RENAULT

Workshop Repair Manual

Manual gearbox

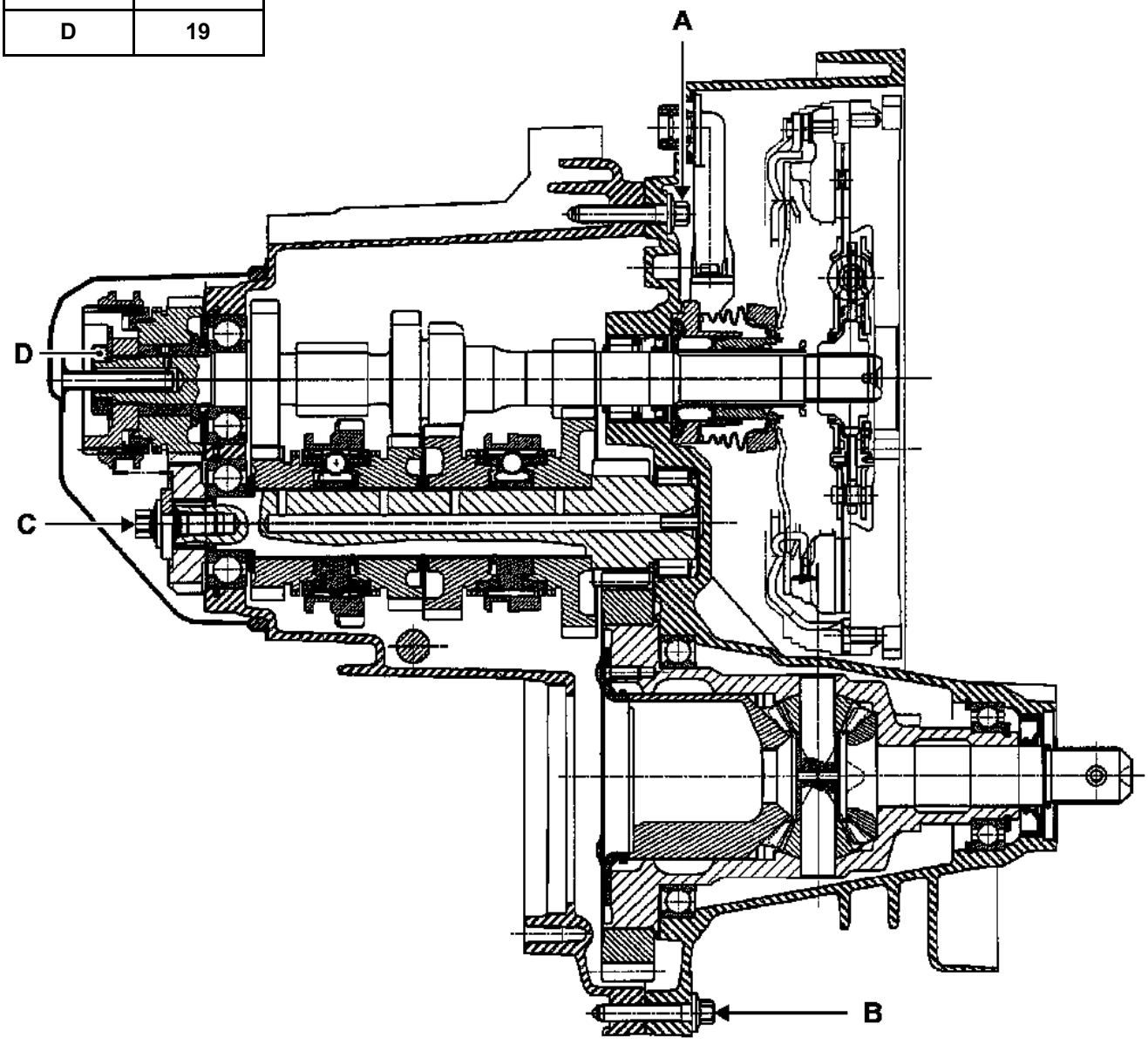
Type	Range
JH1	Twingo Clio
JH3	Clio Laguna II
JR5	Laguna II

77 11 299 962 MARCH 2001 EDITION ANGLAISE

Contents

JH GEARBOX

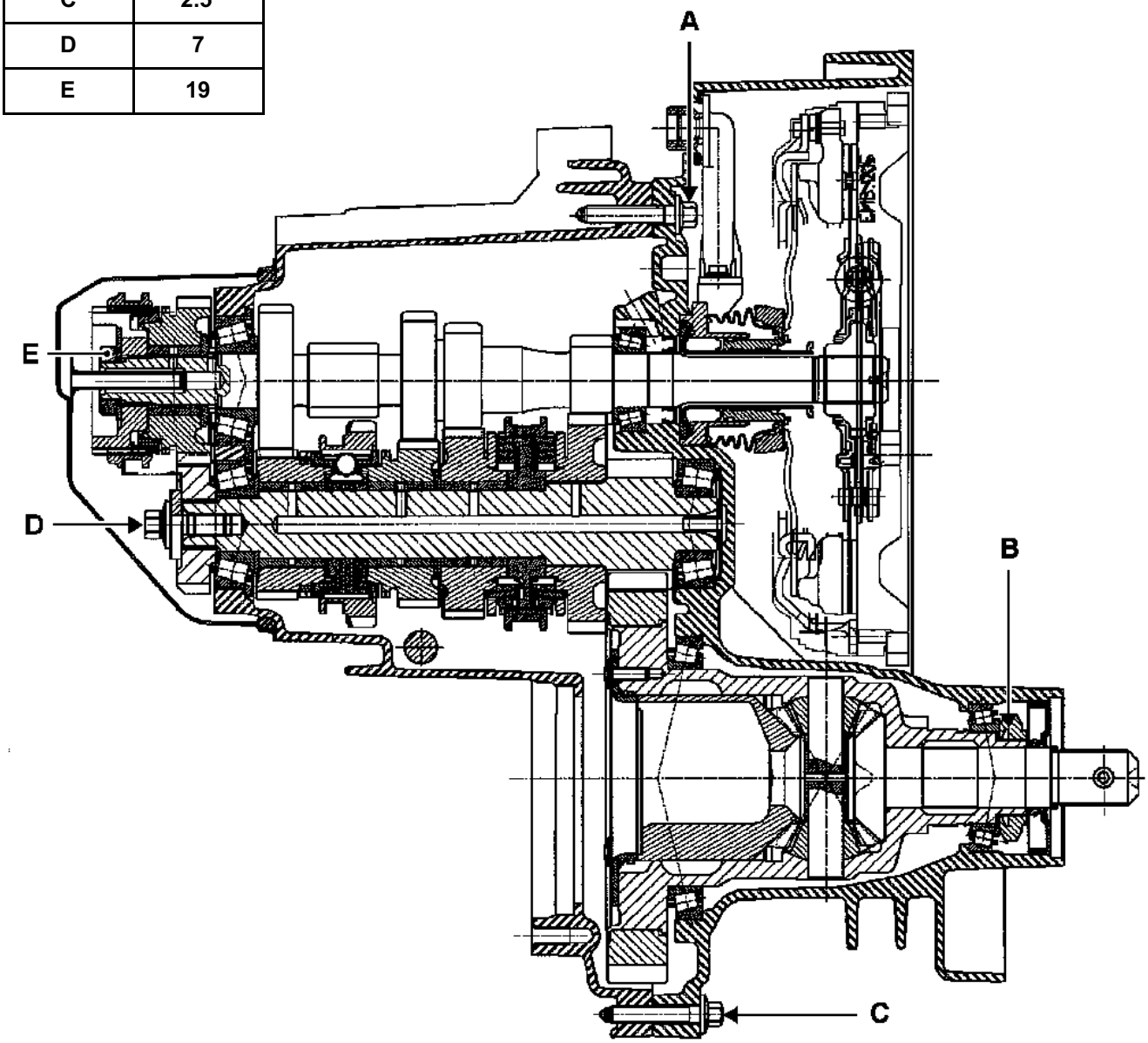
A	2.5
B	2.5
C	7
D	19



19803

JR GEARBOX

A	2.5
B	13
C	2.5
D	7
E	19



19804

Description	Torque in daNm
Gearbox edge bolt	**2.5**
Secondary shaft bolt	**7**
Primary shaft nut	**19**
Rear cover bolt	**2.5**
Reverse gear switch	**2.5**
Clutch slave cylinder bolt	**2.1**
Control shaft bolt	**2**
Catch bolt	**0.5**
Speed sensor bolt for sequential gearbox	**1**

JH GEARBOX

Index	Type	1st	2nd	3rd	4th	5th	Reverse gear	Final drive	Speedometer
JH1-002	Twingo	11/37	22/41	28/37	30/29	41/31	11/39	15/56	21/20
JH1-003	Twingo	11/37	22/41	28/37	30/29	39/32	11/39	15/58	21/20
JH1-007	Twingo	11/37	22/41	28/37	34/35	39/32	11/39	15/61	21/19
JH3-005	Laguna 2	11/37	22/41	28/37	34/35	39/32	11/39	14/59	None

JR GEARBOX

Index	Type	1st	2nd	3rd	4th	5th	Reverse gear	Final drive	Speedometer
JR5-003	Laguna 2	11/37	22/41	28/37	34/35	39/32	11/39	15/61	None
JR5-008	Laguna 2	11/41	21/43	28/39	31/34	37/33	11/39	15/58	None
JR5-009	Laguna 2	11/37	22/41	28/37	34/35	39/32	11/39	15/61	None
JR5-012	Laguna 2	11/41	21/43	28/37	35/34	41/31	11/39	16/55	None

Type	Packaging	Parts Stores No.	Unit
Molykote BR2	1 kg tin	77 00 421 145	Sunwheel splines
Loctite 518	24 ml syringe	77 01 421 162	Housing assembling faces Switch threading
Loctite FRENBLOC	24 cc bottle	77 01 394 071	Fixed gear and 5th gear hub Primary shaft nut Secondary shaft bolt

Capacities - Lubricants

Capacity in litres	Grade
JH 2.8	TRJ 75W80W
JR 2.5	TRJ 75W80W

Parts to be systematically replaced

After they have been replaced:
– lip seals,
– O-rings,
– stop rings,
– roll pins,
– secondary shaft and differential nuts,
– gear supporting rings,
– primary and secondary shaft bearing circlips.

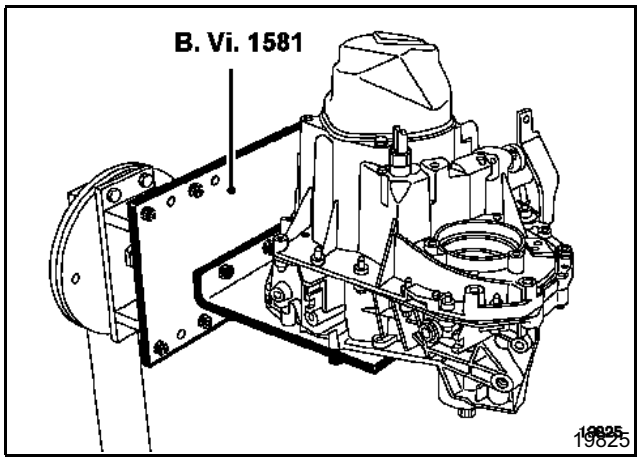
B. Vi. 22-01	Bearing extractor tool
B. Vi. 31-01	Set of punches for roll pins
B. Vi. 945	Sunwheel oil seal gasket inserting tool (JH)
B. Vi. 946	Sunwheel circlip replacer
B. Vi. 949	Selector fork roll pin rem/ref tool
B. Vi. 1000	5^{th} speed gear extractor shell
B. Vi. 1057	Differential locking tool
B. Vi. 1058	Sunwheel oil seal gasket inserting tool (JR)
B. Vi. 1059	Differential bearing bushes fitting kit
B. Vi. 1161	Steel plate to attach DTI gauge + pre-load adjust shims
B. Vi. 1165	Secondary shaft bearing on clutch housing extractor tool
B. Vi. 1170	Extractor for 5^{th} speed hub gear
B. Vi. 1527	Primary and secondary shaft adjustment plate
B. Vi. 1570	Tool for fitting ball indentation
B. Vi. 1576	Mandrel for fitting bearings in the mechanism housing (JH)
B. Vi. 1581	Gearbox mounting on Desvil post
B. Vi. 1601	Mandrel for fitting primary shaft guide bearing

Removing and handling the parts must be carried out on a workbench with a knockproof cover (thick rubber or plastic).

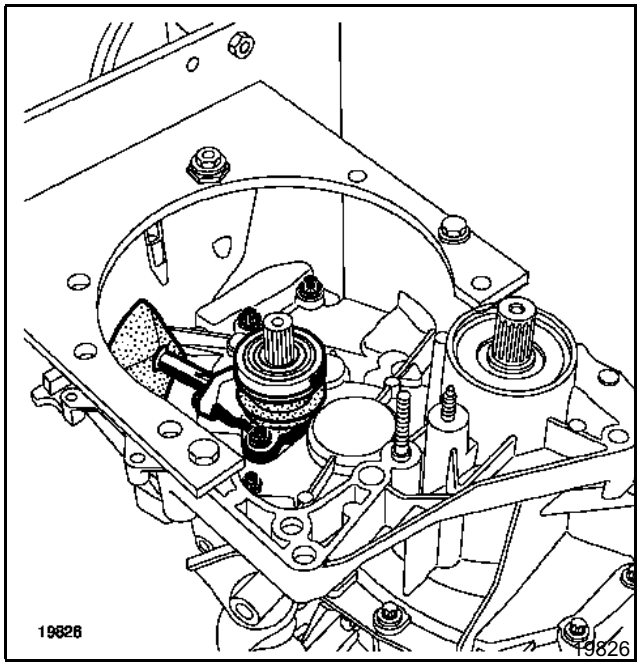
REMOVAL

Fit support plate **B. Vi. 1581** on a Desvil shoe.

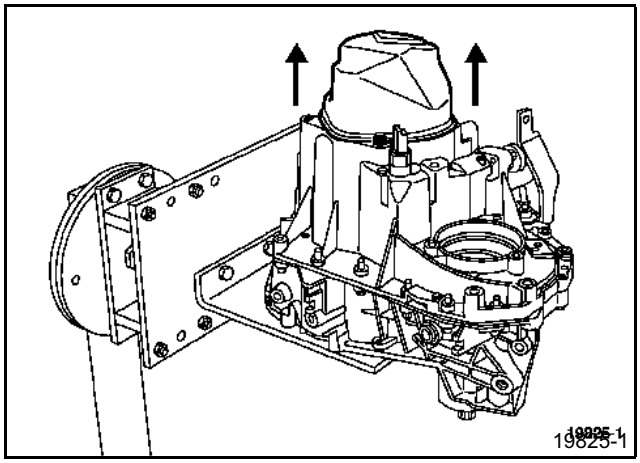
Fit the gearbox on the **B. Vi. 1581** support.



Remove:
– the clutch slave cylinder,
– the bolts located inside the housing,

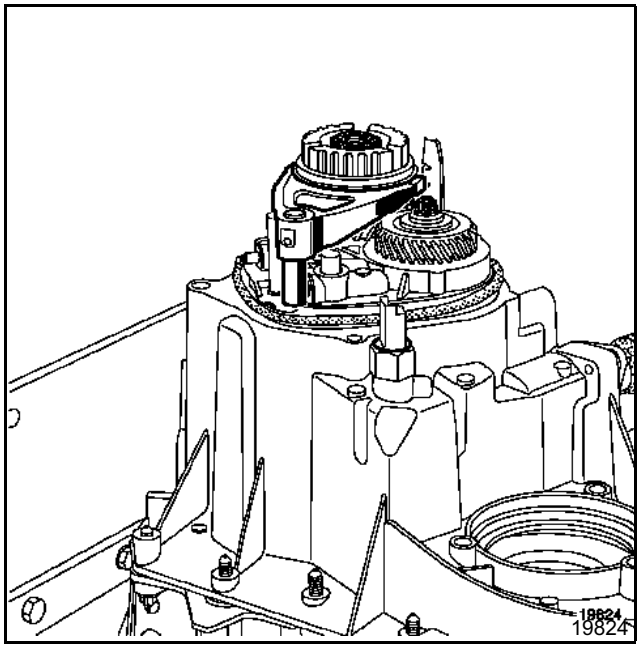


– the rear housing. This must be removed along the horizontal axis of the gearbox because it has a lubrication spline which is located in the primary shaft bore.



