

VB2x0R and VB3x0R Series Ball Valves with MB6 Series Two-Position Actuators

Installation

Inspection

Inspect the package for damage. If package is damaged, notify the appropriate carrier immediately. If undamaged, open the package and inspect the device for obvious damage. Return damaged products.



Requirements

Tools (not provided)

- Wrench 1 to 1-5/8" (25 to 40 mm)
- Pipe wrench according to pipe size
- Volt-ohm multimeter

Training — Installer must be a qualified, experienced technician.

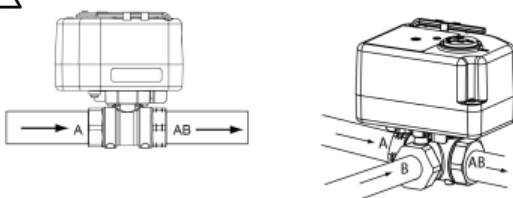
Other accessories as appropriate.

	<p>Warning Electrical shock hazard! Disconnect power before installation to prevent electrical shock or equipment damage.</p> <p>Make all connections in accordance with the electrical wiring diagram and in accordance with national and local electrical codes.</p> <p>Use copper conductors only.</p> <p>All conductors shall be provided with insulation rated for the highest voltage motor and end switch circuits.</p>
	<p>Caution Avoid locations where excessive moisture, corrosive fumes, explosive vapours, or vibration are present.</p> <p>Avoid electrical noise interference. Do not install near large conductors, electrical machinery, or welding equipment.</p> <p>When making lead connections within the actuator, use caution not to put leads or connectors below the motor.</p>

Piping

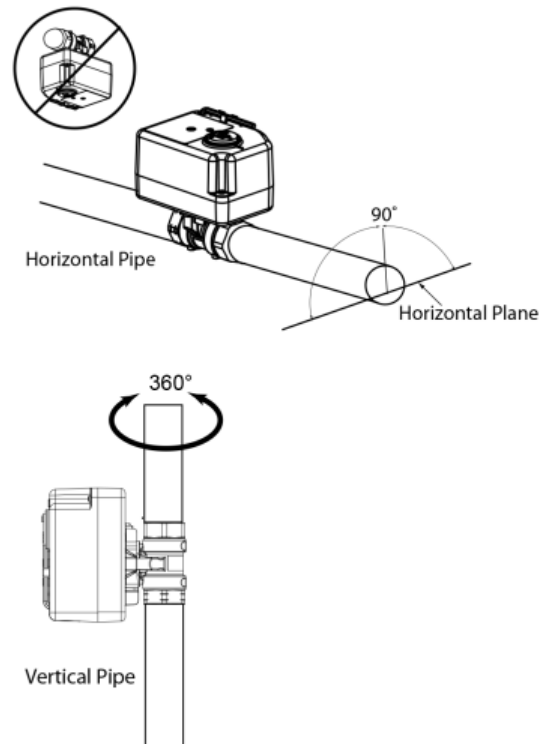
These valves must be piped according to the water flow directions as below and marked on the valve. Two-Way valve flow should go A to AB. Three-Way valves should only be applied as mixing valves (see diagram).

Caution The use in systems which have substantial make-up water (open systems) is not recommended. Follow proper water treatment practices and system procedures.



Mounting

The valves can be mounted in horizontal or vertical piping. When installed in horizontal piping, the actuator must be above the valve body. It can be tilted left or right but it must not be tilted below 90° from vertical.



