



# Electrohydraulic Motion Controls

Proportional Directional & Pressure Control Valves  
Servovalves, Electronics, Accessories

Catalog HY14-2550/US

aerospace  
climate control  
electromechanical  
filtration  
fluid & gas handling  
**hydraulics**  
pneumatics  
process control  
sealing & shielding



ENGINEERING YOUR SUCCESS.

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**SAFETY GUIDE**

For safety information, see Safety Guide SG HY14-1000 at [www.parker.com/safety](http://www.parker.com/safety) or call 1-800-CParker.

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Cat HY14-2550-frtcvr.indd, dd



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**Description**

Series BD servovalves provide high resolution in the control of position, velocity and force in motion control applications.

**Features**

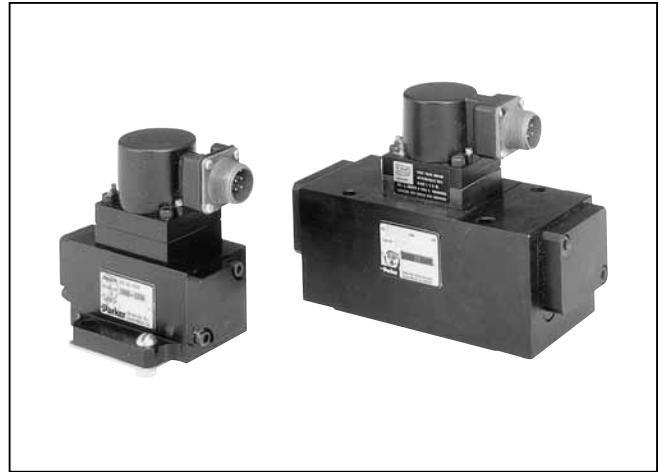
- Rugged reliable trouble-free operation.
- Reduced contaminant sensitivity.
- Linear flow gain characteristics.
- Intrinsically safe model available.
- Explosion proof model available.

**Operation**

When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

**Specifications**

Rated Flow @ 1000 PSI ΔP	3.78–151 LPM (1.0 – 40 GPM)	
Linearity	≤ 5%	
Hysteresis	≤ 3%	
Threshold	≤ 0.5%	
Fluid	Mineral oil, 60–225 SSU, max. 1000 SSU	
Oper. Temp. (Ambient)	–1 to 106°C (30 to +225°F)	
Pressure Gain	3% of spool shift	
Null Shift with Temperature with Supply Pressure	< ± 2% per 38°C (100°F) < 2% per 69 Bar (1000 PSI)	
Quiescent Flow (Std. Spool Lap)	BD15 – 1.5–2.1 LPM (.40–.55 GPM)	BD30 – 2.1–3.78 LPM (.55 – 1.0 GPM)
Step Response Input	Model	Typical Step Response Input
	BD15	10 to 90%, 26 ms
	BD30	10 to 90%, 30 ms
<b>Pressure Ranges</b>		
For optimum performance, Parker Servo Valves are designed to operate within specific system supply pressure ranges.		
<u>System Supply Pressure</u>		
180–210 Bar (2600–3000 PSI)	48–66 Bar (700–950 PSI)	
138–172 Bar (2000–2500 PSI)	14–45 Bar (200–650 PSI)	
95–133 Bar (1400–1950 PSI)	0–210 Bar (0–3000 PSI)	
68–90 Bar (1000–1300 PSI)	External Pilot	
Filtration	SAE Class 3 or better, ISO Code 17/15/12	
Protection Class	NEMA 1 (IP54)	



**Flow–Load Characteristics**

Control flow to the load will change with load pressure and valve current as shown in figure 1. These characteristics closely follow the theoretical square–root relationship for sharp–edged orifices as illustrated in the equation below.

$$Q = K\sqrt{\Delta P}$$

- Q = Control flow, cubic inches/sec
- K = Valve constant
- ΔP = Valve pressure drop

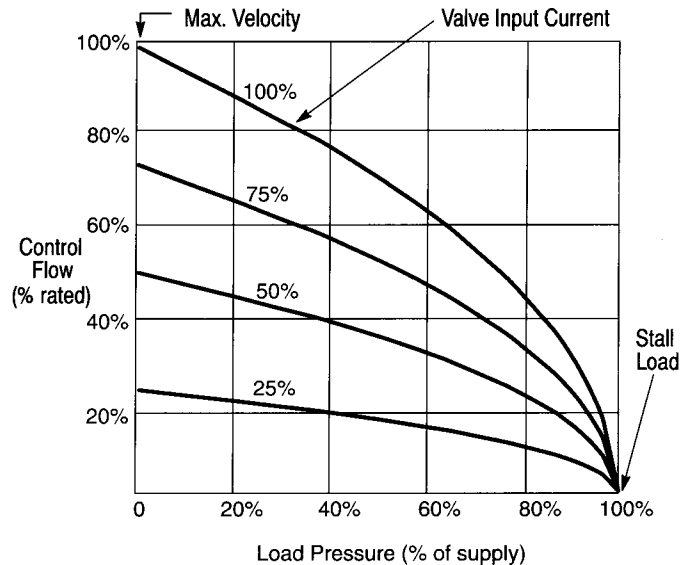


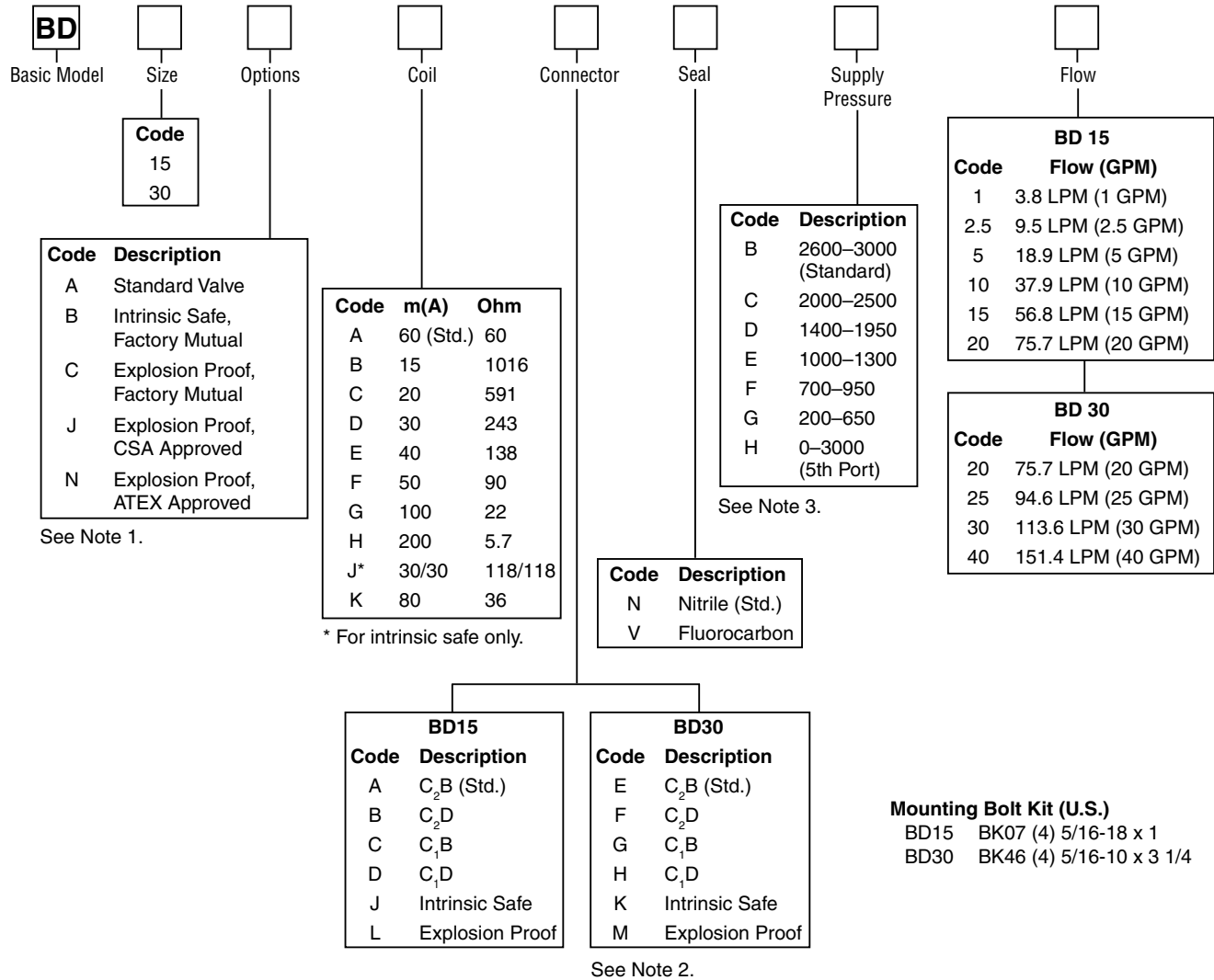
Figure 1. Change in flow with current and load pressure

**Quick Reference Data Chart**

Model	Flow Capacity @ 1000 PSID LPM (GPM)	Max. Pressure Rating	Max. Tank Pressure	Port Circle	Electrical Input (Std.) Single Coil	Coil Resistance (Std.) Each Coil	Weight
BD15	3.8, 9.5, 19, 37, 57, 76 (1, 2.5, 5, 10, 15, 20)	210 Bar (3000 PSI)	14 Bar (200 PSI)	.875	60 mA (Full Flow)	60 ohms	1.2 kg (2.6 lbs.)
BD30	76, 95, 113, 151 (20, 25, 30, 40)	210 Bar (3000 PSI)	14 Bar (200 PSI)	1.75	60 mA (Full Flow)	60 ohms	2.9 kg (6.3 lbs.)

BD.indd, dd





**Note 1: “B” Intrinsic Safe Option meets** Factory Mutual Intrinsically Safe Class I, II and III, Division 1 Groups A through G. Refer to Parker Bulletin 1452.

**“C” Explosion Proof meets:**  
 Factory Mutual Explosion Proof  
 Class I, II, III, Division 1, Groups A through G

**“J” Explosion Proof meets:**  
 Canadian Standards Association  
 Class I, Groups A through D  
 Class II, Groups E, F and G  
 Class III  
 Refer to Parker Bulletin 1451.

**“N” Explosion Proof meets:**  
 ATEX Ex⊙II2G EExm II T3 T<sub>amb</sub> 45°C to -50°C  
 Request Parker Documentation Package: 1200074

**Note 2:** Connector Location & Flow Polarity  
 (Standard connector over C<sub>2</sub> + to B = P to C<sub>1</sub> flow).  
 C<sub>2</sub>B = Connector over Port C<sub>2</sub> + to Pin B = P to C<sub>1</sub> flow.  
 C<sub>2</sub>D = Connector over Port C<sub>2</sub> + to Pin D = P to C<sub>1</sub> flow.  
 C<sub>1</sub>B = Connector over Port C<sub>1</sub> + to Pin B = P to C<sub>1</sub> flow.  
 C<sub>1</sub>D = Connector over Port C<sub>1</sub> + to Pin D = P to C<sub>1</sub> flow.

**Note 3:** Supply Pressure: Code “H” applies to 5th Port/External Pilot Option. This requires the use of a blank orifice “-00”. First stage pressure should be limited to 41.4 Bar (600 PSI) and no less than 27.6 Bar (400 PSI).  
 Servo valve rated flow at 1000 PSID ±10%.

**Accessories**

Model	Description	Model	Description
6522A11	1/16" Hex Allen Wrench	820089-1	BD30 Servovalve Shipping Container
810005-1	Orifice Filter	BD830008	BD90/95 Amplifier Board Shipping Container
810013-**	Valve Orifice Kit, Fluorocarbon		
810014-**	Valve Orifice Kit, Nitrile	810089-1	BD15 Servovalve Shipping Container
<b>**Dash #</b>	<b>Operating Pressure</b>	820000TF3	Filter Wrench
-16	180 – 210 Bar (2600 – 3000 PSI) B	MS3106E-14S-2S	SV Mating Connector
-18	138 – 176 Bar (2000 – 2550 PSI) C		
-20	96 – 134 Bar (1400 – 1950 PSI) D		
-22	69 – 93 Bar (1000 – 1350 PSI) E	1200127	Flushing valve for BD15
-33	48 – 66 Bar (700 – 950 PSI) F	1200128	Flushing valve for BD30
-50	14 – 45 Bar (200 – 650 PSI) G	810107	BD15 Block off Plate
-00	0 – 210 Bar (0 – 3000 PSI) 5th Port H		

**Adapters**

□  
Type of Adapter

Code	To Mount A _____	Onto A _____ Pattern
810092-1	BD15	BD30 (1.75)
810093-5	BD15	D05
810094-5	BD15	D03
810098-1	BD15	.937 Port Circle
810097-3	BD15	.785 Port Circle
810096-5	BD15	.625 Port Circle
820006-1	BD30	Moog 62-303B & Atchley 231
820007-1	BD30	D08
820091-1	BD30	BD15 (.875)
Consult Factory	BD30	1.375
Consult Factory	BD15	D05H

— □  
Seals

Code	Description
Omit	Nitrile
V	Fluorocarbon

**Subplates**

Valve Model	Subplate	Port Size	Location	Bolt Kit	Torque Specifications (Lubricated)
BD15	810090-3	SAE12	Side	BK07	17 ft. lbs.
BD30	820090-3	SAE16	Side	BK46	17 ft. lbs.

**Cables**

**EHC**  
 Electrohydraulic  
 Cable for BD  
 Series Valves

□  
Length

Code	Length
9	Length in Feet
15	

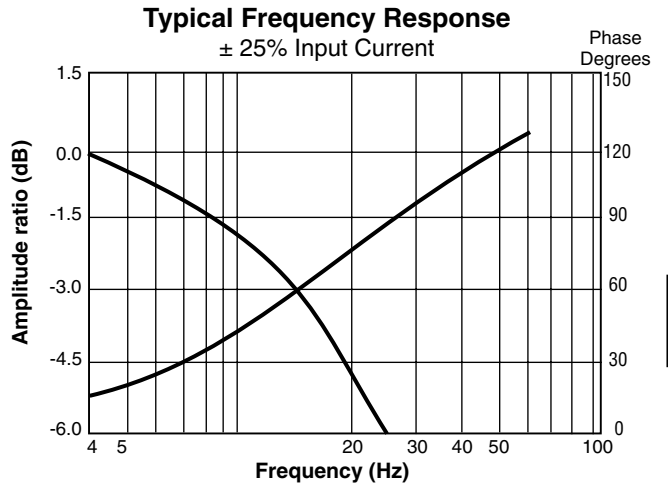
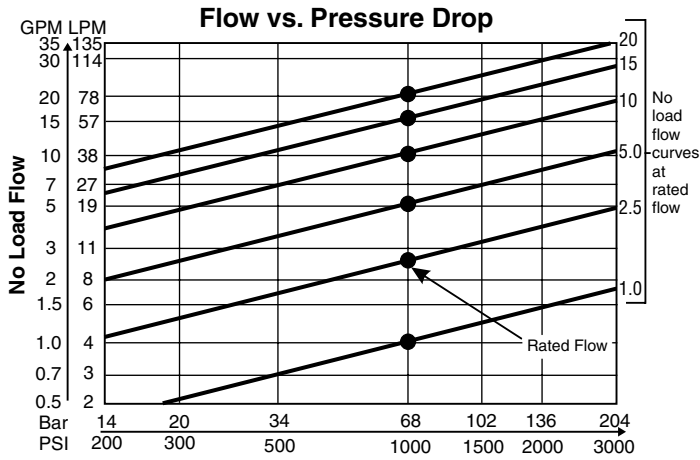
**4**  
Cable Type

Code	Description
4	4-wire, 20 awg. shielded (Belden 9402)

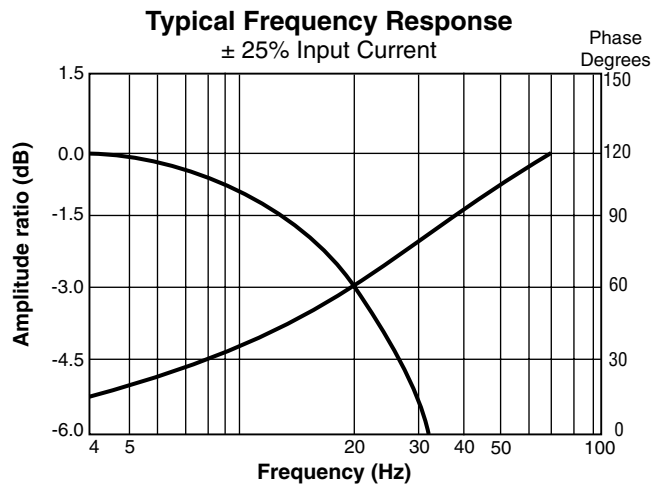
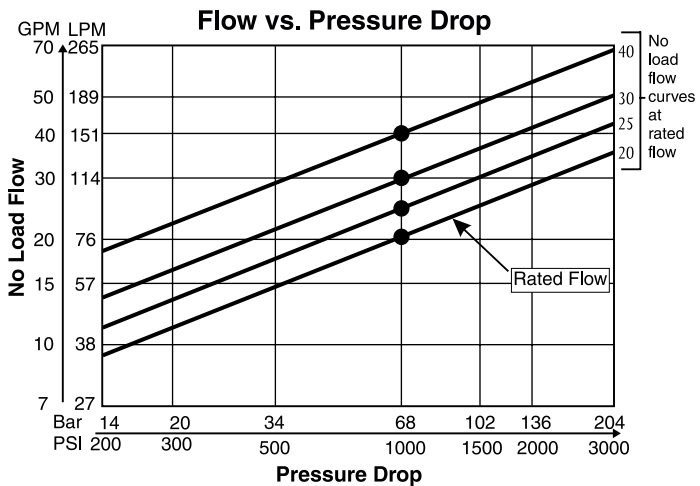
**S**  
Pin Orientation

Code	Description
S	BD Series

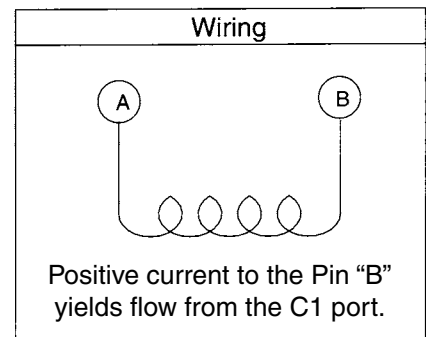
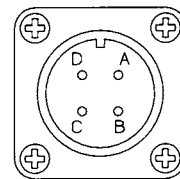
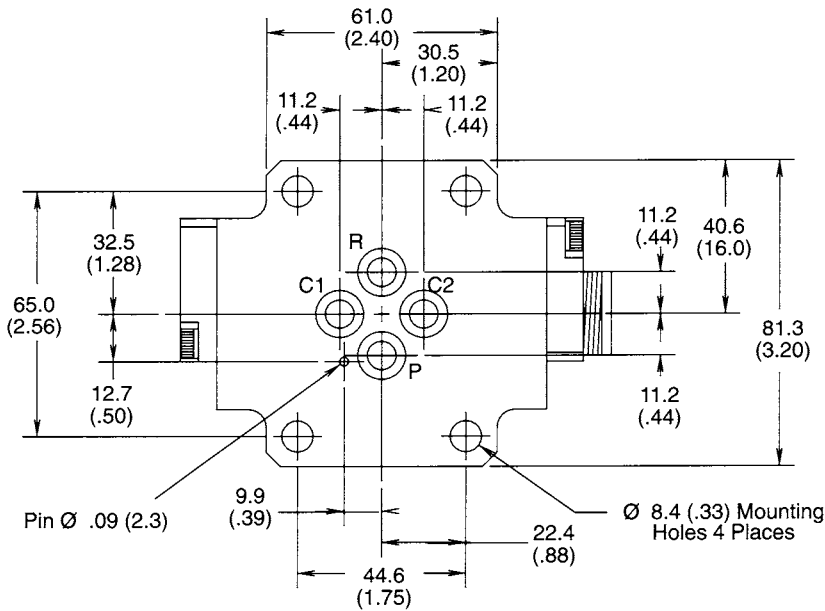
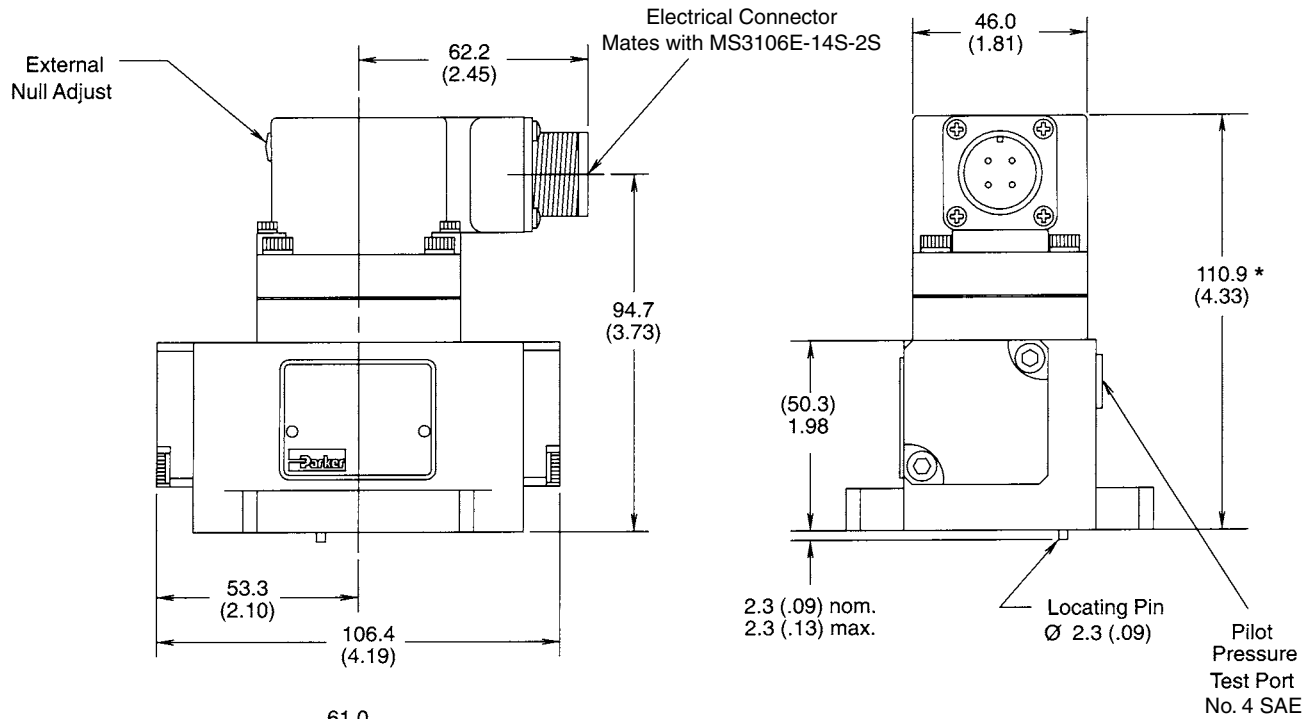
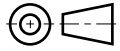
**Series BD15**



**Series BD30**



Inch equivalents for millimeter dimensions are shown in (\*\*)



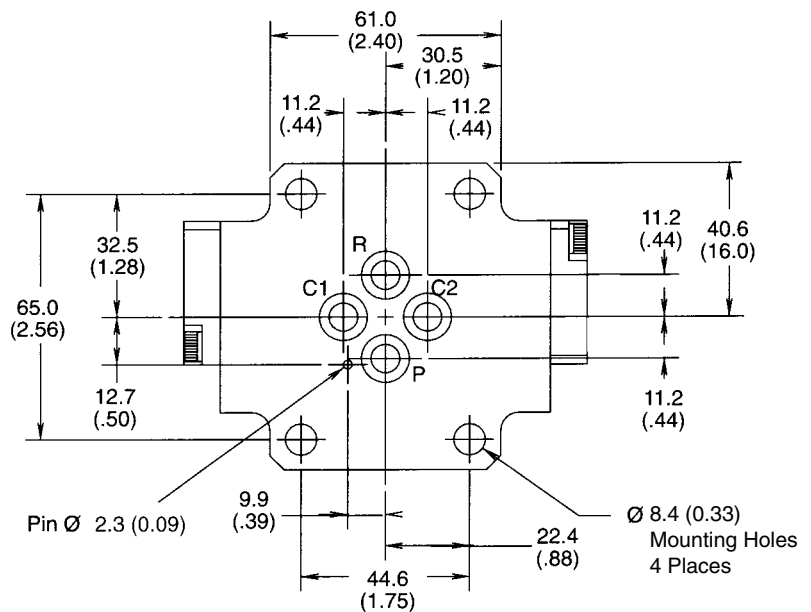
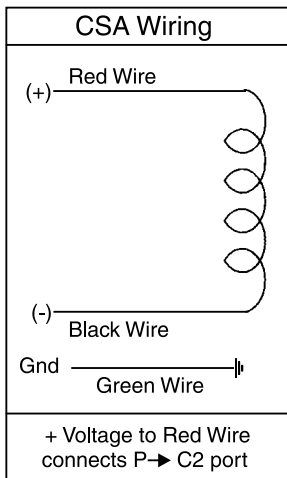
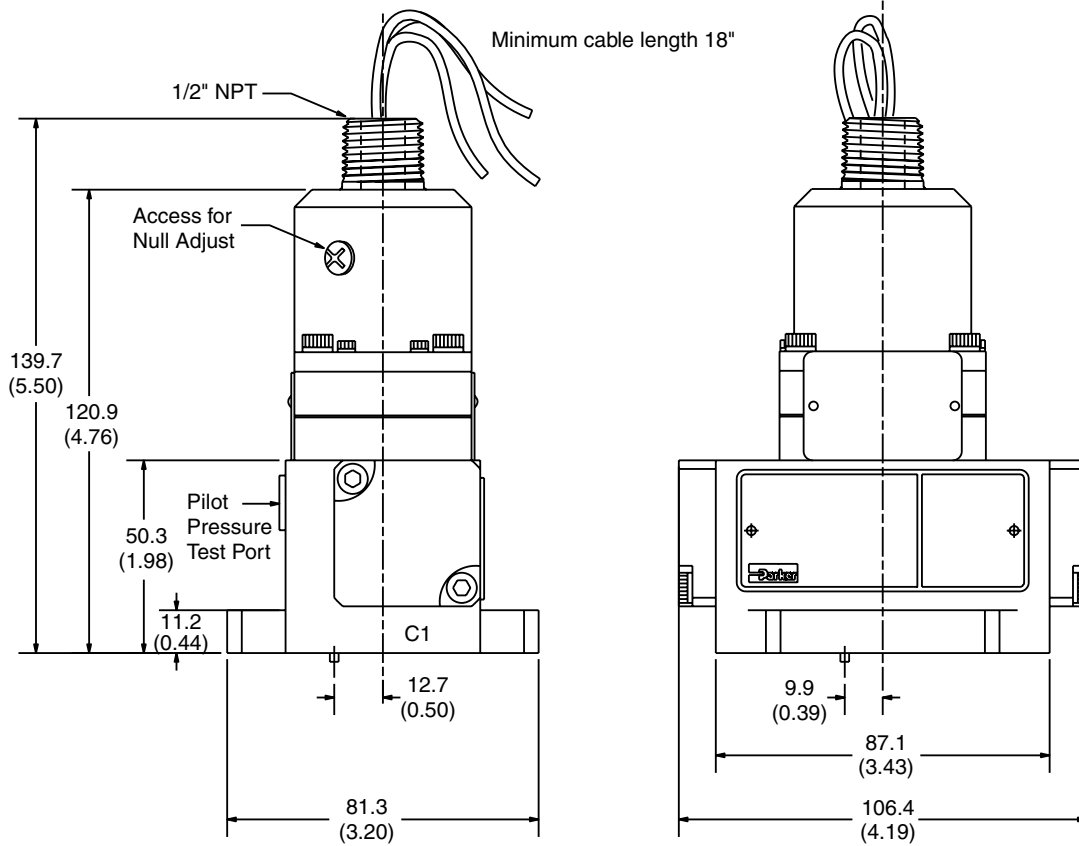
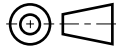
Note: Valve mating surface to be flat within 0.002 TIR, and smooth to within 63 RMS

\* 140 (5.50) for BD15C; explosion proof, FM approved.

Note: Vertically oriented 1/2 NPT threaded male conduit connection with lead wires (not as shown).



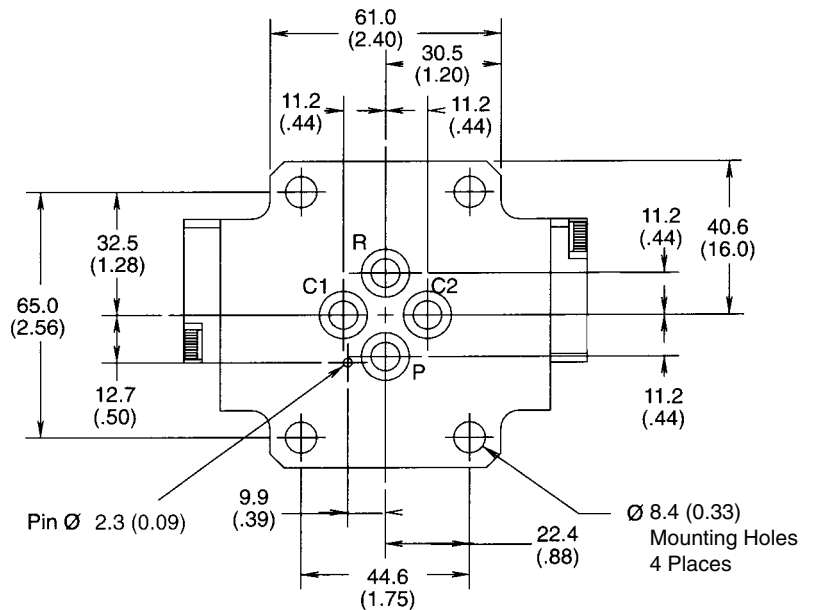
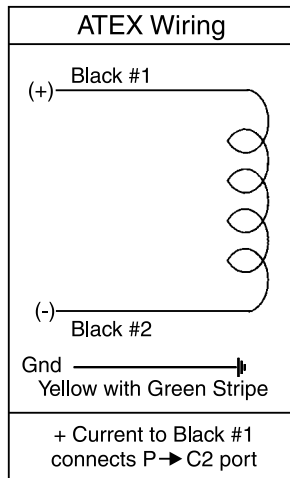
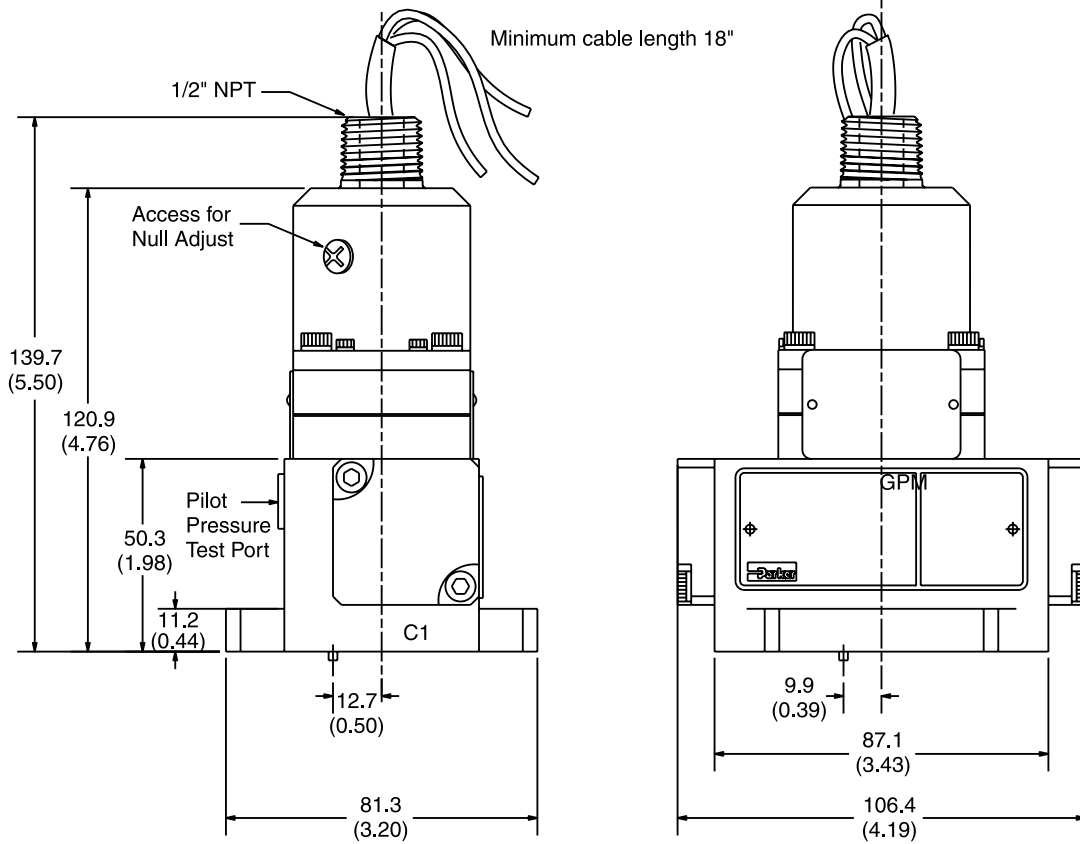
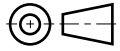
Inch equivalents for millimeter dimensions are shown in (\*\*)



Note: Valve mating surface to be flat within 0.002 TIR, and smooth to within 63 RMS

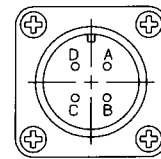
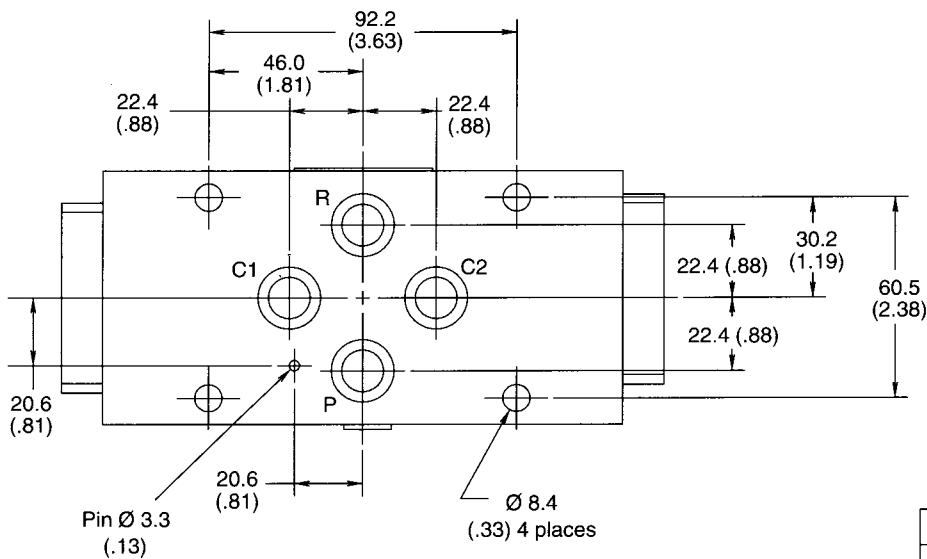
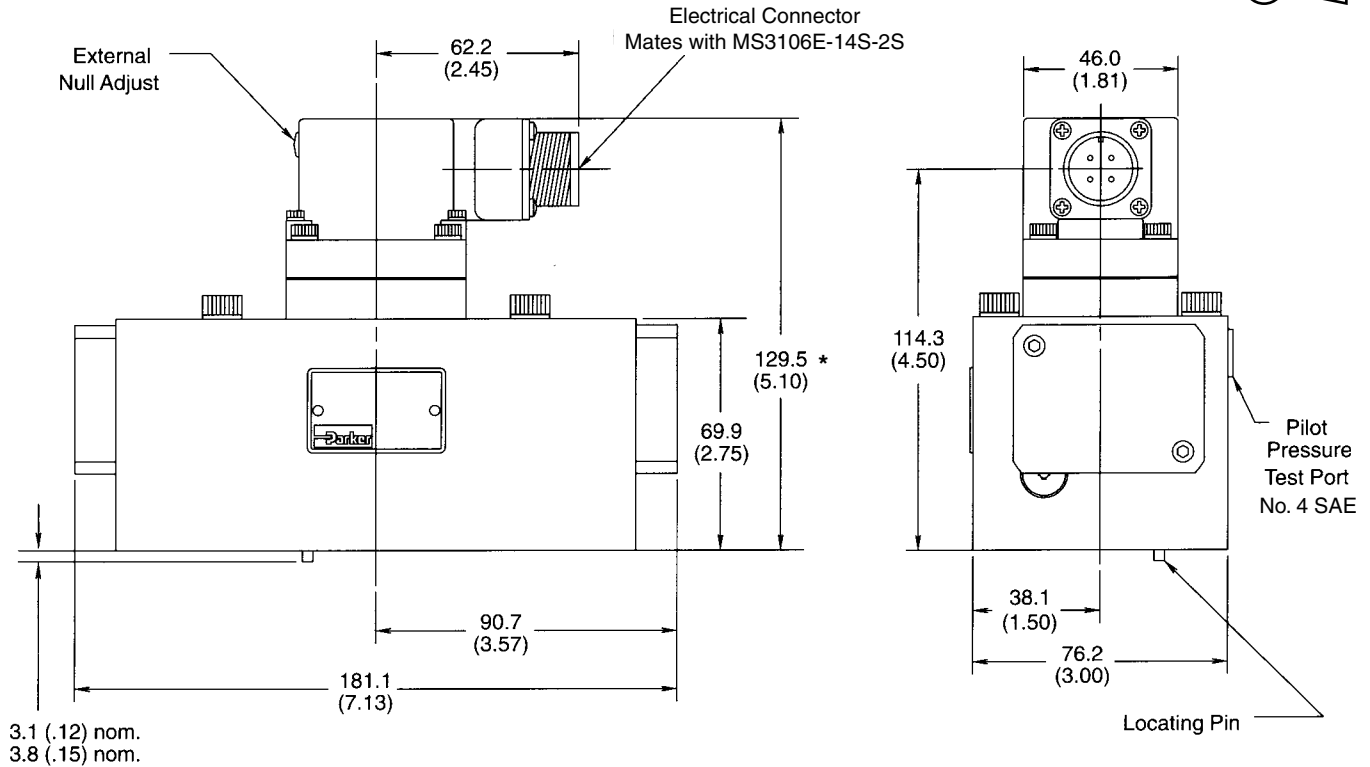
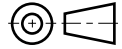


Inch equivalents for millimeter dimensions are shown in (\*\*)



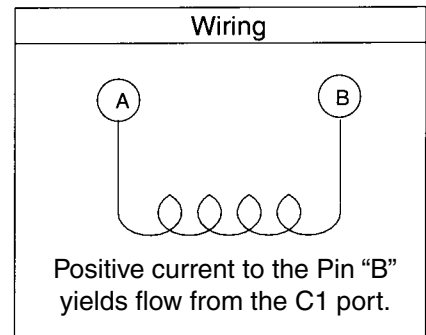
Note: Valve mating surface to be flat within 0.002 TIR, and smooth to within 63 RMS

Inch equivalents for millimeter dimensions are shown in (\*\*)

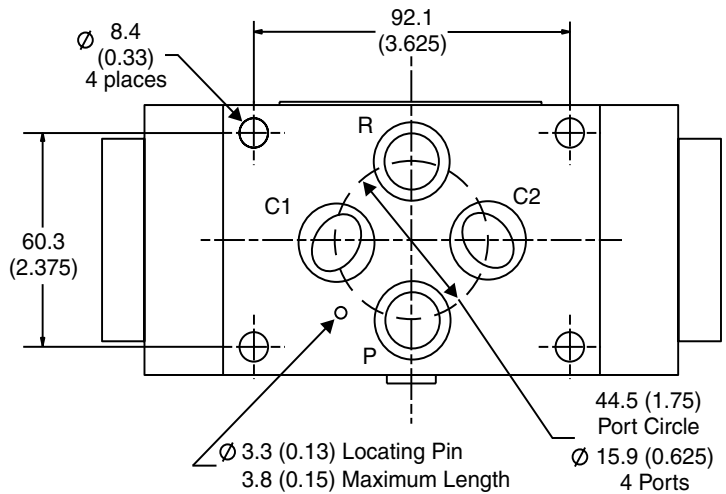
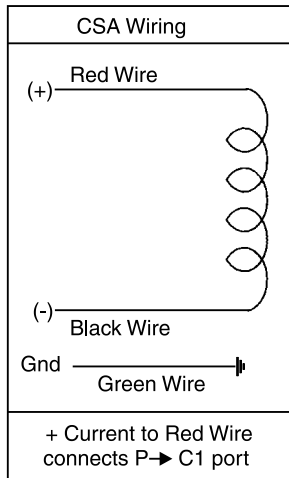
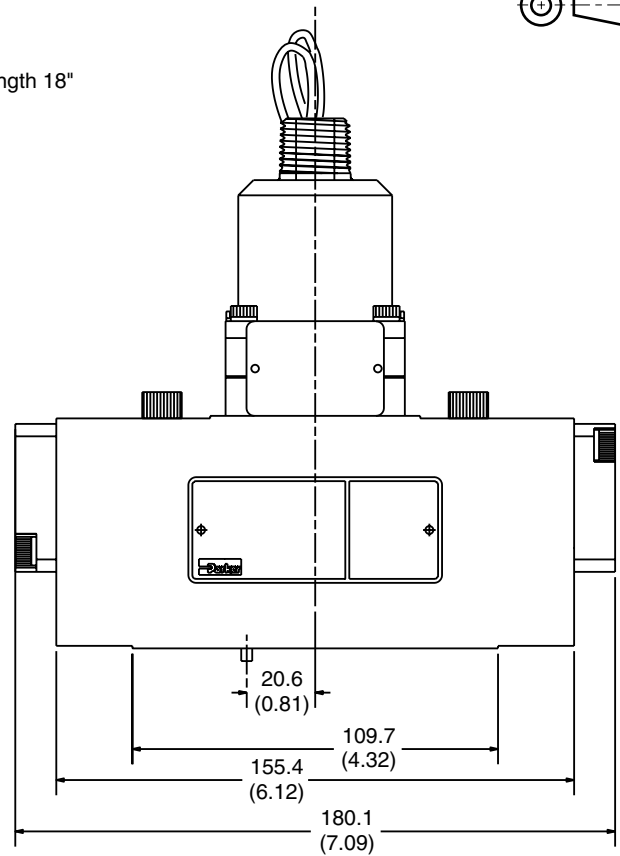
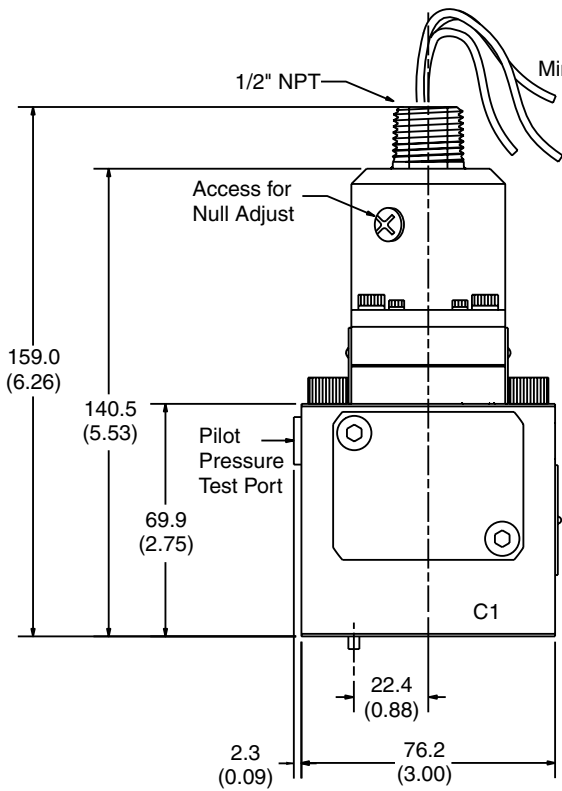
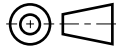


Note: Valve mating surface to be flat within 0.002 TIR, and smooth to within 63 RMS

\* 160 (6.25) for BD30C; explosion proof, FM approved.  
Note: Vertically oriented 1/2 NPT threaded male conduit connection with lead wires (not as shown).



