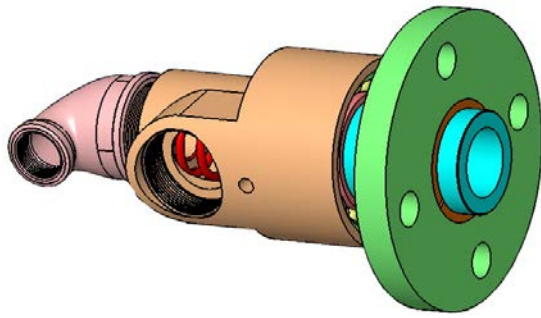


H Series Rotary Joint



3D diagram of HSGF40-20 rotary joint



Image of HSGF40-20 rotary joint

Operating Parameter

Maximum pressure: 1.0 MPa (10 bar)

Vacuum pressure: 50mmHg (7KPa)

Maximum temperature: 100°C

Maximum RPM: 1000 RPM

Circulating medium: water, oil, air, vacuum, hot water, hot oil, steam, etc.

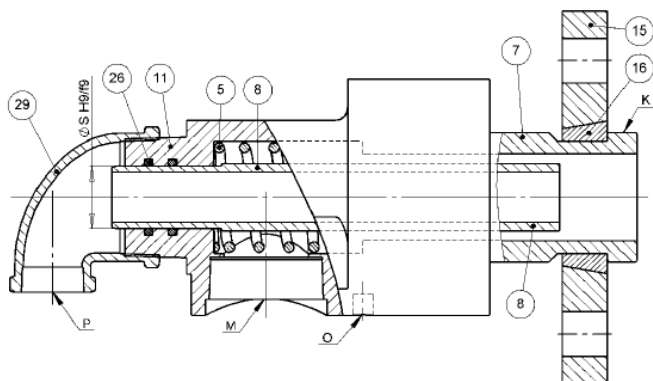
The maximum rated operating speed is 1000 RPM, and the actual recommended maximum speed does not exceed 500 RPM. If the operating speed exceeds 500 RPM, it is recommended to use LH type rotary joints, AK type rotary joints, K type rotary joints, etc



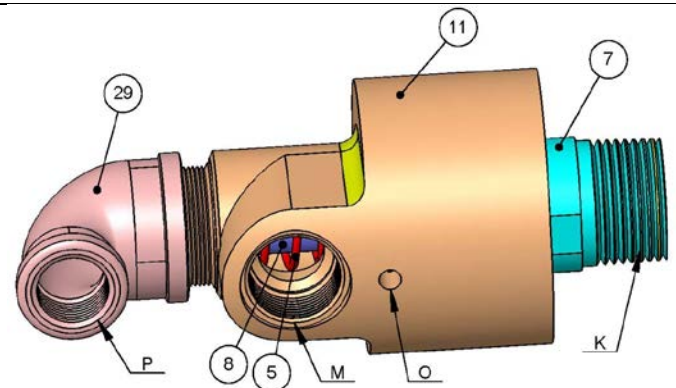
image of HSX40-20 rotary joint

Note: For applications with a pressure exceeding 10 bar, we recommend the LH, AK, and K type rotary joints. For high-speed water flow, the K type rotary joint is recommended. For high-speed gas flow, the AK type rotary joint is recommended.

For low-speed circulating water, we recommend the LH type rotary joint.



HSXF40-20, dual-channel, inner tube S rotary connection, outer tube K quick-change flange connection, H-type rotary joint



HSG25-10, dual-channel, inner tube S fixed connection, outer tube K threaded connection, H-type rotary joint

Part names: 5. Spring, 7. Outer tube (K) (stainless steel), 8. Inner tube (user-supplied), 11. Housing (copper), 15. Quick-change flange, 16. Half-split ring, 26. O-ring, 29. Elbow.

K - outer tube code, M - inlet code, P - outlet code, S - inner tube code, O - leakage observation hole, anti-rotation hole.

Note: The function of the leakage observation hole is to observe whether the rotary joint seal leaks during pressure testing of the product. If there is leakage, the test medium will flow out through this hole. During installation, it can also be used for rotation prevention.

Introduction to H-type rotary joint

1. A graphite sealing ring is used for sealing internally.

2. It is internally supported by two ball bearings, allowing for high-speed rotation, and is an internally supported rotary joint.

