

# The SKF OKF/OKFA coupling Instructions for use

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**1 CAUTIONS AND PERSONAL SAFETY**

- When using the hydraulic pump and injectors, always wear eye protection and gloves.
- Use the correct oil as shown in the instructions.
- Use all equipment strictly in accordance with the instructions, or the instructions supplied by the equipment manufacturer.
- Inspect all equipment for damage before use.
- As a precaution, when mounting/dismounting the coupling, the area in front of and behind the coupling must be kept clear of all personnel.

## 2 THE PRINCIPLE OF THE COUPLING

The OKF and OKFA type coupling consists of two sleeves of high quality steel, a thin inner sleeve and a thick outer sleeve, a nut and a sealing complete the unit.

The outer surface of the inner sleeve is slightly tapered and the bore of the outer sleeve has a corresponding taper.

The inner sleeve bore is some larger than the diameter of the shaft, so that the sleeve can be passed over it with ease.

Coupling is mounted by driving the outer sleeve up on the taper of the inner sleeve .

This action compresses the inner sleeve onto shaft creating a powerful interference fit.

To allow this drive-up, the friction between the matching tapered surfaces is overcome by injecting oil at high pressure between the sleeves. The oil forms a load-carrying film separating the two sleeves.

When the outer sleeve has reached the correct drive up position, the injection pressure is released and the oil is drained off between the mating tapered surfaces, restoring normal friction between the sleeves.

Dismounting the coupling is equally simple. Oil is injected between the coupling sleeves to overcome the friction. As a result of the taper, the compressive force has an axial component which causes the outer sleeve to slide down the taper, forcing the oil out of the hydraulic unit.

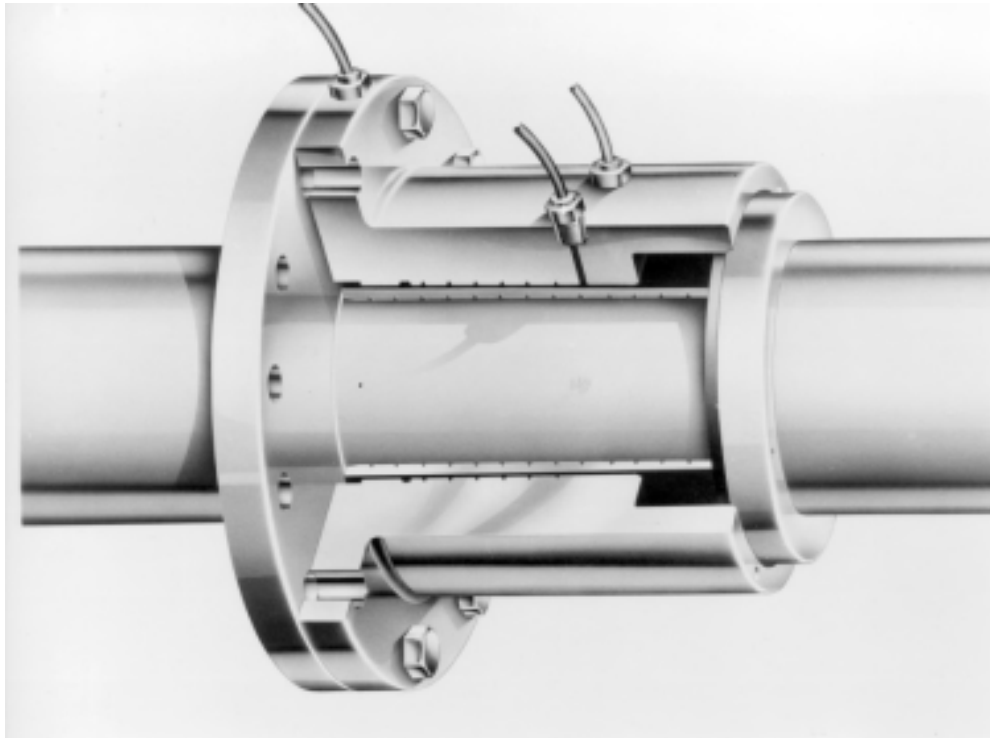


Fig. 2-1

**3 OIL RECOMMENDATION**

The oil to be used for the injector should have a viscosity of 300 mm<sup>2</sup>/s (300cS) at the temperature of the coupling. If the oil used for mounting is too thick, there is a risk that it will remain between the sleeves, resulting in a considerably deteriorated friction. The adequate viscosity will generally be obtained with sufficient accuracy if the oil is chosen as follows:

