TOK

Highly flexible coupling for industrial applications with flexible mounting

TOK…F2
TOK…D F2
TOK…F2K
TOK…D F2K
TOK…TK
TOK…D TK
TOK…R F2K
TOK…R TK

Translation of the original German operating instructions

09/2020 - en - 15500004020002

Contents

Notes on the supplementary manual and the manufacturer

These operating instructions help you use the coupling properly and safely.

Keeping the instructions available

These operating instructions are an integral part of the coupling. Make sure that these operating instructions are constantly available at the place of use and in legible condition for the user. Add these operating instructions each time you sell this type of coupling or make it otherwise available to any third party.

Target group of these operating instructions

These instructions are addressed to the owner and to all persons who perform the following activities with and on the coupling:

- Transportation
- Storage
- Assembly
- Putting into operation
- Operating
- Servicing
- Maintenance work
- Decommissioning
- Disposal.

These operating instructions are intended for trained specialist personnel and for qualified and authorised operating personnel.

Each of these persons must have read and understood the contents of these operating instructions. Following the instructions contained in this manual helps avoid dangers and increases the reliability and the service life of the coupling.
In addition to the instructions in this manual, always observe the legal and other regulations applicable at the installation site, such as:

Accident prevention regulations

- Regulations for safe and proper work.

Copyright

Related documents

Related documents are deemed integral parts of these operating instructions. Retain these documents together with these operating instructions. Add these documents each time you sell this type of coupling or make it otherwise available to any third party.

The following types of document are regarded as being applicable documents:

- Dimensioned drawing
- Technical product description
- All documents contained in the scope of supply

Structural features of these operating instructions

Defined structural features are assigned to the various elements within these operating instructions. A distinction can therefore be easily made between the following elements:

Normal text

Cross references

- Lists

▶ Action steps

Tips. These provide additional information such as special notes regarding the use of the coupling.

Warranty and liability

Our general commercial terms and conditions apply in general. These can be seen in the Internet at http://www.reich-kupplungen.com. Warranty and liability claims for personal injury and property damage are denied in all cases in which these are attributable to one or more of the following causes:

- Improper use of the coupling.
- Improper assembly, commissioning and maintenance of the coupling.
- Operation of the coupling with defective protection guards or improperly mounted or non-functional safety and protection devices.
- Failure to observe the notes in the operating instructions regarding transportation, storage, assembly, commissioning, operation, maintenance, cleaning and disassembly of the coupling.
- Unauthorised modifications to the design of the coupling without consulting REICH.
- Inadequate monitoring of parts of the machine which are subject to wear.
- Improperly performed repairs.
- Major disasters caused by external influences and force majeure.

Manufacturer's address

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Safety

Proper use

The highly flexible Reich TOK coupling has been specially designed for applications requiring extremely low torsional stiffness. Furthermore, it is particularly well suited to the compensation of axial and radial displacements of resiliently mounted drives. The wide range of flexible coupling elements and adaptive designs provides standard solutions for a wide variety of different tasks. These can be complemented by specific customised designs on request. The flexible element is designed to combine high torque transmission capacity and high displacement capacity with high speed capability. Its stiffness can be adapted to requirements by selecting different rubber qualities. The adaptive designs are based on the standard flywheel adapter dimensions according to SAE J 620.

Proper use also includes the observance of and compliance with all details contained in these operating instructions and the related documents. This applies, in particular, to both the safety instructions and the warning notices, and to the adherence to the cleaning and maintenance intervals.

Any other use or any use beyond the limits of proper use is deemed improper use and can lead to property damage or personal injury.

The following types of use, in particular, are deemed improper use:

- Operating the coupling outside its operating limits, and especially at too high rotational speeds and/or torques or continuous fatigue torques.
- Operating the coupling in a substandard condition.
- Having the coupling operated by inadequately trained personnel.
- Operating the coupling with deactivated and/or modified protective guards.
- Operating the coupling with modified add-on parts.
- Improper cleaning with cleaners containing solvents, alkalis or acids.

Improper operation of the coupling results in forfeiture of the liability for material defects and warranty.

Duties of the owner

- The owner of the coupling is bound by laws and regulations to issue instructions which ensure safe operation.
- The owner must define a “responsible person”. Only this person is authorised to issue a work clearance permit for working on and with the coupling. Work on the coupling described herein must not be executed unless the written work clearance permit for the execution of that work is available from the responsible person.
- The owner of the coupling must ensure that only qualified and authorised personnel performs the following activities on and with the coupling:
  - Transportation
  - Storage
  - Assembly
  - Putting into operation
  - Operating
  - Decommissioning
  - Cleaning
  - Servicing
  - Disposal.
- Persons whose ability to react is affected, for example, by the use of alcohol, medicines, drugs, etc., must not work on or with the coupling.
- The owner of the coupling must regularly train the personnel working on the coupling in the following areas:
  - Use of the personal protective equipment
  - Safe working practices
  - Applicable accident prevention regulations
  - Hazards arising from the coupling whilst in operation
  - Behaviour in an emergency
  - First aid measures.
- The owner must ensure that the applicable country-specific laws and guidelines including the health protection regulations, the occupational health and safety regulations and the fire prevention regulations, are adhered to.
- The owner must ensure that personnel receiving training, hands-on training, briefings or making an apprenticeship exclusively works on and with the coupling under the constant supervision of an experienced specialist.
- The operator must ensure that the coupling is enclosed by an adequately dimensioned separating protective guard which can withstand a coupling rupturing. It must allow sufficient ventilation of the coupling; see page 72.
- Before commissioning the coupling, the owner or a person authorised by the owner must ensure that the following requirements are met:
  - Proper use of the coupling must be ensured.
  - All protection devices must be properly mounted and functional.
  - All safety regulations must be adhered to.

Duties of the personnel

The personnel working on and with the coupling must:

- have read and understood all operating instructions,
- be familiar with all safety devices and regulations,
- observe and comply with all safety instructions and warning notices applicable to the place of use,
- be familiar with and adhere to the basic occupational health and safety regulations and accident prevention regulations.

Personnel qualifications

The specialist personnel must have knowledge and experience in the following areas:

- All notes in these operating instructions and the related documents
- Legal regulations and occupational health and safety regulations applicable to the place of use
- Explosion protection and fire prevention regulations applicable to the place of use
- Safe lifting and transportation of loads
- Assembly and disassembly of couplings
- Alignment of couplings
- Joining of bolted connections and their tightening to the specified torque
- Maintenance and cleaning work on couplings.

Prohibition of unauthorised conversions

Conversions or modifications are permissible only with the manufacturer’s approval.

- Exclusively use accessories which are approved by REICH for use with the coupling.
- Exclusively use genuine OEM spare parts. There is no warranty for third-party spare parts that these parts have been designed and manufactured to meet the stress and safety requirements.

Personal protective equipment

Adherence to the following safety measures is required to enable you to work safely on and with the coupling:

- Do not wear clothing or jewellery which may become entangled with moving parts such as ties, neckerchiefs, rings or chains.
- Comply with the owner's safety instructions.
- Wear a hair net or other head covering if you have long hair.
- Wear safety shoes to avoid injuries to your feet.
- Wear protective gloves to avoid injuries to your hands.
- Wear a hard hat to avoid injuries to your head.
- Wear protective clothing to protect your body against injuries.
- Wear protective goggles during work when your eyes are at risk.

- Wear ear protectors in areas in which your hearing may be damaged.
- Wear a respiratory protector during work when your respiratory system may be damaged.
- Make sure that the work areas and escape routes are not blocked at the place of use.

The owner must issue instructions for the wearing of personal protective equipment in accordance with the risks existing at the place of use.

Note regarding residual dangers

The coupling has been constructed according to the state-of-the-art and the recognised safety rules and relevant standards. Wherever possible, sources of danger have been eliminated in the design or ruled out through suitable devices. Residual dangers may nevertheless arise when using the coupling.

Dangers to persons or impairment of the coupling and other property can especially occur if the coupling:

- is improperly transported, mounted, commissioned and maintained by non-qualified or untrained personnel,
- is operated improperly,
- is not used properly,
- is not serviced properly,
- is not cleaned properly,
- is not decommissioned properly,
- is not stored properly.

Basic safety instructions

Danger to life due to rupturing of the coupling

A damaged or improperly mounted coupling can rupture during operation. Parts flying around can cause life-threatening injuries.

- The coupling must be mounted exclusively by specialist personnel qualified for this task.
- The coupling must be operated exclusively in flawless condition.
- The maintenance intervals must be adhered to.
- The owner must mount a protection device which is capable of withstanding rupturing of the coupling.

Danger to life due to improper transportation and handling of the coupling

If the coupling or its components are inadequately supported during transport, assembly or disassembly, there is a risk of crushing injuries in the event of the coupling or its components falling down.

- Exclusively use undamaged lifting and lashing gear which is suitable for the load.
- Secure the coupling and its components during transport, assembly or disassembly to prevent them from falling down.
- Do not stand under suspended loads.
- Wear the personal protective equipment specified by the owner.

Avoiding risks of injury due to entanglement

- Perform all work required on the coupling only when the coupling is stationary.
- Switch off the prime mover prior to all work on the coupling.
- Secure the prime mover to prevent reactivation.
- Exclusively operate the coupling with a mounted and functional protective guard.
- Affix a label warning of the hazard of entanglement on the protective guard.

Avoiding risks of burns from hot surfaces

The surface of the coupling can become hot during operation.

- Do not touch hot surfaces.
- Allow the coupling to cool to hand temperature prior to maintenance work.
- If necessary, check the surface temperature with an infrared thermometer.
- Wear the personal protective equipment specified by the owner.

Avoiding risks of poisoning

There is a risk of poisoning when working with solvents or preservatives.

- Wear the personal protective equipment specified by the owner.
- Observe and follow the instructions contained in the safety data sheet for the solvent or preservative being used.
- Make sure that the workplace is adequately ventilated.

Structural features of warning notices

DANGER

Notices containing the word DANGER warn of a dangerous situation which causes death or severe injuries.

WARNING

Notices containing the word WARNING warn of a dangerous situation which can cause death or severe injuries.

CAUTION

Notices containing the word CAUTION warn of a situation that may lead to minor or moderate injury.

The following specific danger symbols can also be used in the warning notices in lieu of the general danger symbol:

Risk of explosion

Risk of burns, risk of scalding

Danger due to heavy loads falling down

Danger due to rupturing components

Structural features of notices referring to property damage

CAUTION!

These notices warn of a situation which can cause property damage.

Warning and instruction labels

- Observe and comply with the warning and instruction labels which are affixed at the place of use of the coupling.
- Make sure that none of the warning and instruction signs installed at the coupling's operating location are covered over and that they are all clearly legible at all times.
- Immediately replace any damaged warning and instruction labels.

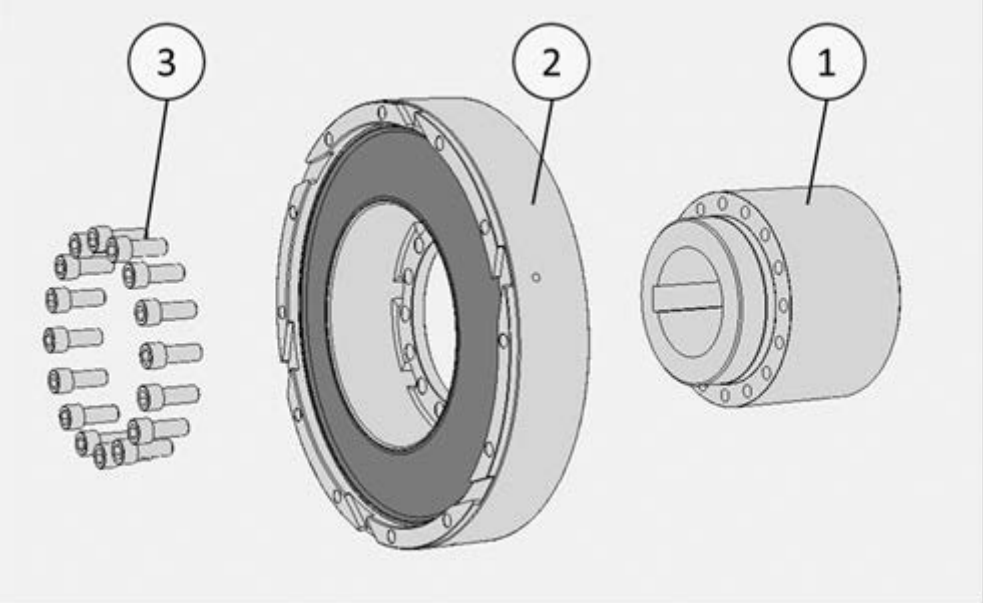
Description

The couplings in the TOK series, types TOK…F2, TOK…D F2, TOK…F2K, TOK…D F2K, TOK…TK, TOK…D TK, TOK…R F2K and TOK R TK are used to transmit torques and speeds between a drive unit and the driven machine in horizontal position. They reduce torsional vibrations and shock loads and are able to compensate for displacements.

Depending on the type, they consist of the flange, the coupling hub, the actual flexible coupling element, adapter flange and an optionally supplied spacer ring. After assembly, a torsionally flexible connection is established between the drive unit and the driven machine.

Overview of type TOK...F2

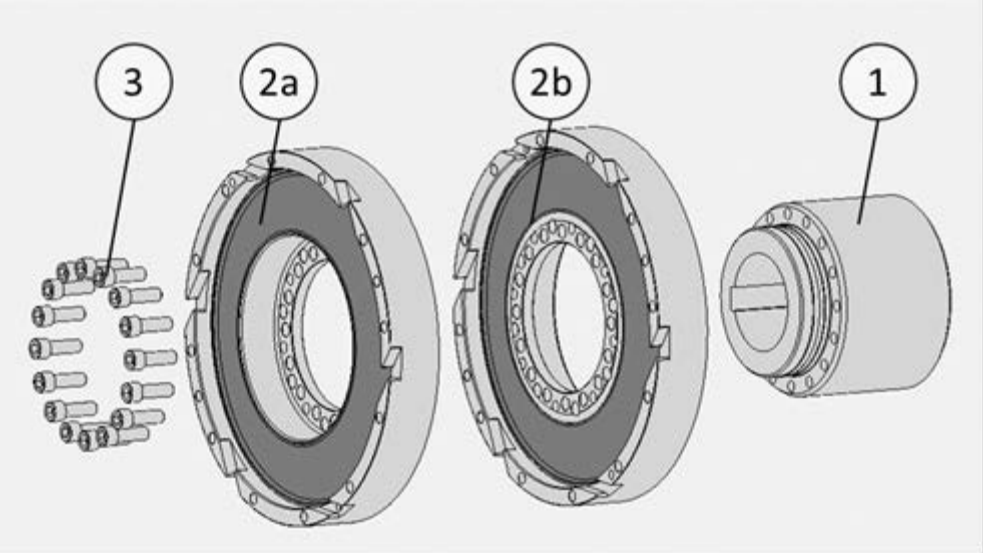
With this type, two different mounting lengths can be achieved depending on the configuration of the coupling element.



No.	Designation
1	Coupling hub
2	Flexible coupling element (with use of through holes)
3	Bolts

Overview of type TOK...D F2

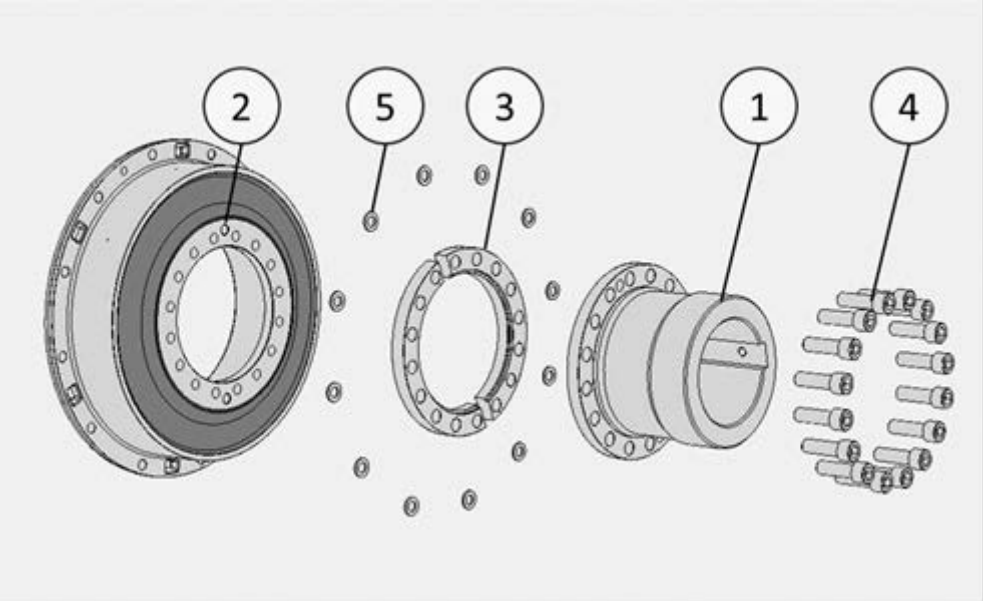
This type uses two coupling elements acting in parallel instead of one. It is therefore designed for the transmission of higher torques.



