



Rotating Unions



Series

2620, 1500, 1579, 1590

2-passage Closed Seal



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1 For your Safety

This chapter provides information on the safe handling of *DEUBLIN* rotating unions.

- For your own safety and the safety of other people read this operating manual carefully and completely prior to working on or with *DEUBLIN* rotating unions.
- This operating manual exclusively describes the rotating unions of the manufacturer *DEUBLIN*. In the further description/explanation the name “*DEUBLIN*” is left out for a better readability.
- This operating manual is a material part of the specified rotating unions. The operator is responsible for the personnel to take note of this manual.
- Always use the latest version of the operating manual, available under www.deublin.eu.
- The operator of the rotating unions shall not make any modifications or attachments to and retrofitting of the rotating union without the manufacturer’s consent.
- Please follow the additional instruction “Installation” for a secure and correct installation of the rotating union. The installation instruction is included with the delivered union.

1.1 Intended Use

The rotating unions of the series 2620, 1500, 1579 and 1590 supply the feeding of the following media: Coolant, Hydraulic oil, Air pressure and Vacuum

Series	Medium			
	Coolant	Hydraulic oil	Air pressure	Vacuum
2620	•	•	•	
1500			•	•
1579		•		
1590			•	

The rotating unions referred to are designed for non-potentially explosive environments and non-combustible media. Details on the operating range of the rotating unions are provided in the catalogue and/or the model-specific installation drawing.

1.1.1 Application

Mounting Example

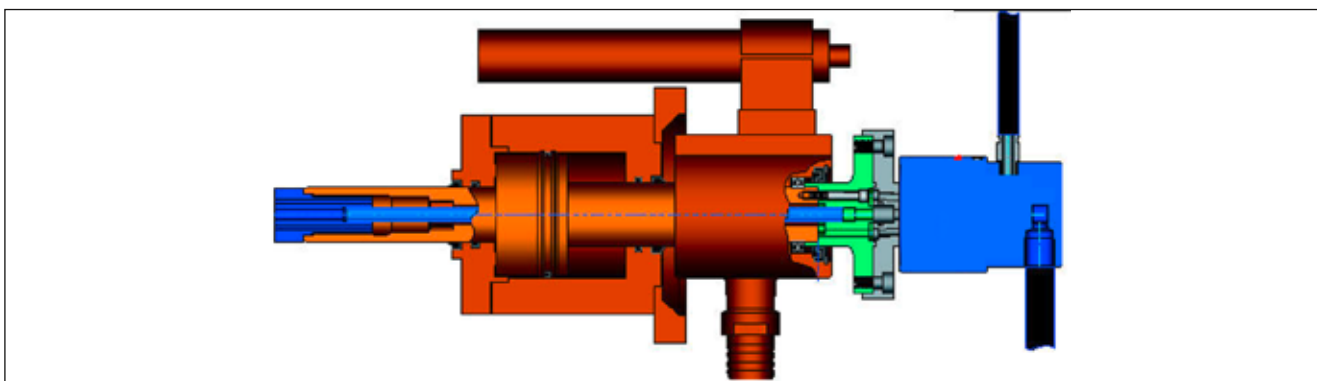


Fig. 1: Mounting example

A rotating union is installed to one end of the shaft. The rotating union is equipped with two channels that are used to pass the corresponding medium to the application site for the corresponding application.

1.2 Misuse

This chapter provides information on known misuse of rotating unions of the 2620, 1500, 1579 and 1590 series.

The rotating unions are not suitable for the areas and applications described herein. Use in such areas or for such applications constitutes a misuse endangering people and machines and is therefore prohibited.

Prohibition for the following areas:

Potentially explosive areas

The rotating unions of the 2620, 1500, 1579 and 1590 series shall not be used in potentially explosive areas, as they are not approved for the requirements in potentially explosive areas. Operation in such areas may cause explosions.

Outdoor operation

Inadequate protection against weather conditions can result in premature failure.

Prohibition for the following applications:

Conveying of combustible media or hydrocarbons

Combustible media or hydrocarbons may ignite or cause explosions.

Exception: Thermal oil within the admissible temperature range. Please observe the safety data sheet of the used thermal oil.

Food

Food, cleaning and disinfectant residues cannot be removed from the rotating unions. People may suffer poisoning.

Connection to a piping system with excessive pressure

If excessive pressure is applied to the rotating unions, supply pipes can come off and cause personal injury or property damage.

Operation without lubrication

Dry operation (without medium) of the rotating union causes damage to the mechanical seals.

