

MVN 3Nm (27 lb-in.) Control Ball Valve Actuator

INSTALLATION INSTRUCTIONS



INSTALLATION

When installing this product...

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check ratings given in instructions and on the product to ensure the product is suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

Preparation



CAUTION

Equipment Damage Hazard

Foreign particles like dirt and metal chips can damage the ball seals.

For trouble-free operation of the product, good installation practice must include initial system flushing, and chemical water treatment. Clean the lines upstream of particles larger than 1/16 inch diameter (welding slag, pipe scale, sand and other suspended particulate). Use of a 50 micron (or finer)

system side stream filter is suggested. Remove all filters before flushing.

Do not use boiler additives, solder flux and wetted materials which are petroleum based or contain mineral oil, hydrocarbons, or ethylene glycol acetate. Compounds which can be used, with minimum 50% water dilution, are diethylene glycol, ethylene glycol, and propylene glycol (antifreeze solutions).

If installing these valves in an addition to, or retrofitting an existing building, do not assume that the fluid in the existing piping meets these criteria.

IMPORTANT:

Hold valve with pipe wrench by hexagonal fitting ONLY. Do NOT handle the valve body with the pipe wrench; product damage may result.

1. Clean the lines upstream of particles larger than 1/16 in. diameter (welding slag, pipe scale and other contaminants).
2. Proceed with installation once the system specifics (expansion/contraction of the system and its medium as well as operating pressures) are within tolerances.
3. Eliminate air from system.
4. Two-way valves are marked to show flow direction.

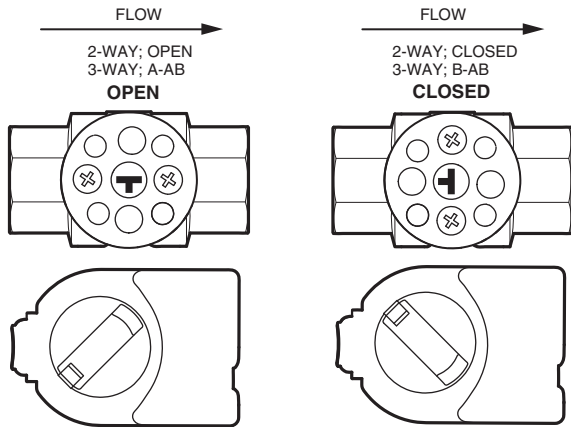
IMPORTANT

Flow arrows must point in the direction of the flow for proper operation.

5. Stem rotation:
 - a. For two-way valves:
 - (1) Clockwise to close.
 - (2) Counterclockwise to open.
 - b. For three-way valves:
 - (1) Clockwise to increase B to AB flow.
 - (2) Counter clockwise to increase A to AB flow.

NOTE: After valves have been installed in the piping, the installer can determine the ball orientation within the valve from the notches in the top of the valve stem. For two-way valves, the lengthwise direction of the notch indicates the flow through the ball (i.e. when the notch is parallel to the axis of the valve between A and B ports, the ball will allow flow through the valve). For three-way valves, the flow can be determined by the orientation of the "T" shaped notch in the valve stem, as shown in Fig. 1.





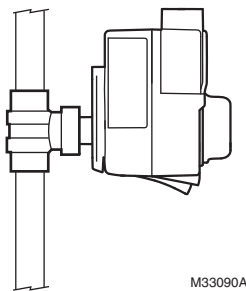
NOTES: **FOR 2-WAY VALVES** TO MOUNT ACTUATOR ON OPEN VALVE, TURN ACTUATOR FULLY COUNTER CLOCKWISE AS SHOWN. FOR 2-WAY VALVES TO MOUNT ACTUATOR ON CLOSED VALVE, TURN ACTUATOR FULLY CLOCKWISE AS SHOWN.

FOR 3-WAY VALVES TO MOUNT ACTUATOR ON A-AB VALVE, TURN ACTUATOR FULLY COUNTER CLOCKWISE AS SHOWN. FOR 3-WAY VALVES TO MOUNT ACTUATOR ON B-AB VALVE, TURN ACTUATOR FULLY CLOCKWISE AS SHOWN.

