

GROUP 43

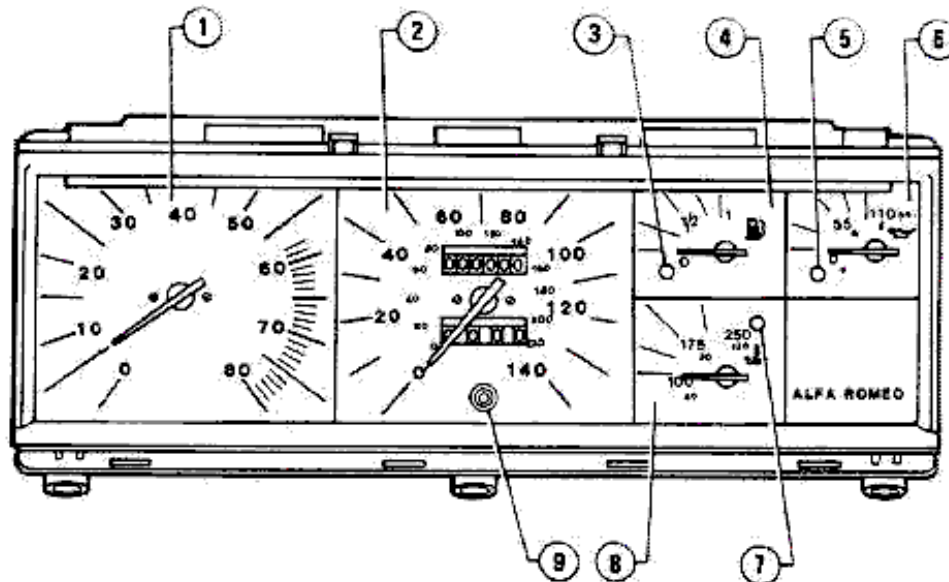
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*Trouble-shooting False
warning light*

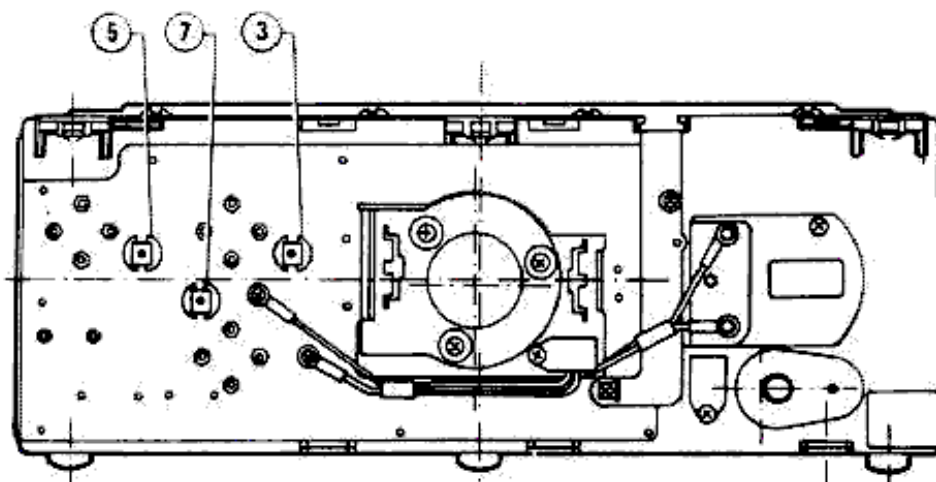
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VEGLIA ELECTRONIC CLUSTER

front view

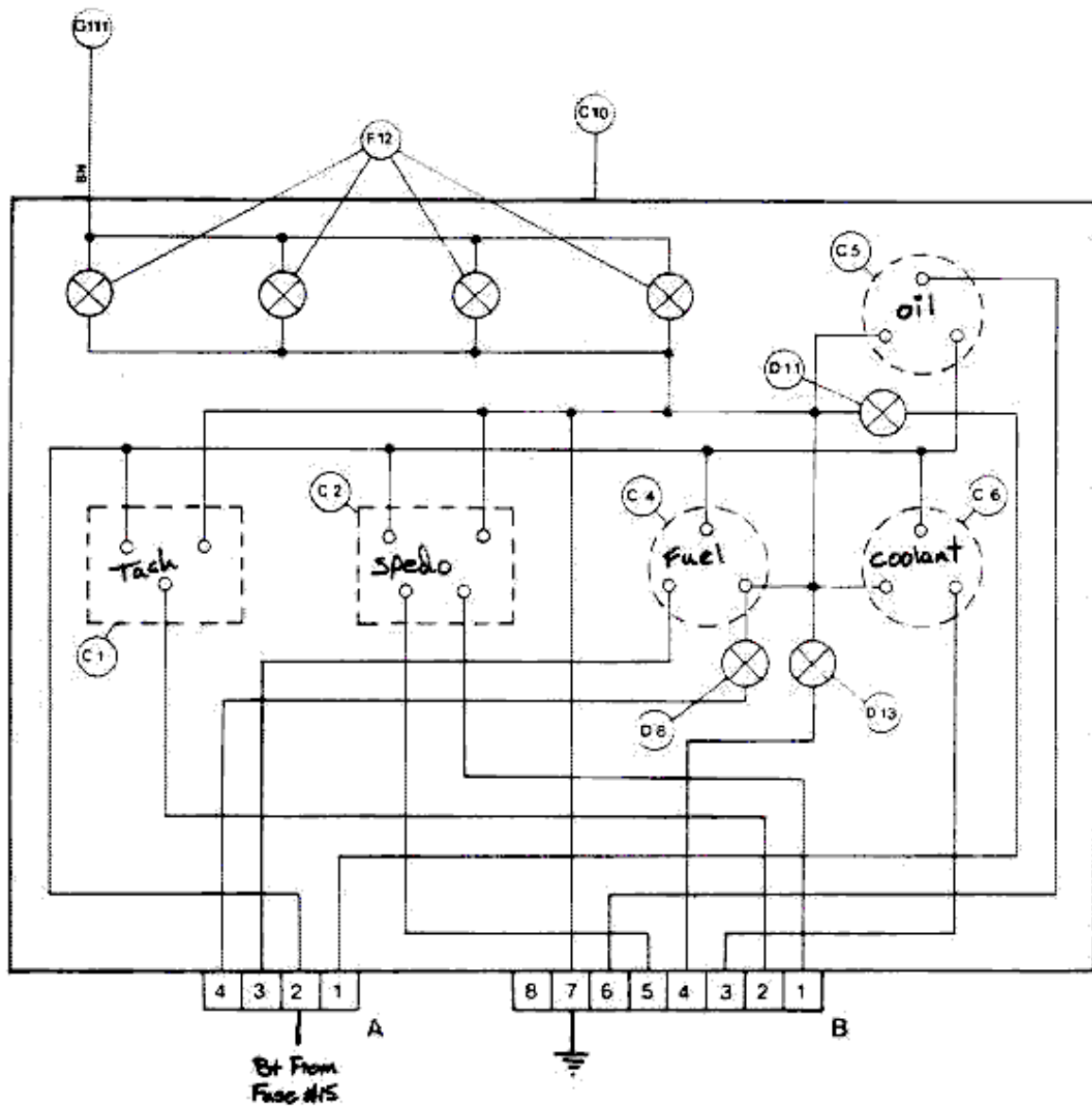


rear view



- | | |
|---------------------------------|--|
| 1 Rev counter | 6 Oil pressure indicator |
| 2 Speedometer - odometer | 7 Max coolant temperature warning lamp |
| 3 Fuel reserve warning lamp | 8 Coolant temperature indicator |
| 4 Fuel level indicator | 9 Pushbutton for resetting trip odometer |
| 5 Min oil pressure warning lamp | |

CLUSTER AND ELECTRONIC INSTRUMENTS



Connector A

- Pin 1: min oil pressure warning lamp
- Pin 2: common +
- Pin 3: Fuel level indicator
- Pin 4: Fuel reserve warning lamp

Connector B

- Pin 1: Odometer signal - **GREY** Wire

- Pin 2: Rev counter signal
- Pin 3: Coolant thermometer
- Pin 4: Max coolant temperature warning lamp
- Pin 5: Pulse generator supply + **Pink/Black**
- Pin 6: Oil pressure indicator
- Pin 7: Common ground
- Pin 8: Not connected

CLUSTER AND ELECTRONIC INSTRUMENTS

CAUTION:

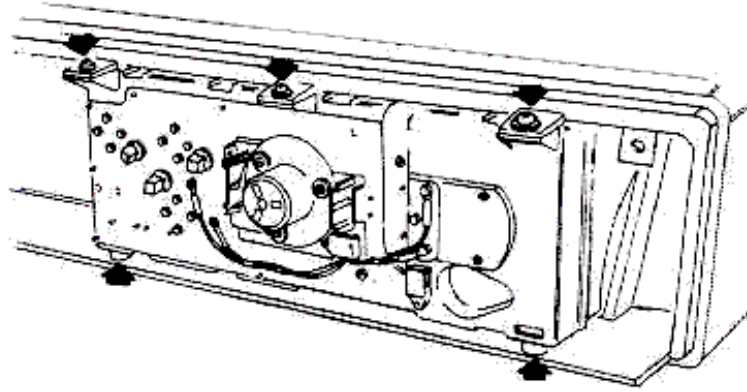
Prior to performing any interventions, ensure the ignition key is in the "ST" position and the battery ground cable is disconnected.

2. Unscrew the five screws indicated in the figure, and remove the cluster:

3. Install by reversing the order of removal.

REMOVAL AND INSTALLATION

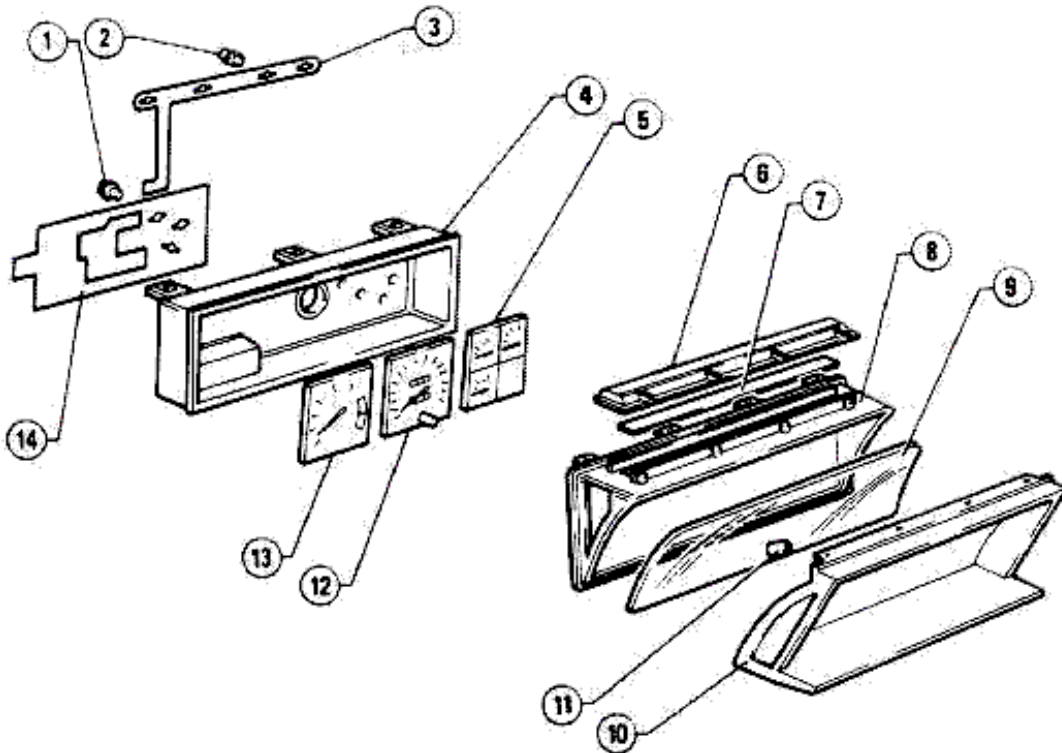
1. Remove the instrument panel dashboard



DISASSEMBLY AND REASSEMBLY

CAUTION:

Operate with necessary caution to avoid damaging the printed circuit boards and electronic components.

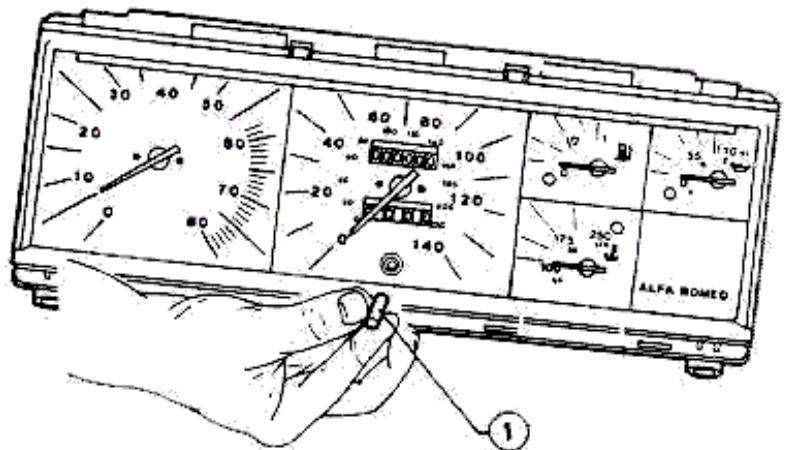


- 1 Indicators warning lamp (complete with lampholder)
- 2 Cluster lighting lamp (complete with lampholder)
- 3 Cluster lighting lamps power circuit board
- 4 Cluster box
- 5 Instrument panel (without performance gauge)
- 6 Cluster lighting lamps support

- 8 Front support
- 9 Transparent strip
- 10 Outer case
- 11 Trip odometer reset pushbutton
- 12 Speedometer - odometer
- 13 Rev counter

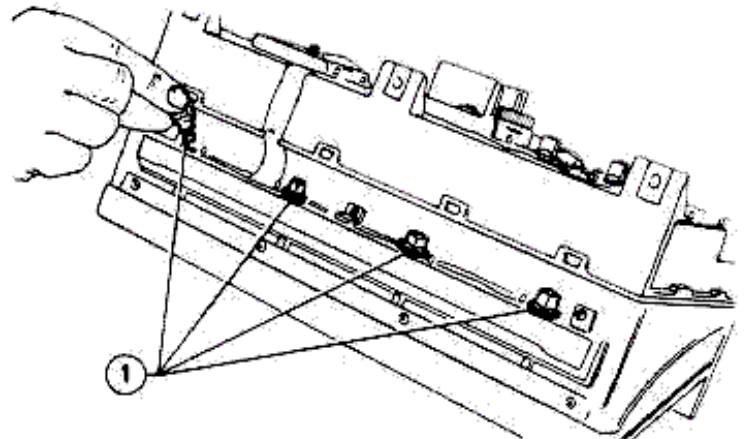
CLUSTER AND ELECTRONIC INSTRUMENTS

1. Remove trip odometer reset pushbutton ①, which has been pushed into cluster.



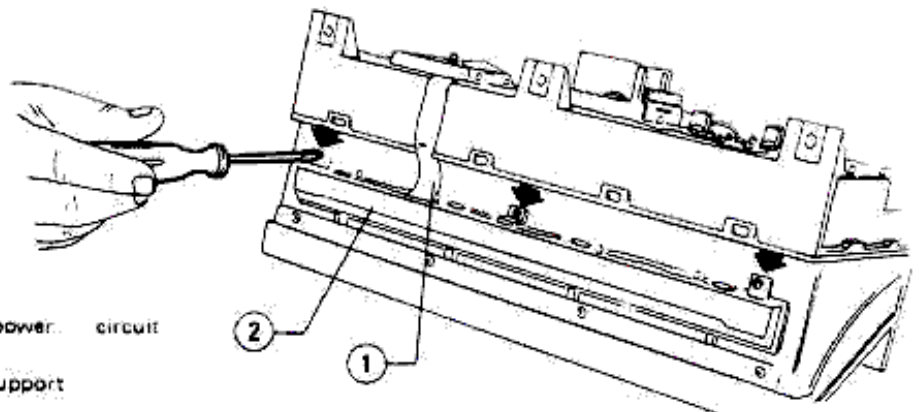
1 Trip odometer reset pushbutton

2. Rotate and withdraw the four lamps lighting cluster ① (complete with the related lampholders).



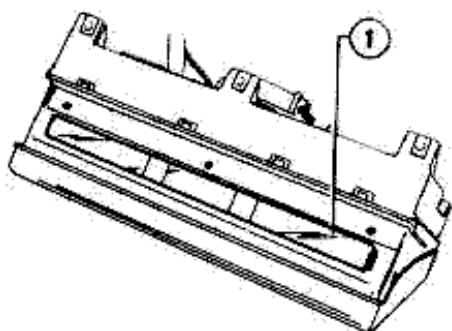
1 Lamps lighting cluster (complete with the lampholder)

3. Unscrew the three screws shown in the figure, carefully move the lighting power circuit board ①, and remove lamp support ②.



1 Cluster lighting power circuit board
2 Cluster lighting lamps support

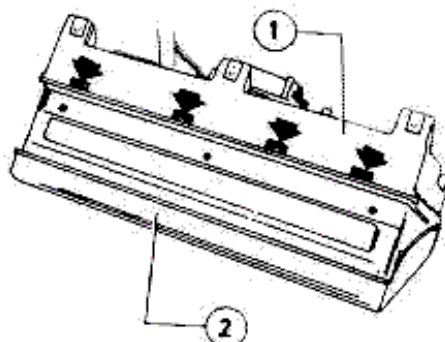
4. Remove green transparent strip ①.



1 Cluster lighting transparent strip

cover) from the cluster box:

- a. Release the four strips shown in the figure, from their seat on box ① upper part.

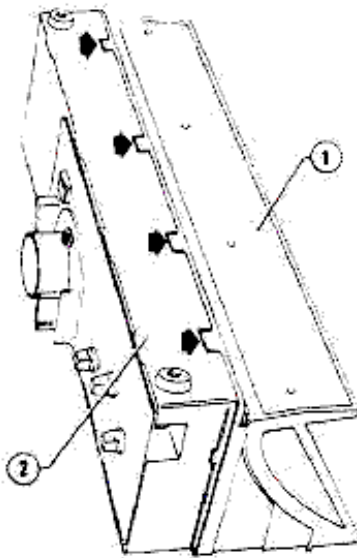


1 Cluster box
2 Front support

- b. Lift the four lower clips (shown in the figure) and separate front support ① (complete with transparent strip and cover) from cluster box ②.

