OPERATION AND MAINTENANCE MANUAL

2” - 66” SERIES 2500
RESILIENT WEDGE GATE VALVE

AMERICAN

FLOW CONTROL

THE RIGHT WAY

INDEX

SERIES 2500 DUCTILE IRON RESILIENT WEDGE GATE VALVE
OPERATION and MAINTENANCE MANUAL

OPERATION AND MAINTENANCE **Page**

WARNING: Special care should be taken in the installation, inspection and repair of pressure containing devices such as valves and hydrants. FAILURE TO FOLLOW PROPER PRATICE AND GUIDELINES CAN RESULT IN SERIOUS INJURY OR DEATH. Do not make repairs while valve is under pressure.

Operation

1. Direction of opening is normally 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 that 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.
6. Gate valves are designed for open and close service. Their multi-turn design is not intended for throttling. As such, the valve should never be left in a partial open or closed position for extended periods.

Maintenance

1. Operate valves at regular intervals. The necessary length of time between the operation of the valve depends upon the time the valve has been in service and the service conditions, but more specifically whatever time period is found to be satisfactory based on local experience. Operation should occur as a minimum of once per year, but in general as detailed in Section A.6, of Appendix A, of ANSI/AWWA C515.
2. Use an AMERICAN Flow Control recommended food grade grease for the stem threads and thrust collar.
3. Chipped spots in the epoxy coating should be repaired with a liquid two-part epoxy.

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	
54”	Contact Factory	
60”	Contact Factory	
66”	Contact Factory	

Problem	Solution
Leakage	**Depending on the location of the leakage, the following should be examined.** 1. 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. 2. 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). 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. 3. BODY: Check for cracked or damaged valve body or bonnet. If damage has occurred, contact manufacturer for further instructions. 4. 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	1. 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. 2. 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. **Number of Turns to Open/Close** **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” | 54” | 60” | 66” 9 | 11 | 13 | 14 | 20 | 26 | 32 | 38 | 44 | 30 | 56 | 62 | 76 | 379 | 448 | 694 | 789 | 789 | 984 | 984 Note: 24” and smaller reflect non-geared valves. 30” and larger reflect geared valves 3. 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.
Valve Leaks During Testing	1. Resilient seated gate valves per ANSI/AWWA C515 have a zero allowable leakage rate. If a leak is detected while testing, it is necessary to find the cause. 2. If seat leakage is detected, it may be due to foreign material or trapped air in the line. Open the valve enough to get high velocity flow to flush out valve. Repeat several times until leakage stops. 3. If testing between valves, allow enough time to fill the valve and vent off air.

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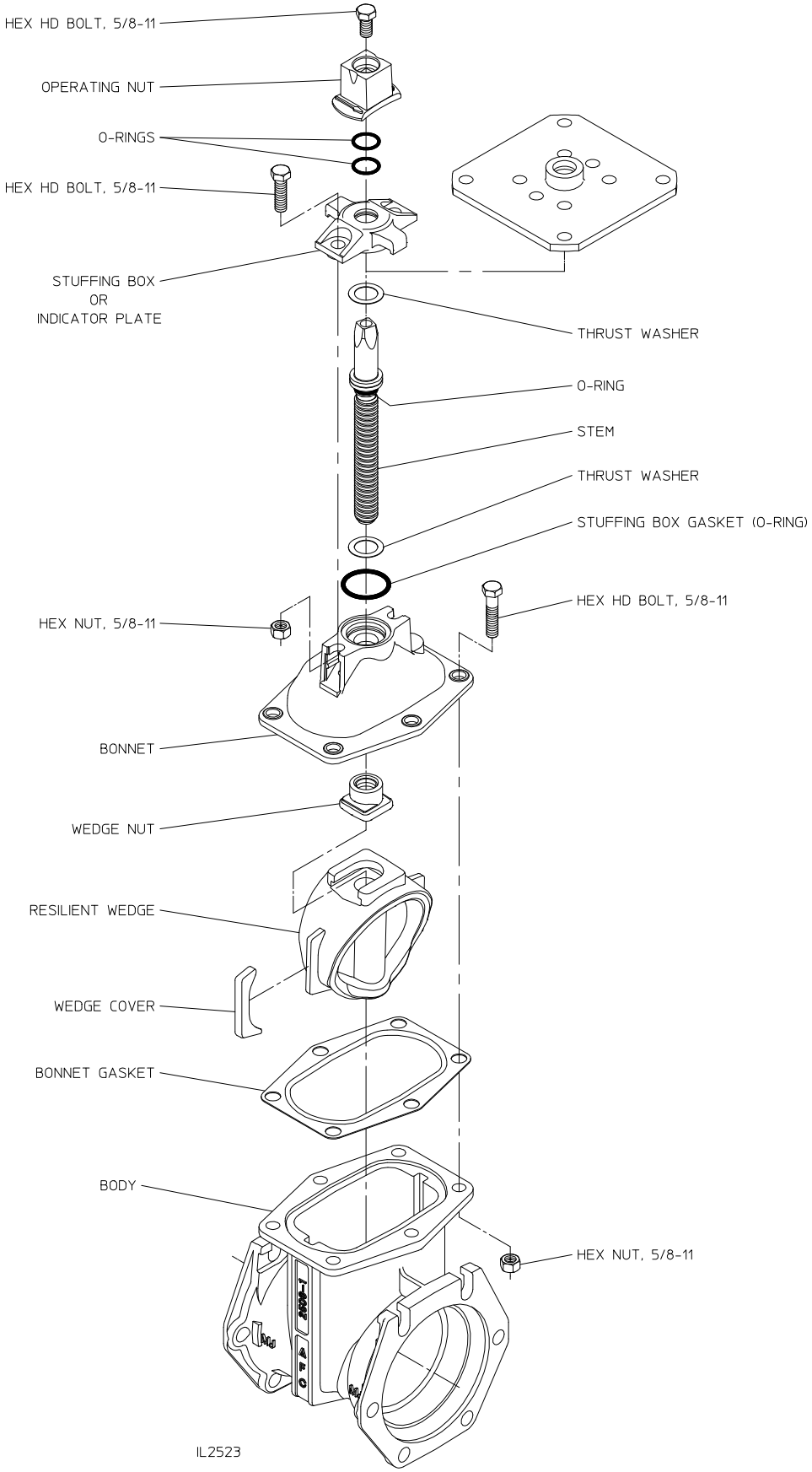
Disassembly

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 an AMERICAN Flow Control recommended food grade 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.


HEX HD BOLT, 5/8-11
OPERATING NUT
O-RINGS
HEX HD BOLT, 5/8-11
STUFFING BOX
OR
INDICATOR PLATE
THRUST WASHER
O-RING
STEM
THRUST WASHER
STUFFING BOX GASKET (O-RING)
HEX HD BOLT, 5/8-11
HEX NUT, 5/8-11
BONNET
WEDGE NUT
RESILIENT WEDGE
WEDGE COVER
BONNET GASKET
BODY
HEX NUT, 5/8-11
IL2523

Disassembly

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Disassembling Miter gearing

1. Remove bolts and nuts that attach gear housing cover.
2. Remove bolt that attaches miter gear to gear shaft. Slide shaft out of opening in the gear housing.
3. Remove bolt that attaches miter gear to valve stem and pull miter gear from stem.
4. Remove gear housing from valve.
5. Inspect O-rings and if damaged, remove from gear housing and stem. Replace with new O-rings and lubricate with an AMERICAN Flow Control recommended food grade grease.

Disassembling Valve

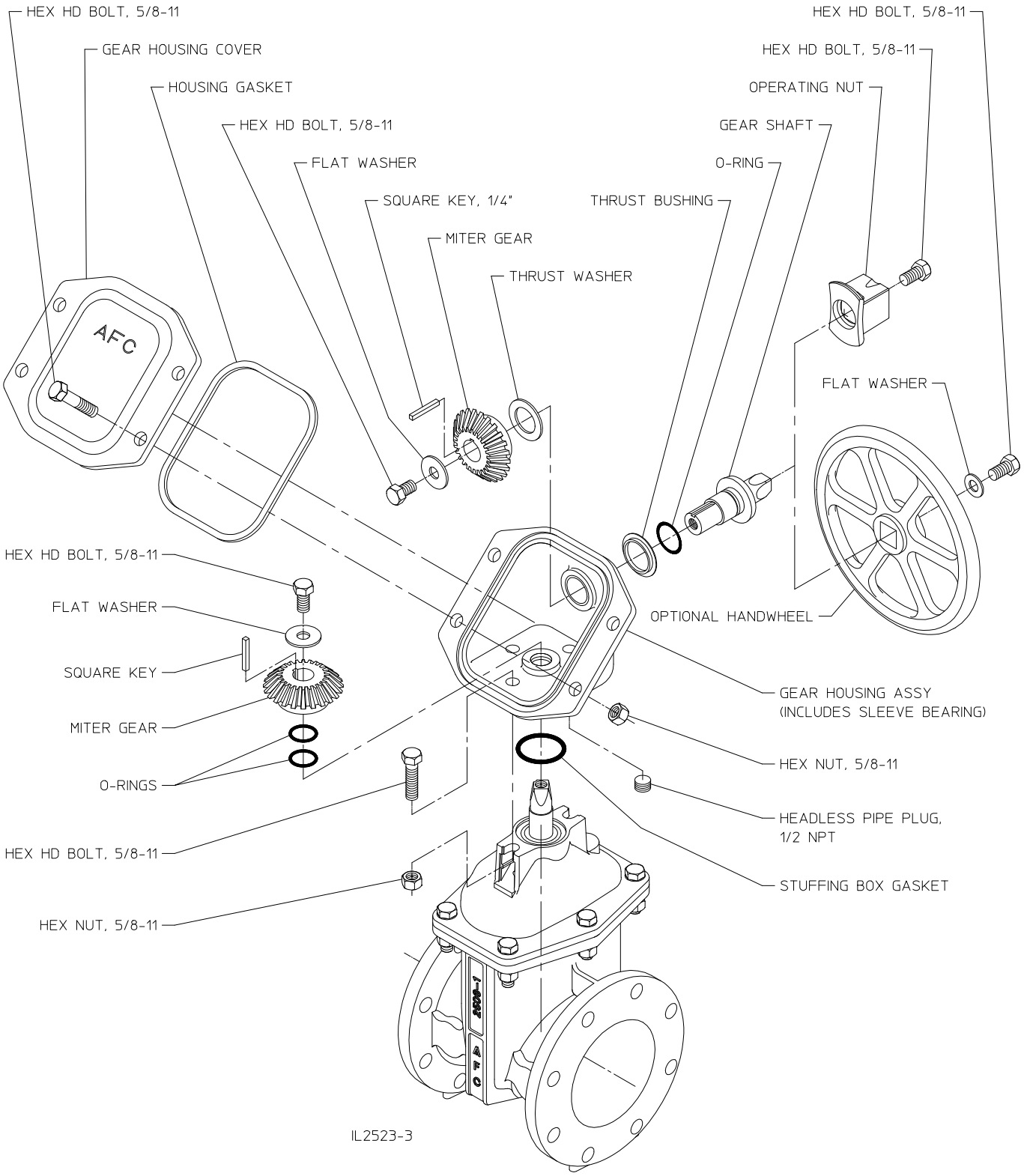
1. Back stem out of bonnet by turning in the closing direction.
2. Inspect O-rings and, if damaged, remove from gear housing and stem. Replace with new O-rings and lubricate with food grade grease.
3. Inspect thrust washers and stuffing box gasket (O-ring) and replace if damaged.
4. Remove bolts and 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 an AMERICAN Flow Control recommended food grade 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 gear housing 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.
6. Make sure the thrust washer is on the pilot of the miter gear when it is assembled onto the gear shaft. A dab of an AMERICAN Flow Control recommended food grade grease on the thrust washer will hold it on the gear.
7. The gear housing should be filled approximately half-full with food grade grease.

