THIS MANUAL COVERS ALL MODELS OF 1991 TO 1993 164 VEHICLES WITH THE EXCEPTION OF 28 EARLY PRODUCTION ELECTRICAL CIRCUITS ON 1991 MODELS PRODUCED BEFORE JULY 1, 1990.

FOR THOSE 28 ELECTRICAL CIRCUITS ON VEHICLES PRODUCED BEFORE JULY 1, 1990, SEE "EARLY PRODUCTION" WIRING DIAGRAMS AND ELECTRICAL DIAGNOSIS MANUAL.

WIRING DIAGRAMS AND ELECTRICAL DIAGNOSIS MANUAL

1991-1993

164 ALL MODELS

50 STATE
AND
CANADA VERSIONS

ALFA ROMEO DISTRIBUTORS
OF
NORTH AMERICA

FOREWORD

The following manuals provide all electrical and electronic information for 1991 164 vehicles produced for the USA and Canada:

-for vehicles produced before July 90=PA4596B (VOLUME 1), and
PA4596C (VOLUME 2);

-for vehicles produced after 1 July 90=PA4596B (VOLUME 1) only.

This manuals will supply service technicians the information necessary to provide timely and precise repairs.

This manuals contain wiring diagrams, functional descriptions, connector drawings, and "ghost" illustration designed to help locate components on the vehicle being repaired.

Troubleshooting procedures are located at the end of each subject section that provide a specific series of test steps to enabled even an unfamiliar technician to quickly repair almost any electrical problem.

Information detailing basic electrical testing techniques and cautions can be found in the introduction chapter. This should be read before using this manual.

For information not covered in this manual, refer to the appropriate chapter of the designated SERVICE MANUAL.

All information contained in this manual refers to the latest data available at the time of print. Alfa Romeo reserves the right to make changes in design, or additions to, or improvements in its products at any time without notice.
Any of the above mentioned changes will be covered in an updated issue of this manual.

Alfa Romeo

TABLE OF CONTENTS

ELECTRICAL SYSTEM SUBJECT LIST

In order to ease the consultation, the subjects contained in this publication are enclosed in alphabetic order as follows:

SUBJECT — PAGE NUMBER

SUBJECT PAGE NUMBER

Moreover, the complete key to electrical components is reported at the end of this manual at page 951.

ELECTRICAL SYSTEM SUBJECT LIST FOR CANADA VERSION ONLY

SUBJECT PAGE NUMBER

Moreover, the complete key to eletrical components is reported at the end of this manual at page 951.

INTRODUCTION

This manual contains necessary information about the theory of operation of the vehicle's electrical systems to help the operator in troubleshooting these systems. For a better understanding, a wiring diagram and a separate operational description is provided for each electrical sub-system (ignition-injection, low/high beam lamps, anti-theft, etc.). In addition, a troubleshooting table is provided for each sub-system, in which the most likely failures and relevant corrective actions are presented.

GENERAL PRECAUTIONS AND ACCIDENT-PREVENTION WARNINGS

Before attempting any activity on the electrical system, adopt the following precautions.

- Wear-off rings and wrist watch.
- Disconnect one battery lead if any electrical component has to be removed.
- If any component needs replacement, use only genuine Alfa Romeo spare parts.

When acting on vehicle's electrical system, never pull abruptly wires connected to connectors to prevent interruption of cables. Disconnect all electronic control units before performing arc welding on vehicle.

Short circuit warning
Althogh the electric system is only 12V, the high battery capacity could cause very high currents in the case of a short circuit, and subsequent sparks or electric arcs that could burn the operator or start fires.

High voltage warning
The electronic ignition system generates greater than 20,000V and could be fatal to people suffering from heart diseases or using a pacemaker.
Proceed with caution when acting on, or in the proximity of the ignition system.

Fire hazard warning
Never smoke when recharging the battery or when working on the vehicle to prevent accidental fires.

High temperatures warning
If it is necessary to work on vehicle components that operate at high temperatures (halogen lamps), or in the engine compartment for inspections or replacement of parts, avoid direct contact with hot components. If not otherwise stated, turn off the relevant electrical systems and/or shut down the engine and wait until cool.

Air Bag warnings
The vehicle is provided with an inflatable Air Bag safety device; always observe the following precautions:

- Always fasten seat belts. The system must inflate quickly to help protect the driver, and the inflation force could cause further injuries if the driver is too close to (or against) the steering wheel when the air bag inflates.
- Do not place any object on the steering wheel surface that could be projected by the inflation charge and cause severe injuries.
- The system has been designed to be actuated only once; after actuation, the system must be replaced.
- When working on any electrical system in the air bag deployment zone (driver's seat area), disconnect the battery and remove the air bag module from the steering wheel. You may then reconnect the battery and proceed with electrical diagnosis. (See air bag section for air bag module removal and air bag warning code reset instructions).
- Never allow children to sit in the driver's seat even when the vehicle is stopped ; accidental actuation of the air bag system could cause them severe injuries.

ABBREVIATIONS

The following abbreviations have been used throughout this manual:

ABS Anti-lock Brake System
L.H Left hand
R.H Right hand
N.C. Normally Closed
N.O. Normally Open

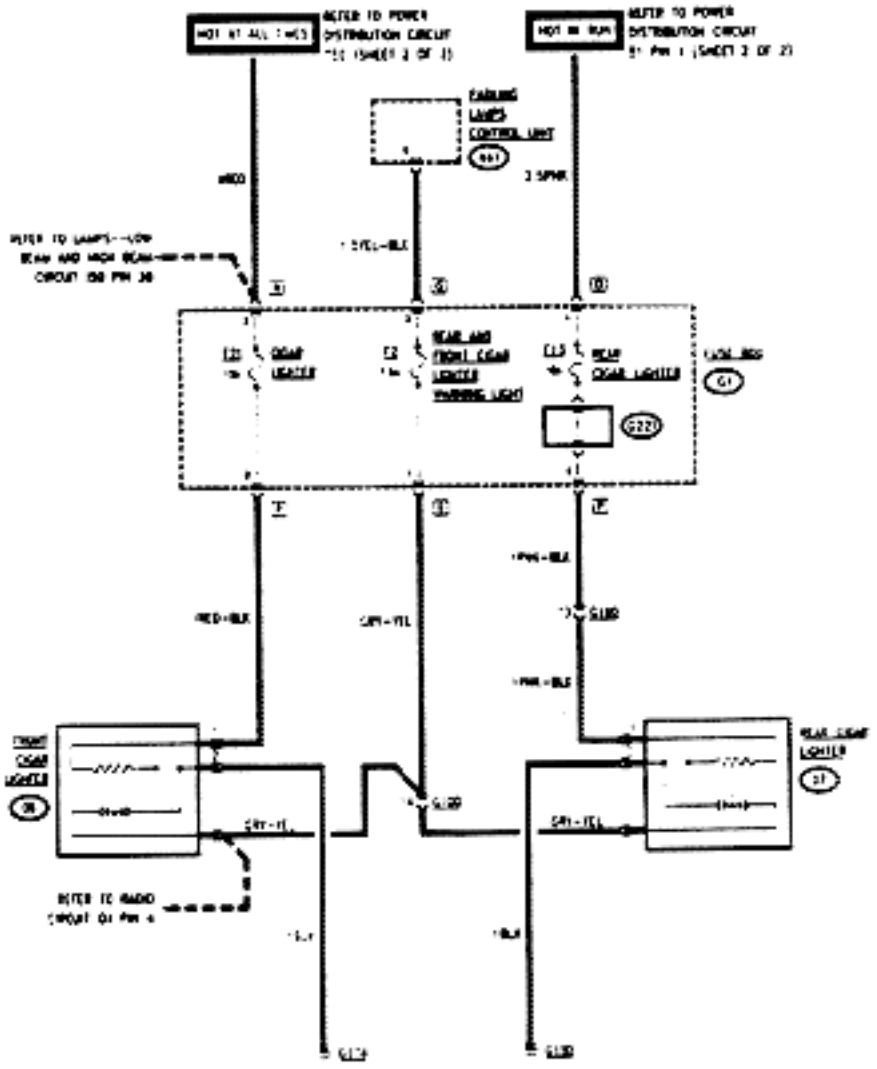
HOW TO USE THIS MANUAL

All information concerning each electrical system has been grouped in single subsections all structured in the same way.
The information contained in each subsection is presented in the following order:

- Wiring diagram (on first reverse page of section - see sample page A).
- General information, operational description and troubleshooting table, (in diagrams featuring more than one fault) (on right hand page facing the wiring diagram - see sample page B).
- List of electrical connectors used in the subject circuit (see sample page C).
- Schematic diagram of circuit (on page facing connectors list - see sample page D).

WIRING DIAGRAMS

A



OPERATIONAL DESCRIPTION

B

GENERAL

The car is provided with two cigar lighters respectively located inside the front and rear ashtrays.
The cigar lighters are illuminated when the parking lights are turned on.
To actuate the lighters, push the center of the lighter: after a few seconds the lighter will pop out, ready for use.
The system is protected by three fuses in the fuse box: G1, as follows:

- F21 fuse (15A) FRONT LIGHTER
- F13 fuse (10A) REAR LIGHTER
- F2 fuse (7.5A) FRONT AND REAR LIGHTER INDICATOR LAMPS

OPERATIONAL DESCRIPTION

12V from the battery is applied to one of the two terminals of front lighter O6 throught the fuse F21.
The rear lighter O7 is energized throught the fuse F13 only when the ignition key is set to "run".
Both O6 and O7 lighters are provided with an indicator light which is actuated by the parking lights control unit #41 when the position lamps are turned on.
The circuit of the indicator lights is protected by the fuse F2.
The second terminal of the front and rear lighters is connected respectively to the ground points G174 and G182 by means of jumpers.
Pressing the center of the lighter which is intended for use, connects to ground the respective jumper, this allowing warming of the lighter.

TROUBLESHOOTING TABLE

Fault type	FAILED COMPONENT: F2 fuse	F13 fuse	F21 fuse	O6 lighter	O7 lighter	#41 control unit
Front lighter inoperative			•	•		
Rear lighter inoperative		•			•	
Lighter illumination inoperative	•					•

- Test-type troubleshooting procedures (on subsequent pages).

When the wiring diagram is laid down on two pages, a blank page is inserted so that the relevant description (generality) will be on a right-hand page. This is also applied to the text: should a subject end on a right-hand page, a blank page is added so that the subsequent subject will start on a right-hand page. To make consultation easy, the sub-sections have been arranged in alphabetical order.
The circuit title is indicated at the top of each page.
A legend of all the system electrical components is included at the end of this manual; the components are grouped according to their function and listed in alphabetical order.
Each component reports the reference to the Service Manual, for an easier component location on the vehicle, except for the junctions, for which reference to the vehicle schematic diagram must be made.

NOTE

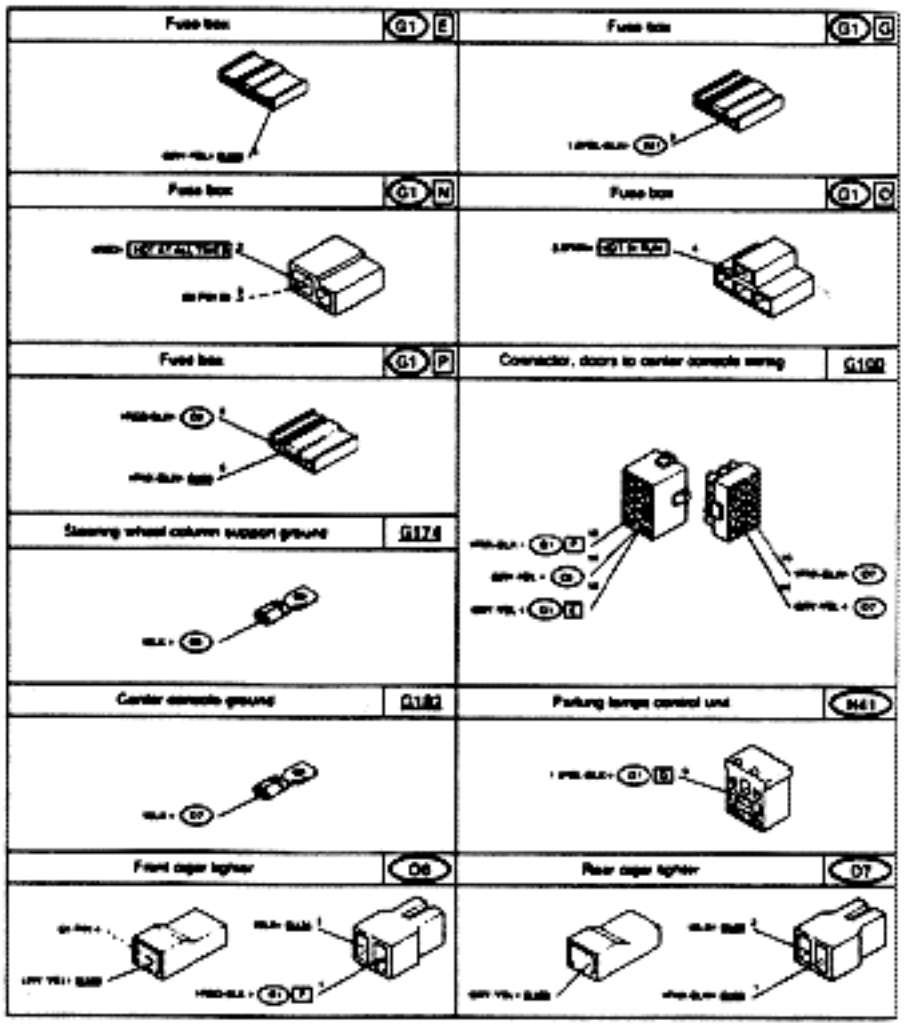
Two wiring diagrams illustrate the printed circuit of the instrument panel and of the fusebox. These wiring diagrams are presented on two pages.

