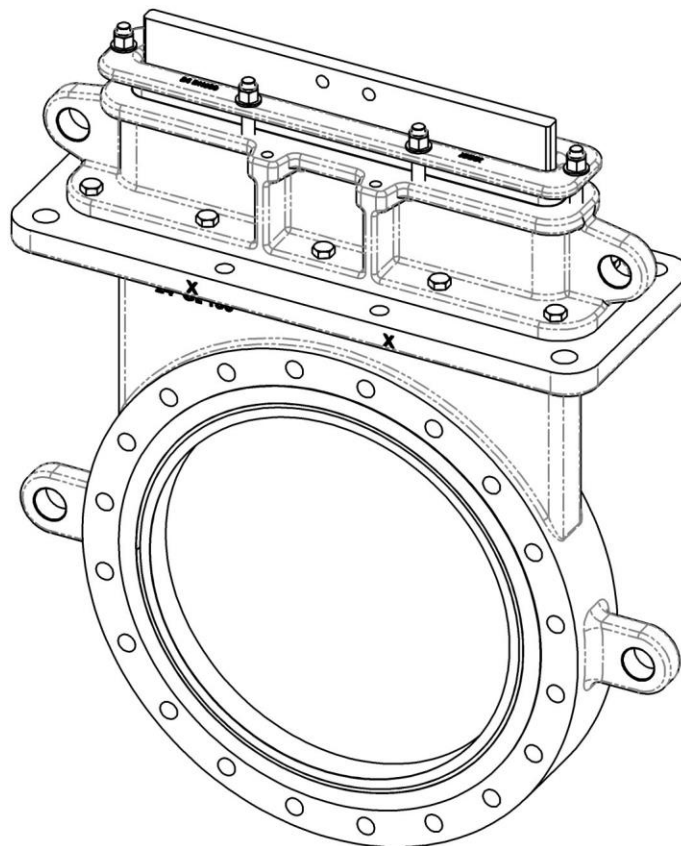


DeZURIK KSV CL150 & CL300 BONNETLESS KNIFE GATE VALVES



Instruction **D11021**
June 2023

Instructions

These instructions are for use by personnel who are responsible for the installation, operation and maintenance of DeZURIK valves, actuators or accessories.

Safety Messages

All safety messages in the instructions are identified by a general warning sign and the signal word CAUTION, WARNING or DANGER. These messages indicate procedures to avoid injury or death.

Safety label(s) on the product indicate hazards that can cause injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

⚠WARNING

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your DeZURIK product has been packaged to provide protection during shipment; however, items can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Replaceable wear parts are listed on the assembly drawing. These parts can be stocked to minimize downtime. Order parts from your local DeZURIK sales representative or directly from DeZURIK. When ordering parts please provide the following information:

If the valve has a data plate: please include the 7-digit part number with either 4-digit revision number (example: 9999999R000) or 8-digit serial number (example: S1900001) whichever is applicable. The data plate will be attached to the valve assembly. Also, include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

If there isn't any data plate visible on the valve: please include valve model number, part name, and item number from the assembly drawing. You may contact your local DeZURIK Representative to help you identify your valve.

DeZURIK Service

DeZURIK service personnel are available to maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services. For more information, contact your local DeZURIK sales representative or visit our website at DeZURIK.com.

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Description

The DeZURIK KSV bonnetless knife gate valves are constructed with a one-piece cast body, gate, packing chamber, replaceable seat rings and either an all-metal or metal/resilient seat. A choice of several actuators and accessories are available.

Installation

**CAUTION!**

When installed with rubber lined pipe/flange faces, additional flange seals would be required. Factory consultation is advised.

**CAUTION!**

Additional valve support may be required for non-vertical installations or where the valve may be exposed to external or vibrational forces. Factory consultation is advised.

Install the valve between appropriate ASME Class pipeline flanges. Flange gaskets are required. Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the valve and pipeline.

