

7 – STEERING

505 – VARIABLE POWER STEERING

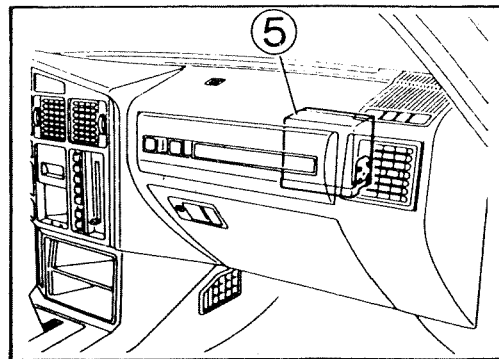
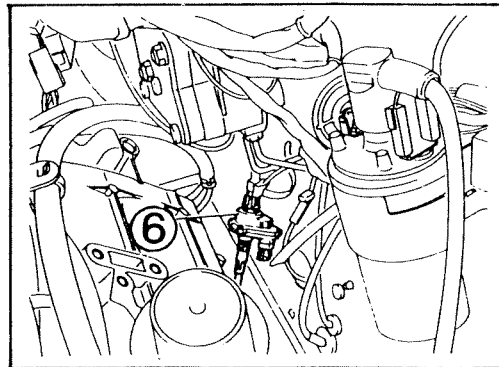
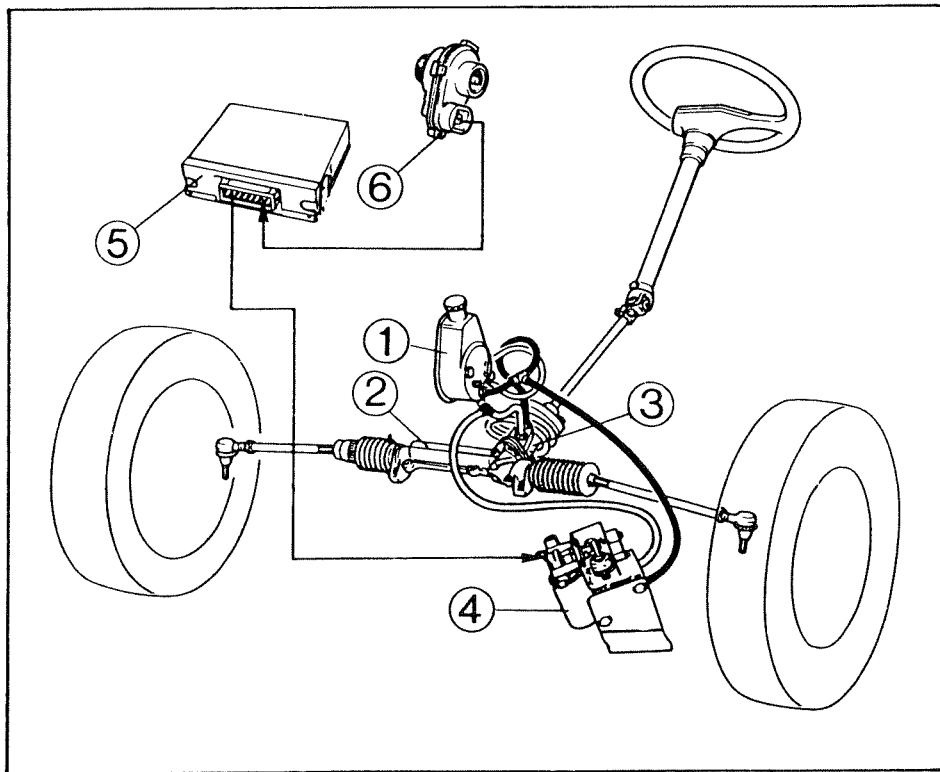
From V.I.N. 1 965 001, 505 TURBO INJECTION and V6 models are fitted, depending on market, with variable power steering.

