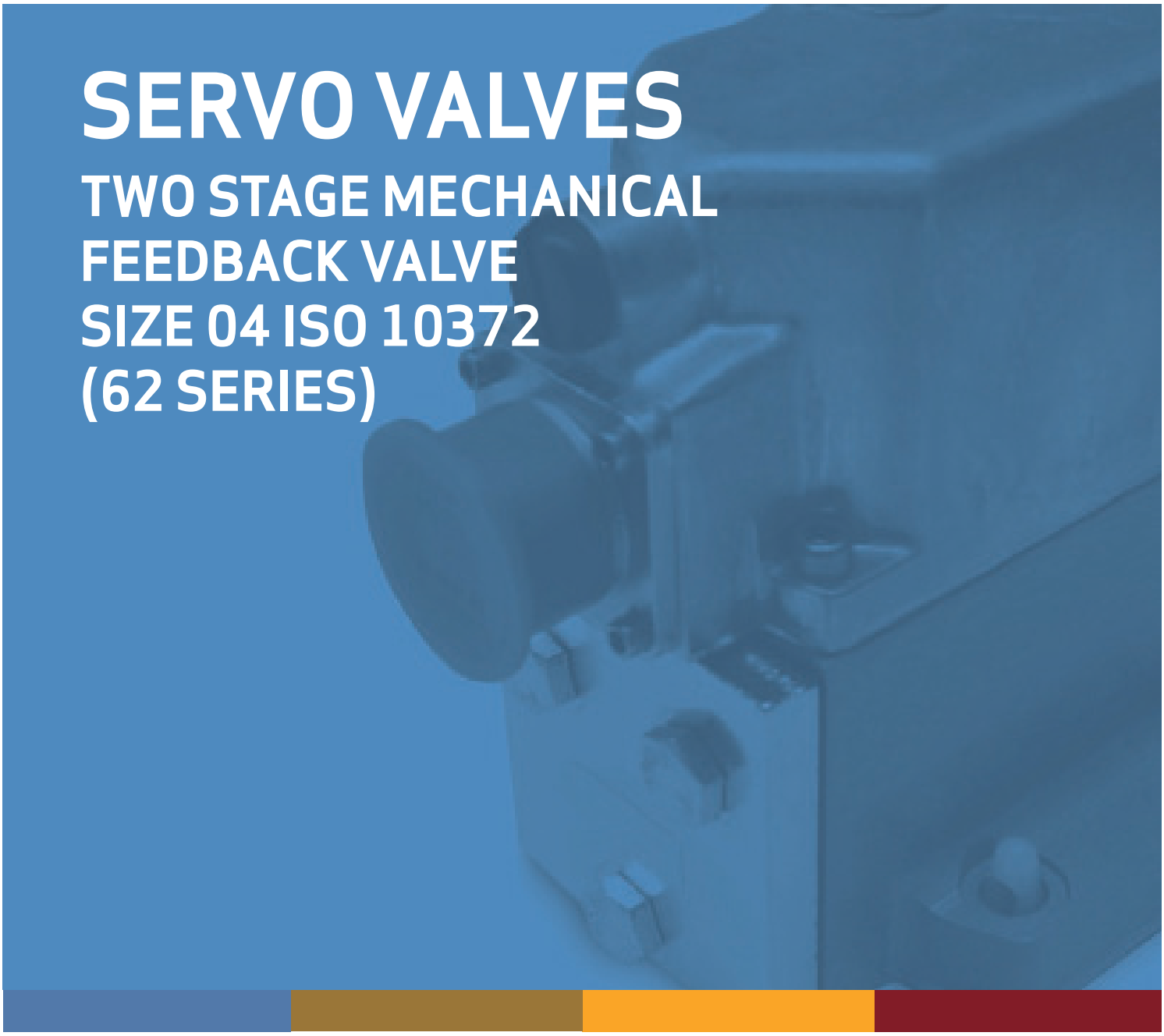


SERVO VALVES

TWO STAGE MECHANICAL FEEDBACK VALVE SIZE 04 ISO 10372 (62 SERIES)

