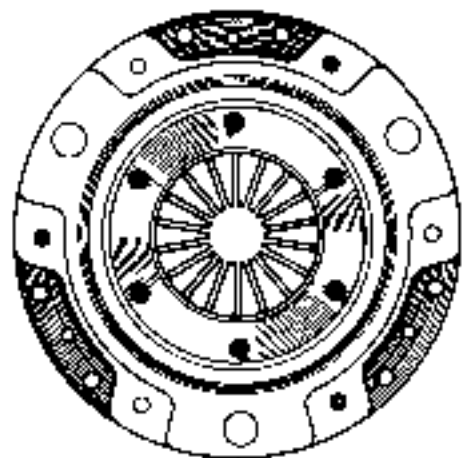
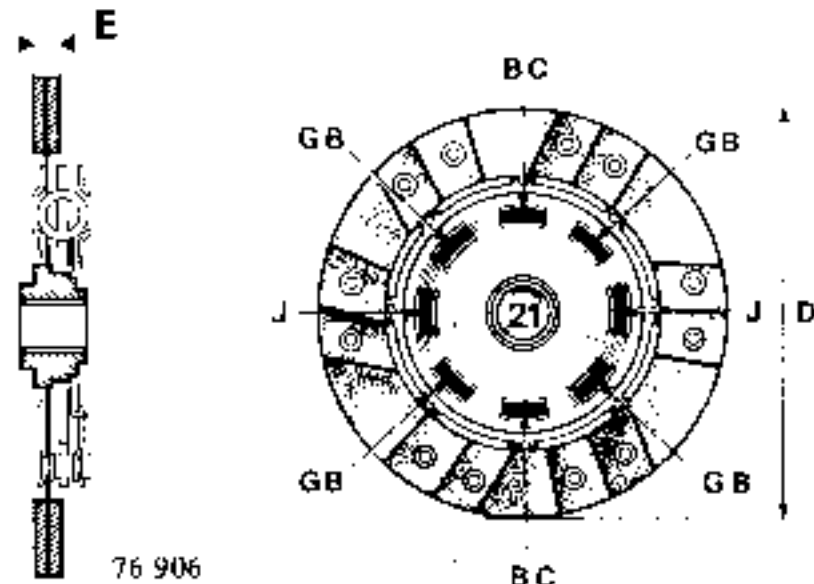
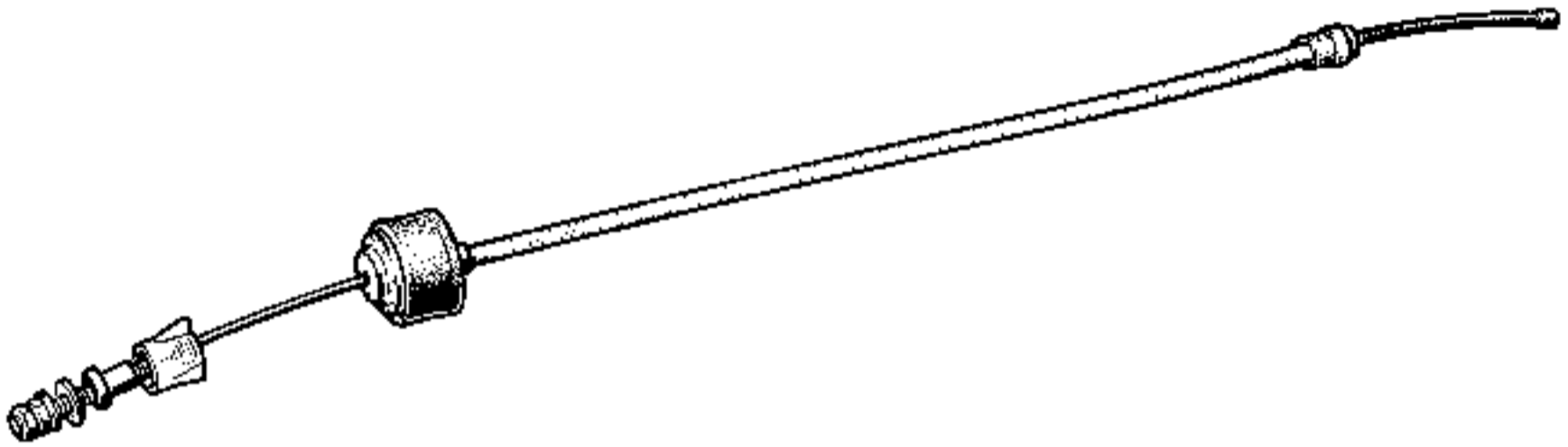


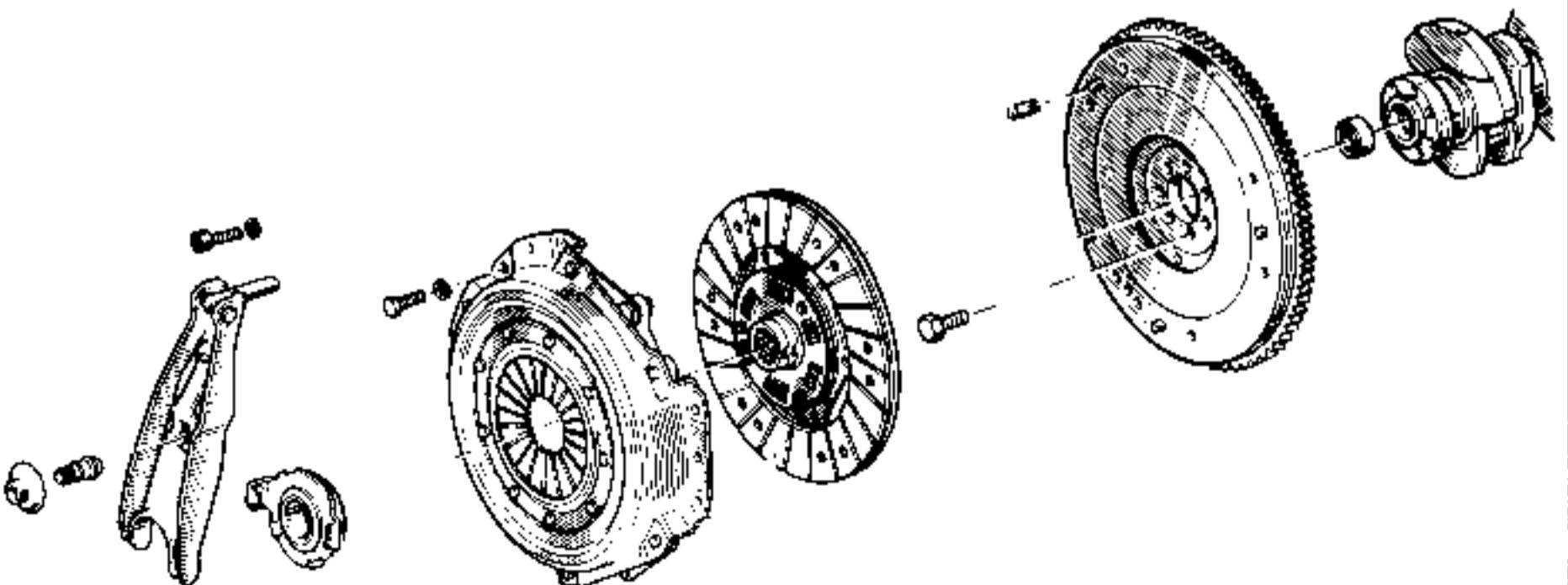
- Single disc clutch operating dry.
- Diaphragm spring pressure plate.
- Friction disc with elastic hub.
- Self-centring ball-type withdrawal pad in constant contact.
- Cable-operated control.

Vehicle type	CLUTCH UNIT	DISC
<p>J112 S112 J116 J117</p>	 <p>215 CP 475</p>	 <p>76 906</p> <p>21 splines E = 6,6 mm D = 215 mm</p> <p>BC = Light blue GB = Blue-grey J = Yellow</p> <p>82 168</p>
<p>J115 S115</p>	<p>76 907</p>	<p>21 splines E = 6,8 mm D = 215 mm</p> <p>J = Yellow B = Azure blue G = Grey</p>

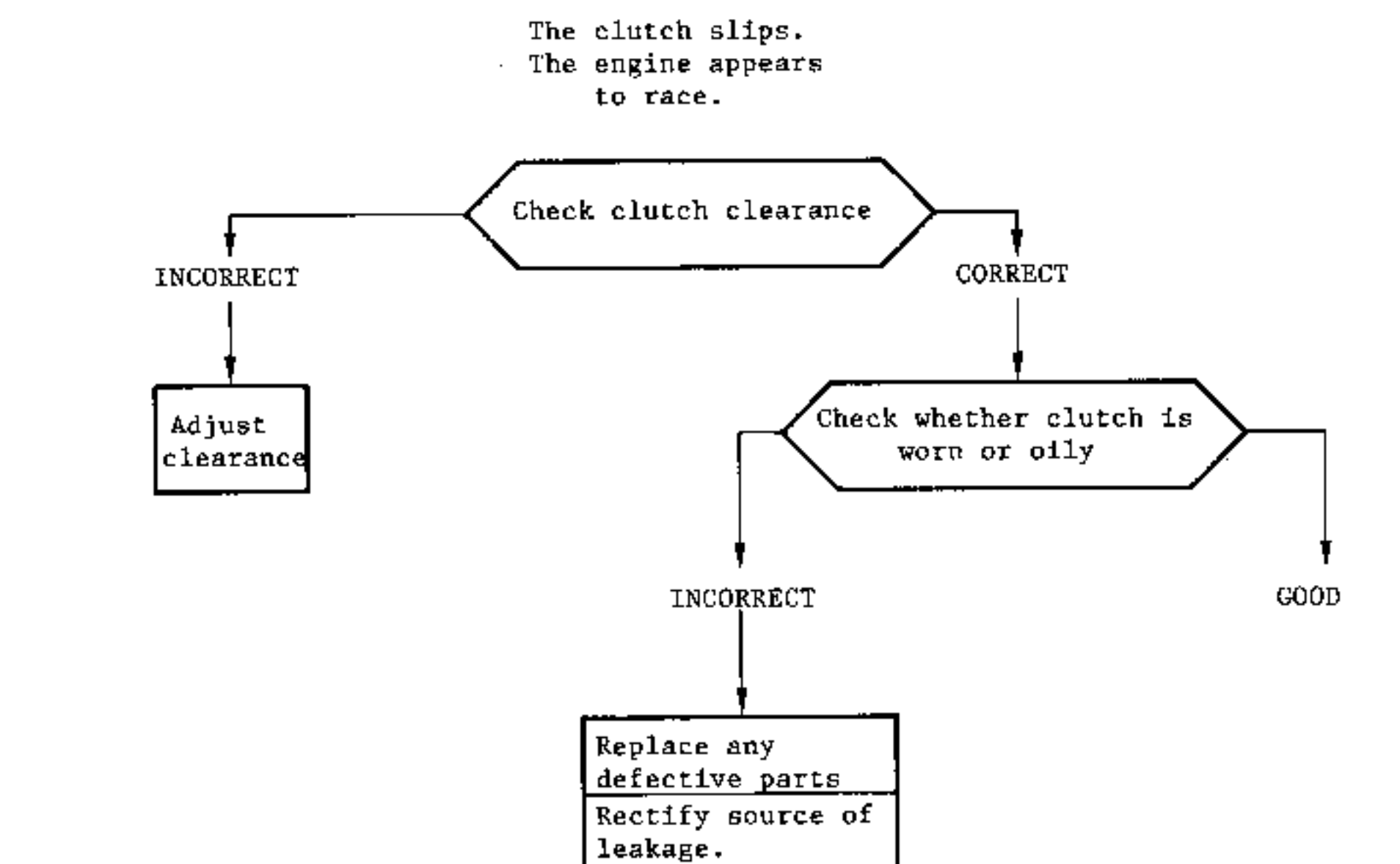
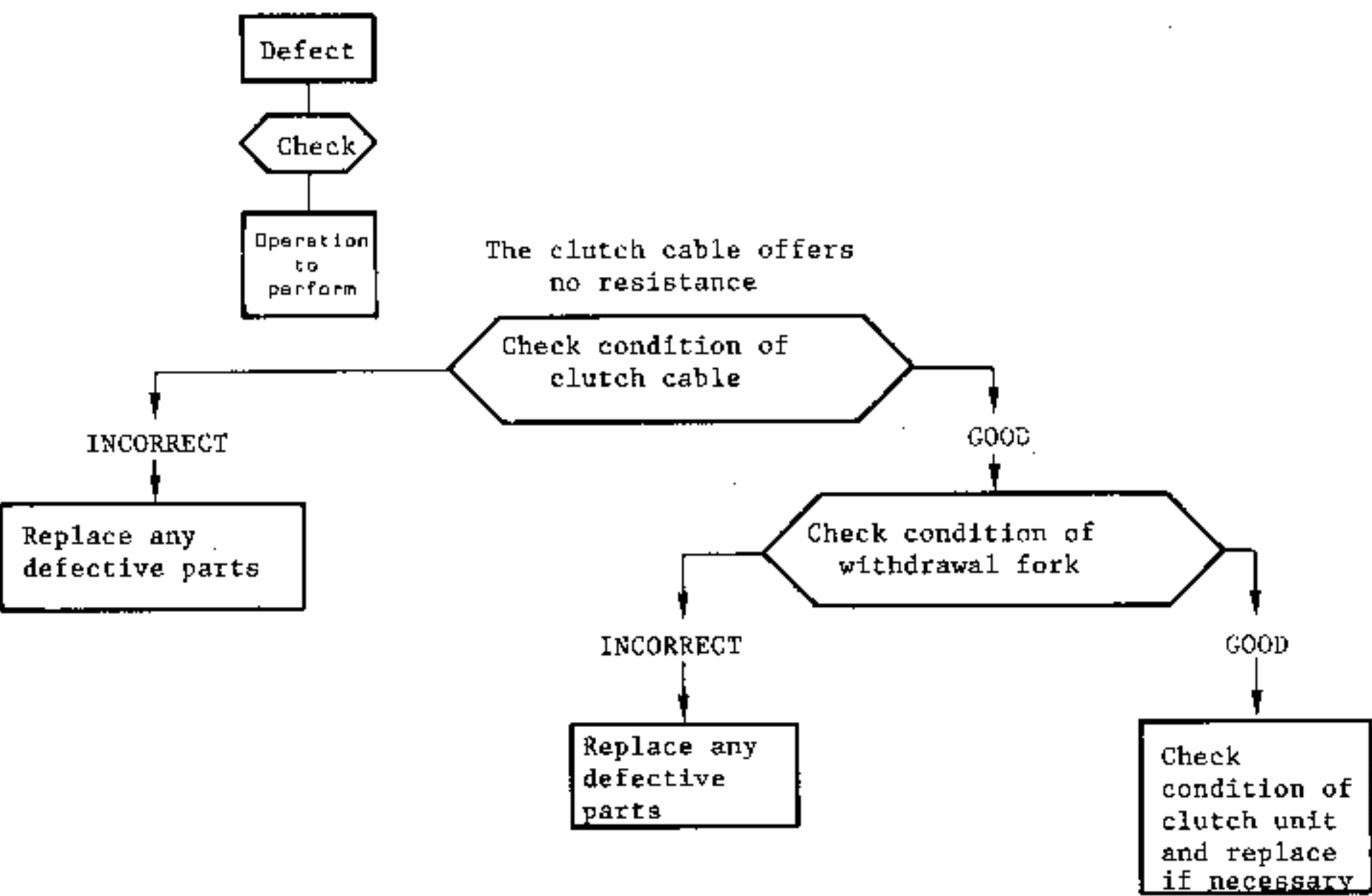
CABLE-OPERATED CONTROL



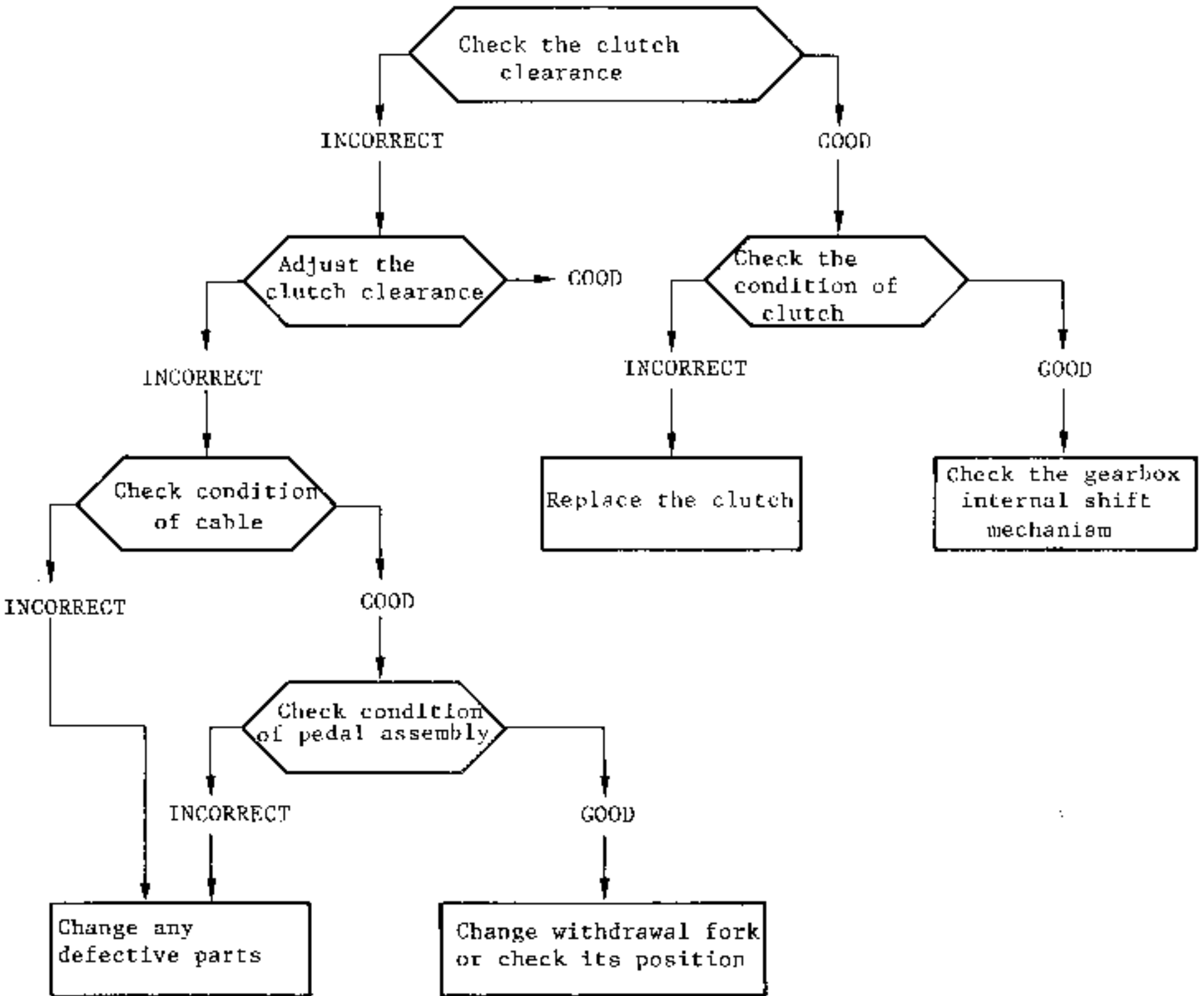
M 10045



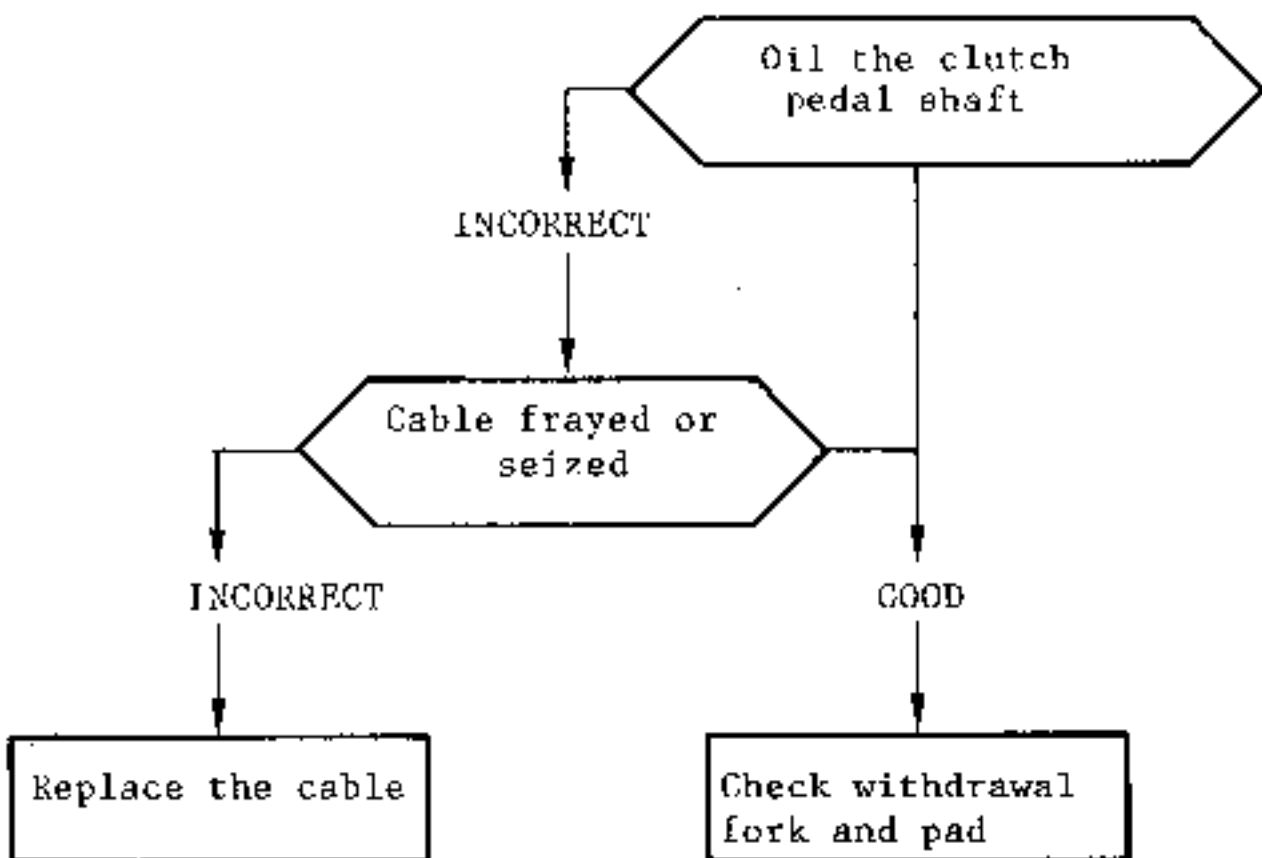
Type	Quantity	Component
MOLYKOTE BR 2	5 g.	<ul style="list-style-type: none"><li>- Splines on clutch shaft and driveshafts</li><li>- Withdrawal pad bearing area on clutch diaphragm</li><li>- Clutch fork pivot</li></ul>
CAF 4/60 THIXO	Coating	<ul style="list-style-type: none"><li>- Thread on reverse positive lock nut</li><li>- Clutch master cylinder locating face on scuttle</li><li>- Ends of spring pin locations in drive-shafts</li></ul>
LOCTITE FRENETANCH	2 drops	<ul style="list-style-type: none"><li>- Flywheel bolts</li></ul>
LOCTITE AUTOFORM	Coating	<ul style="list-style-type: none"><li>- Flywheel locating face</li></ul>



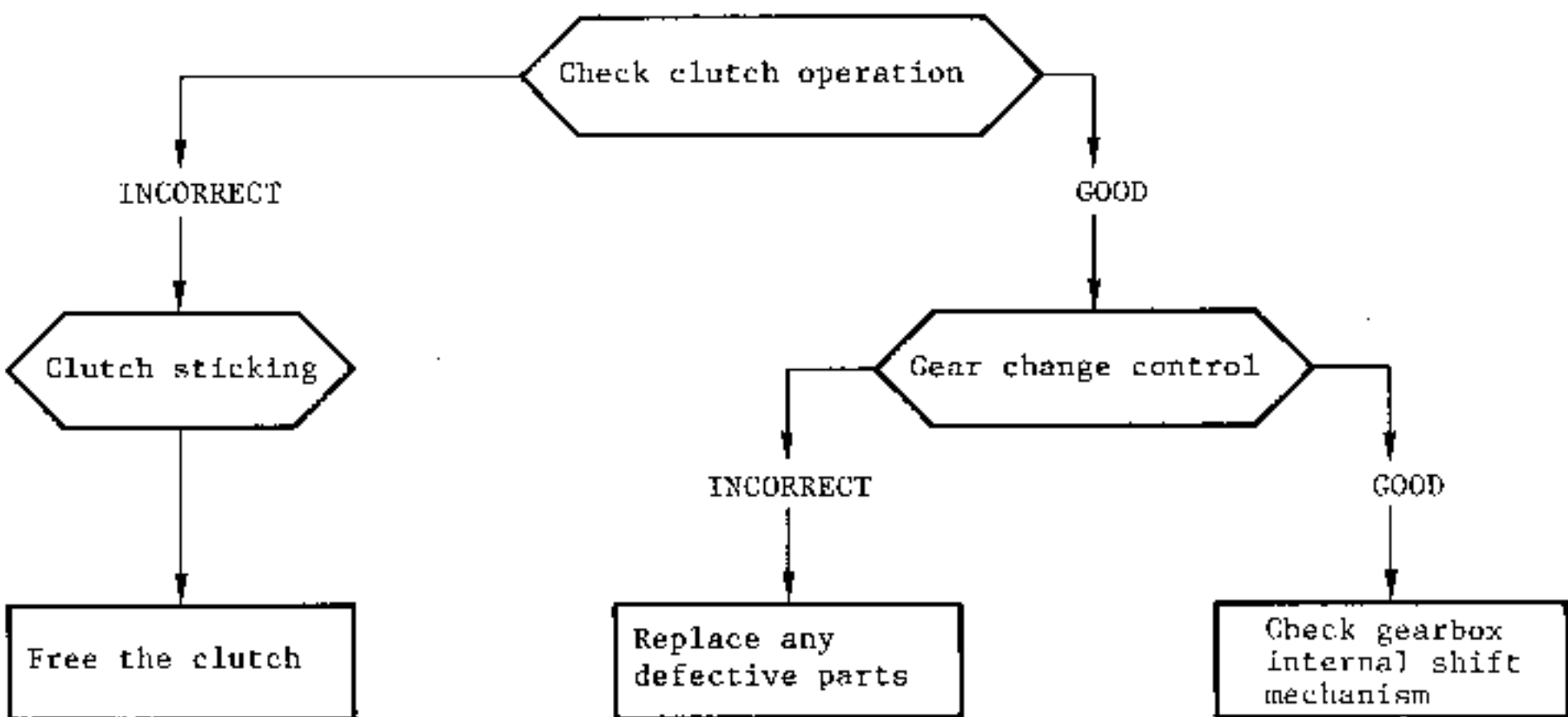
The gearbox is grating.  
Clutch pedal fully depressed:  
- vehicle stationary  
- engine running



Clutch pedal stiff.  
Vehicle jerks as the clutch  
is engaged.



The gears cannot be engaged  
(with the vehicle stationary  
and the engine running)



Infrequent case  
occurring after vehicle  
has been stationary for  
some time (several days).

This operation requires the gearbox to be removed first.

ESSENTIAL SPECIAL TOOLING	
Mot. 582	Locking clamp
Plus gearbox removal tooling.	

