



## **PGV Ported Gate Valves**

Instruction D10380  
June 2009

# DeZURIK

## PGV PORTED GATE VALVES

---

### Instructions

These instructions provide information about the PGV Ported Gate Valve. They are for use by personnel who are responsible for installation, operation and maintenance of PGV Ported Gate Valves.

### Safety Messages

All safety messages in the instructions are flagged with the word Caution, Warning or Danger. These messages must be followed exactly to avoid equipment damage, personal injury or death.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to see, 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 process material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous process materials. Handle valves which have been removed from service with the assumption of process material within the valve.**

---

### Inspection

Your PGV Ported Gate Valve has been packaged to provide protection during shipment; however, it 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

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime.

Order parts from your DeZURIK sales representative, or directly from DeZURIK. When ordering parts, please include the 7-digit part number and 4-digit revision number (example: **9999999R000**) located on the data plate 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.

### DeZURIK Service

DeZURIK service personnel are available to install, 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 [www.dezurik.com](http://www.dezurik.com).

## Table of Contents

Description	3
Installation	3
Operation	5
Lubrication	5
Packing Adjustment	5
Purging	5
Drawings	6
Packing Replacement	8
Seat and Thrust Ring Replacement	9
Gate Replacement	11
Troubleshooting	12

---

# DeZURIK

## PGV PORTED GATE VALVES

### Description

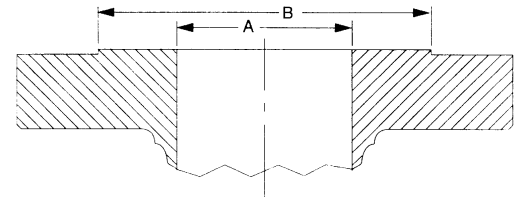
The DeZURIK PGV Series Ported Gate Valves is a full port, bidirectional, bonnetless valve with a stainless steel or ductile iron body and stainless steel gate and resilient-faced seats. A choice of several actuators and accessories is available.

### Installation

1. Remove foreign material such as weld spatter, oil, grease, and dirt from the valve and pipeline.
2. Install the valve between ANSI Class 125 or Class 150 pipeline flanges—**always use flange gaskets.**

**Note:** Flange seal rings are required if the flange dimensions do not meet the criteria in Table A and Figure 1.

- The ID of the flange is larger than the Maximum Inside Diameter (Dimension A) shown in Table A
- The OD of the flange is larger than the Maximum Inside Diameter (Dimension B) shown in Table A



**Figure 1 - Flange Detail**

**Table A—Flange Seal Requirements**

Valve Size		Dimension A Maximum Inside Diameter		Dimension B Minimum Outside Diameter	
NPS	DN	in	mm	in	mm
2	50	2.43	61.72	3.68	93.47
3	75	3.59	91.18	4.68	118.87
4	100	4.61	117.09	5.68	144.27
6	150	6.75	171.45	8.17	207.51
8	200	8.71	221.23	10.17	258.31
10	250	10.5	266.7	12.17	309.11
12	300	12.5	317.5	14.7	359.91
14	350	13.96	354.58	15.92	404.36
16	400	16.68	423.67	18.77	476.75
18	450	18.68	474.47	20.77	527.55
20	500	20.43	518.92	22.77	578.35
24	600	24.43	620.52	26.77	679.95
30	750	30.5	774.7	33.36	847.34
36	900	36.5	927.1	39.36	999.74

**Note:** Use 2 Flange Seal Rings—1 on each side of the valve. See Figure 2

## Installation continued

4. Ensure that the pipe does not extend beyond the flange face—the face of the flange that mates to the valve must be flat. See Figure 3
5. Align the mating pipeline flanges.
6. Ensure that the bolts used in the blind holes of the valve do not bottom out when tightened.
7. Tighten the flange bolts evenly, in a crisscross pattern.