Inch equivalents for millimeter dimensions are shown in (\*\*)

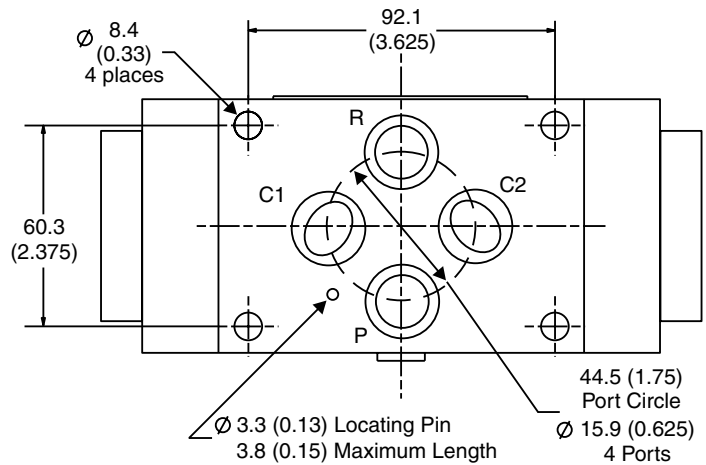
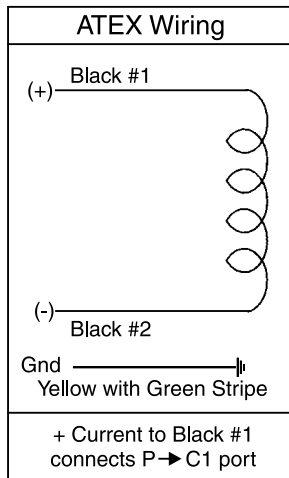
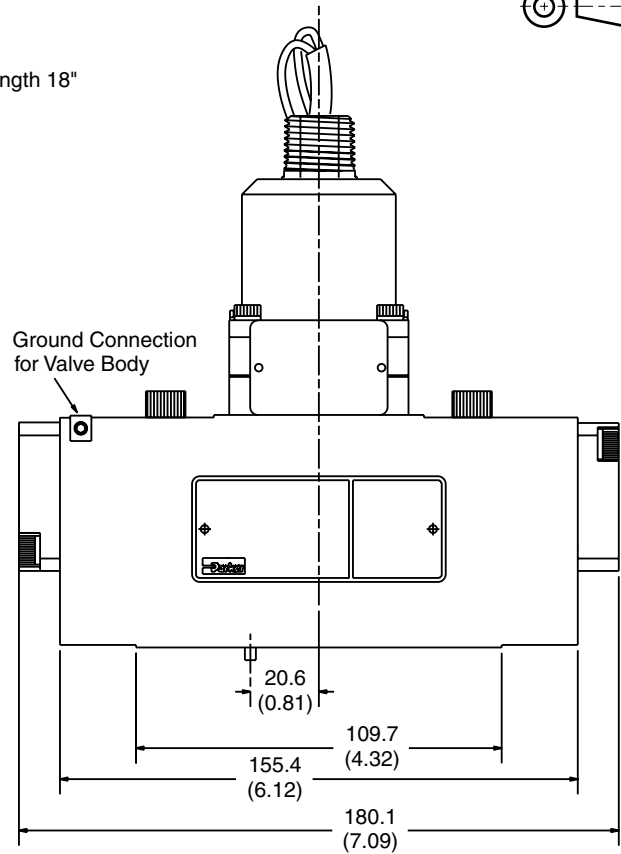
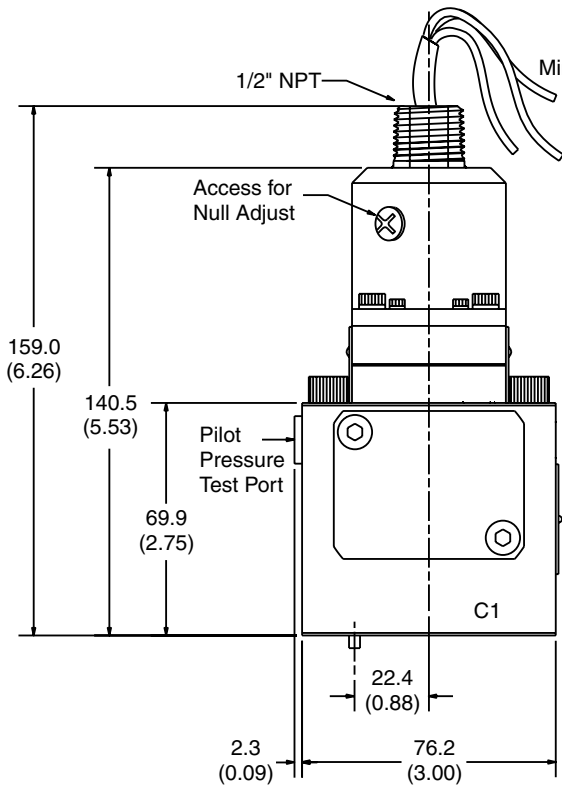
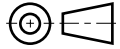


Note: Valve mating surface to be flat within 0.002 TIR, and smooth to within 63 RMS

**Dimensions**

**Series BD30, ATEX Version BD30N\*M**

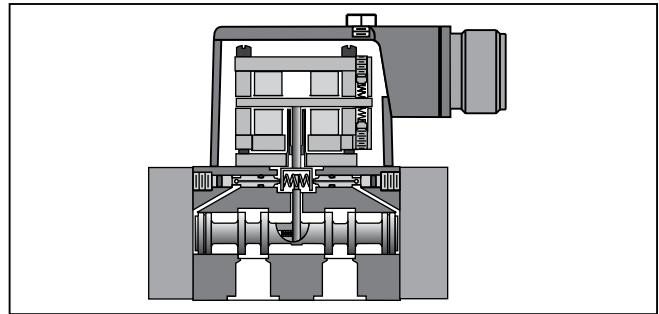
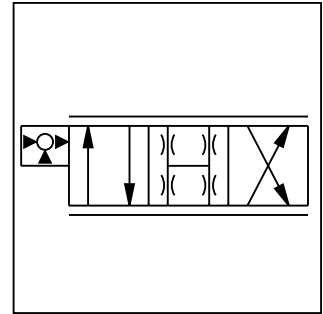
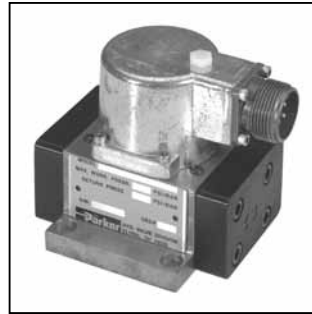
Inch equivalents for millimeter dimensions are shown in (\*\*)



Note: Valve mating surface to be flat within 0.002 TIR, and smooth to within 63 RMS

### General Description

Series PH76 servovalves are high performance, two stage valves, with a range of rated flows from 3.8 to 57 LPM (1 to 15 GPM). The pilot stage is a symmetrical double-nozzle and flapper, driven by a double air gap, dry torque motor. A low current signal to the torque motor pilot stage results in a proportional flow from the output stage. The output stage is a 4-way, sliding spool which provides a mechanical feedback using an exclusive “no ball glitch” design.



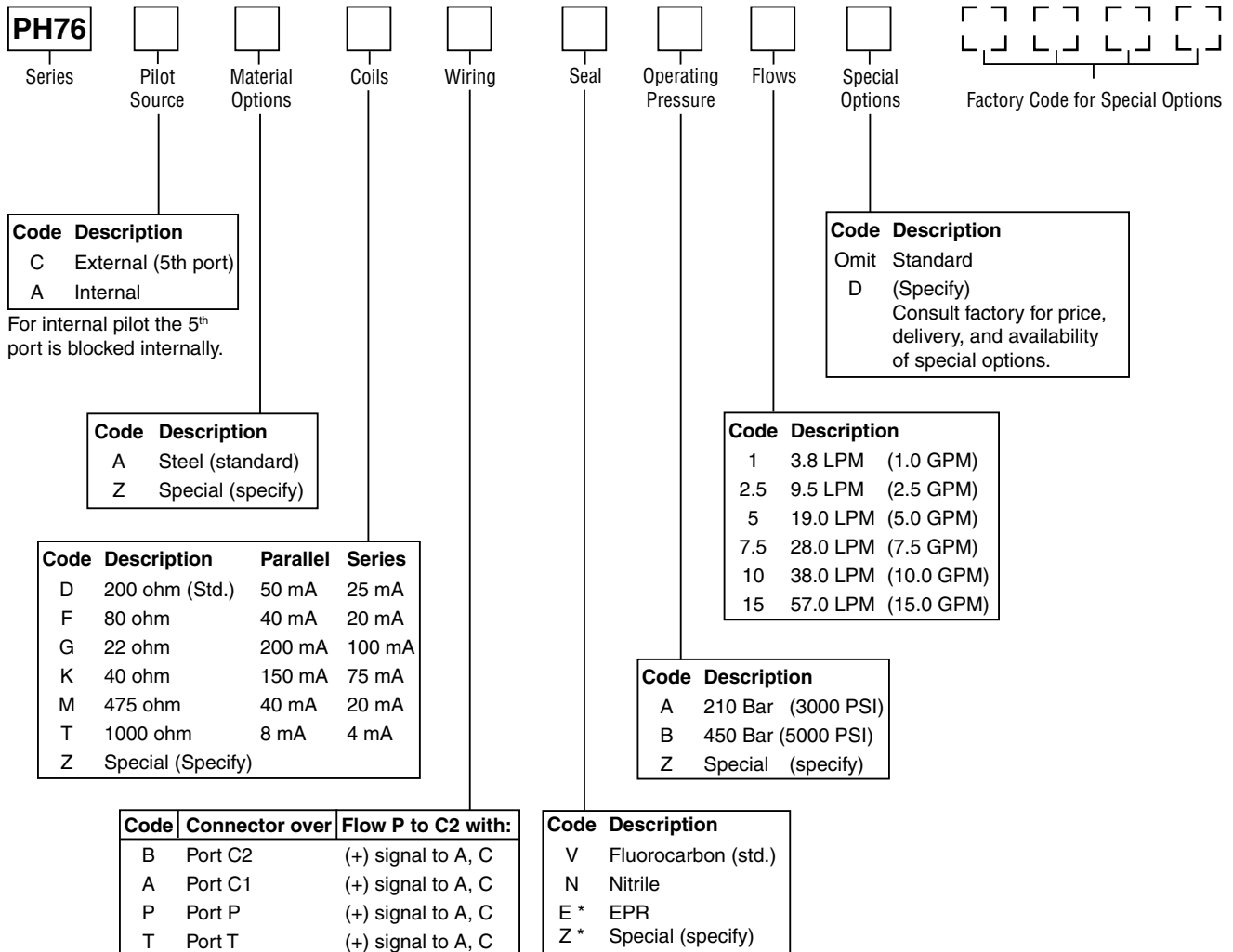
### C

### Features

- Built to survive tank port pressure spikes.
- No ball glitch.
- Tool steel spool and body.
- Optional 5<sup>th</sup> port for external pilot.
- ISO 10372 standard 22.23 mm (0.875 in) port circle.

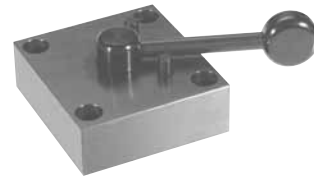
### Specifications

<b>Flow Rating ±10%</b> @ 70 Bar (1000 PSID)	3.8, 9.5, 19, 28, 38, 57 LPM (1, 2.5, 5, 7.5, 10, 15 GPM)	<b>Threshold</b>	≤ 0.5%
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Pressure Gain</b> % change in pressure per 1% change in input command	30% minimum, 70% max.
<b>Null Leakage Flow</b> per 70 Bar (1000 PSID)	0.2 – 0.8 LPM (0.05 – 0.20 GPM)	<b>Step Response</b>	10 – 90%, < 6 ms
<b>Pilot Flow</b> @ 210 Bar (3000 PSID)	0.8 – 1.2 LPM (0.21 – 0.33 GPM)	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to +82°C (+30°F to +180°F)
<b>Frequency Response</b> @ 90° phase shift	> 90 Hz (See Performance Curves)	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Fluid Cleanliness</b>	ISO 4406 15/12 or better



\* Consult factory for delivery.

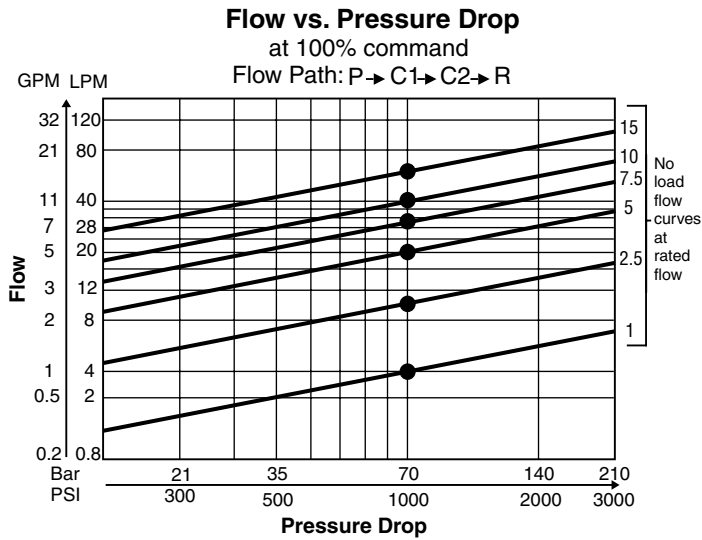
- Weight:** 1 kg (2.2 lb)
  - Cable with mating connector:** EHC154S
  - Mating connector:** MS3106E-14S-2S
  - Bolt kit:** Included with valve. BK07 (4) 5/16-18x1"
  - Flushing valve:** 1200127 (same for 4 or 5 port PH76 valve)
  - Subplate, 5 ports:** 1402303 (4) #12 SAE side ports, (1) #4 SAE side port
  - Subplate, 4 ports:** 810090-3 (4) #12 SAE side ports
  - Null adjust tool:** 6522A13
  - Driver cards:** 23-7030, BD90\*, BD101\*
- When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.
- \* For output currents >15 mA



Flushing valve is rated for 3000 psi operation.

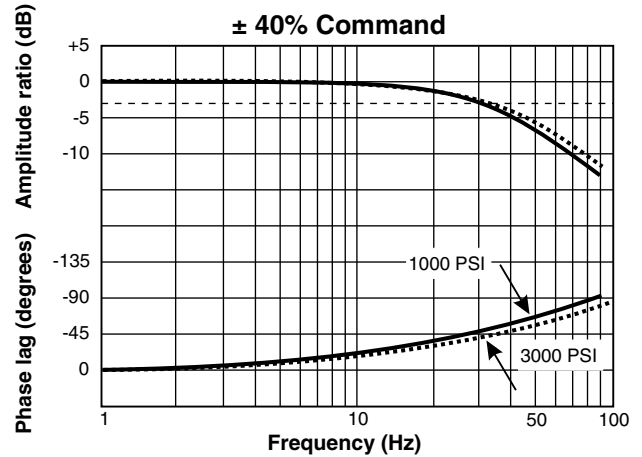
**Performance Curves**

Servovalve flow is proportional to the square root of the pressure drop through the valve. The nominal flow rating for the servovalves is based upon a 70 Bar (1000 PSI) pressure drop.



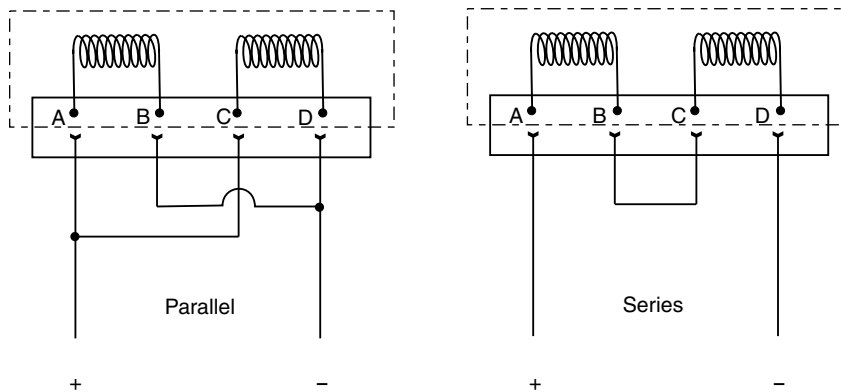
**Frequency Response**

The frequency response curves for the PH76 servovalves show no significant change for signal amplitudes between  $\pm 10\%$  and  $\pm 40\%$ . Frequency response is unaffected by changes in supply pressures above 70 Bar (1000 PSI).



**Installation Wiring Options**

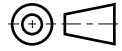
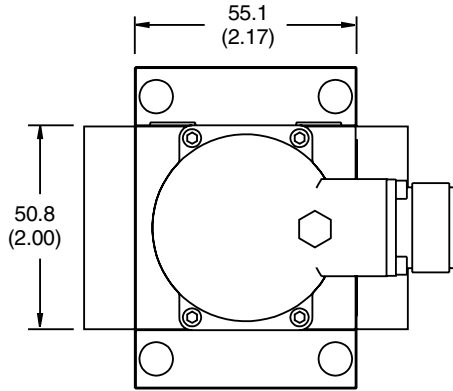
The PH76 servovalve has two coils. One is wired across pins A to B, the other across pins C to D. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. In either case, a positive voltage to pin A connects valve flow from ports P to C2 and ports C1 to R.



Polarity shown (+A, -B, +C, -D) connects flow from P to C2 port.

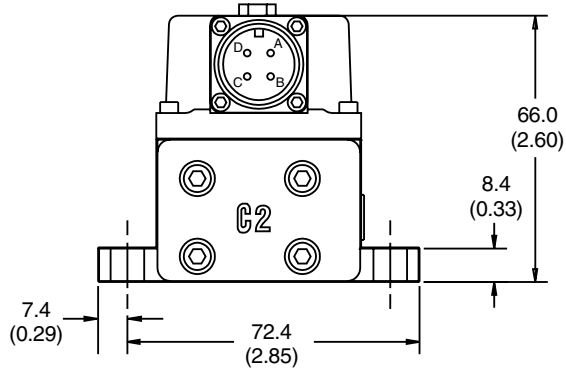
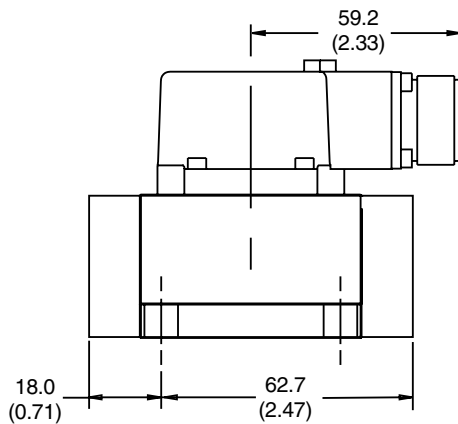


Inch equivalents for millimeter dimensions are shown in (\*\*)



Connector shown over C2 port. See ordering information for other connector locations.

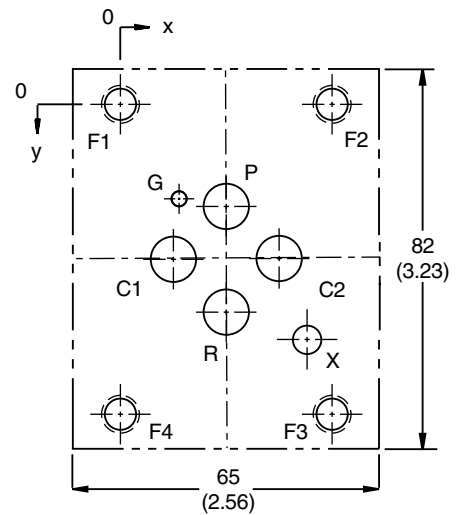
The connector location is factory set and is not field changeable.



**Mounting Surface Dimensions**

Metric Dimensions (millimeters)										± 0.1 mm
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	∅ 8.2 max.	∅ 8.2 max.	∅ 8.2 max.	∅ 8.2 max.	∅ 3.5 max.	∅ 5	M8	M8	M8	M8
X	22.2	11.1	22.2	33.3	12.3	49.5	0	44.4	44.4	0
Y	21.4	32.5	43.6	32.5	19.8	39	0	0	65	65

U.S. Dimensions (inches)										± .004 in
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	∅ 0.32 max.	∅ 0.32 max.	∅ 0.32 max.	∅ 0.32 max.	∅ 0.14 max.	∅ 0.2	5/16 - 18			
X	0.875	0.437	0.875	1.311	0.484	1.531	0	1.750	1.750	0.000
Y	0.846	1.280	1.717	1.280	0.780	1.950	0	0	2.562	2.562



Minimum depth of G is 2 mm (0.08 in)

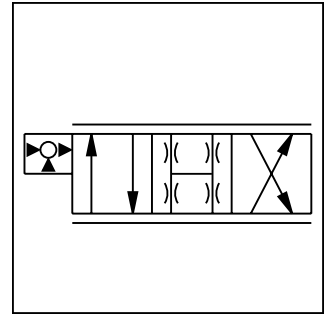
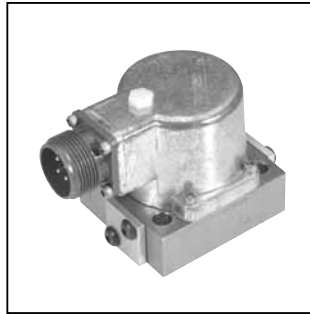
Recommended full thread depth for bolt holes 22 mm (0.87 in)

Surface roughness: Ra < 0.8 µm (0.031 in) as specified in ISO 468 and 1302

Surface flatness: 0.025 mm (0.001 in) as specified in ISO 1101

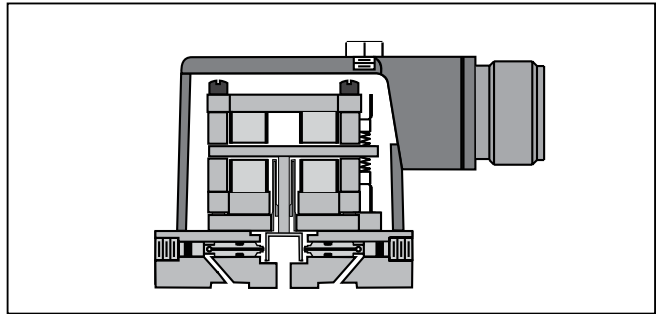
**General Description**

Series DY1S are open center, single stage differential pressure control valves. They are operated by a current driven torque motor. These valves controls the pressure difference between the two actuator ports, C1 and C2, by varying the resistance to flow through their nozzles.



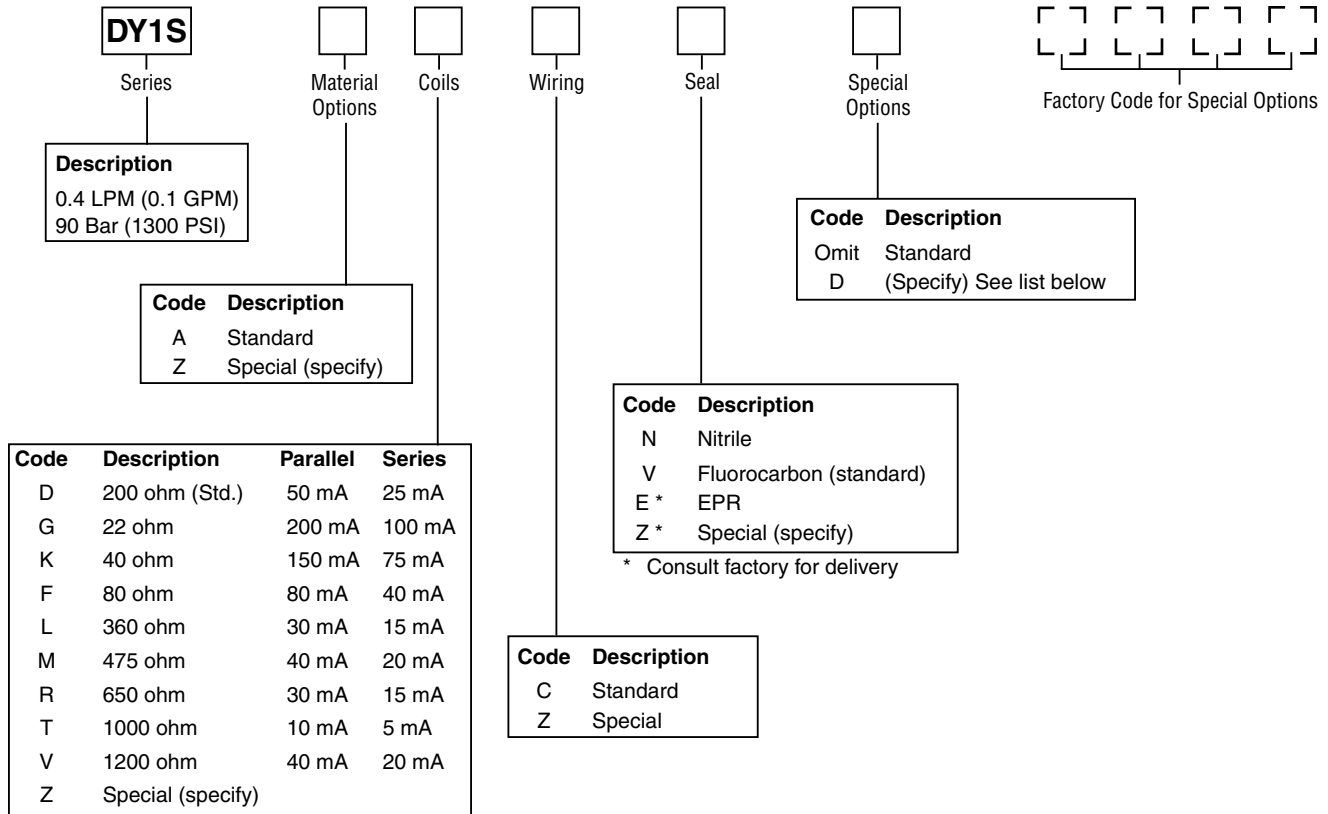
**Features**

- No mechanical wear points.
- High frequency response.
- Nozzle and flapper design.
- Versatile 21.59 mm (0.850 in.) port circle, can mount to standard 19.81 mm (0.780 in.) and 23.62 mm (0.930 in.) port circle patterns.



**Specifications**

<b>Flow Rating</b> @ 90 Bar (1300 PSI)	0.4 LPM (0.1 GPM)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Quiescent Flow</b> @ 90 Bar (1300 PSI)	1.3 – 1.9 LPM (0.3 – 0.5 GPM)	<b>Pressure Gain</b> % change in pressure per 1% change in input command	1% minimum
<b>Supply Pressure</b>	7 – 90 Bar (100 – 1300 PSI)	<b>Step Response</b>	10 – 90%, < 5 ms
<b>Tank Port Pressure</b>	90 Bar (1300 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to + 106°C (+30°F to +225°F)
<b>Frequency Response</b> @ 90° phase shift	> 100 Hz	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Filtration</b>	ISO 4406 15/12 or better
<b>Threshold</b>	≤ 0.5%		



**Accessories**

**Cable with Mating Connector:** EHC154S

**Mating Connector:** MS3106E-14S-2S

**Bolt Kit:** Included with valve

**Flushing Valve:** 11-0500

**Subplate:** 55-0100-2 SAE-6 Side ports

**Null Adjust Tool:** 6522A13

**Electronic Drivers:** 23-7030, BD90\*, BD101\*

When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

\* For output currents >15 mA

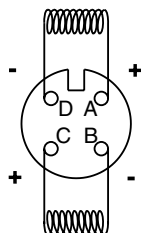
**Special Options:**

Consult factory for price, delivery and availability of special options.

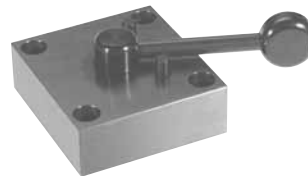
- Special coil
- Special wiring
- Special seals

**Weight:** 0.5 kg (1.2 lbs.)

**Wiring Option C**  
 (Standard)

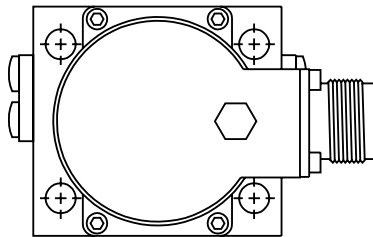


Polarity shown connects P to C2 port.

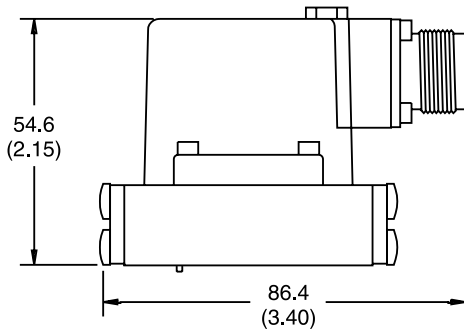


Flushing valve is rated for 3000 psi operation.

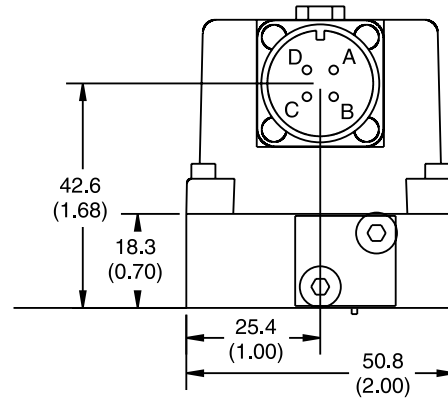
Inch equivalents for millimeter dimensions are shown in (\*\*)



**C**

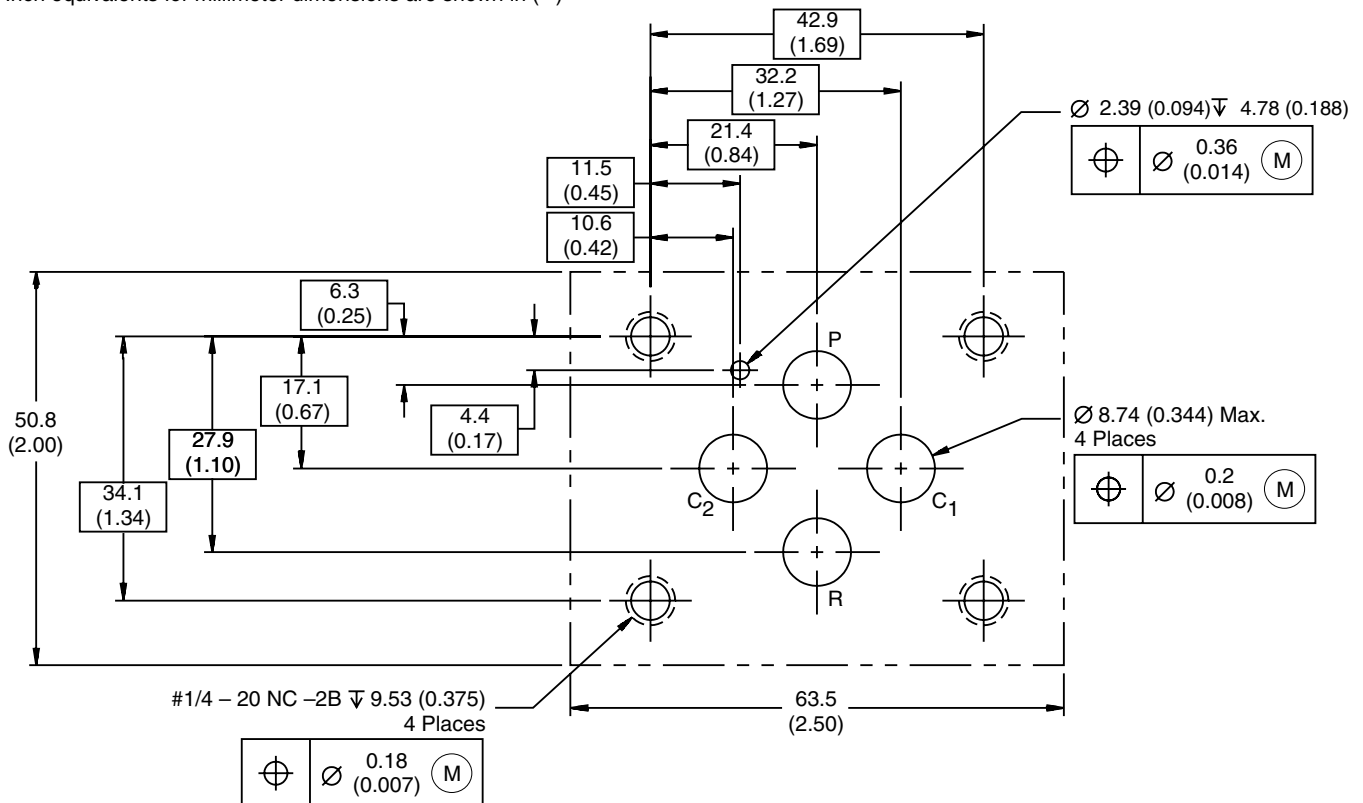


Connector over C1 port



**Mounting Interface**

Inch equivalents for millimeter dimensions are shown in (\*\*)



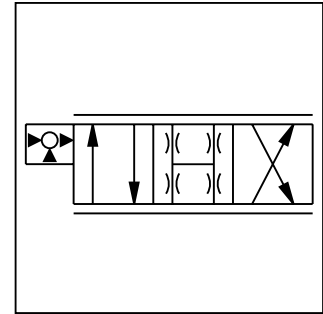
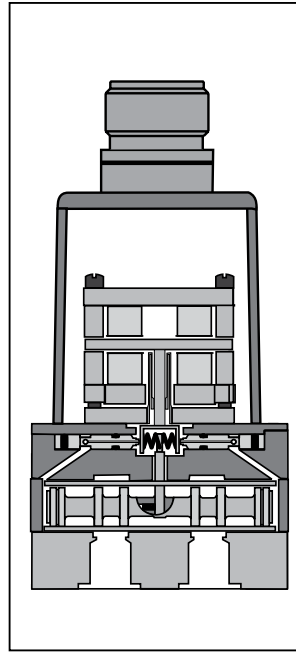
### General Description

Series DY3H and DY6H are two stage, 4-way, high frequency, closed center servovalves, with mechanical spool position feedback. These valves use a flapper and nozzle type, torque motor driven pilot stage to drive the sliding spool second stage. The unique rigid pin feedback design avoids ball glitch problems, which can occur in other types of servovalves.

The DY3H and DY6H offer a compact, lower cost alternative without sacrificing performance in systems operating at 105 Bar (1500 PSI) or less.

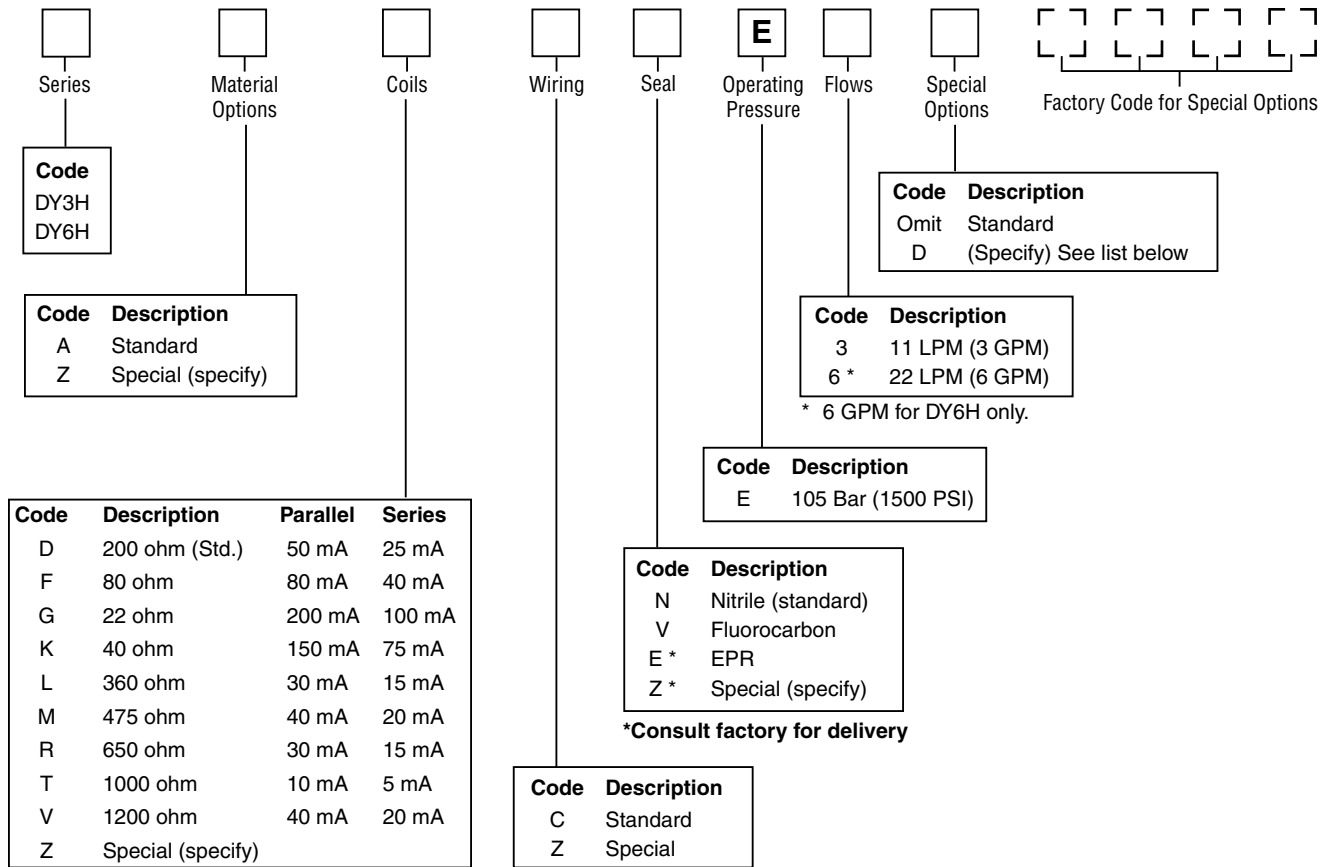
### Features

- Precision lapped spool and sleeve.
- No ball glitch.
- High frequency response.
- Nozzle and flapper design.
- Adapters available for mounting to D03 or ISO port patterns.



### Specifications

<b>Flow Rating</b> @ 70 Bar (1000 PSID)	11 and 22 LPM (3 and 6 GPM)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Supply Pressure</b>	10 – 105 Bar (145 – 1500 PSI)	<b>Pressure Gain</b> % change in pressure per 1% change in input command	30% minimum, 70% maximum
<b>Leakage Flow</b> @ 70 Bar (1000 PSID)	1.3 – 1.9 LPM (0.3 – 0.5 GPM)	<b>Step Response</b>	10 – 90%, < 6 ms for DY3H < 8 ms for DY6H
<b>Tank Port Pressure</b>	105 Bar (1500 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to + 106°C (+30°F to +225°F)
<b>Frequency Response</b> @ 90° phase shift	> 190 Hz (See Performance Curves)	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Filtration</b>	ISO 4406 15/12 or better
<b>Threshold</b>	≤ 0.5%		



**Accessories**

**Cable with Mating Connector:** EHC154S

**Mating Connector:** MS3106E-14S-2S

**Bolt Kit:** Included with valve

**Flushing Valve:** 11-0300

**Subplate:** 55-0100-2 SAE-6 Side ports

**Null Adjust Tool:** 6522A13

**Electronic Drivers:** 23-7030, BD90\*, BD101\*

When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

\* For output currents >15 mA

**Special Options:**

Consult factory for price, delivery and availability of special options.