SERIES 2500 - NRS WITH ENCLOSED MITER GEARING REPAIRS



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Disassembly

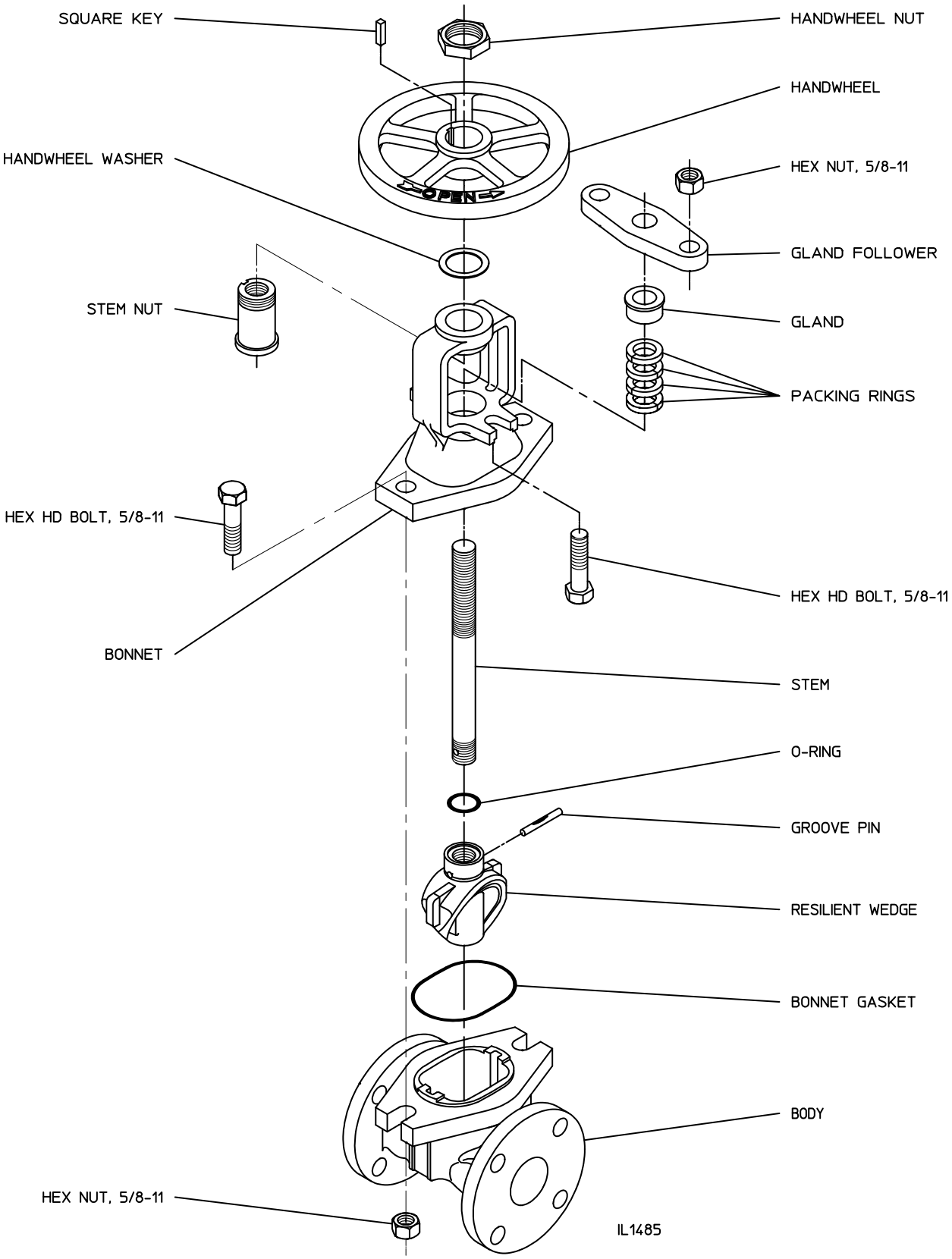
1. Turn the handwheel to fully close the valve.
2. Loosen the packing gland nuts and remove the 2 bolts fastening the bonnet to the valve body.
3. Turn the handwheel to raise the bonnet away from the valve body and unthread the stem assembly from the stem.
4. Pull the wedge and stem assembly out the valve throat.
5. Remove the packing gland nuts, gland, gland follower and packing rings if necessary.
6. Loosen and remove the handwheel nut and stem nut to remove handwheel. Do not lose the square key.
7. Drive out the pin in the wedge nut and unscrew the stem from the wedge.

Reassembly

Reassembly is the reverse of disassembly with the following notes:

1. Carefully inspect and replace any damaged components. Lubricate all O-rings with an AMERICAN Flow Control recommended food grade grease.
2. Make sure the bonnet gasket is properly positioned on the valve body flange when the bonnet is assembled onto the valve body.
3. Place the bonnet part-way onto the stem and insert the gland and gland-follower onto the stem. Raise the bonnet again and thread the stem nut partially onto the stem.
4. Place the bonnet onto the lower stem nut and turn the stem nut and bonnet onto the stem until the bonnet contacts the throat gasket.
5. Using 2 hex head bolts, fasten the bonnet to the valve body.
6. Place the handwheel washer over the stem and onto the top of the yoke.
7. Slip the handwheel over the stem and onto the stem nut. Insert the square key and replace the handwheel nut, tightening securely.
8. Raise the gland and gland-follower and replace the packing rings so that the joints in the rings are not aligned. Use the same number of packing rings as were removed.
9. Replace the gland-follower nuts and tighten only enough to prevent leakage of water past the stem.

SERIES 2500 - OS & Y REPAIRS, 2" SIZE



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Disassembly

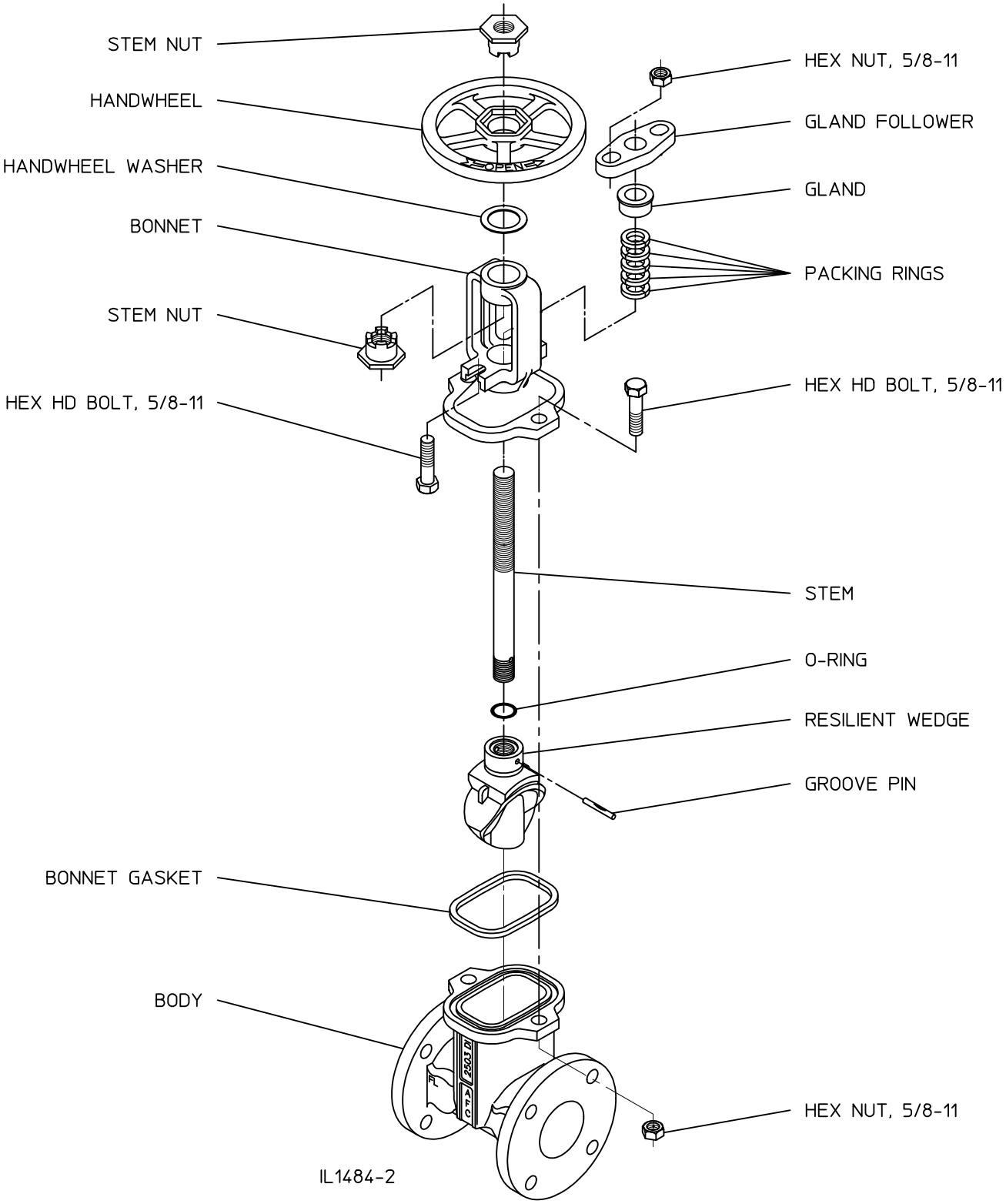
1. Turn the handwheel to fully close the valve.
2. Mark the 2 stem nuts in line with each other - one mark on the top of the upper stem nut and one mark on the same side of the lower stem nut flange.
3. Remove the 2 hex-head bolts from the bonnet.
4. Loosen the gland-follower nuts.
5. Turn the handwheel in the closing direction to unscrew the pair of stem nuts from the stem. The handwheel, bonnet and handwheel washer will also be removed as they are trapped between the stem nuts. When the upper stem nut is fully unthreaded from the stem, the handwheel can be removed. When the lower stem nut is unthreaded from the stem, the bonnet, gland and gland-follower can be removed.
6. Grasping the stem, withdraw the stem and wedge assembly from the valve.
7. Drive the groove pin out of the wedge nut and unscrew the stem from the wedge nut.