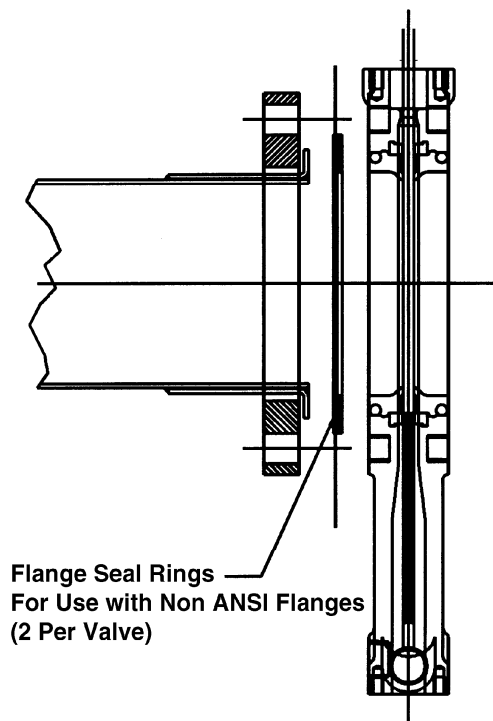


Figure 2 - Seal Ring Installation

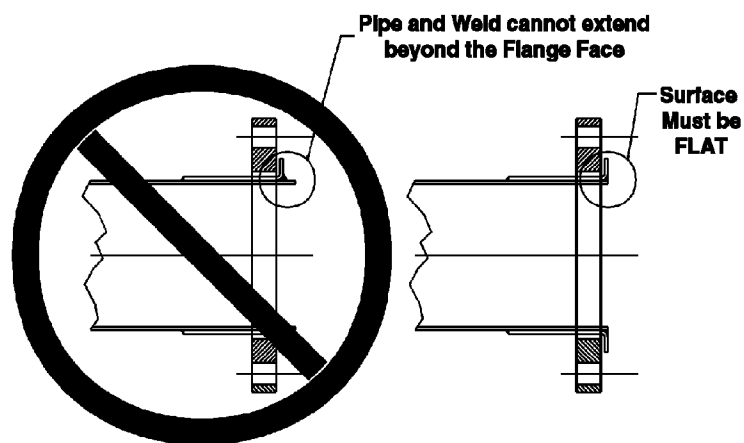


Figure 3 - Flange Face Detail

## Operation

The ported gate in the valve is positioned by the valve actuator. The actuator moves the gate port over the valve seat in the open position, and moves the port into the lower body in the closed position. See Actuator Instructions for adjustment and maintenance requirements for the actuator.



### CAUTION!

**This valve is position-seated in the open and closed positions. Continued torque or thrust beyond these positions can damage the valve. Do not try to operate the valve past the position stops.**

---

## Lubrication

The valve sleeves require only a light silicone-based lubrication on the outside diameter of the seat (A2) that seals against the body. This is for ease of sleeve installation

## Packing Adjustment

The gate packing is contained and compressed by the packing gland. If packing leakage occurs, tighten the adjustment nuts on top of the packing gland. Tighten the nuts evenly and gently, just enough to stop the leakage. Over tightening will cause excessive operating forces, and will decrease the life of the packing.

## Purging

Purge connections allow pressurized fluid or gas to be circulated through the valve body cavity to clear sediments or any other material buildup.

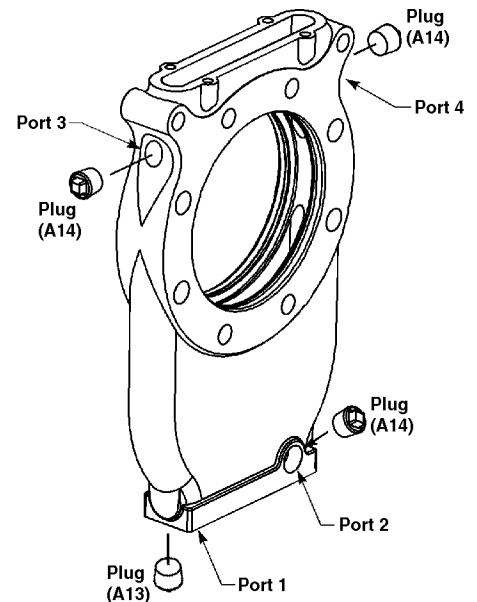
All valves include purge ports 1 and 2 located near the bottom of the valve. Valves for dry service also include purge ports 3 and 4 located near the top of the valve. See Figure 4.

