

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).

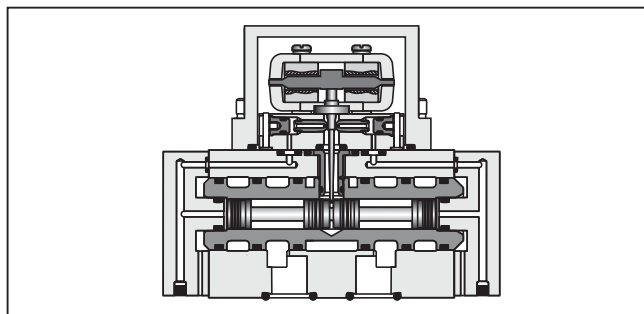
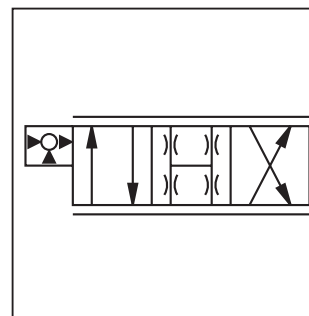
C

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

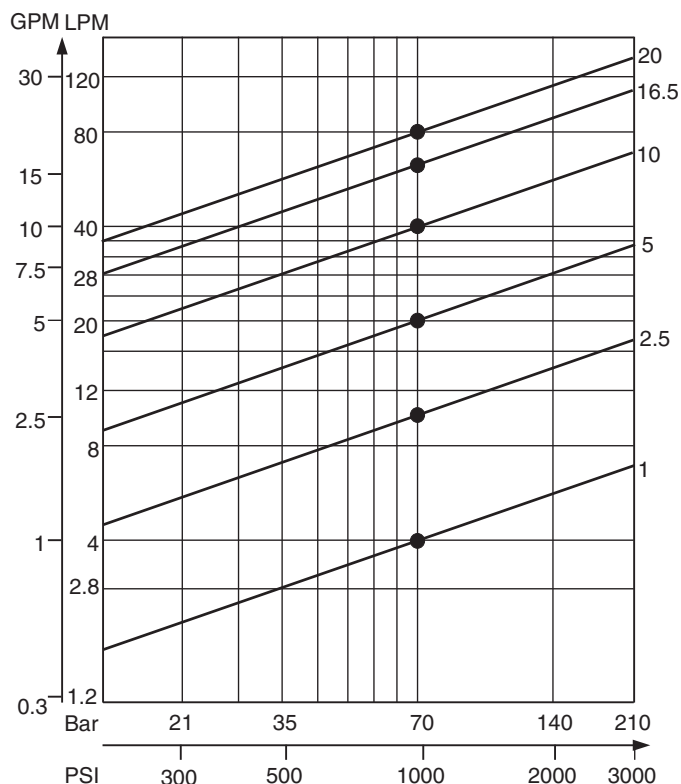
Specifications

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



Flow vs. Pressure Drop

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