No.	Designation
1	Coupling hub
2a	Flexible coupling element (with use of through holes)
2b	Flexible coupling element (with use of through holes and reversed inner sleeve)
3	Bolts

Overview of type TOK...F2K

This type enables the flexible coupling element to be replaced without moving the coupled machines. Follow the instructions given on pages 38 and 79.

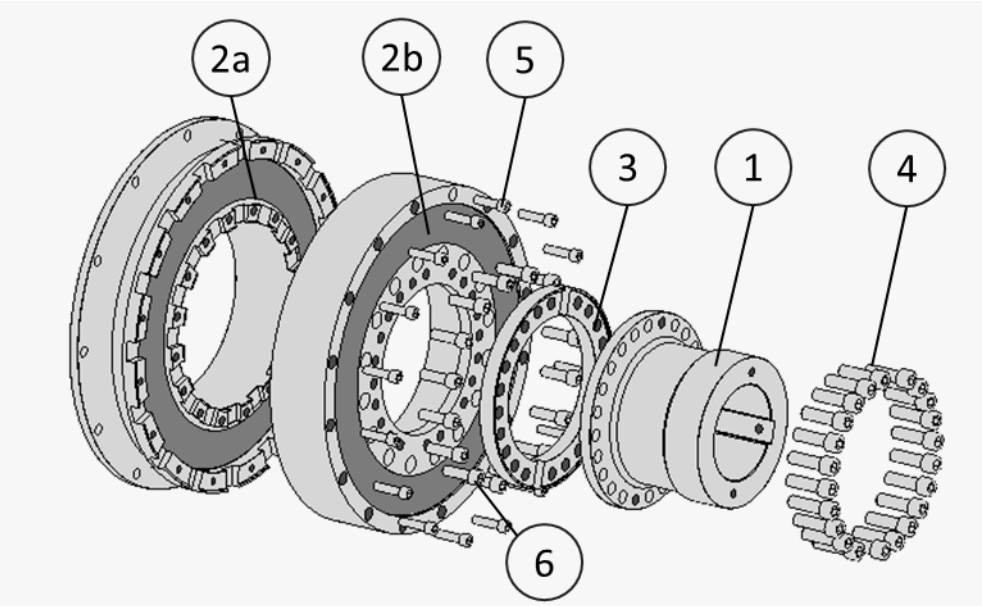


No.	Designation
1	Coupling hub
2	Flexible coupling element (with use of threaded bores)
3	Splited spacer ring
4	Bolts
5	Washers (for aluminium flanges or where necessary)

Overview of type TOK...D F2K

This type uses two coupling elements acting in parallel instead of one. It is therefore designed for the transmission of higher torques.

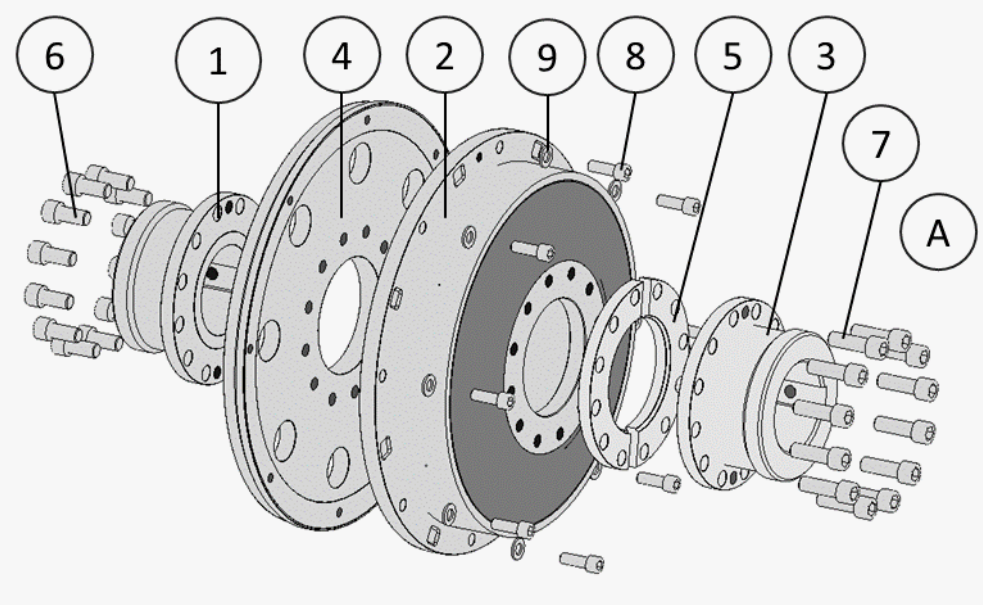
This type enables the flexible coupling elements to be replaced without moving the coupled machines. Follow the instructions given on pages 38 and 79.



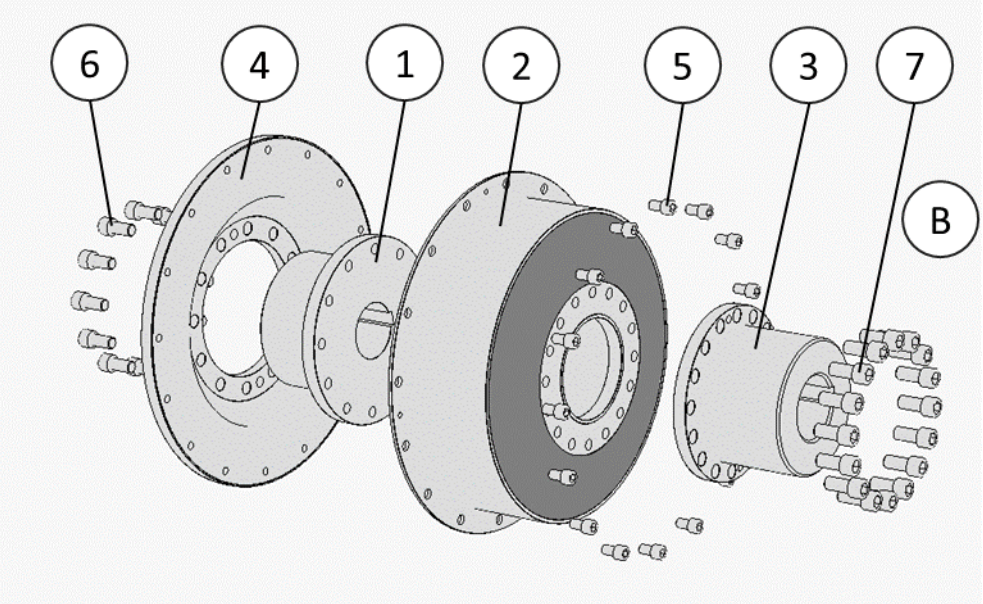
No.	Designation
1	Coupling hub
2a	Flexible coupling element (with use of threaded bores)
2b	Flexible coupling element (with use of through holes)
3	Splited spacer ring
4, 5, 6	Bolts

Overview of type TOK...TK

This type enables the flexible coupling element to be replaced without moving the coupled machines. Follow the instructions given on pages 38 and 79. Depending on the installation situation, it can be designed either with a splited spacer ring (figure A) or with a union flange (figure B).



No.	Designation
1	Coupling hub (drive side)
2	Flexible coupling element (with use of threaded bores)
3	Coupling hub (driven side)
4	Flange
5	Splited spacer ring
6, 7, 8	Bolts
9	Washers (for aluminium flanges or where necessary)

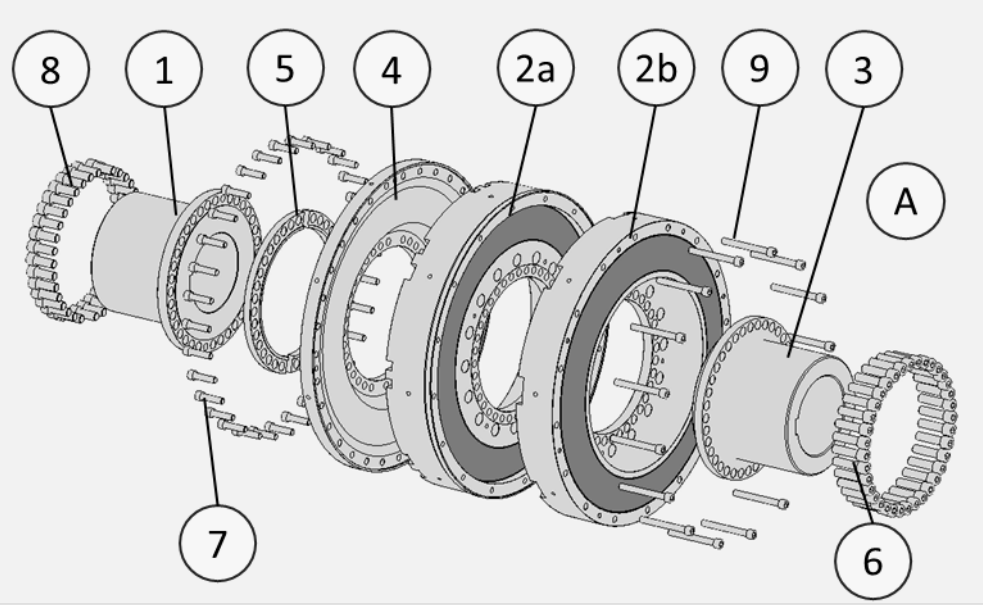


No.	Designation
1	Coupling hub (drive side)
2	Flexible coupling element (with use of threaded bores)
3	Coupling hub (driven side)
4	Union flange
5, 6, 7	Bolts

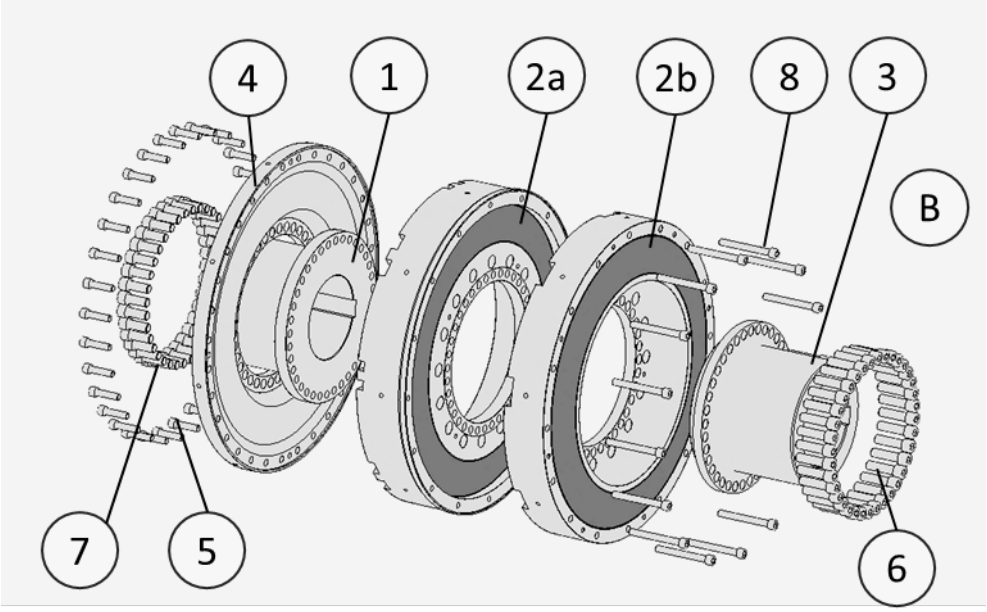
Overview of type TOK...D TK

This type uses two coupling elements acting in parallel instead of one. It is therefore designed for the transmission of higher torques.

This type enables the flexible coupling elements to be replaced without moving the coupled machines. Follow the instructions given on pages 38 and 79. Depending on the installation situation, it can be designed either with a splited spacer ring (figure A) or with a union flange (figure B).



No.	Designation
1	Coupling hub (drive side)
2a	Flexible coupling element (with use of threaded bores)
2b	Flexible coupling element (with use of through holes and reversed inner sleeve)
3	Coupling hub (driven side)
4	Flange
5	Splited spacer ring
6, 7, 8, 9	Bolts

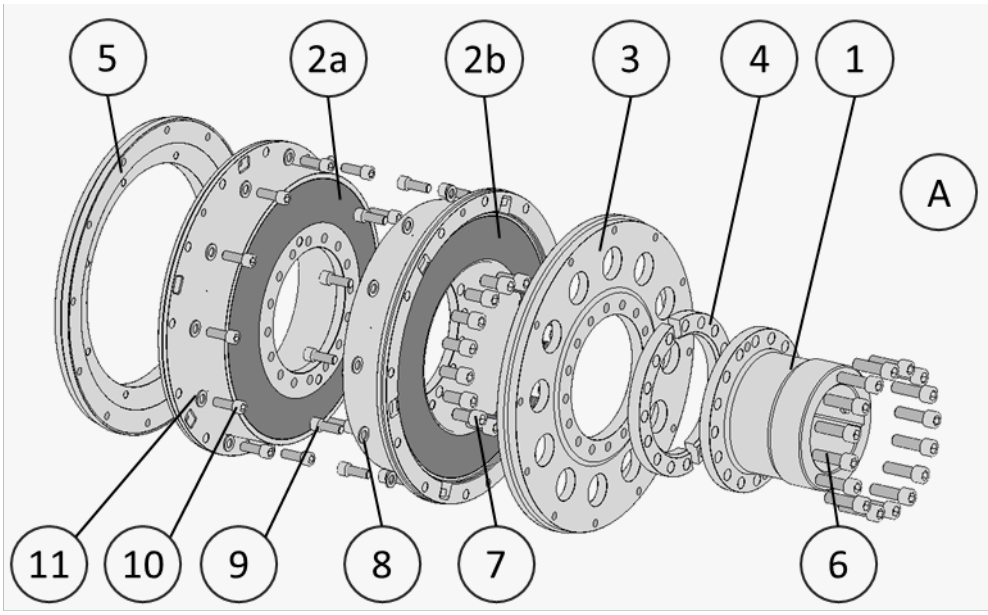


No.	Designation
1	Coupling hub (drive side)
2a	Flexible coupling element (with use of threaded bores)
2b	Flexible coupling element (with use of through holes and reversed inner sleeve)
3	Coupling hub (driven side)
4	Union flange
5, 6, 7, 8	Bolts

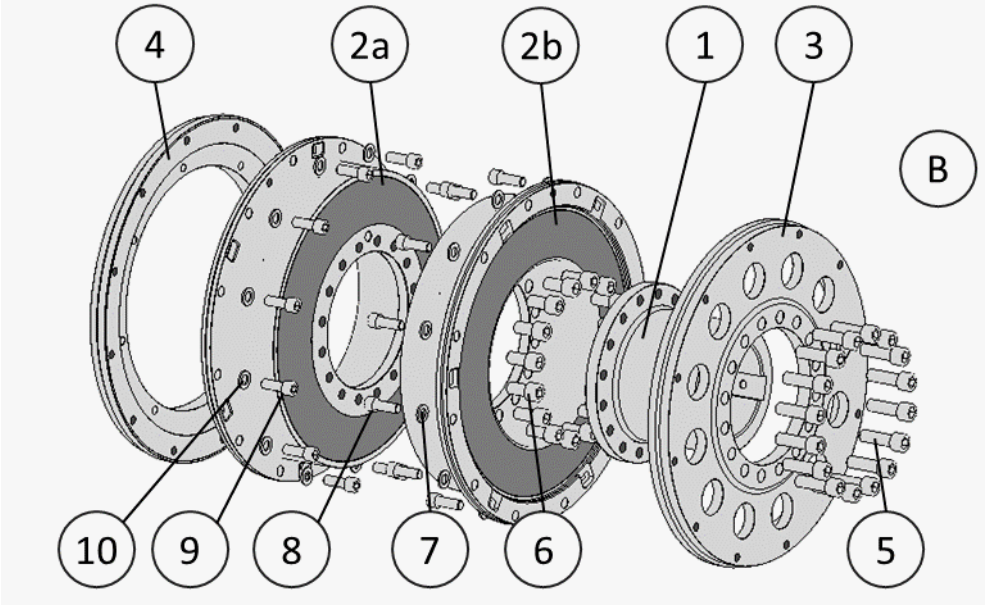
Overview of type TOK...R F2K

This type uses two coupling elements acting in series instead of one. This provides increased coupling flexibility.