3. The built-in spring provides sealing pressure.

4. The outer tube K(7) is made of stainless steel, while the shell (11) is made of copper.

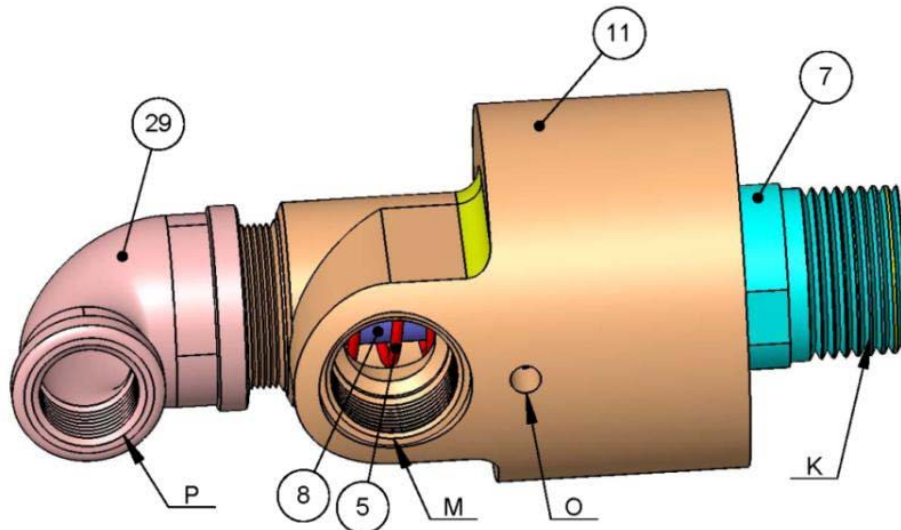
Due to the presence of frictional torque between the sealing surfaces during operation, an external anti-rotation rod is required to prevent rotation when installing the rotary joint. This can be achieved using an anti-rotation hole O, or relying

H Series Rotary Joint

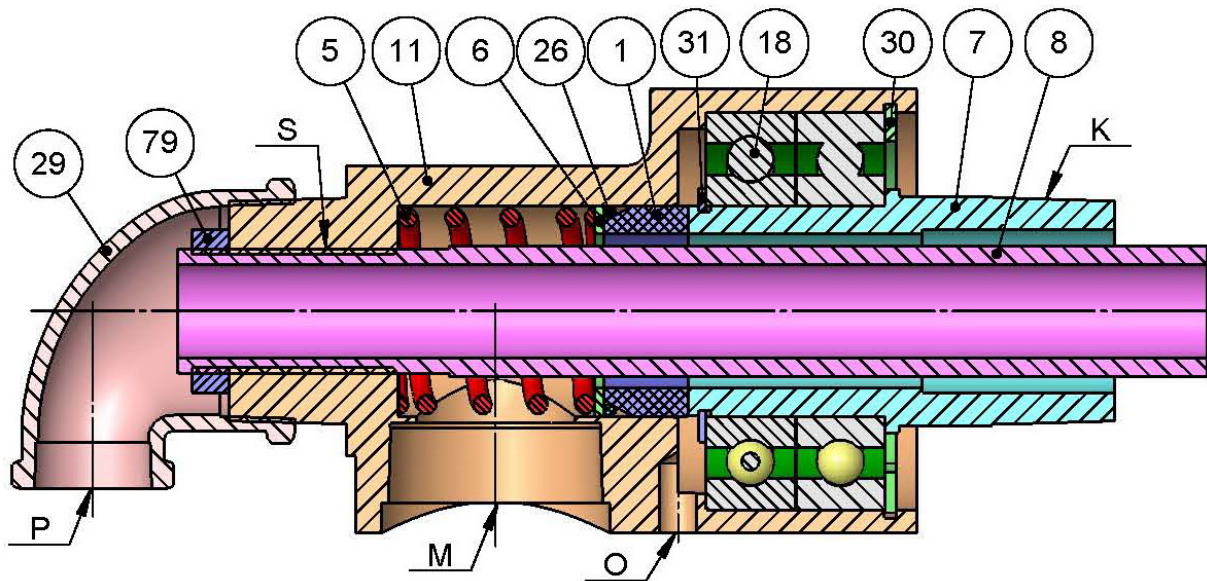
on the inlet M pipeline for hard pipe anti-rotation.

