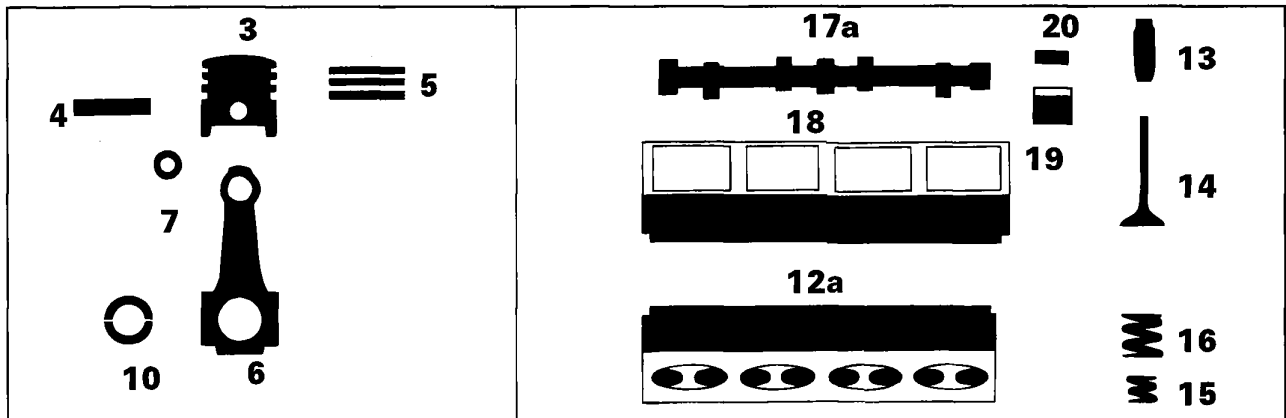


SERVICE MANUAL COMPOSITION

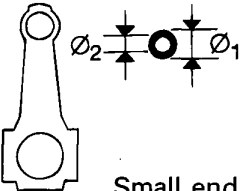


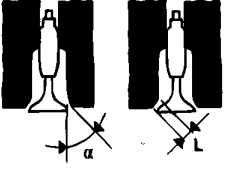

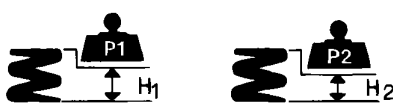
At present, April 1999, the Marea-Marea Weekend 3rd volume manual is composed of the following sections

Print N°	Sections	Page Nos.	Comments
506.763/09 (V/1998)	00	1 - 7	Technical data (1581) 16v 98 range
	10	1 - 64	Fuel system (1581) 16v 98 range
	55	1 - 2	Electrical equipment: Location of components on vehicle (1581) 16v 98 range
		1 - 25	Electrical equipment: wiring diagrams (1581) 16v 98
506.763/10 (V/1998)	33	1 - 17	LUCAS Varity EBC 430 anti-lock brakes
506.763/11 (VII/1998)	10	1 - 12	Fuel system (1387) TD 98 range: system with hot film flow meter
	55	Index 14/1 - 14/4	Wiring diagrams update (1938) TD 98 range: fuel system with hot film flow meter
506.763/13 (XII/1998)	55	Index 14/5 - 14/6 Key	Wiring diagrams update (1938) TD 98 range: Engine cooling system (from July 98)
506.765/14 (IV/1999)	00	1 - 71	99 range Technical Data
		1 - 5	Technical data (1747) 16v 98 update
		1 - 3	Marengo 99 range Technical Data
	10	1 - 54	Fuel system (1242) 16v
		1 - 27	Fuel system (1317) JTD (2387) JTD
		1 - 21	Operations on vehicle (1910) JTD (1317) JTD
		1 - 42	Fuel system (1938) 20v 99 range



DESCRIPTION

Values in mm

 <p>7 Small end bush</p>	\varnothing_1	24,016 ÷ 24,041
 <p>4-7 Gudgeon pin Small end bush</p>	\varnothing_2	22,004 ÷ 22,009
 <p>Valve guide bore in cylinder head</p>	\varnothing	12,950 ÷ 12,977
 <p>12a Valve seat</p>	α	$45^\circ \pm 20'$
		$45^\circ \pm 20'$
	L	about 2
 <p>Volume of combustion chamber in cylinder head</p>	CC	33,35
 <p>15 Internal valve spring</p>	P1	8,3 ÷ 9,3 daN
	H1	27,5
	P2	17,6 ÷ 19,6 daN
	H2	18,5

