

Removing final drive, included in MF (microfiche) Repair Instructions, model-dependent, from '85, refer to 33 10 010.

Secure final drive to special tool 33 1 010.

Drain off fluid. Take off case cover.

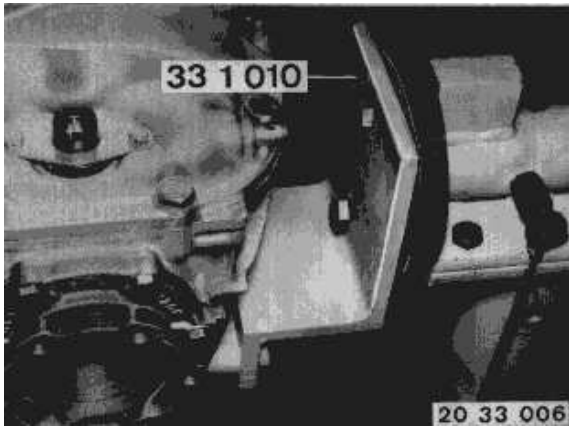
Installation:

Replace seal.

Tightening Torque,
refer to Technical Data 33 11 1AZ.

Topping up oil,
Oil quantity,
refer to Technical Data.

Oil grades,
refer to Operating Fluids specifications.



Press off drive flange with pry bar.



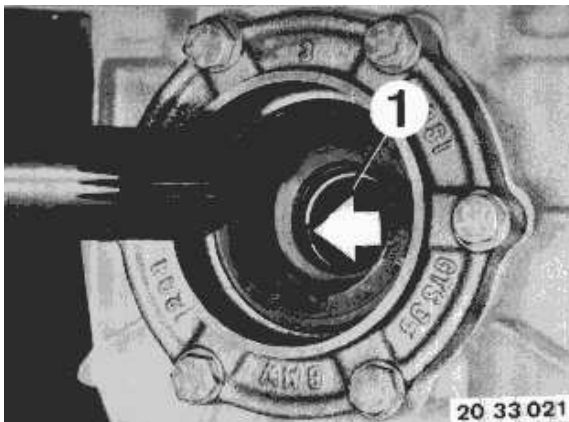
Installation:

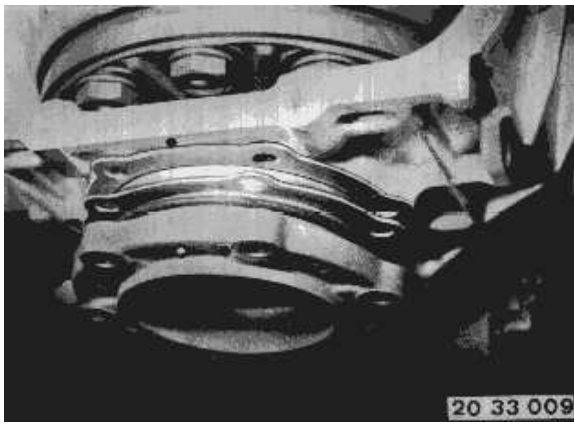
Before fitting the drive flange, the round wire circlip (1) must be placed in the groove of the differential housing in such a way that both ends of the round wire circlip are recessed.

This prevents lateral bending of the ring.

Press in drive flange by hand and turn slightly until wire snap ring is heard to engage.

Replace stretched snap rings.





Punch mark both bearing caps.

Unfasten screws on both bearing covers and remove bearing covers (turn if necessary, because the sealing ring grips firmly - suction).

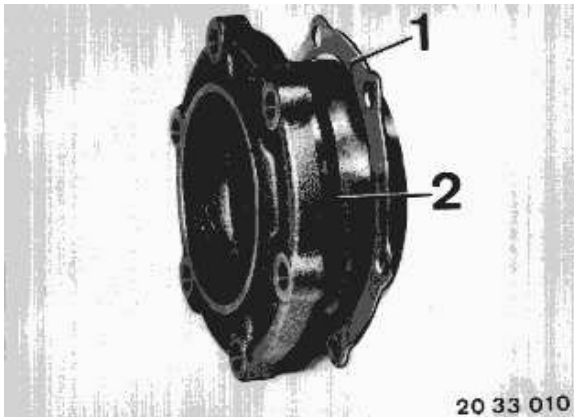
Caution!

Do not mix up bearing caps and spacers.

Secure spacers on bearing cap with a piece of wire, if necessary.

Installation:

Tightening Torque,
refer to Technical Data 33 11 2AZ.



Shims (1) are used to adjust axial preload force of final drive mounting (4000 N) and torsional face runout of crown wheel and bevel gear.

