

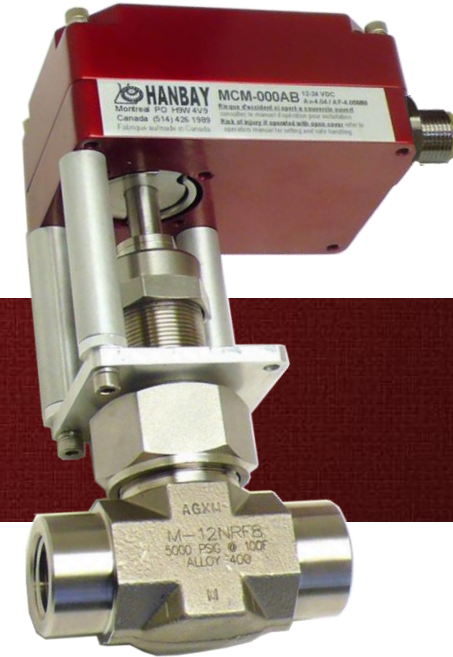
6 Position Ball Valve



Metering Valve



Pressure Regulator

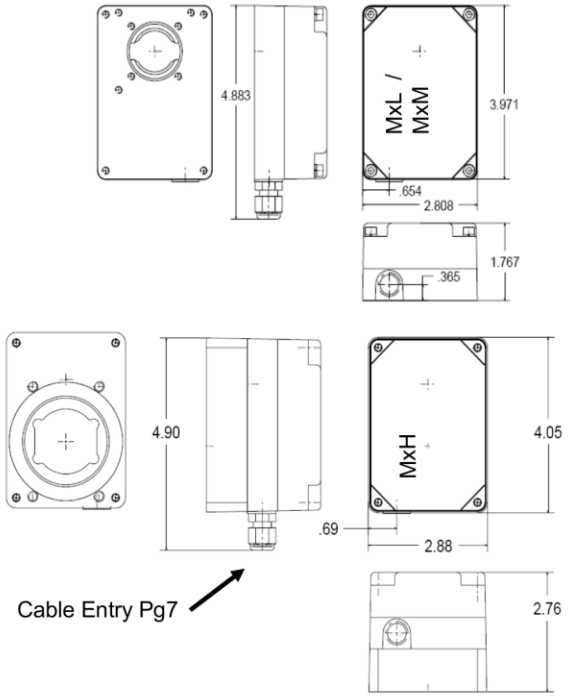


Needle Valve

We can automate anything

M-Series
Valve Actuators

Swagelok®



General Specifications:

Enclosure:	NEMA 4 / IP56
Temperature range:	0 .. 70 deg Cel (derate duty cycle at high temp.)
Extended temperature range:	-40 .. 70 deg Cel [w. Heater option]
Finish:	E-coating, Stainless
Stall protection:	by electronic position and motion detection
Feedback:	TTL, 4.20mA
Life Expectance:	250,000 cycles or equivalent under specified conditions
Motor:	BLDC brushless DC motor.
Voltages:	12-24 VDC
Stall protection:	by electronic position and motion detection
Positioning precision:	+/- 3 deg for 1/4 – 1/2 turn models +/- 0.25 deg for multi turn
Positioning resolution:	+/- 0.15 deg max. adjusting to electronic signal resolution of 12 bit additional signal filters available
Range setting:	dip switches inside enclosure
Speed setting:	dip switches inside enclosure
End of travel detection:	for needle valve closing, by motion detection
Power setting:	adjustable to protect delicate needle valves on closing operation
Position detection:	Hall detectors
Motor control:	Electronic, full computer control
Mechanical shock:	1 m drop test no damage to function Random SAE J1211, Chassis, Exterior
Mechanical vibration:	Random SAE J1211, Chassis, Exterior
Thermal Shock:	-20 deg cel to + 70 deg cel 10 min

Performance: Mxx Multi-turn models:

Model	Torque Range [in-lbs]	Speed range [time for 1 turn]
MCJ	3 .. 20	1 .. 5 sec*
MCL	18 .. 60	1 .. 5 sec
MCM	44 .. 132	3 .. 9 sec
MCH	88.5 .. 400	15 .. 60 sec

* Speed decreased at lowest torque settings

Performance: Mxx 1/4 and 1/2 turn models:

Model	Torque Range [in-lbs]	Speed range [time for 1/4 turn]
MDM	44 .. 132	0.75 .. 2.5 sec
MDH	88.5.. 400	3 .. 9 sec

Note: the speed and torque depend on the settings by dip switch of the actuator, selectable by user. Consult user manuals of individual units.

* De-rate the duty cycle to 25% for the highest torque values

General Description:

Type Mxx electric / electronic actuator are used to precisely position small valves and devices

Gears: Mxx actuators use sintered, greased for life metal gearing only

Housing: all housing parts are aluminum die cast and are protected by an electrophoresis paint

Bearings: oiled for life porous bronze bearings

External Fasteners: Stainless Steel

Manual Override: optional, mounted directly on the output shaft

Mxx actuators offer a full range of control options:
- Multiturn Analog, Partial Turn Analog
- 1/4 - 1/2 turn TTL

External Gear Stages: Metal Gears for additional reduction:
MxH 3.75 additional gear ratio
MxU 15 additional gear ratio

Other Specifications Multi-turn Models:

Isolated Signals: optical isolation 1000V min.
[AI and AF models only]

Feedback 4..20mA: for sensing resistor of max. 250 ohms. Floats +6VDC / -2VDC from power Gnd
[AF model only]

Position on power loss:
- Standard, "remembers" the position it was in before shut down.
- will reset the valve based on torque setting when the signal is between 3 and 4 mA

Other Specifications 1/4 and 1/2 turn Models:

TTL Signals in: internal pull up, <1mA required to pull down

TTL signals out (Feedback): will drive max 2.5mA