

K-FLO

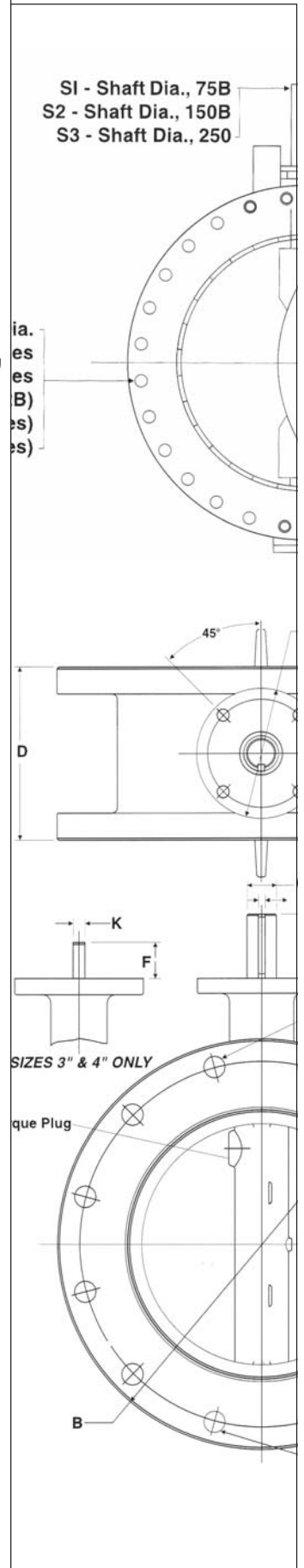
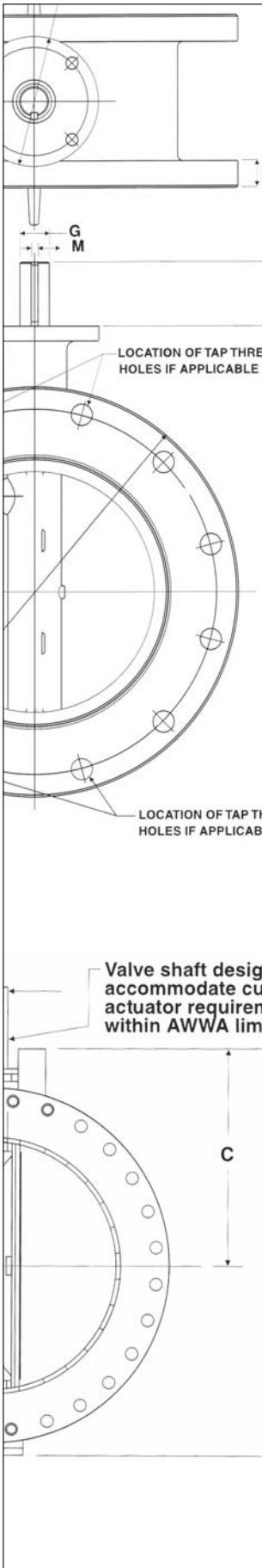
BUTTERFLY VALVES

AWWA C504 COMPLIANT
VALVES FROM 3" THRU 108"



