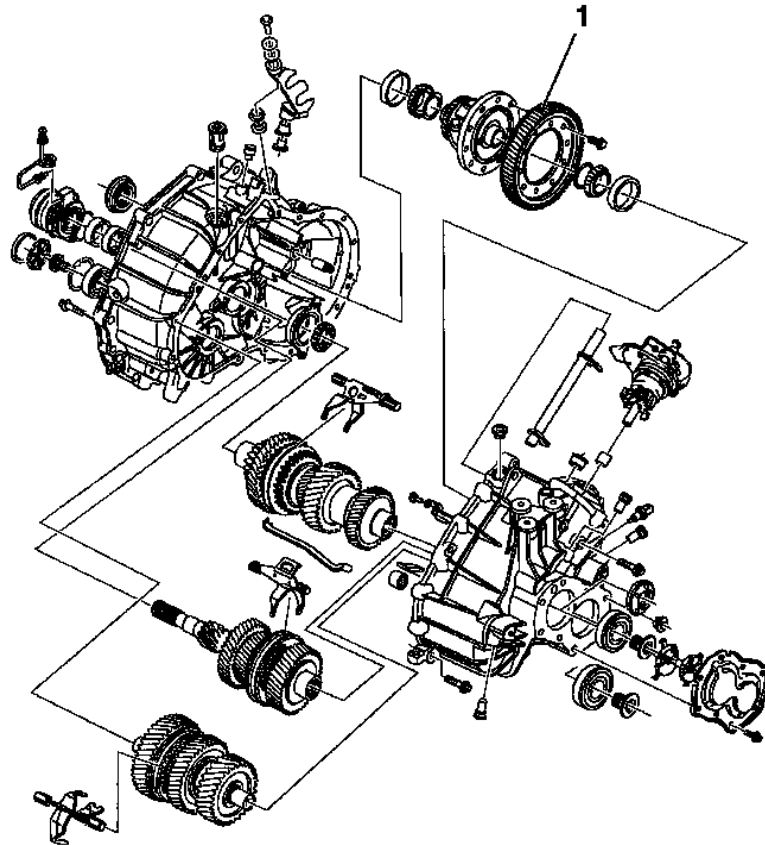


## Ring Gear, Differential, Replace

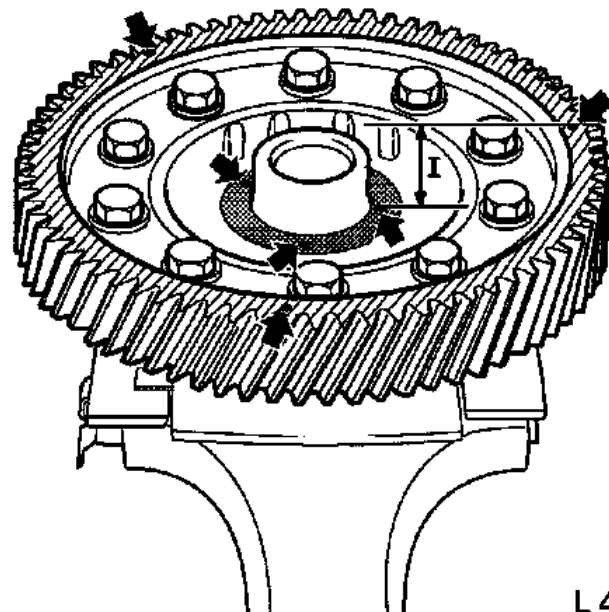
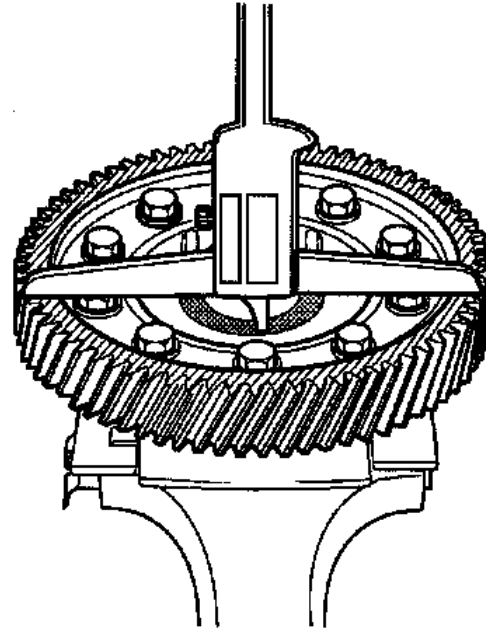
1. Illustration of differential
  1. Ring gear



