RELIEVING THE AIR FROM THE HYDRAULIC SYSTEM

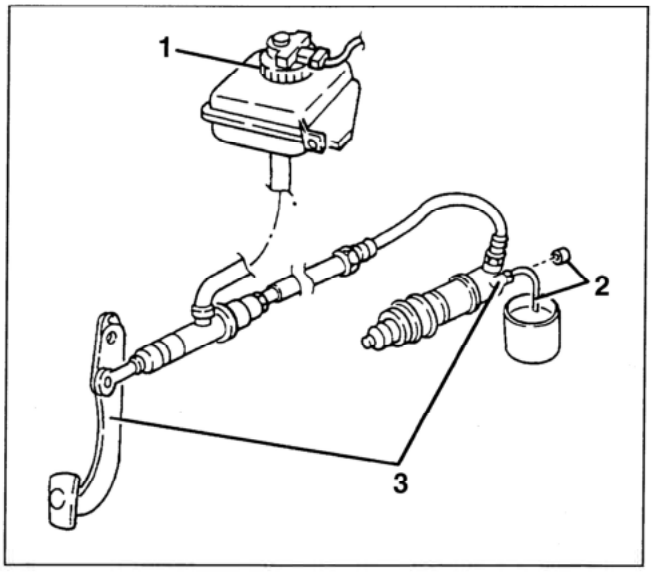
WARNING:
Never re-use the hydraulic fluid drained during the air relieving procedure.

1. Remove the plug of the brake-clutch hydraulic circuit supply reservoir and, if necessary, top up with the specified fluid.

2. Remove the protection cap of the bleed screw on the cylinder and fit it on a hose with the opposite end dipped in a transparent recipient containing the same fluid as the circuit.

3. Slacken the bleed screw and at the same time press the clutch pedal letting it return slowly; repeat this operation until all the air bubbles have issued.

– With the pedal fully depressed, tighten the bleed screw, remove the tube and assemble the protective cap.



During the air relieving operation, keep the level of the fluid in the reservoir above the "MIN" mark.

– Top up the level of the fluid in the reservoir and install the plug.

The brake/clutch fluid can damage the bodywork. Work carefully.

– After relieving the air, check that the clutch disengages normally and that the gears engage properly.

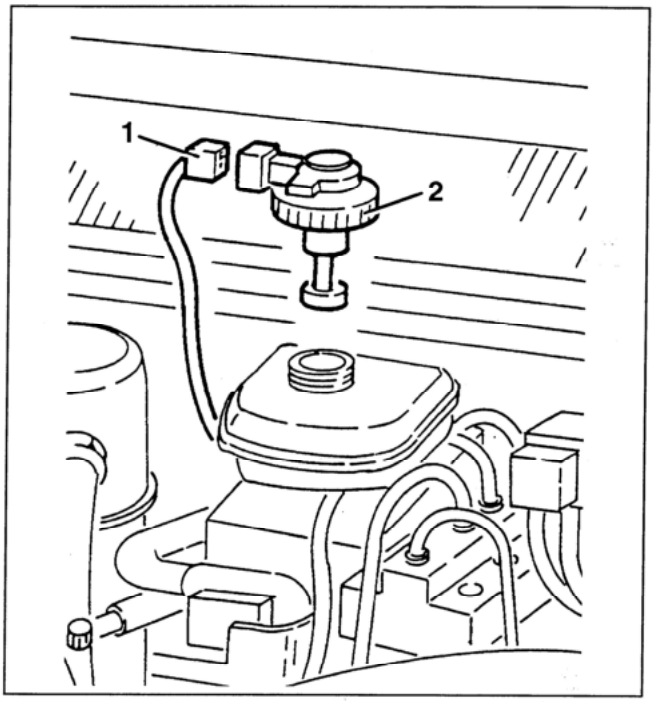
MINIMUM BRAKE-CLUTCH FLUID LEVEL SENSOR

REMOVAL / REFITTING

– Disconnect the battery.

