

**KENNEDY VALVE**

# ***UL-FM RESILIENT SEATED GATE VALVE***

*KS-FW, KS-RW, KS-RWHP, Model 2638*

## ***INSTALLATION & OPERATION MANUAL***

<b>TABLE OF CONTENTS</b>	<b>PAGE</b>
Introduction .....	2
Receiving & Storage .....	2
Installation .....	2
Operation .....	3
Maintenance .....	3
Stem Seal Procedure .....	3
Troubleshooting .....	5
Parts & Service .....	5
Drawings .....	6

# INTRODUCTION

Resilient Seated Gate Valves (RSGV) were introduced in the 1980's and became a dominant preference for use. This manual will provide you with the information needed to properly install, operate, and maintain the valve and to provide long service life. RSGVs are available as a Full Wall (FW) or Reduced Wall (RW) resilient seated valve and comply with AWWA C509 or C515 standards.

The RSGV contains a wedge fully encapsulated with EPDM rubber that is permanently bonded to the wedge and meets ASTM D249. The RSGV body, bonnet, and stuffing plate are coated with fusion bonded epoxy (FBE) and applied in accordance with AWWA C550 and are ANSI / NSF 61/372 certified, or two part epoxy, 14"-24".

Optional configurations also include a Non-Rising Stem (NRS) or Outside Screw & Yoke (OS&Y).

## RECEIVING & STORAGE

Inspect valves upon receipt to ensure correct material, quantity, and any optional equipment has been received. Also inspect all received equipment for any damage which may have occurred during shipment. Contact the Kennedy Valve team to report any issues with materials received. RSGV requires no routine maintenance except that the valve must be operated at least once a year to prevent stem binding due to rust and encrustation.

Unload all valves safely to protect both the materials and workers. Do not allow lifting lugs, slings, or chains to encounter the valve wedge seating surface areas. Store valves indoors with the valve in the fully closed position to prevent damage to the seating surface by foreign material. If outdoor storage is required valves need to be protected from weather and foreign materials. In colder climates where freezing may occur, remove any water from the valve interior and close valve before storage to prevent cracking of the valve casting and deterioration of the resilient seated EPDM.

# INSTALLATION

**WARNING:** *Installation of valves should be performed by experienced installers. Valves should never be used as structural supports and movement into place. Valves are heavy and may include accessories or bolt on pieces which should be handled with caution.*

**NOTE: BEFORE INSTALLING THE VALVE:**

1. *Wipe away any dirt and grit from the inside of the valve*
2. *Flush the line completely.*
3. *Check the operation of the valve – full open to full closed when installing the valve.*
4. *Cover the valve with burlap or similar material while backfilling to protect the coating after installing the valve.*
5. *Open the valve about five turns and allow the flow an opportunity to flush any trash and debris from the line.*

It is recommended that valves be installed into piping system in accordance with AWWA M-11 and NFPA guidelines to prevent any undue piping stress, deflection or bending that may affect the performance of the valve.

1. Prior to installation, check that valve end joints are clean. Check for damage to the valve. Open and close valve to insure proper operation. Close the valve before placing it in trench or line.
2. Handle valve carefully. Do not drop into position. Do not sling through the port opening.
3. Prepare pipe ends according to manufacturer's instructions. Install valve per proper methods according to end joint type. All piping should be properly supported to avoid line stress on the valve. Do not use the valve as a jack to force a pipeline into position.
4. A valve box or vault should be provided for each valve used in buried service application. These should be installed such that no load is transferred to the valve.
5. Before pressurization of the pipeline and valve, all pressure containing bolting (cover, follower plate, end connection) should be inspected for adequate tightness (usually 90 ft. lbs.). (CONT'D)

6. Buried valves should be pressurized before backfilling.
7. With valve in open position, the entire system should be thoroughly flushed to clean the system. Debris in the valve could prevent valve from closing or possibly damage the resilient material on the wedge.
8. Upon completion of the installation, gate valve location, size, type, date of installation, number of turns to open, direction of opening, and any other special information should be entered on permanent records.

## OPERATION

The operation of a RSGV is not like that of a double disc gate valve. In normal circumstances less operating torque is required as the resilient wedge valve just closes, or on opening. Valve operators should adhere to the "Turns to Fully Open RSGV" listed in the table below.

