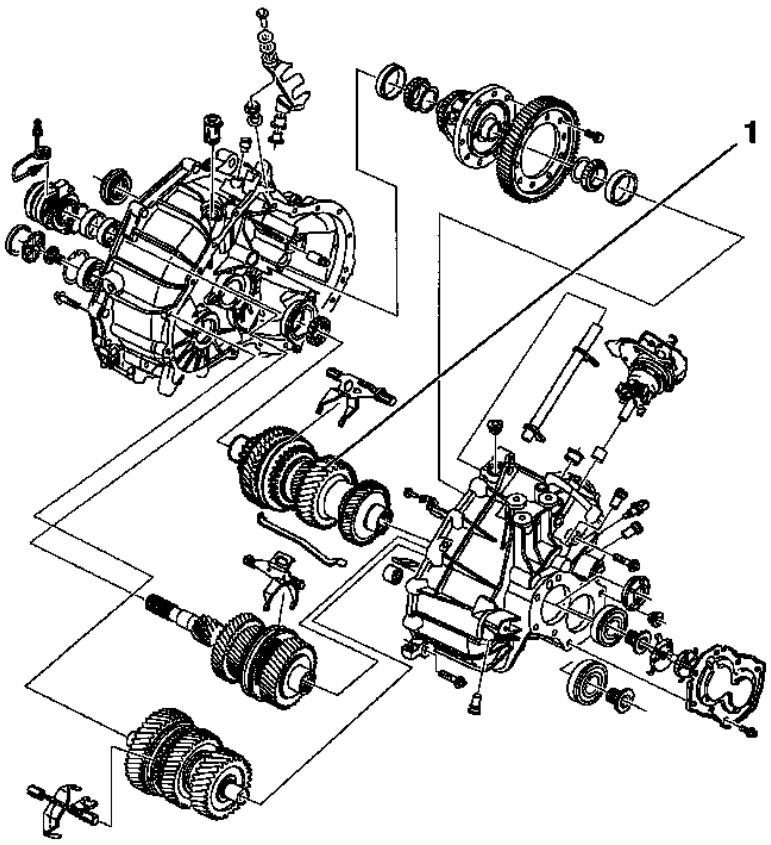
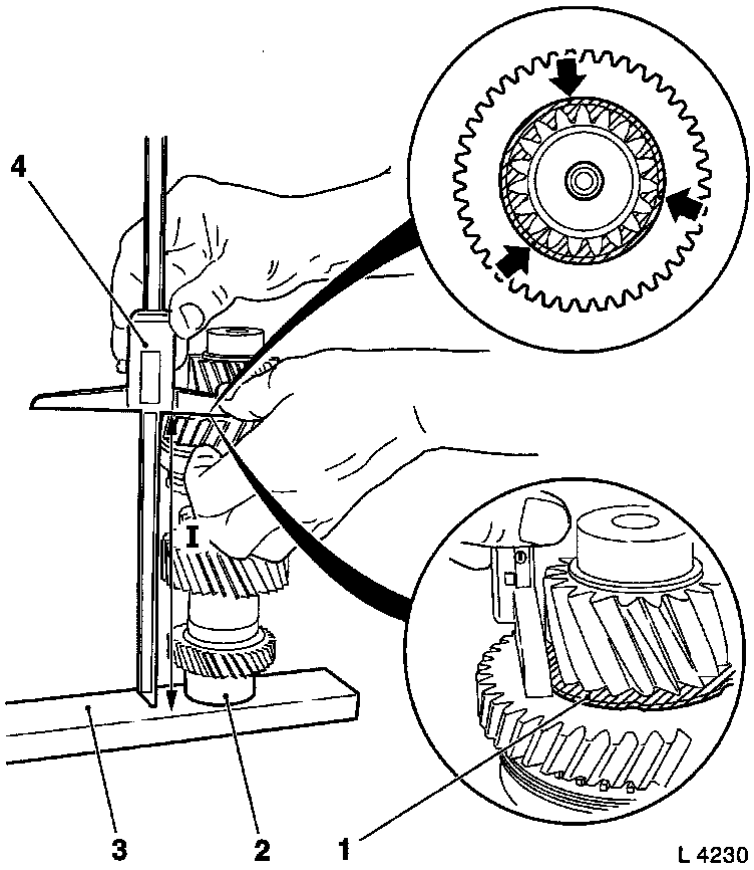
Main Shaft, Remove and Install

1. Remove transmission from vehicle - see operation "Transmission, Remove and Install"
2. Disassemble transmission - see operation "Transmission, Seal Completely
3. Check main shaft (1) for wear and damage; replace if necessary. When replacing main shaft, any necessary adjustments to pressure collar must be checked and adjusted if necessary



4. Install removed main shaft to **KM-621-23** (3) in conjunction with **KM-6146**(2)
5. Measure dimension (l) at pressure comb on main shaft using commercially available digital depth gauge (4) with measuring range of at least 250 mm and graduation of 0.01 mm
   - Perform this measurement at three evenly-spaced measurement points on pressure comb (1)
   - Add measured values and divide sum by number of measurements
   - This calculation is illustrated in following table



6. Purpose of following tables is to explain pressure comb adjustment using example calculation
   - Table for example calculation for evaluation of measurement