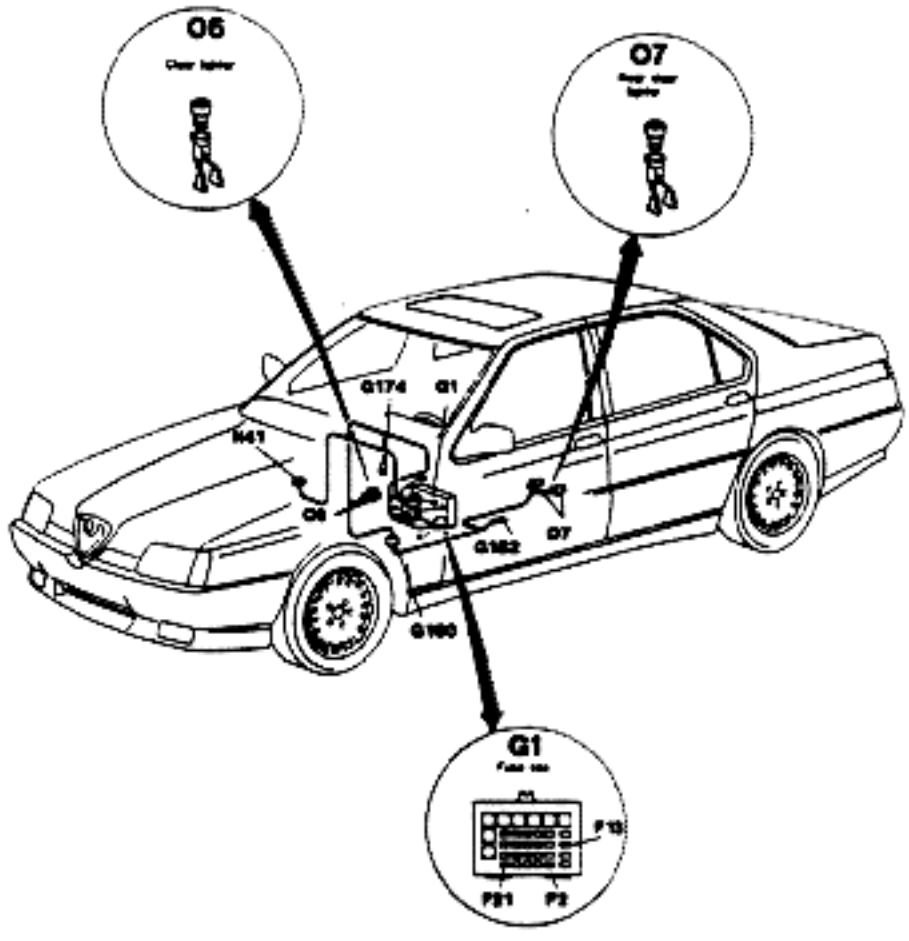
LIST OF ELECTRICAL CONNECTORS

C

SCHEMATIC DIAGRAM OF CIRCUIT

D





WIRING DIAGRAMS

The wiring diagrams are presented from the functional point of view, to ease identification of any failure that could arise. The wiring diagrams must be read from top to bottom; therefore, the power supply point (start point of circuit) is always located in the upper part of the diagram. For complex wiring diagrams, the diagrams are presented on two sheets; in this case the function flow is from left to right. Power supply is presented on wiring diagrams with four different denominations, depending on positioning of the ignition key:

HOT AT ALL TIMES: relevant circuits are continuously powered, even when the key is out of the ignition.

HOT IN PARKING: relevant circuits are powered when the ignition key has been turned off and left in the ignition switch.

HOT IN RUN: relevant circuits are powered when the ignition key is turned to the RUN position.

HOT IN START: relevant circuits are powered when the ignition key is turned to the START position (without mechanical detent); when in this position, activation of the engine starter and momentary de-energization of some circuits to prevent and excessive drainage of battery voltage. Power supply of the various circuits are shown in two power distribution diagrams, also the ignition switch and the electronic control unit power supply relay are illustrated in detail.

The fuse box is never presented in total in the wiring diagrams; complete fuse box wiring diagrams are presented only in the general wiring. Therefore, refer to this diagram if it is necessary to know the actual inner connections of the fuse box.

Each component is identified with an alphanumeric code (e.g. A10); the initial letter identifies the type of component, as indicated below:

A Starting-charging
B Manual electric controls
C Instruments
D Warning lamps
E Exterior lights
F Interior lights
G Fuse box-connectors-ground connections
H Switches
I Relays
L Transmitters
M Solenoids- solenoid valves
N Electronic units, intermittant relays, timers
O Auxiliary equipment
P Electric motors
Q Heat /vent/air conditioning
R Safety devices
S Electronic fuel injection
T Diagnosis

To easily distinguish connectors from components, component codes on wiring diagrams are enclosed in an ellipse, while connector codes are underlined. Components which are part of the subject being treated are always presented in the "OFF" position from a functional point of view, unless otherwise specified. In particular, relays are always represented in a de-energized condition, and switches in N.C. or N.O. condition in relation to their function in the wiring diagram. A dashed line square around a component indicates that component is partially presented in the wiring diagram, and the component is involved and described in several other electric functions. The wiring diagrams also contain references to other diagrams that allow cross referencing the wiring diagrams of the complete vehicle; two type of references can be found:

- Continuous wire: connection between one wiring diagram and another is bridged on a component.

- Dashed wire: connection between one wiring diagram and another is wire-to-wire.

The only exception regarding references to other wiring diagrams concerns the electronic units power supply relay I51. On wiring diagrams where this relay is illustrated, only the wiring diagram of the function being examined is referred to. All systems whose power supply depends on energization of relay I51 are indicated in the relay I51 wiring diagram. All ground points are presented in the lower part of the wiring diagram, except where the complexity of the illustration demands a different solution. Each ground point presented in the wiring diagram is described in a revelant illustration which indicates all circuits connected. Adequate knowledge of all circuits connected to the same ground point facilitates troubleshooting of failures affecting simultaneously all circuits connected to that ground point. Connection of all ground points pertaining to the engine with ground points connected to the vehicle frame is performed by

means of ground straps.
These strips connect the vehicle's frame (front L.H. fender-well) to the engine (gearbox).
Wiring diagrams are presented for both automatic and manual transmission vehicles. In case of differences between the harness of the two versions, the wiring diagram shows with solid lines the circuit relevant to the automatic gear, and with dashed lines the circuit relevant to manual gear. Another type of dashed line has been used to high light specific changes for "S" version (refer to the electric symbols table).

WIRE IDENTIFICATION

Each wire presented in the wiring diagrams is provided with a code consisting of letters and numbers (e.g. 1 WHT).
The number identifies the size of wire (cross section of wire is 0.5 sq. mm when not indicated). The letters identify the wire color. The color code is abbreviated for ease of presentation. The table below lists conversion values of wire size from metric system to american system, and color codes.

WIRE SIZE CONVERSION TABLE	
METRIC (CROSS SECTION AREA) (SQ. MM.)	AWG (AMERICAN WIRE GAUGE)
0.5	20
0.75	18
1	16
1.5	14
2	14
2.5	12
4	10
6	8
8	8
16	4
20	4
25	2
32	2

WIRE COLOR	
ABBREVIATION	COLOR
BLK	BLACK
WHT	WHITE
LT BLU	LIGHT BLUE
BRN	BROWN
YEL	YELLOW
RED	RED
GRN	GREEN
GRY	GREY
PNK	PINK
ORN	ORANGE
PPL	PURPLE
PNK-BLK	PINK-BLACK
PNK-WHT	PINK-WHITE
GRY-BLK	GREY-BLACK
GRY-RED	GREY-RED
GRY-YEL	GREY-YELLOW
WHT-BLK	WHITE-BLACK
WHT-RED	WHITE-RED
LT BLU-BLK	LIGHT BLUE-BLACK
LT BLU-WHT	LIGHT BLUE-WHITE
LT BLU-RED	LIGHT BLUE-RED
LT BLU-YEL	LIGHT BLUE-YELLOW
YEL-BLK	YELLOW-BLACK
YEL-GRN	YELLOW-GREEN
YEL-RED	YELLOW-RED

(Cont.d)

GRN-BLK	GREEN-BLACK
GRN-WHT	GREEN-WHITE
RED-BLK	RED-BLACK
ORN-BLK	ORANGE-BLACK
ORN-WHT	ORANGE-WHITE
PPL-BLK	PURPLE-BLACK
PPL-WHT	PURPLE-WHITE
BRN-WHT	BROWN-WHITE
HZL	HAZEL (BROWN)
PLM	PLUM
DK GRN	DARK GREEN
BLU	BLUE
LT GRN	LIGHT GREEN
BLU-RED	BLUE-RED

ELECTRIC COMPONENTS

All the electric components of the vehicle are illustrated by means of symbols. The table below lists all symbols used within the wiring diagrams.