<b>Turns to Fully Open RSGV</b>	
<b>Model KS-FW (C509) and KS-RW (C515)</b>	
<b>Size</b>	<b>No. of Turns</b>
2"	6-1/2
2-1/2"	8
3"	10
4"	13-1/2
6"	19-1/2
8"	25-1/2
10"	31-1/2
12"	37-3/4
14"	52
16"	52
18"	64
20"	64
24"	76

*\*2TPI Stem Threads*

## MAINTENANCE

The RSGV requires no routine maintenance except that the valve must be operated at least once a year to prevent stem binding due to rust and encrustation.

If the valve has not been abused, the stem seal/packing may be the only items to ever be replaced, and instructions are included below. There have been occasions where a wedge has required replacement and instructions are included but this should not be considered normal maintenance.

## STEM SEAL PROCEDURES

### NON-RISING STEM (NRS) VALVES

Before beginning, contact Kennedy Valve to obtain:

1. Stem sealing O-rings - (2) req'd
2. One stuffing box gasket / O-ring - (1) req'd

### NRS STEM SEAL REPLACEMENT PROCEDURE

1. Operate the valve to its full position (apply approx. 50 ft-lbs. torque for valves 3" and smaller, 100 ft-lbs. for valves 4" and larger)
2. Remove the nuts retaining the stuffing box
3. Separate the stuffing box and the cap/bonnet (the seal between the cap/bonnet and the stuffing box may require the use of a small pry bar or a soft faced hammer).
4. Remove and replace the O-rings. Wipe all grit and dirt from the bore of the stuffing box and stem. Lubricate the bore of the stuffing box, the stem, and the stem seal O-rings before installing the stem seal O-rings. Two O-rings on the shank of the stem and One O-ring/gasket seal on the bottom of the stuffing box. It may be desirable to use a small amount of a cyanoacrylate adhesive to retain the O-ring during reinstallation. (I.e. Permabond 910, Loctite 404, etc.)
5. Replace the stuffing box. Tighten all bolts uniformly and carefully so that the stuffing box is flat and snug against the cover and the gap between the cover and stuffing box does not exceed 0.015" and uniform (normally there should be no gap). Check the stem for binding but operating the valve.

## **OUTSIDE SCREW & YOKE (OS&Y)**

Before attempting to repack the valve, first attempt to stop the leakage by adjusting (tightening) the brass nuts on the packing gland. Tighten both nuts snugly and uniformly to about 60 ft-lb. The switch groove should be above the packing when brass nuts are tightened. Verify that the switch groove on the stem has smooth corners. Sharp corners exist on some older valves. File as necessary. Operate the valve a time or two to determine if the leakage has stopped. Before beginning repacking, contact Kennedy Valve to obtain packing (packing supplied by Kennedy Valve may come in one continuous coil or in segments).

### **OS&Y PACKING PROCEDURE**

1. Operate the valve to its fully open position (apply approx. 50 ft-lbs. torque for valves 3" and smaller, 100 ft-lbs. for valves 4" and larger)
2. Verify that the switch groove on the stem has smooth corners. Sharp corners exist on some older valves. File as necessary.
3. Remove the nuts [Item R8] retaining the packing gland.
4. Lift the packing gland. If necessary, lever the packing gland with a crowbar or similar tool. Zip ties work well to temporarily fasten the packing gland to the handwheel above.
5. Remove and replace the packing - (if the packing is in multiple or individual rings, be sure to stagger the adjoining ends from one layer to the next). We recommend using a packing removal tool. Remove the packing gland bolts and replace them with threaded rods through the packing gland and place nuts on the free ends of the threaded rods. Tighten the nuts with a deep well socket until all leakage stops. Exchange the threaded rods for the actual packing gland bolts/nuts (one side and then the other).
6. Reinstall the packing gland bolts and nuts, tightening the nuts uniformly, one side then the other so that the packing gland pulls down evenly. Tighten the nuts until all leakage past the packing stops. Operate the valve through several complete open/close cycles to check for stem binding and to be certain that there is no leakage.