**TIGHTENING TORQUE (in daNm)**

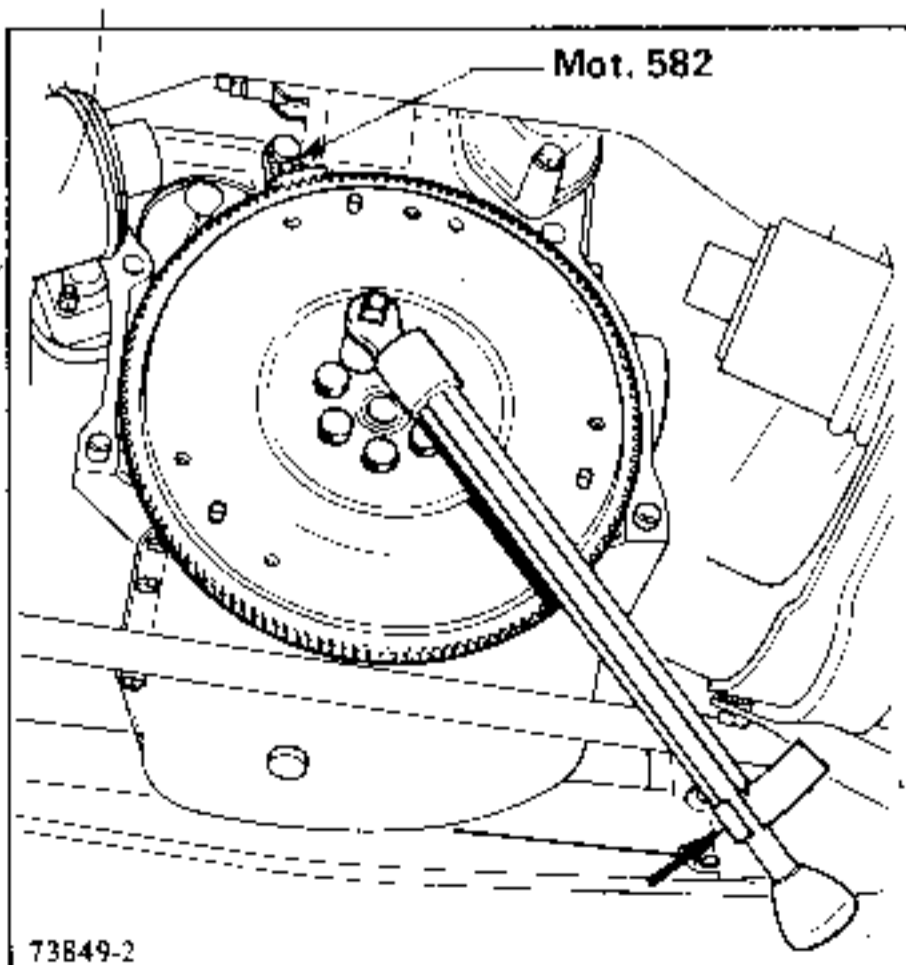
Clutch unit bolts ..... 2,5

**REMOVAL**

Fit clamp Mot. 582.

Remove the clutch securing bolts and take off the clutch and disc.

Check and replace any defective parts.

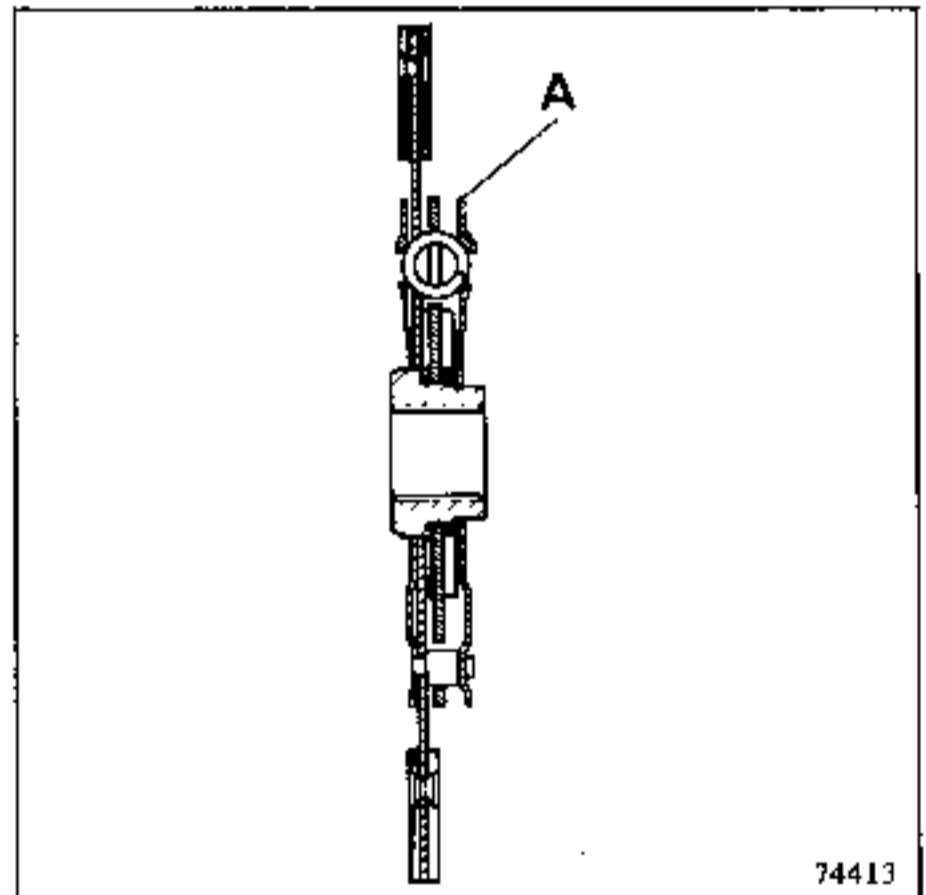


73849-2

**REFITTING**

Degrease the flywheel friction face.

Fit the disc (with the offset on its hub (A) towards the gearbox).



74413

**CENTRING THE DISC**

This is done visually for the NG gearbox.

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

Remove clamp Mot. 582.

Lightly grease the pad bearing area on the diaphragm with **Molykote BR2** grease.

After refitting the gearbox, check the clutch clearance and adjust it if necessary.



To carry out this operation the gearbox must first be removed.

#### REMOVAL

Remove the pad by tilting the fork.

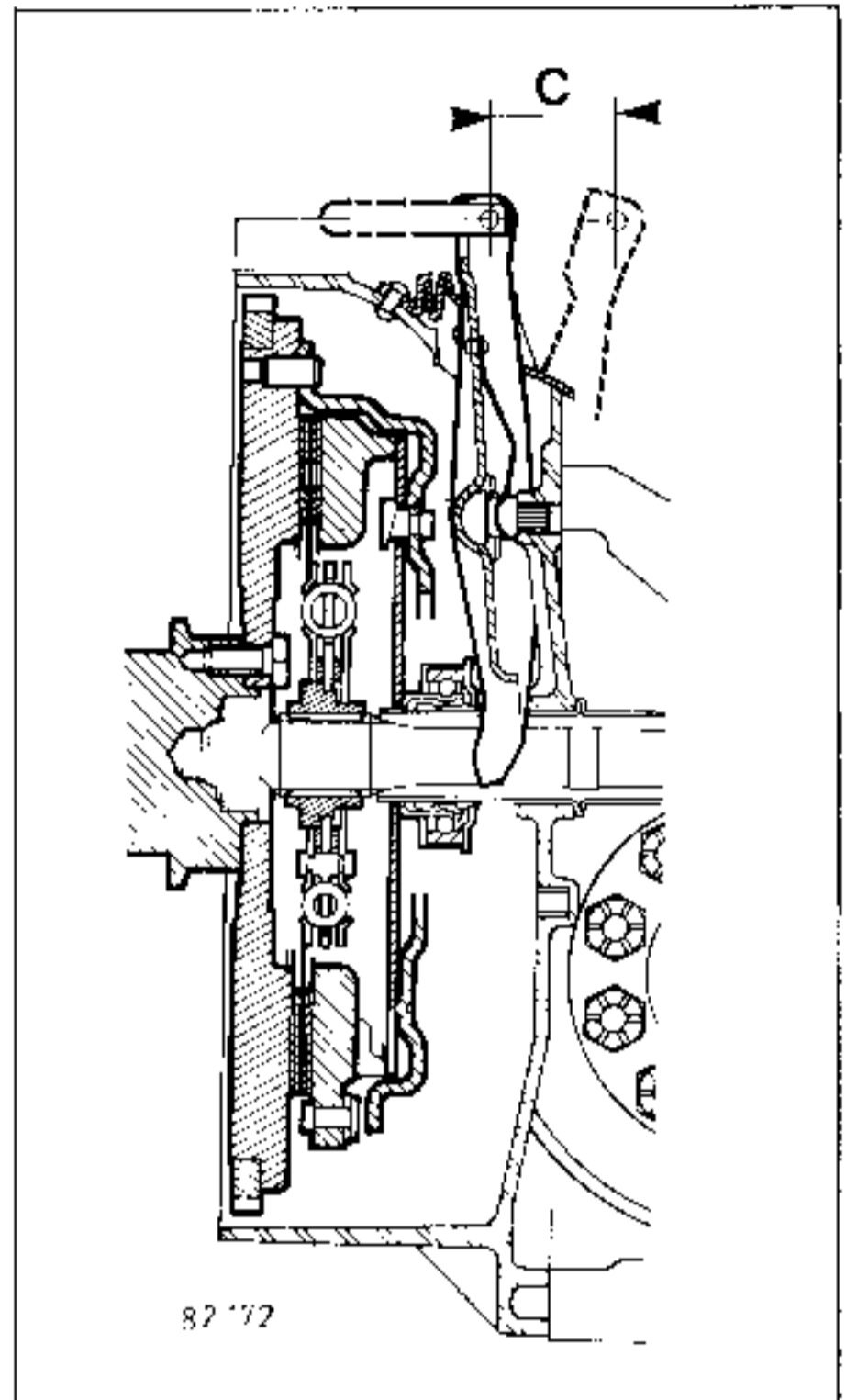
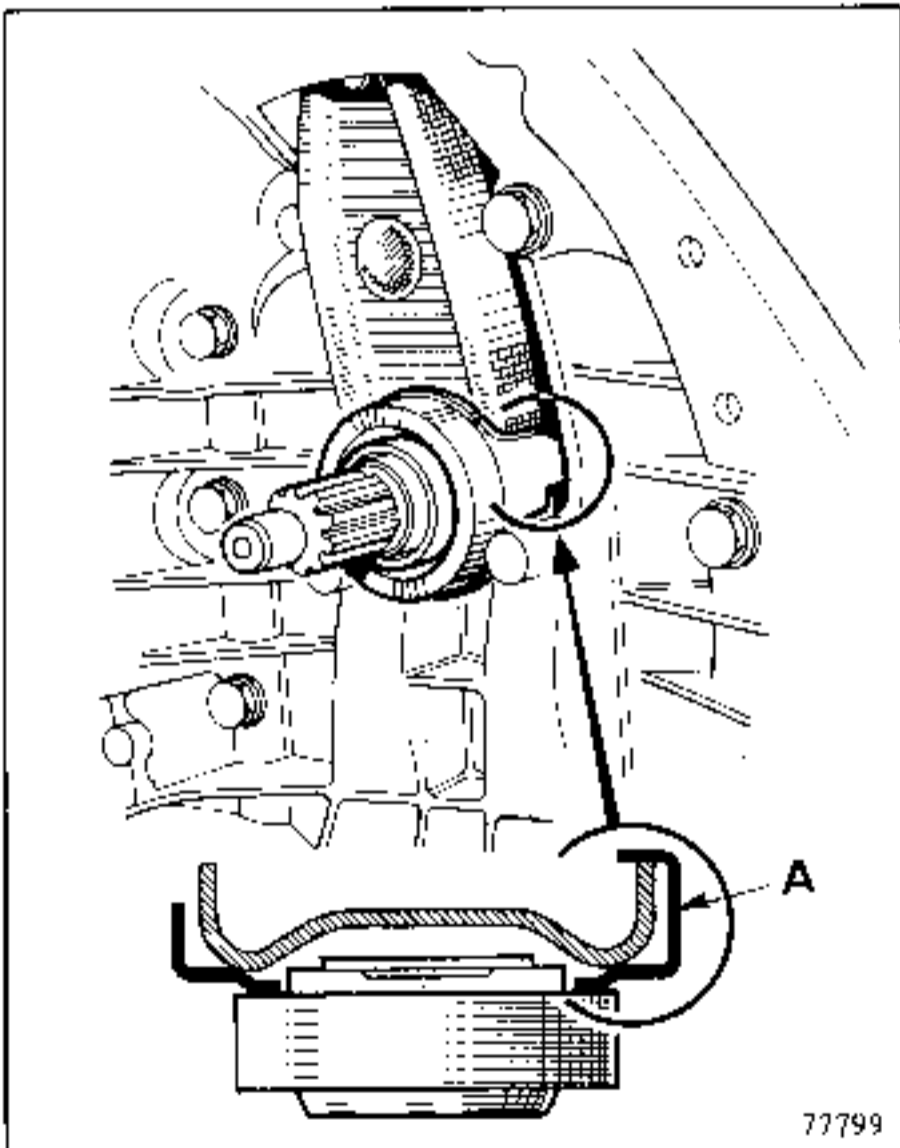
#### REFITTING

Lightly grease the part of the diaphragm on which the pad locates with Molykote BR2.

Fit the withdrawal pad to the guide tube, placing tab (A) in the fork.

#### CHECKING THE TRAVEL

$C = 11 \text{ mm}$



This operation is performed after the gearbox has been removed.

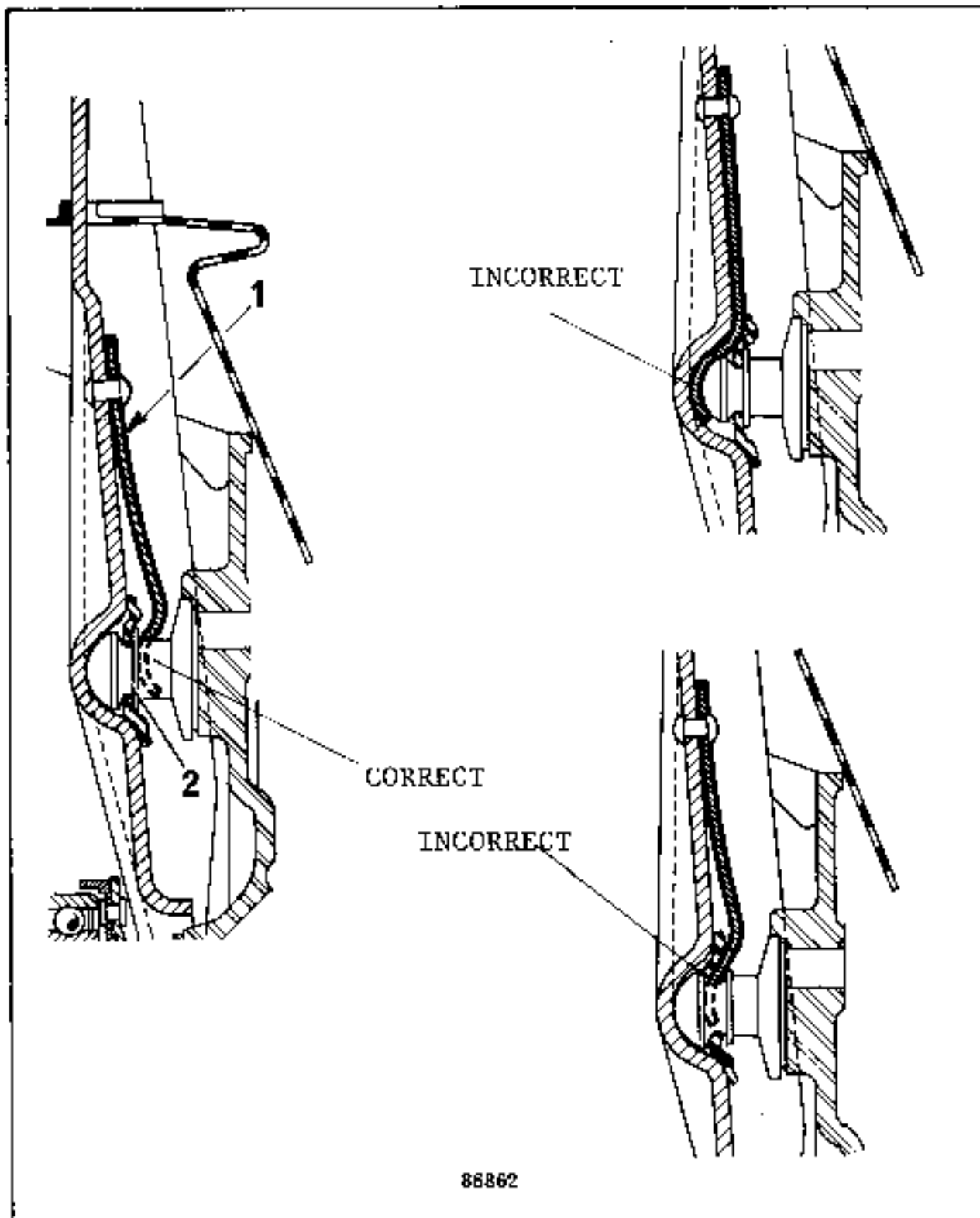
**REMOVAL**

Move the fork towards the outside of the gearbox.

**REFITTING**

Fit the fork in place, placing spring (1) behind cup (2).

Make sure that it operates correctly.



This operation is performed after the gearbox and clutch casing have been removed.

Consult the section on separating the casings in B.V. NG gearbox workshop repair manual.

The outer bearing cage has a lip seal requiring special precautions to be taken on assembly. This seal is lubricated from above by an orifice in the casing.

To replace the bearing in the casing the clutch shaft has to be removed if the bearing face is not correct since the rollers are in direct contact with the shaft.

TIGHTENING TORQUES (in daNm)	
Casing bolts:	
∅ 10 .....	3.5
∅ 8 .....	2.5

**REMOVAL**

Take out the guide tube on the press.

A guide tube cannot be re-used once it has been removed on the press.

**REFITTING**

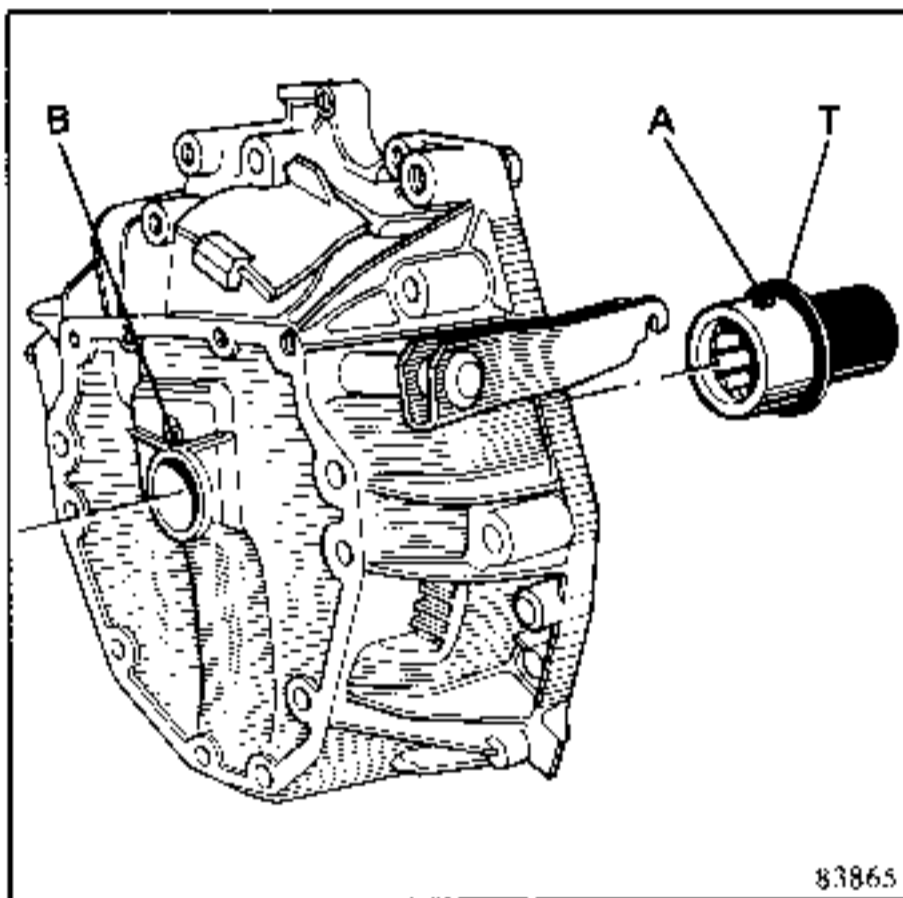
Put a film of **grease no. 20 (Mobil x 57030)** on the walls of the bore.

Place "O" ring seal (T) on the guide tube.

Offer up the guide tube to the clutch casing and align the bearing lubricating hole in the guide tube opposite the hole in the clutch casing.

Insert the guide tube on the press until it is fully inserted.

Check that guide tube lubricating hole (A) is opposite hole (B) in the clutch casing.



Lubricate the seal before fitting the shaft.

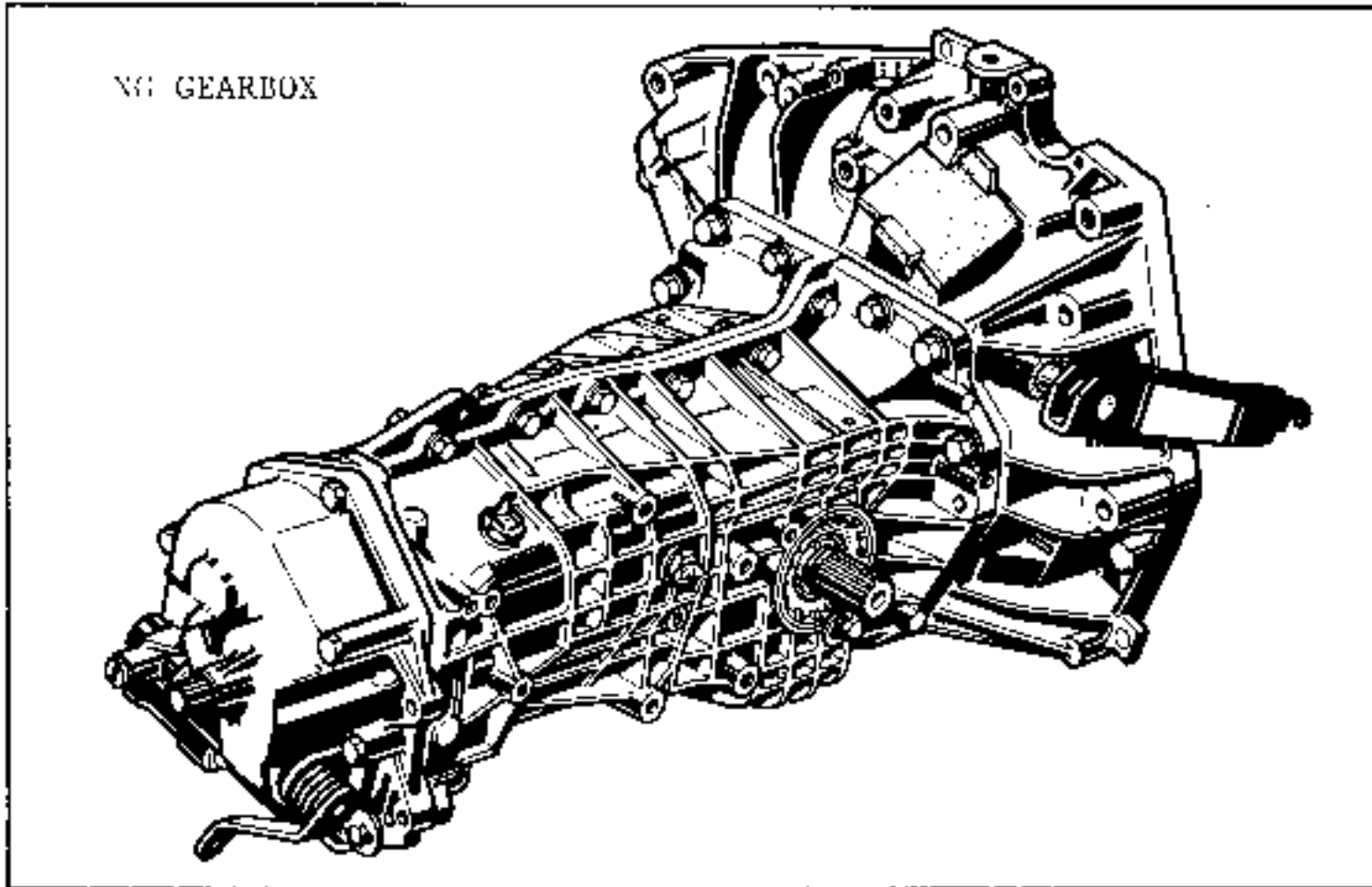
Place adhesive paper on the shaft splines so as not to damage the seal lips.

Fit the casing in place, having greased the seal with **Perfect Seal**.

Torque tighten the bolts:

- ∅ 10 mm: 3.5 daN.m
- ∅ 8 mm: 2.5 daN.m

Coat the guide tube with **No. 20 grease**.



NG GEARBOX

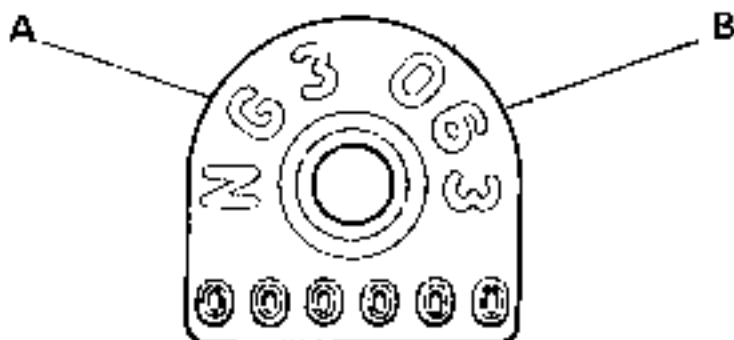
ESPACE vehicles are equipped with the NG3 gearbox.

Repair manual "BV.NG" covers the complete overhaul of these components.

This chapter, therefore, deals with the following operations:

- removing-refitting the gearbox;
- 5th gear assembly in situ;
- removing-refitting the external gear controls.

The gearbox type A, suffix B and fabrication number are stamped on an identification plate on the lefthand side of the rear casing.



Suffix B

Type	Application	Suffix
J 112 (except Switzerland) S 112	up to T0018816 T0000288	063
J 112 (except Switzerland) S 112 J 117	as from T0018817 T0000289 T0000001	084
J 115 S 115	up to T0008022 T0000307	039
J 115 S 115	as from T0008023 T0000308	087
J 116	as from T0000001	091
J 112 (Switzerland)	up to T0018681 as from T0018682	044 085

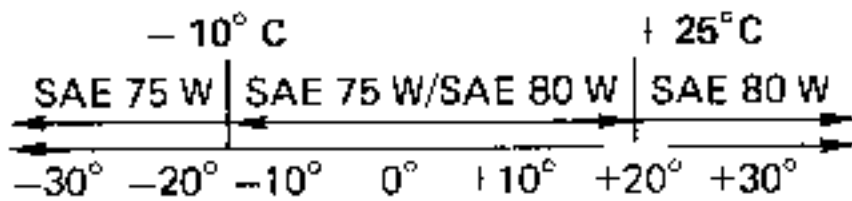
The gearboxes are equipped with the following synchronisers:

1st-2nd : Renault synchronisers  
3rd-4th-5th: Borg-Warner synchronisers

OIL

Grade: API GL5 or MIL L 2105B or C.