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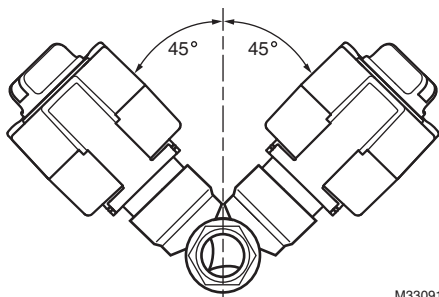
Fig. 1. Orientation of ball in valve.

6. Valve must be mounted with the actuator/bracket above the valve body. Do not install the valve with the stem below horizontal or upside down. (See Fig. 2 and 3.)



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Fig. 2. Vertical valve installation



M33091

Fig. 3. Acceptable valve angle from vertical

Mechanical Installation

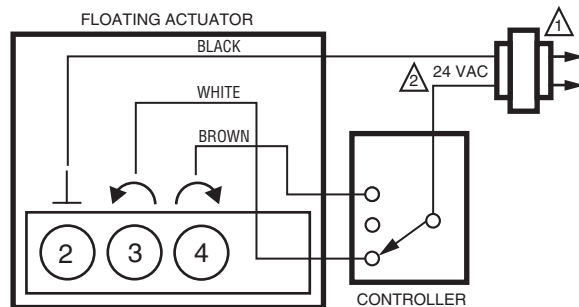
The valves are tapped in NPT and should be sealed with an approved pipe sealant. Torque should not exceed 75 lb-ft.

See Fig. 9 for valve dimensions. Refer to actuator literature for actuator dimensions.

Electrical Installation

1. If necessary, remove actuator wiring cover.
2. Wire actuator using Figures 4 through 7 for the application required.
3. Replace cover.

Wiring (Valves with Non-Spring Return Actuators)

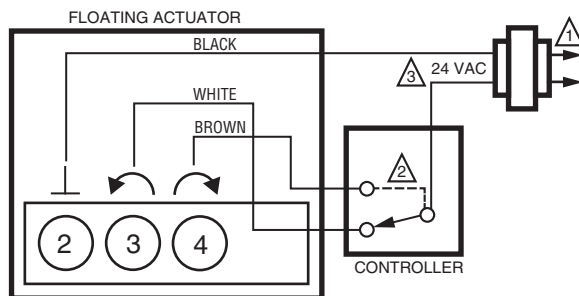


⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚠ 24 VDC SUPPLY ACCEPTABLE FOR MVN643.

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Fig. 4. MVN613 or MVN643 with Floating Control



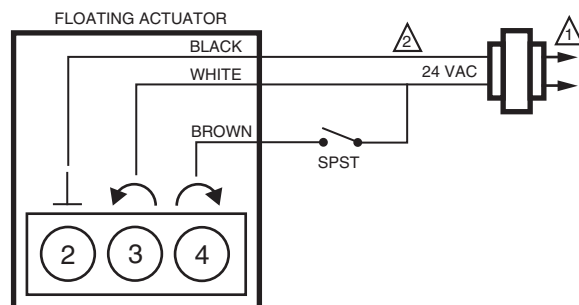
⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚠ CONNECTION REQUIRED FOR SPDT CONTROL.

⚠ 24 VDC SUPPLY ACCEPTABLE FOR MVN643.

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Fig. 5. MVN613 or MVN643 with 2-Position Control



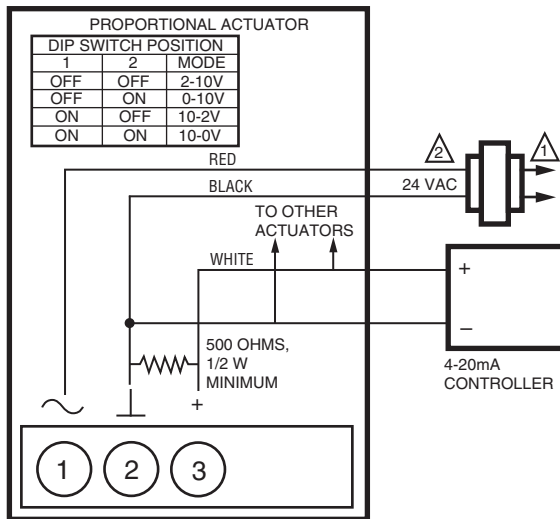
⚠ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚠ 24 VDC SUPPLY ACCEPTABLE.

