

# maier

## **Rotary Joints**

*Solutions for safe transfer of fluids*



**Rotary Joints for Machine Tools**

## Rotary Joints for Machine Tools

Rotary joints are required in practically all industries to transfer fluids from stationary to rotating machine parts. Some applications are simple to solve with standard rotary joint solutions. However, in more complex applications, such as machine tools, the performance of the machine depends to a large degree on the correct selection of the rotary joint. Maier can offer a complete range of rotary joints and sealing systems to suit individual customer specifications. Our comprehensive industry experience and ability to select the optimum solution make Maier your partner of choice for all your rotary joint requirements.

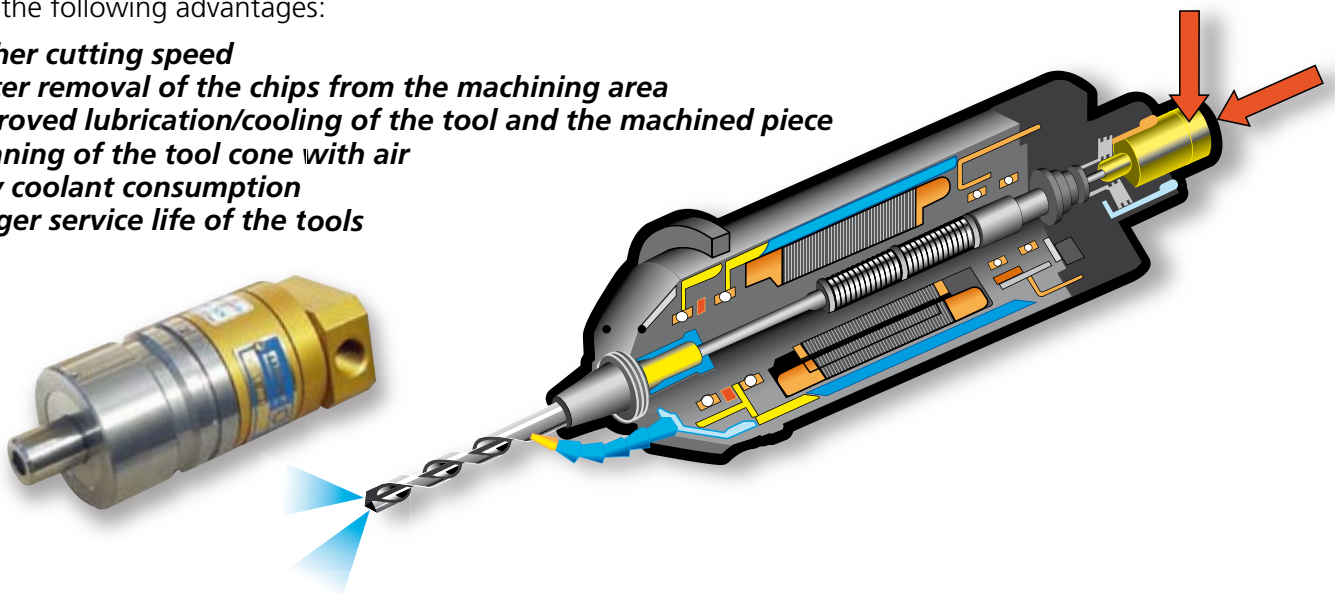
This catalogue introduces the different designs and systems used in machine tools, with a special focus on rotary joints designed for cooling the tool tips. The catalog covers our basic series for coolant such as a **K** and **KL** including accessories as well as installation instructions. In addition, you will find information on rotary joints for other machine applications such as rotating tables, rotating cylinders, etc. Drawings and dimension tables are also included for our **MPV** and **MP** series rotary joints. Basic information is provided on **Combijoints** and **slip rings**.

### Cooling through the electro-spindle

Traditionally, tool tips have been cooled by supplying coolant from an external source. However, in processes such as milling, this method of cooling does not provide optimum performance and decreases the service life of the tools, particularly in the case of high speeds of rotation.

State-of-the-art machine tools use systems that supply cooling fluid through the electro-spindle. This solution offers the following advantages:

- **Higher cutting speed**
- **Better removal of the chips from the machining area**
- **Improved lubrication/cooling of the tool and the machined piece**
- **Cleaning of the tool cone with air**
- **Low coolant consumption**
- **Longer service life of the tools**



### Selection of the rotary joint for coolant

Supplying the coolant through the electro-spindle requires a high quality rotary joint. Important parameters for selecting the correct rotary joint comprise:

- **Fluid to transfer (i.e. coolant, minimal quantity lubrication, air, cutting oil)**
- **Speed of the machine**
- **Pressure and temperature**
- **Type of connection to the machine: threaded rotor, self-supporting plug-in rotor or flange connection**
- **Degree of filtration required for the fluid**

In addition to these parameters, the footprint available for mounting the rotary joint must also be considered. The next step is to select whether completely self-supported joints (with bearings) or a bearingless solution best meets your requirements. Rotary joints with rolling bearings allow for easy installation onto the spindle and they are supplied fully tested to the agreed specifications by the manufacturer. The bearingless version has smaller dimensions but mounting is more complex. This version excels with fewer vibrations and can be operated at higher speeds. Since it is a combination of components provided by the customer and components supplied by the manufacturer of the rotary joint, installation requires special attention.

## Application data

Series:	<b>KL</b>		<b>K</b>		<b>MPV</b>	<b>MP</b>
Design:	Closed seal without <b>TESS</b> KL with <b>TESS</b> KLT		Closed seal without <b>TESS</b> K with <b>TESS</b> KT		Controlled leakage	Radial contact seals
Nominal Diameter DN mm:	06	06	07...10	07...10	06 <small>Greater nominal diameters available</small>	06...25
Fluid:	Coolant	Coolant, MQL, air	Coolant	Coolant, MQL, air	Oil <sup>2</sup>	Oil, water, air, gas, vacuum
Pressure PN max bar:	70 <sup>1</sup>	70	80 <sup>1</sup>	80 <sup>1</sup> 150 <sup>1</sup> } +pressure peaks	200 <sup>3</sup>	Oil: 200 <sup>3</sup> Gas, air, water: 10
Temperature max °C:	50	50	50	50	80	80
Speed max min <sup>-1</sup> :	16,000 <sup>1</sup>	16,000 <sup>1</sup>	24,000 <sup>1</sup>	24,000 42,000	8,000	200 <sup>1</sup>
Passages:	1	1	1	1	1...4	2...10 <small>More passages on request</small>

<sup>1</sup> Avoid combination of maximum values. Higher values and other fluids on request. <sup>2</sup> Please inquire for air and water. <sup>3</sup> Higher pressures are possible, please inquire.

## Ordering information: KL - K

<i>Example:</i>		<b>KLT</b>	<b>1</b>	<b>1</b>	<b>C</b>	<b>07</b>	<b>L</b>	<b>7</b>	<b>-XXX</b>
Series	K KT KL KLT	▲ ▲							
Speed	1 - 16,000 min <sup>-1</sup> → KL only 2 - 24,000 min <sup>-1</sup> 4 - 42,000 min <sup>-1</sup>	▶▶							
Passages	1 - Single-passage version	▶▶							
Housing connection	B - radial C - axial F - flange	▶▶							
Nominal diameter	DN 07, 08 mmm (dimension A)	▶▶							
Rotor connection	L - left-handed thread M16x1.5 R - right-handed thread M16x1.5	KL, KLT only	▶▶						
Max. pressure P in bar	8 - 80 bar   K, KT only 15 - 150 bar   KL, KLT only at 70 bar	▶▶							
Consecutive numbers for special versions, numbering by factory		▶▶							

## Ordering information: MPV - MP

<i>Example:</i>		<b>MP</b>	<b>04</b>	<b>06</b>	<b>A</b>	<b>-XXX</b>
Passages	From 02 to 10	▶▶				
Nominal diameter DN mm (inch)	06 (G 1/4"), 10 (G 3/8"), 15 (G 1/2"), 20 (G 3/4"), 25 (G 1")	▶▶				
A Rotor stainless steel, housing in brass B Rotor stainless steel, housing in aluminum C Rotor and housing stainless steel	▶▶					
Consecutive numbers for special versions, numbering by factory		▶▶				

### Maier sealing systems and rotary joints for machine tools

- **Seals always in contact** - "closed seals"
- **Seals with temperature control** - "TESS technology"
- **Controlled leakage seals**
- **Radial contact seals**
- **Combijoints**
- **Bearingless seal kits**

#### • Closed seals

The seal faces of closed seals are always in contact. The classical rotating mechanical seal provides a fluid film between the seal faces. Generally, a joint with the seals constantly in contact cannot run in dry condition (i.e. without the passage of liquid).