Reassembly

Reassembly is the reverse of disassembly with the following notes:

1. Carefully inspect and replace any damaged components. Lubricate all O-rings with an AMERICAN Flow Control recommended food grade grease.
2. Make sure the bonnet gasket is properly positioned on the valve body flange when the bonnet is assembled onto the valve body.
3. Place the bonnet part-way onto the stem tipping the top of the bonnet's yoke to the side. Raise the yoke off the top of the stem and place the gland and gland follower onto the stem. Raise the yoke again and thread the lower stem nut partially onto the stem. Note the position of the alignment mark and place the yoke onto the lower stem nut.
4. Place the handwheel washer on the top of the yoke.
5. Note the location of the alignment mark on the upper stem nut and place the nut in the handwheel. Place the handwheel and upper stem nut onto the yoke, engaging the teeth of the stem nuts so that the marks are aligned.
6. Turn the handwheel and yoke as a unit onto the stem until the yoke is nearly touching the bonnet.
7. Using 2 hex head bolts, fasten the bonnet to the valve body.
8. Raise the gland and gland-follower and replace the packing rings so that joints in the rings are not aligned. Use the same total number of packing rings as were removed.
9. Replace the gland-follower nuts and tighten only enough to prevent leakage of water past the stem.

SERIES 2500 - OS & Y REPAIRS, 2-1/2" & 3" SIZES



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Disassembly

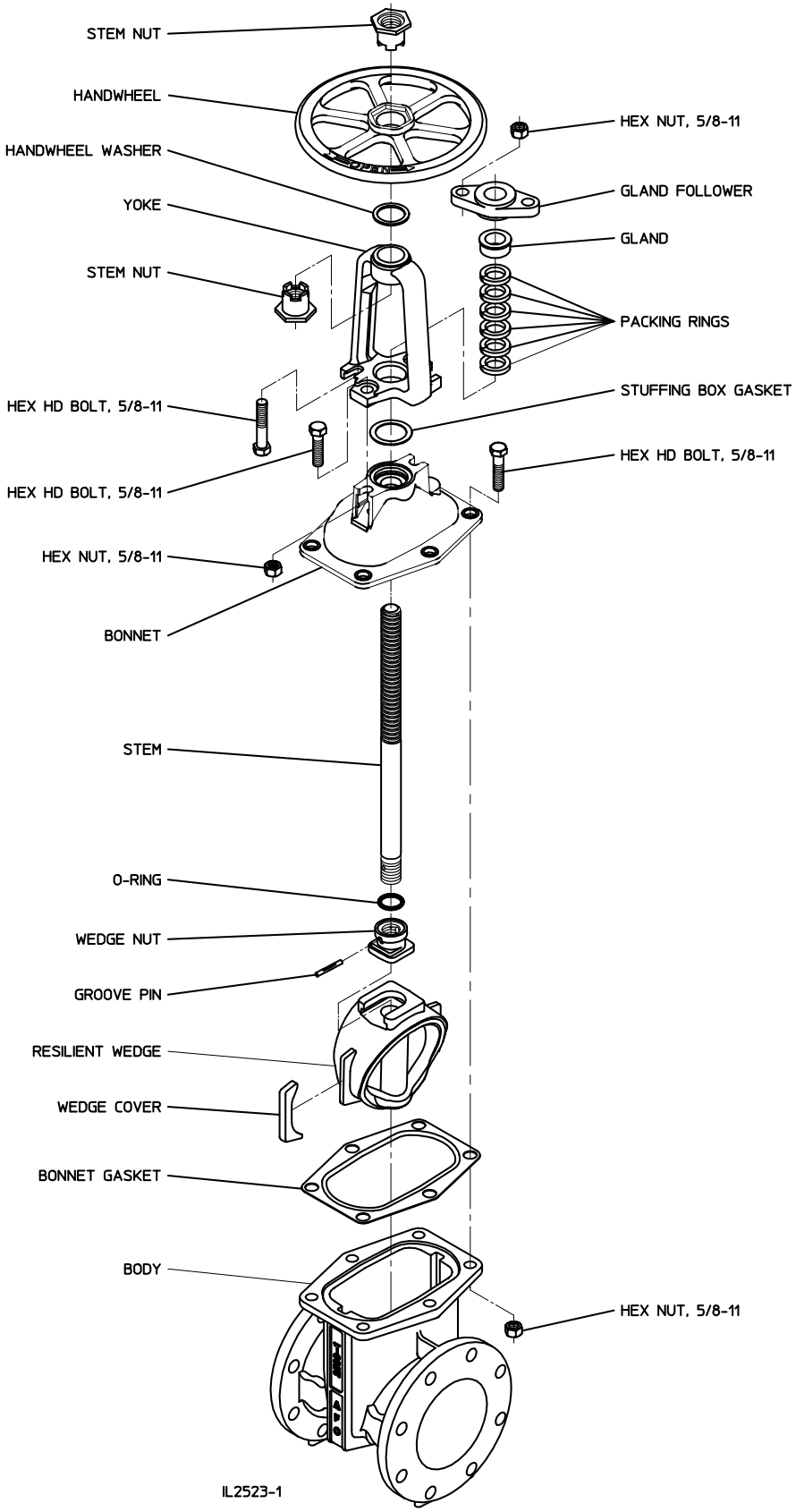
1. Turn the handwheel to fully close the valve.
2. Mark the 2 stem nuts in line with each other, one mark on the top of the upper stem nut and one mark on the same side of the lower stem nut flange.
3. Remove the 2 hex-head bolts from the yoke.
4. Loosen the gland-follower nuts.
5. Turn the handwheel in the closing direction to unscrew the pair of stem-nuts from the stem. The handwheel, yoke and handwheel washer will also be removed as they are trapped between the stem-nuts. When the upper stem nut is fully unthreaded from the stem, the handwheel can be removed. When the lower stem nut is unthreaded from the stem, the yoke, gland and gland follower can be removed.
6. Remove the bonnet bolts and grasping the stem, withdraw the bonnet and wedge assembly from the valve.
7. Withdraw the stem and wedge assembly from the bonnet and remove the wedge from the stem by sliding the wedge nut out the side of the wedge slot.
8. Drive the groove pin out of the wedge nut and unscrew the stem from the wedge nut.

Reassembly

Reassembly is the reverse of disassembly with the following notes:

1. Carefully inspect and replace any damaged components. Lubricate all O-rings with an AMERICAN Flow Control recommended food grade grease.
2. Make sure the wedge nut is fully seated into the slot in the wedge.
3. Make sure the bonnet gasket is properly positioned on the valve body flange when the bonnet is assembled onto the valve body.
4. After installing the wedge assembly and bonnet, place one packing ring in the bonnet then position the stuffing box gasket in the bonnet recess.
5. Place the yoke part-way onto the stem tipping the top of the yoke to the side. Raise the yoke off of the top of the stem and place the gland and gland-follower onto the stem. Raise the yoke again and thread the lower stem nut partially onto the stem. Note the position of the alignment mark and place the yoke onto the lower stem nut.
6. Place the handwheel washer on the top of the yoke.
7. Note the location of the alignment mark on the upper stem nut and place the nut in the handwheel. Place the handwheel and upper stem nut onto the yoke, engaging the teeth of the stem nuts so that the marks are aligned.
8. Turn the handwheel and yoke as a unit onto the stem until the yoke is nearly touching the bonnet.
9. Using 2 hex head bolts, fasten the yoke to the bonnet.
10. Raise the gland and gland-follower and replace the packing rings so that joints in the rings are not aligned. Use the same total number of packing rings as were removed.
11. Replace the gland-follower nuts and tighten only enough to prevent leakage of water past the stem.

SERIES 2500 - OS & Y REPAIRS, 4" - 8" SIZES



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Disassembly

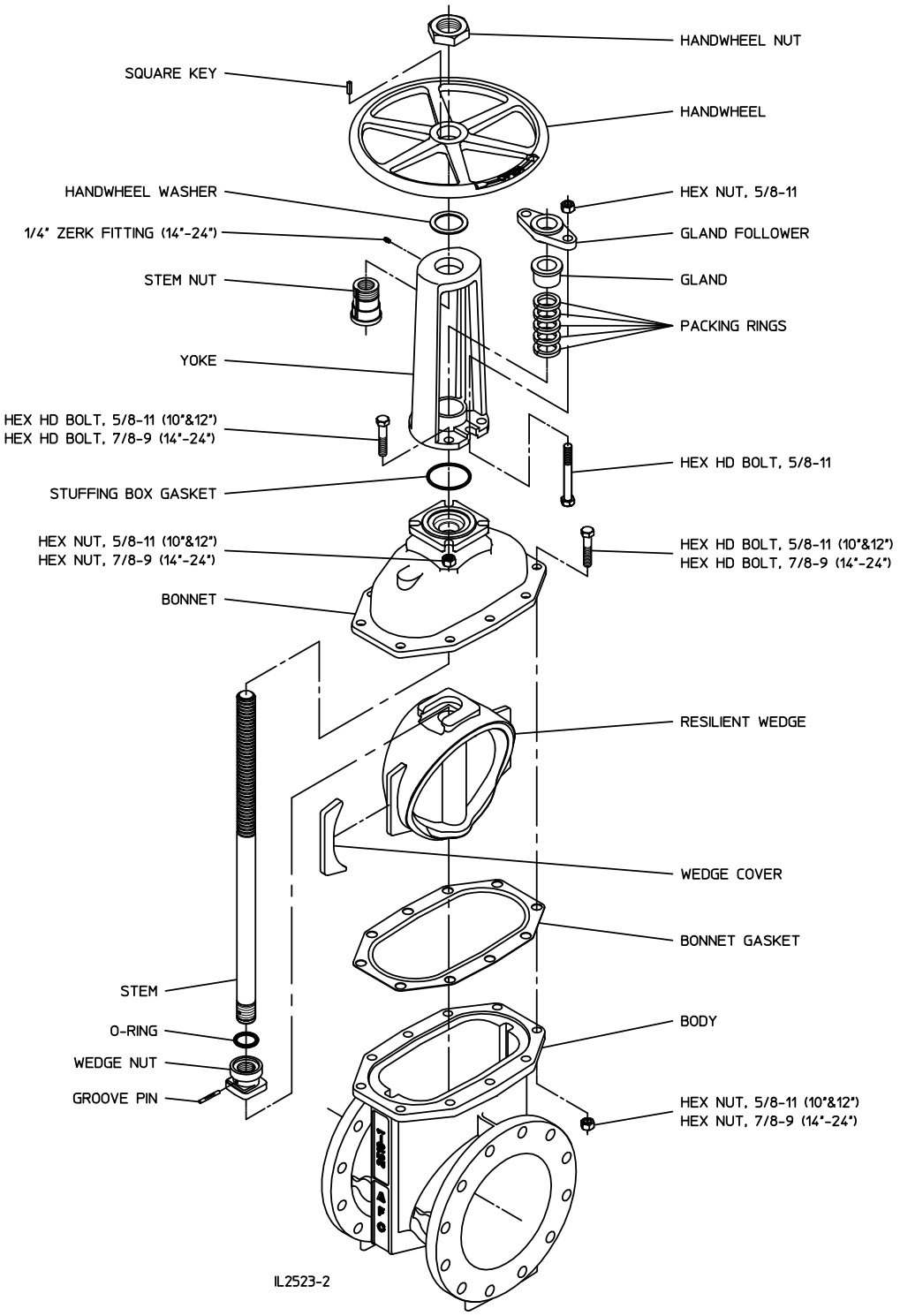
1. Turn the handwheel to fully close the valve.
2. Loosen the packing gland nuts and remove the 4 bolts fastening the yoke to the bonnet.
3. Turn the handwheel to raise the yoke away from the bonnet and unthread the assembly from the stem. Do not lose the square key.
4. Remove the bolts from the bonnet and lift the bonnet over and off of the stem.
5. Disengage the stem and wedge nut from the wedge by sliding the nut out of the slot in the wedge.
6. Drive out the pin in the wedge nut and unscrew the stem from the wedge nut.
7. Pull the wedge out of the valve throat.