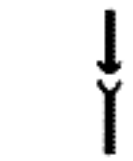
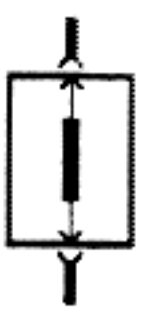
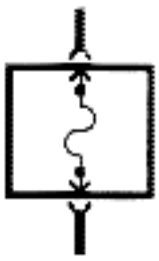
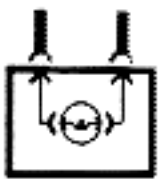
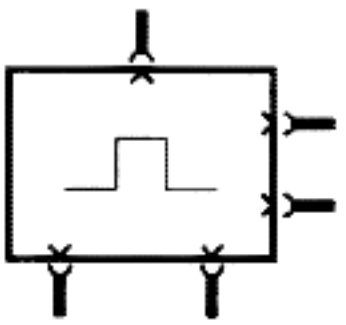
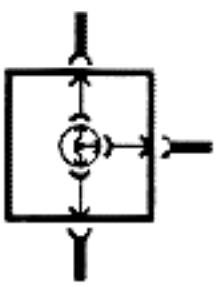
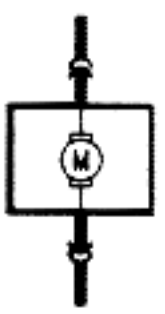
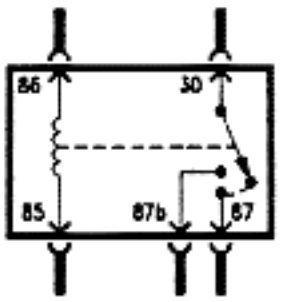
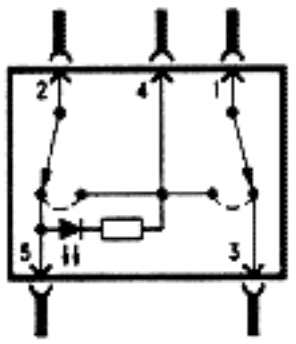
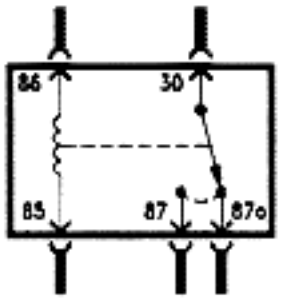
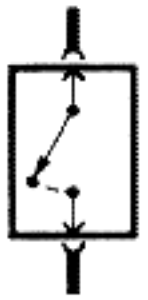
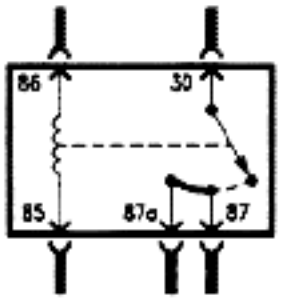
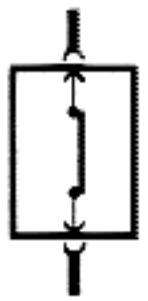
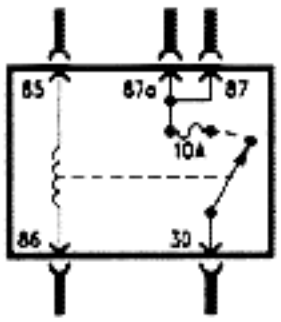
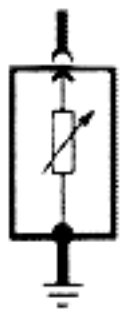
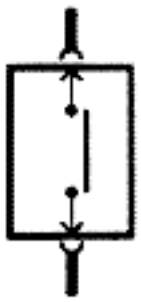
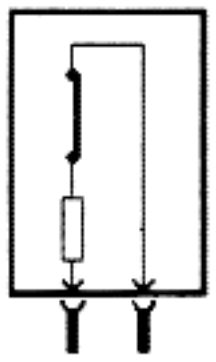
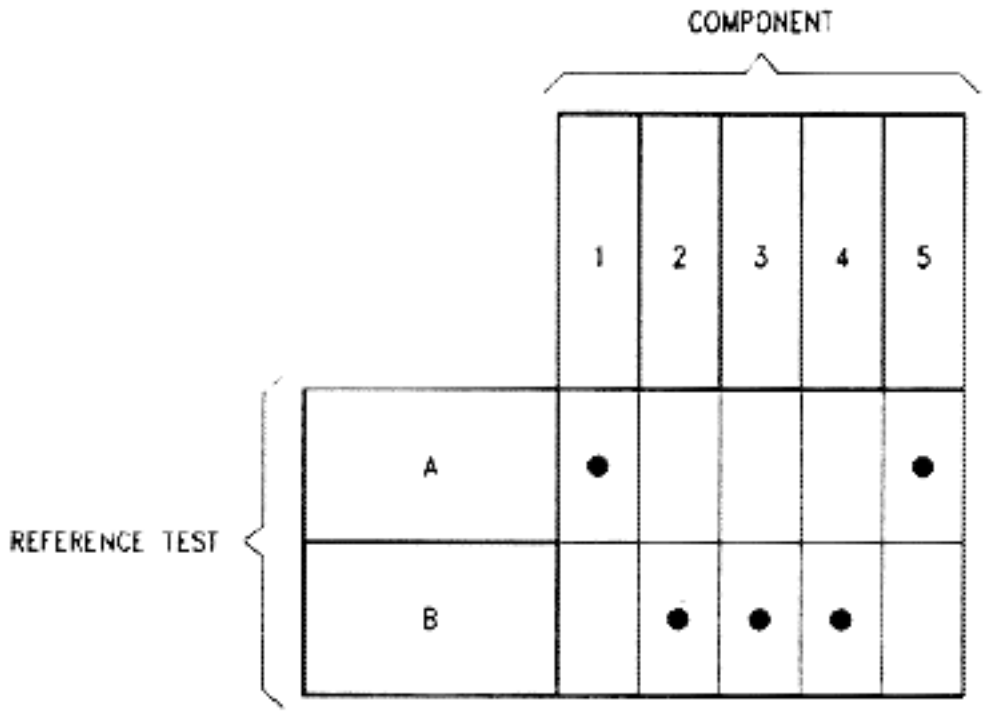
TABLE OF SYMBOL			
SYMBOL	DENOMINATION	SYMBOL	DENOMINATION
	CONNECTOR		BATTERY
	GROUNDING POINT		
	REFERENCE TO THE COMPONENT		CIRCUIT BOARD
	CRIMPING CONNECTION		ELECTROMAGNET
	REFERENCE TO THE CIRCUIT		
	FUSE		INSTRUMENT PANEL
	LAMP		RELAY/INTERMITTANCE
	TWO-BEAM LAMP		MOTOR

TABLE OF SYMBOL

SYMBOL	DENOMINATION	SYMBOL	DENOMINATION
	RELAYS		SWITCHES
			
			
	RELAY WITH FUSE		SENSORS
	SWITCH		
	SPECIFIC DOTTED LINE FOR MODELS WITH MECHANICAL TRANSMISSION		
	SPECIFIC DOTTED LINE FOR MODELS S		

OPERATIONAL DESCRIPTIONS

The page at the right of each wiring diagram contains a brief introduction and an operational description of the related circuit. The operational description has been realized by analyzing the wiring diagram from top to bottom; the voltage flow is illustrated starting from the battery through the related fuses and inhibitors (switches and/or relays) to the load itself.
If the function is divided into more wiring diagrams (Instrument panel, power adjustable seats, parking/ license plate/side marker lamps, etc.), the operational description is preceded by a single general description, but is split into the various sub-functions.
The components are identified in the operational description using the same alphanumerical code enclosed by the ellipse on the wiring diagram.
Where required, a troubleshooting table is located at the end of the operational description of each wiring diagram. This table lists all the failures that could arise during use of vehicle in the function being examined.
This table also provides a list of components that have possibly failed.
Furthermore, for each possible failure a reference is made to the applicable test procedure among those presented at the end of each section.
The sample table shown below indicates that trouble "A" is probably due to failure of components 1 and 5, and that it can be corrected following instructions give in Test "A".



Components and Cables

The second double-size page of each section illustrates all components affected by the wiring, as well as the wiring itself. The table of components lists the connector installed on the component and the corresponding connector on the cable. The connections are illustrated showing the two parts which form the connection (plug and socket).
For each connector or junction only the wires pertaining to the function being examined are illustrated.
As on the wiring diagrams, the wires are identified by the cross section area and color code; in addition, the alphanumeric code of a component connected to that wire is indicated. A vehicle "silhouette" and routing of cables pertaining to the function being examined is presented on opposite page.
In this way, you can easily locate the components.
Finally, a lens-shaped symbol encloses and highlights the utilities pertaining to the affected wiring diagram (cigar lighter, in the example shown) and the relevant protection fuses.
In any case, the fusebox is indicated anytime it is involved in the wiring diagram.

Troubleshooting Procedure

Troubleshooting tests are presented at the end of each section. These tests are identified by the type of failure that the user of vehicle could experience, and by a letter (e.g. Test A, Test B).
Priority is given to the most severe failure or to the most used component.
The tests are presented in tabular form on three columns.
An example of troubleshooting test is illustrated below.

CIGARETTE LIGHTERS - - FRONT AND REAR 184

TYPE OF FAILURE

FRONT LIGHTER INOPERATIVE	TEST A

TEST REFERENCE

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK		
- Check fuse F21 in fuse box G1 for integrity	(OK) ▶	Carry-out step A2
	(OK) ▶	Replace fuse F21
A2 VOLTAGE CHECK		
- Check for presence of 12V between pins 1 and 2 of front lighter O6	(OK) ▶	Replace lighter O6
	(OK) ▶	Carry-out step A3
A3 VOLTAGE CHECK		
- Check for presence of 12V between pin 2N of fuse box G1 and ground	(OK) ▶	Repair wiring between pin 1 of lighter O6 and pin 6P of fuse box G1, and/or between pin 2 of lighter O6 and ground point G174
	(OK) ▶	Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2

End of test A

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TEST STEP: this column contains in numerical order all steps of the troubleshooting procedure.
Inside the procedure, the steps are titled in relation with the type of test being performed.
Where necessary, the operating conditions required for proper execution of the test are indicated at the beginning of the affected test steps.
The test steps are provided with illustrations if the test procedure could be difficult to under-stand.
RESULTS: this column presents the possible results of test step being examined: the result can be satisfactory ((OK)) or unsatisfactory ((OK)).
REMEDY: this column states if the component has to be replaced or repaired, or gives reference to another test step.

NOTE

- Where not otherwise indicated, the checks stated in test steps of the troubleshooting procedure must be performed directly on the pin of the affected component, or on the pin of the connector or terminal board directly connected to that component. An adequate knowledge of the functional flow of the circuit being examined will determine whether a voltage signal is input to, or output from a component. It is therefore advisable to refer to the wiring diagram and operational description prior to performing any troubleshooting procedure.
- Where possible, it is advisable to actuate the component being tested from a remote point in order to simplify and speed up the troubleshooting by isolation of common lines (power supply or ground).

Troubleshooting Tools

A multimeter providing ohmmeter and voltmeter capabilities is required to perform system troubleshooting. Digital multimeters are very high precision instruments whose readings are significant only if contact between multimeter pins and the component is good and the electrical signal does not happen too quickly.
Set multimeter to Ω to measure resistance values; always remove power supply from components before resistance measurement. Remember that:

- Zero Ω means electrical continuity; this measure is significant for wires, fuses, etc., but not for measurement of an electric motor, whose impedance must be equal to a determined resistance value to be considered satisfactory.

- Infinite (∞) means interruption, and as a consequence a wire, fuse, motor, etc. is "open".

Set multimeter to V to measure voltage and select correct scale as dictated by measurement being done.

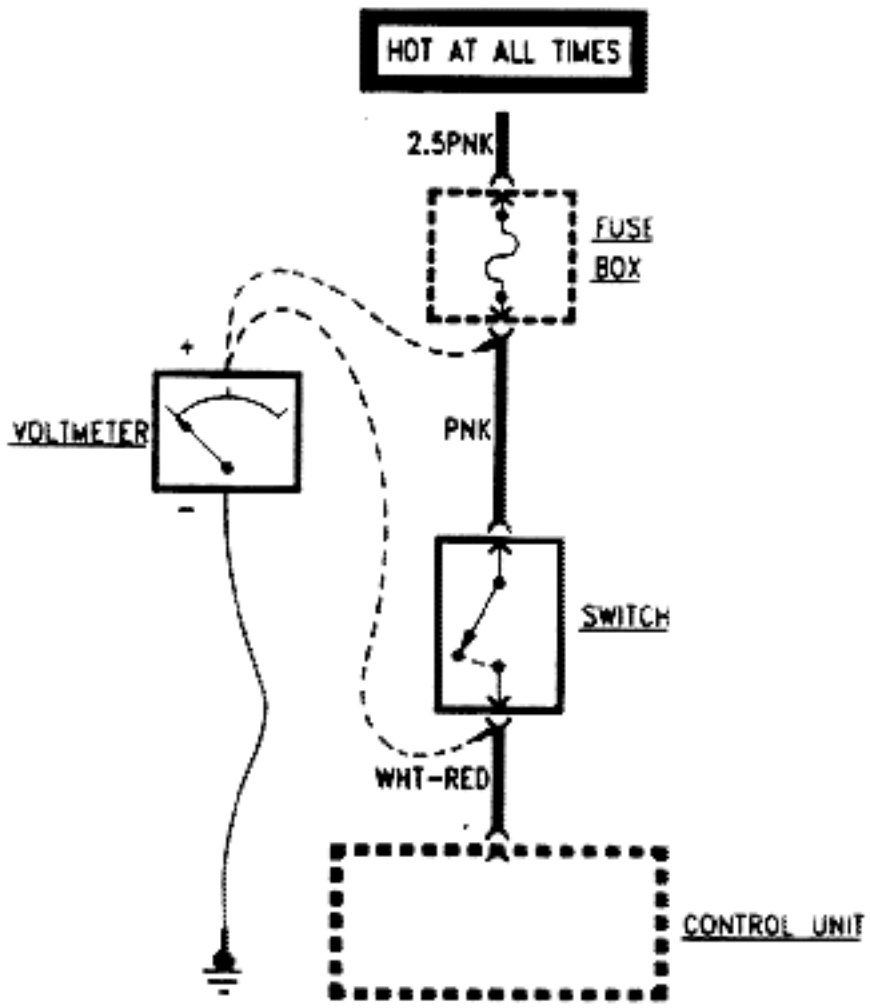
Troubleshooting Check

Voltage test

NOTE

When performing tests of the type shown below, it is necessary to establish the power supply conditions stated in the upper section of the wiring diagram.

This test measures voltage in a circuit. Taking measurements at several points (terminals or connectors) along the circuit allows you to isolate the problem.
To take a voltage measurement, connect the negative lead of the voltmeter to the battery's negative terminal or other known good ground. Then connect the positive lead of the voltmeter to the point you want to test. The voltmeter will read the voltage present at that point in the circuit.



