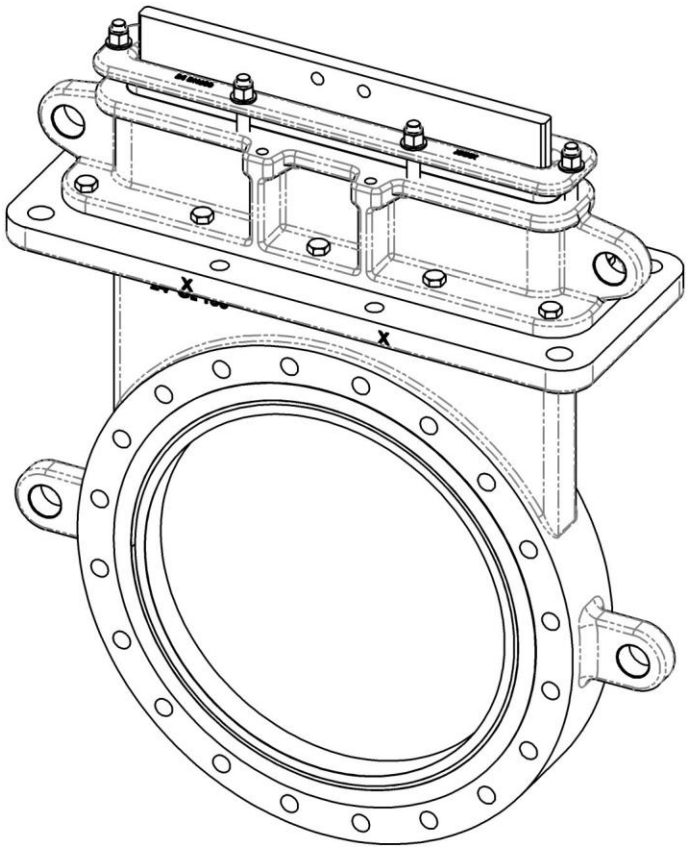
DeZURIK
KSV CL150 & CL300
BONNETLESS KNIFE GATE
VALVES



