

AMERICAN FLOW CONTROL GATE VALVE OPERATION & MAINTENANCE MANUAL

EAST AREA WQCF IMPROVEMENTS ATLANTA, GEORGIA

ENGINEER

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Lakeshore Engineering, LLC
1259 Ellsworth Drive
Atlanta, GA 30318

VENDOR

Eco-Tech, Inc.
156 Hickory Springs Industrial Drive
Canton, Georgia 30115

October 04, 2022

East Area WQCF Improvements Atlanta, Georgia

Contractor: Lakeshore Engineering, LLC
1259 Ellsworth Drive
Atlanta, GA 30318
Ph: 404-355-3976

Description: Gate Valve

Supplier: Eco-Tech, Inc.
156 Hickory Springs Industrial Drive
Canton, GA 30115
Ph: (770) 345-2118
Contact: Heather Bame
Email: hbame@eco-tech.net

Manufacturers: American Flow Control
PO Box 2727
Birmingham, AL 35202
Ph: 800-326-1964
Website: www.acipco.com

Service Center: Eco-Tech, Inc.
156 Hickory Springs Industrial Drive
Canton, GA 30115
Ph: (770) 345-2118
Contact: Kelsie Gibson
Email: kgibson@eco-tech.net

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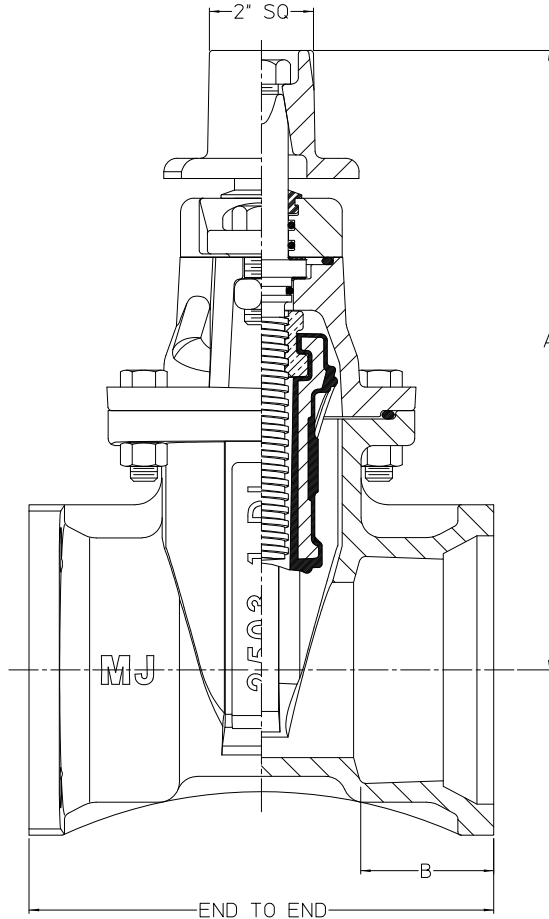
- AIS Certification Letter
- Warranty

SCOPE OF SUPPLY

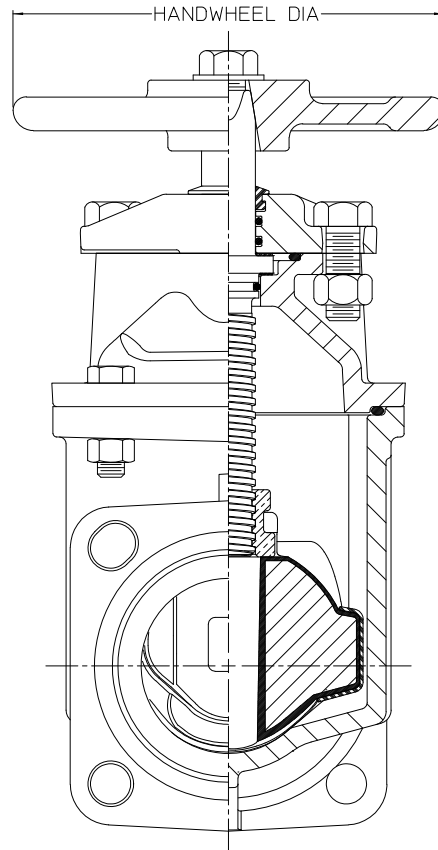
<u>Item</u>	<u>Qty</u>	<u>Description</u>
1	1	3" MJ American Flow Control Series 2500-1 Resilient Seated Gate Valve with 2" Nut Operator at Yard Piping on plan sheet C-011. Tag: GV1
2	3	4" Flanged American Flow Control Series 2500-1 Resilient Seated Gate Valve with Handwheel Operator at Solids Processing Pump Station on plan sheet M-103. Tag: GV2
3	1	3" MJ American Flow Control Series 2500-1 Resilient Seated Gate Valve with 2" Nut Operator. Tag: GV1 – Spare
4	1	4" Flanged American Flow Control Series 2500-1 Resilient Seated Gate Valve with Handwheel Operator. Tag: GV2 – Spare

