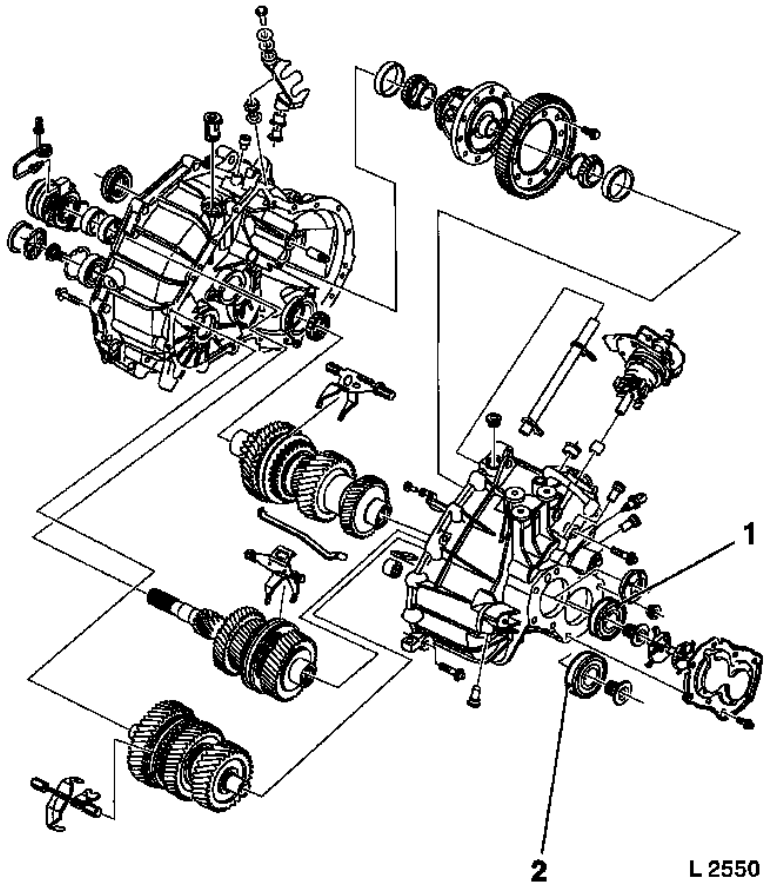
Bearings, Main Shaft and/or Drive Shaft in Transmission Housing, Replace

1. Illustration of main shaft and drive shaft in transmission housing
   1. Main shaft bearing (transmission housing side)
   2. Drive shaft bearing (transmission housing side)



2. Remove transmission from vehicle- see operation "Transmission, Remove and Install"

3. Disassemble transmission - see operation "Transmission, Seal Completely"

4. If required, remove and install new, or old, main shaft bearings using **KM-6122** (1) in conjunction with**KM-523-1** (2)

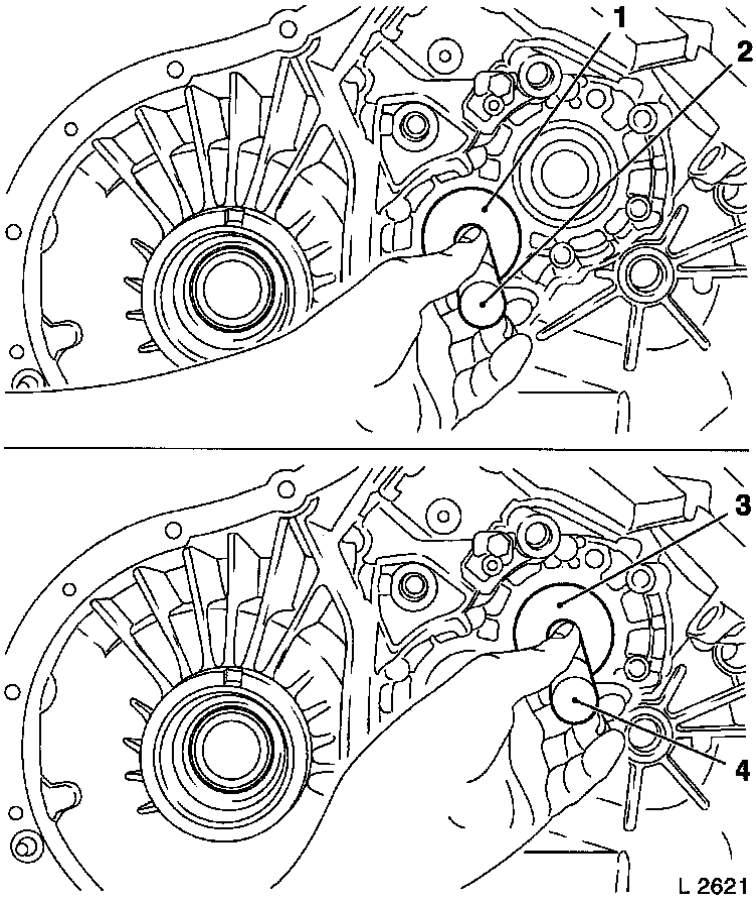
5. Remove drive shaft bearing from transmission housing using **KM-6123** (3) in conjunction with **KM-523-1** (4)

