GREEN TECHNICAL NOTE
Edition Anglaise

MAY 1999
77 11 204 916

3252A
Service 0429

Type | S/Section

ALL TYPES

XXX X | 23

fitted with gearbox AD4, AD8 OR AR4

23 **SLIPPING, IMPACT, DELAY IN ENGAGEMENT OR NO DRIVE**

Other sub-section concerned: **37**

- Engines: **XXX**
- Gearbox: **AD4, AD8 or AR4**

Basic documents: **M.R. of vehicle concerned, N.T. 2774A**

CUSTOMER COMPLAINT
- Slipping, impacts on starting or delay in engagement N → D or no drive in Forward Gear.

POSSIBLE CAUSE
- Leak at piston E1 due to wear or tearing of the seal lip.

CLAIM COMPLETION AND CODING
Destination of removed parts:
- Scrap.

NITG code:	**B321**
Supplier code:	**090**
Customer complaint code:	**7J**
Operation code:	**2999**
Time allocated:	**2.5 h** (not including removal-refitting)
Description:	Replacement of Pack E1

PRODUCTION SOLUTION
- Reinforcement of clutch housing E1 by pinning.

SERVICE SOLUTION
Operation to be carried out
- Replacement of Pack E1.

Vehicles concerned:
- All vehicles fitted with gearbox AD4, AD8 or AR4.

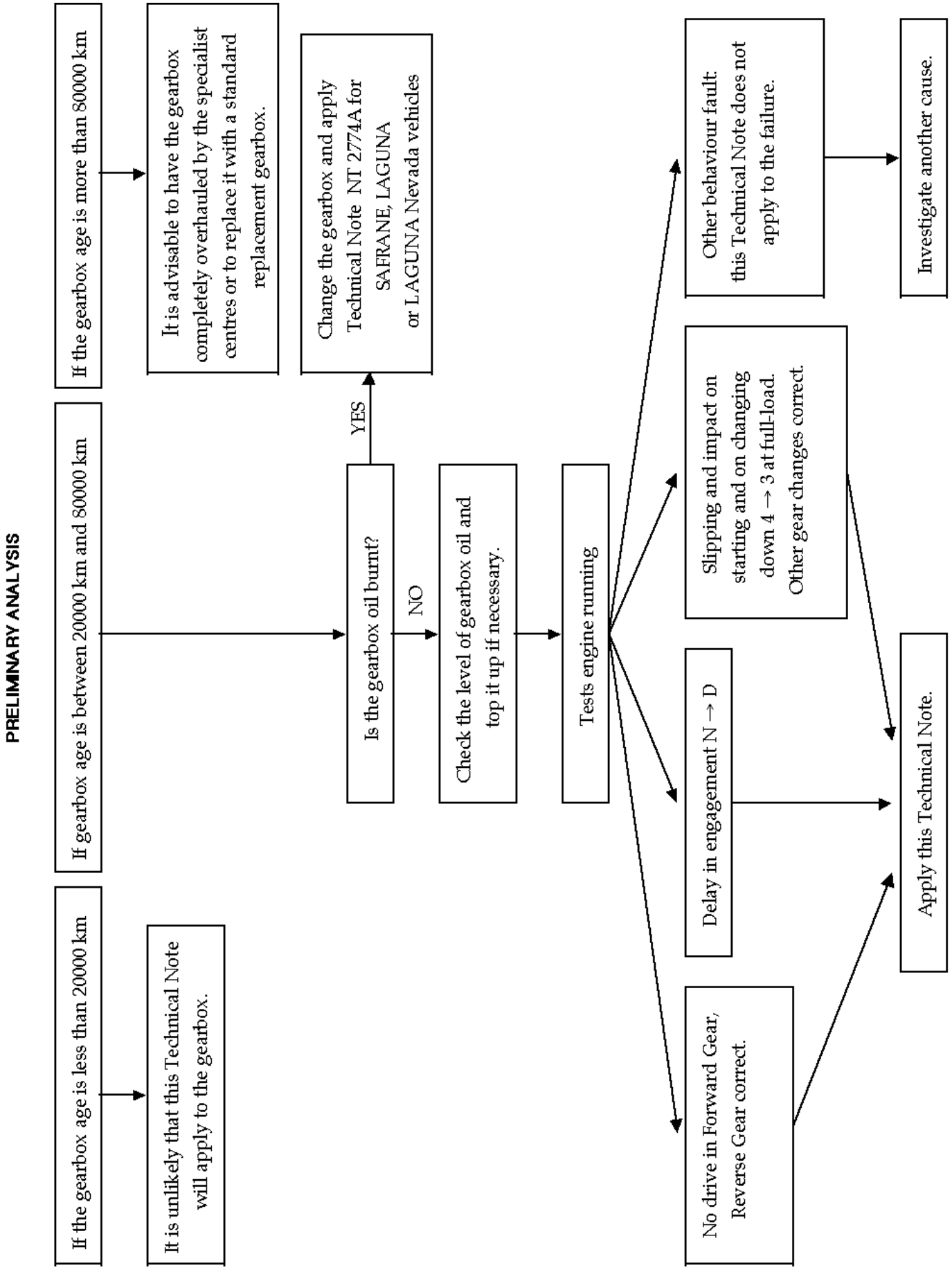
Period of operation:
- When a customer complaint is received.

Parts required:
- See below.

Tools required:
- **B.Vi. 1016** : support plate and set of pins
- **B.Vi. 1389** : rulers for measuring depth
- Ruler thickness **10 ± 0,01 mm**, width **20 mm**, length **190 mm** (local tool).
- **2** ∅ **8 mm** extraction bolts (made on site).
- **2** ∅ **6** studs (made on site).

Description of the operation:
- See following pages.

