

ENV SERIES

MOTORIZED NEEDLE VALVES

The ENV series of motorized needle valves for proportional flow rate adjustment combine the accuracy and repeatability benefits of a stepper motor with the linearity and resolution of a needle valve.

The result is adjustable flow control with less than 2% hysteresis, 0.1% repeatability and 0.2% resolution - making these valves ideal for consistent, high-performance delivery of gases and liquids in medical, life science and advanced-automation applications.



KEY ADVANTAGES

* MULTIPLE ORIFICE SIZES

Available orifice sizes ranging from the low flow $\varnothing 0.9$ mm (0 to 50 SLPM gas) to high flow $\varnothing 6.70$ mm (0 to 1500 SLPM gas) make selecting the right size easy.

* HIGHLY LINEAR

The linearity of the ENV, as low as 1%, simplifies the creating of lookup tables or outer control loops with an simplified relationship between command input and flow output.

* REPEATABLE

By going to the same flow rate each time, with 0.1%, the ENV series provides consistent performance day in and day out

* WIDE PRESSURE RANGE

Vacuum through 5 to 10 bar, depending on orifice size, the ENV covers a wide range of inlet pressures. The stiffness and power of the motor ensures that the valve opens at the same command input, independent of pressure.

* LOW HYSTERESIS

Less than 2% hysteresis makes integration and programming easy, by providing consistent flow when both increasing and decreasing to get to a setpoint.

* HIGH RESOLUTION

0.2% resolution allows the ENV series to make minute flow adjustments in response to very small changes in command input, providing excellent controllability.

MECHANICAL SPECIFICATIONS

Valve Type:

2-Way Proportional

Gating Element:

Needle Seat Valve

Actuation Method:

Stepper Motor

Wetted Materials:

(based on order code)

6061 Al & FKM (suffix left blank)

316 Series SS and FKM (suffix SSF)

316 Series SS and FFKM (suffix SSK)

Mounting:

Through-hole

Mounting Orientation:

Any

Environmental Protection Class:

IP52

Operating Temperature:

0...50C (32...122F)

Filtration:

40 um Particulate

Media:

Neutral Gases, Oxygen, Water, and other Liquids

Other Compatibilities Available

Burst Pressure:

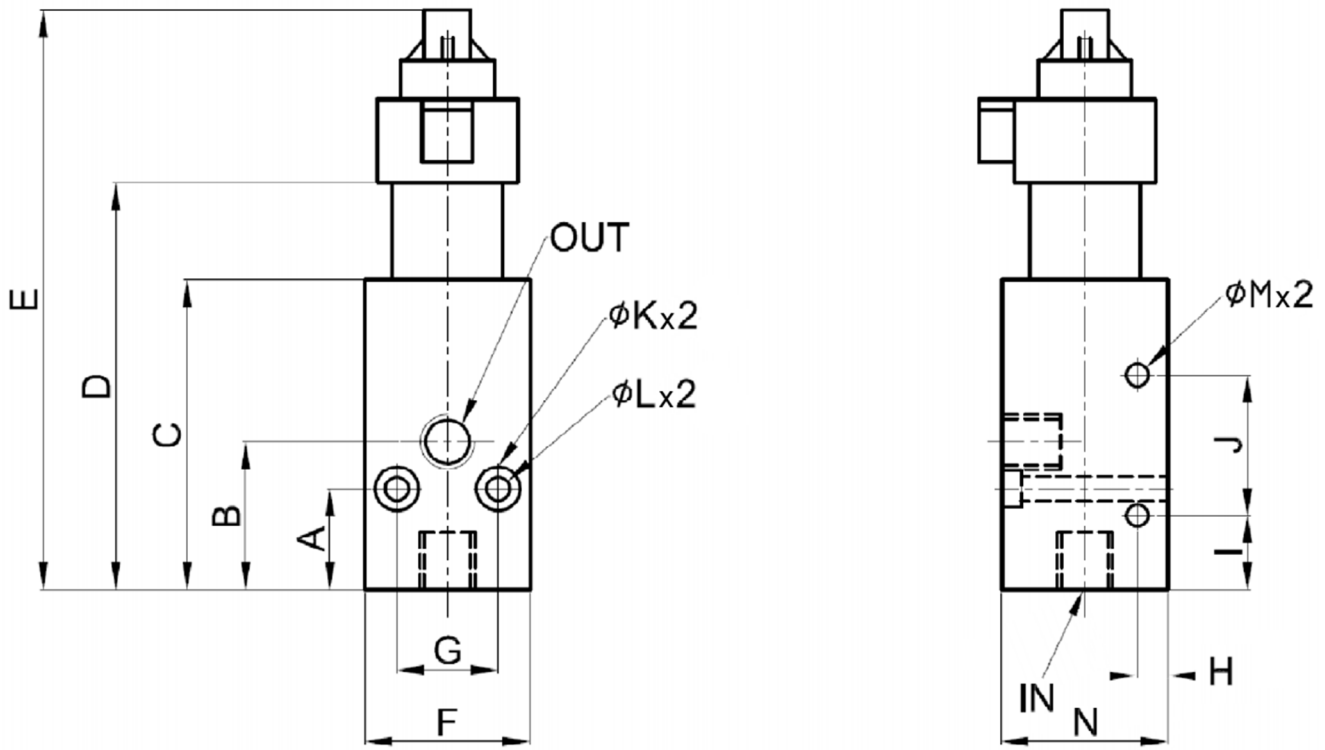
30 bar (435 psi)

