

**Assembly and maintenance manual**  
**Type GFR / GFRN /**  
**GFR..F1F2 / GFR..F2F7 / GFRN..F5F6**  
**GFR..F2F3 / GFR..F3F4**








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## General safety instructions

|   |                |   |
|---|----------------|---|
|    | <b>WARNING</b> | <p><b>Risk of injury due to moving components!</b><br/>         Rotating driven components can cause the most severe injuries. Therefore, during operation:</p> <ul style="list-style-type: none"> <li>➤ It is strictly forbidden for persons to loiter in the danger zone or in its immediate vicinity.</li> <li>➤ Do not disable, render unusable or circumvent safety equipment and / or safety functions.</li> </ul> <p>Prior to entering the danger zone:</p> <ul style="list-style-type: none"> <li>➤ Switch off the power supply and secure it against being switched on again.</li> <li>➤ Wait for lagging components to come to a standstill.</li> </ul> |
|  | <b>DANGER!</b> | <p><b>Danger due to improper operation!</b></p> <ul style="list-style-type: none"> <li>➤ Modifications to the clutch coupling are not permitted and may impair safety.</li> <li>➤ All tasks may only be performed by personnel with the requisite training and expertise.</li> <li>➤ Repairs and maintenance tasks may only be performed when the machine is at a standstill. To this end, the machine is to be secured against a restart.</li> </ul>   |
|  | <b>WARNING</b> | <p><b>Risk of injury due to the clutch coupling falling down or tipping over!</b><br/>         The weight of the clutch coupling can injure people and cause severe crushing. Therefore:</p> <ul style="list-style-type: none"> <li>➤ Use a suitable lifting gear for lifting (slings, etc.) which is able to support the weight of the clutch coupling.</li> </ul>   |
|  | <b>WARNING</b> | <p><b>Risk of injury due to incorrect assembly!</b><br/>         Faulty installation and maintenance can cause severe property damage and personal injury. Installation, maintenance and repair work may only be performed by personnel with the requisite training and expertise.</p>  |
|  | <b>WARNING</b> | <p><b>Risk of injury for insufficiently qualified personnel!</b><br/>         Improper handling can cause significant personal injury and property damage. Therefore:</p> <ul style="list-style-type: none"> <li>➤ Only ever have tasks performed by those persons to whom the tasks have been assigned.</li> </ul>   |

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## 1 General

### 1.1 Information relating to the assembly and maintenance manual

This assembly and maintenance manual provides important information regarding the installation and commissioning of the clutch coupling of type GFR / GFRN / GFR..F1F2 / GFR..F2F7 / GFRN..F5F6 / GFR..F2F3 / GFR..F3F4.






Prerequisite for safe operation is compliance with all of the stated safety and handling instructions.

Moreover, the relevant local accident protection guidelines and general safety provisions for the field of application of the clutch coupling are to be complied with.

Read the assembly and maintenance manual carefully prior to installation and commissioning. It is a product component and must be kept in the immediate vicinity of the installation site and be accessible to personnel at all times. Furthermore, all safety instructions stated in the assembly and maintenance manual are to be observed.

### 1.2 Explanation of symbols

Warnings are marked throughout this assembly and maintenance manual by symbols. These warning symbols are introduced by signal words which indicate the extent of the danger. Comply with these warning symbols under all circumstances and act with due care and attention to avoid accidents, personal injury and property damage.

|   |                  |  |
|---|------------------|--|
|  | <b>Danger!</b>   | ...indicates an imminently dangerous situation which can be fatal or cause severe injuries if it is not averted. |
|  | <b>WARNING</b>   | ...indicates a potentially dangerous situation which can be fatal or cause severe injuries if it is not averted. |
|  | <b>ATTENTION</b> | ...indicates a potentially dangerous situation which can cause minor or light injuries if it is not averted.     |
|  | <b>CAUTION</b>   | ...indicates a potentially dangerous situation which can cause property damage if it is not averted.             |
|  | <b>NOTE</b>      | ... highlights helpful tips and recommendations as well as information for efficient and fault-free operation.   |

### 1.3 Manufacturer

STIEBER GmbH, D-69126 Heidelberg, Hatschekstr. 36, Germany  
Phone +49 (0) 6221 3047-0, Fax -31

### 1.4 Labeling

Front face of the outer race

- Manufacturer's name
- Type designation
- Date of manufacture (coded)

### 1.5 Environmental protection

Energy: The clutch coupling does not use any electrical energy

Materials: Steel

Recycling: Steel parts are up to 100% recyclable

## 2 Safety

### 2.1 Intended use

Clutch couplings of type GFR / GFRN / GFR..F1F2 / GFR..F2F7 / GFRN..F5F6 / GFR..F2F3 / GFR..F3F4 are directional clutches, engaged and disengaged automatically.

They can be used as overrunning clutches, backstops or indexing clutches in machinery and equipment.

Clutch couplings may only be operated within the limitations of use outlined in section 2.5.

All of the specifications stated in the assembly and maintenance manual must be strictly adhered to.

Any claims due to damage arising from improper use are excluded. The operator carries sole liability for all damage arising from improper use.

#### Driving operation of an overrunning clutch:

When operating in torque transmission mode the driving machine element and the driven member are connected in a force-locking manner. In this operating state, power will be transferred.

#### Overrunning operation of an overrunning clutch:

The overrunning clutch disengages automatically when the driven member achieves a higher rotation speed than the driving member.

#### Lockout mode of a backstop:

When operating in the locking direction of the clutch coupling, the machine shaft and the torque bracing to the machine element are connected in a force-locking manner.

In this operating state, torque will be transferred.

#### Overrunning mode of a backstop:

The clutch coupling disengages automatically the force-locked connection between the machine shaft and the torque bracing to the machine element, when the machine shaft runs in clutch coupling direction.

#### Driving operation of an indexing clutch:

When operating in torque transmission mode the driving machine element and the driven member are connected in a force-locking manner. In this operating state, power will be transferred.

#### Overrunning operation of an indexing clutch:

The clutch coupling disengages automatically when the machine shaft is idling.


## **2.2 Responsibility of the operator**

The operator of the machine, in which the clutch coupling is installed, is subject to the legal obligations concerning occupational safety.

The valid provisions for the site of operation as well as the safety and accident prevention regulations of the trade associations are to be observed. This, in particular, means that the operator:

- is aware of the valid occupational safety provisions.
- implements the necessary behavioral requirements for operation of the machine, in which the clutch coupling is installed, at the site of operation.
- clearly defines responsibilities for installation, operation, maintenance and cleaning of the machine in which the clutch coupling is installed.
- ensures that all staff members, who work at or with the machine in which the clutch coupling is installed, are employed and have read and understood the operating manual. Moreover, he must, at regular intervals, provide training for personnel on how to handle the machine, in which the clutch coupling is installed, and inform them of the potential dangers. In addition, the operator is responsible for ensuring that the machine in which the clutch coupling is installed:
  - is always in perfect technical condition.
  - is maintained in accordance with the specified maintenance intervals.
  - has all its safety equipment checked regularly for completeness and functionality.