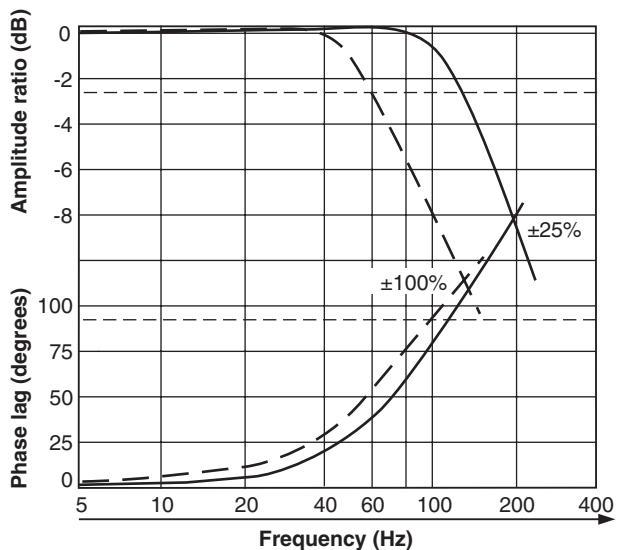




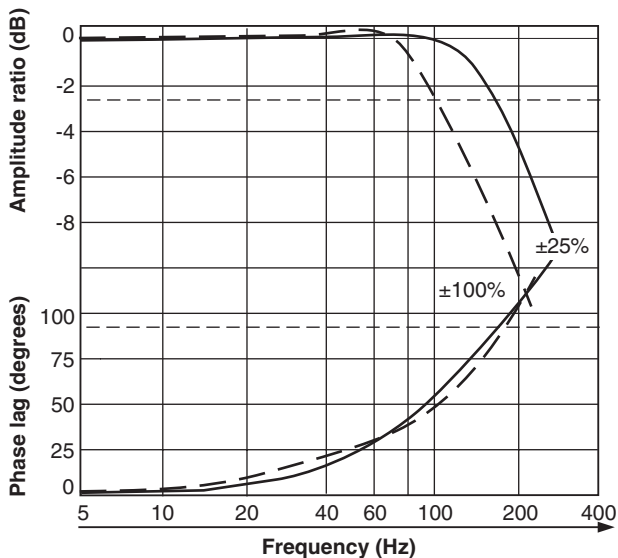
Electronics: BD101, 23-7030, BD90, or BD95

Frequency Response at 210 Bar (3000 PSI)

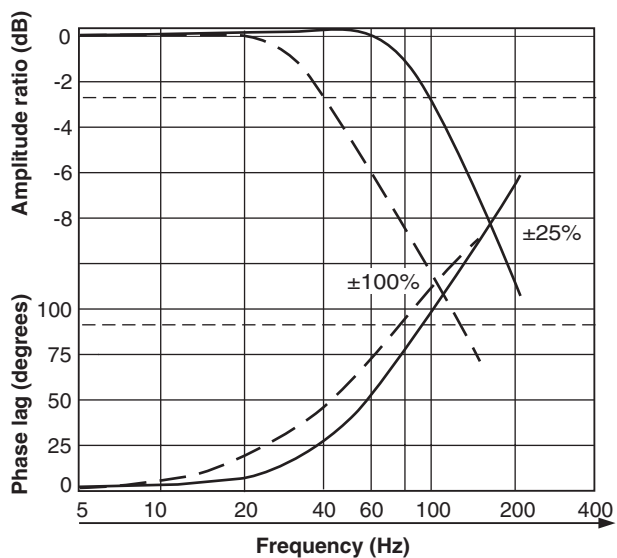
Standard Response
SE20 – 4 LPM (1.0 GPM)



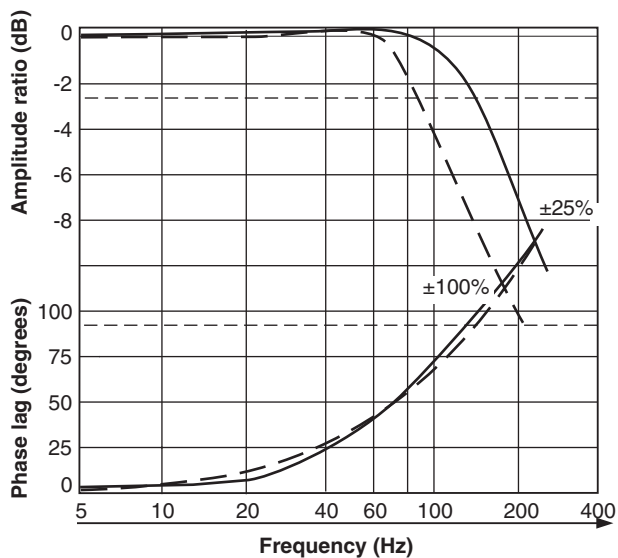
High Response
SE20 – 4 LPM (1.0 GPM)



Standard Response
SE20 – 63 LPM (16.5 GPM)



