

Invensys®

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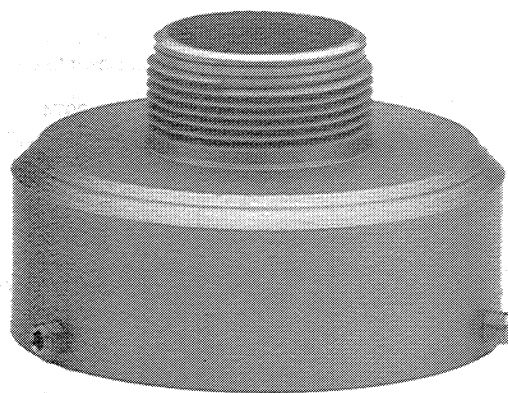
Valve Linkage General Instructions

Application

For mounting MF-631X3 floating actuators on 1/2" through 2" Johnson Controls VB-3754, VB-3924, and VB-4324 valves.

Features

- Provides direct couple interface between MF-631X3 actuator and 1/2" through 2" Johnson Controls VB-3754, VB-3924, and VB-4324 valves



Applicable Literature

- MF-631X3 Series Floating Valve Actuator General Instructions F-24732
- VB-9000 Series Valve Selection Guide F-24823
- Invensys Building Systems Cross-Reference Guide F-23638
- Invensys Building Systems Reference Manual F-21683
- Invensys Building Systems Application Manual F-21335
- Invensys Building Systems Catalog F-16650

SPECIFICATIONS

Temperature Restrictions

Table-1 Restrictions on Maximum Ambient Temperature °F (°C) for Valve Assemblies.

Johnson Controls Valve Body	Maximum Allowable Ambient Maximum Allowable Fluid
VB-3754	125 (52) 281 (140)
VB-3974	
VB-4324	

Close-Off Rating

Table-2 Close-Off Rating Selection.

2-Way Valves			
Johnson Controls Valve Body	P Code	Size	MF-631X3 Close-Off Pressure Ratings PSIG
VB-3754 (Push Down to Close) VB-3974 (Push Down to Open)	-1	1/2"	150
	-2		
	-3		
	-4	3/4"	95
	-5	1"	
	-6	1-1/2"	
	-7	2"	55
3-Way Valves			
Johnson Controls Valve Body	P Code	Size	Close-Off Pressure Ratings
VB-4324 (3-Way Mixing)	-1	1/2"	150
	-2		
	-3		
	-4	3/4"	95
	-5	1"	
	-6	1-1/2"	
	-7	2"	55

NOTE

Consult valve body manufacturer's literature for all performance specifications, including temperature and pressure ratings, and installation limitations.

INSTALLATION

Inspection

Inspect the package for damage. If 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):
Appropriate wrenches for stem extensions, locknuts, packing nuts and bracket nuts
Appropriate screwdriver for actuator cover screw
- Training: Installer must be a qualified, experienced technician.

▼ WARNING

Disconnect power supply before installation to prevent electrical shock and equipment damage.



▼ CAUTION

- Avoid locations where excessive moisture, corrosive fumes, or vibration are present.
 - The actuators can be mounted in any position above the centerline of the valve body. For steam applications only, mount the actuator above the valve body at 45° from vertical. When selecting a location, allow sufficient room for accessories and for service of the product.
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Mounting

Allow 3" (76 mm) above the actuator valve assembly for removal and reattachment of actuator to installed valve.

1. Check that all VB-3754 or VB-3974 two-way valves are installed so that they close off against the flow. An arrow on the valve body or tag indicates proper flow direction.
2. Check that VB-4324 three-way mixing valves are installed with two inlets and one outlet.
3. Valve actuators are to be mounted in any upright position above the centerline of the valve body. For steam applications only, position the valve body so the valve stem and actuator are at least 45° from vertical.

ASSEMBLY INSTRUCTIONS

1. Fully extend the valve stem, screw both 1/4" locknuts (see Figure-1, furnished with the MF-631X3 actuator) onto the valve stem, and finger tighten to the bottom of the stem threads.
2. Screw the AV-673 valve linkage into the actuator mounting bracket and hand tighten (see Figure-1).
3. Manually move the output shaft so that the bottom of indicator disc is just above the last extend hash mark on the indicator scale [approximately 1/8" (3 mm) from extend stop - see blowup in Figure-1]. Make adjustment by pressing the override button and turning manual adjustment wheel.
4. Push the valve stem all the way down, seating the valve. Set the actuator on the valve, engaging the stem into the output shaft. Screw the stem into the output shaft by turning the actuator and pushing actuator toward valve until the stem locknuts touch the end of the output shaft. Be careful to keep valve seated while turning the actuator.
5. When the valve stem is fully engaged, move the actuator output shaft manually so that the indicator disc is about 1/8" (3 mm) below the 1/2 stroke indicator line to allow access to the valve stem locknuts.
6. Lock the valve stem to the actuator output shaft by tightening the upper stem locknut (use a 5/16" open-end wrench), then the lower stem locknut.
7. Align the actuator to the position required for field wiring. Push the actuator down and then tighten the three (3) set screws of the AV-673 valve linkage with a 3/32" allen wrench.
8. Press the actuator manual override button and turn the manual adjustment wheel to lower the valve stem down until the valve seats. The space between the indicator disc and extend stop rib must be between 1/8" (3 mm) and 1/16" (2 mm). If the space is less 1/16" (2 mm):
 - a. Raise the valve stem using the actuator manual override to at least 1/4" (6 mm).
 - b. Unscrew the valve stem 1/16" (2 mm) from the actuator output shaft by turning the upper stem locknut from top of the assembly with a 5/16" open-end wrench.
 - c. Unlock the two stem locknuts from each other with two (2) 5/16" open-end wrenches and lock them to the actuator output shaft by tightening the upper stem locknut against the shaft and then tighten the lower stem locknut against the upper stem locknut. Recheck space and correct further if necessary.
9. On MF-631X3 actuator models with potentiometers, remove the cover and reposition the potentiometer by sliding the pot board up until it stops. It will automatically adjust on the first full extend stroke. (**Refer to MF-631X3 Series Floating Valve Actuator, F-24732 for more information.**)
10. The valve is now slightly closed. Adjust manually to the desired system start up position.

