

FLENDER COUPLINGS

RUPEX

Assembly and operating instructions M3600-01en
Version 03/2026

RWN, RWS, RFN, RFS



Original assembly and operating instructions

M3600-01
Version 03/2026

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Introduction

1

1.1 Legal information

Warning system

These instructions contain information you must observe for your own personal safety as well as to avoid damage to property and persons. The information regarding your personal safety is highlighted with a warning triangle. Information exclusively regarding property damage alone is not marked with a warning triangle. Depending on the hazard class, the warnings shall be depicted as follows, in descending order.

DANGER

means that death or severe physical injury **will** occur if the relevant precautionary measures are not taken.

WARNING

means that death or severe physical injury **may** occur if the relevant precautionary measures are not taken.

CAUTION

means that mild physical injury may occur if the relevant precautionary measures are not taken.

NOTE

means that damage to property may occur if the relevant precautionary measures are not taken.

If multiple hazard classes come into play, the warning for the highest level in question shall always be used. If a warning containing the warning triangle warns of harm to individuals, the same warning may also include a warning regarding damage to property.

Information



Information

Information offers additional notes, assistance and tips for handling the product.

Qualified personnel

The product/system associated with this documentation may only be used by **qualified personnel** trained to perform the relevant tasks, taking into account the associated documentation for the relevant tasks, particularly the safety information and warnings included therein. Due to their qualification and experience, qualified personnel are capable of detecting risks and avoiding potential hazards when dealing with these products/systems.

Intended use of Flender products

Please note the following:

WARNING

Flender products are only suitable for the uses set out in the catalogue and associated technical documentation. If third-party products and components are used, these must be recommended and/or authorised by Flender. Safe and flawless operation of the products requires proper transport, proper storage, setup, assembly, installation, commissioning, operation and maintenance. The permissible environmental conditions must be adhered to. Instructions in the associated documentation must be followed.

Trademarks

All designations marked with the trademark symbol ® are registered trademarks of Flender GmbH. Other designations in this document may be trademarks whose use by third parties for their own purposes may violate the rights of the owner.

Liability disclaimer

We have assessed the contents of these instructions for compliance with the hardware and software described. However, deviations cannot be ruled out, so we are unable to accept liability for full compliance. The details in these instructions are regularly reviewed and necessary corrections are contained in subsequent editions.

1.2 About these instructions

These instructions describe the coupling and provide information about its handling – from assembly to maintenance. Keep these instructions for later use.

Read these instructions prior to handling the coupling. The instructions should be observed.

1.3 Text attributes

In addition to the warnings that you must observe for safety reasons, you will find the following text features in these instructions:

1. Procedural instructions are shown as a numbered list. Always perform the steps in the order given.
 - Lists are formatted as bulleted lists.
 - The dash is used for lists at the second level.
- (1) Numbers in brackets are part numbers.

1.4 Copyright

The copyright for these instructions is held by Flender.

These instructions must not be used wholly or in parts without our authorisation or be given to third parties.

If you have any technical queries, please contact our factory or one of our service outlets (refer to Service and support (Page 59)).

Safety instructions

2

2.1 General information

Instructions

These instructions are part of the delivery. Always keep these instructions close to the coupling.

Please make sure that every person who is commissioned to work on the coupling has read and understood these instructions prior to handling the coupling and observes all of the points.

Only the knowledge of these instructions can avoid faults on the coupling and ensure fault-free and safe operation. Non-adherence to the instructions can cause product or property damage and/or personal injury. Flender Does not accept any liability for damage or operating failures that are due to non-adherence to these instructions.

These instructions apply to couplings that can be used in potentially explosive atmospheres as well as in atmospheres that are not potentially explosive.

If you use the coupling in potentially explosive atmospheres, the coupling must have a corresponding marking. The declaration of conformity in the annex only applies to these couplings.

State of the art

The coupling described here has been designed in consideration of the latest findings for demanding technical requirements. This coupling is state-of-the-art at the time of printing these instructions.

In the interest of further development, Flender reserves the right to make such changes to the individual assembly units and accessories that increase performance and safety while maintaining the essential features.

Symbols

ISO	ANSI	Warning
		Warning – hazardous electrical voltage
		Warning – explosive substances
	---	Warning – entanglement hazard
	---	Warning – hot surfaces

2.1 General information

ISO	ANSI	Warning
	---	Warning – corrosive substances
	---	Warning – suspended load
	---	Warning – hand injuries
		Explosion protection approval

Table 2-1 : General warnings

Explanation regarding Machinery Directive 2006/42/EC

The couplings described here are “components” in accordance with the Machinery Directive and do not require a Declaration of Incorporation.

Explosion Protection Directive

The term “Explosion Protection Directive” used in these instructions refers to the harmonization legislation of the European Union relating to equipment and protective systems intended for use in potentially explosive atmospheres complied with in accordance with the co-applicable EU Declaration of Conformity.

Protective clothing

In addition to the generally prescribed personal protective equipment (safety shoes, overalls, helmet, etc.), also wear suitable protective gloves and safety glasses when handling the coupling.

Using the coupling

The relevant occupational safety and environmental protection regulations must be complied with at all times during transport, assembly, installation, dismantling, operation and maintenance of the coupling.

Only qualified personnel may operate, assemble, maintain and repair the coupling. Information about qualified personnel can be found in the legal notes at the beginning of these instructions.

If hoisting gear or load lifting devices are used for transporting, these have to be suitable for the weight of the coupling.

If the coupling has visible damage, it may not be assembled or put into operation.

The coupling may only be operated in a suitable housing or with touch protection according to applicable standards. This also applies to test runs and rotational direction checks.

Work on the coupling

Only carry out work on the coupling when it is not in operation and is not under load.

Ensure that the drive aggregate cannot be inadvertently switched on. Attach an information notice to the start switch stating clearly that work is being carried out on the coupling. Ensure that the entire unit is not under load.

2.2 Intended use

Only use the coupling according to the conditions specified in the service and delivery contract and the technical data in the annex. Deviating operating conditions are considered improper use. The user or operator of the machine or system is solely liable for any resulting damage.

When using the coupling please specifically observe the following:

- Do not make any modifications to the coupling that go beyond the permissible machining described in these instructions. This also applies to touch protection equipment.
- Use only original replacement parts from Flender. Flender only accepts liability for original replacement parts from Flender.
Other spare parts are not tested and approved by Flender. Non-approved replacement parts may possibly change the design characteristics of the coupling and thus impact active and/or passive safety.
Flender will accept no liability or warranty whatsoever for damage occurring as a result of the use of non-approved spare parts. The same applies to any accessories that were not supplied by Flender.

If you have any queries, please contact our Customer Service (see Service and support (Page 59)).

2.3 Safety instructions for a coupling for use in potentially explosive atmospheres



Information

Declaration of conformity

A declaration of conformity required according to the corresponding Explosion Protection Directive can be found in Chapter Declaration of Conformity (Page 85).



DANGER

Risk of explosion due to use of couplings with axial backlash limitation

Couplings with axial backlash limitation have not been approved for use in potentially explosive atmospheres.

- Do not use any coupling with axial backlash limitation in potentially explosive atmospheres.

2.3.1 Marking

You can find a description of the coupling parts in Chapter Description (Page 23).

A coupling designed in accordance with the Explosion Protection Directive has a marking on the coupling.

Maximum marking

The maximum marking according to the Explosion Protection Directive appears as shown below:

without electrically insulating buffer

Flender GmbH



D 46393 Bocholt

RUPEX

<Year of manufacture>



II 2G Ex h IIC T6 ... T4 Gb X



II 2D Ex h IIIC T85 °C ... 110 °C Db X



I M2 Ex h Mb X

with electrically insulating buffers

Flender GmbH



D 46393 Bocholt

RUPEX

<Year of manufacture>



II 2G Ex h IIB T6 ... T4 Gb X



II 2D Ex h IIIC T85 °C ... 110 °C Db X



I M2 Ex h Mb X

Reduced marking

A reduced marking may be affixed due to structural conditions. The reduced marking is representative of the maximum markings listed above.

2.3.2 Conditions of use

Note also the material-dependent permissible ambient temperature of the buffers (5) in accordance with Section Buffers (5) (Page 83).

A coupling designed in accordance with the Explosion Protection Directive is suitable for the following conditions of use:

- Equipment group I
 - Category M2
- Equipment group II
 - Category 2 and 3
 - Group of substances G, zone 1 and 2
 - Group of substances D, zone 21 and 22
 - Explosion group IIA, IIB and IIC
 - Explosion group IIA and IIB when electrically insulating buffers are used

Conditions of use for products with X marking

The maximum ambient temperature stated in the following tables applies to the temperature in the direct vicinity of the coupling and the temperature of adjacent components.

1. Gases, vapours or mists

Check the ambient temperature for use of the coupling in the relevant temperature class.

Max. ambient temperature	Temperature class
80 °C	T4
70 °C	T5
55 °C	T6

Table 2-2 : Temperature classes (X) for explosive atmospheres as a result of gases, vapours or mists

2. Dust/air mixtures

Check the ambient temperature.

Max. ambient temperature	Max. surface temperature
80 °C	110 °C

Table 2-3 : Maximum surface temperature (X) for a potentially explosive atmosphere as a result of dust/air mixtures

2.4 General warning notices

Notes concerning operation of the coupling in potentially explosive atmospheres

- Only use the coupling underground in mines in potentially explosive atmospheres together with drive motors that can be switched off in the event of the formation of an explosive atmosphere.
- Earth machines that are connected via the coupling with a leakage resistance of less than $10^6 \Omega$.
- If you want to use a coated coupling in potentially explosive atmospheres, please note the requirements concerning the conductivity of the paint and the limitation on the paint layer thickness applied in accordance with EN 80079-36. No build-up of electrostatic charges is to be expected with a paint layer thickness of less than 200 μm .

2.4 General warning notices

**! DANGER****Risk of explosion if not used as intended**

The coupling can burst. There is a risk of fatal injury from flying fragments. Personal injury, property damage and fire damage caused by sparks may occur. If a coupling bursts in an area at risk of explosion, then this can result in an explosion.

- Use the coupling for the purpose for which it is intended.

**! DANGER****Risk of explosion when using coupling parts without Ex marking**

Coupling parts without Ex marking have not been approved for use in potentially explosive atmospheres. These coupling parts can lead to an explosion during operation. There is a risk to life.

- Only use couplings with Ex marking in potentially explosive atmospheres.

**! DANGER****Risk of explosion due to the use of unsuitable and/or damaged components**

The use of unsuitable and/or damaged components can lead to an explosion in potentially explosive atmospheres. There is a risk to life.

- Observe the information regarding conditions of use.

**! DANGER****Risk of explosion due to improper operation**

Improper operation of the coupling can lead to an explosion in potentially explosive atmospheres. There is a risk to life.

- Please observe the notes concerning operation of the coupling in potentially explosive atmospheres.



! DANGER

Risk of explosion from hot coupling parts

Risk of burns on hot surfaces. Hot coupling parts can lead to an explosion in potentially explosive atmospheres. There is a risk to life.

- Wear suitable protective equipment (gloves, safety glasses).
- Make sure that the area is not at risk of explosion.



! WARNING

Risk of chemical burns due to chemical substances

There is a risk of chemical burns when handling aggressive cleaning agents.

- Please observe the manufacturer's information on how to handle cleaning agents and solvents.
- Wear suitable protective equipment (gloves, safety goggles).



! WARNING

Risk of crushing due to falling components

Falling components can cause crushing, serious injury and death. The components can be damaged.

- Secure the components to prevent them from falling
- Only use suitable and technically flawless hoisting gear and load lifting attachments.
- Only use hoisting gear and load lifting attachments with sufficient load-bearing capacity.

The RUPEX couplings described here are universally applicable, torsionally flexible, damping pin and bush couplings in various types and sizes. The couplings can be used in accordance with the Explosion Protection Directive in potentially explosive atmospheres if they have a corresponding marking.

These instructions describe the assembly and operation of a RUPEX coupling arranged horizontally with a shaft-hub connection made by a cylindrical or conical bore with parallel key or by a pressurised oil interference fit. Types RWN and RWS have two shaft-hub connections. Types RFN and RFS have one shaft-hub connection and a flange. Please consult Flender if you want to use a different type of installation.

Types RWN and RWS can be optionally equipped with axial backlash limitation in sizes 228 to 1,600. The components of the axial backlash limitation are part of the bolt connection. The axial backlash limitation consists of the tension disc (37) and pressure plate (36). The tension disc (37) replaces the washer (6) in the standard version. The pressure plate (36) is glued to the corresponding bolt fitting holes of the coupling part 2 (2). Depending on the size of the coupling, some or all of the standard bolt connections are replaced by bolt connections with axial backlash limitation.