6. When connecting the rotary joint and the pipeline, it is recommended to use metal hoses or high-pressure rubber hoses for flexible connection.

7. The outer tube K of the rotary joint is connected to the rotating roller shaft head in the equipment, serving as the main moving component.



Internal structure and working principle of H-type rotary joint (internal compensation rotary joint)



HSG40-20, dual-channel, with the inner tube S fixed connection and the outer tube K threaded connection, and an H-type rotary joint

Part names: 1. Graphite sealing ring, 5. Spring, 6. Spring pad, 7. Outer tube (K), 8. Inner tube (to be provided by the user), 11. Housing, 18. Ball bearing, 26. O-ring, 29. Elbow, 30. Hole retainer, 31. Shaft retainer, 79. Lock nut for inner tube (to be provided by the user).

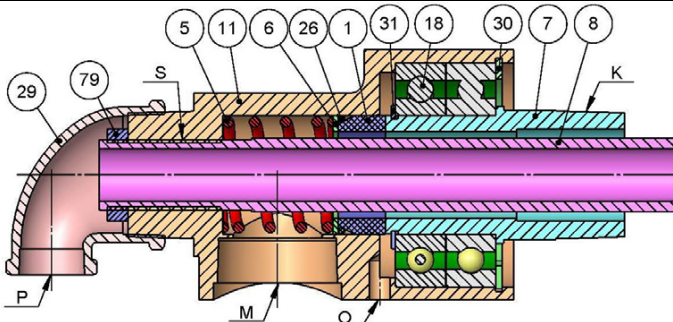
K - outer tube code, M - pipeline interface code, P - pipeline interface code, S - inner tube code, O - rotation stop hole code (leakage observation hole for the flowing medium, abbreviated as: observation hole).

Working principle of H-type rotary joint

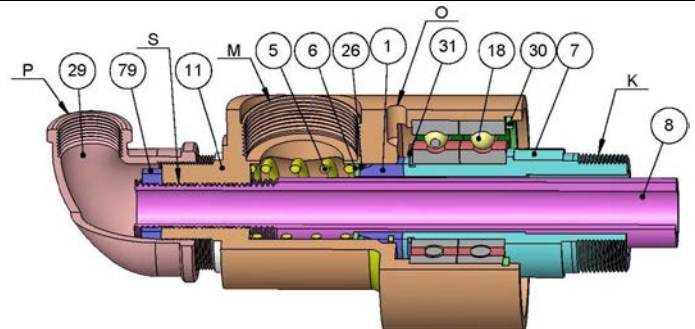
1. The outer tube (7) is connected to the roller shaft head of the equipment and rotates synchronously with the equipment, serving as the main moving component.
2. The shell (11) and elbow (29) are connected to the pipeline and fixed to it, serving as stationary components.
3. The graphite sealing ring (1) is the main sealing component, achieving dynamic sealing. The contact surface between the end face of the sealing ring (1) and the end face of the outer tube (7) forms another dynamic sealing surface (planar seal).
4. The spring (5) provides sealing pressure for the dynamic sealing surface.

H Series Rotary Joint

5. The ball bearing (18) is positioned between the outer tube and the housing, providing support for the rotary joint, also known as a self-supported rotary joint.
6. Due to the presence of frictional torque during the operation of the dynamic sealing friction pair, it is necessary to provide a rotation stop for the rotary joint. (Note: If there is no rotation stop, the rotary joint housing will rotate along with the outer tube.) A rotation stop hole (O) is provided on the housing observation hole for installing a rotation stop rod, or a metal hose can be directly used for connection and rotation support, or a hard pipe can be connected at port M for rotation stop.
7. Due to the wear of the graphite sealing ring (1) during operation, when the graphite sealing ring is worn, it automatically moves inside the housing under the action of spring pressure to compensate for the wear of the graphite sealing ring. Therefore, the connection between the rotary joint and the pipeline does not necessarily require a soft connection (flexible connection, using metal hoses or rubber hoses), but can also adopt a hard connection (steel pipe connection). The graphite sealing ring automatically moves inside the housing under the action of spring pressure to compensate for the wear of the sealing ring. This type of rotary joint is also known as an internally compensating rotary joint.
8. Dual-channel rotary joint: It enters from the pipeline interface (M port), passes through the annular gap between the outer tube (7) and the inner tube (8), and enters the equipment drum, forming an external channel. The S port inside the housing (11) is connected to the inner tube (8) via pipe threads, forming an internal channel that is connected to the pipeline interface (P port).