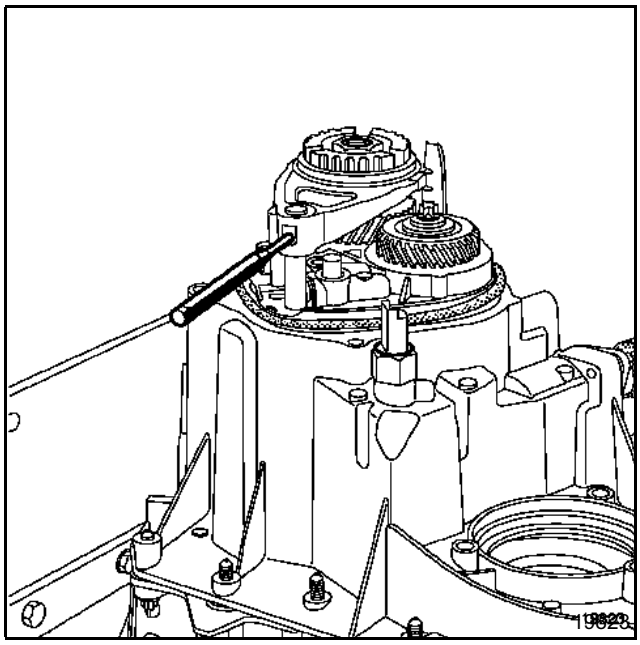
Select 1st gear using the gear lever and 5th gear by sliding the 5th gear fork along its shaft.

Remove the secondary shaft bolt and the primary shaft nut.



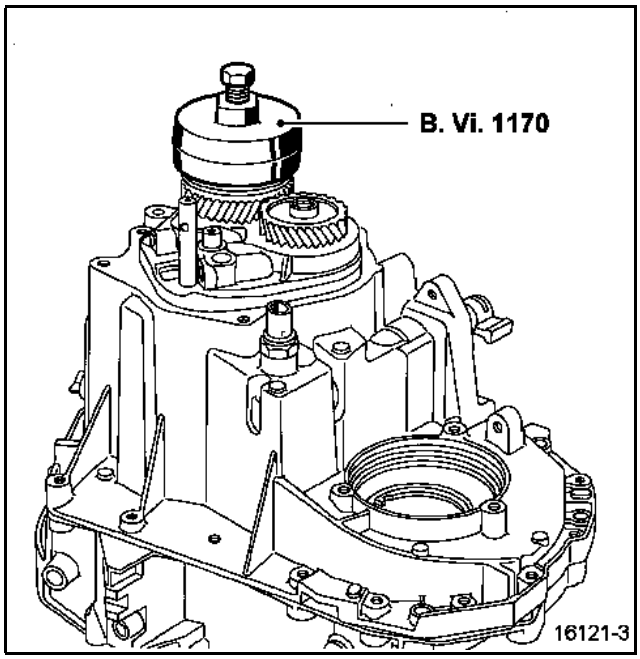
Drive in the 5th gear fork pin using **B. Vi. 31-01**.

Remove the 5th gear fork and the sliding gear.

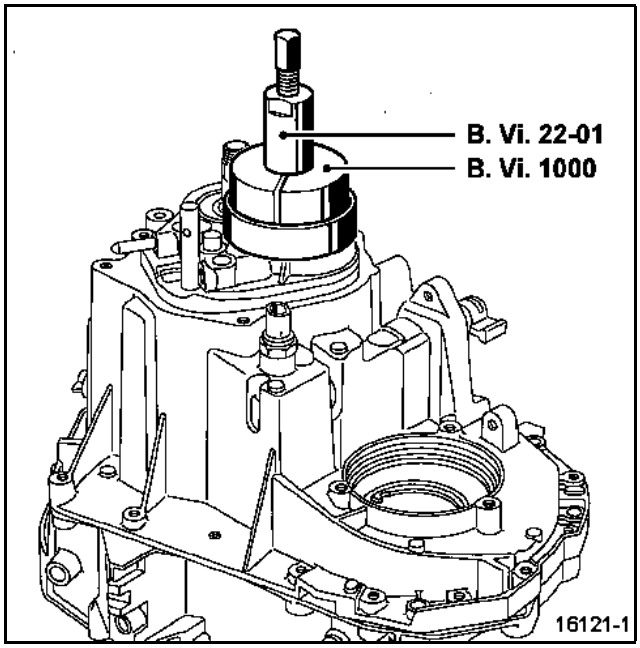


Extract the 5th gear hub using tool **B. Vi. 1170**.

Position the sliding gear of tool **B. Vi. 1170** as if to select 5th gear and rotate it so as to position the splines of the sliding gear opposite those of the hub and withdraw the assembly.

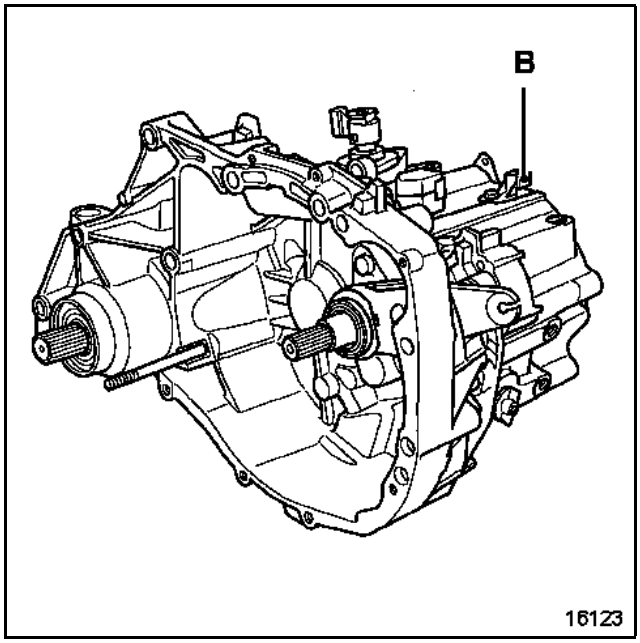


Remove the 5th fixed gear using tools **B. Vi. 22-01** and **B. Vi. 1000**.

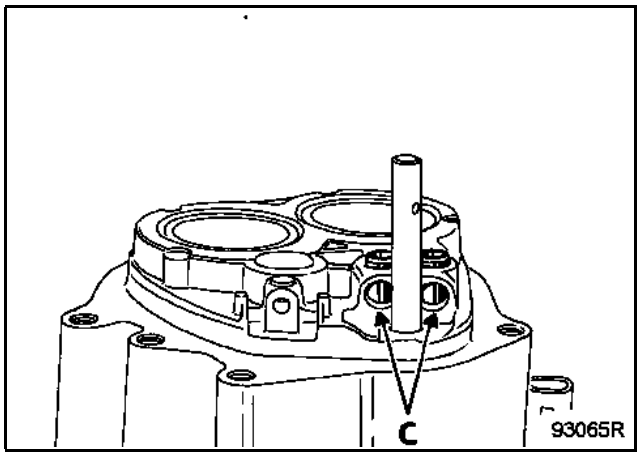


Remove the outer bolts from the mechanism housing.

(Remove the speed sensor (B) for sequential gearbox JH1).



It is advisable to place two magnets or to close off the openings (C) to retrieve the locking balls and springs for shafts 1/2 and 3/4.

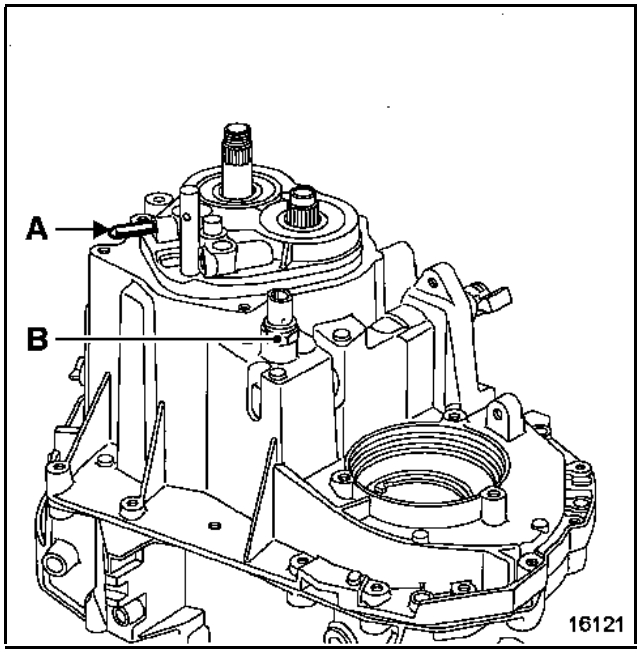


Remove the reverse gear shaft (A).

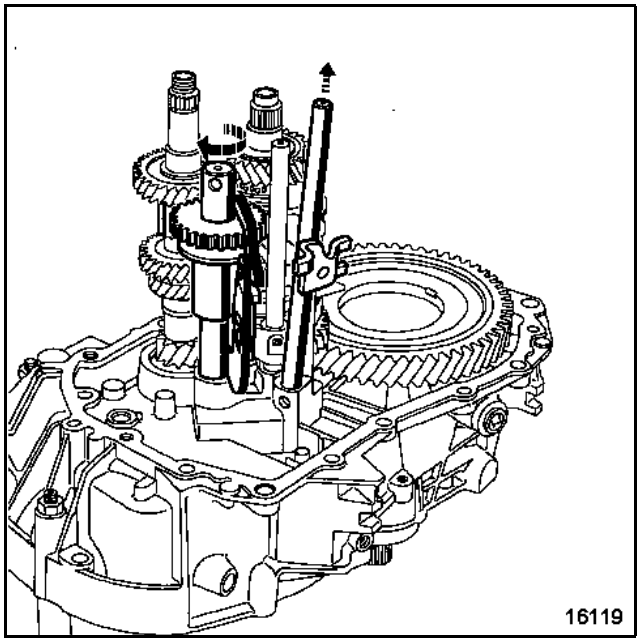
Remove the reverse gear switch (B).

Carry out an outwards stress test on the control shaft.

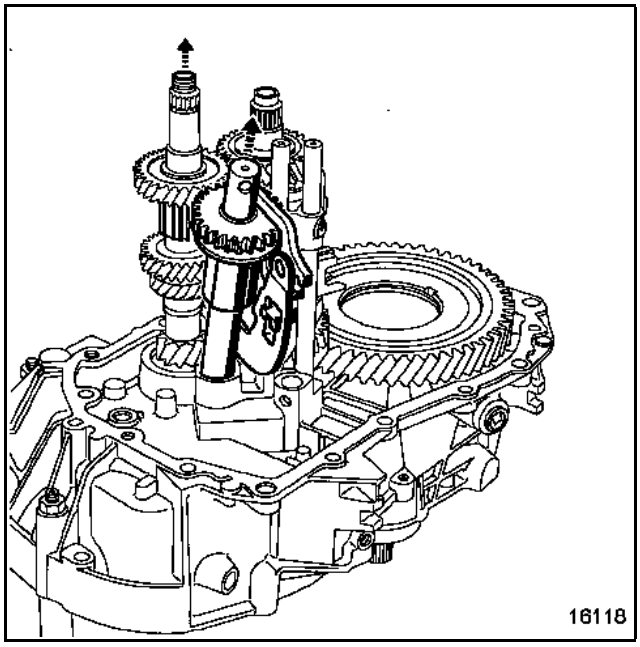
Lift and remove the mechanism housing.



Rotate the reverse gear shaft assembly to the left and remove the reverse/5th gear fork shaft.

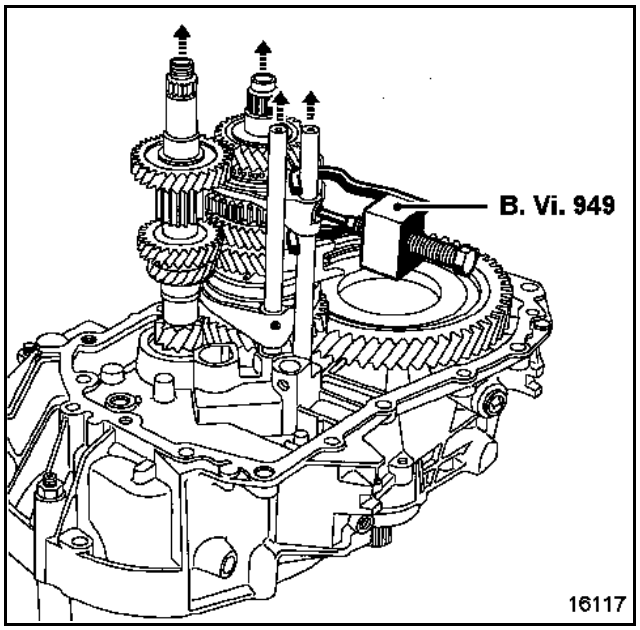


Gently lift the primary shaft and remove the reverse gear shaft assembly.

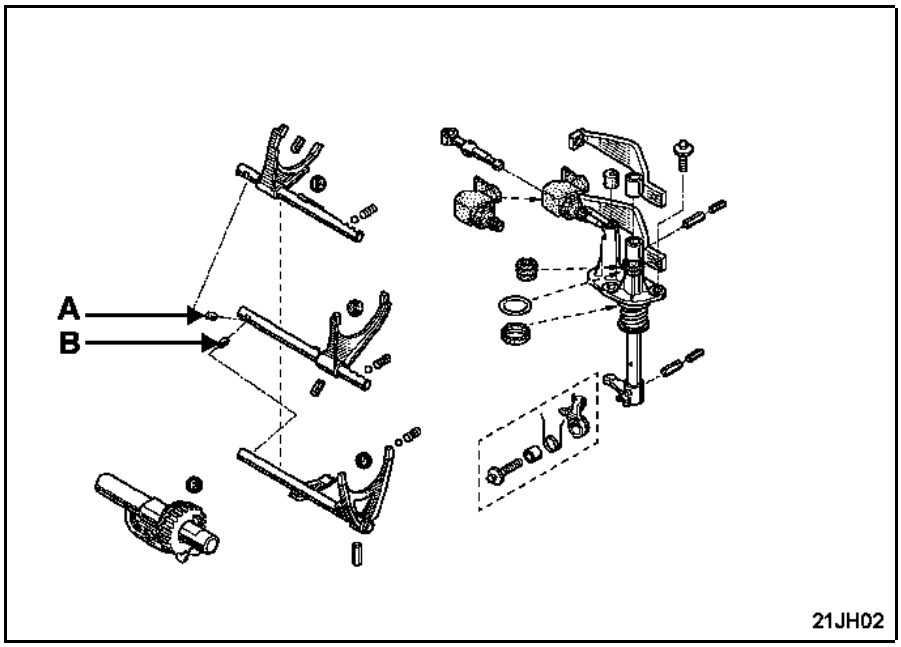


Take the pin out of the 3/4 gear fork using **B. Vi. 949** and remove the shaft and 3/4 gear fork assembly.

