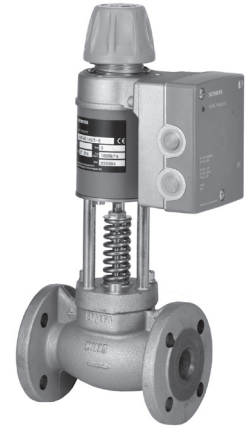


## Modulating Control Valves

*with Magnetic Actuators, Positioning Control and Position Feedback for Hot Water and Steam*



MVF461H Series Magnetic Control Valve.

### Description

MVF461H Series Modulating Control Valves are control valves with magnetic actuators, for modulating control of hot water, high temperature hot water, and steam.

### Features

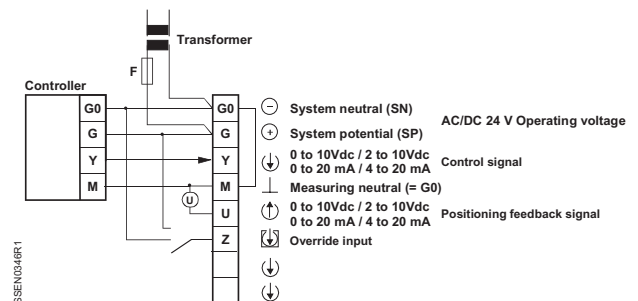
- Fast positioning time (< 2 seconds)
- Selectable valve characteristic: Equal percentage or linear
- Selectable standard interface: 0/2 to 10 Vdc or 0/4 to 20 mA
- High resolution (>1000:1)
- High rangeability
- Wear-free inductive stroke measurement
- Spring return fails closed when de-energized
- Positioning control and position feedback signal
- Low-friction, heavy-duty and maintenance-free

### Applications

The MVF461H... Control Valves are through-port valves with magnetic actuators. The actuator is equipped with an electronics module for positioning control and position feedback. If the power is off, the valve fails closed.

The short positioning time, high resolution and high rangeability make these valves ideal for proportional control of district heating stations, and heating applications using high temperature hot water and steam.

### Wiring Diagram



# MVF461H Modulating Control Valve Specifications

## Electrical

Low-voltage Use Only ..... Class 2 (SELV, PELV)

## 24 Vac

Operating Voltage ..... 24 Vac +20/-15%  
 Frequency ..... 45 to 65 Hz  
 Typical Power Consumption ..... See Sizing Table  
 Standby ..... <1 W (Valve Fully Closed)  
 Nominal Apparent Power ..... See Sizing Table  
 Suitable Fuse ..... Slow

## 24 Vdc

Operating Voltage ..... 20 to 30 Vdc

## Functional Data of Actuator

### Input

Positioning Signal Y ..... 0/2 to 10 Vdc, 0/4 to 20mA  
 Impedance  
 0/2 to 10 Vdc ..... 100 kΩ//5nF  
 0/4 to 20 mA ..... 240 Ω//5nF

### Forced Control

Impedance ..... 22 kΩ  
 Closing the Valve (Z Connected to G0) ..... <1 Vac; <0.8 Vdc  
 Opening the valve (Z Connected to G0) ..... > 6 Vac; >5 Vdc  
 No Function (Z Not Wired) ..... Positioning Signal Y Active

### Output

Position Feedback Signal Voltage ..... 0/2 to 10 Vdc;  
 Load Resistance > 500Ω  
 Current ..... 0/4 to 20 mA;  
 Load Resistance < 500Ω  
 Stroke Measurement ..... Inductive  
 Nonlinearity ..... ±3% of End Value

## Functional Data of Valve

Nominal Pressure ..... ANSI 125 (PN 16)  
 Perm. Operating Pressure<sup>1</sup> ..... Water up to 248°F (120°C)  
 232 psig (16 bar)  
 Water Above 248°F (120°C):  
 188 psig (13 bar)  
 Saturated Steam: 130 psig (9 bar)

Pressure Differential  $\Delta p_{max}$  /  $\Delta ps$  ..... 145 psi (10 bar)

## Materials

Body ..... Nodular Cast Iron  
 Cover Flange ..... Nodular Cast Iron  
 Seat/Inner Valve ..... Stainless Steel

## Packing

Normal Duty ..... EDPM (O-ring)

## Electrical Connections

Cable Entries ..... 3 x M20 x 1.5 or PG13.5/G1/2  
 Connection Terminals ..... Screw Terminals for up to 12 AWG Wires  
 (0.75 mm<sup>2</sup> Min. Cross-sectional Area<sup>3</sup>)

## Max. Pressure

Max. Differential Pressure ..... 145 psi

## Media Temperature

..... 34° to 356°F (1° to 180°C)

## Ambient Conditions

Temperature  
 Operation and Storage ..... 23° to 113°F (-5° to 45°C)  
 Transport ..... -13° to 158°F (-25° to 70°C)  
 Humidity ..... 5 to 95% rh (Non-condensing)

## Resolution

..... 1000:1

## Position with Actuator De-energized

..... Closed

## Positioning Time

..... <2 Seconds

## Approvals

..... IP31 to IEC 529  
 Conforms to CE Requirements, UL 873,  
 Certified to Canadian Standard C22.2, No. 24, C-Tick N-474,  
 PED 97/23/EC: Pressure-carrying Parts  
 Par. 1, Section. 2.1.4 / Par. 3, Section 3 Fluid Group 2

## Flow Characteristic

..... Equal Percentage or Linear<sup>2</sup>

## Environmental Protection

..... NEMA Type 1

## Notes:

<sup>1</sup>Tested at 1.5 x PN (24 bar), similar to DIN 3230-3

<sup>2</sup>Can be selected via DIP switch.

