



Rotating Unions



Series 73000

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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.
- This manual also includes general instructions for operation with compressed air. Please observe these instructions for setup, operation, supervision and maintenance.
- This manual must be available for consultation at all times at a protected and clearly visible location in close proximity to the machine.
- Always use the latest version of the operating manual, available under 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.
- The operating company must supplement this manual with the following operating instructions:
 - Operating instructions pertaining to national accident prevention laws
 - Operating instructions with regard to environmental protection including information specifying statutory duties of supervision and notification
 - Information on the compliance with special operating features, e.g. with regard to work organisation, work process structures and assigned staff.
- In addition to these operating instructions, all applicable and mandatory regulations relating to accident prevention as well as the acknowledged technical rules for safe and professional working must be observed.
- Please contact *DEUBLIN* GmbH for any additional information or instructions as well as in the event of damage.
- The rotating union is state-of-the-art in design and constructed in accordance with the accepted safety regulations. Nevertheless, if not operated by trained or instructed staff, or if used other than for the purpose intended, or if repaired or maintained incorrectly, its use may result in risks for its operator or for third parties or damage to the device or other material assets.
- Spare parts may only be used when they comply with the technical requirements specified by the manufacturer. Thus, only use original *DEUBLIN* parts (repair sets).

1.1 Intended Use

The rotating union is used to convey water/bentonite mixtures (approx. 3% bentonite) from a stationary system to a rotating shaft. The rotating union is designed for the operating parameters listed in the following table, and may only be operated within these parameters.

Media	Water/bentonite mixture (approx. 3% bentonite)
max. pressure p [bar]	70
max. temperature t [°C]	70
ambient temperature t [°C]	3 – 40
max. speed n [min ⁻¹]	250
max. flow Q [l/min]	757

The rotating unions referred to are designed for non-potentially explosive environments and non-com-

bustible media. Specific “Operating Parameters” for the rotating union are specified on the model-specific installation drawing, which can be requested from *DEUBLIN* GmbH.

The rotating union can be used in both directions of rotation. Long periods in reverse operation, however, are not permissible.

The rotating union may only be used with accessory equipment provided and approved by the manufacturer.

Any form of use other than those stated are not in accordance with the intended use.

Intended use also includes the compliance with the instructions pertaining to safety, operation and repair/maintenance which are specified in this manual.

1.1.1 Application

This rotating union is a single passage variant (see schematic diagram). It is screwed to the rotating shaft via the rotor thread and is with that pressure-proof. The medium is supplied axially via hoses, which are connected free of tension.

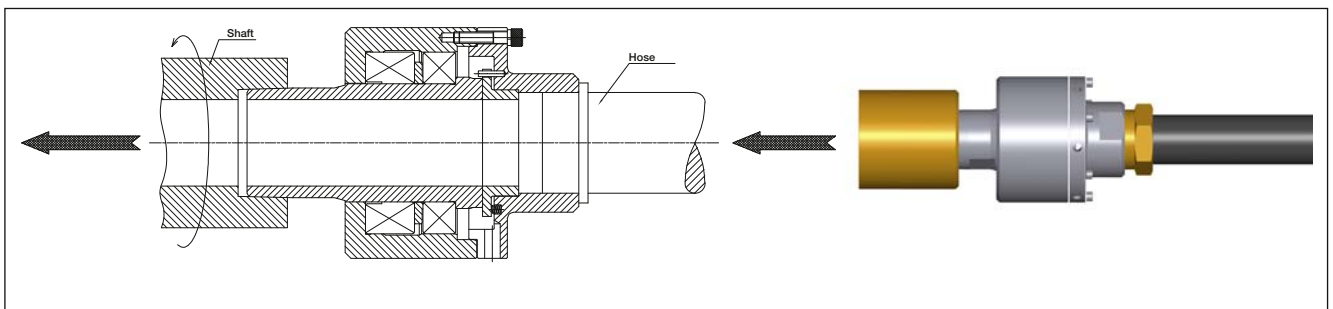


Fig. 1: Schematic diagram

1.2 Misuse

This chapter provides information on known misuse of rotating unions.

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 series 73000 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 solvents

If solvents are fed through the rotating union, the elastomers of the seals can become corroded which could result in uncontrolled leakages.

Conveying of combustible media or hydrocarbons

Combustible media or hydrocarbons may ignite or cause explosions.

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 axial face seals.
- Conveying of compressed air**
The rotating union is not designed for compressed air.
- Connection via fixed pipes**
Any connection via fixed pipes may cause damage to the ball bearings as a result of tension, which might result in leakage and premature breakdown.
- 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, or with medium temperatures below 3 °C**
Rotating unions may be damaged if they are operated at temperatures (ambient or media) below 3 °C.
- Use of hydraulic oils**
The rotating unions of series 73000 are not approved for hydraulic oils. If you are using rotating unions for hydraulic oils, the rotating unions will be damaged and hydraulic oil may splash out. Persons may be injured.
- 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 through rotating unions.

