



Rotating Unions



Series
2400
Model
2412
2420
2425
2440

For use of the medium water.

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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 2400 series serve the feeding of water for continuous casting machines in the steel industry. The fed water serves the cooling of the rollers.

Model	Q _{max.} (l/min)	max. pressure (bar)	n _{max.} (min ⁻¹)	max. Temperature T (°C)
2412 Mono	25	10	100	120 ^(*)
2420 Mono	50			
2420 Duo	25			
2425 Mono	100			
2425 Duo	50			
2440 Duo	110			

^(*) If you need the rotating unions for a higher medium temperature, please consult *DEUBLIN*.

The rotating unions of the 2400 series are designed for non-potentially explosive environments and non-combustible media.

The rotating unions of the 2400 series can be used as one-way or two-way version depending on the connection type. The model 2440 can be used as a two-way version only.

1.1.1 Application one-way version (Mono)

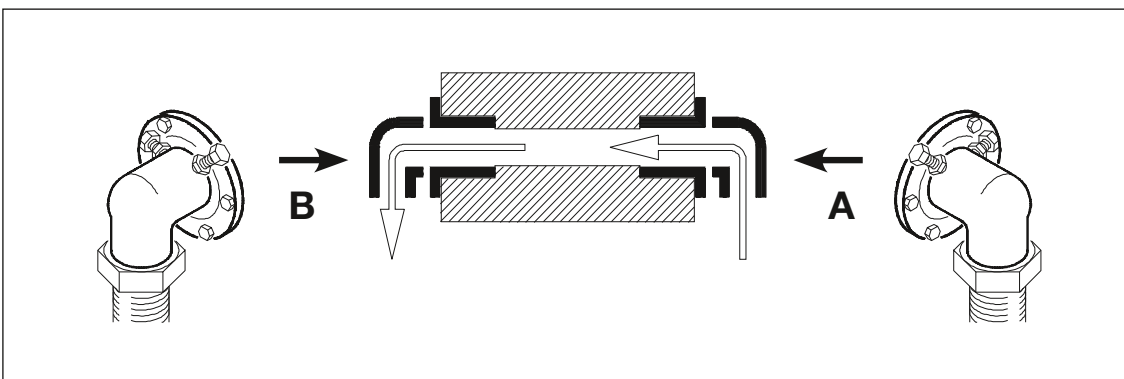
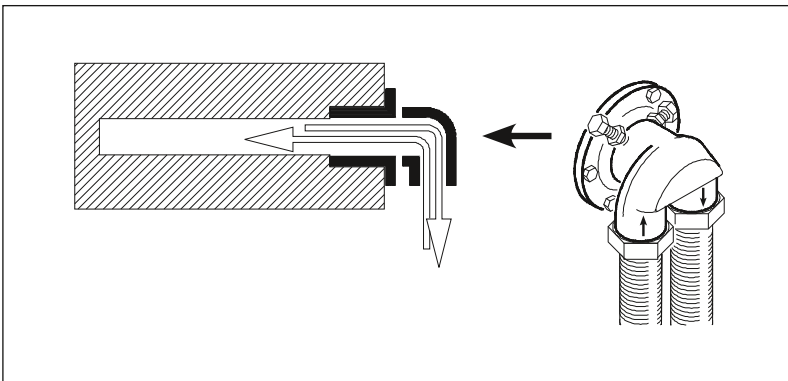


Fig. 1: Schematic diagram one-way version (Mono)

One one-way version of the rotating union is mounted at each of the two ends of the roller. The rotating union **(A)** conveys the medium into the roller. The rotating union **(B)** conveys the medium into the piping of the machine.

1.1.2 Application two-way version (Duo)



At one end of the roller a rotating union is mounted which conveys the medium into the roller and afterwards into the piping of the machine. For this purpose, the rotating union is provided with a manifold with two connections and one siphon tube.

Fig. 2: Schematic diagram two-way version (Duo)

1.2 Misuse

This chapter provides information on known misuse of the rotating unions of the 2400 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 2400 series shall not be used in potentially explosive environment, as they do not conform for the requirements of potentially explosive areas.
- Food**
Food, cleaning and disinfectant residues cannot be removed from the rotating unions. People may suffer poisoning.

Prohibition for the following applications:

- Conveying of combustible media or hydrocarbons**
Combustible media or hydrocarbons may ignite or cause explosions.
- Connection to a piping system with excessive pressure**
If excessive pressure is applied to the rotating unions, supply pipes may come off and people may suffer injuries thereby or by the escaping media or property damage may be caused.
- Operation without lubrication**
Dry operation (without medium) of the rotating union causes damages to the axial face seals.
- Connection to fixed pipes**
If connection is via fixed pipes, the rotating unions may leak and the bearings may get damaged.
- Conveying of media with a temperature below 3 °C**
If you convey a medium with a temperature below 3 °C through the rotating union, the latter will be damaged.
- Conveying of steam**
Steam causes damage to the rotating union. Steam may escape and injure people seriously.