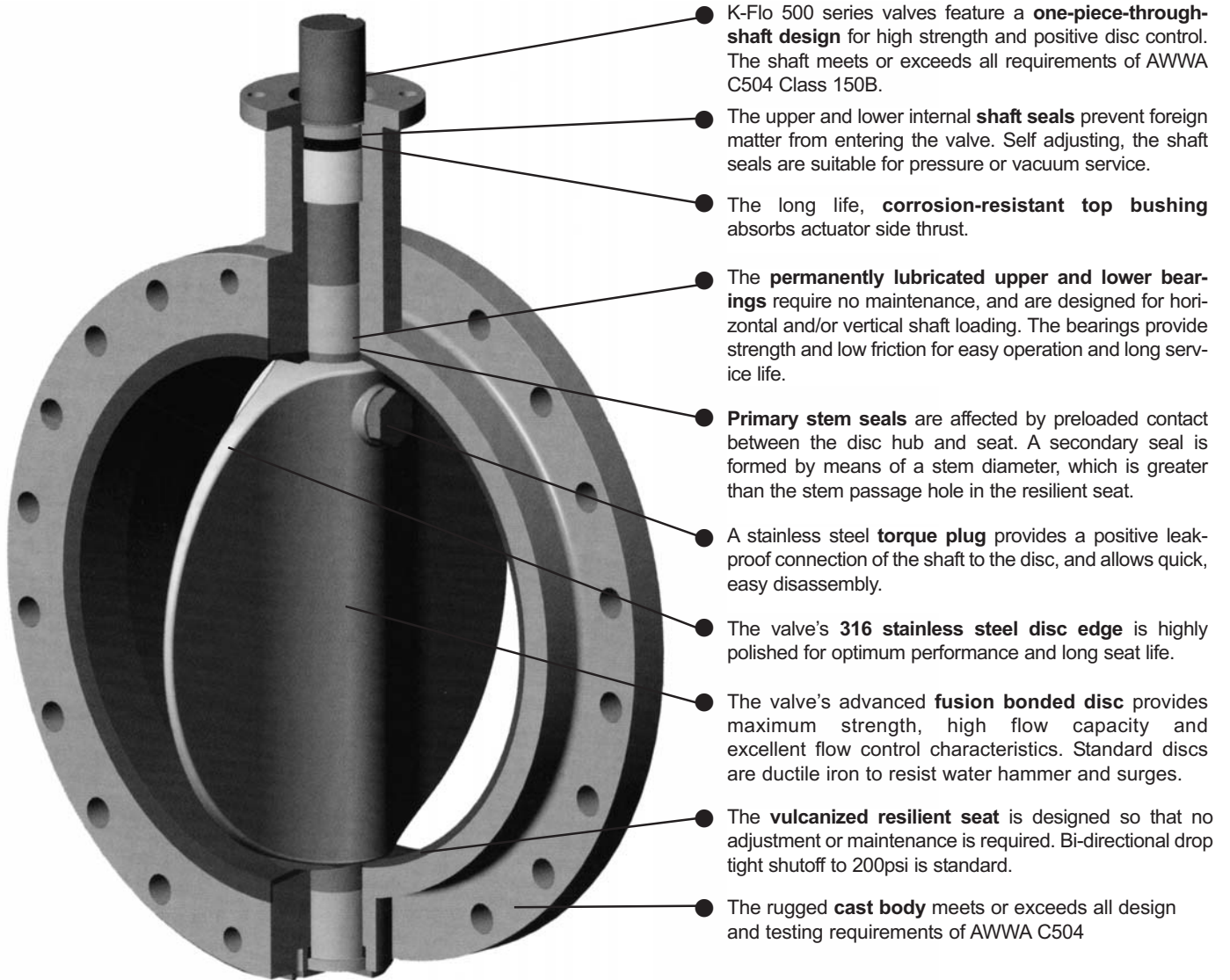
PO Box 411
Berwick PA 18603

800-247-VALV
www.crispinvalve.com



500 SERIES: Sizes 3"-20" Available

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, seat leakage and body leakage in accordance with AWWA C504 standards. 500 Series valves are available in flanged or mechanical joint configurations.



- 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 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.
- 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 stem seals** are affected by preloaded contact between the disc hub and seat. A secondary seal is formed by means of a stem diameter, which is greater than the stem passage hole in the resilient seat.
- A stainless steel **torque plug** provides a positive leak-proof connection of the shaft to the disc, and allows quick, easy disassembly.
- The valve's **316 stainless steel disc edge** is highly polished for optimum performance and long seat life.
- The valve's advanced **fusion bonded disc** provides maximum strength, high flow capacity and excellent flow control characteristics. Standard discs are ductile iron to resist water hammer and surges.
- The **vulcanized resilient seat** is designed so that no adjustment or maintenance is required. Bi-directional drop tight shutoff to 200psi is standard.
- The rugged **cast body** meets or exceeds all design and testing requirements of AWWA C504

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

Seating of Synthetic Rubber bonded to Cast Iron body. (tested in accordance with ASTM D429, Method B)

STEM

Stainless Steel

DISC

Ductile Iron w/ 316 Stainless Steel Edge
All discs are coated with a fusion epoxy for extra long product life

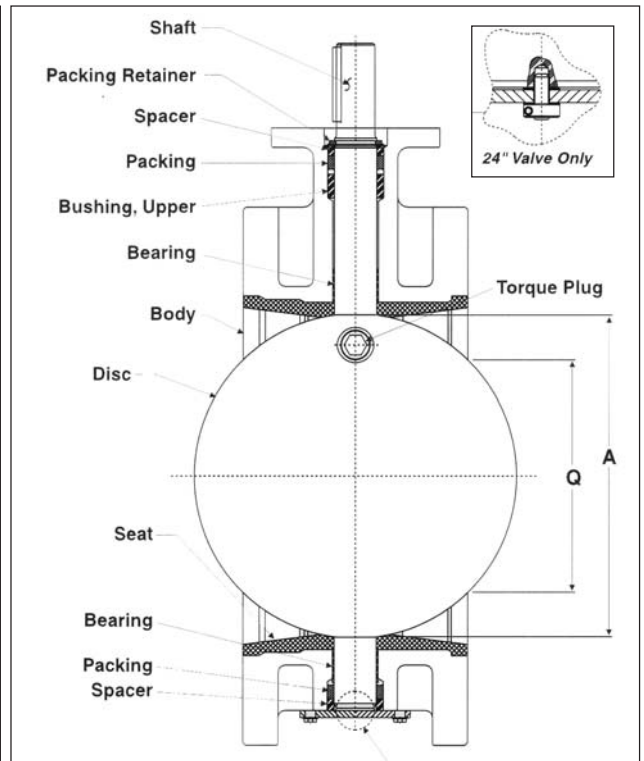
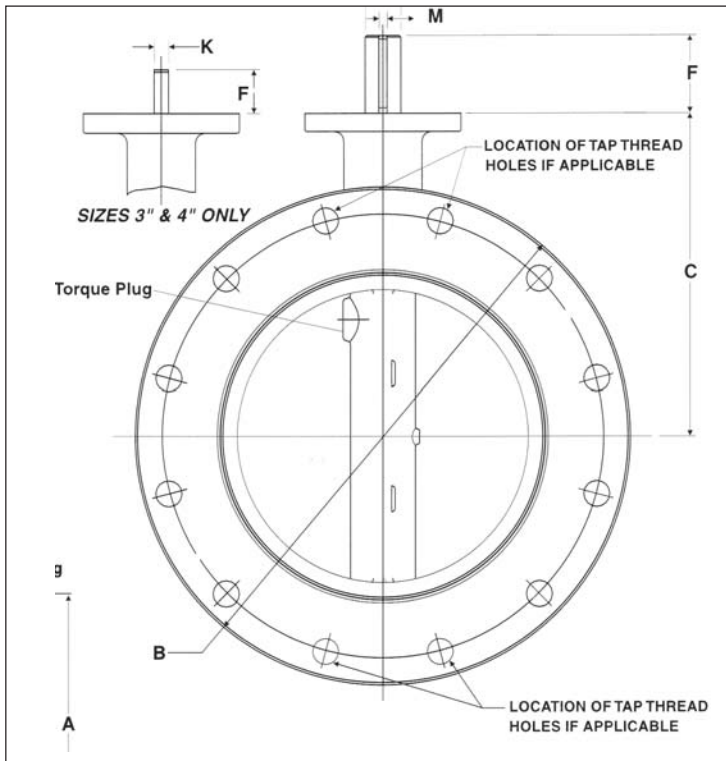
UPPER STEM BUSHING

