



**SMV Stepping Motor Valves**

# STEPPING MOTOR VALVES

## DESIGN FEATURES

- ✓ High precision two-way metering valves in aluminum or 316 SS for air/water.
- ✓ Unparalleled precision and resolution in controlling flow rates (0.00025" per step resolution standard, 0.000125" optional).
- ✓ Operate continuously without overheating.
- ✓ Eliminates coil heating problems associated with solenoid designs.

## GENERAL DESCRIPTION

A line of electronic two-way metering needle valves is presented. High precision linear stepping motors drive the valve spindle.

The resolution of the stepping motor driven needles is 0.0025"/steps standard. Optional 0.000125"/step resolution available. Low differential pressure valves, may be operated continuously (100% duty cycle). Valves stay in position as when de-energized.

Advantages over solenoid operated valves include cool operations, i.e. there are no control operating problems due to coils heating up, extremely fine resolution, very low differential pressures and high operating pressures. Valves are controllable by CMOS 12VDC compatible logic level and analog 0 to 5 Vdc signals.

## OPERATION

When the "DIRECTION" is set LOW (GND) the valve spindle travels downward (closes), when it is set HIGH, the valve spindle moves upward (opens). The "SPEED" voltage on pin 4 determines how quickly the valve opens or closes. The signal amplitude for the "SPEED" control signal must remain within the limits of 0 to +2.5 Vdc. It may be necessary to override "DIRECTION" and "SPEED" signals with the preset (2.75 Vdc) speed control signal.

This can be accomplished with valve CLOSE and PURGE control signals (open collector NPN compatible). In order to CLOSE the valve, pin 3 on the 9-pin "D" -connector has to be connected to GND (pin 2). A GREEN light on the top of the valve will indicate a CLOSED valve condition. In order to PURGE the valve, pin 7 on the 9-pin "D" -connector has to be connected to GND (pin 2). A RED light on the top of the valve will indicate a fully OPEN valve condition.

During normal operation the valve remains in the last position as it is de-energized. After powering up, the valve will be automatically closed within the first 10 seconds and after that resumes control operation. Operating power and valve control signals are supplied via the "D"-connector.

MODEL	MATERIAL	CONNECTIONS	MAXIMUM FLOW RATE (mL/min)				CV	POWER INPUT
			Air		Water			
			[sL/min]	[scfh]	[L/min]	[GPM]		
6ASMV0101-2	Aluminum	3/8" compression	200	424	5.6	1.48	0.336	12VDC
6ASMV0102-2	Stainless Steel	3/8" compression	200	424	5.6	1.48	0.336	12VDC
6ASMV0103-2	Aluminum	1/2" compression	500	1060	14.2	3.75	0.855	12VDC
6ASMV0104-2	Stainless Steel	1/2" compression	500	1060	14.2	3.75	0.855	12VDC
6ASMV0105-2	Aluminum	3/4" FNPT	1000	2119	28	7.4	1.735	12VDC
6ASMV0106-2	Stainless Steel	3/4" FNPT	1000	2119	28	7.4	1.735	12VDC
6ASMV0101-4	Aluminum	3/8" compression	200	424	5.6	1.48	0.336	24VDC
6ASMV0102-4	Stainless Steel	3/8" compression	200	424	5.6	1.48	0.336	24VDC
6ASMV0103-4	Aluminum	1/2" compression	500	1060	14.2	3.75	0.855	24VDC
6ASMV0104-4	Stainless Steel	1/2" compression	500	1060	14.2	3.75	0.855	24VDC
6ASMV0105-4	Aluminum	3/4" FNPT	1000	2119	28	7.4	1.735	24VDC
6ASMV0106-4	Stainless Steel	3/4" FNPT	1000	2119	28	7.4	1.735	24VDC

MODEL	DESCRIPTION
6ACBLSMV	Connection Cable, D-Connector, 3 ft length, unterminated end

## SPECIFICATIONS FOR STEPPING MOTOR VALVE

- ALUMINUM MODELS:** Aluminum housings and valve blocks, Fkm O-Rings, PFA closing pins.  
**STAINLESS / PTFE MODELS:** 316 stainless steel valve blocks, PTFE-lined aluminum housing blocks, Fkm O-Rings, and PFA closing pins.
- MAXIMUM FLOW RATES:** 1000 L/min (air), 28 L/min (H<sub>2</sub>O).
- CONNECTIONS:** 3/8", 1/2", compression and 3/4" FNPT.
- ELECTRICAL CONNECTIONS:** 9-pin "D"-connector, located at the side of the valve.
- POWER INPUT:** 12 Vdc @ 800 mA, or +24 Vdc @ 600 mA, protected by a 600mA resettable fuse.
- DIRECTIONAL CONTROL SIGNAL:** 12 Vdc CMOS compatible logic level signal (10K input impedance). (Logic High >= 7.5 Vdc, Low <2.3 Vdc).
- SPEED CONTROL SIGNAL:** Analog 0 to 2.5 Vdc (100K input impedance). ON/OFF override: 12 Vdc CMOS low active level to pins 7 and 3 (10K input impedance).
- RESPONSE TIME:** 100ms time constant.
- PRESSURE DROP AT MAX. FLOW:** (700 to 1000) mbars 10 to 15 psid.
- MAX. OPERATING PRESSURE:** 500 psig (35 bars).
- MAX. DIFFERENTIAL PRESSURE:** 40 psig (2.7 bars).
- GAS & AMBIENT TEMPERATURE:** 32 °F to 122 °F (0 °C to 50 °C).



*The selection of materials of construction, is the responsibility of the customer. The company accepts no liability.*