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 Hazards due to hot surfaces

The rotating unions are heated by the temperature of the medium. 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 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.

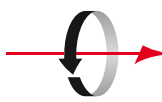
If you use incorrect hoses, they may become porous or burst. This can cause personal injury and/or property damage to components of the machine.

- When using water as medium, use hoses complying with the maximum system pressure of the machine and the maximum temperature of the medium.

1.3.3 Hazards by faulty installation

If the rotating unions are installed incorrectly, hoses and connections may become leaky. The medium can escape. This may cause personal injury or property damage to components of the machine.

- Before installing the rotating union ensure that no feed pressure and no residual pressure is applied to the piping system of the machine.
- 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.
- Prior to installation, make sure that the O-rings are positioned correctly in the recesses of the rotating union.
- Make sure the fixings of the rotating union are tightened in the correct sequence.



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.eu.
- Always use the latest version of the operating manual.

3 Information on the Name Plate

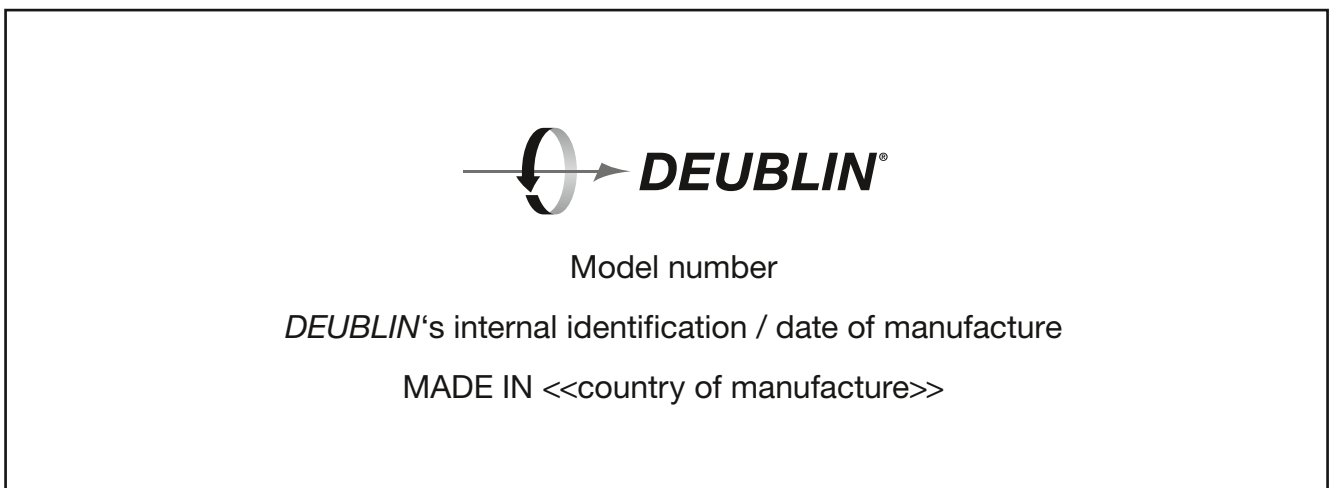


Fig. 3: Name plate

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* in order to integrate the rotating union in your drawing.

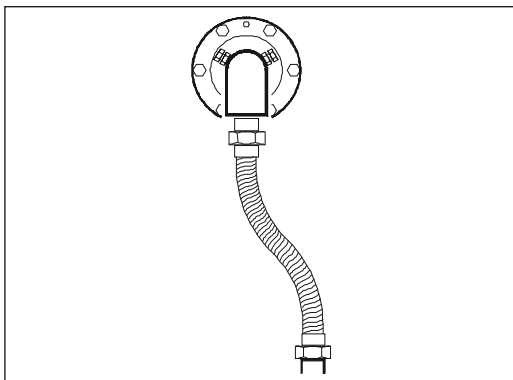
You will require the model-specific installation drawing of your rotating unions to implement it into your design and to operate the rotating unions in a safe manner.

4.1 Options of Hose Installation

The following examples show how to install the pipes at the rotating unions.

These connecting options ensure that the hoses do not transfer stress to the rotating unions when the machine shaft moves. The options for the hose installation are described here on the basis of the one-way version. The two-way version is to be connected in the same way.

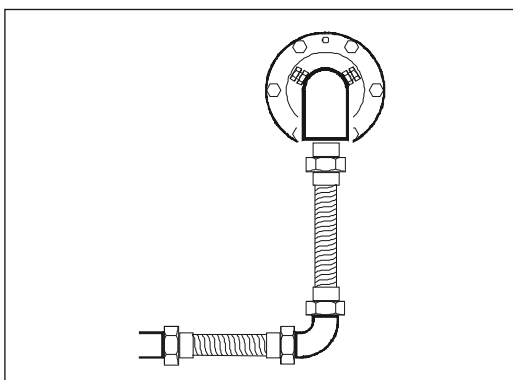
- ❑ Please pay attention to the chapter “1.3 Security Advices” regarding the design.



