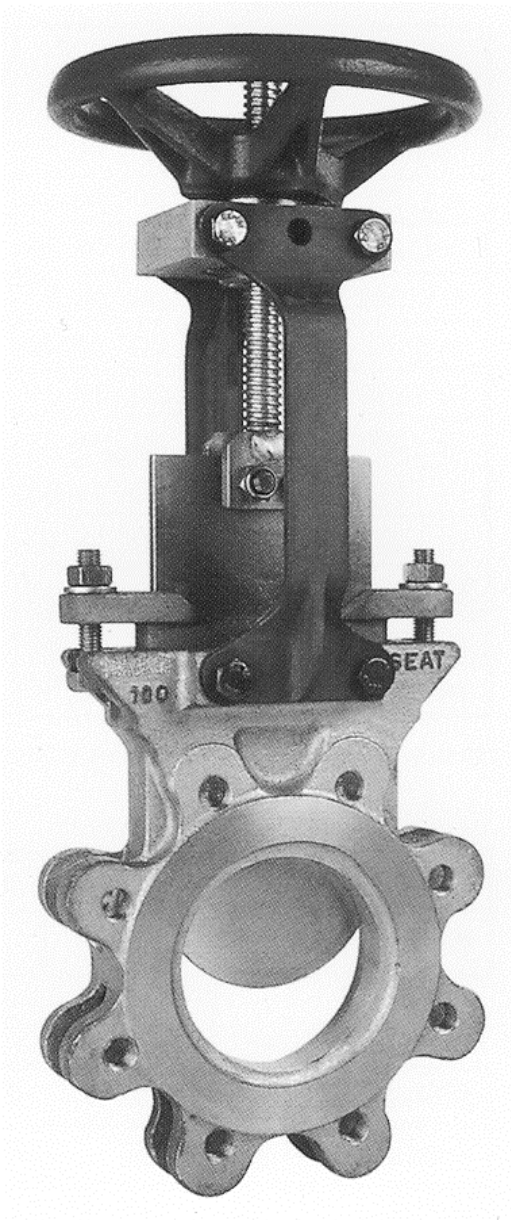




2-36" GKB BI-DIRECTIONAL KNIFE GATE VALVES



Instruction **D10472**

March 2009

DeZURIK

2-36" GKB Bi-Directional Knife Gate Valves

Instructions

These instructions provide information about GKB Bi-Directional Knife Gate Valves. They are for use by personnel who are responsible for installation, operation and maintenance of Knife Gate Valves.

Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that 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 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 GKB Knife 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.

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2-36" GKB Bi-Directional Knife Gate Valves

Description

The GKB Bi-Directional Knife Gate Valves are a full lug single piece cast stainless steel body and gate with a bi-directional elastomer seat. The Bi-Directional Knife Gate Valve is available in 2–36" sizes with 150 CWP. A choice of several actuators and accessories is available.

Installation

Install the valve between ANSI Class 125 or Class 150 pipeline flanges. Flange gaskets are required. Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the valve and pipeline.

The valve can be install with flow in either direction. If the valve is installed in a horizontal pipeline with the possibility of particles/solids settling at the bottom, the valve should be installed with the stem horizontal.

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 blind holes near the chest area of the valve do not bottom out when tightened. We recommend using studs with nuts in the blind holes.
- Tighten the flange bolts evenly, in a crisscross pattern. Refer to Table A for recommended flange bolt/stud torques.

Table A: Recommended Flange Bolt/Stud Torque Range in ft-lbs

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

Valve Size		ASME Gasket Types	
Inch	MM	Rubber with Soft Fabric Filler, and 1/8" Thick Hard	Soft Elastomer Gasket Shore Durometer < 75A
2	50	9 - 50	6 - 9
3	80	21 - 50	12 - 21
4	100	15 - 50	9 - 15
5	125	23 - 50	15 - 23
6	150	23 - 50	15 - 23
8	200	43 - 50	33 - 43
10	250	45 - 70	37 - 45
12	300	62 - 90	51 - 62
14	350	81 - 140	68 - 81
16	400	77 - 190	66 - 77
18	450	112 - 300	96 - 112
20	500	107 - 300	92 - 107
24	600	165 - 300	144 - 165
30	750	179 - 300	158 - 179
36	900	264 - 300	237 - 264

- After installing the valve, pressurize pipeline and ensure the packing is not leaking. If the packing leaks, adjust the packing as described in the "Packing" section.

Operation

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

Lubrication

The valve does not require lubrication. Refer to the Actuator Instructions for lubrication requirements for the actuator.

Packing

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

Note: The packing gland is slightly loosened prior to shipping. This is done to increase the life of the packing during extended storage.

