

**K-Flo 500 Series Resilient Seated Butterfly Valve
for Municipal Water Treatment, Power Generation and Industrial Applications**

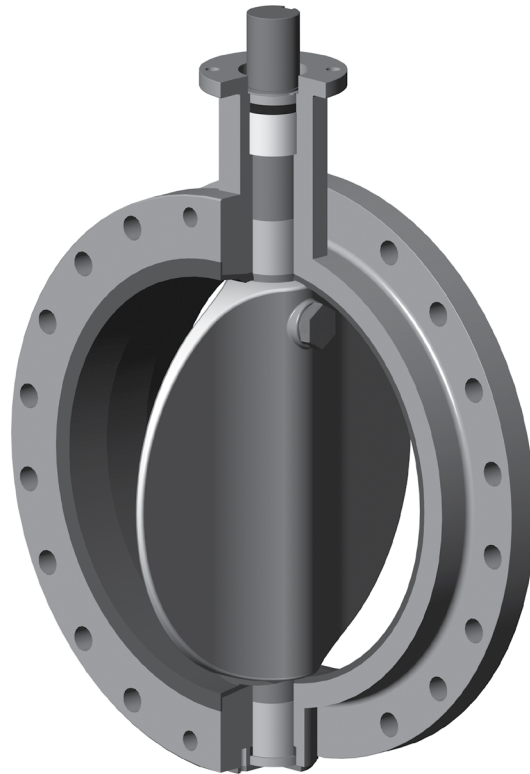


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K-Flo 500 Series Butterfly Valve: Installation, Operation & Maintenance Manual

INTRODUCTION

K-Flo 500 Series Butterfly Valves are heavy-duty, rubber seated butterfly valves in full compliance with AWWA C-504 for use in municipal water treatment, power generation and industrial applications. They utilize bearings that are of the self-lubricating type, which provide strength and low friction for easy operation and lifetime service. No special periodic maintenance is necessary. The valves are typically used to completely turn flow “off” or “on.” However, the valve can also be used to control flow rates within a system with the proper design.

FLANGE REQUIREMENTS

K-Flo 500 Series Butterfly Valves are designed for installation between ANSI B16.1 Class 125# flat faced flanges. Mechanical joint valves are designed for use with AWWA C111 end connections. MJ accessories for the pipe must be supplied by the installing contractor. Class 250 valves can be ordered with either ANSI B16.1 Class 250# drilling, ANSI B16.1 Class #150 drilling, or AWWA C111 MJ ends.



SAFE INSTALLATION AND MAINTENANCE PROCEDURES

Please read this entire O&M Manual prior to proceeding with the installation. The installation of the valve is important for its proper operation.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to read, or if a label has been removed, please contact Crispin Valve for replacement.

Your K-Flo 500 Series Butterfly Valve has been packed to provide protection during shipment. Inspect the unit for damage upon arrival, and file a carrier claim if damage is apparent.

Crispin service personnel are available to install, maintain and repair all Crispin Valves and products. Crispin also offers customized training programs and consultation services. For more information, contact your local Crispin/K-Flo valve sales representative, or visit our website at www.crispinvalve.com. Parts can also be ordered from your local representative, or directly from Crispin Valve.

Personnel involved in the installation or maintenance of valves should be constantly alert to the potential emission of process material, and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous process materials. Handle valves that have been removed from service with the assumption that process material could be present within the valve.

WARNINGS

The K-Flo 500 Series butterfly valve is a pressure vessel. Good maintenance and practice dictates that the valve must be depressurized prior to performing maintenance. Isolate the valve in the pipeline by closing the valve that is just upstream, and then the valve that is just downstream (in that order) prior to performing maintenance.

Moving parts from an accidental operation of a powered actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.



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INSTALLATION INSTRUCTIONS

1. Failure to lift the valve properly may cause damage. The valve should be lifted only by non-metallic slings attached to the valve mounting plate or flange holes. Never lift the valve by its actuator, or by the valve body opening. Adjacent piping must be positioned so that minimal piping stresses are transmitted to the valve flanges during and after installation.
2. The Valve disc **MUST BE IN THE CLOSED OR NEARLY CLOSED POSITION BEFORE INSTALLATION** of the valve in the pipeline. This is done to protect the disc seating edge. The valve may be installed with the flow in either direction.
3. The valve shaft axis may be either vertical or horizontal. If possible, the valve should be located at least six pipe diameters downstream of all pumps, elbows, or tees (see Figure 2).
4. Instructions related to valve assembly can be found on page 4 of this O&M.
5. Disc Torque Plug values are below for general information related to valve assembly.

TABLE 1: DISC TORQUE PLUG VALUES

Valve Size	Torque, Ft.-lbs.
3", 4"	30
6", 8"	210
10"	320
12"	380
14", 16"	500
18"	620
20"	740