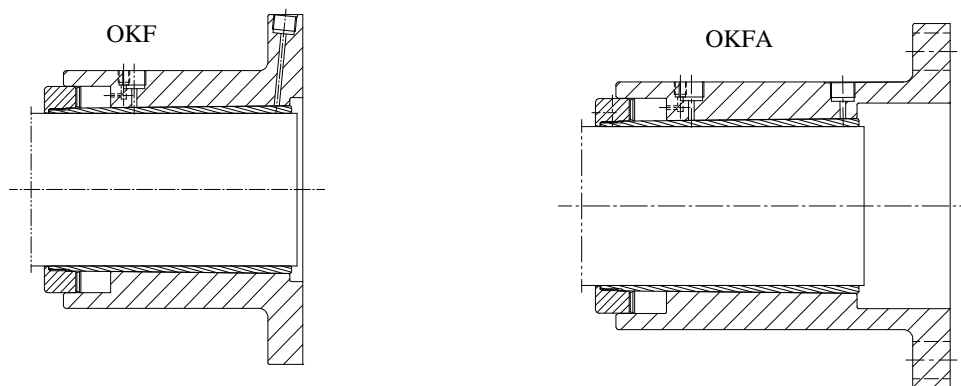
<i>Temperature range</i>		<i>Viscosity in SAE</i>	
0	- 8°C	Mineral Motor Oil	SAE 10 W
8	- 18°C	Mineral Motor Oil	SAE 20 W
18	- 27°C	Mineral Motor Oil	SAE 30
24	- 32°C	Mineral Motor Oil	SAE 40
32	- 38°C	Mineral Motor Oil	SAE 50

**4 DESIGNATION OF THE COUPLING**

The coupling is designated as "Type OKF or OKFA". Coupling sizes are specified using the following system:

OKF, shaft diameter / drawing number.

For example: OKF 280/xxxxx

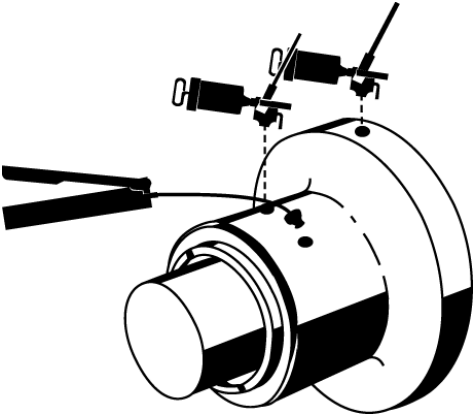
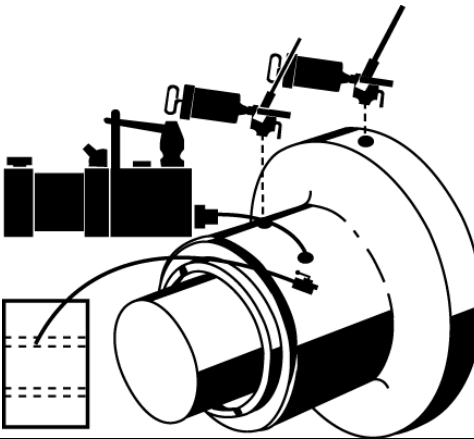
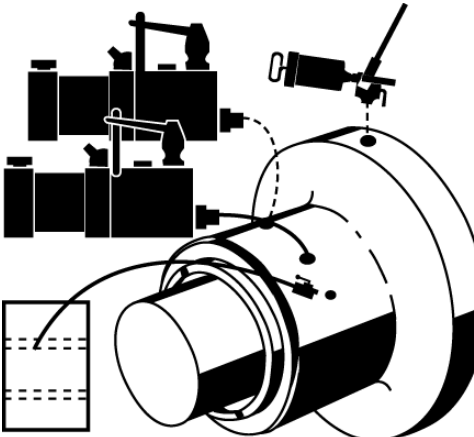


**5 COUPLING DETAILS**

For more details see enclosed assembly drawing.