For wear monitoring, types RWN, RWN with axial backlash limitation, RWS, and RWS with axial backlash limitation are available as an "AIQ Detect-ready" version. This version has a magnet installed on the outer diameter of the coupling. To use wear monitoring, you also require the "AIQ Detect" system, which must be ordered separately.



Information

Observe the operating instructions of the AIQ Detect.

Application

RUPEX Couplings are designed for use in all kinds of machines. They are designed to withstand high torques and harsh operating conditions.

RUPEX couplings with axial backlash limitation are predominantly used in drives in which the motor does not have a separate thrust bearing. For a coupling with axial backlash limitation and electrical insulation, contact Flender.

Structure

The diagrams show the various types with their constituent parts and their part numbers.

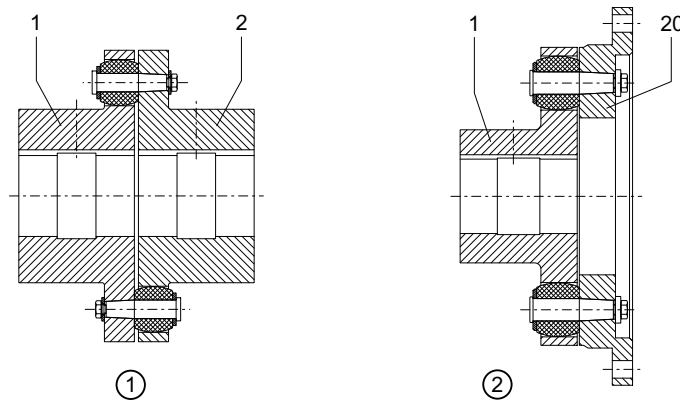


Figure 3-1: RWN, RWS, RFN and RFS types

- ① RWN and RWS types
- ② RFN and RFS types
- 1 Coupling part 1
- 2 Coupling part 2
- 20 Coupling part 20

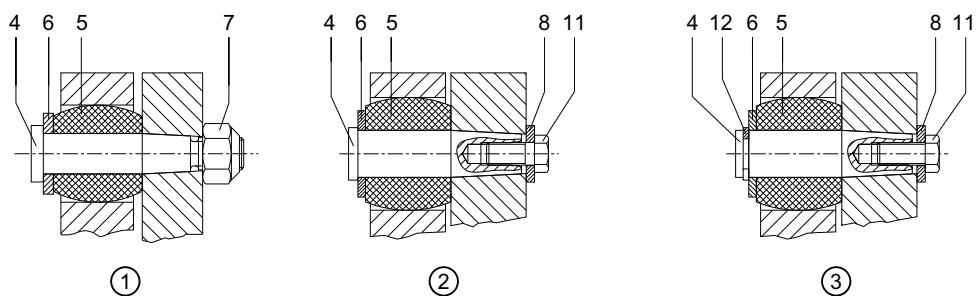


Figure 3-2: Bolt connection

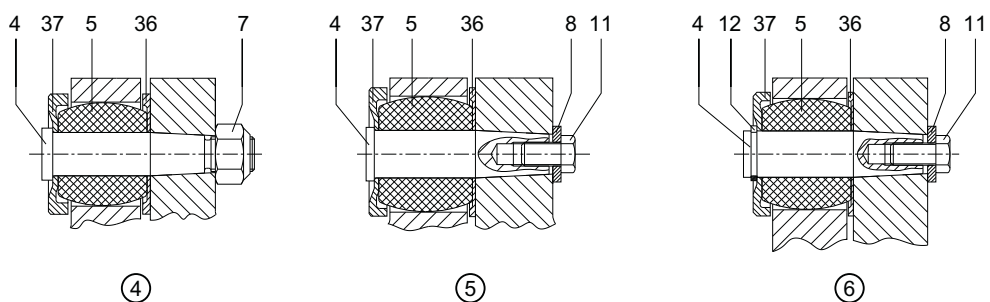


Figure 3-3: Bolt connection with axial backlash limitation

- ① Bolt connection for sizes 105 to 400
- ② Bolt connection for sizes 450 to 630

- ③ Bolt connection for sizes 710 to 2,000
- ④ Bolt connection with axial backlash limitation for sizes 228 to 400
- ⑤ Bolt connection with axial backlash limitation for sizes 450 to 630
- ⑥ Bolt connection with axial backlash limitation for sizes 710 to 1,600
- 4 Bolt
- 5 Buffer
- 6 Washer
- 7 Hexagon nut, self-locking
- 8 Washer
- 11 Hexagon head screw
- 12 Locking ring
- 36 Pressure plate
- 37 Tension disc

Check the delivery for damage and for completeness. Report any damage and/or missing parts to Flender immediately.

The coupling is delivered in individual parts and preassembled groups. Preassembled groups may not be dismantled.

4.1 Transport of the coupling



WARNING

Risk of crushing due to improper transport

Falling components can cause crushing, serious injury and death. The components can be damaged.

- Only use suitable and technically flawless hoisting gear and load lifting attachments.
- Only use hoisting gear and load lifting attachments with sufficient load-bearing capacity.
- The symbols on the packaging must be observed.

Unless otherwise agreed contractually, the packaging complies with the HPE Packaging Guidelines.



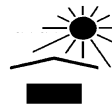
This way up



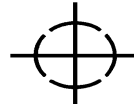
Fragile



Keep dry



Keep dry



Centre of gravity



Do not use hand hook



Attach here

Figure 4-1: Transport symbols

4.2 Storage of the coupling

NOTE

Property damage due to improper storage

Negative changes to the physical properties of the coupling and/or coupling damage.

- Please observe the procedure for storing the coupling.

The coupling, unless specifically ordered otherwise, is supplied with preservation and can be stored for up to 3 months.

4.2 Storage of the coupling

Information about storing the coupling

- Ensure that the storage room is dry (relative humidity < 65 %) and free of dust.
- Ensure that there is no condensation.
- Do not store the coupling together with corrosive chemicals, acids, caustic solutions, etc.
- If the coupling contains elastomer components, ensure that there are no devices in the storage room that produce ozone, such as fluorescent lights, mercury vapour lamps or high-voltage electrical equipment.
- Store the coupling on suitable supports or in suitable containers.

Long-term storage

NOTE**Property damage due to improper long-term storage**

Negative changes to the physical properties of the coupling and/or coupling damage.

- Carefully observe the specifications for long-term storage.

1. You can find the required type of preservative agent in the following table (types of preservative agents for long-term storage).
2. Remove the elastomer components. These must not come into contact with cleaning agents and long-term preservative agents.
3. Clean the coupling parts.
4. Apply the stipulated preservative agent.
5. Store the coupling parts and the elastomer components separately.

Preservative agent	Features	Indoor storage	Outdoor storage
Oil spray	Corrosion protection	Up to 12 months	Up to 4 months
Tectyl 846 or similar	Long-term preservative agent on wax basis	Up to 36 months	Up to 12 months
Emulsion cleaner + VCI foil	Active system, reusable	Up to 5 years	Up to 5 years

Table 4-1 : Types of preservative agents for long-term storage

Assembly of the coupling comprises the following steps:

- Preparatory work (Page 29)
- Mounting the coupling (Page 36)
- Aligning the coupling (Page 39)



DANGER

Risk of explosion if specifications relating to assembly are not adhered to

If you do not observe the information stipulated here regarding assembly, this can lead to bursting of the coupling during operation. There is a risk of fatal injury from flying fragments. If a coupling bursts in an area at risk of explosion, then this can result in an explosion.

- Carefully observe all of the specifications relating to assembly.

Notes for assembling the coupling

- Only use undamaged components when assembling the coupling.
- Follow the assembly sequence.
- Please ensure that there is sufficient space at the assembly location and that the location is tidy and clean in order to be able to assemble and maintain the coupling without any risk.
- If a dimension drawing has been created for the coupling, please observe the information it contains as a matter of priority.

CAUTION

Cutting hazard due to sharp edges

Sharp edges on the parallel keyway and parallel key groove may cause hand injuries.

- Wear protective gloves.

5.1 Preparatory work

Please consult Flender if you want to machine a conical finished bore.

Carry out the following steps if the coupling does not have a finished bore:

- Milling the finished bore (Page 30)
- Milling the parallel keyway (Page 31)
- Machining an axial locking mechanism (Page 31)
- Balancing the coupling (Page 35)

5.1 Preparatory work

**Information**

The customer is responsible for execution of the finishing work on the coupling. Flender shall have no liability whatsoever for claims under warranty arising from finishing work that has not been carried out adequately.

5.1.1 Milling the finished bore

The diameter of the finished bore depends on the shaft used.

Recommended assigned fits

In the following table you can find the recommended assigned fits for bores with a parallel key connection. The assigned fit m6 / H7 is especially suitable for a host of applications.

Description	Push fit		Press fit		Interference fit		
	Not suitable for reversing operation		Suitable for reversing operation				
Shaft tolerance	j6	h6	h6	k6	m6	n6	h6
Bore tolerance	H7	J7	K7	H7	H7	H7	M7

Table 5-1 : Recommended assigned fits for bores with parallel key connection

Bore diameter



DANGER

Risk of explosion if maximum bore diameter is exceeded

The coupling can burst. There is a risk of fatal injury from flying fragments. In an area at risk of explosion, a burst coupling may result in an explosion.

- Adhere to the maximum bore diameter specified.

The maximum diameters are listed in Section Speeds, geometry data and weights (Page 69)

Procedure

1. Remove the bolts (4) and the buffers (5). For further information, refer to section Replacing wearing parts (Page 50).
2. Remove the preservation and clean the coupling parts 1 (1) and/or 2 (2) to be machined.
3. Clamp the coupling parts to the areas marked with  in the diagram below.
4. Machine the finished bore in accordance with the diagram below.

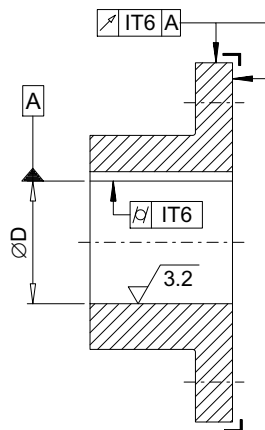


Figure 5-1: Tolerances for the finished bore in coupling part 1 (1) or 2 (2)

5.1.2 Milling the parallel keyway

Position of the parallel keyway

Arrange the parallel keyway in the centre between two adjacent buffer fitting holes or bolt fitting holes.

Applicable standards

- If the coupling is intended for use under normal operating conditions, mill the parallel keyway according to DIN 6885/1 ISO JS9.
- If the coupling is intended for reversing operation, mill the parallel keyway according to DIN 6885/1 ISO P9.
- If you want to mill a parallel keyway that does not correspond to DIN 6885/1, please consult Flender.

5.1.3 Machining an axial locking mechanism

The coupling part is secured by a set screw or an end plate to prevent axial movements.

Please consult Flender if you want to use an end plate.

Note the following when using a set screw:

- Diameter and axial position of the threaded hole in the hub
- Position of the threaded hole with respect to the parallel keyway
- Selection of the set screw

5.1.3.1 Without axial backlash limitation

Diameter and axial position of the threaded hole in the hub

The axial position of the threaded hole is in the centre of the hub.

The following tables contain the values for the diameter of the threaded hole depending on the finished bore.

Finished bore		Threaded hole d_1	Tightening torque T_A Nm	Width A/F Hexagon socket mm
Over mm	Up to mm			
8	30	M6	4	3
30	38	M8	8	4
38	65	M10	15	5
65	95	M12	25	6
95	110	M16	70	8
110	150	M20	130	10
150	230	M24	230	12
230	600	M30	470	14

Table 5-2 : Threaded hole, tightening torque and width A/F for types RWN and RFN

Apply the specified tightening torques as listed in Section Tightening procedure (Page 82).

Finished bore		Threaded hole d_1	Tightening torque T_A Nm	Width A/F Hexagon socket mm
Over mm	Up to mm			
8	30	M6	4	3
30	75	M8	8	4
75	95	M12	25	6
95	110	M16	70	8
110	150	M20	130	10
150	230	M24	230	12
230	640	M30	470	14

Table 5-3 : Threaded hole, tightening torque and width A/F for types RWS and RFS

Apply the specified tightening torques as listed in Section Tightening procedure (Page 82).

