Installation Instructions
for Type ELSJ Rotary Joints With
ISSS Stationary Syphon

Follow your company’s safety procedures whenever working on Kadant Johnson products. Read all of the instructions before proceeding with the installation or repair.

Please refer to the Kadant Johnson assembly drawing for part identification. Assembly drawings are available on request from Kadant Johnson.

Lubricate all fasteners with anti-seize compound. Tighten all fasteners in a star pattern. Torque specifications are listed on the product assembly drawing and are available from Kadant Johnson.

STEP 1.
Remove all existing equipment down to the bare journal. Clean the journal gasket surfaces on the inside and outside of the journal.

STEP 2.
Assemble the internal spider (3) by inserting two syphon bushings (3A) into the end of the spider. Install a third syphon bushing into the bushing retaining ring (3B) and mount bushing retaining ring to the end of the internal spider. Secure into position using cap screws (3C). Tighten cap screws evenly to 20 ft-lbs (27 Nm).

STEP 3.
If an insulating sleeve (98) is being installed, install it following the insulating sleeve instructions. Inside the dryer, mount the internal spider (3) to the dryer head using a new gasket (7) and secure with cap screws (3D).

STEP 4.
Outside the dryer, install the journal flange (13) using a new gasket (11) and secure into position with socket head cap screws (12).

STEP 5.
Check to make sure that all debris has been removed from the piping and roll before installing the rotary joint. This will eliminate seal ring scoring and damage to the internal rotary joint parts which could cause unnecessary downtime and maintenance.

STEP 6.
Remove cap screws or hex nuts (2A). Remove head (2), head gasket (8), lockwashers (44), pressure plate (43), and split wedges (42) and set aside.

STEP 7.
Place a new copper gasket (8Q) into the recess of the journal flange (13). Slide the quick release nipple flange (5) over the nipple (4) with its taper facing outward. Place two split wedges (55) into the recess of the nipple and then slide the quick release flange over them. Position the rotary joint nipple into the recess of the journal flange. Align the holes in the quick release flange with the studs protruding from the journal flange and slide the quick release flange over them. Secure the quick release flange using hex nuts. Note: the quick release flange will not seat tightly against the face of the journal flange. When tight, there should be 1/8˝ to 3/16˝ (3 to 5 mm) space between the two flanges. Make sure the space is even around the circumference of the flanges. If the rotary joint has a threaded nipple connection for attachment to the roll, thread it into the journal and tighten.

STEP 8.
Inside the dryer, carefully slide the horizontal pipe (99) through the syphon bushings (3A) in the internal spider (3). Continue to slide the horizontal pipe through the journal and into the rotary joint until it passes through the wedge plate (40) and o-rings (41).
STEP 9.
Lubricate o-ring (10A) with silicone o-ring lube and place it into the o-ring groove in the face of the vertical condensate pipe flange (10B). Position the vertical condensate pipe flange against the horizontal pipe flange (10) and secure with cap screws (10C). Tighten cap screws evenly to 20 ft-lbs (27 Nm).

STEP 10.
Rotate the syphon assembly inside the dryer and make sure it clears all obstructions. Position the syphon pick-up fitting (1) at the bottom of the dryer.

STEP 11.
Set the gap between the bushing retaining ring (3B) and the horizontal pipe flange (10) to a minimum of 0.59˝ (15 mm).

STEP 12.
Secure syphon assembly into position by installing the split wedges (42) and pressure plate (43) into the wedge plate (40). Secure pressure plate with cap screws (45) and lockwashers (44) and tighten evenly to 5 ft-lbs (7 Nm). Tap pressure plate with a soft-faced hammer to seat the split wedges. Then tighten the cap screws evenly to 10 ft-lbs (14 Nm).

STEP 13.
Make sure the pick-up fitting (1) faces into the rotation of the dryer. Set the pick-up fitting clearance, between the bottom of the fitting and the dryer shell, to 0.25˝ (6 mm). Secure pick-up fitting by tightening the clamping bolts and nuts (1A) to 50 ft-lbs (68 Nm).

STEP 14.
Place head gasket (8) onto the head (2) and position the head to rotary joint assembly. Secure the head using cap screws or hex nuts (2A).

STEP 15.
Connect piping to rotary joint using Kadant Johnson flexible metal hose. The hose(s) should be long enough so there is no binding or tension to cause the rotary joint to move off the journal centerline. The rotary joint must be free to move outward to compensate for seal ring wear. See recommended flexible metal hose length chart in this instruction sheet.

IMPORTANT: Connect the hose directly to the rotary joint. Minimize the use of fittings and pipe, as the increased weight can affect the performance of the rotary joint. Provide suitable support for the pipe and fitting beyond the hose.

STEP 16.
Install anti-rotation rod through the anti-rotation hole in each rotary joint using Schedule 80 pipe. No more than two rotary joints should be joined with one rod. Secure the rod by drilling a hole for a cotter pin through the rod on the outer most side of each rotary joint lug. The rod will absorb the torque generated by the rotary joint and prevent premature hose failure by reducing stresses. See recommended anti-rotation sizing chart.

NOTE: Never apply oil or grease to Kadant Johnson rotary joints. The saturated steam, condensate, or liquid passing through it is the only lubrication required for the carbon-graphite parts.

NOTE: Minimize running Kadant Johnson rotary joints dry. Excessive seal wear may occur.

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.

### PROCEDURE FOR DETERMINING SEAL RING WEAR

Check the rotary joint regularly to determine seal ring (6) wear. As shown in Figure 1, the shoulder of the nipple will be exposed as seal ring wear occurs. Should the seal ring wear away completely, the metal nipple can wear into the wear plate and eventually through it. This will result in a significant leak and create a hazardous condition. Lack of attention may require replacement of the entire rotary joint instead of just the seal ring.

**STEP 1.**
Locate the shoulder that has been machined into the rotary joint nipple. See Figure 1.

**STEP 2.**
As the rotary joint moves, the shoulder on the rotary joint’s nipple is exposed.

**STEP 3.**
Refer to Table 1 and determine the maximum seal ring wear for your rotary joint size.

**STEP 4.**
When the exposed shoulder on the nipple is equal to the dimension in Step 3, the rotary joint should be rebuilt.

<table>
<thead>
<tr>
<th>Minimum Seal Ring Wear (R)</th>
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<tbody>
<tr>
<td>Seal Wear</td>
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<tr>
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</tr>
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<tr>
<td>3-1/2˝</td>
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**RECOMMENDED SIZES FOR ANTI-ROTATION RODS**

<table>
<thead>
<tr>
<th>Rotary Joint Number</th>
<th>Schedule 80 Pipe Size</th>
<th>Rod Diameter</th>
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<tr>
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<td>3600</td>
<td>1-1/4˝</td>
</tr>
<tr>
<td>3˝</td>
<td>3700</td>
<td>1˝</td>
</tr>
<tr>
<td>3-1/2˝</td>
<td>3750</td>
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<td>4˝</td>
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</tr>
<tr>
<td>4˝</td>
<td>3800 (new style)</td>
<td>1-1/4˝</td>
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**RECOMMENDED MINIMUM HOSE LENGTHS**

<table>
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<th>Hose Size</th>
<th>Minimum Length</th>
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</tr>
<tr>
<td>3˝</td>
<td>24˝</td>
</tr>
<tr>
<td>3-1/2˝</td>
<td>24˝</td>
</tr>
<tr>
<td>4˝</td>
<td>28˝</td>
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