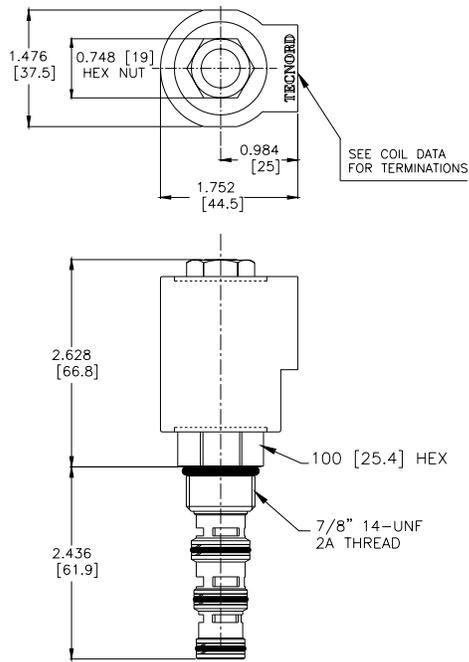


VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	10 cu in/min (164 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	.44 lbs. (.20 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

HG-S4A - - - -

OPTIONS
 Buna Standard
 Viton Standard

00
V0

Blank
N
S

BODIES
 Without Body
 3/8" BSP Ports
 #6 SAE Ports

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

VOLTAGE (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"L" COIL TERMINATION
 (All DC Except as Noted)

DL Double Lead
 (* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

IMMERSION PROOF "L" TYPE
"I" Coil AMP Superseal - Integral
"1" Coil Deutsch – Integral DT04-2P
"J" Coil AMP Jr. Timer - Integral
"T" Coil Metri-Pack – Integral

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.

HV-S4A Direct Acting Spool, 4 Way 2 Position, Criss Cross



DESCRIPTION

"High pressure" 12 size, 1 1/16-12 thread, "Tecnord" series, solenoid operated, 4 way 2 position, criss cross side flow spool valve.

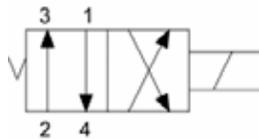
OPERATION

When de-energized the HV-S4A allows flow from (1) to (4) and from (2) to (3). When energized the valve allows flow from (2) to (1) and from (3) to (4).

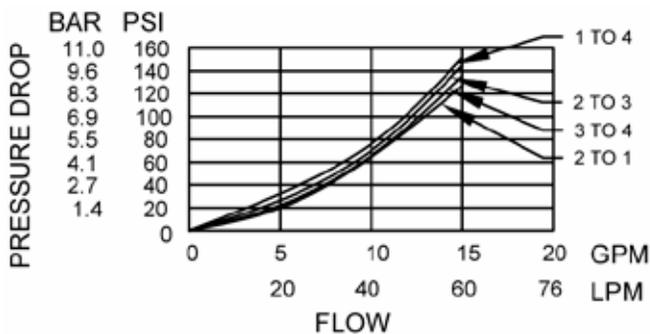
FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



PERFORMANCE

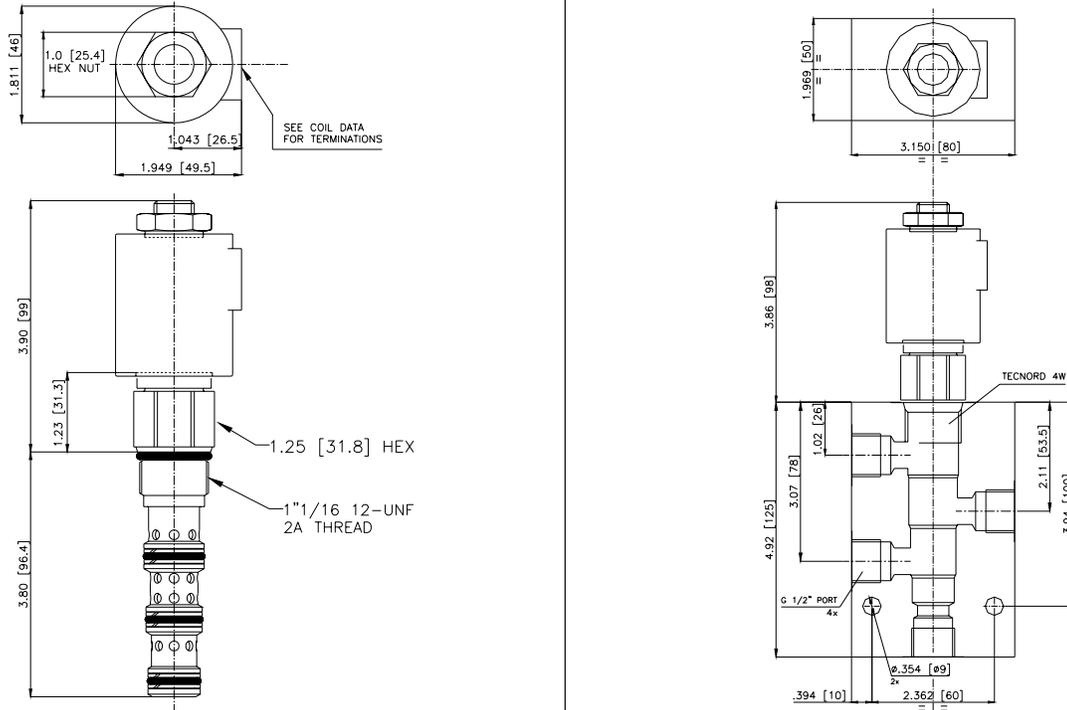


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	5000 PSI (345 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (131 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	1.07 lbs. (.48 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	50 ft-lbs (67.8 Nm)
Coil Nut Torque Requirements	5-7 ft-lbs (6.8-9.5Nm)
Cavity	TECNORD 4W
Cavity Tools kit (form tool, reamer, tap)	40500035
Seal Kit	21191309

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DIMENSIONS



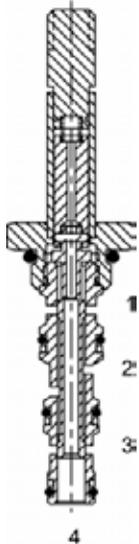
ORDERING INFORMATION

HV-S4A -		-	-	-
OPTIONS				
Buna Standard	00			Blank
Viton Standard	V0			N
				S
"T" COIL TERMINATION				12
(All DC Except as Noted)				24
Double Lead	DL			22
(*several types of termination can be attached on leads on request)				
DIN 43650 (Hirschman) - (AC & DC)	HC			
				BODIES
				Without Body
				3/4" BSP Ports
				#10 SAE Ports
				VOLTAGE (*other voltages available on request)
				12 VDC
				24 VDC
				220 VAC without internal rectifier

Approximate Coil Weight: .78 lbs (.35 kg)

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.

MD-S4B Direct Acting Spool, 4 Way 2 Position, Closed Center



DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, solenoid operated, 4 way 2 position, closed center spool valve.

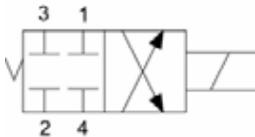
OPERATION

When de-energized the MD-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and (3) to (4).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

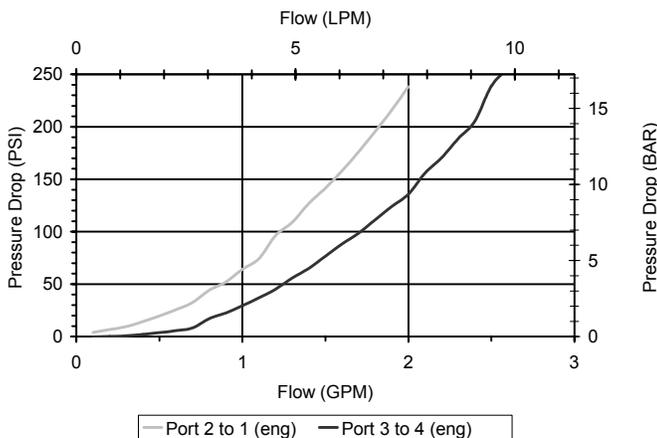
HYDRAULIC SYMBOL



Modes of shift operation to 3 GPM, Consult Factory.
For higher pressures or flows see HD-S4B.

PERFORMANCE

Actual Test Data (Cartridge Only)

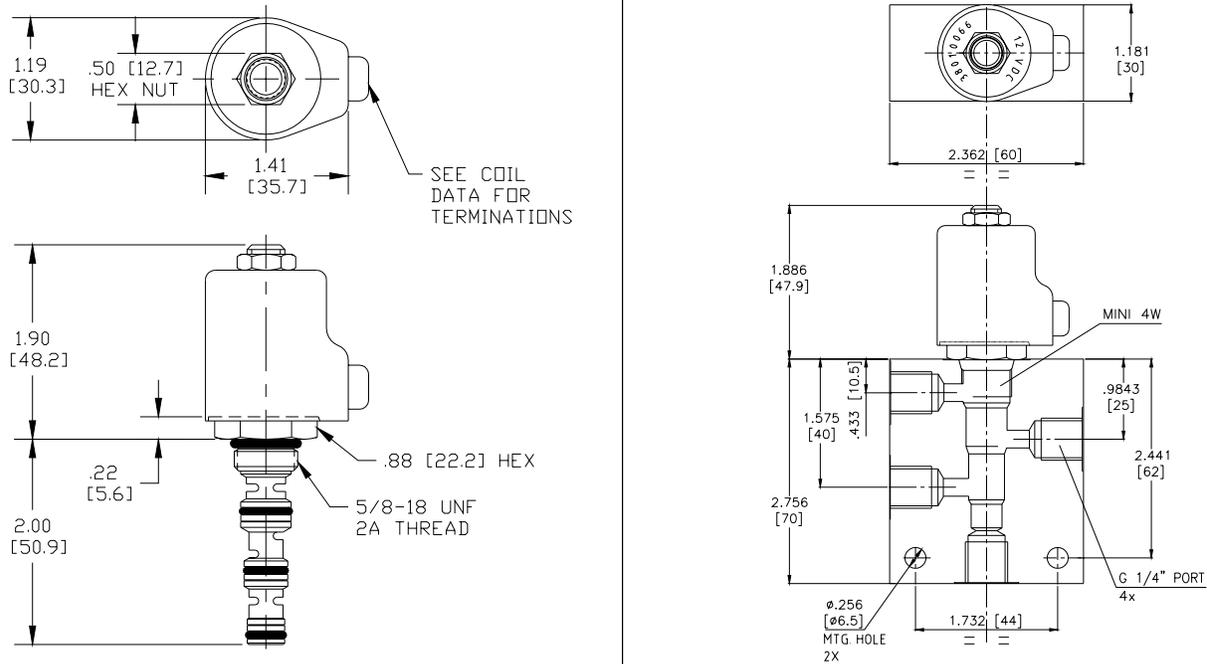


VALVE SPECIFICATIONS

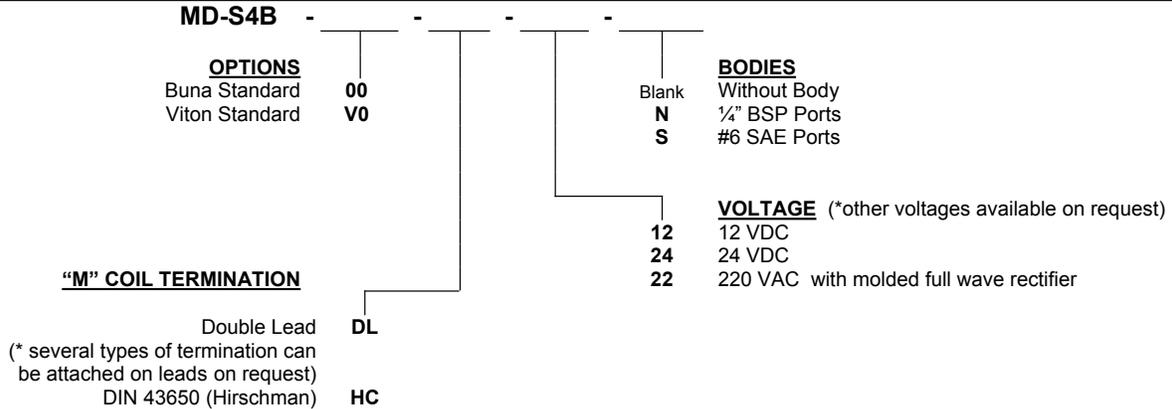
Nominal Flow	1.5 GPM (6 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.15 lbs. (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 4W
Cavity Tools Kit (form tool, reamer, tap)	40500006
Seal Kit	21191008

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DIMENSIONS



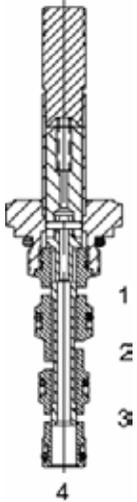
ORDERING INFORMATION



Approximate Coil Weight: .30 lbs (.14 kg)

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.

HD-S4B Direct Acting Spool, 4 Way 2 Position, Closed Center



DESCRIPTION

"High Pressure" 7 size, 5/8-18 thread, "Mini" series, solenoid operated, 4 way 2 position, closed center spool valve.

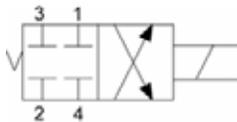
OPERATION

When de-energized the HD-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and (3) to (4).

FEATURES

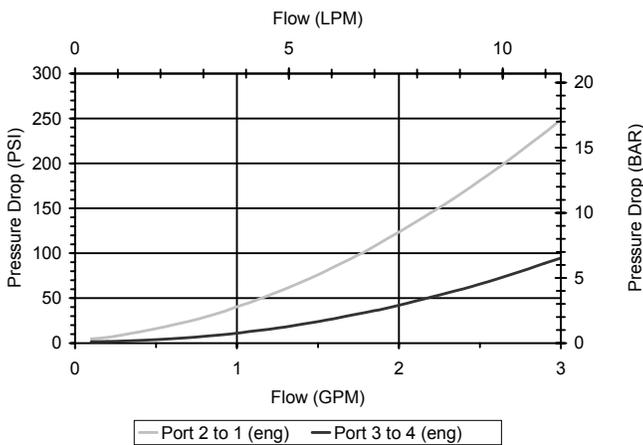
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design (for most common terminations, see coil page).
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

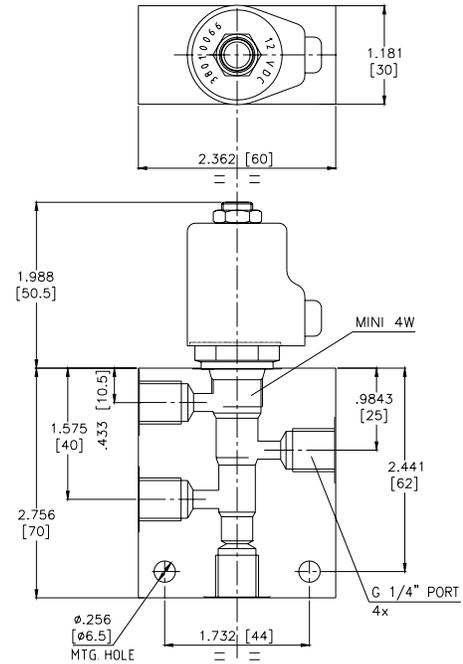
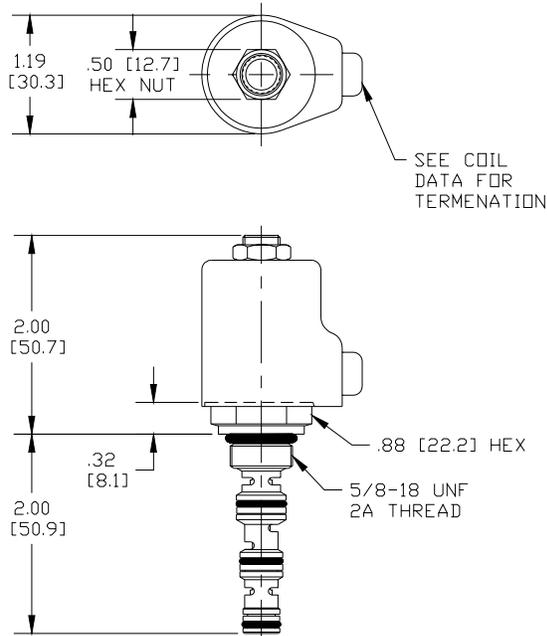


VALVE SPECIFICATIONS

Maximum Flow	3 GPM (11 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (131 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	.16 lbs. (.07 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	15 ft-lbs (20 Nm)
Coil Nut Torque Requirements	3-5 ft-lbs (4.1-6.8 Nm)
Cavity	MINI 4W
Cavity Tools kit (form tool, reamer, tap)	40500006
Seal Kit	21191008

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

HD-S4B - - - -

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

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

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

VOLTAGE (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC with molded full wave rectifier

"M" COIL TERMINATION
Double Lead **DL**
(* several types of termination can be attached on leads on request)
DIN 43650 (Hirschman) **HC**

Approximate Coil Weight: .30 lbs (.14 kg)

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.

PQ-S4B Direct Acting Spool, 4 Way 2 Position, Closed Center



DESCRIPTION

8 size, 3/4 -16 thread, "Power" series, solenoid operated, 4 way 2 position, closed center spool valve.

OPERATION

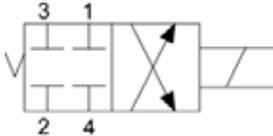
When de-energized the PQ-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and from (3) to (4).

OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

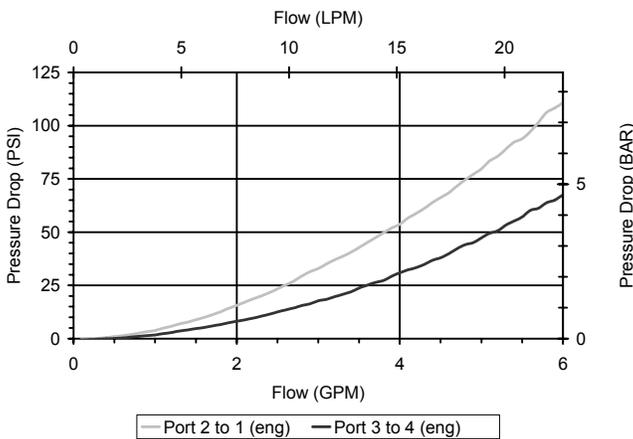
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

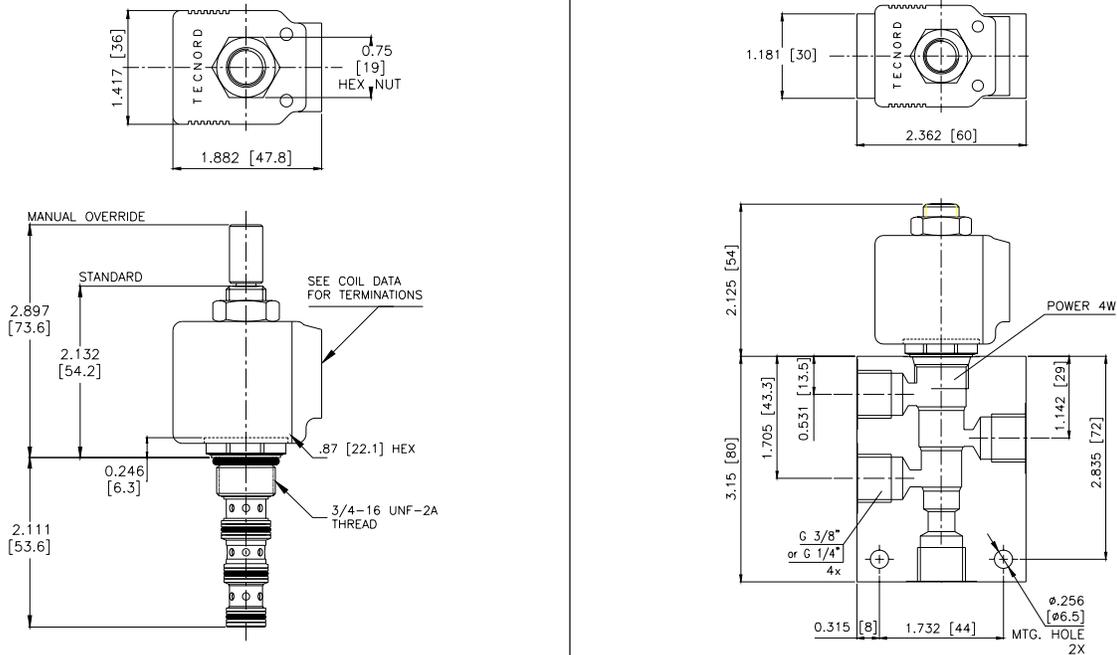


VALVE SPECIFICATIONS

Nominal Flow	4 GPM (15 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	.24 lbs. (.11 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 4 W
Cavity Tools kit (form, tool, reamer, tap)	40500029
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



ORDERING INFORMATION

PQ-S4B - - -

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Override, Detent	0M
Viton, Override, Detent	VM
Buna, Override, Non-detent	B1
Viton, Override, Non-detent	V1

Blank

N	Without Body
N1	1/4" BSP Ports
S	3/8" BSP Ports
	#6 SAE Ports

BODIES

N	Without Body
N1	1/4" BSP Ports
S	3/8" BSP Ports
	#6 SAE Ports

VOLTAGE (*other voltages available on request)

12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

"K" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
(*several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) - (AC & DC)
DI Deutsch - Integral DT04-2P

PIA
PID
PIJ
PIM

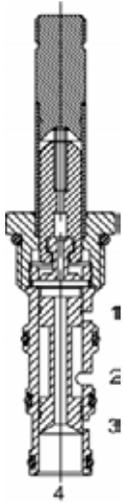
IMMERSION PROOF "P" TYPE

"I" Coil AMP Superseal - Integral
"I" Coil Deutsch - Integral DT04-2P
"I" Coil AMP Jr. Timer - Integral
"I" Coil Metri-Pack - Integral

Approximate Coil Weight: .42 lbs (.19 kg)

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-S4B Direct Acting Spool, 4 Way 2 Position, Closed Center



DESCRIPTION

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

OPERATION

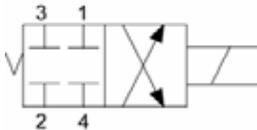
When de-energized the DG-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and (3) to (4).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

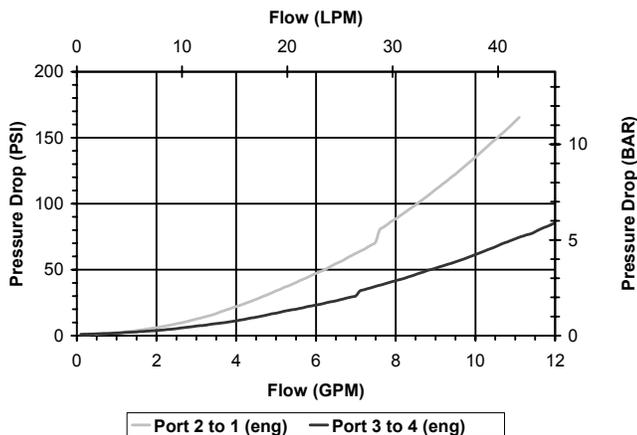
HYDRAULIC SYMBOL



For higher pressures see HG-S4B.
Operational shift limit, 10 GPM.
For shift performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

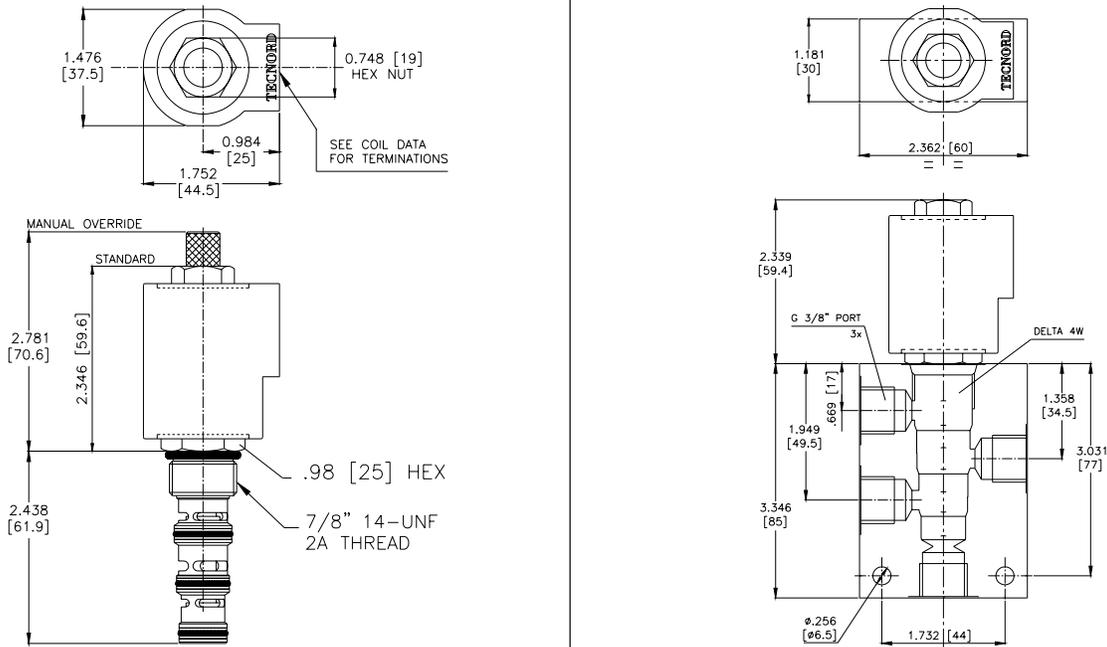
Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.32 lbs (.15 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

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SOLENOID OPERATED DIRECTIONAL CONTROLS



DIMENSIONS



ORDERING INFORMATION

DG-S4B - - - -

OPTIONS

Buna Standard **00**
 Viton Standard **V0**
 Buna, Override **0M**
 Viton, Override **VM**

Blank

N 3/8" BSP Ports
S #6 SAE Ports

BODIES

Without Body
 3/8" BSP Ports
 #6 SAE Ports

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"V" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
 (* several types of termination can be attached on leads on request)

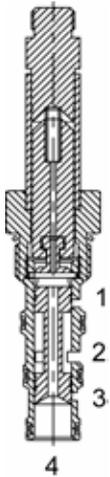
HC DIN 43650 (Hirschman) - (AC & DC)
DI Deutsch - Integral DT04-2P

DIA "I" Coil AMP Superseal - Integral
DID "I" Coil Deutsch - Integral DT04-2P
DIJ "I" Coil AMP Jr. Timer - Integral
DIM "I" Coil Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

HG-S4B Direct Acting Spool, 4 Way 2 Position, Closed Center



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position closed center spool valve.

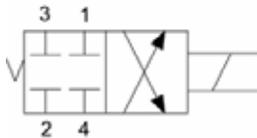
OPERATION

When de-energized the HG-S4B blocks flow at all ports. When energized the valve allows flow from (2) to (1) and from (3) to (4).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

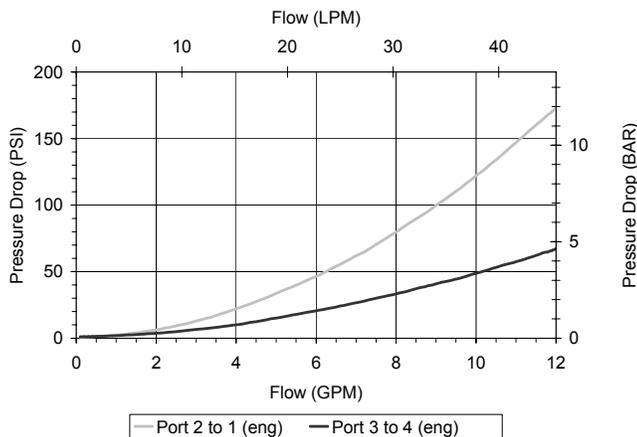
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	10 GPM (38 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	10 cu in/min (164 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	.44 lbs. (.20 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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.

PQ-S4C Direct Acting Spool, 4 Way 2 Position, Tandem Center

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 4 way 2 position, tandem center spool valve.

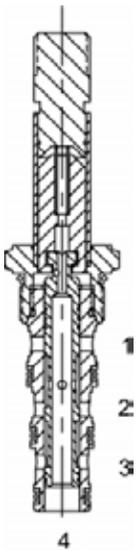
OPERATION

When de-energized the PQ-S4C allows flow between (2) and (4), blocks flow at (1) and (3). When energized the valve allows flow from (2) to (3) and from (1) to (4).