FOR DEPENDABLE, LONG LIFE OPERATION WHERE POSITION, L SPEED, PRESSURE OR FORCECONTROSYSTEMS HAVE HIGH DYNAMIC RESPONSE REQUIREMENTS

Rev. L, May 2024

WHAT MOVES YOUR WORLD

MOOG

62 SERIES
TWO STAGE SERVO VALVES

62 SERIES SERVO VALVES

The 62 Series flow control servovalves are throttle valves for 3- and preferably 4-way applications. They are a standard performance, two-stage design that covers the range of rated flows from 2.5 to 20 gpm at 1000 psi valve drop. The output stage is a closed center, fourway sliding spool.The pilot stage is a symmetrical doublenozzle and flapper, driven by a double air gap, dry torque motor. Mechanical feedback of spool position is provided by a cantilever spring. The valve design is simple and rugged for dependable, long life operation. These valves are suitable for electrohydraulic position, speed, pressure or force control systems with high dynamic response requirements.

Principle of operation
An electrical command signal (flow rate set point) is applied to the torque motor coils, and creates a magnetic force which acts on the ends of the pilot stage armature. This causes a deflection of the armature/flapper assembly within the flexure tube. Deflection of the flapper restricts fluid flow through one nozzle which is carried through to one spool end, displacing the spool.

Movement of the spool opens the supply pressure port (P) to one control port, while simultaneously opening the tank port (T)/ return port (R) to the other control port. The spool motion also applies a force to the cantilever spring, creating a restoring torque on the armature/flapper assembly.

Once the restoring torque becomes equal to the torque from the magnetic forces, the armature/flapper assembly moves back to the neutral position, and the spool is held open in a state of equilibrium until the command signal changes to a new level.

In summary, the spool position is proportional to the input current and with constant pressure drop across the valve, flow to the load is proportional to the spool position.

VALVE FEATURES

- 2-stage design with dry torque motor
- Low friction double nozzle pilot stage
- High spool control forces
- High dynamics
- Low cost design
- Rugged, long-life design
- High resolution, low hysteresis
- Completely set-up at the factory

The actual flow is dependent upon electrical command signal and valve pressure drop.The flow for a given valve pressure drop can be calculated using the square root function for sharp edge orifices:

$$Q = Q_N \sqrt{\frac{\Delta p}{\Delta p_N}}$$

Q [gpm] = calculated flow
Q_N [gpm] = rated flow
Δp [psi] = actual valve pressure drop
Δp_N [psi] = rated valve pressure drop

ISO 9001 CERTIFIED

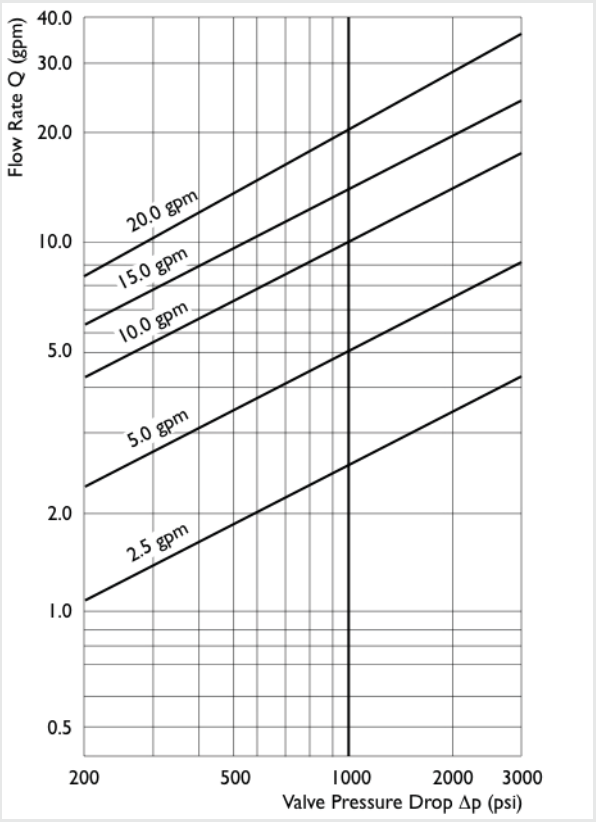
This catalog is for users with technical knowledge. To ensure that all necessary characteristics for function and safety of the system are given,the user has to check the suitability of the products described here. In case of doubt, please contact Moog Inc.

