

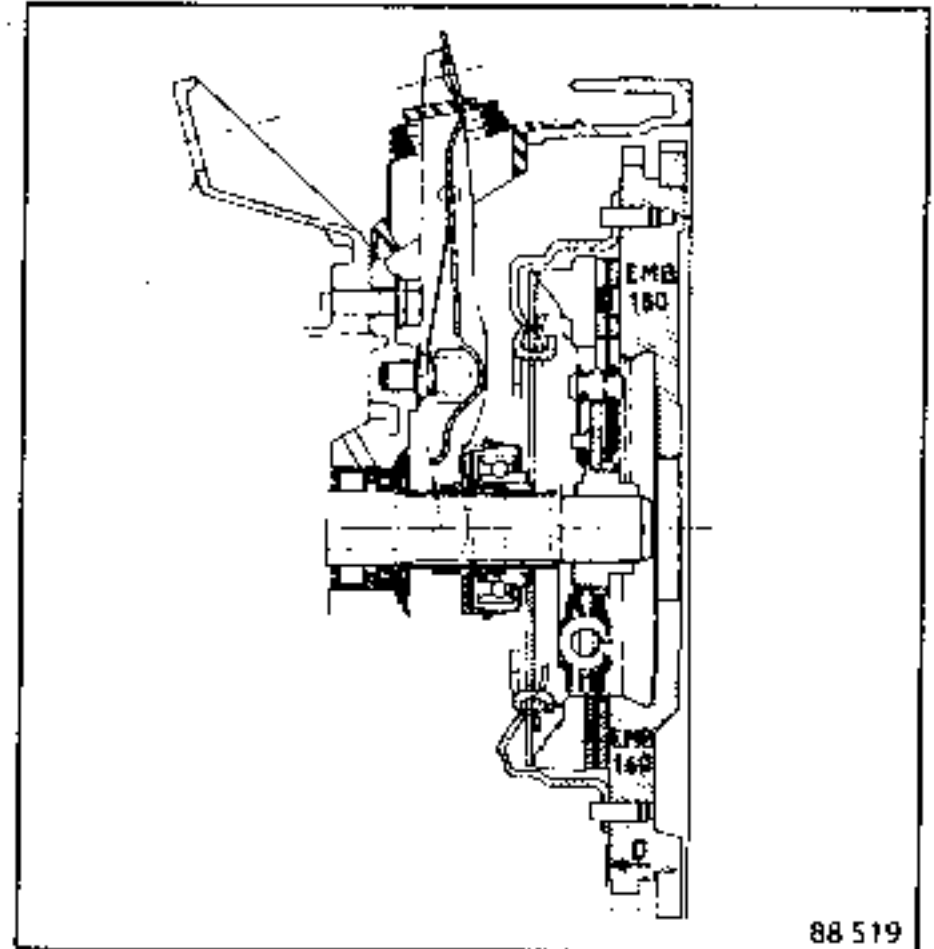
Single disc, cable controlled clutch,  
operating dry.

Diaphragm spring type clutch plate.

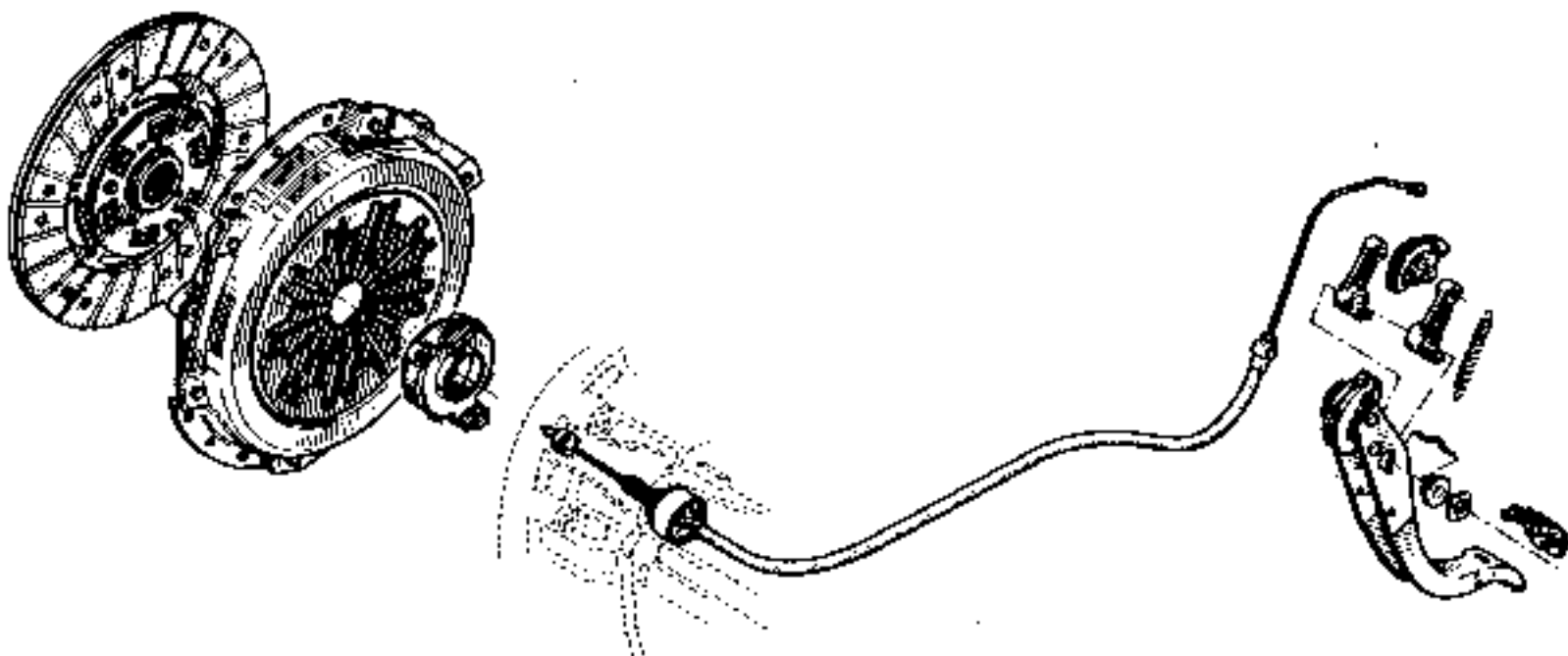
Elastic hub type clutch disc.

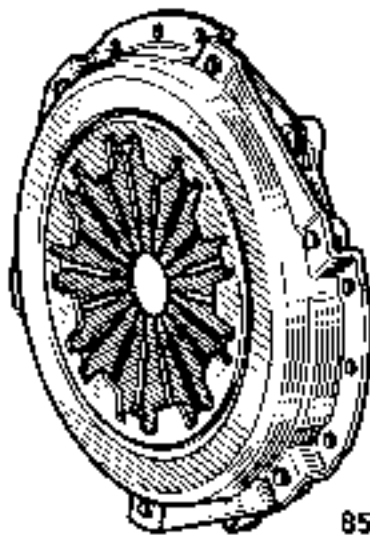
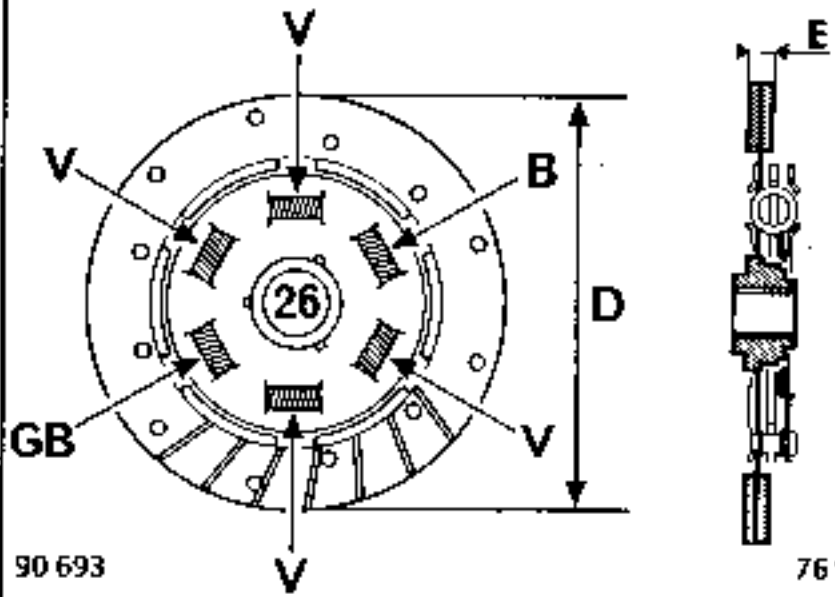
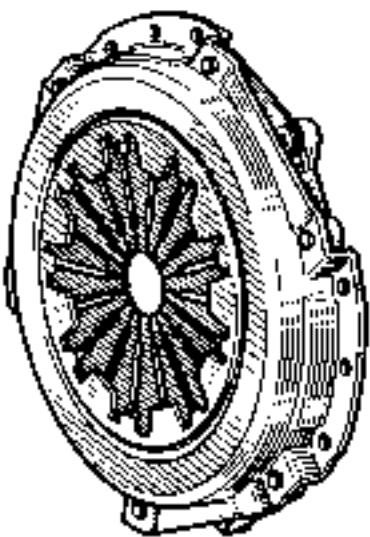
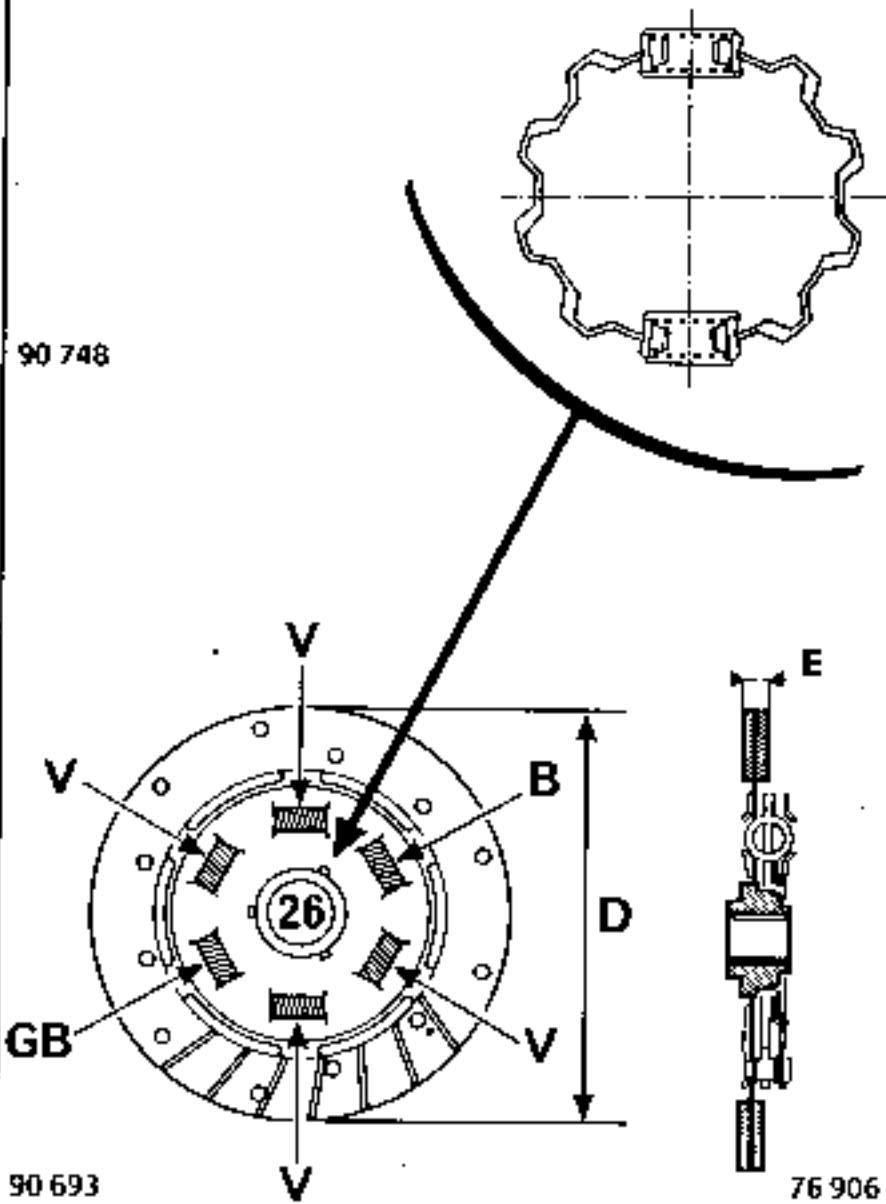
Self-centering guided ball type release  
bearing, in permanent contact.

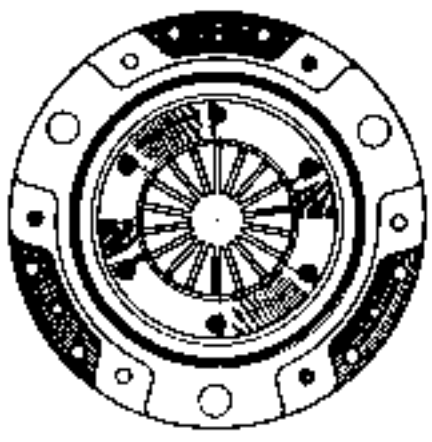
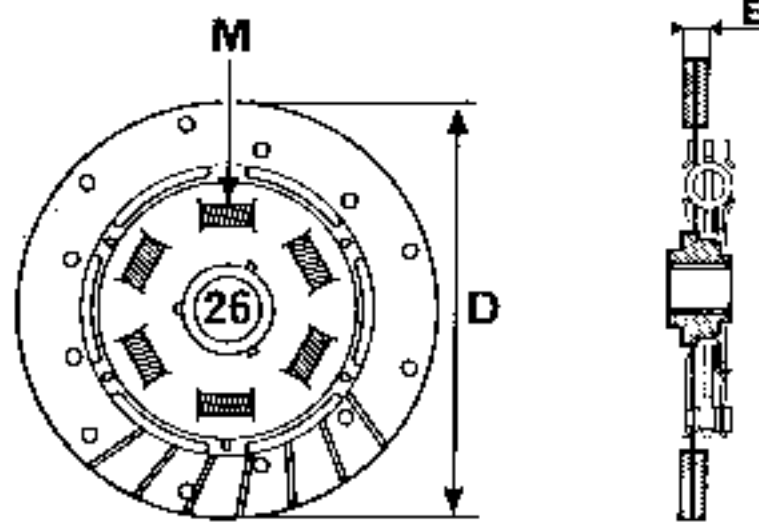
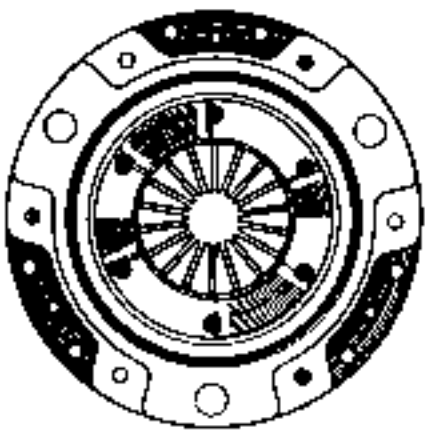
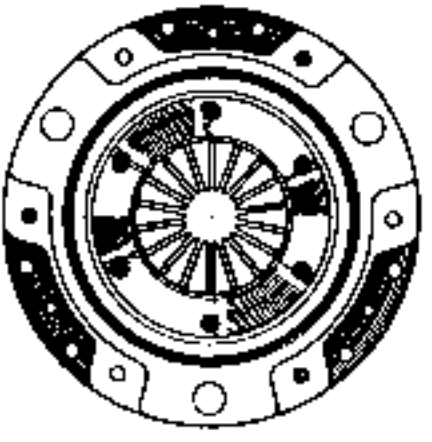
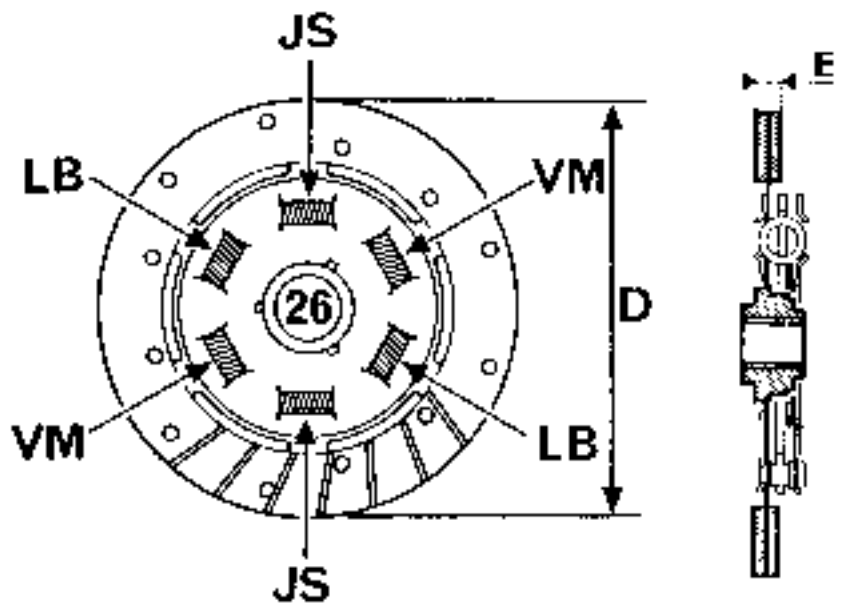
Automatic wear take-up system.



Exploded view



VEHICLE TYPE	ENGINE TYPE	CLUTCH UNIT	DISC
B/C/F400 B/C/S/F401 B/C/F402 B/C403 B/C/F407 B/C/F/S40F B/C/F40H B/C40J B/C/F40M	C1C C1E C1J C2J C3J C1G C1E C2J C2J	 <p>85 873</p> <p><b>180 CP 335</b></p>	 <p>90 693</p> <p>76 906</p> <p>26 splines      B = White            E = 7,7 mm      GB = Blue grey            D = 181,5 mm      V = Green</p>
B/C404 S404 F404	F8M	 <p>85 873</p> <p><b>180 CP 335</b></p>	 <p>90 748</p> <p>90 693</p> <p>76 906</p> <p>Special features : 2 additional springs on the hub.</p> <p>26 splines      B = White            E = 7,7 mm      GB = Blue grey            D = 181,5 mm      V = Green</p>

VEHICLE TYPE	ENGINE TYPE	CLUTCH UNIT	DISC
B/C408 C409 B/C40G B/C40K	F3N F3N F2N F2N	 200 CP 425 76 907	 90 693 76 906 26 splines M = 6 light pink springs E = 7,7 mm D = 200 mm
C405	C1J	<p>1<sup>er</sup> TYPE</p>  200 CP 410 76 907 <p>2<sup>ème</sup> TYPE</p>  200 CP 425 76 907	 90 693 76 906 26 splines E = 7,7 mm D = 200 mm VM = Moss green JS = Sand yellow LB = Light mauve

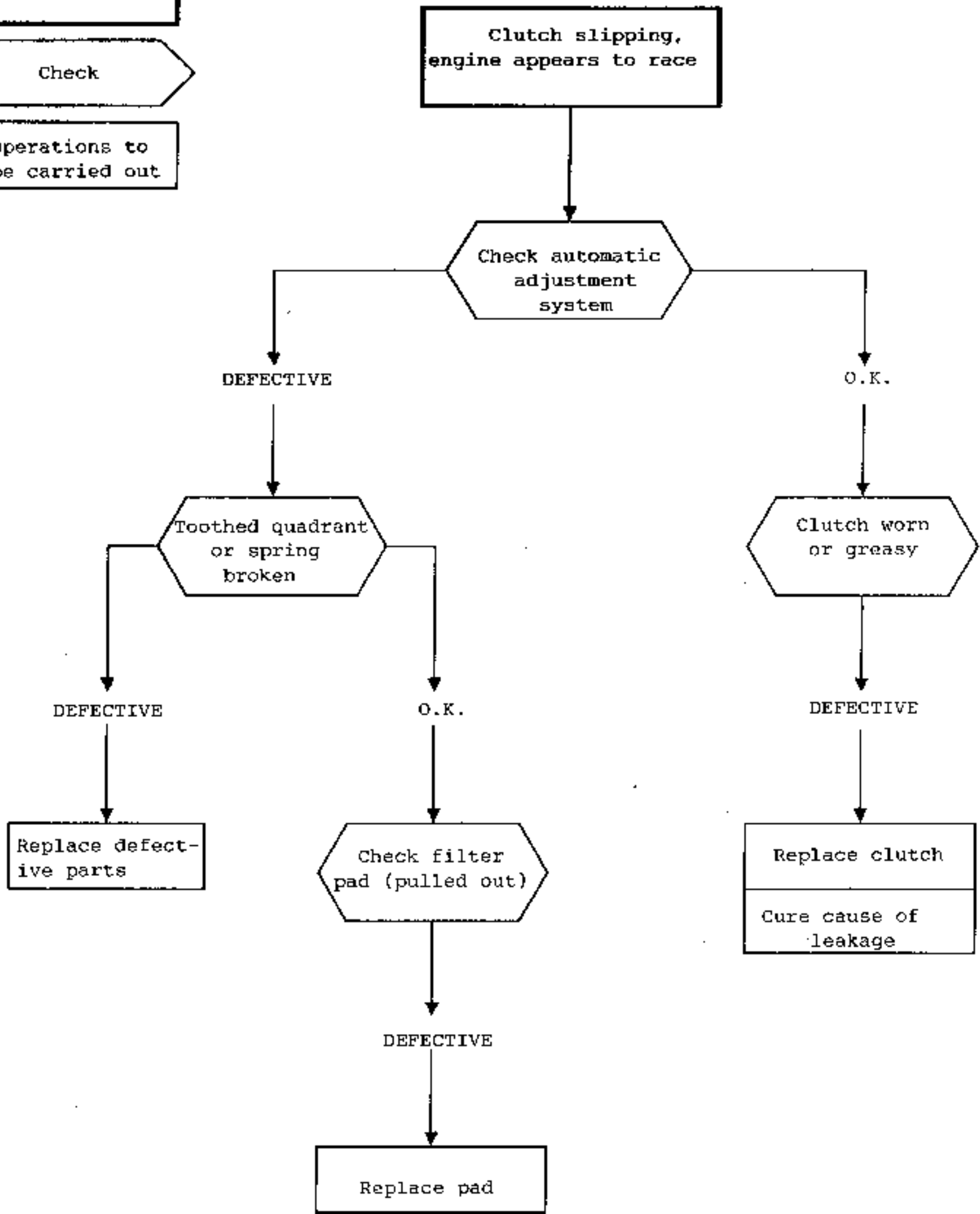
Type	Pack size	Part no.	Unit
Grease No. 20	1 gr sachet	77 01 032 832	RH planet wheel splines (Shaft splines Clutch (Fork pivot (Release bearing guide (Fork pads
CAF 4/60 THIXO	100 gr tube	77 01 404 452	Ends of drive shaft spring pins
LOCTITE 518	24 ml syringe	77 01 421 162	Housing assembly faces

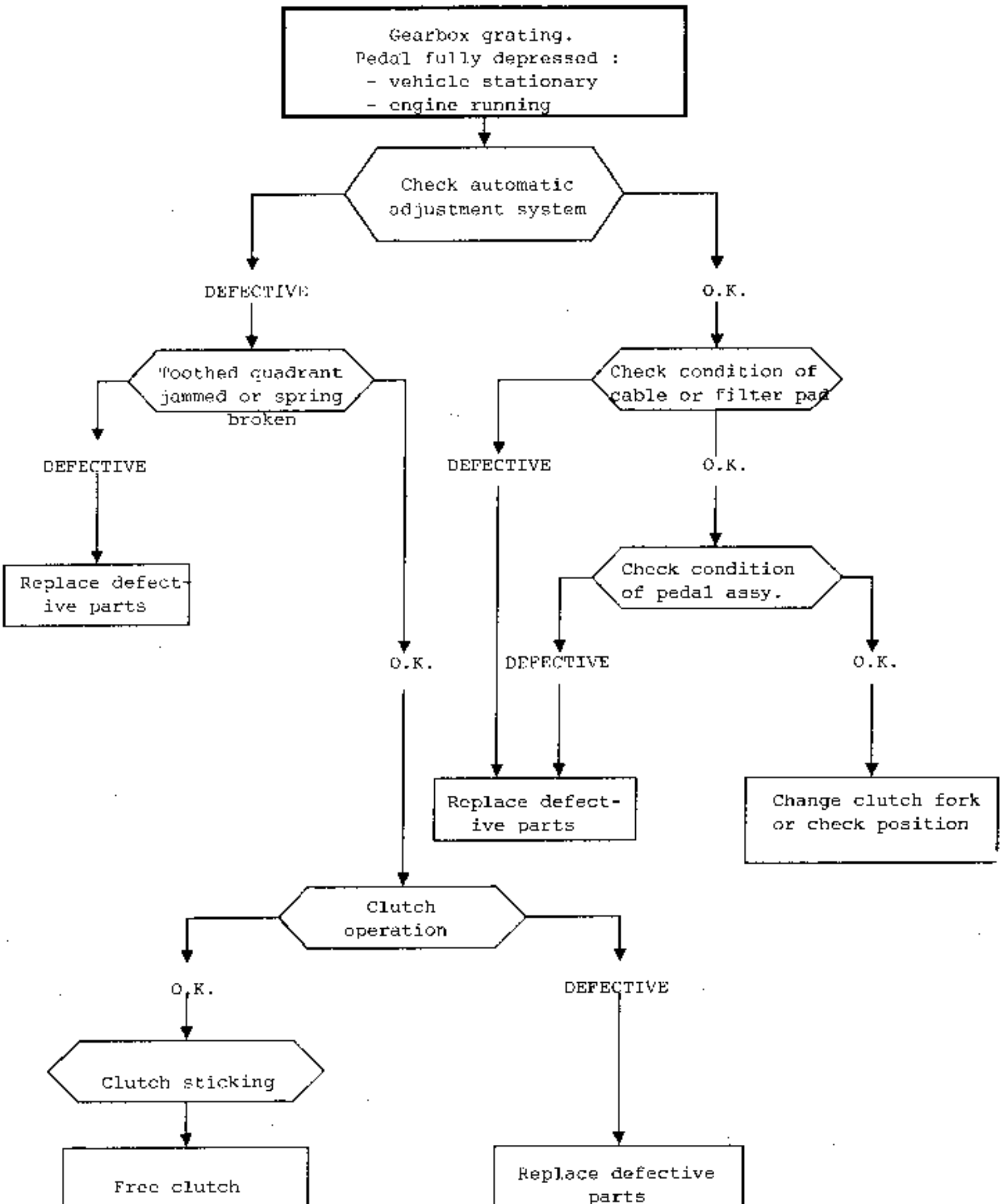
KEY

Defect noted

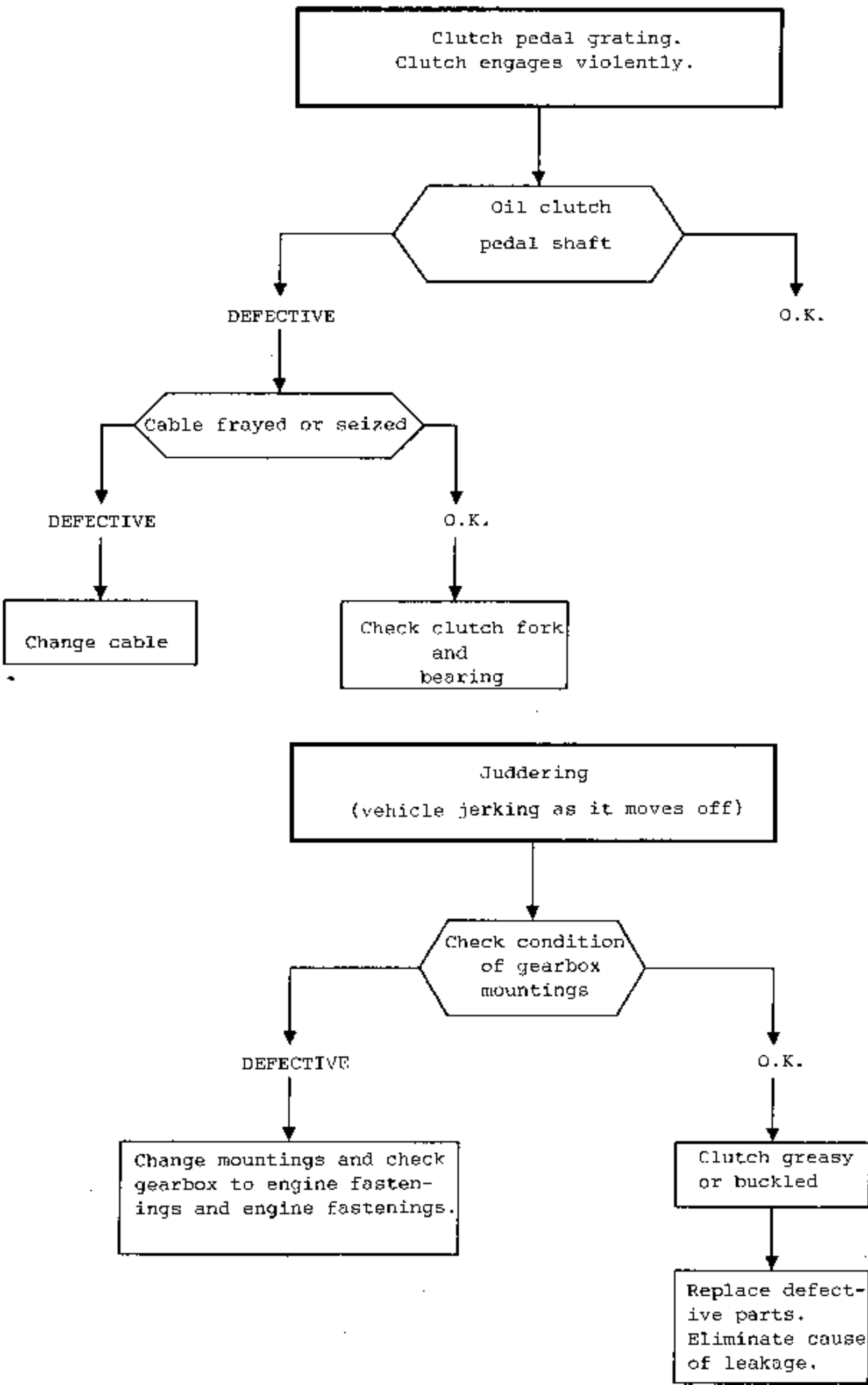
Check

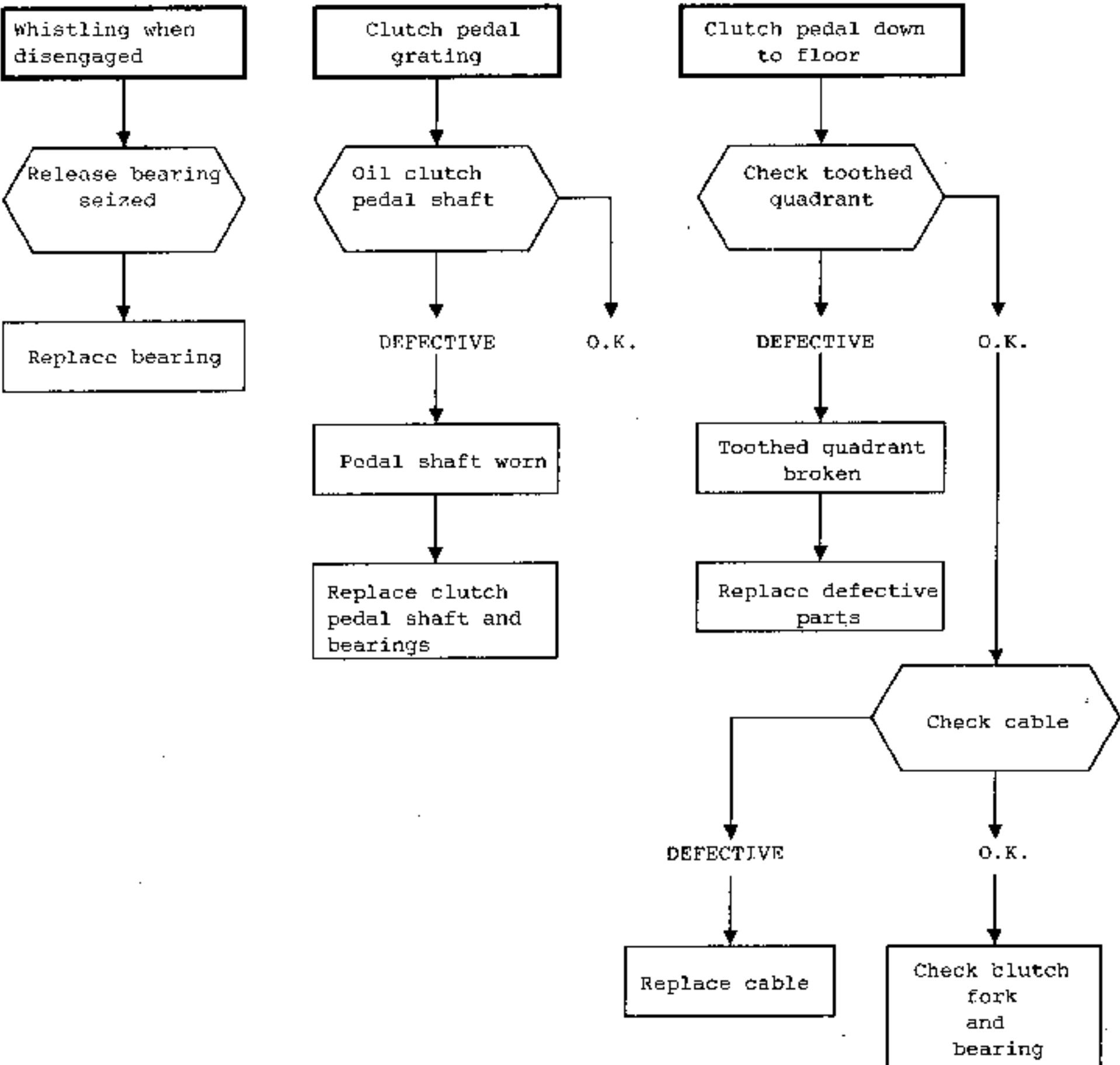
Operations to  
be carried out





Rare. Occurs after  
vehicle not used  
for some time  
(several days)







This operation is carried out after first removing the gearbox.

ESSENTIAL SPECIAL TOOLS

**Mot. 582** Retainer  
Plus tooling required to remove gearbox

TIGHTENING TORQUES (in daN.m)

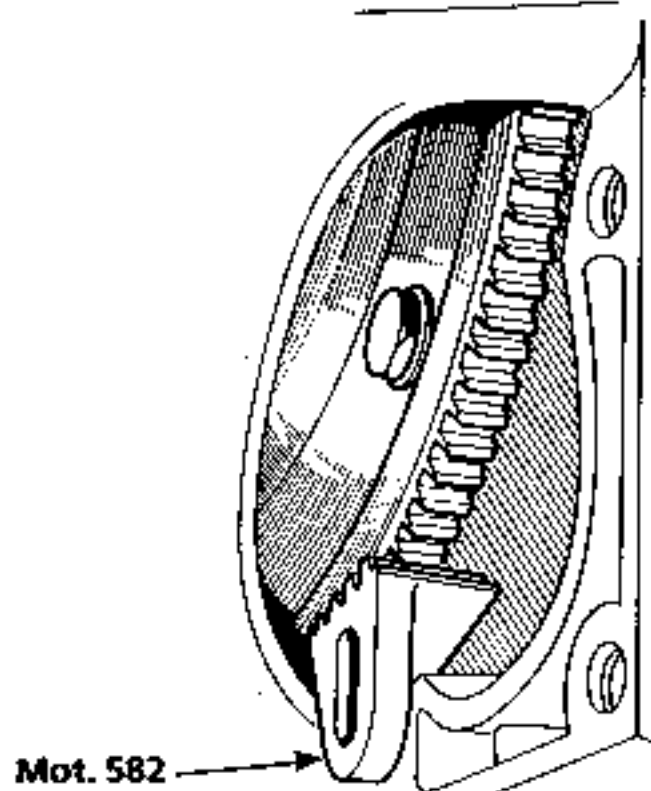
Unit securing bolts **2,5**

REMOVING

Fit retainer Mot.582.

Remove the clutch unit securing bolts and take out the clutch unit and disc.

Check and replace any defective parts.

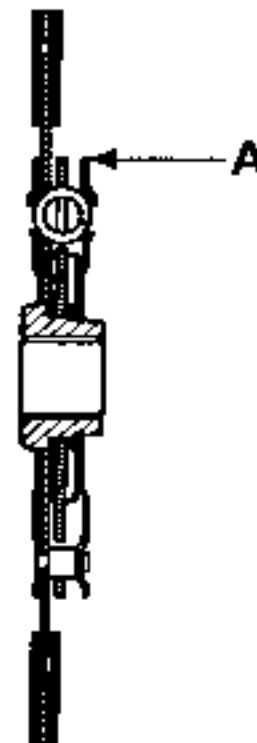


87365

REFITTING

Degrease the mounting face on the flywheel.

Place the disc in position (with offset (A) on the hub towards the gearbox) : centralise it, visually, without using a tool.



74413

Screw up the unit securing bolts, evenly, then tighten them to torque.

Remove the retainer Mot.582.

Coat the bore in the release bearing, the guide tube and the splines on the clutch shaft with grease No. 20 (MOBIL X 57030).

After refitting the gearbox, reset the toothed quadrant and check that the play take-up system operates correctly.

This operation is carried out after first removing the gearbox.

#### REMOVING

Remove the release bearing by tilting the fork.

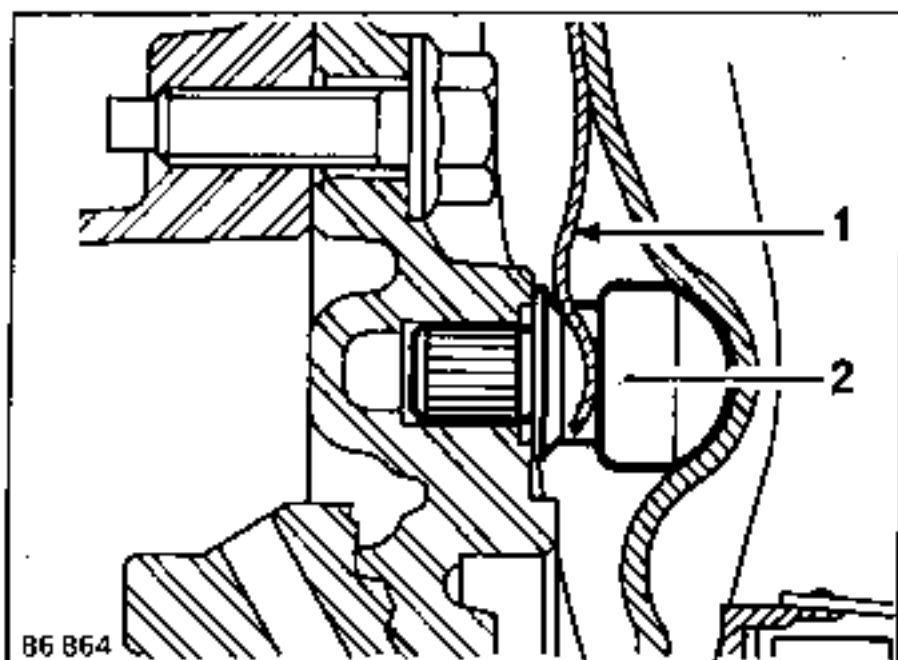
Remove the rubber protector and pull the fork towards the inside of the clutch housing.

#### REFITTING

Coat the walls of the guide tube and the pads on the fork with grease No. 20 (77 01 032 832).

#### Early type

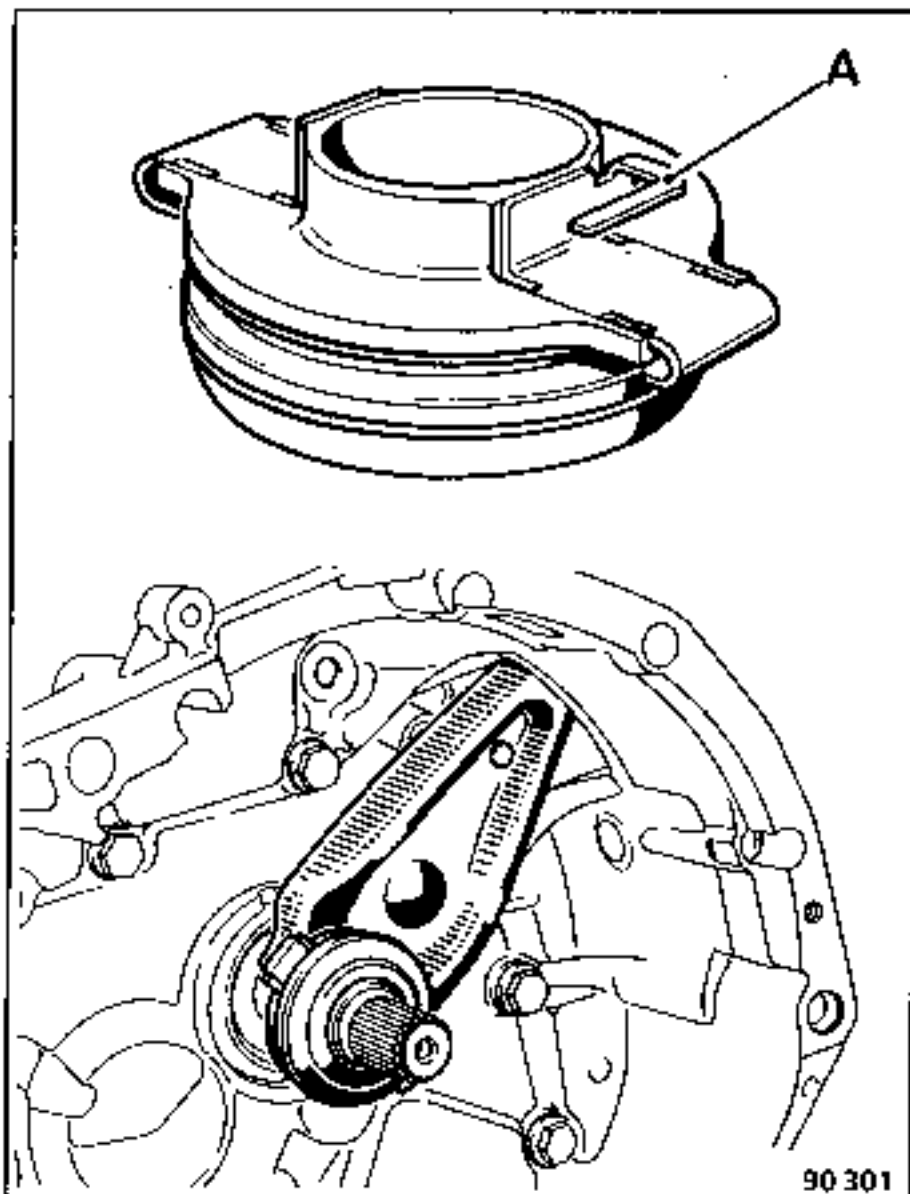
Fit the fork, placing the spring (1) behind the cup (2) on the pivot.



#### Later type

The spring (1) locating the clutch fork on the pivot has been discontinued.

Place the release bearing on the guide tube, inserting the lug (A) into the fork.



Refit the rubber protector.

Ensure that the mechanism operates correctly.

NOTE : when carrying out work that does not involve removing the gearbox, or after refitting the gearbox, DO NOT lift the fork as the lug (A) could slip out of the release bearing.

This operation is carried out after removing the gearbox and taking off the clutch housing.

See Workshop Manual "B.V. JB", section entitled "Separating the Housings".

TIGHTENING TORQUES (in daN.m)

Housing bolts	2.5
---------------	-----

REMOVING

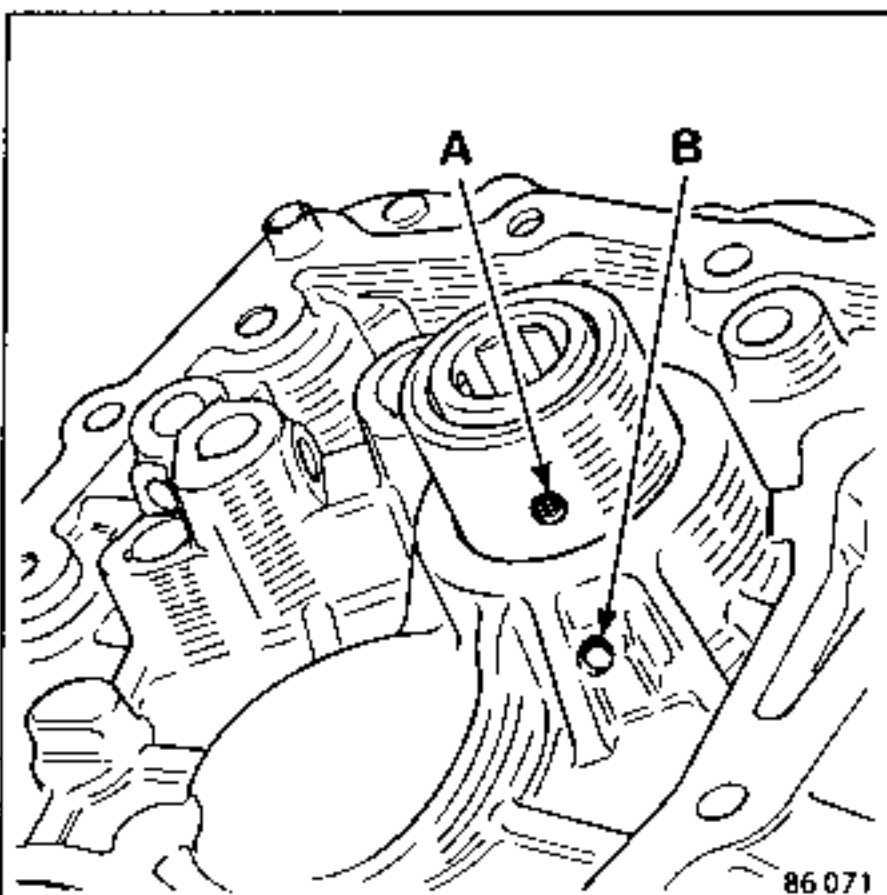
Extract the guide tube on the press.

After the guide tube has been removed, it cannot be re-used.

REFITTING

Apply a film of grease No. 20 (MOBIL X 57030) to the walls of the bore.

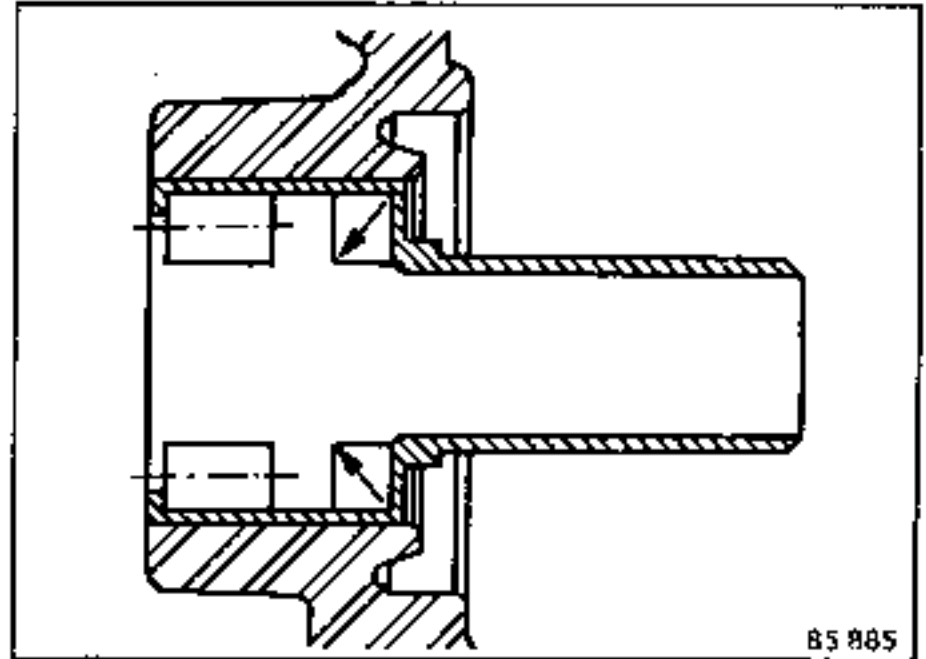
Align the bearing lubrication hole (A) in the guide tube with the hole in the clutch housing (B).



Insert the guide tube, on the press, until it is fully against the internal face on the housing.

Oil the seal before fitting the shaft.

Wrap masking tape round the splines on the clutch shaft.

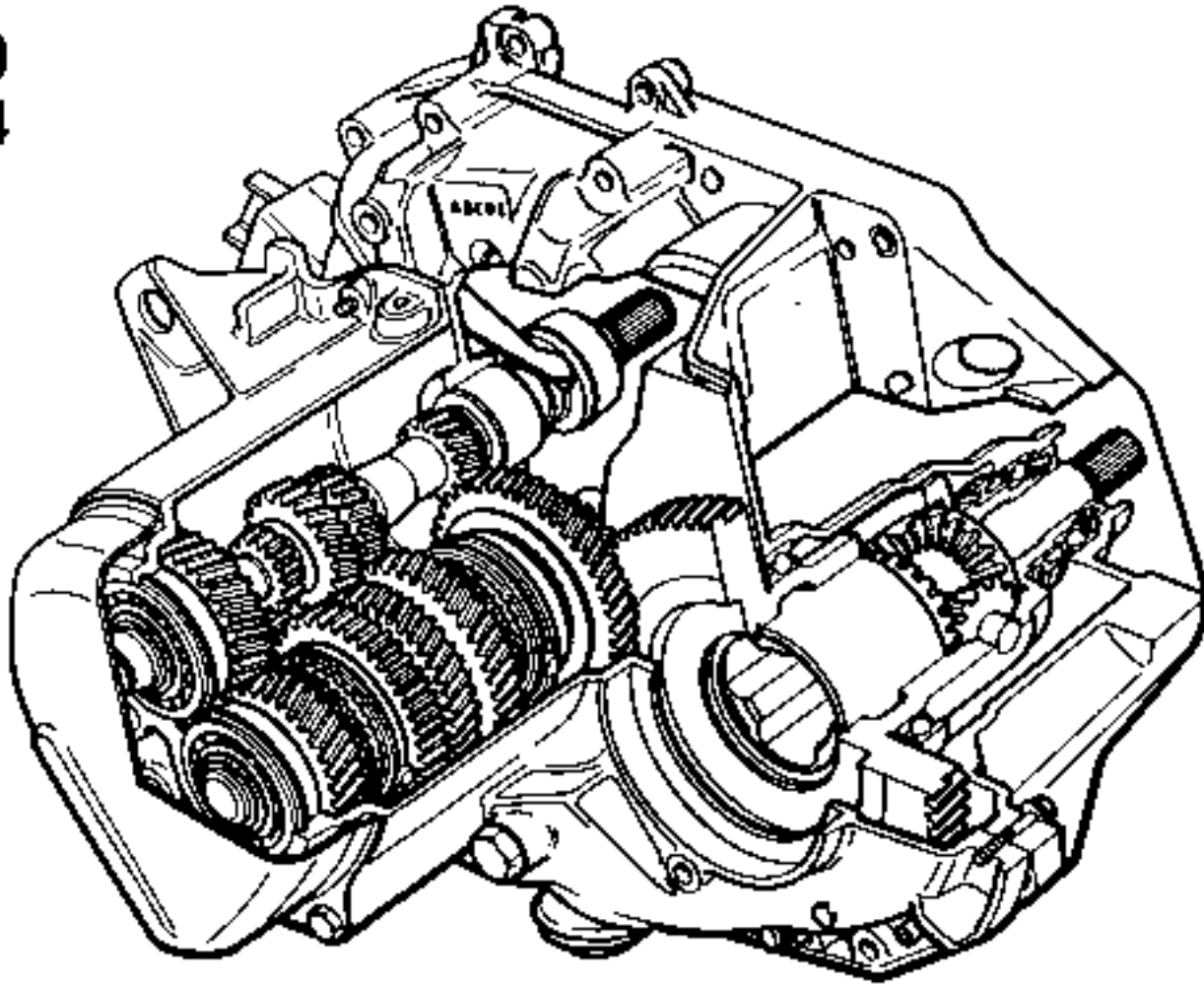


Coat the face of the housing with Loctite 518.

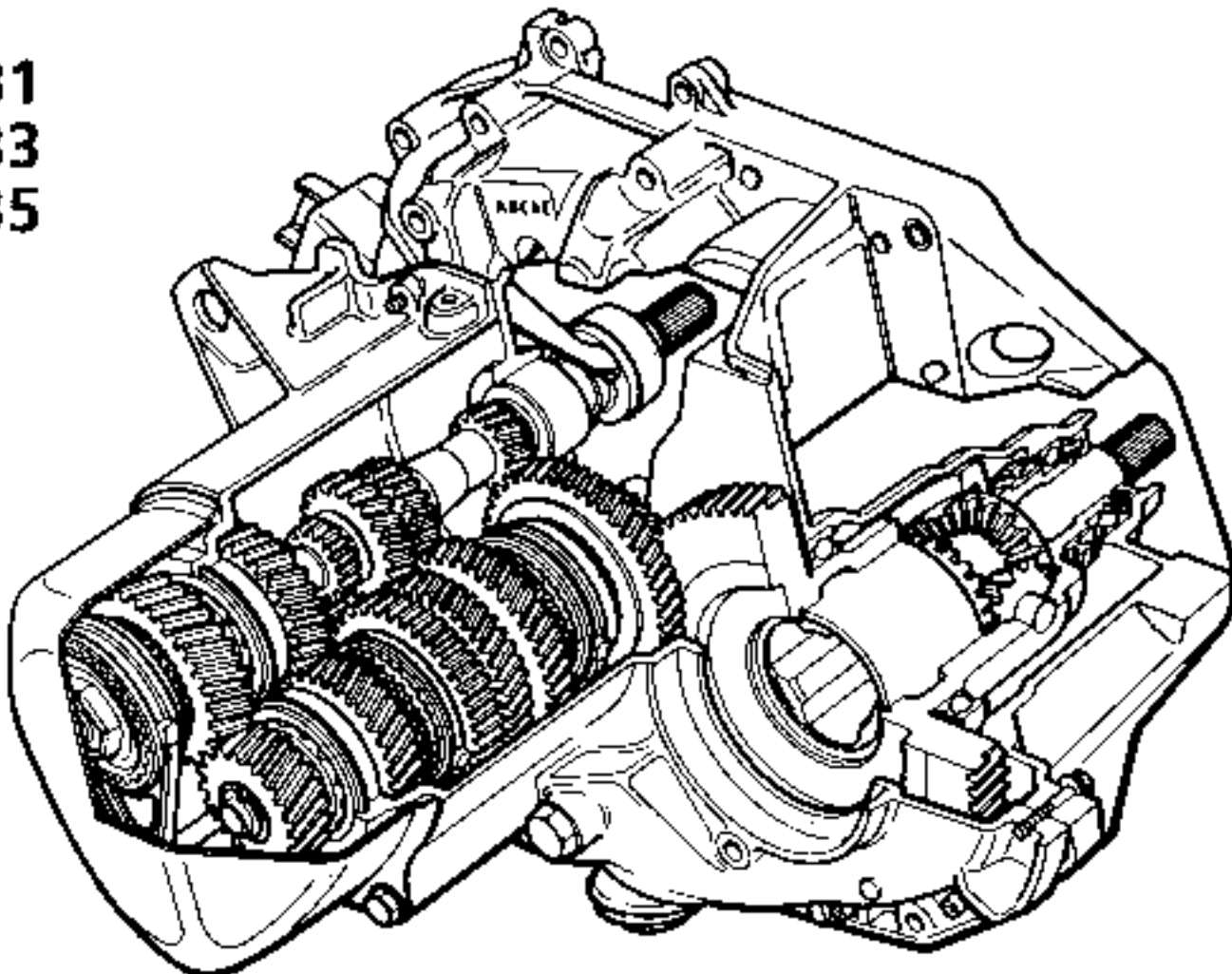
Refit the housing and secure it in place by tightening its bolts to a torque of 2.5 daN.m.

