

Operating Instructions Maier Rotary Joints

Series DP

B-DP_en - Version 7- 16.02.2011



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Series DP

B-DP_en -Version 4 – 14.02.2011

Contents

1	Safety	2
2	Design and function	3
3	Information on design and mounting	4
4	Transport und Lagerung	4
5	Mounting	5
6	Operation	7
7	Maintenance	8

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1. Safety

Application

Maier rotary joints may only be used as fittings to connect pressurized pipes carrying liquids to rotating pressure systems. Such rotating pressure systems are, for example, rollers through which flow liquids for cooling or heating purposes. **Series DP rotary joints are primarily used for water. Series DP ... - 800 is available for usage with thermal oil.** Other media are possible - please contact the manufacturer for details. **Please refer to the section "Specifications and Spare Parts" for details on approved media and their qualities/properties.** These values are binding for the application.

Never modify the rotary joint or tamper with it in any way as this may cause dangers. Install, operate and maintain the rotary joint only as described in these operating instructions. We shall not be liable for any damages or plant interruptions whatsoever resulting from failure to observe these operating instructions.

These operating instructions do not contain all information important for the safe operation of the rotary joint. Also observe all pertinent local and national regulations and legislation concerning workplace safety and prevention of accidents.

Use only genuine or Maier-approved spare parts (standard norm parts). If you use other parts, this may have adverse effects on the safety of the rotary joint.

1.1 Requirements concerning installation and maintenance staff as well as operators

Only staff that has read and fully understood these operating instructions and that is fully aware of the dangers resulting from the rotary joint as well as the appropriate safety measures may work with Maier rotary joints. Such staff must have at least the knowledge of a trained locksmith or industrial mechanic who has experience with pressurized components.

1.2 Dangers



Warning!

If you touch hot parts or come into contact with hot liquids escaping under high pressure, this may result in dangerous burns.

⇒ **Mount a protective hood to the rotary joint in order to prevent persons from directly coming into contact with hot parts and to safely retain escaping medium.**



Warning!

If the rotary joint blocks and rotates along with the roller, the hoses may be torn off so that hot liquids can escape under high pressure.

⇒ **Always observe the design and mounting information in chapter 3. Monitor the rotary joint by means of a torque sensor or a vibration pickup. Ensure that the rotary joint is regularly maintained as per chapter 7**

1.3 Safety precautions

Always observe the following safety precautions for the operation of the rotary joint:

- DP rotary joints that are operated at temperatures of more than 80°C (176°F) must be relubricated (see 7.2 on page 8).

Series DP

B-DP_en -Version 4 – 14.02.2011

2 Design and function

2.1 Function and components

Maier rotary joints are fittings used to connect pressurized pipes to rotating pressure systems. Such rotating pressure systems are, for example, rollers through which flow liquids, gases or steam for cooling or heating purposes.

Housing connections:

The connection to the stationary pressurized system is made by the stationary part of the rotary joint – the housing or the angle piece. Different rotary joint versions are available:

Mono version: housing with one connection for supplying or removing the medium to or from the rotating pressure system (version 1). **DP rotary joints are always delivered as mono version. Angle pieces must be used for duo versions.**

Duo version: rotary joint DP and angle piece for supplying and removing the medium to and from the rotating pressure system. The second channel is formed by an inner pipe that is centered in the center axis of the rotating part.

The design of the inner pipe differs in terms of the following versions:

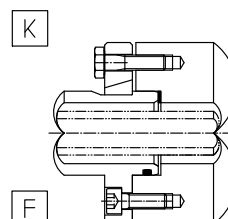
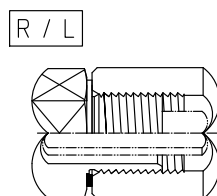
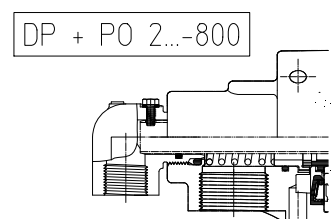
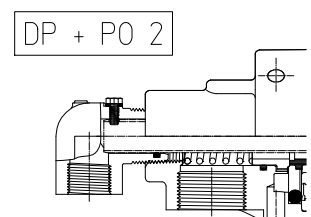
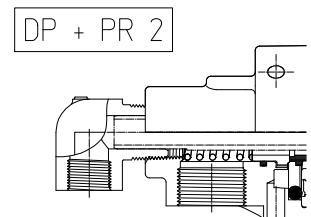
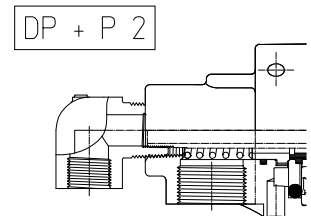
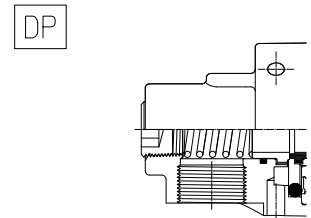
- Stationary inner pipe (version 2): The inner pipe is screwed into the angle piece (standard version always with right-hand thread).
- Rotating inner pipe supported in angle piece (version PR 2): The inner pipe is supported by the stationary angle piece. There is wear at the bearing point.
- Stationary inner pipe with floating bearing in O ring and anti-rotation lock by means of screw (version PO 2): The inner pipe is held in the angle piece by means of an O ring. A screw prevents it from rotating. There is wear at the bearing point.

This also applies to series -800 with the difference, however, that the duo version has an additional Viton O ring between angle piece and housing for sealing purposes.

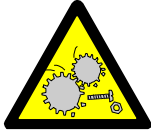
Rotor connections:

The connection to the rotating pressurized system is made by the rotating part of the rotary joint – the rotor. The rotor is mounted to the rotating pressure system (e.g. a roller) by means of a right-hand or left-hand thread R / L, flange K (DN 40 (1½") and 50 (2")) or a fixed flange F (DN 40 (1½") and 50 (2")). The system is sealed by means of a sealing cone, flat packing or an O ring.

Please refer to our catalog and the corresponding outline drawing for further information.



3 Information on design and mounting



Attention!

Damage to components due to vibration and heat expansion.

⇒ **Use only flexible hoses to connect the rotary joint!**

- Use flexible metal hoses for the connection between the supply pipe system and the rotary joint housing. This compensates for heat expansion and vibrations.
- Never apply torsional, tensile or pressure forces to metal hoses. Observe the minimum bending radii quoted by the hose manufacturers. Never use axial compensators.
- Use flat packings made of pure graphite to securely seal flange connections.
- Only operate rotary joints sizes DN 65 ... 100 with a sufficiently dimensioned torque support. The support element must allow for axial and radial movements of the housing. For sizes DN 06 ... 50, due to low friction torque support by the hoses is sufficient.
- For DN 65 and greater install an additional safety unit:
Install a **torque monitoring** system or a bearing monitoring system with vibration pickup (e.g. FAG or SKF) with connection to the emergency shutdown system in order to avoid bearing damages and consequential damages.
If the monitoring system is activated, the rotation of the roller should be stopped immediately and the supply of the medium should be interrupted upstream of the metal hoses.
- Center the inner pipe and the roller as well as the rotary joint. Run-out and axial tension will lead to malfunctions of the rotary joint.
- For smooth operation of rotary joint ensure concentricity and minimum run-out tolerance at roller or intermediate flange.
- In the case of a rotary joint with rotating inner pipe it is recommended to use a stainless steel inner pipe or at least a hard chromium-plated bearing seat.
- Operation at water temperatures exceeding 70°C (158°F):
In order to ensure maximum reliability and service life of the seals in the rotary joint, the hot water used in the rotary joint must be processed, treated and conditioned according to the DdTÜV Guidelines Technical Chemistry 1466 (VdTÜV - Merkblatt Technische Chemie 1466). The circulated water must have a low salt concentration and a maximum conductivity of < 100 µS/cm (100µmho/cm)!
If the salt concentration is high, this may result in deposits in the seal gap and premature failure of the seal!

4 Transportation and storage

- The rotary joints may only be stored in the original package.
- Make sure the storage conditions specified in the "Specifications and Spare Parts" are met.
- If the rotary joint itself or the facility in which the rotary joint is installed is to be preserved, make sure the preservation agent and the seals of the rotary joint are compatible.

Series DP

5 Mounting

5.1 Mounting the rotary joint to the roller

- Mount rotary joint 1 to roller W:
as per drawing A with thread at rotor
as per drawing B with K flange 2 and inner ring 3
as per drawing C with fixed flange 4.
- Seal with a sealing cone (rotor R/L), O ring 6, flat packing 7
or another suitable sealing element.
- Fasten the rotary joint with screw 8 or stud bolt 9 and nut 10.
- Clean sealing surfaces DF.
- Place the sealing element into roller W (drawing B).
Recommended material for flat packing:
pure graphite with metal insert.
- Duo version rotary joint:
version P 2: screw inner pipe J into angle piece
version PR 2: insert inner pipe J into the angle piece, center
the pipe, no tension allowed.
version PO 2: screw inner pipe J with O ring and anti-rotation
unit into angle piece (inner pipe available for type PO2).
- Mount K flange 2 with screws over rotor 80 and place inner
ring 3 into rotor groove. Mount stud bolts 9 (drawing B).
- Lift the rotary joint and insert it into the centering unit of the
roller.
Versions with inner pipe: the inner pipe must be centered
with reference to the rotary joint and the roller. If you en-
counter resistance, check for correct position. Run-out and
axial tension cause malfunctions of the rotary joint.
- Mount screws 8, 11 and nuts 10. Maximum admissible tor-
que as per "Specifications and Spare parts".

Attention:

- When sealing with flat packing, do not fully tighten the
screws until you have aligned the rotary joint as per sec-
tion 5.2!
- Assure the minimum distance MA is at least 1mm - oth-
erwise leakage will occur at the sealing element and the
rotary joint and the inner pipe will be damaged:
drawing B : $MA \geq 1 \text{ mm (0.04")}$
drawing C : $MA1 = 0 \text{ mm (0.00")}$
 $MA2 \geq 1 \text{ mm (0.04")}$

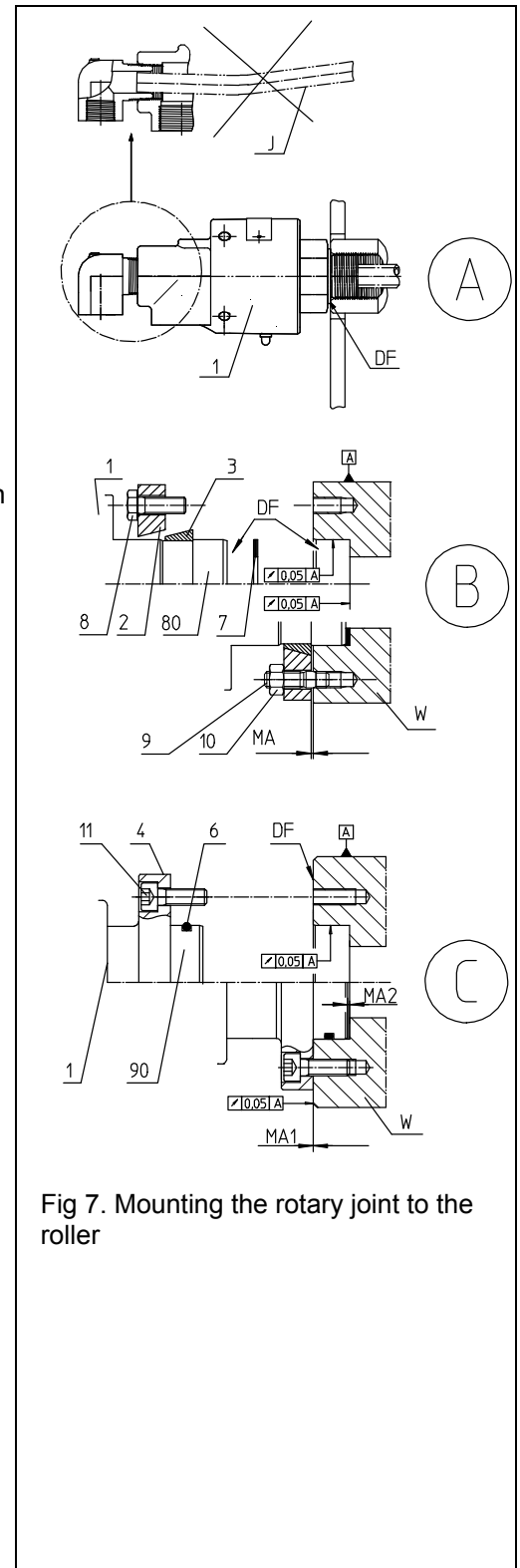


Fig 7. Mounting the rotary joint to the roller



Note!
For smooth operation of rotary
joint ensure concentricity and minimum
run-out tolerance of roller

Operating Instructions Maier Rotary Joints

Series DP

B-DP_en -Version 4 – 14.02.2011

5.2 Aligning the rotary joint, sealing with flat packing

- Place dial gauge M from the idle machine frame MG onto the rotary joint.
- Rotate roller W until the dial gauge is at the bottom dead center UT. Mark the pointer position.
- Rotate roller until you reach the upper dead center OT.
- Tighten the bottom screws Su until the dial gauge is in the center position.
- Repeat this alignment process until you reach the concentricity tolerance specified in the table.
- Tighten the screws with the admissible torque as per "Specifications and Spare Parts"!