Metal Seat

Install the valve so that the side marked "SEAT" is on the lower pressure side of the valve when the valve is closed; the pipeline pressure will then help seal the valve in the closed position.

Resilient Seat

Resilient seat valves are bi-directional and can be installed with the "SEAT" side on the high- or low-pressure side of the pipeline. It is preferred that the "SEAT" side be on the low-pressure side.

General Installation Guidelines

Observe the following points to prevent distortion of the valve body and gate when the flange bolts are tightened:

- Align the mating pipeline flanges.
- Select the length of the flange bolts so that the bolts used in the chest blind holes do not bottom out when tightened. We recommend studs and nuts.
- Tighten the flange bolts evenly, in a crisscross pattern. Refer to Table A for recommended flange bolt/stud torques.

Note: Torque ranges are based on ASME Pressure Vessel Code Calculations and lab test data. These torques are only spiral wound type gaskets. For other gasket types listed in ASME, consult DeZURIK.

Table A: Bolt Torques

Valve Size	CL150 Lubricated Min. Torque <u>ft.lbs.</u> Nm	CL150 Lubricated Max. Torque <u>ft.lbs.</u> Nm	CL150 Non -lubricated Min. Torque <u>ft.lbs.</u> Nm	CL150 Non -lubricated Max. Torque <u>ft.lbs.</u> Nm	CL300 Lubricated Min. Torque <u>ft.lbs.</u> Nm	CL300 Lubricated Max. Torque <u>ft.lbs.</u> Nm	CL300 Non -lubricated Min. Torque <u>ft.lbs.</u> Nm	CL300 Non -lubricated Max. Torque <u>ft.lbs.</u> Nm
<u>3"</u> 75mm	<u>41</u> 56	<u>45</u> 61	<u>73</u> 99	<u>81</u> 110	<u>41</u> 56	<u>45</u> 61	<u>73</u> 99	<u>81</u> 110
<u>4"</u> 100mm	<u>30</u> 41	<u>32</u> 43	<u>53</u> 72	<u>59</u> 80	<u>35</u> 47	<u>38</u> 52	<u>64</u> 87	<u>70</u> 95
<u>6"</u> 150mm	<u>58</u> 79	<u>64</u> 87	<u>107</u> 145	<u>117</u> 159	<u>39</u> 53	<u>47</u> 64	<u>71</u> 96	<u>85</u> 115
<u>8"</u> 200mm	<u>79</u> 107	<u>87</u> 118	<u>144</u> 195	<u>158</u> 214	<u>61</u> 83	<u>81</u> 110	<u>112</u> 152	<u>149</u> 202