Coat the release bearing guide tube with grease No. 20 (MOBIL X 57030).

**JB0  
JB4**



**JB1  
JB3  
JB5**

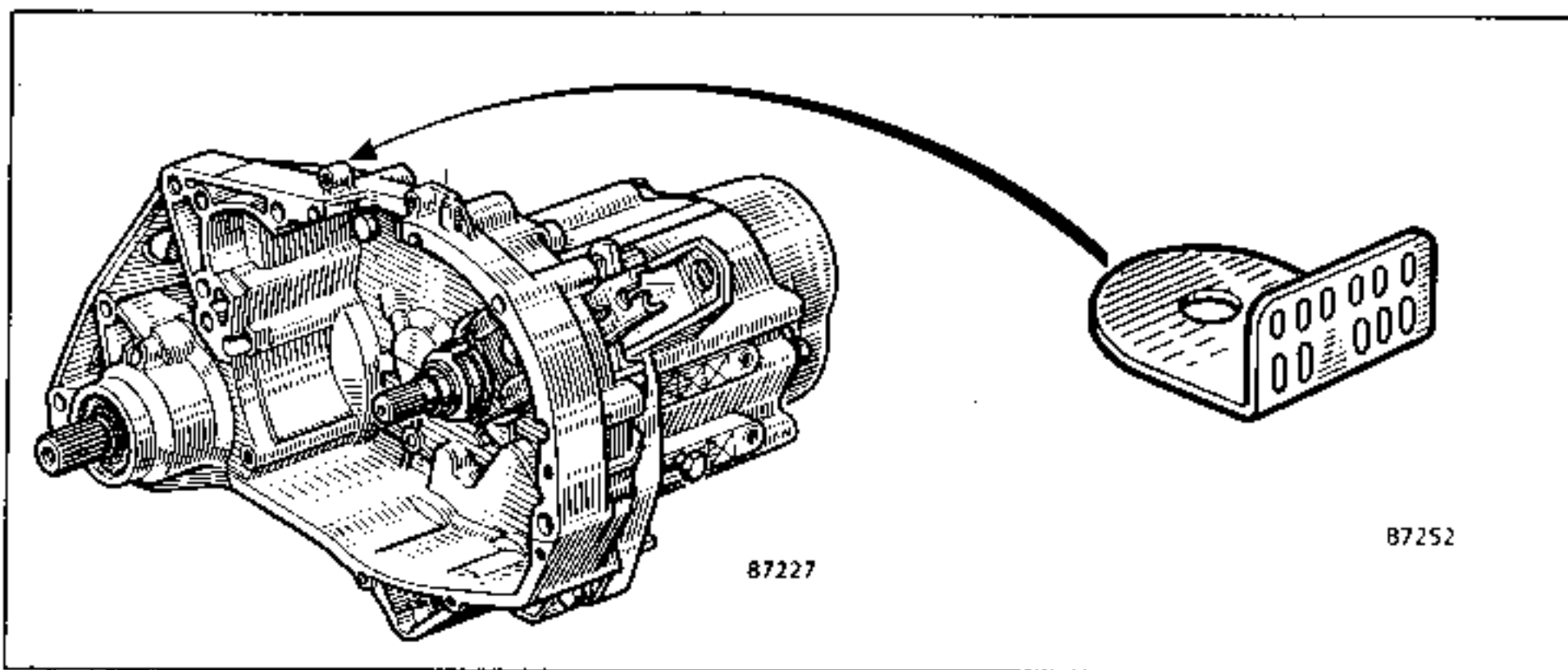


These vehicles are equipped with type JB gearboxes.

The operations involved in overhauling these gearboxes are covered by Workshop Manual "B.V. JB".

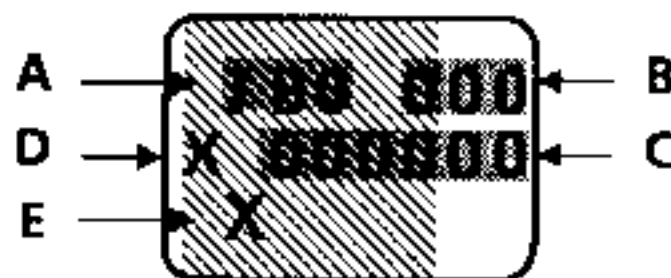
In this section, therefore, we shall only describe the following operations :

- Removing - Refitting the gearbox.
- Removing - Refitting the 5th speed gears on the vehicle.
- Removing - Refitting the external gear shift control.
- Replacing the differential outlet seal.



An identification plate secured to the clutch housing shows :

- At **A** : the gearbox type
- At **B** : the gearbox index number
- At **C** : the serial number
- At **D** : the factory at which it was produced
- At **E** : the engine type with which the gearbox is used



#### COLOUR CODING

2/3 of the surface is painted with a colour that identifies the gearbox type to ensure that it is fitted with the correct drive shafts.

The remaining 1/3 of the surface is painted with a code colour that identifies the gearbox index number.

Gearbox type	COLOUR CODING	
	Entire surface	<b>2/3</b> of surface
	Early type	New type
JB0	Red	Orange
JB1	Red	Red
JB2	Black	Aluminium
JB3	Black	Black

For all type JB4 and JB5 gearboxes, the colour coding consists of two colours (green and pink) in bands of equal width.

The following gearboxes :

JB0 } 4 forward speeds  
JB4 } 1 reverse  
  
JB1 } 5 forward speeds  
JB3 }  
JB5 } 1 reverse

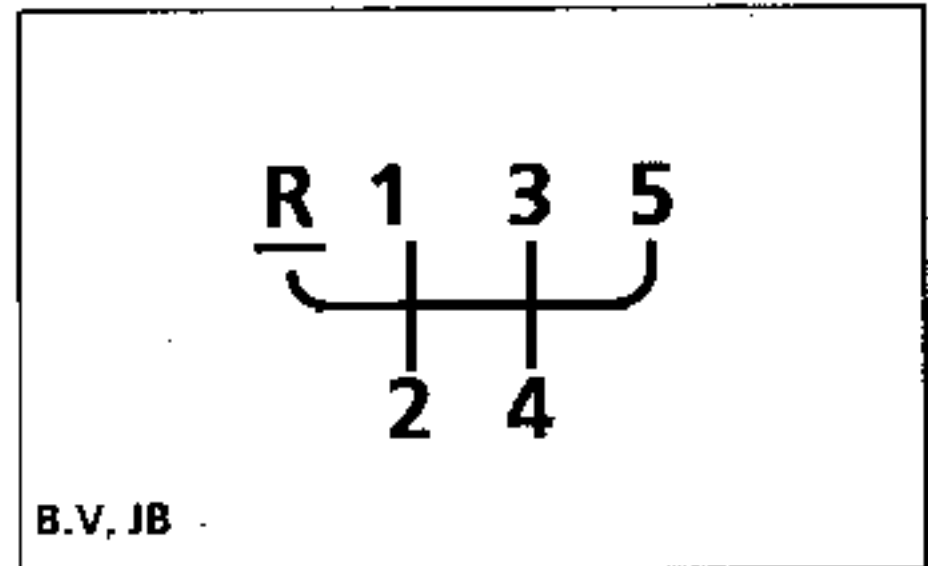
are equipped with BORG-WARNER synchronisers.

Type JB4 and JB5 gearboxes differ from JB0 - JB1 and JB3 gearboxes mainly at the following points :

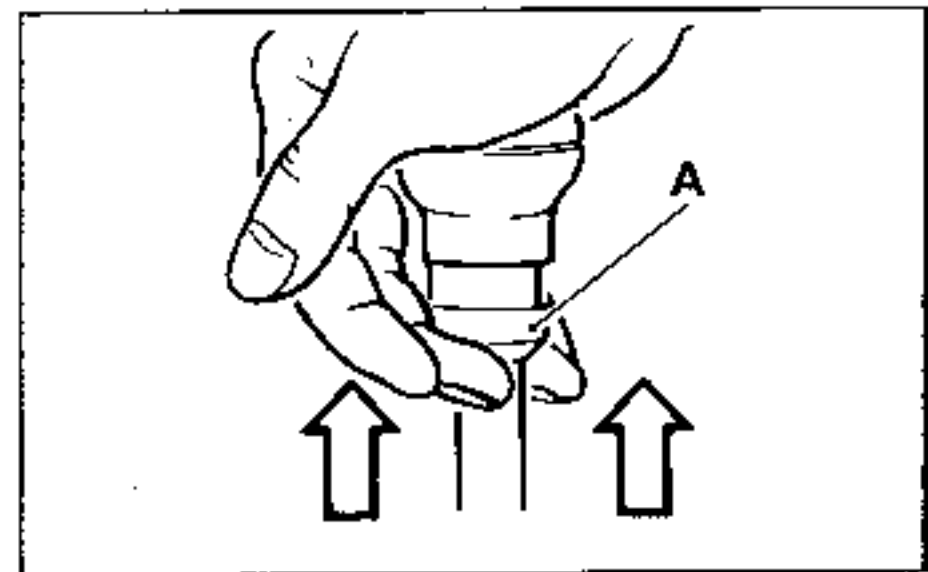
- the dimensions of the clutch housing, gearbox housing and gear trains,
- the differential housing which is light weight cast iron and the crown wheel which is narrower,
- the sun wheels which have lightened tail shafts and lobes,
- the guide tube arrangement.

The component parts of these units are not interchangeable.

#### GEAR SHIFT GATE



To select reverse, lift the lock release ring (A) and move the lever.



Index	Vehicle	Final drive set	Speedo. drive set	1st	2nd	3rd	4th	Reverse
<b>JBO</b>								
009	B/C/S404	$\frac{19}{59}$	$\frac{21}{20}$	$\frac{11}{41}$	$\frac{19}{39}$	$\frac{25}{33}$	$\frac{31}{28}$	$\frac{11}{39}$ 26
010	F404	$\frac{16}{57}$	$\frac{21}{19}$					
011	F40H F401	$\frac{15}{58}$						
014	F400	$\frac{14}{63}$						
016	B/C401	$\frac{14}{59}$						
<b>JB4</b>								
000	F40F Spain	$\frac{15}{58}$	$\frac{21}{19}$	$\frac{11}{41}$	$\frac{19}{39}$	$\frac{25}{33}$	$\frac{31}{28}$	$\frac{11}{39}$ 26
001	B/C401 B/C/S400 B/C40F		$\frac{21}{20}$					
002	B/C/S401 B/C40H							
003	B/C40F							
004	B/C/S40F Spain							

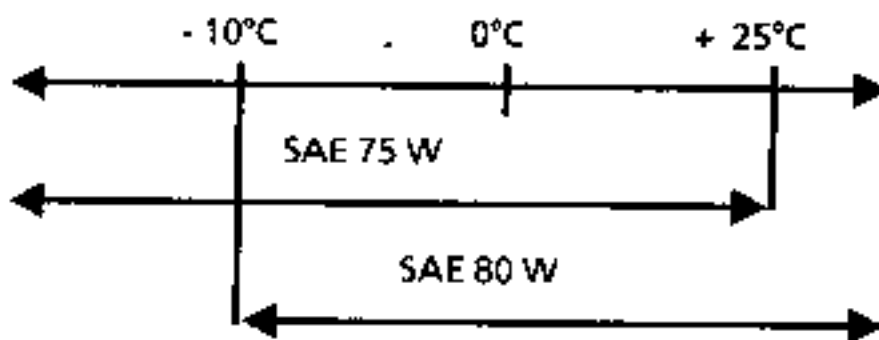
Index	Vehicle	Final drive set	Speedo. drive set	1st	2nd	3rd	4th	5th	Reverse
<b>JB1</b>									
011	F40H.F40M F401.F402.F407	$\frac{15}{58}$	$\frac{21}{19}$	$\frac{11}{41}$	$\frac{19}{39}$	$\frac{25}{33}$	$\frac{30}{29}$	$\frac{34}{27}$	$\frac{11}{39}$ 26
013	B/C/S404	$\frac{17}{56}$	$\frac{21}{20}$						
019	F404.B/C/S404	$\frac{15}{58}$	$\frac{21}{19}$						
020	B/C404	$\frac{16}{57}$	$\frac{21}{20}$						
021	F404 SPAIN	$\frac{15}{61}$	$\frac{21}{19}$						
022	B402	$\frac{15}{61}$	$\frac{21}{19}$						
<b>JB3</b>									
009 014	C405	$\frac{15}{56}$	ELECT. SPEEDO.	$\frac{11}{34}$	$\frac{19}{35}$	$\frac{25}{33}$	$\frac{30}{29}$	$\frac{33}{25}$	$\frac{11}{39}$ 26
019	C409	$\frac{15}{58}$	$\frac{21}{20}$						
023	B/C408	$\frac{16}{57}$	$\frac{21}{20}$						
024	B/C40G B/C40K	$\frac{16}{57}$	$\frac{21}{20}$						
<b>JB5</b>									
001	B/C40M B/C403 B/C40J B/C/S40H B/C/S40I B/C/S/407	$\frac{16}{55}$	$\frac{21}{20}$	$\frac{11}{41}$	$\frac{19}{39}$	$\frac{25}{33}$	$\frac{30}{29}$	$\frac{34}{27}$	$\frac{11}{39}$ 26
002	B403.C403	$\frac{15}{61}$		$\frac{11}{34}$	$\frac{19}{35}$			$\frac{33}{25}$	
003	B402.C402 B407.C407 B/C/S40F	$\frac{17}{56}$		$\frac{11}{41}$	$\frac{19}{39}$			$\frac{34}{27}$	
004	B400.C400	$\frac{15}{61}$							
005	B/C/S40F	$\frac{16}{57}$							
008	B/C40F Spain	$\frac{15}{58}$							



CAPACITY (in litres)

Plug without dipstick. <u>Normal level</u>	Plug with dipstick <u>Low level</u>
4 speed 3,25	2,75
5 speed 3,40	2,90

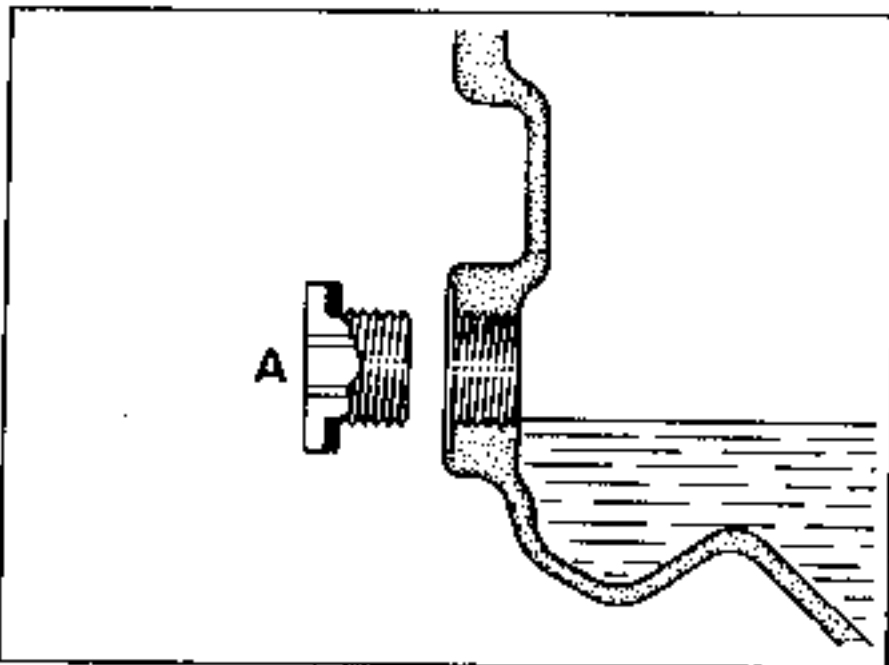
VISCOSITY



CHECKING THE LEVEL

Plug (A) without dipstick

Fill up to the edge of the plug hole.

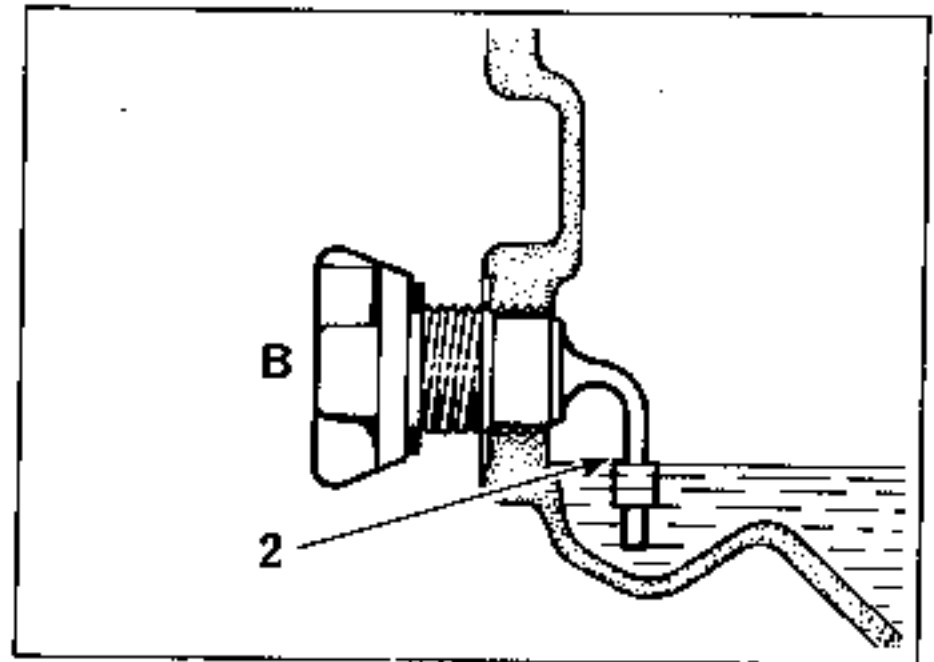


Plug (B) with dipstick

Wipe the dipstick section.

Refit the plug without screwing it in and with the dipstick downwards.

Take out the plug. The level should be on the boss (2).



GRADES

In order to stand the thermal stresses to which they are subjected in "Petrol engined turbo" vehicles, the gearboxes of these vehicles must only be lubricated with the new "High Temperature" oil approved by RENAULT : TRANSELF TRX 80 W.

Consequently, two differing grades of oil are recommended.

VEHICLE	GRADE
NATURALLY ASPIRATED	API GL5 - MILL 2105 B or C
PETROL ENGINE TURBO	TRANSELF TRX 80 W*

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

Type	Pack size	Part no.	Unit
Grease No. 20 <b>MOBIL X57 030</b>	1 gr sachet	<b>77 01 032 832</b>	Clutch fork pivot Release bearing guide tube bore Clutch shaft splines RH sun wheel splines
<b>Loctite 518</b>	24 ml syringe	<b>77 01 421 162</b>	Housing joint faces
<b>Loctite FRENBLOC</b>	24 cc bottle	<b>77 01 394 071</b>	5th speed fixed gear 5th speed synchroniser hub Primary shaft nut Secondary shaft bolt
<b>CAF 4/60 THIXO</b>	100 gr tube	<b>77 01 404 452</b>	Ends of spring pins on drive shafts Taper drain and filler plugs Screw threads on switches
MOLYKOTE grease <b>33 MEDIUM</b>	100 gr tube	<b>77 01 028 179</b>	Shift mechanism pivot points

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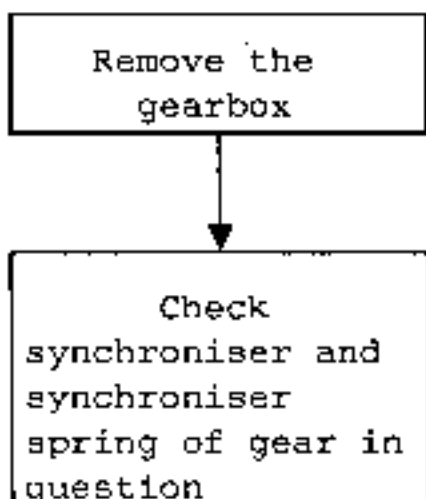
Parts that must automatically be replaced

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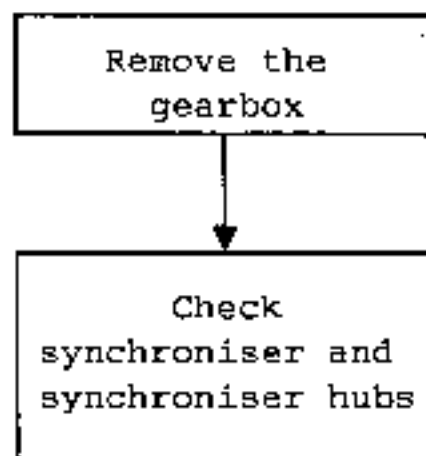
Whenever they are removed :

- the spring pins,
- the primary and secondary shaft nuts and bolt

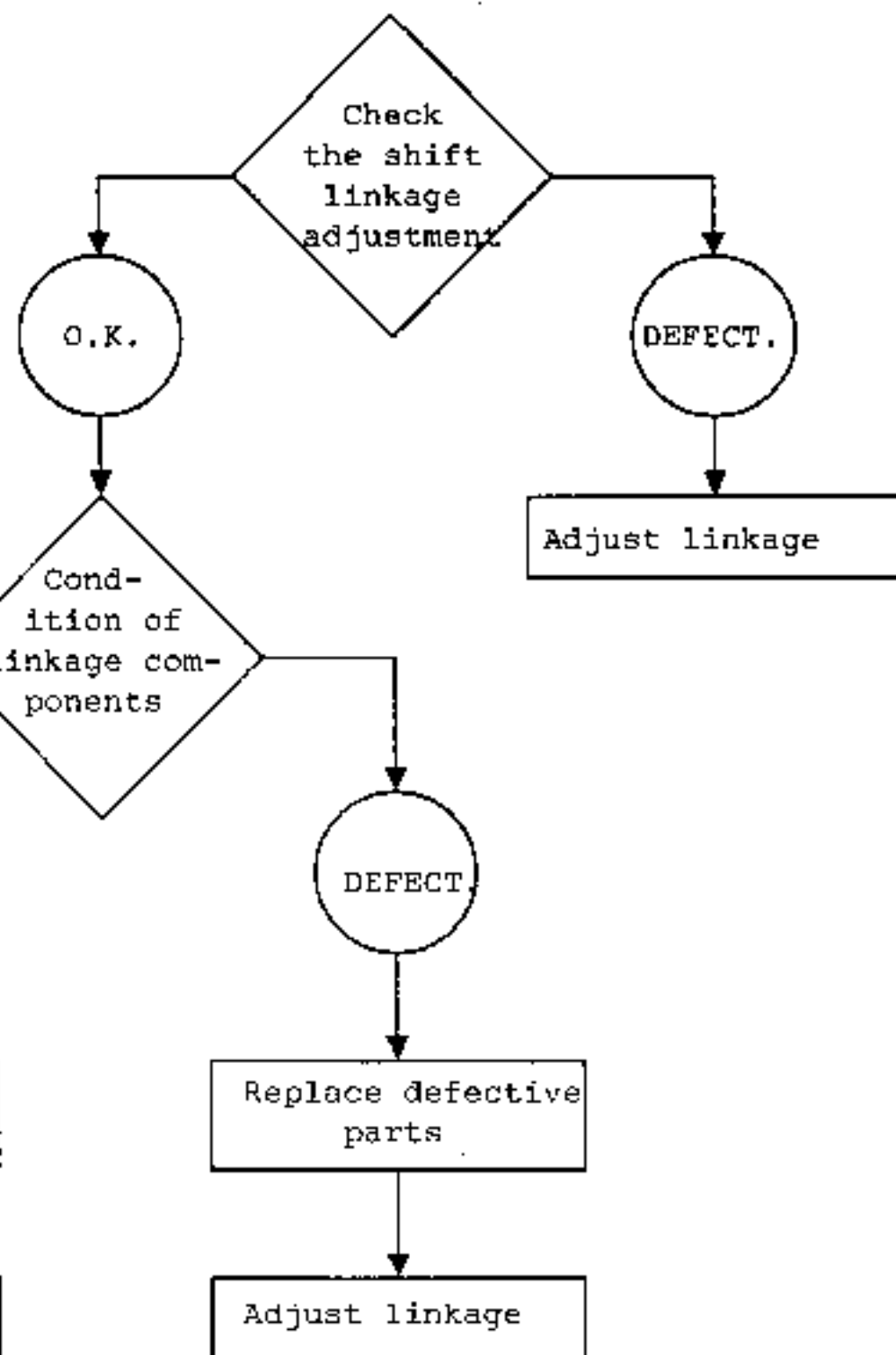
Grating when one gear is engaged



Grating when each gear is engaged  
(after first checking the clutch)



Impossible to engage gears  
(after first checking the clutch)

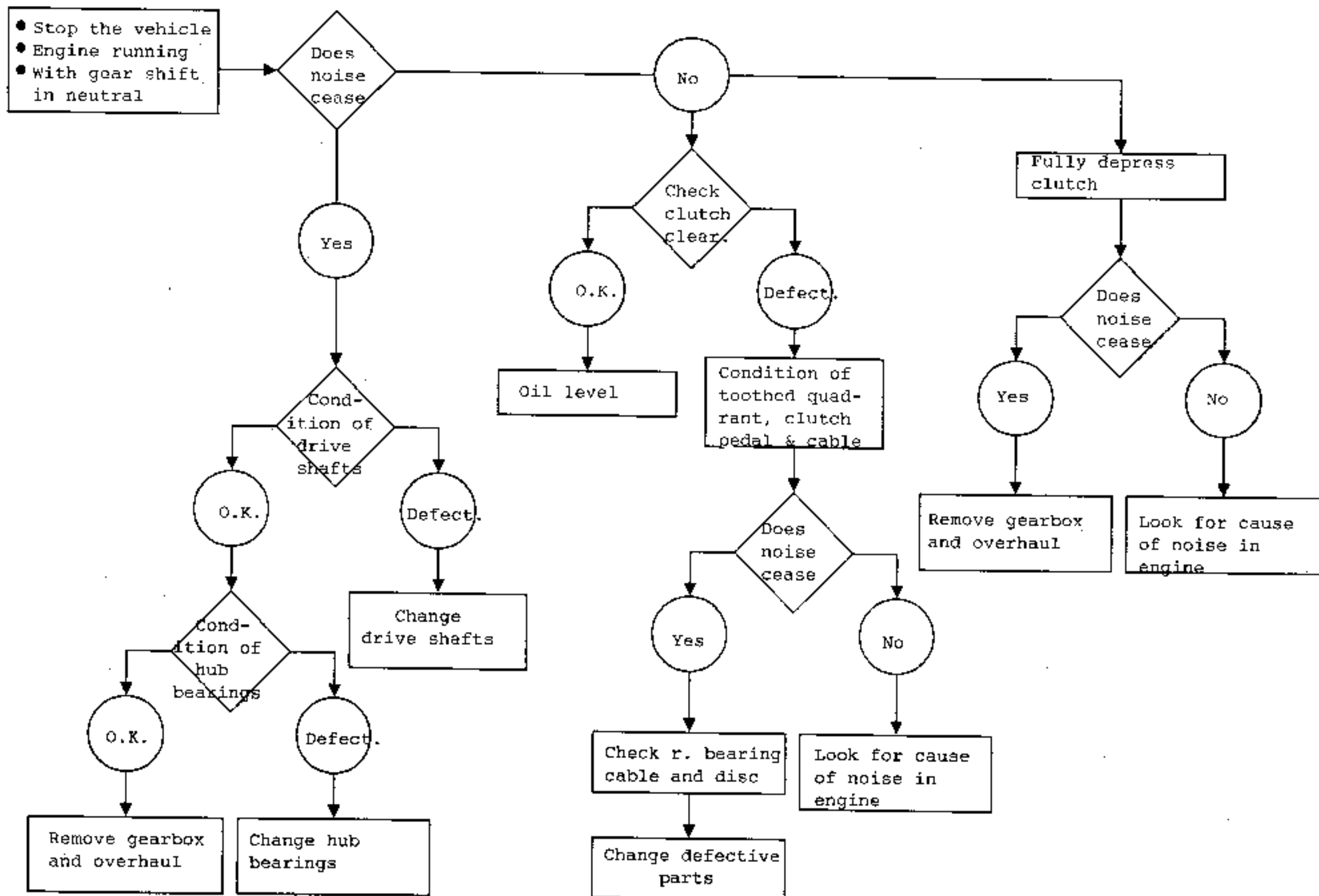


KEY

Operations to be carried out

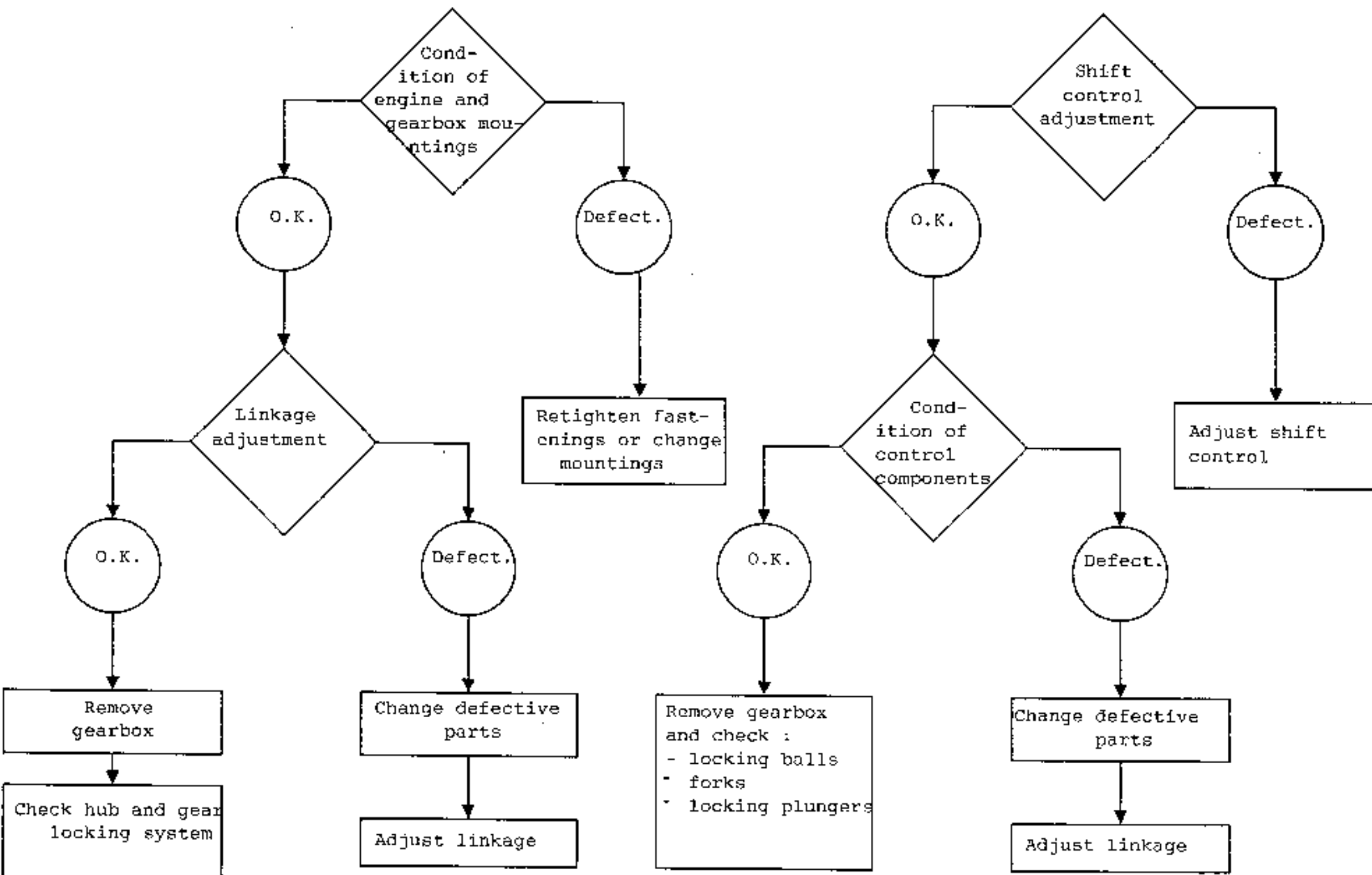
Inspection

Abnormal noises while vehicle is being driven



Slipping out of gear

Locking in gear



On versions equipped with the type "F" (Petrol and Diesel) engines and the Super 5 GT Turbo (C405) the gearbox cannot be removed alone. The power unit assembly must therefore be removed (see "Engine" section).

**ESSENTIAL SPECIAL TOOLS**

<b>B.Vi. 31-01</b>	Set of pin punches
<b>T.Av. 476</b>	Ball joint extractor



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

Brake caliper securing bolts	<b>10</b>
Shock absorber lower sec. bolts	<b>8</b>
Steering ball joints	<b>4</b>
Mounting securing bolts	<b>4-5</b>
Wheel bolts	<b>8</b>
Drive shaft bellows securing screws	<b>2,5</b>
Bolts round gearbox periphery	<b>4-5</b>

**CONSUMABLES**

Loctite FRENBLOC :  
     Brake caliper securing bolts  
 CAF 4/60 THIXO :  
     Ends of pins on RH drive shaft  
 Grease No. 20 (MOBIL X57 030) :  
     Clutch shaft and RH sun wheel  
     splines

**REMOVING**

Place the vehicle on a lift or on axle stands.

Disconnect the battery.

Remove :

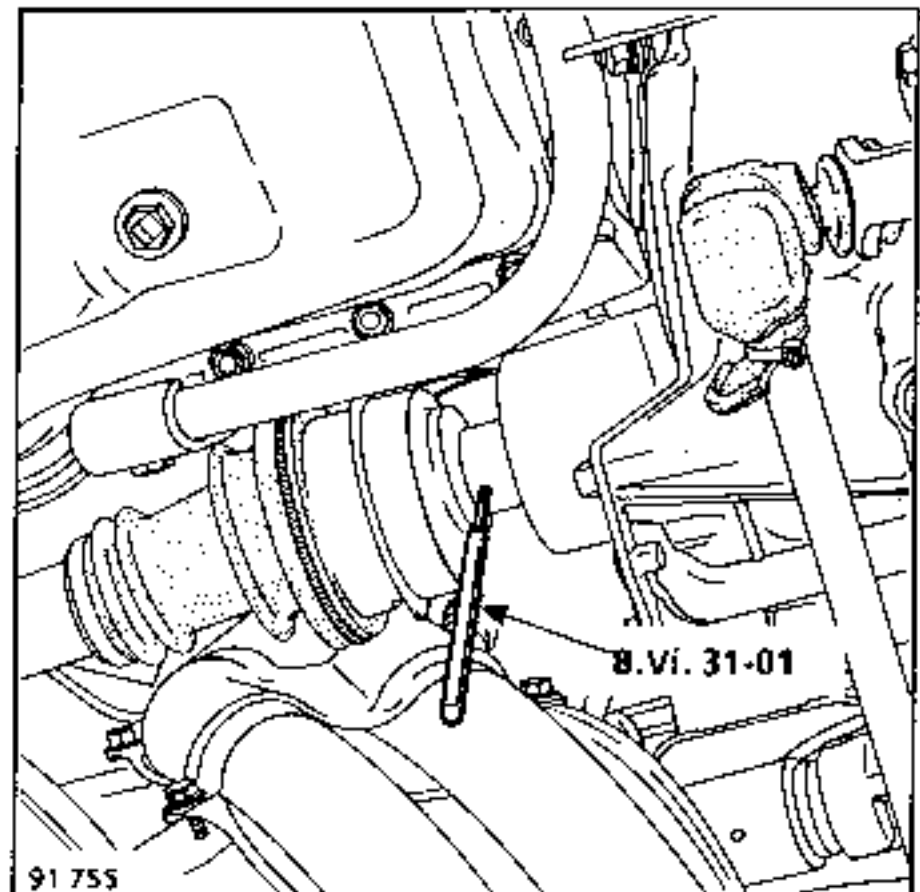
- the front wheels,
- protective casing under the engine.

Drain the gearbox.

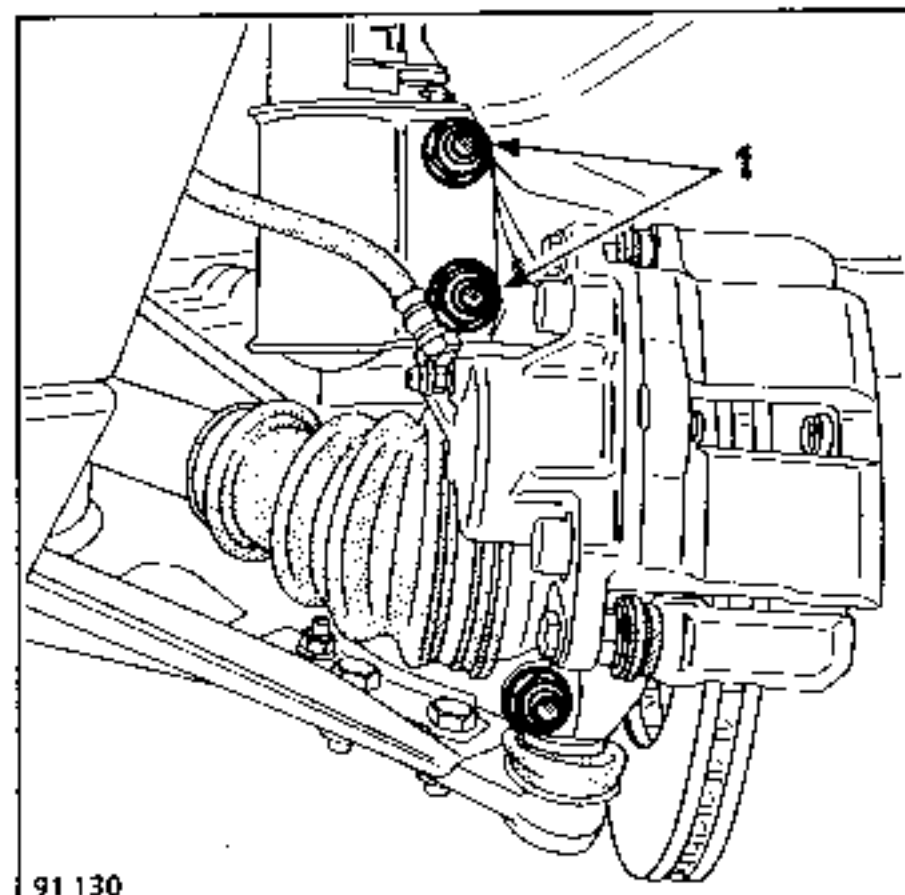
On the right hand side of the vehicle :

Remove :

- the pin from the drive shaft using pin punches B.Vi.31-01.



- the two bolts (1) that secure the lower end of the shock absorber.



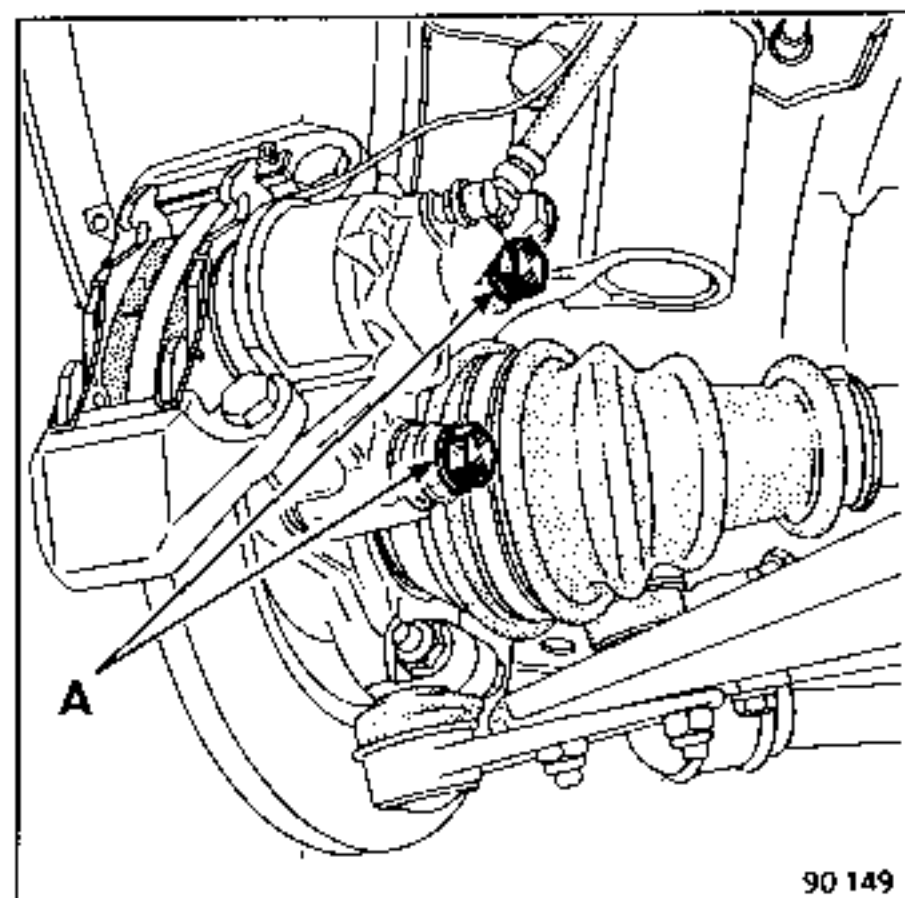
Free the drive shaft taking care not to catch the bellows, at the wheel end, by protecting it and securing the stub axle carrier to avoid subjecting the brake hose to tension.

On the left hand side of the vehicle

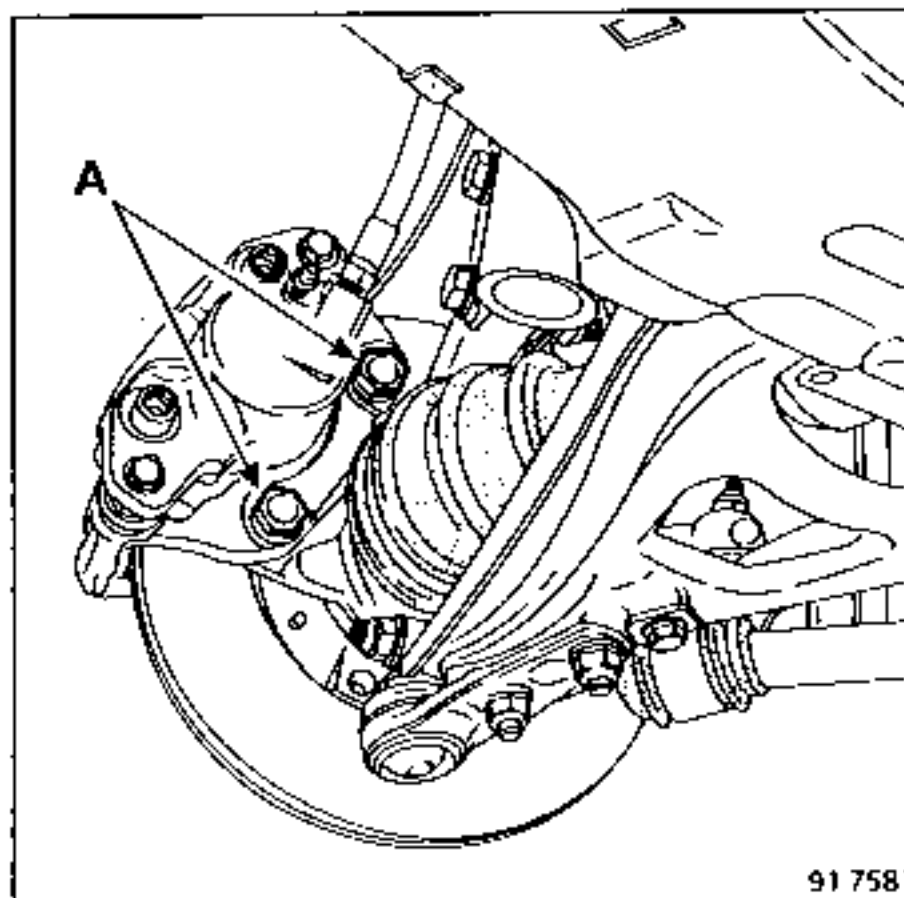
Remove :

- the two caliper securing bolts (A). Secure the caliper to the suspension spring to avoid subjecting the hose to tension.

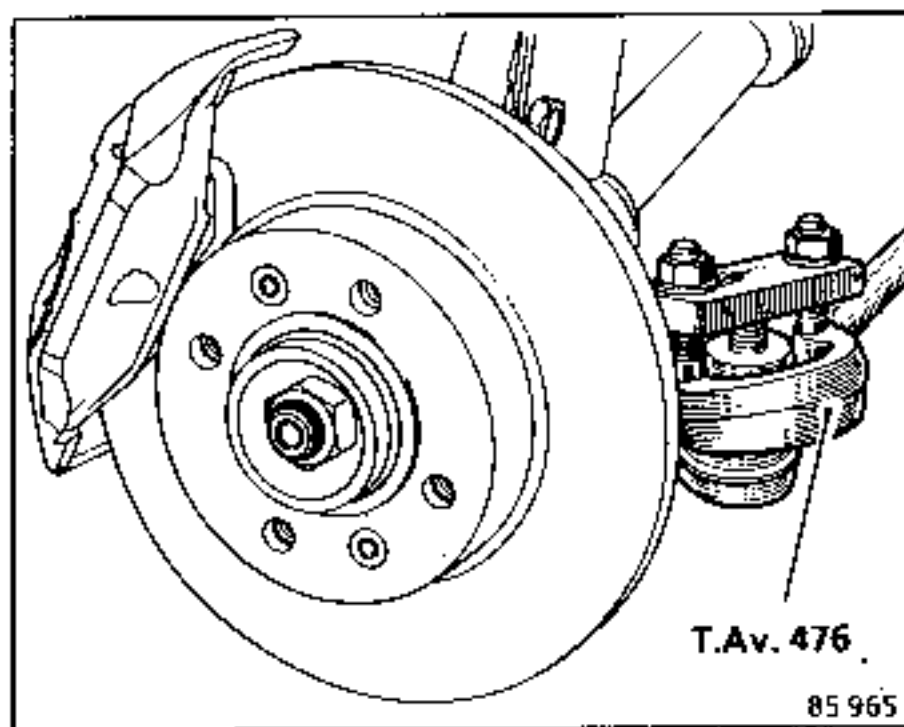
## BENDIX



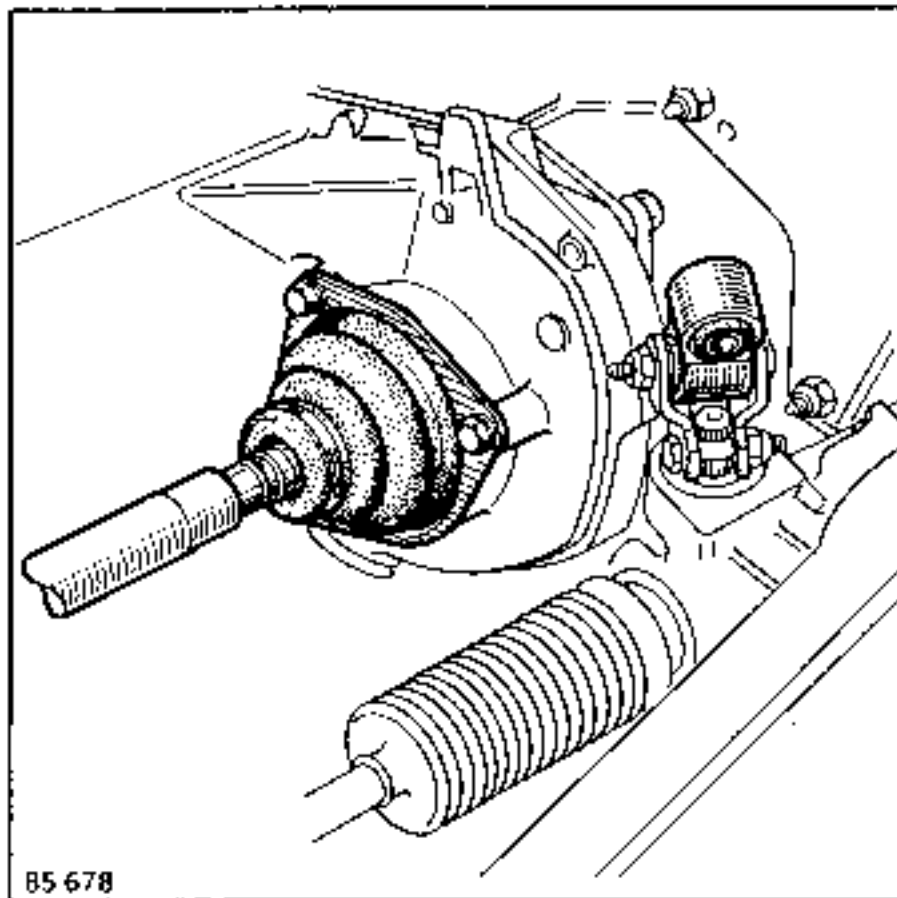
## GIRLING



- the steering ball joint using tool T.Av.476.



- the three screws that secure the drive shaft bellows in place,

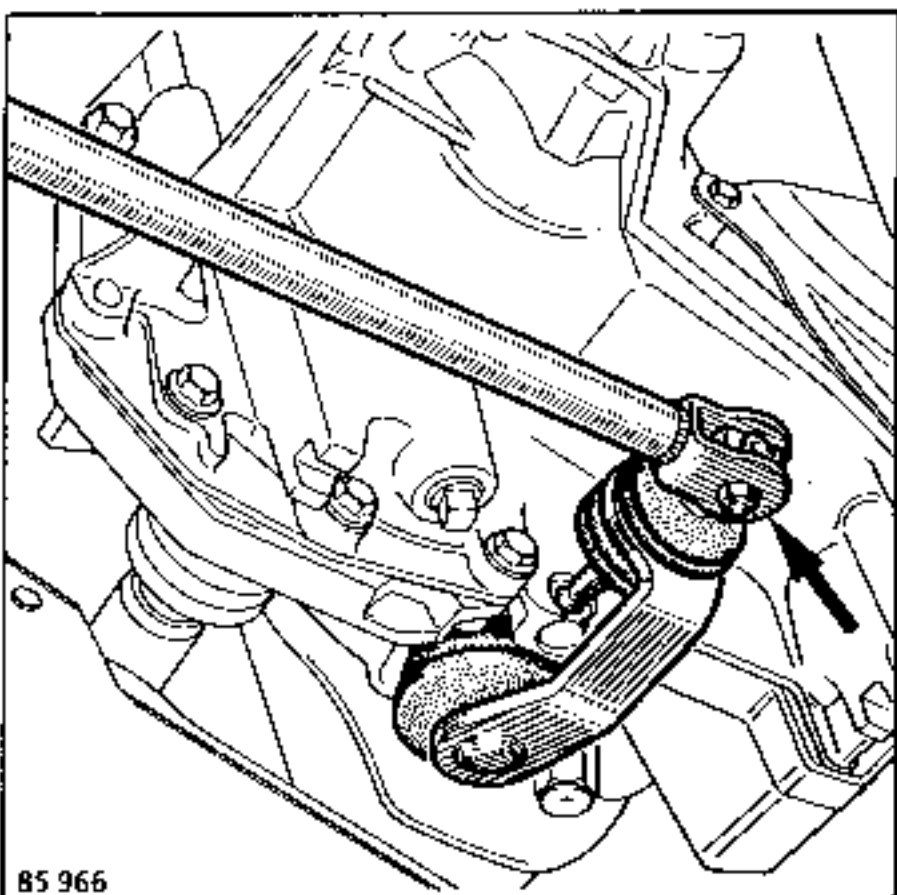


- the two bolts on the lower end of the shock absorber and free the drive shaft.

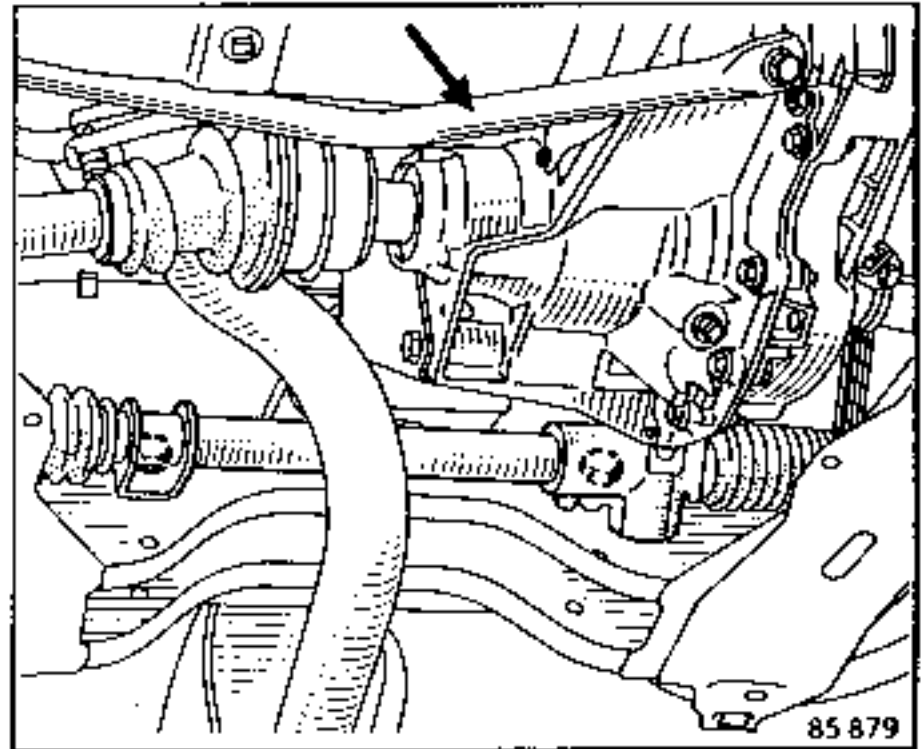
Check that the drive shaft rollers cannot be taken out by hand. If they can, check, on reassembly, that the bearing needles have not fallen into the gearbox.