This equipment adapts the degree of steering assistance to vehicle speed so as to optimise steering effort, by providing :

- vehicle stationary = maximum assistance
- at low speeds = medium assistance
- at high speeds = minimum assistance

It comprises :

- familiar power steering components, with, however, differences :
 - high pressure pump (1) (output and pressure increased)
 - ram (2) (stroke reduced)
 - control valve (3) (modified response) identified by a green protector
- variable power steering components
 - power steering servo (4) mounted under the battery
 - power steering control unit (5) located behind the glove box
 - speed sensor (6) fitted to the speedometer cable



PRINCIPLE OF OPERATION

Power steering

A pump (1), driven by the engine, supplies the hydraulic pressure used for steering assistance.

A control valve (2), connected to the steering column, allows pressure to pass to the ram (3).

The ram (3) acts on the rack to reduce steering effort at the wheel.

Modulation of steering assistance

A valve (4), fitted in a by-pass to the high pressure circuit between the pump (1) and the control valve (2) can modify the degree of steering assistance by reducing the volume and pressure of fluid supplied to the ram (3).

The power steering control unit (5) determines a position of valve (4) and causes it to move through the medium of an electric motor (6).

A potentiometer (7) informs the control unit (5) of the position of the valve (4).



The speed information which determines the degree of assistance is supplied to the power steering control unit by a speed sensor (8) fitted to the speedometer cable.

