



## **2** Transmission

**20** CLUTCH

**21** MANUAL GEARBOX

**29** DRIVESHAFTS

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***BB0A - BB0C - BB0D - BB0E - CB0A - CB0C - CB0D - CB0E***

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**77 11 197 298**

**DECEMBER 1997**

**Edition Anglaise**

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

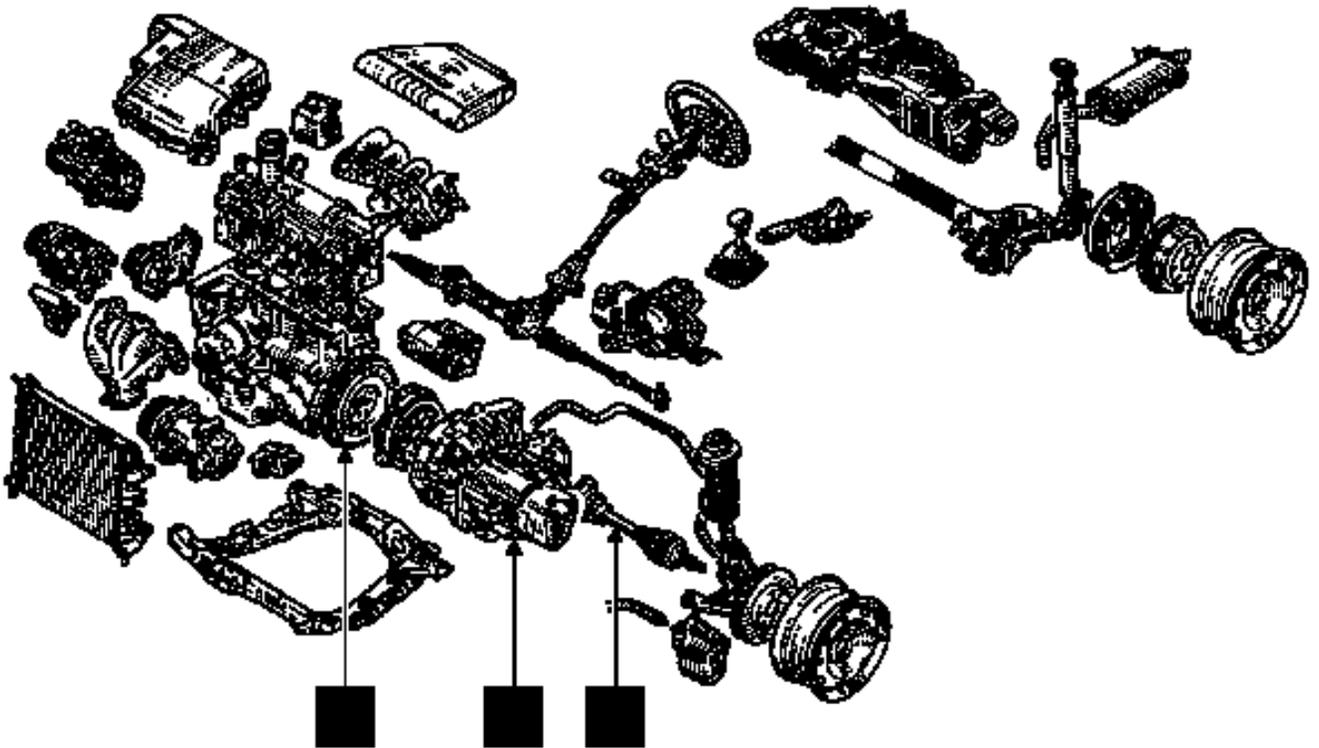
The methods may be modified as a result of changes introduced by the manufacturer in the production of the various component units and accessories from which his vehicles are constructed."

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# EXPLODED VIEW

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# Transmission

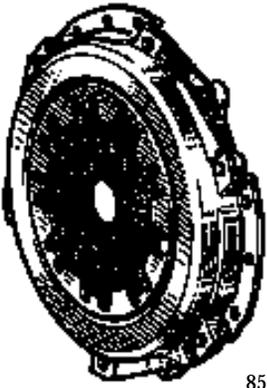
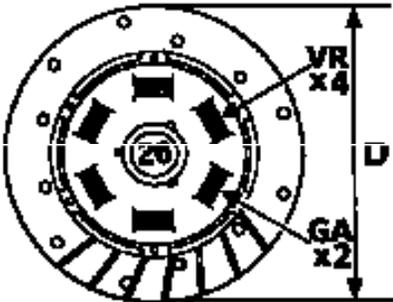
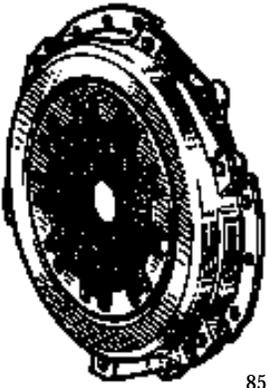
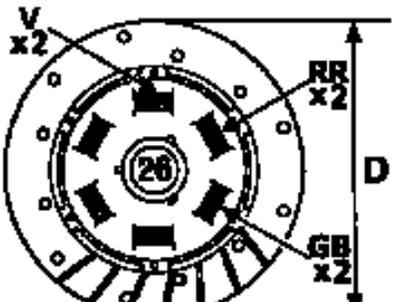
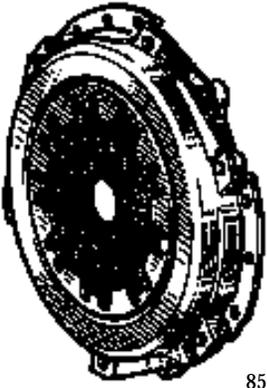
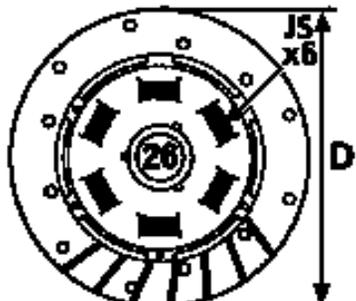
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# CLUTCH Mechanism - Disc

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Vehicle type	Engine type	Mechanism	Disc
B/C B0A B/C B0C	D7F E7J	 <p>85873S</p> <p>180 CP 3300</p>	<p><b>26 splines</b> D = 181.5 mm E = 6.7 mm</p> <p>GA : Grey Silver VR : Violet Red</p>   <p>90693R8</p> <p>76906R</p>
B/C B0E	F8Q	 <p>85873S</p> <p>200 CPOV 3250</p>	<p><b>26 splines</b> D = 200 mm E = 6.8 mm</p> <p>V : Green RR : Red Ruby GB : Grey Blue</p>   <p>90693R11</p> <p>76906R</p>
B/C B0D	K7M	 <p>85873S</p> <p>200 CPO 3500</p>	<p><b>26 splines</b> D = 200 mm E = 6.8 mm</p> <p>JS : Yellow Sand</p>   <p>90693R12</p> <p>76906R</p>

Cable controlled, dry operating single disc clutch.

Thrust pad in constant contact.

