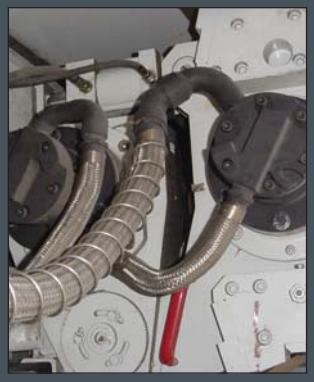
Corrugator Steam Joints

Advanced rotary joint technology

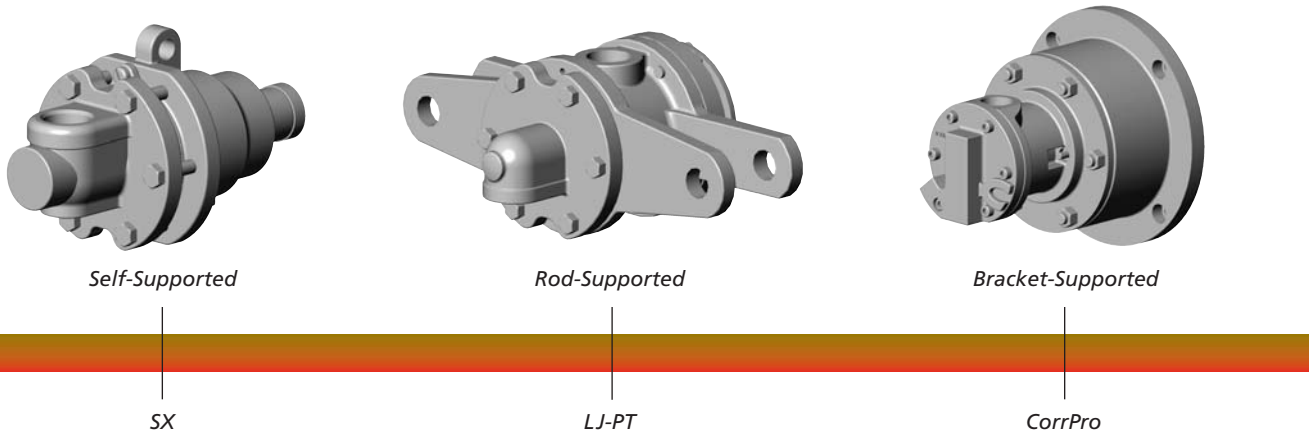
KADANT
AN ACCENT ON INNOVATION

Steam joint solutions for demanding applications.



Engineered reliability and performance.

Innovation



Rotary steam joints have been a part of the corrugating manufacturing process since the 1930s, when Kadant Johnson introduced the rotary pressure joint. Since then, Kadant Johnson has incorporated advances in sealing technology, rotary joint design, and materials to extend the application range of the conventional pressure-type rotary joint.

Kadant Johnson's advanced seal technology and extensive line of rotary joints provide increased reliability and performance for any corrugator application, even at operating speeds in excess of 1,500 fpm (460 mpm) and steam pressures up to 300 psig (20 bar).