Electrical Connector:

JST B4B-ZR(LF)(SN)

	Units	ENV-0090	ENV-0225	ENV-0375	ENV-0410	ENV-0670
Orifice Size	mm	0.9	2.25	3.75	4.10	6.7
Minimum Pressure	vacuum	vacuum	vacuum	vacuum	vacuum	vacuum
Maximum Pressure	bar (psi)	7 (101.5)	7 (101.5)	7 (101.5)	5 (72.5)	10 (145)
Maximum Flow Rate (Air)	slpm	50	240	410	600	1500
Maximum Flow Rate (Water)	lpm	0.94	5.9	8.6	16.5	62.4
Leakage	slpm	<0.1	<0.1	<0.1	<0.1	<0.1
Ports	ISO 7-1	G 1/8"	G 1/8"	G 1/8"	G 3/8"	G 3/8"
Compatible Driver		D5-01-U01	D5-02-U01	D5-03-U01	D5-04-U01	D5-05-U01

DIMENSIONS



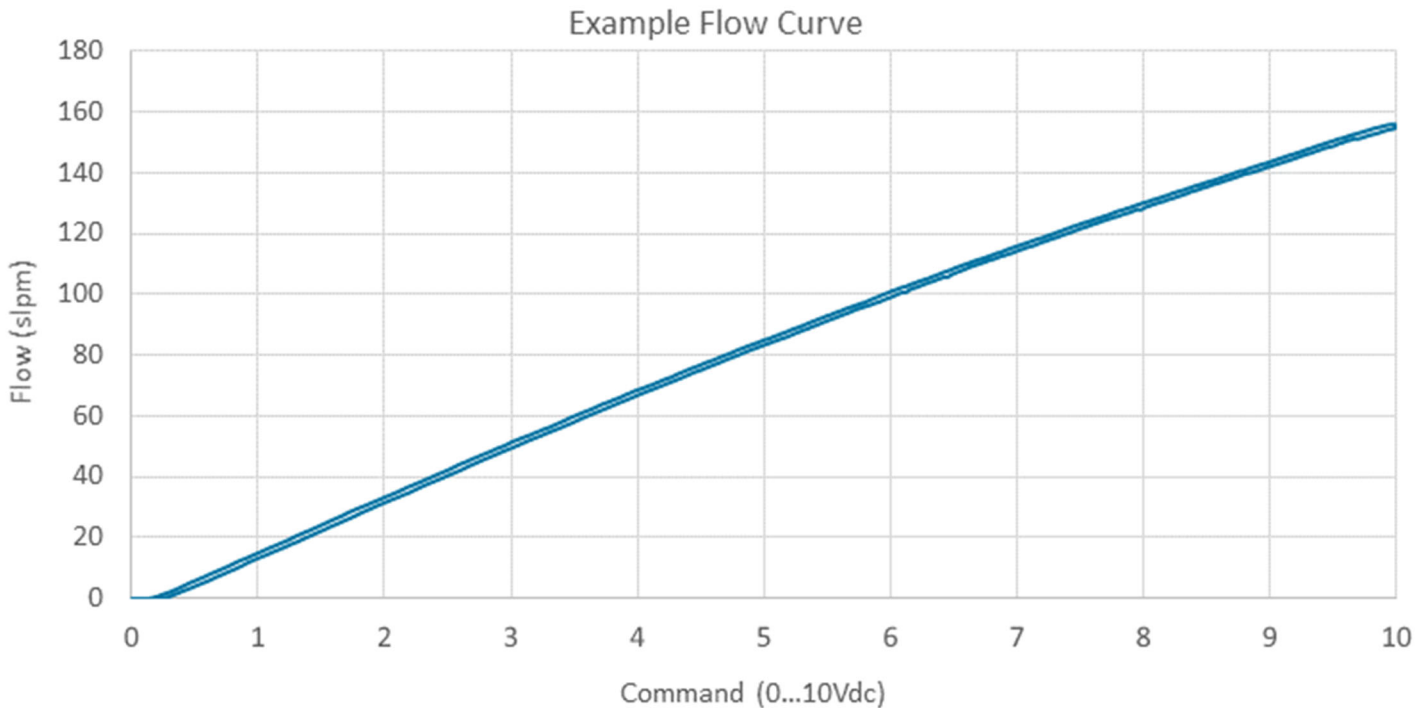
	A	B	D	E	F	G	H	I	J	φK	φL	φM	N	IN	OUT
ENV-0090	5.3	14.3	43.8	81.1	25.0	15.0	-	-	-	6.0	3.3	-	25.0	G 1/8	G 1/8
ENV-0225	15.1	25.1	57.5	90.0	25.0	13.0	3.5	20.2	15	7.0	4.3	4.3	25.0	G 1/8	G 1/8
ENV-0375	15.4	26.2	57.8	94.2	29.7	18.3	4.95	13.6	25.6	7.0	4.3	4.3	29.7	G 1/8	G 1/8
ENV-0410	28.3	40.8	86.6	126.5	31.8	22.1	-	-	-	7.0	4.3	-	31.8	G 3/8	G 3/8
ENV-0670	19.8	32.4	72.1	110.1	40.0	28.0	-	-	-	7.0	4.3	-	40.0	G 3/8	G 3/8

