

Technical Information

General Description

The “BD” Series servo valves 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 our BD90/95 series of servo amplifiers or our PMC series of motion controllers, the BD series of 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	
Pressure Ranges For optimum performance, Parker Servo Valves are designed to operate within specific system supply pressure ranges.		
System Supply Pressure		
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)	External Pilot
68–90 Bar (1000–1300 PSI)		
Filtration	SAE Class 3 or better, ISO Code 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

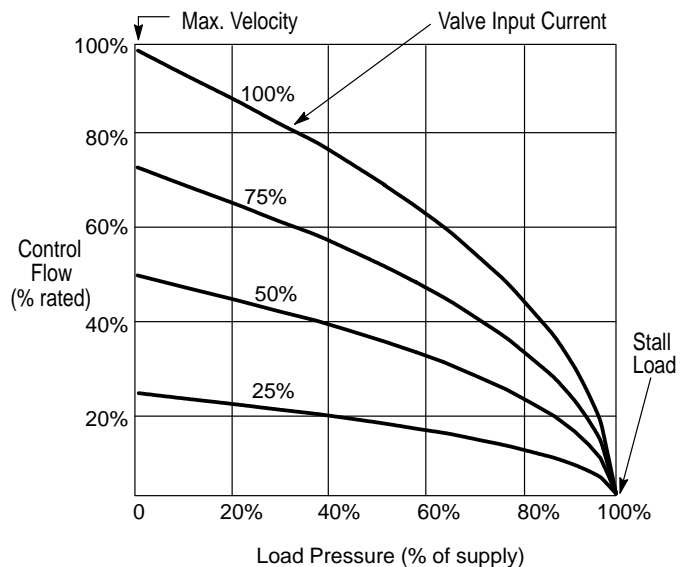


Figure 1. Change in flow with current and load pressure

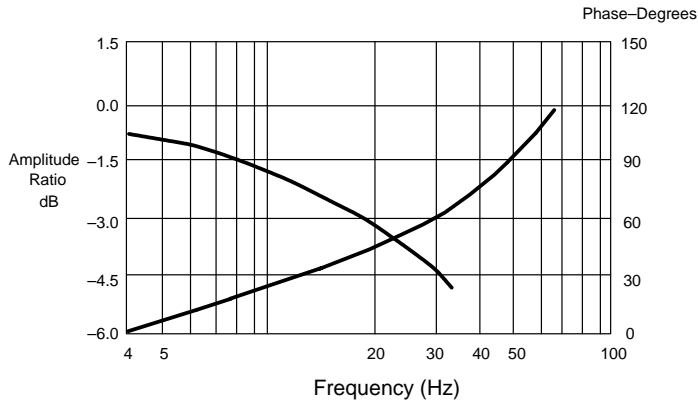
Quick Reference Data Chart

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.)