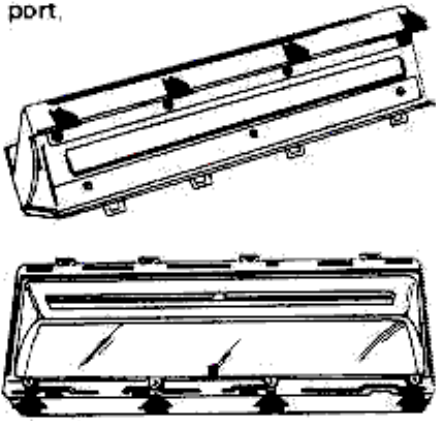
5. Separate the front support (complete with transparent strip and

CLUSTER AND ELECTRONIC INSTRUMENTS

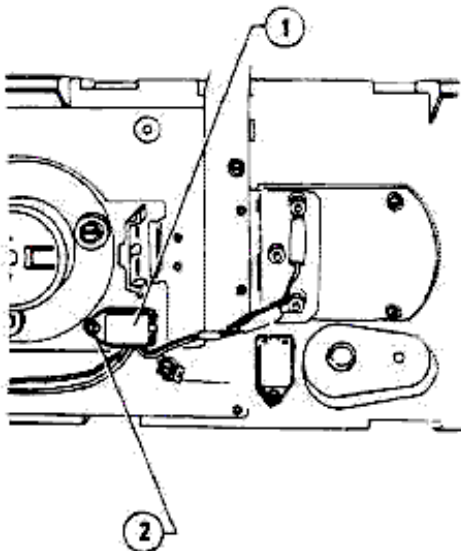


- 1 Front support
- 2 Cluster box

6. If required, unscrew the eight screws shown in the figure; and separate the cover from front support.



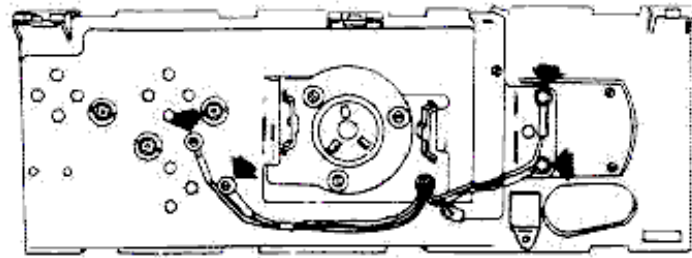
7. Unscrew the screw (2) and remove cover (1).



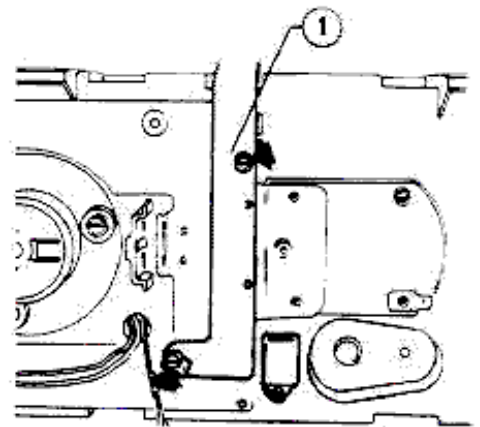
- 1 Cover
- 2 Screw

8. Disconnect the electric leads as follows:
Unscrew the two screws and the two

nuts indicated in the figure, and disconnect the electric leads.

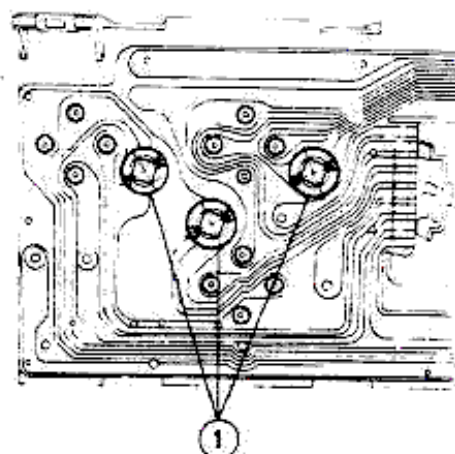


9. Unscrew the two screws indicated in the figure and remove the cluster lighting lamps circuit board (1).

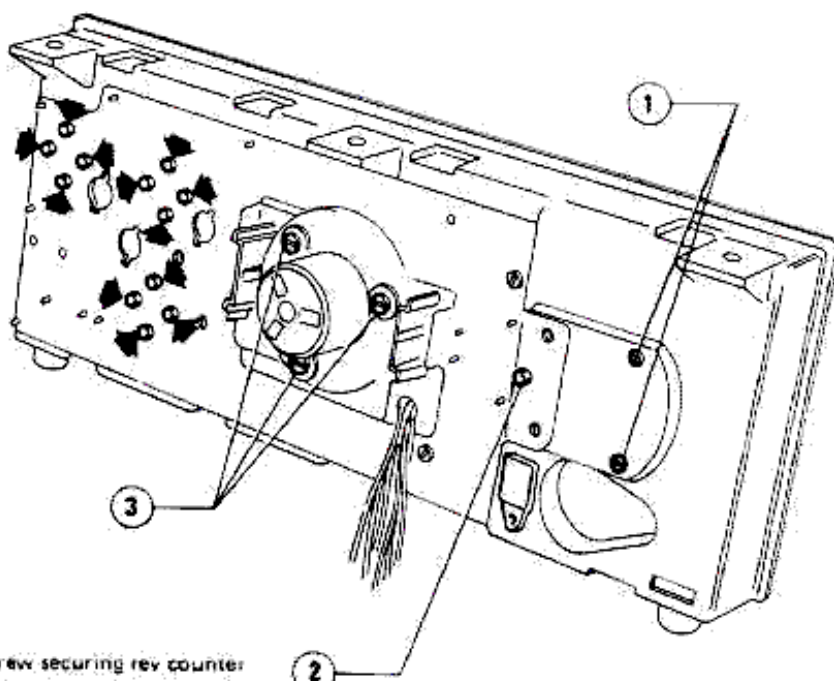


- 1 Cluster lighting printed circuit board

10. Rotate and extract the three lampholders of indicators warning lamps ① (complete with lamp).



1 Indicators warning lamp holder



1 Screw securing rev counter
2 Nut securing rev counter
3 Screw securing speedometer-odometer

11. Proceed to disassemble the cluster instruments.

CAUTION:

Disassemble the indicators in the following order: cluster, level indicators, rev counter and speedometer-odometer. This order must be followed due to the fact that the cover edges overlap.

a. Unscrew the twelve nuts in the figure, and remove the level indicators panel.

b. Unscrew nut ②, two screws ① and remove rev counter.

c. Unscrew the three screws ③ and remove the speedometer-odometer.

12. Reassemble by reversing the order of removal.

REPLACEMENT OF WARNING AND LIGHTING LAMPS

1. Remove the instrument panel dashboard without disconnecting wiring.

a. Remove the front cigar lighter finisher.

b. Remove the instrument panel without disconnecting wiring.

c. Remove the glove box.

d. Remove the switch finishers on cluster left side, and disconnect wiring.

e. Unscrew the two screws and remove the frame on cluster left side.

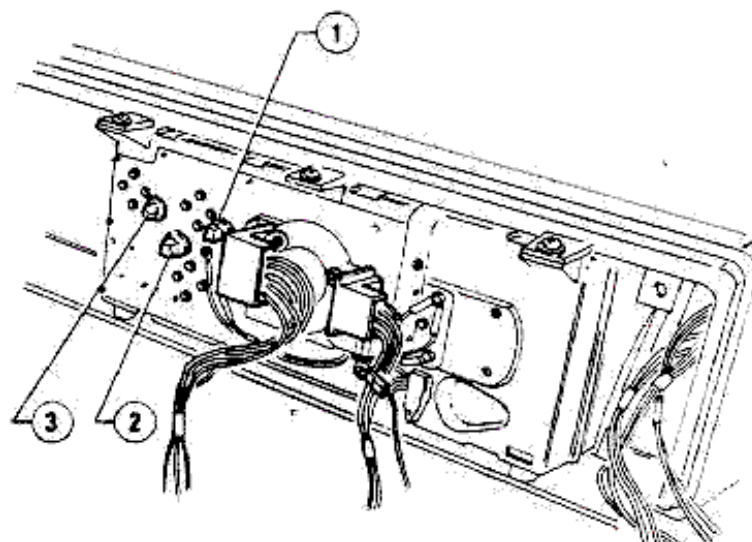
f. Disconnect the instrument panel dashboard complete with cluster without disconnect wiring.

2. Rotate and extract the lampholder, then withdraw the bulb from it.

3. Replace the bulb with another of the same type, and refit by reversing the order of removal.

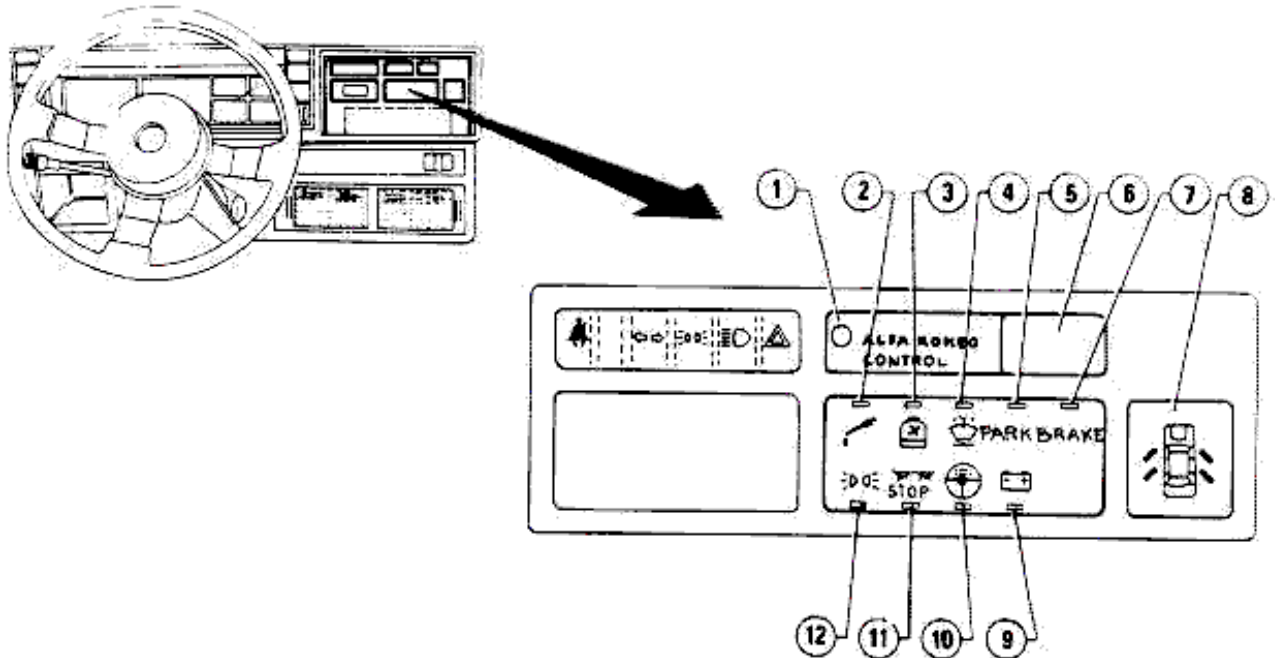
CAUTION:

Use only genuine lamps supplied by ALFA ROMEO.



1 Fuel reserve warning lamp
2 Coolant temperature warning lamp
3 Engine oil pressure warning lamp

ALFA ROMEO CONTROL (AR.C.)



- | | |
|---|--|
| 1 Red alarm warning lamp disabling key | 7 Brake oil and pad wear oil level warning lamp |
| 2 Engine oil level warning lamp | 8 Door closing efficiency warning lamp |
| 3 Coolant liquid level warning lamp | 9 Generator efficiency warning lamp |
| 4 Windshield washer liquid level warning lamp | 10 Cluster warning lamps efficiency warning lamp |
| 5 Handbrake efficiency warning lamp | 11 Stop lights efficiency warning lamp |
| 6 Red general alarm warning lamp (Check) | 12 Parking/rear fog lights efficiency warning lamp |

see "Trouble shooting False Warning" Page 43-16

THEORY OF OPERATION

When the ignition key is in the "MAR" position, all the AR.C. warning lamps and the three warning lamps on the cluster corresponding to *Minimum Oil Pressure, Maximum Coolant Temperature and Fuel Reserve*, light up for a period of time between 1.8 and 4 seconds.

This gives the driver sufficient time to visually check that all indicators are working properly.

After this period of time, the lamps will extinguish, and only defective functions will be displayed. The

defect is indicated on the AR.C. when the general warning lamp (red) blinks and the led indicating the defective function lights up.

However, after approximately 1 minute, even if a new defect occurs, the indications will be inverted and the general warning lamp (red) will remain constantly lit and the led indicating the defective function will begin to blink. This is to be taken as a general rule which is valid even when the engine is running, and excludes only the checking function of the cluster warning lamps and corresponding sensors.

With reference to this function, if one of the three warning lamps is blown, which can be seen by its

absence in the first 1.8 to 4 seconds, the alarm indication follows the general rule (i.e.: general warning lamp (red) blinks, led on AR.C. lights up, then vice versa).

If, however, a sensor other than the fuel reserve sensor which is not indicated on the AR.C., is activated (alarm condition), the general warning lamp (red) **Check** will light up, and the warning lamp corresponding to the sensor in the alarm condition will light up on the cluster instead of the AR.C. led that indicates **FAULTY CLUSTER WARNING LAMP**.

After about 1 minute, the general red warning lamp will remain constantly lit and the cluster warning lamp will

begin to blink.

If during the initial check phase of **1.8 to 4 seconds**, one of the following defects is detected:

- break in the circuit and in the generator electrical connection
- interruption in functioning of oil pressure sensor
- interruption in sensor functioning or engine oil level low, the warning will be displayed and memorized by the A.R.C.

To cancel the warning indication, the engine must be switched off, the defect corrected, and the engine switched on again.

For all other functions, however, the warning indication will stop by removing the defect without having to return the ignition key to the rest position.

Turn the key in the "AVV" position, and within **5 seconds** of releasing the key, the A.R.C. will check that both signals, *GENERATOR EFFICIENCY* and *OIL PRESSURE SUFFICIENT*, are present. If one of the two sensors remains in the condition of engine off after this period of time, the corresponding function, will be indicated as defective. **60 seconds** after releasing the key from the "AVV" position to the "MAR" position, the engine will be considered as in the running condition.

If the engine fails to start or stalls followed by immediate restarting in the space of **3 to 10 seconds**, the A.R.C. will ignore the signal supplied by the *Minimum Oil Pressure Sensor*. In fact, whenever the key is turned from the "O" position to the "MAR" position the electrical continuity of the contact in this sensor is checked. In the above-mentioned case, since the lubrication system pressure does not drop immediately, the contact remains open for a certain length of time, and this would give rise to a false warning indication.

In connection with the warning condition indication, on the A.R.C. there is a *SILENCE* pushbutton. This allows the general red warning lamp, blinking or constantly lit, to be extinguished both when the engine is off and when it is running. If a further defect occurs, the warning lamp will be restored to its

normal functioning together with the corresponding optical indicator.

Turning the ignition key from the "MAR" position to the "AVV" position cancels the *SILENCE* function.

The A.R.C. also performs the function of roof lights timing.

When one of the doors is opened on a stationary vehicle, a command is sent to the roof lights lighting relay. This signal remains active for the period of time the door is left open, and for **2 to 7 seconds**, after the door is closed.

If one of the doors remains open for a long time, the roof lights will be automatically extinguished after a period of time from **80 to 160 seconds**.

INDIVIDUAL FUNCTIONS

MINIMUM ENGINE OIL PRESSURE

Checks:

- Oil pressure sensor efficiency
- Correct oil pressure with engine running
- Blown warning lamp on cluster

When oil pressure is absent, the sensor contact is normally closed and grounds the A.R.C.

When the oil pressure is correct, the sensor contact opens and breaks the A.R.C. grounding.

Turning the key to the "MAR" position, the A.R.C. checks the continuity of the minimum oil pressure warning lamp on the cluster, and the continuity of the sensor that must be grounded in this condition. If the warning lamp on the cluster is interrupted, the *Check general warning lamp (red)* and the indicator corresponding to *CLUSTER WARNING LAMPS EFFICIENCY* will light up.

If there is a defect on the minimum oil pressure sensor, the *Check general warning lamp (red)* and the minimum oil pressure warning lamp on the cluster will light up.

This alarm condition will remain

stored in the A.R.C. until the ignition key returns to the "O" position. When the vehicle is started, the minimum oil pressure sensor contact opening is checked, i.e. the presence of pressure in the lubrication system as well as the possible blowing of the corresponding warning lamp on the cluster.

No alarm condition that occurs when the vehicle is in motion is stored by the A.R.C., but the warning indications are displayed as described for the engine off conditions with the ignition key in "MAR" position. If the engine fails to start or stalls followed by immediate restarting in the space of **3 to 10 seconds**, the A.R.C. will ignore the signal supplied by the *Minimum Oil Pressure* sensor. In fact, whenever the key is turned from the "O" position to the "MAR" position, the electrical continuity of the contact in this sensor is checked. In the above mentioned case, since the pressure tends to drop with a certain delay, the sensor would remain open giving rise to a false alarm condition.

If, when the vehicle is in motion, temporary low pressure due to dangerously low oil level occurs in the lubrication system, the defect indication will be emphasized by prolonging the illumination of the *Check general warning lamp (red)* and the minimum oil pressure warning lamp on the cluster for a period of time from **2.5 to 5 seconds**.

MAX COOLANT TEMPERATURE

Checks:

- Blowing of warning lamp on cluster
- Reaching of maximum permissible temperature

When the temperature is within normal limits, the sensor contact is open.

When the temperature exceeds the normal limits the sensor contact closes and grounds the A.R.C.

The checking procedure performed by the A.R.C. is the same when the engine is running and when the ignition key is in the "MAR" position.

tion.

If the functioning or the electrical connection of the warning lamp on the cluster corresponding to *Max Coolant Temperature* are interrupted, the **Check** general warning lamp (red) and the warning lamp corresponding to *CLUSTER WARNING LAMPS EFFICIENCY* light up. If the max permissible coolant temperature is exceeded, this defect will be indicated by the fact that the **Check** general warning lamp (red), and the *Max Coolant Temperature* warning lamp on the cluster light up.

FUEL RESERVE

- Only the blowing of the *Fuel Reserve* warning lamp situated on the cluster is displayed.

The checking procedure performed by the A.R.C. is the same when the engine is running and when the ignition key is in the "MAR" position.

If the functioning or electrical connection of the *Fuel Reserve* warning lamp is interrupted, the **Check** general warning lamp (red) and the warning lamp corresponding to *CLUSTER WARNING LAMPS EFFICIENCY* light up.

The *Fuel Reserve* sensor, inside the *Fuel Level Transmitter*, is connected to the pin 4 input of A.R.C. connector "C", and is used exclusively to allow the A.R.C. to control the lighting-up of the warning lamp on the cluster if a condition of *Fuel Reserve* occurs (the contact is grounded).

