BR-MX26-00EN

MOX SERIES

Proportional Control Valve with Pneumatic Actuator

FLOWMAXI

www.flowmaxi.com.tr

MOX 101

Proportional Control Valve with Pneumatic Actuator

Flowmaxi MOX Series are pneumatic actuated valves developed for processes requiring high-precision proportional control. According to 4–20 mA or 0–10V signals, they proportionally regulate the fluid flow rate and provide stable response to process variations. With positioner technology offering millimetric precision, they accurately determine the opening/closing position of the valve. Flowmaxi branded positioners or IP converters ensure full compatibility with control systems. Thanks to their compact and modular design, they deliver high performance, low maintenance, and long service life.

Domestic Production and Control Power

The MOX series operates seamlessly with Flowmaxi branded positioners and IP converters, as well as different analog and digital signal converters, ensuring full integration with existing automation systems. Thus, it provides long-lasting, fast, and stable control performance.

Precise Proportional Control

According to process requirements, MOX series valves can operate with linear or equal percentage characteristics, providing high flow accuracy with a control deviation of ±1%.

Modularity and Service Convenience

MOX valves offer easy maintenance and short downtime with quick-disassembly structure and replaceable trim components. Process continuity is ensured thanks to the standard actuator connection.

High Response and Safe Shut-Off

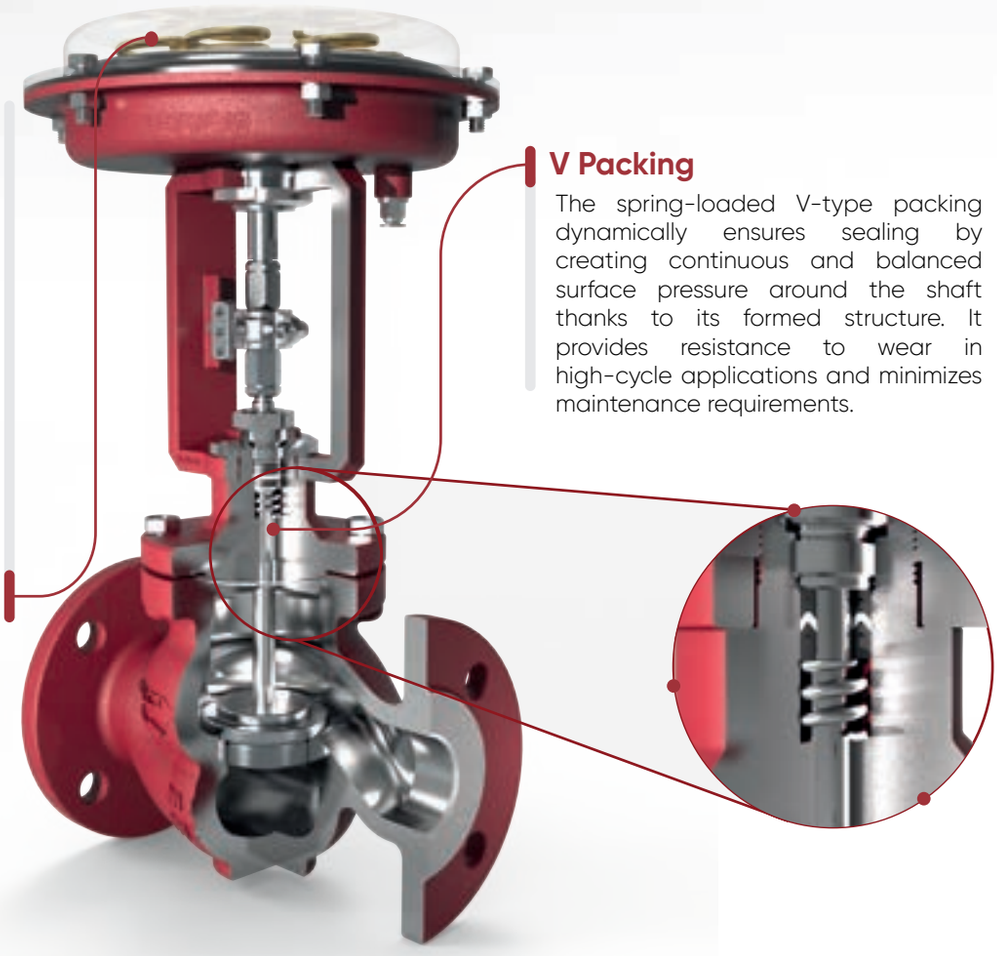
The pneumatic actuator quickly moves to a safe position in case of air supply interruption thanks to its rapid position change capability. With its spring-return *(fail-safe)* design, it offers NO *(Normally Open)* or NC *(Normally Closed)* configuration options.