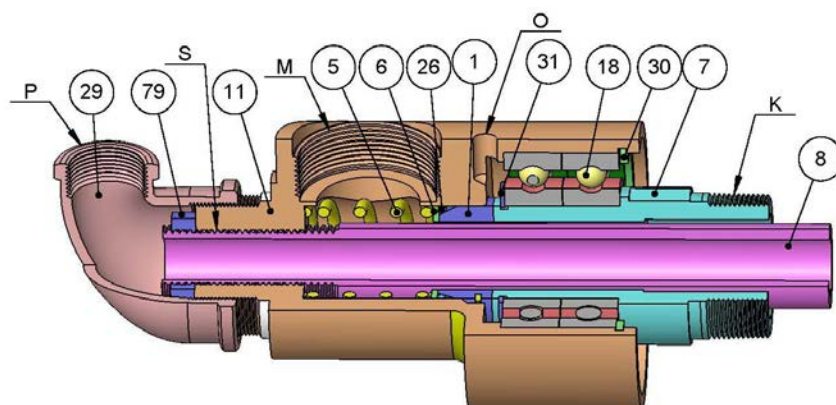
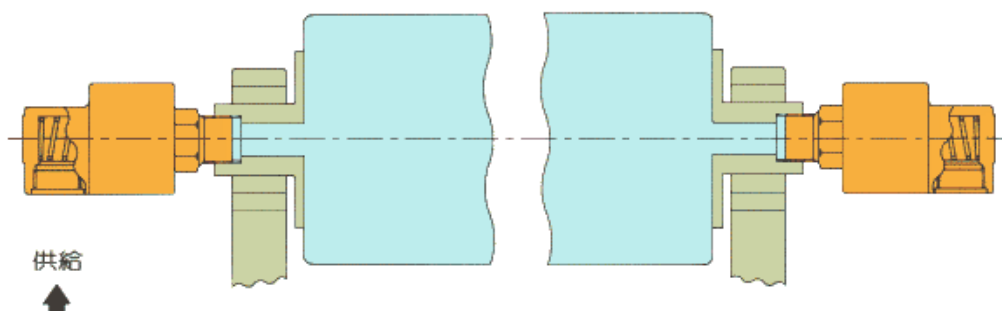


Internal structure of rotary joint



3D sectional view of rotary joint

Introduction to internally compensated rotary joints



3D view of HSG40-20 type, dual-channel, inner tube S fixed connection, outer tube K threaded connection, and H-type rotary joint

H Series Rotary Joint



Part names: 1. Graphite sealing ring, 5. Spring, 6. Spring pad, 7. Outer tube (K), 8. Inner tube (user-supplied), 11. Housing, 18. Ball bearing, 26. O-ring, 29. Elbow, 30. Hole retainer, 31. Shaft retainer, 79. Lock nut for inner tube (user-supplied). K - Outer tube code, M - Pipeline interface code, P - Pipeline interface code, S - Inner tube code, O - Rotation stop hole code (leakage observation hole for flow medium).

Installation requirements for internally compensated rotary joints

Connection with the pipeline

The internally compensated rotary joint has no special installation requirements. For its connection to the pipeline, both flexible connections (metal hose connections) and rigid connections (steel pipe connections) can be used. This is because it adopts a ball design

For bearing support, to prevent pipeline installation stress from being applied to the ball bearing and reducing its service life, it is generally recommended to use metal hoses for water passage, or alternatively, rubber hoses can also be recommended.

Anti-rotation connection

The observation hole (○) can be used as a stop hole, if the rotational speed of the rotary joint is very low (e.g., below 30 RPM).

Alternatively, a specialized anti-rotation device can be omitted, and the rotation can be stopped by relying on the metal hose installed in the pipeline.