<u>10"</u> 250mm	<u>74</u> 100	<u>82</u> 111	<u>136</u> 184	<u>149</u> 202	<u>71</u> 96	<u>106</u> 144	<u>131</u> 178	<u>197</u> 267
<u>12"</u> 300mm	<u>94</u> 127	<u>104</u> 141	<u>172</u> 233	<u>190</u> 258	<u>90</u> 122	<u>144</u> 195	<u>166</u> 225	<u>267</u> 362
<u>14"</u> 350mm	<u>117</u> 159	<u>129</u> 175	<u>214</u> 290	<u>236</u> 320	<u>78</u> 106	<u>133</u> 180	<u>145</u> 197	<u>246</u> 334
<u>16"</u> 400mm	<u>109</u> 148	<u>120</u> 163	<u>200</u> 271	<u>220</u> 298	<u>107</u> 145	<u>188</u> 255	<u>199</u> 270	<u>351</u> 476
<u>18"</u> 450mm	<u>156</u> 212	<u>171</u> 232	<u>288</u> 390	<u>317</u> 430	<u>114</u> 155	<u>203</u> 275	<u>213</u> 289	<u>377</u> 511
<u>20"</u> 500mm	<u>137</u> 186	<u>151</u> 205	<u>253</u> 343	<u>279</u> 378	<u>126</u> 171	<u>238</u> 323	<u>234</u> 317	<u>444</u> 602
<u>24"</u> 600mm	<u>188</u> 255	<u>207</u> 281	<u>350</u> 475	<u>385</u> 522	<u>185</u> 251	<u>387</u> 525	<u>350</u> 475	<u>729</u> 988
<u>26"</u> 650mm	<u>121</u> 164	<u>133</u> 180	<u>225</u> 305	<u>248</u> 336	<u>132</u> 179	<u>365</u> 495	<u>251</u> 340	<u>674</u> 914
<u>28"</u> 700mm	<u>111</u> 150	<u>122</u> 165	<u>207</u> 281	<u>228</u> 309	<u>142</u> 193	<u>405</u> 549	<u>269</u> 365	<u>766</u> 1039
<u>30"</u> 750mm	<u>119</u> 161	<u>138</u> 187	<u>221</u> 300	<u>257</u> 348	<u>163</u> 221	<u>490</u> 664	<u>309</u> 419	<u>931</u> 1262
<u>32"</u> 800mm	<u>158</u> 214	<u>185</u> 251	<u>297</u> 403	<u>349</u> 473	<u>194</u> 263	<u>594</u> 805	<u>371</u> 503	<u>1132</u> 1535
<u>36"</u> 900mm	<u>169</u> 229	<u>204</u> 277	<u>319</u> 433	<u>385</u> 522	<u>222</u> 301	<u>696</u> 944	<u>424</u> 575	<u>1332</u> 1806
<u>42"</u> 1050mm	<u>181</u> 245	<u>241</u> 327	<u>341</u> 462	<u>454</u> 616	<u>220</u> 298	<u>759</u> 1029	<u>416</u> 564	<u>1437</u> 1948
<u>48"</u> 1200mm	<u>175</u> 237	<u>253</u> 343	<u>330</u> 447	<u>476</u> 645	<u>297</u> 403	<u>1113</u> 1509	<u>566</u> 767	<u>2123</u> 2878
<u>54"</u> 1400mm	Contact DeZURIK							
<u>60"</u> 1500mm								