## 6 EQUIPMENT FOR MOUNTING AND DISMOUNTING

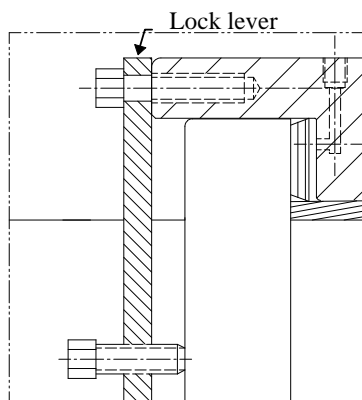
For mounting and dismantling the coupling, a number of tool kits has been assembled. The kit to be used is selected with reference to the coupling size.

Coupling size	Description	SKF set no.
<p>OKF / OKFA 100 - 300</p>	<p>1 Tool case 728245-3 2 Oil injector 226400 1 Hand operated pump TMJL 50 1 Pipe 227958A 1 Adapter block 226402 1 Set of hex keys 1 Spare parts for injector 226400 Mass: 28.1 kg. Set TMHK 38 can also be used for these coupling sizes. The set contains a hydraulic pump driven by compressed air which enables the coupling to be mounted more quickly.</p>	<p><b>TMHK 37</b></p>  <p>The diagram shows a cross-section of a coupling with various tools and components of the TMHK 37 kit. A hand-operated pump is connected to the coupling, and two oil injectors are positioned to inject oil into the coupling. A pipe and an adapter block are also shown. A set of hex keys and spare parts for the injector are also included.</p>
<p>OKF / OKFA 300 - 700</p>	<p>1 Air driven pump set: THAP 030/SET 1 Return hose 729147A 2 Oil injectors 226400 1 Set of hex keys 1 Spare parts for injector 226400 Mass: 32.1 kg</p>	<p><b>TMHK 38</b></p>  <p>The diagram shows a cross-section of a coupling with various tools and components of the TMHK 38 kit. An air-driven pump set is connected to the coupling, and two oil injectors are positioned to inject oil into the coupling. A return hose is also shown. A set of hex keys and spare parts for the injector are also included.</p>
<p>OKF / OKFA 300 - 700</p>	<p>1 Air driven pump set: THAP 030/SET 1 Return hose 729147A 1 Air-driven pump THAP 300E 1 Oil injector 226400 1 Set of hex keys 1 Spare parts for injector 226400 Mass: 76.2 kg including weight of pallet</p>	<p><b>TMHK 38S</b></p>  <p>The diagram shows a cross-section of a coupling with various tools and components of the TMHK 38S kit. An air-driven pump set is connected to the coupling, and two oil injectors are positioned to inject oil into the coupling. A return hose is also shown. A set of hex keys and spare parts for the injector are also included.</p>

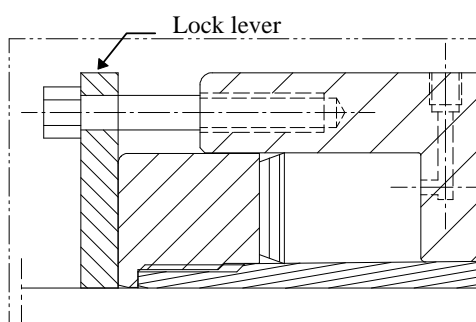
### 6.1 Locating device for outer sleeve

All flange couplings for shafts with diameters  $>300\text{mm}$  are equipped with lock levers which prevent the outer sleeve from being driven up unintentionally on the inner sleeve during transport and when the coupling is placed on the shaft. The lock levers must be removed before the mounting procedure. When the coupling is final mounted, the lock levers are remounted on the coupling and are now used as a locking device for the nut.

Transport and handling mode.



After final mounting on shaft.