Polyester

INBOARD BEARINGS

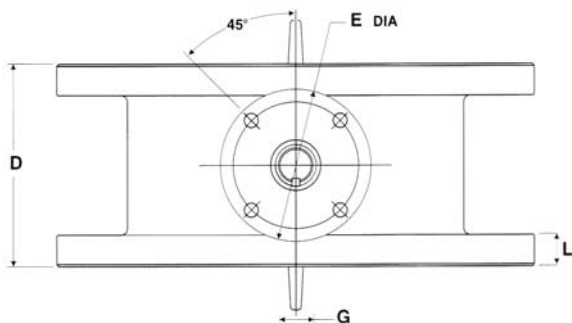
316 Stainless Steel;
TFE Fabric Lined

500 SERIES: Dimensional Data



K-FLO Model 504 (Flanged x Flanged)

Size	A	B	C	D	E	F	G	K	L	M (Key)	Q	TOP PLATE			FLANGE DRILLING					Wt. lbs.	
												Bolt Circle	# of holes	Hole Size	Bolt Circle	# of Holes	Hole Size	Tapped Holes	Tap Thread		
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.
3	2 ³ / ₄	7 ¹ / ₂	6 ⁵ / ₁₆	5	4	1 ¹ / ₄	9 ¹ / ₁₆	3 ³ / ₈	3 ³ / ₄	n/a	n/a	3 ¹ / ₄	4	7 ¹ / ₁₆	6	4	3 ³ / ₄	n/a	n/a	n/a	29
4	3 ⁹ / ₁₆	9	7 ¹ / ₁₆	5	4	1 ¹ / ₄	5 ⁸ / ₁₆	7 ⁷ / ₁₆	15 ¹⁵ / ₁₆	n/a	n/a	3 ¹ / ₄	4	7 ¹ / ₁₆	7 ¹ / ₂	8	3 ³ / ₄	n/a	n/a	n/a	48
6	5 ¹ / ₂	11	8 ¹ / ₁₆	5	6	2	1 ¹ / ₈	n/a	1	1 ¹ / ₄ sq	2 ³ / ₄	5	4	9 ⁹ / ₁₆	9 ¹ / ₂	8	7 ⁷ / ₈	n/a	n/a	n/a	58
8	7 ¹ / ₂	13 ¹ / ₂	9 ⁹ / ₁₆	6	6	2	1 ¹ / ₈	n/a	1 ¹ / ₈	1 ¹ / ₄ sq	4 ⁷ / ₈	5	4	9 ⁹ / ₁₆	11 ³ / ₄	8	7 ⁷ / ₈	n/a	n/a	n/a	96
10	9 ⁹ / ₈	16	10 ¹³ / ₁₆	8	6	3	1 ³ / ₈	n/a	1 ³ / ₁₆	5 ⁵ / ₁₆ sq	5 ⁴ / ₇	5	4	9 ⁹ / ₁₆	14 ¹ / ₄	12	1	n/a	n/a	n/a	150
12	11 ¹¹ / ₃₂	19	12 ⁵ / ₁₆	8	6	3	1 ³ / ₈	n/a	1 ¹ / ₄	5 ⁵ / ₁₆ sq	8 ³ / ₈	5	4	9 ⁹ / ₁₆	17	12	1	n/a	n/a	n/a	204
14	12 ¹⁵ / ₁₆	21	14 ¹ / ₁₆	8	6	3	1 ⁵ / ₈	n/a	1 ⁷ / ₁₆	3 ³ / ₈ sq	10 ¹ / ₂	6 ¹ / ₂	4	9 ⁹ / ₁₆	18 ³ / ₄	12	1 ¹ / ₈	n/a	n/a	n/a	267
16	15 ⁵ / ₃₂	23 ¹ / ₂	15 ¹ / ₁₆	8	8	3	1 ⁷ / ₈	n/a	1 ¹ / ₂	1 ¹ / ₂ x 3 ³ / ₈	13 ¹ / ₈	6 ¹ / ₂	4	13 ¹³ / ₁₆	21 ¹ / ₄	16	1 ¹ / ₈	4	1 ¹ / ₈	354	
18	17	25	16 ⁹ / ₁₆	8	8	1 ¹ / ₄	2 ¹ / ₄	n/a	1 ⁵ / ₈	1 ¹ / ₂ x 3 ³ / ₈	15 ¹ / ₄	6 ¹ / ₂	4	13 ¹³ / ₁₆	22 ³ / ₄	16	1 ¹ / ₄	4	1 ¹ / ₈	433	
20	18 ¹⁵ / ₁₆	27 ¹ / ₂	18 ¹ / ₁₆	8	8	1 ¹ / ₄	2 ¹ / ₄	n/a	1 ³ / ₄	1 ¹ / ₂ x 3 ³ / ₈	17 ³ / ₈	6 ¹ / ₂	4	13 ¹³ / ₁₆	25	20	1 ¹ / ₄	4	1 ¹ / ₈	586	
24	22 ⁵ / ₁₆	32	19 ⁹ / ₁₆	8	8	1 ¹ / ₄	2 ¹ / ₄	n/a	1 ⁷ / ₈	3 ³ / ₄ x 1 ¹ / ₂	21 ¹ / ₈	6 ¹ / ₂	4	13 ¹³ / ₁₆	29 ¹ / ₂	20	1 ³ / ₈	4	1 ¹ / ₄₋₇	780	



FLANGED X FLANGED

- Flange drilling per ANSI B16.1 Class 125
- "Q" Dimension is the minimum allowable inside diameter at the centered body face to protect the disc sealing edge from damage when opening the valve.
- Model 504 valves are designed in full compliance with AWWA C504. The Model 504 is a heavy duty, fully AWWA C504 compliant, resilient-seated, flanged-end butterfly valve.