# CLUTCH

## Mechanism - Disc

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### REPLACEMENT (after removing the gearbox)

SPECIAL TOOLING REQUIRED	
Mot. 582	Locking sector
or	
Mot. 582-01	

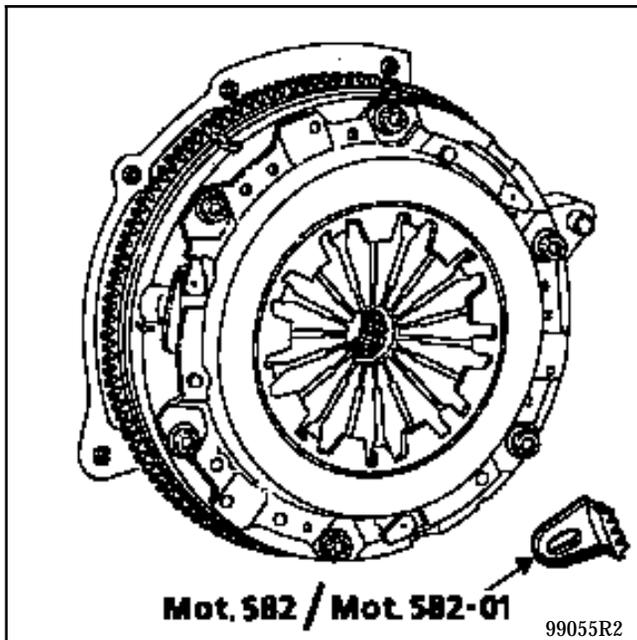
TIGHTENING TORQUES (in daN.m)	
Mechanism mounting bolt	2

### REMOVAL

Fit the locking sector **Mot. 582** or **Mot. 582-01**.

Remove the mechanism mounting bolts and remove the friction disc.

Check and replace any faulty parts.

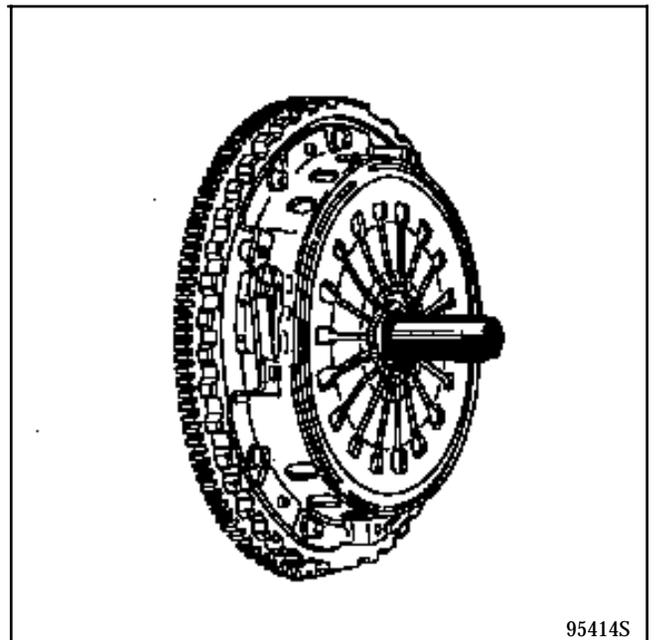


### REFITTING

Clean the clutch shaft splines and refit the assembly **without lubricant**.

Fit the disc into position (hub offset on gearbox side).

Centre using the tool in the replacement kit.



Tighten progressively in a star pattern then lock the mechanism mounting bolts to the correct torque.

Remove the locking sector **Mot. 582** or **Mot. 582-01**.

Coat with **MOLYKOTE BR2** :

- the guide tube,
- the fork pads.

# CLUTCH

## Mechanism - Disc

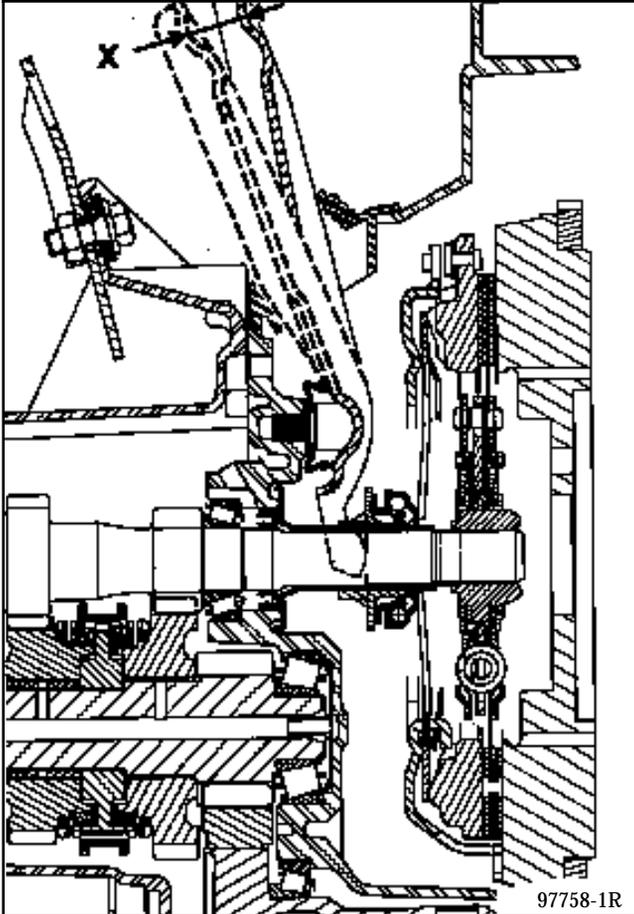
20

After refitting the gearbox, place the cable on the clutch fork, reset the notched sector and check the operation of the wear compensation system.

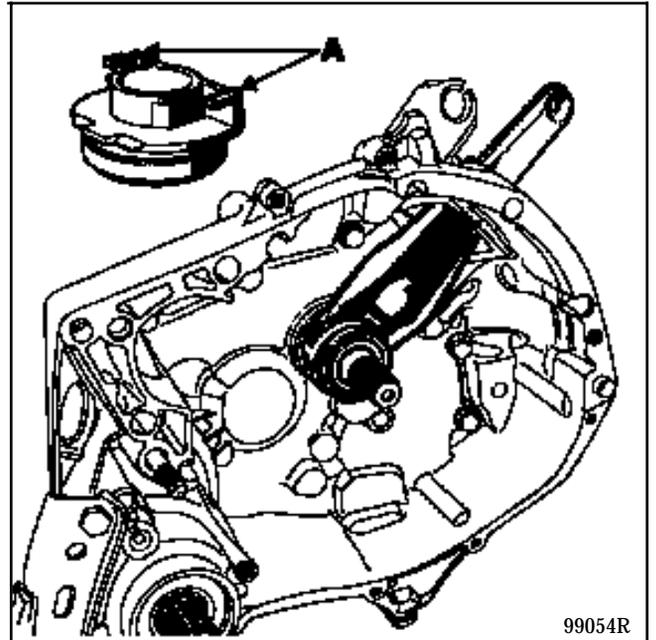
Check the clutch travel.

The fork travel should be :

$$X = 27.4 \text{ to } 30.7 \text{ mm}$$



NOTE : during an operation which does not require the gearbox to be removed or after fitting the gearbox, **DO NOT LIFT** the fork as it may become released from lug (A) on the thrust pad.



## REPLACING THE FLYWHEEL

SPECIAL TOOLING REQUIRED	
<b>Mot. 582</b>	
or	<b>Locking sector</b>
<b>Mot. 582-01</b>	

TIGHTENING TORQUES ( in daN.m ) 	
<b>Flywheel bolt</b>	<b>2 + 60°</b>

## REMOVAL

After removing the friction disc, remove the flywheel mounting bolts (they cannot be re-used).