Operation without a medium (dry run)

Operating rotating unions without a medium may damage the sealing surfaces of the rotating union. This is particularly applicable to models where air is to be used on the outer or in both channels. Here, continuous medium flow has to be provided so that the oil particles of the flowing air are brought to the mechanical seal faces.

Connection to fixed pipes

If connection is via fixed pipes, the rotating unions may leak and the ball bearings may get damaged.

Conveying of media which are too hot

If the media exceed the maximum admissible temperature for the rotating union, the static seals (elastomeric seals) can be damaged which may result in leaky rotating unions and personal injury or property damage.

Incorrect channel configuration

If the channels of the rotating union are not charged with the correct media in accordance with the model-specific installation drawing, the rotating union may be damaged and material damage and injury to persons may be the result.

Static air

If the rotating union supplies compressed air to a clamping cylinder for example, the compressed air will be accumulated in the channel of the rotating union during the clamping procedure. As a result, depending on pressure, speed and application duration the union gets hot. This can damage the mechanical seals.

Use of anti-rotation elements

If the rotating unions are secured by means of anti-rotation elements, it has to be observed that the installation is carried out without any stress. Stresses may result in damage to the rotating unions. See chapter 4.5.

❑ Pressure peaks

If the rotating unions are subject to pressure peaks, the rotating unions may be damaged and material damage and injury to persons may be the result.

❑ Operation at the maximum speed and with maximum pressure

Speed and pressure must be adjusted to each another so that the rotating unions are not damaged or fail prematurely (see model-specific installation drawing).

This list is not comprehensive and will be updated with results from product observation.

1.3 Safety Instructions

This chapter provides information on the hazards from rotating unions.

1.3.1 Hazards due to incorrect hoses

For the connection of the rotating union to the machine, you have to choose appropriate hoses for the respective medium, which meet the specifications for the application.

If you use incorrect hoses, they may become porous or burst. This can cause personal injury and/or property damage to components of the machine.

- ❑ Use only hoses which are suitable for the media, the maximum system pressure and the maximum temperature for the machine.

1.3.2 Hazards due to the media

When working on the rotating union, injuries can be caused by skin or eye contact with the media.

- ❑ Observe the safety instructions for the media. Observe the COSHH Safety Data Sheet for the media.

1.3.3 Hazards due to faulty installation

If the rotating unions are installed incorrectly, hoses and connections may leak. The medium can escape. Depending on the medium, personal injury or property damage to the components of the machine may occur.

- ❑ Before installing the rotating union ensure that no feed pressure and no residual pressure is applied to the pipeline system of the machine.
 - To ensure the safe and correct installation of the rotating union, observe the additional "Installation" instruction manual, which is included with the delivered union.
- ❑ Install the hoses to the rotating union prior to mounting it to the machine shaft. This does not apply to hoses with an SAE connection.
- ❑ Install the rotating union to the machine using flexible hoses only, in order to avoid stress on the rotating union.
- ❑ Install the hoses free from stress.
- ❑ Install the rotating union in a way that the leaking medium can be carried away downward at the lowest point and that the drain line permanently slopes downwards at a minimum of 15°.

1.3.4 Hazards due to hot surfaces

During operation, the rotating unions may become hot. Skin contact with heated rotating unions can cause injuries.

- ❑ Use safety gloves and PPE (Personal Protective Equipment) protecting against heat when handling the rotating union.
- ❑ Attach a clearly visible danger sign on or next to the rotating union in order to warn of potential hazards.



1.4 Structure of Pictograms

This chapter provides information on the meaning of the pictograms used in the manual.



Warning

Warning

Potentially dangerous situation, which may result in death or serious bodily injuries.



Note

Note

Potentially harmful situation, in which the product or an object in its surroundings can be damaged.



Info

Application notes

and other useful information.

2 Information as to this Manual

The copyright as to this manual remains with *DEUBLIN*. Subject to changes!

- You can download the latest version of this manual under www.deublin.eu.
- Always use the latest version of the operating manual.

