

Moog is a leader in designing, manufacturing, and selling high performance hydraulic valve products. With over 50 years experience producing servo and proportional valves for the industrial market, our products are legendary for reliability and accuracy. Designed and built to meet the unique needs of even the most demanding customers, we offer numerous models with a range of sizes, performance characteristics, and mounting options. Focus markets and applications include plastics, metal forming, power generation, testing machinery and wood products processing, to name a few.

In addition to servo and proportional valves, our product lines include cartridge/slip-in, pressure relief, sandwich/modular/stack, check, and directional control valves including accessories such as portable valve testers, electronics, filters and mounting manifolds. Moog also designs and manufactures products such as pumps, integrated hydraulic manifold systems, servomotors and drives, electronics and electromechanical actuators as components or part of turnkey system solutions.

### Servovalves and Servo-Proportional Valves Product Line Overview



Servovalve and Servo-Proportional Valves are electrohydraulic, continuously acting valves that transform a changing analog or digital input signal into a stepless hydraulic output (flow or pressure). The term servovalve describes valves that function as closed-loop control devices. Moog's valves provide precise control of position, velocity, and force and act as the heart of your industrial machinery.

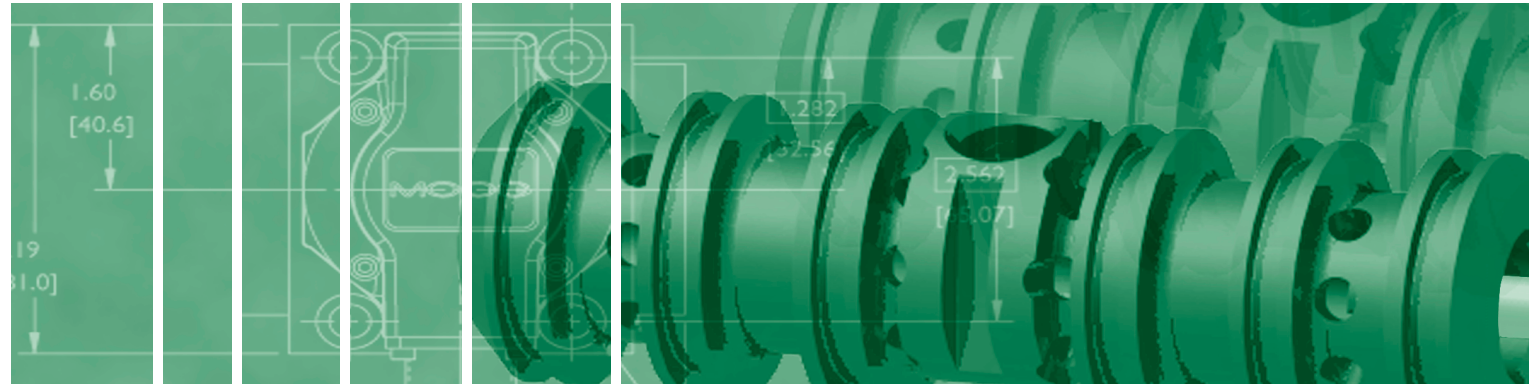
# Moog Support

Moog's Servovalves and Servo-Proportional valves are manufactured with precision parts using tight machining tolerances, state-of-the-art production processes, and thorough product testing to guarantee a long service life. Moog's technical staff is available around the world to help you select the correct valve and to provide quality maintenance and repair services when needed. Our engineers, technicians, and distribution network are committed to working with you to solve your motion control problems and making your machine operate at peak performance.



# Why Moog Servovalves and Servo-Proportional Valves?

- Over 50 years experience designing, manufacturing, and supporting valve technology.
- Broadest line of electrohydraulic valves on the market today with an impressive range of sizes, flow rates, pressures, step response times, and configurations.
- Proven technology with high reliability and built-in quality for a long service life.



- Advanced engineering capabilities in the design and development of new products incorporating the latest technology.
- A global support network to ensure selection of the proper valve and trouble free installation, maintenance, and service for users.