6. Clean all parts

7. Check all parts; replace if necessary

8. When replacing main shaft bearing in transmission housing, pressure collar adjustment must be determined and adjusted if necessary. For this, seat of bearing inner race for main shaft relative to

sealing surface of transmission housing must be determined. This is described in following steps



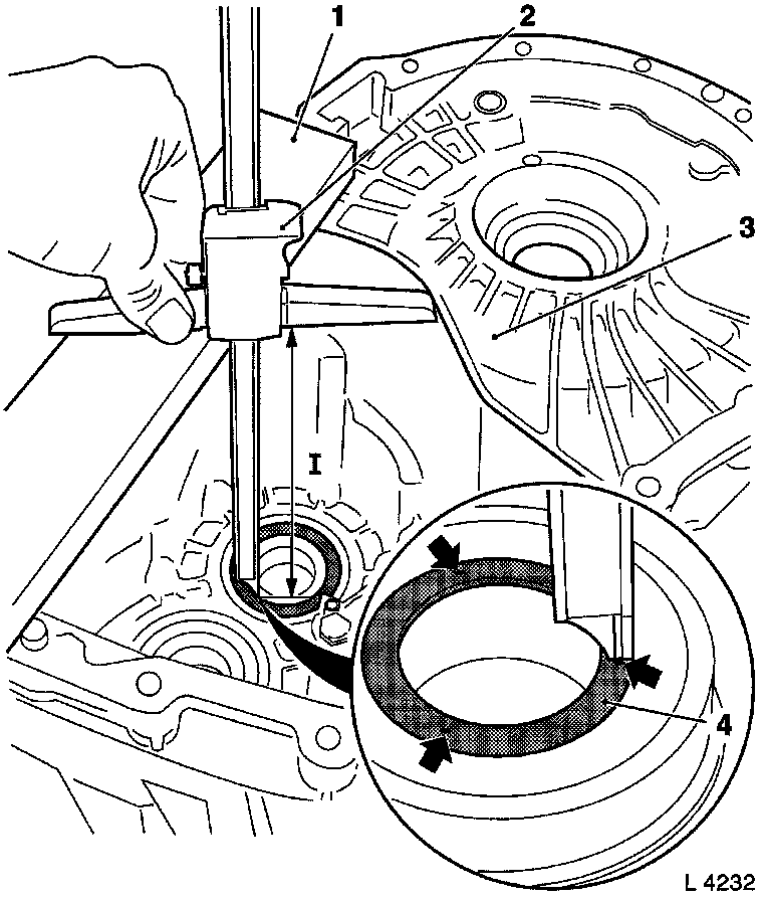
9. Support transmission housing using wooden block so that main shaft bearing inner ring is unobstructed

Important: For measurement of main shaft bearing, bearing must not contact surface of workbench