From under the vehicle, remove :

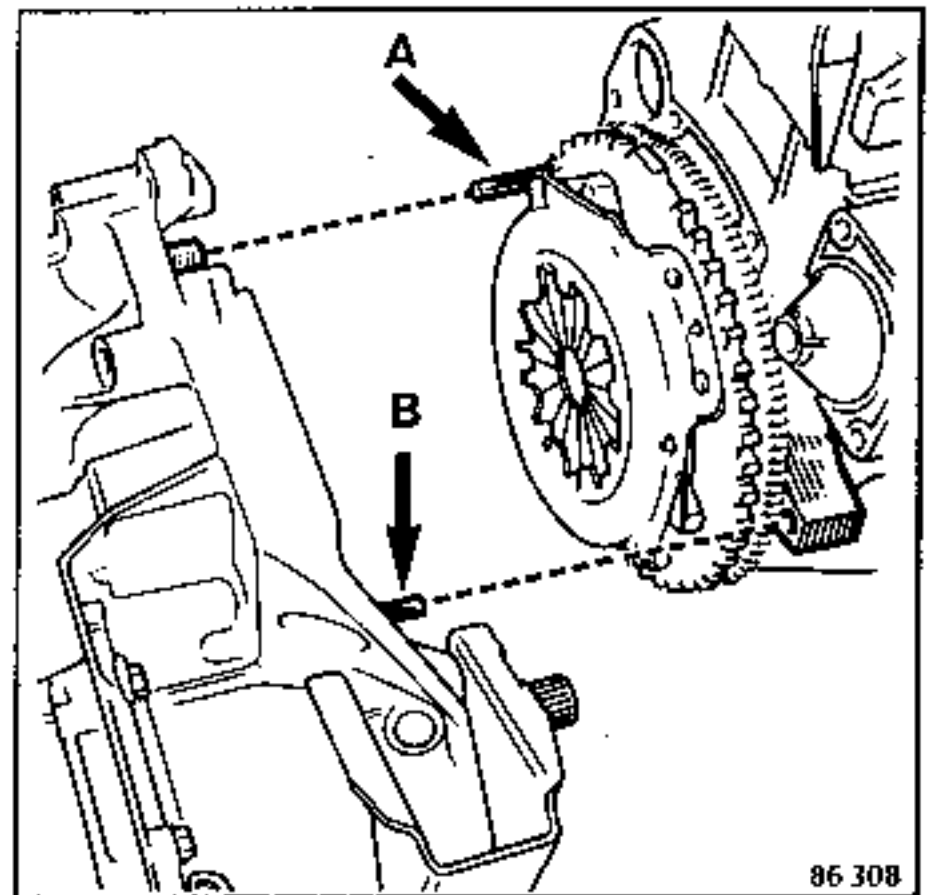
- the shift control,



- the engine to gearbox tie rod.

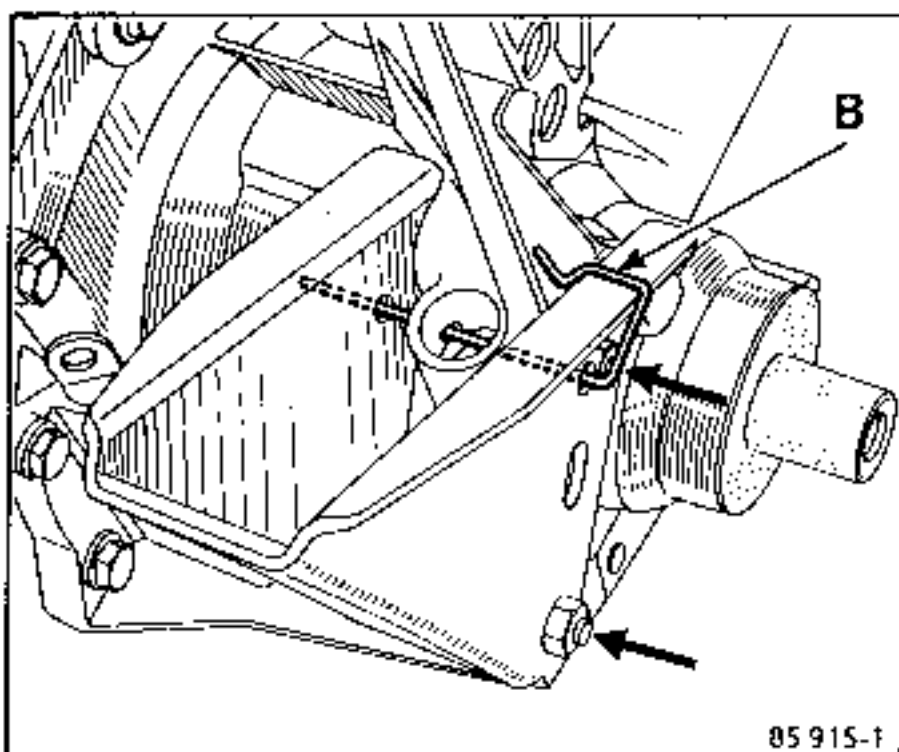


- the clutch protection plate,
- the wires from the switches,
- the starter protection plate,
- the two studs (A) and (B),

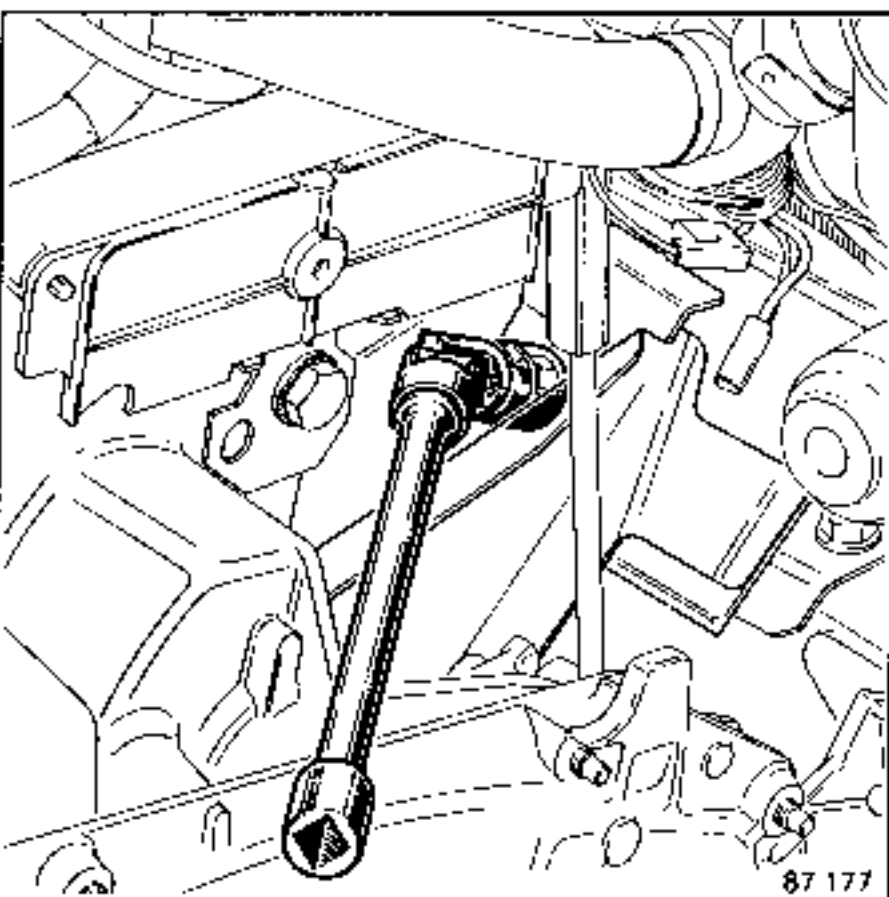




- the clip (B) from the speedometer drive cable,
- the nuts from the gearbox front and rear flexible mounting bolts, loosening the nut on the engine flexible mounting,



- the earthing braid,
- the air filter, plugging the entrances to the carburettor so that no foreign bodies can fall into them,
- the nut from the rear flexible mounting, using an extension and a ball jointed spanner.



#### Disconnect :

- the choke cable from the carburettor,
- the speedometer drive cable,
- the clutch cable,
- the wires from the fan and the coolant temperature gauge.

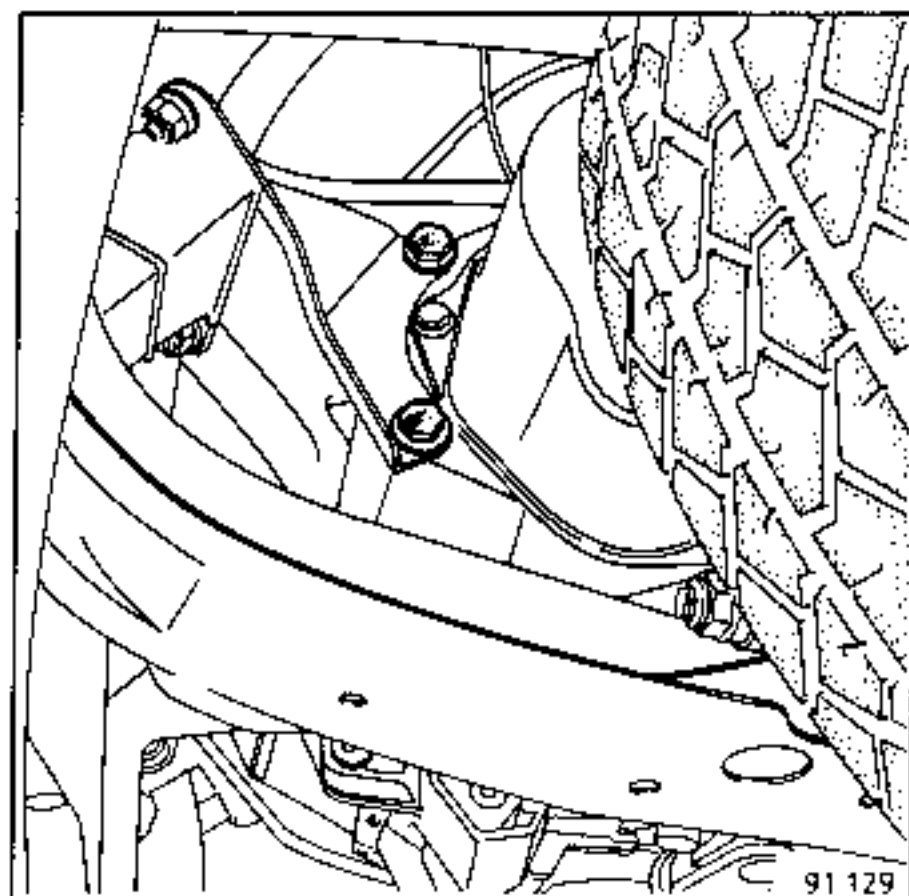
#### Unclip :

- the coolant bottle, placing it on the engine,
- the radiator, placing it on the engine (without disconnecting the pipes) after having protected the fins with cardboard.

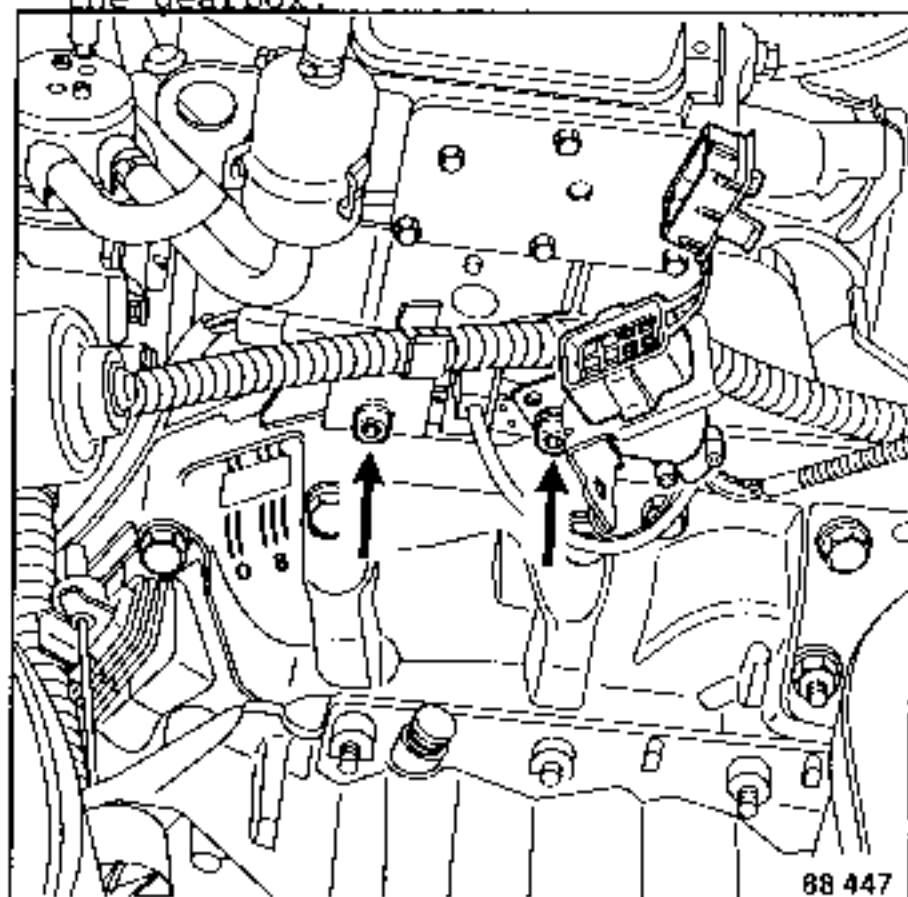
Take the weight of the engine to release the rear flexible mounting.

#### Remove :

- the front mounting,



- the T.D.C. sensor and the A.E.I. unit,
- the starter securing bolts,
- the bolts from round the periphery of the gearbox.



Hook the gearbox on to the workshop crane securing it at the clutch cable support lug and one of the gearbox securing bolts fitted in place of the stud (H).

Free the engine from the gearbox by sliding the 5th speed housing between the vehicle side members and the engine sub-frame.

Lift the engine.

Swing the gearbox slightly to the left to clear the final drive section then take out the gearbox from the vehicle.

#### REFITTING (Special features)

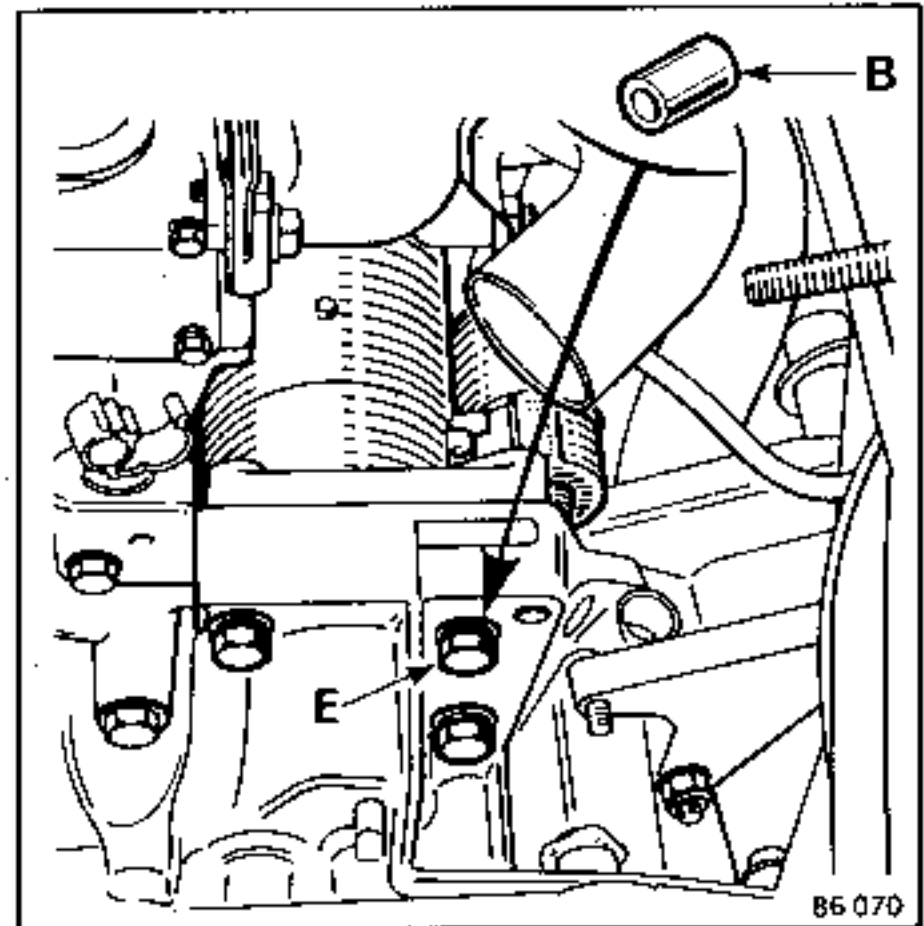
Coat the splines on the clutch shaft and on the RH planet wheel with grease No. 20 (MOBIL X57 030).

Place the gearbox in position.

Check that the locating dowels are correctly fitted into their holes.

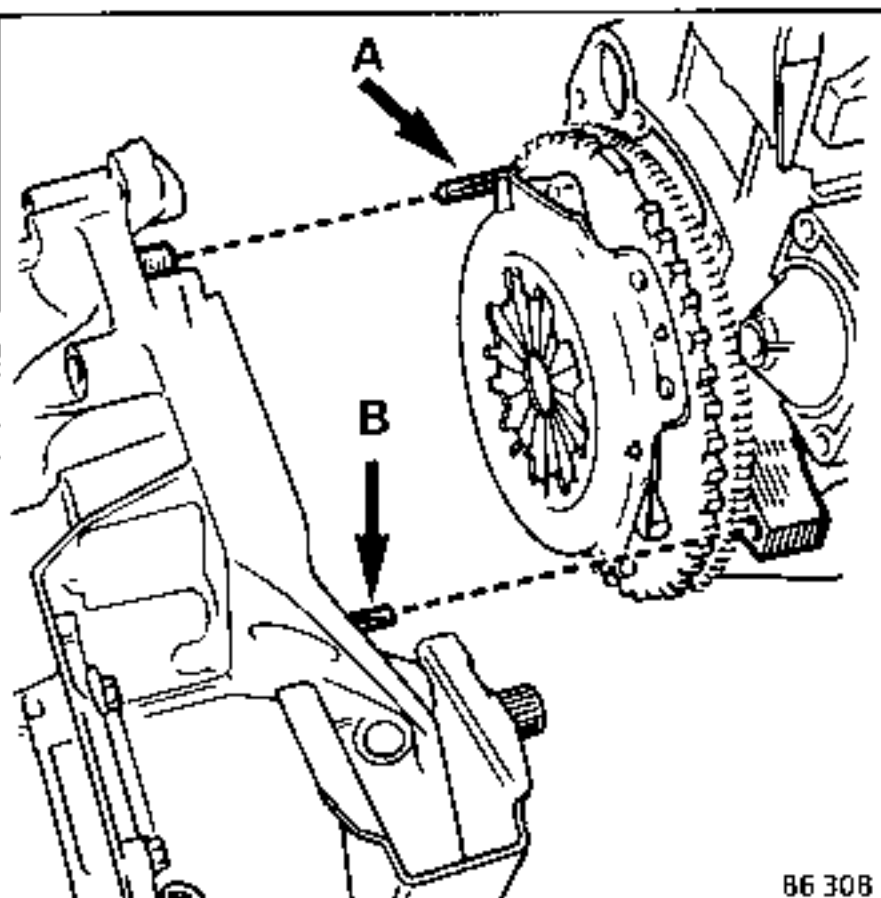
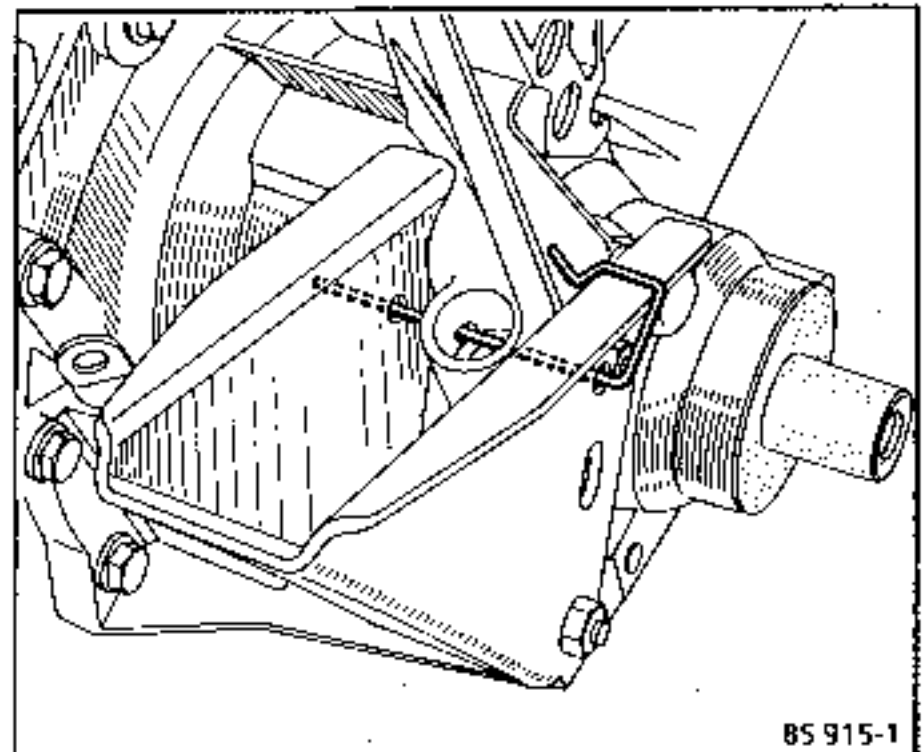
Refit the studs (A) and (B) in the same positions as they were before removal, they, together with the bolts round the gearbox align and locate the assemblies.

**WARNING :** ensure that the starter bolt (C) is refitted in the correct position.



Check that the locating dowel (D) is in position. IT MUST be placed in bolt hole (E) (Type C engine).

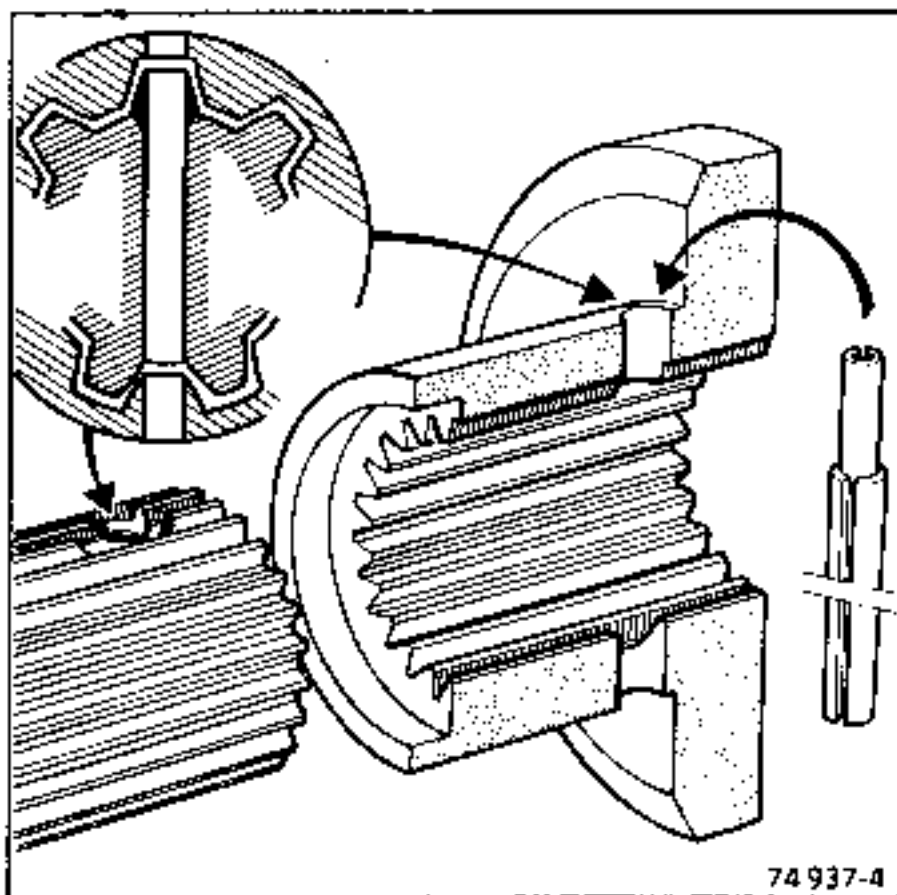
Reconnect the speedometer drive cable, ensuring that the clip is correctly refitted.



Correctly position the right hand drive shaft with reference to the sun wheel.

Swing the stub axle carrier into position whilst engaging the drive shaft in the sun wheel.

Use the cranked pin punch B.Vi.31-01 to align the holes.



Lead chamfers on the sun wheels facilitate fitting the new spring pins.

Seal the pin holes (with CAF 4/60 THIXO).

Fit the caliper securing bolts after applying Loctite FRENLOC to them and tighten the bolts to torque.

Depress the brake pedal a number of times to bring the pistons into contact with the brake pads.

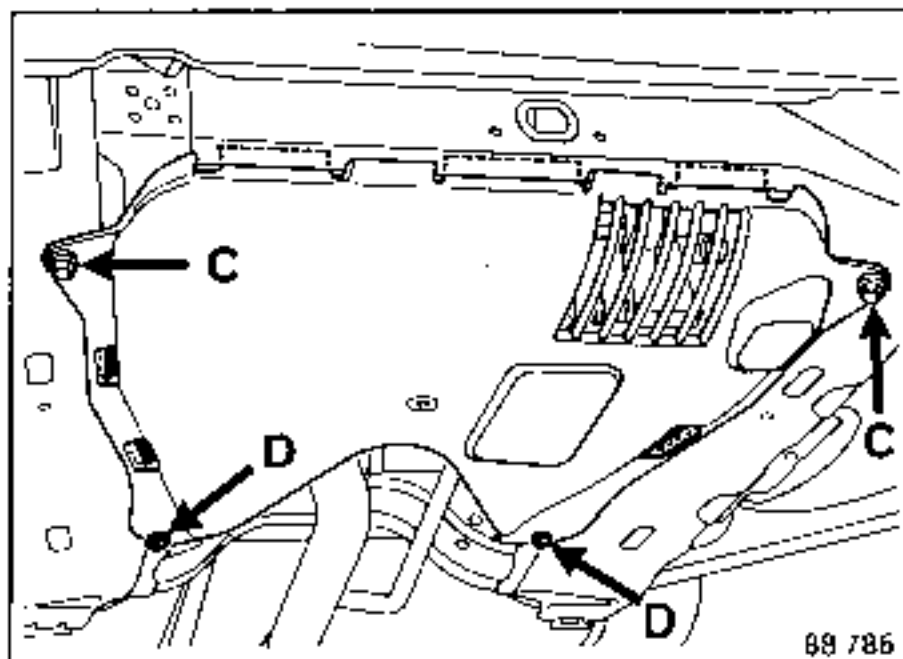


Tighten the following to torque :

- the nuts securing the lower end of the shock absorber,
- the steering ball joint nut,
- the nuts on the flexible mountings,
- the screws securing the left hand drive shaft bellows.

Fill the gearbox with oil.

Place the protective casing under the engine.



2 bolts (C)

2 "quarter turn" retaining clips (D)

Tighten the wheel bolts to the specified torque.

ESSENTIAL SPECIAL TOOLS	
<b>B.Vi. 28-01</b>	Extractor body
<b>B.Vi. 31-01</b>	Set of pin punches for removing and inserting 5 mm $\varnothing$ spring pins
<b>B.Vi. 1003</b>	5th speed hub extractor
<b>B.Vi. 1007</b>	Claws for B.Vi.28-01

TIGHTENING TORQUES (in daN.m)	
Primary shaft nut	<b>13,5</b>
Secondary shaft bolt	<b>8</b>
Nuts on mounting pads	<b>4</b>

CONSUMABLES
<b>Loctite FRENBLOC :</b>
Nut on primary shaft
Bolt on secondary shaft
5th speed fixed gear
5th speed hub

#### SPECIAL FEATURES

Do not pull the 5th speed shift fork shaft outwards as this will allow the gear locking assembly to fall into the gearbox. To avoid all possibility, engage a gear (3rd or 4th).

#### REMOVING

Remove the gearbox front flexible mounting to lower the box.

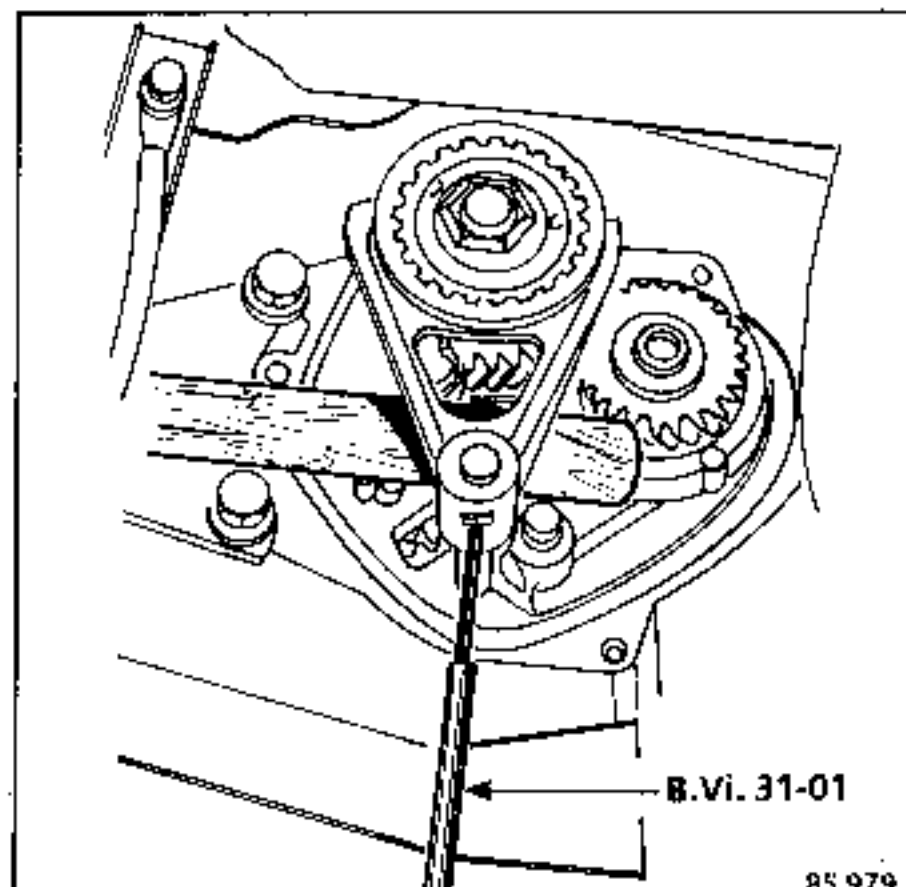
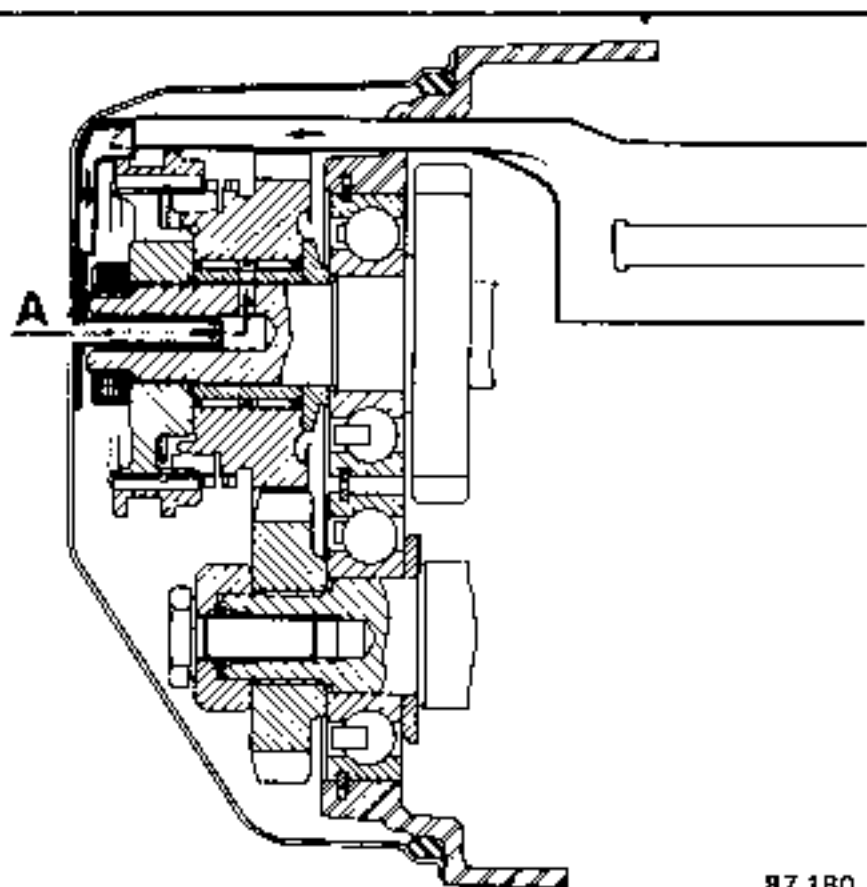
Drain the gearbox.

The housing must be removed in line with the gearbox horizontal axis because it carries an oil pipe (A) that penetrates the primary shaft.

Place :

- a drip tray under the rear housing and remove it,
- a wooden chock between the 5th speed shift fork and the drive gear to act as a support and then remove the pin from the fork using punch B.Vi.31.01.

Removing the pin can be made easier by slightly bending the end of punch B.Vi. 31.01 so that it is not necessary to lift the gearbox.



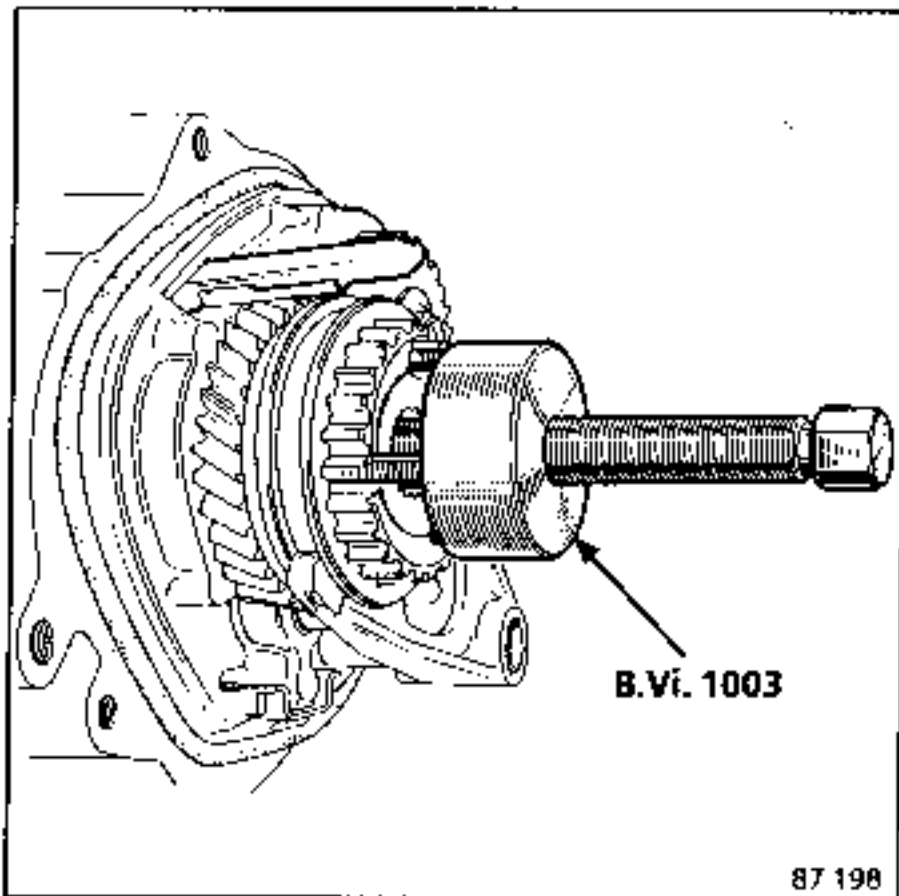
On the primary shaft :

Select 1st speed at the shift lever and 5th speed at the box, by sliding the 5th shift fork along its shaft.

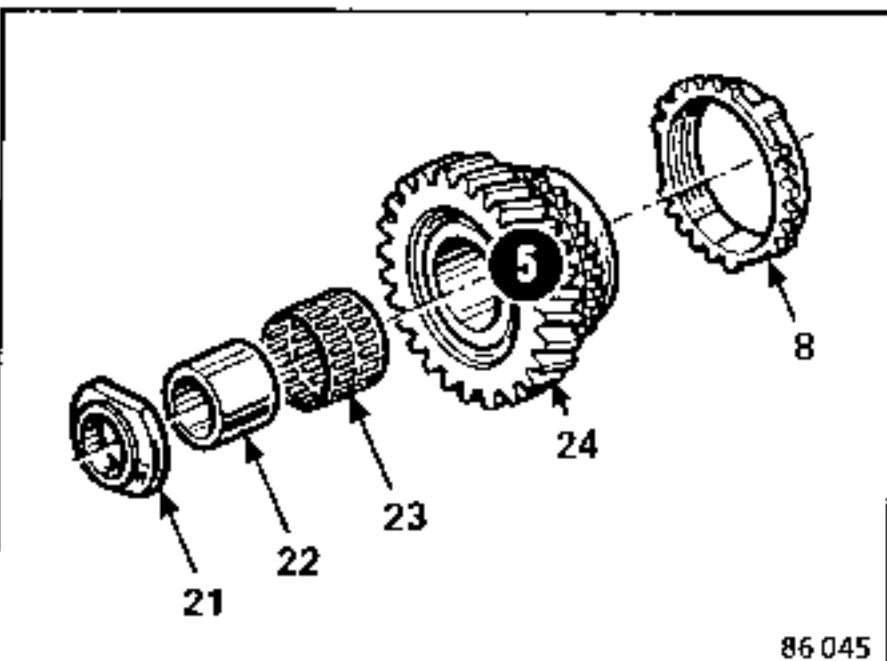
Loosen and remove the nut from the primary shaft and the bolt from the secondary shaft (65).

Return the gearbox to neutral.

Place tool B.Vi.1003 in the slots on the 5th speed hub and remove the hub-sliding gear and fork assembly.

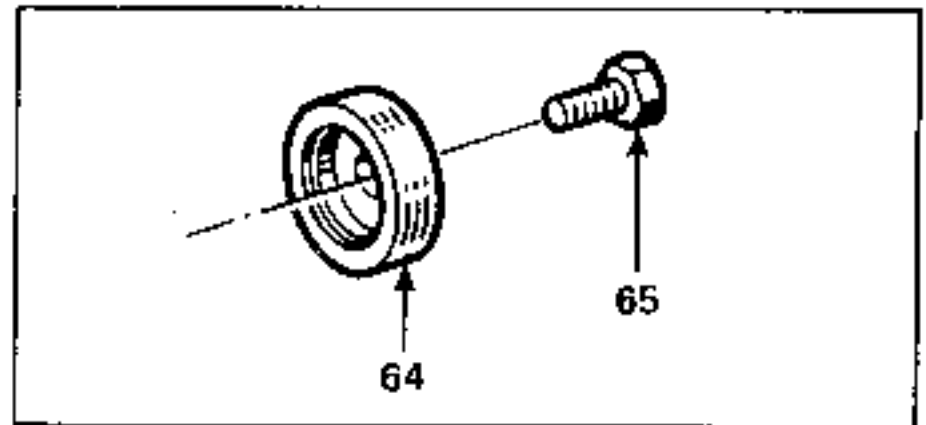


Remove components (8) and (24) to (21) in that order.

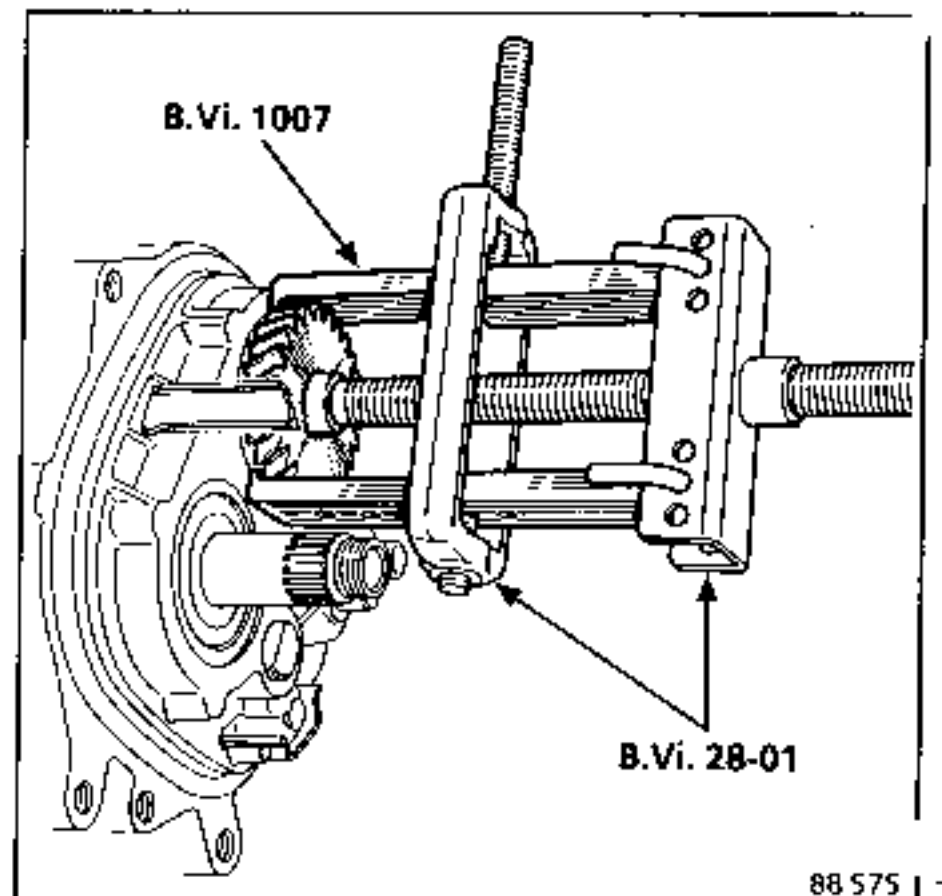


On the secondary shaft :

Remove the shouldered washer (64).



Remove the fixed gear using B.Vi.28-01 fitted with jaws B.Vi.1007.



## REFITTING

On the secondary shaft :

Apply 3 drops of Loctite FREN8LOC to the fixed gear splines.

Fit the shouldered washer (64).

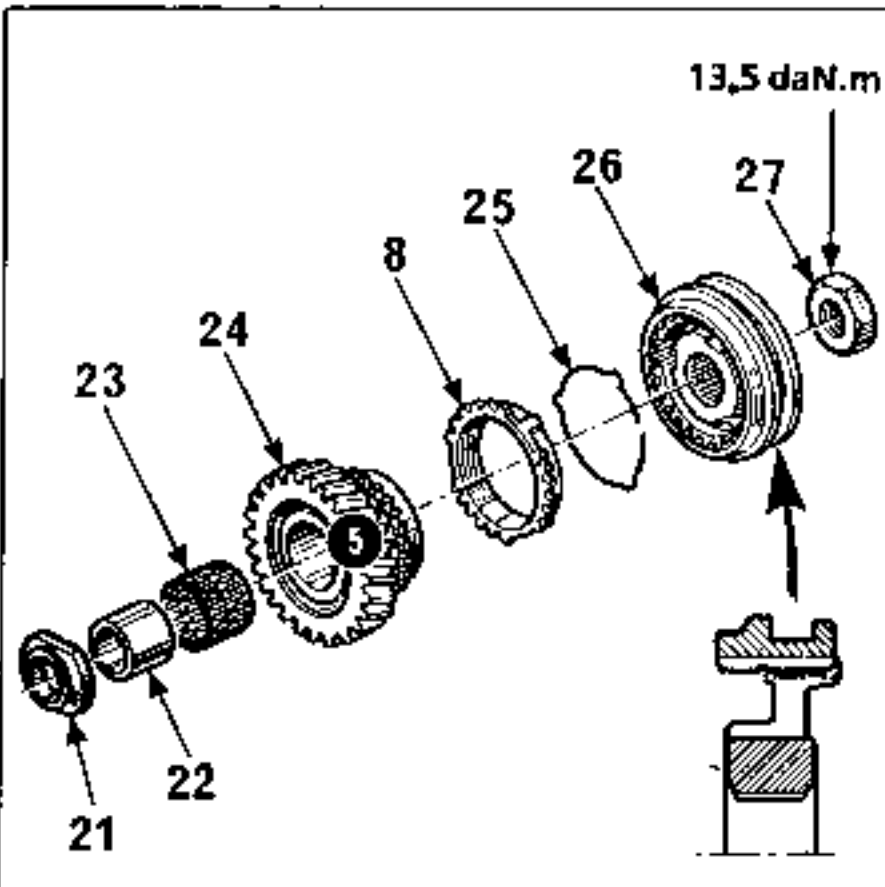
On the primary shaft :

Refit, in this order (21) (shoulder on the bearing side) (22), (23), (24) and (8).

Place the fork on the sliding gear (26), together with (25).

Apply 3 drops of Loctite FRENHLOC to the hub and refit the hub-sliding gear and fork assembly.

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

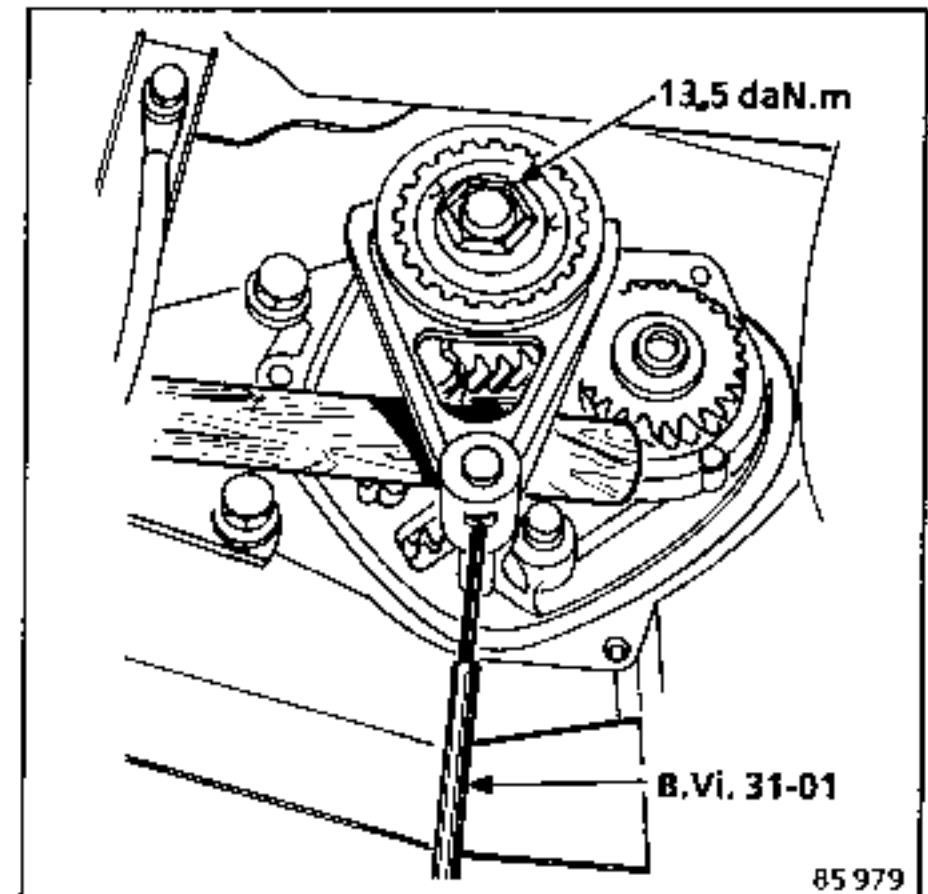
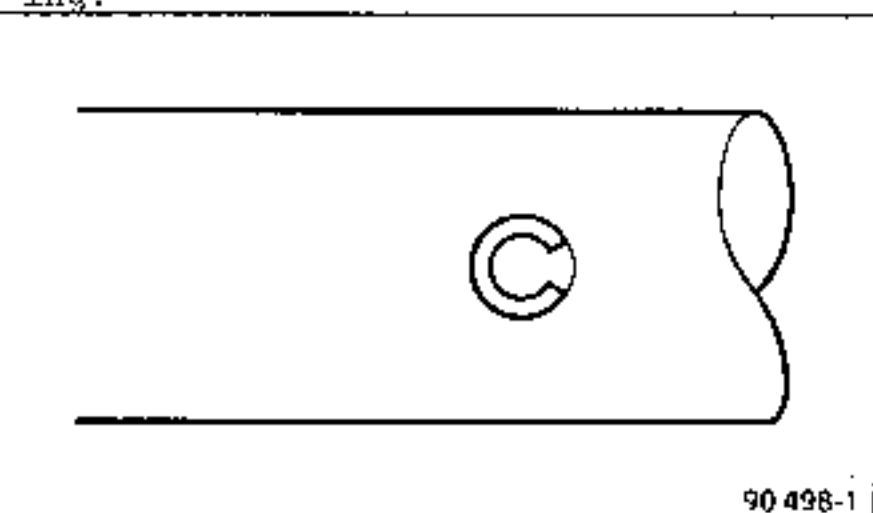


Select 1st at the shift lever and 5th at the gearbox by sliding the 5th speed fork along its shaft.

Apply 3 drops of Loctite FRENHLOC :

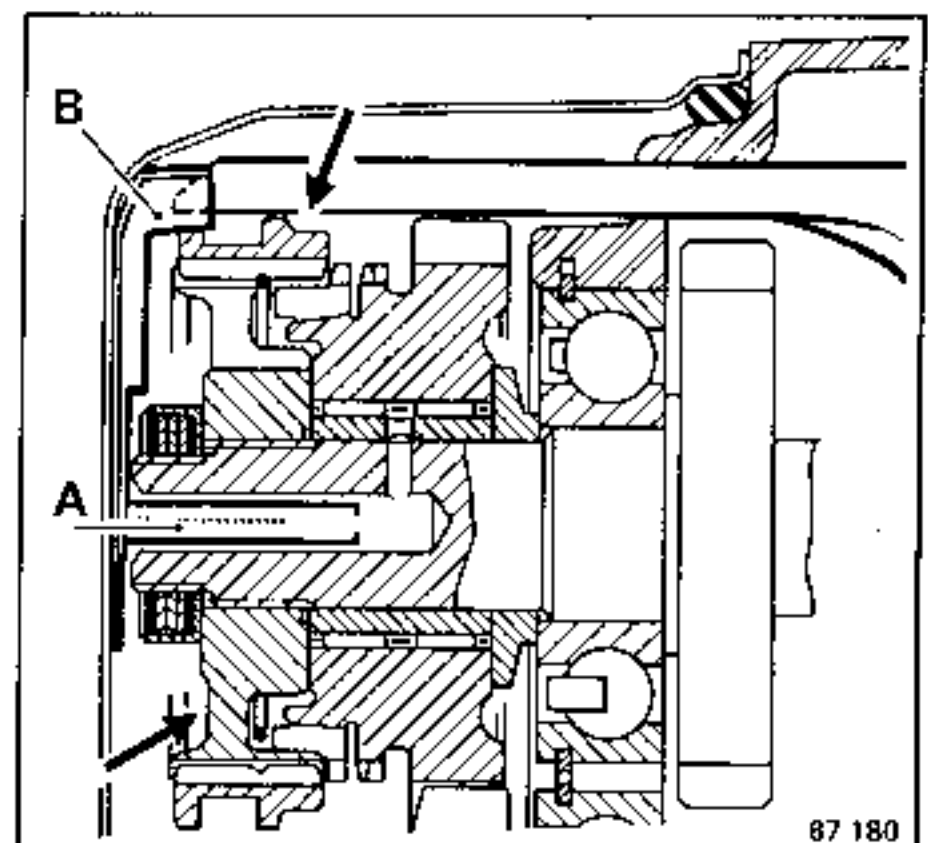
- to the nut (27) on the primary shaft, tightening it to a torque of 13,5 daN.m
- on the bolt (65) and tightening it to a torque of 8 daN.m to force fit the fixed gear.

Place a wooden chock between the 5th speed fork and the driving gear to support it and fit a new pin to the 5th speed fork using punch B.Vi.31-01 and fitting it the correct way round. The slit is to point towards the rear housing.



Fit a new O ring to seal the rear housing.

Return the gearbox to neutral then fit the rear housing, engaging the oil pipe (A) into the primary shaft and the lubrication gully into the oil collector rail (B). Tighten the bolts to a torque of 2,5 daN.m.



Check that all the gears select correctly.

If difficulties are encountered, check that neither reverse nor 5th speed are engaged.

Fill type JB1 and JB3 gearboxes with : 3.40 litres or JB5 gearboxes : 2.90 litres of oil.

Check the rear housing for leaks with the engine running.

ESSENTIAL SPECIAL TOOLS

<b>B.Vi.</b>	<b>31-01</b>	Set of pin punches
<b>T.Av.</b>	<b>476</b>	Ball joint extractor
<b>B.Vi.</b>	<b>945</b>	Plug for fitting the differential seal
<b>B.Vi.</b>	<b>1058</b>	Plug for fitting the differential seal (JB3 with taper roller bearings)



TIGHTENING TORQUES (in daN.m)

Brake caliper securing bolts	<b>10</b>
Shock absorber lower securing bolts	<b>8</b>
Steering ball joints	<b>4</b>
Wheel bolts	<b>8</b>

REMOVING

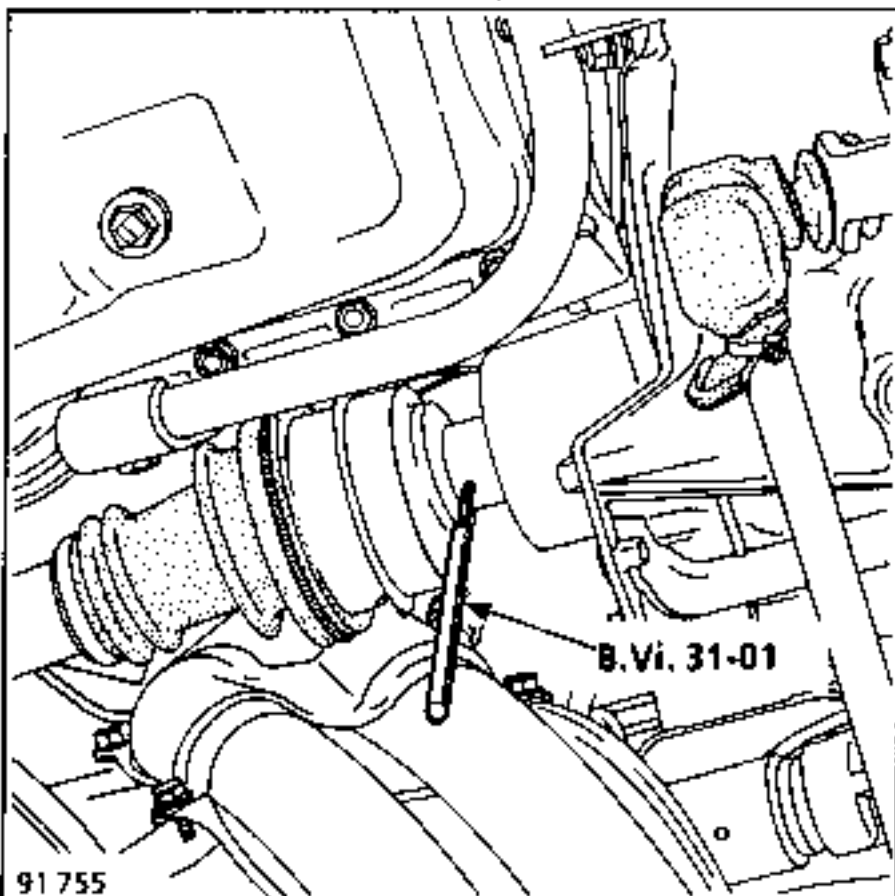
Remove the protective casing from under the engine.

