FLENDER COUPLINGS

ARPEX

Operating instructions 8706 en
Edition 10/2017

ART, ARE

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ARPEX
8706 en

Operating instructions

Translation of the original operating instructions

ART, ARE

Edition 10/2017

Legal notes

Warning note concept

This manual comprises notes which must be observed for your personal safety and for preventing material damage. Notes for your personal safety are marked with a warning triangle, those only for preventing material damage appear without a warning triangle. Depending on the level of hazard, the warning notes are shown in reverse order of seriousness, as follows.

⚠ DANGER

means, that death or serious injury **will result**, if the appropriate preventive action is not taken.

⚠ WARNING

means that death or serious injury **may result**, if the appropriate preventive action is not taken.

⚠ CAUTION

means that a slight injury may result, if the appropriate preventive action is not taken.

NOTICE

means that material damage may result, if the appropriate preventive action is not taken.

Where there is more than one hazard level, the warning note for whichever hazard is the most serious is always used. If in a warning note a warning triangle is used to warn of possible personal injury, a warning of material damage may be added to the same warning note.

Qualified personnel

The product/system to which this documentation relates may be handled only by **persons qualified** for the work concerned and in accordance with the documentation relating to the work concerned, particularly the safety and warning notes contained in those documents.
Qualified personnel must be specially trained and have the experience necessary to recognise risks associated with these products and to avoid possible hazards.

Proper use of Flender products

Observe also the following:

⚠ WARNING

Flender products must be used only for the applications provided for in the catalogue and the relevant technical documentation. If products and components of other makes are used, they must be recommended or approved by Flender. The faultfree, safe operation of the products calls for proper transport, proper storage, erection, assembly, installation, start-up, operation and maintenance. The permissible ambient conditions must be adhered to. Notes in the relevant documentations must be observed.

Trade marks

All designations to which the registered industrial property mark ® is appended are registered trademarks of Flender GmbH. Other designations used in this document may be trademarks the use of which by third parties for their own purposes may infringe holders' rights.

Exclusion of liability

We have checked the content of the document for compliance with the hard- and software described. Nevertheless, variances may occur, and so we can offer no warranty for complete agreement. The information given in this document is regularly checked, and any necessary corrections are included in subsequent editions.

Flender GmbH
Alfred-Flender-Straße 77
46395 Bocholt
GERMANY

Document number: 8706 en
℗ 10/2017 Subject to alterations

Note on the EC Machinery Directive 2006/42/EC

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

Symbols in these operating instructions

This symbol additionally indicates an imminent risk of explosion in the meaning of Directive 2014/34/EU.

This symbol additionally indicates an imminent risk of burns due to hot surfaces in the meaning of standard "DIN EN ISO 13732-1".

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Contents

1. Technical data

Enclosed with the coupling delivery and the documentation is an order-specific dimensioned drawing showing all the technical data necessary for fitting (see Fitting data field in figure 1). The coupling can be fitted with the aid of these instructions **only in conjunction with the order-specific drawing of the coupling**.

The technical data to the ARPEX couplings listed in these instructions are documented on the **order-specific drawing of the coupling** (see "Operating and Coupling Data" fields in figure 1) and in the current product catalogue and are available on request or can be accessed at any time on the Internet (see cover at back).

Because of customer-specific adaptations the standard design is frequently deviated from. The **technical data on the order-specific drawing of the couplings should always be followed before** the data in the current product catalogue, therefore.

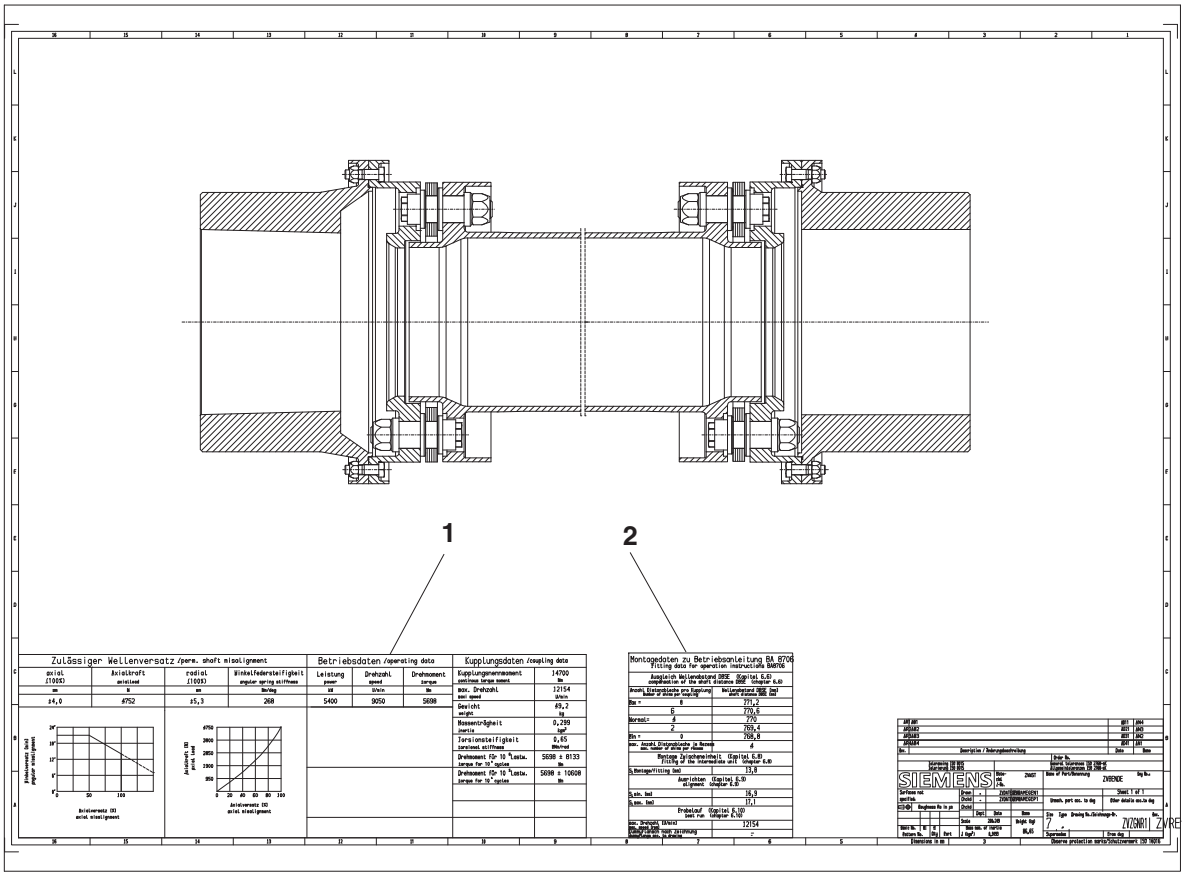

Fig. 1: Order-specific drawing of the coupling

1 Operating and coupling data 2 Fitting data

These data together with the contractual agreements on the coupling determine the limits of its proper use.

> **WARNING**
>
> **Risk of serious injury through flying fragments**
>
> Risk of serious injury through flying fragments and/or risk of damage to the coupling.
> The coupling must be designed with an application factor appropriate to the application. In the event of a change in operating conditions (output, speed, prime mover and driven machine) the design must always be checked.

2. General notes

2.1 Introduction

These instructions are an integral part of the delivery of the coupling and must be kept in its vicinity for reference at all times.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.

- All persons carrying out work on the coupling must have read and understood these instructions and must adhere to them.
- Any changes on the part of the user are not permitted. This applies equally to safety features designed to prevent accidental contact.
- The coupling is designed only for the application specified in the order. Other operating conditions are regarded as incorrect.

The **"FLENDER coupling"** described in these instructions has been developed for stationary use in general engineering applications. The coupling serves to transmit power (torque and speed) between two shafts or flanges connected by this coupling.

The coupling has been manufactured in accordance with the state of the art and is delivered in a condition for safe and reliable use.

The coupling complies with the requirements in Directive 2014/34/EU.

The coupling must be used and operated strictly in accordance with the conditions laid down in the contract governing performance and supply.

The coupling described in these instructions reflects the state of technical development at the time these instructions went to print.

In the interest of technical progress we reserve the right to make changes to the individual assemblies and accessories which we regard as necessary to preserve their essential characteristics and improve their efficiency and safety.

2.2 Copyright

Technical enquiries should be addressed to the following factory or to one of our customer services:

Flender GmbH
Schlavenhorst 100
46395 Bocholt

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

3. Safety instructions

Observe the information in section 2, "General notes".

DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas.
Incorrect changes made to the coupling will create ignition sources.
Any changes on the part of the user are not permitted. This applies equally to safety features designed to prevent accidental contact. For the use in potentially explosive environments the protective equipment must comply at least with type of protection IP2X.

DANGER

Danger of explosion

Risk of explosion when using unsuitable components in potentially explosive areas.
Use the coupling only for the approved zones and equipment groups. In case of doubt, contact Flender.

DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas.
Damaged coupling modules and coupling parts are potential explosion hazards.
Use only undamaged coupling components. Operating the coupling with damaged coupling parts is not permitted in potentially explosive environments in accordance with Directive 2014/34/EU.

3.1 Obligations of the user

- The operator must ensure that everyone carrying out work on the coupling has read and understood these instructions and is adhering to them in every point in order to:
  - avoid injury or damage,
  - ensure the safety and reliability of the coupling,
  - avoid disruptions and environmental damage through incorrect use.
- During transport, assembly, fitting, demounting, and maintenance of the unit, the relevant safety and environmental regulations must be complied with.
- The coupling may only be maintained and/or repaired by persons qualified for the work concerned (see "Qualified personnel" on page 3 of this manual).
- The outside of the coupling must not be cleaned with high-pressure cleaning equipment.
- All work must be carried out with great care and with due regard to safety.

⚠ DANGER

Danger to life through switched-on installation

Risk of being caught or drawn in by rotating and/or movable parts.
To carry out work on the coupling, the system must always be stopped. The drive unit must be secured against being switched on accidentally (e.g. by locking the key switch or removing the fuses from the power supply).
A notice should be attached to the ON switch stating clearly that work is in progress.
At the same time the complete installation must be without load, so that no danger occurs during demounting operations.

⚠ WARNING

Risk of serious injury through rotating components

Risk of serious injury through contact with rotating components.
The coupling must be fitted with suitable safeguards to prevent any contact. The operation of the coupling must not be impaired by the safeguard. This also applies to test runs and when checking the direction of rotation.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
If any malfunctions or changes are noticed during operation, the drive assembly must be switched off at once.

Note

If the coupling is fitted in plant or equipment, the manufacturer of such plant or equipment must ensure that the contents of the present instructions are incorporated in his own instructions.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling through use of defective spare parts.
Flender guarantees only the genuine spare parts supplied by Flender.
Non-genuine spare parts have not been tested or approved by Flender. Non-genuine spare parts may alter technical characteristics of the coupling, thereby posing an active or passive risk to safety.
Flender will assume no liability or guarantee for damage caused by spare parts not supplied by Flender. The same applies to any accessories not supplied by Flender.

4. Transport and storage

Observe the instructions in section 3, "Safety instructions"!

4.1 Scope of supply

The products supplied are listed in the dispatch papers. Check on receipt to ensure that all the products listed have actually been delivered. Parts damaged and/or missing parts must be reported to Flender in writing immediately.

4.2 Transport

Different forms of packaging may be used depending on the size of the coupling and method of transport. Unless otherwise agreed, the packaging complies with the **HPE Packaging Guidelines.**

The following symbols with their meanings are applied to the packaging and must be observed:

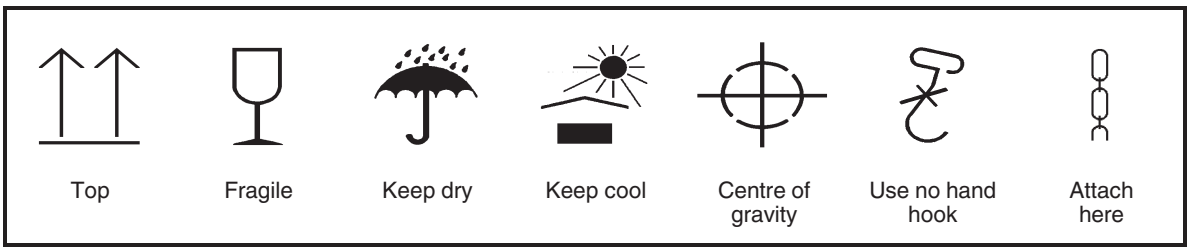

Fig. 2: Transport symbols

DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas.
Damaged coupling modules and coupling parts are potential explosion hazards.
Use only undamaged coupling components. Operating the coupling with damaged coupling parts is not permitted in potentially explosive environments in accordance with Directive 2014/34/EU.

WARNING

Serious injury

Risk of serious injury through falling components or quenching.
Damage to coupling parts when using unsuitable transport equipment.
When handling these products, use only lifting and handling equipment of sufficient load-bearing capacity.
Transport of the coupling must be carried out so as to avoid personal damage and damage to the coupling.

NOTICE

Material damage

Risk of material damage if not observing the packaging symbols.
The symbols marked on the packing must be observed.

4.3 Storage of the coupling

The coupling is delivered in a preserved condition and can be stored in a covered, dry place for up to 6 months. If the unit is to be stored for a longer period, it should be treated with a long-term preservative agent (Flender must be consulted).

Correctly stored couplings retain their properties unchanged.

NOTICE

Risk of damage to the coupling through improper storage

Impairment of the physical properties of the coupling and/or coupling parts.
The storage area must be dry (air humidity less than 65 %) and free from dust. Ensure that no condensation occurs. Do not store with aggressive chemicals, acids, alkalis, etc.
If the coupling contains elastomer components, no ozone-generating equipment of any kind, such as fluorescent light sources, mercury vapour lamps or high-tension electrical equipment, must be allowed into the storage areas.
Storage of the coupling on suitable aids or in suitable containers.

5. Technical description

5.1 General description

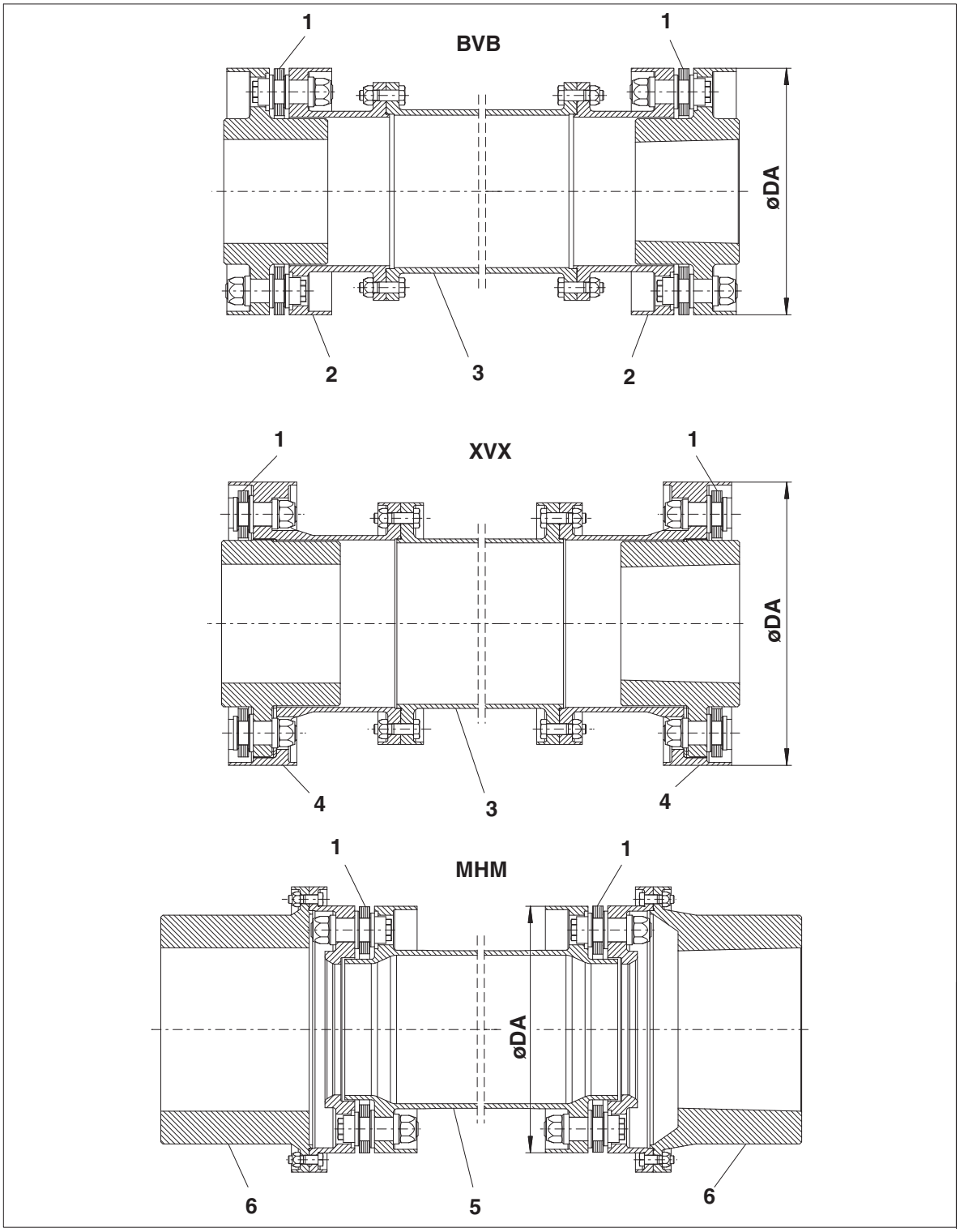

Fig. 3: Types **BVB**, **XVX** and **MHM**

1 Plate pack
2 "**B**" module
3 "**V**"-spacer
4 "**X**" module
5 "**H**" module
6 "**M**" hub

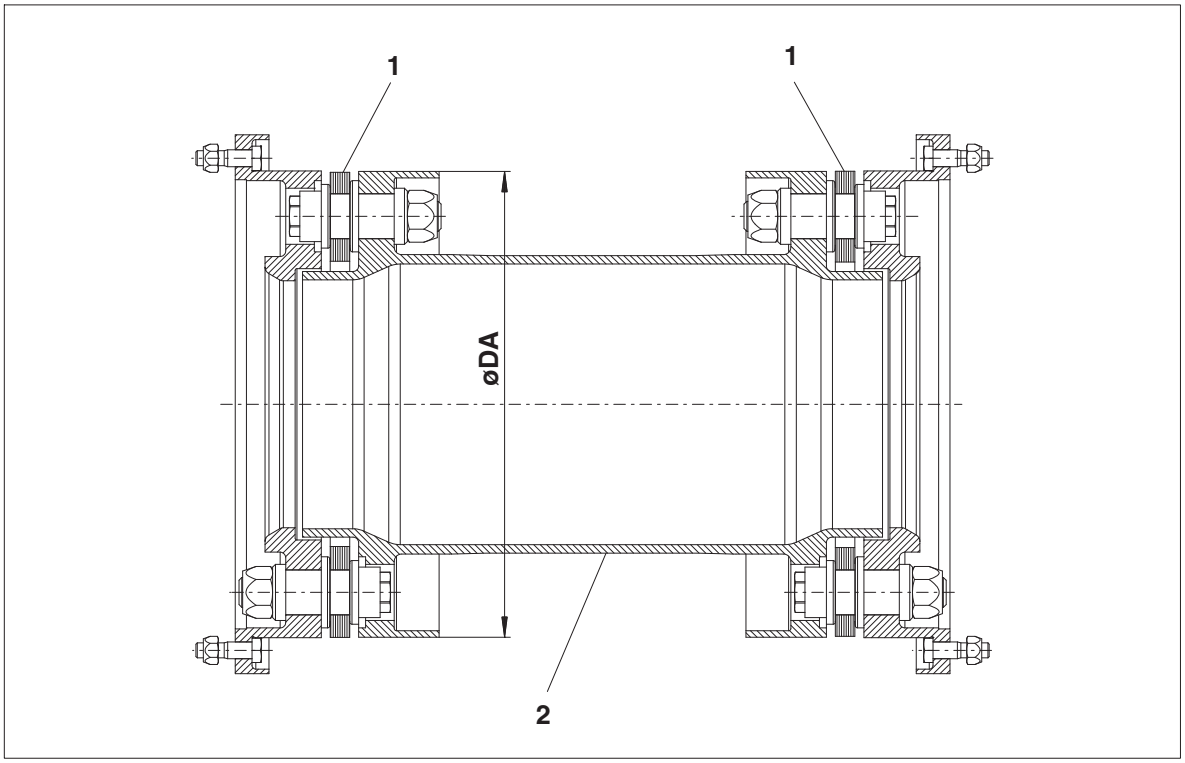

Fig. 4: Type with **"H"** module

1 Plate pack
2 "**H**" module

ARPEX-turbo couplings are all-steel couplings and can be supplied, inter alia, in the types shown in figures 3 and 4. The plate packs are arranged in the fitted coupling modules between the flanges of the coupling parts and bolted to them alternately. The ARPEX coupling is torsion-resistant and transmits the torque without circumferential backlash. In axial and radial direction the coupling is however still flexible and can absorb axial, radial and angular misalignment of the coupled units.