## 2.3 Assembly and maintenance personnel

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <b>Risk of injury for insufficiently qualified personnel!</b><br>Improper handling can cause significant personal injury and property damage. Therefore:<br>➤ Only ever have tasks performed by those persons to whom the tasks have been assigned. |
|---|----------------|---|

Qualified personnel are those persons who, owing to their training, experience and instruction as well as their knowledge of relevant standards, provisions, accident prevention regulations and operating conditions, have been authorized by the person responsible for the safety of the plant to perform the requisite tasks and are able to recognize and avoid potential dangers in doing so. Knowledge of first-aid measures and on-site emergency equipment must also be included.

## 2.4 Personal protective equipment

It is necessary to wear personal protective equipment when handling the machine, in which the clutch coupling is installed, to minimize health risks.

The necessary protective equipment such as work shoes, gloves, safety goggles etc. is to be put on prior to all tasks and kept on during the task.



## 2.5 Limitations of use

- Maximum allowable overrunning speeds and maximum torque capacity (oil quantities):

| Type        | Size *<br>bore dia.<br>H7 [mm] | maximum torque<br>[Nm] * | maximum<br>overrunning<br>speed<br>inner race<br>[rpm] | maximum<br>overrunning<br>speed<br>outer race<br>[rpm] |
|-------------|--------------------------------|--------------------------|--|--|
| GFR<br>GFRN | 12                             | 110                      | 4000   | 7200   |
|             | 15                             | 250                      | 3600   | 6500   |
|             | 20                             | 362                      | 2700   | 5600   |
|             | 25                             | 576                      | 2100   | 4500   |
|             | 30                             | 1000                     | 1700   | 4100   |
|             | 35                             | 1450                     | 1550   | 3800   |
|             | 40                             | 2050                     | 1150   | 3400   |
|             | 45                             | 2250                     | 1000   | 3200   |
|             | 50                             | 4250                     | 800  | 2800   |
|             | 55                             | 5250                     | 750  | 2650   |
|             | 60                             | 7000                     | 650  | 2450   |
|             | 70                             | 11500                    | 550  | 2150   |
|             | 80                             | 17000                    | 500  | 1900   |
|             | 90                             | 29000                    | 450  | 1700   |
|             | 100                            | 40000                    | 350  | 1450   |
|             | 130                            | 62500                    | 250  | 1250   |
| 150         | 140000                         | 200                      | 980  |  |

\*Special drilled holes and reinforced spring GFR (..)V and the nickel-plated design GFR(..)-NI are available upon request

Table1a Specification for oil lubricated clutches

| Type                                 | Size*<br>Ø Bore H7 | max. Torque Capacity | max.<br>Overrunning Speed<br>Inner Race<br>[rpm] | max.<br>Overrunning Speed<br>Outer Race<br>[rpm] | Oil Quantity **<br>[cm <sup>3</sup> ] |
|--------------------------------------|--------------------|----------------------|--|--|---------------------------------------|
| GFR..F1F2<br>GFR..F2F7<br>GFRN..F5F6 | 12                 | 110                  | 3100   | 4700   | 8                                     |
|                                      | 15                 | 250                  | 2800   | 4400   | 11                                    |
|                                      | 20                 | 362                  | 2400   | 4100   | 15                                    |
|                                      | 25                 | 576                  | 1600   | 3800   | 19                                    |
|                                      | 30                 | 1000                 | 1300   | 2800   | 25                                    |
|                                      | 35                 | 1450                 | 1200   | 2600   | 32                                    |
|                                      | 40                 | 2050                 | 850  | 2300   | 40                                    |
|                                      | 45                 | 2250                 | 740  | 2200   | 45                                    |
|                                      | 50                 | 4250                 | 580  | 1950   | 55                                    |
|                                      | 55                 | 5250                 | 550  | 1800   | 70                                    |
|                                      | 60                 | 7000                 | 530  | 1700   | 80                                    |
|                                      | 70                 | 11500                | 500  | 1600   | 125                                   |
|                                      | 80                 | 17000                | 480  | 1500   | 185                                   |
|                                      | 90                 | 29000                | 420  | 1300   | 270                                   |
|                                      | 100                | 40000                | 310  | 1100   | 350                                   |
|                                      | 130                | 62500                | 220  | 900  | 430                                   |
| 150                                  | 140000             | 170                  | 700  | 500  |                                       |

\* Special bores and reinforced spring version and the nickel-plated design GFR(..)-NI are available upon request

\*\* At horizontal mounting, vertical installation upon request


Table1b Specification for oil lubricated clutches

| Type                  | Size*<br>Ø Bore H7 | max. Torque<br>Capacity | maximum<br>Overrunning<br>Speed<br>Inner Race<br>[rpm] | Oil<br>Quantity **<br>[cm <sup>3</sup> ]<br>GFR..F2F3 | Oil<br>Quantity **<br>[cm <sup>3</sup> ]<br>GFR..F3F4 |
|-----------------------|--------------------|-------------------------|--|---|---|
| GFR.F2F3<br>GFR..F3F4 | 12                 | 110                     | 3100   | 8   | 15  |
|                       | 15                 | 250                     | 2800   | 11  | 17  |
|                       | 20                 | 362                     | 2400   | 15  | 20  |
|                       | 25                 | 576                     | 1600   | 19  | 25  |
|                       | 30                 | 1000                    | 1300   | 25  | 30  |
|                       | 35                 | 1450                    | 1200   | 32  | 40  |
|                       | 40                 | 2050                    | 850  | 40  | 45  |
|                       | 45                 | 2250                    | 740  | 45  | 55  |
|                       | 50                 | 4250                    | 580  | 55  | 65  |
|                       | 55                 | 5250                    | 550  | 70  | 75  |
|                       | 60                 | 7000                    | 530  | 80  | 90  |
|                       | 70                 | 11500                   | 500  | 125   | 130   |
|                       | 80                 | 17000                   | 480  | 185   | 185   |
|                       | 90                 | 29000                   | 420  | 270   | 270   |
|                       | 100                | 40000                   | 310  | 350   | 370   |
|                       | 130                | 62500                   | 220  | 430   | 450   |
| 150                   | 140000             | 170                     | 500  | 550   |   |


\* Special bores and reinforced spring version and the nickel-plated design GFR(..)-NI are available upon request

\*\* At horizontal mounting, vertical installation upon request

Table 1c Specification for oil lubricated clutches

|   |             |  |
|---|-------------|--|
|  | <b>NOTE</b> | With smaller bore diameters than the maximum bore diameter, the maximum transmittable torque depends on the keyway connection! |
|---|-------------|--|