PERFORMANCE SPECIFICATIONS

	Units	ENV-0090	ENV-0225	ENV-0375	ENV-0410	ENV-0670
Hysteresis	% FS	±2	±2	±2	±2	±2
Linearity	% FS	±2	±1	±1	±5	±10
Repeatability	% FS	± 0.1	± 0.1	± 0.1	± 0.1	± 0.1
Resolution ¹	slpm	0.1	0.2	0.3	0.5	2.0
Response Time ²	seconds	0.8	1.0	1.0	1.25	1.25

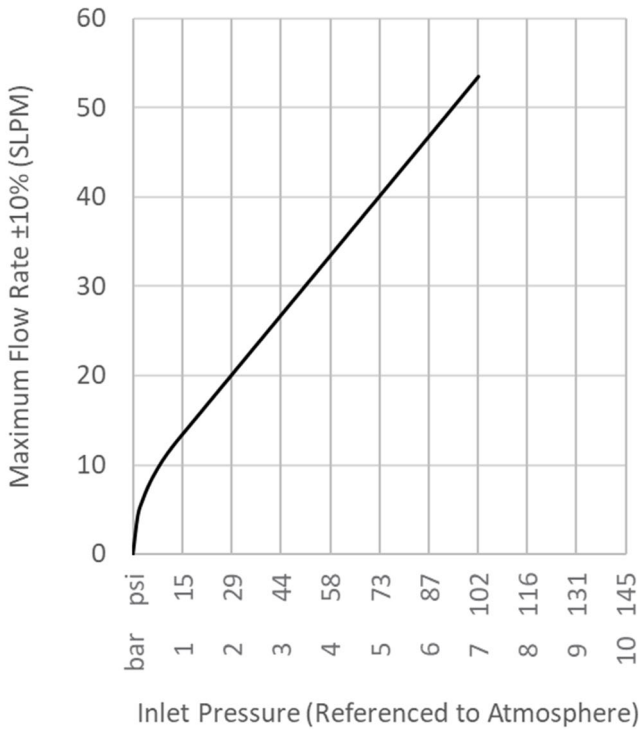
1. Resolution measurements takes at 3 bar inlet pressure to atmosphere
2. Response Time is based on shift from fully-open to fully-closed