Technical data

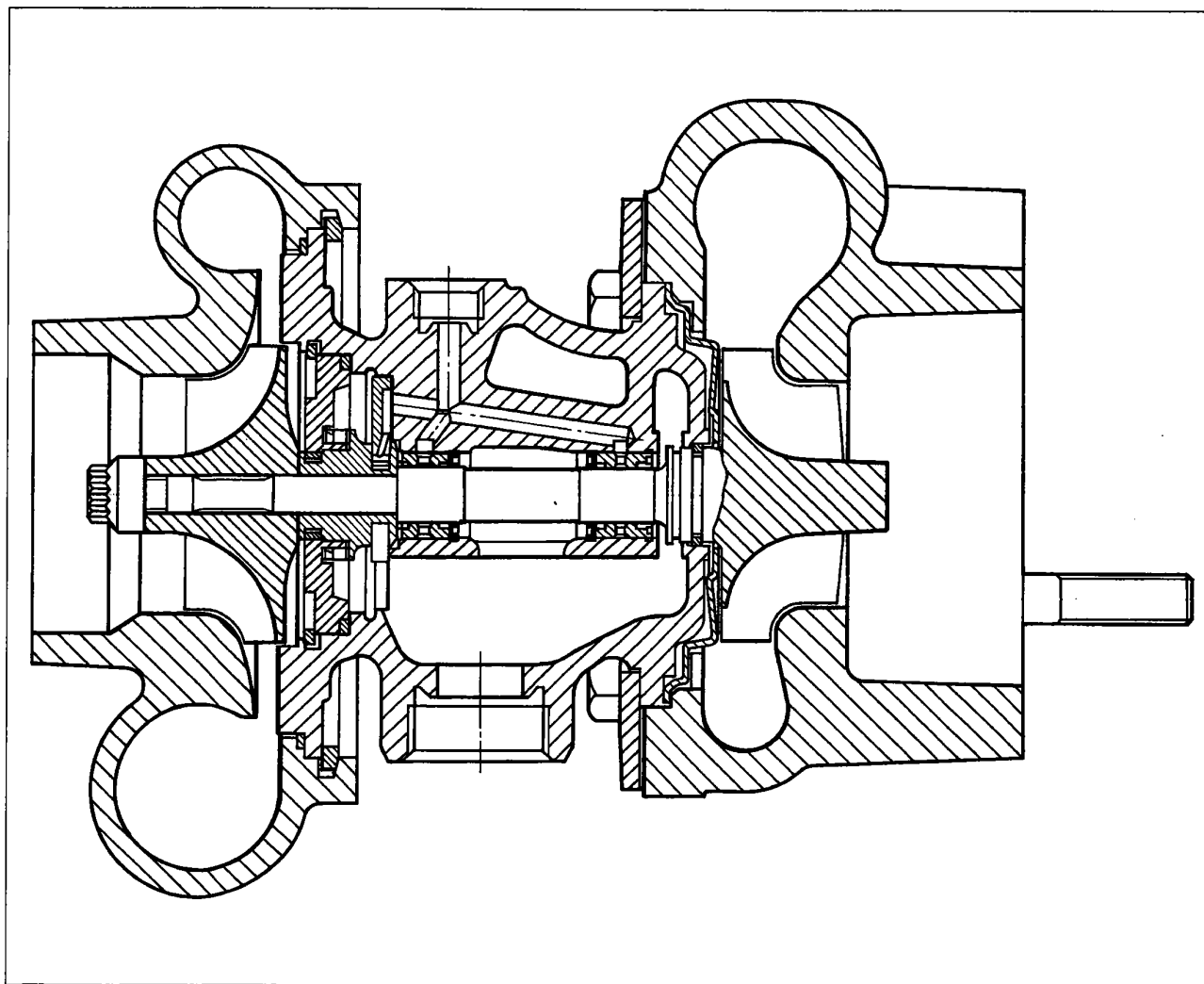
Engine: supercharging

99 range

00.10

SUPERCHARGING Turbocharger operated by exhaust gases with waste-gate pressure valve and air/air heat exchanger (intercooler)

COOLING SYSTEM	1910 JTD	2387 JTD
Turbocharger: type	Garret GT 15	IHI VL6 variable geometry
Maximum supercharging pressure	1.05 bar	



4A46A01

CROSS SECTION OF TURBOCHARGER

Over-run

Two strategies are superimposed during this stage:

1. Transient negative strategy to reduce the amount of fuel required by the engine (lower emissions). This stage is recognized by the ECU when the potentiometer signal changes from a higher voltage level to a lower value.
2. A dash-pot strategy to lessen changes in torque delivery (lower engine brake). This strategy is implemented when the potentiometer signal indicates that the throttle is closed and rpm is high. The step motor gradually decreases the flow of air through the by-pass.

Barometric correction

Atmospheric pressure varies with altitude to bring about changes in volumetric efficiency of sufficient entity to require a correction to baseline concentration (injection time).

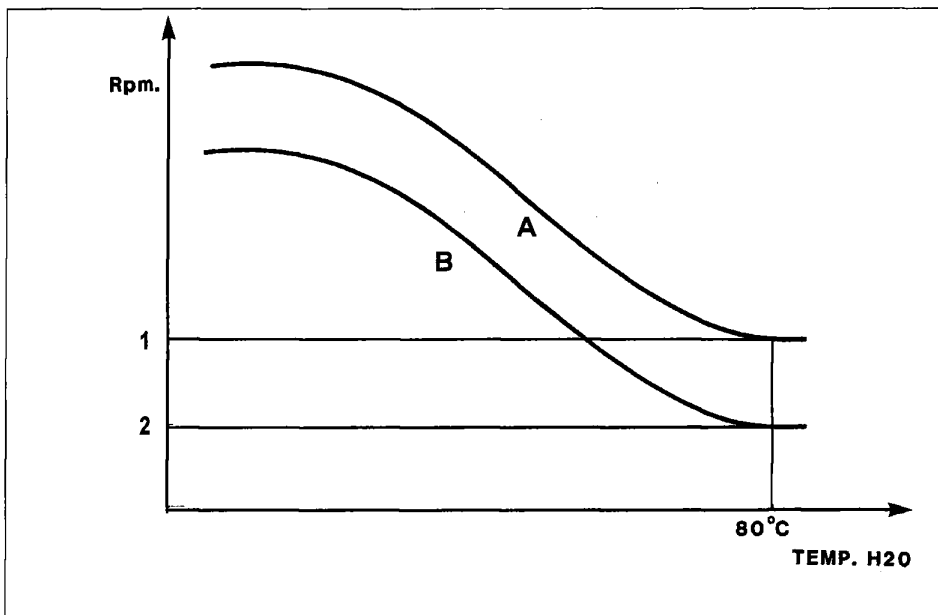
Injection time is corrected according to changes in altitude and updated automatically by the ECU whenever the engine is started up and under certain conditions of throttle position and rpm (dynamic adjustment of barometric correction)

Cut-off

The fuel cut-off strategy is activated when the ECU recognises that the throttle is in closed position (throttle potentiometer signal) and engine speed exceeds 1350 rpm (1750 rpm for automatic transmission versions). The ECU activates cut-off only when engine temperature exceeds 0° C.

The fuel supply is restored when the throttle is no longer closed or the engine speed is lower than 1270 rpm (1650 rpm for version with automatic transmission).

At very high speeds, cut-off takes place even when the throttle valve is not fully closed but pressure in the intake manifold is particularly low (partial cut-off).



Version with manual gearbox

1. 1350 rpm
2. 1270 rpm

Version with automatic transmission

1. 1750 rpm
2. 1650 rpm

A. entering cut-off

B. leaving cut-off

P4F071J01

EMISSION CONTROL DEVICES

These devices have two aims:

- to keep down the levels of pollutant substances present in the exhaust, by means of the catalytic silencer;
- to eliminate the dispersion into the atmosphere of the unburnt hydrocarbons, through the (fuel) anti-evaporation system and the (lubricant) oil vapour recirculation system.

CATALYTIC SILENCER

The catalytic silencer is a device which makes it possible to keep down the levels of the three main pollutant compounds present in the exhaust simultaneously: unburnt hydrocarbons (HC), carbon monoxide (CO) and nitrogen oxides (NOx).

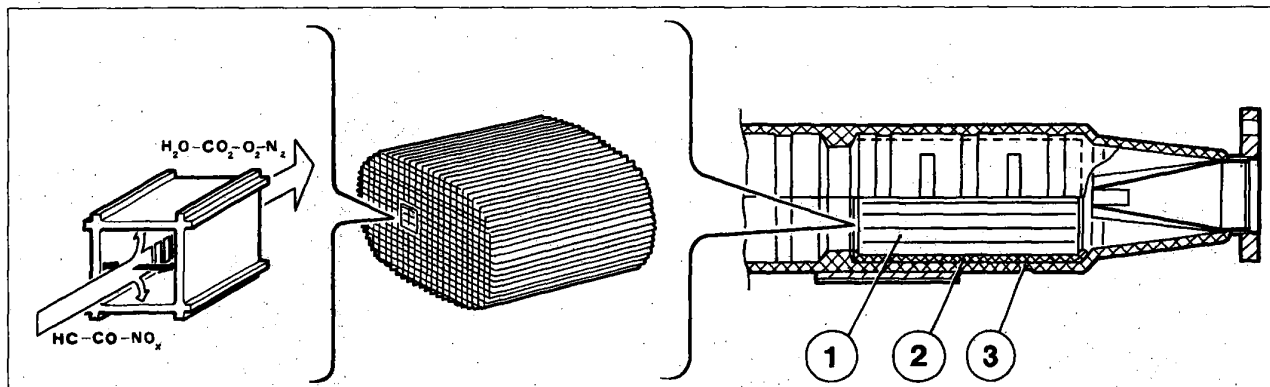
Two types of chemical reactions take place inside the catalyzer:

- oxidation of the CO and HC, converted into carbon dioxide (CO₂) and water (H₂O);
- reduction of the NOx, converted into nitrogen (N₂).