Series **KL** with axial contact rotating mechanical seal is suitable to transfer liquid coolants at medium speeds.

**KL**



#### • Seals with thermal relief: "TESS technology"

The **TESS** technology (Thermal Expansion Sealing Systems) is an internationally patented Maier development. The system works like a classical closed seal when used with liquid coolant. In case of pressurized dry air, dry operation or minimal lubrication, the system detects an increase in temperature and reduces the specific closing pressure applied to the seal faces without separating the sealing surfaces.

Series **KLT** and **KT** use **TESS** technology and allow for dry operation with and without pressure, without speed limit. The significant advantage of using **KLT** and **KT** rotary joints is the fact that there is no coolant leakage from the drain port since TESS technology ensures that the seal faces are always in contact.

**K**



#### • Controlled leakage seals

The sliding faces of seals with controlled leakage design are never in contact. There is always a minimum gap between the rotating and stationary part. The design is suitable to transfer fluids at high pressures and speeds at the same time. A minimum leakage is returned to the hydraulic unit or, in case of air, vented to atmosphere. A high degree of filtration is required so it is not recommended to use this design with coolant.

The fluid in the labyrinth prevents wear for a long service life. The leakage is drained through the drain port by means of a hose.

**MPV**



## Rotary Joints for Machine Tools

### • **Radial contact seals**

Due to their compact dimensions, radial contact seals allow for multi-passage solutions with a single fluid or different fluids. The radial contact seals turn the **MP** series into a highly versatile seal system that enables the implementation of virtually countless numbers of special versions for any type of medium. They can be mounted in series; they can be manufactured with axial or radial connections at the housing or at the rotor, with hollow shaft or as multi-port housing versions and they can be made of special materials.

### **MP**



### • **Combijoints**

The combinations of seals and systems allow for transferring media as well as routing electric cables through different joints mounted in series. All of our seal systems can be combined in this rotary joint series. A Combijoint version is the optimum solution for transferring media, it allows for selection of different sealing systems to best meet the requirements of the operating data for the rotary joint. Combijoints are customized solutions so this catalog does not provide standard data.

### **Combijoint**

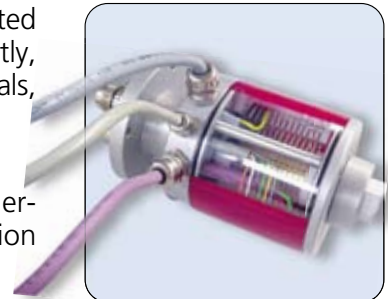


### • **Slip Rings**

Machine tools require ever increasing levels of integration to account for limited space. This goes hand in hand with increasing quality requirements. Frequently, the rotary joint is connected to an electric slip ring to also transfer current, signals, digital data, etc.

The type **SRK** electric slip rings are equipped with gold-gold contacts. They can be used to transfer digital data such as Interbus, Profibus, Canbus or Ethernet up to the Gbit/s range. The slip rings are also suitable for high-precision analog measurement signals, PT100, DMS or encoders as well as currents of several amperes.

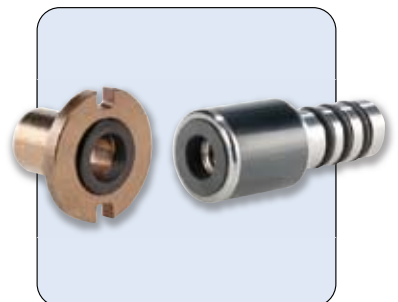
### **SRK**



### • **Bearingless seal kits**

Maier also provide bearingless solutions. Bearingless solutions are suitable for applications involving highly limited space or high speed. Due to the lower mass and since there are no bearings, vibrations are drastically reduced. Since a bearingless solution combines components provided by the customer and components supplied by the manufacturer of the rotary joint, this solution is customized. Please get in touch with us for further details.

### **Bearingless seal kits**





## Characteristics

Series **KL** rotary joints are designed for liquid coolants. Passage in one direction, closed seals. The housing is made of stainless steel and anodized aluminum. A labyrinth seal protects the bearings against fluid. Adapted rotating mechanical seals made of silicon carbide and carbon graphite. Ball bearings. Drain holes in the housing.

**KLT** is the alternative with **TESS** technology with thermal relief of the seal. KLT is suitable for coolant, dry operation and MQL (minimal quantity lubrication). Outside dimensions identical to series **KL**.

**KL 11 C** and **KLT 11 C** with axial inlet.

**KL 11 B** and **KLT 11 B** with radial inlet.

## Application Data

Fluid:

Coolant (KL and KLT) —————→ 70 bar

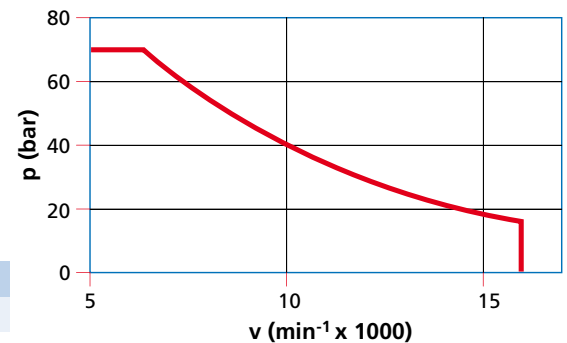
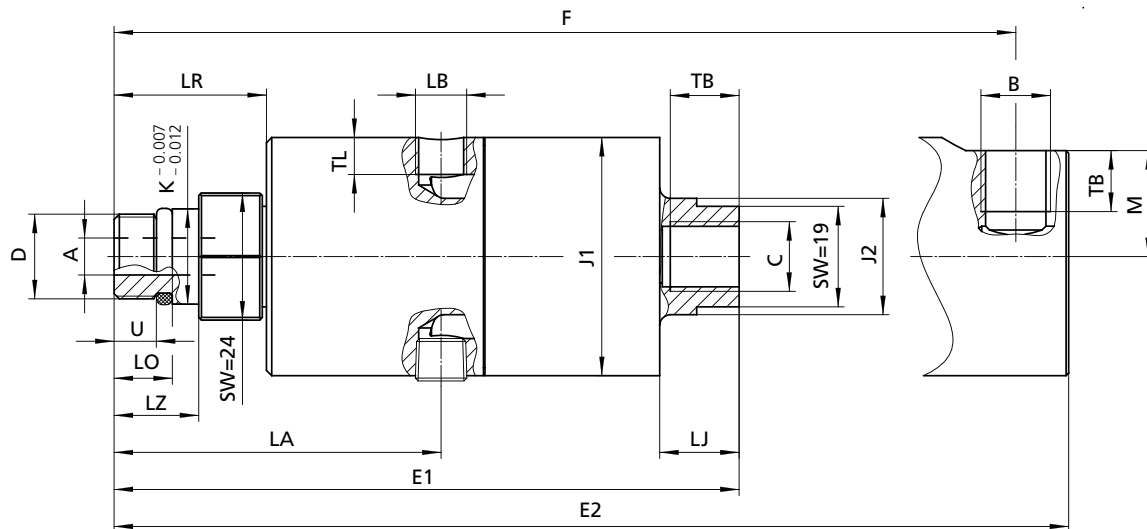
Minimal Quantity Lubrication (KLT) —————→ 10 bar

Dry air (KLT) —————→ 10 bar

Temperature: —————→ 50°C

Speed: —————→ 16,000 min<sup>-1</sup>

Filtration: —————→ 50 micron



Type	KL 11 B 07 L-1	KLT 11 B 07 L-401	KL 11 C 07 L-1	KLT 11 C 07 L-401
Ord. no.	1121202-001	1121202-401	1121208-001	1121208-401

## Dimensions

A	B	C	D	E1	E2	F	J1	J2	K	LA	LB	LJ	LO	LR	LZ	M	TB	TL	U
7	G 1/4"	G 1/4"	M16x 1.5L	118.3	119.3	109.8	45	22	18	61.8	G 1/8"	15	11	28.8	16	20	13	7	8

Subject to technical modifications without notice.





## Characteristics

Series **K** consists of three basic versions: **K 21**, **KT 21** and **KT 41**.

They share common characteristics such as:

- Housing made of stainless steel and anodized aluminum
- Adapted rotating mechanical seal with seal faces always in contact
- Bearings protected by labyrinth seal and drain
- Passages free from springs and corners
- Possible stroke of driving rod of 19 mm
- All outside dimensions identical

Rotary joint type **K 21** is only suitable for coolant. Rotary joint type **KT 21** with **TESS** technology is resistant to pressure peaks. Suitable for coolant, dry operation without limitation, minimal quantity lubrication (MQL) and dry air under pressure and speed. Rotary joint type **KT 41** with **TESS** is designed for high pressure and speed.

