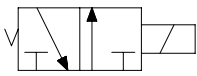
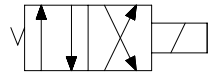
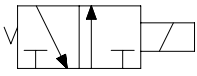
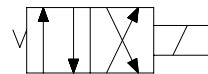


**Transmission & Brake Spool Valves**

**Screw-in style**

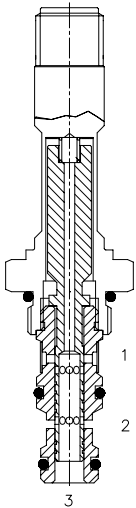
	<b>GPM</b>	<b>PSI</b>	<b>LPM</b>	<b>BAR</b>	<b>MODEL</b>	<b>CAVITY</b>	<b>PAGE</b>
	2	1000	8	70	TC-S3A	5/8" - 18	186
	6	1000	23	70	TF-S3A	7/8" - 14	188
	6	1000	23	70	TF-S3D	7/8" - 14	190
	5	1000	20	70	TG-S4A	7/8" - 14	192

**Slip-in style, flanged retained**

	<b>GPM</b>	<b>PSI</b>	<b>LPM</b>	<b>BAR</b>	<b>MODEL</b>	<b>CAVITY</b>	<b>PAGE</b>
	6	1000	23	70	IF-S3A	special	194
	6	1000	23	70	IF-S3D	special	196
	5	1000	20	70	IG-S4A	special	198

**WARNING:** The specifications/application data shown in our catalogs and data sheets are intended only 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.

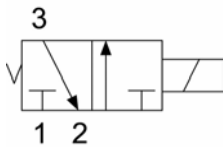
**OPERATION**

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.

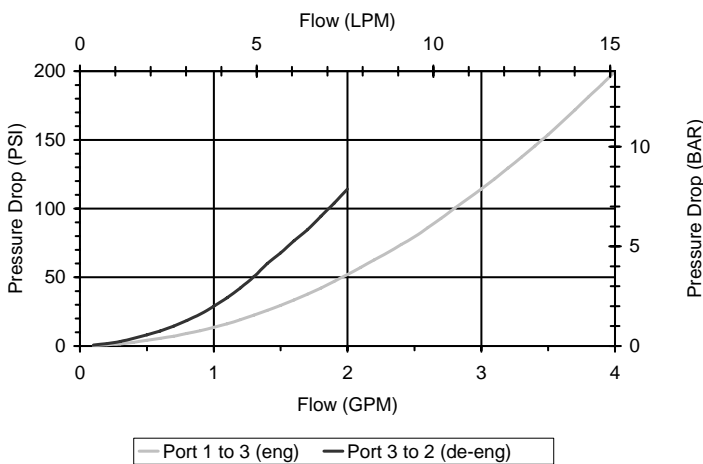
**HYDRAULIC SYMBOL**



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)

