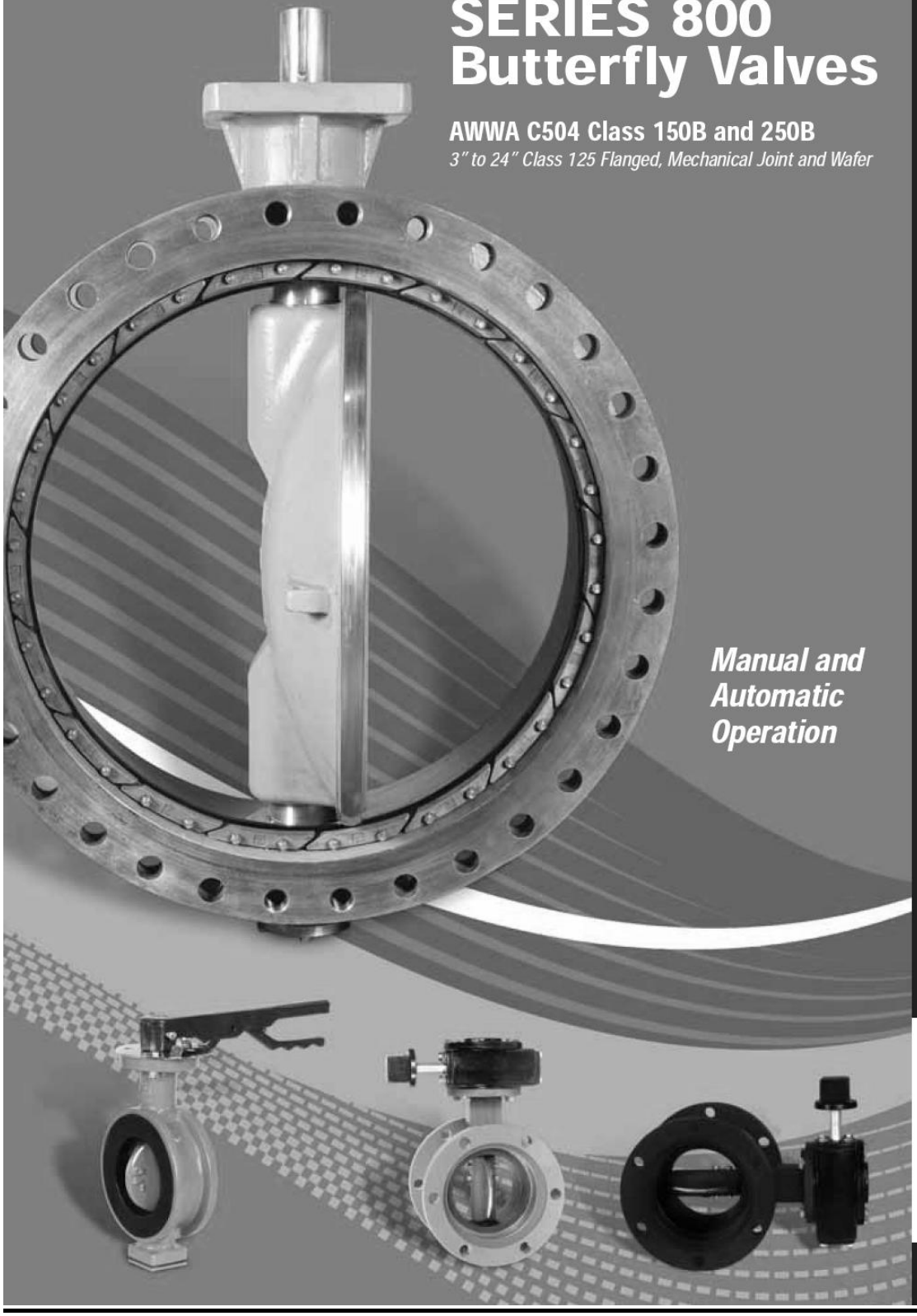
Operation & Maintenance Manual

SERIES 800 Butterfly Valves

AWWA C504 Class 150B and 250B

3" to 24" Class 125 Flanged, Mechanical Joint and Wafer



Manual and Automatic Operation

GA Industries, LLC.