MOX 101

Proportional Control Valve with Pneumatic Actuator

Multi-Spring Actuator Design for High Performance

The pneumatic actuators used in the MOX series provide high control stability thanks to their multi-spring diaphragm structure. Each spring is positioned to ensure optimum force distribution; thus, low hysteresis and high repeatability are achieved during position changes. With its fail-safe *(safe position on power loss)* feature, the valve remains in a safe position when the air supply is interrupted.



V Packing

The spring-loaded V-type packing dynamically ensures sealing by creating continuous and balanced surface pressure around the shaft thanks to its formed structure. It provides resistance to wear in high-cycle applications and minimizes maintenance requirements.

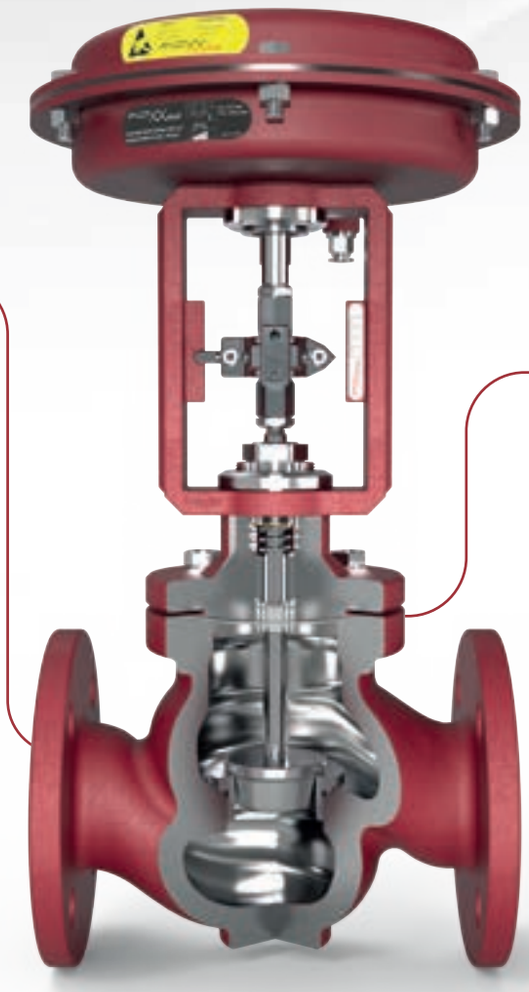
Multifunctional, High-Performance Design

The form built on the S-type body of the MOX series guarantees optimum control and service life in compliance with international requirements. The robust body structure minimizes turbulence effects, thereby increasing the efficiency of your system.

MOX 101

Proportional Control Valve with Pneumatic Actuator

The MOX Series is a control valve specially developed for process applications requiring high precision in fluid control. Precisely machined seating surfaces provide sealing and high performance, enhancing process safety. Thanks to its interchangeable flow characteristics, the MOX series offers the control flexibility and durability required across many industries.



Thanks to stainless internal components with high resistance to wear and corrosion, maximum continuity is ensured in process operation.

Steam Lines
For saturated or Zsuperheated steam lines.

Heating–Cooling
In HVAC systems, boilers, and cooling towers.

Process Lines
In chemical, petrochemical, food, and pharmaceutical processes.

Compressed Air Systems
Compressor discharge and pre-regulation lines.

Hot Water Systems
Heat transfer circuits and boiler return lines.

Oil Circuits
Heated thermal oil or hydrocarbon lines.

MOX 101-V

Proportional Control Valve with Pneumatic Actuator and Manual Handwheel

Safe Control with Manual Override Capability

The handwheel model of the MOX Series offers the operator manual control capability in case of malfunction or automation system failure, in addition to the power of the pneumatic actuator. In this way, the valve position can be manually adjusted via the handwheel mechanism and the system can continue operating without interruption.

Operational Continuity

In case of power outage or automation faults, the continuation of the process can be ensured through manual intervention via the handwheel.

Dual Safety

MOX valves provide dual safety by enabling manual operation with the handwheel in case of pneumatic system failures.

Backup Control in Emergency Situations

In cases of power or automation losses, intervention can be made without the need to completely shut down the facility.

Ease of Maintenance and Commissioning

During initial commissioning or maintenance, the positioning of the valve can be performed conveniently.

Reliable Manual Backup Solution for Critical Lines

The MOX Handwheel Series supports your engineering strength as a reliable manual backup solution, especially in processes requiring high safety and in critical lines.

MOX 102

Proportional Control Valve with Pneumatic Actuator

Special Design for High Temperature Applications

MOX 102 Series is developed for processes involving high temperatures and risks, such as thermal oil, superheated steam, and toxic gases. Thanks to its long stuffing box and special insulation structure, the actuator and packing components remain unaffected by high heat.

Body and Material Structure:

It can be used safely in various fluids and processes such as steam, thermal oil, hot water, compressed air, and chemical fluids.