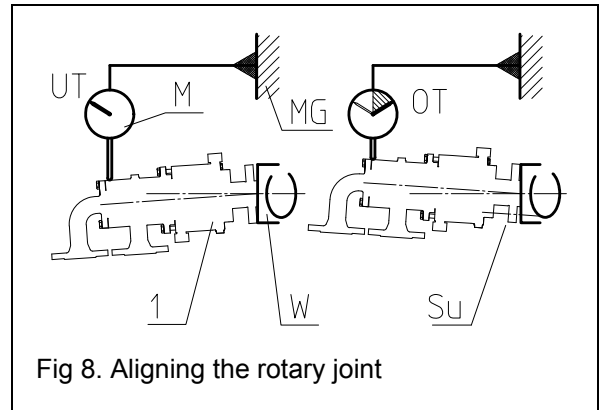
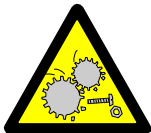


Fig 8. Aligning the rotary joint

Admissible concentricity tolerance

DN [mm]	DN [inch]	n (min ⁻¹ / rpm)		
		≤ 100	≤ 400	> 400
03-50	1/8 - 2	±0,25mm	(±0.01")	
65 - 100	2 1/2 - 4		± 0,1mm (±0.004")	

5.3 Connecting the rotary joint



Attention!

The rotary joints must never run dry since this may damage them. Exception: test run for a maximum of 30 minutes at a very low speeds.

- Mount torque monitor or vibration pickup.
- Connect the housing.
- Route the hoses as shown in fig. 4. Do not route the hoses as shown in fig. 5.

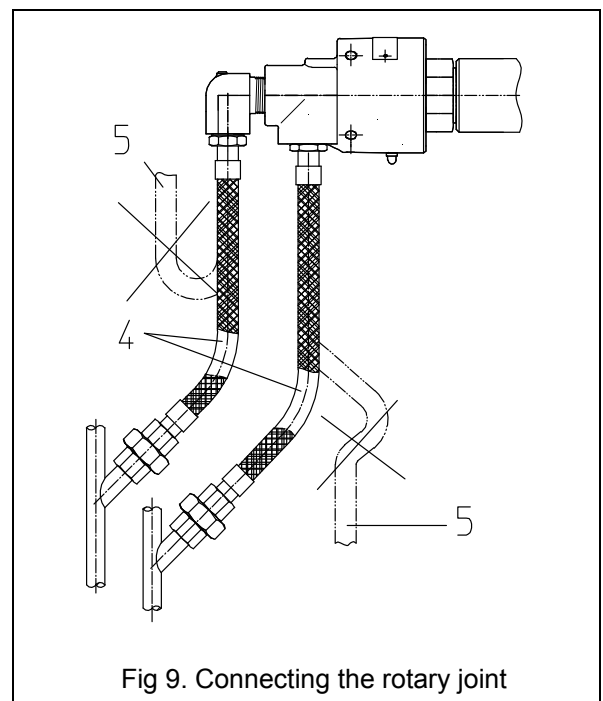
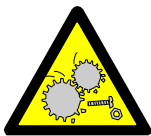


Fig 9. Connecting the rotary joint



Note!
Observe the information in section 3!

6 Operation



Attention!

Danger of damage to the rotary joint if is not operated as per instructions.

⇒ **Never operate the rotary joint beyond the application data limits specified in "Specifications and Spare Parts"!**

⇒ **Observe the limitations specified in section 0 on page 2!**

6.1 Observe and check during operation

Check the following during operation:

- Check for centric arrangement of the rotor with reference to the roller cog. The radial deflection at the rear area of the housing must not exceed the values in chapter 5.2 (Admissible concentricity tolerance). Place a dial gauge from the idle machine frame onto the rotary joint housing to check.
- Check the quality of the medium in the system and record the values.
- Check for visible leaks at the relief connection of the rotary joint. The operating behavior of the rotating mechanical seal installed does not change suddenly. If the seal is beginning to fail, this is indicated by slowly increasing leakage. Regular checks allow you to acquire values concerning the operating behavior of the rotary joint installed in the system.

6.2 Troubleshooting

Problem	Reason	Repair
Leakage at the housing via the relief holes	Rotating mechanical seal is damaged or worn.	Install a new rotating mechanical seal. Check the quality of the medium and the bearings.

7 Maintenance

7.1 Safety during maintenance

Only staff that has read and fully understood these operating instructions and that is fully aware of the dangers resulting from the rotary joint as well as the appropriate safety precautions may work with Maier rotary joints. Such staff must have at least the knowledge of a trained locksmith or industrial mechanic who has experience with pressurized components.

Perform work on the rotary joint only when the machine/system is idle.

Allow the rotary joint to cool down before you take up work or wear safety equipment to protect against the heat.

Always wear safety glasses when performing work on the rotary joint to protect against escaping medium.

Use only genuine Maier or Maier-approved spare parts (standard norm parts). If you use other parts, this may have adverse effects on the safety of the rotary joint.

Maier offers on site specialist service. We can also train your service staff - just get in touch with us!

If you have to remove protective equipment to perform the work, refit such equipment when you are done and check it for proper operation.

Make sure to properly tighten all screws (see sheet "Specifications and Dimensions").

Always observe the safety information in chapter 1 on page 2.

7.2 Maintenance plan

Due to lifetime lubrication, the rotary joints are maintenance-free up to operating temperatures of up to max. 80°C (176°F). The bearings must be lubricated if the rotary joints are operated at greater temperatures. Please refer to "Specifications and Spare Parts" for information on lubrication intervals and volumes.

Interval	Activity	Explanation
According to section "Specifications and Spare Parts"	Lubricate DP rotary joints depending on operating temperature.	Lubrication volume depends on the nominal diameter of the rotary joint (see section "Specifications and Spare Parts").
Every 12 months	Check all bearings and seals and replace them	By Maier customer service



Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

Contents

Table 1: Application data	1
Table 2: Transportation and storage	1
Table 3: Bearing lubrication	2
Table 4: Tightening Torques for Fastening Screws.....	2
Approved media for the pressure pipe	3
Specifications - standard media	3
DP DN 10 – 50 ($\frac{3}{8}$ " - 2").....	5
P N 10 ... 50 ($\frac{3}{8}$ " ... 2")	6
DP ... -800 DN 10 ... 50 ($\frac{3}{8}$ " ... 2").....	7
P ... - 800 DN 10 – 50 ($\frac{3}{8}$ " ... 2").....	8
At DN 15 and 20: Elbow with additional adapter!	8
Inner pipe for Elbow PO 2 ... - 800	8
DP Spare parts DN 10 – 50 ($\frac{3}{8}$ " ... 2")	9
DP DN 06 and Spare Parts.....	10
DP1 DN 65 – 100 (2½" - 4")	11
DP2 DN 65 – 100 (2½" - 4")	12
DPR2 DN 65 – 100 (2½" - 4").....	13
Spare Parts for types DP1, 1, R2, - DN 65 – 100 (2½" -4")	14
DPN1 D 10 – 50 (3/8" - 2").....	15
DPN2, DPNR2 DN 10 – 50 (3/8" - 2").....	16
Spare Parts for types DPN1, 2, R2, - DN 10 – 50 (3/8" - 2").....	17
Journal Flanges for K Rotor Connection	18

Table 1: Application data

Series		DP	DP	DP-800	DP	DPN	
Type					1, 2, R2	1B, 1C, 2, R2	
Nominal diameter DN [mm]		...06	10 ... 50	10 ... 50	65 ... 100	10 ... 50	
Nominal diameter DN [inch]		... $\frac{1}{4}$	$\frac{3}{8}$... 2	$\frac{3}{8}$... 2	2 $\frac{1}{2}$... 4	$\frac{3}{8}$... 2	
Medium		Compressed air, water	Hydraulic Oil	Water	Thermal Oil	Water	
Temperature	max. °C max. °F	... 120 ... 248	... 80 ... 176	-10 ... 160 14 ... 320	... 160 ... 320	-10 ... 140 14 ... 284	-10 ... 90 14 ... 194
Pressure PN,	min...max. bar min... max. psi	... 10 ... 145	... 80 1160	-0,2 ... 10 -2.9 ... 145	... 10 ... 145	-0,2 ... 10 -2.9 ... 145	-0,2 ... 10 -2.9 ... 10
Speed	max. min ⁻¹ max. rpm	<u>55000</u> DN [mm]		<u>55000</u> DN [mm]	<u>55000</u> DN [mm]	<u>55000</u> DN [mm]	<u>55000</u> DN [mm]
Speed limite for formula values	max. min ⁻¹ max. rpm	3000	400	2500	2500	850	2500

Avoid operating the unit under conditions involving several maximum values attained at the same time! Inquire for greater values and other media.

Table 2: Transportation and storage

Storage temperature	15 °C to 30 °C 59 °F to 86 °F
Humidity	65 %
Preservation	none; check compatibility with seal materials, if necessary



Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

Table 3: Bearing lubrication

Lubricant	Lubrication at grease nipple – used grease escapes at the housing. You may use any other grease that meets the application and operation conditions. The rotary joints are factory-lubricated with PETAMO GY 193, Klüber Lubrication KG (phone.: ++49-(0)89-7876-271 www.klueber.com)												
Volume	DN mm	...06	10	15	20	25	32	40	50	65	75	80	100
	DN inch	...1/4	3/8	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4
	Q grease *	-*1	3	4	5	6	8	10	15	20	35	35	50
* strokes of a grease gun according to DIN 1283 with 1.2 cm ³ (0.073in ³) / stroke													
Interval	up to 80°C up to 176°F		80°C to 120°C 176°F to 248°F				120°C to 140°C 248°F to 284°F			140°C to 160°C 284°F to 320°F			
	*1	factory lifetime lubrication	every 6 months				every 12 weeks			every 2 weeks			

Table 4: Tightening Torques for Fastening Screws in Nm (ft lbf) with friction in the thread and connecting surface with $\mu = 0,14$ and ...