1. Disconnect the electrical connection of the minimum brake-clutch fluid level sensor.

2. Slacken the plug incorporating the minimum brake-clutch fluid level sensor and remove it.



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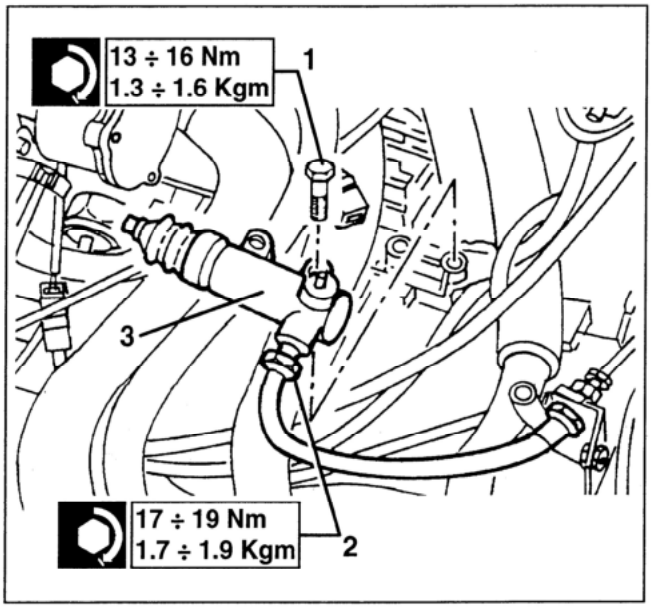
REMOVAL / REFITTING (4-CYLINDER ENGINE)

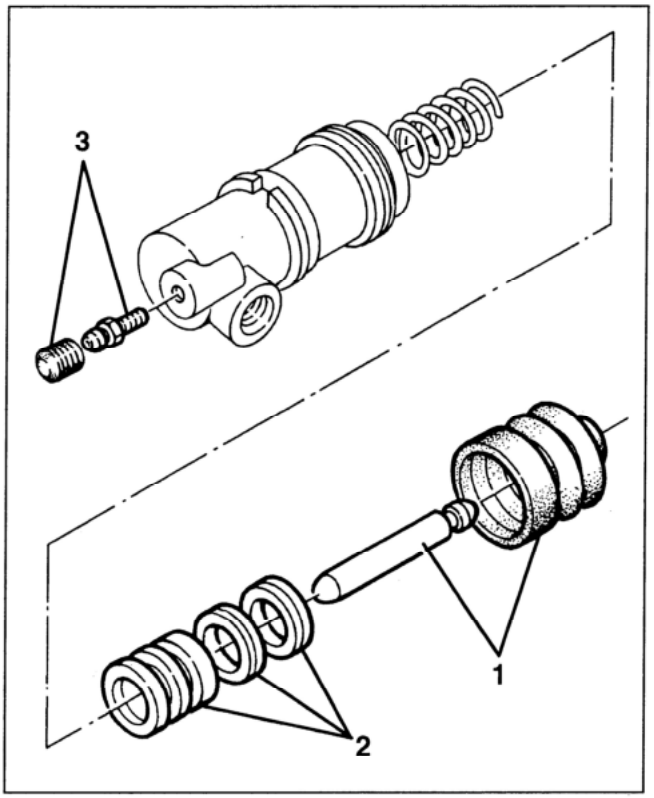
- Working from the engine compartment remove the air cleaner cover complete with intake sleeve (see GROUP 10).
- Empty the brake-clutch fluid reservoir, using a suitable syringe.
- Move the injection wiring to gain access to the clutch cylinder.

1. Slacken the two screws fastening the clutch control cylinder.
2. Disconnect the hose leading from the pump from the clutch control cylinder.
3. Remove the clutch control cylinder.



DIS-ASSEMBLY/REASSEMBLY

1. Withdraw the rubber protective boot and remove it together with the control prod.
2. Withdraw the piston from the cylinder body, with its seals.
3. Remove the spring.
4. Only if necessary, remove the bleed screw.



WARNING:
Always change the seals when refitting.

CHECKS AND INSPECTIONS

- Check that on the piston and inside the cylinder there are no scores or traces of rust, otherwise replace the cylinder assembly.
- Check that the spring is intact.
- Check that the air relief hole is not clogged.

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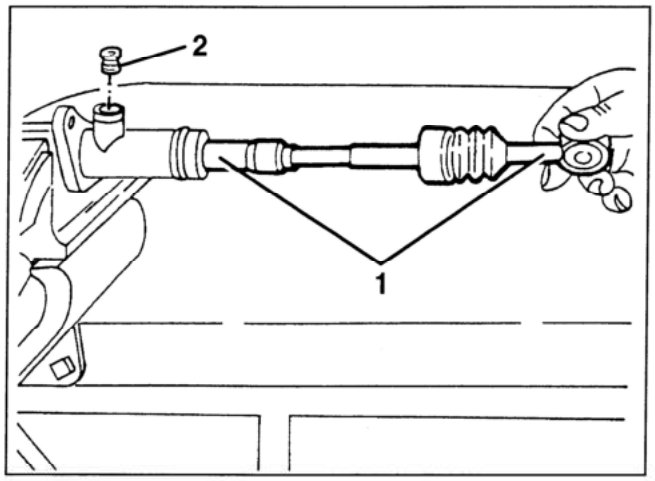
1. Withdraw the piston and operating lever.
2. Remove the seal.

