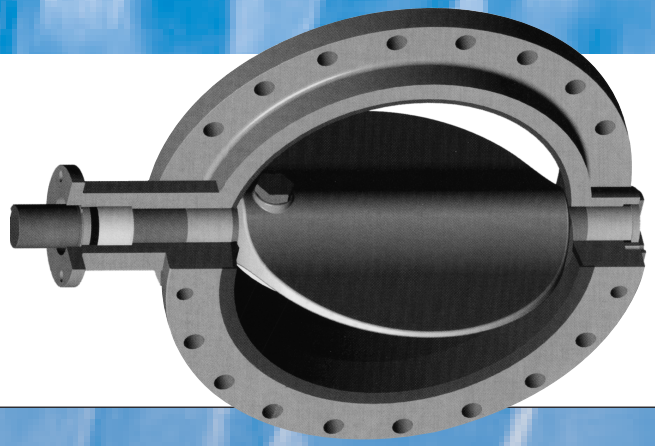


K-FLO 500 SERIES

Sizes 3”-20”

K-FLO
BUTTERFLY VALVES

500 SERIES: SIZES 3" - 20"

AWWA C504 Compliant

The K-Flo 500 Series is a heavy-duty resilient seated butterfly valve line in full compliance with AWWA C504 for use in municipal, power and industrial applications. Every K-Flo 500 Series butterfly valve is tested for performance, as well as seat and body leakage; and all of the valves meet or exceed the latest AWWA C504 standards and requirements.

The 500 Series valves are available in flanged or mechanical joint configurations. Flanged ends are available on sizes 3" through 20", while mechanical joints are available on sizes 4" thru 20".

500 SERIES MATERIALS

SIZES
3"-20" (meets or exceeds AWWA C504)

BODY
Cast Iron (ASTM A126, Class B); Ductile Iron (optional); (ASTM A536 Grade 65/45/12)

SEAT
Synthetic Rubber bonded to body. Buna-N standard; EPDM optional (tested in accordance with ASTM D429, Method B)

UPPER STEM BUSHING Polyester

SHAFT
Stainless Steel (ASTM A276): Grade 304 standard, Grade 316 optional; 17-4pH on Class 250B

DISC
316 Stainless Steel standard on 3"-8". Ductile Iron (ASTM A536, Grade 65-45-12) with a 316 Stainless Steel Edge on sizes 10"-20". Ductile Iron discs are coated with an epoxy for extra long product life

BEARINGS
316 Stainless Steel; TFE Lined

500 SERIES ADVANTAGES

- 3"-20" tested at 150 psi
- Cv's equal to or greater than industry standard for superior performance
- AWWA C504 compliant
- Fully rubber-lined body
- Fusion epoxy coating available on ductile iron disc
- Rugged cast iron body
- Stainless steel disc edge
- Multiple actuator options
- Lens shaped symmetrical disc for bi-directional service
- Self-adjusting packing for longer valve life
- Bi-directional packing prevents contamination from entering potable water supply