## **OS&Y PACKING GLAND REPLACEMENT PROCEDURE**

1. Remove the packing gland fasteners.
2. Remove the cap/bonnet fasteners.
3. Rotate the hand wheel in "valve closing direction". This action will allow the entire cover assembly to travel upward until the threads of the yoke nut completely disengage the threads on the stem.
4. Carefully, lift the cap/bonnet assembly [cap/bonnet assembly includes Handwheel Hold Down Nut, Handwheel, Upper Thrust Washer (sizes 3" thru 12"), Lower Thrust Washer, Yoke Nut, Packing Bolts & Nuts, Packing Gland, Packing] up and completely off stem [item R14].
5. Remove the old packing and discard the old packing gland.
6. Position the new packing gland into the packing well of the cap/bonnet. The packing gland is not meant to be secured at this point.
7. Carefully, reposition the cap/bonnet assembly over the stem until the end of the stem contacts the starting threads of the yoke nut.
8. Rotate the hand wheel in "valve opening direction". This action will allow the entire cap/bonnet assembly to travel downward until the cap/bonnet assembly rests on the top of the body flange. --- Make sure that the cap/bonnet O-ring is not damaged and is in position.
9. Bolt the cap/bonnet to the body, using an alternating tightening pattern, assuring that the cap/bonnet is down flush to the body (the maximum gap should not exceed 0.015" and should be uniform (normally there should be no gap). --- see last page for bolt torque recommendations.
10. Refer to the OS&Y Packing Procedure.

## RESILIENT WEDGE REPLACEMENT

1. It is necessary to take the valve fully out of service to replace the wedge, but it is not necessary to remove the valve from the line.
2. It is very unusual to have to replace a wedge. Wedges normally can be expected to last for many years and thousands of cycles. Before replacing a wedge, first check to see if the operation personnel are closing the valve tightly. If the valve is closed tightly, open the valve about five turns and attempt to cause the maximum flow through the valve to flush any debris from the seating area. If it is necessary to replace a wedge suspect that there is some systematic problem causing the wedge failure such as stones in the line.
3. Before attempting to replace the disc, contact Kennedy Valve to obtain:
  - A. Cap/bonnet O-Ring
  - B. Wedge

## WEDGE REPLACEMENT PROCEDURE

1. Partially open the valve.
2. Remove the cap (bonnet) bolts and nuts.
3. Lift the cap/bonnet, stem, stuffing box, and wedge from the body.
4. Remove and replace the wedge by un-threading the stem from the wedge nut.
5. Replace the cap sealing O-ring (not always necessary)
  - Retain the O-ring with lubricating grease (Clarion Food Machinery Grease, No. 2). Lubricate stem with same grease.
6. Replace the cap/bonnet, stem, stuffing box, wedge assembly– taking care to start the disc into the guides cast into the body.
7. Place the bolts through the holes in the body and cap/ bonnet – taking care to line the bolt holes up.
8. Snug the cap/bonnet bolts finger tight and then tighten them. First tighten two bolts diagonally opposite with wrist torque. Then go to another bolt opposite the first two and tighten. Then work around the bolt pattern tightening the bolts.
9. Operate the valve fully open to fully close before backfilling.

# TROUBLESHOOTING

PROBLEM	CAUSE	SOLUTION
<b>Joint leakage</b>	<i>Bolt tension relaxing</i>	<i>Tighten bolts</i>
	<i>Foreign material caught in seat</i>	<i>Operate valve to flush out debris</i>
<b>Seat leakage</b>	<i>Seat is dirty / corroded</i>	<i>Flush or disassemble &amp; clean</i>
	<i>Seat is damaged</i>	<i>Inspect- repair or replace.</i>
	<i>Bolts loose</i>	<i>Tighten bolts</i>
<b>Leak Past Stem</b>	<i>O-rings worn / damaged (NRS)</i>	<i>Inspect / Replace</i>
	<i>Packing worn / damaged (OS&amp;Y)</i>	<i>Inspect / Replace</i>

# PARTS & SERVICE

Parts and service are available from your local representative or the factory. For availability and pricing of spare parts please contact the Kennedy Valve sales team:

### Kennedy Valve

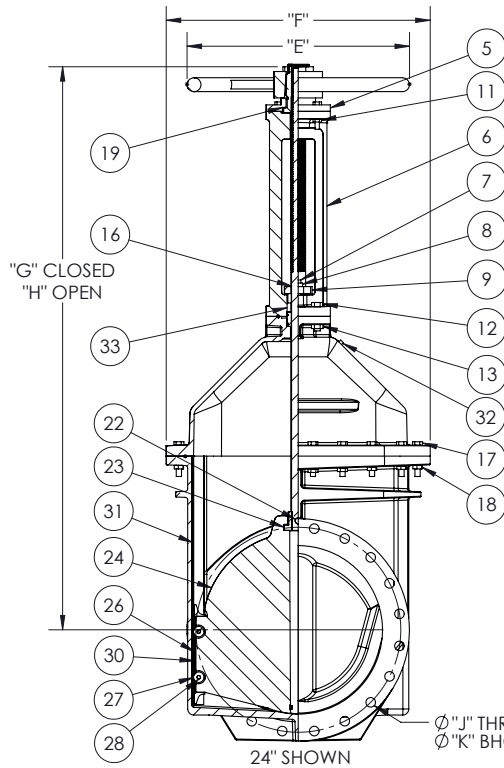
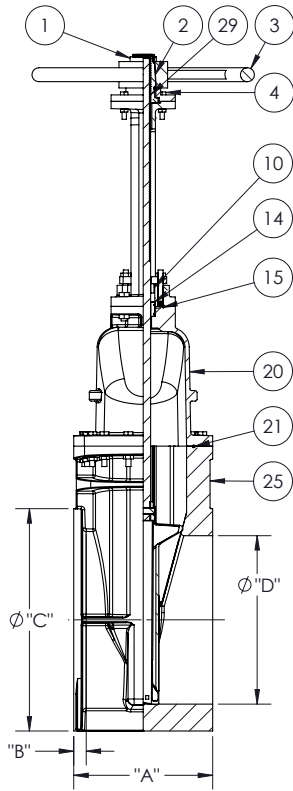
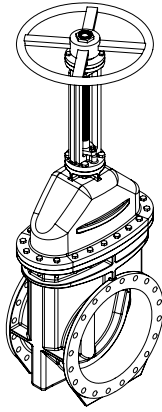
[www.kennedyvalve.com](http://www.kennedyvalve.com)

**Phone:** 800-782-5831

607-734-2211

**Email:** [knv.sales@mcwane.com](mailto:knv.sales@mcwane.com)

# OS&Y RSGV with FLANGED ENDS, 2"-24"

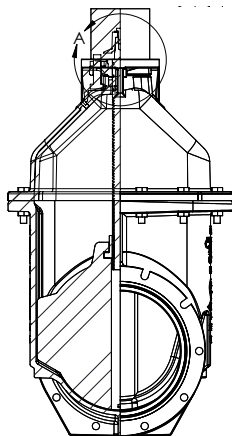


PARTS LIST		
SIZE	DESCRIPTION	MATERIAL
1	Hold Down Nut	Bronze ASTM B584 C87850 / C57610 (2"-12")
		Bronze ASTM B584 C83600 (14"-24")
2	Yoke Nut	Bronze ASTM B584 C86700 (2"-12")
		Bronze ASTM B584 C83600 (14"-24")
3	Handwheel	Ductile Iron ASTM A536 70-50-05 (2"-12")
		Gray Iron ASTM A126 Class B (14"-24")
4	Hex Cap Screw	ZN A307 Grade B / ASTM F593 S30400 / S31600
5	Adapter (14"-24")	Gray Iron ASTM A126 Class B
6	Yoke	Ductile Iron ASTM A536 70-50-05 (2"-12")
		Gray Iron ASTM A126 Class B (14"-24")
7	Stud (14"-24")	ASTM F593 S30400 / S31600
8	Hex Nut	ZN A307 Grade B / ASTM F593 S30400 / S31600
9	Follower Plate (14"-16")	Gray Iron ASTM A126 Class B
10	Packing Gland	Ductile Iron ASTM A536 70-50-05 (2"-12")
		Bronze ASTM B584 C83600 (14"-24")
11	Hex Nut	ZN A307 Grade B / ASTM F593 S30400 / S31600
12	Hex Cap Screw	GR 2 ZN SAE J429 / 304SS ASTM 18-8SS
13	Hex Nut	ZN A307 Grade B / ASTM F593 S30400 / S31600
14	Bushing (14"-24")	ZN A307 Grade B / ASTM F593 S30400 / S31600
15	Yoke O-Ring	Buna-N ASTM D2000 (2"-12")
		EPDM (14"-24")
16	Stem	*304SS ASTM A276 S30400 / 316SS ASTM A276 S31600 / ECO Brass ASTM B371 C69300 / Silicon Bronze "A" (Everdur) ASTM B98 C65500 (2"-12")
		*304SS ASTM A276 S30400 / 316SS ASTM A276 S31600 / Silicon Bronze "A" (Everdur) ASTM B98 C65500 (14"-24")
17	Hex Cap Screw	ZN A307 Grade B / ASTM F593 S30400 / S31600
18	Hex Nut	ZN A307 Grade B / ASTM F593 S30400 / S31600
19	Flat Washer	ZN A307 Grade B / ASTM F593 S30400 / S31600
20	Cover	Ductile Iron ASTM A536 70-50-05 (2"-12")
		Ductile Iron ASTM A536 65-45-12 (14"-24")
21	Cover O-Ring	Buna-N ASTM D2000 (2"-12")
		EPDM (14"-24")
22	Stem O-Ring	Buna-N ASTM D2000 (2"-12")
		EPDM (14"-24")
23	Stem Nut	Bronze ASTM B584 CDA 844 (2"-12")
		Bronze ASTM B584 C87610 / Bronze ASTM B584 C87850 / Bronze ASTM B763 C99500 (NDZ) (14"-20")
24	Wedge	Bronze ASTM B584 C83600 (24")
		Ductile Iron ASTM A584 70-50-05 & EPDM (2"-12")
25	Body-Flanged Type	Ductile Iron ASTM A536 65-45-12 & EPDM (14"-24")
		Ductile Iron ASTM A584 70-50-05 & EPDM (2"-12")
26	Scraper (24")	Ductile Iron ASTM A536 65-45-12 & EPDM (14"-24")
27	Roller (24")	Bronze ASTM B584 C83600
28	Pin (24")	Bronze ASTM B584 C83600
29	Square Key (18"-24")	Stainless Steel AISI 303
30	Wedge Cap (18"-20")	GR 2 ZN SAE J429
31	Track (24")	Delrin
32	Pipe Plug (14"-24")	Stainless Steel AISI 316
33	Packing	18-8SS
		Braided, Lubricated (Non-Asbestos)