- Limits for ambient temperature: from -40°C to +50°C
- Maximum operating temperature: 90°C
- Required machine shaft tolerance: d = h6 or j6
- Oil lubrication: approved oils according Stieber catalogue / WN900
- Grease lubrication: approved greases according Stieber catalogue / WN900/  
When assembling grease-lubricated clutch couplings, reinforced spring GFR(..)V must be used

|   |             |   |
|---|-------------|---|
|  | <b>NOTE</b> | With grease lubrication the maximum overrunning speeds of inner and outer race will be reduced by half! |
|---|-------------|---|

|                       | Ambient temperature   |                  |                                 |                                 | Grease                              |
|-----------------------|-----------------------|------------------|---------------------------------|---------------------------------|-------------------------------------|
|                       | -40°C to -15°C        | -15°C to +15°C   | +15°C to +30°C                  | +30°C to +50°C                  |                                     |
|                       | Operating temperature |                  |                                 |                                 |                                     |
|                       | -20°C to +25°C        | +10°C to +50°C   | +40°C to +70°C                  | +50°C to +85°C                  |                                     |
|                       | Oil                   |                  |                                 |                                 |                                     |
| ISO - VG<br>DIN 51519 | 10                    | 22               | 46                              | 100                             |                                     |
| ARAL                  | SUMOROL CM10          | SUMOROL CM22     | SUMUROL CM 46<br>MOTANOL HE 46  | DEGOL CL100T<br>MOTANOL HE 100  | ARALUB HL2                          |
| BP                    | ENERGOL CS10          | ENERGOL CS22     | ENERGOL CS46<br>ENERGOL RC R 46 | ENERGOL CS100<br>ENERGOL RC 100 | ENERGREASE LS2                      |
| CASTROL               | –                     | –                | AIRCOL PD46                     | AIRCOL PD 100                   | SPHEEROL MP2                        |
| ESSO                  | SPINESSO 10           | SPINESSO 22      | TERESSTIC T46                   | NUTO 100                        | UNIREX N2                           |
| FUCHS                 | RENOLIN MR3           | RENOLIN DTA22    | RENOLIN DTA46                   | RENOLIN MR30                    | RENOLIT LZR2                        |
| KLÜBER                | ISOFLEX PDP 38        | ISOFLEX PDP 48   | LAMORA HLP 46                   | LAMORA 100                      | POLYLUB WH2<br>KLÜBERSYNTH BM 44-42 |
| MOBIL                 | VELOCITE No6          | VELOCITE No10    | MOBIL DTE 798                   | MOBIL DTE OIL HEAVY             | POLYREX EM                          |
| SHELL                 | MORLINA S2 BL<br>10   | MORLINA S2 BL 22 | MORLINA 46                      | MORLINA 100                     | ALVANIARL2                          |
| TOTAL                 | AZZOLA ZS10           | AZZOLA ZS22      | AZZOLA ZS46                     | AZZOLA ZS100                    | MULTIS 2                            |

\* Alternatively we strongly recommend the use of multigrade oil SAE 10W-40 at working temperature between 0 °C and +80 °C.

Table 2 Lubricant recommendation

|   |             |   |
|---|-------------|---|
|  | <b>NOTE</b> | With grease lubrication fill the free space in the clutch coupling up to approx.30 - 40% with grease.<br>Excessive amount of grease may affect the function of the clutch coupling! |
|---|-------------|---|

### 3 Structure and function

#### 3.1 Structure

|         |                        |         |                     |
|---------|------------------------|---------|---------------------|
| Pos. 1  | Inner race             | Pos. 12 | Centering flange F7 |
| Pos. 2  | Outer race             | Pos. 13 | Cover F2            |
| Pos. 3  | Rollers                | Pos. 14 | Cover F5            |
| Pos. 6  | Spring loaded plungers | Pos. 15 | Cover F6            |
| Pos. 7  | Disc                   | Pos. 16 | Torque arm F3       |
| Pos. 8  | Flat seal              | Pos. 17 | End cover F4        |
| Pos. 9  | Rotary shaft seal      | Pos. 18 | Oil filling screw   |
| Pos. 10 | Ball bearing           | Pos. 19 | Stop bolt           |
| Pos. 11 | Flange F1              | Pos. 20 | Oil gauge glass     |

Table 3 Parts list

Pos.8 will be always supplied loose!

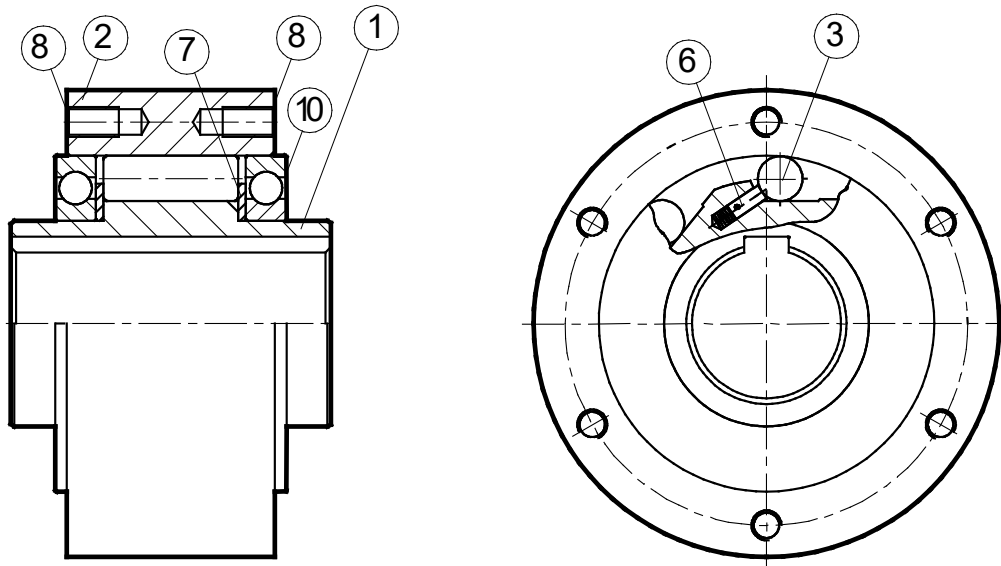


Fig.1a Structure GFR

Pos.8 will be always supplied loose!

