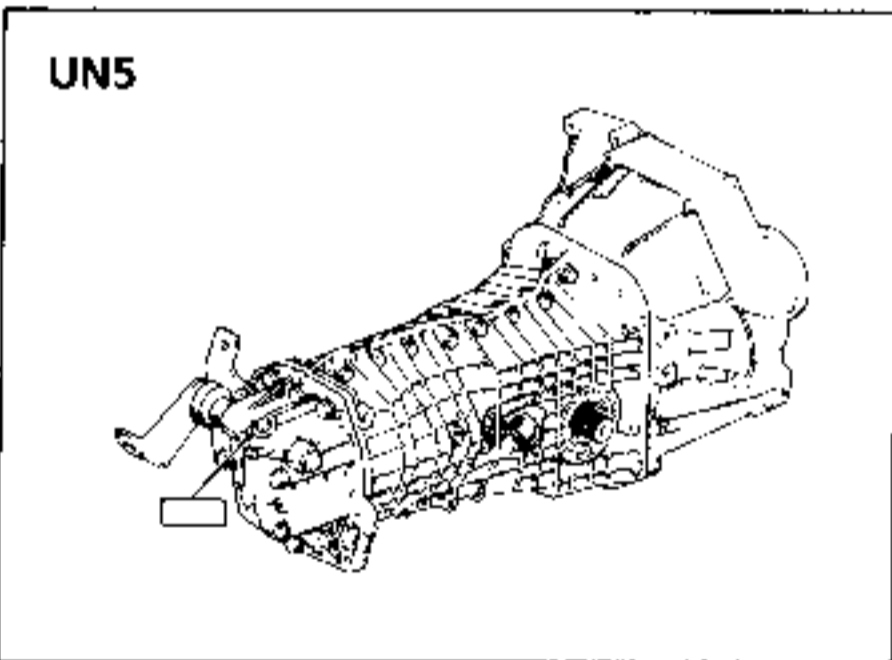
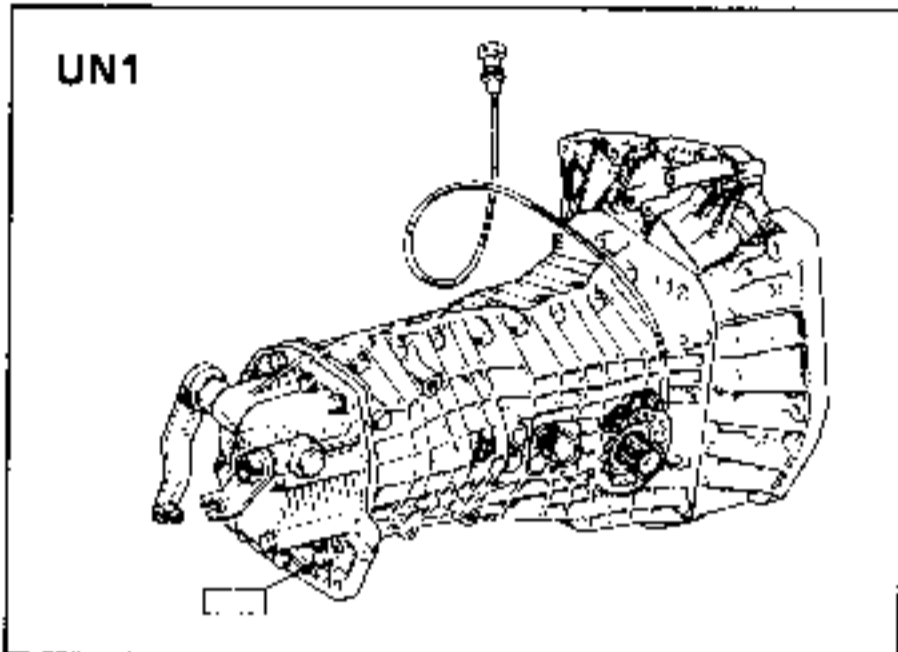


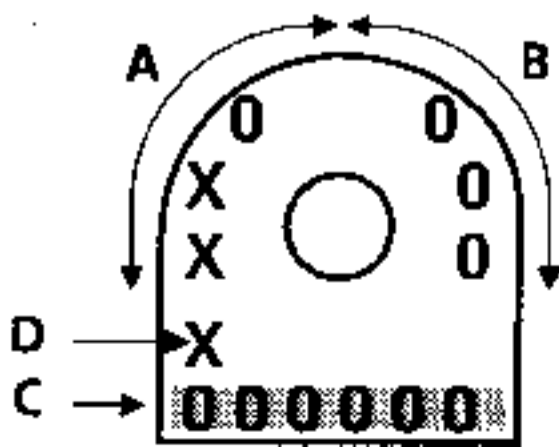
Type UN gearboxes are fitted to the following vehicles :

- Renault 21 : L485
- Renault 25 : B29E-B295-B29R-B29A
- Alpine V6 GT : D500
- Alpine V6 Turbo : D501-D50A
- Master : FB30

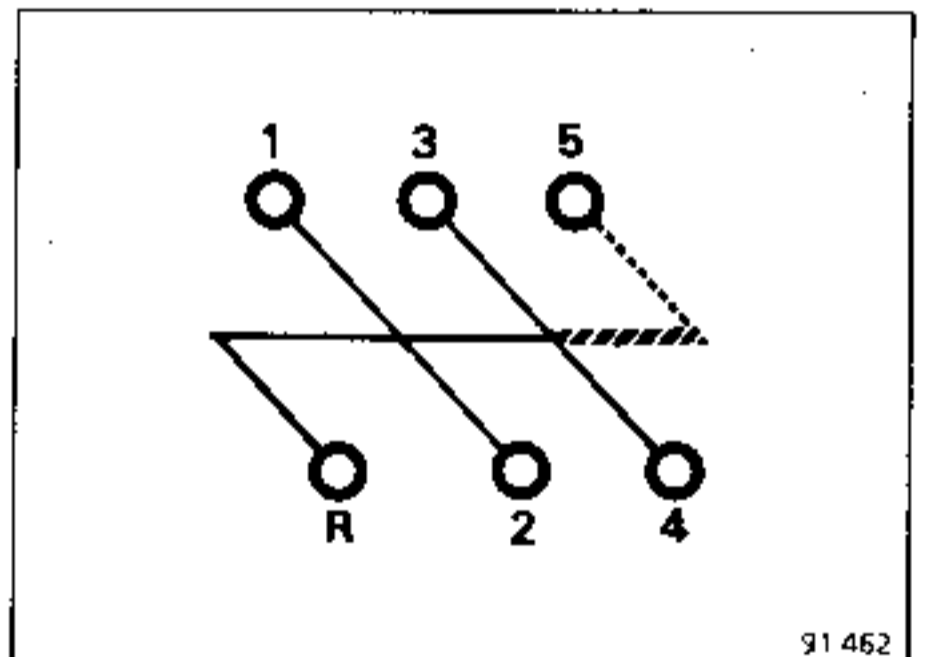
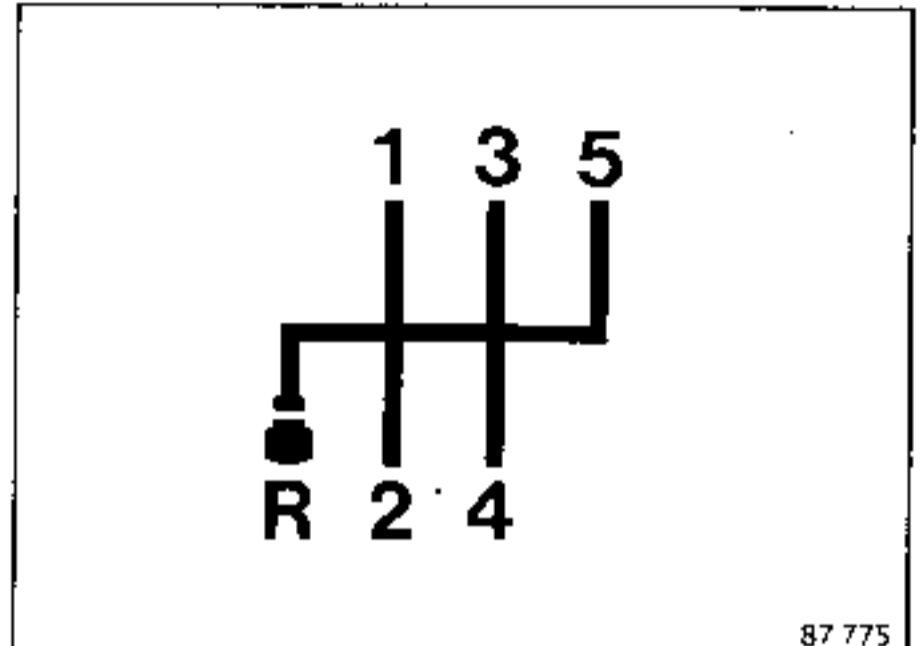
IDENTIFICATION



A plate secured to the rear housing shows:  
 At A : the gearbox type,  
 At B : the gearbox reference,  
 At C : the serial number,  
 At D : the factory at which it was made.



GEAR SHIFT GATE

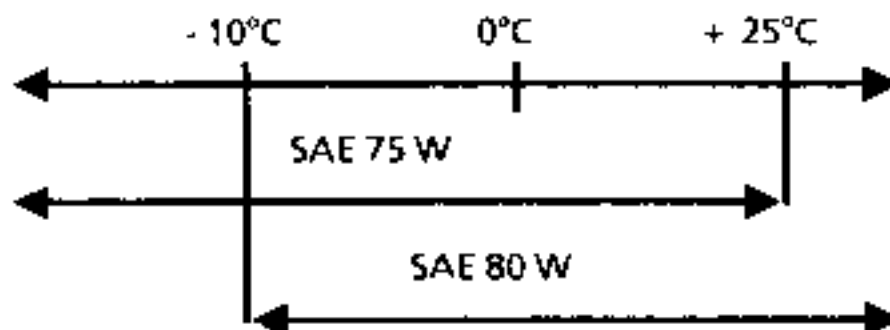


Five synchronised forward speeds :  
 - 1st/2nd : RENAULT synchroniser  
 - 3rd/4th/5th : BORG-WARNER synchroniser

CAPACITIES (in litres)

UN1 (Early type)	3.4
UN1 (Later type)	3
UN5	4

GRADES



GRADES

In order to withstand the thermal stresses inherent to "Petrol Engined Turbocharged" vehicles, their gearboxes must be lubricated only with the new "High Temperature" oil approved by RENAULT : TRANSELF TRX 80 W.

Consequently, two grades of oil are specified.

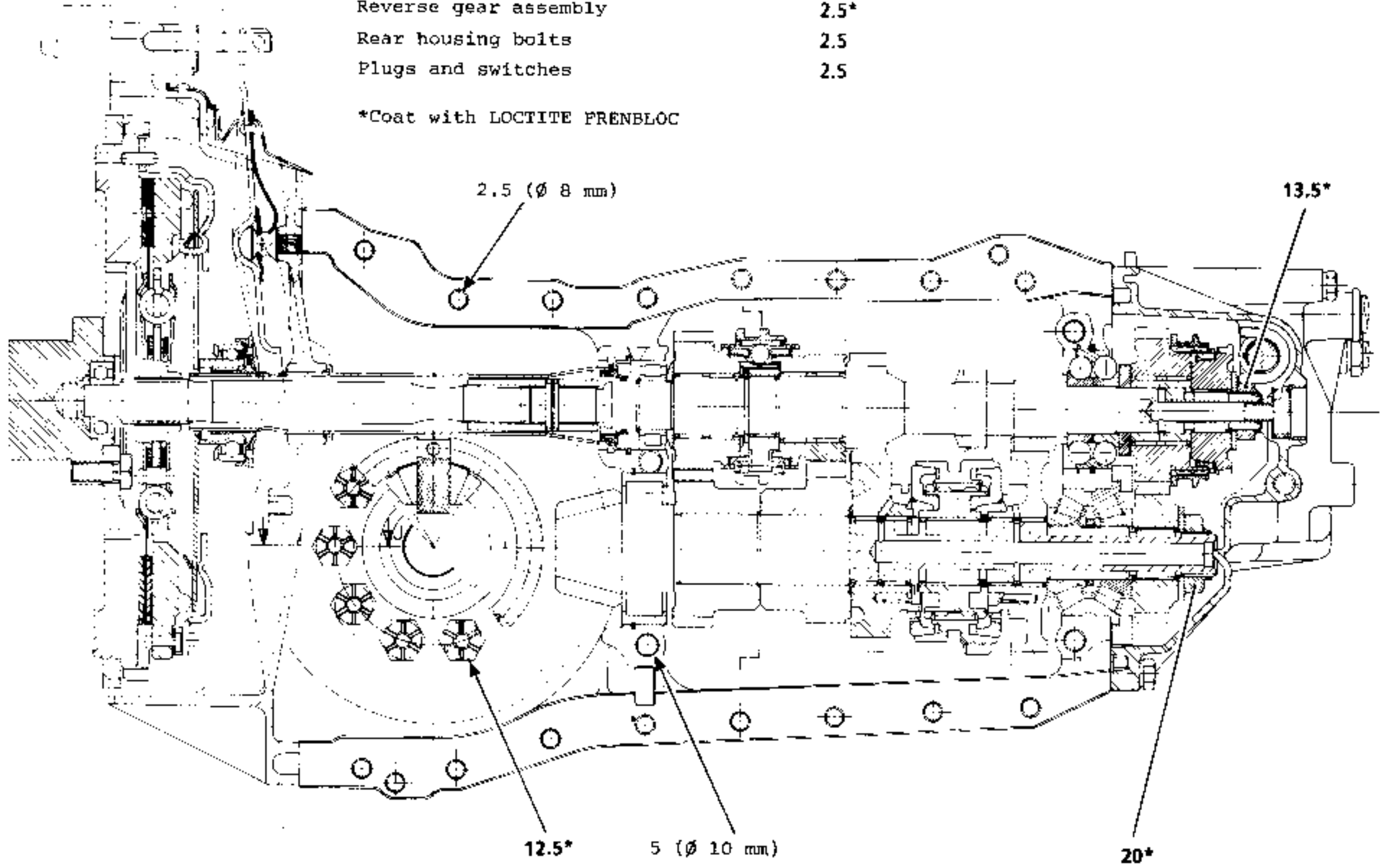
VEHICLE	GRADE
NATURALLY ASPIRATED	APIGL5-MILL2105 B or C
TURBOCHARGED PETROL	TRANSELF TRX 80 W*

(\*) In case of difficulty in obtaining local supplies of this grade of oil, it can be ordered from the Parts Department under the part no. 77 01 417 403 (28 litre cans only).

UN1

Clutch housing bolts	5
Secondary shaft bearing support plate bolts	5
Reverse gear assembly	2.5*
Rear housing bolts	2.5
Plugs and switches	2.5

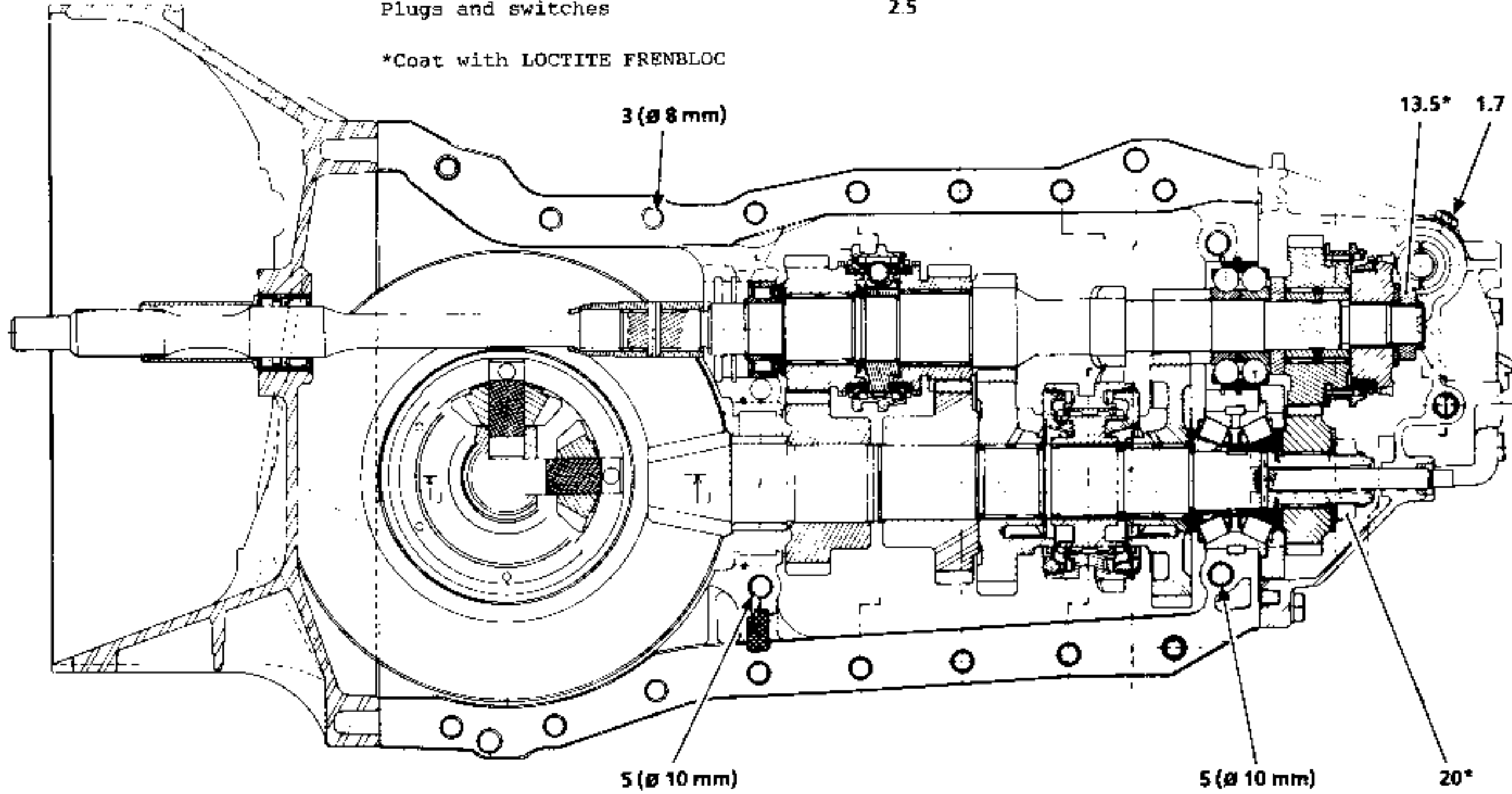
\*Coat with LOCTITE PRENBLOC



**UN5**

Clutch housing bolts	5
Crown wheel bolts	17*
Secondary shaft bearing support plate bolts	5
Lock rocker	3.5
5th speed housing bolts	2.5
Plugs and switches	2.5

\*Coat with LOCTITE FRENBLLOC



UN1

Suffix	Vehicle	Crown wheel and pinion	Speedometer drive	1st	2nd	3rd	4th	5th	Reverse	
00	B29E	9x35	electronic speedometer	11x37	17x35	21x29	27x28	39x32	$\frac{11}{39}$ 25	
01	B29B						28x27	41x31		
03 15	B29E						27x28	39x32		
04	B29A B298 B29F B293						28x27	41x31		
	D500						9x31*	27x28		39x32
06	B298 B293 Armoured						9x37	28x27		41x31
	07						D501	9x31*		28x27
08	B295						9x35	28x27		41x31
13	L485	9x31	23x20	27x28	39x32					

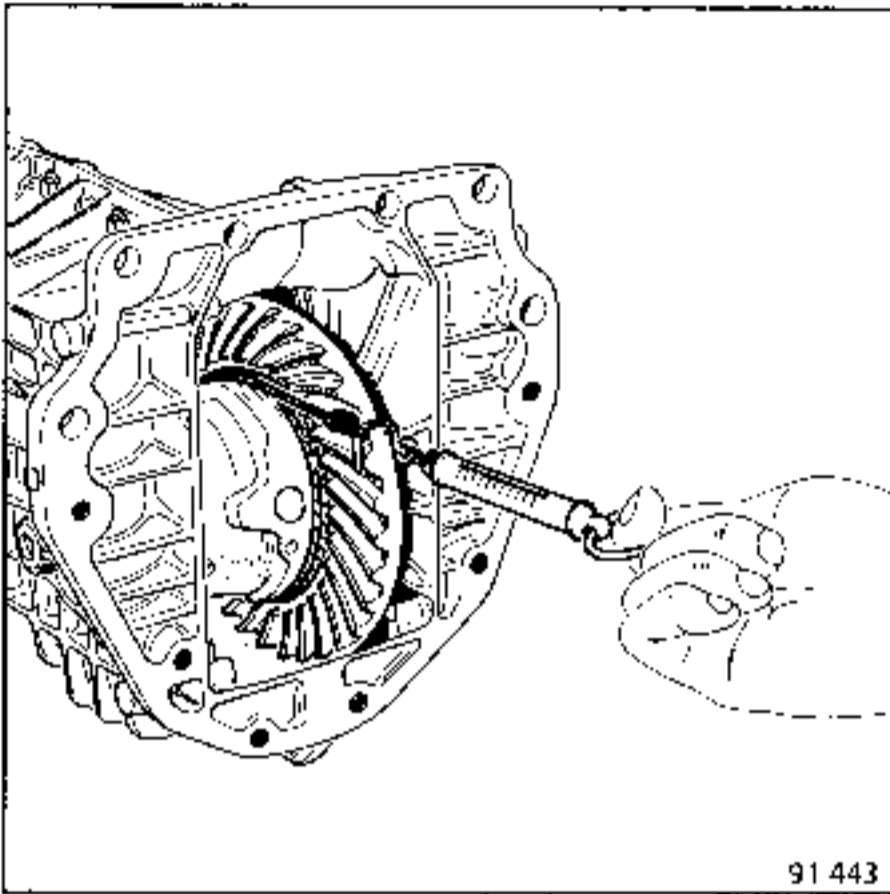
(\*) Special features : the crown wheel is mounted on the opposite side to that of the B29

UN5

The speedometer drive shaft is secured to the secondary shaft

Suffix	Vehicle	Crown wheel and pinion	1st	2nd	3rd	4th	5th	Reverse
00	Rxx2	7x41	11x49	16x39	25x37	27x28	38x33	$\frac{11}{39}$ 25
03 04 07	Rxx3 Rxx4						39x32	
	Rxx2						38x33	$\frac{10}{40}$ 26
06	Rxx3 Rxx4						39x32	

DIFFERENTIAL BEARING PRELOAD (daN)

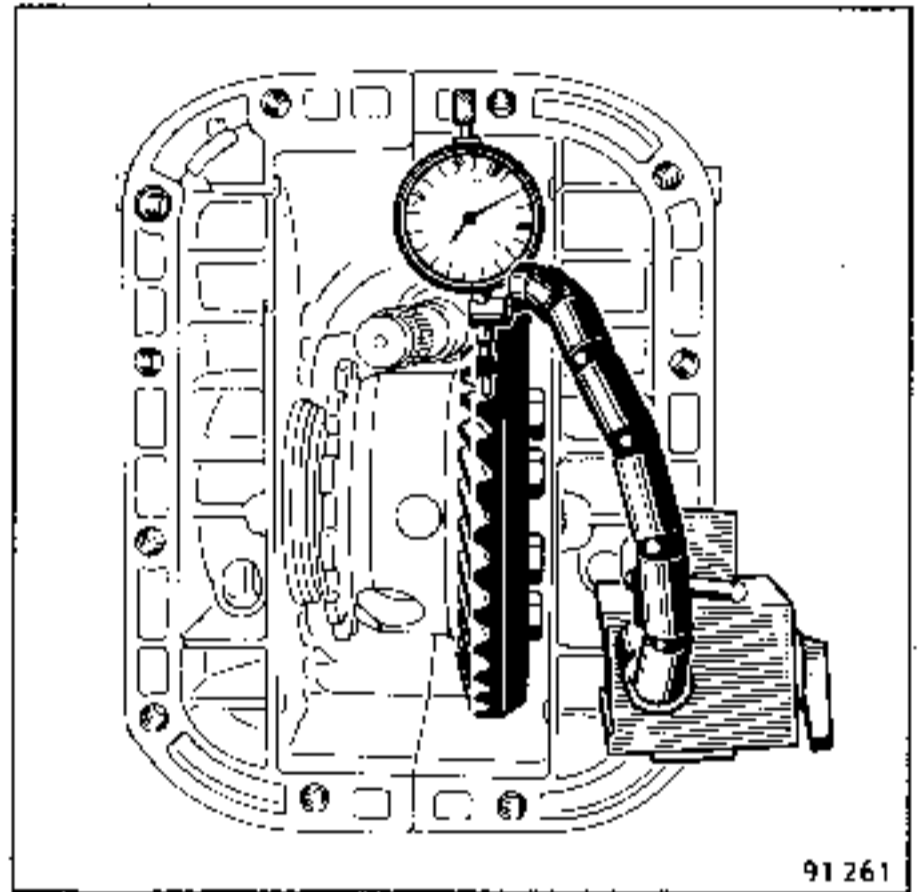


Re-used bearings	New bearings
Free, without play	5 to 6.5 daN

To avoid noise that can result from distortion of the housings during the reassembly phase, when the differential housing bearings are subject to preload it is essential to reassemble the housings by the specified method.

Backlash
0.12 to 0.28 mm

Only on the UNI 005 and 007 Alpine can the backlash be adjusted. However, it is to be checked on all the gearbox types. If the backlash is incorrect, check the positioning of the bearings and that the gearbox half housings and differential housing are correct.



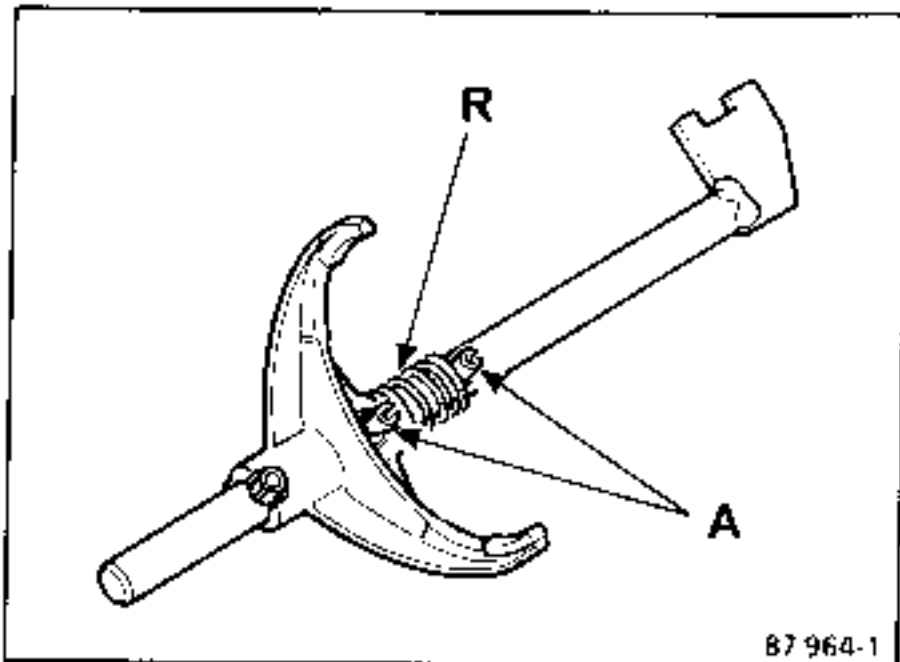
UN1

2nd SPEED SYNCHRONISER ASSISTANCE

This system improves the 2nd speed engagement.

PRINCIPLE OF OPERATION

When second is selected, part of the load applied to the shift fork to move the sliding gear is absorbed by spring (R), on the shift fork shaft, to cause the selector to move instantaneously and to obtain complete but retarded movement of the sliding gear and the shift fork.



PRECAUTIONS

When fitting the 1st/2nd shift fork and its shaft, it is essential to ensure that the pins (A) are in the correct positions to prevent any possibility of their making contact with the 1st speed gear. They must not project past the spring coils, at the top.

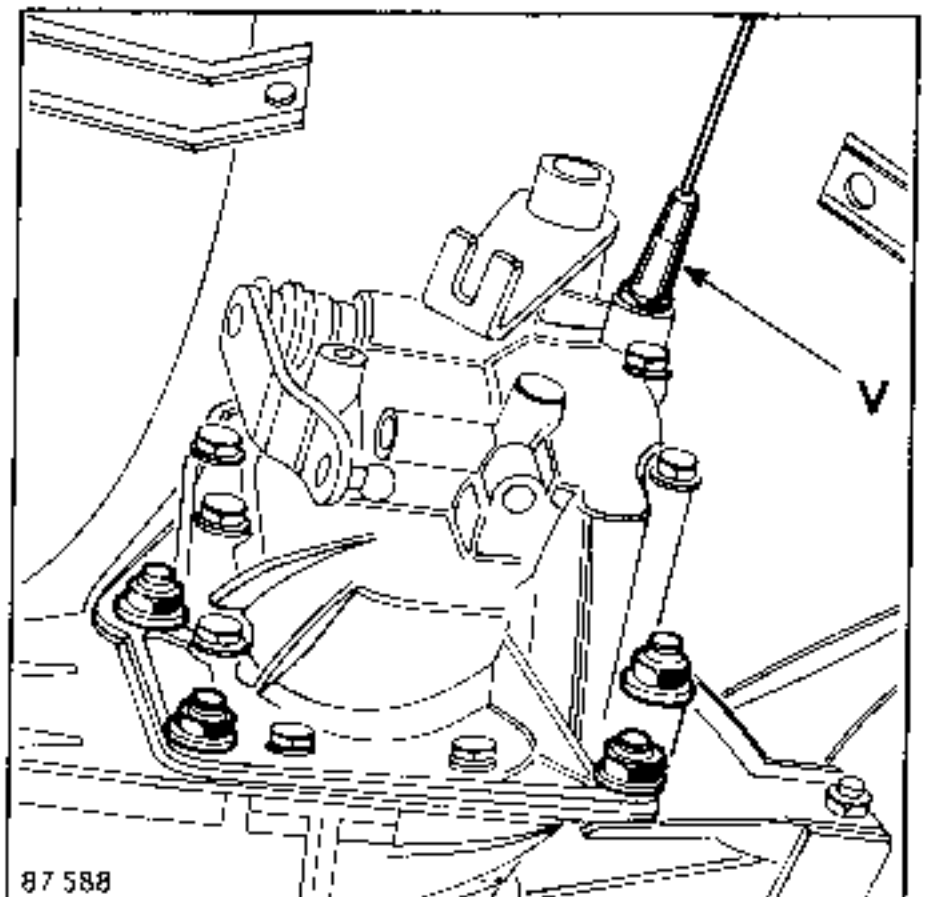
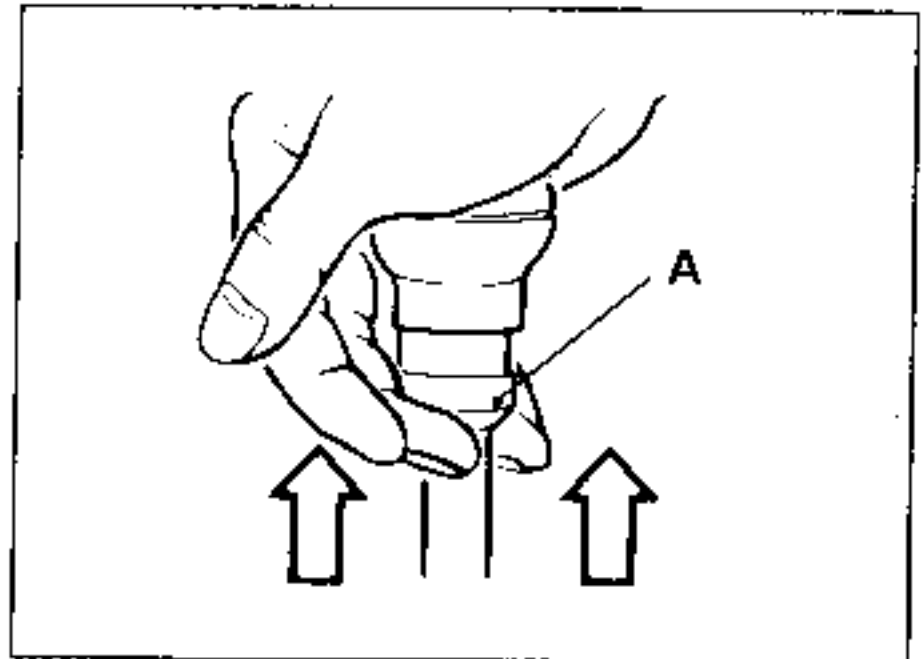
REVERSE POSITIVE LOCK

This system prevents accidental snagging of reverse when changing quickly from 2nd down to 3rd.

PRINCIPLE OF OPERATION

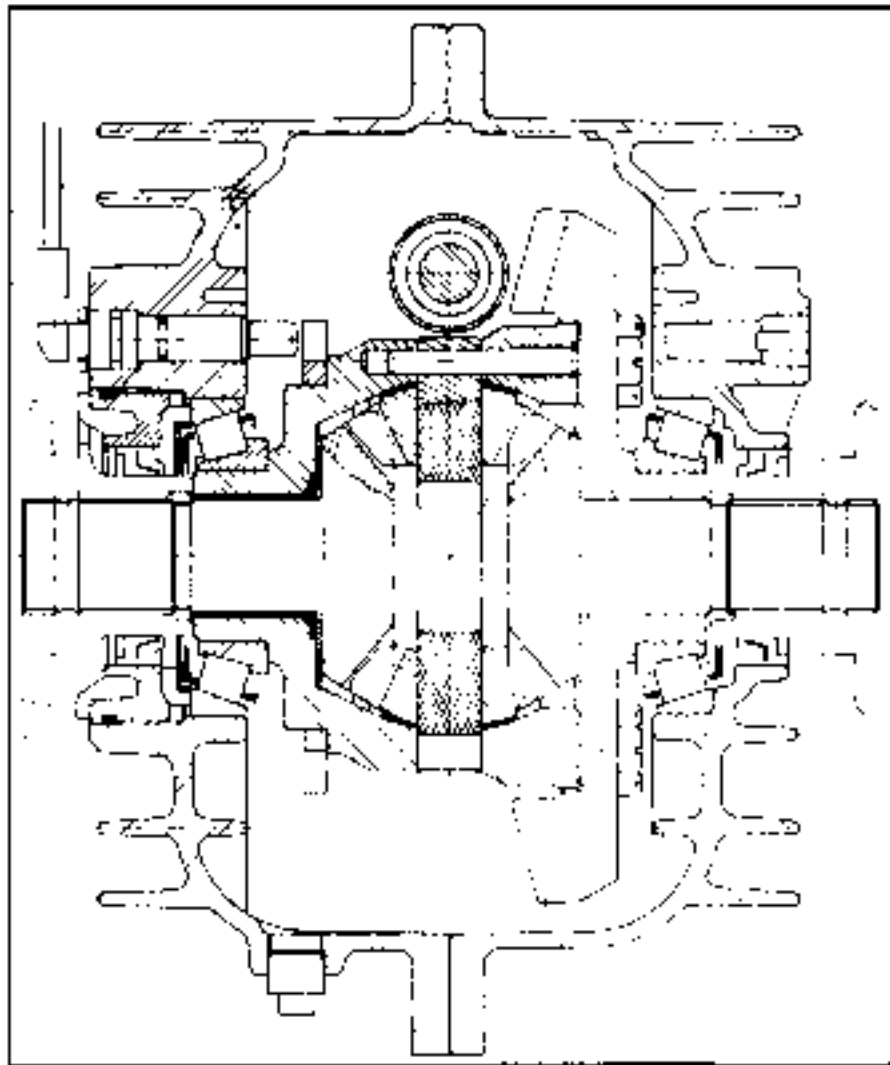
To select reverse, lift the lock ring (A) and move the shift lever. The lock ring operates, through a cable, on the lock lever (V) which is in the gearbox rear housing.

Moving this lever out of the way permits reverse to be selected.

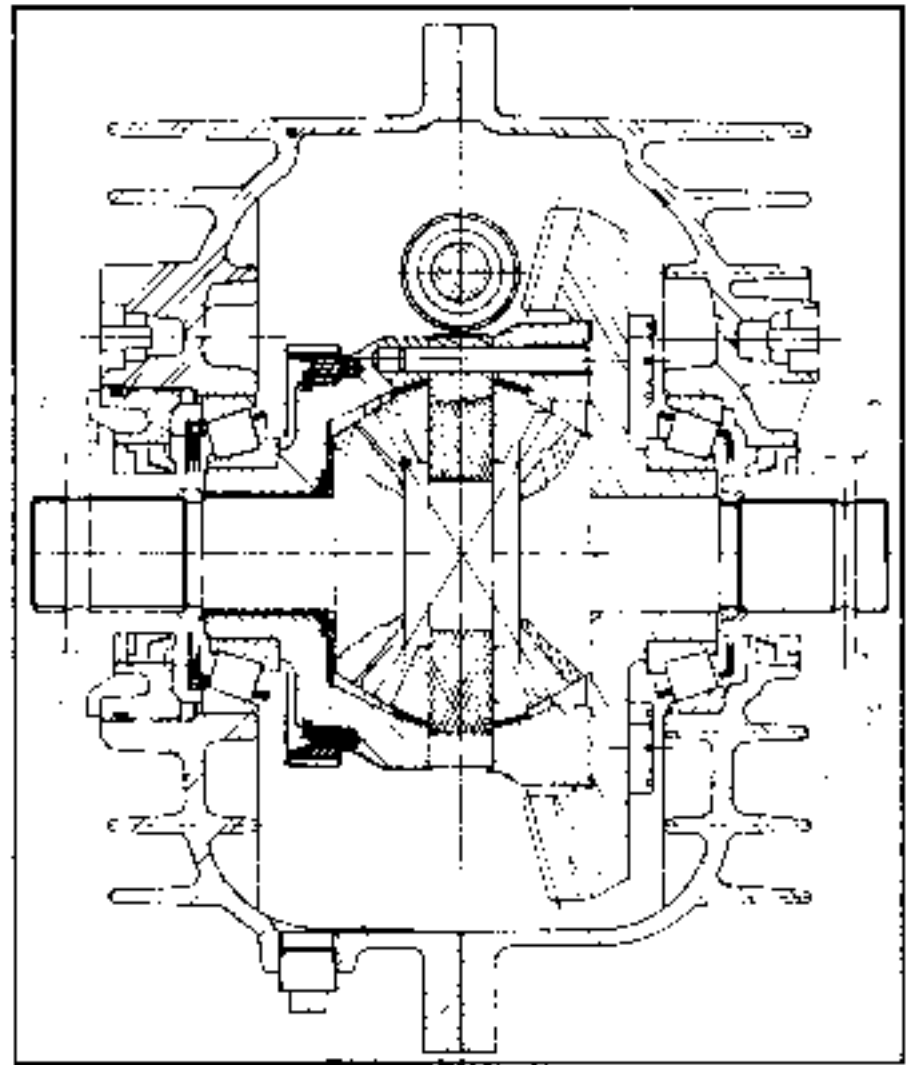


Direction in which the crown wheel is fitted  
(seen from clutch housing end)

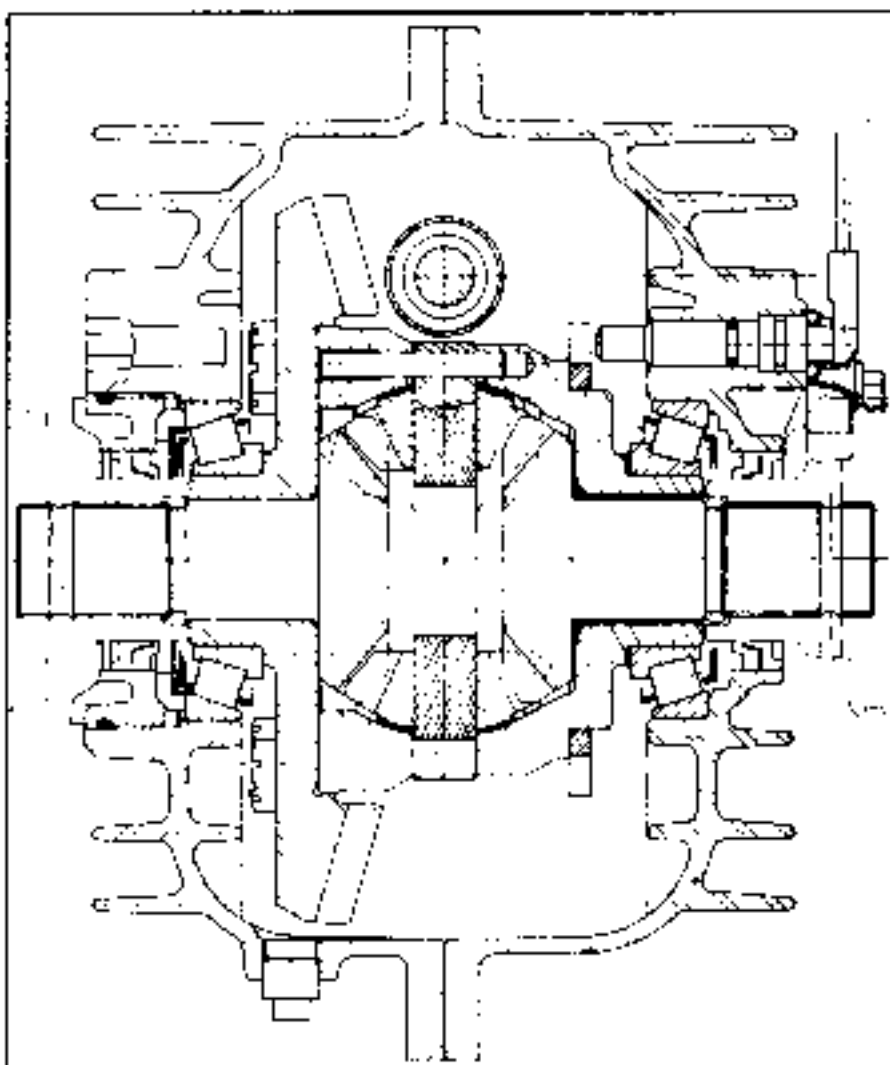
UN1 (B29)



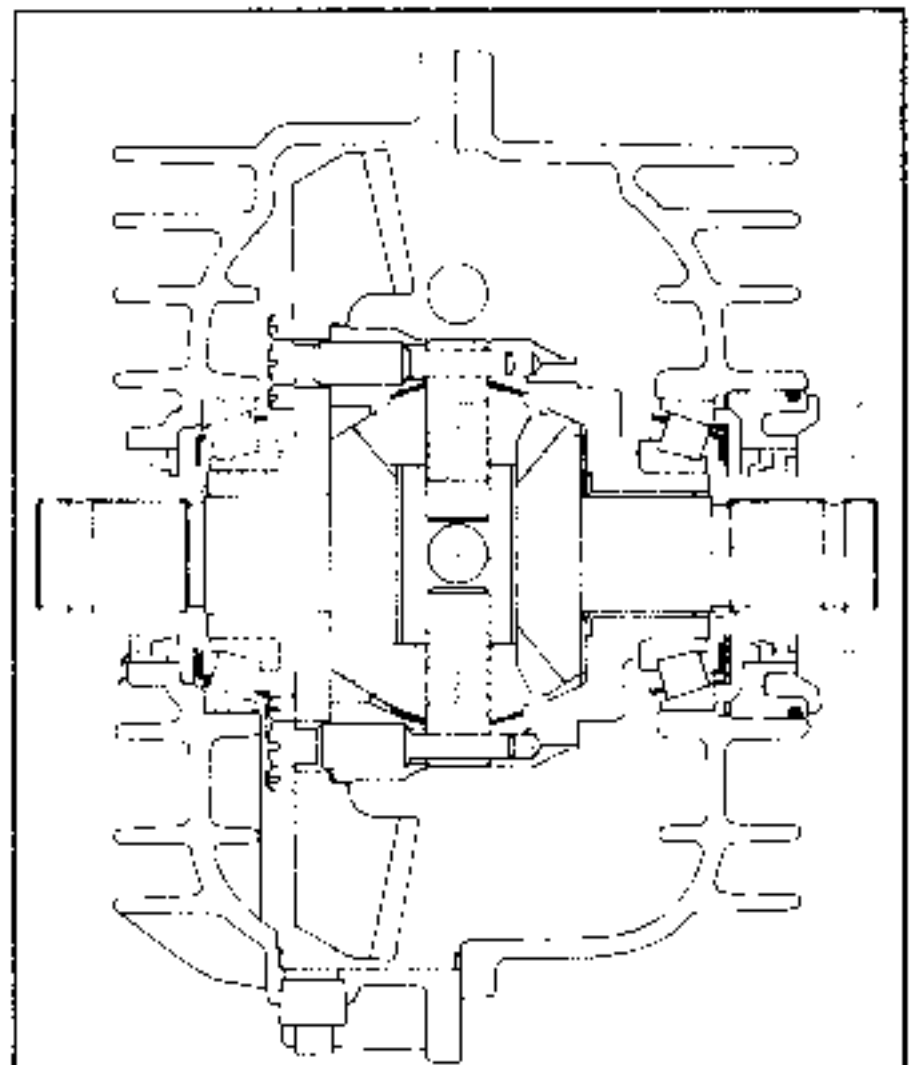
UN1 (L48)



UN1 (D50) Alpine



UNS (4 planet wheels)





MATCHED COMPONENTS

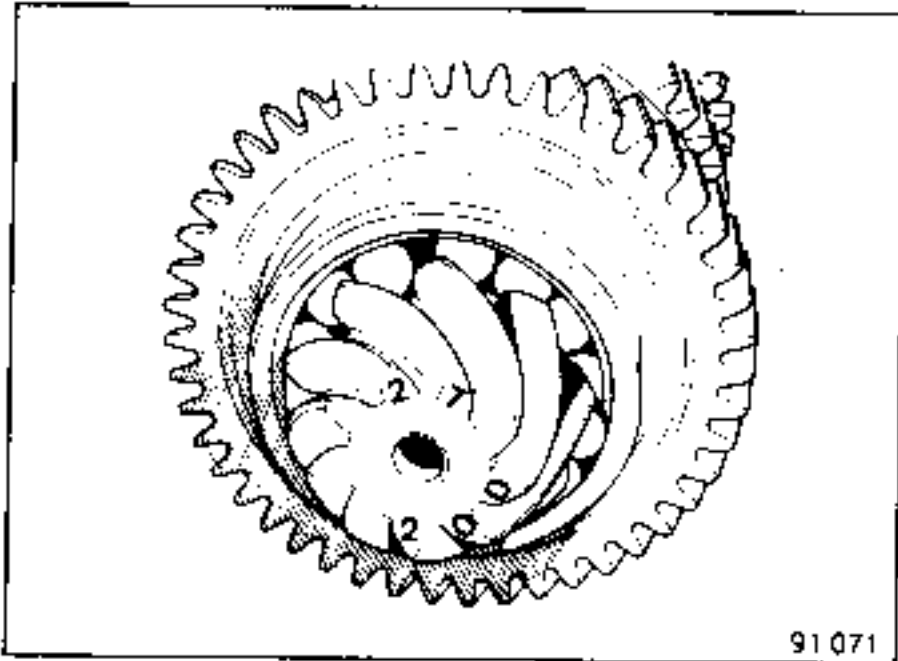
- Crown wheel and pinion.
- Synchroniser hubs and sliding gears.
- Differential bearing track rings and cage assemblies.