These reactions can take place extremely quickly thanks to the presence, inside the structure (ceramic support) of the catalyzer, of a layer of active substances (platinum and rhodium) which greatly accelerate the conversion speed of the harmful substances.

The effectiveness of this conversion process is conditioned by the fact that the mixture strength on which the engine is running is continuously fluctuating around the stoichiometric value, which is achieved thanks to the feed-back control carried out by the control unit on the basis of the Lambda sensor signals.

Lastly, the conversion processes are activated at temperatures in excess of 300 - 350°C: it is therefore vital for the catalyzer to reach this temperature as quickly as possible in order to be able to work properly.



3N45GJ01

1. Ceramic structure
2. Metal support
3. Outer steel casing



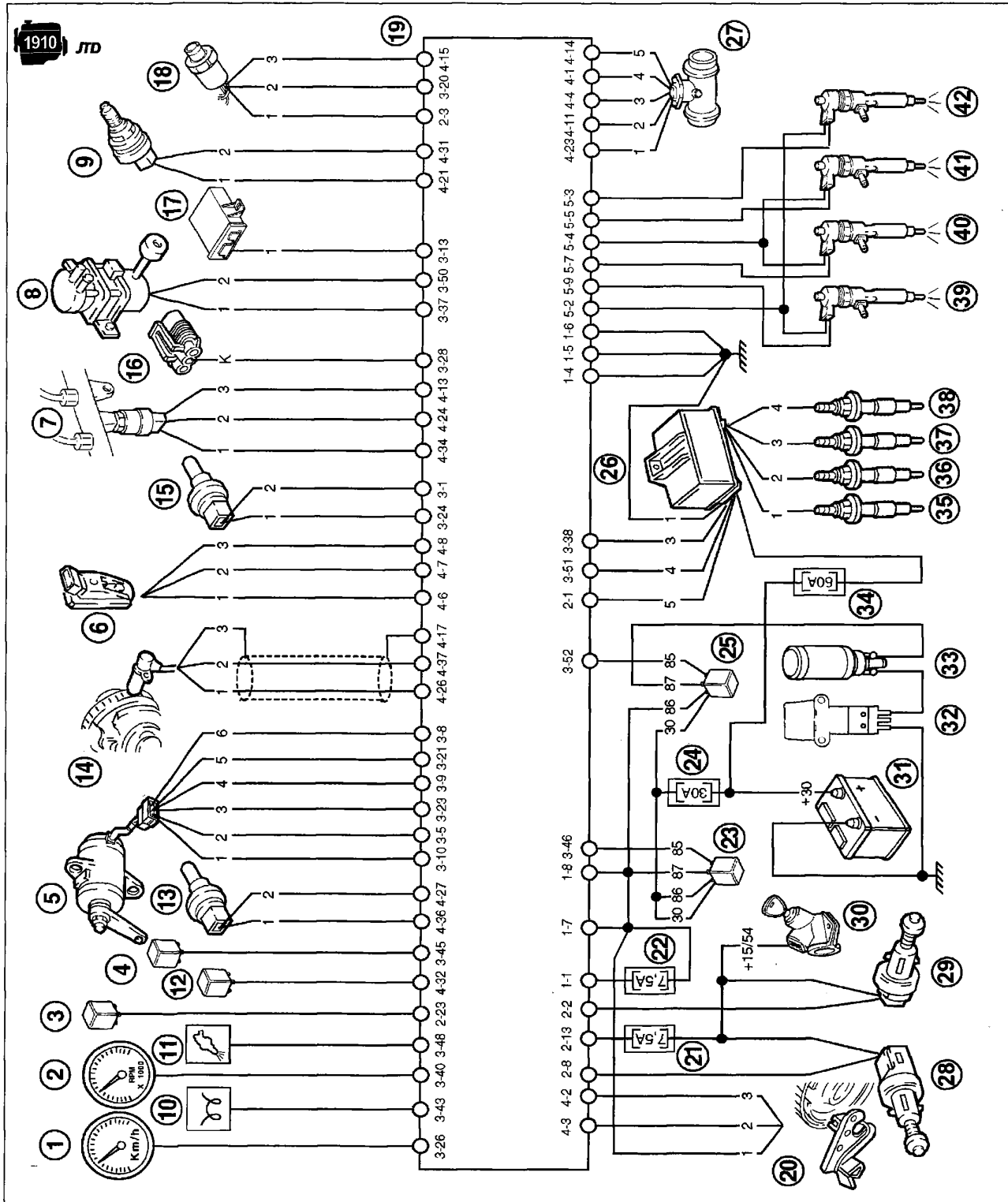
when work has to be carried out in the vicinity of the catalytic silencer, the vehicle must be left for a certain length of time because the operating temperature inside the catalyzer is between 500 and 850°C.



There are basically two causes which can destroy the inside of the catalyzer:

- the presence of lead in the fuel which lowers the degree of conversion to practically zero (lead poisoning) and irreparably damages the Lambda sensor as well;
- the presence of completely unburnt fuel in the exhaust gases, due to failed ignition, which causes an increase in temperature which leads to the ceramic support melting. As a result, the connector for the coils must never, under any circumstances, be disconnected with the engine running: in the case of tests, the silencer must be replaced with an equivalent length of pipe.

10.
INJECTION SYSTEM WIRING DIAGRAM



4F006NJ01

10.

The recirculation of the exhaust gases is only permitted at medium-low loads, when the air/fuel ratio is very high and the operation of the engine is not adversely affected by the presence of inert gases in place of the air.

The recirculation is controlled by the injection control unit (1) which, mainly according to the signals from the accelerator pedal potentiometer, the rpm sensor and the engine coolant temperature sensor, supplies an output signal for the modulating solenoid valve (2).

The latter, connected to the atmosphere by means of a filter (3), transmits a lesser or greater vacuum, according to the signal received, coming from the brake servo vacuum pump (5) to the EGR valve.

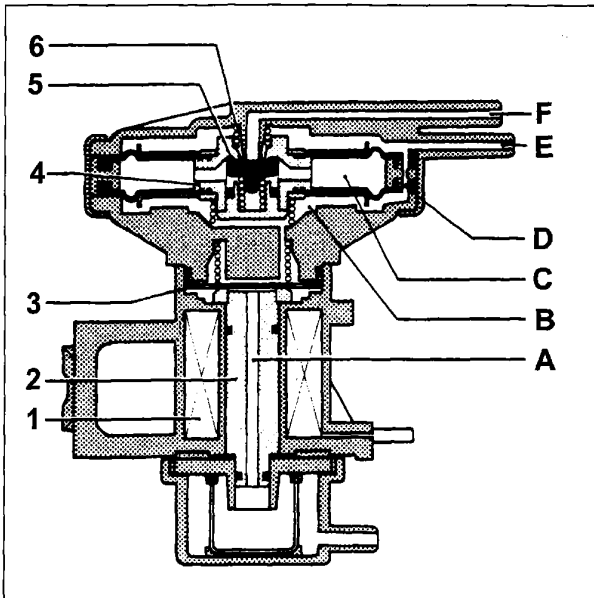
If the vacuum is sufficient, the valve (4) opens placing the exhaust manifold in contact with the inlet manifold.