Installation Notes

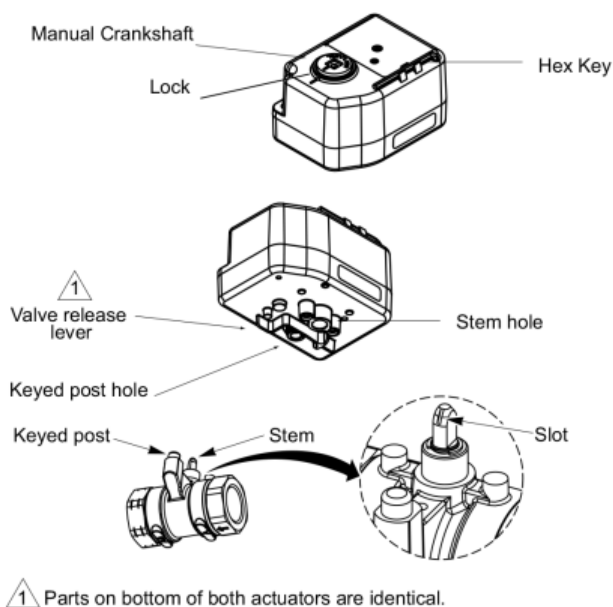
- Ensure there is no overhead water source that may drip onto valve actuator.
- In normal service, some condensation may occur on or around the valve. A drip pan may be necessary or the valve body may be insulated.
- Do not cover the actuator or obstruct the manual operator lever.
- Reference product label and Product Datasheet EN-03-000237-xx-EN for additional product specifications.

Agency Listings

European Community: EMC Directive (2004/108/EC).
Low Voltage Directive (72/23/EEC).

Installing the Valve Body

Apply PTFE tape to the male pipe thread. Hand screw the pipe into the valve, turning it as far as it will go. Use a wrench to fully tighten the valve to the pipe. Do not over tighten or strip the threads.



Checkout

1. Make sure the valve stem rotates freely before and after installing the actuator.
2. If the stem does not operate freely it may indicate that the stem was damaged and may require that the valve be replaced.
3. After the piping is under pressure, check the valve body and the connections for leaks.
4. After the valve and actuator are installed, power the actuator and check the operation by varying the control signal. On spring return models, the valve should return to its normal position when power is removed.

Theory of Operation

When powered, the actuator moves to the desired position, tensing the spring return system. When power is removed the actuator returns to the normal position.

Caution



Do not use the manual operator while power is applied to the actuator. Manual positioning of the actuator while power is applied is **NOT** recommended.

Installing the Actuator on the Valve Body

1. Turn the valve stem so that the slot on the top of the stem is pointing towards the large keyed post. (See image above)
2. Insert the hex key into the slot on the top of the actuator. Rotate eight full revolutions. In the last turn, align the indicator notch to the opening in the manual crankshaft. Press the lock button around manual crankshaft to lock in place. Remove and replace hex key in cover slot.
3. Align the valve body with the actuator to ensure the stem lines up with the large stem hole and the large keyed post lines up with the post hole on the bottom of the actuator.
4. Press the valve and actuator firmly together to lock into place.
5. The first time the valve is operated electrically, the manual crankshaft of the actuator will move to the automatic position. The manual crankshaft can be used to allow flushing of the system after installation.

Manual override lever is designed to manually position the actuator to install on the valve or to manually position the valve. Turning the hex key in the manual crankshaft while power is applied or in the opposite direction as shown on the label will cause permanent damage. Use only the hex key provided with a maximum torque of 1.3 Nm (10 in/lb).

Removing the Actuator

1. Press and hold the valve release lever inward, towards the valve.
2. Lift the actuator from the valve.

Caution: Do not use the valve body to manually open the actuator as damage to the valve actuator will result.

Power/Failure Action

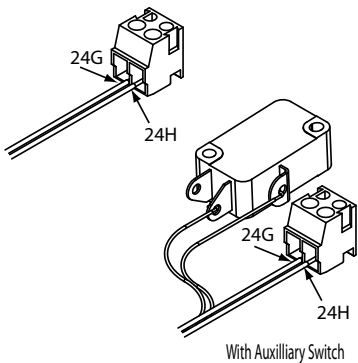
	Control Signal	Spring Return Open Actuator	Spring Return Closed Actuator
2-Position	Power On	A to AB Closed	A to AB Open
	Power Off	A to AB Open	A to AB Closed

Wiring

Make all connections according to job wiring diagrams and in compliance with local and national electrical codes. Refer to diagrams below for typical wiring.

Notice

- Multiple actuators may be connected to a single controller. Do not exceed the maximum current draw of the controller.
- Use of a properly sized, inherently limited, Class 2 transformer is recommended (for 24VAC Wiring).
- Use only 12 to 22 AWG copper wire for all connectors.



