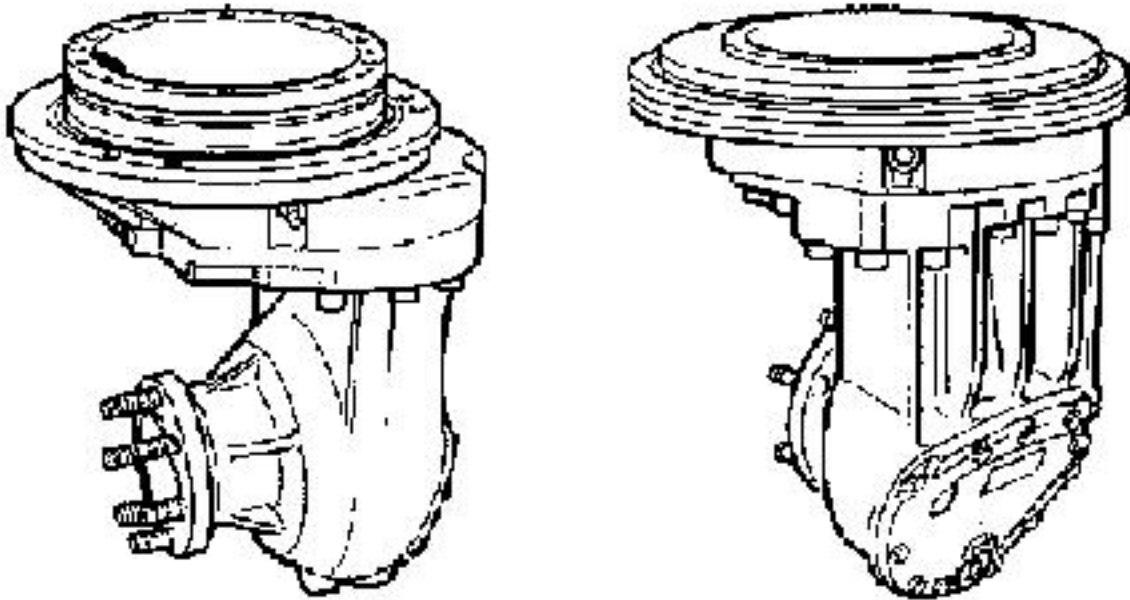


P.N- 272490600

Technical Information for YALE Service Centres



This manual is addressed exclusively to the skilled technicians of the YALE service network

REDUCTION GEAR
SERIES HFK 100 - 200, 400 - 600
SERIES GR 92 - 96 - 97

Yale

Section: INDEX

GENERAL SAFETY PRESCRIPTIONS



Never do any cleaning, lubricating or servicing with the battery connected.



Do not wear rings, watches, jewellery, loose clothing such as scarves, unbuttoned or unzipped jackets or shirts that could get caught up in moving parts. Operators should wear approved safety clothing: hard hat, non-slip footwear, gloves, safety glasses, etc..



Do not use petrol, diesel fuel or other flammable liquids as detergents: use instead non-flammable, non-toxic commercial solvents.

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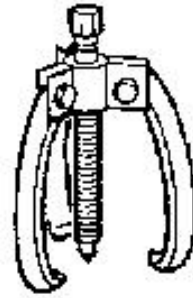
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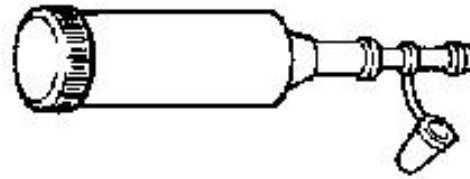
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Bearing puller