EGR MODULATING SOLENOID VALVE

The vacuum coming from the vacuum pump for the brake servo reaches the chamber (E) from the duct (F) (case I) because the force of the spring (6) acts on the moving element (4) and the valve (5) allows its flow.

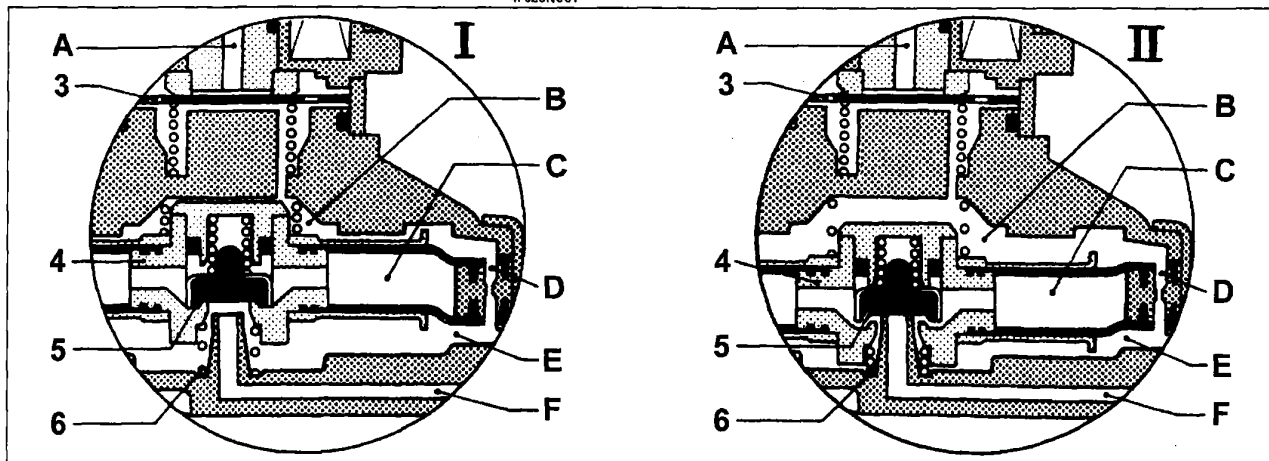
The vacuum then enters the chamber (B), through the compensation port (D) and the surface of the disc shutter (3).

When the forces acting on the disc (3) are balanced, the atmospheric pressure in the duct (A) enters the chamber (B), moving the moving element downwards (case II), therefore the valve (5) shutter closes the duct (F) and places chamber (E) in contact with chamber (C) at atmospheric pressure, decreasing the vacuum in the duct (E).



4F026NJ01

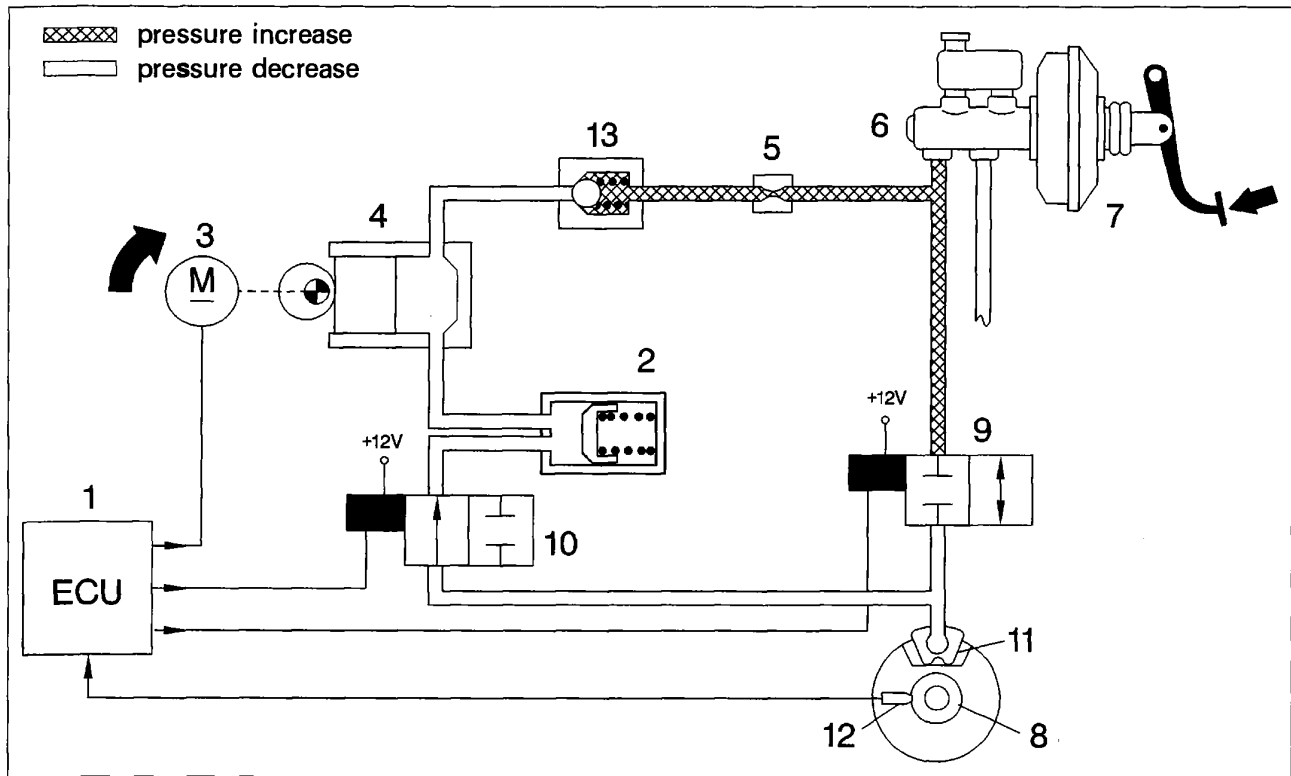
The decreased vacuum value or the increased absolute pressure in the chamber (E) raises the moving element (4) (case I), closing the section (C) and placing the valve (5) in the ideal condition (E in contact with F) and the cycle is repeated.



4F026NJ02

33.

Pressure reduction stage



P4F12BD01

1. Electronic control unit
2. Low pressure accumulator (reservoir)
3. Recovery pump motor
4. Recovery pump
5. Restrictor
6. Brake pump
7. Brake servo

8. Multi-polar ring
9. Pressurizing solenoid valve
10. Discharging solenoid valve
11. Brake caliper
12. Rpm sensor
13. Single-acting valve

The electronic control unit (1) detects the tendency of the wheel to lock and alerts the electro-hydraulic unit to contain the deceleration of the wheel within the permissible limits.