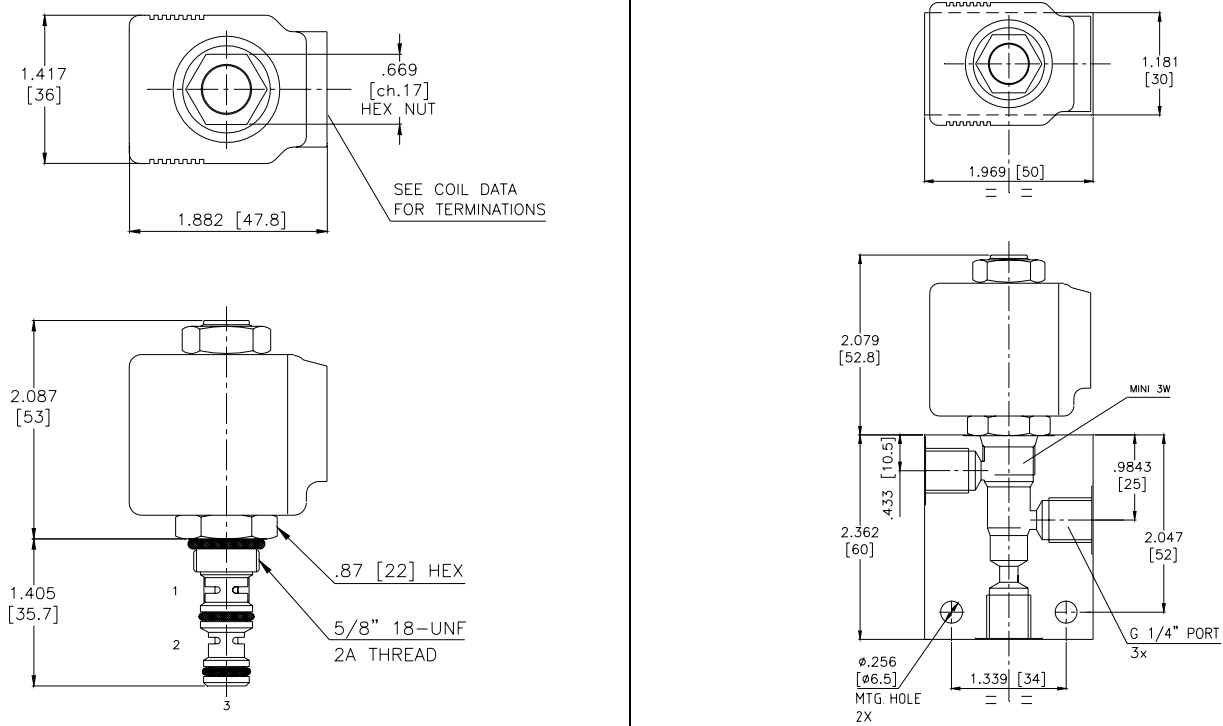


**VALVE SPECIFICATIONS**

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

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**DIMENSIONS**



**ORDERING INFORMATION**

TC-S3A - - - -

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

**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 without internal rectifier

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

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

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

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

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

**TF-S3A Direct Acting Spool, 3 Way 2 Position, Transmission & Brake**

**DESCRIPTION**

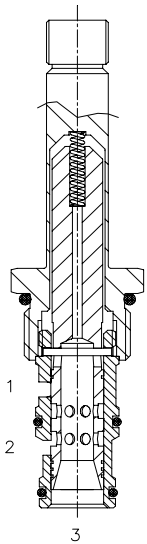
10 size, 7/8-14 thread, "Delta" series, solenoid operated, 3 way 2 position, spool valve.

**OPERATION**

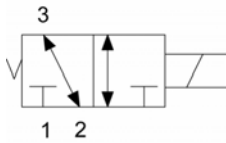
When de-energized the DF-S3A allows flow from (3) to (2) and blocks flow at port (1). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

**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.

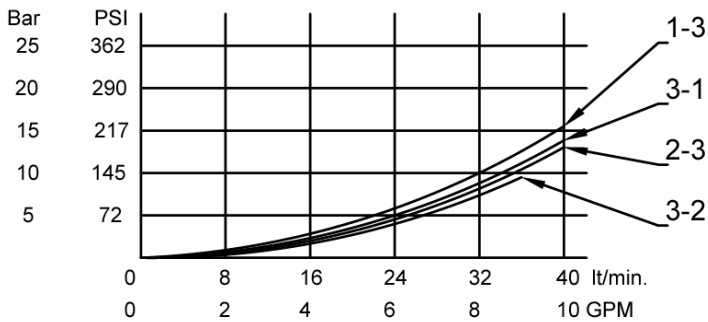


**HYDRAULIC SYMBOL**



**PERFORMANCE**

Actual Test Data (Cartridge Only)