The hoses must be laid in a slight curve.

The curve shall only be as large as to prevent the hoses from showing stress or kinks.

Fig. 4: Hoses laid in a curve



If the hoses are to be guided away from the rotating unions vertically and bent by 90°, connect the hoses as shown.

Fig. 5: Hoses bent by 90°

4.2 Two-way Version (Duo)

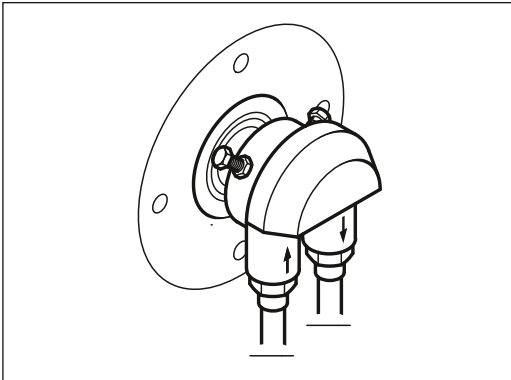


Fig. 6: Connect hoses for inlet/outlet

The manifold is fitted with two connections. Both connections are provided with arrows showing the inlet and outlet. The inlet is connected to the connection with the arrow showing to the top. The outlet is connected to the connection with the arrow showing to the bottom.

4.3 Fits, Shape and Positional Tolerances

The operation of the rotating union is only ensured when you adhere to the specifications by *DEUBLIN* regarding the design of the fit, shape and positional tolerances. If you do not meet them, O-rings can be damaged or the medium can escape, for instance.

In the technical drawing for your rotating union, you can find detailed information on these specifications.

- Ensure that all specifications by *DEUBLIN* for the installation of the rotating union in your machine are adhered to.

4.4 Prepare Installation of Rotating Union

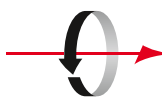
Sharp edges at the bore hole of the roller can damage the O-rings of the rotating union.

- Provide the bore hole of the roller with a 30° chamfer so that the O-rings will not be damaged when pressing them in.

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
 - Plan for connection of hoses
 - Position of leakage line
 - 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, they are not lubricated and will thus be damaged.

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



Note

Damage to components due to medium which is too cold

If you convey a medium with a temperature below 3 °C through the rotating union, the latter will be damaged.

- Use the rotating unions only for media with a temperature above 3 °C.

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. You can only avoid early wear of the rotating unions, if you observe the maintenance interval described herein.

8.1 Maintenance Intervals

Rotating unions of 2400 series are maintenance-free.



Warning

Risk of injury due to hot surfaces

The rotating unions are heated by the temperature of the medium. When touching this heated rotating union, severe injuries may be caused.

- Before starting to work on the rotating unions, allow the machine to cool.
- Depending on the application of the rotating union, use gloves protecting against heat.



Note

Damage of component due to old bushing

If you operate an old bushing with a new rotating union, the latter may be damaged.

- Always replace rotating union and bushing.

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 serious injuries.

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

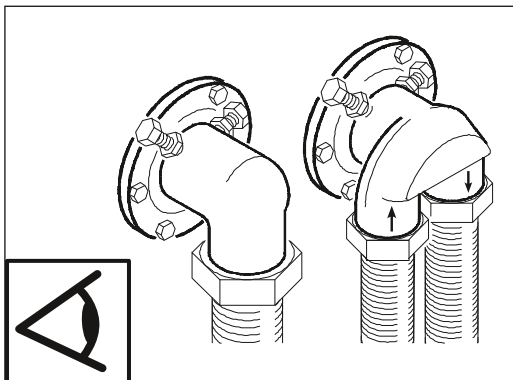


Fig. 7: Inspect visually

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

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

If you detect leakages:

1. Stop the machine.
2. Replace the defective hoses with new ones.
3. Seal leaky connections.
4. If the rotating union is worn and leaks, replace it with a new one. Repair kits for several models can be obtained from *DEUBLIN*.

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



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 laid 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	
Rotating union leaks before the end of the expected service life	Rotating union is not designed for the case of 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.
	The medium shows impurities.	<ol style="list-style-type: none"> 1. Check filter system of the machine; clean and install new filter, if applicable.
Rotating union runs untrue or wobbles	Bore and/or centring outside the admissible tolerance.	<ol style="list-style-type: none"> 1. Stop the machine. 2. Remove rotating union. 3. Manufacture new bore or flange. 4. Install rotating union.
	Rotating union is mounted incorrectly.	
Two-way version: Cooling water is warmed when conveying it through the rotating union. Cooling capacity of cooling water is reduced.	The hoses for the inlet/outlet at the knee piece have been inter-changed when connecting them.	<ol style="list-style-type: none"> 1. Stop the machine. 2. Drain medium. 3. Dismount hoses and mount them again in the correct order.

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 ground 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 rinsing water.
- Dispose of the collected rinsing water 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. Wearing parts are excluded from the warranty. All static and dynamic sealing elements of a component are considered wearing parts, as well as bearings and thrust washer.

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.

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