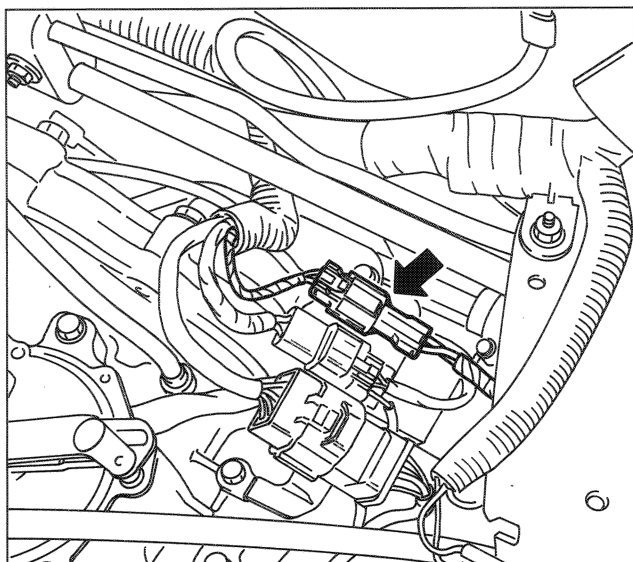


PUNTO eMANUAL

Gearbox & differential

Title	Page
Removing/refitting electro magnetic clutch supply bushes ...	1 ➡
Changing transmission fluid and filter	2 ➡
Removing/refitting hydraulic control unit	4 ➡
Removing/refitting oil pump	6 ➡
Removing/refitting ECU	7 ➡
Cable adjustment	8 ➡
Road testing	15 ➡
Pressure checking	17 ➡
Fault diagnosis	18 ➡
Safety devices	20 ➡



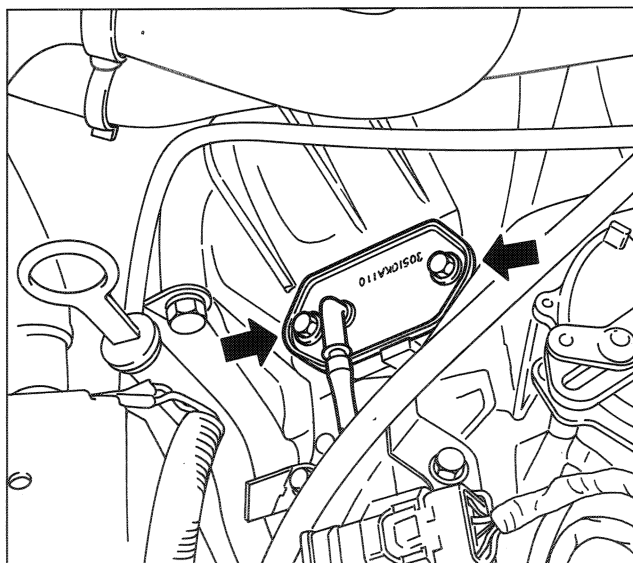
P3M45AB01



REMOVING-REFITTING ELECTROMAGNETIC CLUTCH SUPPLY BRUSHES

Removing-refitting

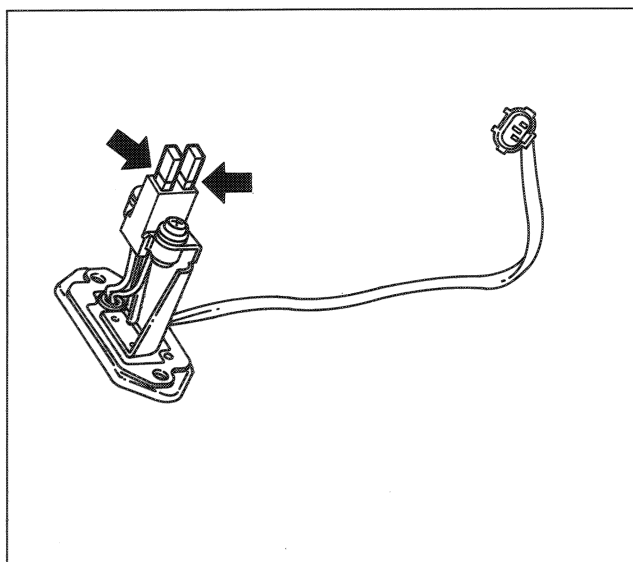
- Disconnect connector shown in figure, beneath battery holder;



P3M45AB02



- remove retaining screws, then remove electromagnetic clutch supply brushes.



P3M45AB03

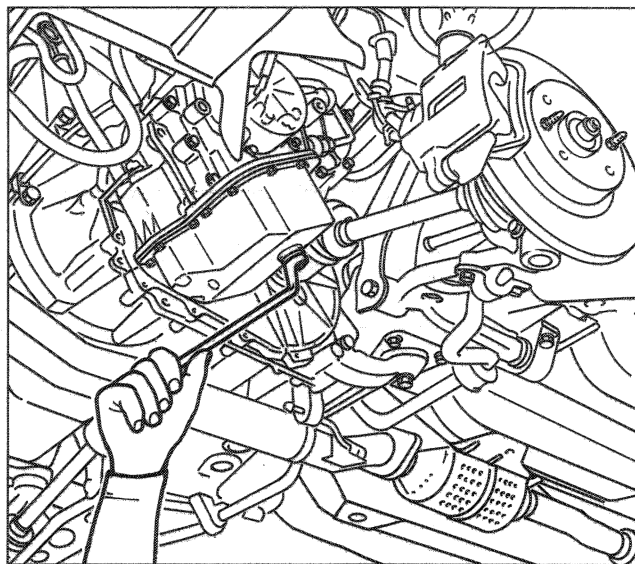


Electromagnetic supply brushes



The brush wear limit reference marks are arrowed.

21-27.



P3M46AB01



CHANGING AUTOMATIC TRANSMISSION FLUID AND INTERNAL FILTER

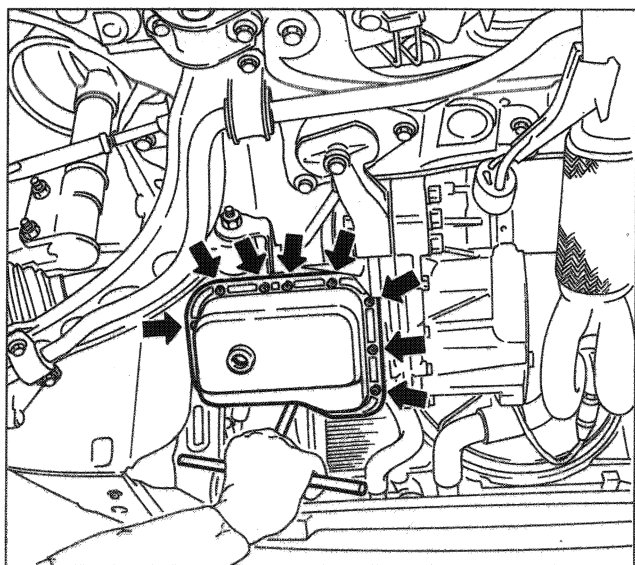


Change the automatic transmission fluid and internal filter every 40,000 km.

Drain transmission fluid

- Unscrew nut indicated and leave oil to drain out for at least ten minutes;

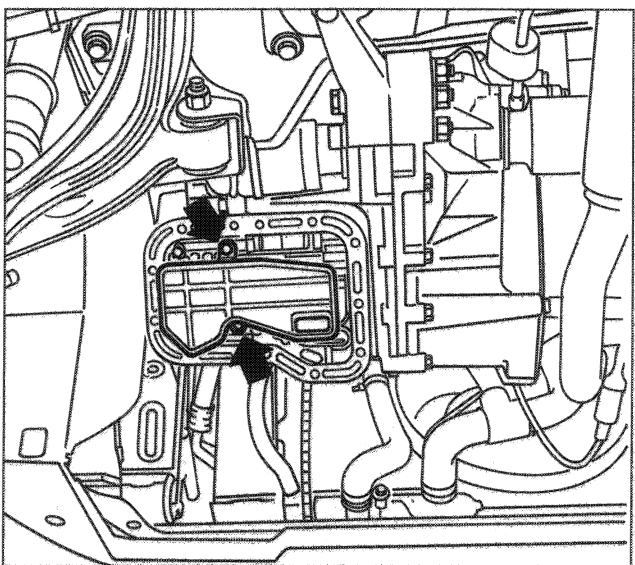
NOTE Oil colour and presence of residue can provide useful information on transmission operating conditions and potential need for servicing.



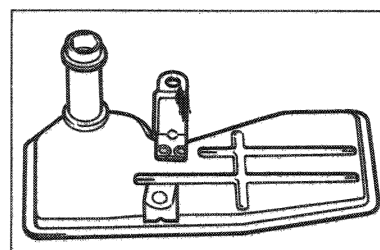
P3M46AB02



- remove oil sump by undoing the screws indicated in the figure;



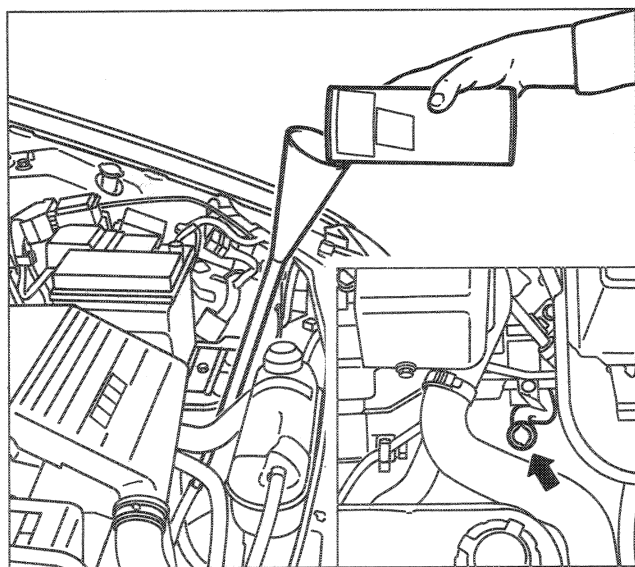
P3M46AB03



P3M46AB04

- unscrew screws shown in figure alongside and remove the oil filter;

NOTE The oil filter must be replaced whenever the transmission fluid is changed.