CROWN WHEEL AND PINION MATCHING

The crown wheel and pinion are lapped together during manufacture.

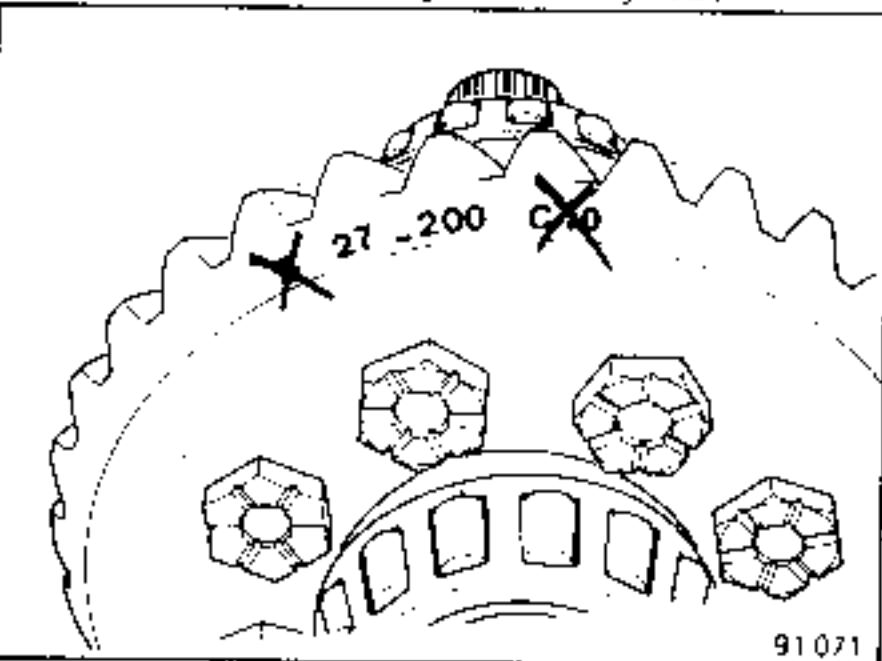
They are therefore inseparable.

The replacement of one of these parts involves, automatically, the replacement of the other.



A common reference mark appears on both crown wheel and pinion.

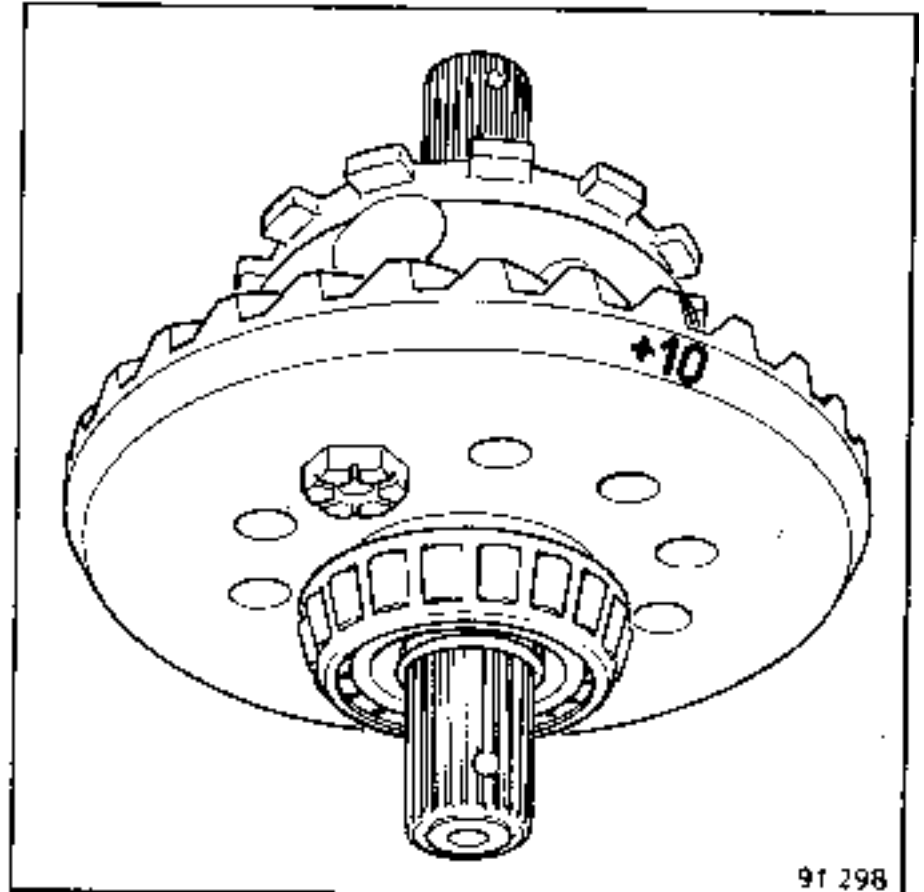
Example : 27-200 (the 27th crown wheel and pinion set machined on the 200th day of the year)



The pinion depth is not adjustable.

SPECIAL FEATURES OF THE UNI 005 AND 007 (Alpine)

The rear face of the crown wheel carries a second figure preceded by the sign "+" or "-", this figure is used during the backlash adjustment.



HUB/SLIDING GEAR MATCHING

In all cases, we recommend that the position of the sliding gear should be marked with reference to the hub.

The 3rd/4th synchroniser hub runs free on the primary shaft and is retained, longitudinally, by a circlip.

## 1. UN1

### Primary shaft

The lip seal runs directly on the primary shaft and therefore if the sealing area is in bad condition, the primary shaft must be replaced.

Type UN1 gearboxes are equipped with an electronic speedometer (except for the UN1 013).

The sensor ring cannot be removed.

## 2. UN5

The mechanical speedometer drive shaft on type UN5 gearboxes is connected to the secondary shaft and has a direct outlet on the rear housing.

The release bearing guide tube carries a bearing and a lip seal. It cannot be removed until after removal of the clutch housing.

The lip seal and the guide tube bearing rollers run directly on the clutch shaft.

Damage to the seal or bearing area involves replacement of the clutch shaft.

## 3. ALL TYPES

Synchronisation is on two shafts :

- 1st/2nd synchronisation is on the secondary shaft,
- 3rd/4th and 5th speed synchronisation is on the primary shaft.

The 5th speed fixed gear and dog must be bonded with Loctite SCELBLOC.

The primary and secondary shaft nuts and the reverse assembly bolt must be bonded with Loctite FRENBLOC.

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Parts that must be replaced each time they are removed

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Each time the following are removed :

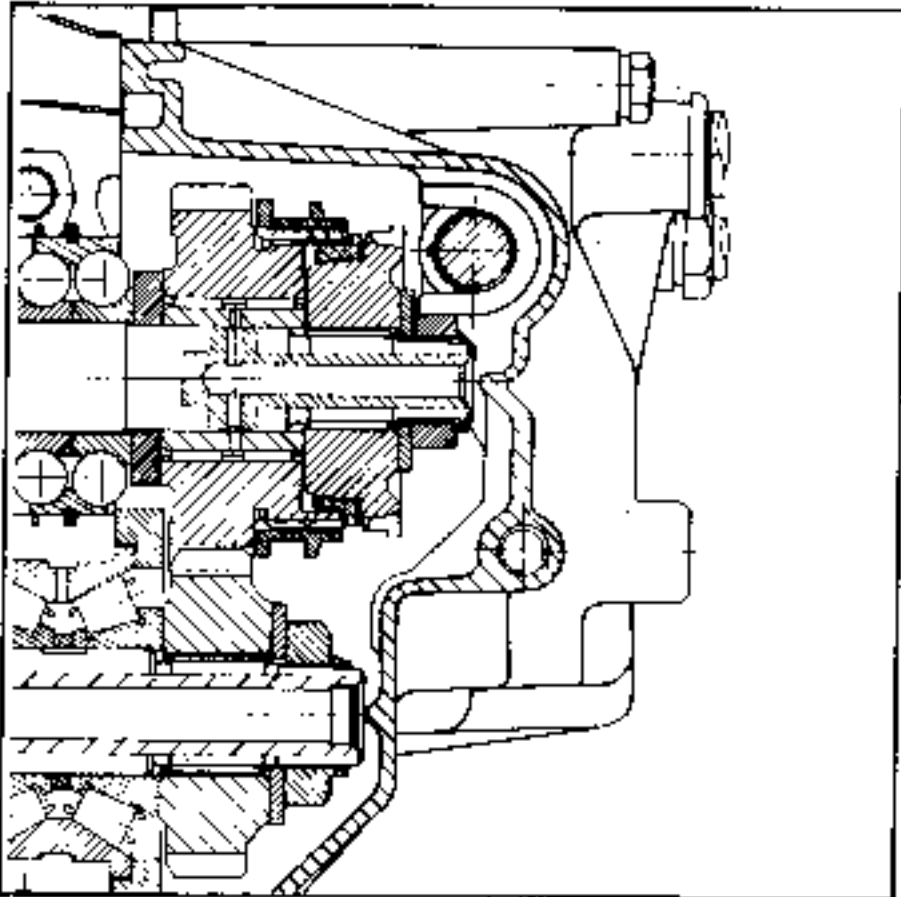
- the paper gaskets,
- the lip seals,
- the differential housing securing bolts,
- the spring pins,
- the reverse assembly bolt,
- the O ring seals,
- the circlips,
- the release bearing guide tube,
- the nuts on the primary and secondary shafts,

they must be replaced by new ones.

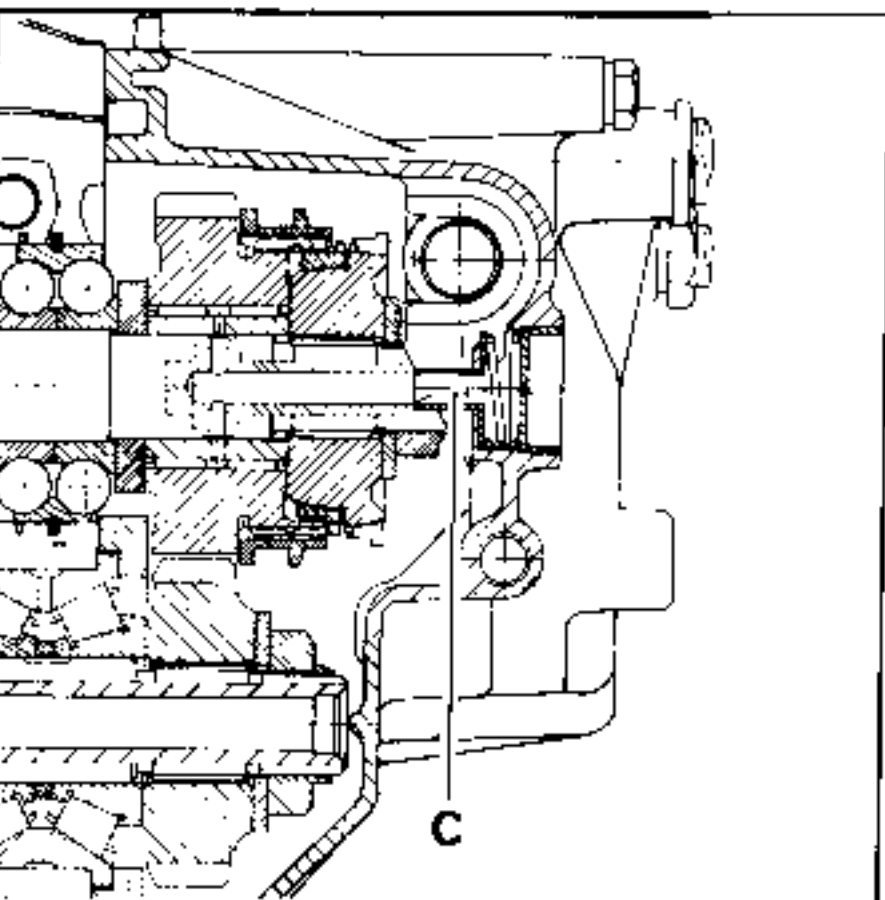
1. IMPROVED 5th GEAR LUBRICATION

The 5th speed housings of UN1 gearboxes of the later type are equipped with a lubrication duct (C) to improve the lubrication of the 5th speed needle race. The primary shaft has been modified to receive this duct.

Early type



Later type



Do not fit an old type primary shaft to a new type housing, as a replacement part.

2. STANDARDISATION

The oil level has been lowered on all type UN1 gearboxes.

CAPACITY : 3 litres instead of 3.4 litres.

3. LUBRICATION

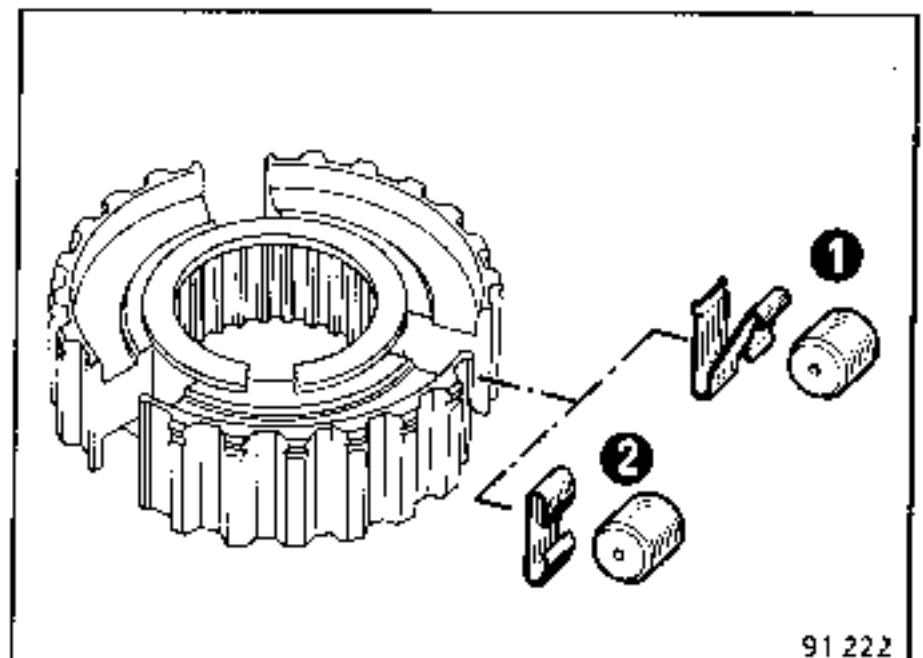
The grade of oil used in PETROL ENGINED TURBOCHARGED vehicles has been altered.

In order to resist, more effectively, the thermal stresses inherent to these vehicles, the manual gearboxes fitted to them must be lubricated exclusively with the new "high temperature" gearbox oil approved by Renault :

TRANSELF TRX 80 W

4. MODIFICATION OF THE TYPE OF ROLLER SPRING FITTED TO THE 3rd/4th SPEED SYNCHRONISER (BORG-WARNER)

The springs, referred to as "Z" springs used until recently, have been replaced by springs referred to as "heart shaped".



1 : early type

2 : later type

In order to permit the fitting of the "heart shaped" springs, the lead chamfer on the recess under the 3rd and 4th speed idle gear synchroniser cones have been modified.

Consequently, springs of the "heart shaped" type can only be used with the modified type idle gears.

Parts Department Pack Sizes

Description	Pack size	Part no.	To be used on :
Grease No. 20	1 g sachet	77 01 032 832	Sun wheel splines Shaft ) Fork pivot ) Clutch Release bearing guide) Fork pads )
LOCTITE "518"	24 ml syringe	77 01 421 162	Housing assembly faces
CAF 4/60 THIXO	100 g tube	77 01 404 452	Screwed plugs and switches Locking ball plugs Ends of spring pins on drive shafts
LOCTITE SCELBLOC (locking and sealing resin)	24 cc flask	77 01 394 072	5th speed fixed gear 5th speed dog
LOCTITE FRENBLOC (locking and sealing resin)	24 cc flask	77 01 394 071	Primary shaft nut Secondary shaft nut Reverse assembly bolt Crown wheel bolts
"LOWAC" PERFECT SEAL (coating fluid for gaskets)	100 g tube	77 01 417 404	Paper gaskets on rear and clutch housings
Gearbox oil			Immersion of all gearbox parts

Grating when a gear  
is engaged  
(after the clutch has been  
checked)

Remove the gearbox

Check the synchroniser assembly of  
the defective gear :  
- gear and synchroniser ring friction  
cones,  
- synchroniser hub and springs,  
- fixed and sliding gear dogs.

Impossible to engage gears  
(after the clutch has been checked)

Check  
the area  
round the gear  
shift  
linkage

Correct

In-  
correct

Free the gear  
shift linkage

Check  
condition  
of linkage  
components

Correct

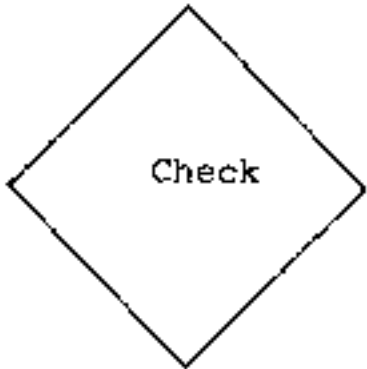
In-  
correct

Remove the  
gearbox

Replace any  
defective parts

Check the  
gearbox  
locking system

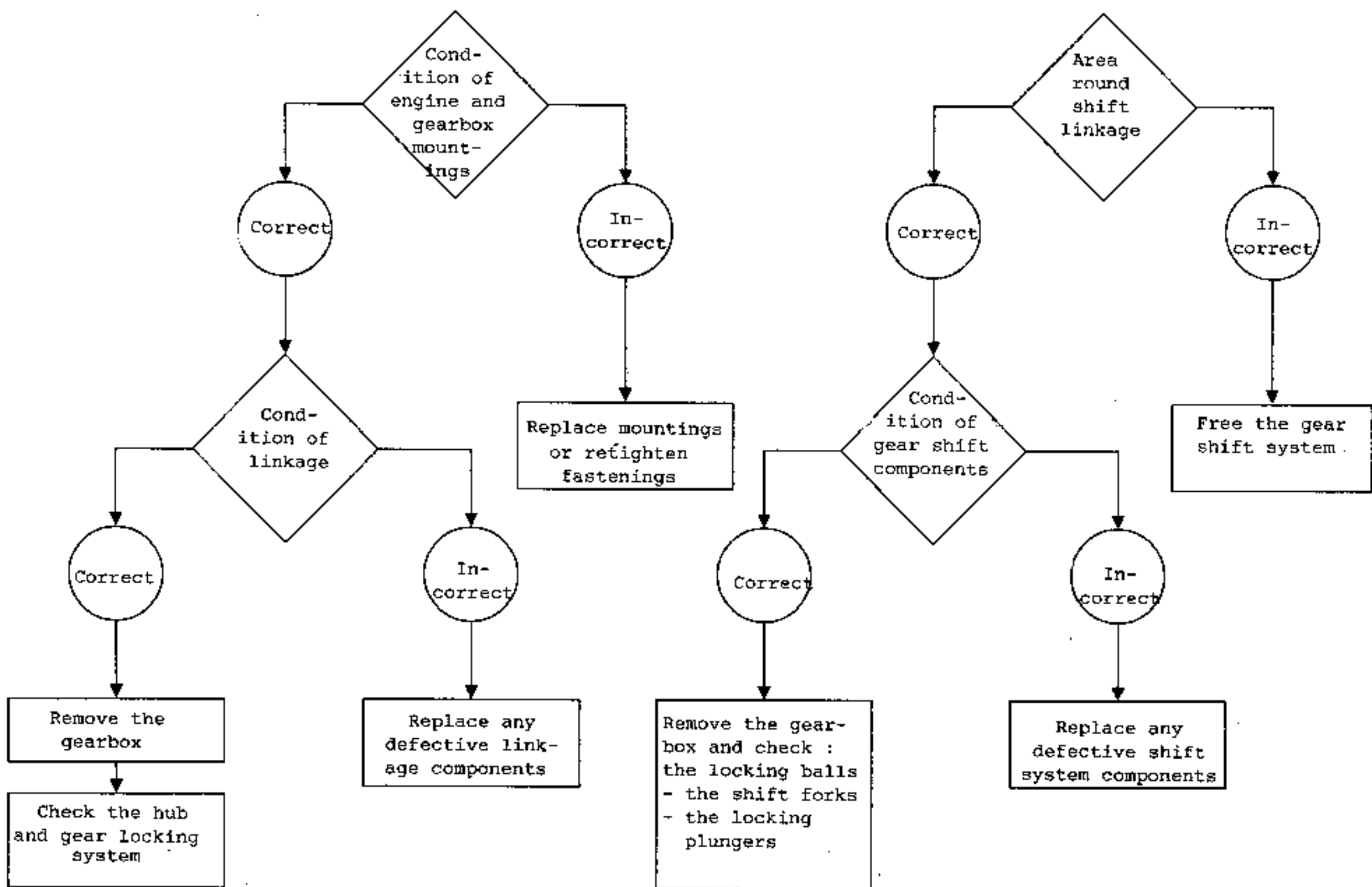
KEY



Operations  
to be carried out

Slipping out of gear

Locking in a gear



ESSENTIAL SPECIAL TOOLS

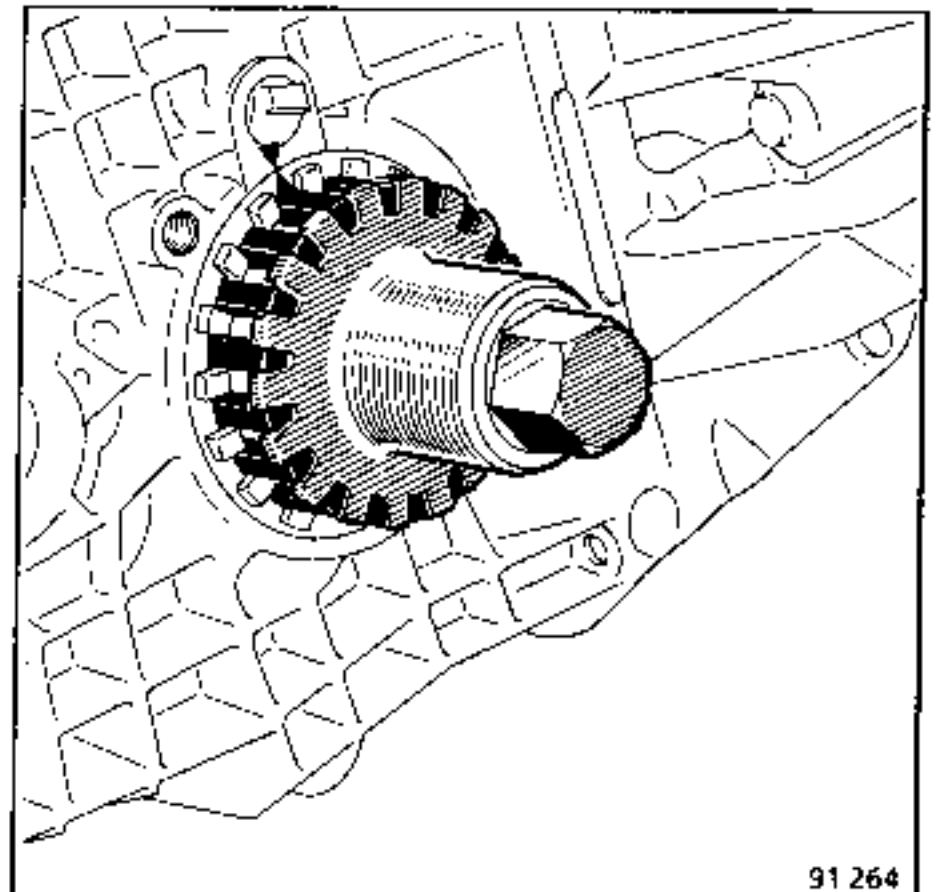
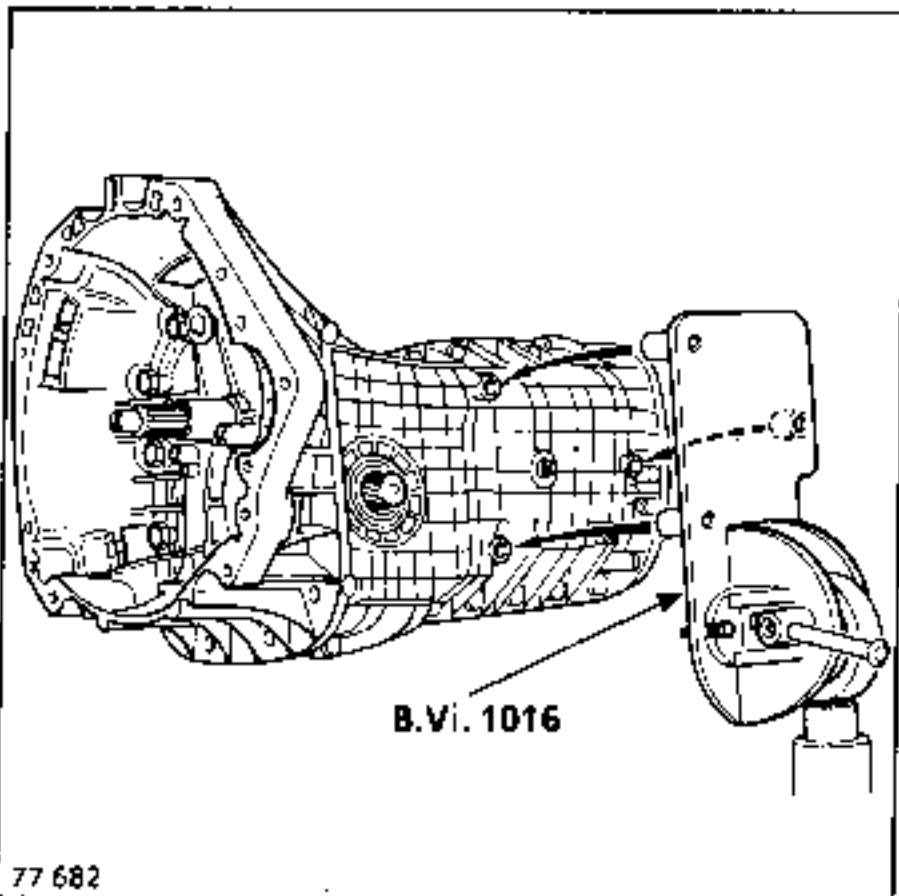
- B.Vi. 28-01 Extractor body
- Rou. 15-01 Shaft protector
- B.Vi. 645 Castellated spanner for adjusting the differential play
- B.Vi. 805 Spanner for differential nut
- B.Vi. 1007 Claws for B.Vi.28-01
- B.Vi. 1016 Gearbox support

The operations of dismantling and reassembling the various component parts are to be carried out on a bench the covering of which protects them against shock

(rubber or thick plastic)

Mount the gearbox on support B.Vi. 1016.

Use tools B.Vi.645 and B.Vi.805 so as not to damage the lip seal.



Make position marks on the housing and the differential nut.

Remove the locking plate.

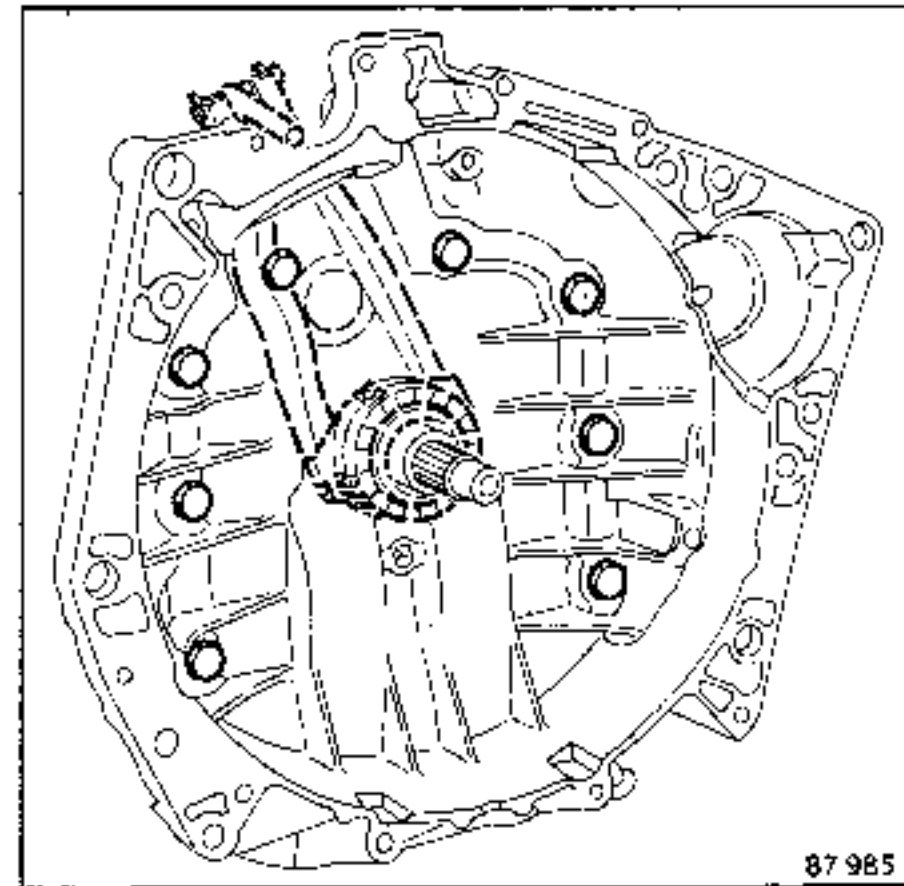
Loosen the nut by 1/6 turn (3 castellations) to release the differential bearing preload.

Remove the release bearing.

Free the fork from its pivot and remove it.

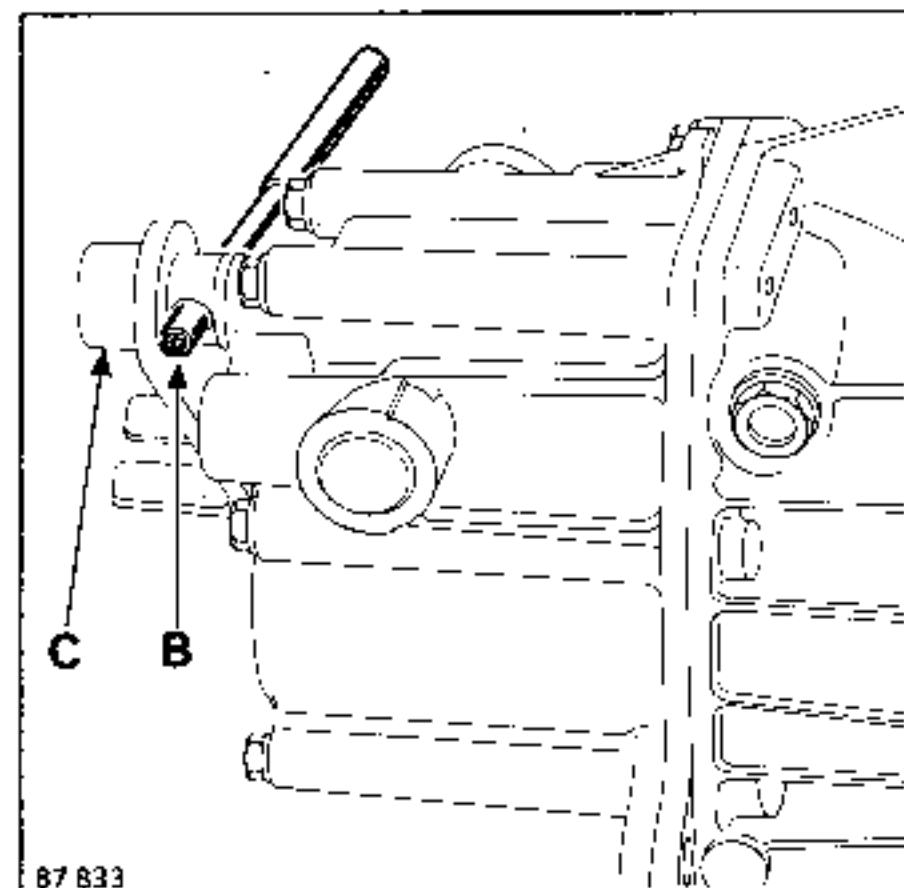
Remove :

- the clutch housing securing bolts,
- the clutch housing.

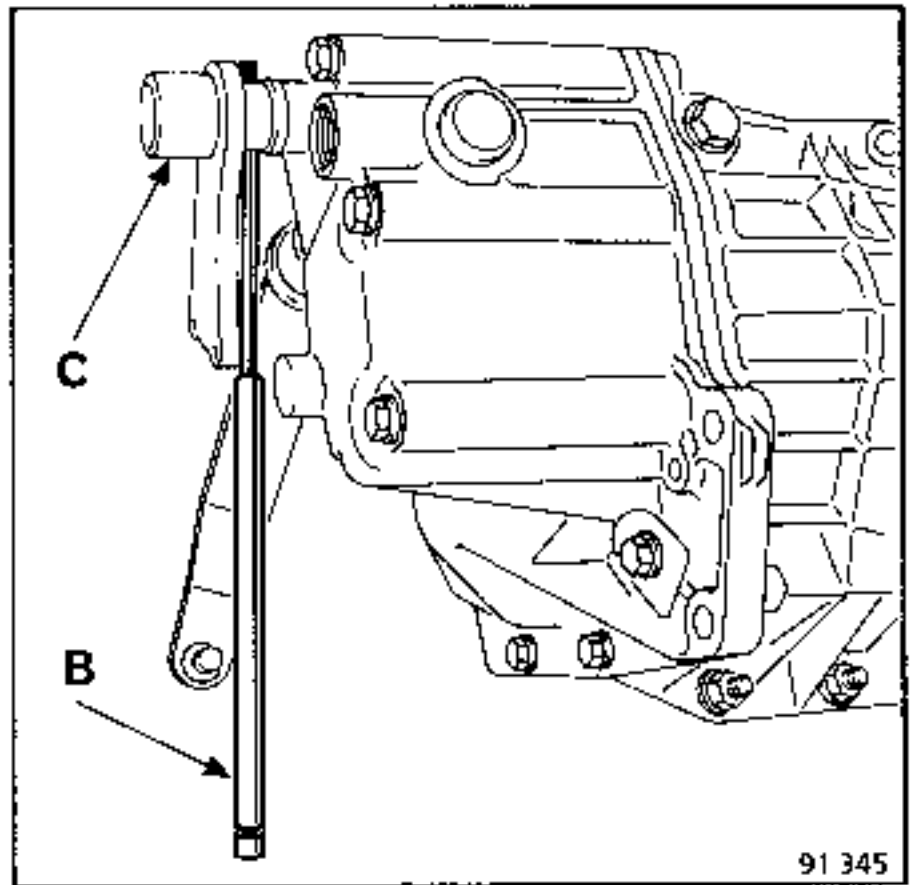


- the pins (B), internal :  $\varnothing$  4 mm,  
external :  $\varnothing$  7 mm,
- the sleeve (C).

UN1 (B29)

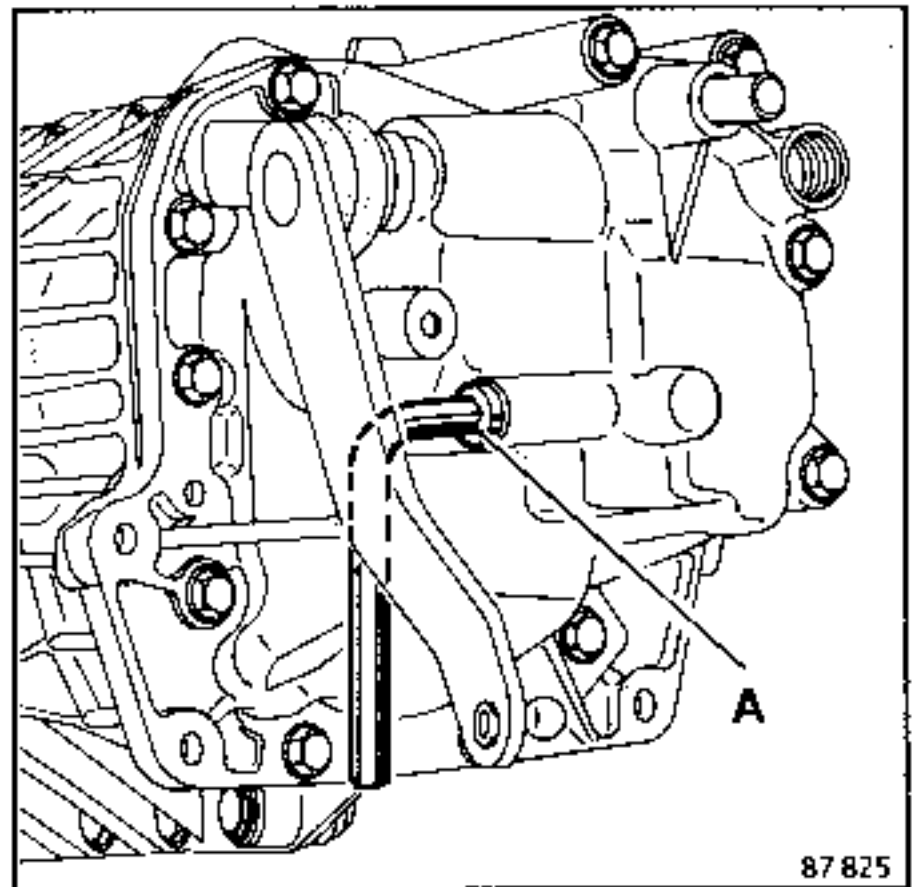


UN1 (L485)



Remove :

- the 5th speed locking ball assembly (A),

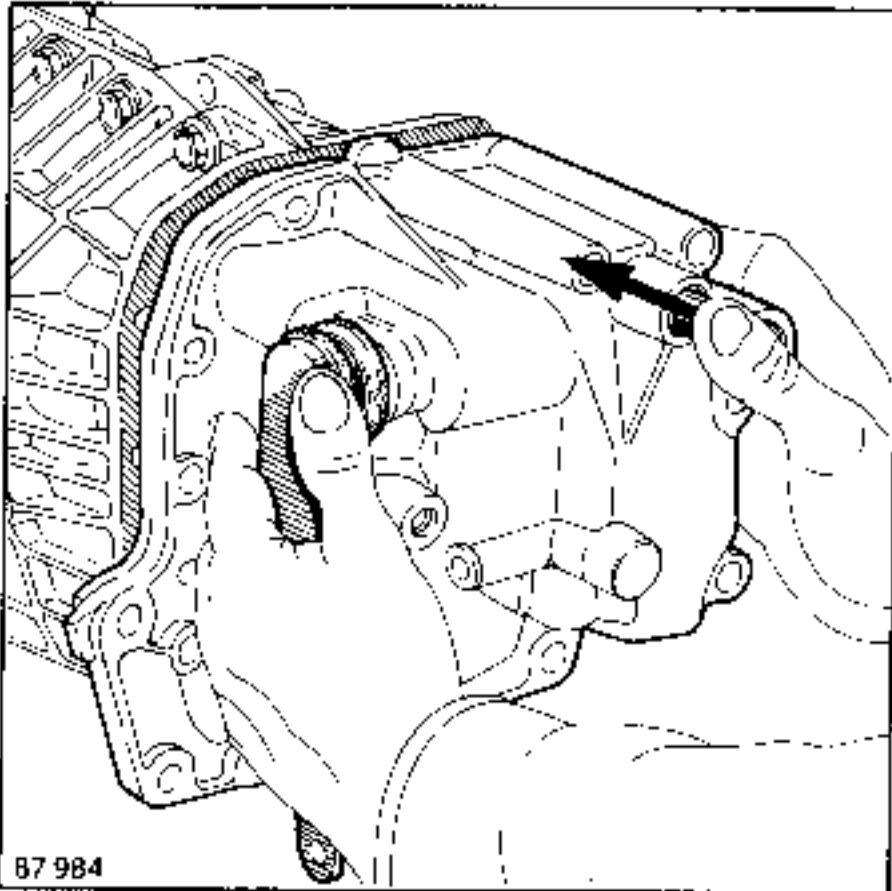


- the rear housing (with the gearbox in neutral).



**UN1**

Remove the housing by pushing the selector lever.