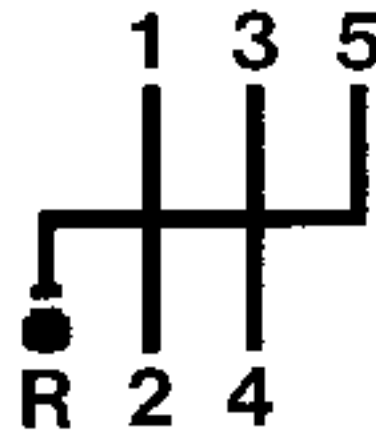
VISCOSITY



87117

CAPACITY: 2.2 litres

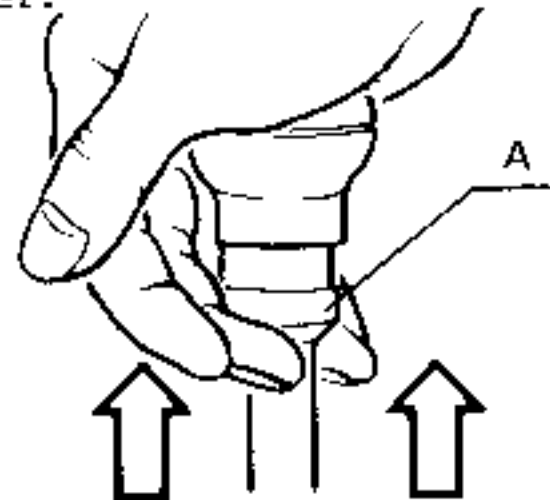
GEAR CHANGE PATTERN



87775

As from 87 models

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



Consumables

Type	Quantity	Unit
<b>CAF 4/60 THIXO</b>	Coating	- Pins at gearbox end of drive shafts - Housing joint face seals - 5th speed locking ball - Reverse gear positive locking
<b>LOCTITE FRENBLOC</b>	3 drops	- 5th speed fixed gear - 5th speed hub - Circling brake calliper guide bolts
<b>MOLYKOTE BR2</b>	2 g.	- Clutch shaft splines - Sunwheel splines
<b>PERFECT-SEAL</b>	Coating	- Rear housing joint seal

PARTS WHICH MUST AUTOMATICALLY BE REPLACED WHENEVER THEY ARE REMOVED

- The drive shaft spring pins
- The primary and secondary shaft nuts
- The heat-meltable fuse (on exhaust)

Grating when  
one gear is  
engaged

Remove the  
gearbox

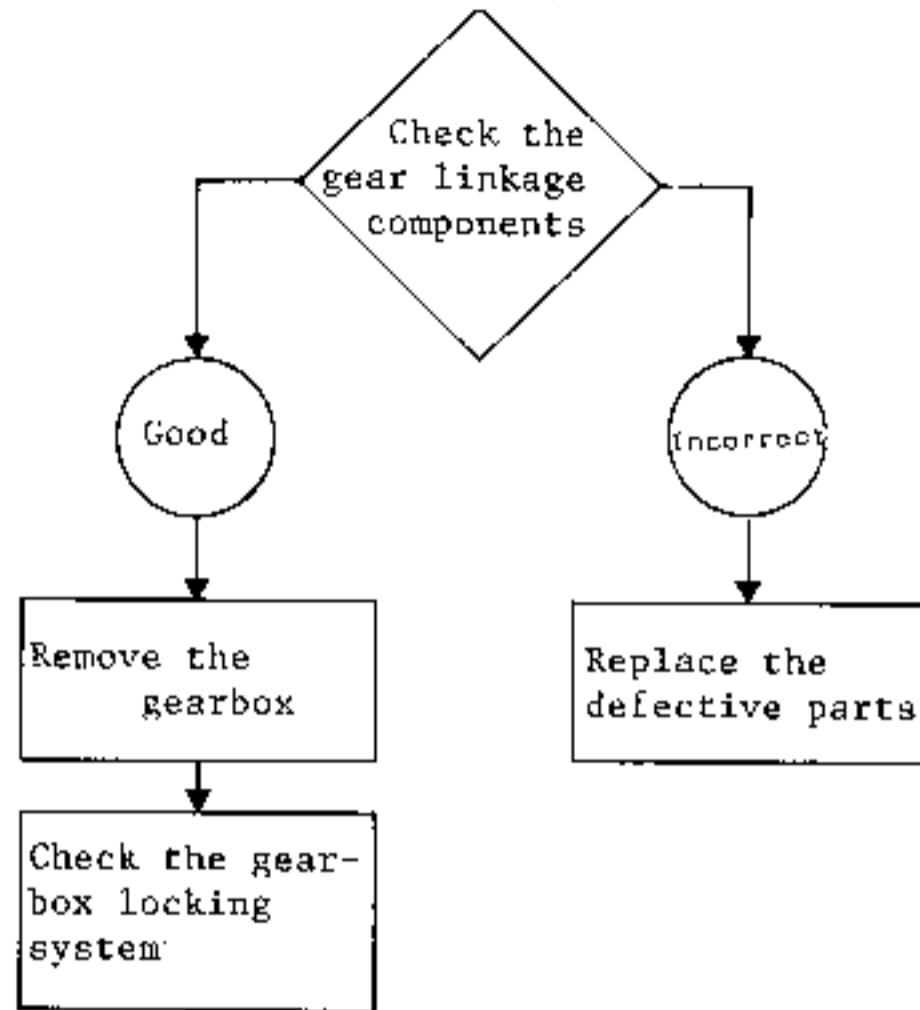
Check synchro-  
niser and syn-  
chro spring on  
defective gear

Grating when all  
gears are engaged  
(after checking the clutch)

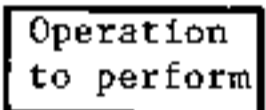
Remove the  
gearbox

Check the synch-  
ronisers and  
synchro hubs

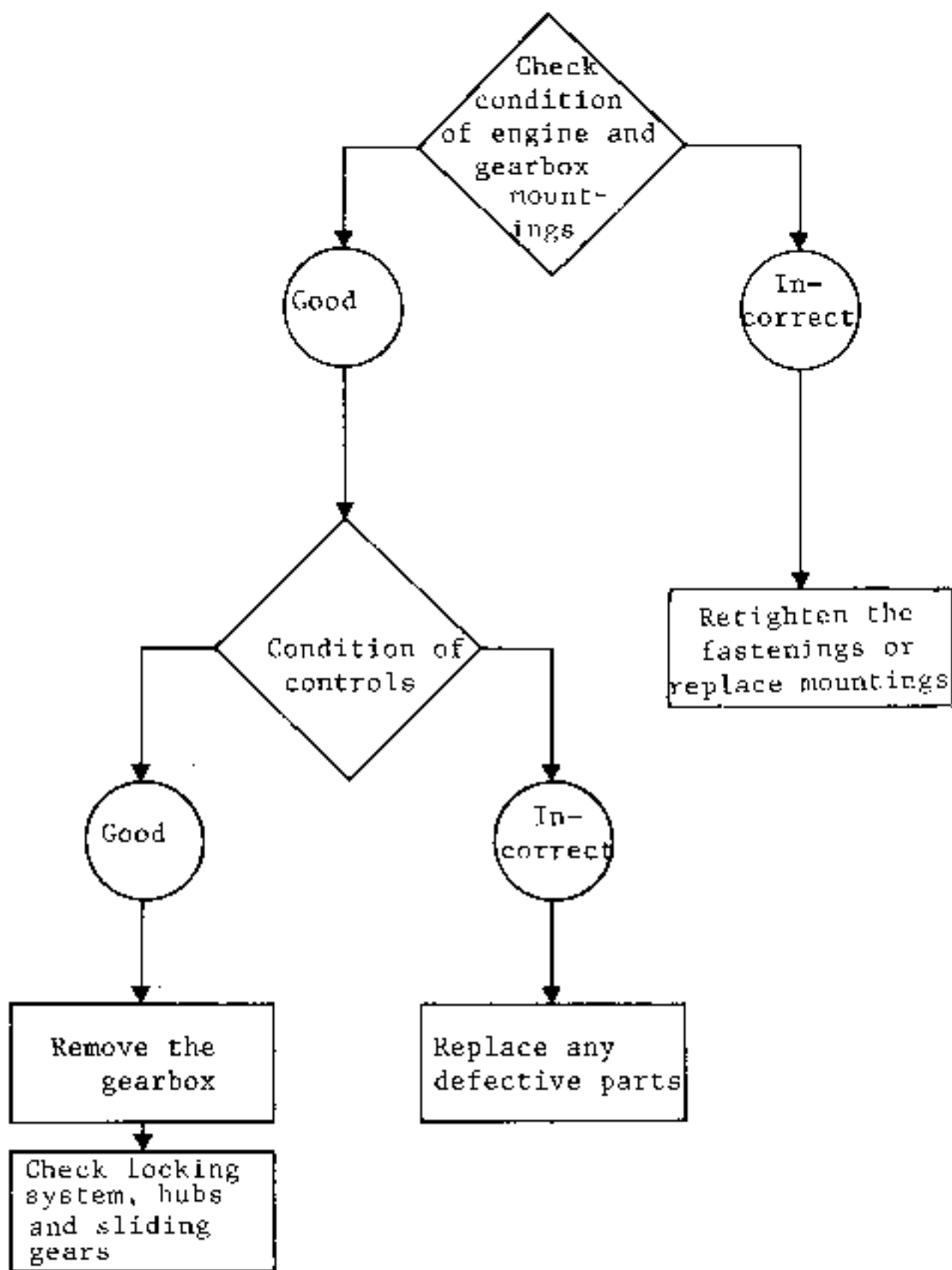
Impossible to engage  
any gear  
(after checking the clutch)



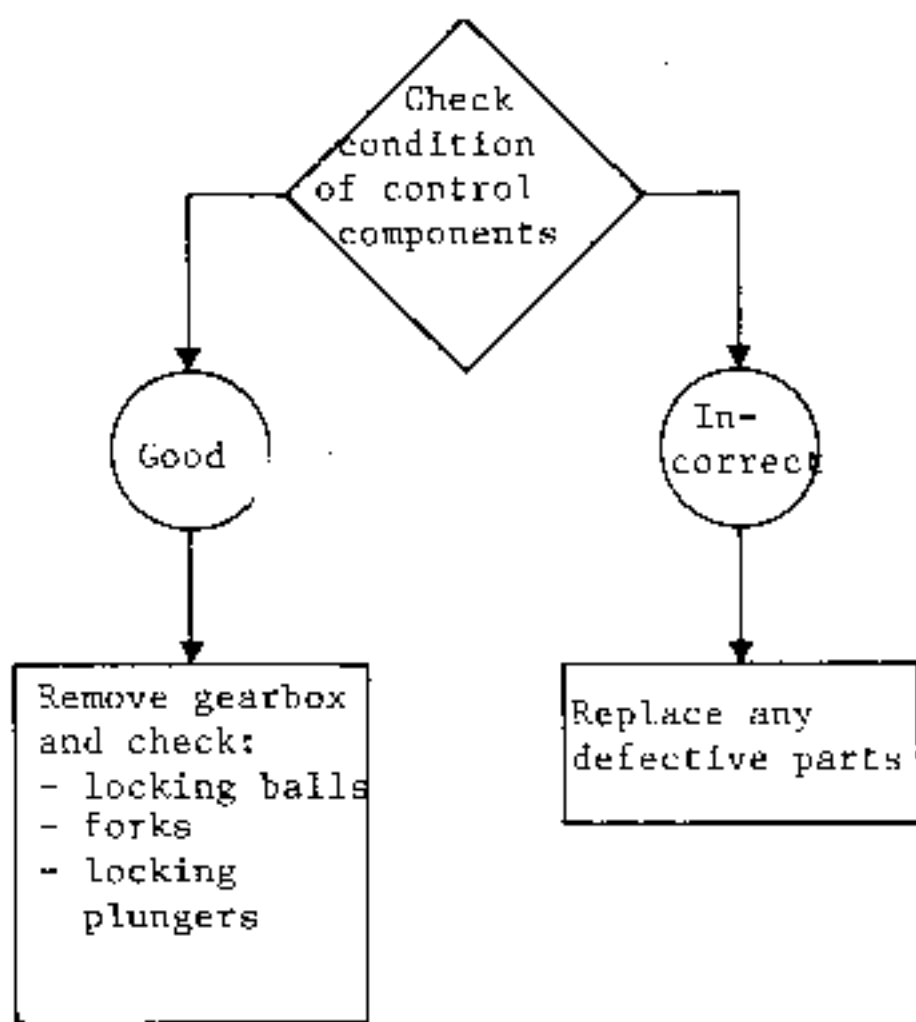
Legend



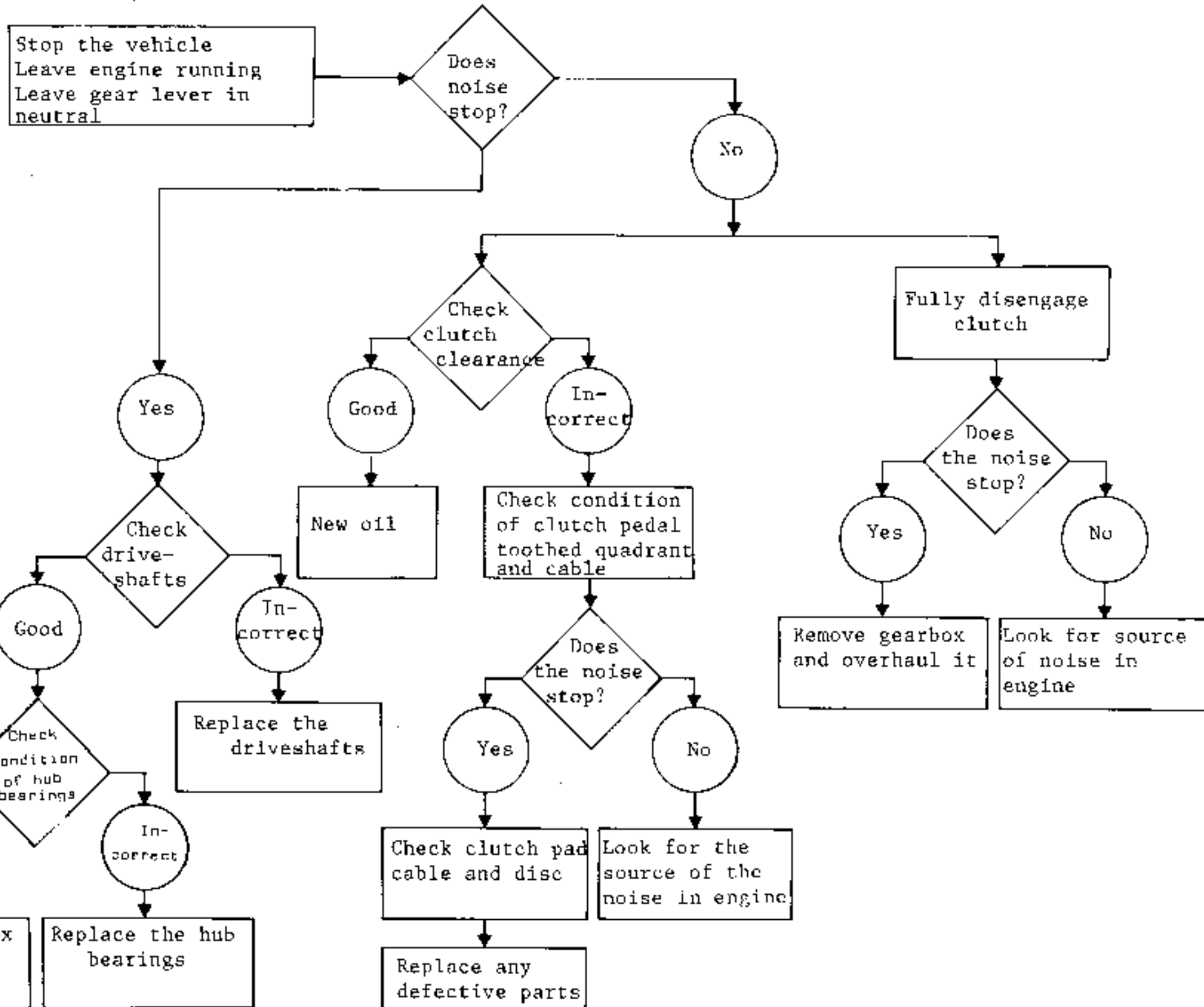
Slipping out of gear



Locking in gear



Abnormal noises whilst the vehicle is being driven





ESSENTIAL SPECIAL TOOLS

- B. Vi 31-01 Set of 5 mm  $\varnothing$  drifts
- T. Av. 476 Ball joint extractor
- T. Av. 509-01 Front axle spacer

TIGHTENING TORQUES (in daNm)

Wheel bolts	9
Upper ball joint nuts	6,5
Link arm or steering ball joint nuts	4
Gear selector control nut	4,5
Girling brake calliper guide bolts	3,5*
* - "LOCTITE FRENBLOC"	

REMOVAL

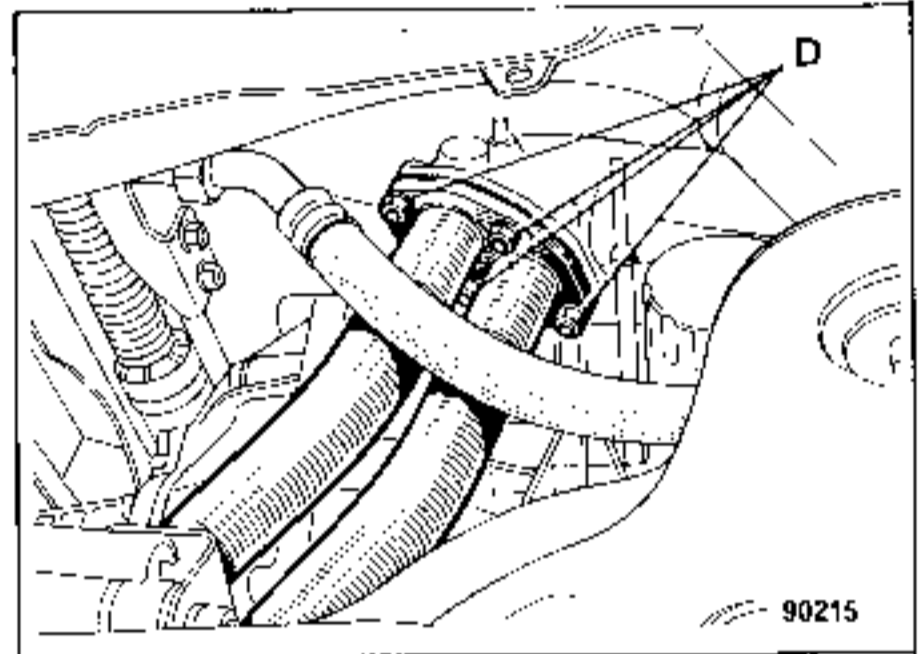
Place the vehicle on a hydraulic lift.

Disconnect:

- the battery
- the clutch cable at (A), freeing it from (C).

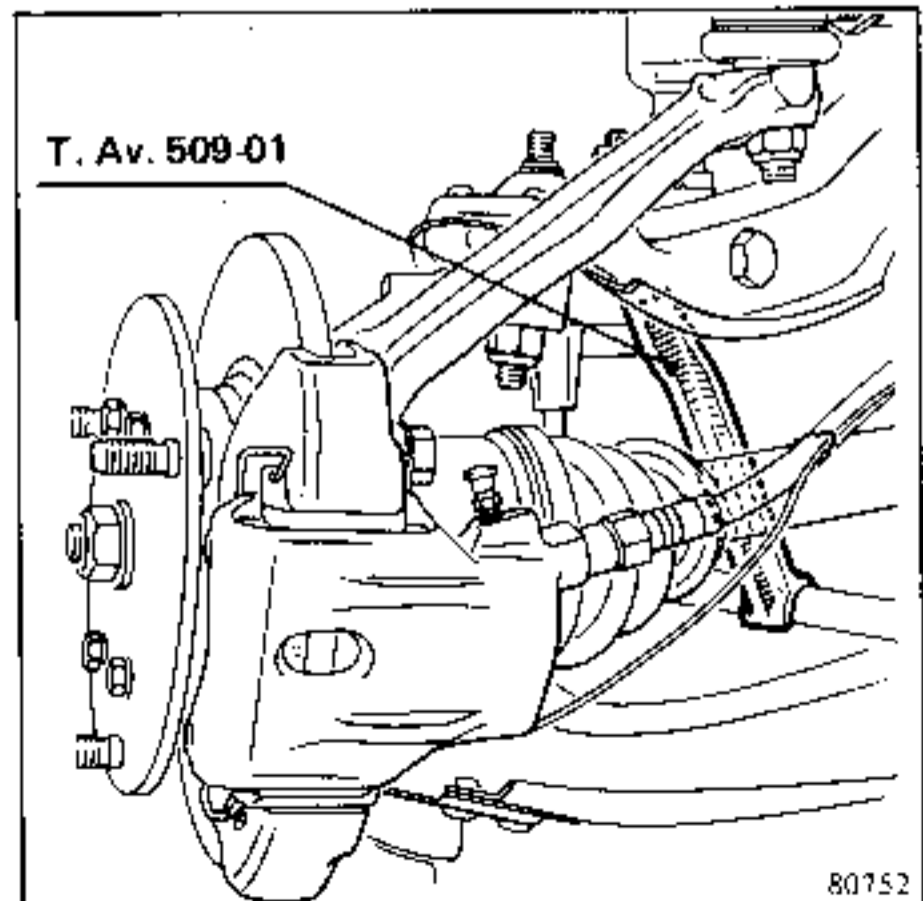
Remove swivel lever pivot (B).

Remove nuts (D) securing the exhaust downpipe.



Under the vehicle:

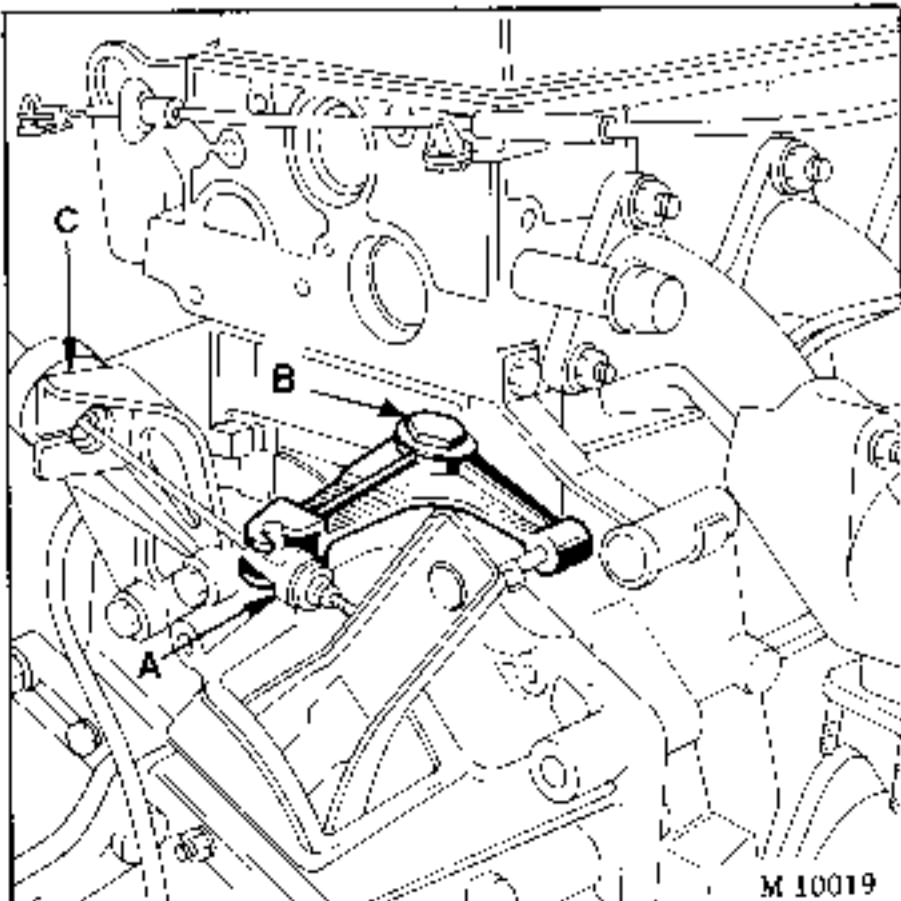
fit retaining spacers T. Av. 509-01 between the shock absorber lower securing pins and the suspension arm inner hinge pins.



The gearbox can either be removed:  
- with the engine (see engine section);

- or alone, using a unit support jack and its pins (from under the vehicle).

The gearbox does not have to be drained to carry out this operation because there are the seals at the sun wheels.



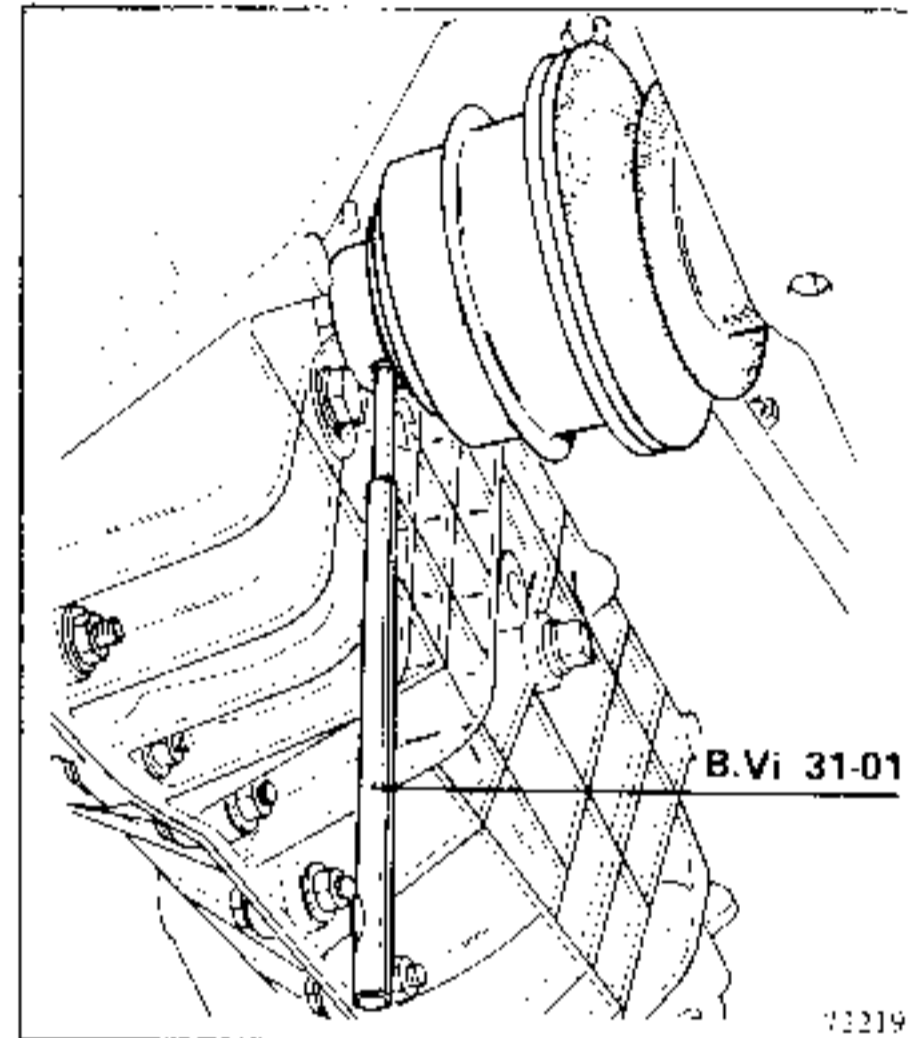
Slacken the front wheels.

Place the front of the vehicle on stands and check that spacers **T.Av. 509.01** stay in place.

Remove the front wheels.

Remove the brake callipers.