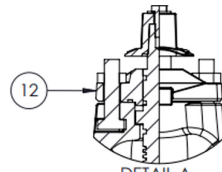
\*304 standard 12" & down.  
Silicon Bronze standard 14" & up.

DIMENSIONS												
SIZE	A	B	C	D	E	F	G	H	J	K	No. Turns to Open	Weight (lbs.)
2	7"	5/8"	6"	2"	7-1/4"	6"	13-3/32"	15-7/8"	5/8" x 4	4-3/4"	6-1/2	42.10
2-1/2	7-1/2"	11/16"	7"	2-1/2"	7-1/4"	7"	13-7/8"	16-3/8"	5/8" x 4	5-1/2"	8	52.00
3	8"	3/4"	7-1/2"	3"	10"	7-1/2"	15-5/8"	18-7/8"	5/8" x 4	6"	10	67.14
4	9"	15/16"	9"	4-1/4"	10"	9"	18-1/4"	22-3/4"	5/8" x 4	7-1/2"	13-1/2	91.85
6	10-1/2"	1"	11"	6-1/4"	12"	11-3/8"	23-3/4"	30-1/8"	3/4" x 8	9-1/2"	19-1/2	140.67
8	11-1/2"	1-1/8"	13-1/2"	8-1/4"	14"	13-1/2"	29-1/4"	37-3/4"	3/4" x 8	11-3/4"	25-1/2	212.60
10	13"	1-3/16"	16"	10-1/4"	18"	16"	35-3/8"	45-3/4"	7/8" x 12	14-1/4"	31-1/2	368.48
12	14"	1-1/4"	19"	12-1/4"	18"	19"	40-5/8"	53-1/8"	7/8" x 12	17"	37-3/4	479.41
14	15"	1-3/8"	21-1/16"	14-1/4"	22"	26-11/16"	59-3/4"	74-3/4"	1" x 12	18-3/4"	52	670.00
16	16"	1-7/16"	23-1/2"	16-1/4"	22"	26-11/16"	59-3/4"	74-3/4"	1" x 16	21-1/4"	52	735.00
18	17"	1-9/16"	25"	18-1/4"	24"	32-1/4"	71-1/4"	92-9/16"	1-1/4" x 16	22-3/4"	64	1100
20	18"	1-11/16"	27-1/2"	20-1/4"	24"	32-1/4"	67-3/8"	94-3/8"	1-1/4" x 20	25"	64	1325
24	20"	1-7/8"	32"	24-1/4"	32"	38"	81-3/8"	110-5/8"	1-3/8" x 20	29-1/2"	88	1900