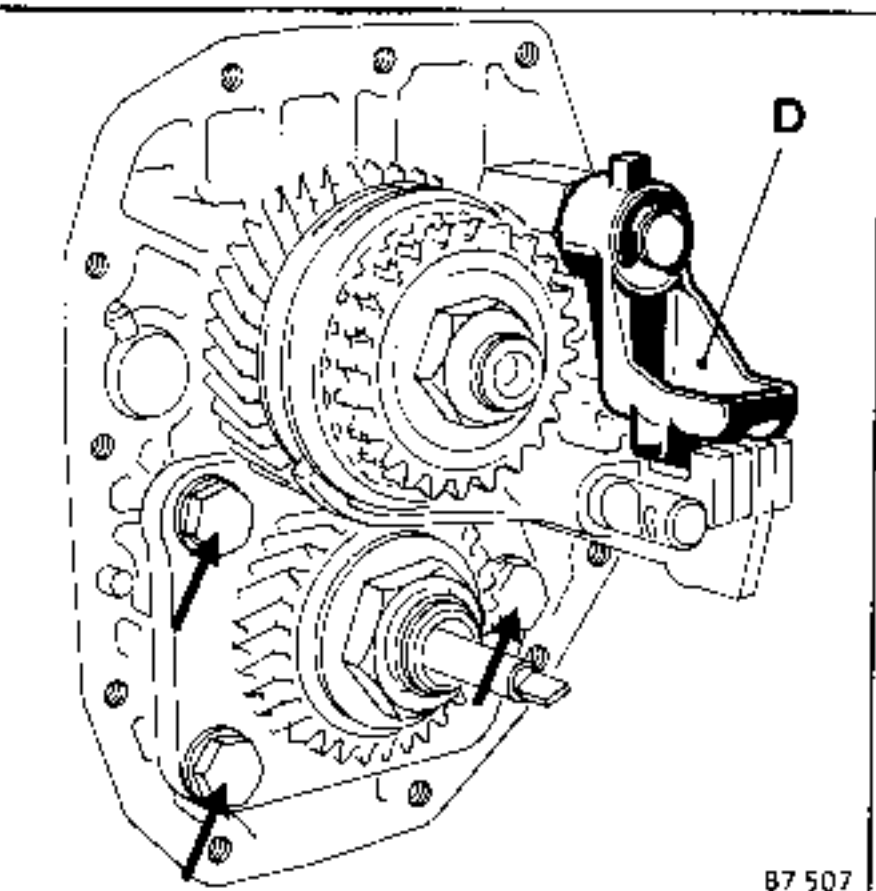
Select 2 gears simultaneously : reverse and 4th.

Loosen the primary and secondary shaft nuts.

Return to the neutral position.

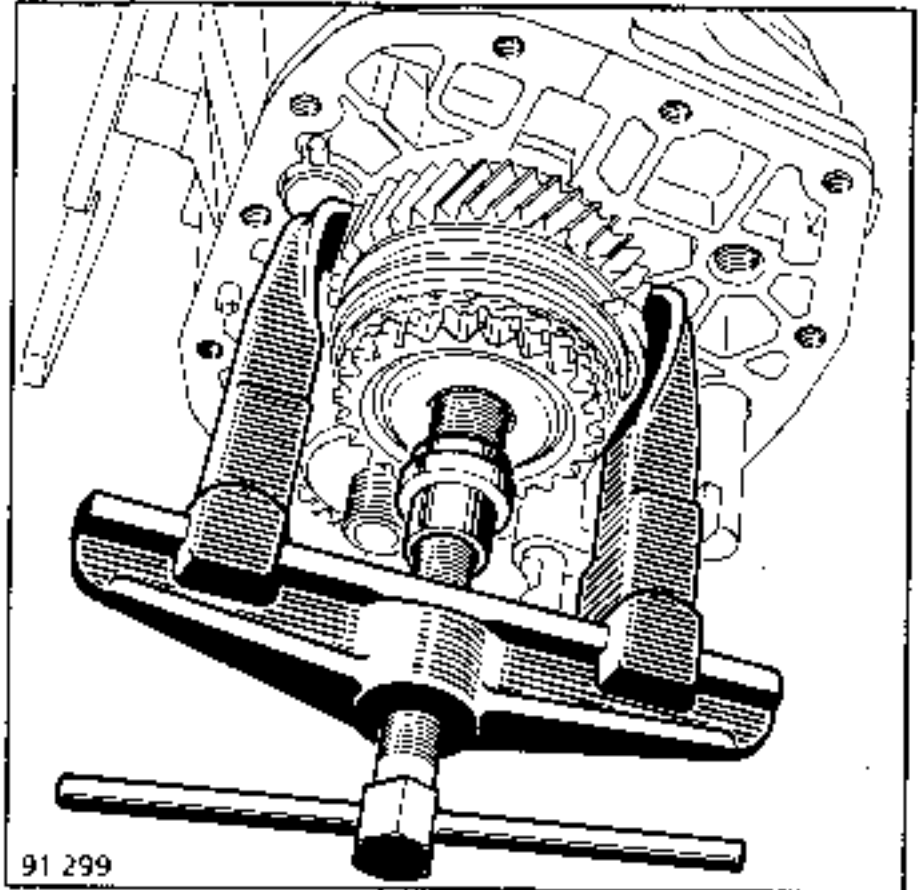
**UN5**

Remove the locking rocker (D).



Place an extractor of the FACOM U32-120 type, or an equivalent, on the primary shaft with protector Rou. 15-01 between it and the shaft and extract the 5th speed assembly :

- idle gear,
- sliding gear,
- fork and shaft,
- synchroniser ring,
- dog.



Mark the position of the sliding gear on the hub.

Remove the 3 bolts from the plate that retains the double taper roller bearing.

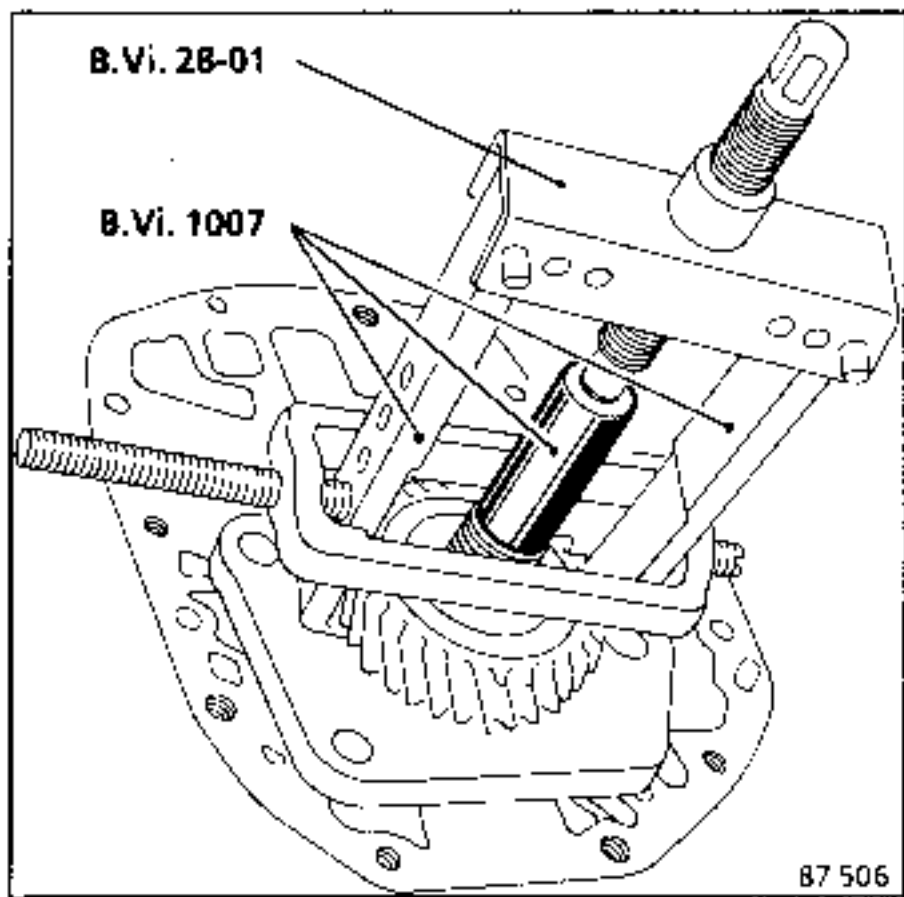
REMOVING THE 5th SPEED FIXED GEAR

There are two possibilities :

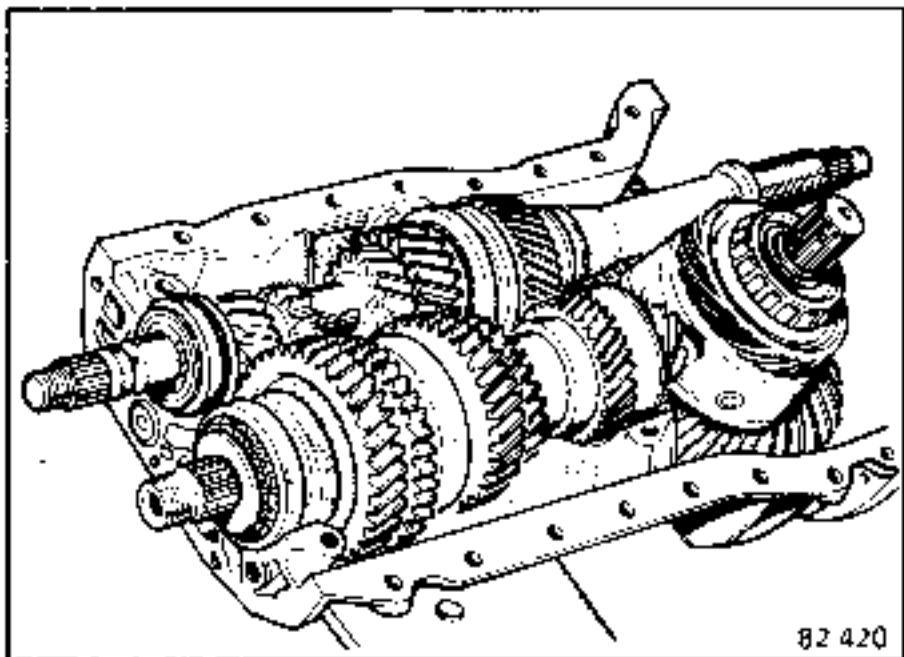
1. Extracting the fixed gear using B.Vi. 28-01 fitted with claws B.Vi.1007.

UN5 (Special feature)

Fit the protector from B.Vi.1007 so that the load is taken on the secondary shaft and not on the speedometer drive shaft.



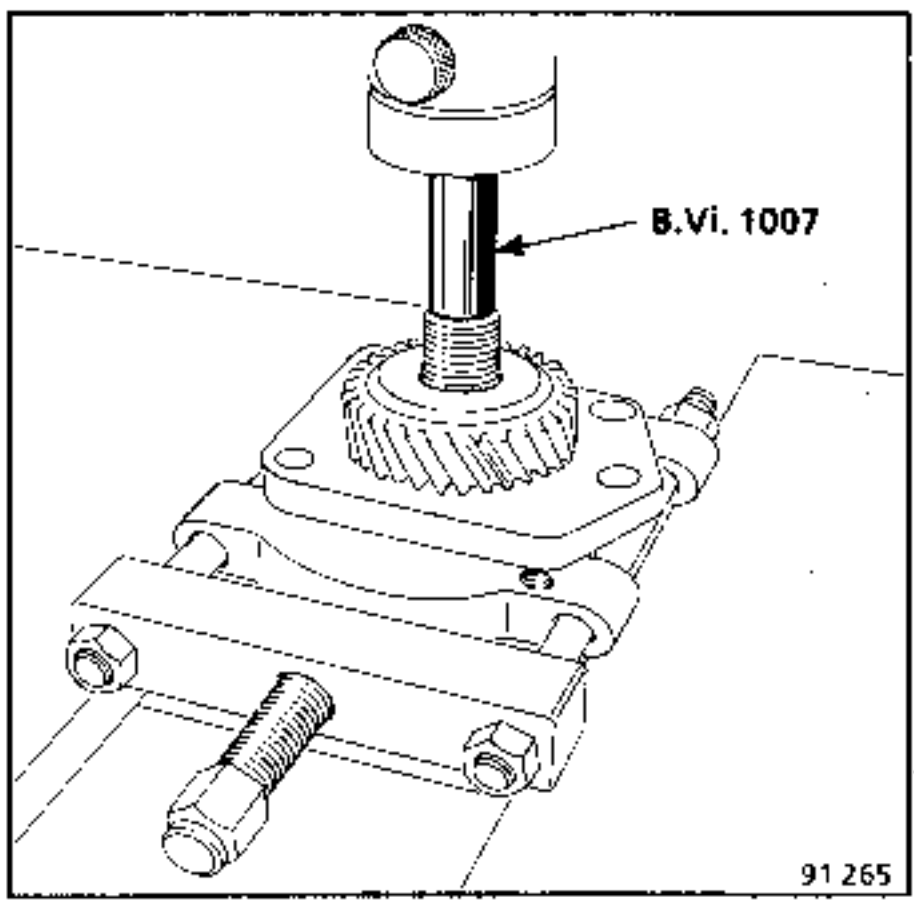
Remove the double taper roller bearing retaining plate and separate the housings.



2. Separate the housings.

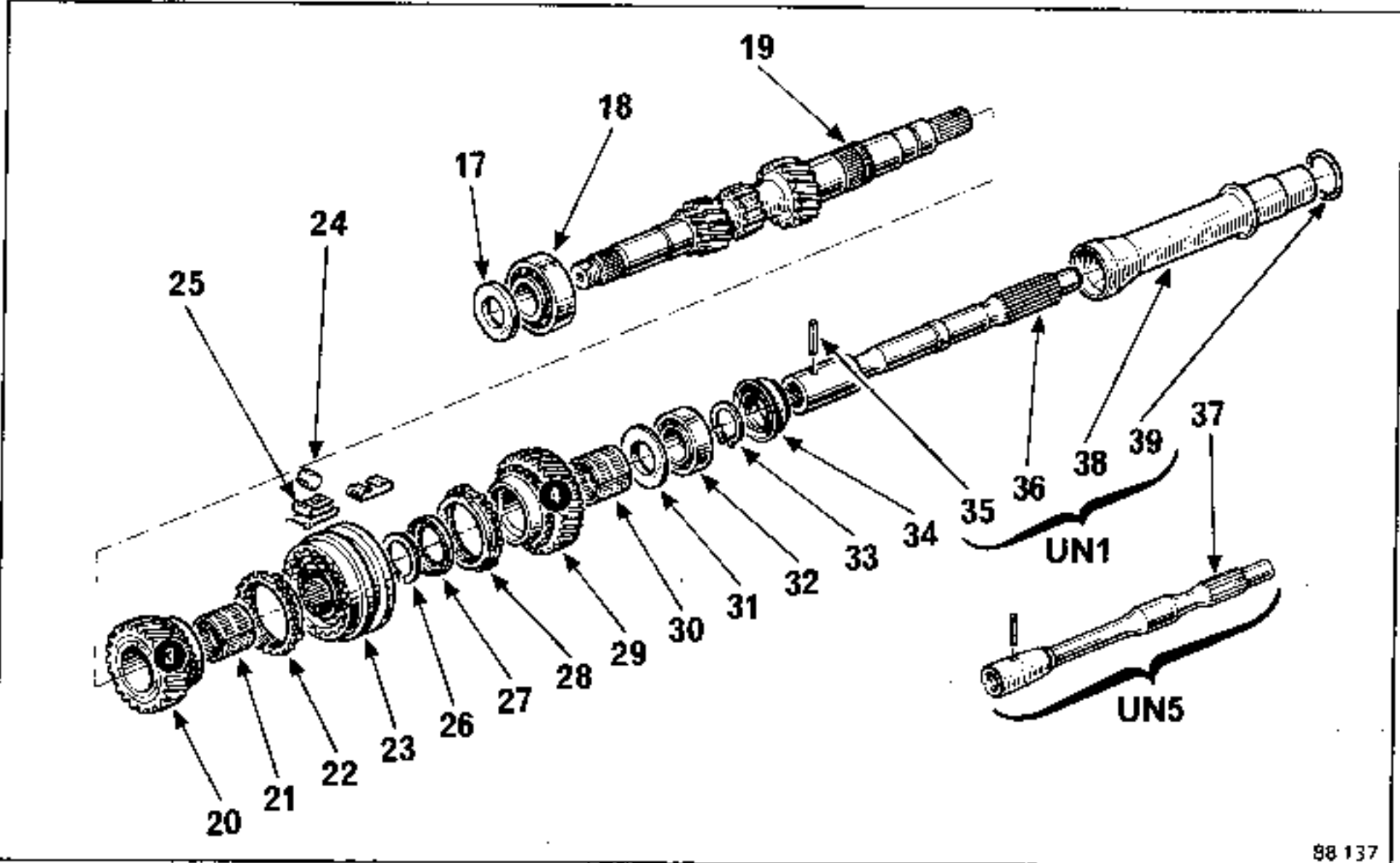
Remove the secondary shaft.

Taking the load under the double taper roller bearing retaining plate, extract the fixed gear on the press.



Place the protector from B.Vi. 1007 on the shaft (UN5).

ESSENTIAL SPECIAL TOOLS  
B.Vi. 606 Set of pin punches for 6 mmØ pins



88 137

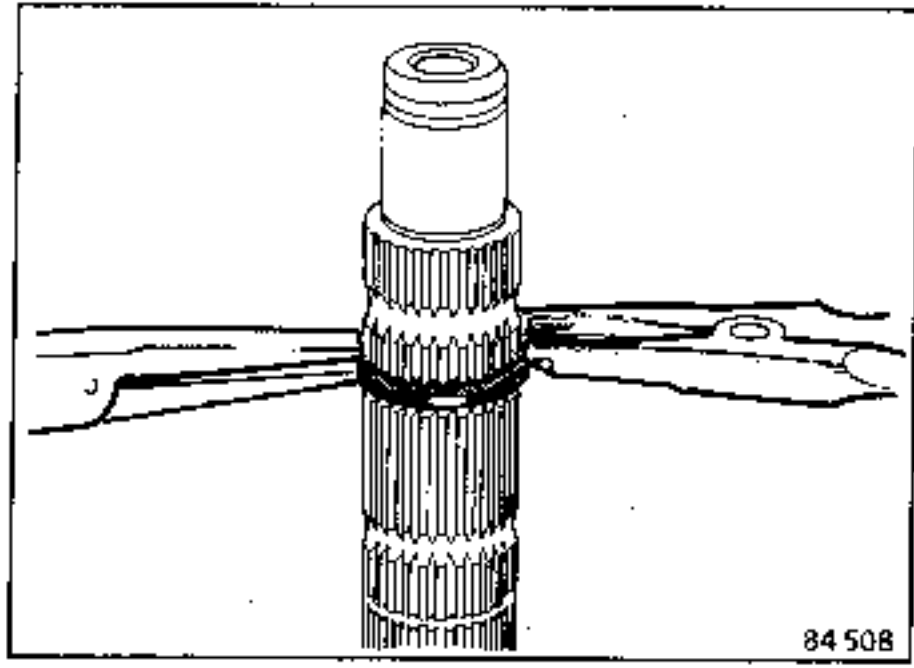
DISMANTLING

UN1

Free the release bearing guide tube (38).  
Separate the clutch shaft from the primary shaft assembly by knocking out the spring pin (35) with tool B.Vi.606.

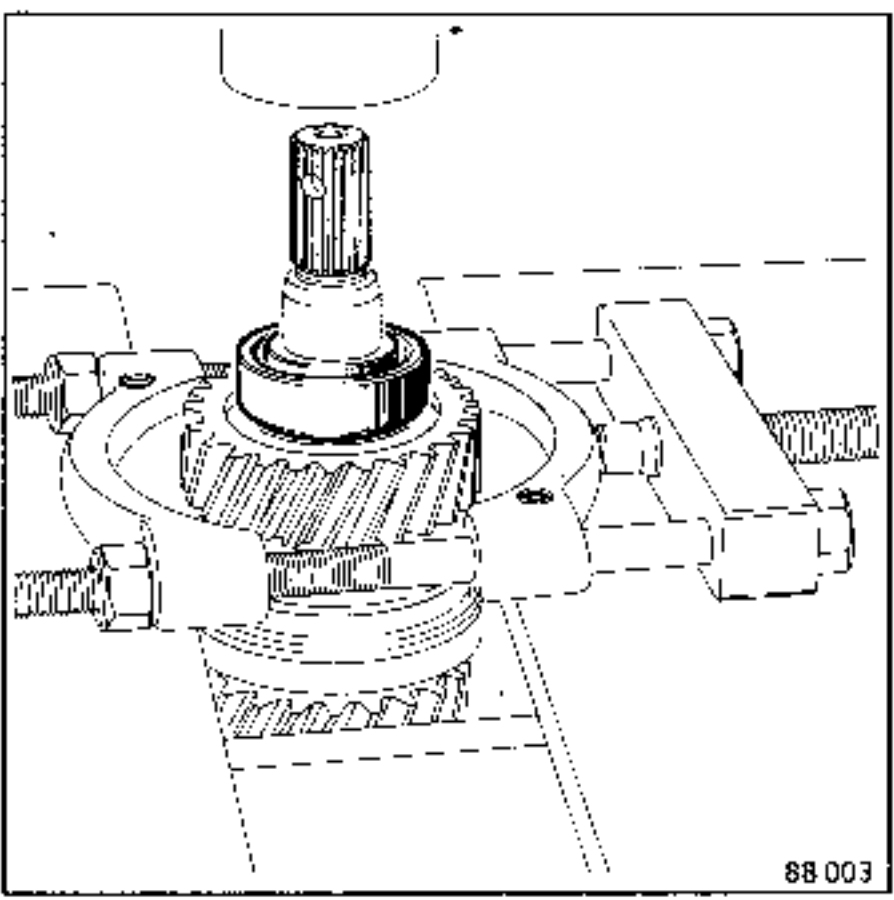
Remove the circlip (33) and the lip seal (34).

To remove the circlip, use, first of all, a pair of circlip pliers to spread its ends and then grip it with a pair of flat nosed pliers on the opposite side so that it does not twist.



84 508

Taking the load on the 4th speed gear (29) extract components (29) to (32) on the press.

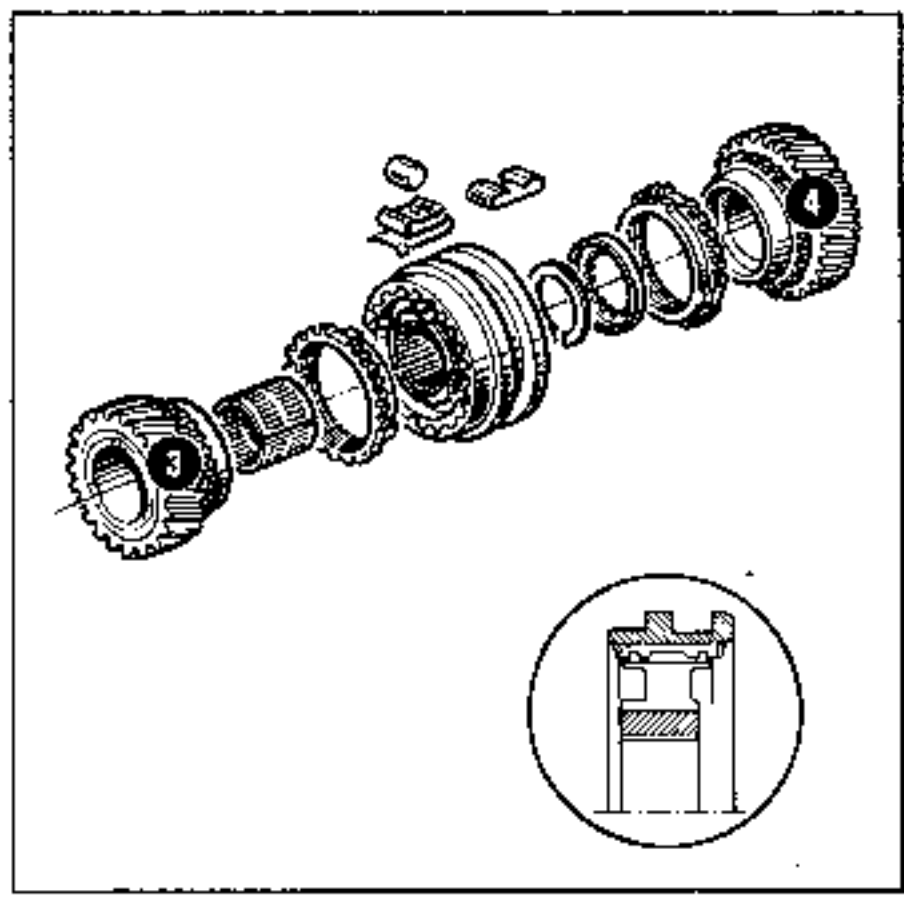


Retrieve (27) and (28).  
Note the position of the hub on the sliding gear.  
Remove the sliding gear.  
Take out the rollers (24) and 3 springs (25).  
Remove the circlip (26).  
Remove the synchroniser hub and the 3rd speed gear.  
Remove the washer (17).  
Free the bearing (18), using a pin punch and then extract it.

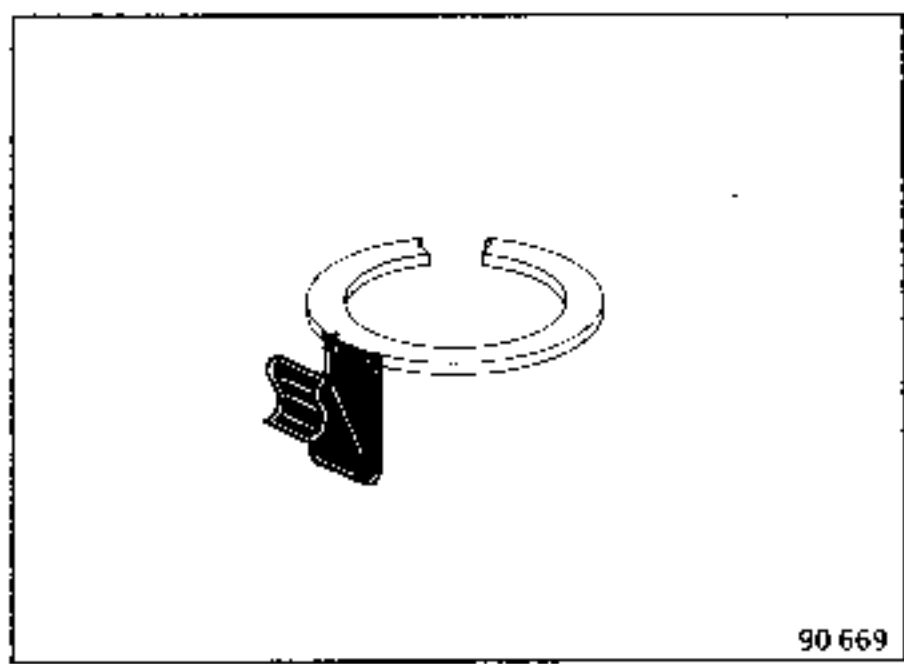
REASSEMBLING

Automatically replace all the circlips after each time they are removed.  
UN1  
As the lip seal is in direct contact with the primary shaft, check the condition of its sealing area. If it is scored or suffers from some visible damage, replace the primary shaft.  
Take care to align the slots in the hub with the bosses on the synchroniser ring.

Ensure that the following are the correct way round :  
- the 3rd/4th speed hub,

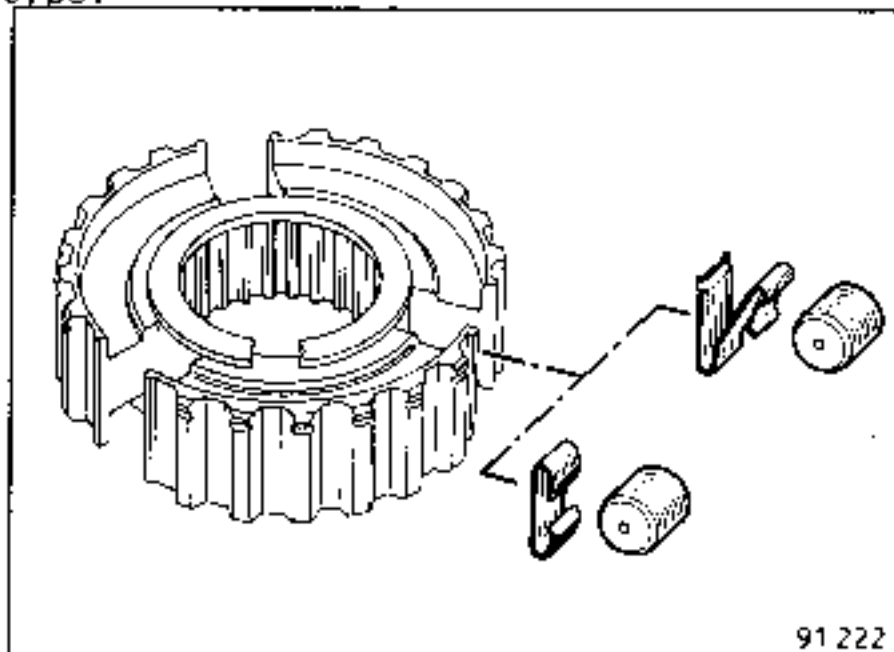


- the sliding gear,  
- the synchroniser roller springs (with their retaining lugs on the same side as the circlip).



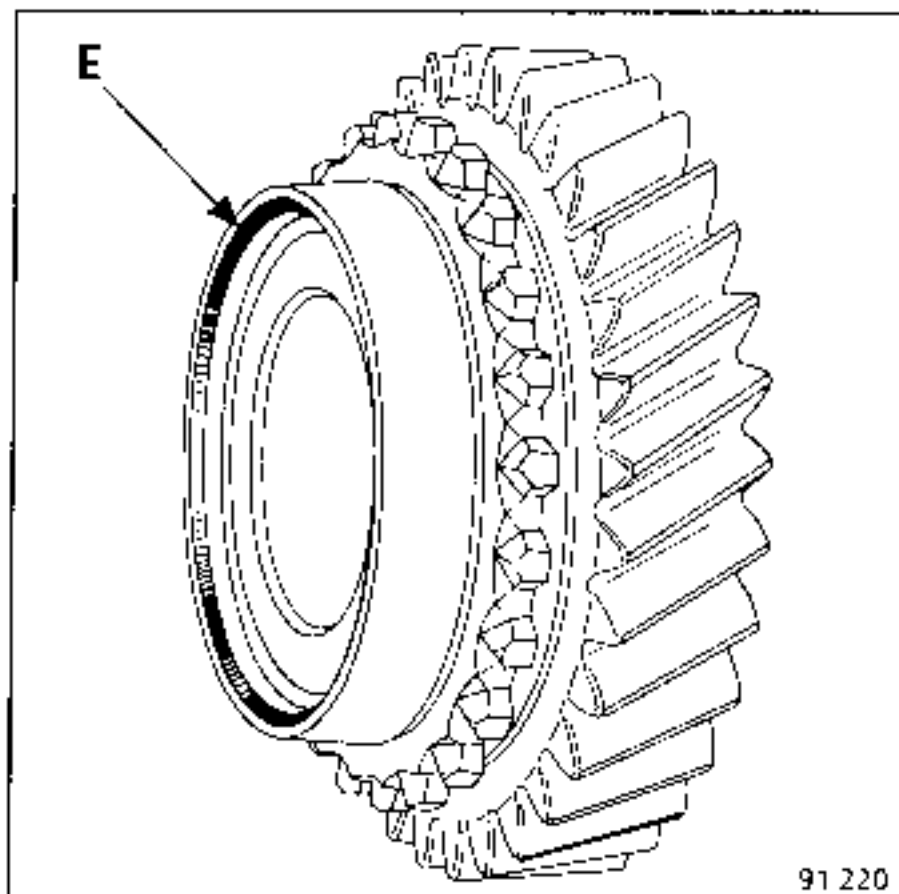
WARNING

Two different types of synchroniser roller spring have been used : the springs of the "Z" type have been replaced by springs of the "heart shaped" type.

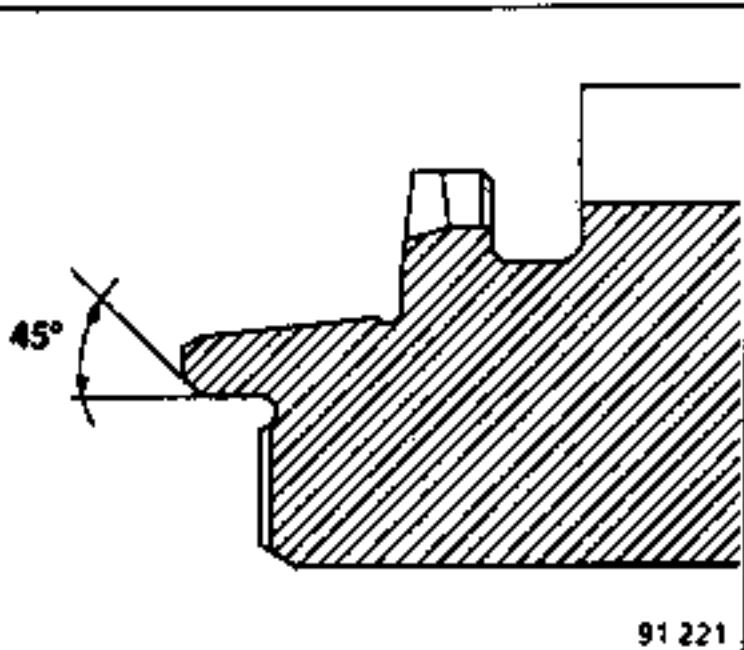


To permit the fitting of the so called "heart shaped" springs, the lead chamfer (E) on the recess under the synchroniser cone of the 3rd and 4th speed idle gears has been modified.

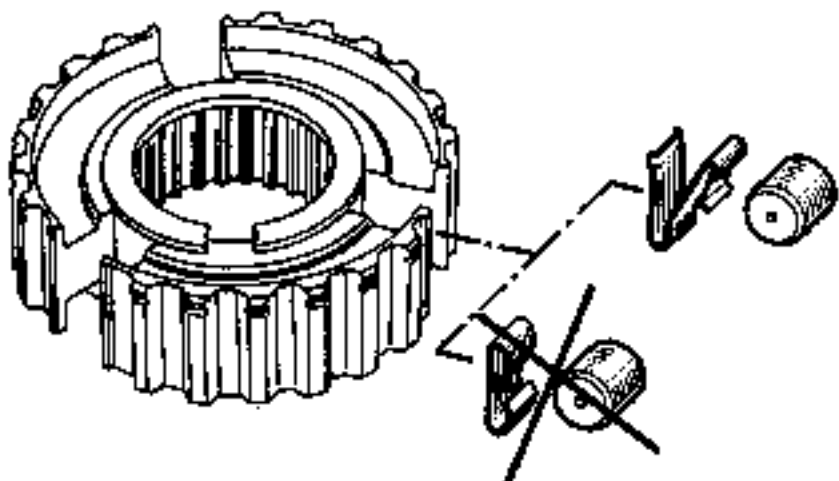
Consequently, springs of the "heart shaped" type can only be used with the modified idle gears.



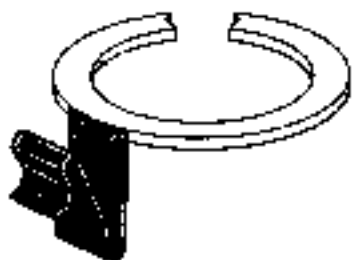
1st type of assembly  
Detail (E)



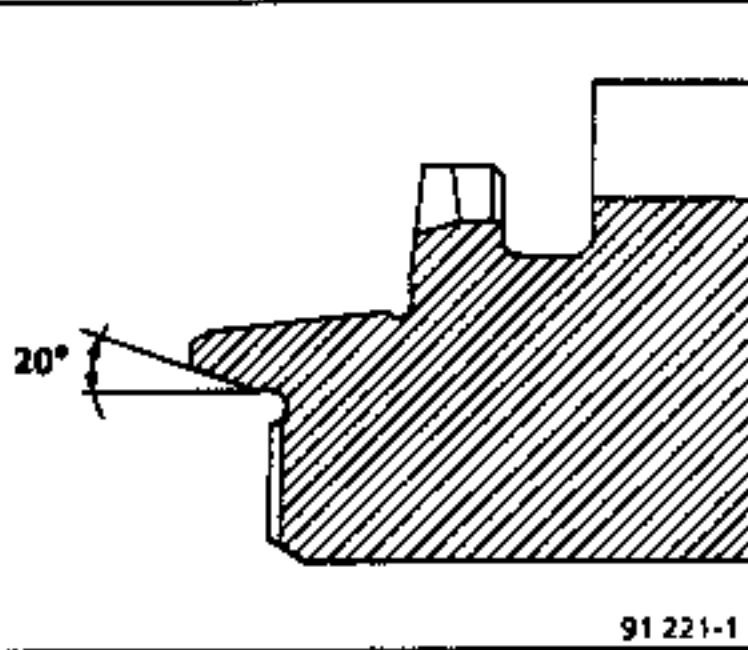
The 45° inlet chamfer "E" for the recess under the synchro cone can only be fitted with a "Z-shaped" spring.



**Remember:** Make sure the synchro roller "Z-shaped" springs are mounted the correct way round: locking tabs fitted at the lock ring end.



2nd type of assembly  
Detail (E)



Special point: idler gears with a 20° inlet chamfer "E" can be fitted either with "heart-shaped" or "Z-shaped" springs.

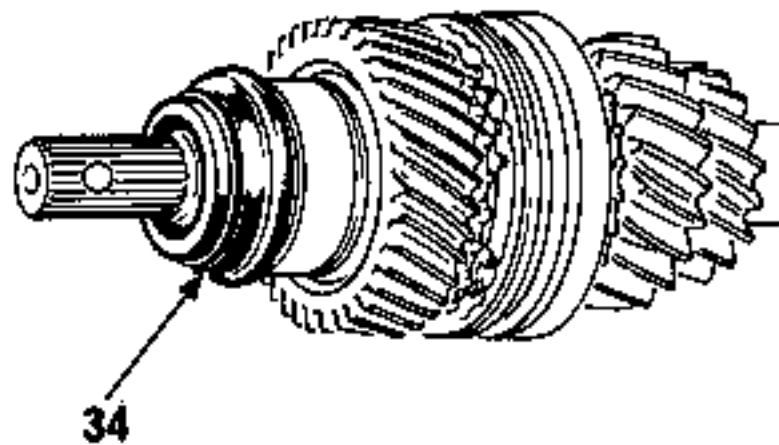
However, **different shaped springs must not be used on the same synchro assembly.**

**REASSEMBLING (continued)**

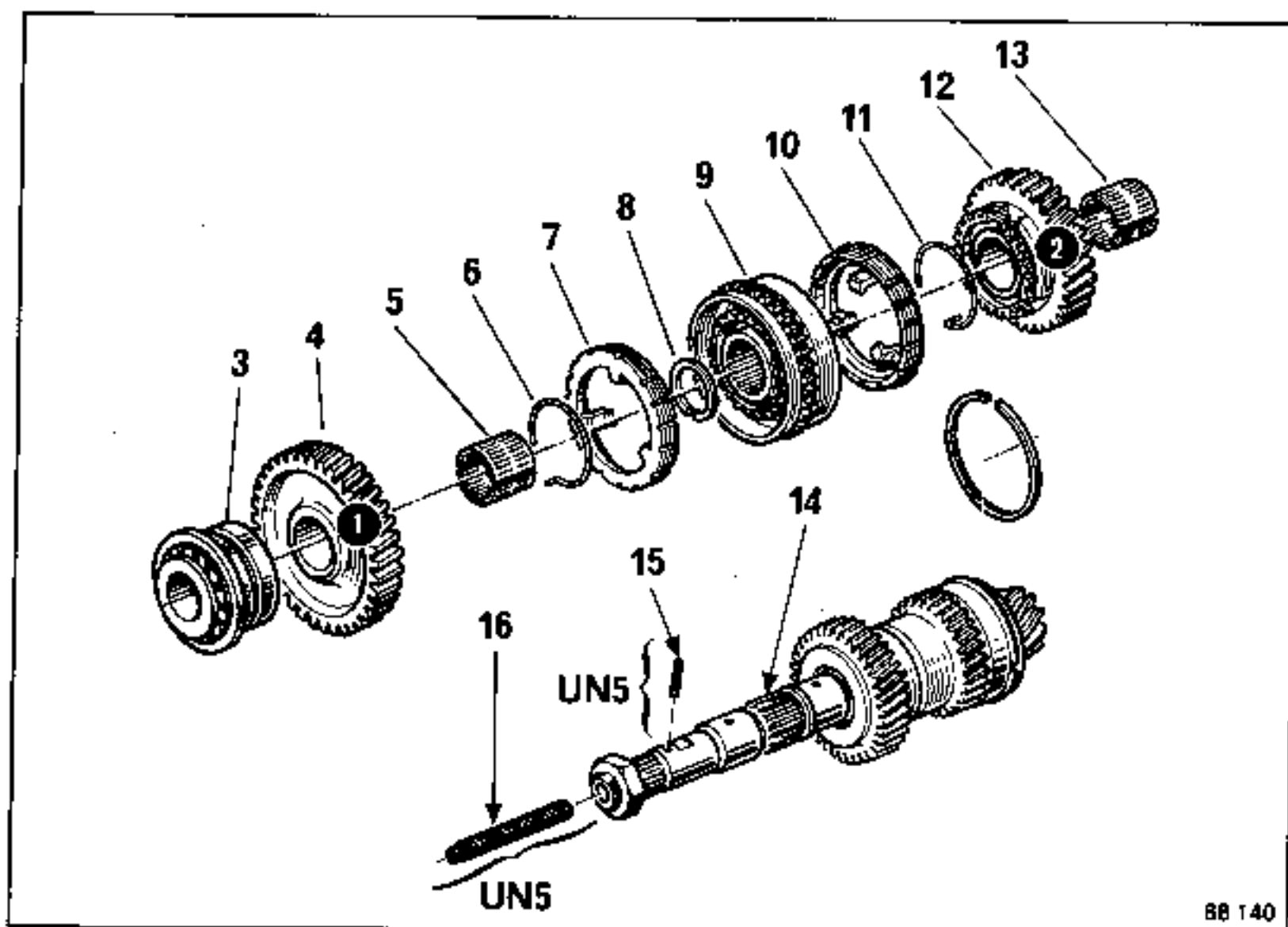
Fit the washer and the bearing on the press.

Ensure that the following are the correct way round:

- the chamfer on washer (31) must be on the bearing side;
- the lip seal (34) on the type UN1.



This operation is carried out after the housings have been separated.