A) FAULT FINDING



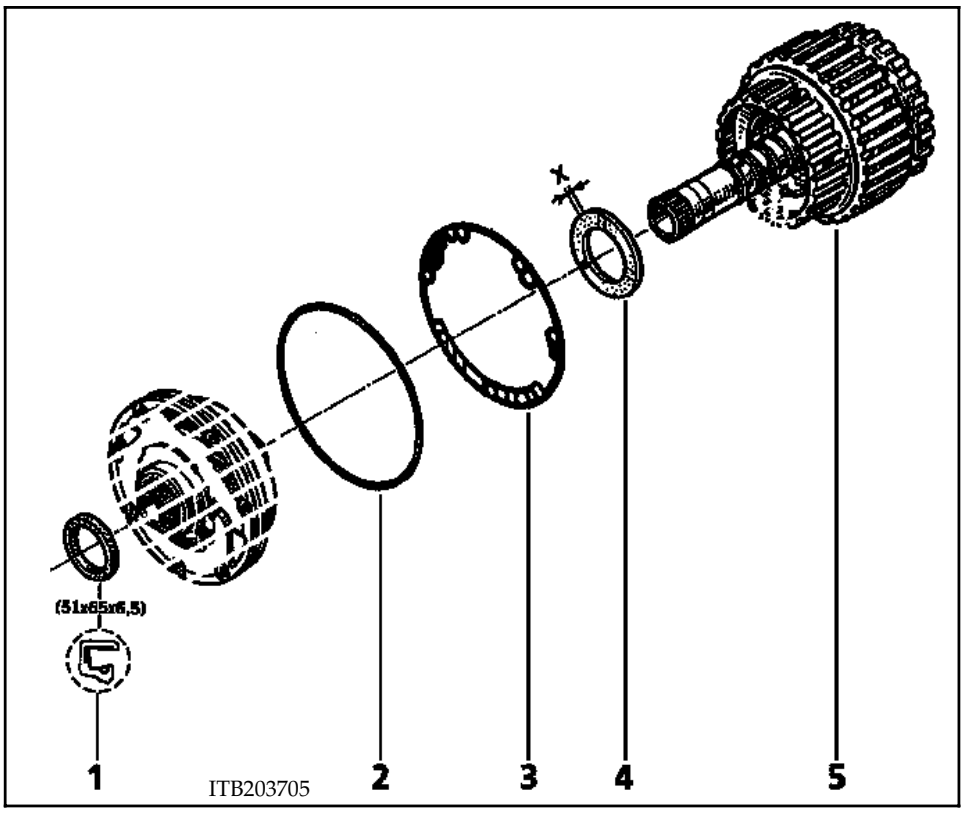
B) TOOLS

- **B.Vi. 1016** : support plate and set of pins.
- **B.Vi. 1389** : rulers for measuring depth.
- Ruler thickness **10 ± 0,01 mm**, width **20 mm**, length **190 mm** (local tool).
- **2 ∅ 8** extraction bolts (made on site).
- **2 ∅ 6** studs (made on site).

C) PARTS REQUIRED (set)

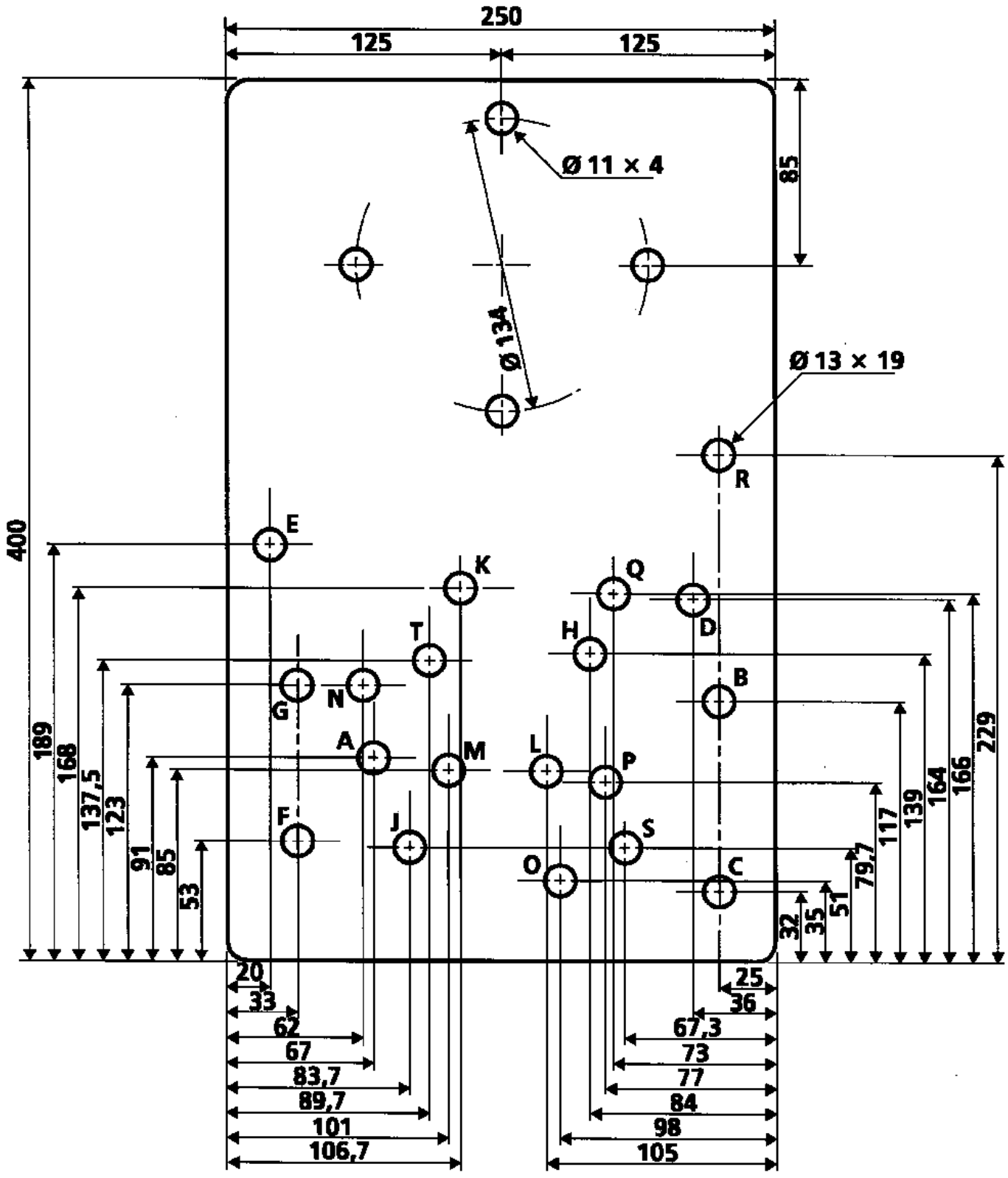
Depending on the gearbox type and index:

- **AD4** : **Part no.: 77 01 472 039**
- **AD8** (indexes : 000, 002, 013, 017, 021, 022, S01, S03, S09, S10, S11, S12): **Part no.: 77 01 472 040**
- **AD8** (indexes : 004, 005, 006, 016, 018, S05, S06, S07, S08) : **Part no.: 77 01 472 041**
- **AR4** (indexes other than 002, 022, S04, S13): **Part no.: 77 01 472 042**
- **AR4** (indexes : 002, 022, S04, S13): **Part no.: 77 01 472 043**



1 Converter lip seal
2 Pump body O-ring
3 Pump body flat seal
4 Adjusting shims
5 Pack E1

To repair Pack E1, you must obtain tool **B. Vi. 1016*** automatic transmission support and drill holes N, O, P, Q, R, S and T (dimensions in mm)

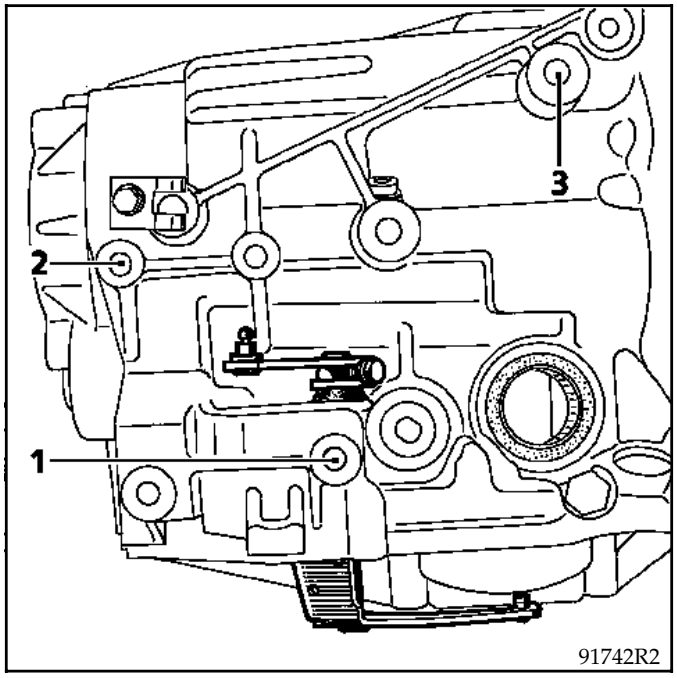


* **NOT E:** on tool **B.Vi. 1016-01** the holes are already drilled.