Filling transmission

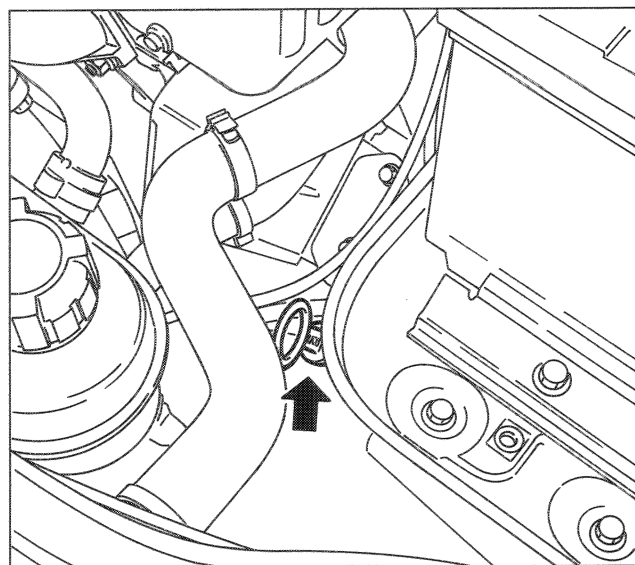
Add fluid through fitting (shown in box) using splashproof funnel.



Use only Olio fiat TUTELA CVT.

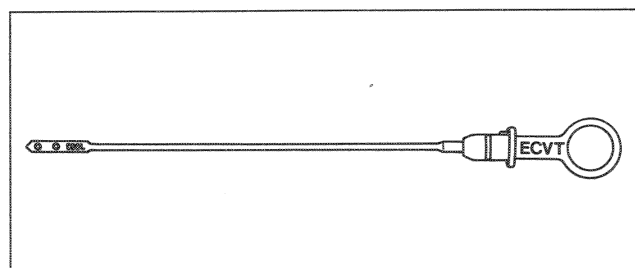


If the automatic transmission is subject to heavy use: e.g. taxi service, towing trailers etc., it is advisable to replace the fluid and internal filter every 20,000 km.



CHECKING FLUID LEVEL IN AUTOMATIC TRANSMISSION

Check transmission fluid level using dipstick, with engine idling, vehicle on level surface and with selector lever set to "P" or "N".



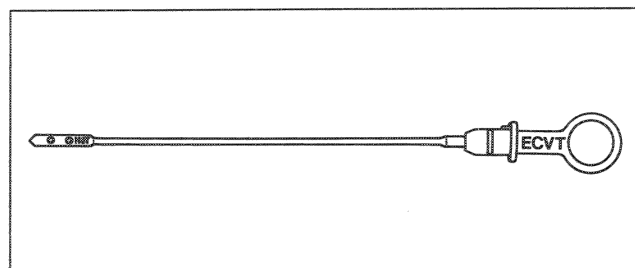
References on the two faces of the dipstick indicate minimum and maximum oil levels with the following indications:

COOL for cool checks (20° - 40°C)

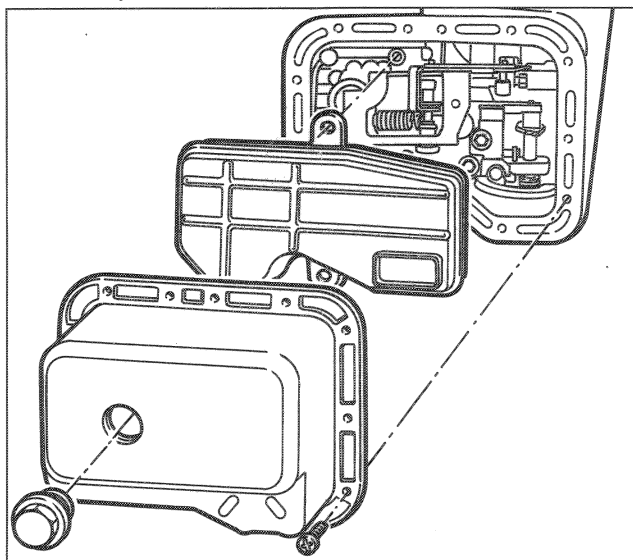
HOT for hot checks (60° - 80°C)



Use only lint-free cloths to wipe the dipstick to prevent the hydraulic transmission valves from becoming clogged.



21-27.



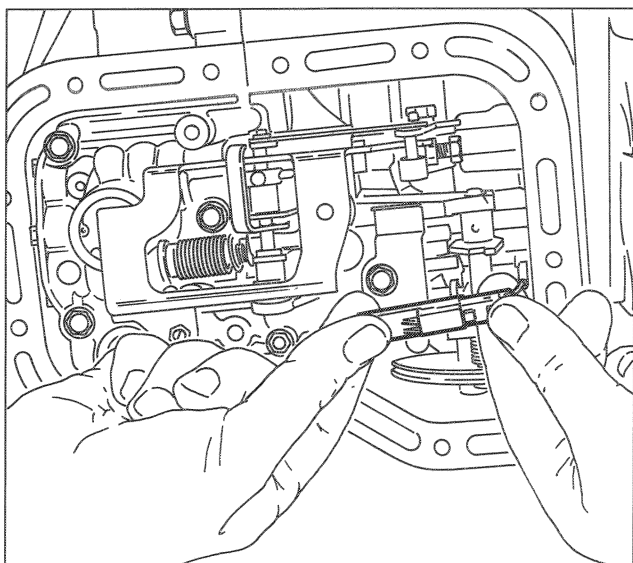
P3M48AB01



**REMOVING-REFITTING
CONTROL UNIT**

HYDRAULIC

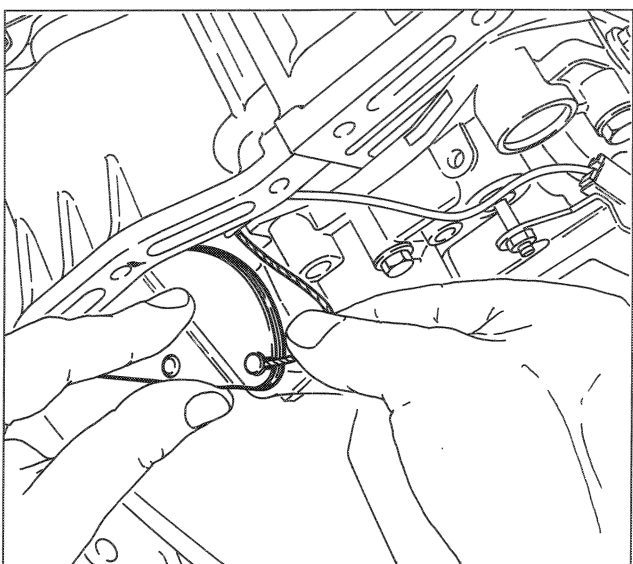
- Remove oil sump and filter as described on page 46 in order to gain access to hydraulic control unit;



P3M48AB02



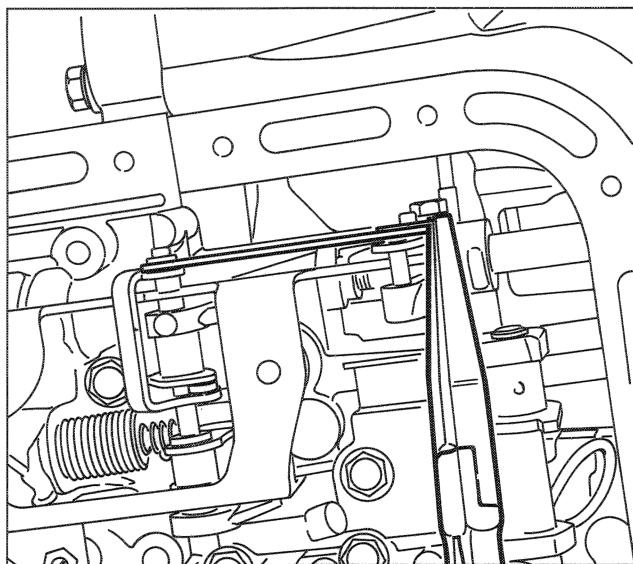
- disconnect supply connector shown in figure;



P3M48AB03



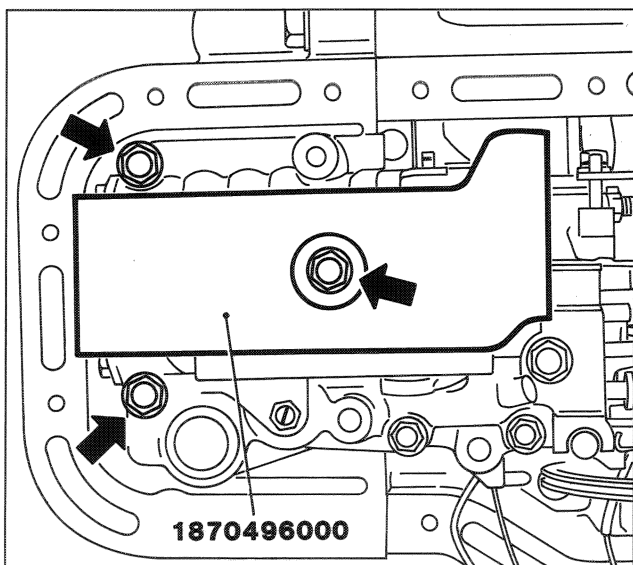
- release cam control cable inside transmission from block on hydraulic control unit;