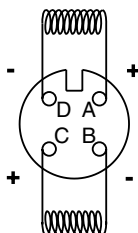
- Special coil
- Special wiring
- Special seals

**Weight:**

DY3H 0.34 kg (0.56 lbs.)

DY6H 0.34 kg (0.56 lbs.)

**Wiring Option C**  
**(Standard)**



Polarity shown connects P to C2 port.

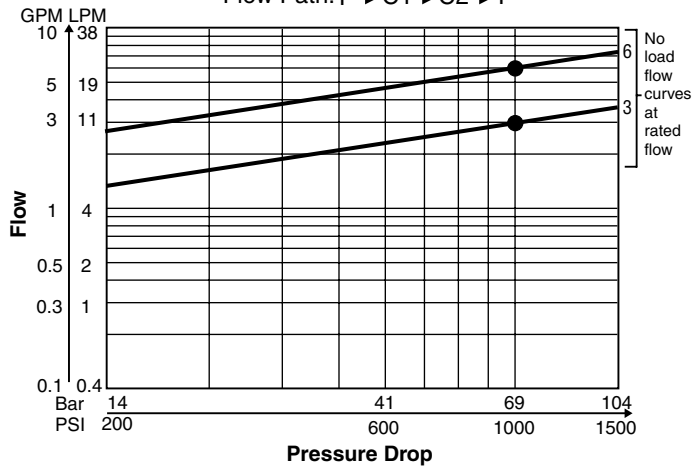


Flushing valve is rated for 3000 psi operation.

**Performance Curves**

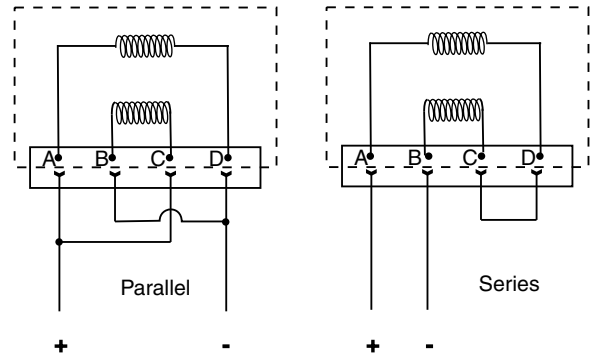
**Flow vs. Pressure Drop**  
 at 100% command

Flow Path: P → C1 → C2 → T



**Installation Wiring Options**

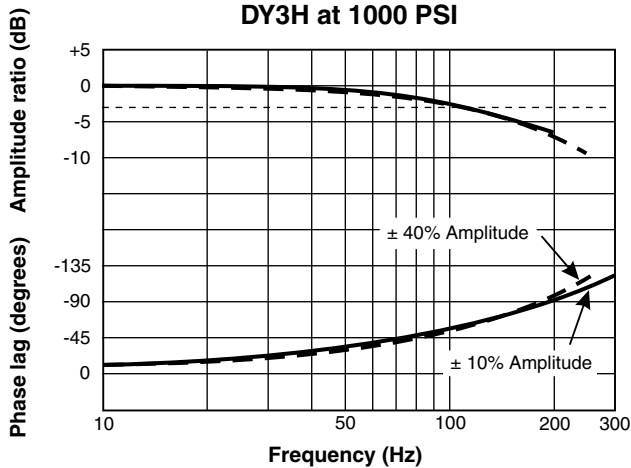
This servovalve has two coils. This illustration shows the internal wiring configurations for these valves. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustration below and to the mounting pattern for this valve to insure proper control phasing.



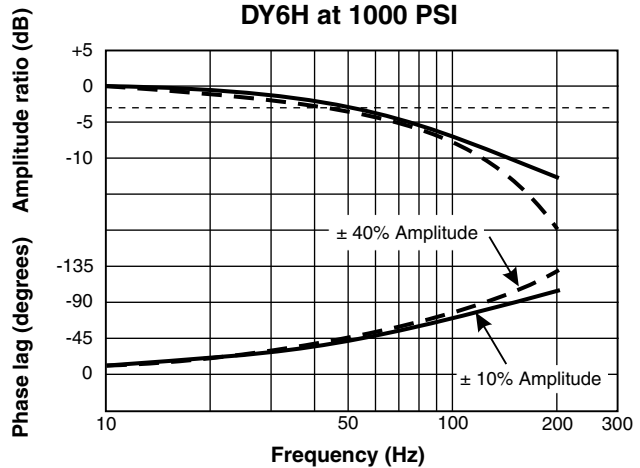
Polarity shown connects flow from P to C2 port.

**Frequency Response**

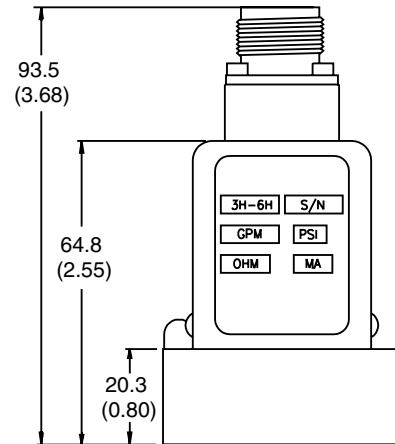
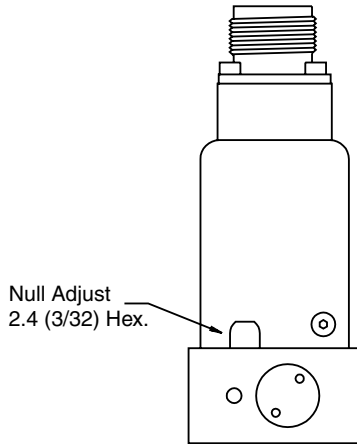
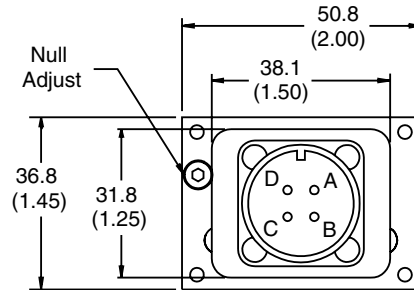
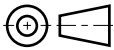
**DY3H at 1000 PSI**



**DY6H at 1000 PSI**

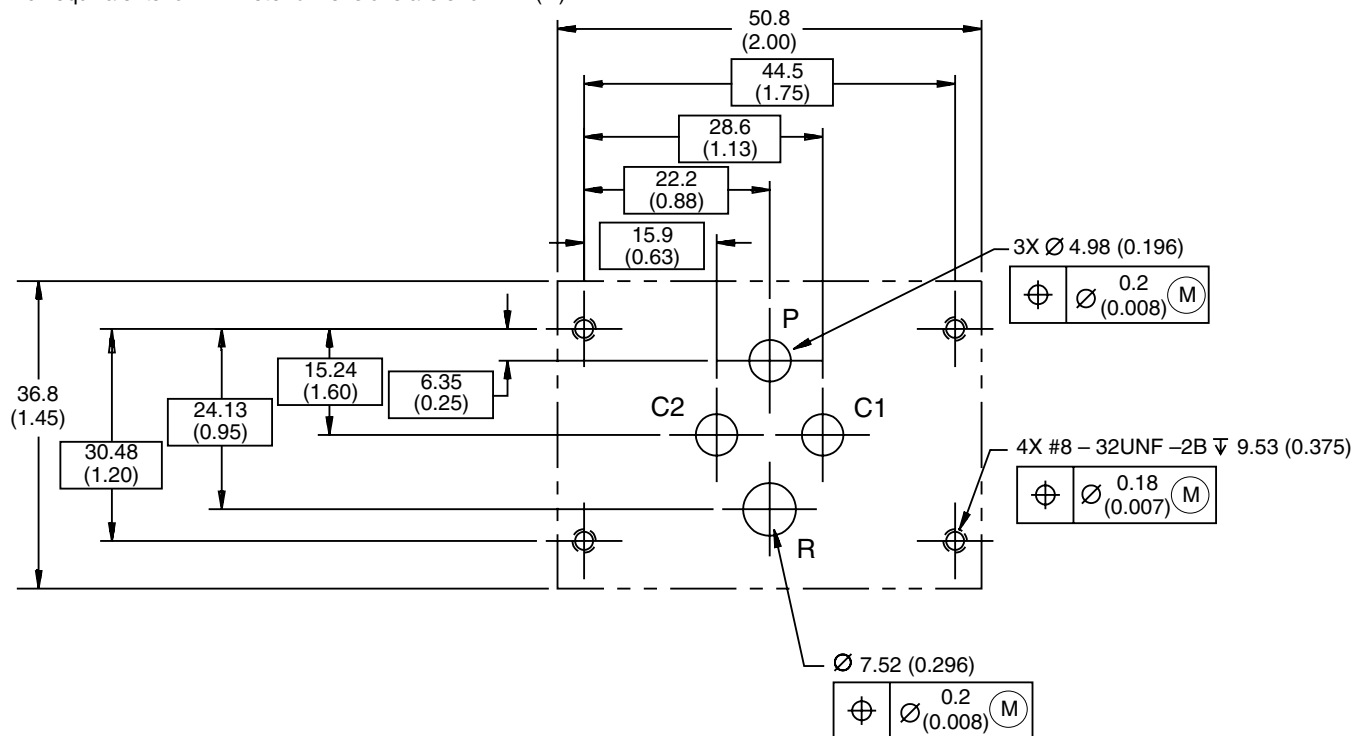


Inch equivalents for millimeter dimensions are shown in (\*\*)



**Mounting Interface**

Inch equivalents for millimeter dimensions are shown in (\*\*)





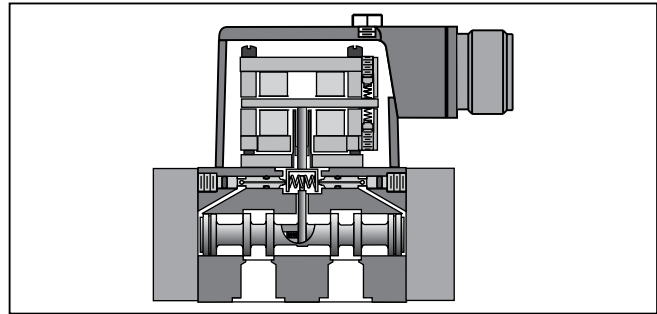
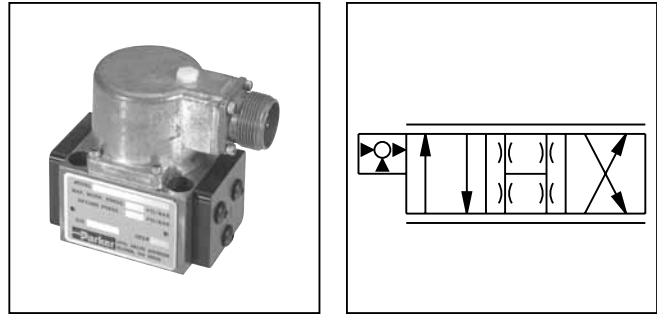
**General Description**

Series DY01 are two stage, 4-way, flapper and nozzle style servovalves. The DY01 servovalve combines a spool and sleeve construction, and a high frequency torque motor, for optimal performance. The unique rigid pin feedback design avoids ball glitch problems, which can occur in other types of servovalves. This valve is rated for 210 Bar (3000 PSI) standard, or can be built for 350 Bar (5000 PSI) service. The pressure ratings are the same for both the tool steel construction or the optional stainless steel spool and body.

The DY01 servovalve was specially designed for high precision flight simulator applications.

**Features**

- Precision lapped spool and sleeve.
- No ball glitch.
- Tool steel, or stainless steel, spool and body.
- Versatile 21.59 mm (0.850 in.) port circle, can mount to standard 19.81 mm (0.780 in.) and 23.62 mm (0.930 in.) port circle patterns.



**Specifications**

<b>Flow Rating</b> @ 70 Bar (1000 PSID)	3 and 11 LPM (1 and 3 GPM)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI) opt. 350 Bar (5000 PSI)	<b>Pressure Gain</b> % change in pressure per 1% change in input command	30% Minimum, 70% Maximum
<b>Leakage Flow</b> @ 70 Bar (1000 PSID)	0.42 – 0.95 LPM (0.11 – 0.25 GPM)	<b>Step Response</b>	10 – 90%, < 8 ms
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to + 106°C (+30°F to +225°F)
<b>Frequency Response</b> @ 90° phase shift	> 180 Hz (See Performance Curves)	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Filtration</b>	ISO 4406 15/12 or better
<b>Threshold</b>	≤ 0.5%		

**DY01**

Series

Material Options

Coils

Wiring

Seal

Operating Pressure

Flows

Special Options

Factory Code for Special Options

**Code Description**

- A Steel (standard)
- B Stainless Steel
- Z\* Special (specify)

\* Material selection does not affect operating pressure.

**Code Description**

- Omit Standard
- D (Specify) See list below

**Code Description**

- 1 3.8 LPM (1 GPM)
- 1.5 5.7 LPM (1.5 GPM)
- 3 11 LPM (3 GPM)

**Code Description**

- A 210 Bar (3000 PSI)
- B 350 Bar (5000 PSI)
- Z Special (specify)

Operating pressure is independent of material selection.

**Code Description**

- N Nitrile (standard)
- V Fluorocarbon
- E\* EPR
- Z\* Special (specify)

\* Consult factory for delivery

**Weight:** 1.0 kg (2.1 lbs.)

Code	Description	Parallel	Series
D	200 ohm (Std.)	50 mA	25 mA
F	80 ohm	80 mA	40 mA
G	22 ohm	200 mA	100 mA
K	40 ohm	150 mA	75 mA
L	360 ohm	30 mA	15 mA
M	475 ohm	40 mA	20 mA
R	750 ohm	30 mA	15 mA
T	1000 ohm	10 mA	5 mA
V	1200 ohm	40 mA	20 mA
Z	Special (specify)		

**Code Connector over: Flow P to C2 with:**

- C Port C1 (+) Signal to A, C
- D Port C1 (+) Signal to B, D
- Z Special (specify)

**Special Options:**

Consult factory for price, delivery and availability of special options.

- Special coil
- Special wiring
- Special seals
- Special flow rate
- Dual flow rate
- Dual gain
- Zener barriers

**Accessories**

**Cable with Mating Connector:** EHC154S

**Mating Connector:** MS3106E-14S-2S

**Bolt Kit:** Included with valve

**Flushing Valve:** 11-0500

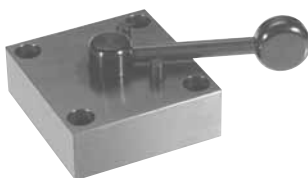
**Subplate:** 55-0100-8S SAE-8 Side ports

**Null Adjust Tool:** 6522A13

**Electronic Drivers:** 23-7030, BD90\*, BD101\*

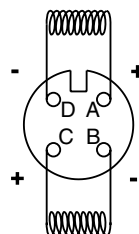
When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

\* For output currents >15 mA



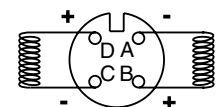
Flushing valve is rated for 3000 psi operation.

**Wiring Option C (Standard)**



Polarity shown connects P to C2 port.

**Wiring Option D**



Moog, Atchley and Vickers standard.

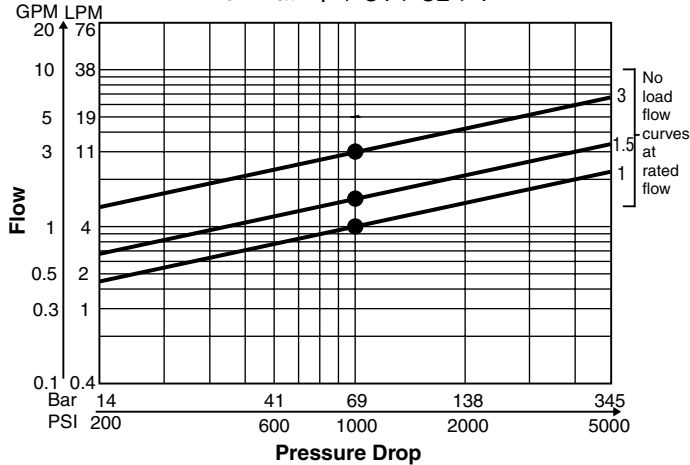
**Performance Curves**

**Frequency Response**

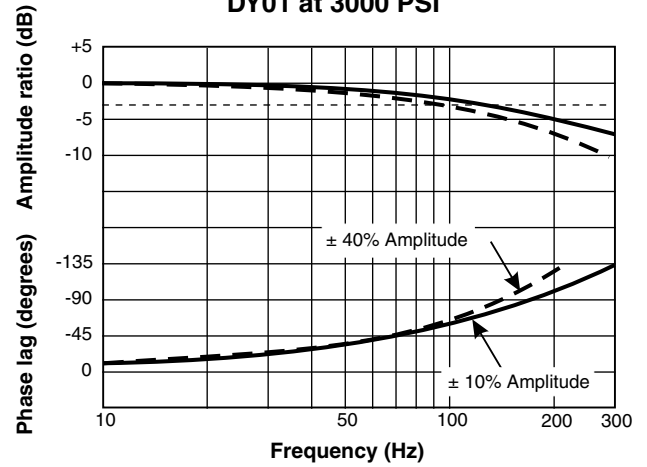
**DY01 Flow vs. Pressure Drop**

at 100% command

Flow Path: P → C1 → C2 → T



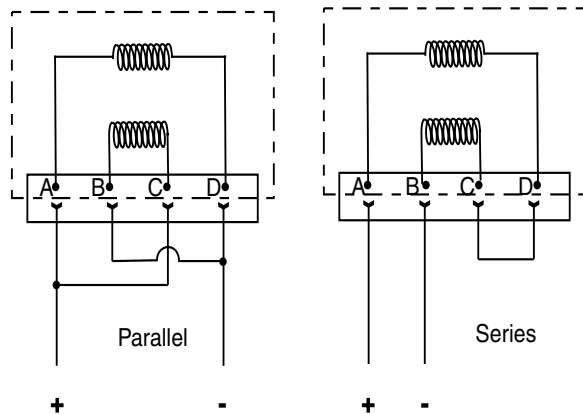
**DY01 at 3000 PSI**



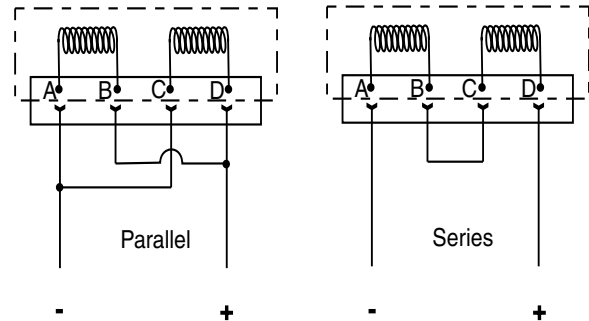
**Installation Wiring Options**

This servovalve has two coils. This illustration shows the internal wiring configurations for options C and D. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.

**Option C**

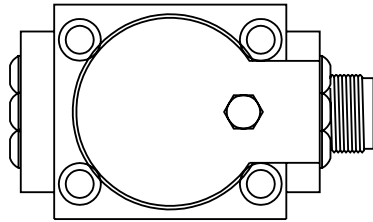
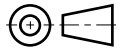


**Option D**

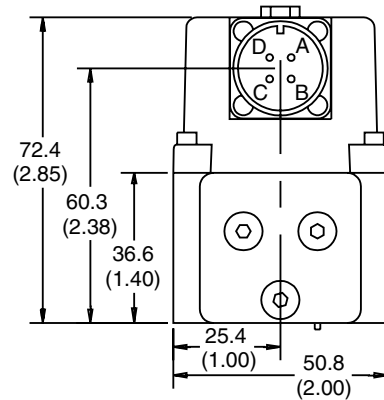
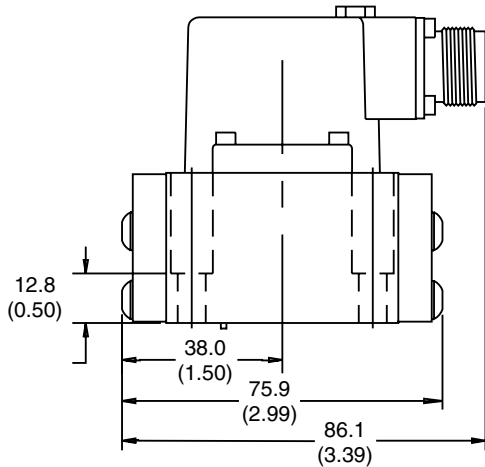


Polarity shown connects flow from P to C2 port.

Inch equivalents for millimeter dimensions are shown in (\*\*)

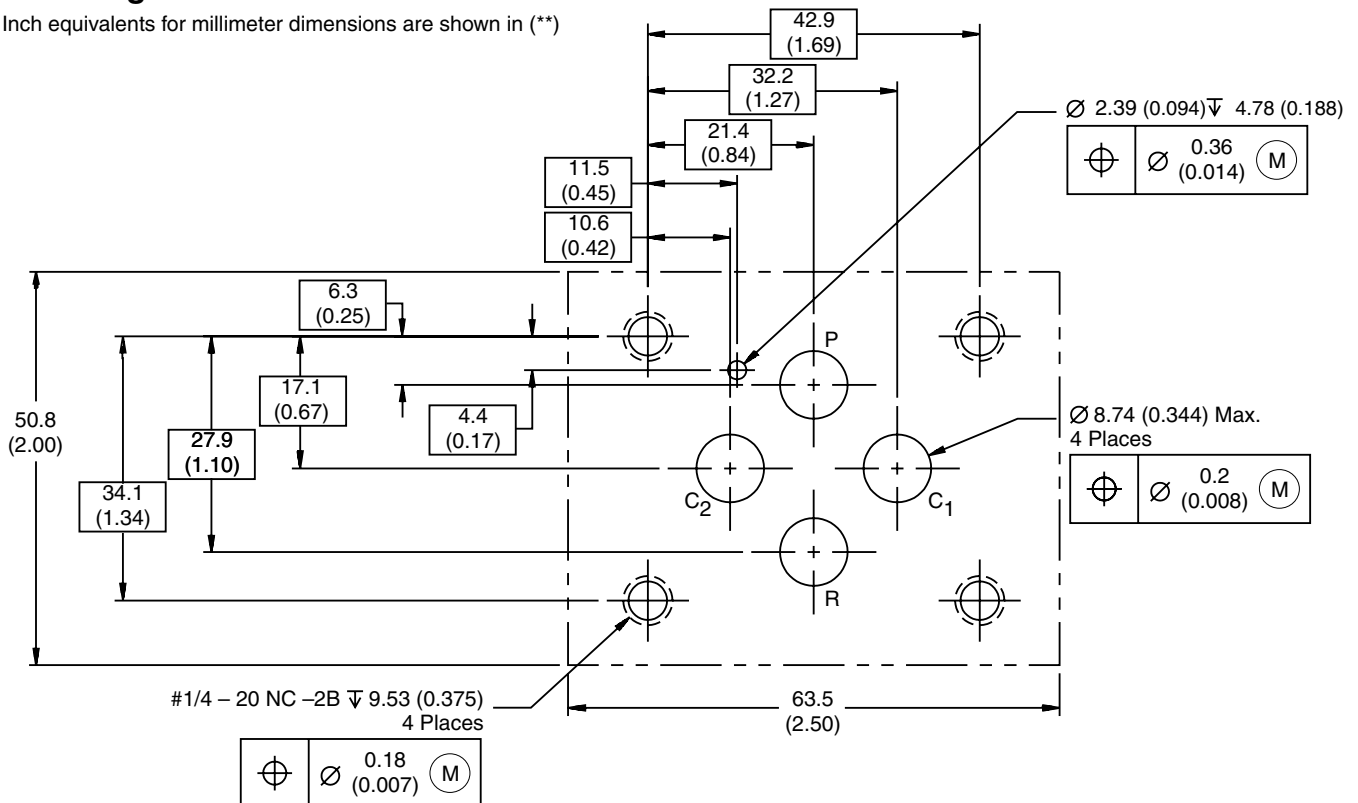


Connector over port C1



**Mounting Interface**

Inch equivalents for millimeter dimensions are shown in (\*\*)

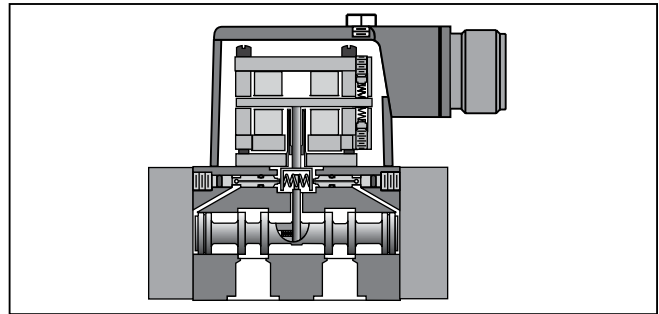
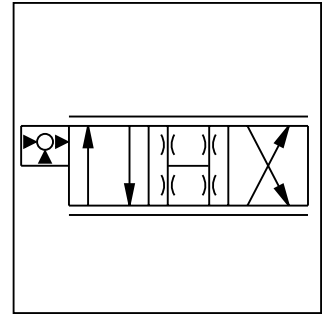
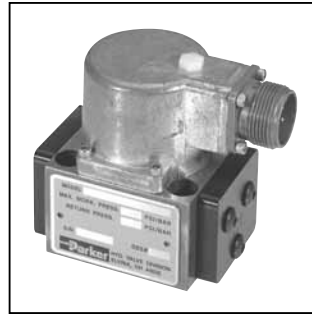


### General Description

Series DY05 are two stage, 4-way, flapper and nozzle style servovalves. The DY05 has a wide range of flow ratings within a lower cost spool and body design. The unique rigid pin feedback design avoids ball glitch problems, which can occur in other types of servovalves. These valves are rated for 210 Bar (3000 PSI) standard, or can be built for 350 Bar (5000 PSI) service. The pressure ratings are the same for both the tool steel construction or the optional stainless steel spool and body.

### Features

- Lapped spool and body.
- No ball glitch.
- Tool steel, or stainless steel, spool and body.
- Versatile 21.59 mm (0.850 in.) port circle, can mount to standard 19.81 mm (0.780 in.) and 23.62 mm (0.930 in.) port circle patterns.
- Survives high tank port pressures.



### Specifications

<b>Flow Rating</b> @ 70 Bar (1000 PSID)	0.95, 1.9, 3.8, 9.5 and 19 LPM (0.25, 0.5, 1.0, 2.5 & 5 GPM)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI) opt. 350 Bar (5000 PSI)	<b>Pressure Gain</b> % change in pressure per 1% change in input command	30% minimum, 70% maximum
<b>Leakage Flow</b> @ 70 Bar (1000 PSID)	0.42 – 0.95 LPM (0.11 – 0.25 GPM)	<b>Step Response</b>	10 – 90%, < 11 ms
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to + 106°C (+30°F to +225°F)
<b>Frequency Response</b> @ 90° phase shift	> 100 Hz (See Performance Curves)	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Filtration</b>	ISO 4406 15/12 or better
<b>Threshold</b>	≤ 0.5%		

**DY05**

Series

Material Options

Coils

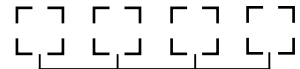
Wiring

Seal

Operating Pressure

Flows

Special Options



Factory Code for Special Options

Code	Description
A	Steel (standard)
B	Stainless Steel
Z*	Special (specify)

\* Material selection does not not affect operating pressure.

Code	Description
Omit	Standard
D	(Specify) See list below

Code	Description
0.25	0.95 LPM (0.25 GPM)
0.5	1.9 LPM (0.5 GPM)
1	3.8 LPM (1 GPM)
2.5	9.5 LPM (2.5 GPM)
5	19 LPM (5 GPM)

Code	Description	Parallel	Series
D	200 ohm (Std.)	50 mA	25 mA
F	80 ohm	80 mA	40 mA
G	22 ohm	200 mA	100 mA
K	40 ohm	150 mA	75 mA
L	360 ohm	30 mA	15 mA
M	475 ohm	40 mA	20 mA
R	750 ohm	30 mA	15 mA
T	1000 ohm	10 mA	5 mA
V	1200 ohm	40 mA	20 mA
Z	Special (specify)		

Code	Description
A	210 Bar (3000 PSI)
B	350 Bar (5000 PSI)
Z	Special (specify)

Operating pressure is independent of material selection.

**Weight:** 1.0 kg (2.1 lbs.)

Code	Description
N	Nitrile (standard)
V	Fluorocarbon
E*	EPR
Z*	Special (specify)

\* Consult factory for delivery

Code	Connector over:	Flow P to C2 with:
C	Port C1	(+) Signal to A, C
D	Port C1	(+) Signal to B, D
Z	Special (specify)	

**Special Options:**

Consult factory for price, delivery and availability of special options.

- Special coil
- Special wiring
- Special seals
- Special flow rate
- Dual flow rate
- Dual gain
- Zener barriers
- High frequency torque motor (Models 5, 10, 12 & 15 only)

**Accessories**

**Cable with Mating Connector:** EHC154S

**Mating Connector:** MS3106E-14S-2S

**Bolt Kit:** Included with Valve

**Flushing Valve:** 11-0500

**Subplate:** 55-0100-8S SAE-8 Side ports

**Null Adjust Tool:** 6522A13

**Electronic Drivers:** 23-7030, BD90\*, BD101\*

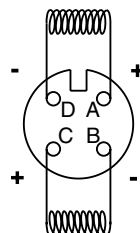
When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

\* For output currents >15 mA



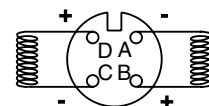
Flushing valve is rated for 3000 psi operation.

**Wiring Option C (Standard)**



Dyval and Pegasus standard.

**Wiring Option D**



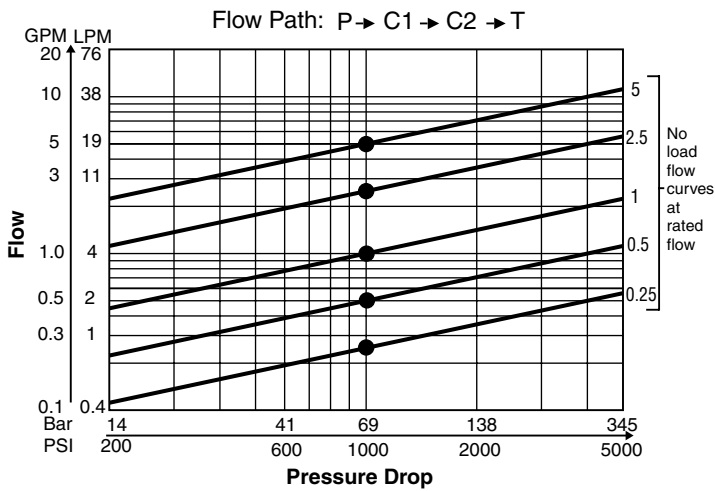
Moog, Atchley and Vickers standard.

In both cases, polarity shown connects P to C2 port.

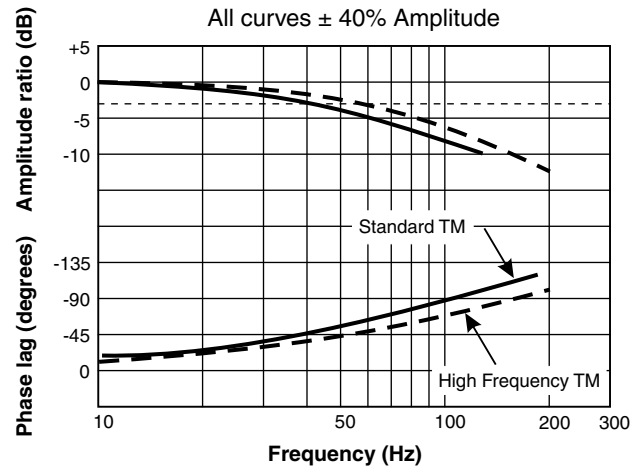
**Performance Curves**

**Frequency Response**

**DY05 Flow vs. Pressure Drop**  
 at 100% command



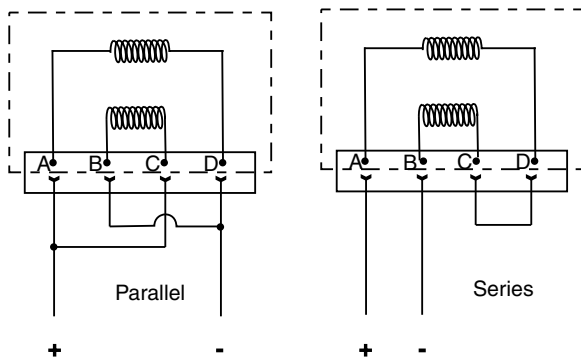
**DY05 at 3000 PSI**  
 All curves ± 40% Amplitude



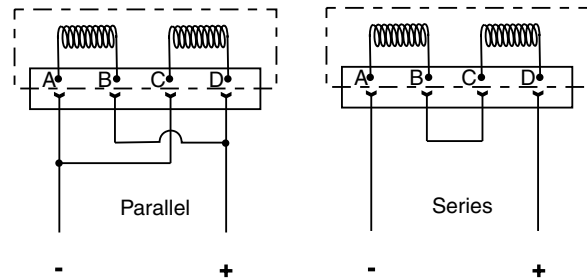
**Installation Wiring Options**

This servovalve has two coils. This illustration shows the internal wiring configurations for options C and D. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.

**Option C**



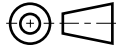
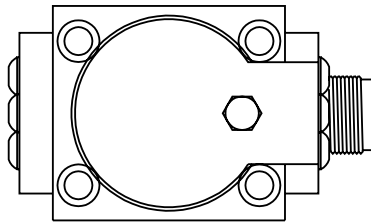
**Option D**



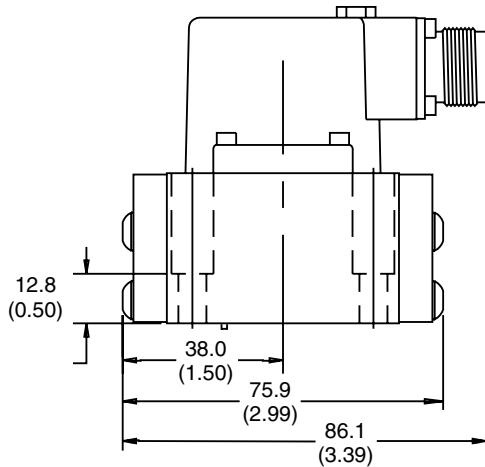
Polarity shown connects flow from P to C2 port.



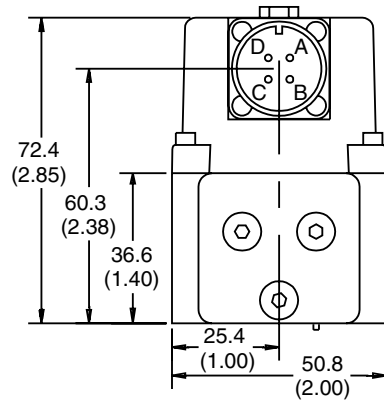
Inch equivalents for millimeter dimensions are shown in (\*\*)



**C**

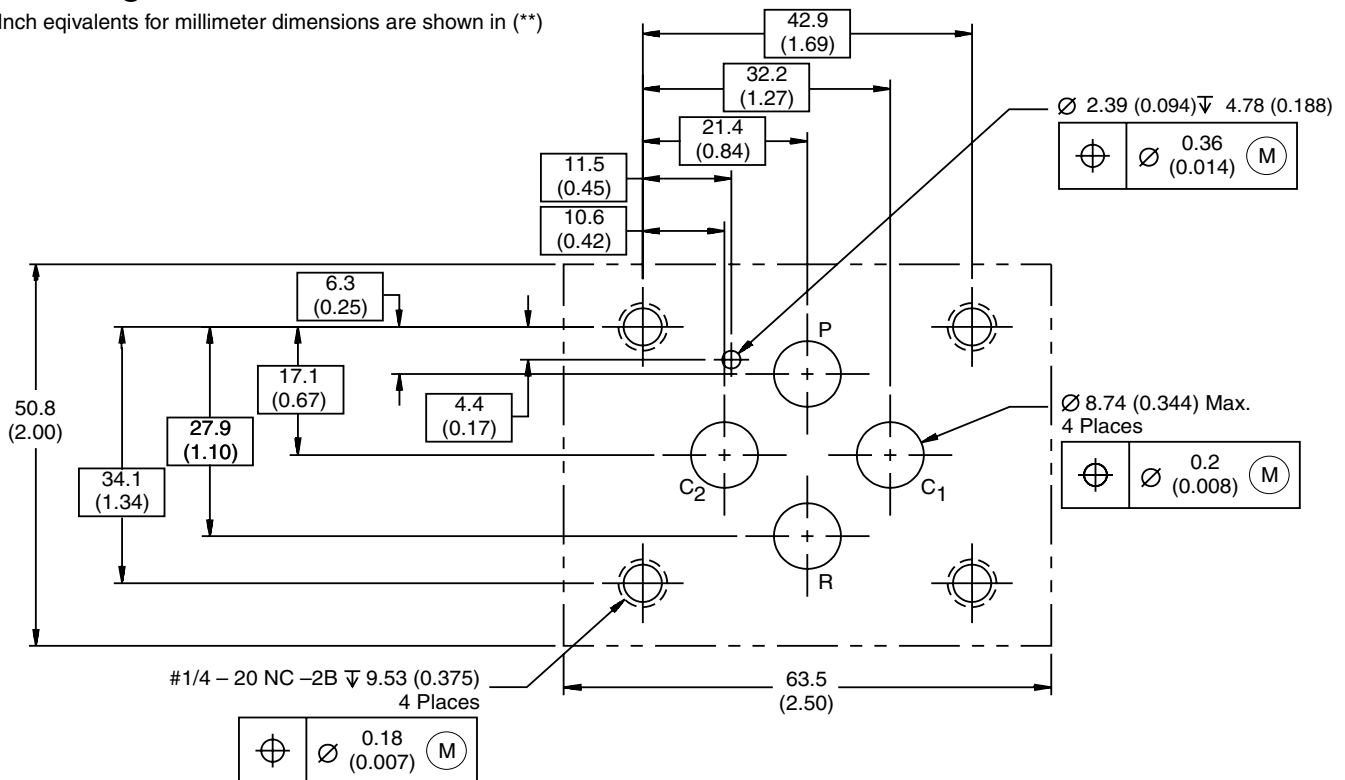


Connector over port C1



**Mounting Interface**

Inch equivalents for millimeter dimensions are shown in (\*\*)



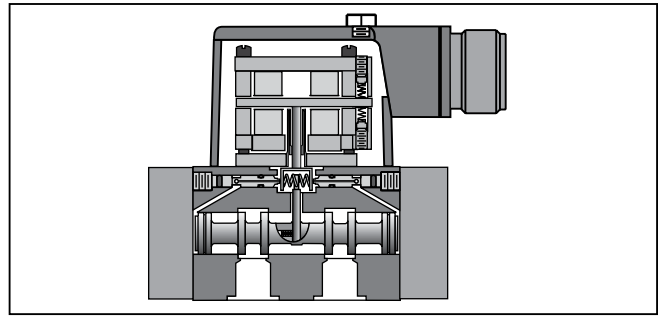
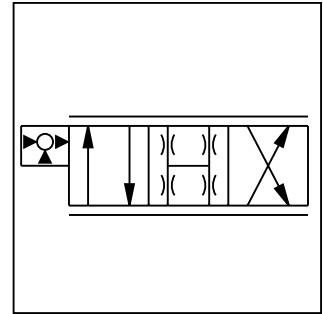
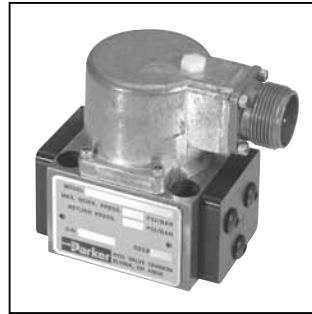


### General Description

Series DY10 are two stage, 4-way, flapper and nozzle style servovalves. The DY10 is a higher flow version of the DY05. The unique rigid pin feedback design avoids ball glitch problems, which can occur in other types of servovalves. These valves are rated for 210 Bar (3000 PSI) standard, or can be built for 350 Bar (5000 PSI) service. The pressure ratings are the same for both the tool steel construction or the optional stainless steel spool and body.

### Features

- Lapped spool and body.
- No ball glitch.
- Tool steel, or stainless steel, spool and body.
- Versatile 21.59 mm (0.850 in.) port circle, can mount to standard 19.81 mm (0.780 in.) and 23.62 mm (0.930 in.) port circle patterns.
- Survives high tank port pressures.



### Specifications

<b>Flow Rating</b> @ 70 Bar (1000 PSID)	28 and 38 LPM (7.5 and 10 GPM)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI) opt. 350 Bar (5000 PSI)	<b>Pressure Gain</b> % change in pressure per 1% change in input command	30% minimum, 70% maximum
<b>Leakage Flow</b> @ 70 Bar (1000 PSID)	0.57 – 1.1 LPM (0.15 – 0.3 GPM)	<b>Step Response</b>	10 – 90%, < 13 ms
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to + 106°C (+30°F to +225°F)
<b>Frequency Response</b> @ 90° phase shift	> 100 Hz (See Performance Curves)	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Filtration</b>	ISO 4406 15/12 or better
<b>Threshold</b>	≤ 0.5%		

**DY10**

Series

Material Options

Coils

Wiring

Seal

Operating Pressure

Flows

Special Options

Factory Code for Special Options

Code	Description
A	Steel (standard)
B	Stainless Steel
Z*	Special (specify)

\* Material selection does not affect operating pressure.