Drain the gearbox.

Support the front of the vehicle, on the side concerned, with axle stands.

Remove the wheel.

Knock out the pin from the drive shaft (punch B.Vi.31-01).



CONSUMABLES

**Loctite FRENBLOC :**

Brake caliper securing bolts

**CAF 4/60 THIXO :**

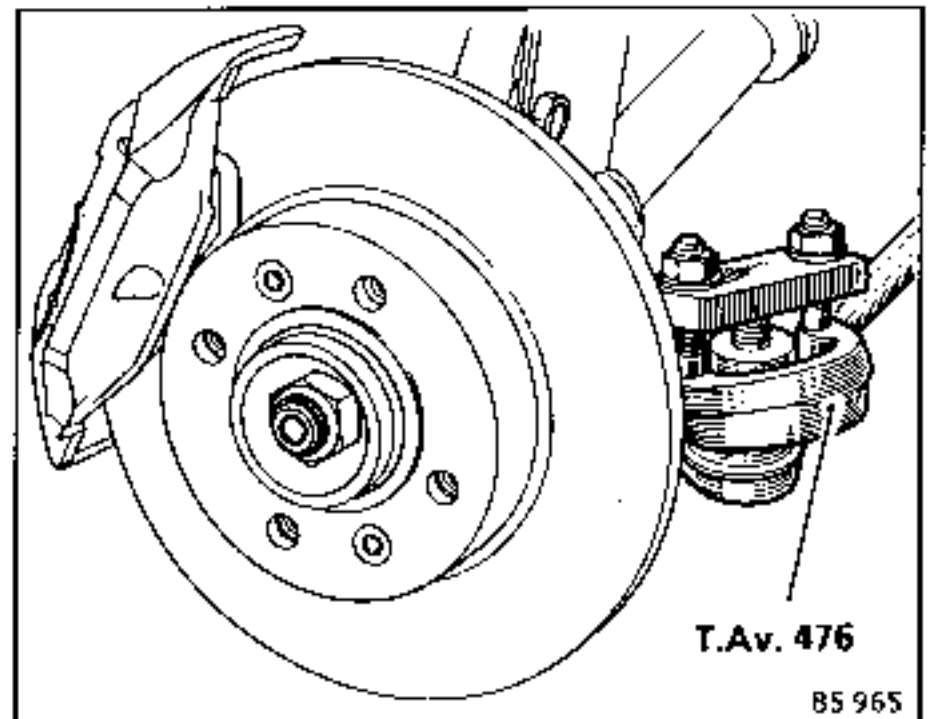
Ends of pin holes in drive shaft

**Grease No. 20 :**

Splines on RH sun wheel

Remove :

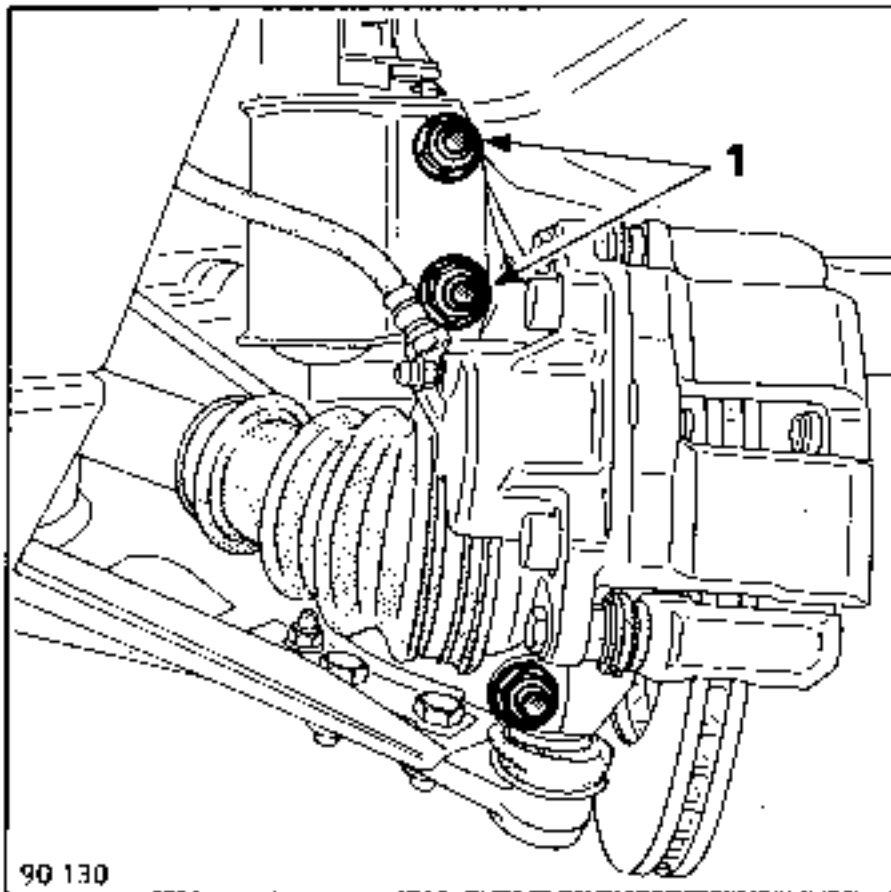
- the steering ball joint (tool T.Av.476)



- the two brake assembly securing bolts, fastening the caliper to the suspension spring to avoid applying tension to the hose.



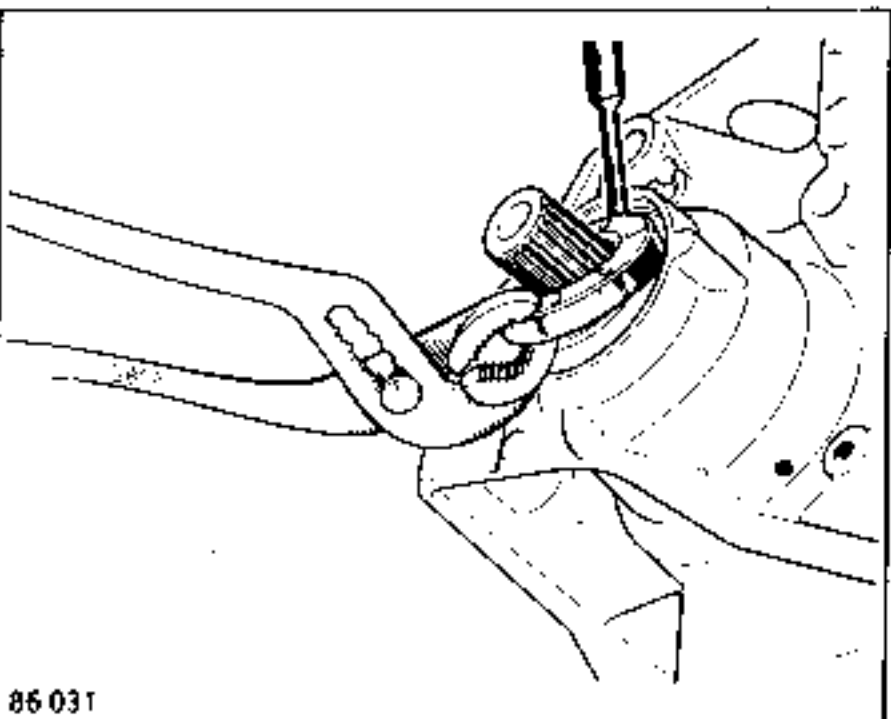
- the bolts (1) that secure the lower end of the shock absorber.



Tilt the stub axle carrier and disconnect the drive shaft from its sun wheel, taking care not to catch the bellows at the wheel end, by protecting it.

Using a pin punch and a small hammer, tilt the seal in its location.

After tilting the seal, pull it out with pliers, taking care not to damage the splines on the sun wheel.

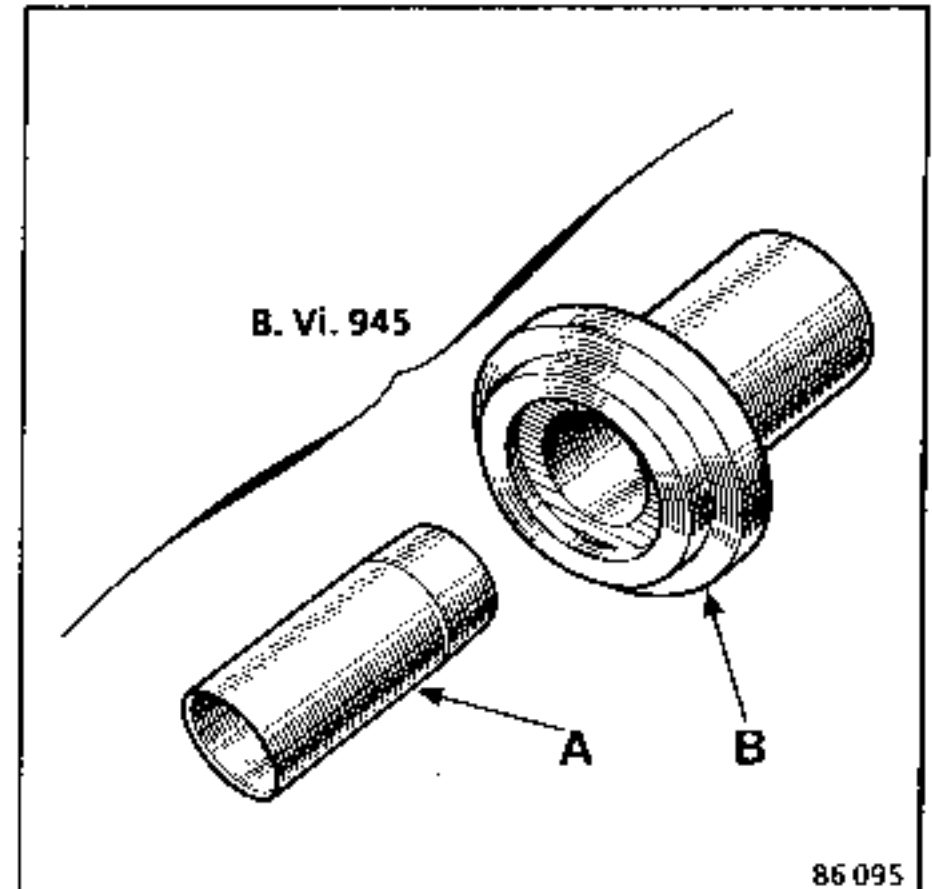


#### REFITTING

1. Vehicles equipped with type JB0, JB1, JB4, JB5 All Models and JB3-09 gear-boxes.

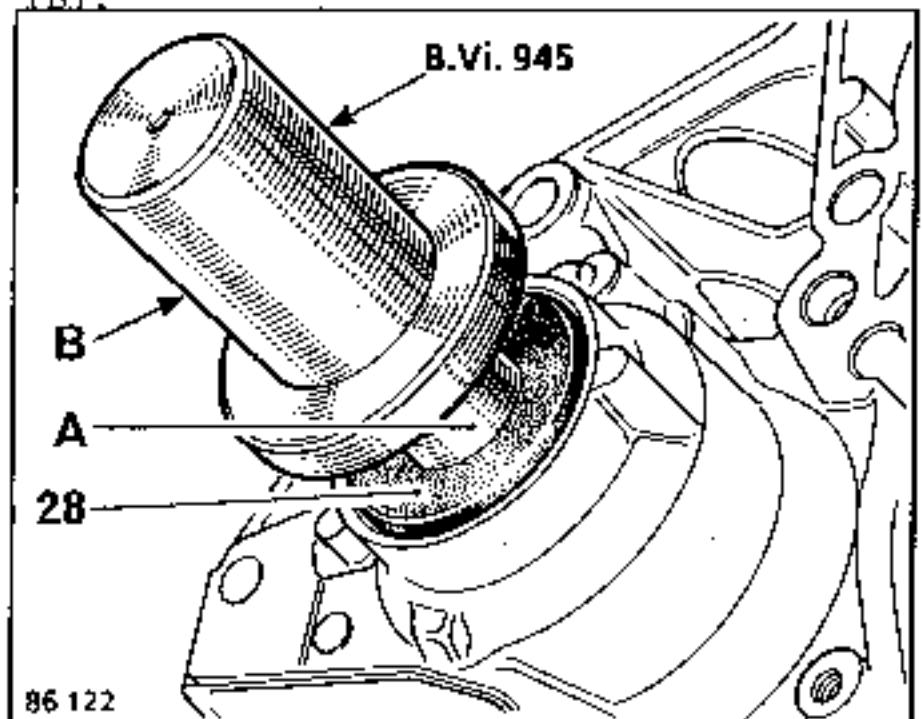
The seal (28) is refitted using tool B.Vi.945 which consists of :

- a tapered seal protector (A),
- a plug for inserting the seal (B).



#### METHOD

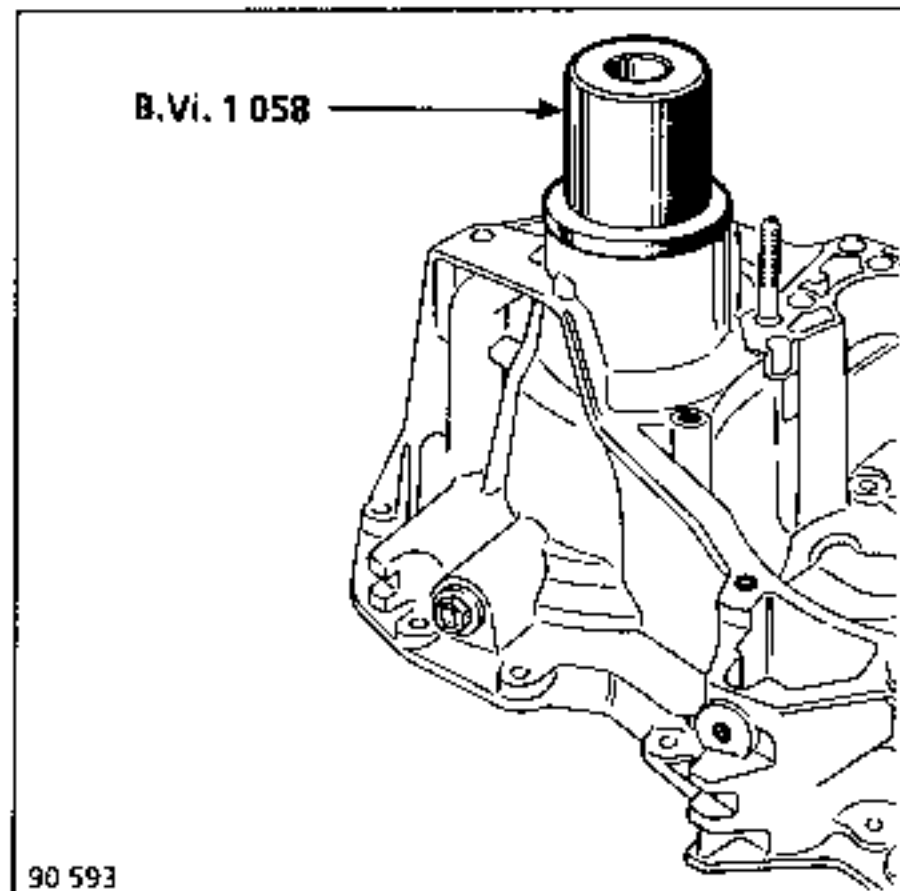
Oil the protector (A) and place it on the sun wheel. Fit the oiled seal using plug (B).





2. Vehicles equipped with type JB3-014,019, 023 and 024 gearboxes (with the differential running on taper roller bearings).

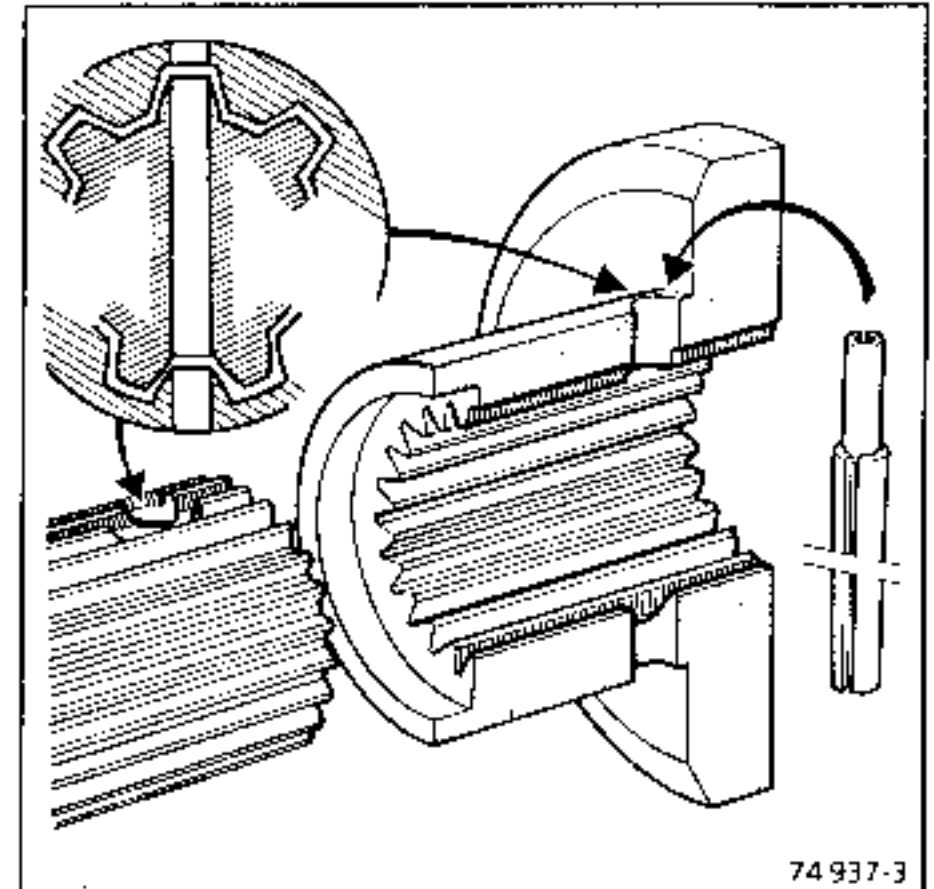
Proceed in the same way using tool B.Vi. 1058 and the protector (A) from B.Vi.945.



Coat the splines on the sun wheel with grease No. 20.

Correctly position the drive shaft with reference to the sun wheel.

Swing up the stub axle carrier, engaging the drive shaft in the sun wheel, using punch B.Vi.1031 to align the holes.



Fit new spring pins and seal the ends with CAF 4/60 THIXO.

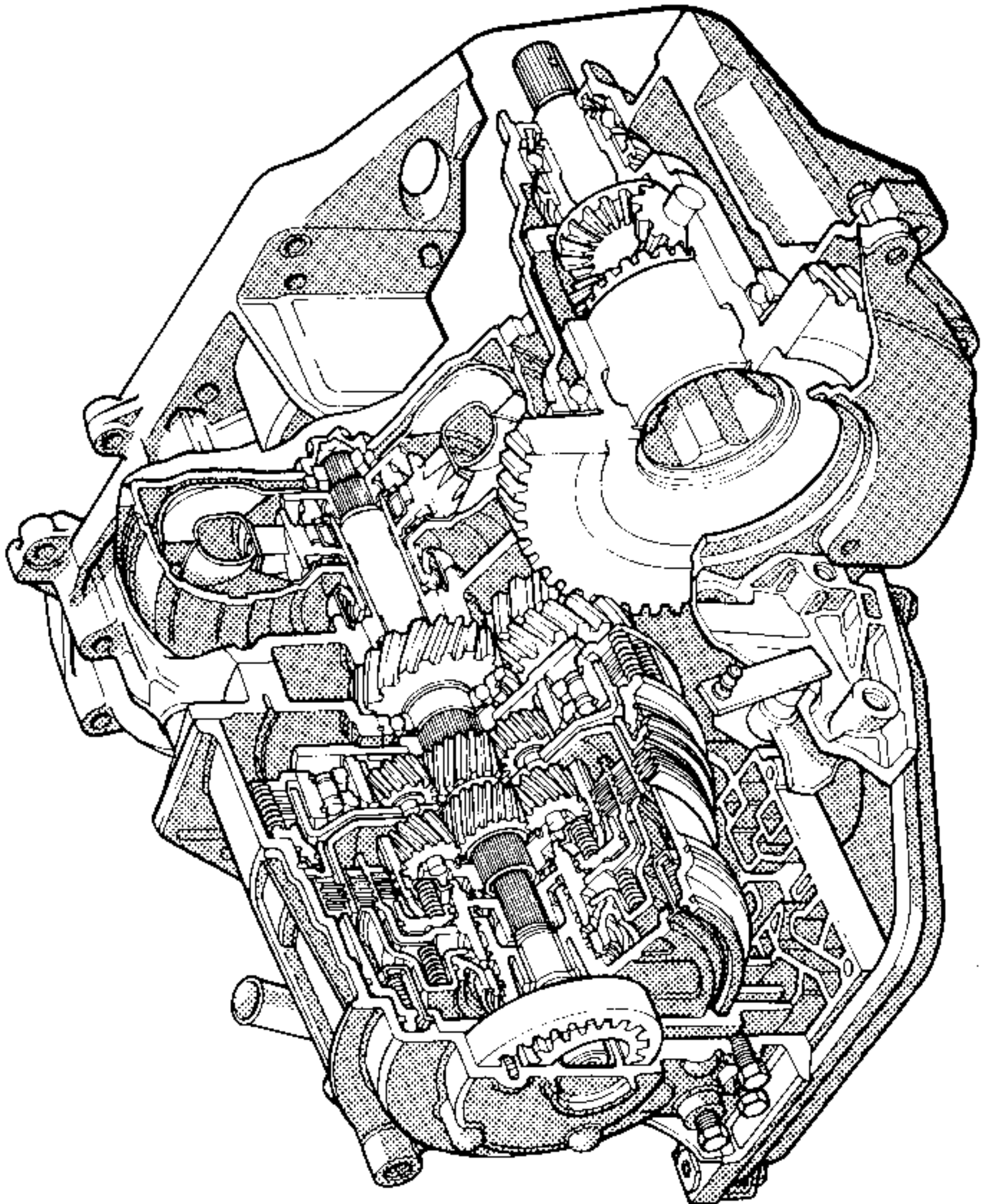


Tighten the bolts and nuts to the specified torques.

Fit the brake caliper, coating its bolts with Loctite FRENALOC.

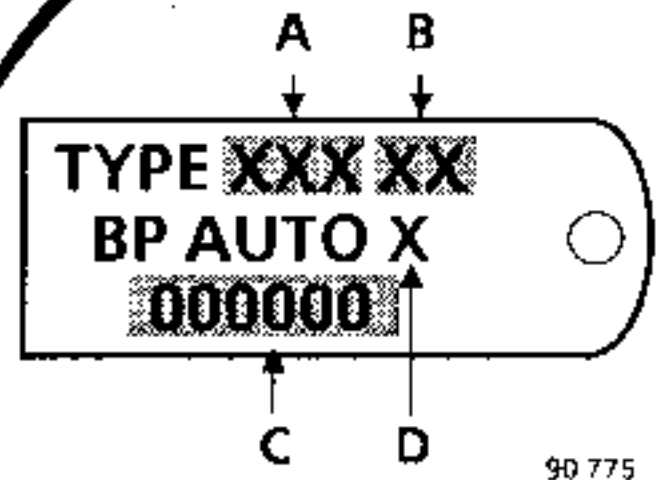
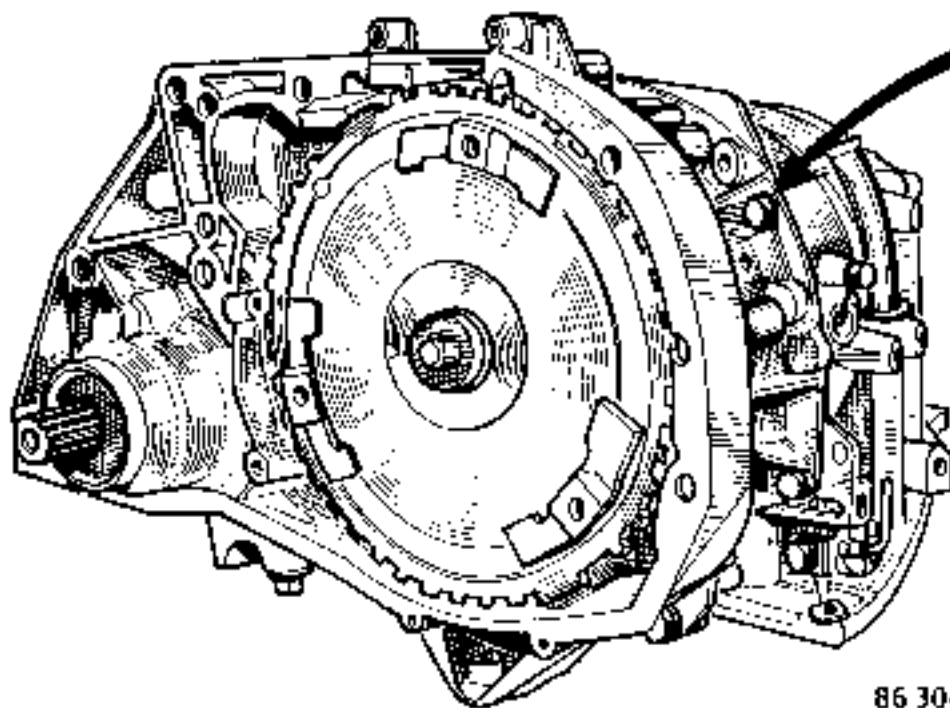
Fill the gearbox with oil.

The automatic transmission is of the MB type



The identification plate shows :

- at **A** : the automatic transmission type,
- at **B** : the type index,
- at **C** : the serial number,
- at **D** : the factory at which it was made.



Vehicle	A.T. type	Index	Final drive gears	Step- down gears	Speedo. drive gears	Oil pressure (-0.1 bars)	No. of planet wheels	No. of electronic unit
B403 C403	MB1	600 601 602	17/56	29/24	21/20	4,4	2	021 221 135
B408 C408	MB3	001	16/57	29/24	21/19	4,4	2	134 230
B40J C40J	MB1	602	17/56	29/24	21/20	4,4	2	135

**B/C403 - B/C40J**

Accel. posit- ion	1 ↔ 2		2 ↔ 3	
	↗	↘	↗	↘
FL	25	16	42	29
FD	75	59	119	108

**B/C408**

Accel. posit- ion	1 ↔ 2		2 ↔ 3	
	↗	↘	↗	↘
FL	23	15	38	27
FD	69	54	110	100

The kick-down system is integral with the electronic unit.

The special feature of index 2 electronic units (example 221-230) is that they prevent speed selection from 2nd to 3rd when the driver quickly lifts his foot from the accelerator depressed position to the "foot lifted" position.

2nd will select into 3rd, in the usual way, when the driver re-accelerates.

If the speed sensor is defective, the A.T. will be locked in 3rd under all conditions (if the defect has occurred whilst the vehicle is being driven or after starting).

The nature of the fault is found using B.Vi. 958 or tester XR25.

Special features

**FAULT FINDING**

Unit	Potentiometer		Starter test B.Vi.958 light 6	If the speed sensor is defective the trans- mission is locked in :
	Diagnosis	Reference		
021	no	(1)	yes	1 <sup>st</sup>
134	no	(1)	yes	3 <sup>rd</sup>
135	yes	1/2 load	yes	3 <sup>rd</sup>
221	no	(1)	yes	3 <sup>rd</sup>
230	no	(1)	yes	3 <sup>rd</sup>

(1) If there is no potentiometer diagnosis, the fact that this is incorrectly adjusted causes all the shift speeds to be incorrect.

If the potentiometer circuit is broken, there is only one shift speed :

Pedal depressed (PD) if :  
connectors 10 and 11 are disconnected  
or the + 5 volt supply is broken  
or if the cursor is not moving

Foot lifted (FL) if :  
the earth is broken

### ADJUSTING THE VALVE CLEARANCES ON VEHICLES EQUIPPED WITH AUTOMATIC TRANSMISSIONS

When using tool M.S.511-01, connected to the starter, to turn the engine over, under no circumstances is it to be connected to anything other than the starter solenoid.

If it is connected at any other point there is a risk that the A.T. electronic control unit will be irreparably damaged.

### TOWING THE VEHICLE

The front of the car should be lifted. However, if this is impossible, the vehicle can be towed, with its front wheels on the ground, under exceptional circumstances as follows :

- pour an additional 2 litres of fluid into the transmission (ELF RENAULTMATIC D2 or MOBIL ATF 220).
- tow the vehicle at less than 30 km/h (20 mph) and, even then, for no more than a maximum of 50 km (30 miles) (with the lever in "N").

Do not forget to drain off the excess oil after this operation.

### BALANCING THE WHEELS

The dynamic balancing of the drive wheels, with the wheels still on the vehicle, is forbidden.

### DRIVING THE VEHICLE

The transmission is only lubricated when the engine is running. It is therefore forbidden :

- to coast with the ignition switched off (down a hill for example)
- to have the vehicle pushed (see section entitled "Towing the vehicle").

It is impossible to start the engine by pushing the vehicle.

No special equipment is required to tow a caravan with this vehicle.

The "Automatic Transmission" ("T.A.M.") manual covers the complete overhaul of the automatic transmissions fitted to the various versions of this vehicle.

We shall therefore only describe, in this chapter :

- the operations of Removing and Refitting the automatic transmission.
- Removing - Refitting - Adjusting the shift controls.

Although they can be carried out with the automatic transmission still in the vehicle, operations such as "Replacing the hydraulic control valve" - "Replacing a differential seal" are not described in the vehicle repair manual because they are no different from the methods described in the "T.A.M." manual.

### Consumables

Type	Quantity	Unit concerned
CAF 4/60 THIXO	Coating	Sealing the pins in the drive shafts
Grease MOLYKOTE BR2	Coating	RH son wheel splines

Whenever they are removed :

- the spring pins,
- the self-locking nuts.

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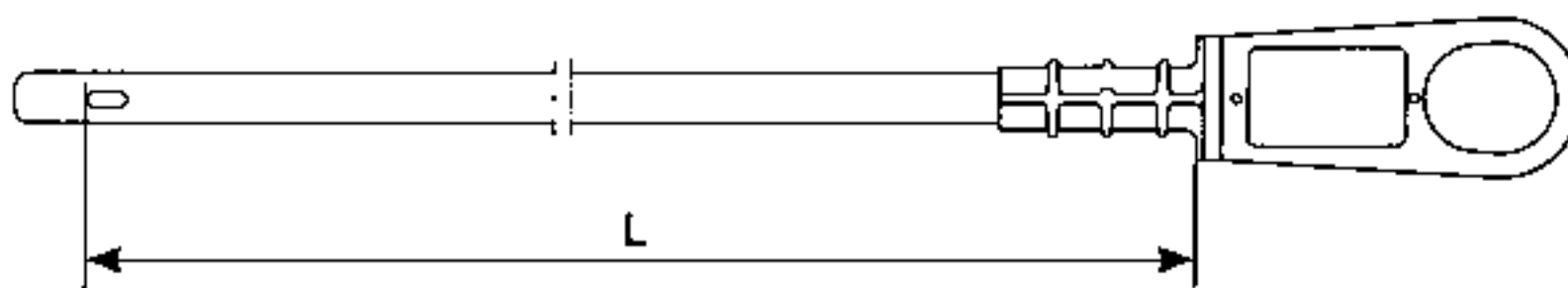
Draining - Refilling

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CORRECT TYPE OF DIPSTICK

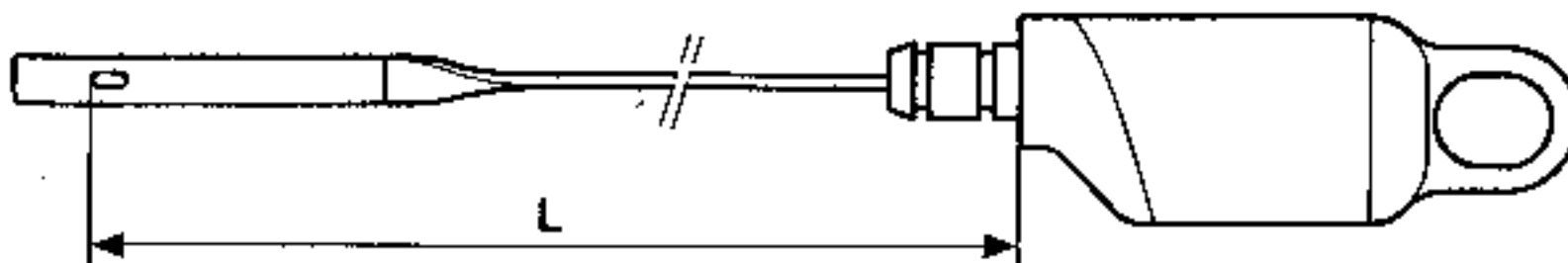
VEHICLE TYPE	COLOUR OF HANDLE, LENGTH	DIPSTICK PART NO.	A.T. TYPE
B/C403 - B/C408 - B/C40J	(2) GREEN or	77 00 716 561	MB3 { 600 601 602
	(1) L = 243 mm	77 00 739 735	MB3 001

(2)



88 860

(1)



91 193

**FLUID TYPE**

The MB automatic transmission only has one fluid level and one fluid grade (for converter, final drive and mechanism).

**OIL GRADE**

ELF RENAULTMATIC 02

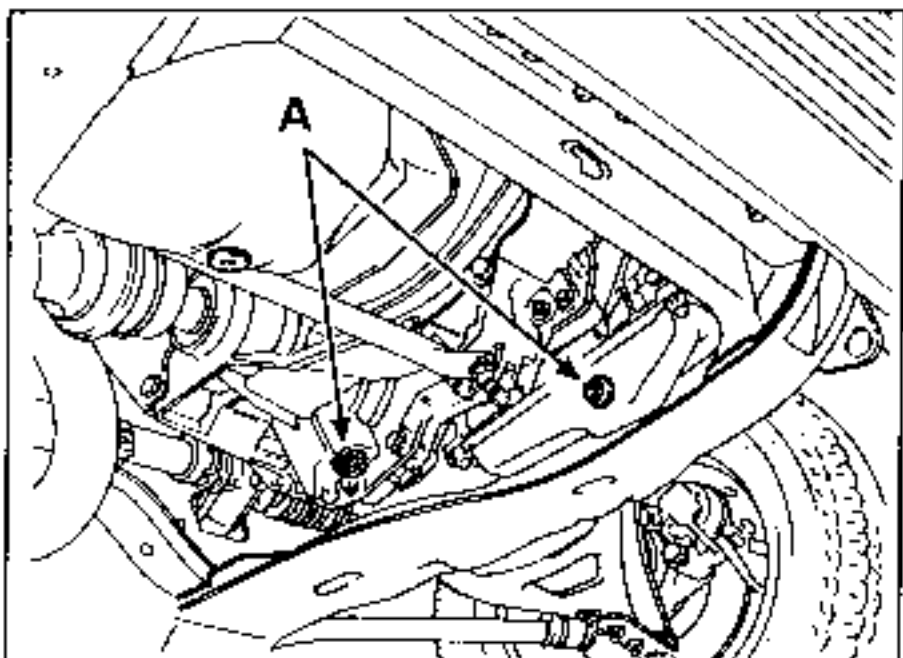
If this is not available, use :  
MOBIL ATF 220 (which are intermixable)  
or TOTAL DEXRON

**CAPACITY IN LITRES (approximate)**

Total nominal : 4.5 l  
After draining : 2 l

**FLUID CHANGE PERIODS**

The transmission is not drained during the warranty inspection between 1 000 and 3 000 km (600 and 1 800 miles). Checking the level is all that is necessary. The fluid is changed every 50 000 km (30 000 miles) and the gauze filter is also changed. The unit is to be changed when cold with the dipstick and plugs (A) removed.



Use new seals when refitting the plugs.  
The unit is filled through the dipstick tube.  
Use a funnel fitted with a 15/100 filter to avoid dirt entering the unit.  
Use the recommended fluid.  
Start the engine, run it at idling speed, check the level and top-up if necessary.

**CHECKING THE FLUID LEVEL WHEN COLD**

The vehicle is to be unladen and parked on a flat horizontal surface.

Place the selector lever in "PARK" (P).

Start the engine and wait for 1 to 2 minutes for the converter and the cooler to fill.

The oil will be at ambient temperature (20°C).

Take out the dipstick with the engine running.

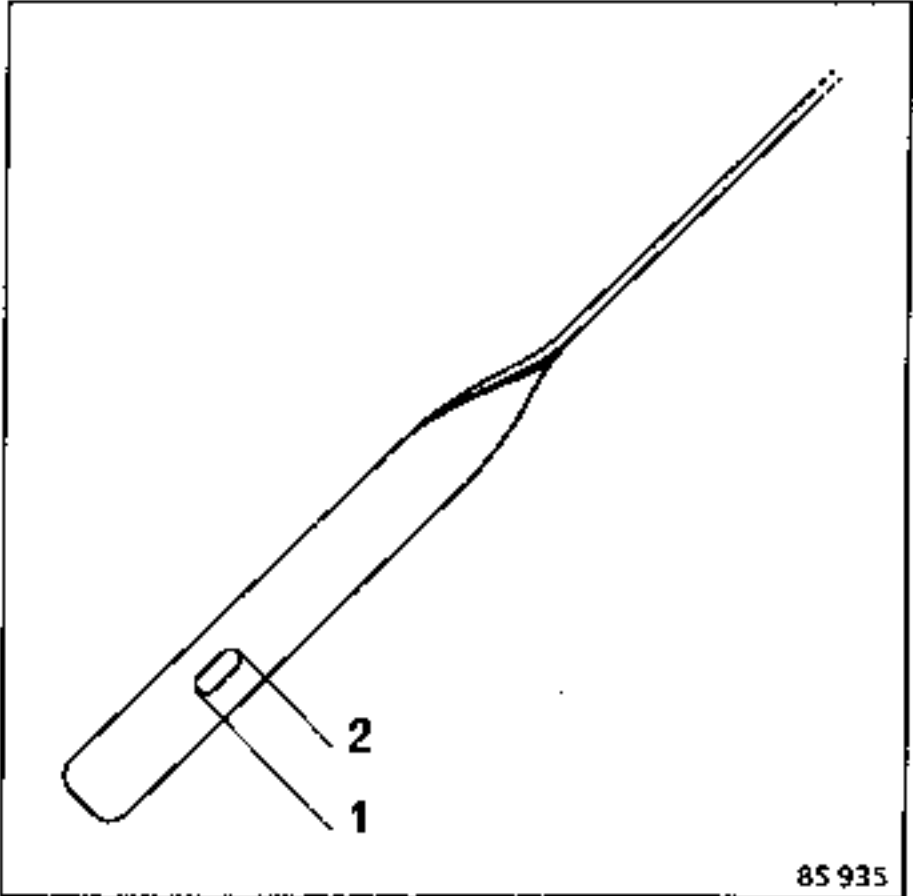
The level is not to be lower than the MIN COLD level (1) (there is a risk of damage) or above the MAX COLD level (2) (there is a similar risk of damage).

Never fill the unit over the MAX COLD level.

**WARNING**

Too much fluid in the unit causes :  
- overheating of the fluid,  
- leakage.  
Too little fluid results in damage to the mechanism.

TOP-UP THE FLUID LEVEL WHEN THE UNIT IS COLD.

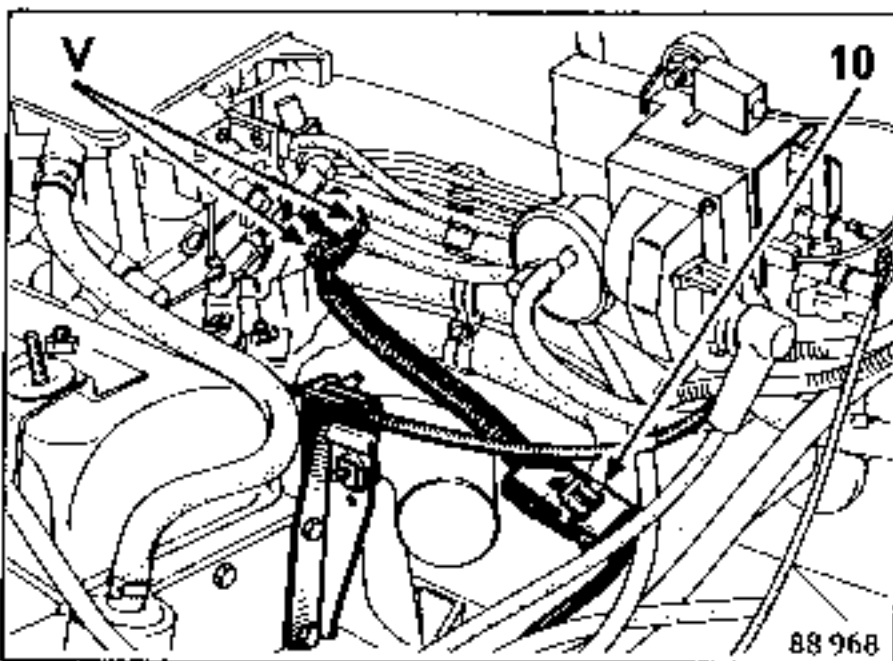


ESSENTIAL SPECIAL TOOLS	
B.Vi. 958	Tester

### PREPARATION

With the vehicle stationary, and the ignition switched off, check that the accelerator cable is correctly adjusted.

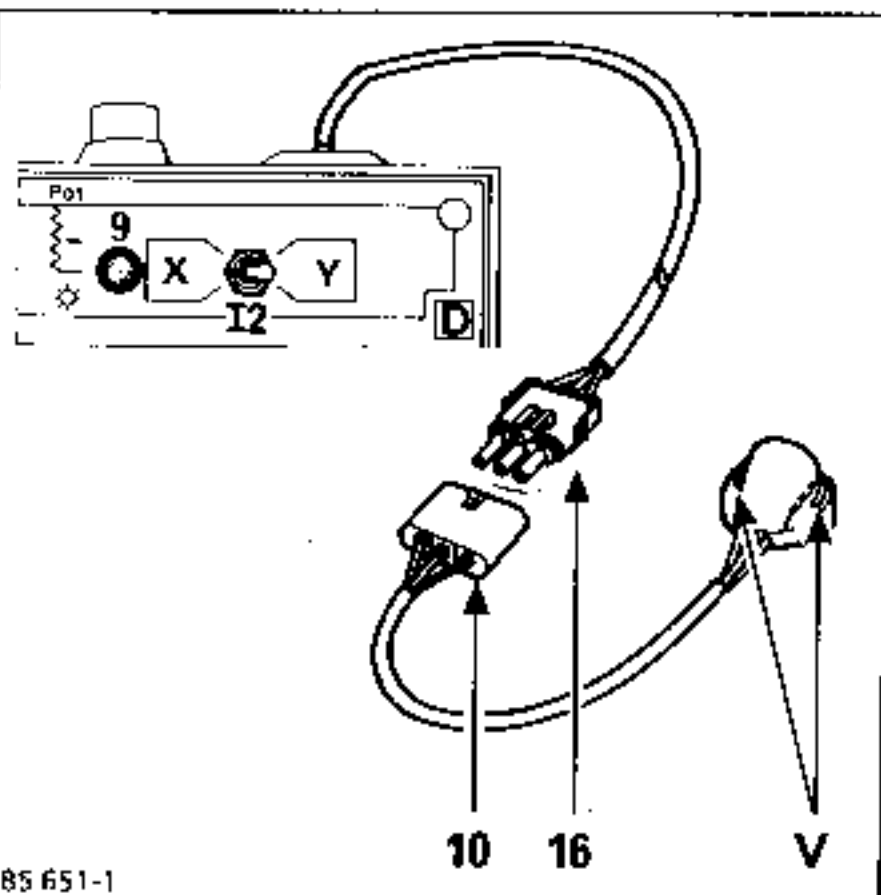
Disconnect the three way connector (10) on the wiring connecting the electronic unit to the potentiometer.



Connect the potentiometer connector (10) to the connector on B.Vi.958 (16).

Provide a supply to B.Vi.958 from the battery.

The switch "12" should be in position "Y".



### TESTING

Fully depress the accelerator	LIGHT 9
O.K.	★
DEFECTIVE or incorrectly adjusted	○

### ADJUSTING

Slightly unscrew the two screws (V) that secure the potentiometer in place.

Hold the throttle fully open by depressing the accelerator pedal and slowly turn the potentiometer until the indicator light (9) switches on. Then retighten the two screws (V).

If the indicator light (9) cannot be switched on by means of this adjustment, check the wiring and, if the potentiometer is defective, replace it.

Whenever the potentiometer has been replaced or refitted, it is to be re-adjusted.

NOTE : whenever cleaning the carburettor, remove the load potentiometer or protect it so that it cannot get splashed by the cleaning solvent.



ESSENTIAL SPECIAL TOOLS

<b>B.Vi. 466-06</b>	Cylindrical end fitting
<b>B.Vi. 466-07</b>	Oil pressure gauge

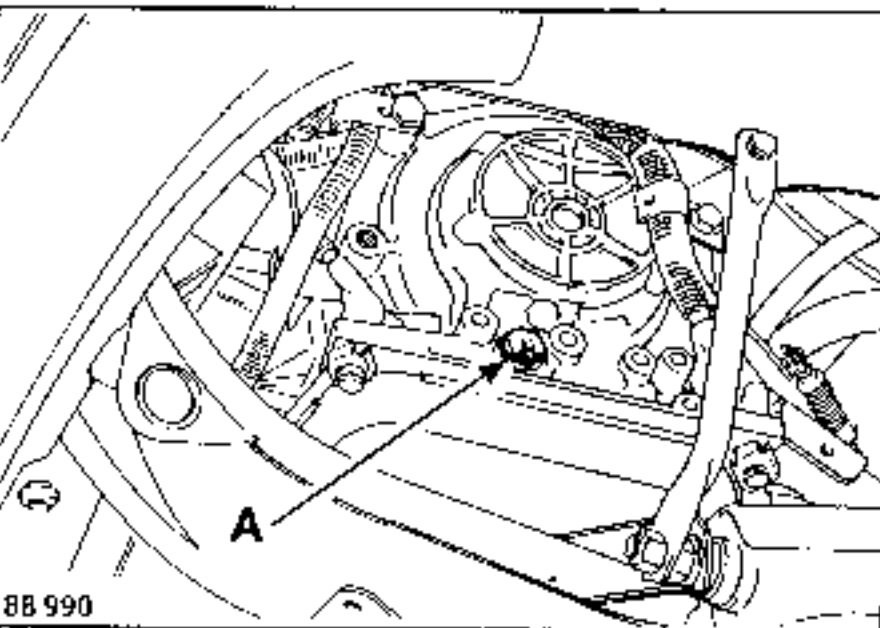
CHECKING

Prior requirements for measuring :

The normal operating temperature is 80°C.

Ensure that the accelerator cable is correctly adjusted.

Connect the oil pressure gauge B.Vi. 466-07 to end fitting B.Vi.466-06, at (A).



Measuring :

Place the selector lever in 2nd speed hold.

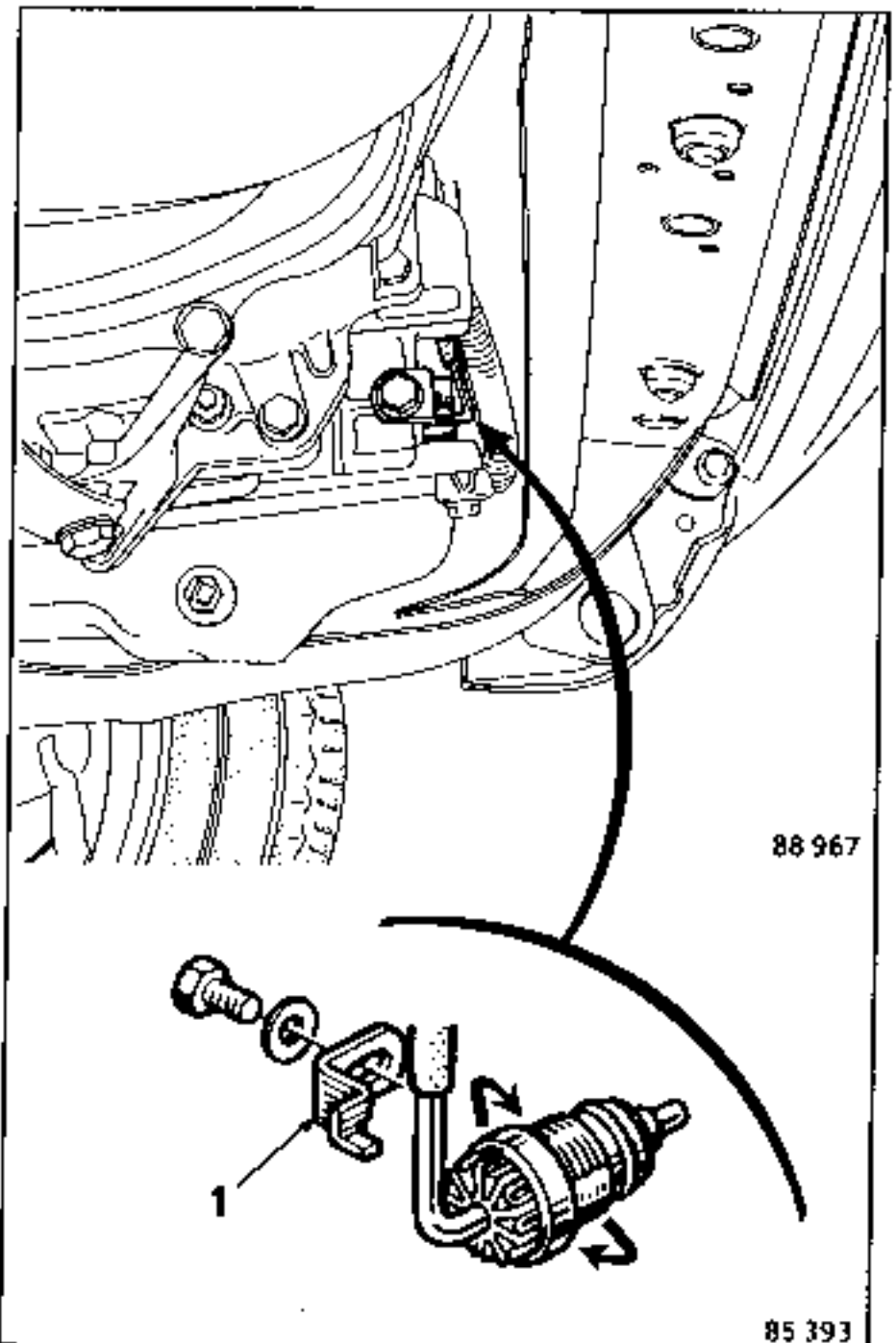
Fully depress the accelerator whilst depressing the brake, at the same time, to stabilise the speed at 80 km/h (50 mph)

The pressure should be :

S/C403	)	MB1 = 4.4 + 0.1 bars
B/C405	)	
B/C408		MB3 = 4.4 + 0.1 bars

ADJUSTING :

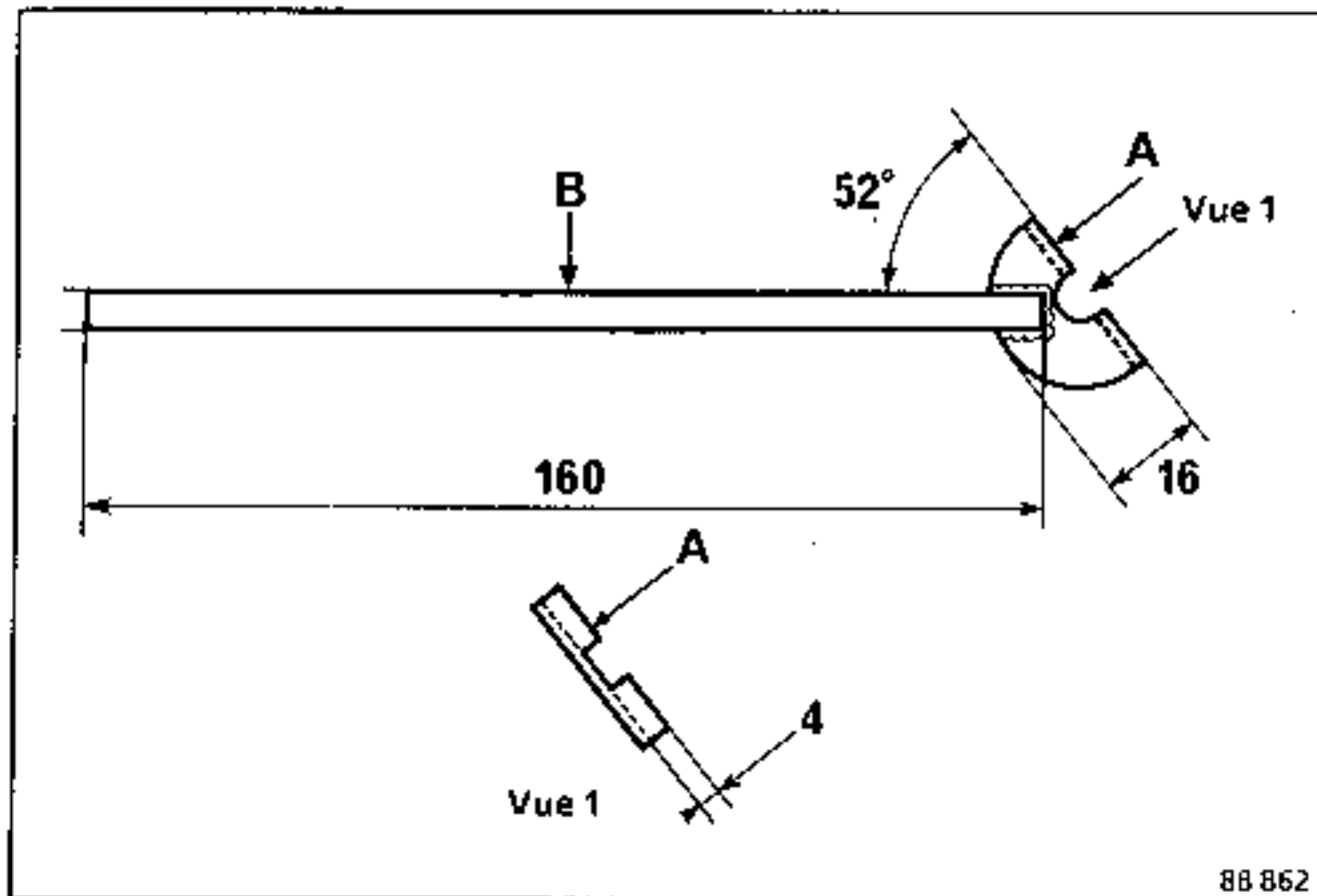
Remove the stop (1) and turn the capsule. By screwing the capsule in, one increases the pressure and vice versa.