Unlike the other warning lamps on the cluster, the fuel reserve warning lamp remains lit even one minute after the warning indication has been given.

GENERATOR EFFICIENCY

Checks:

- Continuity of electrical connection to generator
- Generator efficiency

Turning the key to the "MAR" position, the A.R.C. checks the continuity, towards ground, of the generator regulation circuit. If the

general warning lamp (red) and the optical indicator corresponding to *GENERATOR EFFICIENCY* will light up.

The alarm condition that occurs at this stage will remain stored, in the A.R.C. until the ignition key returns to the "0" position.

A check is made to ensure that the generator supplies voltage when the vehicle is started. If this fails to occur, the same indication as that described in the previous point will appear, but without memorization.

ENGINE OIL LEVEL

Checks:

- Oil level sensor efficiency
- Engine oil sufficient

The *Engine Oil* level sensor consists of a bimetal strip (contact) with a series resistance of 12 Ohm wrapped around the strip. The two electrical circuit terminals obtained in this way are connected to the A.R.C. which supplies a current that heats the bimetal strip for a determined period of time after the ignition key is rotated to the "MAR" position. This period of time is such that it allows the bimetal strip to disconnect the contact if the sensor is in air (oil low), and keep the contact closed if the sensor is immersed in engine oil. In the latter case, the oil acts as a heat exchanger, and does not allow the temperature necessary to open the contact to be reached.

The alarm condition is indicated by the lighting-up of the **Check** general red warning lamp and the optical indicator for *ENGINE OIL LOW*. The alarm given when the ignition key is turned to the "MAR" position (i.e.: when current is supplied to the dipstick) indicates there is insufficient engine oil and this will be stored by the A.R.C. until the key is returned to the "0" position; any warning indication given after this period of time, however, indicates that the sensor dipstick functioning or corresponding electrical connections have been interrupted, an occurrence which is not however memorized; the warning indication

BRAKE PADS WEAR AND BRAKE FLUID LEVEL

Checks:

- Brake pads slightly worn
- Brake pads very worn
- Brake fluid level

On one front left pad and on one rear right pad there is a device consisting of a short-circuiting jumper let into the friction material of the pad. Both jumpers are in series with each other and with the floating contact situated in the brake fluid tank. In normal conditions, the electrical circuit formed in this way is equivalent to a closed contact with both ends connected to the A.R.C.

The checking procedure is the same when the engine is running and when the ignition key is in the "MAR" position.

The brake pads are slightly worn when the friction material reaches a thickness where one of the jumper begins to be uncovered.

In this condition, whenever the brake pedal is pressed, the uncovered jumper comes into contact with its own disc, consequently grounding the electrical circuit. The warning indication given by the **Check** general warning lamp (red) and the corresponding optical indicator *BRAKE FLUID LEVEL AND PADS WORN* consequently occurs only when the brake pedal is used.

The brake pads very worn indication is given when the breaking point of the jumper let into the friction material of one of the two pads is reached, or when the brake fluid level falls below the minimum level making the float contact open. The warning indication, generated in this case, is the same as that previously described, and differs only in that it persists on the display.

The brake pads wear indicator also lights up when a defect occurs in the stop lights circuit to emphasize the fact that the braking system is faulty.

STOP LIGHTS

Checks:

- Stop lights fuses efficiency
- Blowing of stop light bulbs

The electrical circuit consists of a protection fuse, a switching push-button (operated by the brake pedal) and by a power supply that activates the lamps via the A.R.C.

The contact, that closes when the brake pedal is released, is only connected to the A.R.C. and is used to detect the presence of voltage after the fuse, and consequently to establish whether the fuse is blown. This permits the warning indication to appear even with the brake pedal released. By pressing the brake pedal, the pushbutton switches the +12 V after the fuse, to the *Stop* lamps which are separately supplied via the A.R.C. to enable an efficiency check to be made by comparing the consumption of one with respect to the other. If one or both bulbs are blown, the difference in consumption or the interruption of the protection fuse provides the warning indication. In all cases, this warning indication is the same when the engine is running and when the ignition key is in the "MAR" position, and it is displayed by the lighting-up of the **Check** general warning lamp (red), the *STOP LIGHT EFFICIENCY* corresponding optical indicator and the *BRAKE PADS WEAR* indicator. The blowing of both bulbs is also indicated with the brake pedal released.

PARKING LIGHTS AND REAR FOG LIGHTS

Checks:

- Blowing of one or more parking lights with switch on
- Blowing of one or two parking light fuses with switch on
- Blowing of one or both rear fog lights with low beam lights and rear fog light switches on.

The warning indication for a defect on the parking lights circuit or on the rear fog lights circuit is displayed in the same way on the A.R.C. The **Check** general warning lamp (red) and the optical warning lamp corresponding to both *PARKING LIGHTS AND REAR FOG LIGHTS* light up.

PARKING LIGHTS

The warning functions only if the parking lights are lit; the lamps are connected with two different fuses thus forming two different power supply branches.

Branch A = Front right lamp with rear left lamp

Branch B = Front left lamp with rear right lamp

The A.R.C. checks the interruption of electrical connections and the single or simultaneous blowing of several bulbs.

The blowing of only one of the two protection fuses also gives an alarm condition.

If the two fuses blow simultaneously, no alarm condition is indicated on the A.R.C., but the fact is indicated when the *Parking Lights* warning lamp on the cluster fails to light up.

REAR FOG LIGHTS

The warning indication functions only when the rear fog lights are on (these lights are dependent on the simultaneous switching-on of the low beam head lights). Both lamps are protected by a single fuse. The A.R.C. detects the interruption of the electrical connections and the individual or simultaneous blowing of both rear fog lights.

Interruption in the functioning of the protective fuse does not give rise to an alarm indication, but the fact is indicated when the *Rear Fog Lights* warning lamp on the cluster fails to light up.

DOOR CLOSING

This signal is supplied by the four microswitches fitted to the door locks. When the doors are closed the switches are normally closed and therefore ground the circuit. If one of the four doors is opened, the corresponding microswitch opens and supplies a warning indication that will be displayed on the A.R.C. by the lighting-up of the **Check** general red warning lamp and the optical indicator corresponding to the *OPEN DOOR*. The open door signal is also used to energize the *Roof Lights Lighting Relay*. The warning indication is the same whether the key is in the "MAR" position or if the engine is running.

WINDSHIELD LIQUID LEVEL

The amount of liquid contained in the reservoir is measured by a microswitch operated by a float. In normal conditions the microswitch contact is closed and consequently the A.R.C. is grounded.

When the liquid falls below the minimum level, the contact opens and generates the warning signal. The warning indication is the same when the key is in the "MAR" position and when the engine is running, and it is indicated on the A.R.C. by the lighting-up of the **Check** general warning lamp (red) and the optical indicator corresponding to the *WINDSHIELD LIQUID LEVEL*.

COOLANT LEVEL

The amount of coolant contained in the reservoir is measured by a microswitch operated by a float. In normal conditions the microswitch contact is closed and consequently the A.R.C. is grounded.

When the coolant falls below the minimum level, the contact opens and generates the warning signal. The warning indication is the same when the key is in the "MAR" position and when the engine is running, and it is indicated on the A.R.C. by the lighting-up of the **Check** general warning lamp (red) and the optical indicator corresponding to the *COOLANT LEVEL*.

PARKING BRAKE ON

With the ignition key in the "MAR" position or the engine running, the A.R.C. detects the pulling of the parking brake, and indicates the fact by the lighting-up of the **Check** general warning lamp (red) and the *PARKING BRAKE ON* corresponding optical indicator.

The signal is detected via a micro-

switch operated by the parking brake lever.

When the parking brake is released, the microswitch contact is open, while with the brake engaged the contact closes and grounds the A.R.C.

INSPECTION OF A.R.C. ON VEHICLE

| Test | Inspection procedure |
|---|--|
| Functioning of optical indicators and cluster warning lamps | <ul style="list-style-type: none"> - Turn key to "MAR" position. Check that all A.R.C. warning lamps including the Check general warning lamp (red) light up for a period of time from 1,8 to 4 seconds. Warning lamps related to <i>Max Coolant Temperature</i>, <i>Fuel Reserve</i>, <i>Engine Oil Pressure</i> must also light up on the cluster. - After this period of time all the warning lamps must extinguish, except for those indicating faults. |
| Max coolant temperature | <ul style="list-style-type: none"> - Short-circuit the temperature sensor, and with key in the "MAR" position, check that the warning is indicated by the lighting-up of the Check general warning lamp (red) and of the <i>Max Coolant Temperature</i> warning lamp on the cluster. Eliminate the short-circuit, and ensure that the warning disappears. - Remove the warning lamp related to <i>Max Coolant Temperature</i> from the cluster. Turn the ignition key to the "MAR" position and check that the optical indicator related to <i>CLUSTER LIGHTS EFFICIENCY</i> and the Check general warning lamp (red) light up. - Reinsert the previously removed warning lamp, and ensure that the warning disappears. |
| Fuel reserve | <ul style="list-style-type: none"> - Short-circuit the <i>Purple Black</i> wire in output from the <i>Fuel Level Transmitter</i> connector towards ground. - With the ignition key in the "MAR" position, check that the warning indication is given by the lighting-up of the warning lamp related to <i>Fuel Reserve</i> situated on the cluster. Unlike the others, this warning lamp will remain constantly lit even one minute after the warning indication has appeared. - Eliminate the short-circuit, and if the vehicle is not in reserve the warning indication must disappear. - Remove the warning lamp related to <i>Fuel Reserve</i> from the cluster. Turn the ignition key to the "MAR" position, and check that the warning indication is given by the lighting of the optical indicator related to <i>CLUSTER LIGHTS EFFICIENCY</i> and of the Check general warning lamp (red). - Reinsert the cluster warning lamp, and check that the warning disappears. |
| Minimum engine oil pressure | <ul style="list-style-type: none"> - Disconnect the engine oil pressure sensor. Turn the key to the "MAR" position, and check that the warning indication is given by the lighting-up of the Check general warning lamp (red) and of the <i>Minimum Oil Pressure Warning Lamp</i> on the cluster. - Reconnect the engine oil pressure sensor and check that the warning indication remains. Remove and reinsert the ignition key in the "MAR" position, and check that the warning indication disappears. |

CLUSTER AND ELECTRONIC INSTRUMENTS

| Test | Inspection Procedure |
|---|---|
| Stop lights Parking lights Rear fog lights (continued) | <ul style="list-style-type: none"> — Switch on the parking lights and check that the related optical indicator and the Check general warning lamp (red) lights up. Switch off the parking lights and check that the warning indication disappears. — Reconnect the rear lamp connector. — Switch on the low beam headlights and the rear fog lights — Remove one fog light bulb from one of the two rear lamps, turn the ignition key to the "MAR" position and check that an alarm condition occurs that is analogous to that previously described for the parking lights. Refit the rear fog light bulb and check that the warning indication disappears |
| Door closing and roof light timing | <ul style="list-style-type: none"> — Turn the key to the "MAR" position, open the doors one at a time, and check that the related optical indicators and the Check general warning lamp (red) light up. Check also that the roof lights are lit. Close all the doors, and check that the lights go out after a period of 2 to 7 seconds. Turn the key to the "0" position. Open one door and check that the roof lights come on. Close the door and check that the lights go out automatically after a period of 2 to 7 seconds. |
| Windshield liquid | <ul style="list-style-type: none"> — Remove the cap from the windshield liquid tank. Turn the key to the "MAR" position. Lower the float with a blunt instrument, and check that the warning indication is given by the lighting-up of the related optical indicator and the Check general warning lamp (red). — Release the float and check that the warning indication disappears. |
| Coolant level | <ul style="list-style-type: none"> — Extract the coolant level sensor from the tank. Turn the key to the "MAR" position and with float lowered check that the warning indication is given by the lighting-up of the related optical indicator and the Check general warning lamp (red). — Push the float upwards and check that the warning indication disappears. |
| Parking brake on | <ul style="list-style-type: none"> — Turn the key to the "MAR" position. With the parking brake on, check that the warning indication is given by the lighting-up of the related optical indicator and the Check general warning lamp (red). — Release the parking brake and check that the warning indication disappears. |

CLUSTER AND ELECTRONIC INSTRUMENTS

| Test | Inspection procedure |
|--|---|
| Minimum engine oil pressure (continued) | <ul style="list-style-type: none"> - Remove the warning lamp related to <i>Engine Oil Pressure</i> from the cluster. Turn the ignition key to the "MAR" position, and check that the warning indication is given by the lighting-up of the optical indicator related to <i>CLUSTER LIGHTS EFFICIENCY</i>, and of the Check general warning lamp (red). Reinsert the warning lamp previously removed from the cluster, and check that the warning indication disappears. |
| Generator efficiency | <ul style="list-style-type: none"> - Disconnect the green alternator connector. Turn the ignition key to the "MAR" position, and check that the warning indication is given by the lighting-up of the optical indicator related to <i>GENERATOR EFFICIENCY</i> and of the Check general warning lamp (red). - Reconnect the green conductor to the alternator and check that the warning indication remains. Remove and reinsert the ignition key in the "MAR" position and check that the warning indication disappears. |
| Engine oil level | <ul style="list-style-type: none"> - Unscrew the oil level sensor support rod with a wrench. With the rod removed but connected electrically, turn the key to the "MAR" position. Check that the warning indication is given by the lighting-up of the relevant optical indicator and the Check general warning lamp (red). - Refit the dipstick and disconnect the connector. Turn the key back to the "MAR" position, and check the warning indication once again. - Insert the connector without removing the wrench and check that the alarm condition persists. <p>On diesel engines, the sensor is on the engine oil dipstick and therefore it is only necessary to extract the dipstick.</p> |
| Brake pads wear and brake fluid level | <ul style="list-style-type: none"> - Remove the protective cap from the brake fluid level sensor. Turn the ignition key to the "MAR" position. Manually lower the float rod, and check that the warning indication is given by the lighting-up of the optical indicator related to <i>BRAKE PADS WEAR</i> and the Check general warning lamp (red). - Remove the brake fluid level sensor connector. Short-circuit the two female contacts of the connector and connect them toward ground. Turn the ignition key to the "MAR" position and recheck the warning indication. Remove the connection towards ground, and check that the warning indication disappears. <p>If in doubt, the same procedure can be applied to each one of the two brake pads wear sensors. The three sensors being tested are in series with each other and consequently produce the same effect on the A.R.C.</p> |
| Stop lights Parking lights Rear fog lights | <ul style="list-style-type: none"> - Disconnect the connector of one of the two rear lamps. - Turn the ignition key to the "MAR" position. - Press the brake pedal, and check that the fault indication is given by the lighting-up of the related indicator and the Check general warning lamp (red). Release the pedal and check that the indication disappears. |

Good Tests

TROUBLE DIAGNOSIS AND CORRECTIONS

Trouble-Shooting False A.R.C. Warning

This trouble diagnosis refers to the detection of faults on the vehicle's electrical system. It is therefore taken for granted that the A.R.C. is functioning correctly.

| Condition | Probable cause | Fault verification and corrective action |
|---|---|--|
| <p>RED GENERAL WARNING LAMP</p> <p>Lit without any fault being indicated.</p> | <ul style="list-style-type: none"> • Interruption in connection between pin 5 of connector "B" of A.R.C. and ground | <p>Disconnect A.R.C. connector "B". Check electrical continuity between pin 5 of disconnected connector and ground. If interruption is present, locate the fault in the wiring. Restore the electrical continuity between pin 5 and ground.</p> |
| <p>DOOR CLOSING WARNING LAMP</p> <p>Warning indication with doors closed</p> <p>Warning indication absent with door open</p> | <ul style="list-style-type: none"> • Interruption in microswitch fitted on door lock or in the electrical connection towards the A.R.C. • Wire between door microswitch and A.R.C. short-circuited towards ground or microswitch out of order | <p>Check that the microswitch delivers a ground signal with the door closed. Check wiring electrical continuity especially in correspondence with the connectors. If the warning indication disappears when the microswitch is operated by hand, check the setting of the appropriate actuating pin.</p> <p>Disconnect the A.R.C. connectors and check for short circuit towards ground.</p> |
| <p>BRAKE PADS WEAR WARNING LAMP</p> <p>Warning indication when pads are in good condition</p> | <ul style="list-style-type: none"> • No brake fluid • Interruption or contact towards ground in electrical circuit | <p>Restore brake fluid level.</p> <p>Disconnect A.R.C. connector "B". Using a tester, check there is electrical continuity between pins 8 and 9 of the disconnected connector. If continuity is absent, check continuity of the jumpers (sensors) on both brake pads; continuity of contact on brake fluid level sensor, with correct brake fluid level; check that wiring and corresponding connectors are operating correctly.</p> |

Continued Next Page

CLUSTER AND ELECTRONIC INSTRUMENTS

| Condition | Probable cause | Fault verification and corrective action |
|--|--|--|
| <p>Warning indication when pads are in good condition (continued)</p> <p>No warning indication when brake pads are worn</p> | <ul style="list-style-type: none"> • Short-circuit between the two wires of one sensor | <p>Using a tester, check that electrical continuity is absent between pin 8 and ground, and pin 9 and ground of the disconnected connector. If there is a short-circuit towards ground check the wiring.</p> <p>Ensure that the A.R.C. is functioning correctly by simulating faults on the individual sensors (removing connectors of brake pads wear and brake fluid level sensors). If the A.R.C. is functioning correctly, check the wiring.</p> |
| <p>PARKING LIGHTS AND REAR FOG LIGHTS WARNING LAMP</p> <p>Incorrect warning indication</p> | <p>The fault in the parking lights and rear fog lights is to be located by first switching on only the parking lights to discover whether the warning indication refers to this circuit. If the parking lights are OK, switch on the rear fog lights. Any warning indication appearing in these conditions refers to the rear fog lights.</p> <p>There is no warning indication with switches off.</p> <ul style="list-style-type: none"> • Lamps are not genuine ALFA ROMEO lamps • Electrical contacts of lampholders or connectors oxidized | <p>Check that lamps are genuine ALFA ROMEO lamps. For parking lights, check RIGHT FRONT with LEFT REAR and LEFT FRONT with RIGHT REAR. Fit genuine ALFA ROMEO lamps.</p> <p>Check for oxidation on lamp holders or on connectors between lamps and A.R.C. Remove layer of oxidation or, if necessary, replace defective components</p> |
| <p>STOP LIGHTS WARNING LAMP</p> <p>Warning indication without brake pedal being pressed</p> | <ul style="list-style-type: none"> • Brake pedal switch faulty; fuse blown; break in wiring | <p>Disconnect A.R.C. connector "A" Measure voltage between pin 7 of disconnected connector and ground, and check that [redacted] when brake pedal is released and [redacted] ^{Present, that} the signal switches between 0V and 12V.</p> |