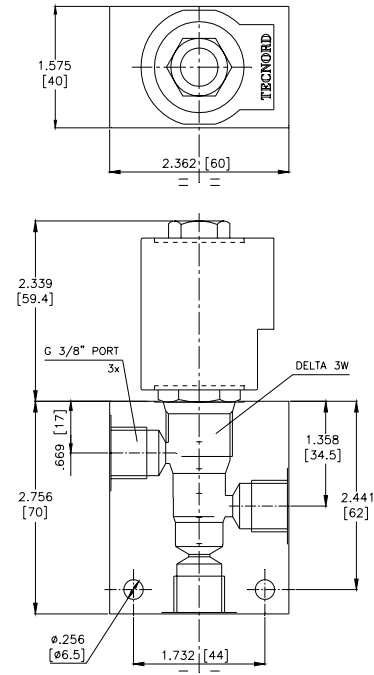
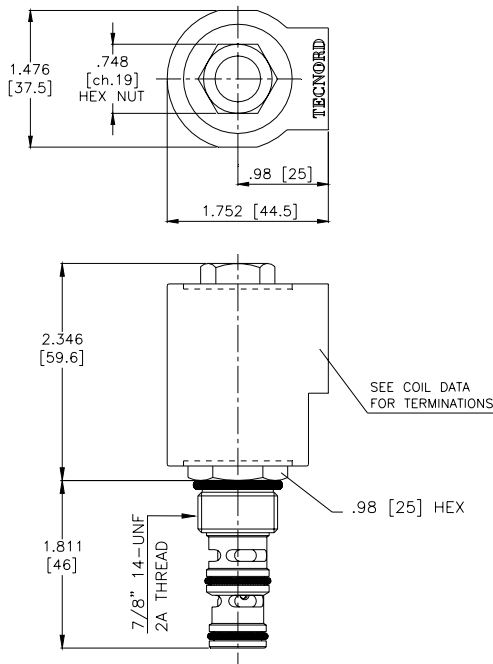
**VALVE SPECIFICATIONS**

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 is intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

by **TECNORD** Phone +39 059 510001 Fax +39 059 511357 E-mail: [tecnord@tecnord.com](mailto:tecnord@tecnord.com)  
 a Delta Power Co.

**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 "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

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

by **TECNORD** Phone +39 059 510001 Fax +39 059 511357 E-mail: tecnord@tecnord.com  
 a Delta Power Co.

**TF-S3D Direct Acting Spool, 3 Way 2 Position, Transmission & Brake**

**DESCRIPTION**

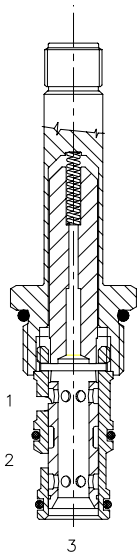
10 size, 7/8-14 thread, "Delta" series, solenoid operated, 3 way 2 position, spool valve.

**OPERATION**

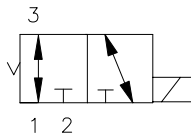
When de-energized the DF-S3D allows flow from (3) to (1) and blocks flow at port (2). When energized the valve allows flow from (3) to (2) and blocks flow at port (1).

**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.

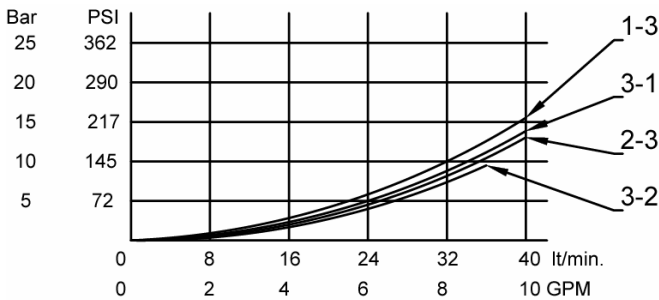


**HYDRAULIC SYMBOL**



**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

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

by **TECNORD**

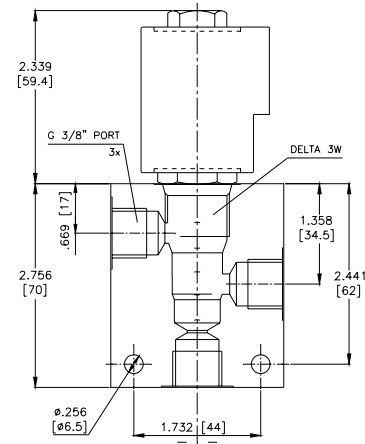
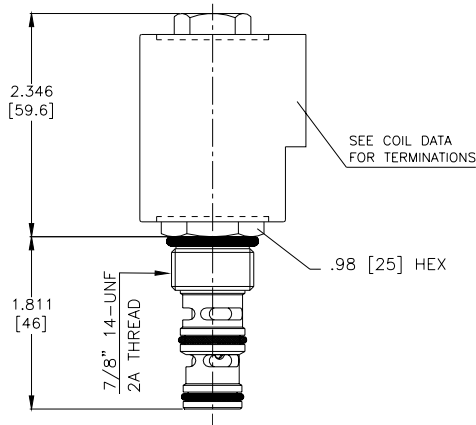
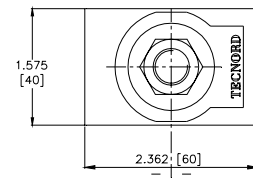
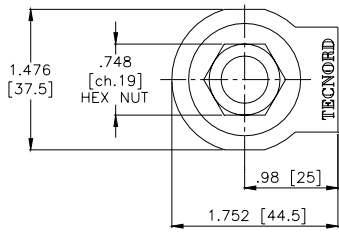
Phone +39 059 510001