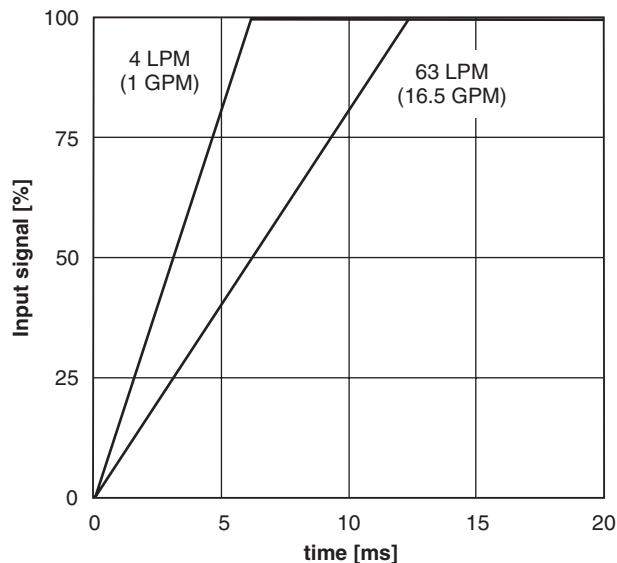
High Response
SE20 – 40 LPM (10 GPM)



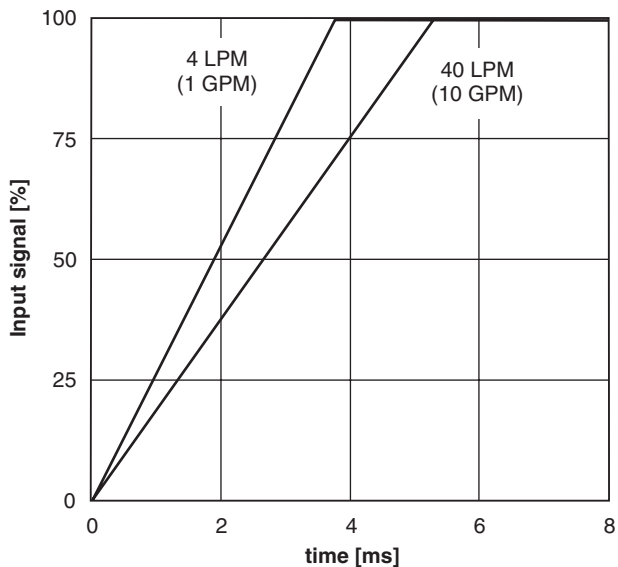
Performance Curves

Step Response at 210 Bar (3000 PSI)