**K 21 C**, **KT 21 C** and **KT 41 C** with axial inlet.

**K 21 B**, **KT 21 B** and **KT 41 B** with radial inlet.

## Application Data

Fluid:

Coolant (K only) → 80 bar

Coolant + pressure peaks (KT only) → 80 bar

Coolant + pressure peaks (KT only) → 150 bar

Minimal quantity lubrication (KT only) → 10 bar

Dry air (KT only) → 10 bar

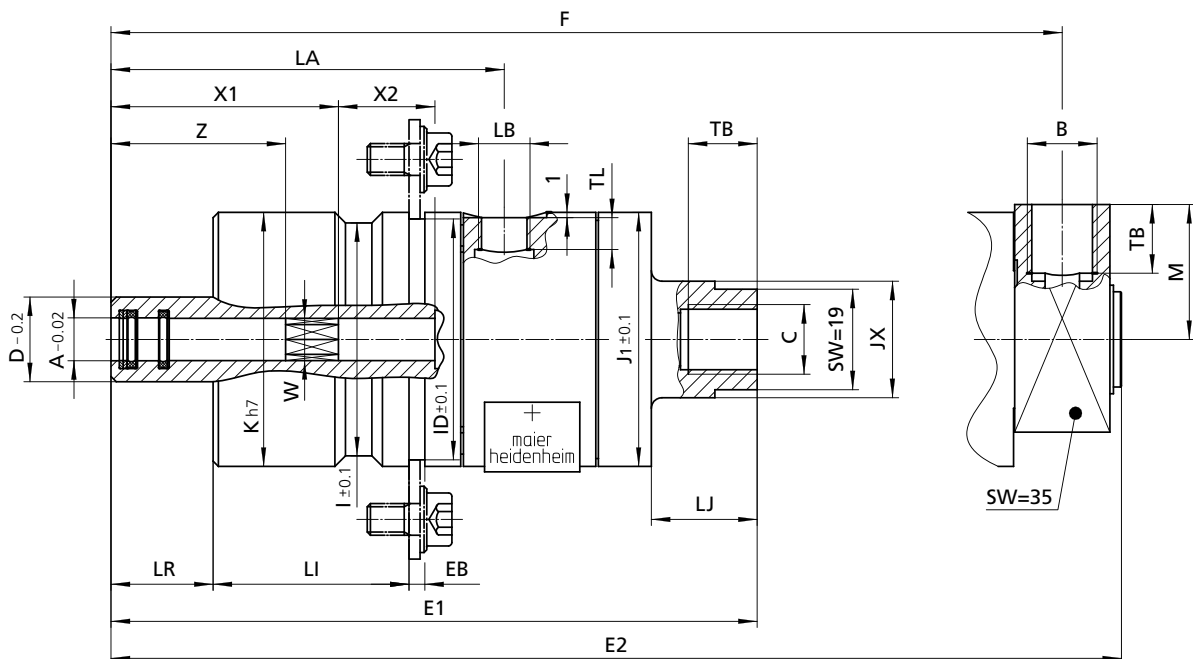
Temperature: → 50°C

Speed:

K 21 and KT 21 → 24,000 min<sup>-1</sup>

KT 41 → 42,000 min<sup>-1</sup>

Filtration: → 50 micron



Type	K 21 B 07-14	K 21 C 07-14	KT 21 B 078-15	KT 21 C 078-15	KT 21 B 0715-16	KT 21 C 0715-16	KT 41 B 0715-18	KT 41 C 0715-18
Ord. no.	1118202-014	1118208-014	1118202-015	1118208-015	1118202-016	1118208-016	1118204-018	1118210-018

## Dimensions

A	B	C	D	EB	E1	E2	F	I	ID	J1	J2	K	LA	LB	LI	LJ	LR	M	TB	TL	W	X1	X2	Z
8.1	G 1/4"	G 1/4"	16	3	122.1	122.3	111.1	44	45.5	48	22	48	74.3	G 1/8"	37	20	19.3	25.5	13	6	8-kt SW7.5	43	18	33

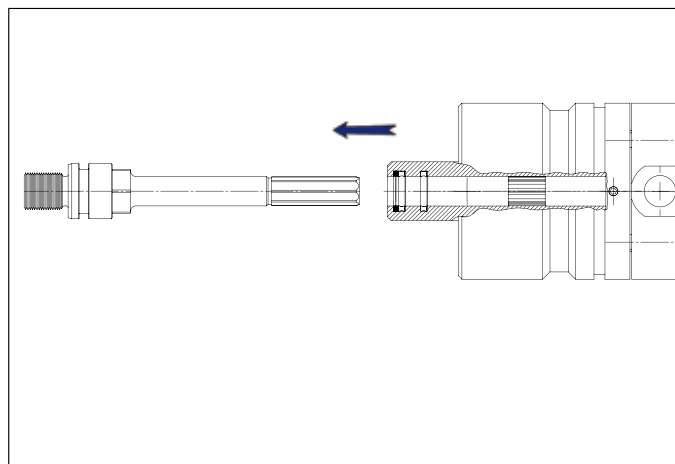
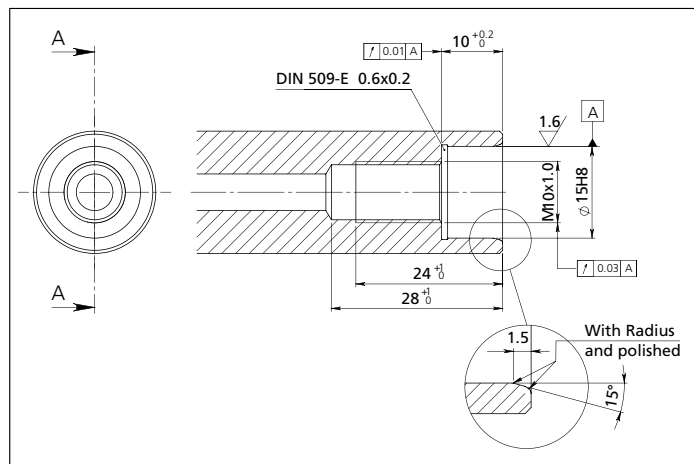
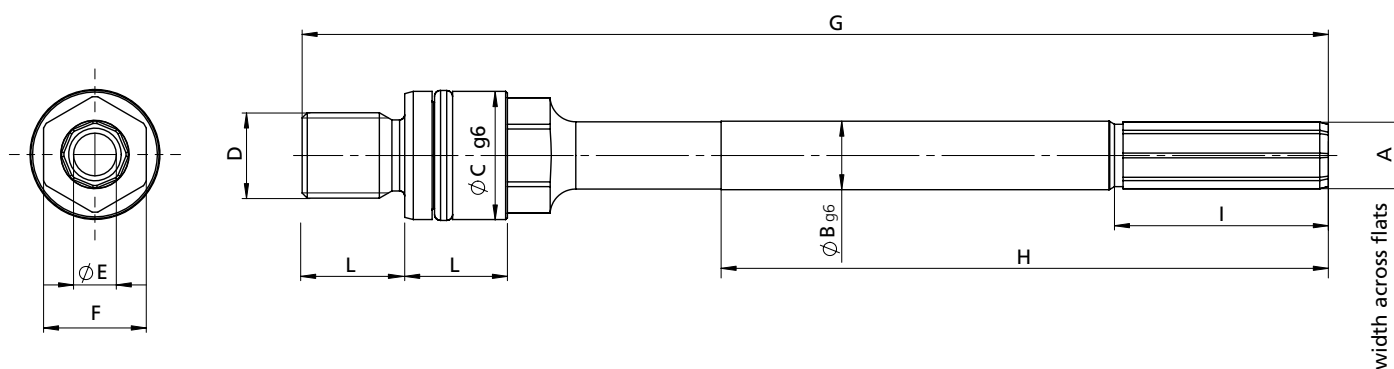
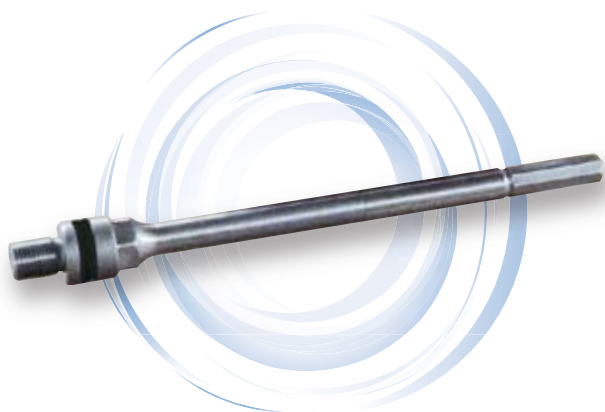
Subject to technical modifications without notice.