(2) O-ring



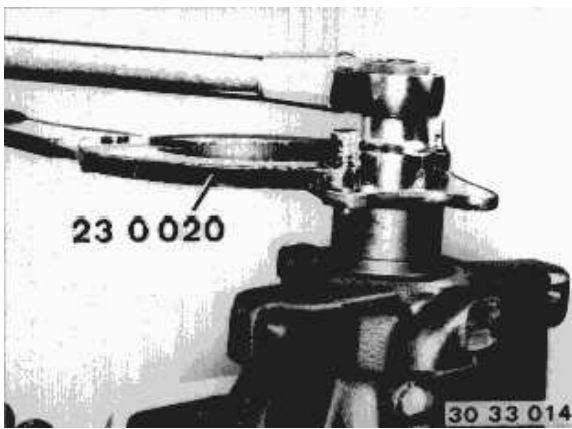
Remove complete differential case.

Caution!

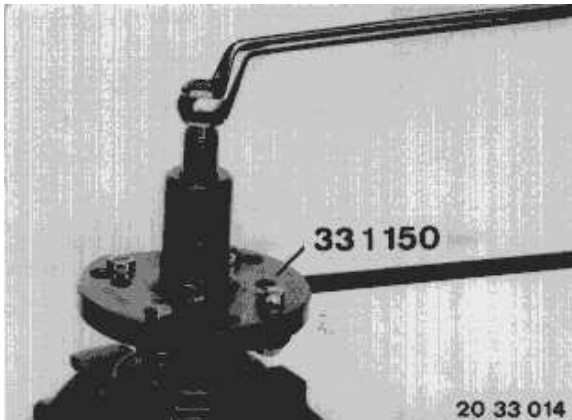
Do not bend the pulse generator wheel.



Lift out lockplate (1).



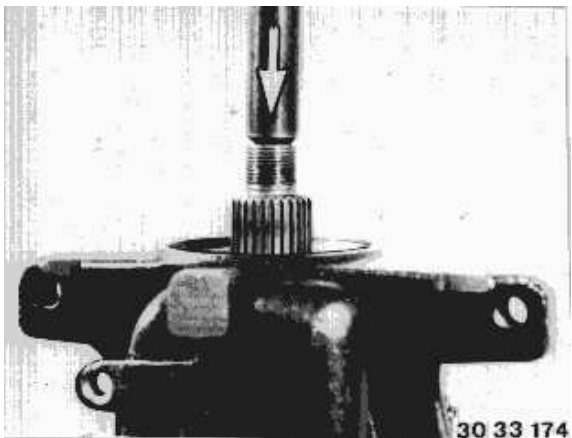
Brace input flange with special tool 23 0 020 and unfasten collar nut.



Remove input flange with special tool 33 1 150.

The specified friction torque level is indicated for the new bearings,
refer to Technical Data.

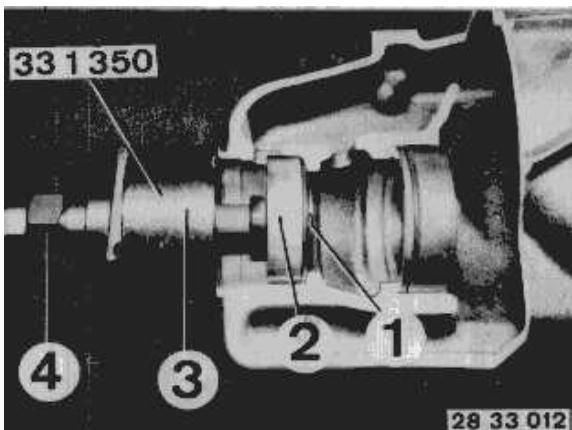
The friction torque of the old bearings no longer needs to be measured.



Press out drive pinion.

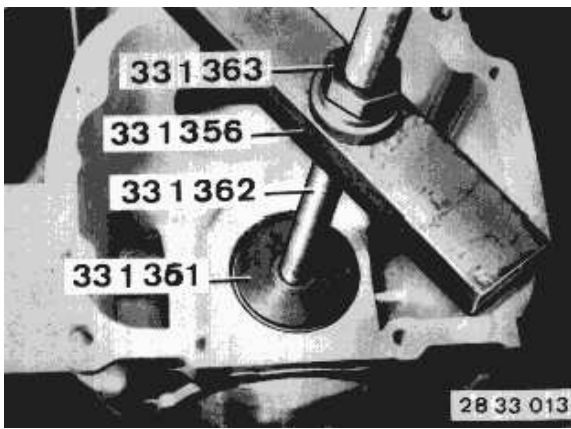
Caution!