Code	Description
Omit	Standard
D	(Specify) See list below

Code	Description
7.5	28 LPM (7.5 GPM)
10	38 LPM (10 GPM)

Code	Description
A	210 Bar (3000 PSI)
B	350 Bar (5000 PSI)
Z	Special (specify)

Operating pressure is independent of material selection.

Code	Description
N	Nitrile (standard)
V	Fluorocarbon
E *	EPR
Z *	Special (specify)

\* Consult factory for delivery

**Weight:** 1.0 kg (2.1 lbs.)

Code	Description	Parallel	Series
D	200 ohm (Std.)	50 mA	25 mA
F	80 ohm	80 mA	40 mA
G	22 ohm	200 mA	100 mA
K	40 ohm	150 mA	75 mA
L	360 ohm	30 mA	15 mA
M	475 ohm	40 mA	20 mA
R	750 ohm	30 mA	15 mA
T	1000 ohm	10 mA	5 mA
V	1200 ohm	40 mA	20 mA
Z	Special (specify)		

Code	Connector over:	Flow P to C2 with:
C	Port C1	(+) Signal to A, C
D	Port C1	(+) Signal to B, D
Z	Special (specify)	

**Special Options:**

Consult factory for price, delivery and availability of special options.

- Special coil
- Special wiring
- Special seals
- Special flow rate
- Dual flow rate
- Dual gain
- Zener barriers
- High frequency torque motor (Models 5, 10, 12 & 15 only)

**Accessories**

**Cable with Mating Connector:** EHC154S

**Mating Connector:** MS3106E-14S-2S

**Bolt Kit:** Included with valve

**Flushing Valve:** 11-0500

**Subplate:** 55-0100-8S SAE-8 Side ports

**Null Adjust Tool:** 6522A13

**Electronic Drivers:** 23-7030, BD90\*, BD101\*

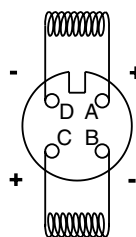
When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

\* For output currents >15 mA



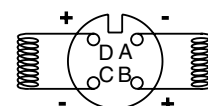
Flushing valve is rated for 3000 psi operation.

**Wiring Option C (Standard)**



Dyval and Pegasus standard.

**Wiring Option D**

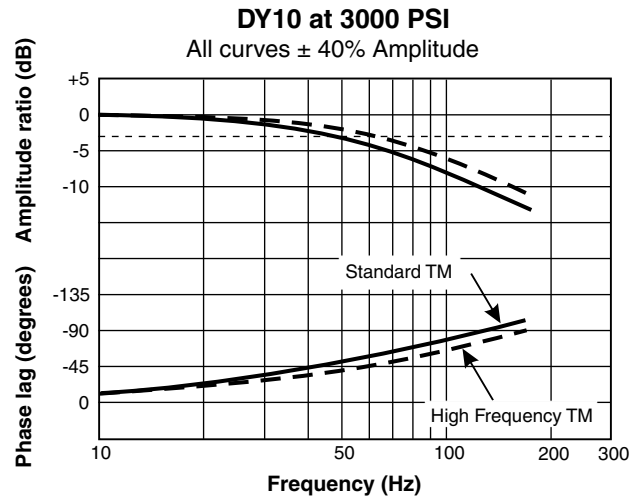
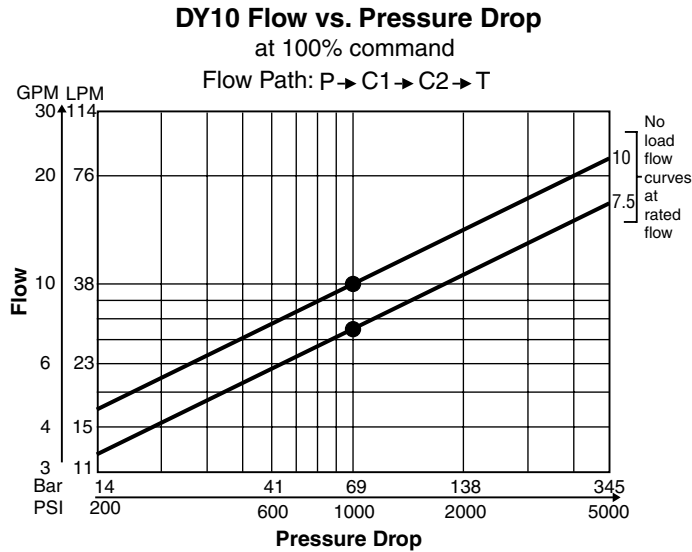


Moog, Atchley and Vickers standard.

In both cases, polarity shown connects P to C2 port.

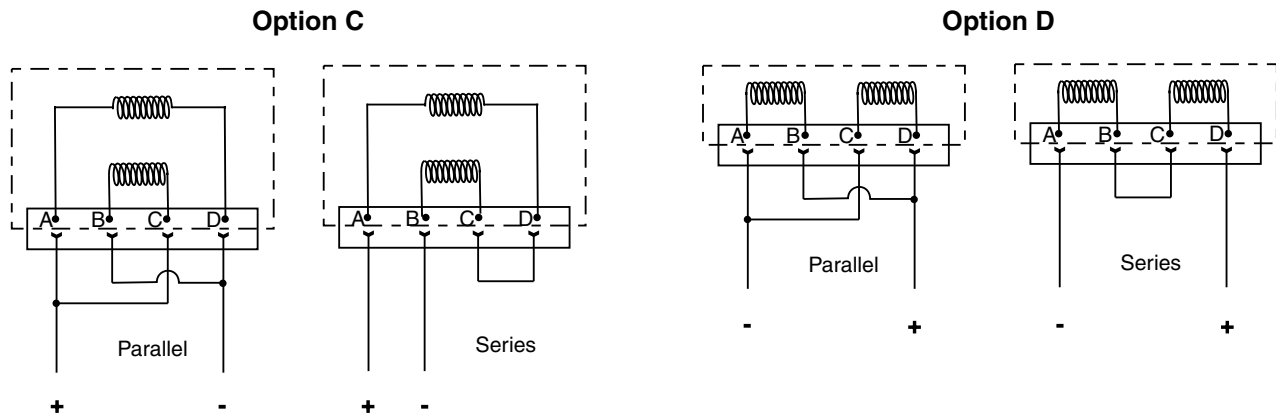
**Performance Curves**

**Frequency Response**



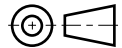
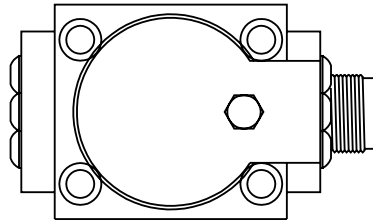
**Installation Wiring Options**

This servovalve has two coils. This illustration shows the internal wiring configurations for options C and D. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.

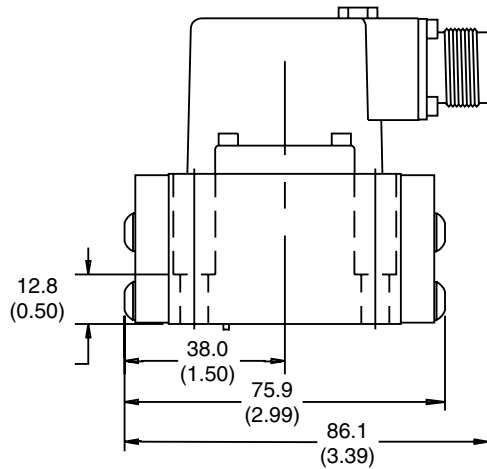


Polarity shown connects flow from P to C2 port.

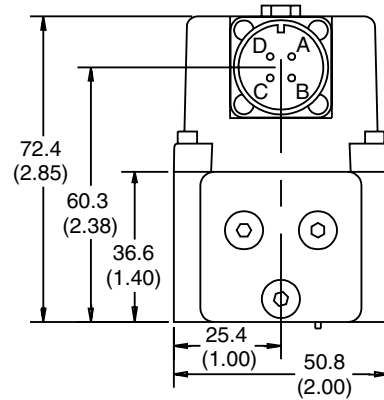
Inch equivalents for millimeter dimensions are shown in (\*\*)



**C**

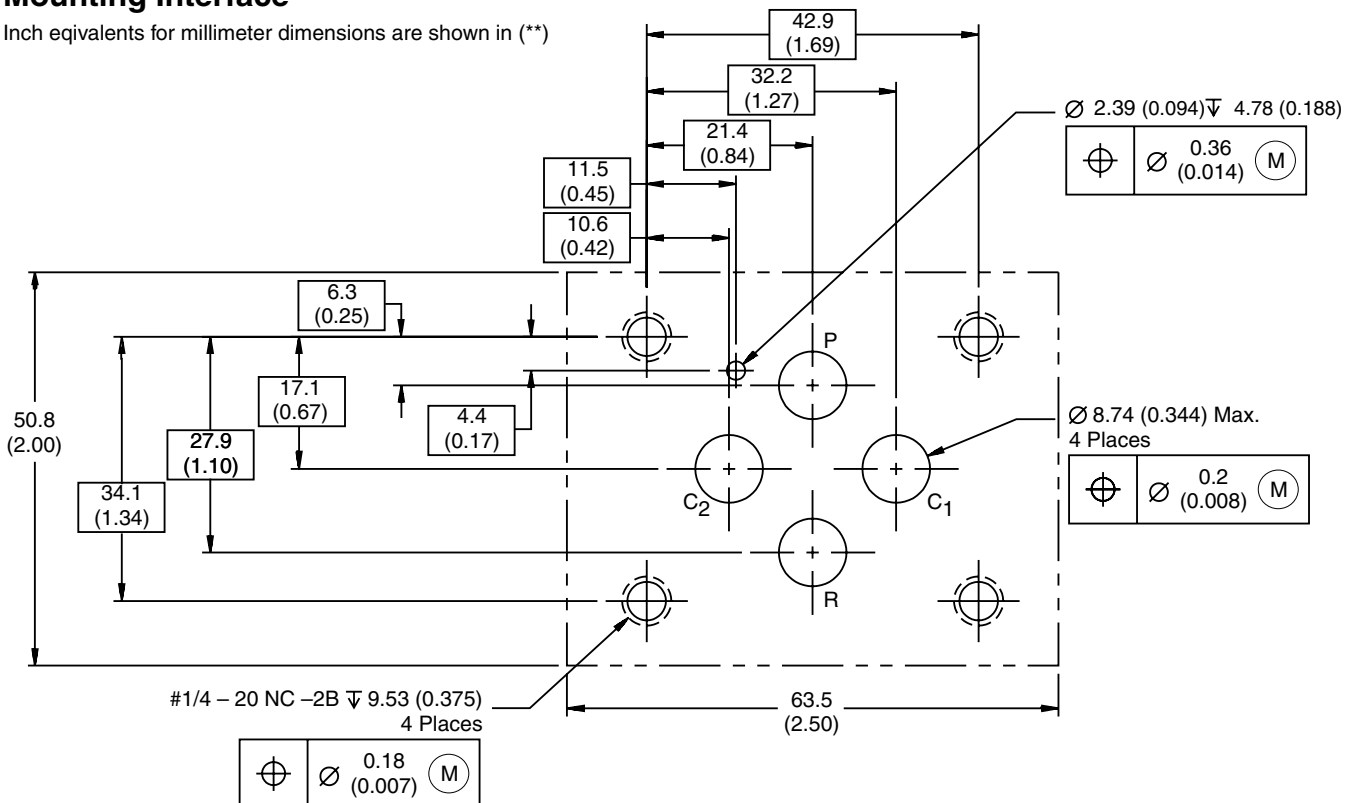


Connector over port C1



**Mounting Interface**

Inch equivalents for millimeter dimensions are shown in (\*\*)

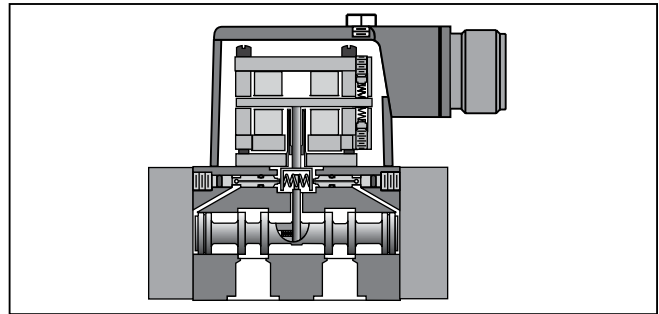
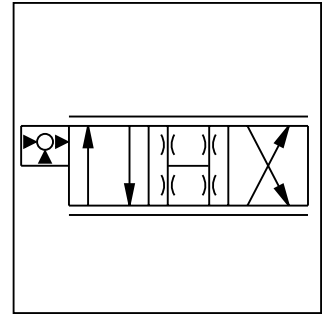


### General Description

Series DY12 are two stage, 4-way, flapper and nozzle style servovalves. They have the same port pattern and body as the DY10 valve, but have a longer spool stroke for higher flow. The unique rigid pin feedback design avoids ball glitch problems, which can occur in other types of servovalves. These valves are rated for 210 Bar (3000 PSI) standard, or can be built for 350 Bar (5000 PSI) service. The pressure ratings are the same for both the tool steel construction or the optional stainless steel spool and body.

### Features

- Lapped spool and body.
- No ball glitch.
- Tool steel, or stainless steel, spool and body.
- Nozzle and flapper design.
- Versatile 21.59 mm (0.850 in.) port circle, can mount to standard 19.81 mm (0.780 in.) and 23.62 mm (0.937 in.) port circle patterns.
- Survives high tank port pressures.



### Specifications

<b>Flow Rating</b> @ 70 Bar (1000 PSID)	47 and 57 LPM (12.5 and 15 GPM)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI) opt. 350 Bar (5000 PSI)	<b>Pressure Gain</b> % change in pressure per 1% change in input command	30% minimum, 70% maximum
<b>Leakage Flow</b> @ 70 Bar (1000 PSID)	0.57 – 1.1 LPM (0.15 – 0.3 GPM)	<b>Step Response</b>	10 – 90%, < 13 ms
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to + 106°C (+30°F to +225°F)
<b>Frequency Response</b> @ 90° phase shift	> 100 Hz (See Performance Curves)	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Filtration</b>	ISO 4406 15/12 or better
<b>Threshold</b>	≤ 0.5%		

**DY12**

Series

Material Options

Coils

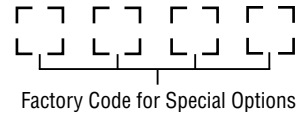
Wiring

Seal

Operating Pressure

Flows

Special Options



Factory Code for Special Options

Code	Description
A	Steel (standard)
B	Stainless Steel
Z*	Special (specify)

\* Material selection does not affect operating pressure.

Code	Description
Omit	Standard
D	(Specify) See list below

Code	Description
12.5	47 LPM (12.5 GPM)
15	57 LPM (15 GPM)

Code	Description
A	210 Bar (3000 PSI)
B	350 Bar (5000 PSI)
Z	Special (specify)

Operating pressure is independent of material selection.

Code	Description
N	Nitrile (standard)
V	Fluorocarbon
E *	EPR
Z *	Special (specify)

\* Consult factory for delivery

Code	Description	Parallel	Series
D	200 ohm (Std.)	50 mA	25 mA
F	80 ohm	80 mA	40 mA
G	22 ohm	200 mA	100 mA
K	40 ohm	150 mA	75 mA
L	360 ohm	30 mA	15 mA
M	475 ohm	40 mA	20 mA
R	750 ohm	30 mA	15 mA
T	1000 ohm	10 mA	5 mA
V	1200 ohm	40 mA	20 mA
Z	Special (specify)		

Code	Connector over:	Flow P to C2 with:
C	Port C1	(+) Signal to A, C
D	Port C1	(+) Signal to B, D
Z*	Special (specify)	

**Weight:** 1.0 kg (2.1 lbs.)

**Special Options:**

Consult factory for price, delivery and availability of special options.

- Special coil
- Special wiring
- Special seals
- Special flow rate
- Dual flow rate
- Dual gain
- Zener barriers
- High frequency torque motor (Models 5, 10, 12 & 15 only)

**Accessories**

**Cable with Mating Connector:** EHC154S

**Mating Connector:** MS3106E-14S-2S

**Bolt Kit:** Included with valve

**Flushing Valve:** 11-0500

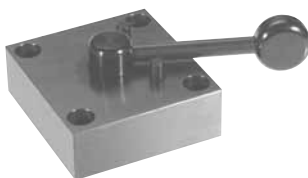
**Subplate:** 55-0100-8S SAE-8 Side ports

**Null Adjust Tool:** 6522A13

**Electronic Drivers:** 23-7030, BD90\*, BD101\*

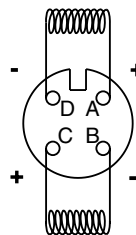
When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

\* For output currents >15 mA



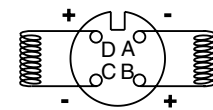
Flushing valve is rated for 3000 psi operation.

**Wiring Option C (Standard)**



Dyval and Pegasus standard.

**Wiring Option D**

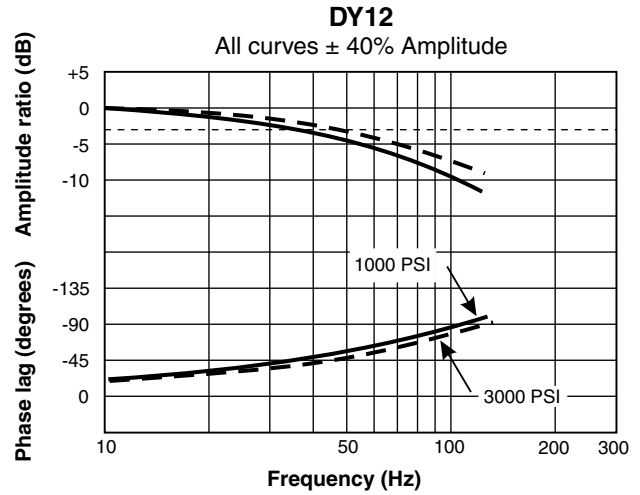
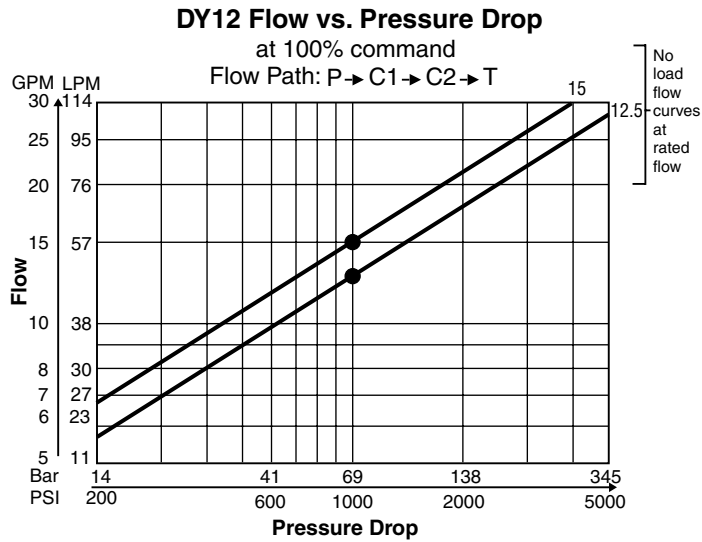


Moog, Atchley and Vickers standard.

In both cases, polarity shown connects P to C2 port.

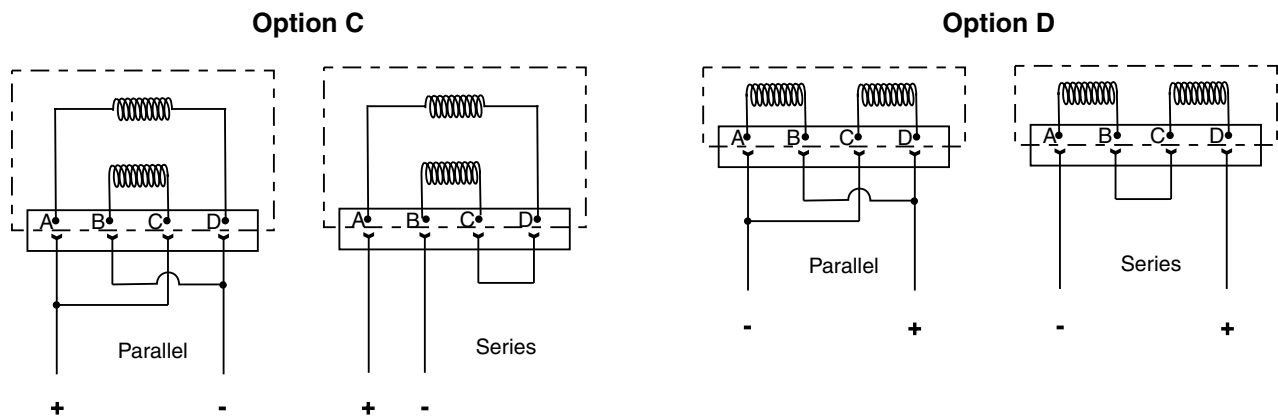
**Performance Curves**

**Frequency Response**



**Installation Wiring Options**

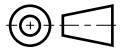
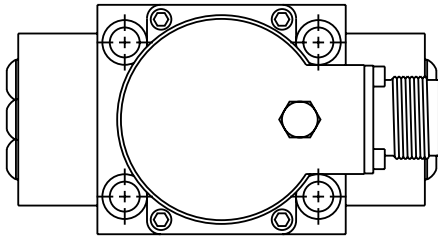
This servovalve has two coils. This illustration shows the internal wiring configurations for these valves. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustration below and to the mounting pattern for this valve to insure proper control phasing.



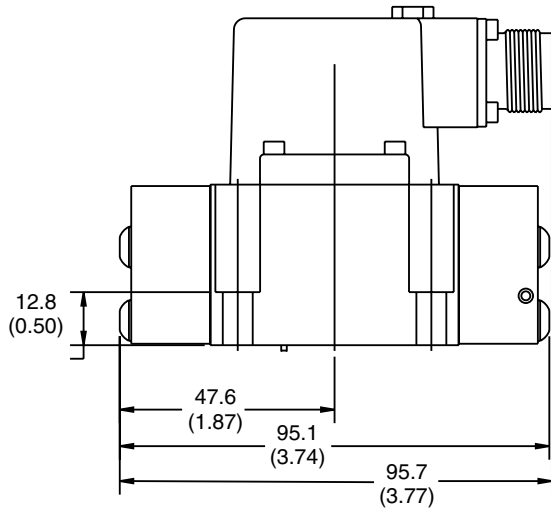
Polarity shown connects flow from P to C2 port.



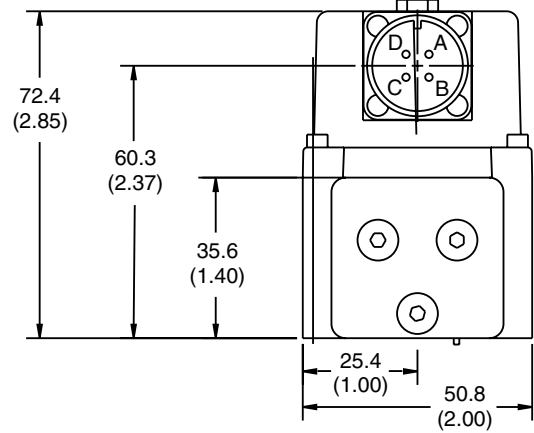
Inch equivalents for millimeter dimensions are shown in (\*\*)



**C**

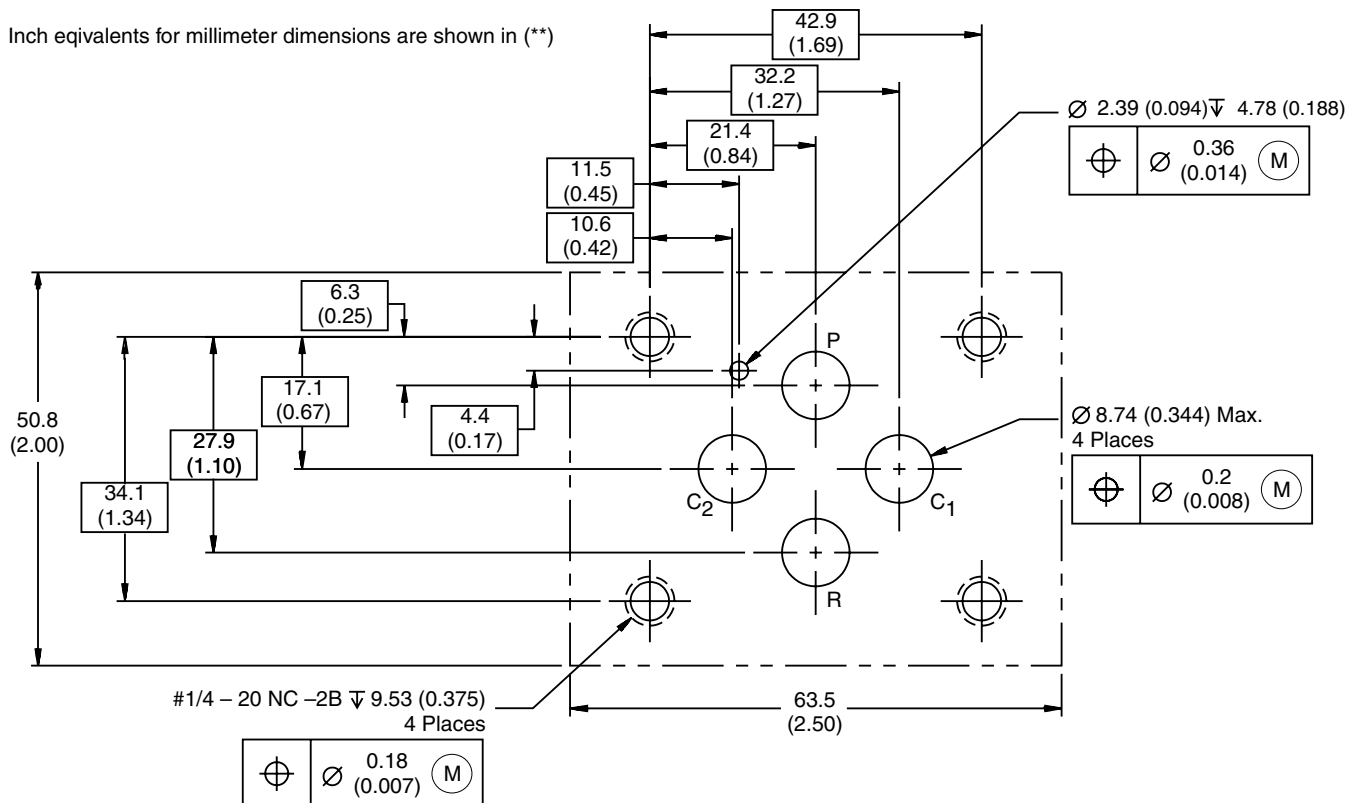


Connector over C1 port



**Mounting Interface**

Inch equivalents for millimeter dimensions are shown in (\*\*)



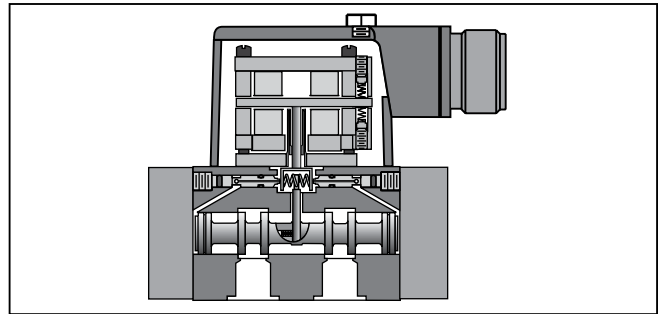
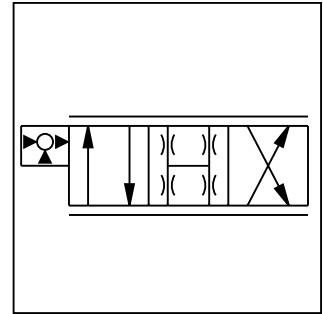
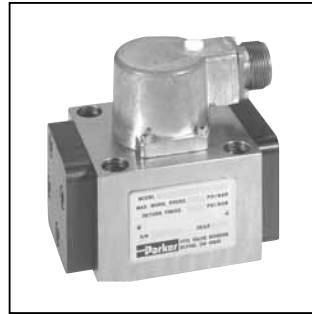


### General Description

Series DY15 are two stage, 4-way, flapper and nozzle style servovalves. This valve is rated for 210 Bar (3000 PSI) standard, or can be built for 350 Bar (5000 PSI) service. The pressure ratings are the same for both the tool steel construction or the optional stainless steel spool and body.

### Features

- Lapped spool and body.
- No ball glitch.
- Tool steel, or stainless steel, spool and body.
- Nozzle and flapper design.
- Unique port pattern (see next page). (1 in. port circle)
- Survives high tank port pressures.



### Specifications

<b>Flow Rating</b> @ 70 Bar (1000 PSID)	57, 75 and 95 LPM (15, 20 and 25 GPM)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI) opt. 350 Bar (5000 PSI)	<b>Pressure Gain</b> % change in pressure per 1% change in input command	30% minimum, 70% maximum
<b>Leakage Flow</b> @ 70 Bar (1000 PSID)	0.95 – 1.7 LPM (0.25 – 0.45 GPM)	<b>Step Response</b>	10 – 90%, < 18 ms < 18 ms up to 75 LPM (20 GPM) < 20 ms up to 95 LPM (25 GPM)
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to + 106°C (+30°F to +225°F)
<b>Frequency Response</b> @ 90° phase shift	> 45 Hz (See Performance Curves)	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Filtration</b>	ISO 4406 15/12 or better
<b>Threshold</b>	≤ 0.5%		



**DY15**

Series

Material Options

Coils

Wiring

Seal

Operating Pressure

Flows

Special Options

Factory Code for Special Options

Code	Description
A	Steel (standard)
B	Stainless Steel
Z*	Special (specify)

\* Material selection does not affect operating pressure

Code	Description
Omit	Standard
D	(Specify) See list below

Code	Description
15	57 LPM (15 GPM)
20	76 LPM (20 GPM)
25	95 LPM (25 GPM)

Code	Description
A	210 Bar (3000 PSI)
B	350 Bar (5000 PSI)
Z	Special (specify)

Operating pressure is independent of material selection.

Code	Description
N	Nitrile (standard)
V	Fluorocarbon
E*	EPR
Z*	Special (specify)

\* Consult factory for delivery

Code	Description	Parallel	Series
D	200 ohm (Std.)	50 mA	25 mA
F	80 ohm	80 mA	40 mA
G	22 ohm	200 mA	100 mA
K	40 ohm	150 mA	75 mA
L	360 ohm	30 mA	15 mA
M	475 ohm	40 mA	20 mA
R	750 ohm	30 mA	15 mA
T	1000 ohm	10 mA	5 mA
V	1200 ohm	40 mA	20 mA
Z	Special (specify)		

Code	Connector over:	Flow P to C2 with:
C	Port C1	(+) Signal to A, C
D	Port C1	(+) Signal to B, D
Z	Special (specify)	

**Weight:** 1.8 kg (3.9 lbs.)

**Accessories**

**Cable with Mating Connector:** EHC154S

**Mating Connector:** MS3106E-14S-2S

**Bolt Kit:** Included with valve

**Flushing Valve:** 11-0600

**Subplate:** 55-0300-2 SAE-16 Side ports

**Null Adjust Tool:** 6522A13

**Electronic Drivers:** 23-7030, BD90\*, BD101\*

When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

\* For output currents >15 mA



Flushing valve is rated for 3000 psi operation.

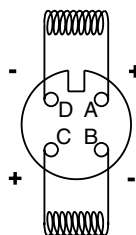
DY15.indd, dd

**Special Options:**

Consult factory for price, delivery and availability of special options.

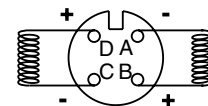
- Special coil
- Special wiring
- Special seals
- Special flow rate
- Dual flow rate
- Dual gain
- Zener barriers
- High frequency torque motor (Models 5, 10, 12 & 15 only)

**Wiring Option C (Standard)**



Dyval and Pegasus standard.

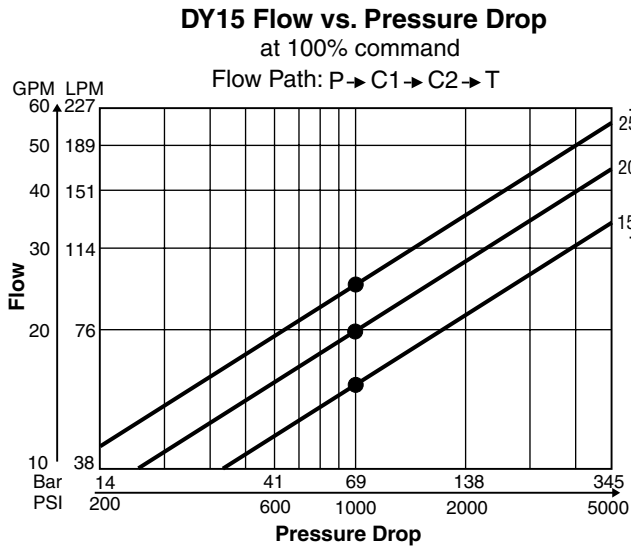
**Wiring Option D**



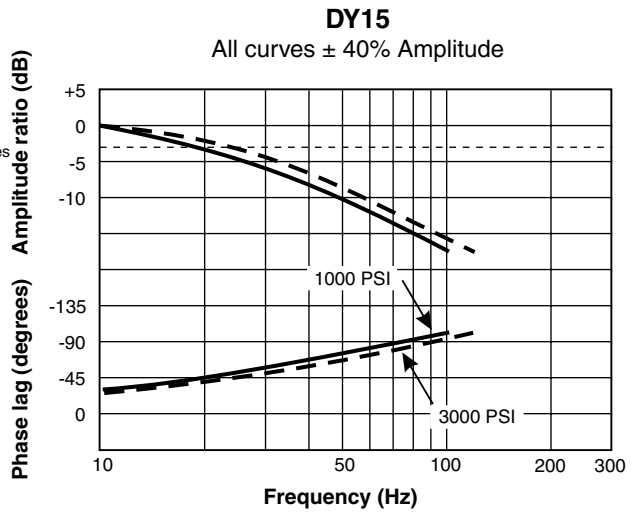
Moog, Atchley and Vickers standard.

In both cases, polarity shown connects P to C2 port.

**Performance Curves**

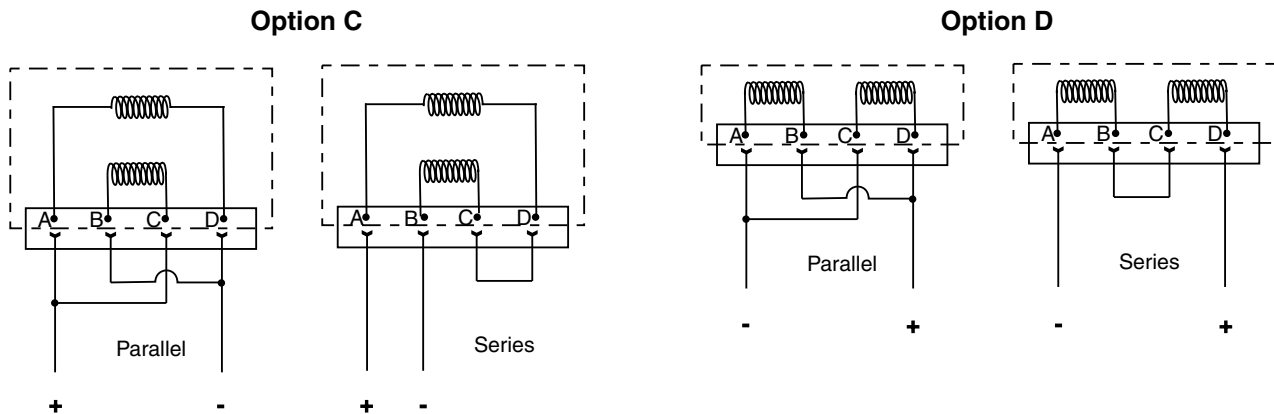


**Frequency Response**



**Installation Wiring Options**

This servovalve has two coils. This illustration shows the internal wiring configurations for options C and D. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.



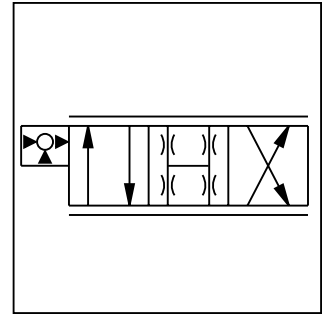
Polarity shown connects flow from P to C2 port.





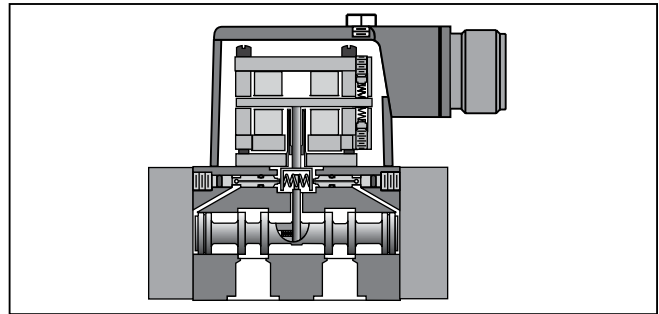
### General Description

Series DY25 are two stage, 4-way, flapper and nozzle style servovalves. They have the same port pattern and body dimensions as the DY15, but use a higher force torque motor pilot. These valves are rated for 210 Bar (3000 PSI) standard, or can be built for 350 Bar (5000 PSI) service. The pressure ratings are the same for both the tool steel construction, and the optional stainless steel spool and body.



### Features

- Lapped spool and body.
- No ball glitch.
- Tool steel, or stainless steel, spool and body.
- Nozzle and flapper design.
- Unique port pattern (see next page). (1 in. port circle)
- Survives high tank port pressures.



### Specifications

<b>Flow Rating</b> @ 70 Bar (1000 PSID)	57 and 75 LPM (25 and 30 GPM)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI) opt. 350 Bar (5000 PSI)	<b>Pressure Gain</b> % change in pressure per 1% change in input command	30% minimum, 70% maximum
<b>Leakage Flow</b> @ 70 Bar (1000 PSID)	0.95 – 1.7 LPM (0.25 – 0.45 GPM)	<b>Step Response</b>	10 – 90%, < 18 ms @ 95 LPM (25 GPM) < 20 ms @ 114 LPM (30 GPM)
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to +106°C (+30°F to +225°F)
<b>Frequency Response</b> @ 90° phase shift	> 35 Hz (See Performance Curves)	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Filtration</b>	ISO 4406 15/12 or better
<b>Threshold</b>	≤ 0.5%		

**DY25**

Series

Material Options

Coils

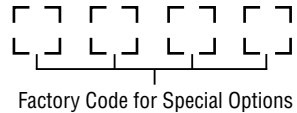
Wiring

Seal

Operating Pressure

Flows

Special Options



Code	Description
A	Steel (standard)
B	Stainless Steel
Z*	Special (specify)

\* Material selection does not affect operating pressure

Code	Description	Parallel	Series
D	200 ohm (Std.)	50 mA	25 mA
F	80 ohm	80 mA	40 mA
G	22 ohm	200 mA	100 mA
K	40 ohm	150 mA	75 mA
R	750 ohm	30 mA	15 mA
Z	Special (specify)		

Code	Connector over:	Flow P to C2 with:
C	Port C1	(+) Signal to A, C
D	Port C1	(+) Signal to B, D
Z	Special (specify)	

Code	Description
Omit	Standard
D	(Specify) See list below

Code	Description
25	95 LPM (25 GPM)
30	114 LPM (30 GPM)

Code	Description
A	210 Bar (3000 PSI)
B	350 Bar (5000 PSI)
Z	Special (specify)

Operating pressure is independent of material selection.

Code	Description
N	Nitrile (standard)
V	Fluorocarbon
E*	EPR
Z*	Special (specify)

\* Consult factory for delivery

**Weight:** 1.9 kg (4.2 lbs.)

**Special Options:**

Consult factory for price, delivery and availability of special options.

- Special coil
- Special wiring
- Special seals
- Special flow rate
- Dual flow rate
- Dual gain
- Zener barriers

**Accessories**

**Cable with Mating Connector:** EHC154S

**Mating Connector:** MS3106E-14S-2S

**Bolt Kit:** Included with valve

**Flushing Valve:** 11-0600

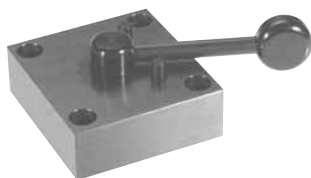
**Subplate:** 55-0300-2 SAE-16 Side ports

**Null Adjust Tool:** 6522A13

**Electronic Drivers:** 23-7030, BD90\*, BD101\*

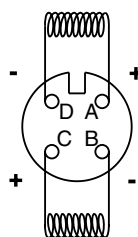
When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

\* For output currents >15 mA



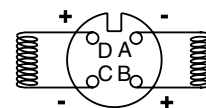
Flushing valve is rated for 3000 psi operation.

**Wiring Option C (Standard)**



Dyval and Pegasus standard.