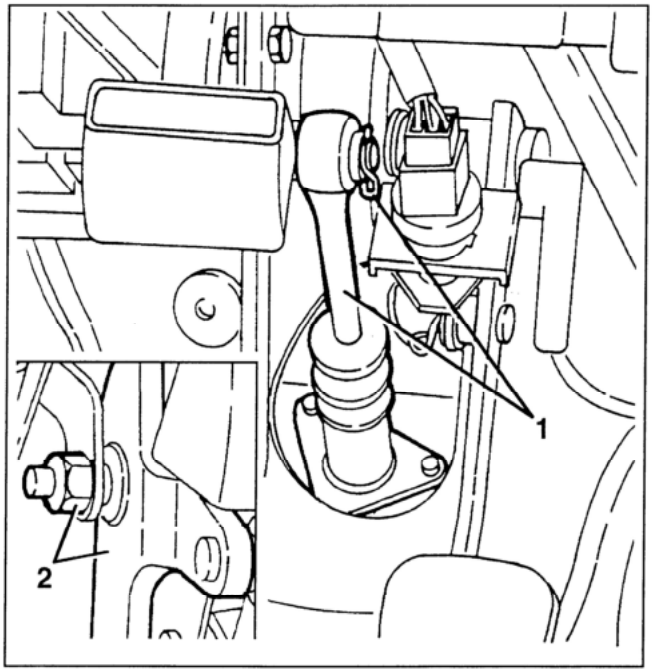


– Check that on the piston and inside the cylinder there are no marks, scores, scrapes or rust, otherwise change the pump assembly.

CLUTCH CONTROL PEDAL

REMOVAL/REFITTING

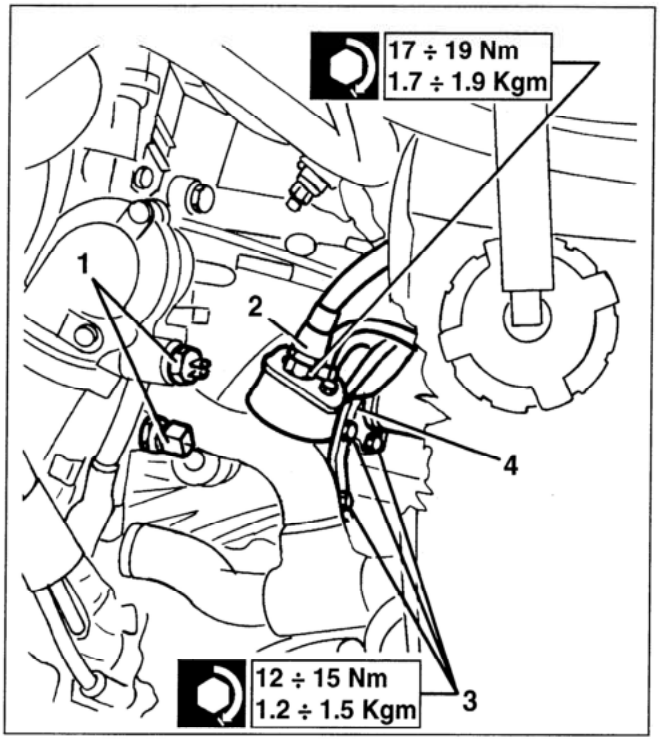
1. Remove the safety stopper and disconnect the clutch pump from the pedal.
2. Slacken the fastening bolt and remove the clutch pedal.



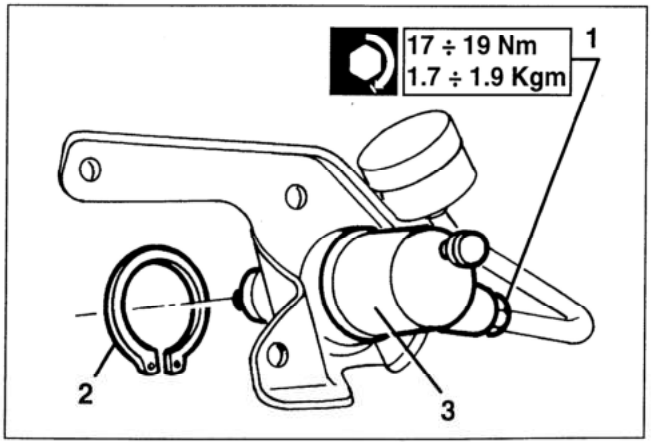
CLUTCH CONTROL CYLINDER

REMOVAL / REFITTING (6-CYLINDER ENGINE)

– Disconnect the battery.
– Working from the engine compartment, remove the air cleaner cover complete with sleeve di aspirazione (see GROUP 10).
- Empty the brake-clutch fluid reservoir, using a suitable syringe.
1. Disconnect the electrical connections of the engine temperature sensor.
2. Disconnect the hydraulic damper hose.
3. Slacken the three bracket fastening screws.
4. Retrieve clutch cylinder support bracket and damper.