Reassembly

Reassembly is the reverse of disassembly with the following notes:

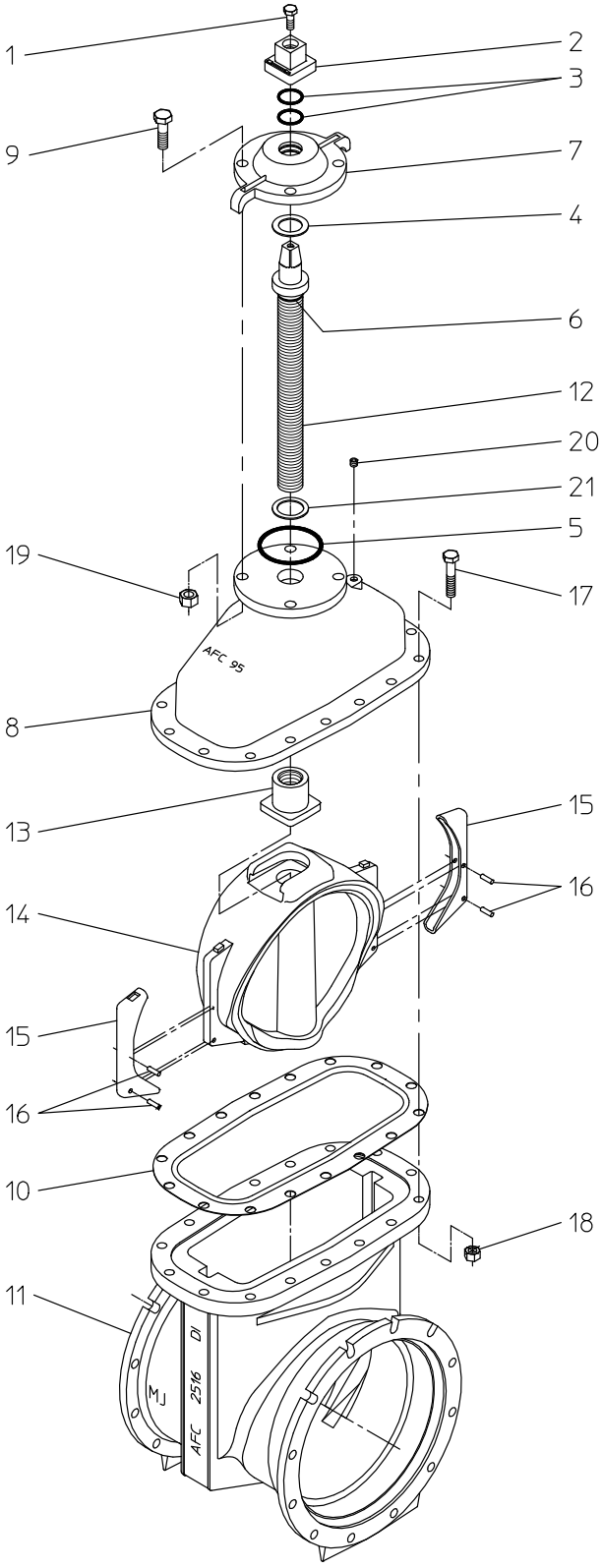
1. Carefully inspect and replace any damaged components. Lubricate all O-rings with an AMERICAN Flow Control recommended food grade grease.
2. Make sure the wedge nut is fully seated into the slot in the wedge.
3. Make sure the bonnet gasket is properly positioned on the valve body flange when the bonnet is assembled onto the valve body.
4. After installing the stem and wedge assembly and bonnet, position the stuffing box gasket in the bonnet recess.
5. Place the yoke part-way onto the stem tipping the top of the yoke to the side. Raise the yoke off the top of the stem and place the gland and gland follower onto the stem. Raise the yoke again and thread the stem nut partially onto the stem. Place the yoke onto the lower stem nut.
6. Turn the lower stem nut and yoke onto the stem until the yoke contacts the bonnet.
7. Using 4 hex head bolts, fasten the yoke to the bonnet.
8. Place the handwheel washer over the stem and onto the top of the yoke.
9. Slip the handwheel over the stem and onto the stem nut. Insert the square key and replace the handwheel nut, tightening securely.
10. Raise the gland and gland-follower and replace the packing rings so that joints in the rings are not aligned. Use the same number of packing rings as were removed.
11. Replace the gland-follower nuts and tighten only enough to prevent leakage of water past the stem.

SERIES 2500 - OS & Y REPAIRS, 10” & 12” SIZES



SERIES 2500 - STANDARD NRS PARTS LIST, 14” - 24” SIZES

Ref No.	Description	Material	Qty. Series 2500				
			14”	16”	18”	20”	24”
1	Hex Head Bolt, 5/8-11 x 1-3/4”	Stainless Steel	1	1	1	1	1
2	Operating Nut, 2” Square	Ductile Iron	1	1	1	1	1
3	O-ring	Rubber	2	2	2	2	2
4	Upper Thrust Washer	Delrin	1	1	1	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1	1	1	1
6	O-ring	Rubber	1	1	1	1	1
7	Stuffing Box	Ductile Iron	1	1	1	1	1
8	Bonnet	Ductile Iron	1	1	1	1	1
9	Hex Head Bolt, 7/8-9 x 3”	Stainless Steel	4	4	4	-	-
9	Hex Head Bolt, 7/8-9 x 4”	Stainless Steel	-	-	-	4	4
10	Bonnet Gasket	Rubber	1	1	1	1	1
11	Body	Ductile Iron	1	1	1	1	1
12	Stem	Bronze	1	1	1	1	1
		Stainless Steel (Optional)					
13	Wedge Nut	Bronze	1	1	1	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1	1	1	1
15	Wedge Cover	Polymer	2	2	2	2	2
16	Wedge Cover Pin	Polymer	2	4	4	2	2
17	Hex Head Bolt, 3/4-10 x 3-1/2”	Stainless Steel	14	16	-	-	-
17	Hex Head Bolt, 7/8-9 x 4”	Stainless Steel	-	-	16	-	-
17	Hex Head Bolt, 7/8-9 x 4-1/2”	Stainless Steel	-	-	-	18	-
17	Hex Head Bolt, 7/8-9 x 5”	Stainless Steel	-	-	-	-	20
18	Hex Nut, 3/4-10	Stainless Steel	14	16	-	-	-
18	Hex Nut, 7/8-9	Stainless Steel	-	-	16	18	20
19	Hex Nut, 7/8-9	Stainless Steel	4	4	4	4	4
20	Pipe Plug, 3/8 NPT	Stainless Steel	1	1	1	1	
21	Lower Thrust Washer	Delrin	1	1	1	1	1



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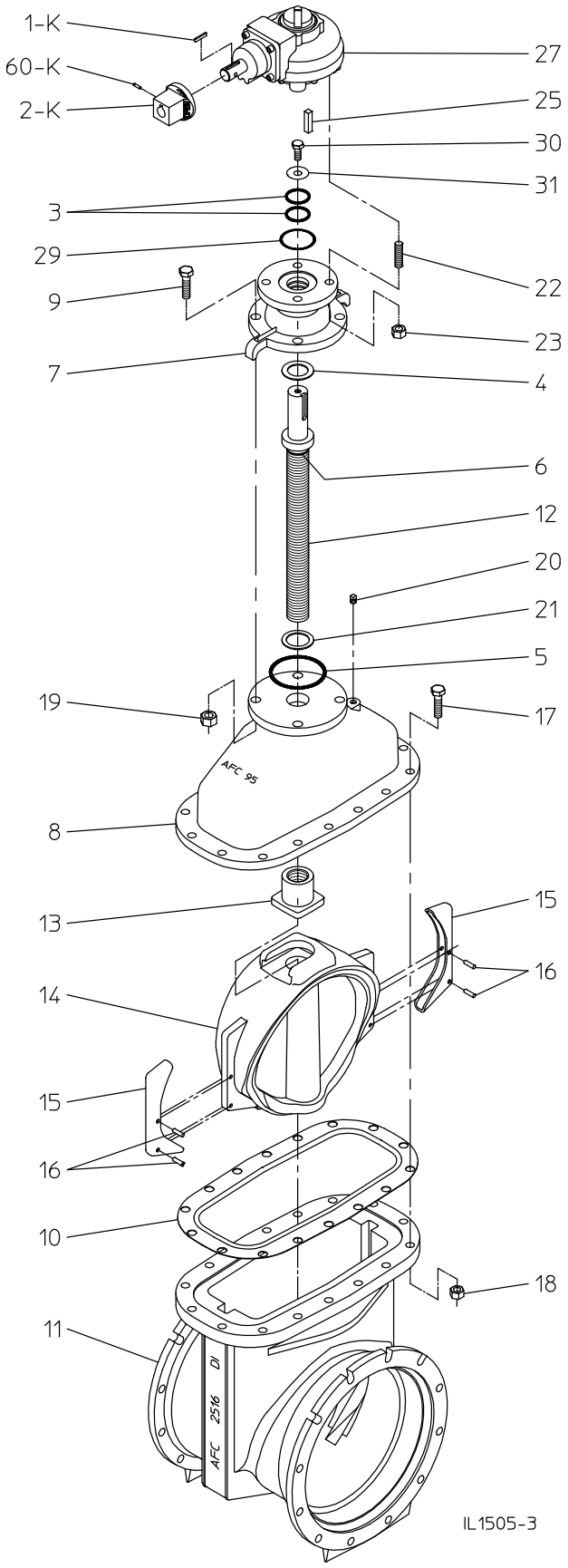
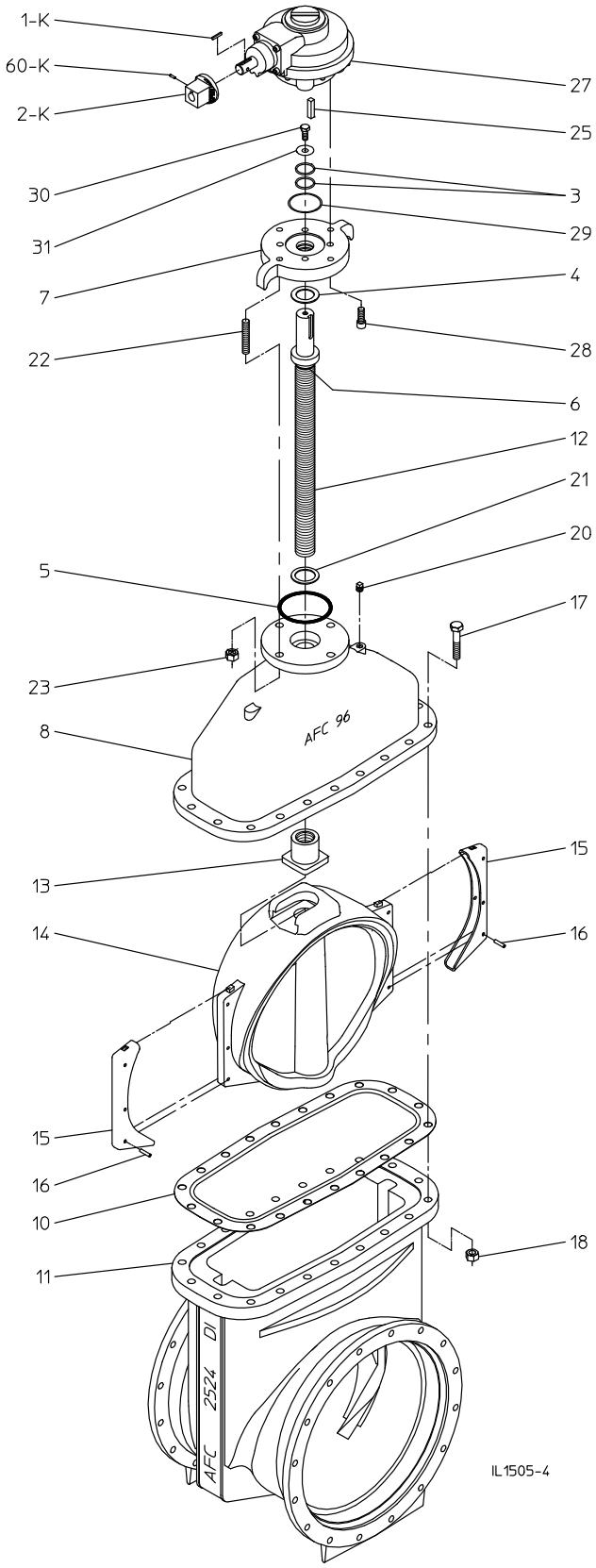
SERIES 2500 - NRS WITH BEVEL GEARING PARTS LIST, 14" - 18" SIZES