CLUSTER AND ELECTRONIC INSTRUMENTS

| Condition | Probable cause | Fault verification and corrective action |
|---|---|---|
| <p>Warning indication without brake pedal being pressed (continued)</p> <p>Warning indication when stop lights function normally</p> <p>No warning indication</p> | <ul style="list-style-type: none"> • Bulbs are not genuine ALFA ROMEO bulbs • Lampholder or connector contacts oxidized • Electrical continuity absent between parking brake switch and A.R.C. connector | <p>If the previously described conditions do not occur, check the protective fuse, the functioning of the brake pedal switch and finally the wiring.</p> <p>Check that bulbs are genuine ALFA ROMEO bulbs. Fit ALFA ROMEO genuine bulbs.</p> <p>Check for oxidation on lampholders or on connector between lamps and A.R.C.; clean contacts, if necessary replace oxidized components.</p> <p>Check for electrical continuity between red wire in output from parking brake operated switch and pin 6 on A.R.C. connector "A". Restore electrical continuity.</p> |
| <p>ENGINE OIL LEVEL WARNING LAMP</p> <p>Incorrect warning indication</p> <p>No warning indication</p> | <ul style="list-style-type: none"> • Interruption in engine oil sensor or wiring • Oil level sensor defective | <p>Disconnect connector on engine oil dipstick, and check the sensor resistance is 12 Ohm. Reconnect the connector engine oil dipstick.</p> <p>Disconnect A.R.C. connector "B". Check that resistance between pins 1 and 2 of disconnected connector is 12 Ohm. If this is not so, look for the break in the wiring, and restore electrical continuity.</p> <p>Disconnect connector on the engine oil sensor dipstick. Repeat the checks and if the warning indication appears in these conditions, replace the dipstick with sensor.</p> |
| <p>WINDSHIELD LIQUID WARNING LAMP</p> <p>Incorrect warning indication</p> | <ul style="list-style-type: none"> • Interruption in electrical circuit | <p>Using a tester, check there is electrical continuity on the float connector output; if this is not so, replace. Disconnect connector "F" from the A.R.C.</p> <p style="text-align: right;"><i>Continued Next Page</i></p> |

CLUSTER AND ELECTRONIC INSTRUMENTS

| Condition | Probable cause | Fault verification and corrective action |
|--|---|--|
| <p>Incorrect warning indication (continued)</p> <p>No warning indication</p> | <ul style="list-style-type: none"> • Short-circuit on sensor or wiring | <p>Using a tester, check there is electrical continuity between pin 4 of disconnected connector and ground. If continuity is absent, check the wiring.</p> <p>Detach float electrical connections, check that when liquid is at minimum, there is infinite resistance at sensor terminals. If not, replace float. Reconnect electrical connections. Disconnect connector "F" from A.R.C. Using a tester, check there is infinite resistance between pin 4 of disconnected connector and ground. If not, there is a short-circuit towards ground in the wiring. Eliminate the cause of the short-circuit.</p> |
| <p style="border: 1px solid black; border-radius: 15px; padding: 2px; display: inline-block;">COOLANT LEVEL WARNING LAMP</p> <p>Incorrect warning indication</p> <p>No warning indication</p> | <ul style="list-style-type: none"> • Interruption in electrical circuit • Short-circuit on sensor or wiring | <p>Using a tester, check there is electrical continuity at float connector output, if not, replace. Disconnect A.R.C. connector "B" Using a tester, check there is electrical continuity between pin 3 of disconnected connector and ground. If not check wiring. Restore electrical continuity.</p> <p>Disconnect float electrical connections, and check that with coolant at minimum level there is infinite resistance at sensor terminals. If not, replace float. Reconnect electrical connections. Disconnect A.R.C. connector "B" Using a tester, check there is infinite resistance between pin 4 of disconnected connector and ground. If not, there is a short-circuit towards ground on the wiring. Eliminate the cause of the short-circuit.</p> |

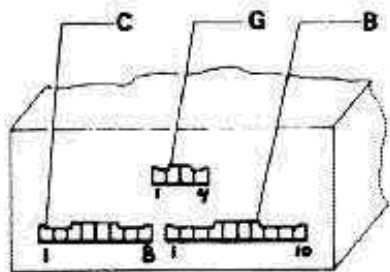
CLUSTER AND ELECTRONIC INSTRUMENTS

| Condition | Probable cause | Fault verification and corrective action |
|---|---|---|
| <p>Incorrect fuel reserve indication (continued)</p> <p>No fuel reserve indication:</p> <p>If the <i>Fuel Reserve</i> warning lamp bulb on the cluster blows, this is indicated by the CLUSTER LIGHTS EFFICIENCY warning indication.</p> | <ul style="list-style-type: none"> • Open contact on <i>Fuel Level Transmitter</i> or interruption on wiring | <p>If indication does not disappear disconnect A.R.C. connector "C" and check there is resistance between pin 4 of disconnected connector and ground. If this is not so there is a short circuit between wiring and ground. Eliminate causes of short-circuit.</p> <p>Short-circuit pins 3 and 2 on <i>Fuel Level Transmitter</i> connector. Perform A.R.C. procedure and check fuel reserve indication appears. If test is positive, <i>Fuel Level Transmitter</i> is faulty. Replace <i>Fuel Level Transmitter</i>. With pins 3 and 2 short-circuited disconnect A.R.C. connector "C". Place a tester between pin 4 of disconnected connector and ground, and check that resistance is zero. If this is not the case, look for the interruption on the wiring and corresponding connectors.</p> |
| <p>GENERATOR EFFICIENCY WARNING LAMP</p> <p>Incorrect warning indication when alternator is functioning correctly</p> | <ul style="list-style-type: none"> • Wiring or electronic alternator regulator defective | <p>Disconnect green conductor from alternator. Disconnect connector "F" from the A.R.C. Using a tester, check that resistance between pin 1 of connector disconnected from A.R.C. and green conductor terminal disconnected from alternator is zero. Check that resistance of one of the two points towards ground is infinite. If an error appears in one of the two measurements, look for the fault in the wiring. Otherwise the fault is to be found in the alternator regulator.</p> |

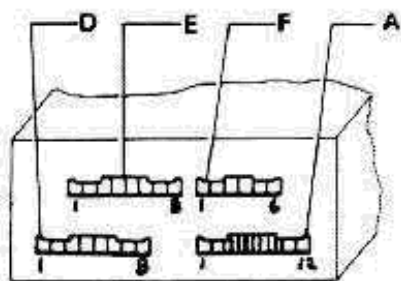
CLUSTER AND ELECTRONIC INSTRUMENTS

ALFA ROMEO CONTROL (AR.C.) WIRING DIAGRAMS

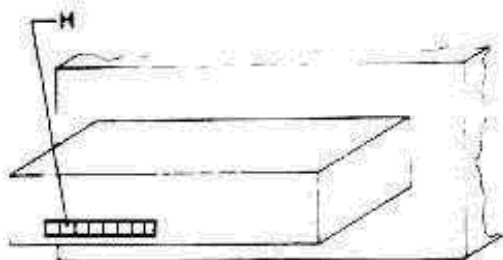
ALFA ROMEO CONTROL (AR.C.) PIN OUT



CONTROL UNIT - FRONT VIEW



CONTROL UNIT - REAR VIEW



DISPLAY - REAR VIEW

Connector A - Fuse box

- 1 +30 Pos.
- 2 +15/54 Pos.
- 3 +50 Pos.
- 4 +Parking lights (input)
- 5 +Parking lights (input)
- 6 Stop light (input)
- 7 Stop switch
- 8 Parking brake pushbutton (input)
- 9 Display lighting rheostat (input)
- 10 Antitheft steering lock and roof light delaying device
- 11 Additional stop
- 12 Left front side marker

Connector B - Right front connection

- 1 Engine oil level
- 2 Engine oil level
- 3 Coolant level
- 4 Coolant temperature sensor (input)
- 5 Free (available for A.B.S. system)
- 6 Right front parking light
- 7 Ground
- 8 Brake pads wear - brake fluid level
- 9 Brake pads wear
- 10 Front right sidemarker

Connector C - Right rear connection

- 1 Polarization
- 2 Right front door pushbutton
- 3 Right rear door pushbutton
- 4 Fuel reserve (input)
- 5 Right rear sidemarker
- 6 Right stop light
- 7 Right rear parking light
- 8 Available

Connector D - Left rear connection

- 1 Left rear door pushbutton
- 2 Left rear parking light
- 3 Left stop light
- 4 Left rear sidemarker
- 5 Left front door pushbutton
- 6 Rear fog light (input)
- 7 Right rear fog light (output)
- 8 Left rear fog light (output)

Connector E - To display

- 1 Ground (-)
- 2 +15/54 Pos.
- 3 Light illuminating under panel
- 4 Data line
- 5 Polarization
- 6 Alarm reset
- 7 Clock
- 8 Strobe

Connector F - Left front connection

- 1 Generator (input)
- 2 Available
- 3 Polarization
- 4 Windshield liquid level
- 5 Oil pressure sensor (input)
- 6 Left front side light

Connector G - Instrument warning lamps

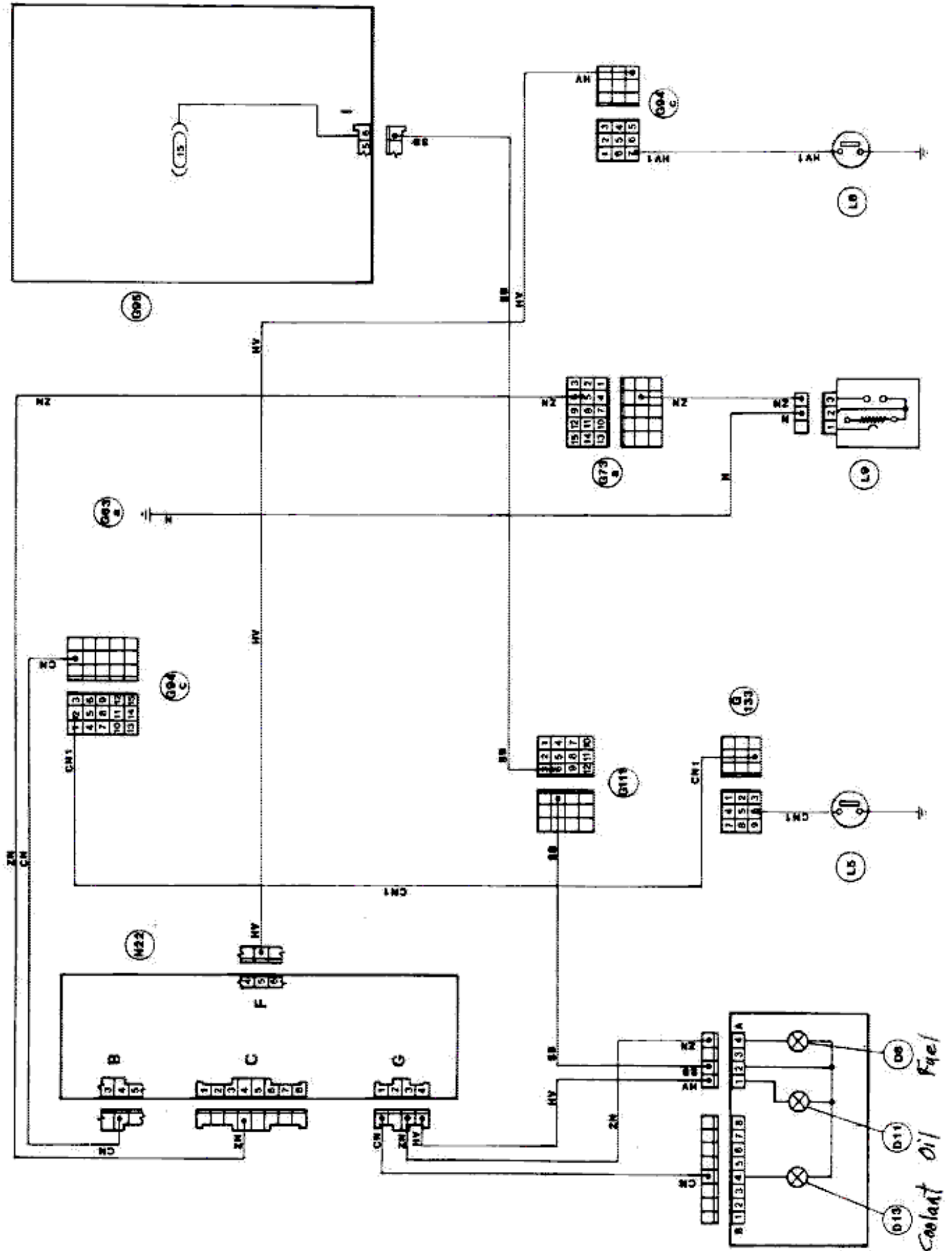
- 1 Engine water temperature warning lamp (output)
- 2 Check warning lamp output
- 3 Fuel reserve warning lamp (output)
- 4 Minimum oil pressure warning lamp (output)

Connector H - Display

- 1 Strobe
- 2 Clock
- 3 Alarm reset key
- 4 Available
- 5 Data line
- 6 Light illuminating under panel
- 7 +15/54 Pos.
- 8 Ground (-)

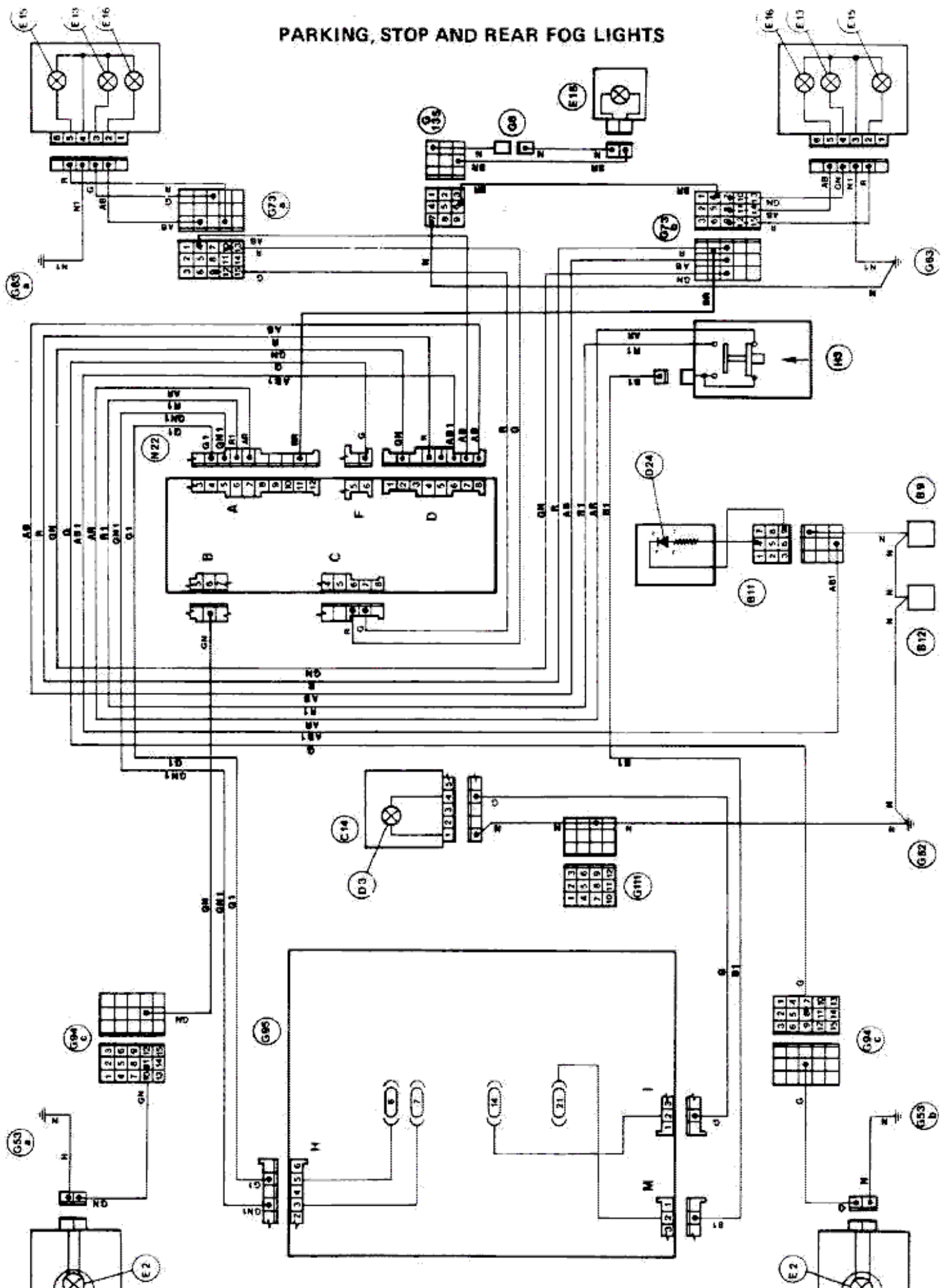
CLUSTER AND ELECTRONIC INSTRUMENTS

CLUSTER WARNING LAMPS AND SENSORS



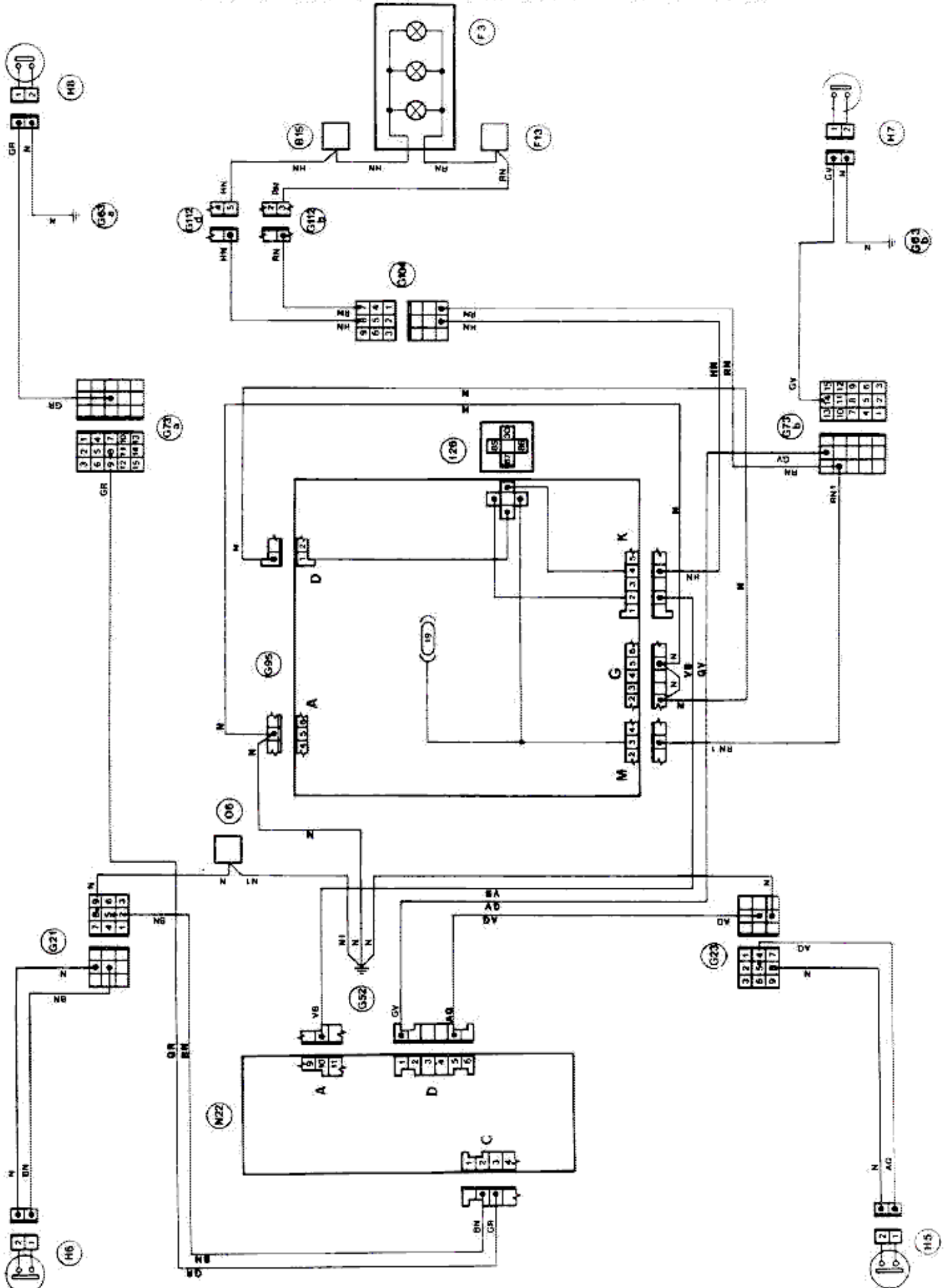
CLUSTER AND ELECTRONIC INSTRUMENTS

PARKING, STOP AND REAR FOG LIGHTS



CLUSTER AND ELECTRONIC INSTRUMENTS

DOOR CLOSING PUSHBUTTONS AND ROOF LIGHTS TIMING



CRUISE CONTROL

FUNCTION

CRUISE CONTROL is an electronic device which allows a vehicle to travel at a constant speed without

holding the accelerator pedal down. Both vehicles with manual and automatic transmission are fitted