Seal technology for demanding applications

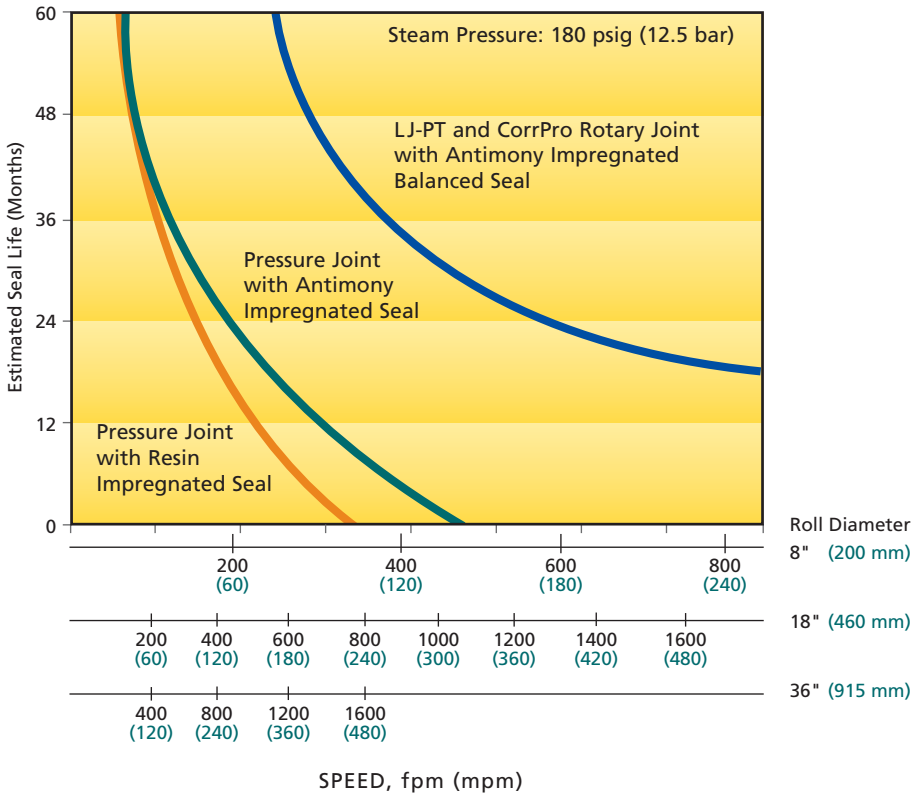
Until recently, the most popular sealing technology used in corrugating applications was the pressure-type joint, with resin-impregnated carbon graphite seal rings. Silver Streak™ antimony impregnated seal rings have since replaced the resin seals to allow higher speeds and steam pressures and longer seal ring life.

Balanced seal technology combined with advanced seal geometry offers maximum seal life, reduced maintenance downtime, and improved reliability at any speed.

Silver Streak antimony seal rings

Antimony impregnated seal rings have been proven to be superior to standard carbon graphite seal rings and are used by many corrugators today. Antimony seal rings tolerate the high temperature created by steam pressure and seal friction. Antimony impregnated seal rings can increase the operating life of pressure joints operating at high speeds.