P3M49AB01



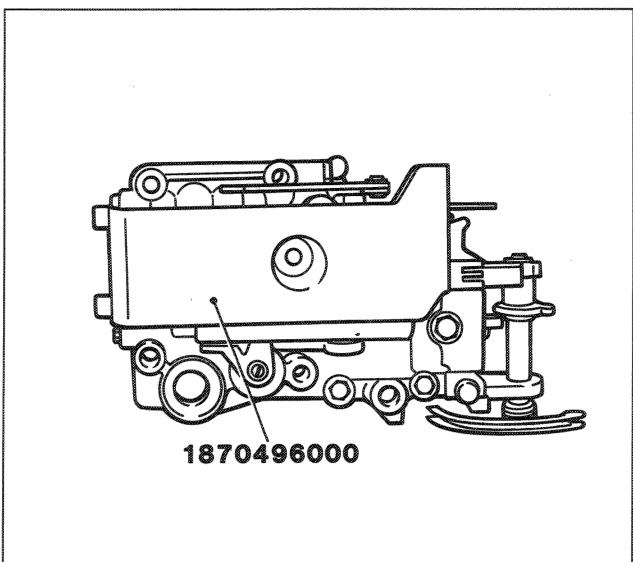
- remove cotter pin and disconnect control lever;



P3M49AB02



- loosen screws indicated in figure and position tool 1870496000 to retain secondary valve;
- remove hydraulic control unit;

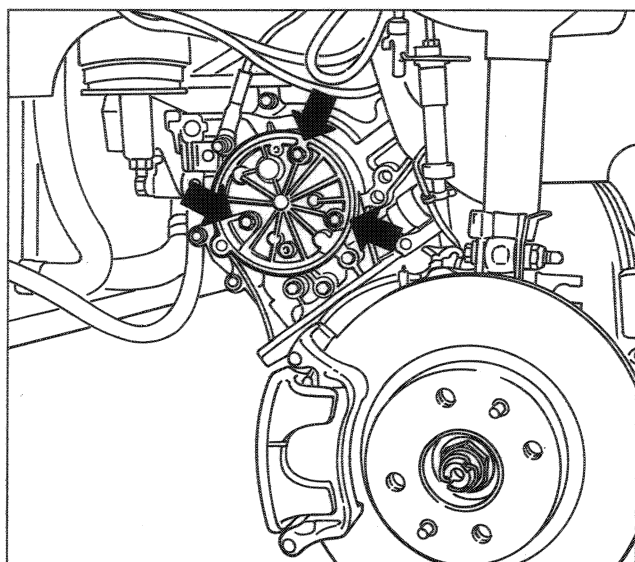


P3M49AB03



Hydraulic control unit with tool 1870496000

21-27.



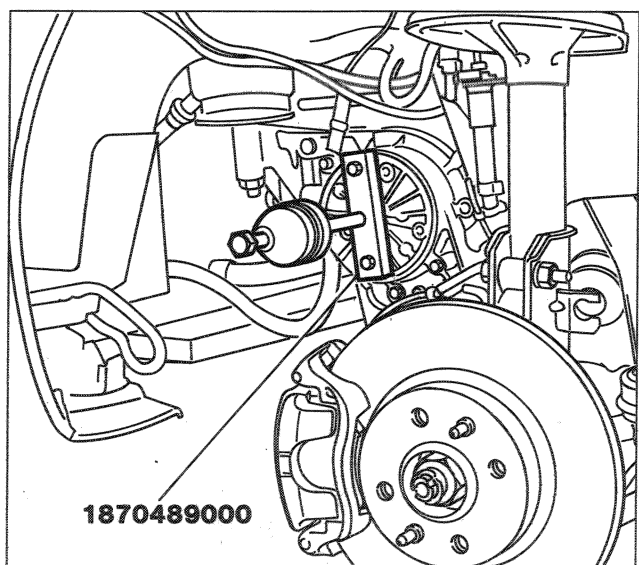
P3M50AB01



REMOVING-REFITTING OIL PUMP



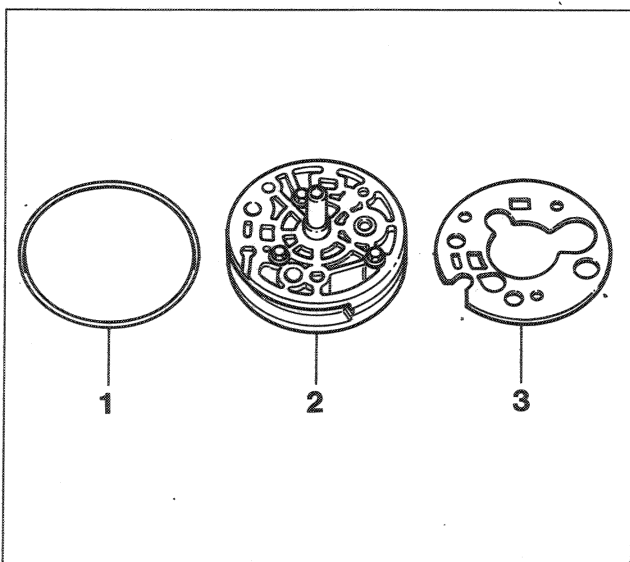
- Unscrew oil pump retaining screws indicated in figure;



P3M50AB02



- position extractor 1870489000 and remove oil pump.



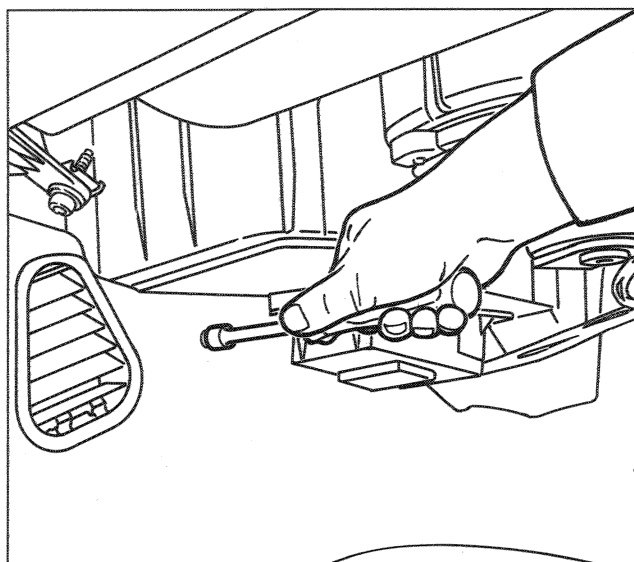
P3M50AB03



Disassembling oil pump

Oil pump components are not available as spare parts and the whole pump must therefore be replaced. The only parts that can be changed are sealing ring (1) and gasket (3).

1. Sealing ring
2. Oil pump
3. Gasket



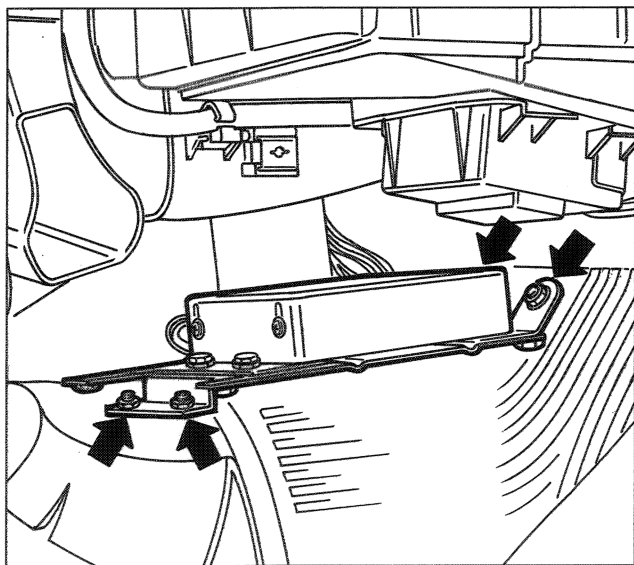
P3M51AB01



**REMOVING-REFITTING
CONTROL UNIT**

ELECTRONIC

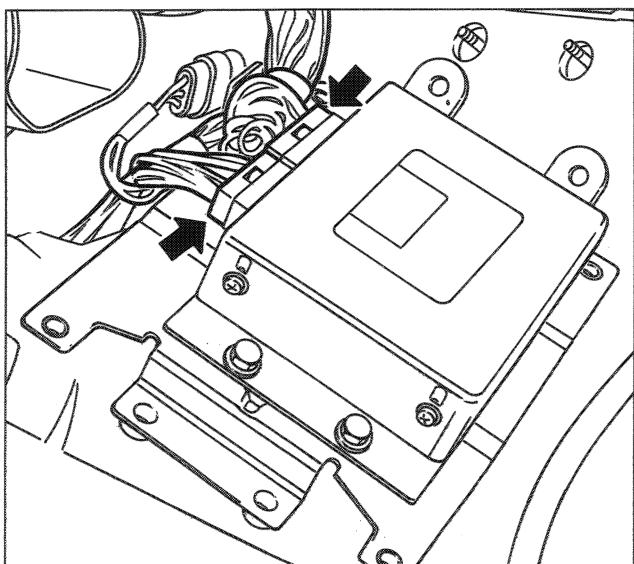
- Remove screws retaining central console cover and lower;