Voltage drop test

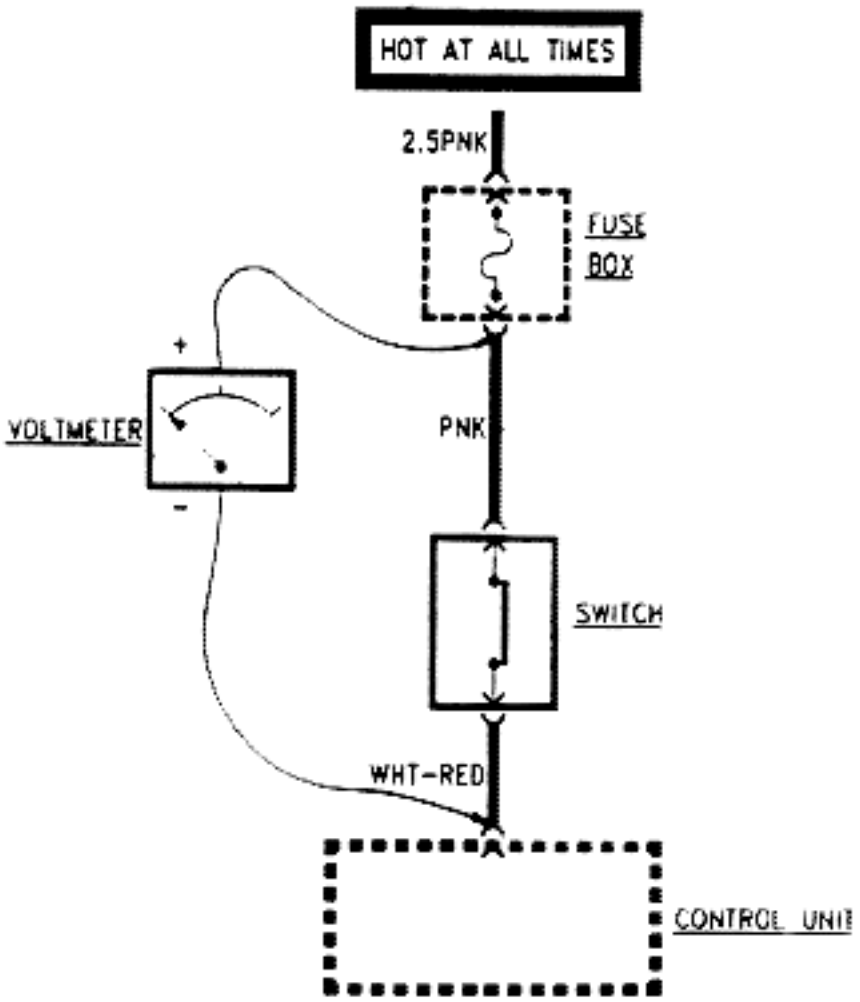
NOTE

When performing tests of type shown below, it is necessary to establish the power supply condition stated in the upper section of the wiring diagram.

Wires, connectors and switches (when closed), have been designed to conduct current with a minimum loss of voltage. A voltage drop across any one connector or switch that exceeds 0.2 volts indicates a problem.

To test for voltage drop, connect the voltmeter leads to connectors at either end of the suspected part of the circuit.

The positive lead should be connected to the connector closest to the power source. The voltmeter will show the voltage drop between these two points.

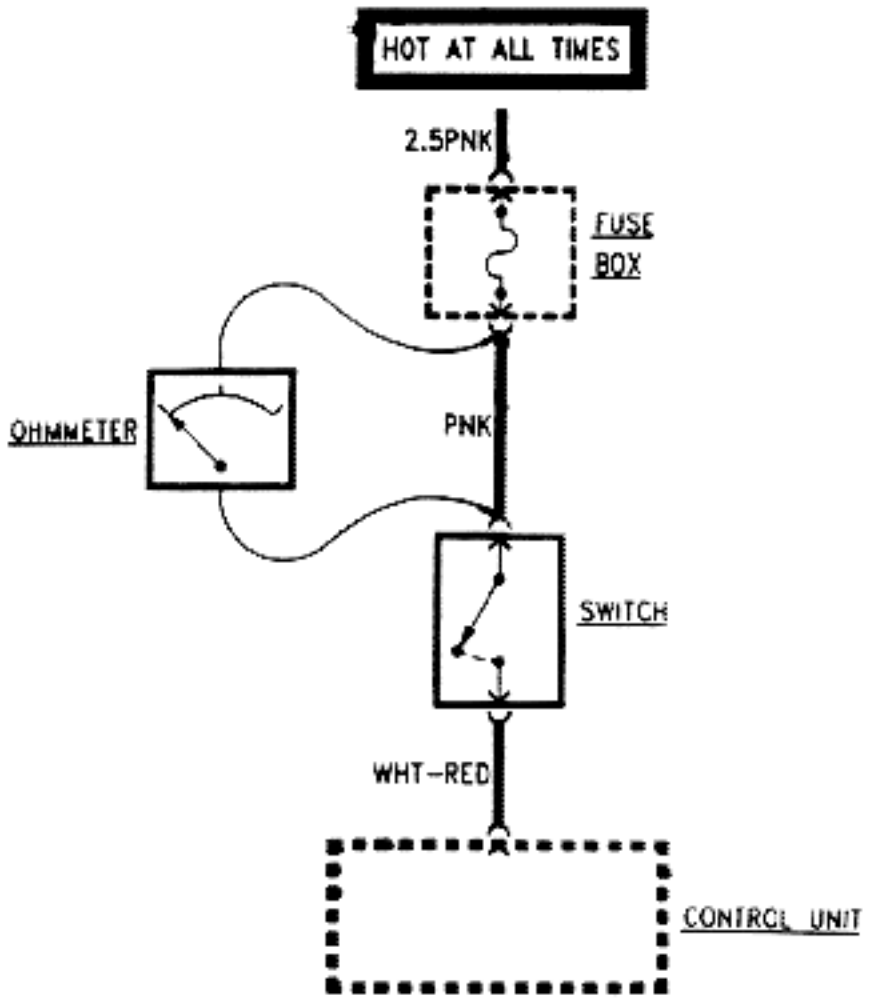


Continuity test

To perform a continuity test, first disconnect the car battery. Then adjust the ohmmeter to read zero while holding the ohmmeter leads together.

Connect the ohmmeter leads to connectors or terminals at either end of the suspected part of the circuit.

The ohmmeter will show the resistance across that part of the circuit.

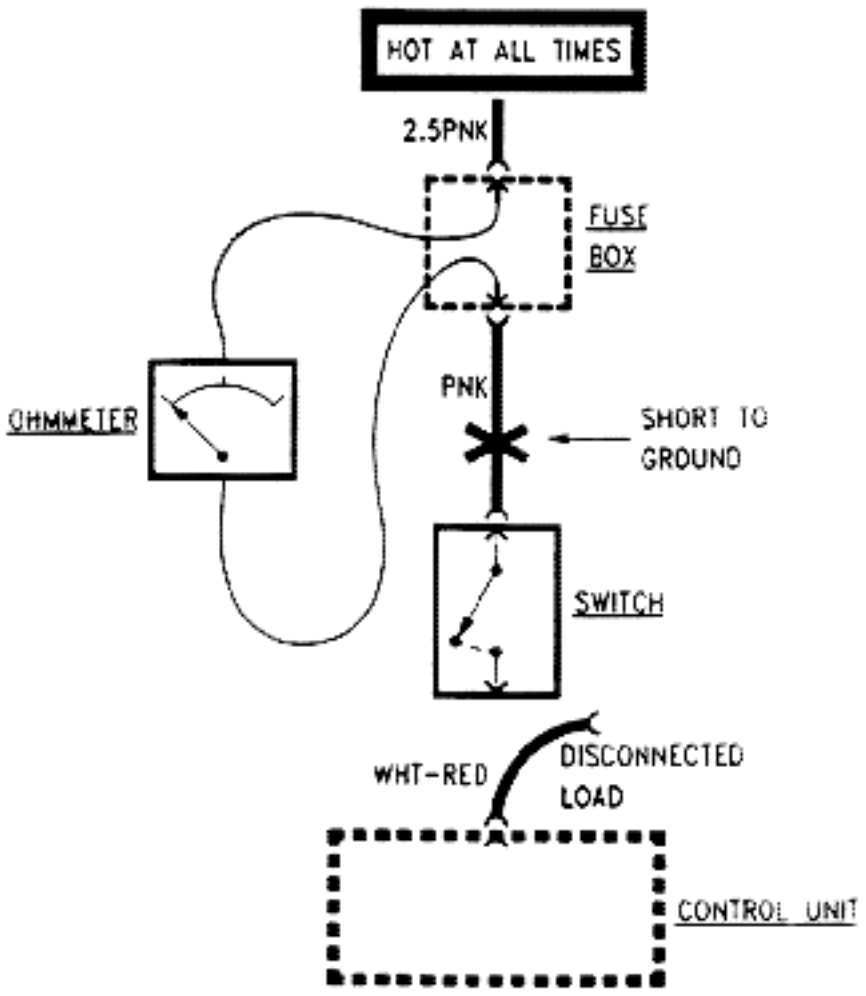


Short test using voltmeter

NOTE

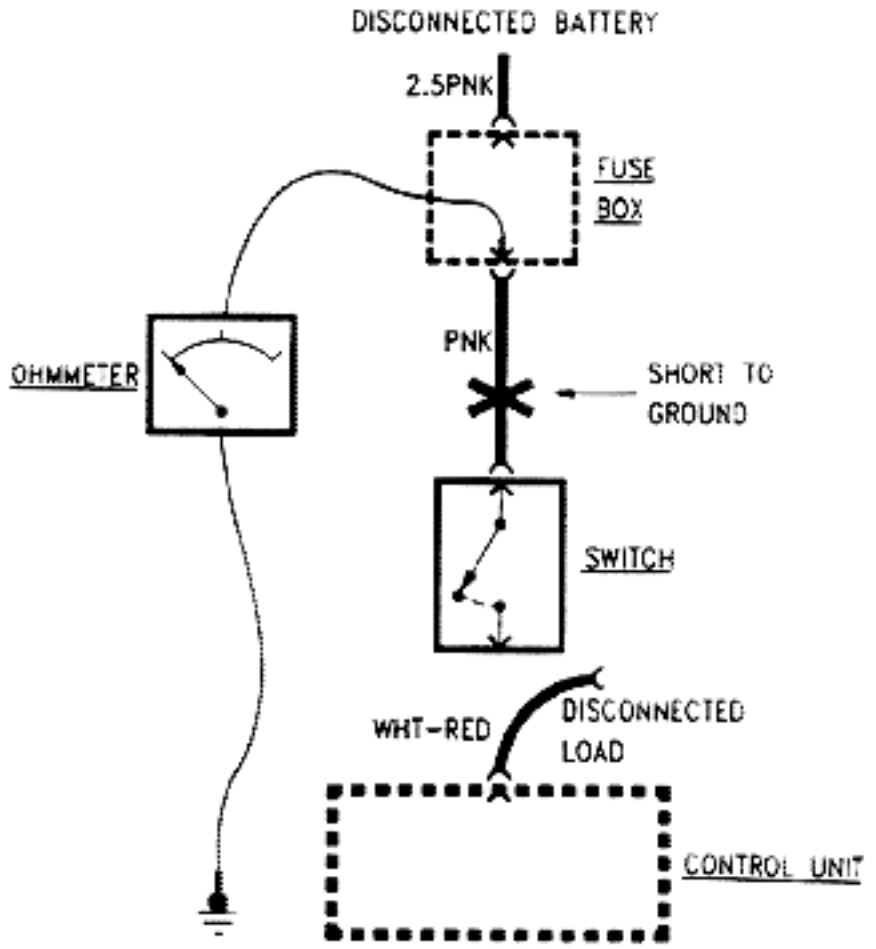
When performing tests of type shown below, it is necessary to establish the power supply conditions stated in the upper section of the wiring diagram.

Remove the blown fuse and disconnect the load. Connect the voltmeter leads to the fuse terminals.
The positive lead should be connected to the terminal closest to the power source.
Starting near the fusebox move the wire harness in question back and forth and watch the voltmeter reading. If the voltmeter shows a reading, there is a ground-short in the wiring. Somewhere in the area of the harness being moved, the wire insulation is worn away and the circuit is grounded.



Short test using ohmmeter

Disconnect the battery. Adjust the ohmmeter to read zero while holding the leads ohmmeter together. Remove the blown fuse and disconnect the load. Connect one lead of the ohmmeter to the fuse terminal that is closest to the load. Connect the other lead to a known good ground.
Starting near the fusebox or the pertaining circuit free fuse, move the wire harness back and forth and watch the ohmmeter reading. Low or no resistance indicates a ground-short in the wiring. Infinite resistance indicates no short.



Components Functional Check

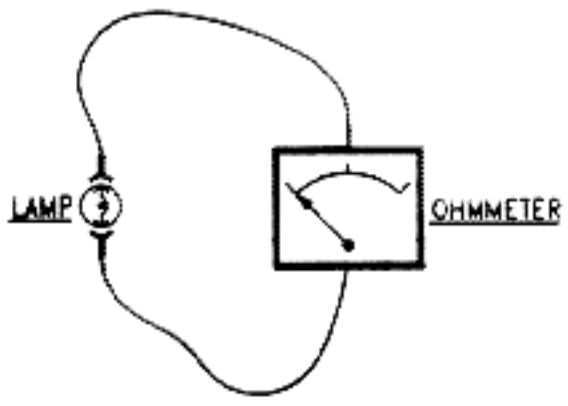
This section contains instructions to perform functional checks of main components indicated on the wiring diagrams.
These instructions must be considered any time it is required to ascertain that components listed below are operating properly.

NOTE

The contacts of all electric/electronic parts are subject to oxidation, and could cause false measurements that differ from values stated in the following.
It is therefore necessary to check and remove any oxidation before proceeding to a functional check.
If during troubleshooting it is necessary to remove a component to check if it is operational, it is understood that the same component will be properly re-installed if found serviceable, paying attention not to reverse polarity and/or connections.

