



CONTROL VALVES

PRESSURE REGULATING BALL VALVES VRN SERIES

3

CONTROL VALVES

DESCRIPTION

The Honeywell VRN Series pressure-regulated control valves reduce overall installation labor by integrating flow control and temperature control functions into a single valve assembly and then automatically controlling the flow in each hydronic system circuit to maintain temperature when piping pressures fluctuate. The valves feature an integrated pressure control cartridge that delivers flow balancing and control functions in one package. Calculating Cv is not required, simply match the circuit flow rate with the valve capacity to determine the correct model number. VRN valves are threaded, sizes 1/2" to 3" FNPT, and use standard Honeywell 44 in-lb fail-safe and non-fail safe direct-coupled actuators.

FEATURES

- Sizes from 1/2 to 3 in. with internal (female) NPT connections
- Controls hot or chilled water with up to 50% glycol
- Regulated flow rates available from 1 to 95 gpm
- Differential pressure regulator for constant pressure drop across valve seat
- Positive pressure, rolling diaphragm regulator design for flow control accuracy of ±5%

- Equal percentage flow characteristic using patented flow control ball insert
- Multiple maximum flow rates available per valve size
- Patented ball seals for low operating torque
- Nickel-chrome plated brass or stainless steel trim
- Choice of factory-installed actuation using Honeywell N05/S05-series direct coupled actuators: Floating, Modulating (2-10 V), Spring Return Modulating/ Floating

- Spring return actuators field-configurable for normally open or normally closed fail-safe position
- Removable, manual operating handle to control valve during installation or in an event of power failure
- Upstream Test Port for venting or pressure gauge attachment
- Three actuator orientations on the valve for cramped spaces
- Integral snubber eliminates affect of system pressure fluctuations and entrapped air while improving flow performance

NEW!



VRN2AF3D2D

Honeywell



APPLICATION

The VRN2 two-way dynamic pressure-regulating control valves maintain constant flow of hot or chilled water with glycol solutions up to 50% in closed-loop heating, ventilating, and air conditioning (HVAC Division 23) systems regardless of head pressure fluctuations above the minimum specified pressure drop. These valve assemblies can be used with Honeywell non-spring return or spring return direct coupled actuators (DCA) with minimum torque of 35 lb-in (4 Nm) on valve sizes up to 3 inches (DN80). The built-in differential pressure regulator makes fluid flow through the valve independent of changes in supply pressure, eliminating "hunting" by the control system, even at low coil flow. The pressure regulator virtually eliminates cavitation in the valve, and decouples the control valve from the effects of piping components such as reducers and elbows. Pressure independent control valves are sized to match design coil flow regardless of coil size. VRN2 valves eliminate the need to balance the system for proper flow, and allow chillers to be operated at design temperature differential for maximum efficiency at every load condition. When used in a system with variable speed pump drives, 3-way valves and coil bypass lines are not required. In new construction, VRN2 valves perform better than reverse return piping designs without the extra materials these systems need. Pressure-independent control requires less flow, enabling use of smaller piping, pumps, and chillers.

SPECIFICATIONS

Valve Type	Dynamic Pressure Regulated Control Valve	Stem Seals	EPDM O-ring and Teflon™ bearings
Body Style	Two-way ball valve, straight-through flow, full port with patented flow control insert	Ball Seals	Reinforced Teflon™ seals, with EPDM O-rings
Pipe Size	1/2" to 3" with female NPT pipe fittings	Regulator	Hydrogenated acrylonitrile-butadiene rubber rolling diaphragm in stainless steel housing
Body Pressure Rating (maximum)	360 psi (2500 kPa) at 250°F (121°C)	Compatible Actuators	
Controlled Medium	Water or Glycol solutions up to 50%; not suitable for combustible gases, oil or steam	Non-Spring Return	ML6161, ML7161, MN6105*, MN7505*
Medium Temperature Range	-22° to 250°F (-30° to 121°C)	Spring Return	MS6105, MS7505*, MS8105; MS6103, MS7503, MS8103 only at 1/2" or 3/4" (DN15 ~ DN 20)
Maximum Differential Pressure	1 gpm (1/2" valve) to 95 gpm (3" valve)	Minimum Torque Required	35 lb-in (4 Nm) up to 3" (≤DN80) 18 lb-in (2 Nm) up to 3/4" (and 1" up to 9 gpm)
Close-off pressure	100 psid	Warranty	1 year on valves, 5 years on actuators
Flow Characteristics	Equal percentage with flow control insert		
Body	Forged brass (ASTM B283)		
Flow Optimizer	Laser-milled, glass-reinforced Noryl®		
Trim (ball and stem)	Nickel-chrome plated brass, or stainless steel		
			* These actuators available factory-installed.