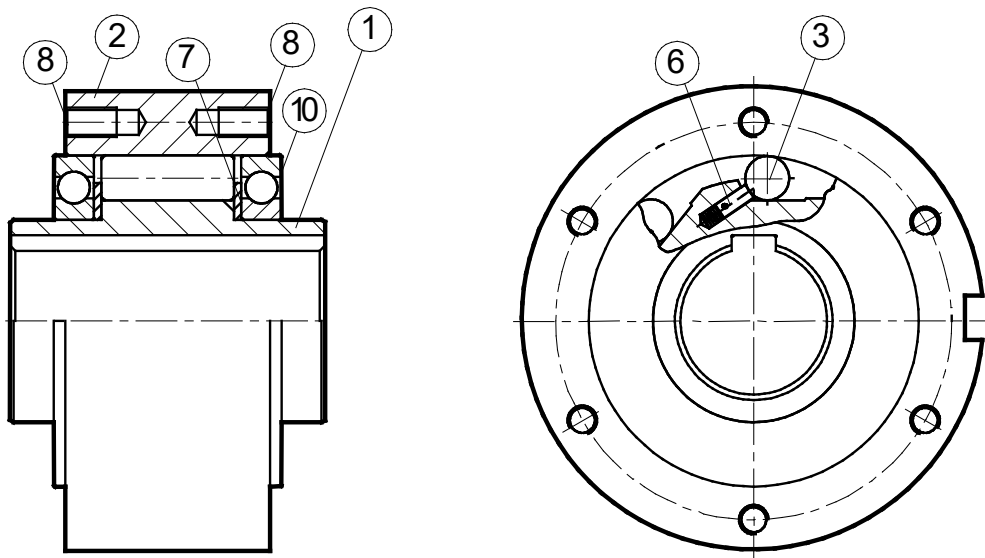


Fig.1b Structure basic unit GFRN

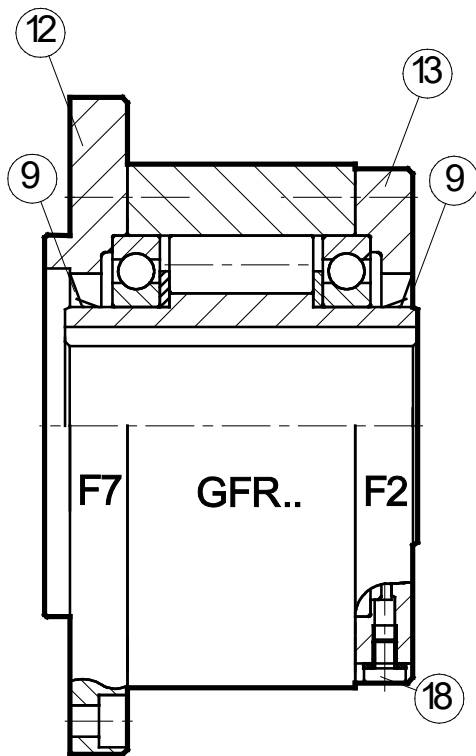


Fig.1c Structure GFR..F2F7

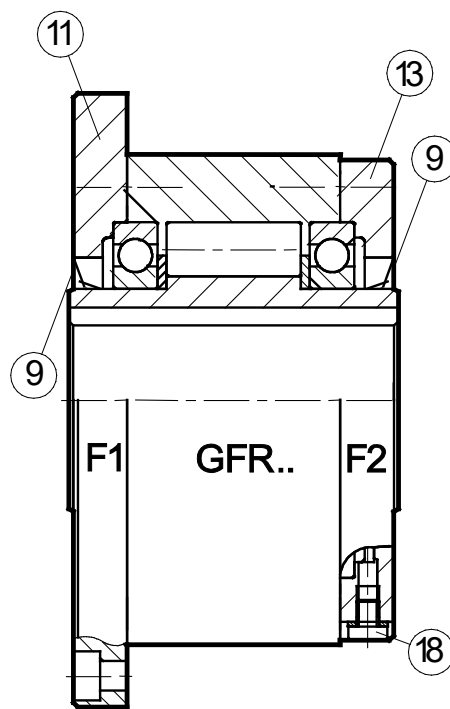


Fig.1d Structure GFR..F1F2

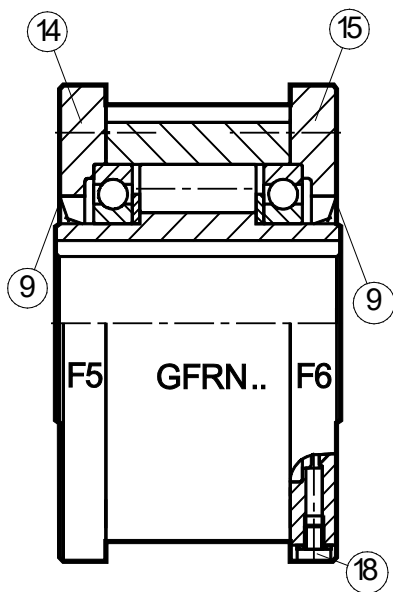


Fig.1e Structure GFRN..F5F6

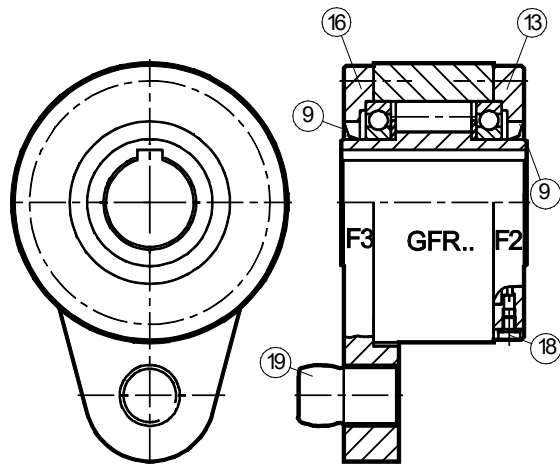


Fig.1f Structure GFR..F2F3

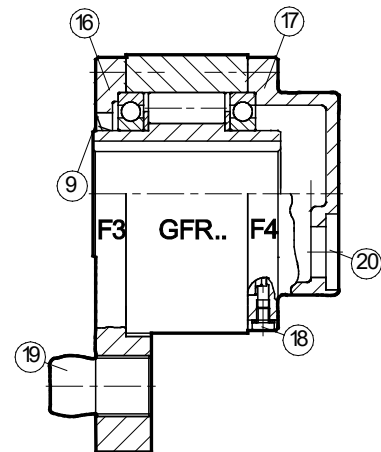


Fig.1g Structure GFR..F3F4

### 3.2 Function

Clutch couplings of type GFR / GFRN / GFR..F1F2 / GFR..F2F7 / GFRN..F5F6 / GFR..F2F3 / GFR..F3F4 are fitted with ramps on which rollers are located. Springs and plungers ensure a permanent contact between inner race and outer race for an instant torque transmission.

While the outer race (see Fig.2) is turned in the direction of driving operation, the rollers ensure a connection between inner and outer race, so that torque and power can be transmitted.

The torque transmission is effected from the input shaft onto the output shaft. In driving operation the speeds of the inner and outer race are equal.

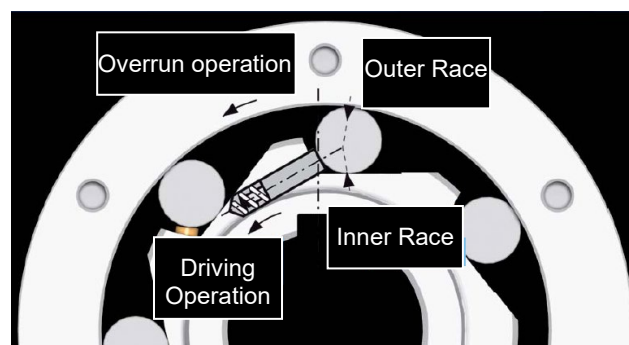


Fig.2 Driving/ Overrun Operation

The overrunning operation takes place while the outer race is turned in the direction of rotation. Whereby force-locked connection (see Fig.2) between inner race and outer race is interrupted.