500 SERIES: SIZES 3”-20”

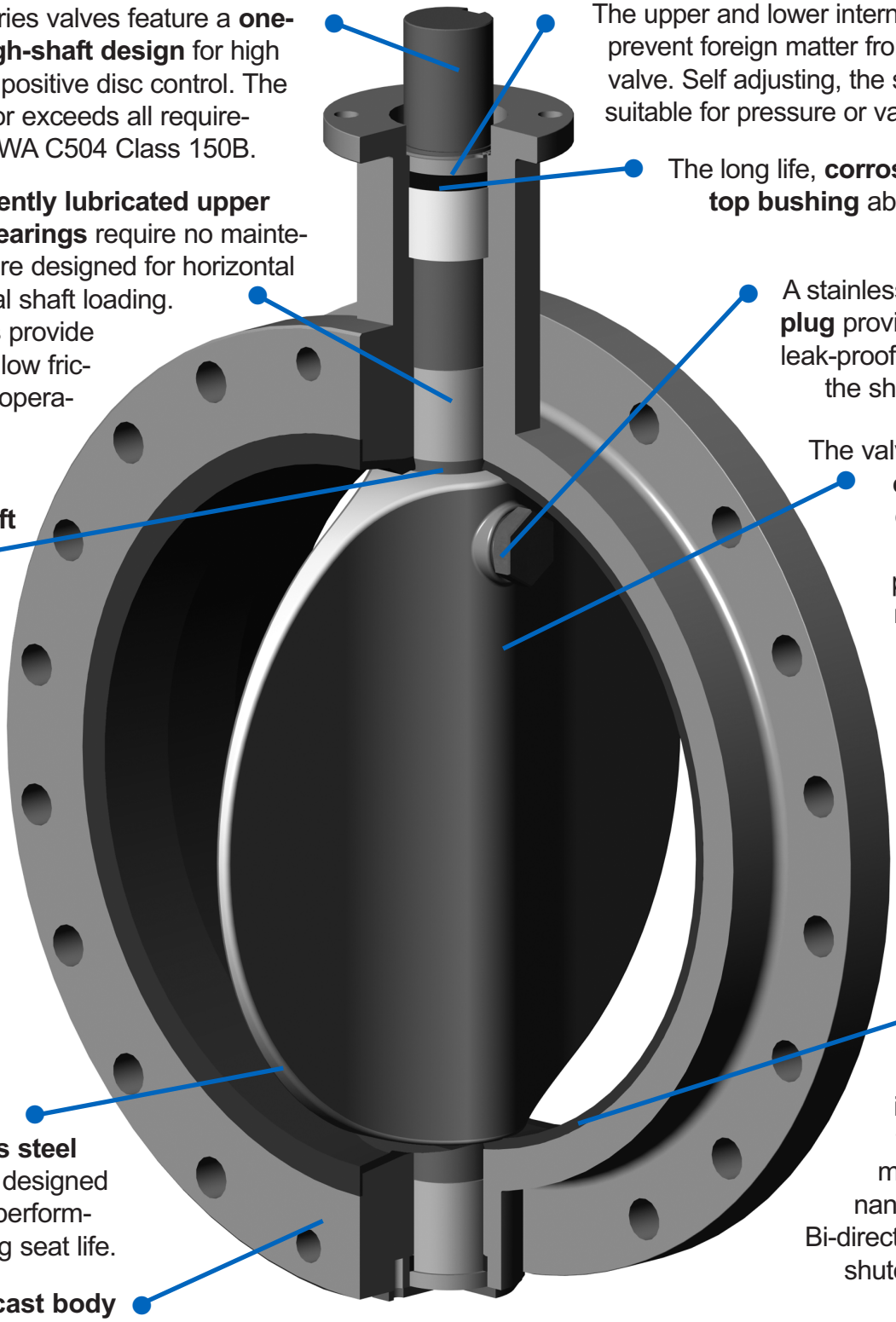
K-Flo 500 series valves feature a **one-piece-through-shaft design** for high strength and positive disc control. The shaft meets or exceeds all requirements of AWWA C504 Class 150B.

The **permanently lubricated upper and lower bearings** require no maintenance, and are designed for horizontal and/or vertical shaft loading. The bearings provide strength and low friction for easy operation and long service life.

Primary shaft seals are affected by preloaded contact between the disc hub and seat. A secondary seal is formed by the shaft diameter, which is greater than the passage hole in the

The valve’s **316 stainless steel disc edge** is designed for optimum performance and long seat life.

The rugged **cast body** meets or exceeds all design and testing requirements of AWWA C504.



The upper and lower internal **shaft seals** prevent foreign matter from entering the valve. Self adjusting, the shaft seals are suitable for pressure or vacuum service.

The long life, **corrosion-resistant top bushing** absorbs actuator side thrust.

A stainless steel **torque plug** provides a positive leak-proof connection of the shaft to the disc.

The valve’s advanced **epoxy-coated disc (NSF 61-approved)** provides maximum strength, high flow capacity and excellent flow control characteristics. Standard material for the disc is 316 SS/ ductile iron.

The **vulcanized resilient seat** is designed so that no adjustment or maintenance is required. Bi-directional drip tight shutoff to 250psi is optional.

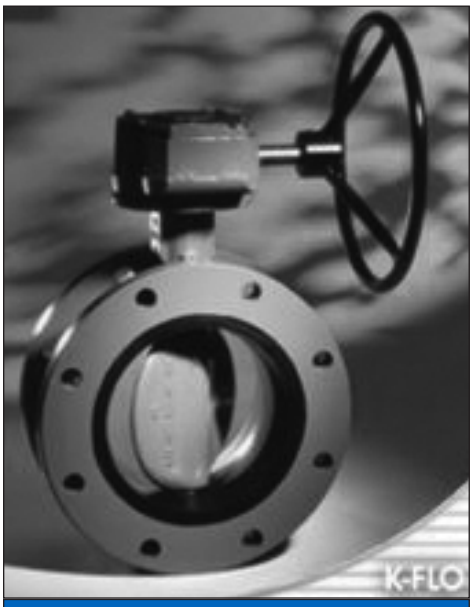
Class 250B valves with AWWA Type “E” and “F” flanges are available. Please contact the factory.