FLOW VS. COMMAND

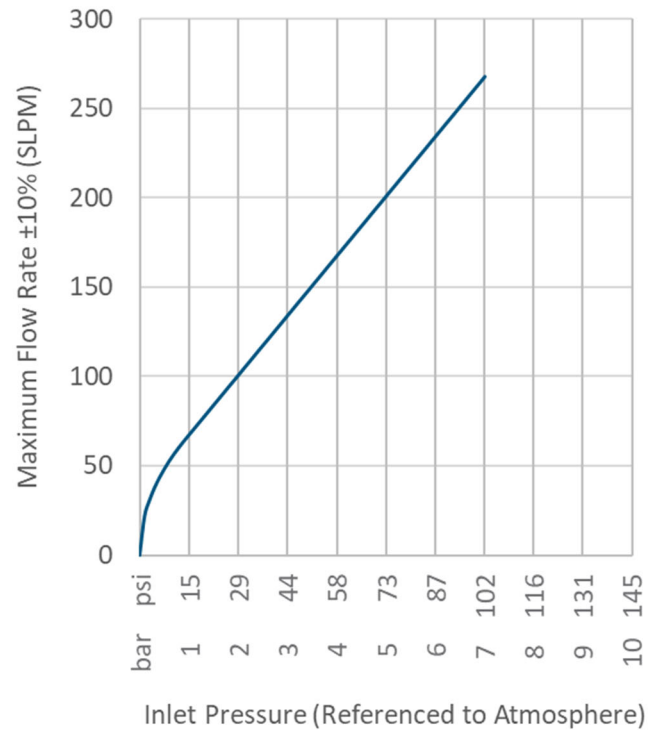


MAX FLOW VS. INLET PRESSURE (AIR)

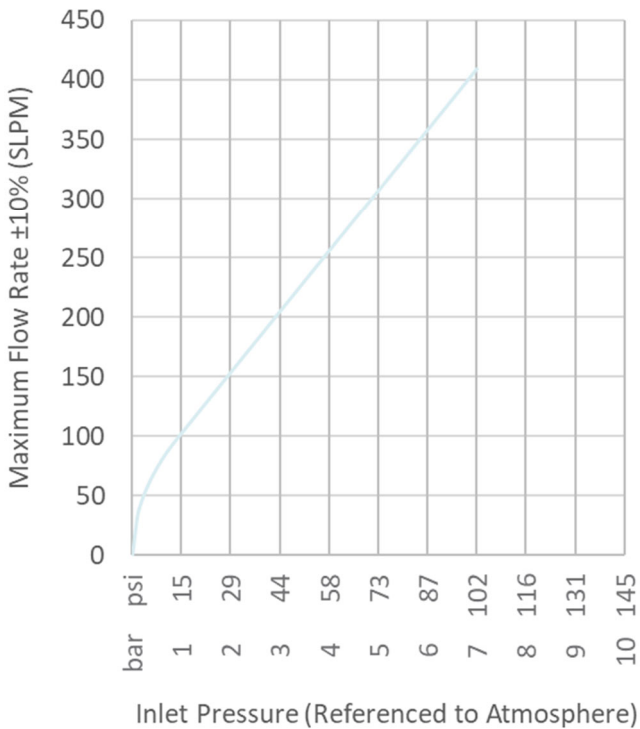
ENV-0090 Maximum Flow Rate (Air)



ENV-0225 Maximum Flow Rate (Air)

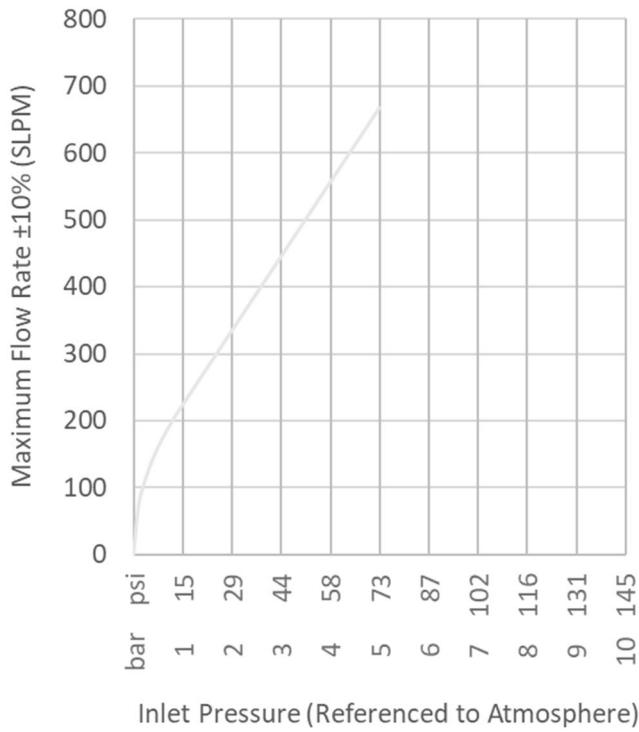


ENV-0375 Maximum Flow Rate (Air)