1.3.1 Risk of injuries due to hot surfaces

The rotating unions may become hot during operation. If the skin makes contact with this heated rotating union, it 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, use safety gloves and PPE (Personal Protective Equipment) protecting against heat when handling the rotating union.

1.3.2 Hazards due to rotating of the union rotor

If you reach into the area of the union long hair or loose clothing might get caught in the rotor, it can result in severe injuries.

- Please ensure that it is impossible for persons to touch the rotating rotor accidentally.
- Please do not have long hair loose; do not wear loose clothing, or pieces of jewellery when working on rotating components.

1.3.3 Hazards by improper 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.

1.3.4 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.

1.3.5 Hazards by the high pressure of the flow media

The media applies high pressure to the rotating union and its equipment. If working on the rotating union with the pump pressure of the flow media applied, or if residual pressure is still present in the pipeline system of the machine, the flow media can escape under pressure if connections are loosened. You and other persons might be severely injured as a result.

- Make sure that no conveyance pressure is applied.
- Make sure that there is no residual pressure present in the pipeline.

1.3.6 Hazards by faulty installation

If the rotating unions are installed incorrectly, hoses and connections may become leaky. The media can escape. Depending on the media, 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.
- Please make sure that the hoses for the media are connected in accordance with the channel configuration of the rotating union. Please observe the model-specific installation drawing regarding this.
- 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 media can be carried away downward at the lowest point and that the drain line permanently slopes downwards at a minimum of 15°.

1.4 Structure of Pictograms

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

**Warning**

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

**Note**

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

**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.com.
- Always use the latest version of the operating manual.

3 Information on the Name Plate

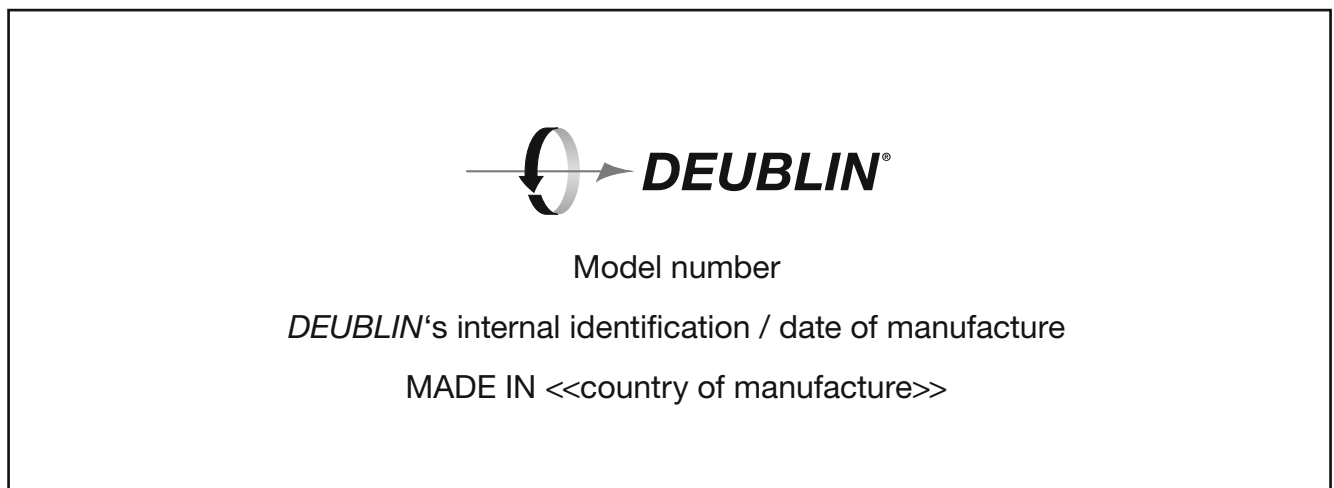


Fig. 2: Name plate

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 drawings of the rotating unions from *DEUBLIN* in order to integrate the rotating union into 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 corresponding rotating union contains all data required to install and operate the rotating union.