3 Information on the Name Plate

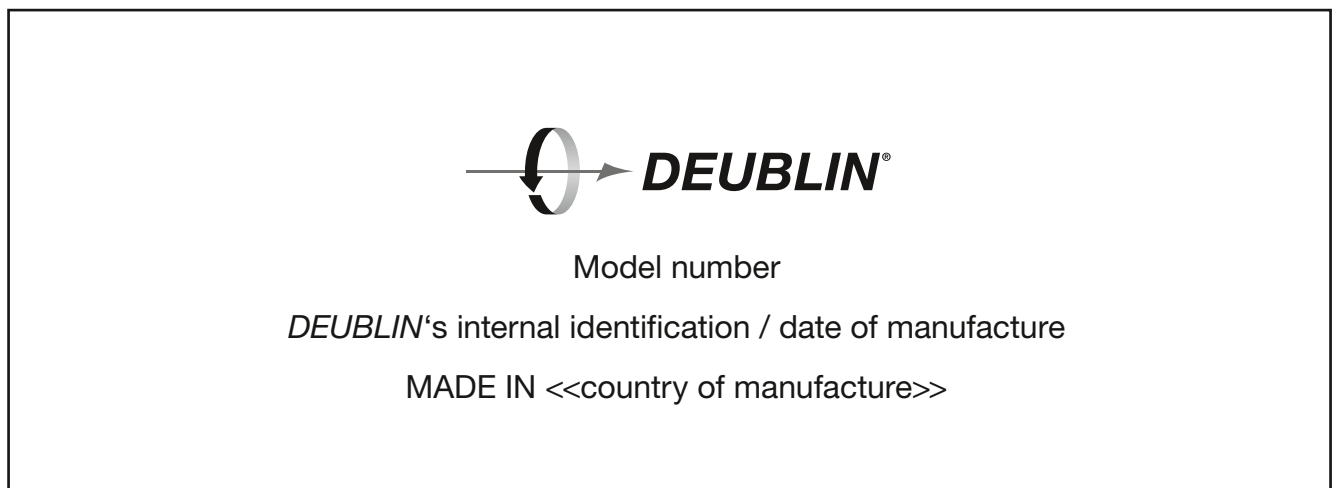
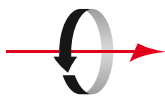


Fig. 2: Name plate

The coding of the model number is described in the catalogue. The model number corresponds to the order number.



4 Information on the Design

This chapter provides information as to which items have to be observed in the design in order to have a positive effect on the service life of the rotating union.



Info

You can obtain the drawings of the rotating unions from *DEUBLIN* to integrate the rotating union in your drawing.

You will require the model-specific installation drawing of your rotating unions to implement it into your design and to operate the rotating unions in a safe manner.

The model-specific installation drawing of the respective rotating union contains e.g.:

- approved operating data
- design of the customers interface
- torque moments of the union

4.1 Filtering of the Medium

Unfiltered media with a particle size of more than 60 µm, increased wear of the rotating union.

Please use the following classes for liquid media:

- Class 5 in accordance with ISO 4406:2017 Code 17/15/12 or
- Class 6 in accordance with NAS 1638

Determine the required filter performance data according to standard ISO 16889:2008 in order to achieve a maximum particle size of 60 µm.



Info

The larger the particles in the media, the higher the wear of the rotating union is. The higher the total of all particles (polluting load), the higher the wear is.

- Insert a filter in front of the rotating union which filters particles with a size of 60 µm and larger from the media.

4.2 Compressed Air Purity Classes

To ensure the longest possible service life of the rotating union, *DEUBLIN* recommends using a compressed air purity class according to ISO 8573-1:2010 [6:4:4]. This results in the following parameters for the compressed air:

Particles	Water	Oil
Mass concentration Cp [mg/m³]	Pressure dewpoint [C°]	Concentration of total oil [mg/m³]
0 < Cp ≤ 5	≤ +3	≤ 5

4.3 Connecting Options of the Rotating Union at the Machine Shaft



Fig. 3: Rotating Union with flange

The rotating unions are screwed to the machine shaft via the rotor. In order to allow for this, the rotor is equipped with a flange. Additionally, the rotating union can be equipped with a location diameter. This is inserted into the machine shaft.

The rotor provides for the connection between the rotating union and the shaft. For this reason it is important to design the shaft with the corresponding accuracy and to observe the specifications of the model-specific installation drawing of the rotating union. Deviations may result in leakages and rough running of the rotating unions.

The rotating unions can be installed on the shaft vertically (rotor pointing in a downwards direction) or horizontally.



Note

Component damage due to incorrect installation

When installing the rotating unions vertically with the rotor pointing in an upwards direction, the union may be damaged.

- Please contact *DEUBLIN* if you wish to install rotating unions vertically with the rotor pointing in an upwards direction.

4.4 Options of Hose Installation

The following examples show how to install the hoses to the rotating unions.