The friction face cannot be reground.

## REFITTING

On the crankshaft, clean the flywheel mounting bolt threaded holes.

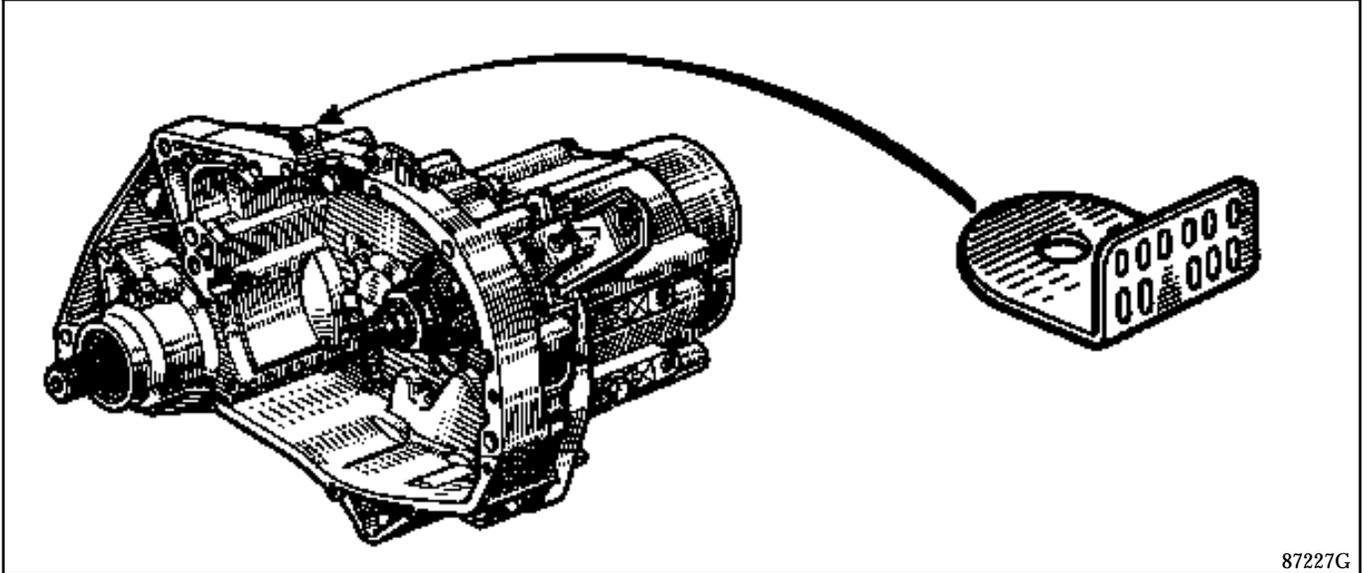
Degrease the pressure face of the flywheel on the crankshaft.

Refit the flywheel, locking it using **Mot. 582** or **Mot. 582-01**.

**NOTE:** the flywheel mounting bolts must be systematically renewed.

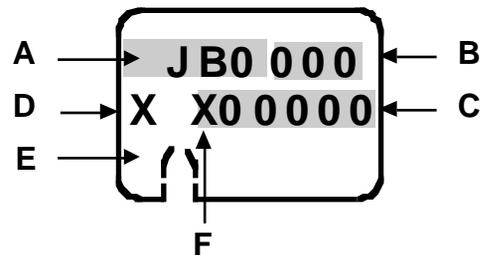
This type of vehicle is fitted with a **JB** type gearbox.

Workshop Repair Manual "B.V. JB. JC " deals with the complete repair of this component.



## IDENTIFICATION PLATE

- At A : gearbox type
- At B : gearbox suffix
- At C : fabrication number
- At D : factory of manufacture
- At E : a notch when the gearbox is assembled with an E engine
- At F : letter preceding fabrication numbers greater than 999999



# MANUAL GEARBOX Ratios

# 21

JB1									
Suffix	Vehicle	Step down	Speedo	1st	2nd	3rd	4th	5th	Reverse
180	B/C B0E	$\frac{16}{55}$	$\frac{21}{19}$	$\frac{11}{37}$	$\frac{22}{41}$	$\frac{28}{37}$		$\frac{39}{31}$	$\frac{11}{39}$ 26
905 (1)		$\frac{16}{57}$							
183	B/C B0D	$\frac{15}{58}$						$\frac{39}{32}$	
184	B/C B0A	$\frac{15}{61}$							
909		$\frac{15}{58}$					$\frac{39}{31}$		
185	B/C B0C	$\frac{15}{61}$						$\frac{34}{35}$	
186 (1)		$\frac{15}{61}$							

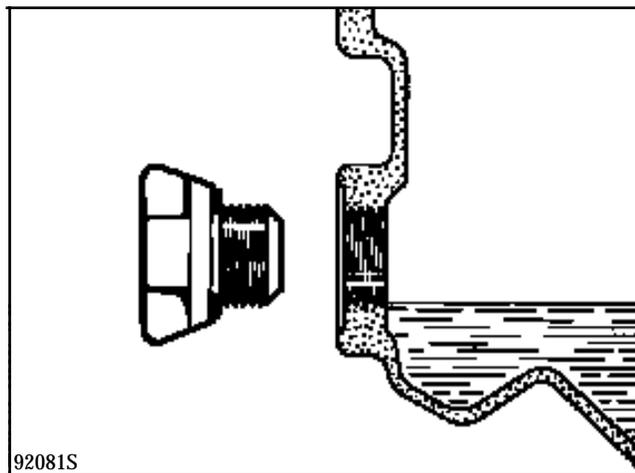
(1) Vehicle fitted with AC.

CAPACITY (in litres)

5 speed gearbox	
JB1	3.4

Viscosity
TRX 75W 80W

## CHECKING THE LEVEL



Fill up to the level of the opening.

# MANUAL GEARBOX

## Consumables

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TYPE	PACKAGING	PART NUMBER	COMPONENT
MOLYKOTE BR2	1 kg tin	77 01 421 145	Right hand sunwheel splines Fork pivot Thrust pad guide Fork pads <span style="font-size: 2em; vertical-align: middle;">}</span> Clutch control
LOCTITE 518	24 ml syringe	77 01 421 162	Housing assembly faces
RHODORSEAL 5661	100 g tube	77 01 404 452	Threaded plugs and switches Bearing plugs Ends of driveshaft roll pins
LOCTITE FRENBLOC (locking and sealing resin)	24 cc bottle	77 01 394 071	Primary and secondary shaft nuts Fixed gear and 5th gear hub Differential lock drive stud

### Parts to be systematically replaced

Whenever they are removed:

- lip seals,
- O rings,
- thrust pad guide tubes,
- secondary and differential shaft nuts,
- speedo gear and shaft,
- speedo drive,
- roll pins,
- inner hubs.