In overrun operation the speeds of the inner and outer race are different.

## 4 Transport and packaging



### NOTE

The local provisions regarding the disposal of transport and packaging materials are to be observed!

The clutch couplings are sent in a box on a pallet.

Transport damage to the packaging and / or the clutch coupling is to be reported to the respective transit company! The clutch coupling must be unpacked in a clean and dry environment!

## 5 Storage

### 5.1 Short-term storage

Clutch couplings of type GFR / GFRN / GFR..F1F2 / GFR..F2F7 / GFRN..F5F6 / GFR..F2F3 / GFR..F3F4 come with an oil film as corrosion protection. This corrosion protection is to be renewed at regular intervals. The frequency of these renewal intervals is dependent on the environmental conditions (temperature, moisture, salt content of the air, etc.) at the storage site.

The maximum storage period (short-term storage) is 6 months. Moreover, the clutch coupling must have long-term storage corrosion protection applied to it.

Store packages under the following conditions:

- Do not keep outdoors.
- Keep dry and free from dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shocks and vibrations.
- Storage temperature: -10 to +60 °C.
- Relative humidity: maximum 95%, non-condensing.



## 5.2 Long-term storage



To this end the clutch coupling must be welded in PE foil with desiccant agent. The corrosion protection must be checked after a period not exceeding one year or else depending on the environmental conditions (temperature, moisture, salt content of the air, etc.) at the storage site.


Store packages under the following conditions:


- Do not keep outdoors.
- Keep dry and free from dust.
- Do not expose to aggressive media.
- Keep away from direct sunlight.
- Avoid mechanical shocks and vibrations.
- Storage temperature: -10 to +60 °C.
- Relative humidity: maximum 95%, non-condensing.

## 6 Installation

### 6.1 Checking the direction of rotation

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <p><b>Risk of injury due to incorrect assembly!</b><br/>           Faulty installation and maintenance can cause severe property damage and personal injury!<br/>           Installation, maintenance and repair work may only be performed by personnel with the requisite training and expertise!</p>   |
|  | <b>WARNING</b> | <p><b>Risk of injury due to moving components!</b><br/>           Rotating driven components can cause the most severe injuries. Therefore, during operation:</p> <ul style="list-style-type: none"> <li>➤ It is strictly forbidden for persons to loiter in the danger zone or in its immediate vicinity.</li> <li>➤ Do not disable, render unusable or circumvent safety equipment and / or safety functions.</li> </ul> <p>Prior to entering the danger zone:</p> <ul style="list-style-type: none"> <li>➤ Switch off the power supply and secure it against being switched on again.</li> <li>➤ Wait for lagging components to come to a standstill.</li> </ul> |

|   |                |  |
|---|----------------|--|
|  | <b>WARNING</b> | <p><b>Risk of injury due to the clutch coupling falling down or tipping over!</b><br/>         The weight of the clutch coupling can injure people and cause severe crushing.<br/>         Therefore:</p> <ul style="list-style-type: none"> <li>➤ Use a suitable lifting gear for lifting (slings, etc.) which is able to support the weight of the clutch coupling.</li> </ul> |
|---|----------------|--|

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <p><b>Risk of injury for insufficiently qualified personnel!</b><br/>         Improper handling can cause significant personal injury and property damage. Therefore:</p> <ul style="list-style-type: none"> <li>➤ Only ever have tasks performed by those persons to whom the tasks have been assigned.</li> </ul> |
|---|----------------|---|

The direction of rotation must be checked prior to installation.

## 6.2 Changing the direction of rotation

Changing of the direction of rotation is achieved by exchanging flange and cover (with types GFR / GFRN only by turning round).

Procedural steps:

- Unscrew the cylindrical screws from cover and remove flange and cover.
- Place the flange at opposing ends and screw the cylindrical screws with Loctite (see table 4 Tightening torques).

| Tightening torques [Nm] |                 |                        |                    |    |
|-------------------------|-----------------|------------------------|--------------------|----|
| Clutch size             | Cylinder screws |                        | Oil filling screws |    |
|                         | Size            | Strength standard 10.9 | Size               |    |
| from 12 to 20           | M5              | 9.5                    | M5                 | 4  |
| from 25 to 35           | M6              | 16.5                   | M5                 | 4  |
| from 40 to 50           | M8              | 40.1                   | M6                 | 7  |
| from 55 to 70           | M10             | 79.0                   | M8                 | 9  |
| 80                      | M10             | 79.0                   | M10                | 15 |
| 90                      | M12             | 137.0                  | M10                | 15 |
| from 100 to 130         | M16             | 338.0                  | M10                | 15 |
| 150                     | M20             | 661.0                  | M10                | 15 |

Table 4 Tightening torques ( $\mu\text{ges.}=0,14$  )

- Check overrunning as described in Chapter 6.1. The clutch coupling must be able to be turned easily in the overrun direction of rotation.

### 6.3 Oil lubrication

Clutch couplings of type GFR..F1F2, GFR..F2F3, GFR..F2F7 are filled with oil at the factory.


Clutch couplings of type GFR..F5F6, GFR..F3F4 are to be filled directly after mounting with oil. (see Chapter 2.5 Limitations of use).

Clutch couplings of type GFR und GFRN are to be filled during operation with oil.


### 6.4 Grease lubrication


Clutch couplings of type GFR / GFRN / GFR..F1F2 / GFR..F2F7 / GFRN..F5F6 / GFR..F2F3 / GFR..F3F4 require oil lubrication. Where oil lubrication is not possible grease lubrication can be used under appropriate operating conditions. When assembling grease-lubricated clutch couplings, reinforced spring GFR(..)V must be used.