Standard Response

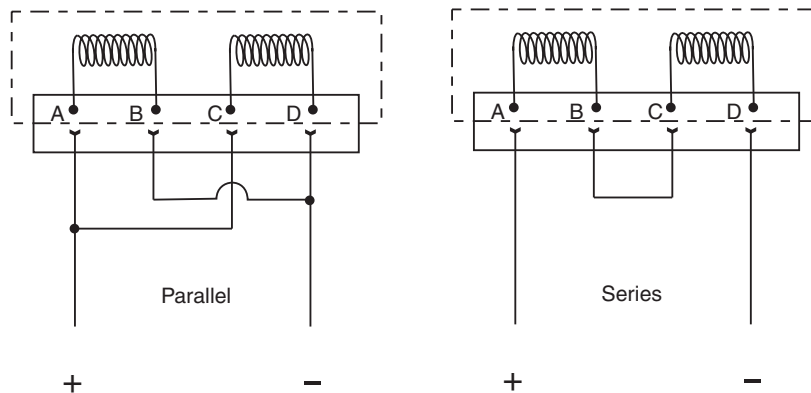


High Response



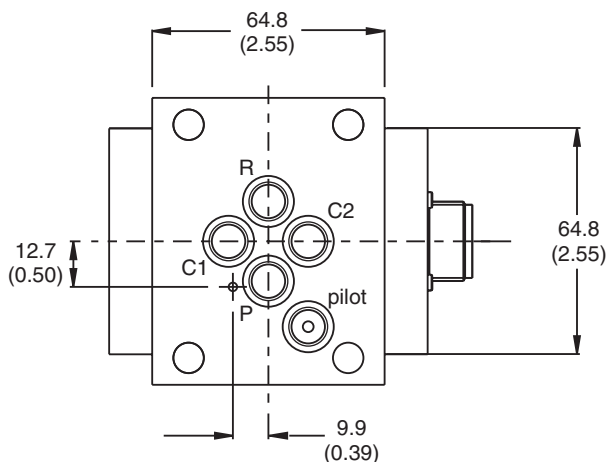
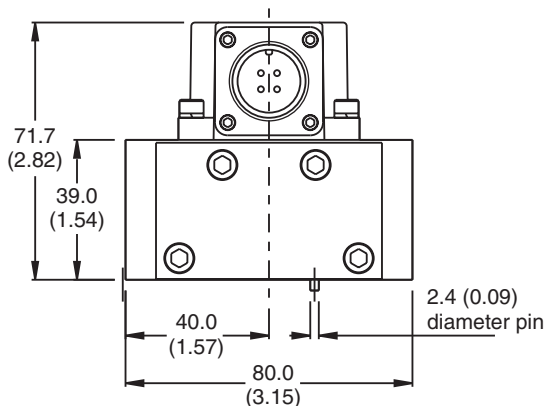
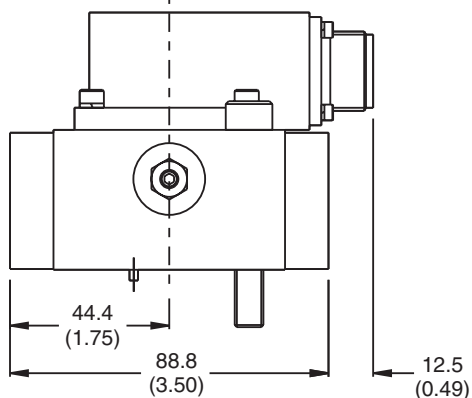
Installation Wiring Options

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 (**)

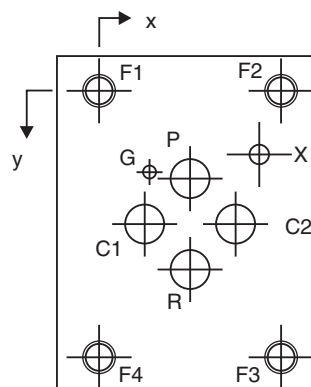


Mounting Torque
29 Nm (21.4 lb.-ft.)

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 $\pm 90^\circ$ 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 $R_a < 0.8 \mu\text{m}$ [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)						($\pm 0.1 \text{ mm}$)				
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	$\varnothing 8.2 \text{ max}$	$\varnothing 8.2 \text{ max}$	$\varnothing 8.2 \text{ max}$	$\varnothing 8.2 \text{ max}$	$\varnothing 3.5$	$\varnothing 5$	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)						($\pm 0.004 \text{ in.}$)				
Axis	P	C1	R	C2	G	X	F1	F2	F3	F4
	$\varnothing 0.32 \text{ max.}$	$\varnothing 0.32 \text{ max.}$	$\varnothing 0.32 \text{ max.}$	$\varnothing 0.32 \text{ max.}$	$\varnothing 0.14 \text{ max.}$	$\varnothing 0.2$	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

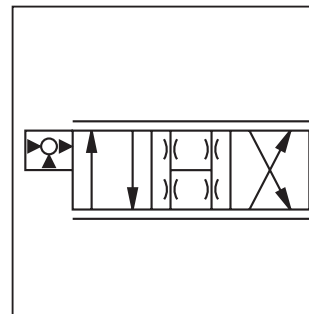
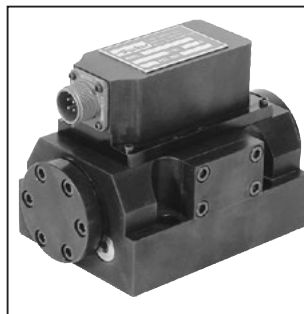
SE20.indd, ddp



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.