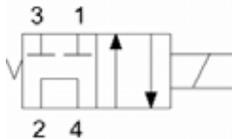
OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

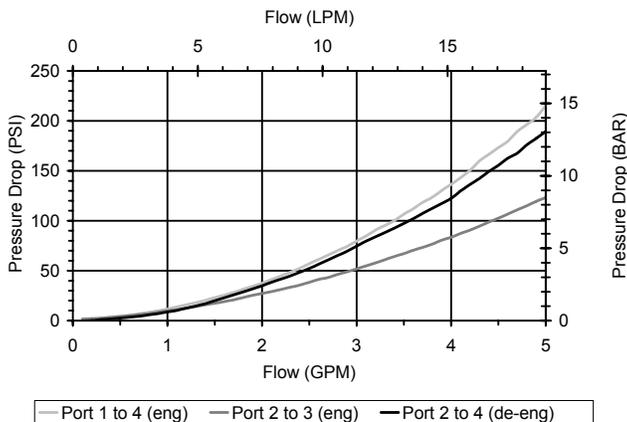


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

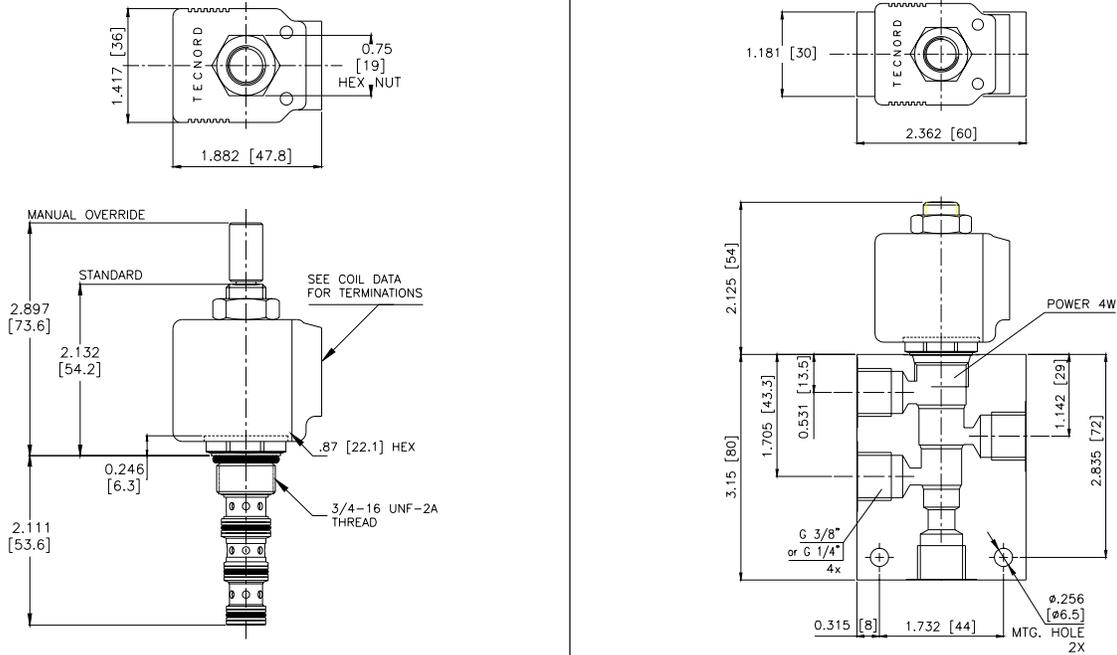


VALVE SPECIFICATIONS

Nominal Flow	4 GPM (15 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	.24 lbs. (.11 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 4 W
Cavity Tools kit (form tool, reamer, tap)	40500029
Seal Kit	21191108

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DIMENSIONS



ORDERING INFORMATION

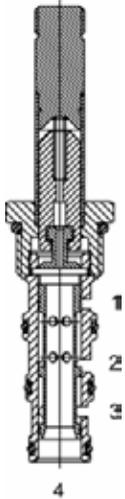
PQ-S4C -

<p>OPTIONS</p> <p>Buna Standard 00</p> <p>Viton Standard V0</p> <p>Buna, Override, Detent 0M</p> <p>Viton, Override, Detent VM</p> <p>Buna, Override, Non-detent B1</p> <p>Viton, Override, Non-detent V1</p>		<p>BODIES</p> <p>Blank</p> <p>N Without Body</p> <p>N1 1/4" BSP Ports</p> <p>S 3/8" BSP Ports</p> <p>S #6 SAE Ports</p>	
<p>"K" COIL TERMINATION (All DC Except as Noted)</p> <p>DL Double Lead (*several types of termination can be attached on leads on request)</p>		<p>VOLTAGE (*other voltages available on request)</p> <p>12 12 VDC</p> <p>24 24 VDC</p> <p>22 220 VAC without internal rectifier</p>	
<p>HC DIN 43650 (Hirschman) – (AC & DC)</p> <p>DI Deutsch – Integral DT04-2P</p>		<p>IMMERSION PROOF "P" TYPE</p> <p>"I" Coil AMP Superseal - Integral</p> <p>"T" Coil Deutsch – Integral DT04-2P</p> <p>"J" Coil AMP Jr. Timer - Integral</p> <p>"M" Coil Metri-Pack – Integral</p>	

Approximate Coil Weight: .42 lbs (.19 kg)

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-S4C Direct Acting Spool, 4 Way 2 Position, Tandem Center



DESCRIPTION

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

OPERATION

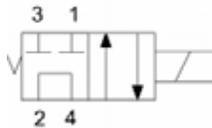
When de-energized the DG-S4C allows flow between (2) and (4), and blocks flow at ports (1) and (3). When energized the valve allows flow from (2) to (3) and (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

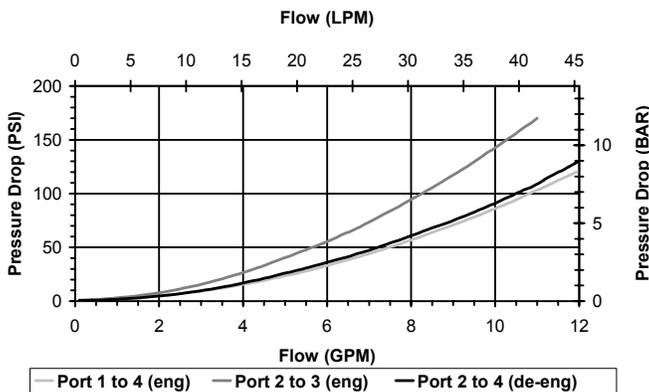
HYDRAULIC SYMBOL



For higher pressures see HG-S4C.
Operational shift limit, 8 GPM.
For shift performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

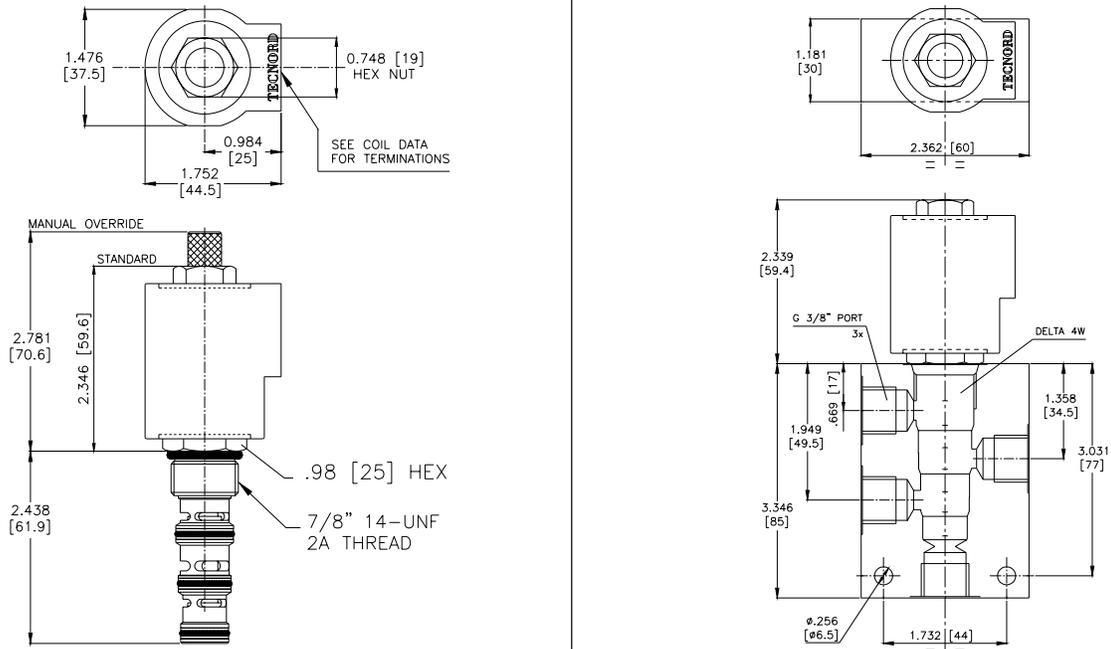


VALVE SPECIFICATIONS

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) 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	.31 lbs (.14 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

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DIMENSIONS



ORDERING INFORMATION

DG-S4C - - - -

OPTIONS

Buna Standard **00**
 Viton Standard **V0**
 Buna, Override **0M**
 Viton, Override **VM**

Blank
N
S

BODIES

Without Body
 3/8" BSP Ports
 #6 SAE Ports

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"V" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
 (* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) - (AC & DC)
DI Deutsch - Integral DT04-2P

DIA
DID
DIJ
DIM

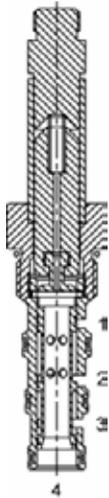
IMMERSION PROOF "D" TYPE

"I" Coil AMP Superseal - Integral
 "I" Coil Deutsch - Integral DT04-2P
 "I" Coil AMP Jr. Timer - Integral
 "I" Coil Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

HG-S4C Direct Acting Spool, 4 Way 2 Position, Tandem Center



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position tandem center spool valve.

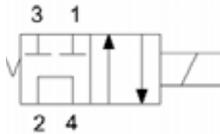
OPERATION

When de-energized the HG-S4C allows flow between (2) and (4) and blocks the flow at (1) and (3). When energized the valve allows flow from (2) to (3) and from (1) to (4).

FEATURES

- Hardened Parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

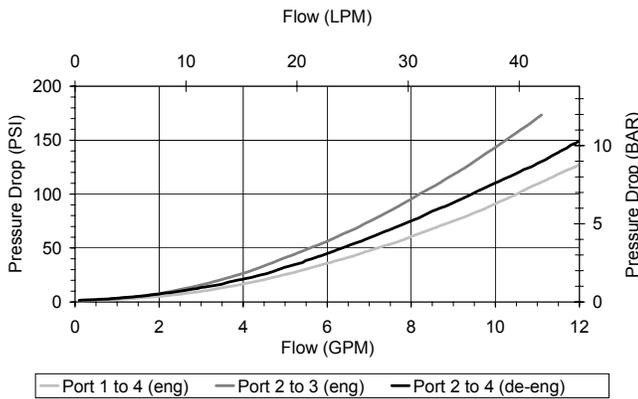
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)

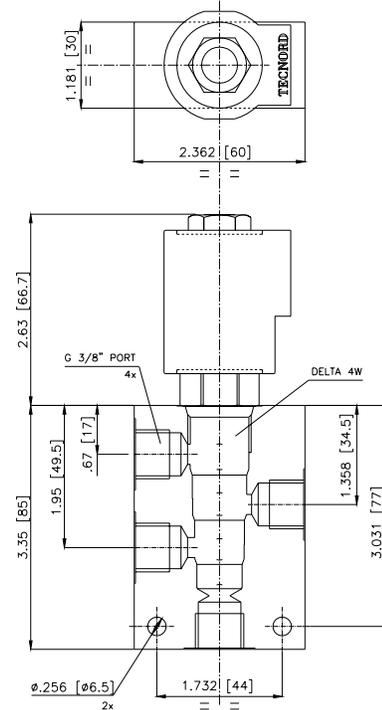
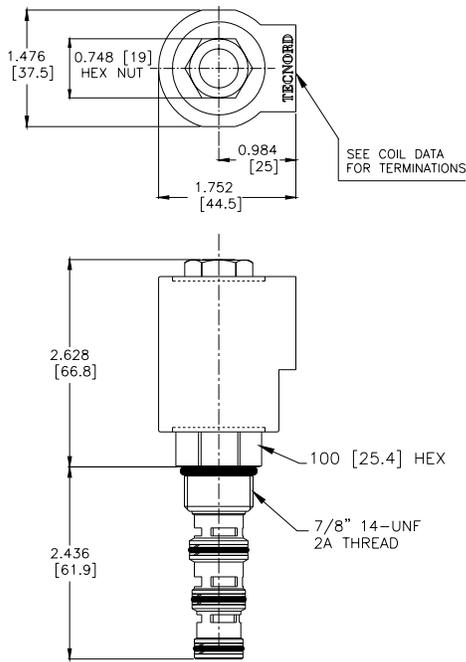


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	10 cu in/min (164 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	.43 lbs. (.20 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

HG-S4C - - -

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

Blank
N
S

BODIES
 Without Body
 3/8" BSP Ports
 #6 SAE Ports

Note: Aluminum, NOT durability rated for 4000 PSI. Consult factory for body options.

12
24
22

VOLTAGE (*other voltages available on request)
 12 VDC
 24 VDC
 220 VAC without internal rectifier

"L" COIL TERMINATION
 (All DC Except as Noted)

DL Double Lead
 (* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

LIA "I" Coil AMP Superseal - Integral
LID "I" Coil Deutsch – Integral DT04-2P
LIJ "I" Coil AMP Jr. Timer - Integral
LIM "I" Coil Metri-Pack – Integral

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.

PQ-S4D Direct Acting Spool, 4 Way 2 Position, Criss Cross

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 4 way 2 position, criss cross, bottom flow spool valve.

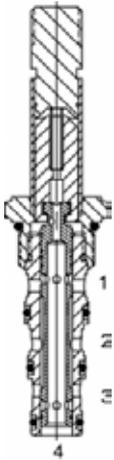
OPERATION

When de-energized the PQ-S4D allows flow from (3) to (2), and from (4) to (1). When energized the valve allows flow from (1) to (2) and from (4) to (3).

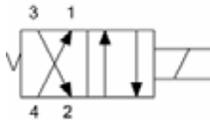
OPERATION OF MANUAL OVERRIDE OPTION: To override, pull knob out. On the detented version, after pulling knob out twist 180 degrees and release. The valve will remain in that position.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

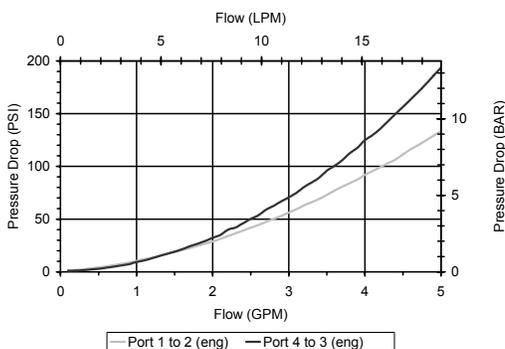
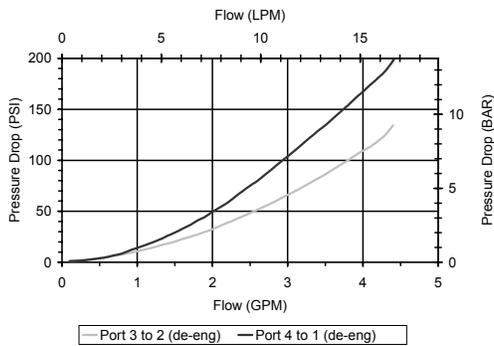


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

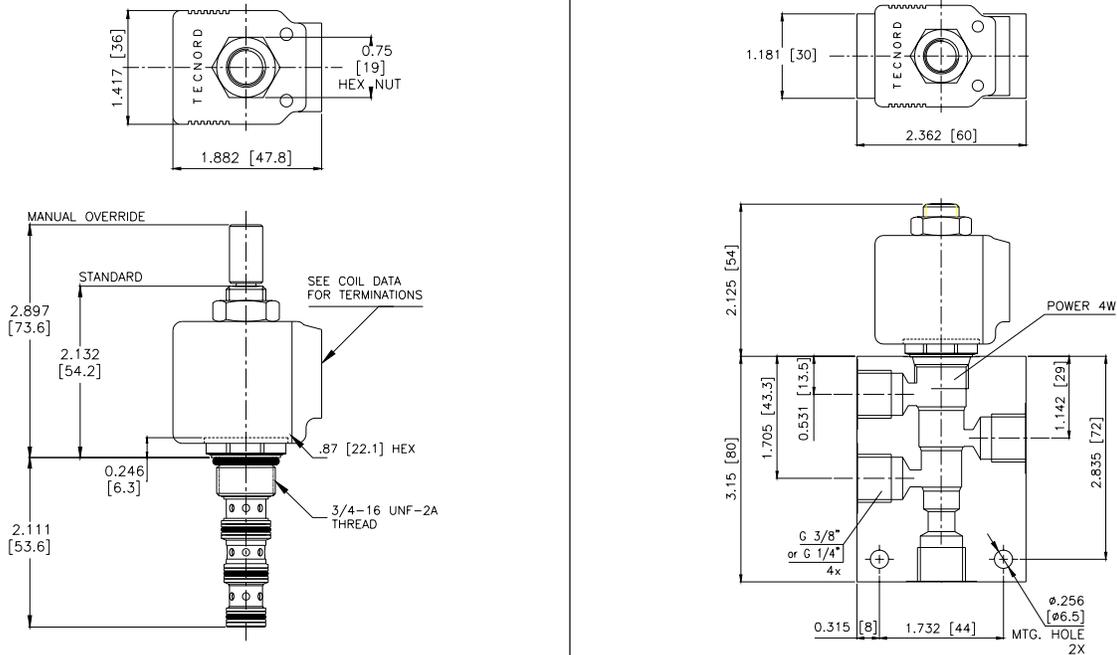


VALVE SPECIFICATIONS

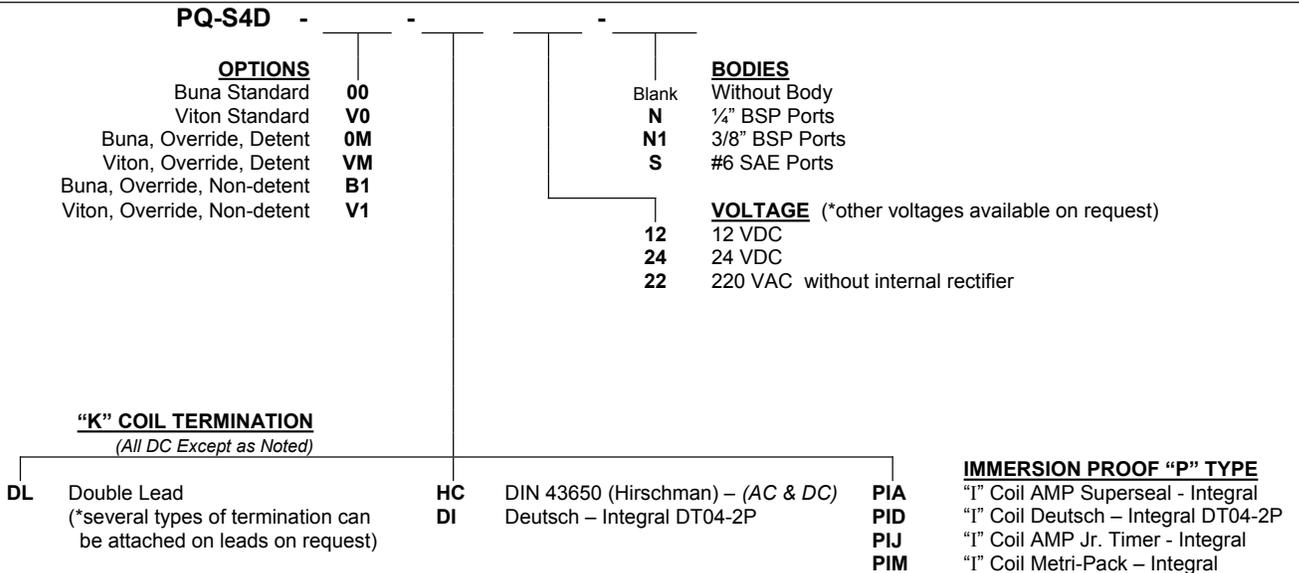
Maximum Flow	2.5 GPM (9 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.24 lbs. (.11 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (33.8 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 4 W
Cavity Tools kit (form tool, reamer, tap)	40500029
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



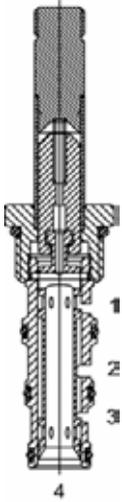
ORDERING INFORMATION



Approximate Coil Weight: .42 lbs (.19 kg)

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-S4D Direct Acting Spool, 4 Way 2 Position, Criss Cross



DESCRIPTION

10 size, 7/8 -14 thread, "Delta" series, solenoid operated, 4 way 2 position, criss cross, bottom flow spool valve.

OPERATION

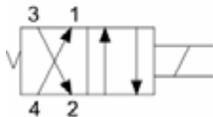
When de-energized the DG-S4D allows flow from (4) to (1), and (3) to (2). When energized the valve allows flow from (4) to (3) and (1) to (2).

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

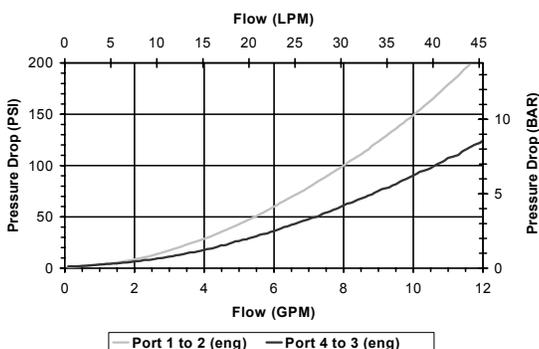
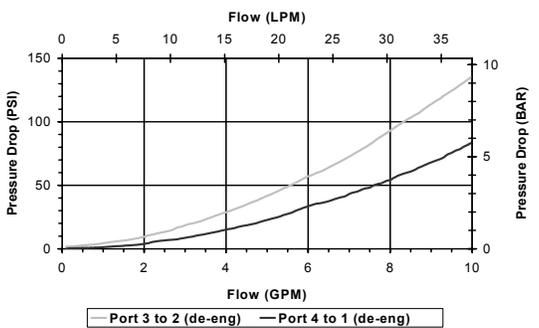
HYDRAULIC SYMBOL



For higher pressures see HG-S4D.
Operational shift limit, 6 GPM.
For shift performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

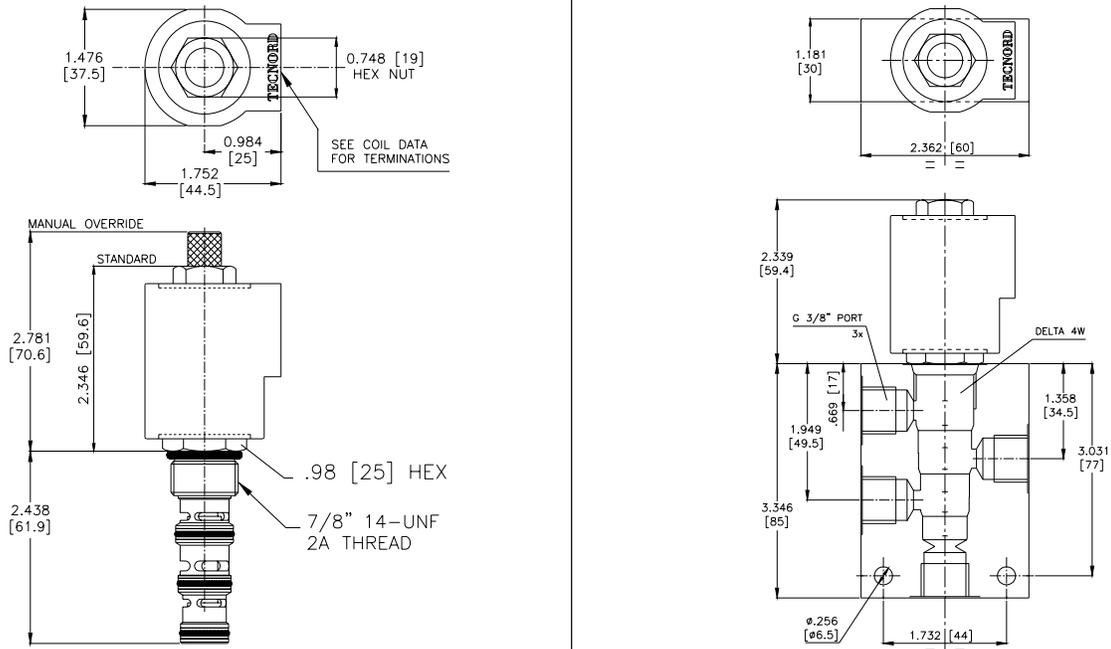


VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 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	.31 lbs (.14 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION

DG-S4D - - - -

OPTIONS

Buna Standard **00**
 Viton Standard **V0**
 Buna, Override **0M**
 Viton, Override **VM**

Blank
N
S

BODIES

Without Body
 3/8" BSP Ports
 #6 SAE Ports

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"V" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
 (* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

DIA
DID
DIJ
DIM

IMMERSION PROOF "D" TYPE

"I" Coil AMP Superseal - Integral
 "I" Coil Deutsch – Integral DT04-2P
 "I" Coil AMP Jr. Timer - Integral
 "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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.

HG-S4D Direct Acting Spool, 4 Way 2 Position, Bottom Flow



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position bottom flow spool valve.

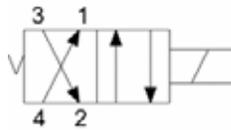
OPERATION

When de-energized the HG-S4D allows flow from (4) to (1) and from (3) to (2). When energized the valve allows flow from (4) to (3) and from (1) to (2).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

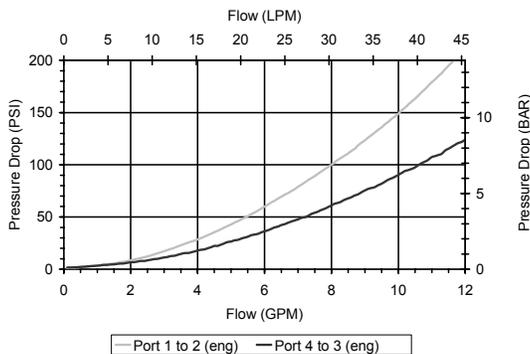
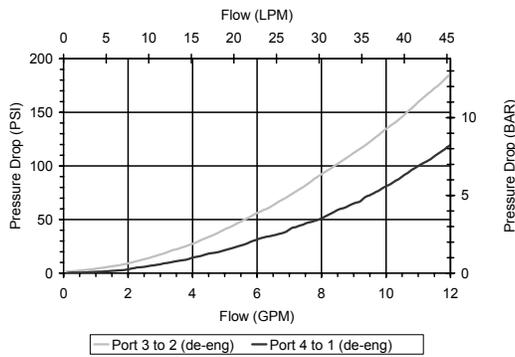
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)

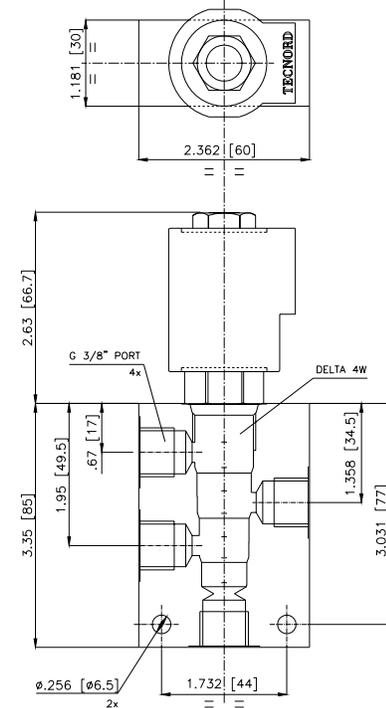
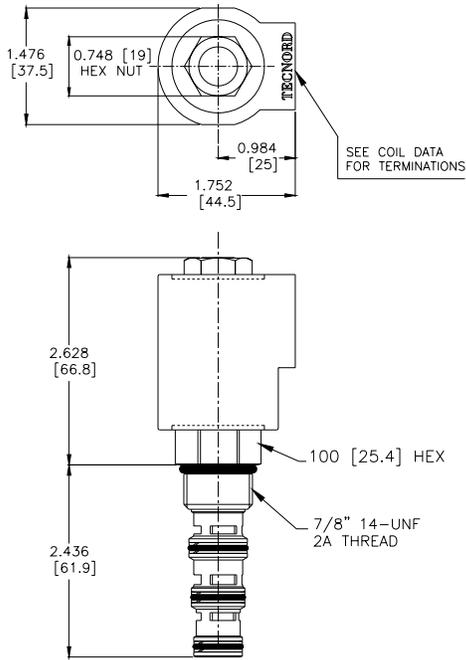


VALVE SPECIFICATIONS

Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	10 cu in/min (164 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	.43 lbs. (.20 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

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DIMENSIONS



ORDERING INFORMATION

HG-S4D - - -

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

Blank
N
S

BODIES
 Without Body
 3/8" BSP Ports
 #6 SAE Ports

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

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"L" COIL TERMINATION
 (All DC Except as Noted)

DL Double Lead
 (* several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) - (AC & DC)
DI Deutsch - Integral DT04-2P

LIA "I" Coil AMP Superseal - Integral
LID "I" Coil Deutsch - Integral DT04-2P
LIJ "I" Coil AMP Jr. Timer - Integral
LIM "I" Coil Metri-Pack - Integral

Approximate Coil Weight: .69 lbs (.31 kg)

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-S4E Direct Acting Spool, 4 Way 2 Position, Series/Parallel

DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position, series/parallel spool valve.

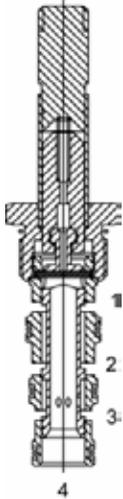
OPERATION

When de-energized the DG-S4E allows flow from (2) and (1), and (3) to (4). When energized the valve allows flow (2) to (4) and blocks the flow at (1) and (3).

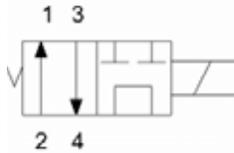
OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.