Typical Life Expectancy of Kadant Johnson Seal Rings



Maximize Heat Transfer

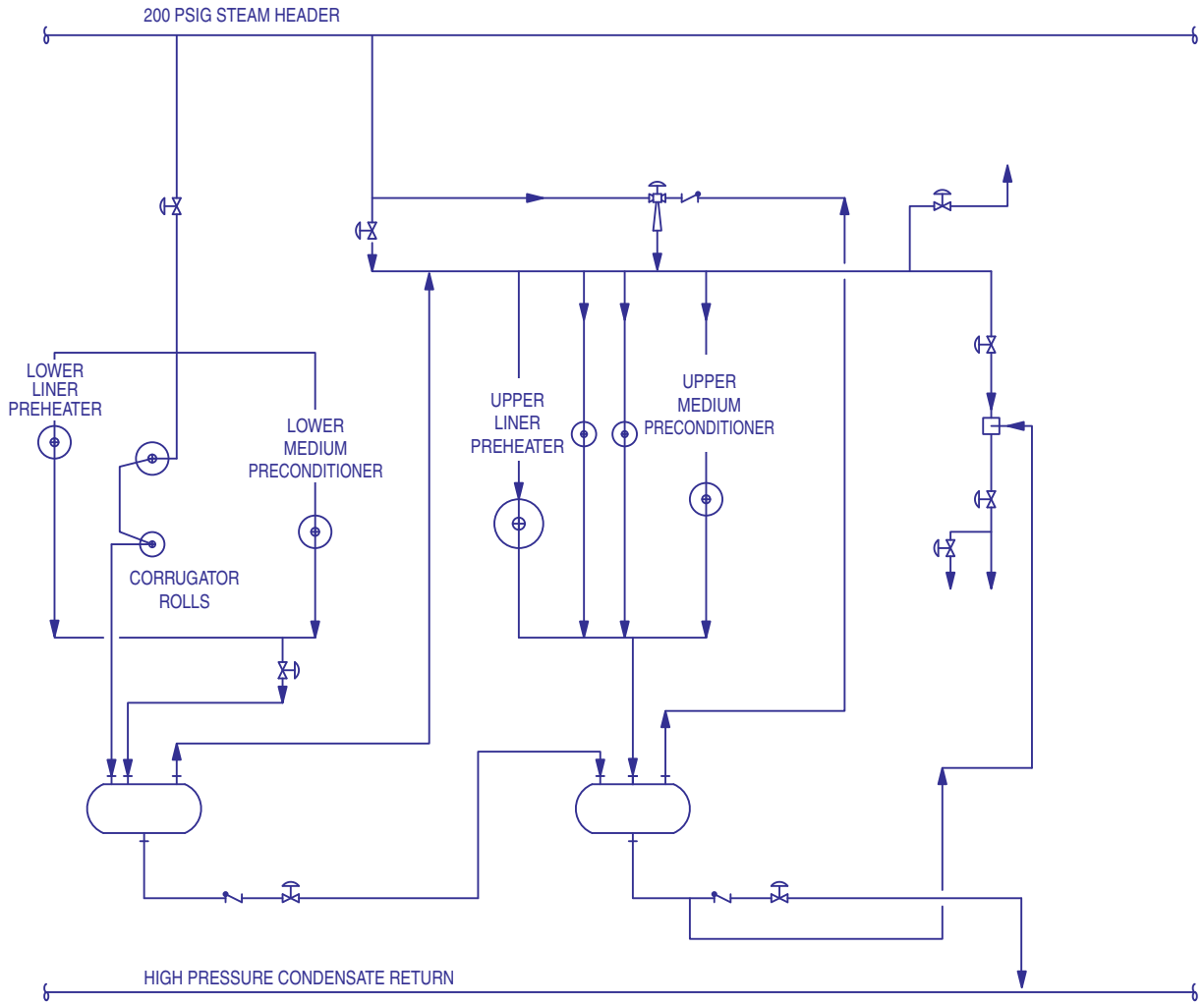
Steam system optimization

Modern steam systems for modern corrugators

Kadant Johnson's extensive research into condensate behavior and heat transfer in rotating rolls and corrugator hot plates has been combined with an intimate knowledge of steam joints, syphons, and the integration of these components