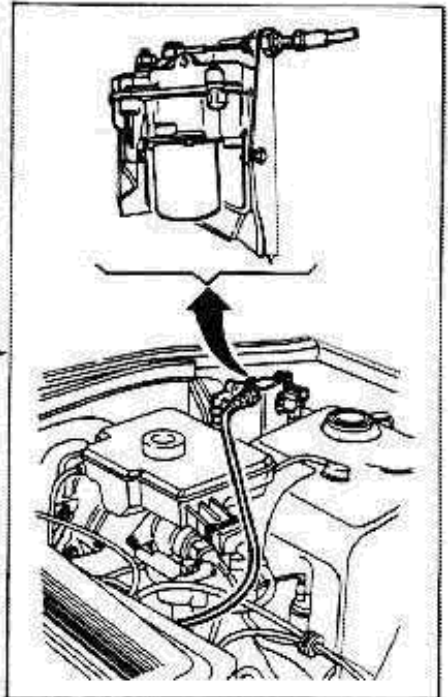
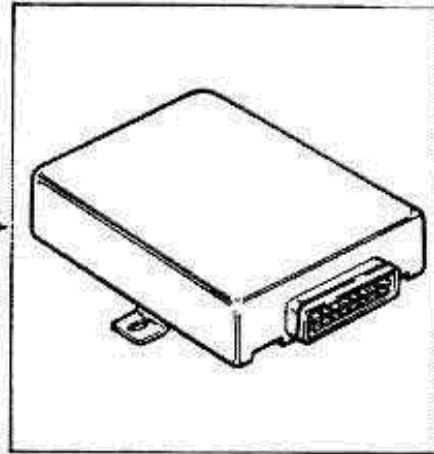
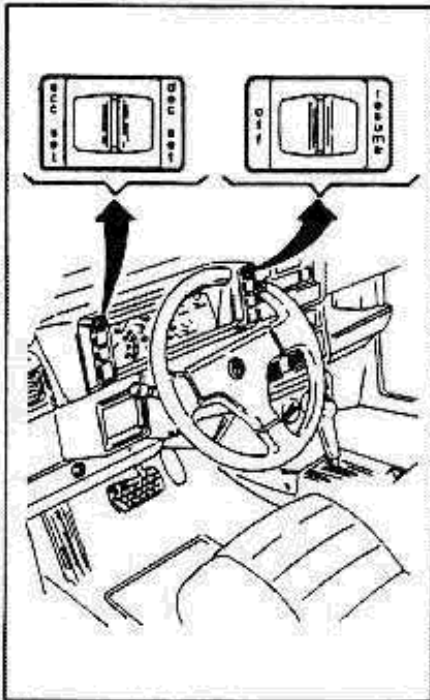
with this device.

DESCRIPTION

The driver uses two control switches positioned at the side of the cluster to send signals to a control unit.

This, in turn, controls an electro-mechanical actuator which, linked to the accelerator throttle, controls its

position and varies the speed of the vehicle.



To use the device correctly it is necessary to bear the following points in mind:

- The device can only be enabled if the vehicle's speed is above a given level; the minimum speed at which it can be enabled is 25 to 40 kph (15.5 to 24.8 mph). Therefore, to be able to set the speed or to return to a speed previously stored in the memory, it is necessary to travel at a speed greater than the minimum. If, when the vehicle is running at a set cruise speed, the speed falls below the minimum, the device is disabled.
- The desired running speed can be set in two ways:
 - a) reach the desired speed to be set, then move the **set** control switch briefly into one of the two positions.
 - b) drive at a speed greater than

the minimum, move the **set** control switch into either the "**acc set**" or "**dec set**" position; the speed increases or decreases progressively; when the desired speed is reached, release the **set** control switch.

- the speed set is memorized by the control unit; the memory is cancelled only if the ignition key is removed or if travelling at a speed lower than the minimum the **off/resume** control switch is moved into the "**resume**" position.

To set the memorized speed it is necessary to travel at a speed greater than the minimum and move the **off/resume** control switch into the "**resume**" position; the vehicle accelerates or decelerates until it reaches the memorized speed.

- The set cruise speed can be

altered by moving the **set** control switch. If the **set** control switch is held in position, the speed increases or decreases progressively, but if it is moved briefly, the speed alters by 1 kph (0.6 mph) each time.

- If the driver accelerates when cruising in order to overtake or if the speed increases by more than 6 kph (3.7 mph) due to external factors, the device is disabled. When the speed then decreases to reach the value previously set the device is re-enabled.
- If either the brake or the clutch pedal is pressed when cruising or the **off/resume** control switch is moved into the "**off**" position, or if the vehicle decelerates by more than 1.6 m/sq-sec (5.25 ft/sq-sec), the device is disabled.

SYSTEM COMPONENTS

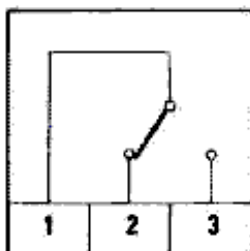
The system is made up of two control switches, a relay, an electro-mechanical actuator and a control unit.

CONTROL SWITCHES

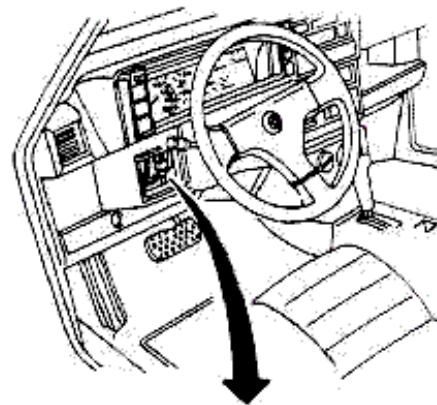
When the *acc set/dec set* and *off/resume* control switches are moved they send a +12 voltage to a pin in the control unit, except for the *off/resume* control switch which, when moved into the 'off' position, sends a +12 voltage to the relay. To check that a control switch operates, set the tester for ohmmetric readings of 200 Ω F.S. and check the continuity between the control switch pins with reference to the following figures:

CONTROL SWITCH MOVED INTO POSITION:

- "dec set"
- "off"

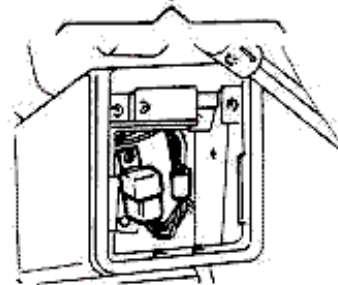


The relay is located behind the dash panel to the left of the steering column.

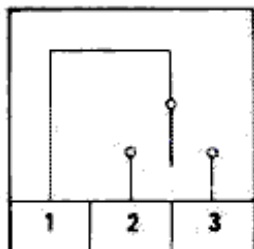


RELAY

When the relay is de-energized, it sends a +12 voltage to a pin in the control unit. By moving the *off/resume* control switch into the 'off' position, the relay is energized and the voltage removed from the control unit pin.

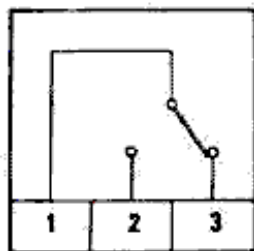


CONTROL SWITCH RELEASED

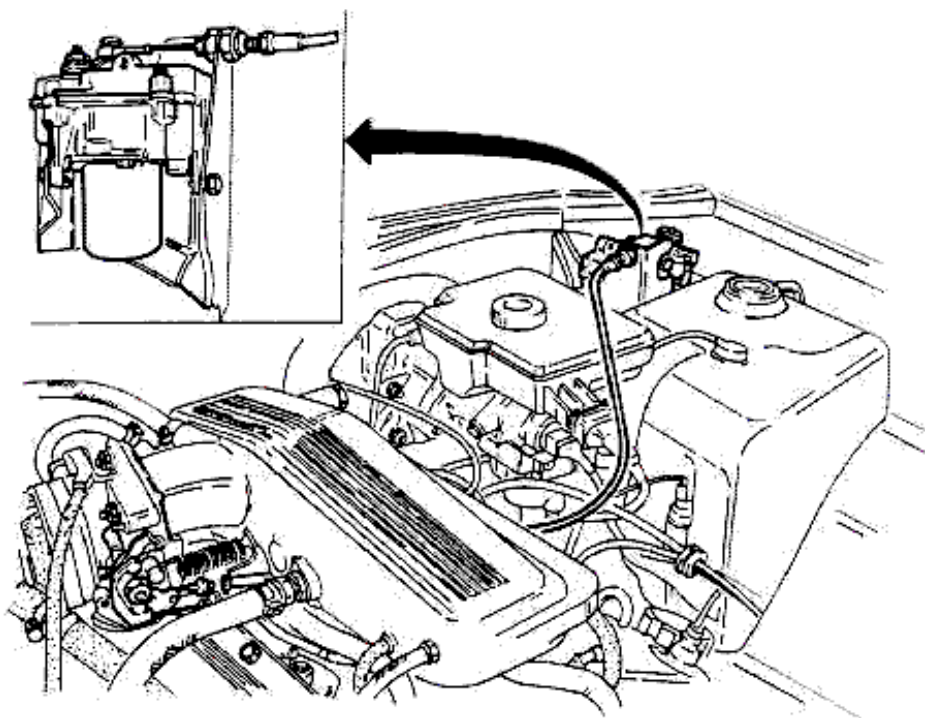


CONTROL SWITCH MOVED INTO POSITION:

- "acc set"
- "resume"



ELECTROMECHANICAL ACTUATOR



The electromechanical actuator is located in the engine compartment. It contains an electric motor that moves a lever connected by a metal cable to the accelerator throttle. The motor rotation regulates the position

of the accelerator throttle. The motor is connected to the lever by a solenoid coupling which separates them when the device is disabled so that the lever is free to follow the movement of the accelerator throttle.

CLUSTER AND ELECTRONIC INSTRUMENTS

For a clearer understanding of how the solenoid coupling is controlled see the diagram below.

The solenoid coupling is linked to the control unit which sends pin A a +12 voltage. Pin B is linked to a normally closed contact switch located on the clutch pedal (on vehicles with automatic transmission this contact switch is replaced by a jumper). The contact switch, in turn, is connected to ground through the stop lights bulbs, so that if the clutch or brake pedals are released pin B is grounded

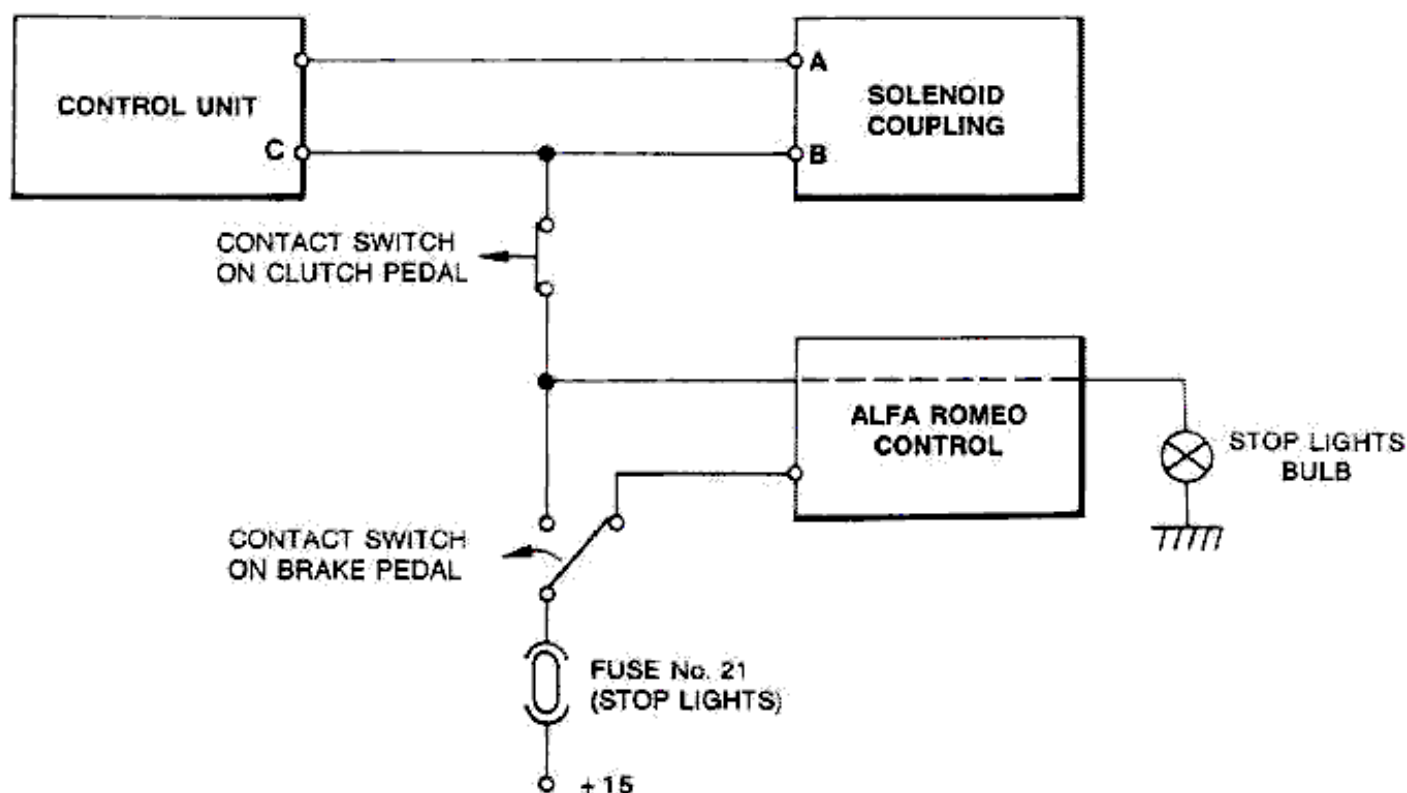
and the coupling energized. When the clutch pedal is pressed this connection is broken and the coupling is de-energized. When the brake pedal is pressed a +12 voltage is sent to pin B and the coupling is de-energized. The control unit detects when the coupling is de-energized through pin C, and cuts off the +12 voltage to pin A.

If there is a malfunction, and the coupling pin B remains grounded when the brake pedal is pressed, the device is disabled all the same. In

fact, when the control unit detects a decrease in the vehicle's speed greater than 1.6 m/sq·sec (5.25 ft/sq·sec), it cuts off the +12 voltage to pin A.

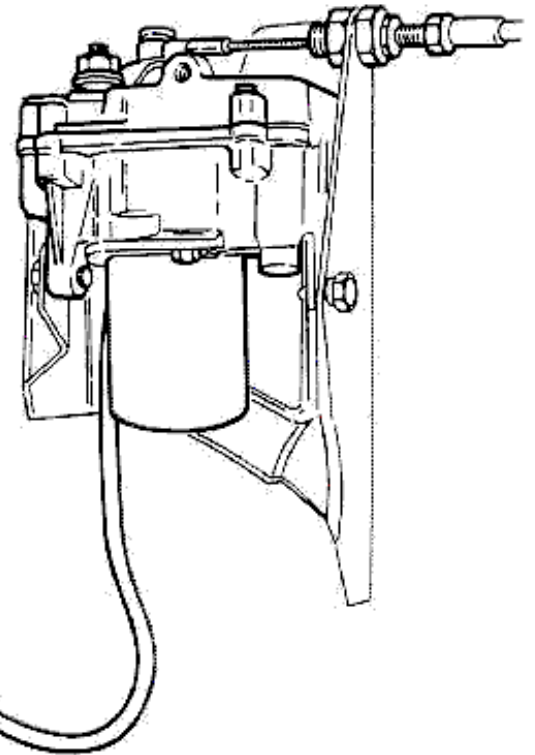
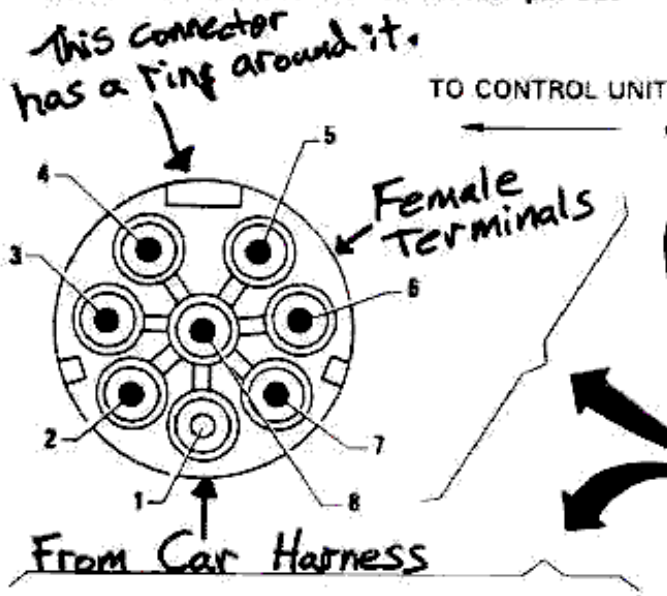
As illustrated above, it is obvious that if all the stop lights bulbs are burnt out, the device is not enabled.