Position of the threaded hole with respect to the parallel keyway

The threaded hole for the set screw is generally positioned on the parallel keyway. This does not apply to coupling parts with the sizes listed in the following table.

Size	Position of the threaded hole
105	Offset 180° relative to parallel keyway
125	Offset 180° relative to parallel keyway

Table 5-4 : Position of the threaded hole with respect to the parallel keyway

Selection of the set screw

⚠ CAUTION

Risk of injury from protruding set screw

There is a risk of injury if the set screw protrudes out of the hub.

- Please observe the information about selecting the set screw.

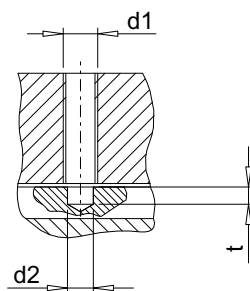
Use set screws with hexagon socket and cup point in accordance with ISO 4029. The size of the set screw is determined by the threaded hole made. The set screw should fill out the threaded hole as much as possible and not protrude beyond the hub.

5.1.3.2 With axial backlash limitation

Diameter and axial position of the threaded hole in the hub

The axial position of the threaded hole is in the centre of the hub.

The diagram below shows the dimensions for drilling the parallel keyway through the threaded hole.



①

Figure 5-2: Dimensions for drilling the parallel keyway

- ① Bore for the set screw with dog point according to ISO 4028

5.1 Preparatory work

The following tables contain the values for the diameter of the threaded hole depending on the finished bore.

Finished bore		Threaded hole			Tightening torque	Width A/F
Over mm	Up to mm	d_1	d_2	t	T_A	Hexagon socket mm
			mm	mm	Nm	
30	38	M8	5.5	2	8	4
38	65	M10	7	2.5	15	5
65	95	M12	8.5	3	25	6
95	110	M16	12	4	70	8
110	150	M20	15	5	130	10
150	230	M24	18	6	230	12
230	600	M30	24	7	470	14

Table 5-5 : Threaded hole, tightening torque and width A/F for RWN type

Apply the specified tightening torques as listed in Section Tightening procedure (Page 82).

Finished bore		Threaded hole			Tightening torque	Width A/F
Over mm	Up to mm	d_1	d_2	t	T_A	Hexagon socket mm
			mm	mm	Nm	
30	75	M8	5.5	2	8	4
75	95	M12	8.5	3	25	6
95	110	M16	12	4	70	8
110	150	M20	15	5	130	10
150	230	M24	18	6	230	12
230	600	M30	24	7	470	14

Table 5-6 : Threaded hole, tightening torque and width A/F for RWS type

Apply the specified tightening torques as listed in Section Tightening procedure (Page 82).

Position of the threaded hole with respect to the parallel keyway

The threaded hole for the set screw is positioned on the parallel keyway.

Selection of the set screw

⚠ CAUTION

Risk of injury from protruding set screw

There is a risk of injury if the set screw protrudes out of the hub.

- Please observe the information about selecting the set screw.

Use set screws with dog point in accordance with ISO 4028. The size of the set screw is determined by the threaded hole made. The set screw should fill out the threaded hole as much as possible and not protrude beyond the hub.

5.1.4 Balancing the coupling

NOTE

Property damage to coupling part 1 (1), 2 (2) or 20 (20)

If you completely drill through the flange on coupling part 1 (1), 2 (2) or 20 (20), then coupling part 1 (1), 2 (2) or 20 (20) is no longer allowed to be used for operation.

- Please observe the stipulations about machining the balancing bore.

- Select the balancing quality according to the application (but at least G16 in accordance with DIN ISO 21940).
- Observe the balancing specification according to DIN ISO 21940-32.
- Machine the balancing bore on a large radius with adequate clearance to the buffer fitting holes, the bolt fitting holes and the outer circumference.
- Carefully deburr the balancing bore.

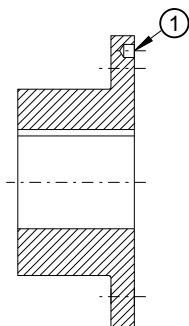


Figure 5-3: Position of the balancing bore for single-plane balancing

- ① Balancing bore

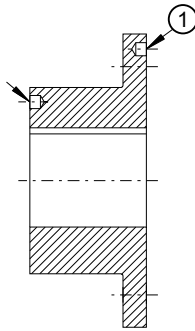


Figure 5-4: Position of the balancing bore for two-plane balancing

① Balancing bore



Information

A better balancing result can be achieved by balancing with bolt (4) fitted. When total balancing, mark the bolt (4) and the bolt fitting hole.

5.2 Assembling the coupling

NOTE

Property damage due to improper handling

Improper handling can damage the shaft ends, coupling and/or parallel keys.

- Ensure that you do not damage the bores with hoisting gear or similar equipment.
- Ensure that the elastomer components do not come into contact with cleaning agents.
- Follow the handling instructions regarding assembling the coupling parts.

The procedure for assembling the coupling parts varies depending on the selected shaft-hub connection.

- Assembling coupling parts with shaft and hub connected by a parallel key (Page 36)
- Assembling coupling parts with shaft and hub connected by a pressurised oil interference fit (Page 37)
- Assembling the coupling part 20 (20) with types RFN and RFS (Page 38)

5.2.1 Assembling coupling parts with shaft and hub connected by a parallel key

Procedure

1. Unscrew the set screw out of coupling parts 1 (1) and/or 2 (2) until it is no longer possible for there to be a collision with the parallel key or the shaft.
2. Clean the bores and shaft ends.
3. Coat the bores of coupling parts 1 (1) and/or 2 (2) and the shafts with MoS₂ mounting paste (e.g. Microgleit LP 405).

4. Mount the coupling parts 1 (1) and/or 2 (2) on the shaft.



! DANGER

Risk of explosion from incorrectly mounted coupling parts with conical bore

If you do not observe the information stipulated here when assembling coupling parts with a conical bore, then this can cause the coupling to burst in operation. There is a risk of fatal injury from flying fragments. If a coupling bursts in a potentially explosive atmosphere, this can result in an explosion.

- Mount the coupling parts with conical bore and parallel keyway on the shaft in the cold condition.
- Secure the coupling parts with suitable end plates without pulling the coupling parts further onto the cone (fitting dimension = 0) or according to the dimension drawing provided.



Information

Coupling parts with cylindrical bore

To make assembly easier, you can heat coupling parts 1 (1) and/or 2 (2) with cylindrical bore up to a maximum of 120 °C if required.

- Ensure that the area is not at risk of explosion.
- When doing this, note the temperature range of the buffers (5) (see section RUPEX buffers (5) (Page 83)). Remove the buffers (5) if necessary. For further information, refer to section Replacing wearing parts (Page 50).
- Protect adjacent components against damage and impermissible heating.

5. Secure the coupling parts 1 (1) and/or 2 (2) with a set screw or an end plate. When securing with a set screw, the shaft must not protrude or be set back from the inner side of the hub.
6. Tighten up the set screw or the screw to attach the end plate to the specified tightening torque T_A (for the set screw please see section Machining an axial locking mechanism (Page 31)).
7. If you have removed the buffers (5), install the buffers (5). For further information, refer to section Replacing wearing parts (Page 50).

5.2.2 Assembling coupling parts with shaft and hub connected by a pressurised oil interference fit

Procedure

1. Remove the buffers (5). For further information, refer to section Replacing wearing parts (Page 50).
2. Remove the screw plugs (101) and/or (201) from the coupling parts 1 (1) and/or 2 (2).
3. Clean, degrease, de-oil and dry the bores and shaft ends.
4. Clean and dry the oil channels and the oil circulation grooves.
5. Protect adjacent components against damage and impermissible heating.

5.2 Assembling the coupling

6. Heat up the coupling parts 1 (1) and/or 2 (2) to the temperature specified in the dimension drawing.
Make sure that no dirt or contaminants can soil the bores again during the heating process.
7. Mount the coupling parts 1 (1) and/or 2 (2) quickly on the shaft according to the instructions in the dimension drawing.
8. Secure the coupling parts 1 (1) and/or 2 (2) to stop them from moving until they have cooled down.
9. Allow the coupling parts 1 (1) and/or 2 (2) to cool down to the ambient temperature.
10. Use an end plate to secure the coupling parts 1 (1) and/or 2 (2) if they have a non-self-locking, tapered pressurised oil interference fit.
11. In order to protect the oil channels of the coupling parts 1 (1) and/or 2 (2) against corrosion, fill them with a suitable pressurised oil and seal the oil channels with the screw plugs (101) and/or (201).
12. Assemble the buffers (5). For further information, refer to section Replacing wearing parts (Page 50).

5.2.3 Assembling the coupling part 20 (20) with types RFN and RFS

Procedure

1. Clean the coupling part 20 (20).
2. Flange-mount the coupling part 20 (20) on the mating part.
3. Tighten the screws to the specified tightening torque T_A (see section Tightening torques and widths A/F (Page 81)).

5.3 Assembling a coupling with axial backlash limitation

Procedure

1. If the motor does not have an axial fixed bearing, determine the mid-point of the rotor axial backlash. If you do not find any marking on the shaft or any other information, you can determine the mid-point of the rotor axial backlash by performing a trial run.
2. Hold the shaft in the axial position that corresponds to the mid-point of the rotor axial backlash.
3. Align the coupling. Follow the instructions in Section Aligning the coupling (Page 39).
4. In the version with axial backlash limitation, the pressure plates (36) are glued to the flange of the coupling part 2 (2).
5. The bolt connections are supplied separately. Mount the bolt connections according to Chapter Replacing wearing parts (Page 50).

5.4 Aligning the coupling

5.4.1 Purpose of alignment

The components that are joined by the coupling (e.g. shafts, flanges) are never on an ideal precise axis but have a certain amount of misalignment.

Misalignment in the coupling leads to restoring forces that can stress adjacent machine parts (e.g. the bearings) to an unacceptable extent.

The misalignment values in operation result from the following:

- Misalignment due to assembly
Incorrect position due to a lack of precision when aligning
- Misalignment due to operation
Example: Load-related deformation, thermal expansion

You can minimise misalignment by aligning after assembly. A lower misalignment in the coupling has the following advantages:

- Reduced wear of the elastomer components
- Reduced restoring forces
- Misalignment reserves for operation of the coupling

You can find the maximum permitted shaft misalignment values during operation in Section Shaft misalignment values during operation (Page 79).

5.4.2 Possible misalignment

The following types of misalignment can occur:

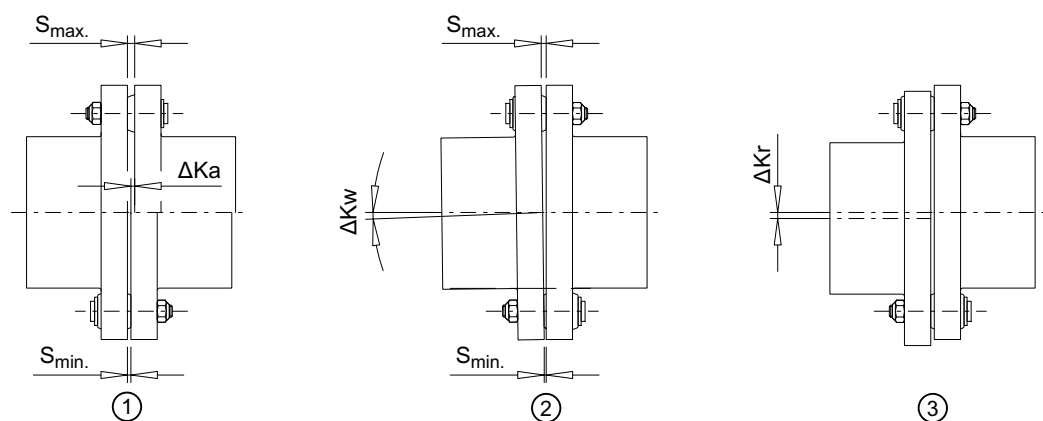


Figure 5-5: Possible misalignment

- ① Axial misalignment (ΔK_a)
- ② Angular misalignment (ΔK_w)
- ③ Radial misalignment (ΔK_r)

5.4.2.1 Axial misalignment

Set the axial misalignment ΔK_a to a value within the permissible tolerance range of dimension S .

5.4 Aligning the coupling

You can find the values for dimension S in section Speeds, geometry data and weights (Page 69).

5.4.2.2 Angular misalignment

Determine the value ΔS ($\Delta S = S_{\max} - S_{\min}$). The determined value ΔS may not exceed the value ΔS_{perm} .