In this case, we request that you please contact the manufacturers.


|  |             |   |
|--|-------------|---|
|  | <b>NOTE</b> | With grease lubrication the maximum overrunning speeds of inner and outer race will be reduced by half! |
|--|-------------|---|

### 6.5 Assembly

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <p><b>Risk of injury due to incorrect assembly!</b><br/>         Faulty installation and maintenance can cause severe property damage and personal injury.</p> <p>Installation, maintenance and repair work may only be performed by personnel with the requisite training and expertise.</p> |
|---|----------------|---|

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <p><b>Risk of injury due to moving components!</b><br/>         Rotating driven components can cause the most severe injuries. Therefore, during operation:</p> <ul style="list-style-type: none"> <li>➤ It is strictly forbidden for persons to loiter in the danger zone or in its immediate vicinity.</li> <li>➤ Do not disable, render unusable or circumvent safety equipment and / or safety functions.</li> </ul> <p>Prior to entering the danger zone:</p> <ul style="list-style-type: none"> <li>➤ Switch off the power supply and secure it against being switched on again.</li> <li>➤ Wait for lagging components to come to a standstill.</li> </ul> |
|---|----------------|---|


|   |                |  |
|---|----------------|--|
|  | <b>WARNING</b> | <b>Risk of injury due to falling down components!</b><br>Falling down components can cause serious injuries!<br>Prevent the clutch coupling from falling down! |
|---|----------------|--|

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <b>Risk of injury for insufficiently qualified personnel!</b><br>Improper handling can cause significant personal injury and property damage. Therefore:<br>➤ Only ever have tasks performed by those persons to whom the tasks have been assigned. |
|---|----------------|---|

### 6.5.1 Assembly of type GFR / GFRN

Procedural steps:

- Insert GFR / GFRN flat seal (8) between outer race (2) and connecting parts. Key in accordance with DIN 6885 sheet 1 throughout the whole length of the clutch coupling. The type GFRN is provided with additional keyway on the outer race for torque transmission.. Lift up the clutch coupling using suitable lifting gear and push it onto the oiled machine shaft.. Tighten machine element and outer race with the fixing screws  
(e. g. in accordance with DIN EN ISO 4762 and strength standard 10.9  
(see table 4 Tightening torques as described in Chapter 6.2).
- Fasten the inner race axially on the machine shaft.
- Check overrunning (as described in Chapter 6.1).

|   |             |                                |
|---|-------------|--------------------------------|
|  | <b>NOTE</b> | Only use screw qualities 10.9! |
|---|-------------|--------------------------------|

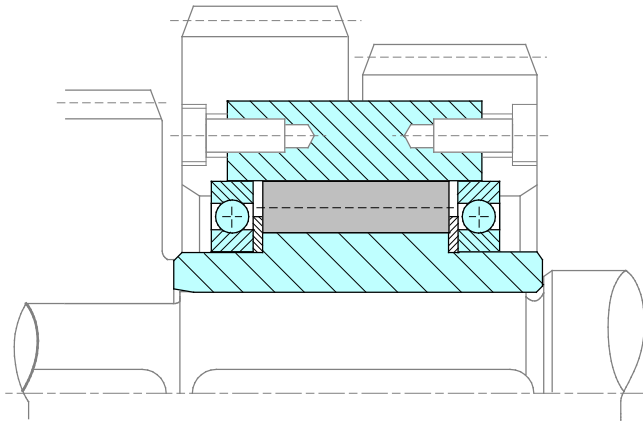


Fig. 3a: Mounting example GFR / GFRN

### 6.5.2 Assembly of type GFR..F1F2

Procedural steps:

- Push machine element onto the outer race.. Key in accordance with DIN 6885 sheet 1 throughout the whole length of the clutch coupling. Lift up the clutch coupling using suitable lifting gear and push it onto the oiled machine shaft. Tighten flange F1 (11) and machine element with the fixing screws (e. g. in accordance with DIN EN ISO 4762 and strength standard 10.9 (see table 4 Tightening torques as described in Chapter 6.2).
- Fasten the inner race axially on the machine shaft.
- Check overrunning. The clutch coupling must be able to be turned easily in the overrun direction of rotation.



#### NOTE

Only use screw qualities 10.9!

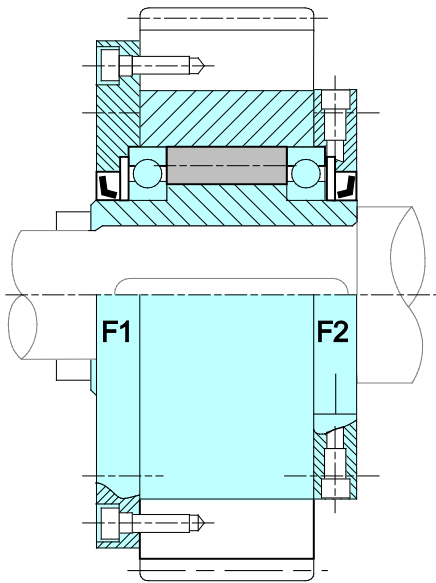


Fig. 3b: Mounting example GFR..F1F2

### 6.5.3 Assembly of type GFR..F2F7

#### Procedural steps:

- Key in accordance with DIN 6885 sheet 1 throughout the whole length of the clutch coupling. Lift up the clutch coupling using suitable lifting gear and push it onto the oiled machine shaft. Tighten centering flange F7 (12) and machine element with the fixing screws  
(e. g. in accordance with DIN EN ISO 4762 and strength standard 10.9  
(see table 4 Tightening torques as described in Chapter 6.2).
- Fasten the inner race axially on the machine shaft.
- Check overrunning. The clutch coupling must be able to be turned easily in the overrun direction of rotation.



#### NOTE

Only use screw qualities 10.9!

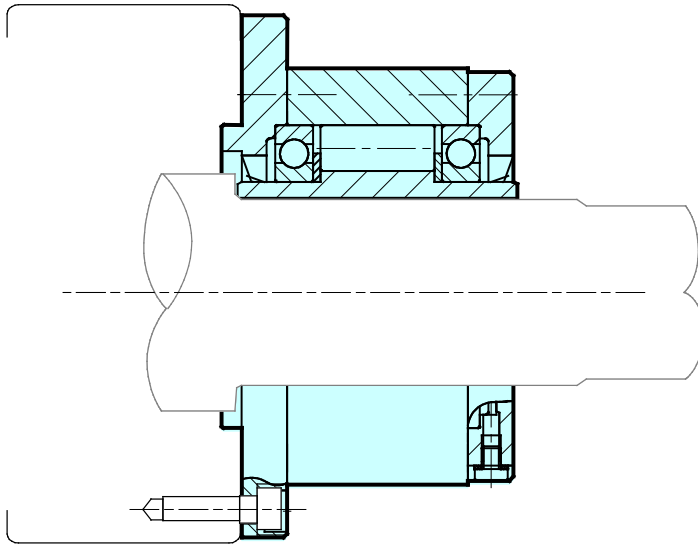


Fig. 3c: Mounting example GFR..F2F7

#### 6.5.4 Assembly of the type GFRN..F5F6

##### Procedural steps:

- Unscrew cover F5 (14) or cover F6 (15) from the outer race.
- Push machine element (keyway) over the outer race and remount the unscrewed cover (see table 4 Tightening torques as described in Chapter 6.2).
- Key in accordance with DIN 6885 sheet 1 throughout the whole length of the clutch coupling. Lift up the clutch coupling using suitable lifting gear and push it onto the oiled machine shaft. Fasten the inner race axially on the machine shaft.
- Fill oil (see Table 1b Specification and Table 2 Lubricant recommendation in Chapter 2.5 Limitations of use).
- Check overrunning. The clutch coupling must be able to be turned easily in the overrun direction of rotation.