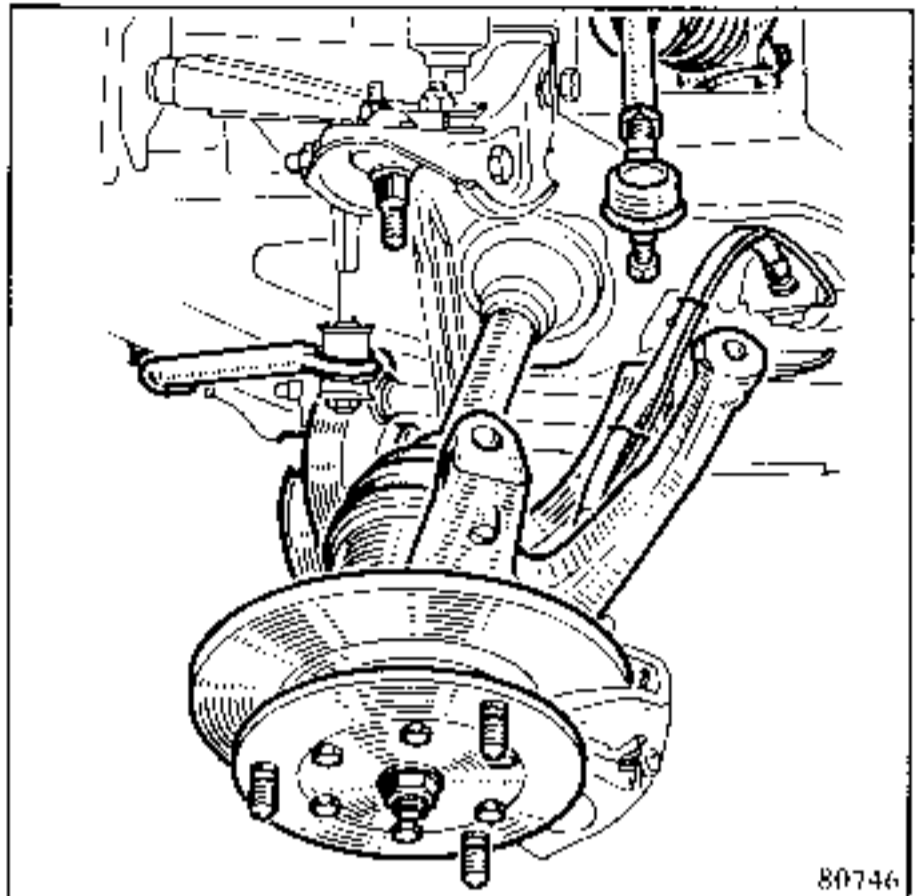
Remove the roll pins securing the driveshafts to the sunwheels using drifts **B.Vi.31.01**.



Unfasten and remove the nut from the steering ball joint and remove the cone using extractor **T.Av.476** then unfasten and remove the nut from the suspension upper ball joint and remove the cone using **T.Av.476**.

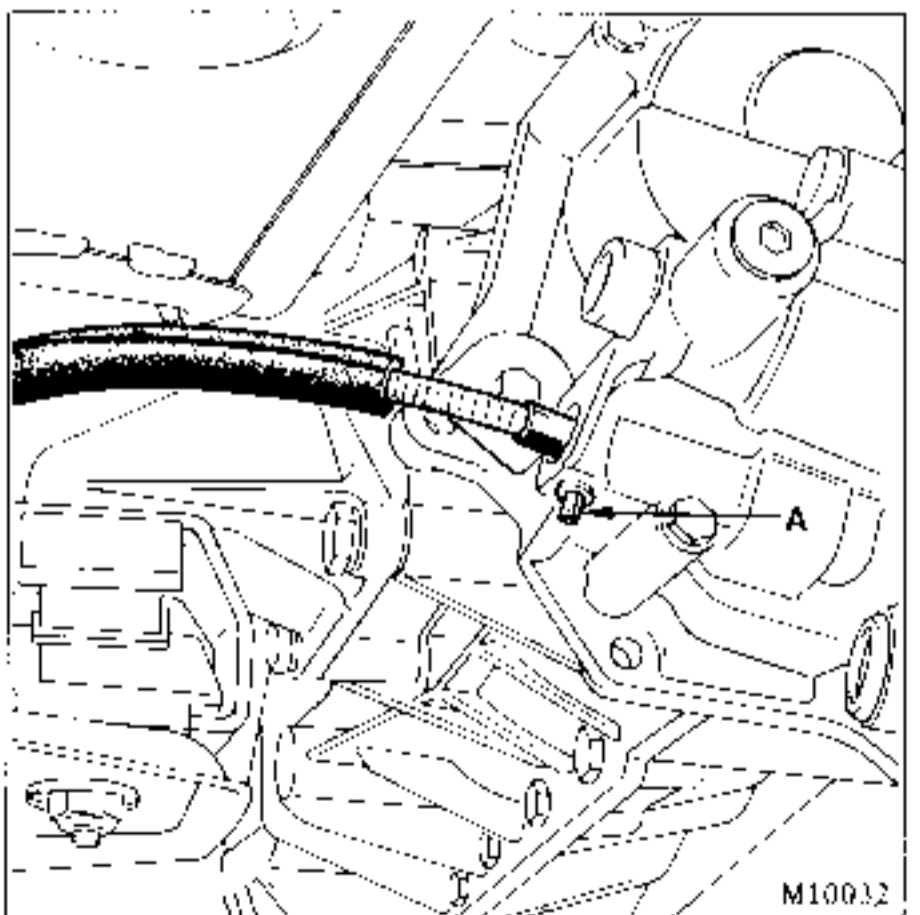
Tilt the stub-axle carrier, releasing the driveshaft from the sunwheel.

Operate in the same way for the other half-axle.



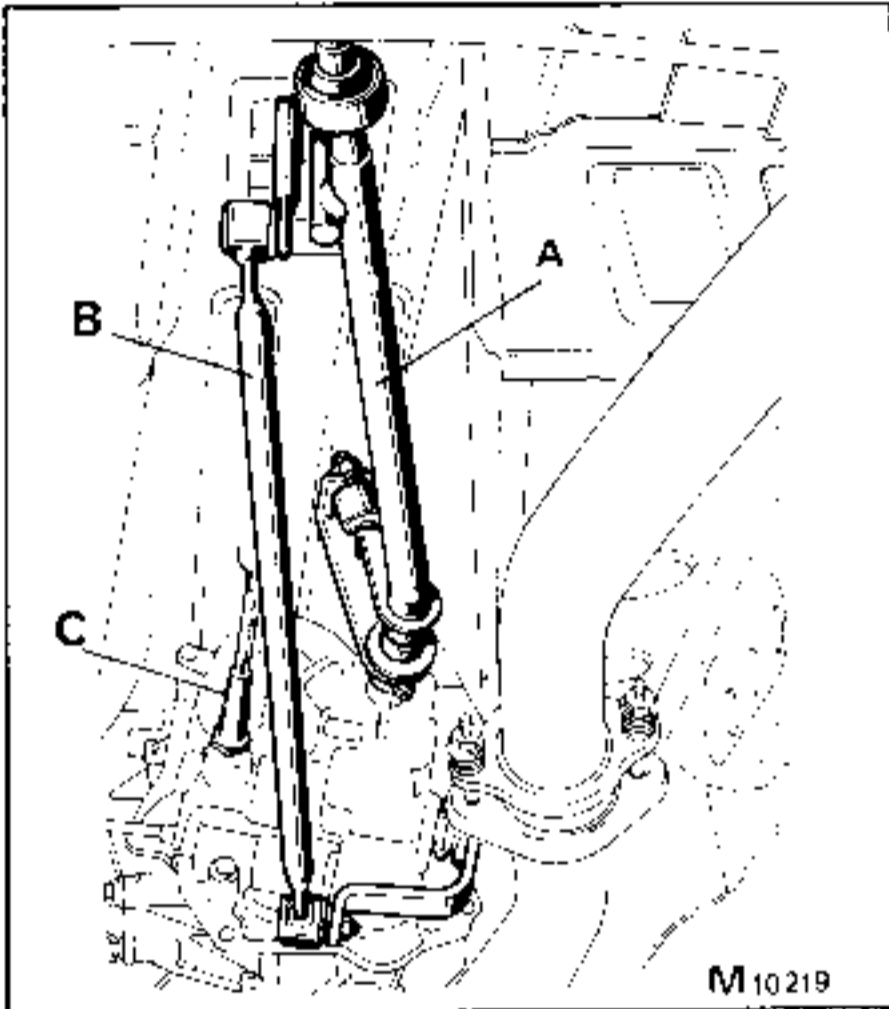
Disconnect:

- the reversing light feed wires;
- the speedometer cable, after removing roll pin (A).



Disconnect the gearbox controls:

- at (A) the selector control;
- at (B) the engagement link;
- at (C) the reverse selector cable (as from 1987 model).



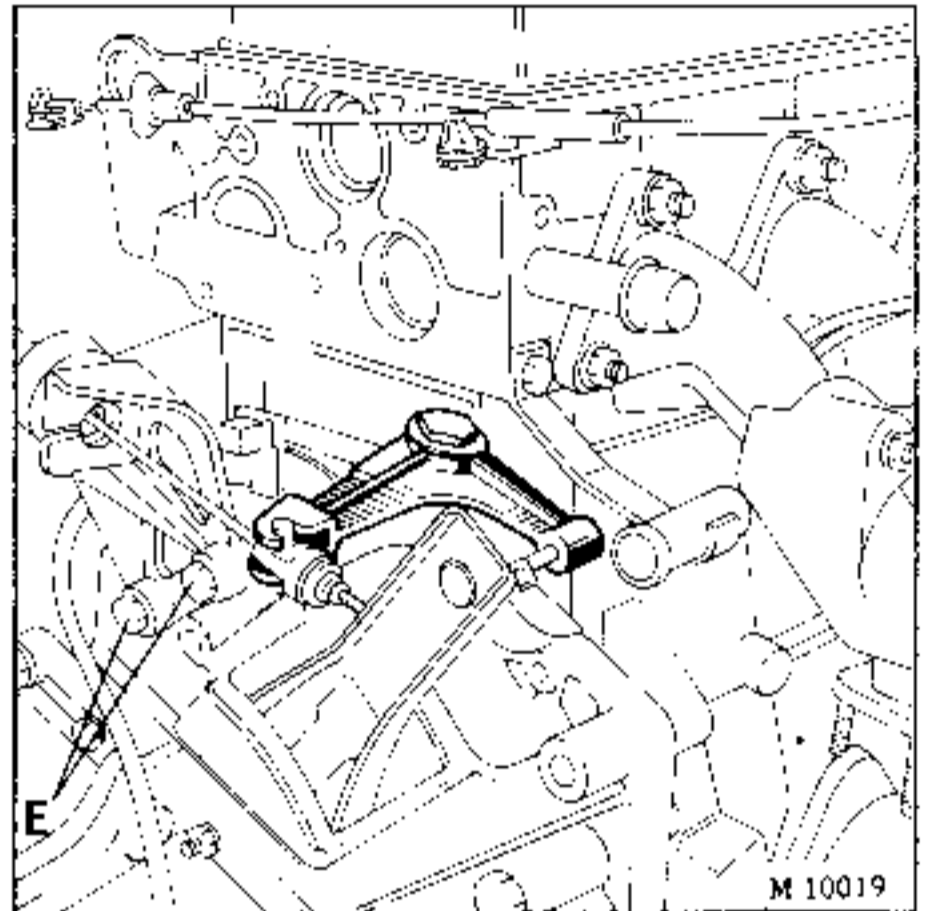
Remove the bolts from the starter.

Place a unit support jack under the gearbox.

Remove the bolts securing the engine to the gearbox.

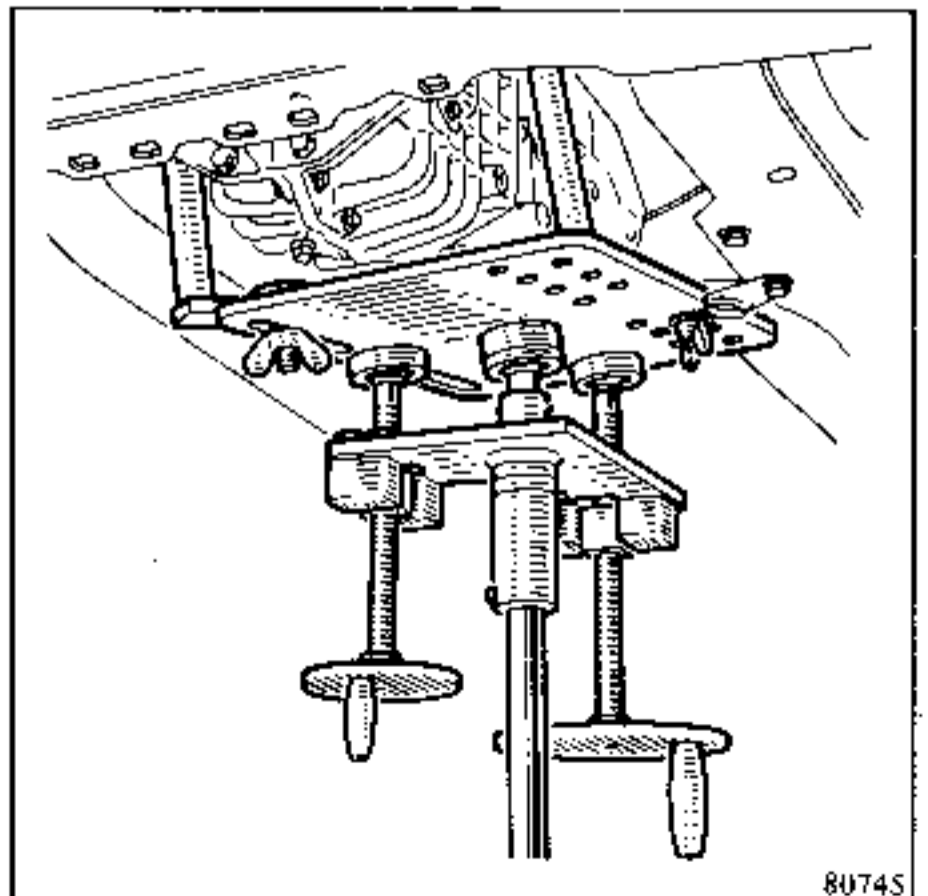
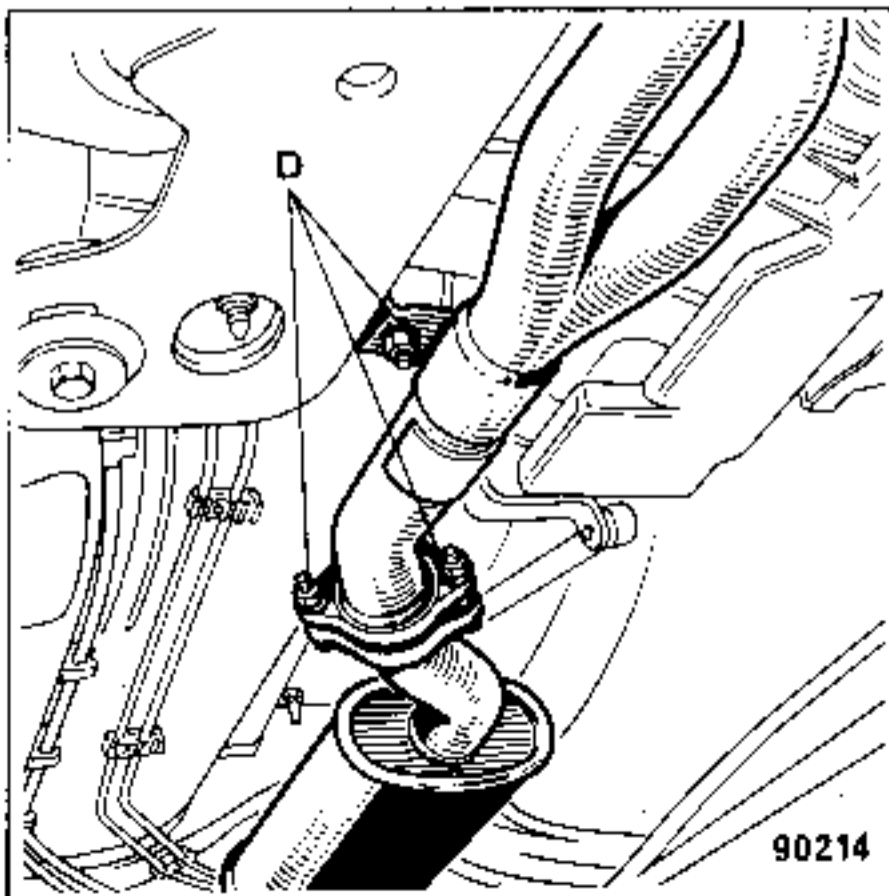
Remove the gearbox mounting pads.

Pull the gearbox towards the rear of the vehicle, taking care not to catch it on the clutch unit.



Remove:

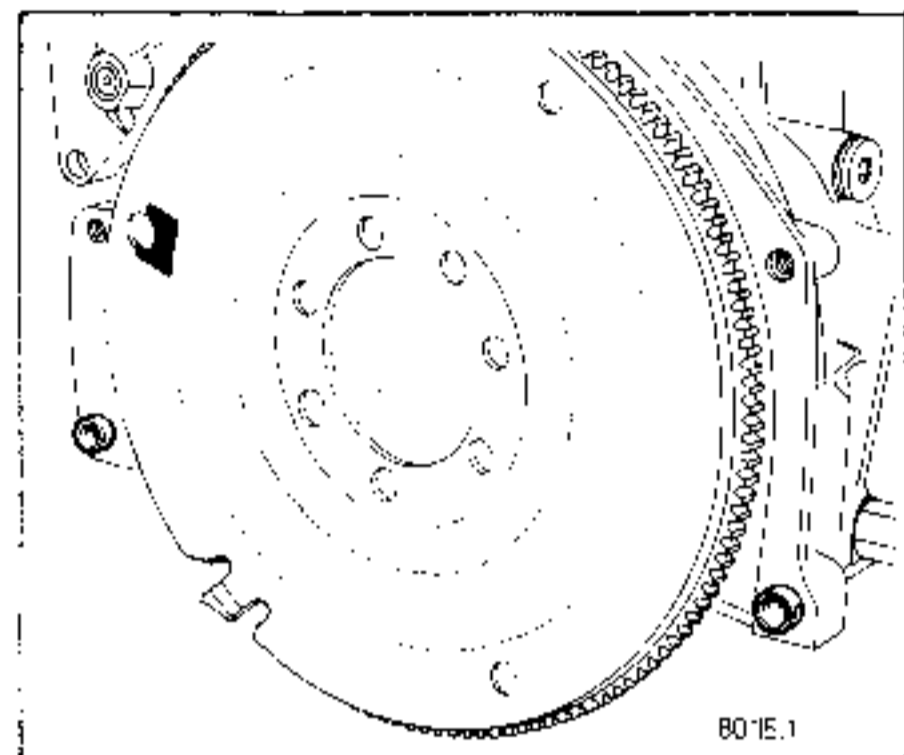
- the AEI position sensor;
- the clutch protection plate;
- the clutch cable sheathing stop (E);
- the exhaust pipes (mounting D).



**REFITTING**

Engage the gearbox, taking care not to catch it on the clutch unit.

Secure the gearbox to the engine and fit the right and lefthand gearbox mounting pads.

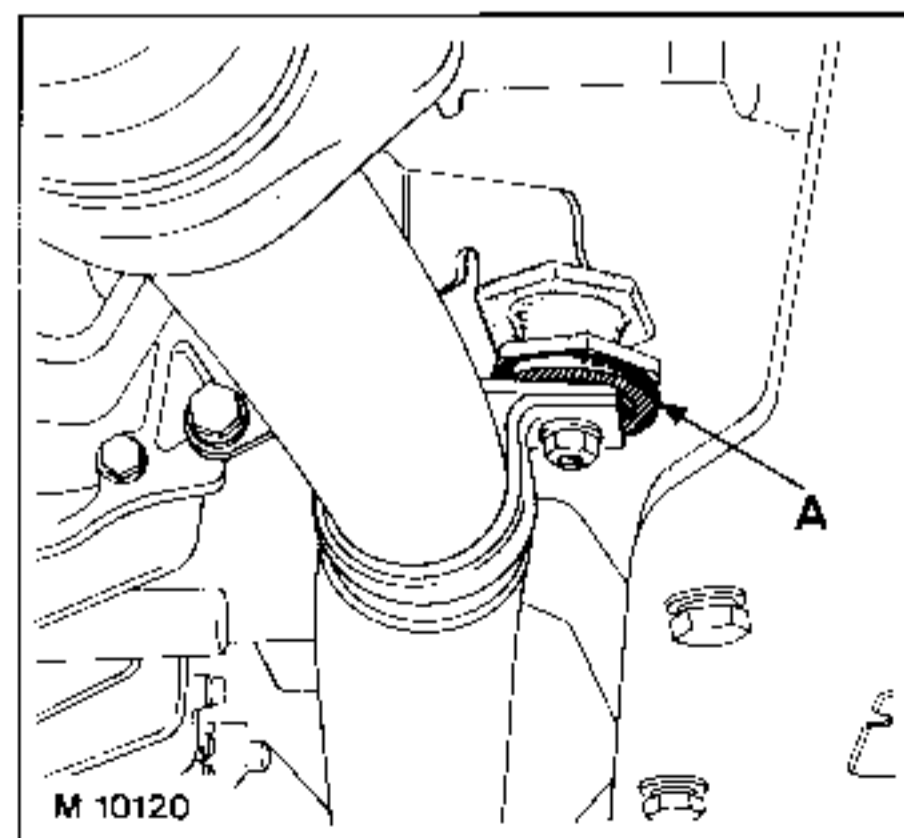


Remove the unit support jack.

**Refit:**

- the bolts to the starter;
- the exhaust pipes.

Remember to fit the insulating washer between the silent bloc bush and exhaust lug on the gearbox.



**Refit:**

- the clutch protection plate;
- the AEI position sensor;
- the swivel lever pivot.

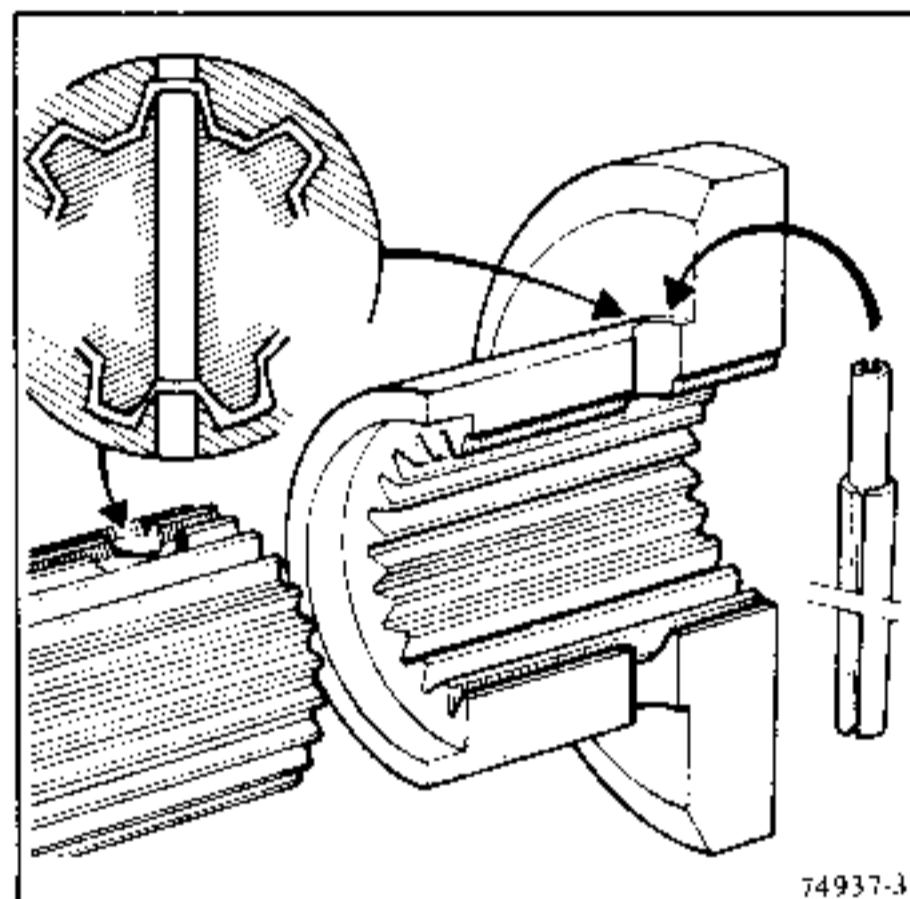
**Reconnect:**

- the gearbox controls;
- the speedometer cable;
- the reversing light feed wires.

Lightly grease the sunwheel splines with **Molykote BR2** grease.

Position the driveshaft in relation to the sunwheel.

Swivel the stub-axle carrier, engaging the driveshaft in the sunwheel and align the roll pin holes.



Fit two new spring pins using tool **B.VI.31.01** and place a few drops of **CAF 4/60 THIXO** in the holes.

Reconnect the steering and suspension ball joints and torque tighten them. Fit new nuts.

When refitting the **GIRLING** brake callipers, coat the calliper guide bolts with **Loctite FRENBLLOC**.

Fit the wheels, lower the front of the vehicle to the ground and torque tighten the wheel bolts.

Remove spacers **T.Av. 509-01**.

Refit the clutch control swivel lever and connect the cable.

Adjust the clutch clearance.

**THE WITHDRAWAL PAD IS IN PERMANENT CONTACT WITH THE DIAPHRAGM:** see section 20.

Reconnect the battery.

## ESSENTIAL SPECIAL TOOLING

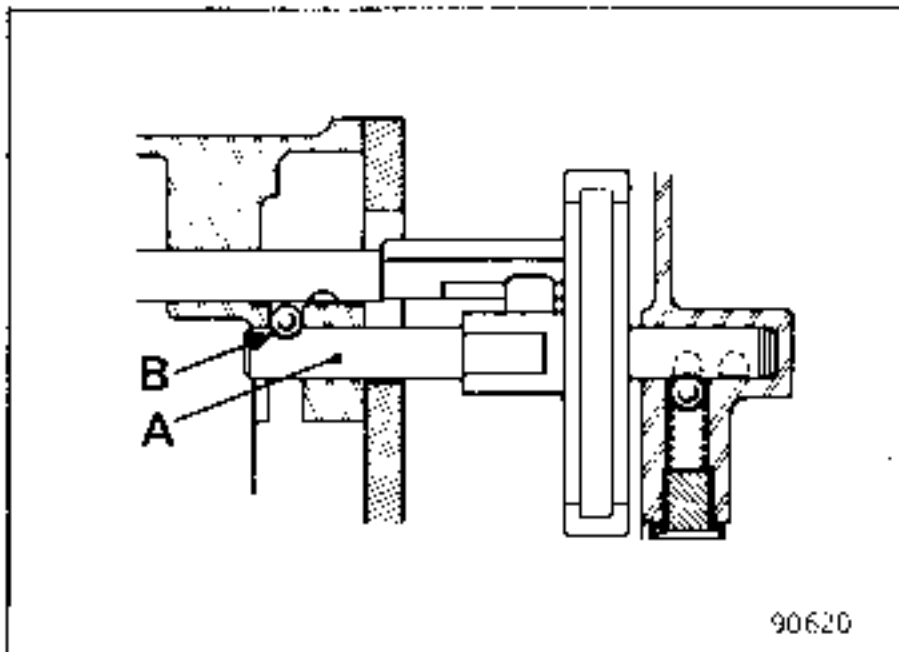
B.Vi. 204-01 Secondary shaft nut wrench

## TIGHTENING TORQUES (in daNm)

Primary shaft nut	13
Secondary shaft nut	15
Rear casing bolts	15

The 5th speed assembly cannot be replaced in situ since it is essential that the 5th speed fork shaft (A) is not removed as there is a risk of the locking ball (B) falling into the gearbox.