88 140

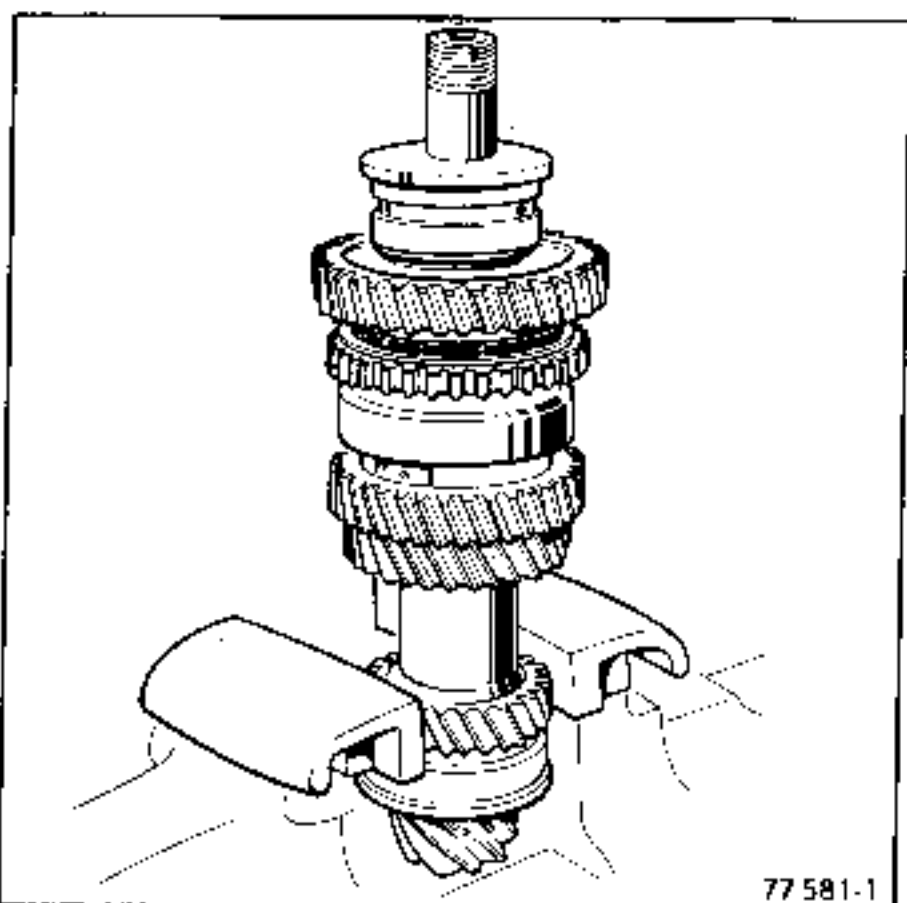
**DISMANTLING**

Grip the secondary shaft in a vice fitted with soft jaws, across the 4th speed gear.

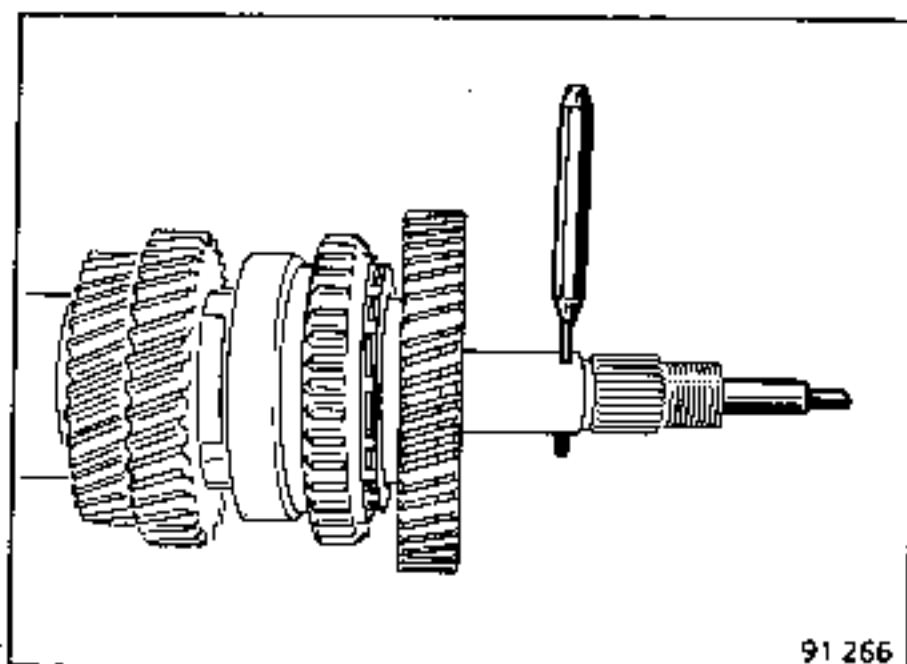
Retrieve the half needle races.

**UN5**

Knock out the 3 mm  $\phi$  pin (15) and remove the speedometer drive shaft (16).



77 581-1

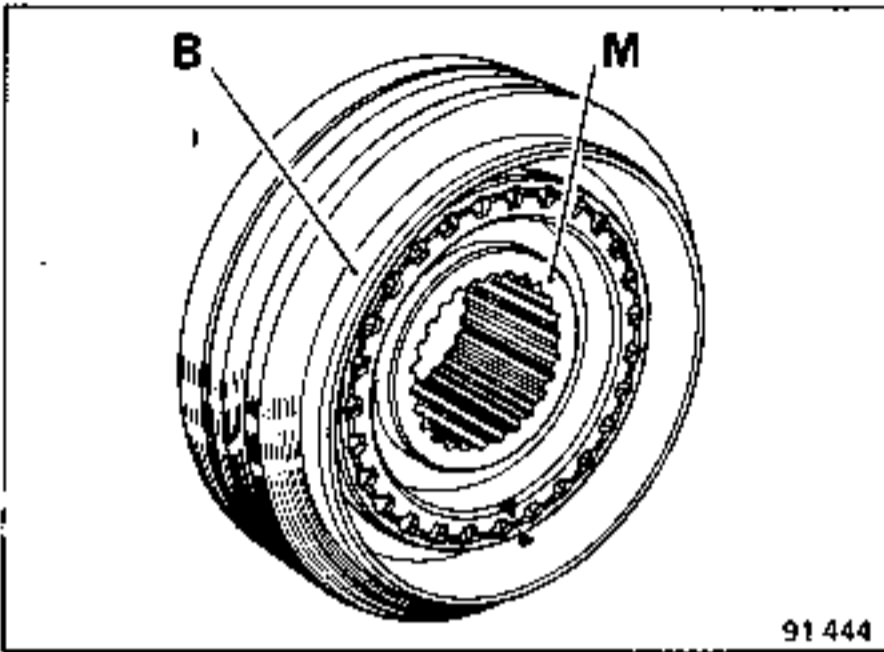


91 266

Remove :

- the double taper roller bearing (3),
- the 1st speed idle gear and its synchroniser ring.

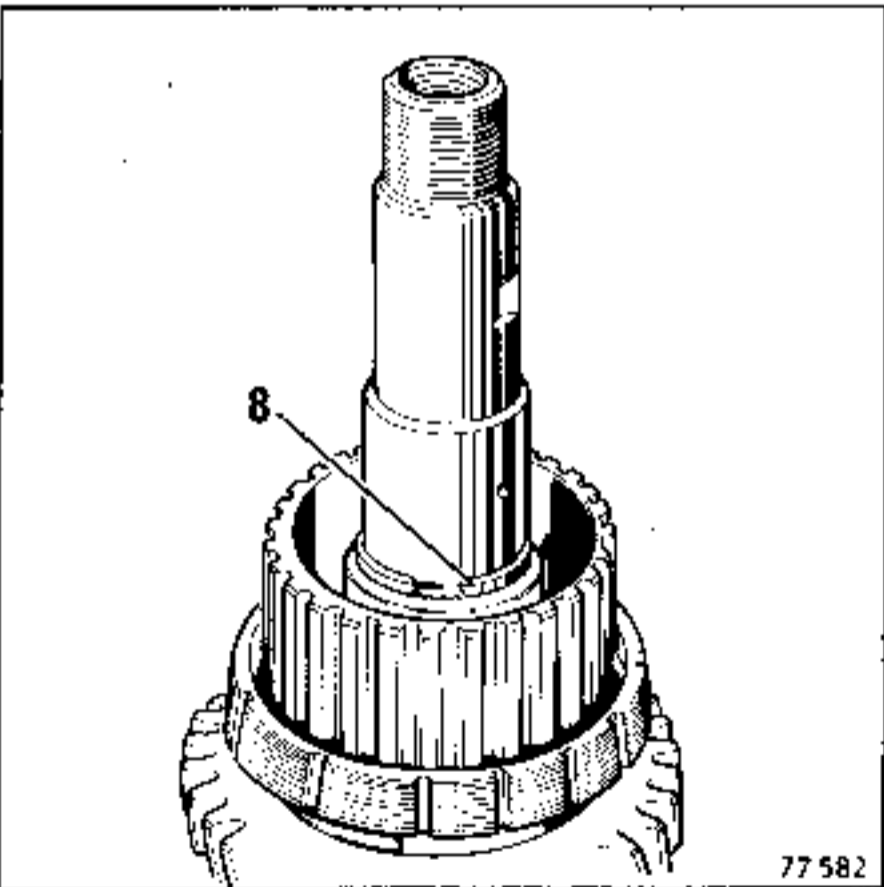
Mark the position of the hub (M) in the sliding gear (B).



91 444

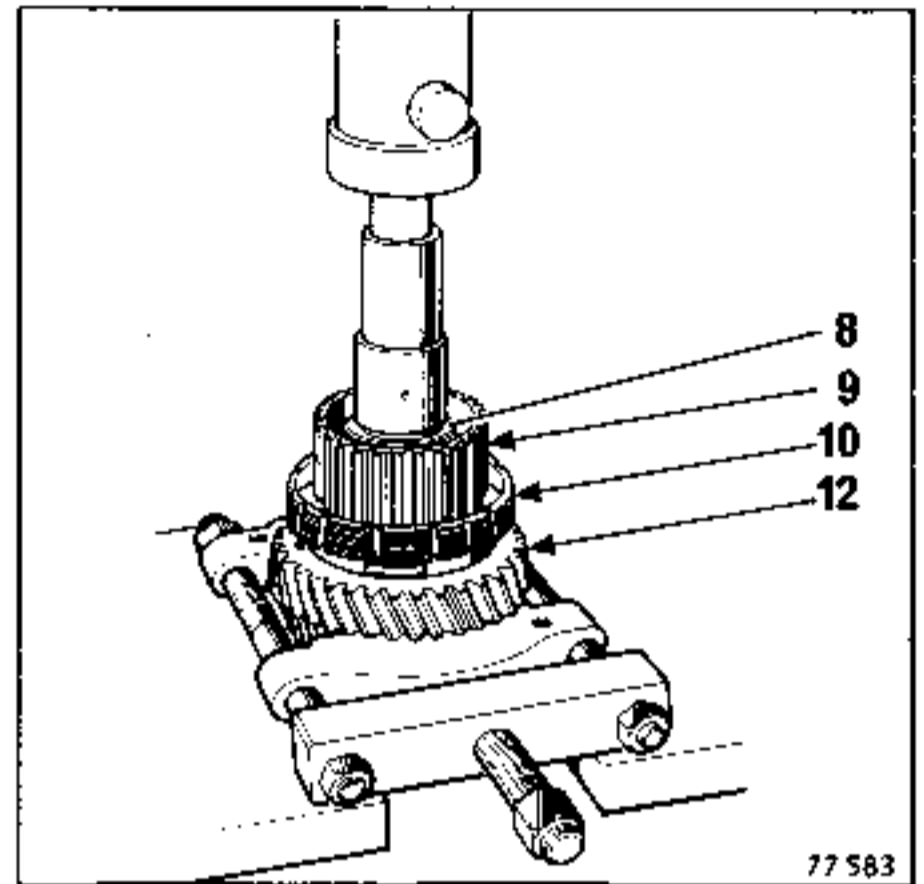
ALL TYPES

Remove the circlip (8).



77 582

Taking the load under the 2nd speed idle gear, extract the assembly on the press.

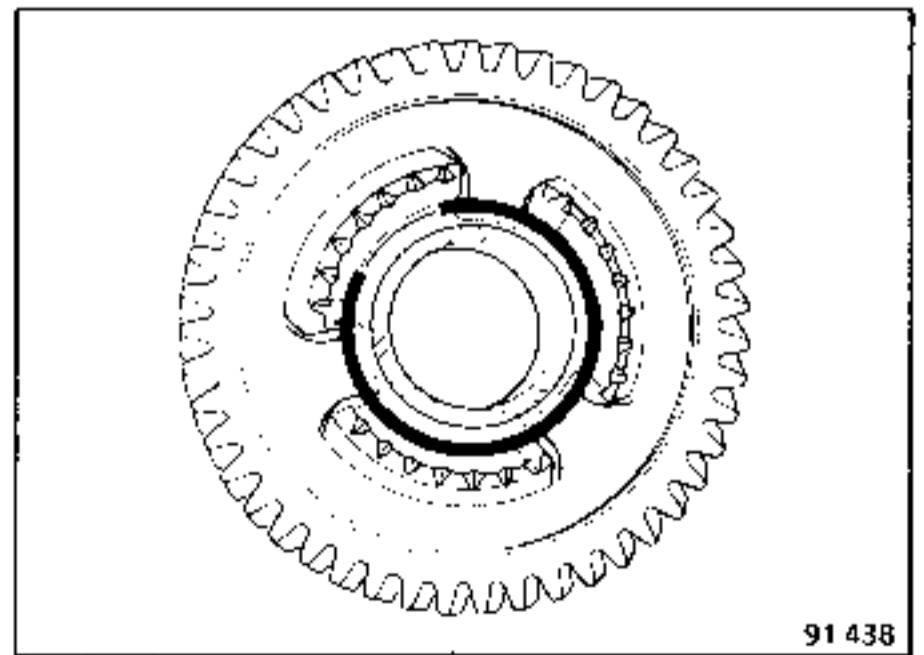


77 583

Do not attempt to remove the 3rd and 4th speed gears as they are not removable.

REASSEMBLING

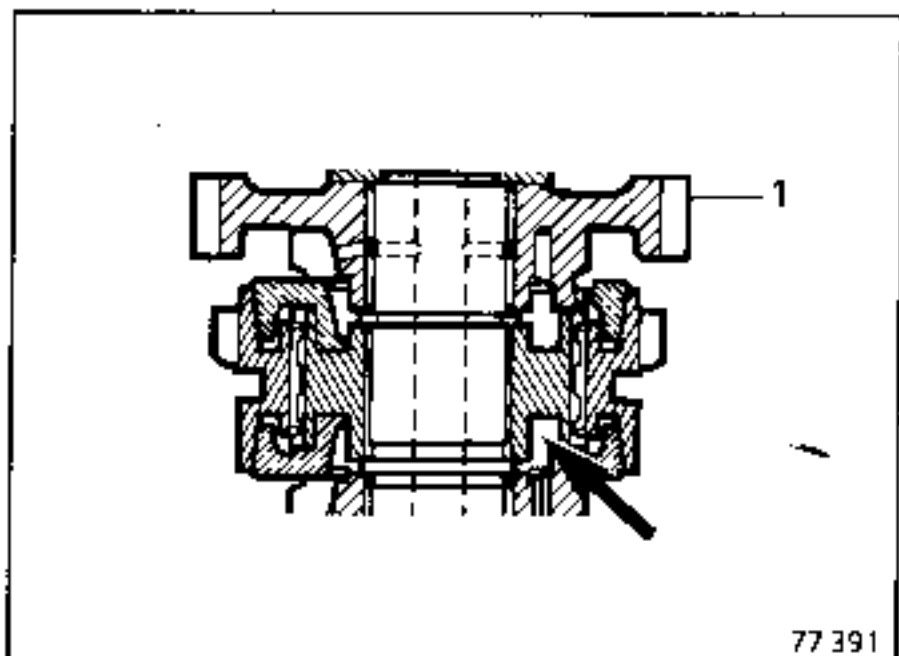
Fit the synchroniser spring to the 2nd speed gear so that it covers the 3 slots.



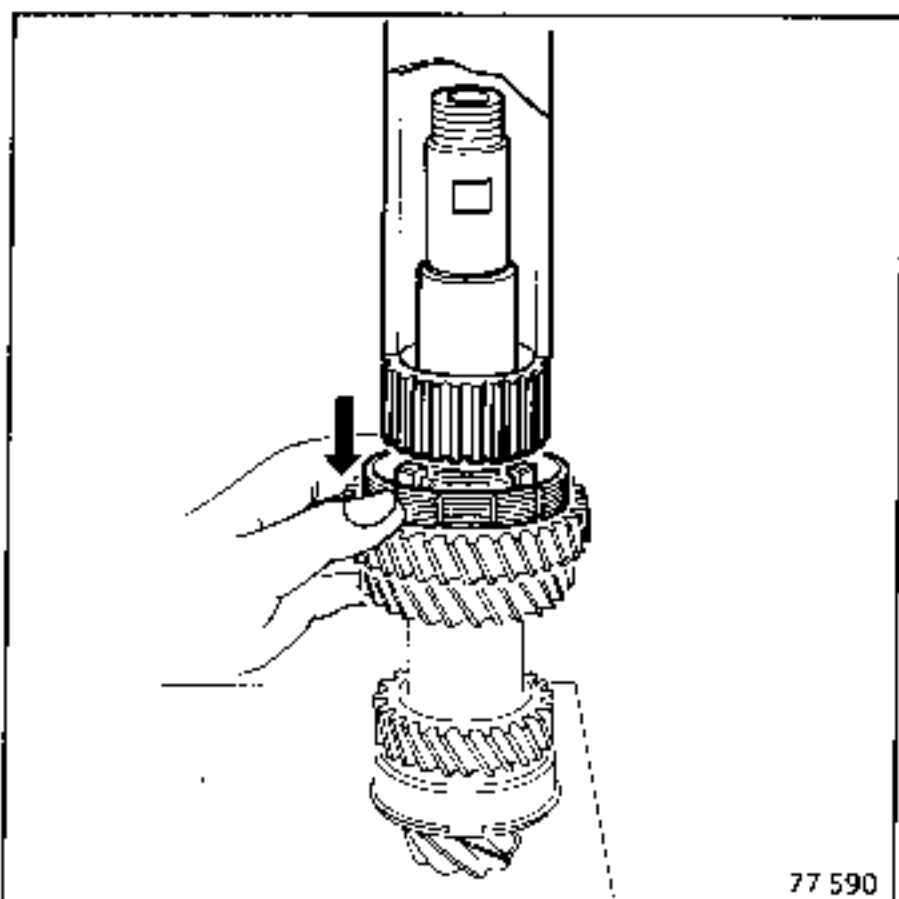
91 438



Place the hub in position with the offset on the 2nd speed idle gear side or the reference made during dismantling on the 1st speed idle gear side.

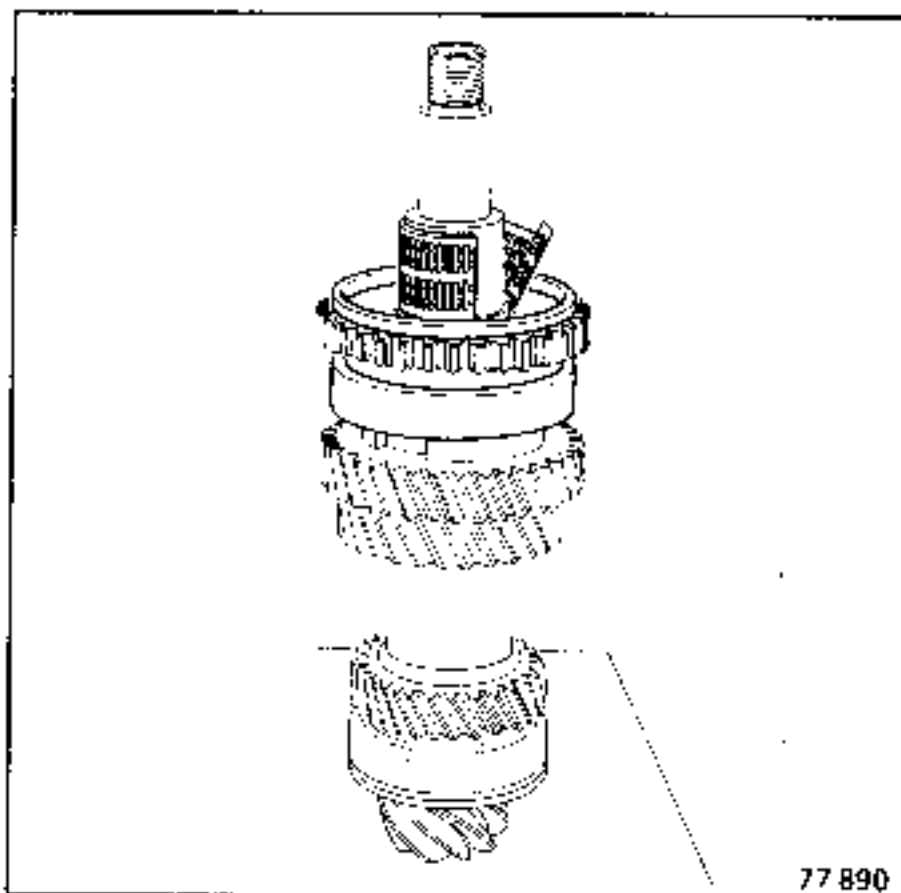


Push on the hub, on the press, until it makes contact with the locating shoulder. Ensure that the synchroniser ring is correctly centralised with the lugs below the level of the locating shoulder, to avoid damaging the spring.

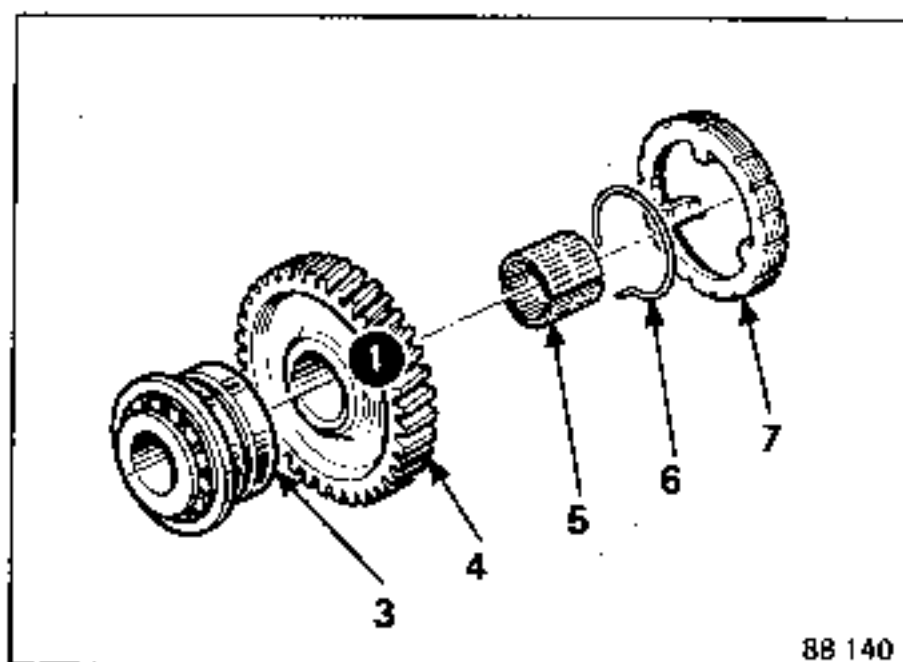


Fit :

- the circlip (B),
- the 1st/2nd sliding gear, ensuring that it is correctly positioned with reference to the hub,
- the half needle races (5).



- the synchroniser ring (7),
- the 1st speed idle gear (4), fitted with the spring (6).



**UN5.**

Place the speedometer drive shaft (16) in position and pin it.

ALL TYPES

Fit the double taper roller bearing (3).

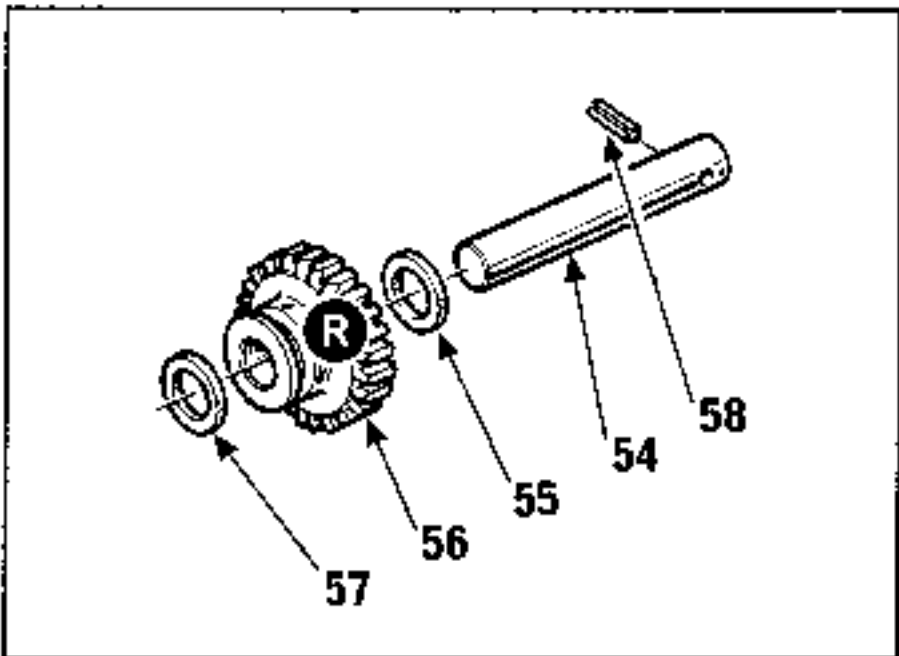
Check that the preload spacer is correctly placed between the 2 cones.

This operation is carried out after the housings have been separated.

ESSENTIAL SPECIAL TOOLS
<b>B.Vi.606</b> Set of pin punches for 6 mm $\varnothing$ pins

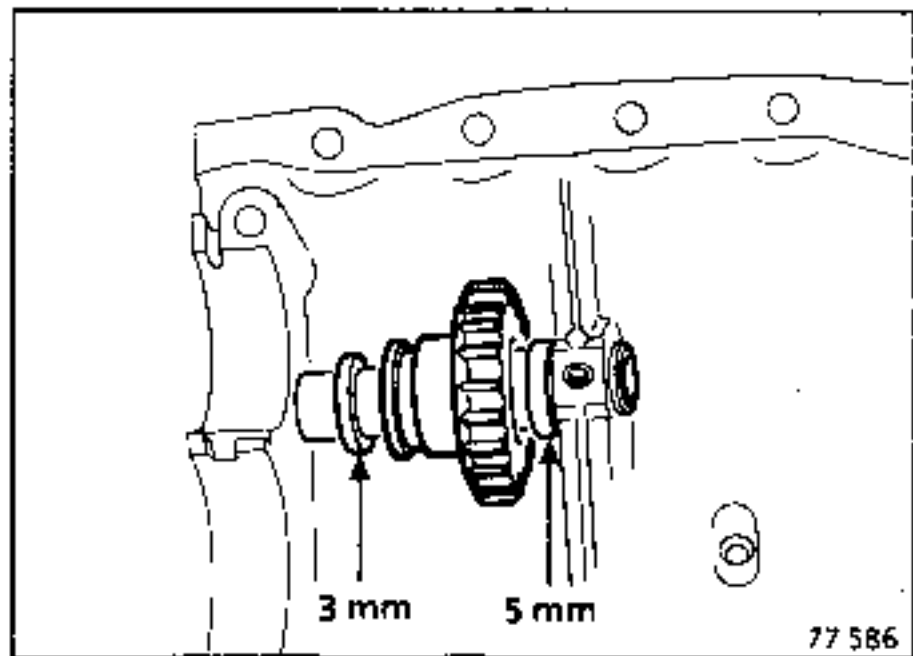
CONSUMABLES
Gearbox oil to immerse the parts

EXPLODED VIEW



REASSEMBLING

Ensure that the gear and the friction washers are fitted the correct way round.



DISMANTLING

Pull the shaft towards the rear and retrieve the gear and its friction washers.

The bushes inside the reverse gear cannot be removed.

Pin (58) is removed with tool B.Vi.606.

DIFFERENTIAL

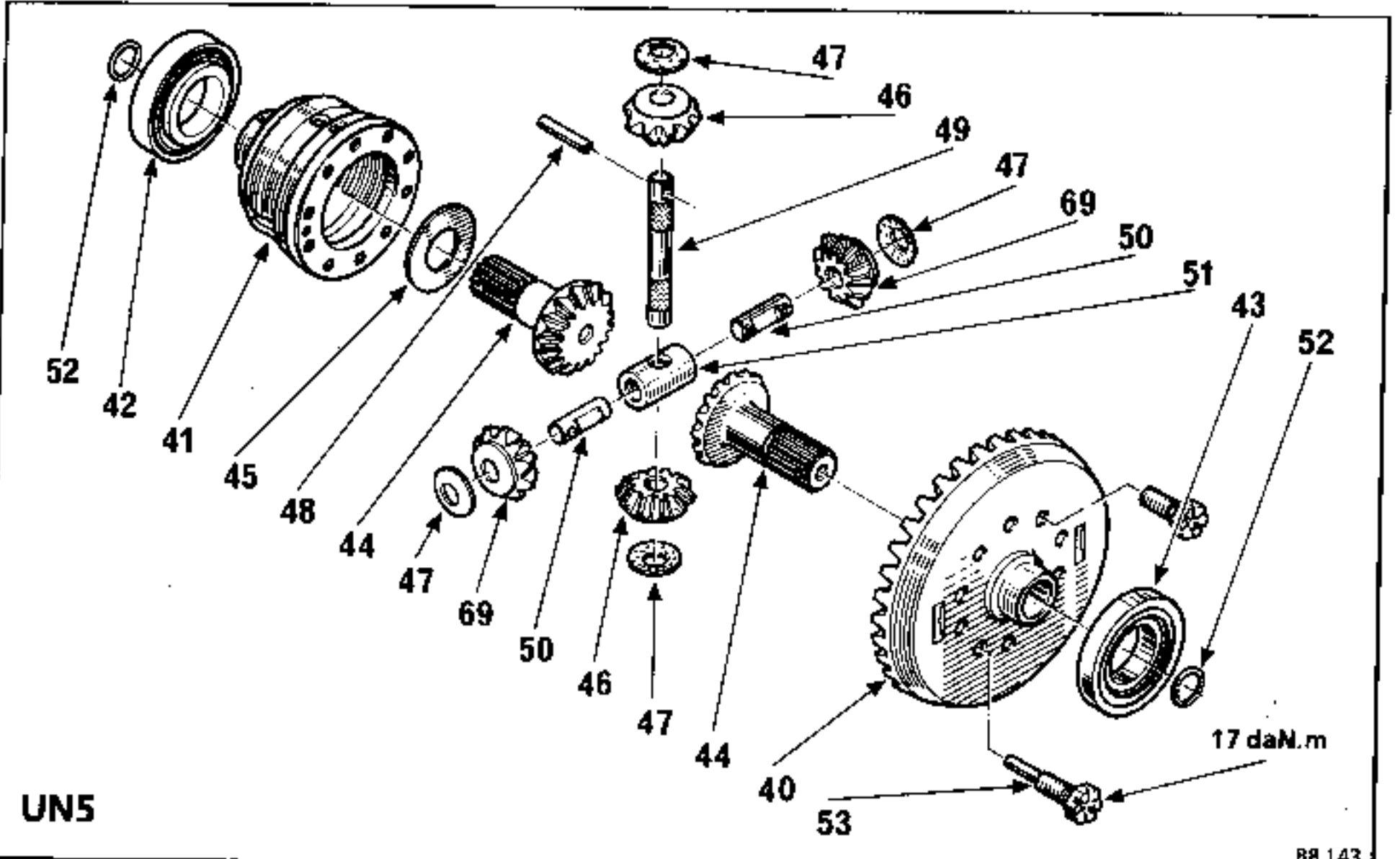
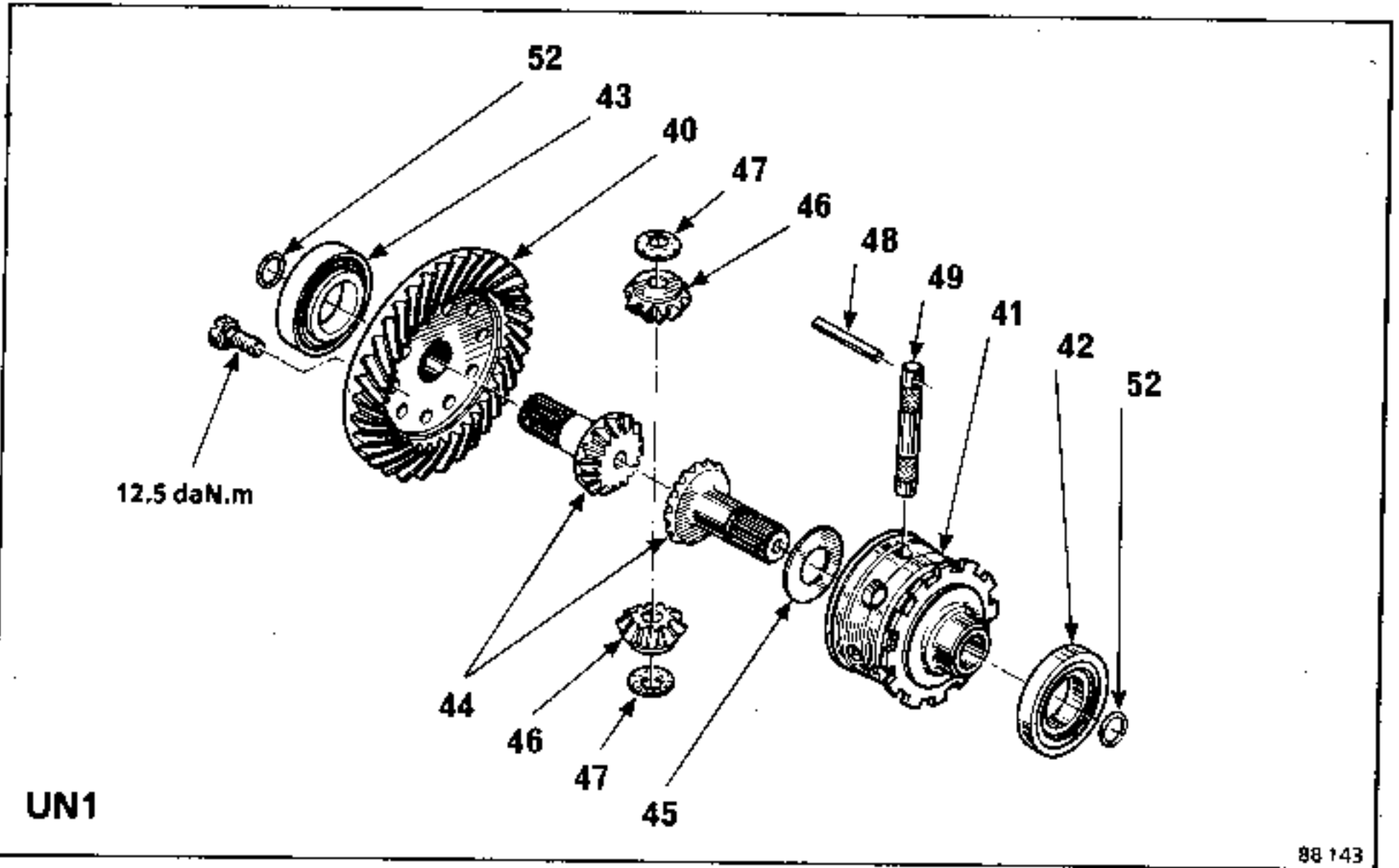
Dismantling - Reassembling

ESSENTIAL SPECIAL TOOLS
<b>B.Vi.31-01</b> Set of pin punches for 5 mm $\varnothing$ pins

TIGHTENING TORQUES (in daN.m)		
Crown wheel bolts	: UN1	12,5
	UN5	17

CONSUMABLES	
Gearbox oil to immerse the parts	
Loctite FRENLOC : crown wheel bolts	

EXPLODED VIEWS



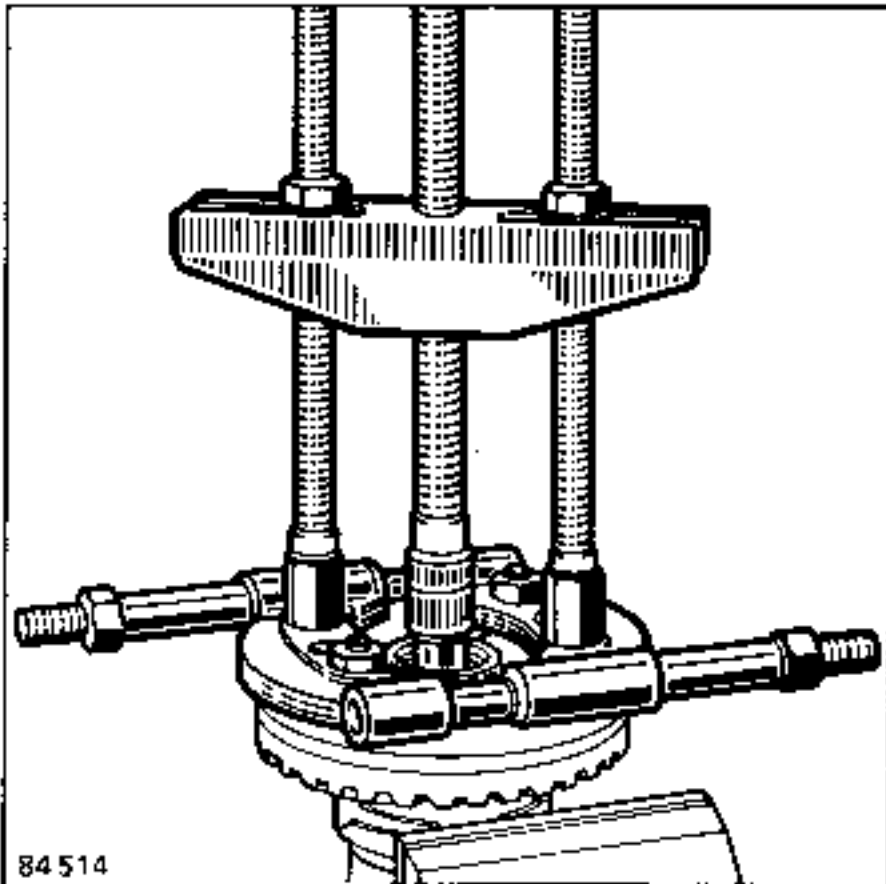
**DISMANTLING**

Remove the crown wheel securing bolts (they are self-locking bolts that cannot be used again).

Leave two, diametrically opposite one another, in place.

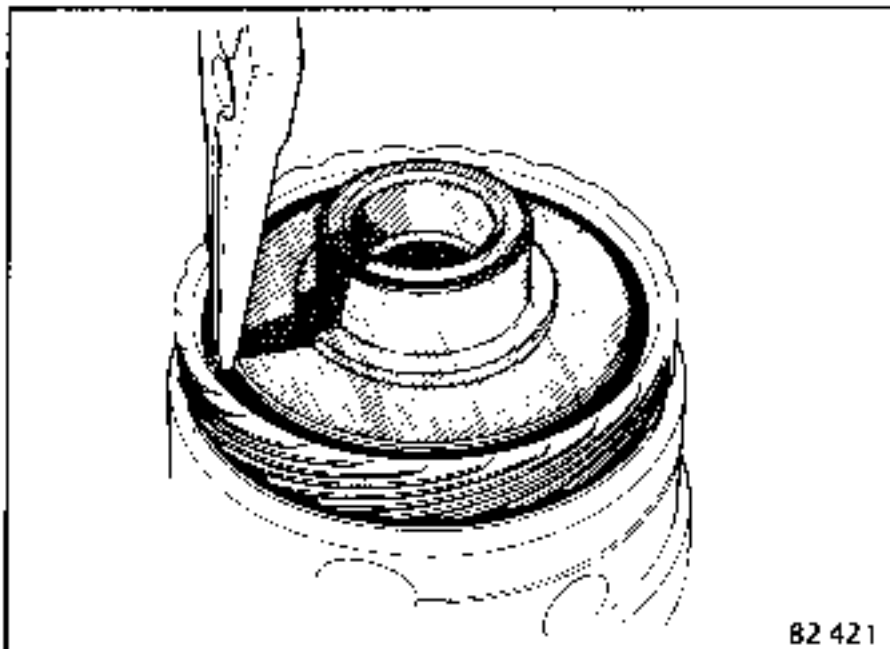
Remove the O rings (52) from the sun wheels (44).

Extract the bearings with a tool of the FACOM U53G+U53E or a similar type.



**UN1 013 (L485)**

Remove the circlip that secures the speedometer drive worm to the housing.



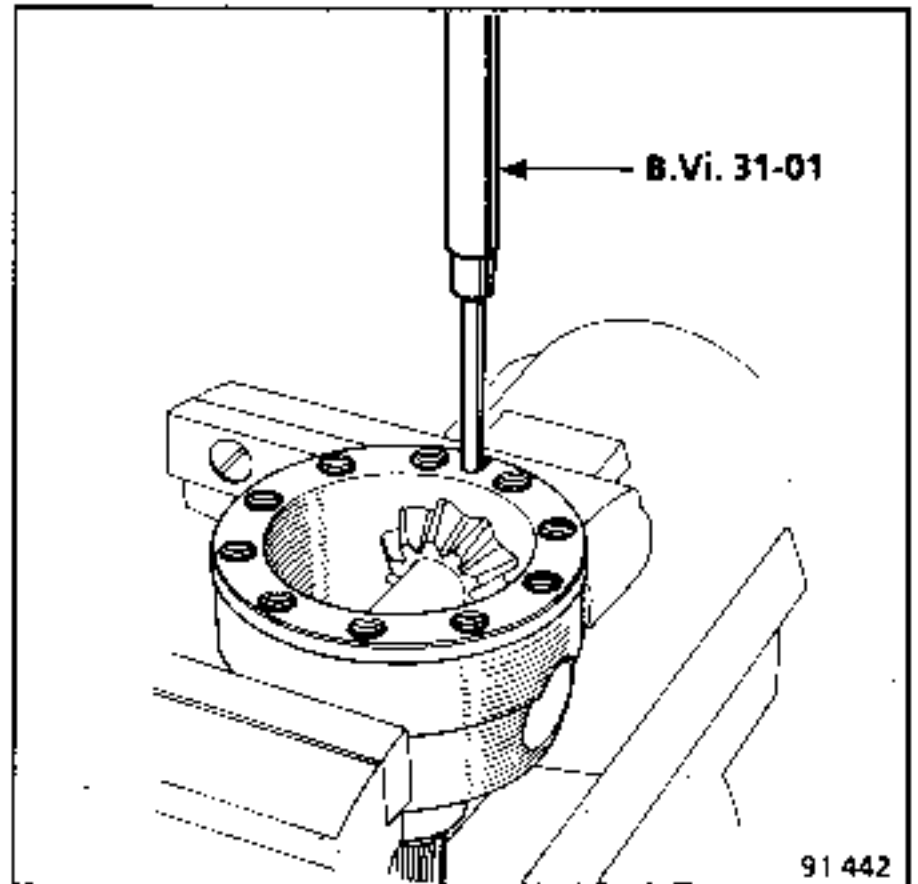
Remove the speedometer drive worm.

**UN1 - ALL TYPES (except for the UN1 013)**

The sensor target ring cannot be removed from the housing.

**ALL TYPES**

Knock out the roll pin that retains the planet wheel shaft using punch B.Vi.31-01.



Separate the various component parts.

Checking the parts

Check the condition of :

- the teeth,
- the bearing areas,
- the washers (planet wheels),
- the splines,
- the housing.

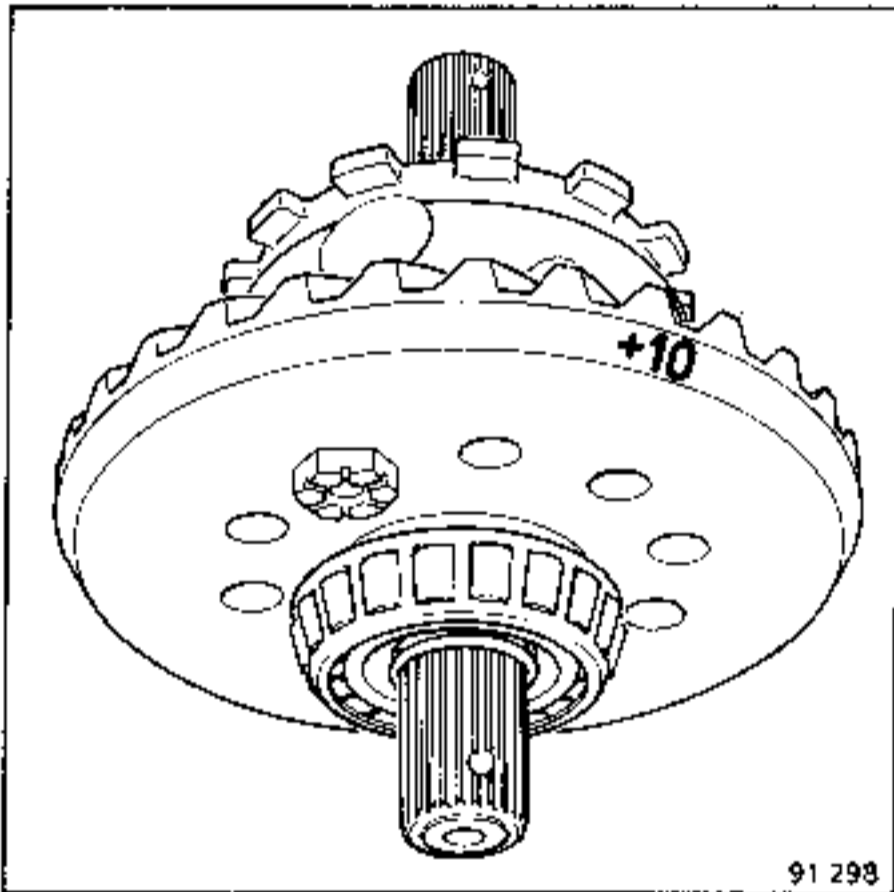
The final drive pinion and the crown wheel are matched and carry the same reference number.