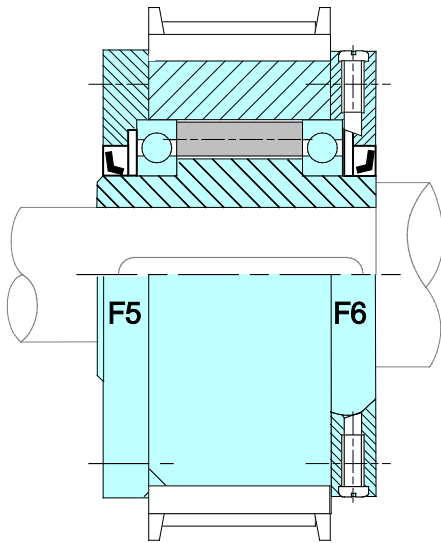


Fig. 3d: Mounting example GFRN..F5F6

#### 6.5.5 Assembly of the type GFR..F2F3

##### Procedural steps:

- Key in accordance with DIN 6885 sheet 1 throughout the whole length of the clutch coupling. Lift up the clutch coupling using suitable lifting gear and push it onto the oiled machine shaft. Torque arm (16) has to be installed vertically downwards. Torque arm and thus the ball bearings must not be distorted.
- The stop bolt (19) in the torque arm must have a radial clearance of 1-3 % of the bolt's diameter.
- Fasten the inner race axially on the machine shaft.
- Check overrun. The clutch coupling must be able to be turned easily in the overrun direction of rotation.



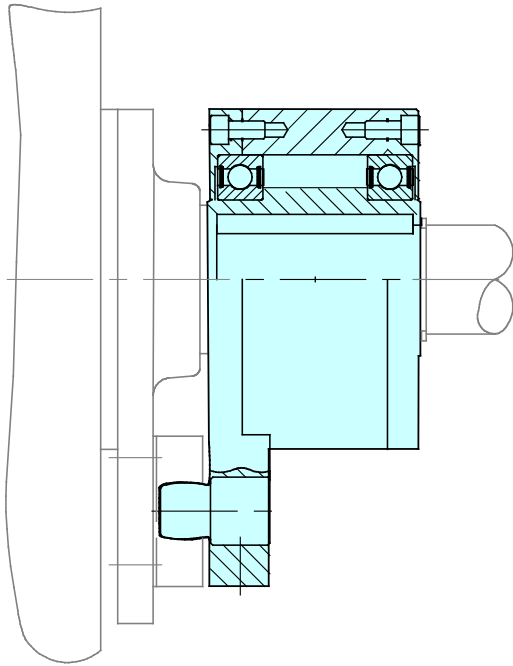


Fig. 3e: Mounting example GFR..F2F3

#### 6.5.6 Assembly of the type GFR..F3F4

##### Procedural steps:

- Unscrew the screw connection of the end cover.
- Dismount end cover F4 (17) from the outer race.
- Key in accordance with DIN 6885 sheet 1 throughout the whole length of the clutch coupling. Lift up the clutch coupling using suitable lifting gear and push it onto the oiled machine shaft. Torque arm (16) has to be installed vertically downwards. Torque arm and thus the ball bearings must not be distorted.
- The stop bolt (19) in the torque arm must have a radial clearance of 1-3 % of the bolt's diameter.
- Fasten the inner race axially on the machine shaft.
- Mount end cover F4 (17).
- Screw the screw connection of the end cover (see table 4 Tightening torques as described in Chapter 6.2).
- Fill oil (see Table 1b Specification and Table 2 Lubricant recommendation in Chapter 2.5 Limitations of use).
- Tighten oil filling screws (see Chapter 6.2).
- Check overrunning. The clutch coupling must be able to be turned easily in the overrun direction of rotation.

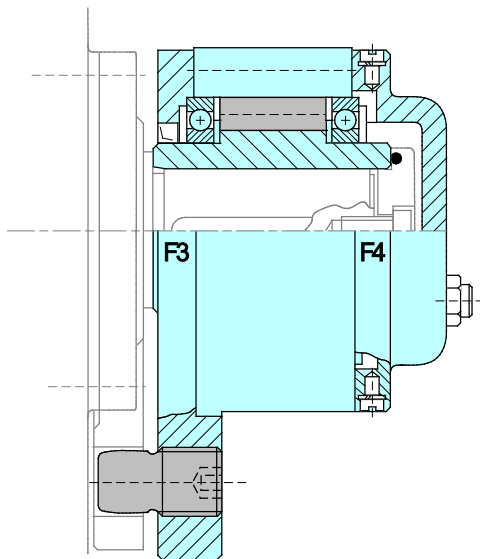








Fig. 3e: Mounting example GFR..F3F4

## 7 Maintenance


|   |                       |   |
|---|-----------------------|---|
|  | <p><b>WARNING</b></p> | <p><b>Risk of injury due to moving components!</b><br/>         Rotating driven components can cause the most severe injuries. Therefore, during operation:</p> <ul style="list-style-type: none"> <li>➤ It is strictly forbidden for persons to loiter in the danger zone or in its immediate vicinity.</li> <li>➤ Do not disable, render unusable or circumvent safety equipment and / or safety functions.</li> </ul> <p>Prior to entering the danger zone:</p> <ul style="list-style-type: none"> <li>➤ Switch off the power supply and secure it against being switched on again.</li> <li>➤ Wait for lagging components to come to a standstill.</li> </ul> |
|  | <p><b>WARNING</b></p> | <p><b>Risk of injury due to incorrect assembly!</b><br/>         Faulty installation and maintenance can cause severe property damage and personal injury.<br/>         Installation, maintenance and repair work may only be performed by personnel with the requisite training and expertise!</p>   |
|  | <p><b>WARNING</b></p> | <p><b>Risk of injury due to falling down components!</b><br/>         Falling down components can cause serious injuries!<br/>         Prevent the clutch coupling from falling down!</p>   |

|   |                |  |
|---|----------------|--|
|  | <b>WARNING</b> | <b>Risk of injury for insufficiently qualified personnel!</b><br>Improper handling can cause significant personal injury and property damage. Therefore: <ul style="list-style-type: none"> <li>➤ Only ever have tasks performed by those persons to whom the tasks have been assigned.</li> </ul> |
|---|----------------|--|

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <b>Risk of scalding from hot surfaces!</b><br>There is a risk of sustaining burns or scalds on hot surfaces during operation. Therefore: <ul style="list-style-type: none"> <li>➤ Do not touch the clutch coupling during operation!</li> </ul> |
|---|----------------|---|

|   |             |   |
|---|-------------|---|
|  | <b>NOTE</b> | When carrying out maintenance work, it is essential to replace the ball bearings! |
|---|-------------|---|

## 7.1 Oil level check

|   |             |   |
|---|-------------|---|
|  | <b>NOTE</b> | Depending on operating conditions and installation position the oil level is to be checked at the latest after half a year! |
|---|-------------|---|

### Procedural steps:

- For checking of the oil level, the oil filling screw (18) around the circumference of the cover or flange must be in the following position:  
two screws that are opposite each other must be vertically in line, the third screw is positioned from the side below the center.

