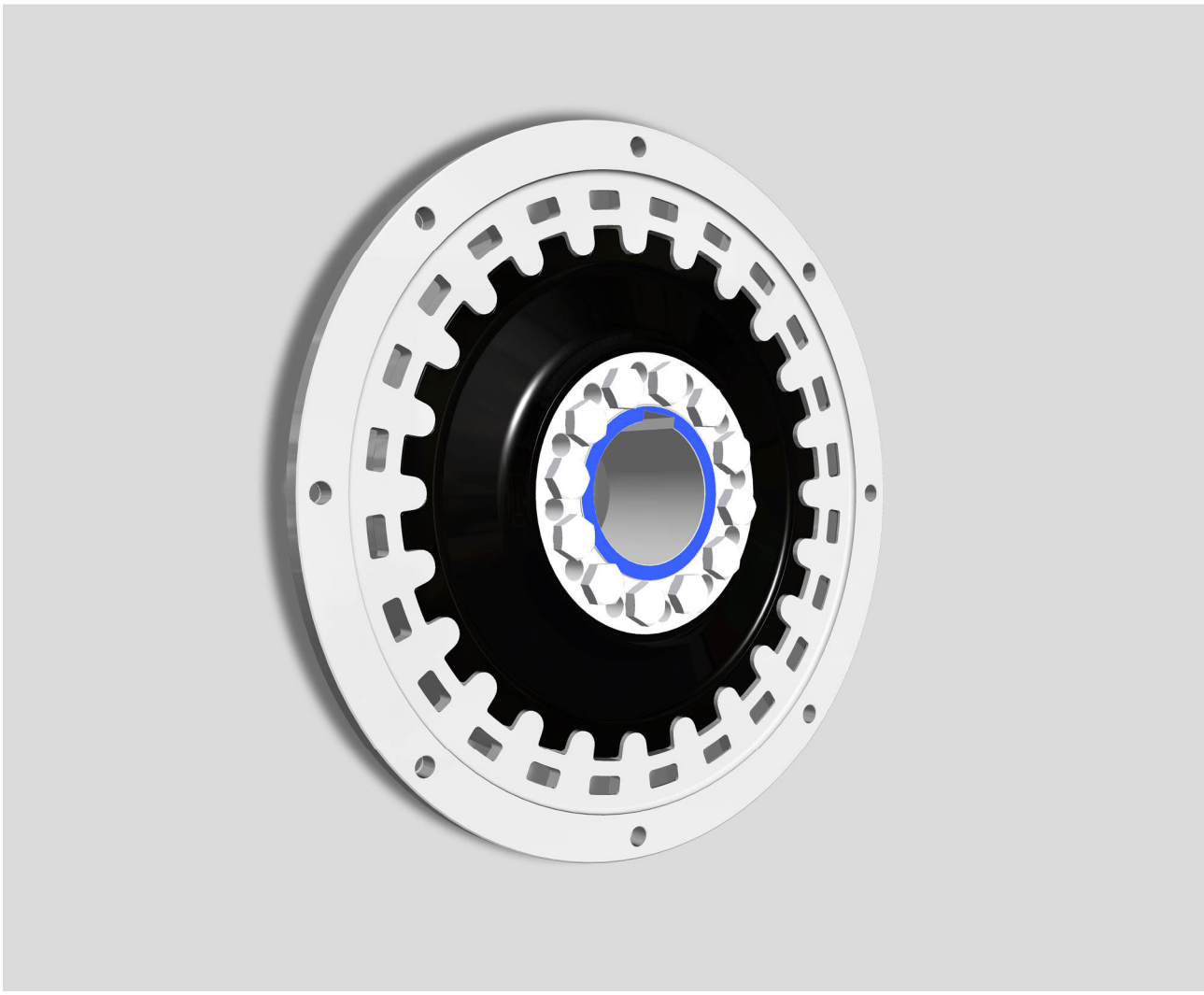
ARCUSAFLEX

Highly Flexible Rubber Disc Couplings

AC…F2
AC…D F2
AC…F2K
AC…D F2K



English version of the original German operating instructions

06/2016 - en - 15500000000002

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.
As well as the instructions in this manual, pay attention to the applicable legal and other regulations that apply to the installation site, such as, e. g.:

- 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 devices 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.
- Unauthorized modifications to the design of the coupling without consulting REICH-KUPPLUNGEN.
- 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 ARCUSAFLEX series couplings in the AC…F2, AC…D F2, AC…F2K and AC…D F2K types are used to transmit torques and rotational speeds between a drive unit and the driven machine in the horizontal position. They reduce torsional vibrations and shock loads and are able to compensate for misalignments.

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 protection devices.
- 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 owner must ensure that the coupling is encased by an amply dimensioned protection device which is capable of withstanding rupturing of the coupling and allows for adequate ventilation of the coupling, see page 48.
- 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-KUPPLUNGEN 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 driving machine prior to all work on the coupling.
- Secure the driving machine to prevent reactivation.
- Exclusively operate the coupling with a mounted and functional protection device.
- Affix a label warning of the hazard of entanglement on the protection device.

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 which can cause slight or moderate injuries.

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.

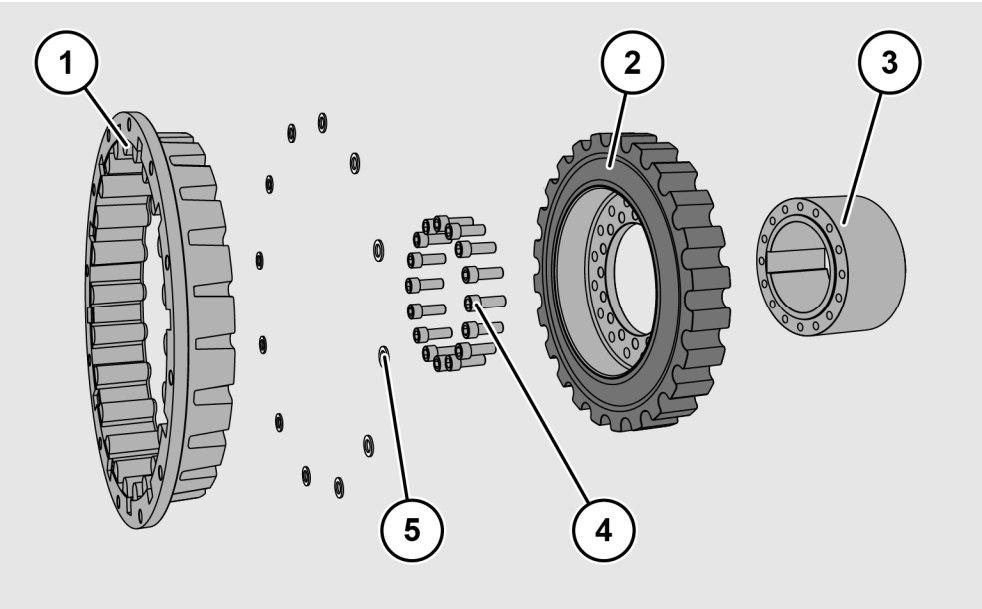
Description

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

The coupling consists of the coupling flange, the coupling hub and the actual flexible coupling element. After assembly, a torsionally flexible connection is established between the drive unit and the driven machine.