If one of these parts is replaced the other must also, automatically, be replaced.

The pinion depth is not adjustable.

UN1 005 and 007 (Alpine)

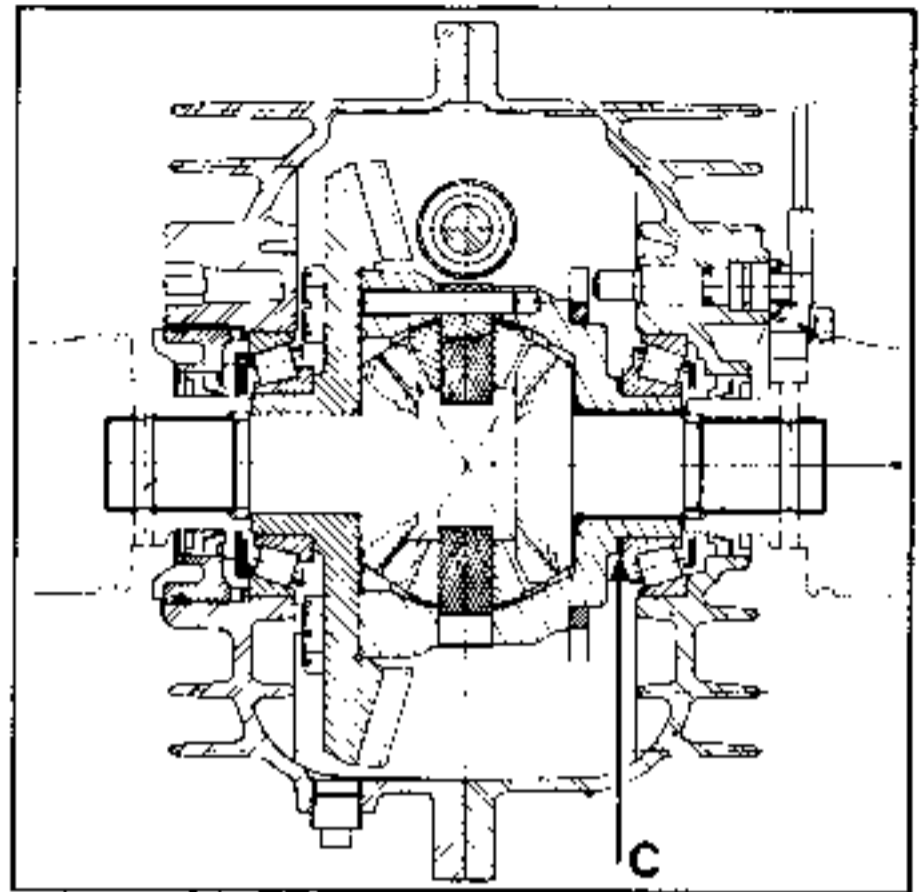
The rear face of the crown wheel carries a second figure preceded by a "+" or "-" sign. These are the figures used to adjust the crown wheel and pinion backlash (expressed in one hundredths of a millimetre, eg : + 10 = + 0.10 mm).



#### ADJUSTING THE BACKLASH

UN1 (Alpine)

The thickness of the shim washer (C), placed between the bearing and the differential housing, determines the backlash.

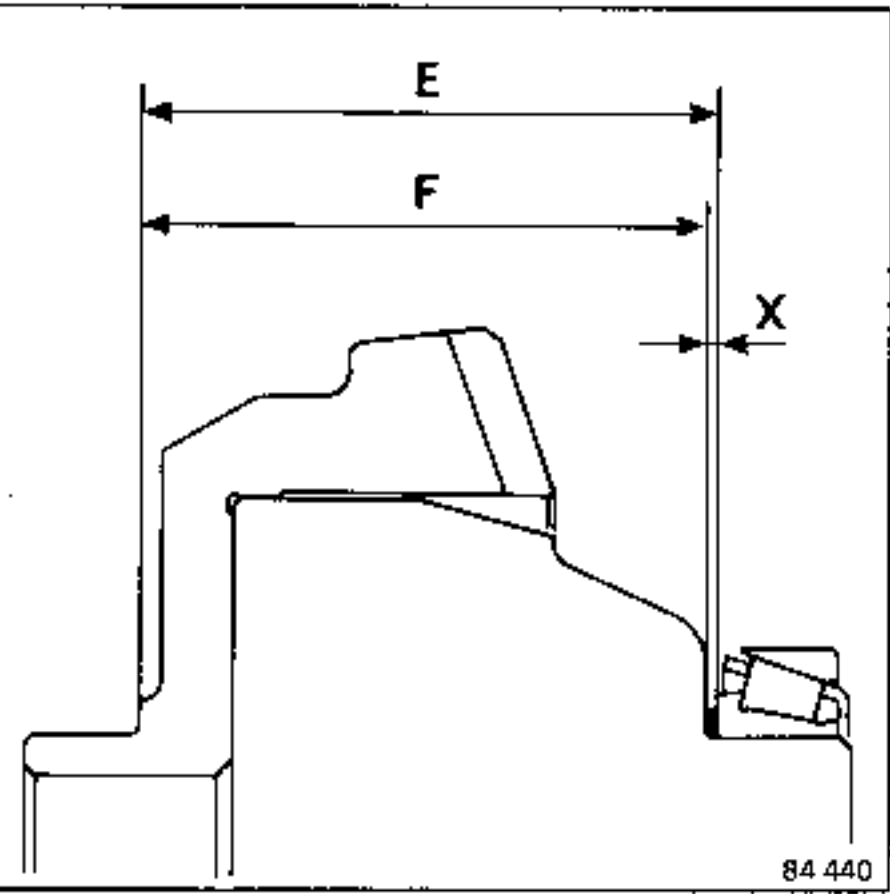


As it is necessary to fit the shim washer before adjusting the bearing preload, its thickness is to be calculated by taking the following dimensions :

**DIMENSION F** : Between the differential locating faces.

**DIMENSION X** : Thickness of the shim washer to be placed between the bearing and the differential housing.

**DIMENSION E** : The nominal dimension of  $98.30 \pm 0.05$  mm + or - the dimension engraved on the rear face of the crown wheel.



84 440

Measure dimension (F) (using a vernier calliper with 90 mm arms).

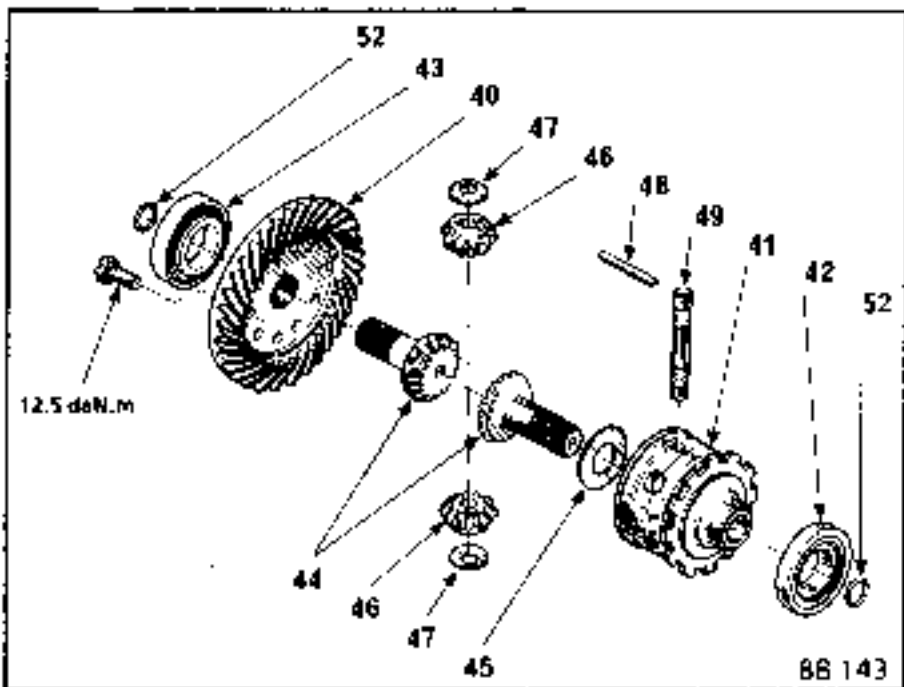
$$X = E - F$$

Note :  
Shim washers are available in thicknesses from 1.20 mm to 1.70 mm in increments of 0.10 mm.

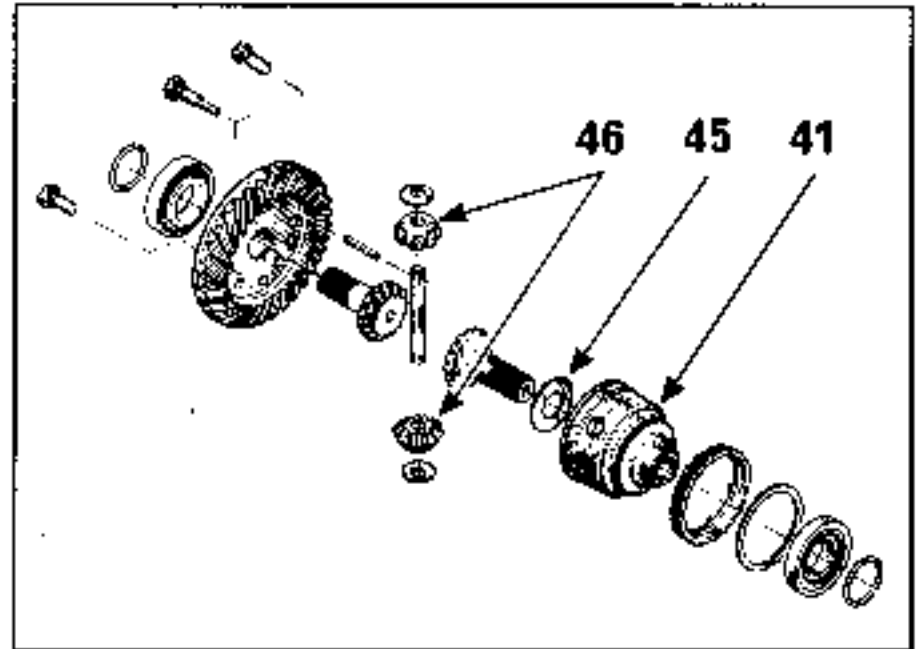
REASSEMBLING

Oil all the parts before reassembly.

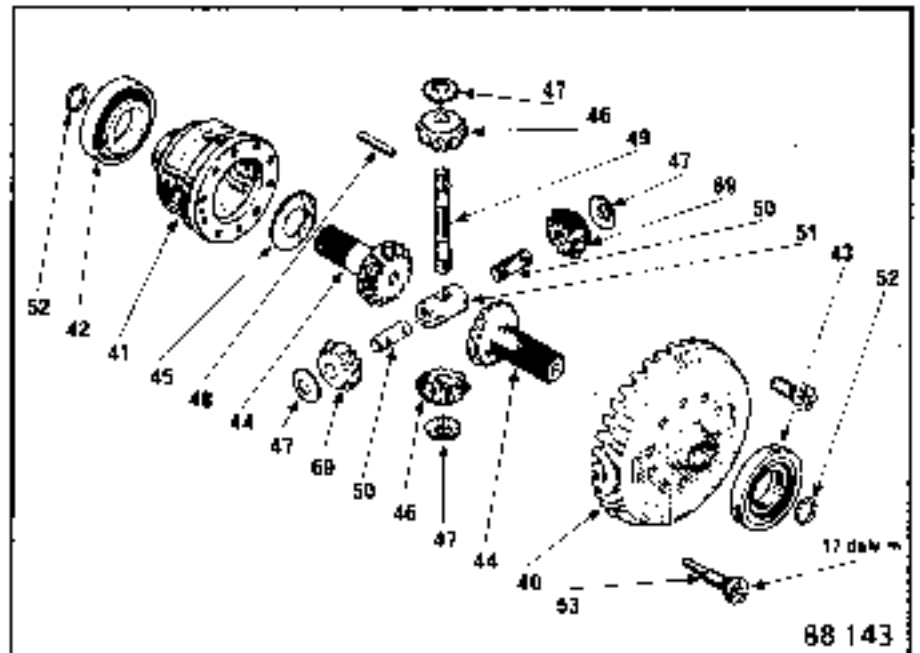
UN1 : electronic speedometer drive



UN1 : mechanical speedometer drive



UN5



- Place the following in the housing (6) :
- the steel washer (7),
  - one of the sun wheels, after having first immersed it in oil,
  - the planet wheels (69) and their bushes. Insert the shafts until they are just flush with the planet wheels but do not project past them,
  - the planet wheels (46) and their bushes, insert the shaft so that it is flush with the planet wheels but does not project past them,
  - the sleeve (51) in line with the small shafts (50).

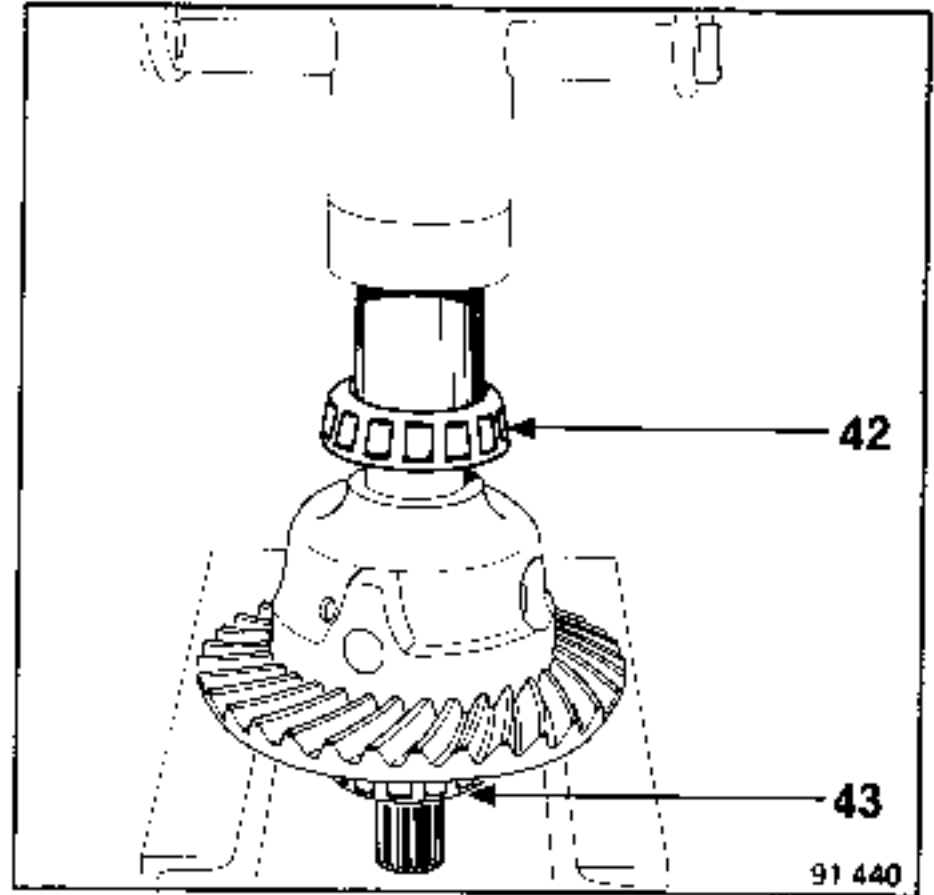
Push the 3 shafts fully in, aligning their holes with those in the housing.

Pin the large shaft in place.

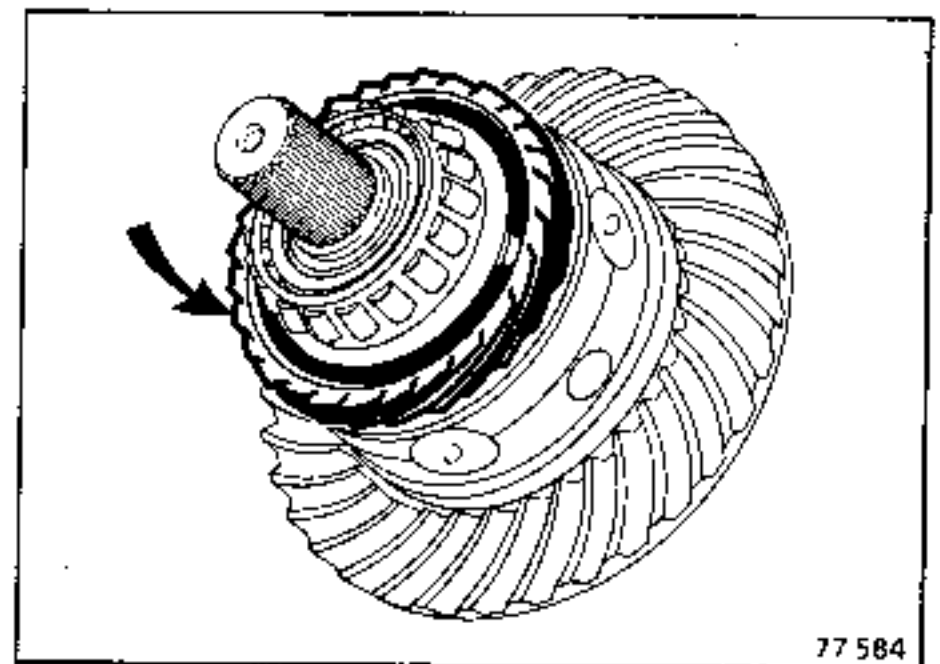
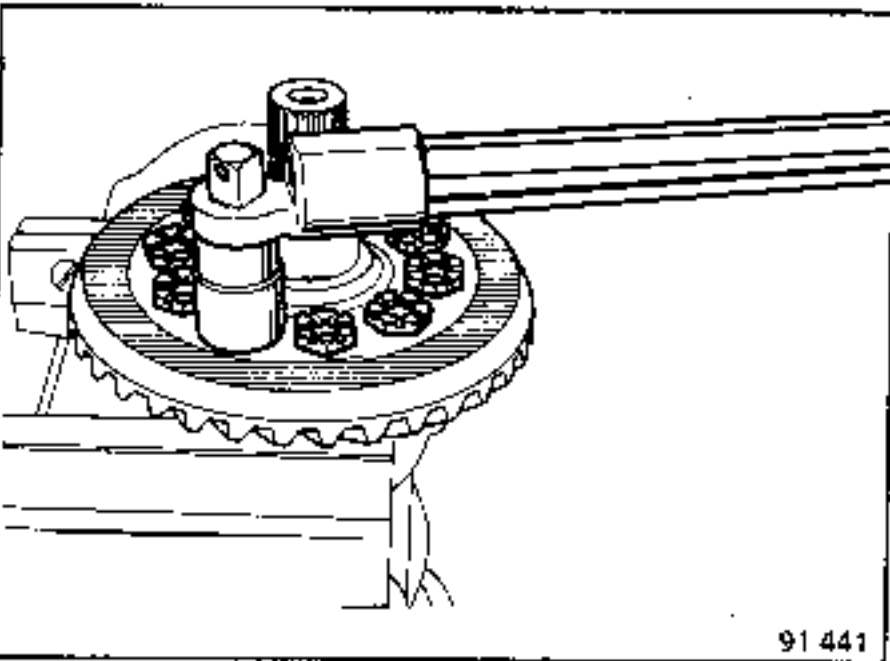
Immerse the 2nd sun wheel in oil and place it in the housing.

Fit the crown wheel to the housing using new self-locking bolts. The spigot bolts will locate the small shafts.

Tighten the bolts to torque.



Fit the O rings to the sun wheels.  
Fit the speedometer drive worm and its circlip (when applicable).



Carry out the differential bearing pre-load adjustment.

Reassemble the various housings.

After assembly, the differential may be slightly stiff to rotate.

Refit the 2 bearings (42) and (43) on the press.

UNI (Alpine)

Insert the backlash adjusting shim washer between the housing and the bearing (42) (see page 32).

**ESSENTIAL SPECIAL TOOLS**

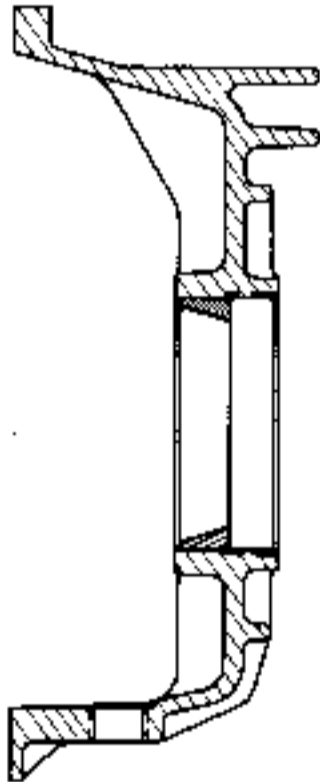
- B.Vi.645** Castellated wrench for differential nut  
**B.Vi.805** Castellated wrench for differential nut  
 (for fitting to B.Vi.645)

**TIGHTENING TORQUES (in daN.m)**

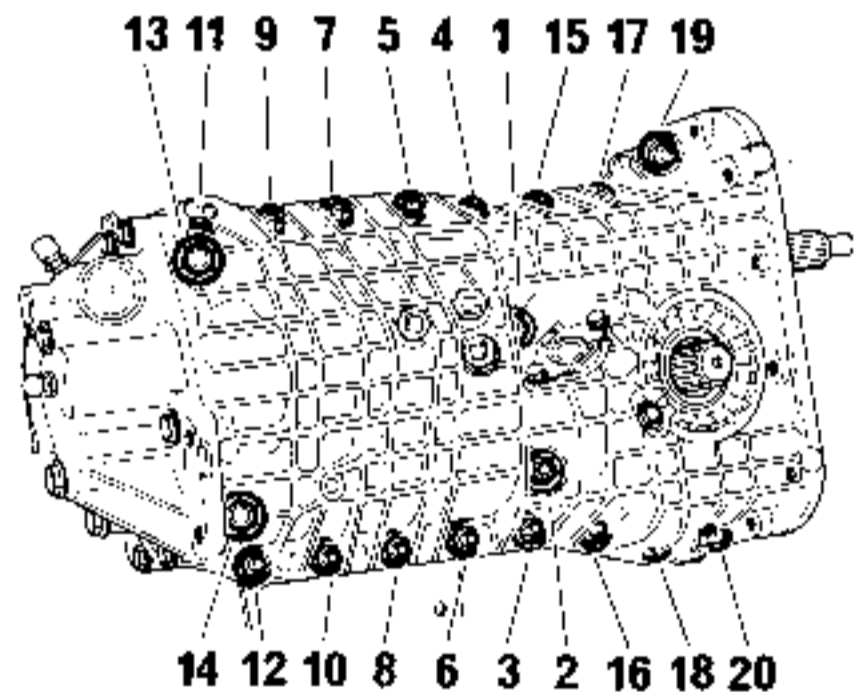
Bolt $\emptyset$ 8 mm, housing securing	2.5
Bolt $\emptyset$ 10 mm, housing securing	5

Fit the differential to the housings, without the final drive pinion and tighten the housing securing bolts to the specified torques.

The bearing track rings can be removed either on a press, using a piece of tube, or with a bronze drift.



91 439



77 644

Fit, to the part of the housing that has no adjusting nut, the track ring for the corresponding bearing and ensure that it engages fully in its location.

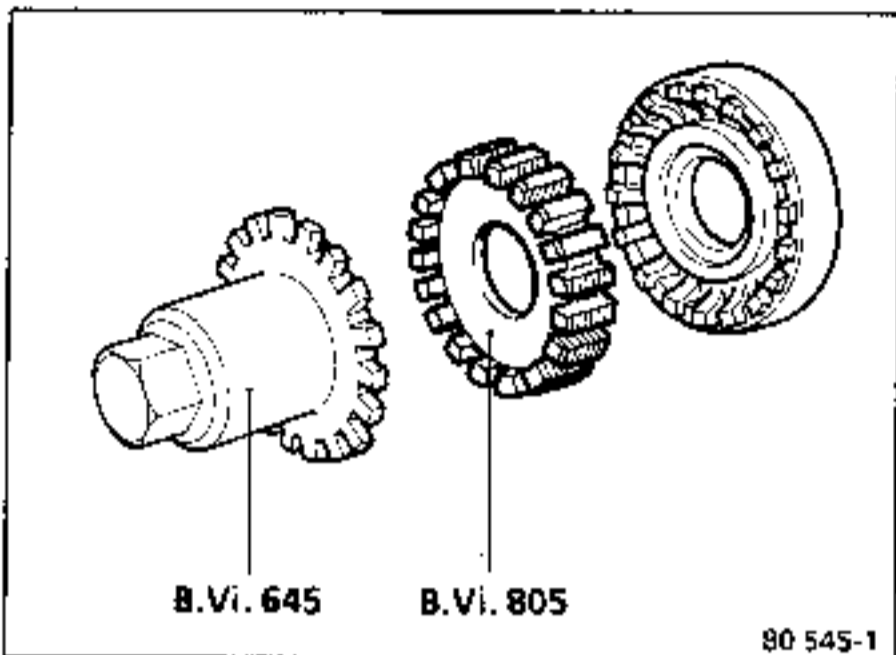
On the housing fitted with an adjusting nut, fit the track ring for the other bearing, slightly back from the inside face of the housing.

- The adjusting nut is on the :
- right hand housing on GB type UN1
  - left hand housing on GB type UN5

Note :  
 The track rings and bearing cages must not be intermixed.



The bearing preload is adjusted by screwing the nut in or out using tools B.Vi.645 and B.Vi.805, so as not to damage the lip seal.



One of two sets of circumstances may arise :

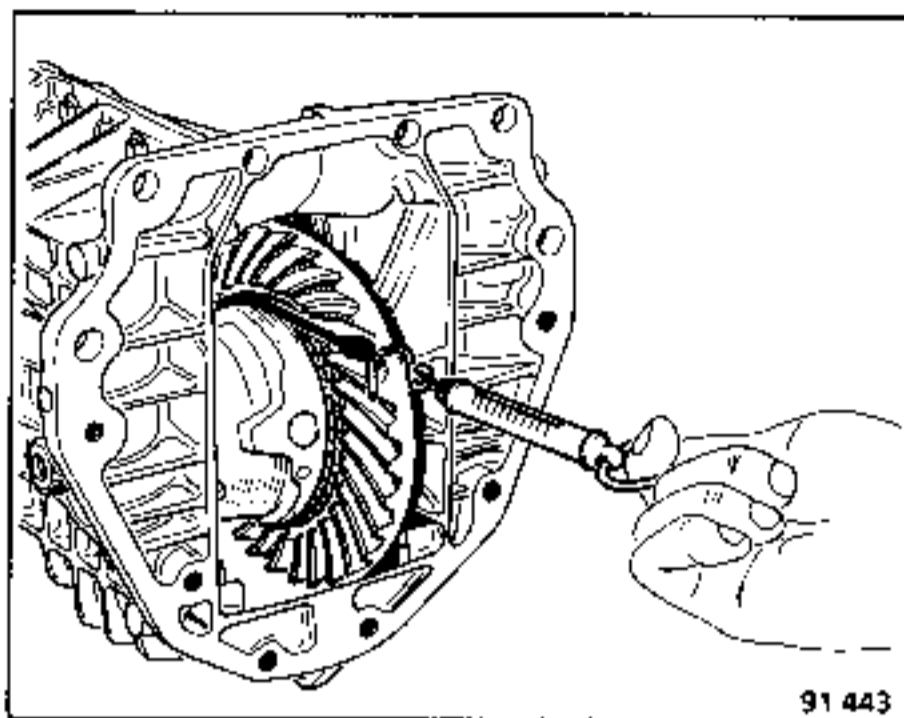
1. If the original bearings are refitted  
The differential must rotate freely without play. If all the original parts have been refitted, refit the nut, using a new oiled O ring, screwing it in by the number of turns and to the reference marks made during dismantling.

2. If new bearings are fitted  
Screw in the nut, fitted with a new, oiled O ring until the differential is slightly stiff to rotate and then check the preload.

Turn the differential a few times to centralise the bearings.

Wrap a piece of string round the differential housing.

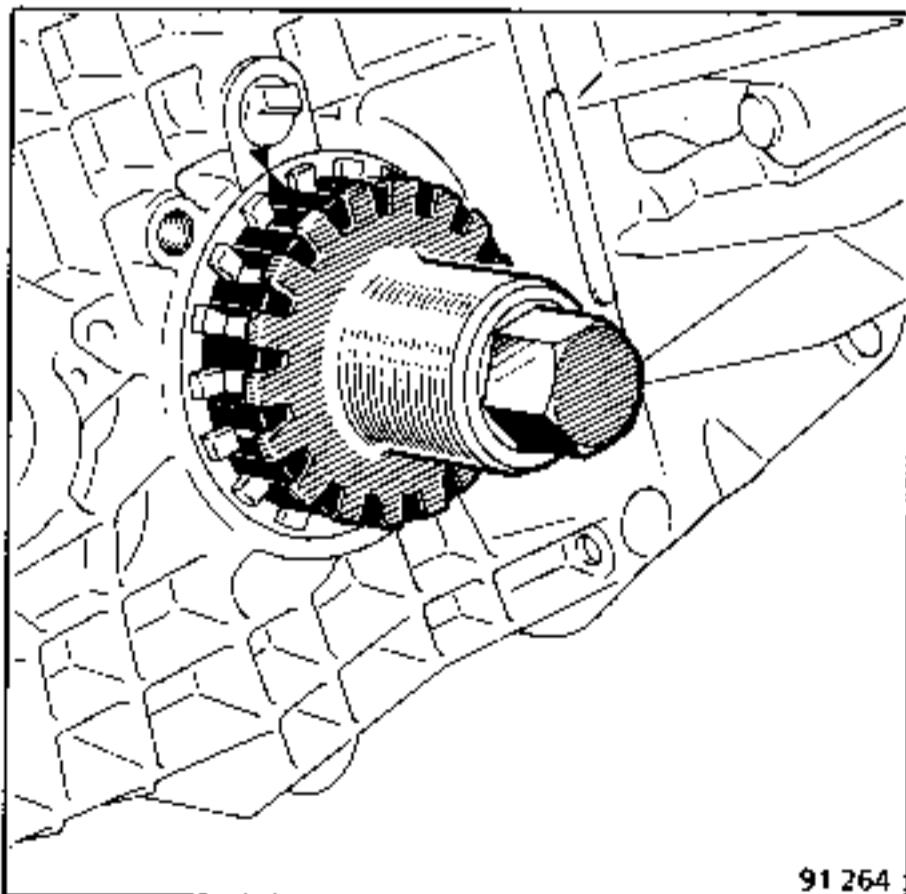
Pull on the string with a spring balance.



The differential should rotate under a load of between 5 and 6.5 daN. This is the load necessary to keep the differential turning.

If the adjustment is not correct, screw the nut in or out and recheck the preload.

In both cases, after the correct adjustment has been obtained, make a position mark across the housing and the nut.

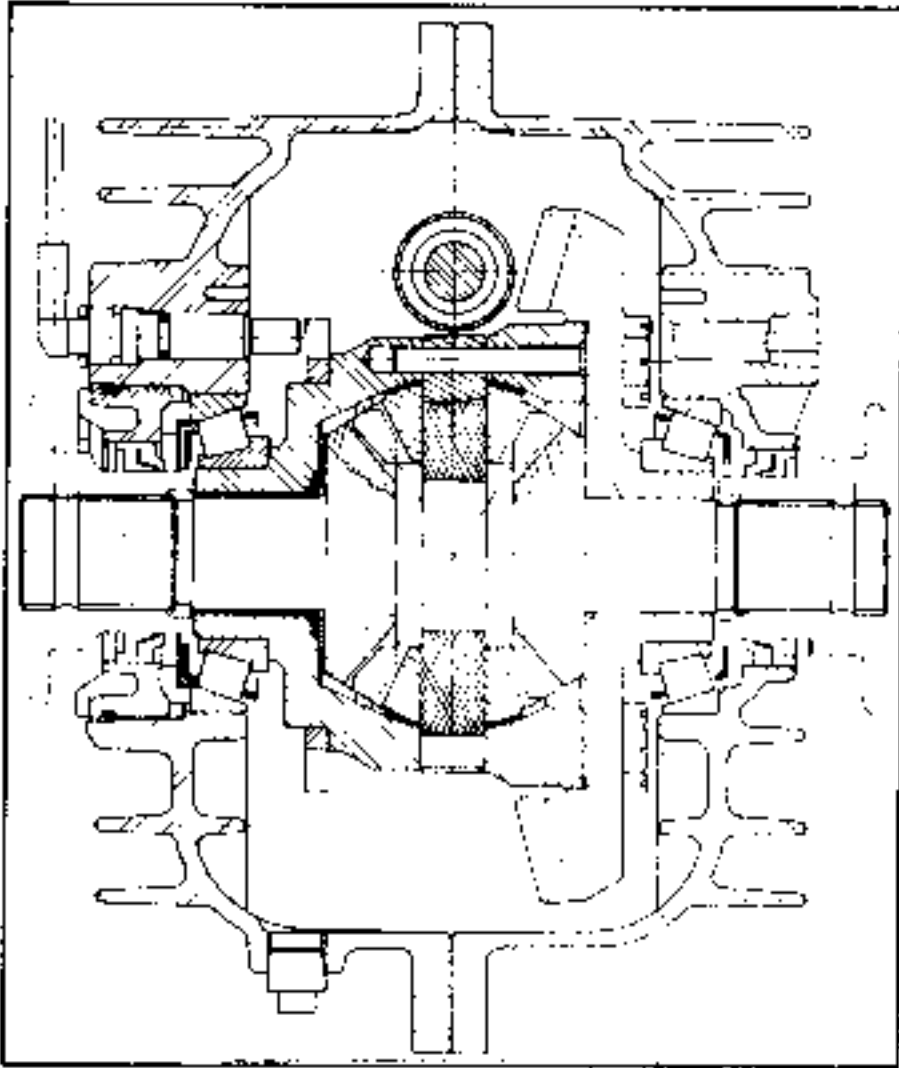


Loosen the nut by 1/6 turn (3 castellations) to eliminate the preload during the gearbox reassembly phase and prior to fitting the clutch housing.

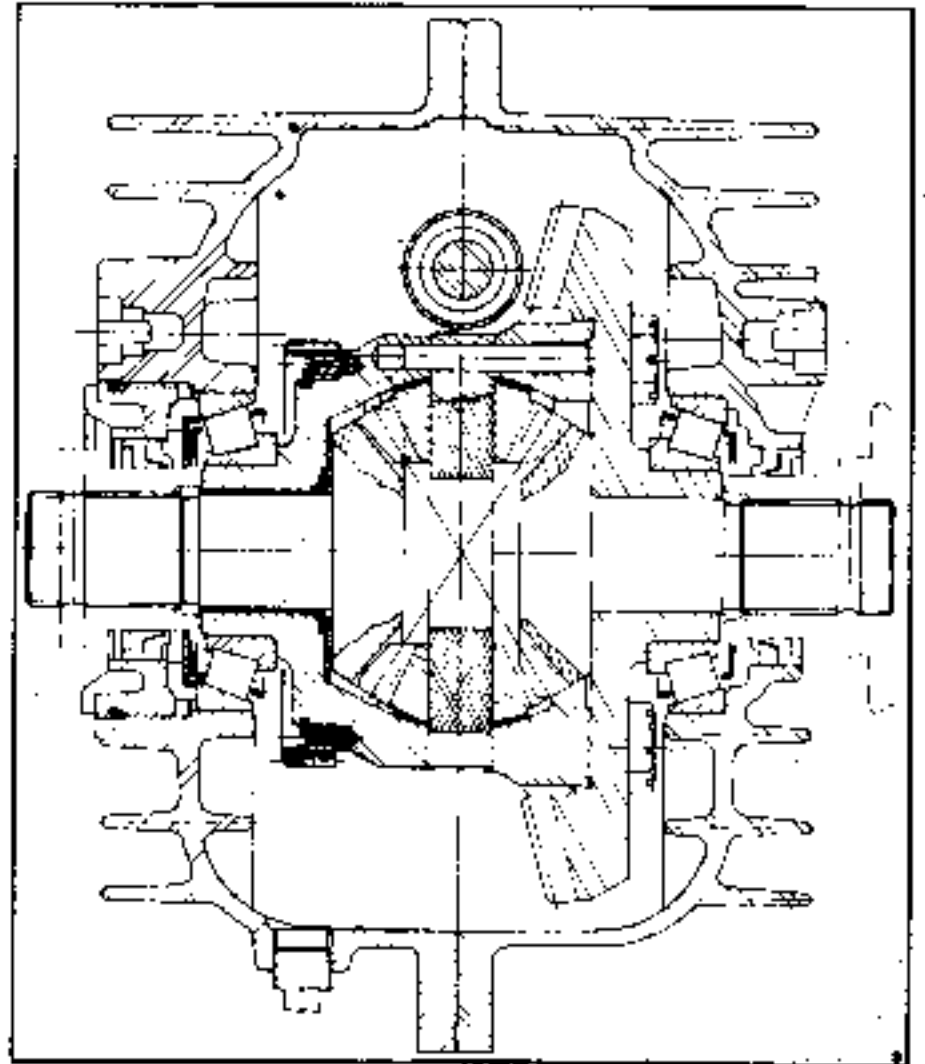
Separate the housings and reassemble the gearbox unit.

Side on which the crown wheel is fitted  
(as seen from clutch housing end)

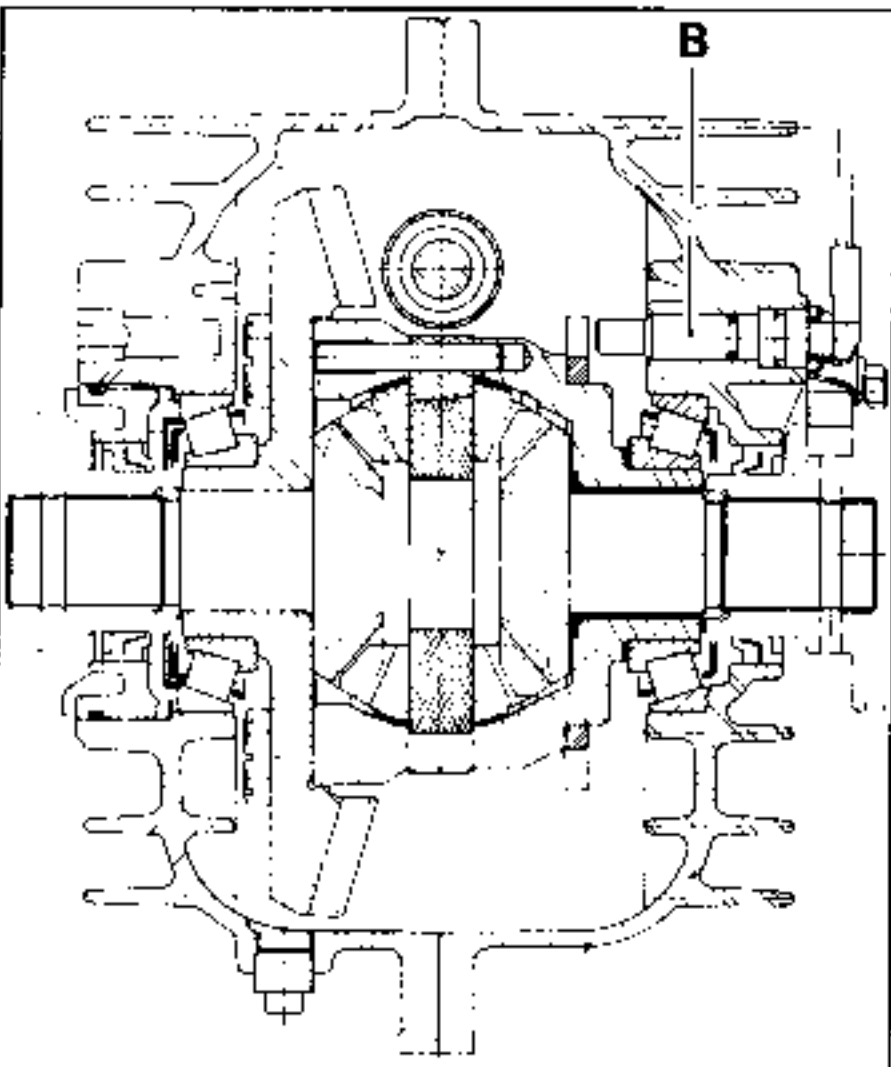
**UN1 (B29)**



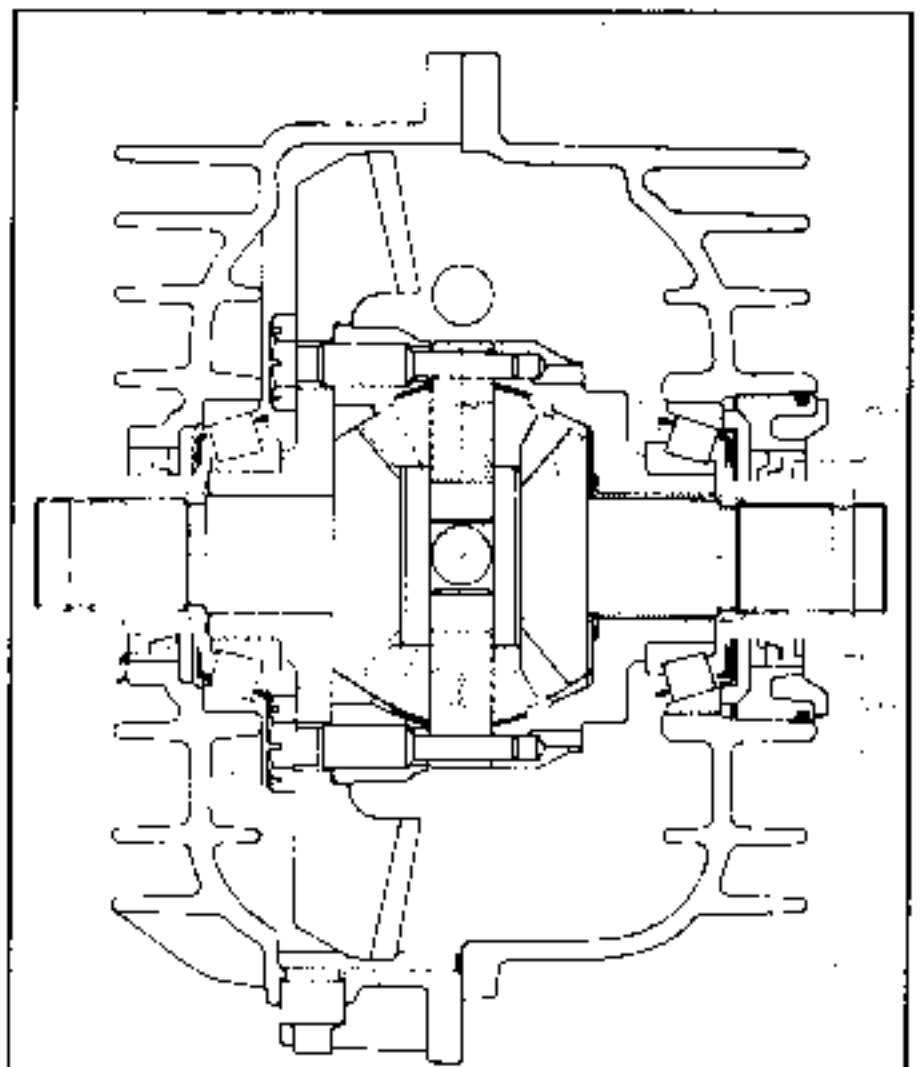
**UN1 (L48)**



**UN1 (D50) Alpine**



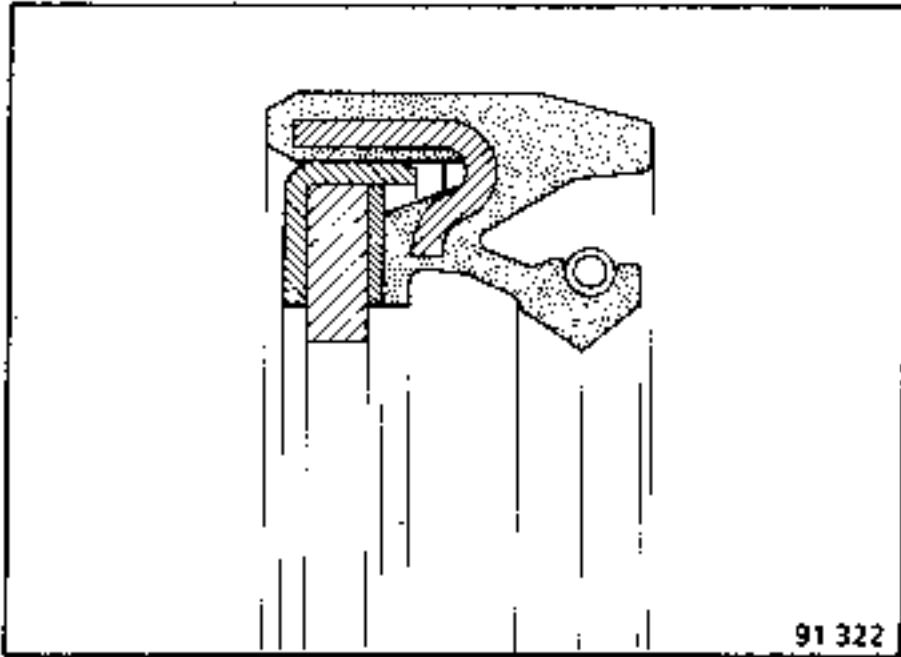
**UN5 ALL TYPES**



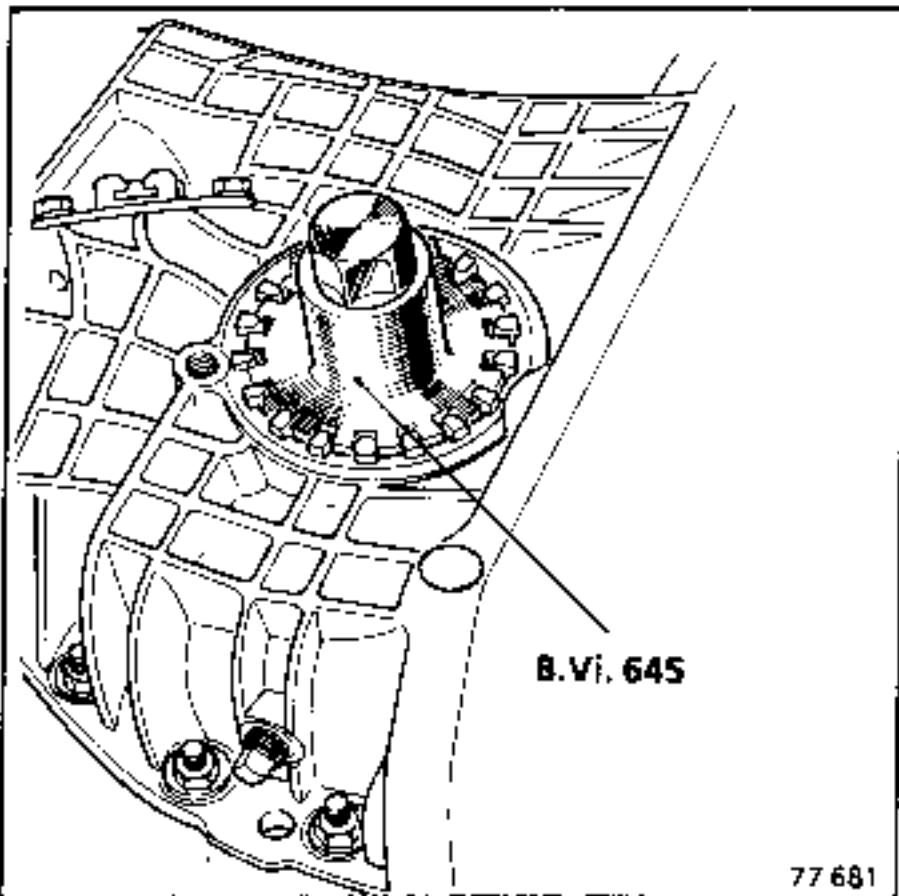
The type UN5 gearbox has a differential seal with 2 lips.