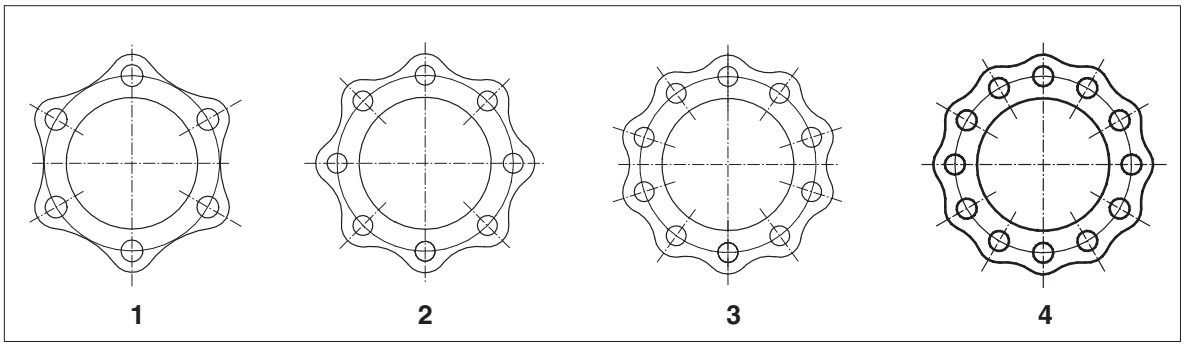

Fig. 5: Designs of the plates

1 6-sided plate ART/ARE-6
2 8-sided plate ART/ARE-8
3 10-sided plate ART/ARE-10
4 12-sided plate ART/ARE-12, special version

The size designation of the coupling indicates the outside flange diameter **DA** (see fig. 3 and/or fig. 4) of the coupling **in mm**. Attached item 6, 8, 10 or 12 (special version) specifies the number of screw-connection points on the plate pack (see figure 5). This information is prefixed by a letter combination specifying the component parts of the coupling.

Example: ART-8 BVB 220-8
Coupling with "B" module **(B)** - "V"-spacer **(V)** - "B" module **(B)** of size 220-8 from the ART-8 series

5.2 Coupling types and component arrangement

All coupling types of the ART/ARE series are assembled from individual components (e.g. **"M"** hubs and/or **"F"** flanges) and from coupling modules (e.g. **"B"** module and/or**"H"** module), which contain the plate packs. The coupling components and coupling modules are joined together with flange screw connections. Items 5.2.1 and 5.2.2 show both standard types and possible special types.

Note

The exact arrangement of the coupling components, coupling modules, screw connections of the flanges and further accessories such as shims can be found on the order-specific drawing of the coupling.

5.2.1 Standard types

In the following figures 6, 7, 8 and 9 the four standard types, **BVB**, **XVX**, **MHM**, and the **"H" module** of the ART/ARE series are shown.

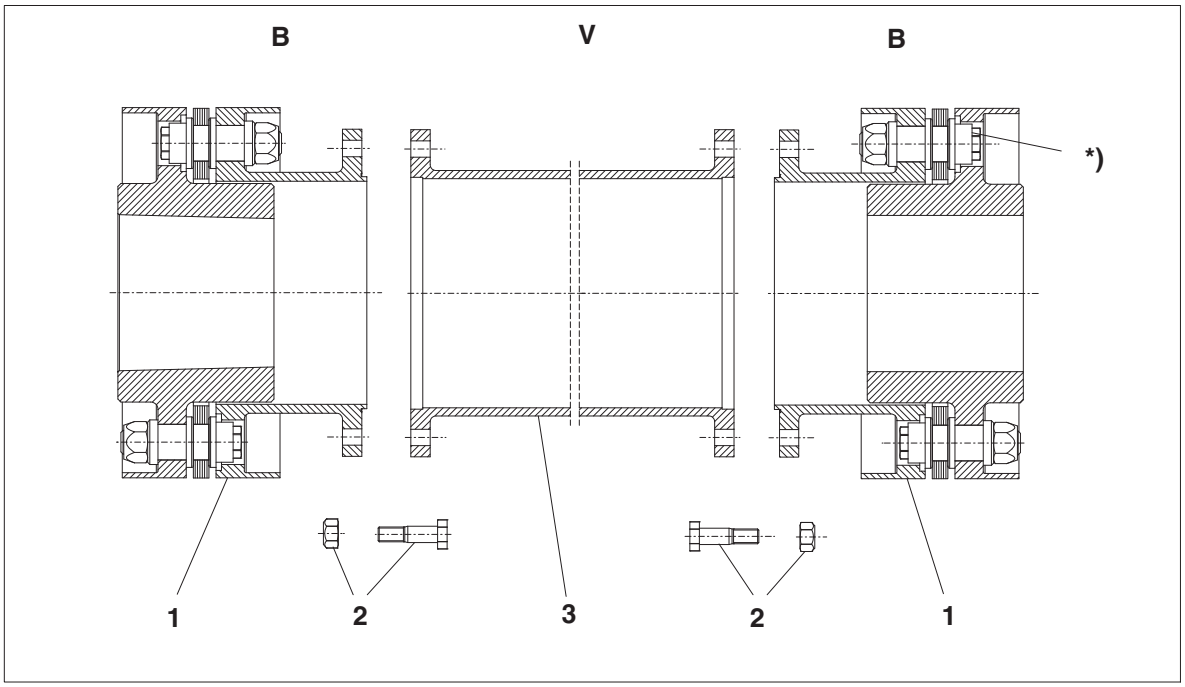

Fig. 6: Standard type **BVB**

1 "**B**" module
2 Screw connection of flange
3 "**V**"-spacer (intermediate unit)

*) **The plate packs must not be demounted or retightened!**

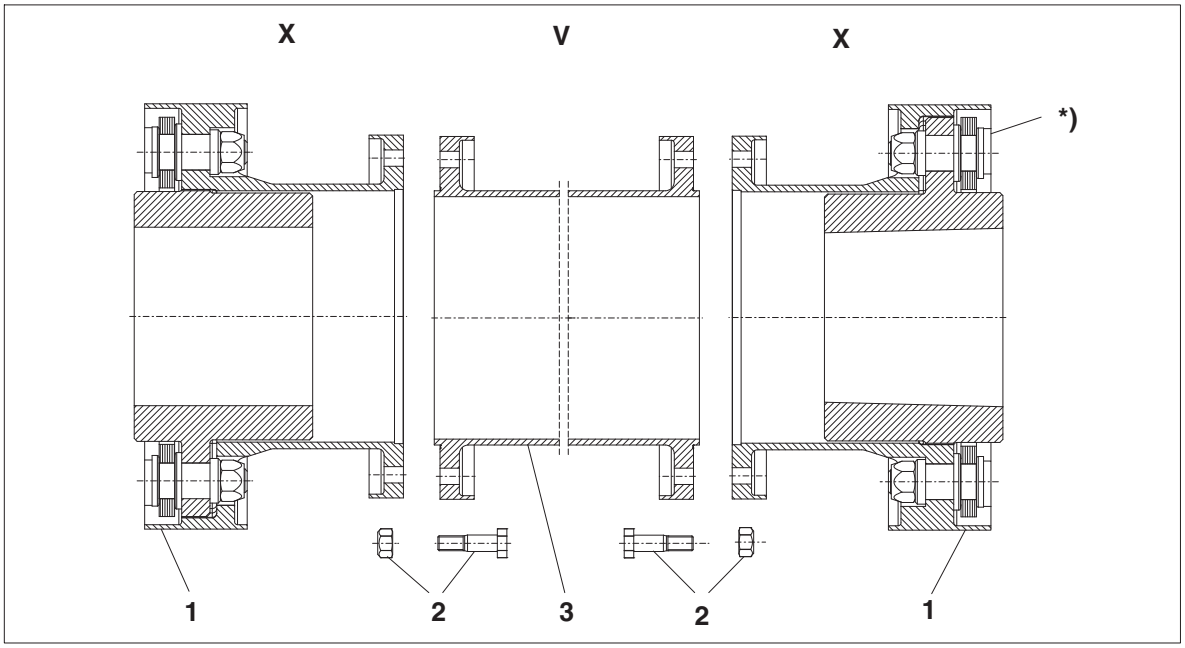

Fig. 7: Standard type **XVX**

1 "**X**" module
2 Screw connection of flange
3 "**V**"-spacer (intermediate unit)

*) **The plate packs must not be demounted or retightened!**

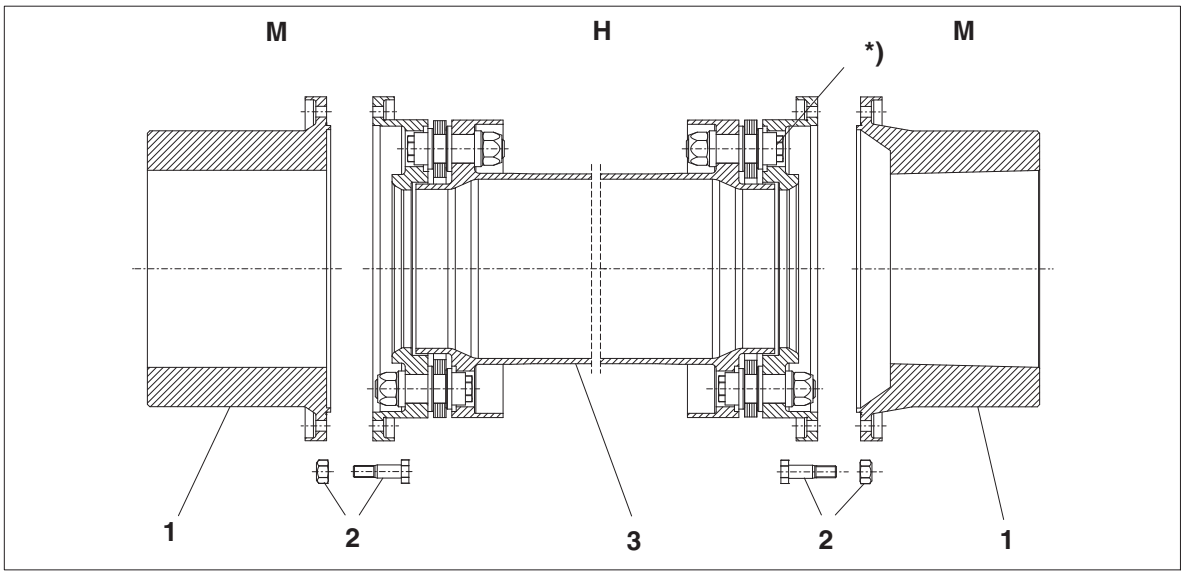

Fig. 8: Standard type **MHM**

1 "**M**" hub
2 Screw connection of flange
3 "**H**" module (intermediate unit)

*) **The plate packs must not be demounted or retightened!**

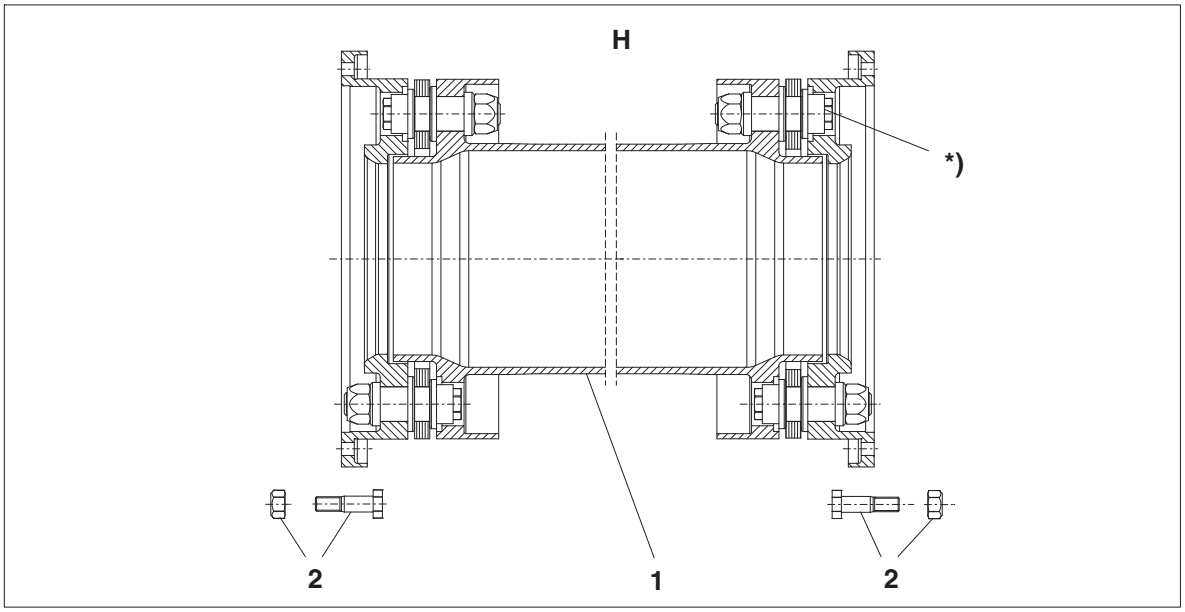

Fig. 9: Standard type with **"H"** module

1 "**H**" module (intermediate unit)

2 Screw connection of flange

*) **The plate packs must not be demounted or retightened!**

5.2.2 Special types

By exchanging individual coupling components and coupling modules, additional types can be generated on the basis of the standard types (see item 5.2.1). As an example three special types, **BVFF, MWF** and **MFB**, are shown in this section (see figs. 10 to 12).

Note

The exact arrangement of the coupling components, coupling modules, screw connections of the flanges and further accessories such as shims can be found on the order-specific drawing of the coupling.

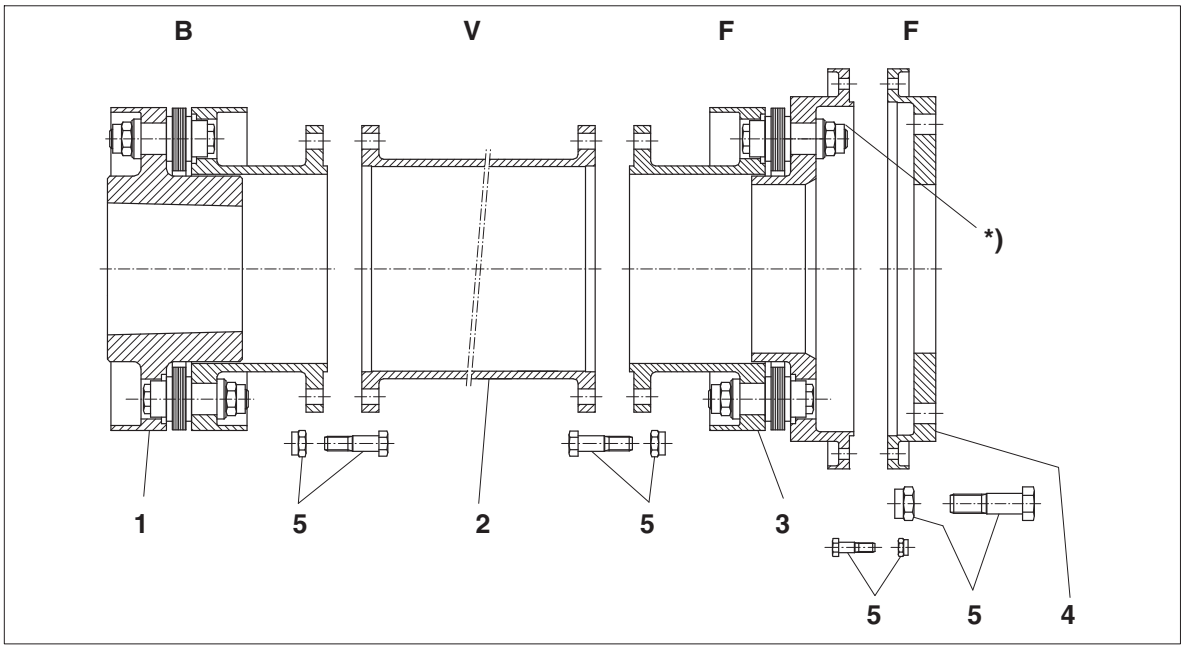

Fig. 10: Special type **BVFF**

1 "**B**" module
2 "**V**"-spacer (intermediate unit)
3 "**F**" module
4 "**F**" flange
5 Screw connection of flange