Overview of type AC…F2

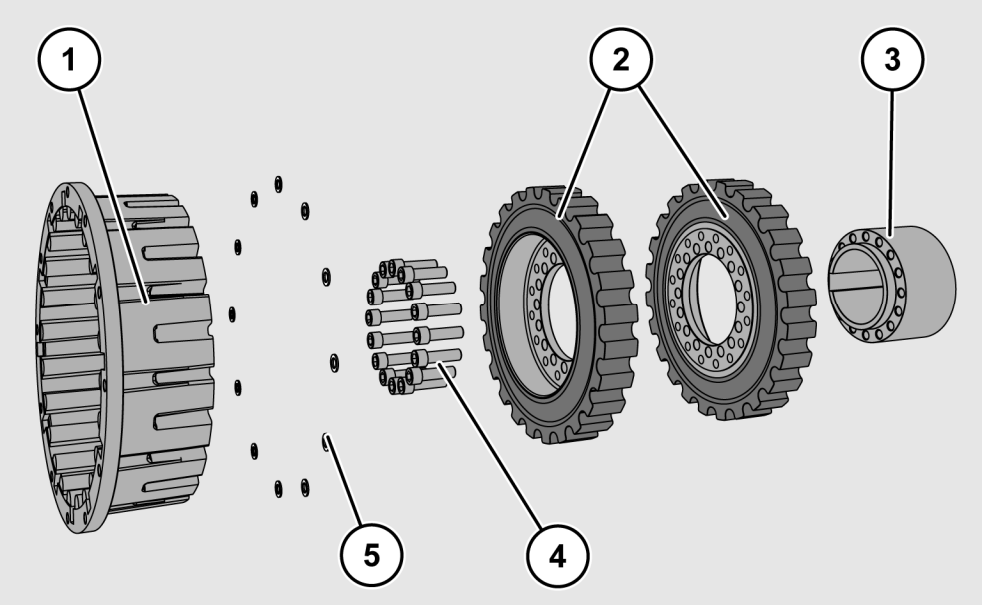
ⓘ With this type, two different mounting lengths can be achieved depending on the configuration of the coupling element, see page 36.



No.	Designation
1	Coupling flange
2	Flexible coupling element (with use of through holes)
3	Coupling hub
4	Bolts
5	Washers (for aluminium flanges or where necessary)
	Spacer ring (optional) not shown, see page 20

Overview of type AC...D F2

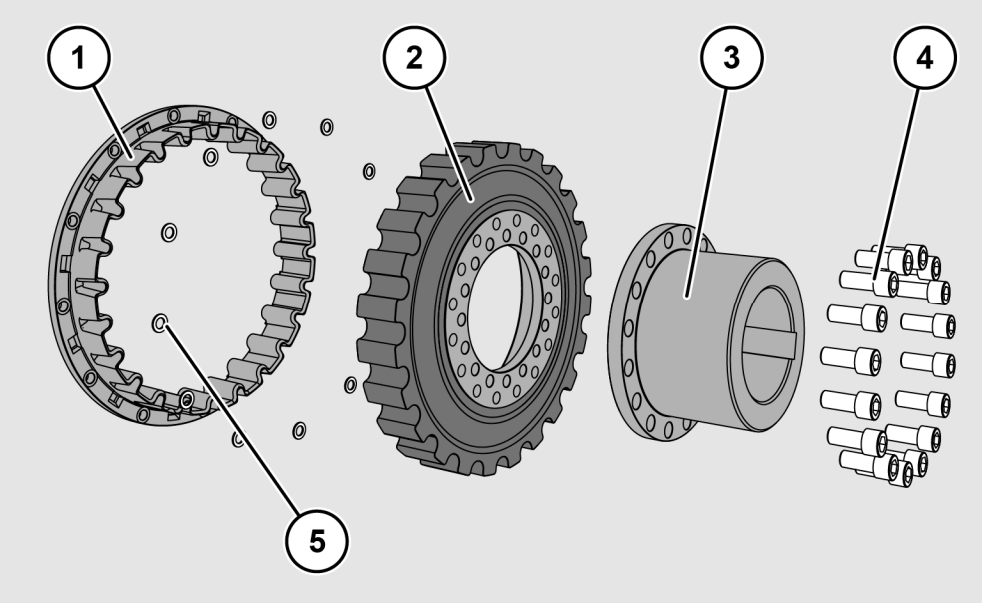
ⓘ This type uses two coupling elements acting in parallel instead of one. It is therefore designed for the transmission of higher torques.



No.	Designation
1	Coupling flange
2	Flexible coupling element (with use of through holes)
3	Coupling hub
4	Bolts
5	Washers (for aluminium flanges or where necessary)
	Spacer ring (optional) not shown, see page 20

Overview of type AC…F2K

ⓘ This type enables the flexible coupling element to be replaced without moving the coupled machines. For this purpose, follow the instructions on page 28 and page 55.

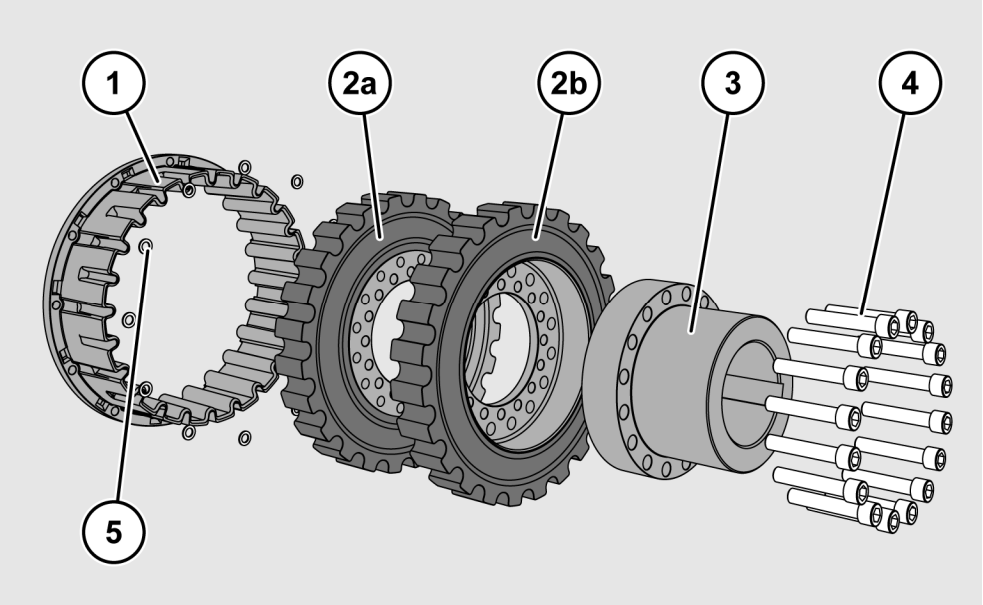


No.	Designation
1	Coupling flange
2	Flexible coupling element (with use of threaded bores)
3	Coupling hub
4	Bolts
5	Washers (for aluminium flanges or where necessary)
	Spacer ring (optional) not shown, see page 20

Overview of type AC...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 element to be replaced without moving the coupled machines. For this purpose, follow the instructions on page 28 and page 55.



No.	Designation
1	Coupling flange
2a	Flexible coupling element (with use of threaded bores)
2b	Flexible coupling element (with use of through holes)
3	Coupling hub
4	Bolts
5	Washers (for aluminium flanges or where necessary)
	Spacer ring (optional) not shown, see page 20

Components

Coupling flange

The coupling flange is bolted to the flywheel on the drive side. The holes required for this purpose are provided on the circumference of the coupling flange. Matching washers, if needed, are included in the scope of supply. Unless otherwise agreed, the required bolts must be provided by the customer. The coupling flange is designed as a cast construction and, depending on the coupling size, is made of cast iron or cast aluminium. The coupling flange is equipped with internal toothing with a cam profile. This internal toothing is the mating part for the external toothing of the flexible coupling element. The toothing intermeshes by joining the flexible coupling element to the coupling flange. Under rotation, this results in a practically backlash-free, positive connection, which allows for transmission of the torque.

Coupling element

The coupling element consists of a bolt-on sleeve made of steel or a cast sleeve and a flexible part. Through holes and/or threaded bores are provided in the bolt-on sleeve. These are used for joining the coupling element to the coupling hub. Depending on the ambient temperature, the flexible part is either made of a mixture of natural/synthetic caoutchouc or silicone caoutchouc. The flexible part is vulcanised directly onto the bolt-on sleeve. The outside diameter of the flexible part is equipped with toothing with a cam profile. This serves to positively transfer the torque in combination with the coupling flange.