The electromechanical actuator contains a potentiometer through which the control unit picks up the lever's position.

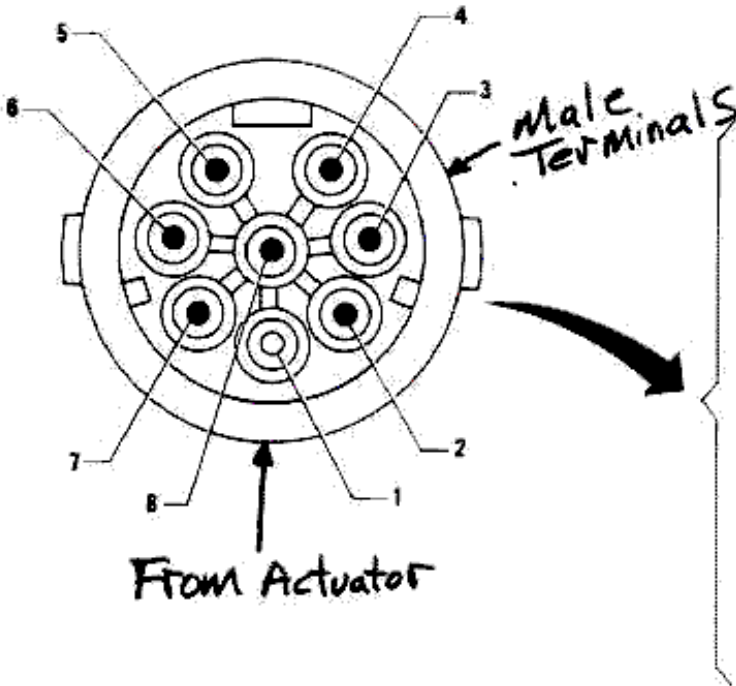


CLUSTER AND ELECTRONIC INSTRUMENTS

Electromechanical actuator connector pin out

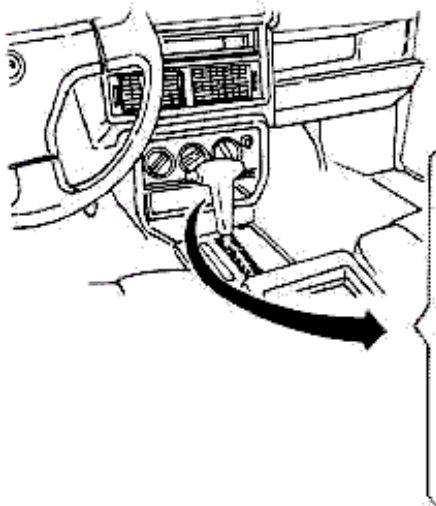


Connector pin out - actuator side



| Pin | Function |
|-----|-------------------|
| 1 | Free |
| 2 | Potentiometer |
| 3 | Potentiometer |
| 4 | Solenoid coupling |
| 5 | Solenoid coupling |
| 6 | Motor |
| 7 | Motor |
| 8 | Potentiometer |

CONTROL UNIT

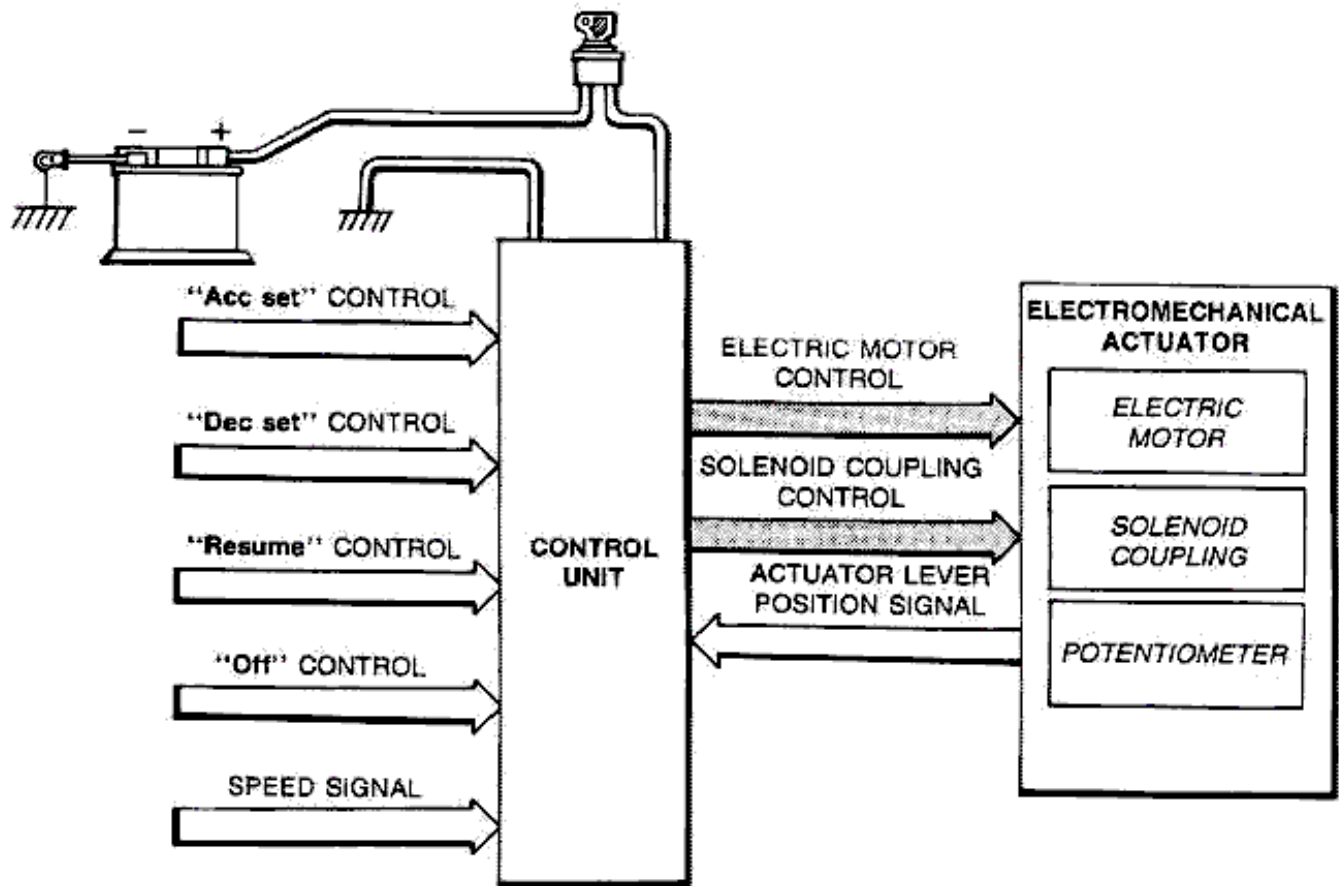


The control unit is located behind the central console under the radio compartment.

The control unit receives the control signals from the two control switches, the speed signal at the same time as the speedometer receives it, and the signal picked up by the potentiometer contained in the electromechanical actuator. The control unit processes these signals and sends a supply voltage to the actuator motor and to the solenoid coupling.

The following diagram illustrates the control unit input - output signals:

CLUSTER AND ELECTRONIC INSTRUMENTS

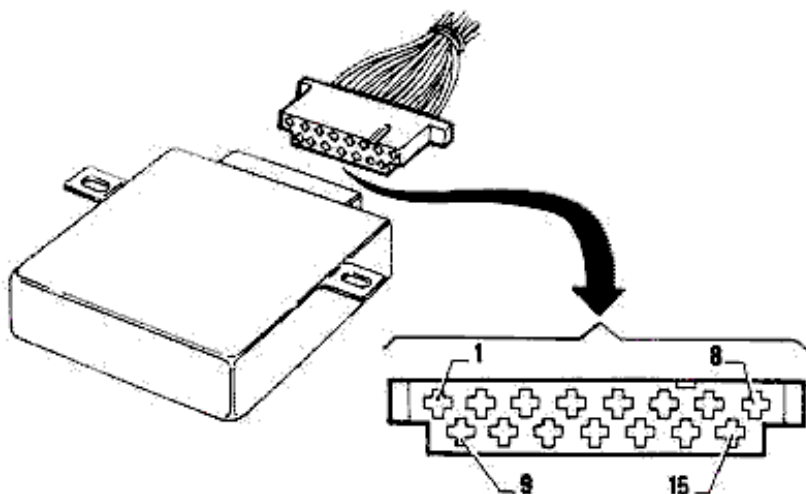


➔ CONTROL UNIT INPUT SIGNALS

➔ CONTROL UNIT OUTPUT SIGNALS

The control unit in vehicles fitted with manual transmission is different from that in vehicles with automatic transmission.

Control unit connector pin out



| Pin | Function |
|-----|---|
| 1 | Actuator potentiometer |
| 2 | Ground |
| 3 | Actuator motor |
| 4 | Actuator coupling/clutch pedal contact switch |
| 5 | Control switch, "resume" position |
| 6 | Control switch "dec set" position |
| 7 | Speed signal |
| 8 | Free |
| 9 | Actuator potentiometer |
| 10 | Actuator motor |
| 11 | Actuator coupling |
| 12 | Control switch, "off" position |
| 13 | +15 cable |
| 14 | Control switch, "acc set" position |
| 15 | Free |

TROUBLE DIAGNOSIS AND CORRECTIONS

The trouble diagnosis procedure is divided into 7 points which correspond to the malfunctions most likely to occur in the CRUISE CONTROL electrical system.

- 1) The device is not enabled when the **set** control switch is moved into the "acc set" position.
- 2) The device is not enabled when the **set** control switch is moved into the "dec set" position.

- 3) The device is not disabled when the **off/resume** control switch is moved into the "off" position.
- 4) The device is not enabled when the **off/resume** control switch is moved into the "resume" position.
- 5) The device is not disabled when the **off/resume** control switch is moved into the "off" position, and it is not enabled when the switch

is moved into the "resume" position.

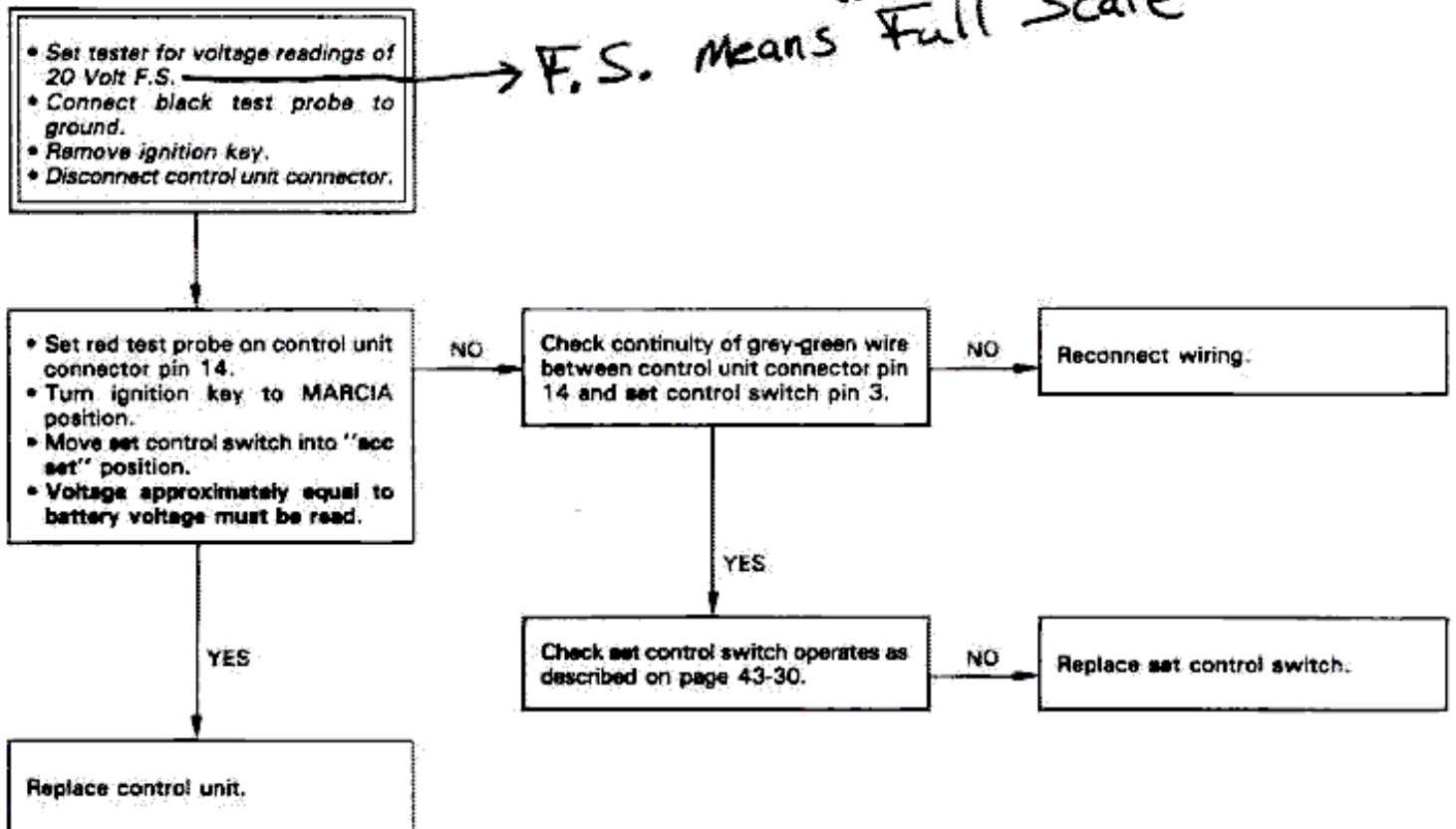
- 6) The device is not enabled.
- 7) The device tends to accelerate and after a few seconds is disabled when the brake pedal is pressed.

NOTE:

If an indication to check the continuity of a wire is given while carrying out trouble diagnosis, perform the following operations:

- SET THE TESTER FOR OHMMETRIC READINGS OF 200 Ω F.S.
- SET THE TEST PROBE ON THE CABLE TERMINALS.
- A RESISTANCE VALUE OF APPROX. 0 Ω MUST BE READ.
- CHECK THAT THE CABLE TERMINALS ARE CLAMPED CORRECTLY AND THAT THERE IS NO OXIDATION PRESENT.

1



2

- Set tester for voltage readings of 20 Volt F.S.
- Connect black test probe to ground.
- Remove ignition key.
- Disconnect control unit connector.

- Set red test probe on control unit connector pin 6.
- Turn ignition key to MARCIA position.
- Move set control switch to "dec set" position.
- Voltage approximately equal to battery voltage must be read.

YES

Replace control unit.

NO

- Check continuity of grey-yellow wire between control unit connector pin 6 and set control switch pin 2.

NO

Reconnect wiring.

YES

- Check set control switch operates as described on page 43-30.

NO

Replace set control switch.

3

- Set tester for voltage readings of 20 Volt F.S.
- Connect black test probe to ground.
- Remove ignition key.
- Disconnect control unit connector.

- Set red test probe on control unit connector pin 12.
- Turn ignition key to MARCIA position.
- Move off/resume control switch into "off" position.
- Voltage of approx. 0 Volts must be read.

YES

Replace control unit

NO

- Set red test probe on 159 relay socket pin 86.
- Move off/resume control switch to "off" position.
- Voltage approx. equal to battery voltage must be read.

NO

- Check continuity of grey-red wire between 159 relay socket pin 86 and off/resume control switch pin 2.

NO

Reconnect wiring.

YES

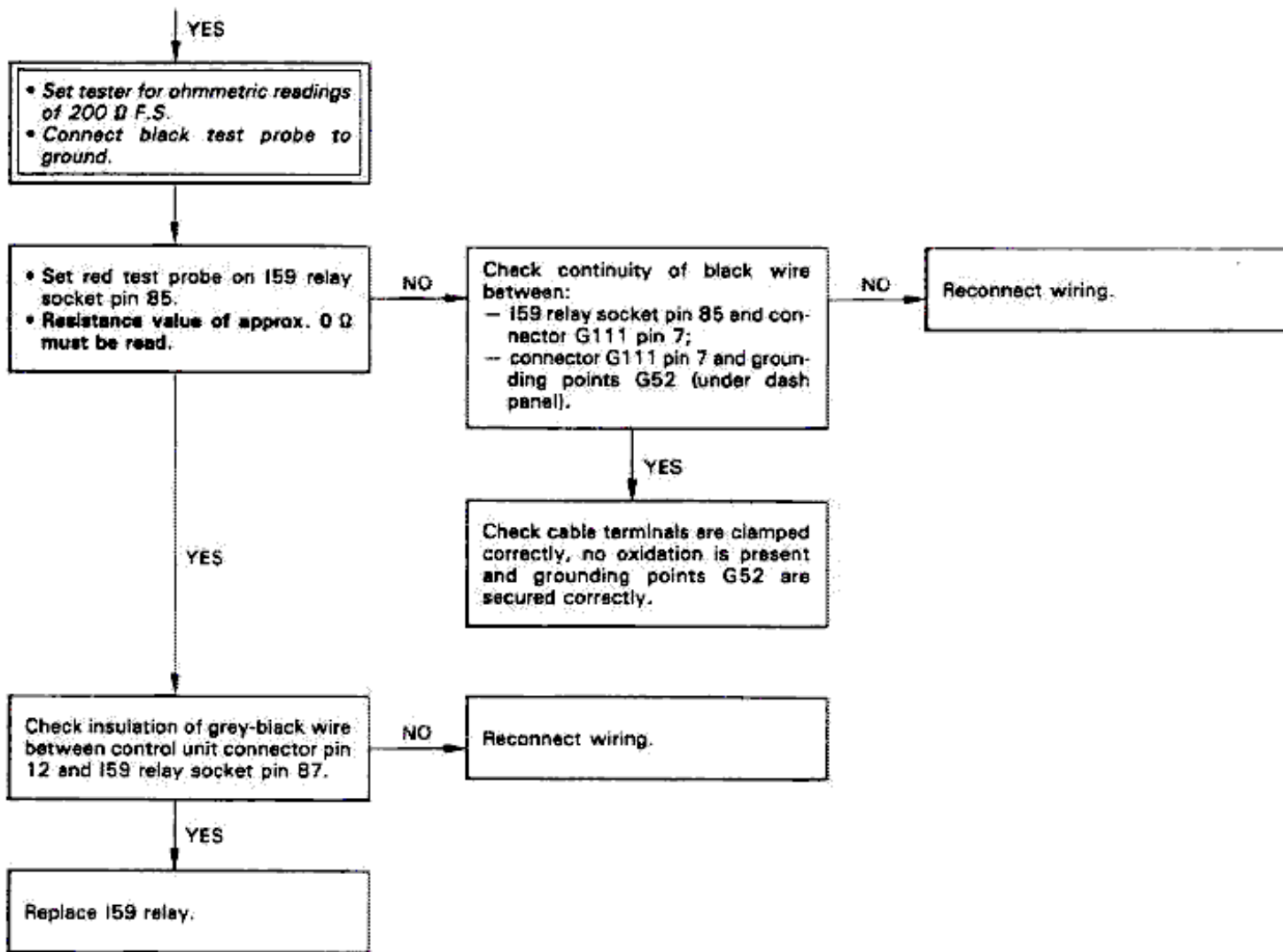
- Check off/resume control switch operates as described on page 43-30.