Argentina  
Australia  
Austria  
Brazil  
China  
Finland  
France  
Germany  
India

Ireland  
Italy  
Japan  
Korea  
Luxembourg  
Norway  
Russia  
Singapore  
Spain  
Sweden  
United Kingdom  
USA

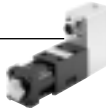

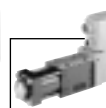
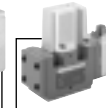
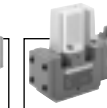
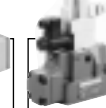
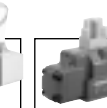
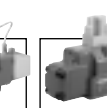
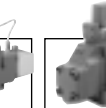
# MOOG

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# Electrical Feedback Servo Valve, Servo-Proportional and Servocartridge Valves with Analog or Digital On-Board Electronics



								
<b>D633</b>	<b>D634</b>	<b>D636</b>	<b>D661</b>	<b>D661-G...A</b>	<b>D662</b>	<b>D663</b>	<b>D664</b>	<b>D665</b>
3, 4, 2x2-way direct drive valves (DDV)	3, 4, 2x2-way direct drive valves (DDV)	3, 4, 2x2-way digital interface valves	3, 4, 2x2-way two stage valves with ServoJet® pilot	3, 4, 2x2-way two stage valves with ServoJet® pilot Bushings/Spool Assembly (BSA)	3, 4, 2x2-way two stage valves with ServoJet® pilot	3, 4, 2x2-way two stage valves with ServoJet® pilot	3, 4, 2x2-way two stage valves with ServoJet® pilot	3, 4, 2x2-way three stage valves with ServoJet® pilot

Flow @ 5 bar [75 psi] per land -  
lpm [gpm]

D633	D634	D636	D661	D661-G...A	D662	D663	D664	D665
2.0 [0.50] 4.0 [1.0] 8.0 [2.0] 16.0 [4.0]	24.0 [6.0] 40.0 [10.0] 60.0 [15.0]	2.0 [0.50] 4.0 [1.0] 8.0 [2.0] 16.0 [4.0]	30.0 [7.5] 60.0 [15.0] 80.0 [20.0]	8.0 [2.0] 15.0 [4.0] 30.0 [7.5] 35.0 [9.0] 45.0 [11.0] 60.0 [15.0] 75.0 [19.0]	150 [38.0] 250 [62.0]	350 [90.0]	550 [145]	1,000 [250] 1,500 [390]

<b>Operating Pressure - bar [psi] maximum</b>	350 [5,000]	350 [5,000]	350 [5,000]	350 [5,000]	350 [5,000]	350 [5,000]	350 [5,000]	350 [5,000]	350 [5,000]
<b>Envelope - cm [in] approximate</b>									
<b>Length</b>	23.9 [9.4]	29.0 [11.4]	25.9 [10.2]	22.1 [8.7]	22.1 [8.7]	32.0 [13.0]	39.0 [15.0]	39.0 [15.0]	50.0 [20.0]
<b>Width</b>	5.0 [2.0]	7.2 [2.8]	4.9 [1.9]	7.5 [3.0]	7.5 [3.0]	9.5 [4.0]	12.0 [5.0]	12.0 [5.0]	20.0 [8.0]
<b>Height</b>	11.4 [4.5]	14.8 [5.8]	12.5 [4.9]	16.0 [6.3]	16.0 [6.3]	19.0 [7.5]	21.0 [8.4]	21.0 [8.4]	35.0 [14.0]
<b>Signal - Vdc</b>	±10	±10	±10	±10	±10	±10	±10	±10	±10
	Other signals available including ±10mA and 4-20mA								
<b>Fluid Temperature Range - °C [°F]</b>	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]
<b>Interface</b>	ISO 4401-03-03-0-94	ISO 4401-05-05-0-94	ISO 4401-03-03-0-94	ISO 4401-05-05-0-94	ISO 4401-05-05-0-94	ISO 4401-07-06-0-94	ISO 4401-08-07-0-94	ISO 4401-08-07-0-94	ISO 4401-10-08-0-94
<b>Hysteresis</b>	<0.20%	<0.20%	<0.20%	<0.30%	<0.30%	<0.50%	<0.50%	<0.50%	<1.0%
<b>Threshold</b>	<0.10%	<0.10%	<0.10%	<0.05%	<0.05%	<0.10%	<0.10%	<0.10%	<0.30%
<b>Frequency Response @ 90° (small signal) 210 bar [3,000 psi] Hz</b>	70	60	70	80-100	85-200	40	45	38	60
<b>Step Response 0-100% @ 210 bar [3,000 psi] ms</b>	12	20	12	18-28	5-18	44	37	48	10

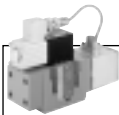
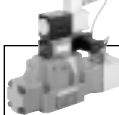

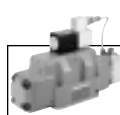

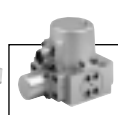

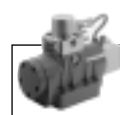

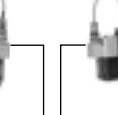
**EMC Test** The Electrical Feedback Servo-Proportional Valves have successfully passed EMC tests required by EC Directives. Please refer to catalog for more details.