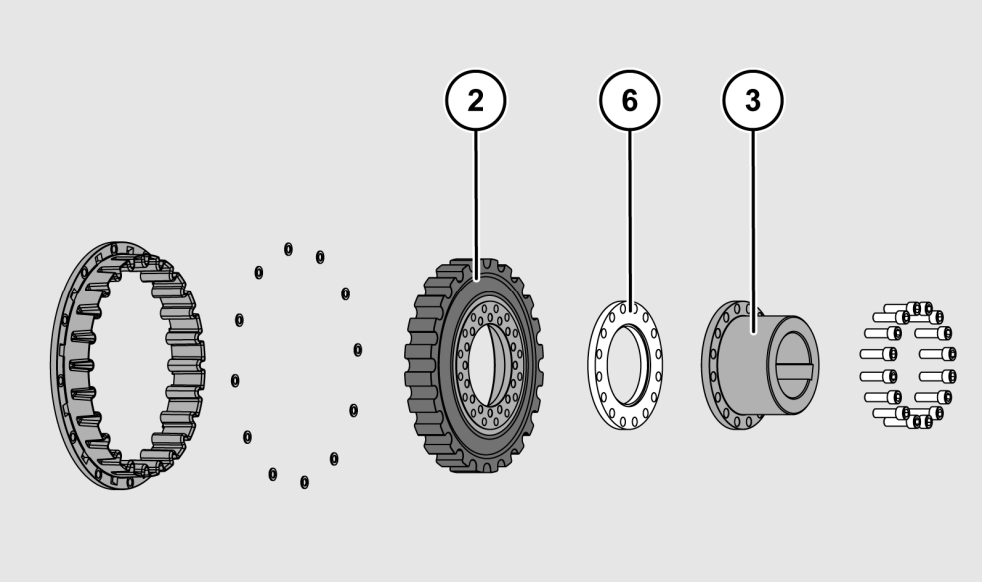
Coupling hub

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, a threaded bore may be provided on the circumference. The coupling element is bolted to the coupling hub. Complete couplings come with matching bolts which are included in the scope of supply.

With this type, AC…F2 two different mounting lengths can be achieved depending on the configuration of the coupling element, see page 36.

Spacer ring (optional)

The spacer ring (6) is an optional component. It is used to adjust the distance between the coupling hub (3) and the flexible coupling element (2).



Operating conditions

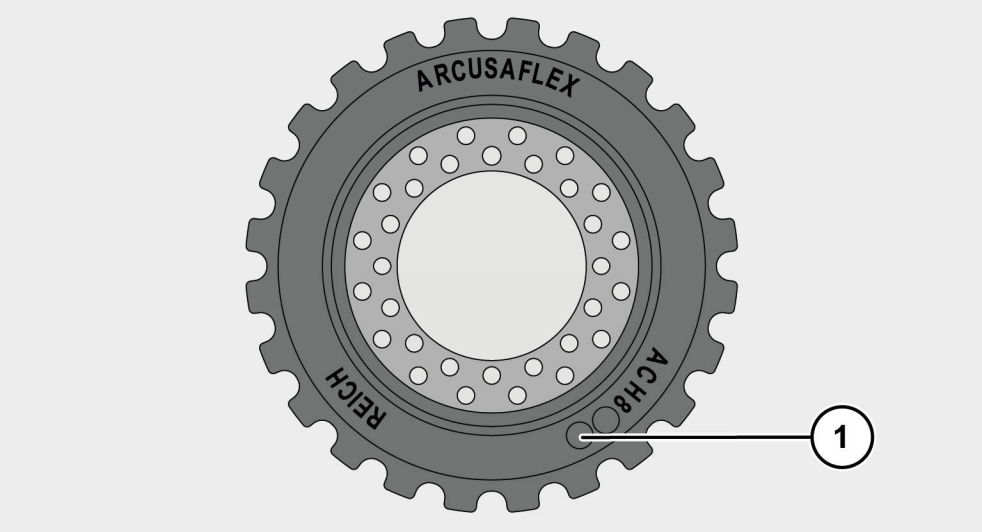
Depending on the rubber mixture of the flexible coupling element, adhere to the following operating conditions:

Rubber mixture	Ambienttemperature	Colour	Identifier
Natural/synthetic caoutchouc in standard design	–40 °C to +80 °C	black	…N
Natural/synthetic caoutchouc in temperature-resistant design	-25 °C to +100 °C	black	…T
Natural/synthetic caoutchouc in temperature-resistant design	-25 °C to +120 °C	black	…Y
Silicone caoutchouc	–40 °C to +130 °C	blue	…X

ⓘ 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.

The identification (1) of the rubber mixture can be found at the place shown in the figure below.



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.

ⓘ To handle the coupling, follow the instructions on page 23.

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 are required to involve 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 component thereof, above a weight of 25 kg, proceed as follows:

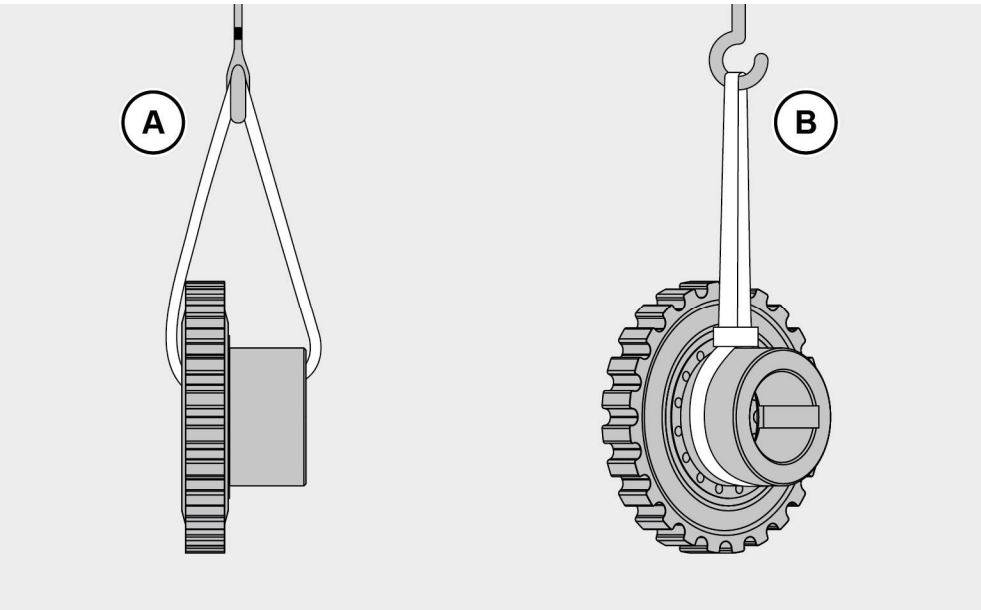
- ▶ Attach the coupling or a coupling component with suitable lifting gear, see from page 24 (Fig. A).
- ▶ Transport the coupling or coupling component to the designated location.