Be careful not to damage threads.



Extract front outer bearing race with special tool 33 1 350.

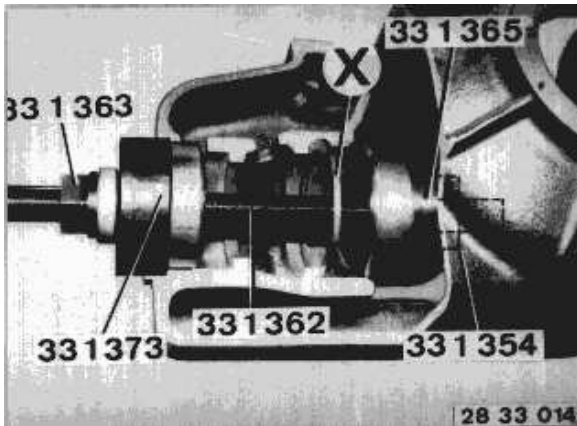
- (1) Spreader
- (2) Front bearing outer race
- (3) Puller bell housing
- (4) Pressure bolt



Remove rear outer bearing race with special tool 33 1 360 / 361 / 362 / 363 / 356.

Caution!

Shim (X) is located underneath the rear bearing outer race.
This is needed again to adjust the block dimension.



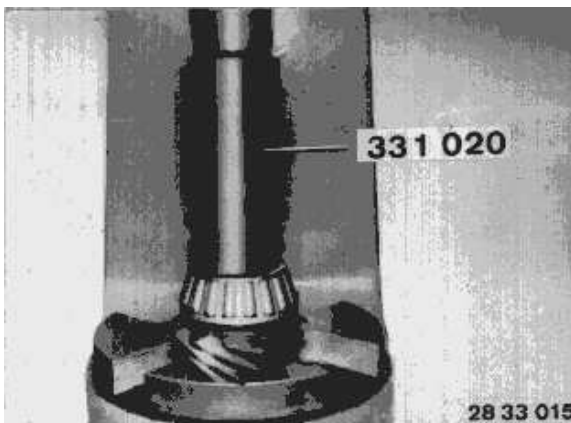
Install old shim (X) in front of the rear bearing outer race.
Draw in outer bearing races with special tool 33 1 360 / 362 / 363 / 365 / 354 / 373.



Pull bevel gear roller bearings off drive pinion with special tool 33 1 300.

Caution!

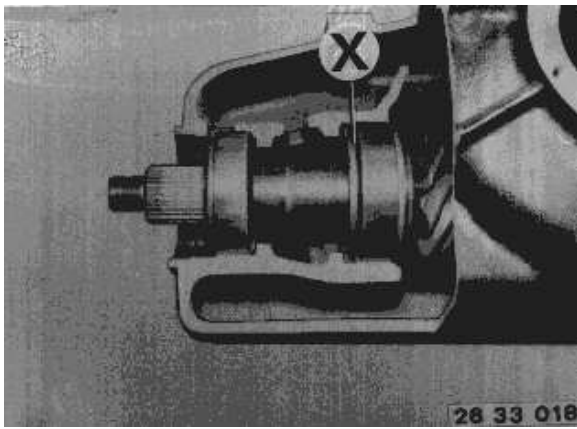
Do not damage taper: Insert aluminium jaws or wooden blocks.



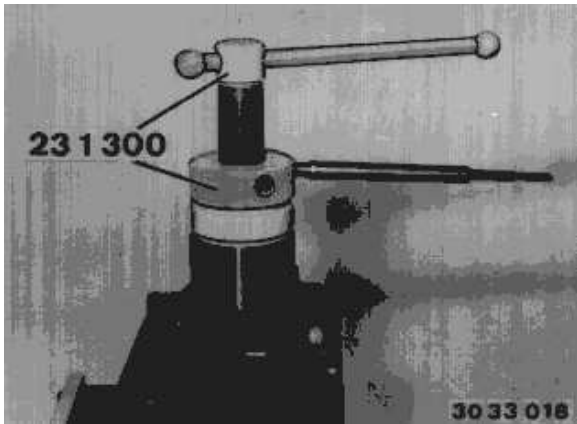
Press-fit new taper roller bearing to the drive pinion with special tool 33 1 020 (sleeve).

Caution!

Always only use same make bearings for both.