## 7 MOUNTING INSTRUCTIONS

See enclosed assembly drawing for reference.

Remove any burrs on the coupling seating on the shaft. **Clean and wash the inner sleeve bore and the coupling seating with white spirit, so that the anticorrosive agent is removed.** Ensure that the seating has been machined to the correct tolerance.

Fit the lock levers for couplings larger than OKF 300 . Align the coupling with the shaft, ensuring that the injector holes face upwards. To prevent damage to the seating, guide the coupling carefully and slide it onto the shaft.

**7.1 Positioning of the Coupling on shaft.**

The coupling may be positioned within the distance  $A_{MIN}$  and  $A_{MAX}$  for hollow shafts and  $A_{MIN}$  and  $B_{MAX}$  for solid shafts.

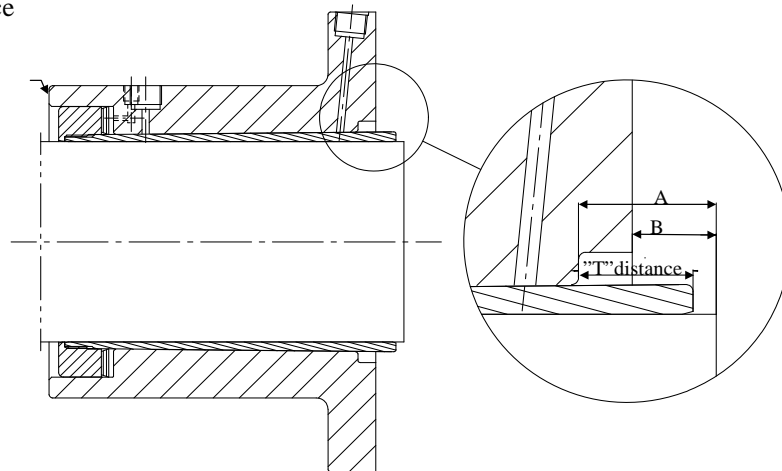
**OKF-Mounted on solid shaft**

Size	$A_{MIN}$	$B_{MAX}$
$\geq$ OKF 100	T -distance	C (drive up)-1mm

**OKF-Mounted on hollow shaft with reinforcement sleeve**

Size	$A_{MIN}$	$A_{MAX}$
OKF 100 - 180	T -distance	T -distance +10mm
OKF 190 - 250	T -distance	T -distance +12mm
$\geq$ OKF 260	T -distance	T -distance +15mm