Property class 5.6 at a screw temperature of						
Size	20°C 68°F	100°C 212°F	150°C 302°F	200°C 392°F	250°C 482°F	300°C 572°F
M 6	4,0 (2.95)	3,6 (2.66)	3,4 (2.51)	3,1 (2.29)	2,9 (2.14)	2,7 (1.99)
M 8	10,0 (7.38)	9,0 (6.64)	8,5 (6.27)	7,9 (5.83)	7,3 (5.38)	6,6 (4.87)
M 10	18 (13.28)	16 (11.80)	15 (11.06)	14 (10.33)	13 (9.59)	12 (8.85)
M 12	37 (27.29)	33 (24.34)	31 (22.86)	29 (21.39)	26 (19.18)	24 (17.70)
M 16	90 (66.38)	81 (59.74)	76 (56.05)	71 (52.37)	65 (47.94)	60 (44.25)
M 20	175 (129.07)	158 (116.53)	148 (109.16)	138 (101.78)	127 (93.67)	116 (85.56)
Property class 8.8 at a screw temperature of						
Size	20°C 68°F	100°C 212°F	150°C 302°F	200°C 392°F	250°C 482°F	300°C 572°F
M 6	10,0 (7.38)	9,3 (6.86)	8,9 (6.56)	8,4 (6.20)	8,0 (5.90)	7,5 (5.53)
M 8	24,0 (17.70)	22,3 (16.45)	21,3 (15.71)	20,3 (14.97)	19,1 (14.09)	18,0 (13.28)
M 10	48 (35.40)	45 (33.19)	43 (31.72)	41 (30.24)	38 (28.03)	36 (26.55)
M 12	82 (60.48)	76 (56.05)	73 (53.84)	69 (50.89)	65 (47.94)	62 (45.73)
M 16	206 (151.94)	192 (141.61)	183 (134.97)	174 (128.34)	164 (120.96)	155 (114.32)
M 20	400 (295.02)	372 (274.37)	355 (261.83)	338 (249.30)	319 (235.28)	300 (221.27)

The property class is indicated by the designation of the fastening element. Please inquire for data on other materials

Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

Approved media for the pressure pipe

Series DP ... 06 may be used for water, compressed air and hydraulic oil, the series DP and DPN for water, having the quality described below. Other media including additives (e.g. anticorrosion or antifreeze agents) must be checked for compatibility with the sealing materials at the manufacturer's site.

Thermal oil must not be used under any circumstances since the elastomers used in the units are not compatible with such media! Use only type DP ... -800 rotary joints for thermal oil!

Specifications - standard media

General

The quality of the water used plays a decisive role regarding the service life and reliability of Maier rotary joints. It is strongly recommended that the media the specifications listed below. Inappropriate water quality will result in heavy wear of the seals and premature failure of the rotary joint.

Section 1: Water at temperatures -10°C - 70°C (14°F – 158°F) for rotary joint DP and DPN

- General: clear, no sediments
- Filtration: particle size 20 µm (788µin), max. 50µm (1969µin]
- Water hardness: < 3,2 mmol/l (322 ppm CaCO₃)
- If required, add a suitable antifreeze agent and a **silicate-free** anticorrosion agent (ensure compatibility with the materials used in the unit, check back with manufacturer, if necessary).

Section 2: Water at temperatures > 70°C (158°F) for rotary joint DP and DPN

- General: clear, no sediments
- Filtration: particle size 20 µm (788µin), max. 50µm (1969µin]
- Water hardness: < 3,2 mmol/l (322 ppm CaCO₃)
- Low salt concentration according to *VdTUV- Guideline TCh 1466 "Guideline for Circulation Water in Hot Water and Warm Water Heating Systems" ("Richtlinie für das Kreislaufwasser in Heißwasser – und Warmwasserheizungsanlagen), sheet 1*
- If required, add a suitable antifreeze agent and a **silicate-free** anticorrosion agent (ensure compatibility with the materials used in the unit, check back with manufacturer, if necessary).

Section 3: Thermal oil temperature < 160 °C (320°F) for rotary joint series DP ... -800

- Material groups:
 1. Thermal oil consisting of hydrocarbons (mineral base, group 1)
 2. Thermal oil made of isomer mixture (synthetic base – group 2)

Only upon request:
Thermal oil consisting of uniform material (synthetic base – group 3)
 - General: clear, no sediments
 - Filtration: particle size 50 µm,(1969µin) max. 100µm (3937µin)
 - Steam pressure*: The steam pressure must not exceed 0.5 bar (7,25 psi) abs at maximum operating temperature.
- *: Steam pressure is the pressure at which a liquid becomes gaseous. The steam pressure depends on the temperature of the liquid.
- Specific heat conductivity: For maximum heat dissipation in the sealing gap, the value should be as good as possible.
 - Kinematic viscosity: For excellent flow in the system and lubrication effect in the rotary joint, the following values should be attained:
 - as low as possible at minimum application temperature
 - as high as possible at maximum application temperature.

Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

Section 4: Hydraulic oil with temperature up to max. 80 °C (176 °F) for rotary joint series DP ...06

We recommend to use Hydraulic oil acc.to DIN 51524 or better with the purity class 21/19/16 acc. to **ISO 4406/99** it should be noted, that transport and storage has a strong influence on the oil purity. Any way, you must accurately filter the fluid when filling, to ensure the oil purity required.

Particle size 4µm			Particle size 6µm			Particle size 14µm		
ISO Code	Particle quantity / 100ml		ISO Code	Particle quantity / 100ml		ISO Code	Particle quantity / 100ml	
	from	to		from	to		from	to
21	1.000.000	2.000.000	19	260.000	500.000	16	32.000	64.000

Section 5: **Compressed air** with temperature up to max. 120 °C (248 °F) for rotary joint DP ... 6

Air food grade (dry and oil-free)

Compressed air quality acc.to DIN ISO 8573-1

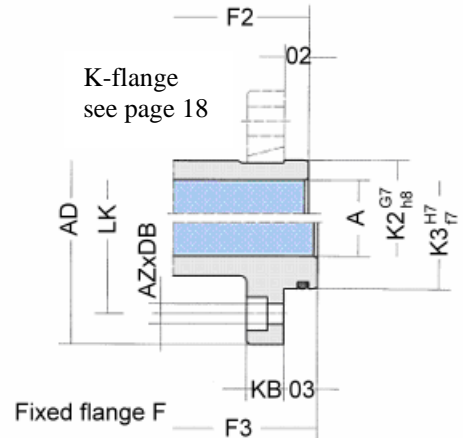
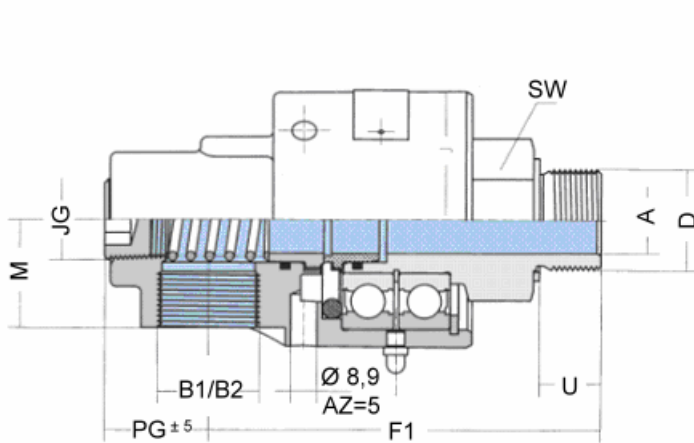
Particle quantity /m ³ Particle size d (µm)			Pressure dew point		Residual oil content
0,1 < d <=0,5	0,5 < d <=1	1 <d <=5	°C	°F	(mg/m ³)
100.000	1.000	10	<= +3	<= + 37.4	0,01

Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

DP DN 10 – 50 ($\frac{3}{8}$ " - 2")



		DN [mm]	10	15	20	25	32	40	50
		DN[inch]	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Housing connection	B2=G	Type	DP 10 R 51	DP 15 R 51	DP 20 R 51	DP 25 R 51	DP 32 R 51	DP 40 R 51	DP 50 R 51
		Order-No.	1112050-051	1112100-051	1112150-051	1112200-051	1112250-051	1112300-051	1112350-051
		Type	DP 10 L 51	DP 15 L 51	DP 20 L 51	DP 25 L 51	DP 32 L 51	DP 40 L 51	DP 50 L 51
		Order-No.	1112051-051	1112101-051	1112151-051	1112201-051	1112251-051	1112301-051	1112351-051
		Type						DP 40 K 91	DP 50 K 91
		Order-No.						1112302-091	1112352-091
	B1=NPT	Type						DP 40 F 91	DP 50 F 91
		Order-No.						1112303-091	1112353-091
		Type	DP 10 R 11	DP 15 R 11	DP 20 R 11	DP 25 R 11	DP 32 R 11	DP 40 R 11	DP 50 R 11
		Order-No.	1112050-011	1112100-011	1112150-011	1112200-011	1112250-011	1112300-011	1112350-011
		Type	DP 10 L 11	DP 15 L 11	DP 20 L 11	DP 25 L 11	DP 32 L 11	DP 40 L 11	DP 50 L 11
		Order-No.	1112051-011	1112101-011	1112151-011	1112201-011	1112251-011	1112301-011	1112351-011
	Type						DP 40 K 01	DP 50 K 01	
	Order-No.						1112302-001	1112352-001	
	Type						DP 40 F 01	DP 50 F 01	
	Order-No.						1112303-001	1112353-001	

Ø A	9,5	13	17,5	22	30	35	47
B1	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2	G 2
B2	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT	1 1/4" NPT	1 1/2" NPT	2" NPT
D	G 3/8 A	G 1/2 A	G 3/4 A	G 1 A	G 1 1/4 A	G 1 1/2 A	G 2 A
F1	88	98	112	128	153	176	191
F2						164	201
F3						170	192
Ø J	54	58	74	84	100	110	137
Ø K2 G7/h8						50	65
Ø K3 H7/f7						65	80
M	24	25	31	36	42	45	57
O2						10	10
O3						20	20
PG ±5	26,5	24	30	37	46	53,5	60
U	15	18	17	20	26	27	27
Ø AD						100	125
AZ x Ø DB						5x9	5x11
JG	1/4" NPT	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT	1 1/4" NPT	1 1/2" NPT
KB						15	15
Ø LK						80	100
SW	24	30	36	46	55	60	75
weight kg	0,8	1	1,8	2,4	4,5	6,2	9
weight lbs	1.7	2.2	4	5.3	9.9	13.7	19.8

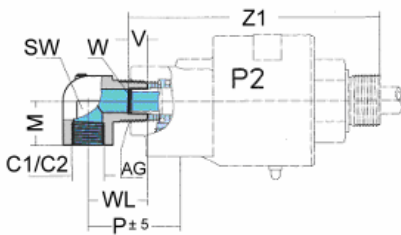
Specifications and Spare Parts

Series DP

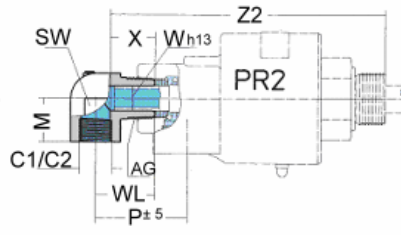
S-DP_en -Version 7 – 16.02.2011

P N 10 ... 50 ($\frac{3}{8}$ " ... 2")

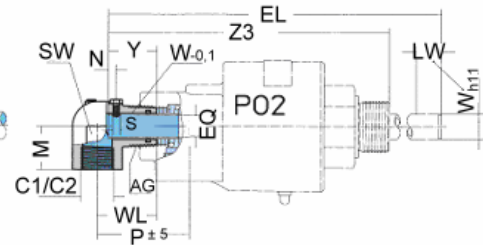
Elbow for series DP



Type P 2
for non rotating inner pipe
(with right-hand thread)



type PR 2
for rotating inner pipe, directly born
in elbow



Type PO 2
for non-rotating inner pipe, floating with elbow
and O-ring, anti-rotational protection by means
of screw. Inner pipe for type PO 2 available.