Grease gun
to DIN 71412 - M8x1



3.2 MEASURING INSTRUMENTS

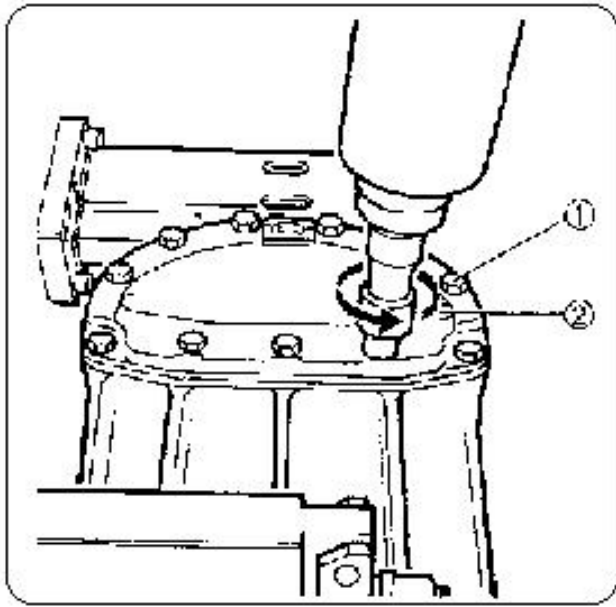


Figure 5

4.4 REMOVING THE CROWN WHEEL AND THE AXLE SHAFT

Position the reduction gear on the rotary stand.

Screw the 2 wheel nuts onto the relative bolts and hold the axle shaft against rotation with a lever.

Unscrew the hex bolt using a 24 mm wrench and remove the disk from the axle shaft (Figure 6).

Assemble a shim pack of the required thickness (see section 2). Insert the shims (pos. 1) into the bearing seat. Fit the outer race of the bearing (pos. 2) in the bearing seat (Figure 17).

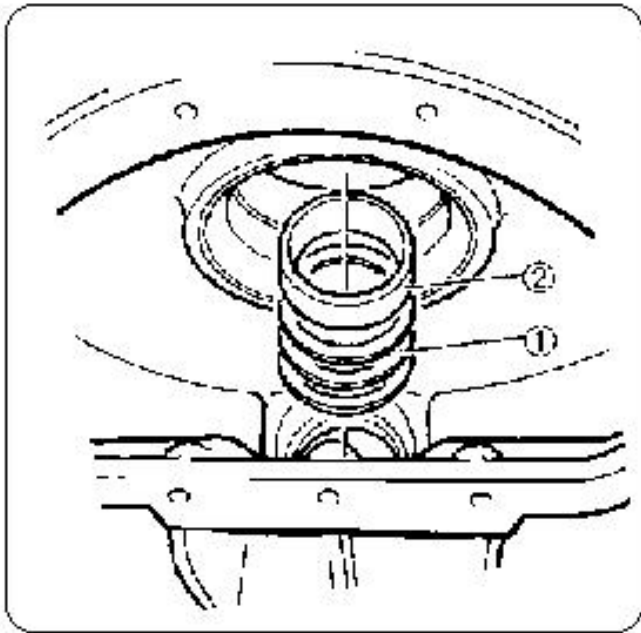


Figure 17

IMPORTANT

MAXIMUM PERMISSIBLE DEVIATION FROM THE MEASURED VALUE IS + 0.05 mm (0.002 in.) - 0.05 mm (0.002 in).

AXLE SHAFT BEARING

Fit the shims (pos. 1) (recovered during dismantling) in the bearing seat for an initial adjustment. Fit the bearing outer race (pos. 2) in the bearing seat (Figure 18).

Fit the shims (pos. 3) (recovered during dismantling) in the second bearing seat for an initial adjustment. Press the bearing outer race (pos. 4) into the bearing seat (Figure 18).

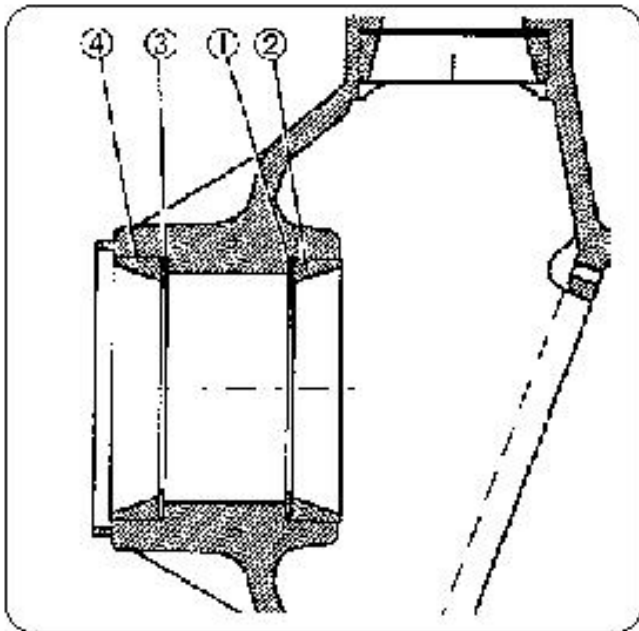


Figure 18

IMPORTANT

DO NOT REUTILIZE DAMAGED SHIMS.