Operating Temperature Range:

Geniş salmastra kutusu içerisinde çelik destekli grafit contalar veya metal körükler sayesinde sıfır dış kaçak sağlanır.

Packing and Bellows Structure:

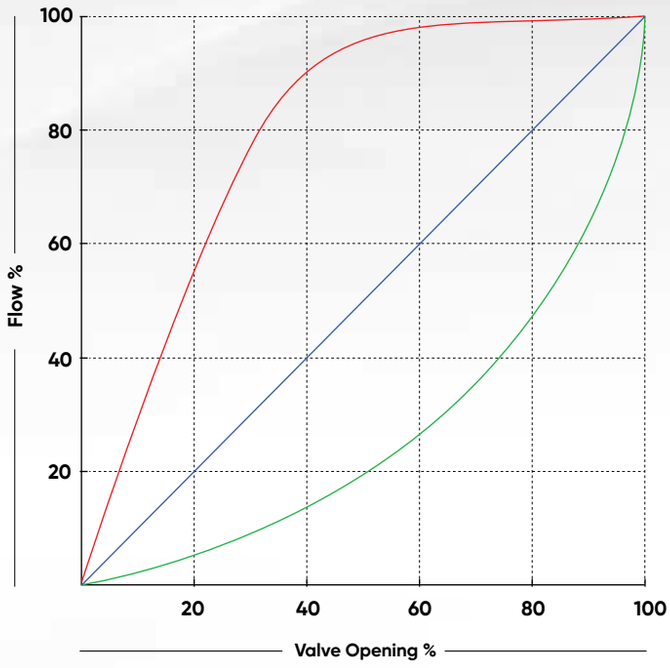
It prevents heat transfer between the process temperature and the actuator, extending the lifespan of the system components.

Stable Positioning Even at High Temperatures

The cooling-effect body design minimizes thermal stresses by delaying high temperatures from reaching the actuator area, thereby extending the equipment's lifespan.

MOX SERIES

Flow Characteristic



Fast Opening
Lineer
Equal Percentage

In control valves, the flow characteristic defines how the flow rate changes as the valve opening increases. In other words, it represents the flow curve corresponding to the opening percentage. Different characteristics are used according to application requirements.

Flow Characteristic Types and Plug Designs:

1. Equal Percentage

As the opening rate increases, the rate of flow change increases progressively. It provides precise control at initial positions and more aggressive flow in the final openings. It is especially preferred in processes with high pressure variations, and in steam and hot fluid applications.

2. Lineer

The increase in flow is directly proportional to the valve opening. It is ideal for systems less sensitive to pressure and for proportional heating–cooling applications.

3. Fast Opening

A small valve movement allows a large portion of the flow to pass. It is commonly used in on/off applications and in systems requiring rapid response, such as safety and discharge lines.

4. Noise-Reducing Cage Plug

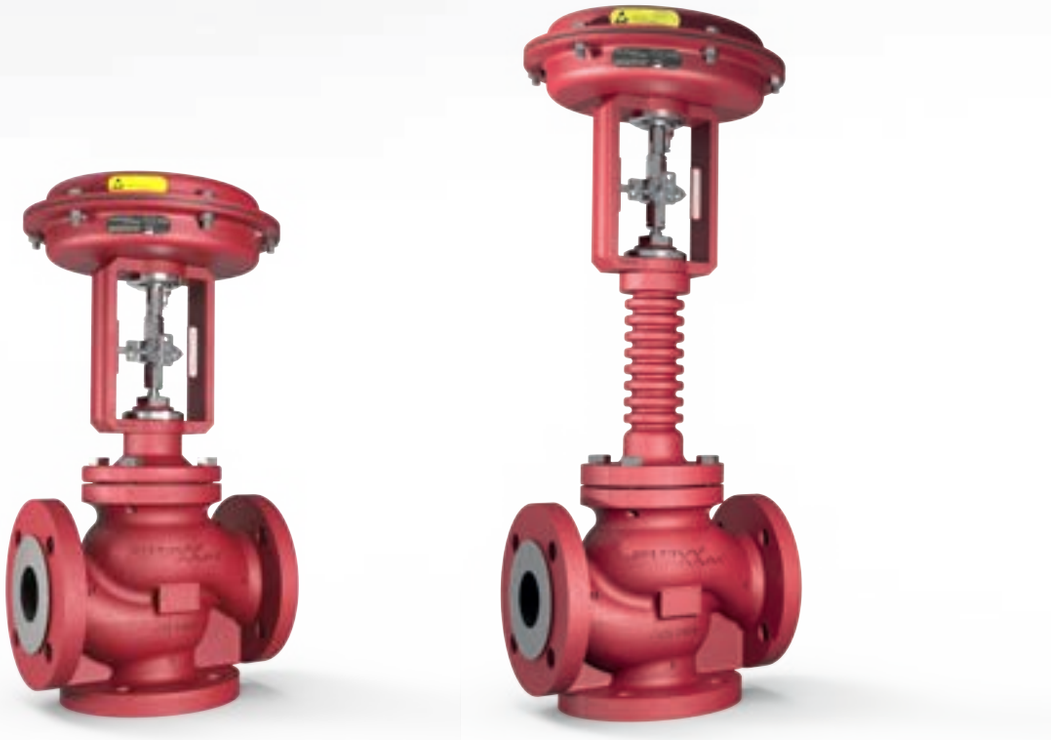
Preferred in high differential pressure lines. It has a perforated structure that improves acoustic performance and reduces noise. It can be designed with linear or equal percentage flow characteristics. It provides a safe and durable solution against high pressure differences, cavitation, and vibration risks.

