

VF Series Butterfly Valves 2 through 20 in., Two-Way and Three-Way

Installation Instructions

Code No. LIT-977205X

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Application Requirements

Note: Read the following application requirements carefully before proceeding to the installation steps pertaining to a particular valve configuration.

- Ensure that the pipeline and flange faces are clean. Pipe scale, metal chips, welding slag, and welding rods can obstruct disc movement and damage the disc and seat.
- The resilient seat of the valve is equipped with molded-in O-rings on the face of the seat; therefore, no gaskets are required.
- Handle the valves by the extended valve neck only. Heavier valves may require a nylon sling to be used as a hoist around the valve neck and/or cast iron tee (on three-way assemblies). Never pick up a valve by the actuator, mounting bracket, or interconnecting linkage.
- Most VF Series Valve Assemblies are shipped with the disc in the near-closed position (approximately 10° open). Do not remove the strapping until the valve is completely installed between the pipe flanges.
- Valves equipped with a V-919X Series Rack and Pinion Spring Return Actuator require a regulated pneumatic air supply to position the disc to 10° open prior to and during installation. If no air supply is available during installation, the V-919X Series Actuator must be removed to allow for manual positioning of the disc to the proper position.

Installation

Installing Two-Way Butterfly Valves

Follow these steps to install a two-way butterfly valve:

1. Align the piping and spread the flanges apart enough to allow the valve body to be located between the flanges without actually contacting the flange surfaces (see Figure 2).
2. Remove the protective cardboard shields from the valve faces.
3. See Figure 6 and Figure 7 for proper valve stem/disc orientation.

4. Place the valve between the flanges, and center the valve.
5. Install all of the flange bolts or cap screws and hand tighten them (see Table 1).
6. Slowly open the disc to the fully open position, making sure that the Outside Diameter (O.D.) of the disc does not contact the Inside Diameter (I.D.) of the adjacent pipe.
7. Remove the flange spreaders and tighten the flange bolts or cap screws according to the sequence in Figure 1.
8. Stroke the valve fully closed and fully open while checking for proper disc clearance and proper pipe alignment (see Figure 3).
9. If the valve is equipped with a pneumatic piston type actuator, remove the strapping from the actuator. Move the disc to its normal position and connect the actuator clevis to the appropriate hole in the crankarm using the clevis pin provided (see Figure 4). If two actuators are provided, perform the above procedure on each actuator.

Installing Three-Way Butterfly Valves

Follow these steps to install a three-way butterfly valve:

1. Align the piping and spread the flanges apart enough to allow the valve bodies and tee to be located between the flanges without actually contacting the flange surfaces (see Figure 2).
2. Remove the protective cardboard shields from the valve faces.
3. Place the valve and tee between the flanges, and center the assembly.
4. Place the appropriate gasket between the bare end of the tee and the adjacent flange. Install the flange bolts to the bare end of the tee and hand tighten them. Check the alignment again to insure proper centering of the assembly between the adjacent pipe flanges.
5. Slowly open the disc of the valve on the **run** side of the tee (see Figure 5), making sure that the disc does not contact the I.D. of the adjacent pipe.

6. Remove the flange spreaders on the **run** side of the tee and hand tighten the flange bolts or cap screws (see Table 1).
7. Repeat Step 5 and Step 6 on the **branch** side of the tee.
8. If the valve is equipped with a pneumatic piston type actuator, remove the strapping from the actuator. Position the disc of the **run** valve to its normal position and connect the actuator clevis to the appropriate hole in the crankarm using the clevis pin provided (see Figure 4). If two actuators are provided, perform the above procedure on each actuator.
9. Position the disc of the **branch** valve to its normal position. See Figure 5 for the proper orientation of the crankarm for the **branch** valve.
10. Unstrap the interconnecting linkage rod and secure the loose end of the rod to the appropriate crankarm.
11. Slowly stroke the fully linked three-way assembly two complete cycles while checking for proper disc clearance and pipe alignment (see Figure 3). Tighten all flange bolts and cap screws securely according to the sequence in Figure 1.

