AV-8020 Series Floating Control Actuated Valve

The AV-8020 is an electric actuator/brass valve combination that furnishes floating control of water flow in Heating, Ventilating, and Air Conditioning (HVAC) applications for zone control.

The AV-8020 consists of a motor-driven, force-sensor-limited electric actuator, factory coupled to a forged brass flare valve. The non-spring return actuator features a 22 lb seating force in a compact, easy to install package. It provides floating control from a 24 VAC signal.

The valve features 1/2 in. flare connections and is available as a two-way Push-Down-To-Close (PDTC) or a three-way mixing configuration.



Figure 1: AV-8020-1001 Floating Control Actuated Valve

Features and Benefits	
❑ **Simplified Setup and Adjustment Procedures**	Reduces installation costs
❑ **1/2 in. O.D. SAE 45° Flare Connections**	Installs with copper tubing (no solder); makes removal easy for maintenance
❑ **Every Valve Tested for Tight Initial and Long-Term Shutoff**	Ensures occupant comfort and energy conservation
❑ **Compact Assembly Size**	Fits most unit vent or baseboard applications
❑ **Slotted Stem Valve**	Provides ease of attachment
❑ **Two- and Three-Way Valves**	Suitable for modulating or mixing applications

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Operation

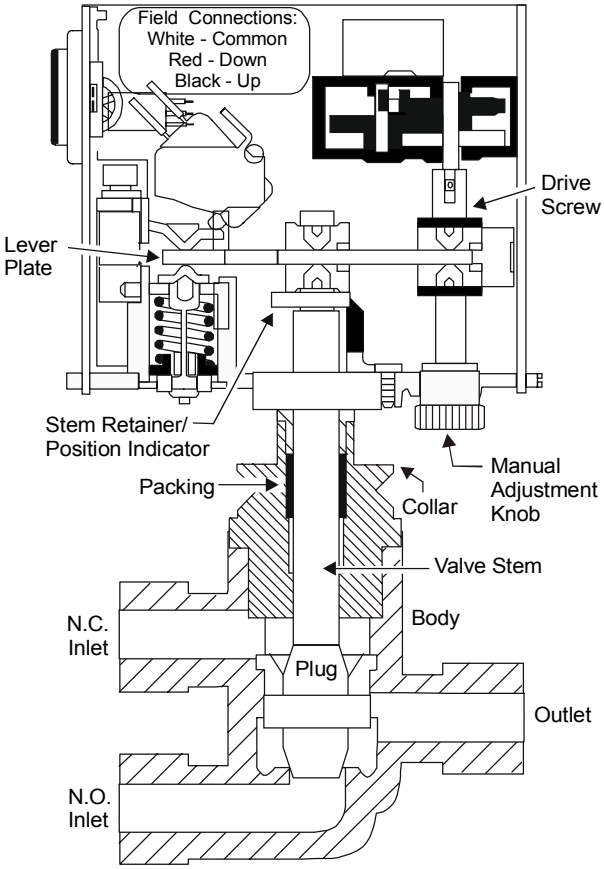
The AV-8020 actuated valve operates on a 24 VAC signal from a compatible controller. The controller sends 24 VAC to either the up (valve stem extended) or the down (valve stem retracted) wire on the AV-8020. This signal drives the actuator motor causing the valve stem to move in the desired direction for the application.

The actuator uses a reversible synchronous motor to accurately position the valve. The motor can reliably generate 22 pounds of shutoff force in either the Drive Down or Drive Up direction.

Once the valve closes, a shutoff force builds up. A lever within the actuator operates a force sensor that stops the motor when the force reaches 22 pounds. The constant load at the end of travel ensures tight valve seat shutoff and compensates for seat wear.

Field calibration of shutoff is not required. The actuator maintains the shutoff force and its last position even if power is removed.

Note: The valve stem can be positioned manually by turning the manual adjustment knob shown in Figure 2. Rotating the knob counterclockwise moves the valve stem up.



Note: The N.C. inlet is not present on a two-way valve.

Figure 2: AV-8020 Components

Dimensions

See Figures 3 and 4 for AV-8020 dimensions.