NOTE : 2 notches = approximately 0.08 bars.

A tool can be made up locally to facilitate this operation.  
(Its dimensions are expressed in mm).

A = washer  $\varnothing$  8/30 mm, thickness 1.5 mm  
B = rod  $\varnothing$  6 mm



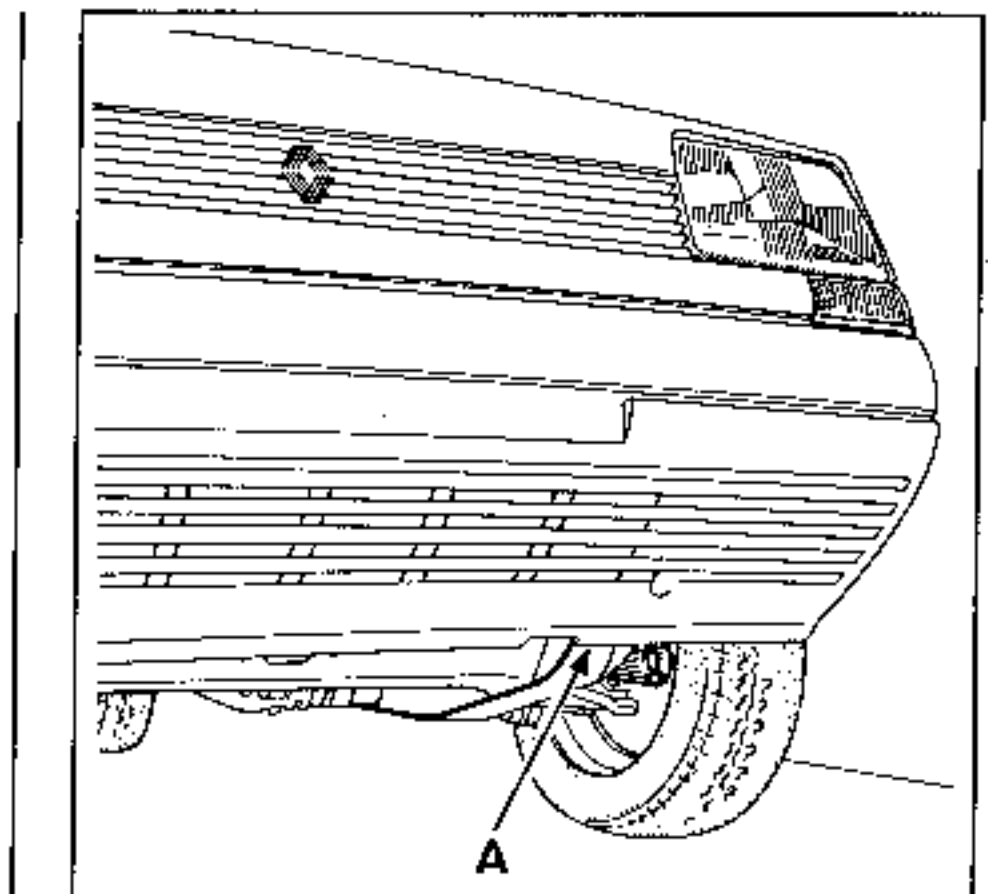
### Gauze filter

This is to be replaced every 50 000 km (30 000 miles) or whenever any extensive work is carried out on the transmission mechanism.

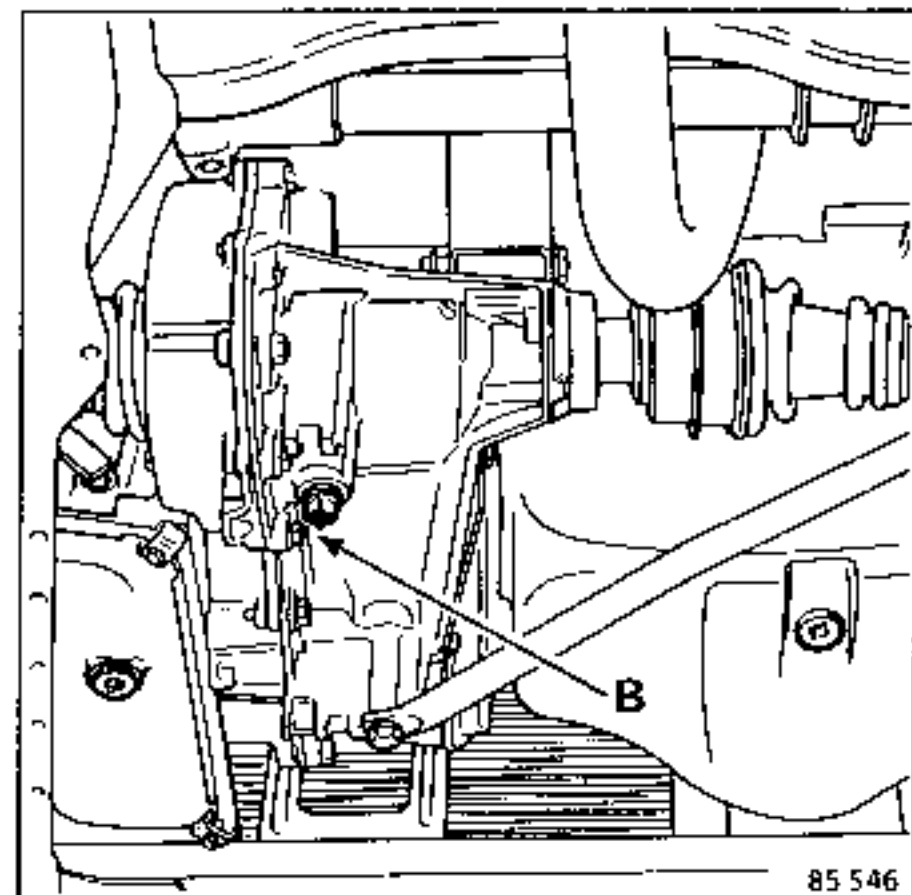
#### REPLACING

Drain the automatic transmission.

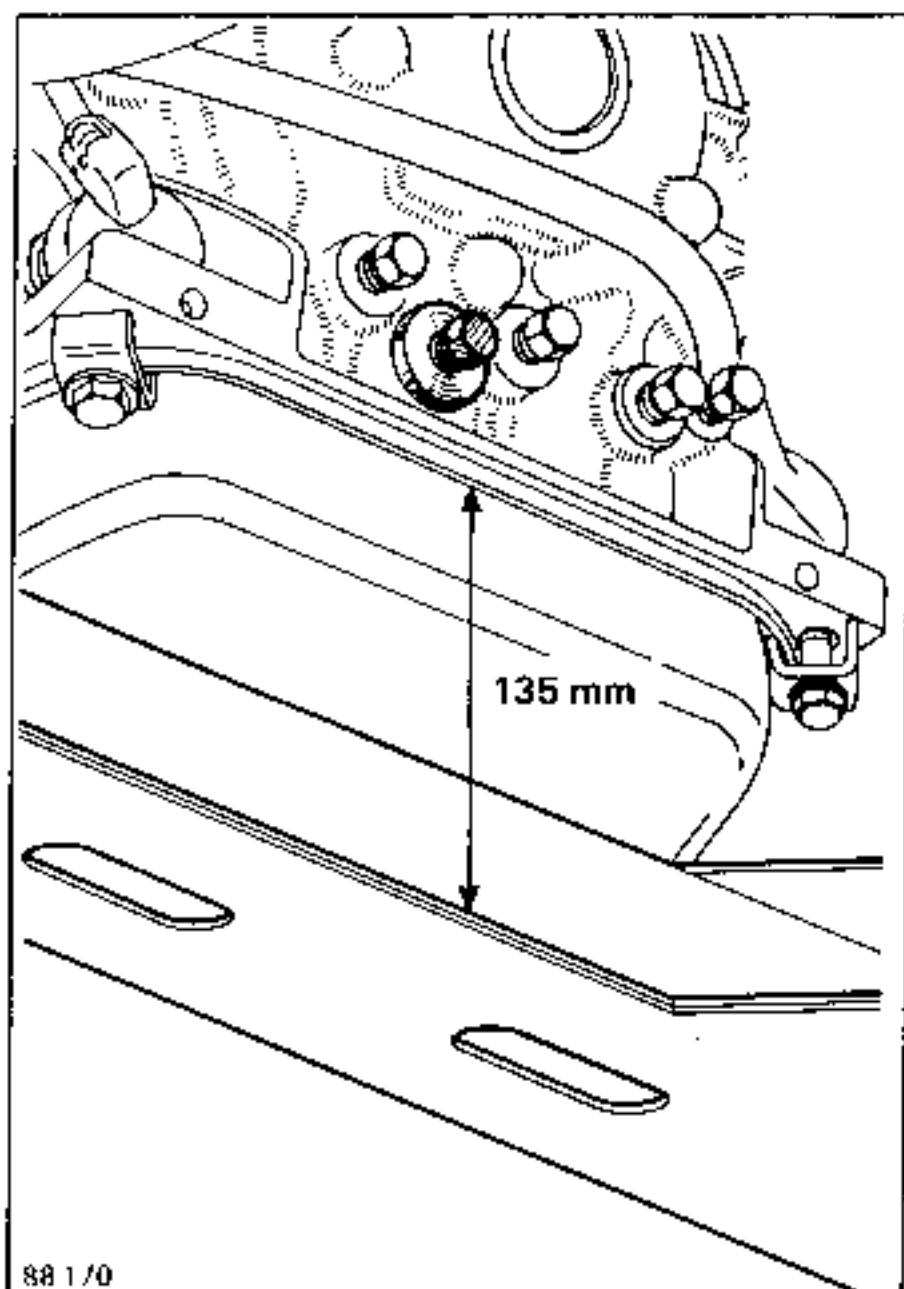
Remove the nut from the transmission flexible mounting at (A).



Place a jack under the transmission at (B).

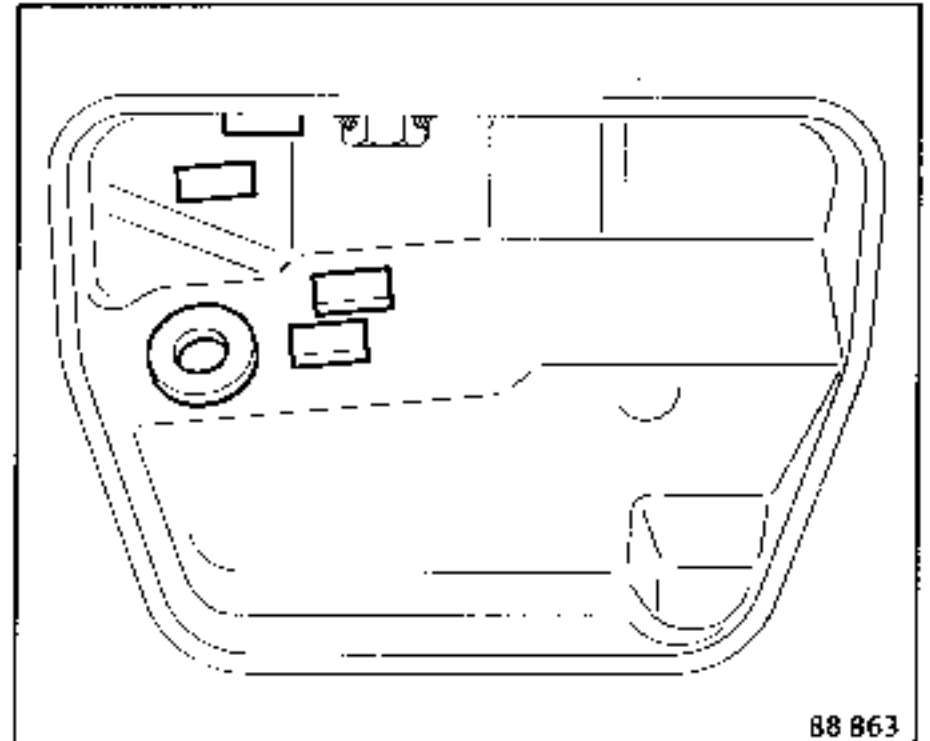


Lift the engine - transmission assembly to obtain a dimension of approx. 135 mm.



Remove the transmission pan plate and the gauze filter together with its gasket.

Clean the pan plate and its magnets and refit them (with the ridged face against the plate).



Fit the new filter together with its gasket and tighten it to a torque of 0.9 daN.m.

Refit the pan plate and fill the transmission with fluid.

## REMOVING - REFITTING

To remove the automatic transmission, one must take out the entire engine - transmission assembly.

ESSENTIAL SPECIAL TOOLS	
<b>B.Vi. 31-01</b>	Pin punches for spring pins
<b>Mot. 878</b>	Lifting chain and rings
<b>T.Av. 476</b>	Ball joint extractor
<b>Mot. 582</b>	Torque convertor locking quadrant
<b>B.Vi. 465</b>	Torque convertor retaining lug

TIGHTENING TORQUES (in daN.m)	
Brake caliper securing bolts	10
Shock absorber securing bolts	8
Steering ball joints	4
Wheel bolts	8
Drive shaft bellows securing screws	2,5
Cooler securing bolts	4
Bolts on convertor drive plate : Verto	3
Renault ø 227	1,9 - 2,5
Bolts round transmission periphery	4

CONSUMABLES	
Loctite FRENLOC :	
Caliper securing bolts	
CAF 4/60 THIXO :	
Drive shaft pins	
MOLYKOTE BR2 :	
Drive shaft splines and torque convertor locator	

## REMOVING

Disconnect the battery.

Drain :

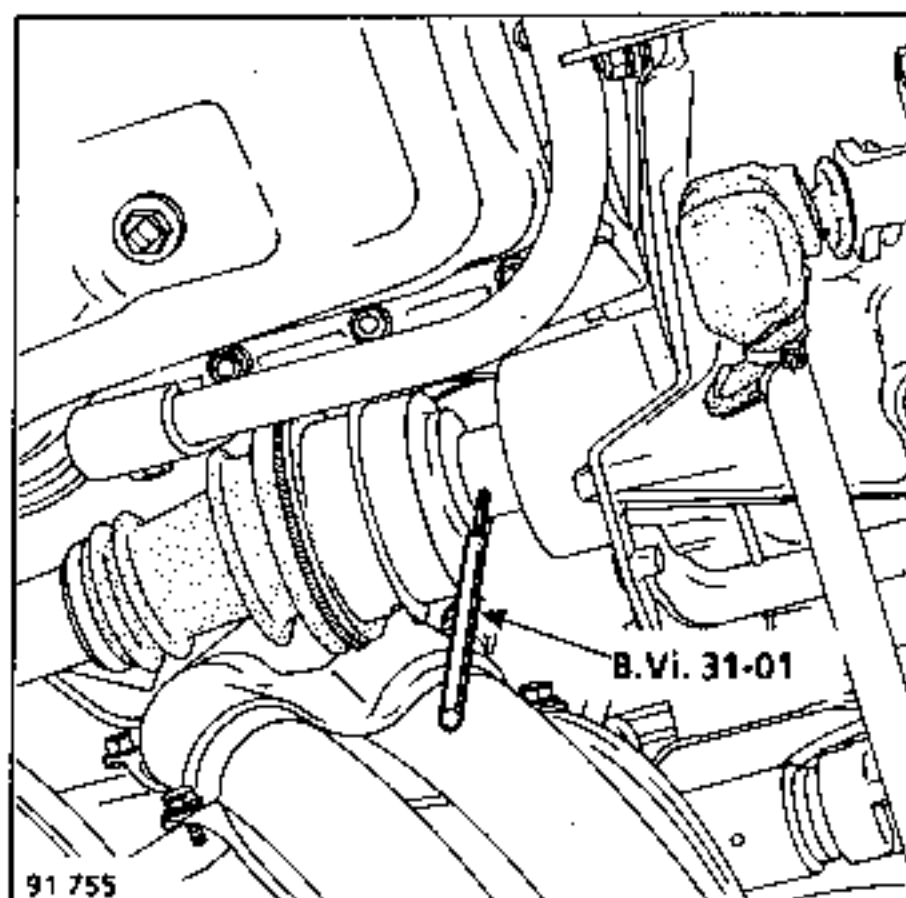
- the cooling system (lower radiator hose),
- the automatic transmission fluid.

Remove :

- the bonnet,
- the engine cooling radiator and expansion bottle,
- the A.E.I. ignition unit,
- the air filter,
- the wheels.

On the right hand side of the vehicle :

- the pin from the drive shaft using punches B.Vi.31-01.

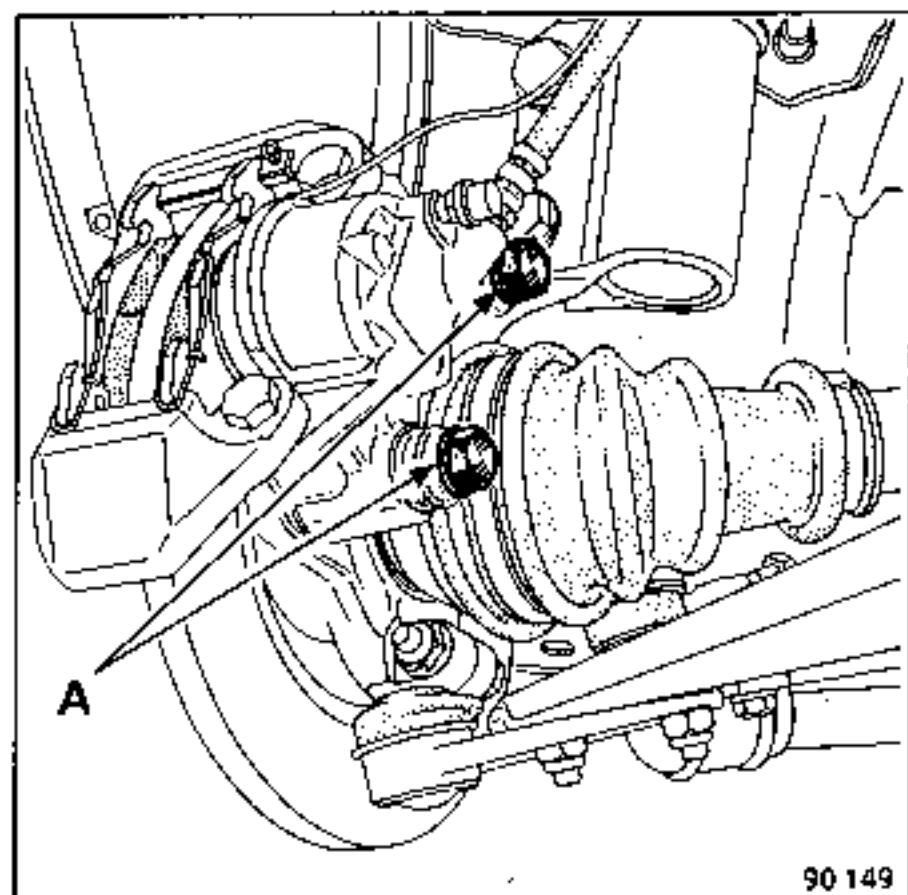


On the left hand side of the vehicle :

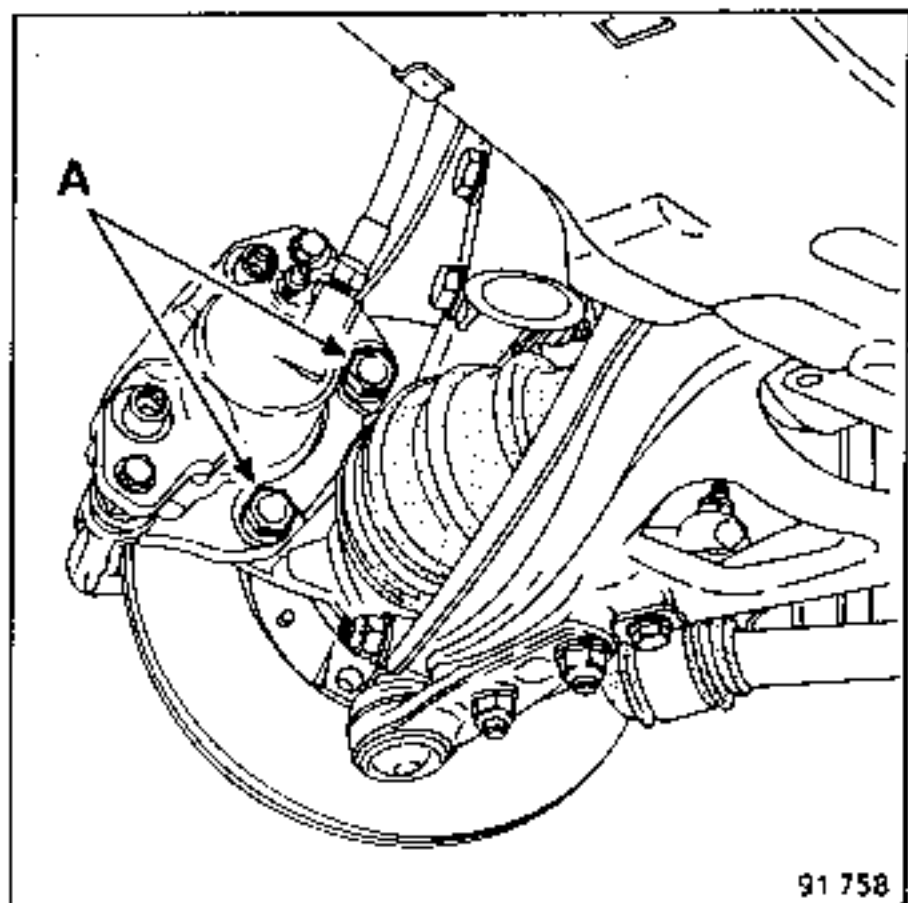
- the two bolts that secure the lower end of the shock absorber. Free the drive shaft, taking care not to damage the bellows. Secure the stub axle carrier to avoid applying tension to the brake hose.

- the two caliper securing bolts (A).  
Secure the caliper to the suspension spring to avoid applying tension to the hose.

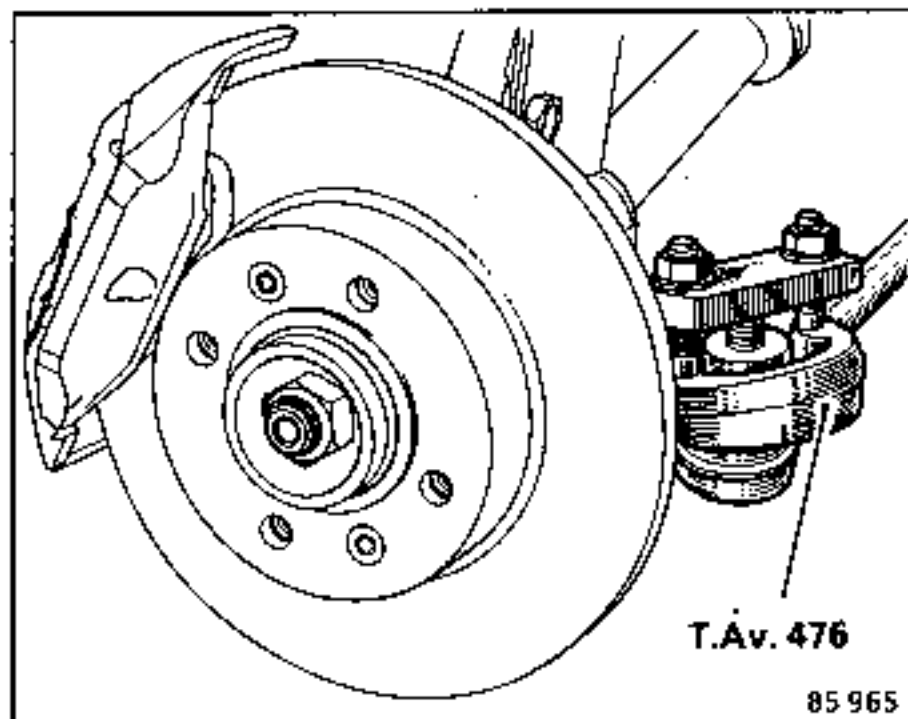
BENDIX



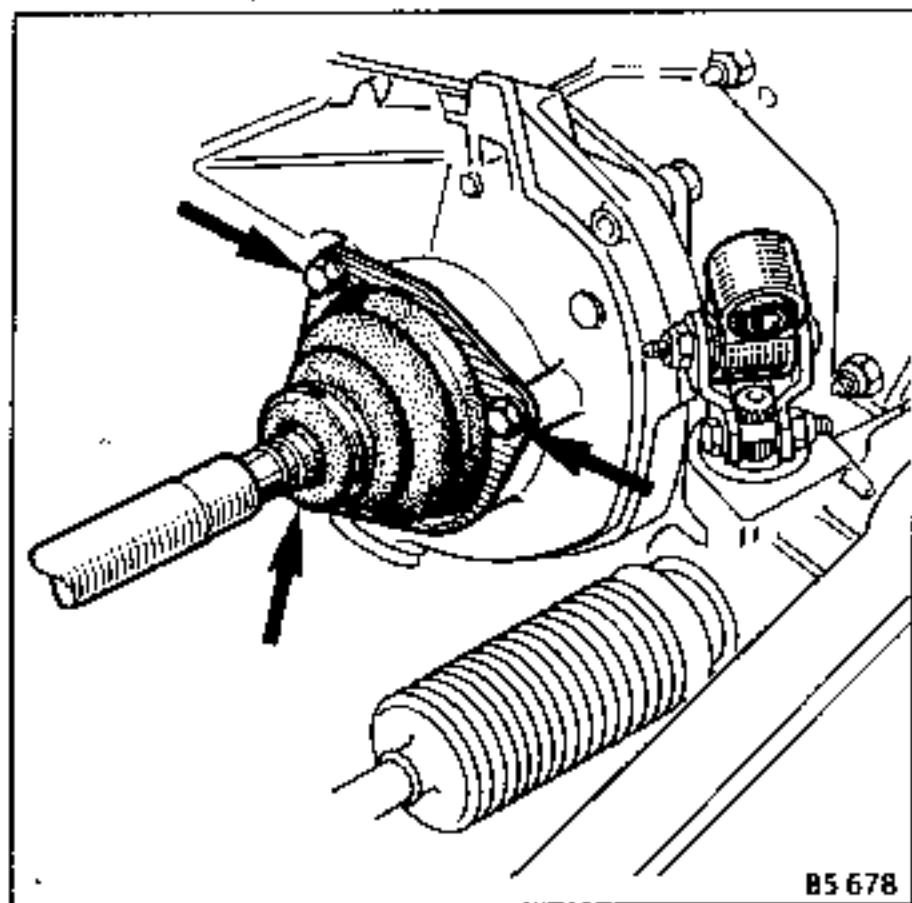
GIRLING



- the steering link ball joint using tool T.Av.476,



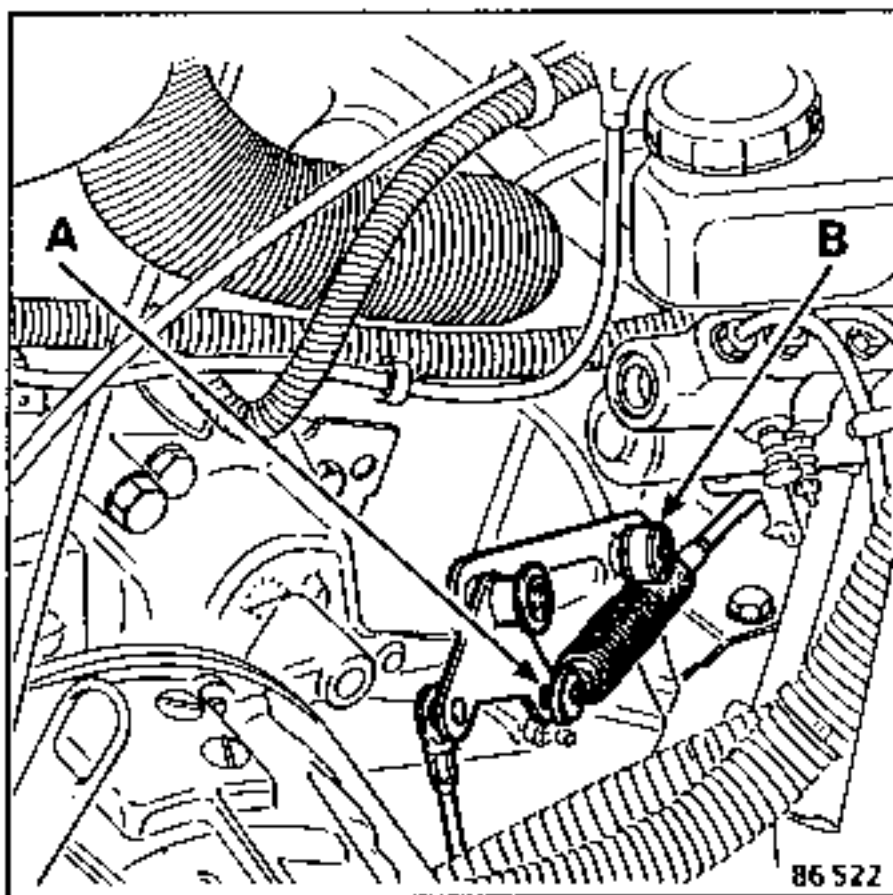
- the three screws that secure the drive shaft bellows,



- the two bolts that secure the lower end of the shock absorber and free the drive shaft.

Disconnect :

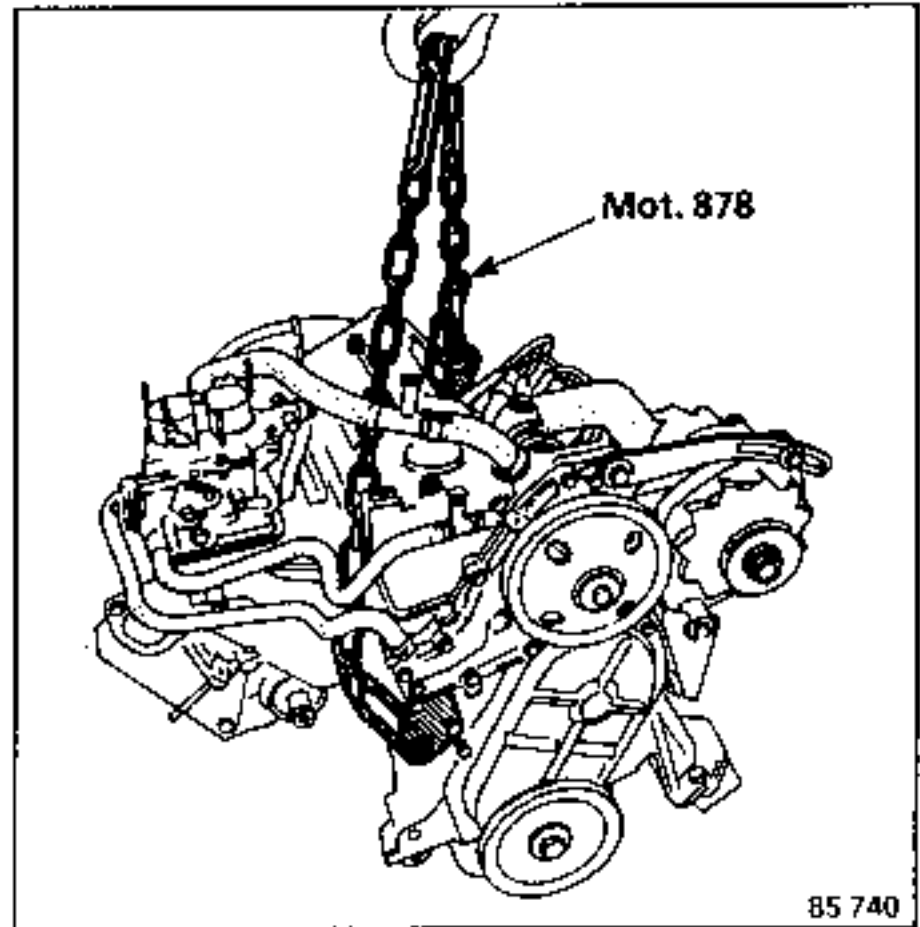
- the heater hose at the coolant pump, the transmission cooler hose, the fuel system hose, the brake servo vacuum hose, the capsule hose,
- the starter cables, freeing them from the automatic transmission,
- the electronic unit electrical junction block,
- the earthing braids,
- the accelerator, the choke and speedometer cables,
- the shift cable from its securing points at (A) and (B).



Remove :

- the A.T. speed sensor, freeing the cable covers from the A.T.,
- the exhaust clamp,
- the flexible mounting nuts and bolts.

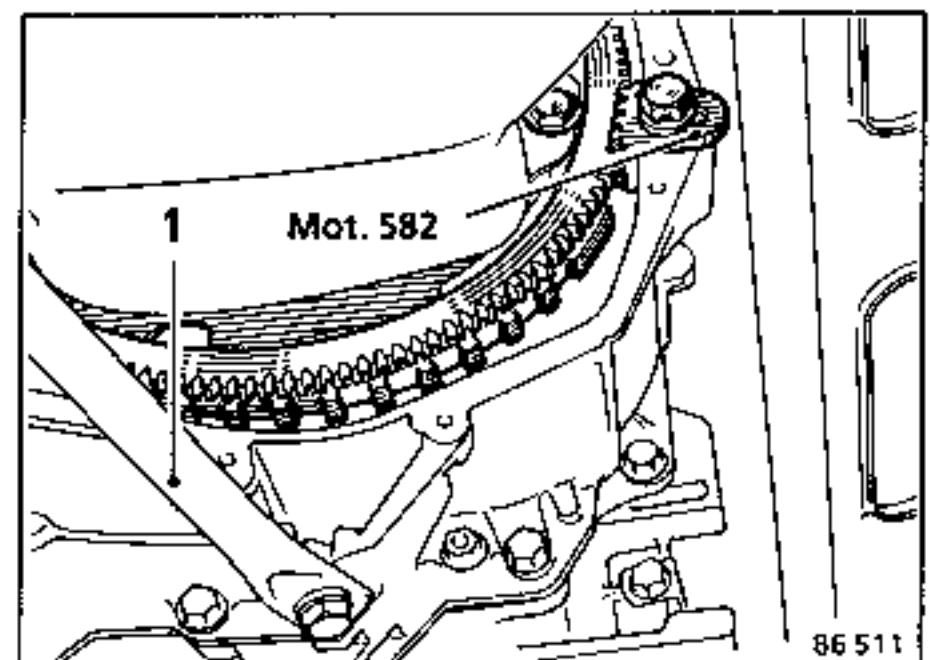
Using a lifting hook and tool Mot.878, lift the engine - transmission assembly out of the engine compartment.



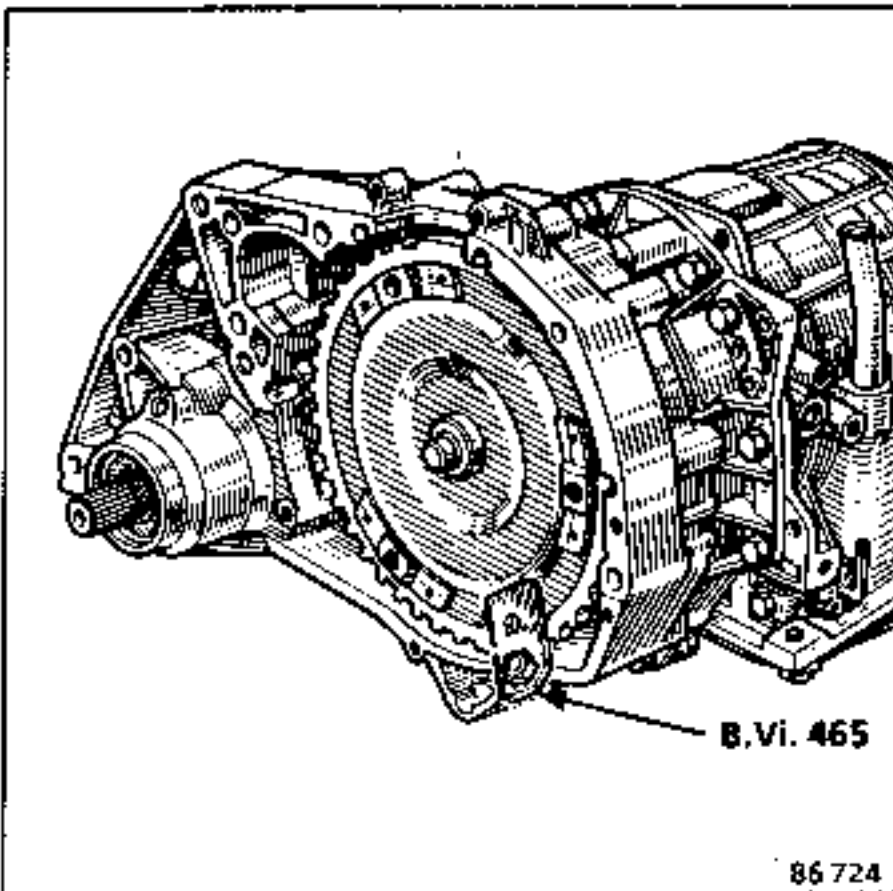
Remove :

- the starter,
- the engine strut (1),
- the protective panel.

Fit the locking quadrant Mot.582 and remove the bolts from the converter drive plate.



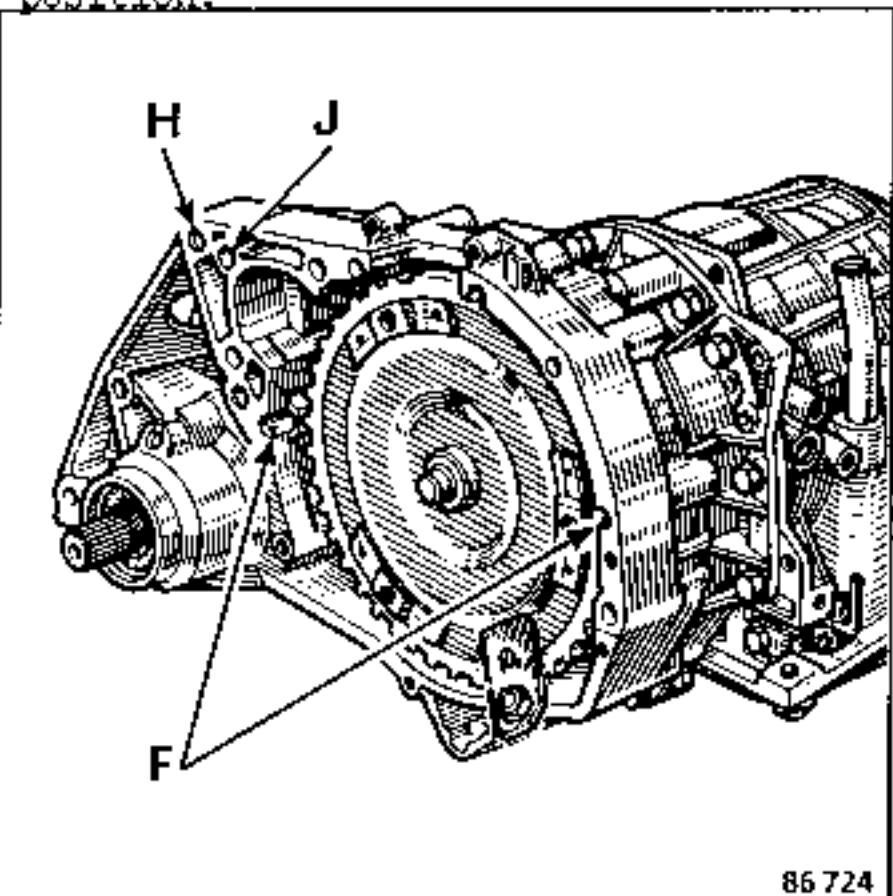
Fit the convertor retaining lug B.Vi.465 and disconnect the automatic transmission from the engine.



#### REFITTING

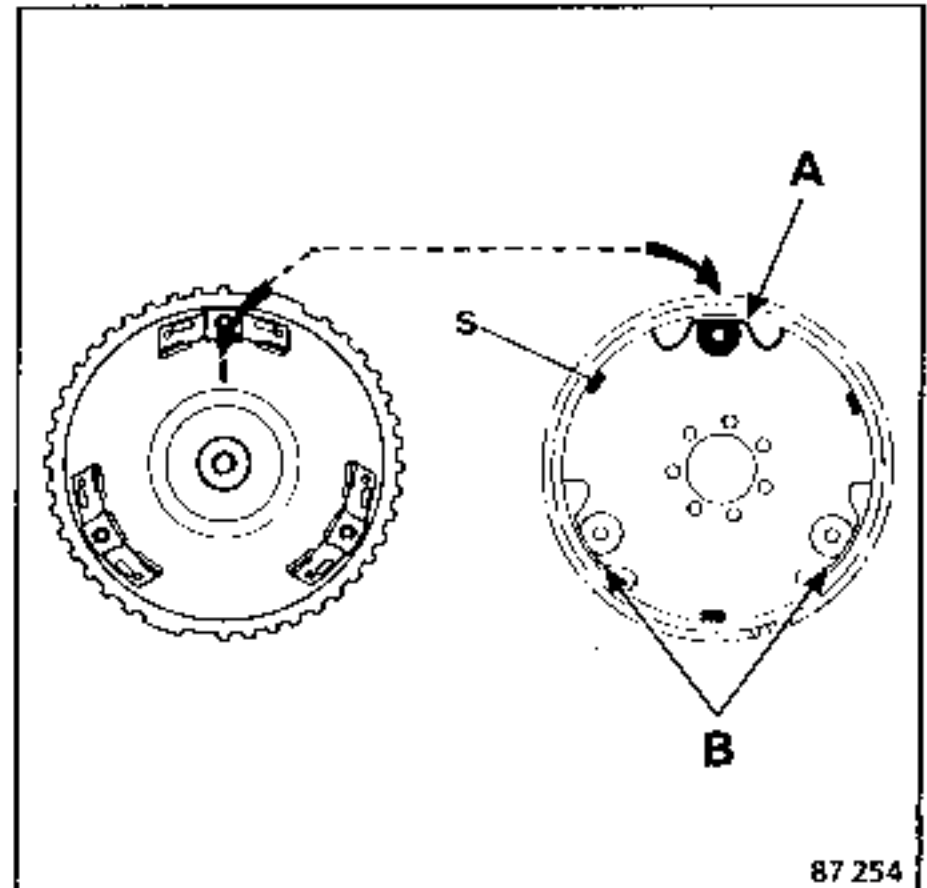
Lubricate the torque convertor, location, in the crankshaft, with MOLYKOTE BR2.

Ensure, and this is essential, that the two dowels (P) that locate the transmission on the engine and dowel (J) that locates the starter on the type "C" engine and (H) on the type "F" engine are in position.



Correctly position the drive plate with reference to the torque convertor (Verto convertor).

As the plate on the convertor is flat, fit it to the engine with the welds (S) towards the convertor and correctly align the position marks (dab of paint on sharp



corner).

A Sharp corner

B Rounded corners

If the transmission is fitted with a Renault convertor  $\varnothing$  227 mm, there are no position marks for the position of the convertor on the drive plate. The ignition sensor target is an integral part of the drive plate.

On refitting, one merely has to align, correctly, the studs on the torque convertor with the holes in the plate.

Tighten the nuts :

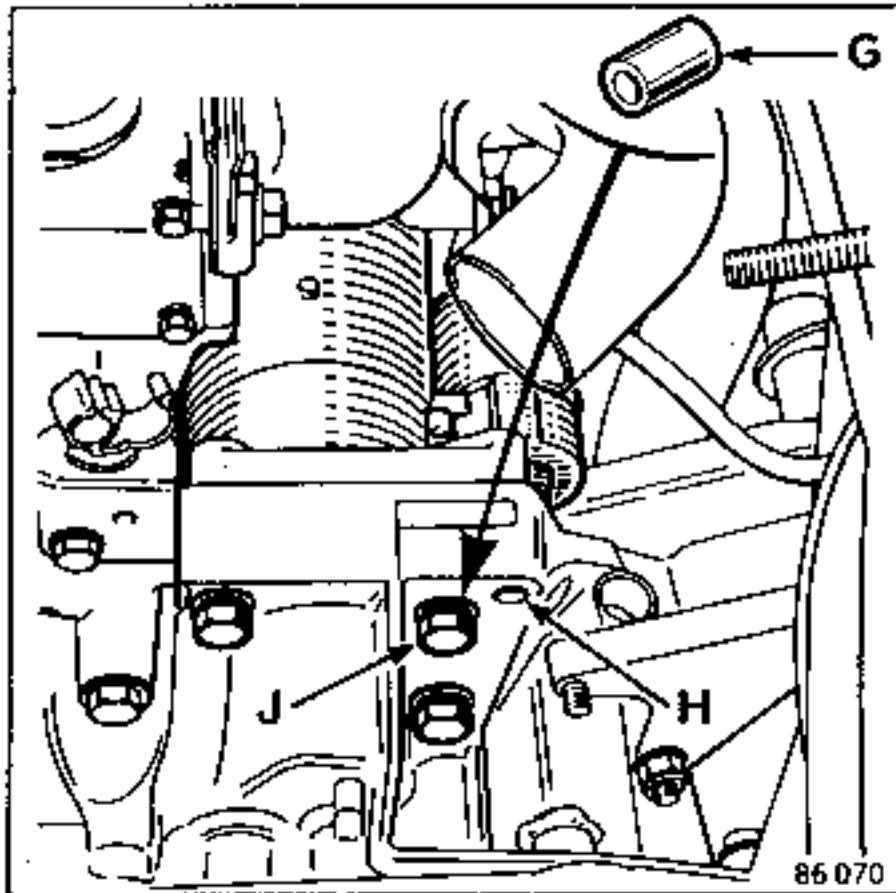
$$- 1.9 \begin{matrix} 0 \\ - 0.5 \end{matrix} \text{ m.daN, if stud } \varnothing \text{ is 8 mm}$$

$$\text{or } - 2.5 \begin{matrix} + 0.5 \\ 0 \end{matrix} \text{ m daN if stud } \varnothing \text{ is 9 mm}$$

Connect the automatic transmission to the engine.

Remove B.Vi.465 and refit the bolts that secure the drive plate and the protective plate.

When refitting the starter, ensure that the locating dowel (G) is in place. It MUST be placed in the bolt hole (J) in the case of type "C" engines and (H) in the case of type "F" engines.



Refit the complete flexible mountings and the engine strut.

Lower the engine - automatic transmission assembly into the compartment.

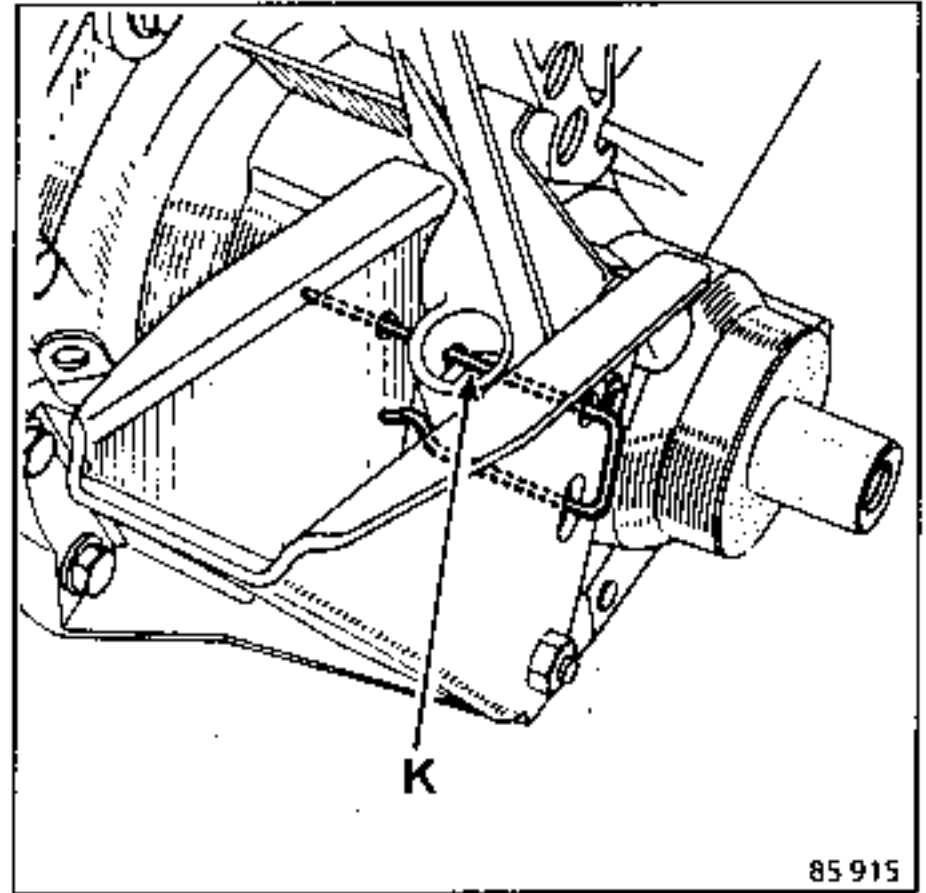
Refit :

- the radiator and its two wires,
- the heater hoses to the coolant pump, and the heater wire,
- the transmission cooler hoses,
- the A.E.I. ignition unit,
- the expansion bottle.

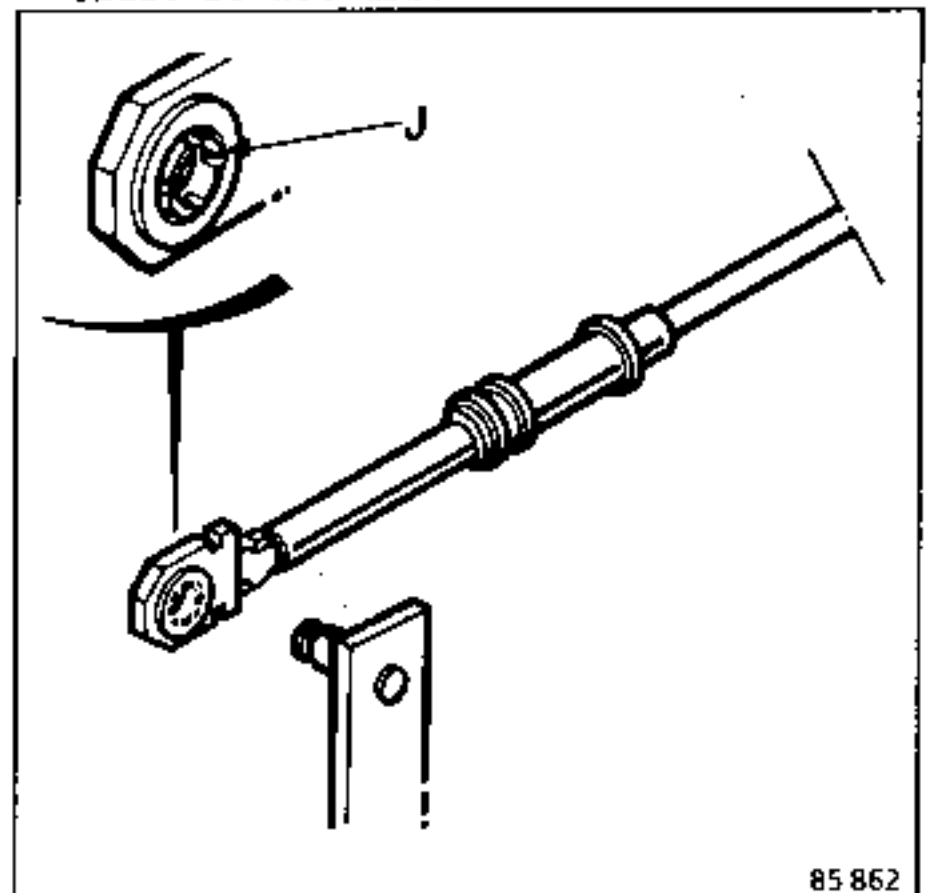
Reconnect :

- the A.T. earthing braid,
- the engine earthing wire on the scuttle,
- the starter cables (pass them through the eye on the transmission),
- the 6 way connector on the electronic unit,
- the brake servo and capsule hoses,
- the fuel hoses,

- the accelerator, choke and speedometer cables (retain the speedometer cable with its clip (K),



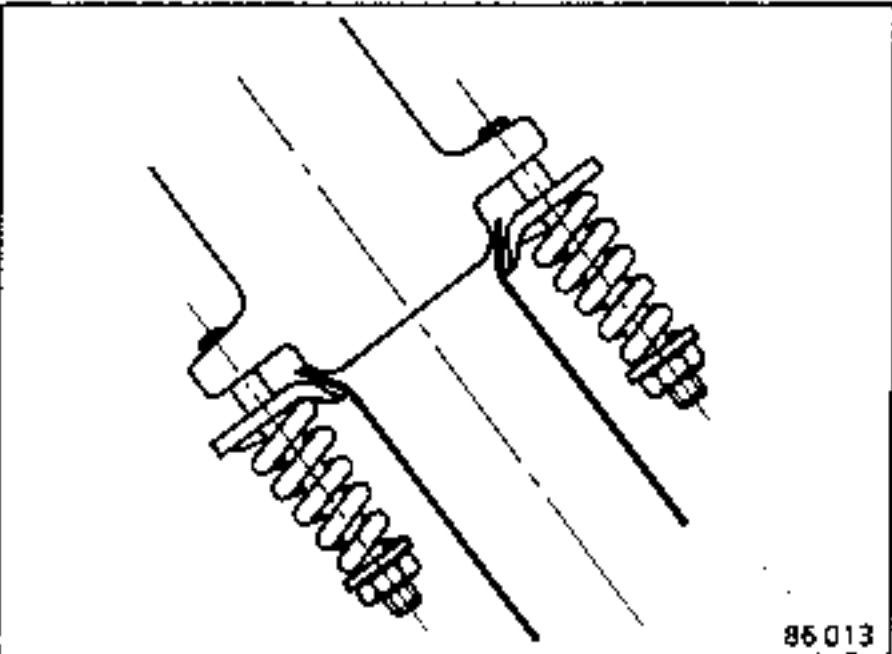
- the shift cable positioning the locating projections (J) on the ball joint side. Do not assemble them.





Place the cables in the cable covers.

- Refit :
- the air filter,
  - the exhaust securing flange. Tighten the springs until they are coil bound, then loosen them by one and a half turns. Never leave the springs coil bound.