**Wiring Option D**

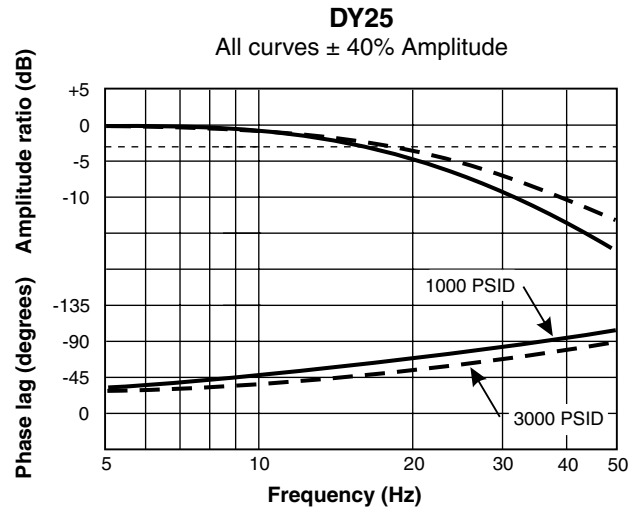
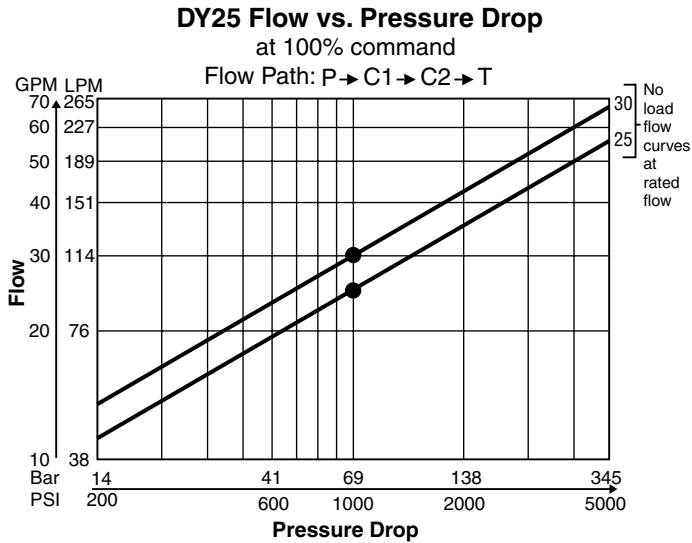


Moog, Atchley and Vickers standard.

In both cases, polarity shown connects P to C2 port.

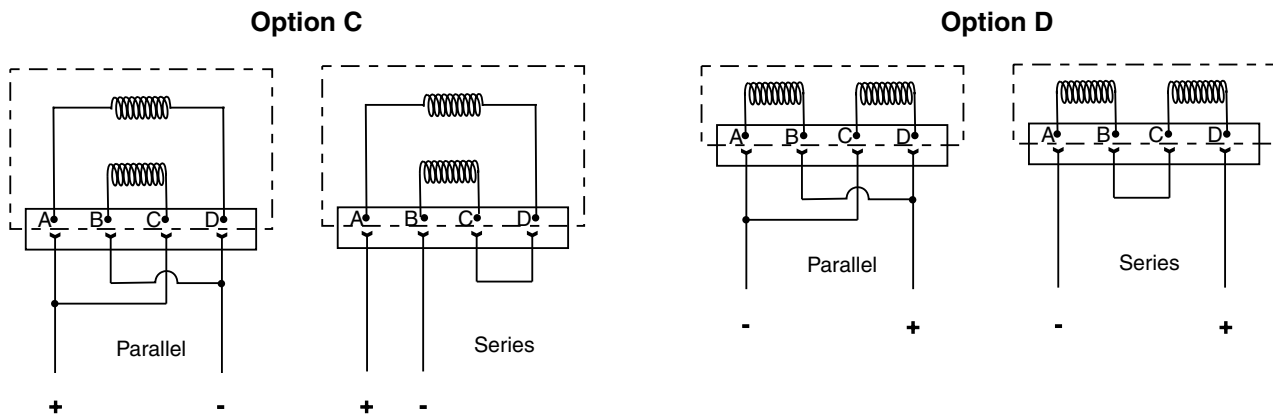
**Performance Curves**

**Frequency Response**



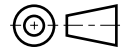
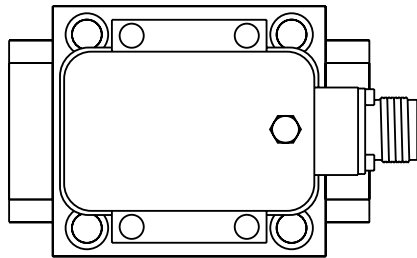
**Installation Wiring Options**

This servovalve has two coils. This illustration shows the internal wiring configurations for options C and D. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.

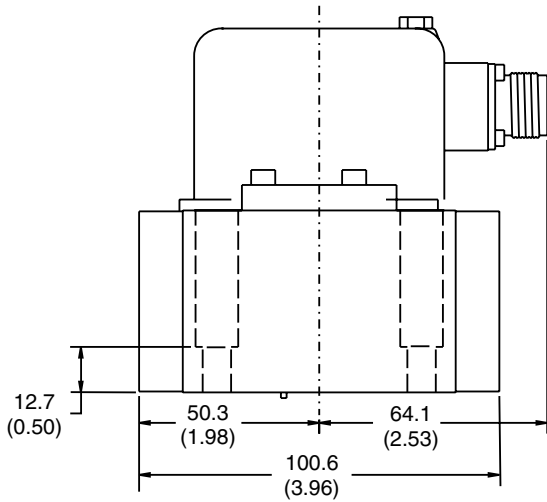


Polarity shown connects flow from P to C2 port.

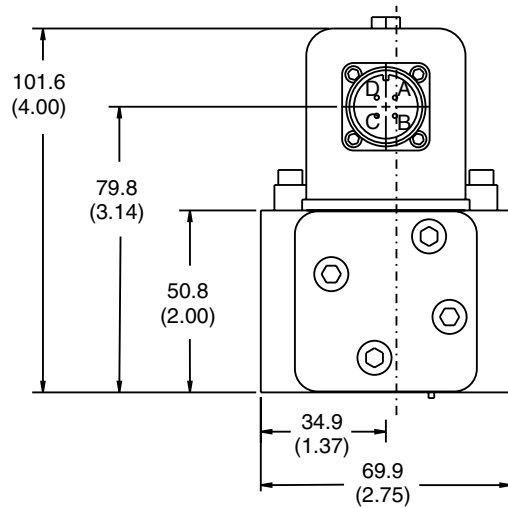
Inch equivalents for millimeter dimensions are shown in (\*\*)



**C**

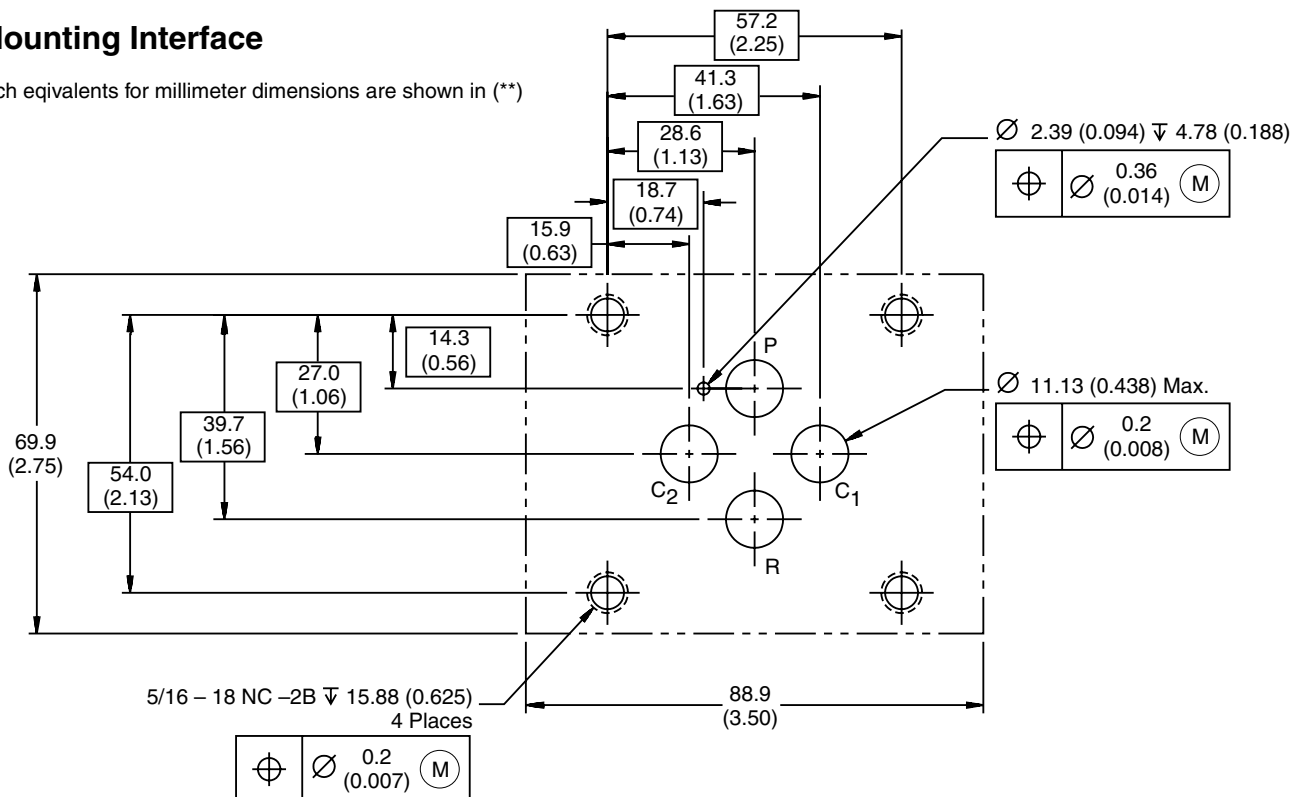


Connector over C1 port



**Mounting Interface**

Inch equivalents for millimeter dimensions are shown in (\*\*)





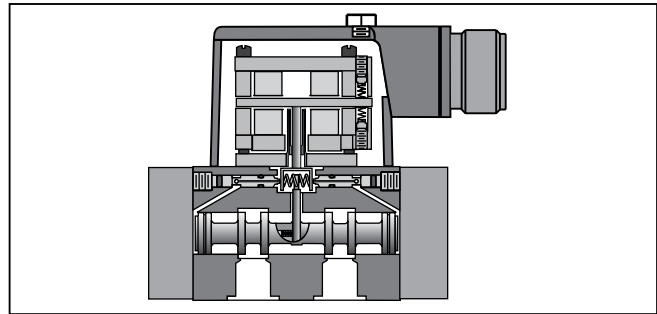
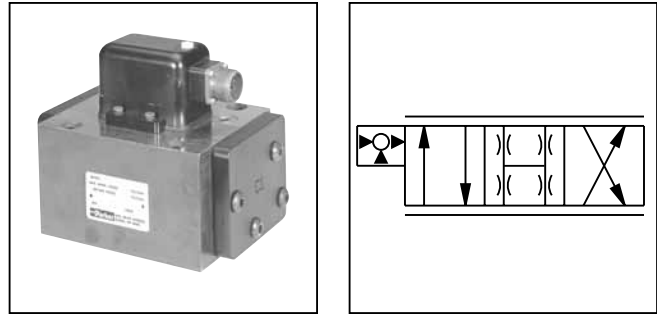
**General Description**

Series DY45 are two stage, 4-way, flapper and nozzle style servovalves. These valves are rated for 210 Bar (3000 PSI) standard, or can be built for 350 Bar (5000 PSI) service. The pressure ratings are the same for both the tool steel construction, and the optional stainless steel spool and body.

**Features**

- Lapped spool and body.
- No ball glitch.
- Tool steel, or stainless steel, spool and body.
- Nozzle and flapper design.
- Unique port pattern (see mounting pattern). (1 in. port circle)
- Survives high tank port pressures.

**Specifications**



<b>Flow Rating</b> @ 70 Bar (1000 PSID)	150, 190 and 225 LPM (40, 50 and 60 GPM)	<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI) opt. 350 Bar (5000 PSI)	<b>Pressure Gain</b> % change in pressure per 1% change in input command	30% minimum, 70% maximum
<b>Leakage Flow</b> @ 70 Bar (1000 PSID)	1.3 – 2.7 LPM (0.35 – 0.70 GPM)	<b>Step Response</b>	10 – 90%, < 25 ms
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance	<b>Fluid</b>	Mineral Oil, 60 – 225 SSU 1000 SSU maximum
<b>Input Command</b>	±50 mA std.	<b>Operating Temperature</b>	-1°C to + 106°C (+30°F to +225°F)
<b>Frequency Response</b> @ 90° phase shift	> 30 Hz at ±10% amplitude	<b>Protection Class</b>	NEMA 4, IP65
<b>Non-Linearity</b>	≤ 10%	<b>Filtration</b>	ISO 4406 15/12 or better
<b>Threshold</b>	≤ 0.5%		



**DY45**

Series

Material Options

Coils

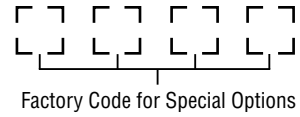
Wiring

Seal

Operating Pressure

Flows

Special Options



Factory Code for Special Options

Code	Description
A	Steel (standard)
B	Stainless Steel
Z*	Special (specify)

\* Material selection does not affect operating pressure

Code	Description	Parallel	Series
D	200 ohm (Std.)	50 mA	25 mA
F	80 ohm	80 mA	40 mA
G	22 ohm	200 mA	100 mA
K	40 ohm	150 mA	75 mA
R	750 ohm	30 mA	15 mA
Z	Special (specify)		

Code	Connector over:	Flow P to C2 with:
C	Port C1	(+) Signal to A, C
D	Port C1	(+) Signal to B, D
Z	Special (specify)	

Code	Description
Omit	Standard
D	(Specify) See list below

Code	Description
40	150 LPM (40 GPM)
50	190 LPM (50 GPM)
60	225 LPM (60 GPM)

Code	Description
A	210 Bar (3000 PSI)
B	350 Bar (5000 PSI)
Z	Special (specify)

Operating pressure is independent of material selection.

Code	Description
N	Nitrile (standard)
V	Fluorocarbon
E*	EPR
Z*	Special (specify)

\* Consult factory for delivery

**Weight:** .3 kg (16.0 lbs.)

**Special Options:**

Consult factory for price, delivery and availability of special options.

- Special coil
- Special wiring
- Special seals
- Special flow rate
- Dual flow rate
- Dual gain
- Zener barriers

**Accessories**

**Cable with Mating Connector:** EHC154S

**Mating Connector:** MS3106E-14S-2S

**Bolt Kit:** Included with valve

**Flushing Valve:** 11-0700

**Subplate:** 55-0200-2 SAE-24 Side ports

**Null Adjust Tool:** 6522A13

**Electronic Drivers:** 23-7030, BD90\*, BD101\*

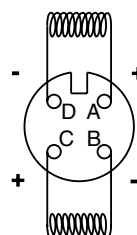
When used in conjunction with Series BD90 and BD101 servo amplifiers or a motion controller, Series BD valves will provide accurate control of rotary and linear actuators.

\* For output currents >15 mA



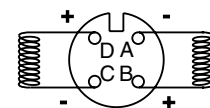
Flushing valve is rated for 3000 psi operation.

**Wiring Option C (Standard)**



Dyval and Pegasus standard.

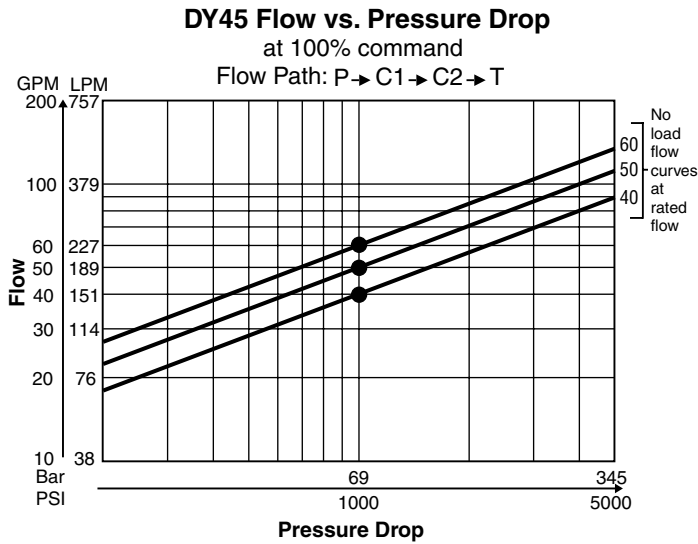
**Wiring Option D**



Moog, Atchley and Vickers standard.

In both cases, polarity shown connects P to C2 port.

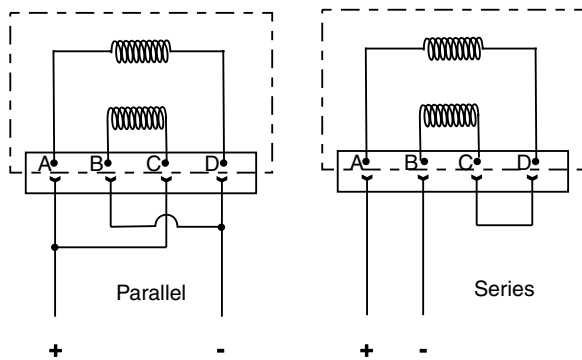
**Performance Curves**



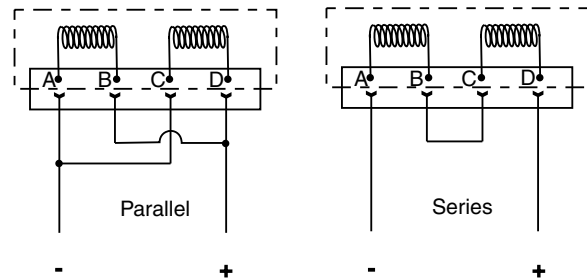
**Installation Wiring Options**

This servovalve has two coils. This illustration shows the internal wiring configurations for options C and D. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.

**Option C**

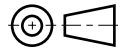
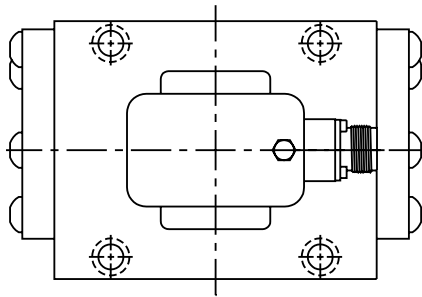


**Option D**

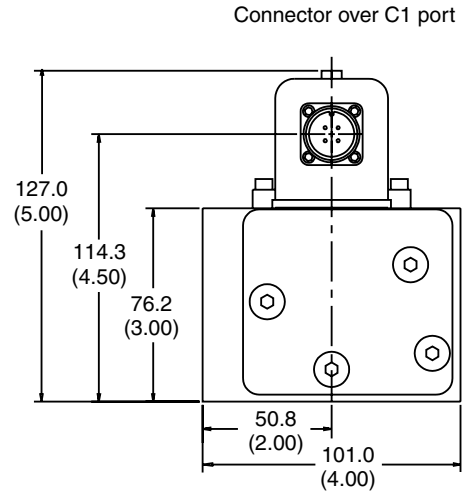
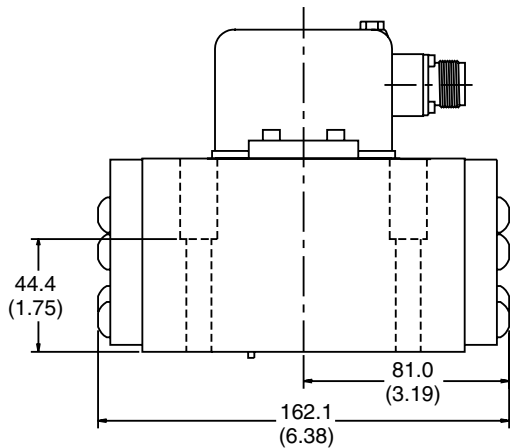


Polarity shown connects flow from P to C2 port.

Inch equivalents for millimeter dimensions are shown in (\*\*)

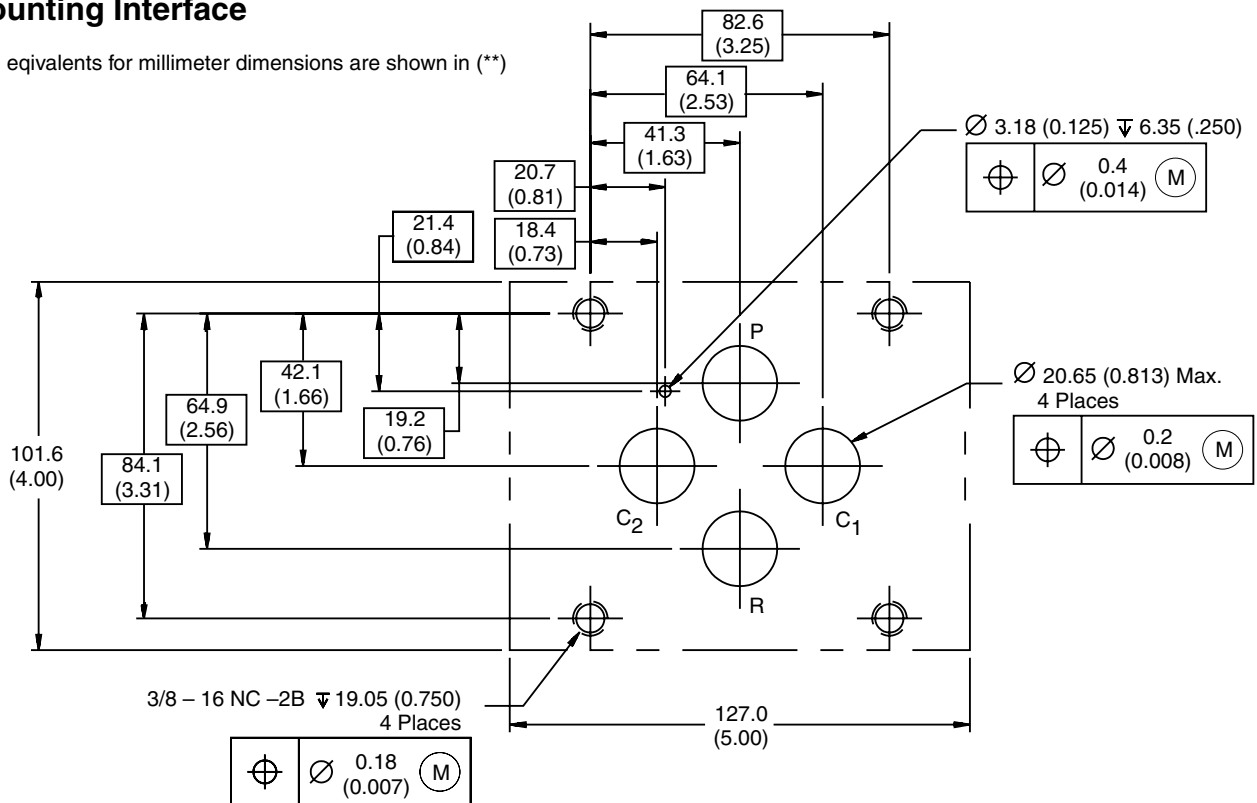


**C**



**Mounting Interface**

Inch equivalents for millimeter dimensions are shown in (\*\*)



### General Description

Series SEMT mini-valve is a two stage, 4-way, flap-per and nozzle style servovalve. Its remarkably small size makes it optimal for Remotely Operated Vehicles (ROV), motorsport suspension control, or any application requiring a compact, and light-weight, high performance servovalve.

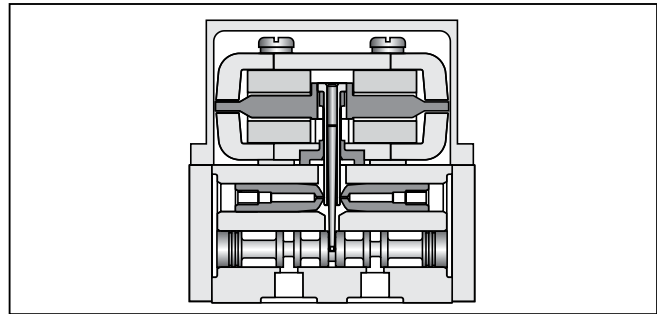
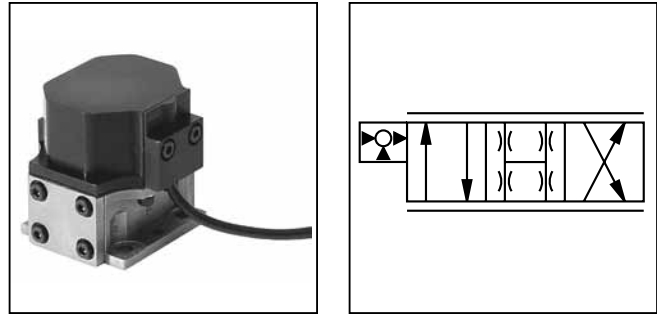
A special jewel feedback design enhances durability and prevents ball glitch problems, which can occur in other types of servovalves. This valve is rated for 210 Bar (3000 PSI) service. Higher pressure capability is available upon request.

### Features

- Jewel feedback ball for durability
- Compact steel body
- High performance
- ISO 10372 standard 12.2 mm (0.480 in.) port circle

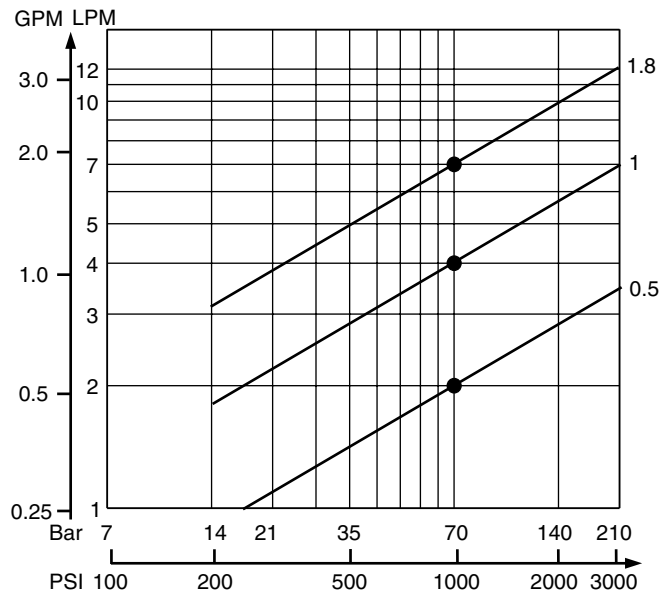
### Specifications

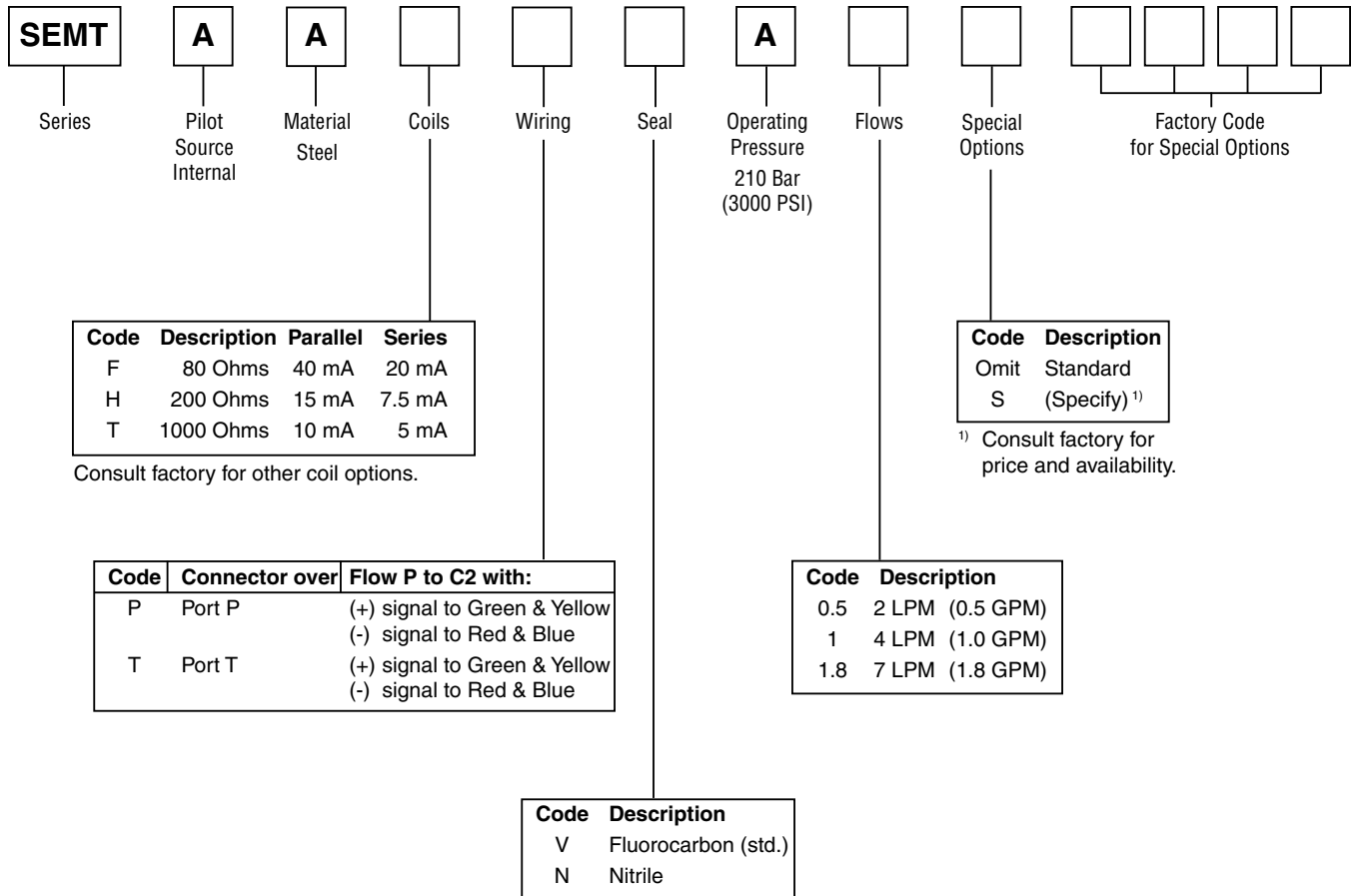
<b>Flow Rating ±10%</b> @ 70 Bar (1000 PSI)	2, 4, 7 LPM (0.5, 1.0, 1.8 GPM)
<b>Supply Pressure</b>	15 – 210 Bar (220 – 3000 PSI)
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance
<b>Pilot &amp; Null Leakage Flow</b> per 140 Bar (2000 PSI)	0.4 – 0.7 LPM (0.1 – 0.2 GPM)
<b>Input Command</b>	±10 mA std.
<b>Frequency Response</b> @ 90° phase shift	> 170 Hz (See Performance Curves)
<b>Non-Linearity</b>	≤ 10%
<b>Hysteresis</b>	≤ 3%
<b>Threshold</b>	≤ 0.5%
<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Pressure Gain</b> change in pressure per 1% change in input command	60% typical
<b>Step Response</b>	10 – 100%, < 4 ms
<b>Fluid</b>	Petroleum based Mineral Oil, 10 – 110 cSt at 38°C (100°F)
<b>Fluid Cleanliness</b>	ISO 4406 15/12 or better
<b>Operating Temperature</b>	-30°C to +130°C (-22°F to +266°F)
<b>Protection Class</b>	NEMA 4, IP65



### Flow vs. Pressure Drop

at 100% command  
 Flow Path: P→C1→C2→R





**Weight:** 0.23 kg (0.5 lbs.)  
**Bolt kit:** Qty 4 of M4 x 10 mm, or Qty 4 of # 6-32 x 7/16"  
**Subplate:** Consult factory.  
**Electronics:** BD101, 23-7030, BD90, or BD95

**Performance Curves**

**Frequency Response at 210 Bar (3000 PSI)**

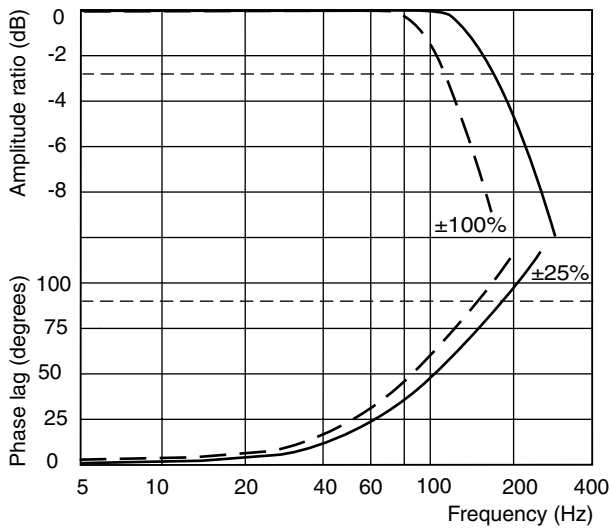
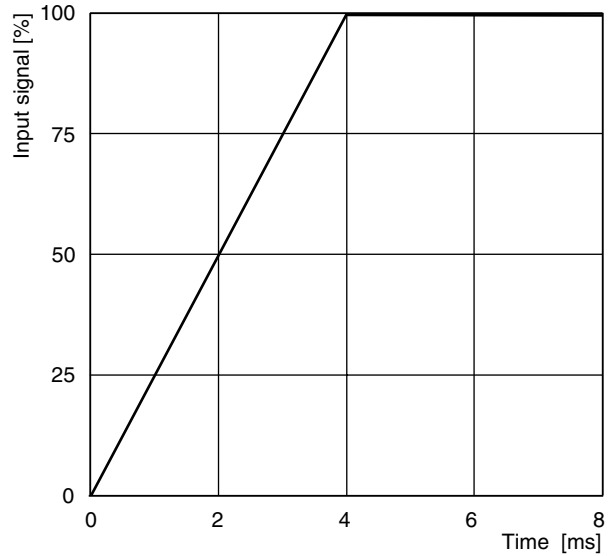


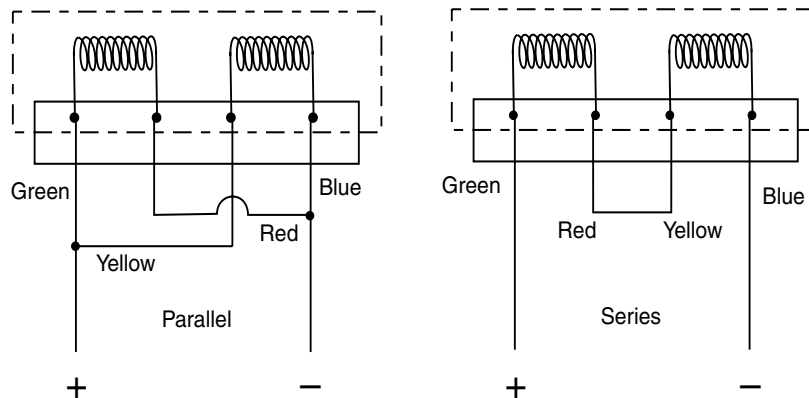
Figure for 7 LPM (1.8 GPM).

**Step Response**  
 at 100% command



**Installation Wiring Options**

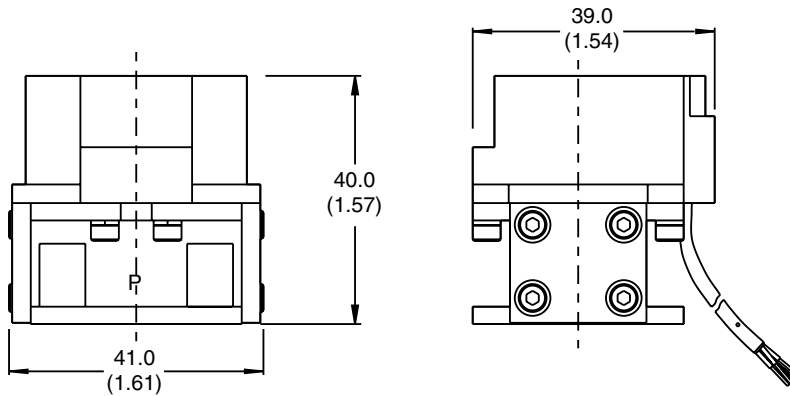
This servo valve has two coils. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.



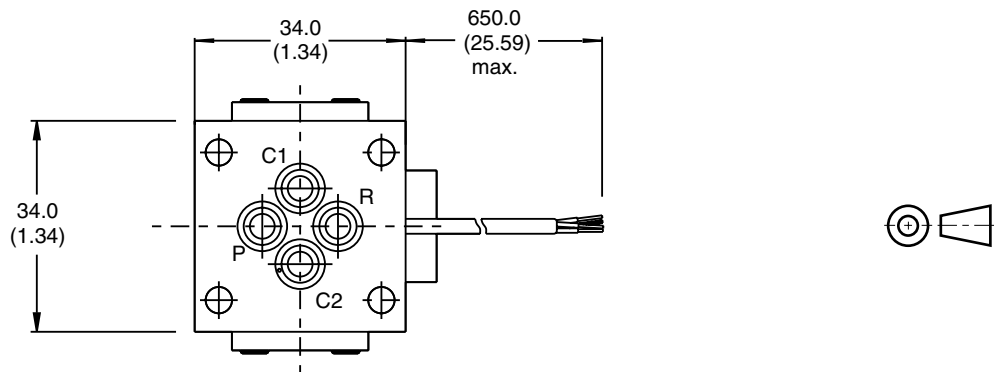
Polarity shown connects flow from P to C2 port.



Inch equivalents for millimeter dimensions are shown in (\*\*)



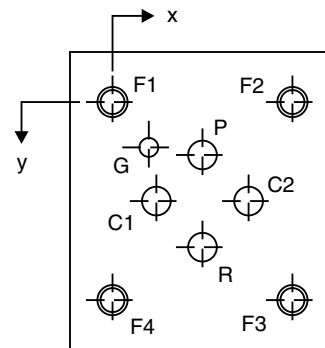
1. Recommended mounting bolts  
M4 x 10 mm or #6-32 x 7/16" high  
tensile steel socket-head cap screws.
2. Base O-Rings: 6 mm x 1 mm section,  
70 durometer.



**Mounting Surface**

ISO 10372-01-01-0-92

1. The minimum engagement of mounting threads is 1.5D, where D is the screw diameter.  
The ISO recommended full-thread depth is 14 mm (0.551 in.).
2. The minimum depth of hole G is 2 mm (0.079 in.).
3. Surface roughness Ra < 0.8 μm [N6], as specified in ISO 468 and ISO 1302.
4. Surface flatness: 0.025 mm (0.001) as specified in ISO 1101.



Metric Dimensions (mm)						(± 0.1 mm)			
Axis	P	C1	R	C2	G	F1	F2	F3	F4
	Ø 3.8 max	Ø 3.8 max	Ø 3.8 max	Ø 3.8 max	Ø 2.5	M4	M4	M4	M4
x	11.9	5.8	11.9	18.0	4.8	0	23.8	23.8	0
y	7.0	13.1	19.2	13.1	6.0	0	0	26.2	26.2

U.S. Dimensions (inches)						(± 0.004 in.)			
Axis	P	C1	R	C2	G	F1	F2	F3	F4
	Ø 0.15 max	Ø 0.15 max	Ø 0.15 max	Ø 0.15 max	Ø 0.10	# 6 - 32	# 6 - 32	# 6 - 32	# 6 - 32
x	0.469	0.228	0.469	0.709	0.189	0	0.937	0.937	0
y	0.276	0.516	0.756	0.516	0.238	0	0	1.031	1.031

SEMT.indd, dd



## General Description

Series SE05, SE10 and SE15 are two stage, 4-way, flapper and nozzle style servovalves. These valves have high performance spool and sleeve designs.

A special jewel feedback design enhances durability and prevents ball glitch problems, which can occur in other types of servovalves. These valves are rated for 315 Bar (4500 PSI) service.