The electronic control unit (1) connects the pressurizing (9) and discharging (10) solenoid valves to earth.

The pressurizing solenoid valve (9) remains closed keeping the connection between the brake pump (6) and the brake caliper (11) interrupted; the discharging solenoid valve (10) opens making a hydraulic connection between the brake caliper (11) and the low pressure accumulator (2) and the recovery pump (4), in such a way as to remove some of the fluid from the brake caliper (11) and decrease the pressure at the actual caliper.

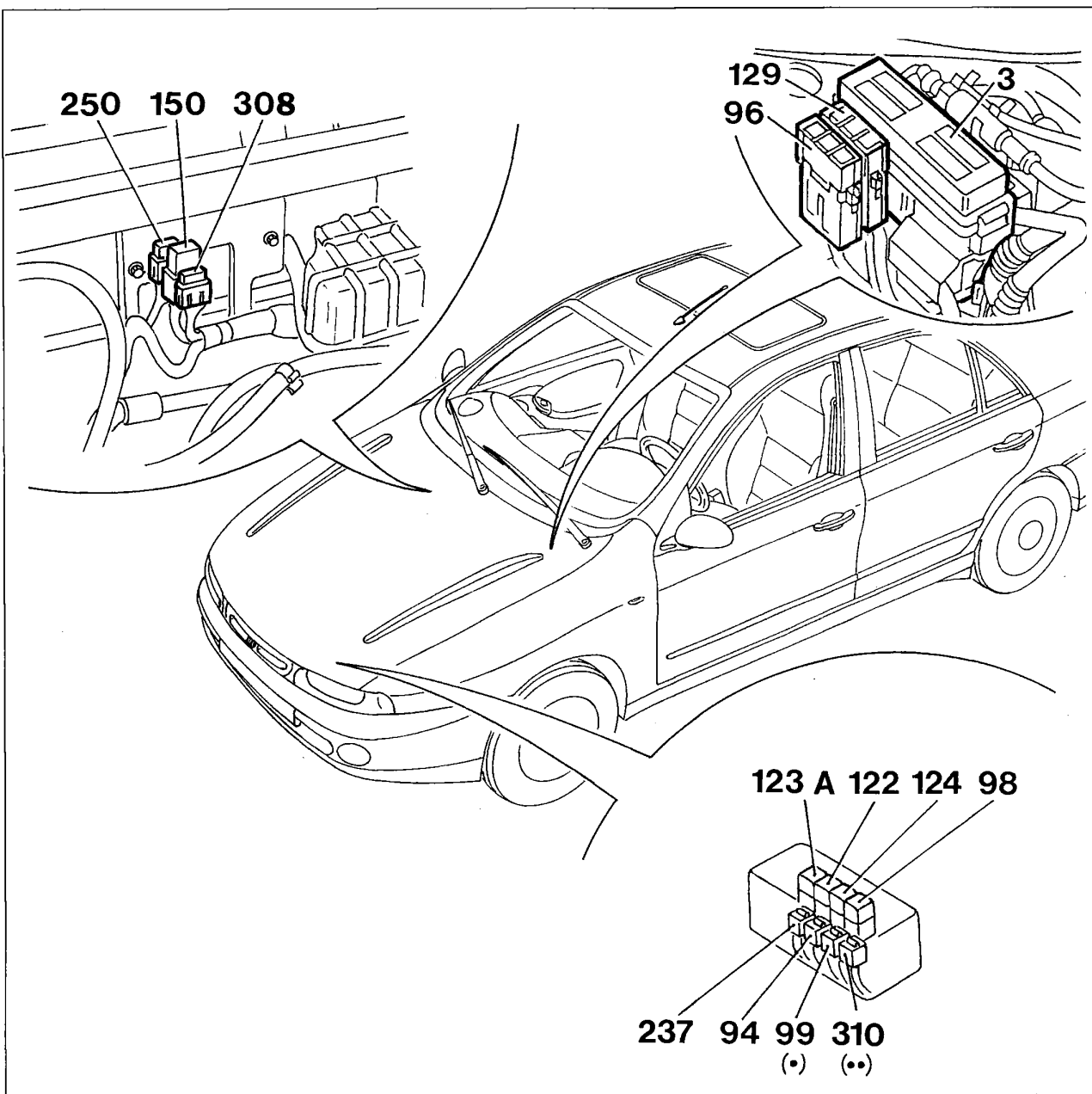
At the same time, the electronic control unit (1) supplies the recover pump (4) motor (3) which allows the fluid removed from the brake caliper (11) to be reintroduced into the main circuit.

The low pressure reservoir or accumulator (2) in the circuit has the task of storing part of the brake fluid removed from the calipers. The fluid is drawn in through the recovery pump (4) circuit and sent, by means of the restrictor (5), into the brake pump (6) main circuit.

During this stage a series of pressure waves (or hydraulic thrusts) are produced which notify the driver that the ABS device has started to work.

During braking, slight force on the brake pedal should be considered normal during the intervention of the A.B.S. system, During this stage, as a result of the decreased braking force, the wheel tends to return to the reference speed calculated by the electronic control unit (1).