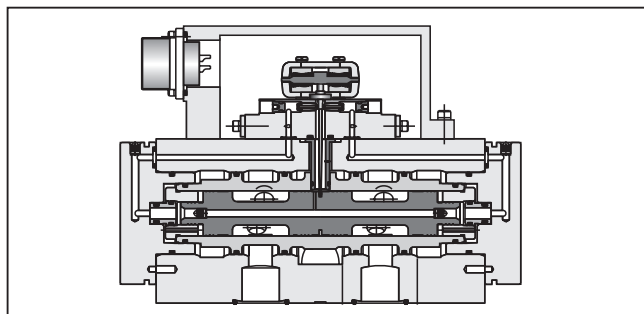
C

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

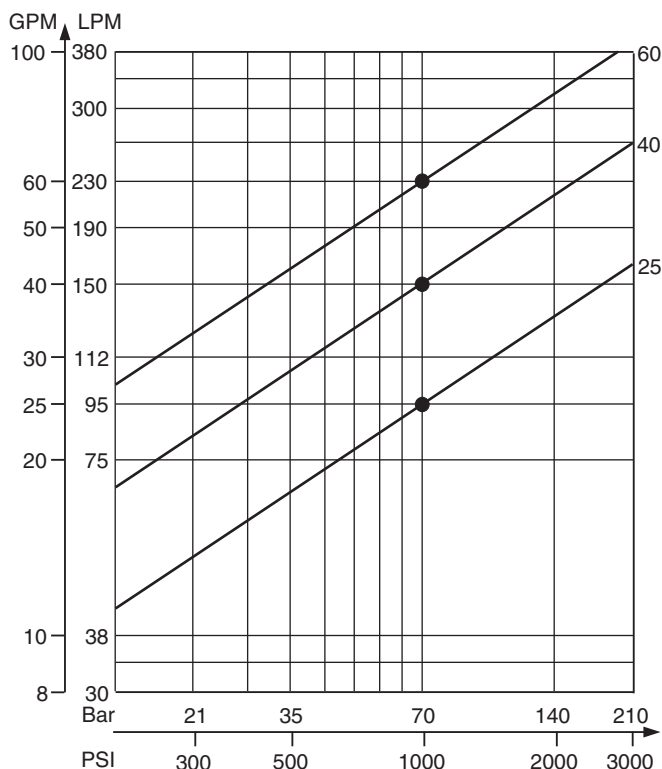
Specifications

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



Flow vs. Pressure Drop

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



WARNING: This product can expose you to chemicals including Lead, Nickel (Metallic), or 1,3-Butadiene which are known to the State of California to cause cancer, and Lead or 1,3-Butadiene which is known to the State of California to cause birth defects and other reproductive harm. For more information go to www.P65Warnings.ca.gov.

C01_Cat2550.indd, ddp, 04/19

SE60			A												
Series	Version	Pilot Source	Material Aluminum	Coils	Wiring	Seal	Operating Pressure	Flows	Special Options	Factory Code for Special Options					

Code Description

H	High performance ¹⁾
S	Standard

¹⁾ Consult factory for price, delivery and availability of high performance version.

Code Description

A	Internal
C	External (5 th Port)

Code	Description	Parallel	Series
F	80 Ohms	40 mA	20 mA
H	200 Ohms	15 mA	7.5 mA
G	22 Ohms	200 mA	100 mA
T	1000 Ohms	10 mA	5 mA
M	27 Ohms	100 mA	50 mA
L	1200 Ohms	20 mA	10mA
A	40 Ohms	60mA	30mA
B	300 Ohms	30mA	15 mA
C	800 Ohms	30mA	15mA
D	22 Ohms	80mA	40mA

Code	Connector over	Flow P to C2 with:
B	Port C2	(+) signal to A, C
A	Port C1	(+) signal to A, C

Code Description

A	210 Bar (3000 PSI)
B	275 LPM (4000 PSI)*

* 4000 PSI requires nitrile seals.

Code Description

V	Fluorocarbon (std.)
N	Nitrile

Code Description

Omit	Standard
F	Field Replaceable Filter
S	(Specify) ²⁾

²⁾ Consult factory for price, delivery and availability of special options.

Code Description

25	95 LPM (25 GPM)
40	150 LPM (40 GPM)
60	230 LPM (60 GPM)