In order to transport the coupling, or a component thereof, above a weight of 25 kg during assembly or maintenance, proceed as follows:

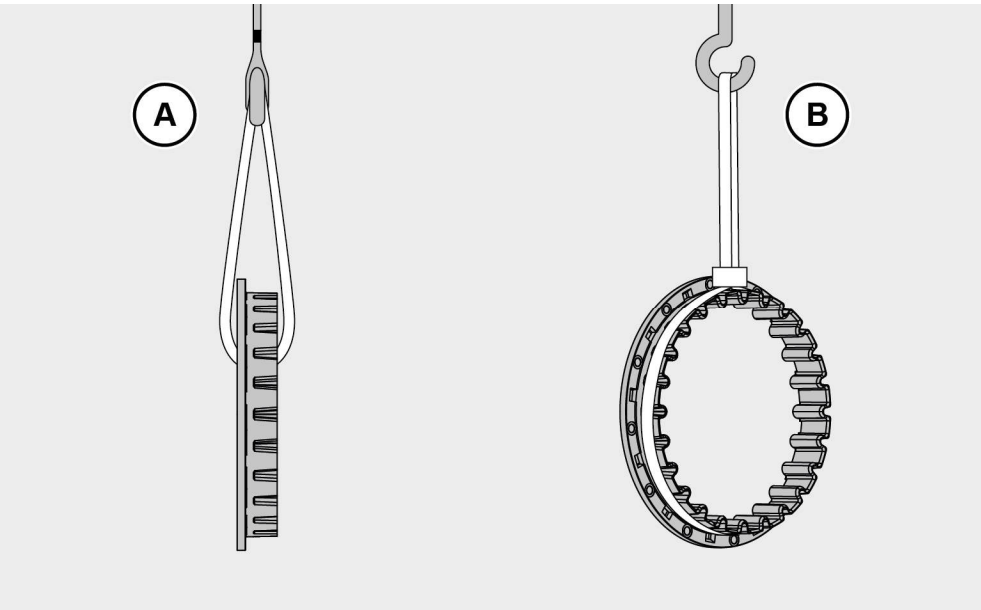
- ▶ Attach the coupling or a coupling component with suitable lifting gear, see from page 24 (Fig. B).
- ▶ Involve a second person for assistance.
- ▶ With the assistance of the second person, make sure that the components to be handled cannot tip over during lifting and positioning.

ⓘ The following figures show examples of how to transport the coupling and its components.
Version A shows a general transport situation.
Version B shows the transport situation during assembly.

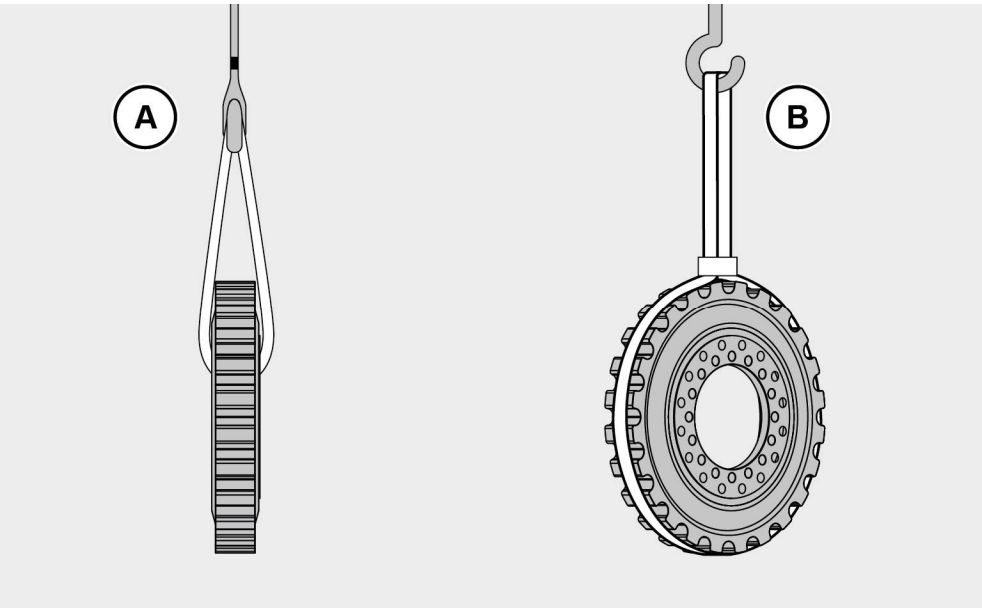
Transporting the coupling hub with coupling element



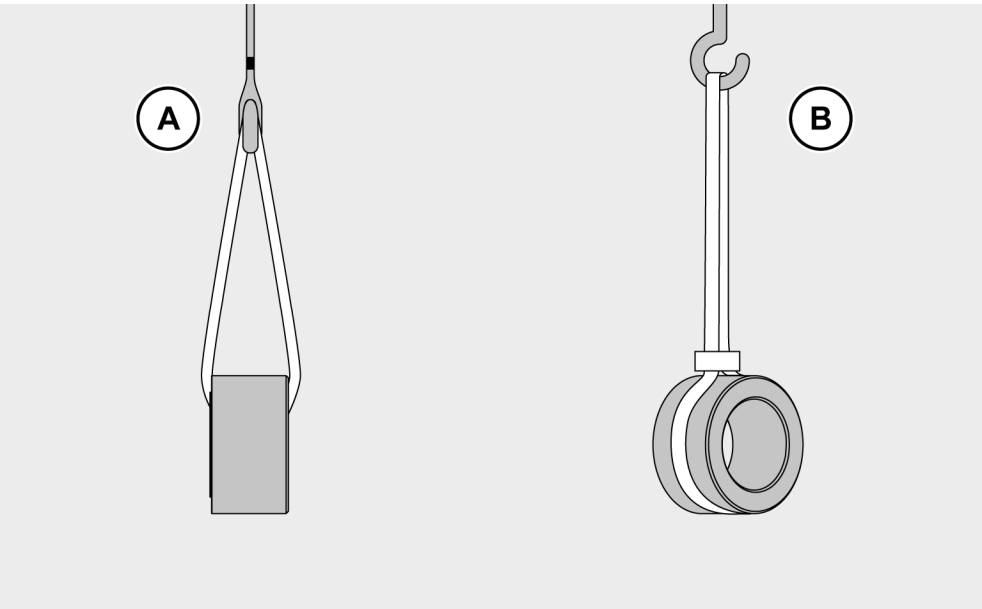
Transporting the coupling flange



Transporting the coupling element



Transporting the coupling hub and the spacer ring



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 proportion of UV rays e. g. the sun, fluorescent tubes
- Protection against draughts
- Protection against ozone caused, for example, by electric motors, 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.

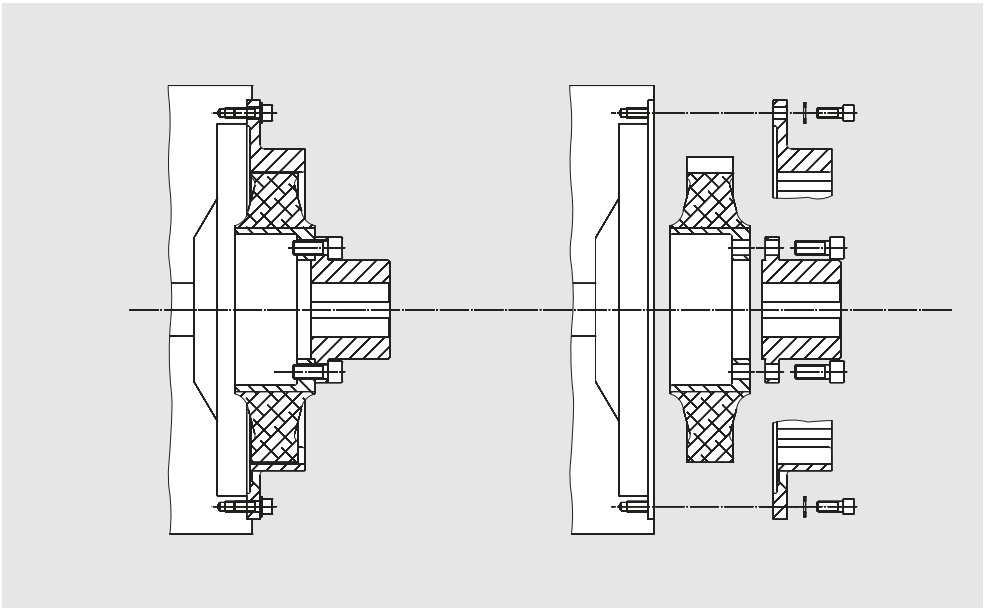
- ▶ Pay attention to the centre of gravity of the load.
- ▶ Use a crane of adequate load-carrying capacity to lift the load.
- ▶ Use lifting gear of adequate load-carrying capacity to lift the load.
- ▶ Make sure that no persons are under suspended loads.

