

**Service-Manual
for Kessler axles
series 51,61,71,72,81,82**

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Recomendable hypoid gear oils corresp. MIL-L 2105 B/API GL 5 resp. MIL-L 2105 C/D/API GL 5

ARAL - Gearoil Hyp 90

AVIA - Gearoil Hypoid 90 EP

BP - Multiuse - Gearoil EP SAE 90

ELF - Tranself Typ B 90 / Tranself Typ B 80 W - 90

ESSO - Gearoil GX - D 90

FINA - Pontonic MP SAE 85 W - 90

FUCHS - Renogear Hypoid 90

MOBIL - HD 90 - A

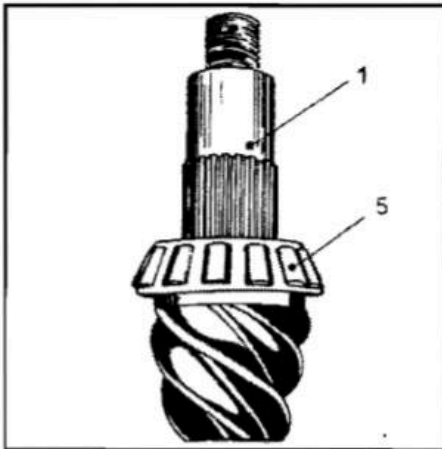
SHELL - Spirax MB 90 / HD 90

TEXACO - Multigear EP SAE 85 W / 90

AGIP - Rotra MP / Rotra MP DB

On no account use "normal" gear oils!

Adjustment of drive pinion distance



To obtain the proper tooth flank contact, adjust the axial position of the drive pinion with the thickness of the adjustment disc. The necessary thickness of the adjustment disc for first time assembly can be obtained by measurement (see calculation example).

The final thickness of the adjustment disc can be fixed during the checking of gear meshing at the assembled drive assembly (see page "Adjustment of gear meshing of Gleason gears") (S theor. = 3 mm).

*) A = Set value for correct pinion support. This dimension is written on the end face of the pinion in millimetres. It indicates the deviation from the theoretic distance (set point dimension).

**) B = Measured width of the taper roller bearing (B theor. = 40 mm).

1. Calculation example to ascertain the thickness S from the adjustment disk:

A = + 0,10; B = 37,95

S = 3,00 mm (theor.)

+ 0,05 mm → B = 0,05 mm smaller than B theor.

= 3,05 mm

- 0,10 mm → drive pinion value A

= 2,95 mm → necessary thickness of the adjustment

disc

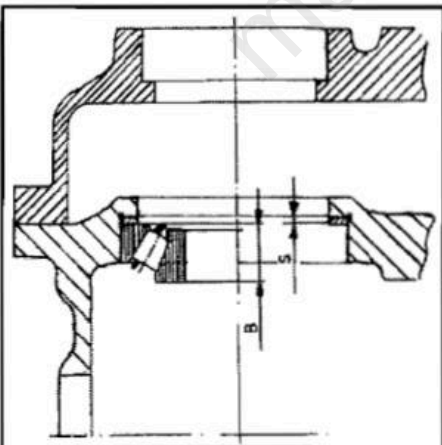
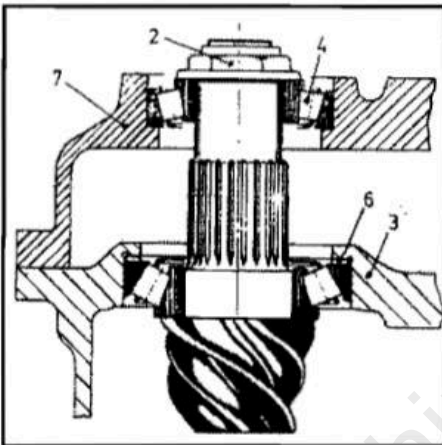
2. Heat the taper roller bearing (5) (drive pinion side) to about 100°C and install it on the drive pinion shaft. (After cooling, drive on for contact).
3. Fit the disk (6) and outer ring of the taper roller bearing into the differential carrier (3).
4. Install the drop gear housing.
5. Press the taper roller bearing (4) into the drop gear housing. Install the drive pinion.
6. Tighten the safety nut (2) to a small bearing roll resistance.
7. Place the differential with the outer rings of the taper roller bearings on the differential carrier and adjust the teeth side play (see assembly of drive assembly). If the gear meshing is not correct, modify the thickness S of the adjustment disk.
8. Detach differential, drive pinion and drop gear housing.