NEW!

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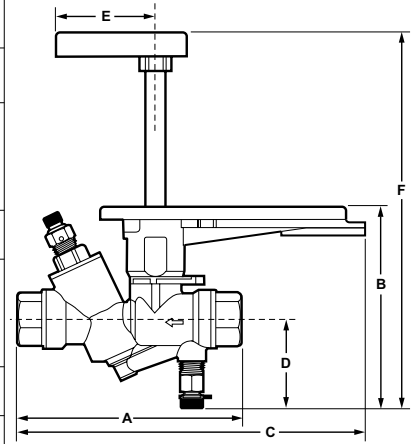


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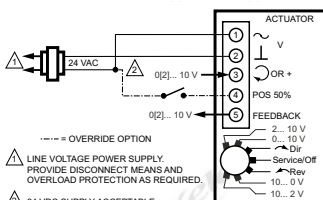
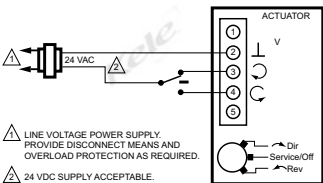
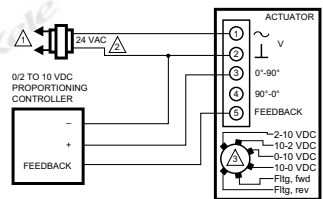
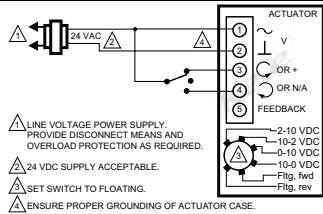
CONTROL VALVES

DIMENSIONS

Model	Size	A	B	C	D	E	F	Weight
VRN2A	1/2" (DN15)	5.7" (14.5 cm)	4.3" (10.9 cm)	8.6" (21.8 cm)	1.0" (2.6 cm)	2.5" (6.4 cm)	8.4" (21.3 cm)	0.9 lb (0.4 Kg)
VRN2B	3/4" (DN20)	5.7" (14.5 cm)	4.3" (10.9 cm)	8.6" (21.8 cm)	1.0" (2.6 cm)	2.5" (6.4 cm)	8.4" (21.3 cm)	0.9 lb (0.4 Kg)
VRN2C	1" (DN25)	5.9" (15.0 cm) or 9" (22.9 cm)	4.3" (10.9 cm) or 4.6" (11.7 cm)	8.7" (22.1 cm) or 10.9" (27.7 cm)	1.0" (2.6 cm) or 1.6" (4.1 cm)	2.5" (6.4 cm)	8.4" (21.3 cm) or 9.4" (23.9 cm)	0.9 lb (0.4 Kg) or 1.5 lb (0.7 Kg)
VRN2D	1-1/4" (DN32)	8.4" (21.3 cm)	4.6" (11.7 cm)	10.6" (26.9 cm)	1.6" (4.1 cm)	2.5" (6.4 cm)	9.4" (23.9 cm)	1.5 lb (0.7 Kg)
VRN2E	1-1/2" (DN40)	8.2" (20.8 cm) or 10.0" (25.4 cm)	4.6" (11.7 cm) or 5.2" (13.2 cm)	10.5" (26.7 cm) or 12.1" (30.7 cm)	1.6" (4.1 cm) or 2.1" (5.3 cm)	2.5" (6.4 cm)	9.4" (23.9 cm) or 10.4" (26.4 cm)	1.5 lb (0.7 Kg) or 3.6 lb (1.6 Kg)
VRN2F	2" (DN50)	9.9" (25.1 cm)	5.2" (13.2 cm)	12.0" (30.5 cm)	2.1" (5.3 cm)	2.5" (6.4 cm)	10.4" (26.4 cm)	3.6 lb (1.6 Kg)
VRN2G	2-1/2" (DN65)	10.3" (26.3 cm)	5.2" (13.2 cm)	12.2" (31.0 cm)	2.1" (5.3 cm)	2.5" (6.4 cm)	10.4" (26.4 cm)	3.6 lb (1.6 Kg)
VRN2H	3" (DN80)	10.8" (27.4 cm)	5.2" (13.2 cm)	12.4" (31.4 cm)	2.1" (5.3 cm)	2.5" (6.4 cm)	10.4" (26.4 cm)	3.6 lb (1.6 Kg)