ⓘ To handle the coupling, follow the instructions on page 23.

Basic instructions for the types AC…F2K and AC…D F2K

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

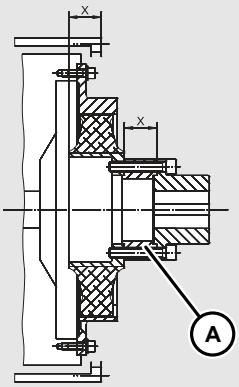
- Make sure that the shaft of the driven machine does not protrude from the coupling hub.
- After loosening the bolts, it must be possible to push the coupling flange back so that there is sufficient space to radially remove the coupling element.
- To achieve maximum movability of the released coupling element, always provide the mounting length LF with a plus tolerance in the specified tolerance range. Pertinent information can be found in the applicable technical product description.



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.
- 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 rubber element due to contact with solvent.

Contact with solvent leads to changes in the properties of the rubber element.

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

- Make sure that solvent does not come into contact with the rubber 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 protection device 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 coupling element and the coupling hub can be delivered in 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	A screw locking compound, for example an adhesive, has been 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-KUPPLUNGEN.

In pre-assembled condition, the coupling element and coupling hub 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.

ACHTUNG!
Die Schraubverbindungen sind lose, nur vormontiert. Schrauben nach der endgültigen Montage mit dem vorgeschriebenen Drehmoment laut Montageanleitung anziehen.

IMPORTANT!
The connecting screws are not fully tightened. These screws must be tightened to the full tightening torque given in our installation instructions during final assembly.

ATTENTION!
Les vis sont uniquement prémontés. Lors du montage veuillez serrer les vis au couple de serrage préscrit. Voir notice de montage et plan correspondant.

All screws must be tightened with the right torque.

CAUTION!

Property damage due to improperly fastened bolts.

When using a screw locking compound, for example an adhesive, the required torque must be adapted under circumstances.

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

- ▶ Tighten the bolts crosswise with the necessary torque, see page 42.
- ▶ Mark the bolts which have been tightened to the required torque in colour.

In the fully assembled condition, the coupling element and the coupling hub 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

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-KUPPLUNGEN 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 protection device 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-KUPPLUNGEN in the case of a different design.

Unless otherwise specified, REICH-KUPPLUNGEN 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.

Mounting the coupling hub on the shaft

ⓘ To handle the coupling, follow the instructions on page 23.

Proceed as follows to jointly mount the coupling hub and the coupling element on the shaft of the driven machine:

- Make sure 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. In this case, pay attention to your specific mounting situation.

- 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 fills the threaded bore but does not protrude from it.
- 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-KUPPLUNGEN 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-KUPPLUNGEN 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.

ⓘ In case that the coupling hub has been balanced together with the flexible coupling element, this fact is confirmed on the coupling hub and the flexible coupling element with a stamped-in X.

- 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.

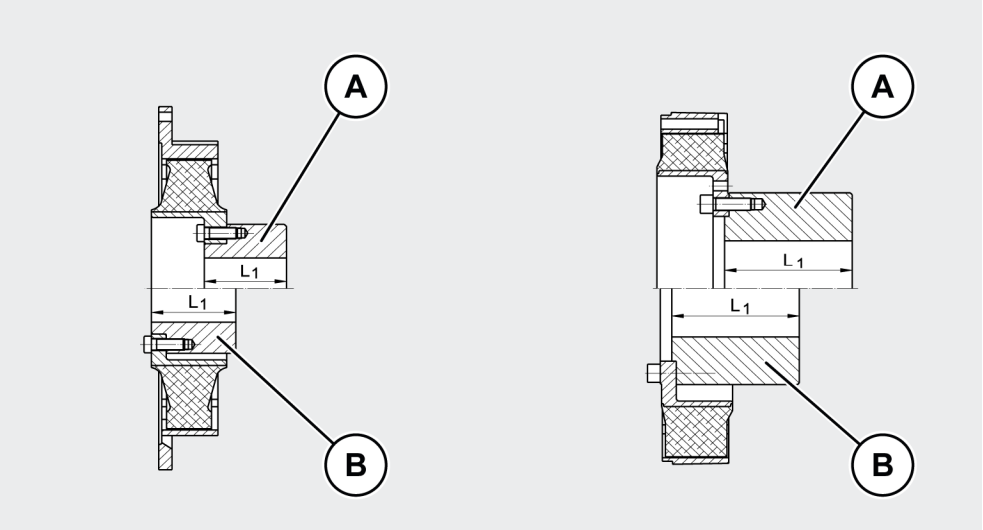
Mounting the coupling element

Type AC...F2

The option of mounting the coupling element on either side allows for two different mounting lengths with the same coupling hub.

- A: long mounting length
- B: short mounting length

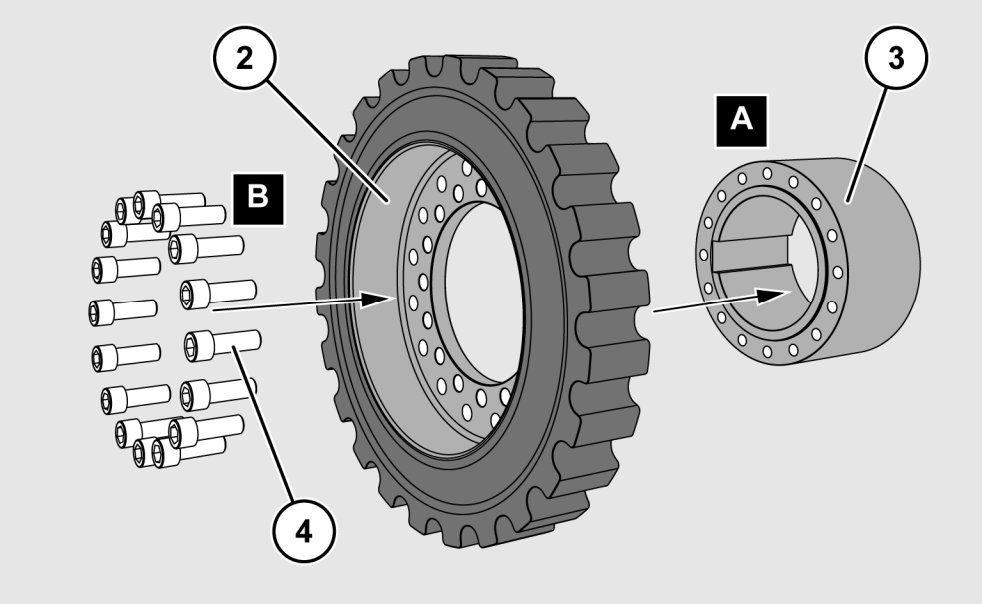
Refer to the order specifications or to the applicable dimensioned drawing for the mounting position and the mounting length.



- Make sure that the connecting surfaces are free of preservative and grease.
- Mount the coupling element (2) on the coupling hub (3) (A).

ⓘ In case that the coupling hub has been balanced together with the flexible coupling element, this fact is confirmed on the coupling hub and the flexible coupling element with a stamped-in X.

- Make sure that the markings from joint balancing are in alignment.
- Align the threaded bores of the coupling hub with the bores in the coupling element.
- Insert the bolts (4) and tighten the bolts hand-tight (B).