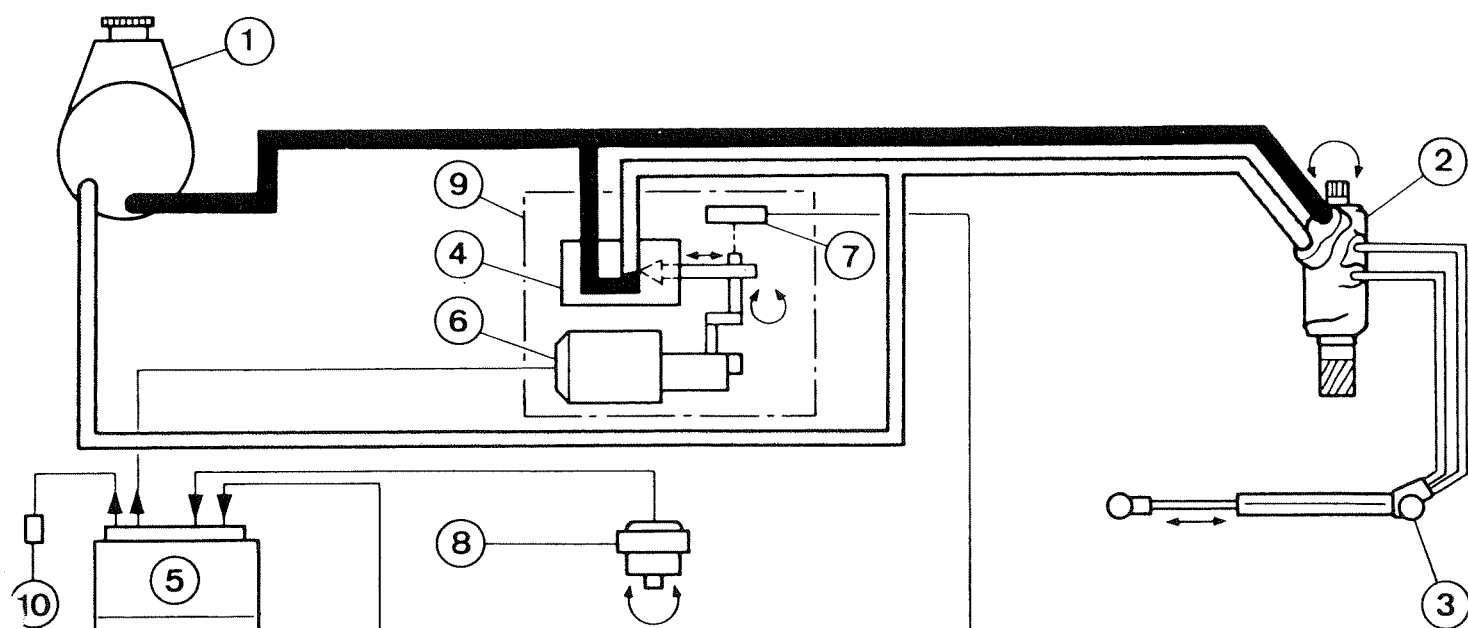
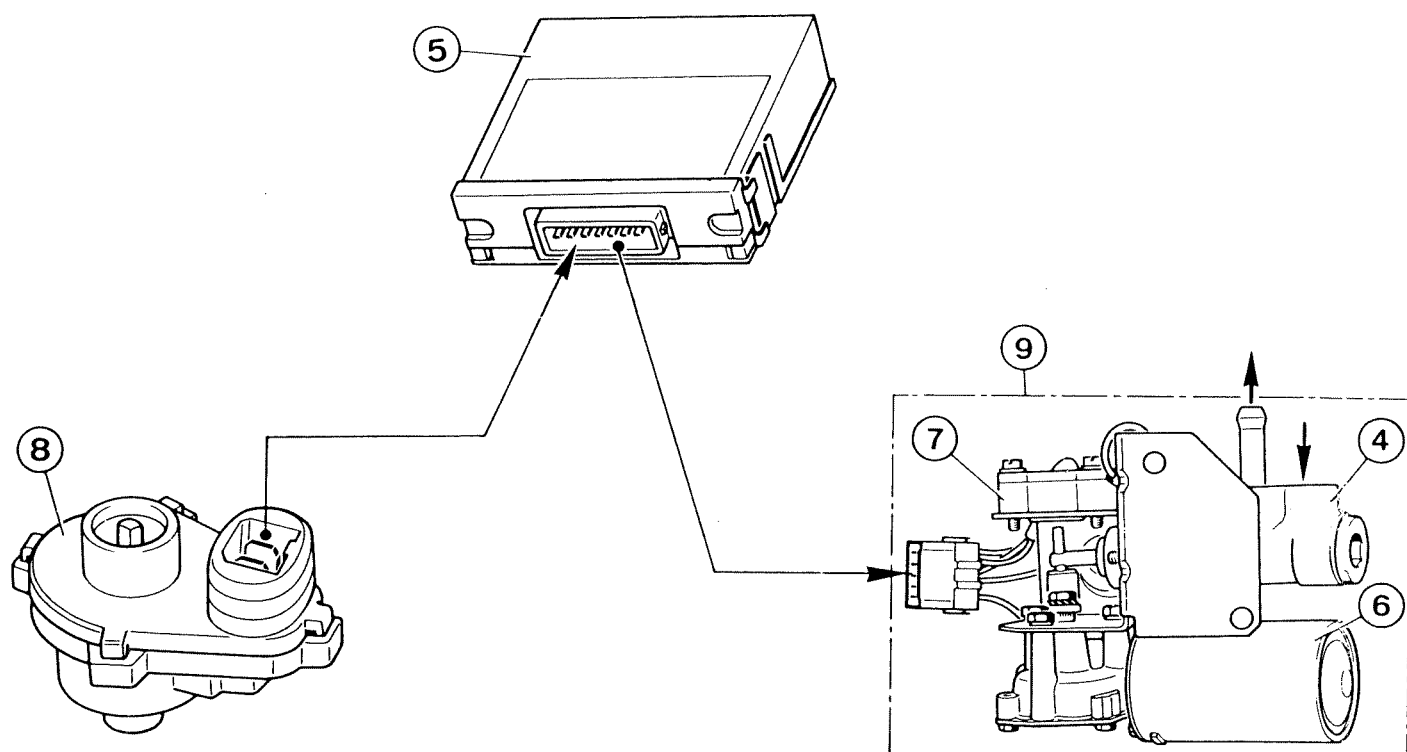
The valve (4), the electric motor (6) and the potentiometer (7) are combined in an assembly (9) known as the power steering servo, mounted under the battery tray.

