

Datasheet

H Series Motorised Valves Rotary-Shoe and Paddle Types

Features



The H Series Motorised Valves, working in conjunction with time controls and thermostats, are used in domestic and commercial central heating, hot water and chilled water systems to control the flow of water in the system.

They are designed and built for long term operation under arduous conditions of high temperatures and rapid pressure fluctuations.

These valves are developed to provide robustness, dependability and operating efficiency. Designed to withstand higher-than-usual test pressures, support bearings at both top and bottom of the shoe and paddle spindles and tough polycarbonate actuator covers are some of the features which ensure this added quality.

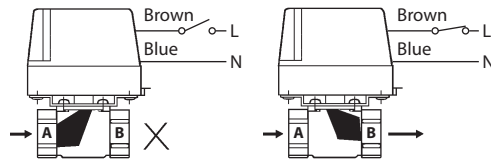
H Series valves are normally purchased as separate valve bodies and actuators, but are available as sets for some of the more popular combinations, see Product Selection Guide for details. Actuators are fitted to the valve bodies on site for convenience of installation and serviceability.

Available as either rotary-shoe or paddle types, H Series valves offer the specifier and installer whatever he decides is appropriate for the job. The range includes 2-port, 3-port diverter or mid-position, metric sizes 15mm, 22mm and 28mm with copper compression fittings and imperial sizes 3/4" and 1" BSP threaded.

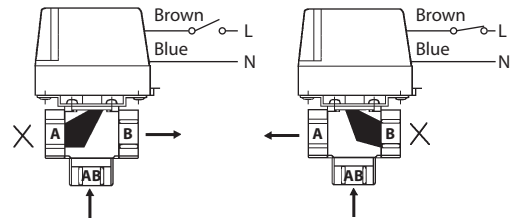
- Suitable for heating and cooling applications
- Proven reliability
- Long working life
- Actuators and valve bodies supplied separately for convenience
- Easy installation and wiring
- Industry-standard fittings and wiring colours
- Robust construction

Datasheet H Series Motorised Valves

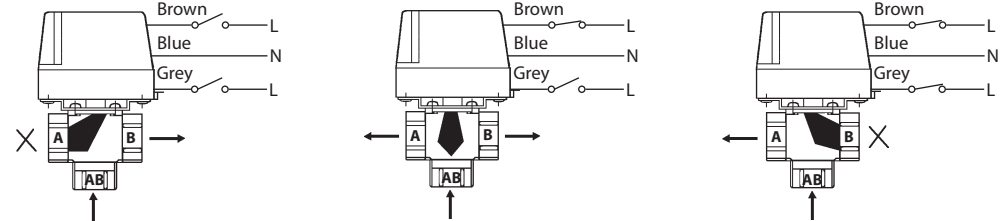
Valve/Actuator Configuration 2-Port Valves



3-Port Diverter Valves



3-Port Mid-Position Valves



Ordering Codes

Valve Bodies Only

| Type | Order Code | Size | Description | Kv (m ³ /hr) | Max. Differential Pressure (Bar) |
|-------------------------------|------------|------|----------------------|-------------------------|----------------------------------|
| Paddle Valves - 2 Port | | | | | |
| HPV22B | 087N662200 | 22mm | External compression | 5.8 | 1.0 |
| HPV28B | 087N662400 | 28mm | External compression | 7.9 | 0.7 |
| Paddle Valves - 3 port | | | | | |
| HSV3B22 | 087N662500 | 22mm | External compression | 6.1 | 1.0 |
| HSV3B28 | 087N663000 | 28mm | External compression | 7.9 | 0.7 |
| Shoe Valves - 2 Port | | | | | |
| HPV15 | 087N659600 | 15mm | Internal compression | 3.3 | 1.0 |
| HPV22 | 087N659700 | 22mm | External compression | 8.2 | 1.0 |
| HPV28 | 087N659800 | 28mm | External compression | 15.0 | 0.7 |
| HPV0.75 | 087N659400 | ¾" | BSP | 8.2 | 1.0 |
| HPV1.0 | 087N659500 | 1" | BSP | 15.0 | 0.7 |
| Shoe Valve - 3 Port | | | | | |
| HSV3 | 087N659900 | 22mm | External compression | 6.8 | 1.0 |

Note: All valve bodies can be used in chilled water applications using 60/40% Glycol/Water mix.