10. Position **KM-621-23** (1) on transmission housing (3)

11. Determine dimension (I) (bearing inner ring to transmission housing sealing surface) using commercially available digital depth gauge (2) with measuring range of at least 250 mm and graduation of 0.01 mm

- Perform this measurement at three evenly-spaced measurement points (arrows) on inner ring (4) of



main shaft bearing in transmission housing (1)

- Add measured values and divide sum by number of measurements. This calculation is illustrated in following tables

12. Purpose of following tables is to explain pressure comb adjustment using example calculation

- Table for example calculation for evaluation of measurement

1st measurement	187.02 mm	+
2nd measurement	187.06 mm	+
3rd measurement	187.05 mm	=
Total value	561.13 mm	:3=
Mean value	187.04 mm	

- Table for your evaluation of measurement; enter your measurement results in table (on a hard copy)

1st measurement	mm	+
2nd measurement	mm	+
3rd measurement	mm	=
Total value	mm	:3=
Mean value	mm	

13. After installation, this measurement must be performed in same way for new main shaft bearing. If a value deviates by more than **0.08 mm** from other values of a particular measurement, measurement must be repeated as measurement error has occurred

14. Mean value for new main shaft bearing is then subtracted from mean value for old main shaft bearing. If dimension difference between old and new main shafts is greater than **+ 0.02-0.06 mm**, pressure comb must be adjusted. For this purpose, tapered roller bearings must be removed from differential - see operation "Tapered Roller Bearings - Differential, Remove and Install"

- Table for example calculation of dimension difference

Mean value	New bearing	197.16 mm	-
Mean value	Old bearing	197.04 mm	=
		+ 0.12 mm	± Difference

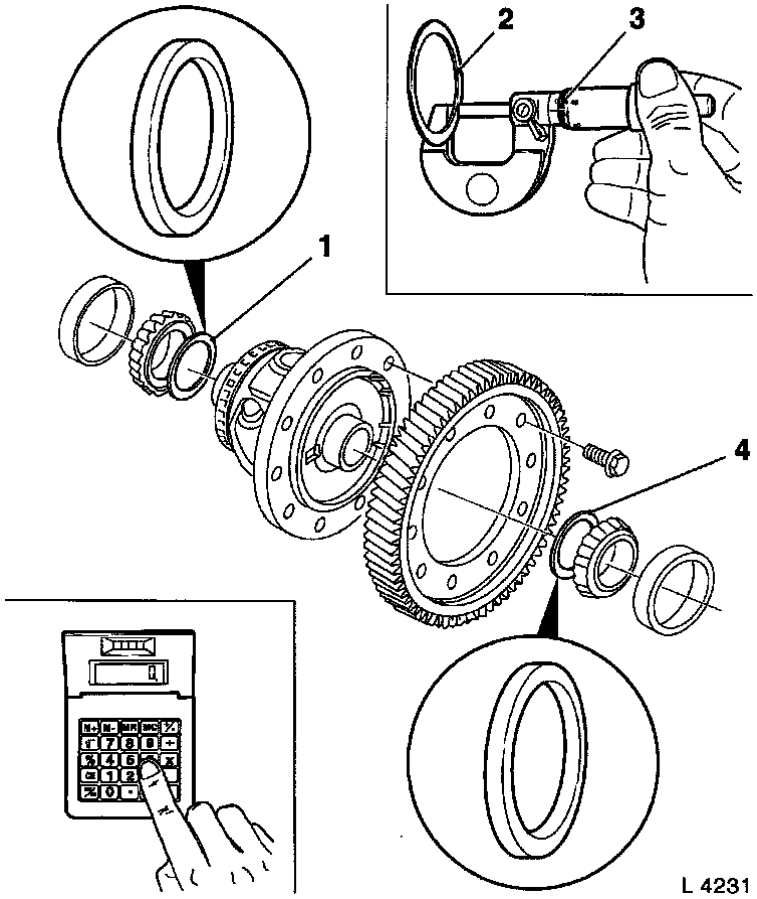
- Table for your dimension difference calculation; enter your measurement results in table (on a hard copy)