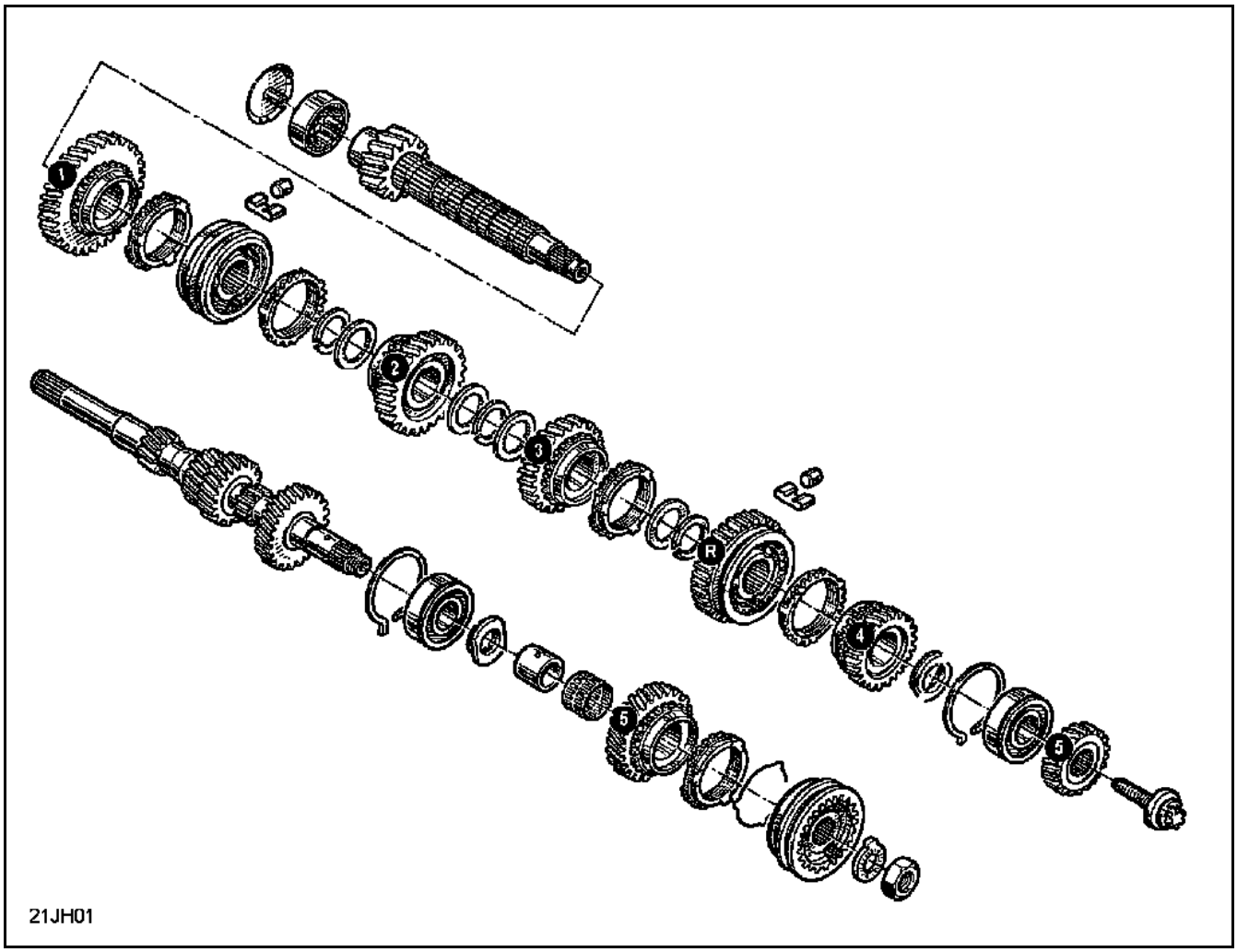
At the same time, remove the primary and secondary shaft assembly with the shaft and the 1/2 gear fork.



Remember to retrieve the inhibiting pegs (A) and (B).



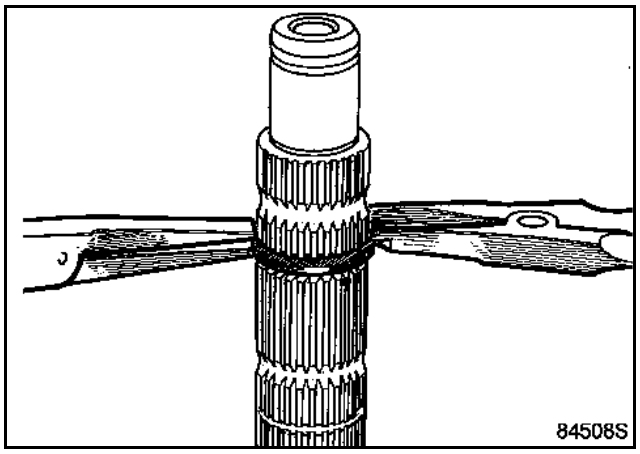
JH SECONDARY SHAFT



Removing the sprocket

Put the secondary shaft in a vice fitted with a clamping jaw and remove the sprocket assembly.

Use circlip pliers on one side and flat-nosed pliers on the other when removing and refitting stop rings.



Checking parts

The sprocket teeth and the claws should not be chipped or excessively worn.

Also ensure that there are no signs of grating or abnormal wear on the surfaces of the shafts or the inner walls of the sprockets.

It is advisable to mark the position of the sliding shaft in relation to the hub.

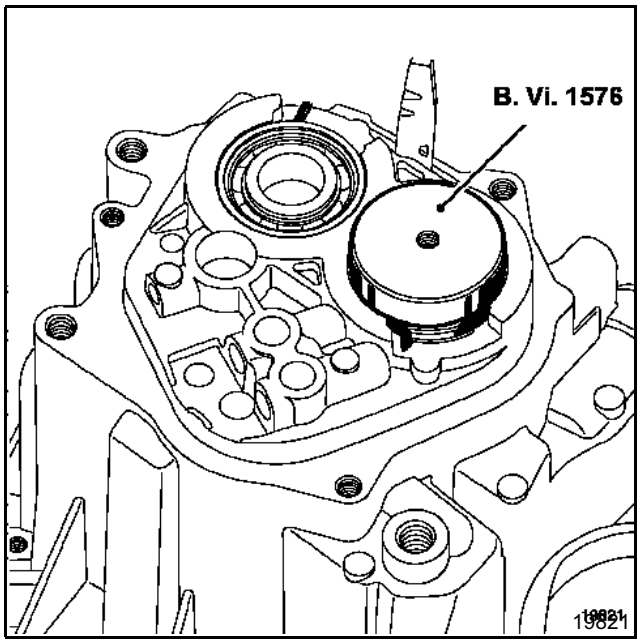
Refitting the sprocket.

Proceed in the reverse order to removal.

The stop rings must be systematically replaced.

REPLACING THE BEARINGS IN THE MECHANISM HOUSING

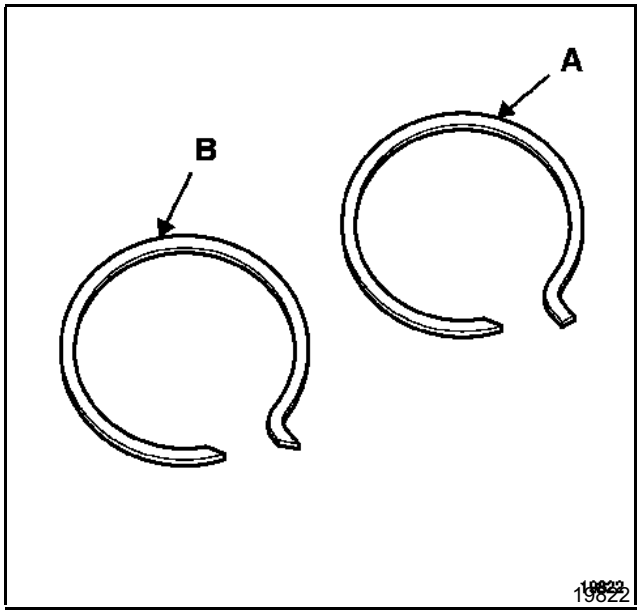
Separate the circlips with circlip pliers and drive the bearing inside the housing using tool **B. Vi. 1576**.



REFITTING

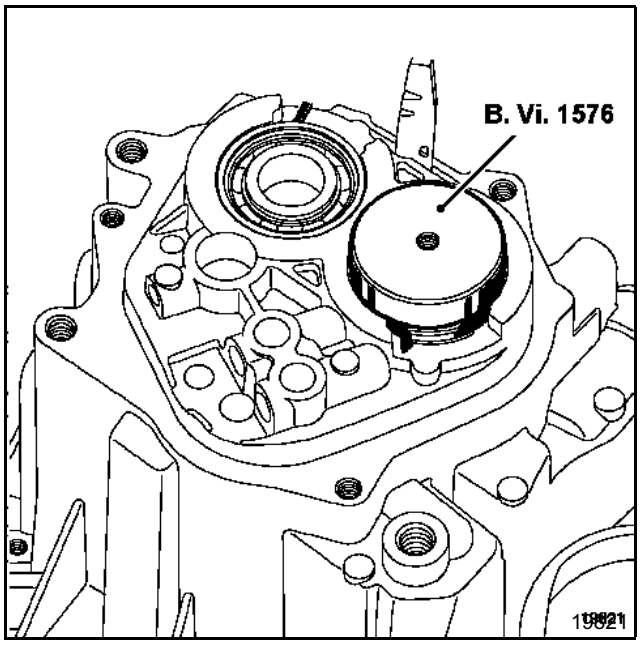
Place the new circlips in their respective housings.

NOTE: the circlips have different shapes:
– primary shaft circlip (A),
– secondary shaft circlip (B).



Fit the bearings using tool **B. Vi. 1576**.

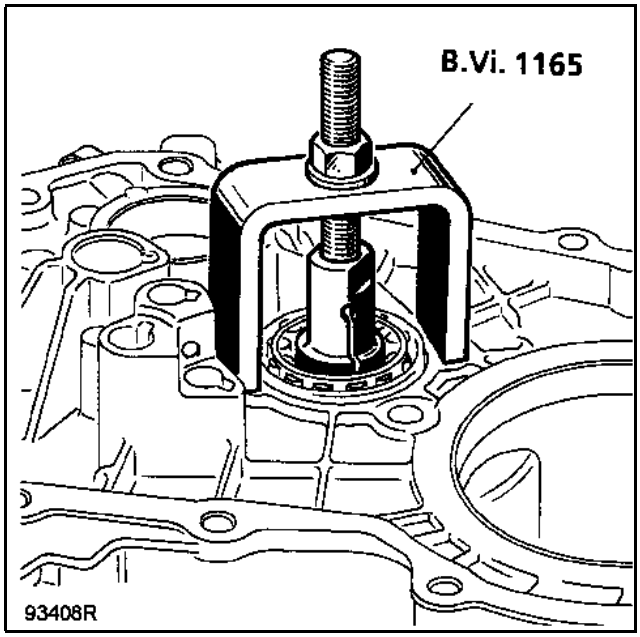
Knock the tool with the bearing using a small hammer.



Replacing the bearings on the clutch housing

Cut the base of the plastic hollow needle located at the centre of the bearing.

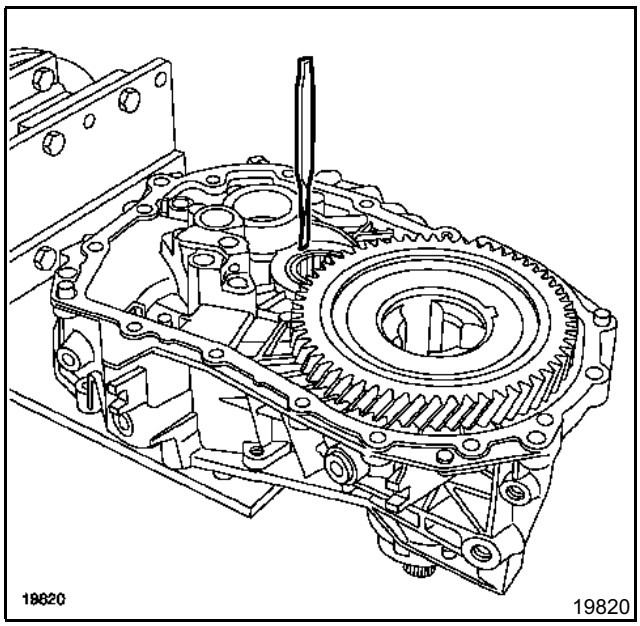
Fit tool **B. Vi. 1165** and extract the bearing.



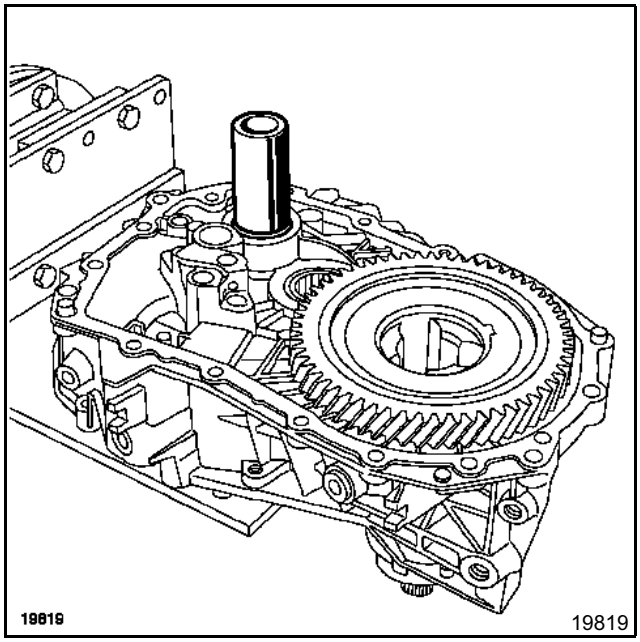
REFITTING

Fit the deflector and the bearing on the press flush with the inner side of the housing.

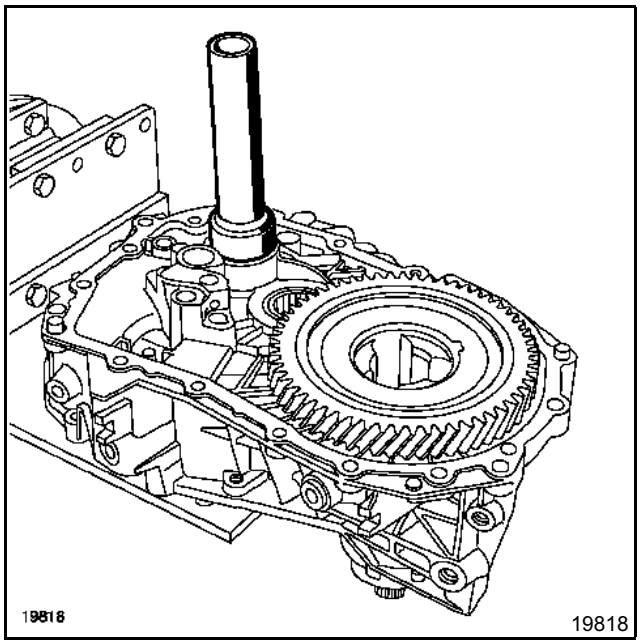
Set the bearing with a mortise chisel.