Performance Curves

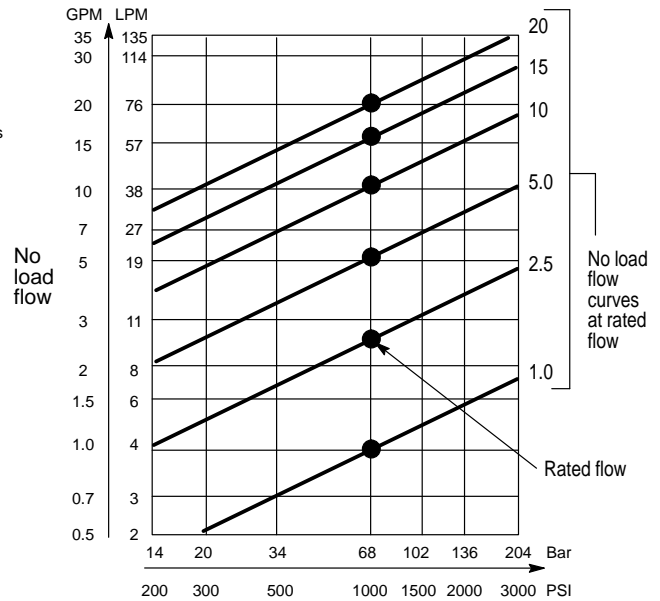
Model BD15

Typical Response Curves



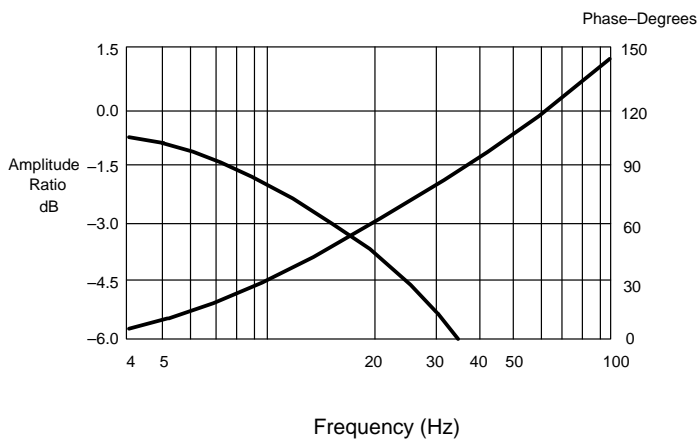
BD15 Typical Frequency Response at $\pm 25\%$ Input Current