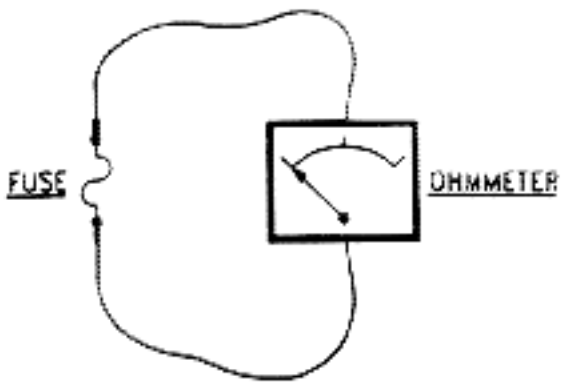
Bulbs

The main characteristics of a bulb are the voltage and the power.
The higher the power of bulb, the higher is the current absorbed, and the lower is its resistance; for example a high beam lamp (12V-45W) has a lower resistance than a warning lamp on instrument panel (12V-3W).
To test a bulb, connect ohmmeter pins to the bulb terminals.
If the measured value corresponds to a certain number of Ω, the bulb is serviceable; if the measured value is infinite (∞), the bulb filament is broken.
Even if a certain resistance is maintained, a bulb's brialliance could be reduced; replace bulbs if blackened.
if a bulb interruption is suspected, it is possible to ascertain if the bulb is serviceable without removing it; connect a 12V power supply to the pins of the bulb connector and check that the bulb illuminates.



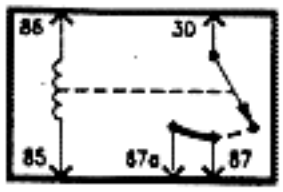
Fuses

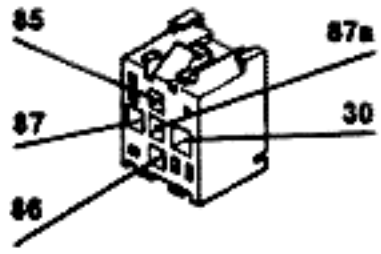
A fuse consists of an electric conductor whose cross section is such as to melt and interrupt the circuit in case of an excessive current load.
To ascertain fuse integrity connect ohmmeter pins in parallel to fuse ends.
If multimeter reading is zero Ω the fuse is serviceable; the fuse is interrupted if ohmmeter reading is infinite (∞).



Relays

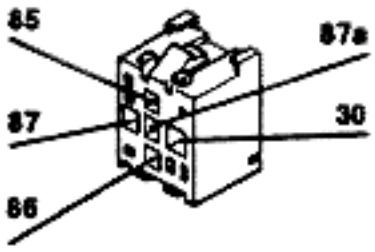
A relay consists of a coil and a set of electrical contacts.
When a voltage is present between the coil terminals, the relay contacts are actuated.
Referring to the following figure, when the relay is energized, pin 30 is connected to pins 87 and 87a.

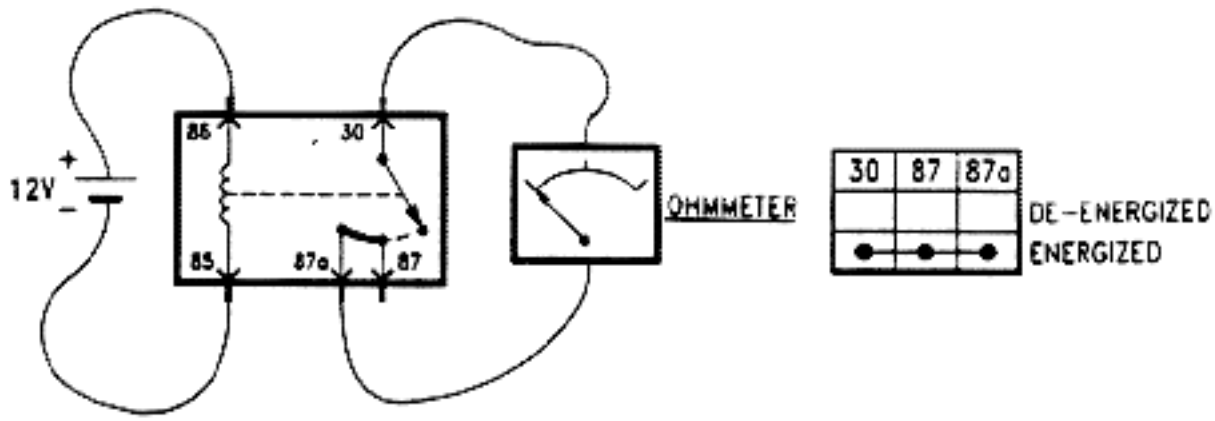


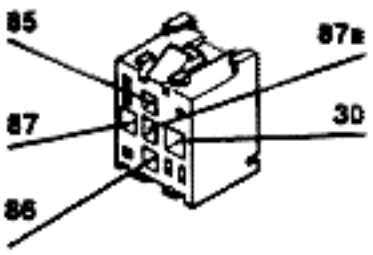


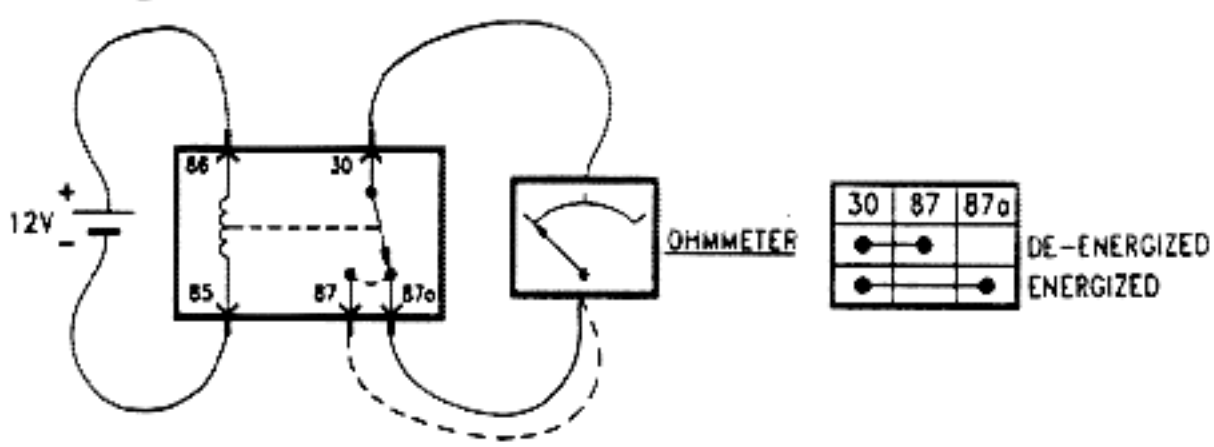
To ascertain if a relay is operational remove it from the vehicle and energize it using a 12V power supply (the coil has no polarity, and positive power supply can be supplied either to pin 85 or pin 86).

Using a multimeter, check for electric continuity between the contacts as illustrated below with relay energized and de-energized.









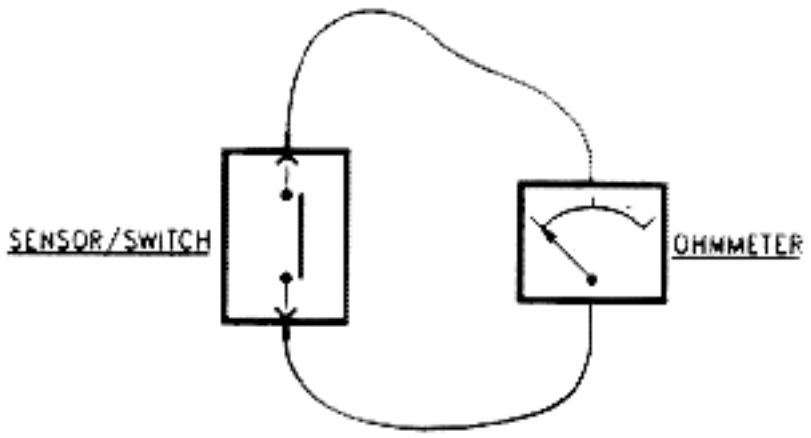
CAUTION:
A "stuck contacts" condition could be encountered during a functional check; in this event the coil is interrupted but the contacts do not move and the ohmmeter reading does NOT show any variation (from 0 Ω to infinite, or vice versa). Replace relays with this malfunction.

NOTE

The vehicle's electrical system includes some relays provided with a fuse.
For this type of relay the functional check of the relay is dependant on the integrity of the fuse, which should be replaced if necessary.

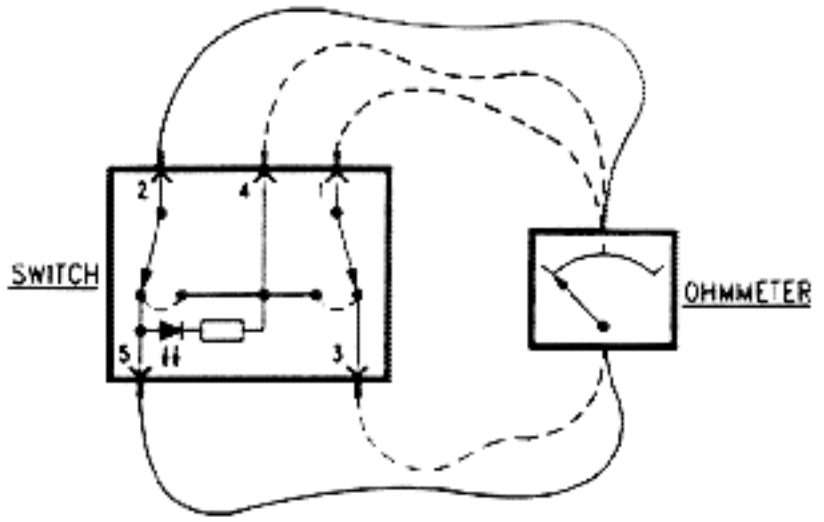
Thermal contacts

The vehicle's electrical system includes thermal contacts whose actuation is determined by temperature.
The thermal contacts are N.O. or N.C. switches that change their status (closed or open circuit) when a pre-determined temperature is reached.
Thermal contacts are illustrated on the wiring diagrams in their normal operating position. Remove the thermal contact from the vehicle's circuit if necessary to check it, and connect an ohmmeter to the thermal contact pins.
Bring the thermal contact to the required temperature and note that the ohmmeter reading changes.



Sensor/switches

The vehicle's electrical system includes sensors that are N.O. or N.C. switches.
These sensors change their status (closed or open circuit) depending on operating conditions.
The sensors are illustrated on the wiring diagrams in normal operating position (for example, the door sensor is illustrated in the door closed position).
To determine if the sensor and/or switch is operational, it is necessary to reverse the operating condition and note that ohmmeter reading changes.



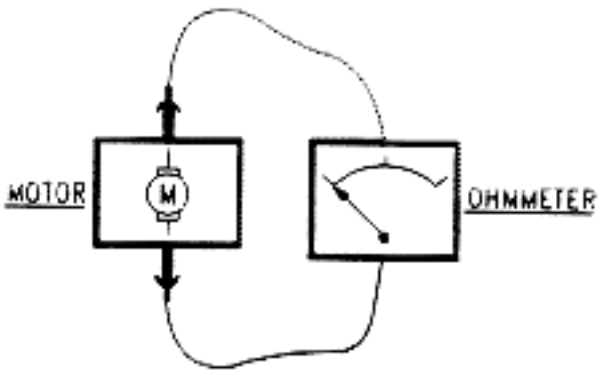
Electric Motors/Electric Fans/Solenoids

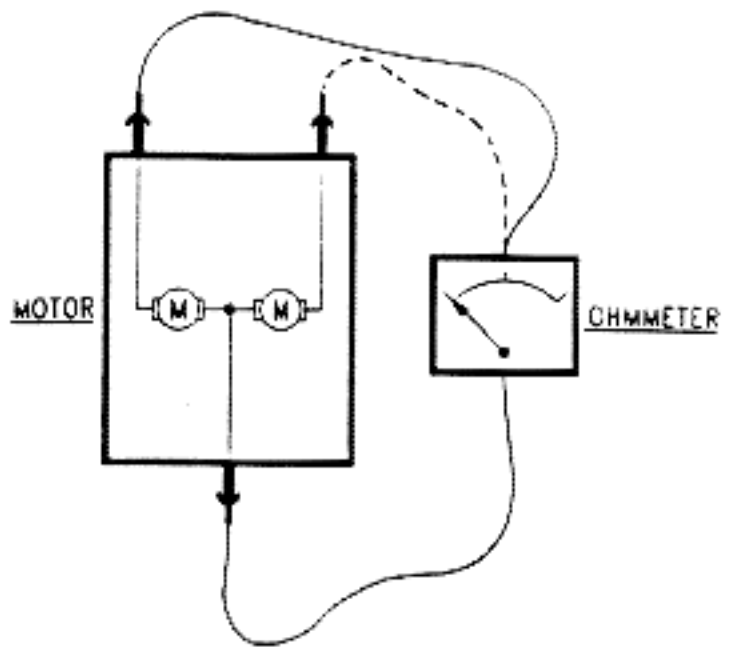
The vehicle's electrical system includes electric motors and/or fans whose energization is controlled by closing of switable pushbuttons or switches.
To determine if motor/fan is operational, it is necessary to disconnect it from the vehicle wiring, and connect an ohmmeter between its terminals and check the electric continuity (absence of open circuit) of its winding.
In case of a suspected failure of the component, the functional check can be performed without removing it from vehicle.