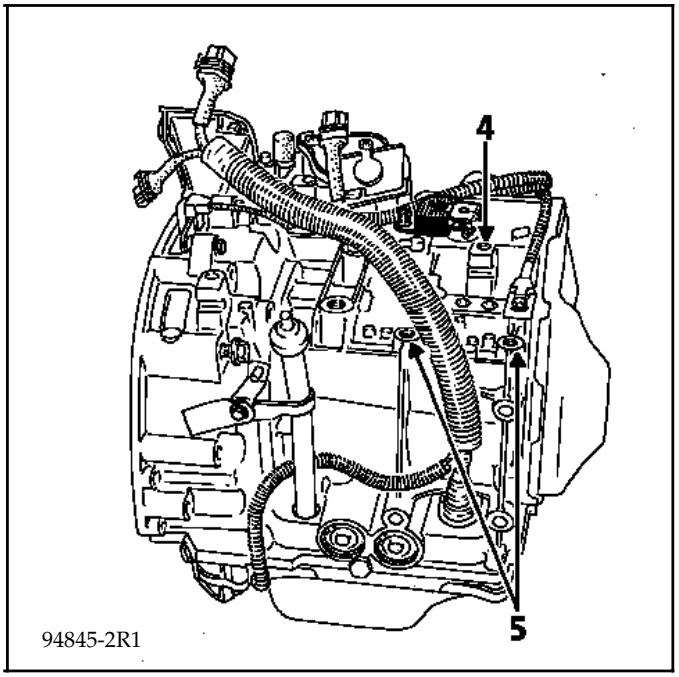
11222-1R

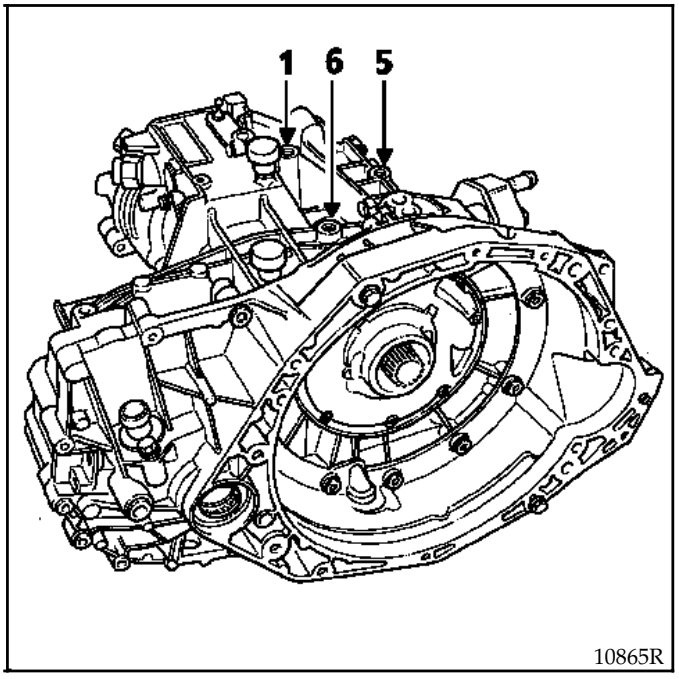
	Holes for B.Vi. 1016	Pin n°
AR4	N O R	1 2 3
AD4	N P Q	4 5 5
AD8	J S T	1 5 6

AR4



AD4





D) REMOVAL

1) Remove the pump

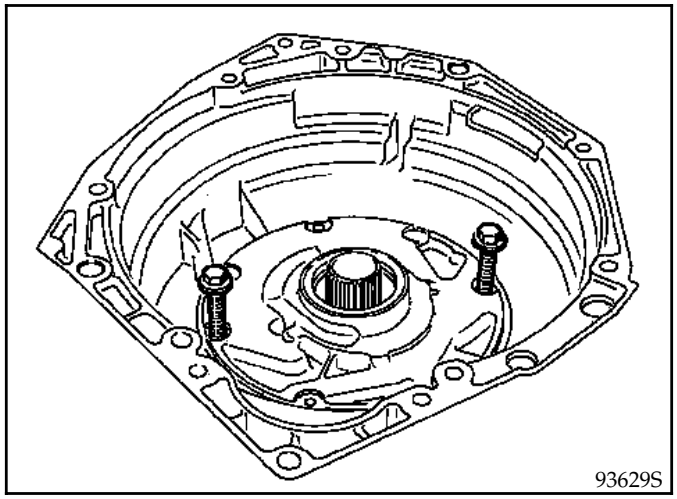
Place the automatic transmission on the tilting support using plate B. Vi. 1016 (refer to the relevant section).
WARNING: this assembly is essential for ease of measurement of the final dimensions which will determine the operating clearance of the gearbox.

Mark the position of the pump on the converter housing (pin punches).

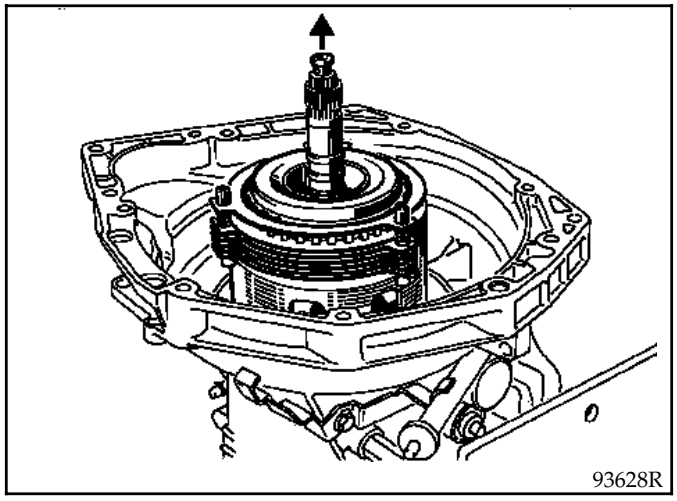
Remove the oil pump body mounting bolts.

Detach the pump by tapping lightly with a hammer.

If it does not detach remove the assembly using the two **Ø 8** flanged nuts.