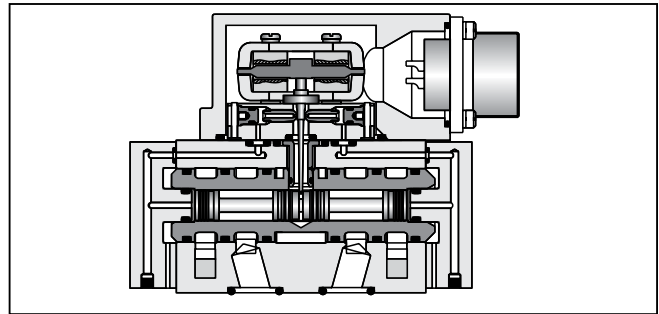
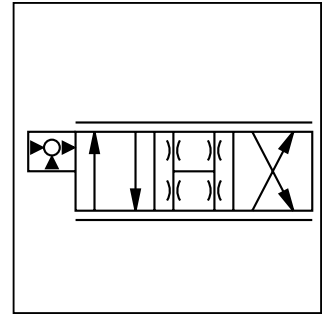
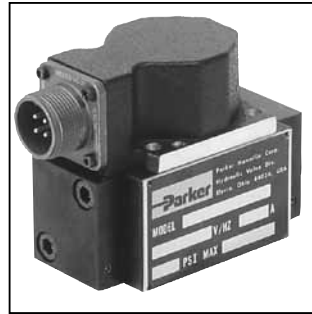
## Features

- Lapped spool and sleeve
- Jewel feedback ball for durability
- Aluminum body
- Medium and High performance
- SE05 15.88 mm (0.625 in.) port circle
- SE10 19.81 mm (0.780 in.) port circle
- SE15 23.80 mm (0.937 in.) port circle

## Specifications

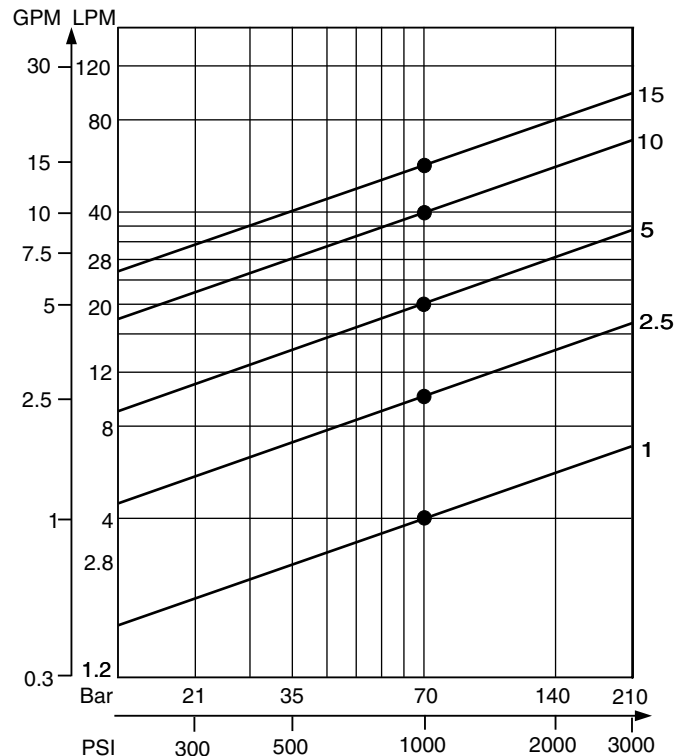
<b>Flow Rating ±10%</b> @ 70 Bar (1000 PSI)	4, 10, 20, 40, 60 LPM (1.0, 2.5, 5, 10, 15 GPM)
<b>Supply Pressure</b>	10 – 315 Bar (145 – 4500 PSI)
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance
<b>Null Leakage Flow</b> per 70 Bar (1000 PSI)	0.6 – 1.0 LPM (0.16 – 0.26 GPM)
<b>Pilot Flow</b> @ 210 Bar (3000 PSI)	0.4 – 0.7 LPM (0.1 – 0.2 GPM)
<b>Input Command</b> @ 210 Bar (3000 PSI)	±40 mA std.
<b>Frequency Response</b> @ 90° phase shift	> 100 Hz (See Performance Curves)
<b>Non-Linearity</b>	≤ 10%
<b>Hysteresis</b>	≤ 3%
<b>Threshold</b>	≤ 0.5%
<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Pressure Gain</b> change in pressure per 1% change in input command	60% typical
<b>Step Response</b>	10 – 100%, < 6 ms
<b>Fluid</b>	Petroleum based Mineral Oil, 10 – 110 cSt at 38°C (100°F)
<b>Fluid Cleanliness</b>	ISO 4406 15/12 or better
<b>Operating Temperature</b>	-30°C to +130°C (-22°F to +266°F)
<b>Protection Class</b>	NEMA 4, IP65

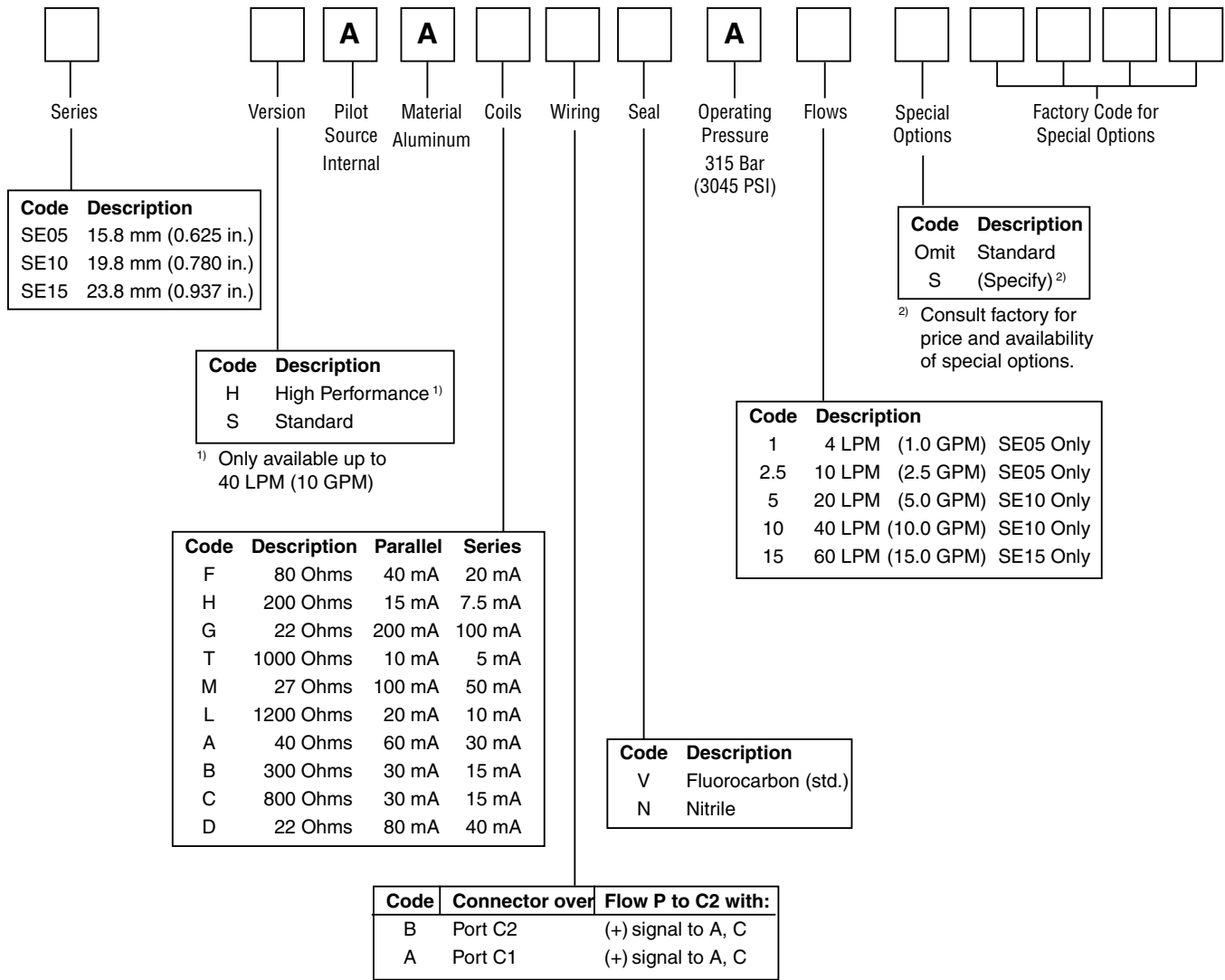
SE05\_10\_15.indd, dd



## Flow vs. Pressure Drop

at 100% command  
 Flow Path: P→C1→C2→R





**Weight:** 1.0 kg (2.2 lbs.)  
**Cable with mating connector:** EHC154S  
**Mating connector:** MS3106E-14S-2S  
**Electronics:** BD101, 23-5030, 23-7030, PMC10, BD90, or BD95

**SE05**  
**Bolt kit:** 4 of M5 x 60 mm, or 4 of #10-32x2.25"  
**Flushing valve:** 11-0500  
**Metric Subplate:** DS02SPS8M (M18x1.5 ISO 6149 side ports)  
**SAE Subplate:** DS02SPS8S (#8 SAE side ports)

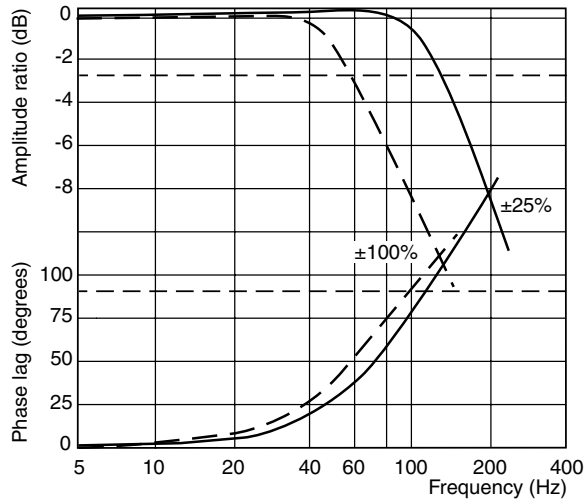
**SE10**  
**Bolt kit:** 4 of M5 x 60 mm, or 4 of #10-32x2.25"  
**Flushing valve:** 11-0500  
**Metric Subplate:** DS71SPS8M (M18x1.5 ISO 6149 side ports)  
**SAE Subplate:** DS71SPS8S (#8 SAE side ports)

**SE15**  
**Bolt kit:** 4 of M6 x 60 mm, or 4 of 1/4-20x2.25"  
**Flushing valve:** 11-0500  
**Metric Subplate:** DS72SPS8M (M18x1.5 ISO 6149 side ports)  
**SAE Subplate:** DS72SPS8S (#8 SAE side ports)

**Frequency Response at 210 Bar (3000 PSI)**

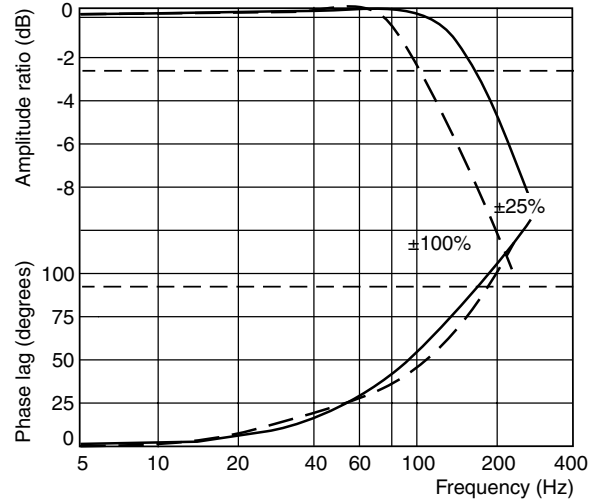
**Standard Response**

**SE05: 4 – 20 LPM (1 – 5 GPM)**



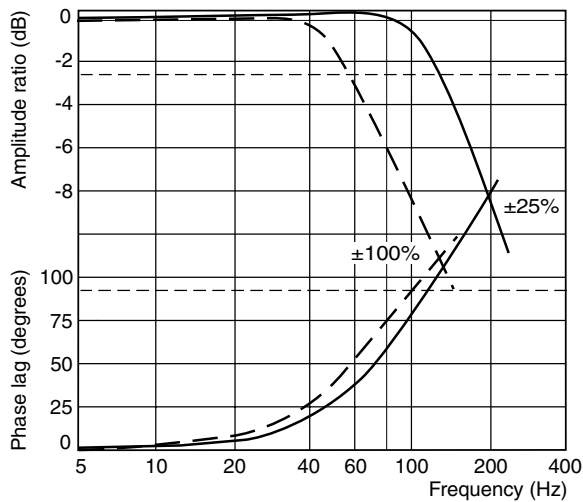
**High Response**

**SE05: 4 – 20 LPM (1 – 5 GPM)**



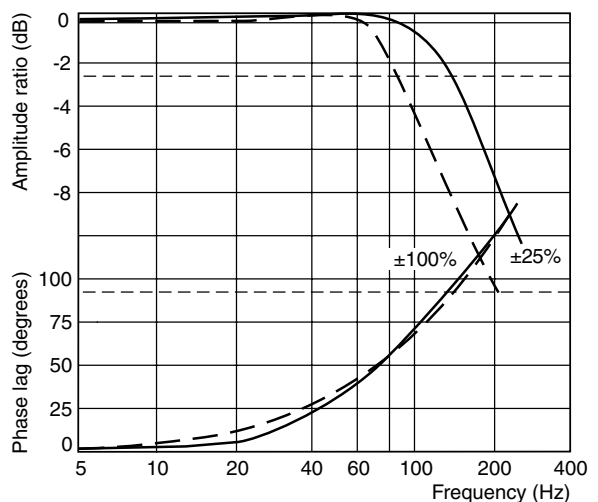
**Standard Response**

**SE10: 40 LPM (10 GPM)**



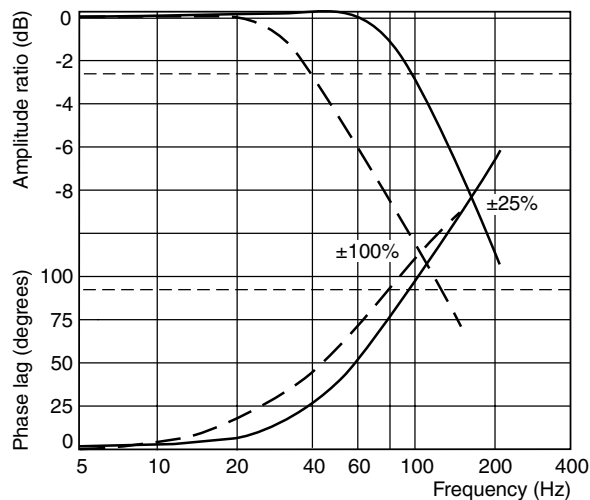
**High Response**

**SE10: 40 LPM (10 GPM)**



**Standard Response**

**SE15: 60 LPM (15 GPM)**

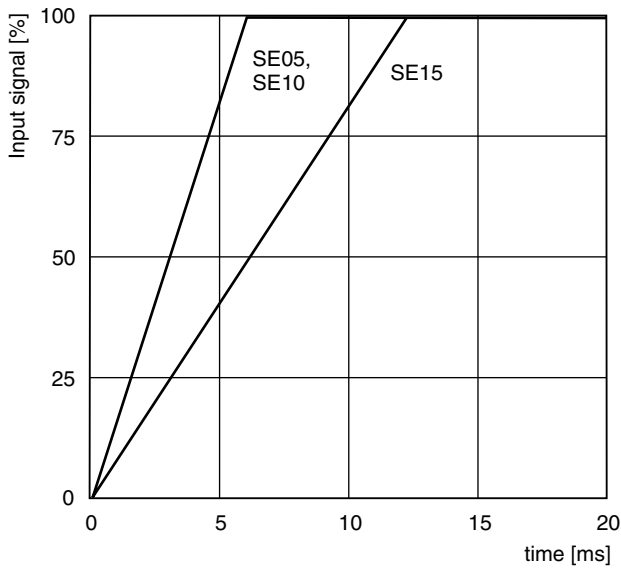


**Performance Curves**

**Step Response at 210 Bar (3000 PSI)**

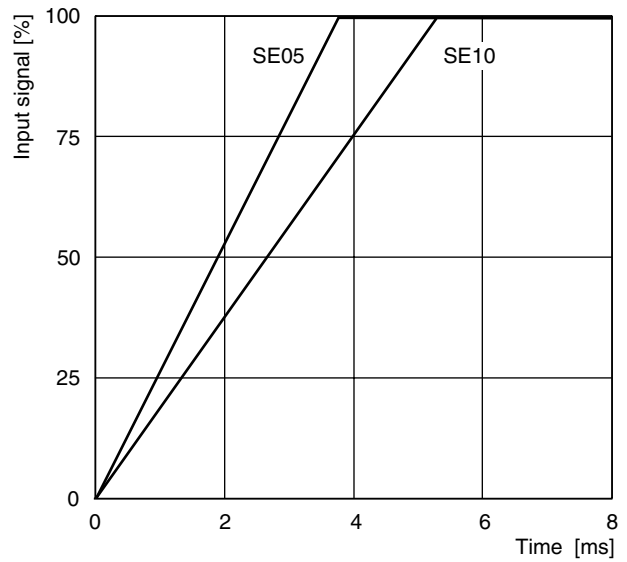
**Standard Response**

SE05, SE10 & SE15: 4 – 40 LPM (1 – 10 GPM)



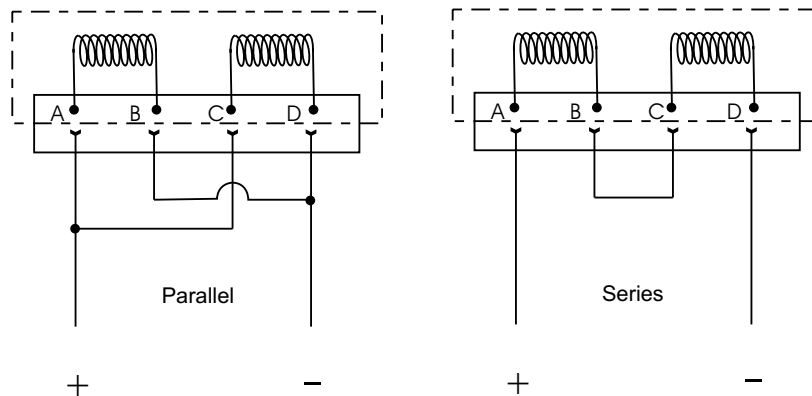
**High Response**

SE05, SE10 & SE15: 4 – 40 LPM (1 – 10 GPM)



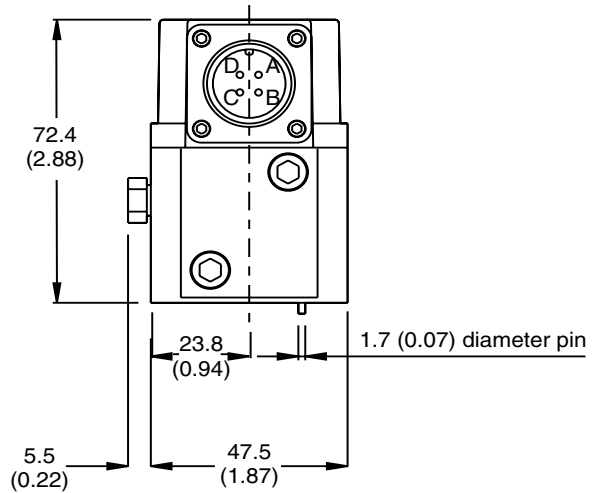
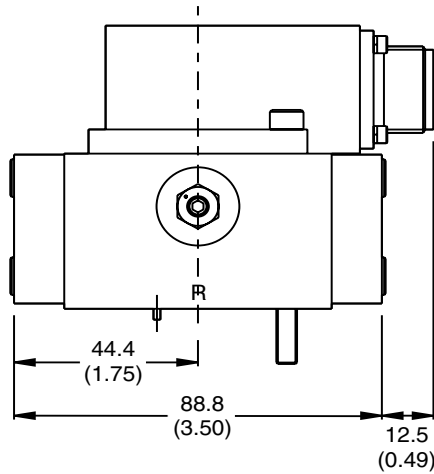
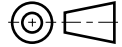
**Installation Wiring Options**

This servovalve has two coils. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.

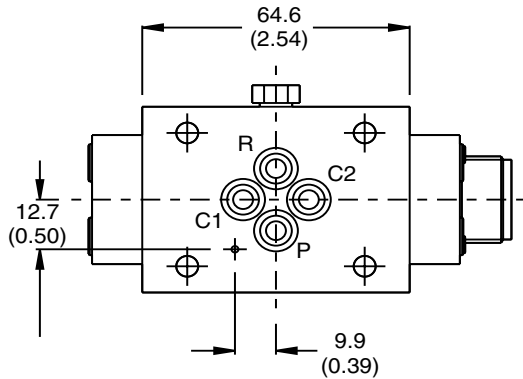


Polarity shown connects flow from P to C2 port.

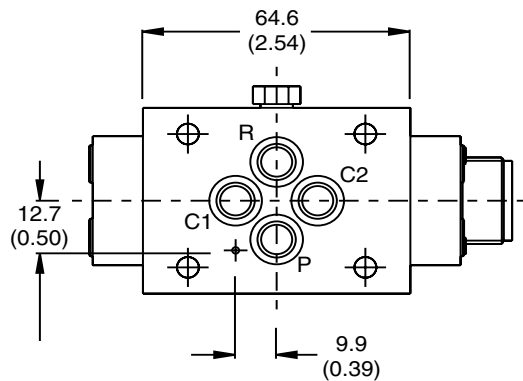
Inch equivalents for millimeter dimensions are shown in (\*\*)



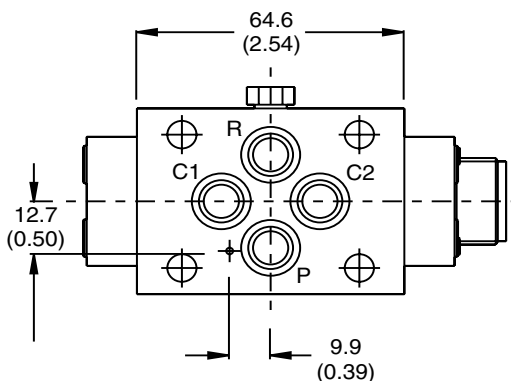
**SE05**



**SE10**



**SE15**

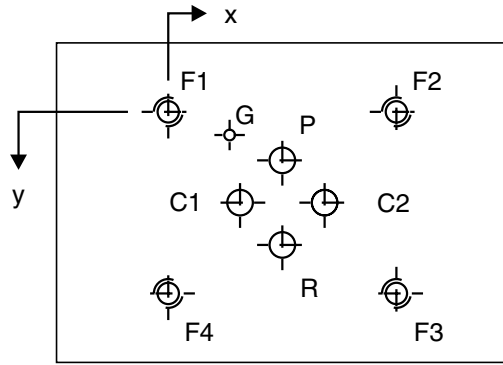


1. Suggested mounting bolts: For SE05 and SE10 use M5 x 60 mm or #10-32 x 2.25" long high tensile steel, socket-head cap screws. For SE15 use M6 x 60 mm or 1/4-20 x 2.25" long high tensile steel, socket-head cap screws.
2. 4-way electrical connector mates with MS3106E-14S-2S or equivalent. Is available at 180° to position shown (advise desired position at time of order).
3. Base O-Rings:  
SE05 use Parker 2011V-9 (7.66 mm I/D x 1.78 section)  
SE10 use Parker 2012V-9 (9.25 mm I/D x 1.78 section)  
SE15 use Parker 2013V-9 (10.82 mm I/D x 1.78 section)
4. Null adjust requires 10 A/F ring spanner (10 mm box end wrench) and 2.5 hexagon key. Flow out of C1 will increase with clockwise rotation of key.
5. See mounting dimensions for port size and locations.

**SE05 Mounting Surface**

1. The recommended full-thread depth is 16 mm (0.630 in.).
2. The minimum depth of hole G is 4 mm (0.157 in.).
3. Surface roughness  $R_a < 0.8 \mu\text{m}$  [N6], as specified in ISO 468 and ISO 1302.
4. Surface flatness: 0.025 mm (0.001) as specified in ISO 1101.

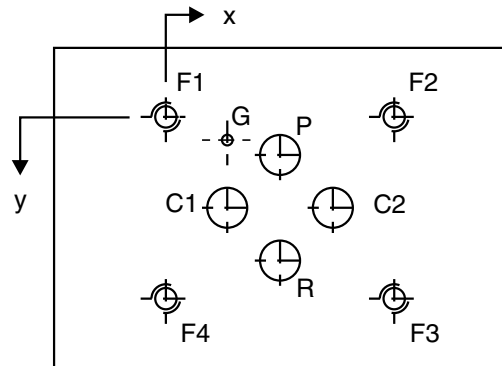
15.88 (0.625) port circle



**SE10 Mounting Surface**

1. The recommended full-thread depth is 16 mm (0.630 in.).
2. The minimum depth of hole G is 4 mm (0.157 in.).
3. Surface roughness  $R_a < 0.8 \mu\text{m}$  [N6], as specified in ISO 468 and ISO 1302.
4. Surface flatness: 0.025 mm (0.001) as specified in ISO 1101.

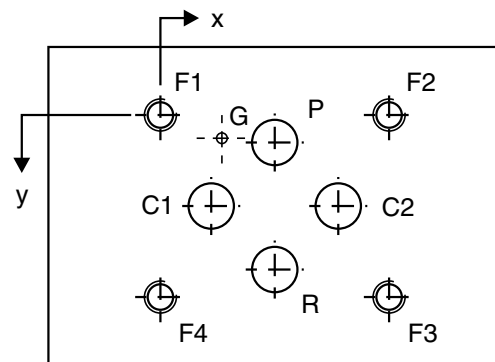
19.81 (0.780) port circle



**SE15 Mounting Surface**

1. The recommended full-thread depth is 18 mm (0.709 in.).
2. The minimum depth of hole G is 4 mm (0.157 in.).
3. Surface roughness  $R_a < 0.8 \mu\text{m}$  [N6], as specified in ISO 468 and ISO 1302.
4. Surface flatness: 0.025 mm (0.001 in.) as specified in ISO 1101.

23.80 (0.937) port circle



## SE05

Metric Dimensions (mm)									
(± 0.1 mm)									
Axis	P	C1	R	C2	G	F1	F2	F3	F4
	Ø 5 max	Ø 5 max	Ø 5 max	Ø 5 max	Ø 3.5	M5	M5	M5	M5
x	21.4	13.5	21.4	29.3	11.5	0	42.8	42.8	0
y	9.2	17.1	25.0	17.1	4.4	0	0	34.2	34.2

U.S. Dimensions (inches)									
(± 0.004 in.)									
Axis	P	C1	R	C2	G	F1	F2	F3	F4
	Ø 0.195 max	Ø 0.195 max	Ø 0.195 max	Ø 0.195 max	Ø 0.136	# 10 -32	# 10 -32	# 10 -32	# 10 -32
x	0.843	0.531	0.843	1.153	0.453	0	1.685	1.685	0
y	0.362	0.673	0.984	0.673	0.173	0	0	1.347	1.347

## SE10

Metric Dimensions (mm)									
(± 0.1 mm)									
Axis	P	C1	R	C2	G	F1	F2	F3	F4
	Ø 7.5 max	Ø 7.5 max	Ø 7.5 max	Ø 7.5 max	Ø 3.5	M5	M5	M5	M5
x	21.4	11.5	21.4	31.3	11.5	0	42.8	42.8	0
y	7.2	17.1	27.0	17.1	4.4	0	0	34.2	34.2

U.S. Dimensions (inches)									
(± 0.004 in.)									
Axis	P	C1	R	C2	G	F1	F2	F3	F4
	Ø 0.290 max	Ø 0.290 max	Ø 0.290 max	Ø 0.195 max	Ø 0.14	# 10 - 32	# 10 - 32	# 10 - 32	# 10 - 32
x	0.843	0.453	0.843	1.232	0.453	0	1.685	1.685	0
y	0.283	0.673	1.063	0.673	0.173	0	0	1.347	1.347

## SE15

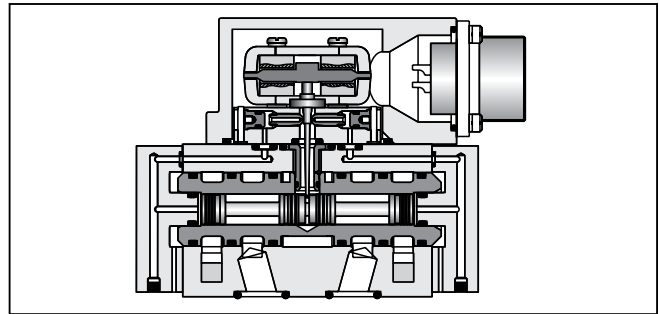
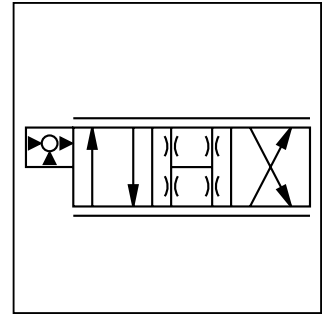
Metric Dimensions (mm)									
(± 0.1 mm)									
Axis	P	C1	R	C2	G	F1	F2	F3	F4
	Ø 8 max	Ø 8 max	Ø 8 max	Ø 8 max	Ø 3.5	M6	M6	M6	M6
x	21.4	9.5	21.4	33.3	11.5	0	42.8	42.8	0
y	5.1	17.1	29.0	17.1	4.4	0	0	34.2	34.2

U.S. Dimensions (inches)									
(± 0.004 in.)									
Axis	P	C1	R	C2	G	F1	F2	F3	F4
	Ø 0.312 max	Ø 0.312 max	Ø 0.312 max	Ø 0.312 max	Ø 0.14	1/4 - 20	1/4 - 20	1/4 - 20	1/4 - 20
x	0.843	0.374	0.843	1.311	0.453	0	1.685	1.685	0
y	0.201	0.673	1.142	0.673	0.173	0	0	1.347	1.347

### General Description

Series SE2N is a two stage, 4-way, flapper and nozzle style servovalve. The SE2N has a narrow body that is a popular size for steam turbine control applications. This valve uses a high performance spool and sleeve design.

A special jewel feedback design enhances durability and prevents ball glitch problems, which can occur in other types of servovalves. This valve is rated for 210 Bar (3000 PSI) service.



### Features

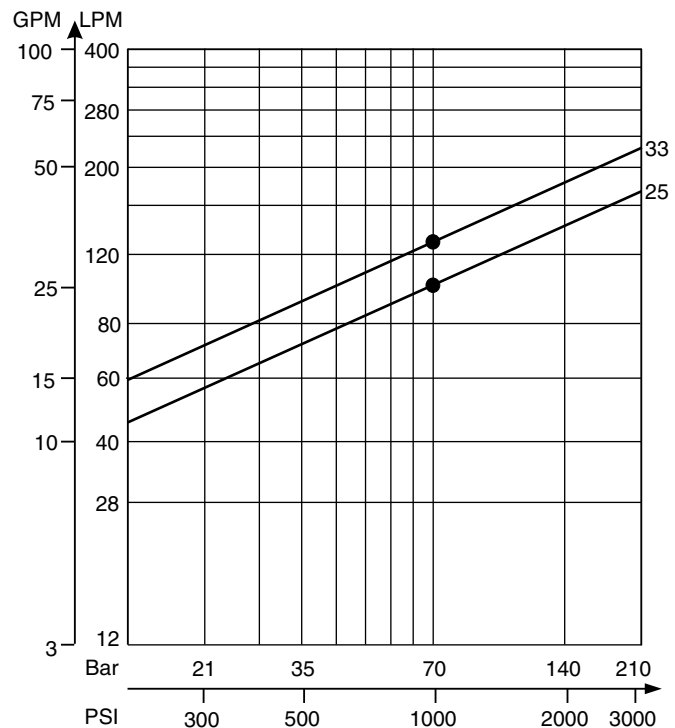
- Lapped spool and sleeve
- Jewel feedback ball for durability
- Aluminum body
- Medium and High performance
- Steam turbine pattern 34.93 mm (1.375 in.) port circle

### Specifications

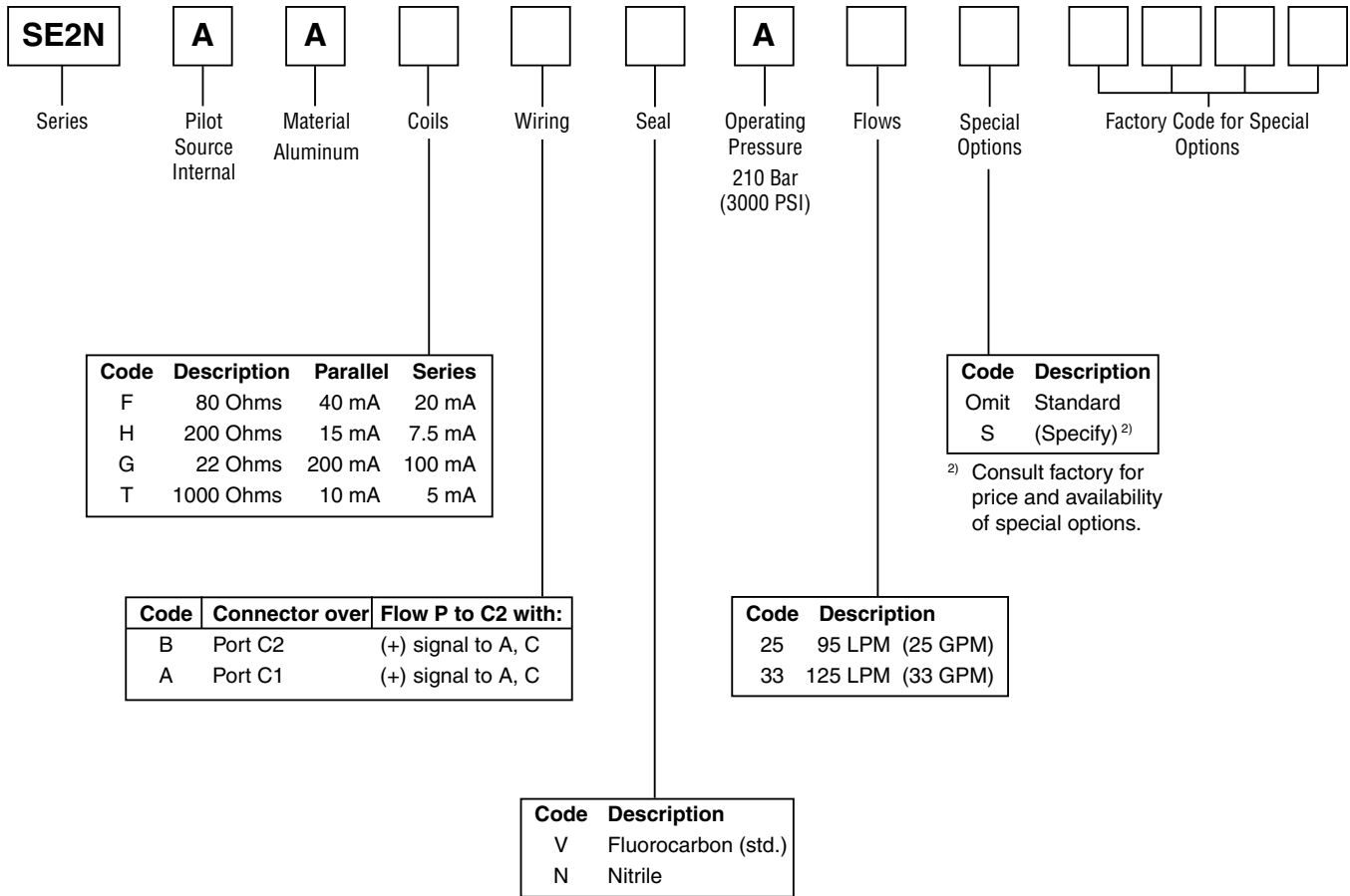
<b>Flow Rating ±10%</b> @ 70 Bar (1000 PSI)	95, 125 LPM (25, 33 GPM)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI)
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance
<b>Null Leakage Flow</b> per 70 Bar (1000 PSI)	2.4 LPM (0.6 GPM)
<b>Pilot Flow</b> @ 210 Bar (3000 PSI)	0.4 LPM (0.1 GPM)
<b>Input Command</b>	±40 mA std.
<b>Frequency Response</b> @ 90° phase shift	> 50 Hz (See Performance Curves)
<b>Non-Linearity</b>	≤ 10%
<b>Hysteresis</b>	≤ 3%
<b>Threshold</b>	≤ 0.5%
<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Pressure Gain</b> change in pressure per 1% change in input command	60% typical
<b>Step Response</b>	10 – 100%, < 30 ms
<b>Fluid</b>	Petroleum based Mineral Oil, 10 – 110 cSt at 38°C (100°F)
<b>Fluid Cleanliness</b>	ISO 4406 15/12 or better
<b>Operating Temperature</b>	-30°C to +130°C (-4°F to +266°F)
<b>Protection Class</b>	NEMA 4, IP65

### Flow vs. Pressure Drop

at 100% command  
 Flow Path: P→C1→C2→R





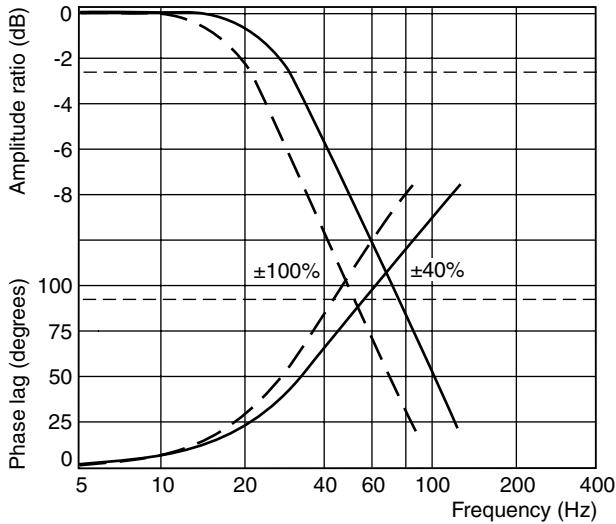


**Weight:** 1.1 kg (2.4 lbs.)  
**Cable with mating connector:** EHC154S  
**Mating connector:** MS3106E-14S-2S  
**Bolt kit:** 4 of M8 x 70 mm, or 4 of 5/16-18 x 2.75"  
**Flushing valve:** Consult factory  
**U.S. subplate:** AS73SPS8S (SAE #8 side ports)  
**Metric subplate:** AS73SPS8M (M18 x 1.5 ISO 6149 side ports)  
**Electronics:** BD101, 23-7030, BD90, or BD95

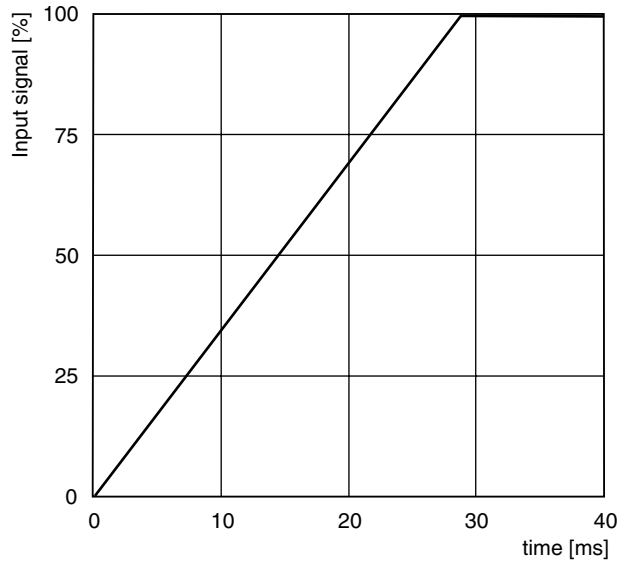


**Performance Curves**

**Frequency Response at 210 Bar (3000 PSI)**  
**Standard Response**  
**SE2N – 95 LPM (25 GPM)**

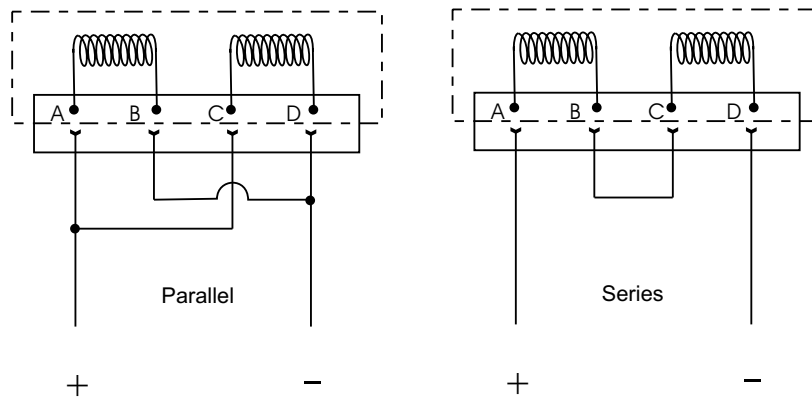


**Step Response at 210 Bar (3000 PSI)**  
**Standard Response**  
**SE2N – 95 LPM (25 GPM)**



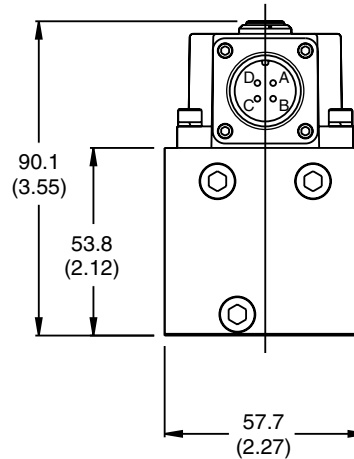
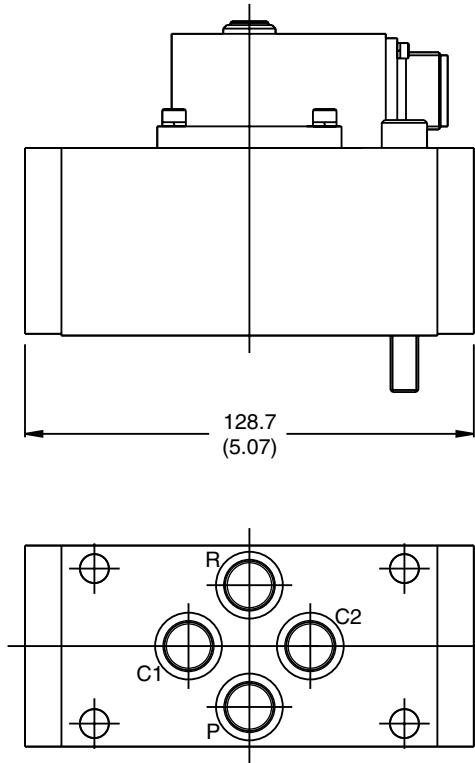
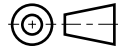
**Installation Wiring Options**

This servo valve has two coils. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.



Polarity shown connects flow from P to C2 port.

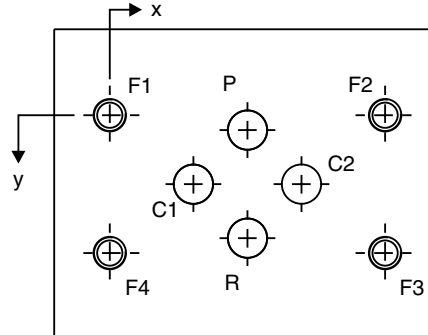
Inch equivalents for millimeter dimensions are shown in (\*\*)



1. Suggested mounting bolts M8 x 70 mm or 5/16-18 x 2.75" long high tensile steel, socket-head cap screws.
2. The 4-way electrical connector mates with MS3106E-14S-2S or equivalent. Is available at 180° to position shown (advise desired position at time of order).
3. Base O-Rings: 14.6 I/D x 2.4 section
4. Null adjust requires 2.5 hexagon key. Flow out of C2 will increase with clockwise rotation of key.

**Mounting Surface**

1. The recommended full-thread depth is 22 mm (0.866 in.).
2. Surface roughness Ra < 0.8 µm [N6], as specified in ISO 468 and ISO 1302.
3. Surface flatness: 0.025 mm (0.001 in.) as specified in ISO 1101.