Table 1: Required Fasteners for Valve Sizes

Regular Hex Head Screws with National Course Threads	Valve Size (in.)												
	2	2-1/2	3	4	5	6	8	10	12	14	16	18	20
Diameter	5/8	5/8	5/8	5/8	3/4	3/4	3/4	7/8	7/8	1	1	1-1/8	1-1/8
Length	1-1/2	1-1/2	1-3/4	1-3/4	1-3/4	2	2-1/4	2-1/4	2-1/2	2-3/4	3-1/4	3-1/2	4
Number Required	4	4	4	8	8	8	8	12	12	12	16	16	20
Heavy Hex Bolts and Nuts	Diameter			5/8	3/4	3/4	3/4	7/8	7/8	None Required			
	Length			5	5	5	6	6	6-1/2				
	Number Required			4	4	4	4	8	8				

Mounting

Use the figures in this section, along with the installation instructions, to guide your installation of the two-way and three-way butterfly valves.

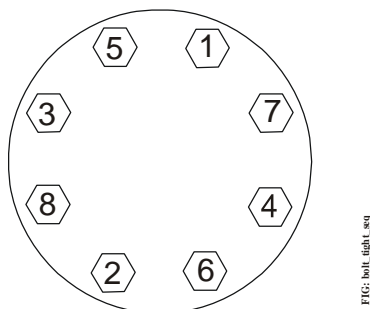


Figure 1: Bolt Tightening Sequence

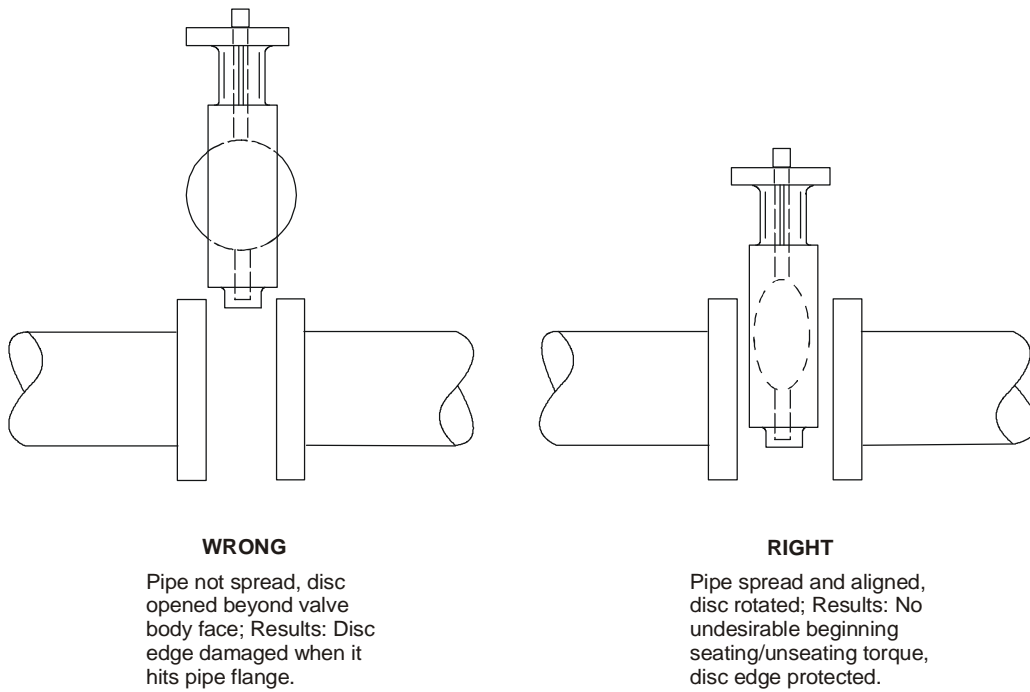


Figure 2: Flange and Disc Position

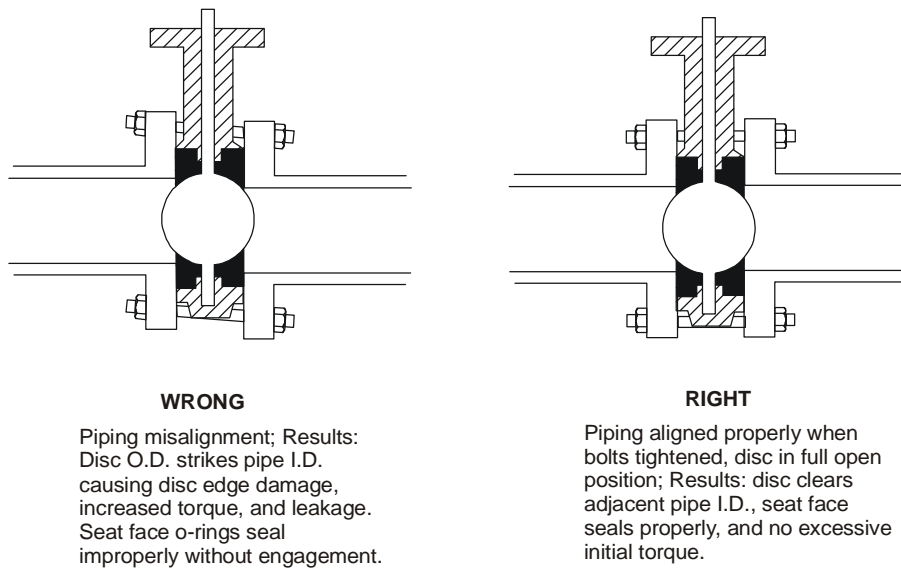


Figure 3: Pipe Alignment and Disc Orientation

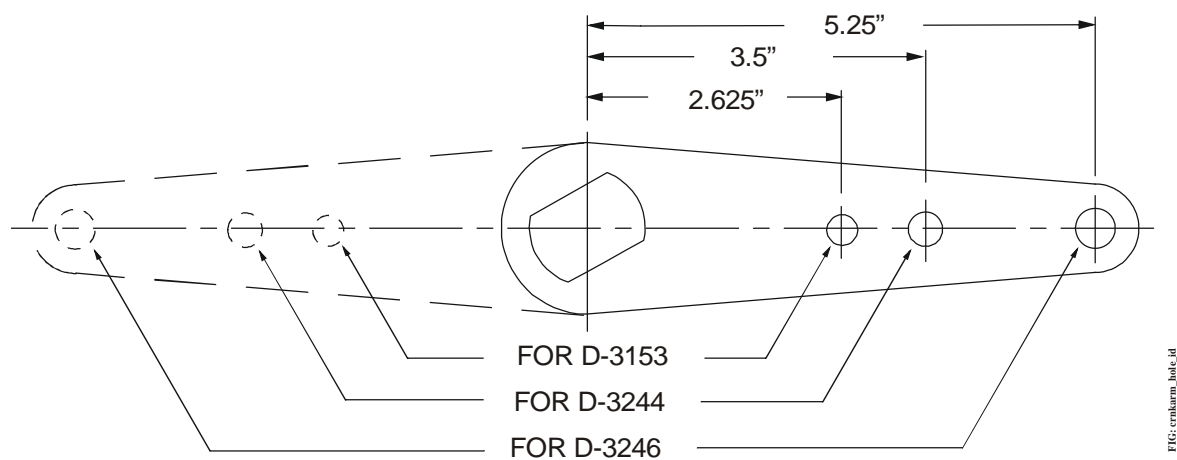