62 SERIES
GENERAL TECHNICAL DATA

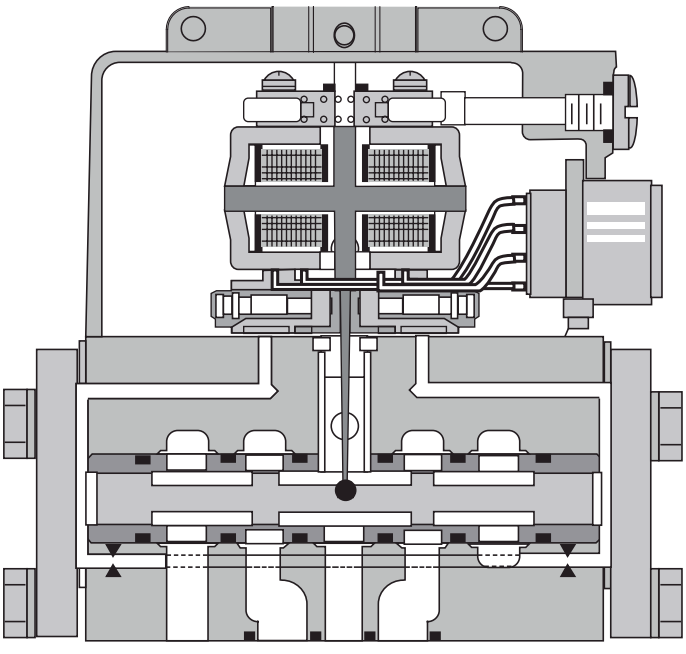
Operating Pressure	
ports P, A/1, and B/2	up to 3,000 psi
port T/R	up to 2,000 psi
Temperature Range	
Fluid	0°F to 200°F
Ambient	0°F to 200°F
Seal Material	Viton, others on request
Operating Fluid	Compatible with common hydraulic fluids, other fluids on request.
Recommended viscosity	60-450 SUS @ 100°F

System Filtration: High pressure filter (without bypass, but with dirt alarm) mounted in the main flow and if possible, directly upstream of the valve.
Class of Cleanliness: The cleanliness of the hydraulic fluid greatly effects the performance (spool positioning,high resolution) and wear (metering edges, pressure gain,leakage) of the servovalve.

Recommended Cleanliness Class	
For normal operation	ISO 4406 < 14/11
For longer life	ISO 4406 < 13/10
Filter Rating Recommended	
For normal operation	ß10 →75 (10 µm absolute)
For longer life	ß5 →75 (5 µm absolute)
Installation Operations	Any position,fixed or moveable.
Vibration	30 g, 3 axes
Weight	2.7 lb. (1.2 kg)
Shipping Plate	Delivered with an oil sealed shipping plate



Valve Flow Diagram
Valve flow for maximum valve opening (100% command signal) as a function of the valve pressure drop.



P A/1 T/R B/2

62 SERIES
TECHNICAL DATA

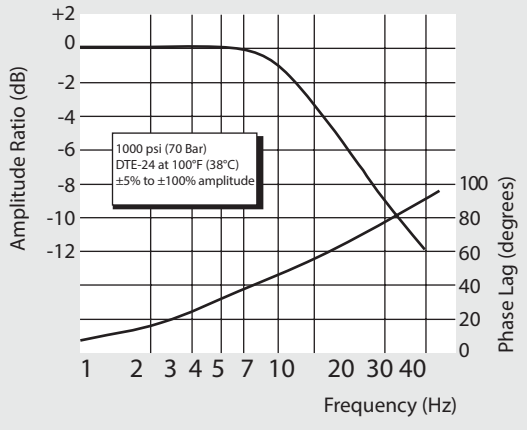
Model...Type	62
Mounting Pattern	ISO 10372 - 04-04-0-92
Valve Body Version	4-way 2-stage with spool busing design
Pilot Stage	Nozzle/Flapper, High flow
Pilot Connection	Internal only