To this purpose, connect a 12V power supply between pins of the component's connector, and check that it operates.
Particular care must be taken when checking power rearview mirror motors, since this component consists essentially of two motors (UP-DOWN motor and LEFT-RIGHT motor); check each motor separately.

NOTE

In some cases the motor transmits its movement to a mechanical device in one direction or the other depending on the actuating signal. Check these components applying 12V with a certain polarity, and then reversing it. (example: window motor, seat motor, etc)

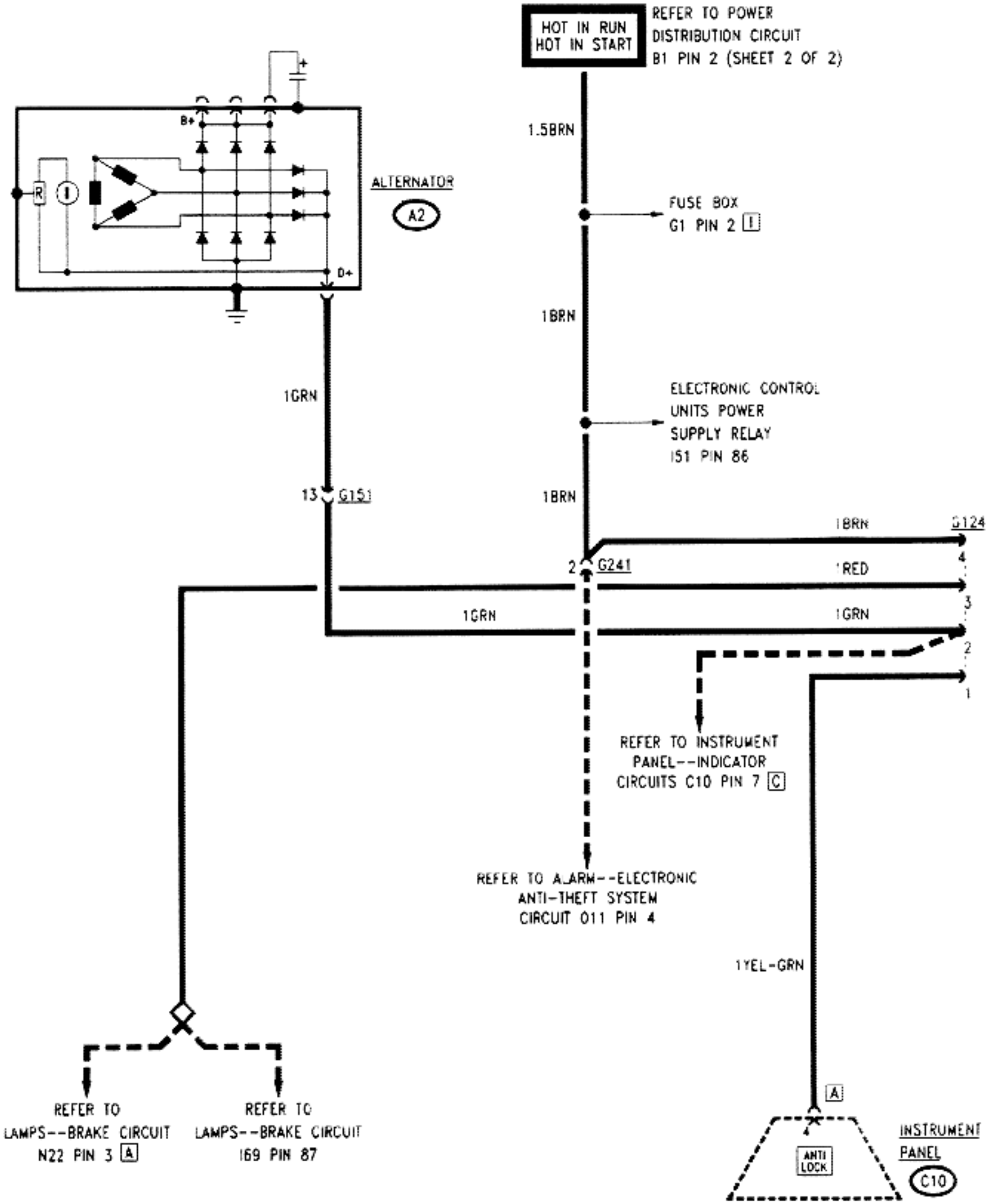




Ground points

The ground is intended to be mechanically connected to the battery negative pole.
A point is not connected to ground when it is not firmly mechanically connected to the negative pole; an oxidized terminal or an improperly secured wire do not offer a good ground connection. The check of ground points is performed by connecting one pin of the ohmmeter to the terminal being checked, and the other to the negative pole of the battery.
Ground connection is satisfactory if the ohmmeter reading is 0 Ω; if the ohmmeter reads anything greater than 0.1 Ω it is necessary to restore proper connection to ground since that terminal is oxidized or not properly secured.

ABS BRAKE SYSTEM



REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 1 OF 2)
HOT AT ALL TIMES
REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 2 OF 2)
HOT AT ALL TIMES
REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 1 OF 2)
HOT AT ALL TIMES
2.5RED
4RED
1.5RED
LEFT FRONT PHONIC WHEEL SENSOR L29
RIGHT FRONT PHONIC WHEEL SENSOR L28
LEFT REAR PHONIC WHEEL SENSOR L31
RIGHT REAR PHONIC WHEEL SENSOR L30
ABS SYSTEM ELECTRONIC RELAY I57
ABS SYSTEM FREE FUSE HOLDER G125
G205
G204
G207
G206
WHT
BRN
GRN
BRN
BRN
YEL
BRN
RED
1BLK
1BRN
1.5YEL-BLK
G124
1RED
1GRN
1YEL-GRN
1.5BLK
1.5BLK
1.5BLK
ABS CONTROL UNIT N27
1PPL
1ORN
1.5RED-BLK
1.5YEL
1.5GRN
1.5WHT
1GRY
1LTBLU
1YEL-GRN
1YEL-BLK
4BLK
1.5BLK
ABS BRAKE FLUID ELECTRIC PUMP N28
1BLK
G53b
G53b
G202
G202
G202
G202

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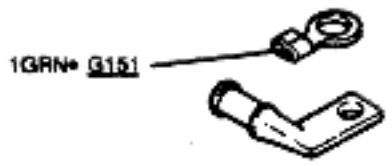
GENERAL

The vehicle is equipped with the anti-lock brake system (ABS). This system modulates the brake pressure to prevent skidding of one or more wheels regardless of road surface and tire conditions.
The system senses the tendency to blocking of one or more wheels by means of sensors located close to the wheels, and monitors skidding.
In this way, the skidding coefficient is continuously maintained within optimal values, thus allowing to stop the vehicle in the shortest possible distance without loosing steering control.
The ABS consists mainly of a control unit that processes the signals delivered by four sensors located near each wheel.
The control unit monitors an electro-mechanical device (ABS brake fluid electric pump unit). This device actuates the solenoid valves that meter the flow of fluid to brake calipers.
The ABS includes a self-diagnosis system that continuously monitors the system components.
In case a malfunction is detected, the ABS automatically de-activates, and a warning lamp illuminates on instrument panel.
Automatic de-activation of the ABS does not jeopardize operation of conventional servo brake circuit.
The ABS circuit is protected by ABS SYSTEM FREE FUSE HOLDER **G125** (10A).

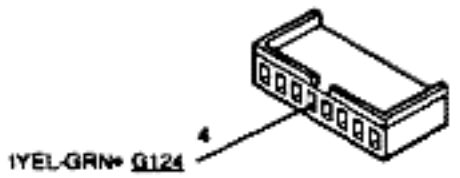
OPERATIONAL DESCRIPTION

The battery power (12V) available when ignition key is set to "run" or "start" positions is applied to coil of ABS relay **I57**, and relay is energized.
When relay **I57** is energized, the ABS control unit **N27** is powered at pin 1 through free fuse **G125**; "vehicle running" condition is sensed at pin 15 of control unit **N27** through direct connection to alternator **A2**.
The control unit **N27** senses the tip speed of wheels through signals delivered by inductive sensors - pulse emitters (phonic wheels) **L28**, **L29**, **L30** and **L31**.
Application of brake pedal is sensed at pin 25 of control unit **N27** which delivers input signals to ABS brake fluid electric pump **N28**.
This unit allows actuation of solenoid valves by means of an electric pump.
The four solenoid valves, one for each wheel, allow metering of brake fluid pressure, and consequent control of braking action. Furthermore, the control unit **N27** includes a self-diagnosis system that provides continuous and constant monitoring of proper operation of the ABS components.
When the ignition key is set to "run", the ANTI-LOCK warning lamp illuminates on instrument panel, and extinguishes a few seconds after engine starting if all ABS components are efficient.
The warning lamp remains on after completion of starting phase, or illuminates during run, in case of ABS malfunction; in this event, restore correct operation of the ABS referring to the troubleshooting procedure.

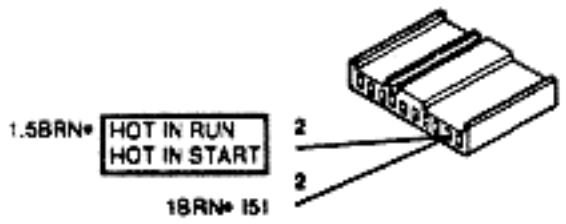
Alternator — A2



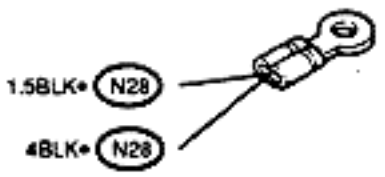
Instrument panel — C10 A



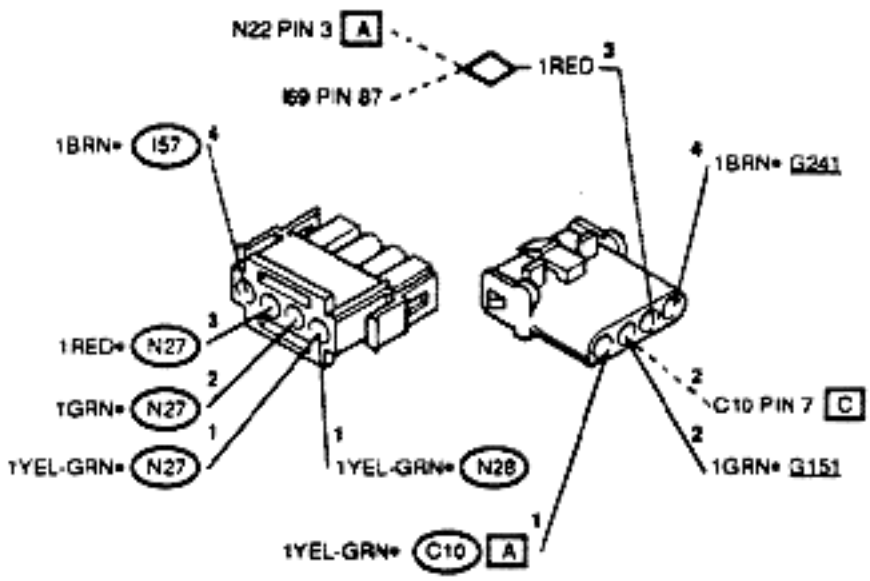
Fuse box — G1 I



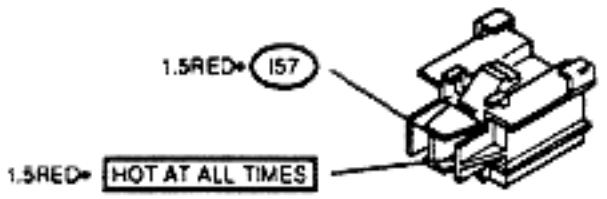
Engine compartment left side ground connection — G53b