	DN mm	10	15	20	25	32	40	50
	DN inch	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
C 1 = G	Type	P2 10 G	P2 15 G	P2 20 G	P2 25 G	P2 32 G	P2 40 G	P2 50
	Order-No.	1112066	1112116	1112166	1112216	1112266	1112316	1112366
	Type	PR2 10 G	PR2 15 G	PR2 20 G	PR2 25 G	PR2 32 G	PR2 40 G	PR2 50 G
	Order-No.	1112067	1112117	1112167	1112217	1112267	1112317	1112367
C 2 = NPT	Type	PO2 10 G	PO2 15 G	PO2 20 G	PO2 25 G	PO2 32 G	PO2 40 G	PO2 50 G
	Order-No.	1112068	1112118	1112168	1112218	1112268	1112318	1112368
	Type	P2 10 N	P2 15 N	P2 20 N	P2 25 N	P2 32 N	P2 40 N	P2 50 N
	Order-No.	1112069	1112119	1112169	1112219	1112269	1112319	1112369
C 2 = NPT	Type	PR2 10 N	PR2 15 N	PR2 20 N	PR2 25 N	PR2 32 N	PR2 40 N	PR2 50 N
	Order-No.	1112070	1112120	1112170	1112220	1112270	1112320	1112370
	Type	PO2 10 N	PO2 15 N	PO2 20 N	PO2 25 N	PO2 32 N	PO2 40 N	PO2 50 N
	Order-No.	1112071	1112121	1112171	1112221	1112271	1112321	1112371

C1	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 3/4	G 1 1/4
C2	1/4" NPT	3/8" NPT	1/2" NPT	1/2" NPT	3/4" NPT	3/4" NPT	1 1/4" NPT
M	18	20	26	28	35	38	45
N	5	5	5	5	5	5	5
P ±5	42,5	38,5	51	59	74	82	98
ØS	5	5	5	5	5	5	5
V	8	8	12	12	15	17	20
W	M 6x1	G 1/8	G 1/4	G 3/8	G 1/2	G 3/4	G 1
Ø W h13	6	10	13	16	22	26	32,2
Ø W -0,1	6	10	13	16	22	26	34
X	21	19,5	25,5	28,5	35	37	39
Y	25	25	28	31	38	40	40
Z1	112	118	140	161	195	226	250
Z2	125	129	153,5	177,5	215	246	269
Z3	129	135	156	180	218	249	270
AG	1/4" NPT	3/8" NPT	1/2" NPT	3/4" NPT	1" NPT	1 1/4" NPT	1 1/2" NPT
SW	22	22	32	32	36	36	55
WL	27	27	35	38	47	49	58,5
weight kg	0,1	0,1	0,3	0,3	0,5	0,6	1,3
weight lbs	0.22	0.22	0.66	0.66	1.1	1.32	2.86

Inner pipe for Elbow PO2

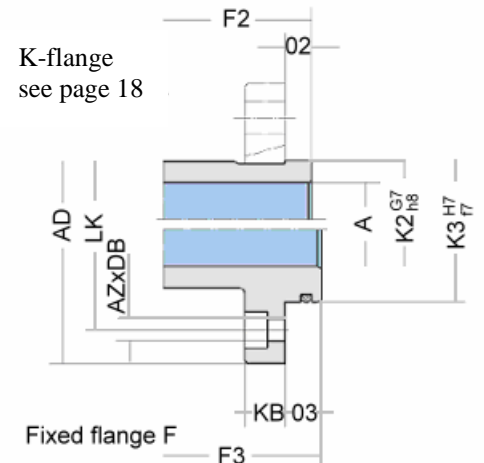
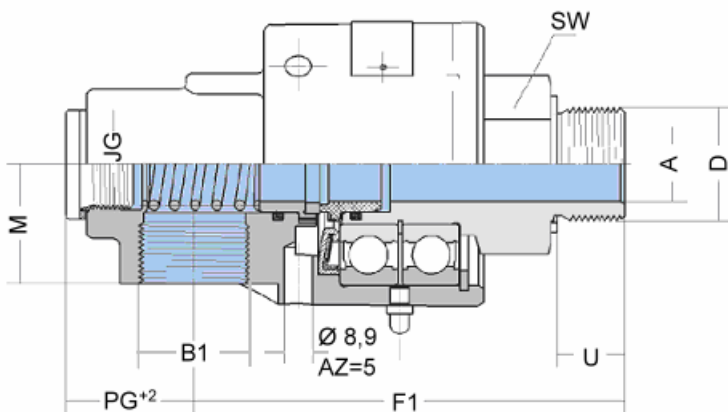
DN mm	10	15	20	25	32	40	50
DN inch	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{3}{4}$	1	$1\frac{1}{4}$	$1\frac{1}{2}$	2
Typ	ES 10	ES 15	ES 20	ES 25	ES 32	ES 40	ES 50
Best.-Nr.	1190951	1190952	1190953	1190954	1190955	1190956	1190957
ØW h11	6	10	13	16	22	26	34
ØEQ	5	8	11	14	20	24	31
EL	176	188	193	252	269	297	342
LW	55	55	55	75	55	55	75

Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

DP ... -800 DN 10 ... 50 ($\frac{3}{8}$ " ... 2")



DN mm DN inch	10 $\frac{3}{8}$	15 $\frac{1}{2}$	20 $\frac{3}{4}$	25 1	32 $1\frac{1}{4}$	40 $1\frac{1}{2}$	50 2
Type Order-No.	DP 10 R 53-800 1112050-800	DP 15 R 53-800 1112100-800	DP 20 R 53-800 1112150-800	DP 25 R 53-800 1112200-800	DP 32 R 53-800 1112250-800	DP 40 R 53-800 1112300-800	DP 50 R 53-800 1112350-800
Type Order-No.	DP 10 L 53-800 1112051-800	DP 15 L 53-800 1112101-800	DP 20 L 53-800 1112151-800	DP 25 L 53-800 1112201-800	DP 32 L 53-800 1112251-800	DP 40 L 53-800 1112301-800	DP 50 L 53-800 1112351-800
Type Order-No.						DP 40 K 93-800 1112302-800	DP 50 K 93-800 1112352-800
Type Order-No.						DP 40 F 93-800 1112303-800	DP 50 F 93-800 1112353-800

Ø A	9,5	13	17,5	22	30	35	47
B1	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2	G 2
D	G 3/8 A	G 1/2 A	G 3/4 A	G 1 A	G 1 1/4 A	G 1 1/2 A	G 2 A
F1	88	98	112	128	153	176	191
F2						164	201
F3						170	192
ØJ	54	58	74	84	100	110	137
ØK2 G7/h8						50	65
ØK3 H7/f7						65	80
M	24	25	31	36	42	45	57
O2						10	10
O3						20	20
U	15	18	17	20	26	27	27
ØAD						100	125
AZxØDB						5x9	5x11
JG	G 1/4	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2
KB						15	15
ØLK						80	100
PG +2	29,5	25	33,5	40,5	49,5	56,5	62,5
SW	24	30	36	46	55	60	75
weight kg	0,8	1	1,8	2,4	4,5	6,2	9
weight lbs	1.76	2.2	3.96	5.29	9.92	13.66	19.84

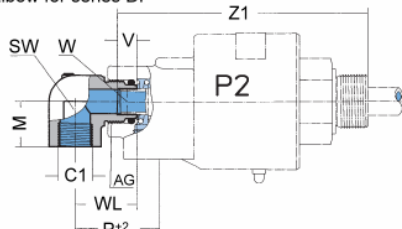
Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

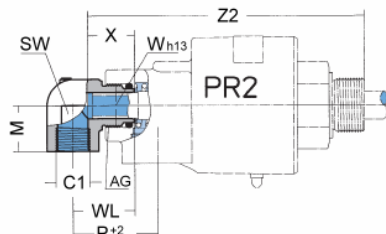
P ...- 800 DN 10 – 50 ($\frac{3}{8}$ " ... 2")

Elbow for series DP



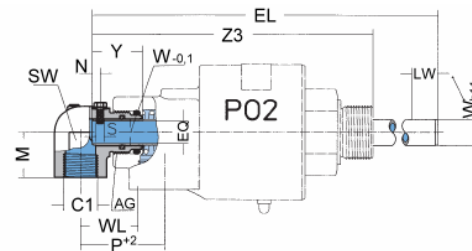
Type P 2

for non-rotating inner pipe
(with right-hand thread)



Type PR 2

for rotating inner pipe, directly born
in elbow



Type PO 2

for non-rotating inner pipe, floating within elbow
and O-ring, anti-rotational protection by means
of screw. Inner pipe for Type PO 2 available

DN mm DN inch	10 $\frac{3}{8}$	15* $\frac{1}{2}$	20* $\frac{3}{4}$	25 1	32 $\frac{1}{4}$	40 $\frac{1}{2}$	50 2
Typ Best.-Nr.	P2 10 G-800 1112066-800	P2 15 G-800 1112116-800	P2 20 G-800 1112166-800	P2 25 G-800 1112216-800	P2 32 G-800 1112266-800	P2 40 G-800 1112316-800	P2 50 G-800 1112366-800
Typ Best.-Nr.	PR2 10 G-800 1112067-800	PR2 15 G-800 1112117-800	PR2 20 G-800 1112167-800	PR2 25 G-800 1112217-800	PR2 32 G-800 1112267-800	PR2 40 G-800 1112317-800	PR2 50 G-800 1112367-800
Typ Best.-Nr.	PO2 10 G-800 1112068-800	PO2 15 G-800 1112118-800	PO2 20 G-800 1112168-800	PO2 25 G-800 1112218-800	PO2 32 G-800 1112268-800	PO2 40 G-800 1112318-800	PO2 50 G-800 1112368-800

C1	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 3/4	G 1 1/4
M	18	20	26	28	35	38	45
N	5	5	5	5	5	5	5
P ± 2	36,5	53	70	52,5	66,5	73,5	87,5
ØS	5	5	5	5	5	5	5
V	8	8	12	12	15	17	20
W	M 6x1	G 1/8	G 1/4	G 3/8	G 1/2	G 3/4	G 1
ØW h13	6	10	13	16	22	26	32,2
ØW -0,1	6	10	13	16	22	26	34
X	21	19,5	25,5	28,5	35	37	39
Y	25	25	28	31	38	40	40
Z1	105,5	132	159	154,5	187,5	217,5	240
Z2	118,5	143,5	172,5	171	207,5	237,5	259
Z3	122,5	149	175	173,5	210,5	240,5	260
AG	G 1/4 A	G 3/8 A	G 1/2 A	G 3/4 A	G 1 A	G 1 1/4 A	G 1 1/2 A
SW	22	22	32	32	36	36	55
WL	27	27	35	38	47	49	58,5
weight kg	0,1	0,1	0,3	0,3	0,5	0,6	1,3
weight lbs	0.22	0.22	0.66	0.66	1.1	1.32	2.86

At DN 15 and 20: Elbow with additional adapter!

Inner pipe for Elbow PO 2 ...- 800

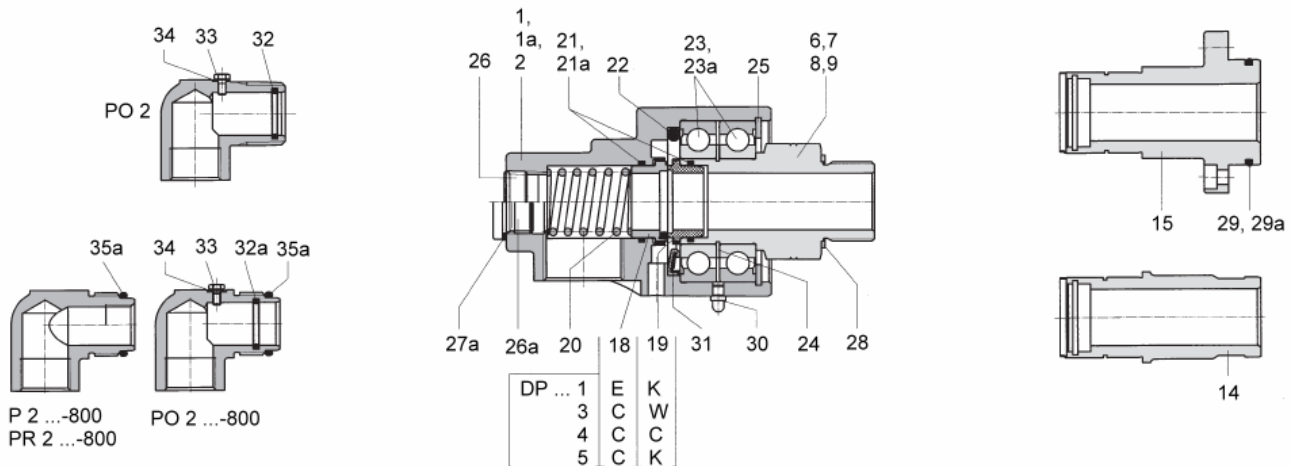
DN mm DN inch	10 $\frac{3}{8}$	15 $\frac{1}{2}$	20 $\frac{3}{4}$	25 1	32 $\frac{1}{4}$	40 $\frac{1}{2}$	50 2
Typ Best.-Nr.	ES 10-800 1190951-800	ES 15-800 1190952-800	ES 20-800 1190953-800	ES 25-800 1190954-800	ES 32-800 1190955-800	ES 40-800 1190956-800	ES 50-800 1190957-800
ØW h11	6	10	13	16	22	26	34
ØEQ	5	8	11	14	20	24	31
EL	169,5	202	212	245,5	261,5	288,5	332
LW	55	55	55	75	55	55	75

Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

DP Spare parts DN 10 – 50 ($\frac{3}{8}$ " ... 2")



DN mm DN inch	10 $\frac{3}{8}$	15 $\frac{1}{2}$	20 $\frac{3}{4}$	25 1	32 $1\frac{1}{4}$	40 $1\frac{1}{2}$	50 2
1 Housing G	1112091	1112141	1112191	1112241	1112291	1112341	1112391
1a Housing G-800	1112091	1112141-100	1112191-100	1112241-100	1112291-100	1112341-100	1112391-100
2 Housing N	1112092	1112142	1112192	1112242	1112292	1112342	1112392
6 Rotor RG	1112078	1112128	1112178	1112228	1112278	1112328	1112378
7 Rotor LG	1112079	1112129	1112179	1112229	1112279	1112329	1112379
8 Rotor RN	1112080	1112130	1112180	1112230	1112280	1112330	1112380
9 Rotor LN	1112081	1112131	1112181	1112231	1112281	1112331	1112381
14 Rotor K						1112336	1112386
15 Rotor F						1112337	1112387
18E Mechanical seal E	1112088-001	1112138-001	1112188-001	1112238-001	1112288-001	1112338-001	1112388-001
18C Mechanical seal C	1112088-002	1112138-002	1112188-002	1112238-002	1112288-002	1112338-002	1112388-002
19K Counter face K	3511391-001	3511392-001	3511393-001	3511394-001	3511395-001	3511396-001	3511397-001
19 Counter face W	3511391-002	3511392-002	3511393-002	3511394-002	3511395-002	3511396-002	3511397-002
19C Counter face C	1112088-002	1112138-002	1112188-002	1112238-002	1112288-002	1112338-002	1112388-002
20 Compression	3511661	3511662	3511663	3511664	3511665	3511666	3511667
21 O-ring	3511809	3511866	3511721	3511929	3511947	3511886	3511696
21a O-ring	3511809-001	3511866-001	3511721-001	3511929-001	3511947-001	3511886-001	3511696-001
22 O-ring	3511860	3511867	3511861	3511862	3511863	3511864	3511865
23 Ball bearing	3510200	3510079	3510202	3510203	3510086	3510204	3510090
23a Ball bearing	3510077-010	3510079-010	3510097-010	3510082-010	3510086-010	3510087-010	3510090-010
24 Circlip	3501000	3501001	3501002	3501003	3501008	3501014	3501030
25 Circlip	3501220	3501219	3501222	3501223	3501205	3501221	3501246
26 Screw plug	3500663-004	3500662-004	3500684-004	3500621-004	3500622-004	3500623-004	3500624-004
26a Screw plug	3500687	3500631	3500688	3500632	3500635	3500633	3500634
27a CU-seal	3502114-001	3502116-001	3502115-001	3502120-001	3502111-001	3502117-001	3502118-001
28 CU-seal	350211-001	3502115-001	3502120-001	3502111-001	3502117-001	3502118-001	3502121-001
29 O-ring						3511948	3511949
29a O-ring						3511948-001	3511949-001
30 Grease nipple	3500918	3500918	3500918	3500918	3500918	3500918	3500918
31 Shaft seal	3512325-001	3512326-001	3512327-001	3512328-001	3512329-001	3512330-001	3512331-001

Spare Parts for Elbow

DN mm DN inch	10 $\frac{3}{8}$	15 $\frac{1}{2}$	20 $\frac{3}{4}$	25 1	32 $1\frac{1}{4}$	40 $1\frac{1}{2}$	50 2
32 O-ring	3511729	3511849	3511722	3511944	3511852	3511723	3511945
32a O-ring	3511729-001	3511849-001	3511722-001	3511944-001	3511852-001	3511723-001	3511945-001
33 Hex.screw	3500014-003	3500014-003	3500015-003	3500015-003	3500014-003	3500014-003	3500015-003
34 Cu-seal	3502122-001	3502122-001	3502122-001	3502122-001	3502122-001	3502122-001	3502122-001
35a O-ring	3511849-001	3511809-001	3511851-001	3511852-001	3511754-001	3511947-001	3512509-001

For variant -800 Pos.31 instead Pos.22. Please specify type designation when making an inquiry or placing an order.

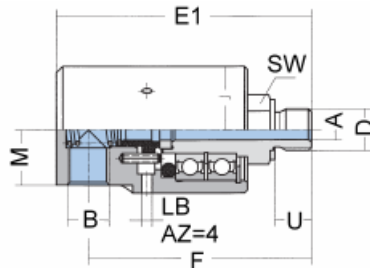
Specifications and Spare Parts

Series DP

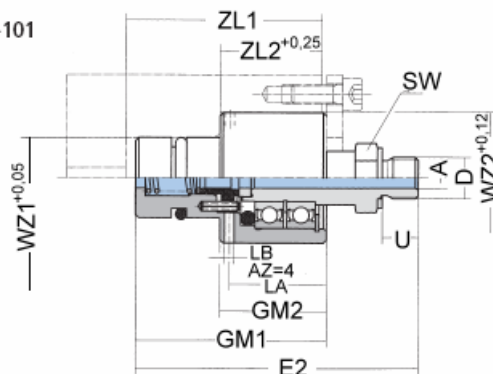
S-DP_en -Version 7 – 16.02.2011

DP DN 06 and Spare Parts

DP .. R/L 55



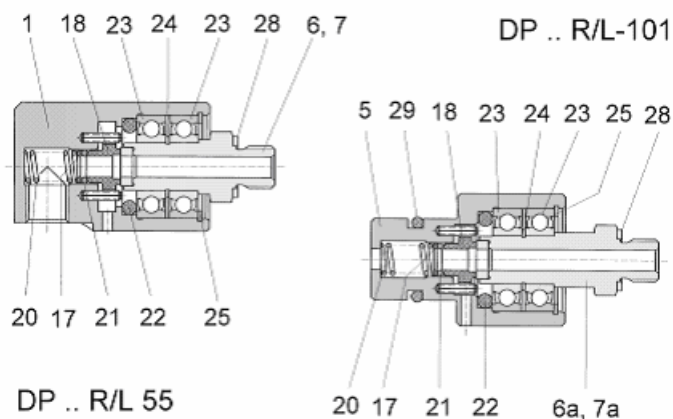
DP .. R/L -101



DN mm DN inch	06 1/4
Type	DP 06 R 55
Order-No.	1112000-055
Type	DP 06 L 55
Order-No.	1112001-055
Type	DP 06 R -101
Order-No.	1112000-101
Type	DP 06 L-101
Order-No.	1112001-101

Ø A	6,5
B	G ¹ / ₄
D	G ¹ / ₄ A
E1	80
E2	89
F	70
ØJ	40
M	17,5
U	11,5
GM1	60
GM2	33,5
LA	30
ØLB	3,2
SW	19
WZ1	25,4
WZ2	41,66
ZL1	61,5
ZL2	32
weight kg	0,3
weight lbs	0.66

Spare Parts DN 06 (1/4")



DN mm DN inch	06 1/4
1 Housing G	1112041
5 Housing (-101)	1112041-058
6 Rotor RG	1112028-002
6a RotorRG (-101)	1112028-057
7 Rotor LG	1112029-002
7a Rotor LG (-101)	1112029-057
17 Disc	3502113-001
18 Mechanical seal	3511390-001
20 Compression spring	3511521
21 O-ring	3511704-001
22 O-ring	3511906-016
23 Ball bearing	3510047
24 Circlip	3501025
25 Circlip	3501200
28 Cu-seal	3502114-001
29 O-ring	3511868

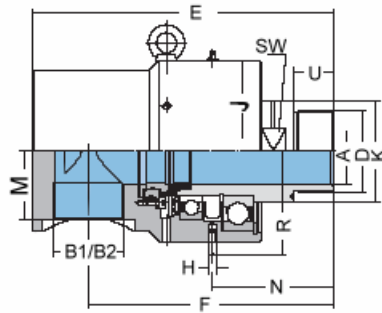
Specifications and Spare Parts

Series DP

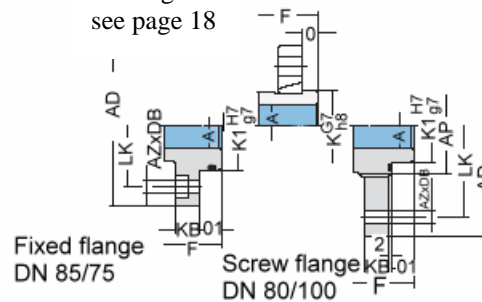
S-DP_en -Version 7 – 16.02.2011

DP1 DN 65 – 100 (2½" - 4")

for one way flow of a medium



K-flange
see page 18



		DN [mm]	65	75	80	100
		DN[inch]	2½	3	3½	4
Housing connection	B1 = G	Type	DP 165 R 51	DP 175 R 51	DP 180 R 51	DP 1100 R 51
		Order-No.	1112400-051	1112575-051	1112450-051	1112550-051
		Type	DP 165 L 51	DP 175 L 51	DP 180 L 51	DP 1100 L 51
		Order-No.	1112401-051	1112576-051	1112451-051	1112551-051
		Type	DP 165 K 91	DP 175 K 91	DP 180 K 91	DP 1100 K 91
		Order-No.	1112402-091	1112577-091	1112452-091	1112552-091
	B2 = NPT	Type	DP 165 R 11	DP 175 R 11	DP 180 R 11	DP 1100 R 11
		Order-No.	1112400-011	1112575-011	1112450-011	1112550-011
		Type	DP 165 L 11	DP 175 L 11	DP 180 L 11	DP 1100 L 11
		Order-No.	1112401-011	1112576-011	1112451-011	1112551-011
		Type	DP 165 K 01	DP 175 K 01	DP 180 K 01	DP 1100 K 01
		Order-No.	1112402-001	1112577-001	1112452-001	1112552-001

ØA	65	72	82	98
B1	G2½	G3	G3	G4
B2	2½" NPT	3" NPT	3" NPT	4" NPT
D	G2½ A	G3 A	G3½ A	G4 A
E	327	375	375	425
F	270	305	305	340
Ø H	10	10	10	12
Ø J	185	225	225	258
Ø K	104	115	125	144
Ø K G7/h8	85	87,29	105	114
Ø K1 H7/g7	98	105	101,7	120,62
M	62,5	85	85	100
N	134	151	151	169
O	25	30	30	30
O1	20	8	6,4	7,5
R	110	130	130	155
U	45	50	50	60
Ø AD	145	185	228,6	276
AZ x Ø DB	5x11	4x18	6x17,5	6x20,5
AP			141	160
KB	26	20	22,2	22,2
LK	120	145	192	228,6
SW	85	110	110	120
Weight kg	31,5	58	58	88
Weight lbs	69.5	127.9	127.9	194