To flush sedimentation in a wet service application, a liquid purge line is typically connected to port 2. To purge material buildup in a dry service application, a gaseous purge line is typically connected to ports 2, 3, and 4. Port 1 is used as either a purge, drain or inspection port.

Other configurations may be used, depending upon the material and the valve orientation in the pipeline.

Purge lines should be the same size as the purge ports. The recommended purge pressure is between 5 psi and 10 psi maximum above the pipeline pressure.

To minimize the amount of purge material that leaks into the pipeline, apply the purge pressure only while the valve is stroking between the open and closed positions.



**Figure 4 - Purge Ports**

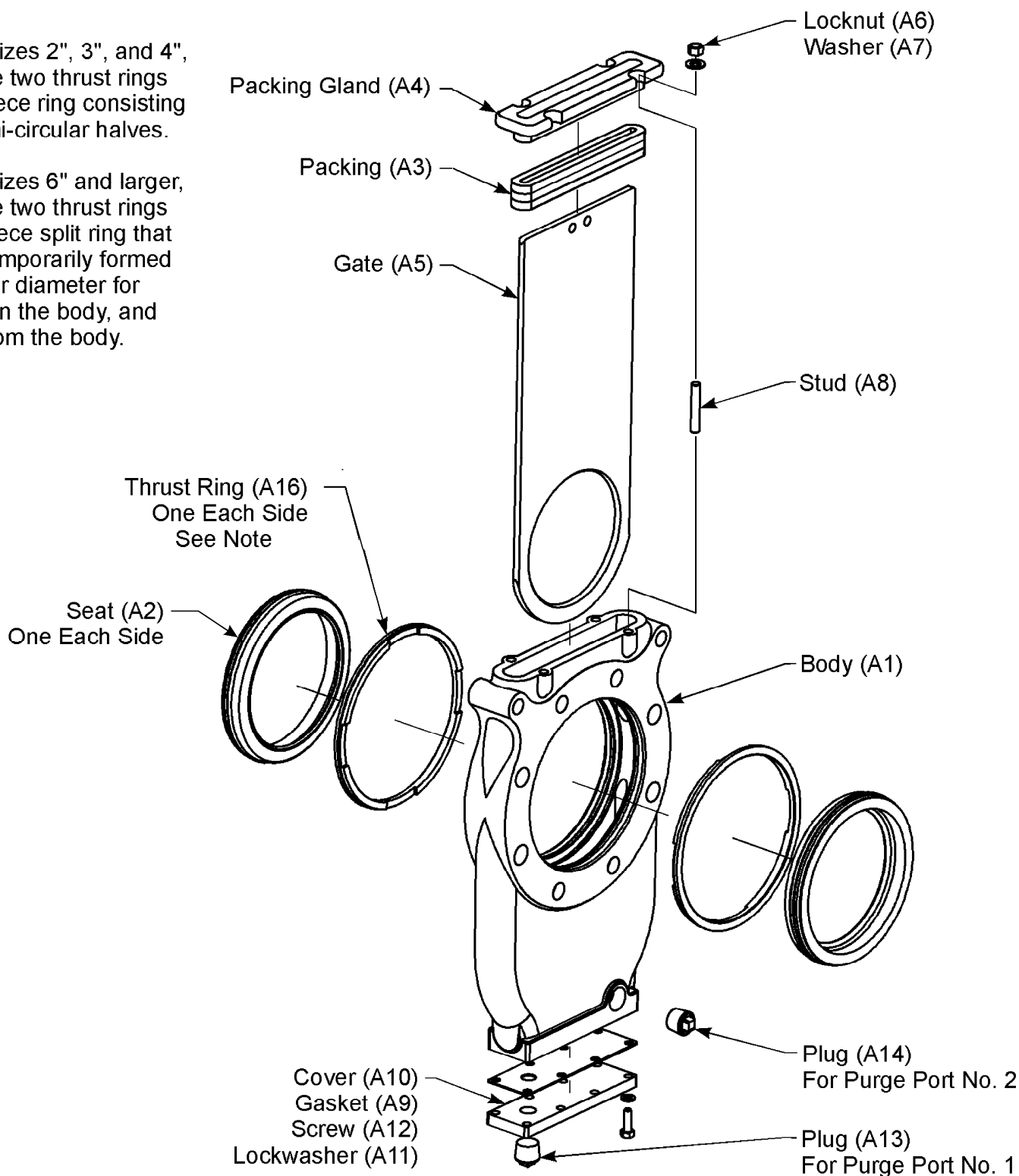
# DeZURIK PGV PORTED GATE VALVES

## Drawings

### Note

On valve sizes 2", 3", and 4", each of the two thrust rings is a two-piece ring consisting of two semi-circular halves.

On valve sizes 6" and larger, each of the two thrust rings is a one-piece split ring that must be temporarily formed to a smaller diameter for assembly in the body, and removal from the body.