1. Slacken the stiff pipe fitting from the clutch cylinder.
2. Remove the seeger ring.
3. Withdraw the clutch cylinder.



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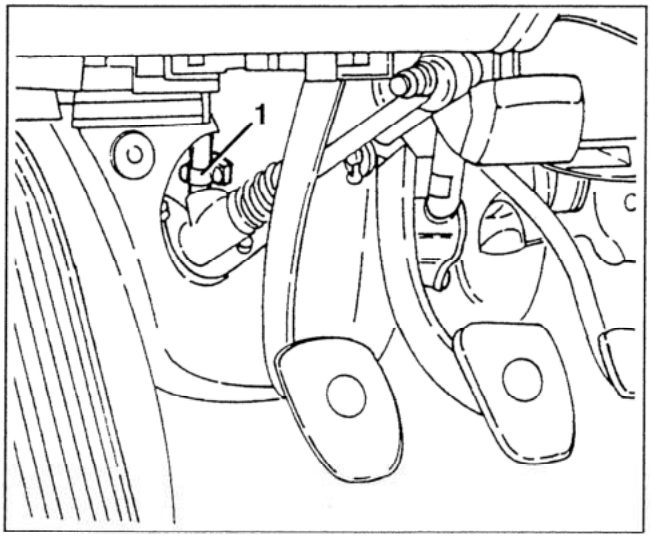
CLUTCH CONTROL

CLUTCH PUMP

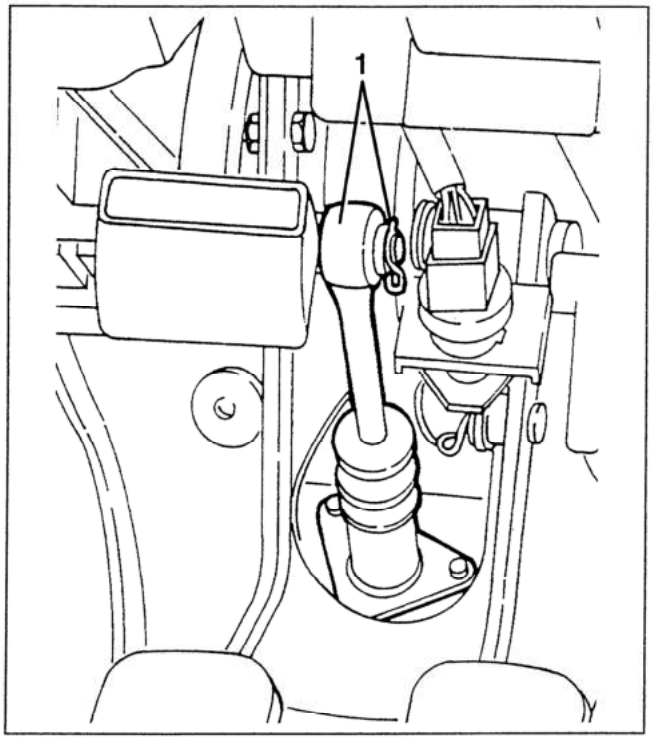
REMOVAL/REFITTING

- Empty the brake-clutch fluid reservoir, using a suitable syringe.

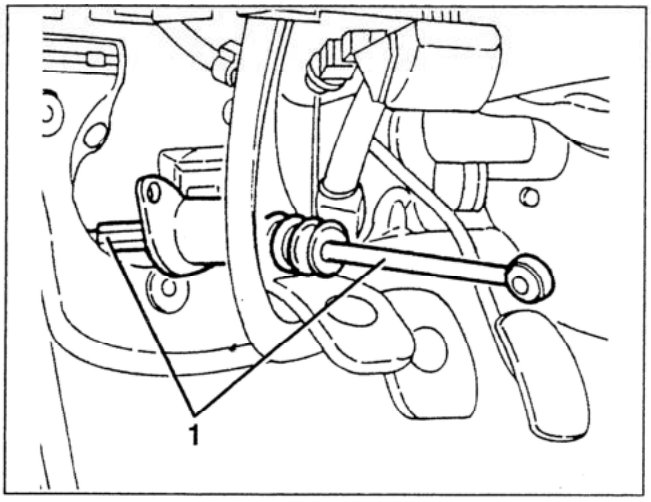
1. Disconnect the reservoir connection pipe from the clutch pump.



1. Remove the safety stopper and disconnect the clutch pump from the pedal.
2. Slacken the two clutch pump fastening nuts.