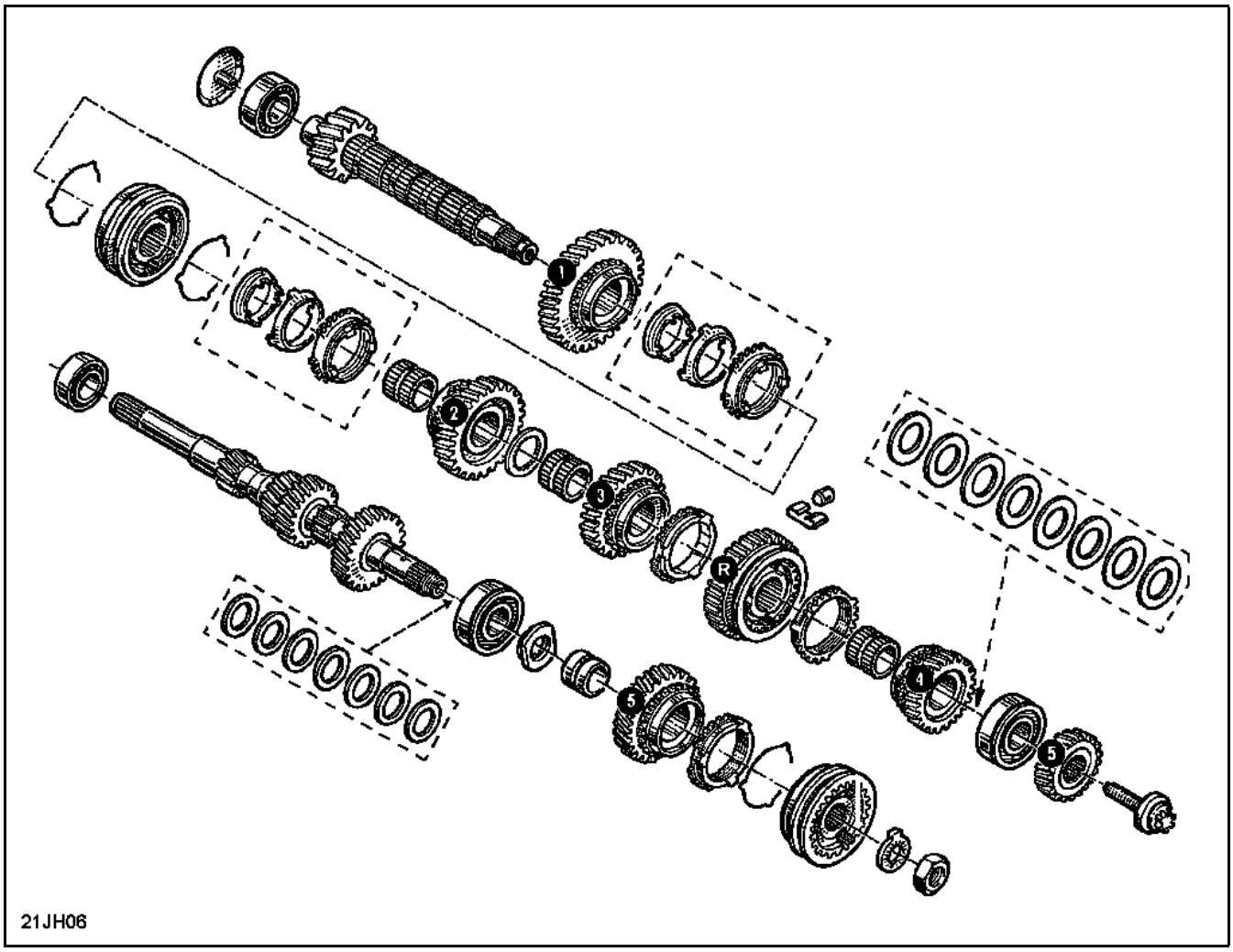
Remove the primary shaft bearing guide using a **38** ∅ tube.



Refit the bearing guide using tool **B. Vi. 1601**.



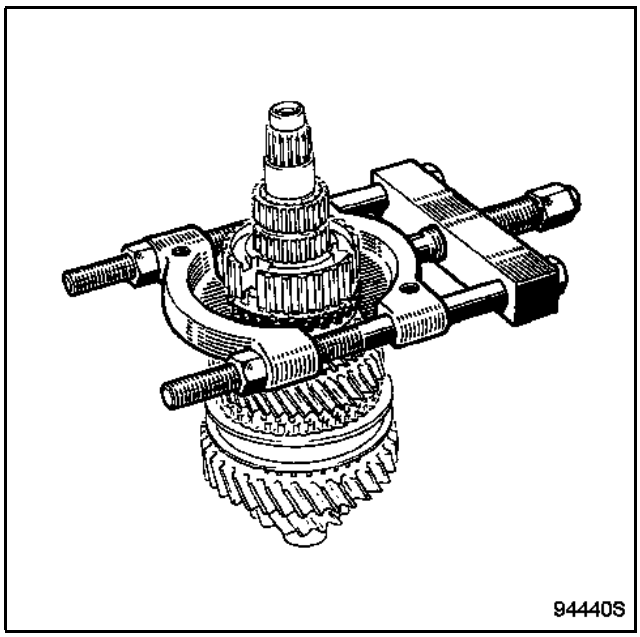
JR SECONDARY SHAFT



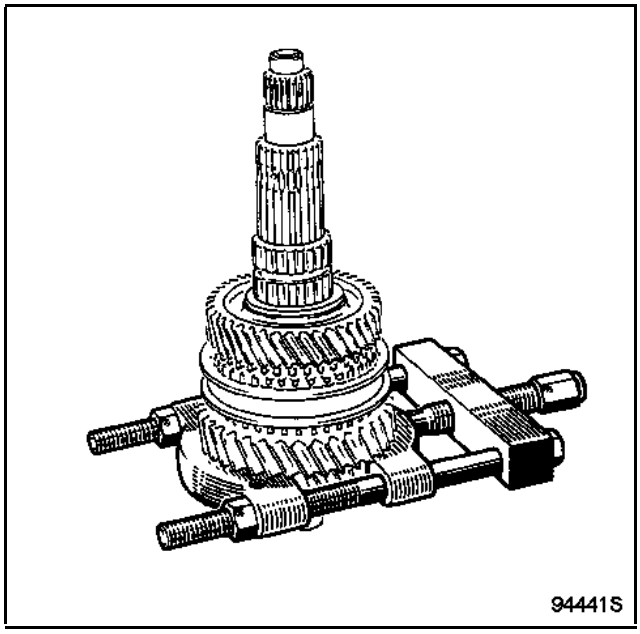
Removing the sprocket

The 2nd, 3rd, and 4th gear supporting rings are fitted tightened. They will be systematically replaced during refitting.

With the press, remove the ring, hub, 3rd gear unit resting under the 3rd gear claw teeth.



With the press, remove the rings, 1st and 2nd gears, hub, sliding shaft unit resting under the 1st gear.



Checking parts

The sprocket teeth and the claws should not be chipped or excessively worn.

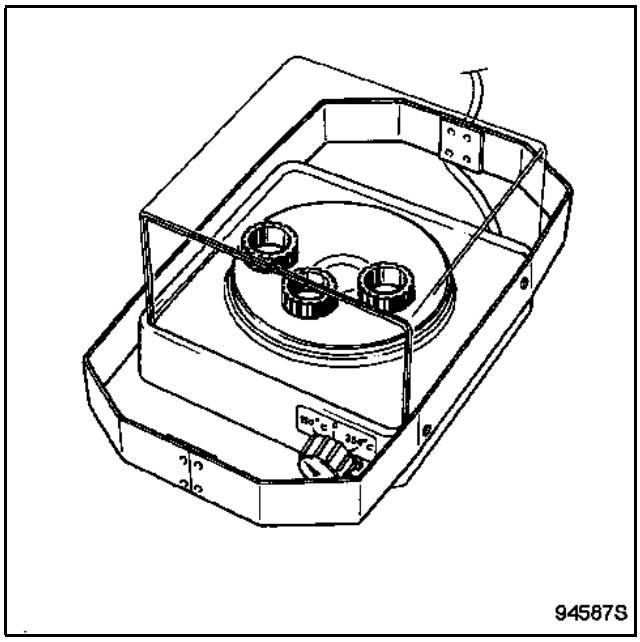
Also ensure that there are no signs of grating or abnormal wear on the surfaces of the shafts or the inner walls of the sprockets.

It is advisable to mark the position of the sliding shafts in relation to the hub.

Refitting the sprocket

A heating plate with a setting of **150°C** should be used for refitting.

Place the new rings on the cold heating plate. Heat them for 15 minutes with the thermostat at **150°C**.

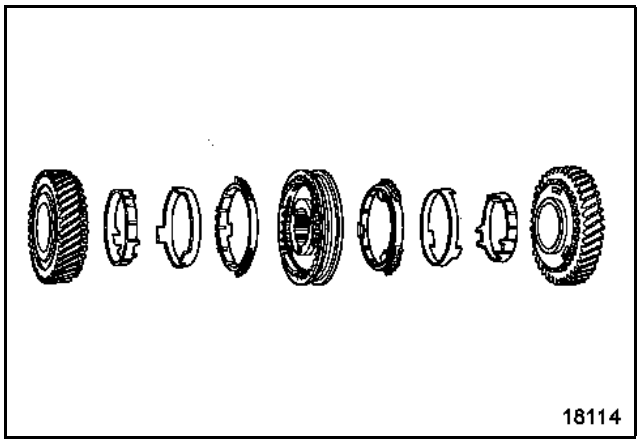


Proceed in the reverse order to removal.

Refit the rings:

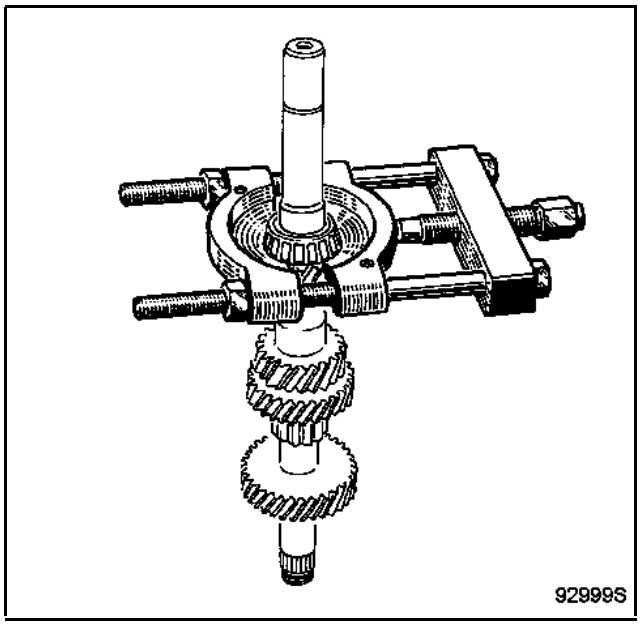
Remove a ring from the heating plate, using pliers, and use a tube with an internal diameter of **33 mm** to fit it on the shaft until it is resting on the hub.

NOTE: the 1/2 gear has dual-cone synchronisation, bring the notches of the synchro rings together with those on the hubs and gears.

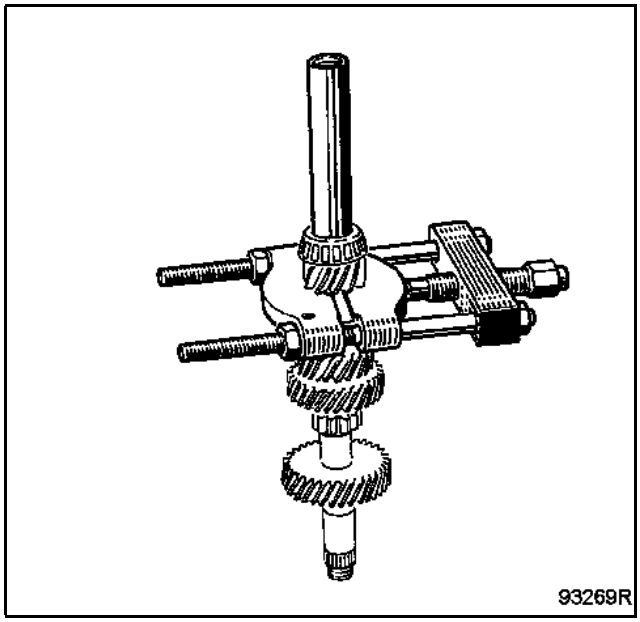


REPLACING THE BEARINGS ON THE PRIMARY SHAFT

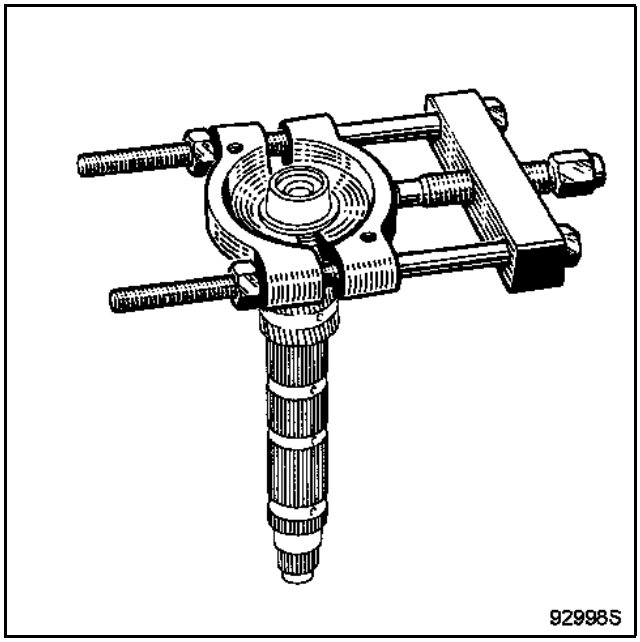
Remove the bearings on the press using the anti-sticking pin.



Refit the bearings on the press using a **25** ∅ tube.

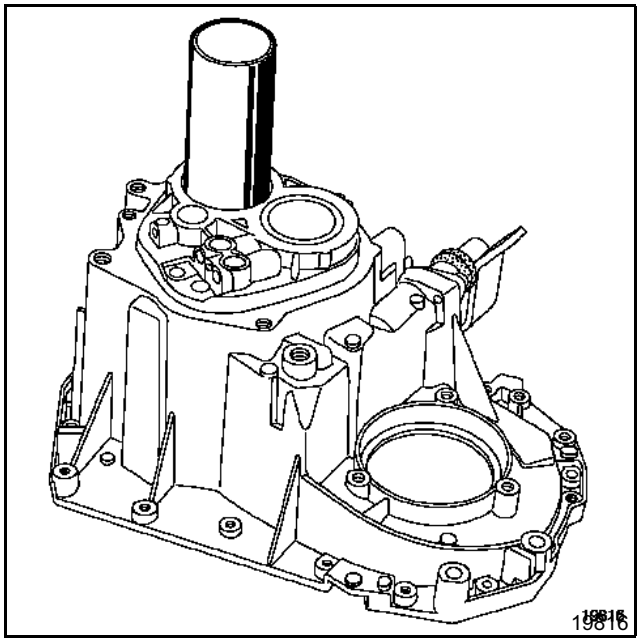


Extract the secondary shaft bearing cone using an anti-sticking pin.

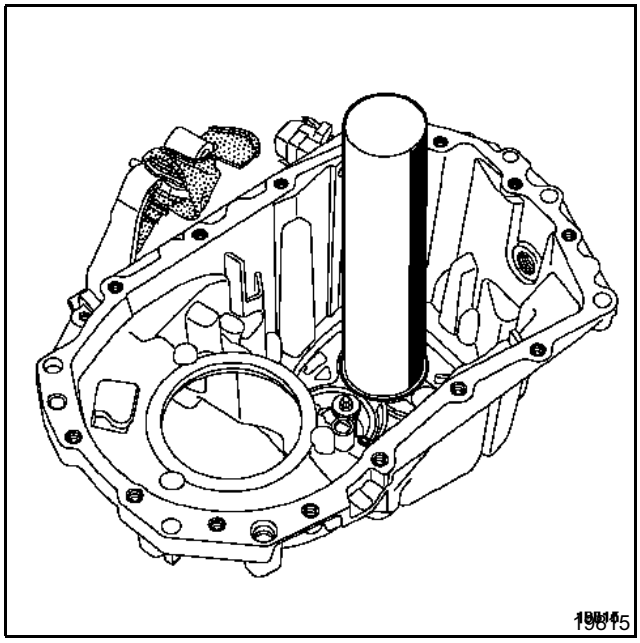


Refit the cone on the press.

Drive out the bearings cups on the housing side of the mechanism using a **55 mm** diameter tube.



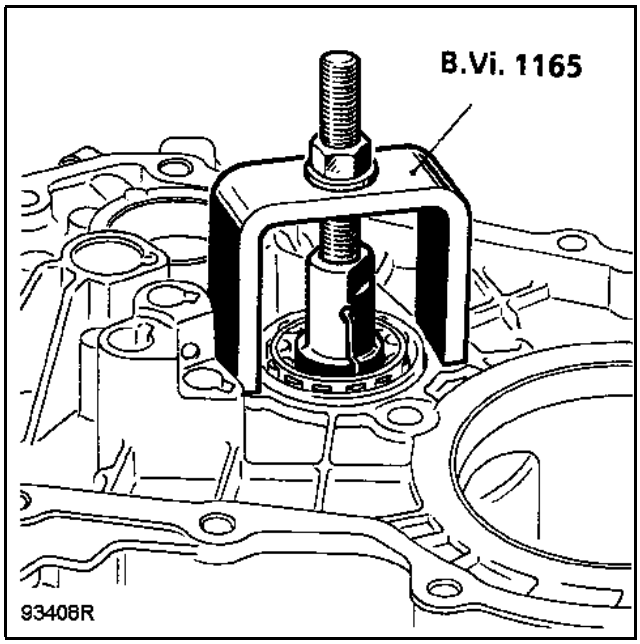
Refit the bearings cups on the housing side of the mechanism using a **60 mm** diameter tube.