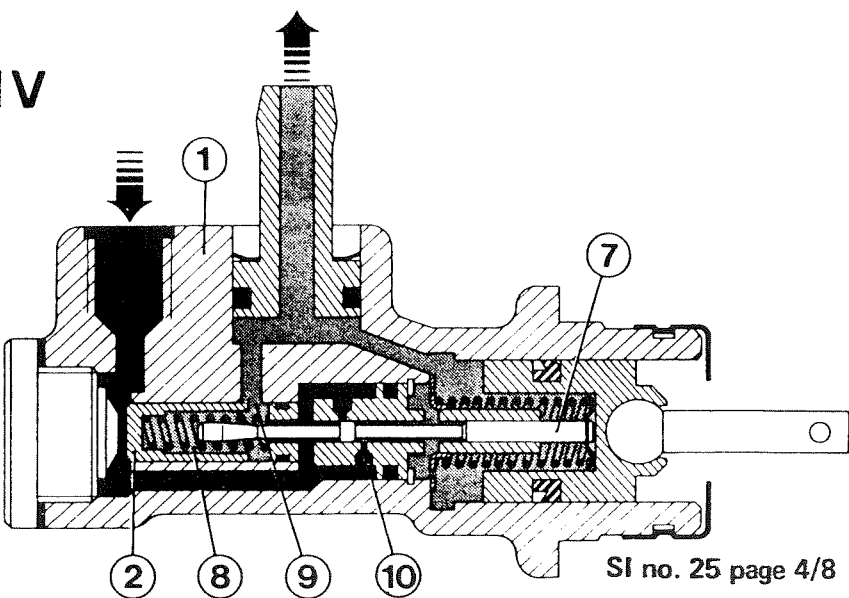
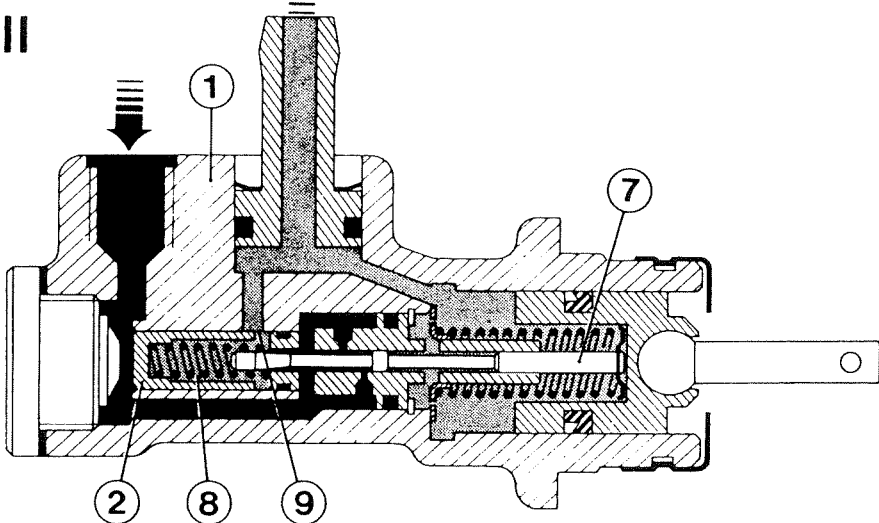
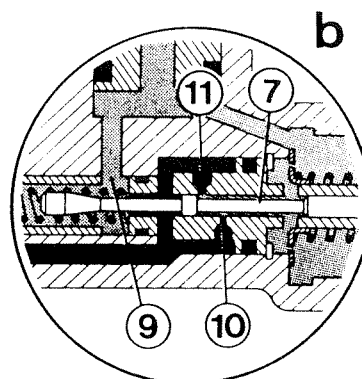