LOCATION OF RELAYS AND FUSES ON VEHICLE

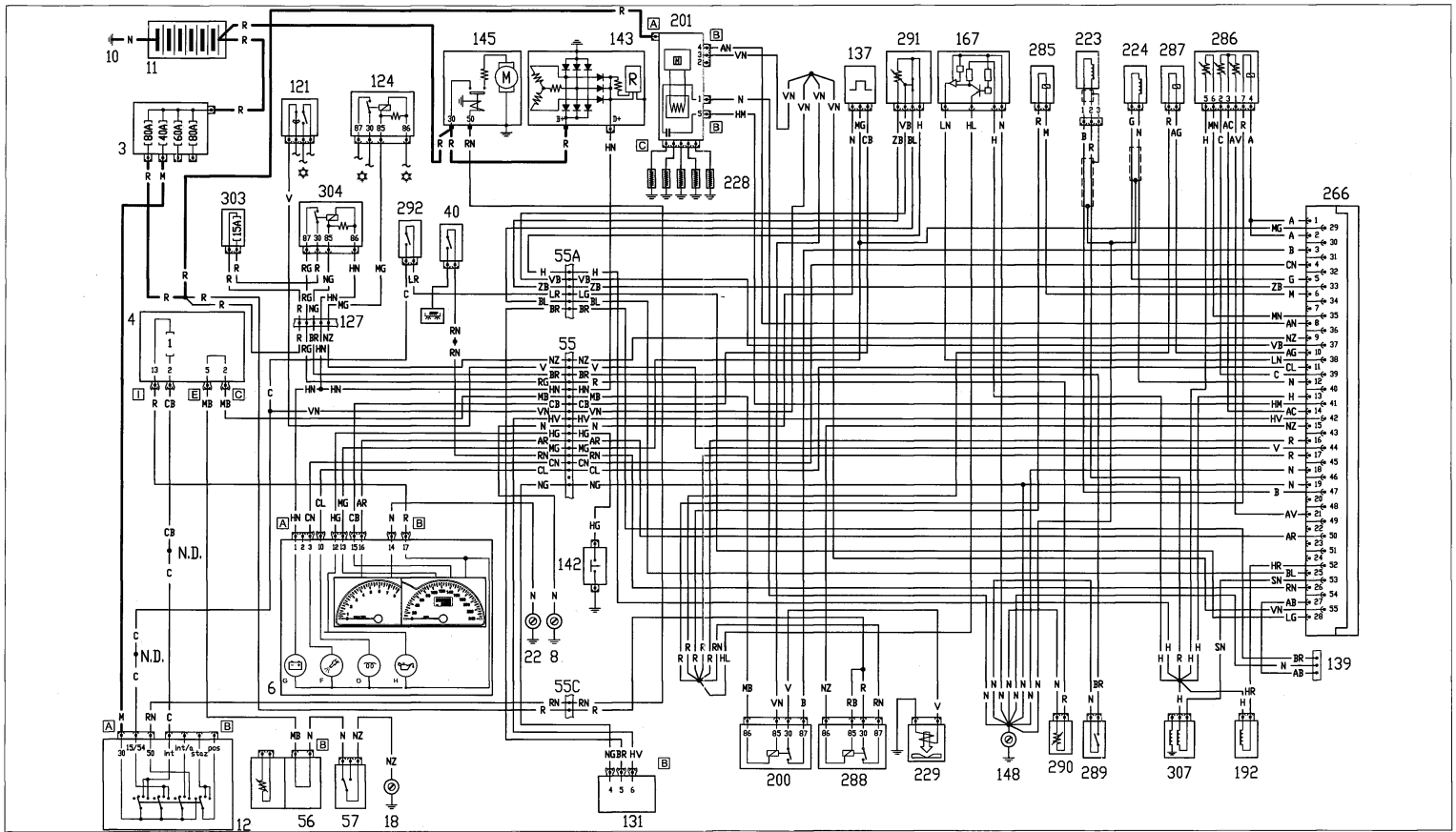


P4F003L02














- | | |
|---|---|
| 3. Power fuse box | 129. Engine cooling fan power fuse |
| 94. ABS fuse | 150. Injection system control relay |
| 96. ABS system power fuse | 237. FIAT CODE fuse |
| 98. Headlamp washer intermittent function | 250. Fuel pump fuse |
| 90. Headlamp wiper fuse | 308. Injection system and Fiat CODE fuse |
| 122. Engine cooling fan low speed relay | 310. Headlamp washer and air conditioner fuse |
| 123A. Engine cooling fan high speed relay | (••) Versions with air conditioner |
| 124. Air conditioner compressor control relay | (•) Versions without air conditioner |

55.

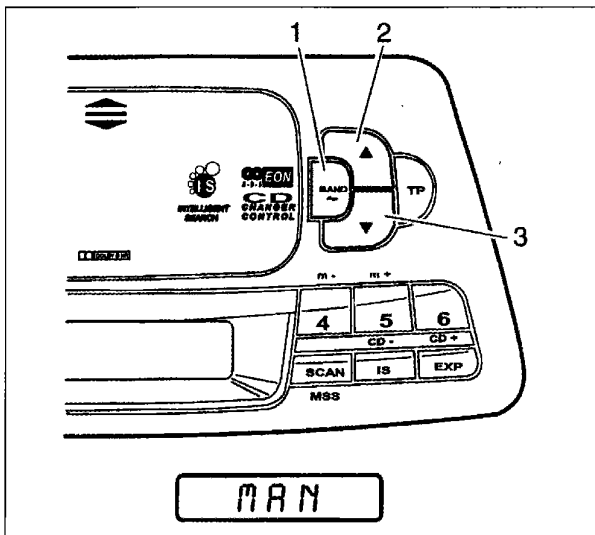
Starting - Electronic injection - Recharging and warning light - Low engine oil pressure warning light - Heater plugs warning light - Fuel injection fault warning light - Fuel preheating (2387 engine)



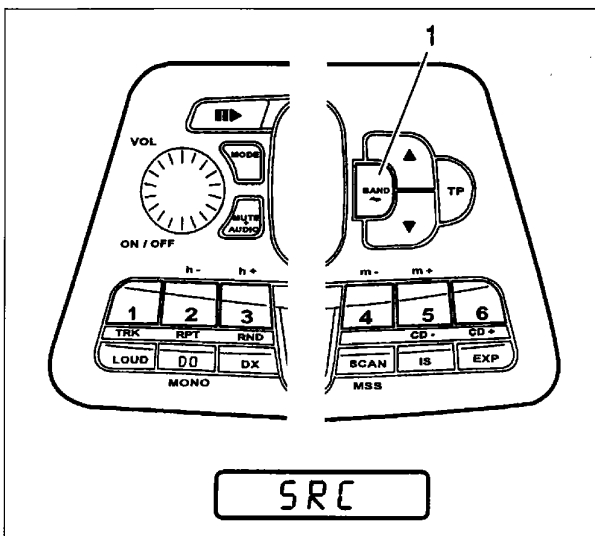
LIST OF FUSES AND MAJOR PROTECTED CIRCUITS

Fuse No.	Amp	Ideogram	Protected circuit	Fuse No.	Amp	Ideogram	Protected circuit
1	10(*)	SERVIZI SERVICES	Brake lights – Additional brake light – Direction indicators – Instrument supply	6	10		Right main beam headlamp
2	10		Right front side light – Left rear side light – Right number plate light – Radio light – Instrument pane light dimmer – Side lights warning light – Cigar lighter light – Switch panel light – Automatic transmission controls light – Radio phone light – Heater/air conditioning controls light.	7	10		Left main beam headlamp – Main beam headlamps – warning light.
				8	20		Central locking □ Luggage compartment light
				9	10		Hazard warning lights.
				10	10	SERVIZI SERVICES	Interior lights (front and rear) – Instrument supply – Remote control receive and alarm control unit supply – Radio phone supply
3	10		Left front side light – Right rear side light – Left number plate light – Mirror controls light	11	30		Heated rear windscreen – Mirror demisting
				12	30		Car interior climate control fan motor (air conditioning) Air conditioning control unit
4	10		Right dipped beam headlamp	13	20		Horns
				14	20		Windscreen wiper – Rearscreen wiper – Windscreen/rearscreen washer – Headlamp washer enablement
5	10		Left dipped headlamp – Headlamp alignment corrector – Headlamp washer enablement.	15	20		Air conditioning control unit – Vehicle interior fan motor (with heater)

(*) Replaced with 15A if the tow hook is fitted



4A43HL01



4A43HL02

Manual station storage

Use BAND (1) button to select the frequency band. The selected band appears on the display as "FM1", "FM2", "FM3", "MW", or "LW". Press button "▲" or "▼" (2,3) for about 6 seconds until the message "MAN" and the current radio frequency appear on the display. Use buttons "▲" and "▼" to change the tuning frequency.