This type enables the flexible coupling elements to be replaced without moving the coupled machines. Follow the instructions given on pages 38 and 79. Depending on the installation situation, it can be designed either with a splited spacer ring (figure A) or with a union flange (figure B).



No.	Designation
1	Coupling hub
2a	Flexible coupling element (with use of threaded bores)
2b	Flexible coupling element (with use of through holes)
3	Flange
4	Splited spacer ring
5	Adapter flange (optional)
6, 7, 9, 10	Bolts
8, 11	Washers (for aluminium flanges or where necessary)

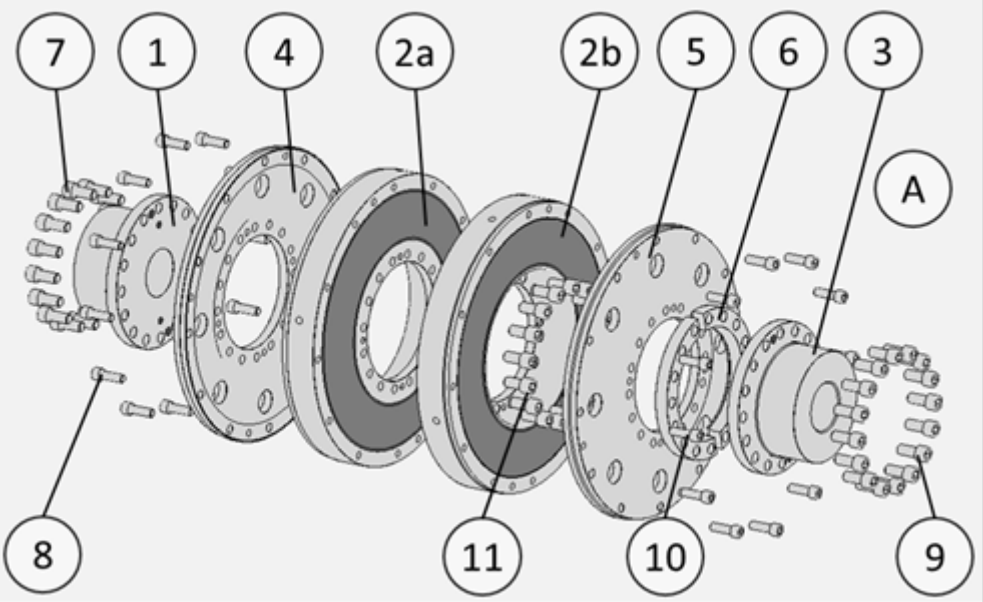


No.	Designation
1	Coupling hub
2a	Flexible coupling element (with use of threaded bores)
2b	Flexible coupling element (with use of through holes)
3	Union flange
4	Adapter flange (optional)
5, 6, 8, 9	Bolts
7, 10	Washers (for aluminium flanges or where necessary)

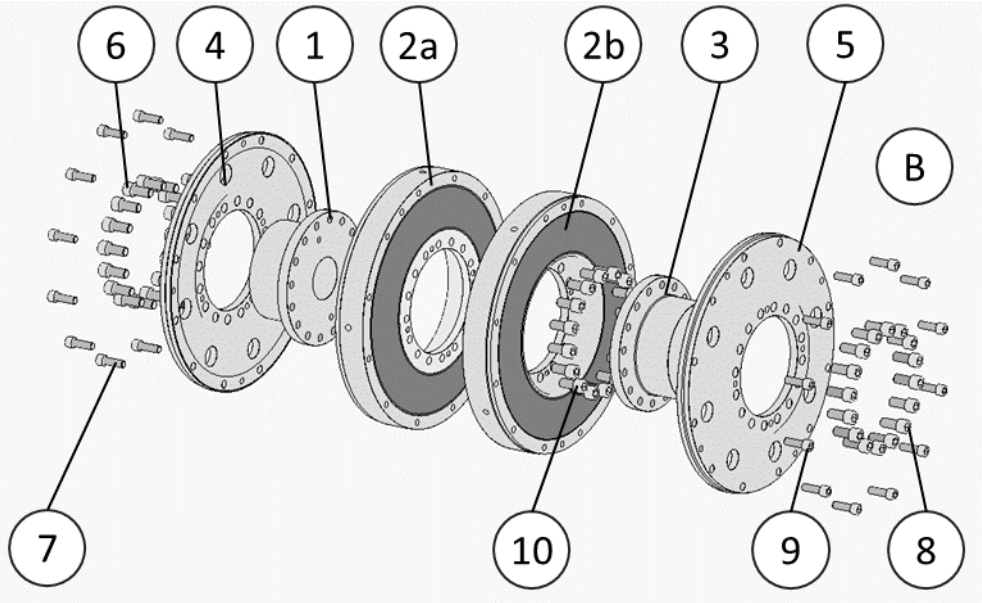
Overview of type TOK...R TK

ⓘ This type uses two coupling elements acting in series instead of one. This provides increased coupling flexibility.

ⓘ This type enables the flexible coupling elements to be replaced without moving the coupled machines. Follow the instructions given on pages 38 and 79. Depending on the installation situation, it can be designed either with a splited spacer ring (figure A) or with a union flange (figure B).



No.	Designation
1	Coupling hub (drive side)
2a	Flexible coupling element (with use of threaded bores)
2b	Flexible coupling element (with use of through holes)
3	Coupling hub (driven side)
4	Flange (drive side)
5	Flange (driven side)
6	Splited spacer ring
7, 8, 9, 10, 11	Bolts



No.	Designation
1	Coupling hub (drive side)
2a	Flexible coupling element (with use of threaded bores)
2b	Flexible coupling element (with use of through holes)
3	Coupling hub (driven side)
4	Union flange (drive side)
5	Union flange (driven side)
6, 7, 8, 9, 10	Bolts

Components

Flange

The flange is used for the connection between the outer ring of the coupling element and the coupling hub. For this purpose there are corresponding bores on the circumference of the coupling flange as well as on the inner diameter. There are also large ventilation holes in the flange. The flange is made of steel, aluminium or cast, depending on the coupling size.

Adapter flange

The adapter flange is made of steel, aluminium or cast and is used to connect the coupling element to the drive.

Coupling element

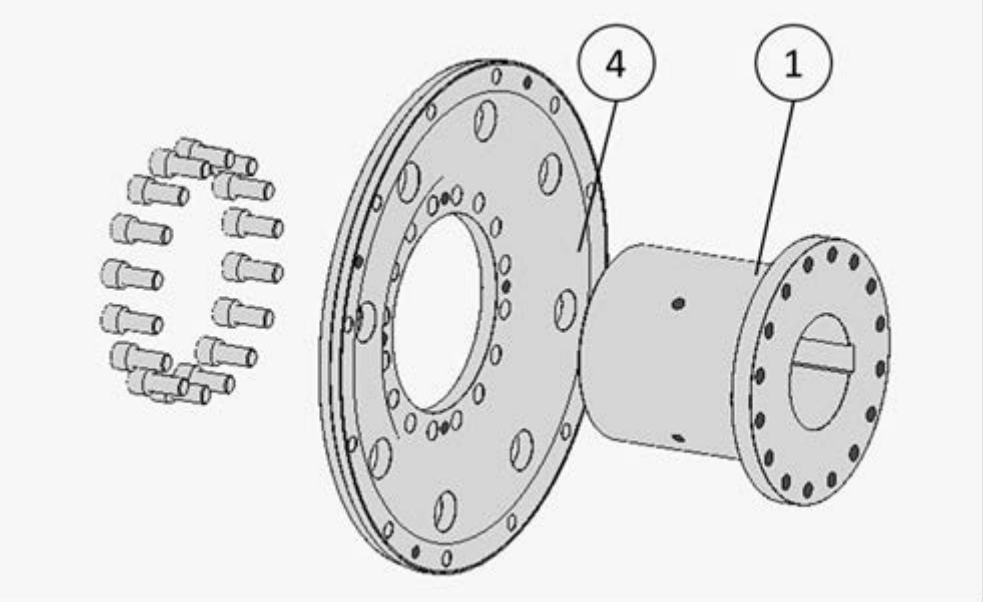
The highly flexible coupling element consists of an inner sleeve, elastomer body and outer ring; the connection is designed as an elastomer-metal connection. In many applications the outer ring is designed as an SAE connection; other connections can be implemented with an adapter flange. The outer ring and inner sleeve are made of steel, aluminium or cast iron. The flexible part consists of natural or synthetic rubber, depending on the application temperature.

Coupling hub

The coupling hub is usually made of steel. The coupling hub can be supplied undrilled, pre-drilled or with finished bores and keyways upon the customer's request. It is mounted on the shaft of the driven machine where it is fastened into position. For this purpose, there may be a set screw or threaded bores for an end plate. The coupling hub is screwed together with a coupling element or a flange. Complete couplings come with matching bolts which are included in the scope of supply.

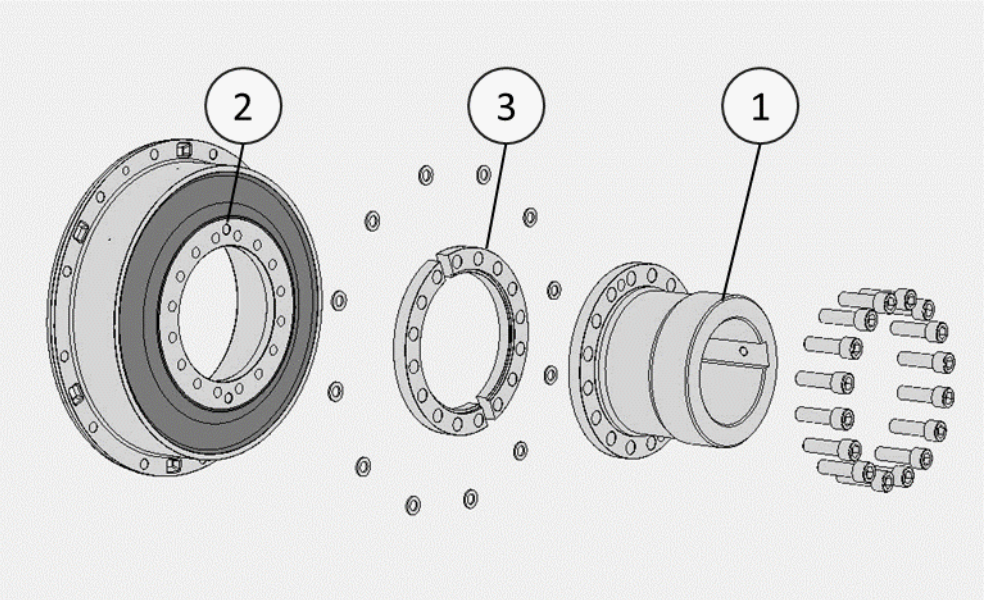
Union flange

The union flange (4) connects the coupling element with the coupling hub (1) and is used for radial disassembly of the coupling element without moving the two connected units. It is mounted together with the coupling hub and consists of steel, aluminium or cast iron, depending on the coupling size.



Splited spacer ring

The splited spacer ring (3) enables radial disassembly of the coupling without having to move the two connected components. It is installed using 2 assembly screws.



Operating conditions

Depending on the elastomer mixture of the flexible coupling element, observe the following operating conditions:

Elastomer mixture	Ambient temperature	Colour	Identifier
Natural/synthetic rubber, standard design	-40 °C to +80 °C	black	...N
Natural/synthetic rubber in temperature-resistant design	-25°°C to +100°°C	black	...T
Natural/synthetic rubber in temperature-resistant design	-25 °C to +120 °C	black	...Y

Contact the manufacturer in the case of deviating ambient temperatures.

For the operating conditions which are permissible for your application, refer to the technical product description supplied with the coupling.

Nameplate

The nameplate is an adhesive label and affixed to an appropriate place on the coupling. The nameplate contains the following information:

- Manufacturer's internet address
- Coupling designation
- Article no.
- Order
- Shipping date.

Alternatively, a nameplate according to the customer' specifications can be provided.

Unpacking and checking the scope of delivery

Unpacking

The coupling or its components are delivered in a transport container.

- Open the transport container.
- Remove any filler material.
- Remove the transport protection device.

On how to handle the coupling, follow the instructions on page 32.

Checking the supply

- Check the scope of supply for correctness and completeness against the delivery note.
- Inform the manufacturer in the event of discrepancies.
- Check the scope of supply for any damage.

Use only the rubber quality which is designated for the specific intended use. Check the label for this purpose.

Reporting and documenting transport damage

- If you discover any damage, record it on the shipping documents.
- Have the damage confirmed by the supplier’s signature.
- Photograph the damage.
- Immediately report the damage to the manufacturer.

Disposing of packaging material

- If the packaging is returnable, return it to the cycle.
- If not, dispose of the packaging and any filler material as required by the local regulations.

Transporting the coupling

DANGER

Risk of explosion when operating the coupling in potentially explosive atmospheres.

Risk of explosion with fatal injuries.

- Exclusively use couplings bearing the corresponding ATEX marking in potentially explosive atmospheres.
- In this respect, read and follow the additional notes in the supplementary manual for ATEX operation.

DANGER

Danger to life due to falling or tipping loads.

- Pay attention to the centre of gravity of the load.
- Use a crane of adequate load-carrying capacity to lift the load.
- Use lifting gear of adequate load-carrying capacity to lift the load.
- Make sure that no persons are under suspended loads.

You are allowed to handle a coupling or coupling components weighing up to 10 kg by yourself.

You must call in a second person to handle a coupling or coupling components weighing 10 kg to 25 kg. Alternatively, you may use suitable lifting equipment.

You must handle a coupling or coupling components weighing over 25 kg using suitable lifting equipment and with the support of a second person.

The precise weight as of which support is required depends on your physical capabilities and the local regulations and conditions.

In order to transport the coupling or a coupling component weighing more than 25 kg, proceed as follows:

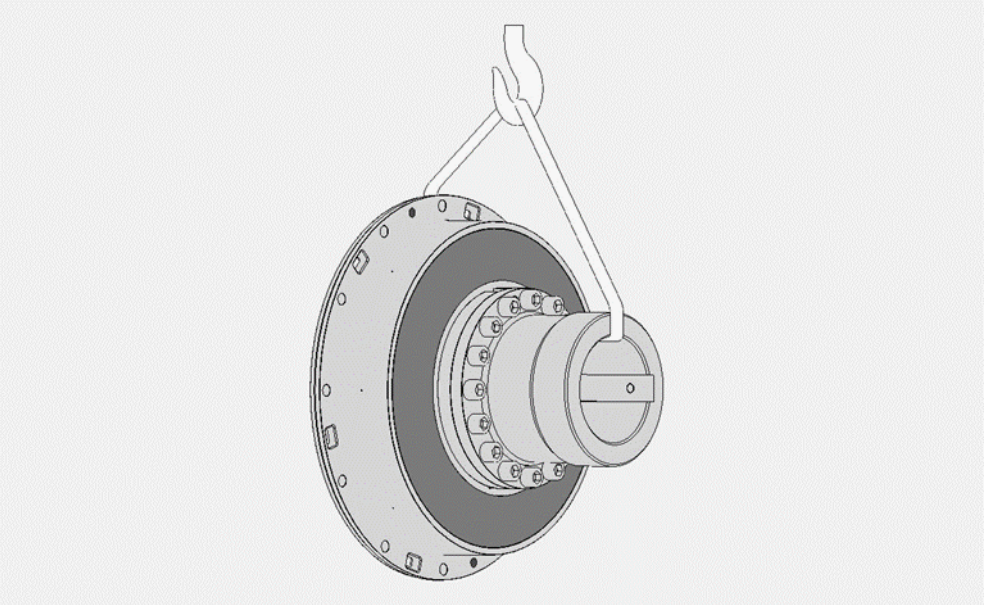
- Attach the coupling or a coupling component with suitable lifting gear; see from page 33.
- Transport the coupling or coupling component to the designated location.

In order to transport the coupling or a coupling component weighing more than 25 kg during assembly or maintenance, proceed as follows:

- Attach the coupling or a coupling component with suitable lifting gear; see from page 33.
- Call in a second person for assistance.
- With the assistance of the second person, make sure that the components to be handled cannot tip over during lifting and positioning.