# MANUAL GEARBOX

## Gearbox (Removal - Refitting)

21

SPECIAL TOOLING REQUIRED	
B. Vi. 31-01	Set of punches
Mot. 1040-01	Trolley for sub-frame
T. Av. 476	Ball joint extractor
EQUIPMENT REQUIRED	
Engine support tool	
Component jack	

TIGHTENING TORQUES (in daN.m)		
Brake caliper bolt	4	
Driveshaft gaiter bolt	2.5	
Lower ball joint nut	5.5	
Shock absorber base bolt	18	
Engine tie bar bolt	6.5	
Bolt at edge of gearbox and starter	4.5	
Suspended mounting bolt on gearbox	4	
Wheel bolt	9	
Track rod end nut	4	

### REMOVAL

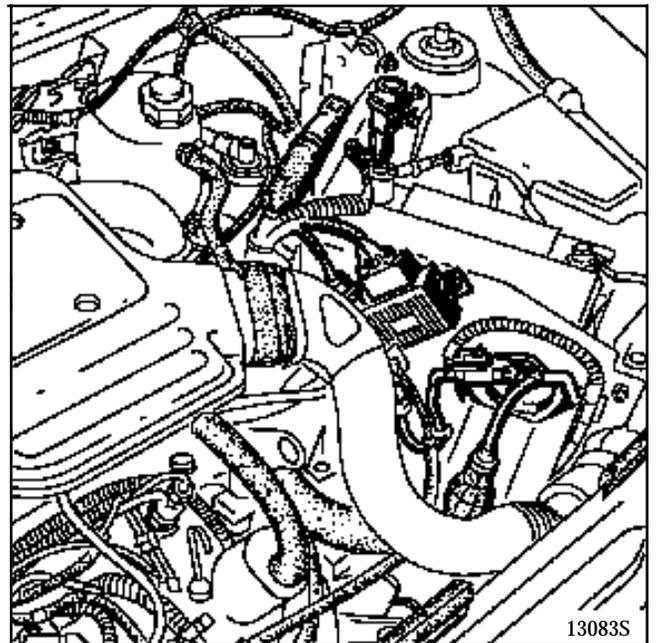
Put the vehicle on a 2 post lift.

Remove the battery.

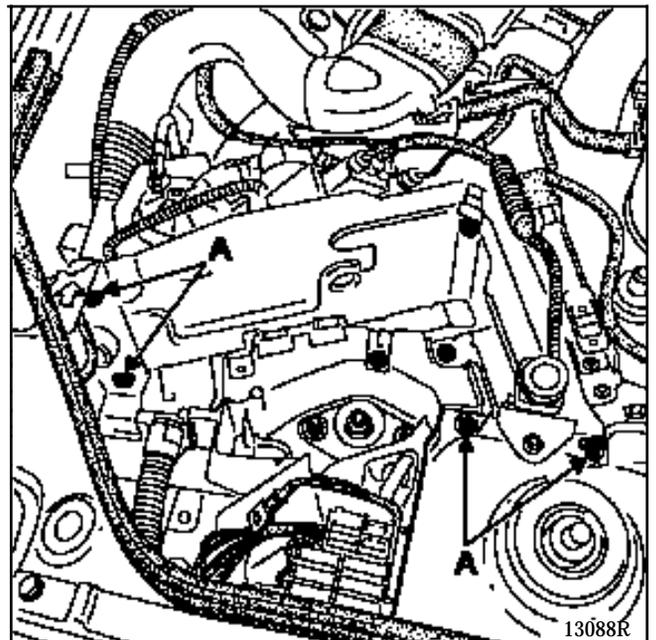
Disconnect the connectors on:

- the injection computer (petrol version),
- the preheating unit (diesel version),
- the fuel filter (diesel version),
- the impact sensor.

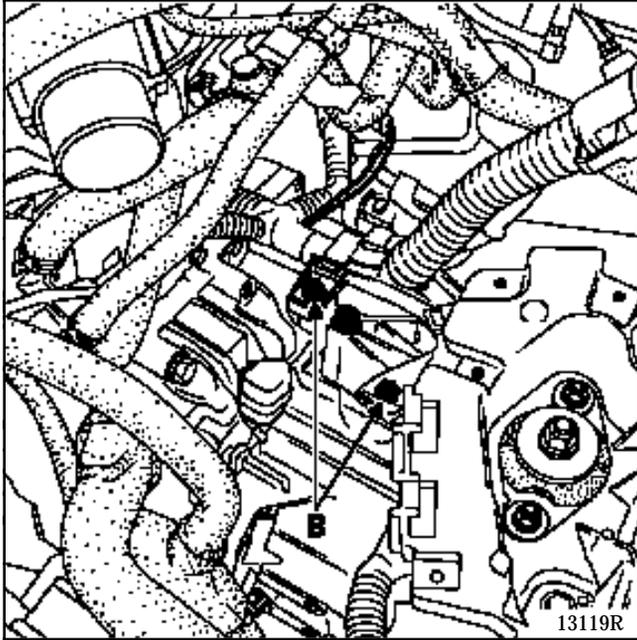
Remove the air filter sleeve.



Remove bolts (A) from the battery protective shield.



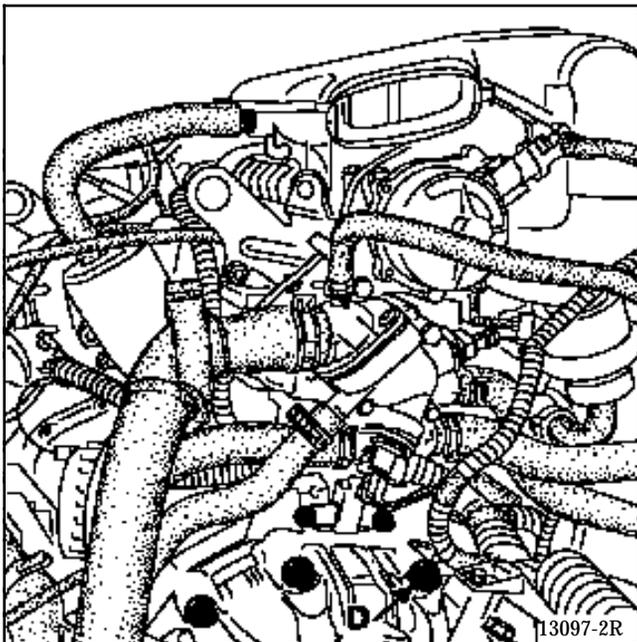
Remove the two mounting bolts (B).



Disconnect the clutch cable.

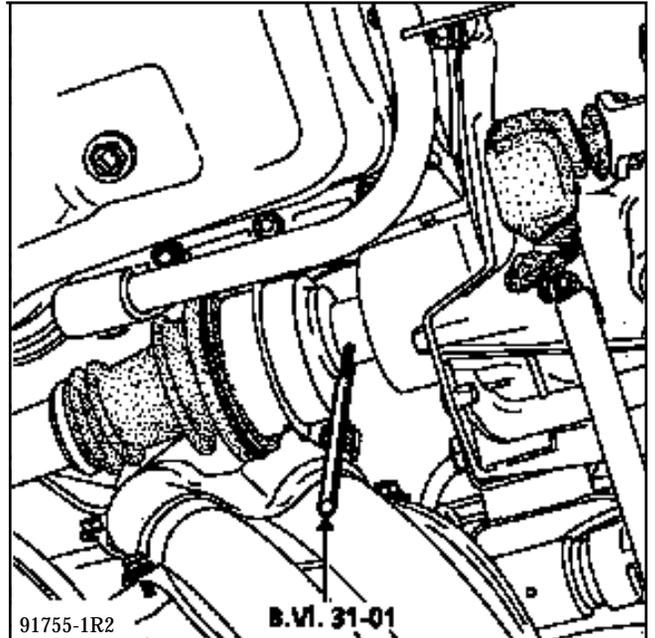
Remove:

- the upper bolts at the edge of the gearbox and starter motor (slacken bolt (D) as far as possible),
- the earth strap bolts on the gearbox,
- the two TDC sensor bolts,



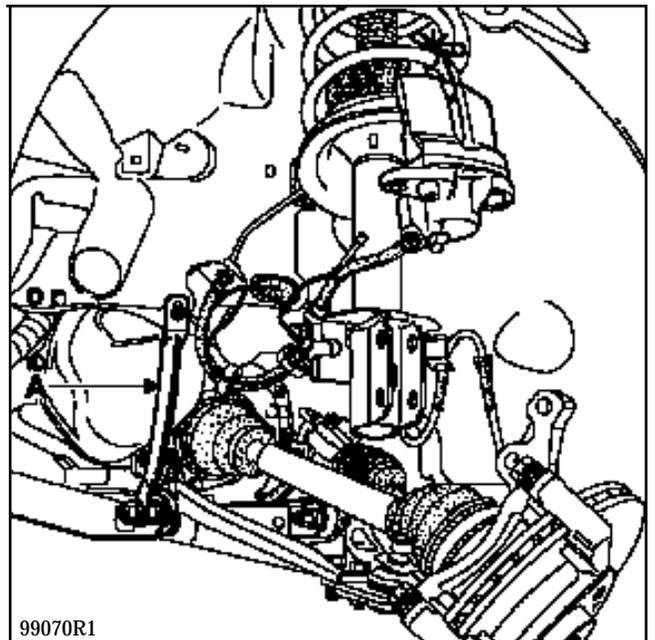
- the front wheels,
- the oil collector under the gearbox.

Right hand side of the vehicle, remove the driveshaft roll pins using tool **B. Vi. 31-01**.



On the right and left hand sides, remove:

- the brake calipers and attach them,
- the mudguards,
- the track rod ends (**T. Av. 476**),
- the shock absorber base bolts,
- the sub-frame- side member tie rods (A),
- the driveshaft - stub axle carrier assembly by releasing the lower ball joint.



# MANUAL GEARBOX

## Gearbox (Removal - Refitting)

21

Check that the rollers for the left hand driveshaft do not come out by hand. If they do, check that the needles have not fallen into the gearbox.

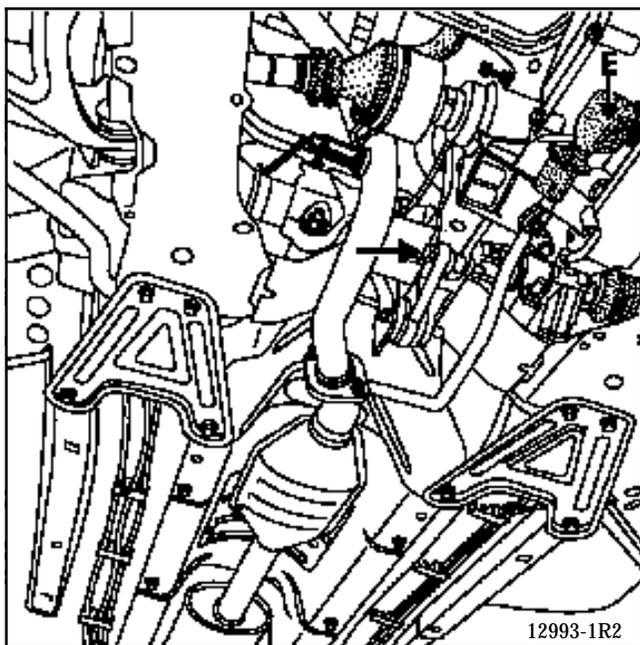
Disconnect and remove the starter motor.

Disconnect:

- the reversing light switch,
- the speedo connector and remove the final drive sensor.

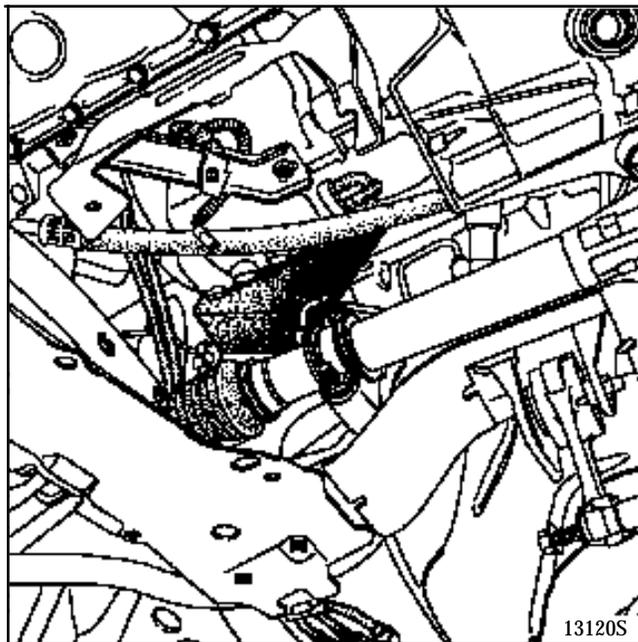
Remove:

- the exhaust downpipe,
- the complete gear control rod, removing bolt (E) and the three bolts for the heat shield to reach the base of the gear lever,
- the engine tie bar bolt,
- the rear gearbox mounting.



Remove the engine - gearbox tie rod.

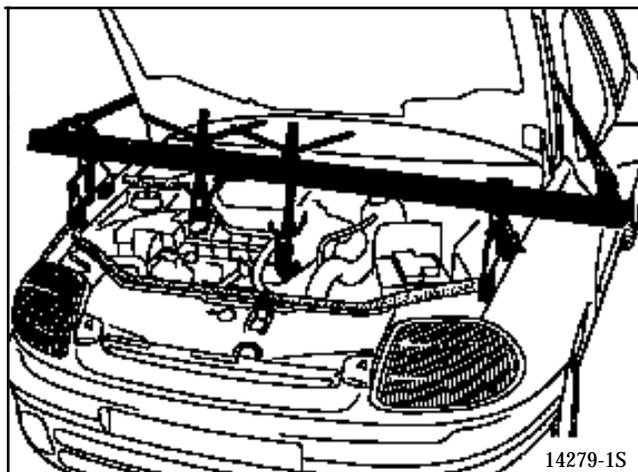
To make removing the steering rack easier, if necessary, fit a block to allow the engine to be tilted forwards.



Remove the steering rack and attach it.

Fit the engine support tool and take the weight of the engine and transmission assembly.