Ref No.	Description	Material	Qty. Series 2500		
			14"	16"	18"
1-K	Key 8 mm x 7 mm x 40 mm	Steel	1	1	1
2-K	Operating Nut, 2" Square	Ductile Iron	1	1	1
3	O-ring	Rubber	2	2	2
4	Upper Thrust Washer	Delrin	1	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1	1
6	O-ring	Rubber	1	1	1
7	Stuffing Box	Ductile Iron	1	1	1
8	Bonnet	Ductile Iron	1	1	1
9	Hex Head Bolt, 7/8-9 x 3"	Stainless Steel	4	4	4
10	Bonnet Gasket	Rubber	1	1	1
11	Body	Ductile Iron	1	1	1
12	Stem	Bronze	1	1	1
		Stainless Steel (Optional)			
13	Wedge Nut	Bronze	1	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1	1
15	Wedge Cover	Polymer	2	2	2
16	Wedge Cover Pin	Polymer	2	4	4
17	Hex Head Bolt, 3/4-10 x 3-1/2"	Stainless Steel	14	16	-
17	Hex Head Bolt, 7/8-9 x 4"	Stainless Steel	-	-	16
18	Hex Nut, 3/4-10	Stainless Steel	14	16	-
18	Hex Nut, 7/8-9	Stainless Steel	-	-	16
19	Hex Nut, 7/8-9	Stainless Steel	4	4	4
20	Pipe Plug, 3/8 NPT	Stainless Steel	1	1	1
21	Lower Thrust Washer	Delrin	1	1	1
22	Stud, 5/8-11 x 2-3/4"	Stainless Steel	4	4	4
23	Hex Nut, 5/8-11	Stainless Steel	4	4	4
25	Square Key, 5/16 x 2-1/2	Hardened Steel	1	1	1
27	Bevel Gear Operator 2:1	Rotork IB5	1	1	1
29	Actuator Gasket	Rubber O-ring	1	1	1
30	Hex Head Bolt, 3/8-16 x 3/4"	Zinc Plated Steel	1	1	1
31	Washer	Steel	1	1	1
60-K	Spring Pin, 1/4 x 3/4"	Stainless Steel	1	1	1



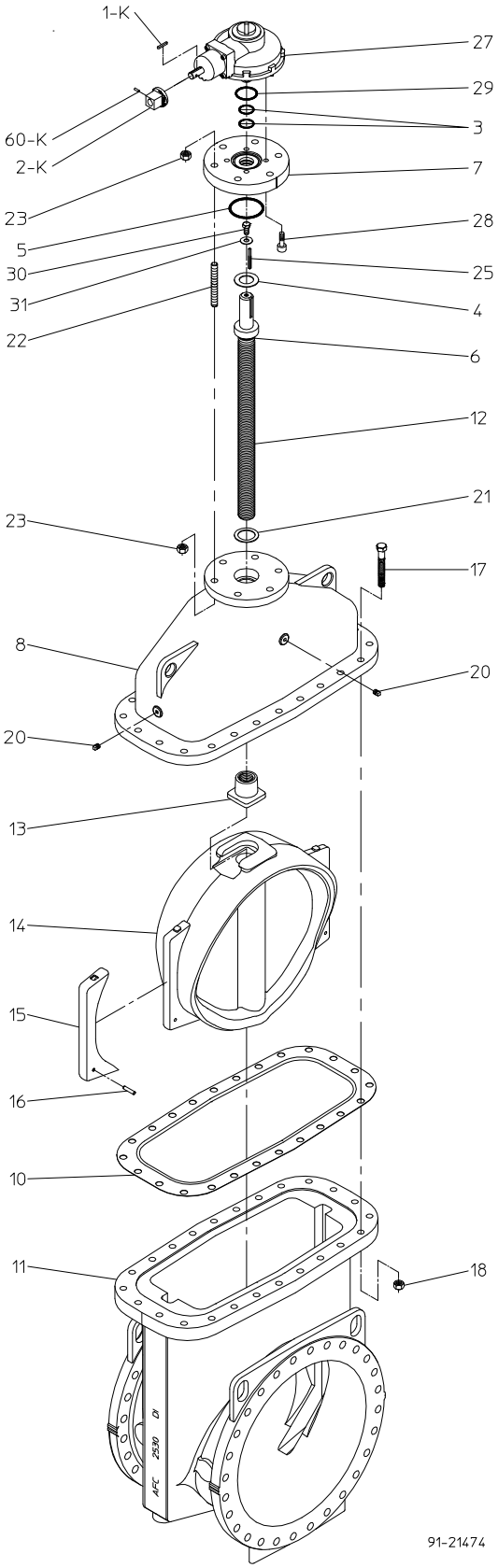
SERIES 2500 - NRS WITH BEVEL GEARING PARTS LIST, 20” & 24” SIZES

Ref No.	Description	Material	Qty. Series 2500 20”	Qty. Series 2500 24”
1-K	Key 8 mm x 7 mm x 40 mm	Steel	1	1
2-K	Operating Nut, 2” Square	Ductile Iron	1	1
3	O-ring	Rubber	2	2
4	Upper Thrust Washer	Delrin	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1
6	O-ring	Rubber	1	1
7	Stuffing Box	Ductile Iron	1	1
8	Bonnet	Ductile Iron	1	1
10	Bonnet Gasket	Rubber	1	1
11	Body	Ductile Iron	1	1
12	Stem	Bronze	1	1
		Stainless Steel (Optional)		
13	Wedge Nut	Bronze	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1
15	Wedge Cover	Polymer	2	2
16	Wedge Cover Pin	Polymer	2	2
17	Hex Head Bolt, 7/8-9 x 4-1/2”	Stainless Steel	18	-
17	Hex Head Bolt, 7/8-9 x 5”	Stainless Steel	-	20
18	Hex Nut, 7/8-9	Stainless Steel	18	20
20	Pipe Plug, 3/8 NPT	Stainless Steel	1	1
21	Lower Thrust Washer	Delrin	1	1
22	Stud, 7/8-9 x 3-1/2”	Stainless Steel	4	4
23	Hex Nut, 7/8-9	Stainless Steel	4	4
25	Square Key, 1/2 x 2-3/4	Hardened Steel	1	1
27	Bevel Gear Operator 3:1	Rotork IB7	1	1
28	Socket Head Cap Screw 3/4-10 x 2”	Stainless Steel	4	4
29	Actuator Gasket	Rubber O-ring	1	1
30	Hex Head Bolt, 1/2-13 x 1”	Zinc Plated Steel	1	1
31	Washer	Steel	1	1
60-K	Spring Pin, 1/4 x 3/4”	Stainless Steel	1	1



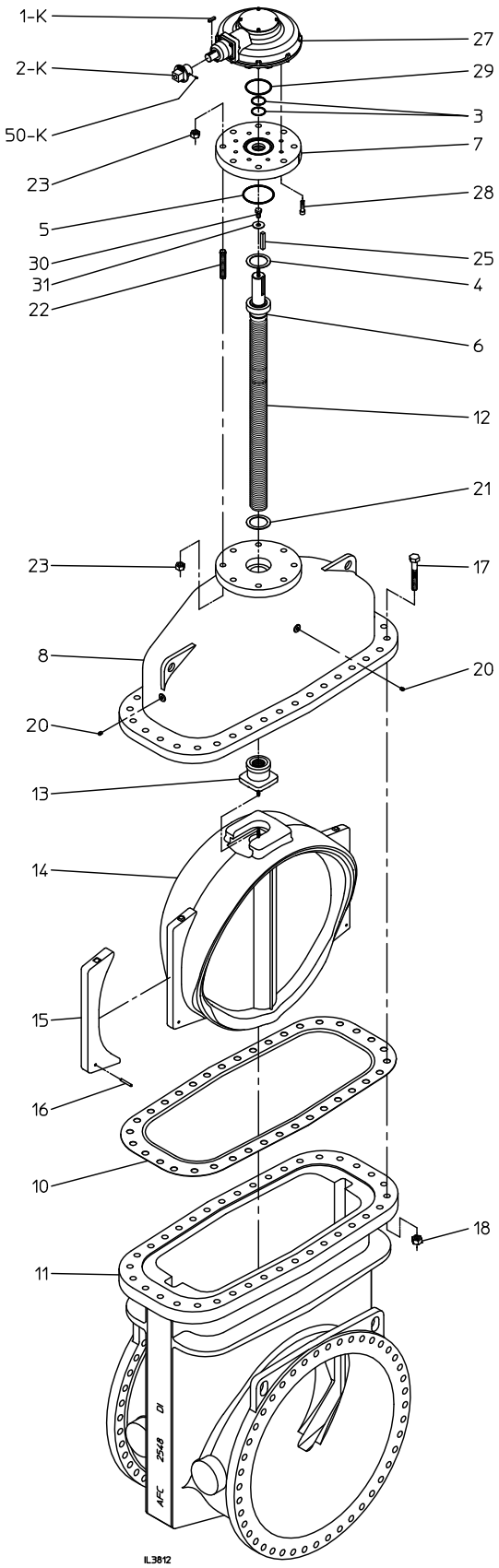
SERIES 2500 - NRS WITH BEVEL GEARING PARTS LIST, 30” & 36” SIZES