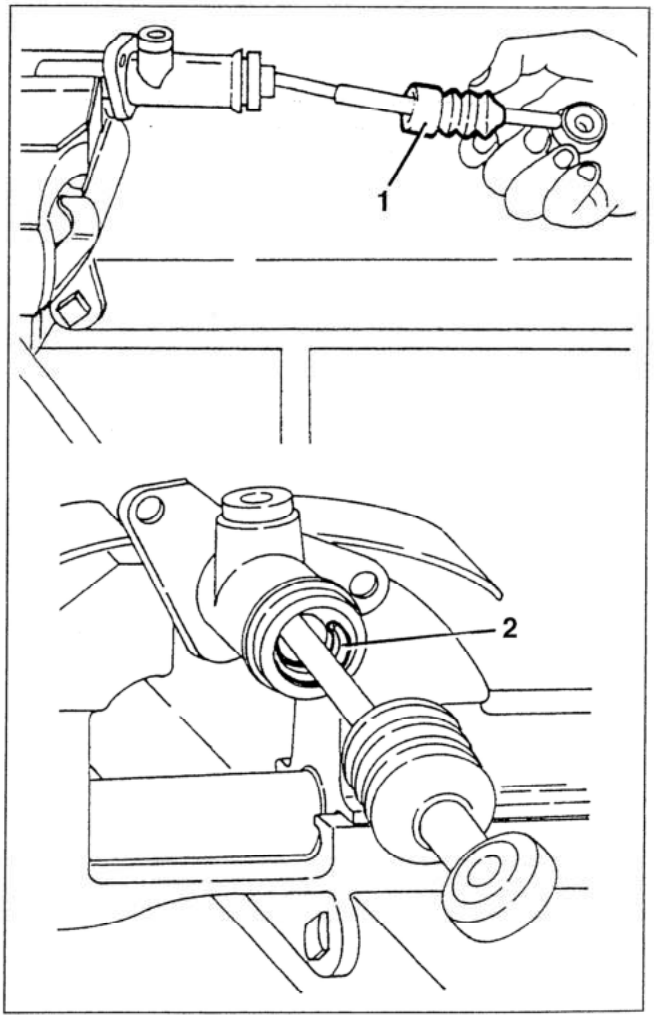


1. Move the clutch pump backwards just enough to disconnect the fitting of the connection pipe to the cylinder, then remove the pump.



DIS-ASSEMBLY/REASSEMBLY

1. Remove the protective boot.
2. Remove the piston retainer ring.



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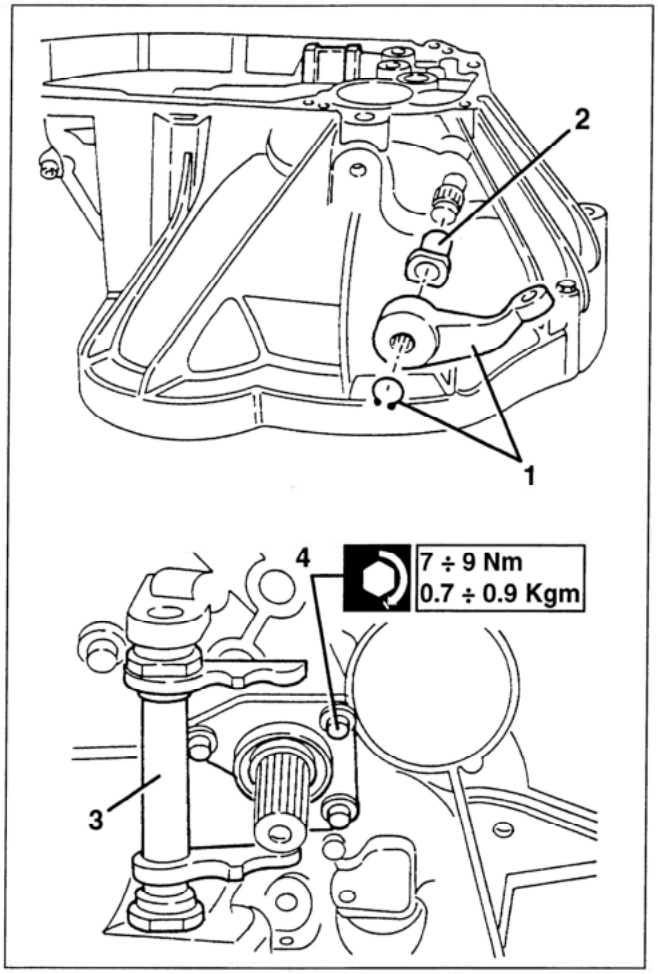
– Only if necessary:

1. **Remove the seeger lockring and withdraw the clutch engagement control lever.**
2. Prise and remove the gearbox cover antislip bush.
3. Working from inside the gearbox cover withdraw the clutch engagement sleeve pin and control fork.
4. Slacken the screws fastening the thrust bearing sleeve and remove it.