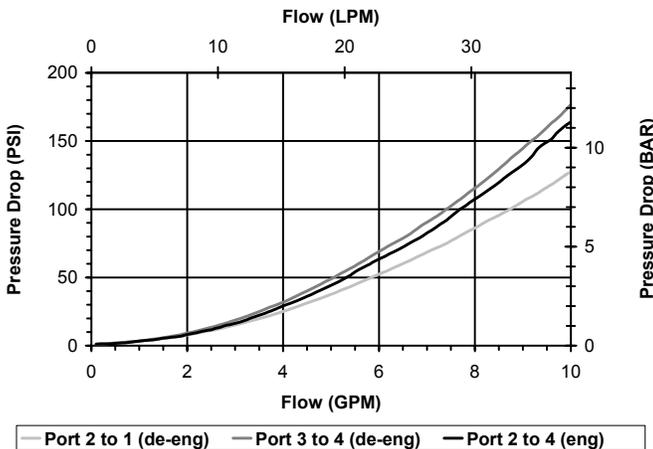
HYDRAULIC SYMBOL



For higher pressures see HG-S4E.
Operational shift limit, 6 GPM.
For shift performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

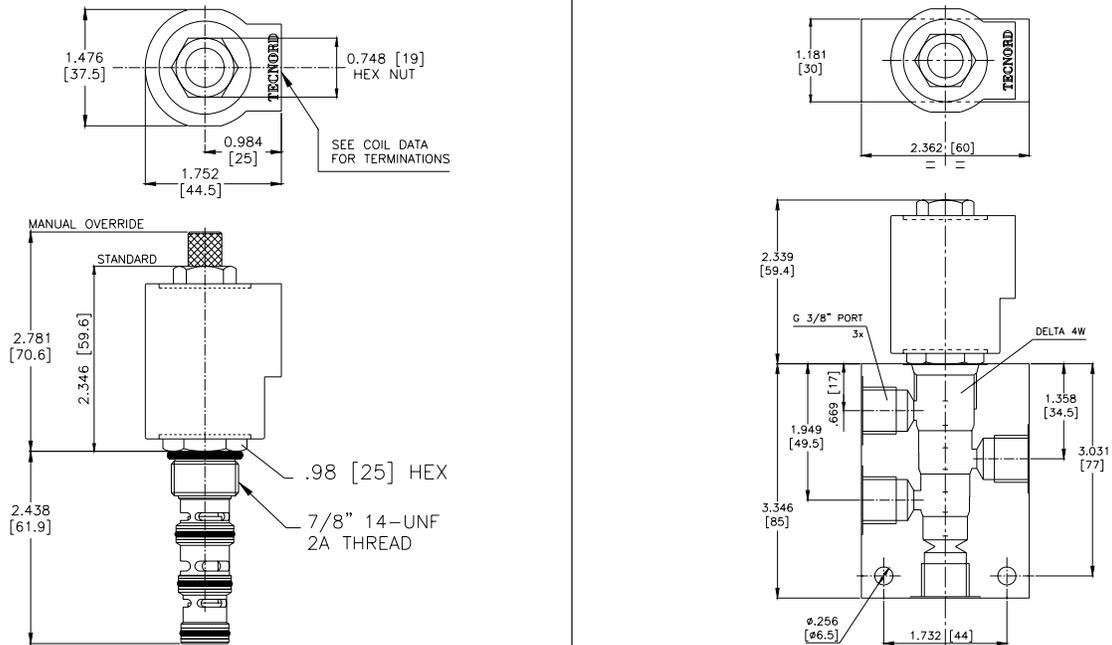


VALVE SPECIFICATIONS

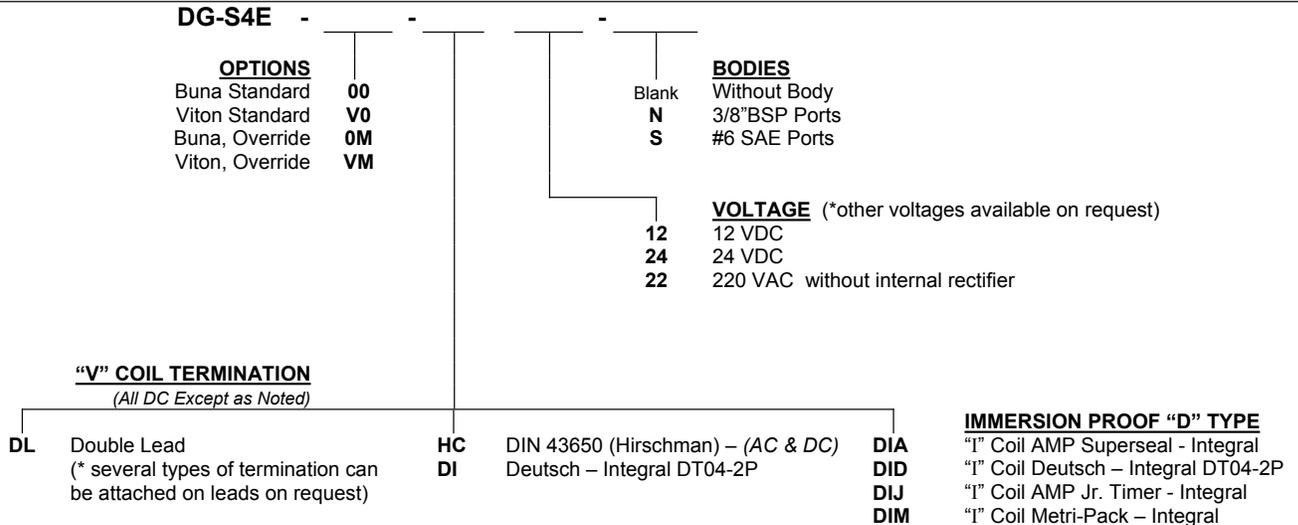
Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.31 lbs (.14 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



ORDERING INFORMATION



Approximate Coil Weight: .56 lbs (.25 kg)

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.

HG-S4E Direct Acting Spool, 4 Way 2 Position, Series/Parallel



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position series/parallel spool valve.

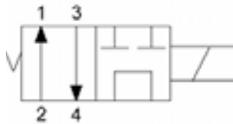
OPERATION

When de-energized the HG-S4E allows flow from (1) to (2) and from (3) to (4). When energized the valve allows flow from (2) to (4) and blocks flow at (1) and (3).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

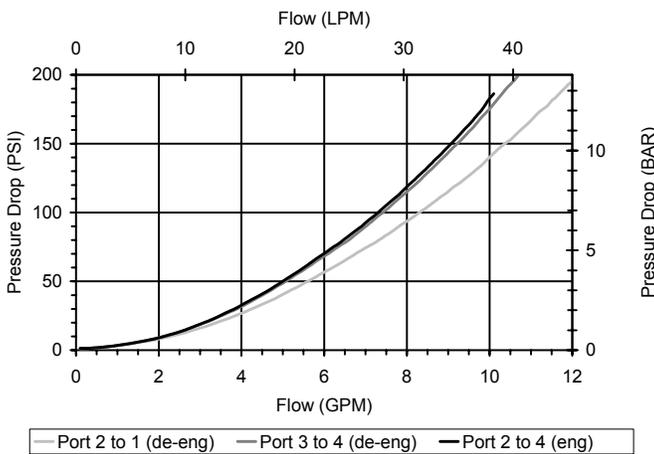
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)

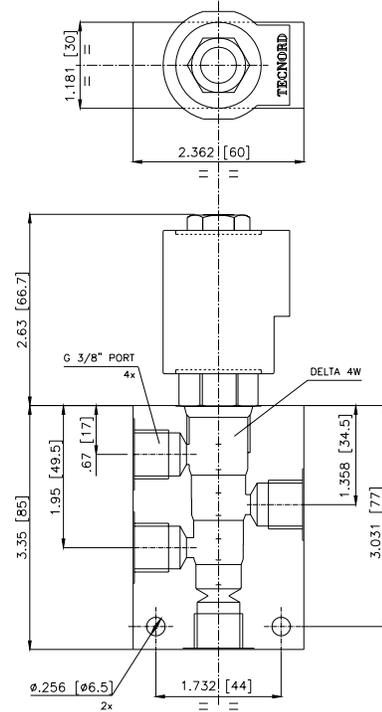
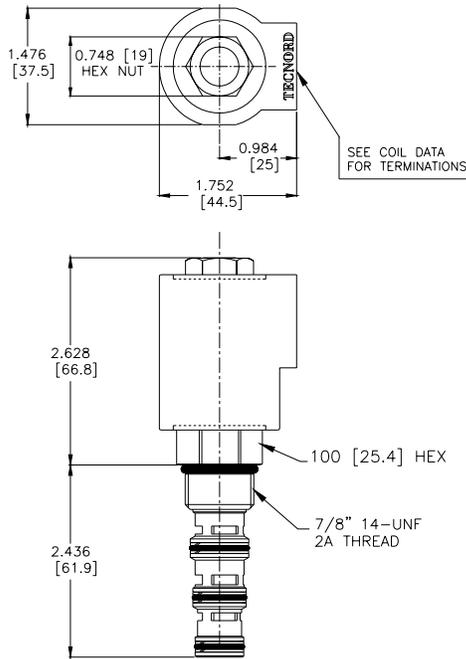


VALVE SPECIFICATIONS

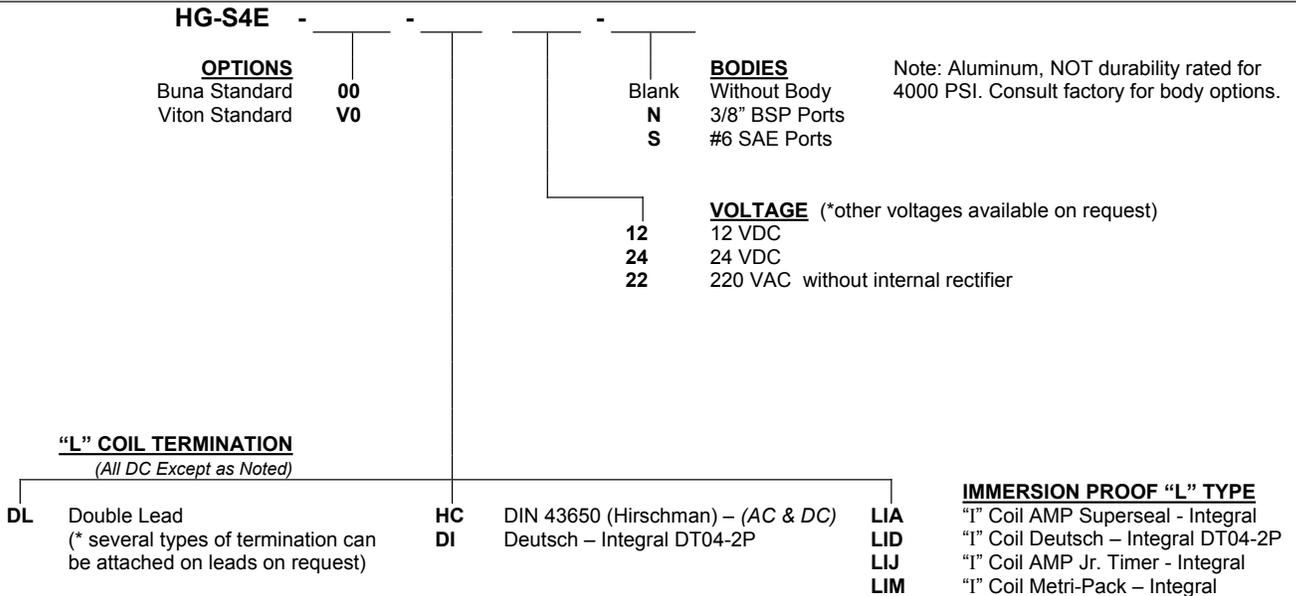
Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	10 cu in/min (164 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.43 lbs. (.20 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

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DIMENSIONS



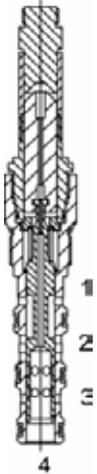
ORDERING INFORMATION



Approximate Coil Weight: .69 lbs (.31 kg)

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.

HV-S4E Direct Acting Spool, 4 Way 2 Position, Series/Parallel



DESCRIPTION

"High pressure" 12 size, 1 1/16-12 thread, "Tecnom" series, solenoid operated, 4 way 2 position, series/parallel flow spool valve.

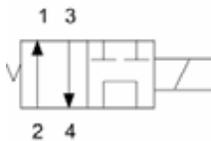
OPERATION

When de-energized the HV-S4E allows flow from (2) to (1) and from (3) to (4). When energized the valve allows flow from (2) to (4) and blocks flow at (1) to (3).

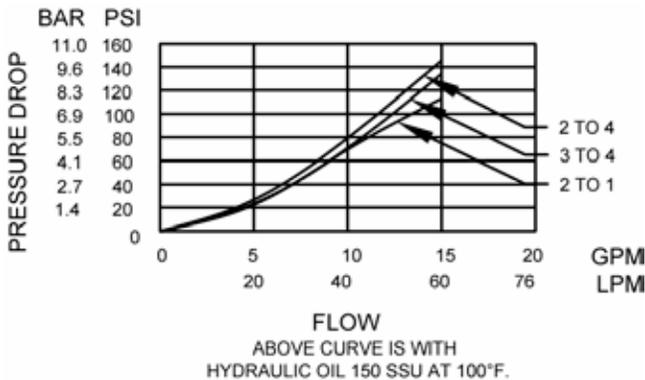
FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL



PERFORMANCE

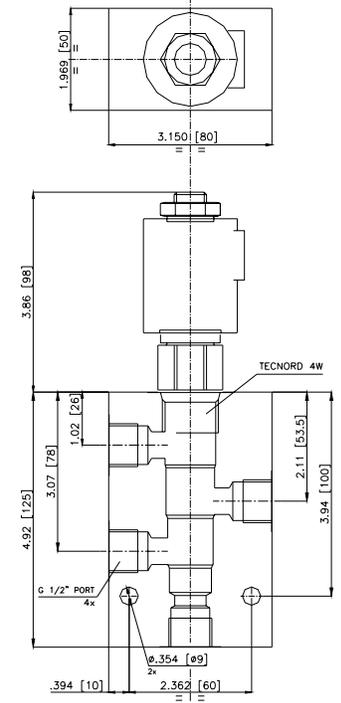
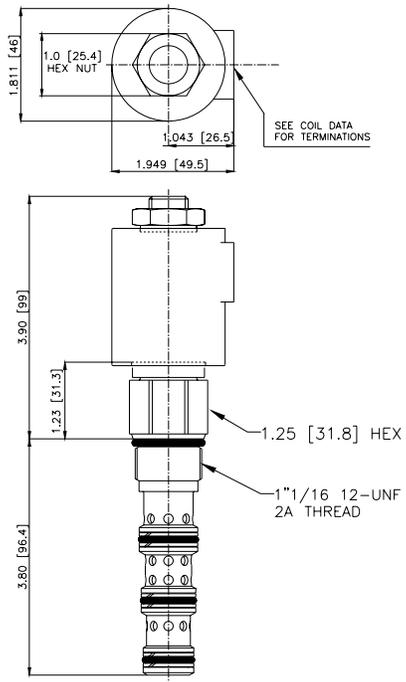


VALVE SPECIFICATIONS

Nominal Flow	15 GPM (57 LPM)
Rated Operating Pressure	5000 PSI (345 bar)
Typical Internal Leakage (150 SSU)	8 cu in/min (131 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	1.09 lbs. (.49 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	50 ft-lbs (67.8 Nm)
Coil Nut Torque Requirements	5-7 ft-lbs (6.8-9.5 Nm) Maximum
Cavity	TECNORD 4W
Cavity Tools kit (form tool, reamer, tap)	40500035
Seal Kit	21191309

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DIMENSIONS



ORDERING INFORMATION

HV-S4E - - -

OPTIONS

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

"T" COIL TERMINATION

- (All DC Except as Noted)
Double Lead **DL**
(*several types of termination can be attached on leads on request)

DIN 43650 (Hirschman) - (AC & DC) **HC**

BODIES

- Blank
- N** 3/4" BSP Ports
- S** #10 SAE Ports

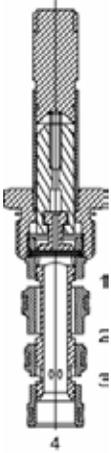
VOLTAGE

- (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

Approximate Coil Weight: .78 lbs (.35 kg)

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-S4F Direct Acting Spool, 4 Way 2 Position, Energized to Block



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position, energized to block spool valve.

OPERATION

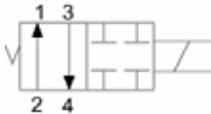
When de-energized the DG-S4F allows flow from (2) and (1), and from (3) to (4). When energized the valve blocks flow at all ports.

OPERATION OF MANUAL OVERRIDE OPTION: To override, turn the manual override screw counter-clockwise. To release turn the manual override screw clockwise.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

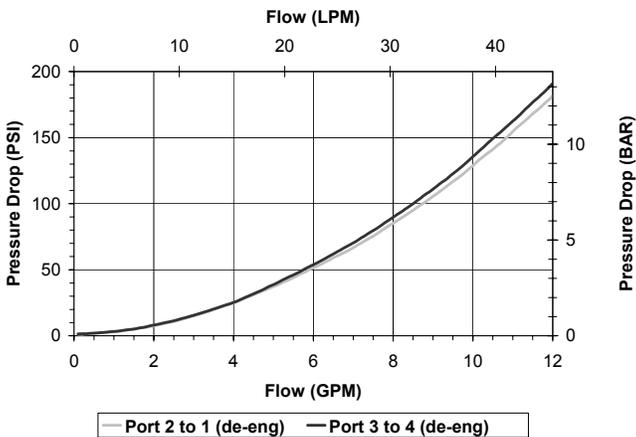
HYDRAULIC SYMBOL



For higher pressures see HG-S4F.
Operational shift limit, 6 GPM.
For shift performance consult chart.

PERFORMANCE

Actual Test Data (Cartridge Only)

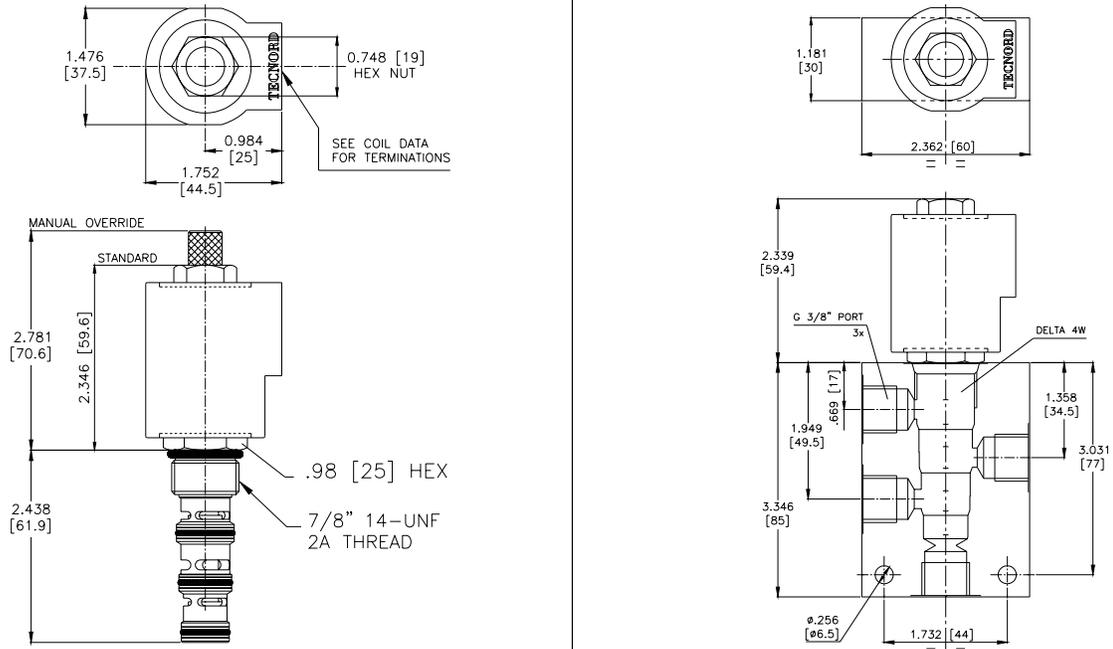


VALVE SPECIFICATIONS

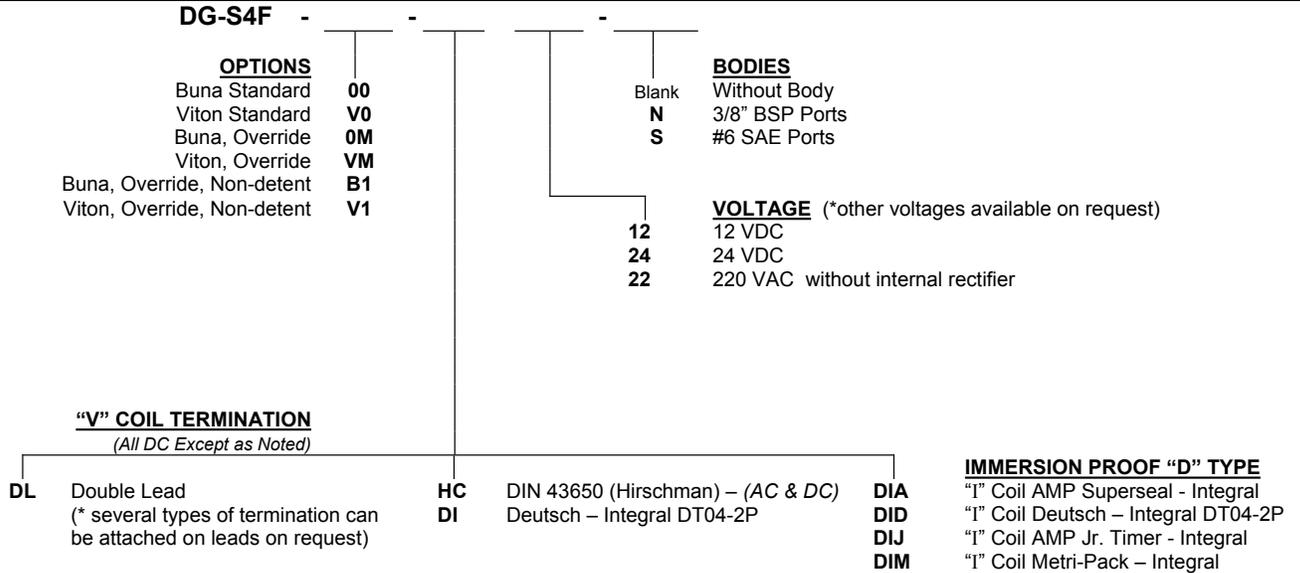
Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.31 lbs (.14 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 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



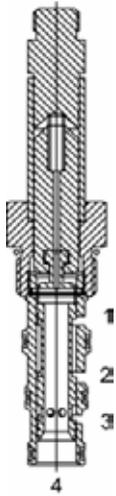
ORDERING INFORMATION



Approximate Coil Weight: .56 lbs (.25 kg)

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.

HG-S4F Direct Acting Spool, 4 Way 2 Position, Energized to Block



DESCRIPTION

"High Pressure" 10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position energized to block spool valve.

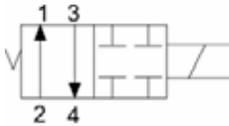
OPERATION

When de-energized the HG-S4F allows flow from (2) to (1) and from (3) to (4). When energized the valve blocks flow at all ports.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

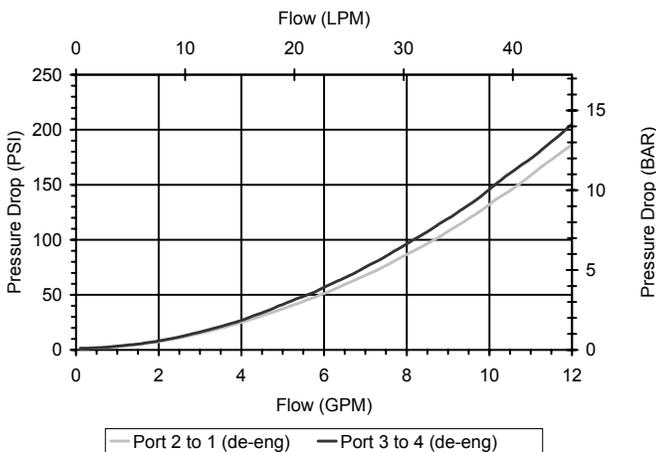
HYDRAULIC SYMBOL



Uses "L" Coil.

PERFORMANCE

Actual Test Data (Cartridge Only)



VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	4000 PSI (276 bar)
Typical Internal Leakage (150 SSU)	10 cu in/min (164 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	.44 lbs. (.20 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

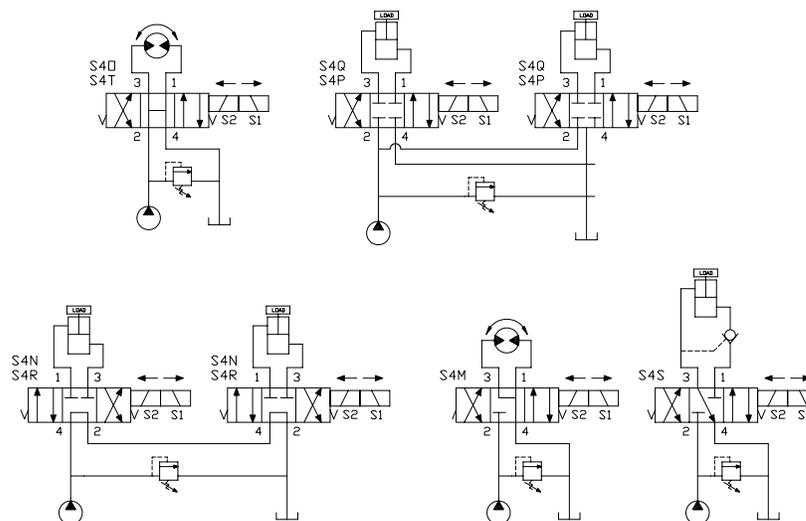
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

4 Way 3 Position Spool Valves

4W3P Spool	GPM	PSI	LPM	BAR	MODEL	PAGE
Motor Center 	5	3000	19	207	PQ-S4M	178
	6,5	3000	25	207	DG-S4M	180
Tandem Center 	5	3000	19	207	PQ-S4N	182
	6	3000	23	207	DG-S4N	184
Open Center 	5	3000	19	207	PQ-S4O	186
	8	3000	30	207	DG-S4O	188
Closed Center 	5	3000	19	207	PQ-S4P	190
	8	3000	30	207	DG-S4P	192
Scotch Center 	6	3000	23	207	DG-S4S	194

Typical Schematic

Typical application for the S4O and S4T "Open Center" valve is a bi-directional fluid motor control with coasting.
 Typical application for the S4Q and S4P "Closed Center" valve is a parallel circuit for cylinder control.
 Typical application for the S4N and S4R "Tandem Center" valve is a series circuit with power beyond.
 Typical application for the S4M "Figure Four" valve is coasting in a fluid motor control circuit.
 Typical application for the S4S "Scotch Center" valve is to vent the pilot side of load holding application.



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.

PQ-S4M Direct Acting Spool, 4 Way 3 Position, Motor Center

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 4 way 3 position, motor center spool valve.

OPERATION

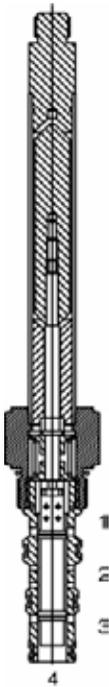
When de-energized the PQ-S4M allows flow between (1), (3) and (4), blocks flow at (2). When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Optional manual "push only" override.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

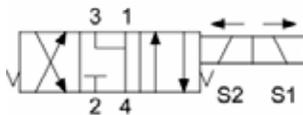


Uses "V" coils.
"OP" override is a push only non-detented button that actuates S2 direction.

VALVE SPECIFICATIONS

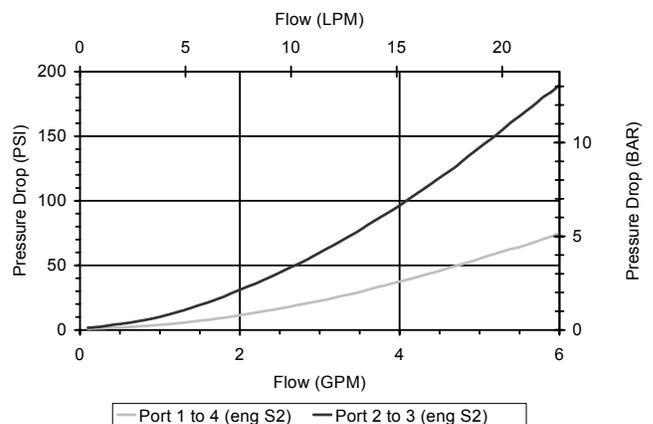
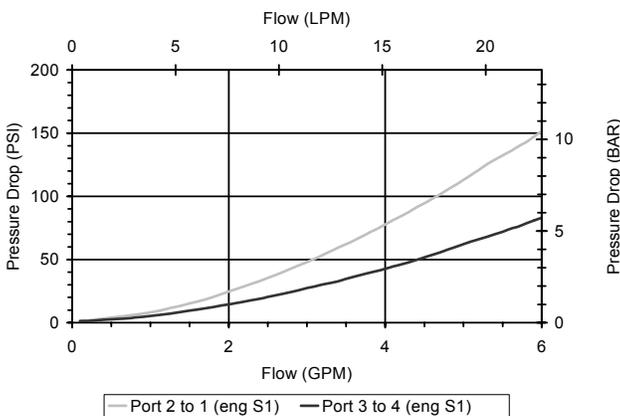
Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.42 lbs. (.19 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 4W
Cavity Tools kit (form tool, reamer, tap)	40500029
Seal Kit	21191108

HYDRAULIC SYMBOL



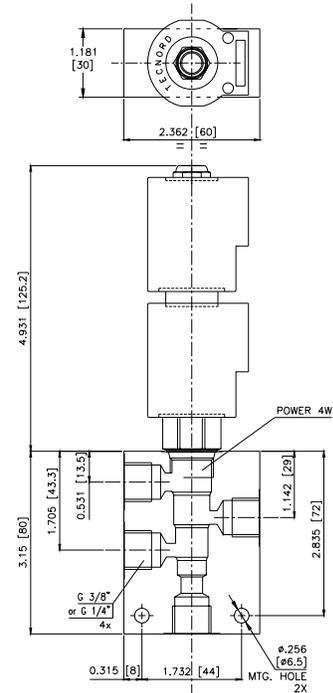
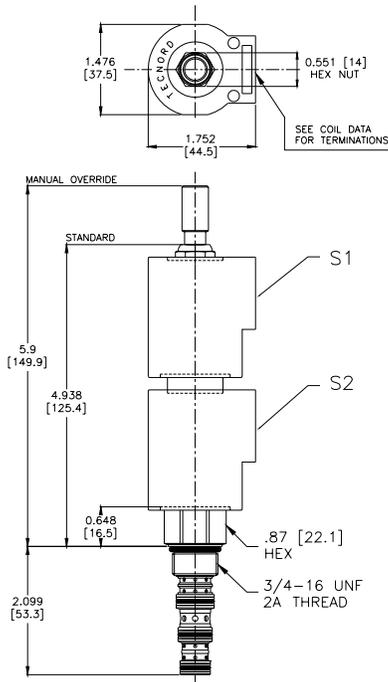
PERFORMANCE

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



ORDERING INFORMATION

PQ-S4M

OPTIONS	
Buna Standard	00
Viton Standard	V0
Buna, Push only override	0P
Viton, Push only override	VP

BODIES	
Blank	N
Without Body	N1
1/4" BSP Ports	S
3/8" BSP Ports	
#6 SAE Ports	

VOLTAGE (*other voltages available on request)	
12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

"V" COIL TERMINATION

(All DC Except as Noted)

DL	Double Lead (*several types of termination can be attached on leads on request)
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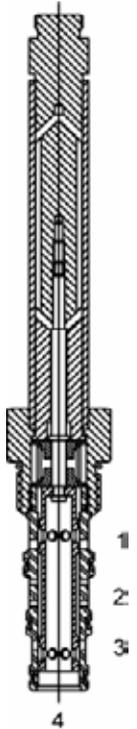
HC	DIN 43650 (Hirschman) – (AC & DC)
DI	Deutsch – Integral DT04-2P

DIA	IMMERSION PROOF "D" TYPE
DID	"I" Coil AMP Superseal - Integral
DIJ	"I" Coil Deutsch – Integral DT04-2P
DIM	"I" Coil AMP Jr. Timer - Integral
	"I" Coil Metri-Pack – Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S4M Direct Acting Spool, 4 Way 3 Position, Motor Center



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 3 position, motor center spool valve.

OPERATION

When de-energized the DG-S4M block the flow at (2) and allows flow between (1), (3) and (4). When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:

Bi-directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

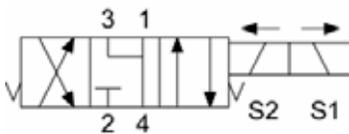


Uses "L" Coils.