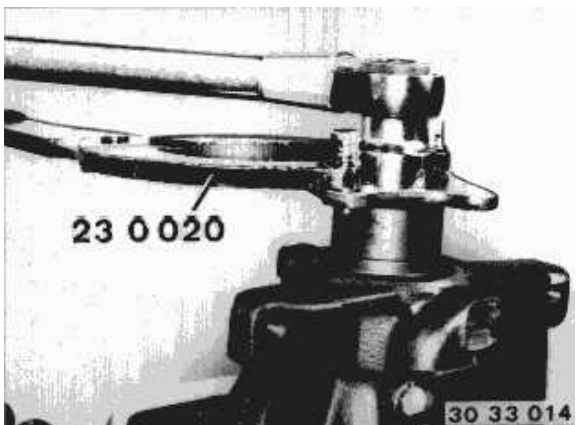


Install the drive pinion with new tapered roller bearings, but without a clamping sleeve, to determine the correct thickness of shim (X).



Install drive pinion in the rear bearing outer race.

Pull front taper roller bearing onto the drive pinion with special tool 23 1 300 in conjunction with a spacer bush.



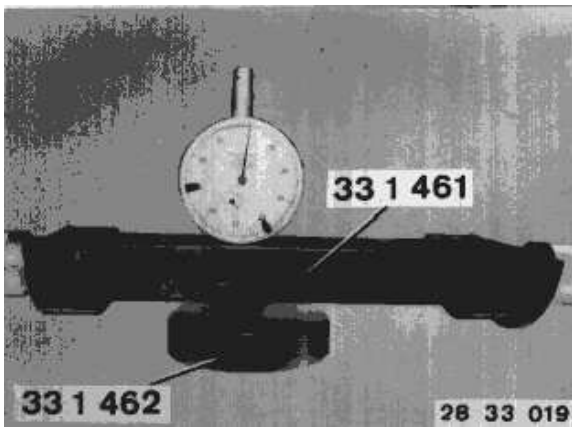
Mount input flange.

By carefully tightening down the collar nut, adjust friction torque of input taper roller bearing to 250 Ncm.



Caution!

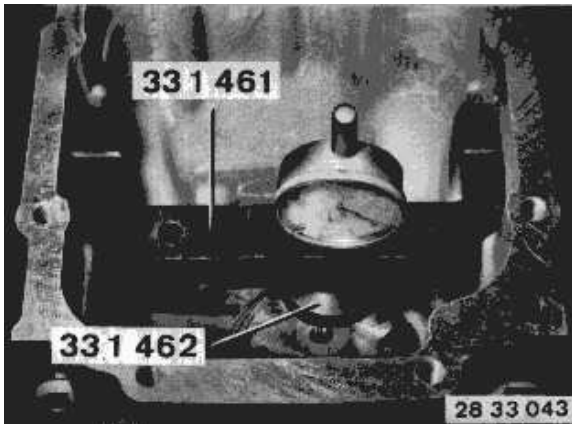
When tightening down, keep checking friction torque with special tool 00 2 000 at regular intervals.



Block Distance of Drive Pinion

Secure dial gauge in special tool 33 1 461.

Fit special tool 33 1 461 with dial gauge on special tool 33 1 462 and set dial gauge preload to zero.



Fit special tool 33 1 462 to drive pinion.