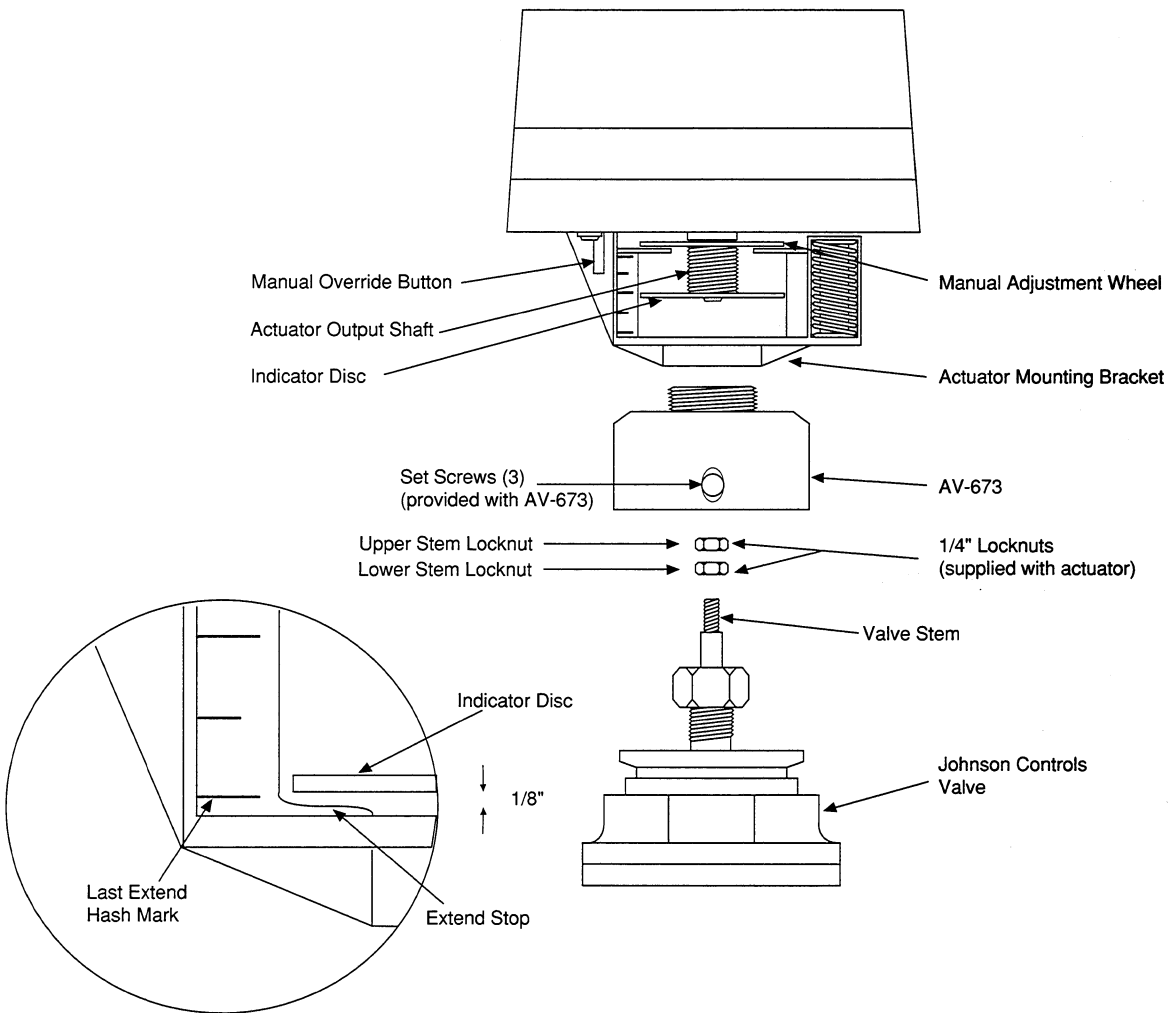


Figure-1 Exploded Assembly View of MF-631X3 Actuator to Johnson Controls Valve.

DISASSEMBLY INSTRUCTIONS



Actuator Removal from 1/2" to 2" Johnson Controls Valve Bodies

▼ **WARNING**

Disconnect power supply before installation to prevent electrical shock and equipment damage.

After electrical disconnection:

1. Loosen the stem locknuts from the actuator output shaft by turning the upper stem locknut with a 5/16" open-end wrench.
2. Loosen the three (3) set screws on the AV-673 so that they are out from the AV-673 valve linkage about 1/4".
3. Remove the valve stem from the actuator output shaft by turning the complete actuator or by turning the upper stem locknut with a 5/16" open-end wrench.
4. Lift the MF-631X3 actuator from the Johnson Controls valve and unscrew the AV-673 valve linkage from the actuator mounting bracket.