You can find the values for ΔS_{perm} in section Shaft misalignment values during operation (Page 79).

If required, you can calculate the angular misalignment ΔK_w as follows:

$$\Delta K_w [\text{rad}] = \Delta S / DA$$

$$\Delta K_w [\text{deg}] = (\Delta S / DA) \cdot (180 / \pi)$$

If required, you can calculate the permissible angular misalignment $\Delta K_{w_{\text{perm}}}$ as follows:

$$\Delta K_{w_{\text{perm}}} [\text{rad}] = \Delta S_{\text{perm}} / DA$$

$$\Delta K_{w_{\text{perm}}} [\text{deg}] = (\Delta S_{\text{perm}} / DA) \cdot (180 / \pi)$$

DA in mm see section Speeds, geometry data and weights (Page 69)

ΔS_{perm} see section Shaft misalignment values during operation (Page 79)

5.4.2.3 Radial misalignment

Determine the value ΔK_r . The determined value ΔK_r may not exceed the value $\Delta K_{r_{\text{perm}}}$.

You can find the permissible radial misalignment $\Delta K_{r_{\text{perm}}}$ in Section Shaft misalignment values during operation (Page 79).



DANGER

Risk of explosion due to ignition of deposits

When used in potentially explosive atmospheres, deposits from heavy metal oxides (rust) can ignite due to friction, impact or friction sparks and lead to an explosion. There is a risk to life.

- Ensure through the use of an enclosure or other suitable measures that heavy metal oxide (rust) deposits on the coupling are not possible.

In order to ensure safe commissioning, carry out various tests prior to commissioning.

Testing before commissioning



DANGER

Risk of explosion due to overload conditions during commissioning

The coupling can burst. There is a risk of fatal injury from flying fragments. If a coupling bursts in an area at risk of explosion, then this can result in an explosion.

- Carry out the tests prior to commissioning.
- Do not touch the rotating coupling.

1. Check the tightening torques of the screws of the coupling in accordance with section Tightening torques and widths A/F (Page 81).
2. Check the tightening torques of the foundation bolts of the coupled machines.
3. Check whether suitable enclosures (ignition protection, coupling guard, touch protection) have been installed and that the function of the coupling has not been adversely affected by the enclosure. This also applies to test runs and rotational direction checks.

7.1 Normal operation of the coupling

The coupling runs quietly and shock-free during normal operation.

7.2 Faults - causes and rectification

A form of behaviour which is different to normal operation is classed as a fault and has to be rectified immediately.

Look out specifically for the following faults during coupling operation:

- Unusual coupling noise
- Sudden occurrence of shocks

7.2.1 Procedure in the event of malfunctions



DANGER

Risk of explosion if any faults occur

The coupling can burst. There is a risk of fatal injury from flying fragments. Bursting of the coupling can lead to an explosion in potentially explosive atmospheres.

- Switch off the unit at once if any faults occur.
- Note during the repair work the possible causes of faults and the notes on rectifying them.

Proceed as described below if there is a fault of the coupling during operation:

1. Turn the drive off immediately.
2. Initiate the required action for repair taking into consideration the applicable safety regulations.

If you cannot determine the cause or if you cannot carry out repair work with your own means, request one of our Customer Service technicians from one of our Customer Service locations.

7.2.2 Identifying the fault cause

Faults occur frequently due to application errors or they occur due to operational circumstances such as wear of wearing parts or changes to the system.

The faults and fault causes listed below only serve as an indication for troubleshooting. In the case of a complex system be sure to include all the system components in the search for the fault.



WARNING

Risk of being pulled in by rotating parts

There is a danger of being caught or pulled in by rotating or moving parts and being injured as a result.

- Only carry out work on the coupling when it is at a standstill.
- Secure the drive aggregate against unintentional startup.
- Attach an information notice to the start switch stating clearly that work is being carried out on the coupling.
- Before starting any work, make sure that the unit is free from loads.

Intended use

The coupling is only approved for the applications specified in these instructions. Please observe the specifications in Section Intended use (Page 17).

7.2.2.1 Possible faults

Fault	Cause	Rectification
Sudden changes in the noise level and/or sudden occurrences of shocks	Wear of wearing parts	Follow the instructions given in section Replacing wearing parts (Page 47).
	Changed alignment	Follow the instructions given in section Correcting the changed alignment (Page 47).
	Coupling not suitable for the operating conditions. Check the possible causes given in section Unsuitable coupling (Page 46).	Use a coupling that is suitable for the operating conditions.
	Incorrect assembly of the coupling. Check the possible causes given in sections Assembly-related causes (Page 46) and Specific installation-related and maintenance-related causes (Page 47).	Reassemble the coupling in accordance with these instructions. Please observe all the stipulations and requirements given in chapter Assembly (Page 29).
	Incorrect maintenance of the coupling. Check the possible causes given in sections Maintenance-related causes (Page 46) and Specific installation-related and maintenance-related causes (Page 47).	Please observe all the stipulations and requirements given in chapter Servicing (Page 49).
Presence of vibration	Coupling not suitable for the operating conditions. Check the possible causes given in section Unsuitable coupling (Page 46).	Use a coupling that is suitable for the operating conditions.
	Incorrect assembly of the coupling. Check the possible causes given in sections Assembly-related causes (Page 46) and Specific installation-related and maintenance-related causes (Page 47).	Reassemble the coupling in accordance with these instructions. Please observe all the stipulations and requirements given in chapter Assembly (Page 29).
	Incorrect maintenance of the coupling. Check the possible causes given in sections Maintenance-related causes (Page 46) and Specific installation-related and maintenance-related causes (Page 47).	Please observe all the stipulations and requirements given in chapter Servicing (Page 49).

Table 7-1 : Table of faults

7.2.2.2 Possible causes

7.2.2.2.1 Unsuitable coupling

- Important information on the description of the drive unit and the environment were not available when the coupling was chosen.
- System torque too high and/or torque dynamics not permissible.
- System speed too high.
- Application factor not selected correctly.
- Chemically aggressive environment not taken into consideration.
- Coupling not suitable for the ambient temperature.
- Diameter and/or assigned fit of the finished bore not permissible.
- Width across corners of the parallel keyways greater than the width across corners of the parallel keyways in accordance with DIN 6885/1 for the maximum permissible bore.
- Shaft-hub connection incorrectly sized.
- Maximum permissible load conditions not taken into consideration.
- Maximum permissible overload conditions not taken into consideration.
- Dynamic load conditions not taken into consideration.
- Coupling and the machine and/or drive train form a critical torsional, axial or bending vibration system.

7.2.2.2.2 Assembly-related causes

- Damaged component installed.
- Shaft diameter outside the stipulated tolerance range.
- Coupling parts interchanged and hence not assigned to the specified shaft.
- Stipulated locking elements to prevent axial movements not installed.
- Stipulated tightening torques not adhered to.
- Bolts inserted dry or greased.
- Flange surfaces of screwed connections not cleaned.
- Alignment and/or shaft misalignment values not set in accordance with the instructions.
- Coupled machines were not correctly connected to the foundation so that a shifting of the machines leads to an impermissible displacement of the coupling parts.
- Coupled machines not earthed adequately.
- Coupling guard used is not suitable.

7.2.2.2.3 Maintenance-related causes

- Stipulated maintenance intervals not adhered to.
- Replacement parts that were used were not original replacement parts from Flender.
- Flender spare parts that were used were old or damaged.
- Leak in the area of the coupling not detected so that chemically aggressive substances damage the coupling.
- Indications of faults, such as noise or vibration, were not heeded.

- Stipulated tightening torques not adhered to.
- Alignment and/or shaft misalignment values not set in accordance with the instructions.

7.2.2.2.4 Specific installation-related and maintenance-related causes

- Buffers (5) not fitted.
- Fitted buffers (5) heated up excessively when applying heat to the coupling parts.
- Buffers (5) of different types or age used.
- Buffers (5) not replaced as sets.
- In the version with axial backlash limitation, mounting position of the tension disc (37) not observed.

7.2.3 Correcting faults

7.2.3.1 Replacing wearing parts

Buffers (5) are subject to wear and this wear can result in torsional backlash.

Procedure

1. Check the wear on the buffers (5) (see section Maximum permissible torsional backlash (Page 50)).
2. Replace the buffers (5) where appropriate (see section Replacing wearing parts (Page 50)).

7.2.3.2 Correcting the changed alignment

A changed alignment of the coupling during operation often occurs when the coupled machines shift towards one another. A cause of this can be loose foundation bolts.

Procedure

1. Correct the cause for the change in alignment.
2. Check the wearing parts for wear and replace them as required.
3. Check the locking elements that prevent axial movements and correct these as required.
4. Realign the coupling.

8.1 Maintenance intervals



DANGER

Risk of explosion if maintenance intervals are not adhered to

The coupling can burst. There is a risk of fatal injury from flying fragments. If a coupling bursts in an area at risk of explosion, then this can result in an explosion.

- Please observe all the specifications for coupling maintenance in this section.



DANGER

Risk of explosion if maximum permitted torsional backlash is exceeded

The coupling can burst. There is a risk of fatal injury from flying fragments. If a coupling bursts in an area at risk of explosion, then this can result in an explosion.

- Note also the actual wear of the elastomer components.



WARNING

Risk of being pulled in by rotating parts

There is a danger of being caught or pulled in by rotating or moving parts and being injured as a result.

- Only carry out work on the coupling when it is at a standstill.
- Secure the drive aggregate against unintentional startup.
- Attach an information notice to the start switch stating clearly that work is being carried out on the coupling.
- Before starting any work, make sure that the unit is free from loads.

Check the torsional backlash between the coupling parts at the specified maintenance intervals. The maximum permissible torsional backlash for the various coupling sizes can be found in section Maximum permissible torsional backlash.

Model	Initial maintenance	Follow-up maintenance
RWN	3 months after commissioning	Every 12 months
RWS		
RFN		
RFS		

Table 8-1 : Maintenance intervals

Shorter maintenance intervals

If necessary, set shorter maintenance intervals depending on actual wear.

8.2 Maximum permissible torsional backlash

In order to calculate the torsional backlash, rotate one coupling part without applying torque up to the stop. Mark both of the coupling halves in the way shown in the diagram below. Turn the coupling part in the opposite direction up to the stop. The markings on both halves will then move apart. The distance between the markings corresponds to the torsional backlash.

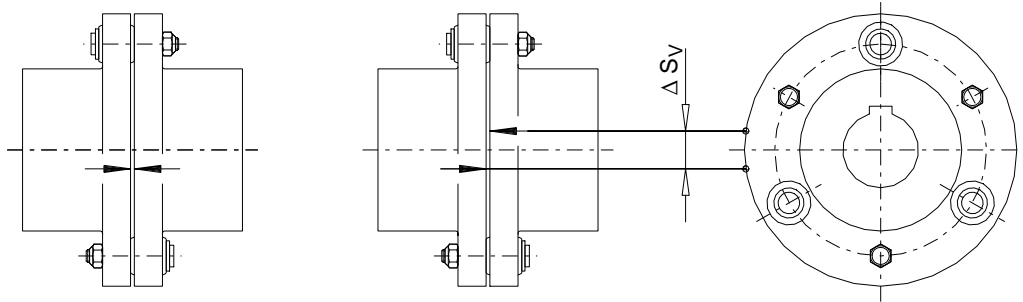


Figure 8-1: Markings for calculating the torsional backlash

Size	105	125 144	162 198	228 252	285 320	360 400	450 500
Maximum permissible torsional backlash ΔS_v [mm]	3.0	3.5	4.0	4.5	6.0	7.0	8.5

Table 8-2 : Maximum permissible torsional backlash for the types RWN, RWS and RFN, RFS (sizes 105 - 500)

Size	560 630	710 800	900 1 000	1 120 1 250	1 400 1 600	1 800 2 000
Maximum permissible torsional backlash ΔS_v [mm]	10.0	12.0	13.5	15.0	18.0	20.0

Table 8-3 : Maximum permissible torsional backlash for the types RWN, RWS and RFN, RFS (sizes 560 - 2 000)

8.3 Replacing wearing parts



! DANGER

Danger due to bursting of the coupling

If you do not observe the information stipulated here regarding replacement of wearing parts, this can lead to bursting of the coupling during operation. There is a risk of fatal injury from flying fragments. Bursting of the coupling can lead to an explosion in potentially explosive atmospheres.

- Please observe all the stipulations concerning the replacement of wearing parts.

Replace the buffers (5) if the maximum permissible torsional backlash has been reached. The method used to replace the buffers (5) and remove the bolts (4) varies according to the coupling size.