Mean value	New bearing	mm	-
Mean value	Old bearing	mm	=
		mm	± Difference

15. Select shim

- If difference is positive (+), then the shim (transmission housing side) (4) must be selected to be thicker by same amount

- If difference is negative (-), then the shim (transmission housing side) (4) must be selected to be thinner by same amount
- If the shim (transmission housing side) (4) is thicker, the shim (clutch housing side) (1) must be selected to be thinner by same amount
- If the shim (transmission housing side) (4) is thinner, the shim (clutch housing side) (1) must be selected to be thicker by same amount
- In other words, total thickness of two shims remains same since this yields bearing pretension for differential tapered roller bearings
- Corresponding shims can be obtained from "Aftersales" division. Actual dimension for shims (2) is determined using micrometer (3) since shims are not labelled



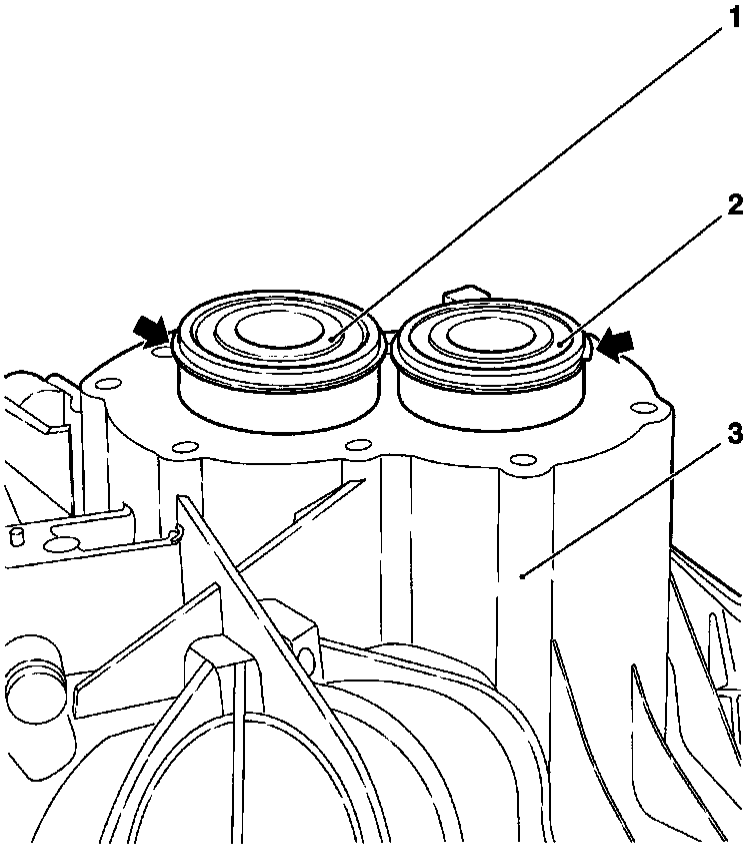
16. Examples for selection of available shims are listed in following table

Difference dimension	Shim (transmission housing side)		Shim (clutch housing side)	
- 0.25 mm	Old 0.90 mm	New 1.15 mm	Old 0.75 mm	New 0.50 mm
+ 0.20 mm	Old 0.90 mm	New 0.70 mm	Old 0.75 mm	New 0.95 mm
+ 0.13 mm	Old 0.90 mm	New 0.75 mm	Old 0.75 mm	New 0.90 mm
+ 0.12 mm	Old 0.90 mm	New 0.80 mm	Old 0.75 mm	New 0.85 mm

17. Shims must be selected so that smallest possible tolerance is achieved during adjustment
Note: Used shims can be re-used in subsequent adjustment operations provided that shims are not damaged

18. Install differential tapered roller bearings - see operation "Tapered Roller Bearings - Differential, Remove and Install"

19. Install drive shaft bearing (1) and main shaft bearing (2) in transmission housing (3) - see operation "Transmission, Seal Completely"



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20. Assemble transmission - see operation "Transmission, Seal Completely"

21. Install transmission - see operation "Transmission, Remove and Install"