*) **Hint:** If value A is positive (e.g. +0,1) the adjustment disc has to be 0,1 mm thinner than theor. S.

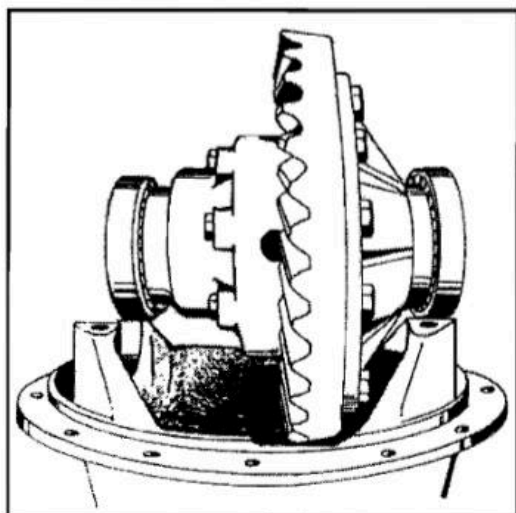
If value A is negative (e.g. -0,1) the adjustment disc has to be 0,1 mm thicker than theor. S.

) **Hint: If value B is positive (e.g. 40,05) the adjustment disc has to be 0,05 mm thinner than theor. S.

If value B is negative (e.g. 39,95) the adjustment disc has to be 0,05 mm thicker than theor. S.



Assembly of drive assembly

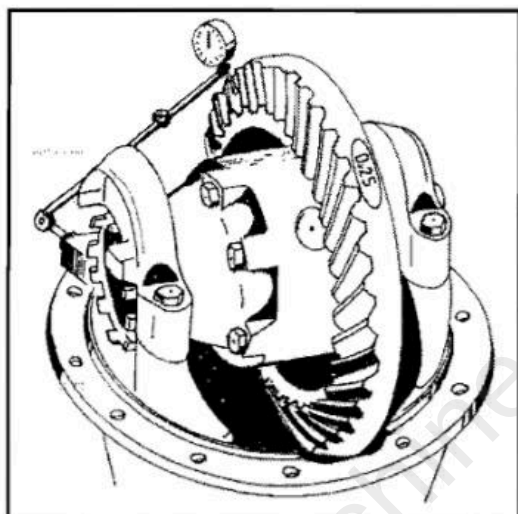


Place the differential with the outer rings of the taper roller bearings on the differential carrier which is in a vertical position, with mounted drive pinion.

Mount the differential straps and align them with the thread rings.

During this operation be careful of the alignment marks on the differential straps with respect to the differential carrier. (Do not interchange the differential straps!).

Hand tighten the differential strap bolts. By a counter rotation of the two thread rings, move the differential until the backlash is correct. (The smallest admissible value at the closest place is marked on the ring gear).



Therefore hold the drive pinion. Check the backlash by careful forwards and rearwards rotating the ring gear. Use a dial indicator.

Measure the backlash during a few times turns of the ring gear and if need correct the backlash, because of the smallest admissible value at the closest place must not be fall short of.

Adjust gear meshing according to sheet "Adjustment of gear meshing of Gleason gear".

Tighten screws of the differential straps and lock them with Loctite 262.

Adjust the bearing roll resistance through tightening of the thread rings.