- Replacing buffers (5) up to coupling size 400 (Page 51)
- Replacing buffers (5) as of coupling size 450 to 630 (Page 51)
- Replacing buffers (5) as of coupling size 710 (Page 52)

8.3.1 Replacing buffers (5) up to coupling size 400

For the structure of the bolt connection, refer to Chapter Spare parts drawing and spare parts list (Page 64).

Procedure

1. Remove the hexagon nuts (7).
2. Remove the bolt connections through the buffer fitting holes.
3. Pull all parts off the bolts (4).
4. Clean the bolt connection parts, the buffer fitting holes and the bolt fitting holes in the coupling parts 1 (1) and 2 (2) or 20 (20).
5. Put the washers (6) or the tension discs (37) onto the bolts (4). Observe the mounting position of the tension discs (37).
6. Mount new buffers (5) on the bolts (4).
Please observe the information in Section Use and storage of the buffers (5) (Page 83) when replacing the buffers (5).
7. Insert the bolt connections through the buffer fitting holes into the bolt fitting holes. Observe any markings that might be provided.
In the version with axial backlash limitation, screw the bolt connection with axial backlash limitation only to the bolt fitting holes in the coupling part 2 (2), on which a pressure plate (36) is glued.
8. Secure the bolts (4) with new hexagon nuts (7) of the same quality.
9. Tighten the hexagon nuts (7) with the specified tightening torque T_A (see Section Tightening torques and widths A/F (Page 81)).

8.3.2 Replacing buffers (5) as of coupling size 450 to 630

For the structure of the bolt connection, refer to Chapter Spare parts drawing and spare parts list (Page 64).

NOTE

Blockage of cross bore of bolts (4)

The liquid screw locking agent can seal the cross bore of the bolts (4). Pressing out the bolts (4) with grease then becomes difficult or completely impossible.

- Apply only a small quantity of the liquid screw locking agent to the screws (11).

Procedure

1. When removing the bolts (4), please observe the information in Section Pressing out bolts (Page 53).
2. Remove the bolt connections through the buffer fitting holes.
3. Pull all parts off the bolts (4).
4. Clean the bolt connection parts, the buffer fitting holes and the bolt fitting holes in the coupling parts 1 (1) and 2 (2) or 20 (20).
5. Put the washers (6) or the tension discs (37) onto the bolts (4). Observe the mounting position of the tension discs (37).
6. Mount new buffers (5) on the bolts (4).
Please observe the information in Section Use and storage of the buffers (5) (Page 83) when replacing the buffers (5).
7. Insert the bolt connections through the buffer fitting holes into the bolt fitting holes. Observe any markings that might be provided.
In the version with axial backlash limitation, screw the bolt connection with axial backlash limitation only to the bolt fitting holes in the coupling part 2 (2), on which a pressure plate (36) is glued.
8. Push the washers (8) onto the screws (11).
9. Apply a small quantity of liquid screw locking agent (e.g. Loctite 243 medium strength) to the screws (11).
10. Secure the bolts (4) with the screws (11) and washers (8).
11. Tighten the screws (11) with the specified tightening torque T_A (see Section Tightening torques and widths A/F (Page 81)).

8.3.3 Replacing buffers (5) as of coupling size 710

For the structure of the bolt connection, refer to Chapter Spare parts drawing and spare parts list (Page 64).

You can use the following methods to replace the buffers (5) on couplings of size 710 or larger.

- Replacing buffers (5) without removing the bolts (4) (Page 52)
- Replacing buffers (5) with removal of the bolts (4) (Page 53)

8.3.3.1 Replacing buffers (5) without removing the bolts (4)

Procedure

1. Remove the locking rings (12) and the washers (6) or the tension discs (37).
2. Pull out the buffers (5) through the buffer fitting holes.
3. Clean the bolts (4) and the buffer fitting holes in the coupling parts 1 (1) and 2 (2) or 20 (20).

4. Mount new buffers (5) on the bolts (4). Please observe the information in Section Use and storage of the buffers (5) (Page 83) when replacing the buffers (5).
5. Secure the buffers (5) with the washers (6) and the locking rings (12) in the axial backlash limitation with the tension discs (37) and locking rings (12).

8.3.3.2 Replacing buffers (5) with removal of the bolts (4)

NOTE

Blockage of cross bore of bolts (4)

The liquid screw locking agent can seal the cross bore of the bolts (4). Pressing out the bolts (4) with grease then becomes difficult or completely impossible.

- Apply only a small quantity of the liquid screw locking agent to the screws (11).

Procedure

1. When removing the bolts (4), please observe the information in Section Pressing out bolts (Page 53).
2. Remove the bolt connections through the buffer fitting holes.
3. Pull all parts off the bolts (4).
4. Clean the bolt connection parts, the buffer fitting holes and the bolt fitting holes in the coupling parts 1 (1) and 2 (2) or 20 (20).
If old bolts (4) are to be reused, the threaded holes and cross bores must be completely free of any residues of grease or liquid screw locking agent.
5. Mount new buffers (5) on the bolts (4).
Please observe the information in Section Use and storage of the buffers (5) (Page 83) when replacing the buffers (5).
6. Secure the buffers (5) with the washers (6) and the locking rings (12) in the axial backlash limitation with the tension discs (37) and locking rings (12). Observe the mounting position of the tension discs (37).
7. Insert the bolt connections through the buffer fitting holes into the bolt fitting holes. Observe any markings that might be provided.
In the version with axial backlash limitation, screw the bolt connection with axial backlash limitation only to the bolt fitting holes in the coupling part 2 (2), on which a pressure plate (36) is glued.
8. Push the washers (8) onto the screws (11).
9. Apply a small quantity of liquid screw locking agent (e.g. Loctite 243 medium strength) to the screws (11).
10. Secure the bolts (4) with the screws (11) and washers (8).
11. Tighten the screws (11) with the specified tightening torque T_A (see Section Tightening torques and widths A/F (Page 81)).

8.3.4 Pressing out bolts

The bolts (4) for coupling sizes 450 to 2 000 have cross bores that make it easier to press out the bolts (4).

8.3.4.1 Pressing out bolts (4) with the "demounting box"

Flender can supply a "demounting box" which is a hydraulic press-out fixture for removing bolts. Flender can supply the demounting box on request.



Information

Separate operating instructions

If you use the "demounting box" to remove the bolts (4), please observe the operating instructions BA 3600.1, "Demounting box for extraction of RUPEX bolts".

8.3.4.2 Pressing out bolts (4) with grease

WARNING

Risk of injury from flying bolts (4)

Loose bolts (4) can become detached from the coupling and fly through the air like a projectile.

- Secure the bolt axially by placing the washer (8) over screw (11) before you insert the screw (11) into the tapped hole of the bolt.



WARNING

Risk of crush injuries as a result of bolt (4) suddenly working loose

If bolt (4) suddenly works loose, the screw (11) and the washer (8) can be abruptly set in motion.

- While you are pressing out bolts, do not place your hands in the area around bolt (4), screw (11) or washer (8).

WARNING

Risk of injury

When you are pressing out the bolts (4), grease can escape under high pressure. If bolt (4) suddenly works loose, fragments can become detached and fly through the air at high speed.

- Wear safety goggles.

Procedure

1. Remove the hexagon head screws (11) and the washers (8).
2. Clean the tapped holes of the bolts (4) until they are free of all residues.
3. Fill the tapped hole of a bolt (4) to 90 % with commercially available machine grease (e.g. Fuchs Renolit H443-HD-88).
4. Wrap screw (11) in Teflon tape or Teflon sealing cord.
5. Place a washer (8) as an axial locking element over screw (11).
6. Insert the screw (11) with the washer (8) into the bolt (4) and tighten manually by two to three turns.

7. Using a spanner, continue turning the screw (11) slowly into the thread so that the grease is pressed evenly through the cross bore between the bolts (4) and the bolt fitting hole of the coupling part 1 (1) and 2 (2) or 20 (20).
The bolt (4) is released suddenly and makes a loud noise.
8. Repeat the process in the order specified for all the installed bolts (4).

8.3.4.3 Potential problems when pressing out bolts (4) with grease

Problem	Cause	Possible solutions
Bolt (4) is not released despite the fact that the screw is fully inserted.	Pressure is too low to release the bolt (4).	• Use a longer screw (11) (minimum strength class 8.8). • Fill more grease into the tapped hole of the bolt (4).
Bolts (4) are difficult or impossible to release.	Liquid locking agent for screws (11) has sealed the cross bore.	Clean the tapped hole and the cross bore of the bolt (4).
Grease is escaping. The bolt (4) is not released.	The tapped hole is not sufficiently sealed.	1. Remove the screw (11). 2. Seal the screw (11) again in Teflon tape or Teflon sealing cord. 3. Press out the bolt (4) again with grease.

8.4 Removing coupling part 1 (1), 2 (2) or 20 (20)

For couplings with axial backlash limitation, first loosen the bolt connection. Follow the instructions provided in Section Replacing wearing parts (Page 50).

The procedure when dismantling the coupling parts depends on the existing shaft-hub connection or the flange connection:

- Removing coupling part 1 (1) or 2 (2) with shaft and hub connected by a parallel key (Page 56)
- Removing coupling part 1 (1) or 2 (2) with shaft and hub connected by a pressurised oil interference fit (Page 56)
- Removing coupling part 20 (20) with flange connection (Page 58)

8.4 Removing coupling part 1 (1), 2 (2) or 20 (20)

8.4.1 Removing coupling part 1 (1) or 2 (2) with shaft and hub connected by a parallel key

**! DANGER****Risk of explosion from burners and hot coupling parts**

Risk of burns due to burners and hot surfaces. Burners or hot coupling parts can lead to an explosion in potentially explosive atmospheres. There is a risk to life.

- Wear suitable protective equipment (gloves, safety glasses).
- Ensure that the area is not at risk of explosion.

Procedure

1. Move the coupled machines apart.
2. Secure the coupling parts to prevent them from falling.
3. Remove the axial locking element (set screw, end plate).
4. Use a suitable pulling fixture.
5. Heat up the coupling part 1 (1) and/or 2 (2) using a burner above the parallel key along its length to maximum 80 °C.
Note the permissible temperature range of the buffers (5) when doing this (refer to Section RUPLEX buffers (5) (Page 83)). Remove the buffers (5) if necessary.
6. Pull off the coupling part 1 (1) and/or 2 (2). Use suitable lifting gear when doing this.
7. Check the hub bore and the shaft for damage and protect them against corrosion.
8. Replace damaged parts.

When reinstalling the coupling parts, please observe the information in Chapters Assembly (Page 29) and Commissioning (Page 41).

8.4.2 Removing coupling part 1 (1) or 2 (2) with shaft and hub connected by a pressurised oil interference fit

**! DANGER****Risk of explosion if oil pressure exceeds maximum permissible value**

The coupling can burst. There is a risk of fatal injury from flying fragments. If a coupling bursts in an area at risk of explosion, then this can result in an explosion.

- Do not exceed the maximum oil pressure specified in the dimension drawing.
- Keep the oil pressure constant in all oil channels during the entire procedure.



! DANGER

Risk of explosion due to improper handling

Failure to handle fixtures and pumps properly can result in injuries. The coupling can burst. There is a risk of fatal injury from flying fragments. In an area at risk of explosion, a burst coupling may result in an explosion.

- Use the fixtures and pumps as intended.
- Follow the manufacturer's instructions for handling the pulling fixtures and the pumps.

! WARNING

Risk of injury as a result of coupling parts or the pulling fixture coming loose.

Falling coupling parts or pulling fixtures can cause crushing, serious injury and death. The coupling parts can be damaged.

- Use suitable hoisting gear to secure the coupling part and the pulling fixture.
- Attach an axial locking element if the pressurised oil interference fit is tapered.

! CAUTION

Risk of injury and danger to the environment from spilled lubricant

There is a risk of injury from slipping. The lubricant may be harmful to the environment.

- Make sure you capture any lubricant that might escape.
- Dispose of the lubricant in accordance with applicable regulations.

Tools required

- One oil pump with pressure gauge (at least 2,500 bar) per oil channel.
Or: One motor-driven oil pump. One connection that can be closed independently is required for each oil channel.
Refer to the dimension drawing for the number of oil channels.
- With a stepped bore:
A motor-driven oil pump at the oil channel located at the point of transition from the smaller to the larger bore. A large quantity of oil per unit of time is needed here.
- Suitable connections and pipes.
- Suitable pulling fixture.
Or: Retaining plate with retaining screws or threaded spindles with nuts. Material of the screws and spindles must have at least strength class 10.9; material of the nuts depending on the material of the screws or spindles.
- Hydraulic cylinder with oil pump. Note displacement and pressure of the hydraulic cylinder. Refer to the dimension drawing for the required axial force.