Fax +39 059 511357

E-mail: [tecnord@tecnord.com](mailto:tecnord@tecnord.com)

a Delta Power Co.

**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

**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)

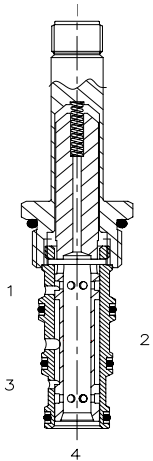
- HC** Din 43650 (Hirschman) - (AC & DC)
- DI** Deutsch - Integral DT04-2P

- 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

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

by **TECNORD** Phone +39 059 510001 Fax +39 059 511357 E-mail: [tecnord@tecnord.com](mailto:tecnord@tecnord.com)  
a Delta Power Co.

**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.

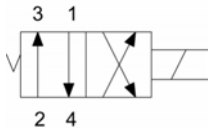
**OPERATION**

When de-energized the 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).

**FEATURES**

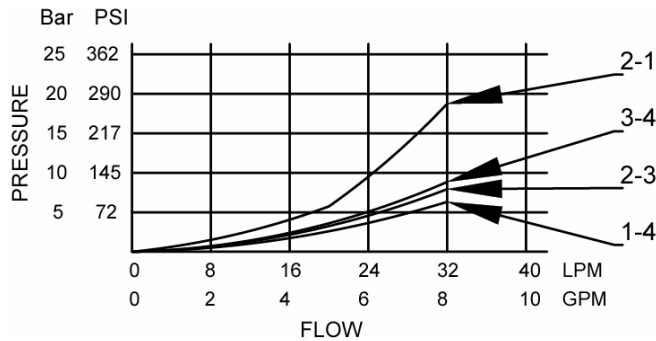
- Hardened parts for long life.
- Efficient wet-armature construction.
- Cartridges are voltage interchangeable.
- Industry common cavity.
- Unitized, molded coil design.
- Continuous duty rated solenoid.
- Optional coil voltages and terminations.
- Optional "I" Coil: Weatherproof, Thermal Shock, Immersion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

**HYDRAULIC SYMBOL**



**PERFORMANCE**

Actual Test Data (Cartridge Only)



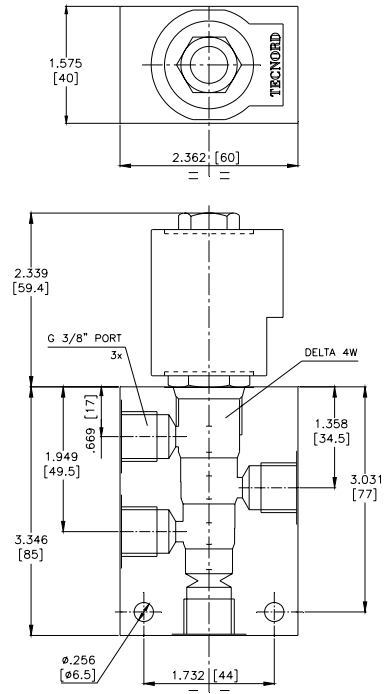
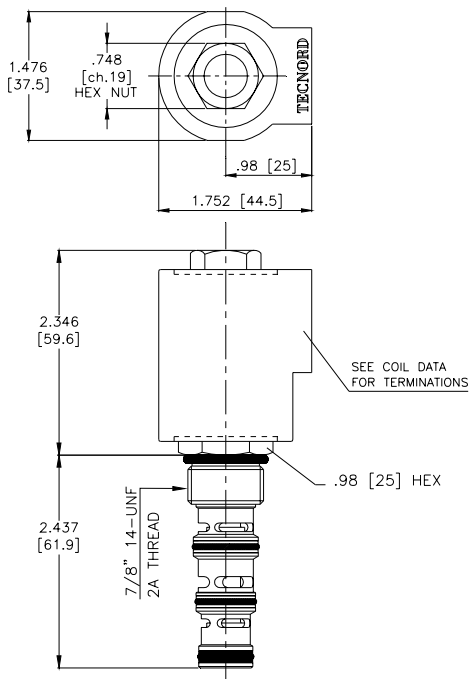
**VALVE SPECIFICATIONS**