Instruction **D11021**
June 2023

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

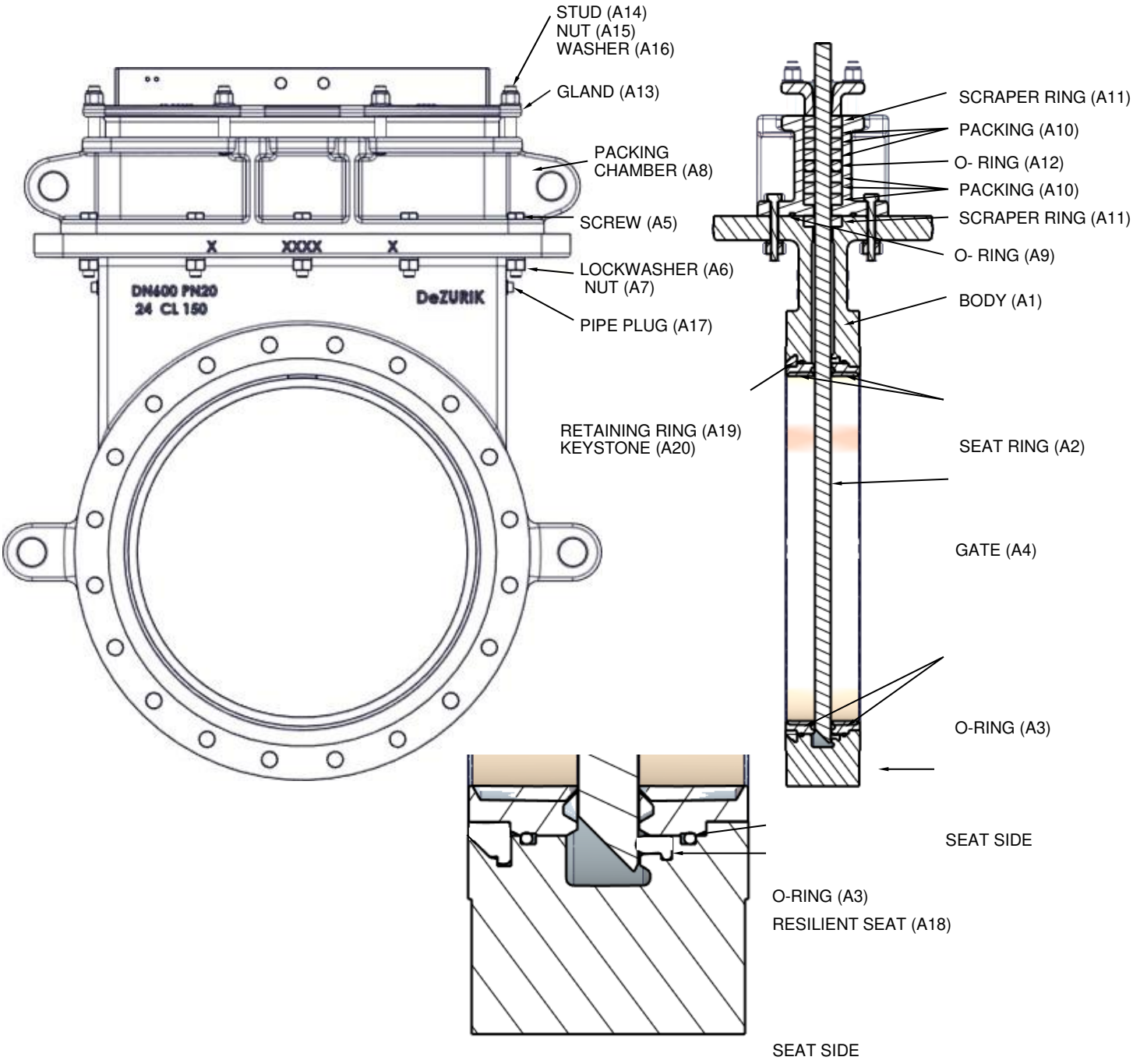

Figure 1—Component Identification

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

Installing the New Packing continued

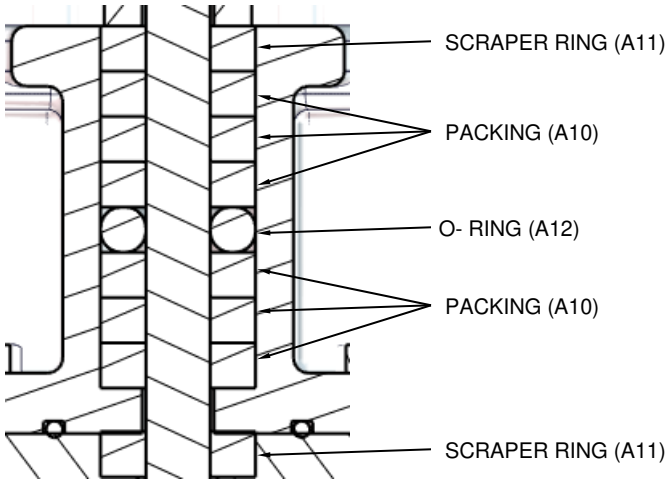

Figure 2—Packing Ring Sequence

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.

THE FOREGOING REPAIR AND REPLACEMENT LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, OBLIGATIONS AND LIABILITIES, INCLUDING, BUT NOT LIMITED TO, ALL WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR OF MERCHANTABILITY OR OTHERWISE, EXPRESSED OR IMPLIED IN FACT OR BY LAW, AND STATE SELLER’S ENTIRE AND EXCLUSIVE LIABILITY AND YOUR EXCLUSIVE REMEDY FOR ANY CLAIM IN CONNECTION WITH THE SALE AND FURNISHING OF SERVICES, GOODS OR PARTS, THEIR DESIGN, SUITABILITY FOR USE, INSTALLATION OR OPERATIONS. NEITHER ANY PERFORMANCE OR OTHER CONDUCT, NOR ANY ORAL OR WRITTEN INFORMATION, STATEMENT, OR ADVICE PREPARED BY SELLER OR ANY OF OUR EMPLOYEES OR AGENTS WILL CREATE A WARRANTY, OR IN ANY WAY INCREASE THE SCOPE OR DURATION OF THE LIMITED WARRANTY.

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Sales and Service

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

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