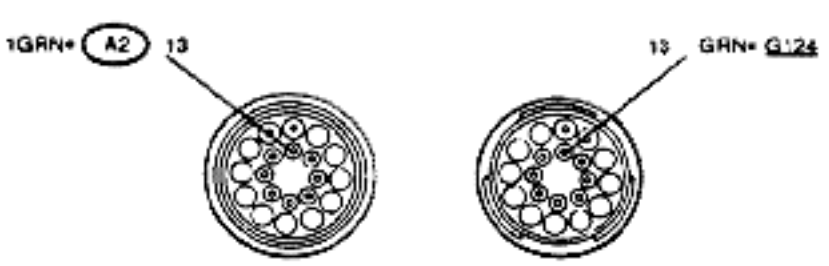
ABS system connector — G124



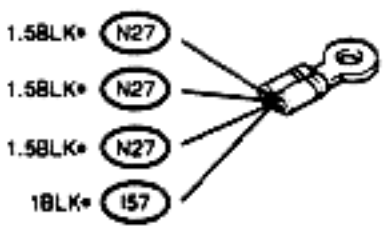
ABS system free fuse holder — G125



Connector, circuit board to engine utilities wiring — G151



ABS system ground connection — G202



Front right sensor connection - ABS — G204

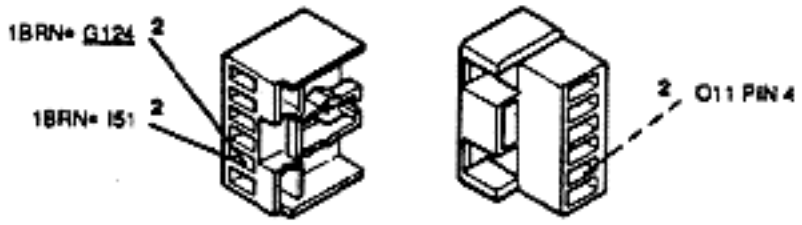
Front left sensor connection - ABS — G205

(Cont.d)

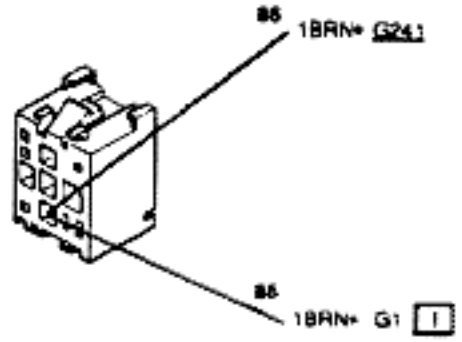
Rear right sensor connection - ABS — G206

Rear left sensor connection - ABS — G207

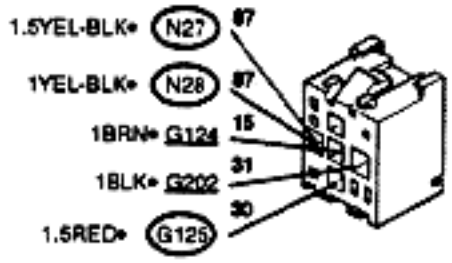
Bard wiring to anti-theft system wiring connector — G241



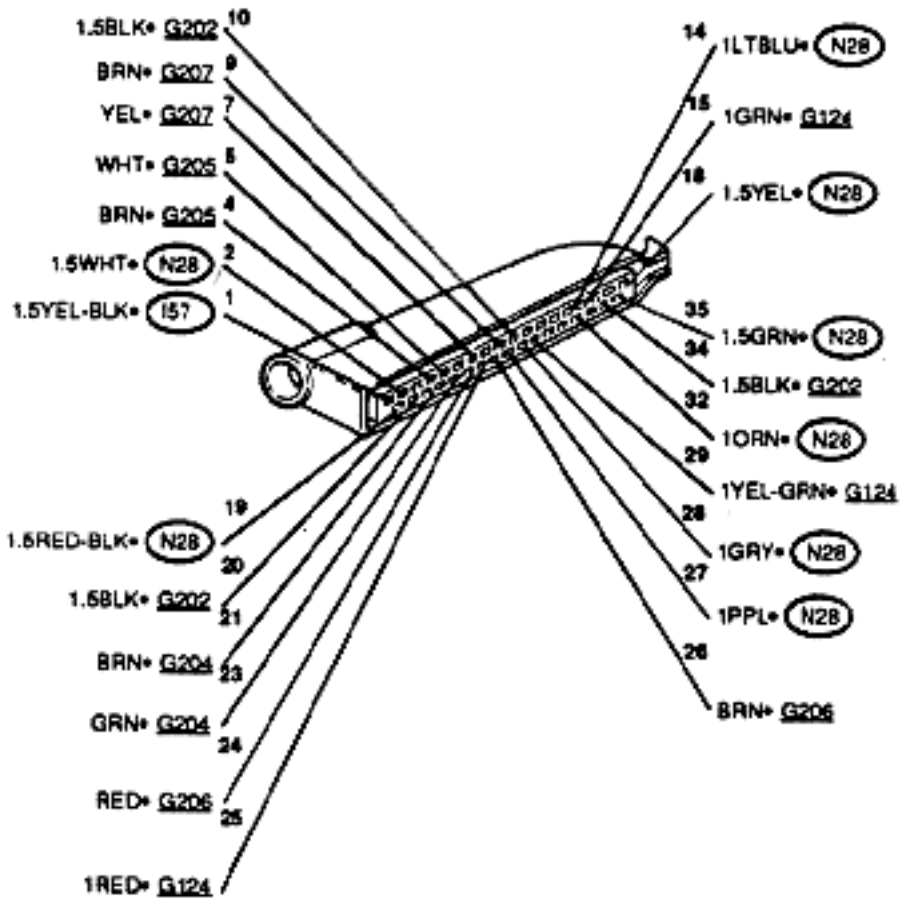
Electronic control units power supply relay — I51



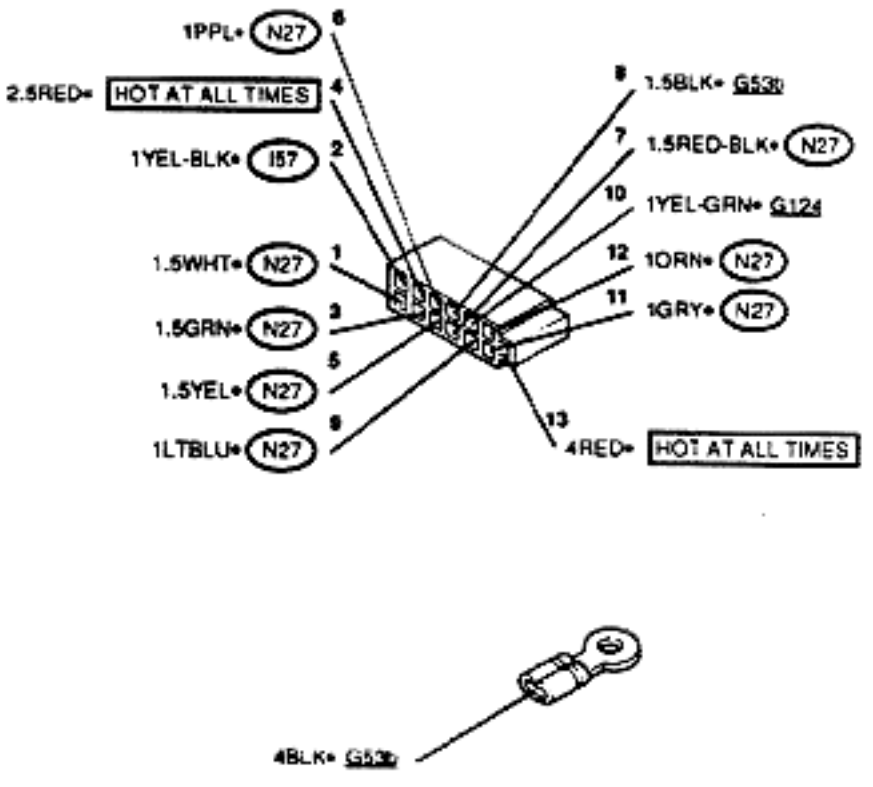
ABS system electronic relay — I57

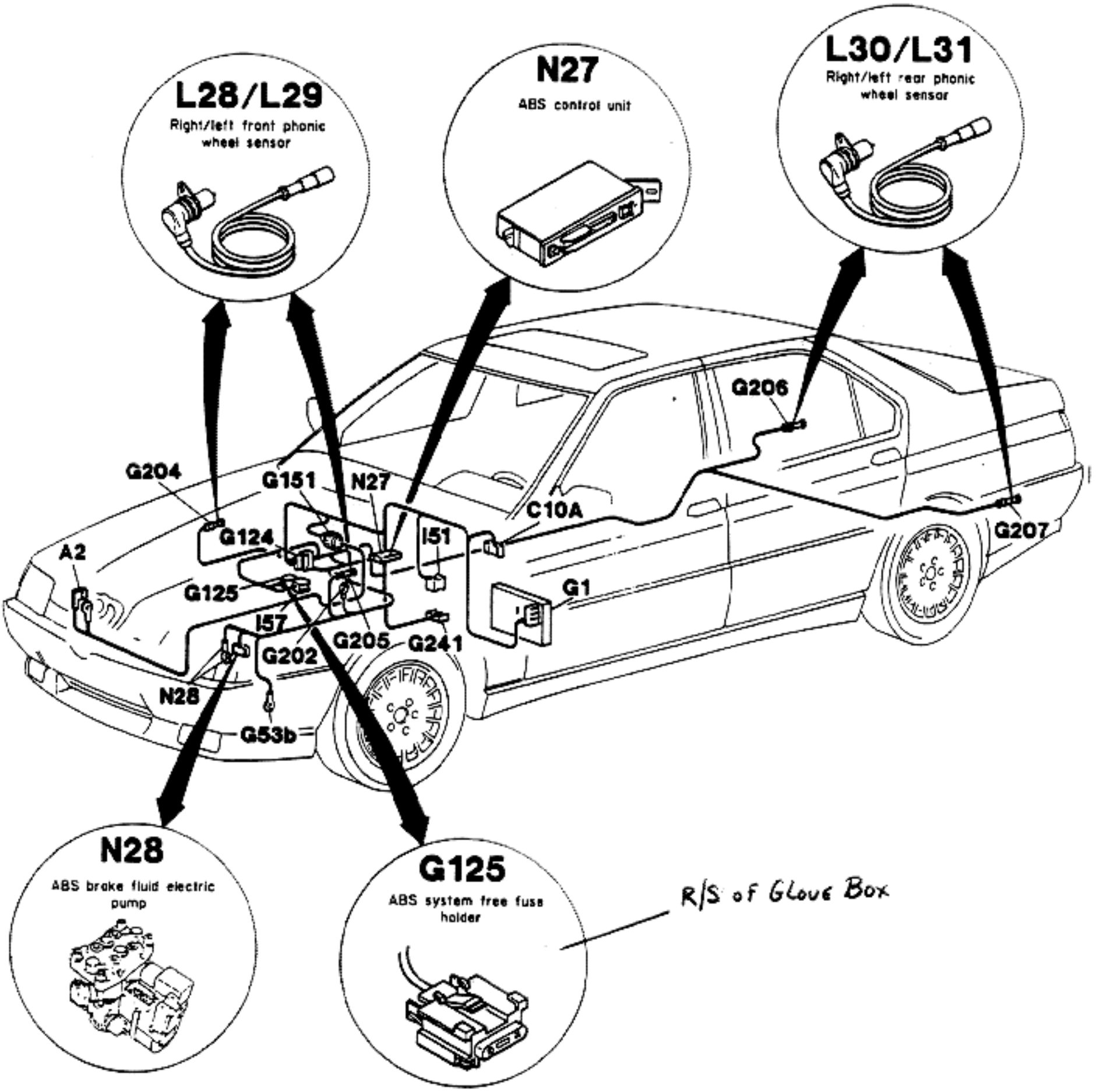


ABS control unit — N27



ABS brake fluid electric pump — N28





ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check free fuse **G125** for integrity	OK ▶ ~~OK~~ ▶	Carry out step **A2** Replace free fuse **G125**
A2 R.H. FRONT SENSORS CHECK - Check for presence of a resistance of 600 to 1400 Ω between pins 21 and 23 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Carry-out **step A13**
A3 L.H. FRONT SENSORS CHECK - Check for presence of a resistance of 600 to 1400 Ω between pins 4 and 5 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A16**
A4 R.H. REAR SENSOR CHECK - Check for presence of a resistance of 600 to 1400 Ω betwèen pins 24 and 26 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Carry-out **step A19**
A5 L.H. REAR SENSOR CHECK - Check for presence of a resistance of 600 to 1400 Ω between pins 7 and 9 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Carry-out **step A22**

(Cont.d)

ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS	RESULTS	REMEDY
A6 GROUNDING CHECK - Check for presence of 0V (zero) at pin 10 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A7** Repair wiring between **pin 10 of control unit N27 and ground point G202**
A7 GROUNDING CHECK - Check for presence of 0V (zero) at pin 20 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A8** Repair wiring between **pin 20 of control unit N27 and ground point G202**
A8 GROUNDING CHECK - Check for presence of 0V (zero) at pin 34 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A9** Repair wiring between **pin 34 of control unit N27 and ground point G202**
A9 VOLTAGE CHECK - With ignition key set to "run", check for presence of 12V at pin 1 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A10** Carry-out **step A27**