MOX 300 SERIES

3 Way Pneumatic Actuated Proportional Control Valve

Flowmaxi MOX Series 3 Way Proportional Control Valves

Specially designed to perform fluid mixing *(mixing type)* or diverting flow to two different directions *(diverting type)*. These valves offer ideal solutions for applications requiring precise control of temperature, flow rate, and mixing ratios in process systems.



Superior Sealing Performance

Thanks to the double plug structure and precisely machined surfaces, sealing class is up to Class IV and Class VI. This minimizes energy losses.

Modular Body and Trim Structure

With easy maintenance and replaceable internal parts, it reduces both investment and operating costs.

Pneumatic Actuator Options

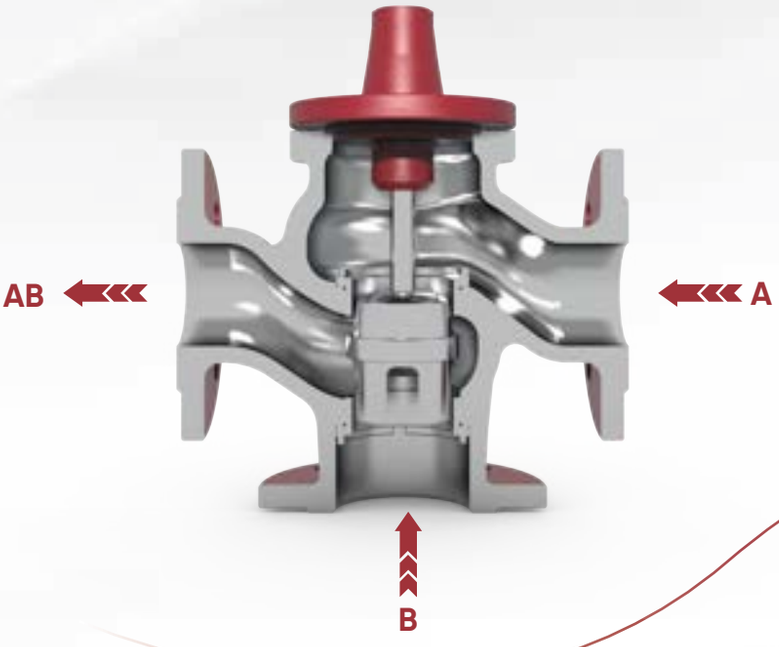
The powerful diaphragm actuator of the MOX series provides fast response time, fail-safe safety, and stable positioning over a wide stroke range.

Fluid Flexibility

Compatible with various fluids such as steam, hot water, thermal oil, and process fluids, with suitable material and sealing options available.

MOX 300 SERIES

3 Way Pneumatic Actuated Proportional Control Valve

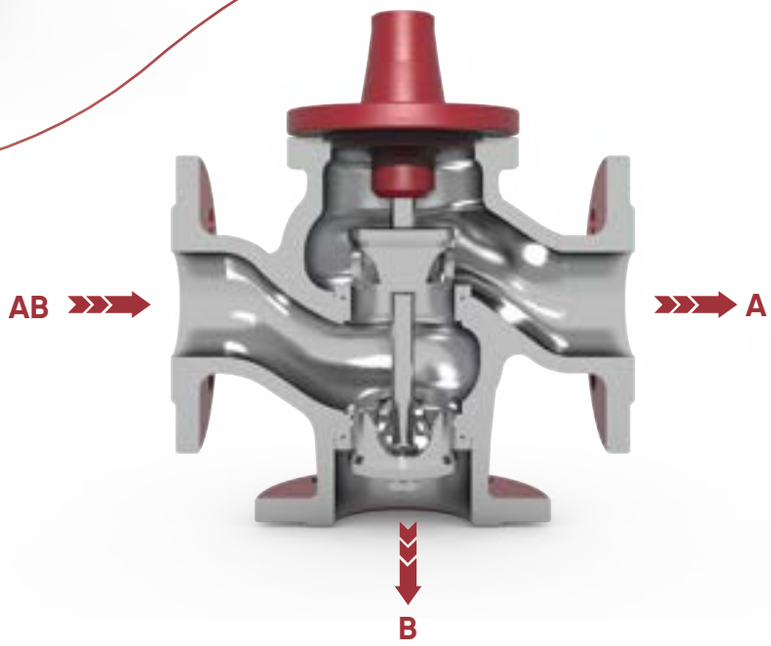


Mixing Type

It enables the controlled combination of fluid coming from two different inlet lines into a single outlet line. It is especially suitable for heat exchangers and mixing processes.