A ZURN Company

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SINCE 1895
GA
MANUFACTURERS OF GOLDEN ANDERSON® VALVES

BUTTERFLY VALVES Series 800

WARNING

Before proceeding read ALL instructions and become familiar with the equipment and associated drawings. Follow ALL applicable safety regulations and codes for pressurized vessels. This manual does not purport to address the safety concerns, if any, associated with its use. It is the responsibility of the user of this manual to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to its use

GENERAL

The GA Series 800 Butterfly Valve is a resilient seated, quarter-turn valve, capable of providing drop tight isolation, on-off or modulating service for liquid flow control. When installed properly, these valves will provide years of maintenance free service.

Failure due to faulty installation, improper operation or maintenance in such systems could result in damage, down time and costly repairs. In buried underground installations, problems or malfunctions can result in extensive, costly excavation to correct the problem.

RECEIVING AND STORAGE

Inspect valves on receipt for damage during shipment and conformance with quantity and description in the order. Carefully unload all valves to the ground without dropping. On smaller valves, do not lift valves with slings or chain around operating shaft, actuator, or through water-way. Instead, lift smaller valves with eyebolts or rods through flange holes.

Whenever practical, store valves indoors. If not possible, protect valves and actuators from weather and accumulation of water, dirt and debris. Do not expose rubber seats to sunlight or ozone for any extended period. Valves should be stored with the valve disc or closure member slightly open.

Make sure flange faces and joint sealing surfaces, body seats and disc seats are clean. Check bolts attaching actuator to valve for loosening in transit and handling. If loose, tighten firmly. Operate valve to make sure it opens and closes properly and that stops and/or limit switches are correctly set. Close valve before installing.

INSTALLATION

The following items must be checked during installation to ensure proper function.

1. Carefully place valves into position avoiding contact or impact with other equipment, vault walls or trench walls.

2. Valves are to be installed in accordance with the General Arrangement Drawings furnished for the order.

3. Foreign material in a valve can damage the rubber seat when valves are operated. Be sure valve interiors and adjacent piping are clear of foreign material prior to mating valve to pipe joint.

4. Prepare pipe ends and install valves in accordance with the pipe manufacturer's instructions for the joint used. Do no deflect pipe/valve joint. Do not use valve as jack to pull pipe into alignment.

5. In plant piping, install so as to minimize bending of valve connection with pipe loading.

6. In the case of wafer type butterfly valves, concentrically center the valve disc between the mating flanges.

7. Make sure valve disc, when opened, will not contact pipe port. This is especially necessary on pipe with linings and when wafer valves are used. Check manufacturer for minimum pipe I.D. required for clearance.

CAUTION: ***It is recommended that valves be installed into piping system in accordance with AWWA M-44 in order to prevent any undue piping stress, deflection or bending that may affect the performance of the valve.***

CAUTION: ***On valves without actuators, discs may open or close at any time and cause injury to persons or damage to valve and other property. The shaft/disc clamping device when furnished is intended for temporary use during shipping, handling and valve installation only. Do no subject the valve to flow conditions before actuator is mounted and tested for performance, and clamping device is removed.***

Buried valves installed with valve boxes must be so installed that the valve box does not transmit shock or stress to the valve actuator as a result of shifting soil or traffic load.

When valves are installed in vaults, the vault design must provide space for purposes of repair. The valve operating nut should be accessible from the top opening of the vault with a tee wrench.

MECHANICAL JOINT INSTALLATION

The successful operation of the mechanical joint requires that the plain end be centrally located in the bell and that adequate anchorage be provided where abrupt changes in direction and dead ends occur. The rubber gasket will seal more effectively if the surfaces with which it comes in contact are thoroughly cleaned (for example, with a wire brush) just prior to assembly in order to remove all loose rust or foreign material. Lubrication and additional cleaning should be performed by brushing both the gasket and the plain end with soapy water or pipe lubricant just prior to slipping the gasket into the plain end and assembling the joint.

For water service, the recommended range of bolt torques to be applied are given in Figure #1.