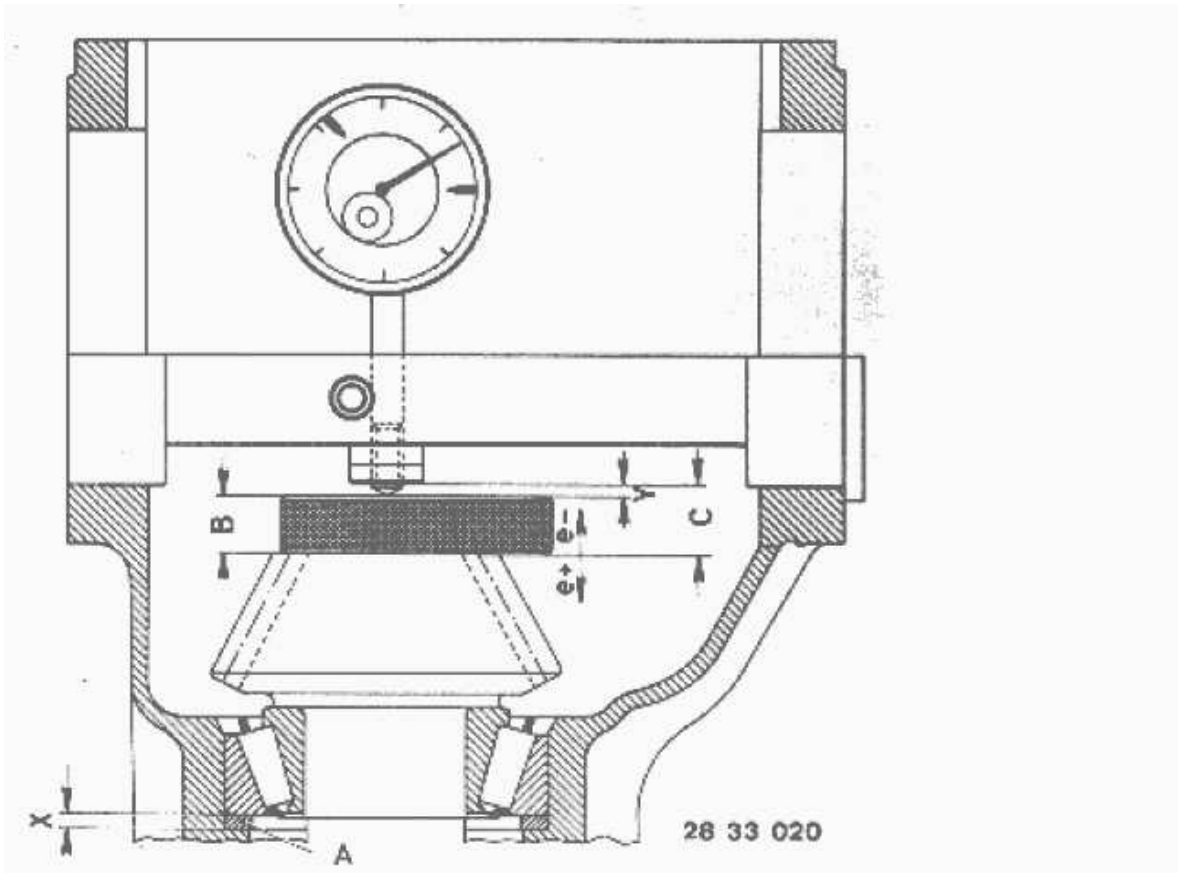
Install special tool 33 1 461 in housing.

Determine value Y:

Basic distance C = 11.50 mm

Gage thickness B = 9.50 mm

Examples for Determination of Correct Shim Thickness (X)



Example I:

C	11.50 mm
e +	0.10 mm
C nominal	11.60 mm

Y measured on dial gage	1.90 mm
+ gage thickness B	9.50 mm
C actual	11.40 mm

C nominal	11.60 mm
C actual	- 11.40 mm
a	0.20 mm

Master disc A 4.10 mm

- a	0.20 mm
Thickness of shim (X)	3.90 mm

If C nominal is greater than C actual, "a" is subtracted from thickness of shim (X).

Example II:

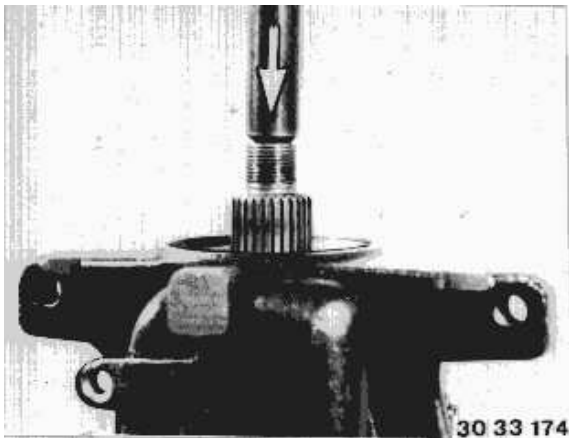
C	11.50 mm
e -	0.10 mm
C nominal	11.40 mm

Y measured on dial gage	2.20 mm
+ master disc thickness	9.50 mm
C actual	11.70 mm

C nominal	11.70 mm
C actual	- 11.50 mm
a	0.20 mm
Master disc A	3.90 mm
- a	0.20 mm
Thickness of shim (X)	4.10 mm

If C nominal is less than C actual, "a" on the shim ring (x) is added to the value.

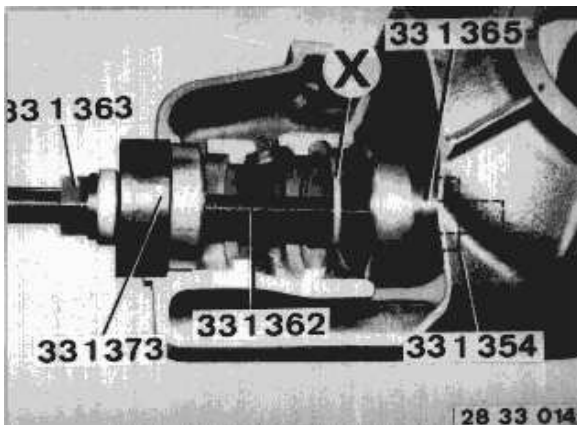
The permitted tolerance for dimension (x) is derived from the gage steps available for shim rings (0.01 ... 0.03 mm).



