

INSTRUCTIONS MANUAL
MOUNTING AND DISMOUNTING
COUPLING
ACH



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1 CAUTIONS AND PERSONAL SAFETY

- When using the hydraulic pump, 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 ACH type coupling consists basically of two sleeves of high quality steel, a thin inner sleeve and a thick outer sleeve.

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 what larger than the diameter of the shafts, so that the sleeve can be passed over them with ease.

The coupling is mounted by driving the outer sleeve up on the taper of the inner sleeve using the hydraulic unit incorporated in the coupling.

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

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

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 pressure, 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.

See Fig. 2-1.

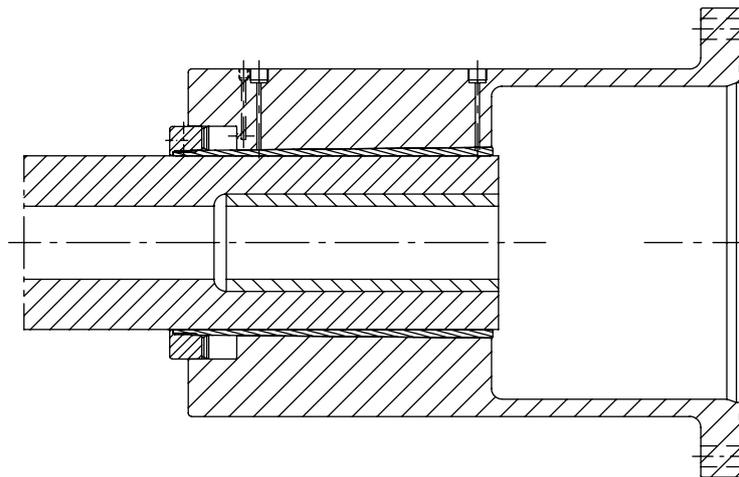


Fig. 2-1



3 OIL RECOMMENDATION

The oil to be used for the injector should have a viscosity of 300 mm²/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 grip. 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	Motor oil	SAE 10 W
8 - 18°C	Motor oil	SAE 20 W
18 - 27°C	Motor oil	SAE 30
24 - 32°C	Motor oil	SAE 40
32 - 38°C	Motor oil	SAE 50

4 DESIGNATION OF THE COUPLING

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

ACH, Shaft diameter / drawing number

For example: ACH 150/xxxxx

5 COUPLING DETAILS

For more details see enclosed assembly drawing

6 EQUIPMENT FOR MOUNTING AND DISMOUNTING

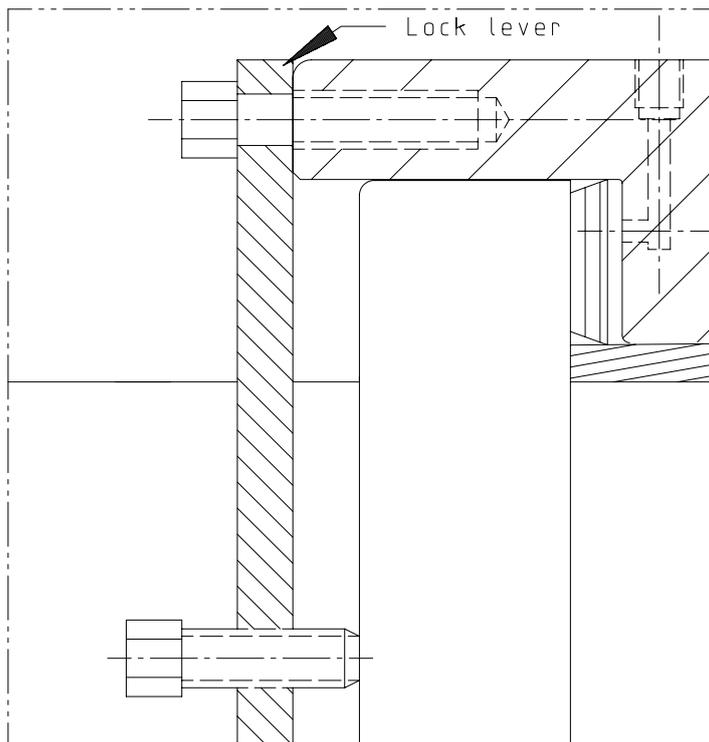
Oil injectors

For high pressure injection between the sleeves, two injectors are recommended together with a low pressure pump for the hydraulic unit. As an alternative air driven hydraulic pumps can be used, for high pressure and for low pressure.