AMERICAN Flow Control Submittal Information

3" SERIES 2500-1 RESILIENT WEDGE GATE VALVE, NRS

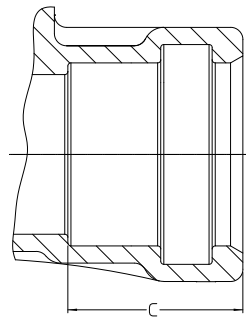


SHOWN WITH 2" OPERATING NUT

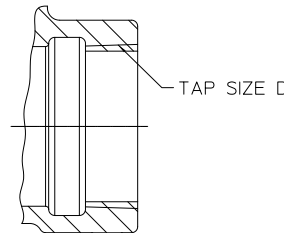


SHOWN WITH OPTIONAL HANDWHEEL

IL4697



PVC



THREADED (SCREW)

OPTIONAL END CONNECTIONS

NOTES:

1. Bolt pattern of flanged ends are in accordance with ASME B16.1, Class 125.
2. Mechanical joint ends are in accordance with ANSI/AWWA C153/A21.53.
3. PVC ends are for steel (IPS) sizes of PVC or steel pipe.
4. Threaded ends are in accordance with ASME B16.4, Class 125 (see dimension D).

DIMENSION	3" VALVE SIZE
End to End - MJ/MJ	8.63
End to End - FL/FL	8.00
End to End - FL/MJ	8.31
End to End - PVC/PVC	11.38
End to End - Threaded	7.38
A	11.50
B	2.50
C	3.56
D	3 NPT
Handwheel Diameter	8.00
No. of Turns to open	13