L 2470

2. Remove transmission from vehicle - see operation "Transmission, Remove and Install"
3. Disassemble transmission - see operation "Transmission, Seal Completely"
4. Remove tapered roller bearings from differential - see operation "Tapered Roller Bearings - Differential, Remove and Install"
 

**Note:** When replacing ring gear, pressure comb adjustment must be determined and adjusted if necessary. For this purpose, tapered roller bearings must be removed from differential
5. Determine dimension (I) (distance of height of ring gear to seat of differential tapered roller bearing on transmission housing side) using commercially available, digital depth gauge with measuring range of at least 250 mm and gradation of 0.01 mm
  - Measurement is made at three measurement points (arrows) distributed uniformly over ring gear and differential
  - Measured values are added and divided by number of measurements
  - This method of calculation is illustrated in table below



L 4241

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

- Table for example calculation for evaluation of measurement

1st measurement	15.02 mm	+
2nd measurement	15.06 mm	+
3rd measurement	15.05 mm	=
Total value	45.13 mm	:3=
Mean value	15.04 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. After installation of new ring gear, replacement of which is described in this operation, measurement must be performed in same way for new ring gear
8. If a value deviates by more than **0.08 mm** from other values, measurement must be repeated as a measurement error has occurred
9. Mean value for old ring gear is then subtracted from mean value for new ring gear

- Table for example calculation of dimension difference

Mean value	New ring gear	15.16 mm	-
Mean value	Old ring gear	15.04 mm	=
		+ 0.12 mm	± Difference

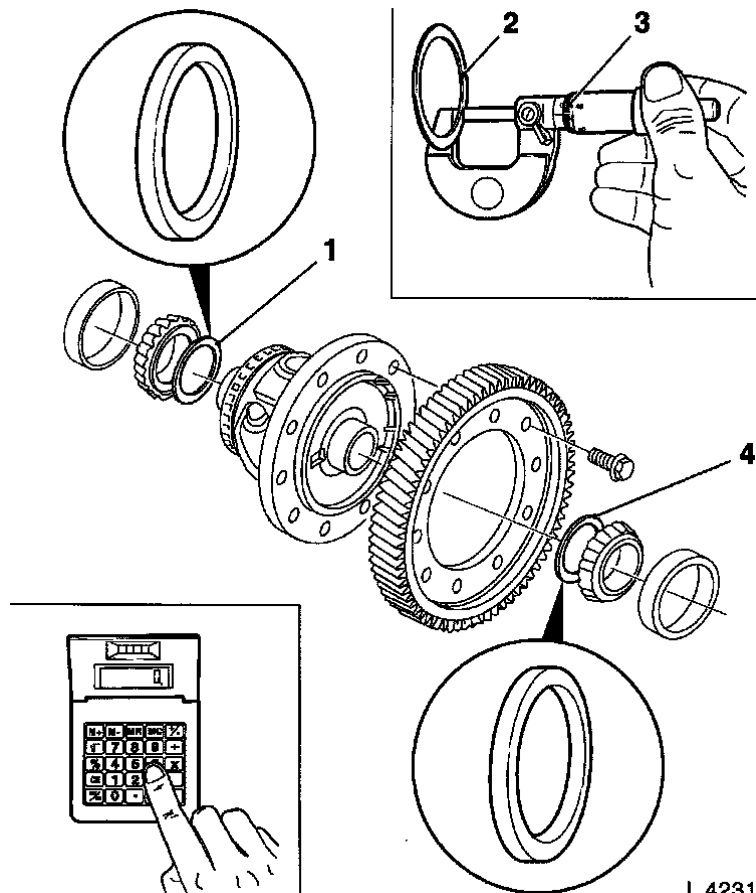
- Table for your dimension difference calculation; enter your measurement results in table (on a hard copy)

Mean value	New ring gear	mm	-
Mean value	Old ring gear	mm	=
		mm	± Difference

10. If difference between old and new ring gear amounts to more than **+0.02/-0.06 mm**, then pressure collar must be adjusted

#### 11. 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



L 4231

- In other words, total thickness of the two shims remains same
- Corresponding shims can be obtained from "Aftersales".  
Actual dimension for shims (2) is determined using a micrometer (3) since shims are not labelled