Model of internally compensated rotary joint

The internally compensated rotary joints primarily include the following types: H-type rotary joint, LH-type rotary joint, D-type rotary joint, WD-type rotary joint, M-type rotary joint, R-type rotary joint, WR-type rotary joint, and T-type rotary joint

Type A rotary joint, Type TF rotary joint, Type A rotary joint, Type B rotary joint, Type C rotary joint, Type F rotary joint, Type AK rotary joint, Type K rotary joint, Type P rotary joint, Type AP rotary joint, Type Y rotary joint

Type rotary joint, TD type rotary joint, Z type rotary joint, ZA type rotary joint, ZC type rotary joint, ZP type rotary joint, ATF type rotary joint, ADF type rotary joint, HSM type rotary joint, HSP type

Rotary joints, including UD type rotary joints, EH type rotary joints, ODF type rotary joints, W type rotary joints, and other models, are mostly of the internally compensating type.

H-Type Rotary Joint Model & Specification Description

Designation Method for H-Type Rotary Joint Model

H	D			25		→	HD25
H	D		F	25		→	HDF25
H	S	G		25	- 10	→	HSG25-10
H	S	G	F	25	- 10	→	HSGF25-10
H	S	X		25	- 10	→	HSX25-10
H	S	X	F	25	- 10	→	HSXF25-10
└─ Nominal diameter of the inner pipe of a double-passage rotary joint, in mm (not applicable to single-passage joints).							
└─ Nominal diameter of the outer pipe of the rotary joint, in mm.							
└─ Outer pipe connection: F = quick-change flange connection; not marked for threaded connection.							
└─ Inner pipe connection of double-passage joints: G = fixed inner pipe, X = rotary inner pipe.							
└─ Number of passages: S = double-passage joint, D = single-passage joint.							
└─ H stands for H-type rotary joint.							

Specifications of H-Type Rotary Joint Model

- The specifications of H-type rotary joints are as follows: DN6 (1/8"), DN8 (1/4"), DN10 (3/8"), DN15 (1/2"), DN20 (3/4"), DN25 (1"), DN32 (1-1/4"), DN40 (1-1/2"), DN50 (2"), DN65 (2-1/2"), DN80 (3"), DN90 (3-1/2"). DN is the abbreviation of Nominal Diameter, which refers to the nominal diameter. The nominal specifications outside the brackets correspond to the inch specifications inside the brackets. The specification of a rotary joint is expressed by the nominal diameter of the outer pipe K.
- If the thread-connected outer pipe and inner pipe have rotation-direction requirements, they may be specified directly: left-hand rotation is marked as LH, and right-hand rotation is marked as RH.
- Threaded connections adopt standard inch pipe threads with a thread angle of 55°. The outer pipe K has an external thread; the M port has an internal thread; the P port internal thread is a BSPT inch taper pipe thread; the S port inner-pipe connection thread is a BSP inch cylindrical pipe thread.
- Non-standard products and specifications not listed in this manual can be customized. For specifications of DN65 (2-1/2") and above, the HK-type rotary joint is recommended.

Note: H-type rotary joint, where H stands for copper alloy rotary joint.

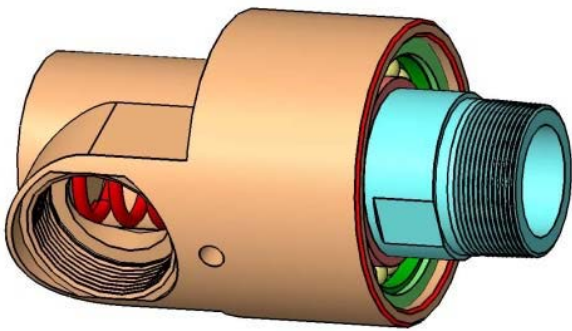
H Series Rotary Joint

Model and specification table of H-type rotary joint

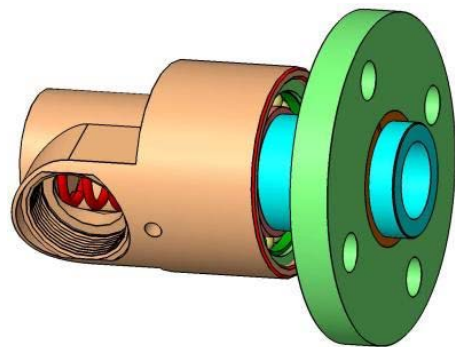
Size		Model					
mm	inch	HD	HDF	HSG	HSGF	HSX	HSXF
6	1/8"	HD6					
8	1/4"	HD8					
10	3/8"	HD10	HDF10				
15	1/2"	HD15	HDF15	HSG15-6	HSGF15-6	HSX15-6	HSXF15-6
20	3/4"	HD20	HDF20	HSG20-8	HSGF20-8	HSX20-8	HSXF20-8
25	1"	HD25	HDF25	HSG25-10	HSGF25-10	HSX25-10	HSXF25-10
32	1-1/4"	HD32	HDF32	HSG32-15	HSGF32-15	HSX32-15	HSXF32-15
40	1-1/2"	HD40	HDF40	HSG40-20	HSGF40-20	HSX40-20	HSXF40-20
50	2"	HD50	HDF50	HSG50-25	HSGF50-25	HSX50-25	HSXF50-25
65	2-1/2"	HD65	HDF65	HSG65-32	HSGF65-32	HSX65-32	HSXF65-32
80	3"	HD80	HDF80	HSG80-50	HSGF80-50	HSX80-50	HSXF80-50
90	3-1/2"	HD90	HDF90	HSG90-50	HSGF90-50	HSX90-50	HSXF90-50