However, this section covers the removal of the 5th speed housing in situ for the occasions when work has to be performed on it or the speedometer drive gears have to be replaced.

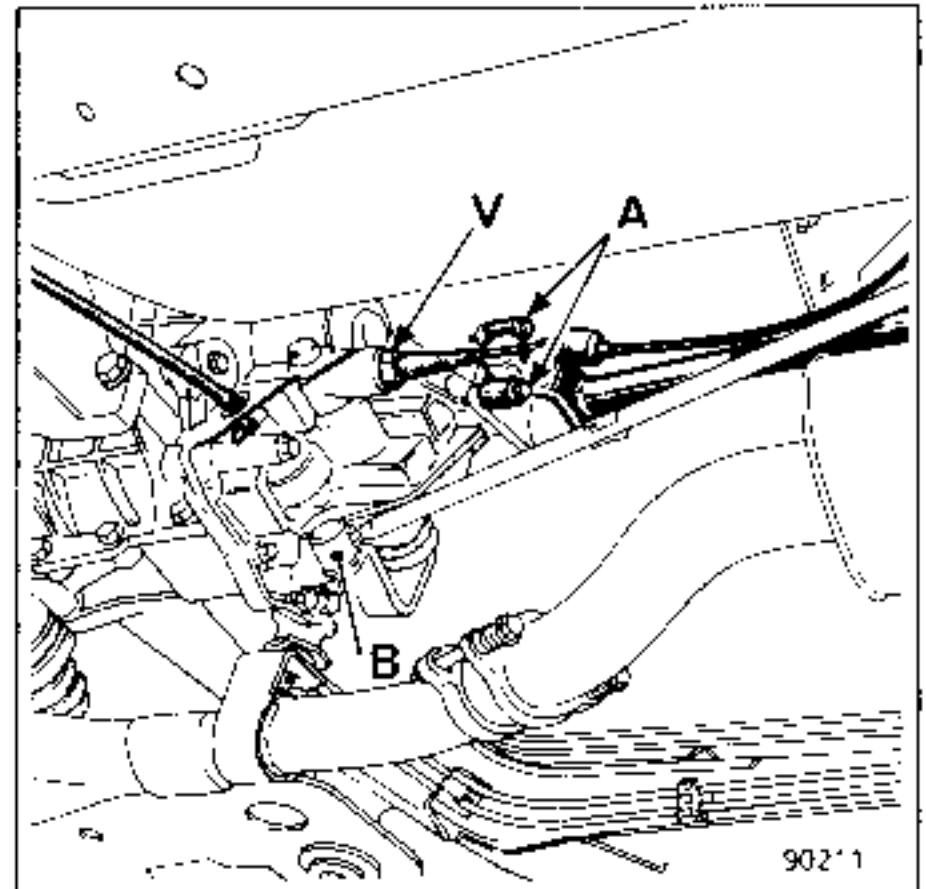
**REMOVAL**

Drain the gearbox.

Remove:

- selector controls:
  - at (A) the 2 mounting bolts;
  - at (B) uncouple the ball joint;
- reverse gear locking device (V);
- the 5th speed detent ball.

Disconnect the speedometer cable after removing the spring pin.



Select 4th gear so that the 5th speed locking ball does not fall into the gear box.

Remove the 5th speed housing.

**Replacing the secondary shaft nut:**

- select neutral;
- engage 1st and 5th gears;
- loosen and unlock the secondary shaft nut using wrench B.Vi. 204-01 and a torque wrench.

**REFITTING**

Proceed in the reverse order to removal.

Put three drops of Loctite FRENLOC on the threads of the new nut and torque tighten it to 15 daNm.

Return the gears to neutral, engage 4th then fit the casing in place (after coating the seal with PERFECT SEAL).

Torque tighten the bolts to 1.5 daNm.

Check that all the gears can be selected.

Coat the threads of the 5th speed locking ball plug and the reverse gear positive locking device with CAP 4/60 THIXO.

Refill the gearbox with 2.2 litres of oil.

## ESSENTIAL SPECIAL TOOLING

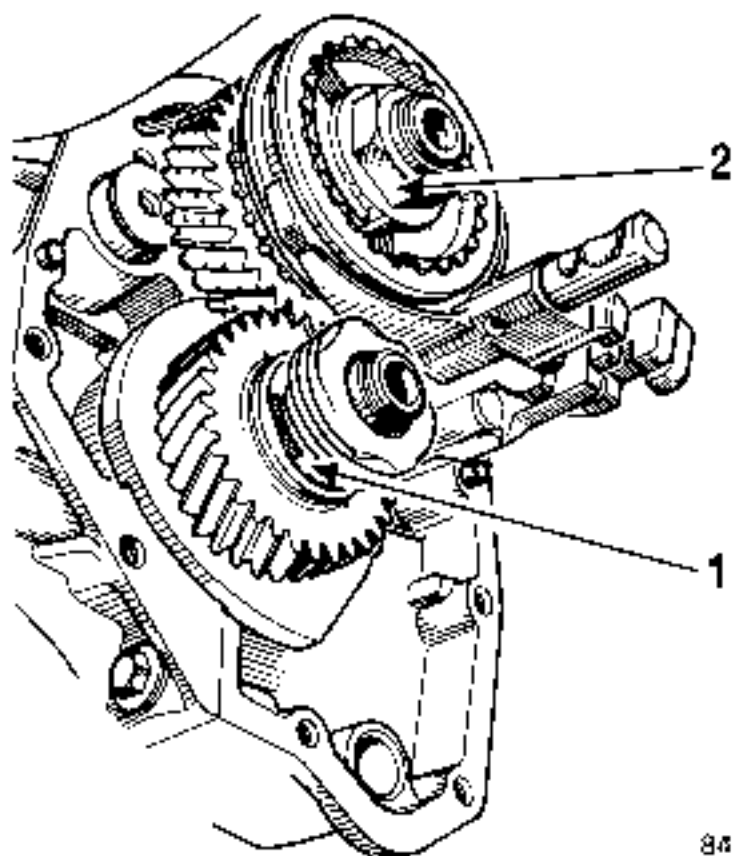
B. Vi. 28-01	Extractor
B. Vi. 31-01	Set of 5 mm $\emptyset$ drifts
B. Vi. 204-01	Secondary shaft nut wrench
B. Vi. 1003	5th speed hub extractor
B. Vi. 1007	Claws for B.Vi. 28-01

## TIGHTENING TORQUES (in daNm)

Primary shaft nuts	13
Secondary shaft nuts	15
Rear casing bolts	1,5

This operation is performed after the gearbox has been removed and the 5th speed housing has been dismantled (see previous page).

Make marks on the hub and sliding gear.

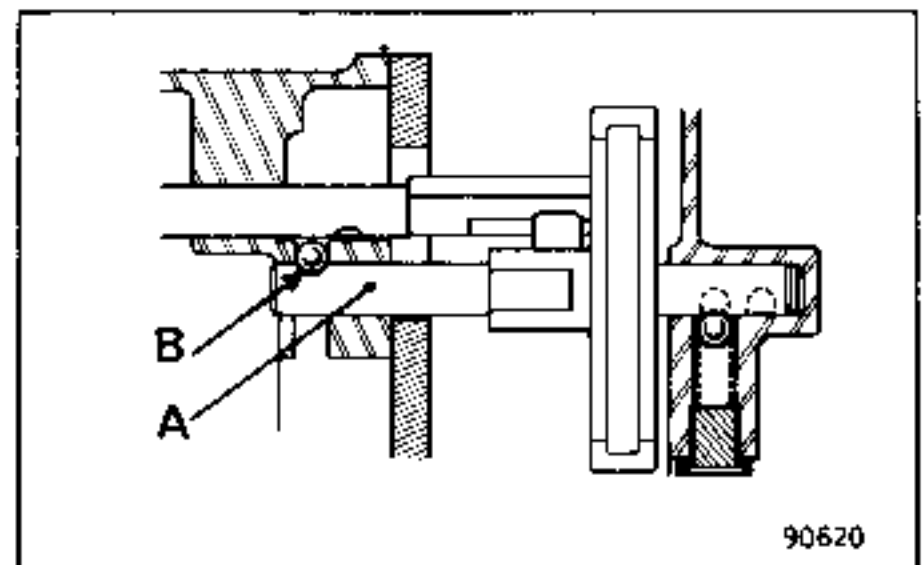


Select 1st and 5th gears.

Loosen and remove primary shaft nut (2).

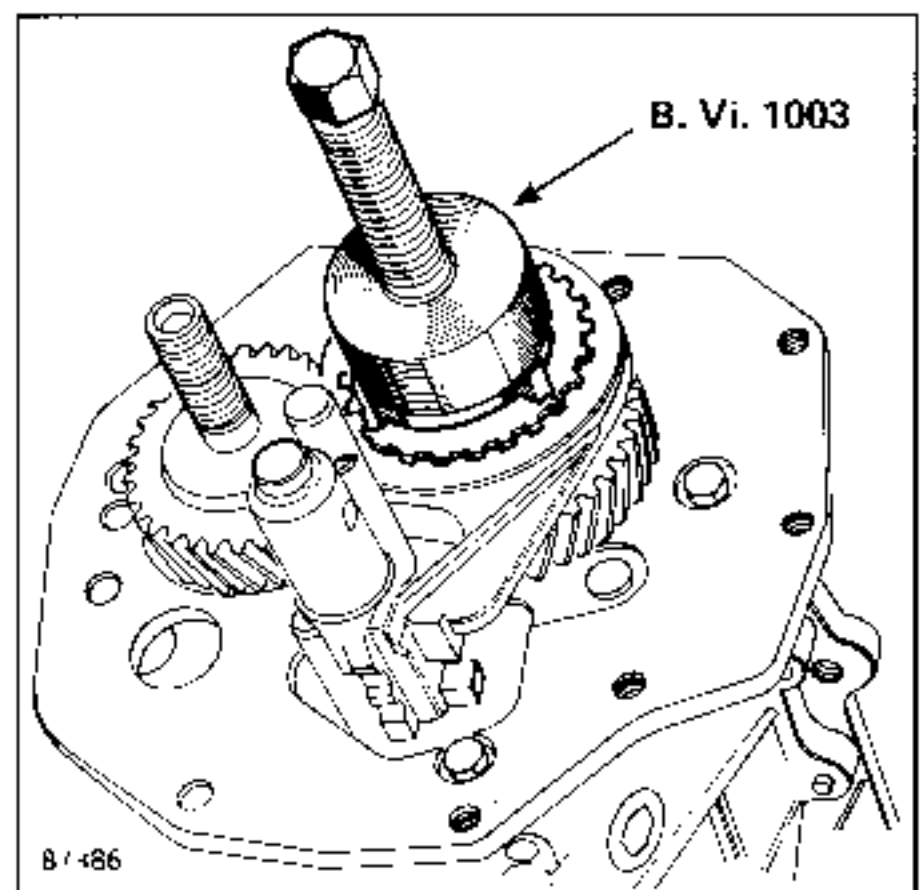
Loosen and remove secondary shaft nut (1) using wrench B.Vi.204-01 and a torque wrench.

When removing the 5th speed shaft and fork without separating the half-casings, the gearbox must be positioned at the reversing light switch end to prevent the locking ball falling into the gearbox.



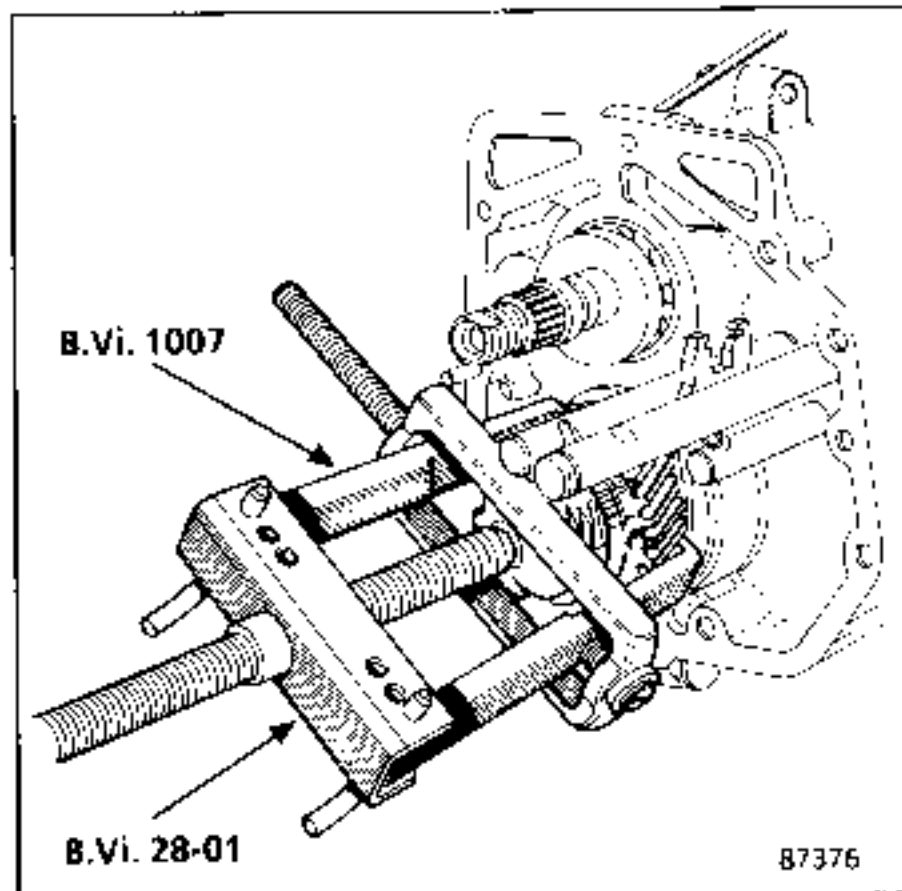
Return the gears to neutral.

Remove the 5th speed synchro assembly (hub-sliding gear and shaft-fork) using tool B.Vi.1003.



Remove the 5th speed idler gear, bearing and bush.

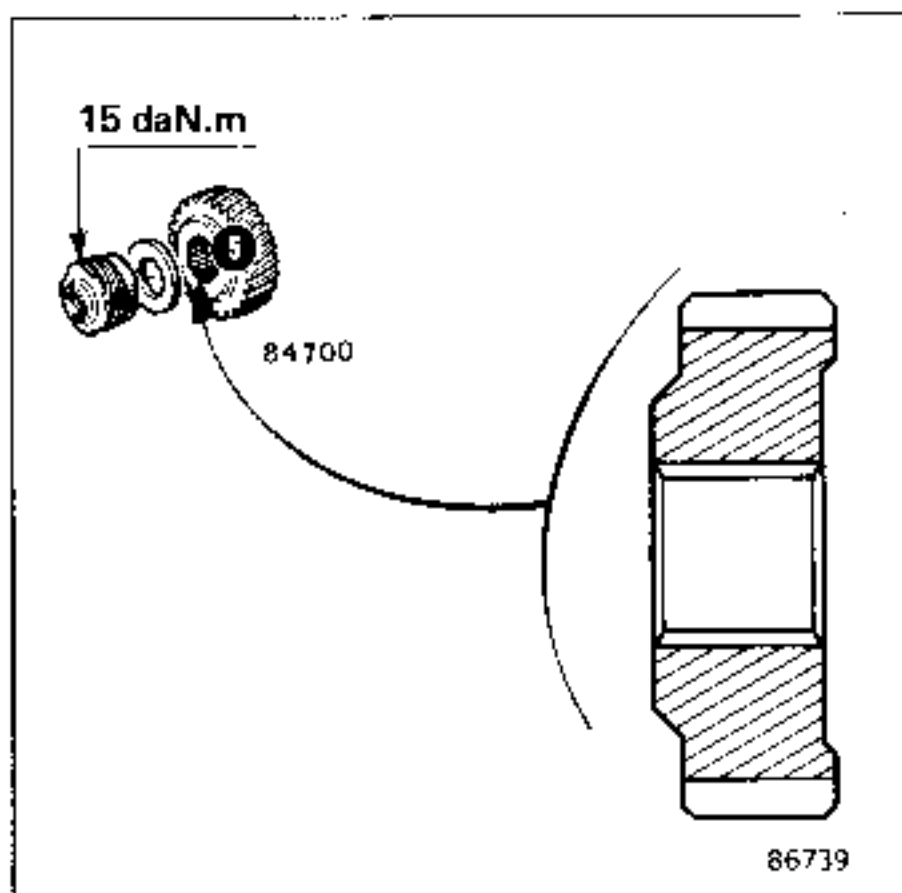
Remove the 5th speed fixed gear using tool B.Vi. 28-01 fitted with claws B.Vi. 1007.



### REFITTING

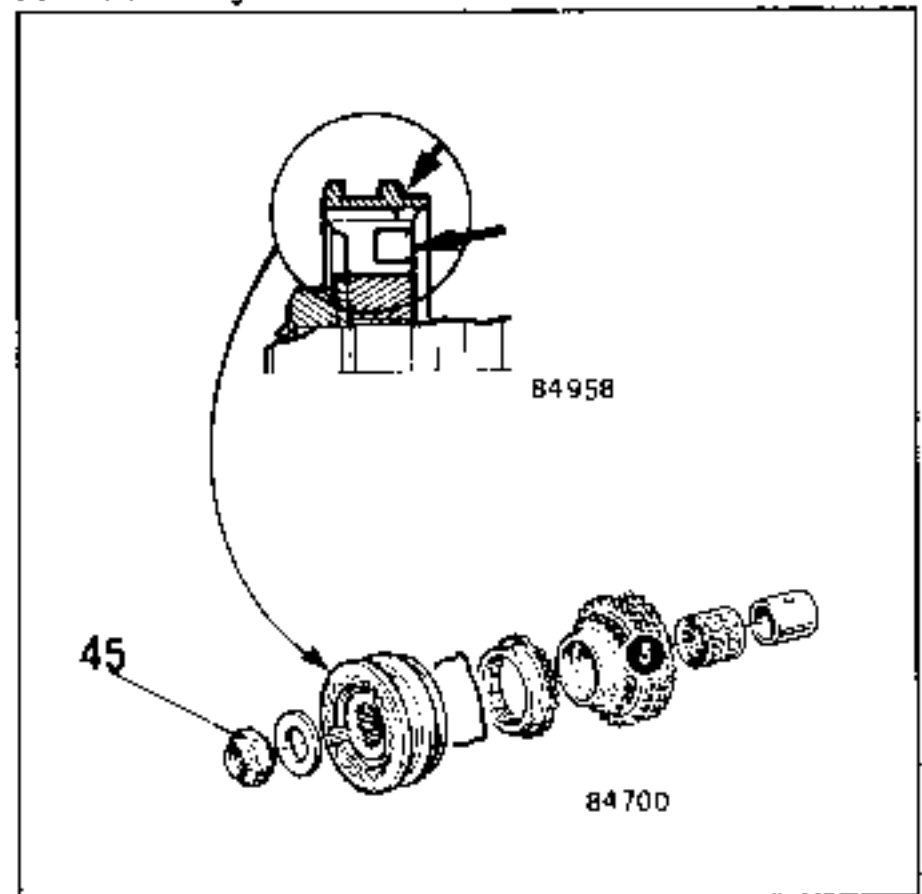
Proceed in the reverse order to removal.

On the secondary shaft: ensure that the fixed gear is fitted the correct way round and bond it with Loctite FRENBLLOC.



On the primary shaft:

Bond the hub with Loctite FRENBLLOC and ensure that the assembly is fitted the correct way round.



Place the bosses on the synchro ring in the notches in the hub.

Refit the 5th speed synchro assembly, hub-idler gear and fork shaft.

Select 1st and 5th gears.

Put three drops of Loctite FRENBLLOC on the threads of the new nut, torque tighten and lock them:

- primary shaft: 13 daNm
- secondary shaft: 15 daNm.

Refit the 5th speed casing.

Check that all gears can be selected.

Type	Quantity	Component
Loctite SCELBLOC	Coating	Stub axle splines
CAF 4/60 THIXO	Coating	Driveshaft roll pins - gearbox end
MOLYKOTE BR2	Coating	Joint splines at gearbox end
FRENBLOC	Coating	Brake calliper bolts
MOBIL CVJ 825 Black star or Mobil EXF 57C	140 g  140 g	Lobro joint  GI 82 joint

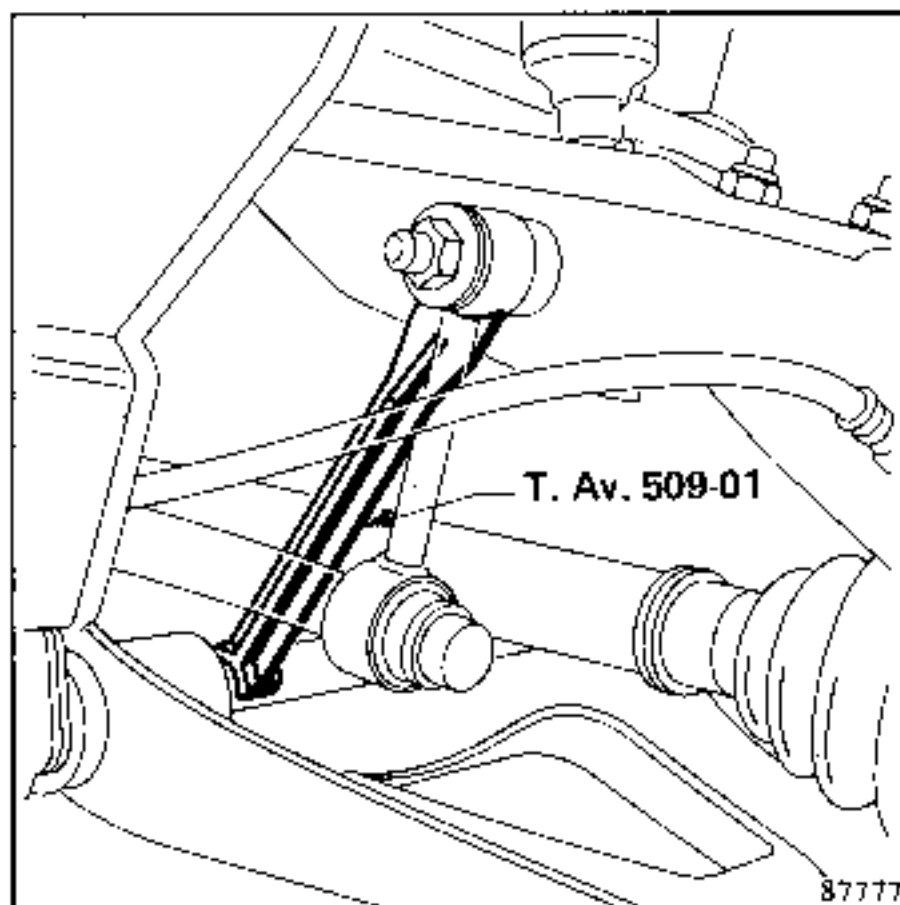


ESSENTIAL SPECIAL TOOLING	
<b>B. Vi. 31-01</b>	Set of drifts
<b>T. Av. 476</b>	Ball joint extractor
<b>T. Av. 509-01</b>	Retaining spacer
<b>T. Av. 1050</b>	Driveshaft extractor
<b>Rou. 604-01</b>	Hub locking tool

TIGHTENING TORQUES (in daNm)	
Wheel bolts .....	9
Driveshaft nuts .....	25
Upper ball joint nuts .....	6,5
Steering ball joint nuts .....	4
Brake calliper mounting bolts .....	10

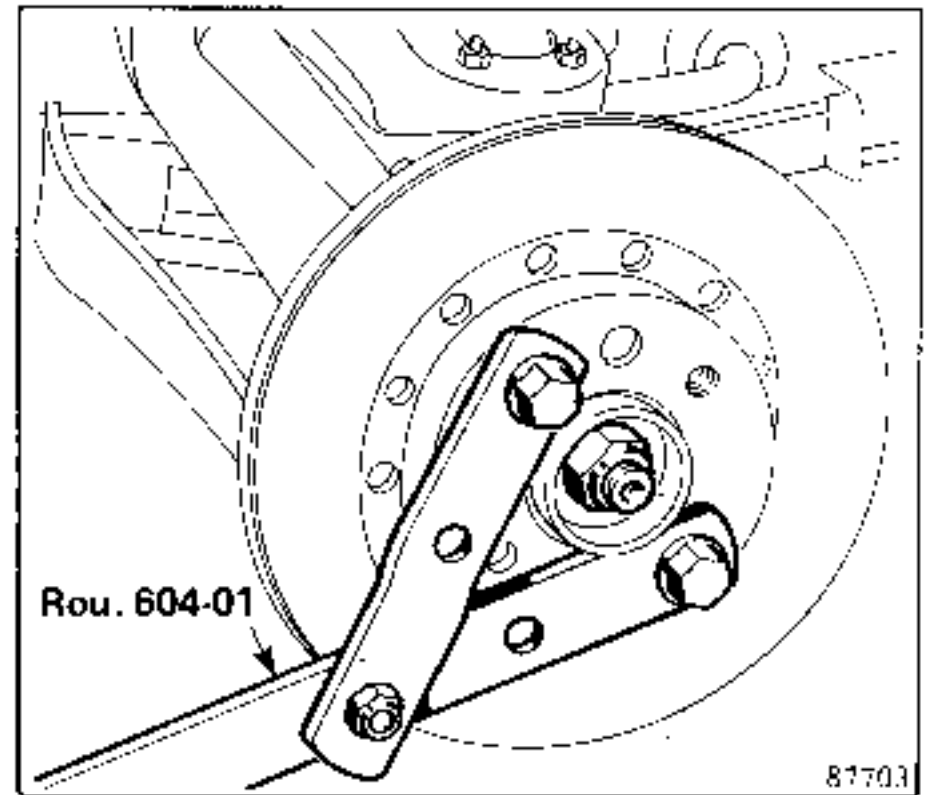
**REMOVAL**

Compress the half-axle and fit spacer **T. Av. 509-01**.

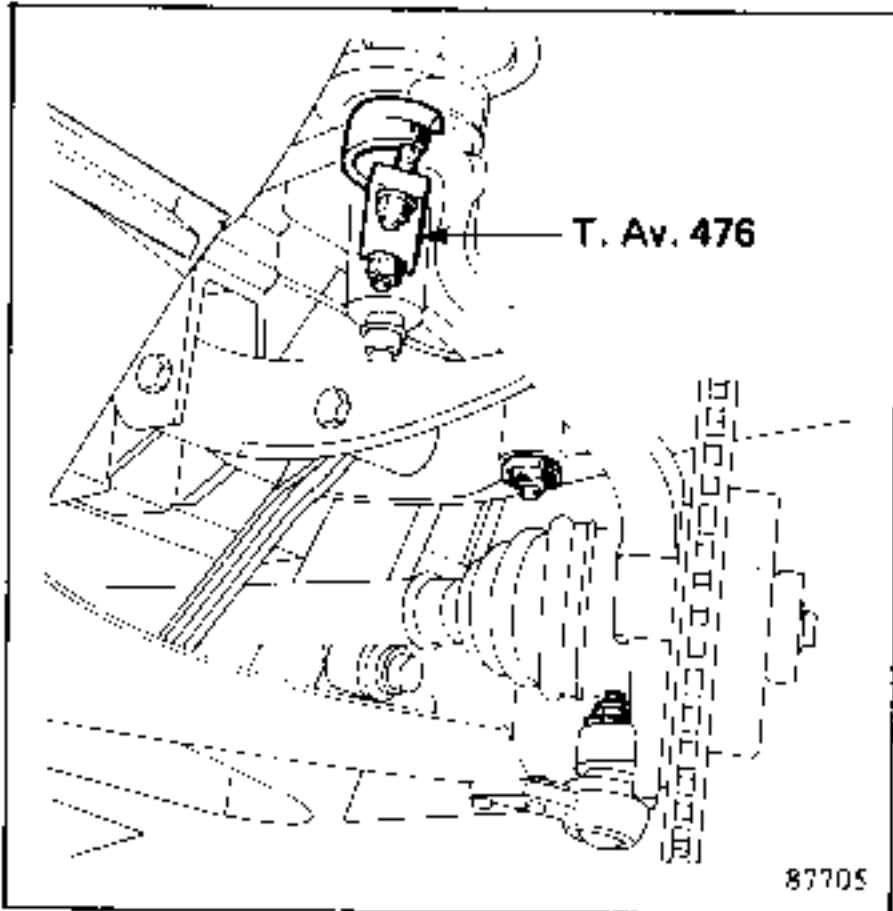


**Remove:**

- the brake calliper assembly;
- the driveshaft nut using tool **Rou. 604-01**.