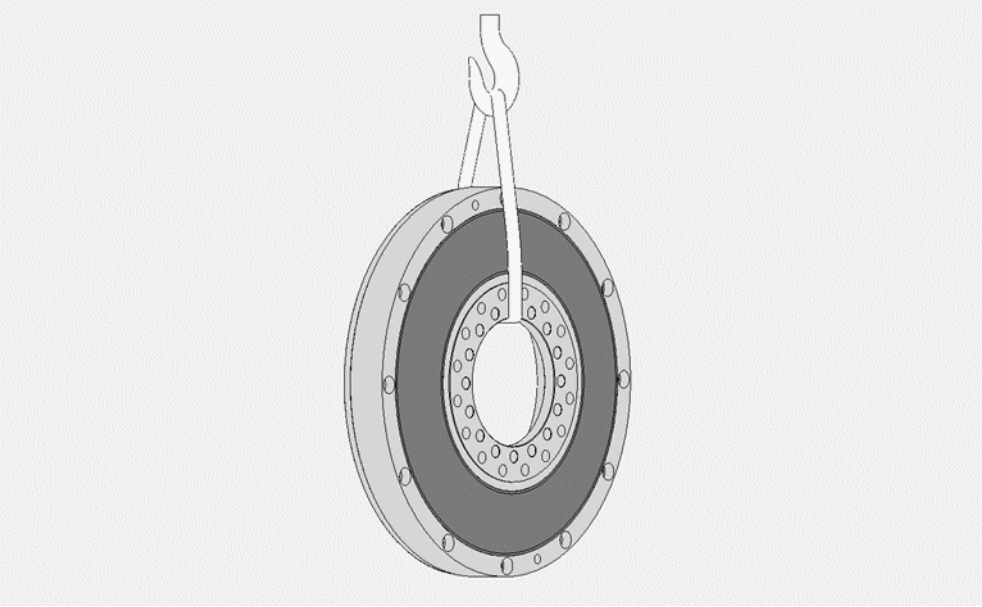
The following figures show examples of how to transport the coupling and its components.

Transporting the coupling hub with coupling element

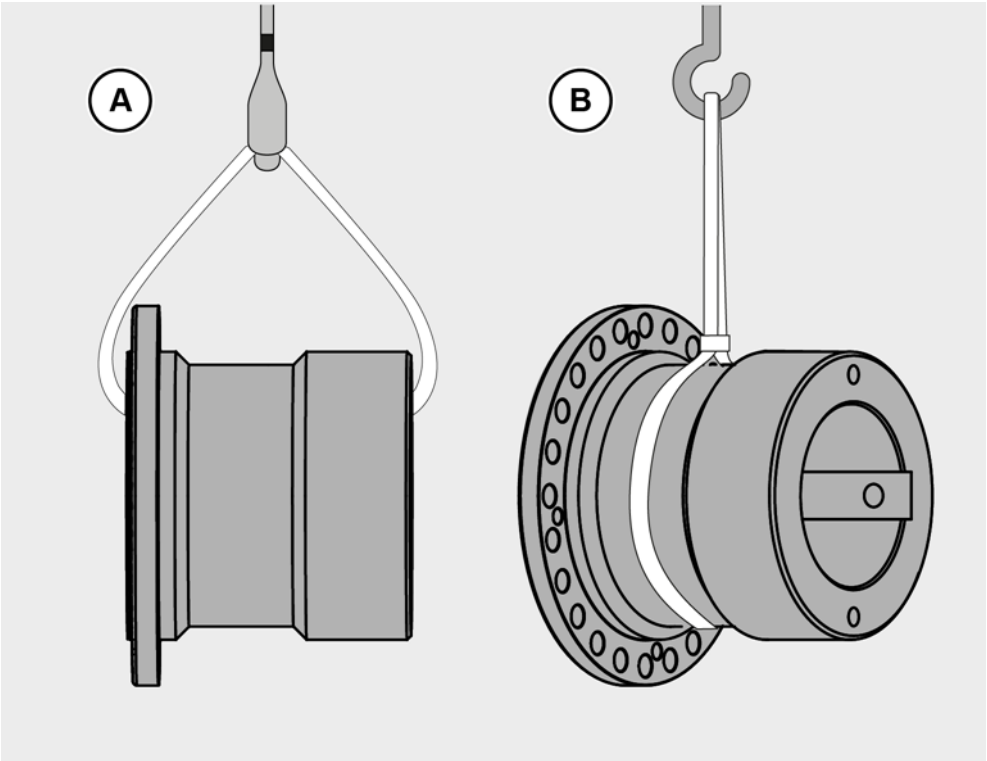


Transporting the flange

Transporting the coupling element



Transportation of coupling hub



Storing the coupling

- Store coupling parts for a maximum of three years.
- Treat metal components with a suitable corrosion inhibitor.

Make sure that the following conditions for flexible coupling elements are adhered to during storage:

- Exclusively store the coupling or its components in a dry and roofed location.
- Temperature range from +15 °C to +25 °C
- Maximum relative humidity 65%
- Keep a distance of at least one metre from heat sources
- Protection against light with high UV content, e.g. the sun, fluorescent tubes
- Protection against draughts
- Protection against ozone caused, for example, by electric motors or mercury vapour lamps
- Avoid component stresses caused, for example, by flexible coupling elements stacked on top of one another
- Contact between the flexible coupling elements and the following substances is prohibited:
  - Copper
  - Manganese
  - Rubber elements with different compositions
  - Solvents
  - Solvent vapours
  - Fuels and lubricants
  - Acids, etc.
- Use intermediate layers when stacking the flexible coupling elements.
- Make sure that the flexible coupling elements are not exposed to any stress. This prevents components from being deformed.
- Further information regarding rubber products can be found in DIN 7716.

Mounting the coupling

DANGER

Risk of explosion when operating the coupling in potentially explosive atmospheres.

Risk of explosion with fatal injuries.

- Exclusively use couplings bearing the corresponding ATEX marking in potentially explosive atmospheres.
- In this respect, read and follow the additional notes in the supplementary manual for ATEX operation.

Lifting loads during assembly

DANGER

Danger to life due to falling or tipping loads.

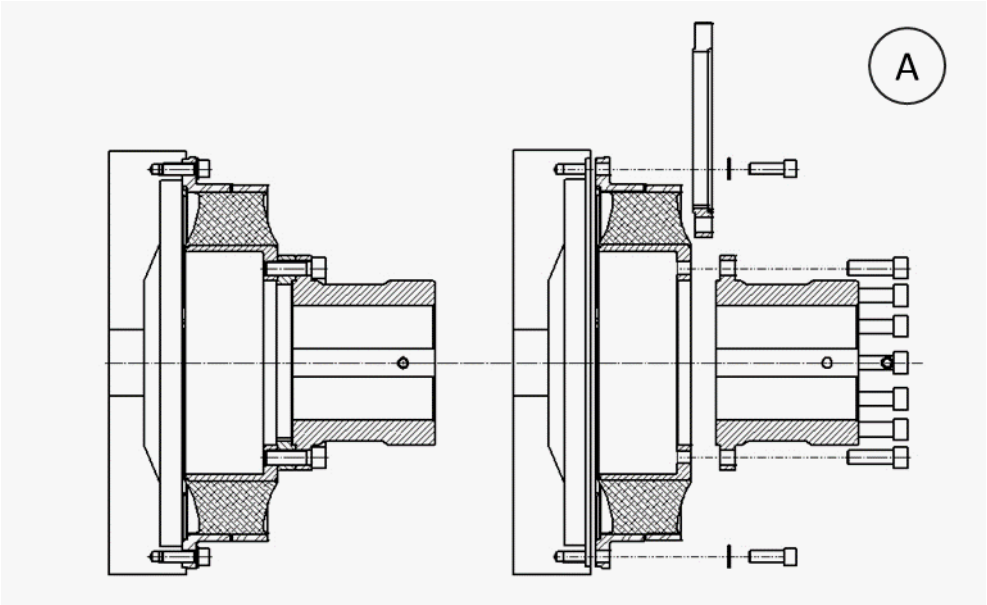
- Pay attention to the centre of gravity of the load.
- Use a crane of adequate load-carrying capacity to lift the load.
- Use lifting gear of adequate load-carrying capacity to lift the load.
- Make sure that no persons are under suspended loads.

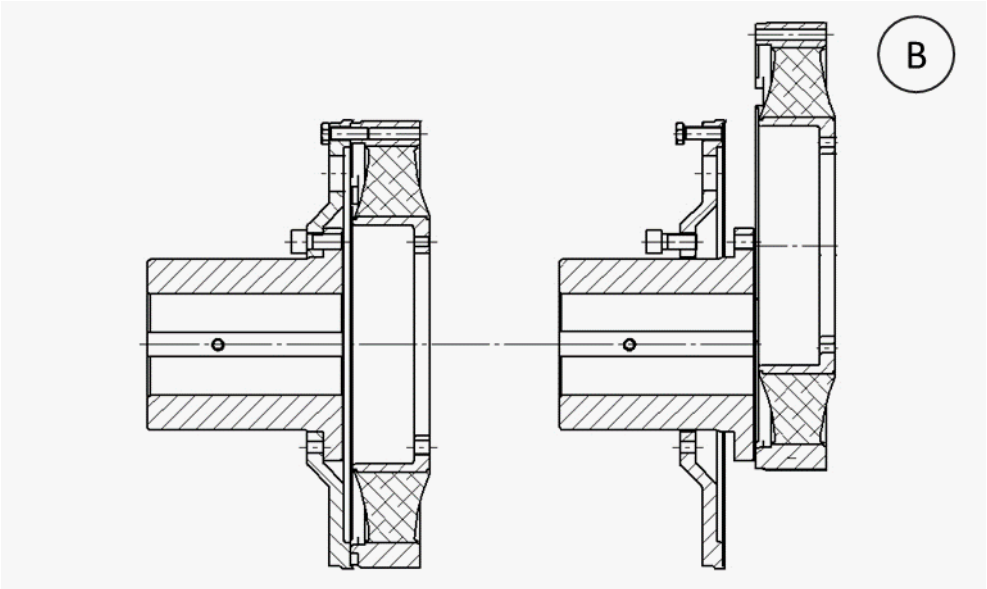
On how to handle the coupling, follow the instructions on page 32.

Basic instructions for the types TOK…F2K, TOK…D F2K, TOK…TK, TOK…D TK, TOK…R F2K and TOK…R TK

These types enable the flexible coupling element to be replaced without moving the coupled machines. The following conditions must be ensured for this purpose:

- Make sure that the shaft of the driven machine does not protrude from the coupling hub.
- After loosening the bolts, there must be sufficient space to remove the splited spacer ring radially and then disassemble the coupling element (see figure A).
- After loosening the bolts, there must be sufficient space to move the union flange and remove the coupling element radially (see figure B).

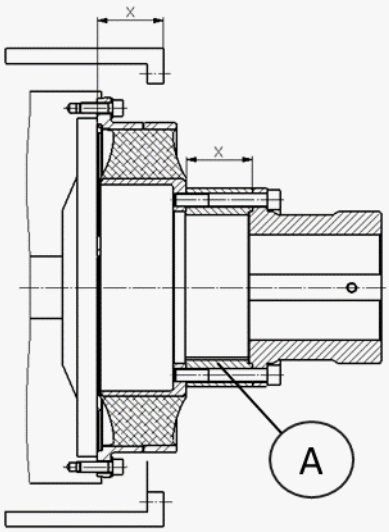


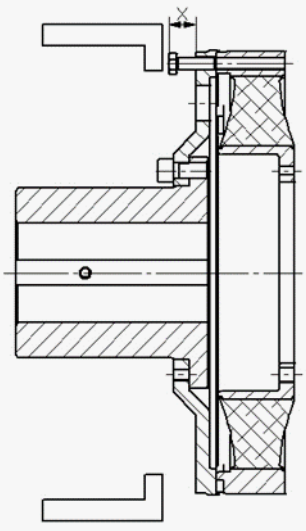


The following conditions can reduce the space to such an extent that radial assembly and removal are not possible:

- The centring in the engine flywheel is mounted too deeply.
- An interfering edge prevents moving of the union flange.
- The engine housing is protruding.

In such a case, use a removable spacer ring (A) with a corresponding width (x). In this case, you must also use correspondingly longer bolts to fasten the coupling hub and coupling element.





Preparing for assembly

- Obtain the work clearance permit from the responsible person prior to all work on and with the coupling.
- Switch the drive unit off.
- Secure the drive unit to prevent reactivation.
- Post up a caution sign indicating that work is in progress.
- Wear the personal protective equipment specified by the owner.

CAUTION!

Damage to the flexible element due to contact with solvent.

Contact with solvent causes changes in the properties of the flexible element.

- ▶ Make sure that the solvent does not come into contact with the flexible element.
- ▶ Protect the flexible element with a cover which is resistant to solvents.

- Make sure that the solvent does not come into contact with the flexible element.
- Remove any preservative and grease from the connecting surfaces of the coupling with a suitable solvent.
- Degrease the shaft of the driven machine with a solvent.
- Degrease contact surfaces on the flywheel of the drive unit with solvent.

WARNING

Danger to life due to rupturing of a damaged coupling.

- ▶ Exclusively operate the coupling in flawless condition.
- ▶ Make sure that the coupling is equipped with a protective guard which is capable of withstanding rupturing of the coupling.

- Make sure that the components to be assembled are in flawless condition.

Basic notes regarding the condition of delivery

The components can be delivered in any of the following conditions:

- Not assembled
- Pre-assembled
- Fully assembled

The bolts are marked in the pre-assembled and fully assembled condition. Refer to the following table for the corresponding condition:

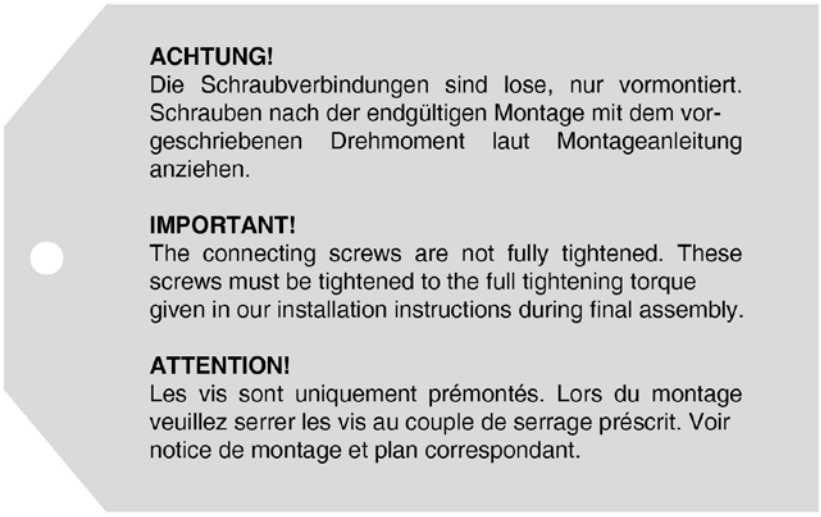
Marking	Condition of the bolts
Red tag/adhesive label	Pre-assembled but not tightened to the required torque
Yellow	Fully assembled and tightened to the required torque
Green	Fully assembled and tightened to the required torque with screw locking compound, for example, adhesive used

If there is no marking, you must assume that the condition is pre-assembled.

▶ Check all bolted connections and tighten them to the specified torque.

▶ If in doubt, contact REICH.

In the pre-assembled condition, the components are bolted together but not to the required torque. The pre-assembled condition can be recognised by the red tag or adhesive label attached in the factory.



All bolts are to be tightened to the specified torque.

CAUTION!

Property damage due to improperly fastened bolts.

When using a screw locking compound, for example, an adhesive, the required torque may need to be adjusted.

- ▶ Observe the specifications of the screw locking compound manufacturer for any changed tightening torques.

- ▶ Tighten the bolts crosswise with the required torque; see page 70.
- ▶ Mark the bolts which have been tightened to the required torque in colour.

In the fully assembled condition, the components are bolted to the required torque. The fully assembled condition can be recognised by the markings made on each bolt in the factory.

Basic notes regarding the coupling hubs

The coupling hub can be supplied as follows upon customer request:

- Undrilled
- Pre-drilled
- With finished bores and keyways
- With finished bores, keyways and set screw

When the coupling hub has been ordered in an undrilled or a pre-drilled condition, the corresponding finished bore with keyway must still be produced, or the desired finishing operations must still be made, prior to assembly.

Responsibility for performing the rework is upon the customer. REICH will not accept any warranty claims arising from any rework that is performed improperly.

WARNING

Danger to life due to rupturing of a damaged coupling.

- ▶ Exclusively operate the coupling in flawless condition.
- ▶ Make sure that the coupling is equipped with a protective guard which is capable of withstanding rupturing of the coupling.

