



## Rotating Unions



### Series

1005, 1102, 1115, 1205, 2200, 14000

### Models

250-094-xxx, 355-021-xxx, 452-000-xxx

for air, hydraulic and vacuum  
(with floating 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 via [www.deublin.com](http://www.deublin.com).
- ❑ 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 referred to supply the following media: hydraulic oil, air or vacuum.

By means of the rotating unions, the media are fed to the actuator with a certain pressure, through rotating machine components (e.g. machine shaft) in order to transmit forces.

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 Cylinder

The subsequently described application is one example of numerous possible applications. This example shows the supply of a cylinder with the hydraulic oil medium.

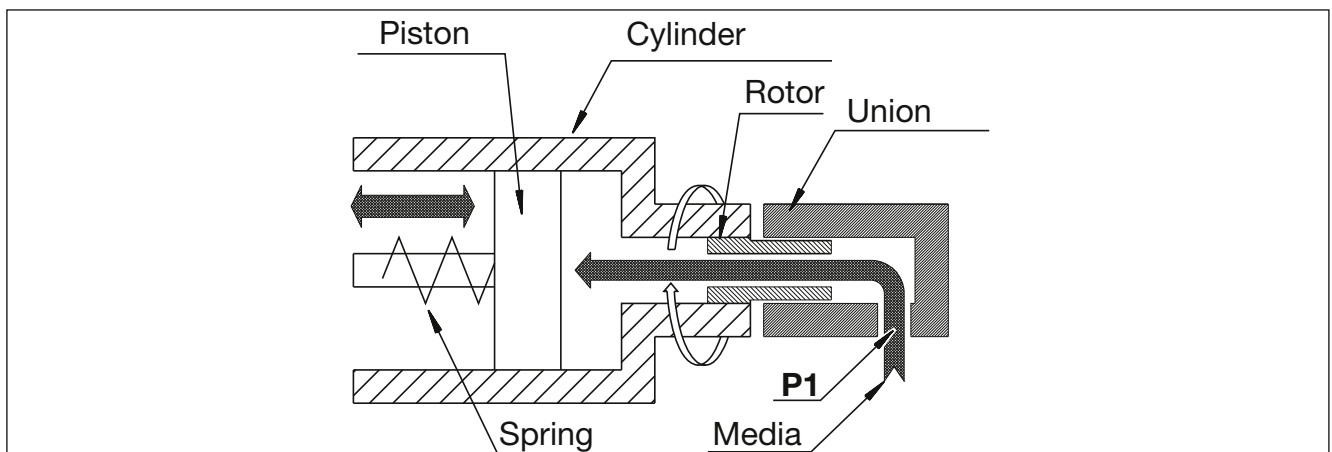


Fig. 1: Scheme showing force transferred to the cylinder

The hydraulic oil moves the cylinder piston.

- ❑ In order to extend the piston, hydraulic oil is introduced through port P1 of the rotating union in front of the piston.

## 1.2 Misuse

This chapter provides information on known misuse of rotating unions referred to.

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. Always observe the operating data released by *DEUBLIN* on the model-specific drawing. It can be requested from *DEUBLIN*.

### Prohibition for the following areas:

**Potentially explosive areas**

The rotating unions of the 1005, 1102, 1115, 1205, 2200 and 14000 series as well as 250-094-xxx, 355-021-xxx and 452-000-xxx models 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.

**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.

**Application in ambient temperatures/with media temperatures below 3 °C**

Rotating unions may be damaged if they are operated at temperatures (ambient or media) below 3 °C.

**Operation without a medium (dry run)**

Operating rotating unions without a medium may damage the sealing surfaces of the rotating union.

**Operation at the highest speed and with maximum pressure**

Speed and pressure must be adjusted to each other so that the rotating unions are not damaged (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 hot surfaces

The rotating unions are heated by the temperature of the medium and through frictional heat. 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 visibly on/next to the rotating union in order to warn of danger.

#### 1.3.2 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, the latter may become porous or burst. This can cause personal injury and/or property damage to components of the machine.

- Only use hoses which are suitable for the media, the maximum system pressure of the machine and the maximum temperature of the media.

#### 1.3.3 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 flow media. Observe the COSHH Safety Data Sheet for the flow media.

#### 1.3.4 Hazards due to faulty installation

If the rotating unions are installed incorrectly, hoses and connections may become leaky. 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.
  - 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.
- Install the rotating union on the machine using 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 securely downward at the lowest point and that the drain line shows a fall (min. 15°).
- Install the hoses to the rotating union prior to mounting it at the machine shaft. This does not apply to hoses with an SAE connection.
- Install the anti-rotation element on the rotating union, tension free.



## 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 injury.



Note

### Note

Potentially harmful situation in which the product or surrounding objects can be damaged.