500 SERIES: Dimensional Data

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

Size	A	B	C	D	E	F	G	M (Key)	Q	Bolt Circle	#of holes	TOP PLATE		FLANGE DRILLING				Wt. lbs.
												Hole Size	Bolt Circle	# of Holes	Hole Size	# Tapped	Angle from Vertical Q _L to 1st Hole (°)	
in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.		in.	in.		in.		°	
6	5 ¹ / ₂	11 ¹ / ₈	8	8 ¹ / ₂	6	2	1 ¹ / ₈	1 ¹ / ₄ SQ	4 ³ / ₄	5	4	9 ¹ / ₁₆	9 ¹ / ₂	6	7 ¹ / ₈	n/a	30	80
8	7 ¹ / ₂	13 ³ / ₈	9 ¹ / ₂	8 ⁵ / ₈	6	2	1 ¹ / ₈	1 ¹ / ₄ SQ	6 ⁷ / ₈	5	4	9 ¹ / ₁₆	11 ³ / ₄	6	7 ¹ / ₈	n/a	30	120
10	9 ⁵ / ₈	15 ¹¹ / ₁₆	10 ³ / ₄	9 ¹ / ₄	6	2 ⁵ / ₈	1 ³ / ₈	5 ¹ / ₁₆ SQ	8 ⁷ / ₈	5	4	9 ¹ / ₁₆	14	8	7 ¹ / ₈	n/a	22.5	170
12	11 ¹¹ / ₃₂	17 ¹⁵ / ₁₆	12 ¹ / ₄	9 ¹ / ₄	6	2 ⁵ / ₈	1 ³ / ₈	5 ¹ / ₁₆ SQ	10 ⁷ / ₈	5	4	9 ¹ / ₁₆	16 ¹ / ₄	8	7 ¹ / ₈	n/a	22.5	230
14	12 ¹⁵ / ₁₆	20 ⁵ / ₁₆	14	11 ¹ / ₂	6	2 ⁵ / ₈	1 ⁵ / ₈	3 ¹ / ₈ SQ	12 ³ / ₈	6 ¹ / ₂	4	9 ¹ / ₁₆	18 ³ / ₄	10	7 ¹ / ₈	n/a	18	300
16	15 ⁵ / ₃₂	22 ⁹ / ₁₆	15	12	8	2 ⁵ / ₈	1 ⁷ / ₈	1 ¹ / ₂ x ³ / ₈	14 ⁵ / ₈	6 ¹ / ₂	4	13 ¹ / ₁₆	21	12	7 ¹ / ₈	n/a	15	390
18	17	24 ⁵³ / ₆₄	16 ¹ / ₂	12 ¹ / ₄	8	3 ¹ / ₈	2 ¹ / ₄	1 ¹ / ₂ x ³ / ₈	16 ³ / ₈	6 ¹ / ₂	4	13 ¹ / ₁₆	23 ¹ / ₄	12	7 ¹ / ₈	n/a	15	470
20	18 ¹⁵ / ₁₆	27 ⁵ / ₆₄	18	12 ¹ / ₂	8	3 ¹ / ₈	2 ¹ / ₄	1 ¹ / ₂ x ³ / ₈	18 ³ / ₈	6 ¹ / ₂	4	13 ¹ / ₁₆	25 ¹ / ₂	14	7 ¹ / ₈	n/a	12.86	630
24	22 ⁵ / ₁₆	31 ³⁷ / ₆₄	22 ¹ / ₂	13 ¹ / ₄	8	3 ¹ / ₈	2 ⁷ / ₈	3 ¹ / ₄ x ¹ / ₂	21 ¹ / ₂	6 ¹ / ₂	4	13 ¹ / ₁₆	30	16	7 ¹ / ₈	n/a	11.25	820

MECHANICAL JOINT X MECHANICAL JOINT

- Flange drilling per ANSI B16.1 Class 125
- "Q" Dimension is the minimum allowable inside diameter at the centered body face to protect the disc sealing edge from damage when opening valve.
- Model 504 valves are designed in full compliance with AWWA C504. The Model 504 is a heavy duty, fully AWWA C504 compliant, resilient-seated, flanged-end butterfly valve.

Cv VALUES



MODEL 504

SIZE	Cv (gpm/√psi)
3"	228
4"	463
6"	1069
8"	2372
10"	4380
12"	6515
14"	9574
16"	13356
18"	16898
20"	20421
24"	27889

What is Cv and Why is it Important?

The flow characteristic of a given valve is defined by the valve's Cv value. Cv is defined as the maximum flow (expressed in gallons per minute, or gpm) of water at 60 degrees F, which produces a 1 psig pressure drop across the valve.

The mathematical formula for Cv is:

$$Cv = Q / \sqrt{\Delta P}$$

Where: Q = Flow rate in gpm;
 ΔP = Pressure Drop across the valve in psig.