with the steam system to provide a holistic steam distribution and handling system. As a result, we are able to achieve the highest possible heat transfer and temperature uniformity, with higher efficiency and less maintenance than a conventional steam trap system such that more heat is delivered to the corrugator and more board is produced, all with less energy.

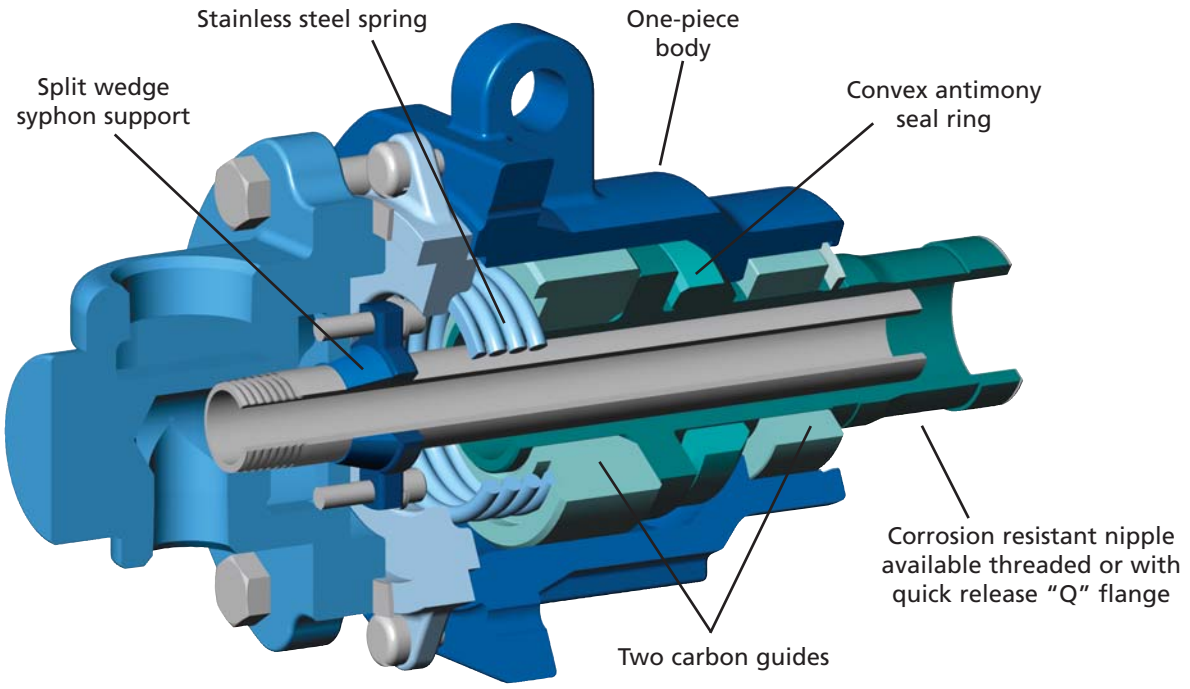
Unique features:

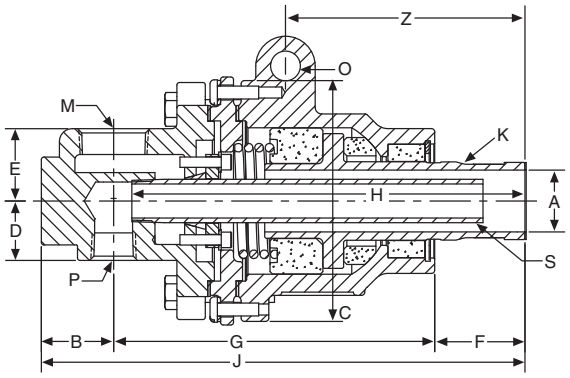
- The Kadant Johnson steam system is designed specifically for high-speed corrugator operation. Decades of experience and research on the transfer of heat from steam-heated rolls uniquely positions Kadant Johnson to address the problems other steam systems encounter when operating at high-speeds and varying heat loads.
- The Kadant Johnson steam system design is linked to the performance of all the system components including rotary joints, syphons, heat transfer bars, and thermocompressors.
- Kadant Johnson technicians and application engineers provide regular, on-site support for process evaluations, upgrades, installations, and systems optimization.



Example of a modern corrugator steam system flow schematic.

SX™ Rotary Joint





Ratings

Maximum Pressure:	300 psig (20 bar)
Maximum Temperature:	550°F (288°C)
Maximum Speed:	350 RPM

Recommended Options

- Split wedge syphon support
- Antimony impregnated seal ring
- Adjustable syphon device

Size (K)	M	P	S	A	B	C	D	E	F	G	H	J	O	Z	Units
1"	¾"	½"	¼", ⅜"	0.94	1.31	4.81	1.12	1.38	1.88	5.12	6.38	8.31	0.44	4.19	inches
				24	33	122	28	35	48	130	162	211	11	106	mm
1¼"	1"	½"	⅜", ½"	1.25	2.00	5.25	1.38	1.81	2.00	7.12	8.37	11.06	0.56	4.81	inches
				32	50	133	35	46	50	180	213	280	14	122	mm
1½"	1¼"	¾"	½", ¾"	1.50	1.75	6.56	1.44	1.75	2.19	7.81	9.50	11.75	0.72	5.81	inches
				38	45	167	36	45	55	198	240	298	18	148	mm
2"	1½"	¾"	½", ¾"	1.94	2.25	6.94	1.50	1.88	2.25	8.44	10.12	12.94	0.88	6.12	inches
				49	57	176	38	48	57	214	257	330	22	155	mm