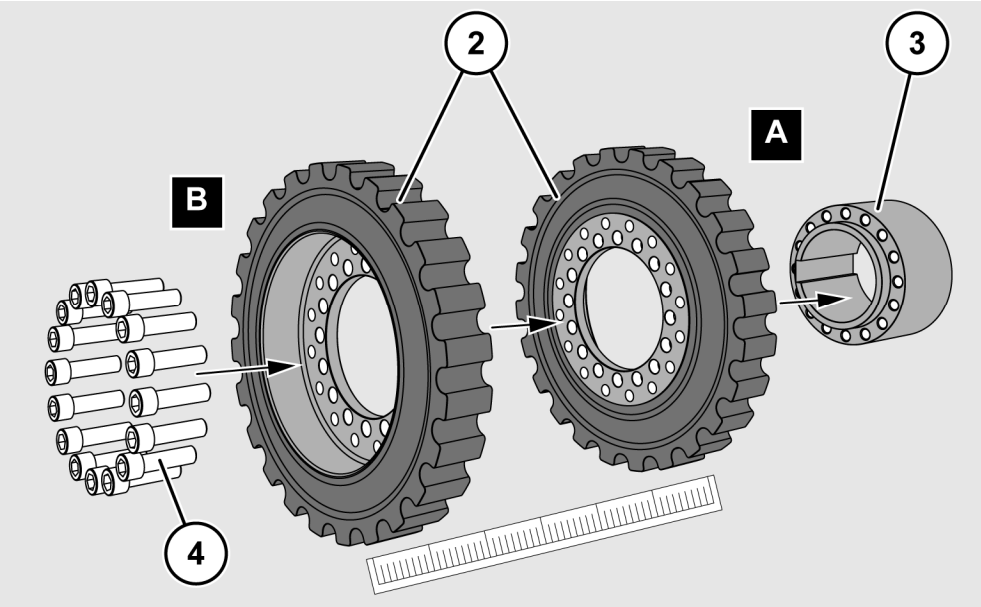
- Tighten the bolts crosswise with the necessary torque, see page 42.
- Mark the bolts which have been tightened to the required torque in colour.

Type AC...D F2

- Make sure that the connecting surfaces are free of preservative and grease.
- Mount the coupling elements (2) on the coupling hub (3) (A).

ⓘ In case that the coupling hub has been balanced together with the flexible coupling elements, this fact is confirmed on the coupling hub and the flexible coupling elements with a stamped-in X.

- Make sure that the markings from joint balancing are in alignment.
- Align the threaded bores of the coupling hub with the bores in the coupling elements.
- Orient the toothing of the two coupling elements in alignment with each other using, for example, a straight edge.
- Insert the bolts (4) and tighten the bolts hand-tight (B).



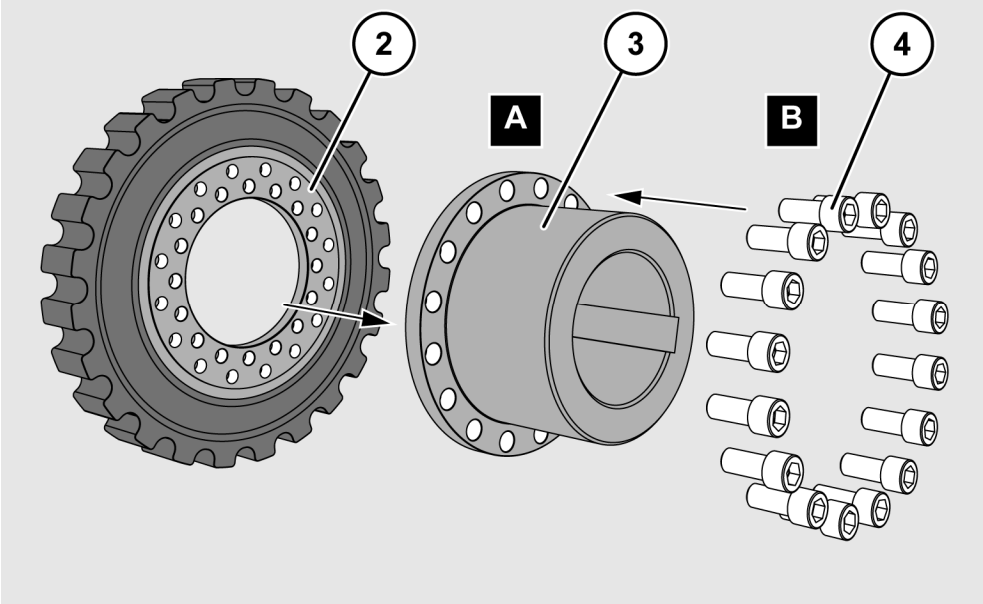
- Tighten the bolts crosswise with the necessary torque, see page 42.
- Mark the bolts which have been tightened to the required torque in colour.

Type AC...F2K

- Make sure that the connecting surfaces are free of preservative and grease.
- If a spacer ring is required, place it onto the coupling hub first.
- Mount the coupling element (2) on the coupling hub (3) (A).

ⓘ In case that the coupling hub has been balanced together with the flexible coupling element, this fact is confirmed on the coupling hub and the flexible coupling element with a stamped-in X.

- Make sure that the markings from joint balancing are in alignment.
- Align the holes of the coupling hub with the threaded bores in the coupling element.
- Insert the bolts (4) and tighten the bolts hand-tight (B).



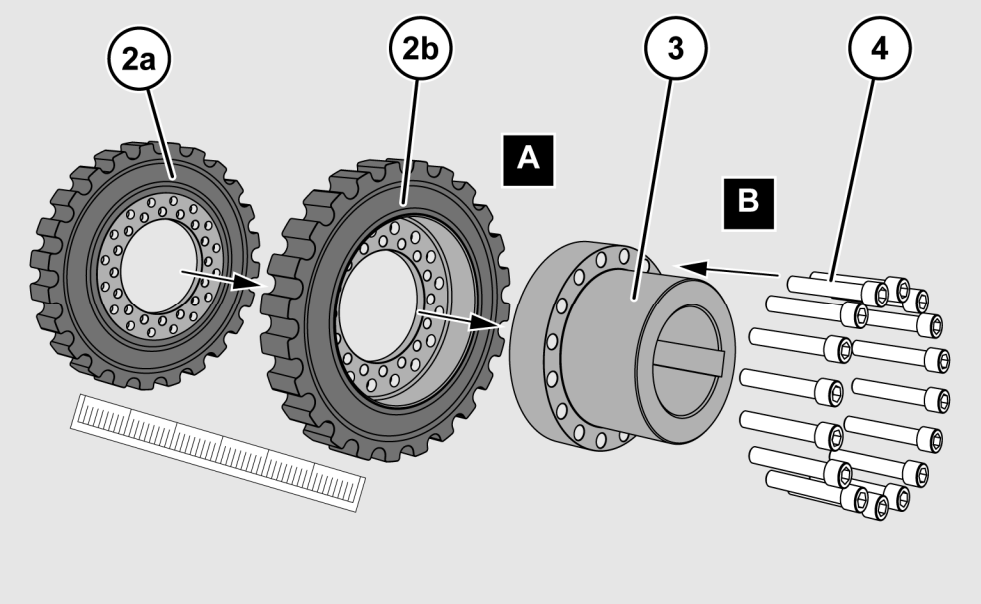
- Tighten the bolts crosswise with the necessary torque, see page 42.
- Mark the bolts which have been tightened to the required torque in colour.

Type AC...D F2K

- Make sure that the connecting surfaces are free of preservative and grease.
- If a spacer ring is required, place it onto the coupling hub first.
- Place the coupling element with the through holes (2b) onto the coupling hub (3) (A).
- Place the coupling element with the threaded bores (2a) on top.

ⓘ In case that the coupling hub has been balanced together with the flexible coupling elements, this fact is confirmed on the coupling hub and the flexible coupling elements with a stamped-in X.

- Make sure that the markings from joint balancing are in alignment.
- Align the holes of the coupling hub with the holes/threaded bores in the coupling elements.
- Orient the toothing of the two coupling elements in alignment with each other using, for example, a straight edge.
- Insert the bolts (4) and tighten the bolts hand-tight (B).