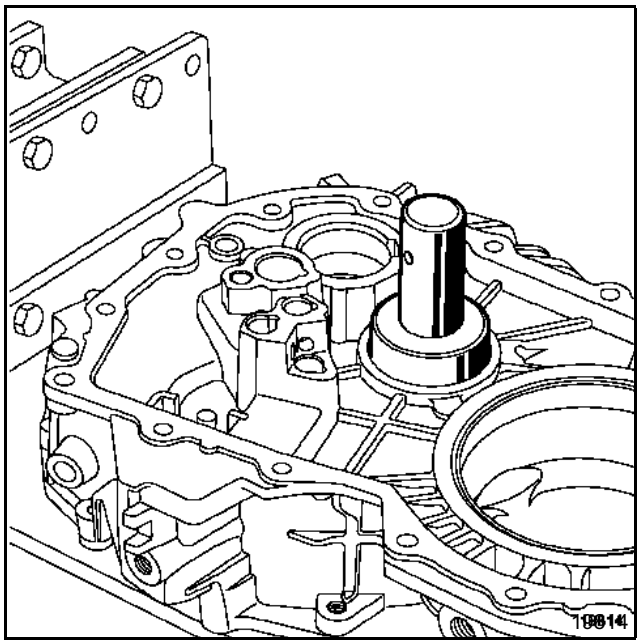
REPLACING THE BEARING ON THE JR CLUTCH HOUSING

Cut the base of the plastic hollow needle located at the centre of the bearing.

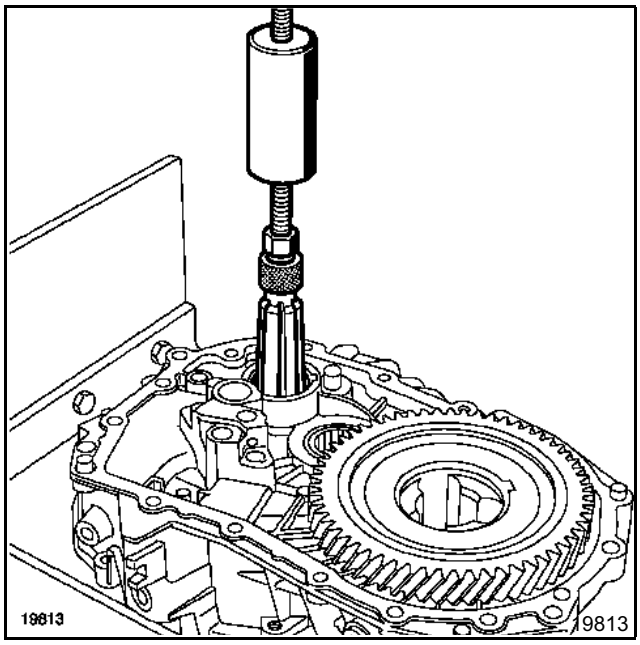
Fit tool **B. Vi. 1165** and extract the bearing.



Refit the bearing using tool **B. Vi. 1167**.



Drive out the primary shaft bearing cup using a **38** ∅ extractor.



Refit this on the press using a **46** ∅ tube.

SETTING THE PRE-TENSIONING OF THE SECONDARY SHAFT BEARINGS

NOTE: this operation is only carried out when replacing the bearings.

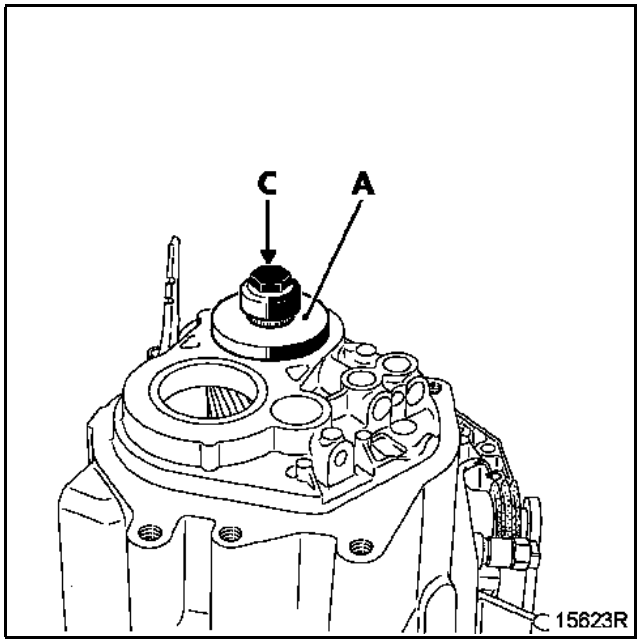
Clutch housing without differential and without primary shaft.

Fit the secondary shaft in the clutch housing with the bearings and the pre-setting washer **B. Vi. 1161**, or equivalent, of **1.60 mm** (large outer ∅).

Fit the mechanism housing.

Fit and tighten to torque the box belt bolts.

Fit the dial gauge support plate **B. Vi. 1161**, or equivalent, on the tripod basin mountings.



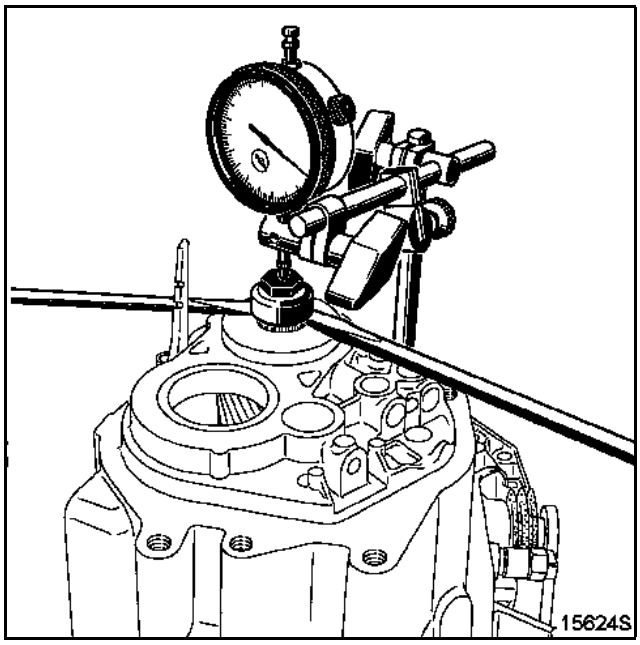
Fit:
- the **B. Vi. 1527** special spacer (A),
- the bolt (C),
- the dial gauge with its magnetic holder.

A A Rotate the secondary shaft several times to fit the bearings.

B B Set the dial gauge to zero.

C C Pull the secondary shaft upwards by making a lever out of two screwdrivers.

D D Take a reading from the dial gauge.



Repeat the actions (**A** to **D**) several times.

Calculate the average of the readings.

Calculation of the value of the pre-tensioning timing washer.

Prescribed value + value of the pre-setting washer + average of the readings on the dial gauge = value of the pre-tensioning dial gauge washer.

Example: (Values in mm).

0.26	+	**0.49**	+	**1.60**	=	**2.35**
↓		↓		↓		↓
Pre-scribed value		Average reading		Pre-setting washer value		Pre-tensioning timing washer value

NOTE: a set of timing washers of **2.15 mm** to **2.43 mm** from **0.04 mm** to **0.04 mm** thickness is supplied as replacement parts.

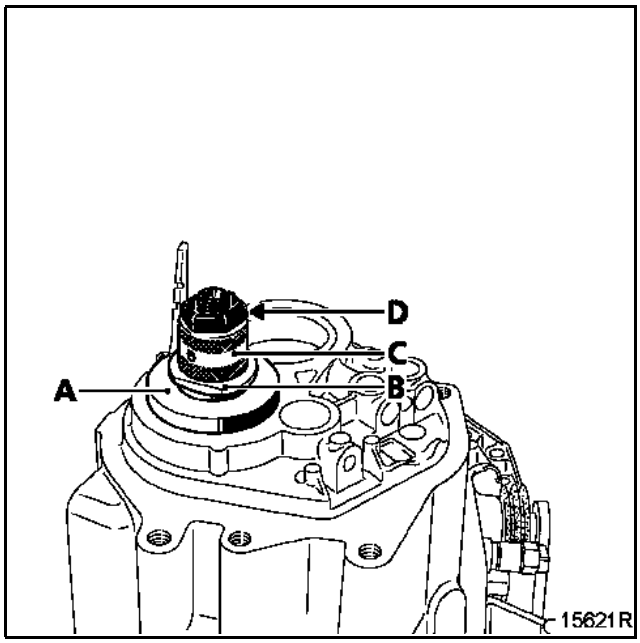
SETTING THE CLEARANCE OF THE PRIMARY SHAFT BEARINGS

NOTE: this operation is only carried out when replacing the bearings.

Clutch housing without differential and without secondary shaft.

Fit the primary shaft with the bearings and the pre-setting washer **B. Vi. 1161** of **0.62 mm** (small outer ∅).

Fit:
- the mechanism housing, **fit and tighten to torque the box belt bolts,**
- the dial gauge support plate **B. Vi. 1161** on the tripod basin mountings.



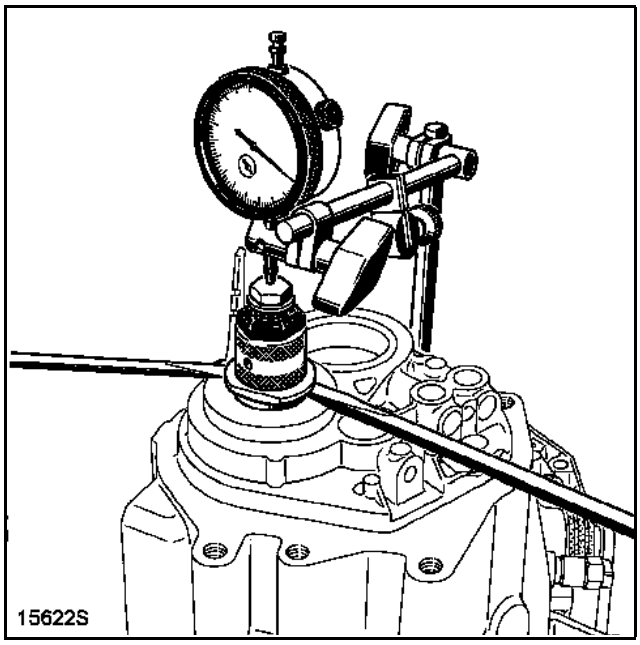
Fit:
- the spacer **B. Vi. 1527** (A),
- the support washer (B),
- the gear ring (C),
- the nut screwed right down (D),
- the dial gauge with its magnetic holder.

A A Rotate the primary shaft several times to fit the bearings.

B B Set the dial gauge to zero.

C C Pull the primary shaft upwards by making a lever out of two screwdrivers.

D D Take a reading from the dial gauge.



Repeat the actions (**A** to **D**) several times.

Calculate the average of the readings.

Calculation of the value of the timing washer

Value of the pre-setting washer + average of the readings on the dial gauge - 0.02 (value to subtract to guarantee a minimum clearance) = value of the timing washer.

Example: (Values in mm).

0.62	**+**	**0.50**	**-**	**0.02**	**=**	**1.10**
↓		↓		↓		↓
Pre-setting value		Average reading		Value of rec-ommended minimum clearance		Value of timing washer

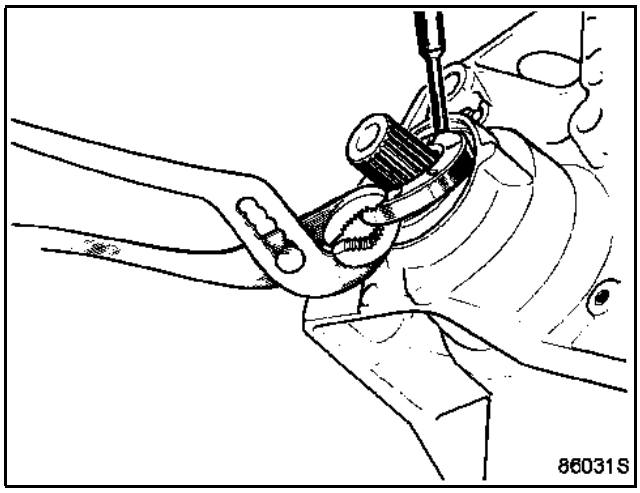
NOTE: a set of timing washers of **0.86 mm** to **1.30 mm** from **0.04 mm** to **0.04 mm** thickness is supplied as replacement parts.

REMOVING THE DIFFERENTIAL

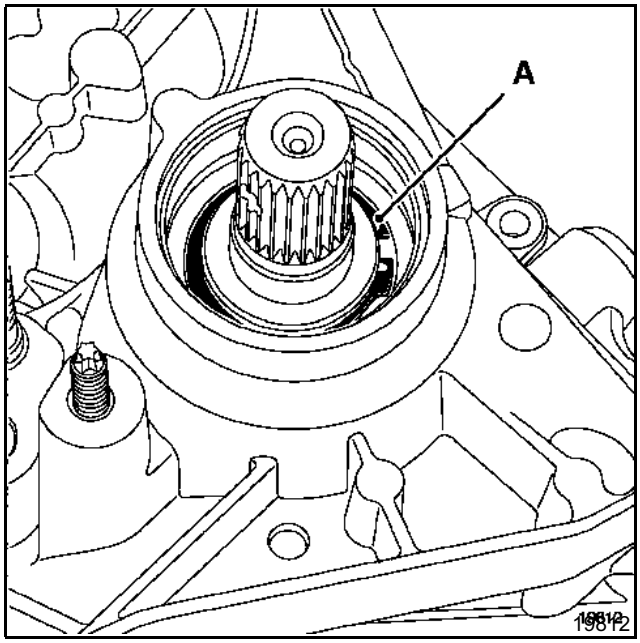
Remove the O-ring.

Tap the lip seal using a drift and a small hammer to pivot it.

Remove the seal, taking care not to damage the splines of the sunwheel.



Use the press to fit a small board under the crownwheel to act as a support. Press on the clutch housing to release the circlip (A) and remove it.



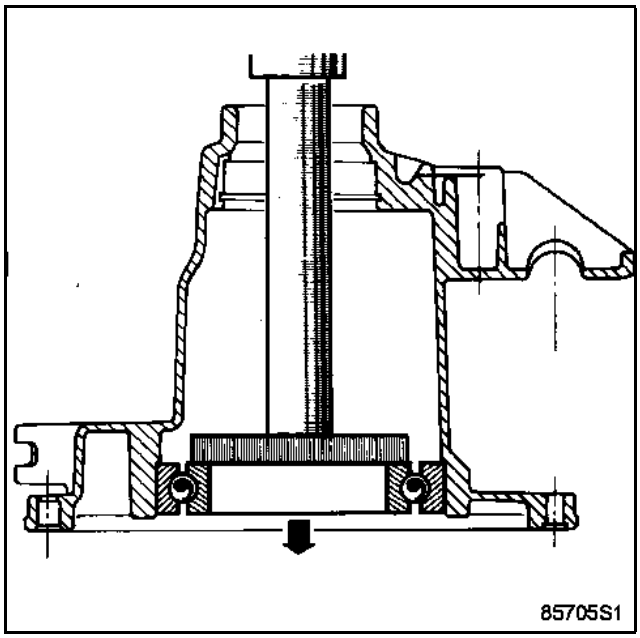
The differential comes out when the sunwheel is pushed on the press.

REPLACING THE BEARINGS

Crownwheel side

Insert a small bar into the casing and place it flat on the bearing.

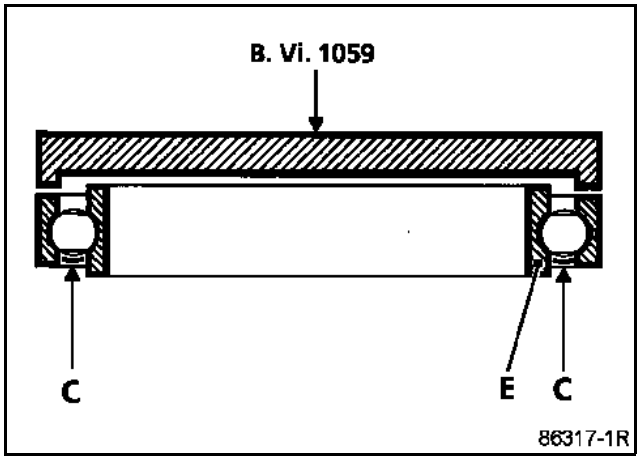
Press on the press with a tube and extract the bearing.