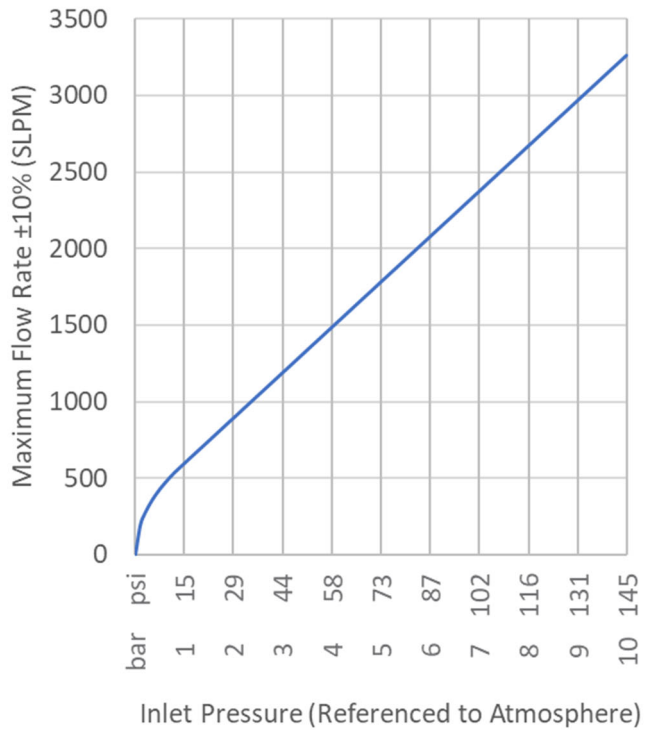


MAX FLOW VS. INLET PRESSURE (AIR)

ENV-0410 Maximum Flow Rate (Air)

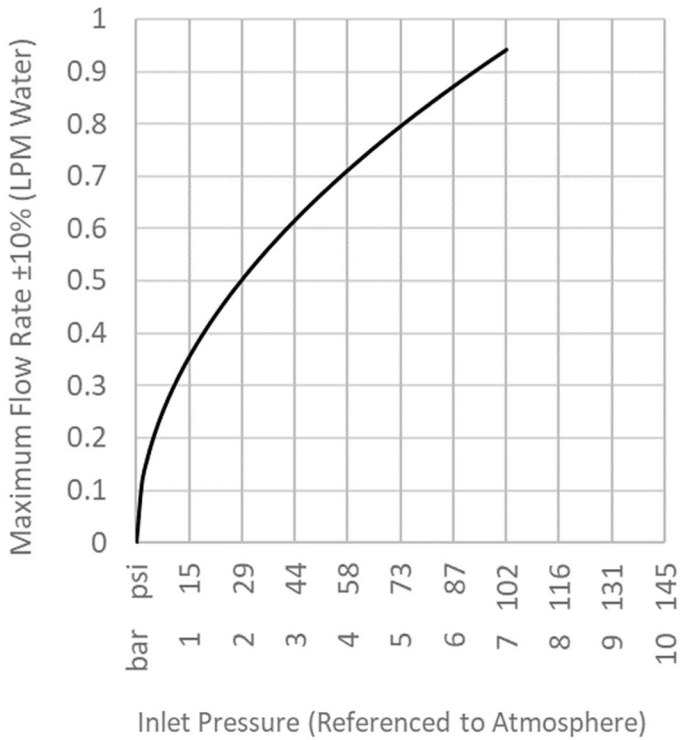


ENV-0670 Maximum Flow Rate (Air)

