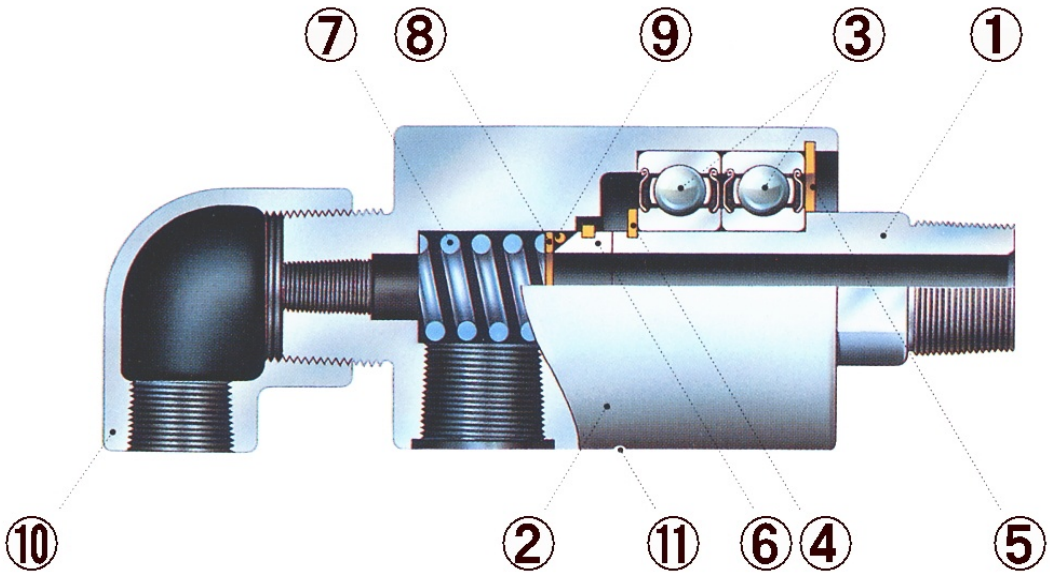
Pearl Rotary Joints

KC Series

FEATURES

1. Light in weight due to aluminum casing
2. Compact design and simple construction
3. Lubrication-free due to sealed ball bearings
4. Capable of high rotation speed

CONSTRUCTION



①ROTOR ②CASING(ALUMINUM) ③BALL BEARINGS ④SNAP RING ⑤SNAP RING ⑥SEAL RING
⑦SPRING ⑧WASHER ⑨O-RING ⑩ELBOW ⑪INSPECTION HOLE

SERVICE CONDITIONS

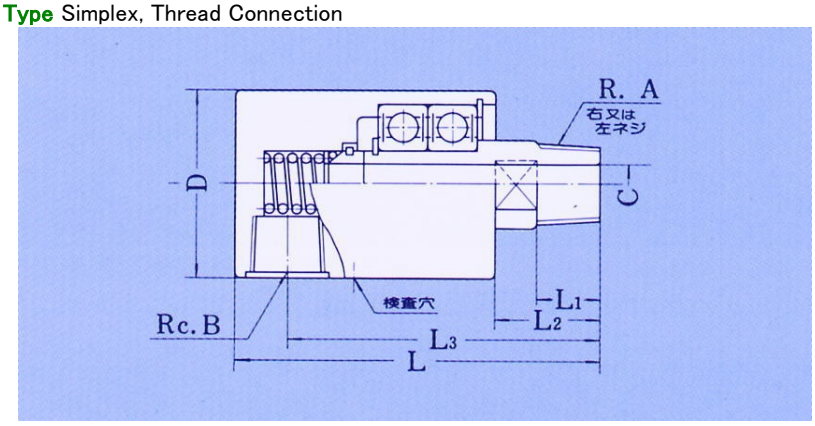
Fluid	Air, Gas, Water, Oil
Max. Temperature	100 degrees C
Max. Pressure	0.98MPa
Max. Rotation Speed	6A to 25A 1500min^{-1} 32A to 65A 1000min^{-1}

NOTE

Operation at Max.pressure combined with Max. speed should be avoided.
The joint should not run dry (without liquid). When serviced with air, mix oil mist into the air to avoid dry operation.