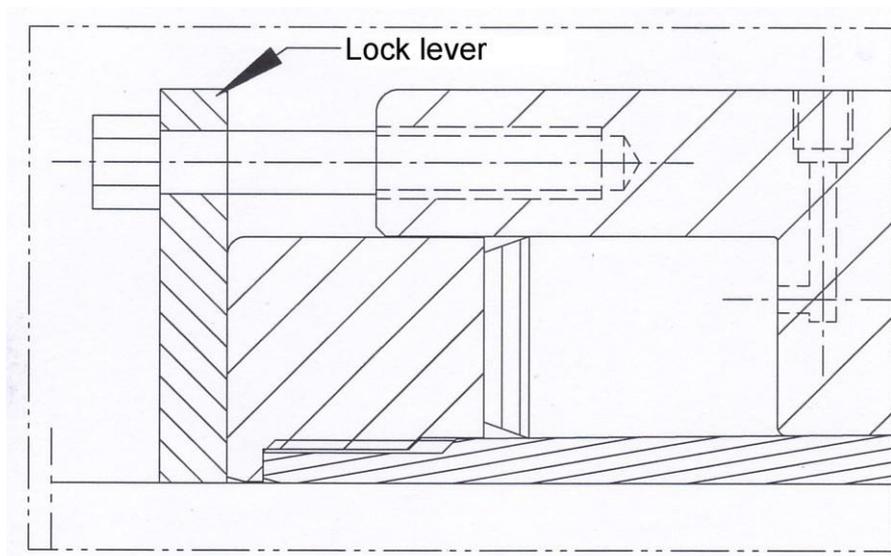
6.1. Locating device for outer sleeve

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 finally 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.

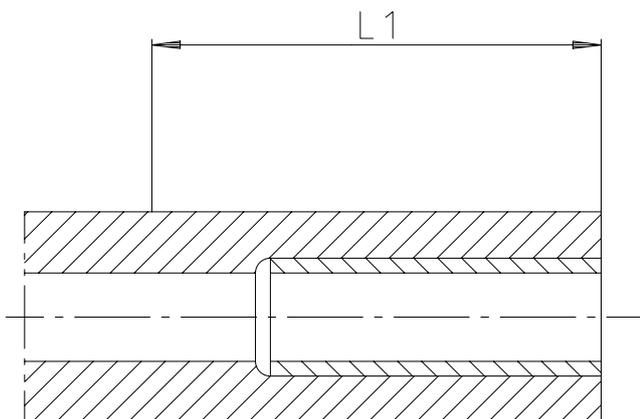


7 MOUNTING INSTRUCTIONS

See enclosed assembly drawing for reference.

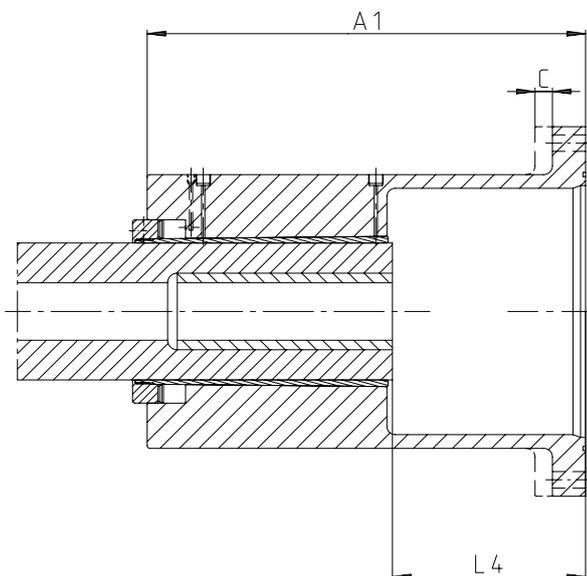
Remove any burrs on the coupling seating on the shaft. **Clean and wash the inner sleeve bore and the coupling seating with white spirit, so that the anticorrosive agent is removed.**

7.1. Positioning of the coupling on shaft.



Mark of dimension L1 on the shaft.