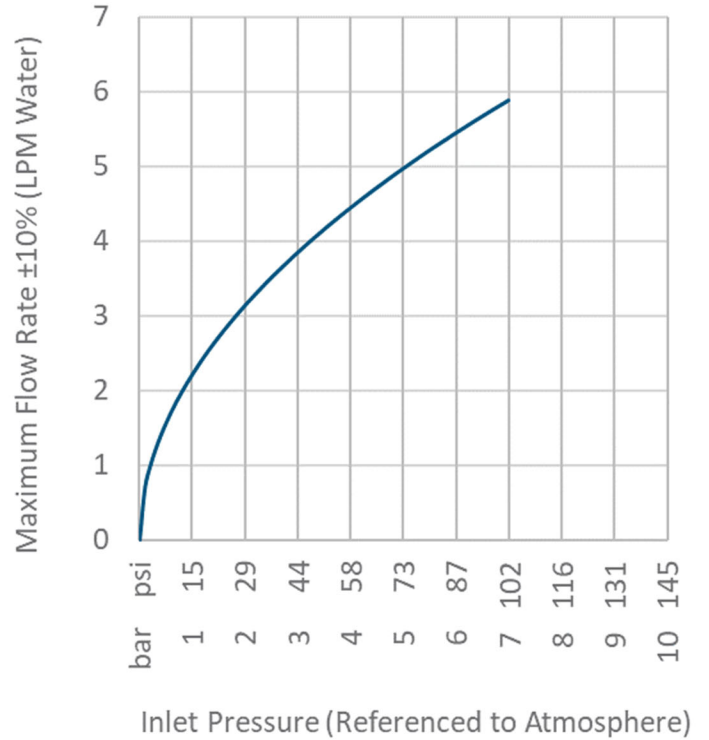


MAX FLOW VS. INLET PRESSURE (WATER)

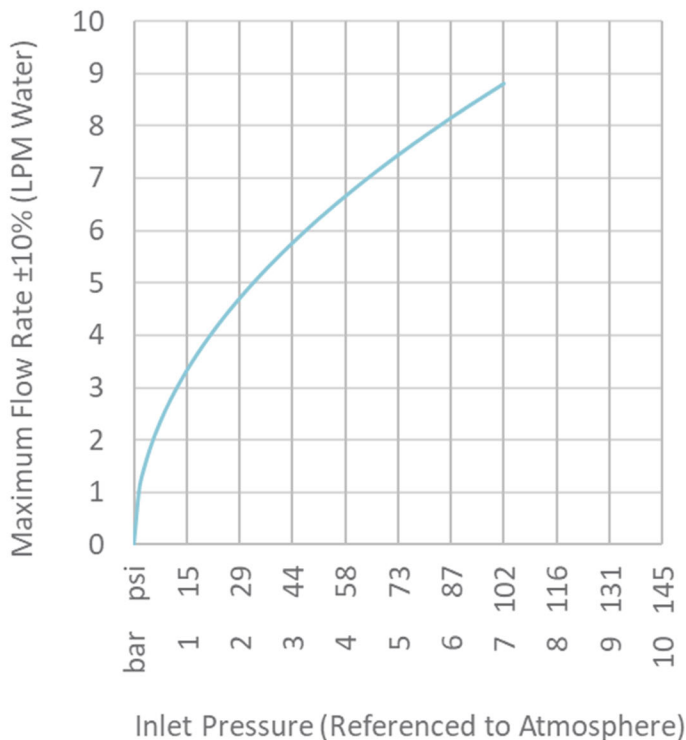
ENV-0090 Maximum Flow (Water)



ENV-0225 Maximum Flow (Water)

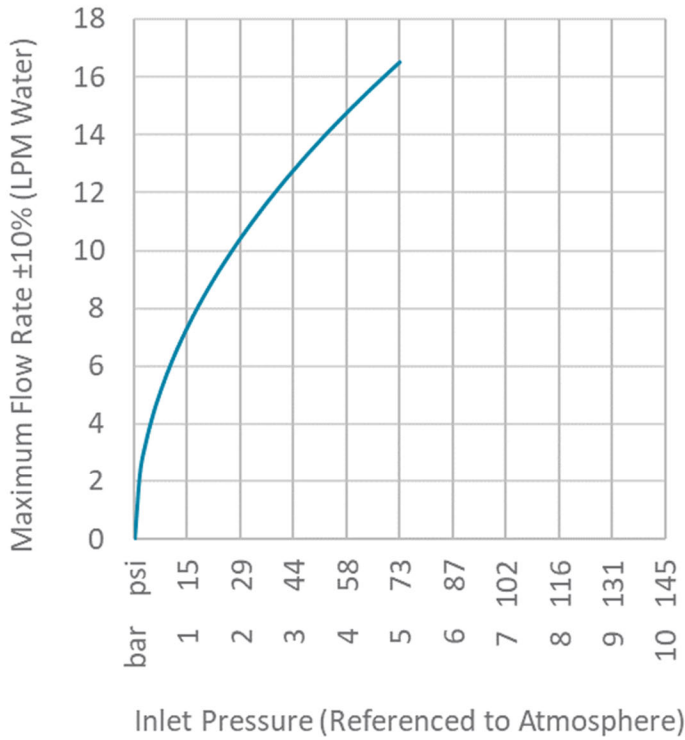


ENV-0375 Maximum Flow (Water)