4.1 Connecting Options of the Rotating Union at the Machine Shaft

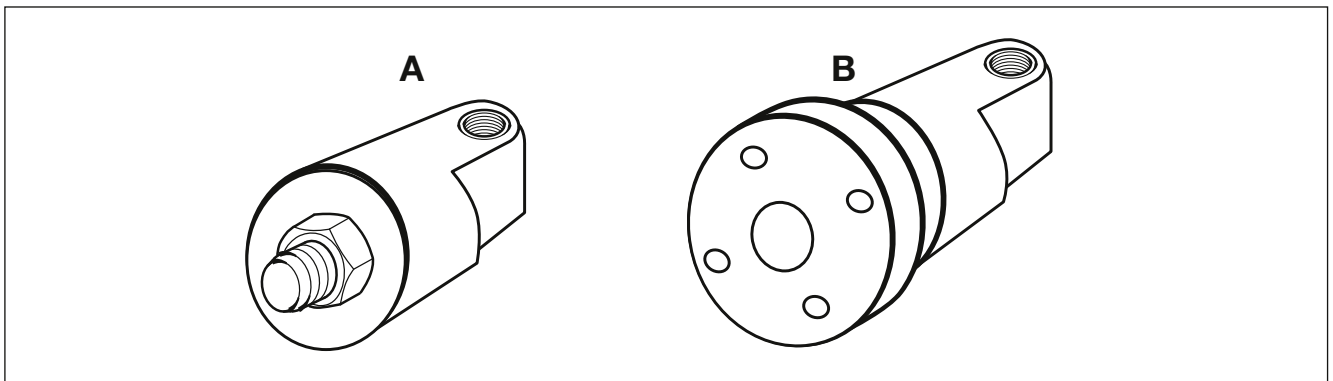


Fig. 3: Variants how to mount the rotating union to the machine shaft

The rotating union is mounted to the machine shaft via the rotor.

4.2 Options of hose installation

The hose must be laid free of tension and without kinks in order that it does not exert any forces on the rotating union.

- Please pay attention to the chapter “1.3 Security Advices” regarding the design.

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.com.

- 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
 - Information on the leakage line (optional)
 - model-specific installation drawing

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.



Note

Test run of the rotating union with media flowing

Carry out a test run following installation and observe the following points:

- Smooth and vibration-free operation of the rotating union.
- Correct connection of the supply hose to the rotating union. The installed rotating union must be free moving and installed without tension.
- No leaking hose connections and leakage bores.
- No leaks on the seal.



Warning

Danger of injuries due to inadmissible mode of operation

If specified temperatures or pressures should be exceeded, the seals of the rotating unions might leak and media might escape endangering persons.

- Use the rotating unions within the specified operating parameters and the intended use ONLY.



Warning

Damage to the union caused by media deposits within the rotating union

If media deposits in the rotating union harden, they may cause damage to the rotating union sealing.

- After using the rotating union with a water-bentonite mixture, the internal passage must be flushed out with clean water.



7 Storage



Note

Damage of component due to incorrect storage

If you store the rotating unions incorrectly, they may leak or get damaged.

- Store the rotating unions in a dry area between 3 °C and 40 °C.
- If storing the rotating union below 3 °C (max. -10 °C), the internal passage must be flushed out with clean water, and dried to avoid frost damage to the rotating union.
- Rotating unions must not be stored for more than two years.

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 injuries 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 and PPE (Personal Protective Equipment) to protect against heat or cold.



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 severe injuries.

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

8.2 Daily Inspection

Inspect/check the rotating union for the following features on a daily basis:

- connections and seals for leakage and correct and secure fit
- the rotating union for damage
- the rotating union for functionality
- the rotating union for smooth running

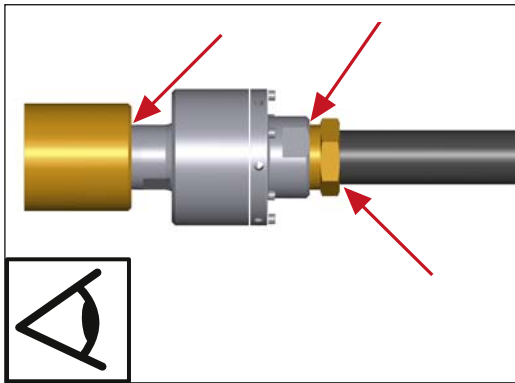


Fig. 4: Inspect visually

During operation of the machine, leakages may occur at the connections and hoses.

1. 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. Depressurise the pipeline to ensure that no line or residual pressure is present.
3. Replace the defective hoses with new ones (if necessary).
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*. Contact *DEUBLIN* for kit availability.



Warning

Damage to the union caused by media deposits within the rotating union

If media deposits in the rotating union harden, they may cause damage to the rotating union sealing.

- After using the rotating union with a water-bentonite mixture, the internal passage must be flushed out with clean water.

8.3 Maintenance after Operating Hours

The series 73000 rotating unions are lubricated for life and require no further lubrication.

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?

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 leaking after installation	Incorrect installation	1. Stop the machine. 2. Ensure that the connections are sealed according to the "Installation" manual. 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	1. Pack rotating union. 2. Send rotating union to <i>DEUBLIN</i> for overhaul/service.
	Rotating union is defective	
Rotating union leaks before the end of the expected service life	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 eccentric or wobbles	Thread and/or concentricity outside the admissible tolerance.	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).
- Collect the dirty flushing media.
- Dispose of the collected flushing media according to the national standards, regulations and directives.
- Please observe the instructions of the media 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. Wearing parts are excluded from the warranty. 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* as well.



Info

Note

If you do not want to repair your rotating union on your own, *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.