Set value: 5,0 to 5,5 Nm. Check the value with a torque wrench (measured with drive pinion and drive gear wheel).



Screw the lock plates for the thread rings and secure with Loctite 270, if need bend the lock plates.

Assembly of steering- resp. track rod lever

Important: threads and surfaces have to be cleaned and free from colour, oil and grease before applying Loctite. Note further remarks for working up Loctite (see sheet 3.2).

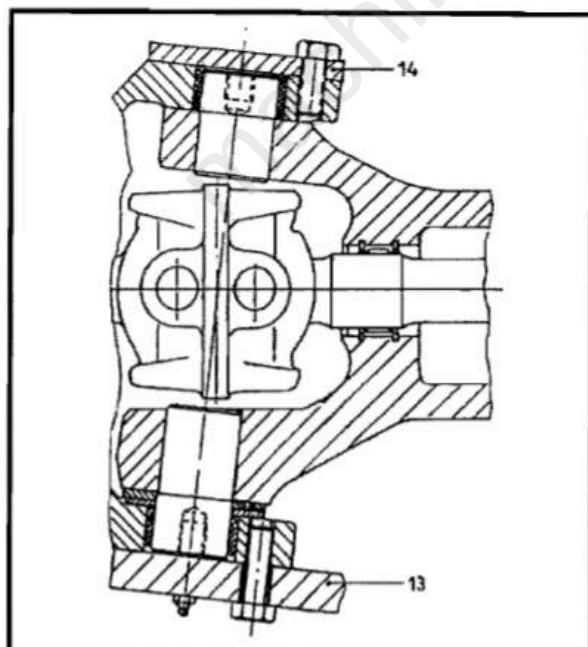
Coat the contact surface between lever (6 resp. 13) and steering knuckle at the contact area with Loctite 270 and install the lever by screws onto the steering knuckle, secure the screws with Loctite 262. Time needed for Loctite 270 to harden = 24 hours.

Coat the contact surface between cover (7 resp. 14) and steering knuckle with Loctite 510 and install the cover by screws onto the steering knuckle.

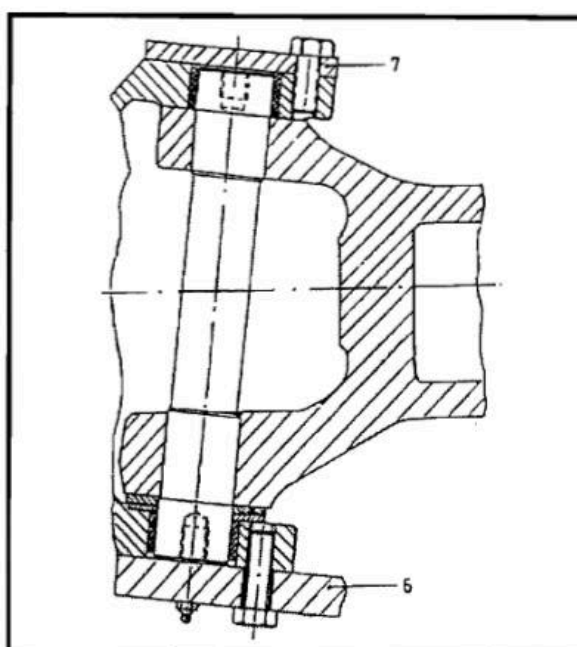
Screw the grease nipples into the lever resp. cover and grease the steering knuckle bearing with bearing grease according to the lubrication plan 2.3.

At version with dowel pins for increased torque, the dowel pins have to be knocked in before tightening the screws, note the position of the slits in the dowel pins (180° turned to one another).