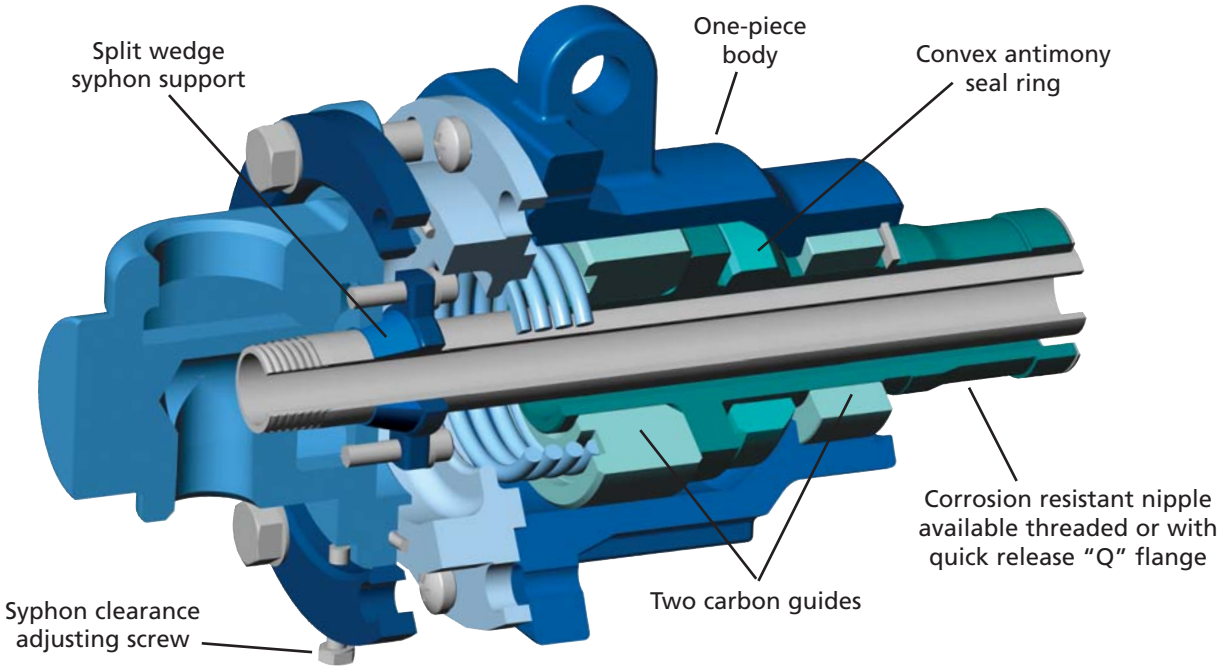
Features

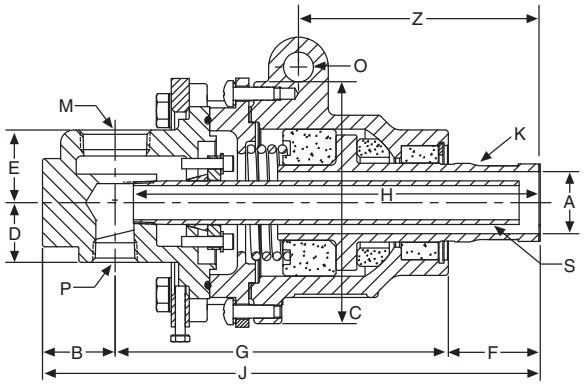
- Two internal support guides
- Optimized seal diameter
- Convex seal ring in compression
- Maximum carbon guide separation
- Adjustable syphon clearance option
- Seal wear indicator

Benefits

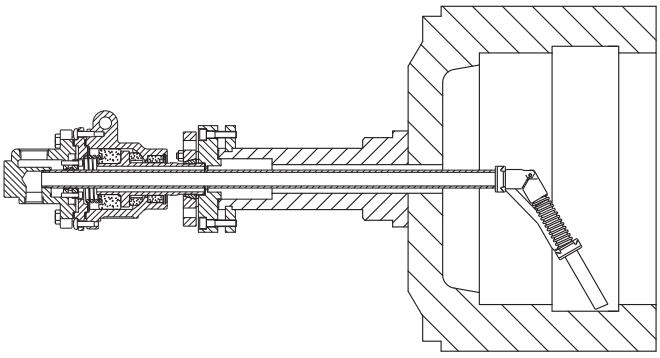
- Increased life and reliability
- Extended seal life, reduced maintenance
- Self-aligning seal, longer life
- Improved rotary joint and syphon support
- Repeatable syphon clearance adjustment
- On-machine measurement of seal wear