ⓘ The maximum permissible bore diameters (see technical product description) are designed for adapter connections without tightening according to DIN 6885-1:1968-08. They must not be exceeded under any circumstances. Check the finished bores using suitable measuring equipment.

- ▶ Machine the keyways as required in DIN 6885-1:1968-08.
- ▶ It is vital to contact REICH in the case of a different design.

Unless otherwise specified, REICH supplies ISO tolerance P9 for the width of hub grooves in the case of holes ≦ 75 mm and ISO tolerance JS9 in the case of holes >75 mm.

ⓘ The following standard tolerance ranges apply to the keyways according to DIN6885/1, unless otherwise specified in the respective design drawing.

The following values are recommended for set screws in the threaded bore of the keyways:

Bore diameter from – to [mm]	Hub groove width		Bolt size	Torque [Nm]
	[mm]	Tolerance range		For set screws of strength class 45H
17-22	6	P9	M5	2
22-30	8	P9	M6	6
30-38	10	P9	M6	6
38-44	12	P9	M8	10
44-50	14	P9	M10	17
50-58	16	P9	M10	17
58-65	18	P9	M10	17
65-75	20	P9	M12	40
75-85	22	JS9	M12	40
85-95	25	JS9	M12	40
95-110	28	JS9	M16	80
110-130	32	JS9	M16	80
130-150	36	JS9	M20	130
150-170	40	JS9	M20	130
170-200	45	JS9	M24	230
200-230	50	JS9	M24	230
230-260	56	JS9	M24	230
260-290	63	JS9	M30	470
290-330	70	JS9	M20	470

Mounting the coupling hub on the shaft

On how to handle the coupling, follow the instructions on page 32.

To attach the coupling hub to the shaft of the driven machine, proceed as follows:

- Ensure that the connecting surfaces are free of preservative and grease.
- Make sure that the parallel key is seated in the keyway of the shaft.
- Raise the coupling hub with the coupling element in a suitable manner.
- Make sure that the keyway is in alignment with the parallel key on the shaft.

The hub can usually be slid on until it reaches the stop. Take your specific installation situation into account for this.

For the coupling type with coupling flange, the flange must be pushed onto the coupling hub before the hub is fitted onto the shaft.

- Slide the coupling hub with the coupling element onto the shaft.
- Lock the coupling hub to prevent axial movement.
- If a set screw is available, secure the coupling hub with the coupling element using the set screw.
- Screw the set screw into the available threaded bore.
- Make sure that the set screw is approximately flush with the hub surface.
- Tighten the set screw after sliding the coupling hub onto the shaft.
- Alternatively, axial locking can be achieved with an end washer. In this case make sure that the coupling hub with the coupling element rests against the shaft shoulder.

Other forms of axial locking are also possible. Contact REICH in this respect.

Assembly notes for a hub bore with press fit or transition fit

If the bore in the coupling hub has a press fit or transition fit, the coupling hub must be heated before mounting on the shaft. To prevent damage to the flexible coupling element, the coupling hub must be removed from the flexible coupling element before heating.

DANGER

Severe physical injuries due to rupturing of the operating hub as a result of excessive heating.

- ▶ Make sure that the coupling hub is not heated to more than 350 °C.

WARNING

Risk of burns due to contact with hot surfaces or fluids.

- ▶ Make sure that you do not come into contact with hot surfaces or fluids.
- ▶ Use suitable fixtures for handling hot components.
- ▶ Wear the required personal protective equipment.

CAUTION!

Damage to the rubber element due to high temperatures.

- ▶ Before heating the coupling hub, remove the flexible coupling element from the coupling hub.
- ▶ Only join the coupling hub to the flexible coupling element once the coupling hub has cooled to hand temperature on the shaft.

Proceed as follows:

- ▶ Wear appropriate personal protective equipment.
- ▶ Remove the flexible coupling element from the coupling hub.
- ▶ Evenly heat up the coupling hub up to approximately 150 to 200 °C, e.g. in an oil bath or on a heating plate.

ⓘ The recommended temperature can be calculated depending on the tolerance pairing. Contact REICH in this respect.

- ▶ Place the heated coupling hub onto the shaft of the driven machine.
- ▶ Make sure that the coupling hub cools uniformly. Quenching is prohibited.
- ▶ Wait until the coupling hub has cooled to hand temperature.

  When the coupling hub has cooled to hand temperature on the shaft, reconnect the flexible coupling element to the coupling hub; see the *Mounting the coupling* section.

ⓘ If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

- Make sure that the markings from joint balancing are in alignment.
- Mount the flexible coupling element on the coupling hub.
- Tighten the bolts to the required torque.

Aligning the coupling

CAUTION!

Increased rate of wear to the flexible coupling element due to inadequate alignment of the drive unit and the driven machine.

- When aligning the drive unit and the driven machine, adhere to the values specified for the angular-, radial and axial displacement.

WARNING

DANGER TO LIFE DUE TO RUPTURING OF A DAMAGED COUPLING.

- Exclusively operate the coupling in flawless condition.
- Make sure that the coupling is equipped with a protective guard which is capable of withstanding rupturing of the coupling.

Free-standing, non-flanged units require careful alignment of the coupling in order to ensure proper functioning of the coupling and to avoid premature wear to the element.

The units must be aligned from the driven side coupling half to one of the machined surfaces of the engine flywheel or engine housing. With shaft couplings, the angular and radial displacements between the two coupling halves are determined by applying the usual dial gauge method. If necessary, use a laser measuring system. The alignment instructions for the other system components must also be taken into account.

Precise alignment has a positive effect on the service life of the coupling and other system components. We therefore recommend using only up to 20% of the permissible radial and angular displacements for the alignment of the installation.

During alignment, it is essential to take into account the usual setting behaviour of the unit bearings as well as temperature-related changes in length that influence the mounting length.

The maximum permissible displacements must under no circumstances be exceeded during operation.

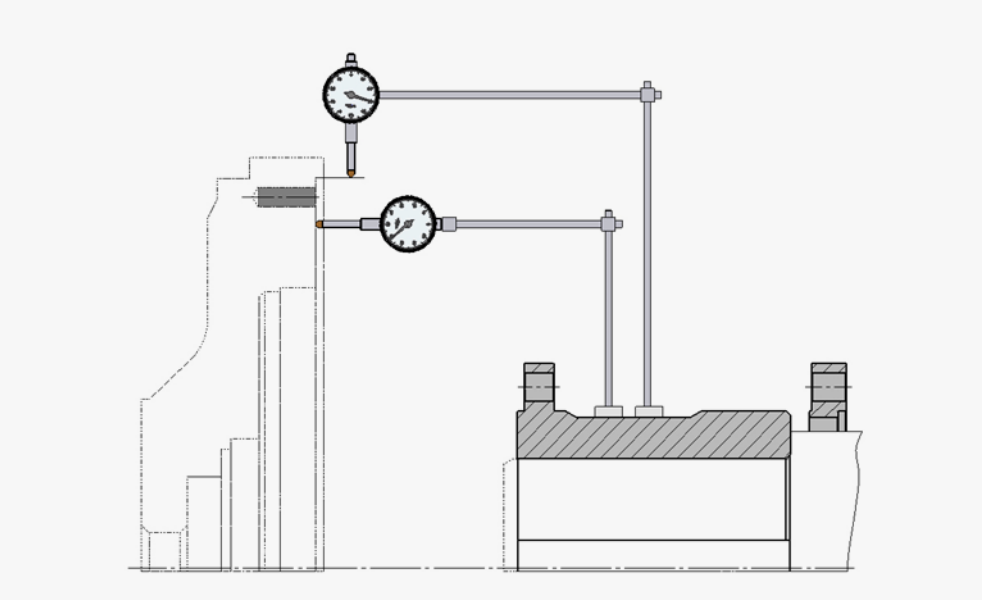
During operation, the sum of the axial, radial and angular displacements must remain <100%.

Determine the alignment, for example by applying the usual dial gauge method to machined surfaces.

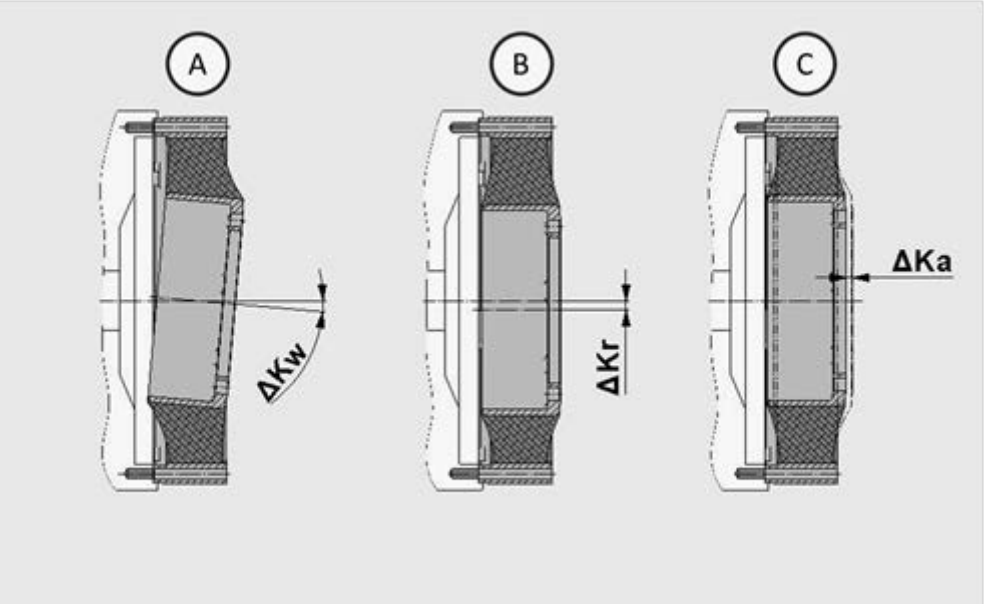
Proceed as follows to align the coupling:

Types TOK…F2 and TOK…D F2 are aligned with pre-assembled coupling element; (see the *Mounting the coupling element* section for details).

- Check the alignment of the coupling from the output-side coupling half to a machined surface of the flywheel or the engine housing; see the figure below.



A larger shaft displacement, for example, when switching a drive unit on and off, is permissible for a short time. The maximum permissible angular, radial and axial displacements must not occur all at the same time.



The permissible coupling misalignment limits are dependent on multiple factors such as coupling size, element hardness, operating speed and torque stress. The guideline values listed in the following table apply to a medium element hardness and a typical speed up to 1500 min^{-1}.

Coupling size	Maximum permissible misalignment[1] continuous/short-term		
	A Angular ΔKw [°]	B Radial ΔKr [mm]	C Axial ΔKa [mm]
TOK 270 F2.10	0.6/2	2/5	±2,5/7
TOK 305 F2.11,5	0.6/2	2/5	±2,5/7
TOK 410 F2.14	0.6/2	3 /8	±5 /14
TOK 510 F2.18	0.6/2	3/8	±5/14
TOK 605 F2.21	0.6/2	3/8	±5/14
TOK 605 F2D	0.2/0.5	3/8	±5/14
TOK 700 F2.21	0.6/2	4/12	± 6/18
TOK 835 F2.920	0.6/2	6/18	± 7/20
TOK 835 F2D	0.2/0.5	6/18	± 7/20

1) Data for speed 1500min^{-1}, values for other speeds on request

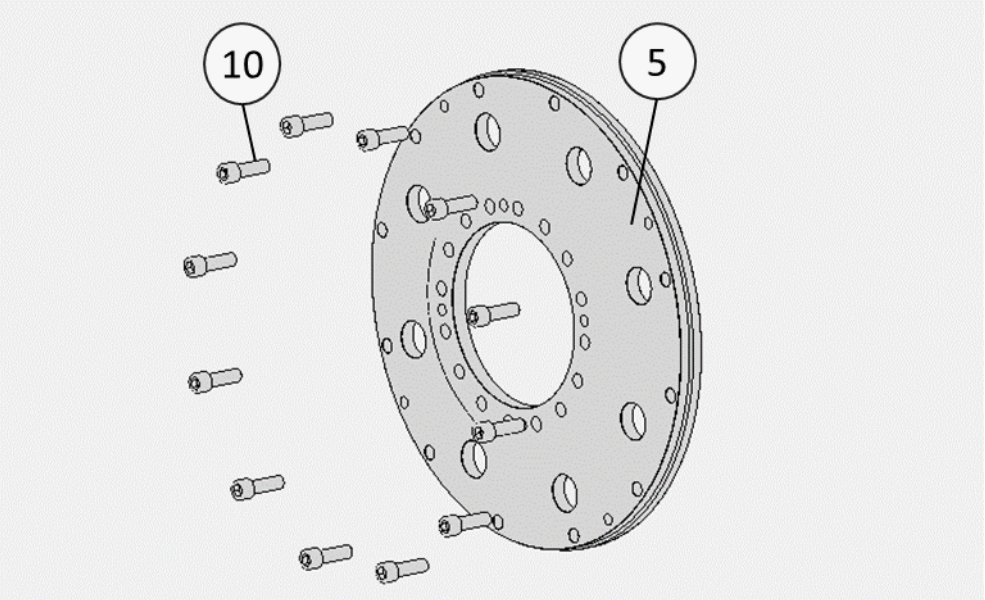
Recommendation: for installation, align each direction of displacement to a maximum 20% of each ΔK; in operation the sum of all ΔK parts must remain <100%.

Mounting the flange

On how to handle the coupling, follow the instructions on page 32.

To mount the flange (5) on the coupling element, proceed as follows:

- Ensure that the connecting surfaces are free of preservative and grease.
- Lift the flange in the appropriate manner.
- Align the threaded bores and through holes of the flange and the coupling element.
- Make sure that the coupling element is seated in the centring of the flange and has full-surface contact.



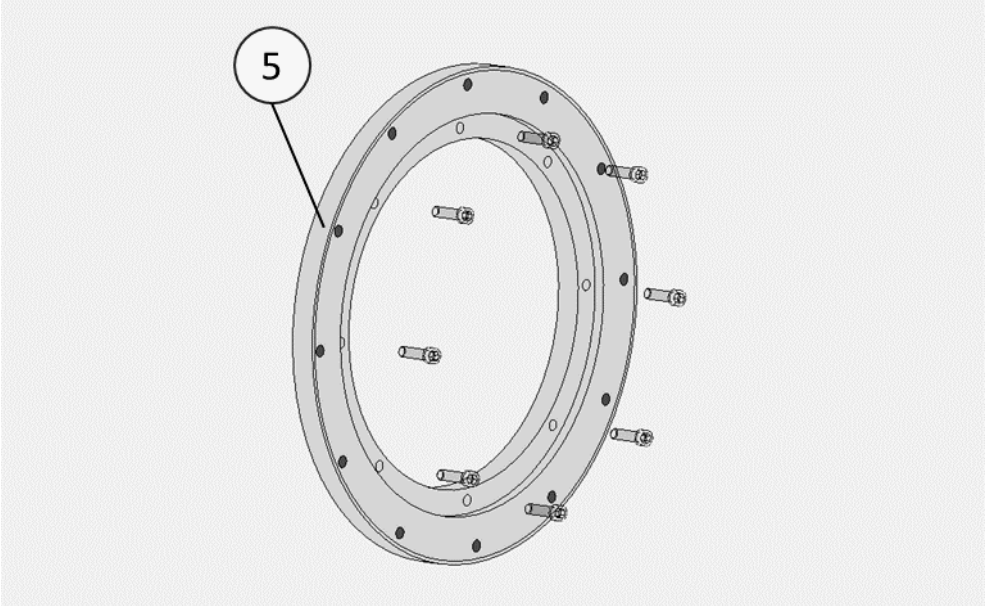
- Insert the bolts (10) and tighten them so that they are hand-tight.
- Use the provided washers in the case of aluminium flanges or when necessary.
- Tighten the bolts crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.

Mounting the adapter flange

On how to handle the coupling, follow the instructions on page 32.