93629S

2) Remove the assembly E1, E2, E3 and F2 vertically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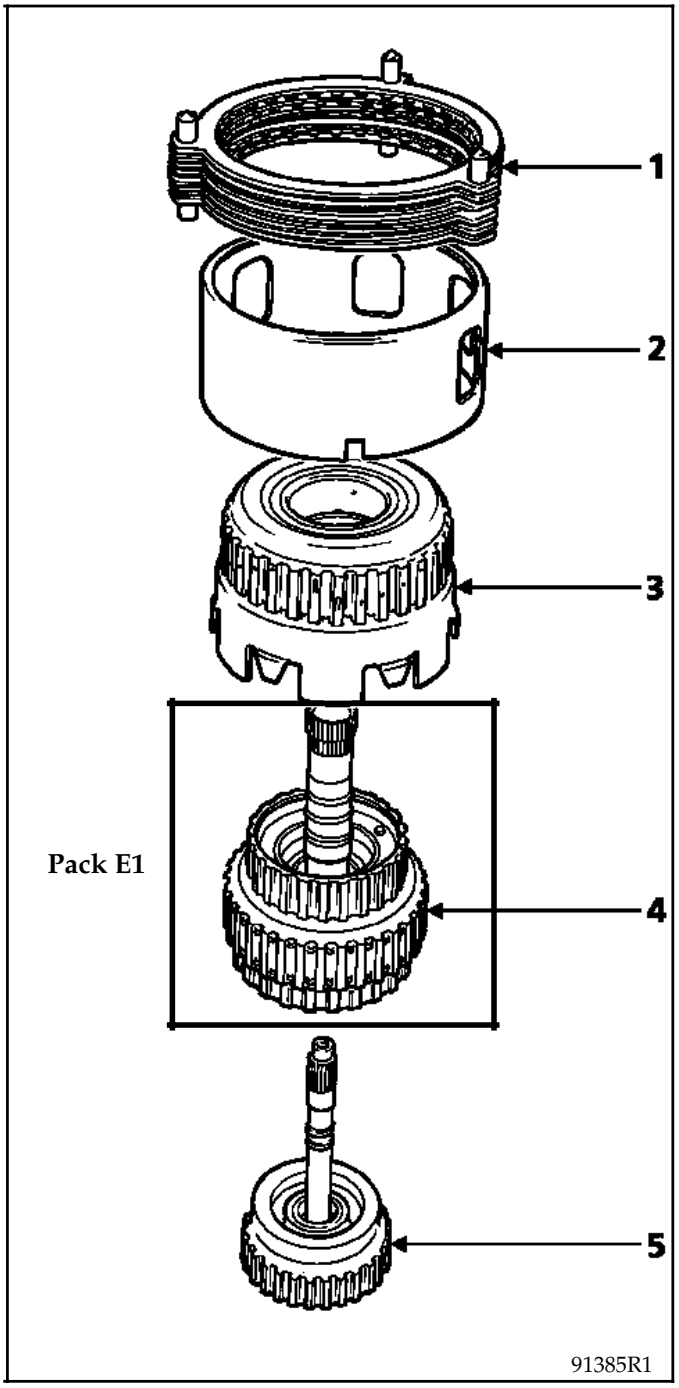
Separate components:

1 Brake F2
2 Spacer F2
3 Clutch E2
4 Pack E1
5 Clutch E3

3) Replace Pack E1



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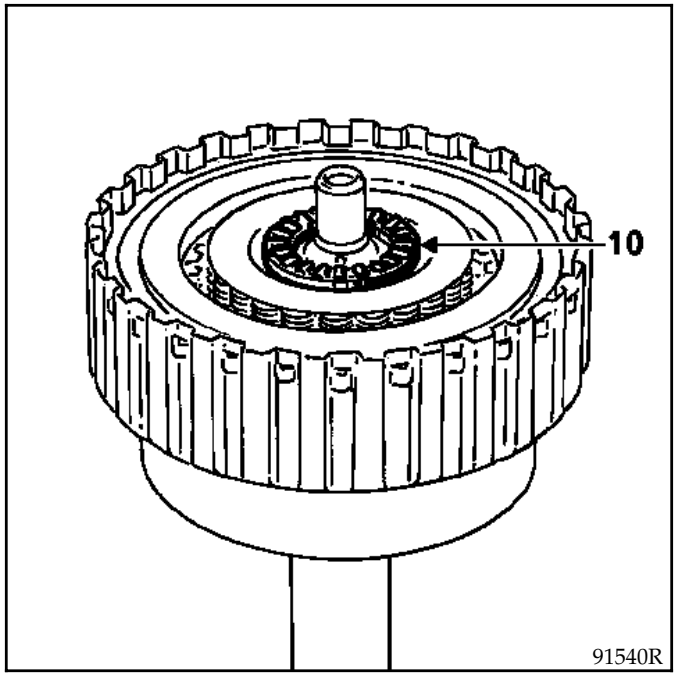
E) REFITTING

1) Refit clutch E3

Bond the stop (10) on the E3 hub using vaseline.

Using a screwdriver, align the notches on the discs to make assembly easier.



Fit clutch E3 in the housing.
WARNING: ensure that all the lined discs are engaged correctly on the grooved hub of the E3 shaft by measuring the dimension A ≈ 89 mm. This is the dimension between the contact surface of the stop and the mating surface of the housing (Fig. 1).

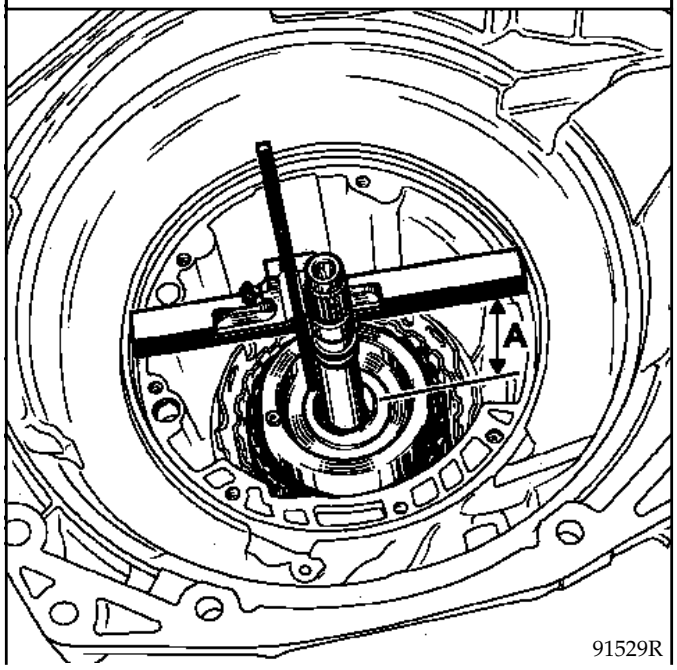
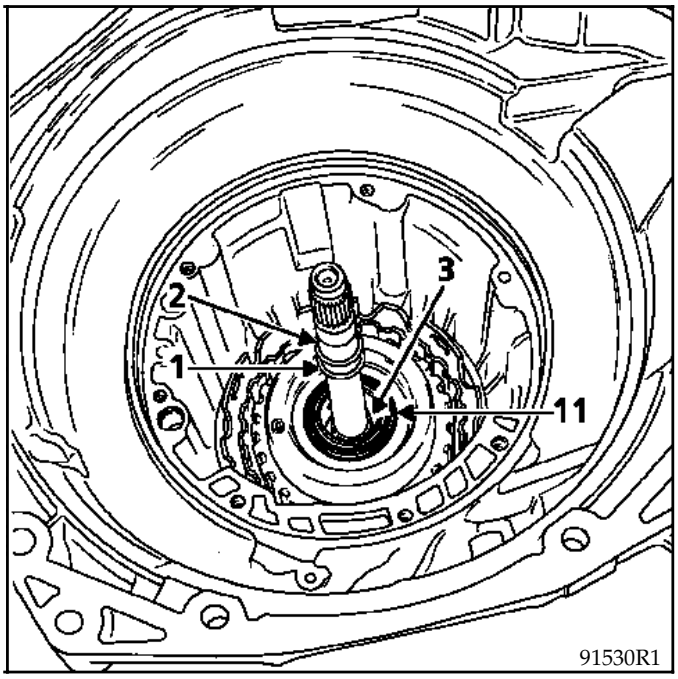


Fig. 1

Fit stop (11) on clutch E3 (check the direction of fitting; black housing of the stop converter end).