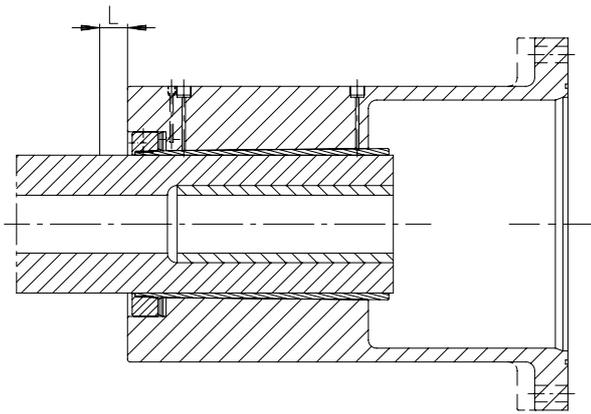
For calculation of L1 see below.



Dimension L1 is evaluated according to the formula below the figure.

Dimension A1, L4 and C is given on the enclosed assembly drawing.

$$L1 = A1 - L4 + C + 50$$



Position the coupling so that the distance between the mark of the shaft and the end of the outer sleeve (L) is 50 mm.

7.2. Preparing the drive up

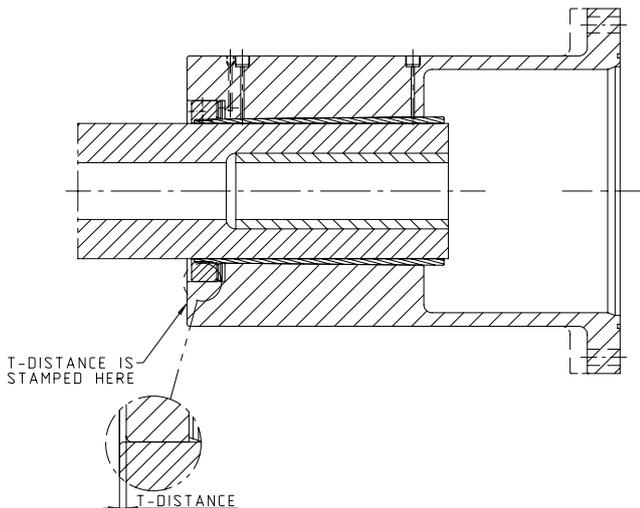
Establishing the start position for drive up.

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.

If the T-distance have a " - ", sign the end of the nut is inside the hydraulic chamber (as on the figure).



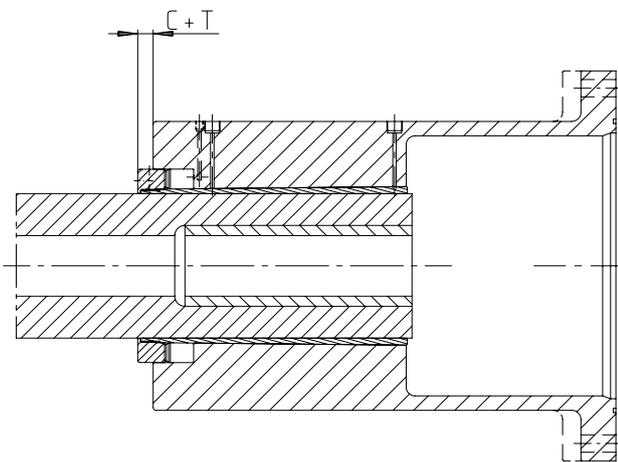


7.3. Drive up procedure

Position the coupling so one of the two $\frac{1}{4}$ " plugs connected to the oil chamber is in top position (12⁰⁰ a clock). Unscrew that plug and connect the low pressure pump to the other $\frac{1}{4}$ " hole. Connect the high pressure pumps to the $\frac{3}{4}$ " holes on coupling hub.

Start injecting oil to the hydraulic chamber until oil scapes through the open $\frac{1}{4}$ " hole without any air bubbles and close that hole with the $\frac{1}{4}$ " plug.