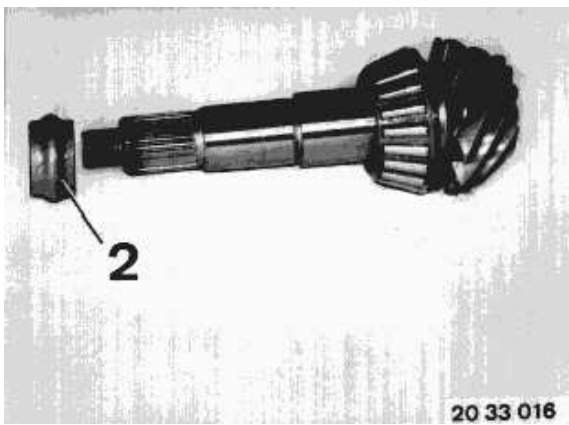
After determining the shim thickness (x), remove drive pinion.

Caution!

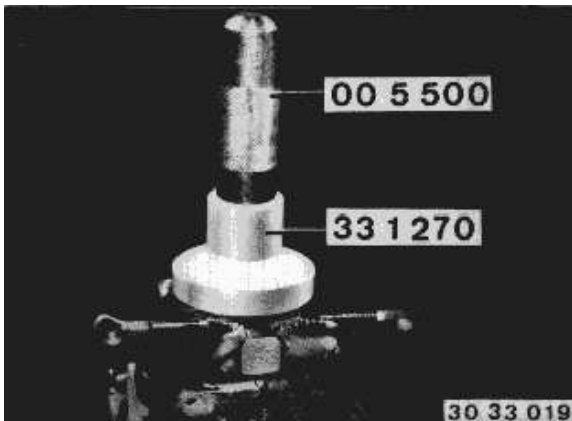
Note make of bearings - this is required to determine the friction torque.



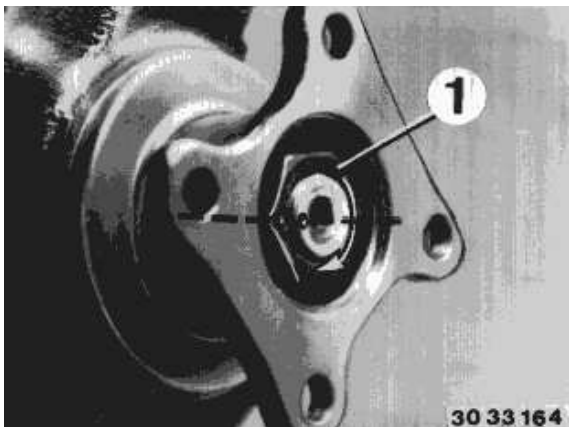
Remove rear outer bearing race and install with a shim (x) of the appropriate thickness.



Install drive pinion with a new clamping sleeve (2).

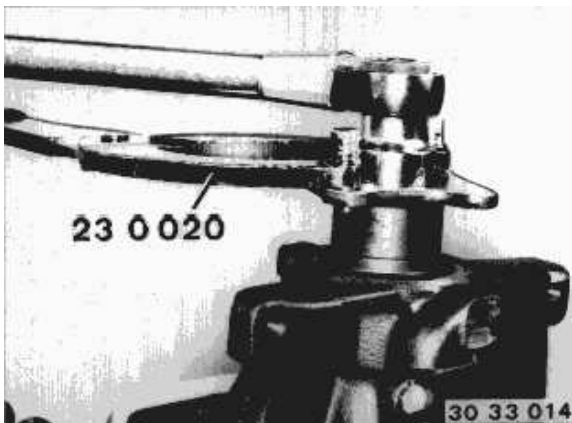


Immerse shaft seal in final drive oil and drive in flush with special tool 33 1 270 in conjunction with special tool 00 5 500.

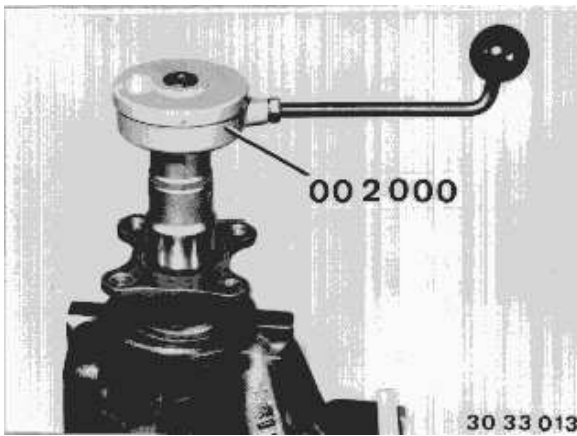


Press-fit input flange to the input shaft using special tool 23 1 300 but do not tighten down.