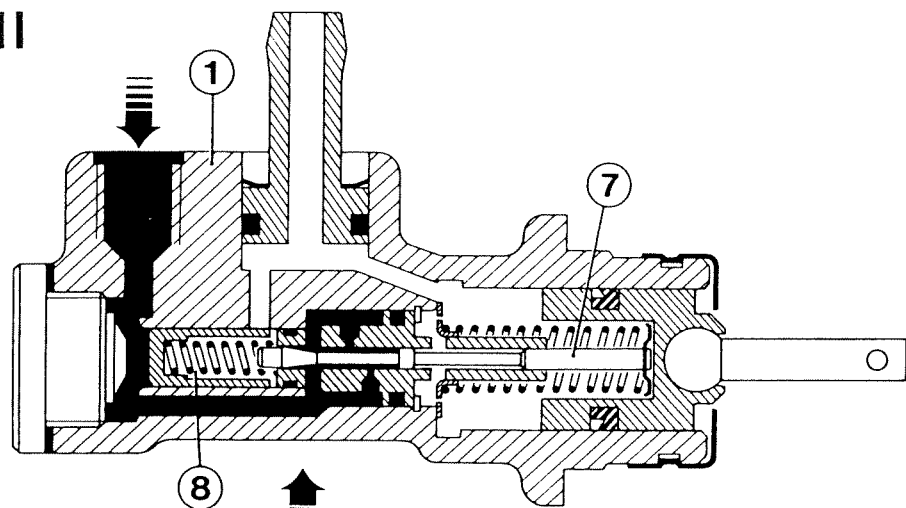
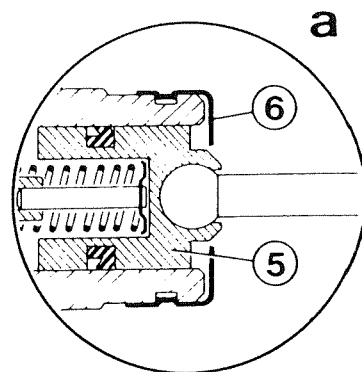
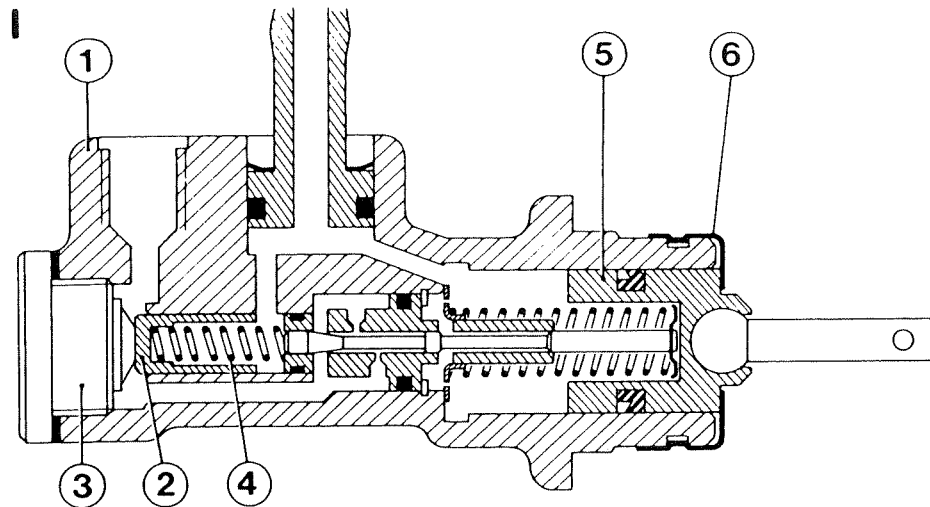
Self-diagnosis