*Terminal block inserts onto PCB only one way

** Warning: DC Input polarities must be as shown in above chart.

24V Wiring (VB2xOR)			
Terminal Marking	AC Input 50/60Hz	DC Input 50/60Hz	Lead Colors
1	2	24v	+
2	1	24v	-
SPST Aux Switch			Orange
			Yellow

Universal Wiring (VB3xOR)		
Terminal Marking	AC Input 100 thru 277 50/60Hz	Lead Colors
1	N/HOT (US220vac)	+
2	HOT/HOT (US220vac)	-
Ground lead	GND	Green/Yellow
SPST Aux Switch		Orange
		Yellow

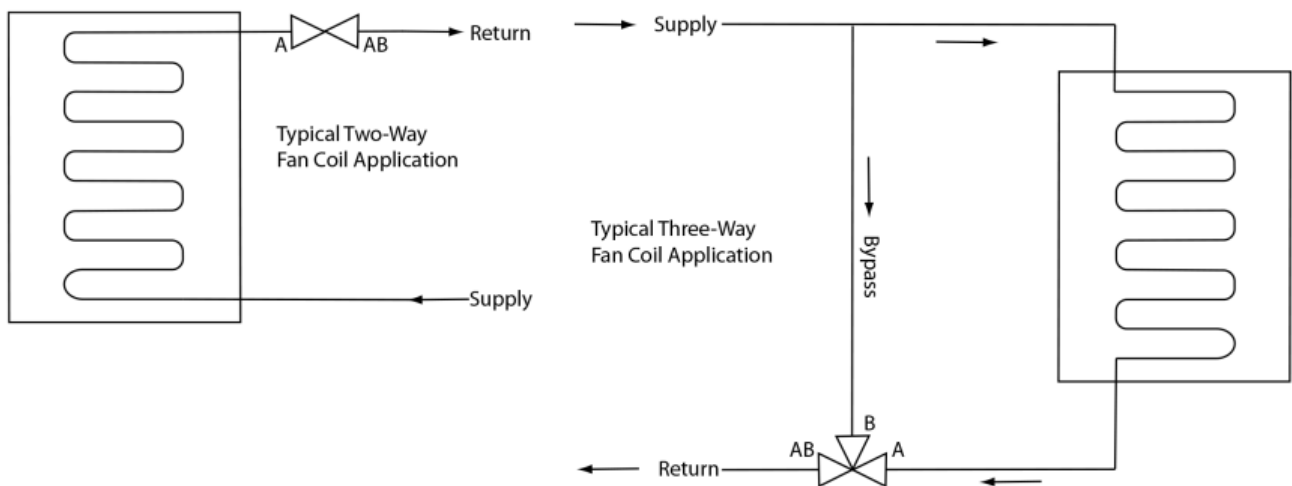
Maintenance

The ball valve assembly itself requires no maintenance. The stem and packing design eliminates the need for packing adjustment for the life of the valve. However, regular maintenance of the total heating and cooling system is recommended to ensure sustained optimum performance.