Adjustment

If packing leaks, tighten the adjustment nuts (A5) on top of the packing gland (A4). Tighten the nuts evenly and slowly, just enough to stop the leak.

Note: Over tightening will cause excessive operating forces, and will decrease the life of the packing.

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2-36" GKB Bi-Directional Knife Gate Valves

Drawings

NO	PART NAME	QTY
A1	BODY	1
A2	GATE	1
A3	PACKING	-
A4	GLAND	1
A5	NUT (2 - 8 VALVES)	2
A5	NUT (10 - 18 VALVES)	4
A5	NUT (20 & 24 VALVES)	6
A5	NUT (30 VALVE)	8
A5	NUT (36 VALVE)	10
A6	SCREW (2 - 8 VALVES)	2
A6	SCREW (10 - 18 VALVES)	4
A6	SCREW (20 & 24 VALVES)	6
A6	SCREW (30 VALVE)	8
A6	SCREW (36 VALVE)	10
A7	WASHER (2 - 8 VALVES)	2
A7	WASHER (10 - 18 VALVES)	4
A7	WASHER (20 & 24 VALVES)	6
A7	WASHER (30 VALVE)	8
A7	WASHER (36 VALVE)	10
A8	SEAT SEAL	1
A9	CHEST LINER	1

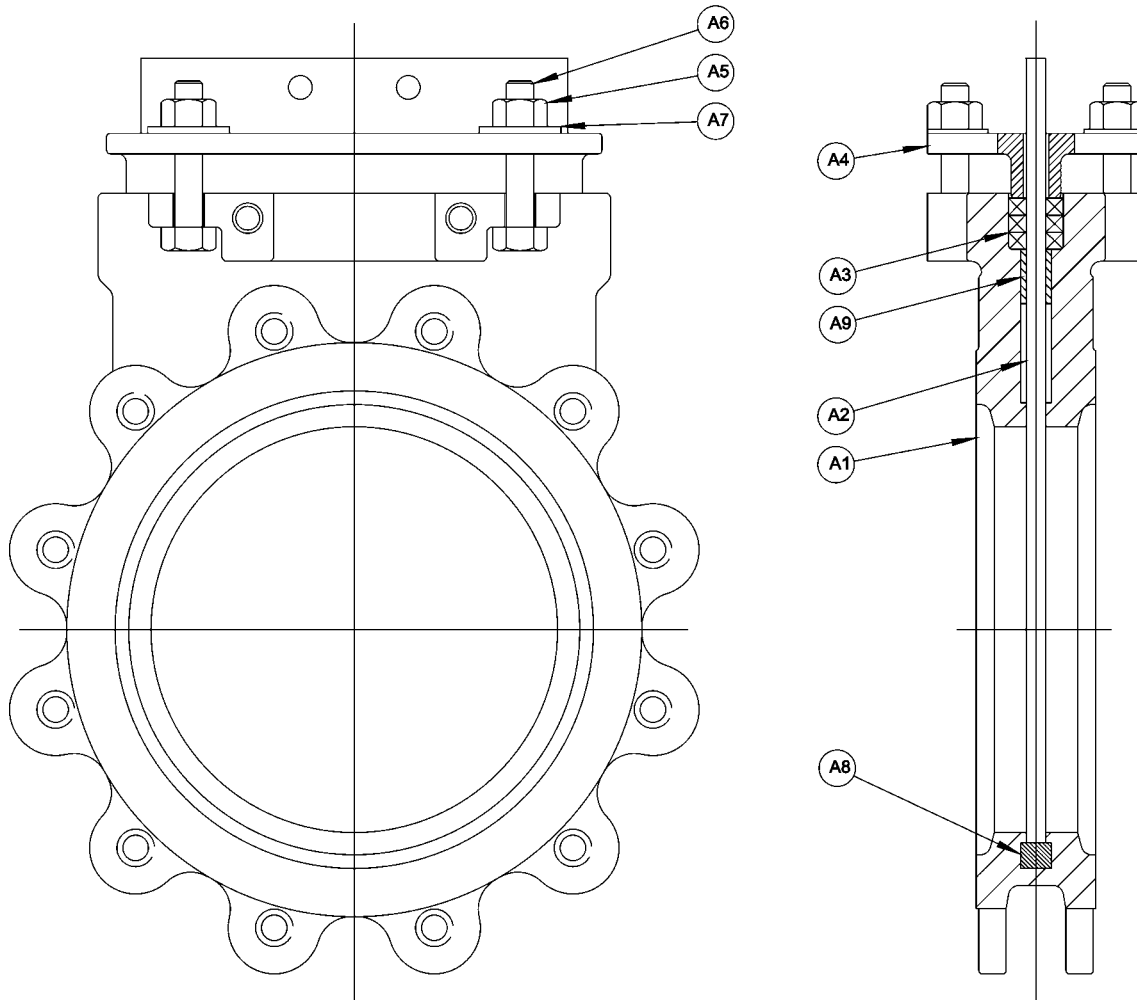


Figure 1—Component Identification

Packing Replacement

Removing the Old Packing

**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 two screws and nuts fastening the stem to gate and disengage the stem from the gate (A2) by stroking the actuator (not the valve) to the open position.
4. Remove the nuts (A5), washers (A7), screws (A6) and packing gland (A4).
5. Remove the used packing (A3) from the packing chamber.

Installing the New Packing

Do not compress the packing any more than needed to stop leaks.

1. Install new packing (A3) one at a time along each side of the gate. The ends must be cut flat.

Note: Wrap the ends with TFE tape to prevent fraying and help fit between the seat seal and body (See Figure 2).

2. Install the packing gland (A4), screws (A6), washers (A7) and nuts (A5).
3. Tighten the nuts (A5) finger tight plus ½ turn.
4. Re-connect power or air supply to the actuator (if required) and lower the stem to the gate.
5. Re-connect the stem to the gate with the two screws and nuts.
6. Pressurize the pipeline and inspect packing for leakage.
7. If packing leaks, tighten the nuts (A5) on top of the packing gland (A4). Tighten the nuts evenly and slowly, just enough to stop the leak.

Note: Over tightening will cause excessive operating forces, and will decrease the life of the packing.