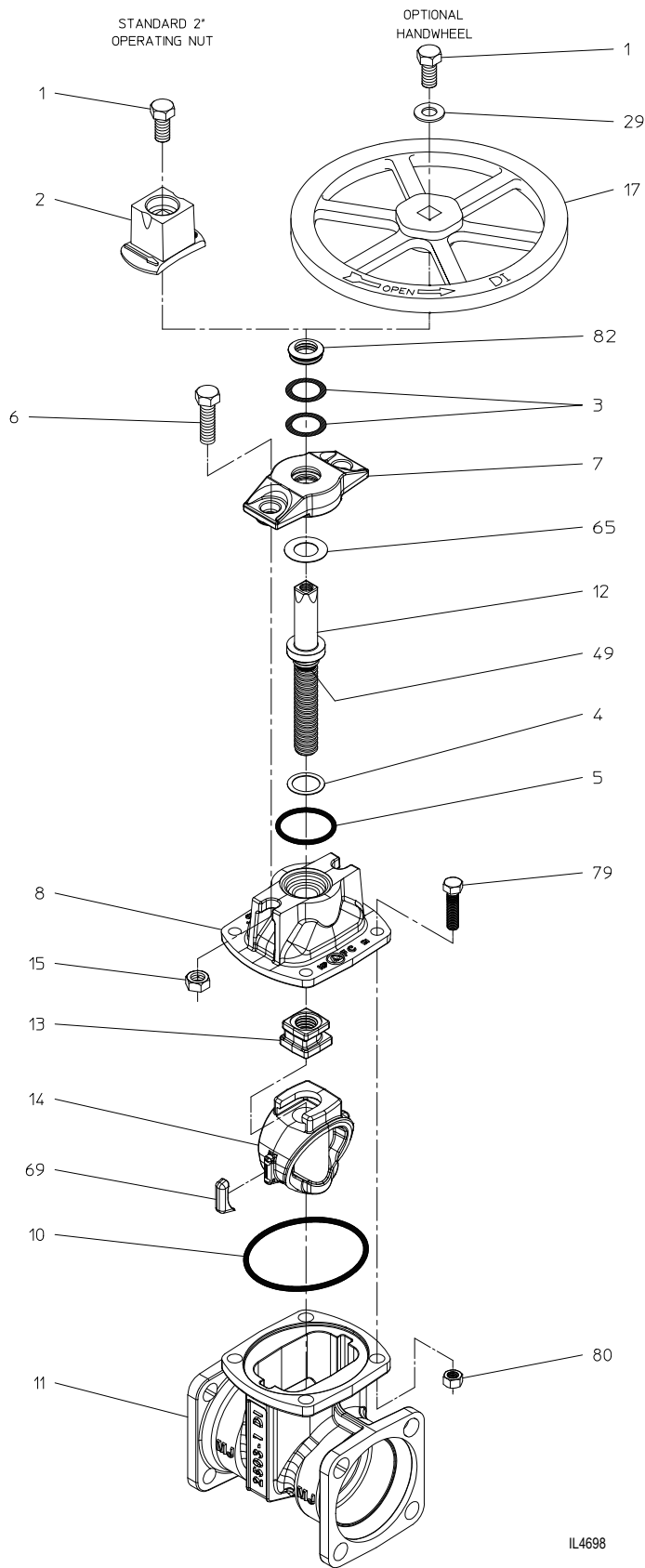
AMERICAN
FLOW CONTROL

THE RIGHT WAY

AMERICAN Flow Control
P.O. Box 2727
Birmingham, Al. 35202-2727
Phone: 1-800-326-8051
Fax: 1-800-610-3569
E-mail: afcsales@american-usa.com

Waterous Company
125 Hardman Avenue South
South St. Paul, Mn. 55075-1191
Phone: 1-888-266-3686
Fax: 1-800-601-2809
E-mail: afcsales@american-usa.com

WWW.AMERICAN-USA.COM



IL4698

Construction shown is typical of the 3-inch size with mechanical joint connections and is illustrative only. Construction of other end connection types vary slightly. See elsewhere on this submittal for specific details.

REF NO.	DESCRIPTION	MATERIAL
1	Hex Head Bolt, 5/8-11 x 1"	304 Stainless Steel
2	Operating Nut	Ductile Iron, ASTM A536
3	O-Ring	Rubber
4	Lower Thrust Washer	304 Stainless Steel
5	Stuffing Box Gasket	Rubber O-ring
6	Hex Head Bolt, 5/8-11 x 1-3/4"	304 Stainless Steel
7	Stuffing Box	Ductile Iron, ASTM A536
8	Bonnet	Ductile Iron, ASTM A536
10	Bonnet Gasket	Rubber O-ring
11	Body	Ductile Iron, ASTM A536
12	Stem	Manganese Bronze, ASTM B763, UNS C86700
13	Wedge Nut	Silicon Bronze, ASTM B584, UNS C87600
14	Resilient Wedge	EPDM Rubber Encapsulated Ductile Iron, ASTM A536
15	Hex Nut, 5/8-11	304 Stainless Steel
17	Handwheel	Ductile Iron, ASTM A536
29	Flat Washer, 5/8	304 Stainless Steel
49	O-Ring	Rubber
65	Upper Thrust Washer	304 Stainless Steel
69	Wedge Cover	Acetal Polymer
79	Hex Head Bolt, 1/2-13 x 1-3/4"	304 Stainless Steel
80	Hex Nut, 1/2-13	304 Stainless Steel
82	Debris Seal	Rubber

OPTIONAL MATERIALS ARE AS FOLLOWS

BOLTS and NUTS: 316 Stainless Steel
 STEM: 304 Stainless Steel and 316 Stainless Steel

Open Direction: Left (C.C.W.) Right (C.W.)

NOTES:

1. Available in configurations that are UL Listed and FM Approved with 250 psig rated working pressure.
2. Meets applicable requirements of ANSI/AWWA C515 with 250 psig rated working pressure.
3. Fusion-bonded epoxy-coated in accordance with ANSI/AWWA C550.
4. Certified to NSF/ANSI/CAN 61 and NSF/ANSI 372.