500 SERIES DIMENSIONS

K-FLO Model 504 (Flanged x Flanged)

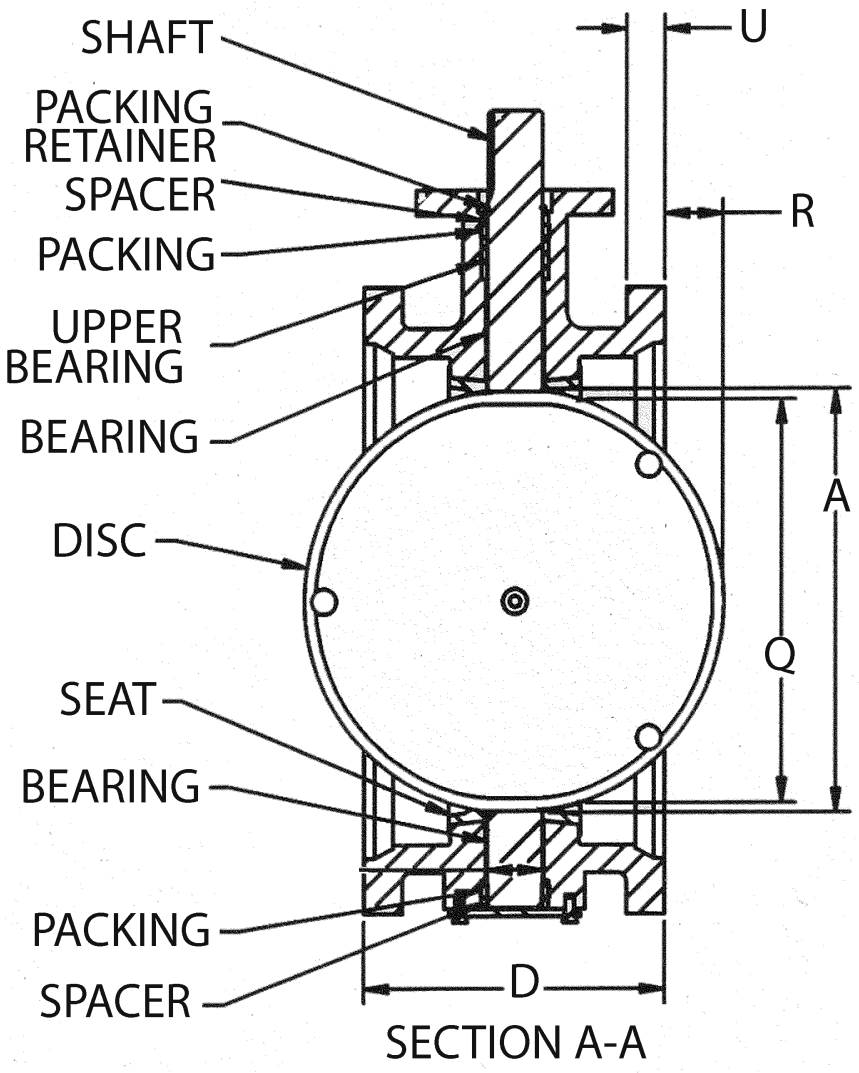
* All dimensions are in INCHES

													TOP PLATE			FLANGE DRILLING					Bare Shaft
Size	A	B	C	D	E	F	G	H	M Key	Q	R	U	Bolt Circle	Hole Size	ISO 5211	Bolt Circle	# of Holes	Hole Size	Tapped Holes	Thread Size	Wt. lbs.
3	2 3/4	7 1/2	6 5/16	5	4	1 1/2	9/16	3 3/4	1/8sq	n/a	n/a	9/16	2.756	11/32	F 07	6	4	3/4	n/a	n/a	29
4	3 9/16	9	7 1/16	5	4	1 1/2	9/16	4 1/2	1/8sq	n/a	n/a	5/18	2.756	11/32	F 07	7 1/2	8	3/4	n/a	n/a	48
6	5 1/2	11	8 1/16	5	6	2	1 1/8	6	1/4sq	2 3/4	5/16	1 1/8	4.921	9/16	F 12	9 1/2	8	7/8	n/a	n/a	58
8	7 1/2	13 1/2	9 9/16	6	6	2	1 1/8	6 3/4	1/4sq	4 7/8	13/16	1 1/8	4.921	9/16	F 12	11 3/4	8	7/8	n/a	n/a	96
10	9 5/8	16	10 13/16	8	6	2 1/2	1 3/8	8	5/16sq	5 3/8	13/16	1 3/8	4.921	9/16	F 12	14 1/4	12	1	n/a	n/a	150
12	11 3/8	19	12 5/16	8	6	2 9/16	1 3/8	9 1/2	5/16sq	8 3/8	1 11/16	1 1/2	4.921	9/16	F 12	17	12	1	n/a	n/a	204
14	12 15/16	21	14 1/16	8	8	2 3/8	1 5/8	10 1/2	3/8sq	10 1/2	2 1/2	1 3/4	6.496	13/16	F 16	18 3/4	12	1 1/8	n/a	n/a	267
16	15 1/8	23 1/2	15 1/16	8	8	2 11/16	1 7/8	11 3/4	1/2 x 3/8	13 1/8	3 5/8	2	6.496	13/16	F 16	21 1/4	16	1 1/8	4	1”-8	354
18	16 15/16	25	16 9/16	8	8	3 3/16	2 1/4	13 1/16	1/2 x 3/8	15 1/16	4 9/16	2 1/4	6.496	13/16	F 16	22 3/4	16	1 1/4	4	1 1/8”-7	433
20	18 7/8	27 1/2	18 1/16	8	8	3 3/16	2 1/4	14 5/16	1/2 x 3/8	17 3/8	5 1/2	2 1/2	6.496	13/16	F 16	25	20	1 1/4	4	1 1/8”-7	586



ADDITIONAL NOTES

- Flange drilling per ANSI B16.1 Class 125
- The “Q” Dimension is the minimum allowable inside pipe diameter at the centered valve body face to protect the disc sealing edge from damage when opening valve.
- For Flanged x Mechanical Joint Configurations in sizes 6”-16”, please consult the factory.