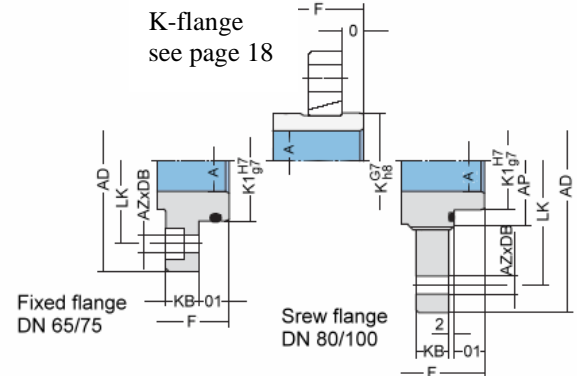
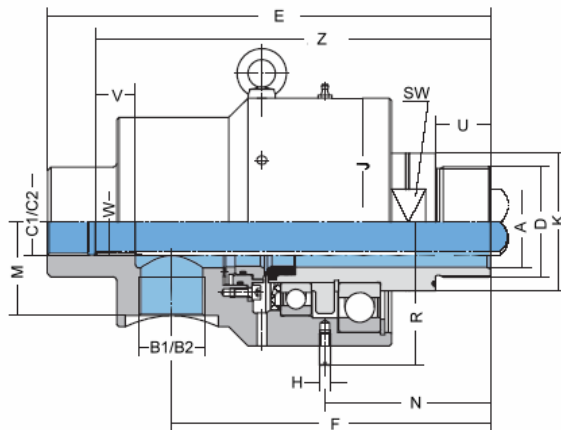
Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

DP2 DN 65 – 100 (2½" - 4")

for two way flow of a medium designed for non-rotating inner pipe



		DN [mm]	65	75	80	100
		DN[inch]	2½	3	3½	4
Housing connection	B1=G1=G	Type	DP 265 R 51	DP 275 R 51	DP 280 R 51	DP 2100 R 51
		Order-No.	1112404-051	1112579-051	1112454-051	1112554-051
		Type	DP 265 L 51	DP 275 L 51	DP 280 L 51	DP 2100 L 51
		Order-No.	1112405-051	1112580-051	1112455-051	1112555-051
		Type	DP 265 K 91	DP 275 K 91	DP 280 K 91	DP 2100 K 91
		Order-No.	1112406-091	1112581-091	1112456-091	1112556-091
	B2=C2=NPT	Type	DP 265 R 11	DP 275 R 11	DP 280 R 11	DP 2100 R 11
		Order-No.	1112404-011	1112579-011	1112454-011	1112554-011
		Type	DP 265 L 11	DP 275 L 11	DP 280 L 11	DP 2100 L 11
		Order-No.	1112405-011	1112580-011	1112455-011	1112555-011
		Type	DP 265 K 01	DP 275 K 01	DP 280 K 01	DP 2100 K 01
		Order-No.	1112406-001	1112581-001	1112456-001	1112556-001

ØA	65	72	82	98
B1.C1	G1½	G2	G2	G2½
B2,C2	1½" NPT	2" NPT	2" NPT	2½" NPT
D	G2½ A	G3 A	G3½ A	G4 A
E	345	403	445	445
F	255	290	290	320
Ø H	10	10	10	12
Ø J	185	225	225	258
Ø K	104	115	125	144
Ø K G7/h8	85	87,29	105	114
Ø K1 H7/g7	98	105	101,7	120,62
M	62,5	85	85	100
N	134	151	151	169
O	25	30	30	30
O1	20	8	6,4	7,5
R	110	130	130	155
U	45	50	50	60
V	28,5	36	36	38,5
W	G1½	G2	G2	G2½
Ø AD	145	185	228,6	276
AZ x Ø DB	5x11	4x18	6x17,5	6x20,5
AP			141	160
KB	26	20	22,2	22,2
LK	120	145	192	228,6
SW	85	110	110	120
Weight kg	28	52	52	75
Weight lbs	61.7	114.6	114.6	165.3

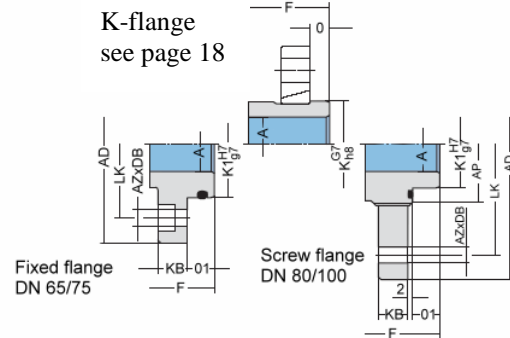
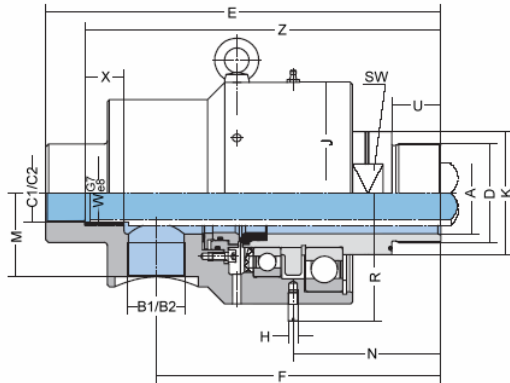
Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

DPR2 DN 65 – 100 (2½" - 4")

for two way flow of a medium designed for a rotating inner pipe



		DN [inch]	65	75	80	100
		DN [inch]	2½	3	3½	4
Housing connection	B1 = G1 = G	Type	DPR265 R 51	DPR 275 R 51	DPR 280 R 51	DPR 2100 R 51
		Order-No.	1112408-051	1112583-051	1112458-051	1112558-051
		Type	DPR 265 L 51	DPR 275 L 51	DPR 280 L 51	DPR 2100 L 51
		Order-No.	1112409-051	1112584-051	1112459-051	1112559-051
		Type	DP 265 K 91	DP 275 K 91	DP 280 K 91	DP 2100 K 91
	Order-No.	1112410-091	1112585-091	1112460-091	1112560-091	
	B2 = C2 = NPT	Type	DPR 265 R 11	DPR 275 R 11	DPR 280 R 11	DPR 2100 R 11
		Order-No.	1112408-011	1112583-011	1112458-011	1112558-011
		Type	DP 265 L 11	DP 275 L 11	DP 280 L 11	DP 2100 L 11
		Order-No.	1112409-011	1112584-011	1112459-011	1112559-011
Type		DPR 265 K 01	DPR 275 K 01	DPR 280 K 01	DPR 2100 K 01	
Order-No.	1112410-001	1112585-001	1112460-001	1112560-001		
ØA			65	72	82	98

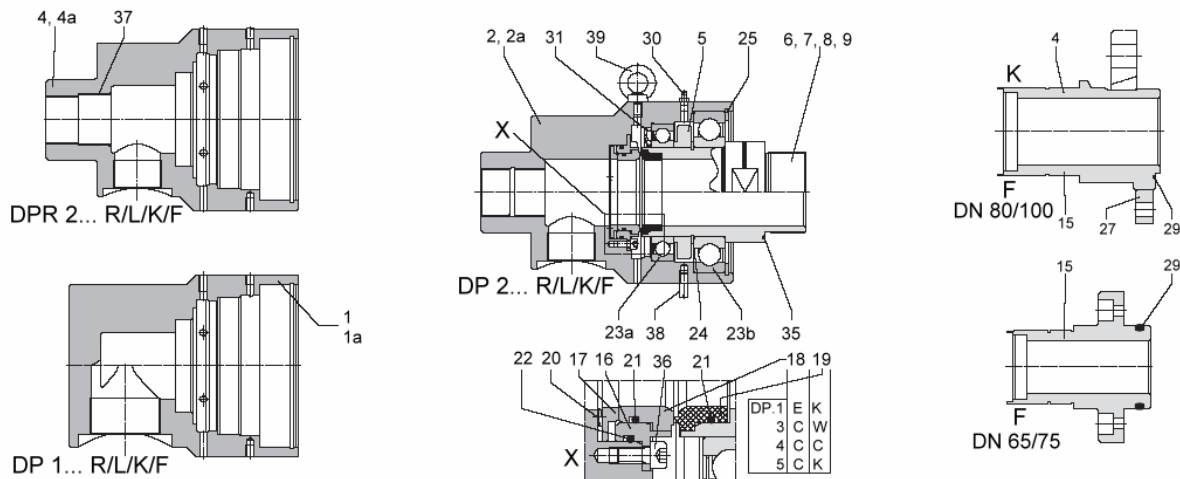
B1.C1	G1½	G2	G2	G2½
B2,C2	1½" NPT	2" NPT	2" NPT	2½" NPT
D	G2½ A	G3 A	G3½ A	G4 A
E	345	403	403	445
F	255	290	290	320
Ø H	10	10	10	12
Ø J	185	225	225	258
Ø K	104	115	125	144
Ø K G7/h8	85	87,29	105	114
Ø K1 H7/g7	98	105	101,7	120,62
M	62,5	85	85	100
N	134	151	151	169
O	25	30	30	30
O1	20	8	6,4	7,5
R	110	130	130	155
U	45	50	50	60
W Ø G7/e8	45	60	60	75
X	30	40	40	40
Z	310	363	363	400
Ø AD	145	185	228,6	276
AZ x Ø DB	5x11	4x18	6x17,5	6x20,5
AP			141	160
KB	26	20	22,2	22,2
LK	120	145	192	228,6
SW	85	110	110	120
weight kg	28	52	52	75
weight lbs	61.7	114.6	114.6	165.3

Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

Spare Parts for types DP1, 1, R2, - DN 65 – 100 (2½" - 4")



	DN [mm]	65	75	80	100
	DN [inch]	2½	3	3½	4
1	Housing 1 G	1112441	1112491	1112491	1112541
1a	Housing 1 N	1112445	1112495	1112495	1112545
2	Housing 1 G	1112442	1112492	1112492	1112542
2a	Housing 1 N	1112446	1112496	1112496	1112546
4	Housing R2 G	1112443	1112493	1112493	1112543
4a	Housing R2 N	1112447	1112497	1112497	1112547
5	Distance ring	1112419	1112469	1112469	1112519
6	Rotor R G	1112428	1112603	1112478	1112528
7	Rotor L G	1112429	1112604	1112479	1112529
8	Rotor R N	1112430	1112605	1112480	1112530
9	Rotor L N	1112431	1112606	1112481	1112531
14	Rotor K	1112436	1112611	1112486	1112536
15	Rotor F	1112437	1112612	1112487	1112537
16	Fixing ring	1112415	1112465	1112465	1112515
17	Thrust collar	1112417	1112467	1112467	1112517
18E	Mechanical seal E	1112438-001	1112488-001	1112488-001	1112539-001
18C	Mechanical seal C	1112438-002	1112488-002	1112488-002	1112539-002
19K	Counter face K	3511385-001	3511386-001	3511386-001	3511388-001
19W	Counter face W	3511385-002	3511386-002	3511386-002	3511388-002
19C	Counter face C	1112438-002	1112488-002	1112488-002	1112539-002
20	Compression spring	3511550	3511551	3511551	3511551
21	O-Ring	3511708	3512553	3512553	3511828
22	O-Ring	3512553	3511828	3511828	3511815-012
23a	Ball bearing 1	3510263-006	3510103-006	3510103-006	3510144-006
23b	Ball bearing 2	3510007-006	3510208	3510208	3510145-006
24	Circlip	3501005	3501006	3501006	3501031
25	Circlip	3501253	3501238	3501238	3501247
27	Screw flange			1190472-009	1190473-012
29	O-Ring	3511694	3511901	3511828	3511716
30	Libric.nipple	3500913	3500913	3500913	3500913
31*	Shaft seal	3512358-001	3512319-001	3512319-001	3512334-001
35	O-Ring	3511894	3511709	3511828	3511716
36	Cyl. Head screw	3500354-070	3500354-070	3500354-070	3500354-070
37	DU-bush	3510514	3510523	3510523	3510525
38	Slotted headless screw	3500678	3500678	3500678	3500587
39	Eye bolt	3500686	3500686	3500686	3500686

Pos.31 on request for additional bearing seal. Please specify type designation when making an inquiry or placing an order

