Disassembly and Repair of Type IC™ Rotary Joints 2000 Series With Ring Bracket Mounting

**NOTE:** Please follow your company’s safety procedures whenever working on Kadant Johnson rotary joints. Read all of the instructions completely before proceeding.

Please refer to the assembly drawings supplied with your Kadant Johnson rotary joint for part identification. If you have any questions, contact your representative or Kadant Johnson.

Tighten all fasteners in a star pattern. See joint assembly drawing for torque specifications.

**REPAIR KITS ARE AVAILABLE CONSISTING OF:**

<table>
<thead>
<tr>
<th>Item #</th>
<th>Qty</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4B</td>
<td>1</td>
<td>O-Ring</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>Seal Ring</td>
</tr>
<tr>
<td>6A</td>
<td>1</td>
<td>Seal Ring</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>Gasket</td>
</tr>
<tr>
<td>8R</td>
<td>1</td>
<td>Gasket</td>
</tr>
<tr>
<td>35</td>
<td>2</td>
<td>Packing</td>
</tr>
</tbody>
</table>

**REMOVAL AND DISASSEMBLY**

**STEP 1.**
Close the inlet and outlet valves and allow the joint to cool to the point where it is safe to work on. Relieve any residual pressure left in the system and make sure pressure indicators read "0".

**STEP 2.**
Disconnect the inlet and outlet piping from the joint.

**STEP 3.**
Loosen and remove head bolts (2A) and remove the head (2) along with the head gasket (8). If the head is removed without disconnecting the flex hose, support the head in a manner as to not kink or damage the flex hose.

**STEP 4.**
Loosen lock nut (30) and packing gland (10).

**STEP 5.**
Remove the hex nuts from the studs at the quick release nipple flange (5). Slide the quick release nipple flange off of the studs and let it rest on the nipple. Remove the split wedges (55) and set a side for future use.

**STEP 6.**
Be prepared to support the weight of the joint at this time. Loosen and remove the cap screws (16A) from the wear plate (16) at the ring bracket (20).

**STEP 7.**
Slide the joint away from the roll. Keep the weight of the joint off of the horizontal pipe so it will not get bent. Remove and discard the copper gasket (8Q) from inside the journal flange.

**STEP 8.**
Slide the quick release nipple flange off of the nipple and set aside for future use.

**STEP 9.**
Place the nipple through a hole in a work bench or some other suitable work surface (See Figure 1) so that it is in a horizontal position with the assembly plate (31) on top.

Figure 1
STEP 10.
Please use caution during this step. There is internal spring force present which is contained by the assembly plate (31). Using a press, push down on the packing gland and remove the assembly plate screws (31A) and washers (31B). Free the assembly plate from the joint body (1). Release the press and remove the assembly plate.

STEP 11.
After the assembly plate is removed, remove these parts in the following order. Seal ring (6), thrust collar (3), spring (7) nipple (4) nipple body (4A) and seal ring (6A). Remove the packing gland and packing (35) from the thrust collar.

INSPECTION OF INTERNAL PARTS
STEP 12.
To remove the o-ring (4B) from the nipple body, slide the nipple body (4A) off the nipple (4). The nipple may have to be tapped on a wooden block in order to remove the nipple body. The wooden block will protect the end of the nipple from damage. Clean and inspect the o-ring groove on the nipple body for steam cuts or pitting. Make sure the spherical face where the seal ring runs is smooth. Inspect the keyways for wear. If any of these areas are damaged the nipple body must be replaced.

Clean and inspect the nipple. The area where the nipple body o-ring seals must be smooth and free of scratches or pitting. Inspect the drive keys for wear. Check the end of the nipple where it seats against the copper gasket, it must be smooth with no pitting present. If any area is damaged, the nipple must be replaced.

Clean and inspect the thrust collar. Make sure the spherical face where the seal ring runs is smooth. Inspect the keyways for wear. If any of these areas are damaged, the thrust collar must be replaced.

Clean and inspect the spring. If the rotary joint runs in a vacuum, it should be replaced. With use, the spring maybe shorter than new one. If the spring isn’t cracked or broken in two, it can be re-used.

Clean and inspect the assembly plate. The flat wearing surface should be smooth without scoring or pitting.

STEP 13.
Clean and inspect the wear plate (16). The flat surface where the seal ring should be smooth. If the nipple has contacted the wear plate where it passes through it and both parts are severely worn, both parts should be replaced. This also indicates that the joint is off centerline with the roll and joint alignment should be corrected. The wear plate gasket (8R) should be replaced when the joint is rebuilt.

STEP 14.
Clean all gasket surfaces.