Metric Dimensions (mm)									(± 0.1 mm)
Axis	P	C1	R	C2	F1	F2	F3	F4	
	Ø 12.7 max	Ø 12.7 max	Ø 12.7 max	Ø 12.7 max	M10	M10	M10	M10	
x	44.5	27.0	44.5	61.9	0	88.9	88.9	0	
y	4.8	22.3	39.7	22.3	0	0	44.5	44.5	

U.S. Dimensions (inches)									(± 0.004 in.)
Axis	P	C1	R	C2	F1	F2	F3	F4	
	Ø 0.5 max	Ø 0.5 max	Ø 0.5 max	Ø 0.5 max	3/8 - 16	3/8 - 16	3/8 - 16	3/8 - 16	
x	1.750	1.063	1.750	2.437	0	3.500	3.500	0	
y	0.189	0.876	1.563	0.876	0	0	1.750	1.750	

SE2N.indd, dd



## General Description

Series SE20 is a two stage, 4-way, flapper and nozzle style servovalve. The SE20 has a wide range of flow ratings and a high performance spool and sleeve design.

A special jewel feedback design enhances durability and prevents ball glitch problems, which can occur in other types of servovalves. This valve is rated for 315 Bar (4500 PSI) service with an option for 500 Bar (7250 PSI).

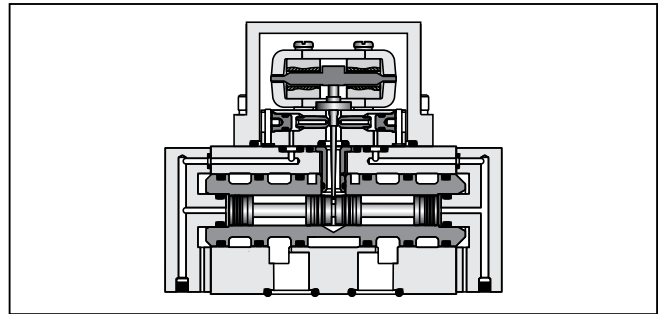
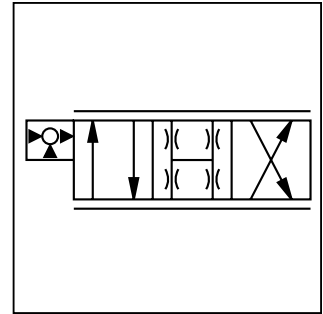
## Features

- Lapped spool and sleeve
- Jewel feedback ball for durability
- Aluminum body
- Medium and High performance
- ISO 10372 standard 22.23 mm (0.875 in.) port circle

## Specifications

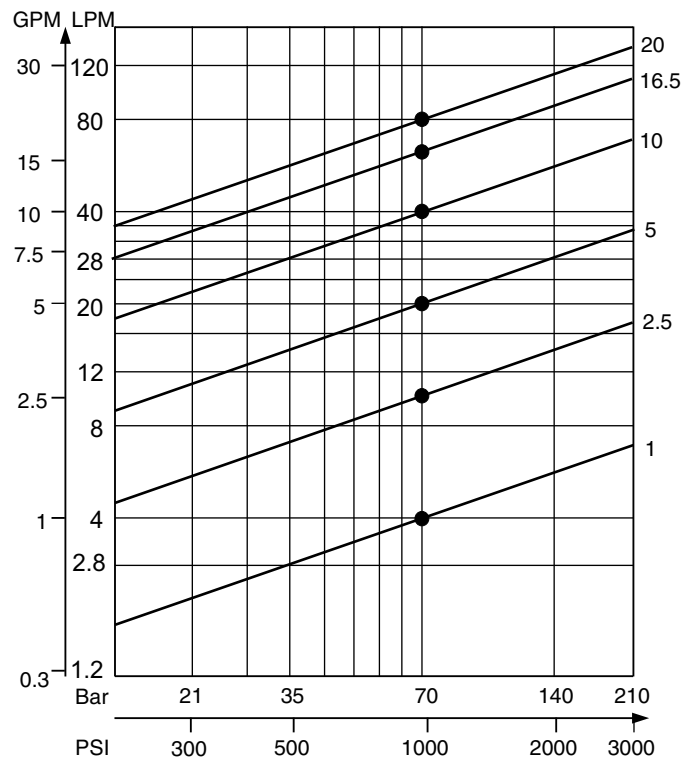
<b>Flow Rating ±10%</b> @ 70 Bar (1000 PSI)	3.8, 9.5, 19, 38, 63, 75 LPM (1, 2.5, 5, 10, 16.5, 20 GPM)
<b>Supply Pressure</b>	10 – 315 Bar (145 – 4500 PSI) 500 Bar (7250 PSI) Optional
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance
<b>Null Leakage Flow</b> per 70 Bar (1000 PSI)	1.2 – 1.9 LPM (0.3 – 0.5 GPM)
<b>Pilot Flow</b> @ 210 Bar (3000 PSI)	0.4 – 0.7 LPM (0.1 – 0.2 GPM)
<b>Input Command</b>	±40 mA std.
<b>Frequency Response</b> @ 90° phase shift	> 100 Hz (See Performance Curves)
<b>Non-Linearity</b>	≤ 10%
<b>Hysteresis</b>	≤ 3%
<b>Threshold</b>	≤ 0.5%
<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Pressure Gain</b> change in pressure per 1% change in input command	60% typical
<b>Step Response</b>	See graphs
<b>Fluid</b>	Petroleum based Mineral Oil, 10 – 110 cSt at 38°C (100°F)
<b>Fluid Cleanliness</b>	ISO 4406 15/12 or better
<b>Operating Temperature</b>	-30°C to +130°C (-22°F to +266°F)
<b>Protection Class</b>	NEMA 4, IP65

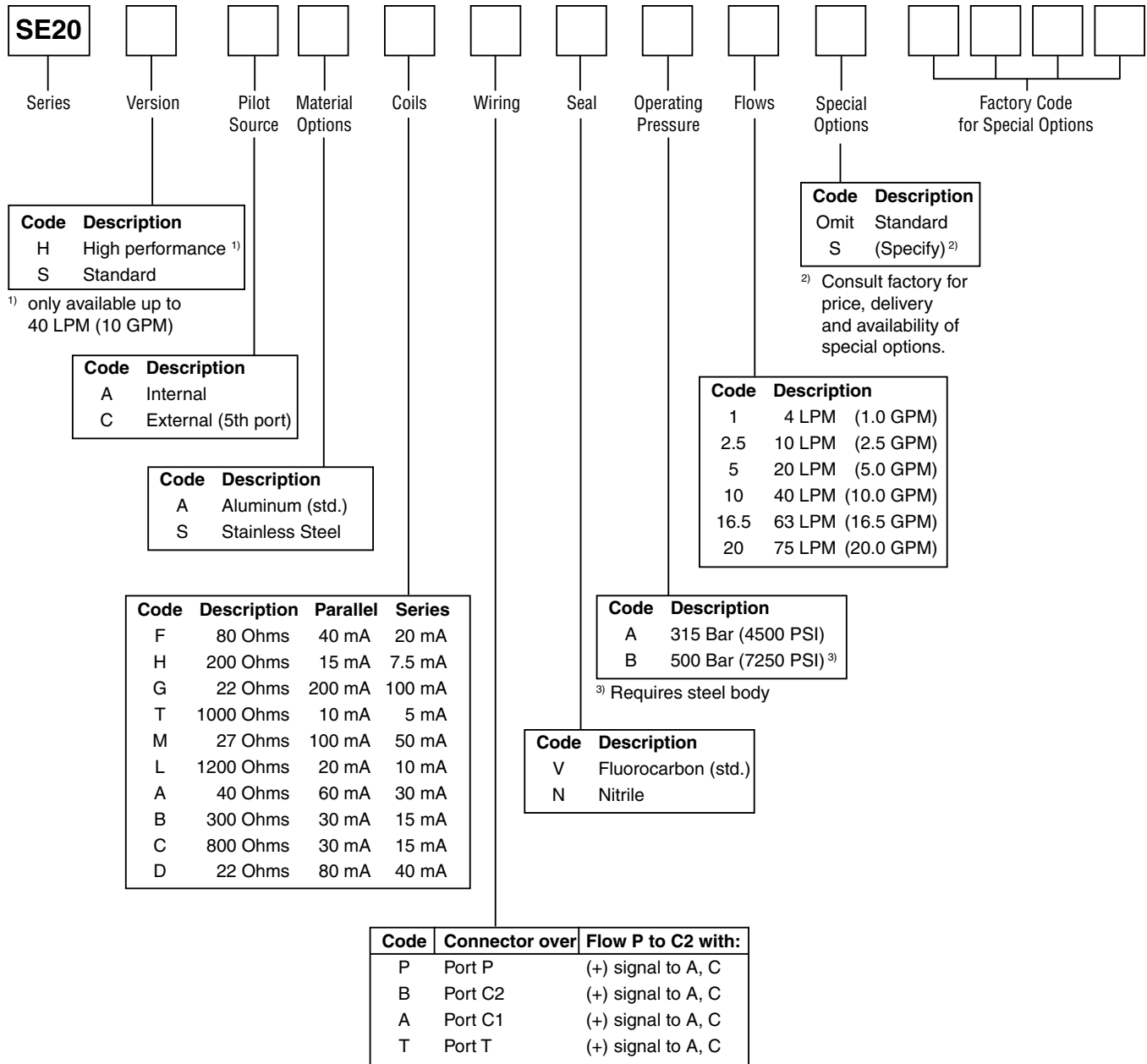
SE20.indd, dd



## Flow vs. Pressure Drop

at 100% command  
 Flow Path P → C1 → C2 → R

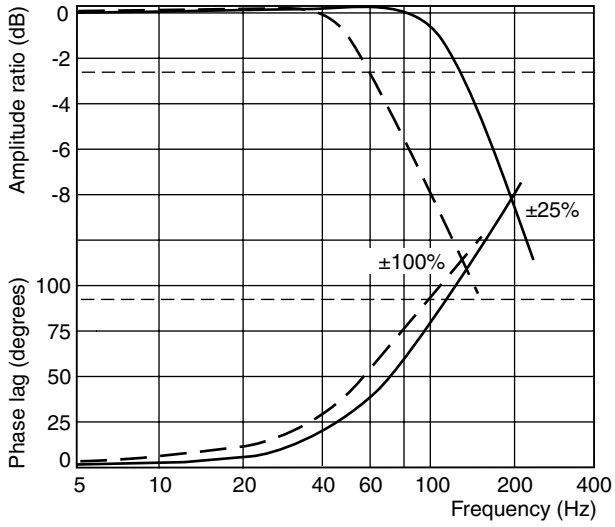




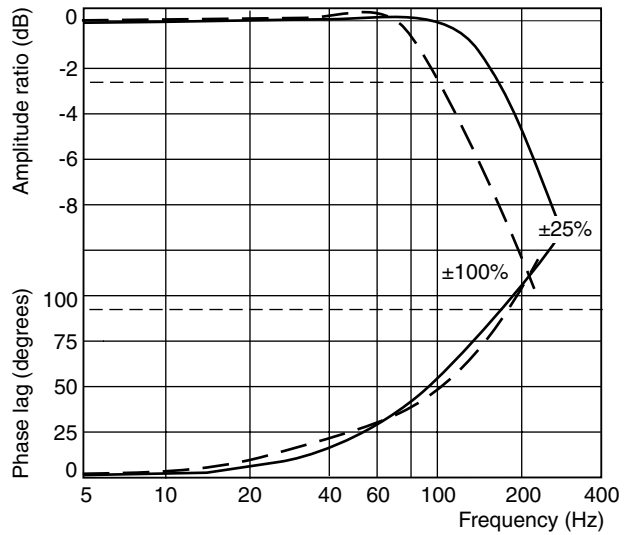
**Weight:** 1.0 kg (2.2 lbs.)  
**Cable with mating connector:** EHC154S  
**Bolt kit:** 4 of M8 x 60 mm, or 4 of 5/16-18x2.25"  
**Flushing valve:** 1200127 (does not cover 5<sup>th</sup> port)  
**U.S. Subplate, 5 ports:** 1402303 (4) #12 SAE side ports, (1) #4 SAE side ports  
**U.S. Subplate, 4 ports:** 810090-3 (4) #12 SAE side ports  
**Metric Subplate, 4 ports:** DS04SPS12M (M27 x 2.0 ISO 6149 side ports)  
**Electronics:** BD101, 23-7030, BD90, or BD95

**Frequency Response at 210 Bar (3000 PSI)**

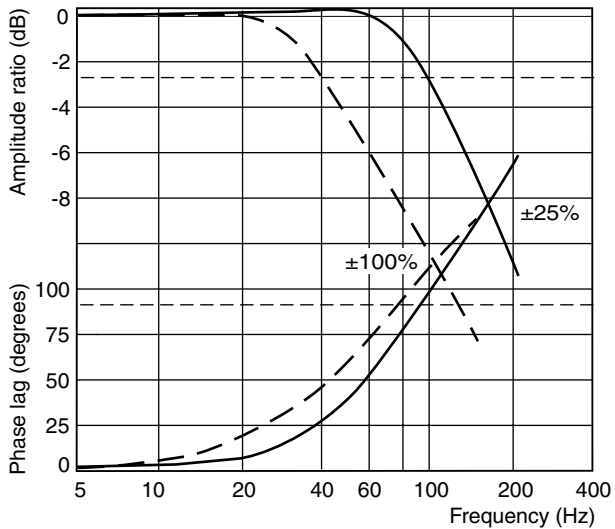
**Standard Response**  
**SE20 – 4 LPM (1.0 GPM)**



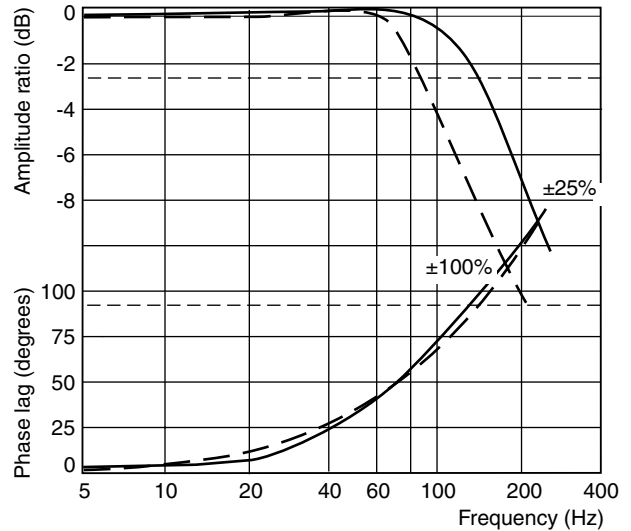
**High Response**  
**SE20 – 4 LPM (1.0 GPM)**



**Standard Response**  
**SE20 – 63 LPM (16.5 GPM)**

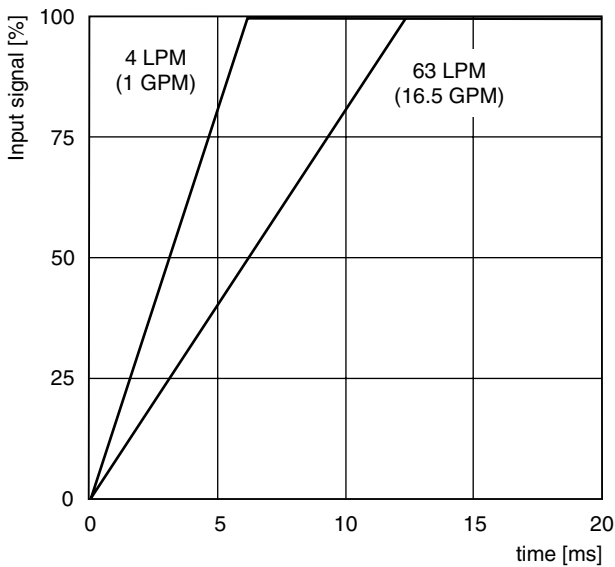


**High Response**  
**SE20 – 40 LPM (10 GPM)**

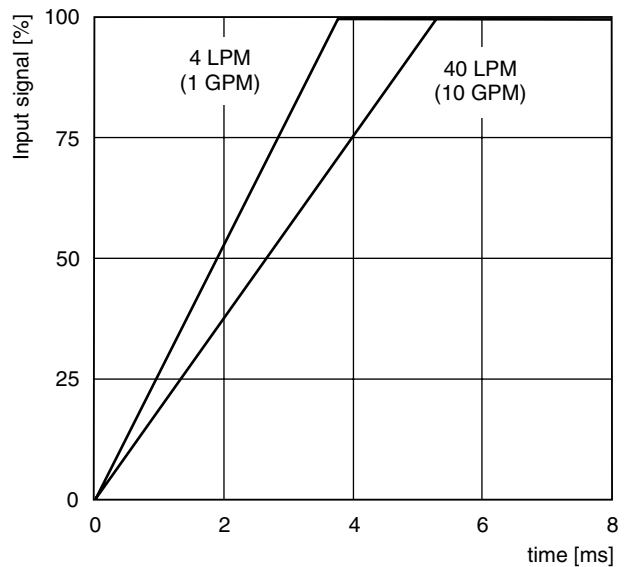


**Performance Curves**

**Step Response at 210 Bar (3000 PSI)**  
**Standard Response**

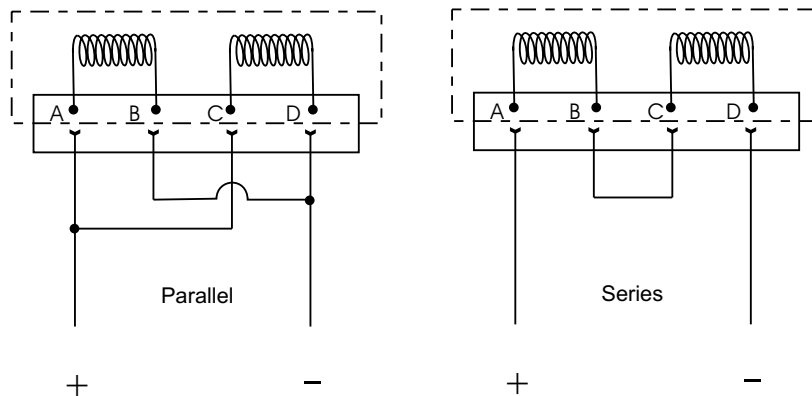


**High Response**



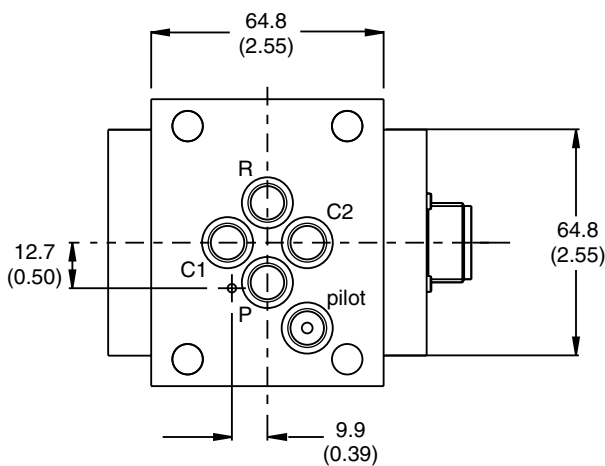
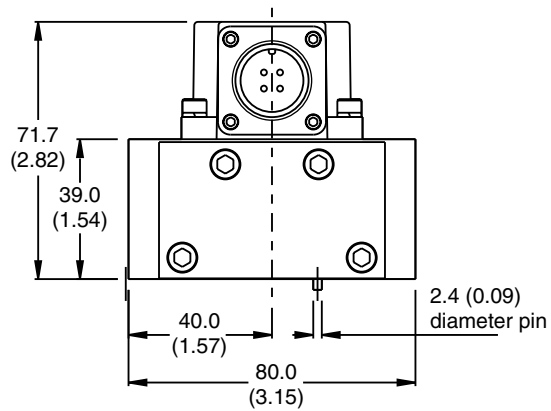
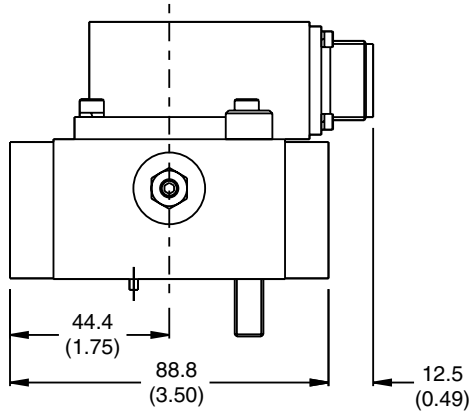
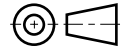
**Installation Wiring Options**

This servovalve has two coils. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.



Polarity shown connects flow from P to C2 port.

Inch equivalents for millimeter dimensions are shown in (\*\*)

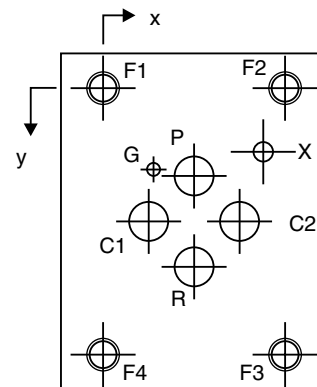


Mounting Torque  
29 Nm (21.4 lb.-ft.)

1. Suggested mounting bolts M8 x 60 mm or 5/16-18 x 2.25" high tensile steel, socket-head cap screws.
2. The 4-way electrical connector mates with MS3106-14S-2S or equivalent. It is available at ±90° and 180° to position shown (advise desired position at time of order).
3. Base O-Rings: 10.82 I/D x 1.78 section (2013N-9 or 2013V-9) 5 pcs.
4. Null adjust requires 10 A/F ring spanner (10 mm box-end wrench) and 2.5 hexagon key. Flow out of C1 will increase with clockwise rotation of key.

**Mounting Surface**

1. The minimum depth of hole G is 2 mm (0.079 in.). The ISO recommended full-thread depth is 22 mm (0.866 in.).
2. Surface roughness Ra < 0.8 μm [N6], as specified in ISO 468 and ISO 1302.
3. Surface flatness: 0.025 mm (0.001 in.) as specified in ISO 1101.



Metric Dimensions (mm)		(± 0.1 mm)								
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	Ø 8.2 max	Ø 8.2 max	Ø 8.2 max	Ø 8.2 max	Ø 3.5	Ø 5	M8	M8	M8	M8
x	22.2	11.1	22.2	33.3	12.3	33.3	0	44.4	44.4	0
y	21.4	32.5	43.6	32.5	19.8	8.7	0	0	65.0	65.0

U.S. Dimensions (inches)		(± 0.004 in.)								
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	Ø 0.32 max.	Ø 0.32 max.	Ø 0.32 max.	Ø 0.32 max.	Ø 0.14 max.	Ø 0.2	5/16 - 18	5/16 - 18	5/16 - 18	5/16 - 18
x	0.875	0.437	0.875	1.311	0.484	1.310	0	1.750	1.750	0
y	0.846	1.280	1.717	1.280	0.780	0.343	0	0	2.562	2.562

SE20.indd, dd





### General Description

Series SE2E features electronic spool position feedback and on-board electronics. Spool position feedback can be used as a safety monitoring tool, or for minimizing valve hysteresis. The SE2E is a two stage, 4-way, flapper and nozzle style servovalve.

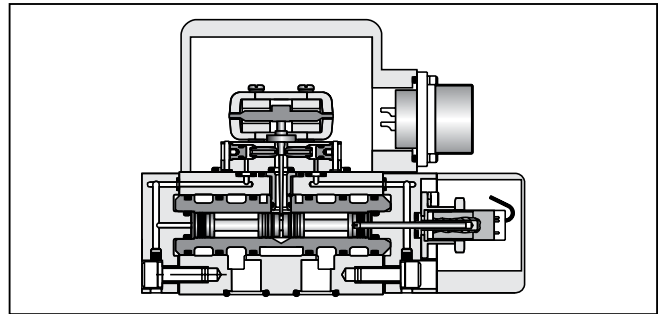
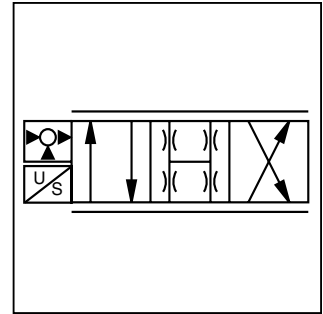
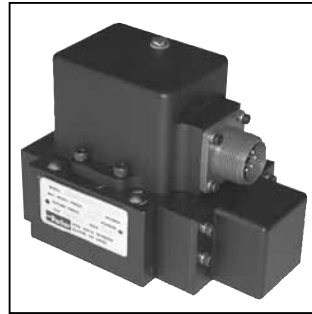
A special jewel feedback design enhances durability and prevents ball glitch problems, which can occur in other types of servovalves. This valve is rated for 315 Bar (4500 PSI) service.

### Features

- On-board electronics
- Electronic spool position feedback
- Jewel feedback ball for durability
- High performance
- ISO 10372 standard 22.23 mm (0.875 in.) port circle

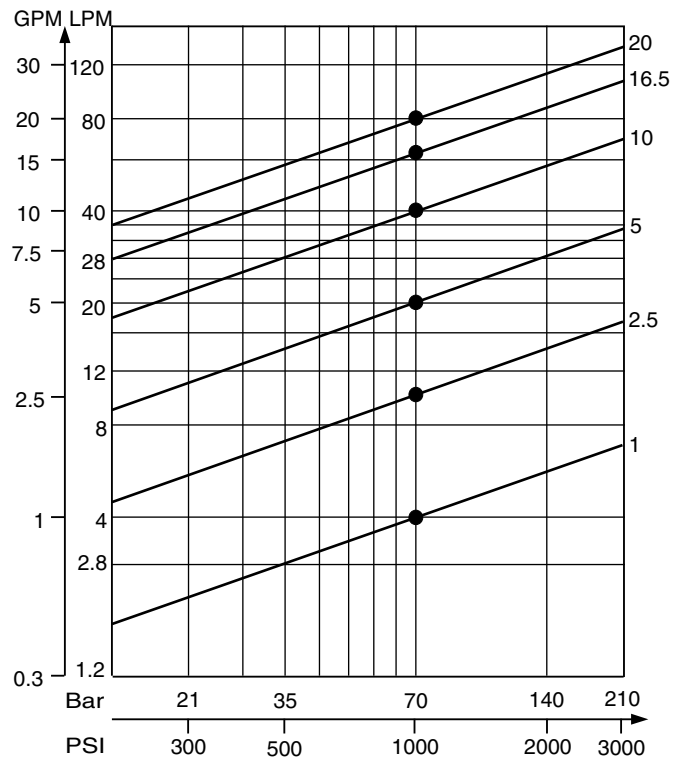
### Specifications

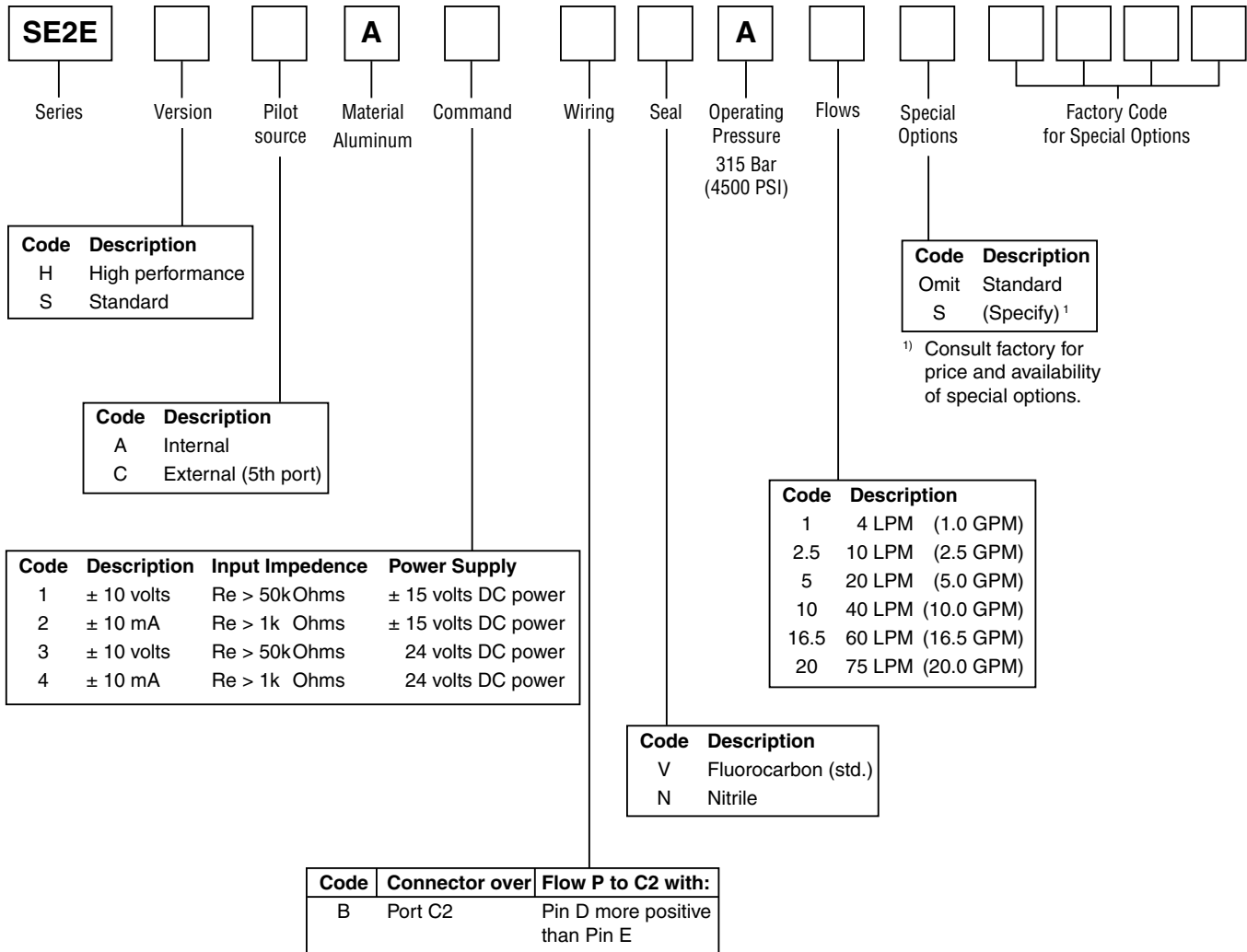
<b>Flow Rating ±10%</b> @ 70 Bar (1000 PSI)	3.8, 9.5, 19, 38, 63, 75 LPM (1, 2.5, 5, 10, 16.5, 20 GPM)
<b>Supply Pressure</b>	10 – 315 Bar (145 – 4500 PSI)
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance
<b>Null Leakage Flow</b> per 70 Bar (1000 PSI)	1.2 – 1.9 LPM (0.3 – 0.5 GPM)
<b>Pilot Flow</b> @ 210 Bar (3000 PSI)	0.4 – 0.8 LPM (0.1 – 0.2 GPM)
<b>Input Command</b>	±10 V std.
<b>Frequency Response</b> @ 90° phase shift	≥ 300 Hz (See Performance Curves)
<b>Non-Linearity</b>	≤ 5%
<b>Hysteresis</b>	≤ 0.5%
<b>Threshold</b>	≤ 0.1%
<b>Null Shift</b> with temperature with pressure	≤ 1% per 55°C (100°F) ≤ 1% per 70 Bar (1000 PSI)
<b>Pressure Gain</b> change in pressure per 1% change in input command	80% typical
<b>Step Response</b>	0 - 100%, 4 to 9 ms
<b>Fluid</b>	Petroleum based Mineral Oil, 10 – 110 cSt at 38°C (100°F)
<b>Fluid Cleanliness</b>	ISO 4406 15/12 or better
<b>Operating Temperature</b>	-20°C to +85°C (-4°F to +185°F)
<b>Protection Class</b>	NEMA 4, IP65



### Flow vs. Pressure Drop

at 100% command  
 Flow Path P → C1 → C2 → R

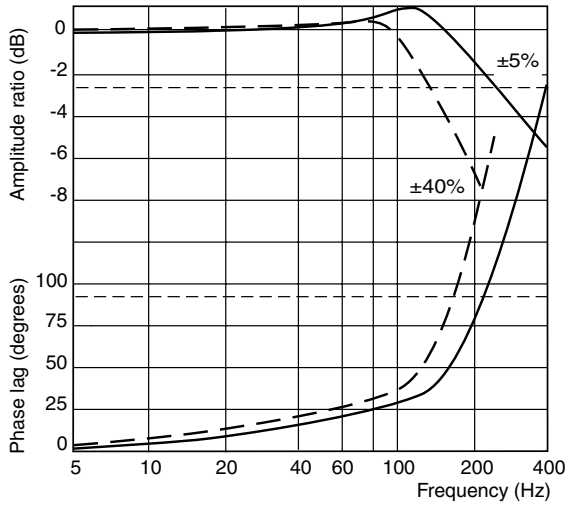




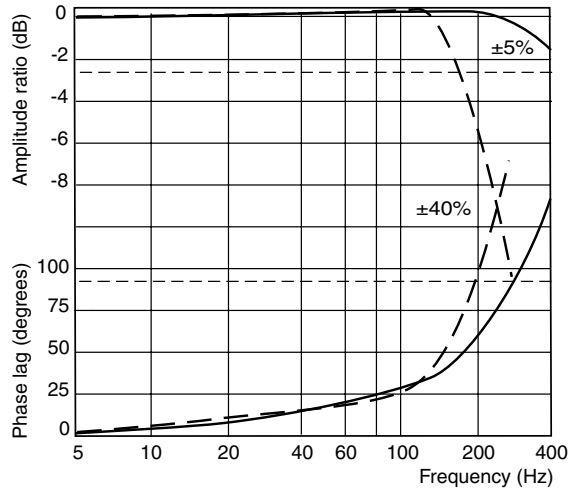
**Weight:** 1.5 kg (3.3 lbs.)  
**Cable with mating connector:** EHC158GE  
**Mating connector:** 5004072 (a 7-pin metal CE connector)  
**Bolt kit:** 4 of M8 x 60 mm, or 4 of 5/16-18x2.25"  
**Flushing valve:** 1200127 (does not cover 5<sup>th</sup> port)  
**U.S. Subplate, 5 ports:** 1402303 (4) #12 SAE side ports, (1) #4 SAE side ports  
**U.S. Subplate, 4 ports:** 810090-3 (4) #12 SAE side ports  
**Metric Subplate, 4 ports:** DS04SPS12M (M27 x 2.0 ISO 6149 side ports)  
**Electronics:** BD101, 23-7030, BD90, or BD95

**Frequency Response at 210 Bar (3000 PSI)**

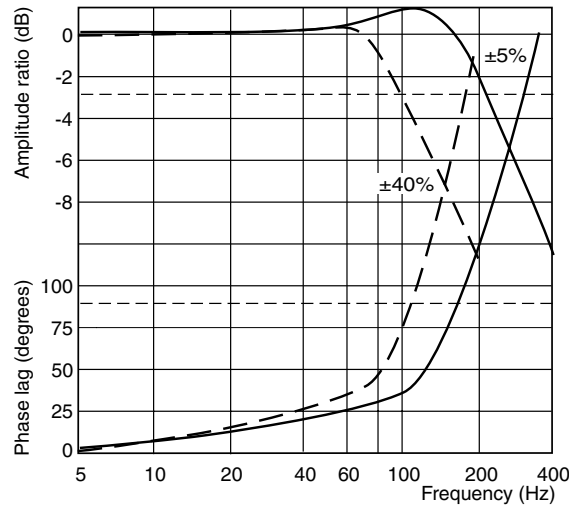
**Standard Response**  
**SE2E – 20 LPM (5 GPM)**



**High Response**  
**SE2E – 4 - 40 LPM (1.0 - 10 GPM)**

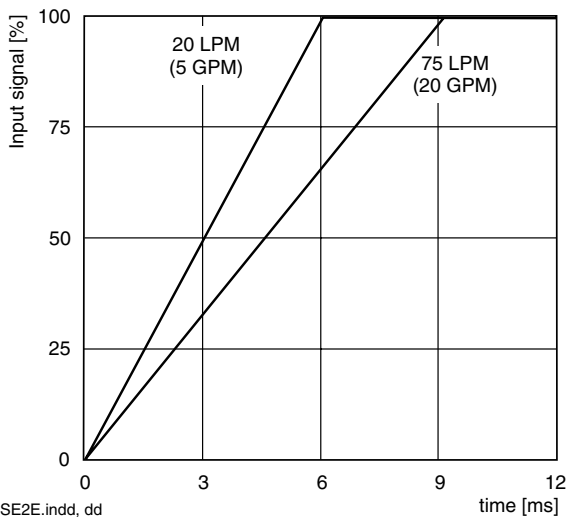


**Standard Response**  
**SE2E – 75 LPM (20 GPM)**



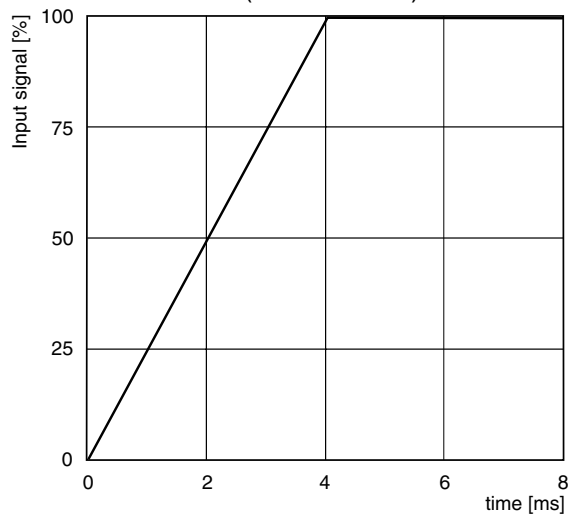
**Step Response at 210 Bar (3000 PSI)**

**Standard Response**



**High Response**

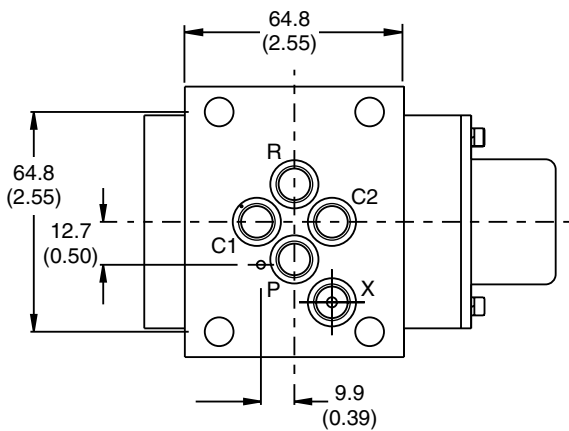
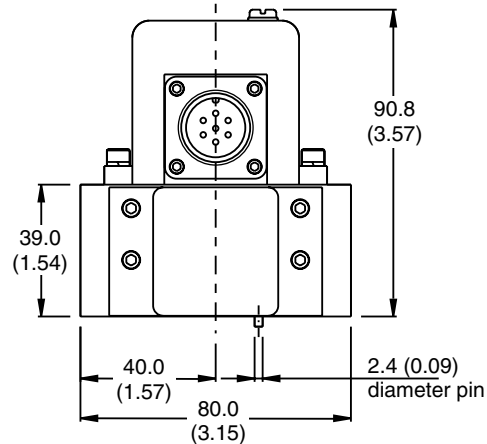
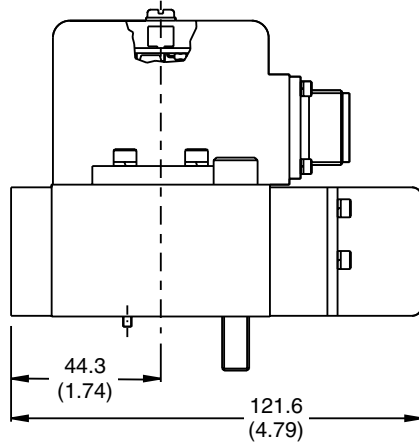
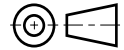
**SE2E – 4 - 40 LPM (1.0 - 10 GPM)**



SE2E.indd, dd



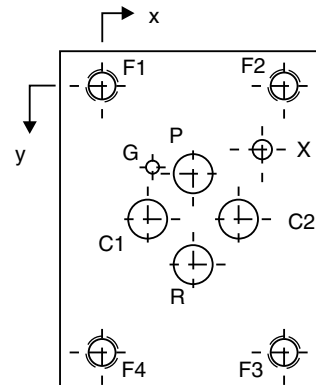
Inch equivalents for millimeter dimensions are shown in (\*\*)



1. Suggested mounting bolts M8 x 60 mm or 5/16-18 x 2.25" long high tensile steel, socket-head cap screws.
2. The 7-pin electrical connector mates with Parker 5004072 connector or equivalent. The connector is available at 180° to position shown (advise desired position at time of order).
3. Base O-Rings: 10.82 I/D x 1.78 section (2013N-9 or 2013V-9) 5 pcs.
4. Null adjustment potentiometer.

**Mounting Surface**

1. The minimum depth of hole G is 2 mm (0.079 in.). The ISO recommended full-thread depth is 22 mm (0.866 in.).
2. Surface roughness Ra < 0.8 μm [N6], as specified in ISO 468 and ISO 1302.
3. Surface flatness: 0.025 mm (0.001 in.) as specified in ISO 1101.