Adjustable syphon device

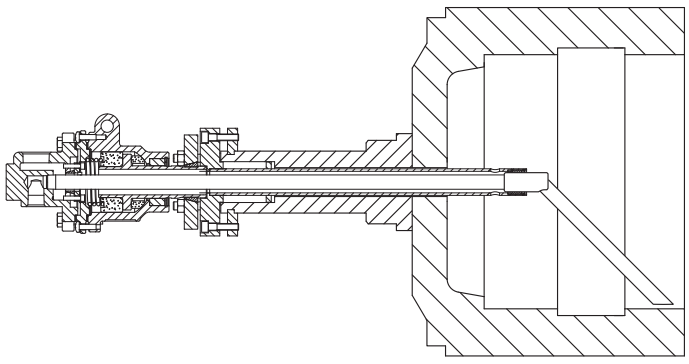




Size (K)	M	P	S	A	B	C	D	E	F	G	H	J	O	Z	Units
1½"	1¼"	¾"	½", ¾"	1.50	1.75	6.56	1.44	1.75	2.19	8.00	9.69	11.94	0.72	5.81	inches
				38	45	167	36	45	55	203	246	303	18	148	mm

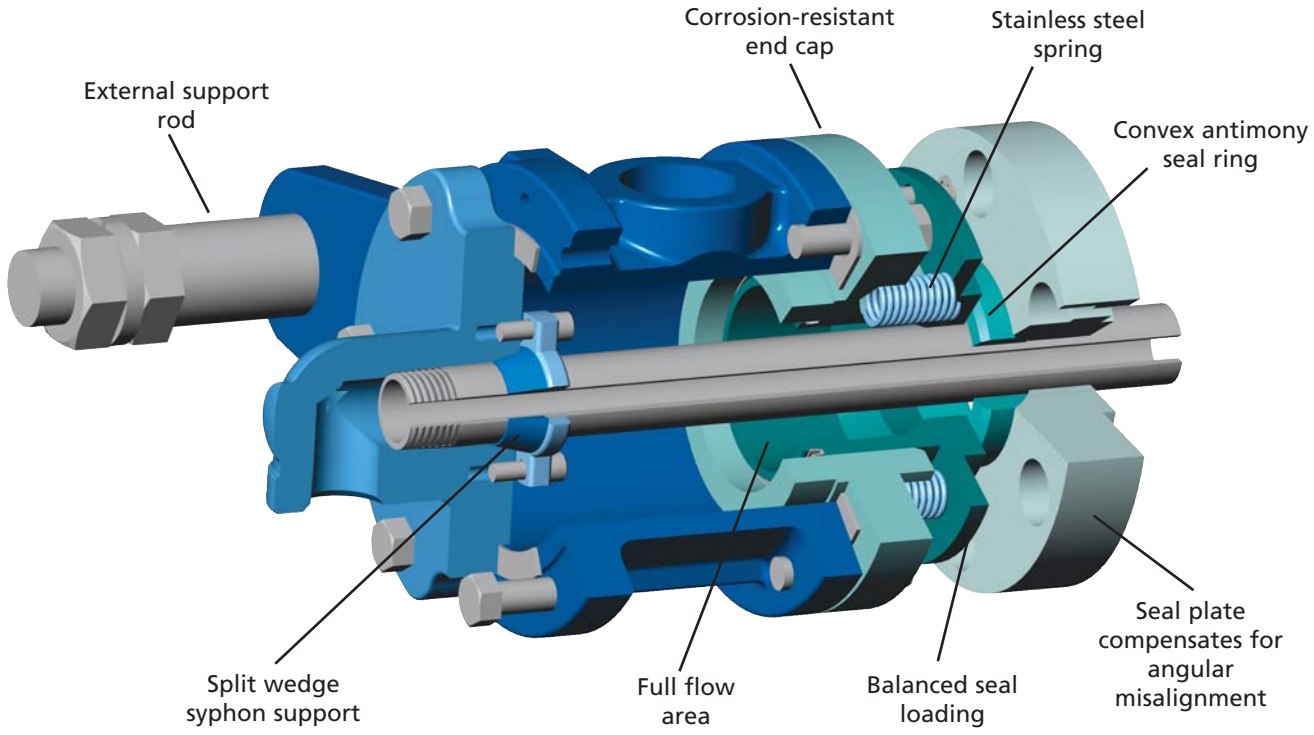


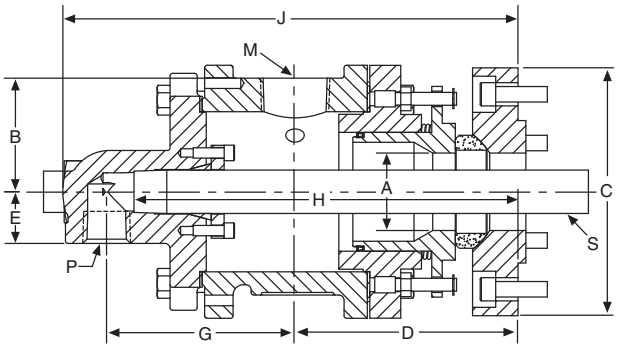
SXB rotary joint with spring-lock elbow



SXB rotary joint with 45° locking elbow and support tube

LJ-PT™ Rotary Joint





Ratings

Maximum Pressure:	225 psig (15 bar)
Maximum Temperature:	450°F (232°C)
Maximum Speed:	400 RPM

Size	M	P	S	A	B	C	D	E	G	H	J	Units
1½"	1¼"	¾"	¾"	1.88	2.75	6.12	5.38	1.25	4.56	9.56	11.06	inches
				48	70	155	137	32	116	243	280	mm