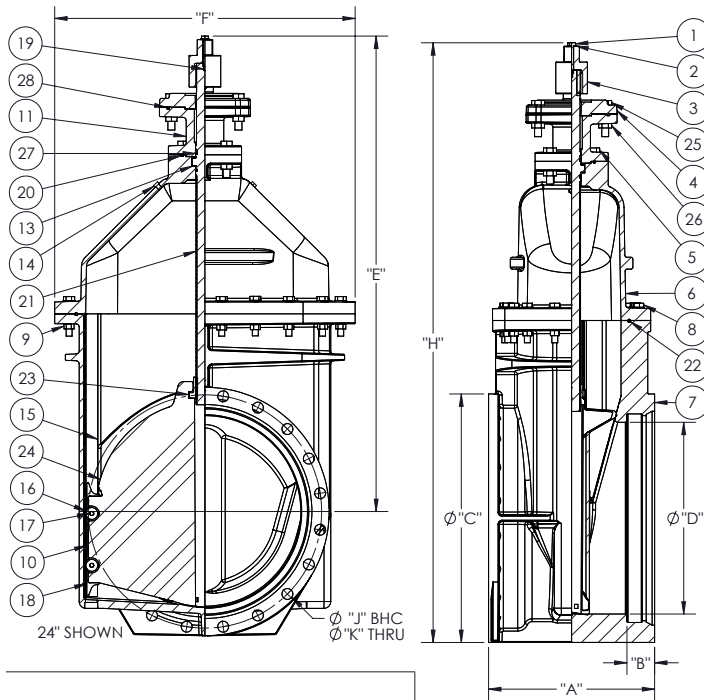
# NRS RSGV with MECHANICAL JOINTS, 2"-24" POST INDICATOR VALVE



14" SHOWN



DETAIL A  
SCALE 1 : 6

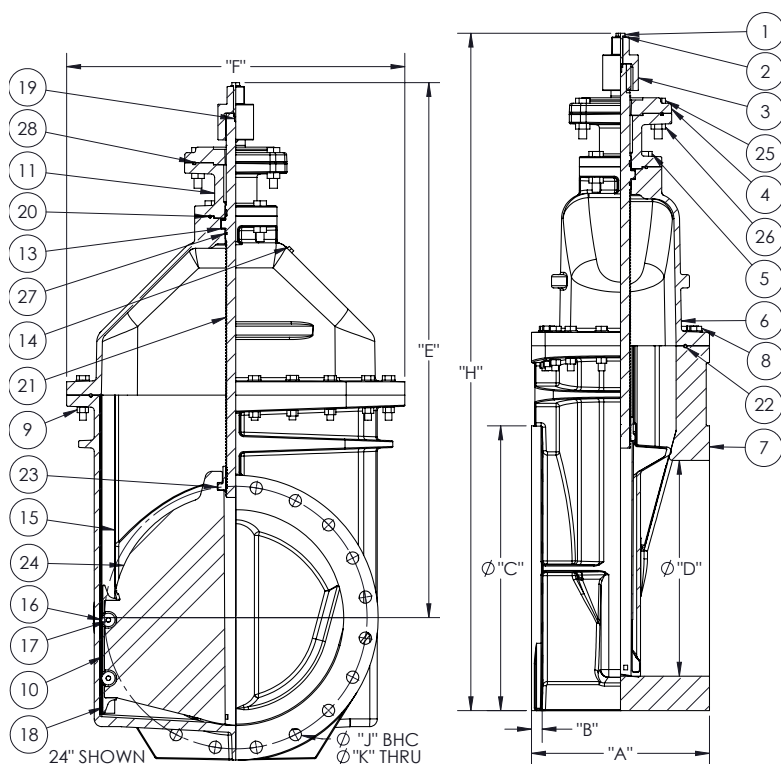
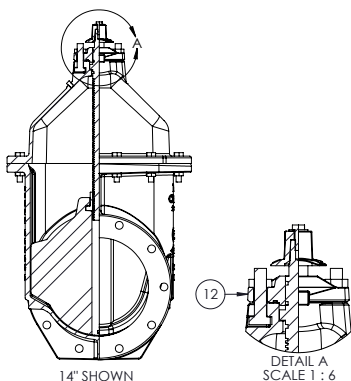