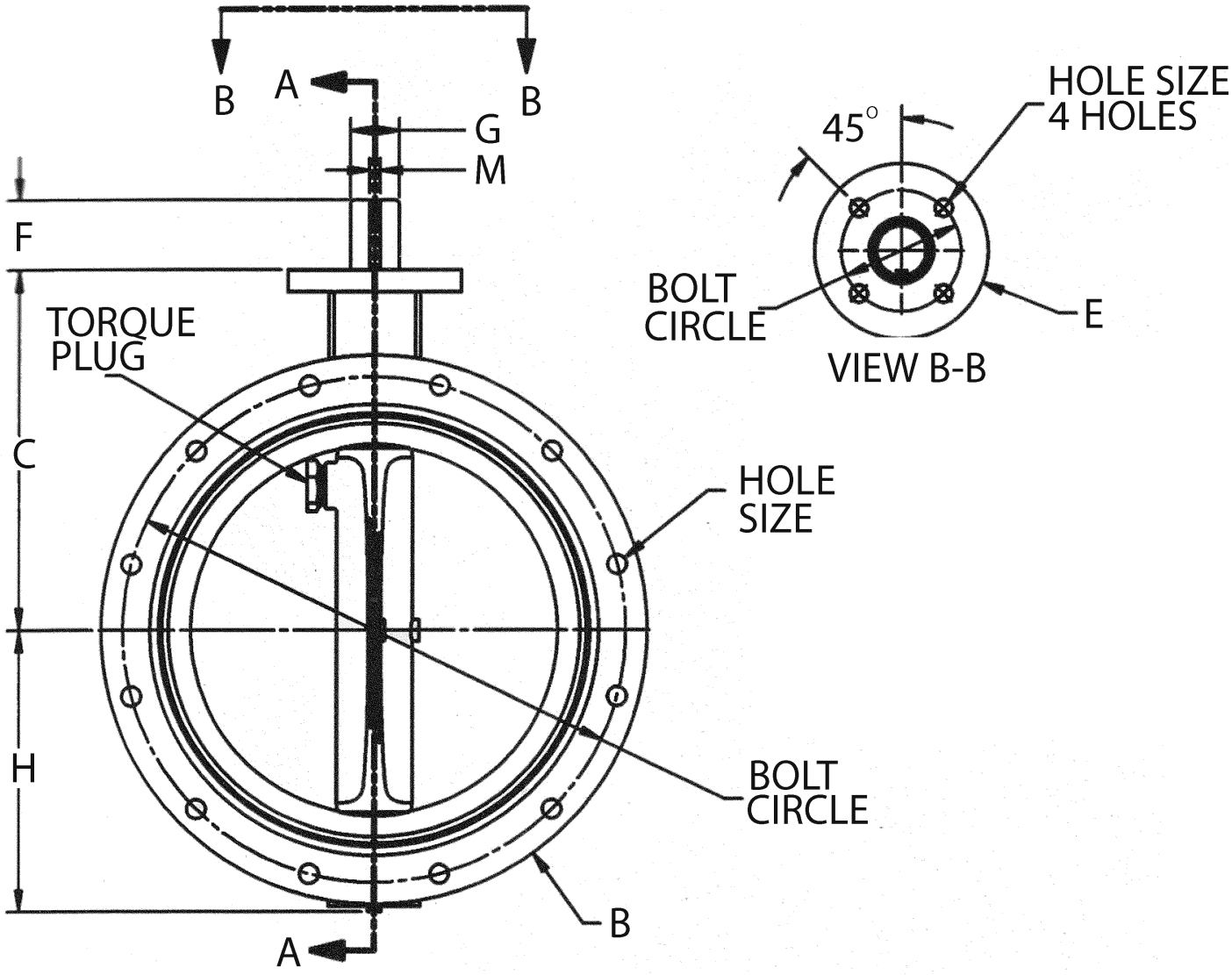


500 SERIES DIMENSIONS

K-FLO Model 506 (Mechanical Joint x Mechanical Joint)

* All dimensions are in INCHES

													TOP PLATE			FLANGE DRILLING			Bare Shaft
Size	A	B	C	D	E	F	G	H	M Key	Q	R	U	Bolt Circle	Hole Size	ISO 5211	Bolt Circle	# of Holes	Hole Size	Wt. lbs.
6	5 1/2	11 1/2	8	8 1/2	6	2 1/16	1 1/8	6	1/4sq	4 1/2	n/a	1 1/8	4.921	9/16	F 12	9 1/2	6	7/8	80
8	7 1/2	13 3/4	9 1/2	8 5/8	6	2	1 1/8	8 7/8	1/4sq	6 3/4	n/a	1 1/8	4.921	9/16	F 12	11 3/4	6	7/8	120
10	9 5/8	16 1/16	10 3/4	9 1/4	6	2 9/16	1 3/8	8	5/16sq	8 3/4	3/16	1 3/8	4.921	9/16	F 12	14	8	7/8	170
12	11 3/8	18 5/16	12 1/4	9 1/4	6	2 9/16	1 3/8	9 3/16	5/16sq	10 9/16	1 1/16	1 1/2	4.921	9/16	F 12	16 1/4	8	7/8	230
14	12 15/16	20 11/16	14	11 1/2	8	2 7/16	1 5/8	10 3/8	3/8sq	12 13/16	3/4	1 3/4	6.496	13/16	F 16	18 3/4	10	7/8	300
16	15 1/8	22 15/16	15	12	8	3	1 7/8	11 7/16	1/2 x 3/8	14 5/16	1 5/8	2	6.496	13/16	F 16	21	12	7/8	390
18	16 15/16	25 1/4	16 1/2	12 1/4	8	3 3/16	2 1/4	13 1/16	1/2 x 3/8	16 3/16	2 3/8	2 1/4	6.496	13/16	F 16	23 1/4	12	7/8	470
20	18 7/8	27 7/16	18	12 1/2	8	3 3/16	2 1/4	14 5/16	1/2 x 3/8	18 1/16	3 3/16	2 1/2	6.496	13/16	F 16	25 1/4	14	7/8	630