**UN5**

Seal with 2 lips



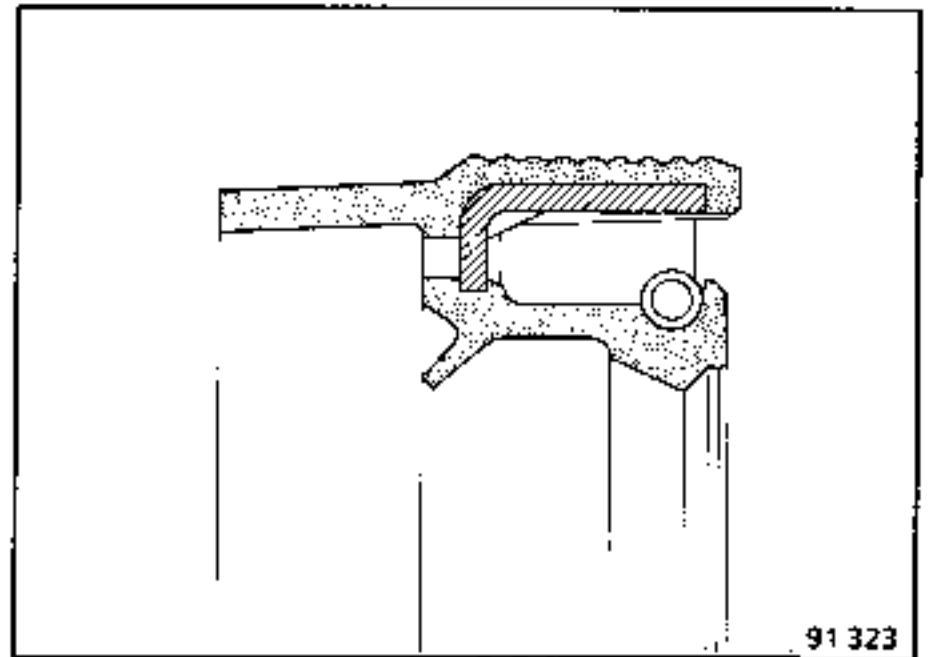
To remove or refit the adjusting nut, use tool B.Vi.645.



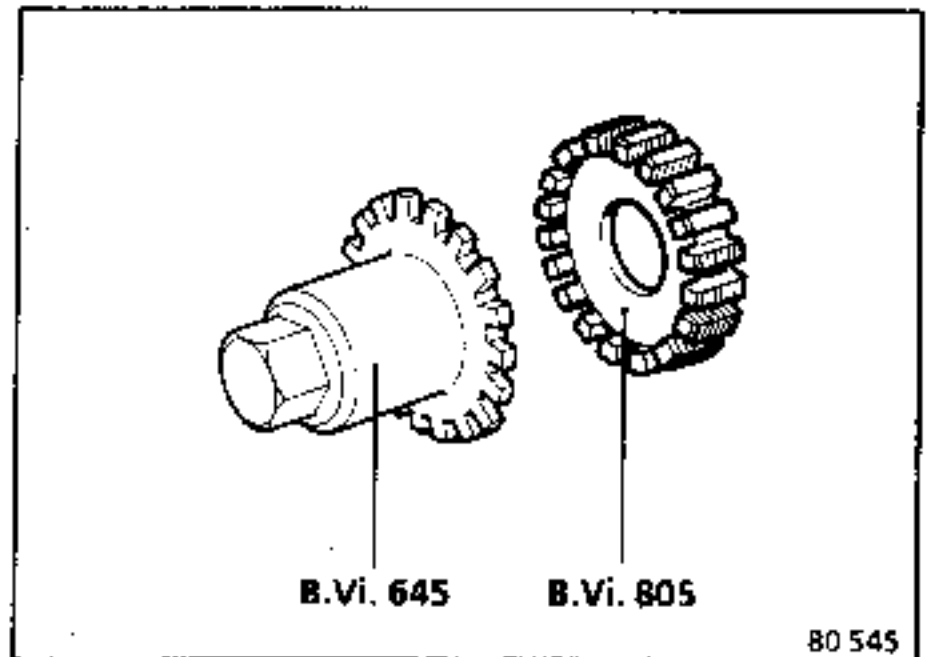
Type UN1 gearboxes are fitted with a differential seal that has 3 lips.

**UN1**

Seal with 3 lips



It is essential to use tool B.Vi.805, in addition to B.Vi.645, to remove and refit the nut to avoid damaging the outer lip on the seal.

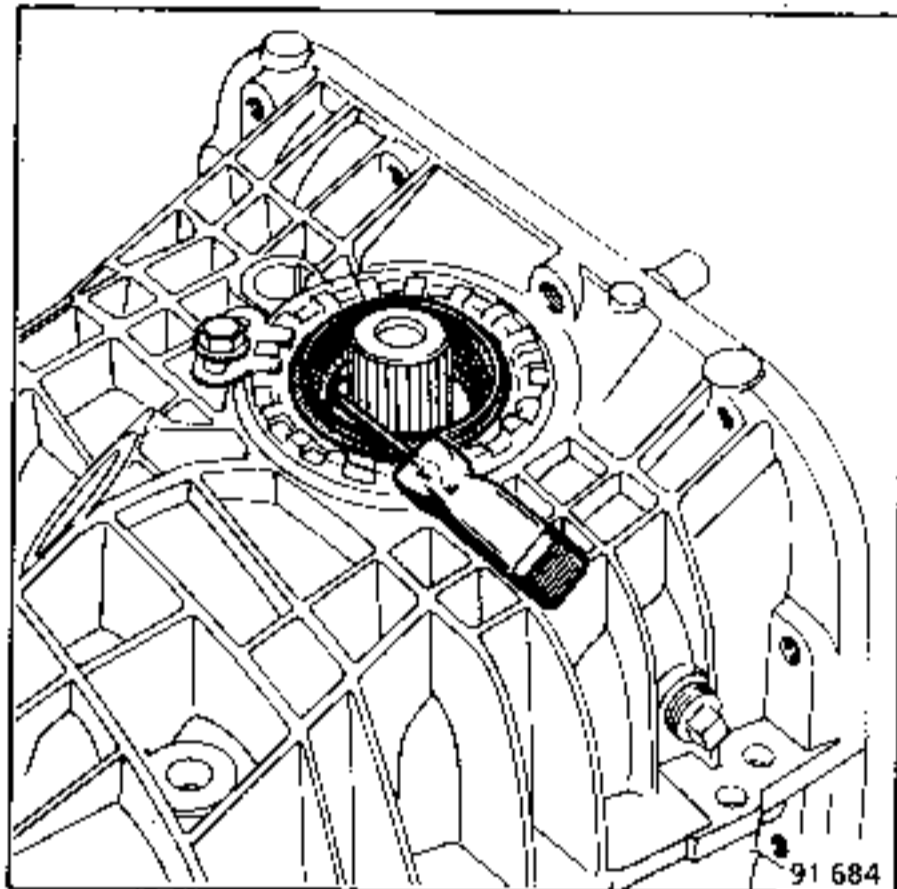


ESSENTIAL SPECIAL TOOLS

B.Vi.1081 Differential seal fitting tool

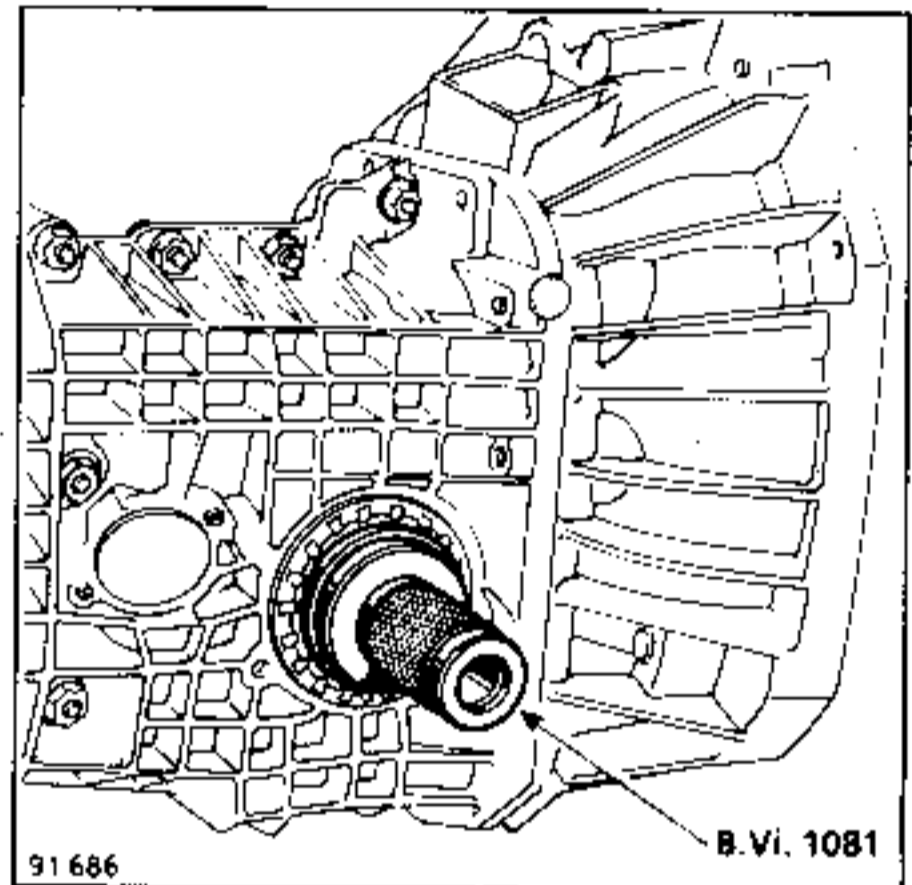
REMOVING

Remove the seal with a screwdriver, taking care not to damage the splines on the sun wheel.



1. Seal fitted to adjusting nut

Fit ring (B) (with its chamfer facing outwards) to tool (A) and fit the lip seal after first oiling it.

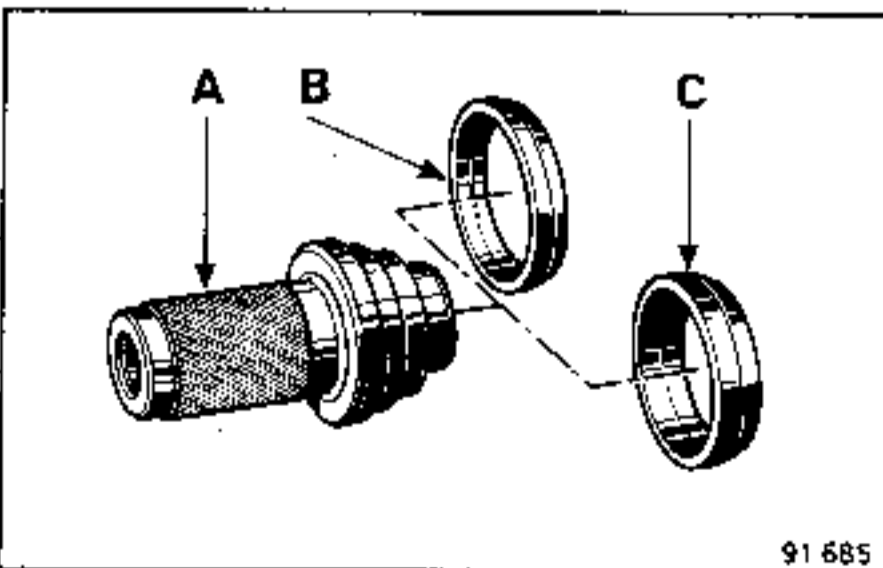


FITTING

Lip seals are fitted using tool B.Vi.1081.

2. Seal on the housing

Carry out the same operations but this time use the ring (C) to position the seal.



- A Tool for fitting lip seals
- B Ring for positioning the seal on the nut
- C Ring for positioning the seal on the housing

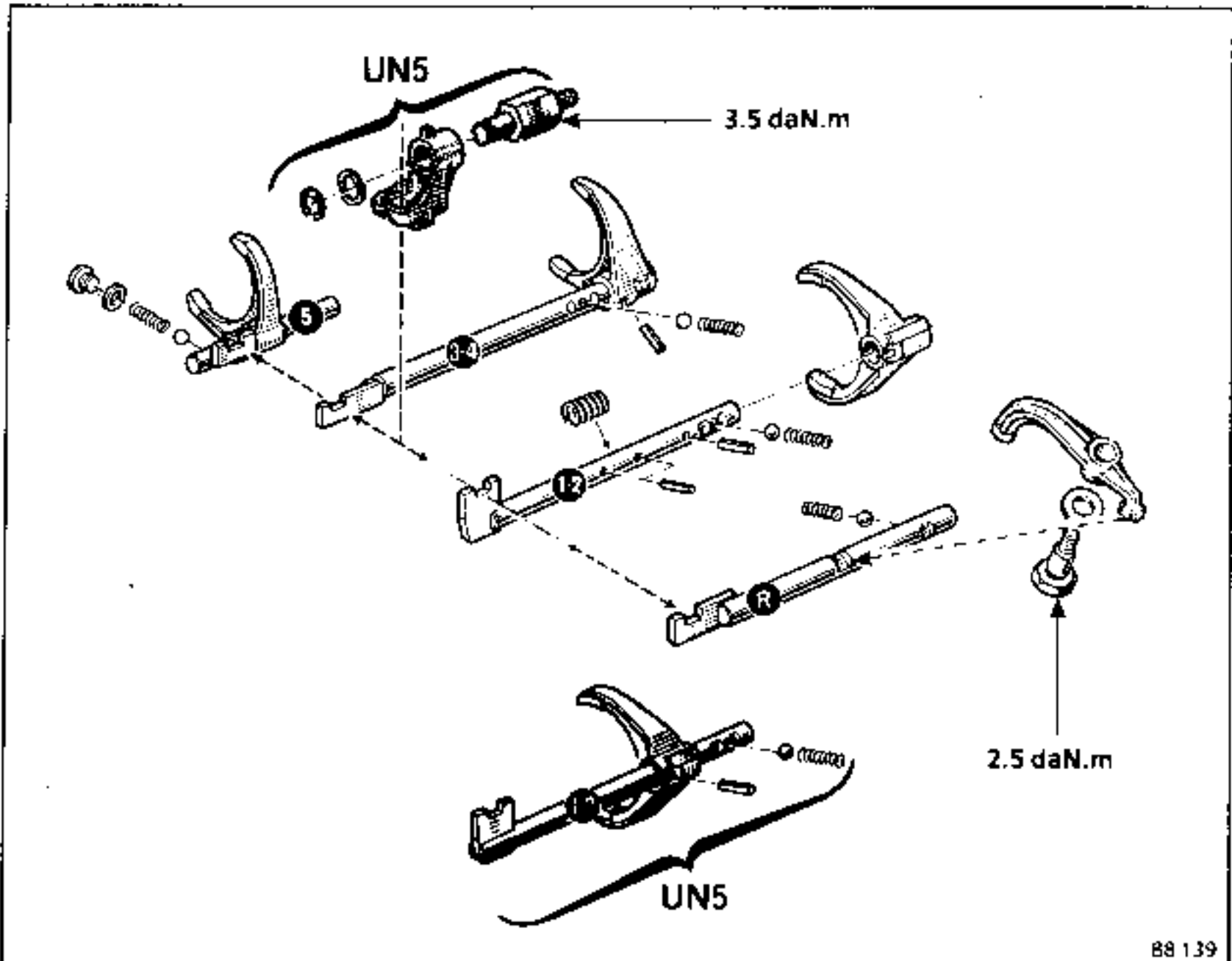
This operation is carried out after separating the housings.

ESSENTIAL SPECIAL TOOLS	
B.Vi. 31-01	Set of punches for 5 mm $\phi$ pins
B.Vi. 606	Set of punches for 6 mm $\phi$ pins

TIGHTENING TORQUES (in daN.m)	
Reverse assembly bolt	2.5
Locking rocker shaft (UN5)	3.5

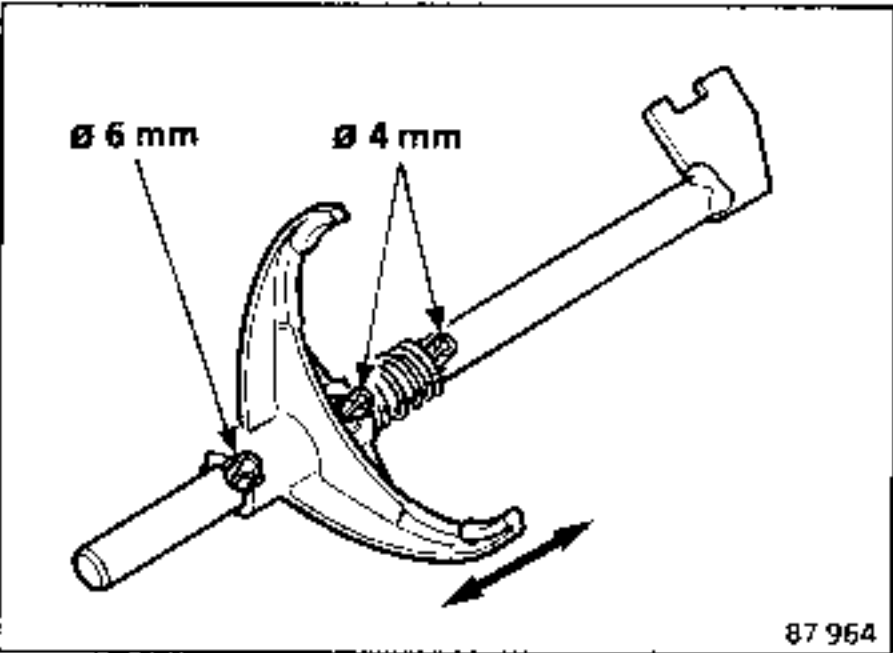
CONSUMABLES
Loctite FRENLOC :
Reverse assembly bolt
Locking rocker shaft bolt (UN5).

EXPLODED VIEW



DISMANTLING

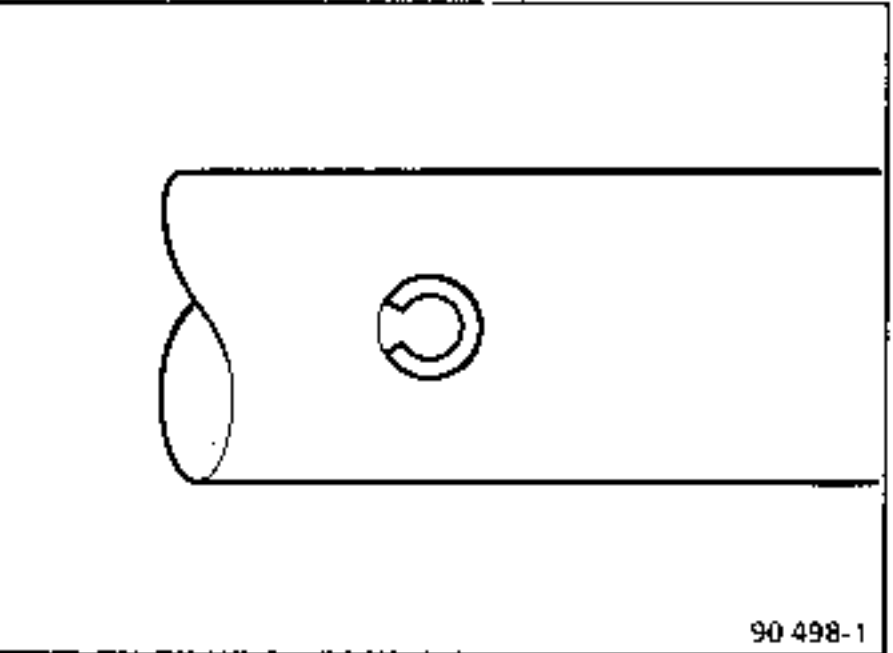
Remove the reversing light switch.  
Place the shift fork shafts in the neutral position.  
Knock out the spring pins from the 1st/2nd and the 3rd/4th shift fork shafts using punch B.Vi.606 and a 4 mm  $\phi$  pin punch.



Retrieve the locking balls and springs.  
Unscrew the reverse selector securing bolt and remove the selector and its shaft.  
5th speed fork : pin  $\phi$  5 mm (B.Vi.31-01).

REASSEMBLING

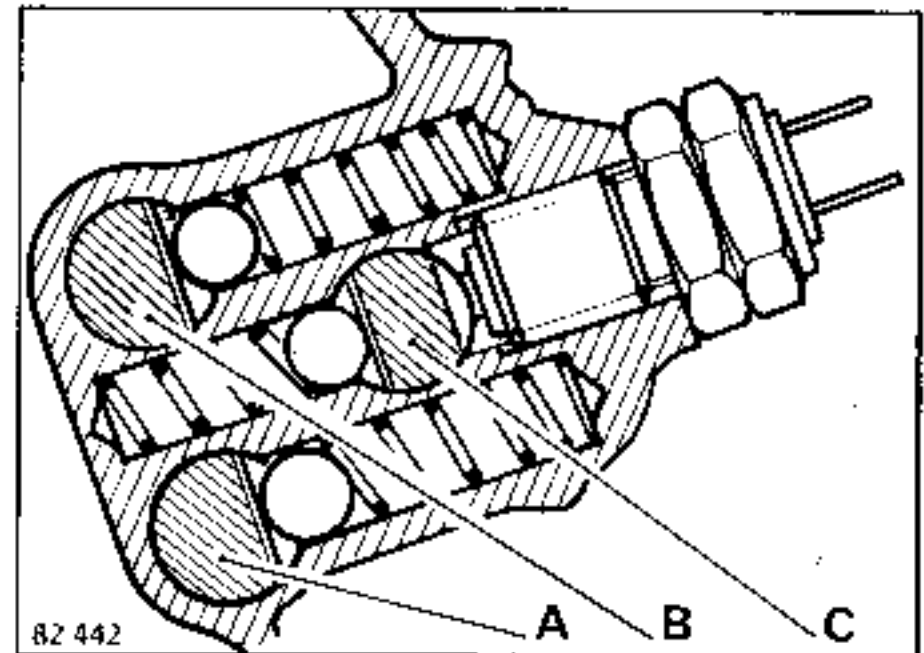
The slots in the spring pins must lie along the shift fork shaft centrelines.



The 3 locking balls are identical.

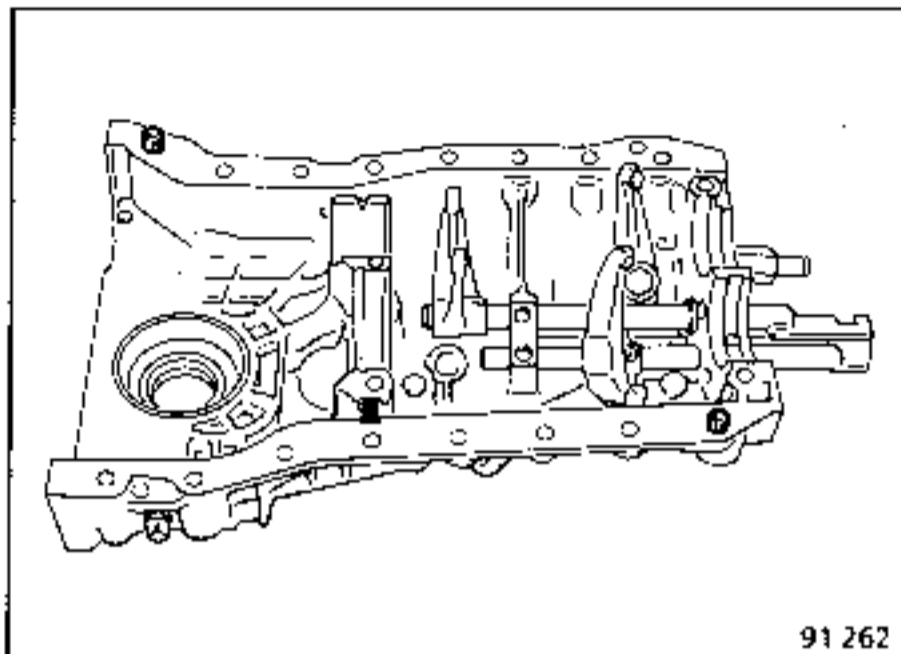
ALL TYPES

The 1/2 (A) and 3/4 (B) locking springs are identical.



Fit the locking ball and spring and insert the reverse shift shaft.  
Fit the reverse selector, inserting its end into the slot (E) in the shaft.  
Coat the threads on the reverse selector bolt with Loctite FRENBLOC and tighten it to the specified torque.  
Fit the locking ball and spring to the 3rd/4th shift fork shaft.  
Insert the shaft, fit the fork and pin it in place.

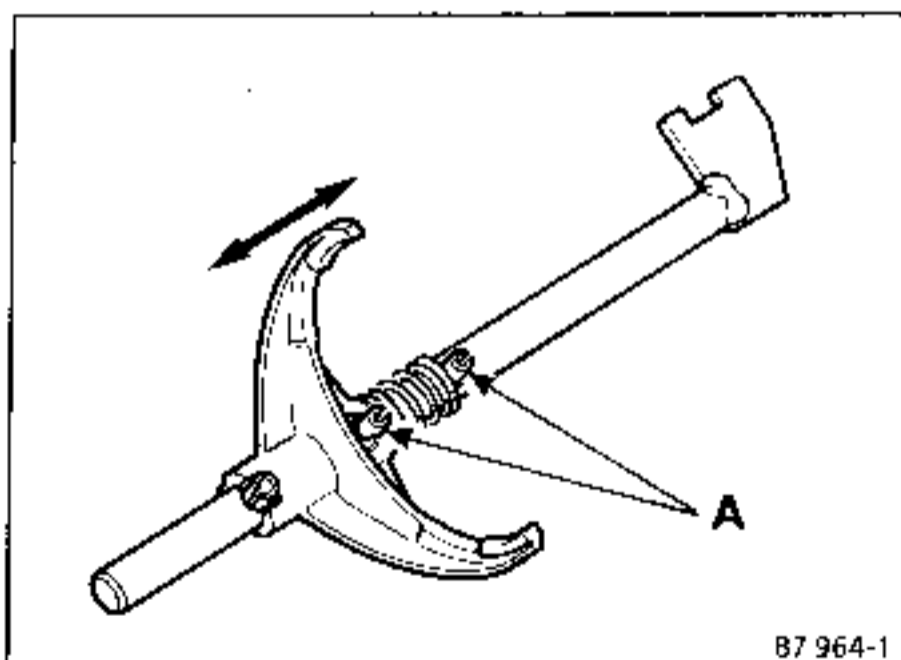
Fit the locking ball and spring to the 1st/2nd shaft whilst inserting it.



### UN1

2nd speed synchronisation assistance

When fitting the 1/2 shift fork to its shaft, it is essential to ensure that the pins (A) are the correct way round. To avoid them fouling the 1st speed gear, they must not project above the spring coils, at the top.

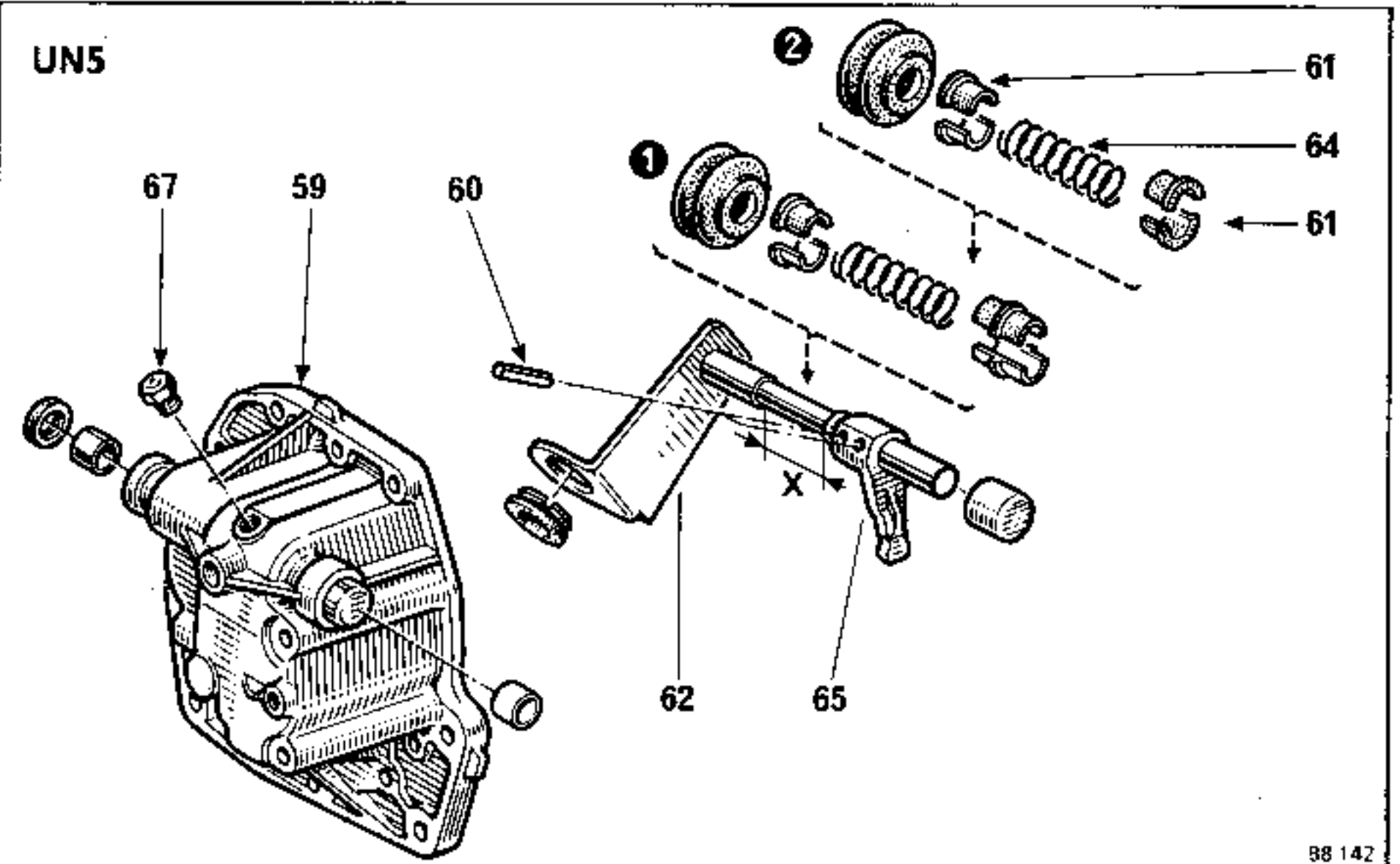
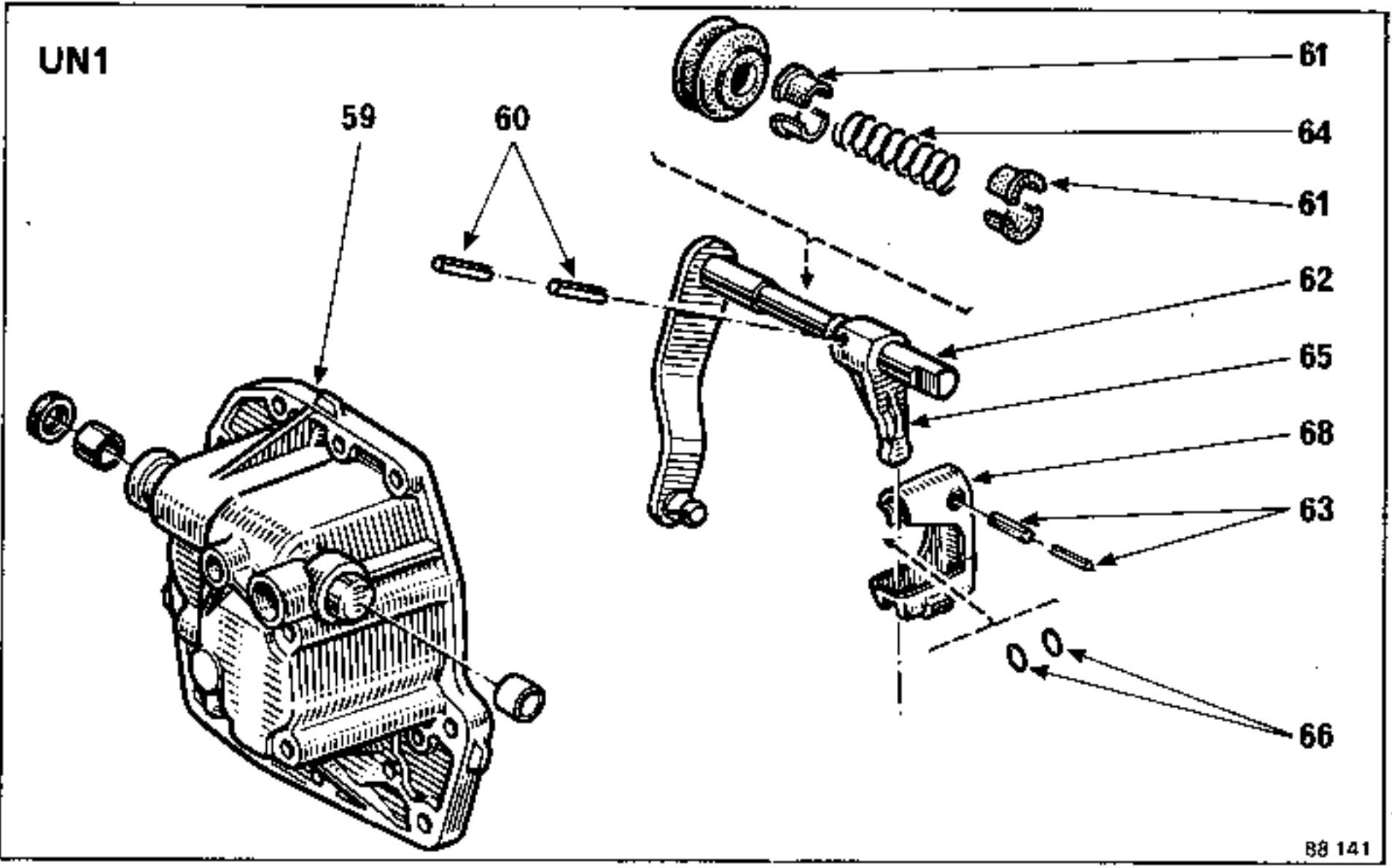


Check that the fork slides freely on the shaft (see arrow).

Refit the gearbox primary and secondary shafts, ensuring that the shift forks engage correctly in the grooves in the sliding gears.

Tighten the reversing light switch to a torque of 2.5 daN.m (its threads must be coated with CAF 4/60 THIXO compound).

EXPLODED VIEWS



1: Early type - X = 46 mm

2: Later type - X 38.4 mm



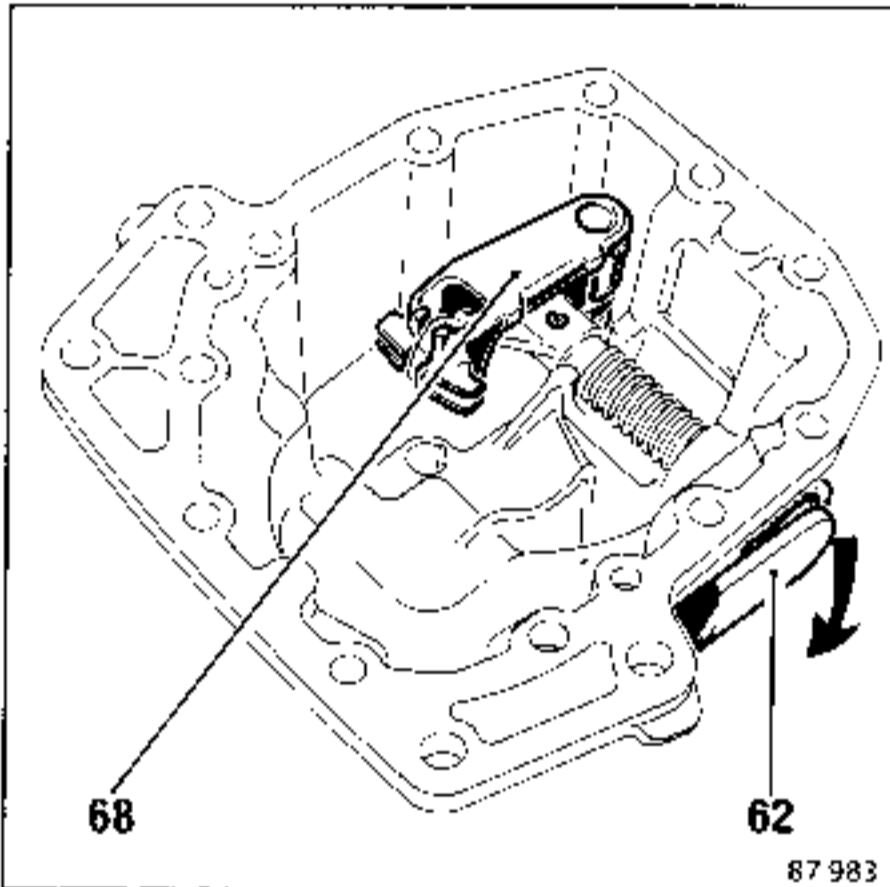
ESSENTIAL SPECIAL TOOLS

- B.Vi. 606** Set of punches for 6 mm  $\varnothing$  pins
- B.Vi. 747** Fork for removing and refitting the selector spring

DISMANTLING

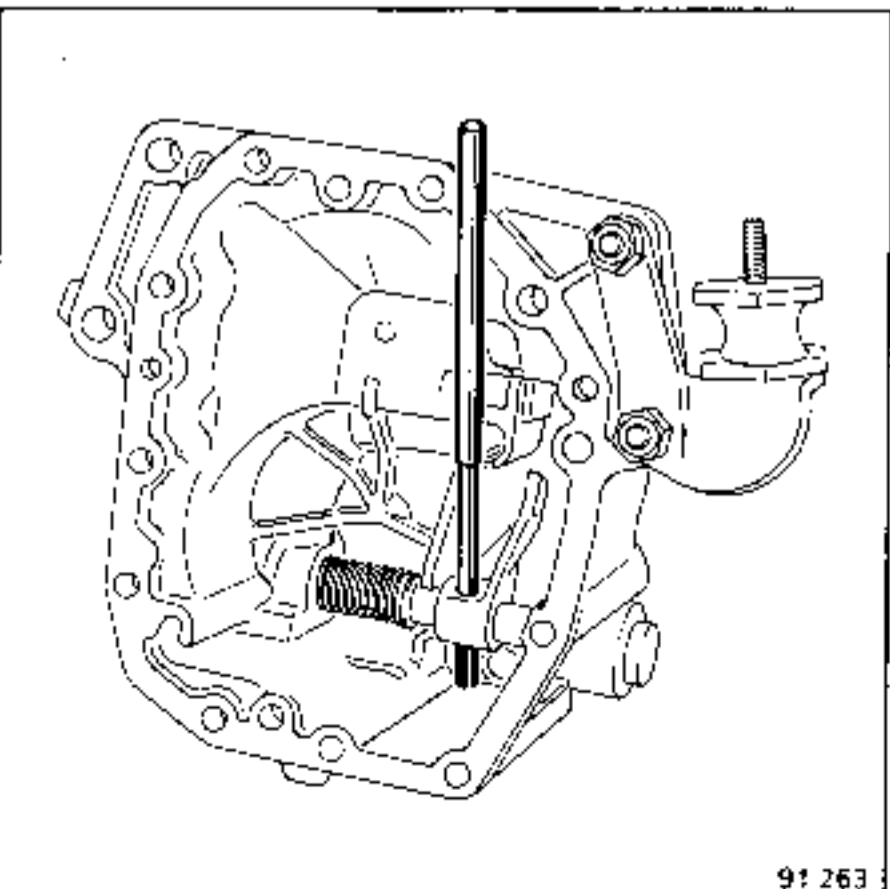
UN1

Pull the shaft (62) in the direction shown by the arrows and remove the rocker.