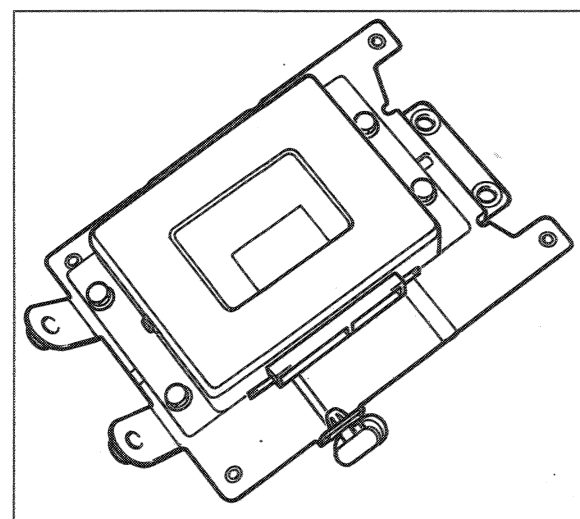
P3M51AB02



- unscrew screws joining control unit bracket to central console;



P3M51AB03



P3M51AB04

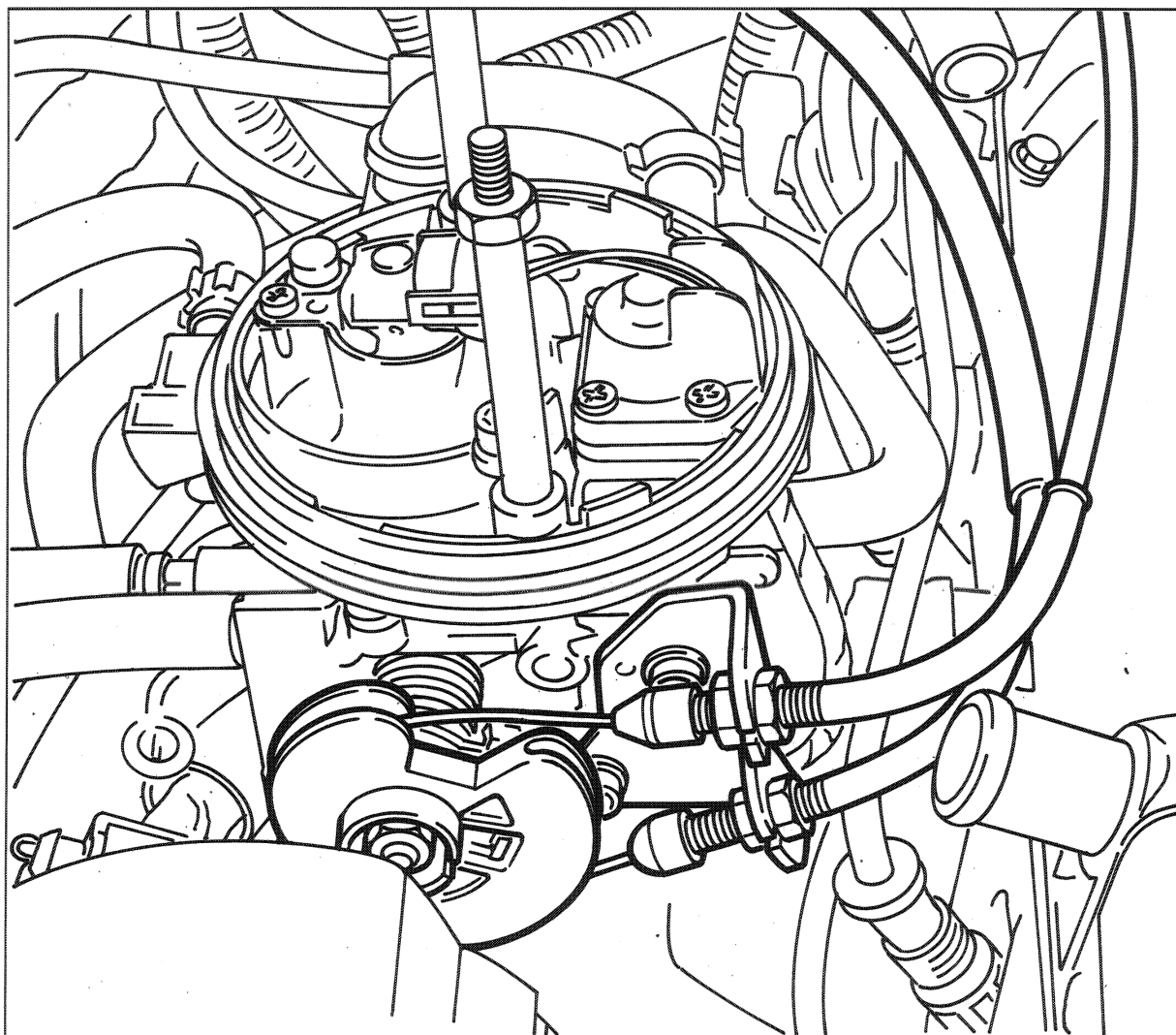
- disconnect connectors indicated and remove control unit from its housing.

Automatic transmission and differential *Punto Selecta*

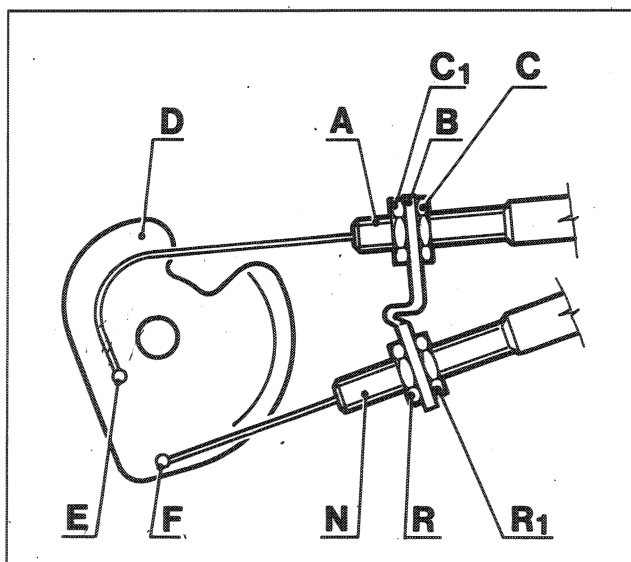
Servicing and adjustment

21-27.

KICK-DOWN CABLE ADJUSTMENT



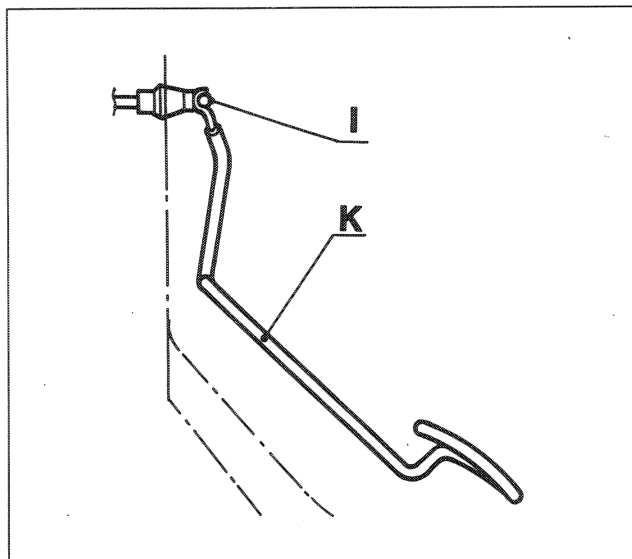
P3M52AB01



P3M52AB02

Before fitting the flexible kick-down cable, first remove the air filter and the air intake tubing.

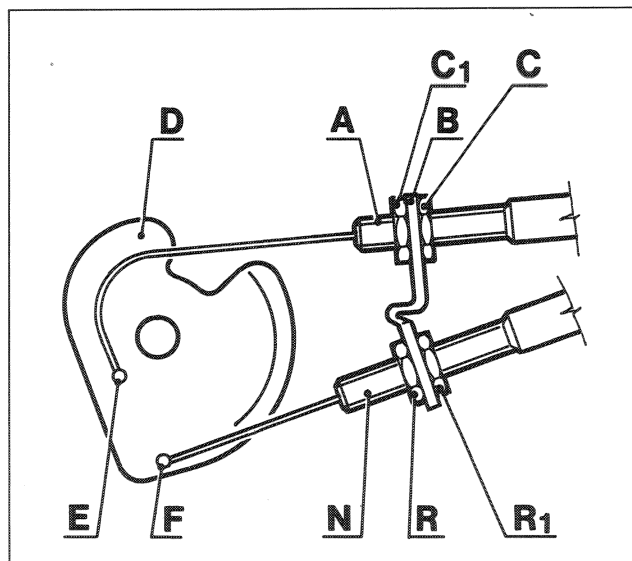
1. Fit Bowden cable (N) to the support bracket (B).
2. Wrap the Bowden cable (N) around cam-guide (D) and insert the cable-end (F) into the correct fixing point.
3. Rotate cam-guide (D) to its maximum position (wide-open throttle plus additional Kick-Down angle), and adjust the Bowden cable (N) using nuts (R) and (R1) until the cable is slightly tensioned.