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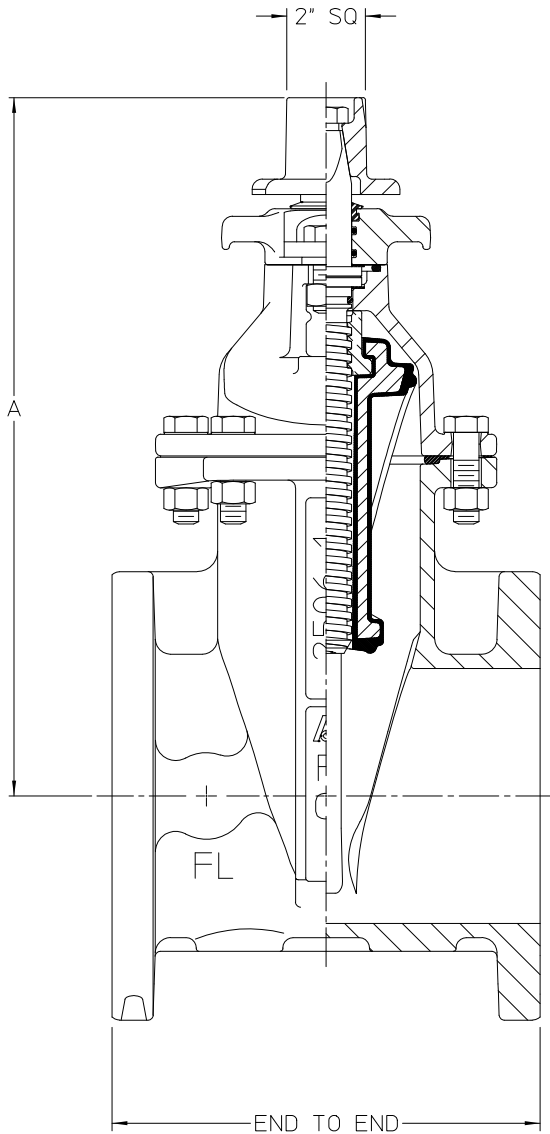
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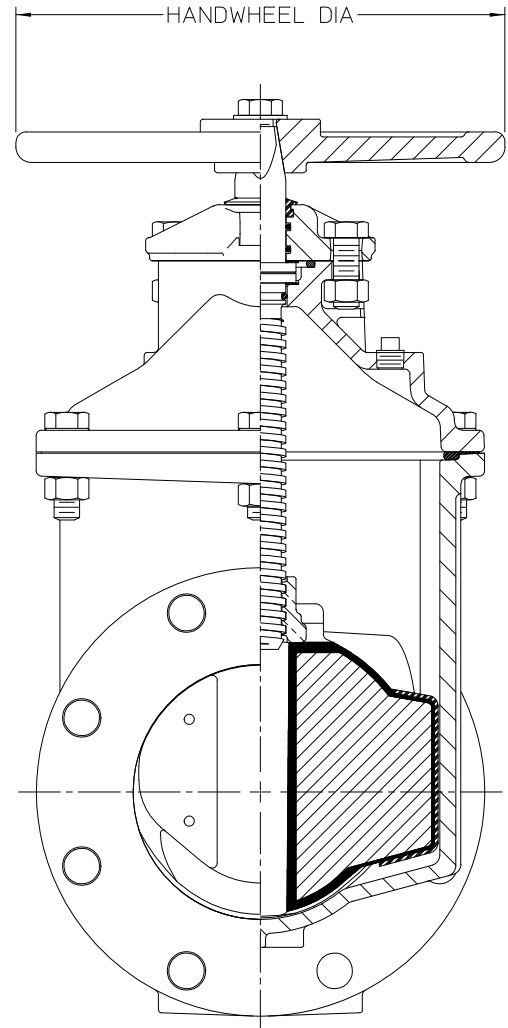
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AMERICAN Flow Control Submittal Information

4" - 12" SERIES 2500-1 RESILIENT WEDGE GATE VALVE, NRS, WITH CLASS 125 FLANGED ENDS (FLG X FLG)



SHOWN WITH 2" OPERATING NUT



SHOWN WITH OPTIONAL HANDWHEEL

IL4041

DIMENSION	VALVE SIZE				
	4"	6"	8"	10"	12"
End to End - FL/FL	9.00	10.50	11.50	13.00	14.00
A	13.91	17.12	20.47	24.06	27.59
Handwheel Diameter	10.00	12.00	14.00	16.00	16.00
No. of Turns to Open	14	20	26	32	38