Stop (11) : **48 x 34 x 3.7**



Ensure that rings (1) and (3) are closed correctly.

NOTE: no ring in groove (2), it has been discontinued since 02/1994.

WARNING: avoid any impact with these rings to prevent them from being broken.

2) Fit the new Pack E1

Fit clutch E1 in the housing.
WARNING: ensure that the assembly is positioned correctly. To do this check dimension B ≈ 54 mm (without the plastic adjusting shim(s)) at three different points.
This is the dimension between the contact surface of the shims and the mounting surface of the housing (Fig. 2).

Take the measurement very accurately. It will be used to determine the value of the shim of the automatic transmission axial clearance.

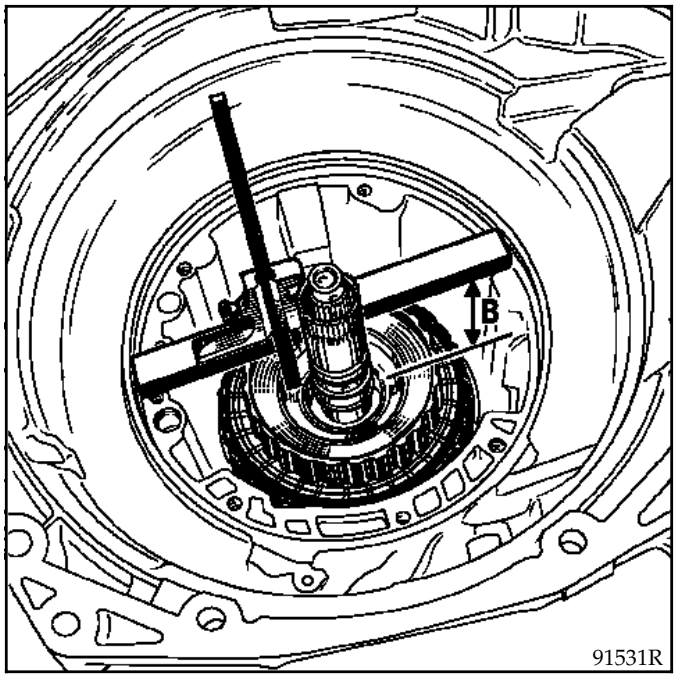


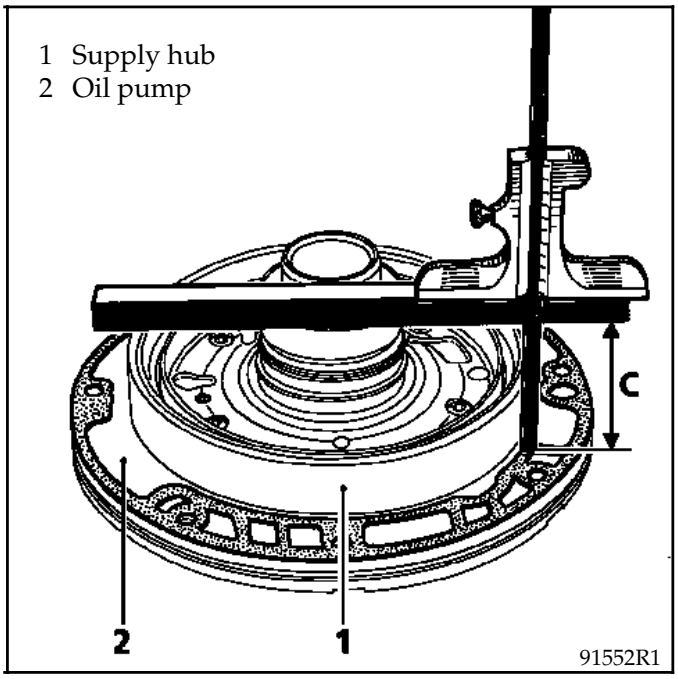
Fig. 2

3) Setting the gearbox axial clearance (JA)

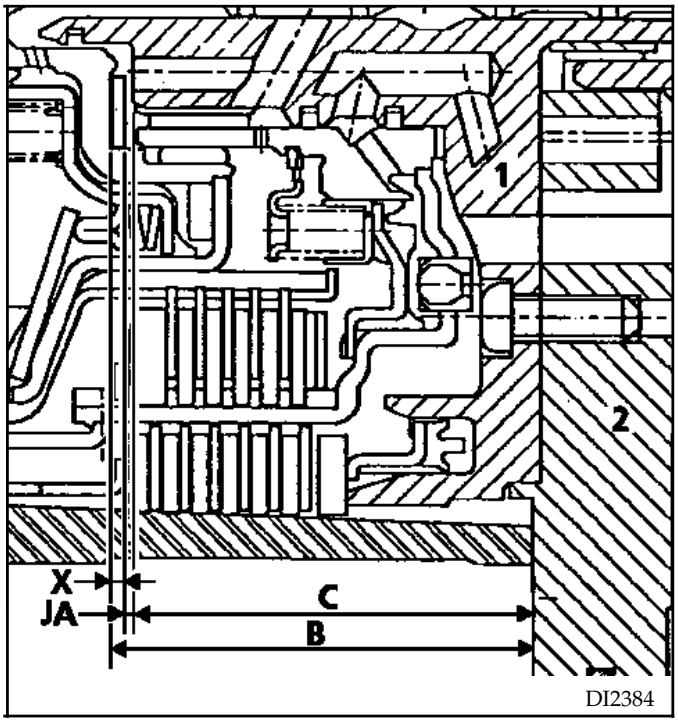
The automatic gearbox axial clearance is the operating clearance of all the clutch housings.

Measure dimension (C) of the supply hub with the pump seal (2) (new seal).

WARNING: if it is necessary to scrape to remove the old seal, take care not to allow debris to fall into the gearbox or the oil pump.



Calculation of the thickness of adjusting shim X taking into account that the average clearance should be **0.9 mm** (theoretical clearance **0.5** to **1.2 mm**).
X = B - (C + 0.9)

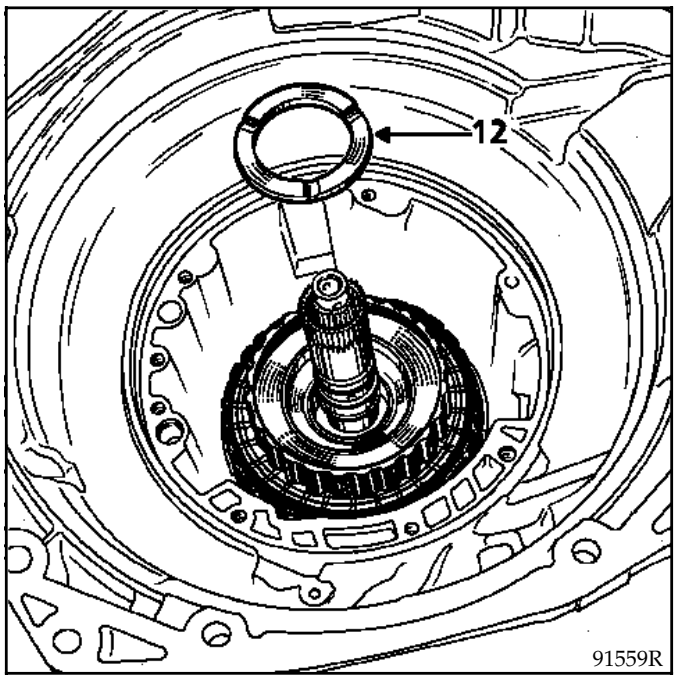


Example : B = 54.3 mm
C = 50.6 mm
X = 54.3 - (50.6 + 0.9) = 2.8 mm

Thickness of shims available: **1.0 ; 1.2 ; 1.4 ; 1.6 ; 1.8 mm.**

In this case select shims **1.2** + **1.6 mm,** which give a clearance close to the recommended **0.9 mm**.