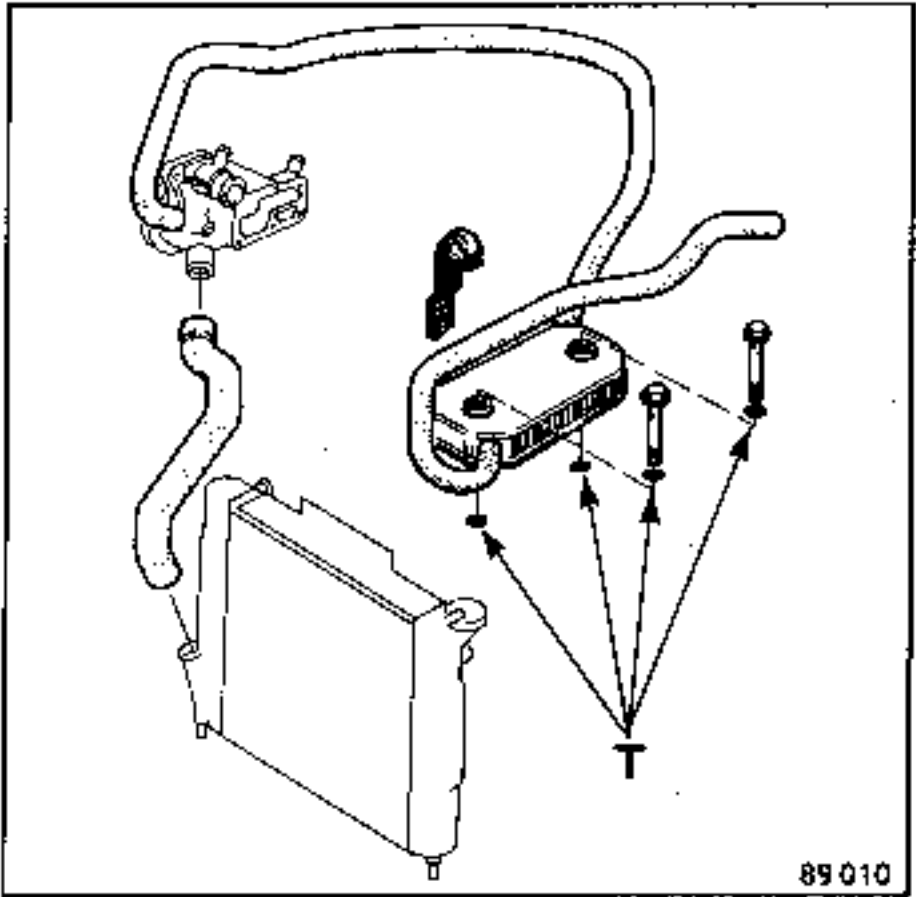
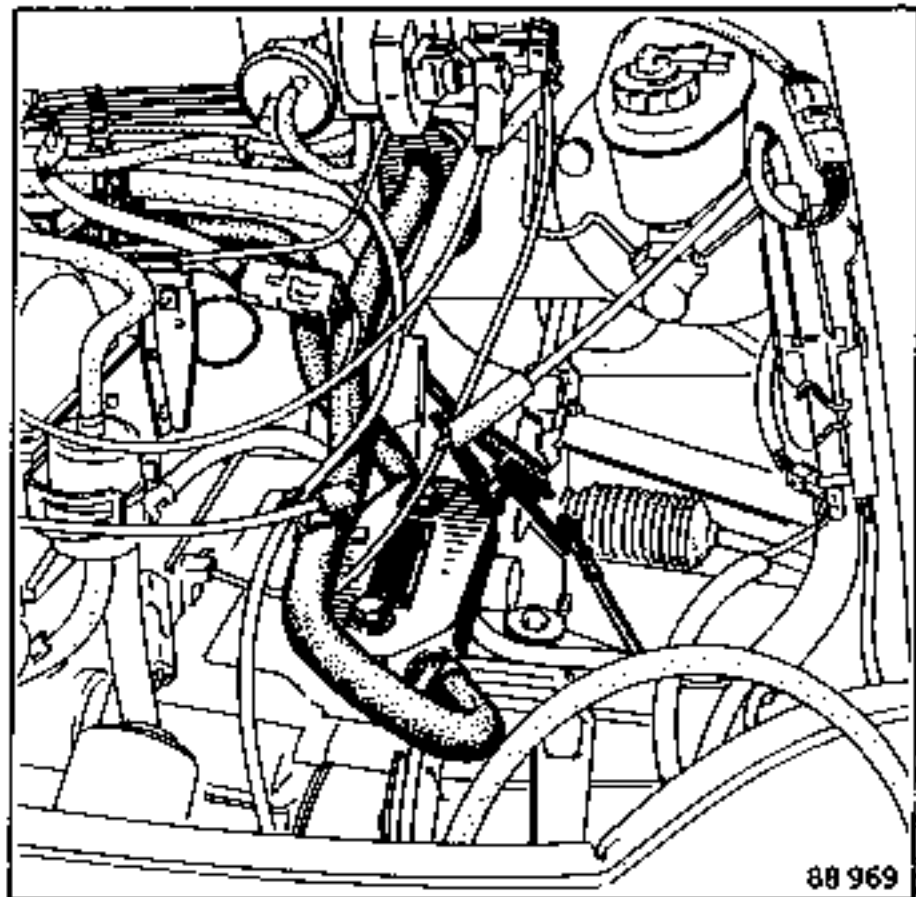
- the drive shafts : apply MOLYKOTE BR2 grease to the right hand sun wheel splines and CAF 4/60 THIXO to the pin holes in the drive shafts.
- the caliper securing bolts, applying Loctite FRENLOLOC to the bolts before tightening them to torque.

Press down the brake pedal a few times to bring the pistons against the brake pads and reconnect the battery.

Fill the transmission and the cooling system.

Bleed the cooling system.

**SPECIAL OPERATIONS INVOLVED WITH RE-FITTING THE TRANSMISSION COOLER**



To ensure that the assembly is correctly sealed, do not forget to fit the O rings (T) to either side of the cooler. Screw up the bolts evenly then tighten them to a torque of 4 daN.m.

Start the engine and check that the entire unit is free from leaks.

Type	Quantity	Unit concerned
Loctite SCELBOC	Coating	Stub axle splines
<b>CAF 4/60 THIXO</b>	Coating	Pins in drive shafts at gearbox
<b>MOLYKOTE BR2</b>	Coating	Splines on joint at gearbox end
FRENBLOC	Coating	Brake caliper bolts
<b>MOBIL CVJ 825</b>	<b>295 g</b>	Joint GE 86
<b>Black Stor</b>	<b>180 g</b>	Joint GE 76
	<b>130 g</b>	Joint GI 62
<b>MOBIL EXF 57C</b>	<b>160 g</b>	Joint RC 490

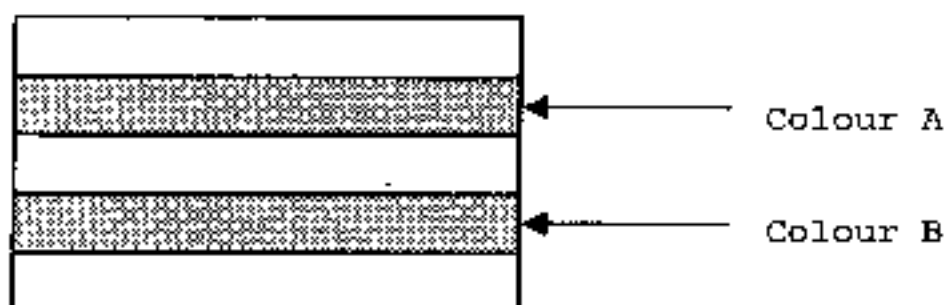
As the drive shafts are of different lengths and specifications, depending on the gearbox with which they are used, it is essential to ensure that the correct type is fitted (see the Parts Catalogue for the vehicle concerned).

The gearbox identification plates and drive shafts have colour codes on them to identify them. These codes are shown in the charts below.

The drive shaft identification consists of an adhesive label applied near the bellows at the wheel end.

Early type

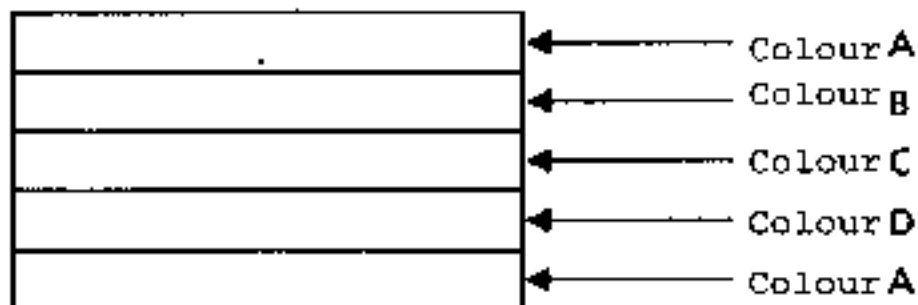
Adhesive label with two bands of colour.



G.B. or A.T.	Joint at wheel end	Colour code on gearbox ident- ification plate	DRIVE SHAFT COLOUR CODES			
			LH SIDE		RH SIDE	
			A	B	A	B
JB 0/1 MB 1	GE 86	Red	Sky blue	Red	Sky blue	Red
JB 0/1	GE 76 engine F8M		Sky blue	Brown	Sky blue	Brown
JB 3	GE 86 engine F2N	Black	Sky blue	Red	Sky blue	Red
	exc. GE 86 engine F2N				Sky blue	Sky blue
JB 4/5	GE 86	Green/Pink	Sky blue	Pink	Sky blue	Pink
	GE 76	Green/Pink	Sky blue	Green	Sky blue	Green

Later type

Adhesive label with five bands of colour.



G.B. or A.T.	Joint at wheel end	Colour code on gearbox identifica- tion plate	DRIVE SHAFT COLOUR CODES							
			LH SIDE				RH SIDE			
			A	B	C	D	A	B	C	D
JB 0/1	GE 76	Orange/Red	Sky blue	Orange	Sky blue	Brown	Sky blue	Orange	Sky blue	Brown
	GE 86		Sky blue		Red	Sky blue	Sky blue		Red	Sky blue
	GE 86		Sky blue	Red	Black	Silver	Sky blue	Red	Black	Silver
JB 3	GE 86	Black	Sky blue	Red	Black	Silver	Sky blue	Red	Black	Silver
	GE 86		Sky blue	Black	Sky blue	Silver	Sky blue	Black	Sky blue	Silver
JB 4/5	GE 76	Green/Pink	Sky blue		Green	Sky blue	Sky blue		Green	Sky blue
	GE 86		Sky blue		Pink	Sky blue	Sky blue		Pink	Sky blue
MB 1	GE 76	Brown	Sky blue	Orange	Sky blue	Brown	Sky blue	Orange	Sky blue	Brown
MB 3	GE 86	Silver	Sky blue	Red	Black	Silver	Sky blue	Red	Black	Silver
	GE 86		Sky blue	Black	Sky blue	Silver	Sky blue	Black	Sky blue	Silver

ESSENTIAL SPECIAL TOOLS

B.Vi.	31-01	Pin punches
Rou.	604-01	Hub lock
T.Av.	476	Ball joint extractor
T.Av.	1050	Drive shaft extractor

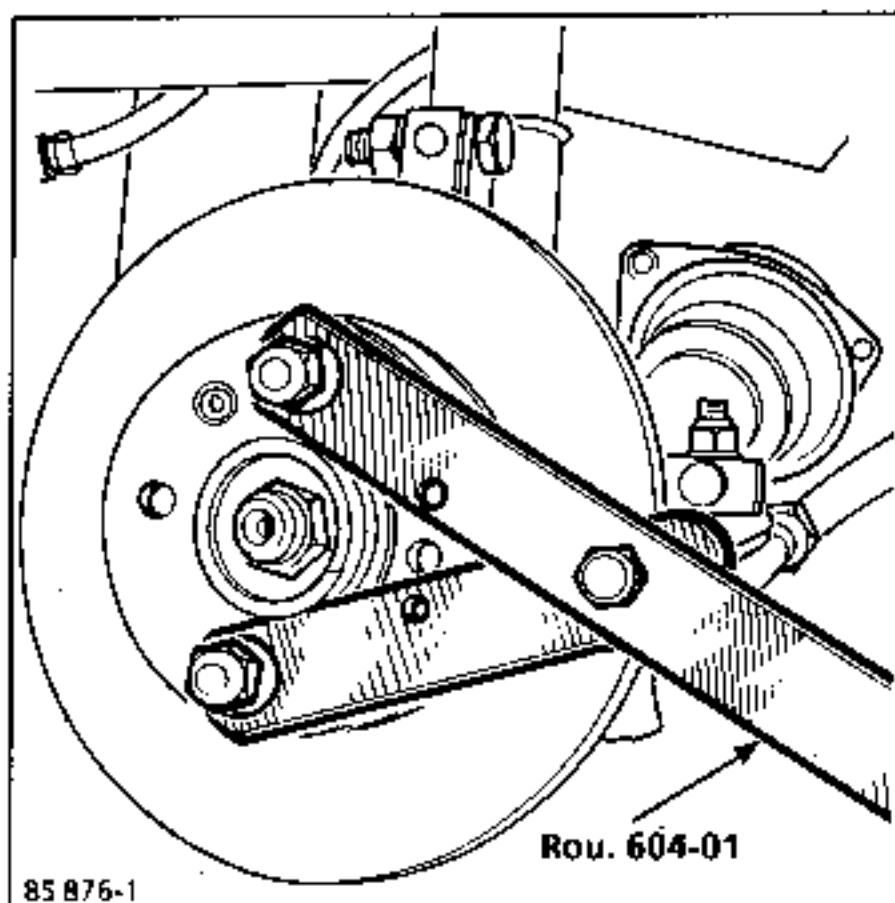
TIGHTENING TORQUES (in daN.m)

Drive shaft nuts	25
Screws securing bellows to G.B.	2,5
Wheel bolts	8
Nuts at bottom of shock absorber	8
Brake caliper securing bolts	10
Steering ball joint nuts	4

REMOVING

Remove :

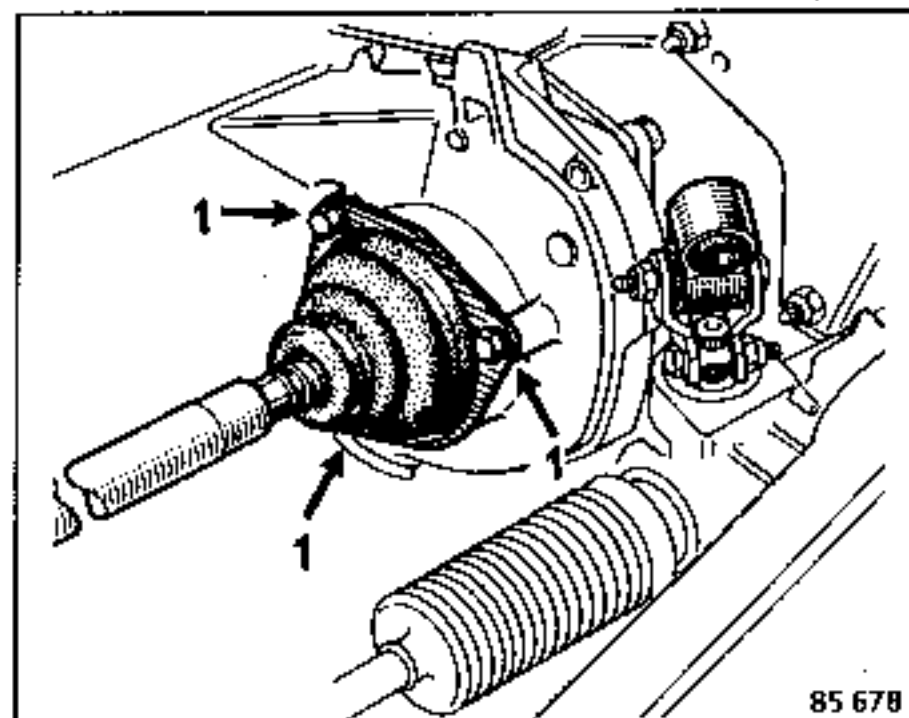
- the brake assembly (hang it from the chassis to avoid damaging the brake hose),
- the drive shaft nut : tool Rou.604-01.



LH side :

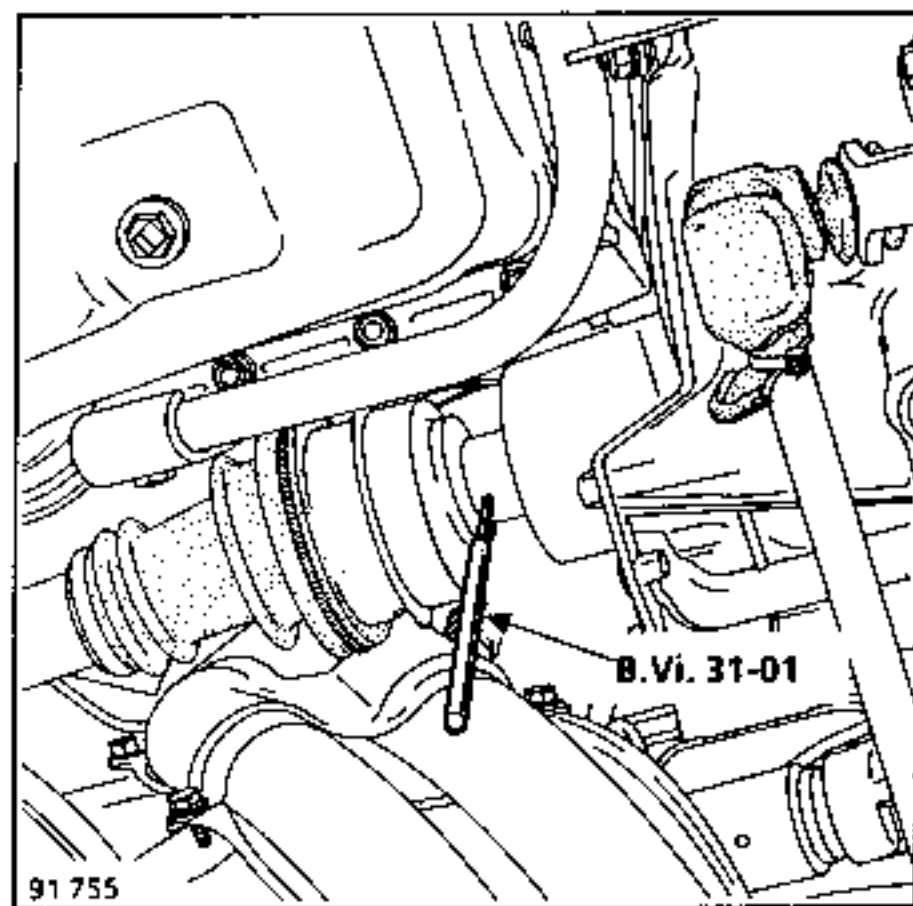
Drain the gearbox.

Remove the three screws (1).



RH side :

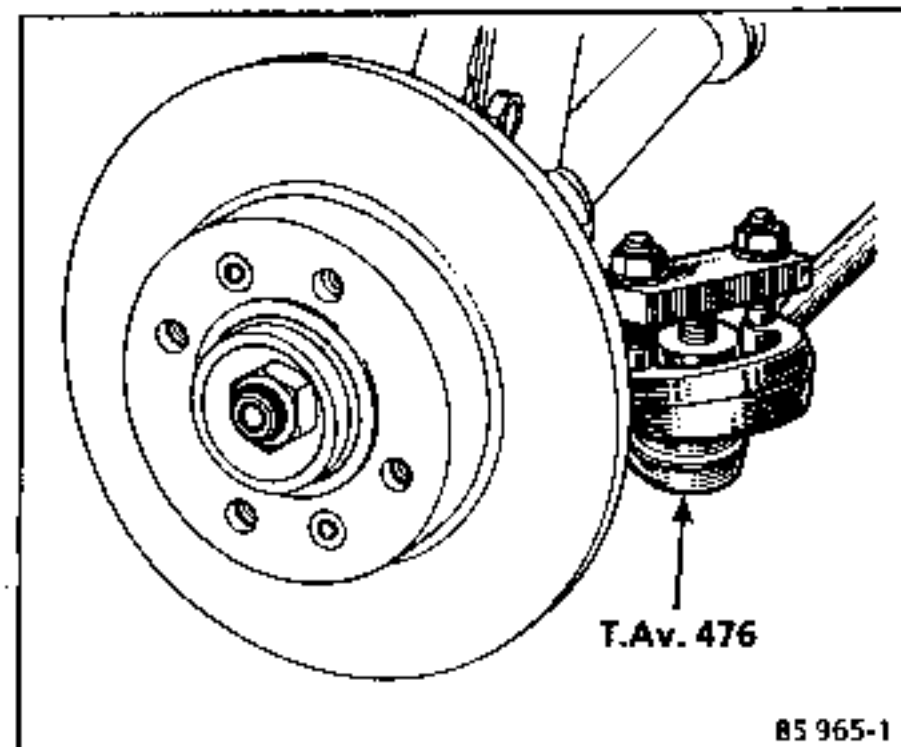
Remove the pin : punch B.Vi.31-01.



On both sides :

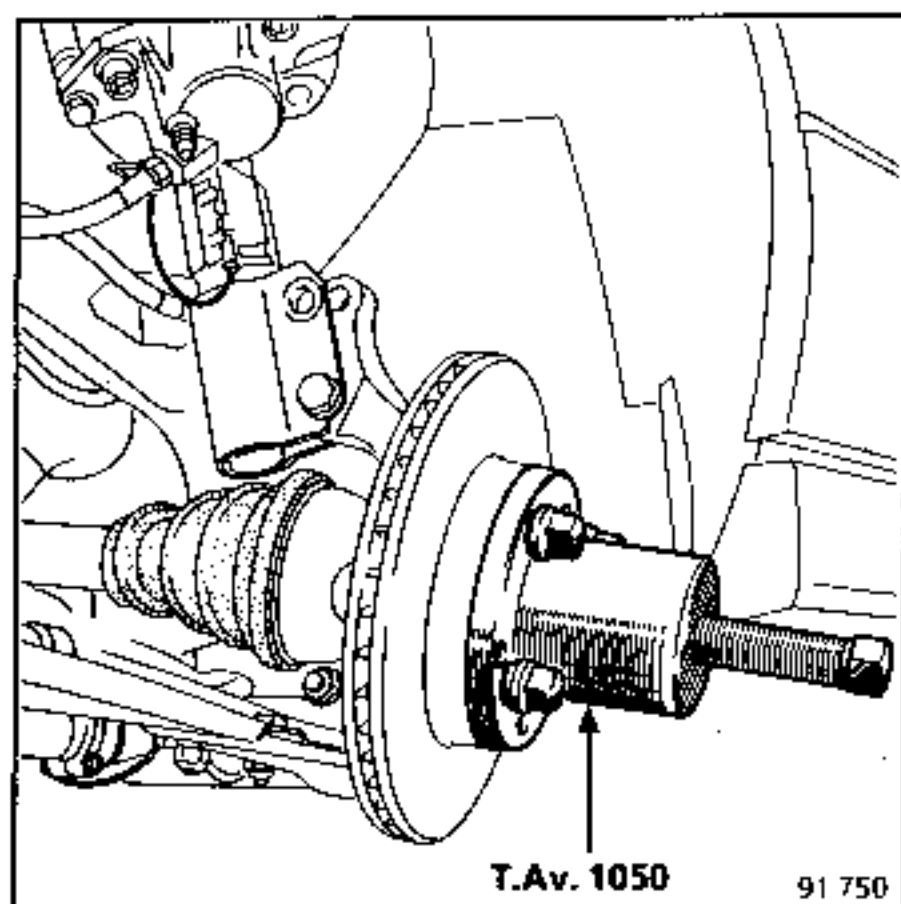
Remove :

- the steering ball joint nut : tool T.Av. 476.

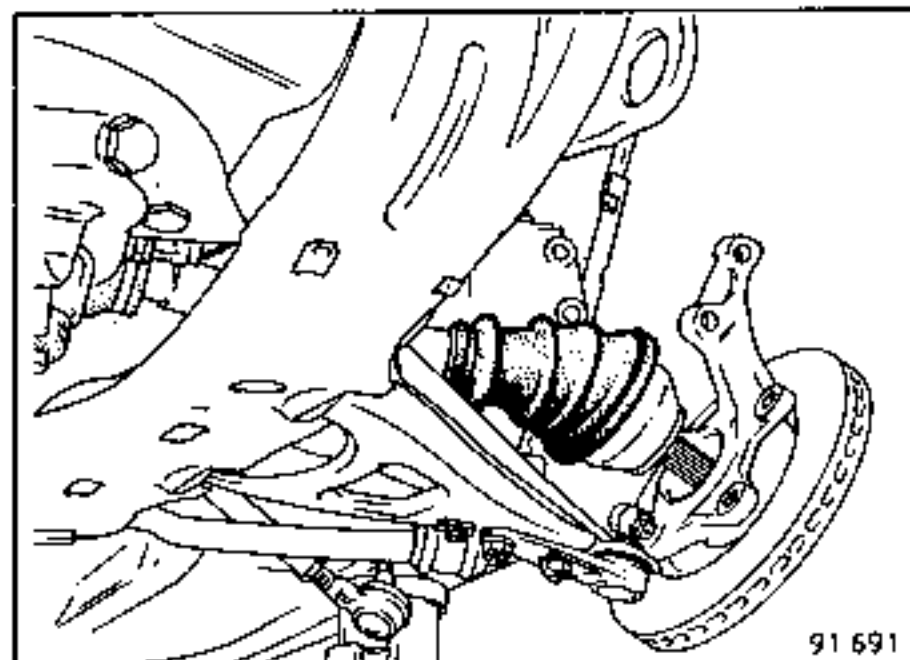


- the upper bolt securing the lower part of the shock absorber.

These vehicles are equipped with bonded drive shafts which therefore have to be pushed out with tool T.Av.1050.



Remove the lower bolt securing the lower end of the shock absorber and extract the drive shaft.

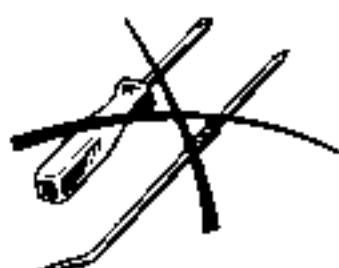
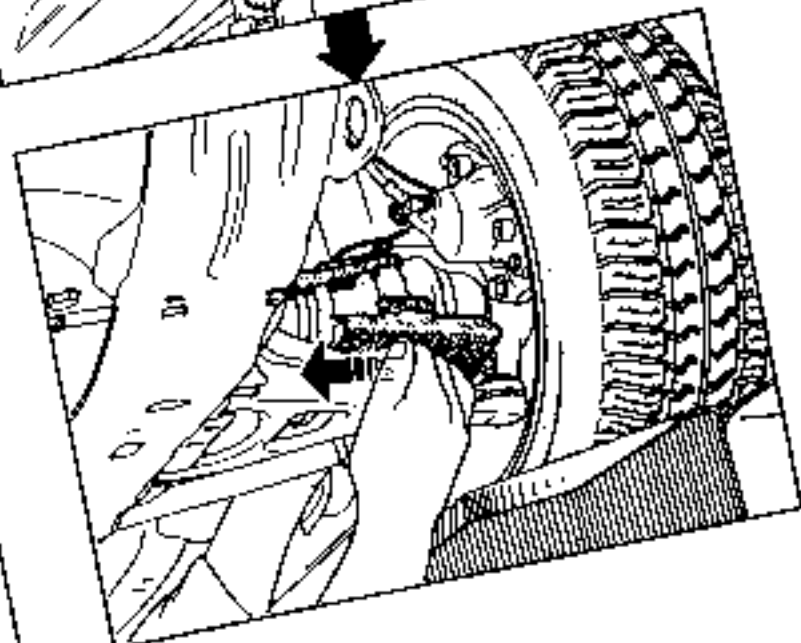
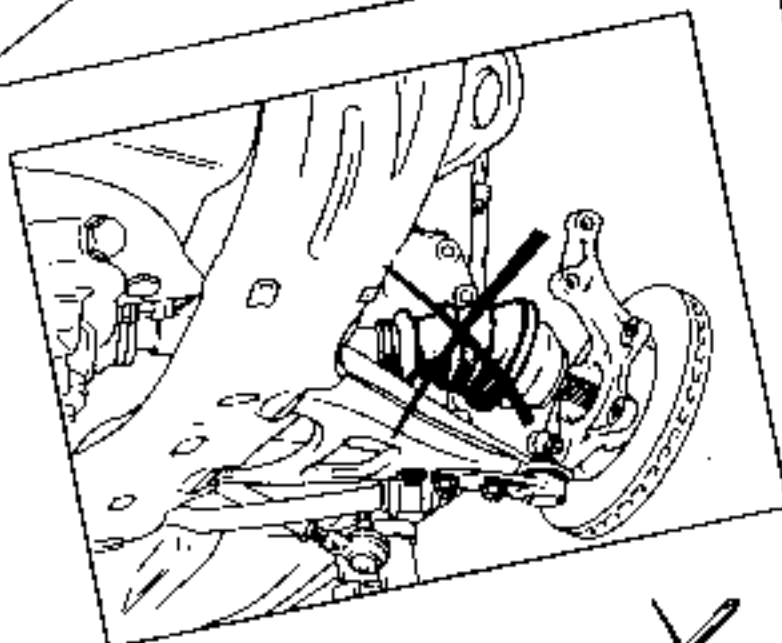
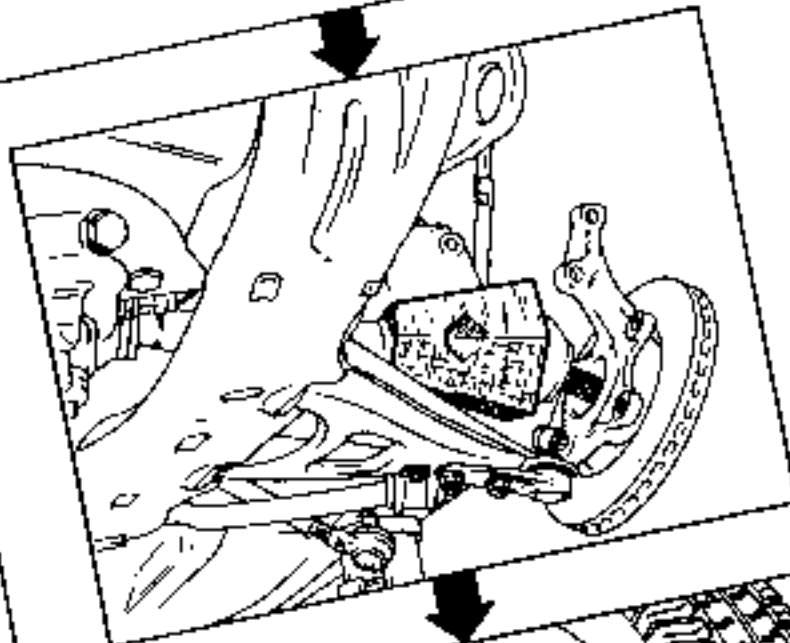
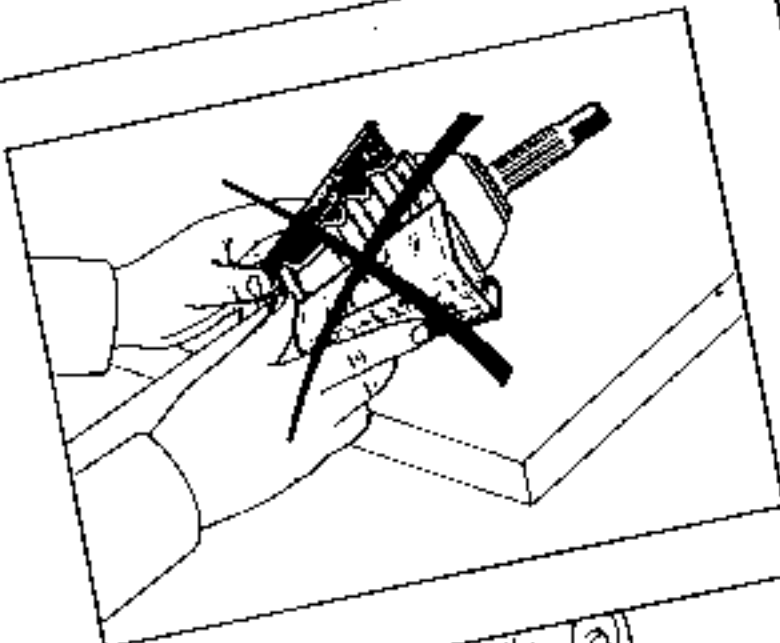
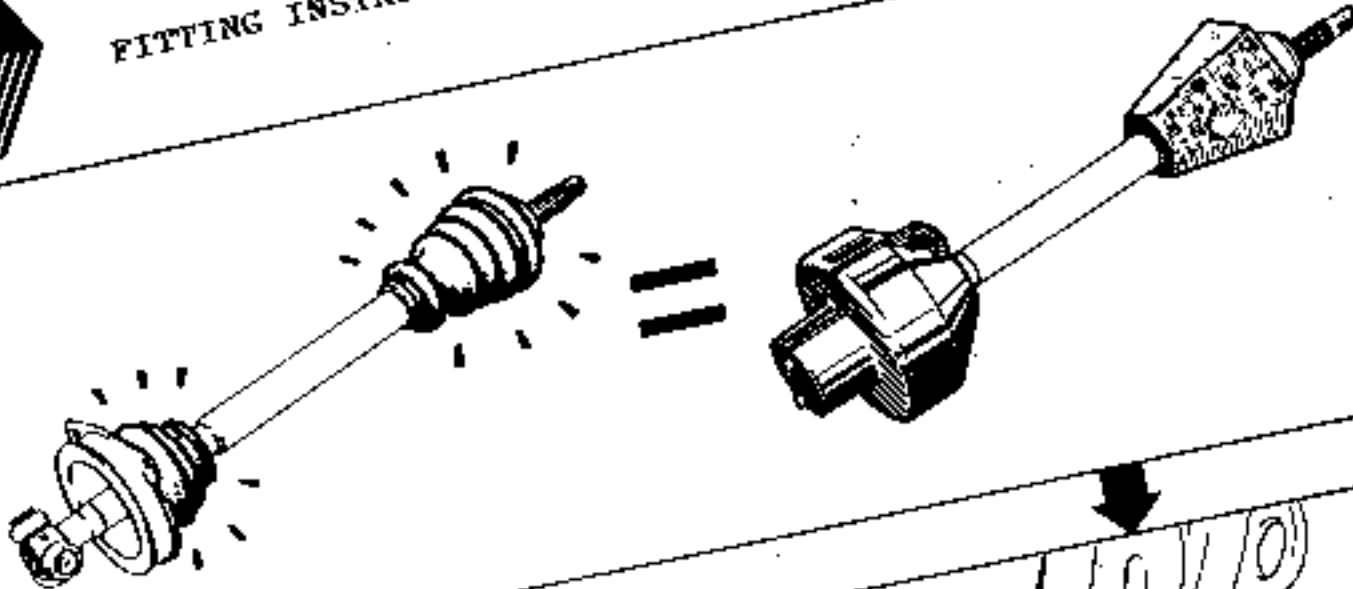


Take care not to damage the bellows during this operation.

#### REFITTING

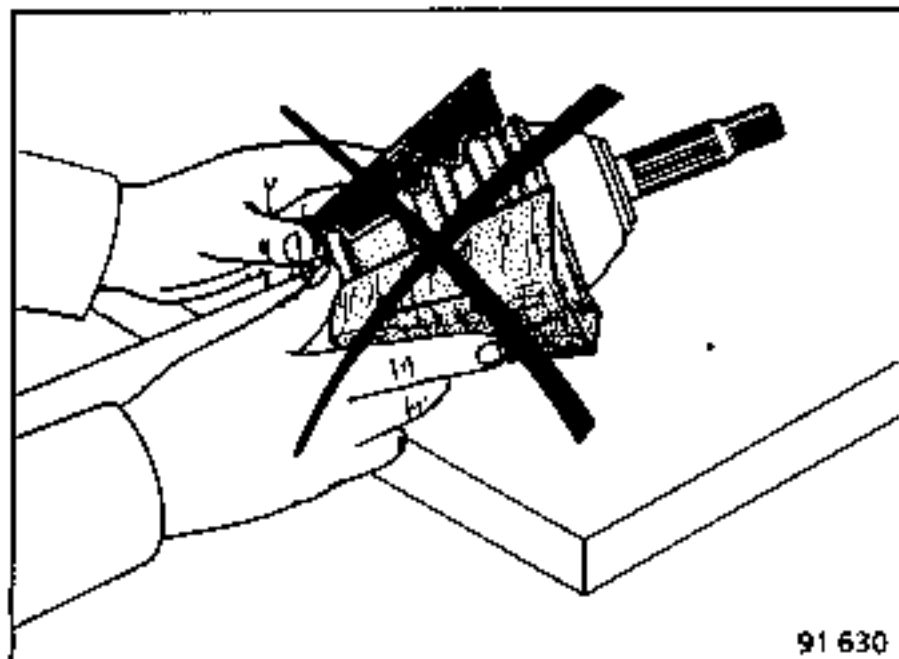
NOTE : from now on the Parts Department will supply drive shafts equipped with a protector accompanied by fitting instructions. It is essential to follow these instructions to ensure a high QUALITY repair in that the slightest impact to the bellows will cause the rubber to break, over a period of time, and irreparable damage to the drive shafts.

FITTING INSTRUCTIONS THAT MUST BE FOLLOWED

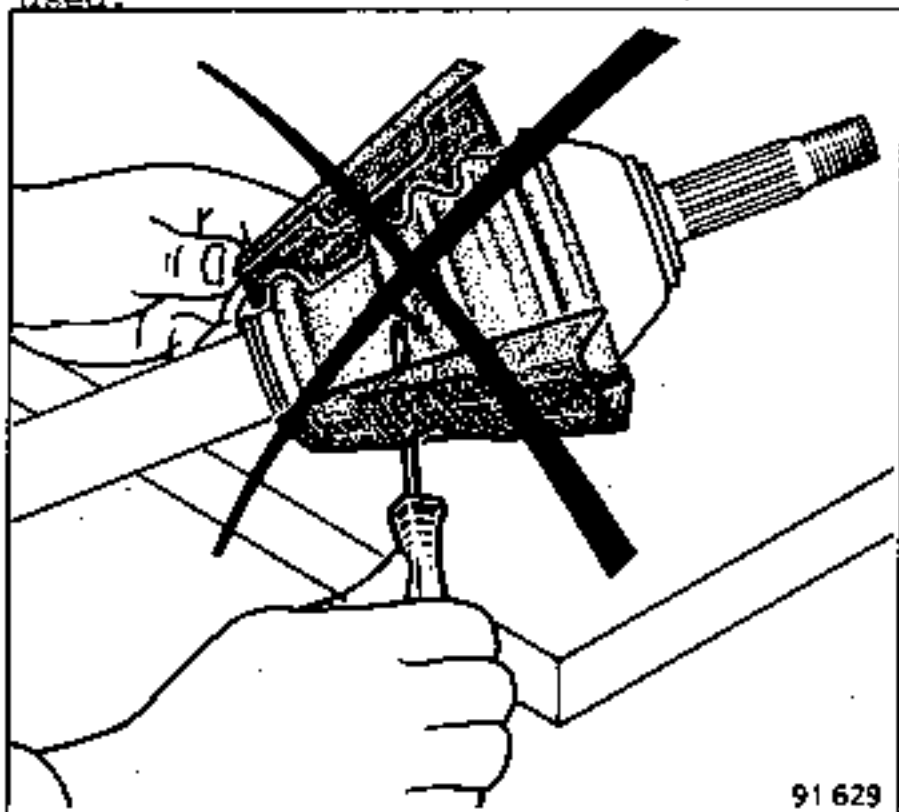


**RENAULT**

Never remove the cardboard protectors until the drive shaft is fully fitted to the vehicle.

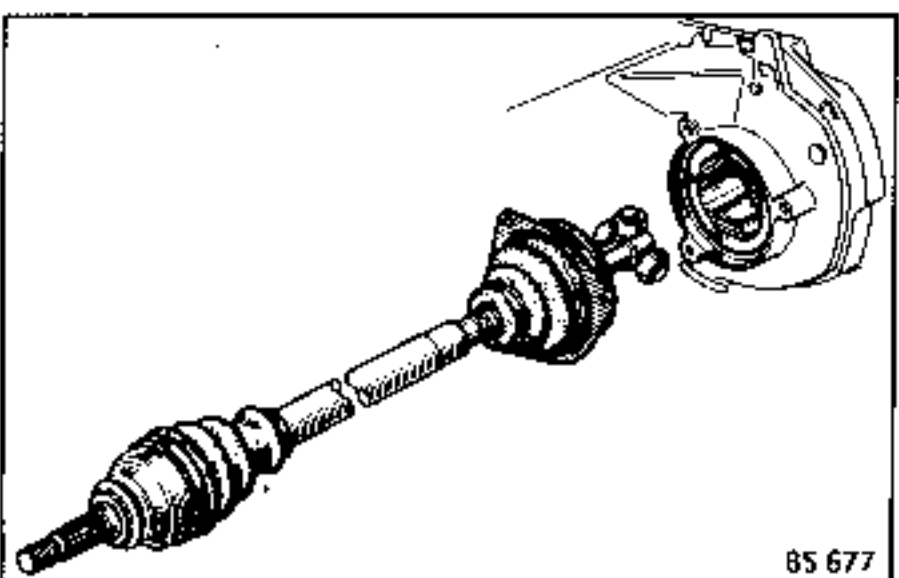


Under no circumstances is a sharp ended tool that could damage the bellows to be used.



LH side :

Remove the plastic protector from the bearing bellows and insert the drive shaft as near to horizontal as possible.



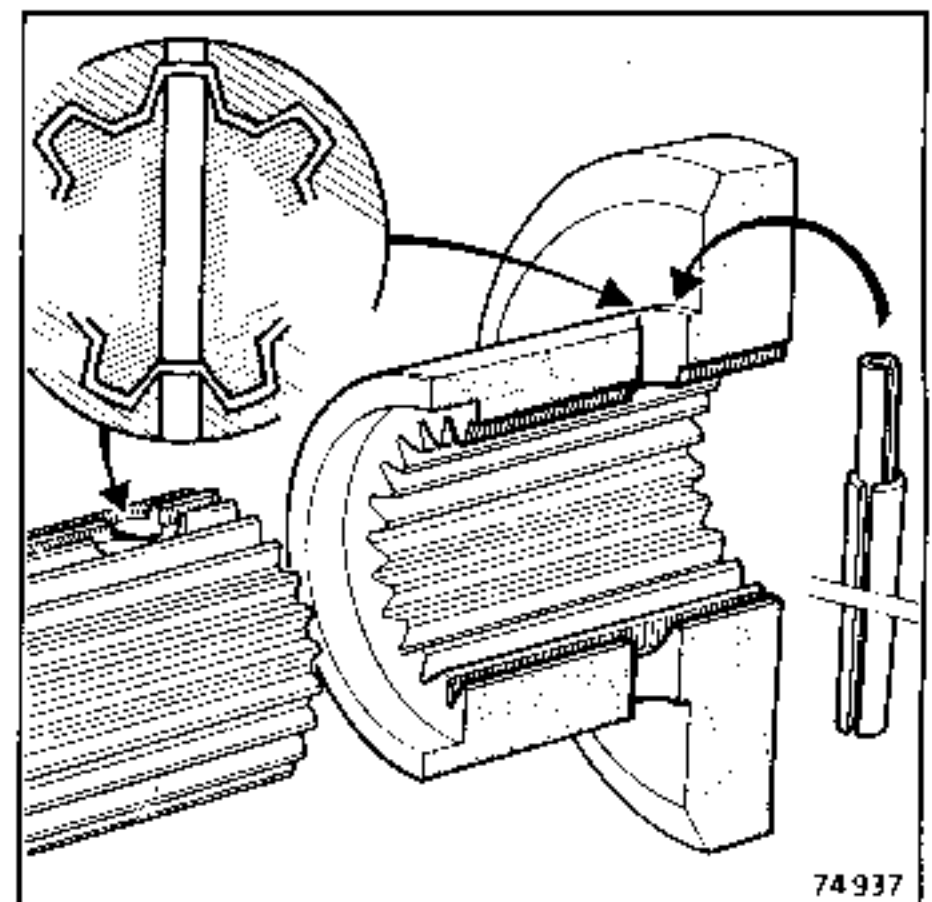
RH side :

With the protector in place, coat the splines on the joint at the gearbox or automatic transmission end with MOLYKOTE BR2 grease.

Correctly position the drive shaft with reference to the sun wheel and insert it.

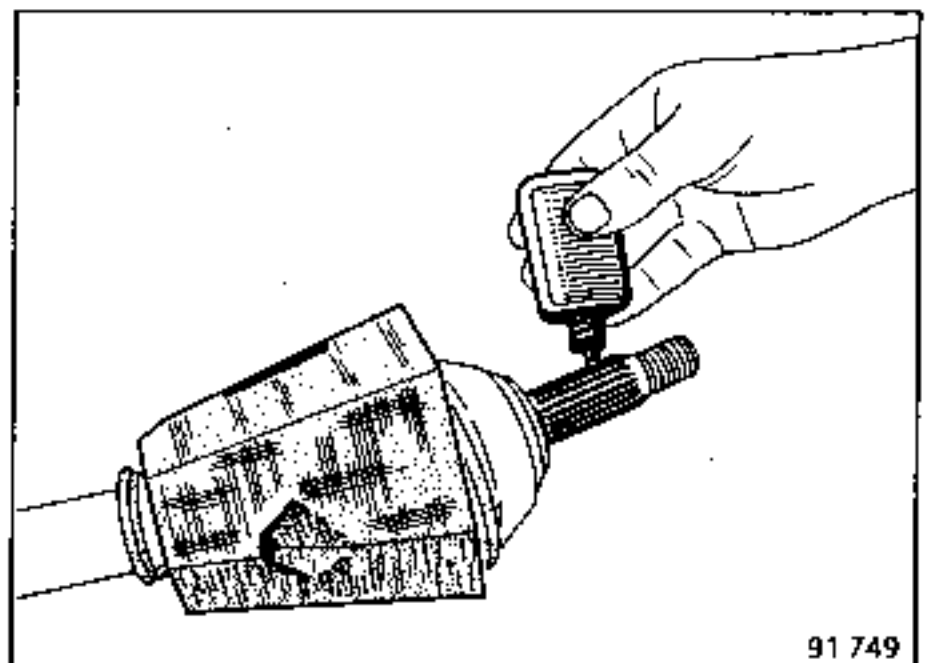
Check that it is correctly positioned by inserting the cranked end of pin punch B.Vi.31-01.

Fit two new spring pins using tool B.Vi.31-01. Seal the ends of the pin holes with CAF 4/60 THIXO.



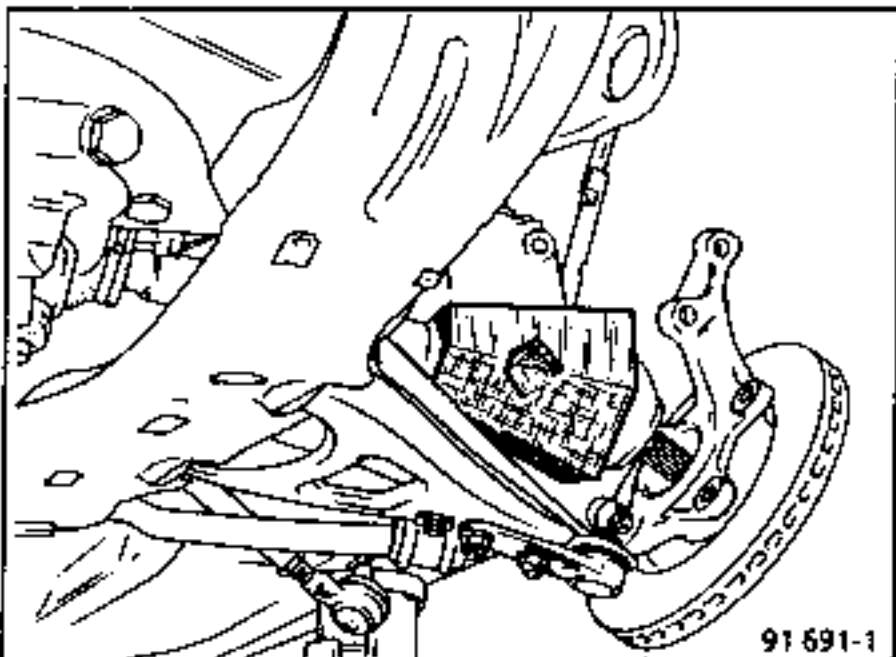
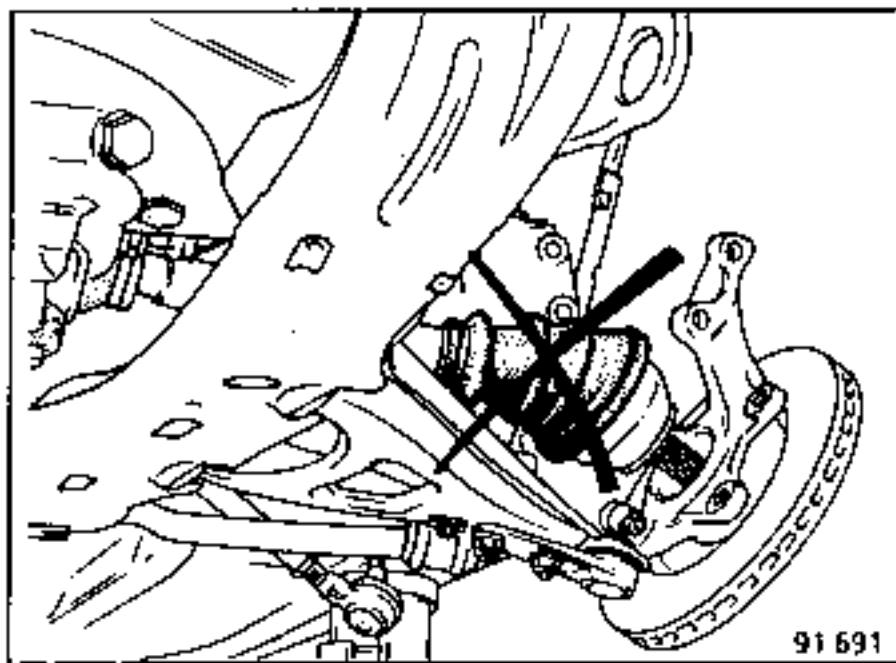
On both sides :

Coat the splines on the stub axle with Loctite SCELBLOC.





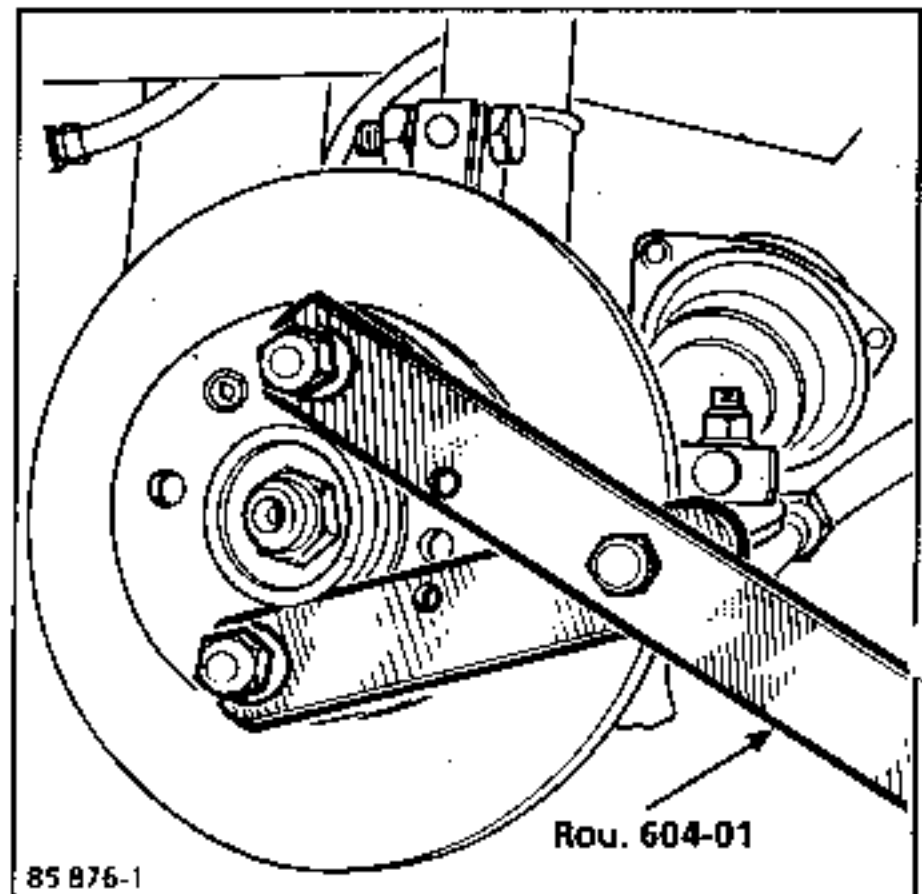
Insert the stub axle on the drive shaft into the hub.



Refit :

- the two bolts securing the bottom of the shock absorber to the stub axle carrier and tighten them to torque,
- the steering ball joint, tightening the nut to torque.

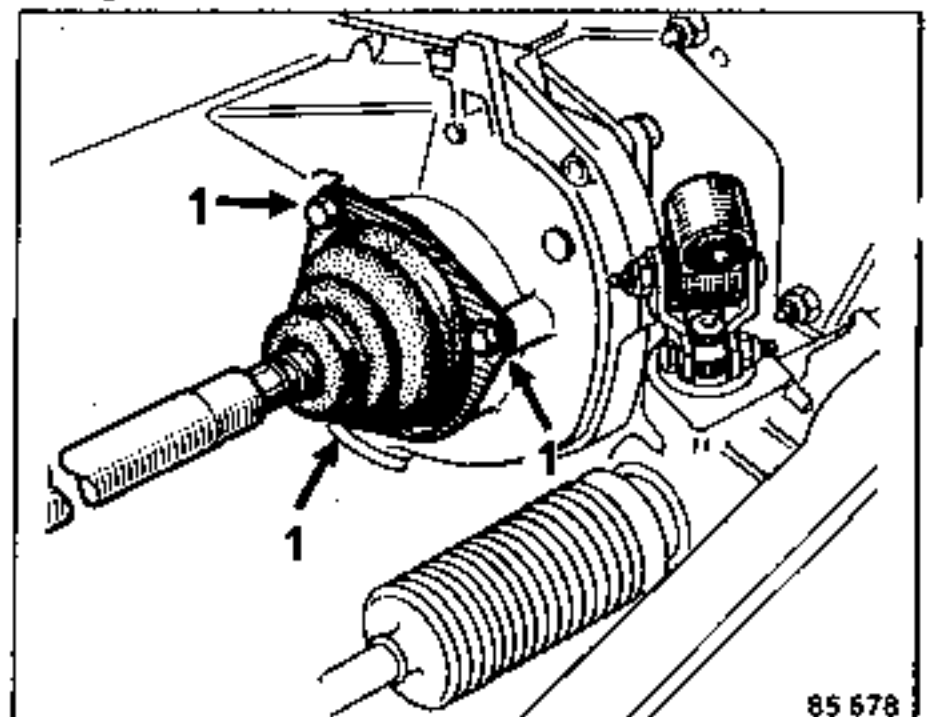
Tighten the nut on the drive shaft to torque using tool Rou.604-01.