*) **The plate packs must not be demounted or retightened!**

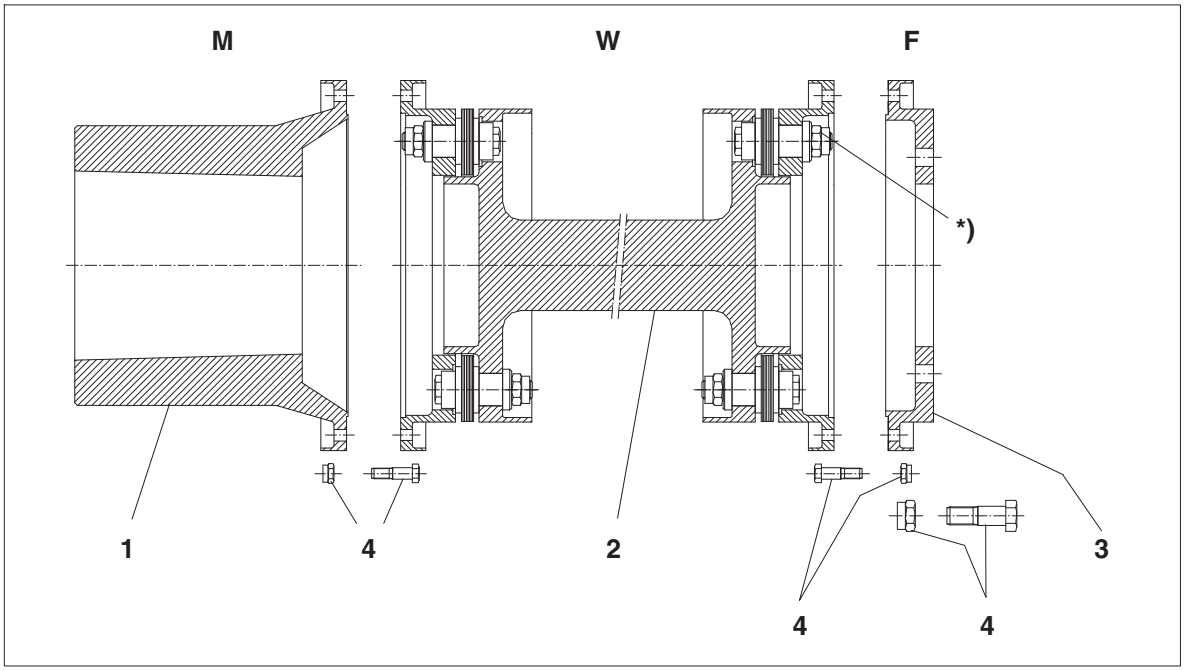

Fig. 11: Special type **MWF**

1 "**M**" hub
2 "**W**" module (intermediate unit)
3 "**F**" flange
4 Screw connection of flange

*) **The plate packs must not be demounted or retightened!**

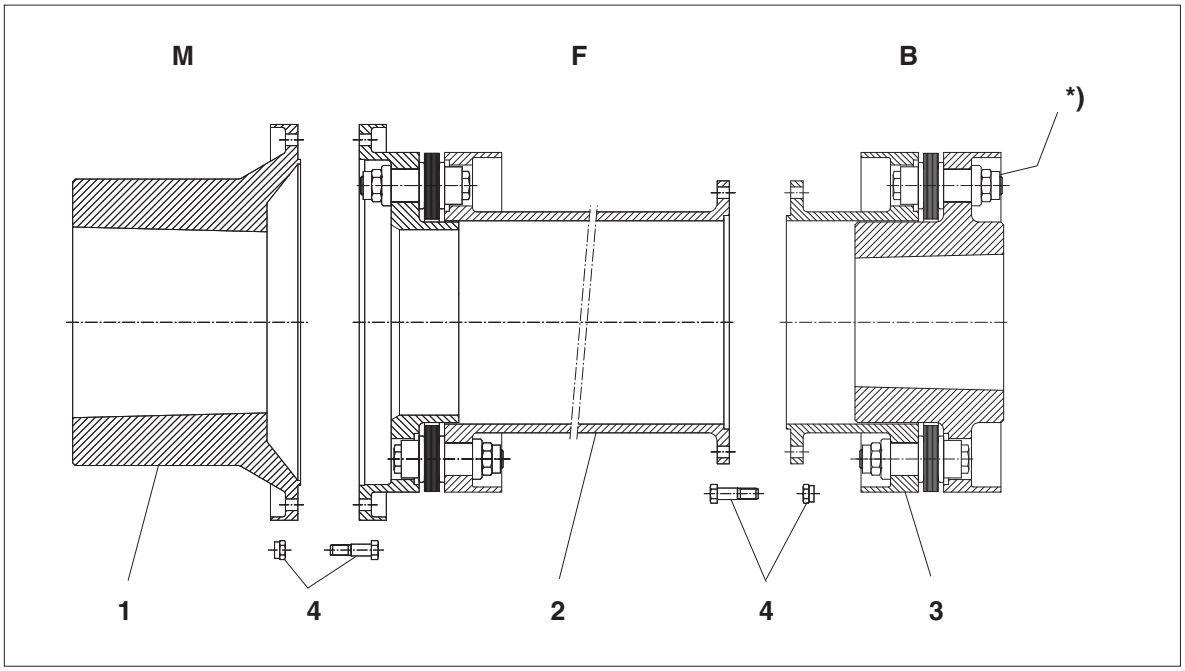

Fig. 12: Special type **MFB**

1 "**M**" hub
2 "**F**" module (intermediate unit)
3 "**B**" module
4 Screw connection of flange

*) **The plate packs must not be demounted or retightened!**

5.3 Marking of the coupling parts for use in potentially explosive areas

Couplings which are ordered in ATEX configuration, have the following marks on the outer circumference of one of the coupling parts (e.g. on the hub):

Complete mark:

Flender GmbH CE Ⓔx II 2G c IIC T2/T3/T4/T5/T6
46395 Bocholt - Germany -40 °C ≤ Ta ≤ +260 °C/+180 °C/+115 °C/+80 °C/+65 °C
FLENDER couplings ARPEX Ⓔx II 2D c T 120 °C -40 °C ≤ Ta ≤ +100 °C
<year built> Ⓔx I M2 c -40 °C ≤ T_a ≤ +130 °C

Abbreviated mark:

Flender GmbH CE Ⓔx II 2GD c IIC TX
46395 Bocholt - Germany Ⓔx I M2 c X
FLENDER couplings ARPEX <year built>

All other coupling components, with the exception of the screw connection of the flanges and the shims, must be marked by Ⓔx .

5.4 Operating conditions

Ⓔx

⚠ DANGER

Danger of explosion

When using unsuitable components in potentially explosive areas there is a risk of explosion .
Use the coupling only for the approved zones and equipment groups. In case of doubt, contact Flender.

Note

Marked couplings and/or coupling parts as described in item 5.3 "Marking of the coupling parts according to Directive 2014/34/EU" are suited for the operating conditions defined in Directive 2014/34/EU mentioned below.

- **Equipment group II (use above ground) of categories 2 and 3 for areas where there are explosible gas, vapour, mist, air mixtures as well as for areas where dust can form explosible atmospheres.**

  Depending on the assigned temperature class, the following maximum ambient temperature in the immediate vicinity of the coupling, or maximum surface temperature of the coupling are permitted.

Table 1: Temperature classes

Ambient temperature	Temperature class	Max. surface temperature
- 40 °C up to max. + 230 °C	T2	less than 280 °C
- 40 °C up to max. + 150 °C	T3	less than 200 °C
- 40 °C up to max. + 85 °C	T4	less than 135 °C
- 40 °C up to max. + 50 °C	T5	less than 100 °C
- 40 °C up to max. + 35 °C	T6	less than 85 °C

- **Equipment group I (underground applications) of the category M2.**

5.5 Condition on delivery

5.5.1 Type **BVB**

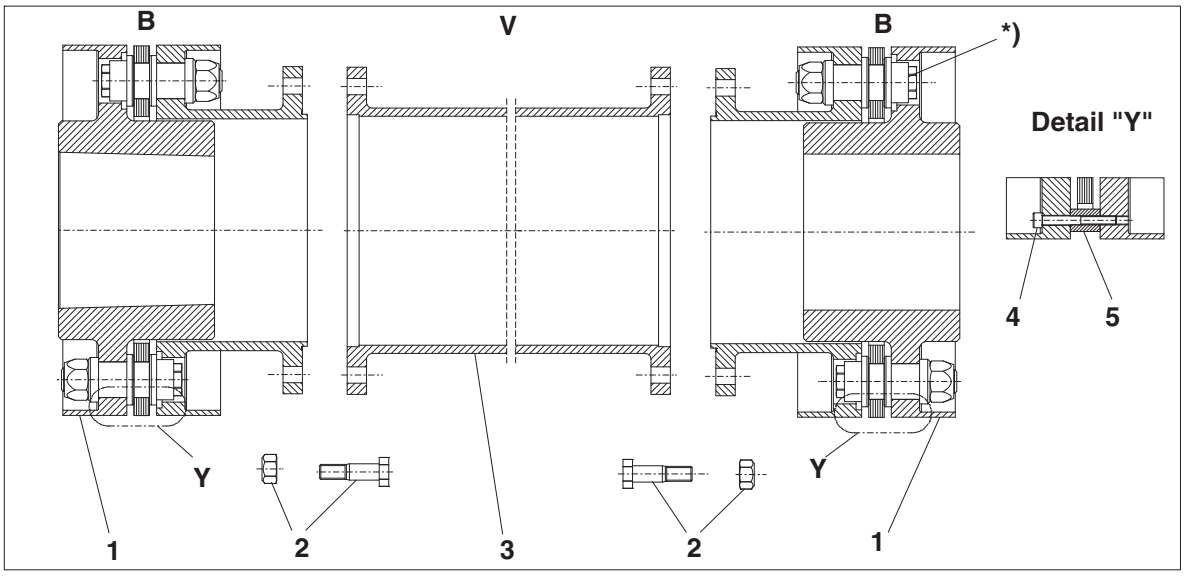

Fig. 13: Type **BVB**

1	**"B"** module	2	Screw connection of flange
3	**"V"**-spacer (intermediate unit)	4	Cheese-head bolt
5	Distance bushes	**"Y"**	Fastening

*) **The plate packs must not be demounted or retightened!**

The plate packs have been secured for the transport with special fastenings (spacer bushes and cheese-head screws; see detail **"Y"** in figure 13).

The screw connections of the flanges (see figure 13) are delivered in separate packing units for each coupling. The packing unit may contain additional spare screw connections.

Depending on the coupling version, optionally shims may be delivered, which are used for compensating the shaft distance **"DBSE"** (DBSE = distance between shaft ends). The procedure is described in item 6.6.

5.5.2 Type **XVX**

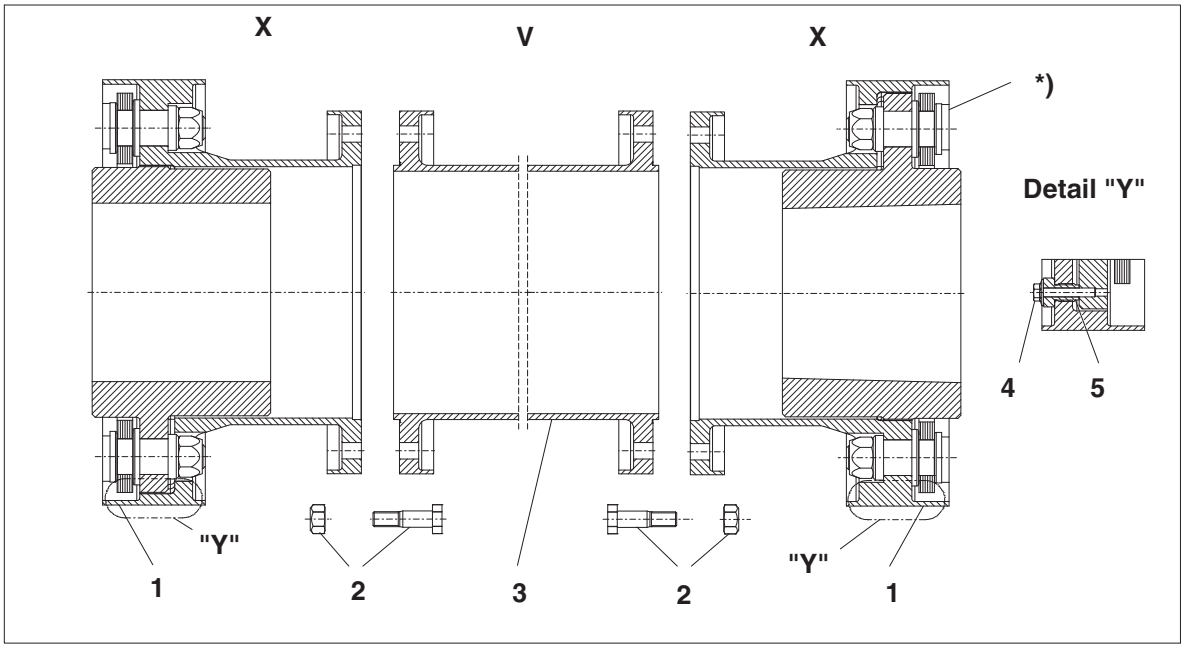

Fig. 14: Type **XVX**

1	"**X**" module	2	Screw connection of flange
3	"**V**"-spacer (intermediate unit)	4	Collar bolt
5	Threaded bush	**"Y"**	Fastening

*) **The plate packs must not be demounted or retightened!**

The plate packs have been secured for the transport with special fastenings (collar bolts and threaded bushes; see detail **"Y"** in figure 14).

The screw connections of the flanges (see figure 14) are delivered in separate packing units for each coupling. The packing unit may contain additional spare screw connections.

Depending on the coupling version, shims may be delivered, which are used for compensating the shaft distance **"DBSE"**. The procedure is described in item 6.6.

5.5.3 Type **MHM**

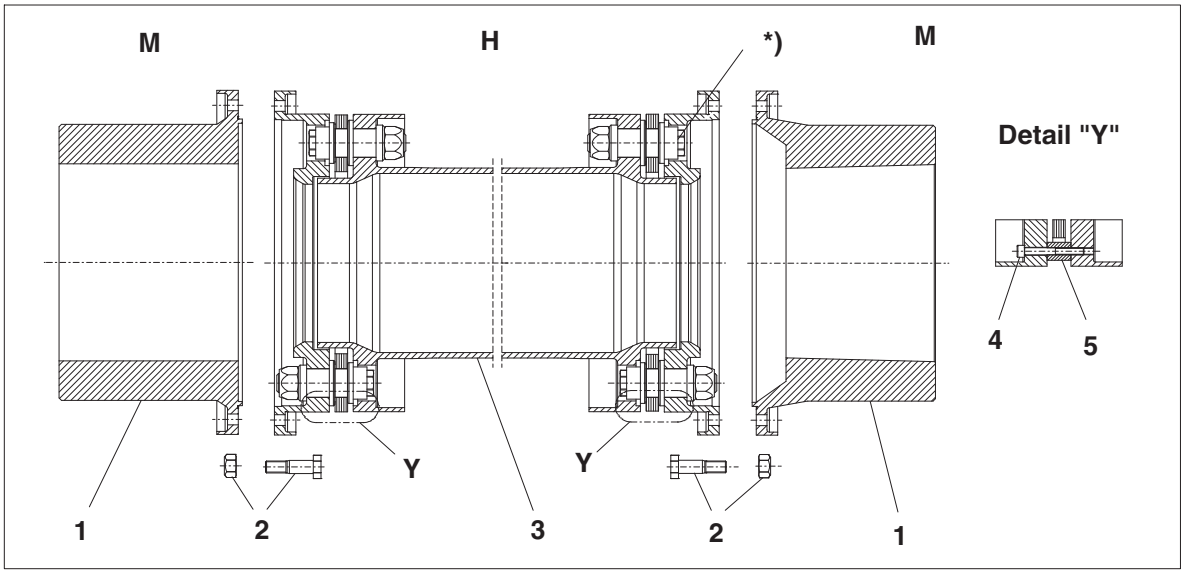

Fig. 15: Type **MHM**

1	**"M"** hub	2	Screw connection of flange
3	**"H"** module (intermediate unit)	4	Cheese-head bolt
5	Distance bushes	**"Y"**	Fastening

*) **The plate packs must not be demounted or retightened!**

The plate packs have been secured for the transport with special fastenings (spacer bushes and cheese-head screws; see detail **"Y"** in figure 15).

The screw connections of the flanges (see figure 15) are delivered in separate packing units for each coupling. The packing unit may contain additional spare screw connections.

Depending on the coupling version, shims may be delivered, which are used for compensating the shaft distance **"DBSE"**. The procedure is described in item 6.6.

5.5.4 Type with **"H"** module

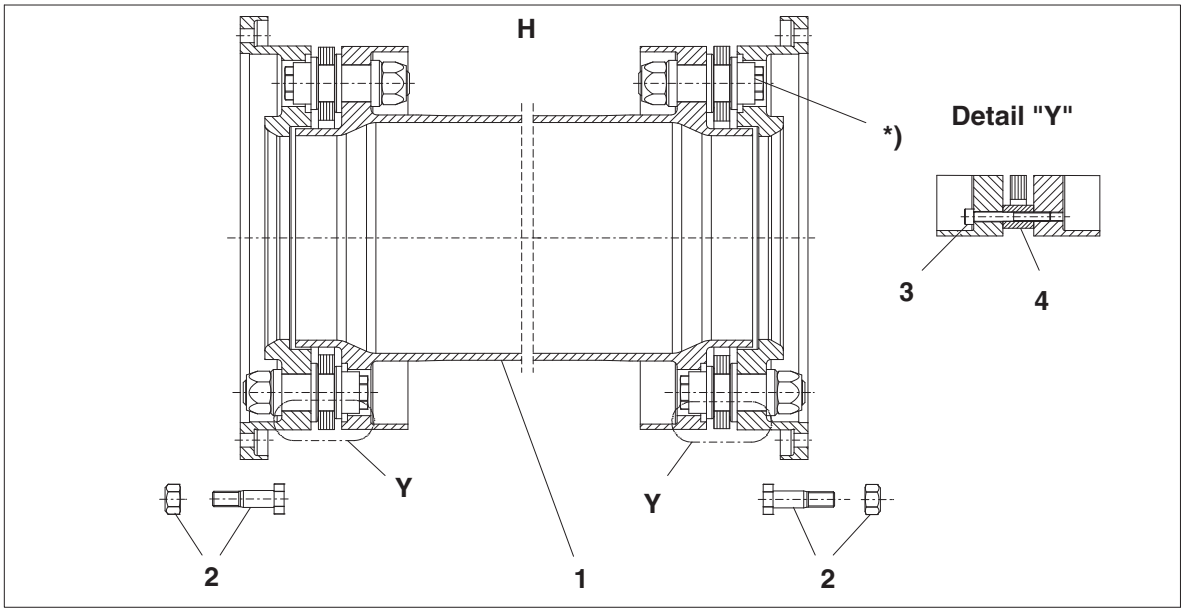

Fig. 16: Type with **"H"** module

1	**"H"** module (intermediate unit)	2	Screw connection of flange
3	Cheese-head bolt	4	Distance bushes
"Y"	Fastening		

*) **The plate packs must not be demounted or retightened!**

This type with the **"H"** module consist as a rule of two flanges, which are bolted to the customer's flanges, of two plate packs and an intermediate spacer.