**Figure 5—Component Identification**

Drawings

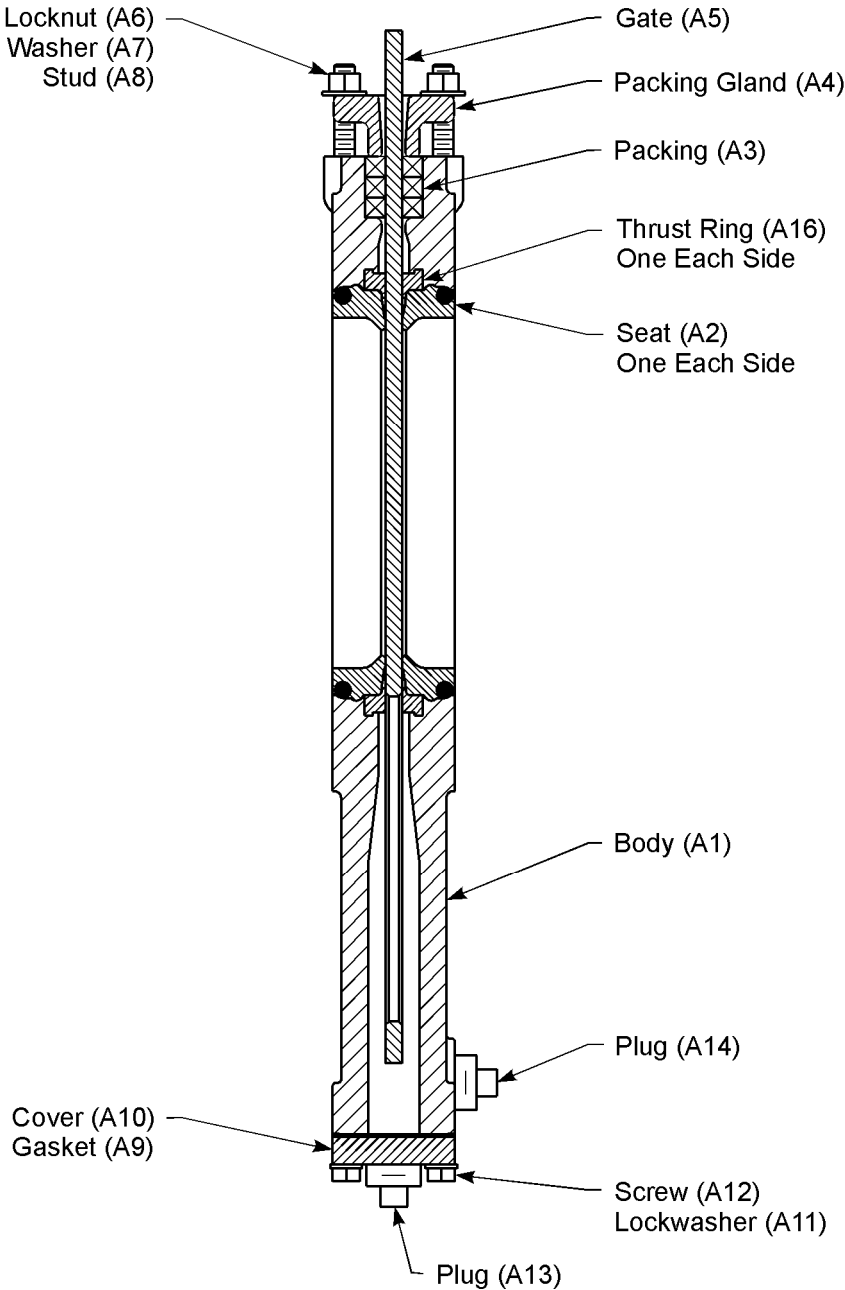


Figure 6—Component Identification, Assembled



## Packing Replacement

See Figure 5 and 6 for component identification.

---



### WARNING!

Pipeline pressure can propel the loose gate and packing gland, and 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!

Moving parts from 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 the pneumatic, hydraulic, or electrical power to prevent accidental operation of the actuator.
  3. Remove the two screws, nuts, lock washers and stem clamps near the top of the gate (A5). Stroke the actuator (not the valve) to the open position.
  4. Remove the gland nuts (A6), washers (A7), and packing gland (A4).
- 



### CAUTION!

The gate may drop when the packing is removed, causing personnel injury or equipment damage. Always block the gate before removing the packing.

---

5. Block the gate to prevent it from moving down in the body when the packing is removed.
6. Remove the used packing (A3) from the packing chamber.
7. With the gate closed, center the gate in the body opening below the packing chamber.
8. Cut new packing rings to the length and quantity shown in Table B.
9. Assemble and pack the rings one at a time, with the ends together, but do not overlap the ends.