These connecting options ensure that the hoses do not transfer stress to the rotating unions when the machine shaft moves.

- Please pay attention to the chapter “1.3 Safety Instructions” regarding the design.

4.4.1 Connection of hose to the rotating union

The hoses must be installed without stress and bends so that they do not apply any forces to the rotating union. The following figures show examples of installations.



The lines supplying the medium have to be flexible. During operation, the flexible hoses prevent the development of lateral loads on the bearings of the rotating unions.

Fig. 4: Connect hoses laterally

4.4.2 Connection of a leakage line

If the rotating union has got drain holes, they should have a drain hose connected to prevent surrounding components from being damaged by escaping media.

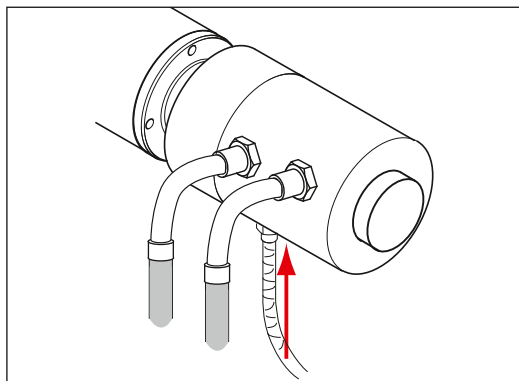


Fig. 5: Schedule connection of leakage line

- ❑ When mounting the union horizontally the leakage hose connection from the housing should be as near as possible to the 6 o'clock position, respectively when mounting the union vertically the leakage hose should lay in a downward angle (at least 15 Degrees) so that leakage can be drained away
- ❑ When used in dirty environment, we recommend protecting the remaining leakage holes against penetrating dirt. You can order sealing plugs from *DEUBLIN*. At least one leakage hole must be vented; so that the leakage can drain off in an unimpeded manner. To prevent the drain hose from being penetrated by dirt, the drain hose should point downwards.

4.5 Using a locking element (screwed on the outside)

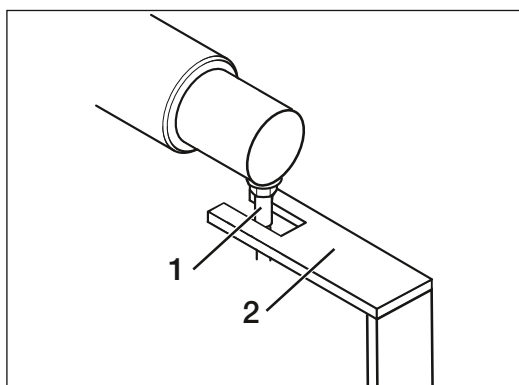


Fig. 6: Example of a possible anti-rotation element

The rotating union housing can be secured against rotation during operation using an anti-rotation element **(2)**. The metal connections of the hoses **(1)** can be used as torque supports in doing so.

A fork head can be installed on a hose connection, for example, as anti-rotation element.

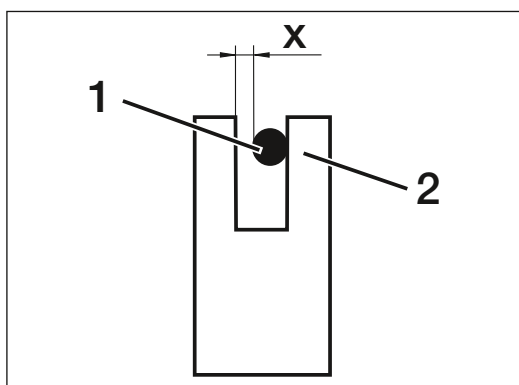


Fig. 7: Top view torque support

In this, the connection of the hose **(1)** must only make contact with one arm **(2)** of the anti-rotation element so that a clearance **(X)** remains between the other arm and the connection of the hose.

5 Installation

The union installation is described in an additional manual which is supplied with each rotating union. Please follow the additional instruction "Installation" for a secure and correct installation of the rotating union. The instruction "Installation" is available online under www.deublin.eu.

- Ensure that the person installing the rotating union receives the following information:
 - Position and location of the rotating union in the machine
 - Information on the media
 - Plan for connection of hoses
 - Position of leakage line
 - Information on installing the anti-rotation element provided by the customer
 - model-specific installation drawing

6 Information on the Operation



Note

Damage to components due to missing lubrication

The axial face seals of the rotating unions are lubricated by the medium. If the rotating unions are operated without medium present they are not lubricated and will thus be damaged.