## DRIVING RODS

### Characteristics

The driving rod serves as the connection between the machine and the rotary joint if axial movements are also required. This part requires absolute precision to avoid vibration that can be detrimental to the rotary joint.

Please inquire for further information or drawings.



### Dimensions

CONNECTION	A -0.05 -0.10	ØB g6	ØC g6	D	ØE	ØF	G	H	I	L
8-KT	7.4	8	15	M10x1	5	6KT-12	91.5	61	25	12
8-KT	7.4	8	15	M10x1	5	6KT-12	120	71	25	12
8-KT	7.4	8	15	M10x1	5	6KT-12	146	61	25	12

Subject to technical modifications without notice.

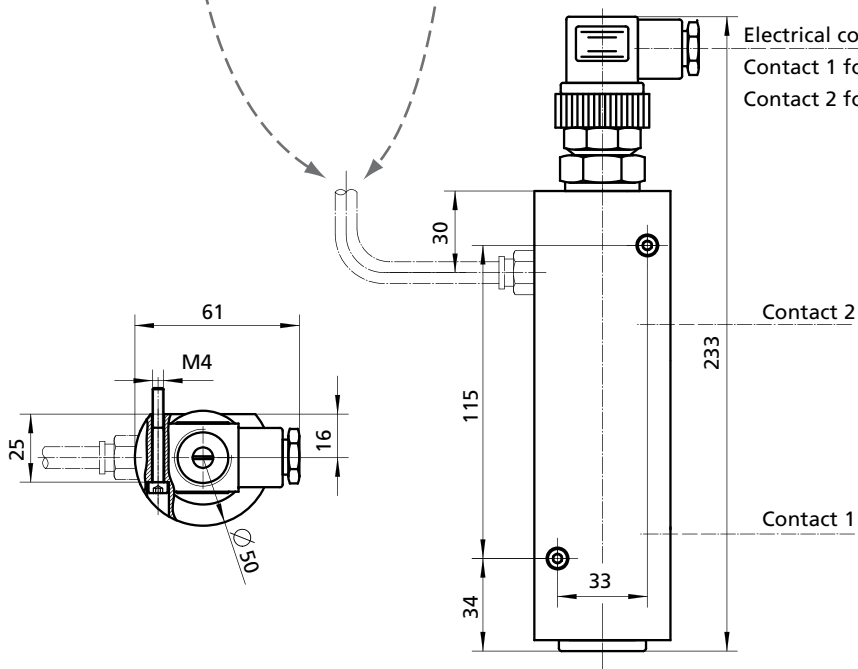
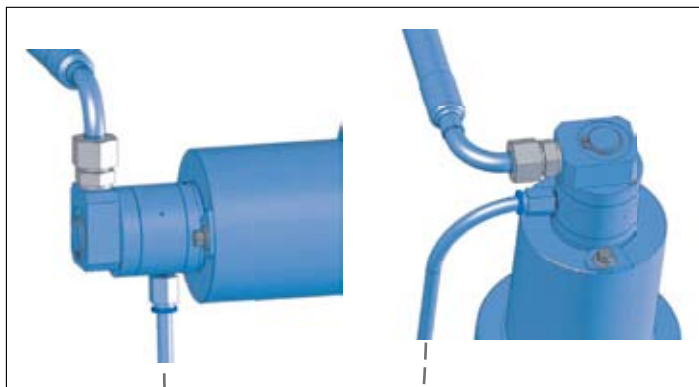


# LEAK MONITORING UNIT



## Characteristics

The leak monitoring unit monitors and collects leakage, thus allowing for monitoring the status of the rotary joint. It is connected to the drain port of the rotary joint and mounted at a point below the rotary joint. The unit provides two alarm levels: the first one signals leakage while the second alarm provides an alert that the rotary joint is about to fail. The leak monitoring unit only works with liquid coolant, no movement possible. The spindle is reliably protected against coolant.





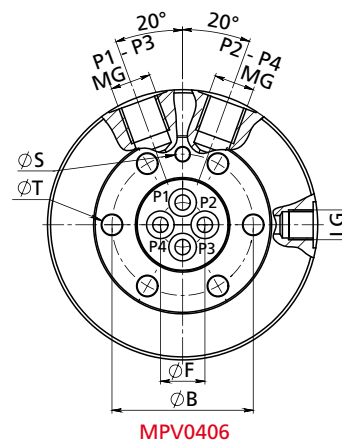
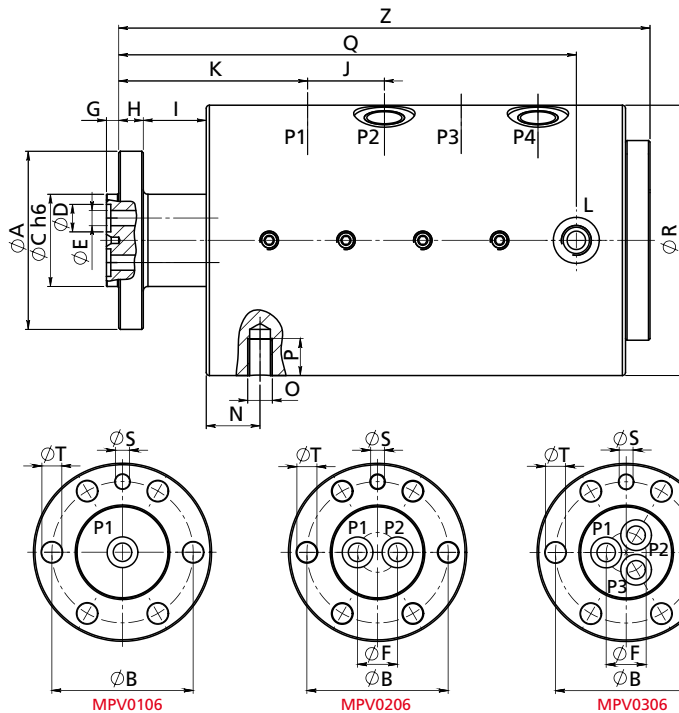
## Characteristics

Type MPV provides 1 to 4 passages to transfer hydraulic oil at high speeds and high pressures at the same time. Gap seal system with hydrostatic relief for controlled leakage which is recirculated to the hydraulic tank. Housing aluminum, rotor steel. Stainless steel on request. Rotor with fixed flange or right-hand or left-hand thread G/BSP (ISO 228). Housing with radial connections G/BSP (ISO 228).

## Application Data

Fluid: Hydraulic oil  
 Max. pressure: 200 bar  
 Min. pressure: 3 bar  
 Max. temperature: 80 °C  
 Max. speed: 8,000 min<sup>-1</sup>  
 Filtration: 15 µm

*Please contact the factory for additional selection information.*



## Dimensions

Type	MPV0106	MPV0206	MPV02T06	MPV0306	MPV0406
Ord. no. C	1119V013	1119V113	1119V113T	1119V213	1119V313
Ord. no. D	1119V014	1119V114	1119V114T	1119V214	1119V314
Ord. no. E	1119V015	1119V115	1119V115T	1119V215	1119V315
A	58	58	46	58	58
B	46	46	46	46	46
C	30	30	G 3/4	30	30
D	10	10	/	10	9
E	6	6	6.5	6	5
F	/	13	/	13	14.5
G	5	5	17	5	5
H	8	8	1.5	8	8
I	22	22	27	22	22
J	25	25	25	25	25
K	64	64	64	64	64
LG	G 1/8	G 1/8	G 1/8	G 1/8	G 1/8
MG	G 1/4	G 1/4	G 1/4	G 1/4	G 1/4
N	34	34	34	34	34
O	M8	M8	M8	M8	M8
P	12	12	12	12	12
Q	76.5	101.5	101.5	126.5	151.5
R	84	84	84	84	84
S	4.5	4.5	/	4.5	4.5
T	6.5	6.5	/	6.5	6.5
Z	100	125	142	150	175

Subject to technical modifications without notice.