DIMENSIONS

KCL Type Simplex, Thread Connection



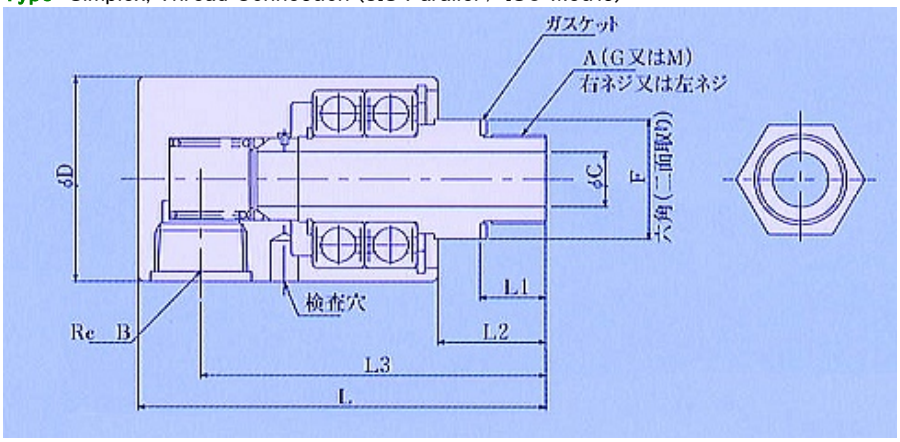
SIZE (A)	SIZE (B)	A	B	C	D	L1	L2	L3	L
6	1/8	1/8	1/8	4	34	10	20	60	70
8	1/4	1/4	1/4	6	40	14	24	75	85
10	3/8	3/8	3/8	9	46	19	29	82	94
15	1/2	1/2	1/2	12	54	21	33	94	109
20	3/4	3/4	3/4	16	60	22	34	102	120
25	1	1	1	20	70	23	36	108	130
32	11/4	11/4	11/4	30	90	28	43	131	158
40	11/2	11/2	11/2	35	95	28	43	135	165
50	2	2	2	48	124	30	55	164	203
65	21/2	21/2	21/2	56	148	40	78	206	256

KCL Type Connection A: Thread (R)

KCLF Type Connection A: Flange

The straight flow-path type (**KCS type**) is also available upon request.

SKCL Type Simplex, Thread Connection (JIS Parallel / ISO Metric)



JIS Parallel

SIZE (A)	SIZE (B)	A	B	C	D	F	L1	L2	L3	L
8	1/4	G1/4	Rc1/4	6	40	17	14	26	77	87
10	3/8	G3/8	Rc3/8	9	46	26	16	26	79	91
15	1/2	G1/2	Rc1/2	12	54	29	18	29	90	105
20	3/4	G3/4	Rc3/4	16	60	32	19	31	99	117
25	1	G1	Rc1	20	70	41	20	33	105	127

The rotor is supplied with a copper plate gasket.