<sup>1)</sup> Please refer to product specific literature for ambient temperature limits.

Performance values stated above reflect standard models. Consult factory for 3-stage versions, intrinsically safe or explosion-proof models, special spool configurations or other special needs. Regen Valves (5 port) are also available for some series. Detailed technical information is available upon request or visit [www.moog.com/industrial/valve](http://www.moog.com/industrial/valve).

# Electrical Feedback Servo Valve, Servo-Proportional and Servocartridge Valves with Analog or Digital On-Board Electronics



									
<b>D681</b>	<b>D682</b>	<b>D683</b>	<b>D684</b>	<b>D685</b>	<b>D765</b>	<b>D791</b>	<b>D792</b>	<b>DSHR</b>	<b>SE3</b>
3, 4, 2x2-way two stage valves with DDV pilot	3, 4, 2x2-way two stage valves with DDV pilot	3, 4, 2x2-way two stage valves with DDV pilot	3, 4, 2x2-way two stage valves with DDV pilot	3, 4, 2x2-way two stage valves with DDV pilot	3 or 4-way two stage	3 & 4-way, three stage, higher flow with onboard electrical feedback	3 & 4-way, three stage, higher flow with onboard electrical feedback	2-way servocartridge valves with DDV or D661 pilot	3-way cartridge valves with DDV pilot

Flow @ 5 bar [75 psi] per land - lpm [gpm]

D681	D682	D683	D684	D685	D765	D791	D792	DSHR	SE3
30.0 [7.5] 60.0 [15.0] 80.0 [20.0]	150 [38.0] 250 [65.0]	350 [93.0]	550 [145]	1,000 [250] 1,500 [390]	4.0 [1.0] 10.0 [2.5] 19.0 [5.0] 38.0 [10.0] 63.0 [16.5]	100 [26.0] 160 [42.0] 250 [65.0]	400 [105] 650 [166] 800 [210] 1,000 [263]	NG40 1,450 [375]; 850 [220] NG50 2,700 [700]; 1,100 [285] NG63 3,900 [1,000]; 2,200 [570] NG80 6,100 [1,580]; 3,000 [800] NG100* 9,600 [2,500]; 4,800 [1,250]	NG30 500 [130] NG50 800 [210] NG63 1,200 [320]







Flow @ 35 bar [500 psi] per land - for D765, D791 & D792 only lpm [gpm]

<b>Operating Pressure - bar [psi] maximum</b>	350 [5,000]	350 [5,000]	350 [5,000]	350 [5,000]	350 [5,000]	315 [4,500] 350 [5,000] w/ steel body	210 [3,000] 350 [5,000]	210 [3,000] 350 [5,000]	350 [5,000] all sizes	350 [5,000]
<b>Envelope - cm [in] approximate</b>	<b>Length</b> 24.8 [9.7]	32.0 [13.0]	39.0 [15.2]	39.0 [15.2]	50.0 [19.6]	12.6 [4.9]	28.8 [11.3]	31.0 [12.2]	see catalog	see catalog
<b>Width</b>	7.5 [3.0]	9.5 [4.0]	12.0 [5.0]	12.0 [5.0]	20.0 [7.8]	8.2 [3.2]	11.3 [4.5]	14.8 [5.8]		
<b>Height</b>	16.0 [6.3]	19.4 [7.6]	22.0 [8.6]	22.0 [8.6]	37.0 [14.5]	9.2 [3.6]	14.5 [5.7]	20.7 [8.2]		
<b>Signal - Vdc</b>	±10	±10	±10	±10	±10	±10	±10V (mA)	±10V (mA)	0 - 10	±10 volt
Other signals available including ±10mA and 4-20mA										
<b>Fluid Temperature Range - °C [°F]</b>	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-18 to 82 [0 to 180]	-18 to 82 [0 to 180]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]
<b>Interface</b>	ISO 4401-05-05-0-94	ISO 4401-07-06-0-94	ISO 4401-08-07-0-94	ISO 4401-08-07-0-94	ISO 4401-10-08-0-94	ISO 10372-04-04-0-92	ISO 10372-06-05-0-92	Moog Unique	DIN 24342 and ISO 7368	Moog unique
<b>Hysteresis</b>	<0.20%	<0.20%	<0.20%	<0.20%	<0.20%	<0.20%	<0.50%	<0.50%	<0.20%	<0.20%
<b>Threshold</b>	<0.03%	<0.02%	<0.02%	<0.02%	<0.02%	<0.10%	<0.20%	<0.50%	<0.10%	<0.10%
<b>Frequency Response @ 90° (small signal) 210 bar [3,000 psi] Hz</b>	80	75	75	75	25	60	>55	>55		70 - 80
<b>Step Response 0-100% @ 210 bar [3,000 psi] ms</b>	11	11	10	12	40	<5	<10	<12	12-32	15-26