P3M53AB01

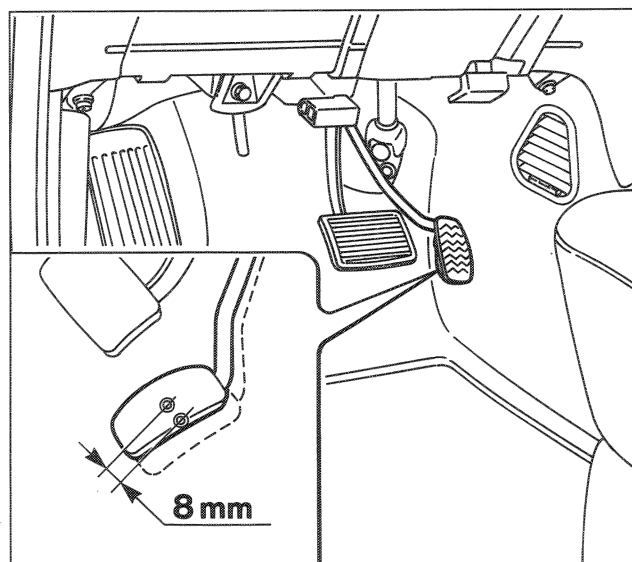
THROTTLE CABLE ADJUSTMENT

- Fit the flexible throttle cable (I) to pedal (K);



P3M52AB02

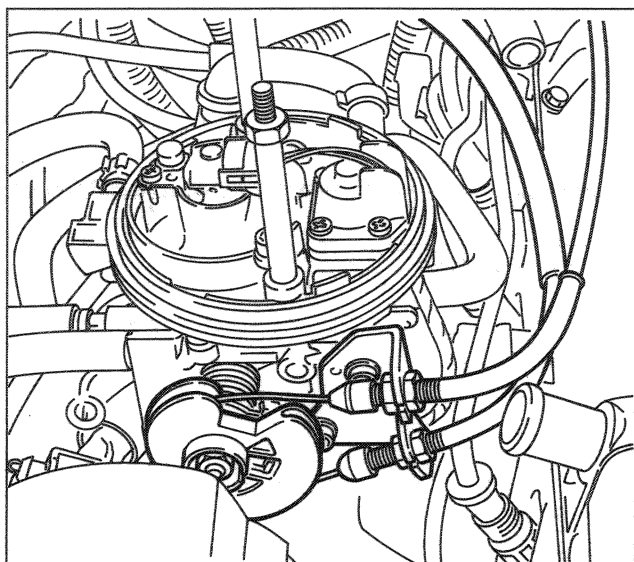
- fit the Bowden cable (A) to the support bracket (B)
- wrap the Bowden cable (A) around cam-guide (D) and fit the cable end into the correct hole;
- check that the throttle body cam-guide (D) is in the idle position;
- adjust the throttle cable using nuts (C) and (C1) until it is slightly tensioned;



P3M53AB02

- check that the accelerator pedal moves freely for approximately 8 mm before the throttle valve starts to open.

21-27.

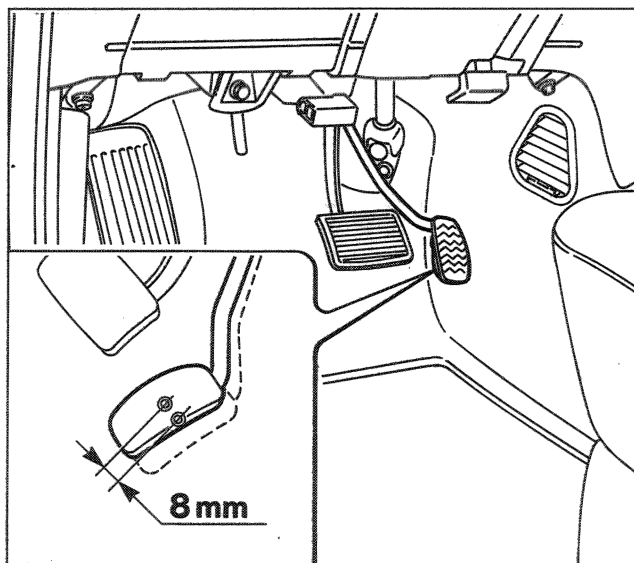


P3M54AB01



**CHECKING THE
THROTTLE AND KICK-DOWN
CABLE ADJUSTMENT**

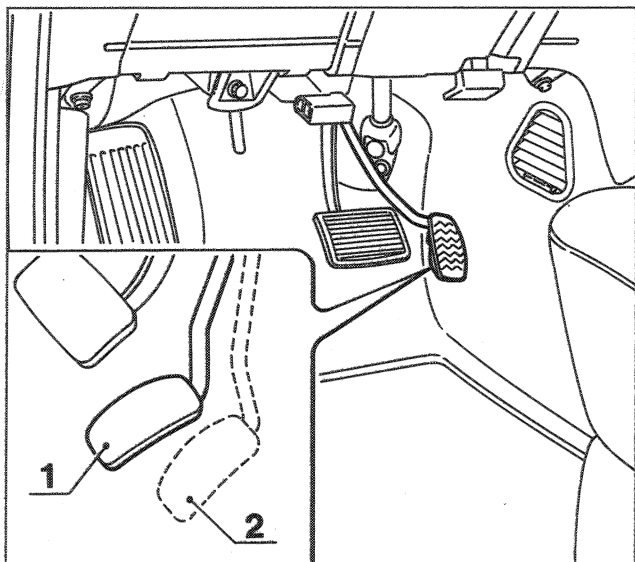
- Check that the throttle body cam-guide is in the idle position;



P3M53AB02



- ensure that the accelerator pedal has approximately 8 mm free travel;

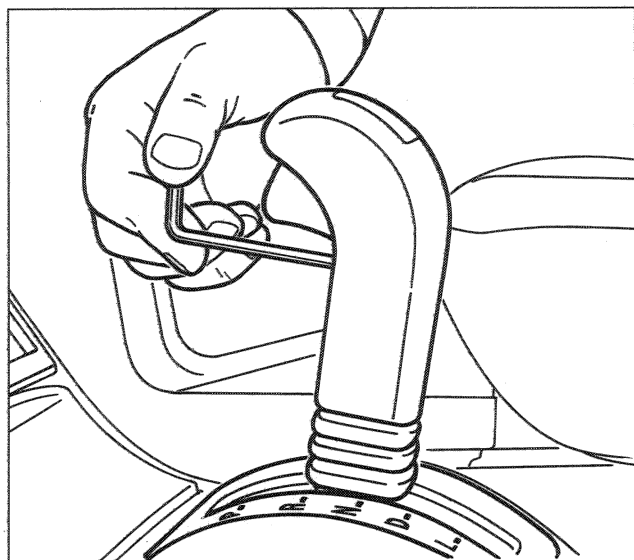


P3M54AB02



- the kick-down cable should still have 0.5-1 mm of free travel with the accelerator pedal completely depressed (throttle valve completely open).

1. Accelerator pedal fully up
2. Accelerator pedal fully depressed



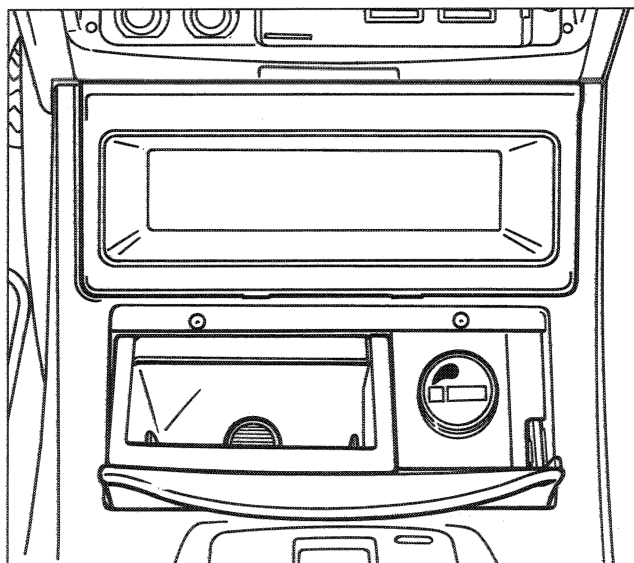
P3M55AB01



FLEXIBLE RATIO SELECTOR CABLE ADJUSTMENT

Removing/refitting centre floor console.

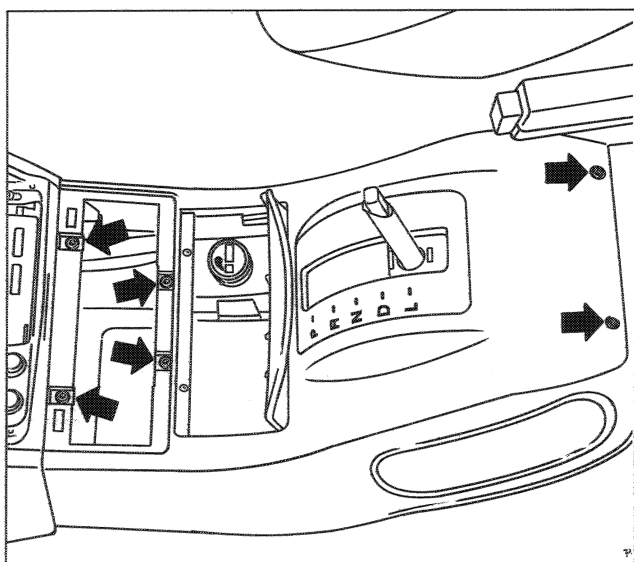
- Unscrew the fixing screw and remove the selector lever cover;



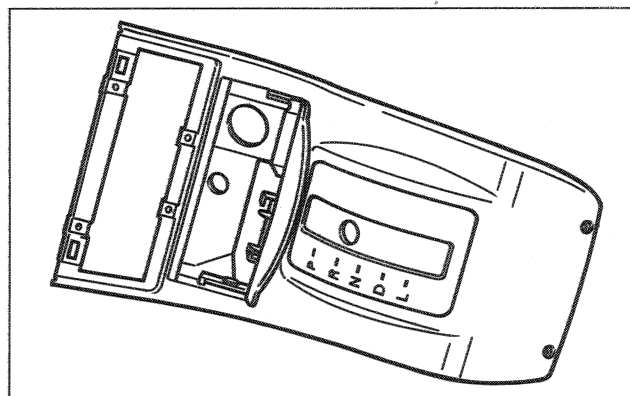
P3M55AB02



- remove the oddment tray and ashtray;