Cv can also be used for fluids other than water by using the following formula:

$$Cv = Q / \sqrt{(\Delta P / G)}$$

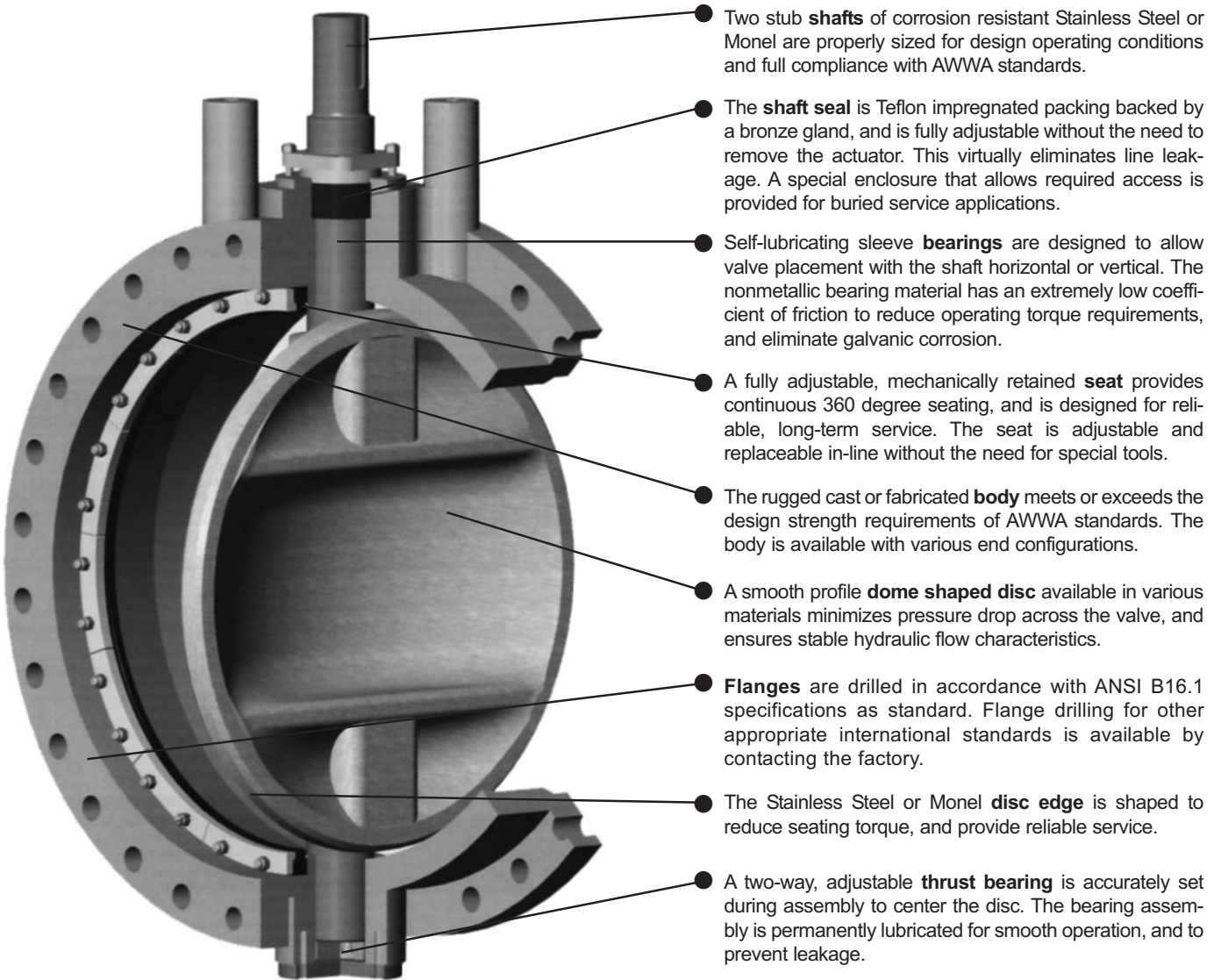
Where G = Specific gravity of the fluid (water=1.0)
 ΔP = Pressure Drop across the valve in psig.

For example, if the valve must pass water at a flow rate of 300gpm, and the maximum allowable pressure drop is 3psig, the Cv of the valve must be equal to or greater than 173.2.

$$Cv = 300\text{gpm} / \sqrt{3\text{psig}} = 173.2$$

47 SERIES: Sizes 24"-96" Available

The K-Flo Wolverine 47 Series butterfly valve is a large diameter valve line designed for a wide variety of liquid and gaseous applications. With over 50 years of service in the field, the K-Flo 47 series design is fully compliant with AWWA C504 requirements. Series 47 valves are available in flanged connections thru 96, and mechanical joint connects thru 48".



- Two stub **shafts** of corrosion resistant Stainless Steel or Monel are properly sized for design operating conditions and full compliance with AWWA standards.
- The **shaft seal** is Teflon impregnated packing backed by a bronze gland, and is fully adjustable without the need to remove the actuator. This virtually eliminates line leakage. A special enclosure that allows required access is provided for buried service applications.
- Self-lubricating sleeve **bearings** are designed to allow valve placement with the shaft horizontal or vertical. The nonmetallic bearing material has an extremely low coefficient of friction to reduce operating torque requirements, and eliminate galvanic corrosion.
- A fully adjustable, mechanically retained **seat** provides continuous 360 degree seating, and is designed for reliable, long-term service. The seat is adjustable and replaceable in-line without the need for special tools.
- The rugged cast or fabricated **body** meets or exceeds the design strength requirements of AWWA standards. The body is available with various end configurations.
- A smooth profile **dome shaped disc** available in various materials minimizes pressure drop across the valve, and ensures stable hydraulic flow characteristics.
- **Flanges** are drilled in accordance with ANSI B16.1 specifications as standard. Flange drilling for other appropriate international standards is available by contacting the factory.
- The Stainless Steel or Monel **disc edge** is shaped to reduce seating torque, and provide reliable service.
- A two-way, adjustable **thrust bearing** is accurately set during assembly to center the disc. The bearing assembly is permanently lubricated for smooth operation, and to prevent leakage.