M33557A

Fig. 6. MVN643 with Two Position SPST Control

PROPORTIONAL/MODULATING: 4-20mA CONTROLLER OUTPUT WITH 500Ω SERIES RESISTOR



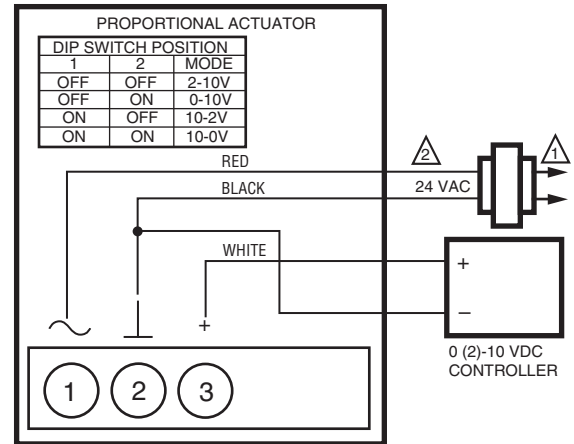
⚠️ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚠️ 24 VDC SUPPLY ACCEPTABLE.

M33141A

Fig. 7. MVN713 with 4-20mA Control

PROPORTIONAL/MODULATING: 0(2)...10 VDC OR 10...0(2) VDC CONTROLLER OUTPUT



⚠️ POWER SUPPLY. PROVIDE DISCONNECT MEANS AND OVERLOAD PROTECTION AS REQUIRED.

⚠️ 24 VDC SUPPLY ACCEPTABLE.

M33140A

Fig. 8. MVN713 with 0 (2)-10 VDC Control

OPERATION AND CHECKOUT

Once both the mechanical and electrical installations are complete:

1. Cycle the actuator to verify that the direction of rotation suits the control sequence.
2. If the rotation direction is incorrect:
 - a. For floating control actuators: Reverse two control signal wires (CW/CCW).
 - b. For modulating control actuators, reposition reverse/direct acting switch 1.

For detailed actuator information, see Honeywell literature:

- 63-2713EFS MVN 3Nm (27 lb-in.) Control Ball Valve Actuator Product Data
- 63-4378EFS MVN 3Nm (27 lb-in.) Control Ball Valve Actuator Specification Data

