

INSTALLATION**WARNING**

To avoid personal injury to yourself or your fellow workers or damage to property from release of the process fluid, before installation-

1. Shut off all operating lines to the valve.
2. Isolate the valve completely from the process.
3. Release process pressure.
4. Drain the process fluid from the valve.

1. Before installing the valve, inspect the valve body port and associated equipment for any damage that may have occurred and for any foreign matter that may have collected in shipping or storage. Make certain the body interior is clean.
2. Before installing the valve, inspect the pipe line and mating flanges, making sure the pipe is free of foreign material and the flanges are clean and have no burrs or pits that could cause leakage.
3. Due to stainless steel castings, machining tolerances, and flange thickness, the body tapped hole depth may vary slightly from valve to valve. It is, therefore, recommended that all knife gates be installed with a stainless steel ASTM A-304-B8 stud or an ASTM A-316-B-8M stud. The use of a carbon steel B-7 stud may also be considered. We further recommend the use of a teflon thread compound. It should be pointed out that the use of cap screws or bolts may harm the chest in the knife gate by bottoming out and should never be used on this area of the knife gate valve.
4. The Davis Knife Gate is manufactured with ANSI B 16.5 – 150# raised face flange dimensions. The use of a suitable gasket between the body and the pipe line flanges shall be selected by the customer. We would recommend the use of a PTFE gasket.
5. Carefully place the valve between the flanges and loosely assemble the valve by putting in the bottom two or three studs, then carefully insert the gaskets into place. The bottom studs will help locate the gasket and hold it in position.
6. Carefully insert the balance of the studs into place and tighten all of them evenly – not in rotation – but by the cross over method. **CAUTION:** Do not over tighten chest cavity studs.

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7. The Davis Knife Gate Valve may be installed in any orientation in the pipe line, however, the normal method is with the handwheel vertical above the valve body. Other positions are acceptable, however, they may result in uneven valve wear.
8. The resilient seat knife gate is a bi-directional valve and will operate with the flow in either direction. Care must be taken with the metal-seated valve as it is a unidirectional valve (or a one-flow-direction valve). Make sure that the metal-seated valve is oriented so that the pipe line flow is in the same direction as the arrow on the side of the valve body. This will insure that the valve seat is on the downstream side of the gate.
9. All Resilient-Seated Knife Gate Valves require the resilient seat to be lubricated before stroking, regardless of type of actuator. The fit pressure of the gate against the resilient seat, on the sides of the valve up thru the packing gland, is such that stroking the valve dry (with no lubrication of any kind) will cause the resilient seat to cold flow beyond safe limits and will damage the seat with just a few strokes. CRC or WD40, sprayed on the seat, up in the chest area, both sides, will normally provide sufficient lubrication. This should be repeated every 2 or 3 strokes. This is CRITICAL to the life and performance of the seat. In operation, the process product normally supplies adequate lubrication.

OPERATION

1. After the valve has been installed, cycle the valve once completely. Open the valve by turning the handwheel counter clockwise, reverse the operation for closing. (Note: This will detect if any damage has been incurred either due to shipping or installation processes.) After installing Resilient Seat Valves (Lug Type), be sure to determine that bonnet nut and lock nut are secure. If either lock or bonnet nut are loose, adjust as follows:
 1. Back lock nut in counterclockwise rotation 2 turns.
 2. Back bonnet nut in counterclockwise rotation 2 turns.
 3. Turn handwheel in clockwise motion until gate bottoms out, then turn handwheel at that point ¼ turn more.
 4. Tighten bonnet nut down to stop-out against stem nut.
 5. Secure lock nut down on bonnet nut to hold in position.

After cycling the gate valve, turn the handwheel counterclockwise several turns allowing partial opening for preparation to fill system.

2. Open upstream valve slowly, building system pressure gradually, allowing installation personnel to detect any excessive packing gland leakage, making adjustments necessary.

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3. After the system has come to a full pressure, open the knife gate fully by turning the handwheel counterclockwise, then close the valve fully by turning the handwheel clockwise. In resilient seat knife gate valves, this process will result in “seating in the valve.” This step may be eliminated with the metal-seated valve.
4. You may now use the valve for its intended purpose, keeping in mind that a gate valve should be used in a full open or a full closed position. Gate valves should not be used for throttling unless specifically designed for such a use.

MAINTENANCE

Valve parts are subject to normal wear and must be inspected and replaced as necessary. Inspection and maintenance frequency depends on the severity of the service conditions. This section includes instructions for packing adjustments, repacking, seat replacement, and seating adjustment.

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1. Normal maintenance of the Davis Knife Gate Valve may only include a periodic tightening of the packing gland. Should a leak occur at the packing gland, simply tighten the packing gland bolt closest to the leak. This may require tightening two or three bolts on larger valves. After the leak has stopped, tighten all packing gland bolts $\frac{1}{4}$ turn. Do not over tighten. The only other normal maintenance required would be to grease the valve stem by using a grease gun at the grease fitting located on the valve yoke.
2. From time to time, it may be necessary to repack the valve completely. This can be done following the warning procedure listed above. Standard repacking kits are available through Davis Valve. Packing kits include necessary packing and a top wiper seal gasket which insures a tight seal. When ordering be sure to specify valve model number,



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indicating type of seat and type of valve. Repacking the valve includes the following steps:

1. Remove packing gland nuts and lock washers.
2. Raise blade to the full open position.
3. Pull up the packing gland to the top of the blade and secure it to the top of the blade.
4. Using a packing hook, remove all of the old packing.
5. Carefully clean the stuffing box. If oil, grease, wax, or graphite impregnated packings were used, it might be necessary to use a solvent to clean the stuffing box.
6. Purchase precut packing kits from Davis Valve or carefully cut each ring by wrapping a length of packing around the blade snugly, but without tension. Cut each ring individually, making a square cut with a clean, sharp knife.
7. Insert rings one at a time into stuffing box. Tamp each ring lightly in place using a flat packing iron. Packing joints may be located 90° apart, on metal-seated valves, to minimize leakage. Successive layers are installed in the same manner.
8. Pull the packing gland down and tighten using only the two end studs until the packing gland almost bottoms out.
9. Remove the packing gland as previously described.
10. Insert the wiper seal gasket.
11. Pull down packing gland using lock washers and nuts and tighten using alternate method. Do not over tighten.
12. Bring the valve up to pressure and tighten the packing gland following the procedures listed under the maintenance instructions.