**Note:** Stagger the joints on the long sides of the packing chamber. Use a mallet and wooden or plastic tool with a square end to pack the rings. Pack each ring so that the inside and outside edge is against the gate and packing chamber and the ring is evenly compressed and flat. Ensure all corners are completely packed with material.

10. Replace the packing gland (A4), washers (A7) and nuts (A6). Tighten the nuts evenly, finger tight plus 1/2 turn.
11. Reconnect the stem to the gate with screws, nuts, lock washers, and stem clamps.
12. If the actuator is powered, reconnect power to the actuator.
13. Pressurize the pipeline.
14. If the packing leaks, tighten the adjustment nuts on top of the packing gland.

**Note:** 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.

## Packing Replacement continued

**Table B: Packing Ring Length, Size and Quantity**

Valve Size		Length		Size, Square		Quantity
NPS	DN	in	mm	in	mm	
2	50	10-3/8	264	3/8	9.53	3
3	75	13-3/8	340			
4	100	15-1/4	388			
6	150	19-5/8	499			
8	200	23-3/4	604			
10	250	28-3/4	731			
12	300	34-3/8	874	1/2	12.70	3
14	350	36-1/2	928			
16	400	40-3/4	1036			
18	450	45-7/8	1166	5/8	15.88	4
20	500	52-5/8	1337			
24	600	60-1/4	1531			
30	750	76-1/2	1944	3/4	19.05	3
36	900	90-7/8	2309			

**Note:** With packing types CD and T, all packing rings are the same material. With packing type ZJ, the second ring (from the bottom) is a zip joint, and the other rings are type T.