To mount the adapter flange (5) on the flywheel of the drive unit, proceed as follows:

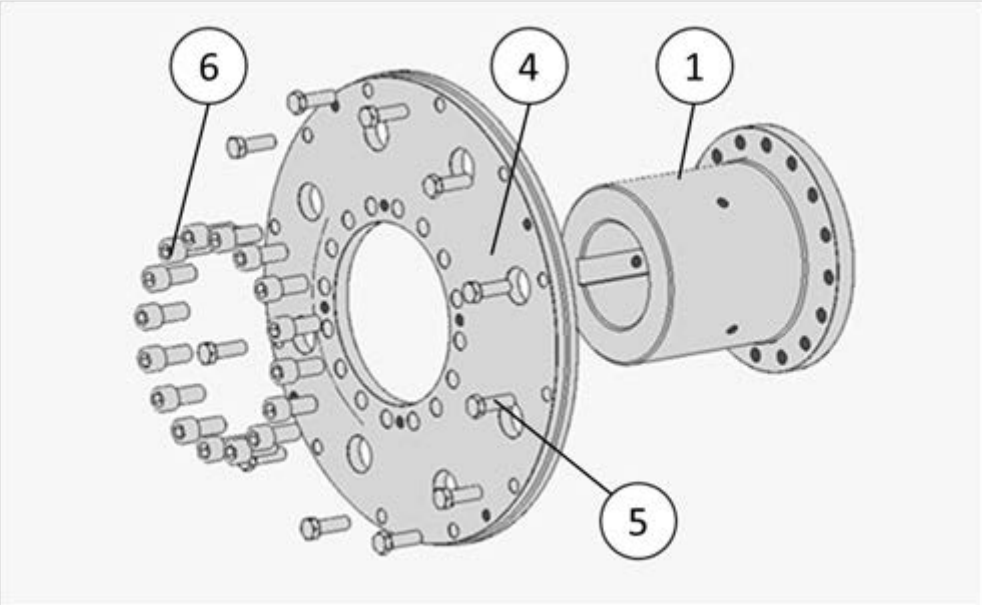
- Ensure that the connecting surfaces are free of preservative and grease.
- Lift the adapter flange in the appropriate manner.
- Align the bores of the adapter flange with the threaded bores in the flywheel.
- Make sure that the adapter flange is seated in the centring of the flywheel and has full-surface contact.



- Insert the bolts for the flywheel (not included in the scope of supply) and tighten them so that they are hand-tight.
- Use the provided washers in the case of aluminium flanges or when necessary.
- Tighten the bolts crosswise with the required torque; see page 71.
- Mark the bolts which have been tightened to the required torque in colour.

Mounting the union flange

On how to handle the coupling, follow the instructions on page 32.



To mount the union flange (4) proceed as follows:

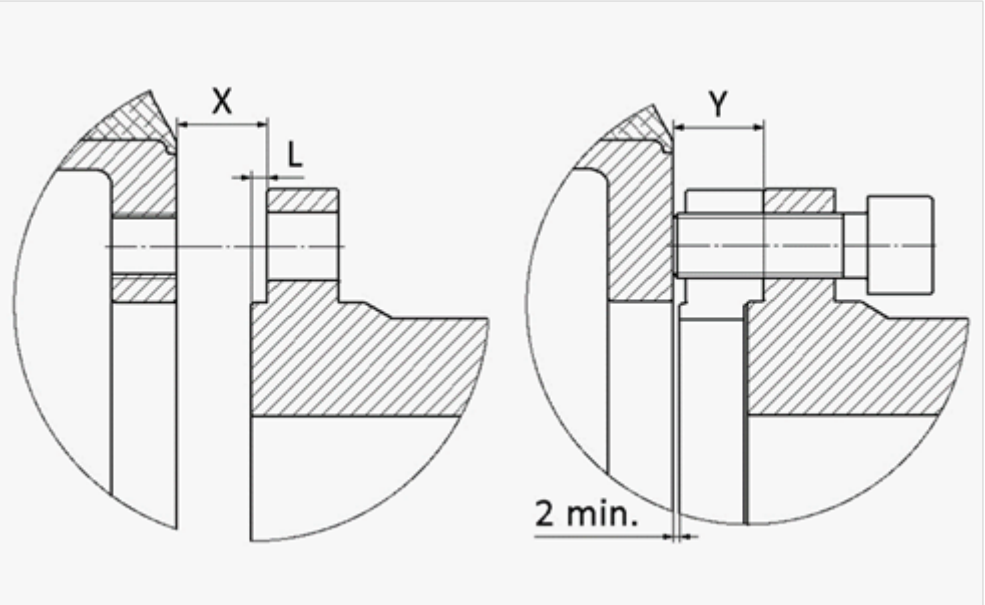
- Ensure that the connecting surfaces are free of preservative and grease.
- Make sure that the threaded bores and through holes of the coupling hub (1), the union flange (4) and the coupling element are aligned. If necessary the primary or secondary side aggregate must be turned for this purpose.
- Connect the union flange (4) with the drive-side coupling hub (1) by means of the bolts (6).
- Connect the coupling flange (4) with the coupling element by means of the bolts (5).

For the types TOK...D TK and TOK...R TK the coupling elements (2a) and (2b) are supplied as a screwed together unit as standard and must be mounted accordingly.

- Make sure that the coupling element and the hub are seated in the centring of the coupling flange (4) and have full-surface contact.
- Tighten the bolts (pos.5+6) crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.

Mounting a splited spacer ring

On how to handle the coupling, follow the instructions on page 32.



To mount the splited spacer ring, proceed as follows:

- When mounting the spacer ring, the adjacent components are already installed. Distance X results from the width of the spacer ring and, if necessary, a differential dimension for the temperature expansion of the system in operating condition; see *Aligning the coupling* section, page 47.
- Turn the primary and secondary sides so that the through holes of the hub are aligned with the threaded holes of the component to be connected.

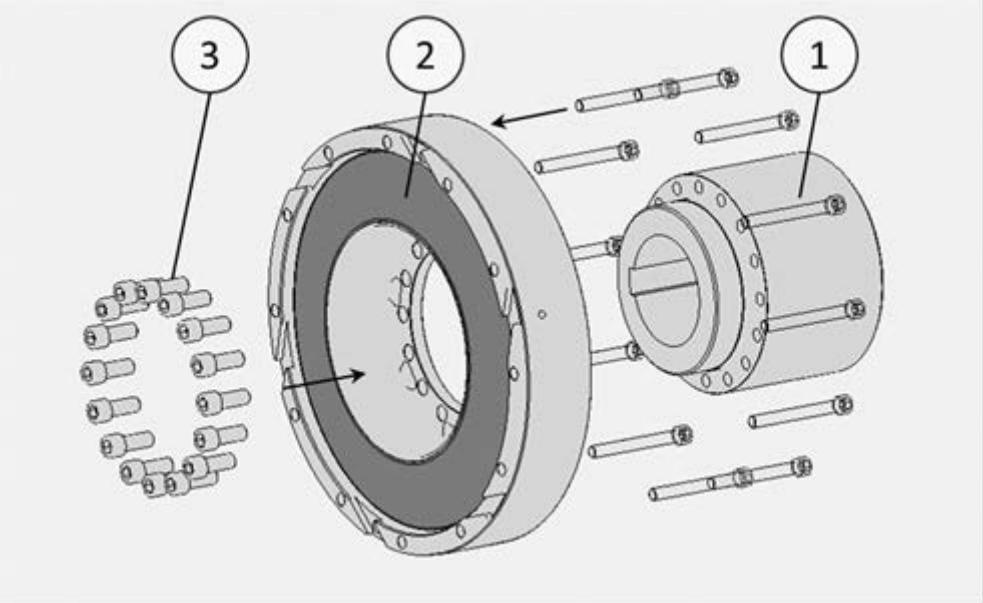
If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

- Make sure that the markings from joint balancing are in alignment.
- Screw the two assembly screws (not supplied) into the threads of the hub and tighten the screws alternately until a dimension Y is obtained.
- Insert the two halves of the ring and secure them by inserting and hand-tightening the fixing screws or by inserting and tightening the fixing screws with torque (1 x per half of the ring).
- Remove the assembly screws. Ensure that the spacer ring is correctly seated in the centring on both sides.

Mounting the coupling element

Type TOK...F2

On how to handle the coupling, follow the instructions on page 32.



- Ensure that the connecting surfaces are free of preservative and grease.
- Mount the coupling hub on the shaft; see from page 45.

If an adapter flange is inserted between the flywheel and outer ring of the coupling, refer to the instructions on assembly in the *Mounting the adapter flange* section, page 50.

If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

- Mount the coupling element (2) on the coupling hub (1).

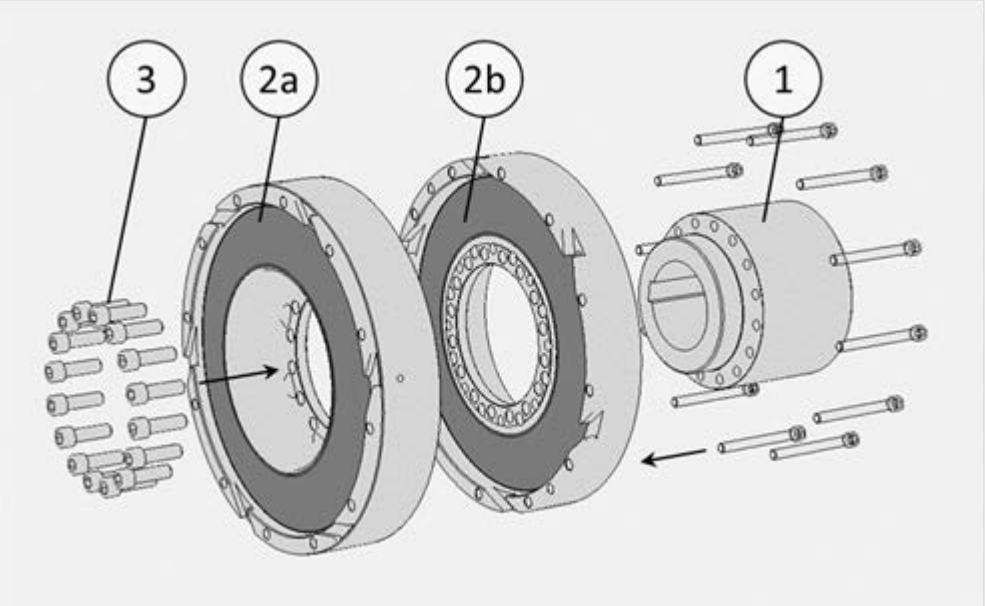
To mount the coupling element, proceed as follows:

- Make sure that the markings from joint balancing are in alignment.
- Align the threaded bores and through holes of the coupling hub and the coupling element.
- Insert the bolts (3) and tighten them crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.
- Position the driven machine in axial direction in front of the drive unit ensuring that there is a clearance of approx. 5 mm between the contact surface of the outer ring and the flywheel/adapter flange.

- Carry out a radial and angular alignment (for details on alignment, see the *Aligning the coupling* from page 47).
- Align the threaded bores and through holes of the flywheel/adapter flange and coupling element (2) and push the units together to the determined installation dimension. The radial and angular alignment of the units to each other must be maintained.
- Insert the bolts and tighten them hand-tight (use the enclosed washers for aluminium outer rings or if necessary the enclosed washers).
- Tighten the bolts crosswise with the required torque; see page 71.
- Mark the bolts which have been tightened to the required torque in colour.

Type TOK...D F2

On how to handle the coupling, follow the instructions on page 32.



To mount the coupling elements (2a) and (2b), proceed as follows:

- Ensure that the connecting surfaces are free of preservative and grease.
- Mount the coupling hub on the shaft; see from page 45.

If an adapter flange is inserted between the flywheel and outer ring of the coupling, refer to the instructions on assembly in the *Mounting the adapter flange* section, page 51.

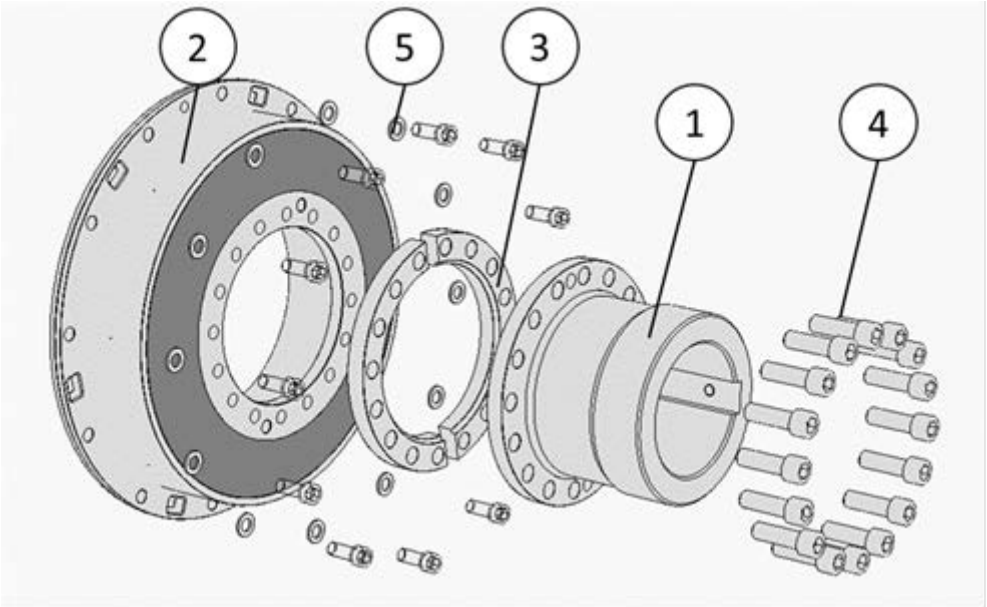
If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

- Mount the coupling elements (2a) and (2b) on the coupling hub (1).
- Make sure that the markings from joint balancing are in alignment.
- Align the threaded bores and through holes of the coupling hub and the coupling elements (2a) and (2b).
- Insert the bolts (3) and tighten them so that they are hand-tight.
- Tighten the bolts crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.
- Position the driven machine in axial direction in front of the drive unit ensuring that there is a clearance of approx. 5 mm between the contact surface of the outer ring and the flywheel/adapter flange.

- Carry out a radial and angular alignment (for details on alignment, see the *Aligning the coupling* from page 47).
- Align the threaded bores and through holes of the flywheel/adapter flange and coupling elements (2a) and (2b) and push the units together to the determined installation dimension. The radial and angular alignment of the units to each other must be maintained.
- Insert the bolts and tighten them hand-tight (use the enclosed washers for aluminium outer rings or if necessary the enclosed washers).
- Tighten the bolts crosswise with the required torque; see page 71.
- Mark the bolts which have been tightened to the required torque in colour.

Type TOK...F2K

On how to handle the coupling, follow the instructions on page 32.



To mount the coupling element (2) on the flywheel of the drive unit, proceed as follows:

- Ensure that the connecting surfaces are free of preservative and grease.
- Mount the coupling hub on the shaft; see from page 45.
- Carry out a radial and axial alignment (for details on alignment, see the *Aligning the coupling* from page 47).

If an adapter flange is inserted between the flywheel and outer ring of the coupling, refer to the instructions on assembly in the *Mounting the adapter flange* section, page 51.

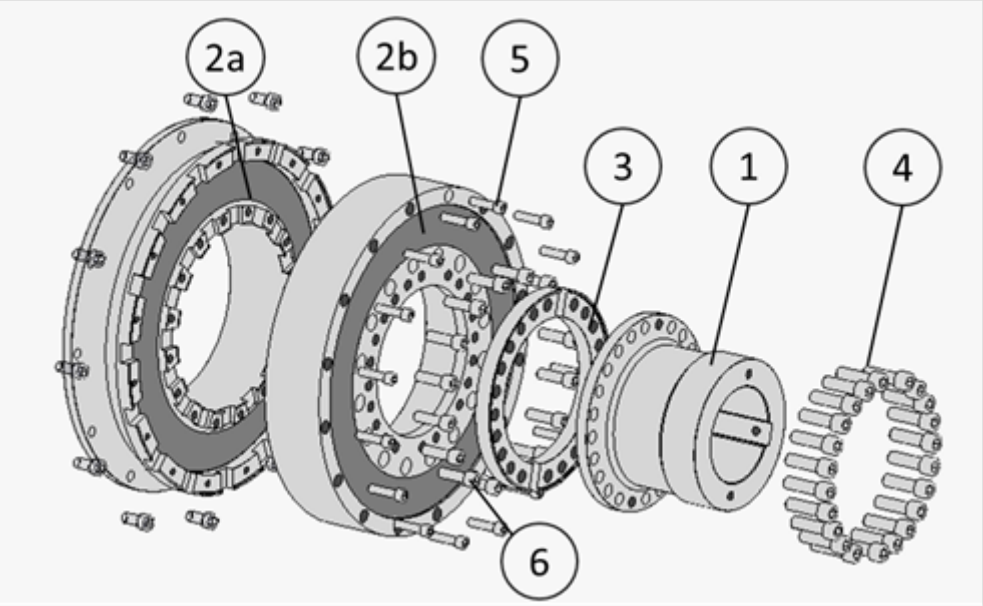
If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

- Make sure that the markings from joint balancing are in alignment.
- Lift the coupling element (2) in a suitable way.
- Align the threaded bores and through holes of the flywheel/adapter flange and the coupling element. Make sure that the coupling element is seated in the centring of the flywheel/adapter flange and has full-surface contact.
- Insert the bolts and tighten them so that they are hand-tight.
- Use the provided washers (5) in the case of aluminium flanges or when necessary.
- Tighten the bolts crosswise with the required torque; see page 71.
- Mark the bolts which have been tightened to the required torque in colour.