Valve Body and Actuator Complete

| Type | Order Code | Size | Description | Kv (m ³ /hr) | Max. Differential Pressure (Bar) |
|--|------------|------|----------------------|-------------------------|----------------------------------|
| Paddle Valves - 2 Port | | | | | |
| HP22B | 087N664200 | 22mm | External compression | 5.8 | 1.0 |
| HP28B | 087N664400 | 28mm | External compression | 7.9 | 0.7 |
| Paddle Valves - 3 Port - Mid Position | | | | | |
| HS3B | 087N664600 | 22mm | External compression | 6.1 | 1.0 |
| HS3B28 | 087N665100 | 28mm | External compression | 7.9 | 0.7 |
| Shoe Valves - 2 Port | | | | | |
| HP15 | 087N660800 | 15mm | Internal compression | 3.3 | 1.0 |
| HP22 | 087N660900 | 22mm | External compression | 8.2 | 1.0 |
| HP28 | 087N661100 | 28mm | External compression | 15.0 | 0.7 |
| HP0.75 | 087N660200 | ¾" | BSP | 8.2 | 1.0 |
| HP1.0 | 087N660400 | 1" | BSP | 15.0 | 0.7 |
| Shoe Valve - 3 Port | | | | | |
| HS3D | 087N661400 | 22mm | External compression | 6.8 | 1.0 |
| Shoe Valves - 3 Port - Mid Position | | | | | |
| HS3 | 087N661300 | 22mm | External compression | 6.8 | 1.0 |

Actuators Only

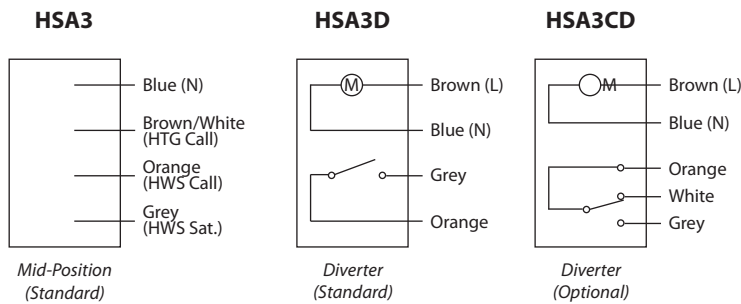
| Type | Order Code | Description | Aux. Sw. Details | Valve Body Compatibility | | |
|--------|------------|-------------------------------------|--------------------|--------------------------|---------------------------|-------------------------------|
| | | | | HPV... 2 port | HSV... 3 port as diverter | HSV... 3 port as mid-position |
| HPA2 | 087N657900 | 2 port, N.C. spring return actuator | SPST | . | | |
| HSA3D | 087N658900 | 3 port, diverter valve actuator | SPST | | . | |
| HSA3CD | 087N658800 | 3 port, diverter valve actuator | SPDT | | . | |
| HSA3 | 087N658700 | 3 port, mid-position valve actuator | SPST (Int. linked) | | | . |

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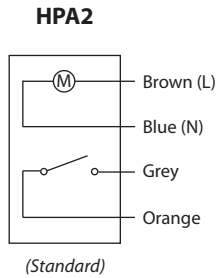
Specifications

| Valve Body Specifications | |
|---|---|
| Body and trims | Hot stamped or die cast brass |
| Top Seal Gasket | THK-Ethylene propylene |
| Spindle O Ring Seals | Flurobon Fluro-elastomer |
| Paddle Material (Paddle type) | Nitrile elastomer |
| Shoe Material (Shoe type) | Carbon filled PTFE |
| Max. Working Pressure (Bar) | 10.0 |
| Max. Operating Temperature (°C) | 95 |
| Maximum bypass/leakage through closed port (shoe valves only) | 15mm (inc. 1/2") & 22mm (inc 3/4") - 1 lt/hr @ 1 Bar Differential Pressure 28mm (inc 1") - 1 lt/hr @ 0.7 Bar Differential Pressure |
| Valve Actuator Specifications | |
| Voltage Rating* | 220/240 Vac, 50/60Hz |
| Maximum Power Consumption | 6 watts |
| Maximum Ambient Temperature | 45°C |
| Opening Time | < 35 seconds |
| Closing Time | < 20 seconds |
| Auxiliary Switch Rating (if fitted) | 3 (1) A, 220/240 Vac, 50/60 Hz |
| Enclosure Rating | IP40 |

Actuator Wiring Detail (Three-Port)



Actuator Wiring Detail (Two-Port)



Sizing

The pressure drop across an H Series valve can be determined from this Kv diagram. The chart, which shows the Kv values of all H Series valves as diagonal lines, can be used to determine pressure drop when the flow rate is known (m³/h). It can also be used to read off pressure drop values when the heating load (kW) is known. A vertical axis, scaled in kW for systems working at temperature differences of either 11°C or 20°C, is included in the chart. Alternatively, pressure drop values can be calculated using the formula:

$$\Delta P = \left(\frac{Q}{K_v} \right)^2$$

Where:

Q = Flow rate (m³/h)

Kv = Co-efficient of Flow (m³/h)

ΔP = Pressure Drop across the valve (bar)

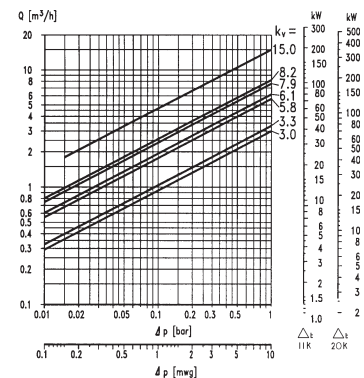
Kv values of each valve type and size are shown in the table opposite.