REFITTING

The bearing race (C) must be facing the opposite side to the crownwheel.

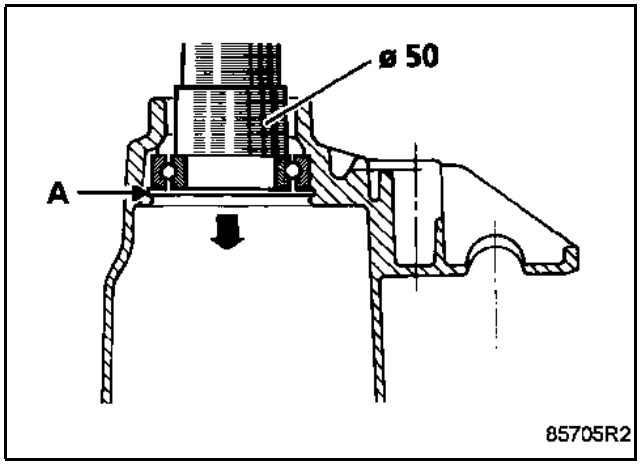
Drive the bearing home on the press, using tool **B. Vi. 1059** and resting on the outer ring of the bearing.



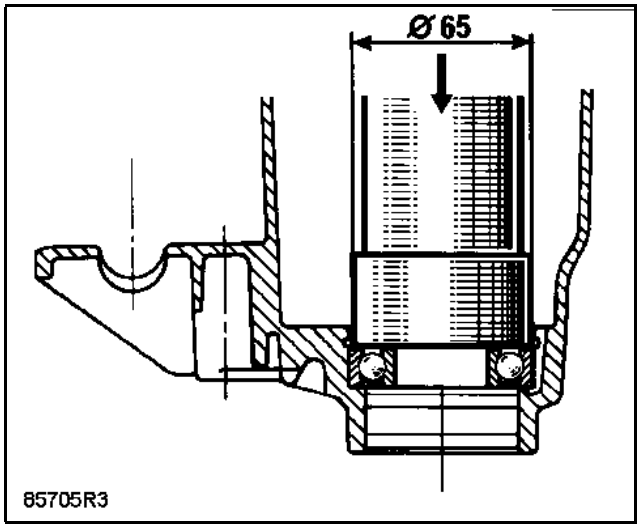
Sunwheel side

Remove the bearing retaining circlip (A).

On the press, move the bearing towards the inside of the housing using a **50 mm** diameter tube.



Refit the bearing using a **65 mm** diameter tube. The bearing race must be facing the opposite side to the crownwheel.



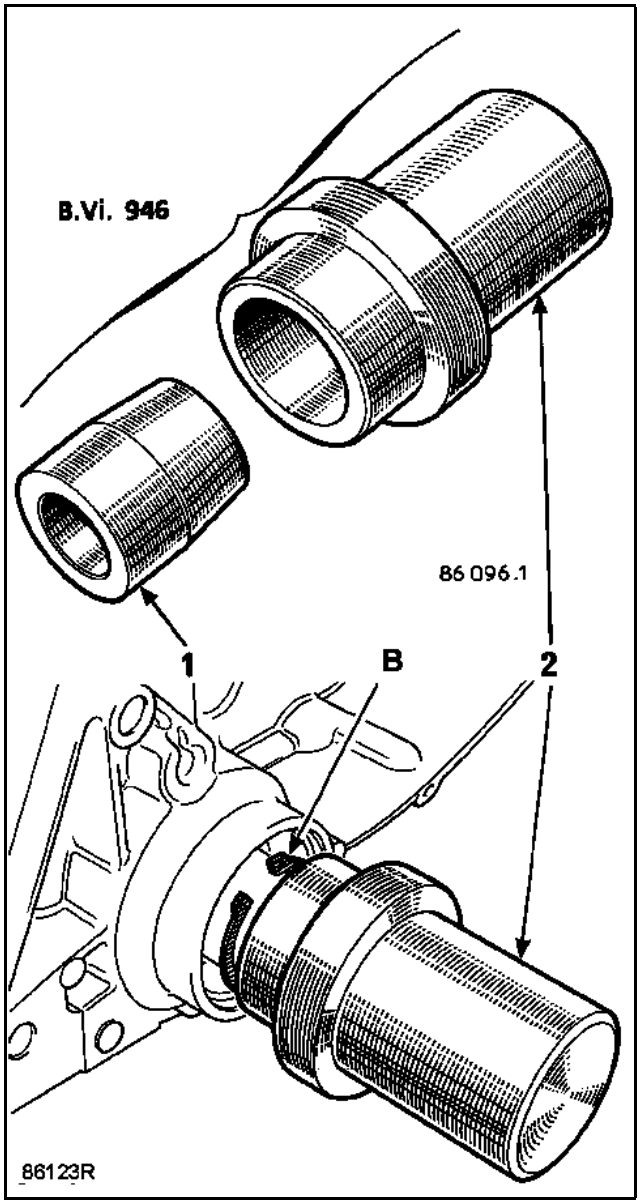
Refit the bearing retaining circlip.

Refit the differential in the housing.

Fit a wooden shim under the crownwheel.

Fit the circlip (B) on the head (1) of tool **B. Vi. 946** and the head on the sunwheel.

Fit the tool (2) **B. Vi. 946** on the head and push with the press until the circlip falls into place in its channel. Remove tool **B. Vi. 946**.



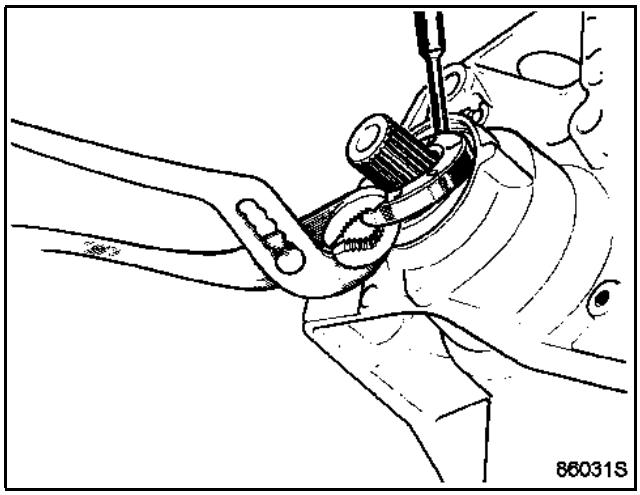
Rotate the assembly and check the rotation of the speedometer drive gear if fitted.

REMOVING THE DIFFERENTIAL

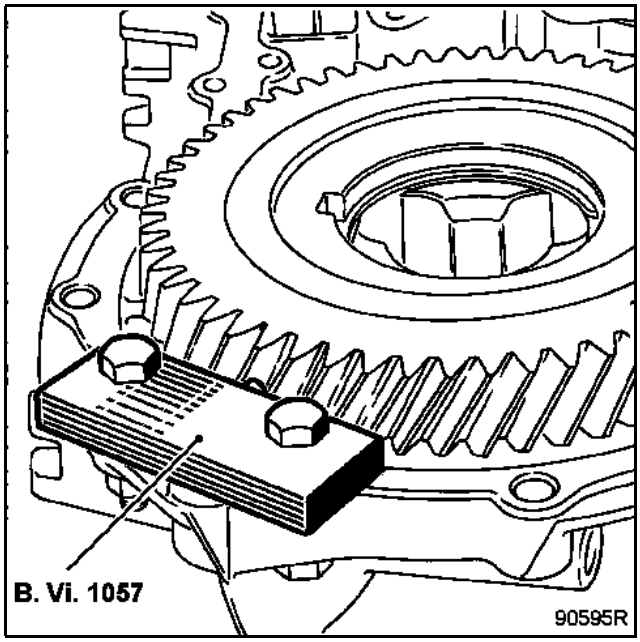
Remove the O-ring.

Tap the lip seal using a drift and a small hammer to pivot it.

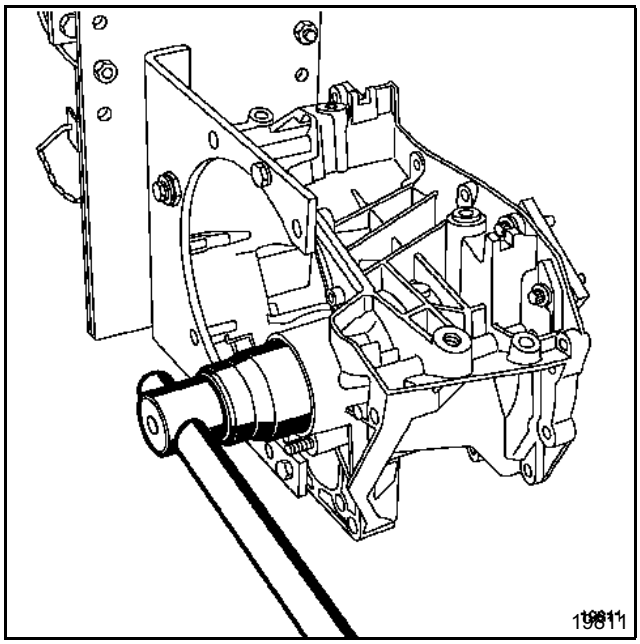
Remove the seal, taking care not to damage the splines of the sunwheel.



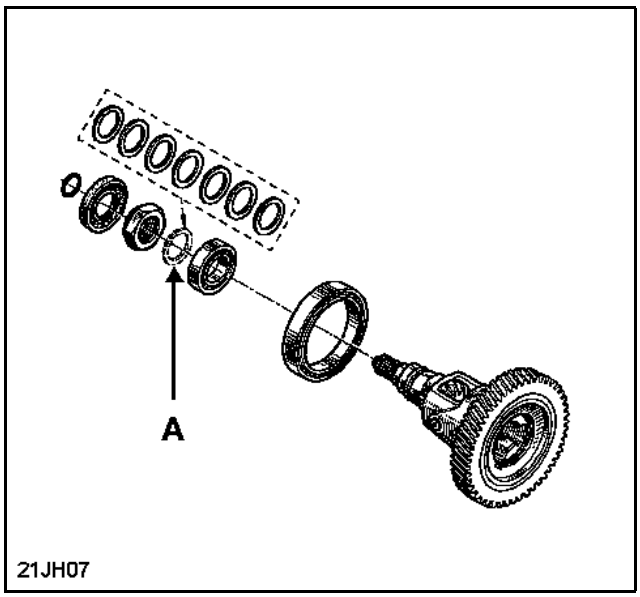
Immobilise the differential unit/crownwheel assembly using tool **B. Vi. 1057** mounted on the housing.



Remove the unit mounting nut.



Retrieve the bearing pre-tensioning setting shim (A).

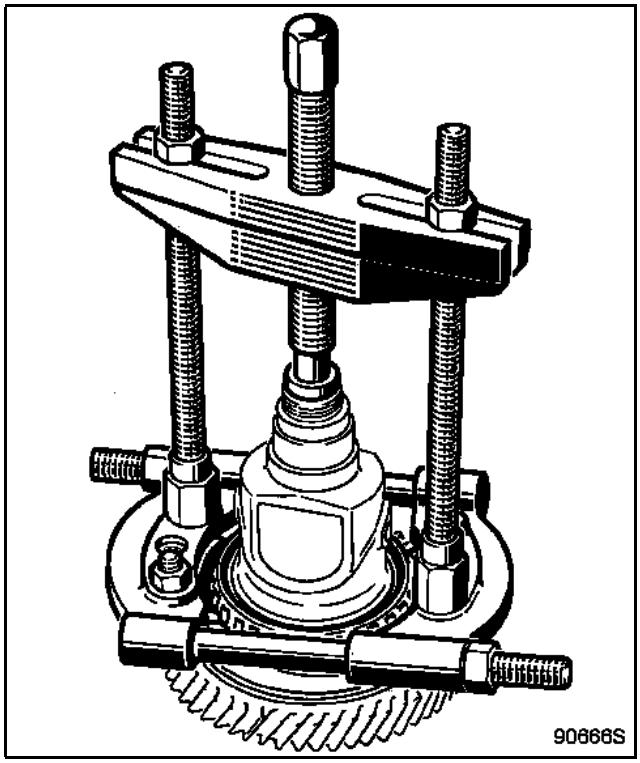


Remove the assembly by pressing on the sunwheel.

REPLACING THE BEARINGS

REMOVAL

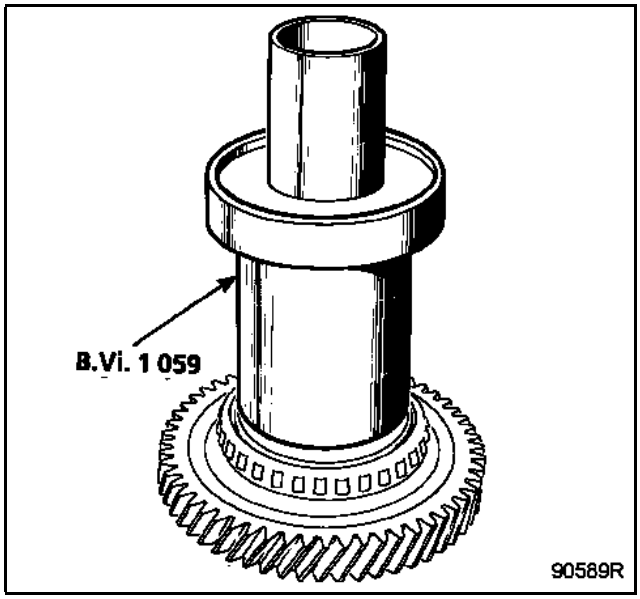
Lift and remove the bearings using an anti-sticking pin.



REFITTING

Place a small board under the crownwheel to act as a support.

Fit the bearings as far as they will go in the housing using tool **B. Vi. 1059** and a press.



REPLACING THE RACES

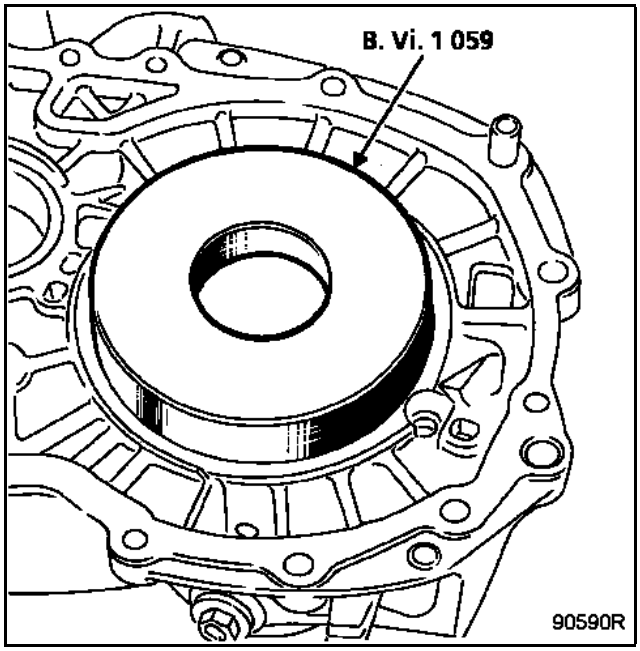
REMOVAL

Drive out the bearing races using a tube inserted in the housing.

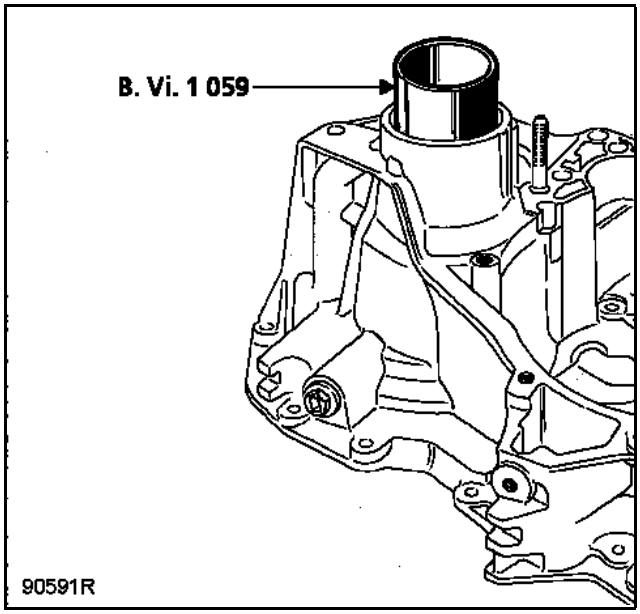
REFITTING

Fit the bearing races until they touch the housing shoulder using tool **B. Vi. 1059** and a press.