When tightening bolts, it is essential that the gland be brought up toward the pipe flange evenly, maintaining approximately the same distance between the gland the face of the flange at all points around the socket. This may be achieved by partially tightening the bottom bolt first, then the top bolt; next the bolts at either side; and finally, the remaining bolts. This process should be repeated until all bolts are within the range of torques shown in Figure #1. If effective sealing is not attained at the maximum torque indicated, then the joint should be disassembled, thoroughly cleaned, and reassembled. Overstressing of bolts or mechanical joint flanges to compensate for poor installation practice is to be avoided.

FIGURE #1 ~ MECHANICAL JOINT-BOLT TORQUE LOADS

Valve Size Inches	Bolt Size Inches	Range of Torque Ft.-Lb.	Length of Wrench * Inches
3	5/8	45-60	8
4-24	3/4	75-90	10

*The torque loads may be applied with torque-indicating wrenches, which may also be used to check the application of approximate torque loads applied by a person trained to give an average pull on a given length of regular socket wrench.

SYSTEM TESTING

When rubber seated valves are used to isolate sections of line for test, it is important to note that these valves are designed or factory set to hold rated pressure only. Test pressure in excess of factory rating may cause leakage past the rubber seat or damage to the valve.

In order to prevent lost time in searching for leaks, it is recommended that excavations for buried valves not be back-filled until after hydrostatic pressure tests have been made.

Seat leakage can occur due to foreign material in the line. If this occurs, open valve 5-10 degrees to get high velocity flushing action. Close and repeat several times to clear seats for tight shutoff.

Seat leakage can occur due to rotational shift in position of the disc with relation to the body seat. Re-adjust closing stop.

OPERATION

Do not permit operation of any valve at pressure above the rated pressure of the valve. Do not exceed 300 ft.-lb. input torque on actuators with wrench nuts, 200 lb. rim pull input torque for handwheels and chainwheels. If portable auxiliary actuators are used, size the actuator or use a torque limiting device to prevent application of torque exceeding 300ft. lbs. If an oversize actuator with no means of limiting torque is used, stop the actuator before valve is fully opened or closed against stops and complete the operation manually. Be sure to check actuator directional switch against direction indicated on wrench nut, handwheel or records before applying opening and closing torque.

If a valve is stuck in some intermediate position between open and closed, check first for jamming in the actuator. If nothing is found, the interference is inside the valve. In this case, do not attempt to force the disc open or closed since excessive torque in this position can severely damage internal parts. Contact the GA service department.

CAUTION: Fluids exposed to freezing temperatures may cause valve to fail resulting in injury to persons or damage to valves and other property. Do not use valves in applications that are exposed to freezing temperatures unless sufficient flow is maintained through the valve to prevent freezing, or other protection is provided.

MAINTENANCE

Maintenance of rubber-seated valves by owner is generally limited to actuators and shaft seals. Seat adjustment should be made in accordance with field service manuals. Unless the owner has skilled personnel and proper equipment, any major re-work will probably require removal of the valve from the line. Depending on condition, valve may require return to the manufacturer.

CAUTION: Removal of actuator from valve shaft can cause disc to rotate, striking persons or objects in the disc path, causing injury to persons or damage to valve. Block or lock disc before removing actuator.

Normal maintenance would be shaft packing replacement and actuator adjustment. Seal leakage, broken parts and difficult operation should be discussed with GA's Service Department before valve repairs are attempted.

Stop line flow and isolate from line pressure prior to performing any corrective maintenance.

After completing repair, cycle valve through one complete operating cycle and after line pressure has been restored, inspect for leakage.

If major repairs require removal or closure of the valve, notify all interested personnel in the water department and fire department that the valve and line are out of service. Upon completion of repair and re-installation, notify the same personnel of the return of the valve and line to service.

PARTS

Order parts from your local GA Industries sales representative or directly from GA Industries. When ordering parts, please include the serial number located on the valve tag.