- Ensure that the rotating unions are operated with a medium.
- Switch off the plant/machine, if the rotating unions are operated without medium.

7 Storage



Note

Damage of component due to incorrect storage

If you store the rotating unions incorrectly, they become leaky or get damaged.

- Store the rotating unions in a dry space between 3 °C and 40 °C.
- Store rotating unions for two years at the most.

8 Maintenance

This chapter provides information on how to extend the service life of the rotating unions by means of maintenance.

8.1 Maintenance Intervals

You can avoid early wear of the rotating unions, if you adhere to the maintenance intervals described herein.

Regular inspections are required if risks with regards to safety and environmental protection result from malfunctions of the *DEUBLIN* Rotating Union.



Info

Ex factory, the bearings in rotating unions are lubricated for the entire duration of their service life. Subsequent lubrication is not required.

8.2 Daily Inspection

Check the rotating unions for tightness.



Risk of injuries due to applied line pressure

If you have to work on the rotating union and feed pressure of the medium is applied or there is residual pressure in the piping system of the machine, the medium can escape under pressure when releasing the connections. You and other people may suffer severe injuries.

- Ensure that no feed pressure is applied.
- Ensure that there is no residual pressure in the piping system.



Risk of injury due to hot surfaces

The rotating unions may become hot during operation. If the skin makes contact with this heated rotating union, this can result in severe injuries.

- Before starting any works on the rotating unions, please allow the machine to cool down.
- Depending on the application case of the rotating unions, please use protective gloves in order to protect against heat or cold.

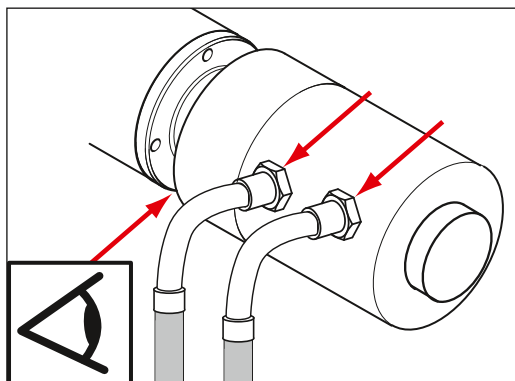


Fig. 8: Inspect visually

During operation of the machine, leakages may occur at the connections and hoses depending on the requirements to the rotating unions.

- Carry out daily visual inspections in order to check whether leakages occurred at the connections (see arrows).

If you detect leakage:

1. Stop the machine.
2. Replace the defective hoses with new ones.
3. Seal leaking connections.
4. If the rotating union is worn and leaks, replace it with a new one or return a leaky rotating union to *DEUBLIN* for overhaul/service.

8.3 Lubricate the rotating union

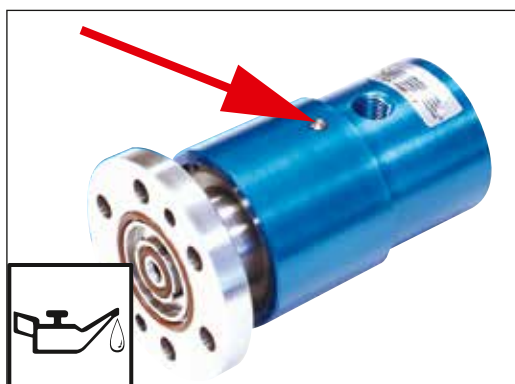


Fig. 9: Lubricate the rotating union here

Rotating unions for the medium air in the outer channel are equipped with an oiler. Lubricate this oiler by means of a manual oiler: Lubrication interval 1 x month (in case of high speeds >3.000 RPM 1 x week) with 4-5 drops of high-quality motor oil.

9 Trouble Shooting

This chapter provides the following information:

1. Which problem may occur?
2. What can be the cause of the problem?
3. How can you eliminate this problem?



Info

Do not disassemble the rotation unions for repair (maintenance). This invalidates the warranty claim.

9.1 Potential Causes for Errors and their Elimination



Warning

Risk of injuries due to applied line pressure

If you have to work on the rotating union and feed pressure of the medium is applied or there is residual pressure in the piping system of the machine, the medium can escape under pressure when releasing the connections. You and other people may suffer serious injuries.

- Ensure that no feed pressure is applied.
- Ensure that there is no residual pressure in the piping system.