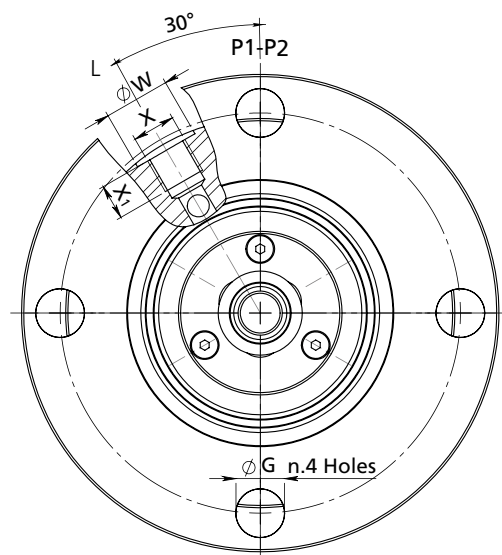
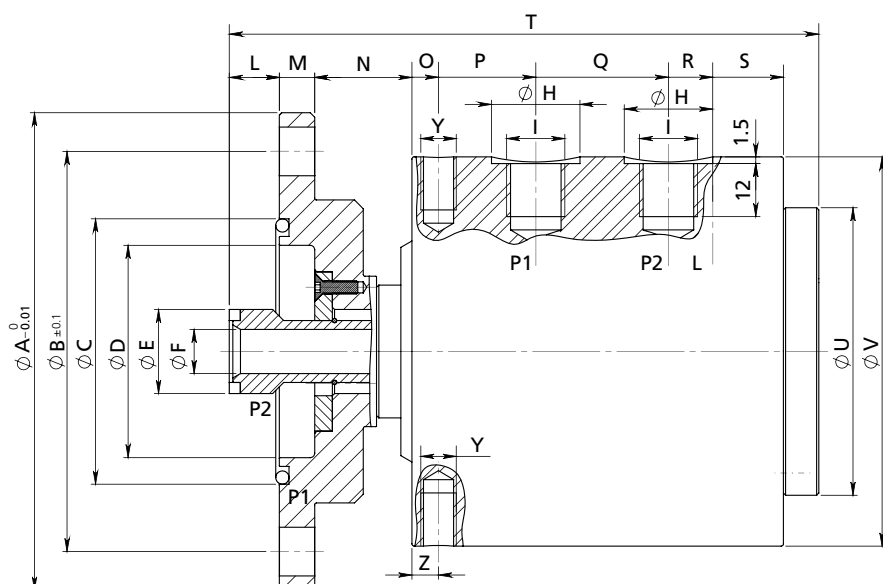


## Characteristics

Rotary joint with two concentric passages for hydraulic oil at high speed and pressure at the same time. Gap seal system with hydrostatic relief for controlled leakage which is recirculated to the hydraulic tank. Rotor steel, ceramic-coated in the seal area. Housing anodized aluminum, stainless steel on request. Rotor with fixed flange or right-hand or left-hand thread G/BSP (ISO 228). Housing with radial connections G/BSP (ISO 228).

## Application Data

Fluid:	Hydraulic oil
Max. pressure:	200 bar
Min. pressure:	3 bar
Max. temperature:	80 °C
Max. speed:	8,000 min <sup>-1</sup>
Filtration:	15 µm



## Dimensions

Type	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	X <sub>1</sub>	Y	Z
MPV0206D	107.95	90.5	60	48	19	10	11	20	G1/4"	12	1.5	11	8	22	6	22	30	10	16	133	65	88	15	G1/8"	8	M8	6

Subject to technical modifications without notice.



## Characteristics

Type MP is equipped with radial shaft seals made of elastomers. Up to ten fluids can be transferred through 2 to 10 passages at the same time. The sealing elements seal the radial connections between housing and rotor. The product is available with off-the-shelf catalog dimensions or with customized flanges and/or axial holes for electric cables, axial inlets and/or radial outlets as well as drains between different fluids. Type MP can be used for individual combinations on request.

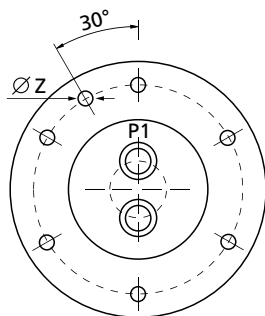
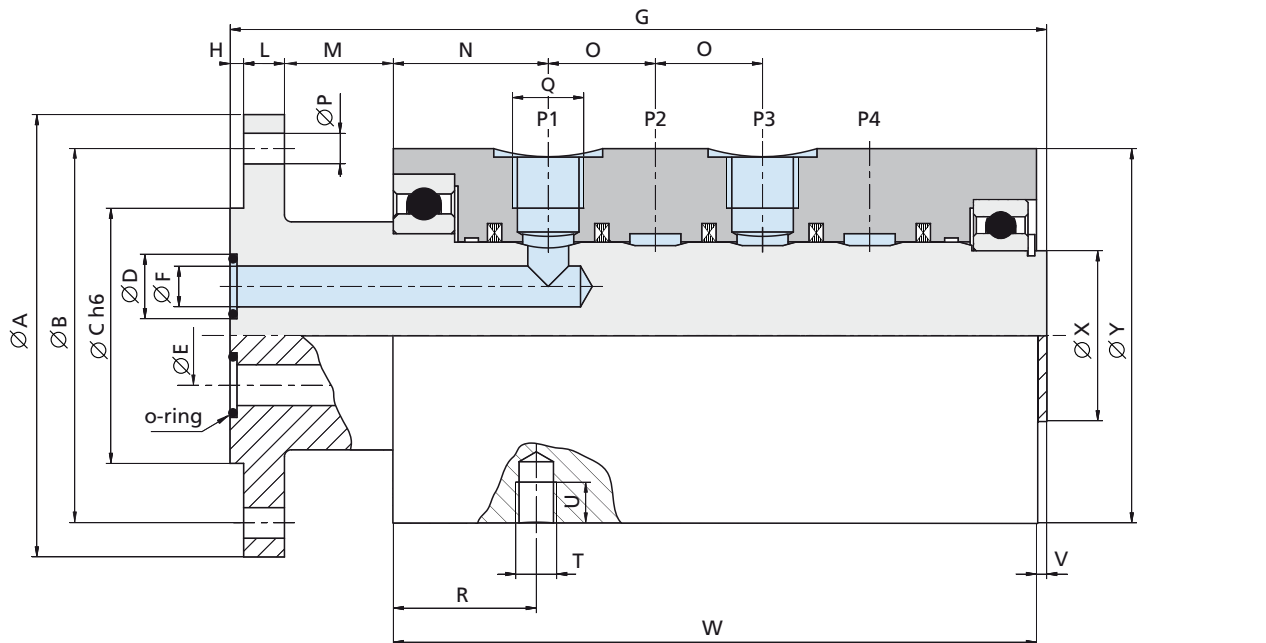
The dimensions for 2 to 10 passages shown in the table as standard design highlight the technical potential of this design

## Application data

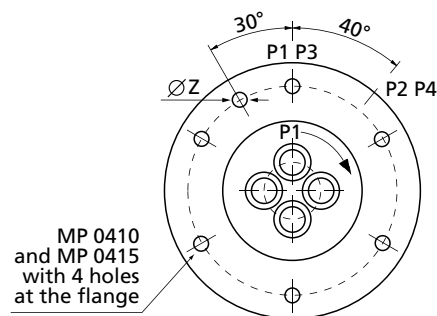
Max. Pressure PN:	200 bar* for oil. 10 bar for gas, air, water.
Max. Temperature:	80°C
Max. speed:	200 min <sup>-1</sup> *
Filtration:	50 µm

\* Avoid combinations of maximum values.

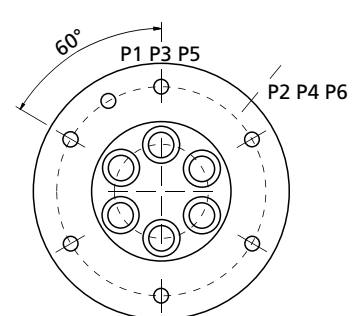
Please contact the factory for additional selection information.