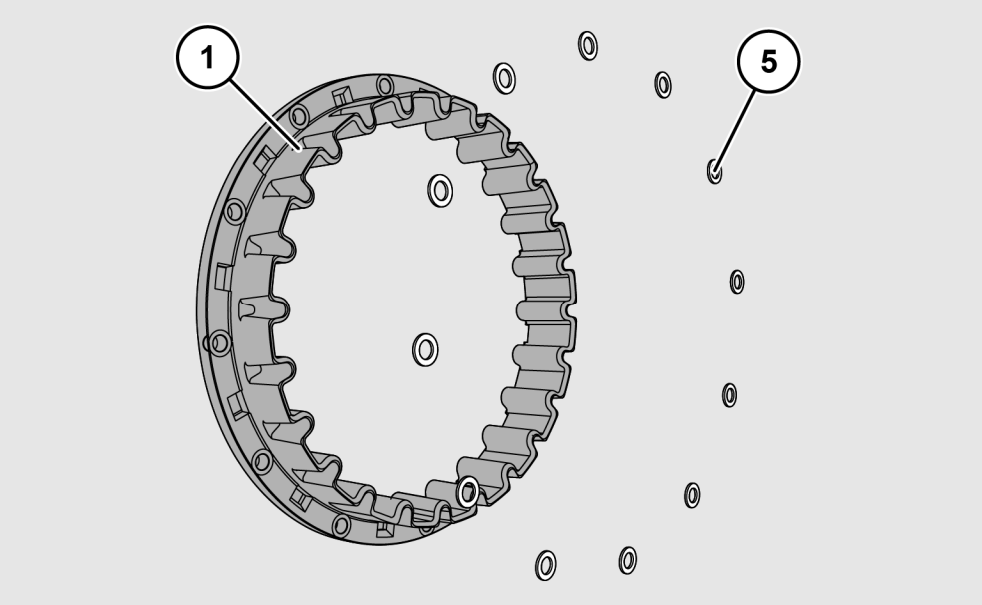
- Tighten the bolts crosswise with the necessary torque, see page 42.
- Mark the bolts which have been tightened to the required torque in colour.

Mounting the coupling flange

ⓘ To handle the coupling, follow the instructions on page 23.

Proceed as follows to mount the coupling flange (1) on the flywheel of the drive unit:

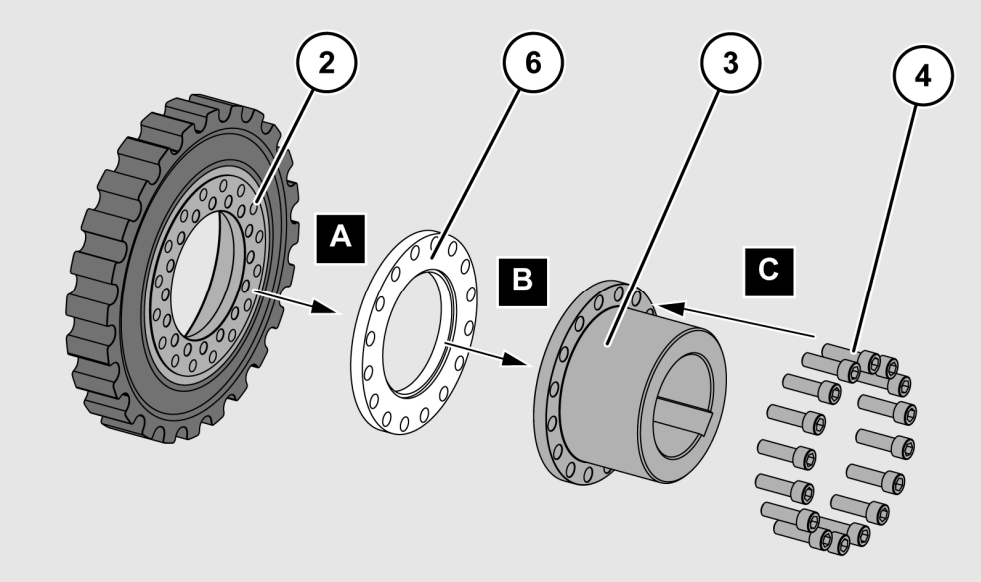
- Make sure that the connecting surfaces are free of preservative and grease.
- Lift the coupling flange in a suitable manner.
- Align the bores of the coupling flange with the threaded bores in the flywheel.
- Make sure that the coupling flange is seated in the centring of the flywheel and has full-surface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



- Insert the bolts (not included in the scope of supply) and tighten them hand-tight.
- Use the provided washers in the case of aluminium flanges or when necessary5.
- Tighten the bolts crosswise with the necessary torque, see page 44.
- Mark the bolts which have been tightened to the required torque in colour.
- Align the coupling as described from page 45.
- Engage the two coupling halves as described from page 47.

Mounting the spacer ring (optional)

The following example figure shows the mounting location of the optional spacer ring (6). The spacer ring is mounted between the coupling hub (3) and the coupling element (2).



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.

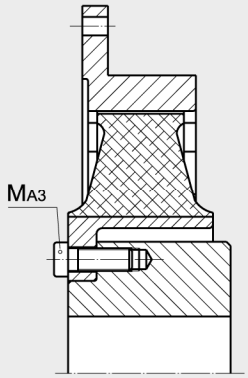
ⓘ The following torques apply as standard unless otherwise specified in the relevant design drawing.

Torques for the bolted connection of the coupling element 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



Coupling size	**2.3**	**2.7 3 4 4.1**	**4.9 5 5.1**	**6 6.1 6.5**	**7 7.5 8 8D 9 9D**		**10.2 10.2D 11 11D 11.7 11.7D 11.9 12**		**12D**
Bolt size	M8	M12	M16	M16	M16	M20	M20	M24	M24 (10.9)
Torque M_{A3} [Nm]	25	85	210	210	210	420	420	710	1000

Torques for the bolted flange connection

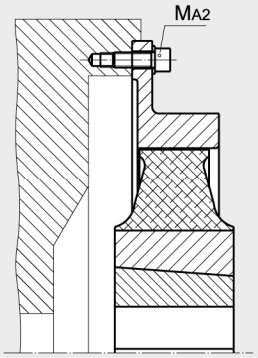
The following torques are applicable for bolting the coupling flange to the engine flywheel.

They are only applicable for the following conditions:

- Total friction factor μ= 0.14
- Bolt strength grade 8.8

Aluminium flanges must be mounted only with plain 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-KUPPLUNGEN.

Contact REICH-KUPPLUNGEN before using bolts of a different strength grade.



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

SAE flywheel	6½, 7½	8, 10, 11½	14, 16	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

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.

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.

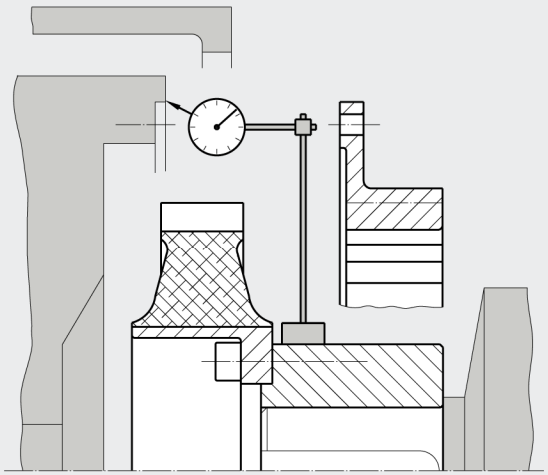
Flange couplings must be aligned from the shaft-side coupling half to one of the machined surfaces of the engine flywheel or engine housing. With shaft couplings, the angular and radial displacements between the two coupling halves are determined by applying the usual dial gauge method. The alignment 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.

