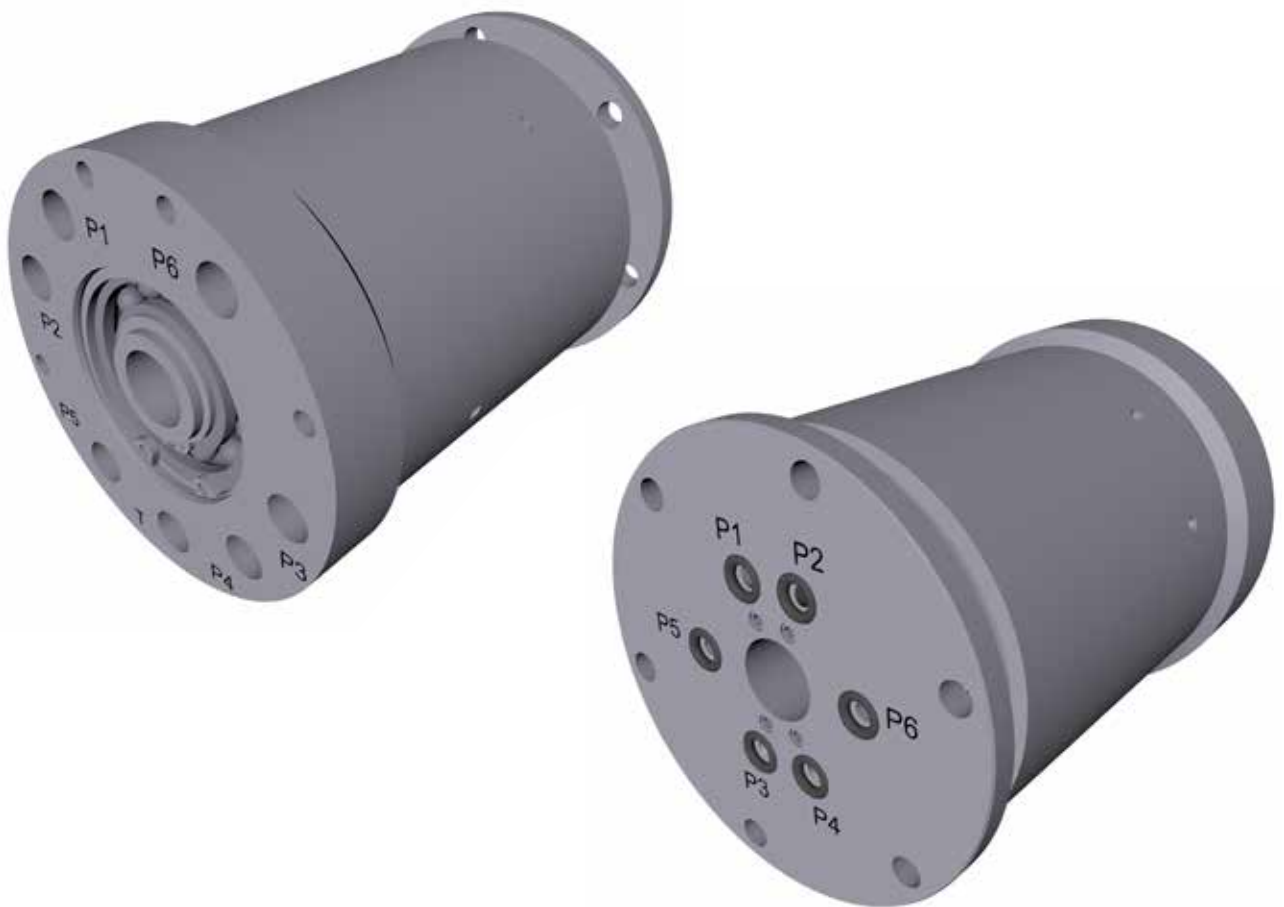




## Rotating Unions



**Model**

**SP0331**

**for air or helium with elastomer sealing  
and water with mechanical Seals**

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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](http://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 Design

The rotor is mounted in the housing and supported by ball bearings. The flanged rotor is for securing to the rotating machine shaft. The vertical supply lines are connected to the housing by means of flexible hose line (connections P1, P2, P3, P4, P5, P6 & T).

Sealing of the gaseous media (air, helium) is made on the rotor by means of elastomeric seals. Mechanical seals are used for sealing the liquid medium (water).