Info

### Application notes

and other useful information.

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## 2 Information as to this Manual

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

- You can download the latest version of this manual under [www.deublin.com](http://www.deublin.com).
- Always use the latest version of the operating manual.

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## 3 Information on the Name Plate

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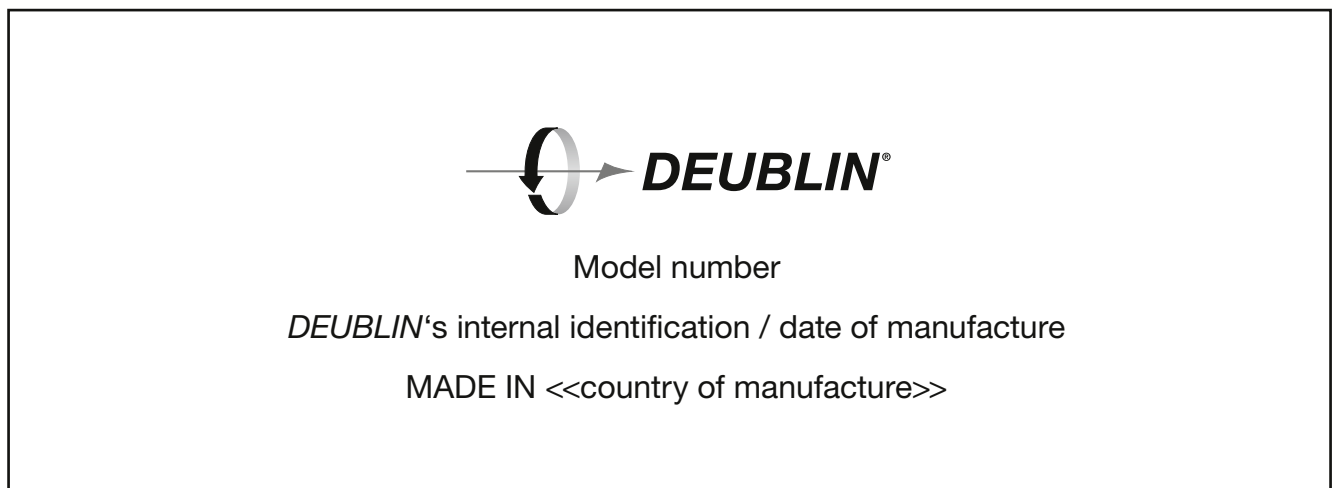


Fig. 2: Name plate

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 drawings of the rotating unions from *DEUBLIN* in order to integrate the rotating union in your drawing. You will need the model-specific installation drawing of your rotating unions for a secure set-up and operation of the rotating unions.

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

- torque moments of the union
- technical data
- tolerances
- approved media

### 4.1 Filtering of the Medium

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

Determine the required filter performance data according to standard DIN ISO 4572 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 Grade

To ensure the longest possible service life of the rotating union, *DEUBLIN* recommends using compressed air grade 4 according to DIN ISO 8573-1. This results in the following parameters for the compressed air:

Particle		Water		Oil
Particles max. in µm	Particles max. in mg/m <sup>3</sup>	Compressed air dew point in °C	Water content in mg/m <sup>3</sup>	Residual oil content in mg/m <sup>3</sup>
15	8	3	6,000	5

### 4.3 Definition of Hydraulic Fluids

The hydraulic fluid that is used must correspond to the following definition: Mineral oils according to DIN 51524 (HL; HLP)/ ISO 6743/4 (HL, HM, HV) in viscosity classes 10, 22, 32, 46, 68 and 100 mm<sup>2</sup>/s).