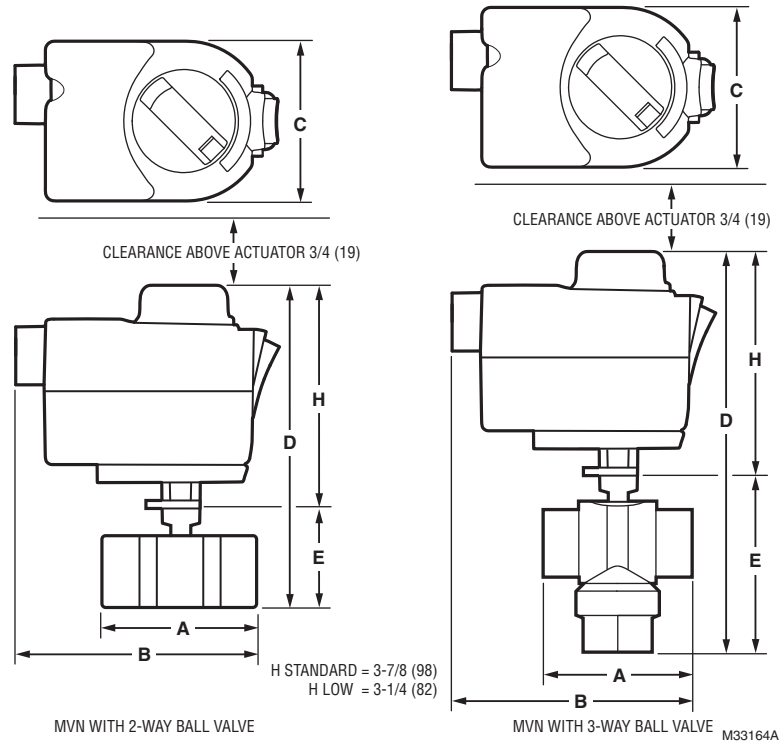


Fig. 9. MVN with 2-way and 3-way ball valve dimensions in inches (millimeters). See also charts below.

Table 1. MVN With 2-way Ball Valve

| Pipe Size | | | Cv Designators | MVN WITH 2-WAY BALL VALVE Dimensions in in. (mm) | | | | | Weight (valve only) | | Weight (valve + actuator) | | Replacement Stem Assembly | | |
|-----------|------|----------|----------------|-----------------------------------------------------|-----------------|-----------------|-----------------|------------------|---------------------|-----|---------------------------|-----|---------------------------|----------------------------|----------------------------|
| In. | (DN) | Code | | A | B | C | D (w/std) | D (w/low) | E | lb | (kg) | lb | | (kg) | |
| 1/2 | 15 | VBN2A... | B,D,E,F,G,H,K* | 2-3/8 (60) | 4-1/8 (104) | 2-13/16 (71) | 5-7/16 (139) | 4-13/16 (123) | 1-5/8 (41) | 0.5 | 0.2 | 1.1 | 0.5 | 5112-19 5112-22 (SS) | |
| | | | J | | | | 5-5/8 (143) | 5 (127) | 1-13/16 (45) | | | | | | |
| 3/4 | 20 | VBN2B... | B,D,E,G,H,J,L* | 2-5/8 (67) | 5-9/16 (141) | | 5-7/16 (139) | 4-13/16 (123) | 1-5/8 (41) | 0.7 | 0.3 | 1.3 | 0.6 | | 5112-20 5112-23 (SS) |
| | | | K,M* | | | | | | 5-5/8 (143) | | | | | | |
| 1 | 25 | VBN2C... | J | 2-3/4 (70) | 4-5/16 (109) | | 6 (153) | 5-3/8 (137) | 2-3/16 (55) | 1.0 | 0.5 | 1.6 | 0.7 | 5112-20 5112-23 (SS) | |
| | | | H,L,P* | 3-1/16 (77) | 4-7/16 (113) | | 6-3/16 (158) | 5-9/16 (142) | 2-3/8 (60) | 2.1 | 1.0 | 2.7 | 1.2 | | |
| | | | M,N* | 4-5/16 (109) | 5-1/8 (129) | | 6 (152) | 5-3/8 (136) | 2-1/8 (54) | 1.0 | 0.5 | 1.6 | 0.7 | | |
| 1-1/4 | 32 | VBN2D... | H,J,K,L,N* | 3 (76) | 4-3/8 (112) | | 6-3/8 (162) | 5-3/4 (146) | 2-9/16 (64) | 2.1 | 1.0 | 2.7 | 1.2 | | |
| | | | M,S* | 3-5/8 (92) | 4-3/4 (120) | | | | | | | | | | |

*Indicates full port valve: no flow characterizing insert.