PROCEDURES THERE MUST BE NO CLEARANCE BETWEEN THE BEARINGS.
IT SHOULD BE POSSIBLE TO TURN THE AXLE SHAFT BY HAND.

After setting the preload on the bearings, re-check the backlash.
If backlash is outside the permissible limits, the adjustment procedure must be repeated.



ATTENTION

During backlash adjustment procedures, add (pos. 1 and 2) or remove shims from both bearing seats "1" and "2" (Figure 32).

After having preloaded the bearings and adjusted the backlash, remove the axle shaft once again in order to fit the thread guard and the radial seal. See paragraphs 12 and 13.

6.12 FITTING THE THREAD GUARD ON THE REDUCTION GEAR CASE

Spray the seating of the thread guard with rapid detergent type LOCTITE No. 706 from a distance of about 30 cm, holding the spray can upright. Allow the detergent time to act then wipe away the dissolved dirt with a clean rag. Spray the surface again and this time leave the product to dry (Figure 33).

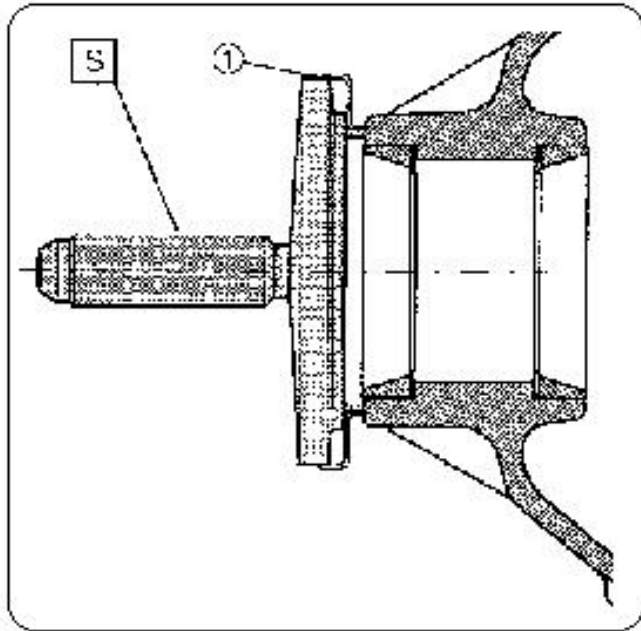


Figure 33



ATTENTION

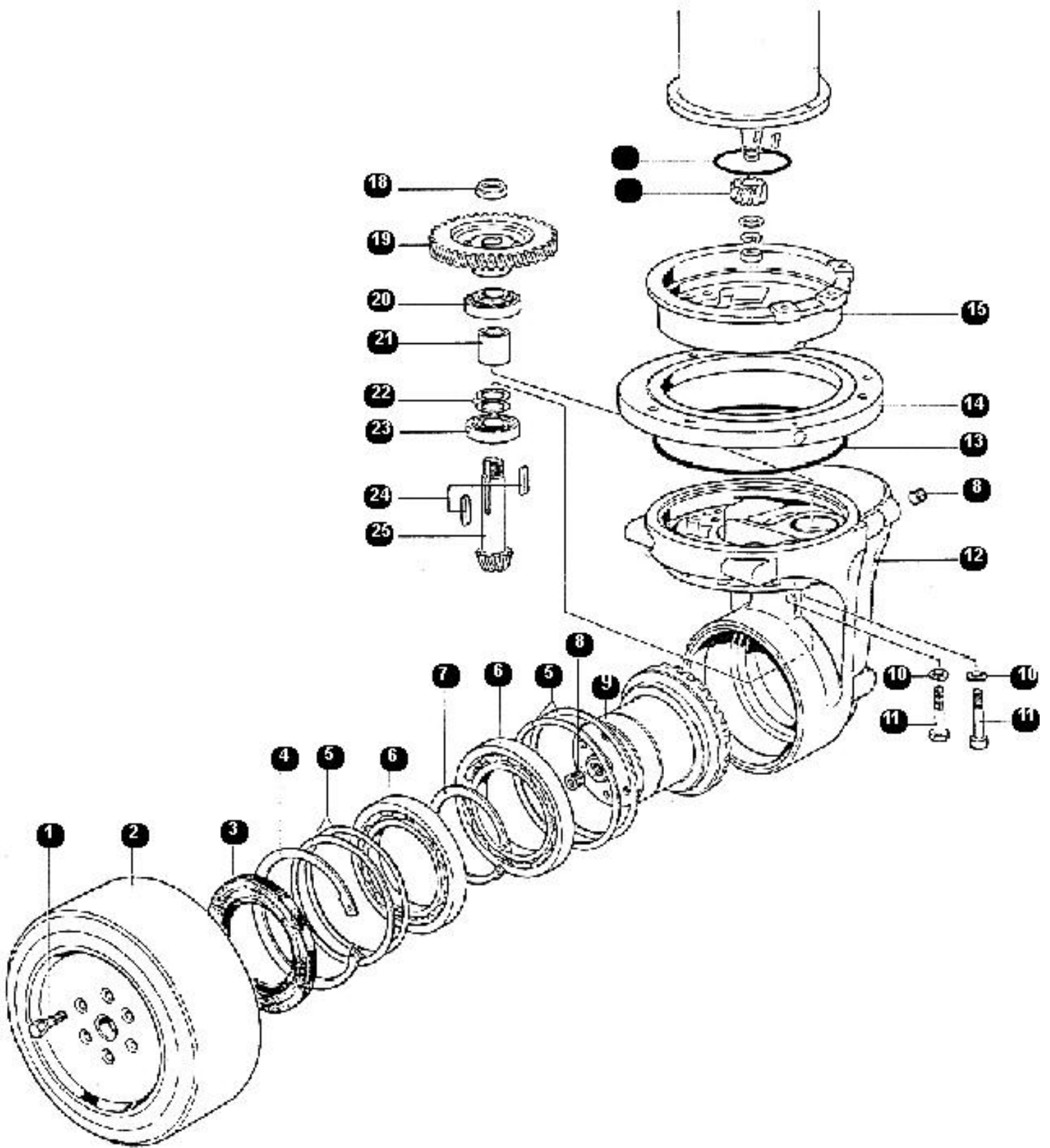
Avoid contact with eyes and skin! Do not spray near naked flames or incandescent parts!

Coat the thread guard seating with LOCTITE No. 270 and then press the thread guard (pos. 1) fully home using tool "S".

6.13 FITTING THE RADIAL SHAFT SEAL IN THE REDUCTION GEAR CASE

Remove the axle shaft and remove the outer race of the taper roller bearing from the reduction gear case using a puller.

Coat the outside diameter of the radial seal of the shaft (pos. 1) with a light film of LOCTITE No. 574 and then fit the seal in the case using installation tool "T" (Figure 34).



2.1 TABLE OF COMPONENTS - REDUCTION GEAR GR-96

The components illustrated on the facing page are described in the following table.