On the left hand side :

Clean the bellows locating area on the gearbox and resecure the bellows and the plate.

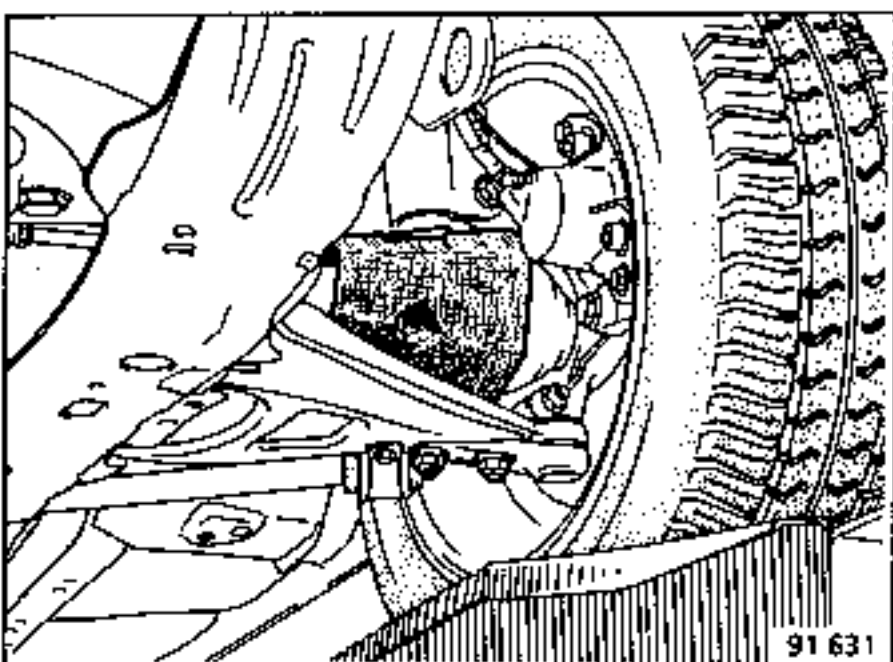
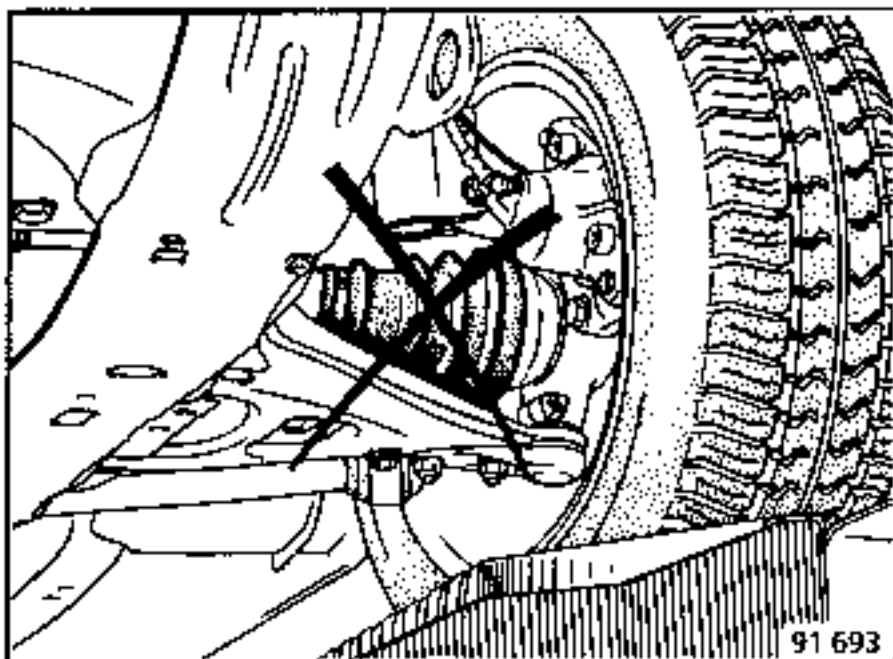
Place the bellows as horizontally as possible and tighten the three screws to torque.



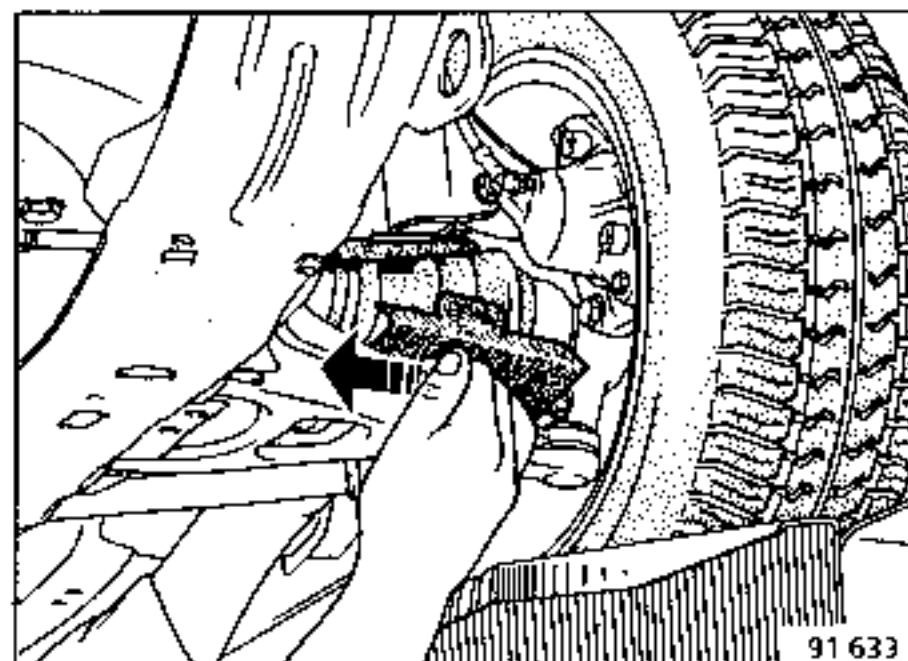
On both sides :

Fit the brake calipers, after coating their bolts with Loctite FRENLOC, and tighten the bolts to torque.

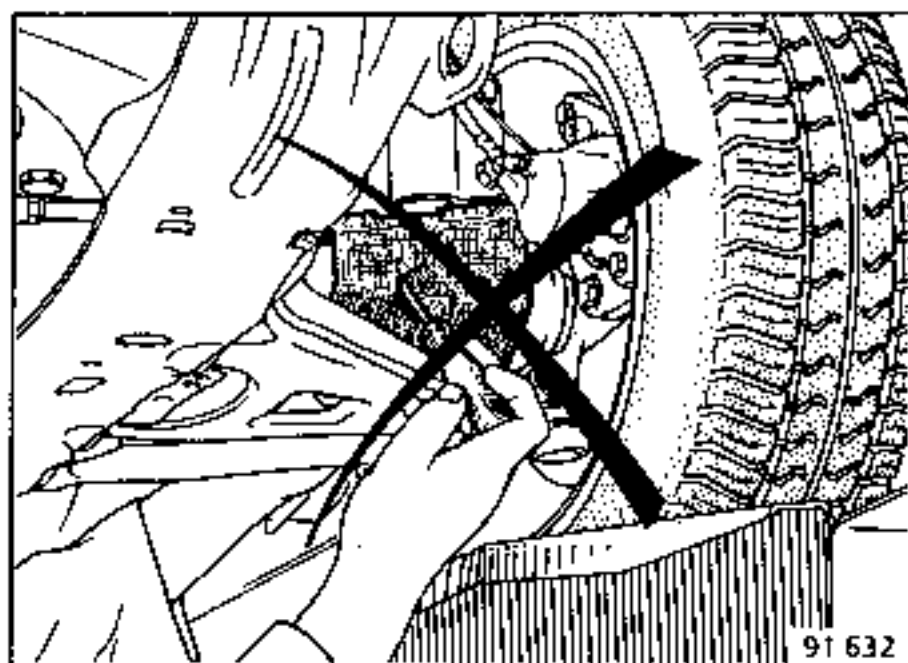
Lower the vehicle on to its wheels.



With the vehicle resting on its wheels, remove the cardboard protectors by tearing them off as shown in this illustration.



Under no circumstances use a sharp ended tool that could damage the bellows.



Depress the brake pedal a number of times to bring the pistons into contact with the pads.

If a left hand drive shaft has been replaced, refill the gearbox with oil or the automatic transmission with fluid.

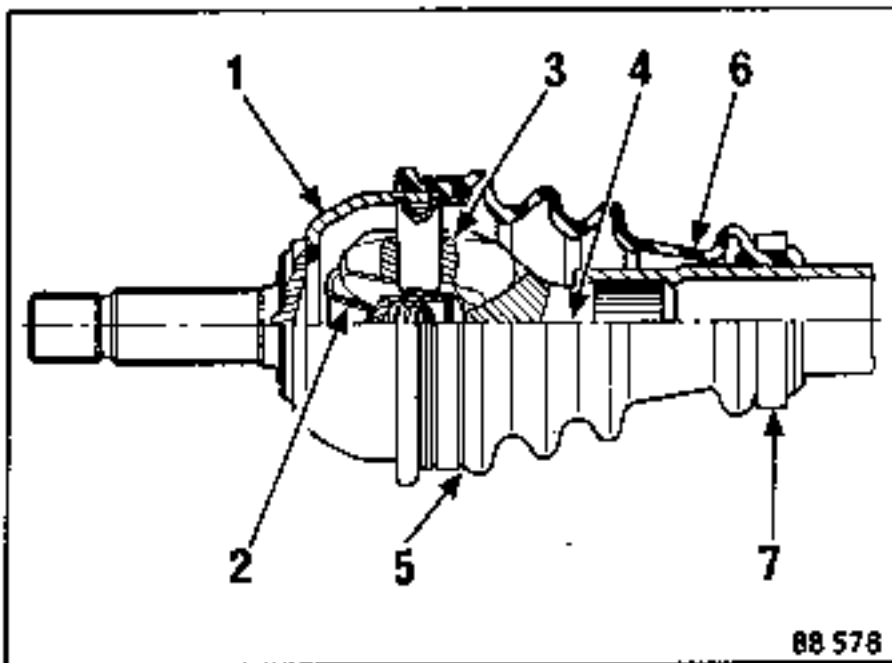
Joint GE86

Joint GE76

ESSENTIAL SPECIAL TOOLS

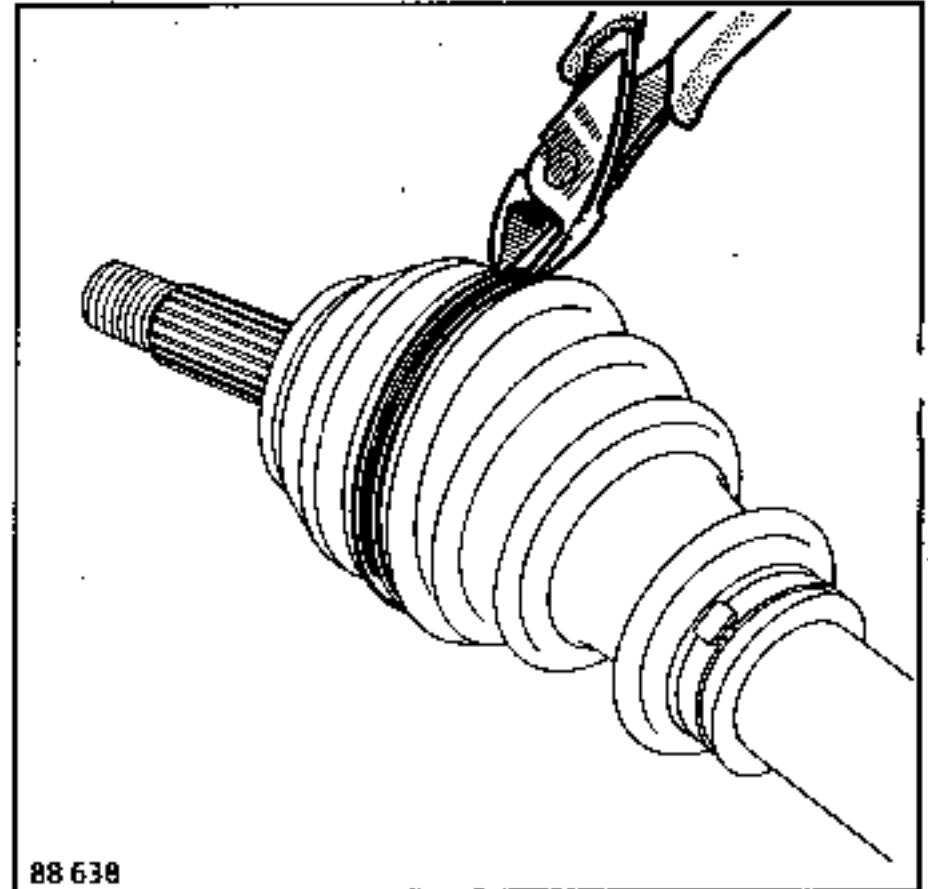
T.Av. 537-02	Expander for GE 86
T.Av. 586-01	Expander for GE 76
T.Av. 1034	Pliers for crimping the drive shaft clips

- 1 Cup yoke
- 2 Retaining star
- 3 Spider
- 4 Shaft yoke
- 5 Retaining clip
- 6 Rubber bellows
- 7 Retaining ring



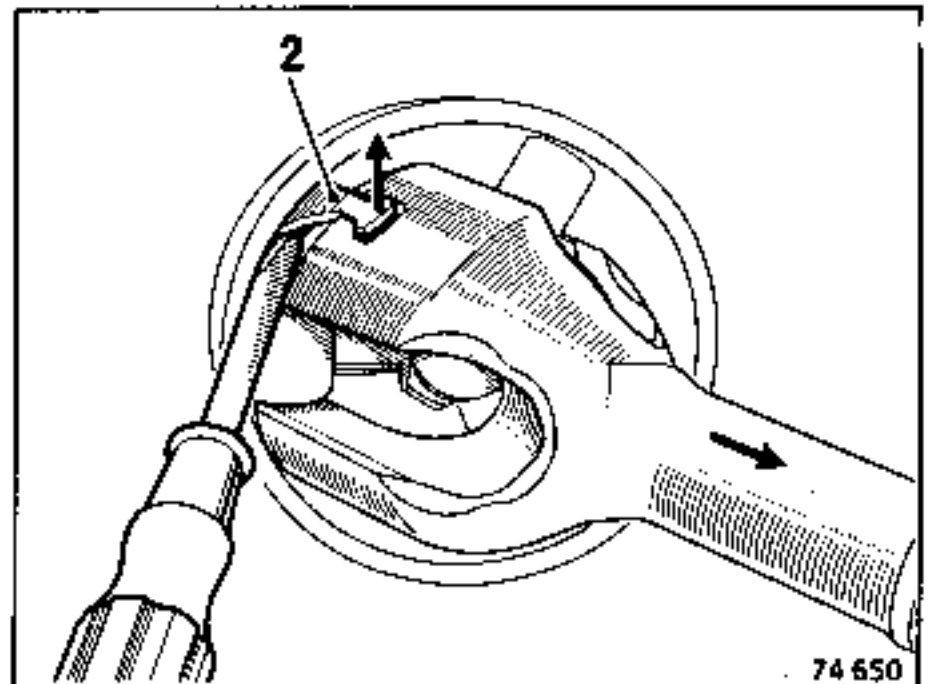
DISMANTLING

Cut the original clips, taking care not to damage the grooves in the cup yoke.



Remove as much grease as possible.

Free the cup yoke from the drive shaft by lifting one of the arms of the retaining star (2).



Joint GE86

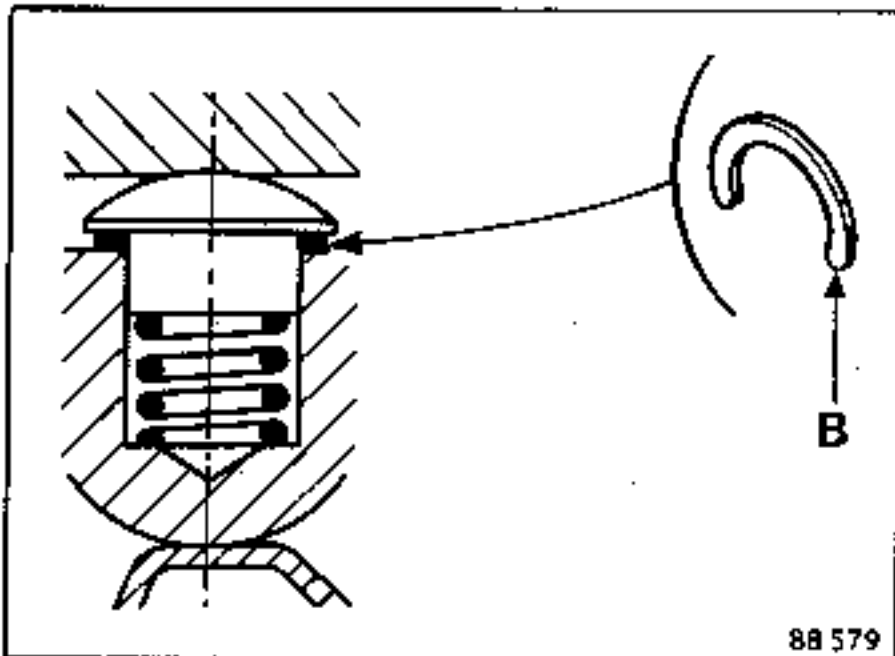
Joint GE76

DO NOT TWIST THE ARMS ON THE RETAINING STAR.

Retrieve the thrust ball joint, the shim under the ball joint (B).

NOTE : the shim under the ball joint is of the correct thickness for the original axial play.

This shim is to be retained and refitted on reassembly.



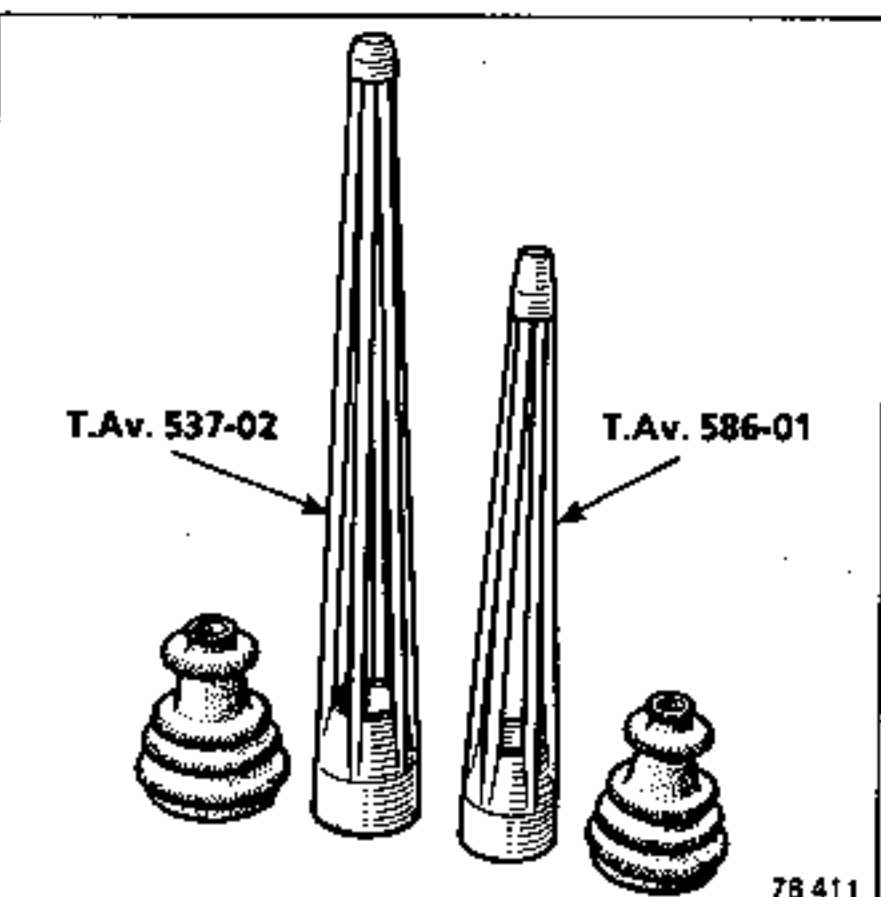
Degrease all the parts.

#### REASSEMBLY

An expander is essential for refitting the bellows :

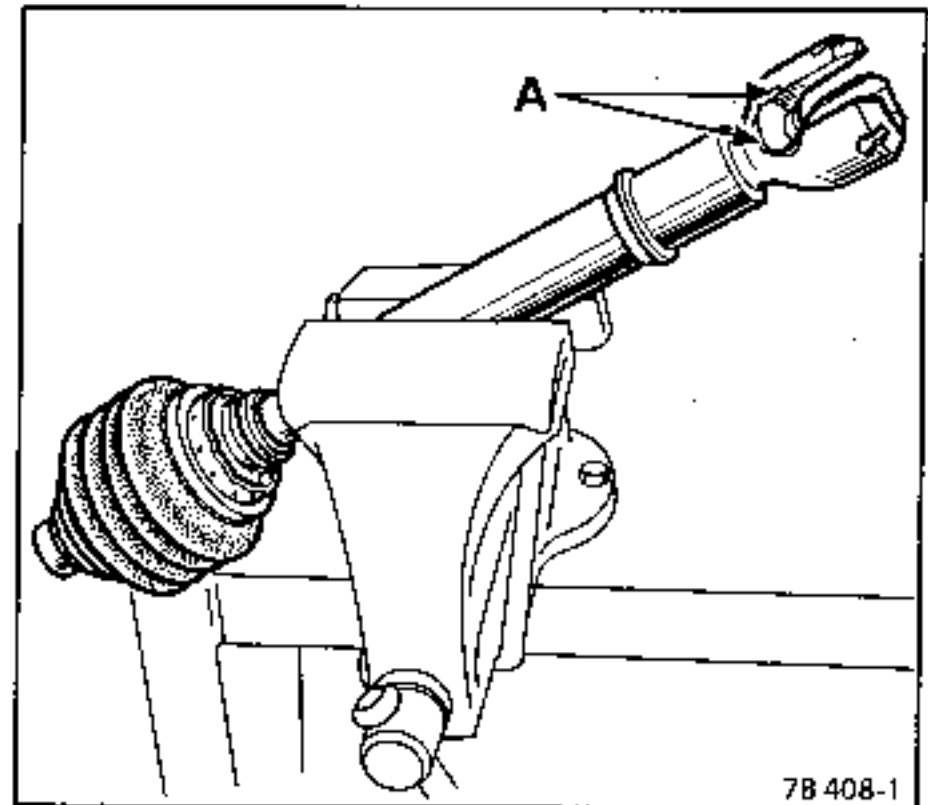
T.Av.537-02 for the GE 86 joint

T.Av.586-01 for the GE 76 joint



Grip the drive shaft, at an angle, in a vice fitted with soft jaws.

Engage the tool fully over the shaft yoke (if this is not possible, rub down the inside of the cylindrical part of the tool with emery cloth).

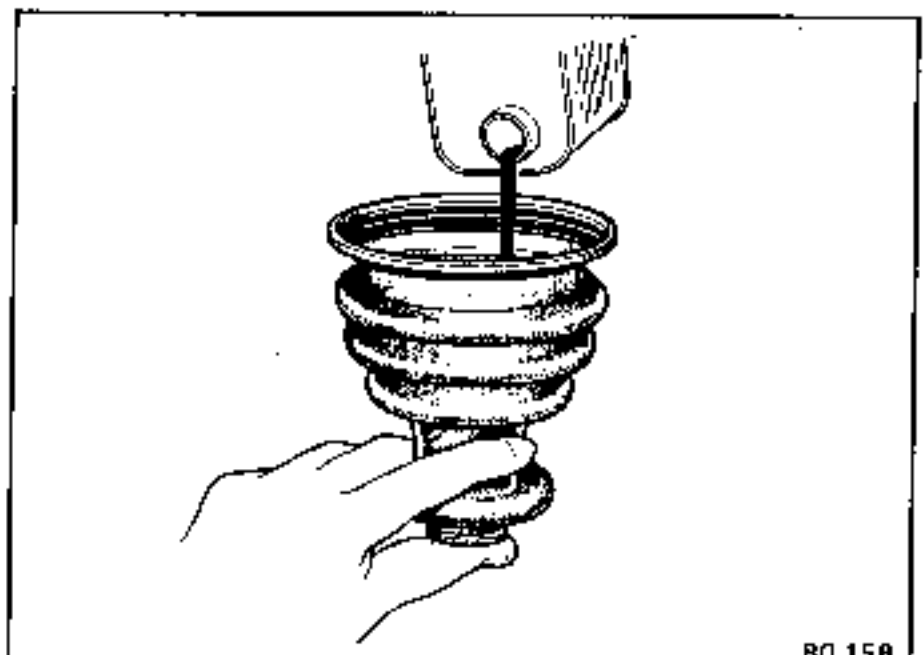


It is essential to ensure that there are no sharp edges on the shaft yoke (A) (lightly rub them down with emery cloth if necessary).

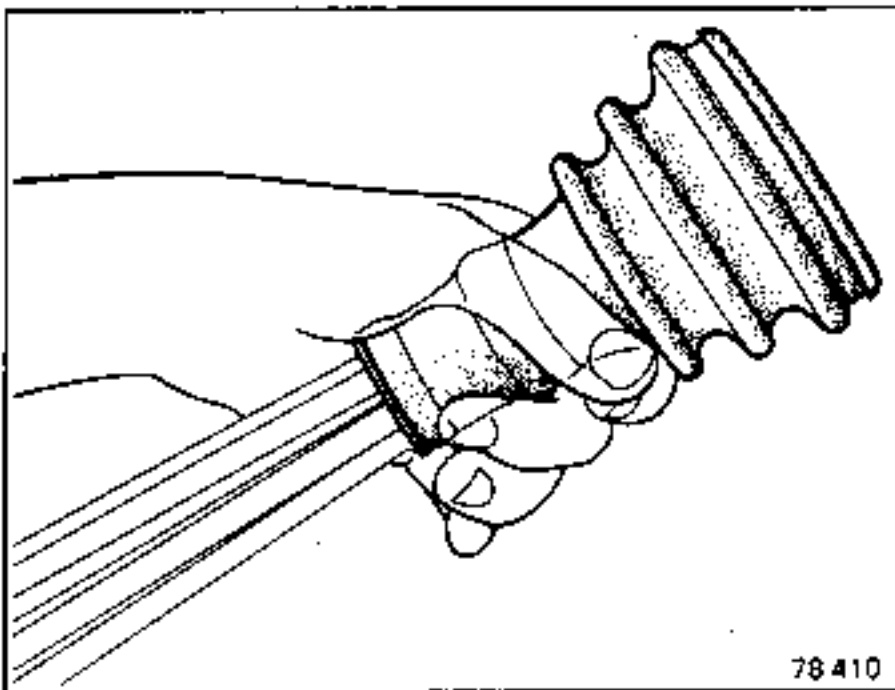
Thoroughly lubricate the following with large quantities of clean engine oil :

- the entire tool (arms and location),
- the inside of the bellows, especially round its collar.

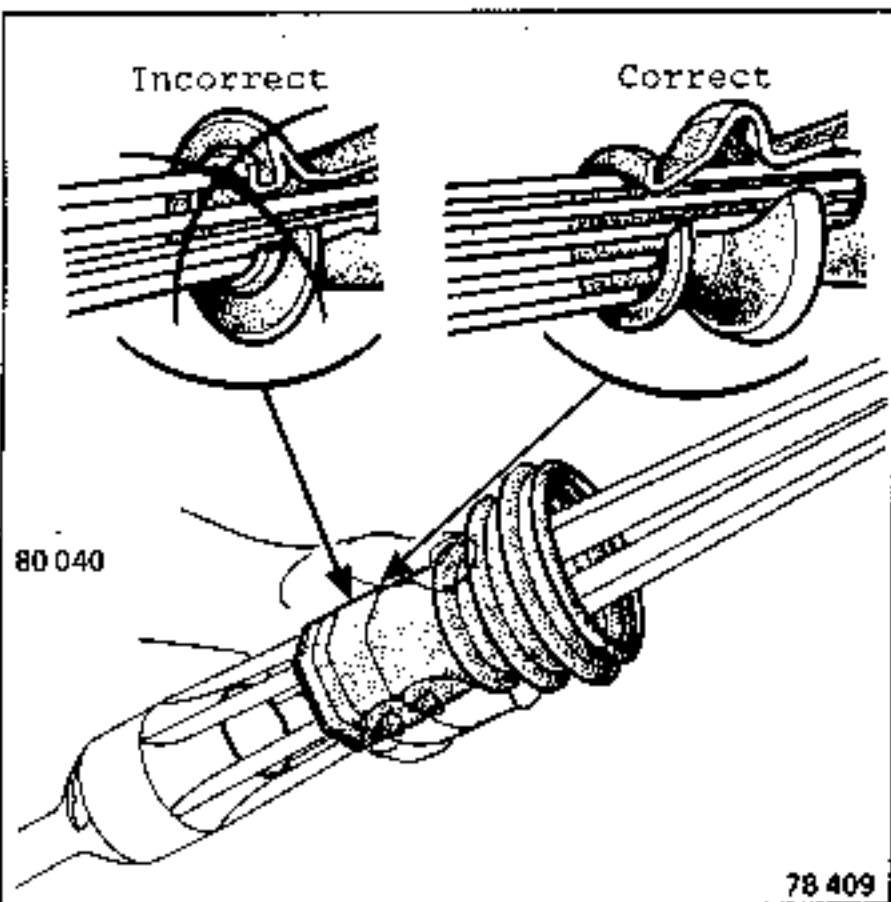
To do this, plug the collar end, pour oil inside the bellows and swill it over the entire inside surface.



Place the bellows on the end of the tool.



Place a clean cloth round one hand and place this over the bellows to extend, fully, the first fold.



Press one hip against the side of the vice.

Place the other hand round the first and pull down the bellows taking care not to turn in its first fold.

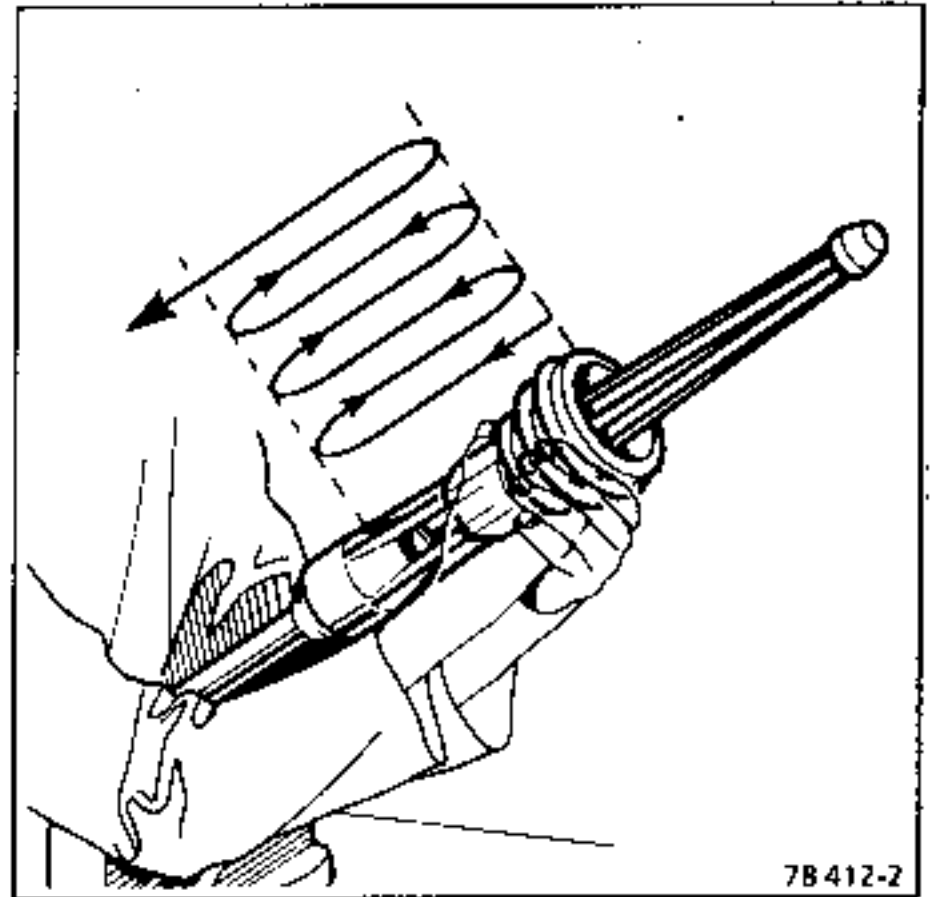
Bring the bellows as near as possible to the cylindrical part of the tool and allow it to return to half way down.

Repeat this operation a number of times (a maximum of 5 times) to soften up the rubber of the bellows (do not hesitate to relubricate the arms of the tool during this operation).

Joint GE86

Joint GE76

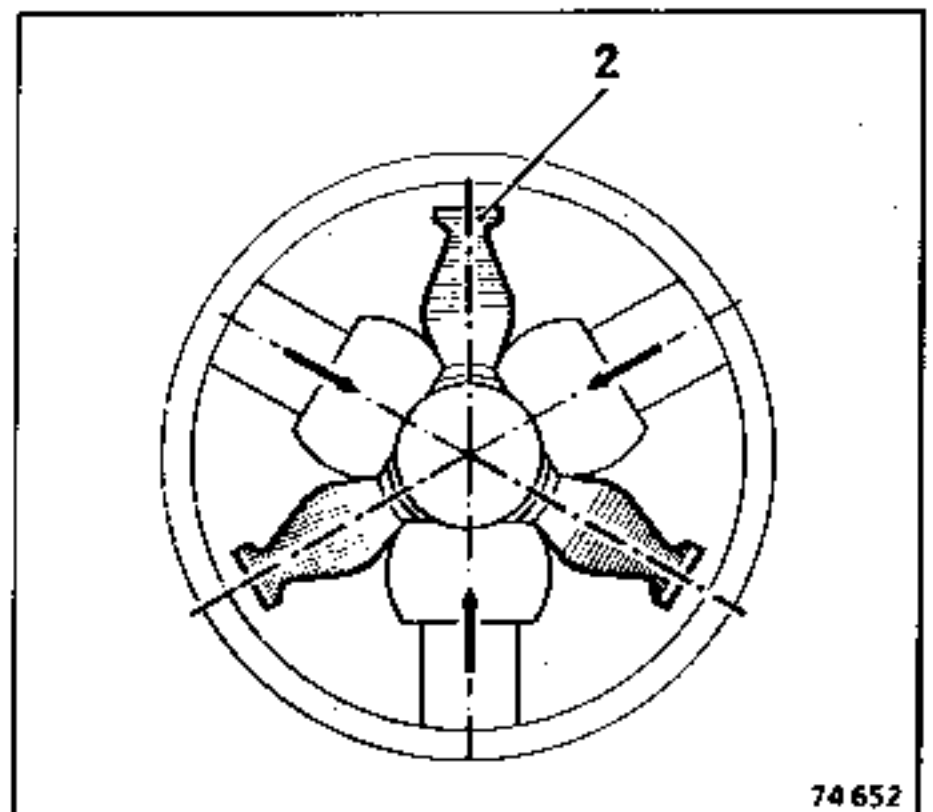
When the bellows can be felt to be sliding more easily, pass it over the cylindrical part of the tool in one movement.



Place the spring and thrust ball joint in the spider.

Pull the rollers in towards the centre.

Place the retaining star (2) so that each of its arms falls exactly on the centre-lines between the shafts on the spider.

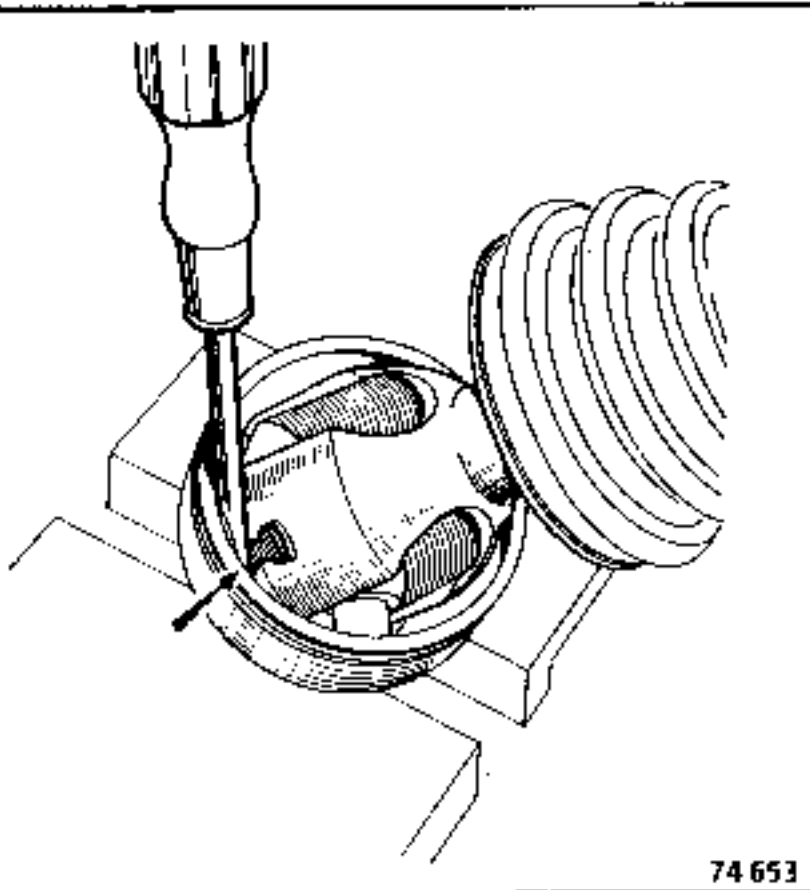


Joint GE86

Joint GE76

Engage the shaft yoke into the cup yoke.

Tilt the shaft to engage one arm of the retaining star into a slot in the shaft yoke and press down on it to locate it correctly.



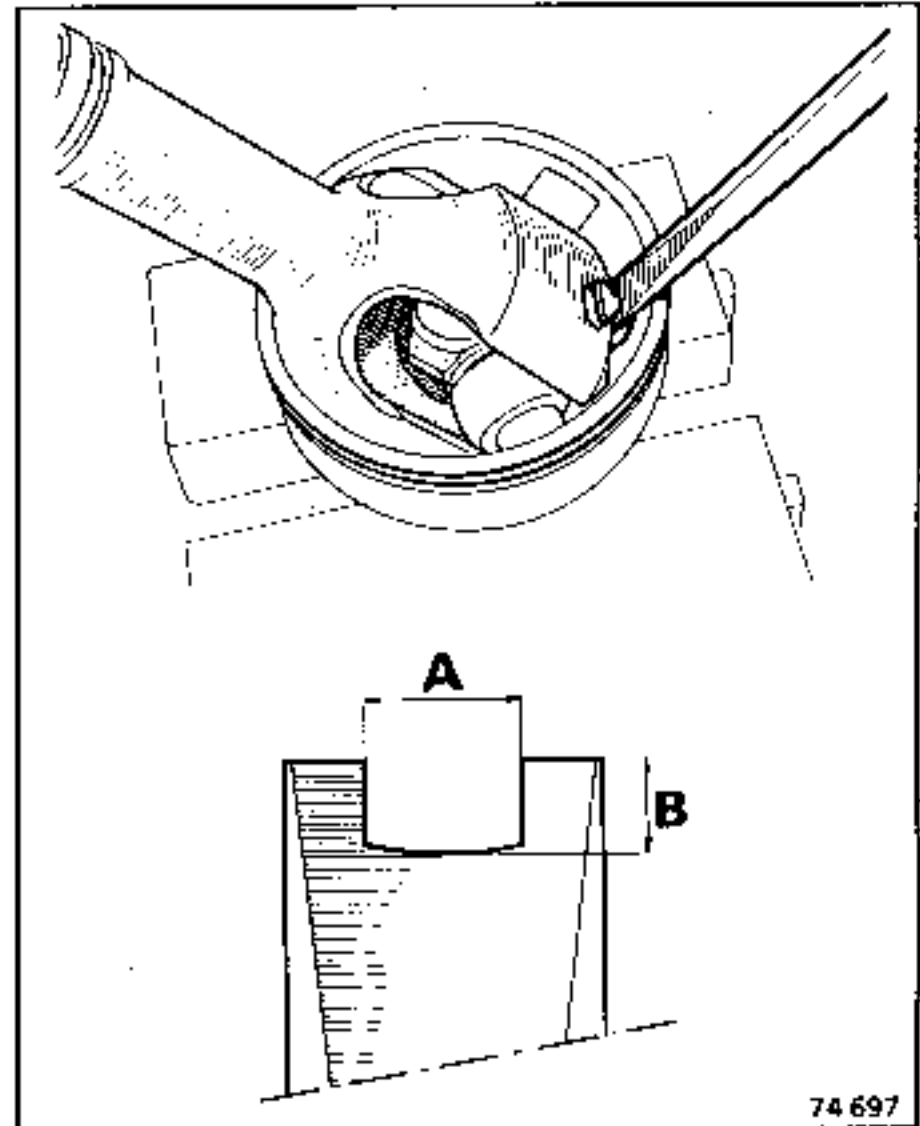
74 653

Fitting the other two arms of the retaining star will be made easier by using, for example, a screwdriver the end of which has been modified as shown in the illustration.

A = 5 mm      B = 3 mm

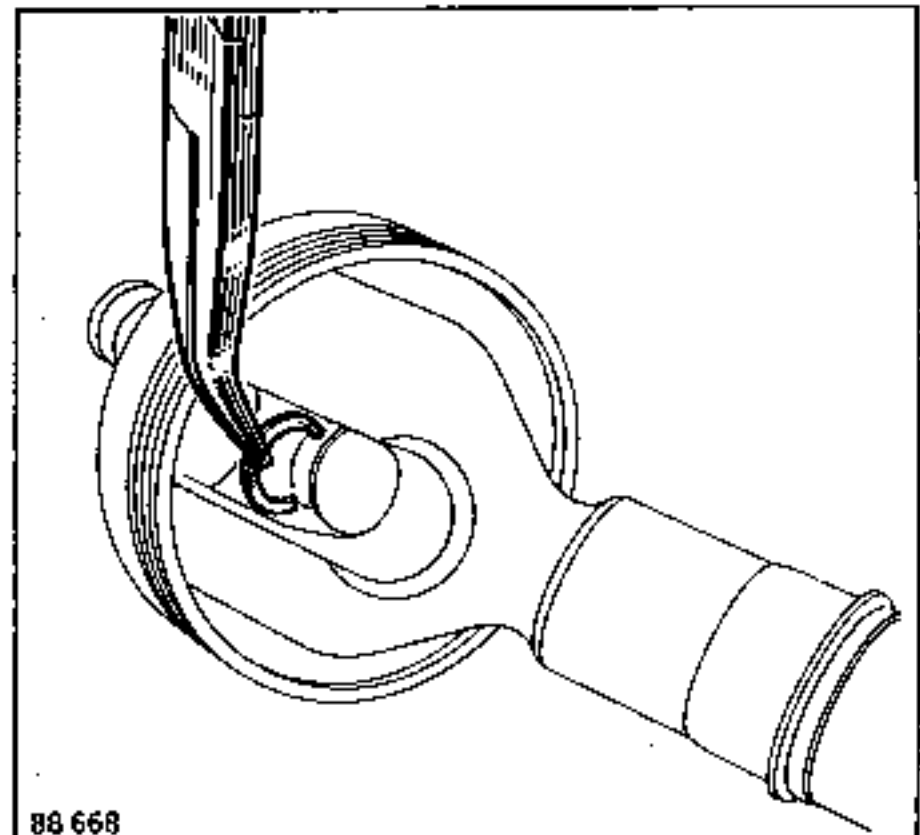
Ensure that the arms of the retaining star are correctly positioned in their locations.

Tilt the shaft in the same plane as one of the arms of the retaining star, the ball joint will lift under the effect of the spring.



74 697

Insert the shim under the head of the ball joint (it is not to project outside the head of the joint).



88 668

Joint GE86

Joint GE76

Check that the joint operates correctly, by moving it by hand.

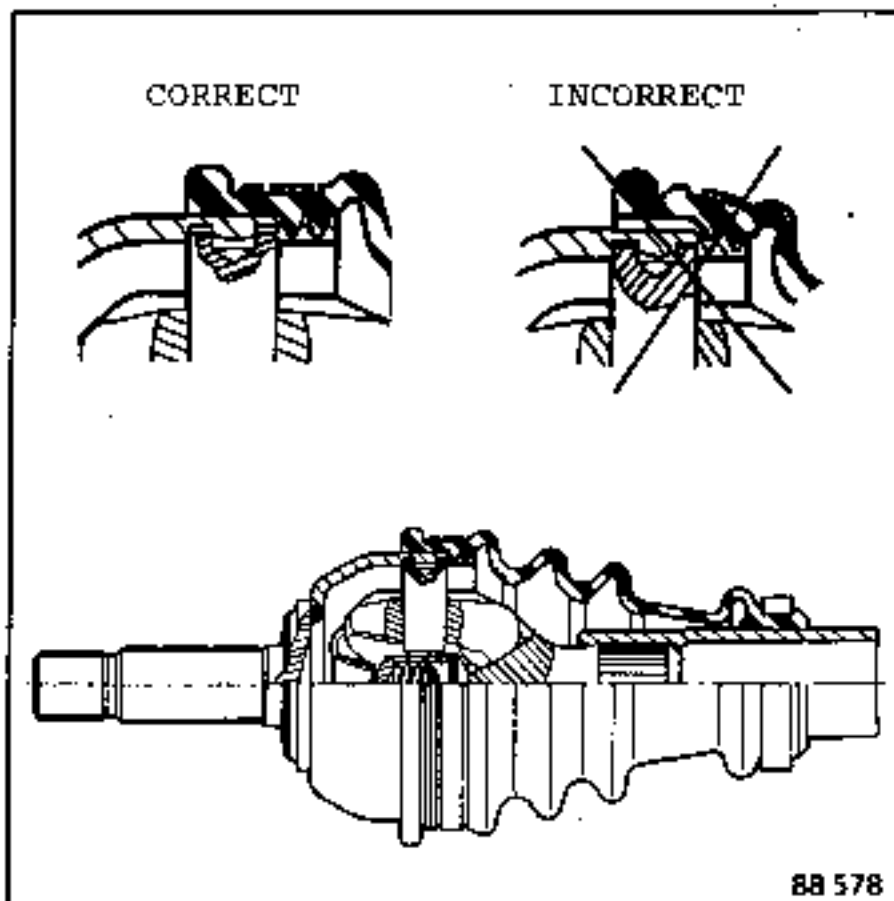
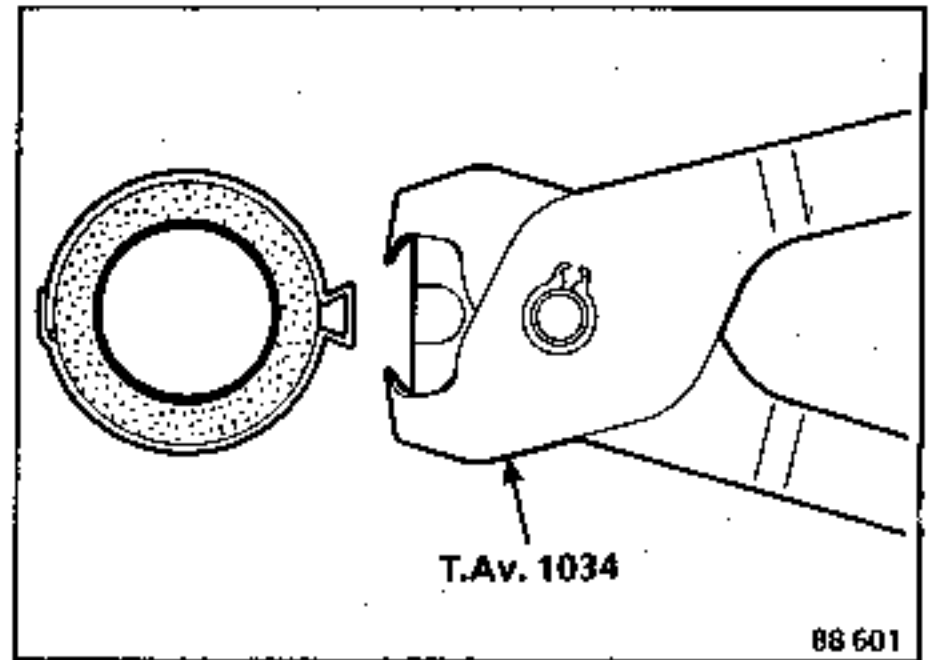
There should be no stiff points.

Distribute the metered quantity of grease into the bellows and into the cup yoke.

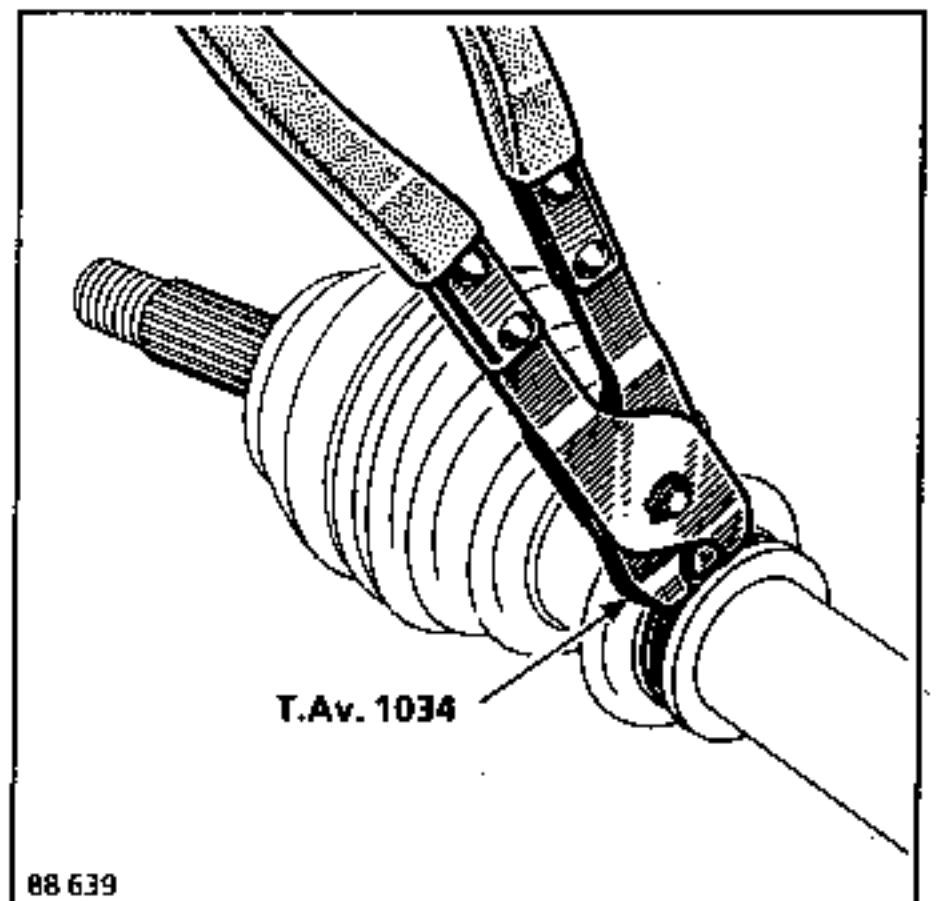
NOTE : it is essential to use only the quantity of grease described in the consumables section.

Position the two beads on the bellows in the grooves in the cup yoke, with it fully pulled down on to the drive shaft tube.

Fit the clips and tighten them with tool T.Av. 1034

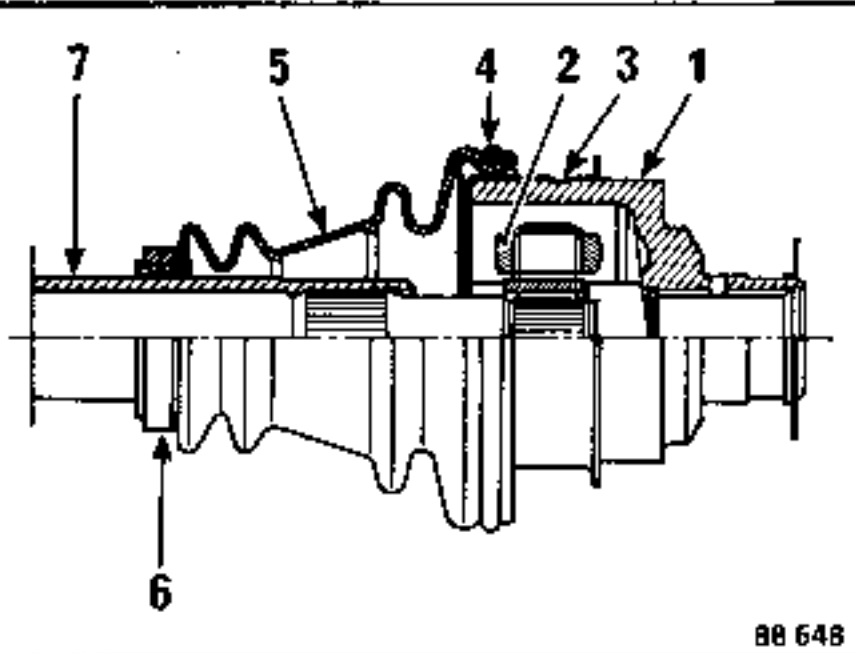


Insert a rod, with no sharp edges, and the end of which has been rounded between the bellows and the tube to ensure that the amount of air in the bellows is correct.