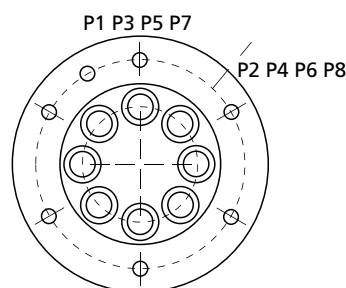
2 passages



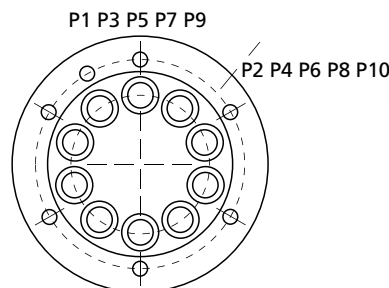
4 passages



6 passages



8 passages



10 passages

MP 0410  
and MP 0415  
with 4 holes  
at the flange



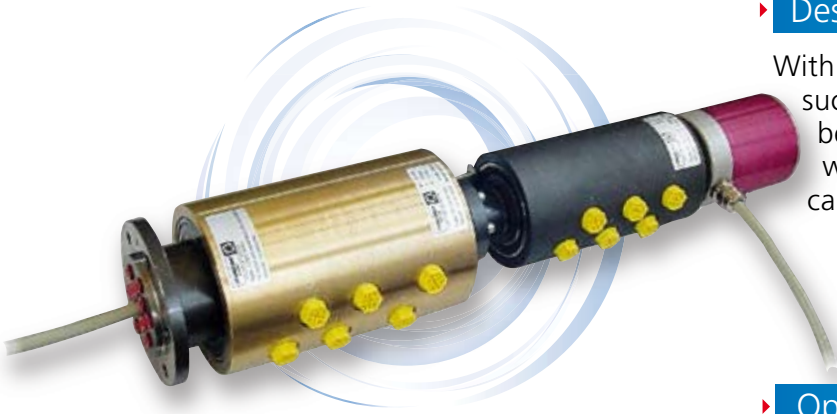
## Dimensions

Type	MP0206	MP0406	MP0606	MP0806	MP01006	MP0210	MP0410	MP0610	MP0810	MP1010
Ord. no. A	1119111	1119311	1119511	1119611	1119711	1119121	1119321	1119521	1119621	1119721
Ord. no. B	1119112	1119312	1119512	1119612	1119712	1119122	1119322	1119522	1119622	1119722
Ord. no. C	1119113	1119313	1119513	1119613	1119713	1119123	1119323	1119523	1119623	1119723
A	78	78	78	98	98	78	110	98	115	125
B	62	62	62	80	80	62	90	82	95	105
C	45	45	45	60	60	45	60	65	75	85
D	11	11	11	11	11	16	16	16	16	16
E	15	26	26	42	42	20	24,5	40	53	63
F	6	6	6	6	6	9	9	9	9	9
X	25	35	35	50	50	35	40	55	65	75
Y	81	89	89	104	104	94	95	109	125	140
G	145	178	219	275	318	156	207	269	348	408
H	5	5	5	5	5	5	4	5	5	5
L	8	8	8	10	10	8	10	10	12	12
M	21	21	21	21	21	21	28	28	33	33
N	42	37.5	37.5	39.5	39.5	45.5	41	43	46	48
O	26	20.5	20.5	21.5	21.5	29	26	26	28	28
P	6.5x6	6.5 (x6)	6.5 (x6)	6.5 (x6)	6.5 (x6)	6.5x6	6.5 (x4)	8.5 (x6)	8.5 (x6)	8.5 (x6)
Q	G1/4	G1/4"	G1/4"	G1/4"	G1/4"	G3/8	G3/8"	G3/8"	G3/8"	G3/8"
R	30	37	37	39	39	30	39	41	44	46
T	M8	M10	M10	M10	M10	M8	M10	M10	M10	M10
U	10	10	10	10	10	10	10	10	10	10
V	1	3	3	3	3	2	3	3	3	3
W	110	137	178	232	275	120	162	219	291	351
Z	4.5	4.5	4.5	4.5	4.5	4.5	6.5	6.5	6.5	6.5

## Dimensions

Type	MP0215	MP0415	MP0615	MP0815	MP1015	MP0220	MP0420	MP0620	MP0820	MP0225	MP0425
Ord. no. A	1119131	1119331	1119531	1119631	1119731	1119141	1119341	1119541	1119641	1119151	1119351
Ord. no. B	1119132	1119332	1119532	1119632	1119732	1119142	1119342	1119542	1119642	1119152	1119352
Ord. no. C	1119133	1119333	1119533	1119633	1119733	1119143	1119343	1119543	1119643	1119153	1119353
A	98	130	125	148	158	115	138	148	168	115	168
B	80	110	100	122	132	95	111	121	141	95	138
C	60	75	75	95	105	65	85	95	115	75	105
D	19	19	19	19	19	24	24	24	24	29	29
E	23	29	48	66	76	28	52	60	80	34	66
F	12	12	12	12	12	18	18	18	18	22	22
X	40	50	65	85	95	55	75	85	105	65	95
Y	106	110	128	158	175	123	145	160	198	146	179
G	167	240	322	401	468	198	297	378	463	204	382
H	5	4	5	5	5	5	5	5	5	5	5
L	10	12	14	16	16	12	16	16	16	12	20
M	23	32	40	45	45	35	45	45	45	28	55
N	47	45.5	47.5	51.5	53.5	52	53	55	59	56	65
O	32	31.5	31.5	31.5	31.5	38	38	38	38	42	52
P	6.5x6	9 (x4)	12.5 (x6)	12.5 (x6)	12.5 (x6)	8.5x6	12.5 (x6)	12.5 (x6)	12.5 (x6)	8.5x6	17 (x6)
Q	G1/2	G1/2"	G1/2"	G1/2"	G1/2"	G3/4	G3/4"	G3/4"	G3/4"	G1	G1"
R	37	42	44	48	50	40	46	48	52	44	54
T	M10	M12	M12	M12	M12	M10	M12	M12	M12	M10	M16
U	10	12	12	12	12	10	12	12	12	10	16
V	2	3	3	3	3	2.5	3	3	3	3	4
W	127	189	256	238	395	146	224	305	390	156	294
Z	4.5	10.5	10.5	10.5	10.5	6.5	10.5	10.5	10.5	6.5	10.5





### ► Description

With Combijoint, different types of rotary joints such as MP, MPV, K, DP and electric slip rings can be combined. Hydraulic oil, compressed air, gas, water, grease, coolant, current and electric signals can be transferred.

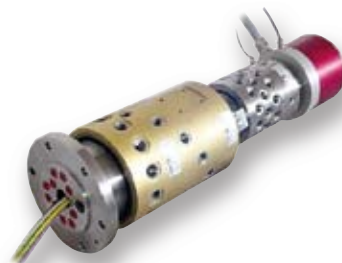
### ► Operation and Design

Combijoint versions are the most versatile and flexible way of transferring fluids. Frequently, only a single type of seal is selected for multi-passages rotary joints, usually a radial seal, to seal the passage of different media under different working conditions. This considerably reduces the service life of the rotary joint. Combijoint allows you to combine different seal technologies that best suit a specific fluid. Mounting several rotary joints in series also lets you select different materials, depending on the specific requirements. This results in a cost-effective and reliable solution. In case of leaks, it is sufficient to repair the failed rotary joint without having to open the other rotary joints since only one housing is affected. The connecting flange can be sized to customer requirements for this solution.

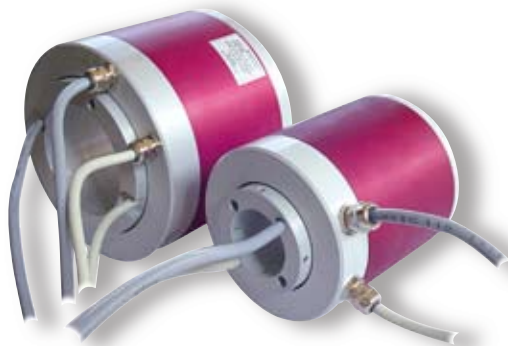
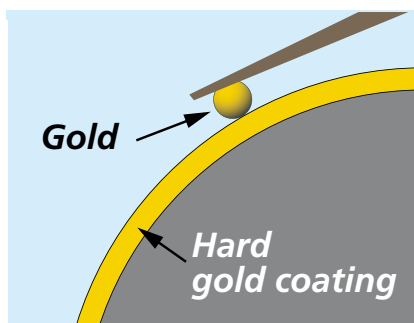
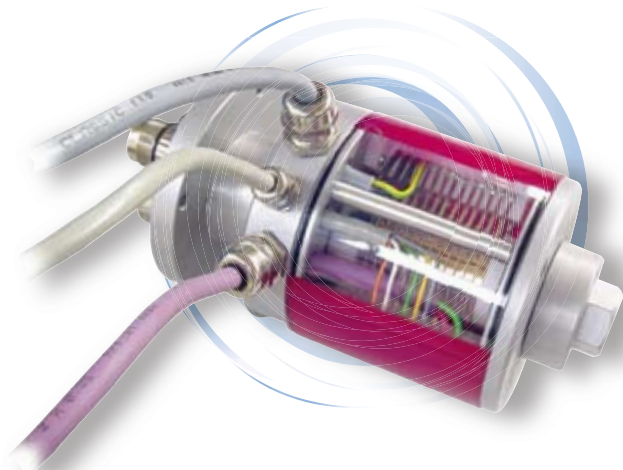


### ► Applications and benefits

The most important applications include machine tools, rotating tables of all types, automatic machine, injection molding machines for plastic, wind turbines, robots, steel plants, mixers, plants in the food industry, etc. Combijoint allows for the maximum degree of customization and flexibility: axial inlets, radial outlets and vice versa, multiple housing connections, drain holes between different fluids, different materials depending on the fluid, hollow shaft, passages for electric cables, probes, etc.