## Seat and Thrust Ring Replacement

See Figure 5 and 6 for component identification



**WARNING!**

Pipeline pressure can propel the loose flange bolts and flanges, and can cause personal injury or equipment damage. Relieve pipeline pressure before removing flange bolts and flanges.

1. Relieve the pressure in the pipeline



**WARNING!**

Moving parts from accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

## Seat and Thrust Ring Replacement continued

2. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic, or electrical power to prevent accidental operation of the actuator.
3. Remove the pipeline flange bolts from the valve body and remove the valve from the pipeline. Remove the flange gaskets from the valve.
4. Remove the two screws, nuts, lock washers and stem clamps near the top of the gate (A5).
5. Remove the gland (A4), packing (A3) and gate (A5). See "Replacing the Gate".
6. Block the gate to prevent it from moving down in the body when the packing is removed.
7. Remove the used packing (A3) from the packing chamber.
8. Carefully pull and remove each of the two seats (A2) from the body.
9. If the valve size is 2, 3 or 4":
  - a. Note that each of the two thrust rings (A16) consists of two halves.
  - b. Separate the halves using a small screwdriver.
  - c. Carefully remove each of the four pieces from the body.
10. If the valve size is 6" or larger:
  - a. Note that each of the two thrust rings (A16) is a one-piece split ring.
  - b. Pry the ends apart using a small screwdriver in the joint of each ring.
  - c. Carefully bend each ring to a smaller diameter, and remove each of the two rings from the body.
11. Thoroughly clean all body and gate surfaces that will be in contact with the new seats and thrust rings. Also, clean the new seats and thrust rings.

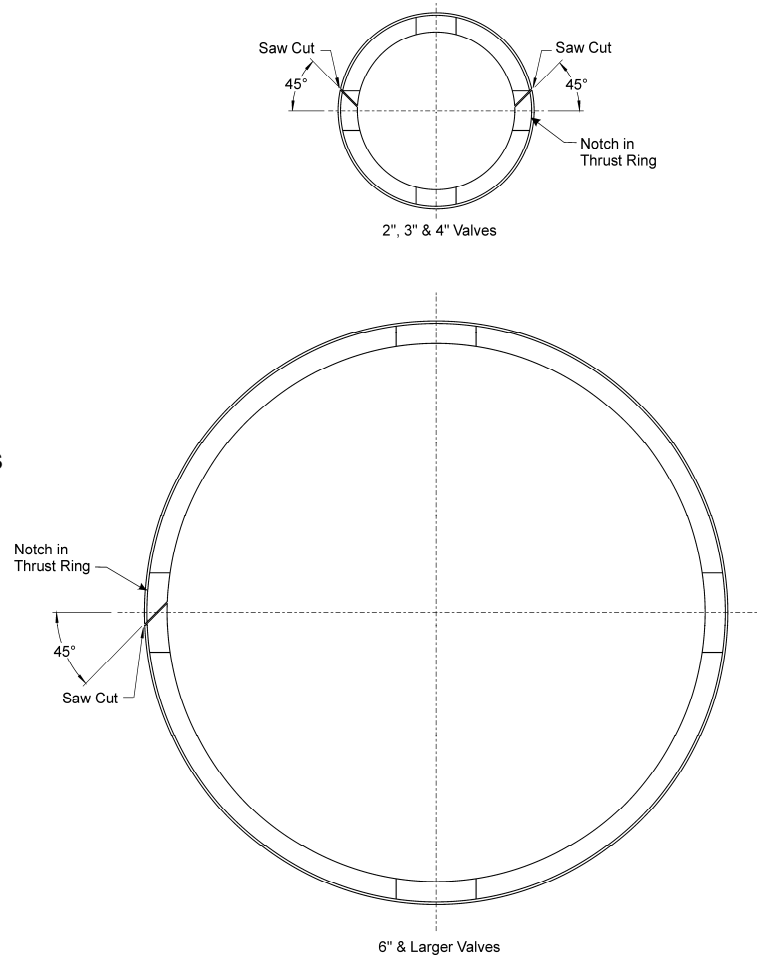
**Note:** Replacement thrust rings (A16) are shipped as a one piece solid ring and require one or two saw cuts prior to installation. See Figure 7 for details.