Rated Flow	(±10%) at ΔpN = 1,000 ps	[gpm]	2.5	5.0	10.0	15.0	20.0
Response Time*		[ms]	60	60	60	60	60
Threshold*		[%]			<1%		
Hysteresis*		[%]			<5%		
Null Shift	at ΔT = 100°F	[%]			<5%		
Null Leakage Flow	max.	[gpm]			0.35 TO 0.55		

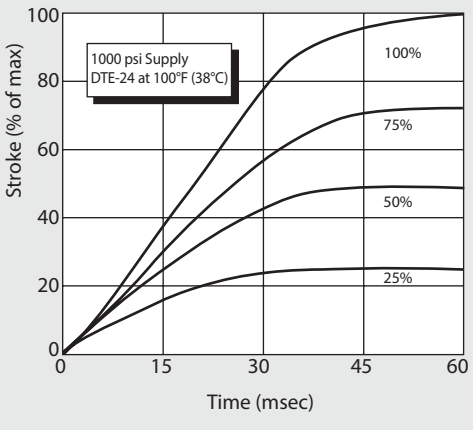
* Measured at 1,000 psi operating pressure

Typical characteristic curves with ±5% to ±100% input signal, measured at 1,000 psi operating pressure.

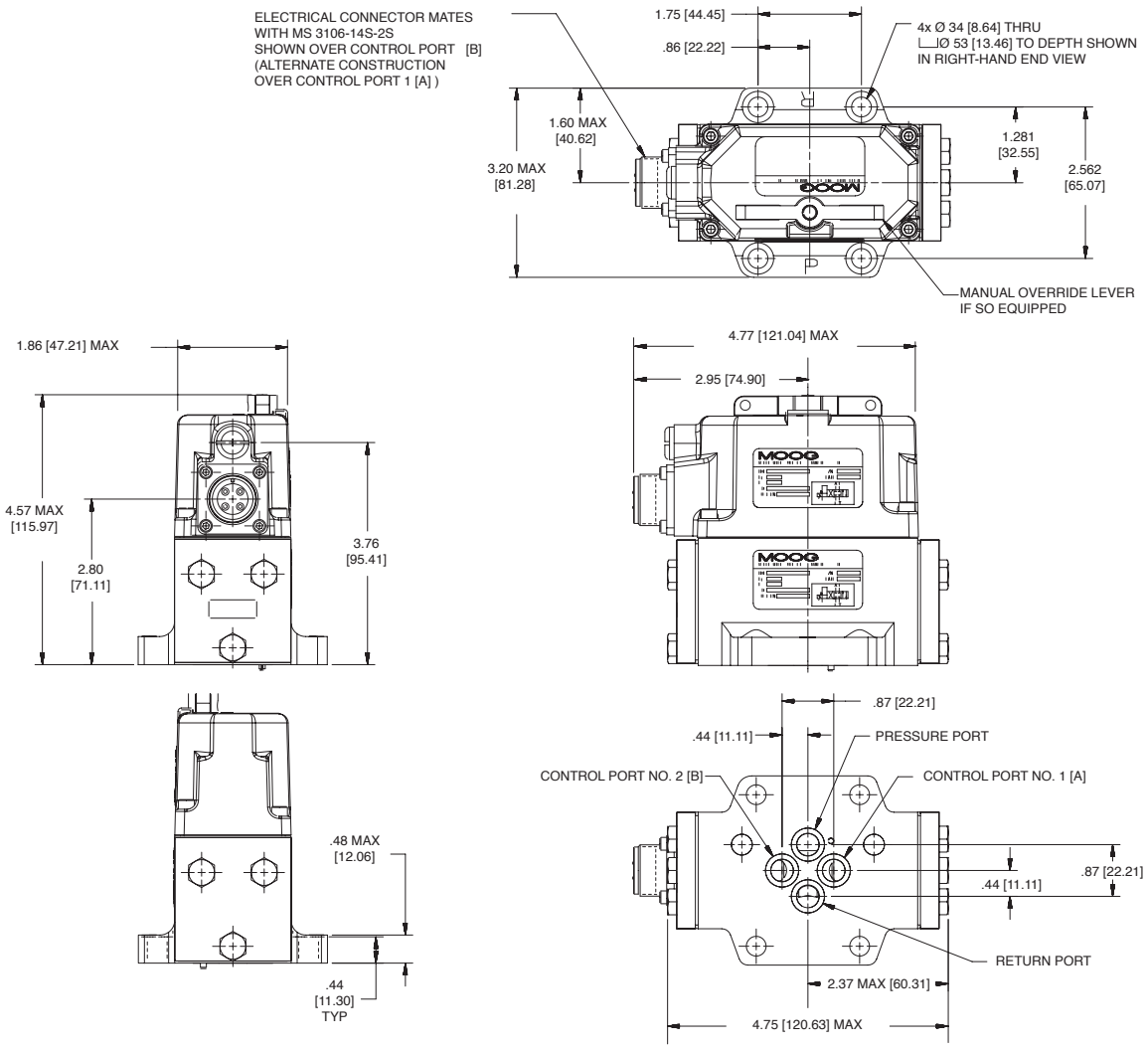
Frequency Response



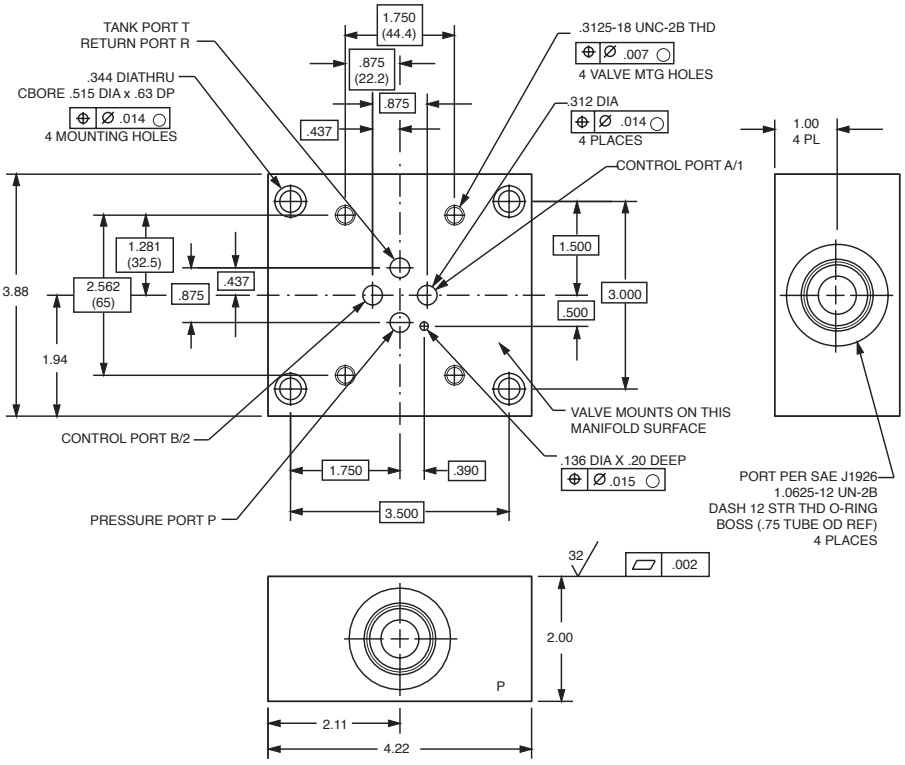
Step Response



62 SERIES
INSTALLATION DRAWINGS



TYPICAL SUBPLATE MANIFOLD



Null Adjust: Flow out of Control Port B will increase with clockwise rotation of null adjust screw (1/8 hex key).

The mounting manifold must conform to ISO 10372-04-04-0-92

Surface to which valve is mounted requires a $\sqrt{32}$ [ΔΔ] finish,flat within 0.002 [0.05] TIR.