PARTS LIST		
SIZE	A	B
1	Bolt	GR 2 ZN SAE J429
2	Washer	GR 2 ZN SAE J429
3	OP Nut	Grey Iron ASTM A126 Class B
4	Adaptor Plate (18"-24")	Ductile Iron ASTM A536 70-50-05
5	Hex Head Bolt	GR 2 ZN SAE J429 / ASTM F593 S30400/S31600
6	Cover	Ductile Iron ASTM A536 70-50-05
7	Body	Ductile Iron ASTM A536 70-50-05
8	Hex Head Bolt	GR 2 ZN SAE J429 / ASTM F593 S30400/S31600
9	Hex Nut	GR 2 ZN SAE J429 / ASTM F593 S30400/S31600
10	Wedge Cover (18"-20")	Delrin
11	Extension (18"-24")	Ductile Iron ASTM A536 70-50-05
12	Stuffing Box (2"-16")	Ductile Iron ASTM A536 70-50-05
13	Thrust Washer	Delrin
14	Pipe Plug (14"-24")	18-8SS
15	Track (24")	AL Bronze ASTM B148 C95400
16	Roller (24")	Copper Alloy ASTM B584 C95400
17	Pin (24")	316 Stainless Steel
18	Scraper (24")	Copper Alloy ASTM B584 C95400
19	Square Key (18"-24")	GR 2 ZN SAE J429
20	O-Ring	EPDM
21	Stem*	Manganese Bronze ASTM B584 C86700 / 304SS ASTM A276 S30400 / 316SS ASTM A276 S31600 / NDZ B763 C99500 (2"-12") Manganese Bronze ASTM B584 C86200 / 304SS ASTM A276 S30400 / 316SS ASTM A276 S31600 / NDZ B763 C99500 (14"-24")
22	O-Ring	EPDM
23	Stem Nut	Manganese Bronze ASTM B584 C86700 (2"-12") Copper Alloy ASTM B584 C87850 (14"-24")
24	Wedge	Ductile Iron ASTM A536 70-50-05 / EPDM Rubber
25	Ind. Post Plate Hex Bolts	ASTM F593 S30400
26	Ind. Post Plate Hex Nuts	ASTM F594 S30400
27	Stem O-Ring	EPDM
28	Ind. Post Plate O-Ring	EPDM

\*Manganese Bronze standard.

DIMENSIONS											
SIZE	A	B	C	D	E	F	H	J	K	No. Turns to Open	Weight (lbs.)
2	8-1/4"	2-1/2"	4-1/2"	2"	10-7/8"	6"	14-7/16"	4-3/4"	5/8" x 2	6-1/2	37.14
3	8-1/2"	2-1/2"	7-3/4"	3"	12-3/8"	7-1/2"	17"	6-1/8"	5/8" x 4	10	58.00
4	9-1/2"	2-1/2"	9-1/8"	4-1/4"	14-3/4"	9"	19-3/4"	7-1/2"	3/4" x 4	13	69.50
6	10-1/2"	2-1/2"	11-1/8"	6-1/4"	19"	11-3/8"	24-5/16"	9-5/8"	3/4" x 6	19	110.00
8	13-1/8"	2-1/2"	13-1/8"	8-1/4"	22-1/2"	13-1/2"	29-11/16"	11-3/4"	3/4" x 6	25	164.00
10	15-1/2"	2-1/2"	15-1/2"	10-1/4"	26-1/2"	16"	34-1/2"	14"	3/4" x 8	31	287.00
12	16"	2-5/8"	18"	12-1/4"	30"	19"	39"	16"	3/4" x 8	37	362.00
14	17"	3-1/2"	20-1/4"	14-1/4"	38-3/4"	26-11/16"	48-1/2"	18-3/4"	3/4" x 10	52	650.00
16	17"	3-1/2"	22-1/2"	16-1/4"	37-3/4"	26-11/16"	48-5/8"	21"	3/4" x 12	52	720.00
18	18-3/4"	3-1/2"	24-3/4"	18-1/4"	57-1/16"	32-1/4"	68-13/16"	23-1/4"	7/8" x 12	64	1250.00
20	18"	3-1/2"	27"	20-1/4"	56-1/4"	32-1/4"	69-3/8"	25"-1/2	7/8" x 14	64	1325.00
24	20"	3-1/2"	32"	24-1/4"	60-1/16"	38"	76-1/16"	29-1/2"	3/4" x 16	88	1700.00