12. If the valve size is 2, 3 or 4":
  - a. Saw cut both the new thrust rings (A16) at a 45 deg angle starting near the top and outside of two opposite notches in the thrust ring. See Figure 7.
  - b. With the notched side towards the gate slot, carefully place one half of the new two-piece thrust ring (A16) into the groove. Then the second half. Repeat for the other ring on the other side of the body.
  - c. Ensure the rings are fully seated in the grooves.
13. If the valve size is 6" or larger:
  - a. Saw cut both the new thrust rings (A16) at a 45 deg angle starting near the center and outside of one of the notches in the thrust ring. See Figure 7.
  - b. With the notched side towards the gate, carefully bend one end of the new one-piece thrust rings (A16) to a smaller diameter, and place the ring into the groove on one side of the body. Repeat for the other ring on the other side of the body.
  - c. Ensure the rings are fully seated in the grooves.

## Seat and Thrust Ring Replacement continued

14. Place the gate (A5) into the body (A1) and position it to the closed position.
15. Lubricate the ring on the outside diameter of each of the two new seats (A2) with a silicone-based grease such as Dow Corning 44.
16. With the toe-shaped side towards the gate, push each of the new seats into position on each side of the body so that the ring snaps into the groove.
17. Place new packing (A3) into body (A1). See 'Replacing Packing'.
18. Replace the packing gland (A4), washers (A7) and nuts (A6). Tighten the nuts evenly, finger tight plus 1/2 turn.
19. Reconnect the stem to the gate with screws, nuts, lock washers, and stem clamps.
20. Install the valve in the pipeline—see the *Installation* section.
21. If the actuator is a powered actuator, reconnect the power.
22. Pressurize the pipeline.
23. If packing leaks, tighten the adjustment nuts (A6) on top of the packing gland.

**Note:** 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.



**Figure 7**

## Gate Replacement

See Figure 5 and 6 for component identification.



### **WARNING!**

Pipeline pressure can propel the loose flange bolts and flanges, and can cause personal injury or equipment damage. Relieve pipeline pressure before removing flange bolts and flanges.

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



### **WARNING!**

Moving parts from accidental operation of power actuator can cause personal injury or equipment damage. Disconnect and lock out power to actuator before servicing.

## Gate Replacement continued

2. If the actuator is powered, disconnect and lock out the pneumatic, hydraulic, or electrical power to prevent accidental operation of the actuator.
3. Remove the pipeline flange bolts, and remove the valve from the pipeline.
4. Remove the actuator, actuator yoke, packing gland (A4) and packing (A3) from the valve. Make certain that the gate is supported to prevent the gate from falling into the body before the packing is removed.
5. Remove and inspect the gate (A5).  
**Note:** If the gate appears to be scratched or galled, it may be due to flange bolts in the chest area that are too long. Check the body for damage in the tapped flange holes and within the chest cavity. Repair or replace the body, as appropriate.
6. Remove, inspect, and replace or re-install the seat and thrust ring components as described in the *Replacing Seat and Thrust Ring* section.
7. Place the new gate (A5) in the body, in the fully closed position.
8. Install new packing (A3) as described in the *Packing Replacement* section.
9. Install the yoke and actuator on the valve.
10. Adjust the actuator, yoke, and packing gland so that the valve operates smoothly.
11. Operate the valve to the full open and close positions and ensure the gate does not bind and that the gate is not scratched.  
**Note:** Check the gate for scratches and galls when the valve is fully open.
12. Replace the valve in the pipeline—see *Installing the Valve*.
13. If the actuator is powered, reconnect the power to the actuator.
14. Pressurize the pipeline.
15. If packing leaks, tighten the adjustment nuts (A6) on top of the packing gland.  
**Note:** 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.