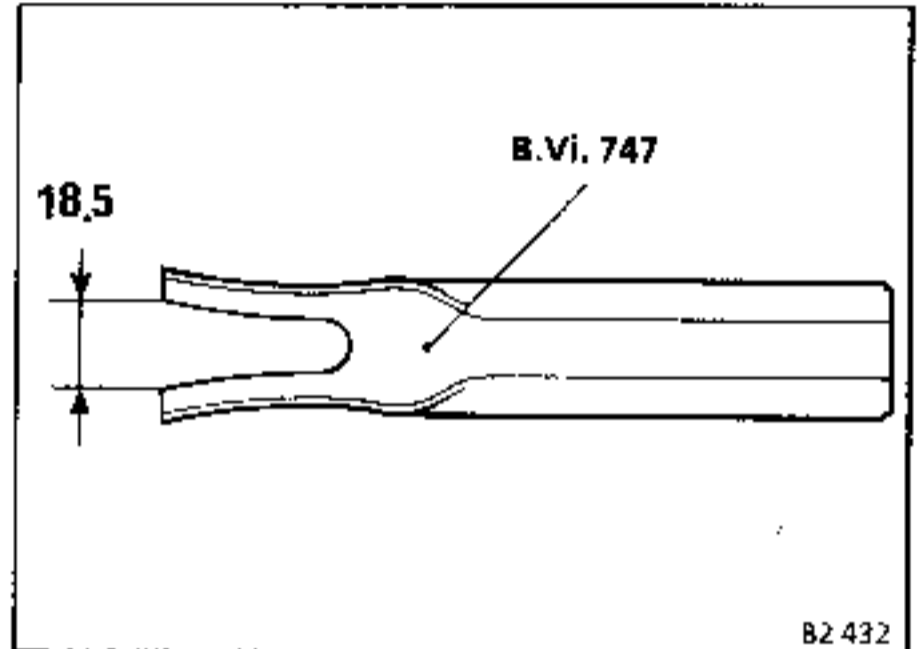


Unpin the engagement lever (65) :

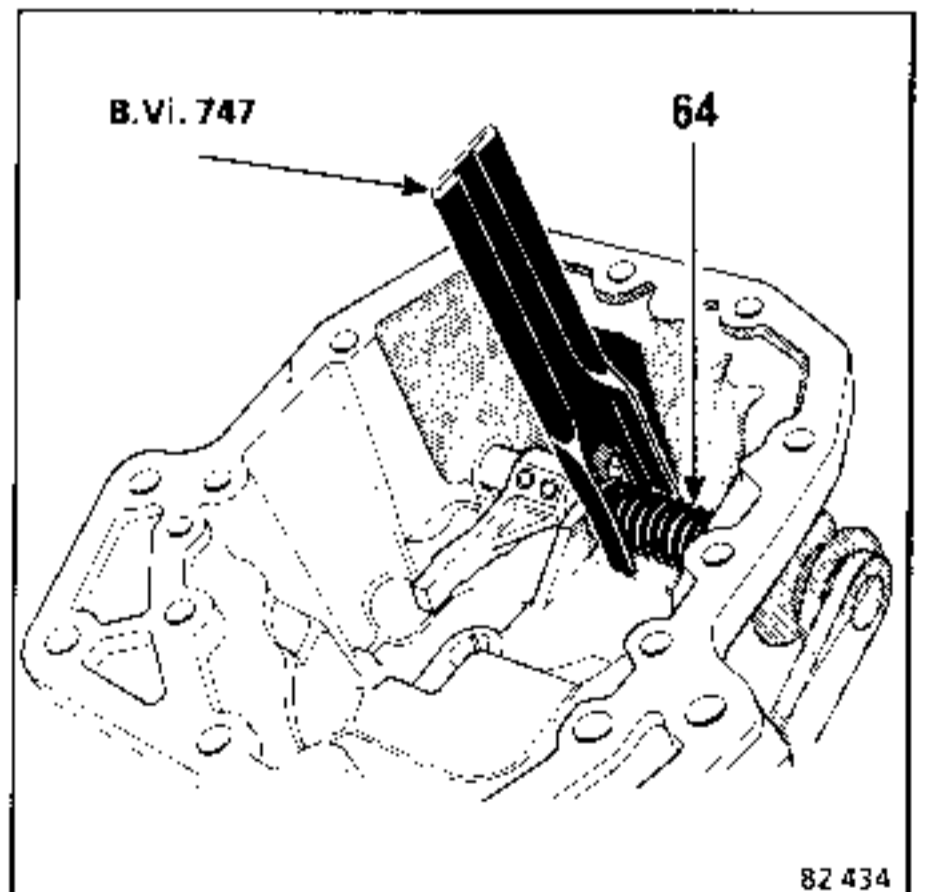
- outer pin  $\varnothing$  7 mm
- inner pin  $\varnothing$  4 mm



Compress the spring (64) with tool B.Vi. 747 modified as shown in the drawing below.



Remove the half shells (61).



### UN5

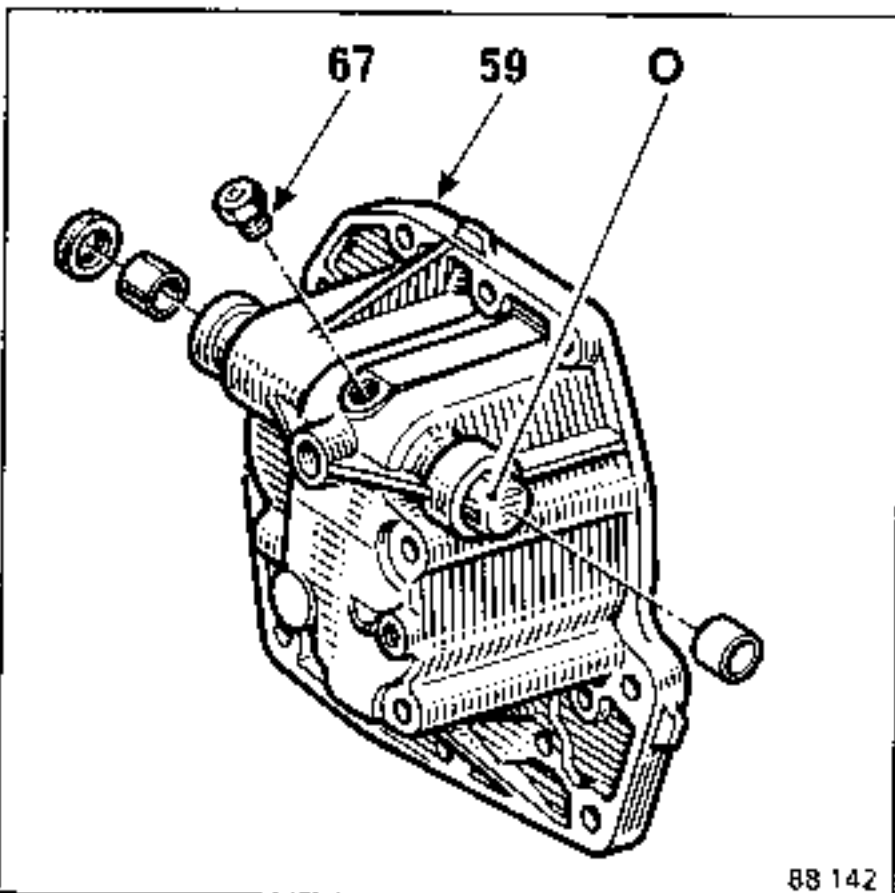
Remove the plug (67) to gain access to the pins.

Unpin the engagement lever (65) (B.Vi.606).

Pull the shaft outwards and retrieve the selector lever and the spring.

Remove the lip seal by levering it out with a screwdriver.

Knock out the plug (O) using a 16 mm  $\varnothing$  rod inserted through the control shaft bore.



Knock out the bushes using a tube with an outside  $\varnothing$  of 17 mm or 19 mm (depending on the arrangement).

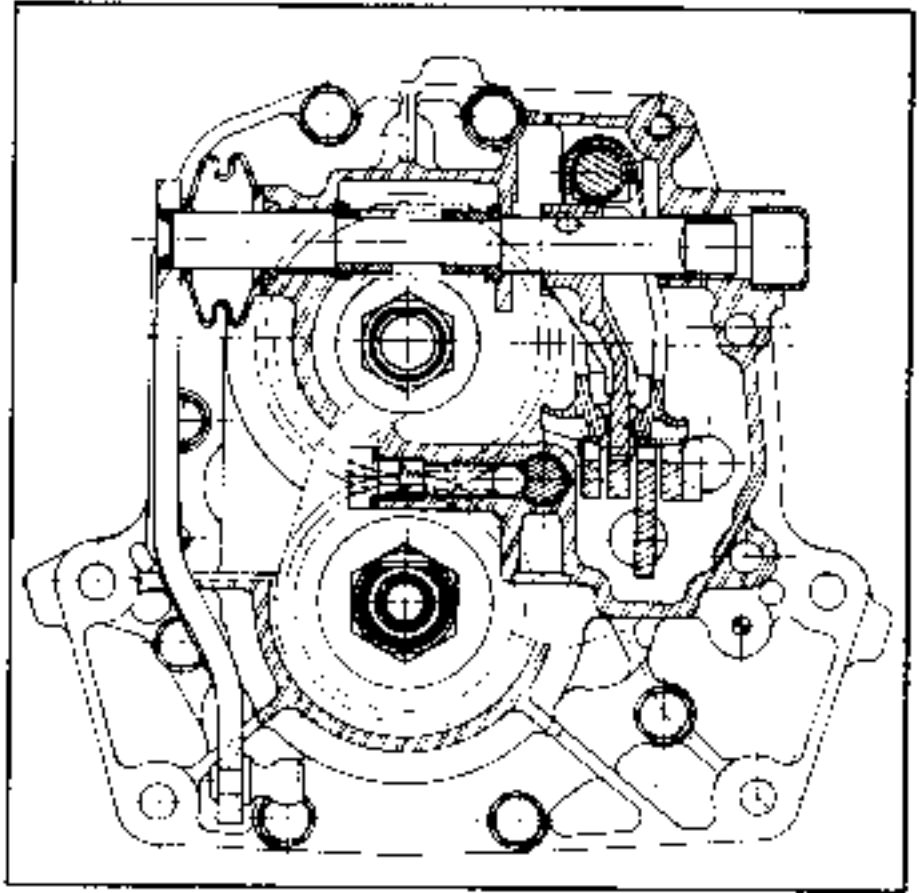
### REASSEMBLING

Refit the 2 bushes, using the tube used for removing them, and a plastic headed mallet.

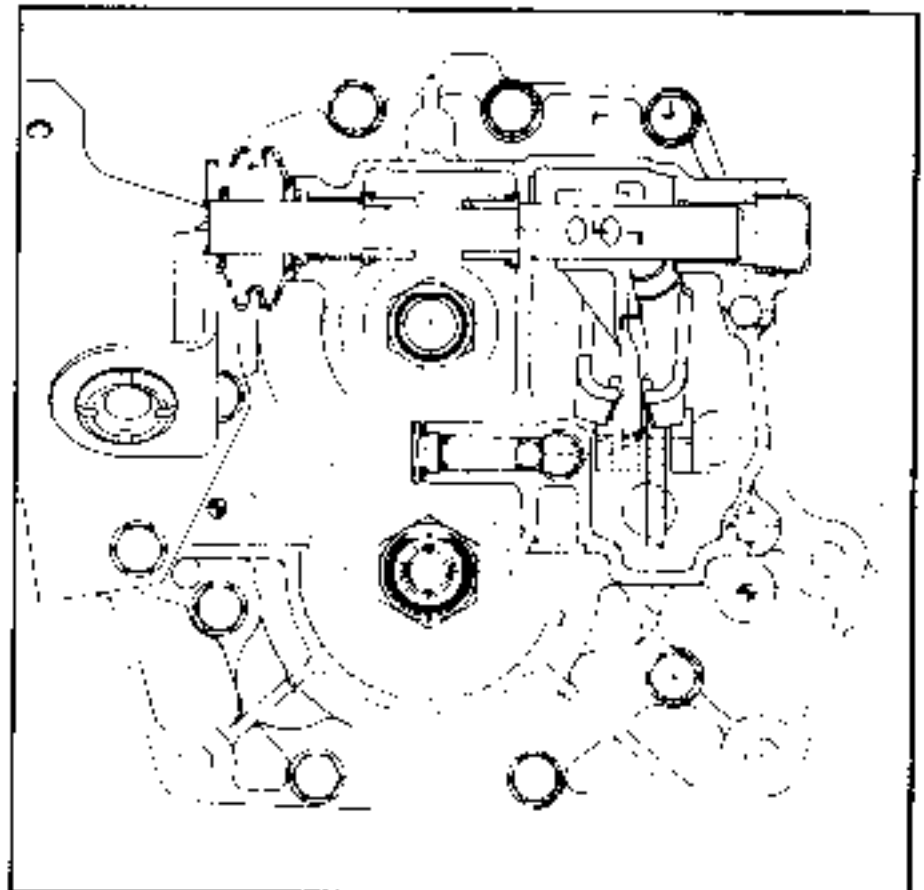
Ensure that the bushes are correctly positioned.

### UN1

The slot in the bush opposite the crescent section.



### UN5



Refit, in the following order :

- the lip seal, after first oiling it, against the shoulder in the housing,
- the plug (O) coated with caf 4/60 THIXO compound.

Remove any burrs from the shaft with fine emery cloth to avoid damaging the lip on the seal.

Refit the following to the housing :

- the spring,
- the engagement lever,
- the shaft and its bellows.

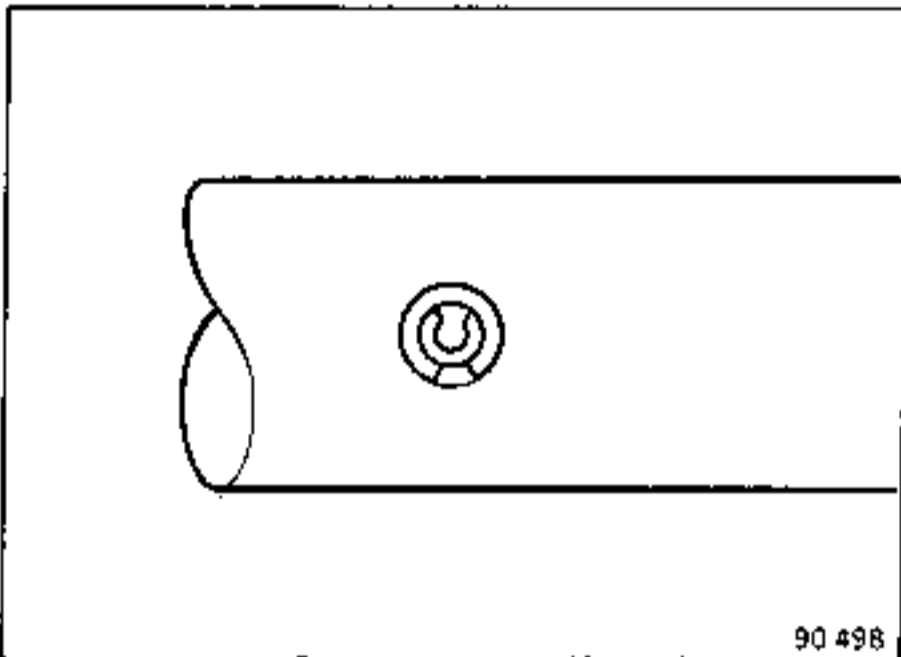
Using tool B.Vi.747, compress the spring and fit the half shells.

Pin the engagement lever (B.Vi.606).

Ensure that the pins are fitted in the correct direction.

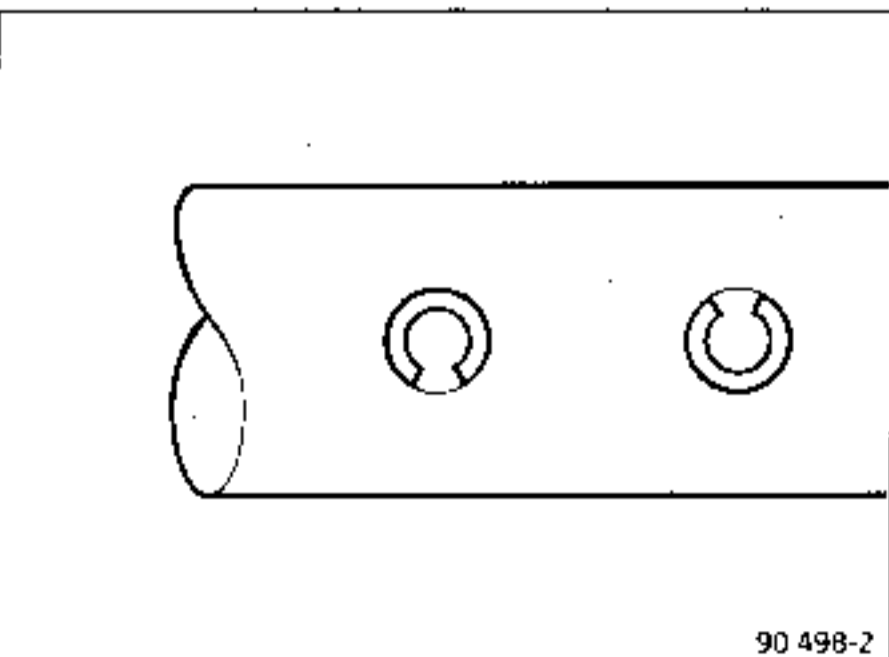
### UN1

The slots in the pins must be square with the centreline of the shaft and on opposite sides to one another.



### UN5

The slots in the pins must be square with the centreline of the shaft and on opposite sides to one another.

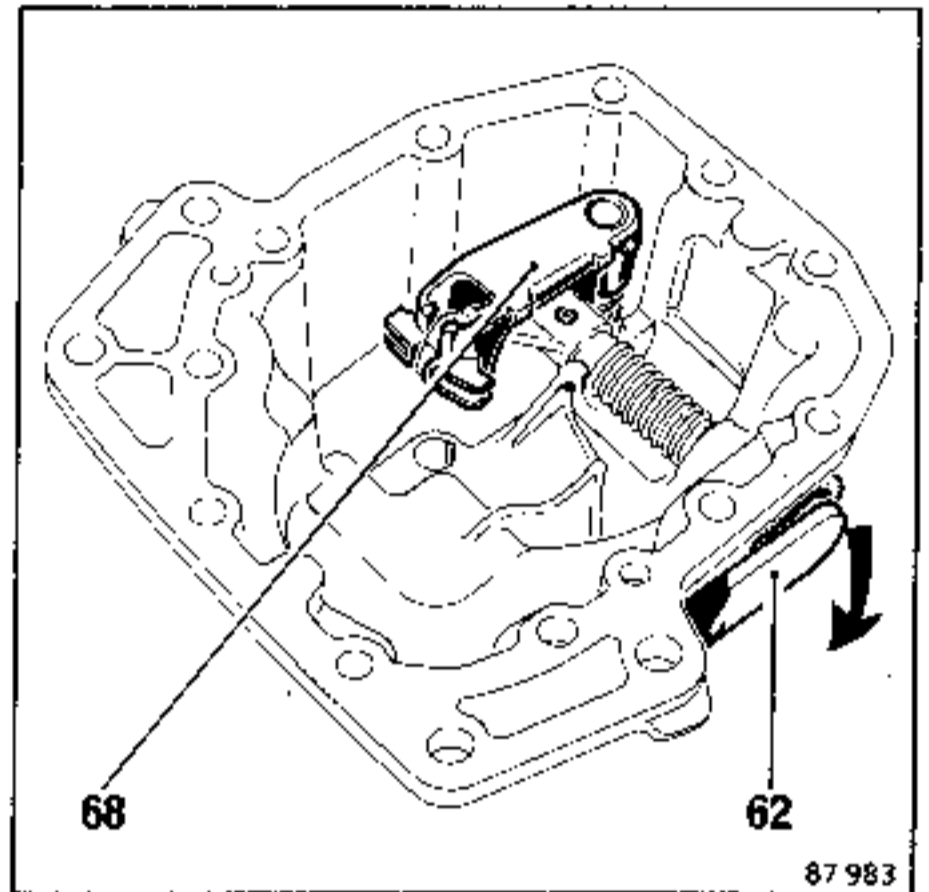


Fit the plug (67) to the housing and tighten it to torque.

Check that the shaft slides freely without play.

### UN1

Fit the locking rocker (69), after oiling its seals, and check that it slides freely on the engagement lever (65).



The outer track ring of the bearing on the guide tube is equipped with a lip seal that involves the taking of certain precautions during fitting.

This seal is lubricated by a hole in the housing.

Replacing the tube involves replacing the shaft if its bearing area is damaged because the bearing rollers and the lip seal run directly on the clutch shaft.

**REMOVING**

Extract the guide tube on the press.

After a guide tube has been extracted on the press it cannot be refitted.

**FITTING**

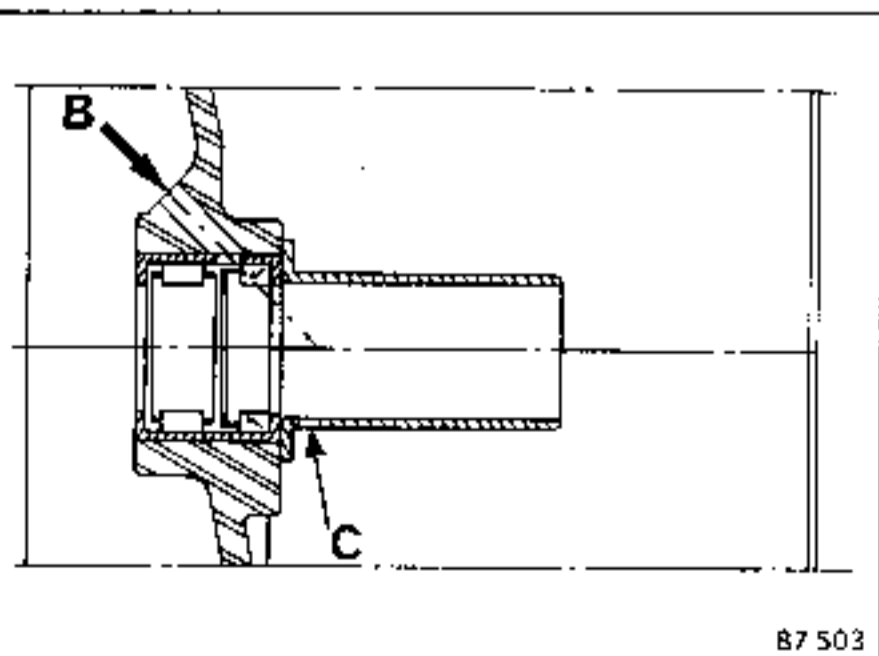
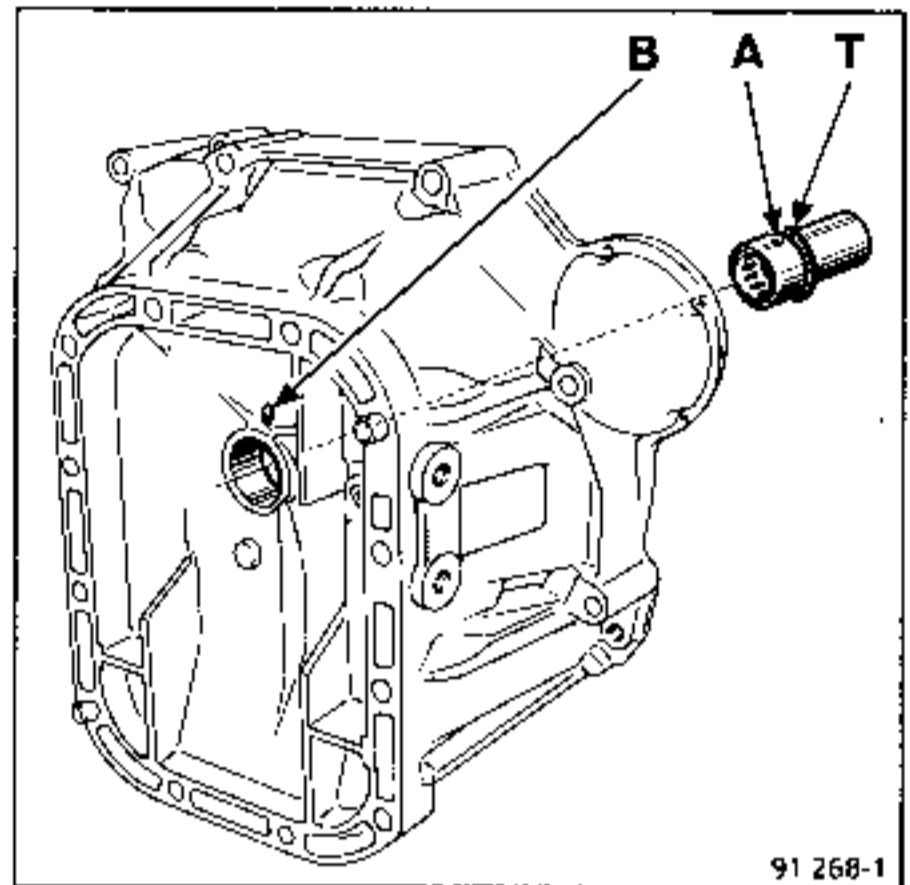
Apply a film of grease No. 20 to the walls of the bore.

Fit the O ring seal (T) to the guide tube.

Place the guide tube against the clutch housing and align the bearing lubrication hole in the guide tube with the hole in the clutch housing.

Fully insert the guide tube on the press.

Check that the bearing lubrication hole (A) is still in line with the hole in the clutch housing (B).



The other hole (C) in the guide tube will be towards the bottom of the housing.

This operation can be carried out on the vehicle.

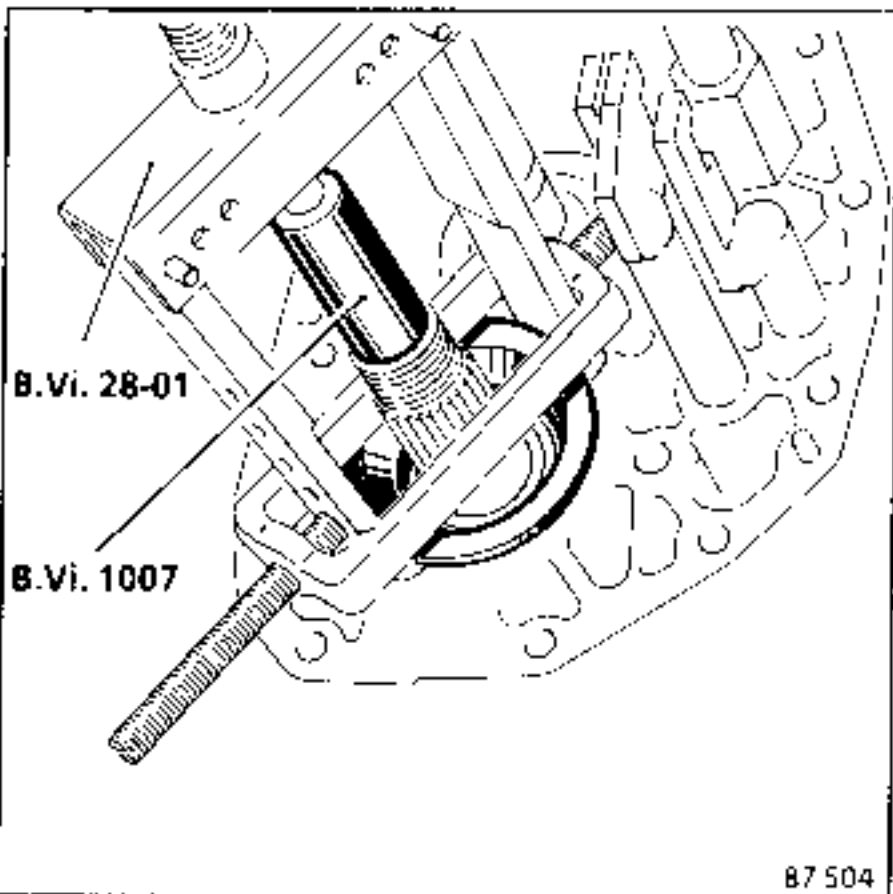
REMOVING

Remove :

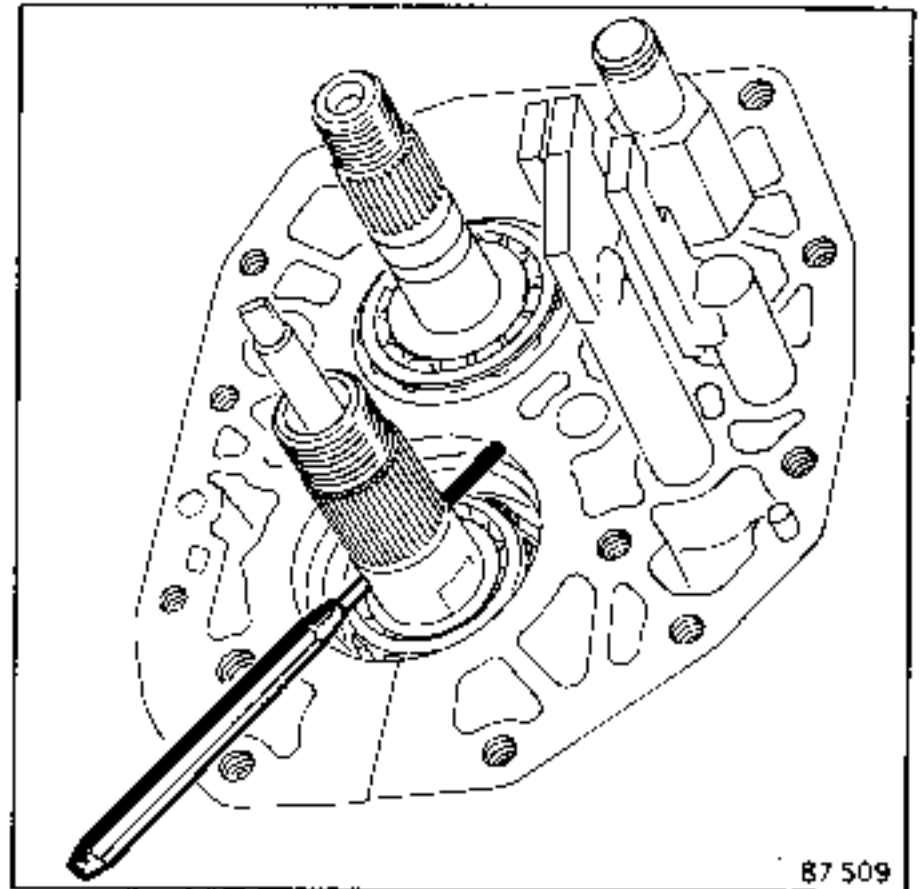
- the rear housing,
- the 5th speed gear assembly,
- the double taper roller bearing retaining plate.

Remove the first row of double taper roller bearing rollers.

Lift out the bearing outer track ring to be able to engage the horns on B.Vi.28-01 and extract it.



Using a 3 mm pin punch, knock out the pin and remove the speedometer drive shaft.



Refitting the shaft is a straight forward operation.

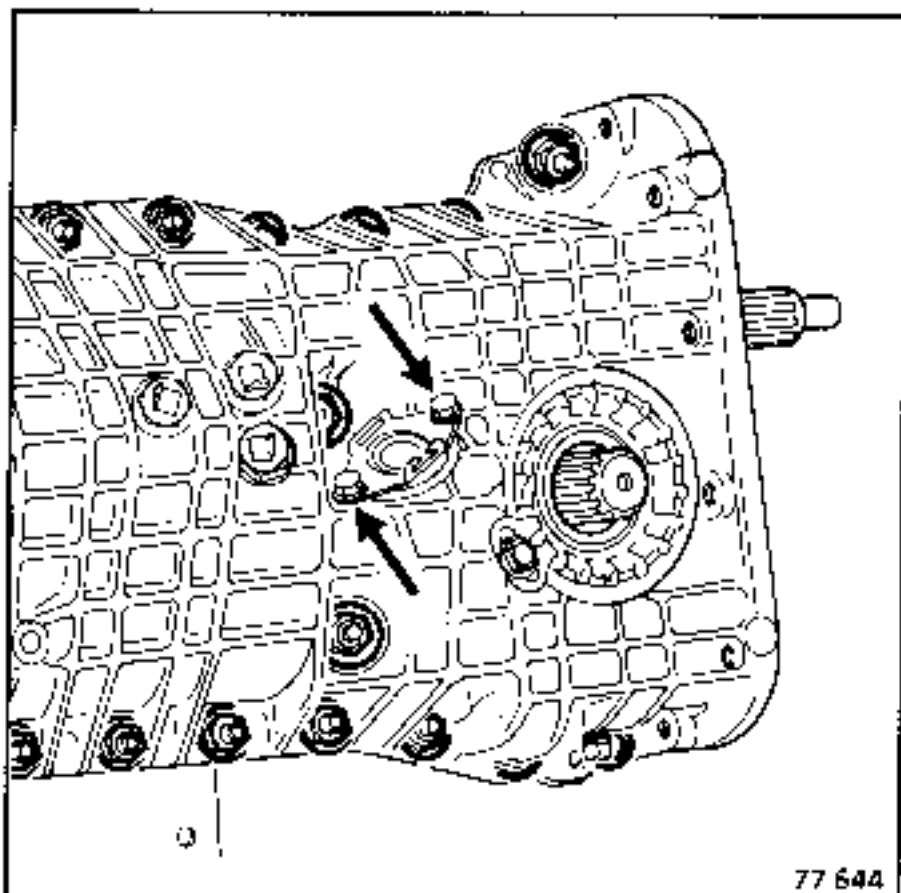
1st CASE

If only the speedometer drive pinion or shaft is damaged.

REMOVING

It is not necessary to dismantle the gear-box.

Remove the 2 bolts that secure the locking plate and take out the speedometer drive guide, shaft and pinion assembly.



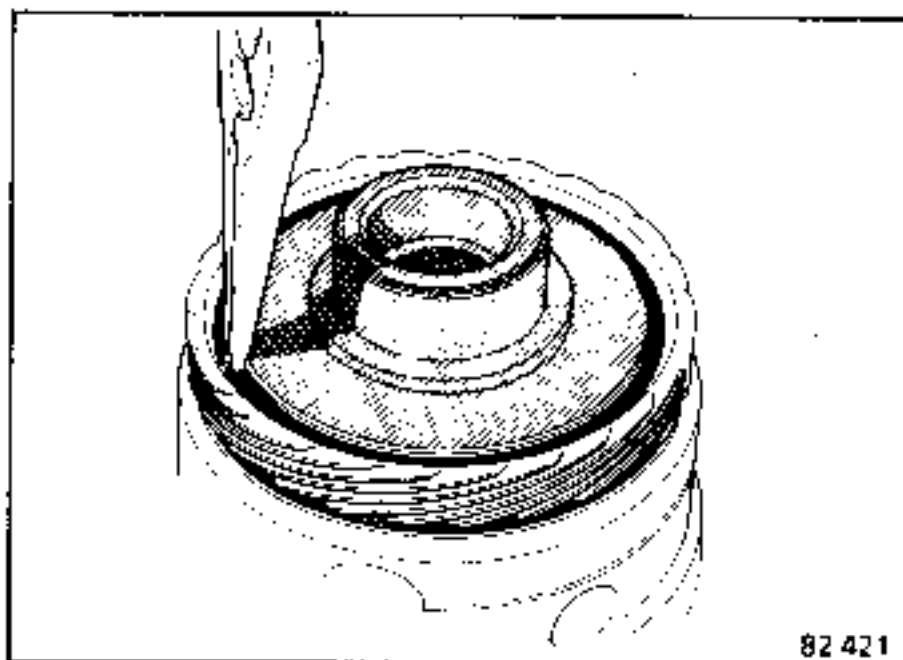
2nd CASE

If both the pinion and worm are damaged.

REMOVING

It will be necessary to remove the gear-box and separate its housings.

Remove the circlip that secures the speedometer drive worm to the differential housing and remove the worm.



Refitting it is a straight forward operation.

REFITTING

Refit the speedometer drive guide, shaft and pinion assembly, fitting it with a new, oiled, O ring seal.

ESSENTIAL SPECIAL TOOLS	
<b>B.Vi. 606</b>	Set of pins for extracting and fitting 6 mm Ø spring pins
<b>B.Vi. 645</b>	Castellated wrench for adjusting the differential backlash
<b>B.Vi. 805</b>	Wrench for differential nut

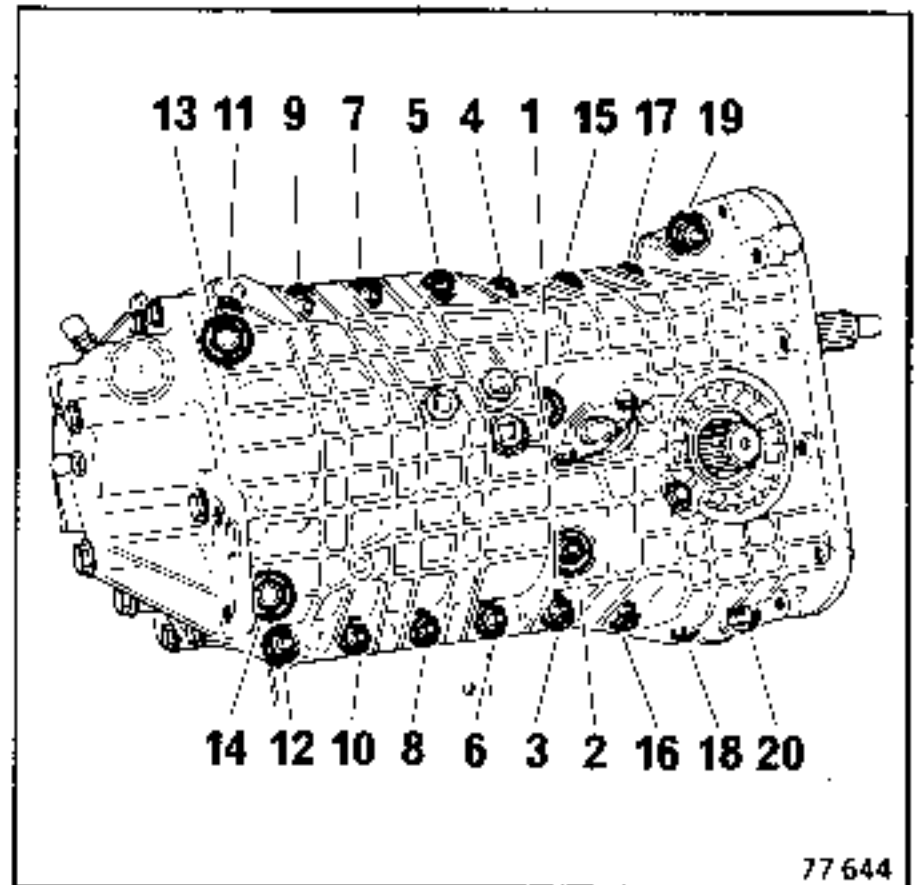
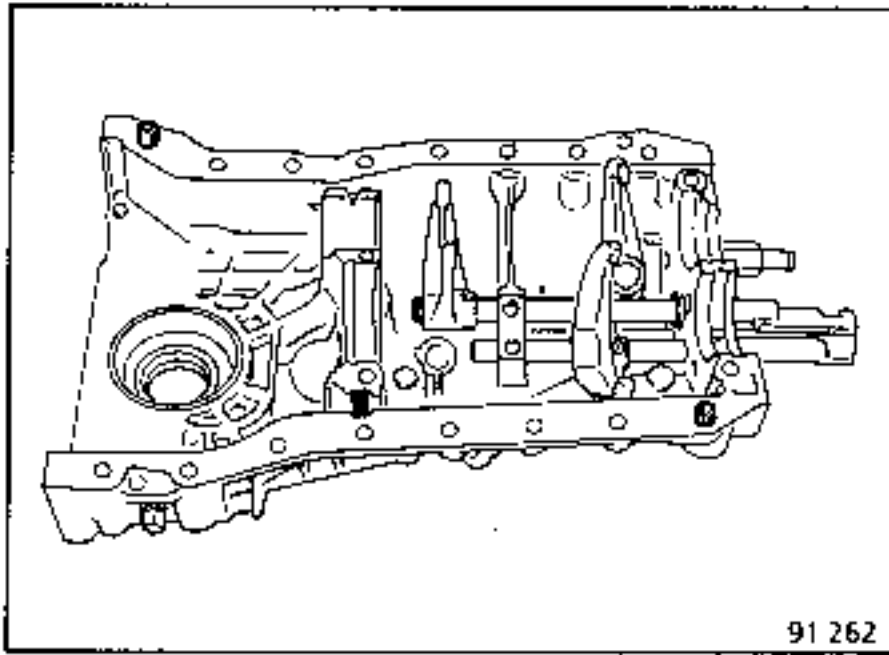
TIGHTENING TORQUES (in daN.m)	
Nut on primary shaft	13.5
Nut on secondary shaft	20
8 mm Ø housing bolts	2.5
10 mm Ø housing bolts	5
Bearing retaining plate bolts	5
Rear housing bolts	2.5
Screwed plugs	2.5
Switch	2.5
Locking rocker shaft	3.5
Locking ball plugs	1.7
Level and drain plugs	2.5
Clutch housing bolts	5

CONSUMABLES
Loctite "51B" : Housing assembly faces
CAF 4/60 THIXO compound Screwed plugs Threads on switches
Grease No. 20 part no. 77 01 032 832 Clutch release bearing guide Clutch fork pivot Clutch shaft splines Sun wheel splines Clutch fork pads
Gearbox oil Lip seals
"LOWAC" perfect seal compound Rear and clutch housing paper gaskets
Loctite FRENBLOC Primary and secondary shaft nuts
Loctite SCELBLOC 5th speed fixed gear 5th speed dog

REASSEMBLING

Ensure that the following are correctly positioned :

1. On the right hand housing :
  - the 2 locating dowels,
  - the magnet in its location,
  - the 1st/2nd, 3rd/4th and reverse shift fork shafts, in the neutral position.



After assembling the half housings, it is essential not to pull out, even partially, the reverse intermediate gear shaft as this could cause one of the friction washers to fall inside the gearbox.