Steer drive axle



Steer axle

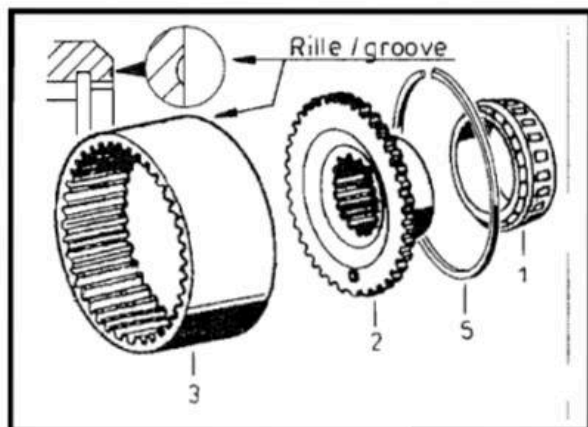


Assembly of the ring gear and ring gear carrier

Assembly of the sun gear

Section 6
6.8.1

Prepare the ring gear and the ring gear carrier



Heat the taper roller bearing inner ring with cage (1) to about 100°C and install it onto the ring gear carrier (2). Place the ring gear (3) onto the ring gear carrier. Install the circlip (5) into the slot of the ring gear.

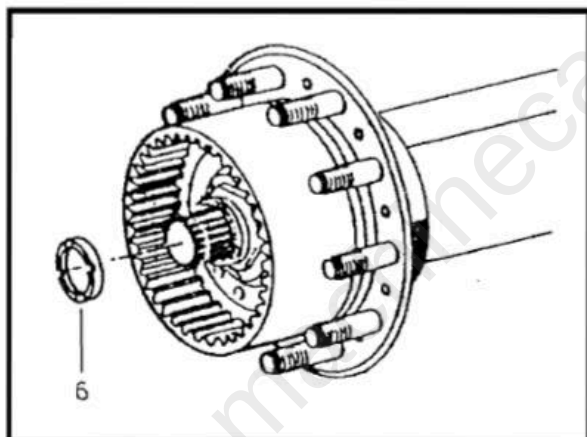
At planetary gear drive PL 375 and PL 75 pay attention to the marking at the front side of the ring gear:

Ring gear with groove ⇒ circlip SB 250.

Ring gear without groove ⇒ circlip SB 240.

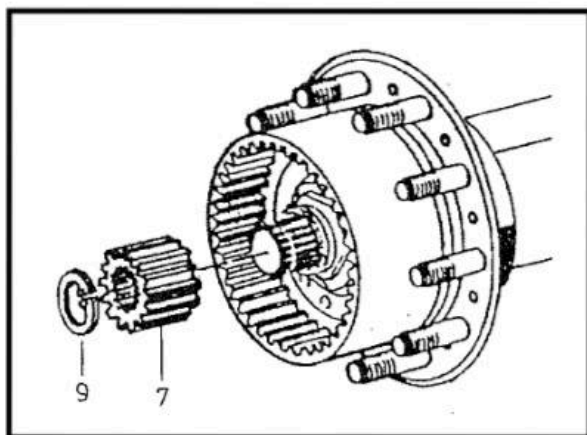
Assembly of the ring gear carrier

Install the ring gear carrier (2) with ring gear (3) into the wheel hub resp. onto the steering knuckle resp. axle spindle. The oil compensating hole in the ring gear carrier must be on the bottom. Subsequent adjust wheel bearings (see chapter 5.7).



Assembly of the thrust ring

Press the thrust ring (6) into the steering knuckle resp. axle spindle. Secure with Loctite 270.



Assembly of the sun gear

Slip the sun gear (7) onto the universal joint resp. axle shaft, install the circlip (9) and push the universal joint resp. axle shaft towards the inside until the circlip contacts to the sun gear and the sun gear contacts to the thrust ring.

Replace the brake shoes if:

- the sliding surfaces on the shoe web are worn or damaged,
- the brake shoes have been damaged by corrosion, or
- the brake shoes are deformed.

3.3. Visual inspection of the brake drums

Check the brake drums for grooving, cracks and wear whenever the brake shoes are changed.