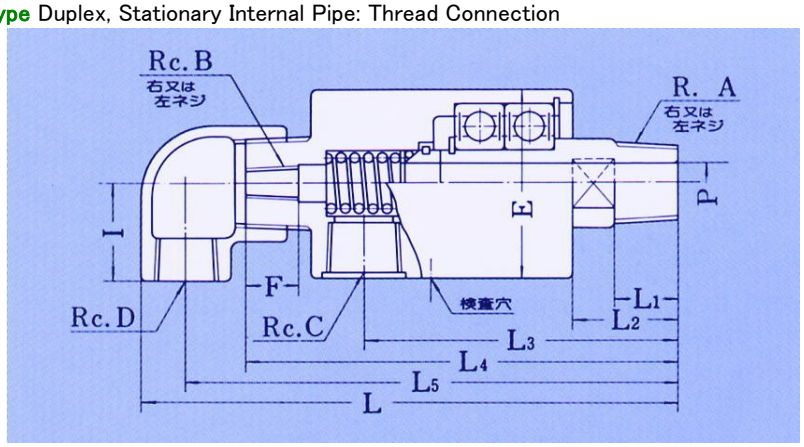
SKCL Type

ISO Metric

SIZE (A)	SIZE (B)	A	B	C	D	F	L1	L2	L3	L
8	1/4	M16x1.5	Rc1/4	6	40	17	14	26	77	87
10	3/8	M18x1.5	Rc3/8	9	46	26	16	26	79	91
15	1/2	M22x1.5	Rc1/2	12	54	29	18	29	90	105
20	3/4	M26x1.5	Rc3/4	16	60	32	19	31	99	117
25	1	M30x1.5	Rc1	20	70	41	20	33	105	127

The rotor is supplied with a copper plate gasket.

KC Type Duplex, Stationary Internal Pipe: Thread Connection



SIZE (A)	SIZE (B)	A	B	C	D	E	F	P	I	L1	L2	L3	L4	L5	L
15	1/2	1/2	1/8	1/2	3/8	54	13	12	28	21	33	94	127	145	156
20	3/4	3/4	(1/8),1/4	1/2	3/8	60	13	16	31	22	34	100	135	154	165
25	1	1	(1/4),3/8	3/4	1/2	70	15	20	38	23	36	108	149	170	184
32	11/4	11/4	1/2	1	3/4	90	20	30	43	28	43	127	173	198	215
40	11/2	11/2	(1/2),3/4	1	3/4	95	21	35	43	28	43	127	173	198	215
50	2	2	(3/4),1	11/2	11/2	124	25	48	62	30	55	160	230	267	297
65	21/2	21/2	11/4	2	11/2	148	30	56	62	40	78	198	270	307	337

KC Type Connection A: Thread (R), Connection B with Internal Pipe: Thread (Rc)
Please prepare the internal pipe by yourself. If you should place an order for the internal pipe with us, please be sure to specify the dimensions.

KCF type Connection A: Flange, Connection B with Internal Pipe: Thread (G)
The internal pipe retaining nut is supplied with the joint.
Please prepare the internal pipe by yourself. If you should place an order for the internal pipe with us, please be sure to specify the dimensions.
KCW Type, KCFW Type Rotational Internal Pipe Type is available upon request.
The internal pipe retaining nut is supplied with the joint.
Please prepare the internal pipe by yourself. If you should place an order for the internal pipe with us,

FLOW RATES

Type	Nominal Size (A) Out-In	Cross Sectional Area (cm^2)	Water Flow Rate (m^3/h)
KC	15-6	0.26-0.33	0.28
	20-6	1.14-0.33	0.35
	20-8	0.51-0.69	0.55
	25-8	1.65-0.69	0.74
	25-10	0.79-1.19	0.85
	32-10	4.72-1.19	1.28
	32-15	3.37-1.94	2.09
	40-15	5.92-1.94	2.09
	40-20	3.81-3.53	3.81
	50-20	12.3-3.53	3.81
	50-25	9.02-5.73	6.18
	65-32	10.3-9.46	10.2
KCL	6	0.12	0.13
	8	0.28	0.30
	10	0.63	0.68
	15	1.13	1.22
	20	2.01	2.17
	25	3.14	3.39
	32	7.07	7.63
	40	9.62	10.4
	50	18.1	19.5
	65	24.6	26.6

Calculation of water flow is based on the smaller area of passage.
Velocity of Water: 3m/sec
Air: normal state
For the dimension specifications of the internal pipes, refer to “SUS304 Pipe dimensions for internal pipes” below.