When water leakage is due to worn seals, drainage must be made by means of a separate leak-age hose at the connection T. It is critical that the leakage connection is at 6 o’ clock and that the leakage hose is always routed in a downward direction. Correct connection of the leakage hose will prevent leaking liquid from entering an air port or the helium port.

### 1.2 Intended Use

The rotating union SP0031, is suitable for the following media:

	Medium <sup>(1)</sup>		
	Air	Water	Helium
Connection	P5	P1, P2, P3, P4	P6

<sup>(1)</sup> In order to obtain the longest possible lifetime for rotating unions, the applied medium must meet certain requirements, which are defined in chapter 4.1 ff.

The rotating union put the medium under a certain pressure forcing it through the rotating machine components (e.g. machine shaft) to the load.

The rotating union referred to is designed for non-potentially explosive environments and non-combustible media.

Details on the operating range of the rotating unions are provided in the installation drawing SP0331-IC.

### 1.3 Misuse

This chapter provides information on possible misuse of the rotating union SP0331.

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 union SP0331 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.

**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 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)**

If the rotating unions are operated without a medium, the sealing surface of the rotating union will be damaged.

**Operation at 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).

**Incorrect port assignment**

If the ports of the rotating union are not charged with the correct flow media according to the specific installation drawing for the model, the rotating union may become damaged, resulting in personal or material damage.

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

## 1.4 Safety Instructions

This chapter provides information on the hazards when using rotating unions.

### 1.4.1 Hazards due to hot surfaces

Frictional heat and the temperature of the medium causes rotating unions to rise in temperature. 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.

### 1.4.2 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, 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.

### 1.4.3 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.

### 1.4.4 Hazards by 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 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.
- Make sure that the hoses are connected in compliance with the channel configuration of the rotating union. Pay attention to the model specific installation drawing.
- 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.
- Rotating Unions with leakage line: 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°).



## 1.5 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.eu](http://www.deublin.eu).
- Always use the latest version of the operating manual.

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## 3 Information on the Name Plate

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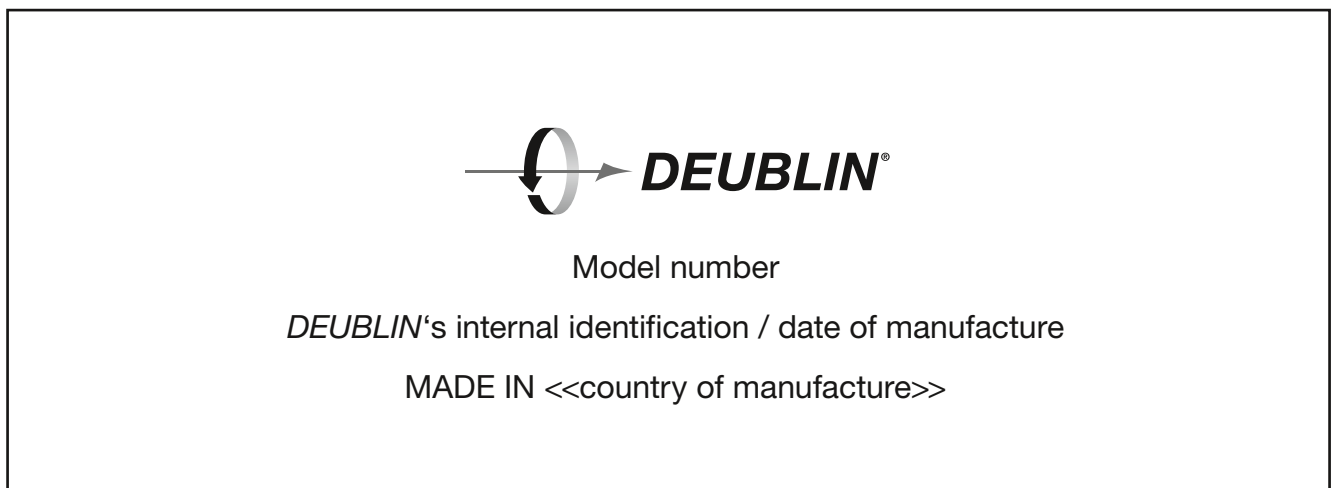


Fig. 1: Name plate

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.:

- 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, increased wear of the rotating union.

Please use the following classes of 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 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.