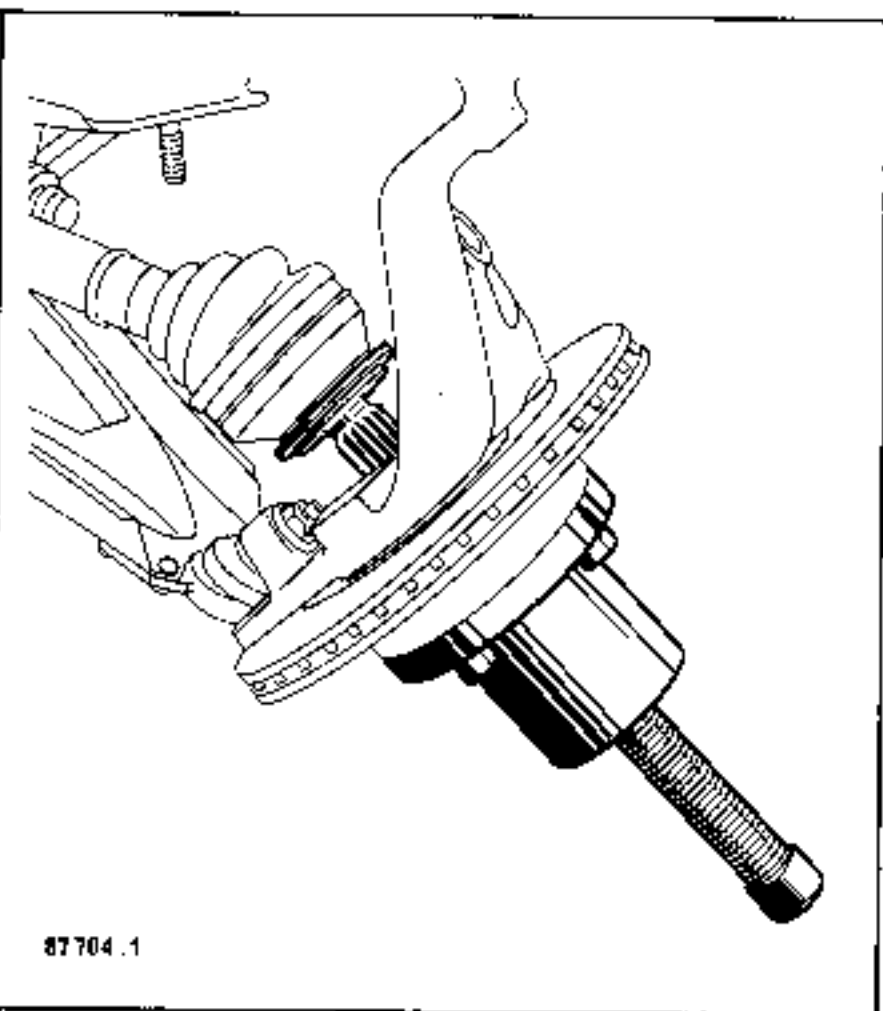


Unfasten the upper and steering ball joints using tool **T. Av. 476**.

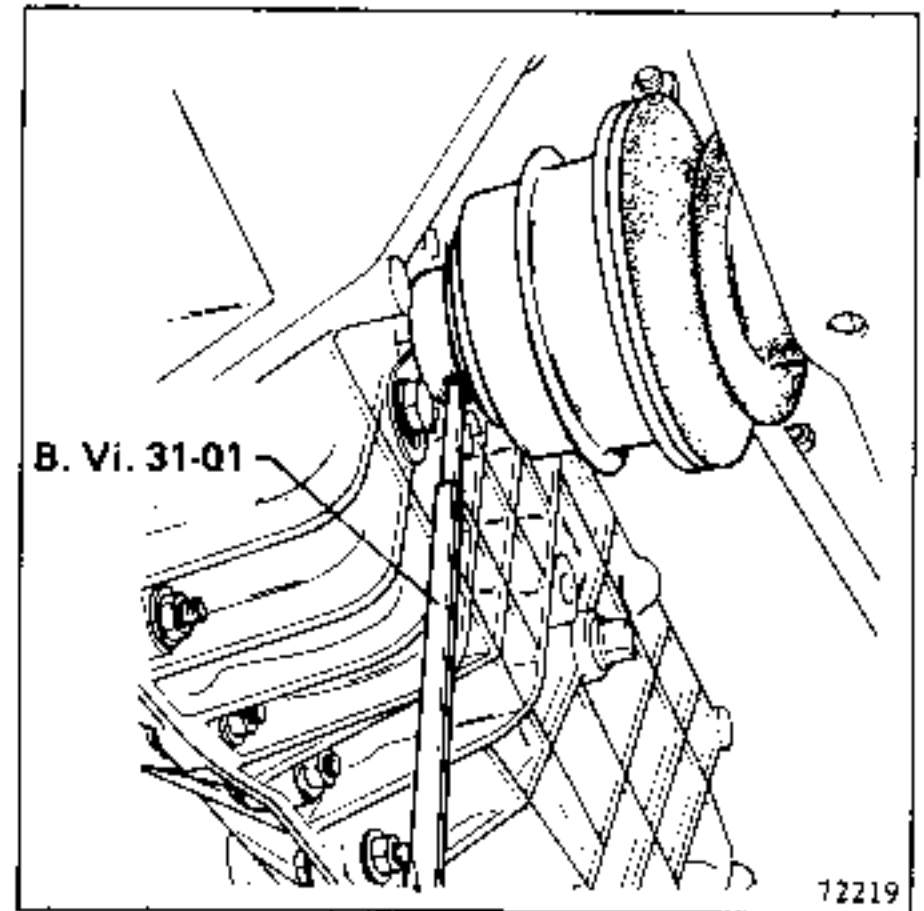


For vehicles with bonded driveshafts, they must be pushed back using tool T. Av. 1050.

Tilt the half-axle to free the stub axle from the driveshaft.



Knock out the pins at the gearbox end using tool B. Vi. 31-01.



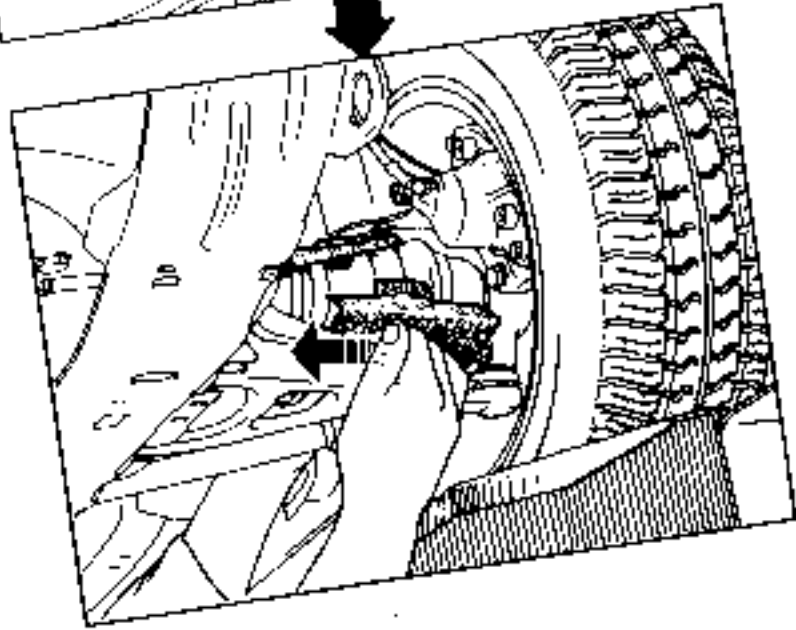
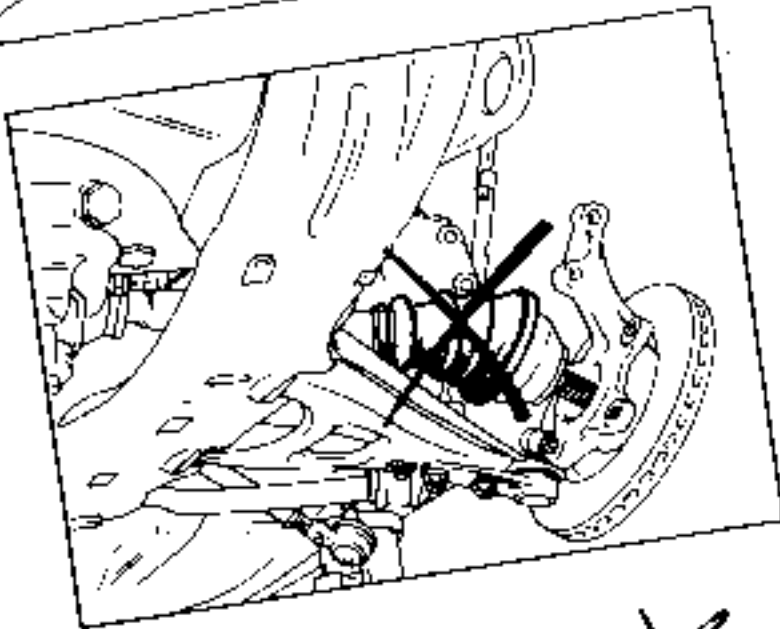
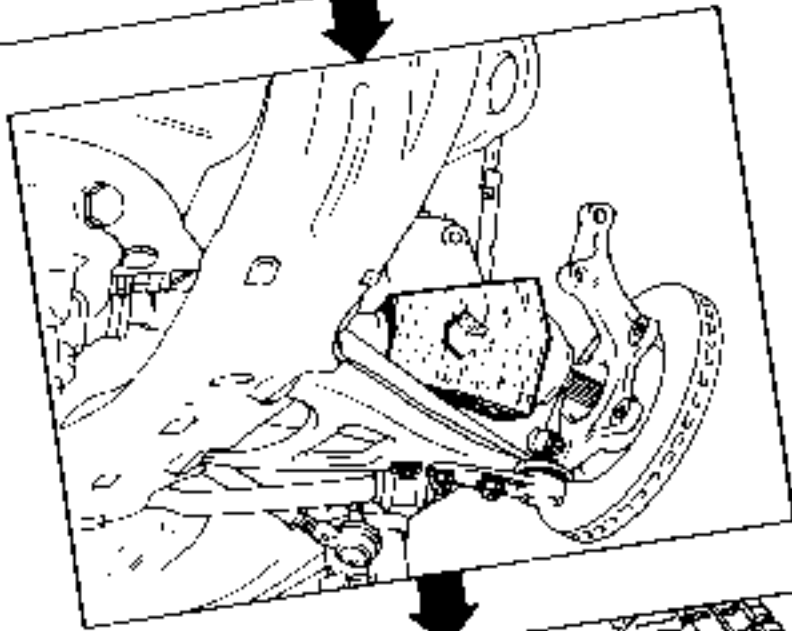
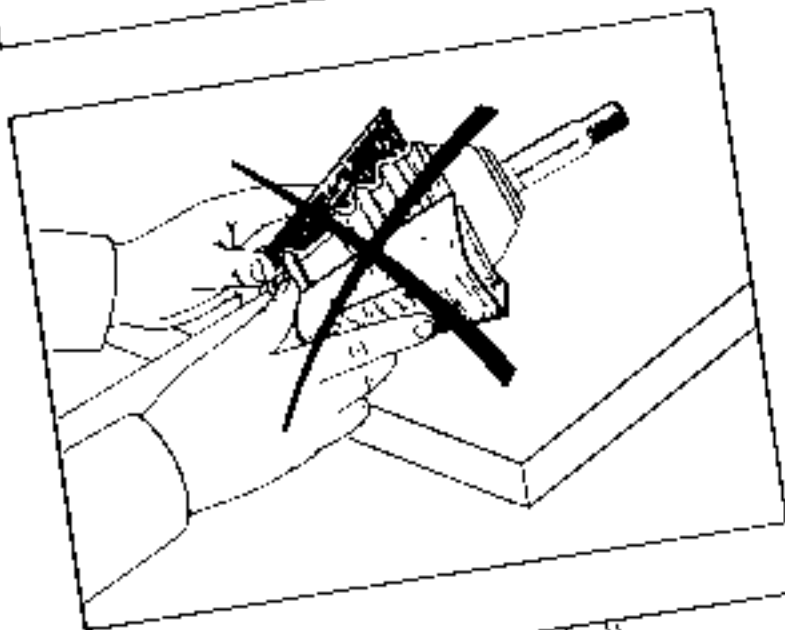
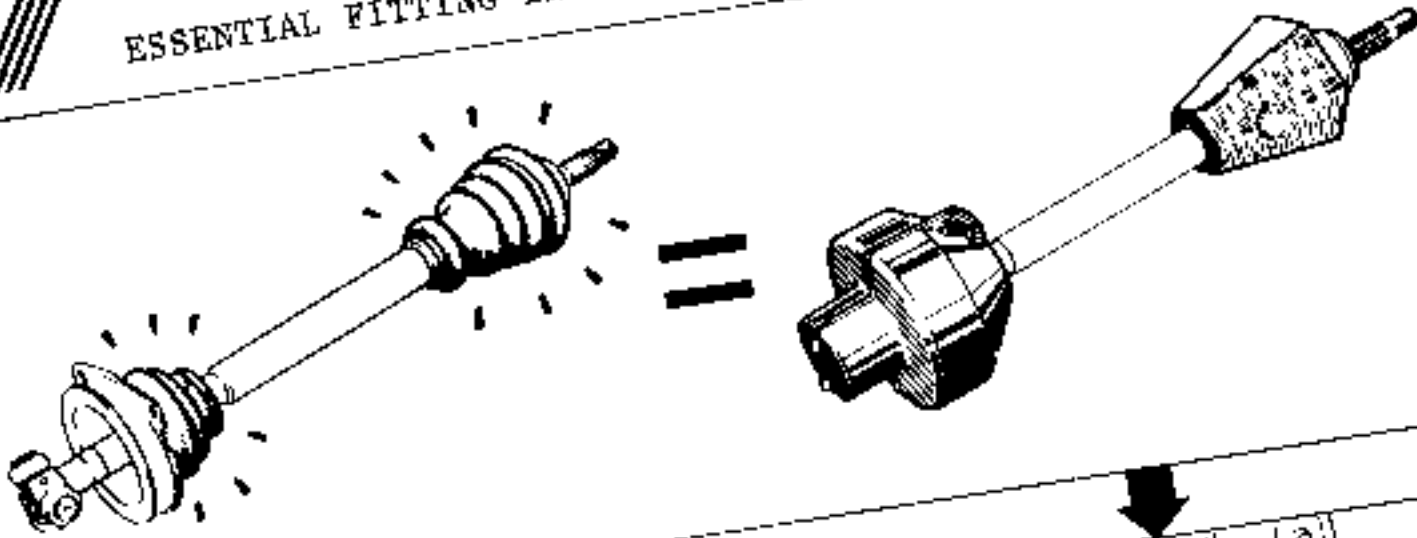
Remove the driveshaft:

Take care not to damage the gaiters during this operation.

**REFITTING**

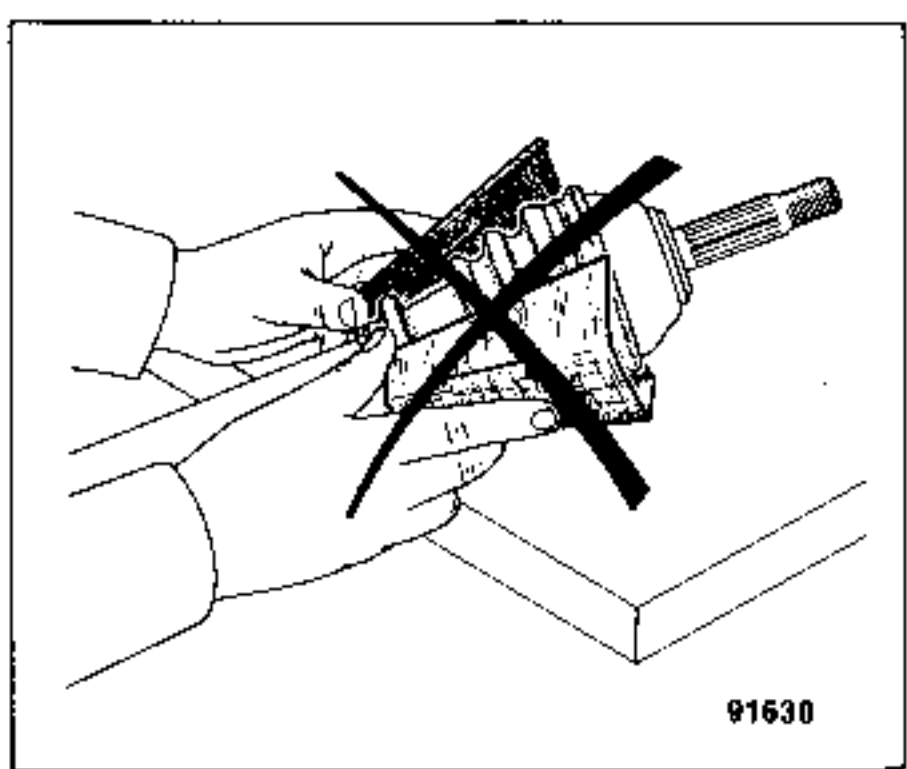
Note: From now onwards, the Parts Department supplies driveshafts equipped with the protector and provided with fitting instructions. These instructions must be followed in order to ensure that the driveshafts are fitted as well as possible since the slightest knock to the gaiters sooner or later causes the rubber to split and the driveshaft to be destroyed.

ESSENTIAL FITTING INSTRUCTIONS

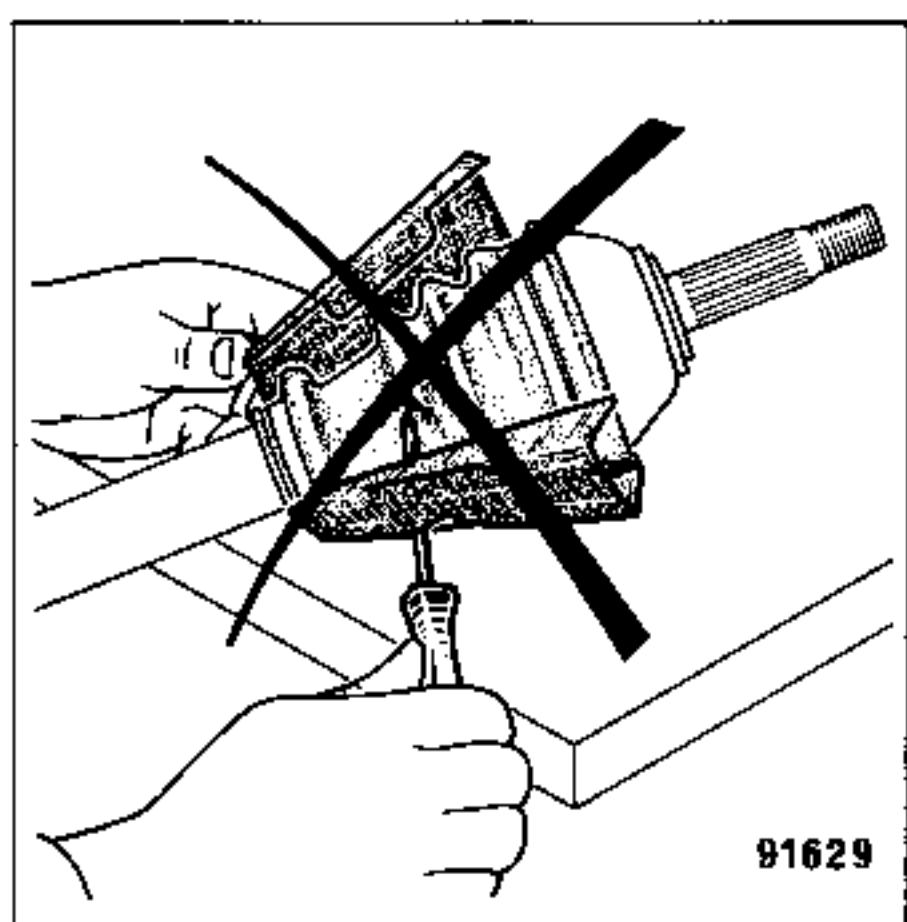


**RENAULT**

Never remove the cardboard protectors from the driveshafts before the operation for remounting the driveshaft on the vehicle has been completed.



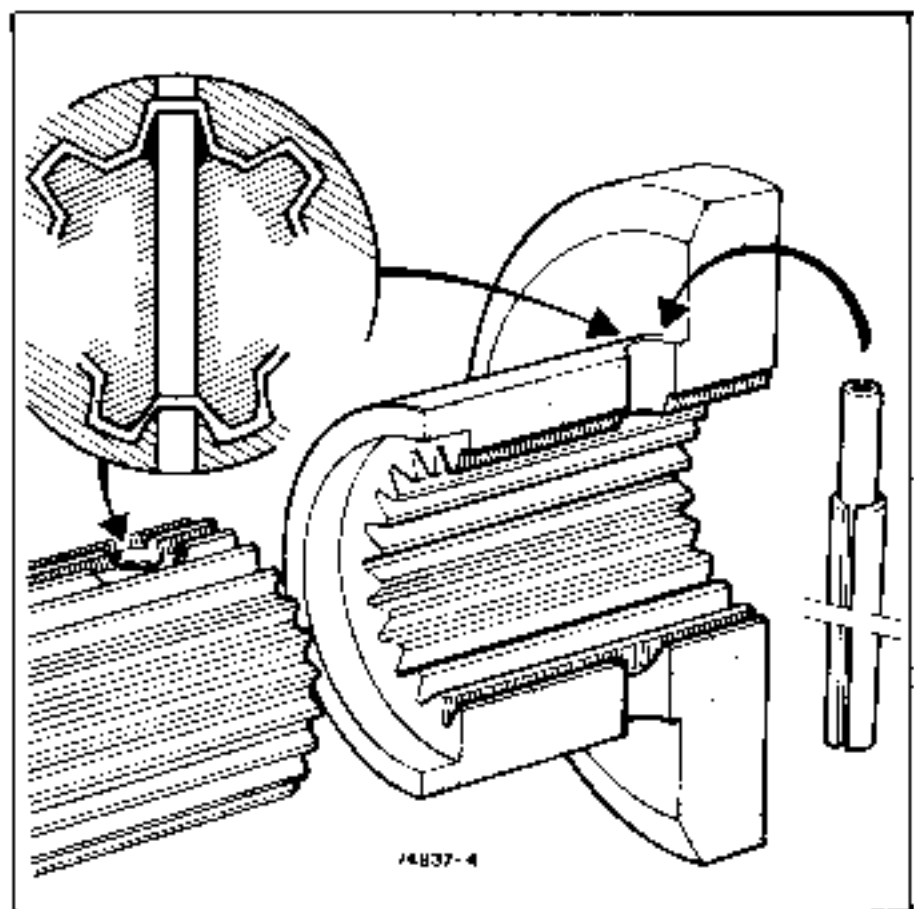
Never use sharp objects which might damage the gaiter.



Coat the splines of the joint at the gearbox end with **MOLYKOTE BR2**.

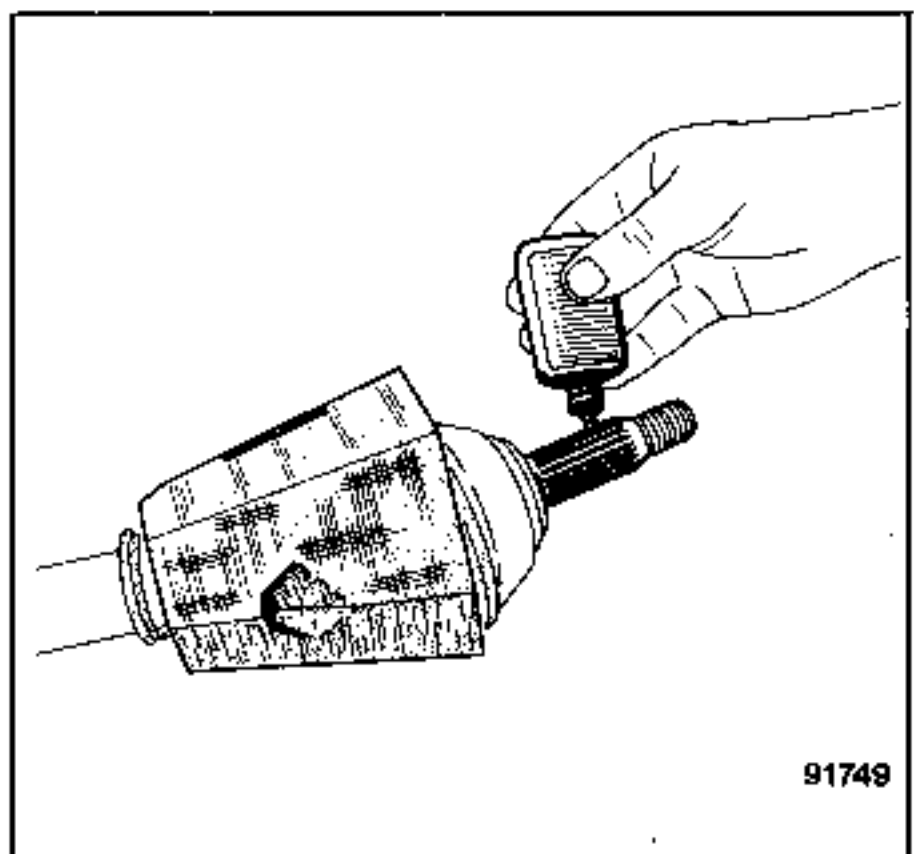
Position the driveshaft in relation to the sunwheel and insert it. Check its position with the cranked punch from set **B.Vi. 31-01**.