MATERIALS

SIZES

24"-72" in AWWA Class 25, 75, 150
(meets or exceeds AWWA C504)
(sizes 78" and above are AWWA compliant)

BODY

Cast Iron (ASTM A126, Class B)
Ductile Iron (ATM A536, Grade 65-45-12)

DISC

Ductile Iron (ASTM A536, Grade 65-45-12)
w/ 316 Stainless Steel Edge

STEM

ASTM A276, Grade 304 or 316
Optional Monel, 17-4PH

SEAT

Buna-N
EDPM Optional

47 SERIES: Dimensional Data

K-FLO Model 47 (AWWA Class 75B and 150B)

Size in.	B in.	C in.	D in.	J in.	K in.	L in.	M in.	N in.	P in.	S1 in.	S2 in.	T in.	U in.	WT. (lbs) 75B	WT. (lbs) 150B
30	38 ³ / ₄	25 ³ / ₈	12	36	28	6	1 ¹ / ₄	7	1 ⁷ / ₈	3	3 ⁵ / ₈	46 ¹ / ₂	2 ¹ / ₈	1550	1650
36	46	28 ³ / ₄	12	42 ³ / ₄	32	6	1 ¹ / ₂	6	2 ¹ / ₄	3 ⁵ / ₈	4 ³ / ₈	53 ⁹ / ₁₆	2 ³ / ₈	2190	2380
42	53	30 ¹⁵ / ₁₆	12	49 ¹ / ₂	36	6	1 ¹ / ₂	6	2 ³ / ₈	4 ³ / ₈	5	58 ⁹ / ₁₆	2 ⁵ / ₈	3000	3260
48	59 ¹ / ₂	34 ³ / ₄	15	56	44	8	1 ¹ / ₂	6	2 ¹ / ₄	5	5 ⁵ / ₈	66	2 ³ / ₄	4150	4490
54	66 ¹ / ₄	40 ³ / ₁₆	15	62 ³ / ₄	44	8	1 ³ / ₄	5	2 ¹ / ₂	5 ⁵ / ₈	6 ³ / ₄	75 ¹¹ / ₁₆	3	5110	5970
60	73	43 ⁵ / ₁₆	15	69 ¹ / ₄	52	8	1 ³ / ₄	5	2 ¹ / ₂	6	7 ¹ / ₄	82 ⁹ / ₁₆	3 ¹ / ₈	6240	7550
66	80	47	18	76	52	8	1 ³ / ₄	5	2 ¹ / ₂	6 ³ / ₄	7 ³ / ₄	90	3 ³ / ₈	8200	9920
72	86 ¹ / ₂	51 ¹ / ₁₆	18	82 ¹ / ₂	60	10	1 ³ / ₄	5	2 ¹ / ₂	7 ¹ / ₂	8 ¹ / ₂	97 ⁷ / ₁₆	3 ¹ / ₂	10100	12050

- Series 47 (class 75B and 150B) valves fully comply w/ AWWA C504's latest edition.
- Series 47 valves have passed the proof of design tests of AWWA C504

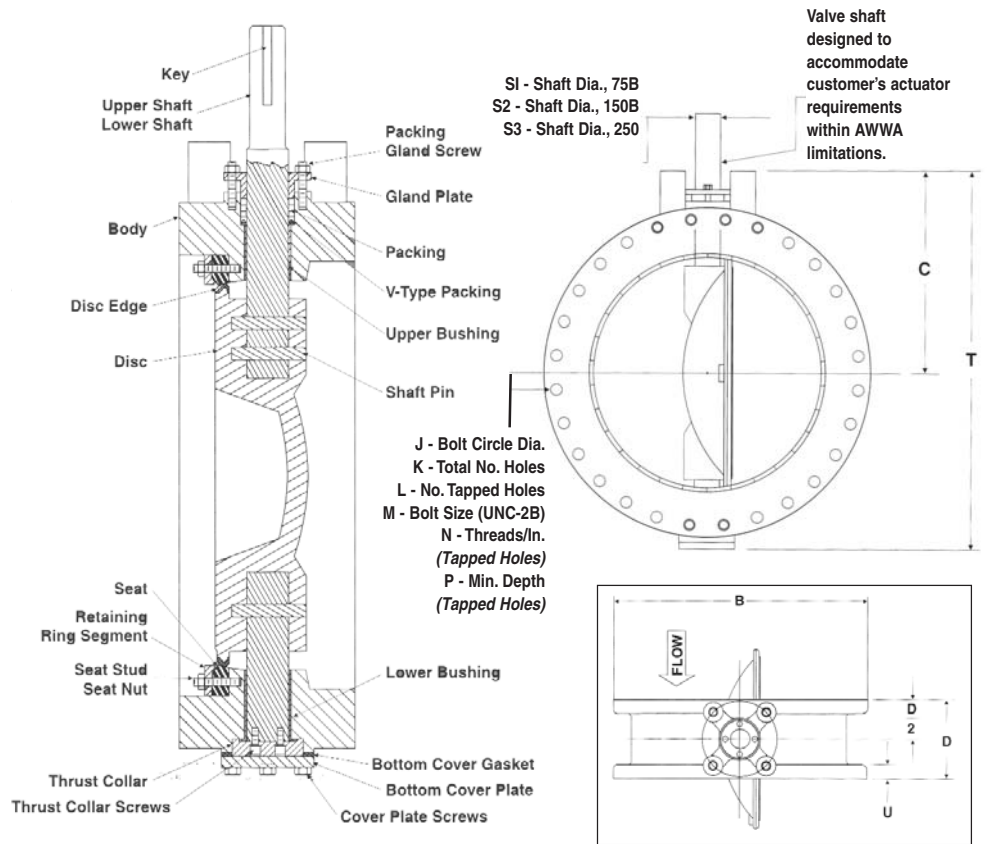
- "Q" Dimension is the minimum allowable inside diameter at the centered body face to protect the disc sealing edge from damage when opening the valve.
- Consult factory for valve dimensions in sizes greater than 72".