The current station can be stored in the frequency band selected using the frequency selection keys (1,2,3,4,5,6). To store, press the preset frequency selection key until sound can be heard again.

Manual tuning can be ended at any time by pressing one of the frequency selection keys or by not pressing any key for 60 seconds.

Listening to stored stations

Proceed as follows:

1. Use BAND button (1) to select the required band.
2. Press one of the frequency selection keys (1,2,3,4,5,6).

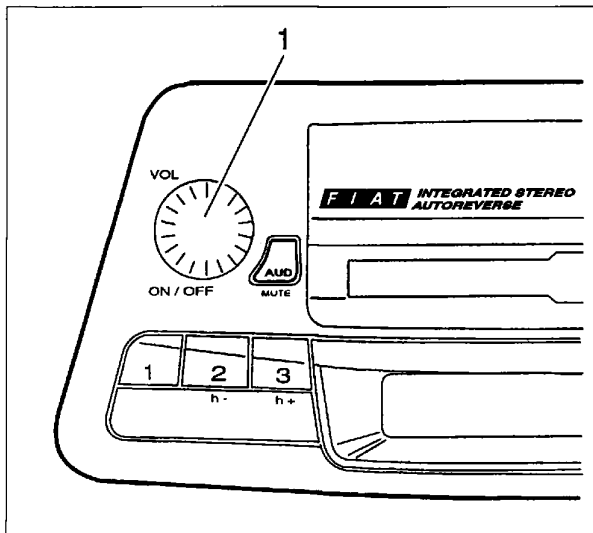
The display shows the key pressed as well as the station code if it is an RDS station.

If the selected station offers an RDS service and the reception is poor, the radio will search for an alternative frequency for the station. The message "SRC" appears on the display during the search.

TP Function (TRAFFIC PROGRAM)

Some stations in bands RDS1 and RDS2 also transmit traffic reports. The TP (Traffic Program) function allows you to:

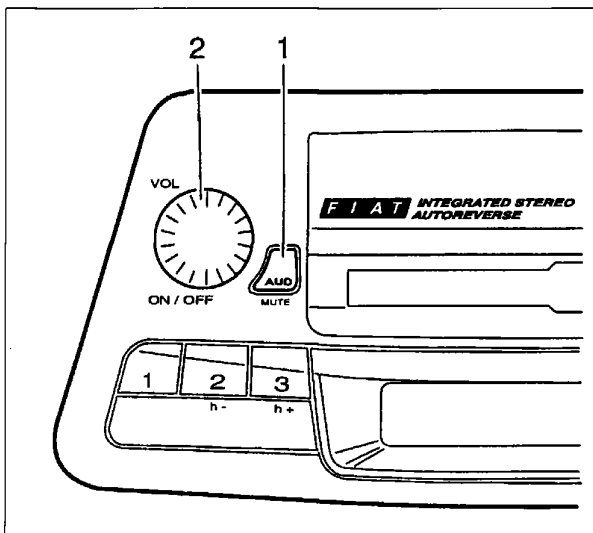
- search only for RDS stations that transmit traffic information;
- receive traffic information even when the cassette or Compact Disc player function is active;
- receive traffic information at a minimum pre-set level even if the radio volume is set to zero.



4A64HL01

VOLUME adjustment

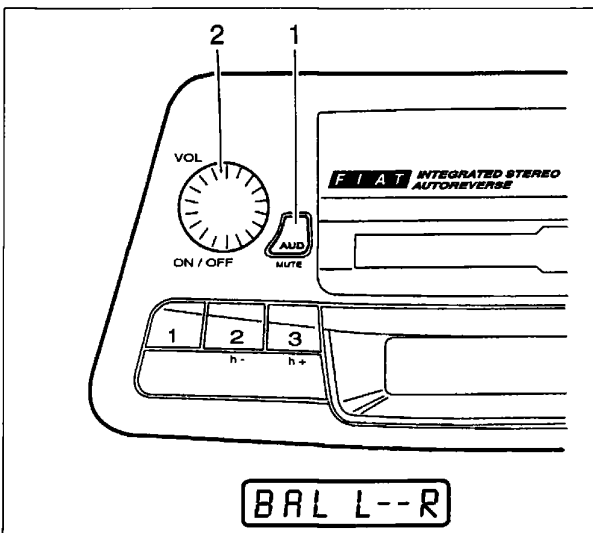
Use the VOL knob (1) to adjust the volume. The volume level, between "VOL 00" and "VOL 31", appears on the display when the volume is being adjusted.



4A64HL02

BASS and TREBLE adjustment (BASS and TREBLE)

Select the "Bass" or "Treb" function by pressing the AUD (1) button. Once the function has been selected, use the VOL / (2) knob to achieve the required sound. To restore the default setting, press the AUD button for about 3 seconds until the message "00" or "-" appears on the display.



4A64HL03

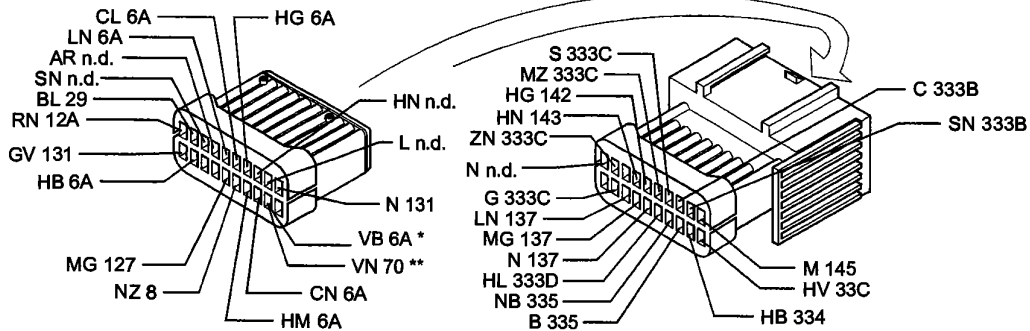
Adjusting balance between left and right speakers (BALANCE)

Balance refers to the "volume ratio" between the left and right speakers. To adjust, press the AUD (1) button a few times until the "BALANCE" function is selected. The message "BAL L- -R" appears on the display. Use VOL (2) knob to adjust the balance as required. The selectable values range from 0 to 15. To restore the default settings, press the AUDIO button for about 3 seconds until the message "00" or "--" appears on the display.

55.