VALVE SPECIFICATIONS

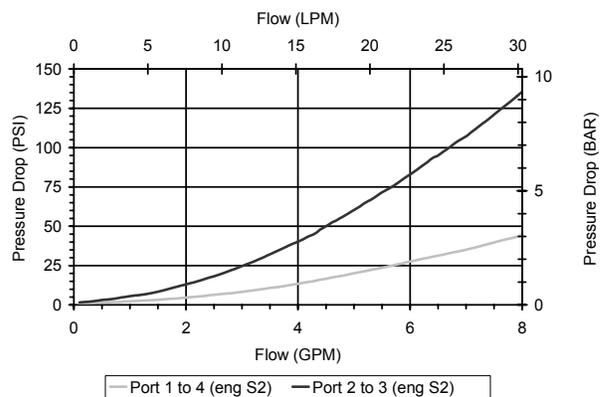
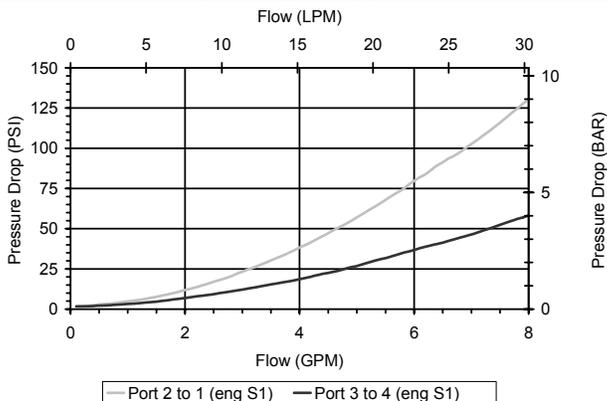
Nominal Flow	6,5 GPM (25 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.51 lbs. (.23 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

HYDRAULIC SYMBOL



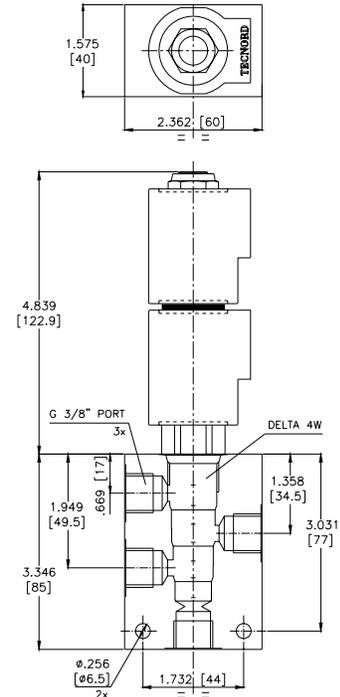
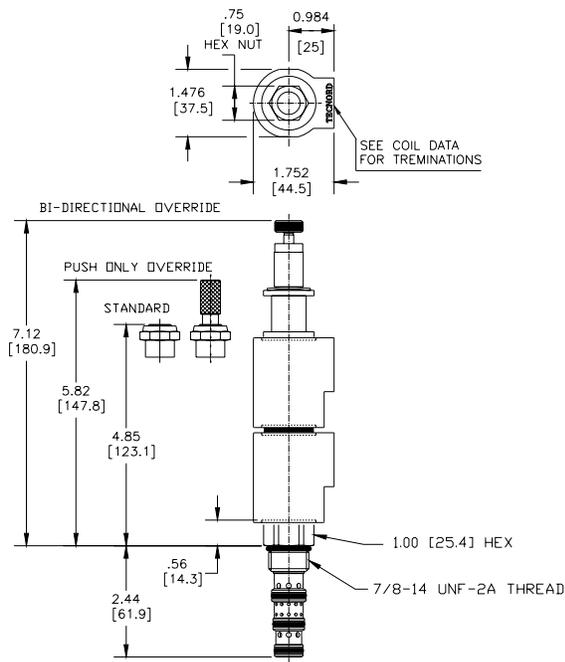
PERFORMANCE

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



ORDERING INFORMATION

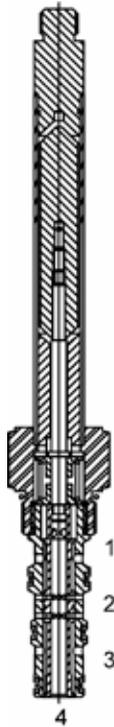
DG-S4M

OPTIONS		BODIES		VOLTAGE (*other voltages available on request)	
Buna Standard	00	Blank	Without Body	12	12 VDC
Viton Standard	V0	N	3/8" BSP Ports	24	24 VDC
Buna, Override	0M	S	#6 SAE Ports	22	220 VAC without internal rectifier
Viton, Override	VM				
Buna, Push only override	0P				
Viton, Push only override	VP				
"L" COIL TERMINATION (All DC Except as Noted)					
DL	Double Lead (* several types of termination can be attached on leads on request)	HC	DIN 43650 (Hirschman) – (AC & DC)	LIA	"I" Coil AMP Superseal - Integral
		DI	Deutsch – Integral DT04-2P	LID	"I" Coil Deutsch – Integral DT04-2P
				LIJ	"I" Coil AMP Jr. Timer - Integral
				LIM	"I" Coil Metri-Pack – Integral
					IMMERSION PROOF "L" TYPE

Approximate Coil Weight: .69 lbs (.31 kg)

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.

PQ-S4N Direct Acting Spool, 4 Way 3 Position, Tandem Center



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 4 way 3 position, tandem center spool valve.

OPERATION

When de-energized the PQ-S4N allows flow between (2) and (4), blocks flow at (1) and (3). When outer coil (S1) is energized the valve allows flow from (2) to (3) and from (1) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (1) and from (3) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Optional manual "push only" override.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

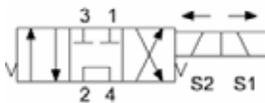


Uses "V" coils.
"OP" override is a push only non-detented button that actuates S2 direction.

VALVE SPECIFICATIONS

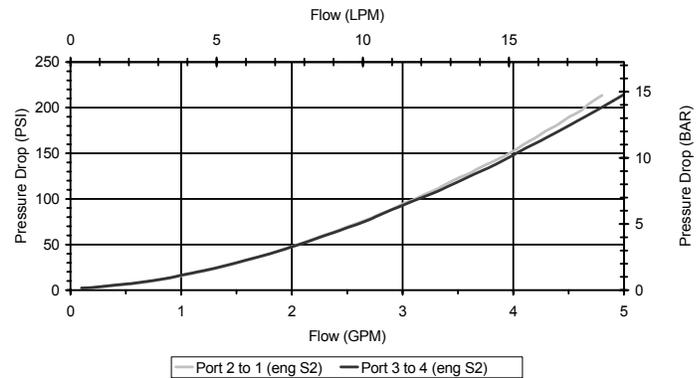
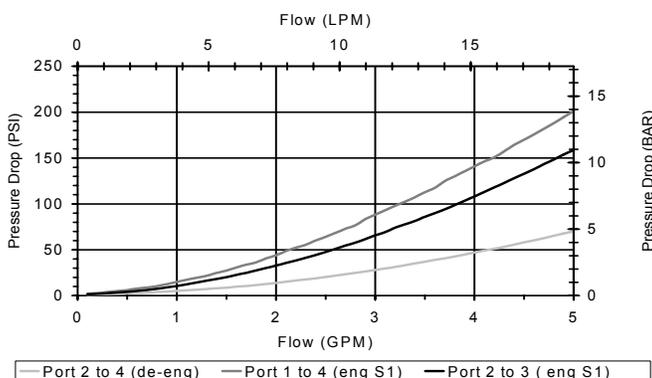
Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.42 lbs. (.19 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 4W
Cavity Tools kit (form tool, reamer, tap)	40500029
Seal Kit	21191108

HYDRAULIC SYMBOL



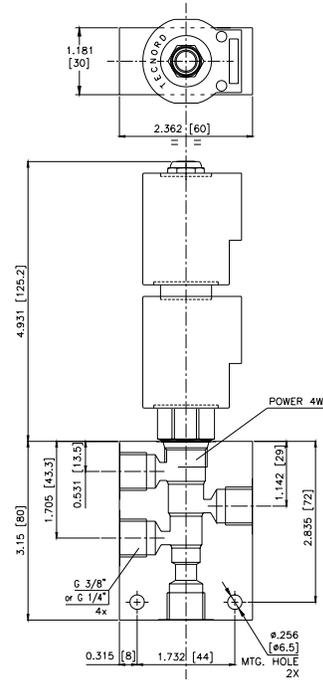
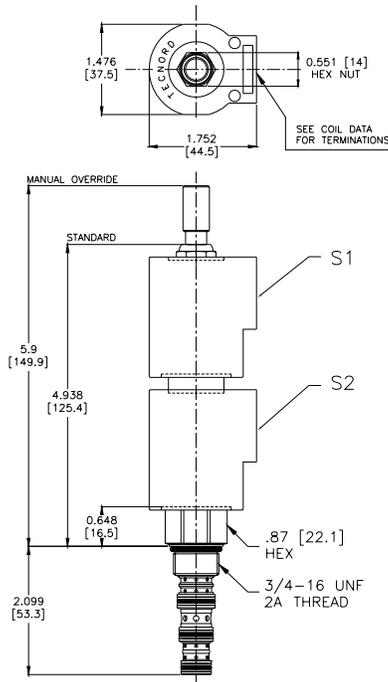
PERFORMANCE

Actual Test Data (Cartridge Only)

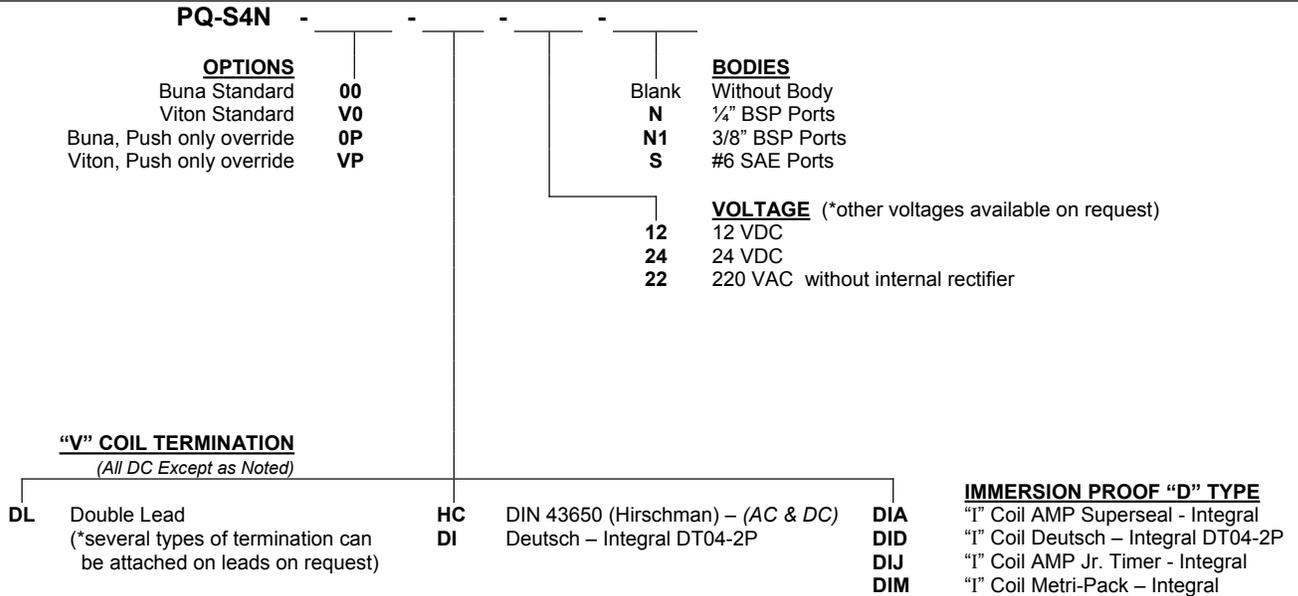


WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

DIMENSIONS



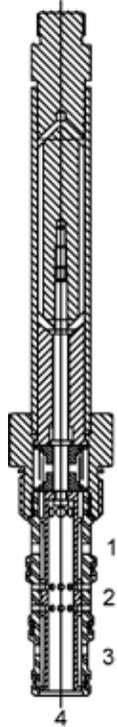
ORDERING INFORMATION



Approximate Coil Weight: .56 lbs (.25kg)

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-S4N Direct Acting Spool, 4 Way 3 Position, Tandem Center



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 3 position, tandem center spool valve.

OPERATION

When de-energized the DG-S4N allows flow between (2) and (4), and blocks flow at (1) and (3). When outer coil (S1) is energized the valve allows flow from (2) to (3) and from (1) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (1) and from (3) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:

Bi-directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override option.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

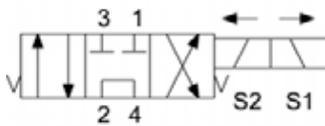


Uses "L" coils.

VALVE SPECIFICATIONS

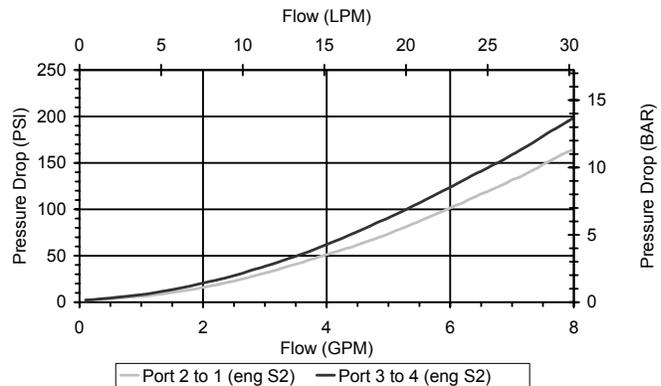
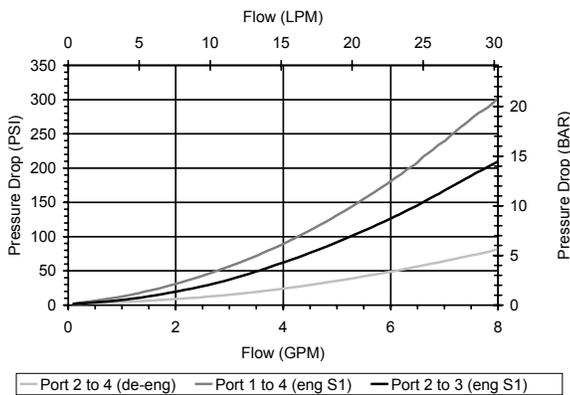
Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.52 lbs. (.23 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

HYDRAULIC SYMBOL



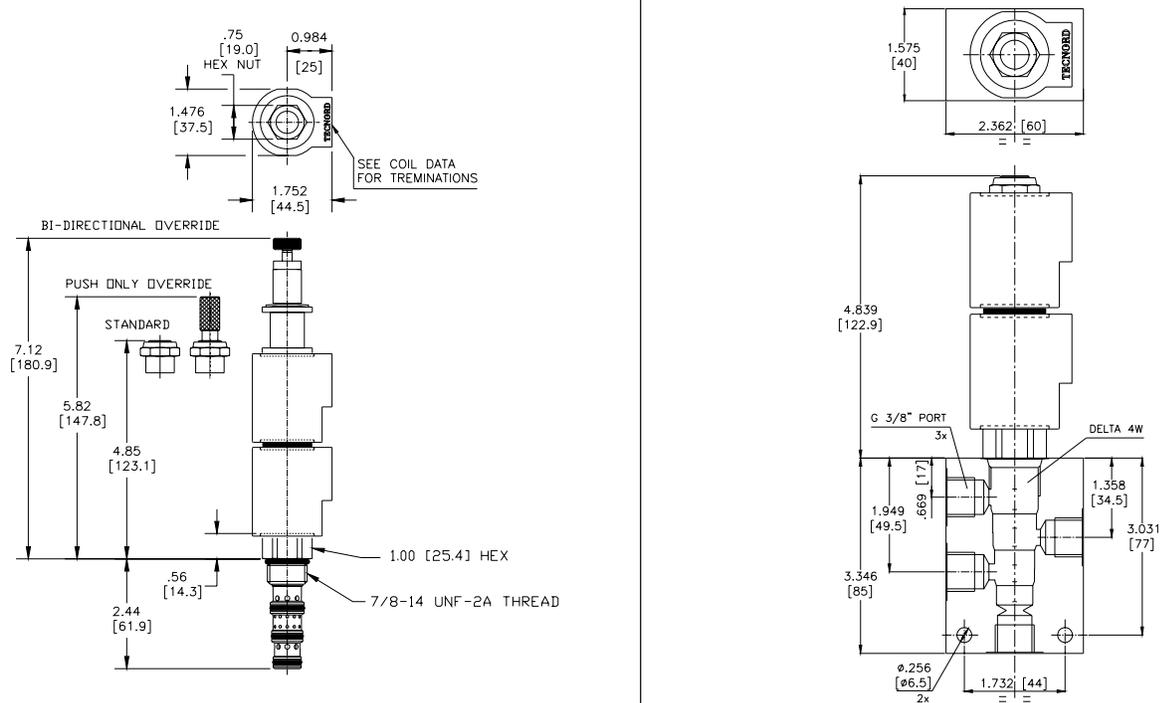
PERFORMANCE

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



ORDERING INFORMATION

DG-S4N - - - -

OPTIONS

- Buna Standard **00**
- Viton Standard **V0**
- Buna, Override **0M**
- Viton, Override **VM**
- Buna, Push only override **0P**
- Viton, Push only override **VP**

BODIES

- Blank
- N** 3/8" BSP Ports
- S** #6 SAE Ports

VOLTAGE

- 12** 12 VDC
- 24** 24 VDC
- 22** 220 VAC without internal rectifier

"L" COIL TERMINATION

(All DC Except as Noted)

- DL** Double Lead
(* several types of termination can be attached on leads on request)

- HC** DIN 43650 (Hirschman) - (AC & DC)
- DI** Deutsch - Integral DT04-2P

- LIA** "I" Coil AMP Superseal - Integral
- LID** "I" Coil Deutsch - Integral DT04-2P
- LIJ** "I" Coil AMP Jr. Timer - Integral
- LIM** "I" Coil Metri-Pack - Integral

Approximate Coil Weight: .68 lbs (.31 kg)

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.

PQ-S40 Direct Acting Spool, 4 Way 3 Position, Open Center

DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 4 way 3 position, open center spool valve.

OPERATION

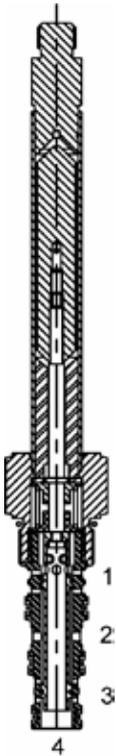
When de-energized the PQ-S40 allows flow to all ports, and pressures are relieved. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Optional manual "push only" override.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

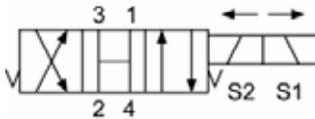


Uses "V" coils.
"OP" override is a push only non-detented button that actuates S2 direction.

VALVE SPECIFICATIONS

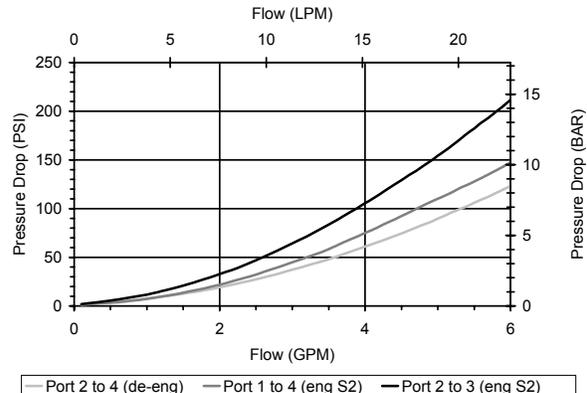
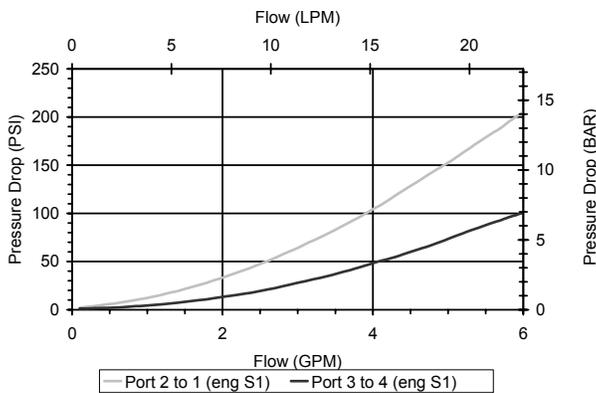
Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.42 lbs. (.19 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (33.9 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 4W
Cavity Tools kit (form tool, reamer, tap)	40500029
Seal Kit	21191108

HYDRAULIC SYMBOL



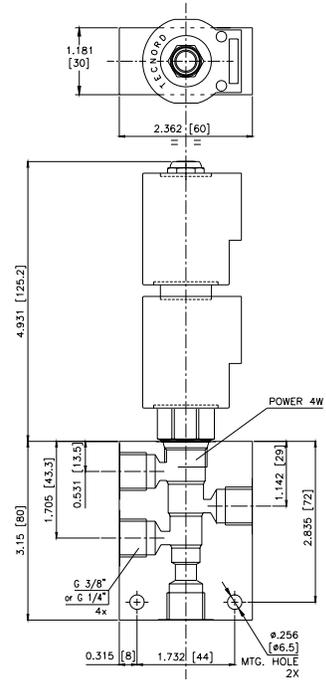
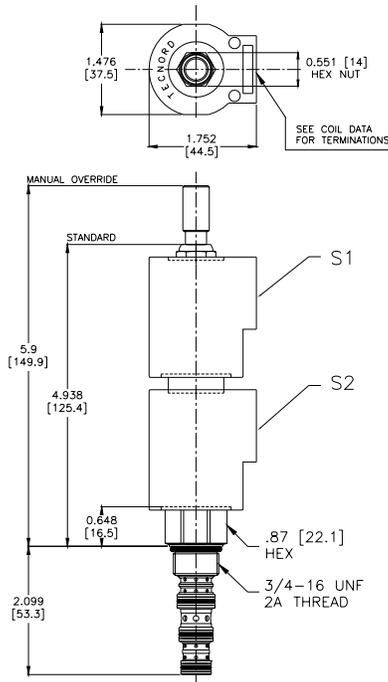
PERFORMANCE

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



ORDERING INFORMATION

PQ-S40 - - -

- OPTIONS**
- Buna Standard **00**
 - Viton Standard **V0**
 - Buna, Push only override **0P**
 - Viton, Push only override **VP**

- BODIES**
- Blank
 - N** 1/4" BSP Ports
 - N1** 3/8" BSP Ports
 - S** #6 SAE Ports

- VOLTAGE** (*other voltages available on request)
- 12** 12 VDC
 - 24** 24 VDC
 - 22** 220 VAC without internal rectifier

"V" COIL TERMINATION
(All DC Except as Noted)

- DL** Double Lead
(*several types of termination can be attached on leads on request)

- HC** DIN 43650 (Hirschman) - (AC & DC)
DI Deutsch - Integral DT04-2P

- DIA** "I" Coil AMP Superseal - Integral
DID "I" Coil Deutsch - Integral DT04-2P
DIJ "I" Coil AMP Jr. Timer - Integral
DIM "I" Coil Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S40 Direct Acting Spool, 4 Way 3 Position, Open Center

DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 3 position, open center spool valve.

OPERATION

When de-energized the DG-S40 is open to all ports, all pressures are relieved. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

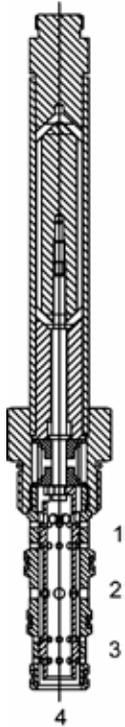
OPERATION OF MANUAL OVERRIDE OPTION:

Bi-directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override options.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

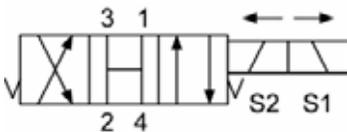


Uses "L" coil.

VALVE SPECIFICATIONS

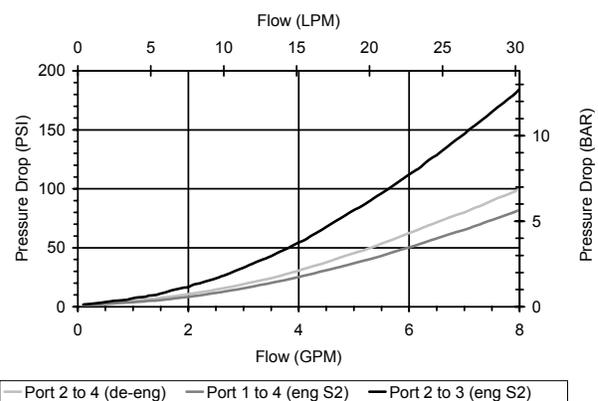
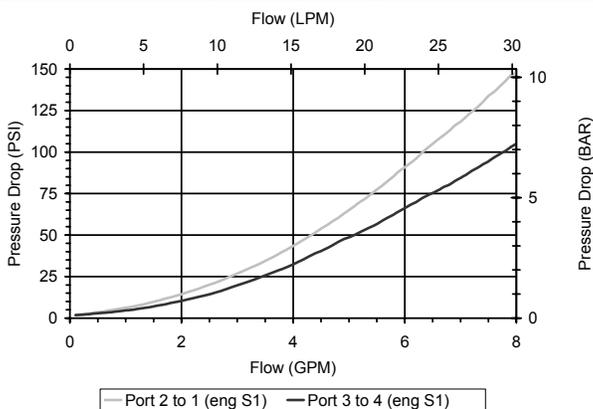
Nominal Flow	8 GPM (30 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.50 lbs. (.23 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4 to 8.1 Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

HYDRAULIC SYMBOL



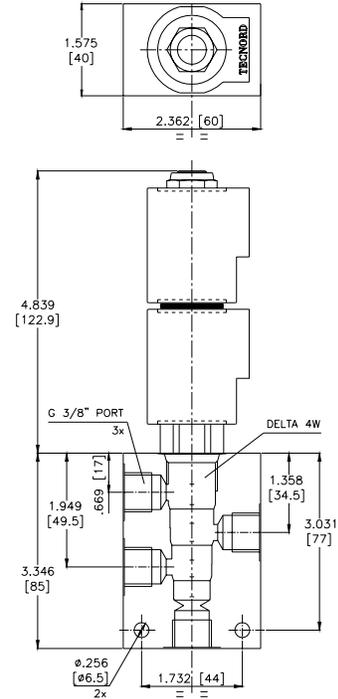
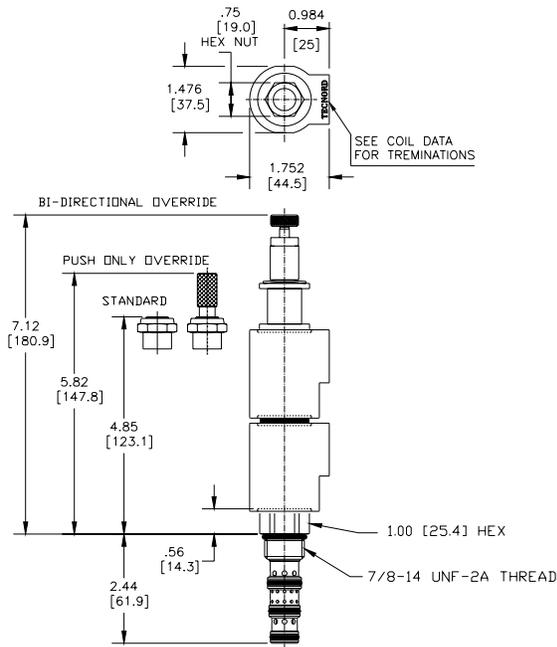
PERFORMANCE

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



ORDERING INFORMATION

DG-S40

OPTIONS

Buna Standard **00**
 Viton Standard **VO**
 Buna, Override **OM**
 Viton, Override **VM**
 Buna, Push only override **OP**
 Viton, Push only override **VP**

BODIES

Blank
N Without Body
S 3/8" BSP Ports
S #6 SAE Ports

VOLTAGE (*other voltages available on request)

12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"L" COIL TERMINATION

(All DC Except as Noted)

DL Double Lead
 (* several types of termination can be attached on leads on request)

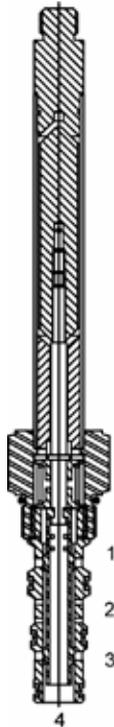
HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

LIA "I" Coil AMP Superseal - Integral
LID "I" Coil Deutsch – Integral DT04-2P
LIJ "I" Coil AMP Jr. Timer - Integral
LIM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .69 lbs (.31 kg)

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.

PQ-S4P Direct Acting Spool, 4 Way 3 Position, Closed Center



DESCRIPTION

8 size, 3/4-16 thread, "Power" series, solenoid operated, 4 way 3 position, closed center spool valve.

OPERATION

When de-energized the PQ-S4P blocks flow at all ports. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Optional manual "push only" override.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

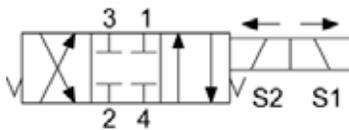


Uses "V" coils.
"OP" override is a push only non-detented button that actuates S2 direction.