WIRING



ORDERING INFORMATION

MODEL	DESCRIPTION
VRN	FNPT valve body (1/2" to 3" only)
SIZE	DESCRIPTION
2A	1/2" (DN15) FNPT
2B	3/4" (DN20) FNPT
2C	1" (DN25) FNPT
2D	1-1/4" (DN32) FNPT
2E	1-1/2" (DN40) FNPT
2F	2" (DN50) FNPT

FLOW RATE (COMPATIBLE VALVE SIZE)

B	1 gpm (1/2", 3/4", 1" only)
D	2 gpm (1/2", 3/4", 1" only)
E	3 gpm (1/2", 3/4", 1" only)
F	4 gpm (1/2", 3/4", 1" only)
G	5 gpm (1/2", 3/4", 1" only)
H	6 gpm (1/2", 3/4", 1" only)
J	7 gpm (1/2", 3/4", 1" only)
K	8 gpm (3/4", 1" only)
L	9 gpm (3/4", 1" only)
M	10 gpm (3/4", 1", 1-1/4", 1-1/2" only)
N	15 gpm (1", 1-1/4", 1-1/2" only)
P	20 gpm (1", 1-1/4", 1-1/2" only)
Q	25 gpm (1-1/4", 1-1/2", 2", 2-1/2", 3" only)
R	30 gpm (1-1/4", 1-1/2", 2", 2-1/2", 3" only)
S	35 gpm (1-1/4", 1-1/2", 2", 2-1/2", 3" only)
T	40 gpm (1-1/2", 2", 2-1/2", 3" only)
U	45 gpm (1-1/2", 2", 2-1/2", 3" only)
1	50 gpm (1-1/2", 2", 2-1/2", 3" only)
2	55 gpm (2", 2-1/2", 3" only)
3	60 gpm (2", 2-1/2", 3" only)
4	65 gpm (2", 2-1/2", 3" only)
5	70 gpm (2", 2-1/2", 3" only)
6	75 gpm (2", 2-1/2", 3" only)
v	Adjustable, low minimum DP
w	Adjustable, high minimum DP

PRESSURE RATING

3 360 psig body rating (NPT only)

VALVE TRIM

D Brass trim (NPT only)
S Stainless trim

ACTUATOR SELECTION

2 NEMA 2 actuator (NPT only)
F No actuator (NPT only)

ACTUATOR CONTROL SIGNAL

A Floating control, non-spring return
B Proportional control, non-spring return
D Proportional control, spring return/failsafe
X No actuator (NPT only)

1" and 1-1/2" valve bodies are available in standard or "large body" for additional flow capacity

Example: VRN2AF3D2 1/2", 4 gpm, NPT, brass trim, NEMA 2 proportional SR actuator