"T" distance  
is stamped  
here



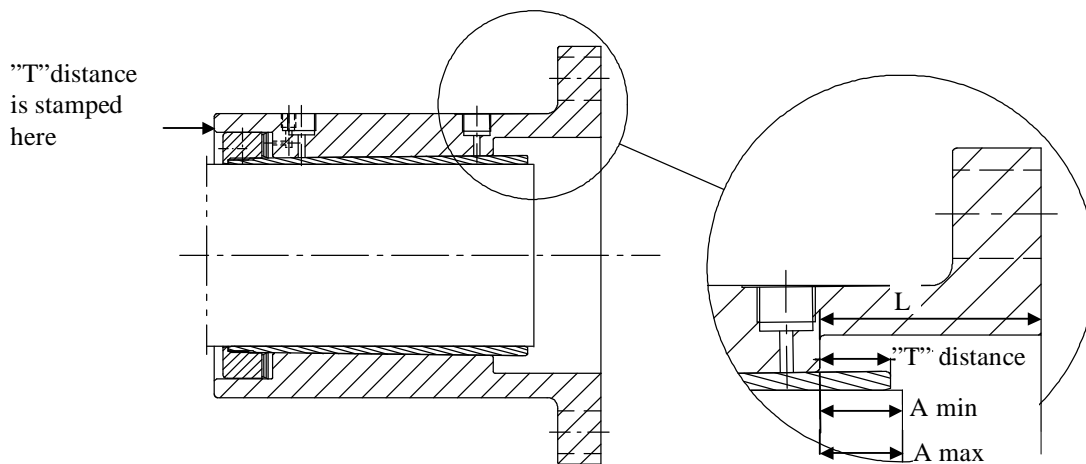


**OKFA-Mounted on solid shaft**

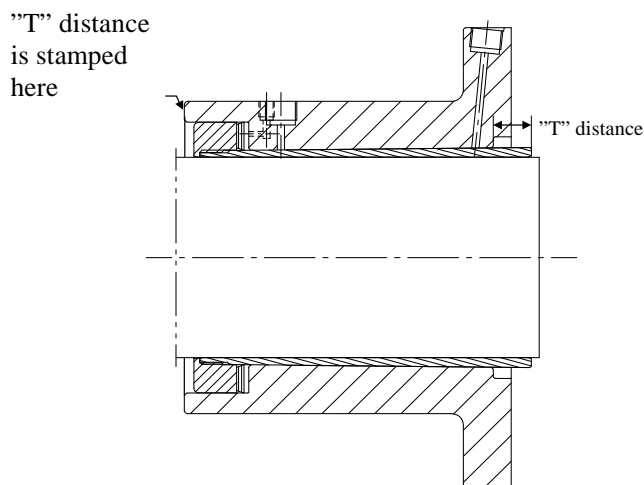
Size	A <sub>MIN</sub>	A <sub>MAX</sub>
OKF 100 >	T -distance	L + C(drive up)-1mm

**OKFA-Mounted on hollow shaft with reinforcement sleeve**

Size	A <sub>MIN</sub>	A <sub>MAX</sub>
OKF 100 >	T -distance	T -distance +15mm



**7.2 Establish the start position for drive up**



The start position is when the inner and outer sleeve have metallic contact.

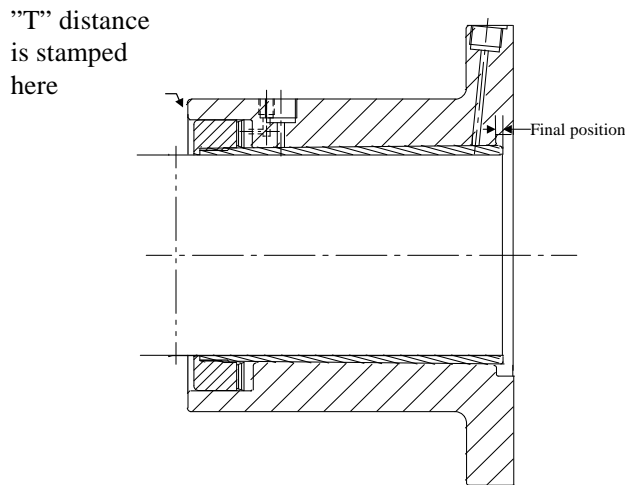
This position have been established when the coupling was assembled before delivery.

That position shall be confirmed by measuring the T-distance and comparing the result with the value stamped on the Coupling.

### 7.3 Drive up procedure

Position the coupling (see 7.1 ) so one of the two ¼" plugs connected to the oil chamber is in top position ( 12<sup>00</sup> a clock). Unscrew that plug and connect the low pressure pump to the other ¼" hole. Connect the high pressure injectors to the ¾" holes on coupling hub and flange.

Calculate the final position of the coupling after drive up.



The drive up is completed when the outer sleeve has been driven up to a distance : “T” – “ C “ (C=drive up).