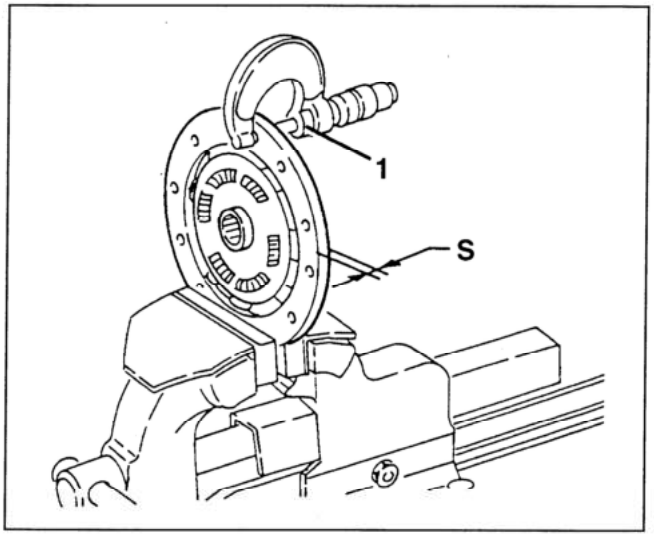


When refitting install a new antislip bush every time the play of the pin is excessive.
When refitting, grease the bushes and sleeve with the specified product. The sleeve complete with oil seal should be changed each time there are oil leaks.

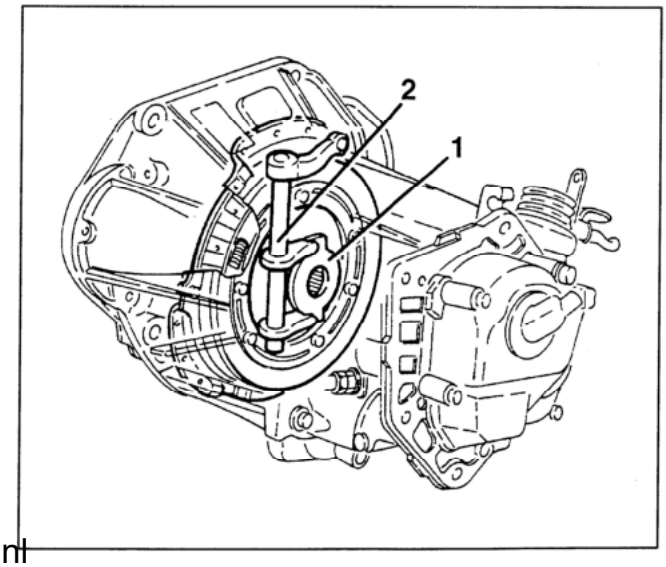
CHECKS AND INSPECTIONS

1. Check that the wear of the seals is uniform and that the thickness of the clutch plate is no lower than the minimum allowed limit.

Clutch plate thickness "S" (mm)	
New	At wear limit
7.1 ÷ 7.7	6.3



– Check that there are no burns or signs of vitrification, and that the springs are intact and correctly fastened.
– Check that the clutch plate hub is intact and runs freely without excessive play on the coupling of the power takeoff shaft.
– Check the working surfaces of the flywheel and pressure plate for signs of overheating, uneven wear, nicks or missing material.
1. Check the thrust bearing for noise, excessive play and freedom of movement on the guide quill.
2. Check the fork for cracks, distorsion, freedom of movement and excessive wear of the working surfaces.



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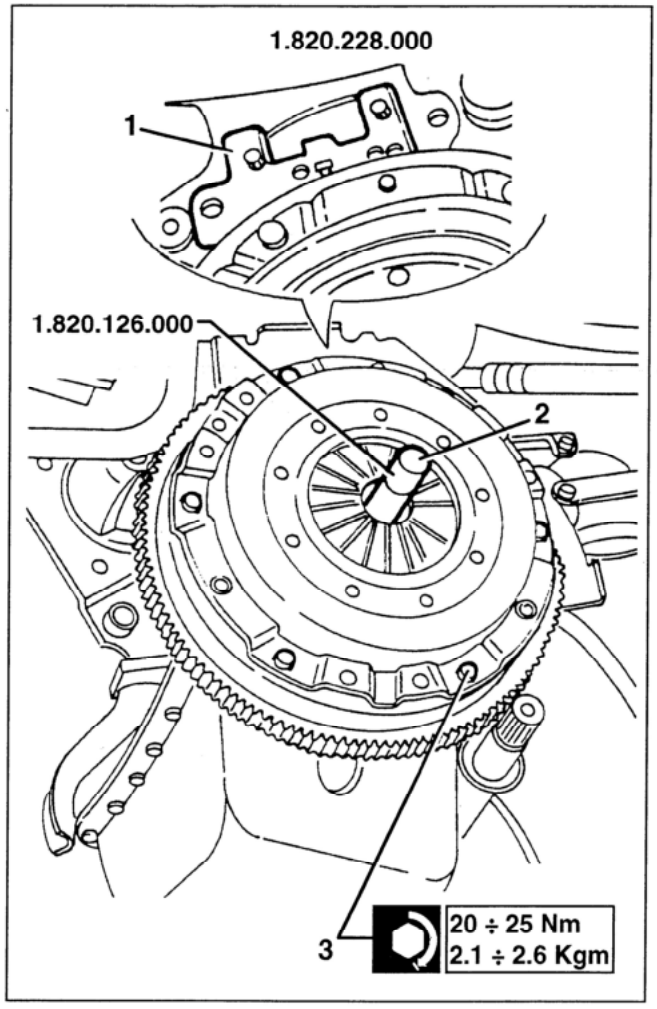
CLUTCH PLATE AND PRESSURE PLATE