REASSEMBLY
STEP 15.
Lubricate and install a new o-ring into the nipple body. Slide the nipple body over the nipple while aligning the keyway to the key in the nipple. Continue to slide the nipple body down the nipple until the key and keyway engage and are fully seated.

STEP 16.
Place a new seal ring with its flat face positioned against the flat face of the wear plate.

STEP 17.
Carefully place nipple assembly into the body and rest it against the seal ring. Position spring over nipple followed by the thrust collar.

STEP 18.
Place gasket on body.

STEP 19.
Place a seal ring with its spherical face matting with the spherical face on the thrust collar. Place the flat face of the assembly plate against the flat face of the seal ring.

STEP 20.
Using a press, compress the spring by pushing down on the thrust collar. Align the keyway in the thrust collar with the key in the nipple. When fully compressed, attach the assembly plate to the body with two screws and lockwashers.

RE-INSTALLATION
STEP 21.
Place a new copper gasket (8Q) into the counterbore of the journal flange.

STEP 22.
Rotate the nipple so that the key and keyway in the nipple can be observed through the inlet connection. Note: This area will need to be reviewed during the final inspection.

STEP 23.
Slide the quick release nipple flange (5) over the end of the nipple (4) with its tapered bore facing the end of the nipple.

STEP 24.
Place two tapered split wedges (55) into the recessed portion on the nipple and slide the quick release nipple flange over them. Hold the quick release nipple flange into position with a large C clip. See Chart A. Other methods, such as a large radiator hose clamp, maybe used in place of the C clip.

STEP 25.
Carefully lift the rotary joint and position it over the horizontal pipe. Do not allow the rotary joint to rest on the horizontal pipe because the weight of the joint may bend it. Pass the horizontal pipe through the nipple and through the thrust collar (3). Do this while placing the end of the nipple into the counter bore of the journal flange. Align the holes in the quick release nipple flange with studs in the journal flange and continue to move the joint into position.

STEP 26.
Place bolts (16A) through the wear plate (16) and secure joint assembly to the ring bracket. Tighten the bolts using a star pattern using the proper torque.

STEP 27.
Place the proper amount of nuts over the studs on the journal flange and secure the quick release nipple flange. Tighten the nuts to approximately 70 ft-lb using star pattern.
The use of a torque wrench in this area is difficult because of the close proximity of other components, please make sure the nuts are tight.

Note: When the quick release journal flange is tight there will be a 1/8” to 3/16” gap between its face and the face of the journal flange. Make sure this gap is even around the circumference of the quick release flange to prevent the nipple from being drawn off center.

STEP 28.
Install new (35) packing into the thrust collar. Stagger the ends of the packing to prevent leaks. Re-install the packing gland and lock nut. Tighten the packing gland to 30 ft-lb and secure using the lock nut.

STEP 29.
Install a new head gasket and the head. Tighten the head bolts to their proper torque using star pattern.

CHECKING THE JOINT ALIGNMENT AND FINAL INSPECTION

STEP 30.
Make sure the nipple is centered in the wear plate. Make sure the thrust collar (3) is centered in the assembly plate (31). Measure the gap between these parts by using a piece of 1/8” welding rod bent at a 90 degree angle. If the joint is off center, alignment can be adjusted by slightly loosening the ring bracket and moving it. The joint should be aligned within .060” ± of the centerline of the roll. Once properly aligned, dowel pin the ring bracket to the bearing cover. Dowel pinning the ring bracket will ensure proper joint alignment when future repairs are made on the machine.

Make sure there is 1/8” to 1/4” gap between the heel of the key in the nipple and the bottom of the keyway in the nipple body (Please see Figure 2). This inspection is done through the inlet connection. The gap should be visible by placing a screw driver between the spring (7) and the nipple body and twisting it so that the bottom of the key and keyway become visible.

If these specifications can not be achieved please contact your Representative or Kadant Johnson.

The Joint is now ready to accept piping.

Dimensions are for reference only and subject to change. Certified drawings are available on request. Please refer to Kadant Johnson Drawing Number A37640 for torque specifications.

<table>
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<tr>
<th>Joint Size</th>
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<th>Description</th>
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<td>2”</td>
<td>16272374</td>
<td>Retaining clip for 2550</td>
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<tr>
<td>2-1/2”</td>
<td>16293341</td>
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<td>3”</td>
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<tr>
<td>3-1/2”</td>
<td>16340227</td>
<td>Retaining clip for 2750</td>
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Chart A
The Kadant Johnson Warranty

Kadant Johnson products are built to a high standard of quality. Performance is what you desire: that is what we provide. Kadant Johnson products are warranted against defects in materials and workmanship for a period of one year after date of shipment. It is expressly understood and agreed that the limit of Kadant Johnson’s liability shall, at Kadant Johnson’s sole option, be the repair or resupply of a like quantity of non-defective product.