Packing Replacement *(Continued)*

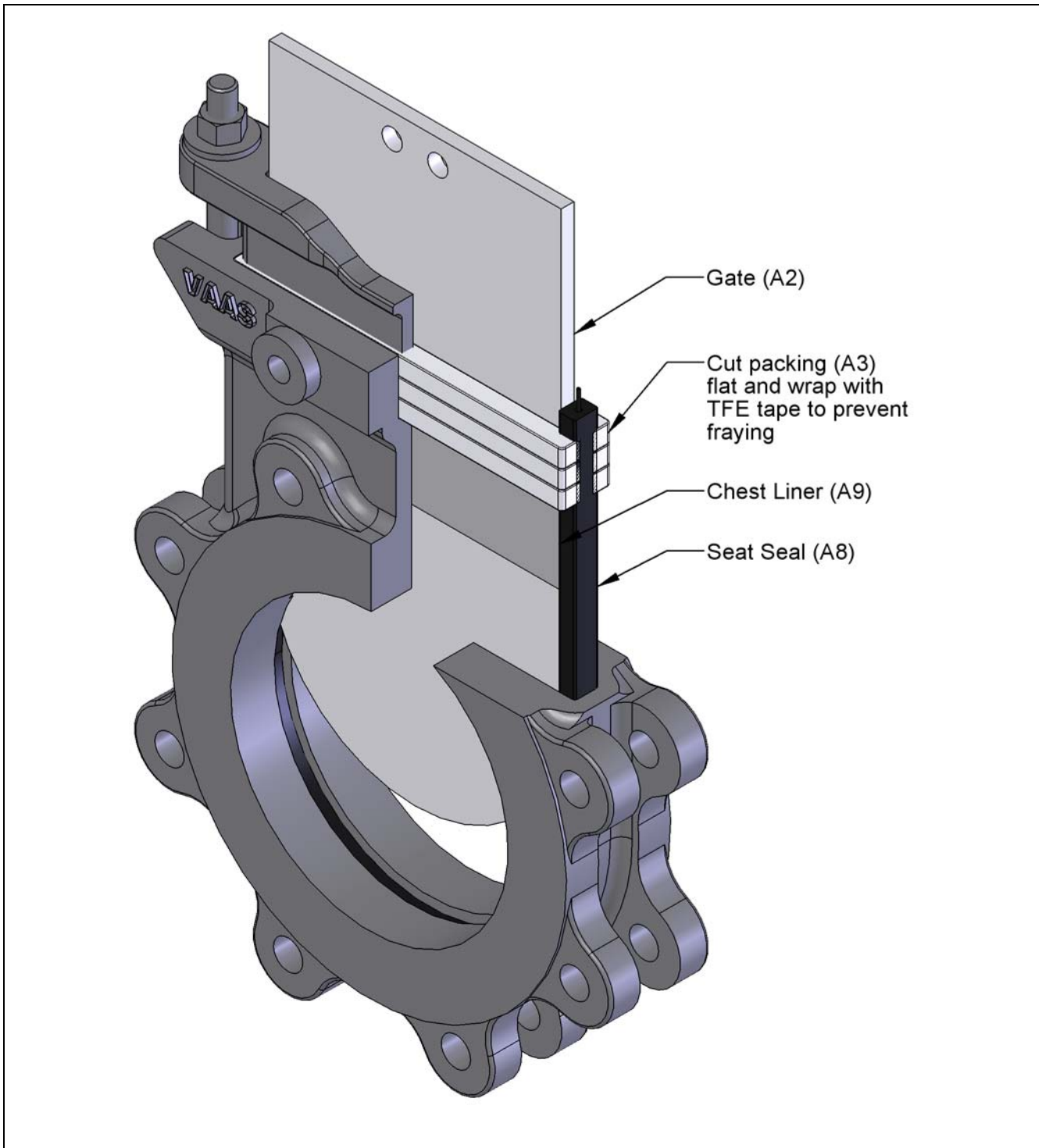


Figure 2—Packing Detail

Seat Seal 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.
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**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 two screws and nuts fastening the stem to gate and disengage the stem from the gate (A2) by stroking the actuator (not the valve) to the open position.
4. Remove the actuator from the valve by removing the yoke bolting on both sides of the valve.
5. Remove the valve from the pipeline.
6. Clamp the valve in the vertical position leaving access to the port area.
7. Remove the nuts (A5), washers (A7), screws (A6) and packing gland (A4).
8. Remove the gate (A2) carefully from the body (A1).

Note: Clean the gate and smooth out any rough surfaces.

9. Remove the used packing (A3) from the packing chamber.
10. Remove the chest liner (A9) from the body (A1).
11. Remove the seat seal (A8) by pulling the seal out the top of the body (A1).

Note: Clean and inspect the body inside area for any damage, particularly sharp edges that may cut the new seat seal. Smooth out if necessary.

12. Saturate the seat seal groove area in the body (A1) with clean water-soluble lubricant that will not affect the seat seal or process.
13. Inspect the new seat seal (A8) for cuts or flaws before installing. Saturate both ends of the seat seal with clean water-soluble lubricant that will not affect the seat seal or process.
14. Insert end of seat seal (A8) thru packing chamber and along inside of body (A1). See step 1 in Figure 3.