Pressure Drop Curves



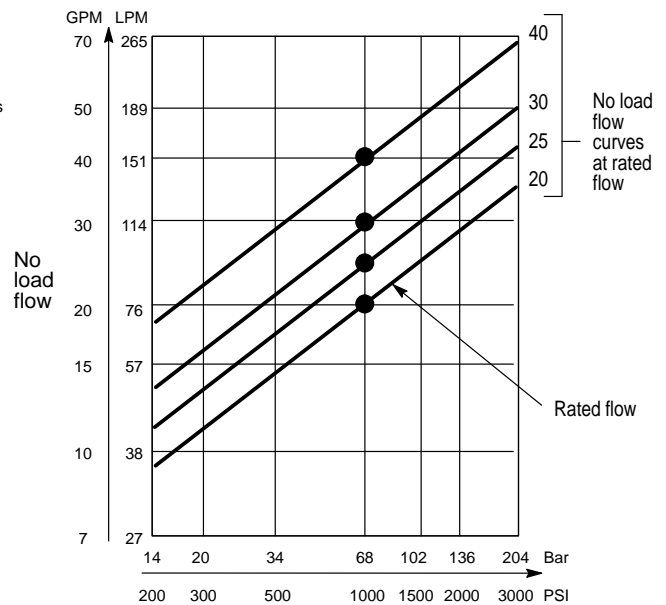
Model BD30

Typical Response Curves



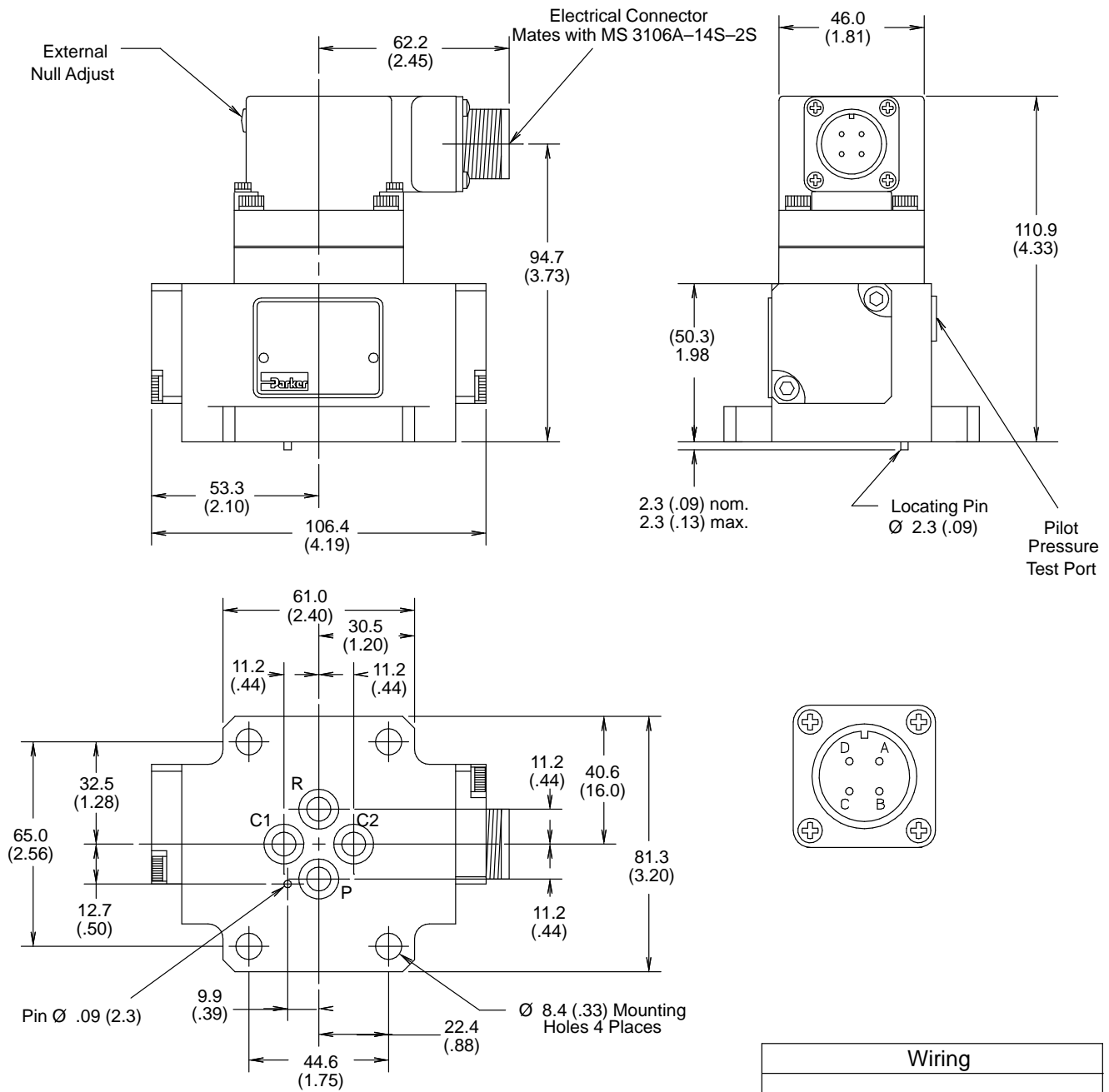
BD30 Typical Frequency Response at $\pm 25\%$ Input Current