55A Front/engine lead connection

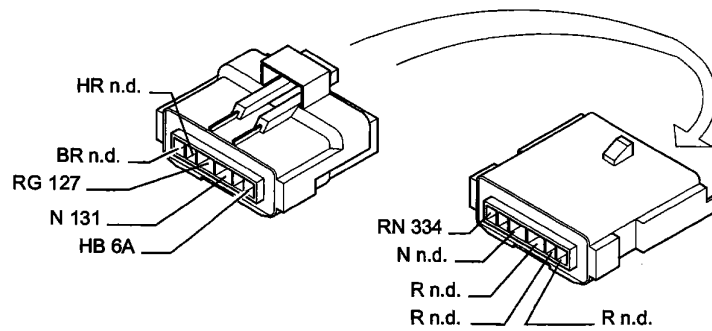
JTD



P4F934N07

55A Front/engine lead connection

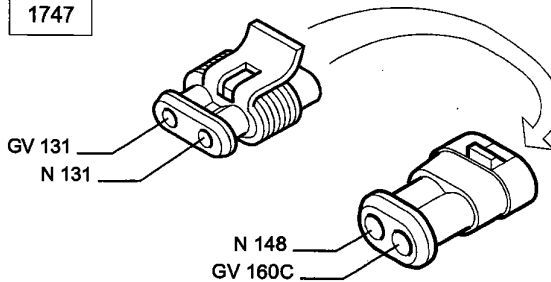
1747
agg.'99



P4F934N02

55A Front/engine lead connection

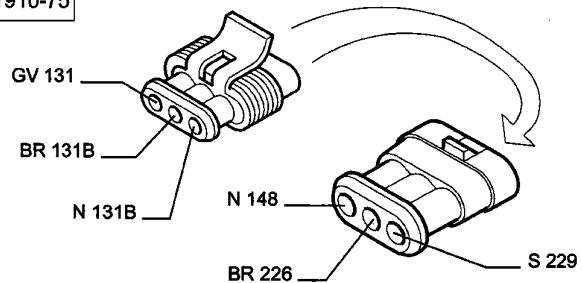
1747



P4F934N03

55A Front/engine lead connection

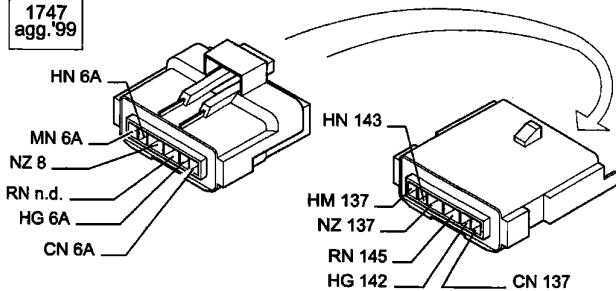
1910-75



P4F934N04

55B Front/engine lead connection

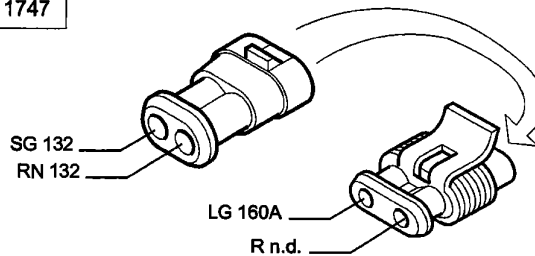
1747
agg.'99



P4F934N05

55B Front/engine lead connection

1747



P4F934N06

(*) from Nov. 99

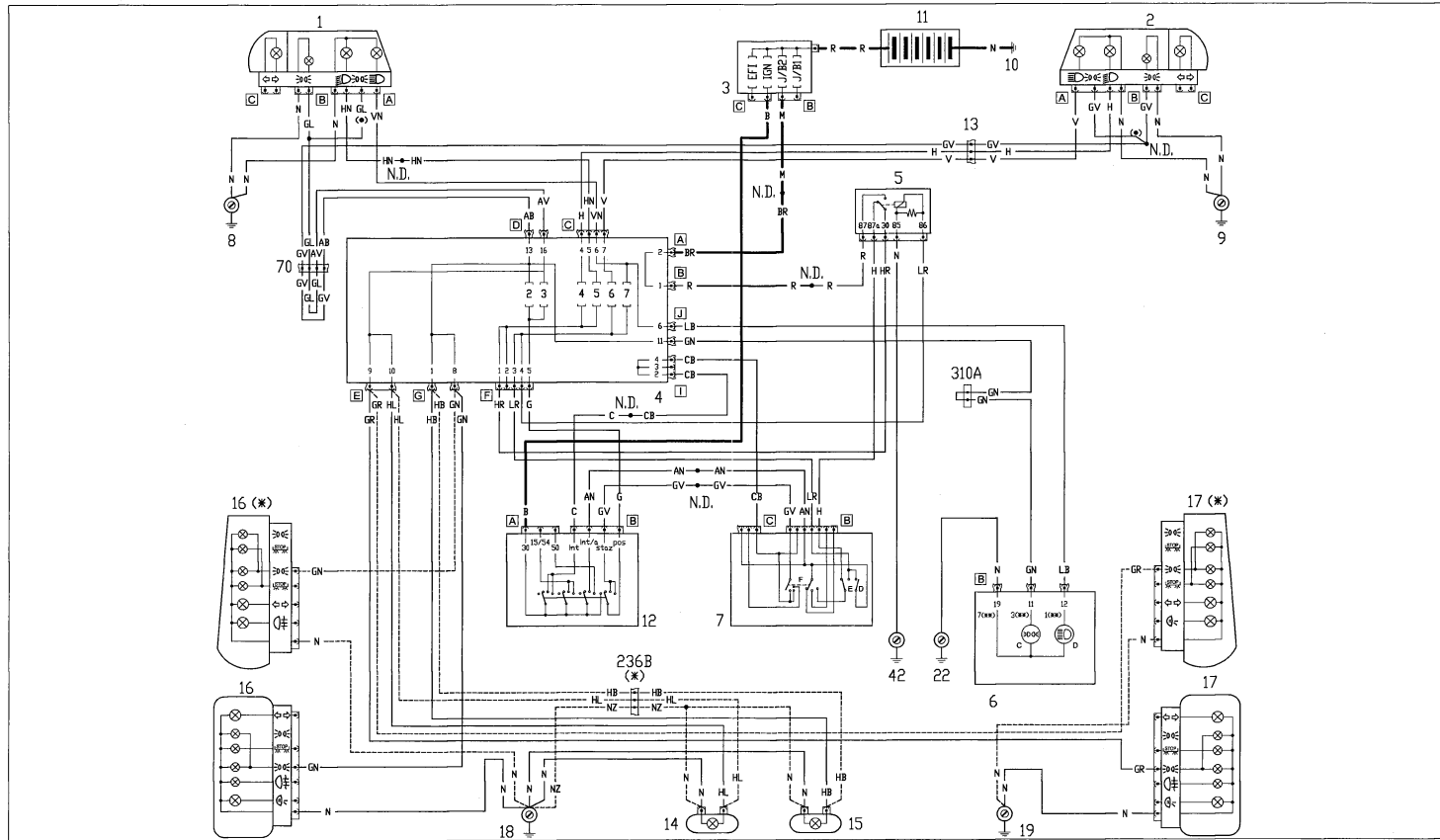
(**) up to Nov. 99

Marea-Marea Weekend
 '99 range

Electrical system
 Wiring diagrams

55.

Versions without Check Panel, polyelliptical headlamps
 Side lights and warning light - Dipped headlamps - Main beam headlamps and warning light - Number plate lights



* Variant for Marea Weekend

** Variant up to Nov. '99

• Wire not connected

PF787N02