12. Examples for using shims are listed in 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

13. Shims must be selected so that smallest possible tolerance is achieved during adjustment

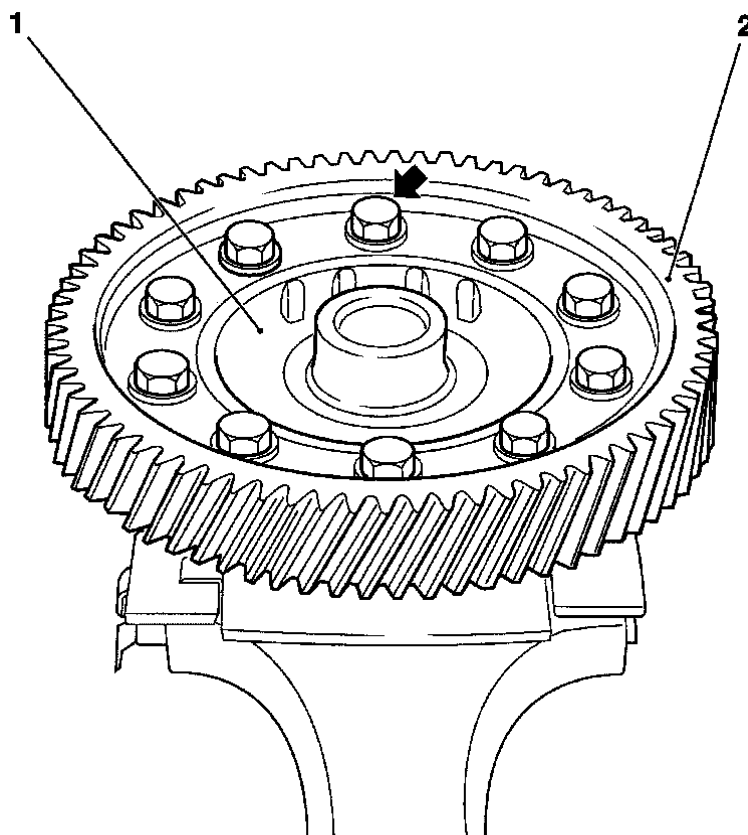
**Note:** Used shims can be re-used in subsequent adjustment operations provided that shims are not damaged

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

15. Check differential for damage and wear; replace if necessary

16. Disassemble ring gear (2) from differential (1)

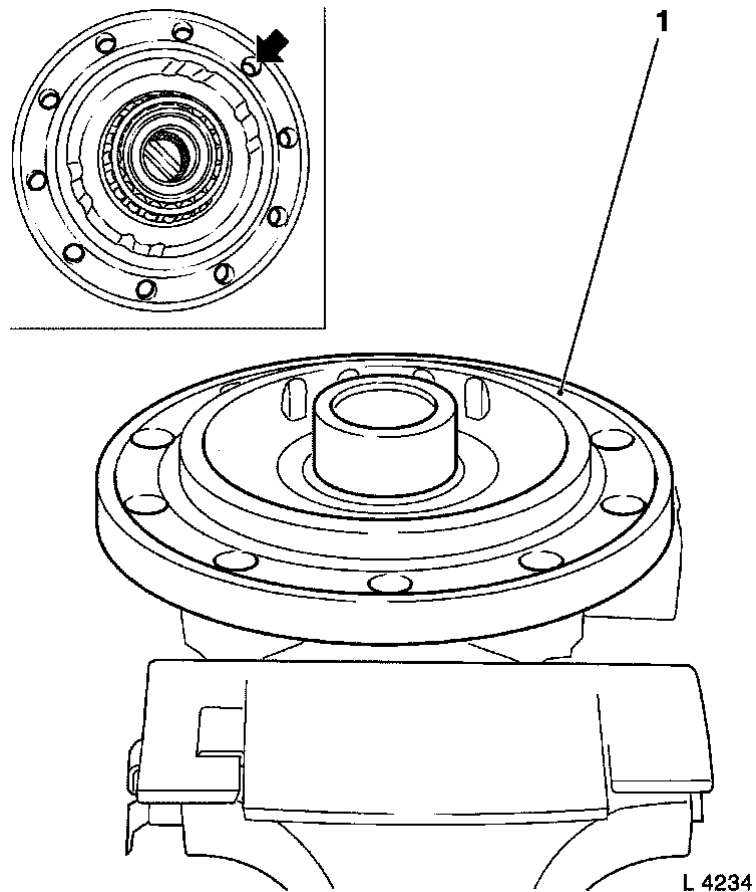
- Clamp differential in vice using jaw protectors
- Remove 10x bolt (arrowed)
- Detach ring gear using plastic hammer