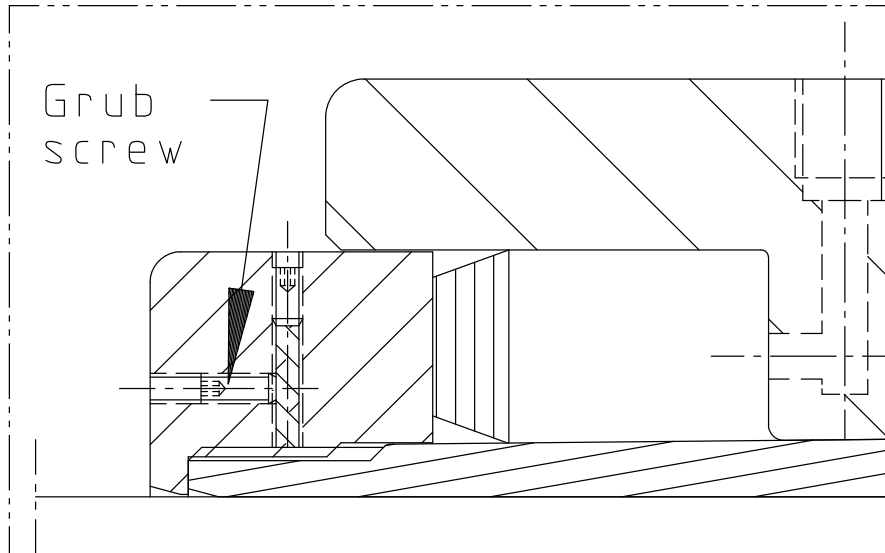
“C” distance is mentioned on the assembly drawing and “T” distance is stamped on the coupling.

Start injecting oil to the hydraulic chamber until oil escapes through the open ¼" hole without any air bubbles and close that hole with the ¼" plug.

Start injecting oil with the high pressure injector, beginning with the injector connected nearest the oil chamber. Continue to work that injector for 5 minutes and then start the second injector. It is important to continue working the injectors during the entire drive up operation.

Start pumping oil into the hydraulic chamber and continue until the final drive up position is reached. Stop the pump and injectors and open the return valve on the high pressure injectors, **but keep the pressure in the oil chamber for 10 minutes**. Release the pressure in the chamber and disconnect the pump and injectors. Mount the plugs and for couplings >300 mount the lock levers as described in chapter 6.1. Couplings <300 has a built in rubber locking plug in the nut.

After the initial mounting of the coupling, release the axial grub screw and retighten the nut, if possible, then retighten the axial grub screw.



## 8 DISMOUNTING INSTRUCTIONS

Connect the injectors and the pump as for mounting and fill up the oil chamber with oil as in 7.3.

Pressurise the oil chamber to  $\approx 15$  MPa and start the high pressure injectors. Start with the injector on the flange side and work it for 2 min. Then work both injectors for another 3 min. (for couplings 100 – 300 ). For coupling  $>300$  work both injectors for 5min.

Continue work the high pressure injectors and open the return valve on the pump connected to the oil chamber and the Coupling will slide off. The high pressure injectors must be working until the full dismounting position is obtained.

## 9 REPLACING THE HYDRAULIC CHAMBER SEALING

The OKF coupling is a unit which should normally not be disassembled. However, should it become necessary because of a damaged sealing , use the following procedure.

### 9.1 Coupling removed from the shaft

Remove the lock levers or slacken the grub screw in the nut as described in chapter 6.1 and 7.3 .

Unscrew the nut and remove the sealing using a tool with rounded edges to avoid damaging the surfaces. Replace it with the new sealing and guide it carefully over the inner sleeve threads not to destroy the sealing edge. Push it against the bottom of the chamber. Correctly mounted the sealing outer edge and inner edge will have good contact against the bottom and the face will have a convex form.

Remount the nut and tighten it properly. With a blast of compressed air in one of the ¼ " hole, the sealing will be forced in position. Remount the lock levers or retighten the grub screw in the nut.

## **9.2 Coupling mounted on the shaft.**

If there is a leakage from the oil chamber when preparing for dismantling, it is necessary to replace the sealing.

Follow the above mentioned procedure for removing the coupling nut and removal of the sealing. Place the nut on the shaft to get good access to the chamber. The new sealing must be cut to get it around the shaft. Do this with a long knife so that it will be a straight and smooth cut. Place the sealing around the shaft with the smallest outer diameter facing the nut. The flat surface of the nut should be used as a template. Use a Cyanoacrylat glue for rubber to glue the cut surface together. Place the sealing in the chamber guiding it carefully over the threads and 10mm up on the taper of the inner sleeve. Try to get the sealing as straight and flat as possible. Remount the nut and position the sealing with a blast of compressed air in one of the ¼ " hole.

## **10 ASSEMBLY DRAWING**