15. Guide end of seat seal (A8) into groove in body (A1). See step 2 in Figure 3.
16. Pull end of seat seal (A8) thru groove in body (A1) and along inside of body (A1). See step 3 in Figure 3.
17. Insert a new chest liner (A9) in the packing area of the body (A1).

Seat Seal Replacement *(Continued)*

18. Install the gate (A2) into the body (A1) in the closed position.
19. Mount the actuator to the valve.
20. Re-connect power or air supply to the actuator (if required) and lower the stem to the gate.
21. Re-connect the stem to the gate with the two screws and nuts.
22. Open and close the gate 5 times to seat the seat seal into the bottom groove.
23. With the gate closed, cut each end of the seat seal off to required extended length from top of the body:
 - 2" thru 8" valves: .79" [20mm]
 - 10" thru 16" valves: 1.00" [25mm]
 - 18" and larger valves: 1.18" [30mm]
24. Remove the two screws and nuts fastening the stem to gate and disengage the stem from the gate (A2) by stroking the actuator (not the valve) to the open position.
25. Install new packing (A3). See the "*Packing Replacement*" section to install new packing.
26. Lower the stem to the gate and re-connect the stem to the gate with the two screws and nuts.
27. Install the valve into the pipeline.
28. Pressurize the pipeline and inspect packing for leakage.
29. If packing leaks, tighten the nuts (A5) on top of the packing gland (A4). Tighten the nuts evenly and slowly, just enough to stop the leak.

Note: Over tightening will cause excessive operating forces, and will decrease the life of the packing.