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

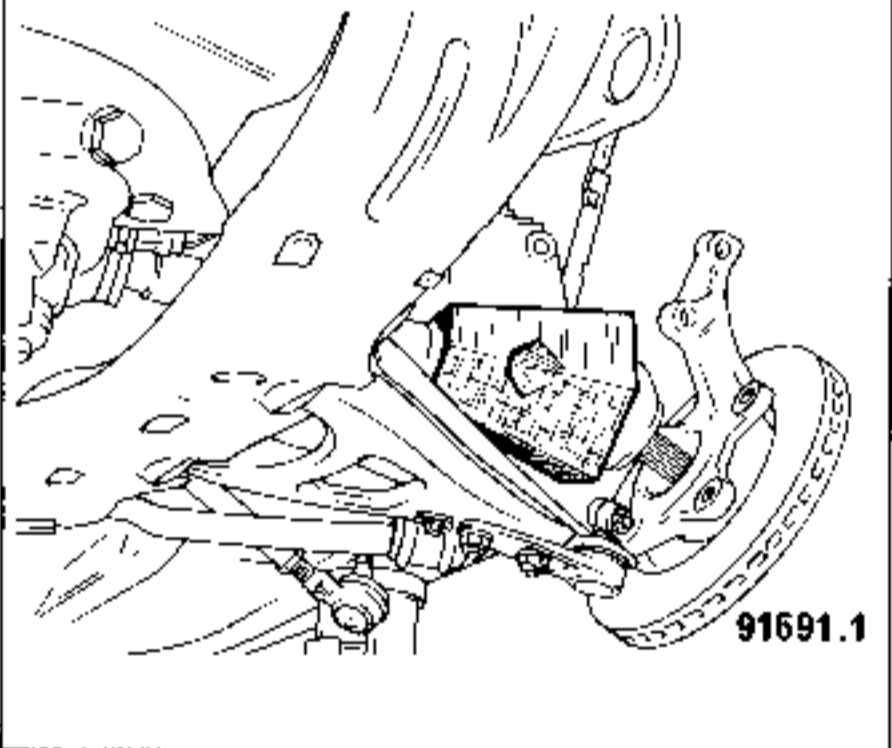
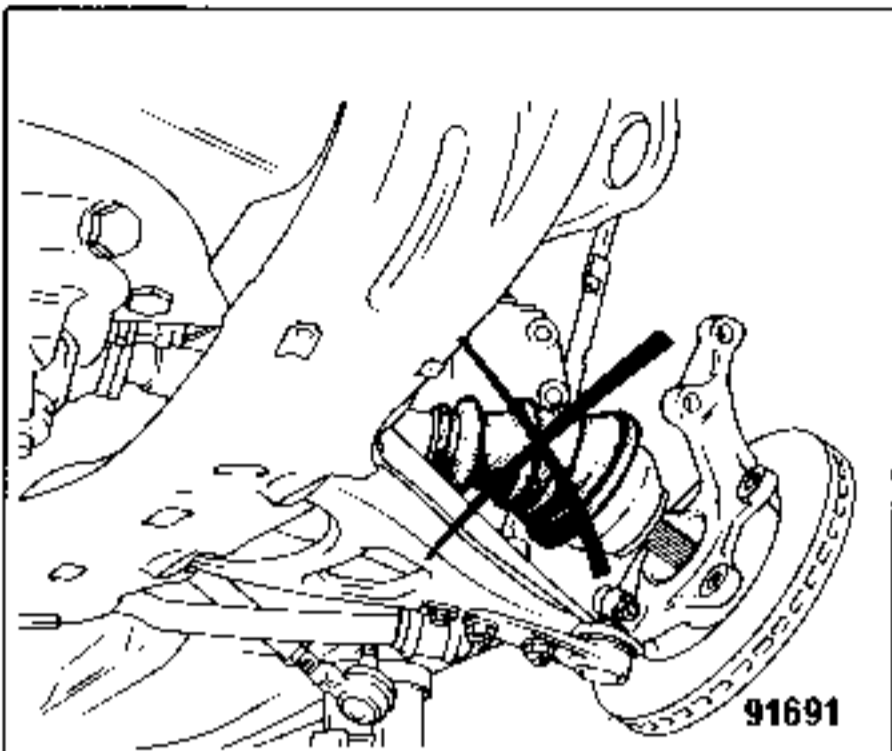


An insert chamfer on the sunwheels makes it easier to fit the new spring pins.

Coat the splines of the stub-axle with **Loctite SCELBLOC**.

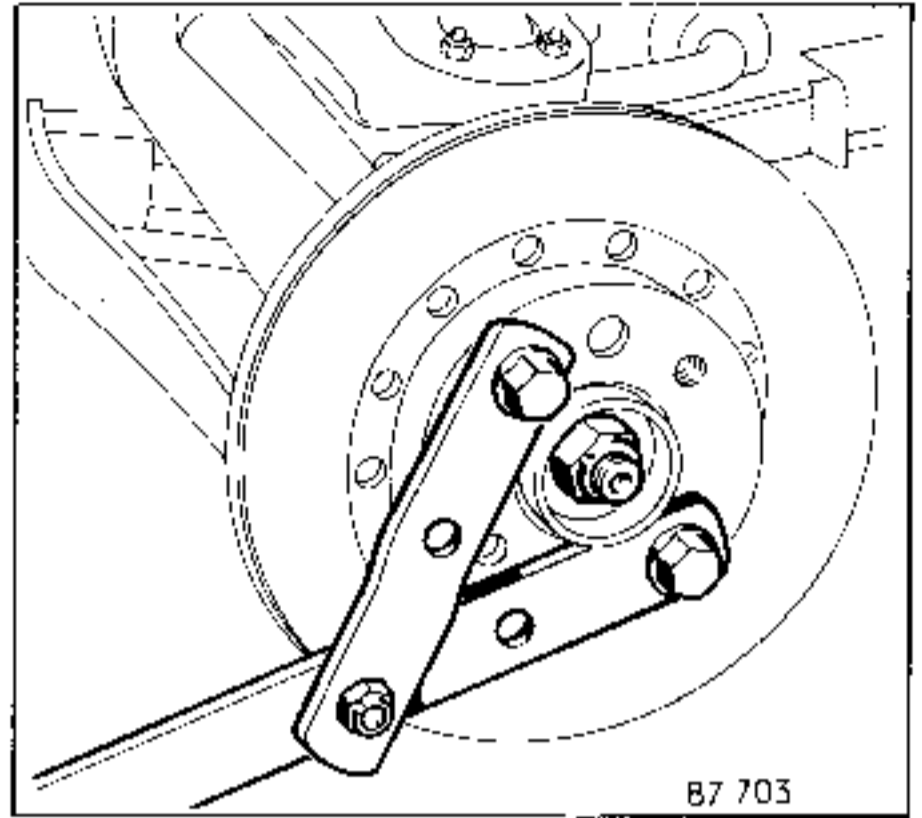


Engage the driveshaft stub-axle in the hub.



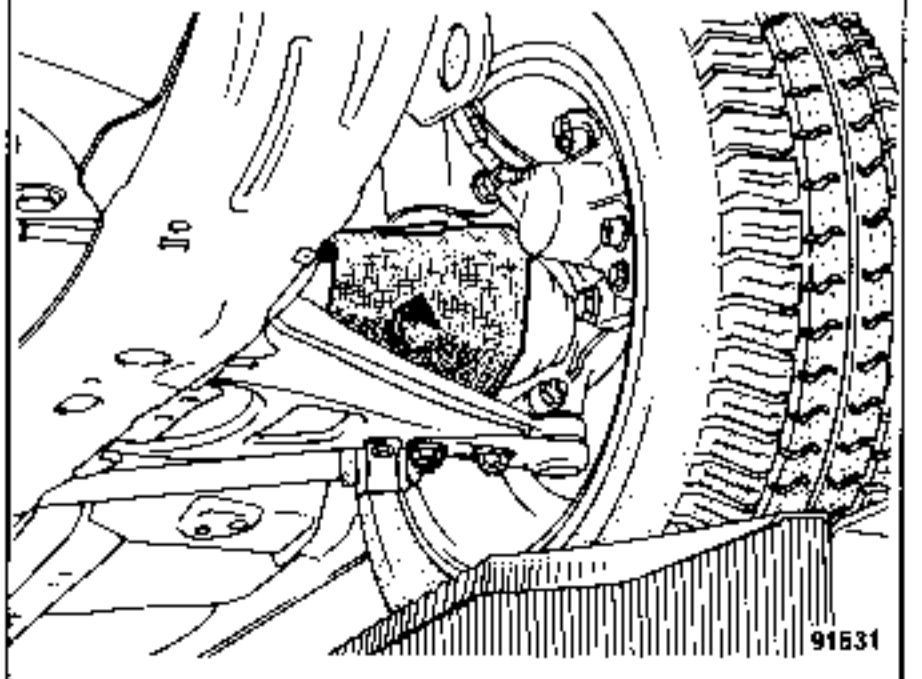
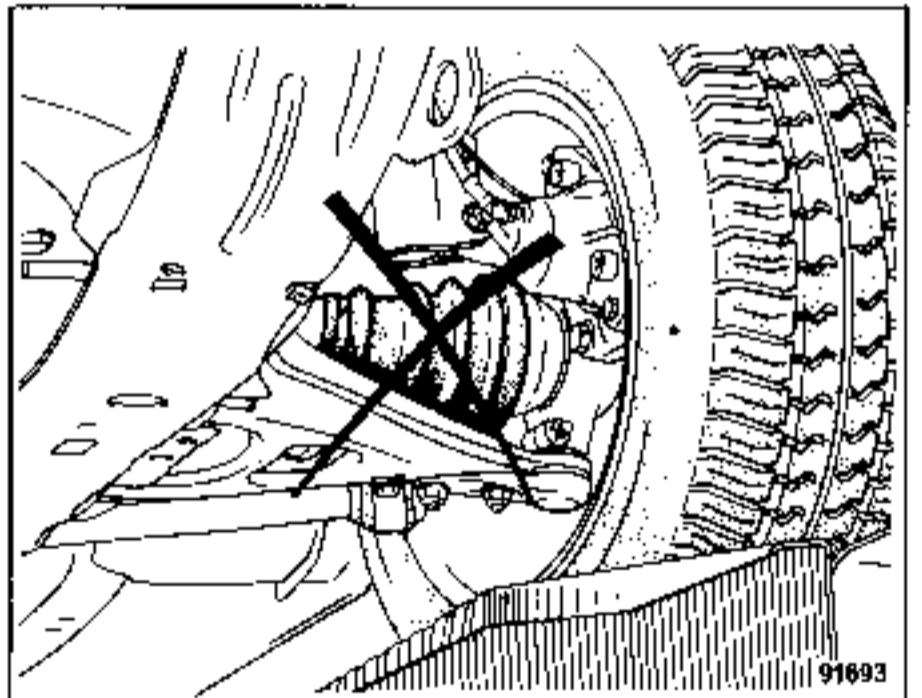
Reconnect the upper ball joint and steering link ball joint and torque tighten the nuts.

Torque tighten the driveshaft nut using tool Rou. 604-01.



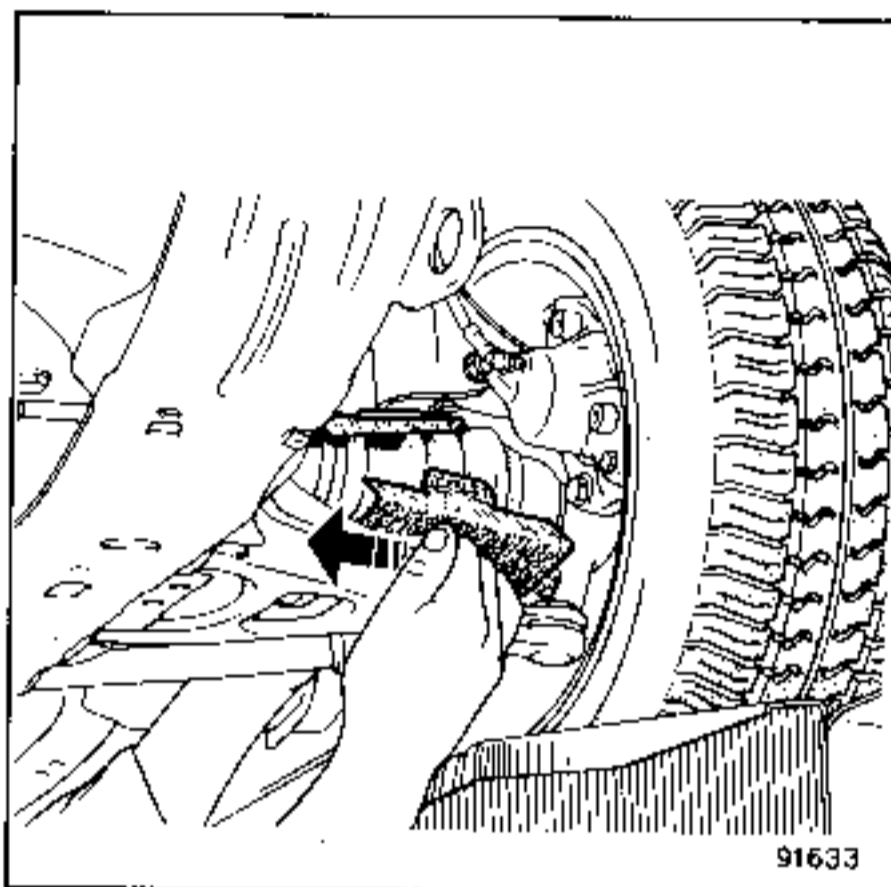
Fit in place the brake callipers, coating the bolts with Loctite FRKNBLOC and torque tighten them.

Place the vehicle on its wheels.

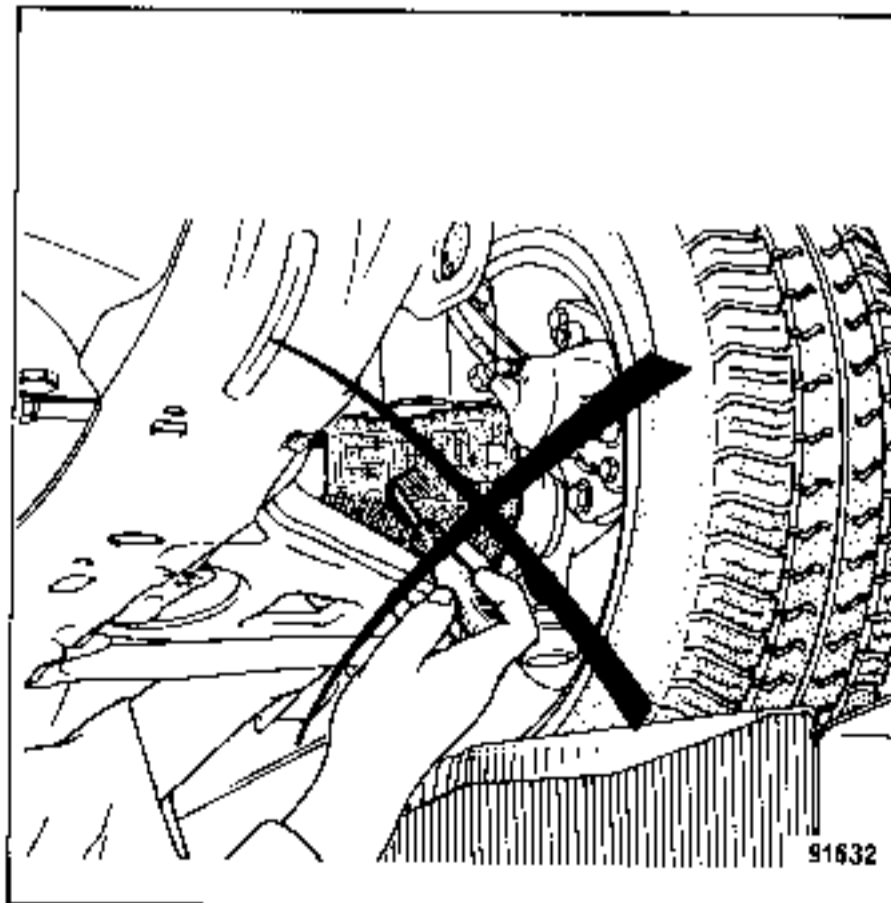


With the vehicle on its wheels, remove:

- the cardboard protectors, tearing them as shown in the drawing;
- spacer T.Av. 509-01.



Under no circumstances should a sharp object be used as it could damage the gaiter.



Press down on the brake pedal several times to bring the piston into contact with the linings.

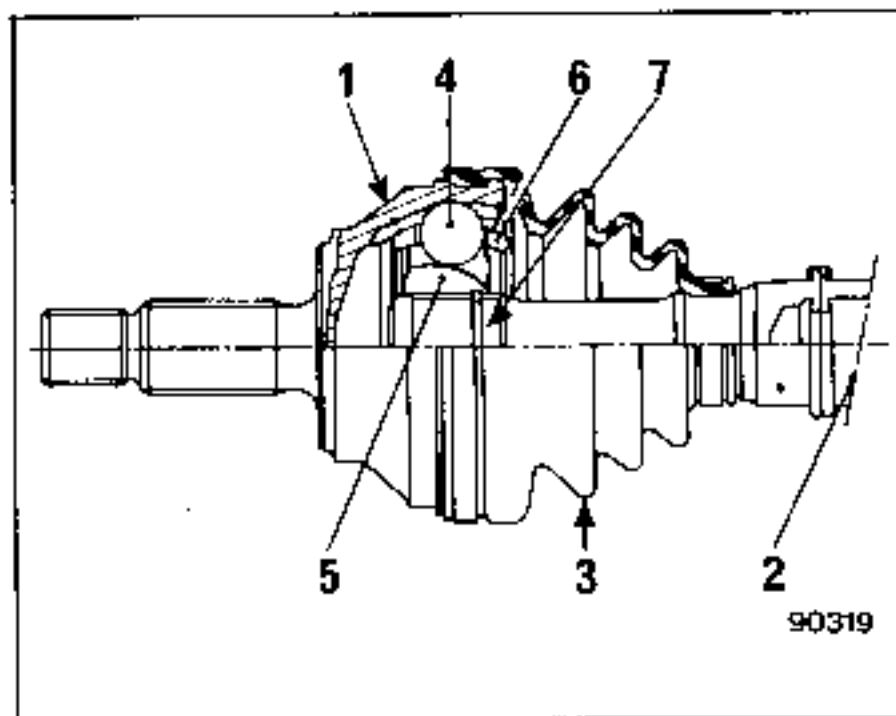
The driveshafts on these vehicles have a 6-ball joint at the wheel end.

The following operations can be carried out on the driveshaft, at the wheel end:

- replacing the joint;
- replacing the gaiter.

#### 6-BALL JOINT AT THE WHEEL END

- 1 - Stub-axle casing
- 2 - Driveshaft
- 3 - Rubber gaiter
- 4 - Balls
- 5 - Ball carrier hub
- 6 - Ball cage
- 7 - Retaining ring



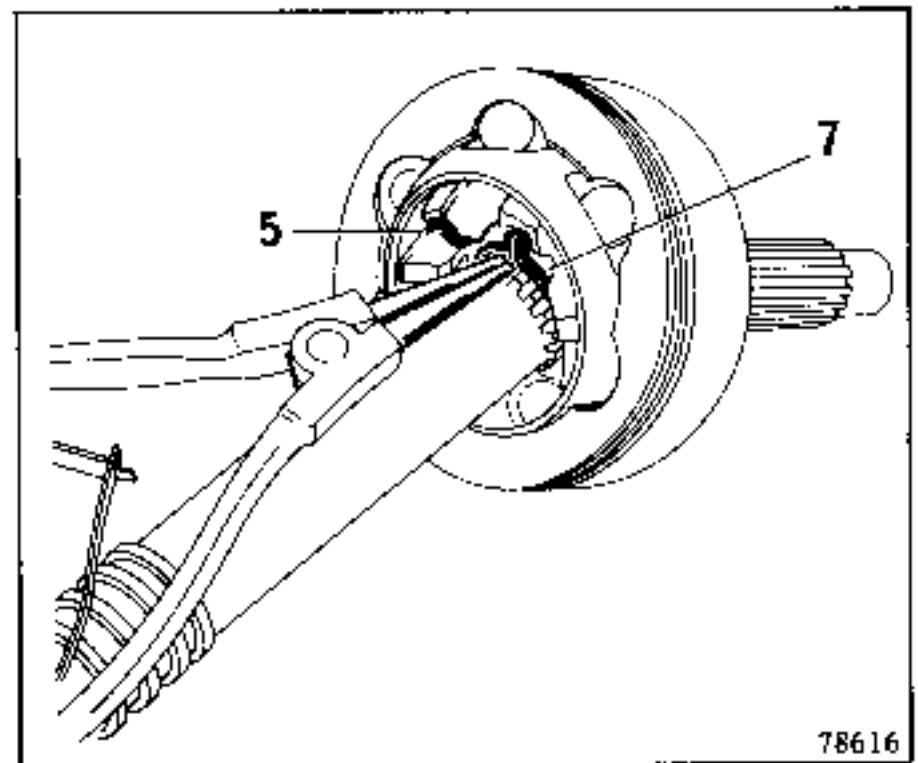
#### DISMANTLING

Cut the clip and the gaiter over its entire length.

Remove as much grease as possible.

Spread retaining ring (7) and at the same time strike the front of the ball carrier hub (5) a few times with a mallet.

In this way the joint is separated from the shaft.

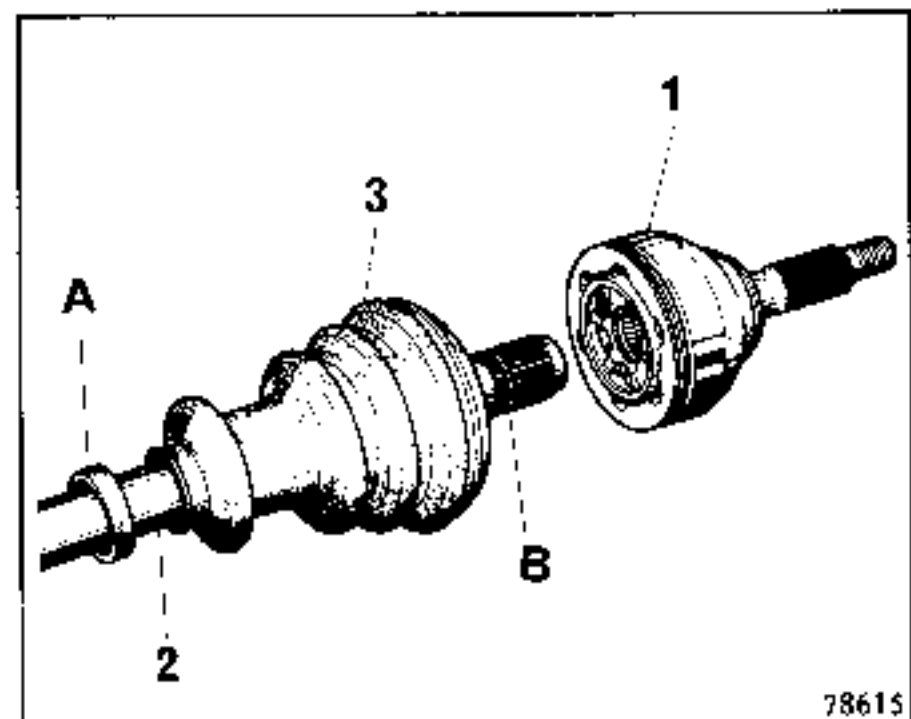


#### REASSEMBLY

Engage the following on the shaft:

- rubber ring (A);
- gaiter (3).

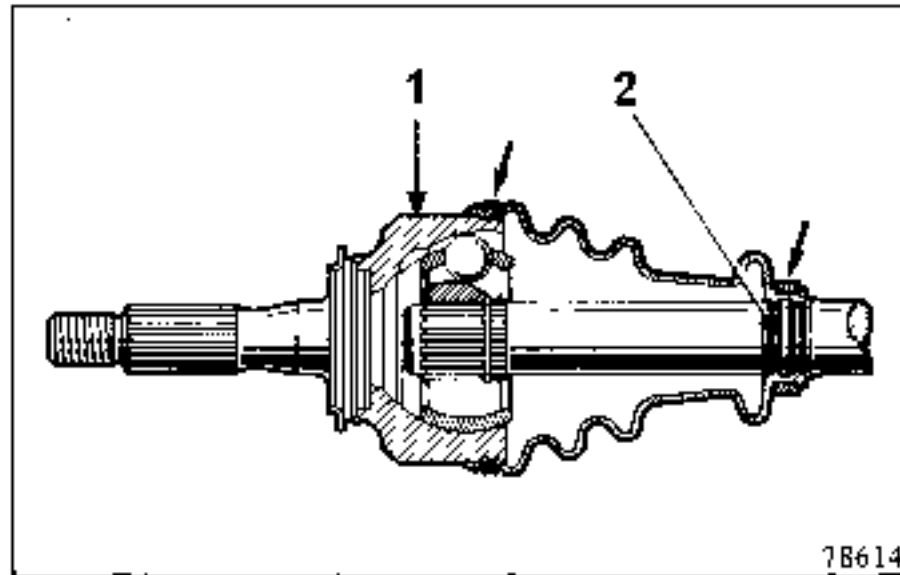
Fit the ball-type joint (1) together with its retaining ring to the splines on the shaft, pushing them in until the ring enters groove (B) on the shaft.



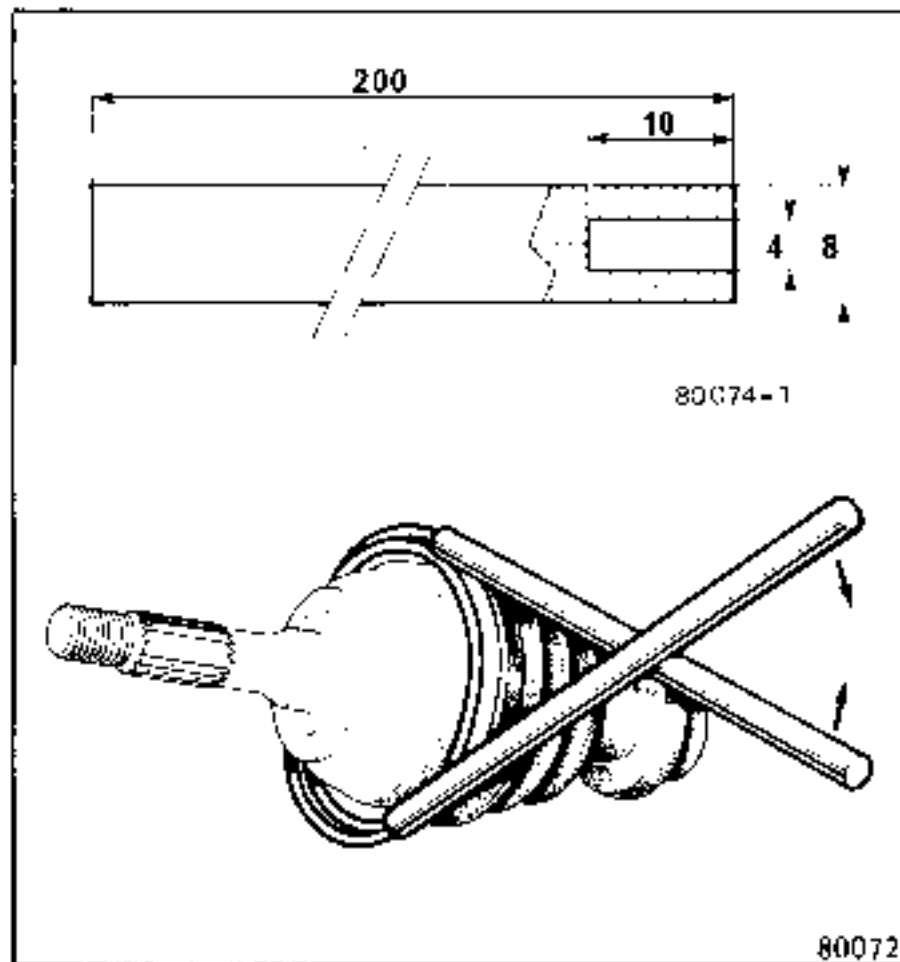
Spread the measured quantity of grease around the gaiter.

**Note:** It is essential to use the amount of grease specified in the list of materials.

Place the lips on the gaiter in the grooves in casing (1) and driveshaft (2).



Fit the retaining clips to the gaiter using two rods which are to be made up locally (to the dimensions shown in the drawing).