VALVE SPECIFICATIONS

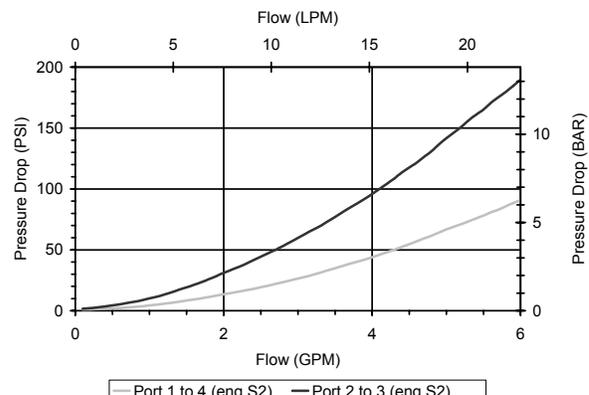
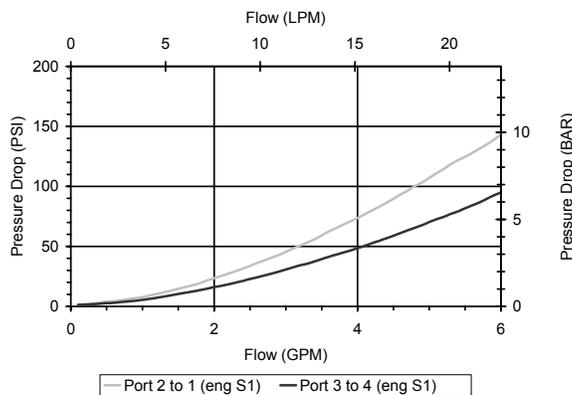
Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.42 lbs. (.19 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	25 ft-lbs (34 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	POWER 4W
Cavity Tools kit (form tool, reamer, tap)	40500029
Seal Kit	21191108

HYDRAULIC SYMBOL



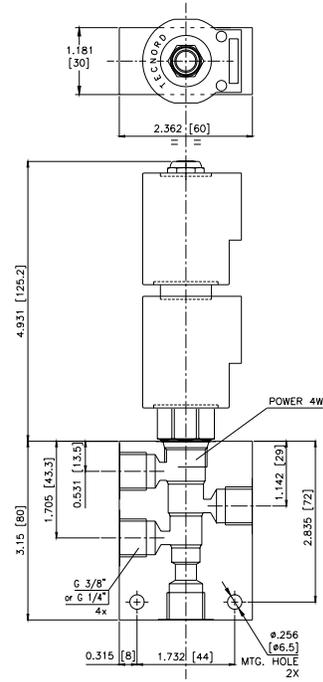
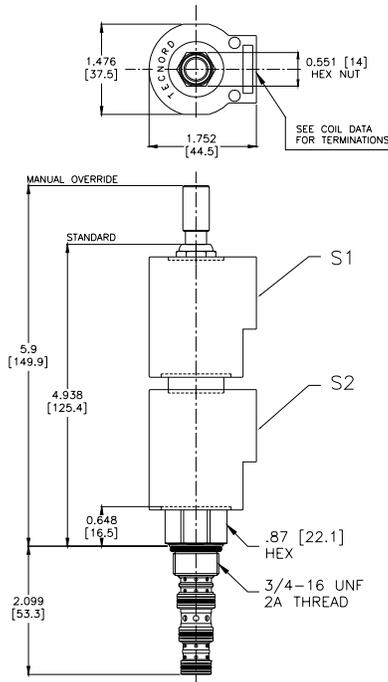
PERFORMANCE

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



ORDERING INFORMATION

PQ-S4P - - - -

- OPTIONS**
 Buna Standard **00**
 Viton Standard **V0**
 Buna, Push only override **0P**
 Viton, Push only override **VP**

- BODIES**
 Blank
N 1/4" BSP Ports
N1 3/8" BSP Ports
S #6 SAE Ports

- VOLTAGE** (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

"V" COIL TERMINATION
 (All DC Except as Noted)

- DL** Double Lead
 (*several types of termination can be attached on leads on request)

- HC** DIN 43650 (Hirschman) - (AC & DC)
DI Deutsch - Integral DT04-2P

- DIA** "I" Coil AMP Superseal - Integral
DID "I" Coil Deutsch - Integral DT04-2P
DIJ "I" Coil AMP Jr. Timer - Integral
DIM "I" Coil Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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-S4P Direct Acting Spool, Closed Center, 4 Way 3 Position, Closed Center

DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 3 position, closed center spool valve.

OPERATION

When de-energized the DG-S4P blocks flow at all ports. When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:

Bi-directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

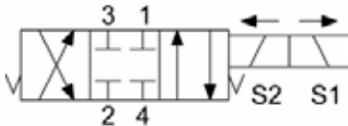
FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override options.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.



Uses "L" coils.

HYDRAULIC SYMBOL

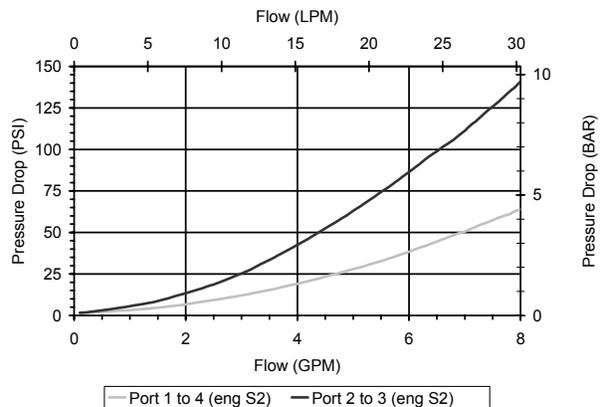
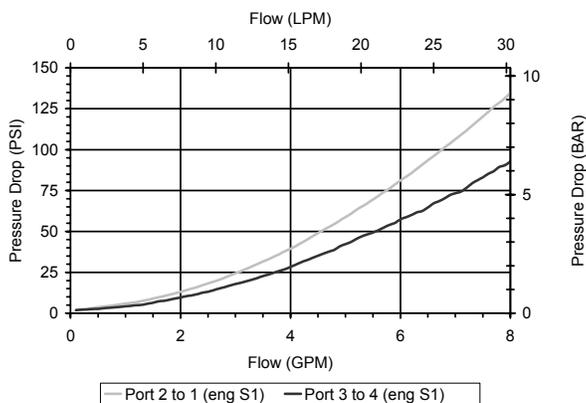


PERFORMANCE

Actual Test Data (Cartridge Only)

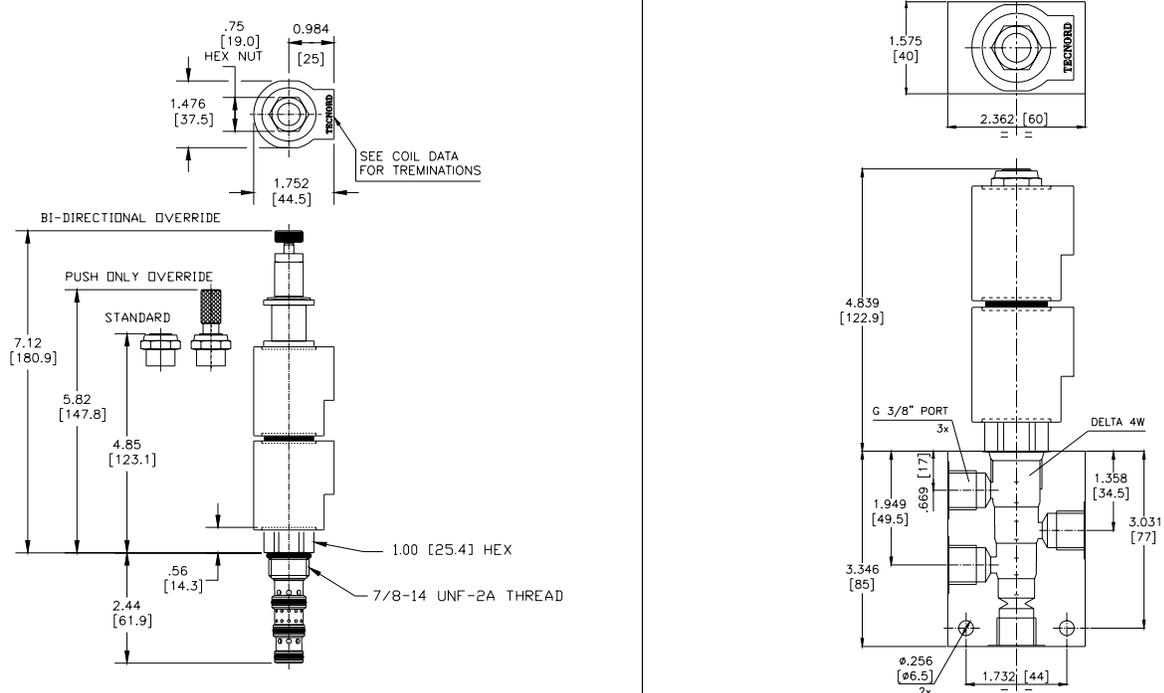
VALVE SPECIFICATIONS

Nominal Flow	8 GPM 30 LPM
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) 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	.53 lbs. (.24 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4 to 8.1 Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214



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DIMENSIONS



ORDERING INFORMATION

DG-S4P - - - -

OPTIONS

- Buna Standard **00**
- Viton Standard **VO**
- Buna, Override **0M**
- Viton, Override **VM**
- Buna, Push only override **0P**
- Viton, Push only override **VP**

- Blank **N**
- S**

BODIES

- Without Body
- 3/8" BSP Ports
- #6 SAE Ports

VOLTAGE (*other voltages available on request)

- 12** 12 VDC
- 24** 24 VDC
- 22** 220 VAC without internal rectifier

"L" COIL TERMINATION

(All DC Except as Noted)

- DL** Double Lead
(* several types of termination can be attached on leads on request)

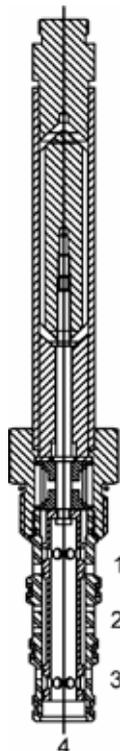
- HC** DIN 43650 (Hirschman) - (AC & DC)
- DI** Deutsch - Integral DT04-2P

- LIA** "I" Coil AMP Superseal - Integral
- LID** "I" Coil Deutsch - Integral DT04-2P
- LIJ** "I" Coil AMP Jr. Timer - Integral
- LIM** "I" Coil Metri-Pack - Integral

IMMERSION PROOF "L" TYPE

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-S4S Spool Operated, 4 Way 3 Position, Scotch Center



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 3 position, scotch center spool valve.

OPERATION

When de-energized the DG-S4S blocks flow at (1) and (2) and allows flow from (3) to (4). When outer coil (S1) is energized the valve allows flow from (2) to (1) and from (3) to (4). When inner coil (S2) is energized the valve allows flow from (2) to (3) and from (1) to (4).

OPERATION OF MANUAL OVERRIDE OPTION:

Bi-directional Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction, when pulled the valve shifts in the S1 direction.

Push Only Override - Spring biased in neutral center position, when pushed the valve shifts in the S2 direction.

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Manual override options.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

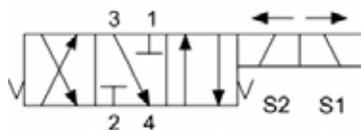


Uses "L" Coils.

VALVE SPECIFICATIONS

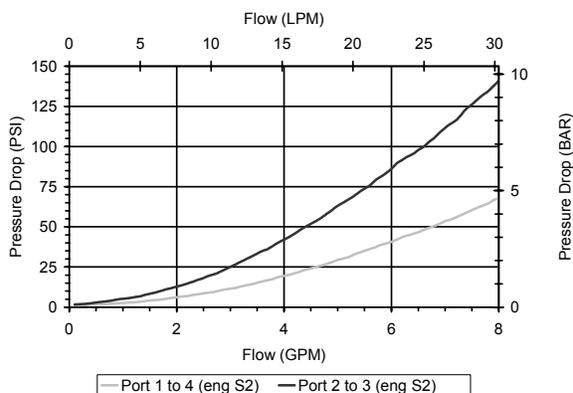
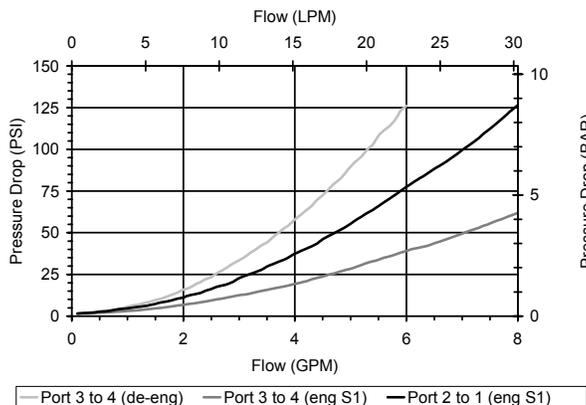
Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	3000 PSI (207 bar)
Typical Internal Leakage (150 SSU)	5 cu in/min (82 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.62 lbs. (.28 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	4-6 ft-lbs (5.4-8.1 Nm)
Cavity	DELTA 4W
Cavity Tool kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

HYDRAULIC SYMBOL



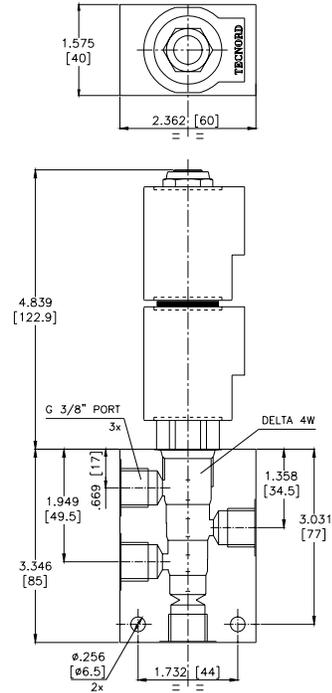
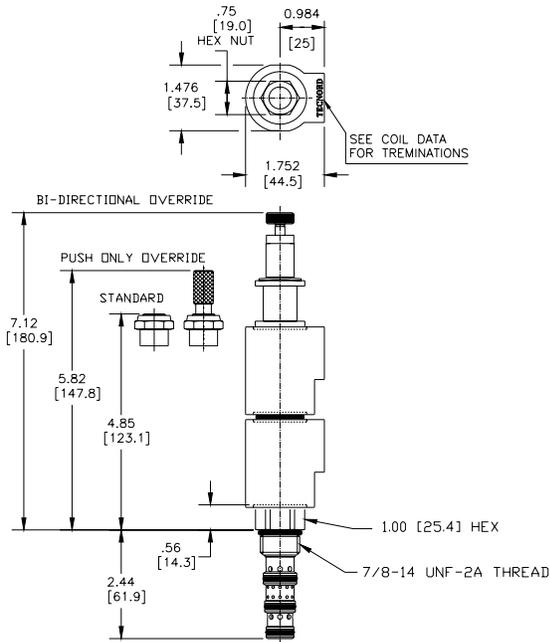
PERFORMANCE

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



ORDERING INFORMATION

DG-S4S

OPTIONS

Buna Standard	00
Viton Standard	V0
Buna, Override	0M
Viton, Override	VM
Buna, Push only override	0P
Viton, Push only override	VP

Blank	N
	S

BODIES

Without Body	N
3/8" BSP Ports	S
#6 SAE Ports	S

VOLTAGE (*other voltages available on request)

12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

"L" COIL TERMINATION

(All DC Except as Noted)

DL	Double Lead (* several types of termination can be attached on leads on request)
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HC	DIN 43650 (Hirschman) – (AC & DC)
DI	Deutsch – Integral DT04-2P

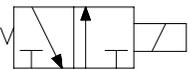
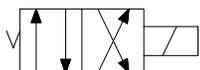
LHC	IMMERSION PROOF "L" TYPE
LIA	"I" Coil DIN 43650 (Hirschman)
LID	"I" Coil AMP Superseal - Integral
LIJ	"I" Coil AMP Jr. Timer - Integral
LIM	"I" Coil Metri-Pack – Integral

Approximate Coil Weight: .68 lbs (.31 kg)

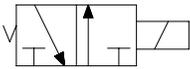
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Transmission & Brake Spool Valves

Screw-in style

	GPM	PSI	LPM	BAR	MODEL	CAVITY	PAGE
	3	1000	11	70	TC-S3A	5/8" - 18	198
	6	1000	23	70	TF-S3A	7/8" - 14	200
	6	1000	23	70	TF-S3D	7/8" - 14	202
	5	1000	19	70	TG-S4A	7/8" - 14	204

Slip-in style, flanged retained

	GPM	PSI	LPM	BAR	MODEL	CAVITY	PAGE
	6	1000	23	70	IF-S3A	special	206
	6	1000	23	70	IF-S3D	special	208
	5	1000	20	70	IG-S4A	special	210

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.

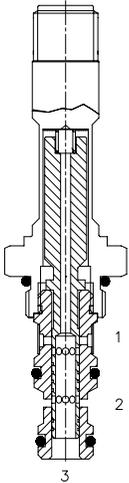
TC-S3A Direct Acting Spool, 3 Way 2 Position, Transmission & Brake

DESCRIPTION

7 size, 5/8-18 thread, "Mini" series, solenoid operated, 3 way 2 position, transmission & brake spool valve.

OPERATION

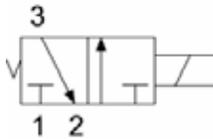
When de-energized the TC-S3A blocks flow at (1) and allows flow from (3) to (2). When energized the valve allows flow from (1) to (3) and blocks flow at (2).



FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.

HYDRAULIC SYMBOL

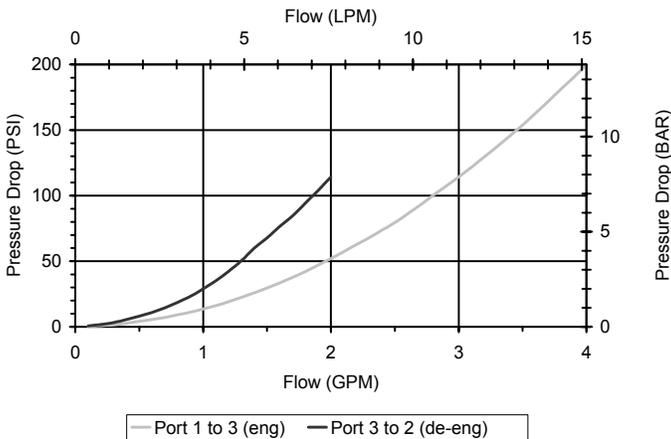


Contamination Tolerant Product.

This valve is designed for transmission and brake applications. Consult factory for alternate low wattage coil options.

PERFORMANCE

Actual Test Data (Cartridge Only)

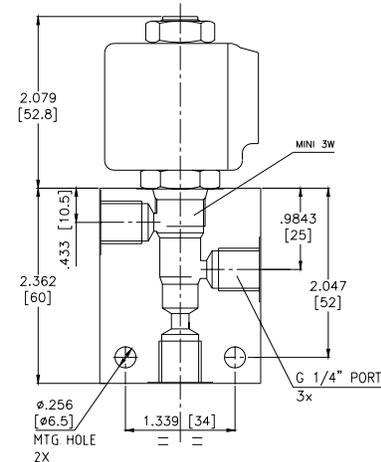
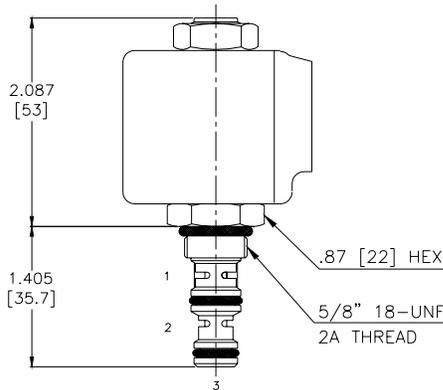
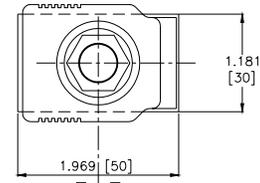
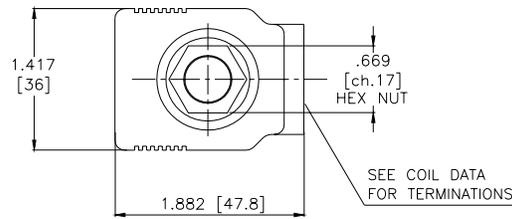


VALVE SPECIFICATIONS

Nominal Flow	3 GPM (11 LPM) from (1) to (3) 2 GPM (7.6 LPM) from (3) to (2)
Rated Operating Pressure	1000 PSI (70 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 20/18/15
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	15 ft-lbs (20.3 Nm)
Coil Nut Torque Requirements	3-4 ft-lbs (4.1 - 5.4 Nm)
Cavity	MINI 3W
Cavity form tool (finishing)	40500004
Seal Kit	21191006

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

TC-S3A -

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

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

VOLTAGE (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

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

"K" COIL TERMINATION
 (All DC Except as Noted)

DL Double Lead
 (*several types of termination can be attached on leads on request)

HC DIN 43650 (Hirschman) – (AC & DC)
DI Deutsch – Integral DT04-2P

IMMERSSION PROOF "P" TYPE
PIA "I" Coil AMP Superseal - Integral
PID "I" Coil Deutsch – Integral DT04-2P
PIJ "I" Coil AMP Jr. Timer - Integral
PIM "I" Coil Metri-Pack – Integral

Approximate Coil Weight: .42 lbs (.19 kg)

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.

TF-S3A Direct Acting Spool, 3 Way 2 Position, Transmission & Brake

DESCRIPTION

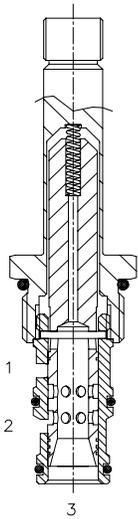
10 size, 7/8-14 thread, "Delta" series, solenoid operated, 3 way 2 position, transmission & brake, spool valve.

OPERATION

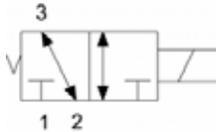
When de-energized the TF-S3A allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

FEATURES

- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

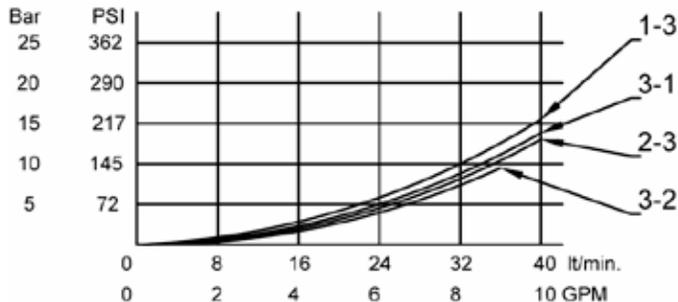


HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

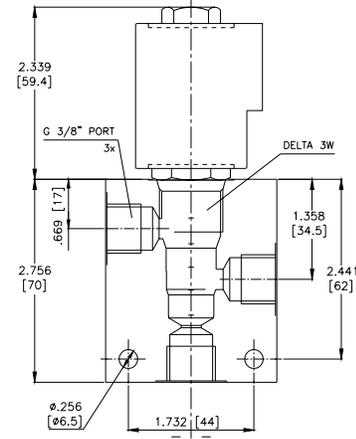
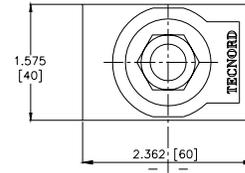
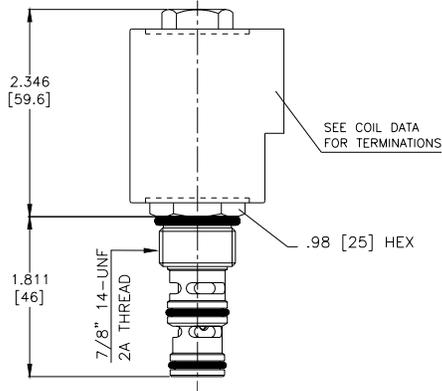
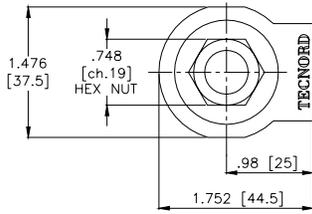


VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	1000 PSI (70 bar)
Typical Internal Leakage (150 SSU)	3 cu in/min (50 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	.28 lbs. (.12 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	3-4 ft-lbs (4.1- 5.4 Nm)
Cavity	DELTA 3W
Cavity Tools kit (form tool, reamer, tap)	40500001
Seal Kit	21191210

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

TF-S3A - - - - -

- OPTIONS**
 Buna Standard **00**
 Viton Standard **V0**
 Buna, Screen **V0**
 Viton, Screen **W0**

- BODIES**
 Blank
N 3/8" BSP Ports
S #8 SAE Ports

- VOLTAGE** (*other voltages available on request)
12 12 VDC
24 24 VDC
22 220 VAC without internal rectifier

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

"V" COIL TERMINATION

- DL** Double Lead
 (* several types of termination can be attached on leads on request)

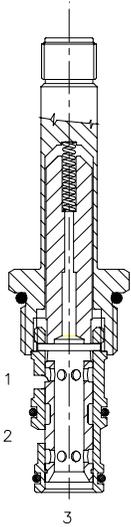
- HC** Din 43650 (Hirschman) - (AC & DC)
DI Deutsch - Integral DT04-2P

- DIA** IMMERSION PROOF "D" TYPE
DID "I" Coil AMP Superseal - Integral
DIJ "I" Coil - Deutsch - Integral DT04-2P
DIM "I" Coil AMP Jr. Timer - Integral
 "I" Coil - Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 ka)

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.

TF-S3D Direct Acting Spool, 3 Way 2 Position, Transmission & Brake



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 3 way 2 position, transmission & brake, spool valve.

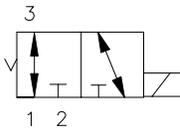
OPERATION

When de-energized the TF-S3D allows flow from (3) to (1) and blocks flow at port (2).
When energized the valve allows flow from (3) to (2) and blocks flow at port (1).

FEATURES

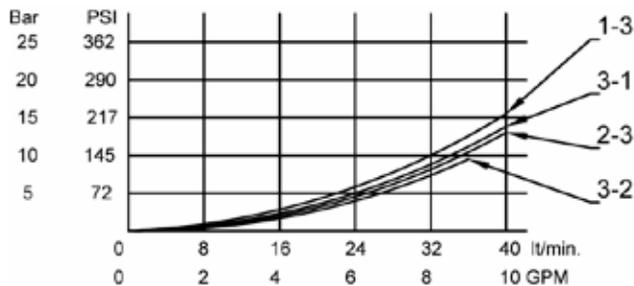
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

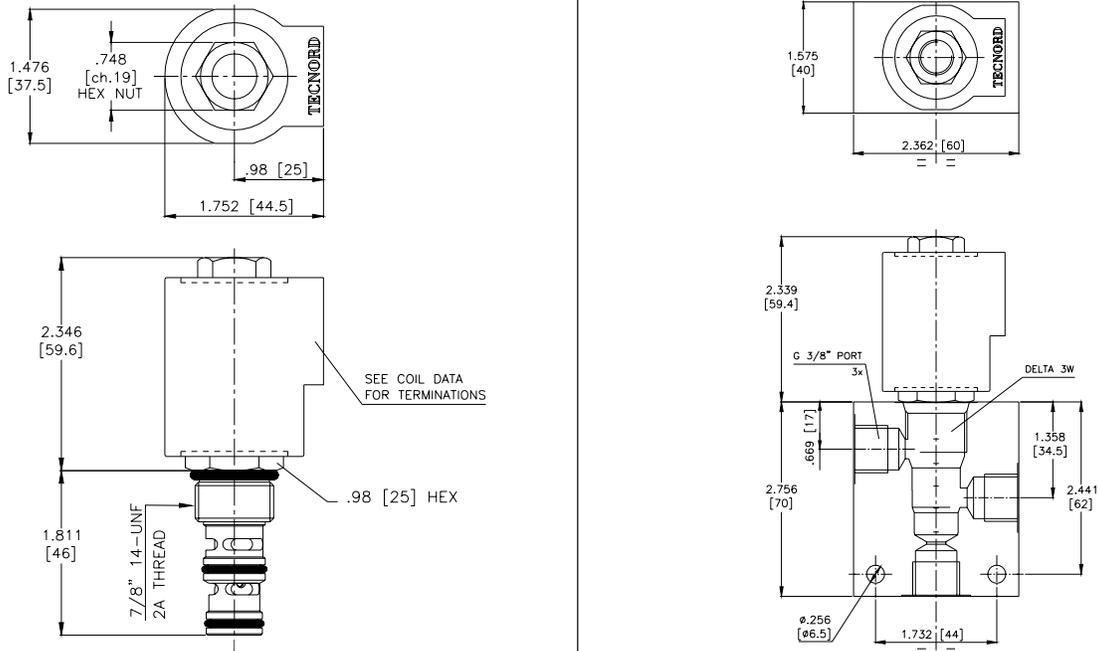


VALVE SPECIFICATIONS

Nominal Flow	6 GPM (23 LPM)
Rated Operating Pressure	1000 PSI (70 bar)
Typical Internal Leakage (150 SSU)	3 cu in/min (50 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	.28 lbs. (.12 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	3-4 ft-lbs (4.1- 5.4 Nm)
Cavity	DELTA 3W
Cavity Tools kit (form tool, reamer, tap)	40500001
Seal Kit	21191210

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DIMENSIONS



ORDERING INFORMATION

TF-S3D

OPTIONS

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

BODIES

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

VOLTAGE (*other voltages available on request)

12	12 VDC
24	24 VDC
22	220 VAC without internal rectifier

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

"V" COIL TERMINATION

DL Double Lead (* several types of termination can be attached on leads on request)	HC Din 43650 (Hirschman) - (AC & DC)
	DI Deutsch - Integral DT04-2P

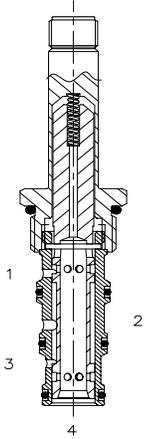
IMMERSSION PROOF "D" TYPE

DIA "I" Coil AMP Superseal - Integral
DID "I" Coil - Deutsch - Integral DT04-2P
DIJ "I" Coil AMP Jr. Timer - Integral
DIM "I" Coil - Metri-Pack - Integral

Approximate Coil Weight: .56 lbs (.25 kg)

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TG-S4A Direct Acting Spool, 4 Way 2 Position, Transmission & Brake



DESCRIPTION

10 size, 7/8-14 thread, "Delta" series, solenoid operated, 4 way 2 position, side flow spool valve.

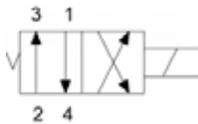
OPERATION

When de-energized the TG-S4A allows flow between (1) to (4) and (2) to (3).
When energized the valve allows flow between (2) to (1) and (3) to (4).

FEATURES

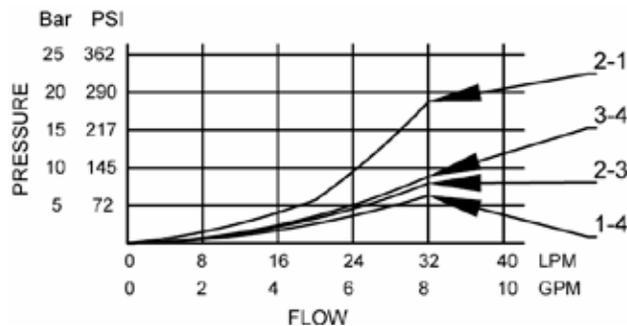
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion Safe.