Operation

The gate in the valve is positioned by the valve actuator. The actuator moves the gate over the valve port in the closed position, and withdraws the gate from the port in the throttling and open positions. Refer to the Actuator Instructions for adjustment and maintenance requirements for the actuator.

Lubrication

The valve does not require lubrication. If applicable, ensure that valve threaded stems are maintained with proper lubrication. Refer to the Actuator Instructions for lubrication requirements for the actuator.

Purging

Purge connections allow for optional pressurized purging fluid to be circulated through the valve to clear out sedimentation or other material buildup. Purge lines should be the same size as the purge ports. The recommended maximum purge pressure is 25-50 psi (170-345 kPa) above the pipeline pressure.

Packing

The gate packing is contained and compressed by the packing gland (A13). See Figure 1 and Figure 2 for component identification.

Note: The packing gland (A13) is slightly loosened prior to shipping. This is done to increase the life of the packing during extended storage. It must be tightened just enough to stop a packing leak prior to energizing the pipeline.

Adjustment

If packing leaks, tighten the adjustment nuts (A15) on top of the packing gland (A13). Tighten all the nuts equally and gently just enough to stop the leak. Over tightening will cause excessive operating forces, and will decrease the life of the packing.

Drawings

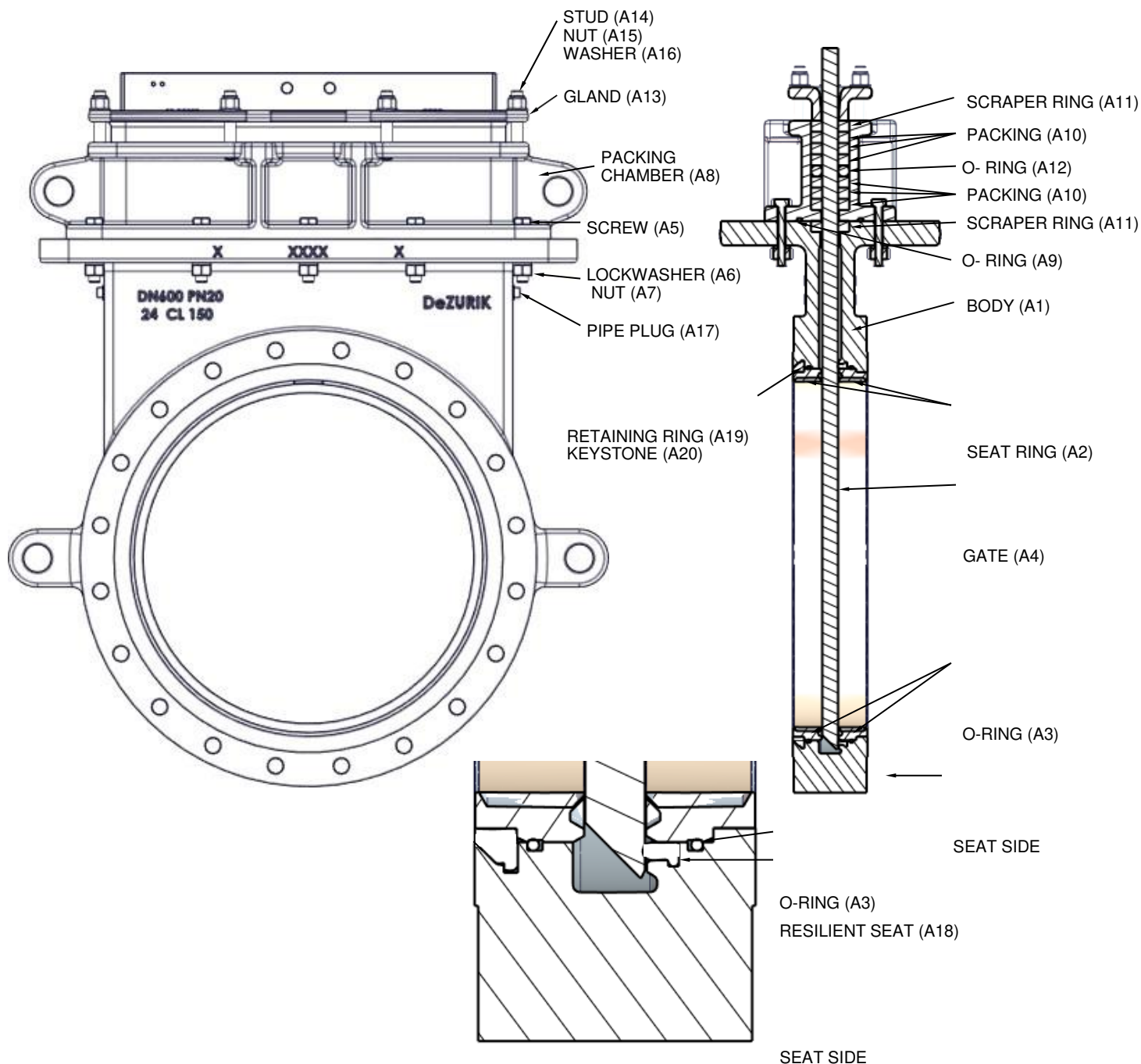


Figure 1—Component Identification

Packing Replacement Only

Removing the Old Packing

1. Relieve the pressure in the pipeline and close the valve.

**WARNING!**

Pipeline pressure can cause personal injury or equipment damage. Relieve pipeline pressure before removing gate stem and packing gland nuts.

2. If the actuator is powered, disconnect and lock out power to prevent accidental operation of the actuator.

**WARNING!**

Accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

3. Remove the two screws and nuts near the top of the gate and disengage the clip from the gate by stroking the actuator (not the valve) to the open position. Remove closed position lockout bars if so equipped.
4. Remove the gland nuts (A15), washers (A16) and the packing gland (A13).
5. Remove the used top scraper ring (A11), packing (A10) and O-ring (A12) from the packing chamber (A8).