Cv VALUES



MODEL 47

SIZE	Cv (gpm √psi)
30"	42200
36"	62060
42"	78930
48"	107930
54"	131350
60"	169220
66"	212430
72"	255880



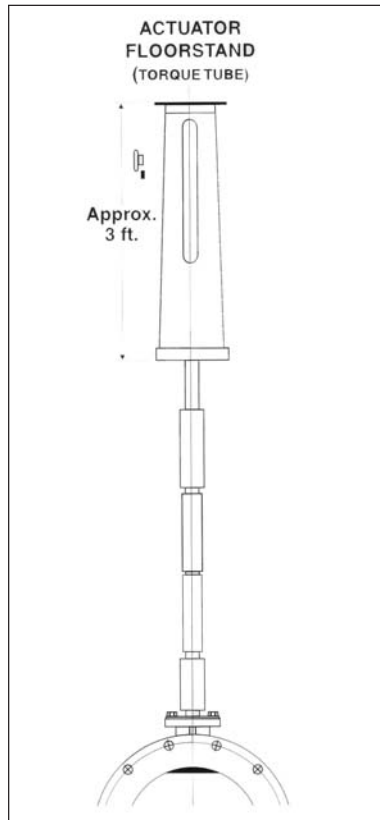
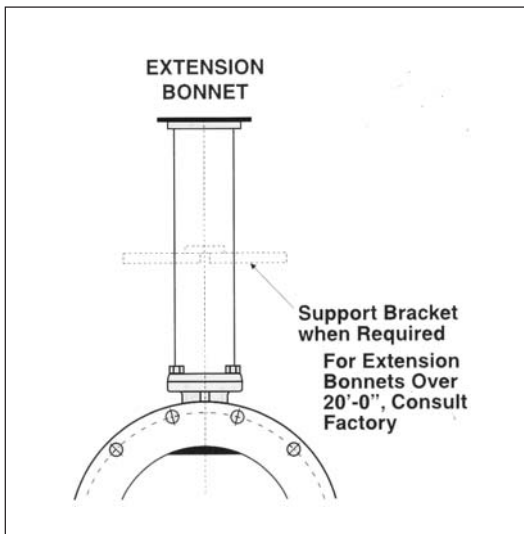
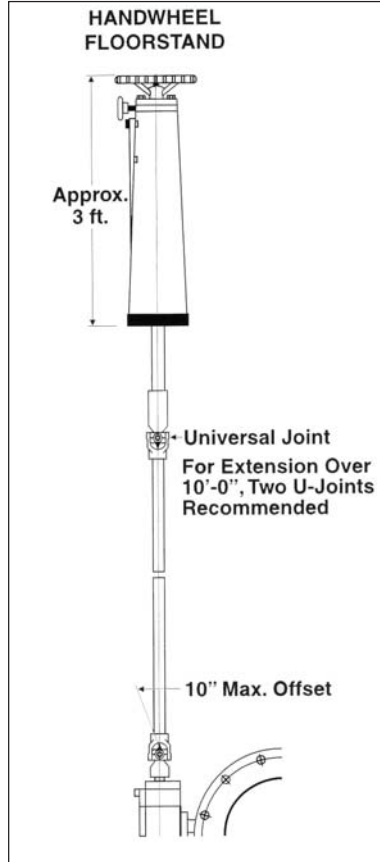
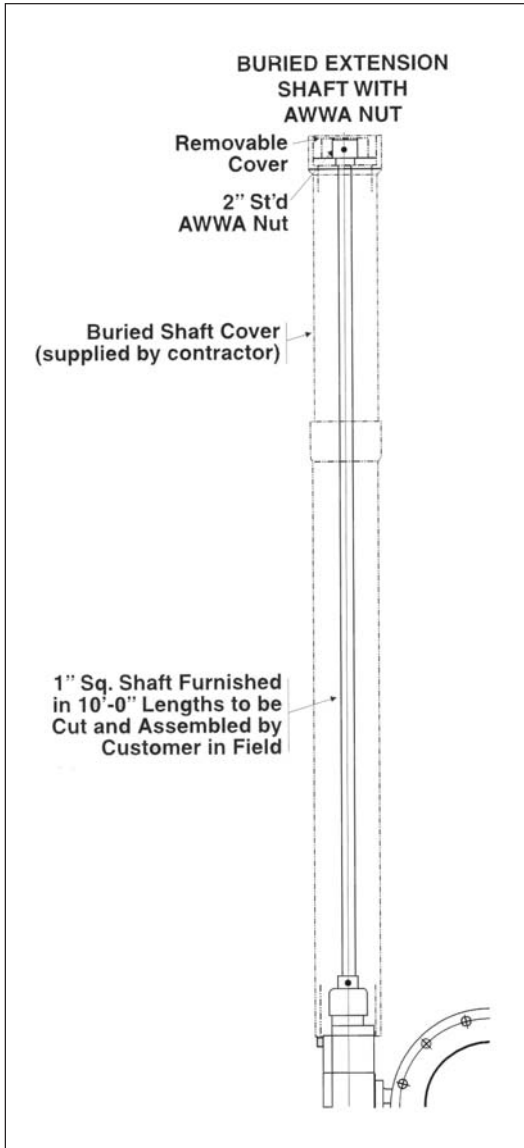
- Series 47 (class 250) valves are designed to the intent of AWWA C504.
- Flange drilling per ANSI B16.1 class 250 (30"-48").
- Flange drilling per ANSI B16.1 class 125 (54" & above).

- "Q" Dimension is the minimum allowable inside diameter at the centered body face to protect the disc sealing edge from damage when opening the valve.
- Consult factory for valve dimensions greater than 72".