The plate packs have been secured for the transport with special fastenings (spacer bushes and cheese-head screws; see detail **"Y"** in figure 16).

The screw connections of the flanges (see figure 16) are delivered in separate packing units for each coupling. The packing unit may contain additional spare screw connections.

Depending on the coupling version, shims may be delivered, which are used for compensating the shaft distance **"DBSE"**. The procedure is described in item 6.6.

5.5.5 Special types

All types of the ART/ARE series are made up of individual coupling components (e.g. **"M"** hubs, **"V"** spacers and/or **"F"** flanges) and coupling modules (e.g. **"B"** module and/or **"H"** module), which comprise the plate packs.

Note

The exact arrangement of the coupling components, coupling modules, screw connections of the flanges and further accessories such as shims can be found on the order-specific drawing of the coupling.

For the transport the plate packs of the coupling modules have been secured with fastenings. The design of the fastenings depends on the type of coupling (see order-specific drawing of the coupling).

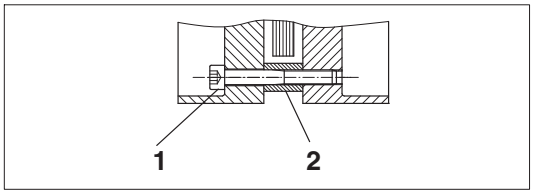

Fig. 17: Fastening of the plate packs with distance bush

1 Cheese-head bolt
2 Distance bush

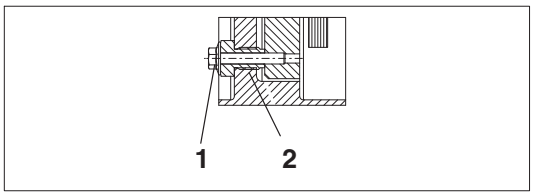

Fig. 18: Fastening of the plate packs with threaded bush

1 Collar bolt
2 Threaded bush

The screw connections of the flanges are delivered in separate packing units for each coupling. The packing unit may contain additional spare screw connections.

Depending on the coupling version, shims may be delivered, which are used for compensating the shaft distance **"DBSE"**. The procedure is described in item 6.6.

6. Fitting

6.1 General information on fitting

Observe the instructions in section 3, "Safety instructions"!

Fitting work must be done with great care by trained and qualified personnel (see "Qualified personnel" on page 3 of this manual).

As early as during the planning phase it must be ensured that sufficient space is available for installation and subsequent care and maintenance work.

Adequate lifting equipment must be available before beginning the fitting work.

DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas.
The conductivity and coating thickness of the paint applied may give rise to electrostatic charges and are potential ignition sources.
If coated couplings are used in potentially explosive areas, the requirements made of the conductivity of the coating and the limitation on the thickness of the coat applied must be observed in accordance with standard "DIN EN 13463-1". Where coatings have a thickness < 200 µm, no electrostatic charge is to be expected. Where coatings are thicker than 200 µm, an electrostatic charge, e.g. by cleaning the coupling, must be avoided.

DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas through damage.
Damaged coupling modules and coupling parts are potential explosion hazards.
Use only undamaged coupling components. Operating the coupling with damaged coupling parts is not permitted in potentially explosive environments in accordance with Directive 2014/34/EU.

DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas.
Incorrect changes made to the coupling will create ignition sources.
Any changes on the part of the user are not permitted. This applies equally to safety features designed to prevent accidental contact. For the use in potentially explosive environments the protective equipment must comply at least with type of protection IP2X.

WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.

- The order of the described fitting steps must be adhered to.
- Adhere to specified tightening torques. Observe the instructions relating to cleaning and/or treatment of the bolts with auxiliary materials.
- No welding work must be done at all on the coupling.
- Only undamaged coupling parts must be used. In particular the teeth, holes, screw threads and joining and sealing surfaces must not be damaged.

⚠ WARNING

Serious injury

Rotating components may cause injury during work on the still rotating coupling.
All work on the coupling must be carried out only when it is at a standstill.
The drive unit must be secured against being switched on accidentally (e.g. by locking the key switch or removing the fuses from the power supply). A notice should be attached to the ON switch stating clearly that work on the coupling is in progress. The relevant accident prevention regulations at the place of installation apply as well.

⚠ CAUTION

Risk of corrosion burns through chemical substances

Avoid burns when working with corrosive cleaning agents.
Observe manufacturer's instructions for handling cleaning agents and solvents.
Wear suitable personal protective equipment (gloves, safety glasses).

6.2 Preparation for fitting

Observe the safety instructions in section 6.1, "General information on fitting"!

Set the flange or shaft distance of the machines to be coupled exactly to the fitting length **"DBSE"**, as shown on the **order-specific drawing of the coupling**. On axially pretensioned couplings adjust the flange or shaft distance exactly to the fitting length **"DBSE fitting"**. Exactly align the machines to be coupled. The shaft distance **"DBSE"** can be adjusted with shims (see item 6.6). Shims form only an optional part of the scope of delivery.

6.3 Screw connection of flange

Observe the safety instructions in section 6.1, "General information on fitting"!

The screw connections of the flanges (see figures 6 to 16) are delivered in separate packing units for each coupling. The packing unit may contain additional spare screw connections.

NOTICE

Damage to the coupling

Damage to the coupling and/or disruptions through the incorrect use of screw connections of the flanges. The screw connections of the flanges have been checked by weight and must always be used or replaced in sets.

6.4 Fitting the coupling parts

Observe the safety instructions in section 6.1, "General information on fitting"!

- Before starting the fitting the **contact surfaces of all the coupling parts** and the **customer's connecting flanges** and the **shaft ends** and **hub bores** must be freed of any rust-preventive medium and carefully cleaned (see figure 19).

NOTICE

Damage to the coupling

Damage to the coupling and/or disruptions through insufficient cleaning.
The surfaces to be joined must be absolutely clean and grease-free.

⚠ CAUTION

Risk of corrosion burns through chemical substances

Avoid burns when working with corrosive cleaning agents.
Observe manufacturer's instructions for handling cleaning agents and solvents.
Wear suitable personal protective equipment (gloves, safety glasses).

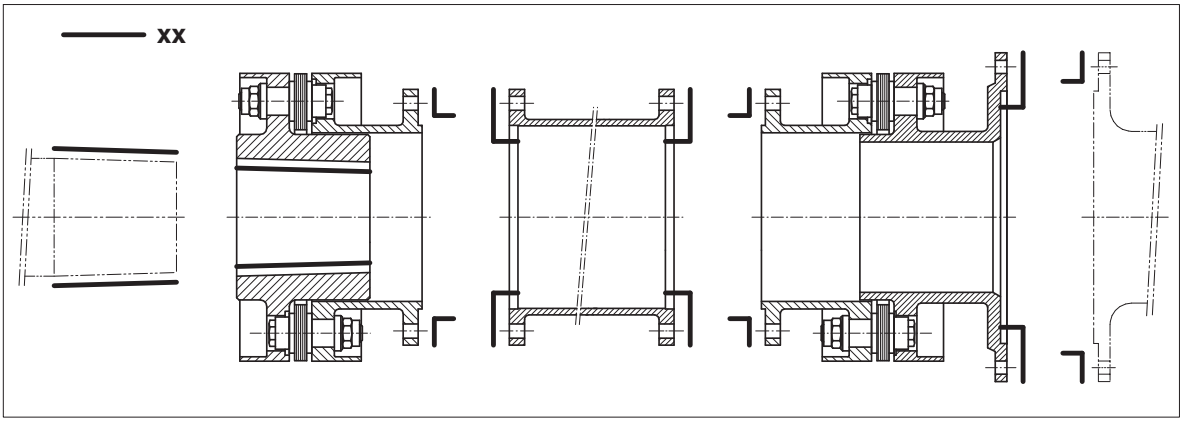

Fig. 19: Preparing the surfaces

xx Surfaces cleaned and free from grease

6.4.1 Fitting **"B"**, **"X"** modules and **"M"**-hubs

Observe the safety instructions in section 6.1, "General information on fitting"!

NOTICE

Damage to the coupling, damage to other components

Damage to the coupling, the bearings and the shaft through incorrect pulling on.
The coupling parts must be fitted with the aid of suitable equipment to avoid damaging the shaft bearings through axial joining forces. Use suitable lifting gear.

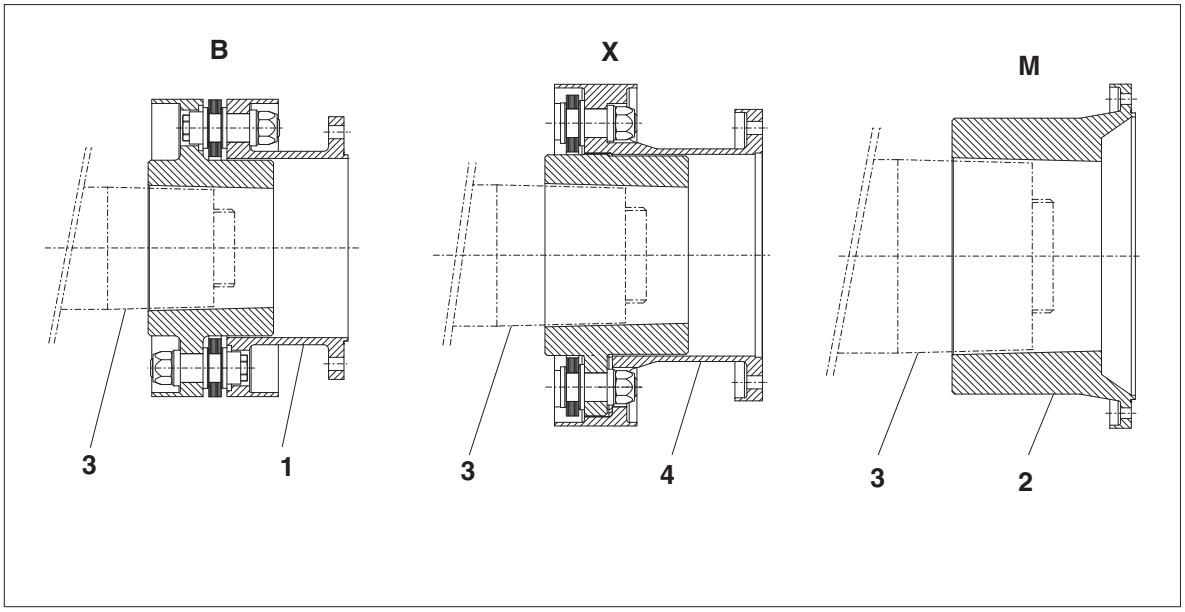

Fig. 20: Fitting **"B"**, **"X"** modules and **"M"**-hubs

1 "**B**" module
2 "**M**" hub
3 Shaft end
4 "**X**" module

NOTICE

Material damage

Damage to the coupling and the shaft.

– The information specified on the dimensioned drawing relating to the pulling-on path must be observed.

– Observe the order-related entries on the drawing of the coupling relating to the joining temperature.

WARNING

Danger of burns

Serious injury through burns on hot surfaces (> 55 °C) possible.
Wear suitable protective gloves and protective clothing.

WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The coupling parts must be held in position on the shaft with the aid of a suitable retaining device, until they cool down and seat firmly.

6.4.2 Fitting **"F"** flanges

Observe the safety instructions in section 6.1, "General information on fitting"!

Screw the **"F"** flange with the screw connection of the flange on the connecting flange of the machine to be coupled (see figure 21). Tighten the screw connection of the flange gradually one after the other to the prescribed tightening torque **(for tightening torque, see order-specific drawing of the coupling)**.

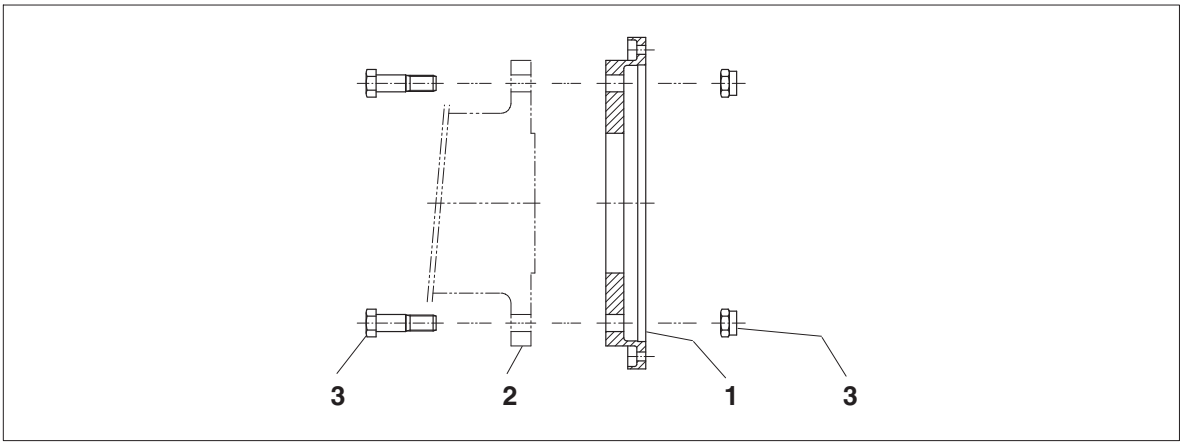

Fig. 21: Fitting **"F"** flanges

1 "**F**" flange
2 Connecting flange
3 Screw connection of flange

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.

– Locking nuts must only be used three times, to guarantee the locking properties.

– Adhere to specified tightening torques. Observe the instructions relating to cleaning and/or treatment of the bolts with auxiliary materials.

6.4.3 Fitting **"F"** and **"D"** modules

Observe the safety instructions in section 6.1, "General information on fitting"!

Screw the **"F"** or **"D"** module with the screw connection of the flange to the already fitted **"F"** flange or with the screw connection of the flange to the connecting flange of the machines to be coupled (see figure 22). Tighten the screw connection of the flange gradually one after the other to the prescribed tightening torque **(for tightening torque, see order-specific drawing of the coupling)**.

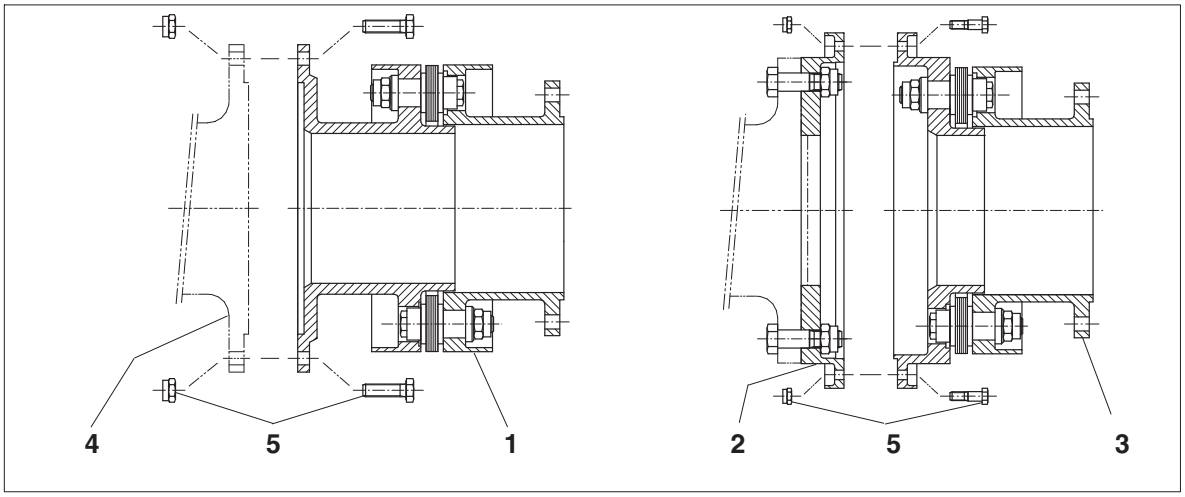

Fig. 22: Fitting **"F"** and **"D"** modules

1 "**D**" module
2 "**F**" flange (fitted)
3 "**F**" module
4 Connecting flange
5 Screw connection of flange

WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.

– Locking nuts must only be used three times, to guarantee the locking properties.

– Adhere to specified tightening torques. Observe the instructions relating to cleaning and/or treatment of the bolts with auxiliary materials.

6.5 Test run of the customer's shaft with fitted coupling parts

Observe the safety instructions in section 6.1, "General information on fitting"!

If a test run of the customer's shaft with fitted coupling parts and any weight simulators must be performed, if necessary, this should be done in accordance with the configuration described in item 6.10.

6.6 Compensation of the flange or shaft distance **"DBSE"**

Observe the safety instructions in section 6.1, "General information on fitting"!

"DBSE" = distance between shaft ends

Set the flange or shaft distance between the machines to be coupled exactly to the fitting dimension **"DBSE"** (on axially pretensioned couplings **"DBSE fitting"**), as shown on the **order-specific drawing of the coupling**.

Lengths can be adjusted with shims. These are mainly used with tapering shaft ends and customer's connecting flanges. Shims form only an optional part of the scope of delivery. The position of the shims can be seen on the **order-specific drawing of the coupling**. As a rule, they are fitted between the fitted coupling part (e.g. **"M"**-hub or **"B"** module, see figure 23) and the intermediate unit (e.g. **"H"** module or **"V"** spacer, see figure 23). With customer's connecting flanges they can also be fitted between the fitted coupling part (e.g. **"F"** flange, see figure 23) and the customer's flange.