Ref No.	Description	Material	Qty. Series 2500 30”	Qty. Series 2500 36”
1-K	Key 8 mm x 7 mm x 40 mm	Steel	1	1
2-K	Operating Nut, 2” Square	Ductile Iron	1	1
3	O-ring	Rubber	2	2
4	Upper Thrust Washer	Delrin	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1
6	O-ring	Rubber	1	1
7	Stuffing Box	Ductile Iron	1	1
8	Bonnet	Ductile Iron	1	1
10	Bonnet Gasket	Rubber	1	-
10	Bonnet Gasket	EPDM Rubber	-	1
11	Body	Ductile Iron	1	1
12	Stem	Bronze	1	1
		Stainless Steel (Optional)		
13	Wedge Nut	Bronze	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1
15	Wedge Cover	Polymer	2	2
16	Wedge Cover Pin	Polymer	2	2
17	Hex Head Bolt, 1-8 x 6”	Stainless Steel	24	-
17	Hex Head Bolt, 1-1/4-7 x 7”	Stainless Steel	-	28
18	Hex Nut, 1”-8	Stainless Steel	24	-
18	Hex Nut, 1-1/4-7	Stainless Steel	-	28
20	Pipe Plug, 3/8 NPT	Stainless Steel	4	4
21	Lower Thrust Washer	Delrin	1	1
22	Stud, 1”-8 x 6”	Stainless Steel	6	-
22	Stud, 1”-8 x 6-1/2”	Stainless Steel	-	8
23	Hex Nut, 1”-8	Stainless Steel	12	16
25	Square Key, 1/2 x 3-1/2	Hardened Steel	1	-
25	Square Key, 5/8 x 4”	Hardened Steel	-	1
27	Bevel Gear Operator 4:1	Rotork IB8	1	-
27	Bevel Gear Operator 4:1	Rotork IB10	-	1
28	Socket Head Cap Screw 3/4-10 x 2”	Stainless Steel	4	-
28	Socket Head Cap Screw 5/8-11 x 2”	Stainless Steel	-	8
29	Actuator Gasket	Rubber O-ring	1	1
30	Hex Head Bolt, 3/4-10 x 1”	Zinc Plated Steel	1	1
31	Washer	Steel	1	1
60-K	Spring Pin, 1/4 x 3/4”	Stainless Steel	1	1



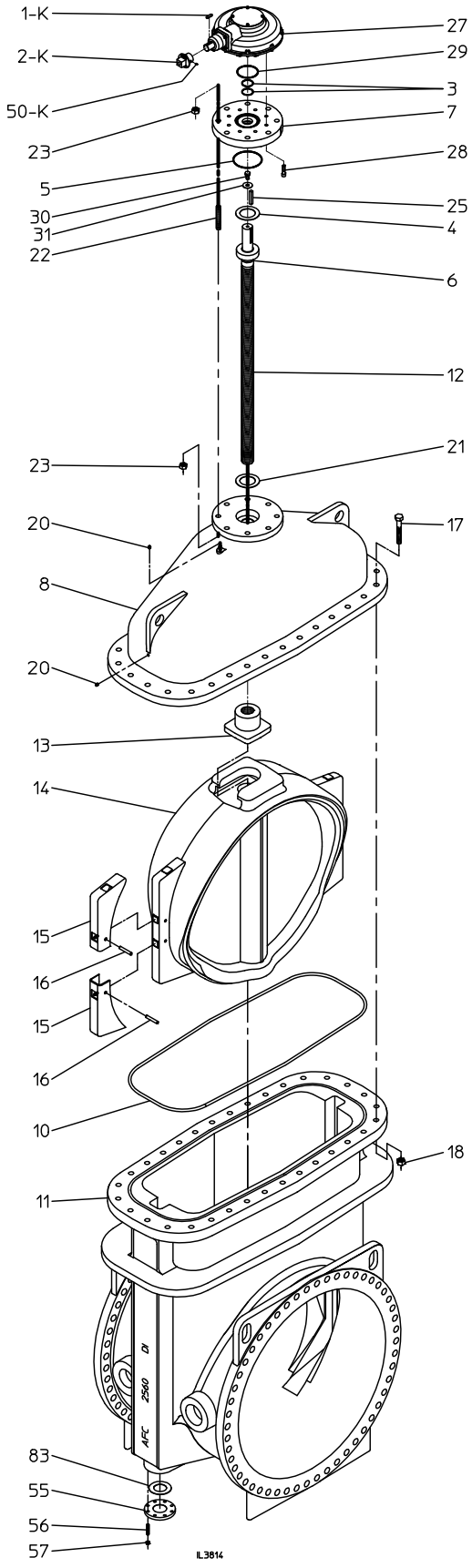
SERIES 2500 - NRS WITH BEVEL GEARING PARTS LIST, 42" - 54" SIZES

Ref No.	Description	Material	Qty. Series 2500		
			42"	48"	54"
1-K	Key 14 mm x 9 mm x 54 mm	Steel	1	1	1
2-K	Operating Nut, 2" Square	Ductile Iron	1	1	1
3	O-ring	Rubber	2	2	2
4	Upper Thrust Washer	Delrin	1	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1	1
6	O-ring	Rubber	1	1	1
7	Stuffing Box	Ductile Iron	1	1	1
8	Bonnet	Ductile Iron	1	1	1
10	Bonnet Gasket	EPDM Rubber	1	1	1
11	Body	Ductile Iron	1	1	1
12	Stem	Bronze	1	1	1
		Stainless Steel (Optional)			
13	Wedge Nut	Bronze	1	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1	1
15	Wedge Cover	Polymer	2	2	2
16	Wedge Cover Pin	Polymer	2	2	2
17	Hex Head Bolt, 1-1/4-7 x 7-1/2"	Stainless Steel	32	-	-
17	Hex Head Bolt, 1-3/8-6 x 8-1/2"	Stainless Steel	-	36	36
18	Hex Nut, 1-1/4-7	Stainless Steel	32	-	-
18	Hex Nut, 1-3/8-6	Stainless Steel	-	36	36
20	Pipe Plug, 1/2 NPT	Stainless Steel	4	4	4
21	Lower Thrust Washer	Delrin	1	1	1
22	Stud, 1-1/4-7 x 7-1/2"	Stainless Steel	8	-	-
22	Stud, 1-1/4-7 x 7-3/4"	Stainless Steel	-	8	8
23	Hex Nut, 1-1/4-7	Stainless Steel	16	16	16
25	Square Key, 3/4 x 4-1/2	Hardened Steel	1	1	1
27	Bevel Gear Operator 8:1	Rotork IB12	1	1	1
28	Socket Head Cap Screw 3/4-10 x 2-1/2"	Stainless Steel	8	8	8
29	Actuator Gasket	Rubber O-ring	1	1	1
30	Hex Head Bolt, 7/8-9 x 1-1/2"	Zinc Plated Steel	1	1	1
31	Washer	Steel	1	1	1
50-K	Set Screw 5/16-18 x 3/4"	Stainless Steel	1	1	1



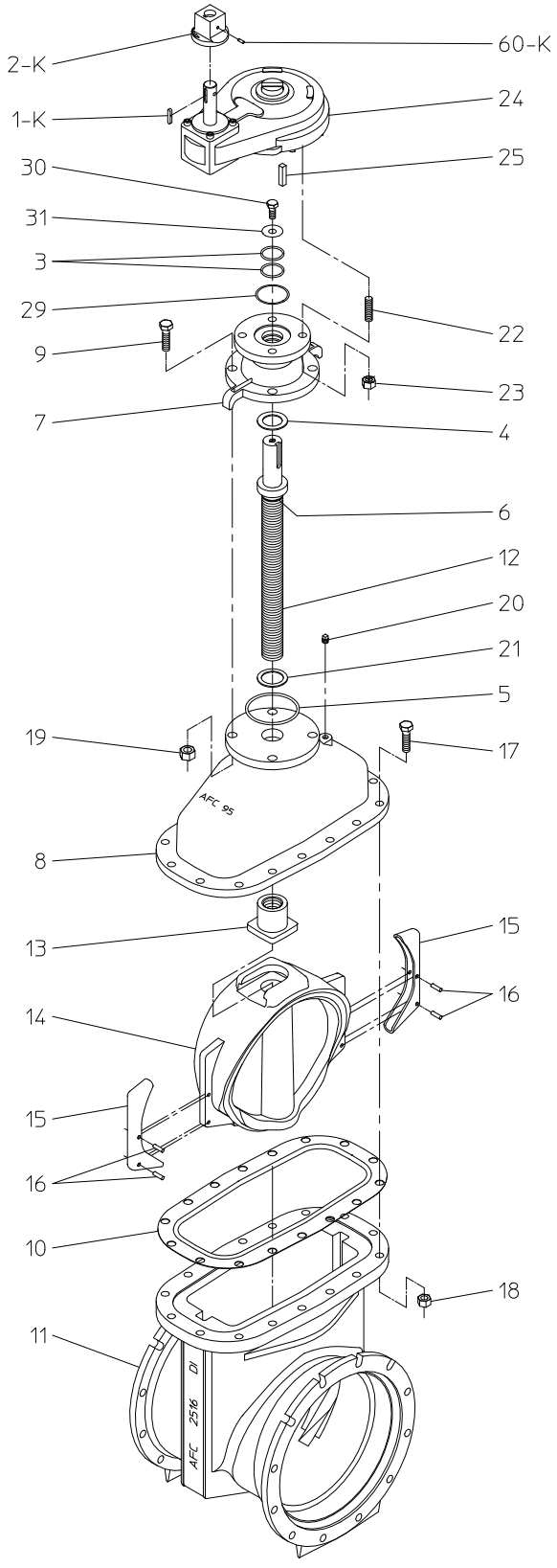
SERIES 2500 - NRS WITH BEVEL GEARING PARTS LIST, 60" & 66" SIZES

Ref No.	Description	Material	Qty. Series 2500 60"	Qty. Series 2500 66"
1-K	Key 14 mm x 9 mm x 54 mm	Steel	1	1
2-K	Operating Nut, 2" Square	Ductile Iron	1	1
3	O-ring	Rubber	2	2
4	Upper Thrust Washer	Delrin	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1
6	O-ring	Rubber	1	1
7	Stuffing Box	Ductile Iron	1	1
8	Bonnet	Ductile Iron	1	1
10	Bonnet Gasket	EPDM Rubber	1	1
11	Body	Ductile Iron	1	1
12	Stem	Stainless Steel	1	1
13	Wedge Nut	Bronze	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1
15	Wedge Cover	Polymer	4	4
16	Wedge Cover Pin	Polymer	4	4
17	Hex Head Bolt, 1-3/8-6 x 8-1/2"	Stainless Steel	32	32
18	Hex Nut, 1-3/8-6	Stainless Steel	32	32
20	Pipe Plug, 1/2 NPT	Stainless Steel	4	4
21	Lower Thrust Washer	Delrin	1	1
22	Stud, 1-1/4-7 x 7-1/2"	Stainless Steel	8	8
23	Hex Nut, 1-1/4-7	Stainless Steel	16	16
25	Square Key, 3/4 x 4-1/2	Hardened Steel	1	1
27	Bevel Gear Operator 8:1	Rotork IB12	1	1
28	Socket Head Cap Screw 3/4-10 x 2-1/2"	Stainless Steel	8	8
29	Actuator Gasket	Rubber O-ring	1	1
30	Hex Head Bolt, 7/8-9 x 1-1/2"	Plated Steel	1	1
31	Washer	Steel	1	1
50-K	Set Screw 5/16-18 x 3/4"	Stainless Steel	1	1
55	Blind Flange	Ductile Iron	1	1
56	Stud, 5/8-11 x 3"	Stainless Sreel	8	8
57	Hex Nut, 5/8-11	Stainless Steel	8	8
83	Blind Falnge Gasket	Rubber	2	2