- Mount the splited spacer ring; see page 53.
- Insert the bolts (4) and tighten them so that they are hand-tight.
- Tighten the bolts crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.

Types TOK...D F2K

On how to handle the coupling, follow the instructions on page 32.



To mount the coupling elements (2a) and (2b) on the flywheel of the drive unit, proceed as follows:

- Ensure that the connecting surfaces are free of preservative and grease.
- Mount the coupling hub on the shaft; see from page 45.
- Carry out a radial and axial alignment (for details on alignment, see the *Aligning the coupling* from page 47).

If an adapter flange is inserted between the flywheel and outer ring of the coupling, refer to the instructions on assembly in the *Mounting the adapter flange* section, page 50.

If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

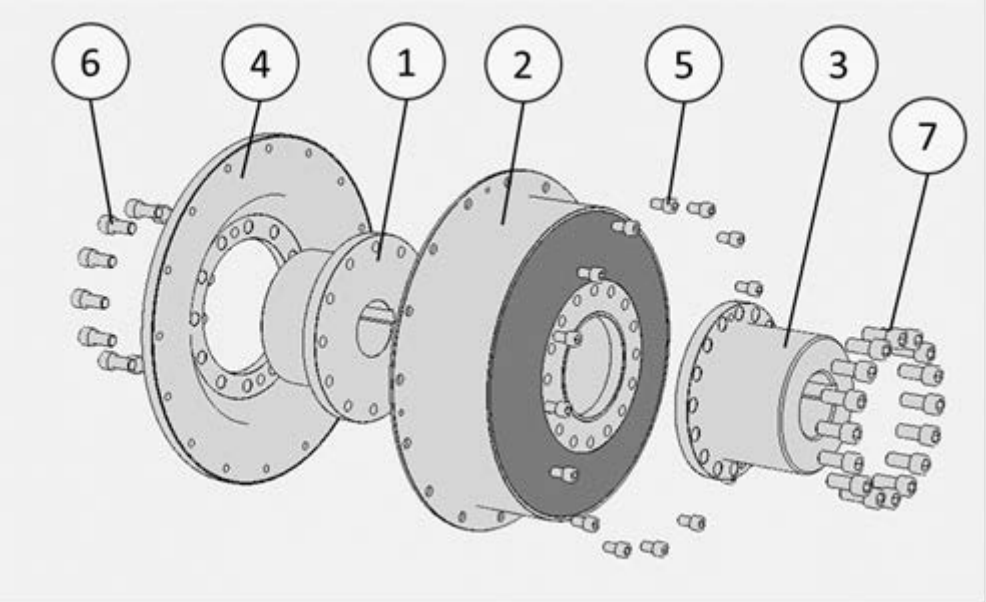
- Make sure that the markings from joint balancing are in alignment.
- Lift the coupling elements (2a) and (2b) in a suitable way.

For the type TOK...D F2K, the coupling elements (2a) and (2b) are supplied as a screwed together unit as standard and must be mounted accordingly.

- Align the threaded bores and through holes of the flywheel/adapter flange and the coupling element (2a). Make sure that the coupling element (2a) is seated in the centring of the flywheel/adapter flange and has full-surface contact.
- Insert the bolts and tighten them so that they are hand-tight.
- Use the provided washers in the case of aluminium flanges or when necessary.
- Tighten the bolts crosswise with the required torque; see page 71.
- Mark the bolts which have been tightened to the required torque in colour.
- Mount the splited spacer ring; see page 53.
- Insert the bolts (4) and tighten them so that they are hand-tight.
- Tighten the bolts crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.

Type TOK...TK

On how to handle the coupling, follow the instructions on page 32.



To mount the coupling element (2) between drive unit and output unit, proceed as follows:

- Ensure that the connecting surfaces are free of preservative and grease.

If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

- Make sure that the markings from joint balancing are in alignment.
- Mount the drive-side coupling hub (1) on the drive shaft. Find the mounting instructions in the *Mounting the coupling hub on the shaft* section; see page 45.
- Mount the output-side coupling hub (3) on the output shaft. Find the mounting instructions in the *Mounting the coupling hub on the shaft* section; see page 45.
- Carry out a radial and axial alignment (for details on alignment, see the *Aligning the coupling* from page 47).
- Insert the coupling element (2) radially between the two coupling hubs.

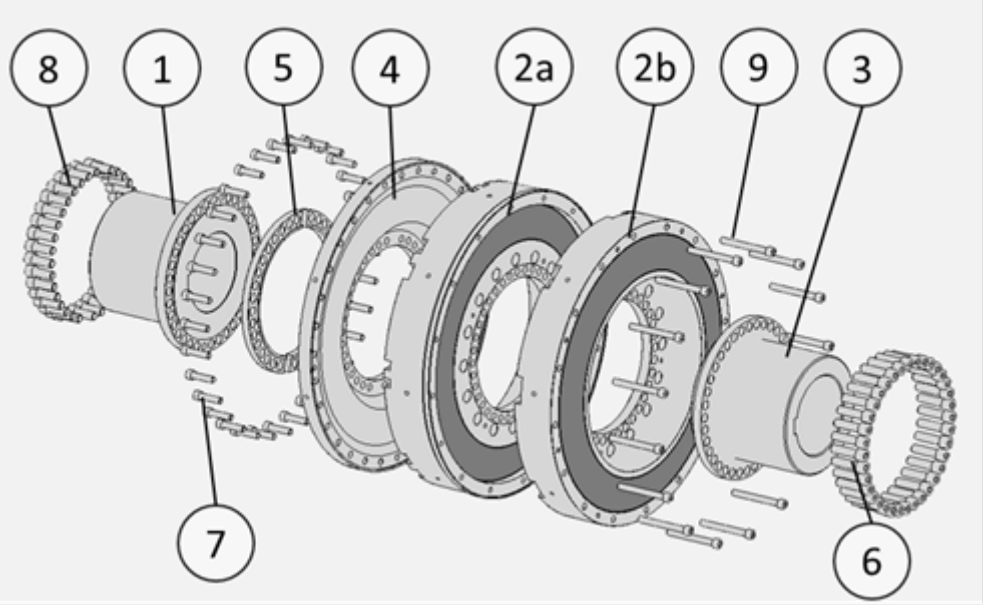
For the splited spacer ring type, refer to the mounting instructions in the *Mounting the splited spacer ring* section, page 53.

The mounting description for the type with splited spacer ring is similar to the TOK...F2K type. See the mounting description for the type TOK…F2K on page 58.

- Connect the coupling element with the output-side hub (3) by means of the bolts (7).
- Make sure that the coupling hub (3) is seated in the centring of the coupling element (2) and has full-surface contact.
- Tighten the bolts crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.
- Mount the union flange (4). Find the mounting instructions in the *Mounting the union flange* section, see page 52.

Type TOK...D TK

On how to handle the coupling, follow the instructions on page 32.



To mount the coupling elements (2a) and (2b) between the drive unit and output unit, proceed as follows:

- Ensure that the connecting surfaces are free of preservative and grease.
- Mount the drive-side coupling hub (1) on the drive shaft. Find the mounting instructions in the *Mounting the coupling hub on the shaft* section; see page 45.
- Mount the output-side coupling hub (3) on the output shaft. Find the mounting instructions in the *Mounting the coupling hub on the shaft* section; see page 45.
- Carry out a radial and axial alignment (for details on alignment, see the *Aligning the coupling* from page 47).

If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

- Make sure that the markings from joint balancing are in alignment.
- Lift the coupling element (2b) in the appropriate manner.
- Mount the coupling element on the hub and secure it to prevent it falling.
- Lift the coupling element (2a) in the appropriate manner.
- Align the threaded bores and through holes of the coupling elements (2a) and (2b). Make sure that the coupling elements sit correctly on the centring of the coupling hub.
- Insert the bolts (6) and tighten them so that they are hand-tight.
- Make sure that the coupling hub (3) is seated in the centring of the coupling elements.
- Insert the bolts (9) and tighten them so that they are hand-tight. Make sure that the outer ring of the coupling element (2b) sits in the centring of the coupling element (2a).
- Use the provided washers in the case of aluminium flanges or when necessary.
- Tighten the bolts (6) crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.
- Tighten the bolts (9) crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.

ⓘ In the element version with the full inner sleeve, the coupling elements are mounted as one screwed together unit.

- Make sure that the outer rings of the elements (2a) and (2b) fit correctly in the centring and have full-surface contact.
- Install the flange (4). Find the flange mounting instructions in the *Mounting the flange* section; see page 50.
- Mount the splited spacer ring (5). For splited spacer ring mounting instructions, refer to the *Mounting the splited spacer ring* section, page 53.

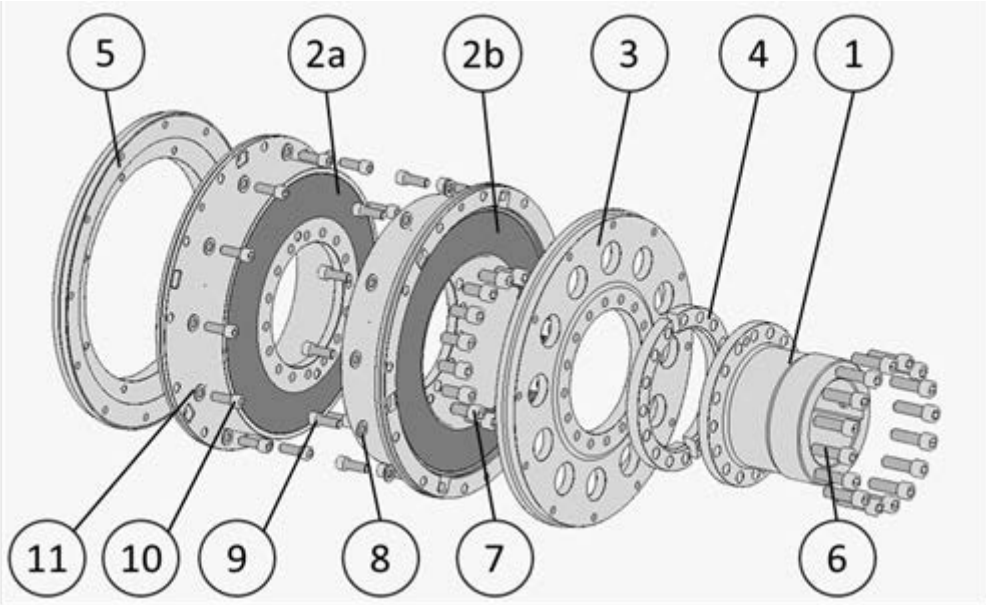
ⓘ For the splited spacer ring type, refer to the mounting instructions in the *Mounting the union flange* section; see page 52.

ⓘ The mounting description for the type with union flange is similar to the TOK...TK type. Refer to type TOK...TK in the *Mounting the coupling element* section, page 62.

- Insert the bolts (8) and tighten them so that they are hand-tight.
- Tighten the bolts crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.

Types TOK...R F2K

On how to handle the coupling, follow the instructions on page 32.



To mount the coupling elements (2a) and (2b) on the flywheel of the drive unit, proceed as follows:

- Ensure that the connecting surfaces are free of preservative and grease.
- Mount the output-side coupling hub (1) on the output shaft. Find the mounting instructions in the *Mounting the coupling hub on the shaft* section; see page 45.
- Carry out a radial and axial alignment (for details on alignment, see the *Aligning the coupling* from page 47).

If an adapter flange is inserted between the flywheel and outer ring of the coupling, refer to the instructions on assembly in the *Mounting the adapter flange* section, page 51.

If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

- Make sure that the markings from joint balancing are in alignment.
- Lift the coupling elements (2a) and (2b) in a suitable way.

For the type TOK...R F2K, the coupling elements (2a) and (2b) are supplied as a screwed together unit as standard and must be mounted accordingly.

- Align the threaded bores and through holes of the flywheel/adapter flange and the coupling element (2a). Make sure that the coupling element (2a) is seated in the centring of the flywheel/adapter flange and has full-surface contact.
- Insert the bolts and tighten them so that they are hand-tight.
- Use the provided washers in the case of aluminium flanges or when necessary.
- Tighten the bolts crosswise with the required torque; see page 71.
- Mark the bolts which have been tightened to the required torque in colour.
- Install the flange (3). Find the flange mounting instructions in the *Mounting the flange* section; see page 50.
- Mount the splited spacer ring. For splited spacer ring mounting instructions, refer to the *Mounting the splited spacer ring* section, page 53.

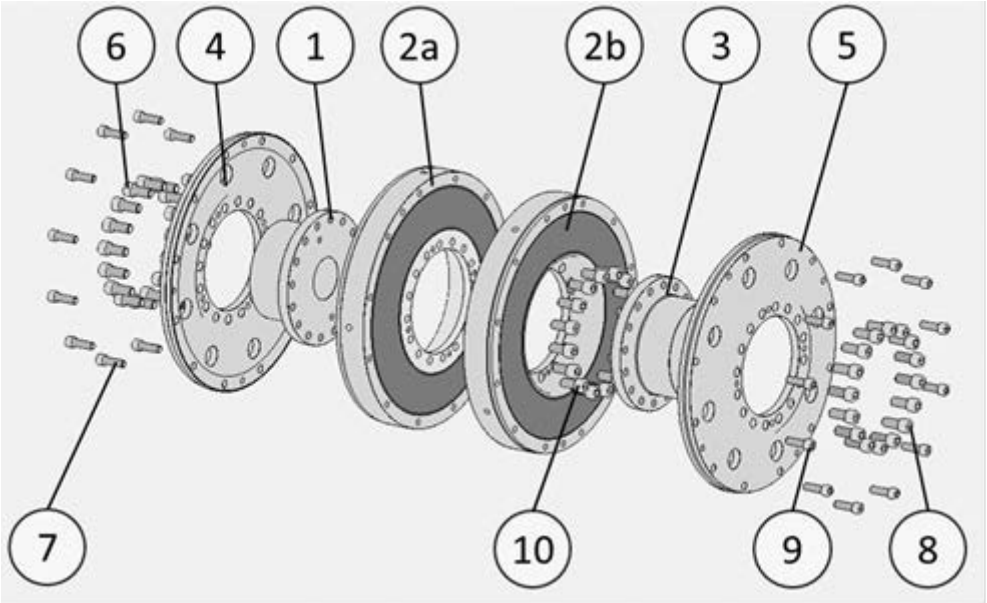
ⓘ For the union flange version, refer to the mounting instructions in the *Mounting the union flange* section; see page 52.

ⓘ The mounting description for the type with union flange is similar to the TOK...R TK type. Refer to type TOK...R TK in the *Mounting the coupling element* on page 68.

- Insert the bolts (6) and tighten them so that they are hand-tight.
- Tighten the bolts crosswise with the required torque; see page 70.
- Mark the bolts which have been tightened to the required torque in colour.

Type TOK...R TK

On how to handle the coupling, follow the instructions on page 32.



To mount the coupling elements (2a) and (2b) between the drive unit and output unit, proceed as follows:

- Ensure that the connecting surfaces are free of preservative and grease.

If several components have been balanced together, they are marked with a stamped X. During assembly, the components must be arranged to ensure that this marking is in line axially for all of them.

- Make sure that the markings from joint balancing are in alignment.
- Mount the drive-side coupling hub (1) on the drive shaft. Find the mounting instructions in the *Mounting the coupling hub on the shaft* section; see page 45.
- Mount the output-side coupling hub (3) on the output shaft. Find the mounting instructions in the *Mounting the coupling hub on the shaft* section; see page 45.
- Carry out a radial and axial alignment (for details on alignment, see the *Aligning the coupling* from page 47).
- Insert the coupling elements (2a) and (2b) radially between the two coupling hubs.

For the type TOK...R TK, the coupling elements (2a) and (2b) are supplied as a screwed together unit as standard and must be mounted accordingly.

- Mount the union flange (4). Find the mounting instructions in the *Mounting the union flange* section; see page 52.
- Mount the union flange (5). Find the mounting instructions in the *Mounting the union flange* section; see page 52.