4) Fit the corresponding axial clearance adjusting shim(s) (12).



5) Refit clutch E2

Ensure that the four rings on the E1 shaft are closed correctly.

Fit clutch E2 in the housing.
WARNING: ensure that the assembly is positioned correctly. To do this, check dimension D ≈ 13 mm. This is the dimension between the ground surface of E2 and the mating surface of the housing (Fig. 3).

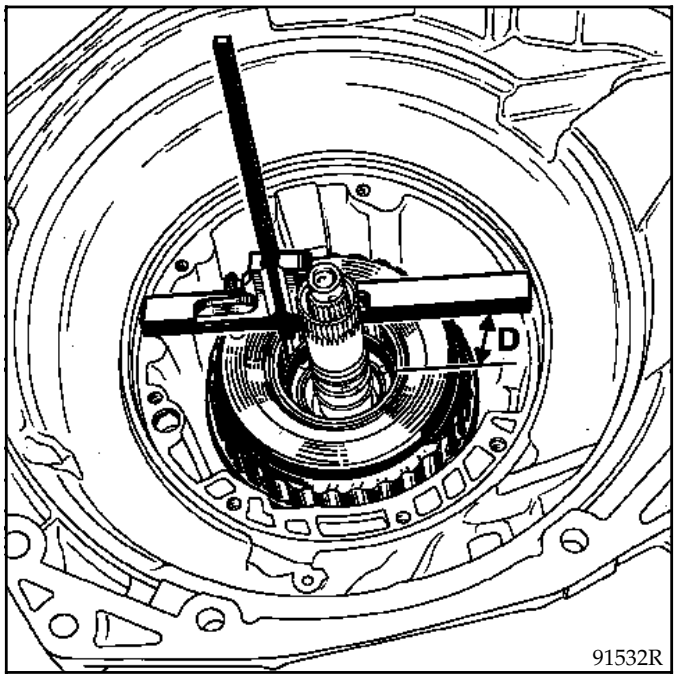
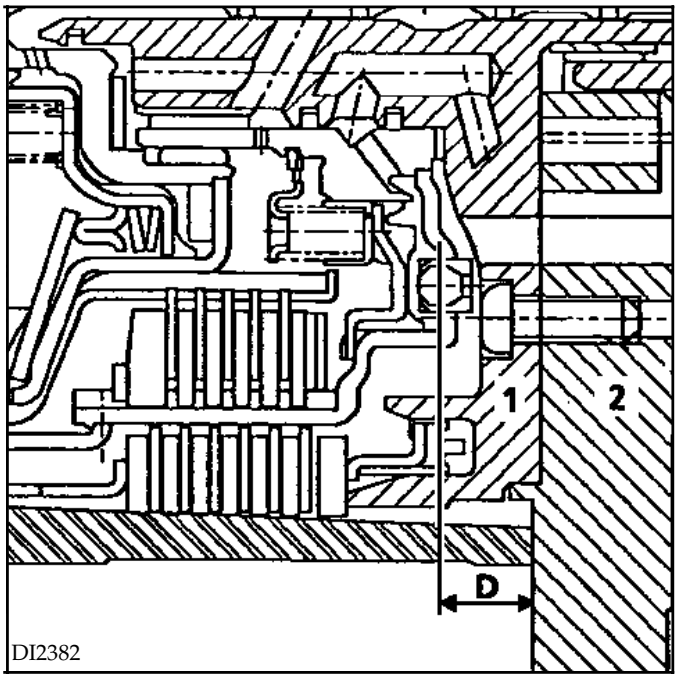


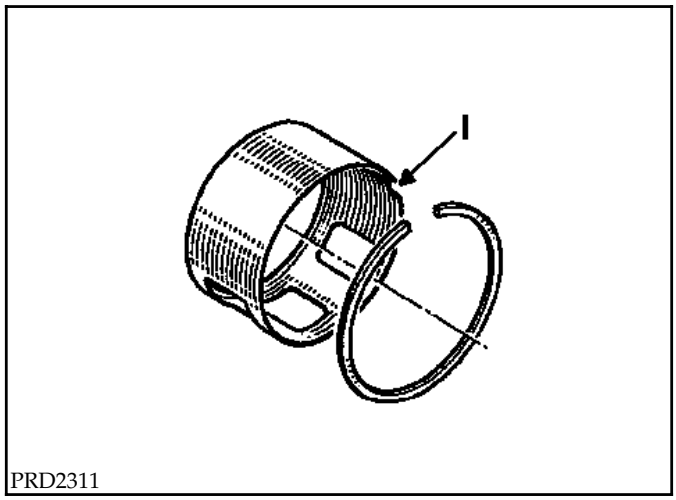
Fig. 3



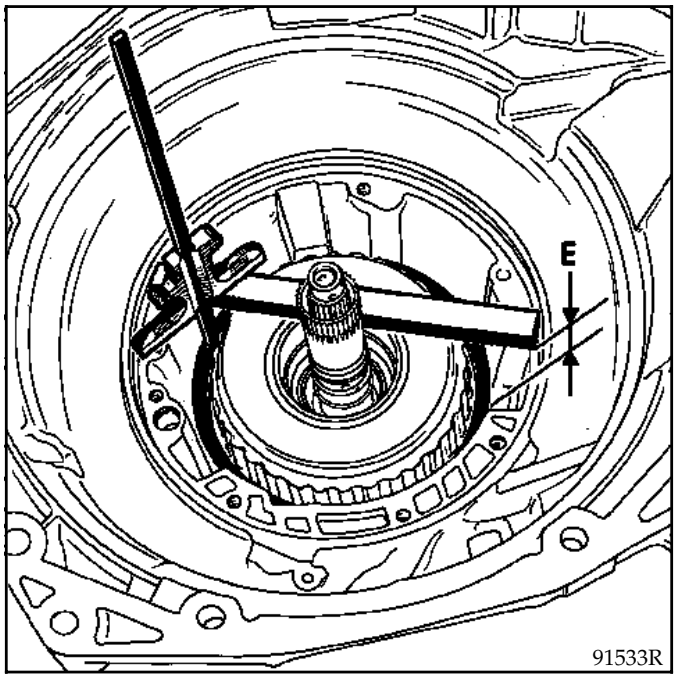
1 Supply hub
2 Oil pump

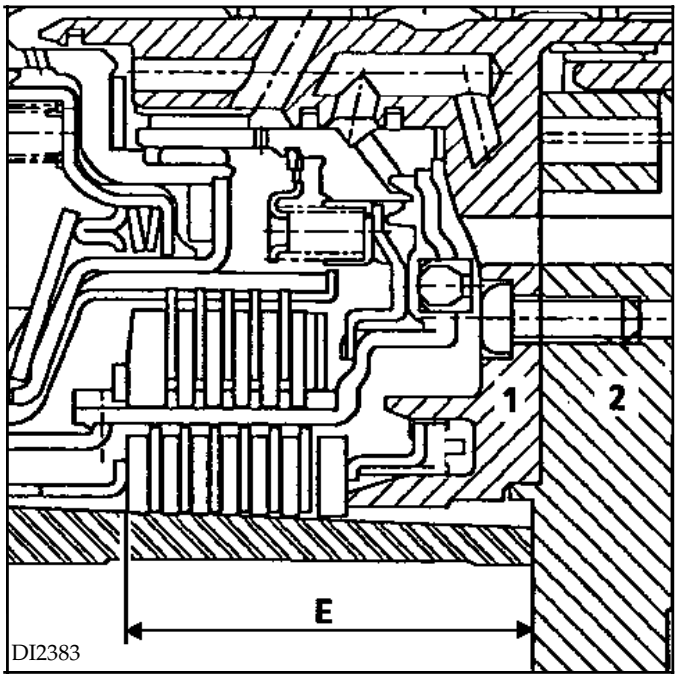
6) Refit brake F2

Fit the support spacer of brake F2. **Check the position of the indexing (I) on the free wheel stator**.