HYDRAULIC SYMBOL



PERFORMANCE

Actual Test Data (Cartridge Only)

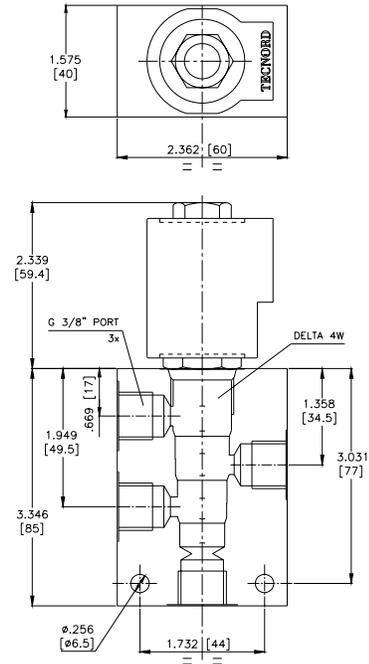
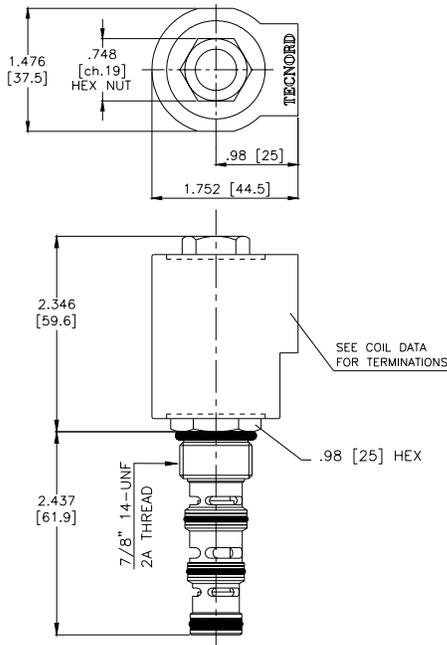


VALVE SPECIFICATIONS

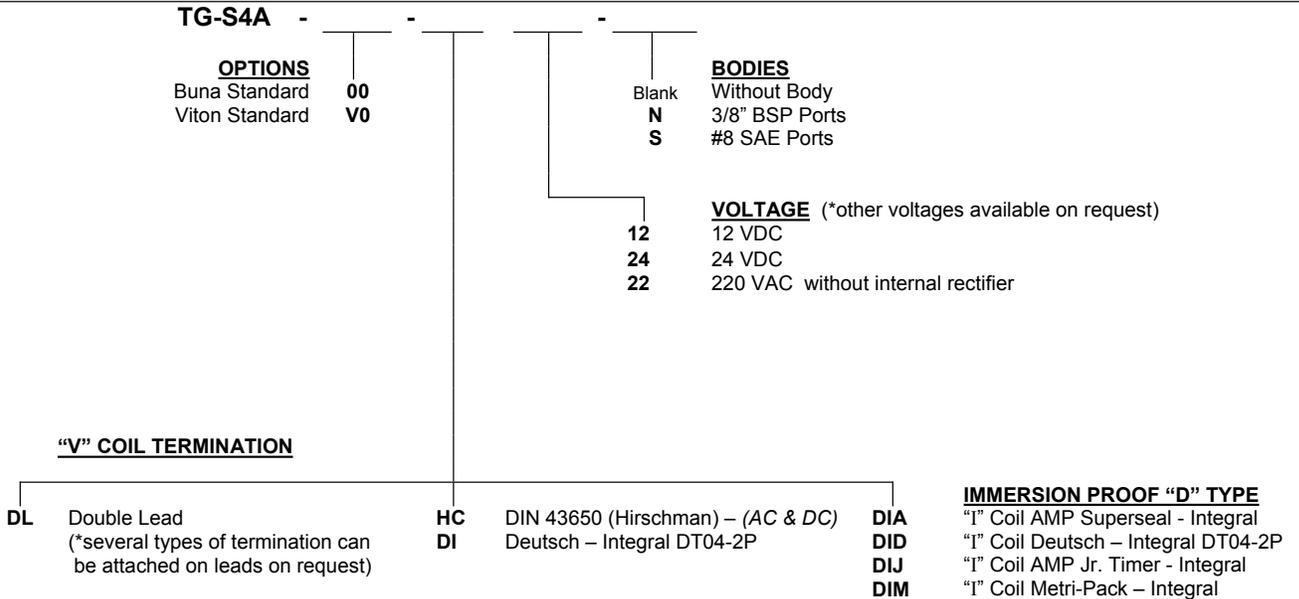
Nominal Flow	5 GPM (19 LPM)
Rated Operating Pressure	1000 PSI (70 bar)
Typical Internal Leakage (150 SSU)	1,2 cu in/min (20 ml/min) per path
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-40° to 250°F (-40° to 120°C)
Weight	.32 lbs. (.15 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cartridge Torque Requirements	30 ft-lbs (40.6 Nm)
Coil Nut Torque Requirements	3-4 ft-lbs (4.1- 5.4 Nm)
Cavity	DELTA 4W
Cavity Tools kit (form tool, reamer, tap)	40500002
Seal Kit	21191214

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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.

IF-S3A Direct Acting Spool, 3 Way 2 Position, Transmission & Brake, Slip-in Style

DESCRIPTION

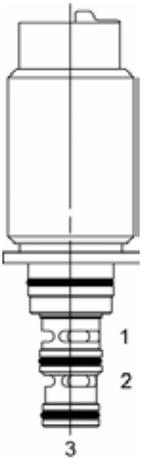
Special cavity, solenoid operated, 3 way 2 position spool type, flanged retained hydraulic valve.

OPERATION

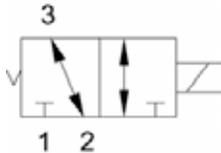
When de-energized the IF-S3A allows flow from (2) to (3) and (3) to (2), and blocks flow at (1).
When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

FEATURES

- Economical slip-in style.
- Efficient wet-armature construction.
- Unitized valve/coil.
- Continuous duty rated solenoid.

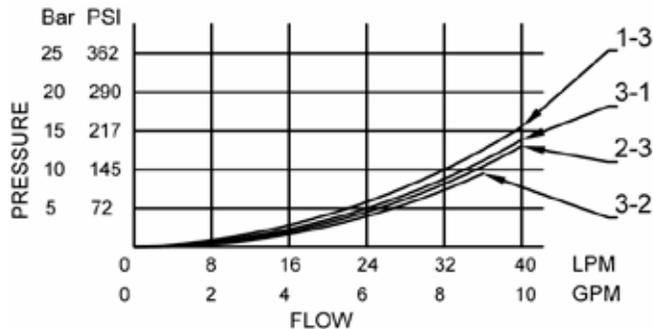


HYDRAULIC SYMBOL



Flanged Retained Product.
Coil is an integral part of the valve and is not serviceable.

PERFORMANCE



VALVE SPECIFICATIONS

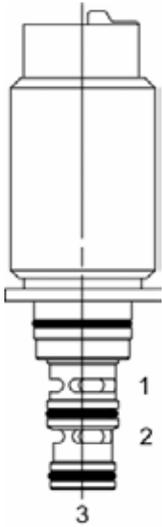
Nominal Flow	6 GPM (18 LPM)
Max Operating Pressure	1000 PSI (70 bar)
Typical Internal Leakage (150 SSU)	3 cu in/min (50 ml/min)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-35° to 200°F (-37.2° to 93.3°C)
Weight	.75 lbs. (.34 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cavity	T057 (special)
Cavity Tool kit	K-T057
Flange mounting screws and torque	M6x10 / 4 ft-lbs (6 Nm)

COIL SPECIFICATIONS

Nominal Operating Voltage	12 VDC +/- 5%
Pull-in Voltage	8.5 VDC at 212°F (100°C)
Peak Voltage	25 VDC for 5 min at 50°F (10°C)
Temperature Range	-40°F to 230°F (-40°C) to (110°C)
Coil Resistance	7.3 ohm +/- 5% at 68°F (20°C)
Coil Termination	AMP Superseal – Integral
Protection degree	IP 67

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.

IF-S3D Direct Acting Spool, 3 Way 2 Position, Transmission & Brake, Slip-in Style



DESCRIPTION

Special cavity, solenoid operated, 3 way 2 position spool type, flanged retained hydraulic valve.

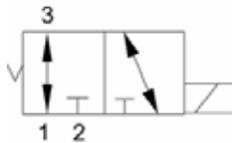
OPERATION

When de-energized the IF-S3D allows flow from (1) to (3) and (3) to (1), and blocks flow at (2). When energized the valve allows flow from (3) to (2) and (2) to (3) blocks flow at port (1).

FEATURES

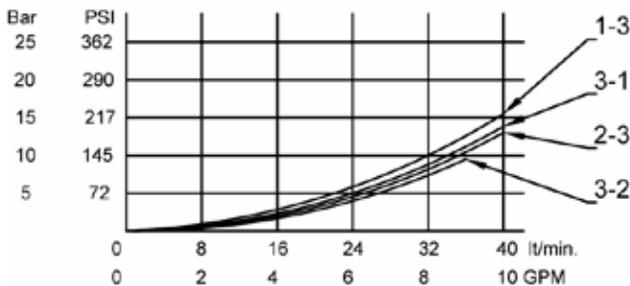
- Economical slip-in style
- Efficient wet-armature construction.
- Unitized valve/coil.
- Continuous duty rated solenoid

HYDRAULIC SYMBOL



Flanged Retained Product.
Coil is an integral part of the valve and is not serviceable.

PERFORMANCE



VALVE SPECIFICATIONS

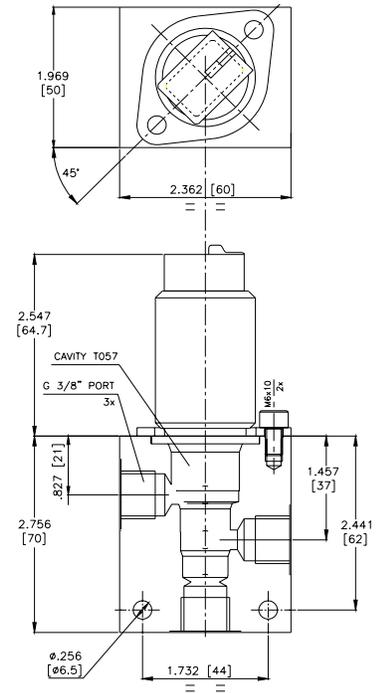
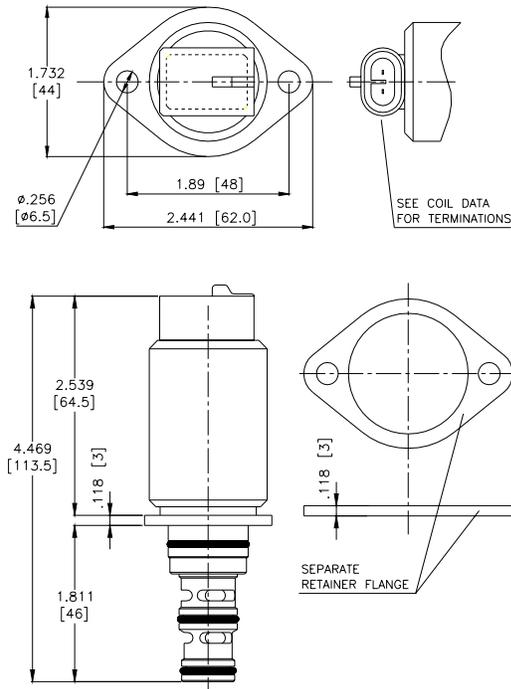
Nominal Flow	6 GPM (18 LPM)
Max Operating Pressure	1000 PSI (70 bar)
Typical Internal Leakage	50 ml/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-35° to 200°F (-37.2° to 93.3°C)
Weight	.75 lbs. (.34 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cavity	T057 (special)
Cavity Tools kit	K-T057
Flange mounting screws and torque	M6x10 / 4 ft-lbs (6 Nm)

COIL SPECIFICATIONS

Nominal Operating Voltage	12 VDC +/- 5%
Pull-in Voltage	8.5 VDC at 212°F (100°C)
Peak Voltage	25 VDC for 5 min at 50°F (10°C)
Temperature Range	-40°F to 250°F (-40°C) to (110°C)
Coil Resistance	7.3 Ohm +/- 5% at 68°F (20°C)
Coil Termination	AMP Superseal – Integral
Protection degree	IP 67

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DIMENSIONS



ORDERING INFORMATION

IF-S3D-57-MP12 -

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

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IG-S4A Direct acting Spool, 4 Way 2 Position, Transmission Valve, Slip-in Style

DESCRIPTION

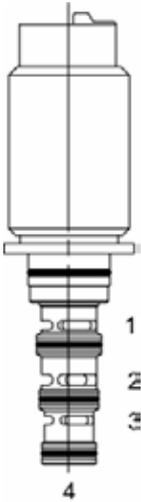
Special cavity, solenoid operated, 4 way 2 position spool type, flanged retained hydraulic valve.

OPERATION

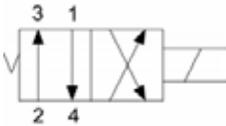
When de-energized the IG-S4A allows flow from (2) to (3) and from (1) to (4).
When energized the valve allows flow from (2) to (1) and from (3) to (4).

FEATURES

- Economical slip-in style.
- Efficient wet-armature construction.
- Unitized valve/coil.
- Continuous duty rated solenoid.

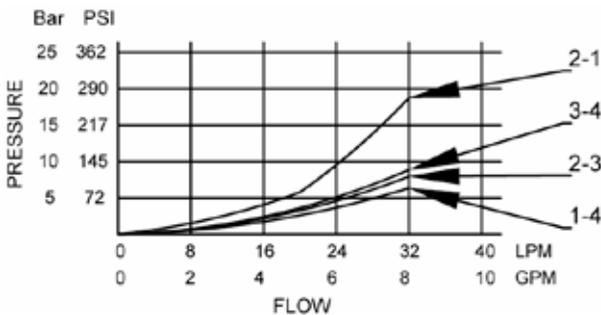


HYDRAULIC SYMBOL



Flanged Retained Product.
Coil is an integral part of the valve and is not serviceable.

PERFORMANCE



VALVE SPECIFICATIONS

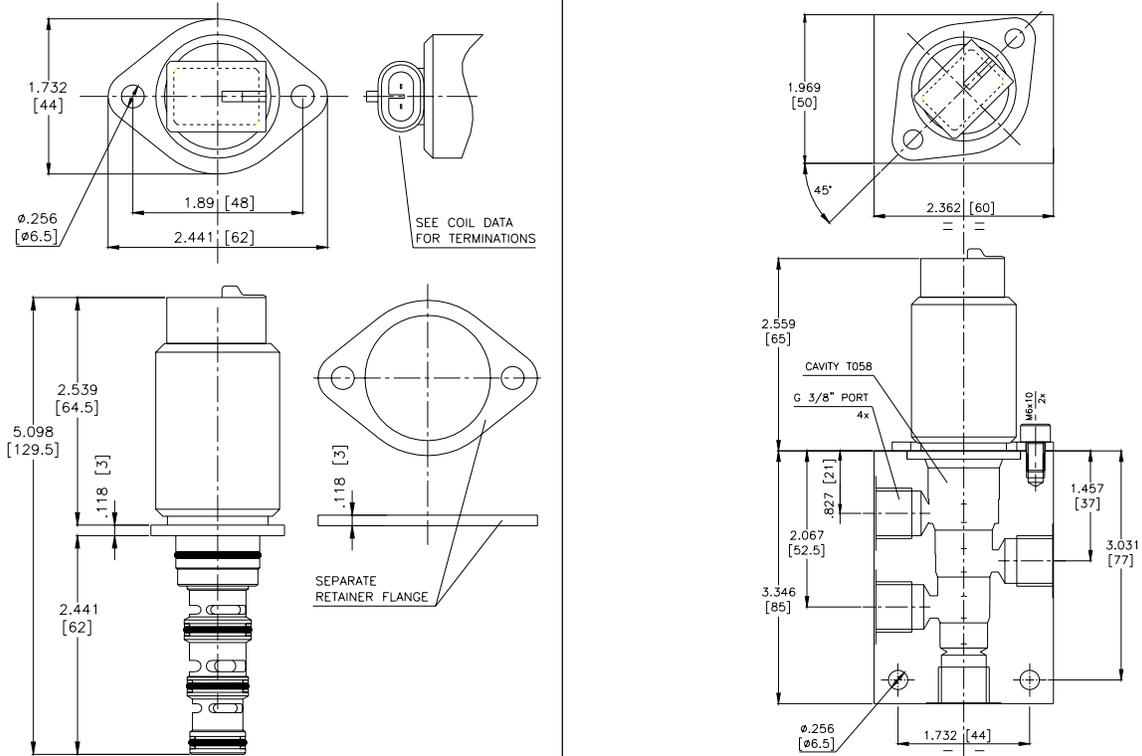
Nominal Flow	5.28 GPM (20 LPM)
Max Operating Pressure	1000 PSI (70 bar)
Typical Internal Leakage	50 ml/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-35° to 200°F (-37.2° to 93.3°C)
Weight	.75 lbs. (.34 kg)
Operating Fluid Media	General Purpose Hydraulic Fluid
Cavity	T058 (special)
Cavity Tools kit (form tool, reamer, tap)	K-T058
Flange mounting screws and torque	M6x10 / 4 ft-lbs (6 Nm)

COIL SPECIFICATIONS

Nominal Operating Voltage	12 VDC +/- 5%
Pull-in Voltage	8.5 VDC at 212°F (100°C)
Peak Voltage	25 VDC for 5 min at 50°F (10°C)
Temperature Range	-40° to 230°F (-40° to 110°C)
Coil Resistance	7.3 Ohm +/- 5% at 68°F (20°C)
Coil Termination	AMP Superseal - Integral
Protection degree	IP 67

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DIMENSIONS



ORDERING INFORMATION

IG-S4A-57-MP12 -

Blank
N
S

BODIES

Without Body
3/8" BSP Ports
#8 SAE Ports

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SECTION/Description

Pages

Valve Bodies

214

Cavity Plugs

216

Connectors

221

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Valve Bodies

Standard Bodies

Port Size	Ordering code	Style/Size	Dimensions (see next page)					
			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
#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
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

The following bodies are for the slip-in style cartridges. Contact factory for price and availability

Port Size	Ordering code	Style/Size	Dimensions (see next page)					
			A	B	C	D	E	F
3/8 BSP	13.1011.133	3W / cavity 057	50	60	70	30	62	44
#6 SAE	13.1011.136	3W / cavity 057	50	60	70	30	62	44
3/8 BSP	13.1011.134	4W / cavity 058	50	60	85	30	77	44
#6 SAE	13.1011.135	4W / cavity 058	50	60	85	30	77	44

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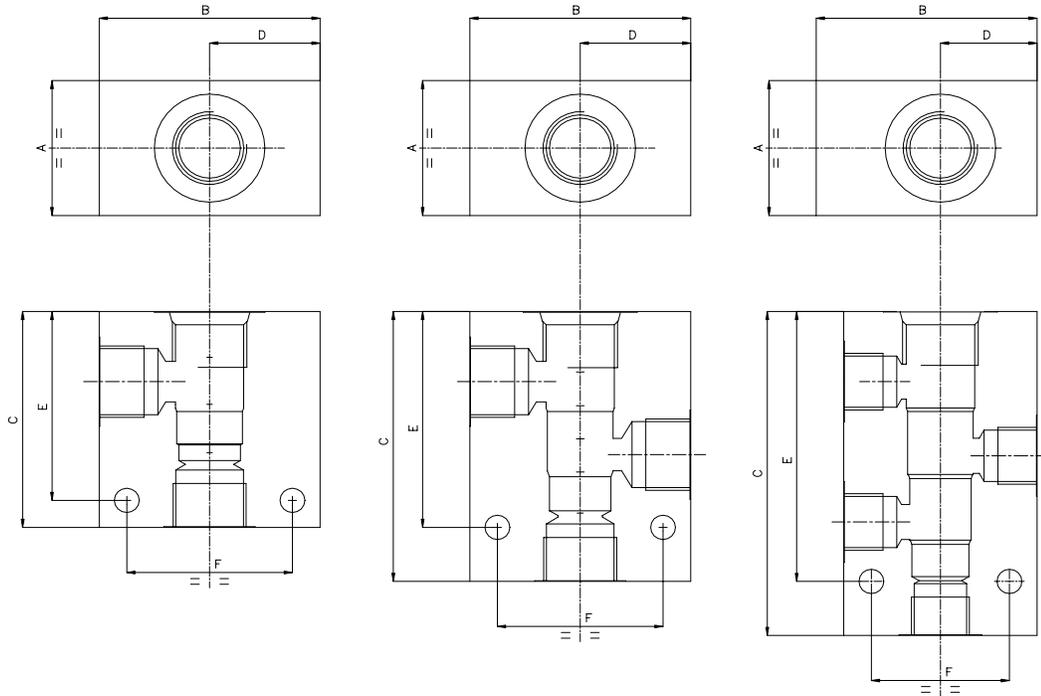
Valve Bodies

2 ways

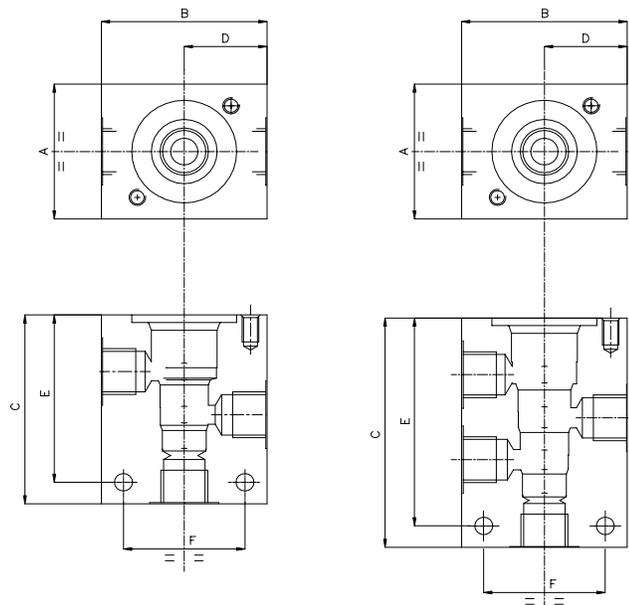
3 ways

4 ways

Standard



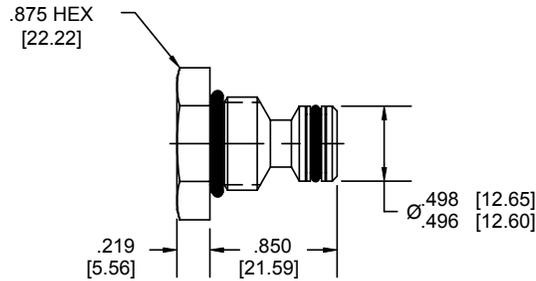
Special (for slip-in style cartridges)



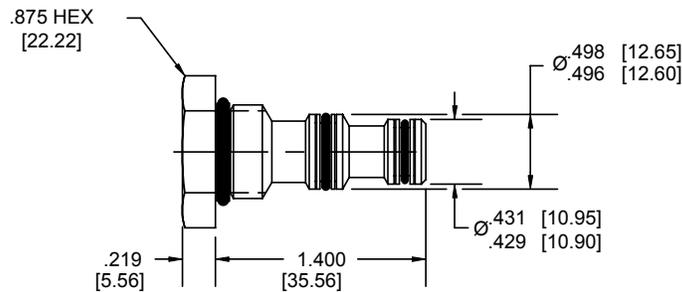
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Mini Series Cavity Plugs

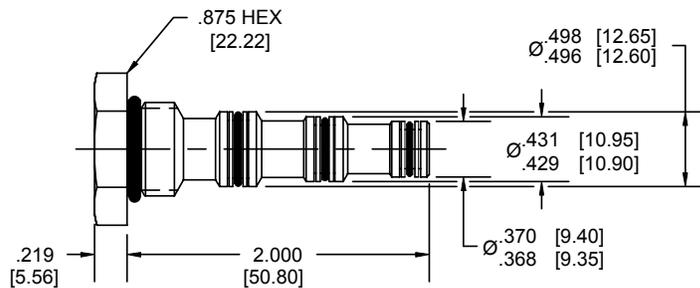
NOTE: DIMENSIONS IN BRACKETS ARE MILLIMETERS



2W 2P CAVITY PLUG
MA SERIES



3W 2P CAVITY PLUG
MC SERIES



4W 2P CAVITY PLUG
MD SERIES

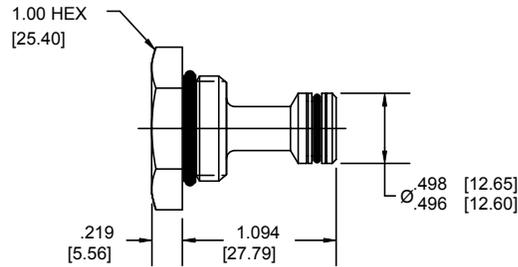
ORDERING INFORMATION

Standard Model Number			Options
2 Way	MA	00	Standard Buna
3 Way	MC	V0	Standard Viton
4 Way	MD		

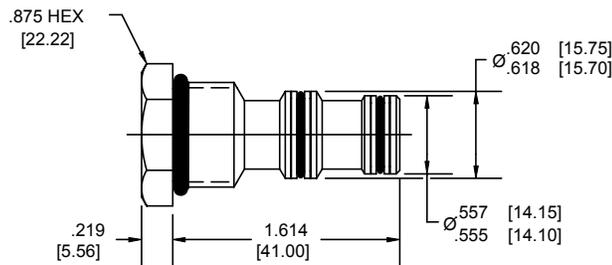
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Power Series Cavity Plugs

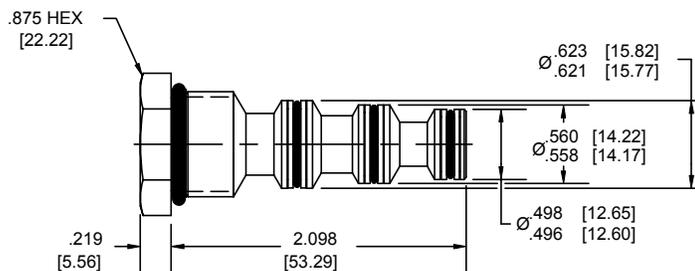
NOTE: DIMENSIONS IN BRACKETS ARE MILLIMETERS



2W 2P CAVITY PLUG
PB SERIES



3W 2P CAVITY PLUG
PP SERIES



4W 2P CAVITY PLUG
PQ SERIES

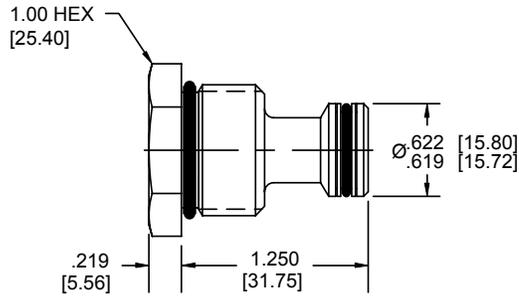
ORDERING INFORMATION

Standard Model Number			Options
2 Way	PB	00	Standard Buna
3 Way	PP	V0	Standard Viton
4 Way	PQ		

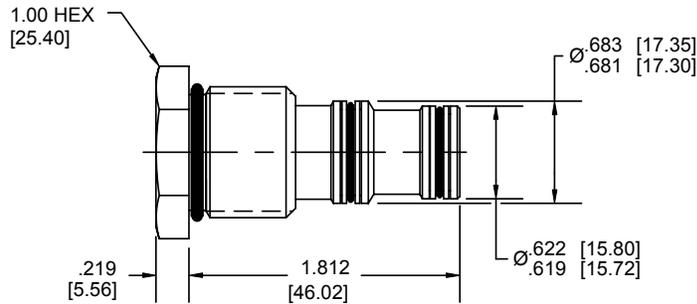
WARNING: the specifications/application data shown in our catalogs and data sheets are intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

Delta Series Cavity Plugs

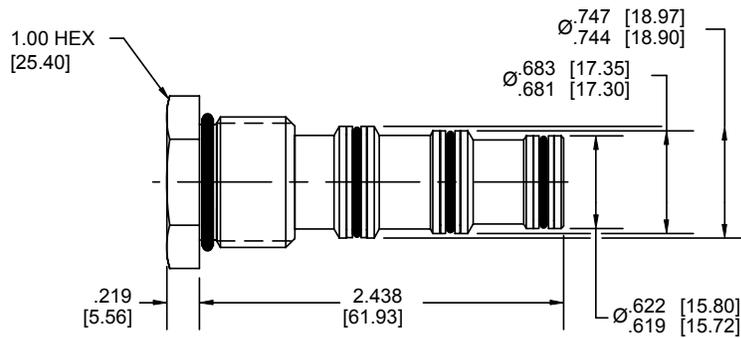
NOTE: DIMENSIONS IN BRACKETS ARE MILLIMETERS



2W 2P CAVITY PLUG
DE SERIES



3W 2P CAVITY PLUG
DF SERIES



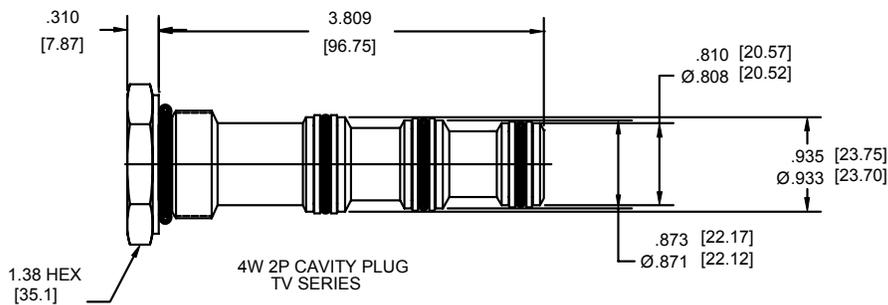
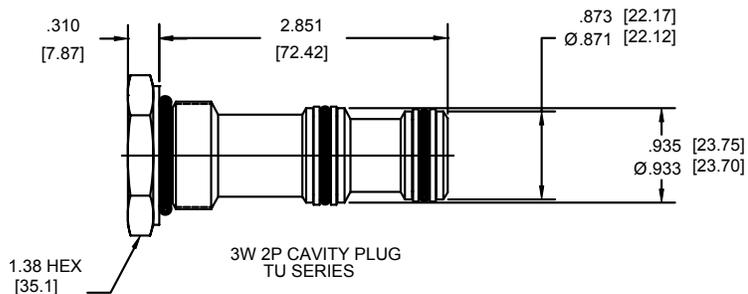
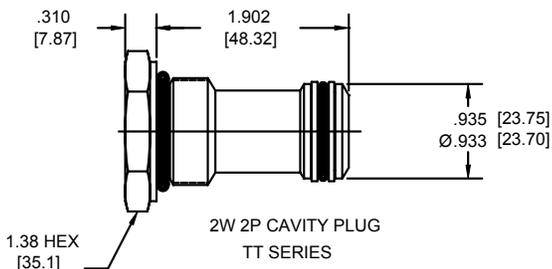
4W 2P CAVITY PLUG
DG SERIES

ORDERING INFORMATION

Standard Model Number			Options
2 Way	DE	00	Standard Buna
3 Way	DF	V0	Standard Viton
4 Way	DG		

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Tecnord Series Cavity Plugs



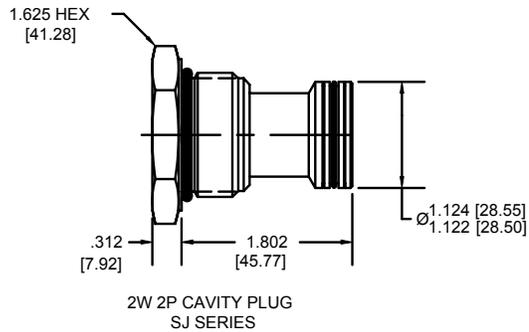
ORDERING INFORMATION

Standard Model Number			Options
2 Way	TT	00	Standard Buna
3 Way	TU	V0	Standard Viton
4 Way	TV		