## 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 and/or thrust rings are worn or torn.	Replace seats and/or thrust rings
Valve leaks when fully closed, and gate is galled.	Seats and thrust rings are worn or torn.	Replace seats and/or thrust rings and gate.
Valve will not open or close completely.	Gate and/or body is packed with sediment or build up material	Clean out gate and/or body and install purge line.

## Guarantee

Products, auxiliaries and parts thereof of DeZURIK Canada, Inc. manufacture are warranted to the original purchaser for a period of twenty-four (24) months from date of shipment from factory, against defective workmanship and material, but only if properly installed, operated and serviced in accordance with DeZURIK Canada, Inc. recommendations. Repair or replacement, at our option, for items of DeZURIK Canada, Inc. manufacture will be made free of charge, (FOB) our facility with removal, transportation and installation at your cost, if proved to be defective within such time, and this is your sole remedy with respect to such products. Equipment or parts manufactured by others but furnished by DeZURIK Canada, Inc. will be repaired or replaced, but only to the extent provided in and honored by the original manufacturers warranty to DeZURIK Canada, Inc., in each case subject to the limitations contained therein. No claim for transportation, labor or special or consequential damages or any other loss, cost or damage shall be allowed. You shall be solely responsible for determining suitability for use and in no event shall DeZURIK Canada, Inc. be liable in this respect. DeZURIK Canada, Inc. does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does DeZURIK Canada, Inc. guarantee 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 DeZURIK Canada, Inc. 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 install and operate said products and parts according to instructions furnished by DeZURIK Canada, Inc., or misuse, modification, abuse or alteration of such product, accident, fire, flood or other Act of God, or failure to pay entire contract price when due shall be a waiver by you of all rights under this warranty.

The foregoing guarantee 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 DeZURIK Canada, Inc. Factory 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 DeZURIK Canada, Inc., despite anything to the contrary contained in the purchase order or represented by any agent or employee of DeZURIK Canada, Inc., in writing or otherwise, notwithstanding, including but not limited to implied warranties.

THE FOREGOING REPAIR AND REPLACEMENT OBLIGATIONS ARE IN LIEU OF ALL OTHER WARRANTIES, OBLIGATIONS AND LIABILITIES, INCLUDING ALL WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR OF MERCHANTABILITY OR OTHERWISE, EXPRESSED OR IMPLIED IN FACT OR BY LAW, AND STATE DEZURIK CANADA, INC.'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.

## Limitation of liability

LIMITATION OF LIABILITY: IN NO EVENT SHALL DEZURIK CANADA, INC. BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND DEZURIK CANADA, INC.'S LIABILITY, UNDER NO CIRCUMSTANCES, WILL EXCEED THE CONTRACT PRICE FOR THE GOODS AND/OR SERVICES FOR WHICH LIABILITY IS CLAIMED. ANY ACTION BY YOU FOR BREACH OF CONTRACT MUST BE COMMENCED WITHIN 12 MONTHS AFTER THE DATE OF SALE.

## Sales and Service

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

Web site: [www.dezurik.com](http://www.dezurik.com) E-Mail: [info@dezurik.com](mailto:info@dezurik.com)



385 Franklin Blvd., Cambridge, ON CANADA N1R 5V5 • Phone: 519-621-8980 • Fax: 519-621-9521

*DeZURIK Canada, Inc. reserves the right to incorporate our latest design and material changes without notice or obligation. Design features, materials of construction and dimensional data, as described in this manual, are provided for your information only and should not be relied upon unless confirmed in writing by DeZURIK Canada, Inc.*

*Certified drawings are available upon request.*

Printed in CANADA