TROUBLE SHOOTING

PROBLEM	POSSIBLE CAUSE	CORRECTIVE ACTION
Leakage at shaft or between valve & actuator.	Packing Loose	Clean packing & valve bore and replace.
	Packing Worn	Replace packing.
Valve will not shut off flow or will not fully close.	Obstruction In Line	Open valve to allow fluid flow to flush out obstruction.
	Disc Not Fully Closed	Adjust actuator closed position stop.
	Excessive Line Pressure	Reduce pressure.
Valve does not fully open.	Position stop on actuator not Set correctly.	Adjust actuator open position stop.
	Obstruction In Line	Remove obstruction.
	Excessive Line Pressure	Reduce pressure.
Opening and/or closing torque is excessive.	Corroded Actuator Parts	Clean & lubricate actuator Parts.
Valve is difficult to operate.	Loose mounting between valve & actuator.	Tighten Bolts.
	Obstruction In Line	Remove Obstruction.
Vibration in valve when operating.	Excessive Velocity	Reduce flow rate.
	Loose mounting between valve & actuator.	Tighten bolts.

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MANUFACTURERS OF GOLDEN ANDERSON® VALVES

SERIES 800 Butterfly Valves

3" TO 20" WAFER
AWWA CLASS 150B

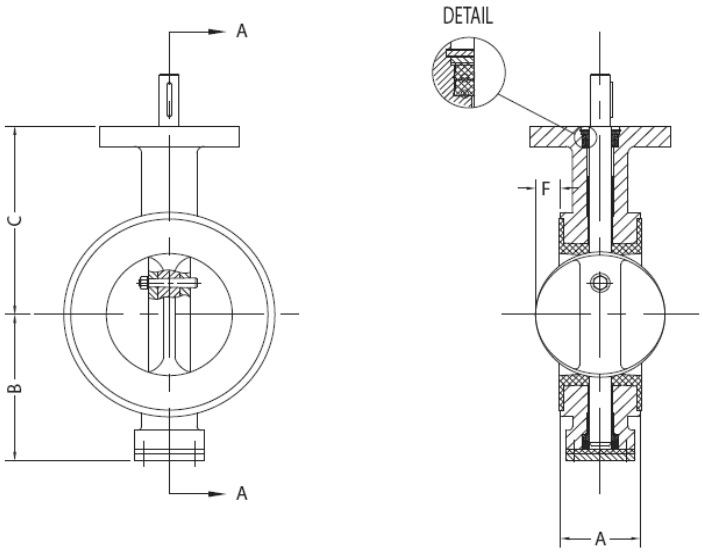
WAFER (LEVER OPERATOR SHOWN)

PRESSURE RATING

Class 150B
150 PSI Working Pressure
300 PSI Test Pressure

FEATURES

1. Conforms with AWWA C504 (latest revision)
2. High strength ductile iron body
3. Fully rubber lined waterway with integral rubber seat vulcanized to body
4. Streamlined epoxy coated ductile iron disc with 316 stainless steel seat edge
5. Stainless steel shaft sized per AWWA C504
6. 316SS backed nylon low friction shaft bearings
7. Self-adjusting and wear compensating U-cup shaft seals
8. External 2-part epoxy coating (Gray)
9. Integral MSS SP-101 actuator mounting pad



SECTION A-A

MATERIALS OF CONSTRUCTION

COMPONENT	STANDARD MATERIAL
Body	Ductile Iron, ASTM A536 Grade 65-45-12
Disc	Ductile Iron, ASTM A536 Grade 65-45-12 with 316 Stainless Steel Seat Edge, NSF-61 Epoxy Coated
Seat	Buna-N Rubber
Shaft	Class 150B – Type 304 Stainless Steel Class 250B – Type 17-4PH Condition H1150 Stainless Steel
Shaft Bearings	316SS and Nylon
Shaft Packing	Buna-N Rubber

GENERAL DIMENSIONS

SIZE	A	B	C	F	WGT
3"	2	3.50	4.75	0.50	12
4"	2¼	4.25	5.50	0.88	18
6"	2¾	5.13	6.50	1.62	28
8"	3	6.25	7.88	2.50	47
10"	3⅛	9.06	9.00	3.44	60
12"	3⅜	9.84	10.56	4.31	84
14"	3¾	11.00	11.81	5.12	165
16"	4⅛	12.63	13.44	5.94	250
18"	4⅜	13.75	14.38	6.69	300
20"	5⅛	14.56	16.00	7.44	385

NOTES:
1. Dimensions in inches, weight in pounds. Weight does not include actuator.
2. Dimension "F" is minimum clearance required for valve to fully open.