<sup>3</sup>In case of strong vibrations, use high-flex stranded wires.

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Valves

## Sizing

Part No.	Line Size (in.)	Cv	Max. Differential Pressure and Close-off (psi)	Power for Transformer Sizing (VA)	Power Consumption (W)	Slow Fuse	Wire Gauge (AWG)		
							16	14	12
							Max. Wiring Length (ft.)		
MVF461H15-0.6	1/2	0.7	145	33	15	3.15	130	215	360
MVF461H15-1.5	1/2	1.8	145	33	15	3.15	130	215	360
MVF461H15-3	1/2	3.5	145	33	15	3.15	130	215	360
MVF461H20-5	3/4	5.9	145	33	15	3.15	130	215	360
MVF461H25-8	1	9.4	145	33	15	3.15	130	215	360
MVF461H32-12	1-1/4	14.0	145	43	20	4	100	165	260
MVF461H40-20	1-1/2	23.3	145	65	20	6.3	100	165	260
MVF461H50-30	2	35.0	145	65	26	6.3	65	100	165

Accessories & Service Kits

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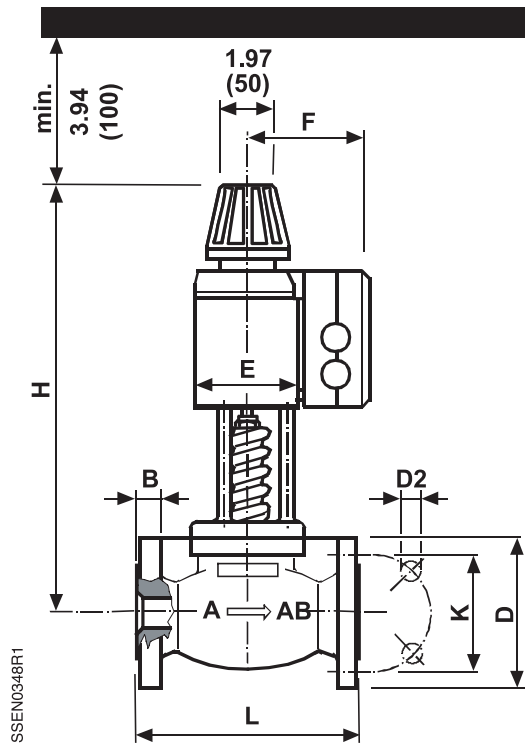
# MVF461H Modulating Control Valve Product Ordering

Valve Size (in)	Cv	Part No.
<b>ISO Flanges Without Adapters</b>		
1/2	0.7	MVF461H15-0.6
1/2	1.8	MVF461H15-1.5
1/2	3.5	MVF461H15-3
3/4	5.9	MVF461H20-5
1	9.4	MVF461H25-8
1-1/4	14.0	MVF461H32-12
1-1/2	23.3	MVF461H40-20
2	35.0	MVF461H50-30
<b>With NPT Adapter Flanges</b>		
1/2	0.7	MVF461H15-0.6-N
1/2	1.8	MVF461H15-1.5-N
1/2	3.5	MVF461H15-3-N
3/4	5.9	MVF461H20-5-N
1	9.4	MVF461H25-8-N
1-1/4	14.0	MVF461H32-12-N
1-1/2	23.3	MVF461H40-20-N
2	35.0	MVF461H50-30-N
<b>With Weld Adapter Flanges</b>		
1/2	0.7	MVF461H15-0.6-W
1/2	1.8	MVF461H15-1.5-W
1/2	3.5	MVF461H15-3-W
3/4	5.9	MVF461H20-5-W
1	9.4	MVF461H25-8-W
1-1/4	14.0	MVF461H32-12-W
1-1/2	23.3	MVF461H40-20-W
2	35.0	MVF461H50-30-W

## Ordering Notes:

- When placing an order, specify the quantity, product number and description.  
**Example: 1 MVF461H15-0.6 valve**
- The valve body and magnetic actuator assemblies cannot be separated.

# Dimensions and Weights



Dimensions shown in inches (mm).

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Valves

Part No.	DN	L	D	D2	B	K	H	E	F	Weight lb. (kg)
MVF461H15-0.6	15	5.12 (130)	3.74 (95)	4 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H15-1.5	15	5.12 (130)	3.74 (95)	4 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H15-3	15	5.12 (130)	3.74 (95)	4 x 0.55 (4x14)	0.55 (14)	2.56 (65)	13.4 (340)	3.15 (80)	4.53 (115)	18.3 (8.3)
MVF461H20-5	20	5.91 (150)	4.13 (105)	4 x 0.55 (4x14)	0.63 (16)	2.95 (75)	13.3 (339)	3.15 (80)	4.53 (115)	19.6 (8.9)
MVF461H25-8	25	6.30 (160)	4.53 (115)	4 x 0.55 (4x14)	0.63 (16)	3.35 (85)	13.6 (346)	3.15 (80)	4.53 (115)	22.1 (10.0)
MVF461H32-12	32	7.09 (180)	5.51 (140)	4 x 0.71 (4x18)	0.71 (18)	3.94 (100)	15.12 (384)	3.94 (100)	4.92 (125)	34.6 (15.7)
MVF461H40-20	40	7.87 (200)	5.91 (150)	4 x 0.71 (4x18)	0.71 (18)	4.33 (110)	15.79 (401)	3.94 (100)	4.92 (125)	39.2 (17.8)
MVF461H50-30	50	9.05 (230)	6.50 (165)	4 x 0.71 (4x18)	0.79 (20)	4.92 (125)	17.58 (449)	4.92 (125)	5.43 (138)	60.0 (27.2)

Table expressed in inches (mm).