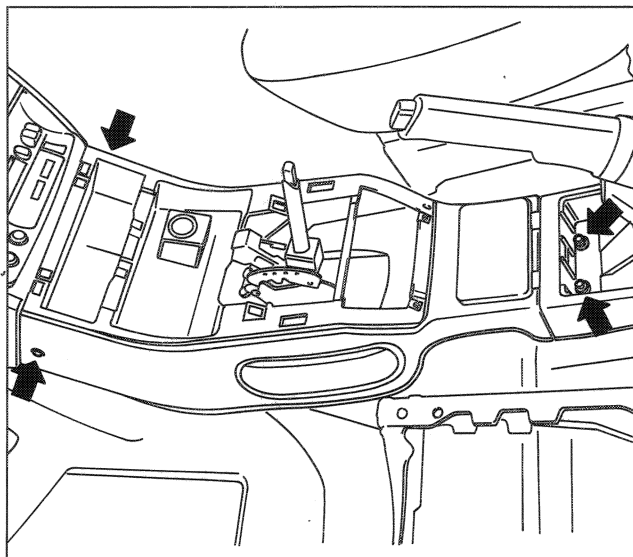
P3M55AB03



P3M55AB04

- unscrew the indicated screws and remove the centre floor console and selector mechanism cover;

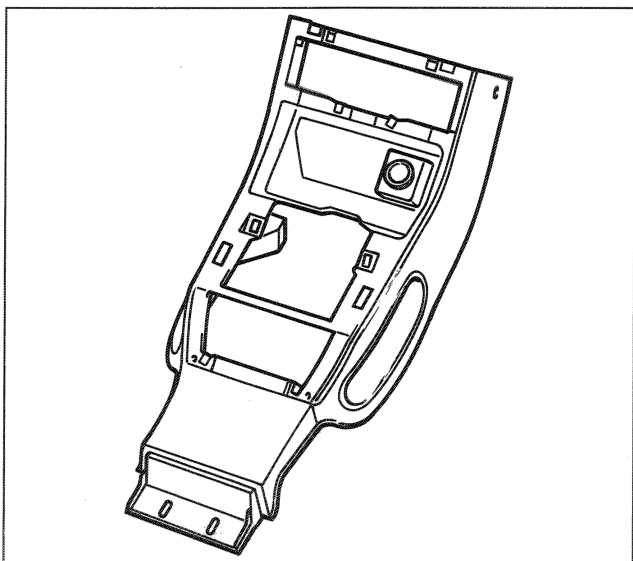
21-27.



P3M56AB01



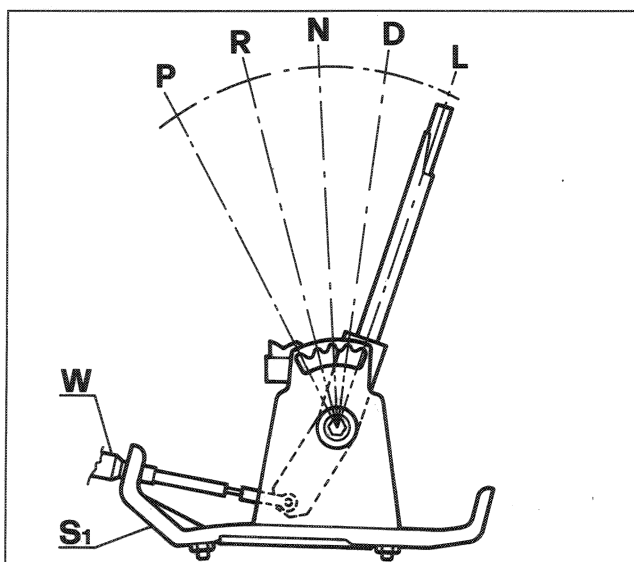
- unscrew the fixing screws as shown;
- lift the centre floor console slightly;
- disconnect the power cables to the cigarette lighter and selector lever panel;



P3M56AB02



- remove the floor console.

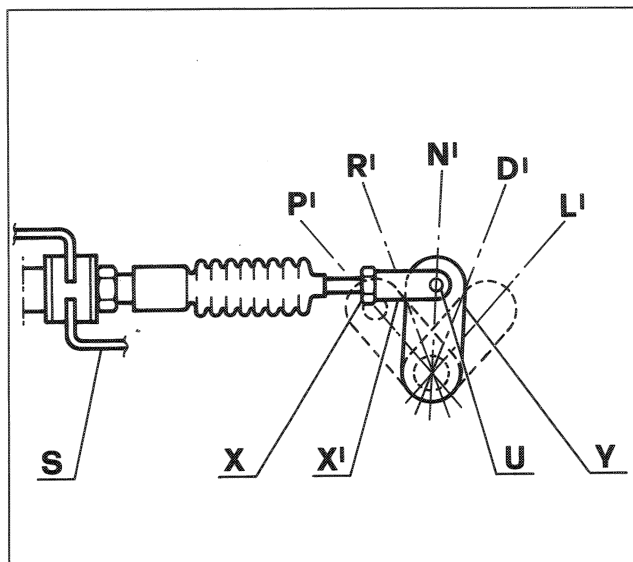


P3M56AB03



Adjustment of the flexible gear selector cable (selector lever end)

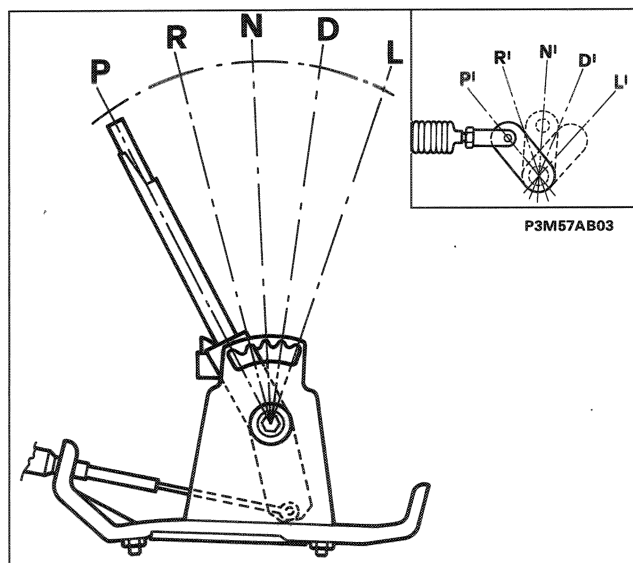
- Fit the Bowden cable (W) into the cable guide of support bracket (S1);
- move the selector lever to the "L" position;
- attach the Bowden cable to the selector lever by fitting the cable-eye onto the lever pin;
- fit the safety clip.



P3M57AB01

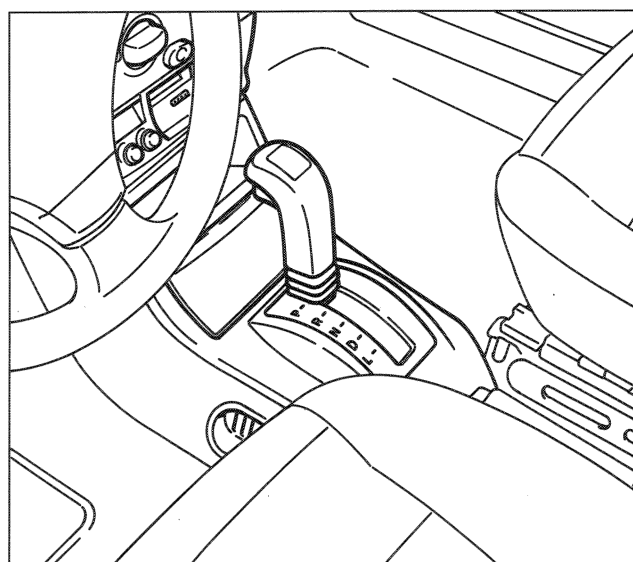
**Flexible ratio selector cable adjustment
(transmission end)**

- Attach the other end of the Bowden cable to the support bracket (S) using the supplied nut;
- move lever (Y) to position (N);
- use nut (X') to adjust the cable length until the cable eye lines up with pin (U) on lever (Y);
- attach the eye to the pin;



P3M57AB02

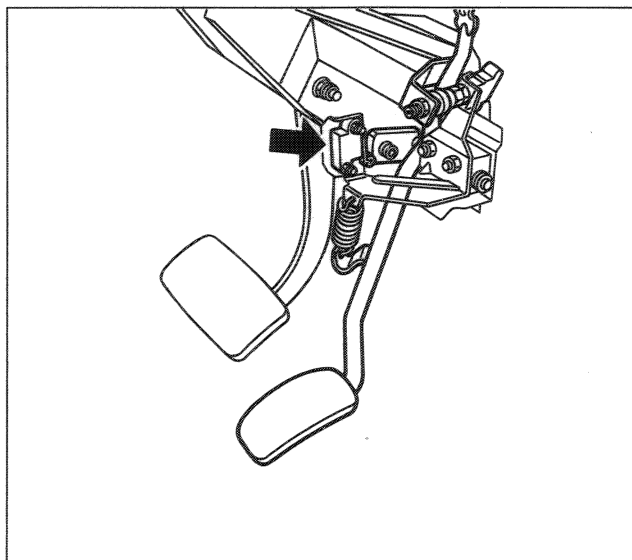
- move the selector lever to the "P" position;
- check that when the selector lever is in the "P" position, the transmission end of the cable has also moved accordingly to the "P" position (see inset);
- if the selector lever position and transmission input lever do not correspond, repeat the adjustment procedure



P3M57AB04

- refit the centre console;
- After finishing the installation procedure, move the selector lever. Check that each position corresponds with the transmission input lever position and that the "click" for each ratio-change is felt positively.

21-27.