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SERIES 800 Butterfly Valves

3" TO 24" MECHANICAL JOINT
AWWA CLASS 150B & 250B

MECHANICAL JOINT (ACTUATOR NOT SHOWN)

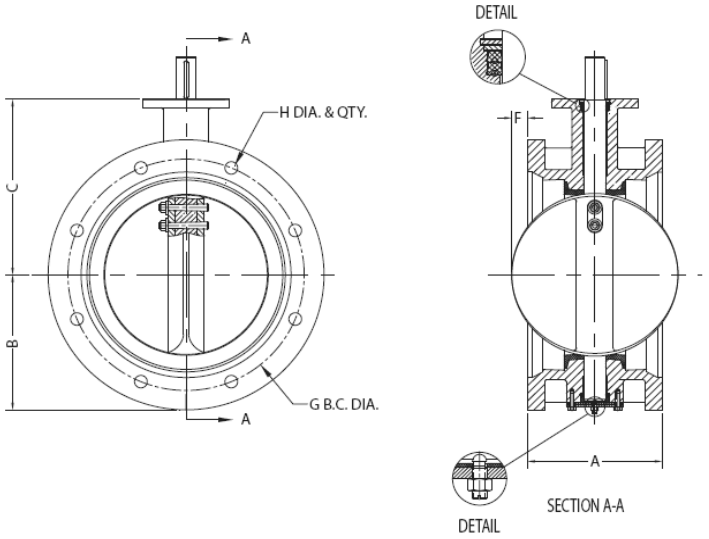
PRESSURE RATING

Class 150B
150 PSI Working Pressure
300 PSI Test Pressure

Class 250B
250 PSI Working Pressure
500 PSI Test Pressure

FEATURES

1. Conforms with AWWA C504 (latest revision)
2. High strength ductile iron body
3. Molded rubber seat vulcanized to body
4. Streamlined epoxy coated ductile iron disc with 316 stainless steel seat edge
5. Stainless steel shaft sized per AWWA C504
6. 316SS backed nylon low friction shaft bearings
7. Self-adjusting and wear compensating U-cup shaft seals
8. Internal and external NSF-61 epoxy coating (Black)
9. Integral MSS SP-101 actuator mounting pad



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Shaft	Class 150B – Type 304 Stainless Steel Class 250B – Type 17-4PH Condition H1150 Stainless Steel
Shaft Bearings	316SS and Nylon
Shaft Packing	Buna-N Rubber

GENERAL DIMENSIONS

SIZE	A	B	C	F	G	H	WGT
3"	8½	3.75	6.25	-	6.19	4 X ¾"	35
4"	8½	4.50	7.00	-	7.50	4 X ⅞"	59
6"	8½	5.88	8.00	-	9.50	6 X ⅞"	74
8"	8⅝	6.75	9.50	-	11.75	6 X ⅞"	97
10"	9¼	8.06	10.75	.38	14.00	8 X ⅞"	133
12"	9¼	9.50	12.31	1.38	16.25	8 X ⅞"	168
14"	11½	10.56	14.00	1.25	18.75	10 X ⅞"	257
16"	12	12.31	15.00	2.00	21.00	12 X ⅞"	305
18"	12¼	13.00	16.50	2.88	23.25	12 X ⅞"	373
20"	12½	14.62	18.00	3.75	25.50	14 X ⅞"	455
24"	13¾	17.12	22.50	5.38	30.00	16 X ⅞"	574

NOTES:
1. MJ ends per AWWA C111/ANSI A12.11.
2. Dimension "F" is minimum clearance required for valve to fully open.
3. Dimensions in inches, weight in pounds. Weight does not include actuator.