Procedure

1. Move the coupled machines apart.
2. Remove the buffers (5). For further information, refer to section Replacing wearing parts (Page 50).
3. Use a suitable pulling fixture.
4. Secure the coupling part 1 (1) and/or 2 (2) and the pulling fixture against falling.

8.4 Removing coupling part 1 (1), 2 (2) or 20 (20)

5. Remove the screw plugs (101) and/or (201) from the oil channels.
6. Deaerate an oil pump and connect it to the oil channel in the centre.
7. Pressurise the oil pump to the pressure specified in the dimension drawing until oil starts to escape from the adjacent connections or the front faces. Keep the pressure constant.
8. Deaerate the next oil pump and connect it to the adjacent oil channel.
9. Repeat steps 7 and 8 on the remaining oil channels.
10. If so much oil escapes when pressure is applied that the pump cannot maintain the pressure, use a higher-viscosity oil.
11. Pressurise the hydraulic cylinder if oil escapes from both front faces as a closed oil ring. Make sure that the coupling part 1 (1) and/or 2 (2) is removed immediately in a swift, smooth movement.

NOTE

Removal in several strokes

If several strokes of the hydraulic cylinder are required, make sure that the shaft end is positioned between two oil channels at the end of the stroke.

12. Dismantle the oil pumps and the pulling fixture from the coupling part 1 (1) and/or 2 (2).
13. Check the hub bore and the shaft for damage and protect them against corrosion.
14. Replace damaged parts.

When reinstalling the coupling parts, please observe the information in Chapters Assembly (Page 29) and Commissioning (Page 41).

8.4.3 Removing coupling part 20 (20) with flange connection

Procedure

1. Move the coupled machines apart.
2. Secure the coupling parts to prevent them from falling.
3. Remove the bolt connection from coupling part 20 (20) with the mating part and separate the components.
4. Check the coupling part 20 (20) for damage and protect it against corrosion.
5. Replace any damaged parts.

When reinstalling the coupling parts please observe the information in chapters Assembly (Page 29) and Commissioning (Page 41).

Service and support

9

9.1 Contact

When ordering replacement parts, requesting a customer service technician or if you have any technical queries, contact our factory or one of our Customer Service addresses:

Flender GmbH
Schlavenhorst 100
46395 Bocholt
Germany

Tel.: +49 (0)2871/92-0
Fax.: +49 (0)2871/92-2596

Flender GmbH (<http://www.flender.com/>)

Further information

You can find further information about service and support online:
Service and support (<https://www.flender.com/service>)

Disposal

10

Disposal of the coupling

Dispose of the coupling parts according to applicable national regulations or recycle them.

11.1 Ordering spare parts

By stocking the most important replacement parts at the installation site you can ensure that the coupling is ready for use at any time.

Use only original replacement parts from Flender. Flender only accepts liability for original replacement parts from Flender.

You can find the available replacement parts for the coupling described here at Spare parts drawing and spare parts list (Page 64).

You can find our contact data for ordering replacement parts at Service and support (Page 59).

Information required when ordering replacement parts

- Flender order number with item
- Flender drawing number
- Coupling type and size
- Part number (refer to Spare parts drawing and spare parts list (Page 64))
- Dimensions of the replacement part, for example:
 - Bore
 - Bore tolerance
 - Parallel keyway and balancing
- Special dimensions, for example, flange connection dimensions, intermediate sleeve length or brake drum dimensions
- Any special properties of the replacement part, such as, for example:
 - Temperature resistance
 - Electrical insulation
 - Operating fluid
 - Use in potentially explosive atmospheres
- Quantity

11.2 Spare parts drawing and spare parts list

11.2.1 Types RWN and RWS

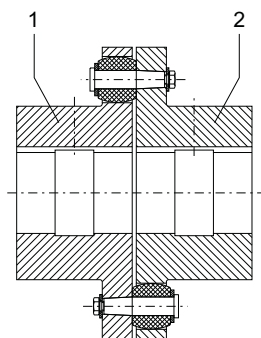


Figure 11-1: Spare parts drawing for types RWN, RWS

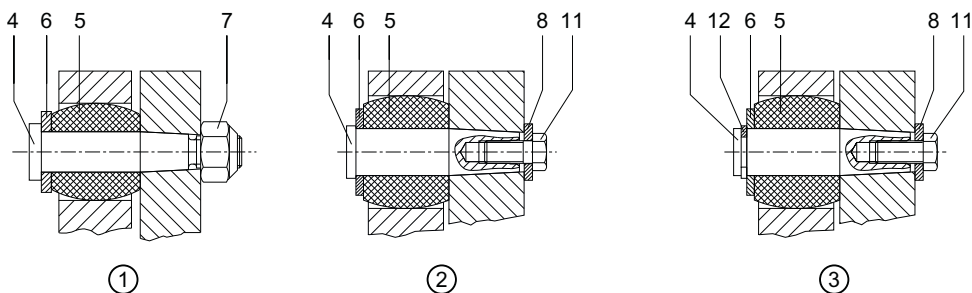


Figure 11-2: Bolt connection

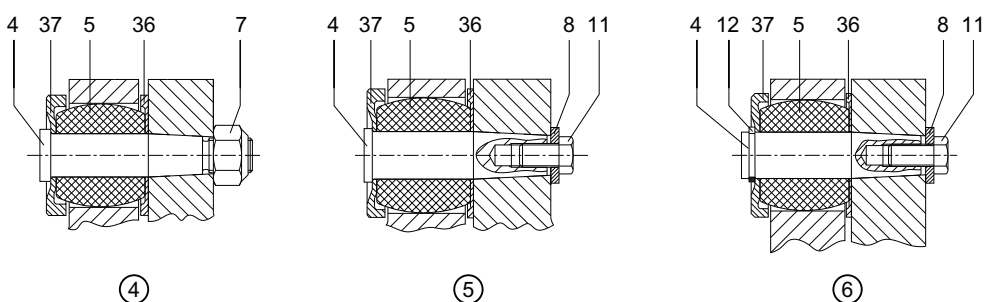


Figure 11-3: Bolt connection with axial backlash limitation

- ① Bolt connection for sizes 105 to 400
- ② Bolt connection for sizes 450 to 630
- ③ Bolt connection for sizes 710 to 2,000
- ④ Bolt connection with axial backlash limitation for sizes 228 to 400
- ⑤ Bolt connection with axial backlash limitation for sizes 450 to 630
- ⑥ Bolt connection with axial backlash limitation for sizes 710 to 1,600

NOTE

Axial backlash limitation

The axial backlash limitation consists of the pressure plate (36) and tension disc (37). The pressure plates (36) are glued to the coupling part 2 (2).

Screw the bolt connection with axial backlash limitation only to the bolt fitting holes in the coupling part 2 (2), on which a pressure plate (36) is glued.



Information

Arrangement of the buffers

The buffers (5) are arranged on one side in the coupling part 1 (1) up to coupling size 360. With coupling size 400 or larger, the buffers (5) are arranged alternately in coupling part 1 (1) and coupling part 2 (2).

Part number	Designation
1	Coupling part 1
2	Coupling part 2 ¹⁾
4	Bolt
5	Buffer
6	Washer
7	Hexagon nut, self-locking
8	Washer
11	Hexagon head screw
12	Locking ring
36	Pressure plate ¹⁾
37	Tension disc
101	Screw plug ²⁾
201	Screw plug ²⁾

Table 11-1 : Spare parts list for RWN and RWS types

¹⁾ The pressure plates (36) are glued to the coupling part 2 (2).

²⁾ Screw plugs (101, 201) are only used in combination with a pressurised oil interference fit.

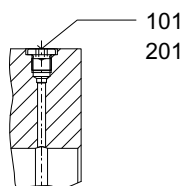


Figure 11-4: Screw plug 101, 201

11.2.2 Types RFN and RFS

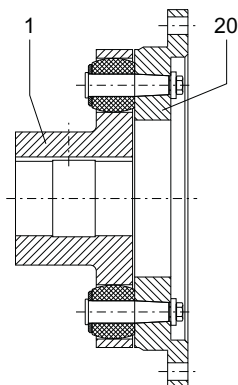


Figure 11-5: Spare parts drawing for types RFN and RFS

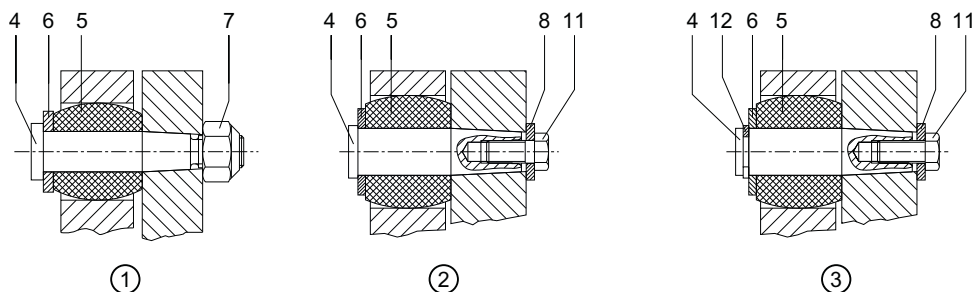


Figure 11-6: Bolt connection

- ① Bolt connection for sizes 105 to 400
- ② Bolt connection for sizes 450 to 630
- ③ Bolt connection for sizes 710 to 800

i

Information

Arrangement of the buffers

The buffers (5) are arranged on one side in the coupling part 1 (1) up to coupling size 360. With coupling size 400 or larger, the buffers (5) are arranged alternately in coupling part 1 (1) and coupling part 20 (20).

Part number	Designation
1	Coupling part 1
4	Bolt
5	Buffer
6	Washer
7	Hexagon nut, self-locking
8	Washer
11	Hexagon head screw
12	Locking ring

Part number	Designation
20	Coupling part 20
101	Screw plug ¹⁾

Table 11-2 : Spare parts list for RFN and RFS types

¹⁾ Screw plugs (101) are only used in combination with a pressurised oil interference fit.

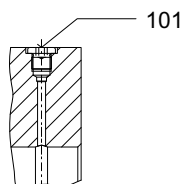


Figure 11-7: Screw plug

Technical data

A

A.1 Speeds, geometry data and weights

In this section you can find dimension drawings and technical data for RUPEX couplings of the following types:

- RWN type (Page 70)
- RWS type (Page 72)
- RFN type (Page 75)
- RFS type (Page 76)

A.1.1 RWN type

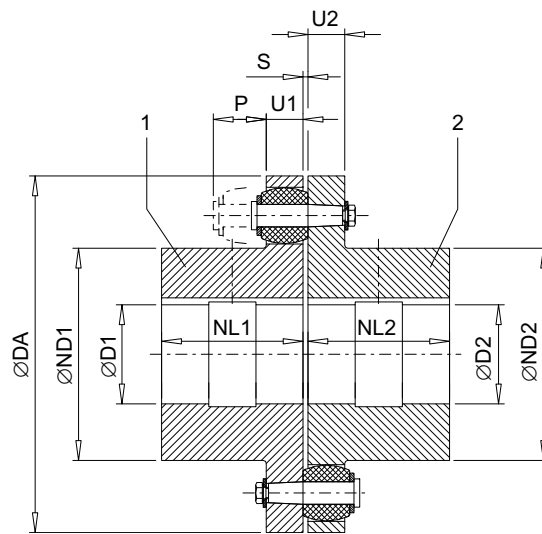


Figure A-1: Dimension drawing RWN type

- 1 Coupling part 1
- 2 Coupling part 2

Size	Speed ¹⁾	Maximum bore ²⁾		DA	ND1	ND2	NL1 NL2	P	S ³⁾	U1	U2	Weight ⁴⁾ m
	n _{max}	D1	D2									
	rpm	mm	mm									
105	7,000	35	42	105	53	59	45	30	2 – 4	13	12	1.9
125	6,000	42	48	125	65	68	50	35	2 – 4	16	15	3.2
144	5,250	48	60	144	76	84	55	35	2 – 4	16	15	4.5
162	4,650	55	65	162	85	92	60	40	2 – 5	20	18	6.5
178	4,200	70	75	178	102	108	70	40	2 – 5	20	18	8.6
198	3,750	80	90	198	120	128	80	40	2 – 5	20	18	12
228	3,300	90	95	228	129	140	90	50	2 – 5	26	24	18
252	3,000	100	110	252	150	160	100	50	2 – 5	26	24	24
285	2,650	110	120	285	164	175	110	60	3 – 6	32	30	36
320	2,350	120	130	320	180	192	125	60	3 – 6	32	30	48
360	2,100	130	140	360	200	210	140	75	3 – 6	42	42	74
400	2,050	150	150	400	230	230	160	75	3 – 6	42	42	99
450	1,800	170	170	450	260	260	180	90	4 – 7	52	52	146
500	1,600	190	190	500	290	290	200	90	4 – 7	52	52	192
560	1,500	140	140	560	250	250	220	120	4 – 8	68	68	275
		180	180		300	300						290
		200	200		320	320						292
630	1,280	140	140	630	250	250	240	120	4 – 8	68	68	345
		180	180		300	300						363
		220	220		355	355						389