Diverting Type

It allows the fluid coming from a single inlet line to be proportionally distributed into two separate outlet lines. It is preferred in systems requiring cooling, heating, and flow direction control.



Typical Application Areas

- Proportional feed water systems for boilers
- Temperature control applications
- Energy recovery boiler systems
- Mixing lines *(chemical, food, pharmaceutical)*
- Inlet/outlet control of heat exchangers

Equipment

FM300 – Air Filter Regulator

Flowmaxi FM300 is a compact air filter regulator designed to provide clean and stable compressed air required for pneumatic control systems. Its high-performance 5-micron filter element ensures particle removal, while the precise regulator mechanism supports system stability.

- 5-micron filtration capacity
- 0–8 bar adjustable outlet pressure
- Automatic drain *(auto-drain)* option
- Maximum inlet pressure: 16 bar
- Easy installation with dual manometer connection
- Operating temperature range: -20°C to +70°C

FM600 – Electropneumatic Positioner

Flowmaxi FM600 is an electropneumatic positioner operating with a 4–20 mA analog control signal, providing high positioning accuracy in MOX series control valves. With its durable structure suitable for harsh field conditions, it increases system reliability.

- Linear and fast positioning with 4–20 mA input signal
- Air supply: 1.4–7 bar / Compatible with double-acting and spring-return types
- Auto/Manual operating mode
- Compact design, IP66 protection class
- Fast commissioning and low hysteresis value
- Compatible connection interface with all standard pneumatic actuators

FM800 – Smart Valve Positioner

Flowmaxi FM800 is a smart positioner designed for advanced control requirements, featuring a digital display and automatic calibration. With its high-resolution LCD screen, diagnostic functions, and HART protocol support, it integrates into industrial automation systems.

- 4–20 mA + HART communication protocol *(optional)*
- User-friendly LCD interface *(position display and parameter settings)*
- Automatic calibration *(Auto Tune)* and self-diagnostics
- Ex ia / Ex d certification options for hazardous areas
- IIP66 protection class, operating range -30°C to +85°C
- Expandable structure with limit switch, position transmitter, and digital output modules

FM1000 – Integrated Air Set with Digital Valve Positioner

Digital display, feedback-enabled, filter-regulated positioner that receives control signals *(4–20 mA, etc.)* from the control system, automatically adjusts the air pressure supplied to the actuator, and keeps the valve precisely at the desired stroke/position. The digital display allows easy monitoring of set value, actual position, and status information. With feedback control, it ensures stable and repeatable positioning. The integrated air set *(air regulator and filter)* stabilizes the supply air, supporting safer and longer system operation. As a result, more precise process control, reduced hunting, and higher efficiency are achieved.

- Easy monitoring and adjustment via digital display
- Precise and repeatable positioning
- More stable operation *(reduced oscillation)*
- Reliable air supply with integrated air set