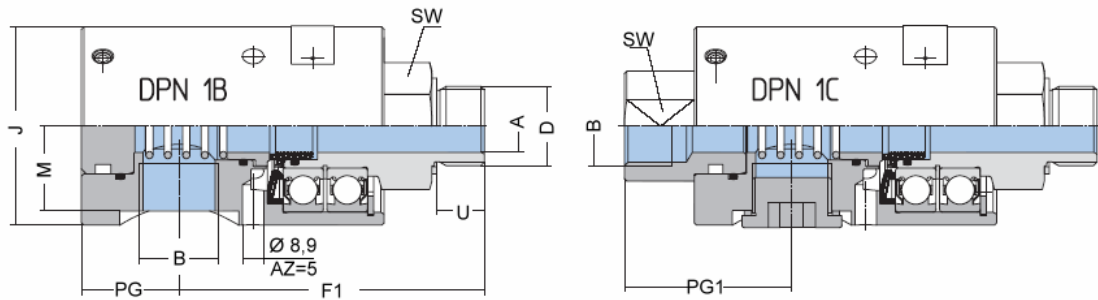
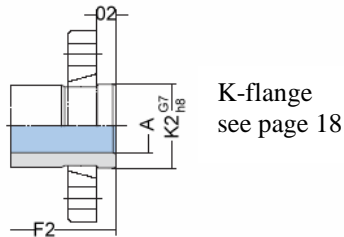
Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

DPN1 D 10 – 50 (3/8" - 2")

for one way flow of a medium



DN [mm] DN[inch]	10 3/8	15 1/2	20 3/4	25 1	32 1 1/4	40 1 1/2	50 2
Type	DPN 1B10 R 51	DPN 1B15 R 51	DPN 1B20 R 51	DPN 1B25 R 51	DPN 1B32 R 51	DPN 1B40 R 51	DPN 1B50 R 51
Order-No.	1113050-051	1113100-051	1113150-051	1113200-051	1113250-051	1113300-051	1113350-051
Type	DPN 1B10 L 51	DPN 1B15 L 51	DPN 1B20 L 51	DPN 1B25 L 51	DPN 1B32 L 51	DPN 1B40 L 51	DPN 1B50 L 51
Order-No.	1113051-051	1113101-051	1113151-051	1113201-051	1113251-051	1113301-051	1113351-051
Type						DPN 1B40 K 91	DPN 1B50 K 91
Order-No.						1113302-091	1113352-091
Type	DPN 1C10 R 51	DPN 1C15 R 51	DPN 1C20 R 51	DPN 1C25 R 51	DPN 1C32 R 51	DPN 1C40 R 51	DPN 1C50 R 51
Order-No.	1113053-051	1113103-051	1113153-051	1113203-051	1113253-051	1113303-051	1113353-051
Type	DPN 1C10 L 51	DPN 1C15 L 51	DPN 1C20 L 51	DPN 1C25 L 51	DPN 1C32 L 51	DPN 1C40 L 51	DPN 1C50 L 51
Order-No.	1113054-051	1113104-051	1113154-051	1113204-051	1113254-051	1113304-051	1113354-051
Type						DPN 1C40 K 91	DPN 1C50 K 91
Order-No.						1113305-091	1113355-091

Ø A	9,5	13	17,5	22	30	35	47
B	G 3/8	G 1/2	G 3/4	G 1	G 1 1/4	G 1 1/2	G 2
D	G 3/8 A	G 1/2 A	G 3/4 A	G 1 A	G 1 1/4 A	G 1 1/2 A	2 A
F1	88	98	112	128	153	176	191
F2						164	201
Ø J	54	58	74	83	100	110	137
Ø K2 G7/h8						50	65
M	24	25	31	36	42	45	57
O2						10	10
U	15	18	17	20	26	27	27
PG	30	25	34	41	54	56	63
PG1	45	50	60	70	80	90	100
SW	24	30	36	46	55	60	75
Weight kg	1,4	1,6	3	5	7,6	11,5	17
Weight lbs	3.1	3.5	6.6	11	16.75	25.35	37.5

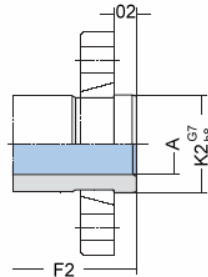
Specifications and Spare Parts

Series DP

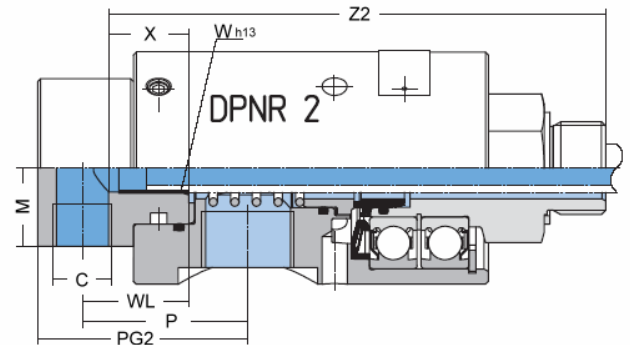
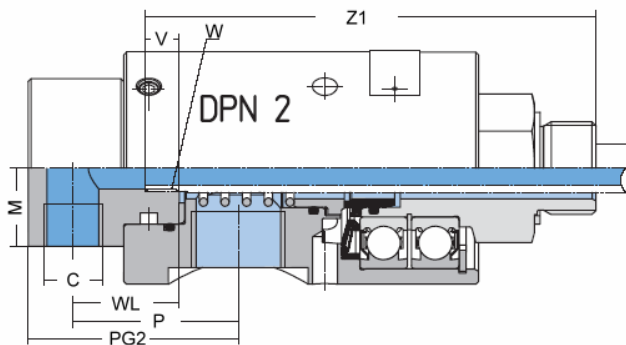
S-DP_en -Version 7 – 16.02.2011

DPN2, DPNR2 DN 10 – 50 (3/8" - 2")

for two way flow of a medium
DPN2 for non-rotating inner pipe, DPNR2 for rotating inner pipe



K-flange
see page 18



DN [mm] DN[inch]	10 3/8	15 1/2	20 3/4	25 1	32 1 1/4	40 1 1/2	50 2
Type	DPN 210 R 51	DPN 215 R 51	DPN 220 R 51	DPN 225 R 51	DPN 232 R 51	DPN 240 R 51	DPN 250 R 51
Order-No.	1113060-051	1113110-051	1113160-051	1113210-051	1113260-051	1113310-051	1113360-051
Type	DPN 210 L 51	DPN 215 L 51	DPN 220 L 51	DPN 225 L 51	DPN 232 L 51	DPN 240 L 51	DPN 250 L 51
Order-No.	1113061-051	1113111-051	1113161-051	1113211-051	1113261-051	1113311-051	1113361-051
Type						DPN 240 K 91	DPN 250 K 91
Order-No.						1113312-091	1113362-091
Type	DPNR 210 R 51	DPNR 215 R 51	DPNR 220 R 51	DPNR 225 R 51	DPNR 232 R 51	DPNR 240 R 51	DPNR 250 R 51
Order-No.	1113063-051	1113113-051	1113163-051	1113213-051	1113263-051	1113313-051	1113363-051
Type	DPNR 210 L 51	DPNR 215 L 51	DPNR 220 L 51	DPNR 225 L 51	DPNR 232 L 51	DPNR 240 L 51	DPNR 250 L 51
Order-No.	1113064-051	1113114-051	1113164-051	1113214-051	1113264-051	1113314-051	1113364-051
Type						DPNR 240 K 91	DPNR 250 K 91
Order-No.						1113315-091	1113365-091

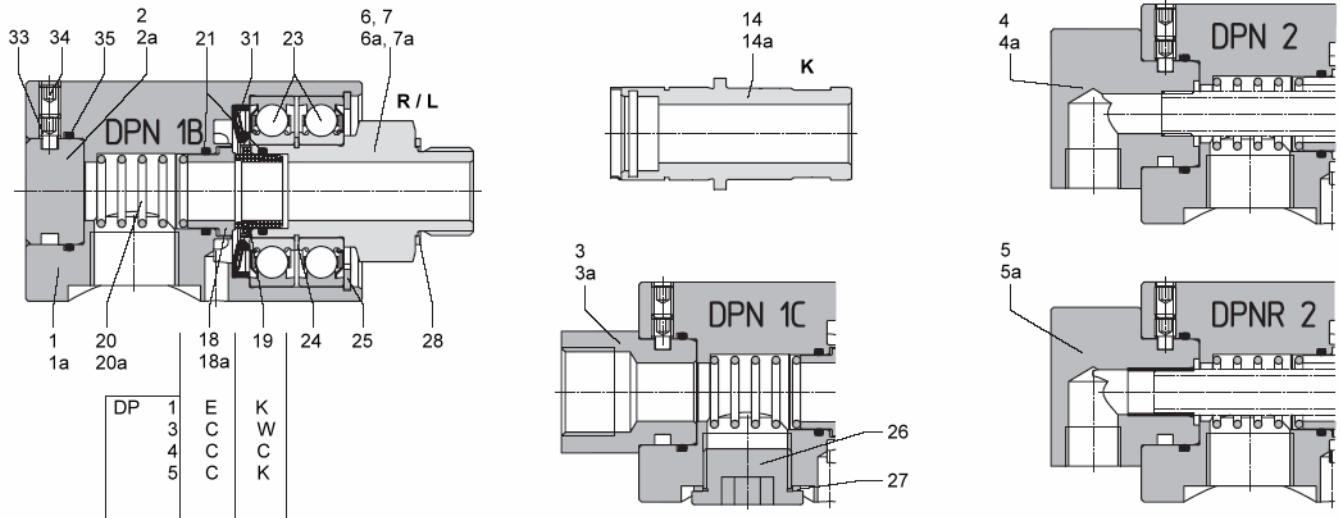
C	G 1/4	G 3/8	G 1/2	G 1/2	G 3/4	G 3/4	G 1 1/4
M	18	20	26	28	35	38	45
P	42,5	38,5	51	59	74	82	98
V	8	8	12	12	15	17	20
W	M 6x1	G 1/8	G 1/4	G 3/8	G 1/2	G 3/4	G 1
Ø W h13	6	10	13	16	22	25	32
X	21	19,5	25,5	28,5	35	37	39
Z1	112	118	140	161	195	226	250
Z2	125	129	153,5	177,5	215	246	269
PG2	54	50	67	75	92	100	125
WL	27	27	35	38	47	49	58,5
Weight kg	1,5	1,8	3,7	5,7	8,6	13,5	20
Weight lbs	3.3	4	8.2	12.6	19	29.8	44.1

Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

Spare Parts for types DPN1, 2, R2, - DN 10 – 50 (3/8" - 2")