EMC Test The Electrical Feedback Servo-Proportional Valves have successfully passed EMC tests required by EC Directives. Please refer to catalog for more details.

# Mechanical Feedback Servovalves



					
<b>72</b>	<b>78</b>	<b>79-100</b>	<b>79-200</b>	<b>G631</b>	<b>G761</b>
3 & 4-way, two stage, higher flow	3 & 4-way, two stage, higher flow	3 & 4-way, three stage, higher flow with offboard electrical feedback	3 & 4-way, three stage, higher flow with offboard electrical feedback	3 & 4-way, two stage, lower flow	3 & 4-way, two stage, lower flow

Flow @ 35 bar [500 psi] per land - lpm [gpm]	95.0 [25.0]	75.0 [20.0]	115 [30.0]	228 [60.0]	5.0 [1.0]	5.0 [1.0]
	152 [40.0]	115 [30.0]	228 [60.0]	378 [100]	10.0 [2.5]	10.0 [2.5]
	228 [60.0]	152 [40.0]		492 [130]	20.0 [5.0]	19.0 [5.0]
				756 [200]	40.0 [10.0]	38.0 [10.0]
					60.0 [15.0]	63.0 [16.5]
					75.0 [20.0]	

<b>Operating Pressure - bar [psi] maximum</b>	350 [5,000]	210 [3,000]	210 [3,000] 350 [5,000]	210 [3,000] 350 [5,000]	210 [3,000] 315 [4,500]	315 [4,500]
<b>Envelope - cm [in]</b>						
<b>approximate</b>						
<b>Length</b>	17.0 [6.1]	14.6 [5.8]	26.1 [10.3]	28.6 [11.2]	13.8 [5.4]	9.4 [3.7]
<b>Width</b>	12.9 [5.1]	8.1 [3.2]	11.0[4.3]	14.5 [5.7]	8.0 [3.2]	9.4 [3.7]
<b>Height</b>	11.4 [4.5]	10.3 [4.1]	17.9 [7.1]	22.3 [8.8]	11.9 [4.7]	6.9 [2.7]
<b>Signal - mA single coil</b>	8, 15, 40	8, 15, 40, 200	User Defined	User Defined	30, 100	15, 40, 200
<b>Fluid Temperature Range - °C )</b>	-40 to 135 [-40 to 275]	-40 to 135 [-40 to 275]	-20 to 80 [-4 to 176]	-20 to 80 [-4 to 176]	-29 to 135 [-20 to 275]	-29 to 135 [-20 to 275]
<b>Interface</b>	ISO 10372- 06-05-0-92	Moog Unique	ISO 10372- 06-05-0-92	Moog Unique	ISO 4401- 05-05-0-94	ISO 10372- 04-04-0-92
<b>Hysteresis @ 210 bar [3,000 psi]</b>	<4.0%	<3.0%	<1.0%	<1.0%	<3.0%	<3.0%
<b>Threshold @ 210 bar [3,000 psi]</b>	<1.5%	<0.50%	<0.50%	<0.50%	<1.0%	<0.50%
<b>Frequency Response @ 40% signal 210 bar [3,000 psi] Hz</b>	>50	>35	>55	>55	>70	>100
<b>Step Response 0-90% @ 210 bar [3,000 psi] ms</b>	<25	<30	<6	<6	<11	<6

\*Scheduled release March 2003

The products described herein are subject to change at any time without notice.