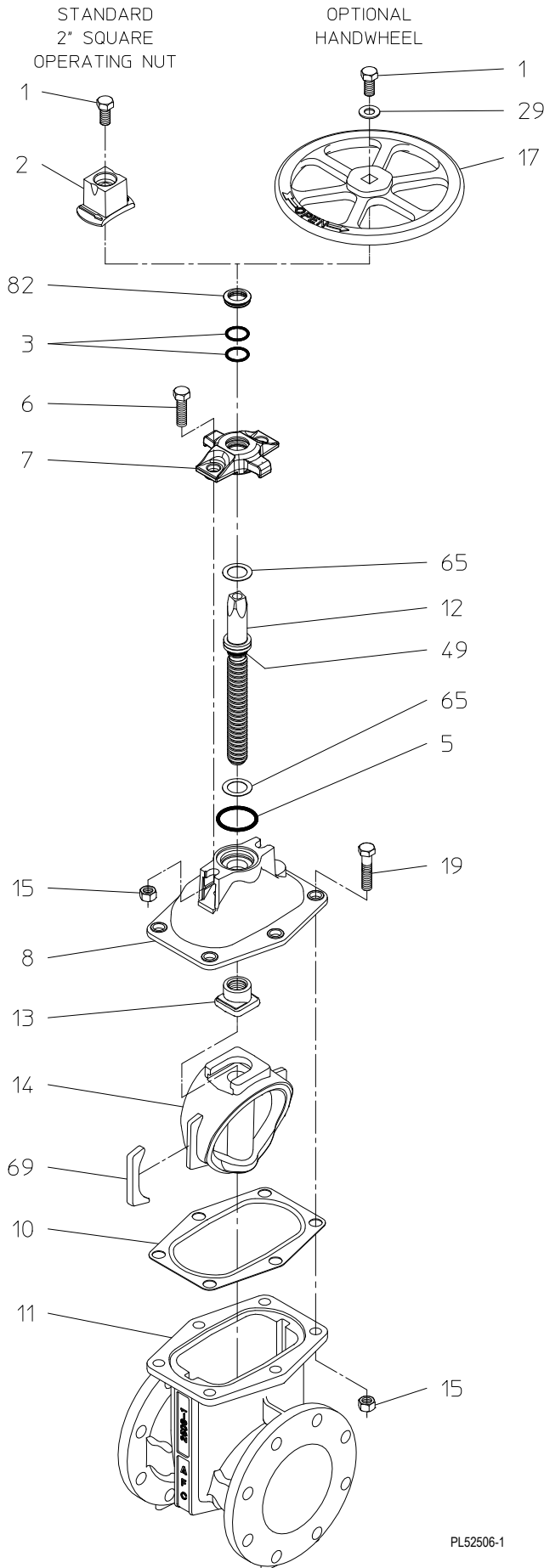
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PL52506-1

Construction shown is typical of the 6-inch size with flanged end connections and is illustrative only. Construction of other sizes vary slightly.

REF NO.	DESCRIPTION	MATERIAL
1	Hex Head Bolt, 5/8-11 x 1"	304 Stainless Steel
2	Operating Nut, 2" Square	Ductile Iron, ASTM A536
3	O-Ring	Rubber
5	Stuffing Box Gasket	Rubber O-ring
6	Hex Head Bolt, 5/8-11 x 1-3/4"	304 Stainless Steel
7	Stuffing Box	Ductile Iron, ASTM A536
8	Bonnet	Ductile Iron, ASTM A536
10	Bonnet Gasket	Rubber
11	Body	Ductile Iron, ASTM A536
12	Stem	Manganese Bronze, ASTM B763, UNS C86700
13	Wedge Nut	Manganese Bronze, ASTM B763, UNS C86700
14	Resilient Wedge	EPDM Rubber Encapsulated Ductile Iron ASTM A536
15	Hex Nut, 5/8-11	304 Stainless Steel
17	Handwheel	Ductile Iron, ASTM A536
19	Hex Head Bolt, 5/8-11 x 2-1/4"	304 Stainless Steel
29	Flat Washer, 5/8	304 Stainless Steel
49	O-Ring	Rubber
65	Thrust Washer	304 Stainless Steel
69	Wedge Cover	Acetal Polymer
82	Debris Seal	Rubber

OPTIONAL MATERIALS ARE AS FOLLOWS

BOLTS and NUTS: 316 Stainless Steel

STEM: Cast NDZ-S Bronze, ASTM B763, UNS C99500

STEM: Stainless Steel

WEDGE NUT: Silicon Bronze, ASTM B584, UNS C87600

Open Direction: Left (C.C.W.) Right (C.W.)

NOTES:

1. Available in configurations that are UL Listed and FM Approved with 250 psig rated working pressure.
2. Meets requirements of ANSI/AWWA C515 with 250 psig rated working pressure.
3. Fusion-bonded epoxy-coated in accordance with ANSI/AWWA C550.
4. Certified to NSF/ANSI 61 & 372.
5. Flanged end dimensions per ASME B16.1, Class 125, and AWWA C110.



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Waterous Company
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SERIES 2500 – WEIGHTS