“SUS304 Pipe dimensions for internal pipes”

SIZE	Outer diameter / Thickness
6A	φ10.5xt2.0
8A	φ13.8xt2.2
10A	φ17.3xt2.5
15A	φ21.7xt3.0
20A	φ27.2xt3.0
25A	φ34.0xt3.5
32A	φ42.7xt4.0
40A	φ48.6xt4.0
50A	φ60.5xt4.0

WEIGHT CHART(Unit = 1kg/1 piece)

	6A	8A	10A	15A	20A	25A	32A	40A	50A	65A
KCL	0.16	0.25	0.37	0.60	0.85	1.2	2.3	2.6	5.3	9.6
KCLF	–	–	0.90	0.90	1.25	1.7	3.0	3.3	6.6	10.9
KC	–	–	–	0.75	1.05	1.5	2.6	2.9	6.5	10.6
KCF	–	–	–	1.05	1.45	2.0	3.3	3.6	7.8	11.9

Table of KC series

		Simplex			Duplex, Stationary Internal Pipe		
		Type	Name	Our Code	Type	Name	Our Code
Thread Connection	JIS Taper	KCL	RJ-KCL 6A LH	KC06000200	KC	RJ-KC 15A-6A LH	KC15060202
			RJ-KCL 6A RH	KC06000100		RJ-KC 15A-6A RH	KC15060101
			RJ-KCL 8A LH	KC08000200		RJ-KC 20A-6A LH	KC20060202
			RJ-KCL 8A RH	KC08000100		RJ-KC 20A-6A RH	KC20060101
			RJ-KCL 10A LH	KC10000200		RJ-KC 20A-8A LH	KC20080202
			RJ-KCL 10A RH	KC10000100		RJ-KC 20A-8A RH	KC20080101
			RJ-KCL 15A LH	KC15000200		RJ-KC 25A-8A LH	KC25080202
			RJ-KCL 15A RH	KC15000100		RJ-KC 25A-8A RH	KC25080101
			RJ-KCL 20A LH	KC20000200		RJ-KC 25A-10A LH	KC25100202
			RJ-KCL 20A RH	KC20000100		RJ-KC 25A-10A RH	KC25100101
			RJ-KCL 25A LH	KC25000200		RJ-KC 32A-15A LH	KC32150202
			RJ-KCL 25A RH	KC25000100		RJ-KC 32A-15A RH	KC32150101
			RJ-KCL 32A LH	KC32000200		RJ-KC 40A-15A LH	KC40150202
			RJ-KCL 32A RH	KC32000100		RJ-KC 40A-15A RH	KC40150101
			RJ-KCL 40A LH	KC40000200		RJ-KC 40A-20A LH	KC40200202
			RJ-KCL 40A RH	KC40000100		RJ-KC 40A-20A RH	KC40200101
			RJ-KCL 50A LH	KC50000200		RJ-KC 50A-20A LH	KC50200202
			RJ-KCL 50A RH	KC50000100		RJ-KC 50A-20A RH	KC50200101
			RJ-KCL 65A LH	KC65000200		RJ-KC 50A-25A LH	KC50250202
			RJ-KCL 65A RH	KC65000100		RJ-KC 50A-25A RH	KC50250101
						RJ-KC 65A-32A LH	KC65320202
						RJ-KC 65A-32A RH	KC65320101
	JIS Parallel	SKCL(G)	RJ-SKCL 10A LH	KC10001200		ask	
			RJ-SKCL 10A RH	KC10001100			
			RJ-SKCL 15A LH	KC15001200			
			RJ-SKCL 15A RH	KC15001100			
			RJ-SKCL 20A LH	KC20001200			
			RJ-SKCL 20A RH	KC20001100			
			RJ-SKCL 25A LH	KC25001200			
			RJ-SKCL 25A RH	KC25001100			
	ISO Metric	SKCL(M)	RJ-SKCL M18x1.5 LH	KC10002200			
			RJ-SKCL M18x1.5 RH	KC10002100			
			RJ-SKCL M22x1.5 LH	KC15002200			
			RJ-SKCL M22x1.5 RH	KC15002100			
			RJ-SKCL M26x1.5 LH	KC20002200			
			RJ-SKCL M26x1.5 RH	KC20002100			
			RJ-SKCL M30x1.5 LH	KC25002200			
			RJ-SKCL M30x1.5 RH	KC25002100			
Flange Connection		KCLF	RJ-KCLF 15A	KC15000000	KCF	RJ-KCF 15A-6A	KC15060011
			RJ-KCLF 20A	KC20000000		RJ-KCF 20A-6A	KC20060011
			RJ-KCLF 25A	KC25000000		RJ-KCF 20A-8A	KC20080011
			RJ-KCLF 32A	KC32000000		RJ-KCF 25A-10A	KC25100011
			RJ-KCLF 40A	KC40000000		RJ-KCF 25A-8A	KC25080011
			RJ-KCLF 50A	KC50000000		RJ-KCF 32A-15A	KC32150011
			RJ-KCLF 65A	KC65000000		RJ-KCF 40A-15A	KC40150011
						RJ-KCF 40A-20A	KC40200011
						RJ-KCF 50A-20A	KC50200011
						RJ-KCF 50A-25A	KC50250011
						RJ-KCF 65A-32A	KC65320011