1st measurement	197.02 mm	+
2nd measurement	197.06 mm	+
3rd measurement	197.05 mm	=
Total value	591.13 mm	:3=
Mean value	197.04 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	

7. Measurement must be performed in same way for new main shaft. If a value deviates by more than **0.08 mm** from other values of a particular measurement, measurement must be repeated because measurement error has occurred
8. Mean value for old main shaft is then subtracted from mean value for new main shaft
9. 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 the differential - see operation "Tapered Roller Bearings, Differential, Remove and Install"
   - Table for example calculation of dimension difference

Mean value	New main shaft	197.16 mm	-

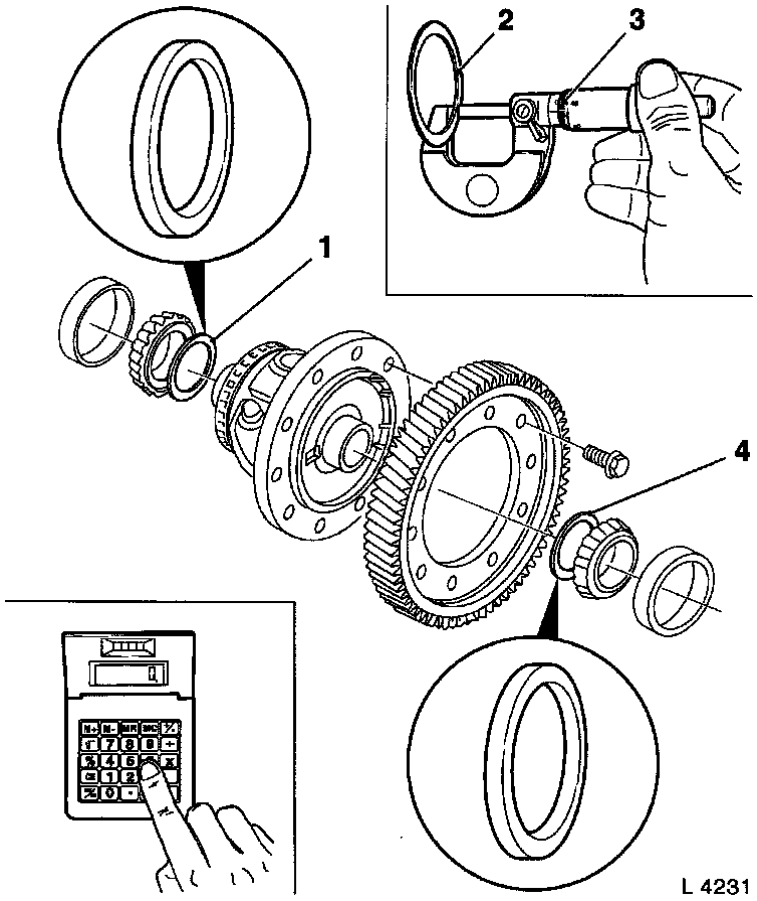
Mean value	Old main shaft	197.04 mm	=
		+ 0.12 mm	± Difference

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

Mean value	New main shaft	mm	-
Mean value	Old main shaft	mm	=
		mm	± Difference

10. Select shim

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

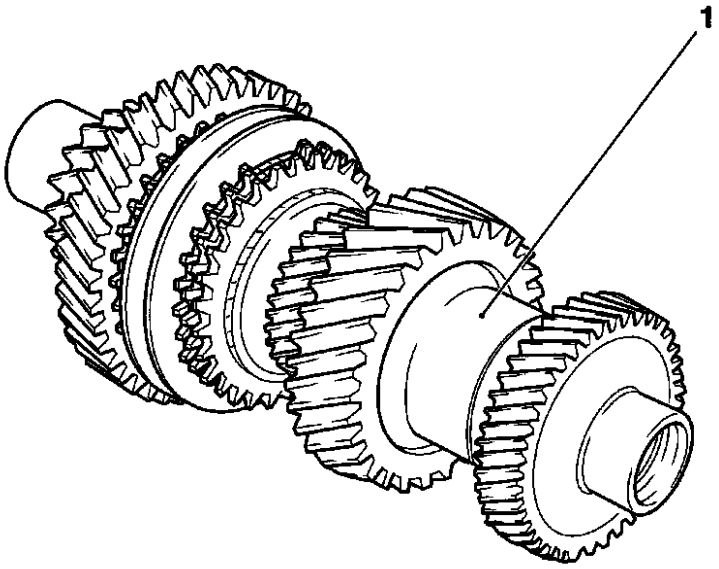
11. A few examples from the selection of available shims are listed in the table below

Difference dimension	Shim (transmission housing side)		Shim (clutch housing side)	
- 0.25 mm	Old 0.90 mm	New 0.65 mm	Old 0.75 mm	New 1.00 mm
+ 0.20 mm	Old 0.90 mm	New 1.10 mm	Old 0.75 mm	New 0.55 mm
+ 0.13 mm	Old 0.90 mm	New 1.05 mm	Old 0.75 mm	New 0.60 mm
+ 0.12 mm	Old 0.90 mm	New 1.00 mm	Old 0.75 mm	New 0.65 mm

12. 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

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

14. Install main shaft (1) to transmission



L 2623

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

16. Install transmission to vehicle - see operation "Transmission, Remove and Install"