

RESILIENT SEATED GATE VALVE

2"-54" AWWA C509 & C515

INSTALLATION & OPERATION MANUAL

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INTRODUCTION

Resilient Seated Gate Valves (RSGV) were introduced to the waterworks industry in the 1980s and became a dominant preference for use in distribution systems. 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 D429. 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.

Optional configurations also include a Non-Rising Stem (NRS) or Outside Screw & Yoke (OS&Y). RSGVs also can be ordered with a Spur or Bevel Gear.

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 McWane Plant & Industrial team to report any issues with materials received.

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 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 ensure proper operation. Close wedge before placing valve 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.
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

Valve operators should adhere to the “Turns to Fully Open RSGV” listed in the table below.

Turns to Fully Open RSGV			
Model KS-FW (C509) and KS-RW (C515)			
Size	without Gearing	with Spur Gear	with Bevel Gear
2"	6-1/2	N/A	N/A
2-1/2"	8	N/A	N/A
3"	10	N/A	N/A
4"	13-1/2	N/A	N/A
6"	19-1/2	N/A	N/A
8"	25-1/2	N/A	N/A
10"	31-1/2	N/A	N/A
12"	37-3/4	N/A	N/A
14"	52	104	104
16"	52	104	104
18"	64	192	192
20"	64	192	192
24"	76	228	228
30"	98	588	588
36"	114	684	684
*42"	100	800	800
*48"	100	800	800
*54"	100	800	800

* 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 properly operated and cycled routinely, the stem seals or packing are the only items that may need to be replaced throughout its lifespan. Instructions for replacing these items are included herein. Instructions are also included for replacing the wedge assembly, but this should not be considered normal maintenance.

STEM SEAL PROCEDURES

NON-RISING STEM (NRS) VALVES

Before beginning, contact McWane Plant & Industrial or an authorized distributor to obtain:

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

NRS STEM SEAL REPLACEMENT PROCEDURE

1. Operate the valve to its fully open position.
2. Remove the nuts retaining the stuffing box.
3. Separate the stuffing box and the cover (The seal between the cover 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 McWane Plant & Industrial or an authorized distributor to obtain packing (packing supplied by McWane Plant & Industrial may come in one continuous coil or in segments).

OS&Y PACKING PROCEDURE

1. Operate the valve to its fully open position.
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 retaining the packing gland.
4. Lift the packing gland. If necessary, lever the packing gland with a crowbar or similar tool.
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). Although not mandatory, it is recommended to use two threaded rods the same diameter as the packing gland bolts and about 6" long to set the packing. 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 cover 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 cover assembly up and completely off stem. The cover 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.
5. Remove the old packing and discard the old packing gland.
6. Position the new packing gland into the packing well of the cover. The packing gland is not meant to be secured at this point.
7. Carefully, reposition the cover 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 cover assembly to travel downward until the cover assembly rests on the top of the body flange. Make sure that the cover O-ring is not damaged and is in position.
9. Bolt the cover to the body, using an alternating tightening pattern, assuring that the cover is down flush to the body (the maximum gap should not exceed 0.015" and should be uniform (normally there should be no gap).
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.

NOTE: The line must not be under pressure when performing this procedure. The line will drain through the body of the valve once the bonnet is unbolted.

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 wedge, contact McWane Plant & Industrial or an authorized distributor to obtain:
 - A. Cover O-Ring
 - B. Wedge

WEDGE REPLACEMENT PROCEDURE

1. Partially open the valve.
2. Remove the bonnet bolts and nuts.
3. Lift the bonnet, stem, stuffing box, wedge assembly from the body.
4. Remove and replace the wedge.
5. Replace the bonnet 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 bonnet, stem, stuffing box, wedge assembly – taking care to start the wedge into the guides cast into the body.
7. Place the bolts through the holes in the body and bonnet – taking care to line the bolt holes up.
8. Snug the 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
Joint Leakage	Bolt tension relaxing	Tighten bolts
Seat Leakage	Foreign material caught in seat	Operate valve to flush out debris
	Seat is dirty / corroded	Flush or disassemble & clean
	Seat is damaged	Inspect / repair or replace
Leak Past Stem	Bolts loose	Tighten bolts
	O-rings worn / damaged (NRS)	Inspect / replace
	Packing worn / damaged (OS&Y)	Inspect / replace

PARTS & SERVICE

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

McWane Plant & Industrial

www.mcwanepi.com

Phone: 866-924-8674

Email: sales@mcwanepi.com



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