### Positioning for F8Q engine

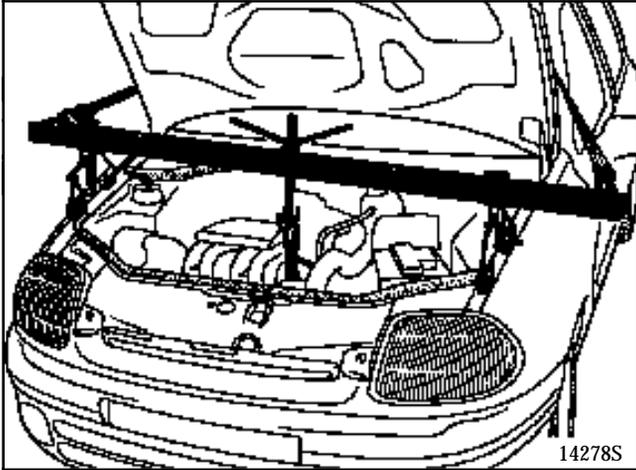


# MANUAL GEARBOX

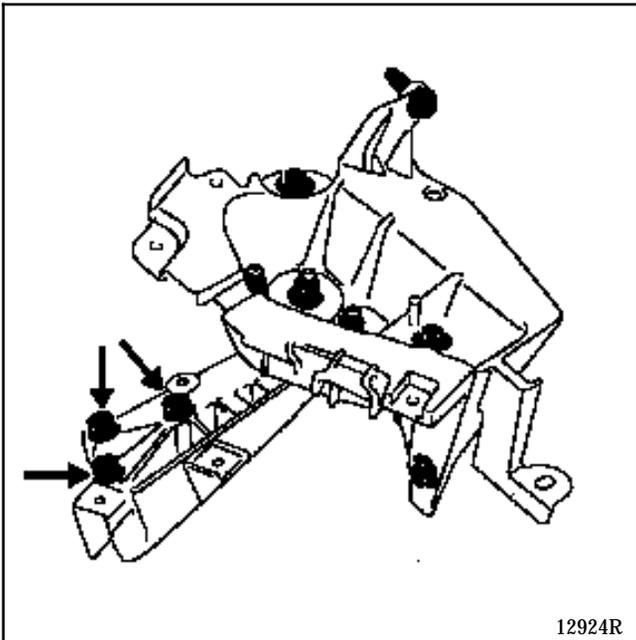
## Gearbox (Removal - Refitting)

21

### Positioning for other engines



Remove the three mounting bolts for the support on the gearbox.

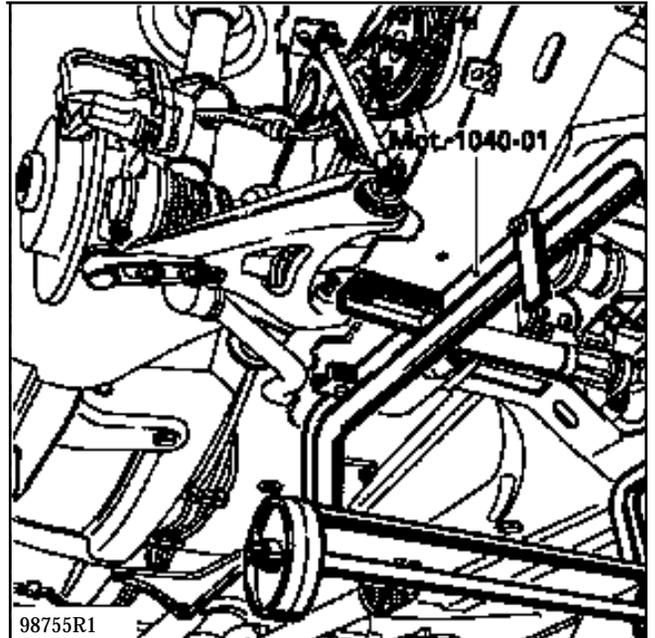


Lower the engine as far as possible.

Remove:

- the last upper bolt at the edge of the gearbox,
- the shield/bumper.

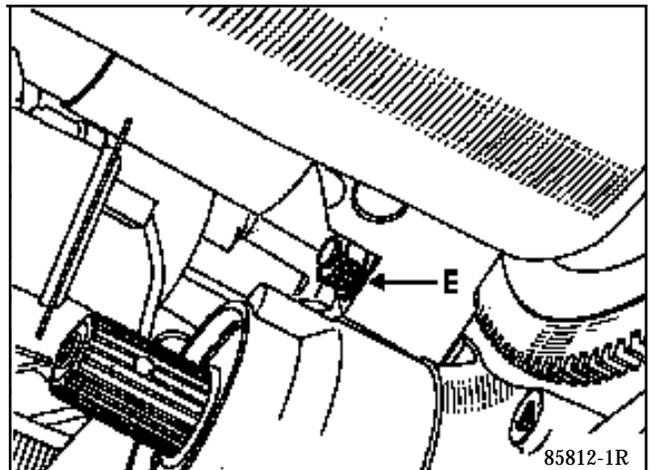
Fit the trolley (Mot. 1040-01) to support the sub-frame and lower the vehicle.



Remove the sub-frame by slackening the four mounting bolts.

Fit the component jack under the gearbox without lifting it.

Release the gearbox from the engine by removing nut (E) and the engine - gearbox mounting stud.



### REFITTING

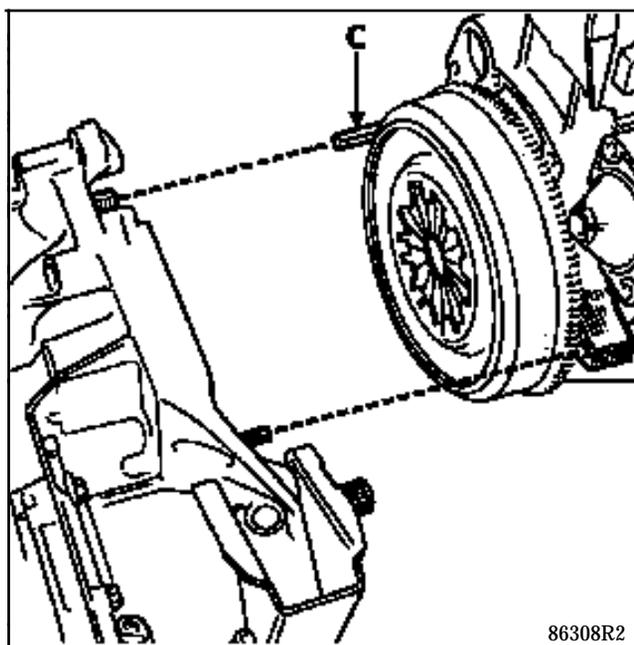
Coat the walls of the guide tube and the fork pads with MOLYKOTE BR2.

Fit the fork in the lugs on the clutch thrust pad.

Connect the gearbox to the engine, avoiding altering the height of the engine.

Ensure the engine - gearbox centring rings are present and correctly positioned.

Stud (C) makes connecting the engine and gearbox easier.



Refit:

- the sub-frame,
- the steering,
- the exhaust downpipe,
- the engine tie bar.

### SPECIAL NOTES FOR E7J ENGINES

Refit the exhaust downpipe before refitting the right hand driveshaft.

Refitting is then the reverse of removal.

# DRIVESHAFTS

## General

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### SPECIFICATIONS

Engines	Gearbox	Driveshaft joint	
		Left	Right
F8Q	JB1	GE 86 + GI 69	GE 86 + RC 462
D7F	JB1		
E7J			
K7M			

### CONSUMABLES

Type	Quantity	Component concerned
RHODORSEAL	Coat	Driveshaft roll pin, gearbox end
MOBIL OIL 55911L 611 (supplied with the repair kit)	180 g <b>Part No. : 77 01 366 100</b>	GE 86
SHELL STAMINA 0233 grease (supplied with the repair kit)	110 cm <sup>3</sup>	RC 462

**NOTE :** the ENKO driveshaft nut does not require the stub axle splines to be coated with Loctite SCELBLOC.

SPECIAL TOOLING REQUIRED	
<b>B. Vi. 31-01</b>	Roll pin punch
<b>Rou. 604-01</b>	Hub locking tool
<b>T. Av. 476</b>	Ball joint extractor
<b>T. Av. 1050-02</b>	Driveshaft extractor

TIGHTENING TORQUES (in daN.m)	
<b>Driveshaft nut</b>	<b>28</b>
<b>Gaiter mounting bolt on gearbox</b>	<b>2.5</b>
<b>Wheel bolt</b>	<b>9</b>
<b>Shock absorber base nut</b>	<b>18</b>
<b>Brake caliper mounting bolt</b>	<b>10</b>
<b>Track rod end nut</b>	<b>3.7</b>

### REMOVAL

Put the vehicle on a 2 post lift.