Replacing the Scraper Ring in the Body

If the bottom scraper ring (A11) in the body (A1) needs to be replaced, use the following steps:

1. Remove the screws (A5), nuts (A7) and lockwashers (A6) and remove the packing chamber (A8) from the body.
2. Remove the used O-ring (A9) from the packing chamber (A8) and remove the used scraper ring (A11) from the body (A1).

Packing Replacement Only continued

Installing the New Packing

DeZURIK recommends using a square-ended wood or plastic tool, driven by a hammer or mallet for packing rings.

Note: DO NOT USE ANY SHARP OR HARD METAL TOOLS TO PACK THE RINGS.

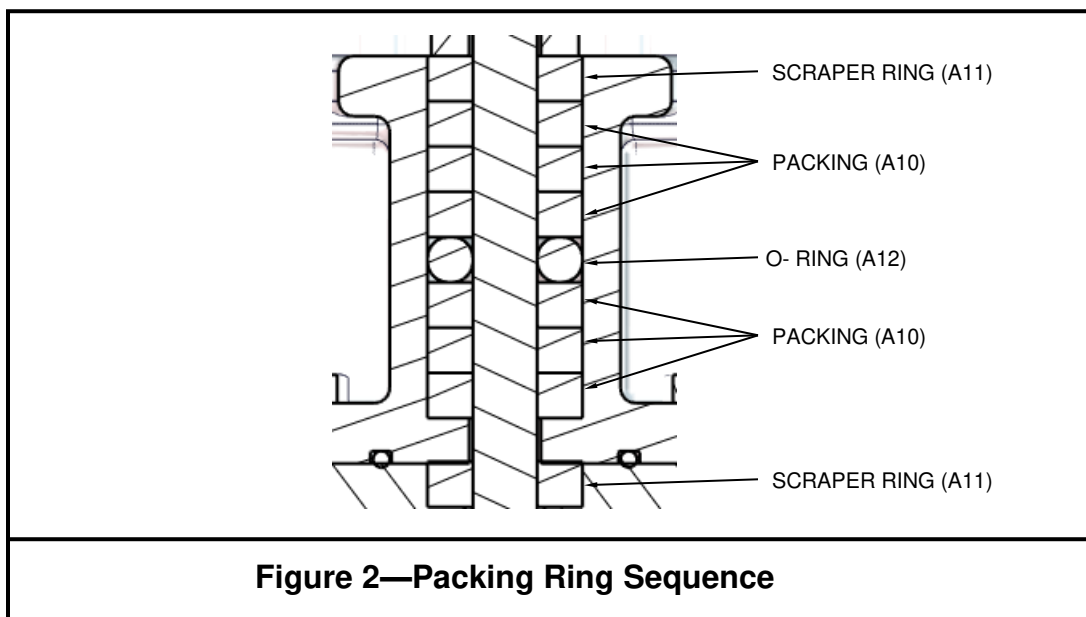
If the bottom scraper ring (A11) in the body (A1) is being replaced, use steps 1 and 2. If not, go to step 3.

1. With the gate (A4) closed, center the gate in the body (A1) and place the scraper ring (A11) into the top of the body (A1).
2. Place the O-ring (A9) into the groove in the bottom of the packing chamber (A8).
3. With the gate closed, center the gate (A4) in the body (A1) and attach the packing chamber (A8) to the body (A1) using the screws (A5), nuts (A7) and lockwashers (A6). Leave snug, but not tight.
4. Cut new packing rings (A10) to the length and quantity shown in Table B.
5. Install and pack the scraper ring (A11), packing rings (A10) and O-ring (A12) one at a time in the sequence shown in Figure 2.
6. Install packing gland (A13) and snug all nuts (A15) equally just enough to stop a packing leak.
7. Tighten nuts (A7) on packing chamber (A8)

Note: Install the packing with the ends together, but not overlapped. Stagger the packing joints on the long sides of the packing chamber. Make sure the inside and outside edges of each ring are tightly packed against the gate and packing chamber, especially in the corner areas. Pack each ring until it is flat and even.