REMOVAL/REFITTING

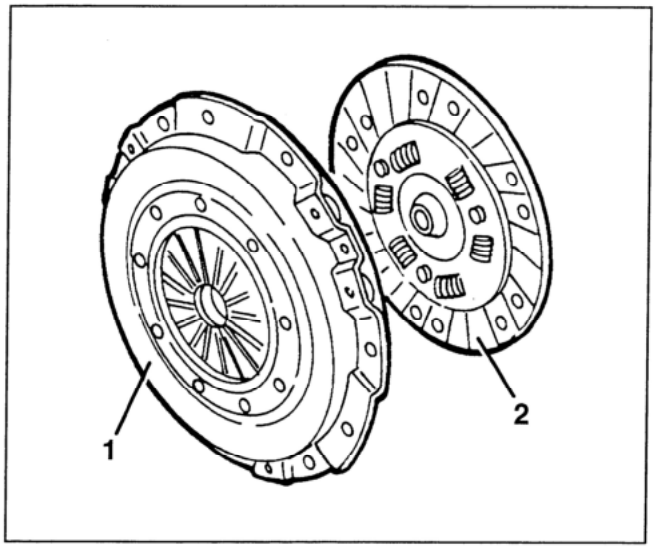
– Remove the differential-gearbox unit (see GROUP 21).

– When replacing only the clutch plate, mark the corresponding positione between the pressure plate and flywheel to simplify refitting operation.

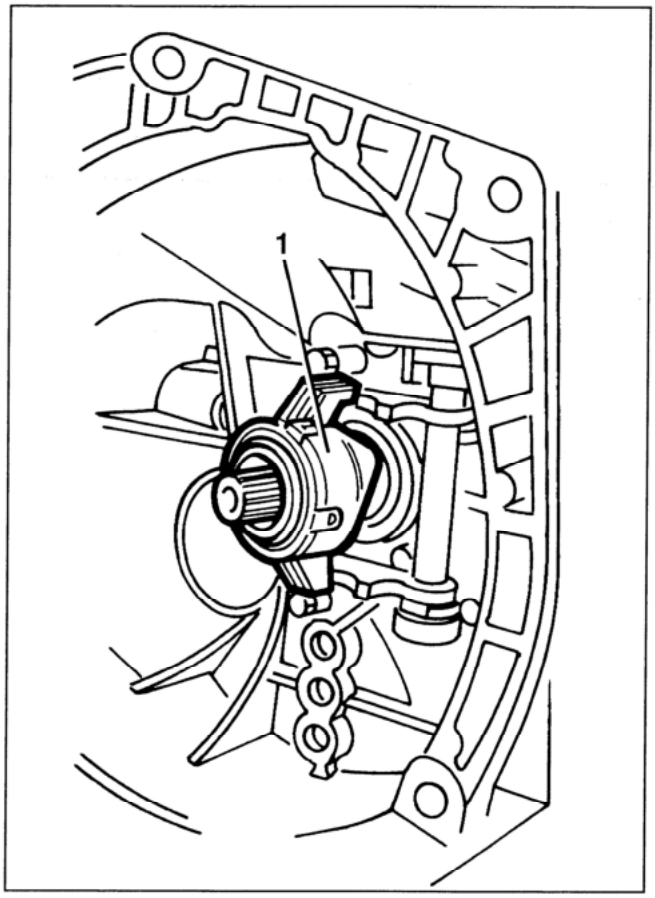
1. Install flywheel stopper tool no. 1.820.228.000.
2. Install tool no. 1.820.126.000 in the clutch plate hub.
3. Slacken the screws fastening the presure plate to the flywheel.



1. Remove the pressure plate.
2. Remove the clutch plate.



1. Withdraw the thrust bearing from its sleeve in the gearbox cover.



When refitting the bearing it must not stick or turn noisily, otherwise it must be replaced.