Table of KC series

		Duplex, Rotationary Internal Pipe					
		Rotor Without Key Seat			Rotor With Key Seat		
		Type	Name	Our Code	Type	Name	Our Code
Thread Connection	JIS Taper	KCW	ask		KCW-2	ask	
	JIS Parallel		ask			ask	
	ISO Metric		ask			ask	
Flange Connection		KCFW	ask		KCFW-2	ask	

Straight Thru Type

		Simplex			
		Type	Name	Our Code	
Thread Connection	JIS Taper	KCS	ask		
	JIS Parallel		ask		
	ISO Metric		ask		
Flange Connection			ask		

Straight Thru Type ・・・ KCS

Precautions for Use

1. Use caution not to allow foreign matter to enter the sealed area.
2. When installing a joint that has a fluid leakage inspection hole, be sure to direct the inspection hole downward.
3. For joints having a fluid leakage inspection hole: When fluid leaks from the inspection hole, it is time to replace the joint.
4. For screw-in connection types: The screw must be allowed to tighten freely against the direction of rotation.
   The left-hand screw is used when the roll or drum rotates clockwise(when viewed from the rotary joint installation position);
   the right-hand screw is used when the roll or drum rotates counterclockwise.
5. Avoid installing piping that would cause the rotary joint to bear the weight of the valve, etc.
6. Use a flexible tube for connecting the rotary joint and piping.
   Do not bind the joint by connecting it directly to the steel pipe.
7. Do not give the rotation stopper on the rotary joint any excessive restraint for stopping the rotation of the joint.
8. Lubrication is required where ball bearings are used for high-temperature operation.
   Supply grease at regular intervals (the interval differs depending on the operation frequency).
9. Do not operate the rotary joint at the maximum rotation speed under the maximum allowable working pressure.
10. When supplying grease, remove the plug, and then top off grease.
11. The joint should not run dry (without liquid). When air service, mix oil mist into the air to avoid dry operation.
12. Do not leave the rotary joint at rest for long periods of time. This may cause fluid leaks due to the formation of rust.
13. In the event of any failure, repair or replace the rotary joint promptly.

⚠ Continued operation with fluid leakage may cause major accident.