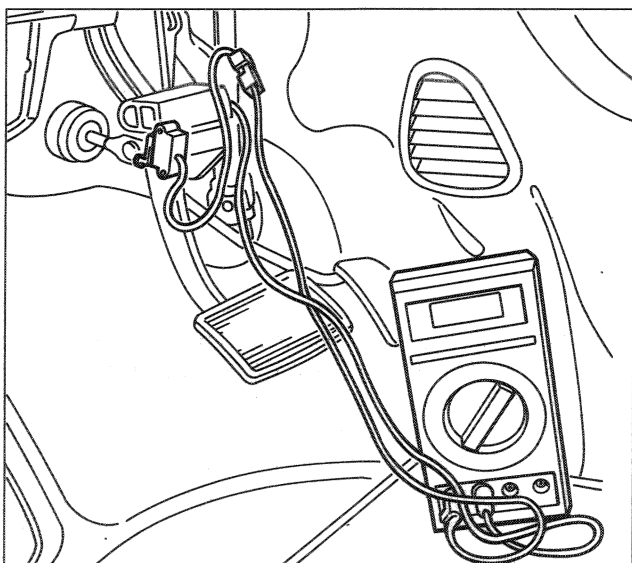


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ACCELERATOR PEDAL SWITCH ADJUSTMENT

Accelerator pedal switch location

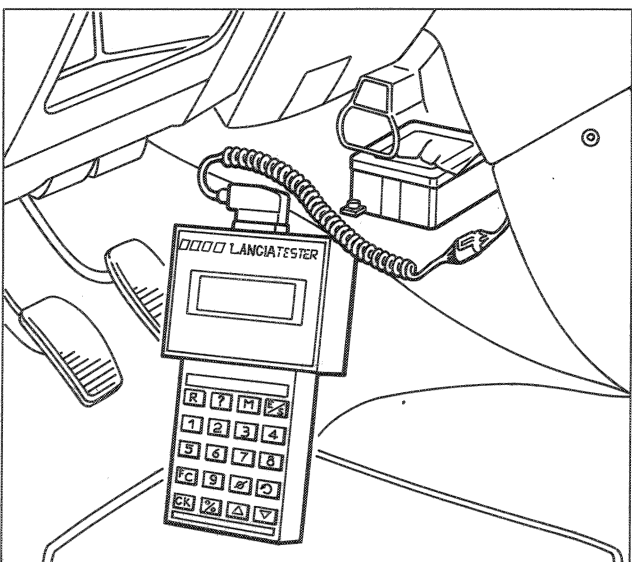


P3M58AB02



Microswitch adjustment

- Disconnect the connector;
- connect a multimeter to the microswitch;



P3M58AB03



- connect the Fiat-Lancia-Tester to the diagnostic socket;
- display the "throttle valve angle" on the Fiat-Lancia Tester;
- press the accelerator pedal until the throttle valve angle reads 30°;
- check that at this point the multimeter reads "infinity" (the switch has already opened)

ROAD TESTING

Before road testing, it is necessary to perform some preliminary checks:

- check the transmission oil level;
- check the throttle and gear selector cable adjustment.

After these checks, select a test route which will allow all the following transmission functions to be checked:

- transmission operation;
- kick-down operation;
- engine braking intervention when changing from "D" (Drive) to "L" (Low);
- clutch condition (stall test).

Transmission operation check

To perform this check follow the road test procedure below:

- start the engine, bring it up to operating temperature and perform the following changes: "N"-"R" and "N"-"D". The vehicle must not creep at idle. Engagement of "D" and "R" must be free of jerkiness or noise;
- with the selector lever in "D", perform the following acceleration tests; 25%, 50% 100% of accelerator pedal travel respectively. The transmission should hold low ratio until 50, 80 and 100 km/h respectively. Ratio variation must then occur without vibration, jerkiness or noise.

Kick-Down operation check

To perform this check, follow the procedure below:

- with the selector lever in "D", bring the vehicle up to 90 km/h, then release the accelerator pedal completely. **Once the vehicle has decelerated to 80 km/h, fully depress the accelerator pedal (to activate Kick-Down).** In these conditions the engine must increase speed to 4600 ± 250 RPM, within two seconds. The ratio variation must be immediate, free from jerkiness and vibration;
- a further check must be made from 120 km/h: fully depress the accelerator pedal, within 2 seconds, the engine must reach 5100 ± 250 RPM.

Engine braking check (on "D" to "L" shift)

To perform this check, follow the procedure below:

- In "D" mode, bring the vehicle up to approximately 110 km/h, then release the accelerator pedal completely. Once the vehicle has decelerated to 100 km/h select "L". Within 2 seconds, the engine must reach 4300 ± 250 RPM. The ratio change must be immediate, free from jerkiness or vibration;
- a further check must be made from 60 km/h: fully depress the accelerator pedal, within 2 seconds the engine speed must rise to 3700 ± 250 RPM.

21-27.

Clutch efficiency check (stall test)

This test gives an indication of the clutch, hydraulic circuit and engine condition.



The check procedure must be completed within 3-5 seconds; if it is necessary to repeat the test then let the engine idle for several minutes with the selector lever in "P" or "N". This allows the transmission to cool.

To perform the test:

- bring the engine and the gearbox up to operating temperature;
- apply the handbrake and depress the brake pedal;
- select "D";
- depress the accelerator pedal fully and hold it until the engine reaches a steady RPM (hold for a maximum of 3-5 seconds).

The steady RPM value should be 1900 ± 250 RPM, as read from the instrument panel.

After performing the stall test let the engine idle and with the vehicle stationary, move the selector lever from the "N" to the "R" position. Depress the accelerator by about 30% of full travel, then check that reverse engages without jerkiness or vibration.

Park the vehicle on an incline, then check that the vehicle does not move when the selector lever is in the "P" position. If problems occur then it is necessary to:

- check and adjust the secondary line pressure;
- check the electromagnetic clutch and associated components (microswitches in the pedal assembly, power supply brushes).

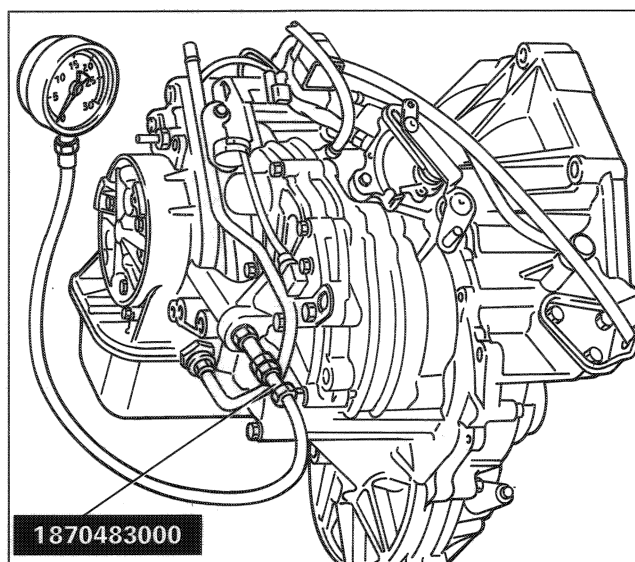
Shift-lock and Key-lock operation check

Shift-lock

- Insert the key into the ignition switch, turn it to "MAR" and select "P" with the selector lever;
- It should be impossible to engage "P" if the brake pedal is not pressed. An acoustic warning signal should sound for at least 10 seconds;
- If the shift-lock does not operate then check the electrical connections between the brake pedal "stop" switch, the transmission safety control unit and the electromagnet on the selector lever.

Key-lock

- Check that the ignition key can only be removed from the ignition switch when the selector lever is in "P";
- If the Key-lock does not operate then check the electrical connections between the ignition switch, the transmission safety control unit and the steering column electromagnet.



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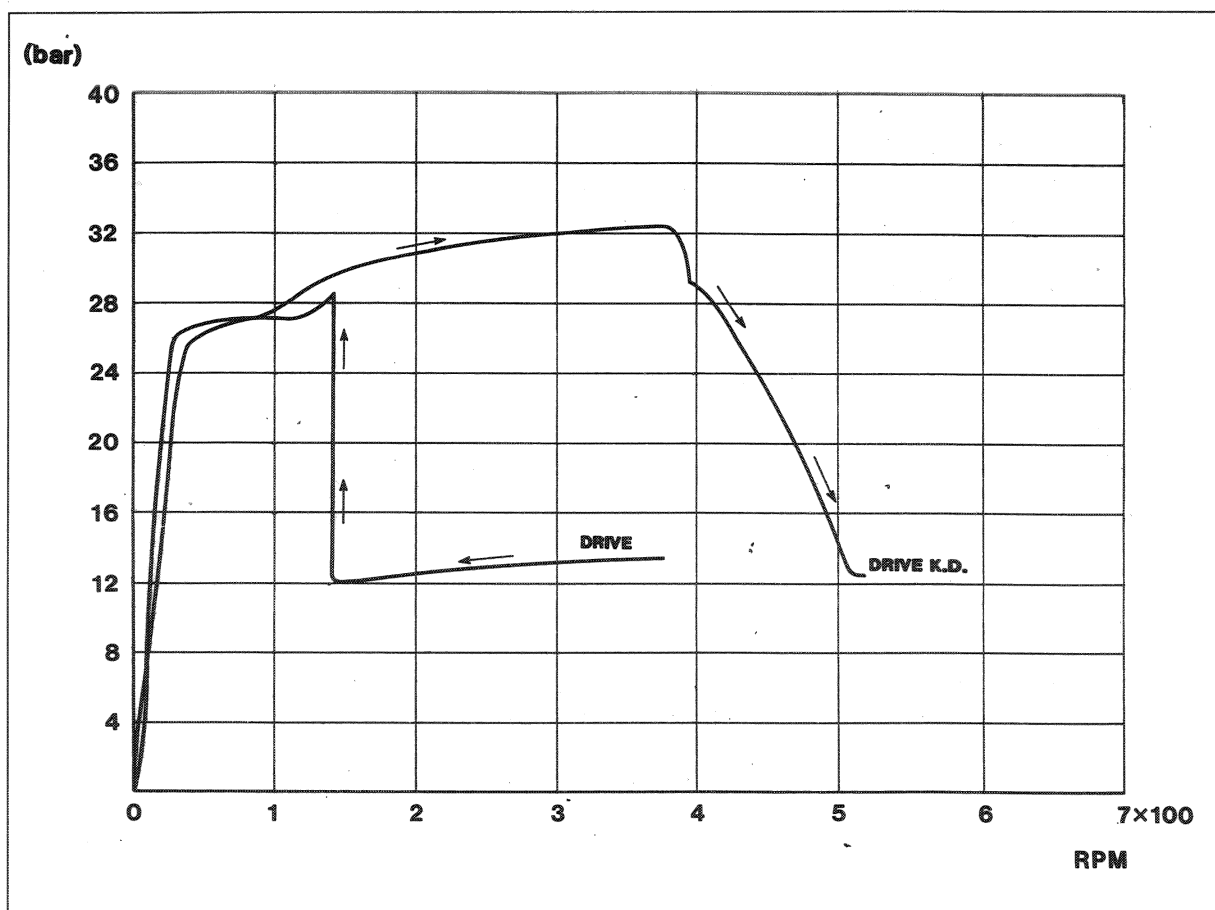
CHECKING LINE OR SECONDARY PRESSURE



Line or secondary pressure should be checked with drive wheels raised, fluid cool and kick-down cable released and held taut.