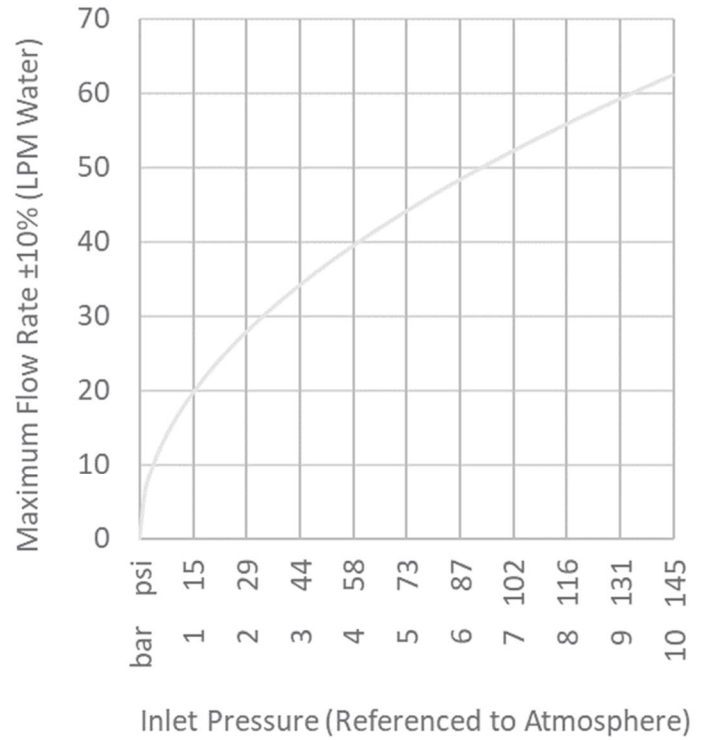


MAX FLOW VS. INLET PRESSURE (WATER)

ENV-0410 Maximum Flow (Water)



ENV-0670 Maximum Flow (Water)



RECOMMENDED DRIVERS

The D5 series of bipolar stepper motor drivers maximizes the performance of the ENV series of stepper valves by taking a 0...10Vdc command input and providing a step and direction output to the valve

Motorized Needle Valve	Recommended Driver
ENV-0090	D5-01-U01
ENV-0225	D5-02-U01
ENV-0375	D5-03-U01
ENV-0410	D5-04-U01
ENV-0670	D5-05-U01



ELECTRICAL SPECIFICATIONS

Power Requirement:
24Vdc

Command Input Impedance:
4kΩ

Output:
Step and direction to valve

Power Consumption:
1.9 W—Maintaining Position
3.8 W—Changing Position

Command Resolution:
0.03 Vdc

Input Mating Connector:
EDZ1550/4

Maximum Power Consumption:
12W

Ambient Temperature:
0...50C (32...132F)

Motor Output Mating Connector:
JST PHR-4

Command Input:
0..10Vdc

LEDS

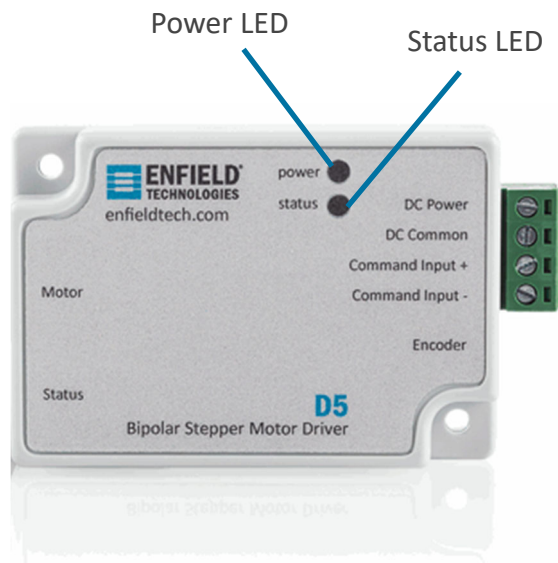
LEDs:

Power

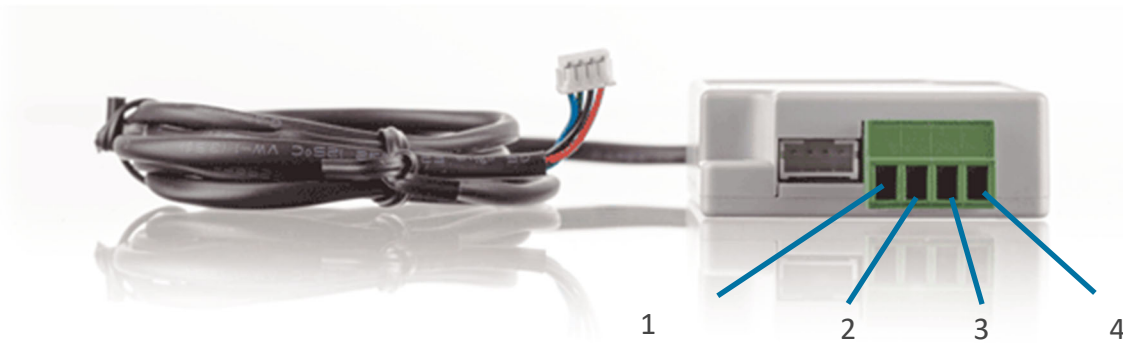
- On: Board has power
- Off: Board does not have power

Status

- On: Changing Position
- Off: Maintaining Position
- Flashing: Error



ELECTRICAL CONNECTIONS (INPUTS)



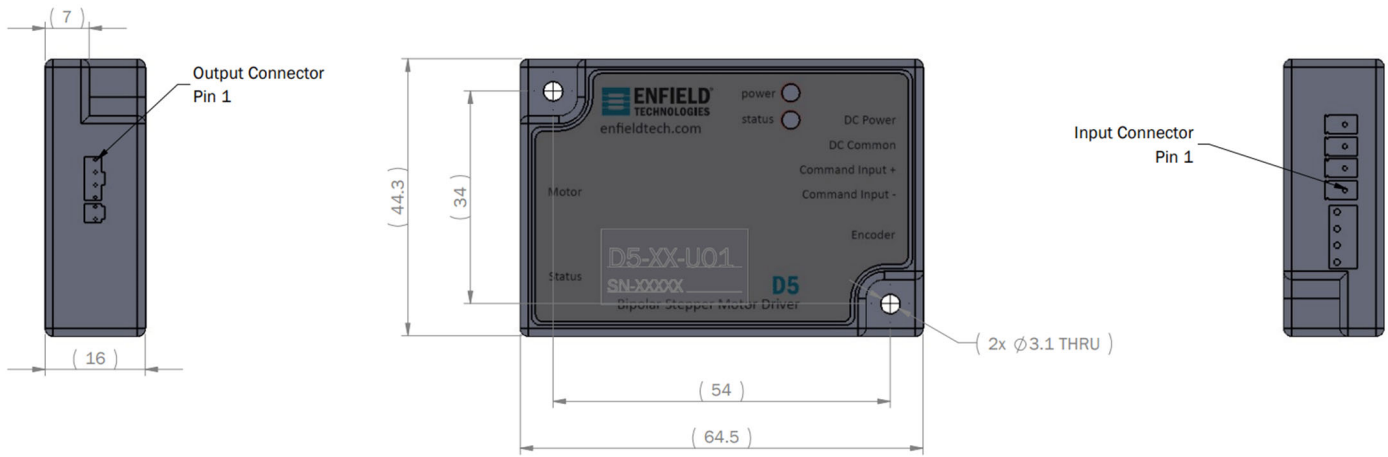
Pin #	1	2	3	4
Function	Command -	Command +	DC Common	DC Power
Input	0Vdc	0...10Vdc	0Vdc	24Vdc

ELECTRICAL CONNECTIONS (OUTPUTS)



Pin #	1	2	3	4
Cable Wire Color	Brown	Black	White	Blue
Output	B-	B+	A-	A+

DIMENSIONS



Enfield Technologies is an expert in high performance proportional control systems. Our standard product line focuses on pneumatics. With custom products and engineering services, we also apply our expertise in other areas of fluid power, electromechanical systems, and control electronics. New developments in pneumatic technology are opening doors for design engineers to create unique, market leading products and systems.

Enfield Technologies is leading this innovation. Our control valves and electronics solve many of the challenges posed by compressible fluids. The additional functionality and performance from Enfield Technologies helps our customers create breakthrough applications and enhance existing systems. Simply put, we make pneumatics do things that others declare impossible.

Enfield Technologies
35 Nutmeg Drive
Suite 130
Trumbull, CT 06611 USA

+1 203 375 3100
enfieldtech.com