WARNING: check dimension (E) at three points to ensure that the spacer is positioned correctly: three identical measurements indicate that the part is horizontal and therefore correctly fitted.

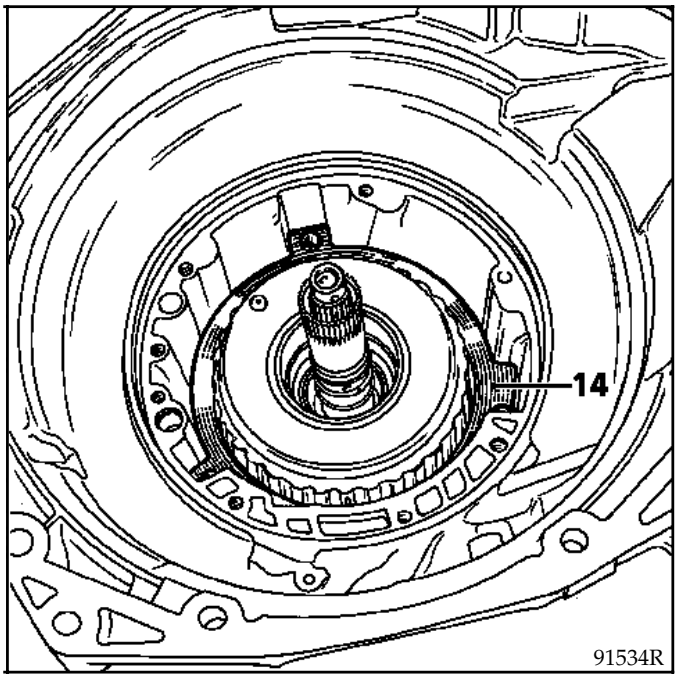




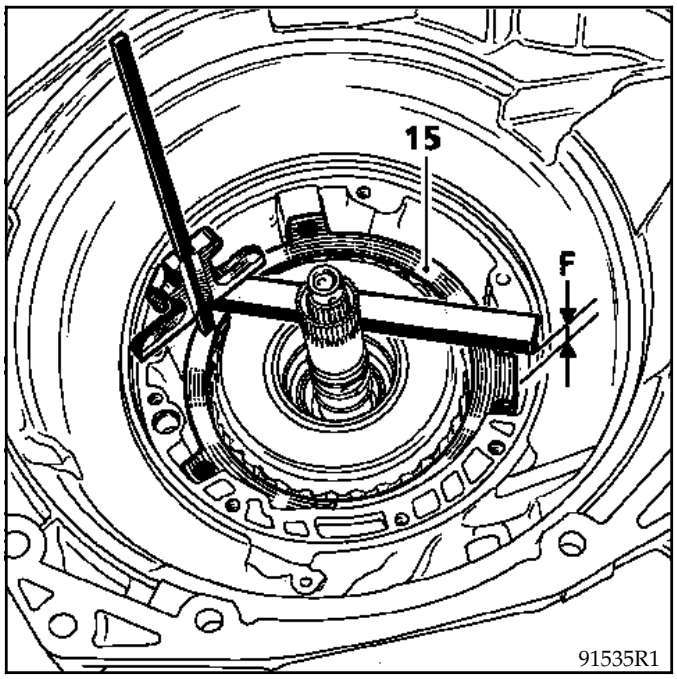
1 Supply hub
2 Oil pump

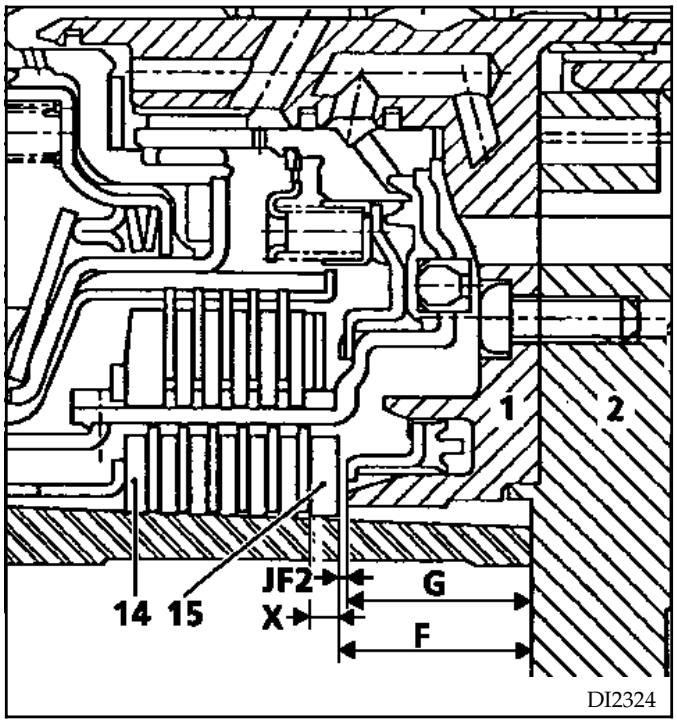
Fit the F2 support plate (14) and the three return spring cups.

Alternately fit 1 lined disc, 1 intermediate disc, etc... .

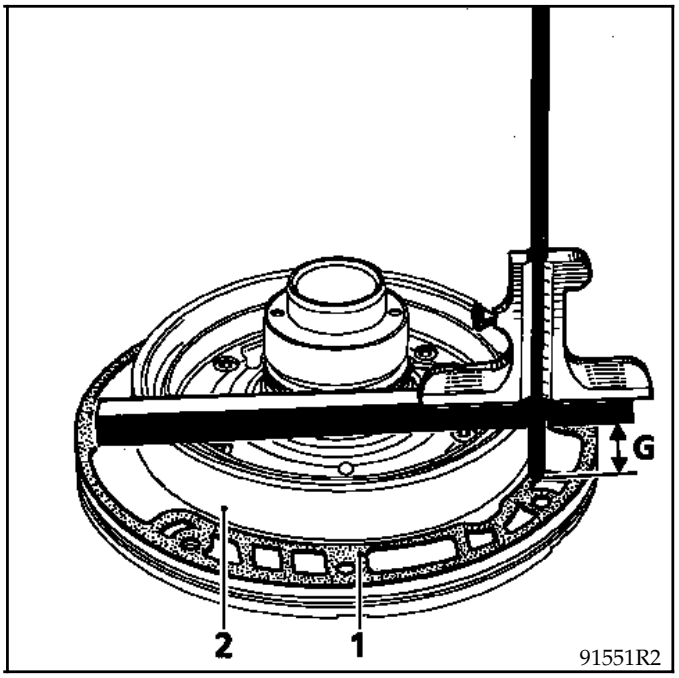


Fit the F2 thrust plate (15) (without upper return springs or cups) and measure the clearance of brake F2 as follows:
- measure dimension (F) at three points,
- remove the F2 thrust plate (15).