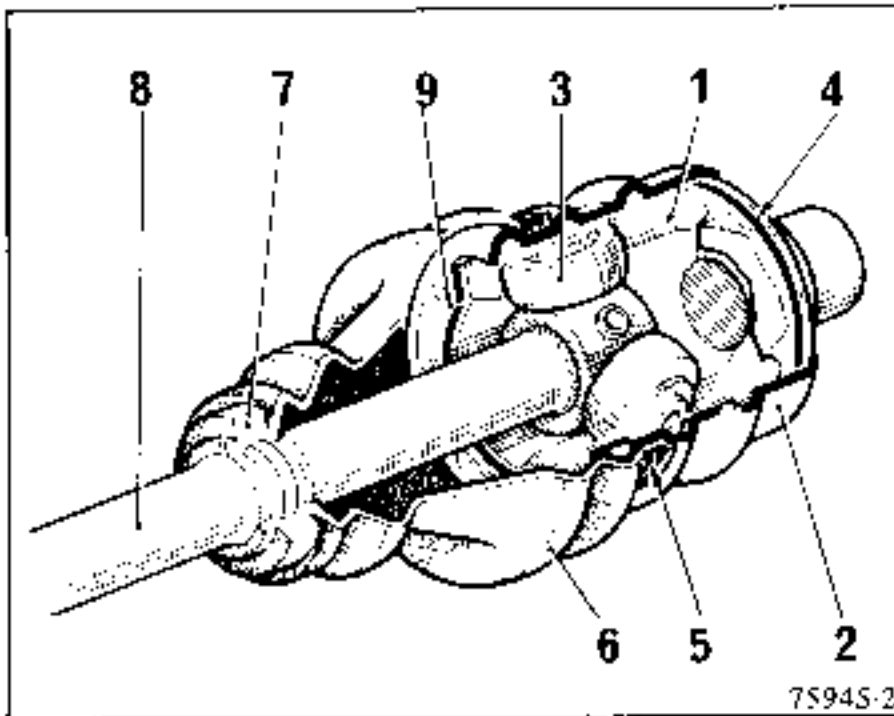




ESSENTIAL SPECIAL TOOLING

T.Av. 1034 Driveshaft clip crimping pliers

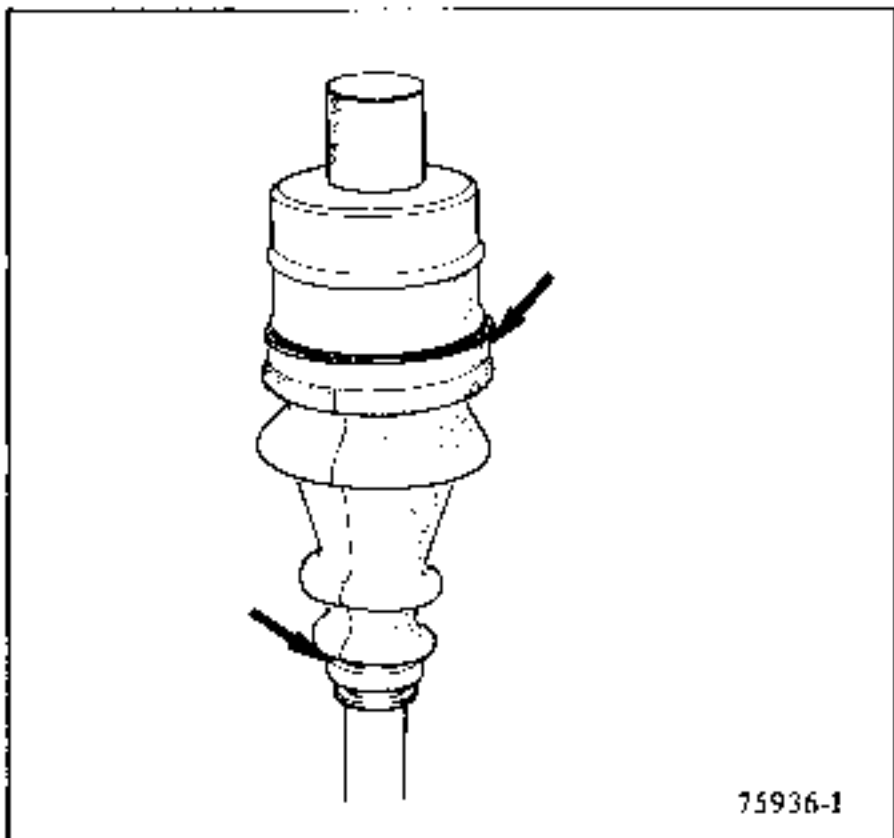
- 1 - Yoke
- 2 - Casing
- 3 - Spider
- 4 - Seal
- 5 - Retaining clip
- 6 - Rubber gaiter
- 7 - Retaining ring
- 8 - Driveshaft
- 9 - Retaining plate



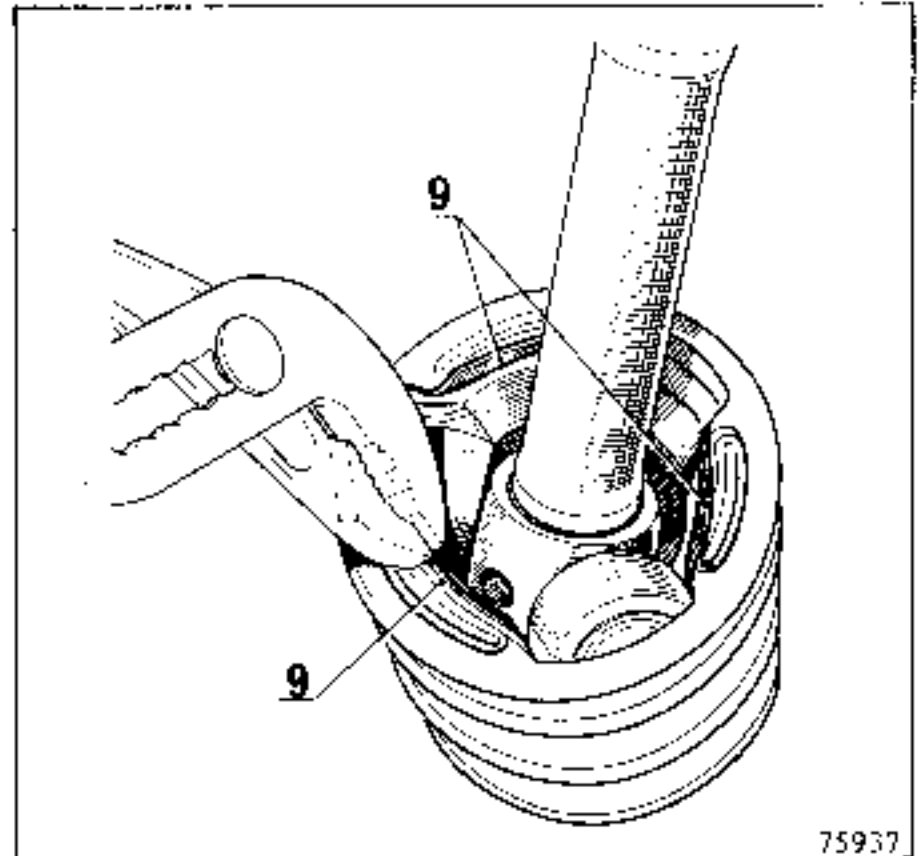
**DISMANTLING**

Cut the crimped clip and gaiter over its entire length.

Remove as much grease as possible.



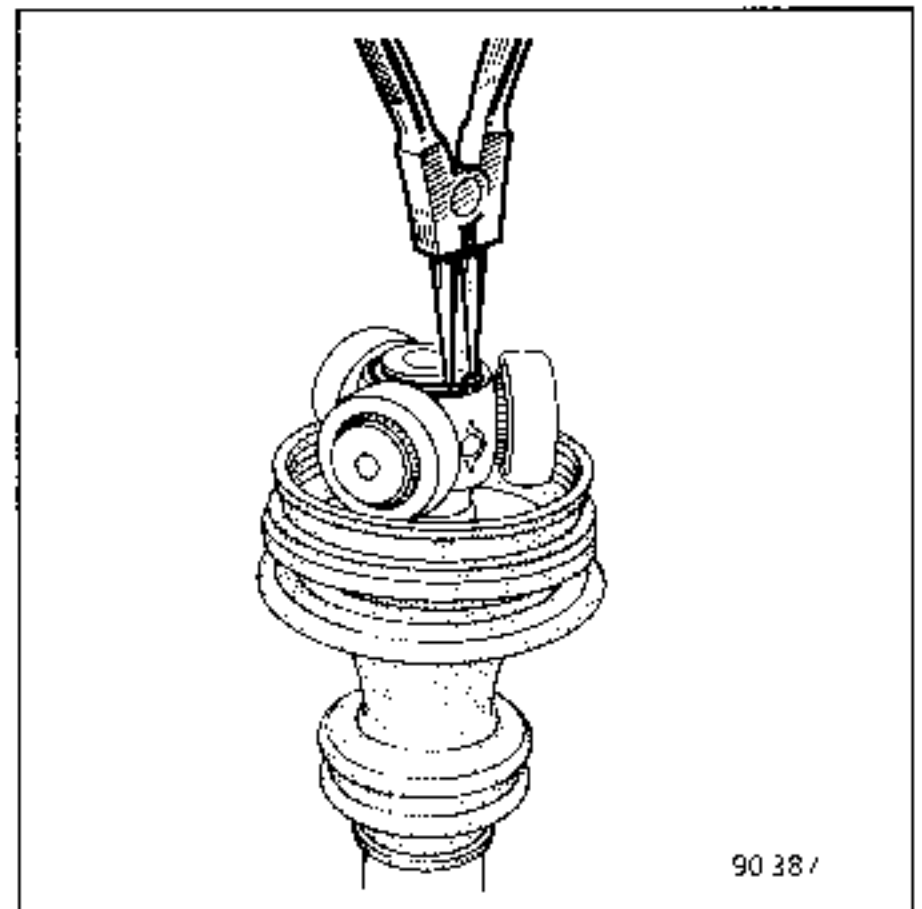
Lift the three tabs (9) on the casing with a pair of pliers and remove the yoke.



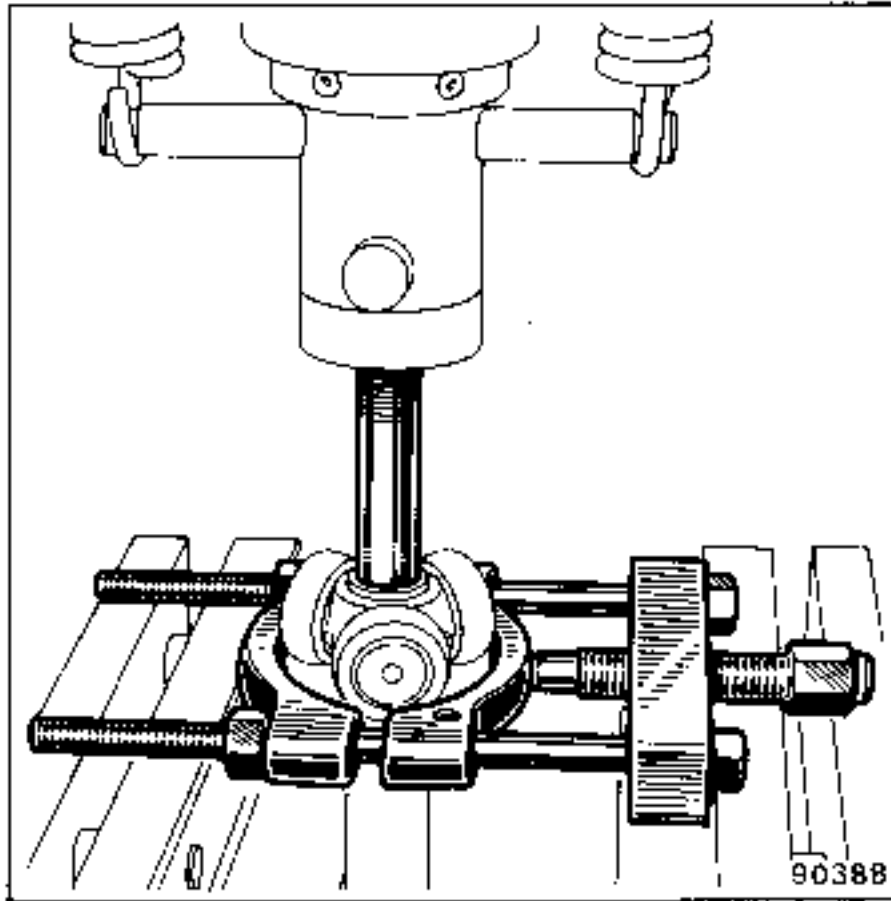
Do not remove the rollers from their respective trunnions as the rollers and trunnions are matched and must never be mixed up with one another.

Never use thinners for cleaning the component parts.

Remove the circlips, if fitted.



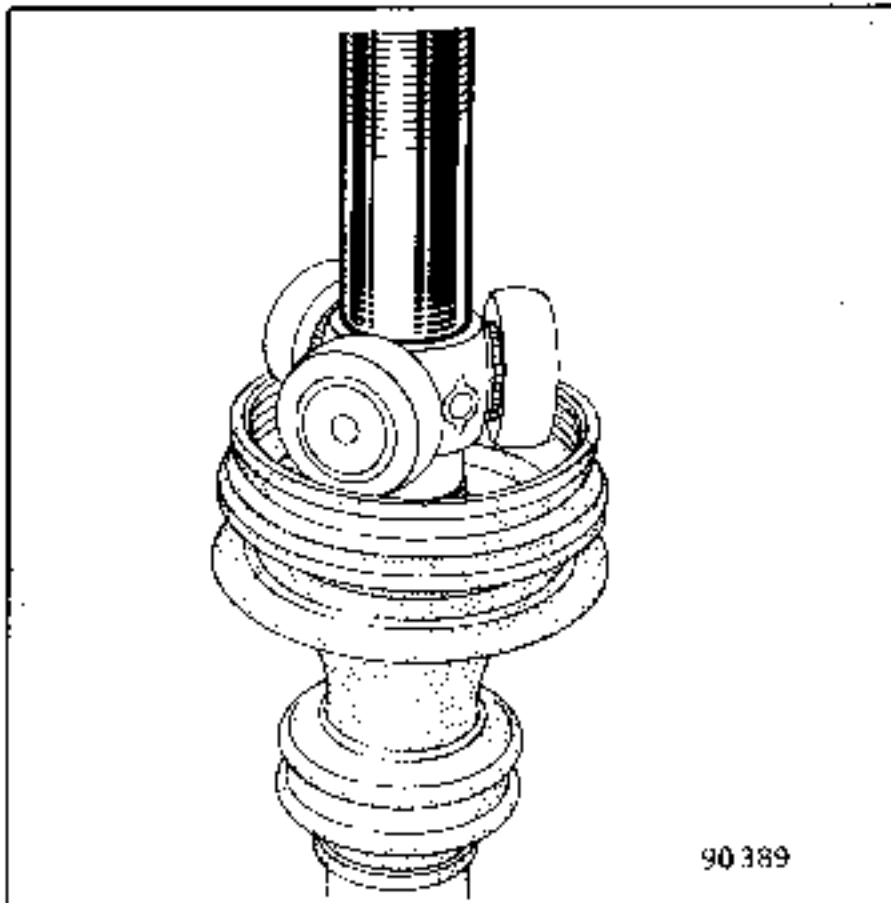
On the press, take out the spider, taking the weight on a stripping extractor.



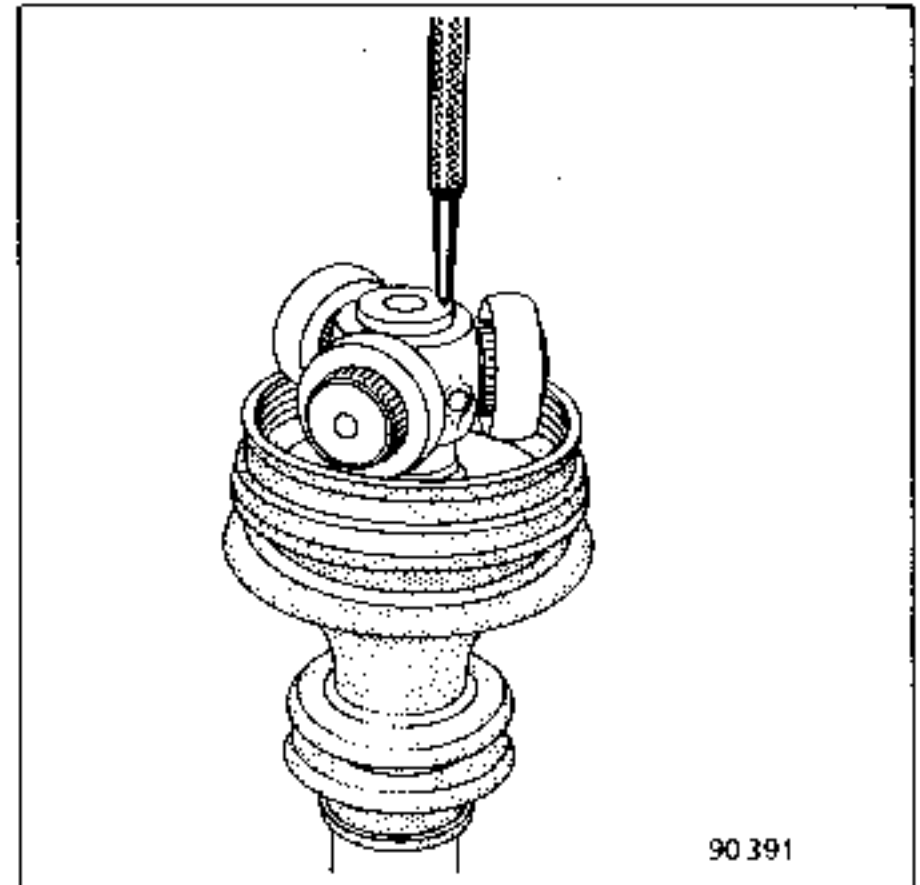
#### REASSEMBLY

Lubricate the driveshaft and slide the new retaining ring and gaiter in place.

Fit the spider on the splined shaft.



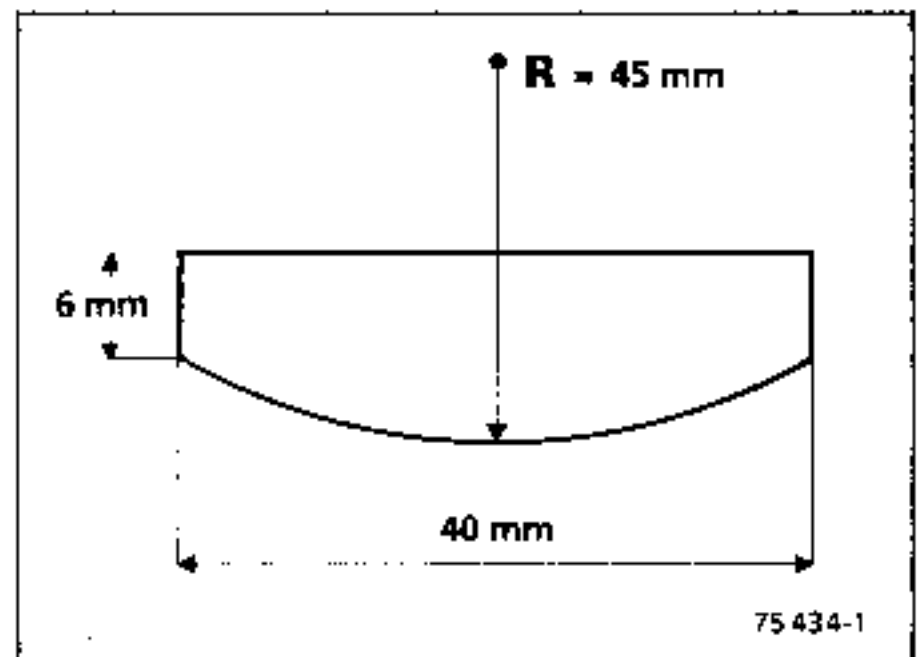
Refit the retaining circlip or pean the metal of the splines onto the driveshaft at points 120° apart.



Spread all the grease from the sachet inside the gaiter.

**Note:** It is essential to use the amount of grease specified in the "Materials" table.

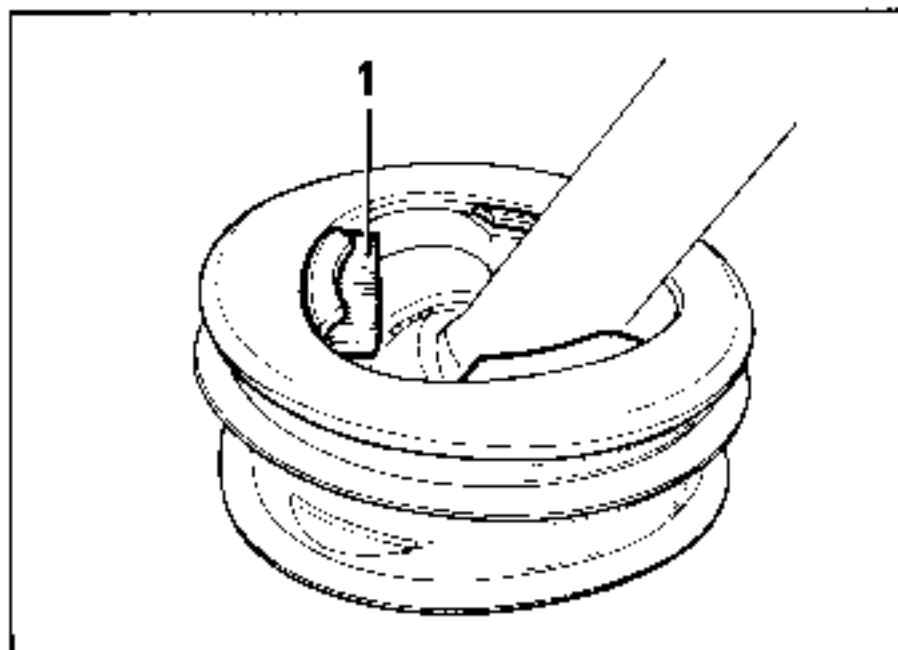
Place a spacer (B), 2.5 mm thick and made to the dimensions shown in the drawing, between tab and yoke.



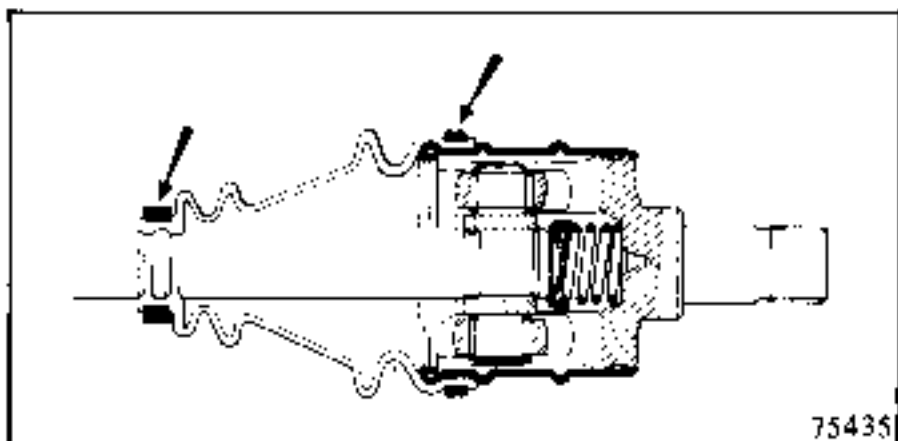
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Using a bronze drift, carefully return the tab to its original position and then remove spacer (B).



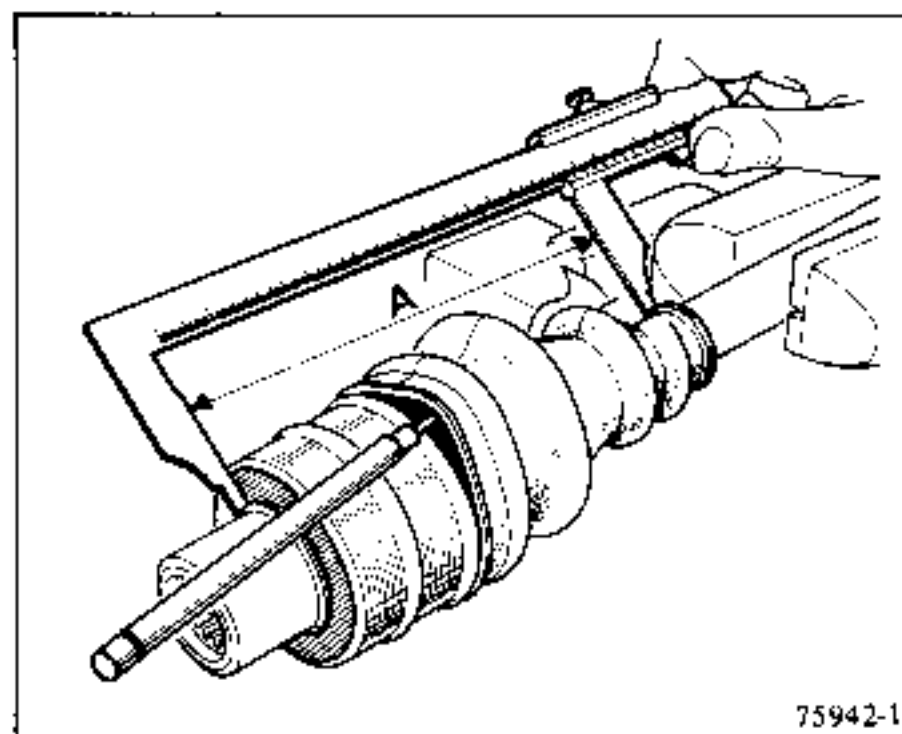
Place the lips on the gaiter in the grooves in the driveshaft and in the casing.



Insert a smooth rod with rounded ends between the bellows and the casing to determine the amount of air remaining in the joint.

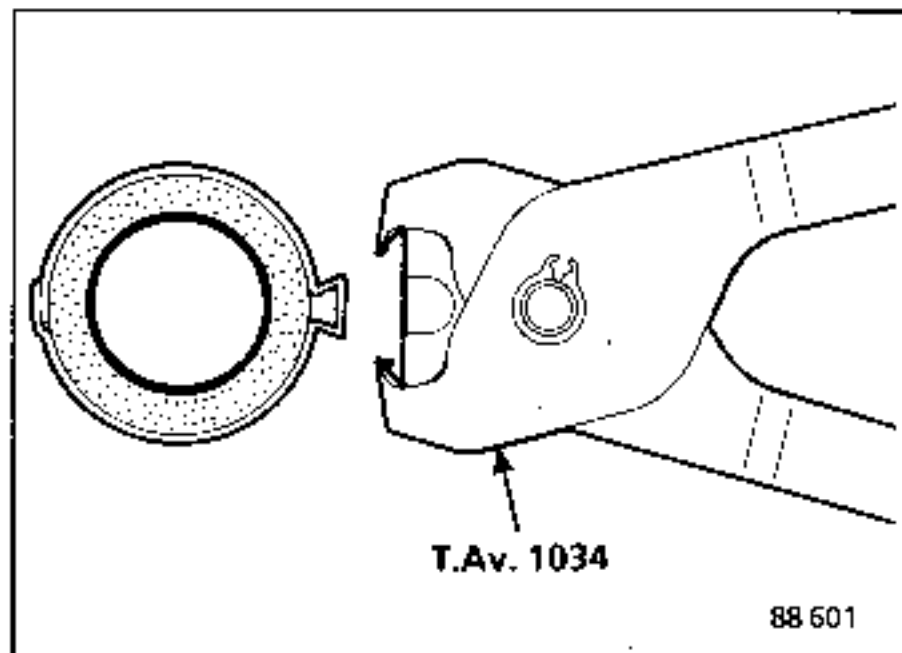
Extend or push together the joint to obtain dimension  $A = 162 \pm 1$  mm (measured between the end of the gaiter and the largest diameter of the machined face on the yoke).

Remove the rod with the assembly in this position.



Fit:

- the retaining clip to the gaiter;
- the clip and tighten it using tool T.Av. 1034.



"The repair methods given by the manufacturer in this manual are based on the technical specifications current when it was compiled.

The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed".

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