Calculate the final position of the coupling after drive up.

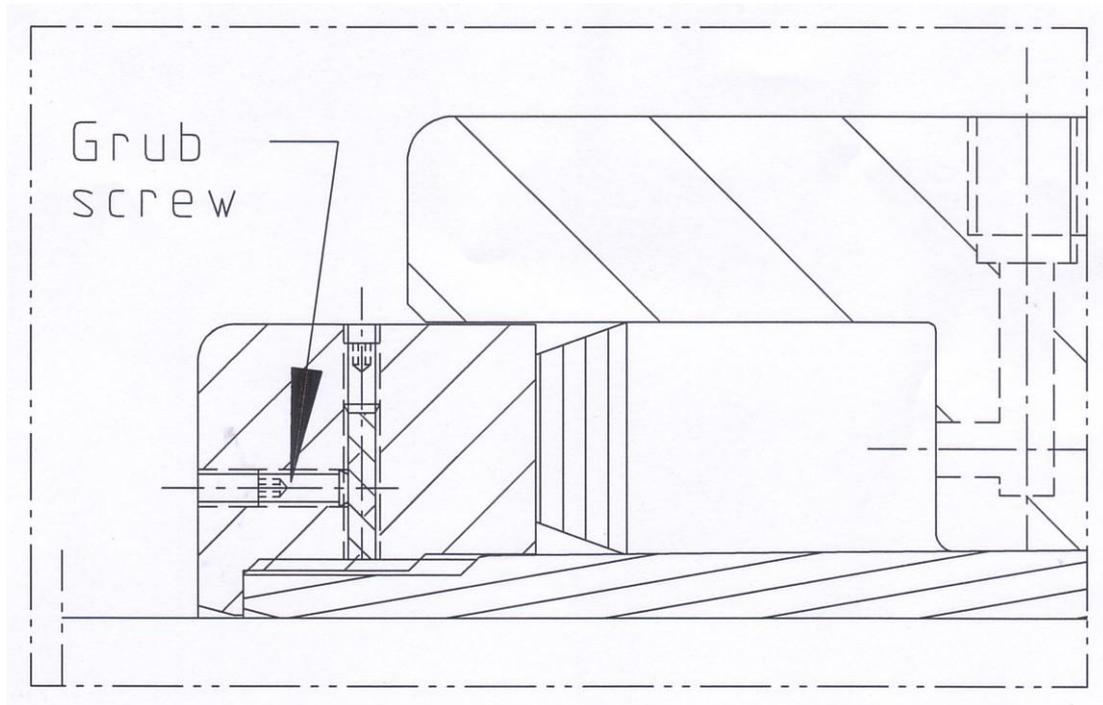


The drive up is completed when the nut escape a distance = $C + T$.

Observe that if the T-distance have a “-“ sign this will be $C + (- T)$

Start injecting oil with the high pressure pumps, beginning with the pump connected nearest the oil chamber. Continue to work that pump for 5 minutes and then start the second pump. It is important to continue working the pumps 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 pumps and open the return valve on the high pressure pumps, **but keep the pressure in the oil chamber for 10 minutes**. Release the pressure in the chamber and disconnect the pumps. Mount the plugs and for coupling >300 mount the lock levers as described in chapter 6.1. Coupling <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, and retighten the axial grub screw,



8 DISMOUNTING INSTRUCTIONS

Connect the injectors as for mounting and fill up the oil chamber with oil as the procedure for mounting.

Pressurise the oil chamber to ≈ 15 MPa and start the high pressure injectors following the procedure for mounting.

Continue work the high pressure pump and open the return valve and the coupling will slide off. The high pressure pumps must be working until the full dismounting position is obtained.



9 REPLACING OF THE HYDRAULIC CHAMBER SEALING

The ACH coupling is a unit which should normally not be disassembled. However, should it become necessary because of a damaged sealing, the nut must be removed first.

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 procedure, **chapter 8**, 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 Cyanoacrylate glue for rubber to glue the cut surface together.

Place the sealing in the chamber guiding it carefully over the threads and 10 mm 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

See enclosure