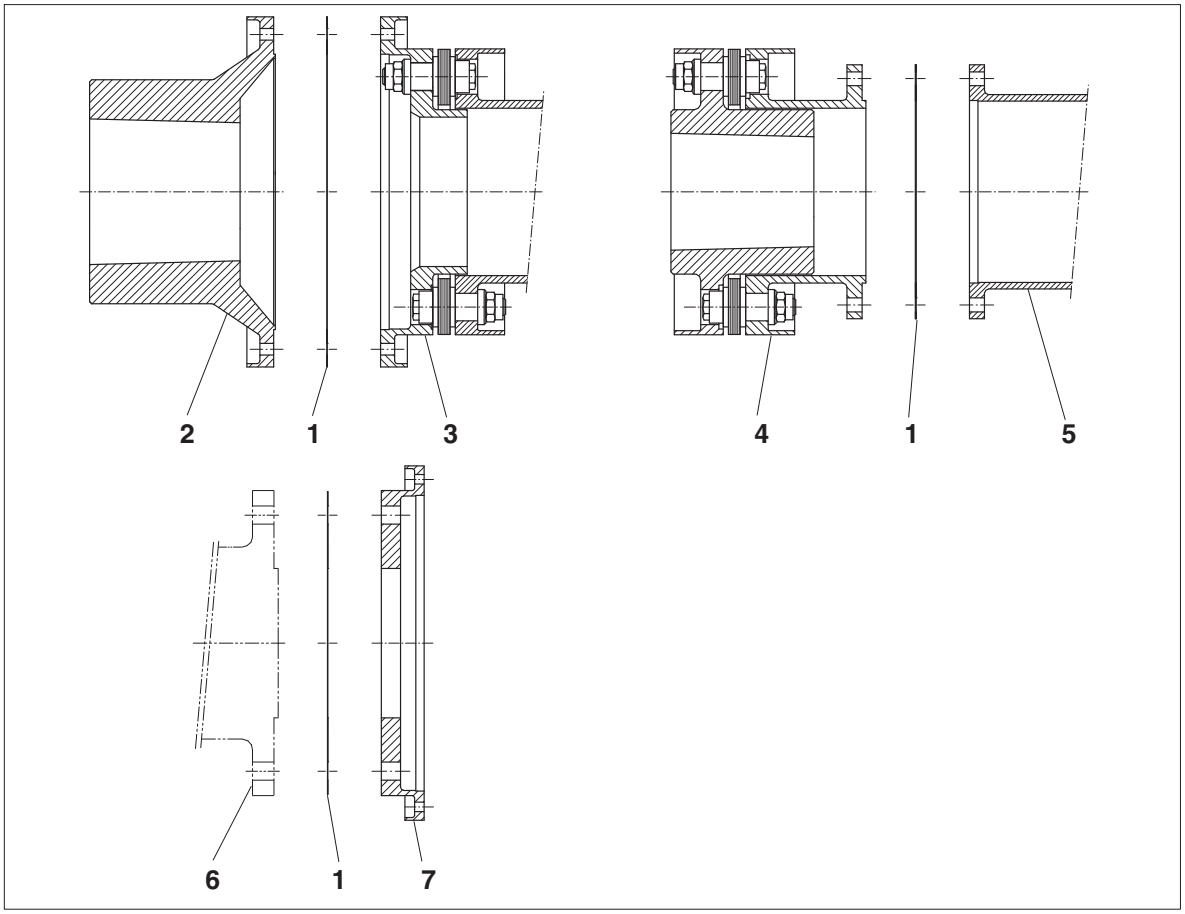

Fig. 23: Fitting shims
(Shims, basic illustration: **"X"** module identical with **"B"** module)

1 Shims
2 "**M**" hub
3 "**H**" module
4 "**B**" module
5 "**V**"-spacer
6 Connecting flange
7 "**F**" flange

The number of shims to be used can be found on the **order-specific drawing of the coupling** (see table "Fitting data"). The normal dimension is reached with half the delivered shims. The shims are pushed onto the "recesses" (centering pin) of the connecting flanges before fitting the screw connections of the flanges.

WARNING

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The maximum number of shims to be used per "recess" (centering pin) must not be exceeded (see table "Fitting data" on the order-specific drawing of the coupling).

6.7 Fitting of assembly-balanced couplings

Observe the safety instructions in section 6.1, "General information on fitting"!

On couplings which have been assembly-balanced each individual coupling component must be marked on the outside circumference of the screw-on flanges with a multidigit number (see marking "XXXXX" in figure 24). When assembling, care must be taken that only coupling parts having the same numbers on the outside circumference of the flange are bolted together.

NOTICE

Damage to the coupling

Risk of damage to the coupling through incorrect assembly.
After correct fitting the identical numbers of the parts must be arranged in line and be legible from one direction (see marking "XXXXX" in figure 24).

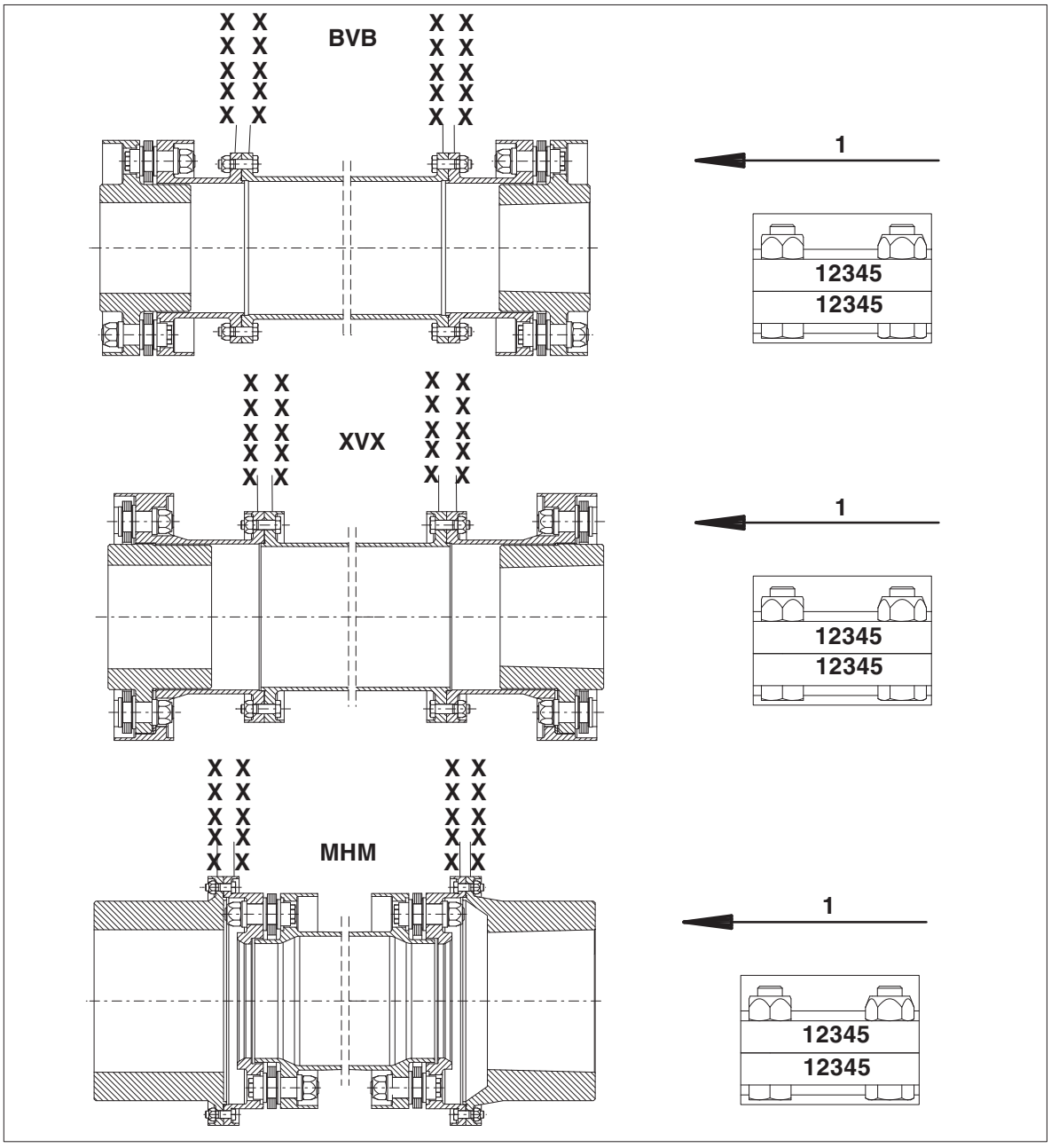

Fig. 24: Marking in case of assembly balancing

1 legible from one direction

6.8 Fitting the intermediate unit

Observe the safety instructions in section 6.1, "General information on fitting"!

- Clean the surfaces to be joined; they must be absolutely clean and grease-free.

⚠ CAUTION

Risk of corrosion burns through chemical substances

Avoid burns when working with corrosive cleaning agents.
Observe manufacturer's instructions for handling cleaning agents and solvents.
Wear suitable personal protective equipment (gloves, safety glasses).

6.8.1 Procedure applying to modules with distance bush

Observe the safety instructions in section 6.1, "General information on fitting"!

The design of the fastening is shown on the order-specific drawing of the coupling.

Unscrew the cheese-head bolts (pos. 1, figure 25) of the fastening and remove the distance bushes (pos. 2, figure 25).

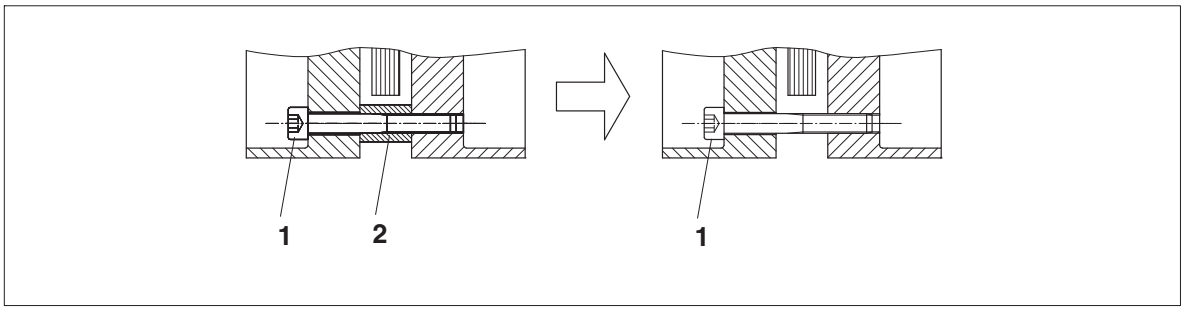

Fig. 25: Removing the distance bush from the fastening

1 Cheese-head bolt 2 Distance bush

Screw in the cheese-head bolts of the fastening again. The plate packs of the fitted modules (e.g. **"B"** module, **"D"** module or **"F"** module, see figs. 6 to 16) or the intermediate unit (**"H"** module, **"W"** module or **"F"** module (see figures 6 to 16) must be axially clinched to a dimension of **$S1_{fitting}$** (see table "Fitting data" on the **order-specific drawing of the coupling**). The intermediate unit (**"H"** module, **"W"** module, **"F"** module or **"V"** spacer (see figures 6 to 16)) must fit between the fitted coupling parts or the customer's connecting flanges (see figure 28, figure 29 and figure 30).

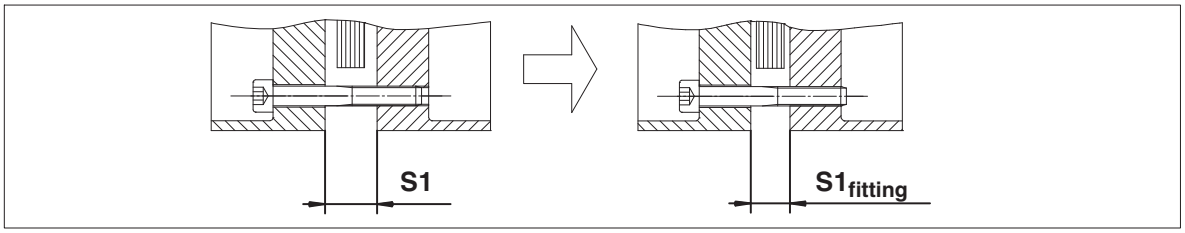

Fig. 26: Illustration $S1_{fitting}$

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling through the plate packs being too tightly clinched during the fitting procedure
The plate packs may be clinched to a maximum dimension of $S1_{fitting}$ (see figure 26) for fitting and disassembly. The value in the table "Fitting data" on the order-specific drawing of the coupling must be adhered to.
The instructions relating to the assembly-balanced couplings in item 6.7 must be observed.

If necessary, move axially the shaft ends of the machines to be joined together and after fitting the intermediate unit set exactly to the dimension **"DBSE"** (see **order-specific drawing of the coupling**).

6.8.2 Procedure applying to modules with threaded bush

Observe the safety instructions in section 6.1, "General information on fitting"!

The design of the fastening is shown on the order-specific drawing of the coupling.

Unscrew the collar bolt from the fastening and remove the threaded bushes (see figure 27).

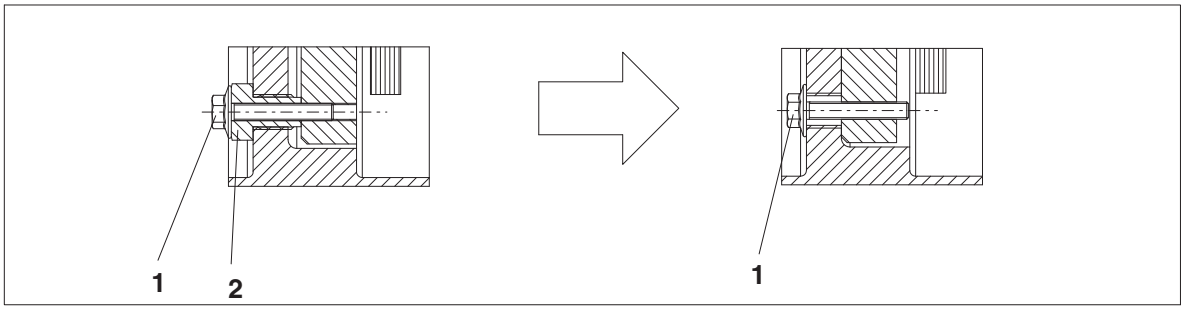

Fig. 27: Unscrewed threaded bush of the fastening

1 Collar bolt 2 Threaded bush

Screw in the collar bolts of the fastening again. The plate packs of the fitted **"X"** modules are clinched axially by tightening the bolts. Tighten the bolts of the coupling flanges as fas as they will go (figure 27). The intermediate unit **"V"** spacer (see figures 7 and 14) must fit between the fitted coupling parts.

If necessary, additionally move axially the shaft ends of the machines to be joined together and after fitting the intermediate unit set exactly to the dimension **"DBSE"** (see **order-specific drawing of the coupling**) again.

6.8.3 Fitting the intermediate unit

Observe the safety instructions in section 6.1, "General information on fitting"!

Insert intermediate unit between the fitted coupling parts (see figs. 28 and 29).

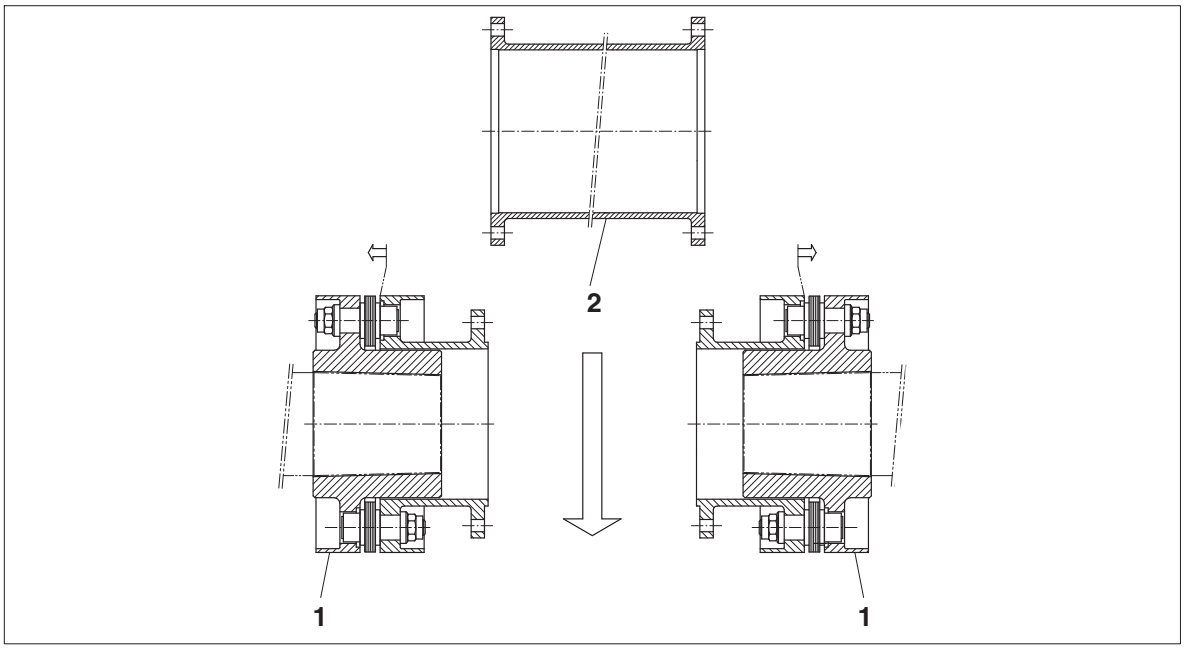

Fig. 28: Fitting intermediate unit type **BVB** and **XVX** (basic drawing **BVB, XVX** identical)

1 Fitted coupling part (e.g. "**B**" module)

2 intermediate unit (e.g. "**V**"-spacer)

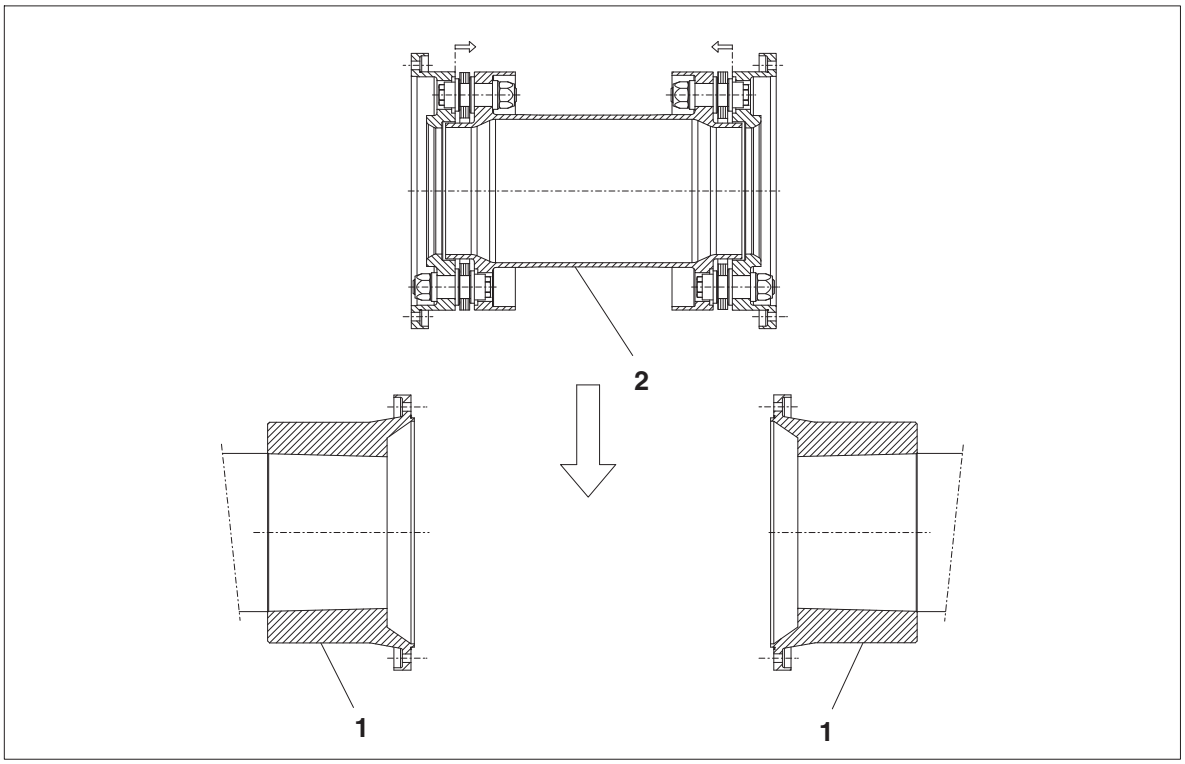

Fig. 29: Fitting intermediate unit type **MHM** (basic drawing)

1 fitted coupling part (e.g. "**M**" module)

2 intermediate unit (e.g. "**H**" module)

With single- and two-part coupling versions with single- or two-side customer's coupling flange (see e.g. type **MH** in figure 30) the intermediate unit is fitted between a fitted coupling part and a customer's connecting flange or between two connecting flanges of the customer.