Table B: Packing Ring Lengths

Valve Size <u>in.</u> mm	Size square <u>in.</u> mm	CL 150 Length <u>in.</u> mm	CL 300 Length <u>in.</u> mm	Number of O-rings	Number of Scraper Rings	Number of Packing Rings			
<u>3"</u> 75mm	<u>0.375</u> 9.5	<u>11.25</u> 286	<u>11.25</u> 286	1	2	6			
<u>4"</u> 100mm		<u>14.00</u> 356	<u>14.00</u> 356						
<u>6"</u> 150mm		<u>18.25</u> 464	<u>17.50</u> 445						
<u>8"</u> 200mm		<u>22.50</u> 572	<u>23.25</u> 591						
<u>10"</u> 250mm		<u>28.00</u> 712	<u>27.50</u> 699						
<u>12"</u> 300mm	<u>0.500</u> 12.7	<u>32.00</u> 813	<u>32.75</u> 832						
<u>14"</u> 350mm		<u>35.50</u> 902	<u>35.50</u> 902						
<u>16"</u> 400mm		<u>39.25</u> 997	<u>39.75</u> 1010						
<u>18"</u> 450mm	<u>0.625</u> 15.9	<u>43.75</u> 1112	<u>44.25</u> 1124						
<u>20"</u> 500mm		<u>47.25</u> 1201	<u>48.25</u> 1226						
<u>24"</u> 600mm	<u>0.750</u> 19.1	<u>56.50</u> 1436	57.25 1455						
<u>26"</u> 650mm		<u>60.75</u> 1544	<u>61.75</u> 1569						
<u>28"</u> 700mm		<u>65.00</u> 1651	<u>65.75</u> 1671						
<u>30"</u> 750mm		<u>68.50</u> 1740	<u>70.75</u> 1798						
<u>32"</u> 800mm		<u>73.50</u> 1867	O/A						
<u>36"</u> 900mm		<u>81.50</u> 2071	O/A						
<u>42"</u> 1050mm		<u>94.00</u> 2388	O/A						
<u>48"</u> 1200mm		<u>107.00</u> 2718	O/A						
<u>54"</u> 1400mm	Contact DeZURIK								
<u>60"</u> 1500mm									

Installing the New Packing continued**Reassembling the Valve**

1. Reconnect the clip to the gate (A4) with the screws and nuts.
2. Reinstall the lockouts in their original locations if they were removed.
3. If the actuator is a powered actuator, reconnect power to the actuator.
4. Pressurize the pipeline and inspect packing for leakage.
5. If packing leaks, tighten the adjustment nuts (A15) on top of the packing gland. Tighten the nuts evenly and slowly, just enough to stop the leak. Over tightening will cause excessive operating forces, and will decrease the life of the packing.

Seat Ring, Seat and Packing Replacement

See Figure 1 for component identification.



WARNING!

Pipeline pressure can cause personal injury or equipment damage. Relieve pipeline pressure before removing gate stem and packing gland nuts.

1. Relieve the pressure in the pipeline and close the valve.



WARNING!

Accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

2. If the actuator is powered, disconnect and lock out power to prevent accidental operation of the actuator.
3. Remove the valve from the pipeline.
Note: If not replacing packing, go to the Note after step 9 to replace the seat rings without removing the packing and packing chamber
4. Remove the screws and nuts near the top of the gate and disengage the actuator stem from the gate (A4).
5. Remove the actuator yoke and actuator from the valve.
6. Remove the gland nuts (A15), washers (A16) and the gland (A13).
7. Remove the packing chamber screws (A5), lockwashers (A6), nuts (A7) and the packing chamber (A8).
8. Remove the used O-ring (A9) from the packing chamber (A8) and remove the used scraper ring (A11) from the top of the body (A1).
9. Remove the gate (A4) from the body (A1). Go to step 10.