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Super Series Cavity Plugs

NOTE: DIMENSIONS IN BRACKETS ARE MILLIMETERS



ORDERING INFORMATION

Standard Model Number
2 Way

SJ

00
V0

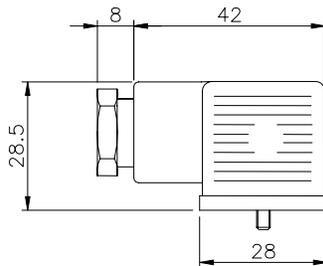
Options

Standard Buna
Standard Viton

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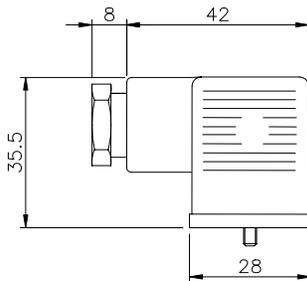
Connectors for the DIN 43650 (Hirschmann) Termination

Standard connector dimensions and with internal VDR resistor against overvoltage peak



TECHNICAL DATA	
Number of poles	2 + Earth
Max operating current	10 A
Contact resistance	< 4 mOhm
Max. wire cross section	1,5 mm ²
Cable diameter	6 – 8 mm
Cable gland size	Pg 9
Protection class	IP 65

Connector with internal full wave rectifier



ORDERING INFORMATION	
Description	Code
Standard	50.1004.002
With VDR resistor	50.1004.025
With full wave rectifier	50.1004.026

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SECTION/Description **Pages**

Cavity Data	224
Standard Coil Data	239
Immersion Proof Coil Data	250
General Cartridge Valve Installation Notes	255
Valve Mnemonic Code	256

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Cavity Data

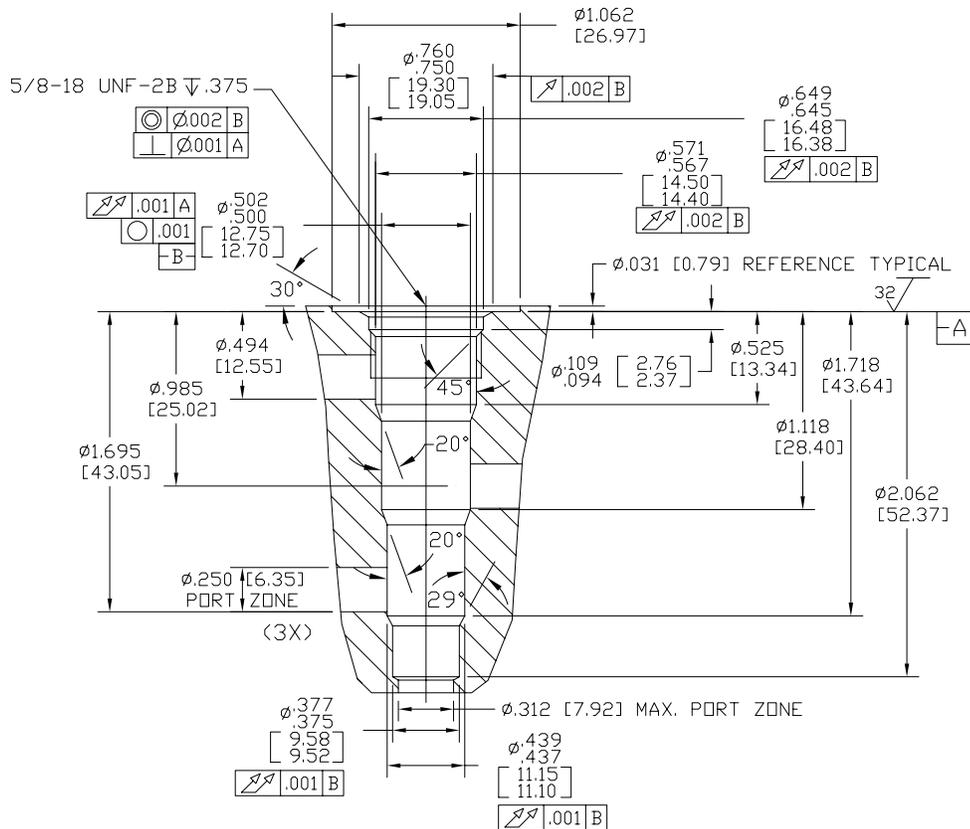
SERIES	SIZE	THREAD SIZE	TOOLS KIT	PAGE
MINI 2 WAY	7	5/8-18 UNF 2-B	40500003	225
MINI 3 WAY	7	5/8-18 UNF 2-B	40500004	226
MINI 4 WAY	7	5/8-18 UNF 2-B	40500006	227
POWER 2 WAY	8	3/4-16 UNF 2-B	40500005	228
POWER 3 WAY	8	3/4-16 UNF 2-B	40500024	229
POWER 4 WAY	8	3/4-16 UNF 2-B	40500029	230
DELTA 2 WAY	10	7/8-14 UNF 2-B	40500000	231
DELTA 3 WAY	10	7/8-14 UNF 2-B	40500001	232
DELTA 4 WAY	10	7/8-14 UNF 2-B	40500002	233
TECNORD 2 WAY	12	1 1/16-12 UNF 2-B	40500032	234
TECNORD 3 WAY	12	1 1/16-12 UNF 2-B	40500034	235
TECNORD 4 WAY	12	1 1/16-12 UNF 2-B	40500035	236
SUPER 2 WAY	16	1 5/16-12 UNF 2-B	40500017	237

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Mini 4W

DESCRIPTION

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



NOTES:

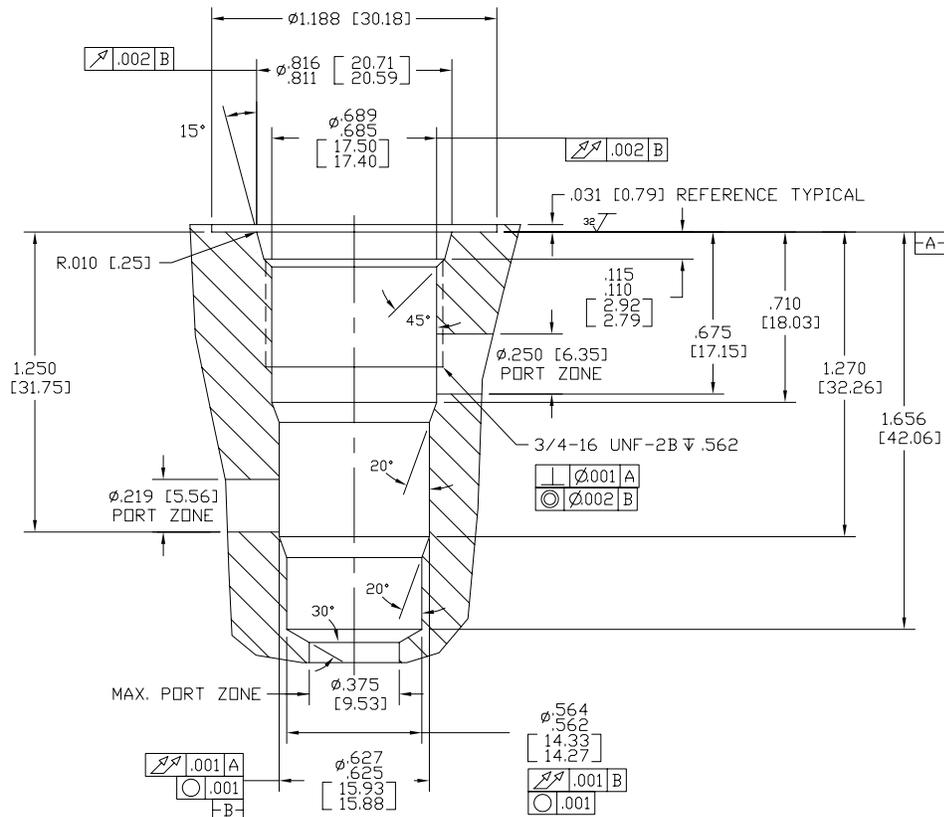
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500006.
- 2.) ALL MACHINED SURFACES TO BE $32\sqrt{\text{ }}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR 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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Power 3W

DESCRIPTION

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



NOTES:

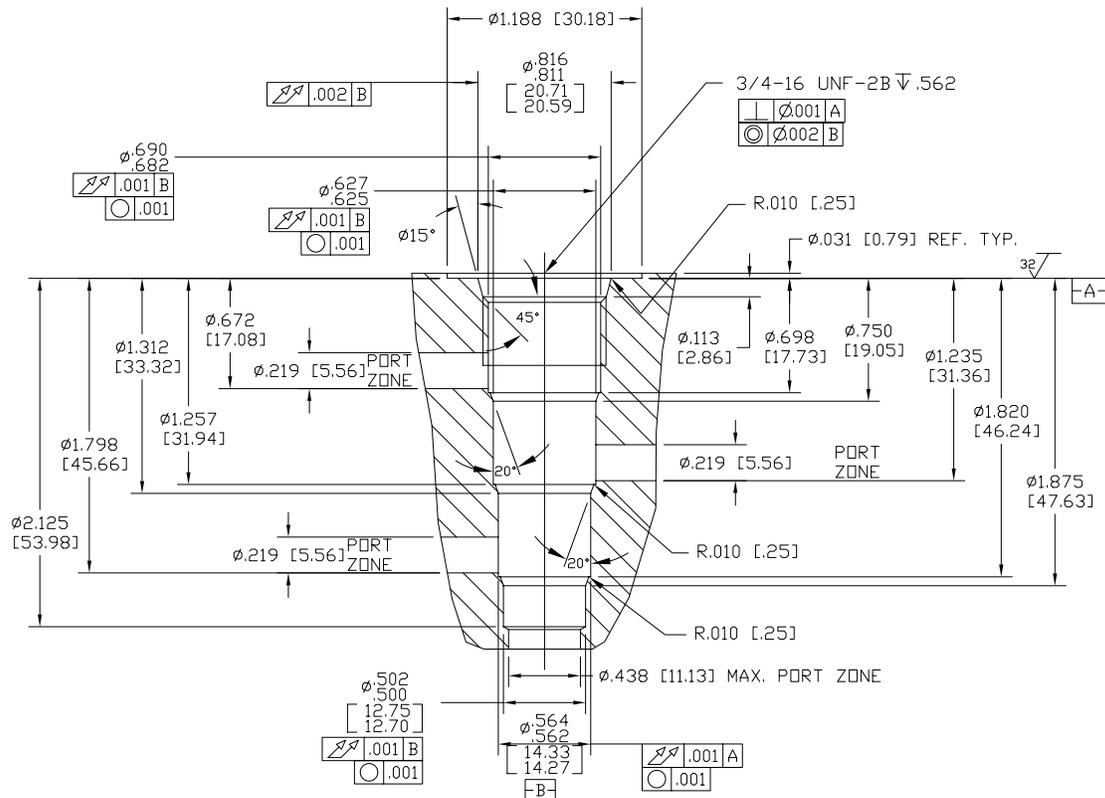
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500024.
- 2.) ALL MACHINED SURFACES TO BE $\sqrt{.001}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR 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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Power 4W

DESCRIPTION

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



NOTES:

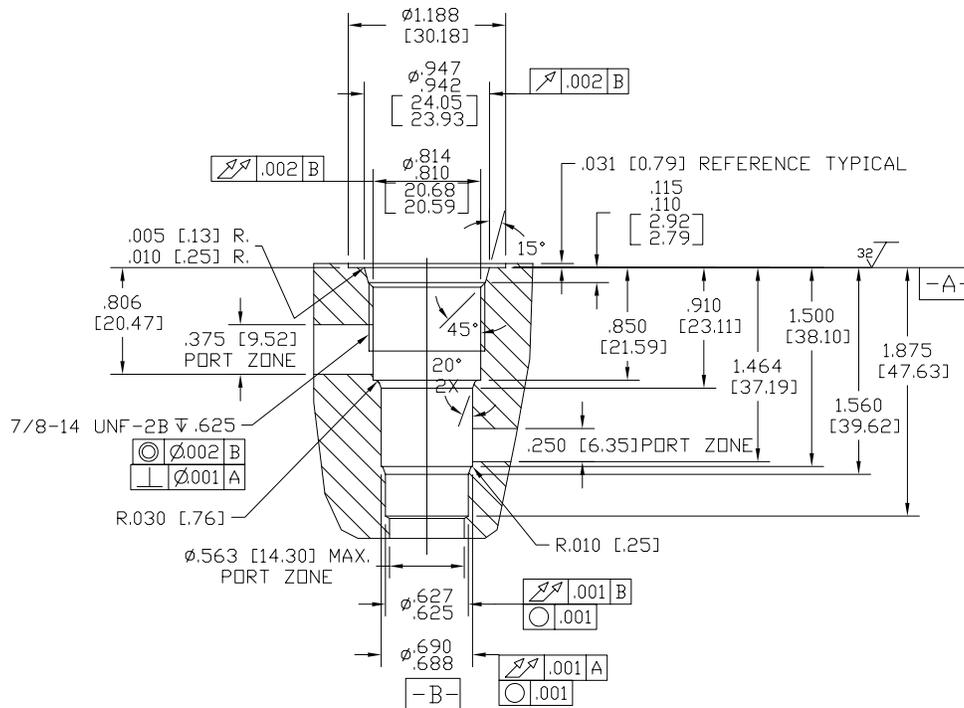
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500029.
- 2.) ALL MACHINED SURFACES TO BE $\sqrt{32}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR 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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Delta 3W

DESCRIPTION

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



NOTES:

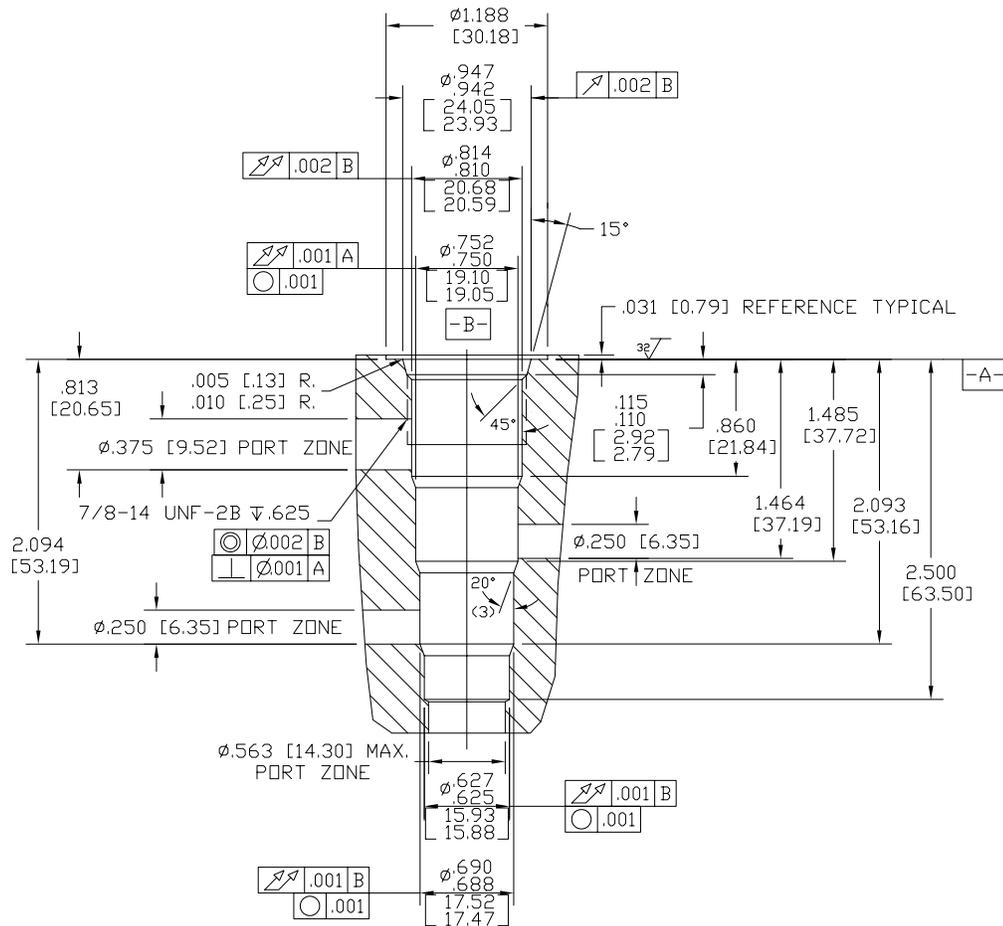
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500001.
- 2.) ALL MACHINED SURFACES TO BE $\sqrt{\text{AA}}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR 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 4W

DESCRIPTION

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



NOTES:

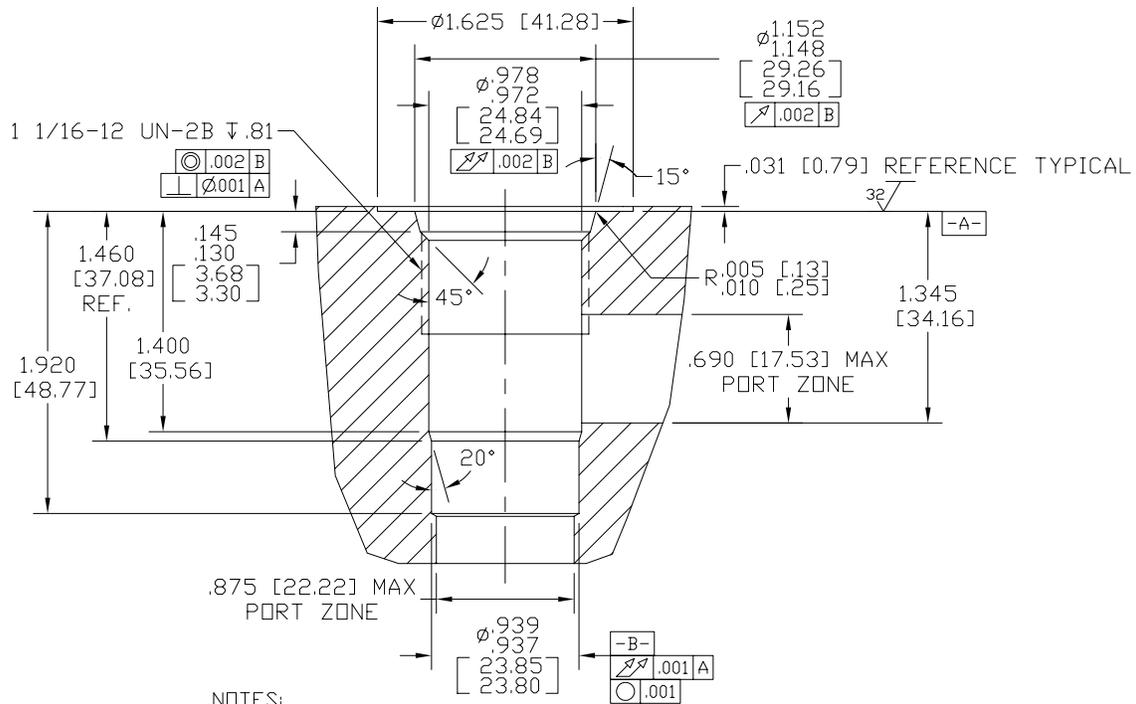
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500002.
- 2.) ALL MACHINED SURFACES TO BE \sqrt{Ra} FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR TO THE SPOTFACE SURFACE. SPOTFACE MUST CLEAN UP TO FULL DIAMETER. IMPROPERLY MACHINED CAVITIES CAN LEAD TO CARTRIDGE MALFUNCTION AND/OR FAILURE FROM DISTORTION.

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Tecnord 2W

DESCRIPTION

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

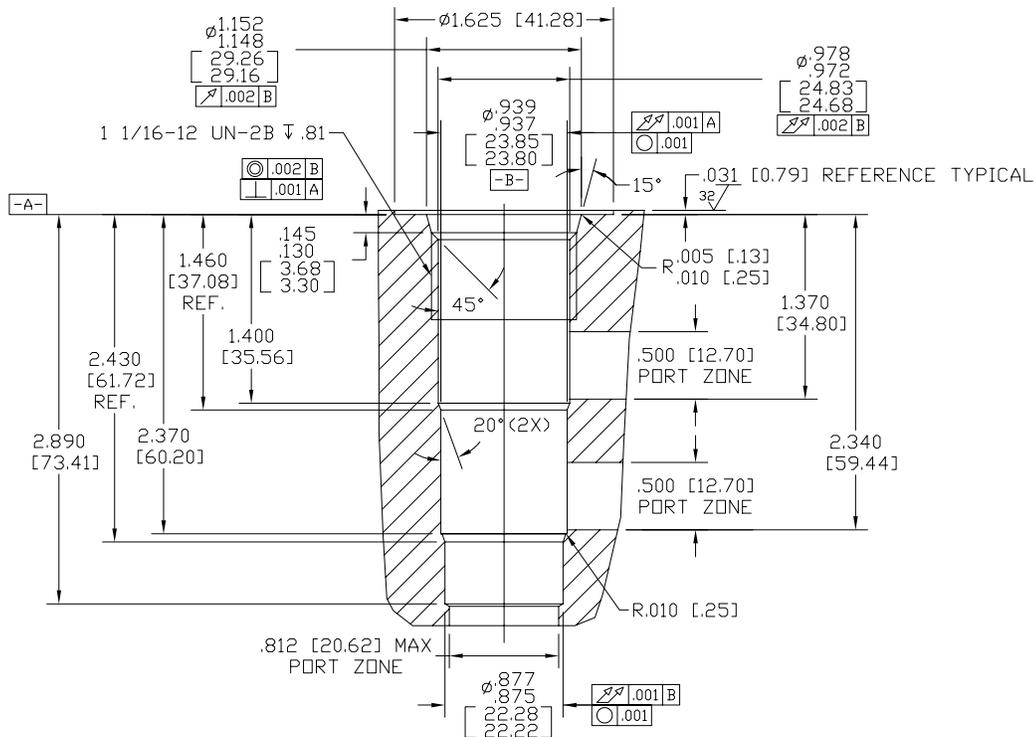


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Tecnord 3W

DESCRIPTION

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



NOTES:

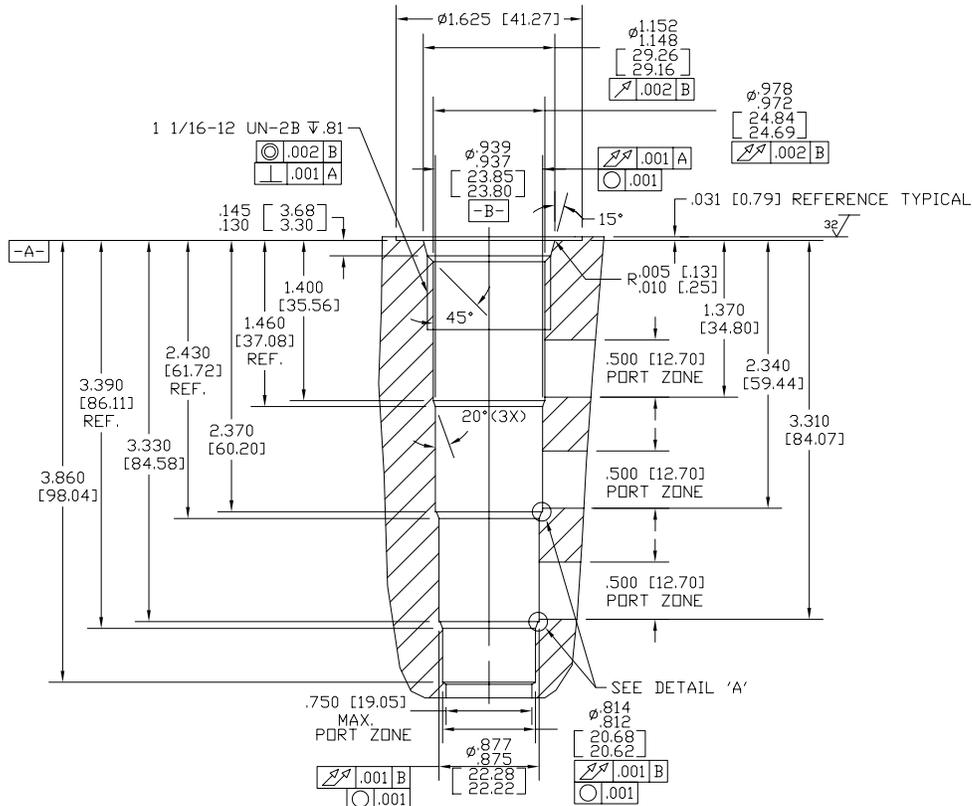
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500034.
- 2.) ALL MACHINED SURFACES TO BE $\sqrt{\text{ }}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR 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 4W

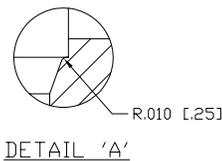
DESCRIPTION

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 $\sqrt{32}$ 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.

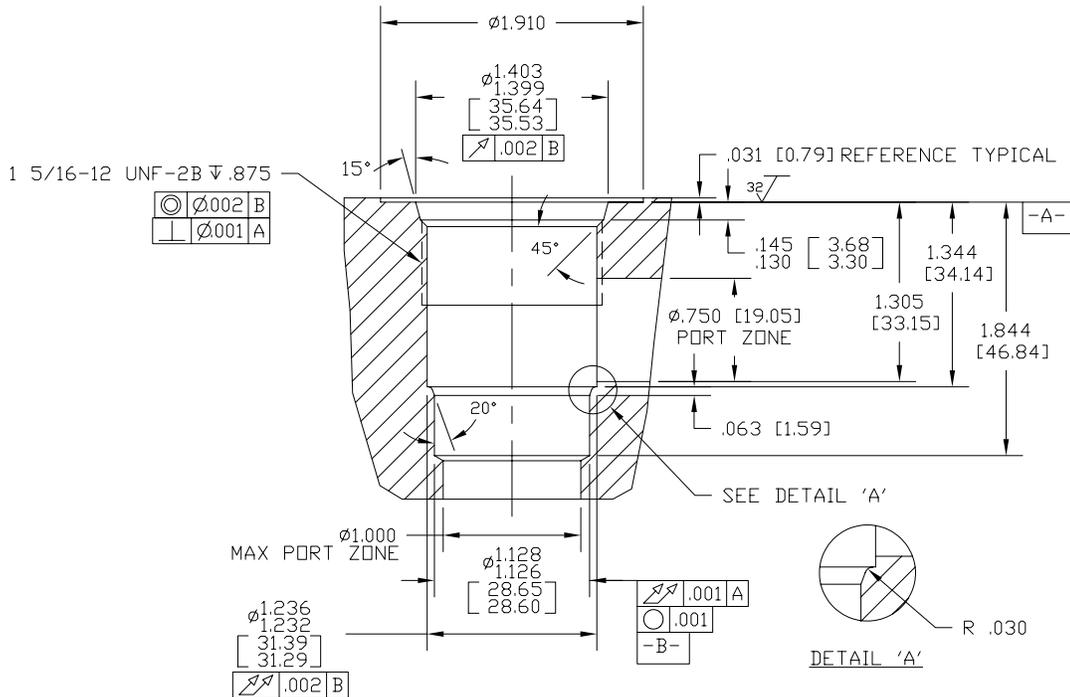


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Super 2W

DESCRIPTION

16 Size, 1 5/16-12 thread "Super" series



NOTES:

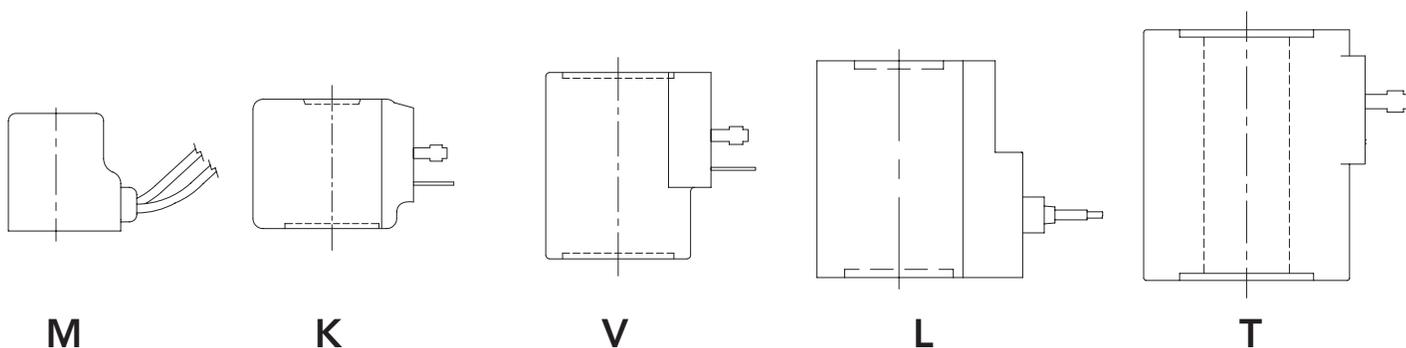
- 1.) CAVITY CAN BE MACHINED WITH DELTA FORM TOOL #40500017.
- 2.) ALL MACHINED SURFACES TO BE $32\sqrt{\text{ }}$ FINISH OR BETTER, EXCLUDING THREADS.
- 3.) IT IS VERY IMPORTANT THAT VALVE CAVITIES MEET ALL DIMENSIONAL AND QUALITY STANDARDS OF CONCENTRICITY AND PERPENDICULARITY. THREADS MUST BE PERPENDICULAR 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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Coil Data

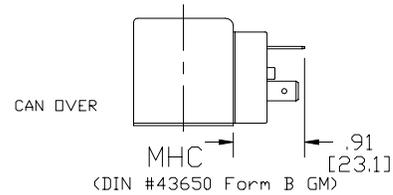
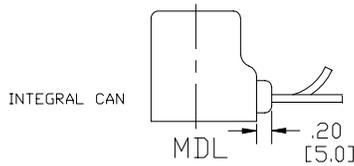
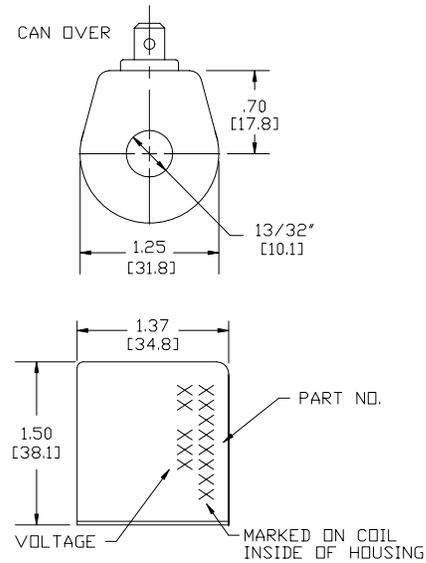
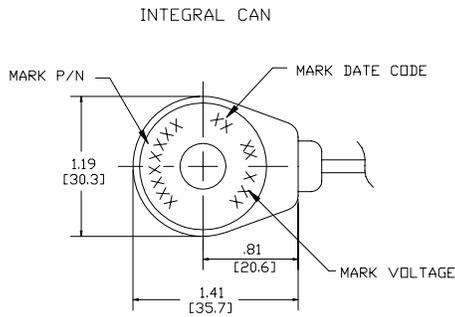
STANDARD COILS

TYPE	ID	WIDTH	HEIGHT	PAGE
M	10.1	31.8	37.3	240
K	13.2	36	38.5	242
V	13.2	37.5	50	244
L	16.1	37.5	50	246
T	19.1	46	56	248

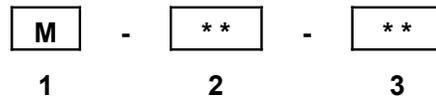


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Standard "M" Type Coils



Ordering information



1 MODEL	2 TERMINATION	3 VOLTAGE
M (coil type)	DL - Double lead HC - DIN 43650 (Hirschmann)	12 -12 Vdc 24 - 24 Vdc 22 - 220 VAC

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Standard "M" Type Coils

Coil Model Numbers

Termination	MDL	MHC		
Description	Double lead	Hirschmann connector	Lead wire colour	AC Voltage range
Voltage / Amp	12 V / 1,7 A	12 V / 1,7 A	Yellow	
Voltage / Amp	24 V / 0,86 A	24 V / 0,86 A	Blue	
Voltage / Amp		220 VAC / 0,10 A	Black / White	200-230 VAC

Specifications:

Wattage: 20 Watts nominal

Duty rating: continuous duty +/- 10% rated voltage at 70°F (21°C) ambient.
Intermittent duty for higher ambient temperature

Minimum current for actuation: 80% of rated current at room temperature.