To carry out check, connect pressure gauge 1870482000 (full scale deflection 35 bar) to the transmission as shown in the figure using fitting 1870483000.

Connecting pressure gauge to automatic transmission to measure line or secondary pressure



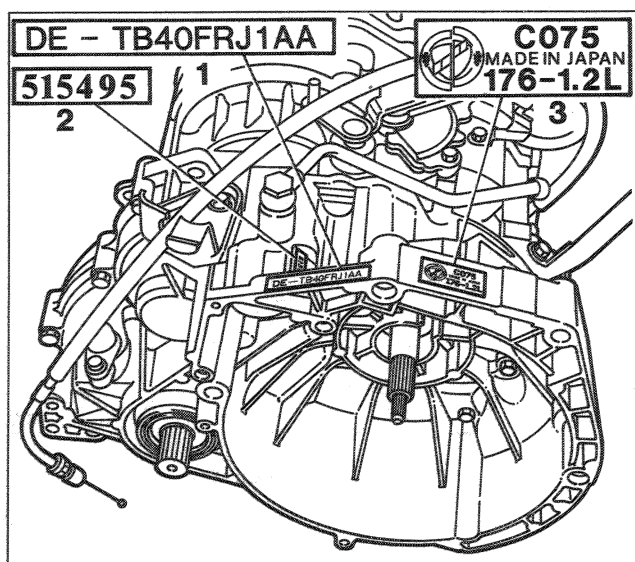
P3M61AB02

Graph showing ageing test

FAULT DIAGNOSIS

Fault	Causes and corrective action
The parking lock does not function with the vehicle parked on an incline	<ol style="list-style-type: none">1) Check that the selector lever position agrees with the position selected at the transmission2) If fault persists then replace the transmission
Oil leaks	<ol style="list-style-type: none">1) The main locations to check and adjust are:<ul style="list-style-type: none">- Oil sump- Oil drain plug- Kick-down cable sealing ring- Oil cooler and associated tubing- Oil seal rings, right and left halfshafts- Sealing ring, secondary pressure take-off point- Oil seal ring, input shaft to transmission2) If the oil leak(s) are in different points to those stated and are impossible to fix, then replace the transmission
It is possible to start the engine in all the selector lever positions	<ol style="list-style-type: none">1) Check the multifunction switch adjustment2) Check the electrical connections3) Check the transmission selector cable adjustment
The vehicle moves forward or backwards when starting the engine with "N" or "P" selected	<ol style="list-style-type: none">1) Check and adjust the transmission selector cable2) If the fault persists then replace the transmission
It is not possible to start the engine with "P" or "N" selected	<ol style="list-style-type: none">1) Check the adjustment of the transmission selector cable2) Check the electrical connections3) Check the multifunction switch
Selector mechanism does not operate correctly	<ol style="list-style-type: none">1) Check and adjust the transmission selector cable2) Check the condition of the power supply brushes for the electromagnetic clutch and the associated connections3) Check the adjustment of the two accelerator pedal microswitches4) If the fault persists then replace the transmission and clutch
Drive modes ("D", "L", "R") do not function when accelerator pedal is pressed	<ol style="list-style-type: none">1) Check the oil level in the transmission2) Check and adjust the selector lever3) Use the Fiat-Lancia Tester to check the clutch closure4) Check the transmission mode with the multifunction switch5) Check the adjustment of the two accelerator pedal microswitches6) Check the state of the power supply brushes for the electromagnetic clutch and the associated connections7) Check the transmission oil pressure8) If the fault persists then replace the electronic control unit9) If the fault persists then substitute the transmission and the clutch

Fault	Causes and corrective action
Limited vehicle acceleration when the accelerator pedal is fully depressed	<ol style="list-style-type: none"> 1) Check the transmission oil level 2) Check and adjust the accelerator and Kick-Down cables 3) Check the transmission oil pressure 4) Use the Fiat-Lancia Tester to check the clutch and associated sensor operation 5) If the fault persists then replace the transmission
Transmission does not change ratio	<ol style="list-style-type: none"> 1) Check and adjust the Kick-Down and selector cables 2) Check the transmission oil level 3) Check the speed sensor with the Fiat-Lancia Tester 4) If the fault persists then substitute the gearbox
The engine RPM increases during steady-speed driving	<ol style="list-style-type: none"> 1) Check the transmission oil level 2) Check the transmission oil pressure 3) Check and adjust the transmission selector cable 4) Check the multifunction switch 5) Check the electrical system with the Fiat-Lancia Tester 6) Check the operation of the transmission speed sensor 7) If the fault persists then replace the gearbox and the clutch
Creep at idle	<ol style="list-style-type: none"> 1) Check the two accelerator pedal microswitches and the electrical system 2) Check the sensors and the electronic control unit using the Fiat-Lancia Tester 3) Check the power supply brushes for the electromagnetic clutch 4) Replace the electronic control unit 5) If the fault persists then replace the transmission



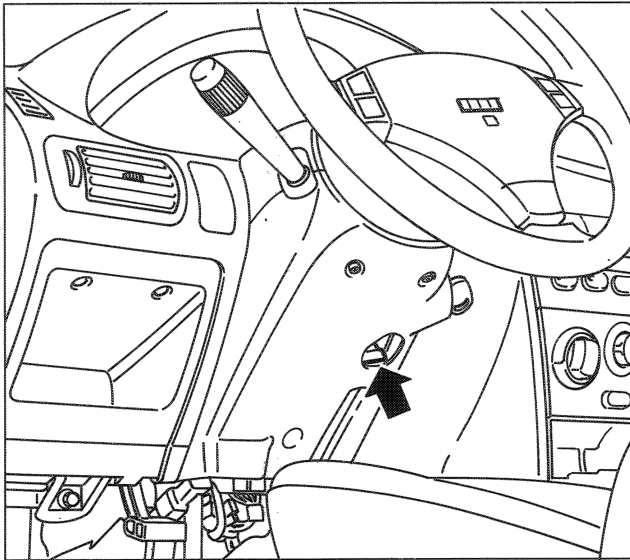
TRANSMISSION IDENTIFICATION PLATES

Self-adhesive identification plates are located on the transmission, as shown. They show important information that is necessary when ordering spare parts or replacing the unit.

1. Transmission identification plate
2. Transmission serial number
3. Identification plate showing vehicle model

176-1.2L = Punto 1242

21-27.



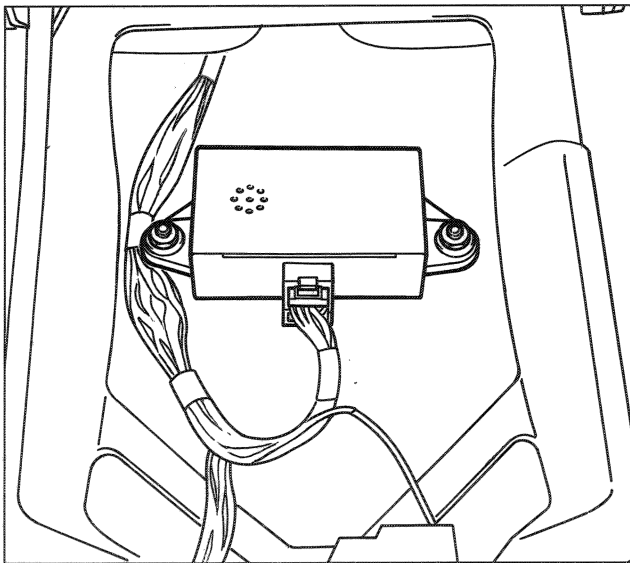
P3M64AB01



SAFETY DEVICES

Safety device to allow key extraction from the ignition switch

In case of emergencies it is possible to extract the key from the ignition switch even if the selector lever is not in "P". To remove the key, it is necessary to push the indicated lever.



P3M64AB02



Safety control unit

This control unit alerts the driver (by an acoustic signal) when certain selector lever positions are chosen. These are:

- with engine running and selector lever in "R" position;
- with engine running and front left door open with selector lever in any position except "P";
- Engine stopped with selector lever in any position except "P".

Location of safety control unit

Towing the vehicle

Vehicle towing, with selector lever in "N", is possible up to 25 km distance and only at a speed of under 30 km/h.

For distances greater than 25 km, and/or speeds greater than 30 km/h or with a faulty transmission it is necessary to tow the vehicle with the front wheels raised off the road. This is because the transmission components are lubricated only when the engine is running.



It is not possible to tow-start or push-start the vehicle since the oil pressure required to activate the transmission servomechanisms is produced by an oil pump within the transmission, driven by the engine itself.