Field Repair

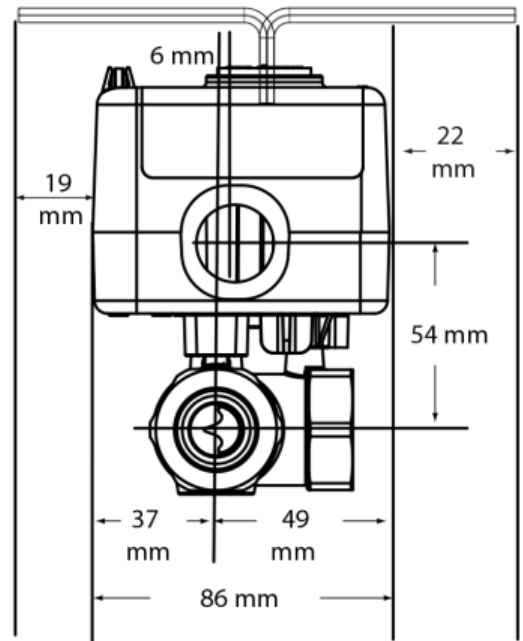
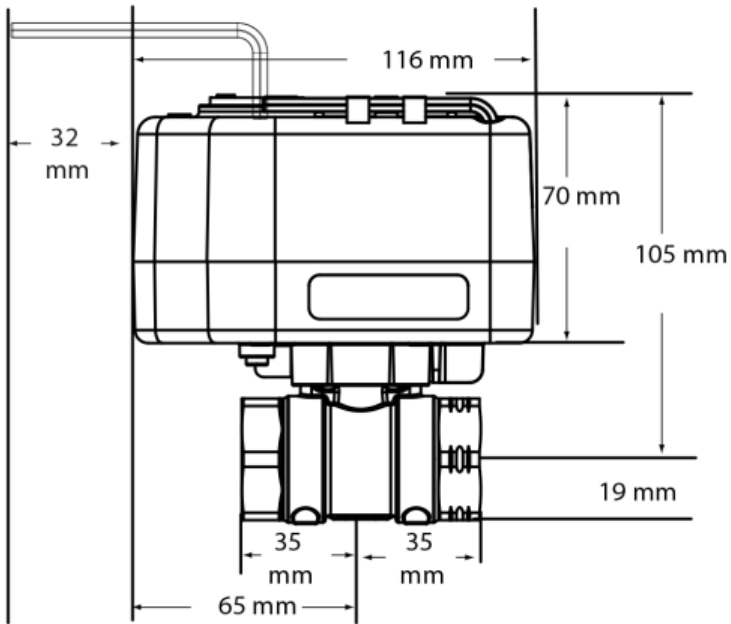
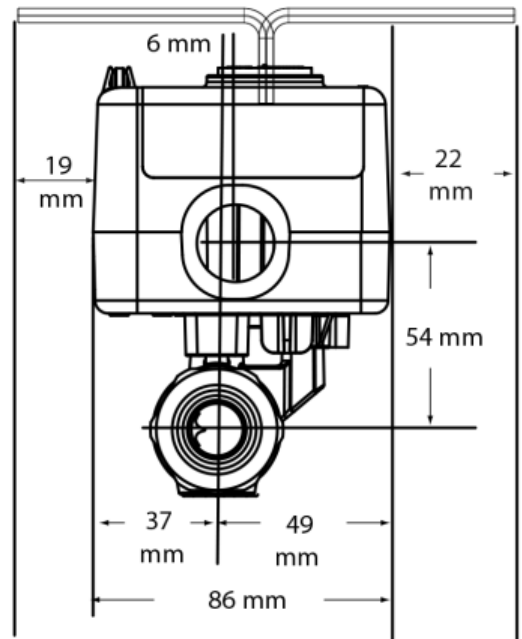
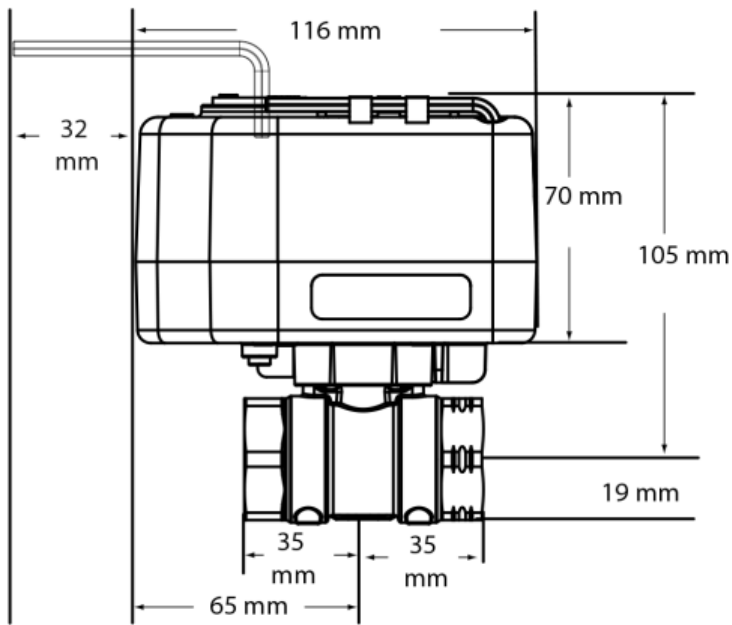
Neither valve nor actuator are field repairable. Replace entire unit as necessary.

Application Drawing



Note: Typical applications. For simplicity, balancing valves and control devices not shown.

Dimensions



An additional 25 mm is required to remove the actuator from the valve.