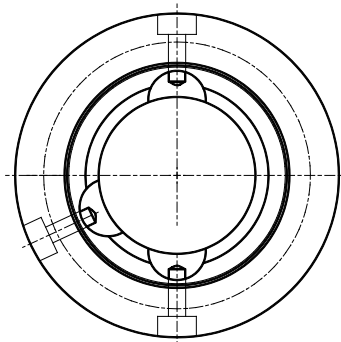


Fig. 4: Position of the oil filling screw

- Unscrew upper and side oil filling screw with gasket.
- Fill prescribed oil into the top drill hole as soon as oil appears at the lateral borehole.

- Tighten oil filling screws (18) with gasket (see table 4 Tightening torques as described in Chapter 6.2).

## 7.2 Oil change

A start up oil change has to be made after 20 working hours, further oil change after approx. 9000 operating hours but at latest after 1 year.

With extremely dirty operations the oil must be changed after every 5,000 operating hours or semi-annually.

Procedural steps:

- Position the clutch coupling so that the oil filling screw around the circumference of the cover or flange are in the following position: two screws that are opposite each other must be vertically in line, the third screw is positioned from the side below the center (see Fig. 4).
- Remove all three oil filling screws with gasket and drain out the oil. Place appropriate collecting buckets with a suitable capacity.



### NOTE

At waste oil disposal the according local disposal regulations are to be followed!


- Tighten the oil filling screw with gasket into the lower hole (see table 4 Tightening torques as described in Chapter 6.2).
- Fill up the clutch coupling with prescribed oil quantity (see chapter 2.5 Specification) or until oil starts escaping from the lateral hole.
- Tighten the remaining oil filling screws with gasket (see table 4 Tightening torques as described in Chapter 6.2).





### NOTE


Check oil filling screw and drain plug for leaks and firm fitting!  
If there are leaks at the screws during operation, new gaskets (see table 4 Gaskets as described in Chapter 11) have to be used!

## 8 Disassembly

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <p><b>Risk of injury due to incorrect assembly!</b><br/>         Faulty installation and maintenance can cause severe property damage and personal injury.<br/>         Installation, maintenance and repair work may only be performed by personnel with the requisite training and expertise!</p> |
|---|----------------|---|

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <p><b>Risk of injury due to moving components!</b><br/>         Rotating driven components can cause the most severe injuries. Therefore, during operation:</p> <ul style="list-style-type: none"> <li>➤ It is strictly forbidden for persons to loiter in the danger zone or in its immediate vicinity.</li> <li>➤ Do not disable, render unusable or circumvent safety equipment and / or safety functions.</li> </ul> <p>Prior to entering the danger zone:</p> <ul style="list-style-type: none"> <li>➤ Switch off the power supply and secure it against being switched on again.</li> <li>➤ Wait for lagging components to come to a standstill.</li> </ul> |
|---|----------------|---|

|   |                |  |
|---|----------------|--|
|  | <b>WARNING</b> | <p><b>Risk of scalding from hot surfaces!</b><br/>         There is a risk of sustaining burns or scalds on hot surfaces during operation. Therefore:</p> <ul style="list-style-type: none"> <li>➤ Do not touch the clutch coupling during operation!</li> </ul> |
|---|----------------|--|

|   |                |   |
|---|----------------|---|
|  | <b>WARNING</b> | <p><b>Risk of injury due to falling down components!</b><br/>         Falling down components can cause serious injuries!<br/>         Prevent the clutch coupling from falling down!</p> |
|---|----------------|---|

### Procedural steps:

- Drain oil. Position and loosen the screws.  
 Place appropriate collecting buckets with a suitable capacity for collecting the waste oil.
- Remove the axial fixing of the inner race (1).
- Unscrew the fastening screw from the flange and from the driven machine element.
- Pull the clutch coupling from the machine shaft. Use suitable lifting gear for this.

## 9 Disposal



### NOTE

The local provisions regarding the disposal of metallic components and any lubricants present are to be observed!

The clutch coupling is comprised of metallic materials which are coated with grease or oil. Metallic materials are fully recyclable. Lubricants and anticorrosive agents are to be disposed of separately. The local disposal provisions are to be observed in this regard.

## 10 Faults

The manufacturer is to be contacted immediately should any faults arise.

STIEBER GMBH, 69126 Heidelberg, Hatschekstr. 36, Germany  
Phone +49 (0) 6221 3047-0, Fax -31

## 11 Spare parts



### WARNING

#### Risk of injury by incorrect spare parts!

Incorrect or faulty replacement parts may cause damage, faulty function or total breakdown, as well as impairing safety. Therefore:

- Use only the manufacturer's original spare parts.

Procure spare parts from authorized dealers or directly from the manufacturer.

| Cover F2, F4, F6 bei: | SAP-Nr.  | Quantity | Description              |
|-----------------------|----------|----------|--------------------------|
| GFR12                 | 30128088 | 3        | Gasket 4,1X7X1-PA6.6     |
| GFR15                 | 30128088 | 3        | Gasket 4,1X7X1-PA6.6     |
| GFR20                 | 30128072 | 3        | Gasket 5,1X9X1,5-PA6.6   |
| GFR25                 | 30128072 | 3        | Gasket 5,1X9X1,5-PA6.6   |
| GFR30                 | 30128072 | 3        | Gasket 5,1X9X1,5-PA6.6   |
| GFR35                 | 30128072 | 3        | Gasket 5,1X9X1,5-PA6.6   |
| GFR40                 | 30128070 | 3        | Gasket 6,1X10X1,5-PA6.6  |
| GFR45                 | 30128070 | 3        | Gasket 6,1X10X1,5-PA6.6  |
| GFR50                 | 30128070 | 3        | Gasket 6,1X10X1,5-PA6.6  |
| GFR55                 | 30128089 | 3        | Gasket 8,1X12X1,5-PA6.6  |
| GFR60                 | 30128089 | 3        | Gasket 8,1X12X1,5-PA6.6  |
| GFR70                 | 30128089 | 3        | Gasket 8,1X12X1,5-PA6.6  |
| GFR80                 | 30128069 | 3        | Gasket 10,1X16X1,5-PA6.6 |
| GFR90                 | 30128069 | 3        | Gasket 10,1X16X1,5-PA6.6 |
| GFR100                | 30128069 | 3        | Gasket 10,1X16X1,5-PA6.6 |
| GFR130                | 30128069 | 3        | Gasket 10,1X16X1,5-PA6.6 |
| GFR150                | ES239520 | 3        | Gasket C20x24-CUFA       |

Table 5 Gasket for GFR..F2, GFR..F4 and GFR..F6