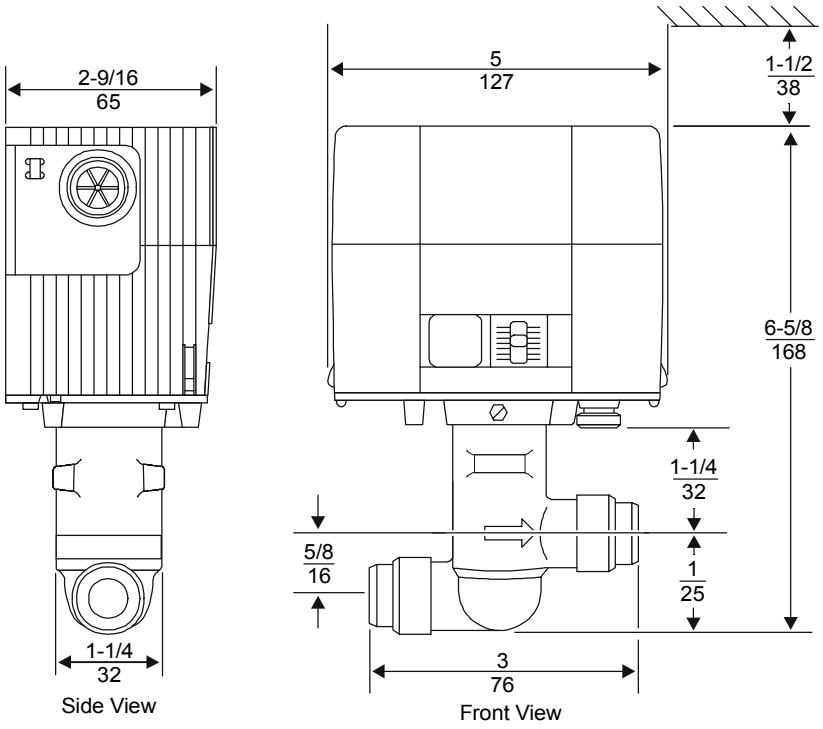


Figure 3: AV-8020 Two-Way PDTC Valve Dimensions, in. (mm)

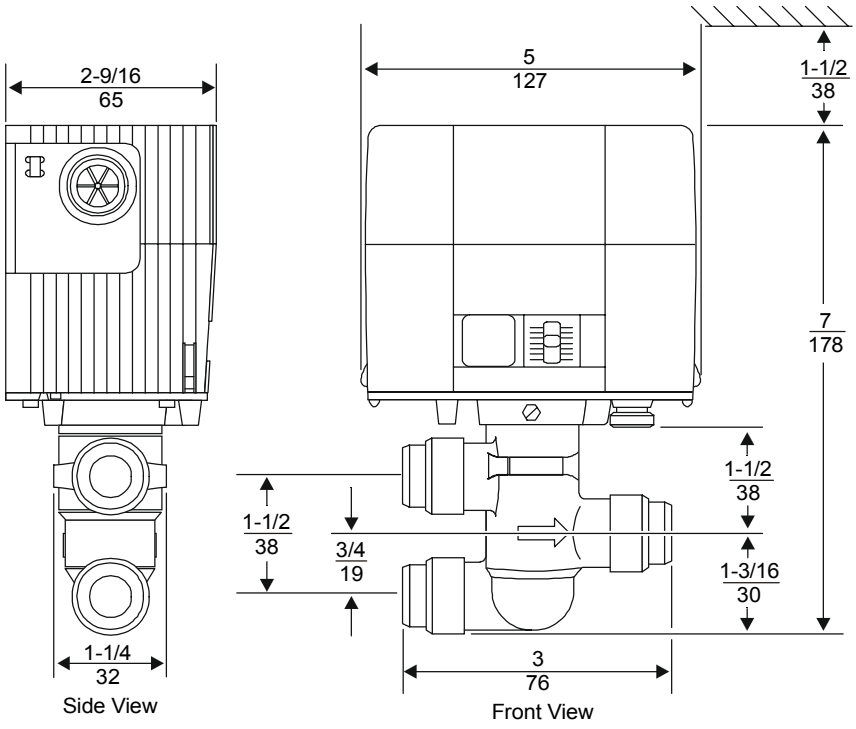


Figure 4: AV-8020 Three-Way Mixing Valve Dimensions, in. (mm)