Figure 4: Crankarm Hole Identification

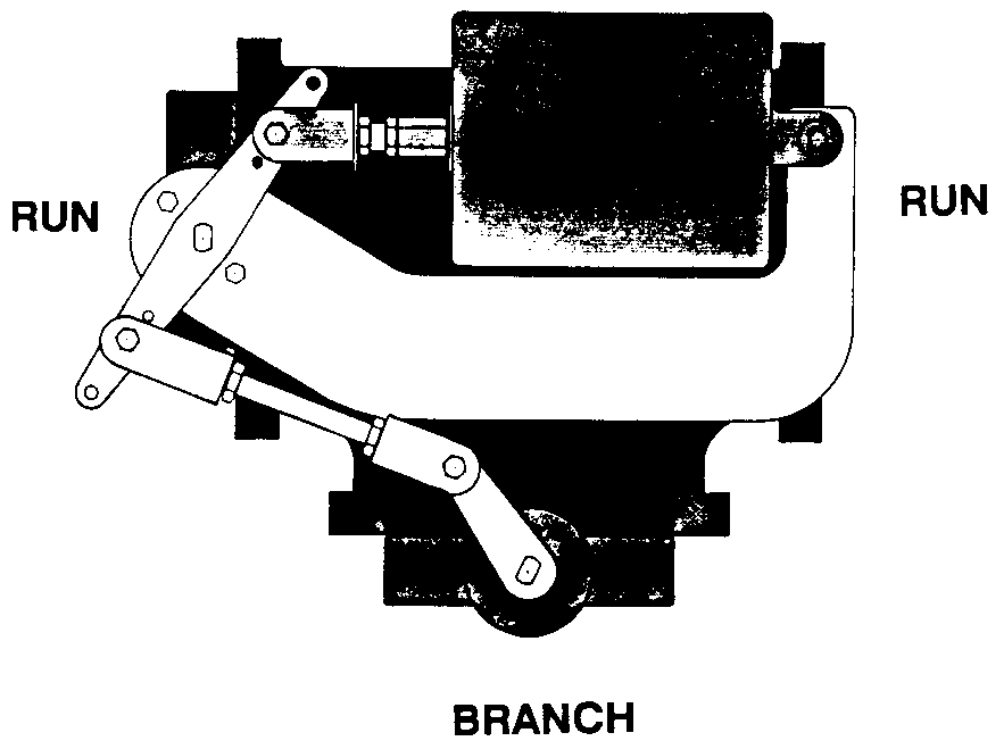
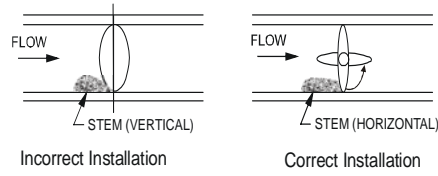
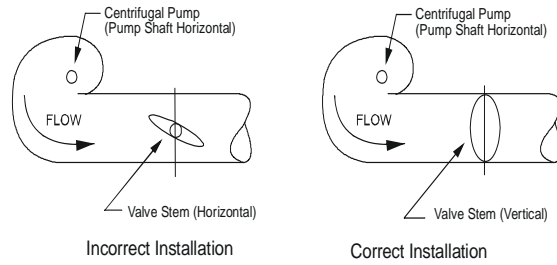


Figure 5: Proper Crankarm Orientation

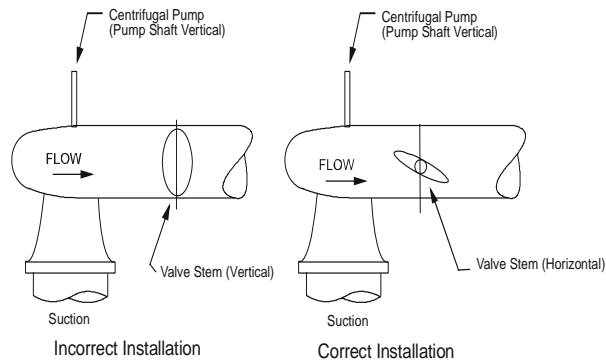
Note: For Water with Sediment, always position the valve with the valve stem in a horizontal plane.



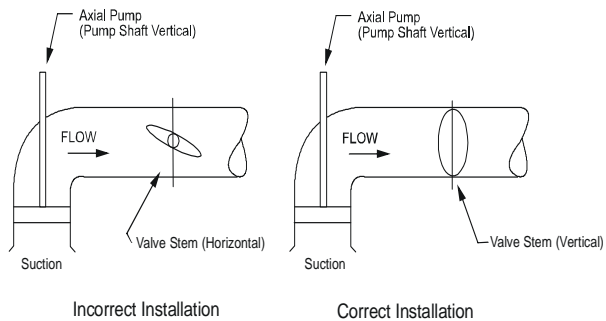
Water with Sediment



Centrifugal Pump (Pump Shaft Horizontal)



Centrifugal Pump (Pump Shaft Vertical)