Causes of Failure

A sign of failure often appears as a premature fluid leakage from the sealing part. This can be found by checking whether any fluid is leaking from the inspection hole in the main body or through the gap between the rotor and casing.
In many cases, the failed joint can be re-used by repairing or replacing certain parts. Please take appropriate measures before the internal parts are damaged.
Main causes of failure are as follows:

1) Natural wear and abnormal wear on sealing surface or bearing area
2) Undue restraint of joint body
・The rotation stopper is restrained.
3) The center of the machine is improperly aligned with the center of the rotary joint.
・The end face of the axis of rotation of the machine is not at a right angle to the shaft.
・The mating part (spigot) is improperly assembled.
・The center of the mounting screw of the machine to be connected to is incorrectly aligned.
・The screw direction is incorrect.
・In the case of flange connection, bolts are not evenly tightened.
(After installation, be sure to operate it at low speed and make sure that centering is achieved).
4) The piping ahead of the joint is improperly installed.
・The joint is connected to a steel pipe.
・The flexible tube does not have adequate flexibility.
・The bending direction of the flexible tube is inappropriate.
・The joint is directly subjected to the weight of a valve, trap or other part.
5) The internal pipe is not appropriate.
・The internal pipe and siphon pipe are too heavy and held just by the screw at the joint head.
・The internal pipe is off-center.
6) Use of improper product type.
・The diameter is too small.
・The working temperature is too high.
・The working pressure is too high.
・The number of RPMs is too high.
・Operated with an improper type of fluid.
・Operated with no fluid running.
7) Problem with flowing fluid
・Foreign matter remains in the flow path such as piping, roll, etc.
・Improper solvent medium is deposited in fluid.
・The design of the piping installation is not appropriate.
8) Others --- If a failure is detected, DO NOT disassemble the joint yourself. Contact us for repairs.

Frequently Asked Questions

Q: What is the difference between "RH/LH" (representing the screw direction of the rotor of the screw-in type rotary joint) and "R/L" (stamped on the rotary joint)?
A: There is no particular difference between "RH/LH" and "R/L". "RH" and "LH" are the abbreviation of "Right Hand" and "Left Hand", respectively.

Q: What is the difference between AC Series and NC Series?
A: They are both high-temperature types but with different structure. The AC Series is a lubricating type using a ball bearing, while the NC Series is a non-lubricating type using a carbon bearing in a spherical sealing structure.

Q: What should I do to let a screw tighten freely against the direction of rotation?
A: When installing the joint, use a screw whose direction is opposite to the direction of rotation of a rotating body to which the joint is connected.

Q: Fluid is leaking from the inspection hole.
A: It is time to repair or replace the joint.

Q: Is it possible to use RXH type to run steam as fluid?
A: The standard products of RXH type cannot be used to run steam as a fluid. For this purpose, use AC Series or NC Series.

Q: A leakage occurred shortly after installation.
A: Check installation and use conditions. Impurities in the fluid and improper installation are two common causes of many leakage failures.Use of an improper product type may also cause leakage.

When this is a new order to us

Please specify the following information in your order.

○If you are currently using our joint

A: In the case of a joint listed in this brochure
Model, size (and, in the case of duplex type, internal pipe size), and screw direction (when using a screw-in type)

B : In the case of a special product
Model, size, screw direction (when using a screw-in type)
Serial number, date of manufacture
Model names contain "OC", "ONC", "OKC", "RXS", etc.

For flange connection types, it is not necessary to specify the screw direction.
For screw-in types, please specify the screw direction.
Please select a left-hand screw when the roll or drum rotates clockwise (when viewed from the rotary joint installation position) and a right-hand screw when the roll or drum rotates counterclockwise.

○When this is a new order to us

1. Fluid for use, pressure, temperature, number of revolutions and description of the machine to be connected
2. Direction of rotation of the machine to be connected (Direction of rotation when viewed from the joint installation position)
3. Connection type: Screw-in connection (screw direction) or flange connection
4. Connection piping port: Screw-in connection or flange connection
5. Size
6. Structure: Simplex type or duplex type (with stationary internal pipe or rotational internal pipe)
7. Frequency of operation and working shifts
8. Working environment (e.g., use in clean room)
9. Other special requests

The contents of this catalog subject to change without notice.

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