The axial preload force of drive pinion bearings (5000 N) can be determined with help of the friction torque.



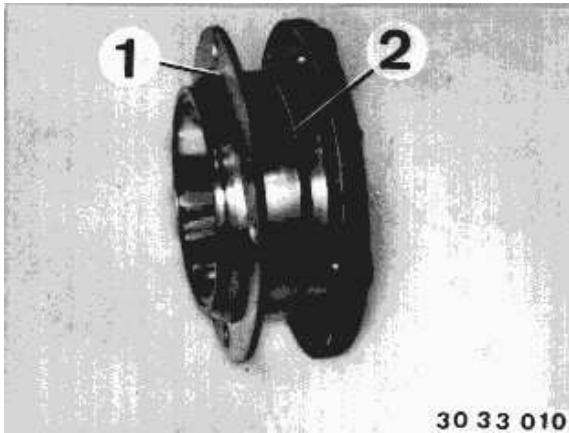
Gradually tighten down input flange with collar nut, measuring friction torque at regular intervals.



Measure friction torque with special tool 00 2 000 and suitable socket adapter, refer to Technical Data.

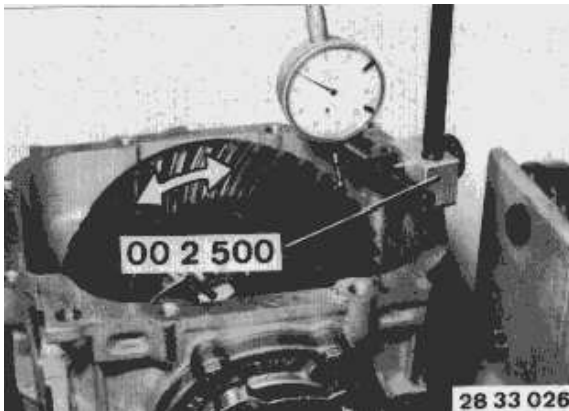
Caution!

The relation between friction torque and preload force differs depending on the make of bearings.
Refer to pinion bearing table for specified friction torque, refer to Technical Data, and add 20 Ncm for the new shaft seal.



Install final drive, install side cover after marking with the appropriate washers (1) and install new O-rings (2). Tighten screws down evenly.

Tightening Torque, refer to Technical Data.

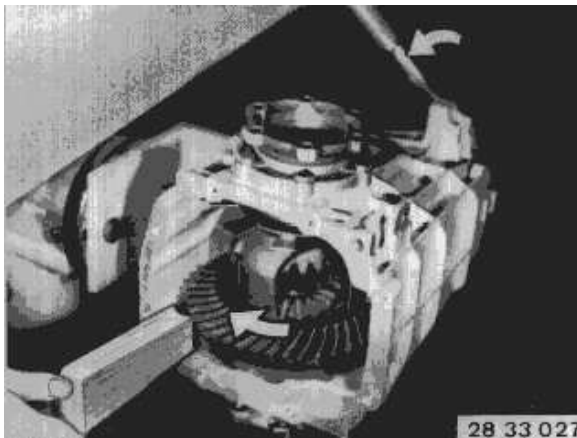


Backlash/tooth contact pattern adjustments

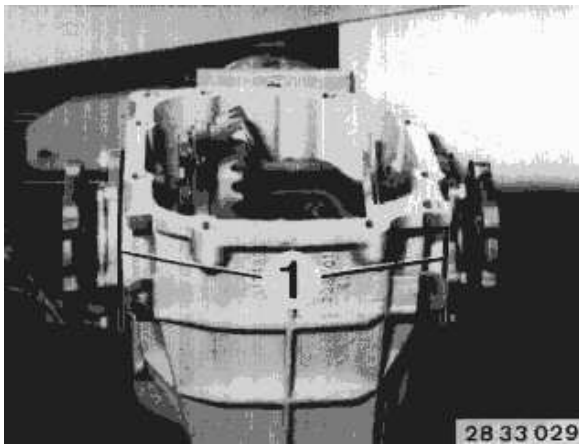
Secure special tool 00 2 500 (dial gauge holder) and measure torsional face runout, refer to Technical Data.

Caution!

The tooth contact pattern is always most important for a perfectly adjusted pinion/crown wheel.



To check the tooth contact pattern, coat the crown wheel teeth with printer's ink, turn in both directions several times and stop crown wheel suddenly with a piece of hard wood.