Metric Dimensions (mm)										
± 0.1 mm										
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	Ø 8.2 max	Ø 8.2 max	Ø 8.2 max	Ø 8.2 max	Ø 3.5	Ø 5	M8	M8	M8	M8
x	22.2	11.1	22.2	33.3	12.3	33.3	0	44.4	44.4	0
y	21.4	32.5	43.6	32.5	19.8	8.7	0	0	65.0	65.0




U.S. Dimensions (inches)										
± 0.004 in.										
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	Ø 0.32 max.	Ø 0.32 max.	Ø 0.32 max.	Ø 0.32 max.	Ø 0.14 max.	Ø 0.2	5/16 - 18	5/16 - 18	5/16 - 18	5/16 - 18
x	0.875	0.437	0.875	1.311	0.484	1.310	0	1.750	1.750	0
y	0.846	1.280	1.717	1.280	0.780	0.343	0	0	2.562	2.562

SE2E.indd, dd




	Pin	Voltage Command	Current Command
Supply voltage +15/0/-15 VDC ±3%  Ripple < 50 mV <sub>p-p</sub>	A	+15 VDC $I_{max} = 200 \text{ mA}$	
	B	-15 VDC $I_{max} = 200 \text{ mA}$	
	C		
Command signal 	D	0...±10 VDC $R_e \geq 50 \text{ k}\Omega$	0...±10 mA $R_e \geq 1 \text{ k}\Omega$
	E		
Spool position output	F	0...±10 VDC load resistance 10 kΩ	0...±10 VDC load resistance 10 kΩ
Protective Earth	G		



	Pin	Voltage Command	Current Command
Supply voltage +24 VDC ±3%  Ripple < 50 mV <sub>p-p</sub>	A	+24 VDC $I_{max} = 200 \text{ mA}$	
	B		
	C	Not used	
Command signal 	D	0...±10 VDC $R_e \geq 50 \text{ k}\Omega$	0...±10 mA $R_e \geq 1 \text{ k}\Omega$
	E		
Spool position output	F	0...±10 VDC load resistance 10 kΩ	0...±10 VDC load resistance 10 kΩ
Protective Earth	G		

Spool stroke is proportional to command signal.  
 +10 VDC to pin D causes 100% rated flow in the direction  
 of P→C2, C1→R.

One input D or E must be connected to common if a single  
 ended driver is used.

Connection cable to be 6-core, 0.75 mm<sup>2</sup> (0.03 in<sup>2</sup>), screened.  
 External diameter 6.5~9.5 mm (0.26 - 0.37 in.).  
 Connect screening to  on supply side only.

Mating connector is Parker number 5004072.  
 A mating cable with connector is Parker number EHC158GE.



## General Description

Series SE31 is a two stage, 4-way, flapper and nozzle style servovalve. This valve is designed to fit onto DIN NG10 or NFPA D05 port patterns. The SE31 has a wide range of flow ratings and a high performance spool and sleeve design.

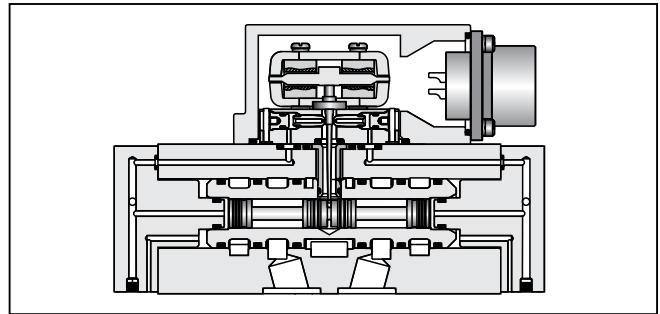
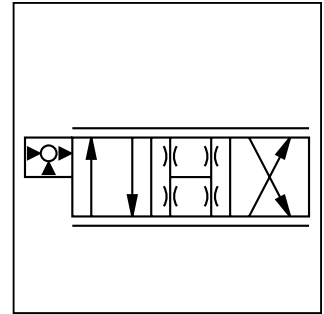
A special jewel feedback design enhances durability and prevents ball glitch problems, which can occur in other types of servovalves. This valve is rated for 210 Bar (3000 PSI) service.

## Features

- Lapped spool and sleeve
- Jewel feedback ball for durability
- Aluminum body
- Medium and High performance
- ISO 440 -05-05-0-94 (4-ports), DO5HE (no "Y" port)

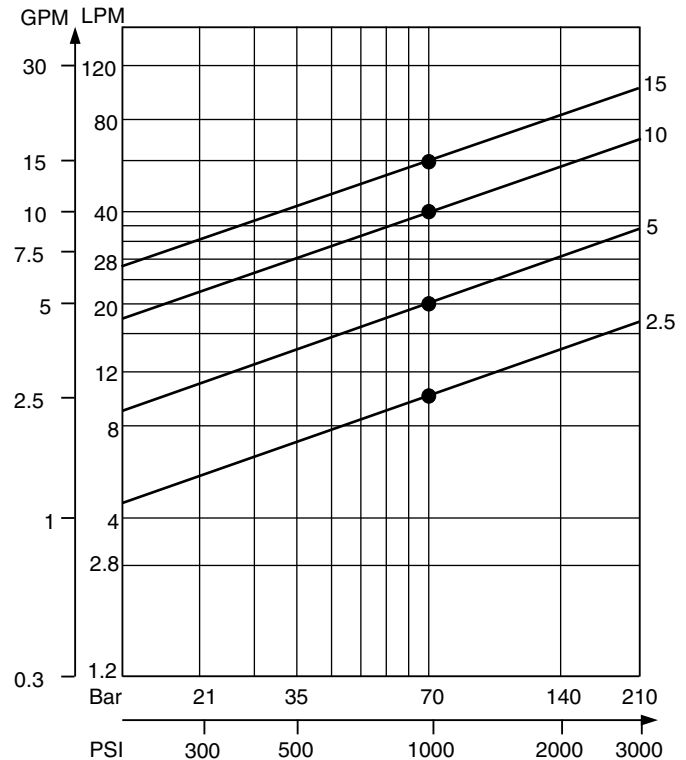
## Specifications

<b>Flow Rating ±10%</b> @ 70 Bar (1000 PSI)	10, 20, 40, 60 LPM (2.5, 5, 10, 15 GPM)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI)
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance
<b>Null Leakage Flow</b> per 70 Bar (1000 PSI)	1.2 – 1.9 LPM (0.3 – 0.5 GPM)
<b>Pilot Flow</b> @ 210 Bar (3000 PSI)	0.4 – 0.7 LPM (0.1 – 0.2 GPM)
<b>Input Command</b>	±100 mA std.
<b>Frequency Response</b> @ 90° phase shift	> 100 Hz (See Performance Curves)
<b>Non-Linearity</b>	≤ 10%
<b>Hysteresis</b>	≤ 3%
<b>Threshold</b>	≤ 0.5%
<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Pressure Gain</b> change in pressure per 1% change in input command	60% typical
<b>Step Response</b>	0 - 100%, < 15 ms
<b>Fluid</b>	Petroleum based Mineral Oil, 10 – 110 cSt at 38°C (100°F)
<b>Fluid Cleanliness</b>	ISO 4406 15/12 or better
<b>Operating Temperature</b>	-30°C to +130°C (-22°F to +266°F)
<b>Protection Class</b>	NEMA 4, IP65

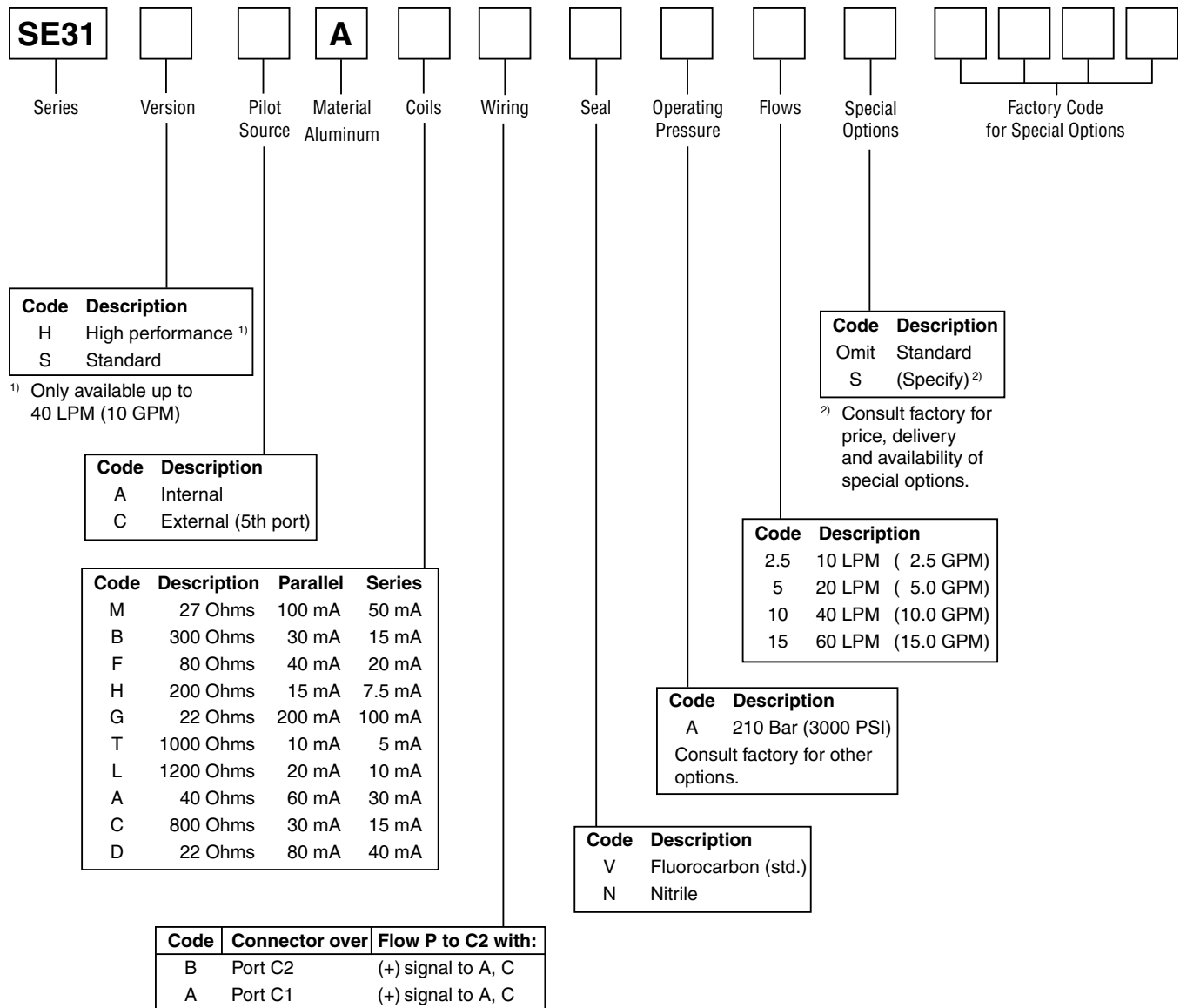


## Flow vs. Pressure Drop

at 100% command  
 Flow Path P → C1 → C2 → R



SE31.indd, dd



**Weight:** 1.1 kg (2.4 lbs.)

**Cable with mating connector:** EHC154S

**Mating connector:** MS3106E-14S-2S

**Bolt kit:** 4 of M6 x 50 mm, or 4 of 1/4-20x2.00"

**Flushing valve:** D3L8CV

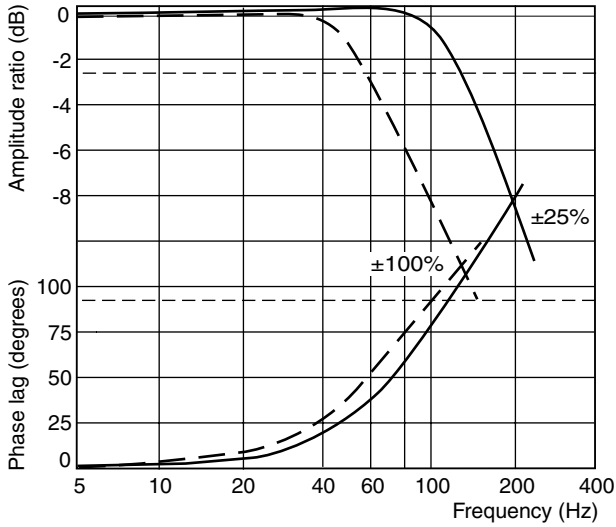
**Subplate, 5 ports:** D31D6SA35 (4 side ports #12 SAE, 1 pilot port on P side is #4 SAE)

**Subplate, 4 ports:** D3H6SA35 (4 side ports #12 SAE)

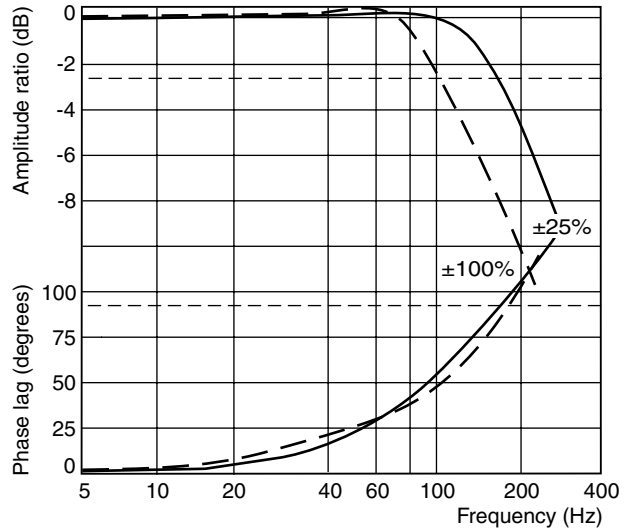
**Electronics:** BD101, 23-7030, BD90, or BD95

**Frequency Response at 210 Bar (3000 PSI)**

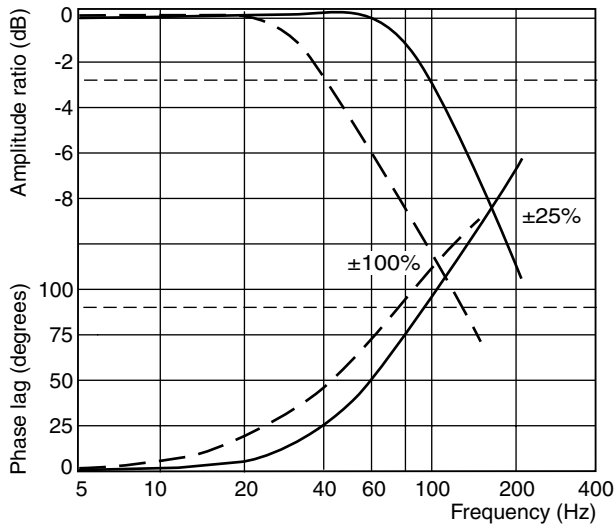
**Standard Response**  
**SE31 – 4 LPM (1.0 GPM)**



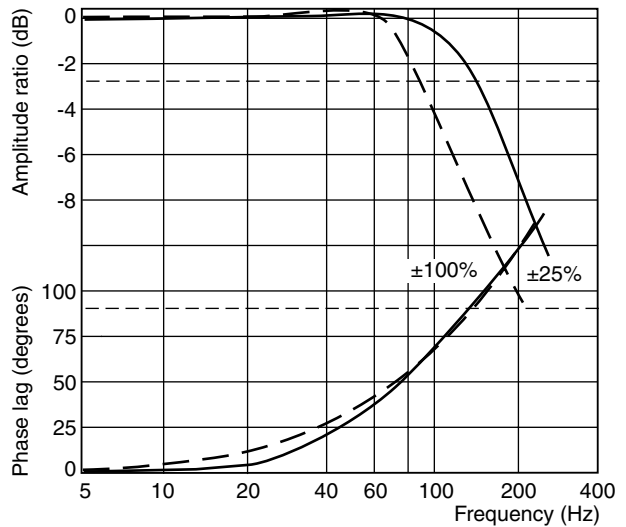
**High Response**  
**SE31 – 4 LPM (1.0 GPM)**



**Standard Response**  
**SE31 – 60 LPM (15 GPM)**



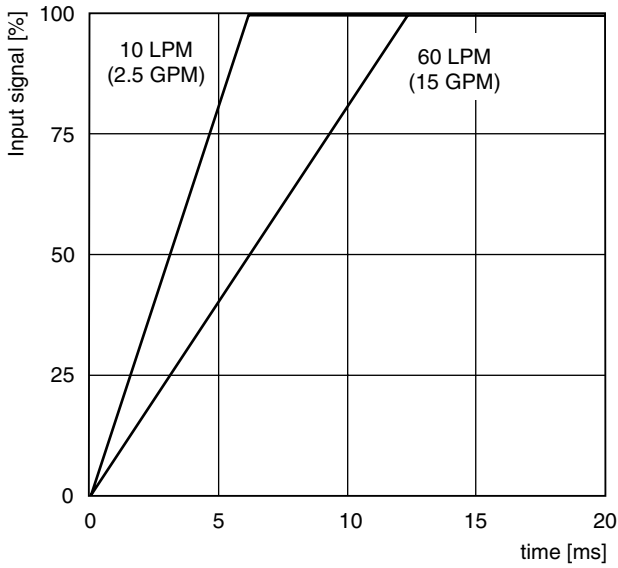
**High Response**  
**SE31 – 40 LPM (10 GPM)**



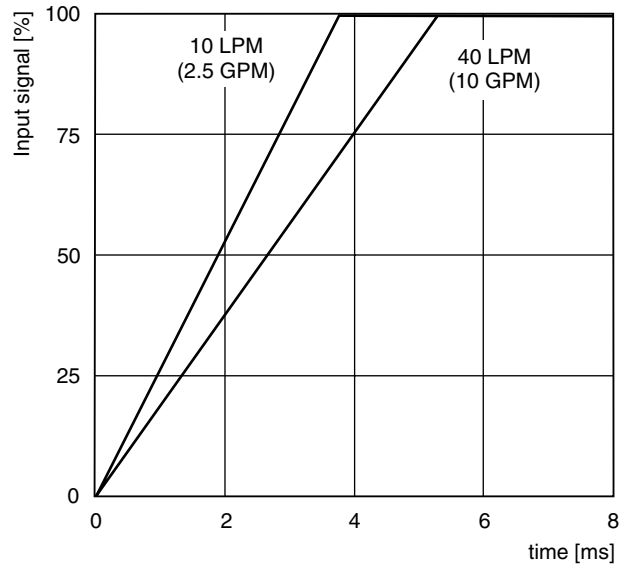


**Performance Curves**

**Step Response at 210 Bar (3000 PSI)**  
**Standard Response**

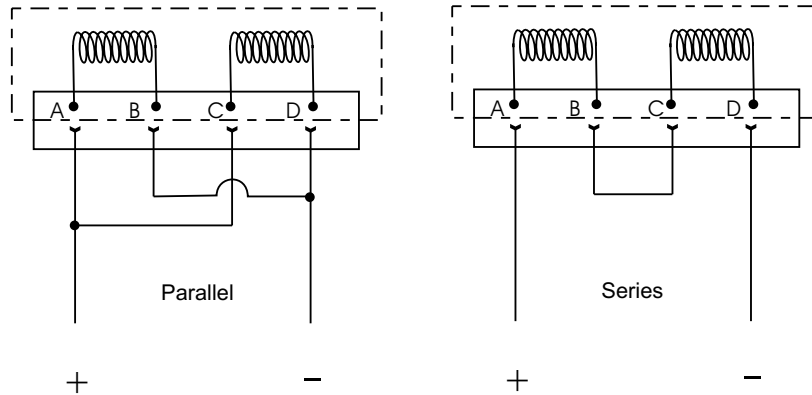


**High Response**



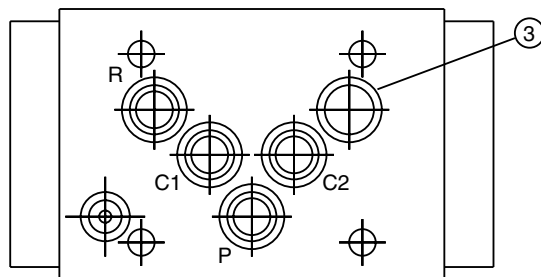
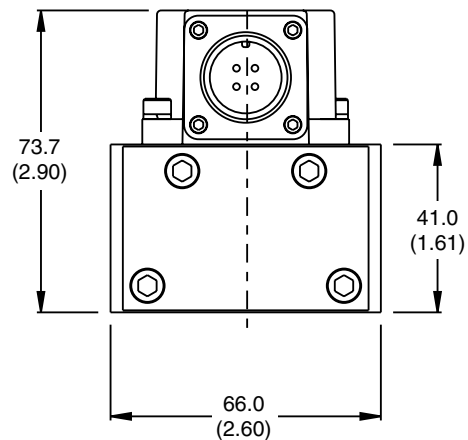
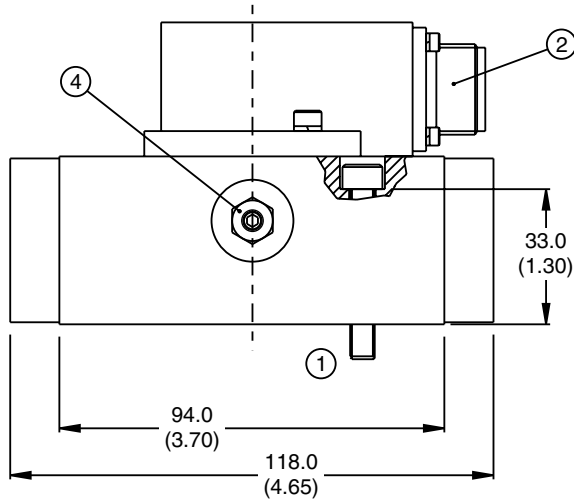
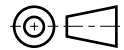
**Installation Wiring Options**

This servovalve has two coils. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.



Polarity shown connects flow from P to C2 port.

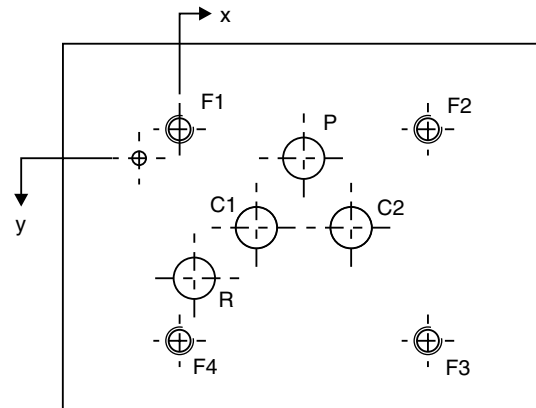
Inch equivalents for millimeter dimensions are shown in (\*\*)



1. Suggested mounting bolts M6 x 50 mm or 1/4-20 x 2.25" long high tensile steel, socket-head cap screws.
2. The 4-pin electrical connector mates with MS3106E-14S-2S or equivalent. The valve connector is available ±90° or 180° from the position shown.
3. Base O-Rings: 12 mm I.D. by 2.0 mm section, 90 durometer.
4. Null adjust requires a 10 A/F ring spanner (10 mm box end wrench) and a 2.5 hexagon key. Flow out of C1 will increase with clockwise rotation of key.

**Mounting Surface**

1. The minimum depth of hole G is 2 mm (0.079 in.). The ISO recommended full-thread depth is 18 mm (0.709 in.).
2. Surface roughness Ra < 0.8 µm [N6], as specified in ISO 468 and ISO 1302.
3. Surface flatness: 0.025 mm (0.001 in.) as specified in ISO 1101.



Metric Dimensions (mm)									
(± 0.1 mm)									
Axis	P	C1	R	C2	X	F1	F2	F3	F4
	Ø 9 max	Ø 9 max	Ø 9 max	Ø 9 max	Ø 3	M6	M6	M6	M6
x	27.0	16.7	3.2	37.3	-8.8	0	54.0	54.0	0
y	6.3	21.4	32.4	21.4	6.3	0	0	46.0	46.0

U.S. Dimensions (inches)									
(± 0.004 in.)									
Axis	P	C1	R	C2	X	F1	F2	F3	F4
	Ø 0.354 max	Ø 0.354 max	Ø 0.354 max	Ø 0.354 max	Ø 0.12	1/4 - 20	1/4 - 20	1/4 - 20	1/4 - 20
x	1.063	0.657	0.126	1.469	-0.347	0	2.126	2.126	0
y	0.248	0.843	1.275	0.843	0.248	0	0	1.811	1.811

SE31.indd, dd



**General Description**

Series SE60 is a two stage, 4-way, flapper and nozzle style servovalve. The SE60 has a wide range of flow ratings and a high performance spool and sleeve design.

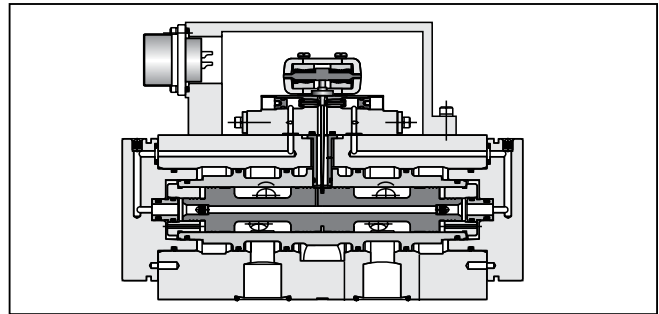
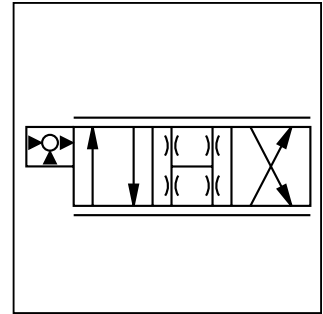
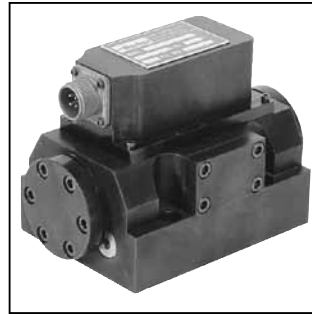
A special jewel feedback design enhances durability and prevents ball glitch problems, which can occur in other types of servovalves. This valve is rated for 210 Bar (3000 PSI) service.

**Features**

- Lapped spool and sleeve
- Jewel feedback ball for durability
- Aluminum body
- Medium and High performance
- ISO 10372 size 6 standard 50.8 mm (2.000 in.) port circle

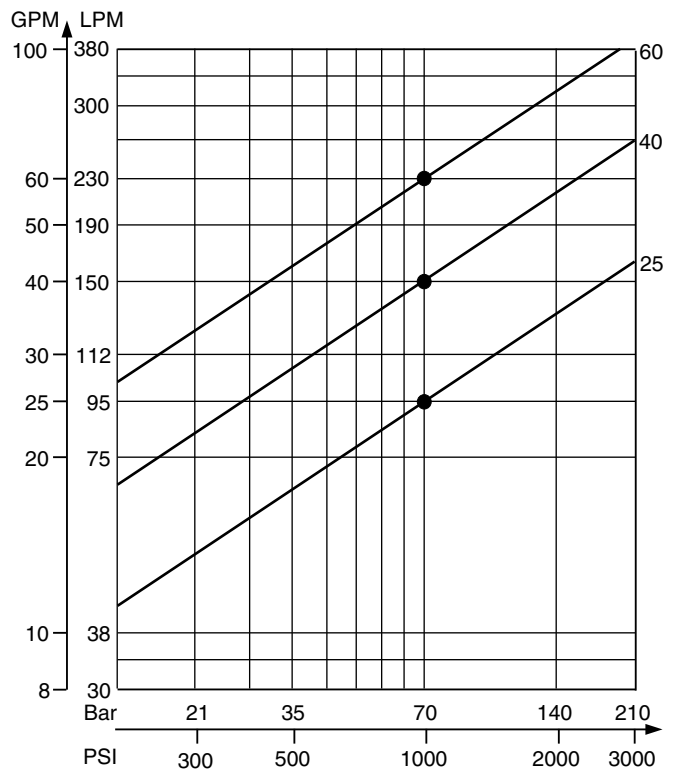
**Specifications**

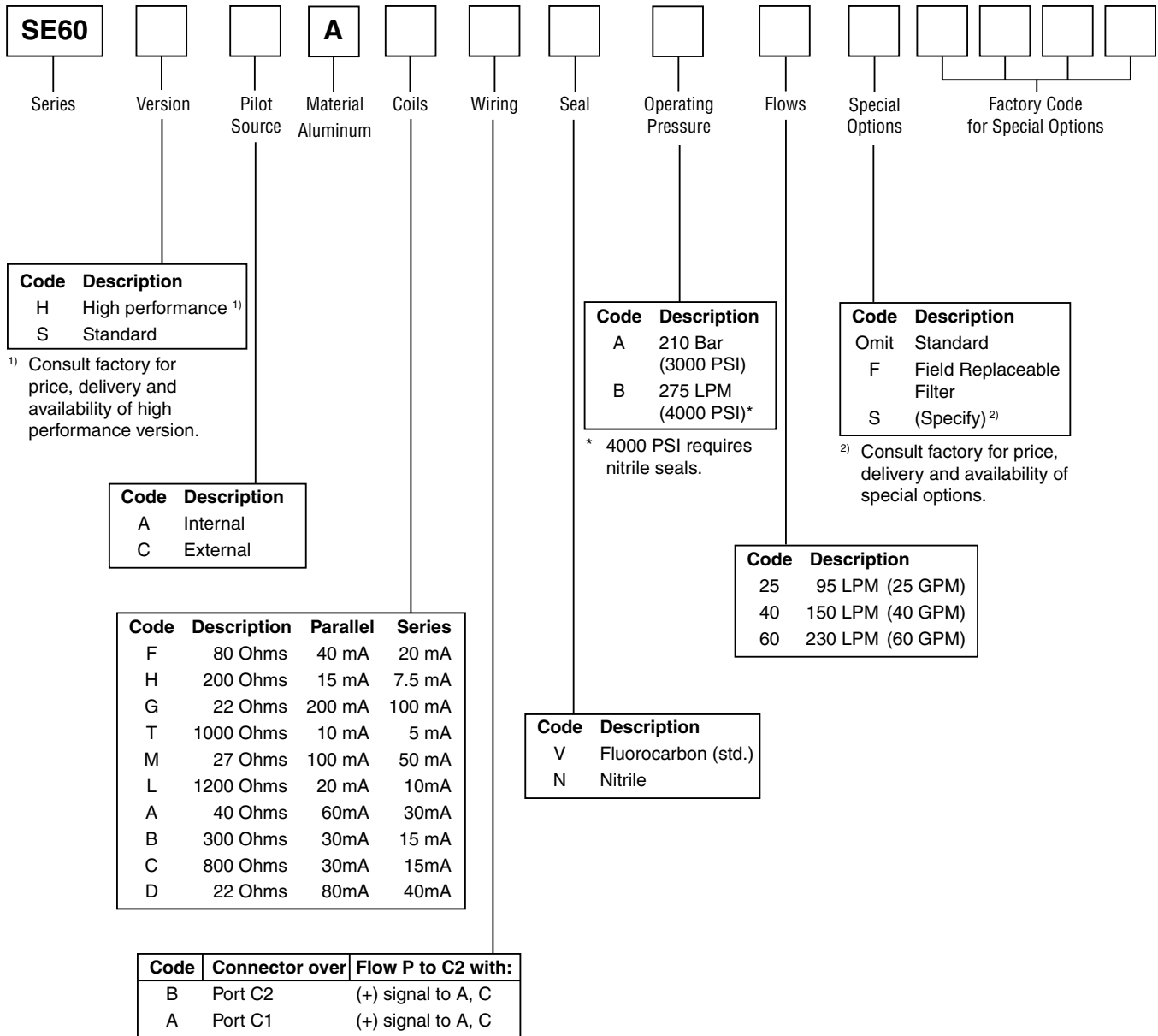
<b>Flow Rating ±10%</b> @ 70 Bar (1000 PSI)	95, 150, 230 LPM (25, 40, 60 GPM)
<b>Supply Pressure</b>	10 – 210 Bar (145 – 3000 PSI)
<b>Tank Port Pressure</b>	210 Bar (3000 PSI) Max. < 10 Bar (145 PSI) for best performance
<b>Null Leakage Flow</b> per 70 Bar (1000 PSI)	2.4 – 3.6 LPM (0.6 – 1.0 GPM)
<b>Pilot Flow</b> @ 210 Bar (3000 PSI)	0.4 LPM (0.1 GPM)
<b>Input Command</b>	±40 mA std.
<b>Frequency Response</b> @ 90° phase shift	> 100 Hz (See Performance Curves)
<b>Non-Linearity</b>	≤ 10%
<b>Hysteresis</b>	≤ 4%
<b>Threshold</b>	≤ 1%
<b>Null Shift</b> with temperature with pressure	≤ 2% per 55°C (100°F) ≤ 2% per 70 Bar (1000 PSI)
<b>Pressure Gain</b> change in pressure per 1% change in input command	60% typical
<b>Step Response</b>	0 - 100%, < 15 ms
<b>Fluid</b>	Petroleum based Mineral Oil, 10 – 110 cSt at 38°C (100°F)
<b>Fluid Cleanliness</b>	ISO 4406 15/12 or better
<b>Operating Temperature</b>	-30°C to +130°C (-22°F to +266°F)
<b>Protection Class</b>	NEMA 4, IP65



**Flow vs. Pressure Drop**

at 100% command  
 Flow Path P → C1 → C2 → R





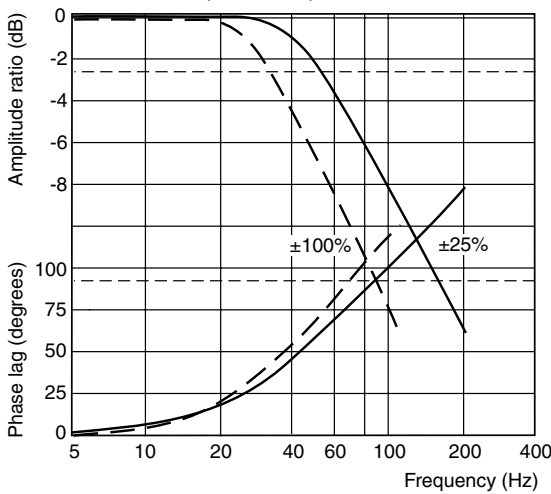
**Weight:** 3.4 kg (7.5 lbs.)  
**Cable with mating connector:** EHC154S  
**Mating connector:** MS3106E-14S-2S  
**Bolt kit:** 4 of M10 x 60 mm, or 4 of 3/8-16x2.375"  
**Flushing valve:** Consult factory.  
**US Subplate, 4 ports:** AS06SPS20S (# 20 SAE side ports)  
**Metric Subplate, 4 ports:** AS06SPS20M (M42 x 2.0 ISO 6149 side ports)  
**Electronics:** BD101, 23-7030, BD90, or BD95

**Performance Curves**

**Frequency Response at 210 Bar (3000 PSI)**

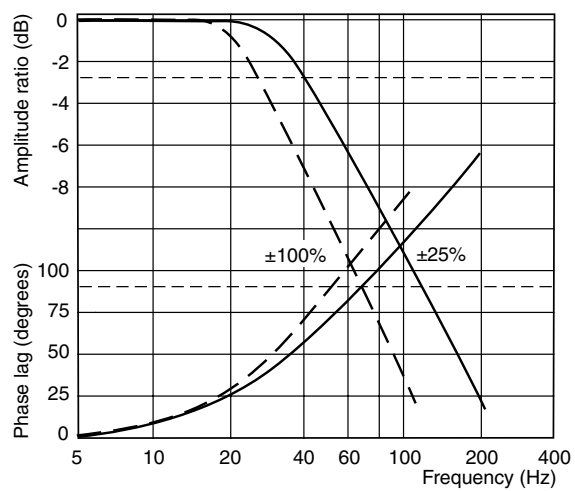
**Standard Response**

**SE60 – 95 LPM (25 GPM)**



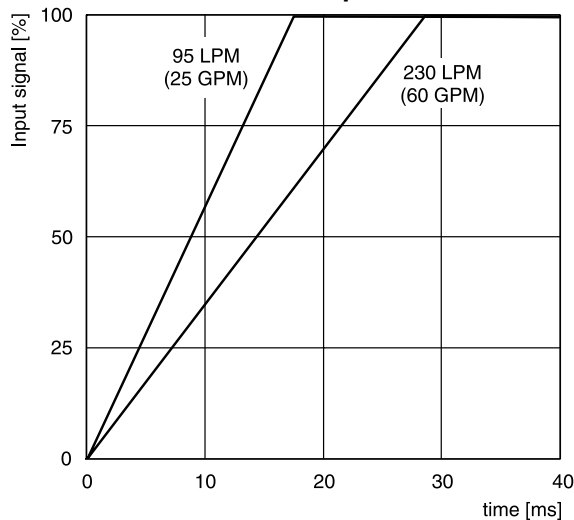
**High Response**

**SE60 – 230 LPM (60 GPM)**



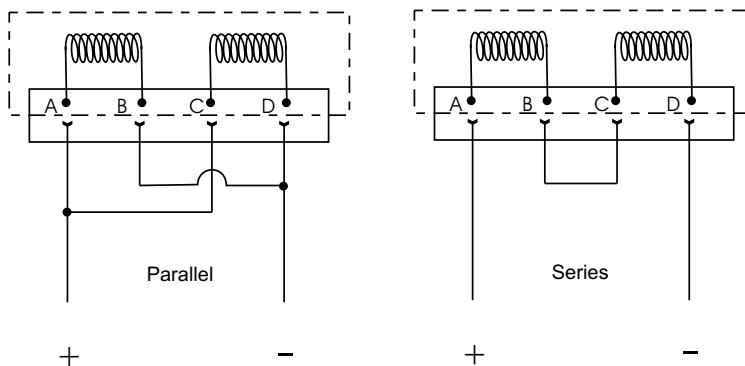
**Step Response at 210 Bar (3000 PSI)**

**Standard Response**



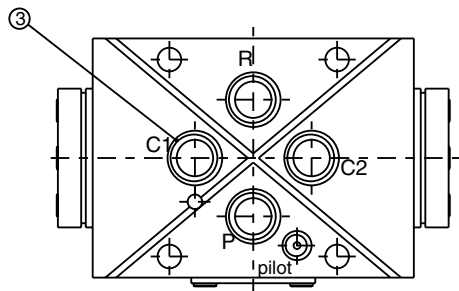
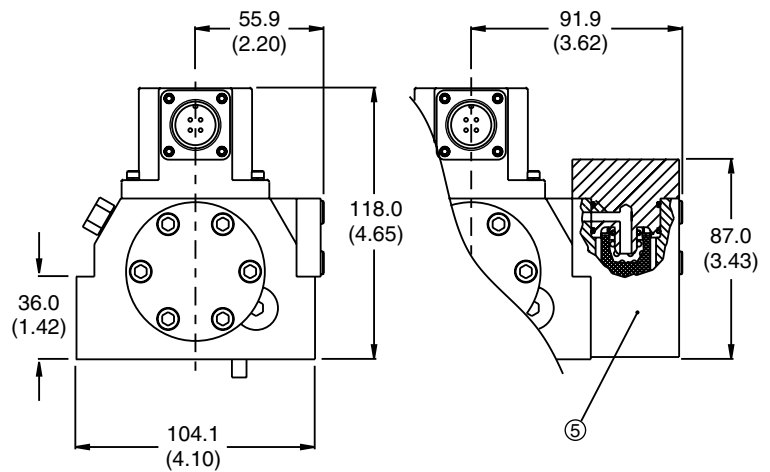
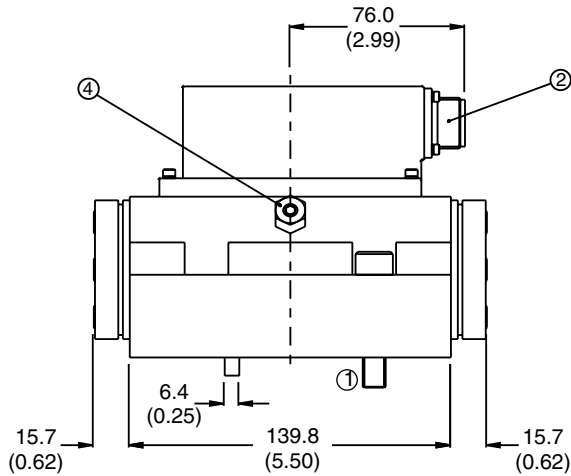
**Installation Wiring Options**

This servovalve has two coils. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.



Polarity shown connects flow from P to C2 port.

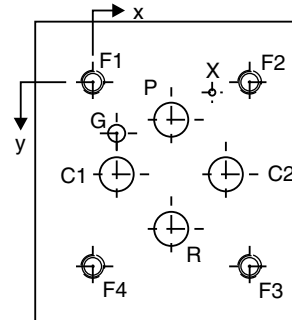
Inch equivalents for millimeter dimensions are shown in (\*\*)



1. Suggested mounting bolts M10 x 60 mm or 3/8-16 x 2.375" long high tensile steel, socket-head cap screws.
2. 4-way electrical connector mates with MS3106-14S-2S or equivalent. Is available at 180° to position shown (advise desired position at time of order).
3. Base O-Rings: 4 of Parker 2019V-7, 1 of Parker 2012V-7 (if external pilot is used).
4. Null adjust requires 12 A/F ring spanner (12 mm box end wrench) and 3.0 hexagon key. Flow out of C2 will increase with clockwise rotation of key.
5. Optional field replaceable filter housing. Element P/N SRS1479.

**Mounting Surface**

1. The minimum depth of hole G is 2 mm (0.079 in.). The ISO recommended full-thread depth is 30 mm (1.181 in.).
2. Surface roughness Ra < 0.8 μm [N6], as specified in ISO 468 and ISO 1302.
3. Surface flatness: 0.025 mm (0.001 in.) as specified in ISO 1101.



Metric Dimensions (mm)										
(± 0.1 mm)										
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	Ø 17.5 max	Ø 17.5 max	Ø 17.5 max	Ø 17.5 max	Ø 8	Ø 5	M10	M10	M10	M10
x	36.5	11.1	36.5	61.9	11.1	55.6	0	73.0	73.0	0
y	17.4	42.8	68.2	42.8	23.7	4.7	0	0	85.7	85.7

U.S. Dimensions (inches)										
(± 0.004 in.)										
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	Ø 0.688 max	Ø 0.688 max	Ø 0.688 max	Ø 0.688 max	Ø 0.39	Ø 0.20	3/8 - 16	3/8 - 16	3/8 - 16	3/8 - 16
x	1.437	0.437	1.437	2.437	0.437	2.187	0	2.875	2.875	0
y	0.687	1.687	2.687	1.687	0.937	0.187	0	0	3.375	3.375

SE60.indd, dd