Drain the gearbox.

Remove:

- the brake assembly (suspend it from the chassis),
- the driveshaft nut ; tool **Rou. 604-01**.

#### Left hand side

Remove the three bolts on the gearbox.

#### Right hand side

Remove the roll pin; tool **B. Vi. 31-01**.

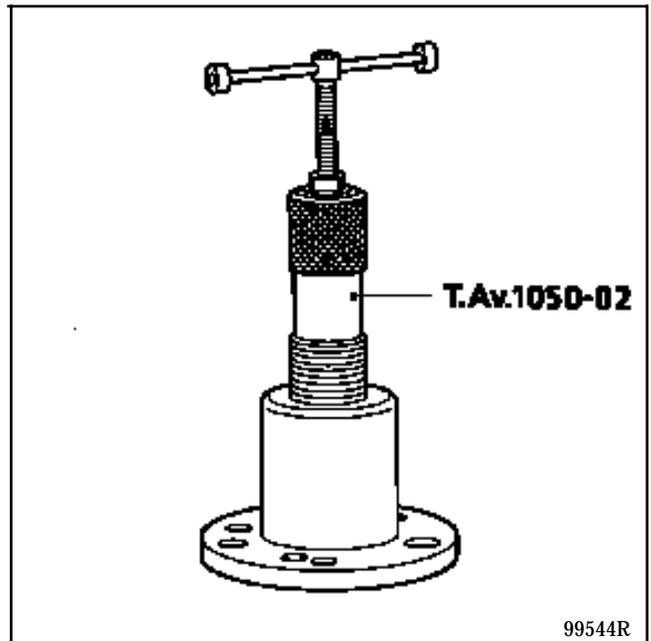
#### On both sides

Remove:

- the track rod end nut and remove the pin using tool **T. Av. 476**,
- the upper shock absorber base bolt.

Push the driveshaft back using tool **T. Av. 1050-02** (if necessary).

Remove the lower shock absorber base bolt and remove the driveshaft.



### REFITTING

#### **Left hand side:**

Fit the driveshaft as horizontally as possible.

#### **Right hand side:**

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

Fit the driveshaft and check its position using the elbow pin **B. Vi. 31-01**.

Fit two new roll pins : **B. Vi. 31-01**. Seal the roll pin holes using RHODORSEAL 5661.

#### **On both sides:**

Fit the driveshaft stub axle into the hub; it should enter easily.

Refitting is then the reverse of removal. Observe the correct tightening torques.

Fill the gearbox with oil.

Press the brake pedal several times to bring the piston into contact with the pads.

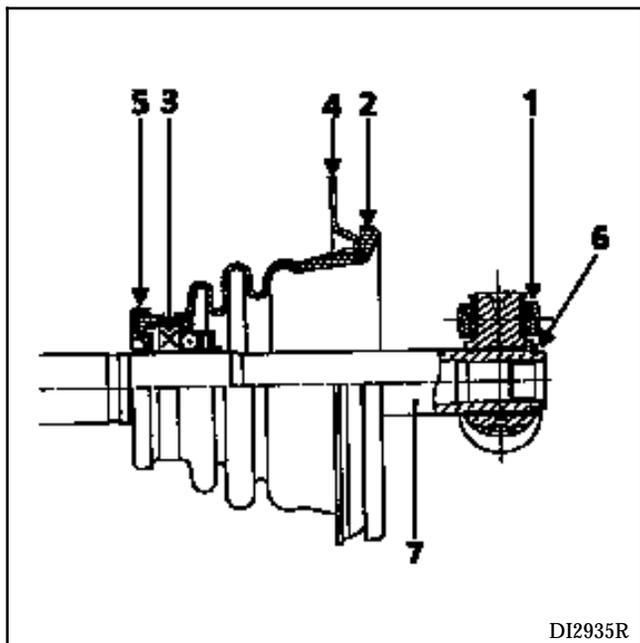
## SPECIAL TOOLING REQUIRED

T. Av. 1168	CAILLAU clip pliers
T. Av. 1256	OETIKER clip crimping pliers
T. Av. 1331	Tool for retaining the driveshaft bearing gaiter in position

## REPLACING THE GAITER, GEARBOX END

## GI 69 JOINT

- 1 Spider
- 2 Rubber gaiter
- 3 Bearing guide
- 4 Retaining clip
- 5 Shield
- 6 Circlip
- 7 Driveshaft



## REMOVAL

Remove the circlip.

On the press, remove the spider using an extractor.

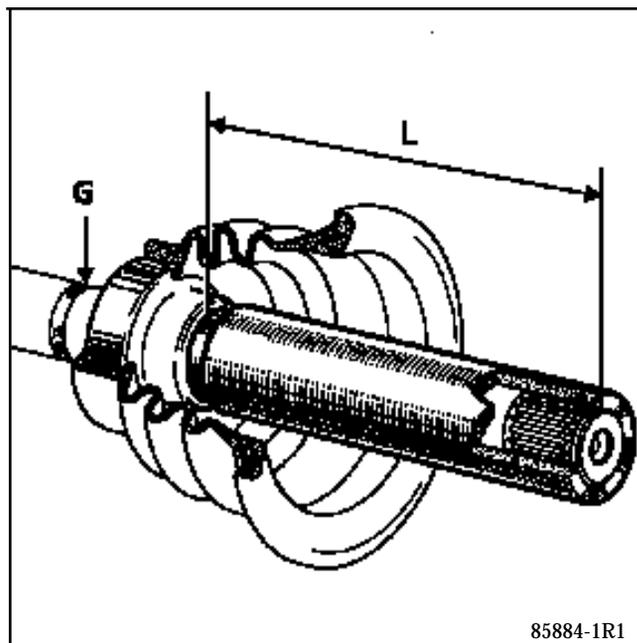
**NOTE** : note the position of the spider before removing it.

Remove the gaiter and bearing - shield assembly in the same manner as for the spider.

## REFITTING

To be correctly positioned on the shaft, the bearing must be pressed on to give dimension  $L = 118 \pm 0.2 \text{ mm}$  between the rear part of the bearing and the end of the shaft.

This dimension is obtained using tool T. Av. 1331 when the end of the tool is level with the shaft.



**NOTE** : to avoid damaging the bearing which has a lip seal, which could cause leakage, do not press it on using a mallet, but use the press to ensure progressive pressure.