K-FLO Model 47 (AWWA Class 250)

Size in.	B in.	C in.	D in.	J in.	K in.	L in.	M in.	N in.	P in.	S3 in.	T in.	U in.	WT. 250B
30	43	25 ³ / ₄	12	39 ¹ / ₄	28	6	1 ³ / ₄	5	3	3 ⁵ / ₈	48 ¹ / ₄	3	1950
36	50	30 ⁵ / ₈	15	46	32	6	2	4 ¹ / ₂	3	4 ³ / ₈	57 ¹ / ₂	3 ³ / ₈	3000
42	57	32 ³ / ₄	15	52 ³ / ₄	36	8	2	4 ¹ / ₂	3	5	62 ¹ / ₄	3 ¹¹ / ₁₆	4175
48	65	36 ³ / ₄	15	60 ³ / ₄	40	8	2	4 ¹ / ₂	3	5 ⁵ / ₈	70 ¹ / ₂	4	5475

ACTUATION: OPTIONS & EXTENSIONS



MANUAL ACTUATION OPTIONS

Above Ground Manual Operators

- Lever operators with ten position selector plate. Available for valve sizes 3" thru 8".
- Handwheel and chainwheel gear operators for all valve sizes. These operators come standard with dial position indicators.

Buried and Submerged Service Gear Operators

- Buried and submerged gear operators are available for all valve sizes. These operators come standard with a 2" AWWA nut and sealed gear housing. For gears continuously submerged at depths greater than 10 feet, please indicate specifications. This will assure the end user that a gear for the intended service is provided.

POWER OPERATORS

Cylinder Operators

- Cylinder operators are available in pneumatic or hydraulic options. They are available as double acting operators or spring return for a specific failure mode (fail open or fail close). All cylinder accessories are available for on/off modulating service.

Electric Motor Operators

- Electric motor operators are available in numerous configurations for varied service conditions. Control options for on/off service and modulating service are available.

Illustrated examples are suitable for mounting manual and automated actuators on valves. The extension bonnet can be used for submerged or buried service valves.

SUGGESTED SPECIFICATIONS



GENERAL

- All butterfly valves shall be of the tight-closing, rubber-seat type, conforming to the design standards of ANSI/AWWA C504's latest revision, except where noted herein.
- Valve shall be bubble-tight at the rated pressure in either direction, and shall be suitable for throttling service and/or operation after long periods of inactivity.
- Manufacturer shall be ISO 9001 Certified and have manufactured AWWA valves for a period of at least 5 years. All butterfly valves shall be from the same manufacturer.
- Valves shall be K-Flo Wolverine Fig. 504/506 (CL. 150/200)/Fig. 507 (CL. 250), for valves 3"-24", K-Flo Fig. 47 (CL. 75, 150 or 250), for valves 30" and larger.

(Notes to Specifier: Please specify pressure class in accordance with your requirements. Wolverine #150 valves are certified for 200 PSI service.)

BODY

- All valve bodies shall be constructed for Cast Iron ASTM A126, Class B with ANSI B16.1 flange drilling. Mechanical joint ends shall conform to the ANSI/AWWA C111/A21.11 standard.

(Note to Specifier: Specifier to indicate end connections, i.e. flanged or MJ. Please indicate 125# or 250# drilling requirements per your project piping requirements.)

DISC

- Discs for valve sizes 3"-24" shall be of the concentric design. Valve discs shall be constructed of Ductile Iron ASTM A536, Grade 65-45-12 with a 316 Stainless Steel edge. Cast Iron discs are not acceptable.
- Discs for valve sizes 30" and larger shall be of the dome design. Valve disc shall be constructed of Ductile Iron ASTM A536 65-45-12.

SHAFT

- Valves 3"-24" shall have a one piece through shaft of 18-8 Stainless Steel, corresponding to the requirements of AWWA C504's latest revision.
- The shafts shall fasten to the disc by means of a threaded disc pin providing a positive leak proof connection to the shaft of the disc.
- Seats for valves 30" and larger shall be field adjustable and replaceable without the use of special tools or factory personnel. Seat adjustment shall be accomplished with a standard wrench.

- Valve seat designs that use epoxy to retain the seat or fillers to increase seat compression are not considered field replaceable or adjustable, and must be field leak witness tested for the water district inspector prior to valves being accepted.
- Valves shall be installed with full seat adjustment downstream.

BEARINGS

- All shaft bearings shall be of the self-lubricating, corrosion-resistant, sleeve type. Bearings shall be designed for horizontal and/or vertical shaft loading.

PACKING

- Shaft packing for valves 3"-24" shall be self-adjusting and suitable for pressure or vacuum service.
- Packing for valves 30" and larger shall incorporate an adjustable packing gland, and the packing shall be adjustable and/or replaceable without removing the valve actuator.

COATINGS AND LININGS

- For valves 3"-24" the flow path shall be fully rubber lined. The valve disc shall be Fusion Bonded Epoxy Coated with an AWWA NSF-61 coating system. The use of liquid epoxy on wetted interior surfaces shall not be acceptable.
- Packing for valves 30" and larger shall be lined and coated with a minimum of 8-10 MILS DFT of a two part liquid AWWA approved epoxy in compliance with NSF-61.

(Note to Specifier: If a higher grade paint system is desired, fusion bonded epoxy coating is available for sizes 30" and larger, and must be specified.)

TESTING

- All valves shall be hydrostatic and leak-tested in accordance with ANSI/AWWA C504, with the following modification: All valves shall be tested and rated at 200 PSI to facilitate field system hydro-test.

PROOF OF DESIGN

- Manufacturer furnishing valves shall present proof of compliance with ANSI/AWWA C504.



FOR MORE INFORMATION ABOUT K-FLO,
CALL OUR SALES DEPT. AT (800) AIR-VALV