SERIES 2500 - NRS WITH SPUR GEARING PARTS LIST, 14" - 18" SIZES

Ref No.	Description	Material	Qty. Series 2500		
			14"	16"	18"
1-K	Key 8 mm x 7 mm x 40 mm	Steel	1	1	1
2-K	Operating Nut, 2" Square	Ductile Iron	1	1	1
3	O-ring	Rubber	2	2	2
4	Upper Thrust Washer	Delrin	1	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1	1
6	O-ring	Rubber	1	1	1
7	Stuffing Box	Ductile Iron	1	1	1
8	Bonnet	Ductile Iron	1	1	1
9	Hex Head Bolt, 7/8-9 x 3"	Stainless Steel	4	4	4
10	Bonnet Gasket	Rubber	1	1	1
11	Body	Ductile Iron	1	1	1
12	Stem	Bronze	1	1	1
		Stainless Steel (Optional)			
13	Wedge Nut	Bronze	1	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1	1
15	Wedge Cover	Polymer	2	2	2
16	Wedge Cover Pin	Polymer	2	4	4
17	Hex Head Bolt, 3/4-10 x 3-1/2"	Stainless Steel	14	16	-
17	Hex Head Bolt, 7/8-9 x 4"	Stainless Steel	-	-	16
18	Hex Nut, 3/4-10	Stainless Steel	14	16	-
18	Hex Nut, 7/8-9	Stainless Steel	-	-	16
19	Hex Nut, 7/8-9	Stainless Steel	4	4	4
20	Pipe Plug, 3/8 NPT	Stainless Steel	1	1	1
21	Lower Thrust Washer	Delrin	1	1	1
22	Stud, 5/8-11 x 2-3/4"	Stainless Steel	4	4	4
23	Hex Nut, 5/8-11	Stainless Steel	4	4	4
24	Spur Gear Operator 2:1	Rotork IS5	1	1	1
25	Square Key, 5/16 x 2-1/2	Hardened Steel	1	1	1
29	Actuator Gasket	Rubber O-ring	1	1	1
30	Hex Head Bolt, 3/8-16 x 3/4"	Plated Steel	1	1	1
31	Washer	Steel	1	1	1
60-K	Spring Pin, 1/4 x 3/4"	Stainless Steel	1	1	1



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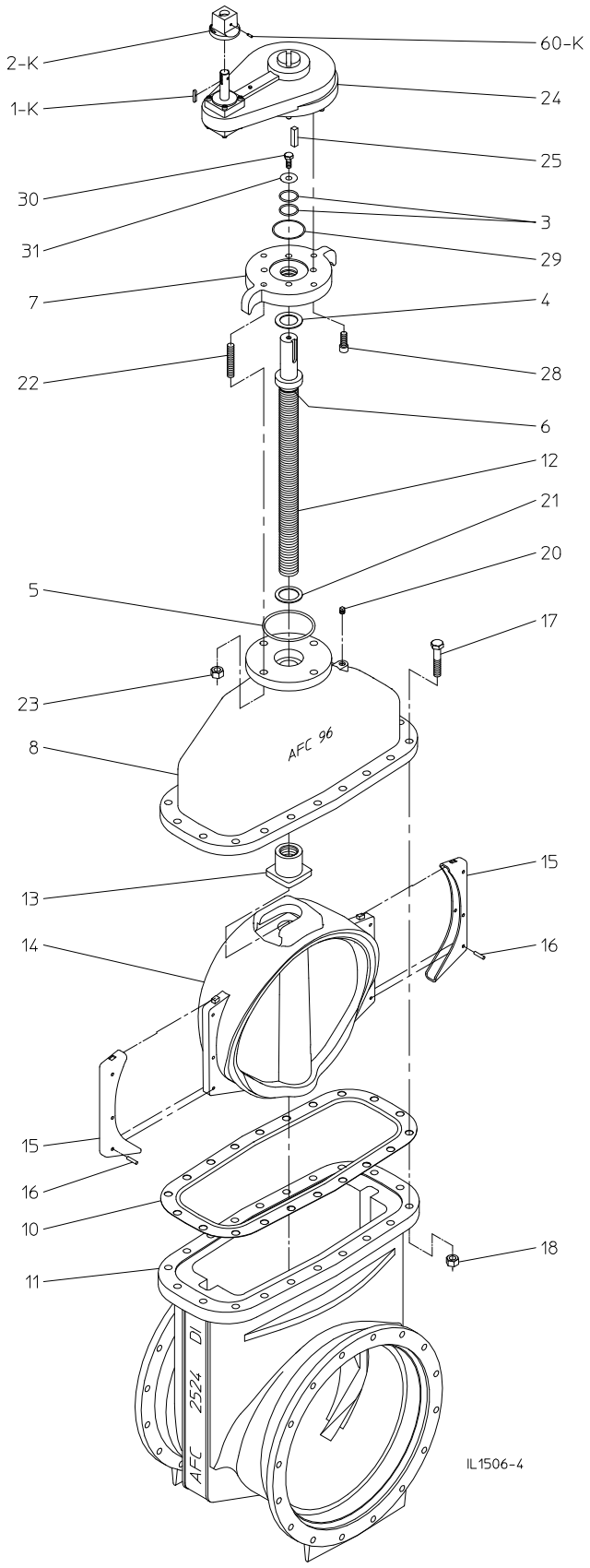
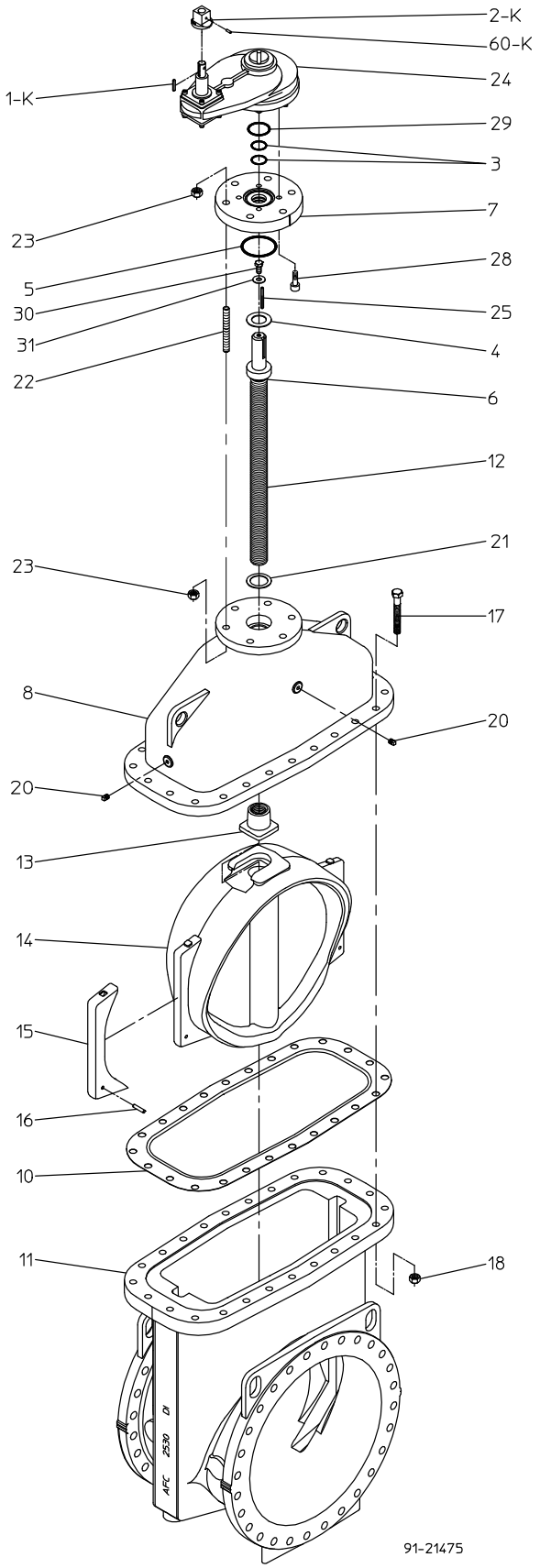
SERIES 2500 - NRS WITH SPUR GEARING PARTS LIST, 20” & 24” SIZES

Ref No.	Description	Material	Qty. Series 2500 20”	Qty. Series 2500 24”
1-K	Key 8 mm x 7 mm x 40 mm	Steel	1	1
2-K	Operating Nut, 2” Square	Ductile Iron	1	1
3	O-ring	Rubber	2	2
4	Upper Thrust Washer	Delrin	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1
6	O-ring	Rubber	1	1
7	Stuffing Box	Ductile Iron	1	1
8	Bonnet	Ductile Iron	1	1
10	Bonnet Gasket	Rubber	1	1
11	Body	Ductile Iron	1	1
12	Stem	Bronze	1	1
		Stainless Steel (Optional)		
13	Wedge Nut	Bronze	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1
15	Wedge Cover	Polymer	2	2
16	Wedge Cover Pin	Polymer	2	2
17	Hex Head Bolt, 7/8-9 x 4-1/2”	Stainless Steel	18	-
17	Hex Head Bolt, 7/8-9 x 5”	Stainless Steel	-	20
18	Hex Nut, 7/8-9	Stainless Steel	18	20
20	Pipe Plug, 3/8 NPT	Stainless Steel	1	1
21	Lower Thrust Washer	Delrin	1	1
22	Stud, 7/8-9 x 3-1/2”	Stainless Steel	4	4
23	Hex Nut, 7/8-9	Stainless Steel	4	4
24	Spur Gear Operator 3:1	Rotork IS7	1	1
25	Square Key, 1/2 x 2-3/4	Hardened Steel	1	1
28	Socket Head Cap Screw 3/4-10 x 2”	Stainless Steel	4	4
29	Actuator Gasket	Rubber O-ring	1	1
30	Hex Head Bolt, 1/2-13 x 1”	Zinc Plated Steel	1	1
31	Washer	Steel	1	1
60-K	Spring Pin, 1/4 x 3/4”	Stainless Steel	1	1