500 SERIES DIMENSIONS

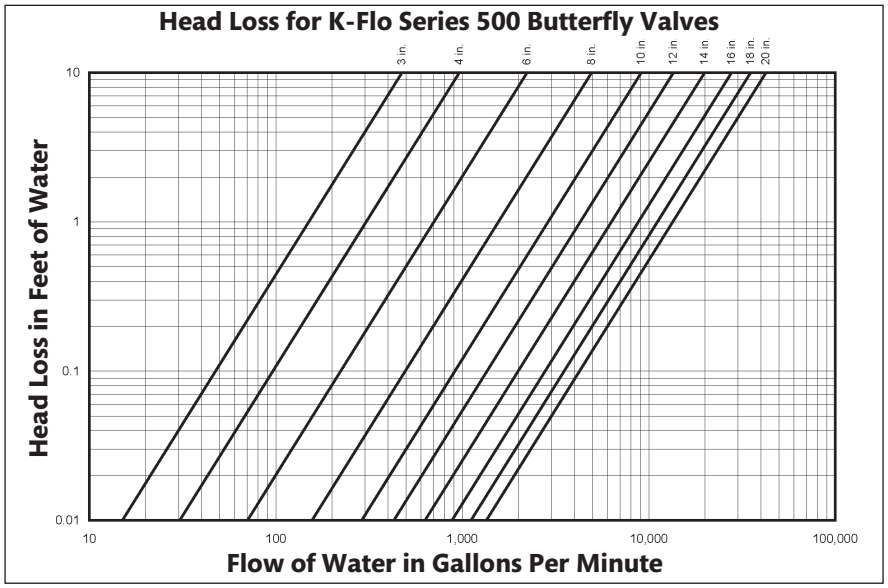
K-FLO Model 507 (Class 250B) (Flanged x Flanged)