Note: If not replacing the packing and scraper rings, then the seat rings may be replaced without removing the gate by following the subsequent steps.

- a Open gate a few inches by retracting actuator.



WARNING!

Exercise care to maintain top structure upright.

- b Once gate is retracted, undo screws, nuts and washers to loosen legs from valve body.
- c Slowly actuate gate closed (extend cylinder or turn handwheel to close). Due to packing friction, this will result in the legs being raised up from the valve body. Do this until the legs have been raised approximately an inch.
- d Place blocks between the legs and the valve body and fasten the legs to the valve body with the blocks between them. Longer screws may be required.
- e Fully retract the gate and check to see that the bottom gate edge has cleared the top of the rubber seat.
- f If the gate has not cleared the rubber seat, repeat steps a thru e with additional or thicker blocks between the legs and the valve body. Also, longer screws may also be required. Continue to Step 10.

Seat Ring & Seat Replacement continued

10. Push seat ring (A2) on the side opposite the seat towards the center of the valve just far enough so that the retaining ring (A19) is exposed.
11. Remove the keystone (A20) and retaining ring (A19), prying it out by starting with the keystone (A20).
12. Remove the first O-ring (A3) and then slide out the first seat ring (A2).
13. Press out the seat side seat ring (A2), the O-ring (A3) retaining it will be damaged by this and will need to be replaced.
14. Remove the resilient seat (A18) (if applicable). Clean the seat area of glue residue and oil.
15. Install the new ring and seat:
 - a. Note the gate side and body side of the seat as shown in Figure 1 (enlarged view).
 - b. Coat new O-ring (A3) with anti-seize compound or medium grease and install them into the body.
 - c. For a resilient seat, apply a bead of cyanoacrylate super glue to the seat area. Insert the resilient seat with the seam at the 3 or 9 o'clock position. Coat the resilient seat with anti-seize compound or medium grease after the seat has adhered.
 - d. Insert the new seat ring (A2) into the body, pressing it in until it rests against the shoulder in the body (end face should be flush with exterior face of valve body).
16. Install second seat ring (A2), properly orientated so it goes in far enough to expose retaining ring groove —See step 15 a, b and c.
17. Place retaining ring (A19) into its groove in the body and install the keystone (A20) near the mounting bracket.
18. Slide the second seat ring (A2) back over the retaining ring (A19). If packing was not removed in steps 4 thru 9, then go to step 30.
19. Insert gate (A4) fully into the body (A1) until it rests against the jams.
20. Insert one scraper ring (A11) into the top of the body (A1).
21. Place O-ring (A9) into the packing chamber (A8) and slide the packing chamber (A8) over the gate (A4) and onto the body (A1).
22. Center the packing chamber (A8) on the gate (A4) and insert screws (A5), lockwashers (A6) and nuts (A7).
23. With the gate (A4) closed, center the gate (A4) in the body (A1) and place the scraper ring (A11) into the top of the body (A1).
24. Place the O-ring (A9) into the groove in the bottom of the packing chamber (A8).
25. With the gate closed, center the gate (A4) in the body (A1) and attach the packing chamber (A8) to the body (A1) using the screws (A5), nuts (A7) and lockwashers (A6). Leave snug, but not tight.
26. Tighten nuts (A7) on packing chamber (A8)

Seat Ring & Seat Replacement continued

27. Replace packing as described in “Installing New Packing”.
28. Place the gland (A13), centering about the gate (A4).
29. Install the gland studs (A14), nuts (A15) and washer (A16). Tighten the gland stud nuts (A15) evenly, applying only enough pressure to seal the packing at the rated test pressure.
30. Remove blocks and refasten actuator to the valve. Or, replace the yoke and actuator if removed in Step 5.
31. Reconnect the stem to the gate with the two screws and locknuts.
32. Replace the valve in the pipeline. Refer to the requirements in the “Installation” section.
33. If the actuator is a powered actuator, reconnect power to the actuator.
34. Pressurize the pipeline and inspect the valve for leaks.
35. If the packing leaks, tighten the adjustment nuts (A15) on top of the packing gland. Tighten the nuts evenly and slowly, just enough to stop the leakage. Over tightening will cause excessive operating forces, and will decrease the life of the packing.