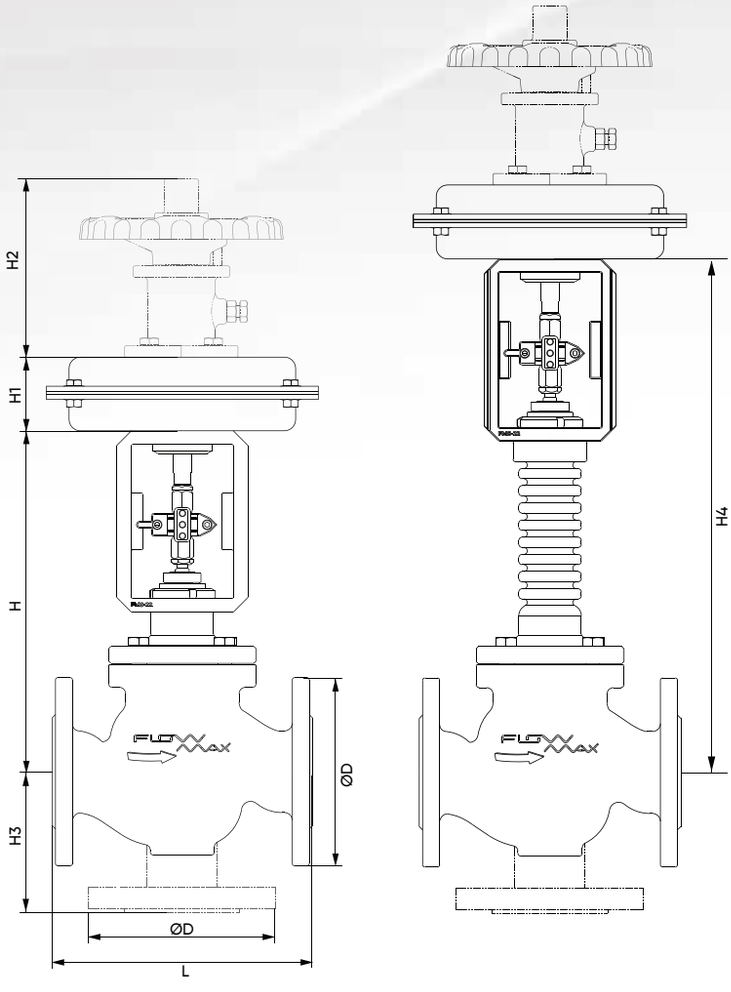
MOX SERIES

Pneumatic Actuated Proportional Control Valve

Technical Details

Flowmaxi MOX Series control valves offer flexible solutions for process requirements with nominal diameters ranging from DN15 to DN150 and different actuator sizes. They are designed to deliver maximum performance in industrial applications where temperature, pressure, and control precision are critical.

Body dimensions are determined in accordance with DIN EN 558-1 standards, and the connection flange, flange dimensions comply with PN16 standards. For high-temperature applications, long-travel designs can be selected, while more compact configurations are available for applications requiring shorter stroke. The MOX series offers a wide range of options in terms of actuator size and body height, enhancing engineering compatibility.



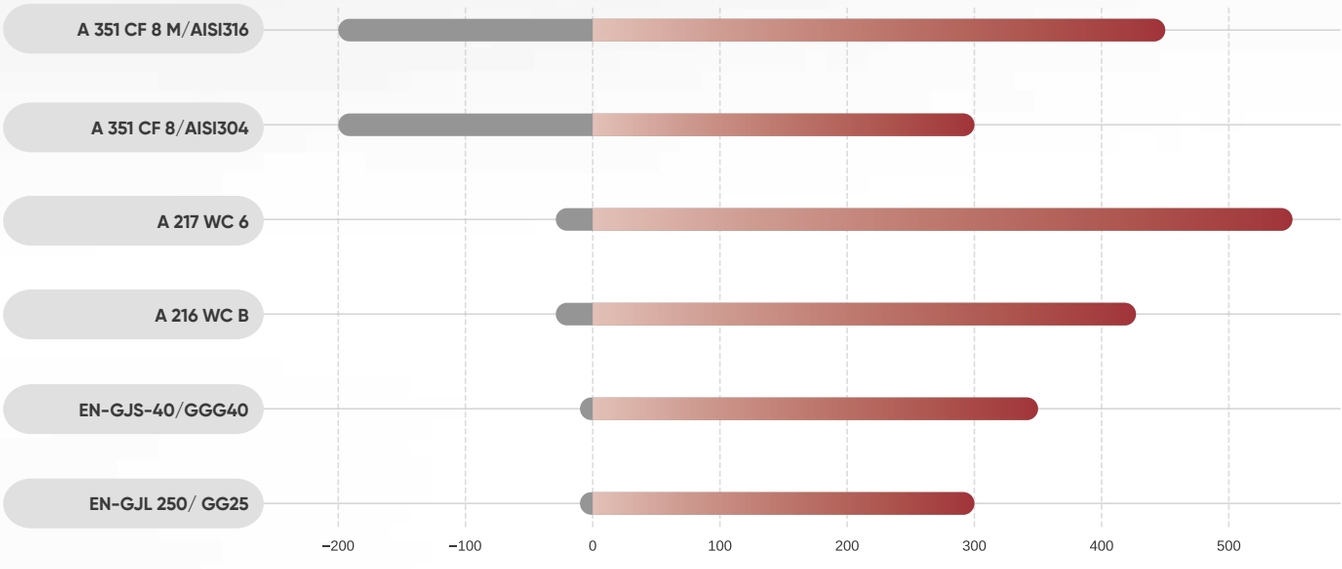
Nominal Sizes	DN	15	20	25	32	40	50	65	80	100	125	150
ØD	mm	95	105	115	140	150	165	185	200	220	250	285
L	mm	130	150	160	180	200	230	290	310	350	400	480
H	mm	275			280	290	300	310	320	370	580	590
H1	mm	60						140			230	
H2	mm	160						200			250	
H3	mm	70	80	85	100	105		140		150	200	210
H4	mm	395			400	410	420	430	440	490	700	710

Note: The dimensions above comply with EN 558-1 standards and are provided according to PN16 flange connection dimensions. The actuator height *(H)* may vary depending on the actuator size used. Accessories such as positioners and limit switches may increase the overall height. The specified technical data may vary depending on the valve body and trim structure. Custom sizing and dimensioning options are available upon request.