Large ∅



Small ∅

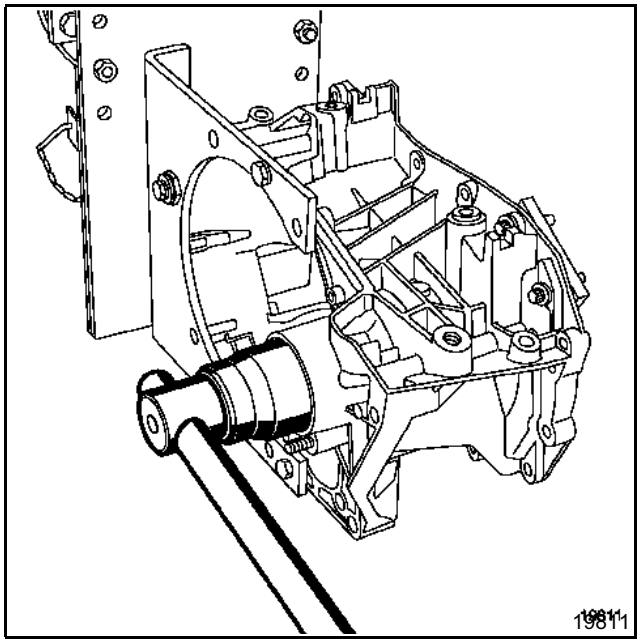


Refit the differential in the housing, with the bearing lightly oiled.

Fit the sunwheel side bearing, the pre-tensioning setting washer and the nut.

As for disassembly, immobilise the unit/crownwheel assembly using tool **B. Vi. 1057**.

Pre-tighten to a torque **of 1 to 2 daNm.**

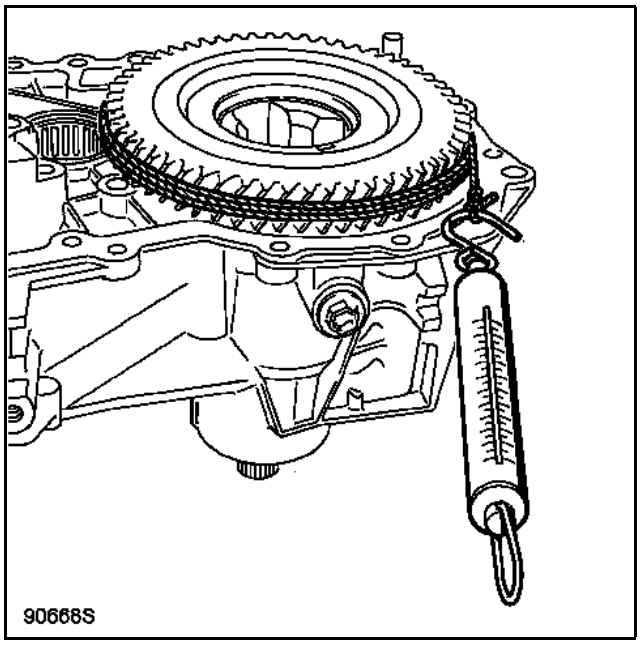


Remove tool **B. Vi. 1057** and rotate the differential to fit the bearings.

Refit tool **B. Vi. 1057** and tighten the nut to a torque of **13 daNm**.

Remove tool **B. Vi. 1057** and rotate the differential and check the pre-tension.

The differential must rotate under a load of between:
– 0.5 and 2 daNm for reused bearings,
– 1.6 and 3.2 daNm for new bearings.



If the setting is not correct:

Determine the thickness of the timing washer bearing in mind that:

The pre-tension increases by approximately **0.7** to **0.8 daNm** when the timing washer thickness is reduced by **0.05 mm** and vice-versa.

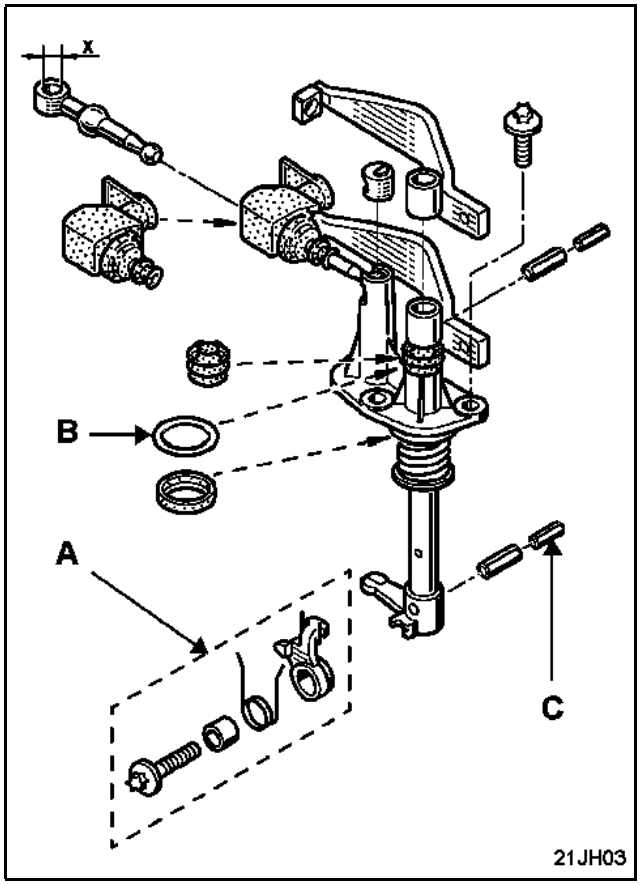
CONTROL SHAFT

A prevention valve is fitted on the housing (A) of the control shaft.

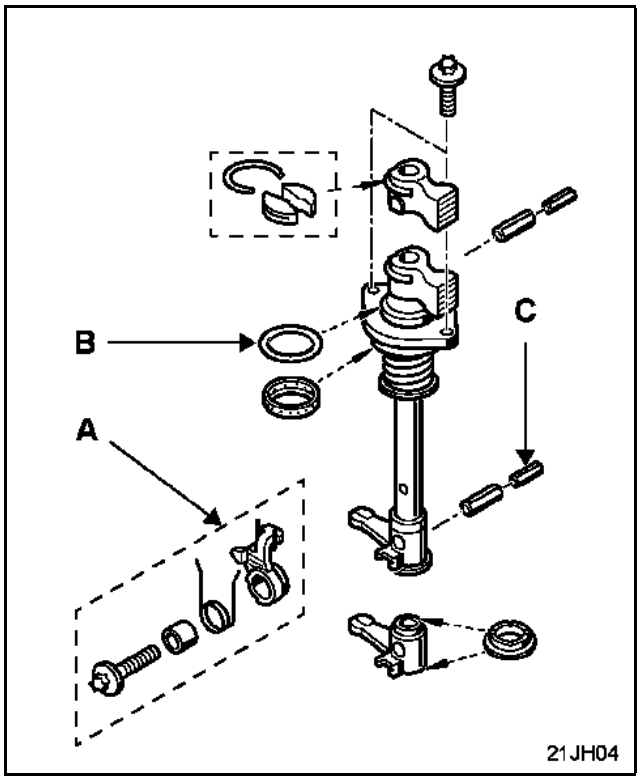
An O-ring (B) ensures that it is sealed tightly.

After removing the pin from the selector finger (C), remove the mounting bolts and remove the control unit.

JH3 and JR5 control shaft

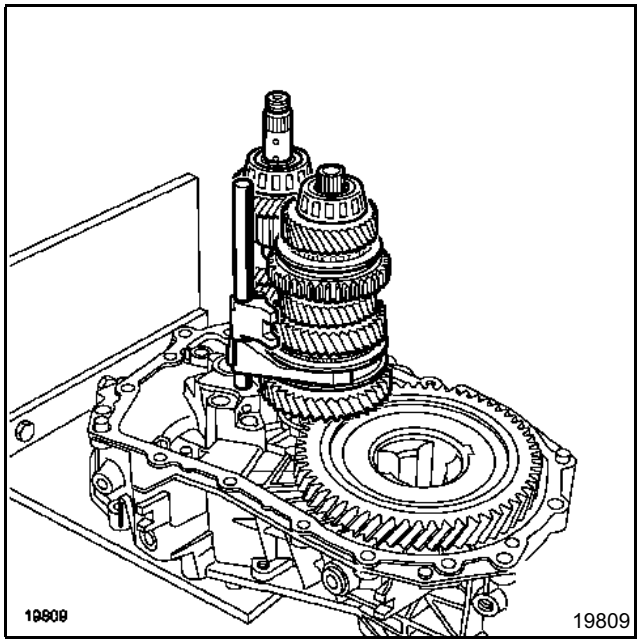


JH1 control shaft

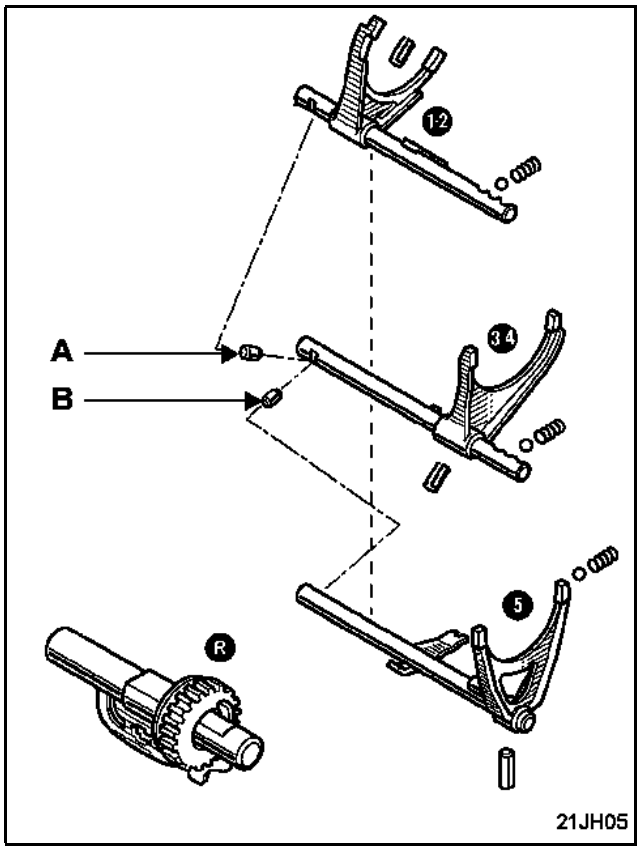


REFIT THE SHAFTS

Fit the primary and secondary shafts with the 1/2 gear fork at the same time.

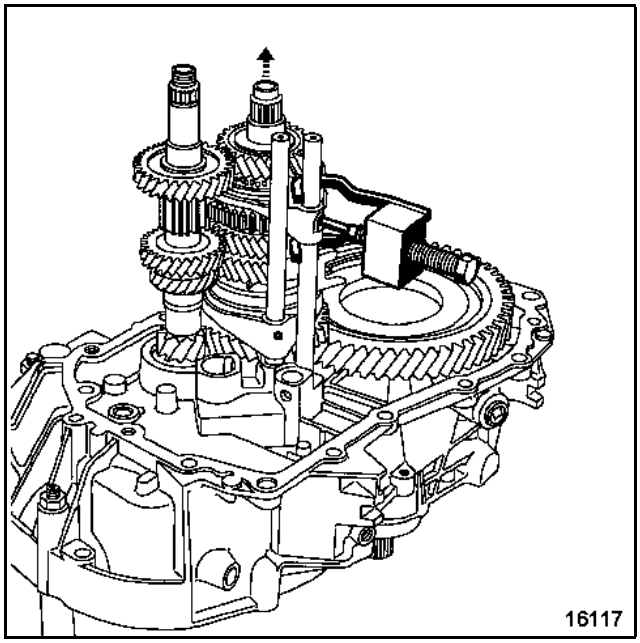


Fit the 1/2 gear shaft locking peg (A).



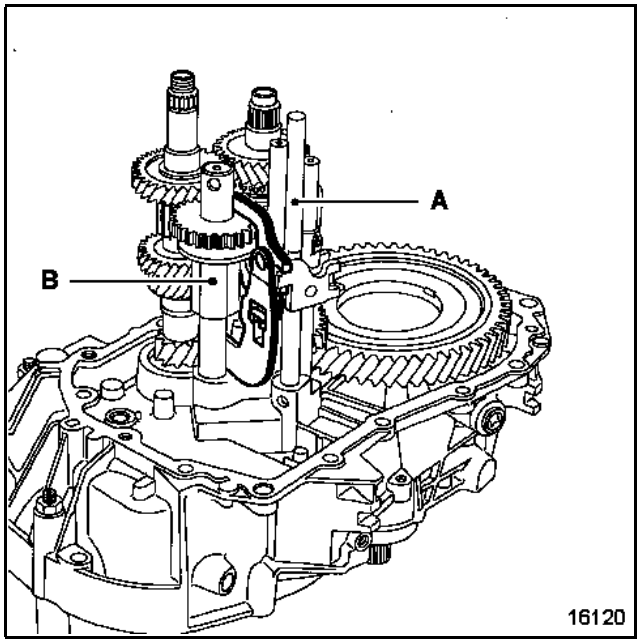
Gently lift the 3/4 hub and fit the 3/4 gear fork and shaft.

Pin the fork using tool **B. Vi. 949**.

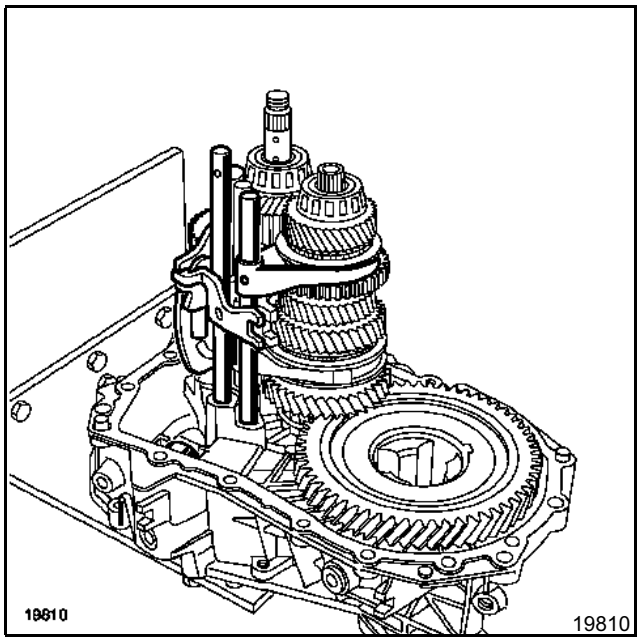


Fit the 5th gear shaft locking peg (B).

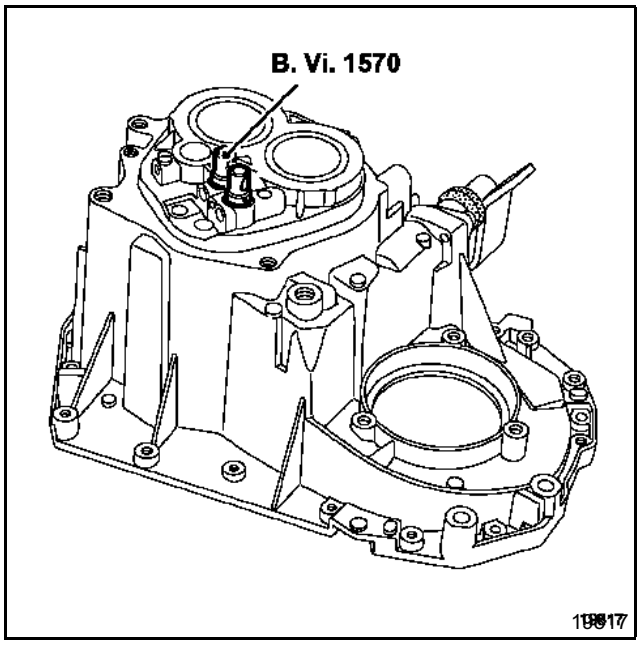
Fit the 5th gear shaft (A) and the reverse gear shaft (B) by gently lifting the primary shaft.