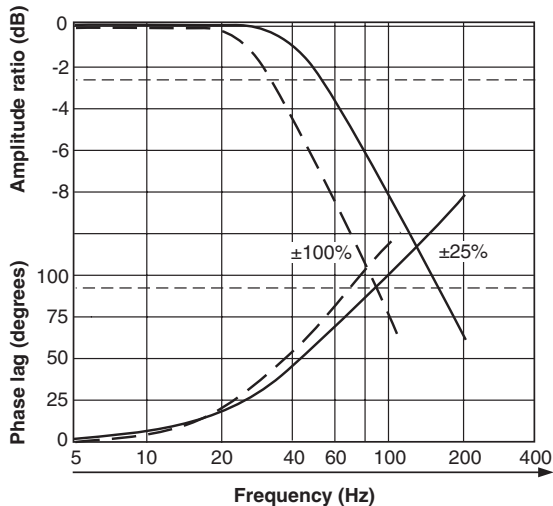
Weight: 3.4 kg (7.5 lbs.)
Cable with mating connector: EHC154S
Mating connector: MS3106E-14S-2S
Bolt kit: 4 of M10 x 60 mm, or 4 of 3/8-16x2.375"
Flushing valve: Consult factory. Use 1278007 and 11-0700.
US Subplate, 4 ports: AS06SPS20S (# 20 SAE side ports)
Metric Subplate, 4 ports: AS06SPS20M (M42 x 2.0 ISO 6149 side ports)
Electronics: BD101, 23-7030, BD90, or BD95

Performance Curves

Frequency Response at 210 Bar (3000 PSI)

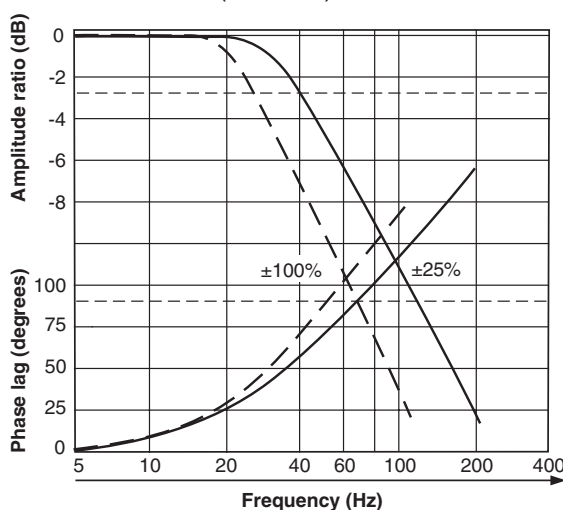
Standard Response

SE60 – 95 LPM (25 GPM)



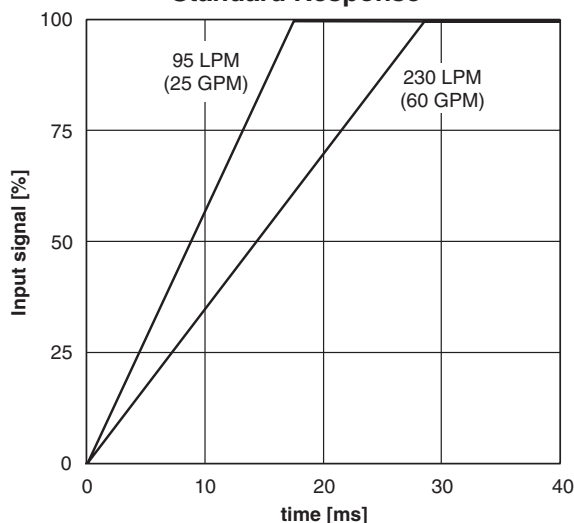
High Response

SE60 – 230 LPM (60 GPM)



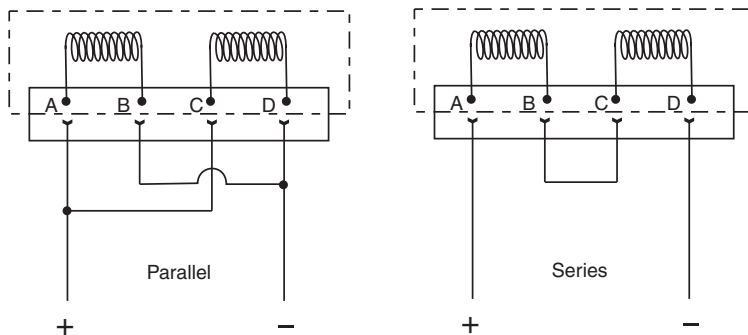
Step Response at 210 Bar (3000 PSI)