Seat Seal Replacement *(Continued)*

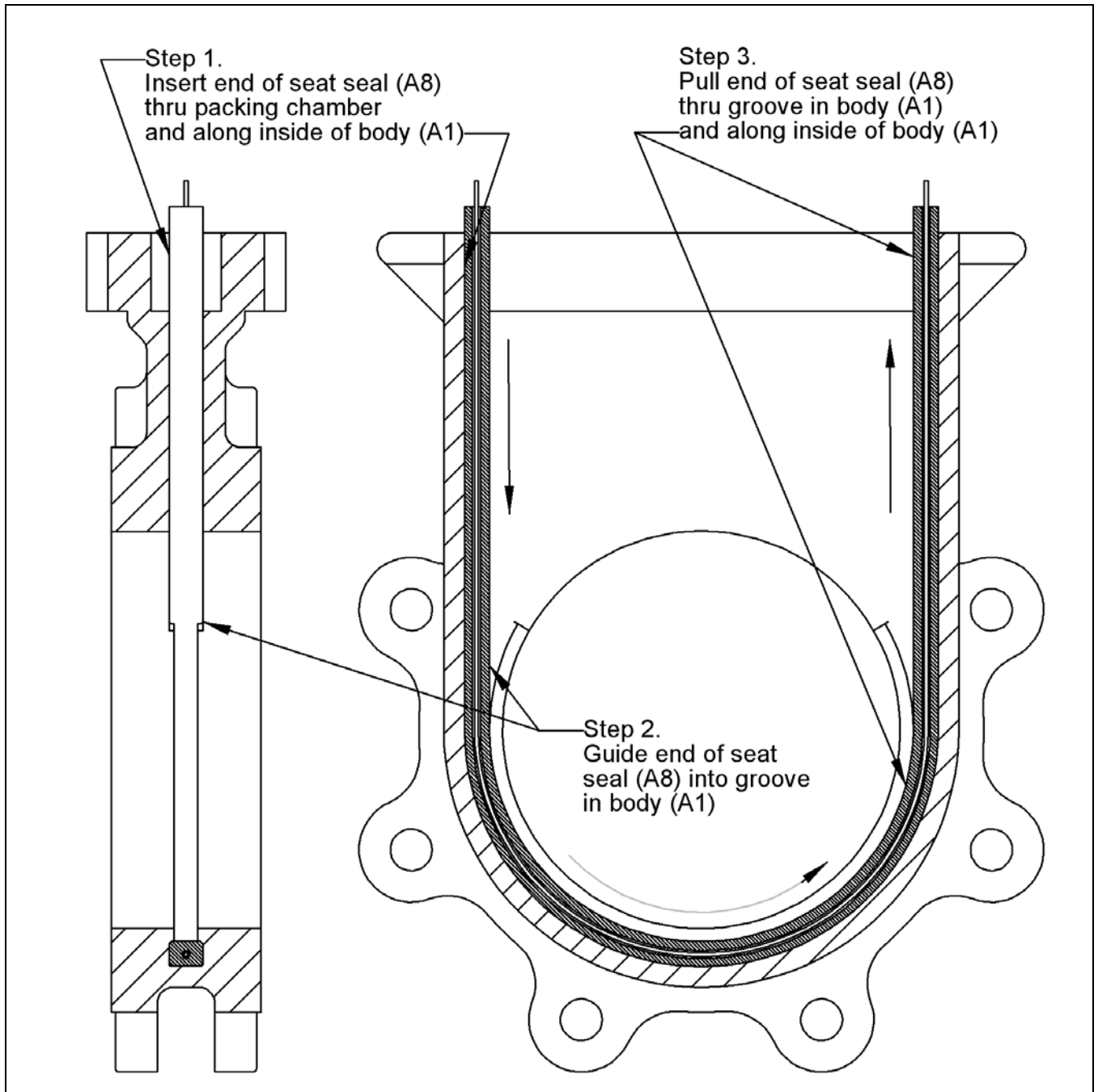


Figure 3— Seat Seal Installation

Replacing the Gate

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.
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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 two screws and nuts fastening the stem to gate and disengage the stem from the gate (A2) by stroking the actuator (not the valve) to the open position.
4. Remove the actuator from the valve by removing the yoke bolting on both sides of the valve.
5. Remove the nuts (A5), washers (A7), screws (A6) and packing gland (A4).
6. Remove the gate (A2) carefully from the body (A1).
7. Remove the used packing (A3) from the packing chamber.
8. Remove the chest liner (A9) from the body (A1).
9. Insert a new chest liner (A9) in the packing area of the body (A1).
10. Install the gate (A2) into the body (A1) in the closed position.
11. Install new packing (A3). See the "*Packing Replacement*" section to install new packing.
12. Lower the stem to the gate and re-connect the stem to the gate with the two screws and nuts.
13. Pressurize the pipeline and inspect packing for leakage.
14. If packing leaks, tighten the nuts (A5) on top of the packing gland (A4). Tighten the nuts evenly and slowly, just enough to stop the leak.

Note: 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 out.	Replace Packing.
Packing leaks, gate is galled.	Packing is worn or torn.	Replace packing & gate, check gate for damage.
Valve leaks when fully closed, with no evidence of galling on gate.	Seat is worn or torn.	Replace seat.
Valve leaks when fully closed, and gate is galled.	Seat is worn or torn.	Replace seat.