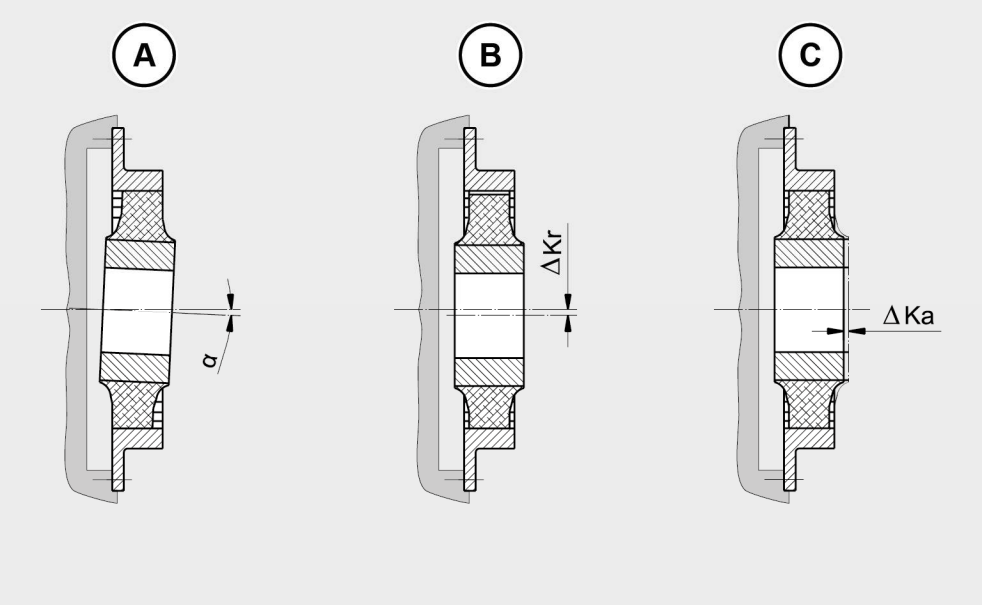
Determine the alignment, for example by applying the usual dial gauge method to machined surfaces.

Proceed as follows to align the coupling:

- ▶ Check the alignment of the coupling from the shaft-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 e.g. 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 rotational speed up to 1500 rpm^{-1}.

Coupling size	A Max. permissible angular displacement α [°]	B Max. permissible radial displacement ΔKr [mm]	C Max. permissible axial displacement ΔKa [mm] *)
1.5	0.5	0.8	±2,5
2.3	0.5	1.2	±3
2.6	0.5	1.2	±4
3	0.5	1.2	±7
4, 4.1	0.5	1.2	+16 -6
4.9	0.5	1.2	±7
5, 5.1	0.5	1.2	±5
6, 6.1	0.4	1.3	±7
6.5	0.4	1.3	±4
7	0.4	1.3	±6

Coupling size	A Max. permissible angular displacement α [°]	B Max. permissible radial displacement ΔKr [mm]	C Max. permissible axial displacement ΔKa [mm] *)
7.5	0.4	1.3	±7
8, 8D	0.4	1.4	±5
9, 9D	0.4	1.5	±4
10, 10D	0.3	1.5	±3
11,7, 11,7D, 11, 11,9, 11D	0.3	1.5	±4
12, 12D	0.3	1.5	±3

*) Observe the following note for types AC…F2K and AC…D F2K:
To ensure maximum mobility of the released coupling element, always provide mounting length L_F with positive tolerance in the specified tolerance range.

The listed axial displacements indicate the possible positioning tolerance to enable full engagement of the coupling element into the flange with reference to the nominal mounting length L_F . The actual positioning must be checked in the mounted condition.

Engaging the coupling halves

Proceed as follows to engage the coupling halves with each other:

- Move the driven machine or the drive unit until the external toothing of the coupling element is in full engagement with the internal toothing of the coupling flange.
- Securely fasten the driven machine and the drive unit in this position.

CAUTION!

Property damage due to collision with other parts.

- Make sure that the coupling has been mounted without distortion.
- Make sure that the coupling has full freedom of movement.

Mounting the protection device

The owner must equip the coupling with a protection device prior to commissioning. The coupling must be operated exclusively with the protection device 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 protection device 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:

- ▶ Make sure 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 protection device 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 alignment of the coupling has been changed.	▶ Decommission the system. ▶ Identify the reason for this change, for example loosened foundation bolts. ▶ Make sure that the alignment of the coupling is corrected properly.
	The coupling element is worn.	▶ Decommission the system. Information regarding this can be found from page 58. ▶ Make sure that the coupling element is exchanged properly. ▶ Make sure that the coupling is mounted and aligned properly. Information regarding this can be found from page 27.

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.

- ▶ Replace aluminium coupling flanges at least every 10 years.

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.

ⓘ To handle the coupling, follow the instructions on page 23.

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-KUPPLUNGEN.
- 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-KUPPLUNGEN for damage and wear assessment.

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

Replacing the coupling elements

Type AC...F2 and AC...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:

- Push the drive unit and the driven machine apart until the flexible coupling element is exposed.
- Release the bolts between the coupling hub and coupling element.
- Secure the coupling element in a suitable manner to prevent it from falling down.
- Remove the bolts between the coupling hub and coupling element.
- Remove the coupling element.
- Make sure to always replace both coupling elements on duplex couplings.

Information on installing flawless coupling elements can be found in the section entitled *Mounting the coupling* on page 27.

Type AC...F2K and AC...D F2K

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

If the conditions described in the section entitled *Basic instructions for types AC...F2K and AC...D F2K* from page 28 are met, the coupling element can be exchanged without moving the coupled machines.

Proceed as follows to remove the coupling element:

- Loosen the coupling flange bolts.
- Secure the coupling flange in a suitable manner to prevent it from falling down.
- Release the bolts between the coupling hub and coupling element.
- Remove the bolts and washers of the coupling flange.
- Pull the coupling flange off the engine flywheel.
- Secure the coupling element in a suitable manner to prevent it from falling down.
- Secure the spacer ring, if fitted, to prevent it from falling down.
- Remove the bolts between the coupling hub and coupling element.
- Remove the coupling element.
- Make sure to always replace both coupling elements on duplex couplings.
- Remove the spacer ring, if fitted.
- Install all new coupling elements.
- Install the flange.

- To install, proceed as described in the section entitled *Mounting the coupling* from page 27.
- Make sure that the connecting surfaces are free of preservative and grease.
- Raise the coupling element in a suitable manner.
- Insert the spacer ring, if fitted.
- Fasten the coupling element hand-tight to the coupling hub using the bolts.
- Push the coupling flange over the coupling element.
- Make sure that the coupling flange is seated in the centring of the engine flywheel and has full-surface contact.
- Insert the bolts with the washers and tighten the bolts hand-tight.
- Tighten the bolts crosswise with the necessary torque, see page 44.
- Tighten the bolts between the coupling hub and coupling element crosswise to the required torque, see page 43.
- Mark the bolts which have been tightened to the required torque in colour.

Completing the maintenance work

- Install the protection devices removed for the maintenance work, such as e.g. the guard on the coupling.
- Remove the tools and aids required for the 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.

- ▶ Make sure that the coupling element and coupling flange do 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.

ⓘ To handle the coupling, follow the instructions on page 23.

- ▶ 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.
- ▶ Pull the drive unit and the driven machine so far apart that there is sufficient space for disassembly.
- ▶ Secure the coupling flange in a suitable manner to prevent it from falling down.
- ▶ Remove the bolts and washers from the coupling flange.
- ▶ Put the coupling flange down on the designated surface.
- ▶ Secure the coupling element and, if fitted, the spacer ring in a suitable manner to prevent them from falling down.
- ▶ Remove the bolts between the coupling element and the hub.
- ▶ Put the coupling element and, if fitted, the spacer ring down on the designated surface.
- ▶ Secure the coupling hub in a suitable manner to prevent it from falling down.
- ▶ Remove any existing axial lock, for example the set screw.
- ▶ Pull the coupling hub off the shaft of the driven machine in a suitable manner.
- ▶ Lay the coupling hub down on a designated 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.