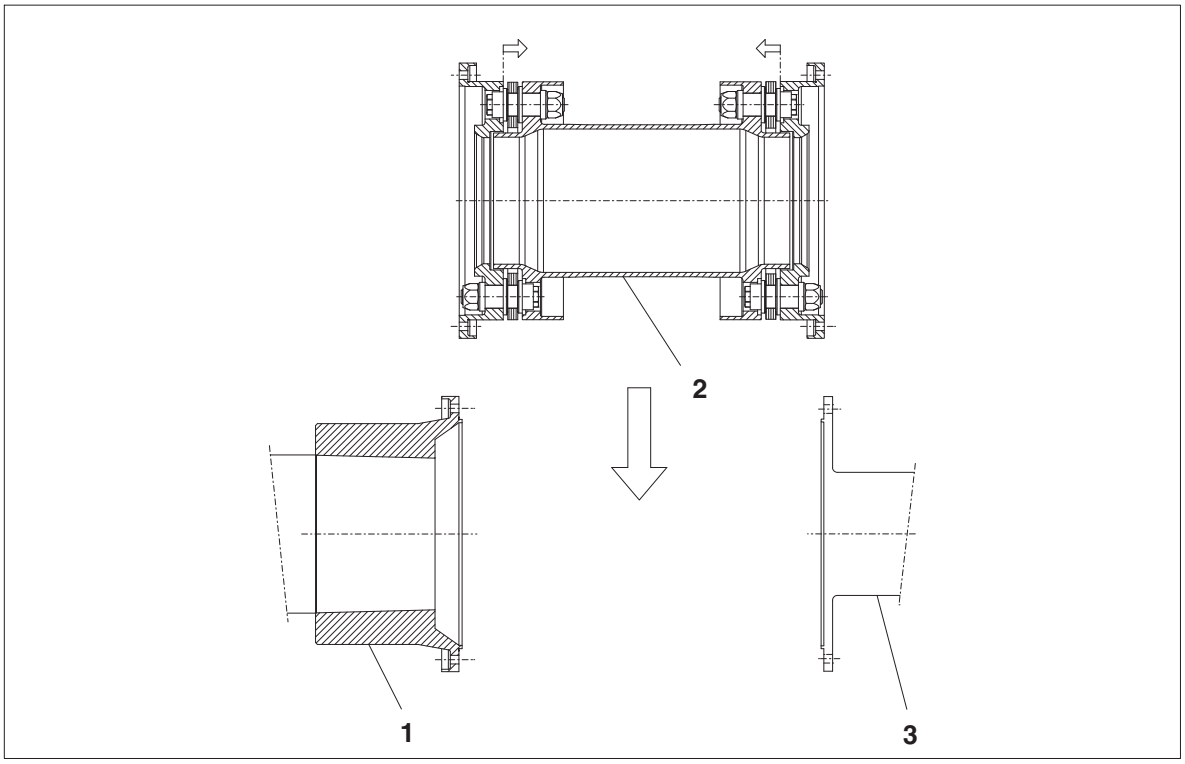

Fig. 30: Two-piece coupling version **MH** with customer's connecting flange on one side

1 "**M**" hub (fitted coupling part) 2 "**H**" module (intermediate unit)
3 Customer's flange

Insert the screw connection of the flange (see figs. 6 to 16) and tighten only **handtight**.

The design of the fastening is shown on the **order-specific drawing of the coupling**.

Remove the bolts from the fastening (see figure 31 or figure 32).

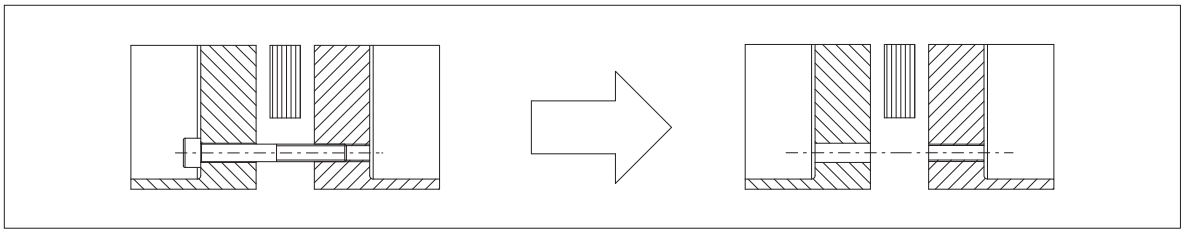

Fig. 31: Removing the fastening in case of distance bush

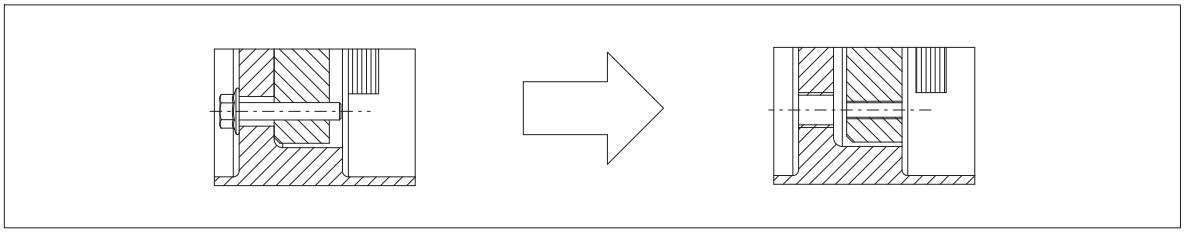

Fig. 32: Removing the fastening in case of threaded bush

Tighten the screw connection of the flange gradually one after the other to the prescribed tightening torque **(for tightening torque, see order-specific drawing of the coupling)**.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.

– Locking nuts must only be used three times, to guarantee the locking properties.

– Adhere to specified tightening torques. Observe the instructions relating to cleaning and/or treatment of the bolts with auxiliary materials.

6.9 Alignment

Observe the safety instructions in section 6.1, "General information on fitting"!

In general the machine parts to be joined together should always be optimally aligned. Since this is often done with high-precision, optical equipment before the coupling components are assembled, in such cases the alignment should be checked during or after assembly of the coupling only as an additional safeguard. The fastening must be removed before aligning. The design of the fastening is shown on the order-specific drawing of the coupling.

6.9.1 Aligning with distance bush

Observe the safety instructions in section 6.1, "General information on fitting"!

Unscrew the cheese-head bolts from the fastening and remove the distance bushes (see figure 33).

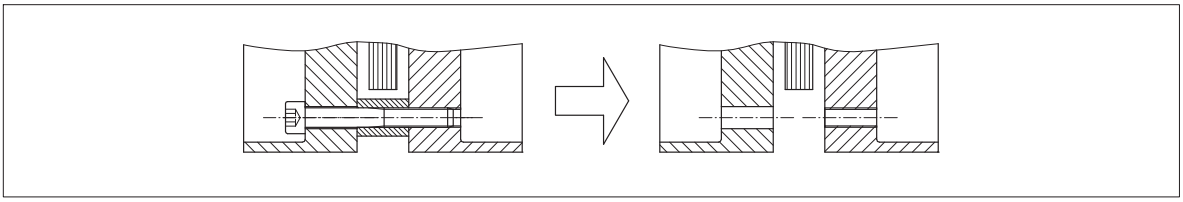

Fig. 33: Removing the fastening in case of distance bush

When aligning the machine parts, in case of modules with distance bush measure with a sliding caliper gauge the distance "S1" (see figure 34) between the coupling flanges.

Note

The permissible values of "S1" are given in the table "Fitting data" on the order-specific drawing of the coupling.

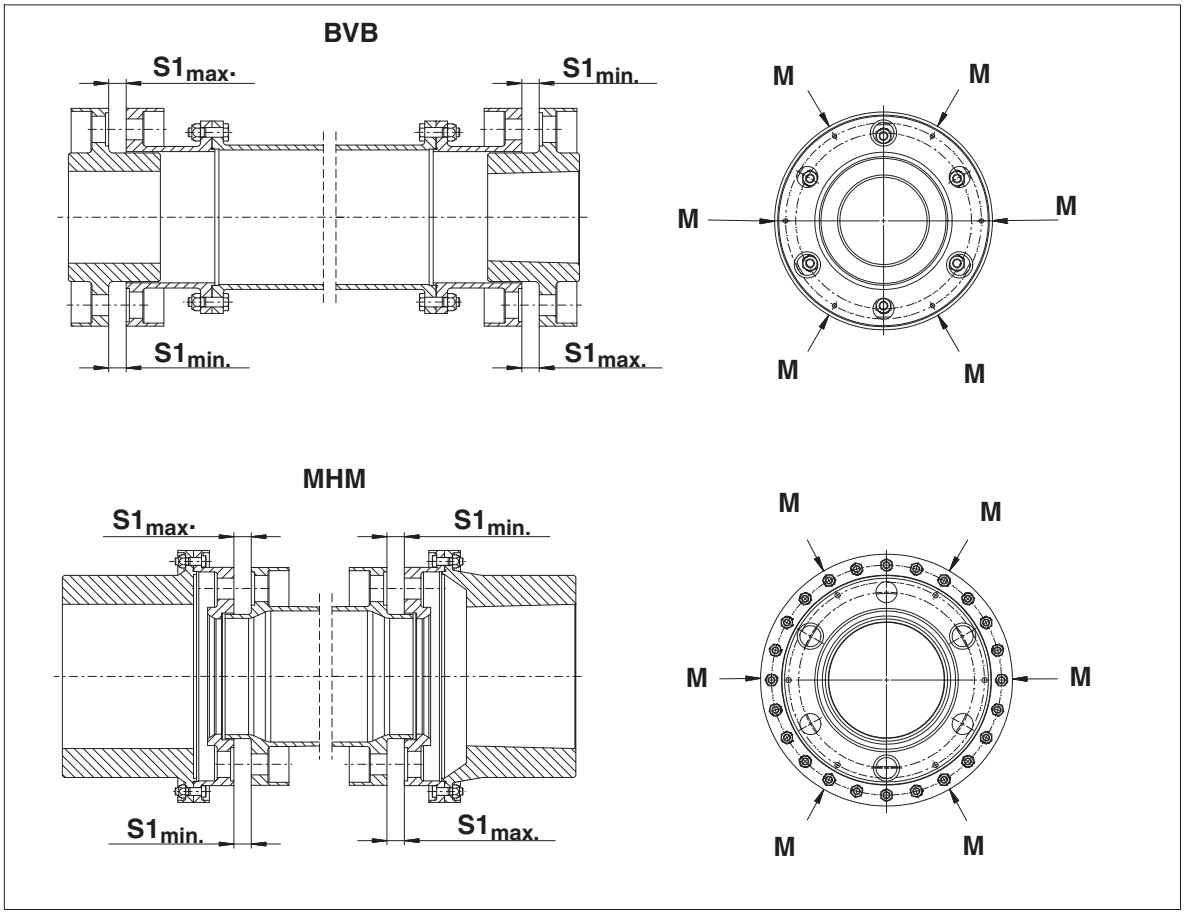

Fig. 34: Flange distance "S1" and measuring points

M Measuring point

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The fitting misalignment must not exceed the values for $S1_{min.}$ and $S1_{max.}$ specified (figure 34). The permissible values of "S1" are given in the table "Fitting data" on the order-specific drawing of the coupling.

6.9.2 Aligning with threaded bush

Observe the safety instructions in section 6.1, "General information on fitting"!

In the case of subassembly “X” with threaded bush either distance "S2" between the opposed subassemblies or dimension "S3" inside subassembly "X" can be measured. The dimensions are taken at several measuring points "M". The permissible values of "S2" and "S3" are given in the table "Fitting data" on the **order-specific drawing of the coupling**.

For measuring dimension "S2" the fastening must have been fitted. The design of the fastening is shown on the order-specific drawing of the coupling.

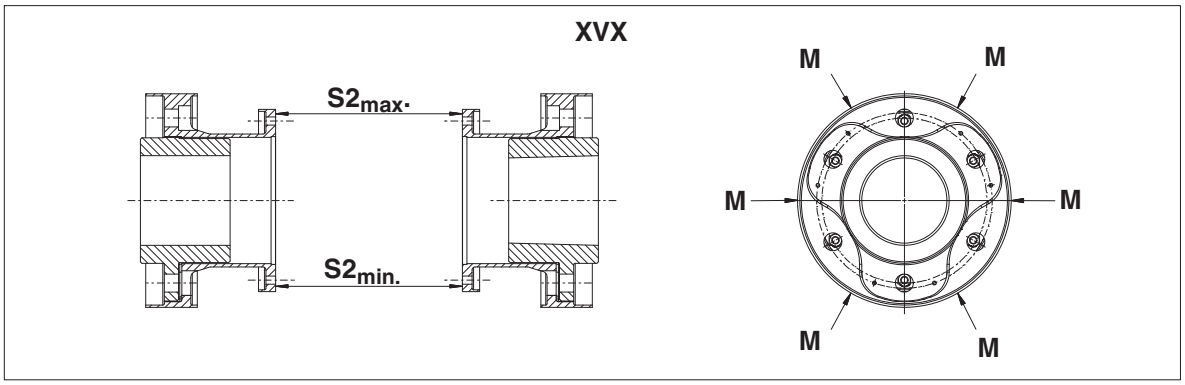

Fig. 35: Measuring point "**S2**" with the **XVX** module

M Measuring point

Dimension "S3" is measured with the intermediate unit fitted. For measuring dimension "S3" the fastening must be removed. The design of the fastening is shown on the order-specific drawing of the coupling. Unscrew and remove collar bolt and threaded bush (see figure 36).

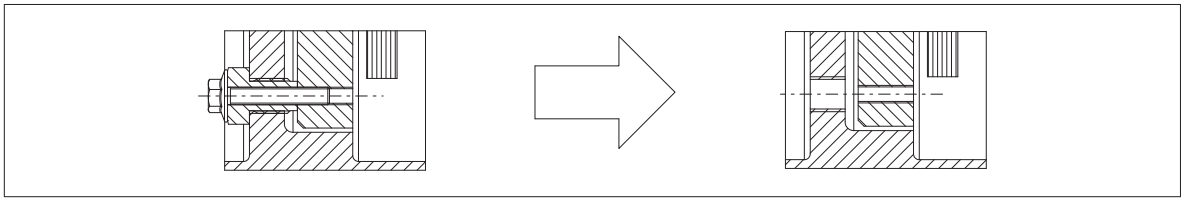

Fig. 36: Removing the fastening in case of threaded bush

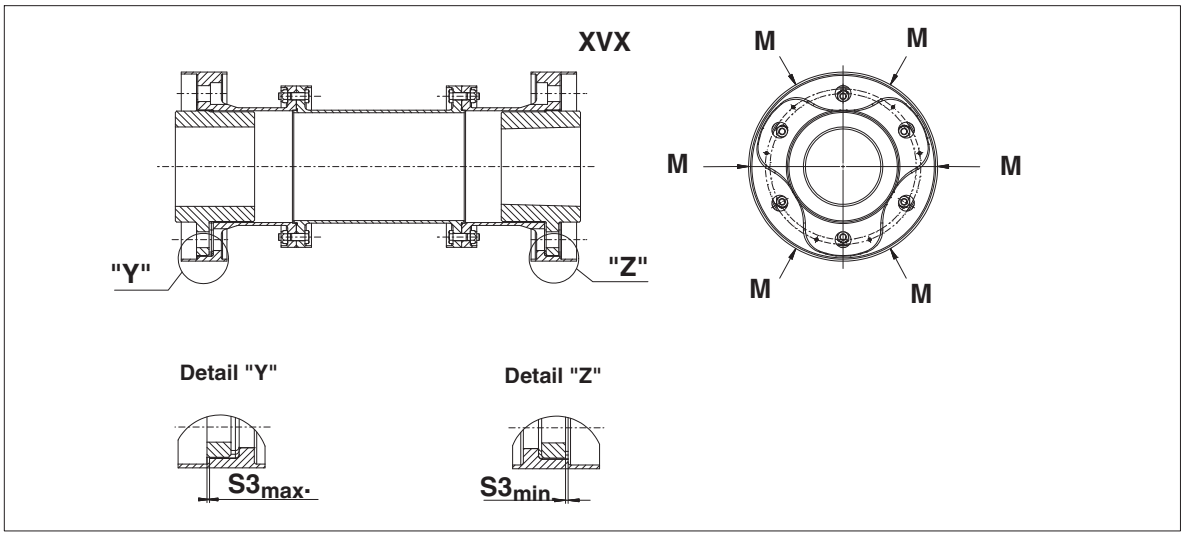

Fig. 37: Measuring point **"S3"** with the **XVX** module

M Measuring point

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The fitting misalignment must not exceed the values specified for $S2_{min.}$ / $S3_{min.}$ and $S2_{max.}$ and $S3_{max.}$.
The permissible values of "S2" and "S3" are given in the table "Fitting data" on the order-specific drawing of the coupling.

6.10 Test run of the customer's shaft with weight simulators

6.10.1 Definition of weight simulators for the test run

Observe the safety instructions in section 6.1, "General information on fitting"!

Depending on the customer's specification, various aids that simulate the weight of the half couplings are used for test runs. These aids (dummy flanges and dummies (see figure 38) are available from Flender on request. They form only an optional part of the scope of delivery.