Joint GI62

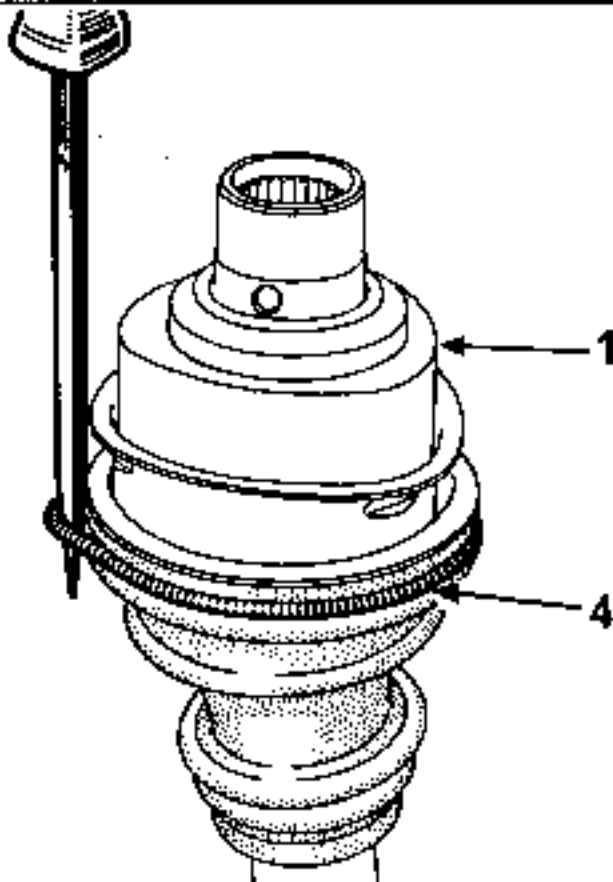
- 1 Yoke
- 2 Spider
- 3 Sheet metal cover
- 4 Retaining spring
- 5 Rubber bellows
- 6 Retaining ring
- 7 Drive shaft



88 648

#### DISMANTLING

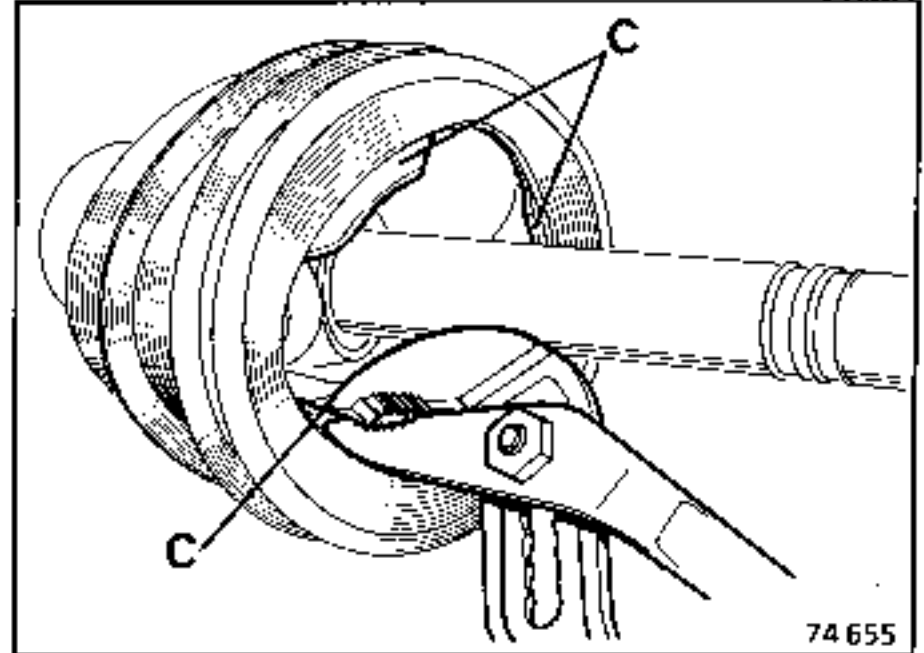
Free the spring (4) that secures the bellows to the yoke (1).



90 386

Cut the bellows over its entire length and remove as much grease as possible.

Lift each end of the locating plate (C) with a pair of pliers and remove the yoke.

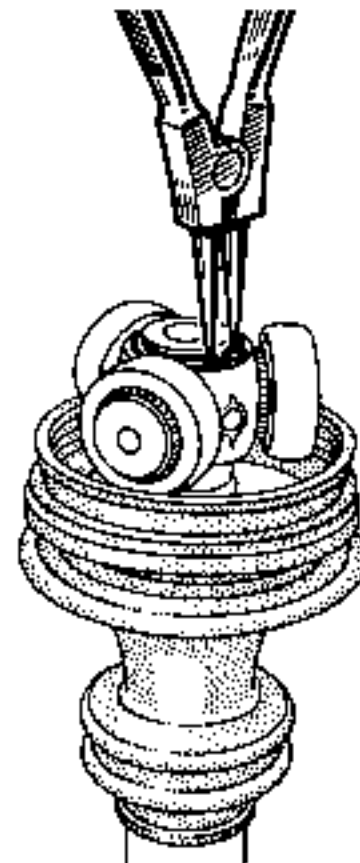


74 655

Do not remove the rollers from their respective trunnions because these rollers and needle bearings are matched and should never be intermixed.

Never use thinners to clean the component parts.

When applicable, remove the circlip.

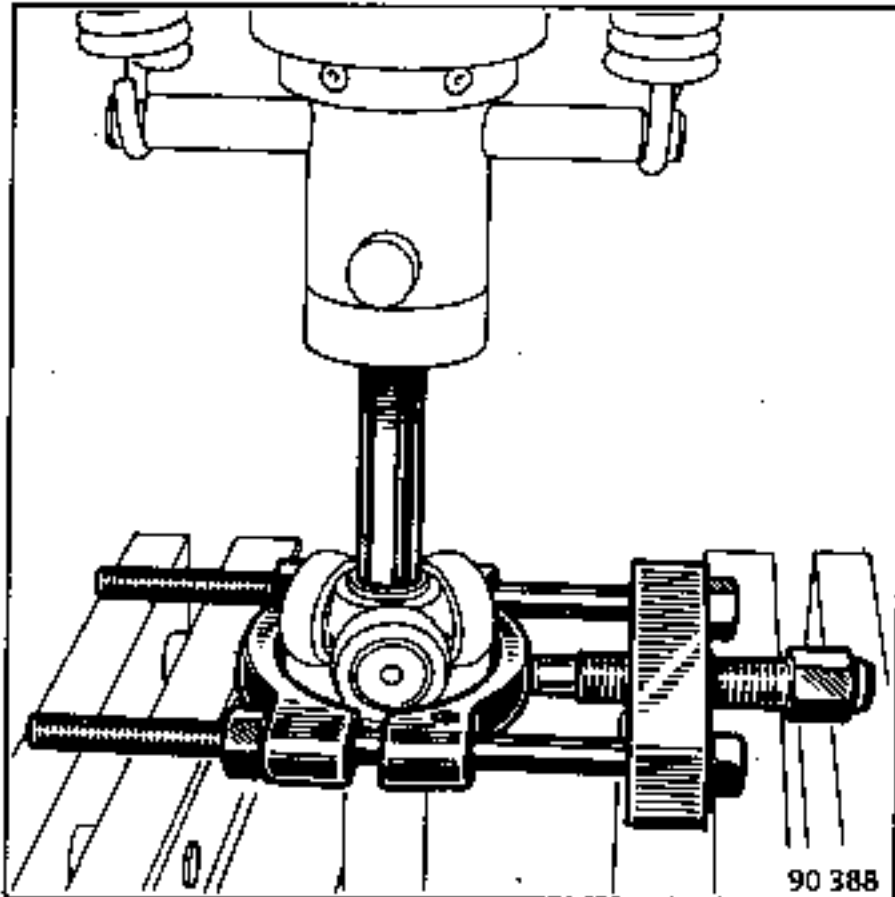


90 387



Extract the spider from the shaft, taking the load on an extractor.

Joint GI62

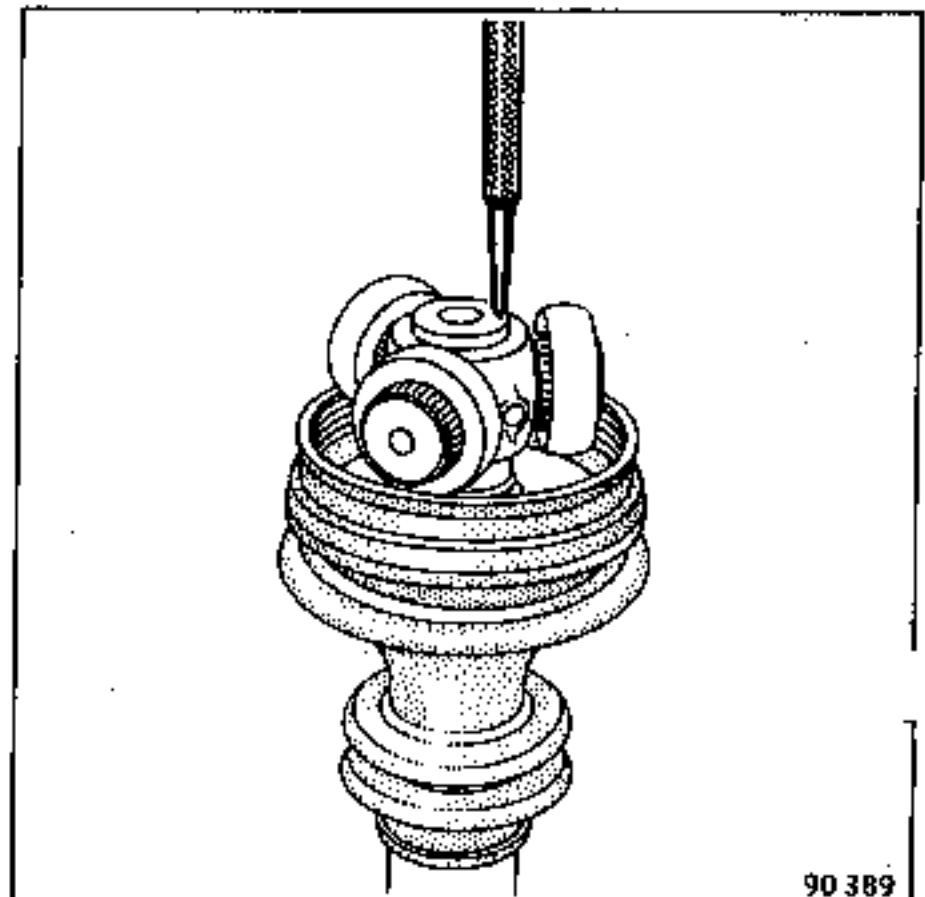


90 388

#### REASSEMBLING

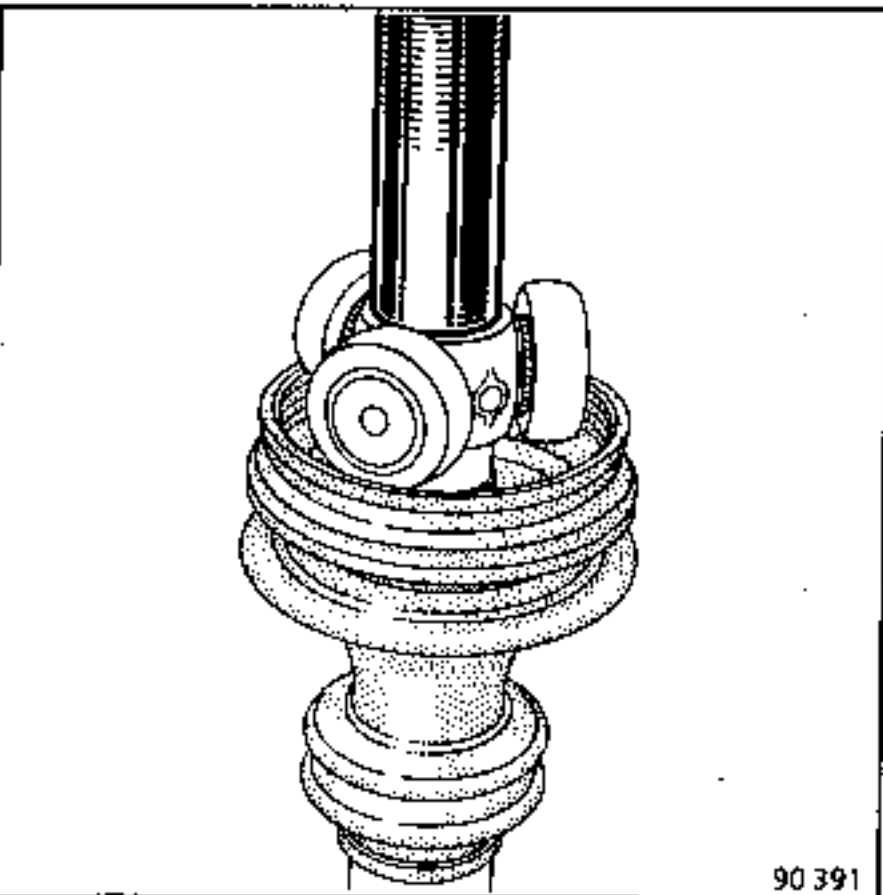
Lubricate the drive shaft and slide on the new retaining ring and bellows.

Fit the spider on to the splined shaft.



90 389

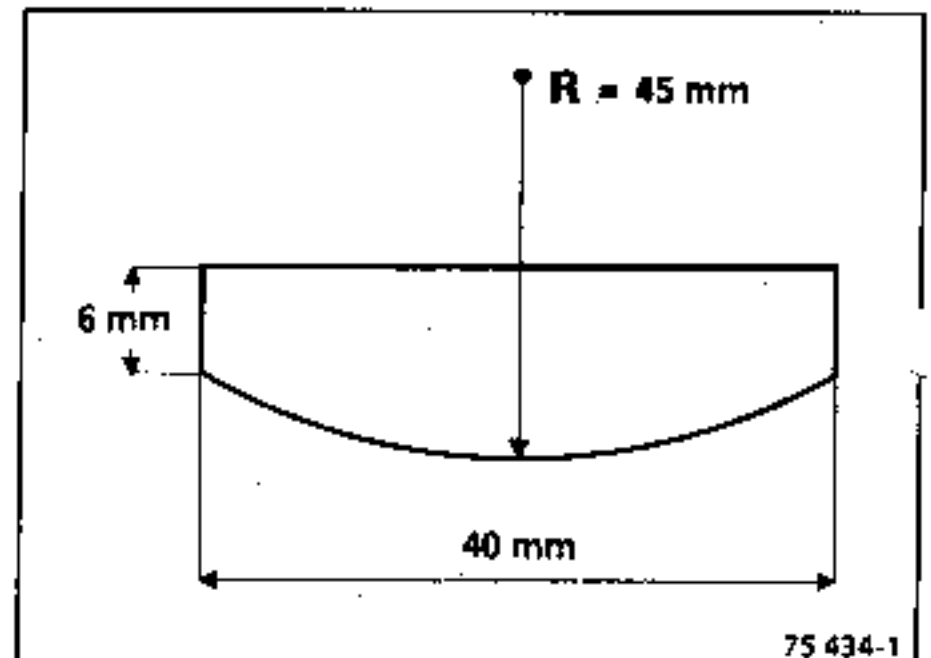
Place a shim (B) 2.5 mm thick, made to the dimensions shown in this drawing, between the locating plate and the yoke.



90 391

Refit the retaining circlip or secure the assembly by peening the metal on to the drive shaft splines at three points 120° from one another.

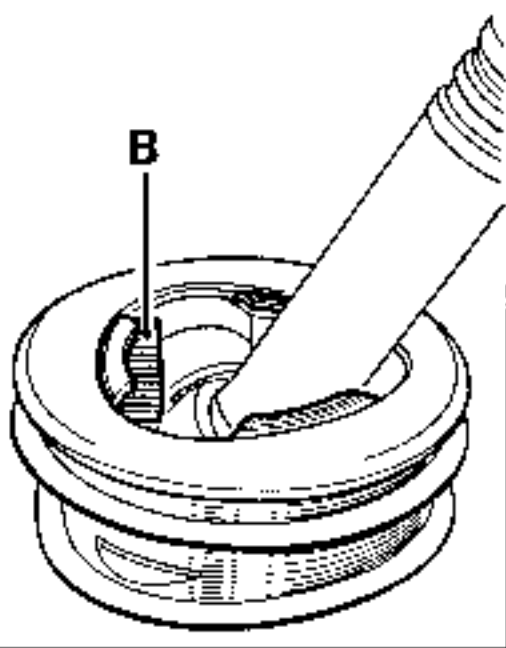
NOTE : it is essential to use the correct quantity of grease as specified in the "Consumables" section.



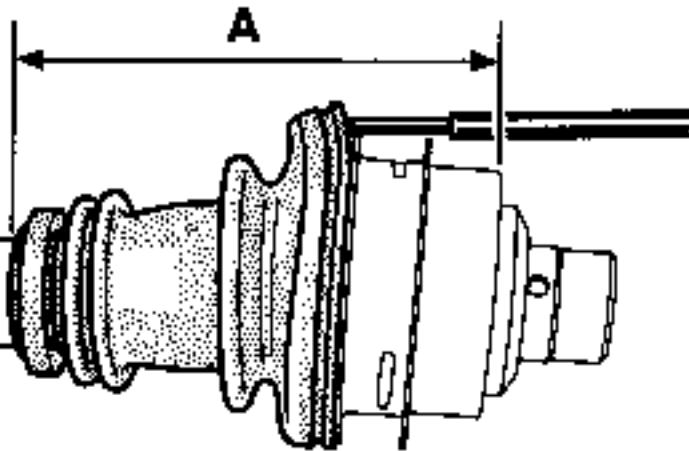
75 434-1

Joint GI62

Using a bronze drift, carefully return the retaining plate to its original position and take out the shim (B).

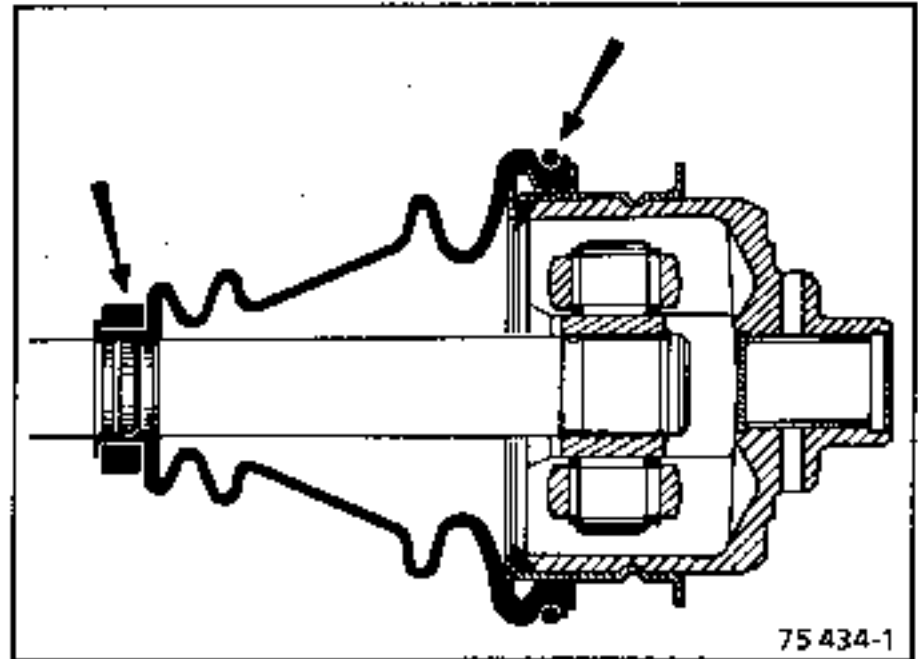


Place the lips of the bellows in the grooves on the drive shaft and on the sheet metal cover.



Insert a smooth rod the ends of which have been rounded off between the bellows and the yoke to ensure that the volume of air inside the joint is correct.

Extend or push in the joint to obtain dimension  $A = 153.5 \pm 1$  mm (the dimension is taken between the end of the bellows and the machined face on the largest diameter on the yoke).



With the joint in this position, remove the rod.

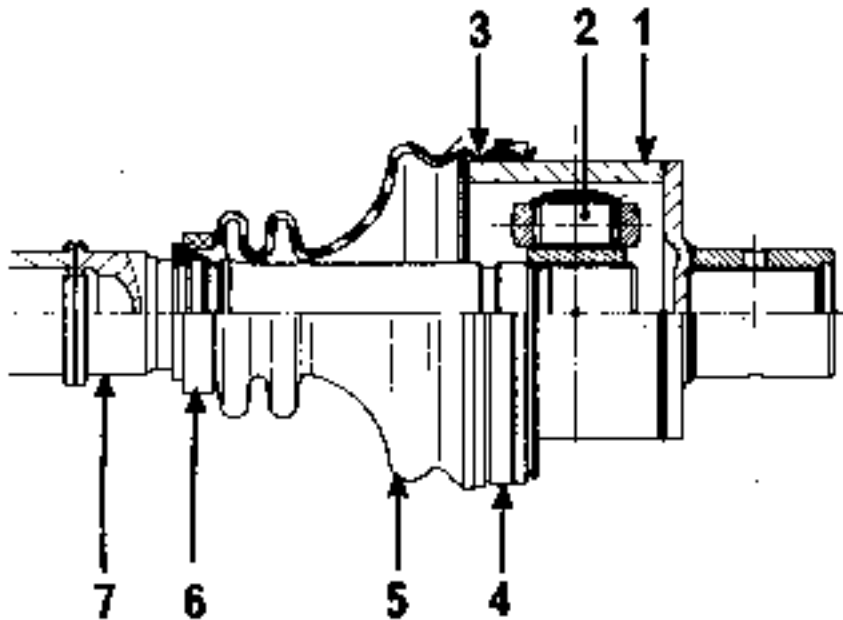
Fit the bellows retaining spring and retaining ring :

- the spring is not to be stretched,
- its coils are to remain in contact with one another after fitting.

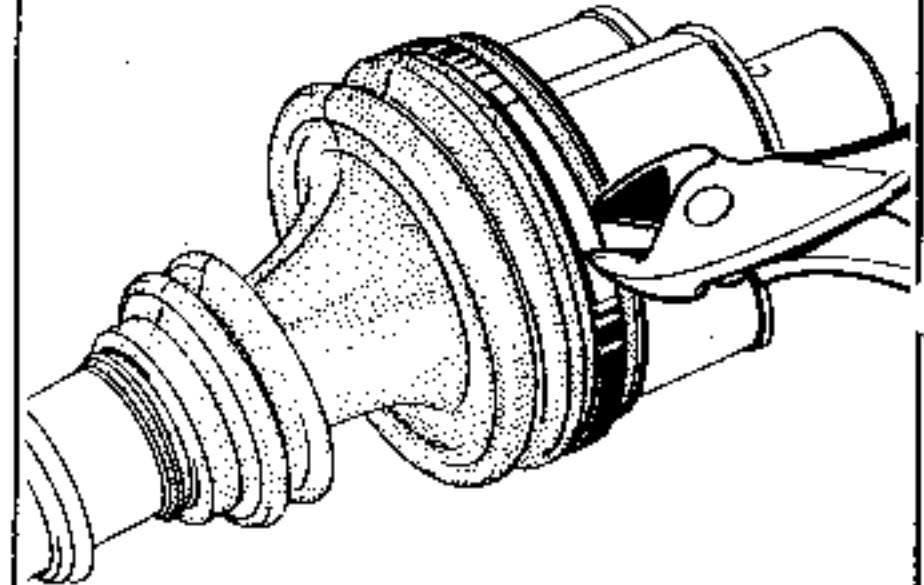
JointRC490

ESSENTIAL SPECIAL TOOLS

**T.Av. 1034** Pliers for crimping the drive shaft clips



89 134



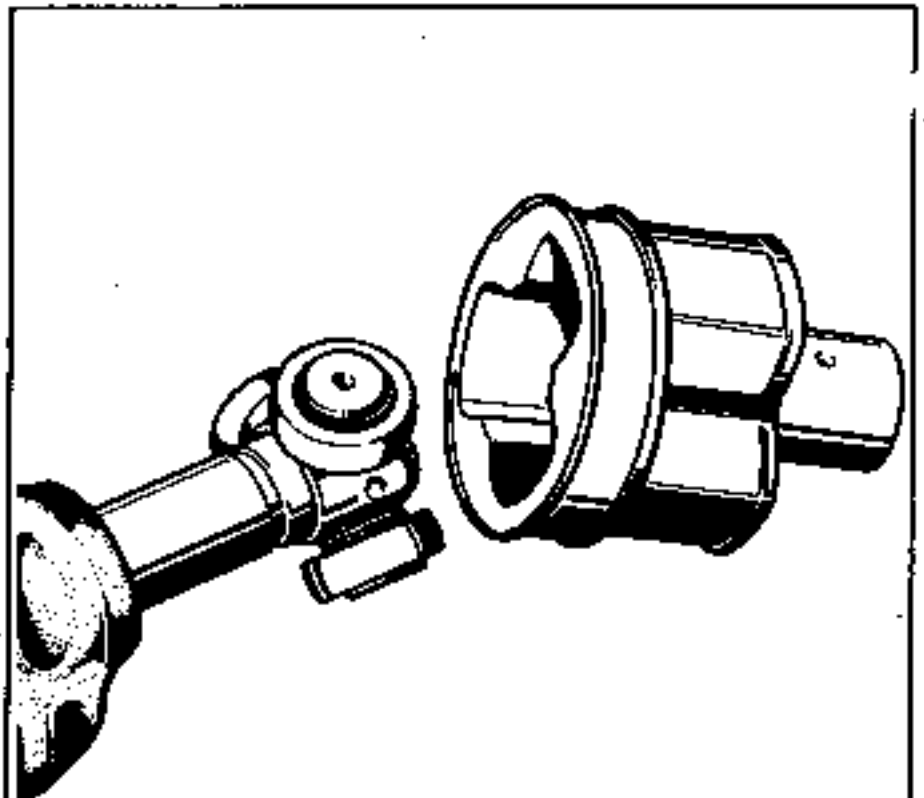
89 143

- the bellows over its entire length.  
Remove as much grease as possible.  
Remove the yoke.

DISMANTLING

Cut :

- the existing retaining clip, taking care not to damage the sheet metal cover,



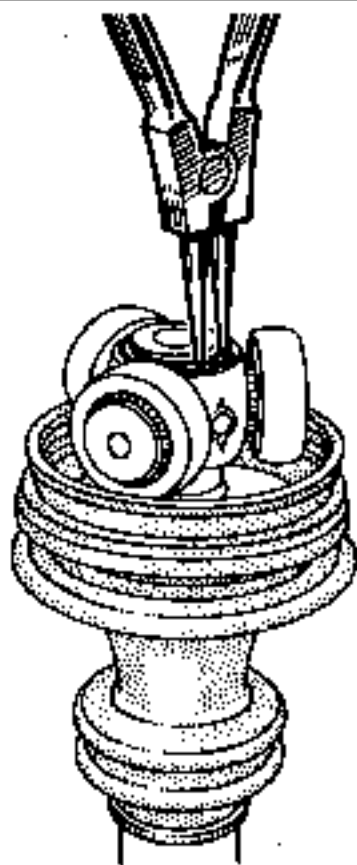
89 145

JointRC490

NOTE : as the yoke has no locking tab, it can be removed without forcing it.

Do not remove the rollers from their respective trunnions because the rollers and needle bearings are matched and must never be intermixed.

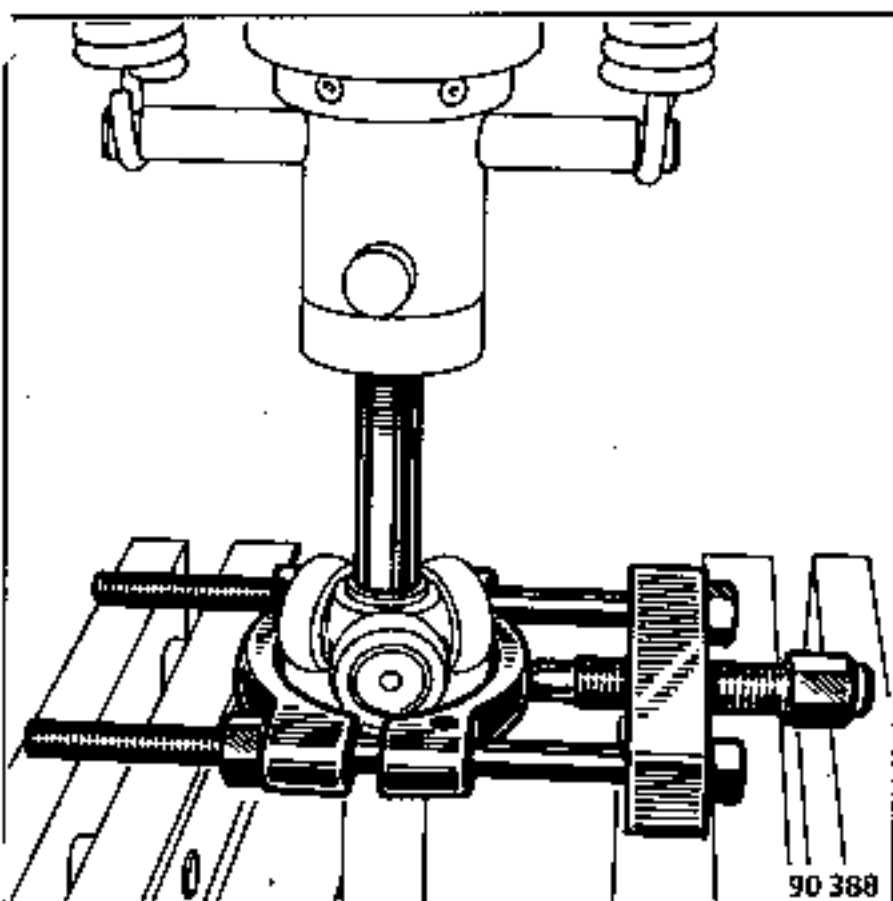
Remove the circlip (on certain models).



90 387

Never use thinners for cleaning the component parts.

Extract the spider, on the press, taking the load on an extractor of the FACOM U53G type.

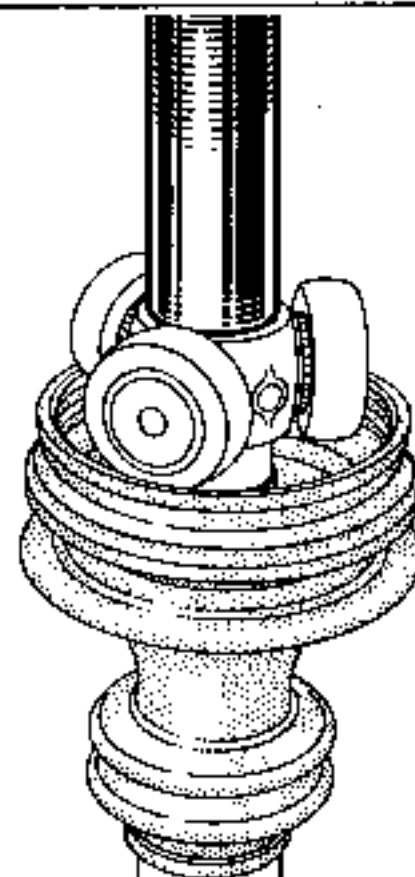


90 388

#### REASSEMBLY

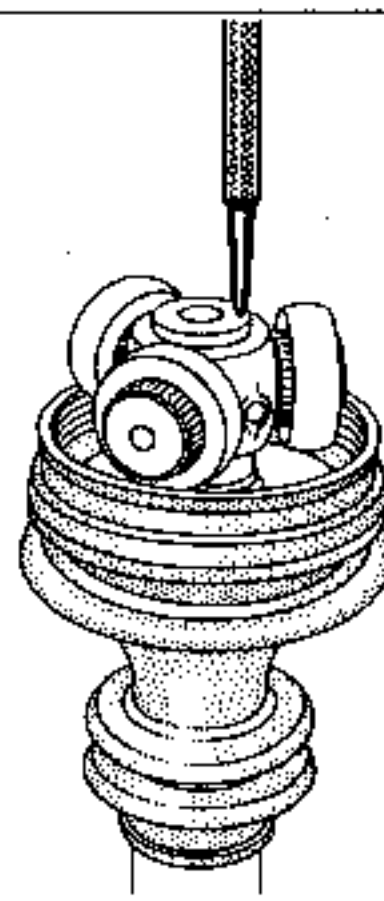
Lubricate the drive shaft and slide on the new retaining ring and bellows.

Fit the spider to the splined shaft.



90 391

Refit the retaining circlip or secure the spider by peening its metal on to the splines of the drive shaft at three points 120° apart.



90 389

JointRC49C

Slide on the yoke and engage it on the spider.

Spread the pre-measured quantity of grease inside the bellows and inside the yoke.

NOTE : it is essential to use only the quantity of grease specified in the consumables section.

Position the lips on the bellows in the grooves in the drive shaft and the cover.

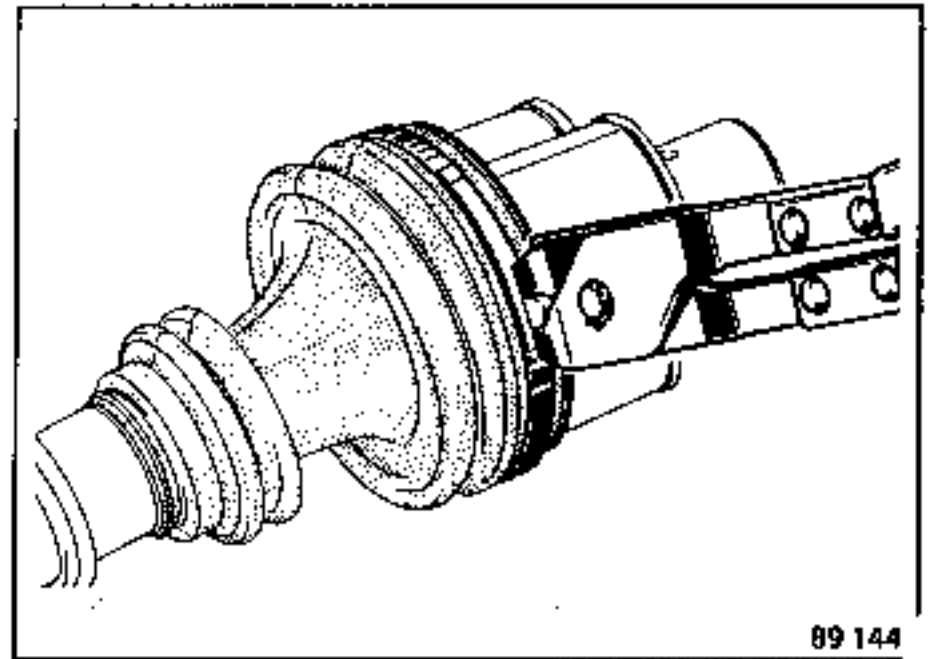
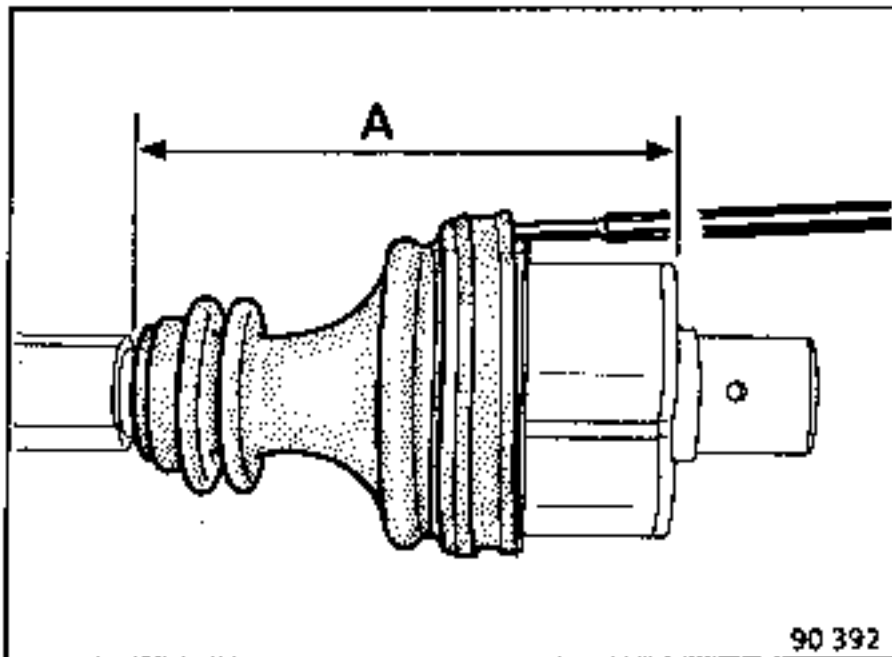
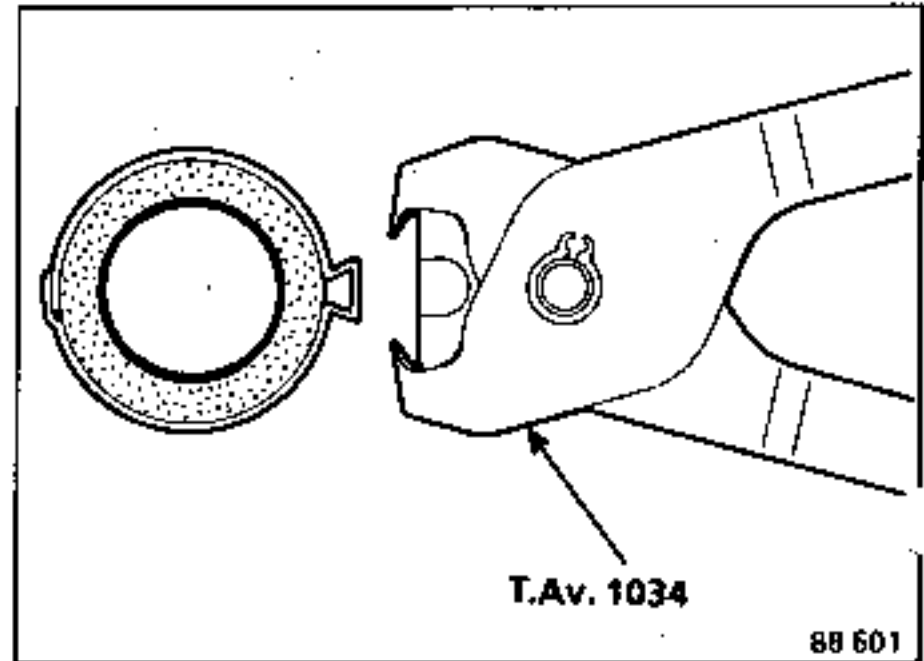
Insert a smooth rod, the end of which has been rounded, between the bellows and the yoke to ensure that the joint contains the correct quantity of air.

Extend or bring together the joint to obtain a dimension  $A = 156 \pm 1$  mm (dimension taken from the end of the bellows to the machined face on the largest diameter of the yoke).

With the joint in this position, remove the rod.

Fit :

- the retaining ring to the bellows,
- the retaining clip, crimping it with tool T.Av.1034.



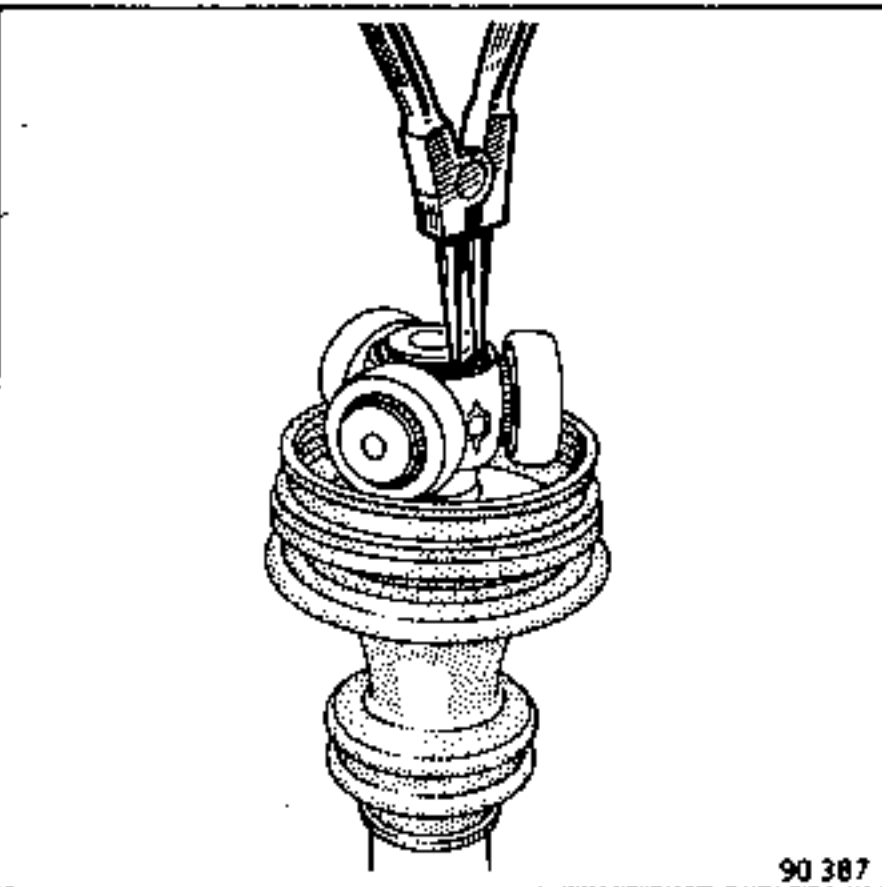
ESSENTIAL SPECIAL TOOLS

**T.Av.944** Plug for fitting the bearing  
to the shaft

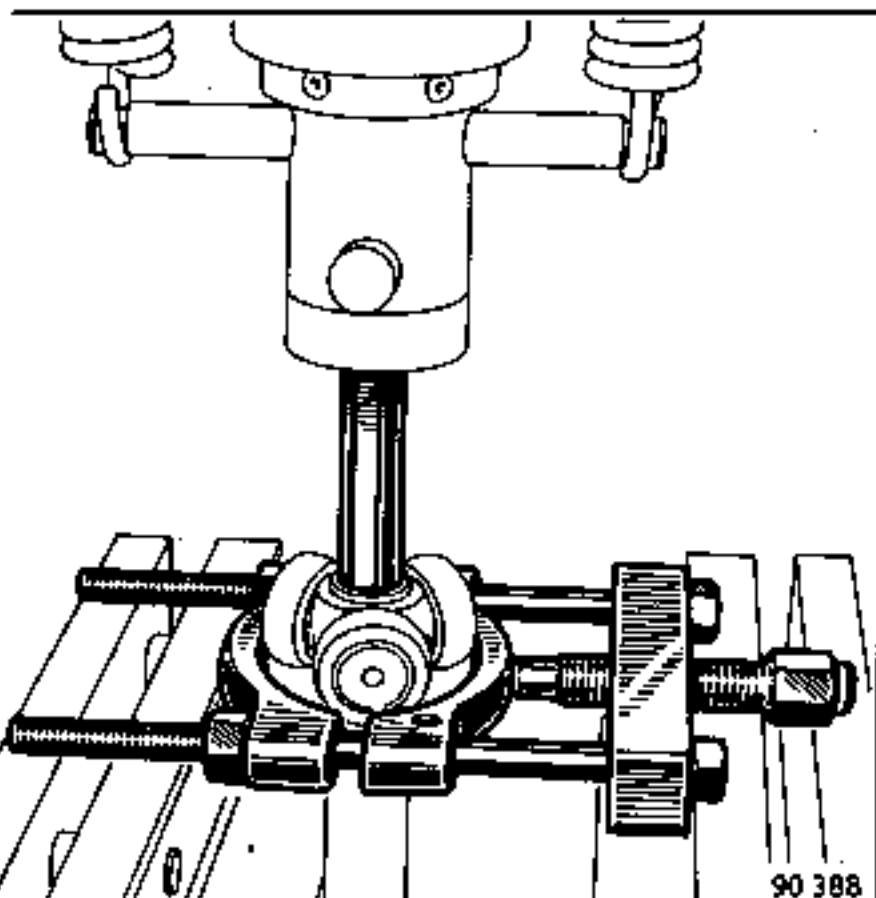
REMOVING

Never use thinners to clean the component parts.

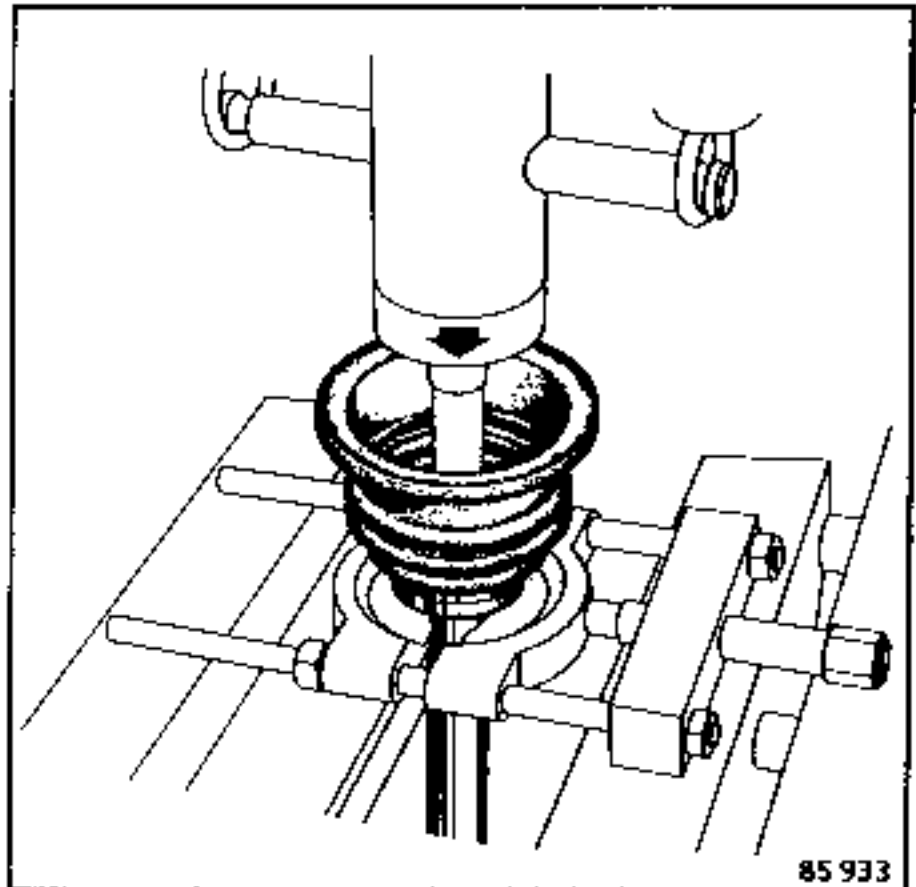
If there is one, remove the circlip.



Extract the spider, on the press, taking the load on an extractor type FACOM U53G.



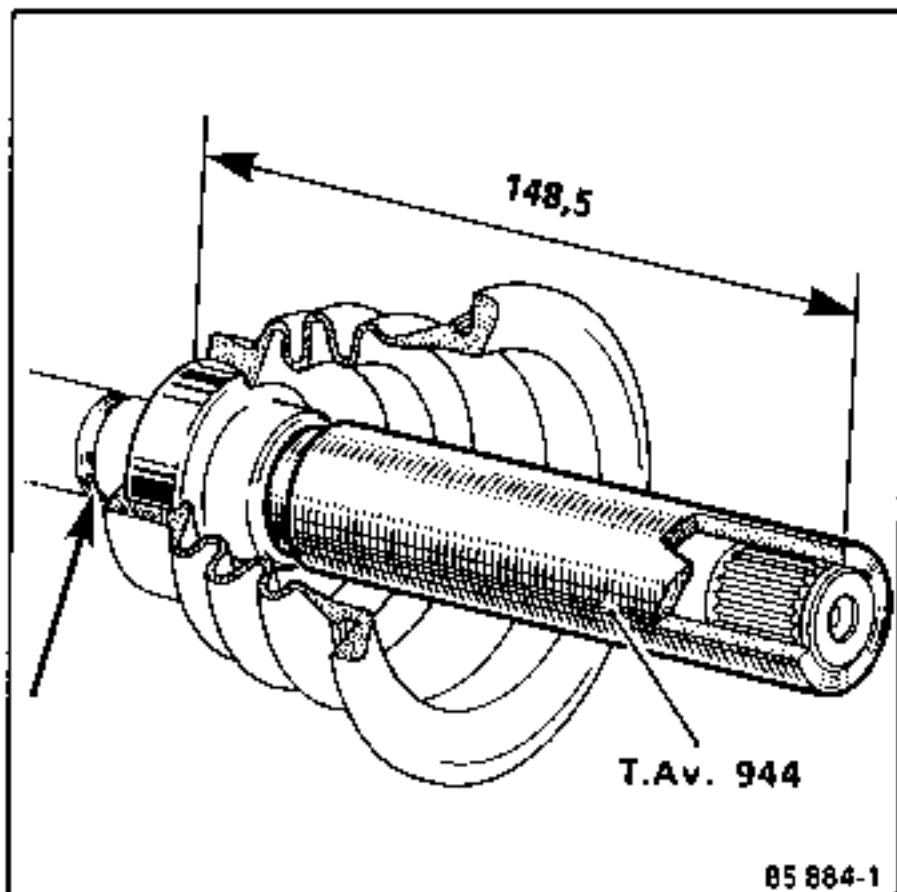
Remove the bellows and bearing assembly in the same way as the spider.



# REFITTING

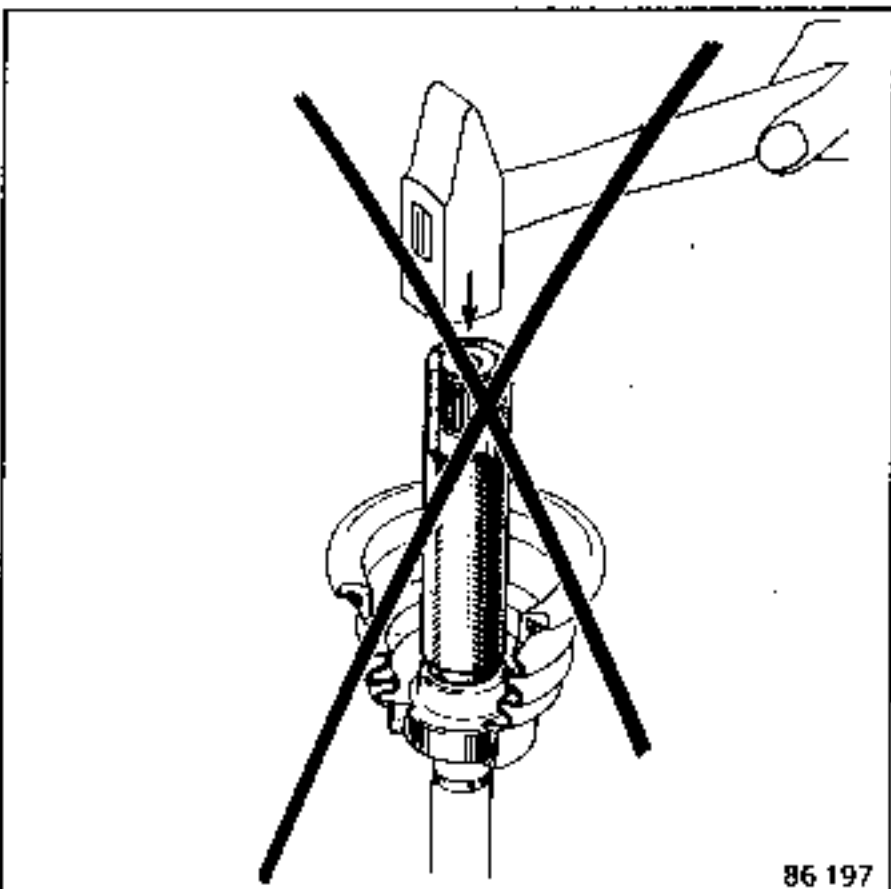
To be in the correct position on the shaft, the bearing must be pushed on until a dimension  $L = 148.5$  is obtained between the rear face of the bearing and the end of the shaft.

This dimension is obtained by pushing the bearing on with tool T.Av.944 until the end of the tool is flush with the end of

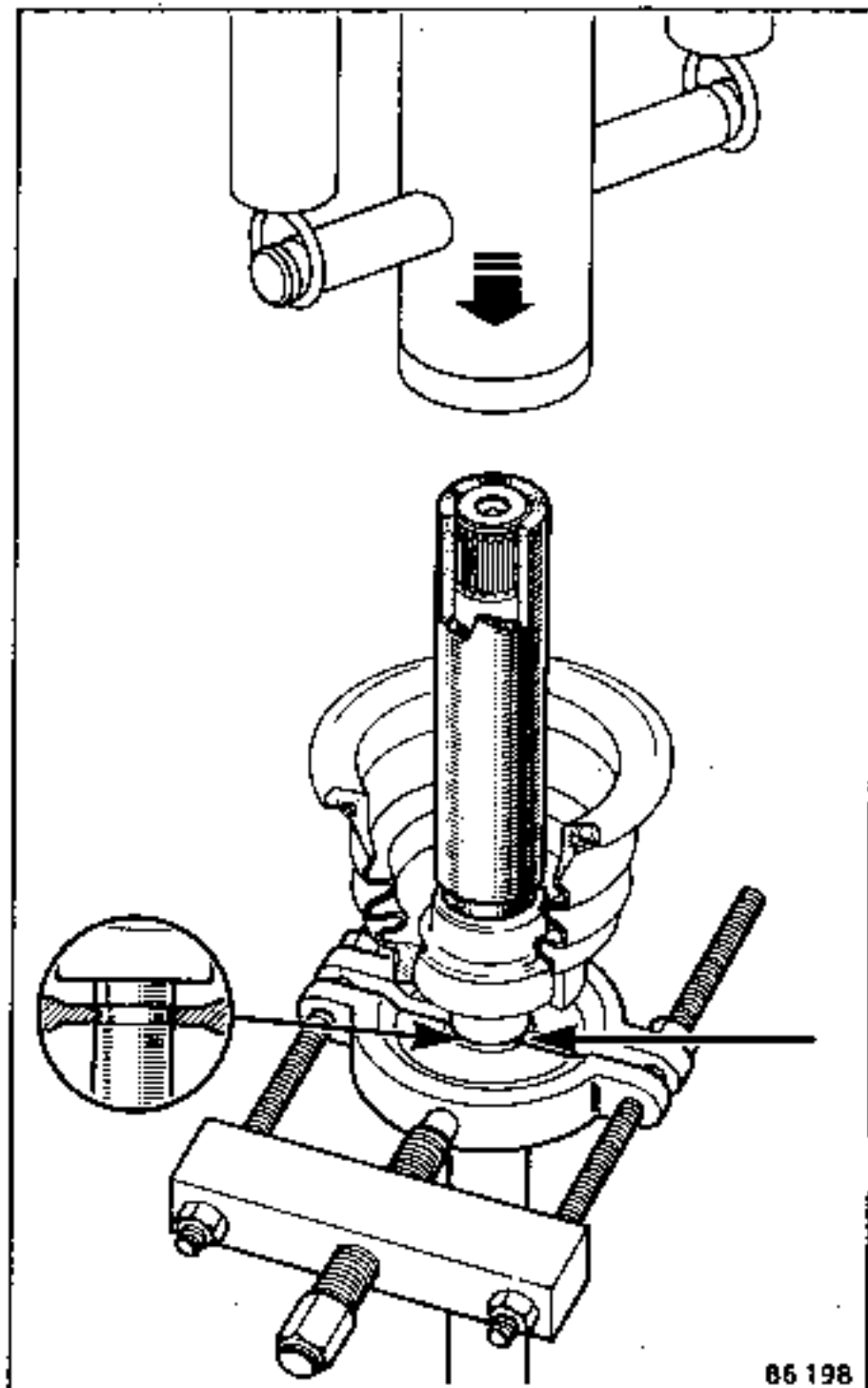


the shaft.

To avoid distorting the bearing, which carries a lip seal, distortion which could cause leakage, the bearing is never to be fitted with a hammer, but on the press, so that the pressure can be applied gradually



Furthermore, the drive shaft is to be mounted on the press, gripping it at groove (G) with a tool of the Facon U53G type to avoid damage to the joint at the wheel end.



Fit the spider to the splined shaft and refit the retaining circlip (when applicable).