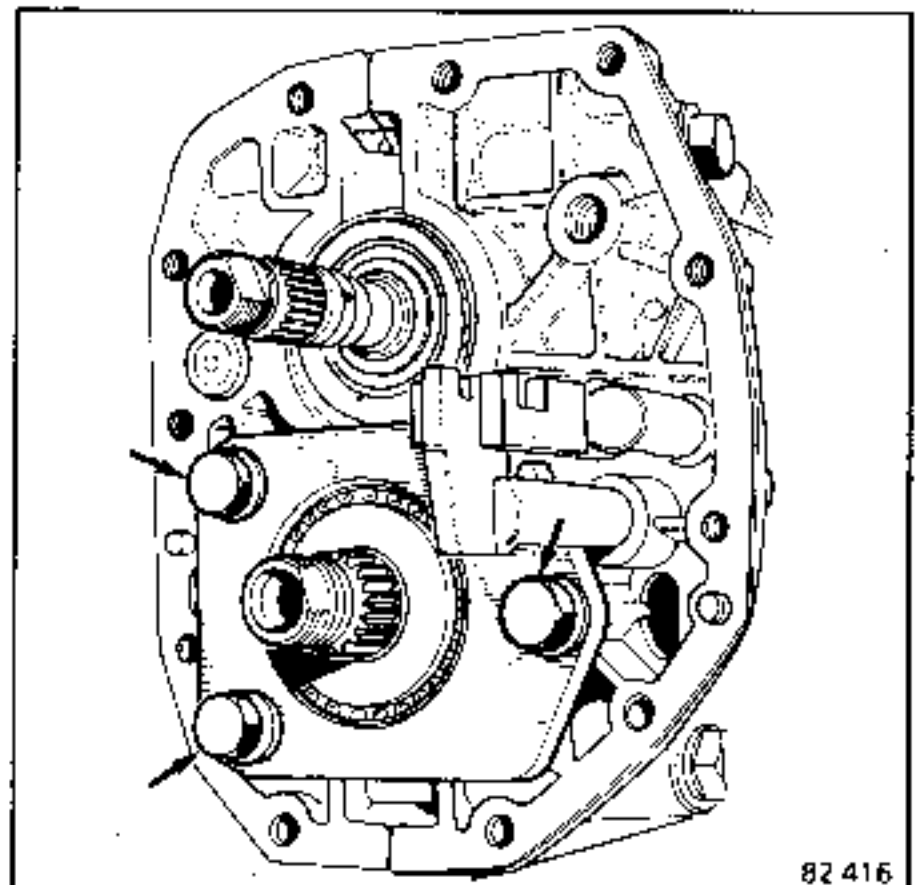
Fit the double taper roller bearing retaining plate and tighten its bolts to torque.

2. On the left hand housing :  
Place the reverse intermediate gear against the front bearing (at the differential end).

Coat the housing assembly faces with Loctite "518".

Place the right hand housing in position, taking care to ensure that the end of the reverse selector enters the groove on the intermediate gear.

Tighten the housing assembly bolts to the specified torque in the order shown.



- On the secondary shaft :
- apply 3 drops of Loctite SCELLOC to the splines,
  - fit the fixed gear and the spring washer.



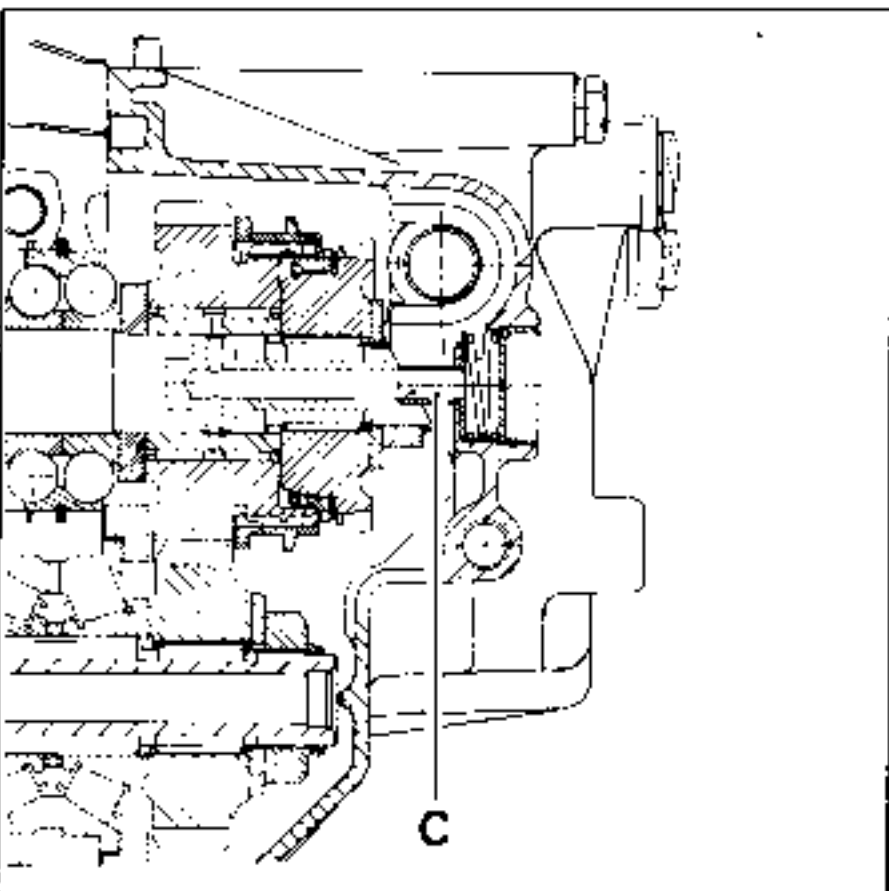
Fit the following to the primary shaft :

- the flat washer,
- the spacer,
- the half needle races,
- the 5th speed idle gear together with the sliding gear equipped with its spring and its fork (pin the shaft).

Place the bosses on the synchroniser ring in the slots in the hub.

Apply 3 drops of Loctite SCELBLOC to the splines.

Fit the 5th speed dog and the spring washer.



Select two gears simultaneously (4th and reverse).

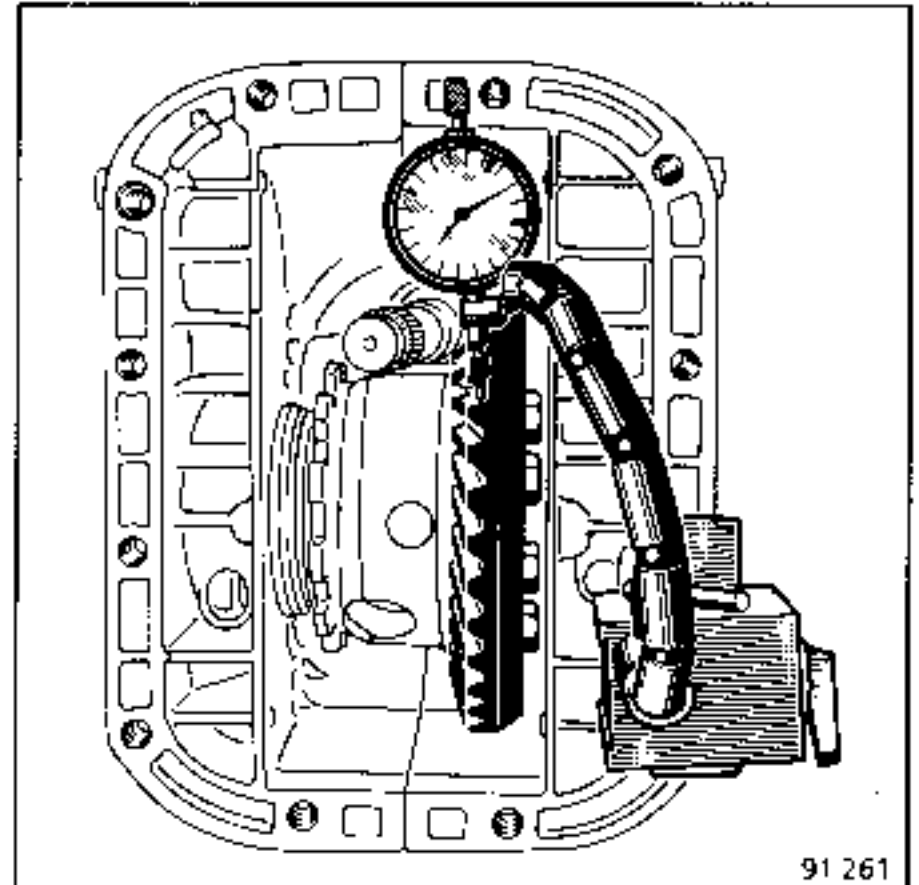
Apply 3 drops of Loctite FRENBLOC to the shaft nuts, tighten them to the specified torque and lock them.

Return to the neutral position and check that all the gears engage correctly.

CHECKING THE BACKLASH  
(at 3 points, 120° apart)

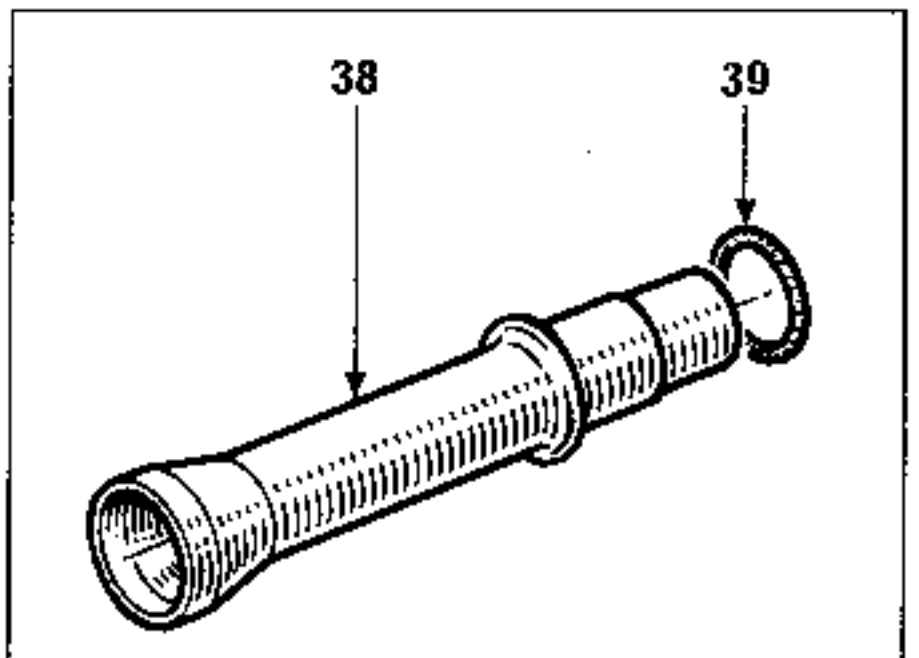
The backlash should be between 0.12 mm and 0.28 mm.

The backlash is not adjustable (except on the Alpine UN1), however it must be checked.



### UN1

Ensure that the O ring seal (39) is in position on the release bearing guide tube (38) and point the oil drain hole in the guide tube downwards.



**UN1**

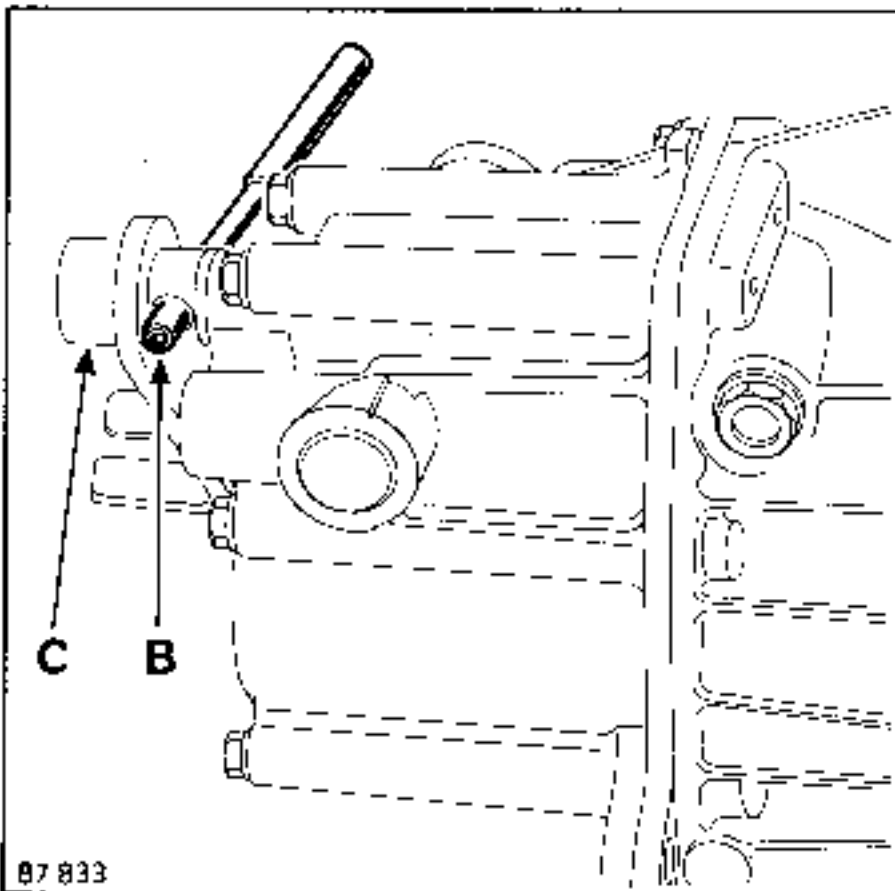
Fit the rear housing paper gasket coated with Perfect Seal jointing compound.

With the gearbox in the neutral position, fit the housing, taking care to ensure that the engagement lever and the locking rocker are placed in the shaft dogs.

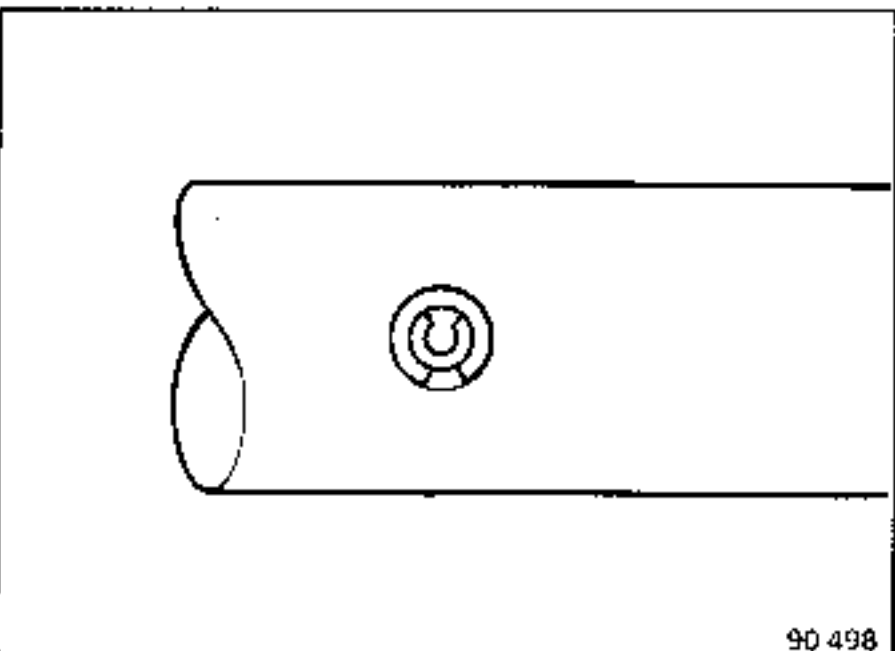
Tighten the bolts to the specified torque.

Fit the dust cover to the shaft.

Pin the selector lever sleeve (C).

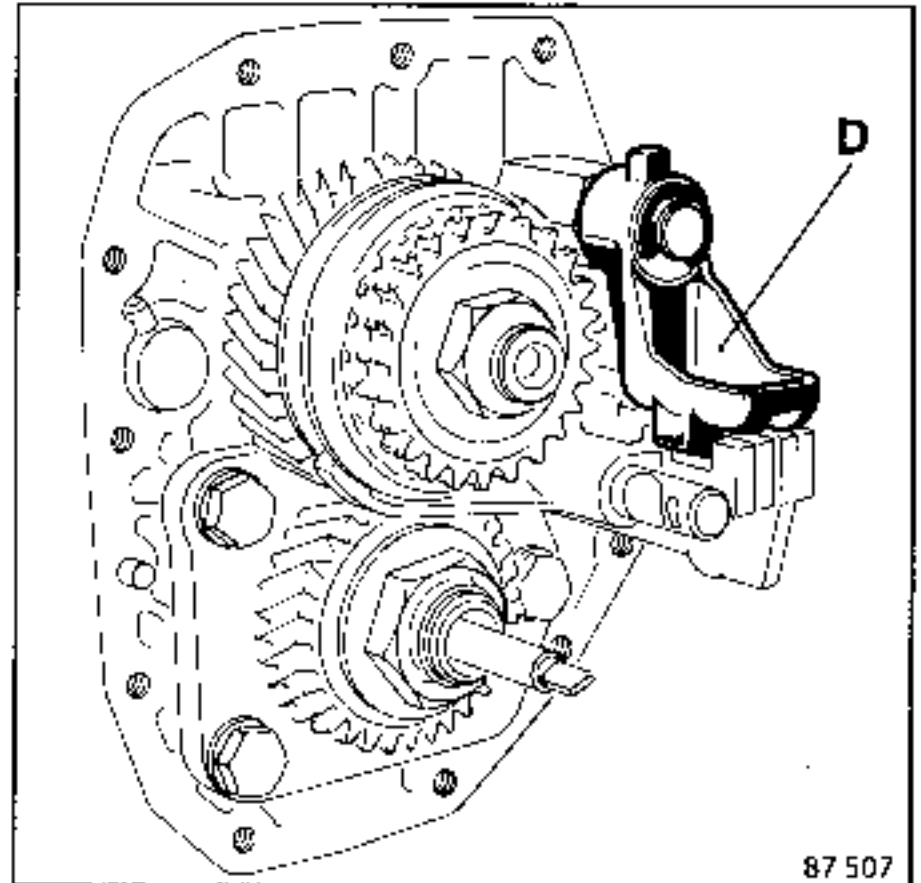


Ensure that the pins are fitted in the correct direction. The slots must be square to the shaft centreline and on opposite sides to one another.



**UN5**

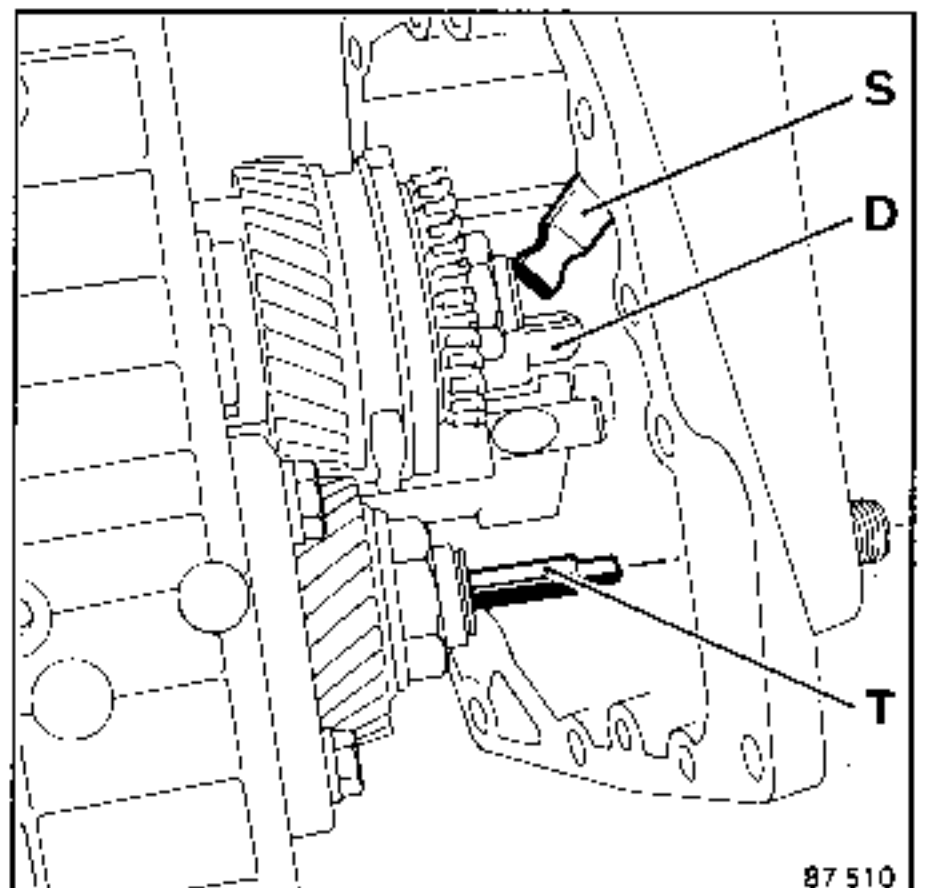
With the gearbox in neutral, fit the locking rocker (D).



Fit the paper gasket coated with Perfect Seal jointing compound.

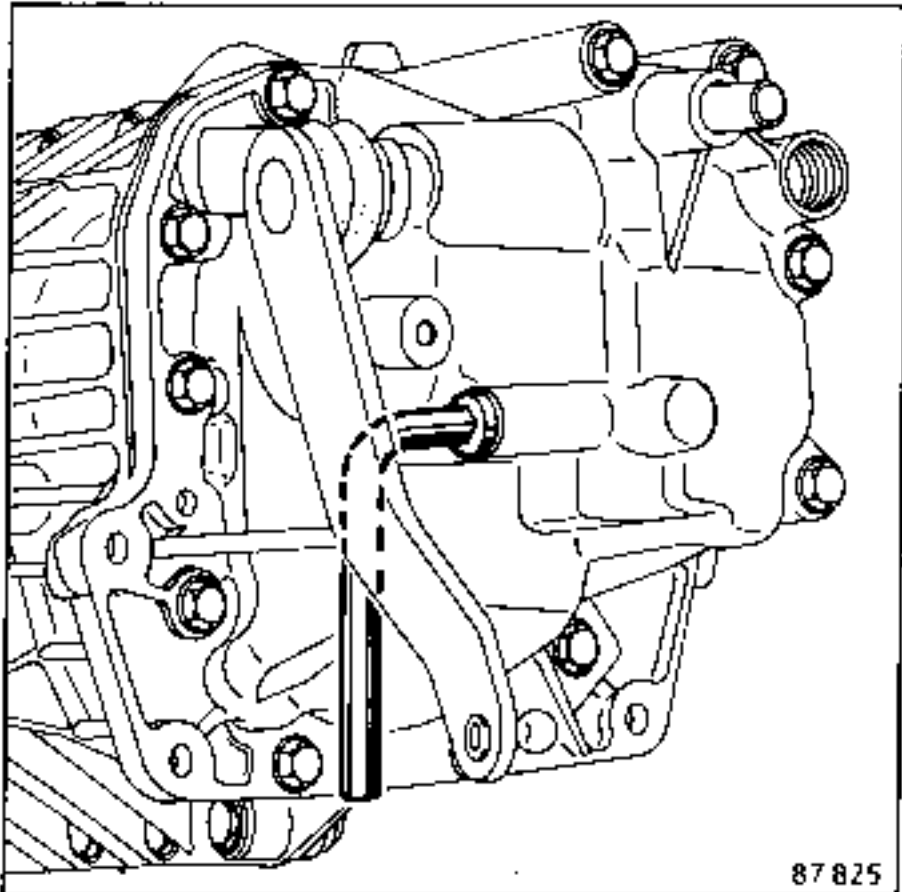
Fit the housing, ensuring that :

- the engagement lever (S) is correctly positioned in the locking rocker (D) and in the shaft dogs.
- the speedometer drive shaft (T) passes across the housing, taking care not to damage the lip on the seal.



ALL TYPES

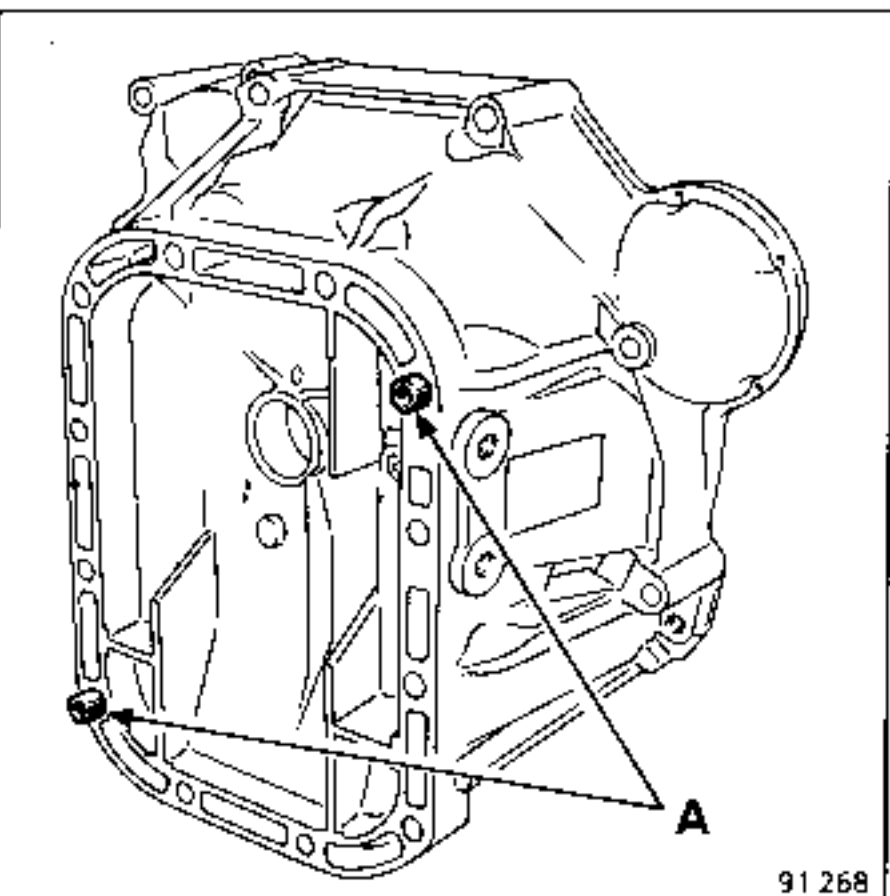
Fit the 5th speed locking ball system, coating the threads on the plug with CAF 4/60 THIXO compound.



Check that all the gears engage correctly.

Before fitting the clutch housing :

1. Check that the locating dowels (A) are in position.



2. Coat the paper gasket with Perfect Seal compound.

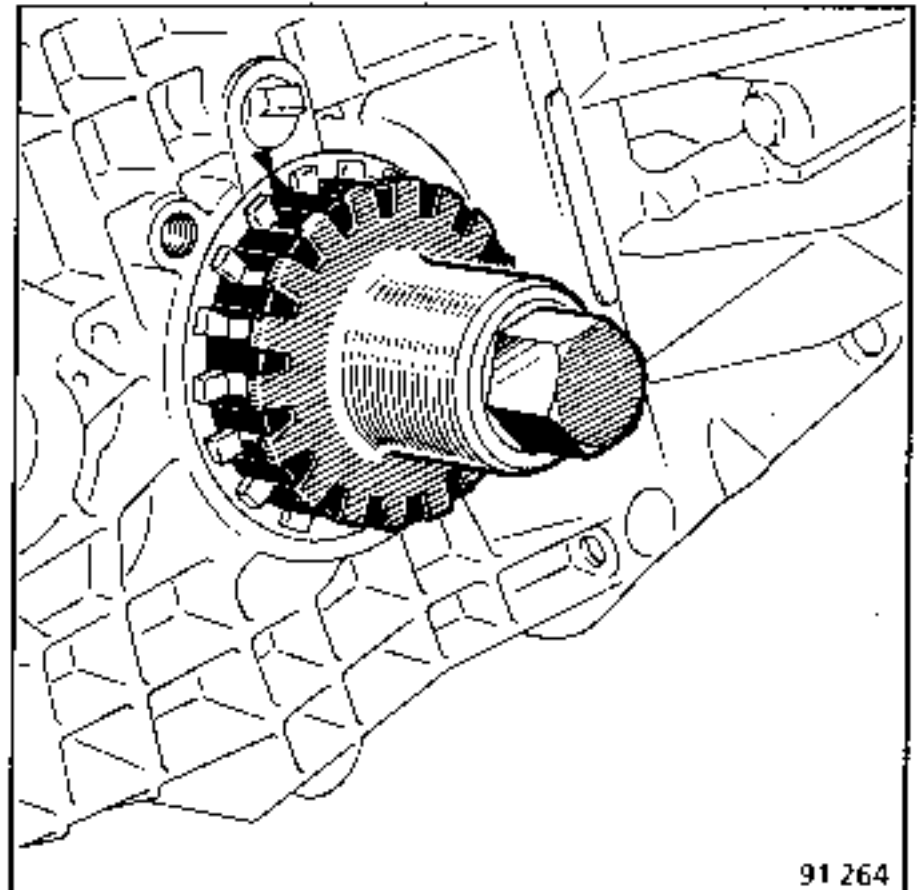
UNS

Oil the lip seal on the guide tube.

Apply adhesive tape to the clutch shaft splines to prevent them damaging the lip on the seal.

Fit the housing and tighten the bolts to torque.

Using tools B.Vi.645 and B.Vi.805, screw in the differential nut until it aligns with the mark made on the housing.



Lock the nut with the locking plate.

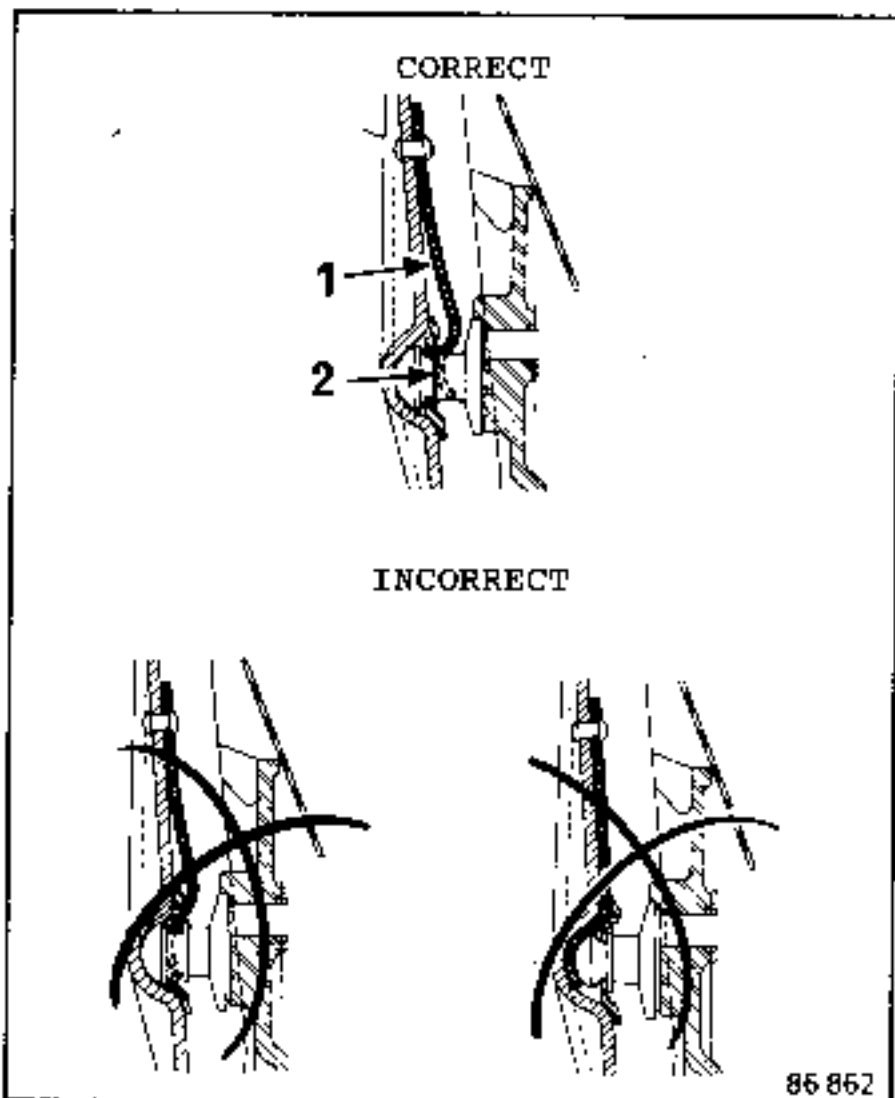
Note :

It is not abnormal for the torque required to tighten the nut in line with the position marks to reach 15 daN.m (when new bearings are fitted).

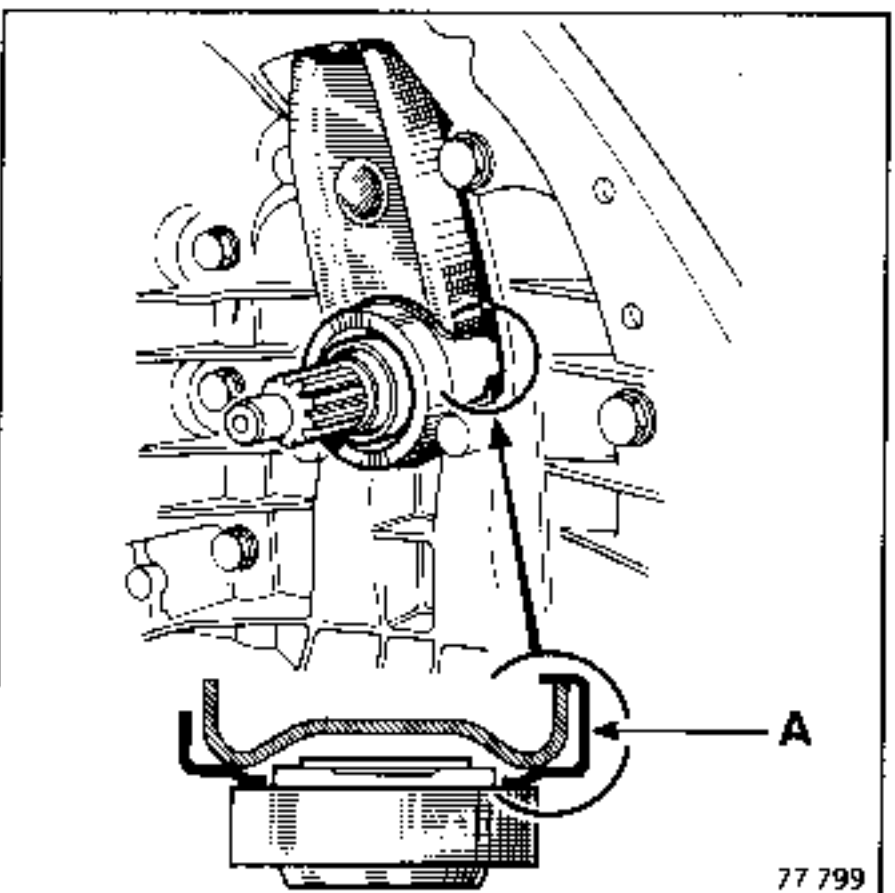
Grease the release bearing guide tube and the fork pads and pivot with grease No. 20.

**UN1**

Place the clutch fork in position, with the spring (1) behind the cup (2) and check that it operates correctly.



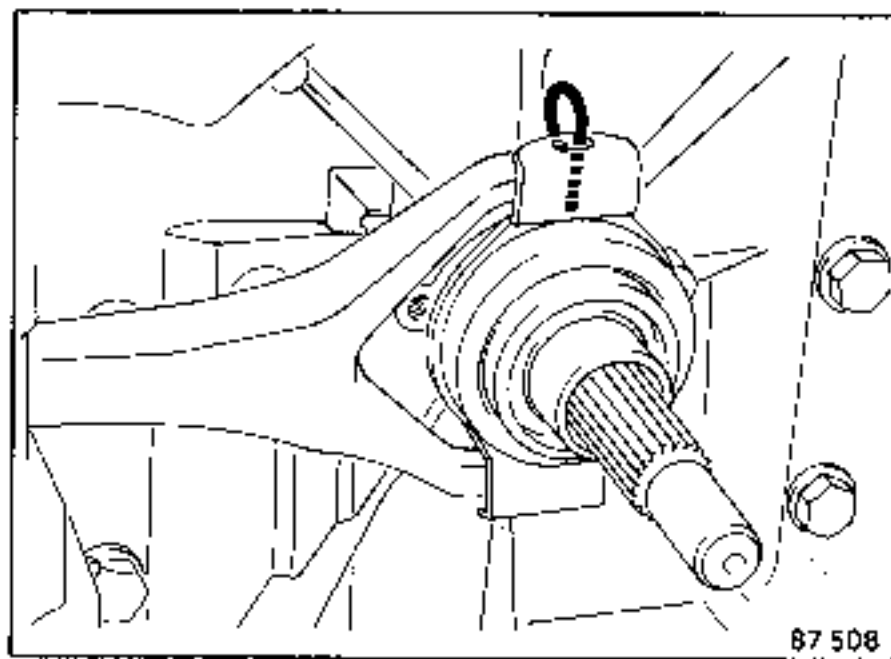
Tilt the fork and insert lug (A) into the fork.



**UN5**

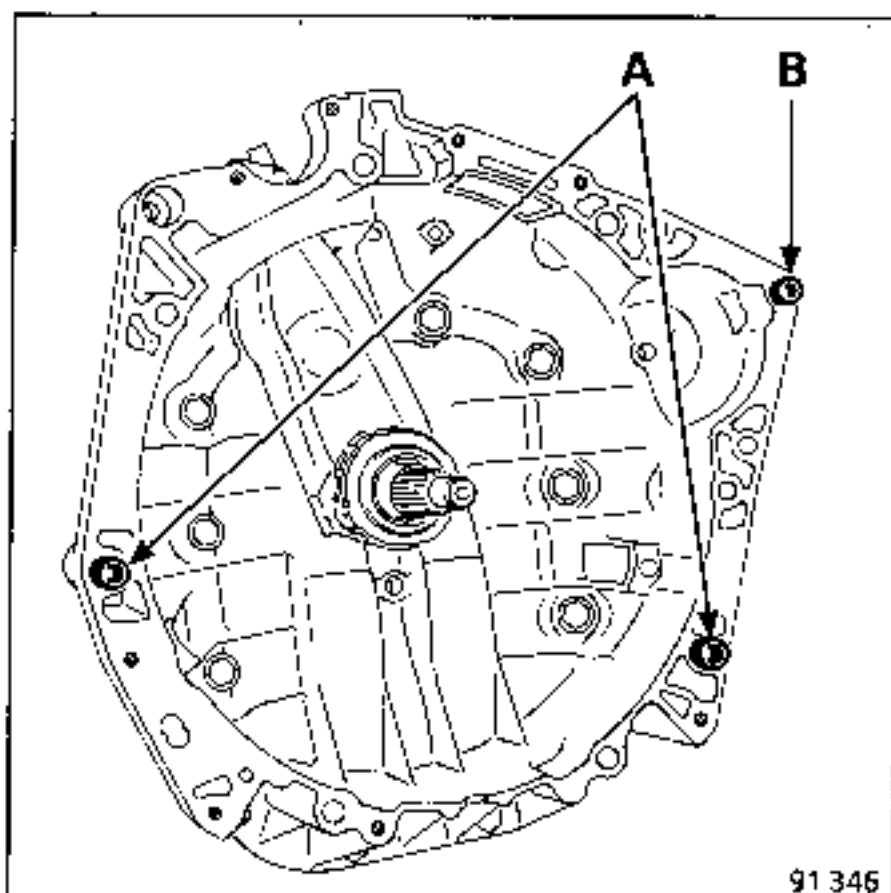
The release bearing is held on the fork by a pin.


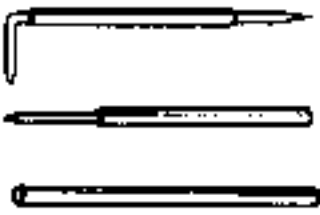

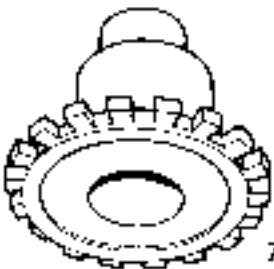

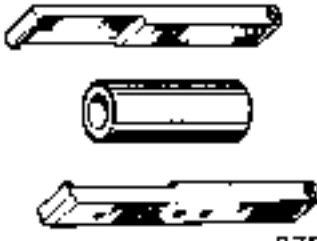
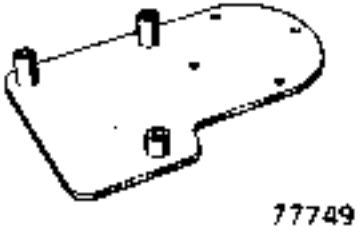

On reassembly, ensure that the pin enters its hole in the fork, correctly.



Remove the gearbox from its support (B.Vi. 1016).

Before refitting the gearbox to the vehicle, ensure that the locating dowels (A) and (B) are in position on the clutch housing.



Symbol	Methods Reference	Part Number	Description
 <p>71625</p>	B.Vi. 28-01	00 01 227 301	Extractor with interchangeable claws
 <p>68997-1</p>	B.Vi. 31-01	00 01 259 401	Set of 3 pin punches for fitting 5 mm Ø spring pins
 <p>77743</p>	B.Vi. 606	00 00 060 600	Set of pin punches for replacing 6 mm Ø spring pins
 <p>77746</p>	B.Vi. 645	00 00 064 500	Castellated wrench for adjusting the differential backlash
 <p>79405</p>	B.Vi. 747	00 00 074 700	Fork for removing and refitting the selector spring
 <p>87571</p>	B.Vi. 1007	00 00 100 700	Set of 2 jaws and end protector for extracting gear wheels (used with B.Vi.28-01)
 <p>77749</p>	B.Vi. 1016	00 00 101 600	Gearbox support plate
 <p>80545</p>	B.Vi. 805	00 00 080 500	Spanner for differential nut (used with B.Vi.645)

Symbol

Methods  
Reference

Part  
Number

Description



91685

B.Vi.1081

00 00 108 100

Tool for fitting differential seals

A	5th speed locking ball	32	Primary shaft front bearing
B	Pin	33	Circlip
C	Sleeve	34	Lip seal
D	Locking lever	35	Clutch shaft pin
E	Slot in reverse selector shaft	36	Clutch shaft GB type UN1
1	Clutch fork spring	37	Clutch shaft GB type UN5
2	Clutch fork pivot cup	38	Release bearing guide tube
3	Double taper roller bearing	39	O ring
4	1st speed gear	40	Crown wheel
5	1st speed gear needle race	41	Differential housing
6	1st speed synchroniser spring	42	Bearing on housing side
7	1st speed synchroniser ring	43	Bearing on crown wheel side
8	Circlip	44	Sun wheel
9	1st/2nd sliding gear hub	45	Washer
10	2nd speed synchroniser ring	46	Planet wheel
11	2nd speed synchroniser spring	47	Planet wheel washer
12	2nd speed gear	48	Planet wheel shaft pin
13	2nd speed gear needle race	49	Planet wheel shaft
14	Secondary shaft	50	Planet wheel half shaft (UN5)
15	Speedometer drive pin (UN5)	51	Planet wheel shaft hub (UN5)
16	Speedometer drive shaft (UN5)	52	Sun wheel O ring seal
17	Thrust washer	53	Spigot bolt (UN5)
18	Primary shaft rear bearing	54	Reverse gear shaft
19	Primary shaft	55	Outer friction washer
20	3rd speed gear	56	Reverse gear
21	3rd speed gear needle race	57	Inner friction washer
22	3rd speed synchroniser ring	58	Reverse shaft pin
23	3rd/4th speed sliding gear hub	59	Rear housing
24	Synchroniser roller	60	Engagement lever pin
25	Synchroniser roller spring	61	Half shell
26	Circlip	62	Selector shaft
27	Splined washer	63	Rocker pin
28	4th speed synchroniser ring	64	Spring
29	4th speed gear	65	Engagement lever
30	4th speed gear needle race	66	O ring seal
31	Thrust washer	67	Plug
		68	Rocker
		69	Planet wheel