NRS Valve

End Connections	Valve Size																
	Series 2500			Series 2500-1					Series 2500								
	2"	2-1/2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"
MJ x MJ	42	-	44	57	96	149	228	331	670	820	1100	1520	2300	4100	7450	11210	15870
FL x MJ (Class 125)	-	-	-	63	102	162	246	364	680	840	1110	1525	2300	4100	7450	11210	15870
FL x FL (Class 125)	38	46	52	71	108	177	268	400	690	870	1120	1530	2300	4100	7450	11210	15870
FL x FL (Class 250)	-	-	68	93	162	251	378	549	875	1080	1370	1880	2300	-	-	-	-
TY x TY	-	-	-	70	110	177	263	370	-	-	-	-	-	-	-	-	-
FL x TY (Class 125)	-	-	-	70	109	176	264	384	-	-	-	-	-	-	-	-	-
PO x PO	-	-	-	-	-	-	-	-	650	830	-	-	-	-	-	-	-
PVC x PVC	35	41	47	58	110	158	-	-	-	-	-	-	-	-	-	-	-
Threaded x Threaded (Screw x Screw)	30	36	41	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FL x MJ (Tapping)	-	-	-	64	102	162	246	365	680	845	1110	1525	2300	4100	7450	11210	15870
FX x FX (Flex-Ring)	-	-	-	-	-	-	-	-	-	-	-	-	2300	4100	7450	-	-

OS & Y Valve

End Connections	Valve Size							
	Series 2500			Series 2500-1				
	2"	2-1/2"	3"	4"	6"	8"	10"	12"
FL x FL (Class 125)	49	47	53	88	131	205	313	446
FL x FL (Class 250)	-	-	69	110	185	279	423	595

NOTE: All weights are in pounds.

SERIES 2500 – INSTALLATION & TESTING

Storage

Valves are palletized when shipped which provides suitable protection from weather and sunlight during storage. If palletizing is disbanded and valves removed, remaining valves should be suitably covered or stored elsewhere with the valve stem vertical.

- Always store valves fully closed.
- When possible, keep valves out of the weather.
- In cold climates, keep the inside of the valve drained of any water to prevent freezing.
- Whenever possible, cover valves with a water-proof covering.
- Protect all parts of the valve at all times.

Inspection Before Installation

- Check to make sure that the valve end connections are clean and that the valve is not damaged.
- Check opening direction and other details against specification.
- Open and close the valve to make sure it works properly.
- Clean the inside of the valve to remove all contaminants that may affect water system purity.
- Keep the valve closed when placing in trench.

Installation

1. Handle the valve carefully.
2. Check all bolts for tightness. Gaskets may shrink during storage and might leak if the bolts are not re-tightened.
3. Prepare pipe ends in accordance with pipe manufacturer's instructions.
4. Install the valve as per appropriate instructions for the specified joint (flanged, mechanical joint, PVC, asbestos cement, etc.)

NOTE: Use 1/8" thick rubber "ring" type gaskets or Toruseal® full face gaskets. Do not use composition or flat full face gaskets.

5. Be sure that the water main is properly supported to avoid line stress on the valve.
6. In buried applications, make sure that the valve box does not transmit traffic loads or other stress to the valve.
7. Do not use valves to force a pipeline into position. Do not deflect any valve/pipe joint.

Reference Material

These reference materials are available and should be helpful in the installation and testing of gate valve products.

AWWA C-515	Reduced-wall Resilient Seated Gate Valve
AWWA C-500	Metal Seated Gate Valves – 3 thru 48 inch
AWWA C-509	Resilient Seated Gate Valves
AWWA C-600	Installation of Cast Iron Water Mains
AWWA C-603	Installation of Asbestos Cement Pressure Pipe
AWWA M23	PVC Pipe – Design and Installation

All installation, operation and maintenance instructions issued by the manufacturer of the pipe and the valves.

Valve user guides as published by MSS.

NFPA-24	Private Fire Service Mains and Their Appurtenances
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These industry practices have been listed to help you make a safe and acceptable installation of a gate valve.

Testing Procedure

1. Do not backfill around valves before hydrostatic system test. Leave the valves and end joints exposed while the pipeline is being pressurized.
2. Check to see that all valve joints and pressure containing bolting are tight.
3. Valves can be tested (but not operated) at up to two times the rated pressure of the valve.
4. After testing, steps should be taken to relieve any trapped pressure in the body of the valve.



SERIES 2500 – OPERATION & MAINTENANCE



Operation

1. Direction of opening is indicated by an arrow cast on the handwheel or wrench nut of the valve.
2. Operate gate valves from full closed to full open position and back before applying pressure.
3. Close gate valve slowly against pressure to avoid damage from surge or water hammer.
4. Valves installed on liquid service subject to freezing conditions should be protected to prevent trapping of liquid in the bonnet cavity, expansion on freezing and subsequent damage. The same is true of valves which are subject to considerable temperature increases. Trapped pressure should be vented back to the upstream side to prevent buildup of pressure in the valve bonnet due to high temperature expansion.
5. Valves should be opened and closed without the use of excessive torque applied to the handwheel or wrench nut. Excessive torque may damage the valve.