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

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



**DIMENSIONS**



**ORDERING INFORMATION**

TG-S4A - - -

**OPTIONS**

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

**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

**"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

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

**IF-S3A Direct Acting Spool, 3 Way 2 Position, Transmission & Brake, Slip-in style**

**DESCRIPTION**

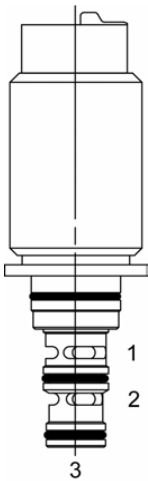
Special cavity, solenoid operated, 3 way 2 position spool type, flanged retained hydraulic valve.

**OPERATION**

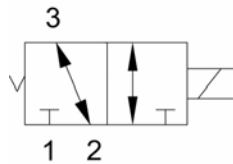
When de-energized the IF-S3A allows flow from (2) to (3) and (3) to (2), and blocks flow at (1). When energized the valve allows flow from (1) to (3) and blocks flow at port (2).

**FEATURES**

- Economical slip-in style.
- Efficient wet-armature construction.
- Unitized valve/coil.
- Continuous duty rated solenoid.

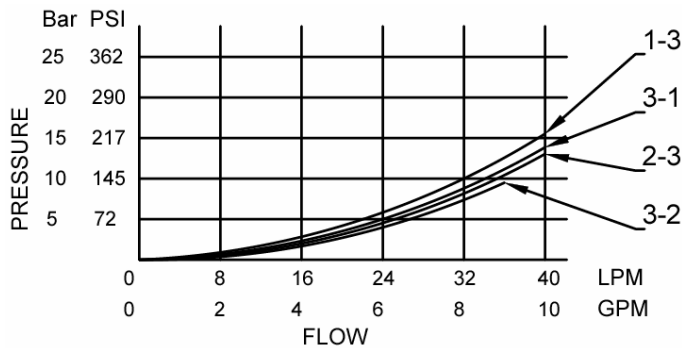


**HYDRAULIC SYMBOL**



Flanged Retained Product.  
Coil is an integral part of the valve and is not serviceable.

