

QUALITY MANAGEMENT SYSTEM



Work Instruction

Release Date:
12/21/23

Procedure: QMS-W043

Subject: 4" Aluminum Gate valve

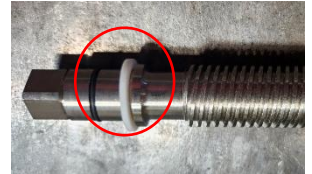
Revision: A

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STEP-10: Spindle Assembly

10.1: Inspect the spindle (1305081) threads for dirt or debris, clean if required.

10.2: Position a Teflon Seal (1111012) on the spindle **FIRST** and 1, O-Ring (1400056)



STEP 20: Support Ring Assembly

20.1: Locate the small port hole in the side of the support rings (3304021 Narrow) (3304022 Wide), brush white grease inside the seal groove.

20.2: The red seal (1304030RED) **MUST** be installed on the PORT side. **The FLAT side of the red seal MUST be positioned down inside the support ring.**



NOTE: The Red Seal must be pressed in using the Pneumatic press and fixture, NOT by hand.

20.3: Position the support ring on the fixture with the red seal position it on the fixture (longer side) and load into the pneumatic press. Activate press by pushing to the 2 palm switches together.



20.4: Repeat the process for the 2nd support Ring, each valve gets a Narrow and Wide support ring.

STEP 30: Valve Assembly

30.1: Inspect the sealing surface of the valve, it should be smooth, no flash or sharp edges.



30.2: Apply generous amounts of white grease in the groove of the narrow support ring and set the black O-ring (1400386) in the groove. The grease will hold the O-ring in.

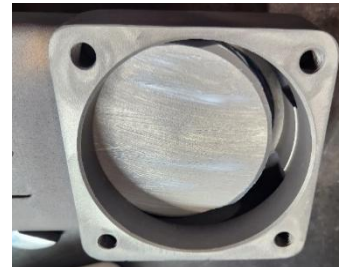
Note: The black O-ring does NOT require the pneumatic press.



30.2: Position the **narrow** support ring down in the valve body with the RED O-ring facing up. Apply white grease to the red seal after installation.



30.3: Apply white grease to both sides of the gate (3304101M) and the threads. Position the gate inside the valve body with the threads aligned with the point of the body.



30.4: Apply white grease to the spindle (1305081) threads and O-ring. Thread the spindle into the gate. **NOTE: The spindle threads in backwards.**



30.5: Apply white grease to the spindle bushing (1305011), attach to the spindle, thread into the valve body and tighten with a wrench.



30.6: Position the O-ring (1400160) on the front flange, apply white grease to the O-ring and inside of the front flange. **This applies to all 3 front flange options, reference BOM for specifics.**

NOTE: The Gate valve has a Straight, 30° elbow and Pressure Relief Valve options, all follow steps 30.6 to 30.11

NOTE: Go to Step 60 for assembly of the PRV



Pressure Relief (PRV) 30° Elbow



Straight

30.7: Repeat step 30.2 for the WIDE support ring and install it into the front flange with the red O-ring showing. Apply white grease to the red seal after installation.



30.8: Clamp the backside of the valve body and insert the front flange Front Flange assembly.

NOTE: The bleed valve hole must be facing up.



NOTE: The RV250 bleed valve is side mounted and exhaust opening must face straight out, reference picture in 30.6.

30.9: Install 4 cap screws (1305101) to attach the front flange assembly, using a socket wrench.

30.10: Using a digital torque wrench, torque the 4 cap screws to **40-50ft lbs.**



30.11: Apply White Teflon tape to the air bleeder screw (1304091) and thread it into the top of the front flange.

NOTE: The Outlet of the air bleed screw **MUST** face to the side.



30.12: Place 1 white Teflon washer (1204760) on the spindle and LOOSELY attach the handwheel.

NOTE: DO NOT tighten the bolt. The hand wheel is removed after leak testing and flipped over so the grip is pointing down, for shipping.



NOTE: Leak testing is performed before any connections are attached to the inlet or discharge sides of the valve.

STEP 40: Leak Test

40.1: Mount the correct test post to the leak tester, connect the outlet side of the Gate valve to the test post. **Verify the Latch is engaged.**

40.2: Leave the gate valve halfway open, cap the inlet side of the gate valve, leave the CAP petcock valve OPEN until water leaks out. Close the petcock valve and pressurize to 200psi and look for any leaks.



40.3: RV250 Option, reference the sticker and tighten the screw down to the desired PSI. Ex. 200psi, tighten the screw down flush with the bottom (C). Watch the gauge and adjust the leak tester to the matching pressure, the PRV should leak at the desire PSI. Adjust the set screw tension if needed to achieve the desired PSI.



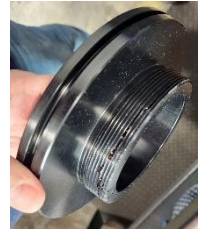
PRESSURE PSI			
A	100	75	
B	150		50
C	200	100	
Spring	outer	1	1 0
	inner	1	0 1

40.4: Following Leak testing, release the pressure with the test post valve, remove the top cap and disconnect gate valve from test post

STEP 50: Intake and Discharge Connections

NOTE: The intake and discharge sides of the gate valve have several options. Reference the Factory Order for specific sizes and options. Picture may not show the exact parts.