Size	Speed ¹⁾	Maximum bore ²⁾		DA	ND1	ND2	NL1 NL2	P	S ³⁾	U1	U2	Weight ⁴⁾
	n _{max}	D1	D2									m
	rpm	mm	mm									kg
710	1,150	160	160	710	290	290	260	140	5 – 9	80	80	504
		200	200		330	330						512
		240	240		385	385						540
800	1,000	180	180	800	320	320	290	140	5 – 9	80	80	660
		220	220		360	360						670
		260	260		420	420						720
900	900	220	220	900	360	360	320	160	5 – 10	90	90	900
		260	260		425	425						960
		290	290		465	465						1,000
1,000	810	240	240	1,000	395	395	350	160	5 – 10	90	90	1,150
		280	280		460	460						1,230
		320	320		515	515						1,300
1,120	700	200	200	1,120	360	360	380	180	6 – 11	100	100	1,450
		250	250		410	410						1,470
		300	300		495	495						1,600
		350	350		560	560						1,670
1,250	650	230	230	1,250	410	410	420	180	6 – 11	100	100	1,830
		280	280		460	460						1,870
		330	330		540	540						2,010
		380	380		610	610						2,130
1,400	570	260	260	1,400	465	465	480	210	6 – 12	120	120	2,730
		320	320		525	525						2,780
		380	380		620	620						2,990
		440	440		700	700						3,150
1,600	500	320	320	1,600	565	565	540	210	6 – 12	120	120	3,710
		380	380		625	625						3,790
		440	440		720	720						4,100
		480	480		770	770						4,220

Size	Speed ¹⁾	Maximum bore ²⁾		DA	ND1	ND2	NL1 NL2	P	S ³⁾	U1	U2	Weight ⁴⁾ m kg
	n _{max}	D1	D2									
	rpm	mm	mm									
1,800	450	380	380	1,800	660	660	600	240	8 – 16	140	140	5,650
		440	440		720	720						5,740
		500	500		820	820						6,160
		540	540		870	870						6,320
2,000	400	440	440	2,000	760	760	660	240	8 – 16	140	140	7,340
		500	500		820	820						7,480
		560	560		920	920						8,030
		600	600		960	960						8,130

Table A-1 : Speed, geometry data and weights of type RWN

¹⁾ For the “AIQ Detect-ready” variant, observe the maximum speed for AIQ Detect. You will find the maximum speeds in the AIQ Direct instructions.

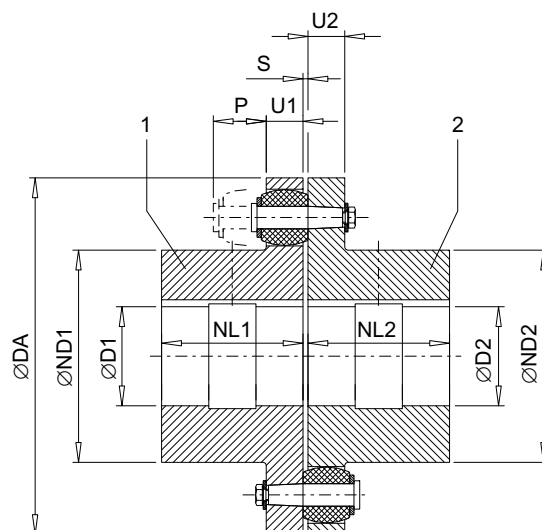
²⁾ Maximum bore for parallel keyway in accordance with DIN 6885/1.

³⁾ The S dimensions for couplings with axial backlash limitation can be found in Section Axial backlash limitation (Page 78).

⁴⁾ Weight applies to one coupling with maximum bore.

Type RWN is also available with axial backlash limitation in sizes 228 to 1,600. The dimensions for axial backlash can be found in Section Axial backlash limitation (Page 78).

A.1.2 RWS type


Figure A-2: Dimension drawing RWS type

- 1 Coupling part 1
- 2 Coupling part 2

Size	Speed ¹⁾	Maximum bore ²⁾		DA	ND1	ND2	NL1 NL2	P	S ³⁾	U1	U2	Weight ⁴⁾
	n _{max}	D1	D2									m
	rpm	mm	mm									kg
105	10 000	38	42	105	53	59	45	30	2 – 4	13	12	1.7
125	9,000	48	50	125	65	68	50	35	2 – 4	16	15	3.0
144	7,800	55	60	144	76	84	55	35	2 – 4	16	15	4.3
162	6,900	60	65	162	85	92	60	40	2 – 5	20	18	6.5
178	6,300	75	80	178	102	108	70	40	2 – 5	20	18	9.1
198	5,600	90	95	198	120	128	80	40	2 – 5	20	18	11.2
228	4,900	95	100	228	129	140	90	50	2 – 5	26	24	17.5
252	4,400	110	120	252	150	160	100	50	2 – 5	26	24	23.6
285	3,900	120	130	285	164	175	110	60	3 – 6	32	30	36
320	3,500	130	140	320	180	192	125	60	3 – 6	32	30	50
360	3,100	145	150	360	200	210	140	75	3 – 6	42	42	73
400	2,800	170	170	400	230	230	160	75	3 – 6	42	42	97
450	2,500	190	190	450	260	260	180	90	4 – 7	52	52	147
500	2,200	215	215	500	290	290	200	90	4 – 7	52	52	192
560	2,000	165	165	560	250	250	220	120	4 – 8	68	68	274
		200	200		300	300						292
		240	240		320	320						268
630	1,800	165	165	630	250	250	240	120	4 – 8	68	68	352
		200	200		300	300						370
		265	265		355	355						356
710	1,600	190	190	710	290	290	260	140	5 – 9	80	80	507
		220	220		330	330						530
		280	280		385	385						509
800	1,400	210	210	800	320	320	290	140	5 – 9	80	80	683
		240	240		360	360						715
		310	310		420	420						699
900	1,250	210	210	900	360	360	320	160	5 – 10	90	90	907
		240	240		425	425						933
		280	280		465	465						1,000
		340	340									948
1,000	1,100	230	230	1,000	395	395	350	160	5 – 10	90	90	1,170
		260	260		460	460						1,208
		300	300		515	515						1,290
		380	380									1,220

Size	Speed ¹⁾	Maximum bore ²⁾		DA	ND1	ND2	NL1 NL2	P	S ³⁾	U1	U2	Weight ⁴⁾
	n _{max}	D1	D2									m
	rpm	mm	mm									kg
1,120	1,000	240	240	1,120	360	360	380	180	6 – 11	100	100	1,560
		270	270		410	410						1,660
		330	330		495	495						1,730
		410	410		560	560						1,720
1,250	900	270	270	1,250	410	410	420	180	6 – 11	100	100	2,000
		300	300		460	460						2,150
		360	360		540	540						2,200
		440	440		610	610						2,250
1,400	800	310	310	1,400	465	465	480	210	6 – 12	120	120	3,020
		350	350		525	525						3,120
		410	410		620	620						3,350
		510	510		700	700						3,280
1,600	700	370	370	1,600	565	565	540	210	6 – 12	120	120	3,890
		410	410		625	625						4,270
		480	480		720	720						4,300
		560	560		770	770						4,270
1,800	600	440	440	1,800	660	660	600	240	8 – 16	140	140	6,230
		480	480		720	720						6,460
		540	540		820	820						6,770
		650	650		870	870						6,390
2,000	550	500	500	2,000	760	760	660	240	8 – 16	140	140	8,140
		540	540		820	820						8,430
		610	610		920	920						8,860
		710	710		960	960						8,280

Table A-2 : Speed, geometry data and weights of type RWS

¹⁾ For the “AIQ Detect-ready” variant, observe the maximum speed for AIQ Detect. You will find the maximum speeds in the AIQ Direct instructions.

²⁾ Maximum bore for parallel keyway in accordance with DIN 6885/1.

³⁾ The S dimensions for couplings with axial backlash limitation can be found in Section Axial backlash limitation (Page 78).

⁴⁾ Weight applies to one coupling with maximum bore.

Type RWS is also available with axial backlash limitation in sizes 228 to 1,600. The dimensions for axial backlash can be found in Section Axial backlash limitation (Page 78).

A.1.3 RFN type

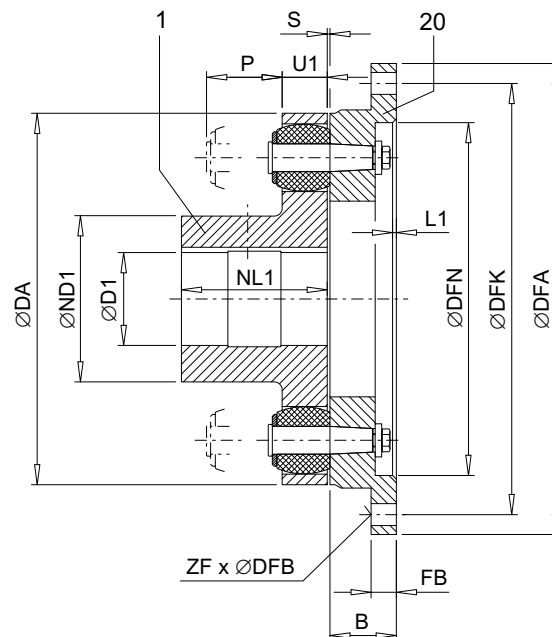


Figure A-3: Dimension drawing RFN type

- 1 Coupling part 1
- 20 Coupling part 20

Size	Speed $n_{\max}$	Maximum bore ¹⁾ D1	DA	ND1	NL1	P	S	U1	DFA	B	FB	DFN	L1	DFK	ZF	DFB	Weight ²⁾ m
	rpm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
105	7,000	35	105	53	45	30	2 – 4	13	158	23	10	-	-	142	6	9	2.2
125	6,000	42	125	65	50	35	2 – 4	16	180	28	13	-	-	160	6	11	4.1
144	5,250	48	144	76	55	35	2 – 4	16	200	28	13	-	-	180	7	11	4.9
162	4,650	55	162	85	60	40	2 – 5	20	220	34	13	-	-	200	8	11	7.1
178	4,200	70	178	102	70	40	2 – 5	20	248	34	16	-	-	224	8	14	9
198	3,750	80	198	120	80	40	2 – 5	20	274	34	16	-	-	250	8	14	12
228	3,300	90	228	129	90	50	2 – 5	26	314	42	20	-	-	282	8	18	19
252	3,000	100	252	150	100	50	2 – 5	26	344	42	20	-	-	312	8	18	24
285	2,650	110	285	164	110	60	3 – 6	32	380	51	22	-	-	348	9	18	37
320	2,350	120	320	180	125	60	3 – 6	32	430	51	25	-	-	390	9	22	48
360	2,100	130	360	200	140	75	3 – 6	42	480	66	25	-	-	440	10	22	74
400	2,050	150	400	230	160	75	3 – 6	42	520	70	50	380	4	480	10	22	122
450	1,800	170	450	260	180	90	4 – 7	52	575	80	45	428	6	528	12	26	166
500	1,600	190	500	290	200	90	4 – 7	52	620	80	45	475	6	570	12	26	200

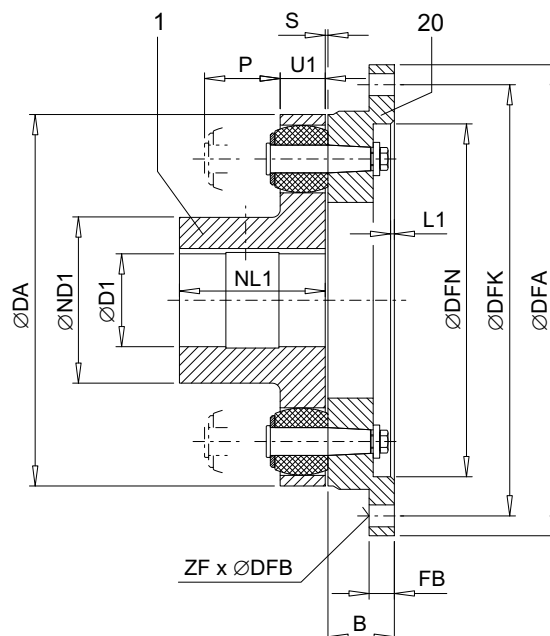
Size	Speed $n_{\max}$	Maximum bore ¹⁾ D1	DA	ND1	NL1	P	S	U1	DFA	B	FB	DFN	L1	DFK	ZF	DFB	Weight ²⁾ t m
	rpm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
560	1,500	140	560	250	220	120	4 – 8	68	700	100	65	532	8	650	16	26	330
		180		300													330
		200		320													340
630	1,280	140	630	250	240	120	4 – 8	68	785	100	60	602	8	725	16	33	390
		180		300													400
		220		355													420
710	1,150	160	710	290	260	140	5 – 9	80	875	120	80	675	10	815	18	33	550
		200		330													550
		240		385													570
800	1,000	180	800	320	290	140	5 – 9	80	1,000	120	70	765	10	930	16	39	680
		220		360													690
		260		420													710

Table A-3 : Speed, geometry data and weights of type RFN

¹⁾ Maximum bore for parallel keyway in accordance with DIN 6885/1.