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SERIES 800 Butterfly Valves

3" TO 24" ANSI CLASS 125 FLANGED
AWWA C504 CLASS 150B & 250B

FLANGED BUTTERFLY (ACTUATOR NOT SHOWN)

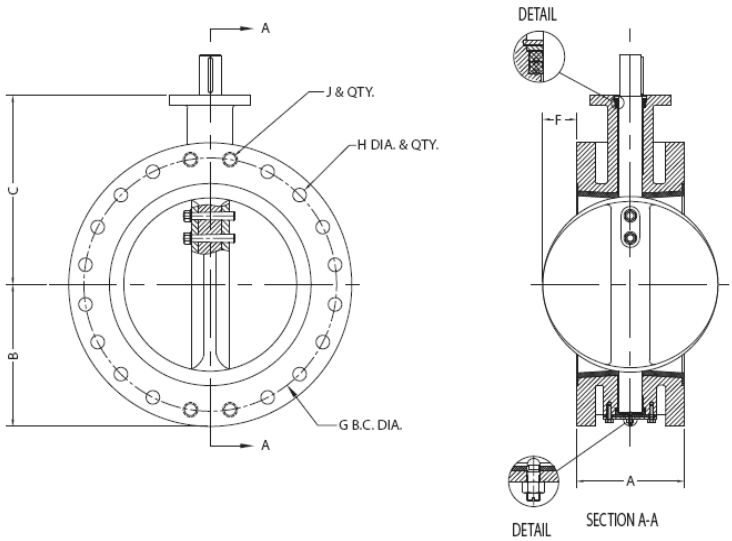
PRESSURE RATING

Class 150B
150 PSI Working Pressure
300 PSI Test Pressure

Class 250B
250 PSI Working Pressure
500 PSI Test Pressure

FEATURES

1. Conforms with AWWA C504 *(latest revision)*
2. High strength ductile iron body
3. Fully rubber lined waterway with integral rubber seat vulcanized to body and tested to ASTM D429 Method B
4. Streamlined epoxy coated ductile iron disc with 316 stainless steel seat edge
5. One-piece stainless steel shaft sized per AWWA C504
6. 316SS backed nylon low friction shaft bearings
7. Self-adjusting and wear compensating U-cup shaft seals
8. External 2-part epoxy coating (Gray)
9. Integral MSS SP-101 actuator mounting pad



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Shaft	Class 150B – Type 304 Stainless Steel Class 250B – Type 17-4PH Condition H1150 Stainless Steel
Shaft Bearings	316SS and Nylon
Shaft Packing	Buna-N Rubber

GENERAL DIMENSIONS

SIZE	A	B	C	F	G	H	J	WGT
3"	5	3.75	6.25	-	6.00	4 X ¾"	-	26
4"	5	4.50	7.00	-	7.50	8 X ¾"	-	39
6"	5	5.88	8.00	0.50	9.50	8 X ⅞"	-	64
8"	6	6.75	9.50	1.00	11.75	8 X ⅞"	-	108
10"	8	8.06	10.75	1.00	14.25	12 X 1"	-	148
12"	8	9.50	12.31	2.00	17.00	12 X 1"	-	201
14"	8	10.56	14.00	3.00	18.75	12 X 1⅛"	-	259
16"	8	12.31	15.00	4.00	21.25	12 X 1⅛"	4 X 1"- 8UNC	321
18"	8	13.00	16.50	5.00	22.75	12 X 1¼"	4 X 1⅛" - 8UNC	403
20"	8	14.62	18.00	6.00	25.00	16 X 1¼"	4 X 1⅛" - 8UNC	496
24"	8	17.12	22.50	8.00	29.50	16 X 1⅜"	4 X 1¼"- 8UNC	726

NOTES:
1. Flange drilling per ANSI B16.1 Class 125 for both Class 150B and 250B valves.
2. Dimension "F" is minimum clearance required for valve to fully open.
3. 16" and larger valves have 4 tapped bolt holes in each flange, 2 at the top and 2 at the bottom straddling the shaft centerline, per Dimension G.
4. Dimensions in inches, weight in pounds. Weight does not include actuator.