The system is fitted with a self-diagnostic device making it possible to establish, by means of a test lamp connected to a test wire (10) in the engine compartment, which component is faulty.

Key

	High pressure
	Low pressure





PRINCIPLE OF OPERATION OF THE POWER STEERING VALVE

Voltage supplied to the system (I)

- Engine stopped, no hydraulic pressure, the plunger (2) is in contact with the cap (3) under the influence of the spring (4).
- When the ignition is switched on, the piston (5), moved by the servo electric motor, comes against the stop (6) then takes up its initial reference position corresponding to the vehicle stationary or low speed (below 30 km/h, 20 mph) position (**detail a**).

This checks the operation of the potentiometer and initialises its position in relation to the piston (5).

Wheels straight ahead (I)

- Bleed at the control valve is maximum. The hydraulic pressure is low, the plunger (2) is against the cap (3) under the influence of the spring (4).

Wheels turned, speed below 30 km/h (20 mph) (II)

- The shuttle valve (7) is in its reference position determined by the motor.

There is no possible route for the hydraulic pressure to reach chamber (8), thus no return to the reservoir.

MAXIMUM ASSISTANCE

Wheels turned, medium speed above 30 km/h (20 mph) (III)

- The shuttle valve (7) moves towards the left under the action of the motor and allows high pressure fluid into chamber (8). The plunger (2) takes up a balanced position and allows a small drop in pressure through the orifice (9).

ASSISTANCE REDUCES

Wheels turned, higher speed (IV)

- A- The shuttle valve (7) moves towards the left under the action of the motor and increases the flow of high pressure fluid into chamber (8).

The bleed through the orifice (9) increases.

ASSISTANCE REDUCES

- B- The shuttle valve (7) continues to move towards the left. It uncovers the orifice (10) and thus provides an additional bleed.

ASSISTANCE REDUCES

Wheels turned, high speed (detail b)

- The shuttle valve (7) moves fully to the left under the action of the motor. Orifices (9), (10) and (11) are completely uncovered. The pressure bleed is maximum.

MINIMUM ASSISTANCE

Key



High pressure



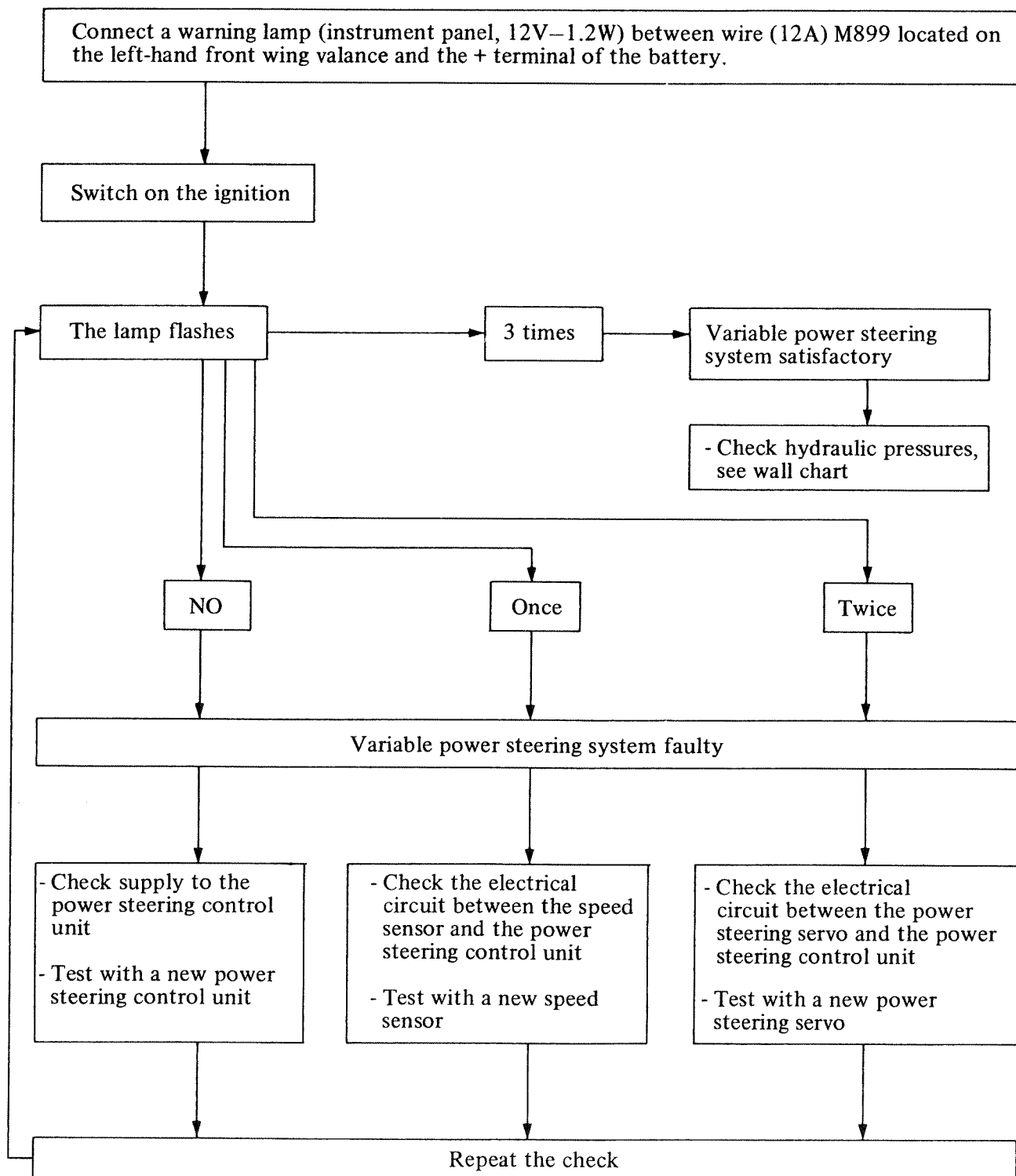
Low pressure (return to the reservoir)