MOX SERIES

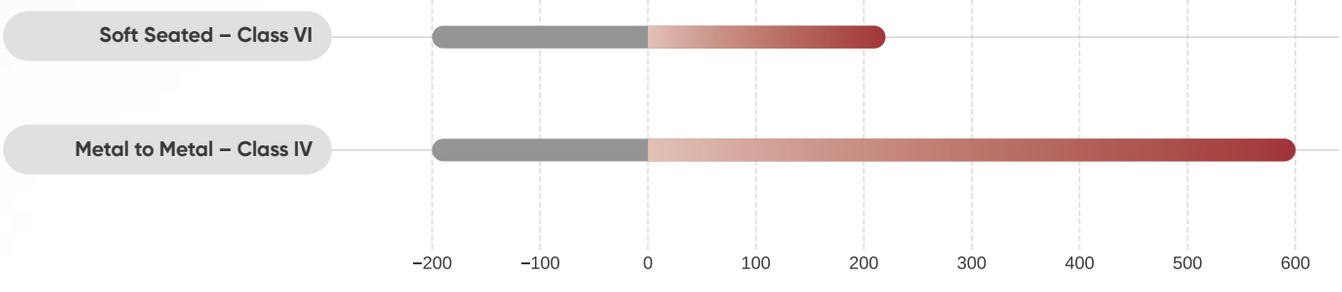
Operating Temperatures

Operating Temperature Ranges by Body Material



Temperature Range (°C)

Temperature Ranges by Seat–Plug Seal Type

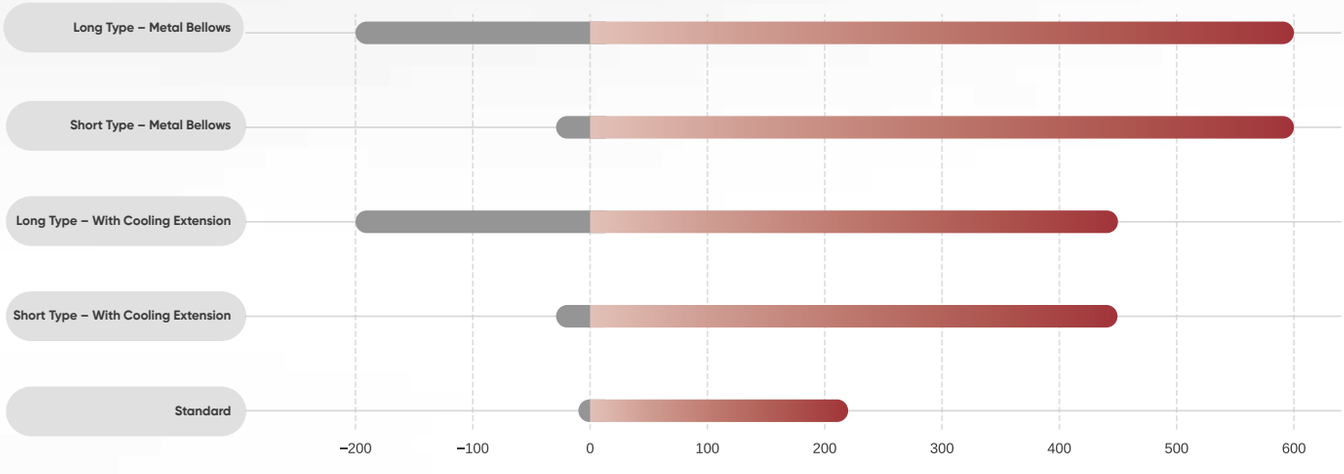


Temperature Range (°C)

MOX SERIES

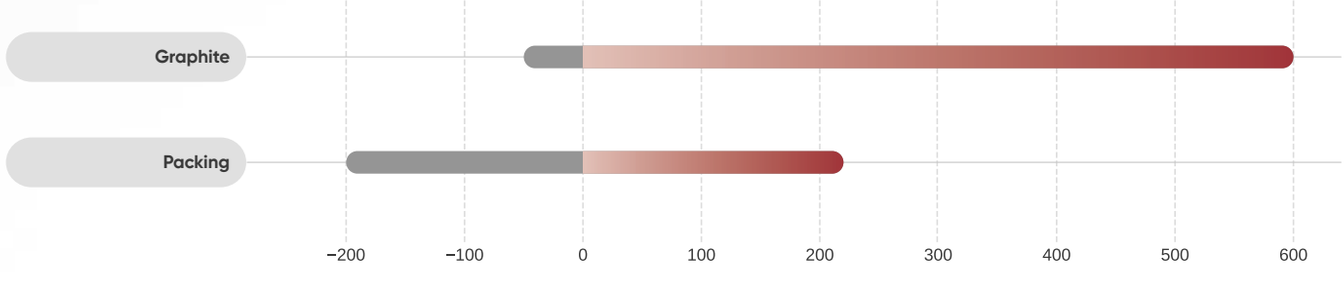
Operating Temperatures

Operating Temperature Ranges by Packing Type



Temperature Range (°C)