- 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

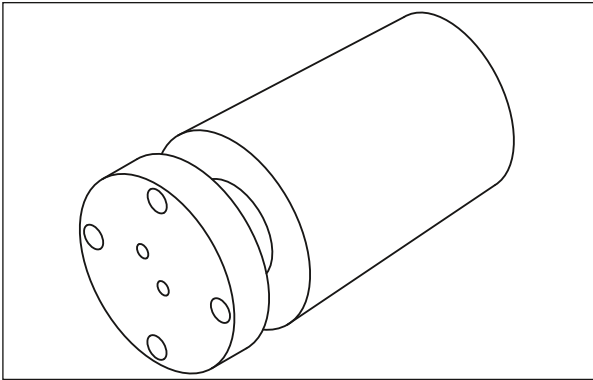


Fig. 2: Rotating union with flange connection.

The rotating union is secured to the machine shaft via the rotor. For this purpose the rotor is equipped with a flange.

The rotor provides the connection between rotating union and shaft. Therefore it is important to carefully design the shaft in compliance with the specifications in the installation drawing for each specific rotating union. Deviations might result in leakages and uneven movements of the rotating unions.

### 4.4 Options of Hose Installation

The hoses must be routed without tension or bends ensuring that they do not exert any force on the rotating union.

Connections to the rotating union are by flexible hoses.

The flexible hoses prevent lateral loads from acting on the bearings of the rotating union during operation.

- Please pay attention to the chapter “1.4 Safety Instructions” regarding the design.

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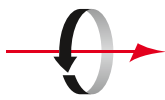
## 5 Installation

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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](http://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 how to mount an anti-rotation element provided by the customer
  - Installation drawing for each specific model





## 6 Information on the Operation



Note

### Damage to components due to operation without medium (dry running)

If your rotating union model is intended for operation with a medium but it is operated without the medium, the sealing surfaces of the rotating unions will 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.
- Rotating unions should 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.

Regular inspections are required, malfunctions of the *DEUBLIN* Rotating Union may result in safety or environmental hazards.



Info

The bearings of the rotating union are pre-lubricated for life. Re-lubrication is not necessary.

### 8.2 Daily Inspection

Check the rotating unions for tightness.



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.

During the operation of the machine, leakage might occur, the time period is subject to the extent which the rotating unions are used.

- Carry out daily visual inspections in order to check whether leakage occurred at the rotating union

If you detect leakage:

1. Stop the machine.
2. Replace worn out or leaking rotating unions with new rotating unions.
3. Replace defective hoses with new hoses.
4. Seal leaking connections.

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## 9 Trouble Shooting

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This chapter provides the following information:

1. Which problem may occur?
2. What could 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	<ol style="list-style-type: none"> <li>1. Stop the machine.</li> <li>2. Ensure that the connections are sealed according to the manual "Installation".</li> <li>3. Ensure that all hoses are installed without stress.</li> <li>4. Ensure that all seal faces are clean.</li> <li>5. Ensure that the anti-rotation element is installed without stress.</li> </ol>
	Seal faces of the rotating union (segments) are damaged	<ol style="list-style-type: none"> <li>1. Pack rotating union.</li> <li>2. Send rotating union to <i>DEUBLIN</i> for overhaul/service.</li> </ol>
Rotating union leaks before the end of the expected service life	Medium is contaminated	<ol style="list-style-type: none"> <li>1. Stop the machine.</li> <li>2. Drain medium.</li> <li>3. Send rotating union to <i>DEUBLIN</i> for overhaul/service, if required.</li> <li>4. Flush the piping system of the machine.</li> <li>5. Mount new filter.</li> <li>6. Fill in new medium.</li> </ol>
	Rotating union is not designed for the respective application	<ol style="list-style-type: none"> <li>1. Ensure that the correct <i>DEUBLIN</i> Rotating Union is used.</li> <li>2. Contact <i>DEUBLIN</i> if required.</li> </ol>
Rotating union runs untrue or wobbles	Thread and/or concentricity outside the admissible tolerance.	<ol style="list-style-type: none"> <li>1. Stop the machine.</li> <li>2. Remove rotating union.</li> <li>3. Manufacture new thread or flange.</li> <li>4. Mount the rotating union according to installation instructions.</li> </ol>
	Rotating union is mounted incorrectly.	<ol style="list-style-type: none"> <li>1. Stop the machine.</li> <li>2. Remove rotating union.</li> <li>3. Mount the rotating union according to installation instructions.</li> </ol>

## 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.
- Observe the instructions of the producer of the media.
- 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.

For overhaul / service please contact *DEUBLIN* Customer Services.

Repair kits are available for series 17/21, 2117, 1690/1790/1890 and 1379/1479 of the rotating unions and can be obtained from *DEUBLIN*. No repair kits are available for models of the D series. 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.

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