Axial Pump (Pump Shaft Vertical)

Figure 6: Correct Valve Stem/Disc Orientation Examples (1)

FIG. 10-10m_dsc_orient_exampl_1

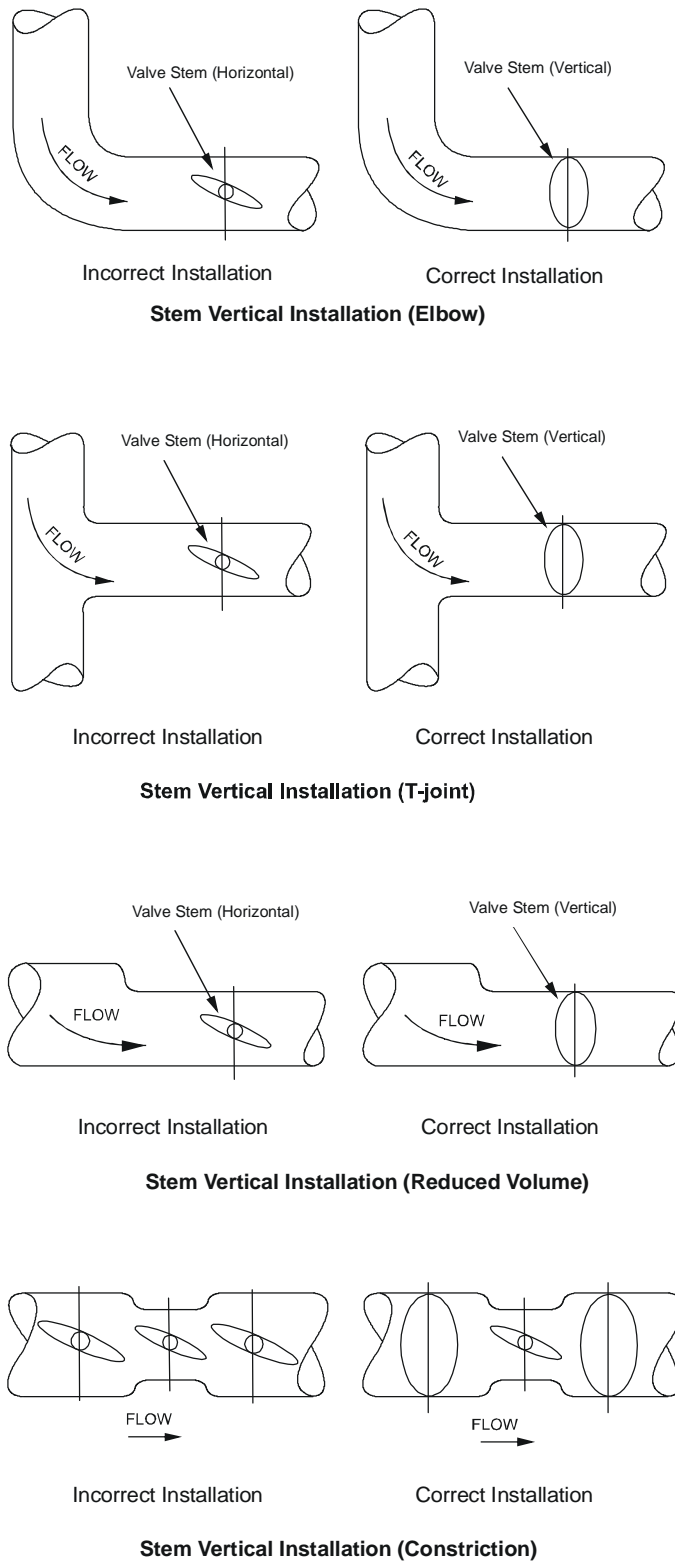


FIG: vls_valve_stem_disc_orient_vsmpl_2

Figure 7: Proper Valve Stem/Disc Orientation Examples (2)

Repair Information

If the VF Series Two-Way or Three-Way Butterfly Valve fails to operate within its specifications, replace the unit. For a replacement butterfly valve, contact the nearest Johnson Controls® representative.



Building Efficiency

507 E. Michigan Street, Milwaukee, WI 53202

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