Troubleshooting

Condition	Possible Cause	Corrective Action
Packing leaks, with no evidence of galling on gate.	Packing is loose.	Adjust packing gland.
	Packing is worn or torn.	Replace packing.
Packing leaks and gate is galled	Packing is worn or torn.	Replace packing and gate.
Valve leaks when fully closed, with no evidence of galling on gate.	Seats are worn or torn.	Replace seats.
Valve leaks when fully closed, and gate is galled.	Seats are worn or torn.	Replace seats and gate.

Limited Warranty

DeZURIK, Inc. ("Seller") manufactured products, auxiliaries and parts thereof that we manufacture for a period of twenty-four (24) months from date of shipment from Seller's factory, are warranted to the original purchaser only against defective workmanship and material, but only if properly stored, installed, operated, and serviced in accordance with Seller's recommendations and instructions.

For items proven to be defective within the warranty period, your exclusive remedy under this limited warranty is repair or replacement of the defective item, at Seller's option, FCA Incoterms 2020 Seller's facility with removal, transportation, and installation at your cost.

Products or parts manufactured by others but furnished by Seller are not covered by this limited warranty. Seller may provide repair or replacement for other's products or parts only to the extent provided in and honored by the original manufacturer's warranty to Seller, in each case subject to the limitations contained in the original manufacturer's warranty.

No claim for transportation, labor, or special or consequential damages or any other loss, cost or damage is being provided in this limited warranty. You shall be solely responsible for determining suitability for use and in no event shall Seller be liable in this respect.

This limited warranty does not warrant that any Seller product or part is resistant to corrosion, erosion, abrasion or other sources of failure, nor does Seller warrant a minimum length of service.

Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than Seller or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to store, install, or operate said products and parts according to the recommendations and instructions furnished by Seller shall be a waiver by you of all rights under this limited warranty.

This limited warranty is voided by any misuse, modification, abuse or alteration of Seller's product or part, accident, fire, flood or other Act of God, or your failure to pay entire contract price when due.

The foregoing limited warranty shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to; an actuator is attached to the item by anyone other than a Seller factory authorized service personnel.

All orders accepted shall be deemed accepted subject to this limited warranty, which shall be exclusive of any other or previous warranty, and this shall be the only effective guarantee or warranty binding on Seller, despite anything to the contrary contained in the purchase order or represented by any agent or employee of Seller in writing or otherwise, notwithstanding, including but not limited to implied warranties.

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Disclaimer

Metric fasteners should not be used with ASME Class 150/300 bolt holes and flange bolt patterns. If you use metric fasteners with ASME Class 150/300 bolt holes and flange bolt patterns, it may lead to product failure, injury, and loss of life. DeZURIK Inc. disclaims all liability associated with the use of metric fasteners with ASME Class 150/300 bolt holes and flange patterns, including but not limited to personal injury, loss of life, loss of product, production time, equipment, property damage, lost profits, consequential damages of any kind and environment damage and/or cleanup. Use of metric fasteners with ASME Class 150/300 bolt holes and flange bolt patterns is a misuse that voids all warranties and contractual assurances. If you use metric fasteners with ASME Class 150/300 bolt holes and flange bolt patterns, you do so at your sole risk and any liability associated with such use shall not be the responsibility of DeZURIK, Inc. In addition to the foregoing, DeZURIK's Manufacturer's Conditions apply.

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Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

Web site: www.dezurik.com E-Mail: info@dezurik.com



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