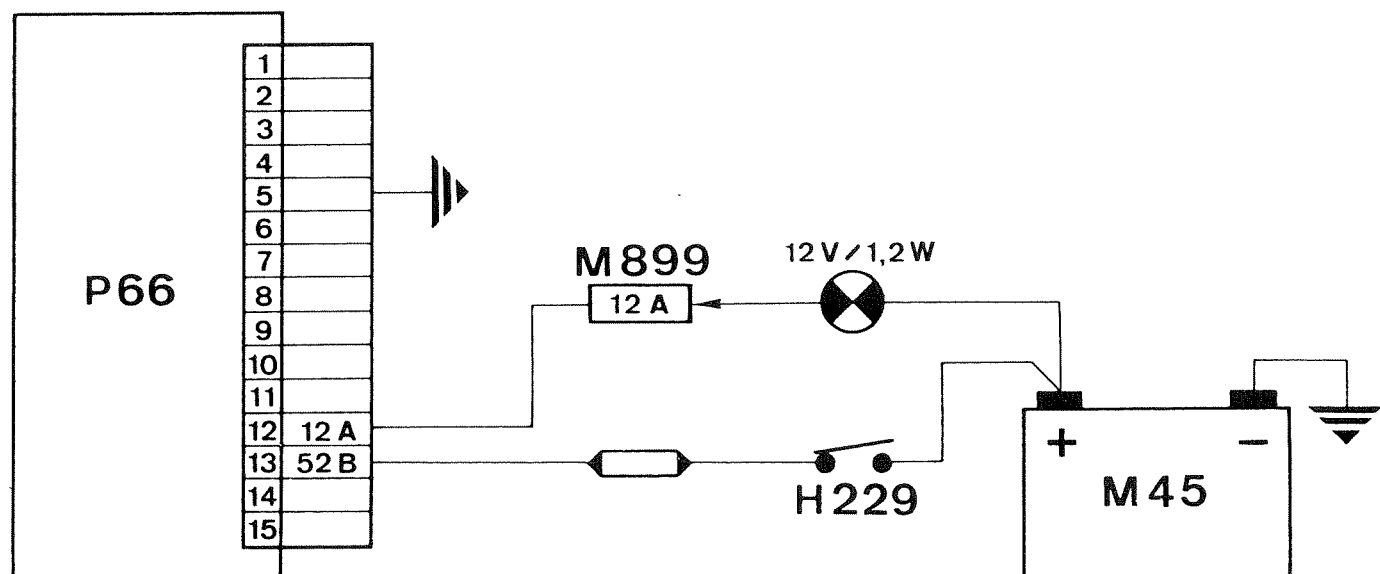
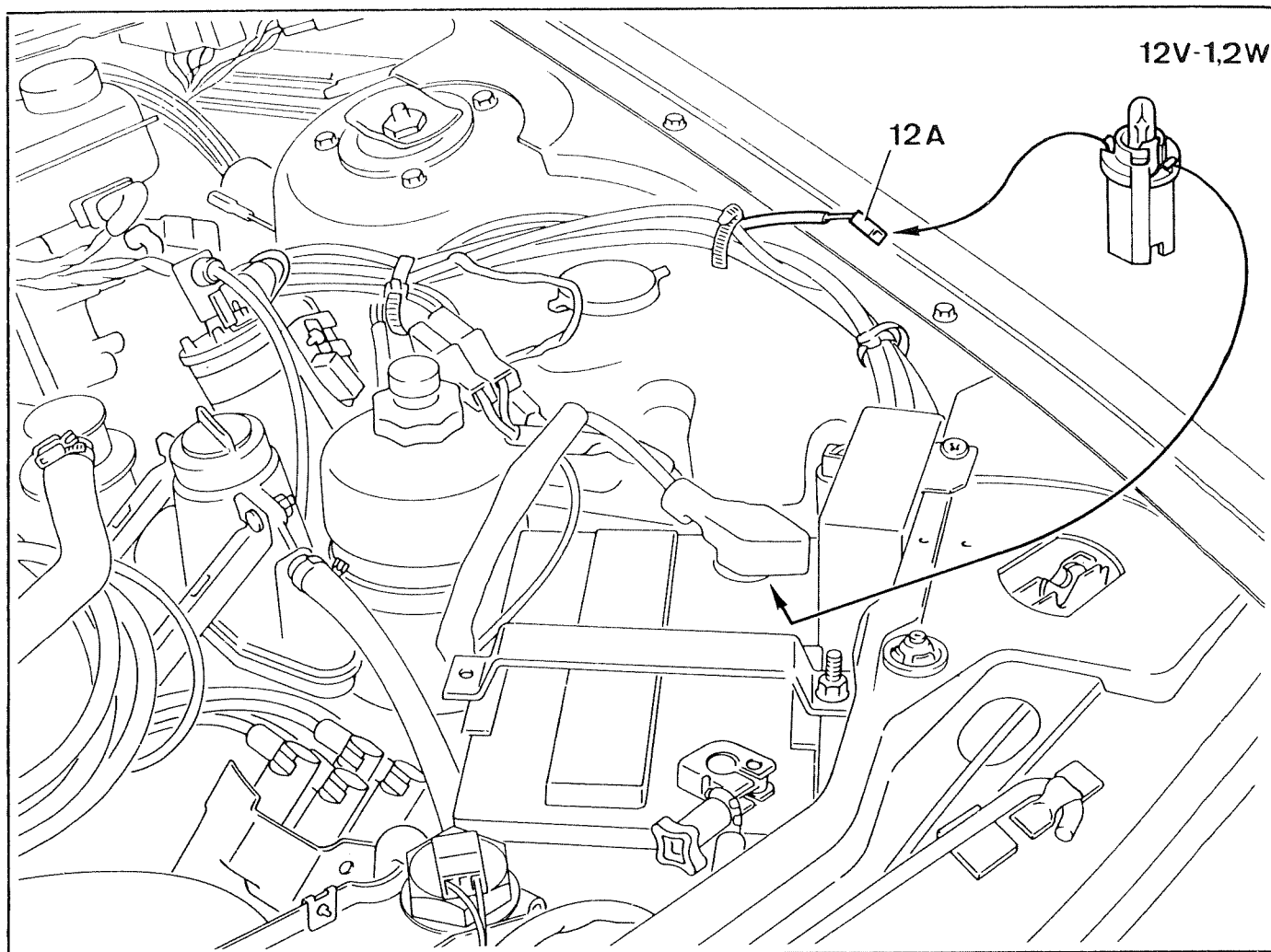
FAULT FINDING

Symptom

- No variation in power steering assistance as a function of vehicle speed.

Checking





SCHEMATIC WIRING DIAGRAM

Key

H229 = Switch, ignition/steering lock

M829 = Servo, power steering

P66 = Control unit, power steering

A = Potentiometer

M45 = Battery

B = Electric motor

M140 = Speed sensor, speedometer cable

M899 = Test unit, variable power steering

F11 = 15A fuse located in the fuse box

The power steering response curves are different for each vehicle. They are determined by the connections of terminals 1, 2 and 3 on the power steering control unit (P66).

– 0 = terminal not connected

– 1 = terminal earthed