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CLUTCH SYSTEM

DESCRIPTION

The clutch adopted is single-plate, dry with diaphragm pressure plate.

The clutch is disengaged by a hydraulic device comprising a reservoir (1) shared with the braking system, a pump (2) fastened to the pedal unit, a control cylinder (3) fastened to the gearbox cover and a thrust bearing (4).

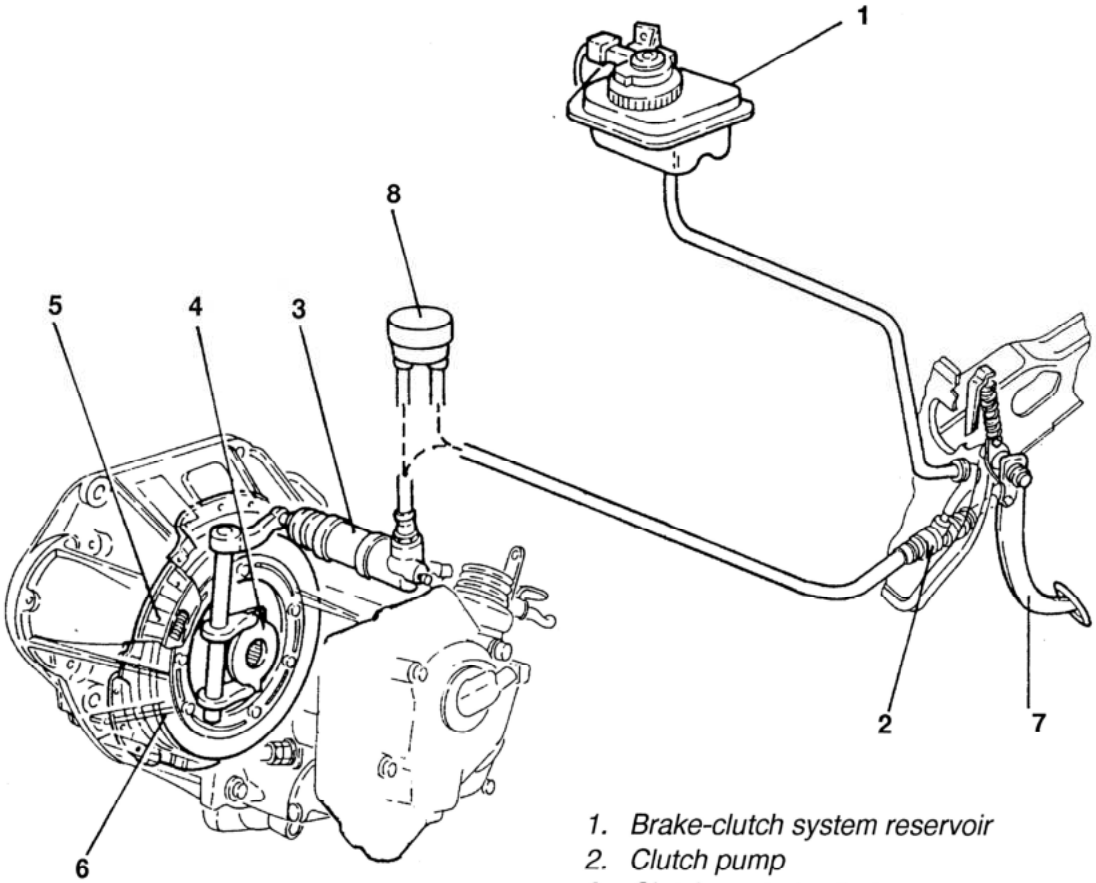
The pump, operated by the pedal, transmits the fluid pressure increase to the control cylinder piston through the special pipe.

Through a prod, the piston acts on the lever and transmits the control to the fork which moves the thrust bearing overcoming the action of the diaphragm pressure plate.

In addition to reducing the effort required on the pedal, the adoption of the hydraulic clutch release device makes it possible to obtain:

- increased reliability in relation to the conventional, mechanical solution.
- improved smoothness due to the damping of the hydraulic system during disengagement which avoids jerking, particularly when the transmitted torque is high.
- greater operating precision as this device permits constant adjustment of the height of the clutch pedal.
- increased driving comfort as a result of the reduction of the level of vibrations transmitted from the engine, due to the damping effect of the oil.

In order to meet the current laws concerning environmental pollution problems, ecological material (asbestos free) material has been used for the friction linings. For the six cylinder version a damper has been fitted on the hydraulic control circuit to graduate its action.



1. *Brake-clutch system reservoir*
2. *Clutch pump*
3. *Clutch control cylinder*
4. *Thrust bearing*
5. *Clutch plate*
6. *Pressure plate*
7. *Clutch pedal*
8. *Damper*

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CLUTCH

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