#### 4.4 Connecting Options of the Rotating Union at the Machine Shaft

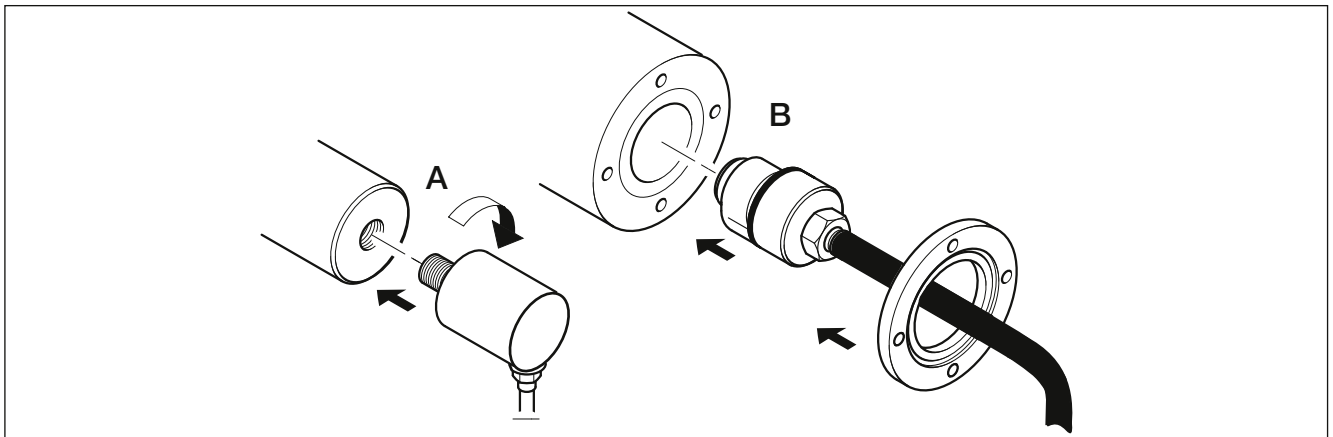


Fig. 3: Options for the installation on the machine shaft

The rotating unions can be fastened on the machine shaft by screwing **(A)** or by means of a flange **(B)** depending on the rotating union.

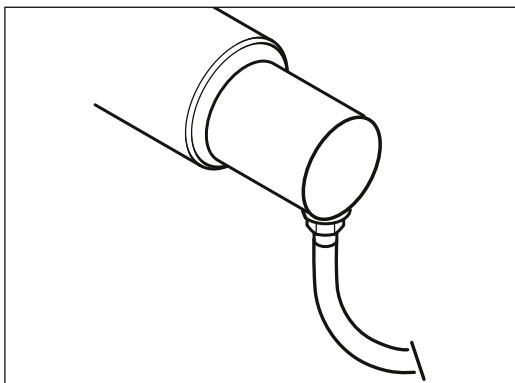
#### 4.5 Options of Hose Installation

The following examples show how to install the hoses at 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.

##### 4.5.1 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 installation.



Use flexible hoses to connect the rotating union. Flexible hoses prevent lateral loads from exerting pressure on the rotating union bearings during operation.

Fig. 4: Hoses bent lateral

#### 4.6 Planning the Oiler Position



Not all rotating unions are equipped with an oiler. If your rotating unions do not have an oiler, you do not need to consider this chapter.



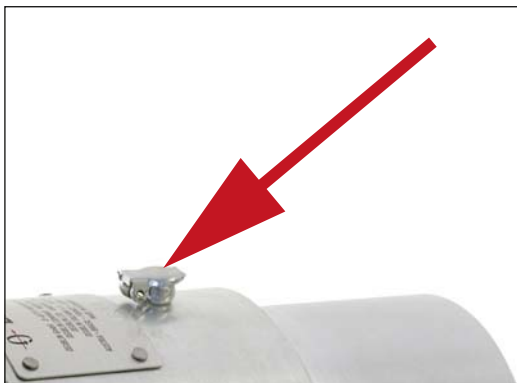


Fig. 5: Correct positioning of the oiler

To allow for the refilling of the internal lubricating oil reservoir of the rotating unions with oil during maintenance, the oiler should be in an 11 o'clock or 1 o'clock position after installation, if possible.

#### 4.7 Using a locking element (mounted externally)

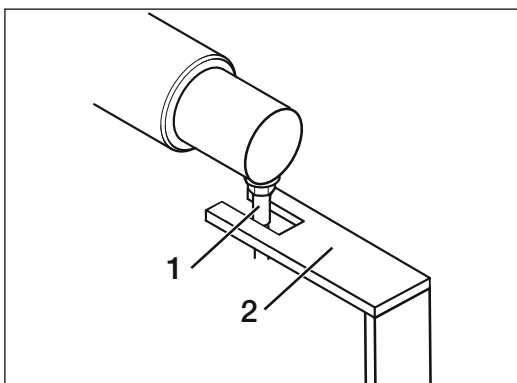


Fig. 6: Example of a possible locking element

The rotating union must be secured against rotation during operation using an anti-rotation element **(2)**. In this connection, the metallic connector of the hoses **(1)** can be used as torque supports.

A fork head may e.g. be installed on-site to serve as an anti-rotation element at a hose connection.

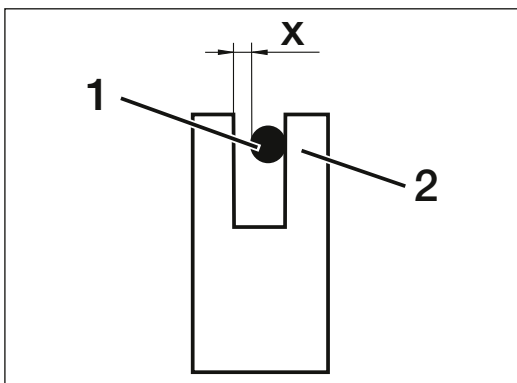


Abb. 7: Top view torque support

The connector of the hose **(1)** may in this example only touch against one side of the bracket **(2)** of the anti-rotation element so that a clearance **(X)** remains between the other side of the bracket and the hose connector.