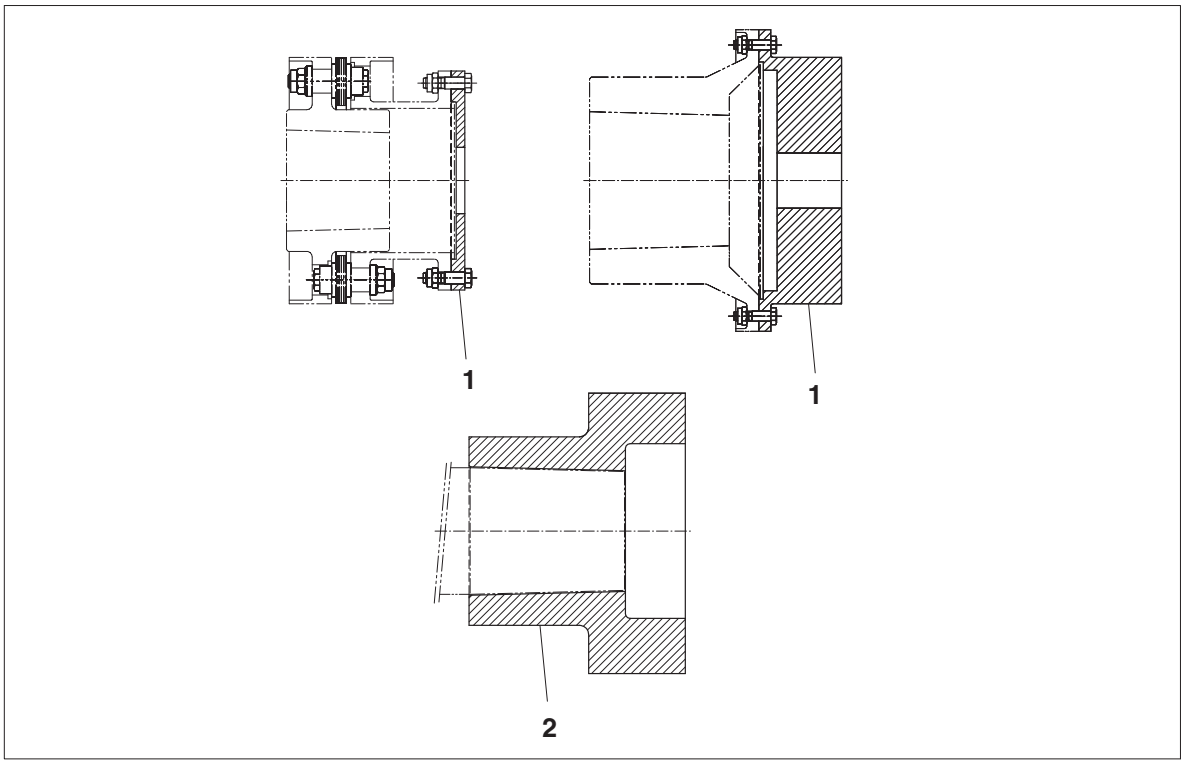

Fig. 38: Test-run aids

1 Dummy flange 2 Dummy

Dummy flange: A dummy flange is an element that is bolted onto a fitted coupling part. It simulates, together with the coupling part, the centre of gravity and the weight of the half coupling.

Dummy: A dummy is an independent element that is mounted like a coupling hub on a shaft end of the machines to be joined together. It simulates the centre of gravity and the weight of the half coupling.

6.10.2 Fastening of coupling modules for the test run

Observe the safety instructions in section 6.1, "General information on fitting"!

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
For running a test with the coupling modules the plate packs must imperatively be fastened with spacer bushes and cheese-head bolts (see figure 39) or with threaded bushes and collar bolts (see figure 40).

The design of the fastening is shown on the order-specific drawing of the coupling.

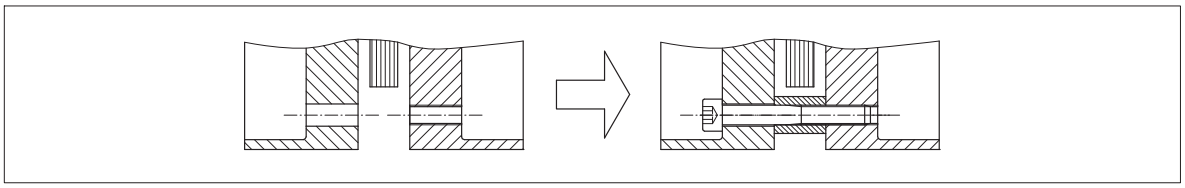

Fig. 39: Test run with fastening with distance bush

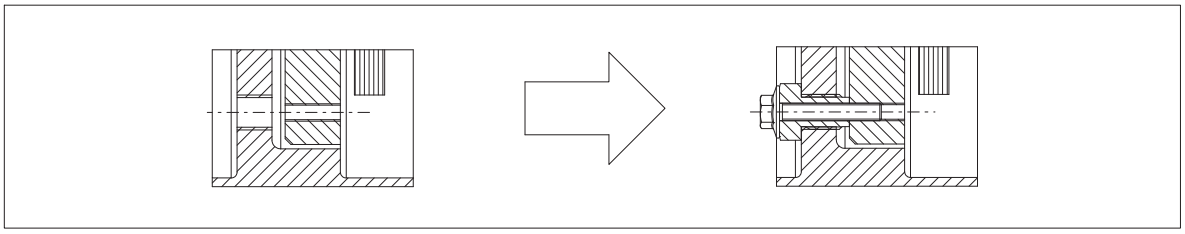

Fig. 40: Test run with fastening with threaded bush

The tightening torque of the bolts (see figure 39 or figure 40) can be found on the **order-specific drawing of the coupling**.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The permissible speed during the test running of coupling modules (see "Fitting data" table on the order-specific drawing of the coupling) must not be exceeded.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The coupling module must be axially secured.

6.10.3 Test run of fitted coupling parts with dummy flange

Observe the safety instructions in section 6.1, "General information on fitting"!

Before starting fitting work the contact surfaces of the dummy flange and the fitted coupling parts must be carefully cleaned and all preservative agent must be removed. Specifications relating to pulling-on action can be found on the order-specific drawing of the coupling.

⚠ CAUTION

Risk of corrosion burns through chemical substances

Avoid burns when working with corrosive cleaning agents.
Observe manufacturer's instructions for handling cleaning agents and solvents.
Wear suitable personal protective equipment (gloves, safety glasses).

Using the flange screw connection, fit dummy flange, if included in the scope of delivery, onto the fitted coupling part (e.g. **"B"** module, **"X"** module or **"M"**-hub, see figure 41). The dummy flange must be bolted on so that the **identical numbers showing which parts belong with which can be read from one direction** (see mark **"AAA"** in figure 41). This marking is optional. The mark is dispensed with, if only one dummy flange has been ordered for two or more identically constructed couplings.

Tighten the screw connection of the flange gradually one after the other to the prescribed tightening torque **(for tightening torque, see order-specific drawing of the coupling)**.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.

– Locking nuts must only be used three times, to guarantee the locking properties.

– Adhere to specified tightening torques. Observe the instructions relating to cleaning and/or treatment of the bolts with auxiliary materials.

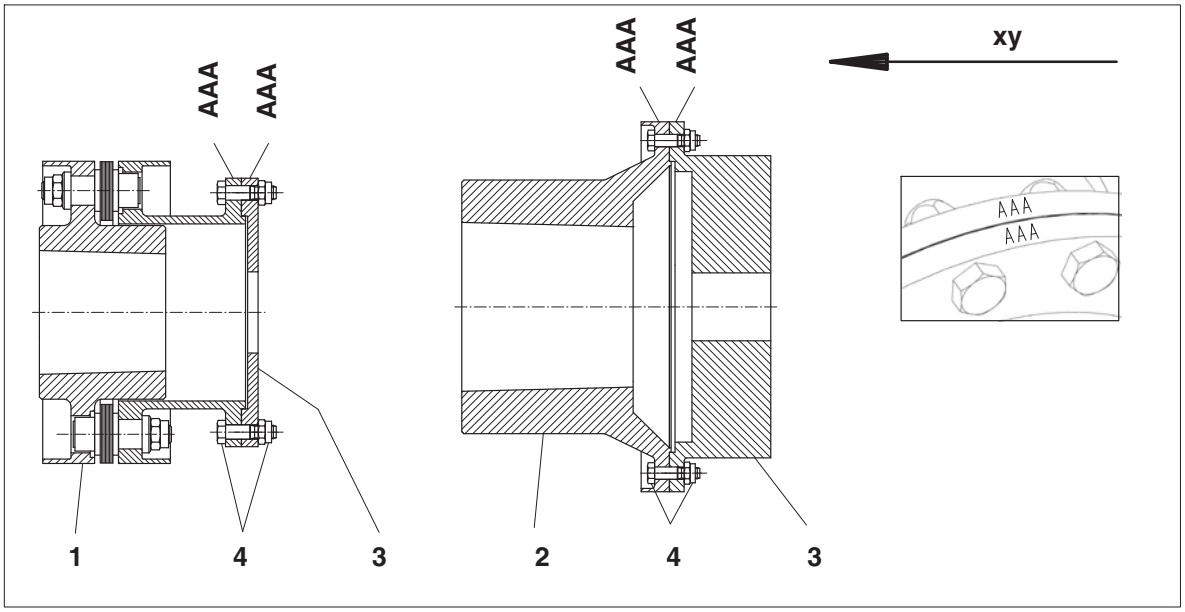

Fig. 41: Fitting the dummy flange
(basic drawing **BVB** and **MHM, XVX** identical to **BVB**)

1	"**B**" module	2	"**M**" hub
3	Dummy flange	4	Screw connection of flange
xy	legible from one direction		

The screw connections of the flanges (see figure 41) are delivered in separate packing units for each dummy flange.

NOTICE

Damage to coupling, disruptions

Damage to the coupling and/or disruptions through the incorrect use of screw connections of the flanges.
The screw connections of the flanges have been checked by weight and must always be used or replaced in sets.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
While running a test of a module with plate pack the plate packs must be fastened as described in item 6.10.2.

Remove the dummy flange after the test run.

Undo the screw connection of the flange (see figure 41) between the fitted coupling part and the dummy flange and remove the dummy flange.

If necessary, using the hexagon-socket close-fitting bolts of the flange screw connection (see figure 41), which must be screwed into the tapped holes provided for in the fitted coupling parts or into the dummy flanges, press the dummy flange (see figure 41) out of the recess (centering pin) (see figure 42).

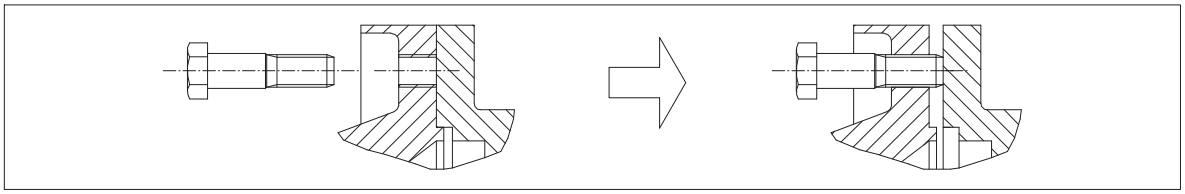

Fig. 42: Removing the flange connection dummy flange

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
Secure all coupling parts before undoing the screw connection.

6.10.4 Test run of fitted dummies

Observe the safety instructions in section 6.1, "General information on fitting"!

Before starting fitting work the contact surfaces of the dummy and the shaft ends must be carefully cleaned and all preservative agent must be removed. Specifications relating to pulling-on action can be found on the order-specific drawing of the coupling.

⚠ CAUTION

Risk of corrosion burns through chemical substances

Avoid burns when working with corrosive cleaning agents.
Observe manufacturer's instructions for handling cleaning agents and solvents.
Wear suitable personal protective equipment (gloves, safety glasses).

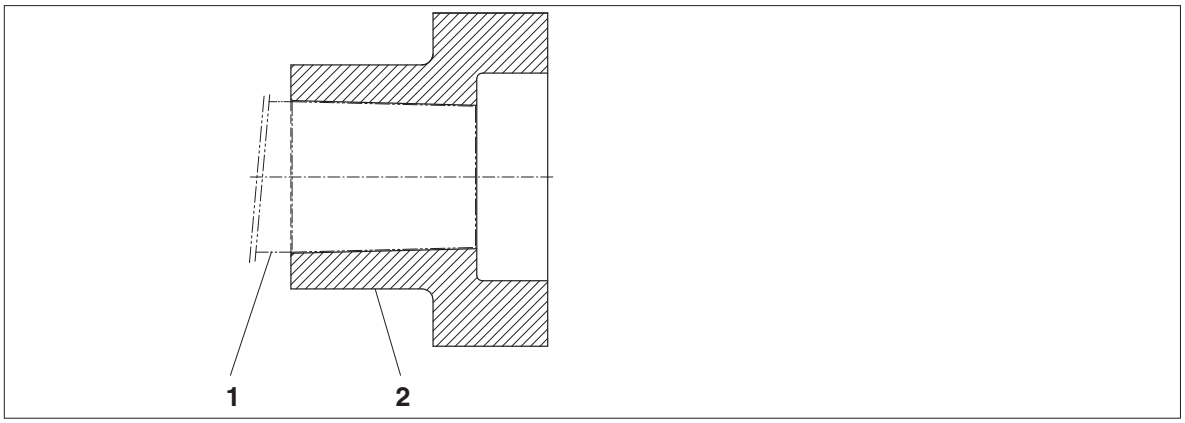

Fig. 43: Fitting the dummy

1 Customer's shaft
2 Dummy

NOTICE

Material damage

Risk of damage to the coupling and the shaft

– The coupling parts must be fitted with the aid of suitable equipment to avoid damaging the shaft bearings through axial joining forces. Use suitable lifting gear.

– The information specified on the dimensioned drawing relating to the pulling-on path must be observed.

– Observe the order-related entries on the drawing of the coupling relating to the joining temperature.

WARNING

Danger of burns

Serious injury through burns on hot surfaces (> 55 °C) possible.
Wear suitable protective gloves and protective clothing.

WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The coupling module must be axially secured.

Remove the dummy flange after the test run.

NOTICE

Damage to the coupling, damage to other components

Damage to the coupling and the shaft through incorrect pulling off.
The coupling parts must be pulled off the shaft end using suitable devices.
Use suitable lifting gear.

WARNING

Risk of serious injury through flying fragments

Risk of serious injury through falling coupling parts and/or flying fragments and/or risk of damage to the coupling.

– The coupling module must be axially secured.

– Observe the permissible demounting pressure and temperature values specified on the order-specific drawing of the coupling.

6.11 Demounting the intermediate unit

6.11.1 Procedure applying to modules with distance bush

Observe the safety instructions in section 6.1, "General information on fitting"!

Re-insert the cheese-head bolts of the fastening (see figure 44). The design of the fastening is shown on the **order-specific drawing of the coupling**. Make sure that the cheese-head bolts are only inserted loosely without being tightened.

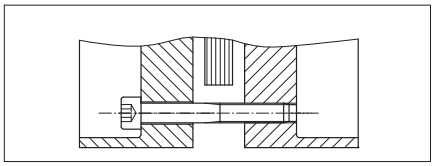

Fig. 44: Inserting the cheese-head bolts of the fastening

Undo the screw connection of the flange (see figs. 6 to 16) and remove them.

⚠ WARNING

Serious injury

Risk of serious injury through falling coupling parts and/or flying fragments and/or risk of damage to the coupling.
Secure all coupling parts against falling before undoing the screw connection.

Tighten the cheese-head bolts of the fastening, so that the plate packs are axially clinched to a dimension of $\mathbf{S1_{fitting}}$ (see table "Fitting data " on the **order-specific drawing of the coupling**) and the intermediate unit can be taken off (see figure 45).

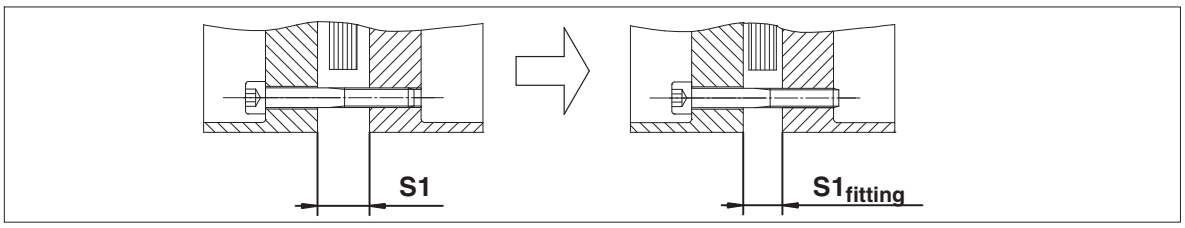

Fig. 45: Illustration $S1_{fitting}$

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling through the plate packs being too tightly clinched during the fitting procedure.
The plate packs may be clinched to a maximum dimension of $S1_{fitting}$ (see figure 45) for fitting and disassembly. The value in the table "Fitting data" on the order-specific drawing of the coupling must be adhered to.

If necessary, also shift the shaft ends of the machines to be joined together axially.

If necessary, using the hexagon-socket fitting bolts of the flange screw connection (see figures 6 to 16), which must be screwed into the tapped holes provided for in the coupling parts, press the intermediate unit (see figs. 6 to 16) out of the recess (centering pin) (see figure 46).

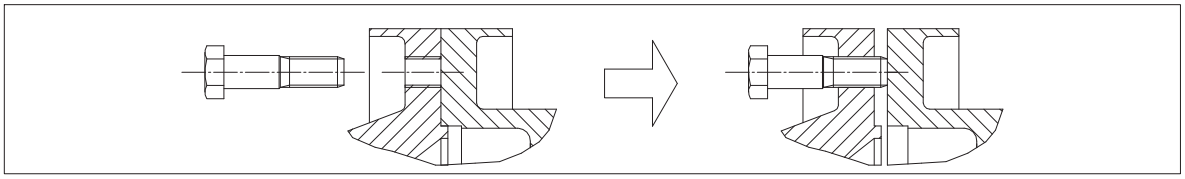

Fig. 46: Demounting the flange connection

Remove the intermediate unit (see figs. 6 to 16).

⚠ WARNING

Serious injury

Risk of serious injury through falling coupling parts and/or flying fragments and/or risk of damage to the coupling.
Secure all coupling parts against falling before undoing the screw connection.

After demounting the cheese-head bolts of the fastening (see figure 47) must imperatively be undone again, so that the plate pack is detensioned and the cheese-head bolts remain only loosely screwed in. Remove the cheese-head bolts (see figure 47) for transport purposes, so that the distance bushes (see figure 47) can be inserted again. After this, insert the cheese-head bolts again and tighten them hand-tight.

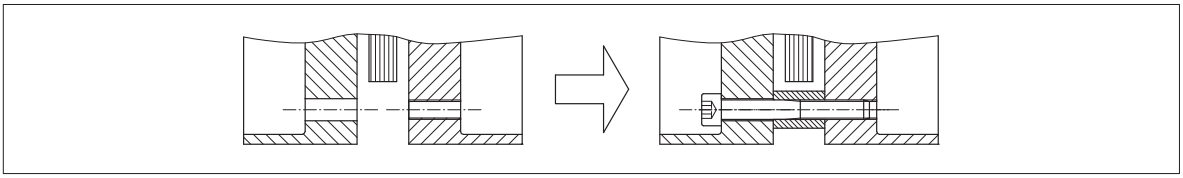

Fig. 47: Inserting the fastening

⚠ WARNING

Serious injury

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
Fit the transport lock of the plate pack before transport.