*M*ounting, Wiring, and Commissioning

CAUTION:	**Equipment Damage Hazard.** Disconnect all power supplies before wiring connections are made or prior to performing maintenance. Check all wiring connections before applying power to the system. Short-circuited or improperly connected wires will result in permanent damage to the equipment.

IMPORTANT:	Make all wiring connections in accordance with the National Electrical Code and local regulations.

Input lines to the actuator must be wired correctly for the valve to move in the proper direction. Refer to the specific controller wiring instructions. Refer to the *VA-8020 Floating Valve Actuator Product/Technical Bulletin (FAN 977 or 1628.3)* for actuator mounting, wiring, and commissioning instructions.

*R*epair and Replacement

Field repairs must not be made, except for replacement of the valve packing and the actuator. Contact the nearest Johnson Controls representative, and specify V-520-650 for the valve packing or VA-8020-1 for the actuator.

Ordering Information

To order an AV-8020 actuated valve assembly, contact the nearest Johnson Controls representative.

Specify the product code number from Table 1. Refer to Table 2 for accessories available.

Table 1: Actuated Valve Assembly Models and Replacement Valves

Actuated Valve Product Code Number	Maximum Cv (Kv) Rating	Maximum Closeoff Pressure psig (kPa)	Replacement Valve Product Code Number	Valve Style
AV-8020-1001	0.5 (0.4)	232 (1598)	VB-5239-1730	Two-Way PDTC
AV-8020-1002	1.2 (1.0)	100 (689)	VB-5239-1750	
AV-8020-1003	2.4 (2.1)	100 (689)	VB-5239-1770	
AV-8020-1004	0.5 (0.4)	232 (1598)	VB-5839-1730	Three-Way Mixing
AV-8020-1005	1.2 (1.0)	100 (689)	VB-5839-1750	
AV-8020-1006	2.4 (2.1)	100 (689)	VB-5839-1770	

Table 2: Actuator Accessories

Product Code Number	Description
VA-8020-601	Replacement cover only
VA-8020-605*	Stem retainer and clip kit
V-520-650	Valve packing

* One kit is included with the VA-8020 actuator. If ordered separately, it must be ordered in multiples of five.

Notes

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Specifications

Product	AV-8020 Series Floating Control Actuated Valve
Power Requirements	20 to 30 VAC at 50/60 Hz, 3.4 VA supply minimum, Class 2
Input Signal	20 to 30 VAC, 50/60 Hz
Input Impedance	250 ohms, nominal
Shutoff Force	22 lb (98 N) minimum
Shutoff Pressure	See Table 1.
Valve Body Connections	1/2 in. (15 mm) external SAE flared-end
Valve Stroke and Time	5/16 in. (8 mm) in approximately 90 seconds
Valve Body Rating	232 psig (1598 kPa)
Valve Cv Factor	See Table 1.
Valve Flow Characteristic	Two-way, equal percentage Three-way, linear
Ambient Operating Conditions	35 to 150°F (2 to 65°C); 85°F (30°C) maximum dew point at 90% RH, non-condensing
Ambient Storage Conditions	-40 to 150°F (-40 to 65°C); 85°F (30°C) maximum dew point at 90% RH, non-condensing
Media Temperature	Water: 195°F (90°C) maximum
Valve Materials	Body: Forged brass Plug: Brass Stem: 316 stainless steel Packing: Synthetic elastomeric ring pack
Dimensions (H x W x D)	See Figures 3 and 4.
Shipping Weight	2.6 lb (1.2 kg)
Agency Compliance	VA-8020: UL 873 Recognized, File E27734, Guide XAPX2 (Suitable for plenum use) CSA C22.2 No. 139 Certified, File LR85083, Class 3221 02

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

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