## Description

- Transmission of signals and digital data
- Transmission of any kind of analog signal
- Transmission of current
- High quality of signals with gold-gold technology
- Constant contact quality during entire service life
- Robust design for heavy duty applications
- IP 64 degree of protection as standard
- Maintenance-free

## Operation and design

Slip rings are used to transfer electrical currents from a stationary component to the rotating shaft of a machine. The energy is transferred between the stator and the rotor via a sliding ring pressed against the rotary ring. Maier slip rings use the gold-gold contact technology. The rotor is hard-gold-plated. The area of contact clips has gold rivets at the contact points. The gold-gold technology and the superior quality of the surfaces ensure an outstanding contact quality as well as corrosion resistance.

The high resistance to the abrasion of the surfaces results in an extremely long service life of the slip ring. The contact quality and thus the output signals remain constant for millions of rotations. All electrical parts of the slip ring are protected by an aluminum housing with ball bearings.

## Applications

Slip rings with gold-gold contacts can be used to transfer digital data such as Interbus, Profibus, Canbus or Ethernet up to the Gbit/s range. They are also suitable for high-precision analog measurement signals such as thermocouples, PT100, DMS or encoders as well as currents of several amperes.

Typical applications include rotating tables, wind turbines, machine tools, packaging machines, rotating cranes and platforms, mixers, food and filling machines, etc.

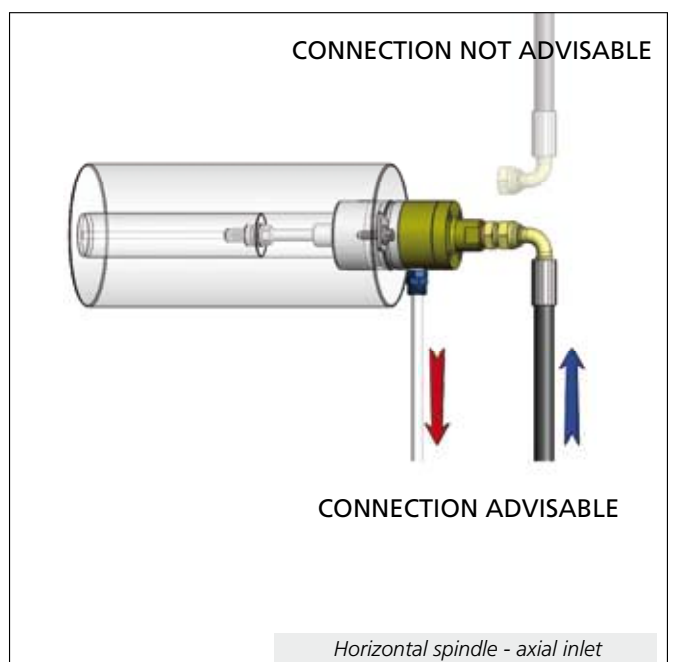
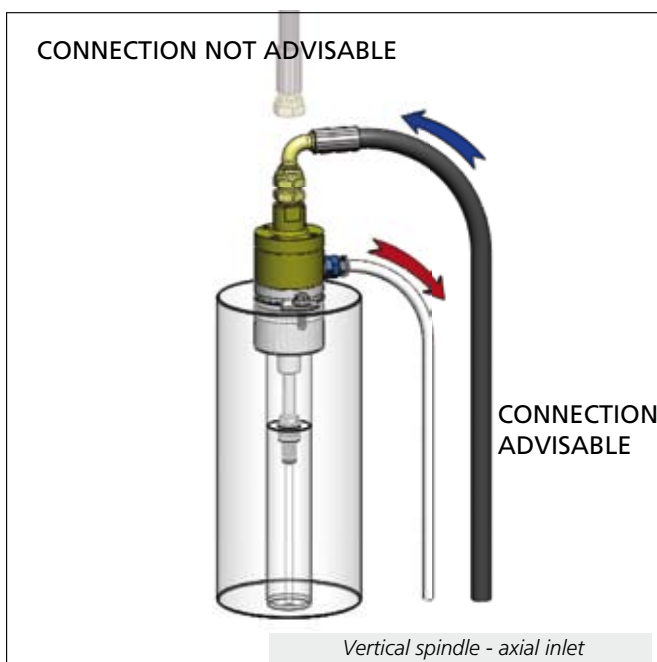
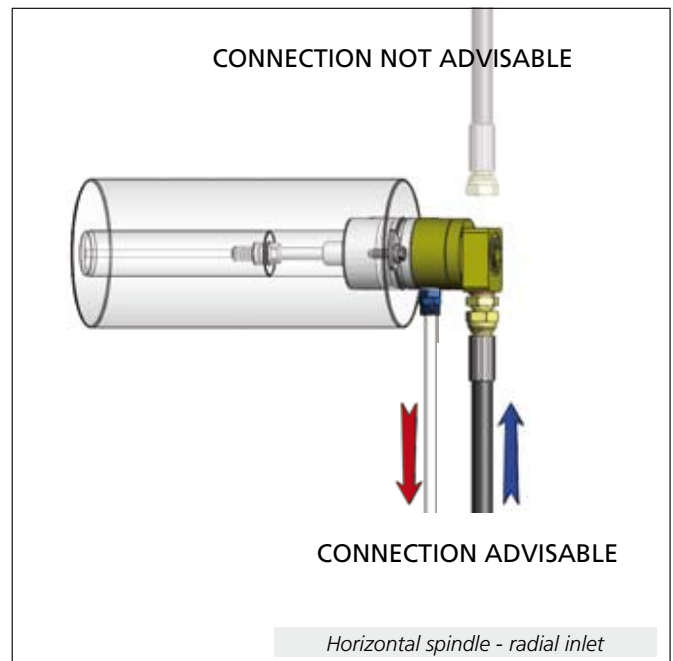
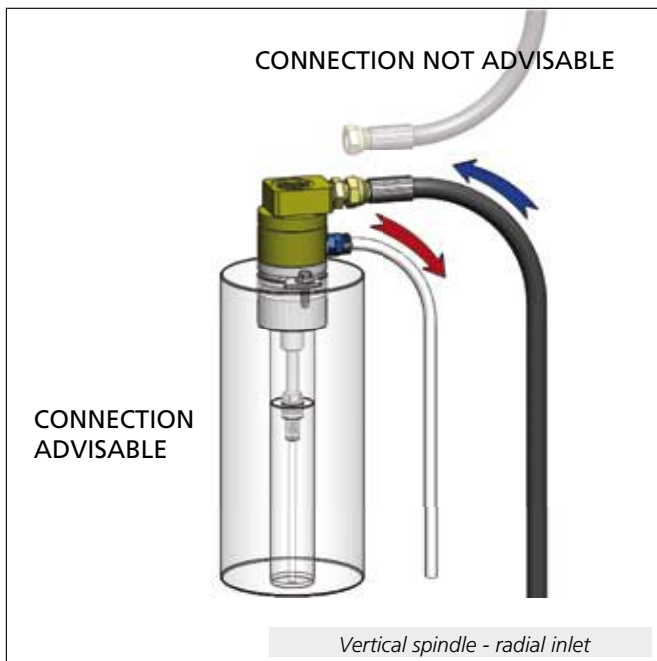


## INSTALLATION

### Connection of supply and drain

When connecting the supply line, make sure no extra loads or tensions are applied. The supply line should lead bottom up, if possible. This reduces leakage during tool changes and the fluid remains in the line.

The drain line must always be directed towards the bottom and torsions must be avoided. Leaking fluid must be able to be removed without obstacles from any position.



With **TESS** technology, series KT rotary joints can run dry without problems both at maximum pressure and speed; the seal faces remain permanently closed. This prevents the annoying and frequently detrimental drain of coolant through the open seal faces during tool changes. However, the lines should point downwards to reduce the risk of leakage through the spindle cone.