## 5 Installation

The union installation is described in an additional leaflet 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 via [www.deublin.com](http://www.deublin.com).

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

## 6 Information on the Operation



Note

### Damage to components due to missing lubrication (Dry run)

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.



Warning

### Risk of injury due to hot surfaces

The rotating unions are heated by the temperature of the medium and frictional heat. Skin contact with these heated rotating unions can cause severe injuries.

- Before starting to work on the rotating union, allow the machine to cool down.
- Use safety gloves and PPE (Personal Protective Equipment) protecting against heat depending on the application of the rotating unions.

## 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.

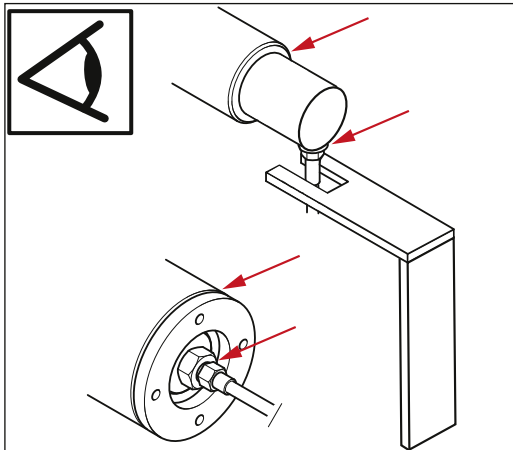


Fig. 8: Inspect visually

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

1. Carry out daily visual inspections in order to check whether leakage and/or damage occurred at the connections (see arrows).

If you detect leakage/damage:

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. Repair kits for various models can be obtained from *DEUBLIN*.

## 8.3 Weekly/monthly maintenance



You must only carry out the maintenance works described herein if your rotating unions are equipped with an oiler (1).

Rotating unions with an oiler have an internal lubricating oil reservoir, which gradually releases oil for the lubrication of the components. This lubricating oil reservoir has to be refilled at least once per month. If the rotating unions are operated at high speeds, the oil reservoir has to be refilled after one week.

For the filling of the oil reservoir, you must use high-quality motor oil.

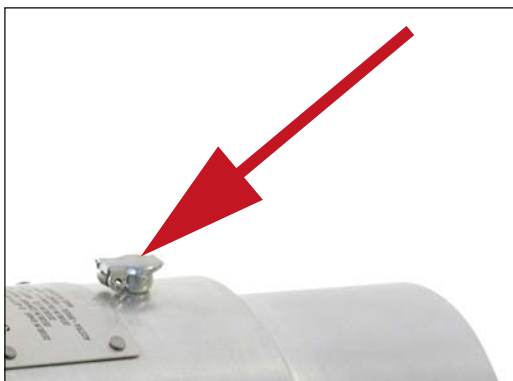


Fig. 9: Refilling the lubricating oil reservoir

If your rotating union is equipped with an oiler (**arrow**) complete the following steps:

1. Open the oiler cover.
2. Fill the oiler with four to five drops of oil.
3. Close the oiler cover

## 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 rotating unions for repair. 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	4. Stop the machine. 5. Ensure that the connections are sealed according to the manual "Installation". 6. Ensure that all hoses are installed without stress. 7. Ensure that all seal faces are clean. 8. Ensure that the anti-rotation element is installed without stress.
	Seal faces of the rotating union are damaged	1. Pack rotating union (see Pack rotating union for transport, page 13).
	Rotating union is defective	2. Send rotating union to <i>DEUBLIN</i> for overhaul/service.
Rotating union leaks before the end of the expected service life	Medium is contaminated	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	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	Rotating union is not designed for the respective application. Thread and/or concentricity outside the admissible tolerance.	1. Stop the machine. 2. Remove rotating union. 3. Manufacture new thread or flange.
	Rotating union is mounted incorrectly.	1. Stop the machine. 2. Remove rotating union. 3. Mount the rotating union according to installation instructions.

## 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.

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## 10 Disposal

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### 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.

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## 11 Spare Parts

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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.

Repair kits are available for several models of the rotating unions and can be obtained from *DEUBLIN*. Please ask your *DEUBLIN* Service.

You need special tools and repair instructions for repair of the rotating unions, which can be obtained from *DEUBLIN*.



Info

### Note

If you do not want to repair your rotating union yourself, *DEUBLIN* will be pleased to help you. If requested, *DEUBLIN* will exchange all wearing parts and clean all components of the rotating union. 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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