- measure dimension (G) with seal (1) (new seal) of hub (2).



Clearance F2 = F - G.

WARNING: the value of the clearance must be between 1.4 and 1.85 mm.
If it is not, repeat the whole refitting procedure.

Then fit:
- the upper return springs and cups,
- the thrust plate (15).

Check that valve (4) is present.

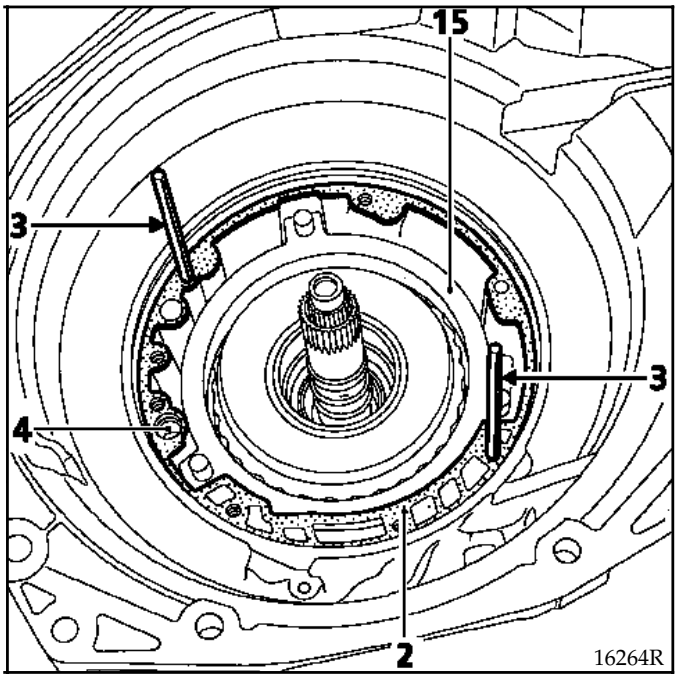


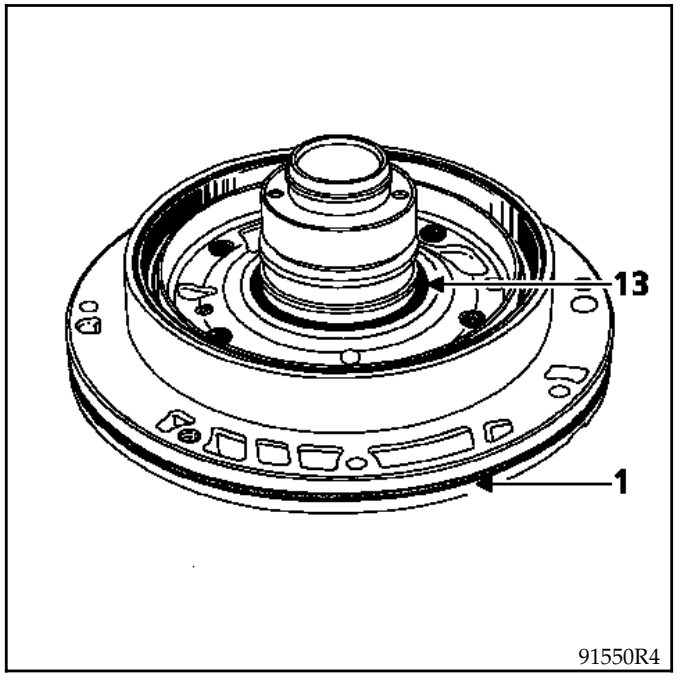
Fig. 4

7) Refit the pump/hub assembly

Ensure that the rings on the E1 shaft and the pump body are closed correctly and that the stop (13) is present.

Fit the flat seal (2) of the pump body on the housing positioning it using 2 ∅ **6** studs **(Fig. 4)** (see previous page).

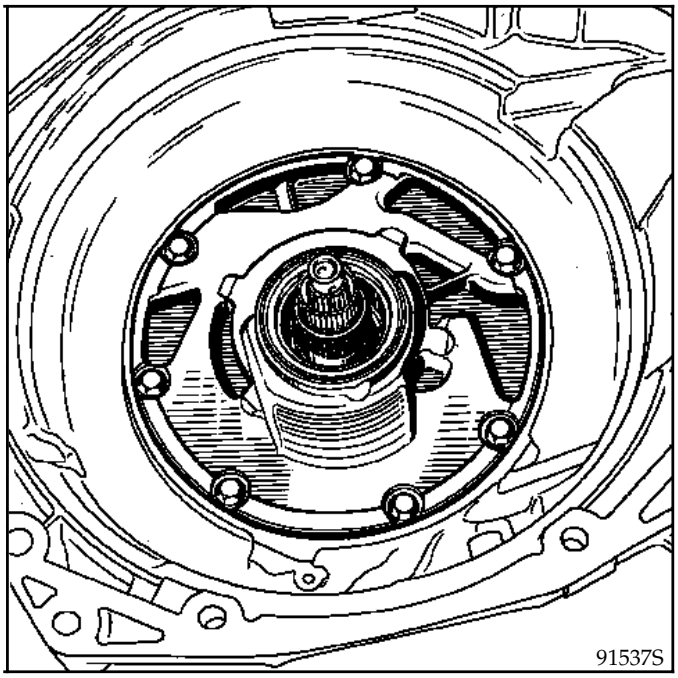
Fit the new O-ring (1) coated with vaseline on the pump body.



Fit the assembled supply hub and pump body using the marks made on removal.

Pretighten the bolts for correct fitting of the pump.

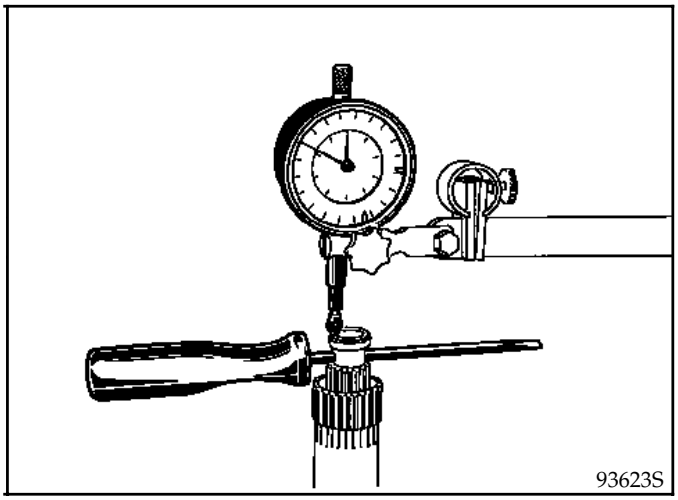
Tighten the bolts to **1 ± 0.1 daN.m**.



WARNING: always change the converter lip seal.

8) Final check

Set a dial gauge to zero and, using a screwdriver placed in the E3 shaft hole, pull until a maximum value is read on the dial gauge.



WARNING: the axial clearance must be between 0.5 and 1.2 mm. If this is not the case, repeat the entire removal/refitting procedure.