Figure 1: Valve Cross Section

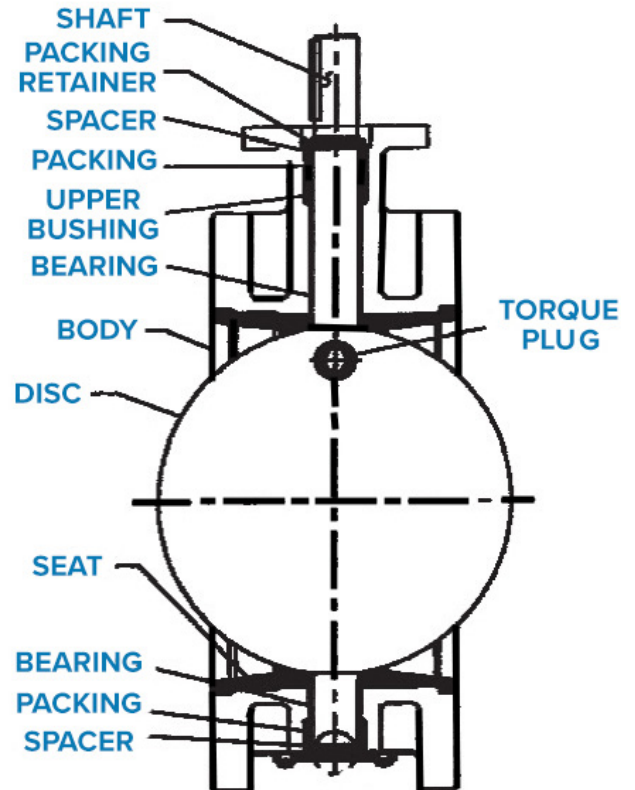
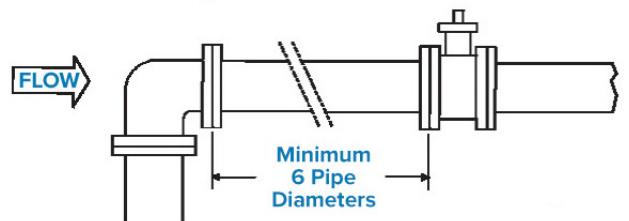


Figure 2: Valve Location



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MAINTENANCE AND REPAIR

It is possible that after many years of service, the rubber components of the K-Flo 500 Series valve may show signs of wear. The valve stem packing is a replaceable component. In the unlikely event that the valve seat is severely worn, contact your K-Flo representative or the factory. If valve packing leakage should occur, the following procedures should be followed:

PACKING REMOVAL (WITH ACTUATOR REMOVED) & REPLACEMENT

1. Remove packing retainer, which is attached to the slot on the valve shaft.
2. After the packing retainer is removed, pull and remove the spacer.
3. Remove the packing.
4. Repeat the same procedures for removing the lower packing, except first remove the bottom cover plate prior to removing the lower spacer.
5. Insert replacement packing, then spacer, then retainer.

VALVE ASSEMBLY

1. Press both upper and lower bearings into the valve body.
2. Install lower stem packing and lower spacer. Install cover plate with cap screws and washers.
3. Install upper bushing, upper packing, and upper spacer into valve body's top stem hole.
4. Install packing retaining ring into groove on valve stem.
5. Install the disc into the valve seat. This requires lubricant, such as silicone oil or grease, to be applied to the stem hub areas of both the disc and seat.
6. Please note that the stem holes through the disc **MUST** be properly aligned with the stem holes in the valve seat to allow installation of the valve stem.
7. Install stem into valve body's top stem hole (operator top plate side). The stem should be installed so that its milled flat aligns with the disc torque plug hole.
8. Torque the plug down through the disc and against the milled flat on the stem to the values as listed in Table 1 on page 3 of this manual.

RECOMMENDED STORAGE PROCEDURES

Ideal storage is in a heated building (41° to 86° F), palletized and covered. If ideal storage is not possible, following a few simple procedures will assure optimum performance later:

1. Valves should be stored approximately 10° open, laying flat and off the ground enough to avoid standing water.
2. Support valve weight on flange faces only, and verify weight before blocking.
3. Cover completely with a tarpaulin, and support on wooden cross ribs underneath to prevent water entrapment.
4. If valve is electric motor operated, follow the manufacturer's procedures for storage to prevent condensation damage.
5. Verify at the time of storage, and when removing from storage, that actuator lubricant levels are as recognized by the manufacturer. Leakage of lubricant sometimes occurs during prolonged horizontal storage.
6. Open and close the valve approximately every three (3) months.



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TROUBLESHOOTING

SYMPTOMS	POSSIBLE CAUSE	SUGGESTED REMEDY
Valve opens only a few degrees and stops. (It will not open to the full angle desired.)	Improper Installation. Valve is not aligned.	Loosen flange bolts. Realign valve with flanges. Re-tighten flange bolts to correct torque per ANSI requirements.
	Mating pipe internal diameter or other obstruction interfering with disc.	Pipe doesn't meet standards. Spacers may be required. Any pipeline or disc obstruction must be removed.
	Actuator not properly installed.	Refer to actuator adjustment manual.
Leakage past the flange face	Flange bolts are not evenly torqued.	Loosen flange bolts. Tighten to correct torque per ANSI requirements.
	Improper flanges	Refer to "Flange Requirements" on page 2.
	Improper flange gaskets	Full face flange gaskets required.
Leakage in the closed position (leakage in the pipeline)	The disc is not closing fully; actuator is not properly adjusted.	Refer to actuator adjustment manual.
	Damaged valve seat	Replace valve.
	Line pressure exceeds valve's working pressure.	Reduce line pressure to valve working pressure.
	Damaged valve disc	Return valve to factory for disc/stem replacement.
Leakage at the valve stem	Packing failure	<ol style="list-style-type: none"> Fully open and close the valve 3 times. Refer to "Packing Removal" and "Valve Assembly" on page 4.
Water Hammer	The valve is closing too quickly.	Turn actuator slower.
Excessively high torque to operate valve	Obstruction in the pipeline	Remove valve from pipeline and remove obstruction.
	Valve shaft or disc bent	Return valve to factory for disc/shaft replacement (check for water hammer or freezing of line material).
	Scale buildup on shaft or seat	Open and close the valve seat several times. Operate the valve for at least a month. Check valve seat for deterioration.



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