Operating Temperature Ranges by Packing Gasket Type



Temperature Range (°C)

MOX SERIES

Product Codes

Section	Code Description	Code Example
Pressure Class	PN16 PN25 PN40	PN16
Nominal Diameter	DN...	DN50
Type	MOX= Pneumatic Actuated Proportional Control Valve	MOX
Series	1 = 2 way 3= 3 way	1
Flow Characteristic	0= Equal Percentage 1= Lineer 2= Quick Opening	0
Packing Size	1 = Short Type Packing 2 = Long Type Cooling Packing	1
Flow Type (for MOX 300 Series)	N= Blank D= Diverting Type M= Mixing Type	N
Manual Handwheel	N= Blank V= With Handwheel	V
Leakage Class	4 = Class IV (Metal-Metal) 6 = Class VI (PTFE)	6
Filter Regulator	0= No 1= Yes	1
Positioner	0= No 1= FM600 2= FM800	2
Control Signal	1= 4-20mA 2= 0-10V	1
Fail Position	NO= Normally Open NC= Normally Closed	NC

Coding Example

PN16	DN50	MOX	1	0	1	N	V	6	1	2	1	NC

SATURATED STEAM TABLE						
Pressure		Temperature	Specific Enthalpy			Specific Volume
[bar g]	[bar a]	[bar a]	Saturated Water (hf) [kJ/kg]	Evaporation (hfg) [kJ/kg]	Steam(hg) [kJ/kg]	[m^3/kg]
0	1,013	100	419,1	2256,6	2675,7	1,674
0,2	1,213	105,2	440,76	2243	2687,3	1,414
0,4	1,413	109,6	459,68	2231	2690,7	1,226
0,6	1,613	113,7	476,53	2220,19	2696,7	1,083
0,8	1,813	117,3	491,7	2210,2	2702	0,971
1	2,013	120,4	505,7	2201,1	2706,9	0,88
1,5	2,513	127,8	536,2	2180,9	2717	0,715
2	3,013	133,8	562,3	2163,3	2725,5	0,603
2,5	3,513	139	585	2147,7	2732,6	0,523
3	4,013	143,9	605,3	2133,5	2738,7	0,461
3,5	4,513	148	623,5	2120,3	2743,9	0,413
4	5,013	152	640,7	2108,1	2748,7	0,374
4,5	5,513	155,6	656,3	2096,7	2753	0,342
5	6,013	158,9	670,9	2086	2756,9	0,315
6	7,013	165,1	697,5	2066	2763,5	0,272
7	8,013	170,6	721,4	2047,7	2769,1	0,240
8	9,013	175,5	743,1	2030,9	2774	0,215
9	10,013	178	763	2015,1	2778,1	0,194
10	11,013	184,2	781,6	2000	2781,7	0,177
11	12,013	188	798,8	1986	2784,8	0,163
12	13,013	191,6	815	1972,5	2787,6	0,151
13	14,013	195,3	830,4	1959,6	2790	0,141
14	15,013	198,4	845,1	1947,1	2792,2	0,132
15	16,013	201,5	859	1935	2794,1	0,124
16	17,013	204,5	872,3	1923,4	2795,7	0,117
17	18,013	207	885	1912,1	2797,1	0,110
18	19,013	210	897,2	1901,3	2798,5	0,105
19	20,013	212,5	909	1890,4	2799,5	0,100
20	21,013	215	920,3	1880,2	2800,5	0,095
21	22,013	217,3	931,3	1870,1	2801,5	0,091
22	23,013	219,5	942	1860	2802	0,087
23	24,013	221,8	952,2	1850,3	2802,8	0,083
24	25,013	224	962,2	1840,9	2803,1	0,079
25	26,013	226,1	972,1	1831,4	2803,5	0,076
30	31,013	235,7	1017	1787	2804,1	0,064
35	36,013	244,2	1057,8	1745,5	2803,1	0,055
40	41,013	252	1094,6	1706,3	2800,8	0,048
45	46,013	258,8	1228,7	1669	2797,6	0,0431
50	51,013	265	1160,9	1632,8	2793,6	0,038

Maximum Safety in Flow Control!

Fevzi Çakmak Mah. 10576. Sk. NO:13/M Karatay/**KONYA**/**TÜRKİYE**
info@**flowmaxi**.com
+90 (850) 255 06 67

www.**flowmaxi**.com.tr