**PERFORMANCE**



**VALVE SPECIFICATIONS**

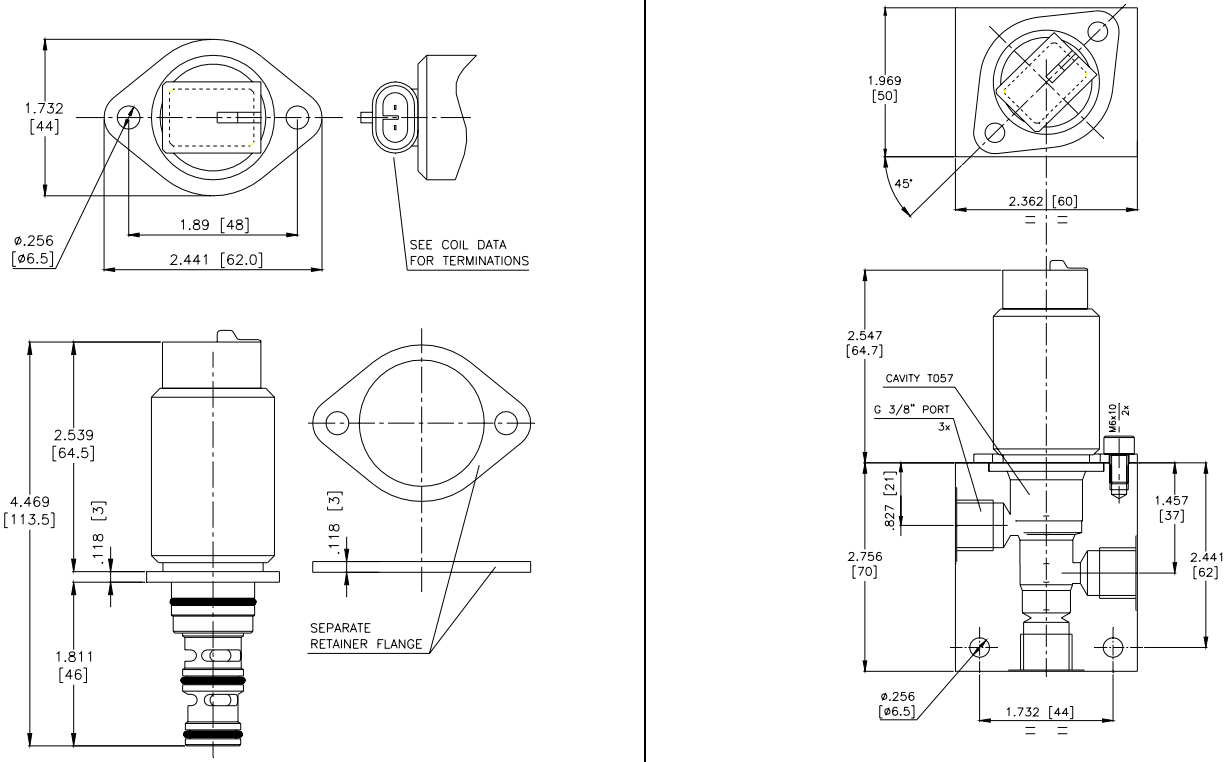
Nominal Flow	6 GPM (18 LPM)
Max Operating Pressure	1000 PSI (70 bar)
Typical Internal Leakage (150 SSU)	3 cu in/min (50 ml/min)
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-35° to 200° F (-37.2° to 93.3° C)
Weight	.75 lbs. (.34 kg)
Operating 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 is intended only as a general guide for the product described (herein). Any specific application should not be undertaken without independent study, evaluation, and testing for suitability.

**DIMENSIONS**



**ORDERING INFORMATION**

IF-S3A-57-MP12 -

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

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

**IF-S3D Direct Acting Spool, 3 Way 2 Position, Transmission & Brake, Slip-in style**

**DESCRIPTION**

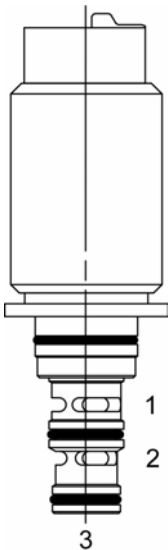
Special cavity, solenoid operated, 3 way 2 position spool type, flanged retained hydraulic valve.

**OPERATION**

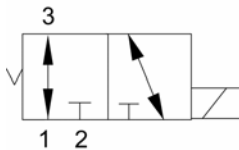
When de-energized the IF-S3D allows flow from (1) to (3) and (3) to (1), and blocks flow at (2). When energized the valve allows flow from (3) to (2) and (2) to (3) blocks flow at port (1).

**FEATURES**

- Economical slip-in style
- Efficient wet-armature construction.
- Unitized valve/coil.
- Continuous duty rated solenoid

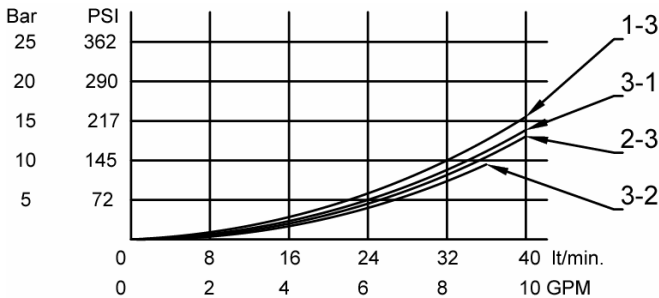


**HYDRAULIC SYMBOL**



Flanged Retained Product.  
Coil is an integral part of the valve and is not serviceable.