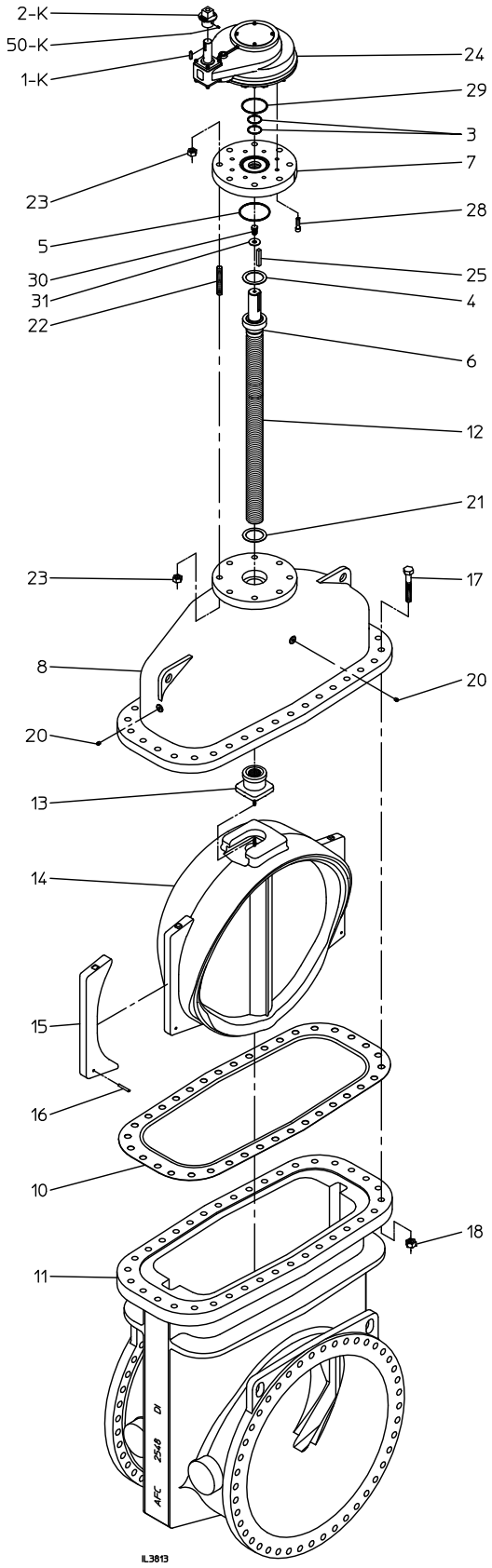
SERIES 2500 - NRS WITH SPUR GEARING PARTS LIST, 30" & 36" SIZES

Ref No.	Description	Material	Qty. Series 2500 30"	Qty. Series 2500 36"
1-K	Key 8 mm x 7 mm x 40 mm	Steel	1	1
2-K	Operating Nut, 2" Square	Ductile Iron	1	1
3	O-ring	Rubber	2	2
4	Upper Thrust Washer	Delrin	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1
6	O-ring	Rubber	1	1
7	Stuffing Box	Ductile Iron	1	1
8	Bonnet	Ductile Iron	1	1
10	Bonnet Gasket	Rubber	1	-
10	Bonnet Gasket	EPDM Rubber	-	1
11	Body	Ductile Iron	1	1
12	Stem	Bronze	1	1
		Stainless Steel (Optional)		
13	Wedge Nut	Bronze	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1
15	Wedge Cover	Polymer	2	2
16	Wedge Cover Pin	Polymer	2	2
17	Hex Head Bolt, 1"-8 x 6"	Stainless Steel	24	-
17	Hex Head Bolt, 1-1/4-7 x 7"	Stainless Steel	-	28
18	Hex Nut, 1"-8	Stainless Steel	24	-
18	Hex Nut, 1-1/4-7	Stainless Steel	-	28
20	Pipe Plug, 3/8 NPT	Stainless Steel	4	4
21	Lower Thrust Washer	Delrin	1	1
22	Stud, 1"-8 x 6"	Stainless Steel	6	-
22	Stud, 1"-8 x 6-1/2"	Stainless Steel	-	8
23	Hex Nut, 1"-8	Stainless Steel	12	16
24	Spur Gear Operator 4:1	Rotork IS8	1	-
24	Spur Gear Operator 4:1	Rotork IS10	-	1
25	Square Key, 1/2 x 3-1/2	Hardened Steel	1	-
25	Square Key, 5/8 x 4"	Hardened Steel	-	1
28	Socket Head Cap Screw 3/4-10 x 2"	Stainless Steel	4	-
28	Socket Head Cap Screw 5/8-11 x 2"	Stainless Steel	-	8
29	Actuator Gasket	Rubber O-ring	1	1
30	Hex Head Bolt, 3/4-10 x 1"	Zinc Plated Steel	1	1
31	Washer	Steel	1	1
60-K	Spring Pin, 1/4 x 3/4"	Stainless Steel	1	1



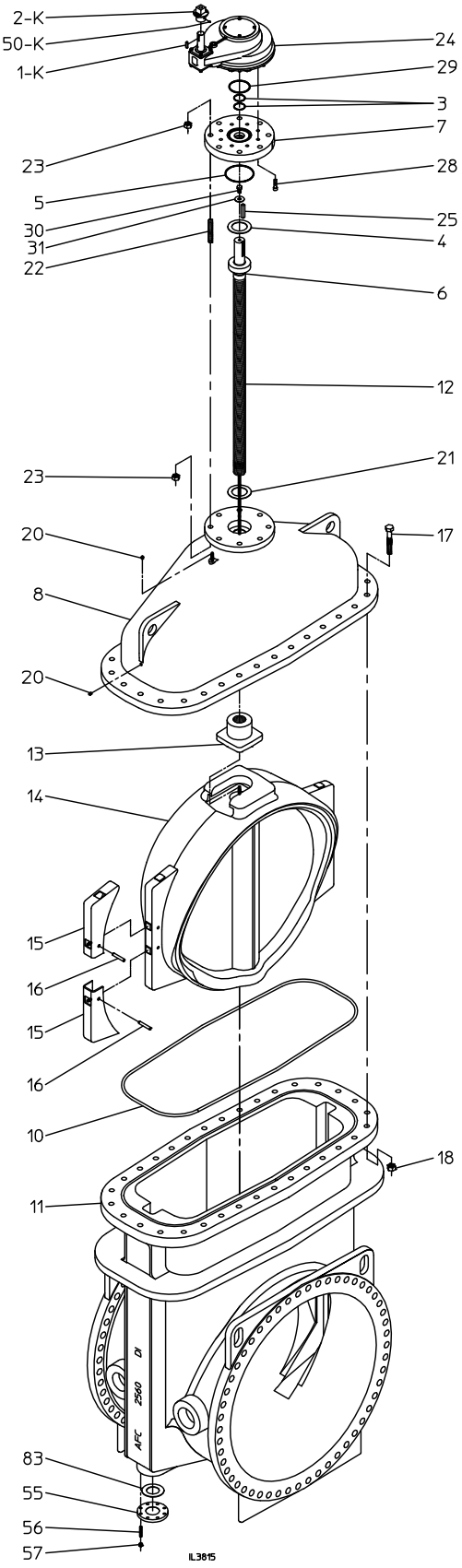
SERIES 2500 - NRS WITH SPUR GEARING PARTS LIST, 42” - 54” SIZES

Ref No.	Description	Material	Qty.		
			Series 2500		
			42”	48”	54”
1-K	Key 14 mm x 9 mm x 54 mm	Steel	1	1	1
2-K	Operating Nut, 2” Square	Ductile Iron	1	1	1
3	O-ring	Rubber	2	2	2
4	Upper Thrust Washer	Delrin	1	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1	1
6	O-ring	Rubber	1	1	1
7	Stuffing Box	Ductile Iron	1	1	1
8	Bonnet	Ductile Iron	1	1	1
10	Bonnet Gasket	EPDM Rubber	1	1	1
11	Body	Ductile Iron	1	1	1
12	Stem	Bronze	1	1	1
		Stainless Steel (Optional)			
13	Wedge Nut	Bronze	1	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1	1
15	Wedge Cover	Polymer	2	2	2
16	Wedge Cover Pin	Polymer	2	2	2
17	Hex Head Bolt, 1-1/4-7 x 7-1/2”	Stainless Steel	32	-	-
17	Hex Head Bolt, 1-3/8-6 x 8-1/2”	Stainless Steel	-	36	36
18	Hex Nut, 1-1/4-7	Stainless Steel	32	-	-
18	Hex Nut, 1-3/8-6	Stainless Steel	-	36	36
20	Pipe Plug, 1/2 NPT	Stainless Steel	4	4	4
21	Lower Thrust Washer	Delrin	1	1	1
22	Stud, 1-1/4-7 x 7-1/2”	Stainless Steel	8	-	-
22	Stud, 1-1/4-7 x 7-3/4”	Stainless Steel	-	8	8
23	Hex Nut, 1-1/4-7	Stainless Steel	16	16	16
24	Spur Gear Operator 8:1	Rotork IS12	1	1	1
25	Square Key, 3/4 x 4-1/2	Hardened Steel	1	1	1
28	Socket Head Cap Screw 3/4-10 x 2-1/2”	Stainless Steel	8	8	8
29	Actuator Gasket	Rubber O-ring	1	1	1
30	Hex Head Bolt, 7/8-9 x 1-1/2”	Plated Steel	1	1	1
31	Washer	Steel	1	1	1
50-K	Set Screw 5/16-18 x 3/4”	Stainless Steel	1	1	1



SERIES 2500 - NRS WITH SPUR GEARING PARTS LIST, 60” & 66” SIZES

Ref No.	Description	Material	Qty. Series 2500	
			60”	66”
1-K	Key 14 mm x 9 mm x 54 mm	Steel	1	1
2-K	Operating Nut, 2” Square	Ductile Iron	1	1
3	O-ring	Rubber	2	2
4	Upper Thrust Washer	Delrin	1	1
5	Stuffing Box Gasket	Rubber O-ring	1	1
6	O-ring	Rubber	1	1
7	Stuffing Box	Ductile Iron	1	1
8	Bonnet	Ductile Iron	1	1
10	Bonnet Gasket	EPDM Rubber	1	1
11	Body	Ductile Iron	1	1
12	Stem	Stainless Steel	1	1
13	Wedge Nut	Bronze	1	1
14	Resilient Wedge	Ductile Iron, Coated With EPDM Rubber	1	1
15	Wedge Cover	Polymer	4	4
16	Wedge Cover Pin	Polymer	4	4
17	Hex Head Bolt, 1-3/8-6 x 8-1/2”	Stainless Steel	32	32
18	Hex Nut, 1-3/8-6	Stainless Steel	32	32
20	Pipe Plug, 1/2 NPT	Stainless Steel	4	4
21	Lower Thrust Washer	Delrin	1	1
22	Stud, 1-1/4-7 x 7-1/2”	Stainless Steel	8	8
23	Hex Nut, 1-1/4-7	Stainless Steel	16	16
24	Spur Gear Operator 8:1	Rotork IS12	1	1
25	Square Key, 3/4 x 4-1/2	Hardened Steel	1	1
28	Socket Head Cap Screw 3/4-10 x 2-1/2”	Stainless Steel	8	8
29	Actuator Gasket	Rubber O-ring	1	1
30	Hex Head Bolt, 7/8-9 x 1-1/2”	Plated Steel	1	1
31	Washer	Steel	1	1
50-K	Set Screw 5/16-18 x 3/4”	Stainless Steel	1	1
55	Blind Flange	Ductile Iron	1	1
56	Stud, 5/8-11 x 3”	Stainless Sreel	8	8
57	Hex Nut, 5/8-11	Stainless Steel	8	8
83	Blind Flange Gasket	Rubber	2	2



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