Check the positioning of:
– the centring dowels,
– the magnet,
– the pre-tension timing washers of the bearings on JR5.



Fit the 1/2 and 3/4 locking springs and balls in the mechanism housing and press them down using tool **B. Vi. 1570**.

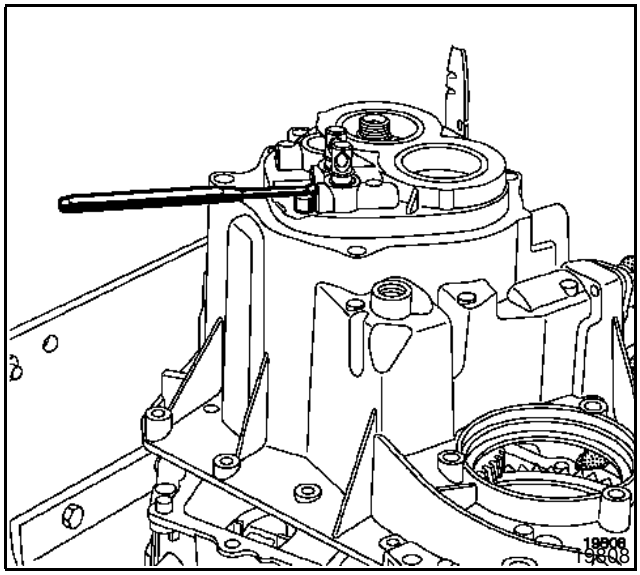


Apply a line of **Loctite 518** to the gasket face.

Engage 3rd gear.

Introduce the housing while guiding the control shaft into 3rd gear, fit the locking spring and ball as the 5th gear shaft appears.

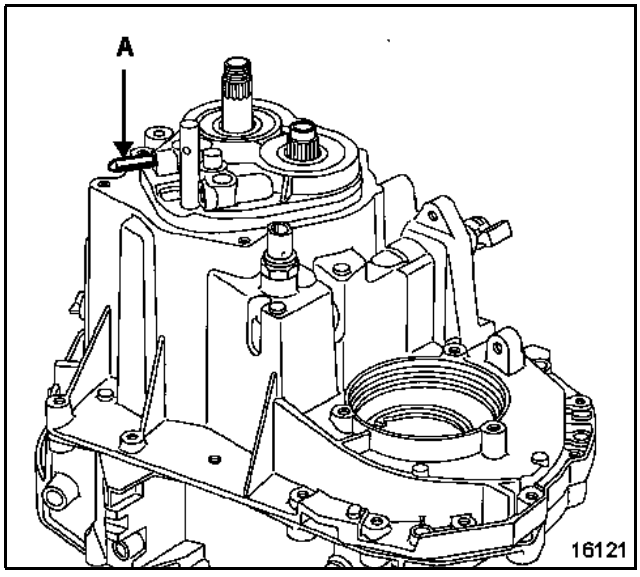
Press down the locking ball and finish fitting the housing.



Remove tool **B. Vi. 1570**.

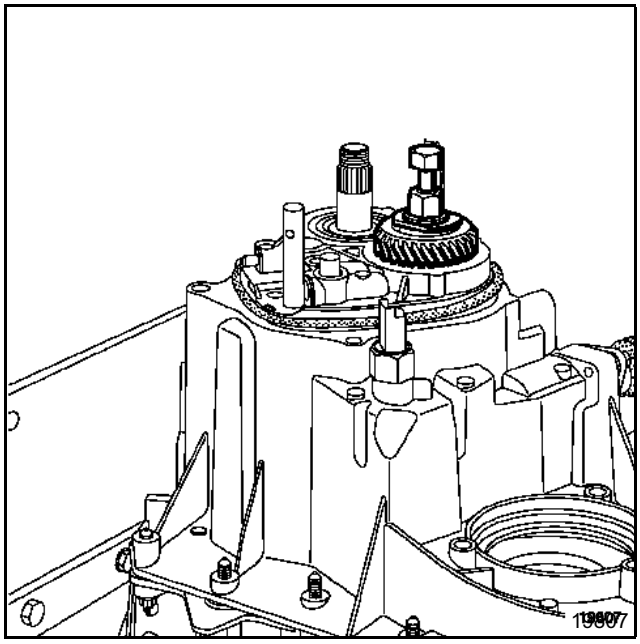
Tighten the peripheral bolt to a torque of **2.5 daNm** after rotating the primary shaft to ensure correct alignment of the bearings.

Fit the reverse gear shaft (A).

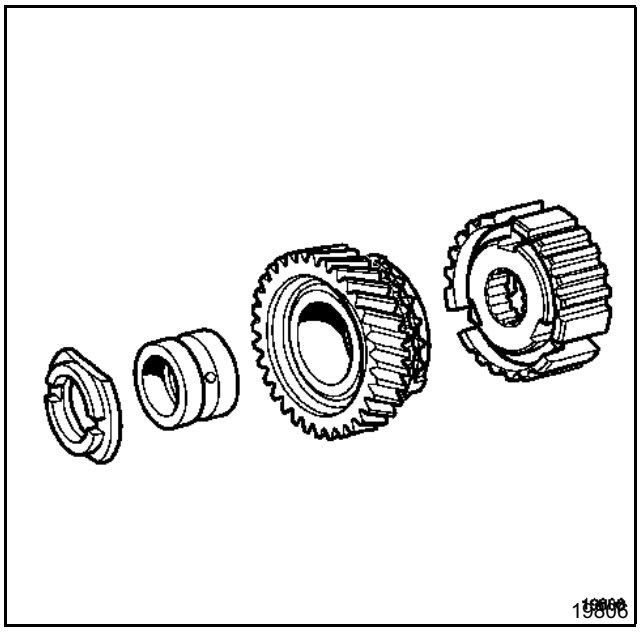


On the secondary shaft:

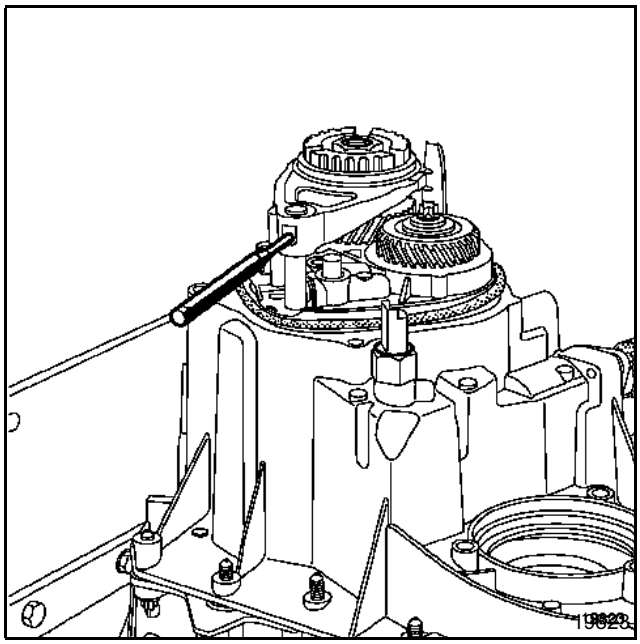
Put three drops of **Loctite Frenbloc** on the splines of the fixed gear and fit it using tool **B. Vi. 1175**.



On the primary shaft, fit:
- the support washer (top side gear side),
- the sprocket bush,
- the 5th idle gear fitted with its synchro ring,
- the 5th gear hub fitted with its spring.



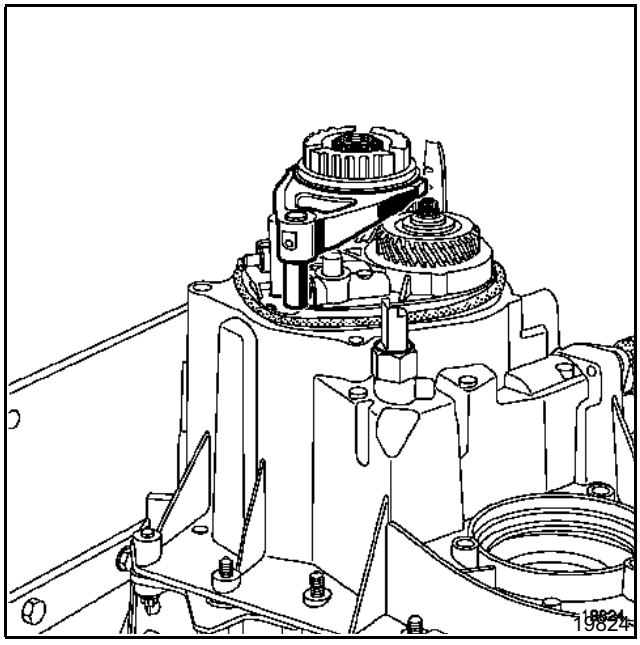
Refit and pin the 5th gear fork.



Select 1st gear using the gear lever and 5th gear by sliding the 5th gear fork along its shaft.

Tighten the gear bolt and nut to torque:

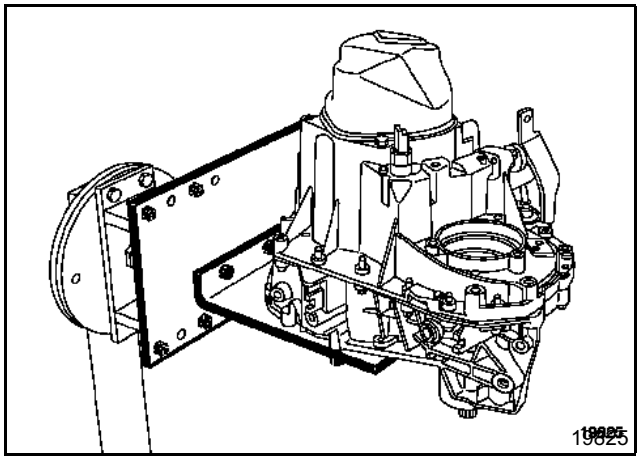
Primary shaft nut **2.5 daNm**.
Secondary shaft bolt **16 daNm**.



Put the gearbox back in neutral.

Fit a new O-ring.

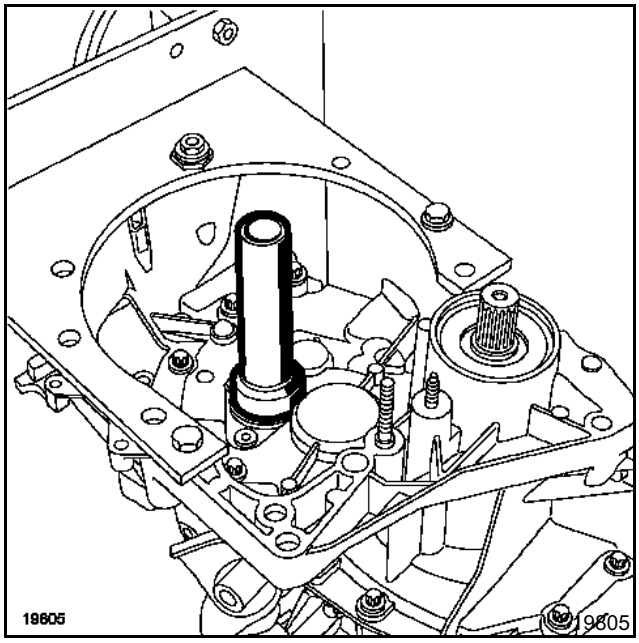
Fit the rear cover and tighten the bolts to torque (**2.5 daNm**).



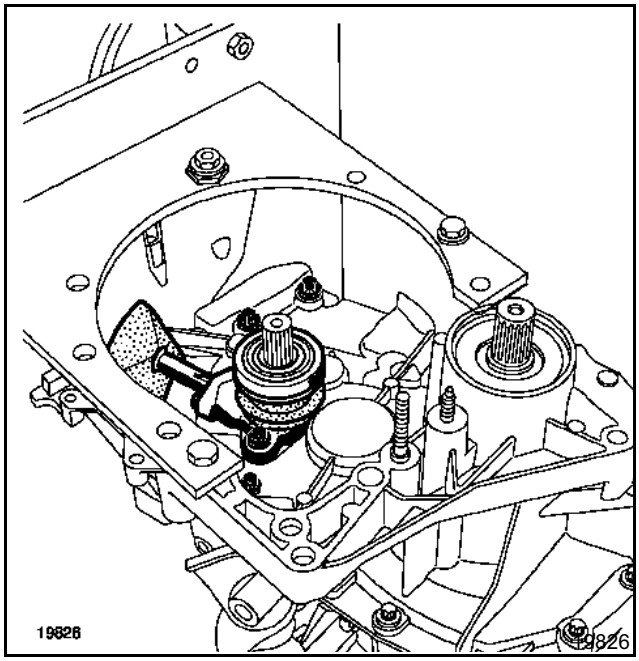
Fit the reverse gear switch.

Fit the speed sensor for the JH1 sequential gearbox.

Fit the clutch shaft seal gasket using tool **B. Vi. 1601** for JR gearbox.



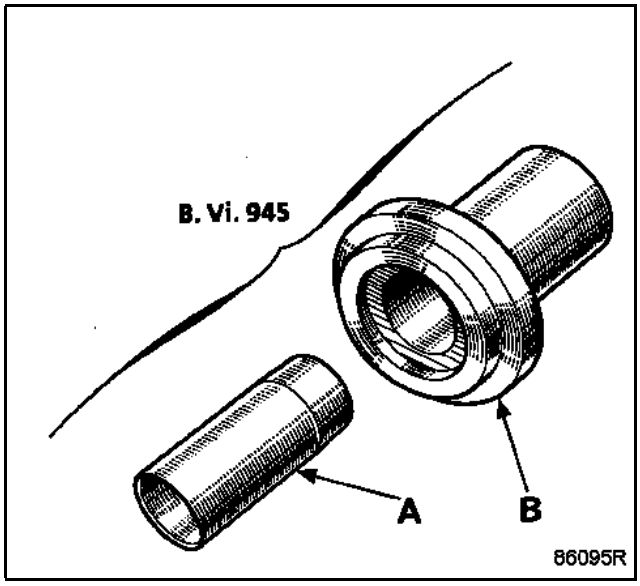
Refit the clutch slave cylinder and tighten the bolts to a torque of **2.1 daNm**.

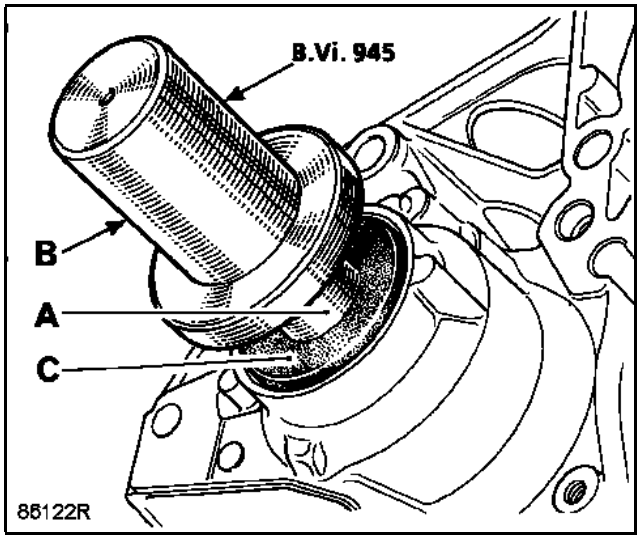


Refit the differential outlet seal gasket using tool **B. Vi. 945** for the JH gearbox and **B. Vi. 1058** for the JR gearbox.

JH GEARBOX

Fit the oiled shield (A) on the sunwheel and position the oiled seal gasket (C) with the tool (B).





JR GEARBOX

Fit the **B. Vi. 945** shield (A) on the sunwheel and position the oiled seal gasket with tool **B. Vi. 1058**.