**PERFORMANCE**



**VALVE SPECIFICATIONS**

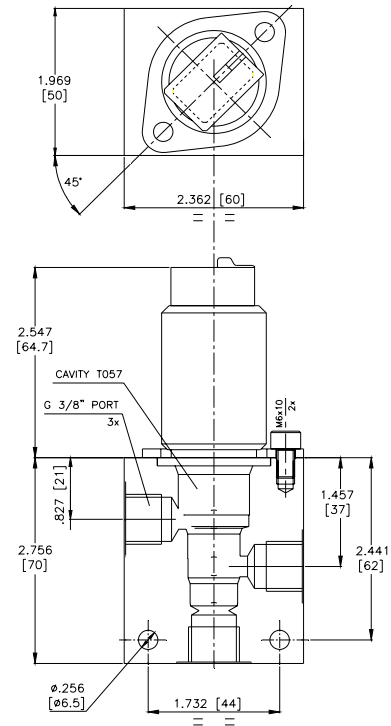
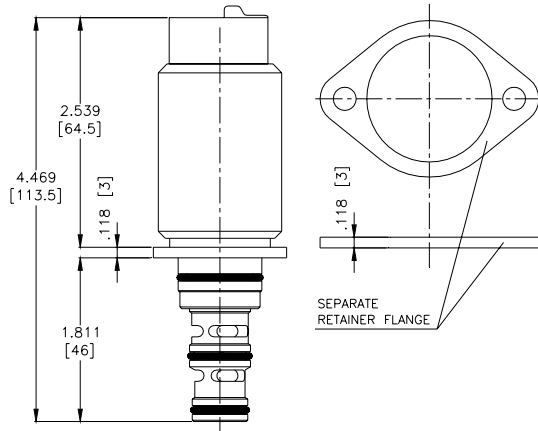
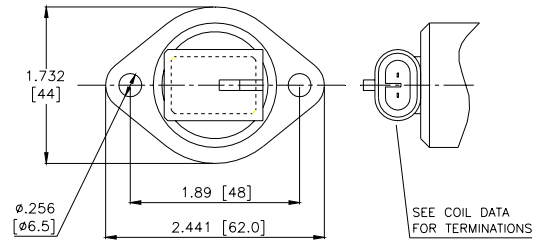
Nominal Flow	6 GPM (18 LPM)
Max Operating Pressure	1000 PSI (70 bar)
Typical Internal Leakage	50 ml/min
Viscosity Range	36 to 3000 SSU (3 to 647 cSt)
Filtration	ISO 18/16/13
Media Operating Temperature Range	-35° to 200° F (-37.2° to 93.3° C)
Weight	.75 lbs. (.34 kg)
Operating Fluid Media	General Purpose 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

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

**DIMENSIONS**



**ORDERING INFORMATION**

IF-S3D-57-MP12 -

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

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**IG-S4A Direct acting Spool, 4 Way 2 Position, Transmission Valve, Slip-in style**

**DESCRIPTION**

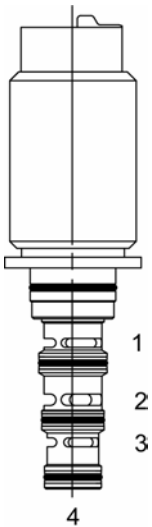
Special cavity, solenoid operated, 4 way 2 position spool type, flanged retained hydraulic valve.

**OPERATION**

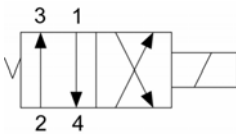
When de-energized the IG-S4A allows flow from (2) to (3) and from (1) to (4). When energized the valve allows flow from (2) to (1) and from (3) to (4).

**FEATURES**

- Economical slip-in style
- Efficient wet-armature construction.
- Unitized valve/coil.
- Continuous duty rated solenoid.

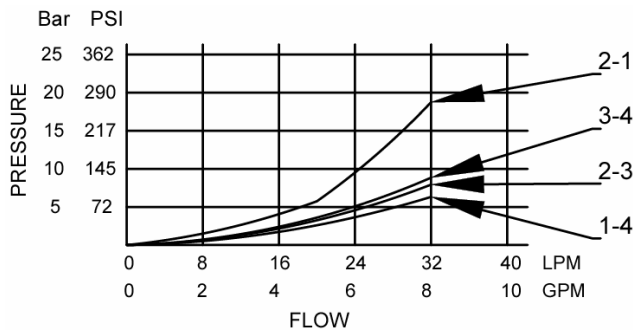


**HYDRAULIC SYMBOL**



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

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