Magnet wire insulation: class H (200°C)

Heat insulation: class H (180°C)

Ambient temperature range: -30°C - +60°C

Protection degree: IP 65

Lead wires: 600 Volt rating, with strain relief

Encapsulating material: glass filled polyester, resistant to moisture, caustic solutions, fungus and vibration

AC coils are rated 50/60 Hz and incorporate integrally molded full wave rectifiers which are rated for reverse voltage peaks of 1000 volts maximum

Approximate coil weight: .30 lbs / .14 Kg

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Standard "K" Type Coils

Features:

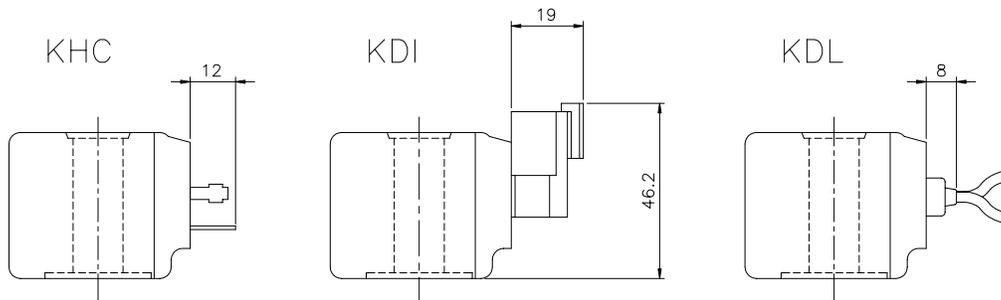
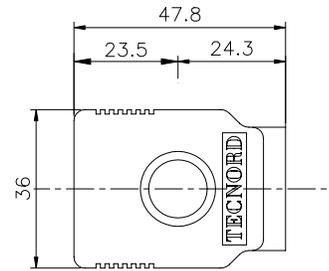
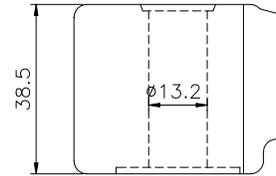
One piece water resistant encapsulated design.

Numerous terminals and voltages available

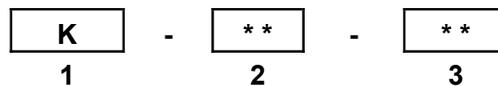
Internal arc suppression diodes available on request

Color identification: black

Note: for coil selection in extreme conditions, please look at our immersion proof "I" coils.



Ordering information



1 MODEL	2 TERMINATION	3 VOLTAGE
K (coil type)	DL - Double lead HC - DIN 43650 (Hirschmann) DI - Deutsch – Integral DT04-2P	12 - 12 VDC 24 - 24 VDC 22 - 220 VAC without internal rectifier For HC termination only

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Standard "K" Type Coils

Coil Model Numbers

<i>Termination</i>	<i>KDL</i>	<i>KHC</i>	<i>KDI</i>
<i>Description</i>	<i>Double lead</i>	<i>Hirschmann connector</i>	<i>Deutsch Integral</i>
<i>Voltage / Amp</i>	12 V / 1,6 A	12 V / 1,6 A	12 V / 1,6 A
<i>Voltage / Amp</i>	24 V / 0,78 A	24 V / 0,78 A	24 V / 0,78 A
<i>Voltage / Amp</i>		220 VAC rectified 0,10 A	

Specifications:

Wattage: 21 Watts nominal

Duty rating: continuous duty +/- 10% rated voltage at 120°F (49°C) ambient

Minimum current for actuation: 80% of rated current at room temperature

Magnet wire insulation: class H (200°C)

Heat insulation: class H (180°C)

Ambient temperature range: -30°C - +60°C

Protection degree: IP 65

Lead wires: 600 Volt rating, with strain relief

Encapsulating material: glass filled polyester, resistant to moisture, caustic solutions, fungus and vibration

AC coils do not include the rectifier, supply voltage must be externally rectified

Approximate coil weight: .42 lbs / .19 Kg

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Standard "V" Type Coils

Features:

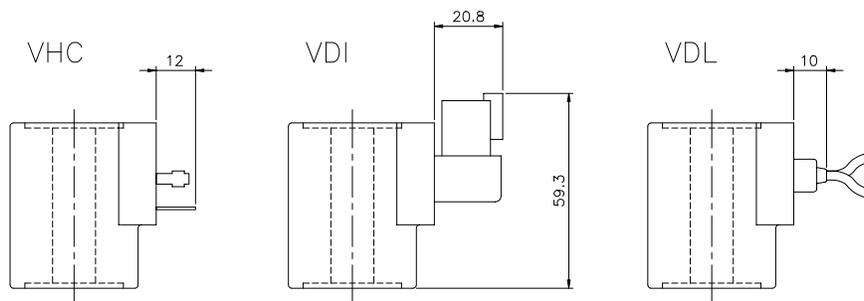
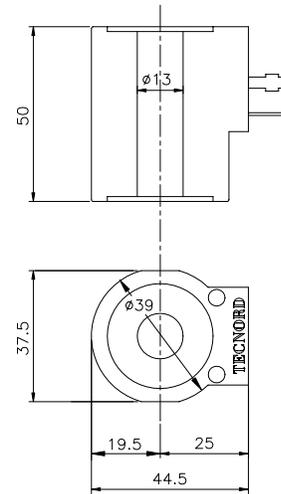
One piece water resistant encapsulated design.

Numerous terminals and voltages available

Internal arc suppression diodes available on request

Color identification: black

Note: for coil selection in extreme conditions, please look at our immersion proof "I" coils.



Ordering information



1 MODEL	2 TERMINATION	3 VOLTAGE
V (coil type)	DL - Double lead HC - DIN 43650 (Hirschmann) DI - Deutsch – Integral DT04-2P	12 - 12 VDC 24 - 24 VDC 22 - 220 VAC without internal rectifier For HC termination 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.

Standard "V" Type Coils

Coil Model Numbers

<i>Termination</i>	<i>VDL</i>	<i>VHC</i>	<i>VDI</i>
<i>Description</i>	<i>Double lead</i>	<i>Hirschmann connector</i>	<i>Deutsch Integral</i>
<i>Voltage / Amp</i>	12 V / 2,03 A	12 V / 2,03 A	12 V / 2,03 A
<i>Voltage / Amp</i>	24 V / 1,01 A	24 V / 1,01 A	24 V / 1,01 A
<i>Voltage / Amp</i>		220 VAC rectified 0,11 A	

Specifications:

Wattage: 24 Watts nominal

Duty rating: continuous duty +/- 10% rated voltage at 120°F (49°C) ambient

Minimum current for actuation: 80% of rated current at room temperature

Magnet wire insulation: class H (200°C)

Heat insulation: class H (180°C)

Ambient temperature range: -30°C - +60°C

Protection degree: IP 65

Lead wires: 600 Volt rating, with strain relief

Encapsulating material: glass filled polyester, resistant to moisture, caustic solutions, fungus and vibration

AC coils do not include the rectifier, supply voltage must be externally rectified

Approximate coil weight: .56 lbs / .25 Kg

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Standard "L" Type Coils

Features:

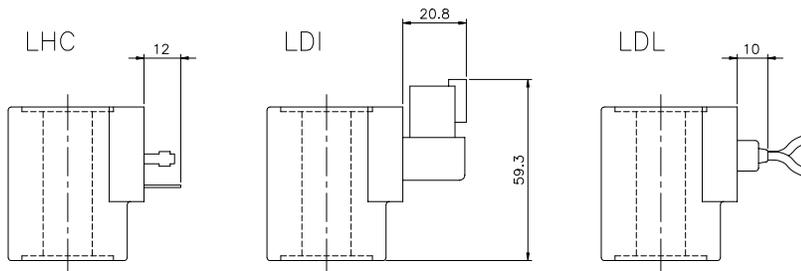
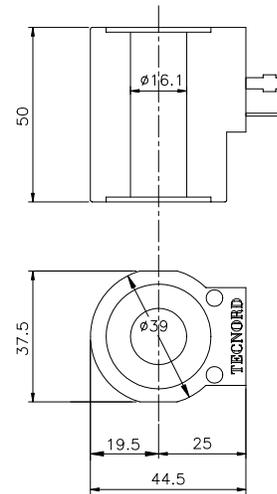
One piece water resistant encapsulated design.

Numerous terminals and voltages available

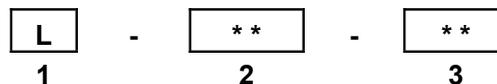
Internal arc suppression diodes available on request

Color identification: black

Note: for coil selection in extreme conditions, please look at our immersion proof "I" coils.



Ordering information



1 MODEL	2 TERMINATION	3 VOLTAGE
L (coil type)	DL - Double lead HC - DIN 43650 (Hirschmann) DI - Deutsch – Integral DT04-2P	12 - 12 VDC 24 - 24 VDC 22 - 220 VAC without internal rectifier For HC termination only

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Standard "L" Type Coils

Coil Model Numbers

<i>Termination</i>	<i>LDL</i>	<i>LHC</i>	<i>LDI</i>
<i>Description</i>	<i>Double lead</i>	<i>Hirschmann connector</i>	<i>Deutsch Integral</i>
<i>Voltage / Amp</i>	12 V / 2,03 A	12 V / 2,03 A	12 V / 2,03 A
<i>Voltage / Amp</i>	24 V / 1,01 A	24 V / 1,01 A	24 V / 1,01 A
<i>Voltage / Amp</i>		220 VAC rectified 0,11 A	

Specifications:

Wattage: 24 Watts nominal

Duty rating: continuous duty +/- 10% rated voltage at 120°F (49°C) ambient

Minimum current for actuation: 80% of rated current at room temperature

Magnet wire insulation: class H (200°C)

Heat insulation: class H (180°C)

Ambient temperature range: - 30°C - +60°C

Protection degree: IP 65

Lead wires: 600 Volt rating, with strain relief

Encapsulating material: glass filled polyester, resistant to moisture, caustic solutions, fungus and vibration

AC coils do not include the rectifier, supply voltage must be externally rectified

Approximate coil weight: .69 lbs / .31 Kg

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Standard "T" Type Coils

Features:

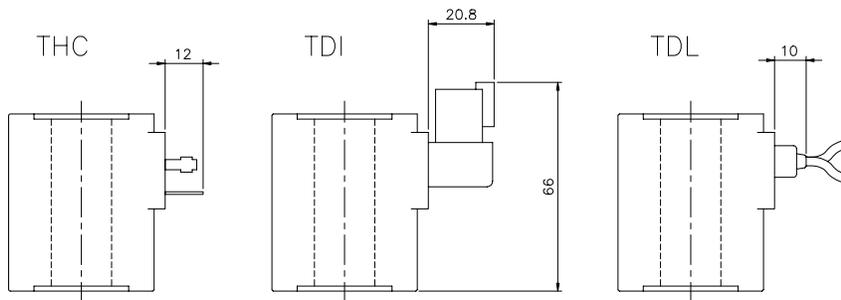
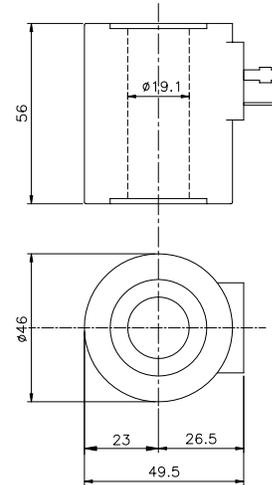
One piece water resistant encapsulated design.

Numerous terminals and voltages available

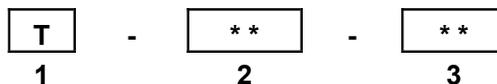
Internal arc suppression diodes available on request

Color identification: black

Note: for coil selection in extreme conditions, please look at our immersion proof "I" coils.



Ordering information



1 MODEL	2 TERMINATION	3 VOLTAGE
T (coil type)	DL - Double lead HC - DIN 43650 (Hirschmann) DI - Deutsch – Integral DT04-2P	12 - 12 VDC 24 - 24 VDC 22 - 220 VAC without internal rectifier For HC termination only

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Standard "T" Type Coils

Coil Model Numbers

<i>Termination</i>	<i>TDL</i>	<i>THC</i>	<i>TDI</i>
<i>Description</i>	<i>Double lead</i>	<i>Hirschmann connector</i>	<i>Deutsch Integral</i>
<i>Voltage / Amp</i>	12 V / 2,26 A	12 V / 2,26 A	12 V / 2,26 A
<i>Voltage / Amp</i>	24 V / 1,13 A	24 V / 1,13 A	24 V / 1,13 A
<i>Voltage / Amp</i>		220 VAC rectified 0,11 A	

Specifications:

Wattage: 27 Watts nominal

Duty rating: continuous duty +/- 10% rated voltage at 120°F (49°C) ambient

Minimum current for actuation: 80% of rated current at room temperature

Magnet wire insulation: class H (200°C)

Heat insulation: class H (180°C)

Ambient temperature range: -30°C - +60°C

Protection degree: IP 65

Lead wires: 600 Volt rating, with strain relief

Encapsulating material: glass filled polyester, resistant to moisture, caustic solutions, fungus and vibration

AC coils do not include the rectifier, supply voltage must be externally rectified

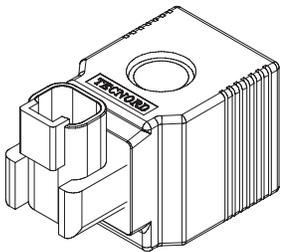
Approximate coil weight: .78 lbs / .35 Kg

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Coil Data

IMMERSION PROOF COILS

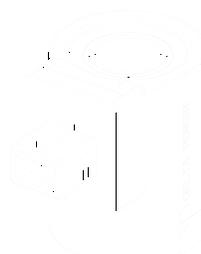
TYPE	ID	WIDTH	HEIGHT	PAGE
PJ	1/2" [13]	1.42" [36.0]	1.52" [38.5]	251
PI	1/2" [13]	1.48" [37.5]	1.70" [43.1]	252
DI	1/2" [13]	1.48" [37.5]	1.97" [50]	253
LI	5/8" [16]	1.48" [37.5]	1.97" [50]	254



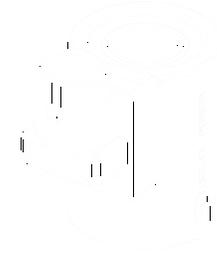
PJ



PI



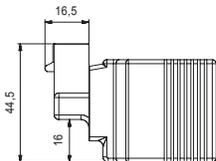
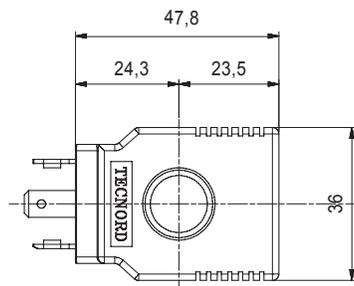
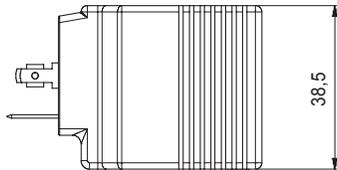
DI



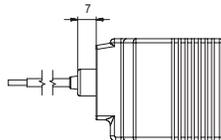
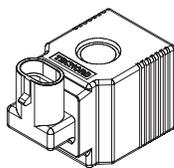
LI

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.

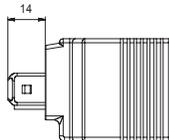
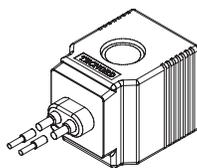
Coil Data - "P" Type "J" Coil



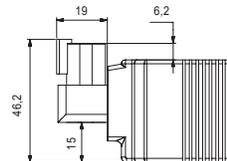
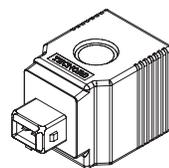
JA



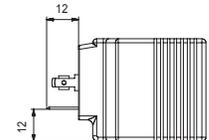
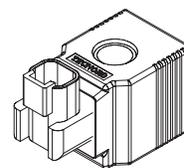
JL



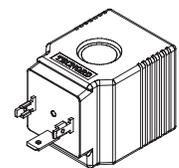
JJ



JD



JH



DESCRIPTION

1/2 inch (13 mm) Immersion Proof Coil.
Color identification: black

FEATURES

One piece encapsulated design that is:

- Weatherproof
- Immersion proof
- Thermal shock/dunk tested
- No external metal shell
- Internal arc suppression diode available on request

COIL SPECIFICATION

Wattage	21 Watts Nominal
Duty Rating	Continuous Duty $\pm 10\%$ rated voltage at 120°F (49°C) ambient
Min Current for Actuation	80% of rated current at room temperature
Magnet Wire Class	H
Heat insulation Class	F
Ambient Temperature Range	-30° to 60°C
Encapsulation Material	Thermo-Plastic, resistant to moisture, caustic solutions, fungus, and vibrations

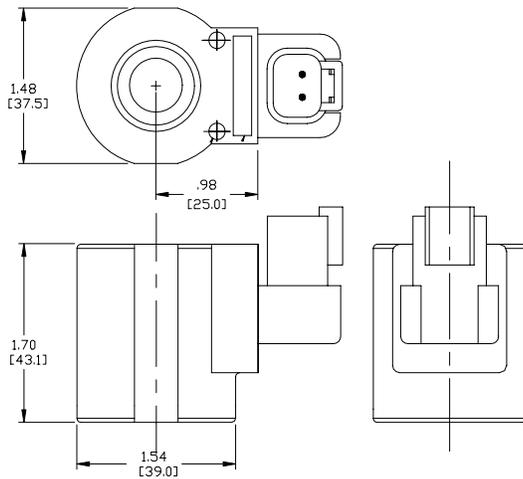
ORDERING INFORMATION

	P - - - -		
	TERMINATIONS		VOLTAGE
"J" Coil AMP Superseal - Integral	JA	12	12 Vdc / 6.8 Ohm
"J" Coil Double lead	JL	24	24 Vdc / 27 Ohm
"J" Coil AMP Jr. Timer - Integral	JJ	26	26 Vdc / 32 Ohm
"J" Coil Deutsch - Integral DT04-2P	JD		
"J" Coil DIN 43650 (Hirschmann)	JH		

Approximate Coil Weight: .42 lbs (.19 kg)

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Immersion Proof "P" Type "I" Coils



DESCRIPTION

1/2 inch (13mm) I.D. Immersion Proof Coil.

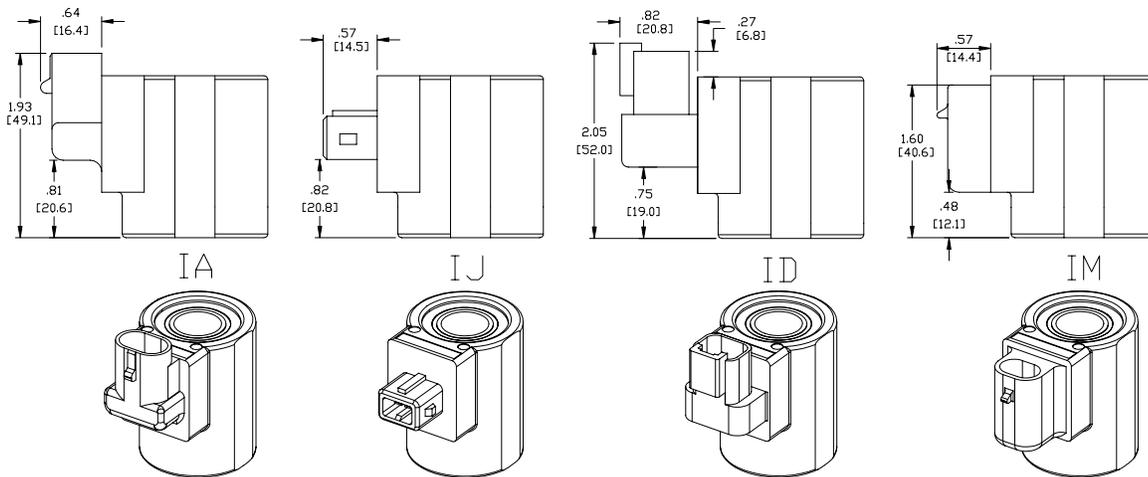
FEATURES

One piece encapsulated design that is:

- Weatherproof
- Immersion proof (IP 69 protection class)
- Thermal shock / dunk tested
- No external metal shell

COIL SPECIFICATIONS

Wattage	20 Watts Nominal
Duty Rating	Continuous Duty +/- 10% rated voltage at 120° F (49°C) ambient
Min Current for Actuation	80% of rated current at room temp.
Magnet Wire Class	H
Heat insulation Class	H
Ambient Temperature Range	-30° to 60° C
Encapsulation Material	Thermo-Plastic, resistant to moisture, caustic solutions, fungus, and vibrations



ORDERING INFORMATION

TERMINATIONS	P	-	-	VOLTAGE
AMP Superseal - Integral	IA		12	12 VDC / 1.6 Amp
Deutsch – Integral DT04-2P	ID		24	24 VDC / .80 Amp
AMP Jr. Timer - Integral	IJ			
Metri-Pack - Integral	IM			

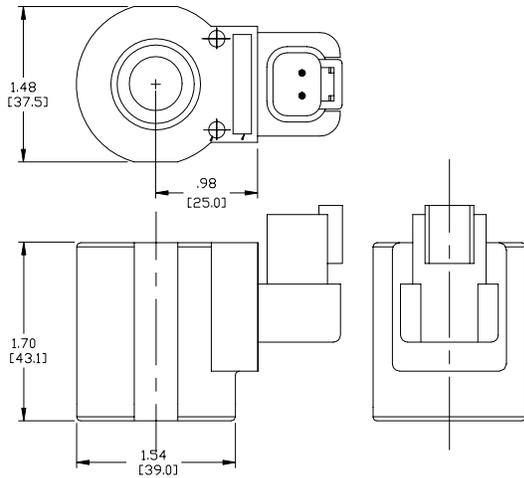
NOTE: Pull type valves require nut 36202070 in lieu of standard nut.
Push type valves require nut 36202071 in lieu of standard nut.

Approximate Coil Weight: .43 lbs. (.19 kg)

Patent Pending

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.

Immersion Proof "D" Type "I" Coils



DESCRIPTION

1/2 inch (13mm) I.D. Immersion Proof Coil.

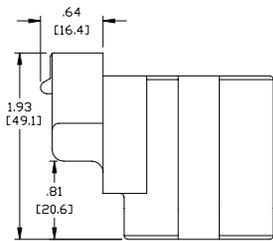
FEATURES

One piece encapsulated design that is:

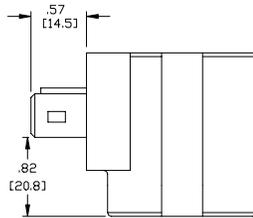
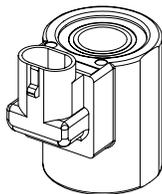
- Weatherproof
- Immersion proof (IP 69 protection class)
- Thermal shock / dunk tested
- No external metal shell

COIL SPECIFICATIONS

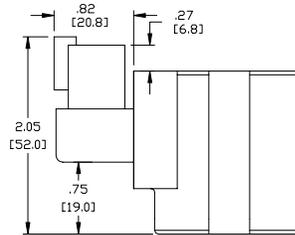
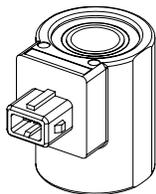
Wattage	24 Watts Nominal
Duty Rating	Continuous Duty +/- 10% rated voltage at 120° F (49°C) ambient
Min Current for Actuation	80% of rated current at room temp.
Magnet Wire Class	H
Heat insulation Class	H
Ambient Temperature Range	-30° to 60° C
Encapsulation Material	Thermo-Plastic, resistant to moisture, caustic solutions, fungus, and vibrations



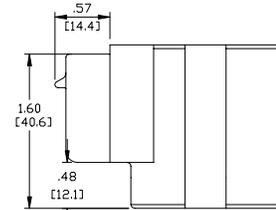
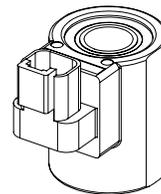
IA



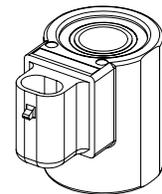
IJ



ID



IM



ORDERING INFORMATION

D - - -

TERMINATIONS

- AMP Superseal - Integral
- Deutsch – Integral DT04-2P
- AMP Jr. Timer - Integral
- Metri-Pack - Integral

- IA
- ID
- IJ
- IM

VOLTAGE

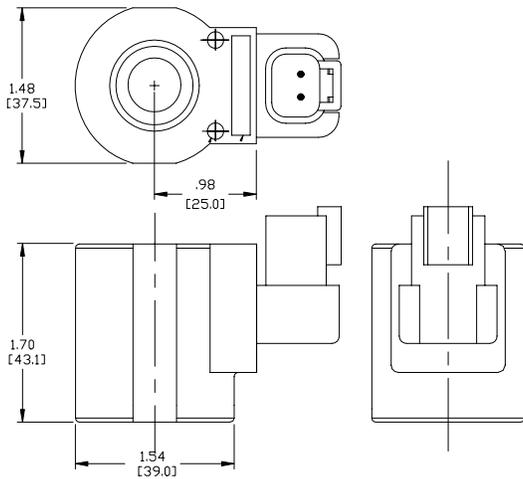
- 12
 - 24
- 12 VDC / 2.0 Amp
24 VDC / 1.0 Amp

NOTE: Pull type valves require nut 36202070 in lieu of standard nut.
Push type valves require nut 36202071 in lieu of standard nut.

Approximate Coil Weight: .49 lbs. (.22 kg)

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Immersion Proof "L" Type "I" Coils



DESCRIPTION

5/8 inch (16mm) I.D. Immersion Proof Coil.

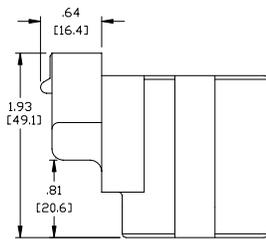
FEATURES

One piece encapsulated design that is:

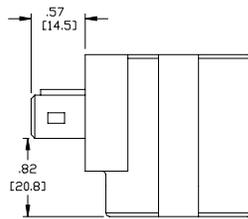
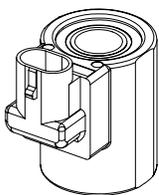
- Weatherproof
- Immersion proof (IP 69 protection class)
- Thermal shock / dunk tested
- No external metal shell

COIL SPECIFICATIONS

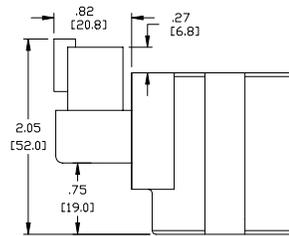
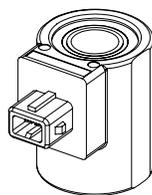
Wattage	26 Watts Nominal
Duty Rating	Continuous Duty +/- 10% rated voltage at 120°F (49°C) ambient
Min Current for Actuation	80% of rated current at room temp.
Magnet Wire Class	H
Heat insulation Class	H
Ambient Temperature Range	-30° to 60°C
Encapsulation Material	Thermo-Plastic, resistant to moisture, caustic solutions, fungus, and vibrations



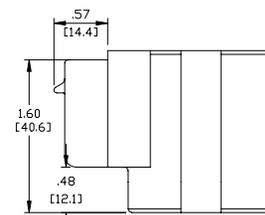
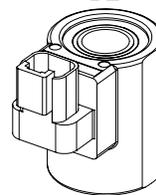
IA



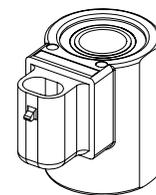
IJ



ID



IM



ORDERING INFORMATION

L - - -

TERMINATIONS

AMP Superseal - Integral
 Deutsch - Integral DT04-2P
 AMP Jr. Timer - Integral
 Metri-Pack - Integral

IA
 ID
 IJ
 IM

VOLTAGE

12 VDC / 2.2 Amp
 24 VDC / 1.1 Amp

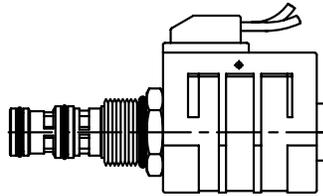
NOTE: Pull type valves require nut 36202070 in lieu of standard nut.
 Push type valves require nut 36202071 in lieu of standard nut.

Approximate Coil Weight: .49 lbs. (.22 kg)

Patent Pending

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General Cartridge Valve Installation Notes



CARTRIDGES

Inspect the cartridge to assure there is no external contaminant present.

Check O-rings and back-up rings to assure they are intact and in the correct position. The O-rings should always be toward the high pressure port or between doubled back-up rings on bi-directional applications.

COILS

It is sometimes easier to remove the coil from the cartridge valve to install terminations or make connections with conduit, etc. If this is the case, reinstall the coil by tightening the coil nut to 4-6 ft lbs per spec sheet. CAUTION: DO NOT OVER TORQUE
Tube will be stretched and damaged, causing valve to fail.

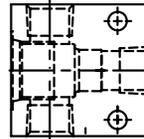


VALVE BODIES

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.

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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")

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
4 Way	D	Q	G	V	N

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
 MCB = MAN NC DETENT
 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 solenoid, flow range, or pressure range. Pressure or flow is specified as a range or a particular setting.

EXAMPLE:
 DL12 = DUAL LEAD 12VDC
 HC24 = HIRSCHMANN 24VDC
 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

1 M
2 P
3 R
4 S
5 V
6 V
7 M
8 H
9 C
10 1
11 2
12 S

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