# INSTALLATION

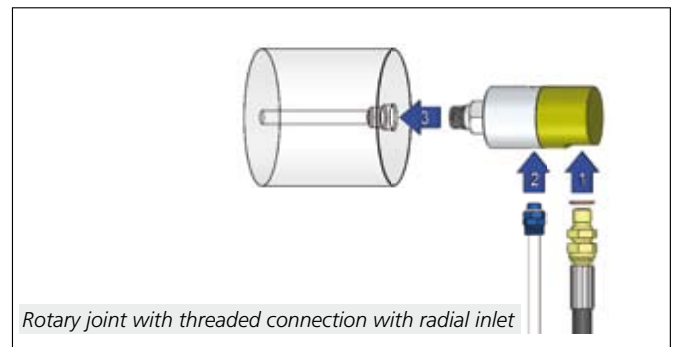
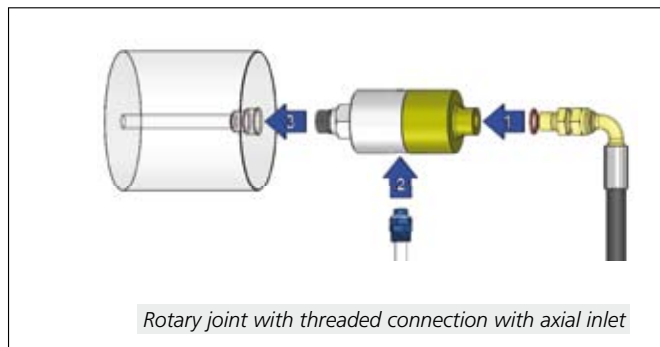
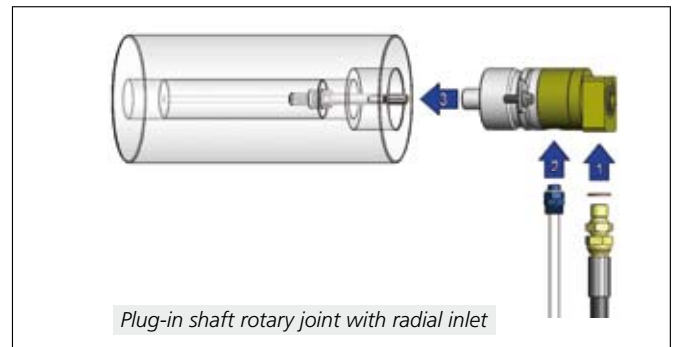
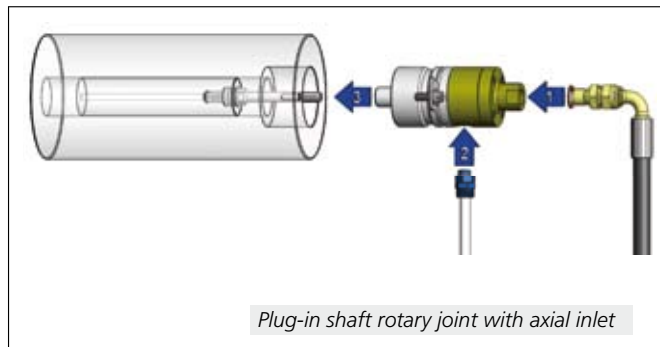
## Installation of the rotary joint

Always use flexible hoses to connect the supply and drain lines. The flexible hoses must be connected to the rotary joint before it is mounted to the spindle (this applies to all self-supported rotary joints and, in particular, to all rotary joints with rotors with threaded connection). Otherwise, loads and forces may be applied to the housing which reduces the service life of the rotary joint.

Note the following for installing the hoses:

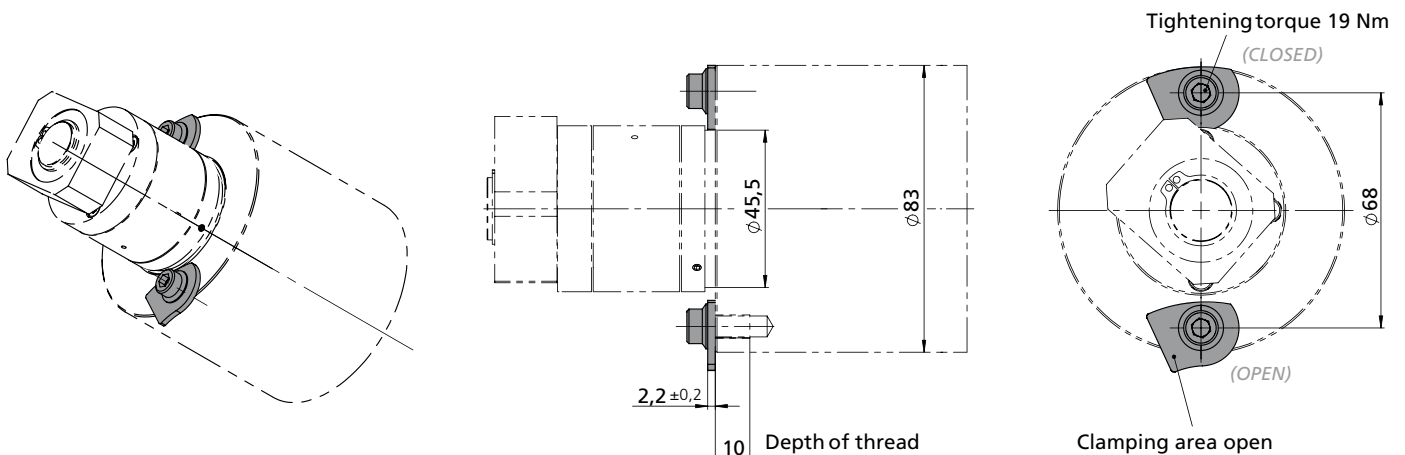
- Avoid bending the hoses (always use elbows)
- Do not exceed the permissible bending radius and bending the pipes and do not direct the drain lines upwards.

In case of vertical installation, the rotor of the rotary joint must be mounted facing down (otherwise, coolant residue can damage the seal faces).



## Mounting kit

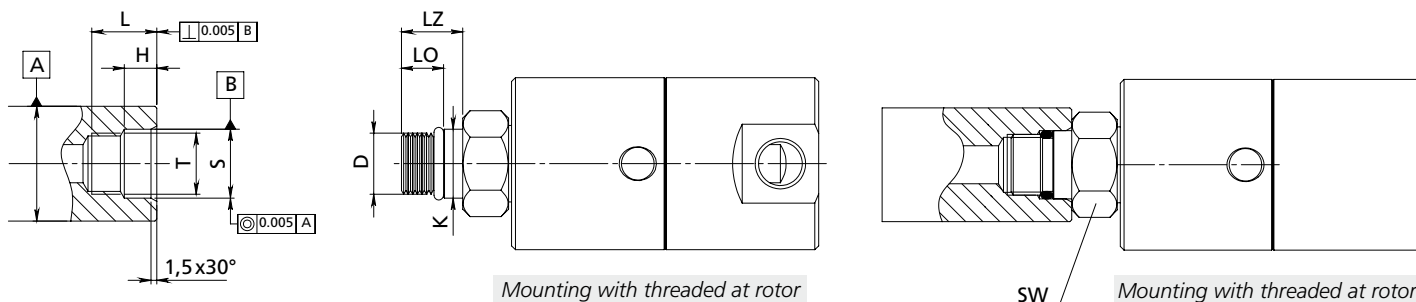
The M6 screws of the rotary joints (included in the mounting kit) must be mounted with a tightening torque of 19 Nm.



# INSTALLATION

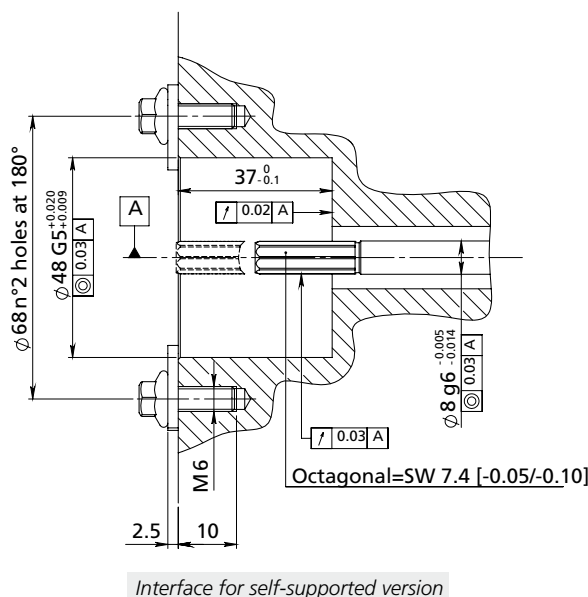
## Mounting tolerances

The following shows typical connection interfaces: with threaded rotor and with self-supported version driving rod. These dimensions must be observed. Adherence to these dimensions is a key factor in the service life of the rotary joints. Please see the drawings and operating instructions shipped with the rotary joint for dimensions not shown in this catalog.



ROTOR END					SPINDLE END				TIGHTENING TORQUE
D	LO	K	LZ	SW	T	S	H	L	
M 16 x 1.5	11	17.993 / 17.988	16	24	M 16 x 1.5	18.00 / 17.995	8.5	17	50Nm
5/8" - 18 UNF	9/16"	0.655" / 0.6553"	12/16"	24	5/8" - 18 UNF	0.6560 / 0.6556	9/32"	13/16"	50Nm

Subject to technical modifications without notice.



## Filtration

It is essential that the fluid is clean. Good filtration increases the service life of all plant components, including the rotary joint. The required degree of filtration for series K series is 50 micron. This degree is normally required for pumps in machine tools. Series MPV rotary joints with controlled leakage require a degree of filtration of 15 - 20 micron.