Pressure Drop Curves

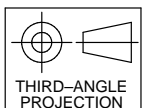


Dimensions

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

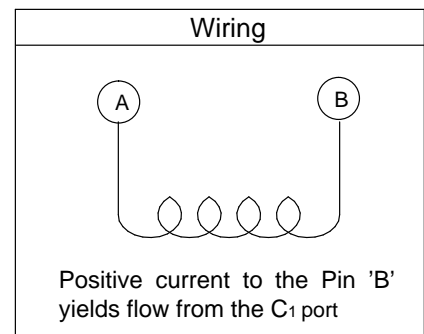
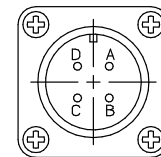
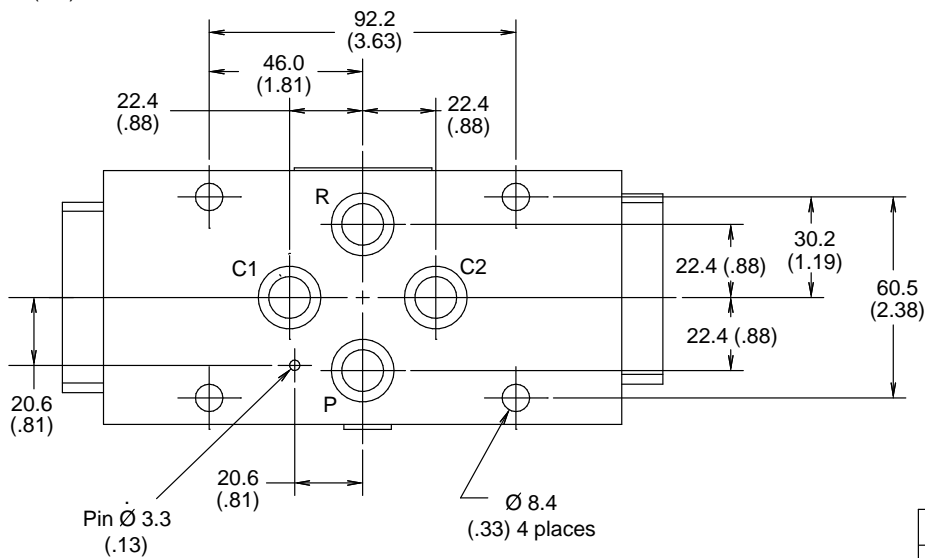
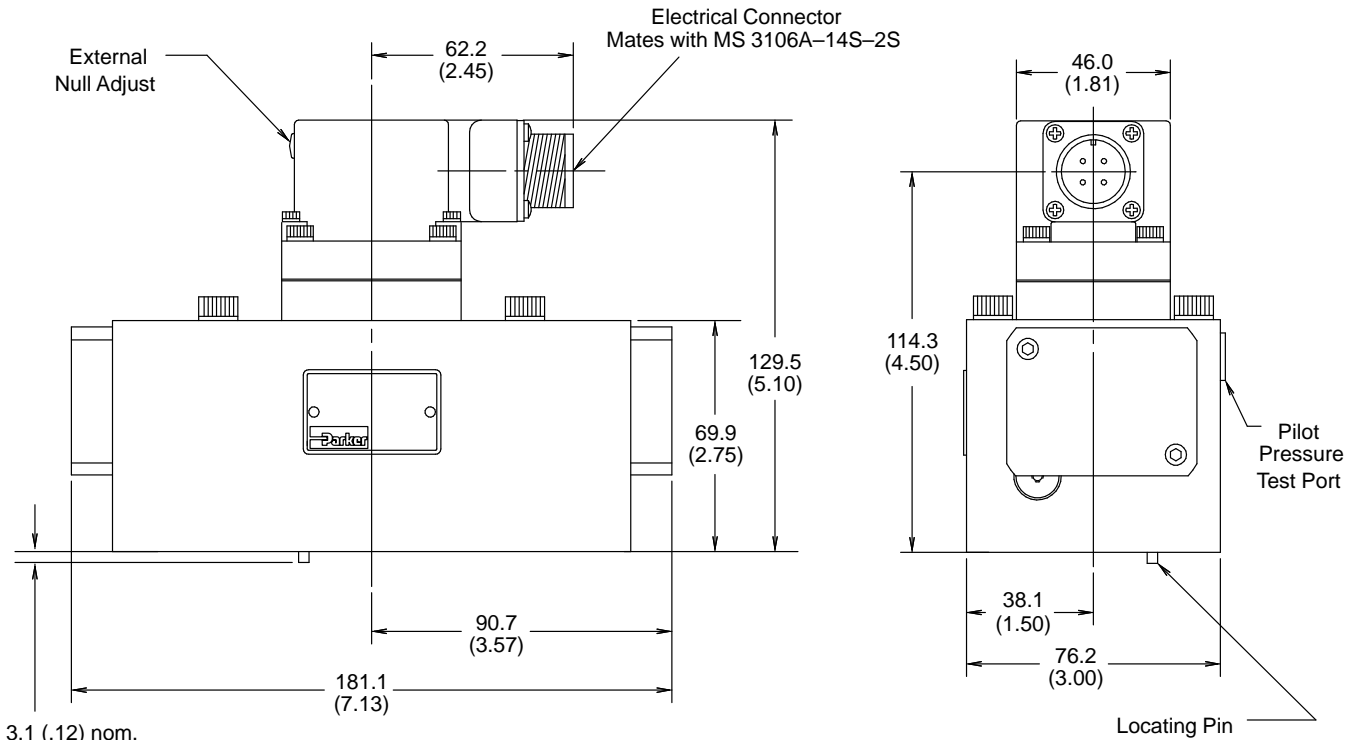