Maintenance

1. Operate gate valves from full open to full close at regular intervals. The length of time between operations depends upon the time of installation and the service conditions.
2. Use Mystik® FG-2 Food Machinery Grease for the stem threads and thrust collar.
3. Chipped spots in the epoxy coating should be repaired with a liquid two part epoxy.

WARNING

To prevent possible personal injury, do not remove bonnet bolts with valve under pressure.

Spare Parts

Under most conditions, the only spare parts needed for the valve would be upper and lower stem O-rings. Under rigorous service, stems, wedges, upper and lower stem O-rings and thrust washers should be carried as spare parts.

Use parts list drawings as a guide for disassembly and ordering repair parts. Also refer to disassembly/reassembly instructions.

Typical Operating Torque At Rated Working Pressure

Valve Size	Closing Torque Ft-lbs	Opening Torque Ft-lbs
2"	15–20	15–20
2–1/2"	15–20	15–20
3"	30–40	30–40
4"	30–40	30–40
6"	50–60	50–80
8"	70–80	60–90
10"	90–100	125–150
12"	100–125	140–175
14"	Contact Factory	
16"	Contact Factory	
18"	Contact Factory	
20"	Contact Factory	
24"	Contact Factory	
30"	Contact Factory	
36"	Contact Factory	
42"	Contact Factory	
48"	Contact Factory	

SERIES 2500 – TROUBLESHOOTING GUIDE



Problem	Solution																																																		
Leakage	<p style="text-align: center;">Depending on the location of the leakage, the following should be examined.</p> <ol style="list-style-type: none"> SEAT: Foreign material may be stuck under the valve wedge. Open valve only enough to get high velocity flow to flush out valve. Repeat several times until leak stops. If this does not solve the problem it is then necessary to open the valve and check for damage to the rubber encapsulated wedge. If it is damaged or severely cut, replace the wedge. STEM: The stem seals are of the O-ring type and the valve has a thrust collar (electric actuated valves normally do not have thrust collars). The seals can be replaced while the valve is under water pressure by back seating the valve in the open position. On OS&Y valves leakage can be stopped by evenly tightening the packing gland bolts. If leakage cannot be stopped, the valve should be repacked. BODY: Check for cracked or damaged valve body or bonnet. If damage has occurred, contact manufacturer for further instructions. BOLTED CONNECTIONS: Check for loose bonnet to body bolts, stuffing box bolts or end joint bolts and tighten as necessary. This should be done prior to pressurization of the line. If line is pressurized, pressure should be relieved prior to tightening any bolts. Do not tighten bolts past the yield strength of the bolt. Reinstall all bolts and nuts and tighten alternately to 70–90 ft.-lbs. of torque. 																																																		
Valve is Hard to Operate or is Inoperable	<ol style="list-style-type: none"> A valve can become inoperable or hard to operate during testing of the pipeline. Prior to relieving pipeline pressure, the valve should be opened to relieve any trapped pressure. The application of excessive torque on a valve can cause permanent damage to the operating parts. A common source of excessive torque is from the use of portable power actuators. Output torques generated by these machines should be adjusted to be suitable for the valve size. The last or first turns of operation should be done by hand. <p style="text-align: center;">Number of Turns to Open/Close</p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="4">Series 2500</th> <th colspan="4">Series 2500-1</th> <th colspan="8">Series 2500</th> </tr> <tr> <th>2"</th> <th>2-1/2"</th> <th>3"</th> <th>4"</th> <th>6"</th> <th>8"</th> <th>10"</th> <th>12"</th> <th>14"</th> <th>16"</th> <th>18"</th> <th>20"</th> <th>24"</th> <th>30"</th> <th>36"</th> <th>42"</th> <th>48"</th> </tr> </thead> <tbody> <tr> <td>9</td> <td>11</td> <td>13</td> <td>14</td> <td>20</td> <td>26</td> <td>32</td> <td>38</td> <td>44</td> <td>50</td> <td>56</td> <td>62</td> <td>73</td> <td>568</td> <td>672</td> <td>694</td> <td>789</td> </tr> </tbody> </table> <ol style="list-style-type: none"> If valve has not been operated periodically, excessive buildup could occur that would affect valve operation. The valve should be exercised one turn at a time and cycled from open to closed as necessary to attempt removal of internal buildup. 	Series 2500				Series 2500-1				Series 2500								2"	2-1/2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"	36"	42"	48"	9	11	13	14	20	26	32	38	44	50	56	62	73	568	672	694	789
Series 2500				Series 2500-1				Series 2500																																											
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9	11	13	14	20	26	32	38	44	50	56	62	73	568	672	694	789																																			
Valve Leaks During Testing	<ol style="list-style-type: none"> Resilient seated gate valves per AWWA C-515 have a zero allowable leakage rate. If a leak is detected while testing, it is necessary to find the cause. If seat leakage is detected, it may be due to trapped air in the line or foreign material. Open the valve enough to get high velocity flow to flush out valve. Repeat several times until leakage stops. If testing between valves, allow enough time to fill the valve and vent off air. 																																																		



Disassembly

WARNING

To prevent possible personal injury, do not make repairs while valve is under pressure.