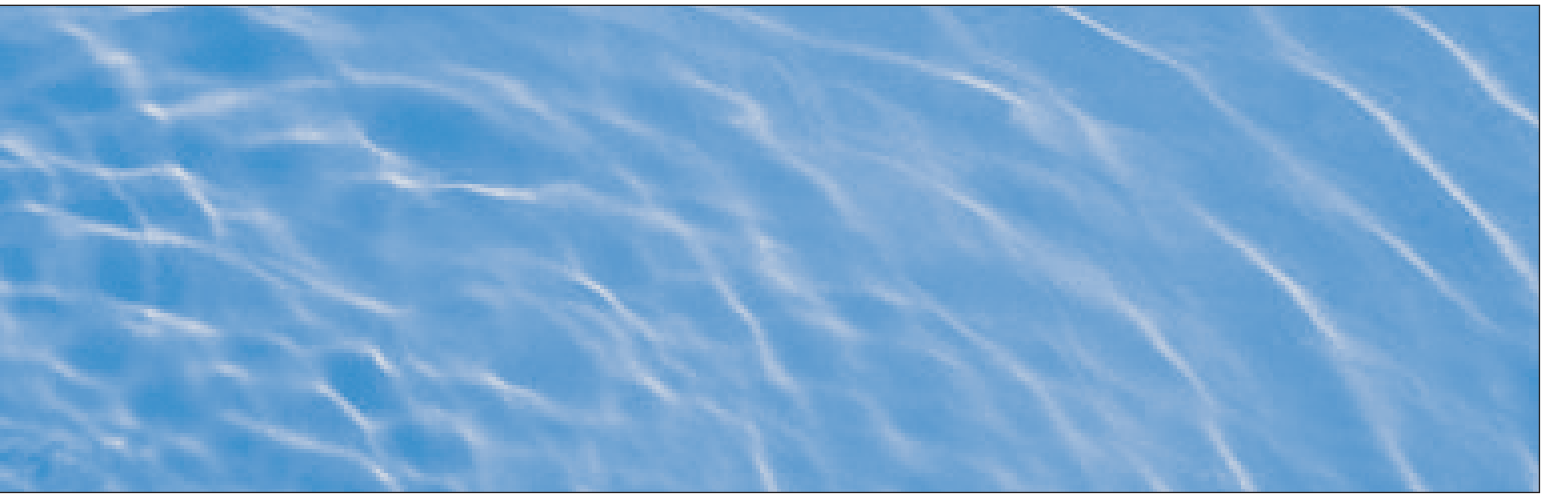
* All dimensions are in INCHES

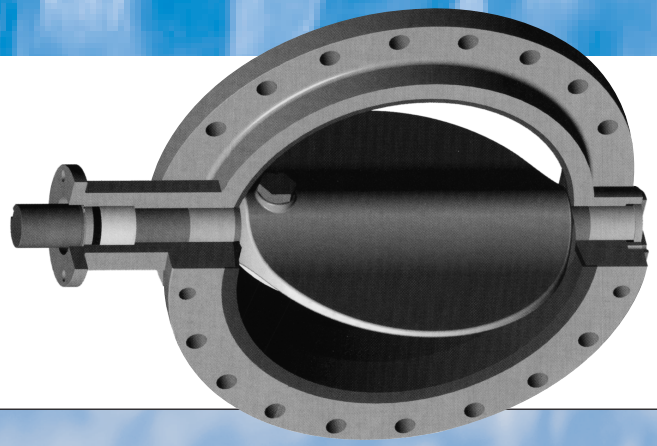
													TOP PLATE			FLANGE DRILLING					Bare Shaft
Size	A	B	C	D	E	F	G	H	M Key	Q	R	U	Bolt Circle	Hole Size	ISO 5211	Bolt Circle	# of Holes	Hole Size	Tapped Holes	Thread Size	Wt. lbs.
4	3 9/16	10	7	5	4	1 1/4	9/16	5 9/16	1/8sq	n/a	n/a	1 5/16	2.756	11/32	F 07	7 7/8	8	7/8	4	3/4"-10	62
6	5 1/2	12 1/2	8 3/8	5	6	2	1 1/8	6 13/16	1/4sq	2 3/4	5/16	1 1/2	4.921	9/16	F 12	10 5/8	12	7/8	4	3/4"-10	100
8	7 1/2	15	9 5/8	6	6	2	1 1/8	8 1/16	1/4sq	4 7/8	13/16	1 11/16	4.921	9/16	F 12	13	12	1	4	7-8"-9	152
10	9 5/8	17 1/2	10 7/8	8	6	2 5/8	1 3/8	9 5/16	5/16sq	5 3/8	13/16	1 15/16	4.921	9/16	F 12	15 1/4	16	1 1/8	4	1"-8	266
12	11 3/8	20 1/2	12 1/2	8	6	2 5/8	1 3/8	10 13/16	5/16sq	8 3/8	1 11/16	2 1/16	4.921	9/16	F 12	17 3/4	16	1 1/4	4	1 1/8"-7	320
14	12 15/16	23	14	8	8	2 5/8	1 5/8	12 1/16	3/8sq	10 1/2	2 1/2	2 3/16	6.496	13/16	F 16	20 1/4	20	1 1/4	4	1 1/8"-7	420
16	15 1/8	25 1/2	16	8	8	2 5/8	1 7/8	13 5/16	1/2 x 3/8	13 1/8	3 5/8	2 5/16	6.496	13/16	F 16	22 1/2	20	1 3/8	4	1 1/4"-8	527
18	16 15/16	28	17 1/4	8	8	2 1/4	2 1/4	11 11/16	1/2 x 3/8	15 1/16	4 9/16	2 7/16	6.496	13/16	F 16	24 3/4	24	1 1/4	4	1 1/4"-7	632
20	18 7/8	30 1/2	18 5/8	8	8	3 3/8	2 1/4	15 7/8	1/2 x 3/8	17 3/8	5 1/2	2 9/16	6.496	13/16	F 16	27	24	1 1/4	4	1 1/4"-7	785

ADDITIONAL NOTES

- Mechanical joint dimensions conform to ANSI/AWWA C111/AR1.11
- "Q" Dimension=the minimum allowable inside pipe diameter at the centered valve body face to protect the disc sealing edge from damage when opening valve.







K-FLO 500 SERIES
Operations & Maintenance

500 SERIES O & M MANUAL

Product Introduction: K-Flo 500 Series Sizes 3”-20”

Introduction

K-Flo Series 500 Butterfly Valves are heavy-duty, rubber seated butterfly valves in full compliance with AWWA-C504 for use in municipal water treatment, power generation, and industrial applications.

Instructions

These instructions are intended for personnel who are responsible for the installation, operation and maintenance of your K-FLO AWWA butterfly valve.

Safety Messages

All safety messages herein are flagged with the word Caution, Warning or Danger. These messages must be followed to avoid equipment damage, personal injury or death. Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes obscured or has been removed, contact 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 which have been removed from service with the assumption that process material could be present within the valve.

Inspection

Your AWWA 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.

Parts

Order parts from your local sales representative, or directly from Crispin Valve.

Crispin Valve Service

Crispin service personnel are available to install, maintain and repair 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.

Description

K-FLO AWWA Butterfly Valves are heavy-duty, rubber-seat-in-body 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 needed.

Flange Requirements

K-FLO 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 used must be supplied by the installing contractor. Class 250 valves can be ordered with either ANSI B16.1 250# drilling, ANSI B16.1 125# drilling or AWWA C111 MJ ends.

Installation

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 the valve 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 flanges during and after installation.

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 1).