Note: Valve mating surface to be flat within 0.002 TIR, and smooth to within 63 RMS

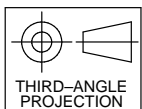


Dimensions

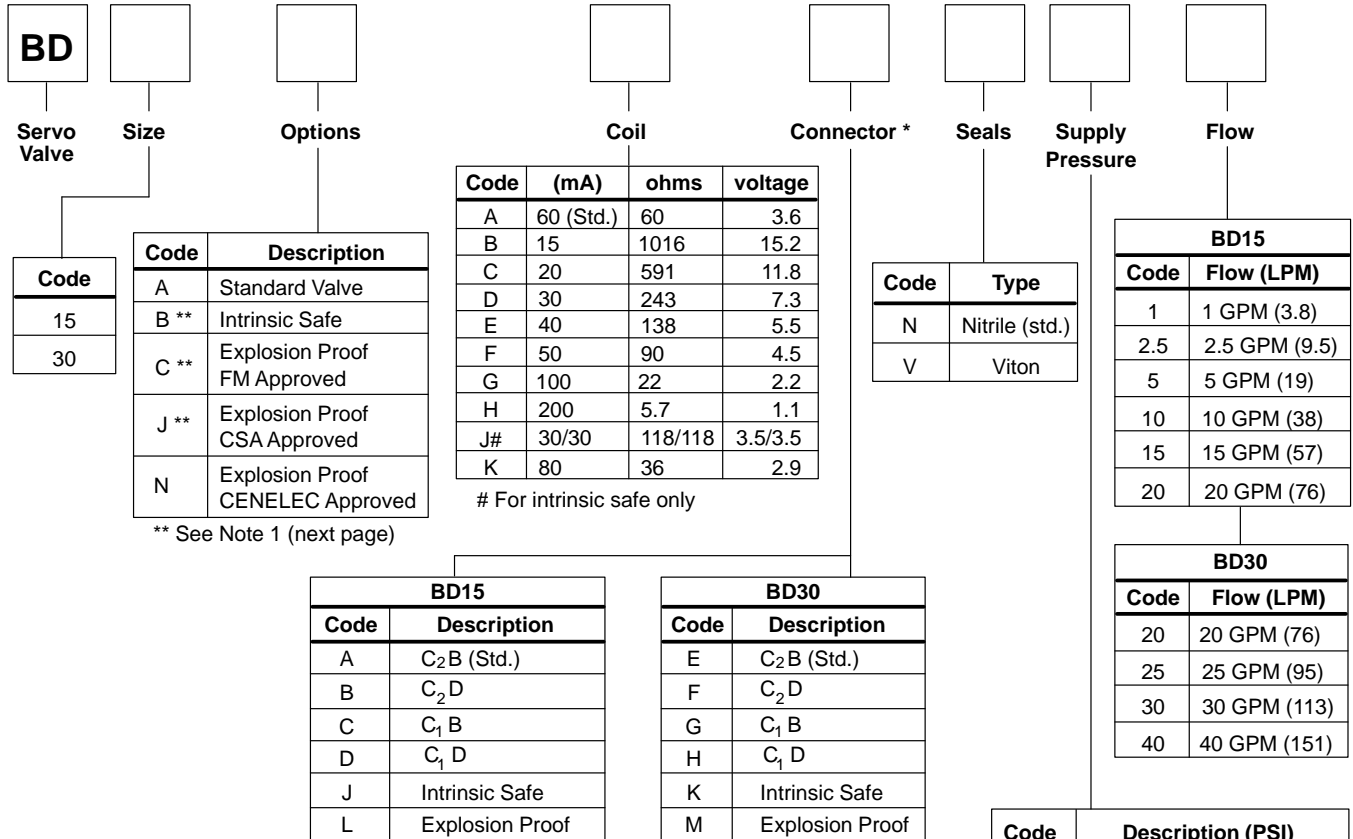
Inch equivalents for millimeter dimensions are shown in (**)



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



Ordering Information



Accessories

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.

Valve Model	Flushing Block
BD15	810099–1
BD30	820099–1

Note: Use the Parker BD90 or BD95 amplifiers with these valves.

* See Note 3 (next page)

Cables

EHC
Electrohydraulic Cable for BD series valves

Length

Code	Length
3	Length in feet
6	
9	
12	
15	

4
Cable Type

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

S
Pin Orientation

Code	Description
BD	BD series

Ordering Information

Accessories

Model	Description	Model	Description
6522A11	1/16" Hex Allen Wrench, Non-Magnetic For Null Adjustment	820089-1	BD30 Servovalve Shipping Container
810005-1	Orifice Filter	BD830008	BD90/95 Amplifier Board Shipping Container
810013-**	Valve Orifice Kit, Viton		
810014-**	Valve Orifice Kit, Nitrile	810089-1	BD15 Servovalve Shipping Container
**Dash #	Operating Pressure	820000-TF3	Filter Wrench
-16	180-210 Bar (2600-3000 PSI)		
-18	138-176 Bar (2000-2550 PSI)		
-20	96-134 Bar (1400-1950 PSI)		
-22	69-93 Bar (1000-1350 PSI)		
-33	48-66 Bar (700-950 PSI)		
-50	14-45 Bar (200-650 PSI)		
-00	0-210 Bar (0-3000 PSI) (5th Port)	MS3106E-14S-2S	SV Mating Connector

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)
820092-1	BD30	2.00 Port Circle
Consult Factory	BD30	1.375
820096-1	BD30	D05H
Consult Factory	BD15	D05H



Seals

Code	Type
Omit	Nitrile
V	Viton

Notes

1. Refer to Hydraulic Valve Division Engineering Bulletins 1451 and 1452, Factory Mutual listing #OP6A1/AX. CSA Documentation Available.
2. 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 400 PSI & no less than 250 PSI. **Pressures in excess of 600 PSI may damage pilot.**

3. Connector Location & Flow Polarity (Standard connector over C₂ + to B = P to C₁ flow).

- C₂ B = Connector over Port C₂, + to Pin B = P to C₁ flow.
- C₂ D = Connector over Port C₂, + to Pin D = P to C₁ flow.
- C₁ B = Connector over Port C₁, + to Pin B = P to C₁ flow.
- C₁ D = Connector over Port C₁, + to Pin D = P to C₁ flow.