DN [mm]		10	15	20	25	32	40	50
DN[inch]		3/8	1/2	3/4	1	1 1/4	1 1/2	2
1	Housing G	1112093-200	1112143-200	1112193-200	1112243-200	1112293-200	1112343-200	1112393-200
1a	Housing G	1112093-204	1112143-204	1112193-204	1112243-204	1112293-204	1112343-204	1112393-204
2	Cover	1112095-208	1112145-208	1112195-208	1112245-208	1112295-208	1112345-208	1112395-208
2a	Cover	1112095-206	1112145-206	1112195-206	1112245-206	1112295-206	1112345-206	1112395-206
3	Housing connection G	1112094-207	1112144-207	1112194-207	1112244-207	1112294-207	1112344-207	1112394-207
3a	Housing connectionG	1112094-207	1112144-207	1112194-207	1112244-207	1112294-207	1112344-207	1112394-207
4	Elbow P2 G	1112066-201	1112116-201	1112166-201	1112216-201	1112266-201	1112316-201	1112366-201
4a	Elbow P2 G	1112066-209	1112116-209	1112166-209	1112216-209	1112266-209	1112316-209	1112366-209
5	Elbow PR2 G	1112067-203	1112117-203	1112167-203	1112217-203	1112267-203	1112317-203	1112367-203
5a	Elbow PR2 G	1112067-211	1112117-211	1112167-211	1112217-211	1112267-211	1112317-211	1112367-211
6	Rotor RG	1112078	1112128	1112178	1112228	1112278	1112328	1112378
6a	Rotor RG	1112078-157	1112128-157	1112178-092	1112228-080	1112278-036	1112328-157	1112378-059
7	Rotor LG	1112079	1112129	1112179	1112229	1112279	1112329	1112379
7a	Rotor LG	1112079-157	1112129-157	1112179-092	1112229-080	1112279-036	1112329-157	1112379-059
14	Rotor K						1112336	1112386
14a	Rotor K						1112336-163	1112386-163
18	Slide ring E	1112088-001	1112138-001	1112188-001	1112238-001	1112288-001	1112338-001	1112388-001
18	Mechanical seal C	1112088-002	1112138-002	1112188-002	1112238-002	1112288-002	1112338-002	1112388-002
18a	Mechanical seal C	1112088-159	1112138-159	1112188-077	1112238-081	1112288-159	1112338-159	1112388-159
19K	Counter face K	3511391-001	3511392-001	3511393-001	3511394-001	3511395-001	3511396-001	3511397-001
19W	Counter face W	3511391-002	3511392-002	3511393-002	3511394-002	3511395-002	3511396-002	3511397-002
19C	Counter face C	1112088-002	1112138-002	1112188-002	1112238-002	1112288-002	1112338-002	1112388-002
20	Compression spring	3511661	3511662	3511663	3511664	3511665	3511666	3511667
20a	Compression spring	3511661-001	3511662-001	3511663-001	3511664-001	3511665-001	3511666-001	3511667-001
21	O-Ring	3511809	3511866	3511721	3511929	3511947	3511886	3511696
23	Ball bearing	3510200-008	3510079-008	3510097-008	3510148	3510086-008	3510087-008	3510090-008
24	Circlip	3501000-001	3501001-001	3501002-001	3501003-001	3501008-001	3501027	3501030-001
25	Circlip	3501220-001	3501219-001	3501222-001	3501223-001	3501205-001	3501241	3501246-001
26	Screw plug	3500631-001	3500688-001	3500632-001	3500635-001	3500633-001	3500634-001	3500641-003
27	Copper seal	3502116-001	3502115-001	3502120-001	3502111-001	3502117-001	3502118-001	3502121-001
28	Copper seal	3502116-001	3502115-001	3502120-001	3502111-001	3502117-001	3502118-001	3502121-001
31	Shaft seal	3512325-001	3512326-001	3512327-001	3512328-001	3512329-001	3512330-001	3512331-001
33	Setscrew	3500576-002	3500576-002	3500516-002	3500516-002	3500534-002	3500534-002	3500586-002
34	Setscrew	3502163-002	3502163-002	3500591-002	3500591-002	3500533-002	3500533-002	3500592-002
35	O-Ring	3511852	3512521	3511754	3511713	3511942	3512540	3512503

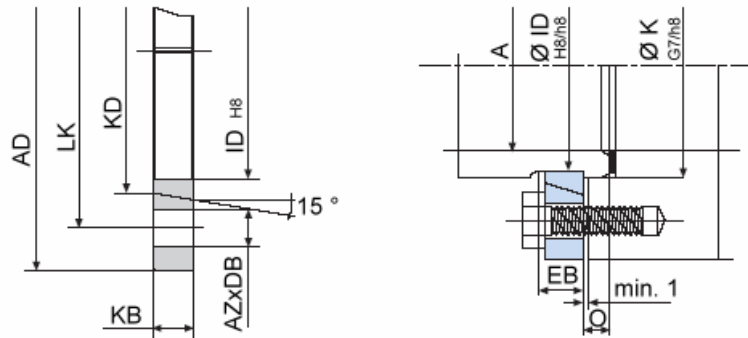
Execution a for variant-100. Please specify type designation when making an inquiry or placing an order.

Specifications and Spare Parts

Series DP

S-DP_en -Version 7 – 16.02.2011

Journal Flanges for K Rotor Connection



DN mm	DN in	K-flange	Order-No.	Inner-ring	Order-No.	Flat pack Order-No.	Ø A	Ø AD	Ø LK	AZ x ØDB	Ø KD	ØID H8/h8	KB	ØK G7/h8	O	EB
10	3/8	KF 10-0	1190430	IR 10-0	1190400	3512230	10	55	40	4x7	20	17	10	18	6	11
15	1/2	KF 15-0	1190431	IR 14-0	1190401	3512231	13	70	50	4x9	26	22	10	24	6	11
20	3/4	KF 20-0	1190432	IR 20-0	1190402	3512232	20	75	55	4x9	32	28	12	30	8	13
25	1	KF 25-0	1190433	IR 25-0	1190403	3512233	25	80	60	4x9	37	33	12	35	8	13
32	1 1/4	KF 32-0	1190434	IR 32-0	1190404	3512234	32	100	75	4x11	48	43	12	45	8	13
32	1 1/4	KF 32-500	1190434-500	IR 32-500	1190404-500	3512234	32	115	90	4x11	48	43	15	45	15	16
40	1 1/2	KF 40-0	1190435	IR 40-0	1190405	3512235	38	105	80	4x11	53	48	15	50	10	16
40	1 1/2	KF 40-500	1190435-500	IR 40-500	1190405-500	3512235	38	120	95	4x11	53	48	18	50	20	20
50	2	KF 50-0	1190436	IR 50-0	1190406	3512236	50	130	100	4x14	69	63	15	65	10	16
50	2	KF 50-500	1190436-500	IR 50-500	1190406-500	3512236	50	145	115	4x14	69	63	20	65	25	22
65	2 1/2	KF 65-0	1190437	IR 65-0	1190407	3512237	66	150	120	4x14	89	82	15	85	10	16
65	2 1/2	KF 65-500	1190437-500	IR 65-500	1190407-500	3512237	66	165	135	4x14	89	82	25	85	25	28
65	2 1/2	KF 65-37	1190437-037	IR 65-0	1190407	3512237	66	150	120	6x14	89	82	15	85	25	28
75	3	KF 75-0	1190440	IR 75-0	1190420	1190191-058	67	203	171,5	5x17,5	89	84,2	31	87,29	22,2	
80	3 1/2	KF 80-0	1190438	IR 80-0	1190408	3512238	81	180	145	4x18	109	102	18	105	12	20
80	3 1/2	KF 80-500	1190438-500	IR 80-500	1190408-500	3512238	81	205	170	4x18	109	102	30	105	30	34
100	4	KF 100-0	1190439	IR 100-0	1190409	3512239	98	195	160	6x18	120	110	20	114	12	22
100	4	KF 100-500	1190439-500	IR 100-500	1190409-500	3512239	98	220	185	6x18	120	110	30	114	30	34
125	5	KF 125-0	1190450	IR 125-0	1190410	1190025	120	225	190	6x18	147	137	22	142	20	25
125	5	KF 125-500	1190450-500	IR 125-500	1190410-500	1190035	120	260	225	8x18	155	145	35	150	35	39
150	6	KF 150-0	1190451	IR 150-0	1190411	1190026	145	255	220	8x18	178	165	25	170	25	28
150	6	KF 150-500	1190451-500	IR 150-500	1190411-500	1190036	145	300	260	8x18	185	175	40	180	40	44
200	8	KF 200-0	1190452	IR 200-0	1190412	1190027	195	310	275	8x18	232	220	28	225	30	32
200	8	KF 200-500	1190452-500	IR 200-500	1190412-500	1190037	195	360	320	8x18	235	224	45	230	45	49
250	10	KF 250-0	1190453	IR 250-0	1190413	1190028	240	390	350	8x23	290	273	37	280	35	40
250	10	KF 250-500	1190453-500	IR 250-500	1190413-500	1190038	240	435	390	8x23	295	278	50	285	50	54
300	12	KF 300-0	1190454	IR 300-0	1190414	1190029	295	470	410	16x23	350	332	42	340	40	45

Versions KF ...-0 and IR ...-0

DX / DXS	DN 10 (3/8") – 80 (3 1/2")
DXSB	DN 50 (2") – 80 (3 1/2")
DP	DN 40 (1 1/2") – 100 (4")
H/HW	DN 15 (1/2") – 100 (4")
HWB/A) ¹	DN 32 (1 1/4") – 100 (4")
M	DN 15 (1/2") – 100 (4")
DA	DN 50 (2") – 300 (12")

Versions KF ...-55 and IR ...-500

DXSB	DN 100 (4") – 150 (6")
HWA	DN 100 (4") – 300 (12")
DQ	DN 25 (1") – 150 (6")

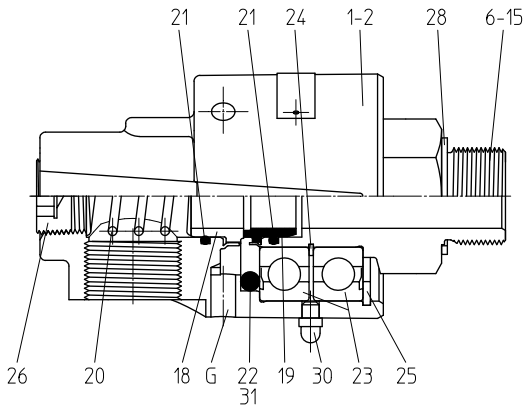
It is important to evenly tighten the screws.

¹ KF65-0 only up to 210 °C (410 °F) , 20 bar (290 psi) or 300 °C (572 °F), 10 bar (145 psi). For higher data use KF 65-37.

Repair Instructions

Series DP DN 10 – 50 ($\frac{3}{8}$ " - 2")

R-dp_en.doc Rel.16.02.2011



1 Housing G	20 Pressure spring
2 Housing N	* 21 O ring
6 Rotor RG	22 O ring
7 Rotor LG	* 23 Ball bearing
8 Rotor RN	24 Locking ring
9 Rotor LN	25 Locking ring
14 Rotor K	26 Screw plug
15 Rotor K	* 28 CU seal
* 18E Mech. seal E	30 grease nipple
* 18C Mech. seal C	* 31 Shaft seal
* 19W Counter ring W	
* 19C Counter ring C	* = wearing part

Attention :

For **thermal oil**, you **MUST** use parts 18E, 19W. O-rings 21 and shaft seal 31 must be made of Viton. Please specify when ordering. Order bearing 23 version for thermal oil.

Repair

Repair is required during preventive maintenance or when leaks are detected at housing holes (G).

Dismantling the unit

- Remove locking ring 25.
- Remove rotor 6-15 with deep groove ball bearings 23 from housing 1-2. If necessary, use disassembly bolt and puller for ball bearings.
- Remove counter ring 19 and O- ring 21 from rotor.
- If bearings 23 are defective: extract left bearing 23 from rotor. Then remove locking ring 24 and extract second bearing 23.
- Depending on version, remove O-ring 22 or shaft sealing ring 31 from housing.
- Remove mechanical seal 18 is not rotating from housing.
- Remove spring 20 from housing.
- Remove O ring 21 from housing.

Evaluating the parts

- The quality of the sealing surfaces of counter ring 19 and mechanical seal 18 is of particular importance. Sealing surfaces are lapped. Therefore, these parts always need to be replaced.
- For safety reasons, replace O- rings 21.
- Shaft sealing ring 31 or O- ring 22 - if applicable - must be replaced.
- Replace or relubricate deep groove ball bearing 23.

Reassembling the unit

- **ATTENTION: All sealing parts must be dry when mounted. Never use grease or oil. Make sure hands and tools are free from grease and clean.**
- Mount deep groove ball bearing 23, locking ring 24, second deep groove ball bearing 23 to rotor 6-15.
- Mount O- ring 21 and counter ring 19 in rotor. Make sure not to scratch the sealing surfaces. The counter ring has a bead that fits into the bead of the rotor.
- Mount O- ring 21 in housing groove.
- Mount spring 20 in housing (make sure not to damage the O-ring).
- Press down spring with bolt. Fixate this position with a screw driver (see fig. 1). Now mount the mechanical seal.

- Press mechanical seal 18 into the housing (manually). The two beads must engage in the housing. Tilting must not be possible.
- Place O- ring 22 into the housing. Versions with shaft sealing ring 31: apply some ball bearing grease to the interior of the shaft sealing ring.
- Press rotor 6-15 with bearings and counter ring 19 into housing.
- Mount locking ring 25.
- Remove screw driver used to hold the spring in position. Check to make sure the spring is straight.

Spare parts

It is recommended to stock the wearing parts mentioned above. Always specify the part number and the complete type designation of the rotary joint as per type designation plate when ordering spare parts.

- We reserve the right to technical modifications -

Fig. 1: Locking the spring by means of a screwdriver for mounting the mechanical seal.