1. Remove bolts and nuts that attach operating nut and stuffing box.
2. Remove operating nut and stuffing box.
3. Back stem out of bonnet by turning in the closing direction.
4. Inspect O-rings and, if damaged, remove from stuffing box and stem. Replace with new O-rings and lubricate with food grade grease.
5. Inspect thrust washers and stuffing box gasket (O-ring) and replace if damaged.
6. Remove bolts and nuts that attach bonnet to valve body. Remove bonnet to inspect bonnet gasket, wedge nut, wedge and interior of valve body. Replace parts if damaged.

Reassembly

Reassembly is the reverse of disassembly while paying attention to the following points.

1. Make sure wedge nut is seated fully into slot in wedge.
2. Make sure the bonnet gasket is positioned correctly on the valve body flange when bonnet is assembled onto valve body.
3. Lubricate stem threads with Mystik® FG-2 Food Machinery Grease before installing into bonnet and threading into wedge nut. Turn stem in opening direction.
4. Position stuffing box gasket in top of bonnet and slide stuffing box onto stem being careful not to cut the stem seal O-rings.
5. Reinstall all bolts and nuts and tighten alternately to 70–90 ft.-lb. of torque.



AMERICAN

FLOW CONTROL

THE RIGHT WAY

Eco-Tech, Inc.
PO Box 956
Holly Springs, GA 30142

October 27, 2021

Subject: American Iron and Steel (AIS) Requirement
Project: Intrenchment Creek WPCP – East Area WQCF
Location: Atlanta, GA
Contractor: Lakeshore Engineering
**Product: AMERICAN Flow Control Series 2500-1
Resilient Wedge Gate Valve**

To Whom It May Concern:

This is to advise that the product shown above, when specifically ordered as such, is in full compliance with the American Iron and Steel (AIS) requirement as mandated in EPA's State Revolving Fund Programs.

This is also to certify that, as part of meeting these requirements, the product listed above is manufactured by American Valve and Hydrant in Beaumont, Texas, in the United States of America, and processes used to produce certain iron and steel components that are used in the construction of these products are also performed in the United States of America. These manufacturing processes include melting and casting of gray and ductile-iron, rolling and forging of steel bar, and the application of coatings, to ductile-iron gate valve and fire hydrant parts.

AMERICAN Valve & Hydrant is a subsidiary of AMERICAN and manufactures products marketed and sold by the AMERICAN Flow Control division of AMERICAN.

Sincerely,

Kendall George
Product Engineer

kgeorge@american-usa.com
P: 409.832.5155
AMERICAN Valve & Hydrant
3525 Hollywood St.
Beaumont, TX 77701



AMERICAN FLOW CONTROL LIMITED 10 YEAR PRODUCT WARRANTY

American Flow Control warrants that its products covered hereby conform to the description and specifications, if any, provided to the seller by the buyer and are free from defects in materials and workmanship for a period of ten (10) years from the date the products are first shipped. American Flow Control shall not be liable for incidental or consequential damages directly or indirectly arising or resulting from the breach of any of the terms hereof or from the sale, handling or use of the products sold. American Flow Control's sole liability (and buyer's exclusive remedy) hereunder, either for breach of warranty or for negligence, is expressly limited at the option of American Flow Control:

- (A) To the replacement at the agreed point of delivery of any products found to be defective or not to conform to the specifications set forth herein,
- (B) To the repair of such products,
- (C) To the refund or crediting to buyer of the price of such products,
- (D) As to motors, controls or accessory equipment purchased by American Flow Control from others, and used or incorporated in American Flow Control's products, to the same extent that the liability of such supplier(s), is limited to American Flow Control.

Anything contained herein to the contrary notwithstanding, American Flow Control's warranties shall not apply to any product sold hereunder if buyer alters such product or replaces any part or parts of such product with any part or parts not manufactured, sold or offered for sale by American Flow Control. No representation or warranty, express or implied, made by any sales representative or other agent or representative of American Flow Control which is not specifically set forth herein shall be binding upon American Flow Control. No claims for damages for goods that do not conform to specifications will be allowed unless AFC is given immediate notice after delivery of goods and allowed an opportunity to inspect them.