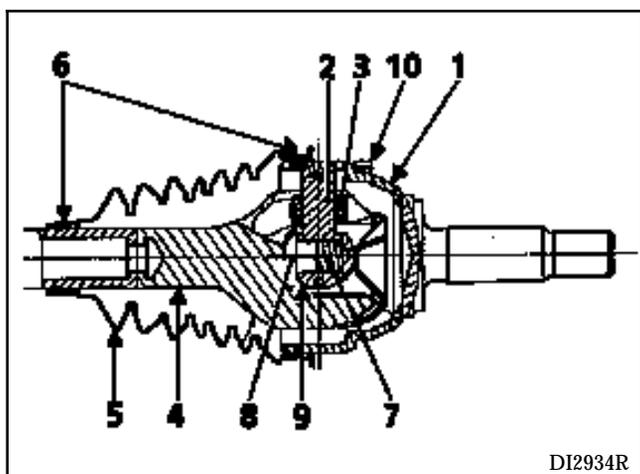
The driveshaft is secured on the press by groove (G) using an extractor.

Fit the spider into the position noted on removal and refit the retaining circlip.

## REPLACING THE GAITER, WHEEL END

## GE 86 JOINT

- 1 Stub axle bowl
- 2 Retaining starplate
- 3 Spider
- 4 Shaft yoke
- 5 Thermoplastic gaiter
- 6 Clips
- 7 Spring
- 8 Pushrod
- 9 Shim
- 10 ABS target



## REMOVAL

Cut the two collars (6), taking care to avoid damaging the grooves in the stub axle bowl.

Remove as much grease as possible.

To replace the thermoplastic gaiter, the parts at the gearbox end must be removed (**GI 69 joint**) (see method described previously).

Remove the gaiter and replace it with a new one.

Spread the recommended dose of grease in the gaiter and the stub axle bowl.

**NOTE** : the volume of grease specified in the consumables section must be observed.

Position the two gaiter rings in the grooves on the stub axle bowl.

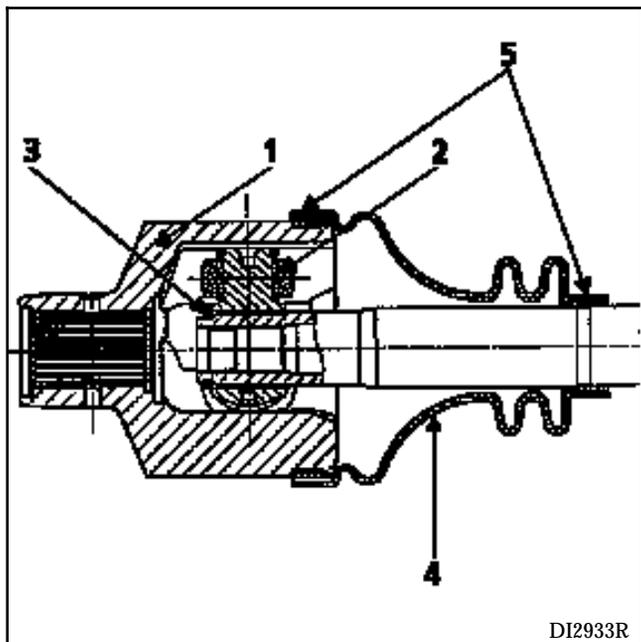
Adjust the amount of air in the gaiter.

Fit the clips and tighten them.

## REPLACING THE GAITER, GEARBOX END

## RC 462 JOINT

- 1 Yoke sleeve
- 2 Spider
- 3 Locking spring ring
- 4 Gaiter
- 5 Clips



## REMOVAL

Cut the two collars (5), taking care to avoid damaging the groove in the yoke sleeve.

Remove as much grease as possible.

Remove the yoke sleeve.

Remove the locking spring ring.

**IMPORTANT:** never use thinners to clean the parts.

On the press, remove the spider, using a releasing type extractor.

**NOTE :** note the position of the spider before removing it.

## REFITTING

Slightly lubricate the driveshaft to make fitting the gaiter easier (position the smaller diameter of the gaiter on the driveshaft groove).

Position the spider in the position noted on removal and fit the locking spring ring.

Crimp three points at  $120^\circ$  by folding over the metal of the splines on the driveshaft.

Fit the yoke sleeve on the spider.

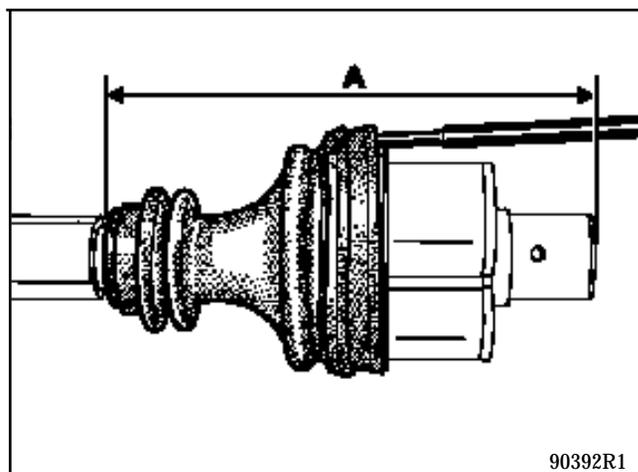
Spread the dose of grease in the gaiter and the yoke sleeve.

Ensure the gaiter is correctly positioned in the grooves.

Insert a rounded end rod between the gaiter and the yoke sleeve to adjust the amount of air in the joint.

Lengthen or shorten the joint to obtain dimension **A = 190 mm** (dimension measured between the end of the gaiter and the face of the smaller diameter of the yoke sleeve).

Remove the rod in this position.

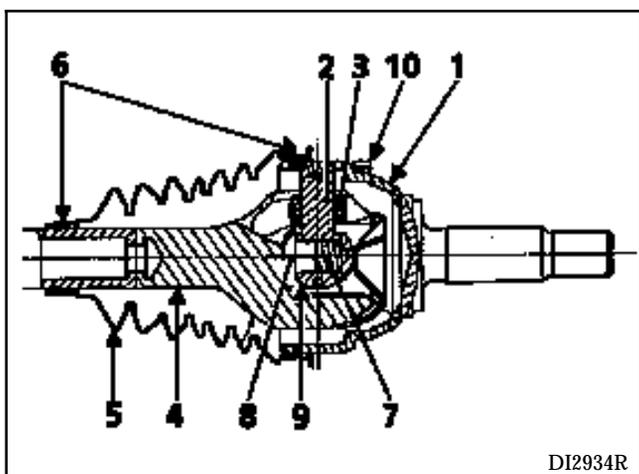


Refit the clips using the recommended tooling.

## REPLACING THE GAITER, WHEEL END

## GE 86 JOINT

- 1 Stub axle bowl
- 2 Retaining starplate
- 3 Spider
- 4 Shaft yoke
- 5 Thermoplastic gaiter
- 6 Clips
- 7 Spring
- 8 Pushrod
- 9 Shim
- 10 ABS target



DI2934R

## REMOVAL

Cut the two collars (6), taking care to avoid damaging the grooves in the stub axle bowl.

Remove as much grease as possible.

To replace the thermoplastic gaiter, the parts at the gearbox end must be removed (**RC 462 joint**) (see method described previously).

**NOTE** : certain right hand driveshafts have a vibration damper. If the thermoplastic gaiter is damaged, replace the complete driveshaft.

Remove the gaiter and replace it with a new one.

Spread the recommended dose of grease in the gaiter and the stub axle bowl.

**NOTE** : the volume of grease specified in the consumables section must be observed.

Position the two gaiter rings in the grooves on the stub axle bowl.

Adjust the amount of air in the gaiter.

Fit the clips and tighten them.