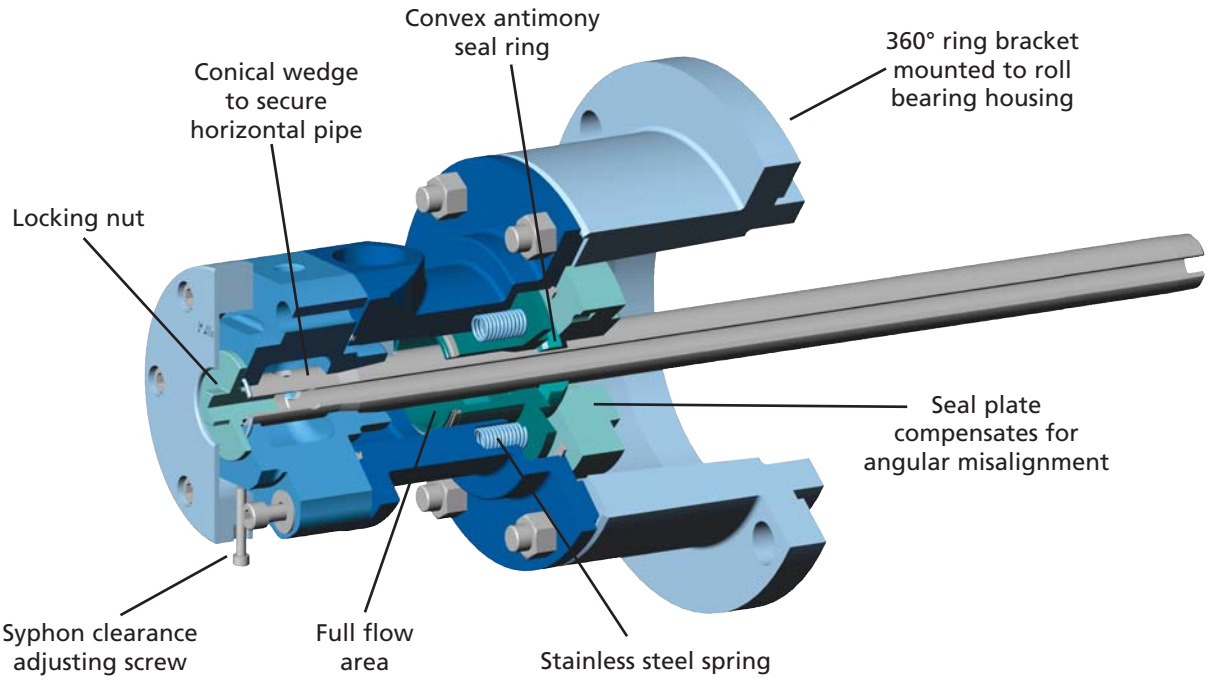
Features

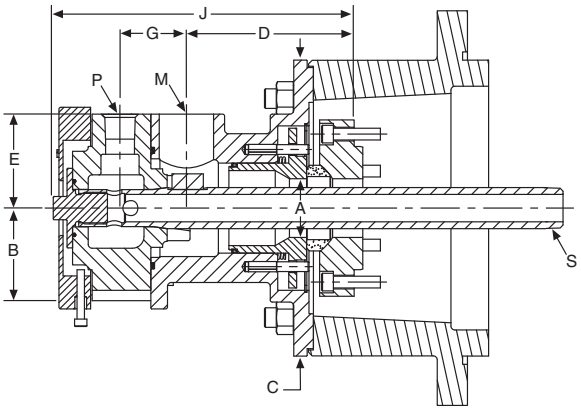
- Balanced seal design with AI technology
- External rod-supported, locked in place
- Seal wear indicator
- Retrofit type LJ™ rotary joints
- Adjustable syphon clearance option

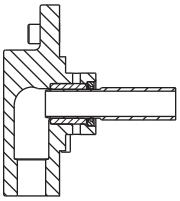
Benefits

- Minimized seal loading and seal wear
- Increased reliability at higher speeds
- On-machine measurement of seal wear
- No piping modifications, easy upgrade
- Repeatable syphon clearance adjustment

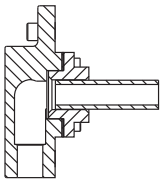
CorrPro™ Rotary Joint







Head with rotating pipe



Two-piece head with stationary pipe

Ratings

Maximum Pressure:	300 psig (20 bar)
Maximum Temperature:	450°F (232°C)
Maximum Speed:	600 RPM

Size	Syphon Type	M	P	S	A	B	C	D	E	G	J	Units
1½"	Stationary	1¼"	¾"	¾"	1.88	3.00	9.50	5.38	3.00	2.12	9.62	inches
					48	76	241	137	76	54	244	mm
1½"	Rotating	1¼"	¾"	¾", 1"	1.88	3.00	9.50	5.43	3.00	2.19	8.38	inches
					48	76	241	138	76	56	213	mm

Features

- Balanced seal design with AI technology
- Circular bracket mounting
- Seal wear indicator
- Adjustable syphon clearance
- Accommodates thermal expansion up to 12 mm

Benefits

- Minimized seal loading and seal wear
- Rigid support for safety and reliability
- On-machine measurement of seal wear
- Optimize heat transfer and temperature uniformity
- Designed for “wide roll” installations

Pivot Body™ syphon elbow

The Pivot Body syphon elbow allows a syphon pipe to be inserted into a roll through the journal and then pivot into place. Unlike conventional syphon elbows, the Pivot Body syphon elbow does not rely on a hinge pin to hold vertical and horizontal pipes together. Its patented pinless design provides improved performance and increased reliability compared to conventional syphon elbows. U.S. Patent No. 7,618,068.

Flexible hose

Flexible hose is engineered specifically for use as inlet and outlet connections to Kadant Johnson rotary joints. It is used to prevent pipe strains from creating stress on the rotating joint and enhances the rotating joint's built-in flexibility. Available in sizes from ¼" to 8" with threaded or flanged couplings.

Liqui-Mover® pumps

Liqui-Mover condensate pumps replace conventional centrifugal pumps and motors in returning condensate at high pressures. Both float and float-free condensate pump designs are available as complete skid-mounted assemblies or as stand-along pressure-powered pumps. Standard pressure rating is 150 psig, with higher pressure ratings available.

Desuperheaters

Desuperheaters are designed to reduce the temperature of superheated steam for optimal heat transfer and efficiency as well as reduced degradation of system components. Kadant Johnson desuperheaters are custom designed for each application and are available in various materials. The efficient geometry allows for direct installation into the steam pipeline with flanged connections.

Thermocompressors

Steam jet thermocompressors are designed to boost low-pressure steam by properly mixing high-pressure steam. With just three basic components: nozzle, mixing section, and diffuser, the Kadant Johnson high-efficiency thermocompressor is simple yet energy efficient.

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www.kadant.com

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