The model specification does not include the thread rotation direction.

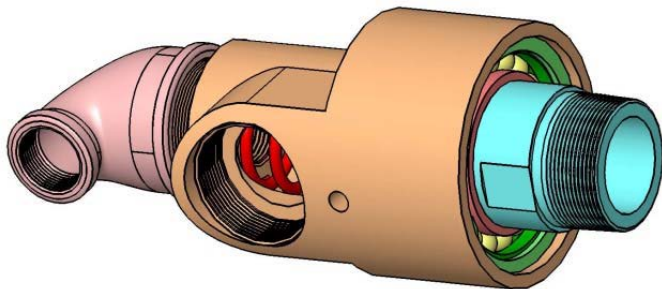
Appearance of H-type rotary joint



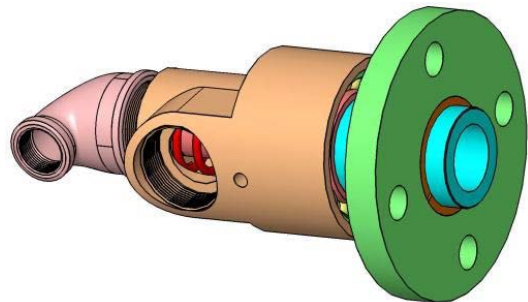
HD type, single-channel, external K thread connection



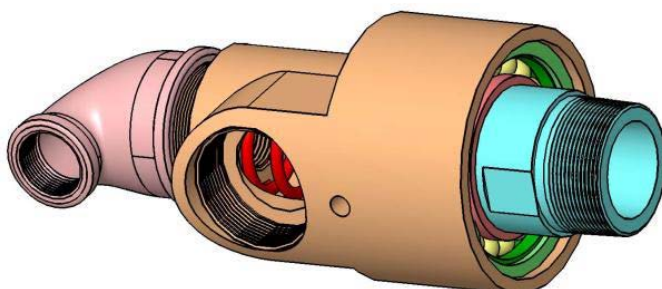
HDF type, single-channel, flange connection type



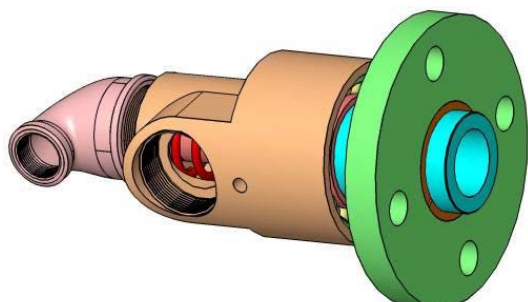
HSG type, dual-channel, inner tube S , outer tube K threaded connection