NO

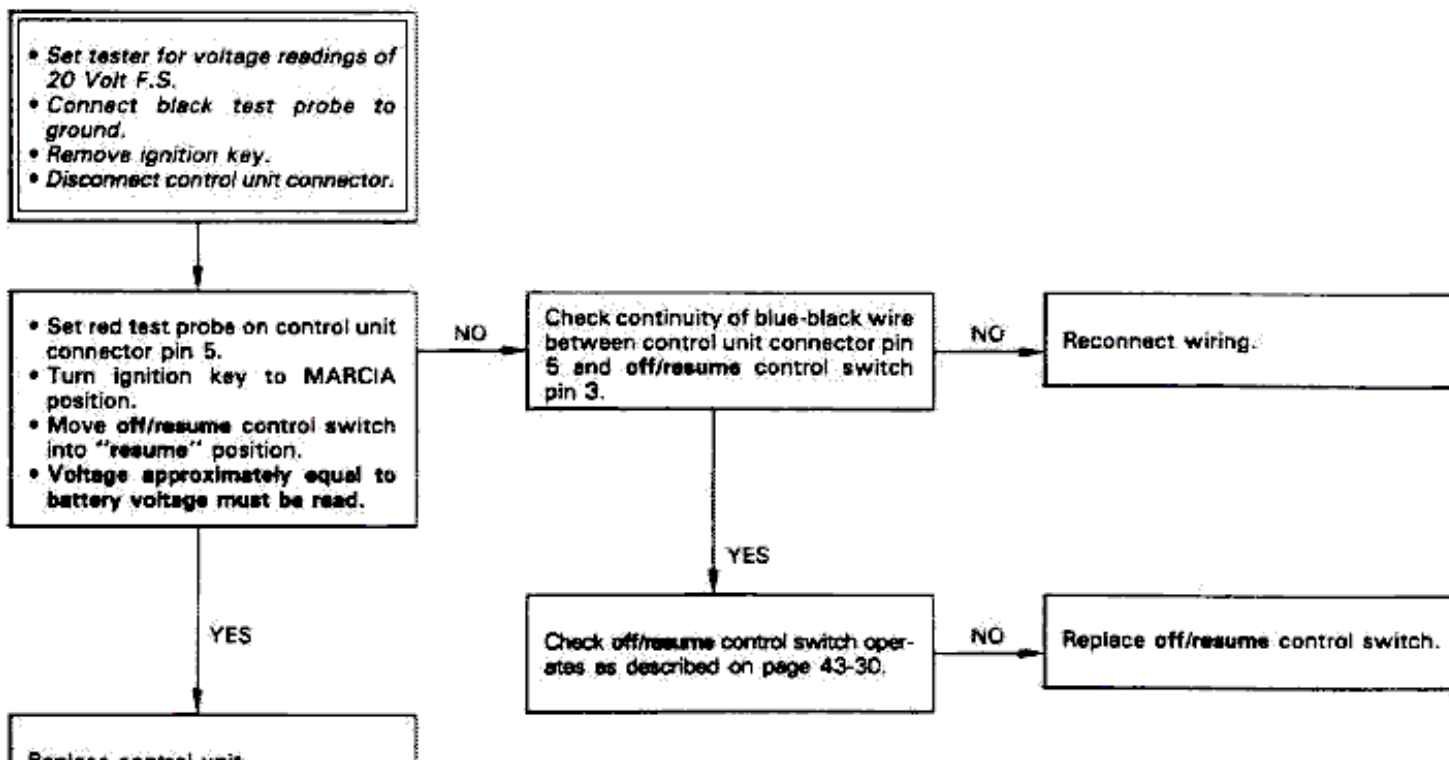
Replace off/resume control switch.

YES
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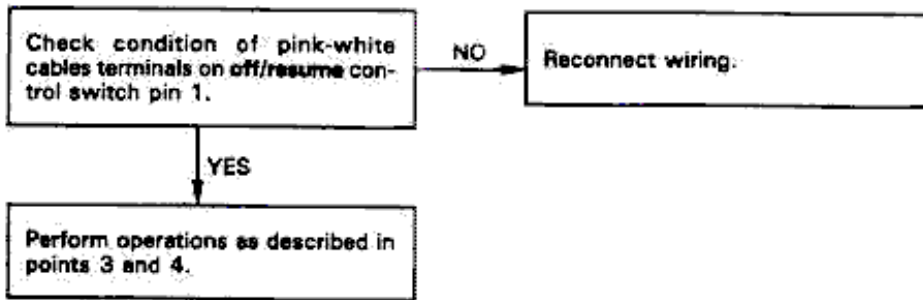
CLUSTER AND ELECTRONIC INSTRUMENTS



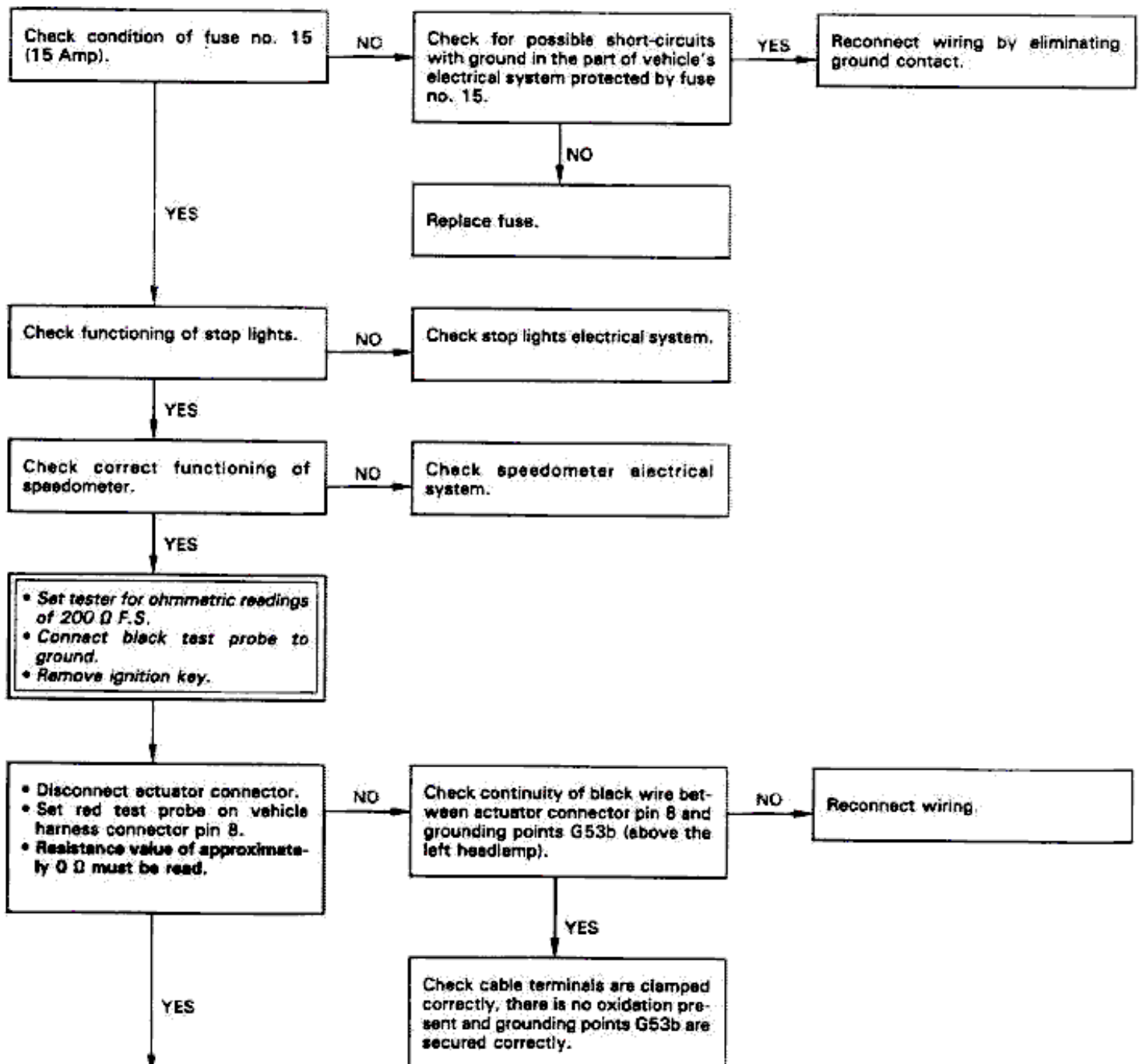
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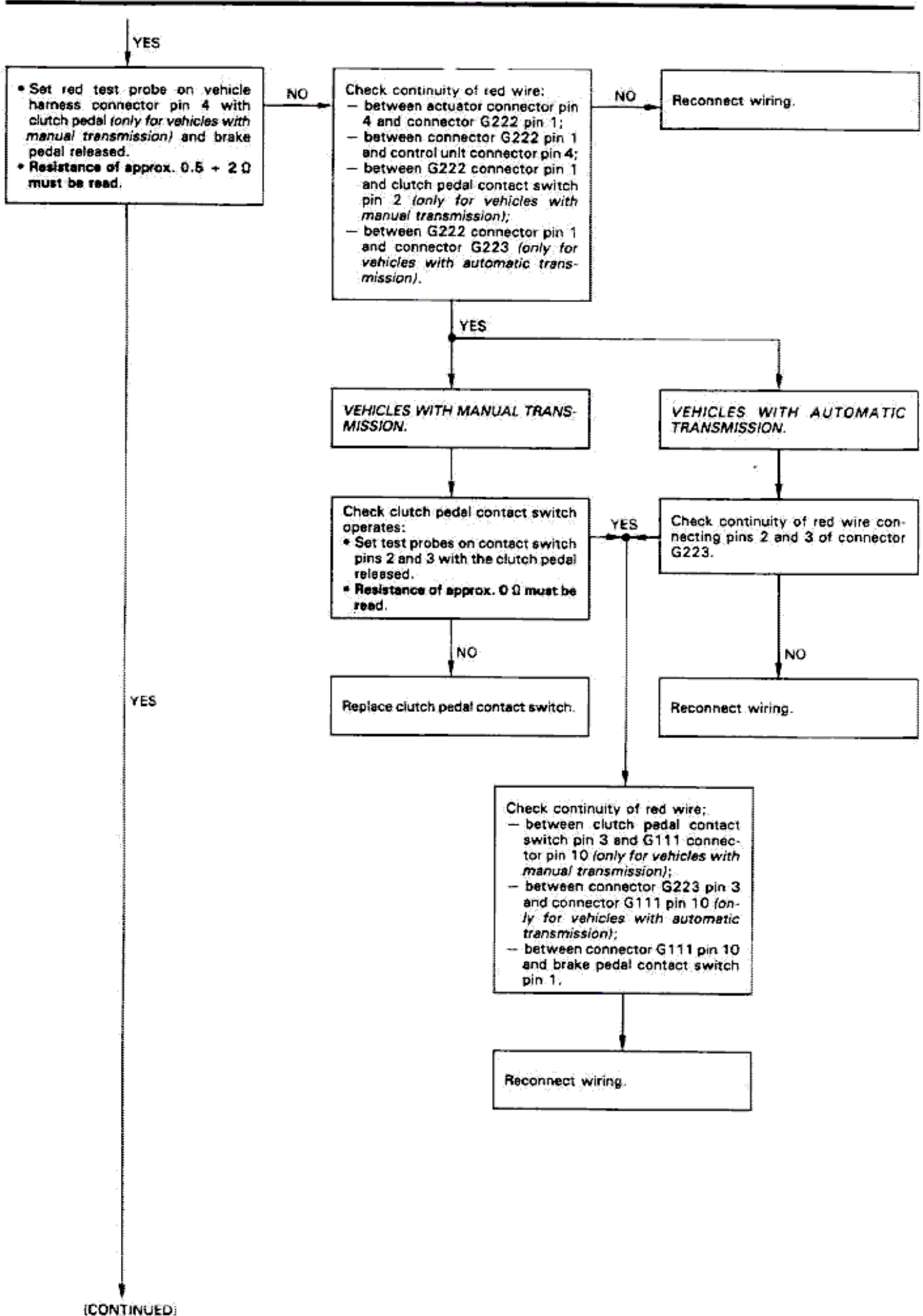


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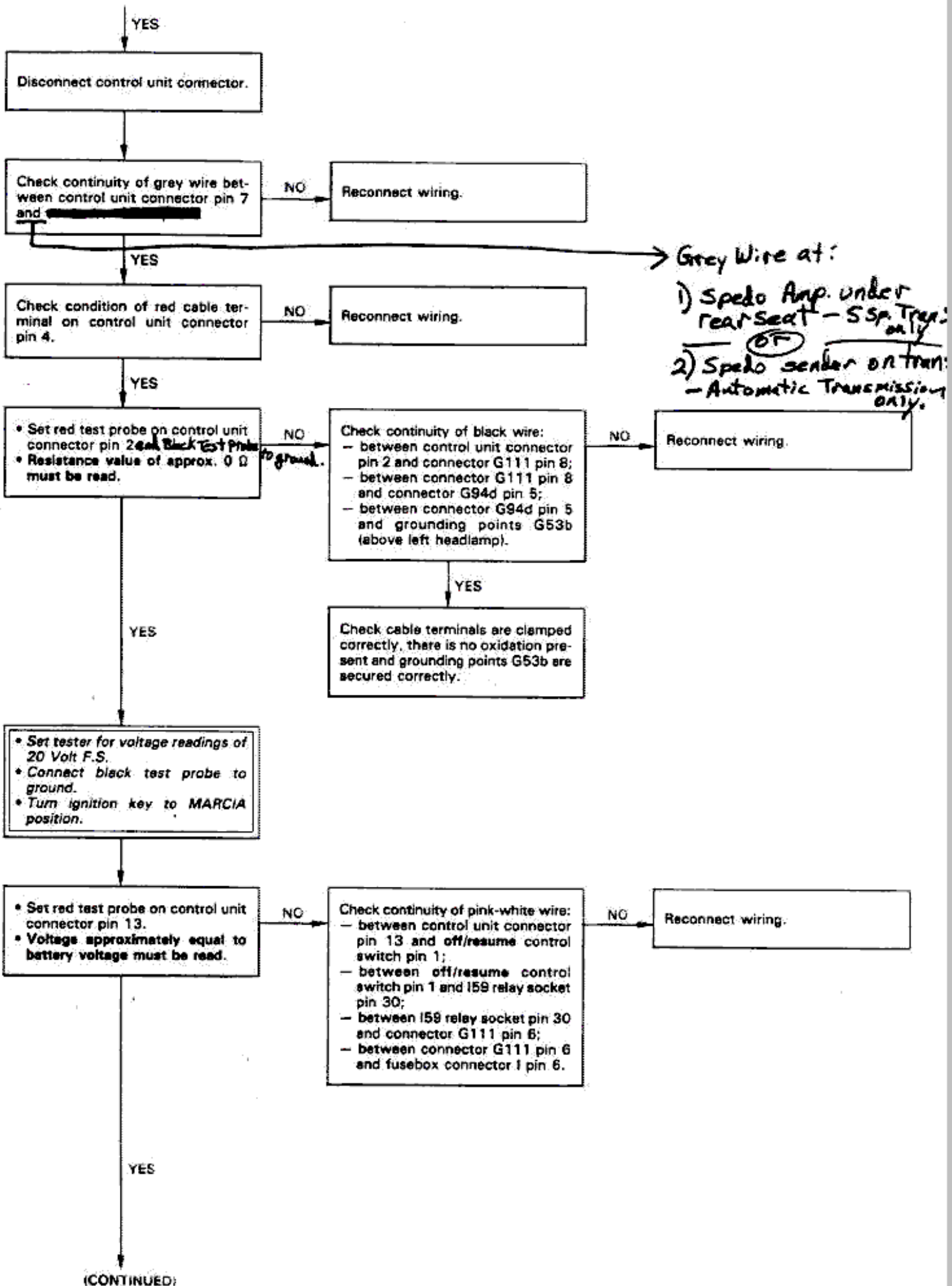