For the splited spacer ring type, refer to the mounting instructions in the *Mounting the splited spacer ring* section, page 53.

The mounting description for the type with splited spacere ring is similar to the TOK...R F2K type. See the mounting description for the type TOK…R F2K on page 66.

Torques for tightening bolted connections

A cordless screwdriver may be used to screw the bolts in hand-tight. The required torque must only be applied by hand using a torque wrench.

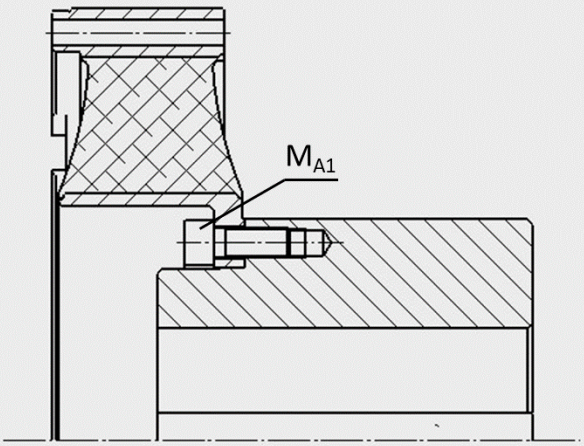
To ensure reliable torque transmission, all bolts must be tightened to the required torque during assembly. For tightening, use a calibrated torque wrench which is suitable for the required torque.

The following torques apply as standard unless otherwise specified in the relevant design drawing.

Torques for the bolted connection of the coupling element, flange and the coupling hub

The following torques are applicable for bolting the coupling hub to the coupling element. They are only applicable for the following conditions:

- Total friction factor μ= 0.14
- Bolt strength grade 8.8 and 10.9 (complying with ISO 4762, ISO 4014 und DIN6912)



Bolt size	Torque M_{A1}	
	Bolt strength grade	
	8.8	10.9
M6	10	14
M8	25	35
M10	49	69
M12	86	120
M14	135	190
M16	210	295
M18	290	405
M20	410	580
M22	550	780
M24	710	1000
M27	1056	1500
M30	1450	2000

Torques for the flywheel bolts

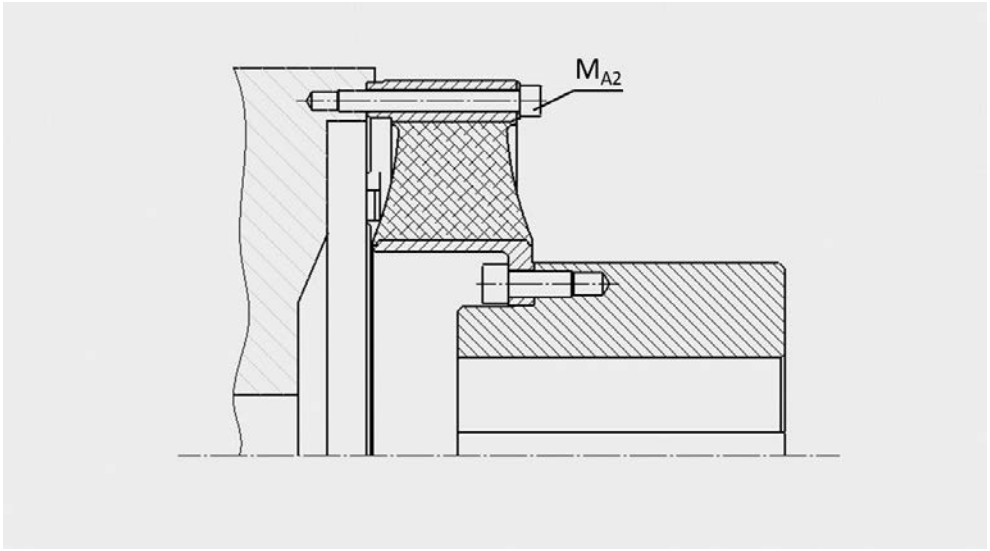
The torques are applicable for bolting the coupling element or adapter flange to the engine flywheel.

They are only applicable for the following conditions:

- Total friction factor μ= 0.14
- Metric bolt strength grade 8.8
- Imperial bolts – bolt strength grade 5 for bolt size ¼ – 1 inch

The coupling elements with aluminium outer ring may only be fitted with smooth washers. We recommend using washers of the largest possible size, but in any case of at least the dimensions defined in DIN 433. Strength grade 10.9 bolts with appropriate washers and correct torques may be used under circumstances after consultation with REICH.

Contact REICH before using bolts of a different strength grade.



▶ Before tightening the bolts, make sure that the washers have full-surface contact on the outer ring.

SAE flywheel	$6^1/_2$, $7^1/_2$	8, 10, $11^1/_2$	14	18, 21	24
Metric bolts	M8	M10	M12	M16	M20
Torque M_{A2} [Nm]	25	50	85	210	420
Imperial bolts	5/16–28	3/8–16	½–13	5/8–11	¾–10
Torque M_{A2} [Nm]	24	42	102	203	340

Mounting the protection device

The owner must equip the coupling with a protective guard prior to commissioning. The coupling must be operated exclusively with the protective guard mounted.

The protection device must satisfy the following minimum requirements and ensure:

- Protection against contact with rotating parts
- Protection against parts flying around after any rupture of the coupling
- Adequate ventilation of the coupling, for example, through integrated cooling slots.

Putting the coupling into operation

DANGER

Risk of explosion when operating the coupling in potentially explosive atmospheres.

Risk of explosion with fatal injuries.

- Exclusively use couplings bearing the corresponding ATEX marking in potentially explosive atmospheres.
- In this respect, read and follow the additional notes in the supplementary manual for ATEX operation.

WARNING

Danger to life due to rupturing of a damaged coupling.

- Exclusively operate the coupling in flawless condition.
- Make sure that the coupling is equipped with a protective guard which is capable of withstanding rupturing of the coupling.

- Wear the personal protective equipment specified by the owner.

Perform the following work prior to commissioning:

- Ensure that all bolted connections are tightened to the required torque.
- Check the alignment of the coupling.
- Correct the alignment if necessary.
- Make sure that a protection device is mounted and functional.

Proceed as follows to commission the coupling:

- Start the drive unit as specified by the owner.
- Check the coupling for low-noise and vibration-free running.
- If this is not the case, shut the drive unit off as specified by the owner.
- Search for the cause of the malfunction.
- Eliminate the malfunction.
- Repeat commissioning.

Operation

DANGER

Risk of explosion when operating the coupling in potentially explosive atmospheres.

Risk of explosion with fatal injuries.

- Exclusively use couplings bearing the corresponding ATEX marking in potentially explosive atmospheres.
- In this respect, read and follow the additional notes in the supplementary manual for ATEX operation.

WARNING

Danger to life due to rupturing of a damaged coupling.

- Exclusively operate the coupling in flawless condition.
- Make sure that the coupling is equipped with a protective guard which is capable of withstanding rupturing of the coupling.

- During operation, regularly check the coupling for changed running noises and suddenly occurring vibrations.
- If a malfunction occurs, shut the drive unit off as specified by the owner.
- Search for the cause of the malfunction.
- Eliminate the malfunction.
- Do not commission a damaged coupling.

Eliminating malfunctions

DANGER

Risk of explosion when operating the coupling in potentially explosive atmospheres.

Risk of explosion with fatal injuries.

- ▶ Exclusively use couplings bearing the corresponding ATEX marking in potentially explosive atmospheres.
- ▶ In this respect, read and follow the additional notes in the supplementary manual for ATEX operation.

The malfunctions and causes of malfunctions described in this section can only serve as a starting point for your checks. Malfunctions are related to the type of use and the respective operating situation. For this reason always incorporate all components of the entire system in your fault finding and elimination process. Pertinent information can be found in the overall documentation for your system.

Detecting malfunctions

The coupling must show a low-noise and vibration-free running behaviour in all phases of operation. Anomalies in the operating behaviour are always indications of the presence of a malfunction.

- ▶ Make sure that the cause of the malfunction is located and immediately eliminated by qualified, specialist personnel.

Table of malfunctions

Malfunction	Cause	Remedy
Sudden change in the noise level. Sudden occurrence of vibrations.	The coupling's alignment has been changed.	▶ Decommission the system. ▶ Identify the reason for this change, e.g. loosened foundation bolts. ▶ Ensure that the coupling's alignment is corrected properly.
	The coupling element is worn.	▶ Decommission the system. Find relevant information on page 82. ▶ Ensure that the coupling element is replaced properly. ▶ Ensure that the coupling is mounted and aligned properly. Find relevant information on page 37.

Procedure for eliminating malfunctions

Proceed as follows when eliminating malfunctions:

- ▶ Shut off the drive units.
- ▶ Secure the drive units to prevent unintentional reactivation.
- ▶ Secure the work area using a suitable cordon facility, e.g. barrier tape. Additionally display a notice sign.

Maintaining the coupling

DANGER

Risk of explosion when operating the coupling in potentially explosive atmospheres.

Risk of explosion with fatal injuries.

- Exclusively use couplings bearing the corresponding ATEX marking in potentially explosive atmospheres.
- In this respect, read and follow the additional notes in the supplementary manual for ATEX operation.

CAUTION

Risk of burns from hot surfaces

- Shut the system off before servicing, maintaining or repairing the coupling.
- Allow the components to cool.
- Wear protective gloves when working on the coupling.

CAUTION!

Malfunctions and damage to the coupling as a result of material fatigue and wear.

- Replacing the coupling elements every 6 year is recommended due to ageing.
- The coupling elements with the aluminium outer rings must be replaced after 10 years at the latest.

Preparing for maintenance work

- Obtain the work clearance permit from the responsible person prior to all work on and with the coupling.
- Switch the drive unit off.
- Secure the drive unit to prevent reactivation.
- Post up a caution sign indicating that work is in progress.
- Wear the personal protective equipment specified by the owner.

On how to handle the coupling, follow the instructions on page 32.

Performing inspections

The owner has the duty to inspect the coupling at the intervals defined for the specific operation. The inspection must be performed by qualified, specialist personnel and documented thereafter.

- Visually inspect the coupling on a regular basis, but at least once a year.
- During the inspection, check for damage of all kinds and particularly for:
  - Cracks
  - Correct seating of the bolts
  - Corrosion
  - Wear
  - Ageing
  - Embrittlement.
- Make sure that damaged couplings are exchanged immediately.
- Only use correspondingly designed original couplings or coupling elements from REICH.
- Check whether a bolt has come loose based on the bolts' colour markings.
- Tighten loose bolts to the required torque.
- If necessary, re-mark the bolt positions.
- Document the test.

If in doubt, contact REICH for damage and wear assessment.

If you discover wear and damage to the coupling element during system and maintenance work involving the separation of the units, we recommend that you replace the coupling element.

Replacing the coupling elements

Types TOK…F2 and TOK…D F2

The following description applies to couplings with one coupling element. Proceed accordingly in the case of couplings with two coupling elements.

The coupling elements of these types cannot be replaced without moving the coupled machines.

Proceed as follows to remove the coupling element:

- Remove the bolts between the engine flywheel and coupling element.
- Remove the bolts between the coupling element and engine flywheel element.
- Push the drive unit and the driven machine apart until the flexible coupling element is exposed.
- Secure the coupling element in a suitable manner to prevent it from falling down.
- Remove the bolts between the coupling element and the coupling hub.
- Remove the bolts between the coupling element and coupling hub.
- Remove the coupling element.
- Install all new coupling elements.
- For installation, proceed as described in the *Mounting the coupling* section from page 37.

Types TOK…F2K, TOK…R F2K and TOK…D F2K

The following description applies to couplings with one coupling element. Proceed accordingly in the case of couplings with two coupling elements.

When the conditions described in the *Basic instructions for the types TOK…F2K and TOK…D F2K* section, page 38 are fulfilled, the coupling element can be exchanged without moving the coupled machines.

Proceed as follows to remove the coupling element:

- Secure the coupling element in a suitable manner to prevent it from falling down.
- Remove the bolts between the coupling hub and the coupling element.
- Secure any splited spacer rings fitted to prevent them from falling down.
- Remove the bolts between the coupling hub and coupling element.
- Disassemble the splited spacer ring. To do this, carry out the assembly steps described on the page in the *Mounting the splited spacer ring section* in the 53 reverse order.

For the union flange type, proceed as follows: disassemble the union flange according to the assembly steps described in the *Mounting the union flange* section in the reverse order; see page 52.

- Remove the bolts between the engine flywheel and coupling element.
- Remove the bolts and washers from the coupling element.
- Pull the coupling element out of the flywheel centring and remove it.
- Make sure to always replace both coupling elements on duplex couplings.

- Install all new coupling elements.
- For installation, proceed as described in the *Mounting the coupling* section from page 37.

Types TOK…TK, TOK…R TK and TOK…D TK

The following description applies to couplings with one coupling element. Proceed accordingly in the case of couplings with two coupling elements.

When the conditions described in the *Basic instructions for the types TOK…TK and TOK…D TK* section, page 38 are fulfilled, the coupling element can be exchanged without moving the coupled machines.

Proceed as follows to remove the coupling element:

- Secure the coupling element in a suitable manner to prevent it from falling down.
- Remove the coupling flange on the drive side and push it towards the engine. To do this, carry out the assembly steps described on the page in the *Mounting the union flange* section in the 52 reverse order. For types TOK...R TK and TOK...D TK, additionally remove the output-side coupling flange and push it over the hub towards the output unit.

For the splited spacer ring type, proceed as follows: disassemble the splited spacer ring according to the assembly steps described in the *Mounting the splited spacer ring* section in the reverse order; see page 53.

- For the type TOK...TK loosen the screws for fastening the output-side coupling hub and remove them.
- Remove the coupling element from the coupling hub.
- Remove the coupling element.

For types TOK...D TK and TOK...R TK, both coupling elements can be disassembled as one screwed together unit.

- Install all new coupling elements.
- For installation, proceed as described in the *Mounting the coupling* section from page 37.

Completing maintenance work

- Install the protective guards removed for maintenance work, such as the guard on the coupling.
- Remove the tools and aids required for maintenance work.

Cleaning the coupling

DANGER

Risk of explosion when operating the coupling in potentially explosive atmospheres.

Risk of explosion with fatal injuries.

- Exclusively use couplings bearing the corresponding ATEX marking in potentially explosive atmospheres.
- In this respect, read and follow the additional notes in the supplementary manual for ATEX operation.

CAUTION!

Damage to the coupling due to improper cleaning.

- Make sure that the flexible coupling element does not come into contact with acids, alkalis or cleaners containing organic solvents.

The coupling element can be damaged due to unsuitable cleaners. As a result, the surface can become so hot that a risk of explosion can occur.

- Ensure that the coupling element does not come into contact with acids, alkalis, organic solvents, greases, oils or their vapours.
- Never clean the coupling element with acids, alkalis or cleaners containing organic solvents.
- Use a hand brush or cloth when cleaning the coupling.

Dismantling the coupling

DANGER

Risk of explosion when operating the coupling in potentially explosive atmospheres.

Risk of explosion with fatal injuries.

- ▶ Exclusively use couplings bearing the corresponding ATEX marking in potentially explosive atmospheres.
- ▶ In this respect, read and follow the additional notes in the supplementary manual for ATEX operation.

DANGER

Danger to life due to falling or tipping loads.

- ▶ Pay attention to the centre of gravity of the load.
- ▶ Use a crane of adequate load-carrying capacity to lift the load.
- ▶ Use lifting gear of adequate load-carrying capacity to lift the load.
- ▶ Make sure that no persons are under suspended loads.

On how to handle the coupling, follow the instructions on page 32.

- ▶ Obtain the work clearance permit from the responsible person prior to all work on and with the coupling.
- ▶ Switch the drive unit off.
- ▶ Secure the drive unit to prevent reactivation.
- ▶ Post up a caution sign indicating that work is in progress.
- ▶ Wear the personal protective equipment specified by the owner.
- ▶ Secure the components in a suitable manner to prevent them from falling down.
- ▶ Follow all instructions regarding the handling of individual coupling parts for disassembly of the coupling.

  Information on this can be found in these sections: *Transporting the coupling* from page 32, *Storing the coupling* from page 36, *Mounting the coupling* from page 37 and *Replacing the coupling elements* from page 79.
- ▶ Place the components on a suitable surface.

Disposing of the coupling

Dispose of the coupling through a certified specialist disposal company. Observe and comply with the country-specific regulations applicable to the place of use. If in doubt, contact your municipal or local administration.

Sort the coupling components according to their materials:

- Steel
- Light alloy
- Rubber

▶ Send the materials for recycling.