62 SERIES
MOUNTING REQUIREMENTS

Recommended Mounting Seals

Material dependant on application

- 1.78 mm (0.070 in) cross-section x 10.82 mm (0.426 in) inside diameter, 90 durometer
- Equivalent AS83248/2 size -013

Recommended Mounting Screws

Material dependant on application

- SHCS 5/16 x 1.0 long. Grade 8 minimum
- SHCS M8 x 25 long. Grade 10.9 minimum

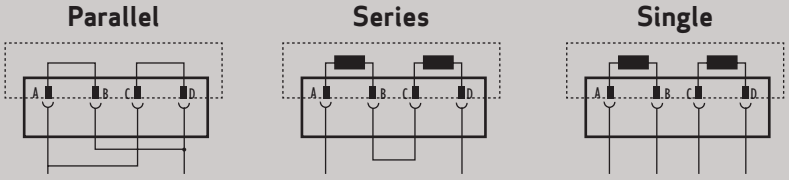
ELECTRICAL CONNECTIONS

Rated current and coil resistance
Two different coil designs are available for 62 Series Servovalves.See Table 1.

Coil connections
A four-pin electrical connector (that mates with an MS3106R14S-2S) is standard. All four torque motor leads are available at the connector so external connections can be made for series, parallel or differential operation.

Servoamplifier
The servovalve responds to input current, therefore a servoamplifier that has high internal impedance (as obtained with current feedback) should be used. This will reduce the effects of coil inductance and will minimize changes due to coil resistance variations.

ELECTRICAL CONNECTIONS
(Example with typical 62 series coils)



		Parallel	Series	Single
Coil Resistance	[Ω]	14	56	28
Rated Current	[mA]	±100	±50	±100
Electrical Power	[W]	.14	.14	.28
Connections for Valve Opening P◗B, A◗T		A and C (+) B and D (-)	A (+), D (-) B and C connected	A (+), B (-) or C (+), D (-)

Note: Before applying electrical signals,the pilot stage has to be pressurized.

TABLE 1

Nominal Resistance Per Coil at 77°F (25°C) Ω	Recommended Rated Curent-mA		Approximate Coil Inductance*–Henrys		
	Parallel, Differential or Single Coil Operation	Series Coils	Single Coils	Series Coils	Parallel Coils
28	100	50	0.2	0.8	0.2
300	30	15	2	7	2

*** Measured at 50 Hz.**

62 SERIES
ORDERING INFORMATION

Model Number 62 • • • • • •

Type Designation • • • • • • • • • • • •

Optional Feature	
	Series specification
K	Intrinsically safe*

Model Designation	
	Assigned at the factory

Factory Identification (Revision Level)

Value Version	
S	Standard response

Rated Flow Q_N [gpm] at Δp_N = 1,000 psi	
10	2.5
20	5.0
40	10.0
60	15.0
75	20.0
XX	Non-Standard Flow

Maximum Operating Pressure P_P and Body	
F	3,000 psi aluminum

Main Spool Type	
O	4-way / axis cut / linear
D	4-way / +/-10% overlap / linear
X	Special

Optional Accessories	
M	Manual Override

Signals for 100% Spool Stroke	
Q	±15 mA Series (±0 mA parallel)
R	±50 mA Series (±100 mA parallel)
Y	Special signal (see spec sheet)*

Valve Connector	
A	Connector C1 (A) – side (RH)
B	Connector C2 (B) – side (LH)

Seal Material	
V	Fluorocarbon
N	NBR (Buna)
	Others on request

Pilot Connection	
4	Internal

Spool Position without Electrical Signal	
M	Mid position
A	A/1 –> T/R
B	B/2 –> T/R

Pilot Stage	
F	Standard dynamics

Preferred configurations highlighted.
All combinations may not be available.
Options may increase price and delivery.
Technical changes are reserved.

* Optional designs are available with intrinsically safe coils (FM,CSA and ATEX approved)

ACCESSORIES AND SPARE PARTS

Part name	Description	Material	Moog part number
Maintenance kit	Base o-rings	FKM per AMS7259	B52555RK206K001
	Additional o-rings required for filter access	Note that o-ring material is dependant on application	
	Filter		

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Moog designs a range of motion control products to complement those featured in this document. Moog also provides service and support for all of our products. For more information, contact the Moog facility closest to you.

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62 Series Flow Control Servo Valves
TJW/PDF, Rev. L, May 2024, CDL6267

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