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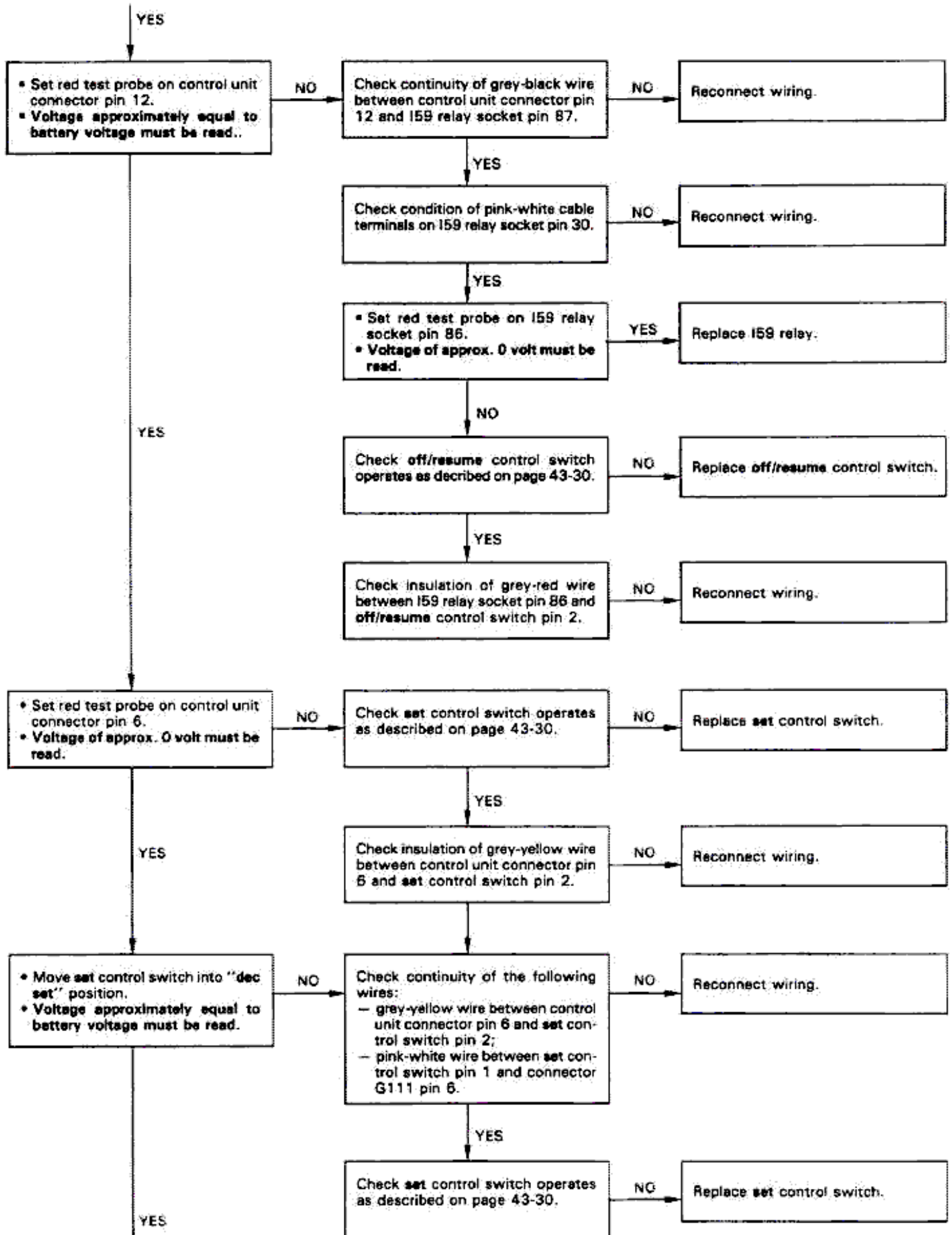
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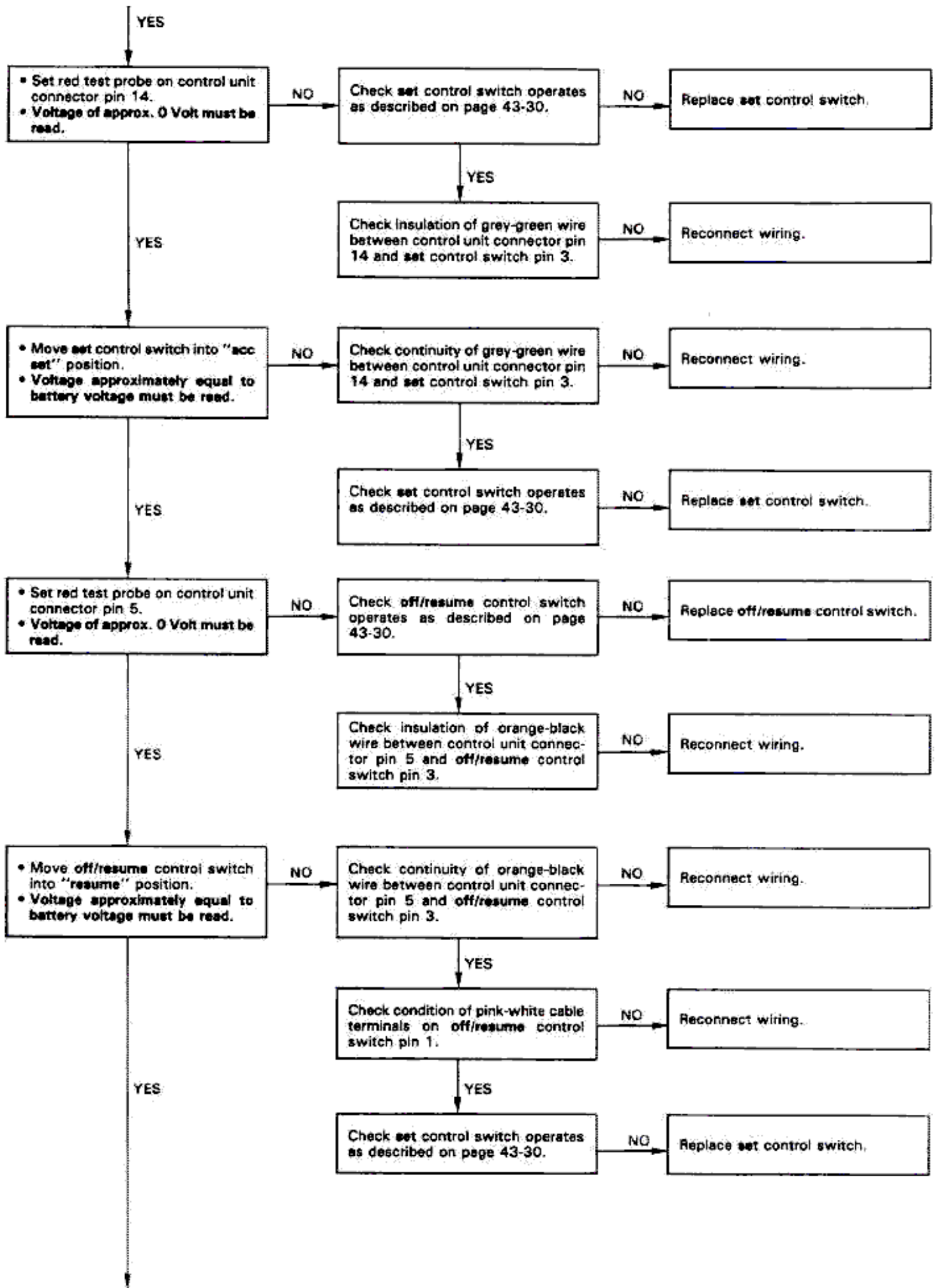
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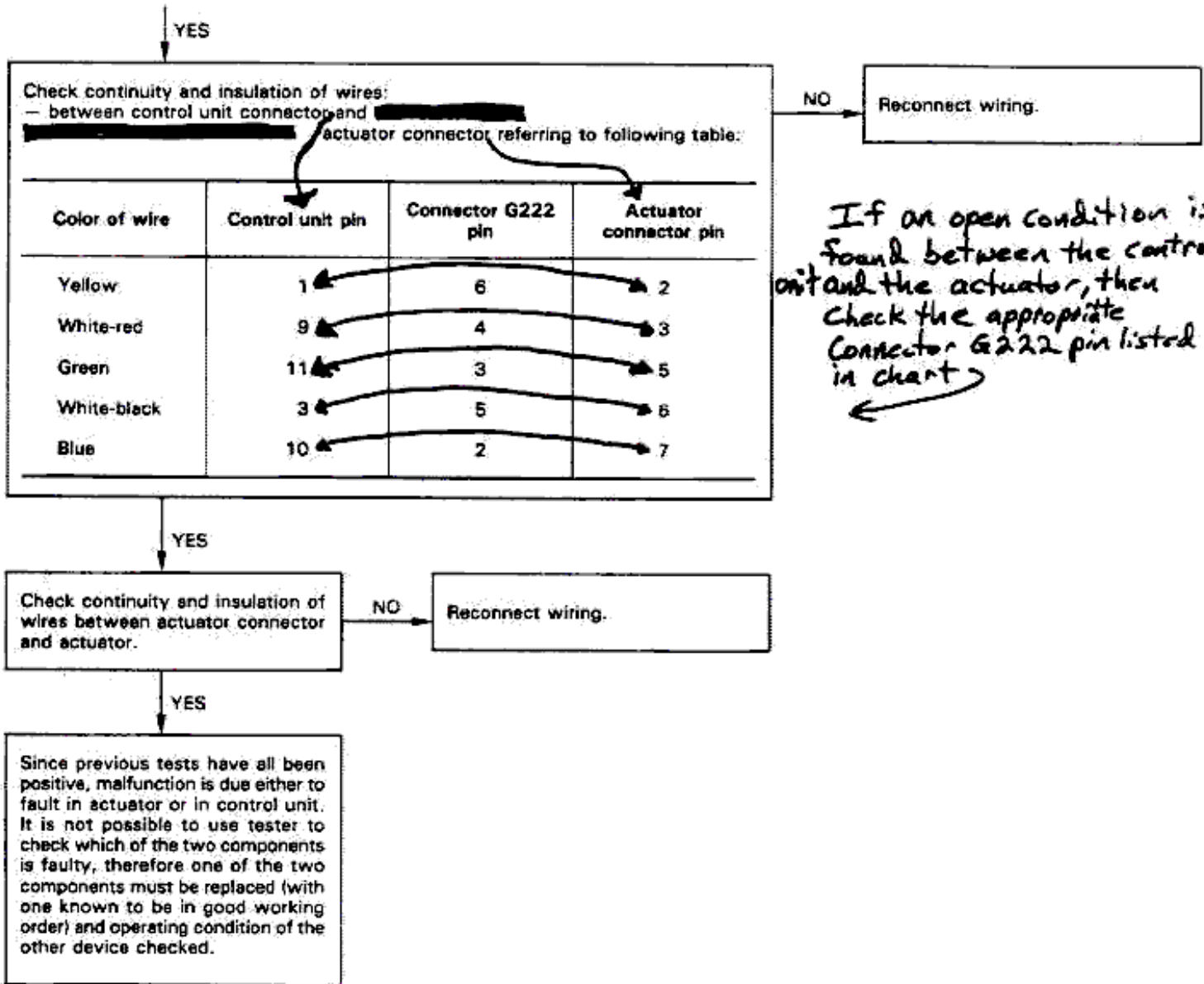
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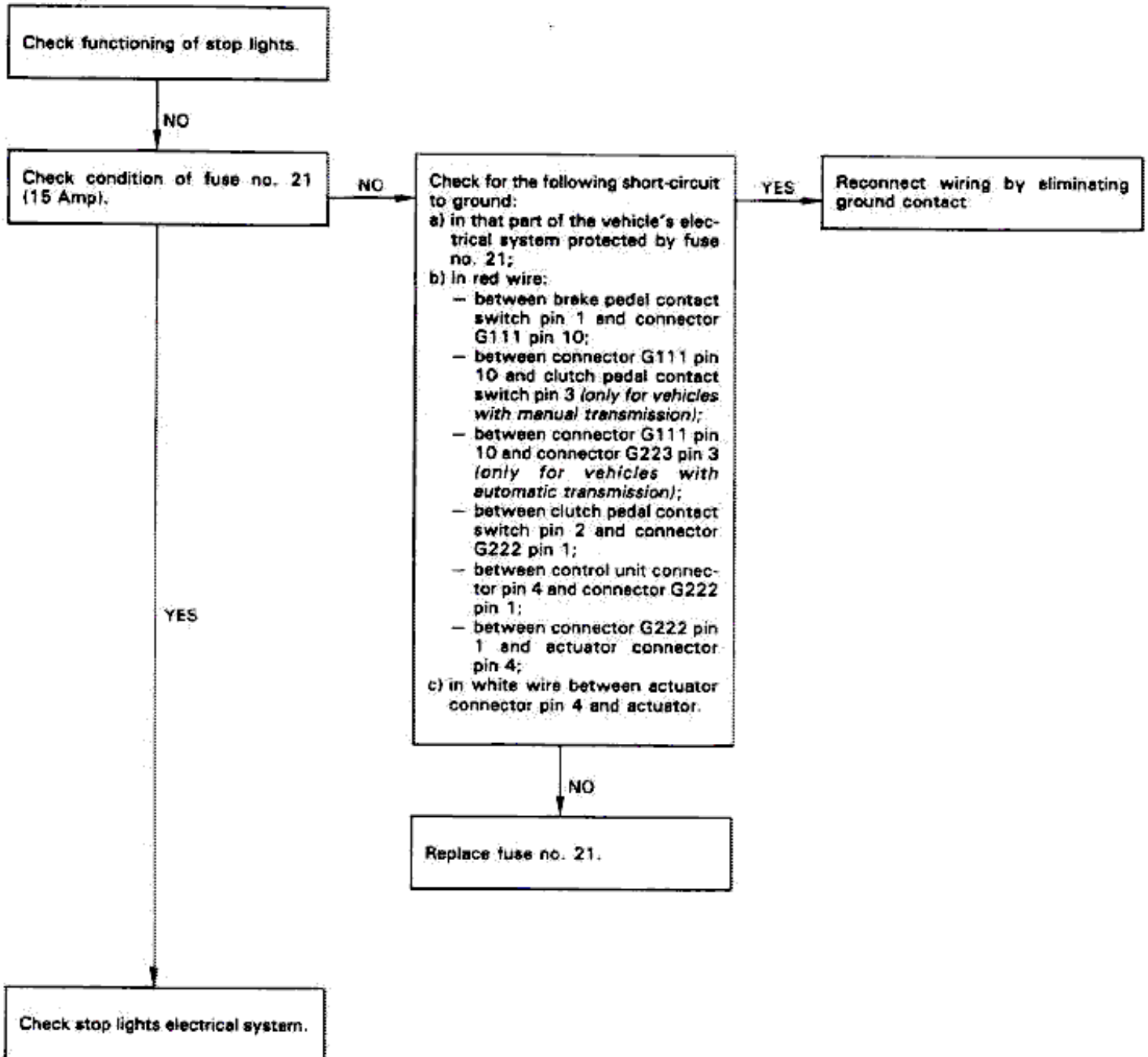
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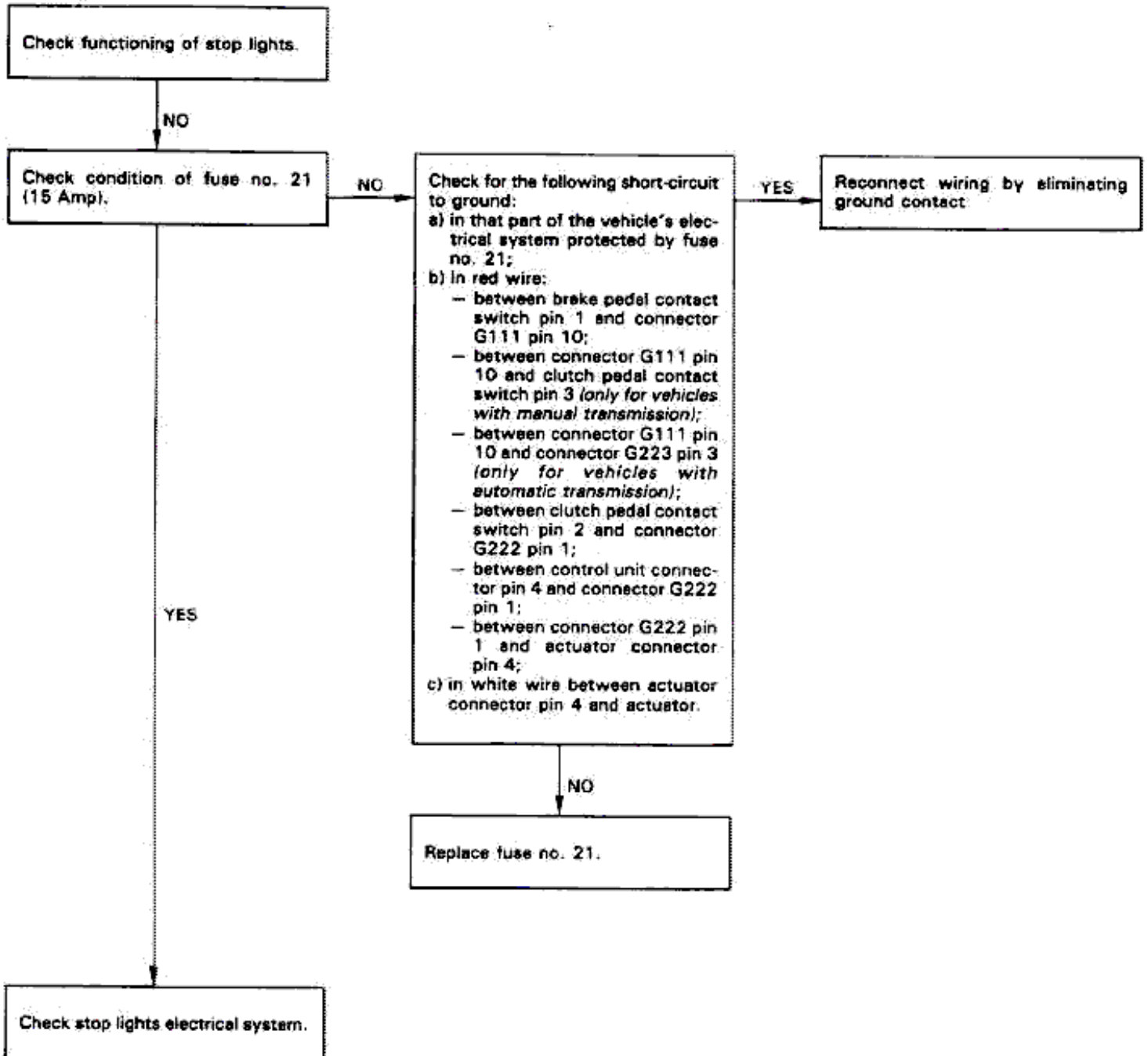
CLUSTER AND ELECTRONIC INSTRUMENTS



7



7



WIRING DIAGRAM

- A1 Battery
- B1 Ignition switch
- B84 Cruise Control "off/resume" switch
- B85 Cruise Control "acc set/dec set" switch
- C2 Electronic speedometer
- G52 Fusebox ground
- G53b Engine compartment ground - left side *behind Head Lamp*
- G73b Connector for left rear services *Bulk Head Connector behind Fuse Box*
- G844 Engine compartment connector - left side
- G85 Central fusebox
- G85V Fuses
- G111 Connector for dash panel instruments wiring
- G222 Cruise Control actuator connector - control unit *3rd from Top*
- G223 Connector for clutch pedal contact switch - Cruise *at bulk head behind fuse box*
- Control *C.A. Has Jumper*
- H3 Stop light switch
- H37 Contact switch on clutch pedal
- (159) Cruise Control "off/resume" switch auxiliary relay *Behind stop Jet Acc.*
- L17 Speedometer sensor
- M14 Cruise Control actuator
- N22 ALFA ROMEO Control unit
- N34 Speedometer pulse generator control unit
- N39 Cruise Control unit