** Replacement stems available in brass or stainless steel--use accordingly to valve part number.

Table 2. MVN With 3-way Ball Valve

| Pipe Size | | | Cv Designators | MVN WITH 3-WAY BALL VALVE Dimensions in in. (mm) | | | | | Weight (valve only) | | Weight (valve + actuator) | | Replacement Stem Assembly | |
|-----------|------|----------|----------------|-----------------------------------------------------|------------------|-----------------|------------------|-----------------|---------------------|-----|---------------------------|-----|---------------------------|---------|
| In. | (DN) | Code | | A | B | C | D (w/std) | D (w/low) | E | lb | (kg) | lb | | (kg) |
| 1/2 | 15 | VBN3A... | B,C,D,E,F,H,J | 3-1/2 (89) | 4-5/8 (118) | 2-13/16 (71) | 6-11/16 (170) | 6-1/16 (154) | 2-7/8 (72) | 1.1 | 0.5 | 1.7 | 0.8 | 5112-19 |
| 3/4 | 20 | VBN3B... | C,D,E,F,G,K* | 2-13/16 (71) | 4-5/16 (110) | | 6-1/8 (156) | 5-1/2 (140) | 2-5/16 (58) | | | | | |
| 1 | 25 | VBN3C... | C,D,E,F,G | 3-13/16 (97) | 4-13/16 (122) | | 6-13/16 (173) | 6-3/16 (157) | 3 (75) | | | | | |
| | | | J,L | 3 (76) | 4-7/16 (112) | | 7-1/8 (181) | 6-1/2 (165) | 3-5/16 (83) | 3.1 | 1.4 | 3.7 | 1.7 | |
| | | | H,K,M | 4-5/16 (114) | 5-1/16 (129) | | 7-1/8 (181) | 6-1/2 (165) | 3-5/16 (83) | 2.8 | 1.3 | 3.4 | 1.5 | |
| 1-1/4 | 32 | VBN3D... | H,J,L* | 3 (76) | 4-7/16 (112) | | 7-5/8 (194) | 7 (178) | 3-13/16 (96) | 3 | 1.4 | 3.6 | 1.6 | |
| | | | K,M,N* | 3-5/8 (91) | 4-3/4 (120) | | | | | | | | | |

*Indicates full A-port: no flow characterizing insert.

Table 3. Two-Way C_V Values.

| C _V Designator | | | | | | | | | | | | | |
|---------------------------|------|------|-----|-----|-----|-----|-----|-------------------|-------------------|-----------------|-----------------|-----------------|------------------|
| Valve Size | B | D | E | F | G | H | J | K | L | M | N | P | S |
| 1/2" | 0.38 | 0.68 | 1.3 | 2.0 | 2.6 | 4.7 | 8.0 | 11.7 ^a | | | | | |
| 3/4" | 0.31 | 0.63 | 1.2 | | 2.5 | 4.3 | 7.4 | 10.1 | 14.7 ^a | 29 ^a | | | |
| 1" | | | | | | 4.4 | 9.0 | | 15.3 | 26 | 44 ^a | 54 ^a | |
| 1-1/4" | | | | | | 4.4 | 8.3 | 14.9 | 25 | 37 | 41 ^a | | 102 ^a |

^a Denotes full port valve (with no insert). Provides linear flow control.

Table 4. Three-Way C_V Values.

| C _V Designator | | | | | | | | | | | | | |
|---------------------------|------|------|------|-----|-----|-----|-----|-----|-------------------|-----------------|----|---|-----------------|
| Valve Size | B | C | D | E | F | G | H | J | K | L | M | N | |
| 1/2" | 0.33 | 0.59 | | 1.0 | 2.4 | | 4.3 | 8.0 | | | | | |
| 3/4" | | 0.40 | 0.66 | 1.3 | 2.4 | 3.8 | | 7.0 | 11.0 ^a | | | | |
| 1" | | 0.40 | 0.65 | 1.3 | 2.3 | 3.5 | 4.5 | 8.6 | 14.9 | 22 | 31 | | |
| 1-1/4" | | | | | | | 4.1 | 8.7 | 12.7 | 19 ^a | 27 | | 34 ^a |

^a Denotes full port valve (with no insert). Provides linear flow control.

NOTE: When valves are mounted between pipe reducers, there is a decrease in actual valve capacity because the reducers create additional pressure losses in the system. This is especially true for ball valves because of their high capacity.

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Automation and Control Solutions

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