Examples of chart use:

- To determine the pressure drop across a 22mm. 3-port paddle valve (Kv = 6.1), at a flow rate of 2.0 m³/h, follow the horizontal line from the 2.0 m³/h point on the left-hand vertical axis until it crosses the diagonal 6.1 Kv line.

By following a vertical line downwards from this point, a pressure drop of 0.11 bar can be read off the horizontal axis at the base of the chart.

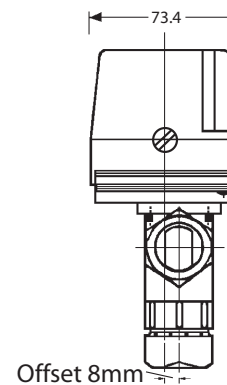
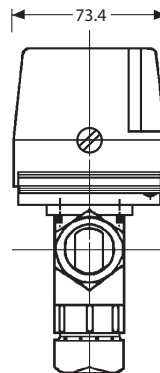
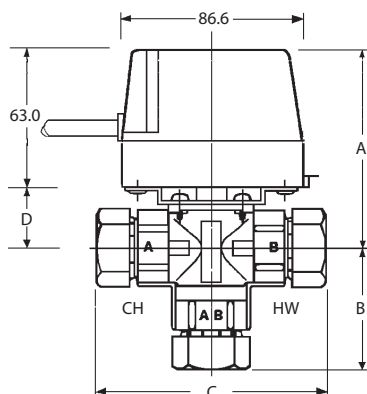
- To determine the pressure drop across a 22mm. 2-port paddle valve (Kv = 5.8), for a 20 kW heating load in a system working at an 11°C temperature difference, follow the horizontal line from the 20 kW point on the appropriate right-hand vertical axis until it crosses the diagonal 5.8 Kv line. By following a vertical line downwards from this point, a pressure drop of 0.072 bar can be read off the horizontal axis at the base of the chart.



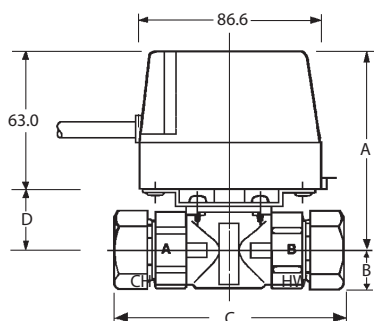
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Dimensions

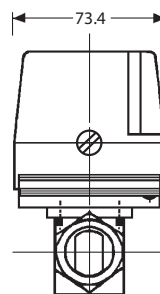
3-PORT



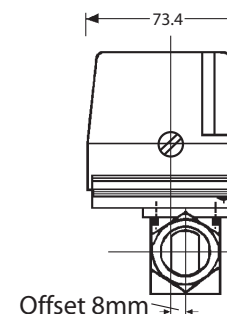
2-PORT



Shoe Valves



Paddle Valves



| Valve Body | Connections | A | B | C | D |
|--|-----------------|------|------|-------|------|
| Paddle Valves | | | | | |
| Two-Port | | | | | |
| HPV22B | 22mm Ext. Comp. | 90.6 | 17.5 | 112.5 | 27.6 |
| HPV28B | 28mm Ext. Comp. | 90.6 | 22.4 | 128.0 | 27.6 |
| Three-Port | | | | | |
| HSV3B22 | 22mm Ext. Comp. | 90.6 | 57.0 | 112.5 | 27.6 |
| HSV3B28 | 28mm Ext. Comp. | 90.6 | 71.5 | 128.0 | 27.6 |
| Shoe Valves | | | | | |
| Two-Port | | | | | |
| HPV15 | 15mm Int. Comp. | 87.1 | 13.8 | 83.5 | 24.1 |
| HPV22 | 22mm Ext. Comp. | 90.4 | 17.5 | 110.0 | 27.4 |
| HPV28 | 28mm Ext. Comp. | 93.6 | 24.3 | 108.0 | 30.6 |
| HPV0.75 | 3/4" BSP | 90.5 | 17.0 | 77.5 | 27.5 |
| HPV1.0 | 1" BSP | 93.6 | 20.6 | 87.3 | 30.6 |
| Three-Port | | | | | |
| HSV3 | 28mm Ext. Comp. | 90.7 | 56.0 | 110.0 | 27.7 |
| All dimensions are shown in millimetres. | | | | | |
| Valve bodies and actuators may be purchased separately for ease of installation and serviceability, or in convenient sets. Actuators are fitted to valve bodies on site. | | | | | |

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