A correction to torsional face runout, refer to Technical Data, and contact pattern is performed by changing the thickness of both shims (1).

If backlash is too great, install a thinner shim on the crown wheel end.

If backlash is too small, use a thicker shim on the crown wheel end.

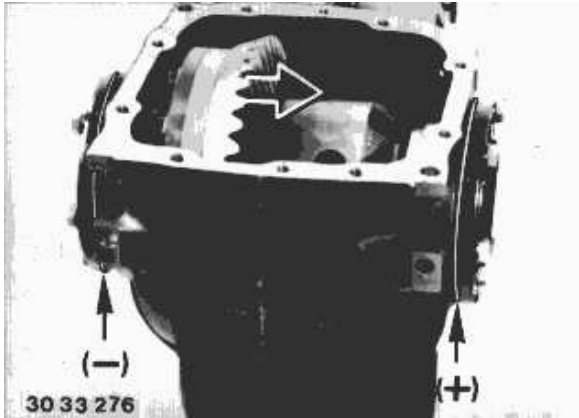
Axial displacement of the crown wheel of 0.01 mm signifies a change in tooth flank clearance of 0.0076 mm.

Caution!

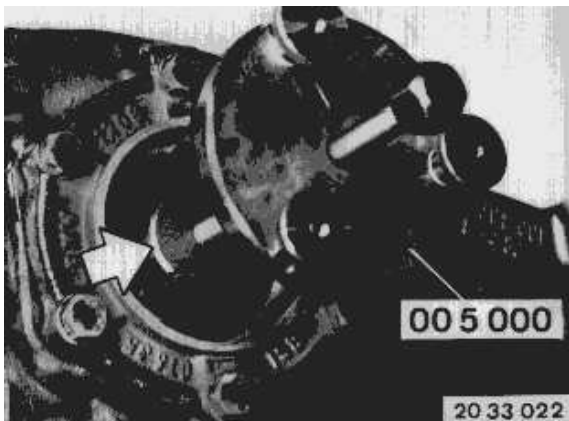
The total of both shim thicknesses must not be altered.

If a thicker or thinner shim is required on the one side to correct the tooth contact pattern, the other shim must also be changed again to have the original total thickness - if not, the friction torque of the bearings would be changed.

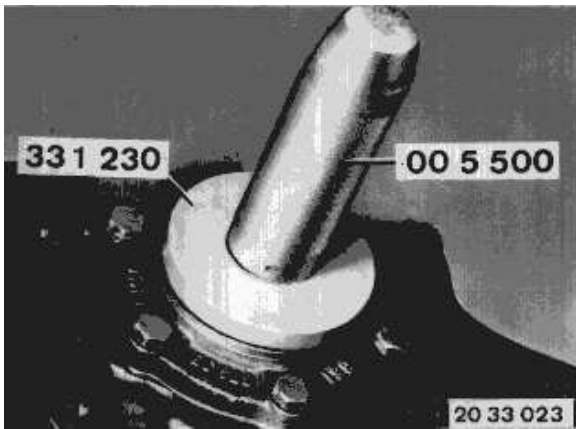
Determine friction torque differential bearings, described in Replace bearings for final drive housing, refer to 33 11 731.



Basic rules for contact pattern adjustment, as Replace drive pinion with crown wheel, refer to 33 12 ...



Extract old shaft seals with special tool 00 5 000 in conjunction with pressure piece.



Installation:

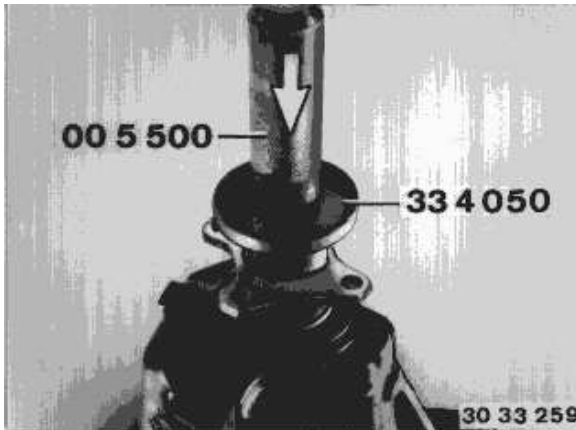
Dip new shaft seals in final drive gear lube.

Drive in shaft seals with special tool 33 1 230 in conjunction with special tool 00 5 500 up to stop.

Replace drive flange if the bearing surface is seriously scored.

Note:

The special tool 33 1 230 may have to be remachined on account of the casting tolerances.



Drive in new retaining plate with special tool 33 4 050 and special tool 00 5 500.