NOTE: The valve disc must be in the closed or nearly closed position before installation of the valve in the pipeline. This is to protect the disc seating edge. The valve may be installed with the flow in either direction.

WARNING: Moving Parts from accidental operation of a power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

WARNING: The 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.

K-Flo 500 Series: Maintenance and Repair

Introduction

It is possible that after many years of service, the rubber components of the K-Flo Series 500 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. If valve packing leakage should occur, the following procedures should be followed:

Packing Removal *(With actuator removed)*

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 and its packing.
3. Repeat the same procedures for removing the lower packing, except first remove the bottom cover plate prior to removing the lower spacer.

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 top stem hole.
4. Install packing retaining ring onto groove on valve stem.
5. Install disc into valve seat. This will require that a lubricant such as silicone oil or grease be applied to the stem hub areas of both the disc and seat.
6. Install stem into valve body top stem hole (operator top plate side). The stem should be installed so that its milled flat aligns with the disc torque plug hole.
7. Torque the plug down through the disc and against the milled flat on the stem listed in Table 1 below.

NOTE: 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.

Figure 1--Valve Location

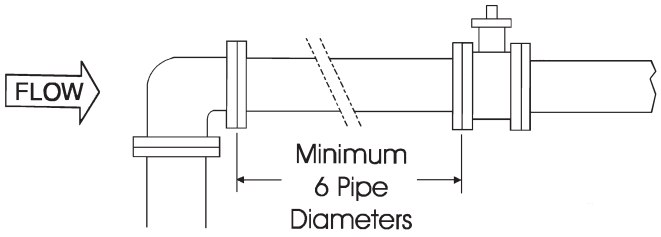
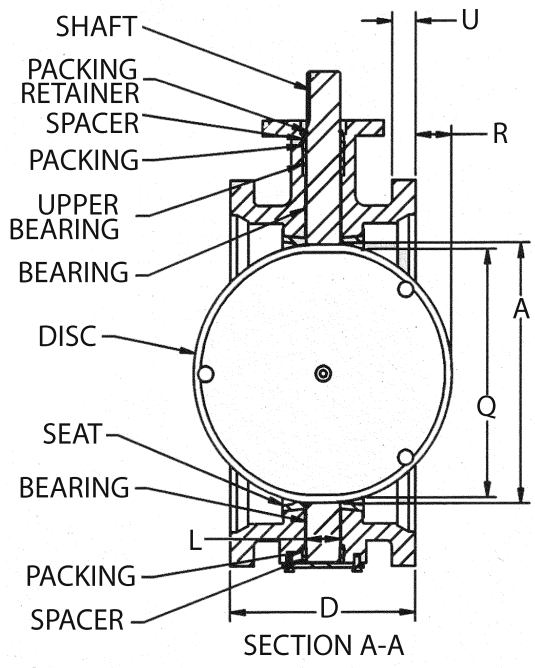


Table 1:
Disc Torque Plug Values

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

Figure 2--Parts



TROUBLESHOOTING GUIDE

SYMPTOMS	POSSIBLE CAUSE	SUGGESTED REMEDY
Valve opens only a few degrees and stops (it will not open to the full angle desired)	Improper installation. The valve is improperly aligned.	Loosen the flange bolts. Realign valve with flanges, and retighten flange bolts to correct torque per ANSI requirements.
	Mating pipe internal diameter or other obstruction is interfering with disc.	Pipe does not meet standards and 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 and tighten flange bolts to correct torque per ANSI requirements.
	Improper flanges	Refer to “Flange Requirements” on page 16.
	Improper flange gaskets	Full face flange gaskets required.
Leakage past disc 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	1. Fully open and close the valve 3 times. 2. Refer to “Packing Removal” and “Valve Assembly” steps 2-4 on pg. 17.
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 several times. Operate the valve at least once a month. Check the valve seat for deterioration.

Recommended Storage Procedures

Ideal storage is in a heated building, palletized and covered. If ideal storage is not possible, following a few simple procedures will assure optimum performance later.

1. Valves should be stored laying flat, slightly opened, but must be kept off the ground and high enough to avoid standing water.
2. Support valve weight on flange faces only and verify weight before blocking.
3. Cover completely with tarpaulin and support on wooden cross ribs underneath to prevent water entrapment.
4. If valve is electric motor operated, follow the motor manufacturer’s procedures for storage to prevent condensation damage.
5. Verify at the time of storage, and at removal from storage, that actuator lubricant levels are as required by the manufacturer. Lubricant leakage can occur during prolonged horizontal storage.