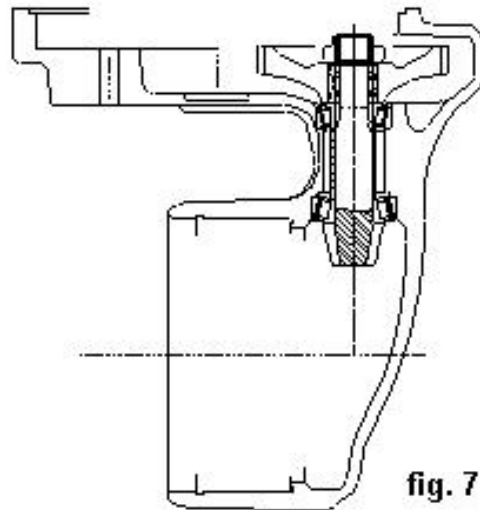
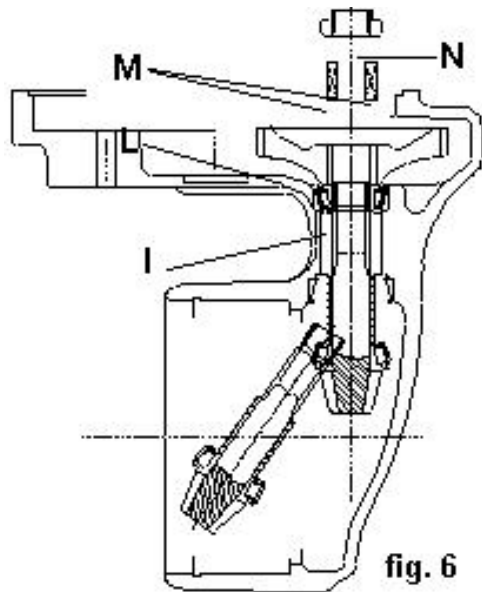
Key:

Ref. Component reference in exploded view

Component description Function of component

- From the side of the reduction gear case, insert the bearing ring **B** and then insert quadrant **C** so that the tapered side of the quadrant engages with the tapered side of the ring; screw the nut onto rod **A** on point **G**, tighten with the wrenches to force the bearing rings together in the reduction gear housing. (Fig. 4)

2) Tool for installing taper roller bearings on pinion (5), Plastic mallet - Fit the taper roller bearing to the pinion shaft, position the tool on the bearing and use the mallet to drive the bearing against the pinion (Ref. H fig. 5), fit the spacer on the shaft.



3) 30 mm hex wrench, Regular pliers, Hammer, Tool (5) -

Insert the taper pin in the reduction gear seat from the inside (Fig. 5), insert the second taper roller bearing on the top of the pin and use the hammer and special tool to drive the bearing fully home against the race.

Insert the two keys (Ref. M) in the locations in the shaft, clean the shaft thoroughly and smear on Loctite 542 then fit the crown wheel (Ref. L).

Smear Loctite 242 on the shaft threads and fit the nut (Ref. N).

Lock the crown wheel (Ref. L) against rotation with the pliers and tighten the nut with the torque wrench to 6 Kgm (59Nm) (Fig. 7).

Tool to insert pinion bearing
internal race

CODE 272452700

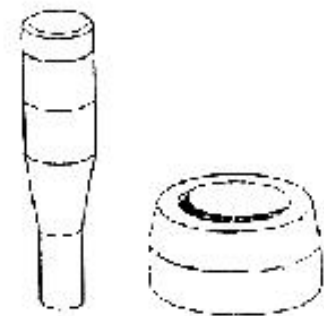
A 92-3



Tool to insert studs in wheel hub

CODE 272452900

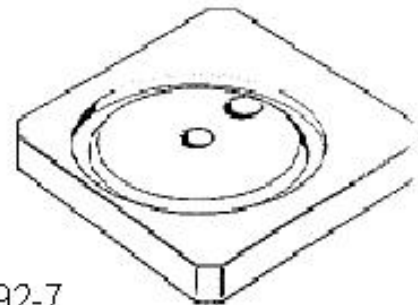
A 92-5



Support plate

CODE 272453600

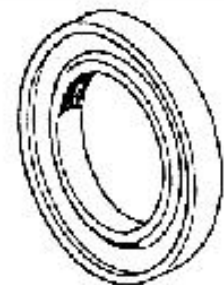
A 92-7



Tool to insert steering thrust bearing on
flange

CODE 272453500

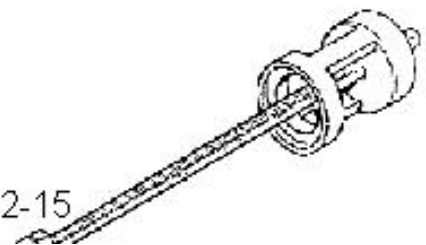
A 92-14



Tool for fitting/removing passive brake
spring

CODE 272453300

A 92-15



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