Note:

The wear limits of the brake drums are specified by the axle manufacturer. Consult the documentation provided by the axle manufacturer.

3.4. Visual inspection and functional test of the expander mechanism

Whenever the brake shoes are being replaced, inspect the expander mechanism as follows:

- Visual check for damage of bellows.
Replace the corresponding parts if damage is evident.
- Check that the self-adjusting mechanism turns freely.
If this is not the case, replace the stud bolt of the self-adjustment mechanism.
- Check that the adjuster bolts turn freely.
If this is not the case, replace the expander mechanism.

3.5. Other brake parts

The compression and tension springs and the sealing rings, protective caps and bellows should be replaced at least every 2 years, or earlier if they are worn.



Note:

Always use new tension and compression springs when the brake shoes have been removed for maintenance and repair purposes!

5. Renewing Gaiters

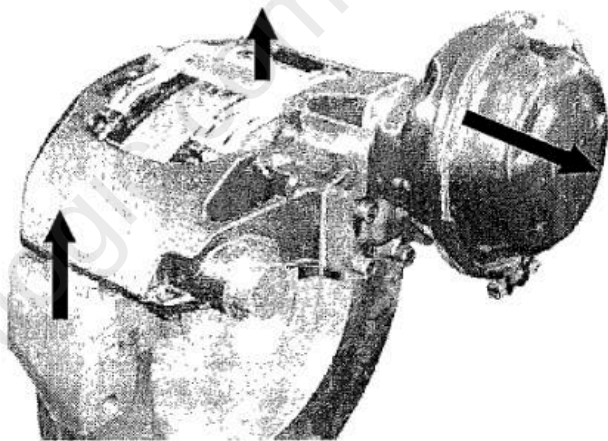
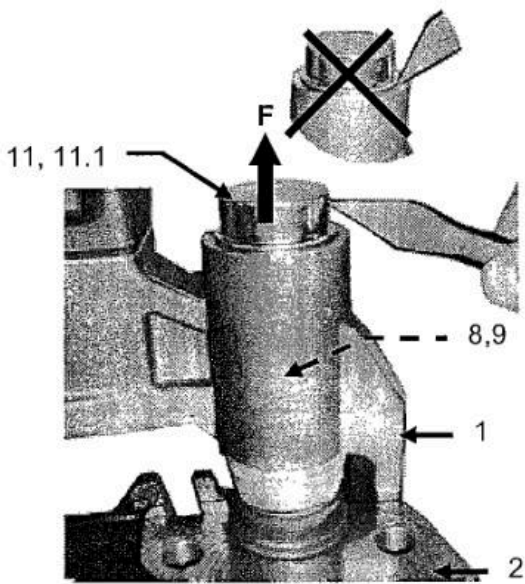
⚠ Caution: Do not use a power-driven socket! Keep hands and fingers out of the inside of the caliper to avoid injury!

Note: When replacing all of the gaiters in the caliper, the work sequences 5.1 and 5.2 should be combined so as not to repeat some operations.

When replacing individual gaiters, follow the corresponding work sequences of the sections 5.1 and 5.2.

5.1 Renewing Guide Pin Gaiters and Bushes

Work Sequences for Removal:

Work Sequences	Figures
- Remove brake pads according to Section 3. - Remove brake cylinder from the brake caliper according to Section 6. - Dismantle the caliper with the carrier from the axle according to Section 4.	 Fig. 35
Dismantle brake caliper 1 from brake carrier 2 by removing short and long caps 11, 11.1 from the guide pins 8, 9 in the caliper housing 1 with a suitable tool, e.g. chisel. Caution: Take care not to damage cover bores in housing. The proper tool position is against the covers.	 Fig. 36

Simplex expanding wedge brake

410 × 180 ZE

500 × 120 ZE

500 × 160 ZE

Assembly and Maintenance Instructions

Edition 1

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