L 4233

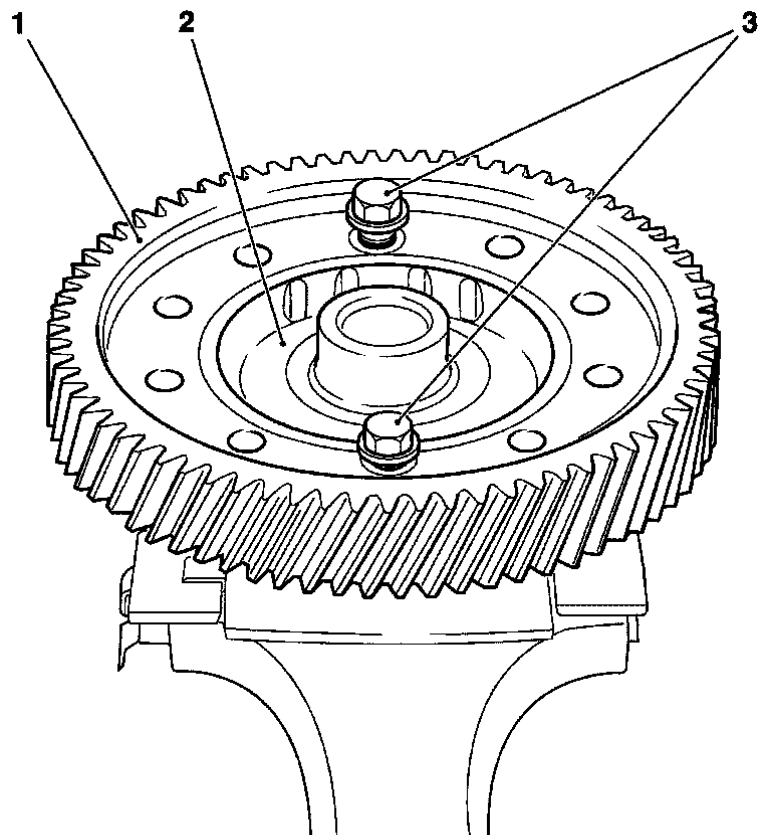
17. Clean all threads

(arrowed) and contact surfaces (1) between ring gear and differential



L 4234

- 18.** Partially assemble ring gear (1) to differential (2)
- Place ring gear on differential
  - Insert 2x bolt (3), then tighten slightly
  - Drive ring gear onto differential using a plastic hammer, then tighten fully 2x bolt

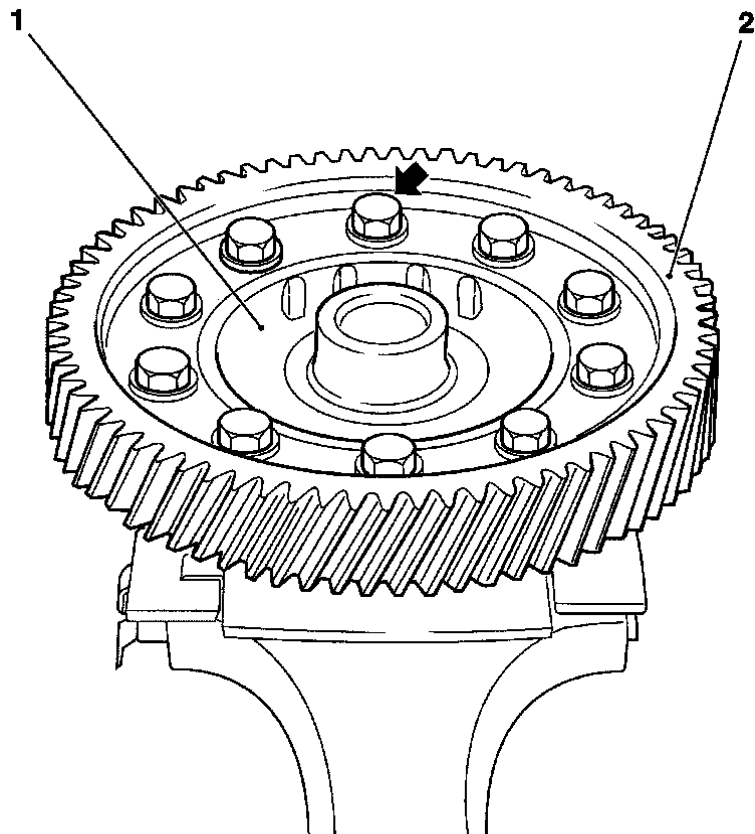


L 4235

- 19.** Fully assemble ring

gear (2) to differential  
(1)

- Clamp differential in vice using jaw protectors
- Remove 2x bolt previously installed
- Install 10x bolt (arrowed) **99 Nm**
  - Coat 10x bolt with locking compound



L 4233

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

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