²⁾ Weight applies to one coupling with maximum bore.

A.1.4 RFS type


Figure A-4: Dimension drawing RFS type

- 1 Coupling part 1
- 20 Coupling part 20

Size	Speed $n_{\max}$	Maximum bore ¹⁾ D1	DA	ND1	NL1	P	S	U1	DFA	B	FB	DFN	L1	DFK	ZF	DFB	Weight ²⁾ m
	rpm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg
105	10,000	38	105	53	45	30	2 – 4	13	158	23	10	-	-	142	6	9	2.2
125	9,000	48	125	65	50	35	2 – 4	16	180	28	13	-	-	160	6	11	4.0
144	7,800	55	144	76	55	35	2 – 4	16	200	28	13	-	-	180	7	11	4.8
162	6,900	60	162	85	60	40	2 – 5	20	220	34	13	-	-	200	8	11	7.1
178	6,300	75	178	102	70	40	2 – 5	20	248	34	16	-	-	224	8	14	10
198	5,600	90	198	120	80	40	2 – 5	20	274	34	16	-	-	250	8	14	12
228	4,900	95	228	129	90	50	2 – 5	26	314	42	20	-	-	282	8	18	19
252	4,400	110	252	150	100	50	2 – 5	26	344	42	20	-	-	312	8	18	24
285	3,900	120	285	164	110	60	3 – 6	32	380	51	22	-	-	348	9	18	36
320	3,500	130	320	180	125	60	3 – 6	32	430	51	25	-	-	390	9	22	49
360	3,100	145	360	200	140	75	3 – 6	42	480	66	25	-	-	440	10	22	74
400	2,800	170	400	230	160	75	3 – 6	42	520	70	50	380	4	480	10	22	119
450	2,500	190	450	260	180	90	4 – 7	52	575	80	45	428	6	528	12	26	167
500	2,200	215	500	290	200	90	4 – 7	52	620	80	45	475	6	570	12	26	198
560	2,000	165	560	250	220	120	4 – 8	68	700	100	65	532	8	650	16	26	330
		200		300													340
		240		320													320
630	1,800	165	630	250	240	120	4 – 8	68	785	100	60	602	8	725	16	33	390
		200		300													400
		265		355													400
710	1,600	190	710	290	260	140	5 – 9	80	875	120	80	675	10	815	18	33	550
		220		330													560
		280		385													555
800	1,400	210	800	320	290	140	5 – 9	80	1,000	120	70	765	10	930	16	39	690
		240		360													710
		310		420													700

Table A-4 : Speed, geometry data and weights of type RFS

¹⁾ Maximum bore for parallel keyway in accordance with DIN 6885/1.

²⁾ Weight applies to one coupling with maximum bore.

A.1.5 Axial backlash limitation

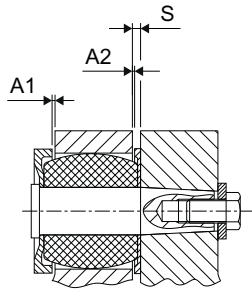


Figure A-5: Axial backlash

Size	Number of bolts with axial backlash limitation	Axial backlash		
		A1	A2	S
		mm	mm	mm
228	11	1.5	1	3.5
252	6	1.5	1	3.5
285	11	1.5	1	4.5
320	6	1.5	1	4.5
360	5	1.5	1	4.5
400	7	1.5	1	4.5
450	6	2	1.5	5.5
500	7	2	1.5	5.5
560	6	2	1.5	6
630	7	2	1.5	6
710	7	2	1.5	7
800	8	2	1.5	7
900	8	2.5	2	7.5
1,000	9	2.5	2	7.5
1,120	9	2.5	2	8.5
1,250	10	2.5	2	8.5
1,400	10	2.5	2	9
1,600	12	2.5	2	9

Table A-5 : Axial backlash limitation

A.2 Shaft misalignment values during operation

The following table shows the maximum permissible shaft misalignment values ΔS_{perm} and $\Delta K r_{perm}$. The values are rounded and specified in mm.

NOTE

For designs with axial backlash limitation, reduce the specified permissible misalignment values by 20%.

Size	Coupling speed in rpm								
	250	500	750	1 000	1 500	2 000	3 000	4 000	5 000
105	0.5	0.35	0.3	0.25	0.2	0.15	0.15	0.1	0.1
125	0.55	0.4	0.3	0.25	0.2	0.2	0.15	0.1	0.1
144	0.6	0.4	0.35	0.3	0.25	0.2	0.15	0.15	0.1
162	0.65	0.45	0.35	0.3	0.25	0.2	0.15	0.15	0.15
178	0.7	0.5	0.4	0.35	0.25	0.25	0.2	0.15	
198	0.75	0.5	0.4	0.35	0.3	0.25	0.2	0.15	
228	0.8	0.55	0.45	0.4	0.3	0.25	0.2	0.2	
252	0.85	0.6	0.5	0.45	0.35	0.3	0.25	0.2	
285	0.95	0.65	0.55	0.45	0.4	0.3	0.25		
320	1.05	0.75	0.6	0.5	0.4	0.35	0.3		
360	1.15	0.8	0.65	0.55	0.45	0.4	0.3		
400	1.25	0.85	0.7	0.6	0.5	0.45			
450	1.35	0.95	0.8	0.7	0.55	0.45			
500	1.5	1.05	0.85	0.75	0.6	0.5			
560	1.65	1.15	0.95	0.8	0.65	0.55			
630	1.85	1.3	1.05	0.9	0.75				
710	2.05	1.45	1.15	1	0.8				
800	2.25	1.6	1.3	1.1					
900	2.5	1.75	1.45	1.25					
1 000	2.75	1.95	1.6	1.35					
1 120	3.05	2.15	1.75	1.5					
1 250	3.4	2.4	1.95						
1 400	3.75	2.65	2.15						
1 600	4.3	3							
1 800	4.8	3.4							
2 000	5.3	3.75							

Table A-6 : Maximum permissible shaft misalignment values during operation

Shaft misalignment values during operation

You can calculate the numerical values in the table and their intermediate values as follows:

$$\Delta K_{r_{perm}} = \Delta S_{perm} = (0.1 + DA / 1,000) \cdot 40 / \sqrt{n}$$

Coupling speed n in rpm
DA in mm (see Speeds, geometry data and weights (Page 69))
Radial misalignment $\Delta K_{r_{perm}}$ in mm

The values in column “250 rpm” of the table above apply for speeds of < 250 rpm.

A.3 Tightening torques and widths A/F

Use bolts of strength class 8.8.

Apply the specified tightening torques as listed in Section Tightening procedure (Page 82).

A.3.1 Bolt connection

Size	Tightening torque	Width A/F External hexagon
	T _A Nm	SW mm
105	8	10
125	15	13
144	15	13
162	30	16
178	30	16
198	30	16
228	55	19
252	55	19
285	100	24
320	100	24
360	170	27
400	170	27
450	180	24
500	180	24
560	340	30
630	340	30
710	580	36
800	580	36
900	600	36
1 000	600	36
1 120	1 150	46
1 250	1 150	46
1 400	1 150	46
1 600	1 150	46
1 800	2 000	55
2 000	2 000	55

Table A-7 : Tightening torques and widths A/F of bolt connection

A.3.2 Coupling part 20 to the mating part

Size	Bolt size	Tightening torque T_A Nm
105	M8	25
125	M10	49
144	M10	49
162	M10	49
178	M12	86
198	M12	86
228	M16	210
252	M16	210
285	M16	210
320	M20	410
360	M20	410
400	M20	410
450	M24	710
500	M24	710
560	M24	710
630	M30	1,450
710	M30	1,450
800	M36	2,530

Table A-8 : Tightening torques for bolt connection of coupling part 20 to the mating part

A.4 Tightening procedure

Tightening torques must be observed taking into account the following table:

Scatter of the torque applied at the tool	Tightening procedure (As a rule, the tightening procedures listed are within the specified tool torque scatter.)
±5 %	- Hydraulic tightening with mechanical screwdriver - Torque-controlled tightening with a torque wrench or a torque wrench that gives a signal - Tightening with a precision mechanical screwdriver with dynamic torque measurement

Table A-9 : Tightening procedure



Information

The tightening torques apply to:

- Screws with untreated surfaces that are not oiled or are only lightly oiled. Use of lubricant coating or lubricant is not permitted.
- Screws that should be used with screw locking agent.

A.5 Buffers (5)

A.5.1 Use and storage of the buffers (5)

Note the following concerning the use and storage of the buffers (5):

- Storage possible for up to 5 years
- Protect against direct sunlight, artificial light with a high UV-content and extreme temperatures
- Avoid contact with aggressive media
- Only replace complete sets
- Only use buffers (5) of the same type and age

A.5.2 RUPEX buffers (5)

Material	Hardness	Comment	Marking	Ambient temperature	Approved for explosion group
NBR	80 Shore A	Standard	Black buffer	-50 °C ... +80 °C	IIA, IIB, IIC
NBR	65 Shore A	Special, soft, Shifting the Resonance speed, Rated torque reduced	Black buffer with green point at the front	-50 °C ... +80 °C	IIA, IIB, IIC
NBR	90 Shore A	Special, hard, Shifting the Resonance speed Rated torque increased	Black buffer with magenta point at the front	-50 °C ... +80 °C	IIA, IIB, IIC
NBR	80 Shore A	Special, electrically insulating	Green buffer	-30 °C ... +80 °C	IIA, IIB

Buffers (5)

Material	Hardness	Comment	Marking	Ambient temperature	Approved for explosion group
NR	80 Shore A	Special, Low-temperature use	Black buffer with white point at the front	-60 °C ... +50 °C	IIA, IIB, IIC
HNBR	80 Shore A	Special, High-temperature use	Black buffer with red point at the front	-10 °C ... +100 °C	not approved

Table A-10 : RUPEX buffer

Declaration of Conformity

B

EU Declaration of Conformity

Product:

FLENDER RUPEX® couplings
RWN, RWS, RFN and RFS types

Name and address of the manufacturer:

Flender GmbH
Schlavenhorst 100
46395 Bocholt
Germany

This Declaration of Conformity is issued under the sole responsibility of the manufacturer.

This declaration refers to the product mentioned above.

The object of the declaration described above is in conformity with the relevant EU harmonisation legislation:

– Directive 2014/34/EU, Official Journal L 96, 29 March 2014, Pages 309-356

Harmonised standards or other technical specifications on which the Declaration of Conformity is based:

EN 1127-1 : 2019

EN 1127-2 : 2014

EN ISO 80079-36 : 2016

EN ISO 80079-37 : 2016

EN ISO/IEC 80079-38 : 2016

Notified Body, DEKRA Testing and Certification GmbH (0158) has received the technical documentation.

Signed for and on behalf of:

Flender GmbH

Bocholt, 2026-03-31



Dr Dennis Geers, President, Business Unit Couplings

FLENDER COUPLINGS

RUPEX

Assembly and operating instructions M3600-01en

Version 03/2026

[Flender GmbH](#)

Alfred-Flender-Strasse 77

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