Standard Response



Installation Wiring Options

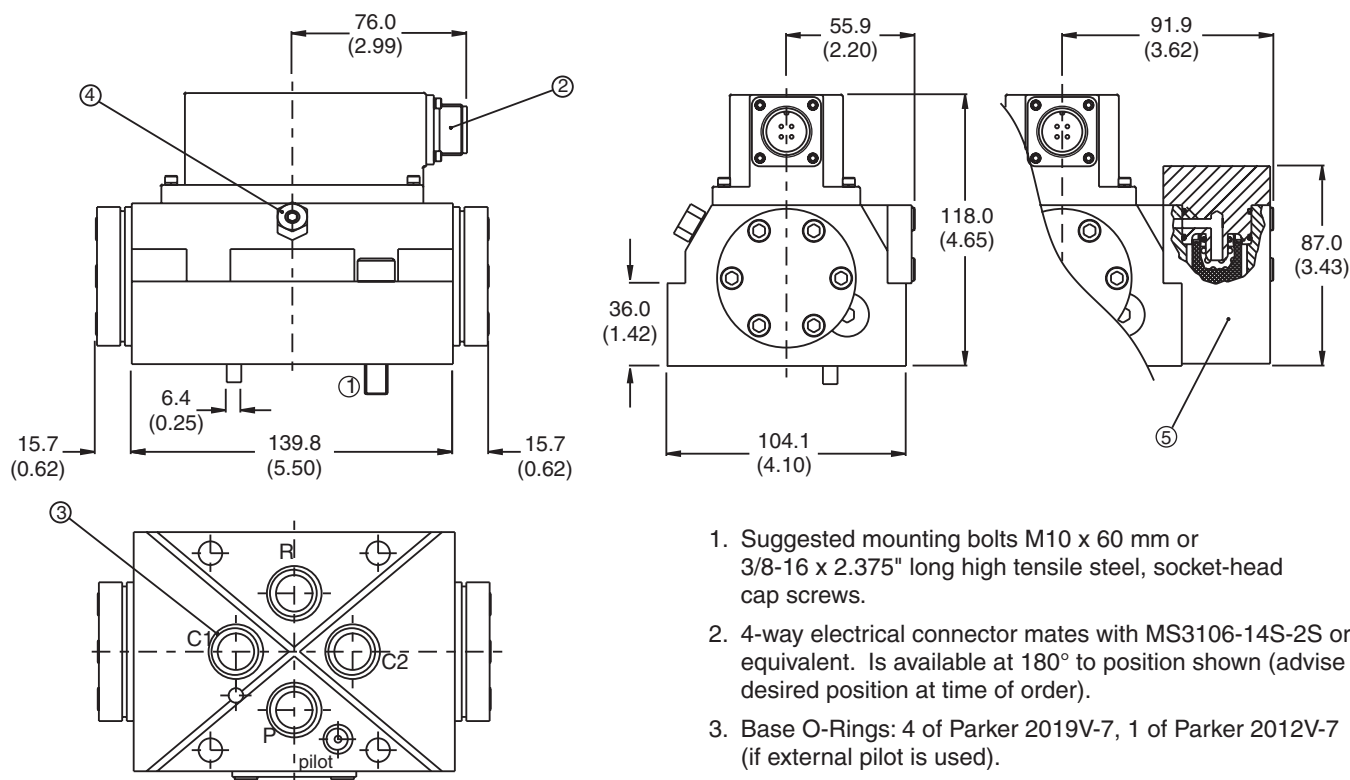
This servovalve has two coils. When connecting the valve to a drive amplifier, the user's external wiring may put the coils either in parallel or in series as needed. Refer to the illustrations below and to the mounting pattern for this valve to insure proper control phasing.



Polarity shown connects flow from P to C2 port.

Dimensions**Servovalves
Series SE60**

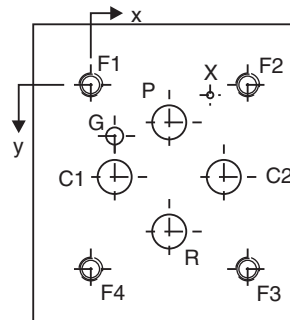
Inch equivalents for millimeter dimensions are shown in (**)



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 $R_a < 0.8 \mu\text{m}$ [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