Error	Potential causes	Elimination
Rotating union is leaky after installation	Incorrect installation	<ol style="list-style-type: none"> 1. Stop the machine. 2. Ensure that the connections are sealed according to the manual "Installation". 3. Ensure that all hoses are installed without stress. 4. Ensure that all seal faces are clean.
	Seal faces of the rotating union are damaged	<ol style="list-style-type: none"> 1. Pack rotating union. 2. Send rotating union to <i>DEUBLIN</i> for overhaul/service.
	Rotating union is defective	
	If applicable: O-rings on the rotor are damaged.	<ol style="list-style-type: none"> 1. Stop the machine. 2. Dismantle the rotating union. 3. Ensure that the O-rings at the rotor are not damaged, if damaged replace O-rings.
	If applicable: O-rings are positioned incorrectly.	<ol style="list-style-type: none"> 1. Stop the machine. 2. Dismantle the rotating union. 3. Ensure that the O-rings are in the correct position (see model specific installation drawing), if necessary adjust position.
Rotating union leaks before the end of the expected service life	Medium is contaminated	<ol style="list-style-type: none"> 1. Stop the machine. 2. Drain medium. 3. Send rotating union to <i>DEUBLIN</i> for overhaul/service, if required. 4. Flush the piping system of the machine. 5. Mount new filter. 6. Fill in new medium.
	Rotating union is not designed for the respective application	<ol style="list-style-type: none"> 1. Ensure that the correct <i>DEUBLIN</i> Rotating Union is used. 2. Contact <i>DEUBLIN</i> if required.
Rotating union runs untrue or wobbles	Fixing thread/flange and/or concentricity outside the admissible tolerance.	<ol style="list-style-type: none"> 1. Stop the machine. 2. Remove rotating union. 3. Manufacture new thread or flange. 4. Install rotating union.
	Rotating union is mounted incorrectly.	

9.2 Pack Rotating Union for Transport

The rotating union has to be protected against mechanical impact and humidity during transport to ensure that the rotating union will arrive at *DEUBLIN* without being damaged.

1. Dismount the rotating union in reverse order of the installation (see Installation).
2. Ensure that the rotating union is free from the respective media.
3. Use a cardboard box which is suitable for the weight of the rotating union.
4. Cushion the base of the cardboard box with a soft material, e.g. air bubble film.
5. Wrap the rotating union with a soft material, e.g. air bubble film.
6. Ensure that no packing material or dirt can penetrate the opening of the rotating union.
7. Position the rotating union in the middle of the cardboard box.
8. Fill the free space around the rotating union with newspaper or another suitable material.
9. Close the cardboard box by means of tape.

10 Disposal

10.1 Dispose of Packaging

- Dispose of the packaging (cardboard box and plastics) according to the national standards, regulations and directives.

10.2 Dispose of Rotating Union

Mainly, the rotating unions consist of metals, which can be reused within the reclamation of scrap. Decontaminate unions / parts and dispose of in an “Environmentally Friendly” way.

- Dismount the rotating union in reverse order to the installation (see Installation).
- Flush the rotating union.
- Collect the dirty flushing media.
- Dispose of the collected flushing media according to the national standards, regulations and directives.
- If you use thermal oil, please observe the instructions of the thermal oil manufacturer.
- Dispose of the rotating union according to the national standards, regulations and directives.

In case of repair, *DEUBLIN* disposes of all used parts.

11 Spare Parts

The rotating unions have a limited service life and include wearing parts. All static and dynamic sealing elements of a component are considered wearing parts, as well as ball bearings.

There are no spare parts to be ordered for the rotating unions.

The function of the rotating unions can only be provided for when all components are adjusted and aligned to each other. Thus, professional overhauling/servicing may only be implemented at *DEUBLIN*.

- Should overhaul/service works be required, please return the rotating unions to *DEUBLIN*.



Info

Note

Rotating unions and bearingless unions of this series cannot be repaired by the customer himself but must be sent to *DEUBLIN* for repair. Before repaired rotating unions leave the premises, they will be subjected to an operational check. The repaired rotating union is returned with a standard “*DEUBLIN* Warranty” valid for 12 months.

Reliability

Many years' experience, ongoing liaison with customers, innovations sourced inhouse and from suppliers place *DEUBLIN* in a position providing reliable Rotating Unions at the highest level.

When it comes to concrete applications, maximum service life is guaranteed by matching the sealing to the respective medium.

The service life is also equally maximized by maintaining cleanliness when storing and handling the Rotating Union and by adhering to the guidelines issued by *DEUBLIN* in respect of the conditions on the customer's premises.

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