6.11.2 Procedure applying to modules with threaded bush

Observe the safety instructions in section 6.1, "General information on fitting"!

Re-insert the collar bolts of the fastening (see figure 48) again. The design of the fastening is shown on the order-specific drawing of the coupling. Make sure that the collar bolts are only inserted loosely without being tightened.

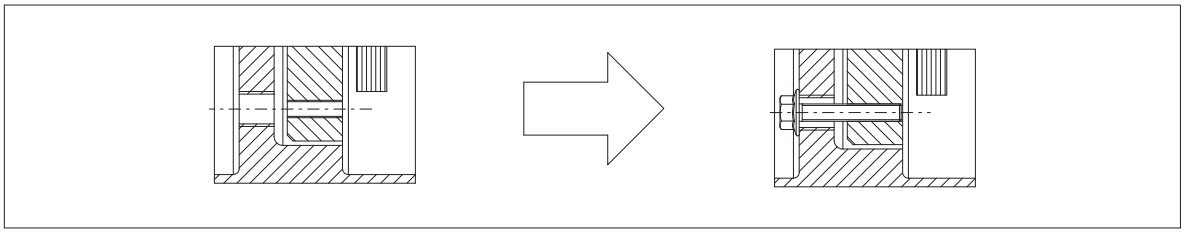

Fig. 48: Inserting the collar bolts of the fastening

Undo the screw connection of the flange (see figs. 6 to 16) and remove them.

⚠ WARNING

Serious injury

Risk of serious injury through falling coupling parts and/or flying fragments and/or risk of damage to the coupling.
Secure all coupling parts against falling before undoing the screw connection.

Tighten the collar bolts of the fastening as far as the coupling flanges will go (see figure 49), so that the plate packs are clinched axially and the intermediate unit can be removed.

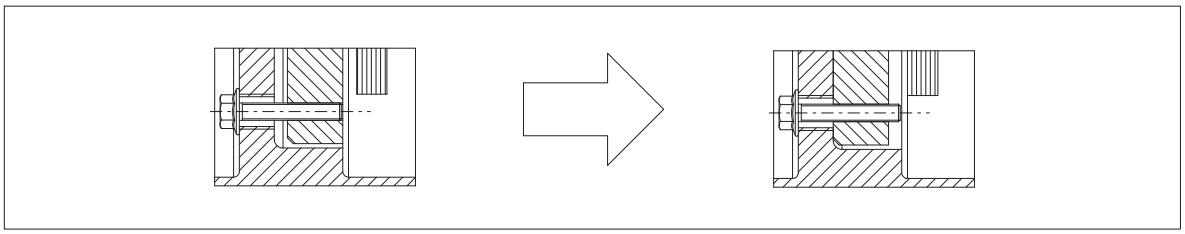

Fig. 49: Tightening the collar bolt

If necessary, also shift the shaft ends of the machines to be joined together axially.

If necessary, using the hexagon-socket fitting bolts of the flange screw connection (see figures 6 to 16), which must be screwed into the tapped holes provided for in the coupling parts, press the intermediate unit (see figs. 6 to 16) out of the recess (centering pin) (see figure 50).

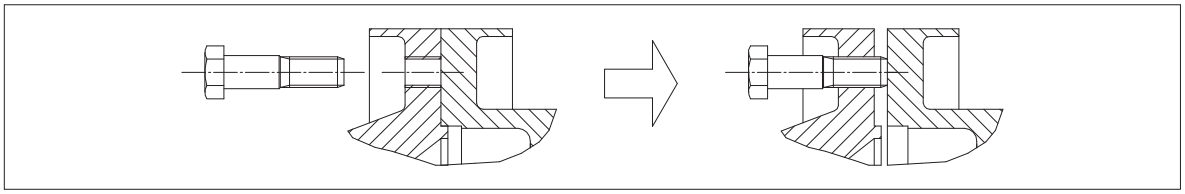

Fig. 50: Demounting the flange connection

Remove the intermediate unit (see figs. 6 to 16).

⚠ WARNING

Serious injury

Risk of serious injury through falling coupling parts and/or flying fragments and/or risk of damage to the coupling.
Secure all coupling parts against falling before undoing the screw connection.

After demounting the collar bolts of the fastening (see figure 49) must imperatively be undone again, so that the plate pack is detensioned and the collar bolts remain only loosely screwed in. For transporting remove the collar bolts (see figure 51), fit the threaded bush and re-insert the collar bolt and fit handtight.

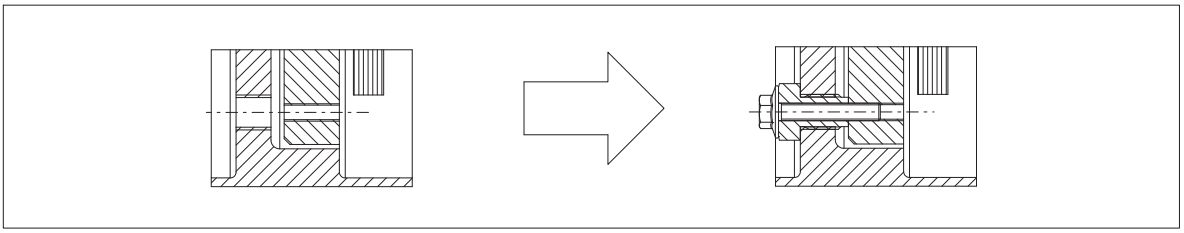

Fig. 51: Inserting the fastening

⚠ WARNING

Serious injury

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
Fit the transport lock of the plate pack before transport.

6.11.3 Demounting the fitted coupling modules or components

Observe the safety instructions in section 6.1, "General information on fitting"!

Pull the **"B"**, **"X"** modules and/or **"M"** hubs (see e.g. figs. 6 to 16), if possible with the aid of demounting devices, off the shaft ends of the machines to be joined together.

WARNING

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through falling coupling parts and/or flying fragments and/or risk of damage to the coupling.

– The coupling module must be axially secured.

– Observe the permissible demounting pressure and temperature values specified on the order-specific drawing of the coupling.

⚠ WARNING

Danger of burns

Serious injury through burns on hot surfaces (> 55 °C) possible.
Wear suitable protective gloves and protective clothing.

In the case of **"F"** modules (see figs. 6 to 16) undo the screw connection to the customer's flange or the screw connection to the **"F"** flange, and demount the **"F"** module.

In the case of **"F"** flanges (see figs. 6 to 16) undo the screw connection to the customer's flange and demount the flange.

⚠ WARNING

Serious injury

Risk of serious injury through falling coupling parts and/or flying fragments and/or risk of damage to the coupling.
Secure all coupling parts against falling before undoing the screw connection.

7. Start-up

Observe the instructions in section 3, "Safety instructions"!

7.1 Procedure before start-up

The design of the fastening is shown on the order-specific drawing of the coupling.

⚠ WARNING

Serious injury

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
Before startup, remove the fastening of the plate packs (distance bush, see figure 52 / threaded bush, see figure 53 and cheese-head bolt).

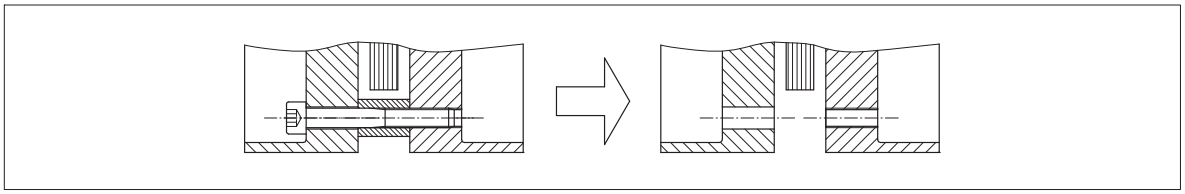

Fig. 52: Removing the fastening with distance bush

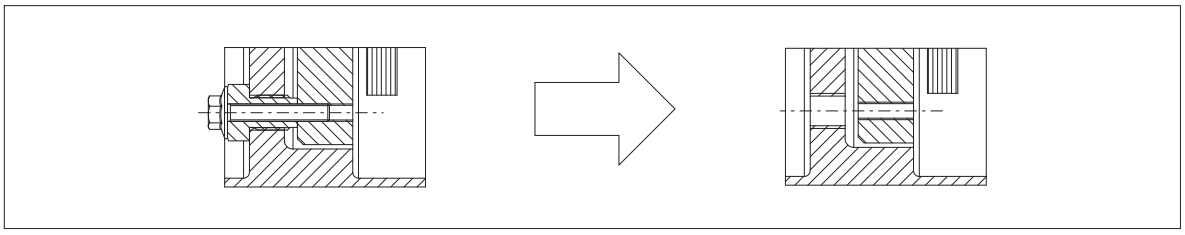

Fig. 53: Removing the fastening in case of threaded bush

Before start-up, the tightening torque of the flange bolts must be checked and, if necessary, the flange bolts must be re-tightened.

⚠ DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas through damage.
Damaged coupling modules and coupling parts are potential explosion hazards.
Use only undamaged coupling components. Operating the coupling with damaged coupling parts is not permitted in potentially explosive environments in accordance with Directive 2014/34/EU.

⚠ DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas.
Incorrect changes made to the coupling will create ignition sources.
Any changes on the part of the user are not permitted. This applies equally to safety features designed to prevent accidental contact. For the use in potentially explosive environments the protective equipment must comply at least with type of protection IP2X.

⚠ WARNING

Serious injury

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The module has already been fully assembled at the factory. The plate packs must not be demounted or retightened.

The alignment and the distance dimension on the plate pack (see item 6.9) must also be checked and, if necessary, adjusted.

⚠ WARNING

Risk of injury

Risk of injury through accidental contact with rotating components.
The coupling must be fitted with suitable safeguards to prevent any accidental contact. The operation of the coupling must not be impaired by the safeguard. This also applies to test runs and when checking the direction of rotation.

8. Operation

Observe the instructions in section 3, "Safety instructions"!

8.1 General operating data

During operation of the coupling watch for:

- Changes in running noise
- Sudden vibrations

⚠ WARNING

Serious injury

Rotating components may cause injury during work on the still rotating coupling.
All work on the coupling must be carried out only when it is at a standstill. Secure the drive unit to prevent unintentional switch-on. A notice should be attached to the ON switch stating clearly that work on the coupling is in progress. The relevant accident prevention regulations at the place of installation apply as well.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
If any malfunctions or changes are noticed during operation, the drive assembly must be switched off at once.

9. Faults, causes and remedy

Observe the instructions in section 3, "Safety instructions"!

9.1 General

The following irregularities can serve as a guide for fault tracing.

Where the system is a complex one, all component units must be included when tracing faults.

The coupling must run with little noise and vibration in all operating phases. Irregular behaviour must be treated as a fault requiring immediate remedy.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.

– Any changes on the part of the user are not permitted. This applies equally to safety features designed to prevent accidental contact.

– The coupling is designed only for the application specified in the order. Other operating conditions are regarded as incorrect and must be contractually agreed. For any damage resulting therefrom only the user or operator of the machine or plant is responsible.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling through use of defective spare parts.
Flender guarantees only the genuine spare parts supplied by Flender.
Non-genuine spare parts have not been tested or approved by Flender. Non-genuine spare parts may alter technical characteristics of the coupling, thereby posing an active or passive risk to safety.
Flender will assume no liability or guarantee for damage caused by spare parts not supplied by Flender.
The same applies to any accessories not supplied by Flender.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
If any malfunctions or changes are noticed during operation, the drive assembly must be switched off at once.

Note

Determine the cause of the fault, using the trouble-shooting table. If the cause cannot be identified and/or the unit repaired with the facilities available, you are advised to contact one of our customer-service offices for specialist assistance.

⚠ WARNING

Serious injury

Risk of serious injury or risk of damage to the coupling.
The relevant safety and environmental regulations must be complied with.

Note

Depending on national regulations, coupling and clutch components have to be disposed of separately or separated for recycling.

9.2 Possible faults

Table 2: Faults, causes and remedy

Faults	Causes	Remedy
Sudden changes in the noise level and/or sudden vibrations.	Change in alignment.	Stop the system, and, if necessary, rectify the cause of the alignment hange (e.g. tighten loose foundation bolts). Perform a visual check (procedure as described in section 10).
	Plate breakage, torque transmission via bolts of the plate-pack screw connection.	Stop the installation. Demount the coupling. Despatch the coupling to the manufacturer for being replaced or, if necessary, repaired, and re-balanced.
Occurrence of vibrations.	Incorrect fitting of the coupling; non-observance of component markings for assembly balancing (see item 6.7).	Stop the installation. Check component markings in accordance with item 6.7 and, if necessary, demount the coupling and recify the position of the components. Perform a visual check (procedure as described in section 10).

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
Only undamaged coupling parts must be used. In particular the teeth, holes, screw threads and joining and sealing surfaces must not be damaged.

⚠ DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas through damage.
Damaged coupling modules and coupling parts are potential explosion hazards.
Use only undamaged coupling components. Operating the coupling with damaged coupling parts is not permitted in potentially explosive environments in accordance with Directive 2014/34/EU.

9.3 Incorrect use

Experience has shown that the following faults can result in incorrect use of the ARPEX coupling. In addition to observing the other instructions in this manual, care must therefore be taken to avoid these faults.
Directive 2014/34/EU requires the manufacturer and user to exercise especial care.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The coupling is designed only for the application specified in the order. Other operating conditions are regarded as incorrect and must be contractually agreed. For any damage resulting therefrom only the user or operator of the machine or plant is responsible.

⚠ DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas through damage.
Damaged coupling modules and coupling parts are potential explosion hazards.
Use only undamaged coupling components. Operating the coupling with damaged coupling parts is not permitted in potentially explosive environments in accordance with Directive 2014/34/EU.

9.3.1 Possible faults when selecting the coupling and/or coupling size

- Important information for describing the drive and the environment are not communicated.
- System torque too high.
- System speed too high.
- Application factor not correctly selected.
- Chemically aggressive environment is not being taken into consideration.
- The temperature in the direct vicinity of the coupling is beyond the permissible range.
- The transmission capacity of the shaft-hub connection is not appropriate to the operating conditions.
- Fitting and/or operational misalignment values of the shaft ends of the machines to be coupled are too high.

9.3.2 Possible faults when fitting the coupling

– Components with transport or other damage are being fitted.

– When fitting coupling parts in a heated condition, these components are being excessively heated.

– The shaft diameter is beyond the specified tolerance range.

– Coupling parts are interchanged during fitting work.

– Non-observance of component markings for assembly balancing (see item 6.7) while the coupling is fitted.

– Specified tightening torques are not being adhered to.

– Alignment and/or shaft-misalignment values do not match the specifications on the order-specific drawing of the coupling.

– The coupling protection used is not suitable for operation within the meaning of the explosion-protection requirements and/or in accordance with Directive 2014/34/EU.

– Operating conditions are being changed without authorisation.

9.3.3 Possible faults in the maintenance of the plant

– Maintenance intervals are not being adhered to.

– Impermissible shaft misalignments occur, which are caused by the coupled units settling and were not taken into consideration when designing the coupling.

– Leakage in the vicinity of the coupling is not being identified and as a result chemically aggressive media are damaging the coupling.

10. Maintenance and repair

Observe the instructions in section 3, "Safety instructions"!

DANGER

Danger of explosion

Risk of explosion when operating in potentially explosive areas through damage.
Damaged coupling modules and coupling parts are potential explosion hazards.
Use only undamaged coupling components. Operating the coupling with damaged coupling parts is not permitted in potentially explosive environments in accordance with Directive 2014/34/EU.

WARNING

Serious injury

Rotating components may cause injury during work on the still rotating coupling.
All work on the coupling must be carried out only when it is at a standstill. Secure the drive unit to prevent unintentional switch-on. A notice should be attached to the ON switch stating clearly that work on the coupling is in progress. The relevant accident prevention regulations at the place of installation apply as well.

10.1 General

ARPEX couplings do not require maintenance; however, they should be **visually inspected** during regular system maintenance inspections **at least once a year**. Especial attention should be given to the condition of the plate packs. If individual plates or several plates are broken, the plate pack affected must be replaced (see item 10.2).

No further maintenance work is necessary.

10.2 Replacing plate packs

If the plate packs must be replaced, it is required to return the coupling to the manufacturer for repair and re-balancing.

WARNING

Serious injury

Risk of serious injury through flying fragments and/or risk of damage to the coupling.
The module has already been fully assembled at the factory. The plate packs must not be demounted or retightened.

10.3 Replacing screw connections of the flanges

NOTICE

Damage to the coupling

Damage to the coupling and/or disruptions through the incorrect use of screw connections of the flanges.
The screw connections of the flanges have been checked by weight and must always be used or replaced in sets.

11. Spare parts, customer-service

By stocking the most important spare parts on site you can ensure that the coupling is ready for use.

To order spare parts, refer to the spare-parts list.

We guarantee only the genuine spare parts supplied by us.

⚠ WARNING

Risk of serious injury through flying fragments

Risk of serious injury through flying fragments and/or risk of damage to the coupling through use of defective spare parts.
Flender guarantees only the genuine spare parts supplied by Flender.
Non-genuine spare parts have not been tested or approved by Flender. Non-genuine spare parts may alter technical characteristics of the coupling, thereby posing an active or passive risk to safety.
Flender will assume no liability or guarantee for damage caused by spare parts not supplied by Flender.
The same applies to any accessories not supplied by Flender.

Please note that certain components often have special production and supply specifications and that we supply you with spare parts which comply fully with the current state of technical development as well as current legislation.

When ordering spare parts, always state the following:

– Quantity

– Designation

– Size

– Number of the drawing of the coupling

– Position of the spare part in the spare-parts list

11.1 Spare-parts and customer-service addresses

When ordering spare parts or requesting a service specialist, please contact Flender first (see section 2).

12. Declarations

12.1 EU declaration of conformity

EU declaration of conformity

The manufacturer, Flender GmbH, 46395 Bocholt, Germany, declares that the equipment described in these operating instructions:

FLENDER COUPLINGS ARPEX®
ART, ARE

is in conformity with Article 1 and Article 13, Paragraph 1 b) ii) of Directive 2014/34/EU and complies with the requirements of Directive 2014/34/EU and the following standards:

EN 1127-1 : 2011
EN 13463-1 : 2009
EN 13463-5 : 2011
EN 1710 : 2008

This declaration of conformity is issued under the sole responsibility of the manufacturer.

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

Directive 2014/34/EU	OJ L 96, 29.03.2014, p.309-356	(effective from 20.04.2016, 00:00 a.m.)
Directive 94/9/EC	OJ L 100, 19.04.1994, p.1-29	(effective until 19.04.2016, 12.00 p.m.)

The technical documentation has been delivered to the body named below:

DEKRA EXAM GmbH, 44727 Bochum, Germany, code number: 0158.

Bocholt, 2017-10-01

Felix Henseler, Head of PD MD AP

Bocholt, 2017-10-01

Thomas Tebrügge / Head of PD MD AP COU BA

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