# NRS RSGV with FLANGED ENDS, 2"-24" POST INDICATOR VALVE



PARTS LIST		
SIZE	A	B
1	Bolt	GR 2 ZN SAE J429
2	Washer	GR 2 ZN SAE J429
3	OP Nut	Grey Iron ASTM A126 Class B
4	Adaptor Plate (18"-24")	Ductile Iron ASTM A536 70-50-05
5	Hex Head Bolt	GR 2 ZN SAE J429 / ASTM F593 S30400/S31600
6	Cover	Ductile Iron ASTM A536 70-50-05
7	Body	Ductile Iron ASTM A536 70-50-05
8	Hex Head Bolt	GR 2 ZN SAE J429 / ASTM F593 S30400/S31600
9	Hex Nut	GR 2 ZN SAE J429 / ASTM F593 S30400/S31600
10	Wedge Cover (18"-20")	Delrin
11	Extension (18"-24")	Ductile Iron ASTM A536 70-50-05
12	Stuffing Box (2"-16")	Ductile Iron ASTM A536 70-50-05
13	Thrust Washer	Delrin
14	Pipe Plug (14"-24")	18-8SS
15	Track (24")	AL Bronze ASTM B148 C95400
16	Roller (24")	Copper Alloy ASTM B584 C95400
17	Pin (24")	316 Stainless Steel
18	Scraper (24")	Copper Alloy ASTM B584 C95400
19	Square Key (18"-24")	GR 2 ZN SAE J429
20	O-Ring	EPDM
21	Stem*	Manganese Bronze ASTM B584 C86700 / 304SS ASTM A276 S30400 / 316SS ASTM A276 S31600 / NDZ B763 C99500 (2"-12") Manganese Bronze ASTM B584 C86200 / 304SS ASTM A276 S30400 / 316SS ASTM A276 S31600 / NDZ B763 C99500 (14"-24")
22	O-Ring	EPDM
23	Stem Nut	Manganese Bronze ASTM B584 C86700 (2"-12") Copper Alloy ASTM B584 C87850 (14"-24")
24	Wedge	Ductile Iron ASTM A536 70-50-05 / EPDM Rubber
25	Ind. Post Plate Hex Bolts	ASTM F593 S30400
26	Ind. Post Plate Hex Nuts	ASTM F594 S30400
27	Stem O-Ring	EPDM
28	Ind. Post Plate O-Ring	EPDM

\*Manganese Bronze standard.

DIMENSIONS											
SIZE	A	B	C	D	E	F	H	J	K	No. Turns to Open	Weight (lbs.)
2	7"	5/8"	6"	2"	11-7/16"	6"	14-7/16"	4-3/4"	5/8" x 4	6-1/2	40.85
2-1/2	7-1/2"	11/16"	7"	2-1/2"	12-1/16"	7"	15-9/16"	5-1/2"	5/8" x 4	8	50.53
3	8"	3/4"	7-1/2"	3"	12-3/8"	7-1/2"	16-15/16"	6"	5/8" x 4	10	79.29
4	9"	15/16"	9"	4-1/4"	14-3/4"	9"	20-1/4"	7-1/2"	5/8" x 4	13	101.75
6	10-1/2"	1"	11"	6-1/4"	19"	11-3/8"	24-1/8"	9-1/2"	3/4" x 8	19	139.04
8	11-1/2"	1-1/8"	13-1/2"	8-1/4"	22-1/2"	13-1/2"	29-1/2"	11-3/4"	3/4" x 8	25	208.05
10	13"	1-3/16"	16"	10-1/4"	26-1/2"	16"	34-1/2"	14-1/4"	7/8" x 12	31	339.52
12	14"	1-1/4"	19"	12-1/4"	30"	19"	39-1/2"	17"	7/8" x 12	37	406.78
14	15"	1-3/8"	21-1/16"	14-1/4"	38-5/16"	26-11/16"	49"	18-3/4"	1" x 12	52	675.00
16	16"	1-7/16"	23-1/2"	16-1/4"	37-5/16"	26-11/16"	49-1/8"	21-1/4"	1" x 16	52	720.00
18	17"	1-9/16"	25"	18-1/4"	56-1/16"	32-1/4"	68-9/16"	22-3/4"	1-1/4" x 16	64	1100.00
20	18"	1-11/16"	27-1/2"	20-1/4"	56-1/4"	32-1/4"	70"	25"	1-1/4" x 20	64	1325.00
24	20"	1-7/8"	32"	24-1/4"	60-1/8"	38"	76-1/8"	29-1/2"	1-3/8" x 20	88	1732.00