50.1: Apply red (146) thread locker to the intake connection and clamp in the vise. Completed thread the gate valve down on the connection until it stops.



50.2: Apply red (146) to the threads on the discharge connection (various options)

50.3: Keep the gate valve clamped in the vice and attach the discharge connection, use the fixture plate to grip and tighten to **50 ft lbs**.



50.4: Install the rubber seal into the inlet swivel, position the gate valve on the edge of the table and attach the swivel.



50.5: Insert the rollers in the swivel until it's FULL, spin the swivel to make sure it moves freely.



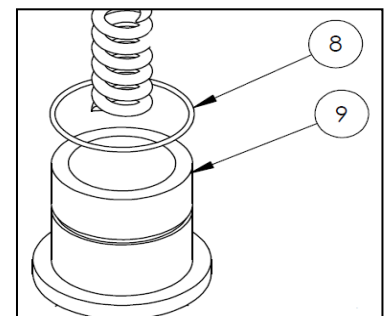
50.6: Remove 1 roller to create space for the plug, completely screw in the plug. Rotate the swivel to ensure smooth operation.



NOTE: STEP 60 is ONLY for assembly of the Pressure Relief Valve RV250

STEP-60: PRV Sub-Assembly

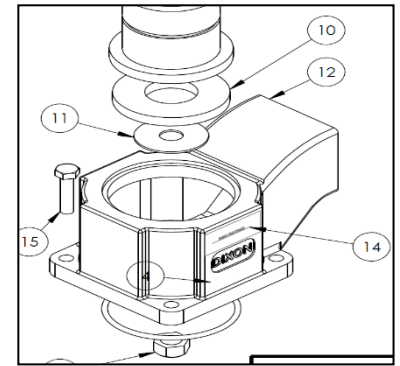
60.1: Position the O-ring (4601201399) in the groove on the PRV Piston (2125197M). Apply white grease to the O-ring and the outside of the PRV Piston.



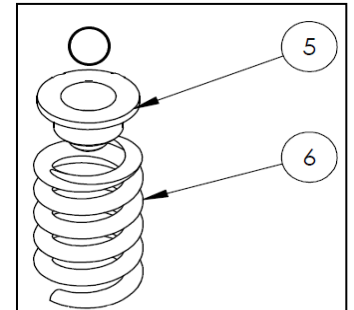
60.2: Position the Flat Gasket(10)(1125018), washer(11)(1125019) on the threaded stud on the bottom of PRV Piston (2125197M) and secure with a Jam Nut (1125020).

NOTE: Tighten Jam Nut completely, DO NOT deform the flat washer.

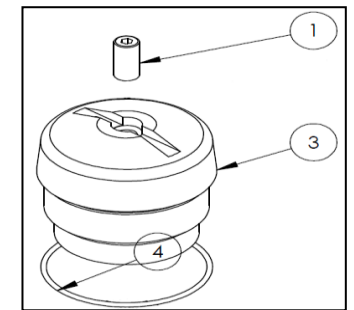
60.3: Position the assembly from 60.2 down inside the PRV Housing (2125082M)



60.4: Position the small compression spring (1125042) down inside the PRV Piston. Position the large compression spring (1125041) around the small spring, down inside the PRV piston.



60.5: Position the PRV spring cap (5) (1125043) on top of the springs and place a ball (1114050) inside the cap (5).

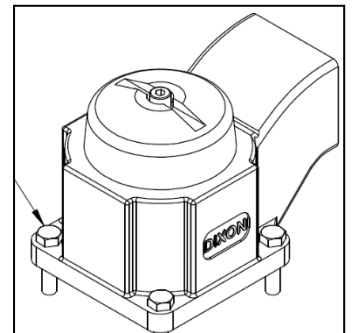


60.6: Position O-ring (4)(1400360) on PRV Cap (2125006M) and apply white grease to the O-ring.

60.7: Apply White Loctite 567 on the PRV adjustment screw (1)(1125106) and install into the top of PRV Cap.

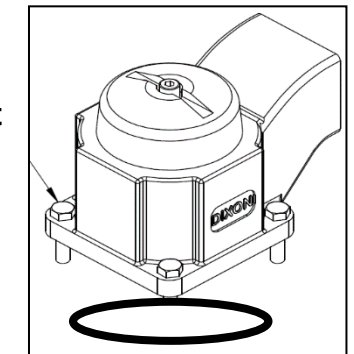
NOTE: Screw should be flush with the top of the cap. The screw will be adjusted on the leak test stand.

60.8: Apply White Loctite 567 to the external threads on the Cap. Position the cap down over the Springs and the completely tighten into the PRV Housing.



60.9: Position the PRV Rating Sticker (1125212) on the side opposite the Dixon Logo.

60.10: Position the O-ring (1400360) under the base of the PRV housing. Apply white grease to the O-ring when ready to assemble the 30° elbow (4311641019). Attach with 5/16-18x1" bolts (Qty4) Torque the bolts to **12 ft lbs**.



REVISION HISTORY:

Revision	Description of Change
A	New Work Instruction

Originator	Effective Date
D. Loomis	12/22/23