HSGF type, dual-channel, inner tube S, outer tube K, flange connection type



HSX type, dual-channel, innertube S, outertube K, threaded connection



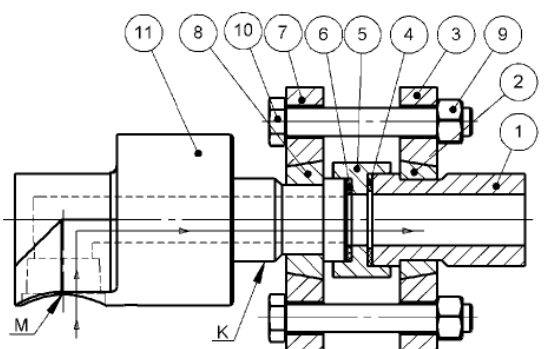
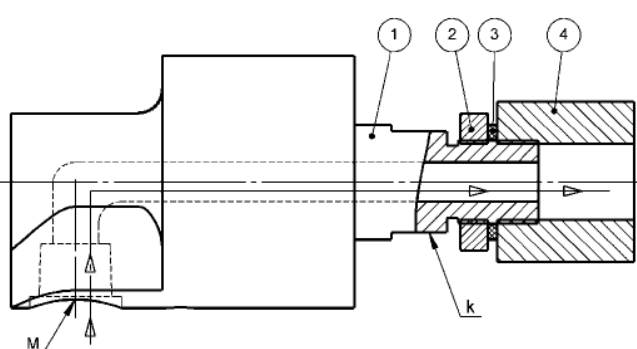
HSXF type, dual-channel, innertube S, outertube K ,flange connection

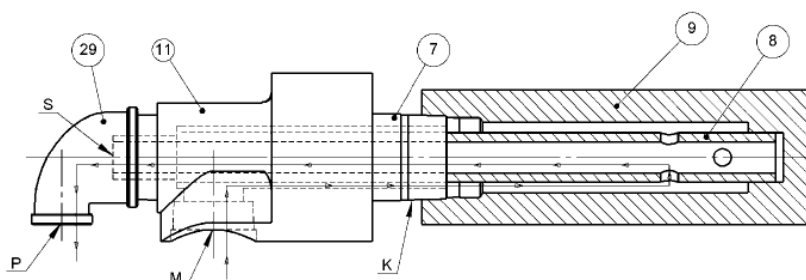
H Series Rotary Joint

Order Instructions for Rotary Joints:

1. To order an H-type rotary joint, please provide the complete model specification and thread rotation direction (unless no rotation direction is required). The rotation direction of the threaded outer tube and threaded fixed inner tube should be opposite to the rotation direction of the roller, so that the threads become tighter as they are screwed. For the H-type rotary joint, the shell is made of copper and the outer tube is made of stainless steel, which is the standard configuration.
2. The threaded connection of the H-type rotary joint adopts BSPT threads.
(The external pipe is connected to the equipment, with external threads marked as R, such as R1-1/2, and internal threads marked as Rc, such as Rc1-1/2) and BSP threads.
(The inner tube is connected to the rotary joint, marked the notation is G, such as G1/2.)
BSPT thread refers to the British taper pipe thread (taper thread) with a thread profile angle of 55 degrees. BSP thread refers to the British straight pipe thread (straight thread) with a thread profile angle of 55 degrees.
3. Circulating steam requires customization, with a maximum temperature of 200°C.
Circulating hot oil requires customization, with a maximum temperature of 260°C.
Circulating hot water requires customization, with a maximum temperature of 200°C
4. For circulating water, LH type rotary joints are recommended. Compared with H-type rotary joints, LH type rotary joints have more stable performance, longer service life, and higher operating pressure.

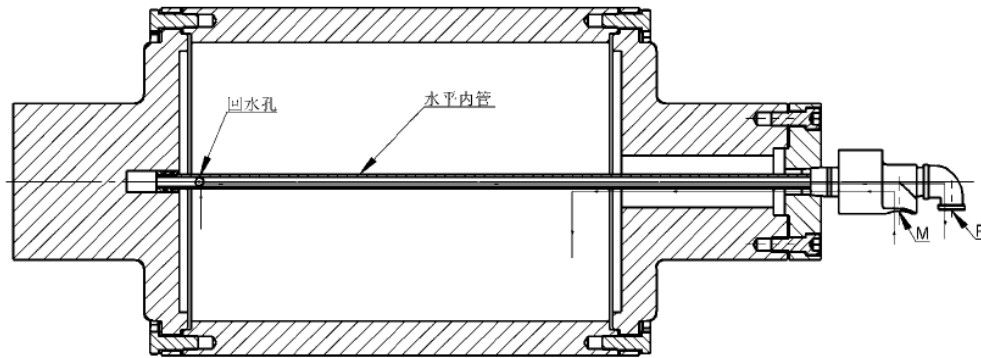
Installation Recommendations:

	
Application legend for HDF type single pass, outer pipe K-flange connection rotary joint and equipment shaft head rotation or back and forth swing. When swinging back and forth, the requirement for rotation direction can be disregarded. The flow direction shown in the diagram can be reversed. Part name: 1. Equipment shaft head, 2. Half ring, 3. Quick change flange, 4. Gasket, 5. Transition sleeve, 6. Gasket, 7. Quick change flange, 8. Half ring, 9. Nut, 10 bolt, 11. Rotary joint.	Application diagram of HD type single pass, outer tube K-threaded connection rotary joint and equipment shaft head swinging back and forth Example. Use a locking nut (2) to lock the outer tube K (which uses cylindrical threads), and the roller (4) moves back and forth When swinging, the requirement for thread rotation direction can be disregarded. The flow direction shown in the diagram can be reversed. Part name: 1. Rotary joint, 2. Lock nut, 3. Sealing washer, 4. Equipment shaft head



The above figure shows the HSX type dual path, outer tube K-threaded connection rotary joint and roller (9). Cooling water enters the roller, cooling roller (9) and bearing through the M port of the housing (11), and then returns through the inner tube (8).

The water hole enters the rotary joint through the horizontal inner pipe (8) and discharged through the P port of the elbow (29). The flow direction can also be reversed.



The above picture shows an example of HSG type dual path, outer pipe K-threaded connection rotary joint and roller installation. Cooling water enters the rollers, cools the rollers and bearings through the M port of the rotary joint, and then passes through the return hole of the inner pipe and the horizontal inner pipe

Enter the rotary joint and discharge through the elbow P port. The flow direction can also be reversed. Drill many small holes evenly on the horizontal inner pipe as a diversion pipe to evenly cool the drum.

External pipe K thread size table

		BSPT British Pipe Thread Description 1. The thread profile angle of British pipes is 55 °. 2. The thread taper is 1 ° 47 ' 28 " , with a small end diameter of D1 and a large end diameter of D2. 3. The reference length L corresponds to the reference major diameter D of the thread, which is the size of the BSP cylindrical thread. 4. BSPT is a tapered thread with a taper angle. 5. BSP threads are cylindrical threads, straight threads, and have no taper. 6. Inch thread specification, corresponding to nominal diameter and outer diameter OD of water and gas pipes, for reference in selecting specifications. 7. BSPT is the abbreviation for British Standard Pipe Thread in English. 8. BSP can be understood as the abbreviation for British Straight Pipe thread in English.										

Size	Dia	Threads per Inch	Pitch	Min. L	Max. L	Reference Length	Reference Diameter	Reference Pitch Dia	Reference Minor Dia	Small End Dia	Large End Dia	Water-Gas Pipe O.D.
inch	<i>n</i>		<i>P</i>			<i>L</i>	<i>D</i>			<i>D1</i>	<i>D2</i>	<i>D0</i>
1/8"	6	28	0.907	5.6	7.4	4	9.728	9.147	8.566	9.478	9.941	10
1/4"	8	19	1.337	8.4	11	6	13.157	12.301	11.445	12.782	13.47	13.5
3/8"	10	19	1.337	8.8	11.4	6.4	16.662	15.806	14.95	16.262	16.975	17
1/2"	15	14	1.814	11.4	15	8.2	20.955	19.793	18.631	20.443	21.38	21.25
3/4"	20	14	1.814	12.7	16.3	9.5	26.441	25.279	24.117	25.847	26.866	26.75
1"	25	11	2.309	14.5	19.1	10.4	33.249	31.77	30.291	32.599	33.793	33.5
1-1/4"	32	11	2.309	16.8	21.4	12.7	41.91	40.431	38.952	41.116	42.454	42.25
1-1/2"	40	11	2.309	16.8	21.4	12.7	47.803	46.324	44.845	47.009	48.347	48
2"	50	11	2.309	21.1	25.7	15.9	59.614	58.135	56.656	58.62	60.227	60
2-1/2"	65	11	2.309	23.2	30.2	17.5	75.184	73.705	72.226	74.09	75.978	75.5
3"	80	11	2.309	26.3	33.3	20.6	87.884	86.405	84.926	86.597	88.678	88.5
4"	100	11	2.309	32.3	39.3	25.4	113.03	111.551	110.072	111.443	113.259	114
5"	125	11	2.309	36.6	43.6	28.6	138.43	136.951	135.472	136.643	139.368	140
6"	150	11	2.309	36.6	43.6	28.6	163.83	162.351	160.872	162.043	164.768	165