(Cont.d)

ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS	RESULTS	REMEDY
A10 VOLTAGE CHECK - With engine running check for presence of 13V to 14.5V at pin 15 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A11** Carry-out **step A32**
A11 VOLTAGE CHECK - With brake pedal pressed, check for presence of 12V at pin 25 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A12** Carry-out **step A15**
A12 RELAYS CHECK - Check proper operation of two relays located on ABS brake fluid electric pump **N28**	OK ▶ ~~OK~~ ▶	Carry-out **step A36** Replace **defective relay (s)**
A13 OPEN CIRCUIT CHECK - Check for presence of open circuit between pins 21 and 23 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A14** Carry-out **step A15 if short circuit is found**

(Cont.d)

ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS	RESULTS	REMEDY
A14 CONTINUITY CHECK - Disconnect R.H. front sensor **L28** and check for continuity between pin 21 of ABS control unit **N27** and **G204**, and between **G204** and pin 23 of control unit **N27**	OK ▶ OK ▶	Replace **sensor L28** Repair or replace **wires, as required**
A15 OPEN CIRCUIT CHECK - Disconnect R.H. front sensor **L28** and check for presence of open circuit between pins 21 and 23 of ABS control unit **N27** (cable side)	OK ▶ OK ▶	Replace **sensor L28** Eliminate **short circuit between BRN and GRN wires connecting G204 to pins 21 and 23 of control unit N27**
A16 OPEN CIRCUIT CHECK - Check for presence of open circuit between pins 4 and 5 of ABS control unit **N27**	OK ▶ OK ▶	Carry-out **step A17** Carry-out **step A18 if short circuit is found**
A17 CONTINUITY CHECK - Disconnect L.H. front sensor **L29** and check for continuity between pin 4 of ABS control unit **N27** and **G205**, and between **G205** and pin 5 of control unit **N27**	OK ▶ OK ▶	Replace **sensor L29** Repair or replace **wires, as required**

(Cont.d)

ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS	RESULTS	REMEDY
A18 OPEN CIRCUIT CHECK - Disconnect L.H. front sensor **L29** and check for presence of open circuit between pins 3 and 5 of ABS control unit **N27** (cable side)	OK ▶ OK ▶	Replace **sensor L29** Eliminate **short circuit between WHT and BRN wires connecting G205 to pins 4 and 5 of control unit N27**
A19 OPEN CIRCUIT CHECK - Check for presence of open circuit between pins 24 and 26 of ABS control unit **N27**	OK ▶ OK ▶	Carry-out **step A20** Carry-out **step A21 if short circuit is found**
A20 CONTINUITY CHECK - Disconnect R.H. rear sensor **L30** and check for presence of continuity between pin 24 of ABS control unit **N27** and **G206**, and between **G206** and pin 26 control unit **N27**	OK ▶ OK ▶	Replace **sensor L30** Repair or replace **wires, as required**
A21 OPEN CIRCUIT CHECK - Disconnect R.H. rear sensor **L30** and check for presence of open circuit between pins 24 and 26 of ABS control unit **N27** (cable side)	OK ▶ OK ▶	Replace **sensor L30** Eliminate **short circuit between RED and BRN wires connecting G206 to pins 24 and 26 of control unit N27**

(Cont.d)

ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS	RESULTS	REMEDY
A22 OPEN CIRCUIT CHECK - Check for presence of open circuit between pins 7 and 9 of ABS control unit **N27**	OK ▶ ~~OK~~ ▶	Carry-out **step A23** Carry-out **step A24 if short circuit is found**
A23 CONTINUITY CHECK - Disconnect L.H. rear sensor **L31** and check for presence of continuity between pin 7 of ABS control unit **N27** and **G207**, and between **G207** and pin 9 of control unit **N27**	OK ▶ ~~OK~~ ▶	Replace **sensor L31** Repair or replace **wires, as required**
A24 OPEN CIRCUIT CHECK - Disconnect L.H. rear sensor **L31** and check for presence of open circuit between pins 7 and 9 of ABS control unit **N27** (cable side)	OK ▶ ~~OK~~ ▶	Replace **sensor L31** Eliminate **short circuit between YEL and BRN wires connecting G207 to pins 7 and 9 of control unit N27**
A25 VOLTAGE CHECK - With ignition key set to "run", check for presence of 12V between pin 87 of relay **I57** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of control unit N27 and pin 87 of relay I57** Carry-out **step A26**

(Cont.d)

ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS	RESULTS	REMEDY
A26 GROUNDING CHECK - Check for presence of 0V (zero) at pin 31 of relay I57	OK ▶ ~~OK~~ ▶	Carry-out **step A27** Repair wiring between **pin 31 of relay I57 and ground point G202**
A27 VOLTAGE CHECK - With ignition key set to "run", check for presence of 12V between pin 15 of relay I57 and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A28** Carry-out **step A30**
A28 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay **I57** and ground	OK ▶ ~~OK~~ ▶	Replace **relay I57** Carry-out **step A29**
A29 VOLTAGE CHECK - Check for presence of 12V between pin of free fuse **G125** (RED wire) and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 30 of relay I57 and free fuse G125** Failure **of the power distribution circuit, refer to relevant circuit of sheet 1 of 2**

(Cont.d)

ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS	RESULTS	REMEDY
A30 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 4 of **G124** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4 of G124 and pin 15 of relay I57** Carry-out **step A31**
A31 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 4 of **G241** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of G241 and pin 4 of G124** Failure **of the power distribution circuit, refer to relevant circuit of sheet 2 of 2**
A32 VOLTAGE CHECK - With engine running, check for presence of 13V to 14.5V at pin 2 of connector **G124**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of G194 and pin 15 of control unit N27** Carry-out **step A33**
A33 VOLTAGE CHECK - With engine running, check for presence of 13V to 14.5V at pin 13 of connector **G151**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 13 of connector G151 and pin 2 of connector G124** Carry-out **step A34**

(Cont.d)

ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS	RESULTS	REMEDY
A34 VOLTAGE CHECK - With engine running, check for presence of 13V to 14.5V at pin D+ of alternator **A2**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin D+ of alternator A2 and pin 13 of connector G151** Replace **alternator A2**
A35 VOLTAGE CHECK - Check for presence of 12V between pin 3 of connector **G124** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 3 of connector G124 and pin 25 of control unit N27** Failure of **lamps - - brake circuit; refer to the applicable troubleshooting procedure**
A36 GROUNDING CHECK - Check for presence of 0V (zero) at pin 4 and on casing of ABS brake fluid electric pump **N28**	OK ▶ ~~OK~~ ▶	Carry-out **step A37** Repair wiring between **ground point G53b, pin 4 and casing of brake fluid electric pump N28**

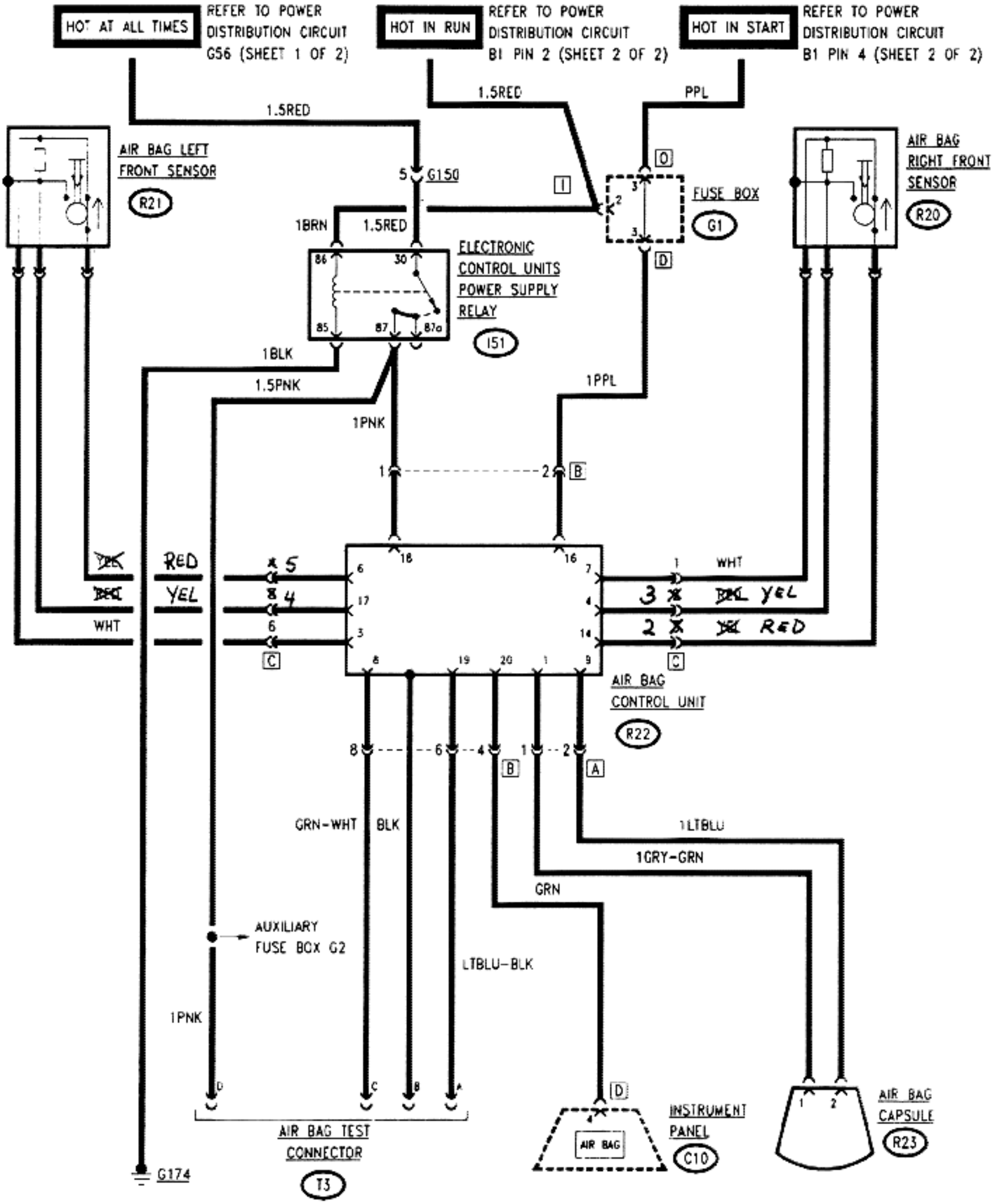
(Cont.d)

ILLUMINATION ON ANTI-LOCK WARNING LAMP	TEST A

TEST STEPS		RESULTS	REMEDY
A37	CONTINUITY CHECK		
- Check for continuity between: • pin 2 of **N27** and pin 1 of **N28** • pin 14 of **N27** and pin 9 of **N28** • pin 18 of **N27** and pin 5 of **N28** • pin 19 of **N27** and pin 7 of **N28** • pin 27 of **N27** and pin 6 of **N28** • pin 28 of **N27** and pin 11 of **N28** • pin 32 of **N27** and pin 12 of **N28** • pin 35 of **N27** and pin 3 of **N28**		OK ▶ OK ▶	Replace **ABS brake fluid electric pump N28** Repair or replace **wires, as required**

End of test A

AIR BAG



GENERAL

The air bag is a safety device, controlled by an electronic control unit, which in case of front impact or impact with reduced angle, inflates instantaneously between steering wheel and driver's body.
After activation, the air bag deflates in a very short time, thus allowing the driver to recover control of the vehicle.
The air bag control system consists of:

- Two front sensors, installed on both sides at forward end of engine compartment.

- An electronic control unit.

- A warning lamp on the instrument panel which indicates failure, if any.

The air bag control unit is equipped with a test connector, which is powered by electronic control units power supply relay **I51**. The connector allows to perform test by a diagnostic interface.
The air bag control unit stores in its memory all failures occurred during the vehicle operation.
The failures are then reported to operator during troubleshooting procedure.
Any time AIR BAG indicator lamp comes on during run or after the starting phase (some seconds after engine starting), the vehicle should be checked and repaired at an Alfa Romeo authorized service station.

FUNCTIONAL DESCRIPTION

The electronic control units power supply relay I51 is energized when ignition key is moved to "run" position.
The 12V power supply is connected to air bag control unit **R22** either through pin 1B of relay (contact) or directly (pin 2B) with ignition key to "start" position.
In case of a front impact, or impact with reduced angle, the air bag front sensors **R20** (R.H. side) and **R21** (L.H. side) send an electric signal to air bag control unit **R22**.
In such a case, the control unit activates an electric signal between pins 1A and 2A.
The signal is then supplied to air bag capsule **R23** on steering wheel.
The air bag module contains a squib, whose detonation generates a shock wave that, in turns, allows the bag to inflate.
The air bag inflates in less than 20 centisec., and deflates in less than 50 centisec.
During starting phase, the air bag control unit performs the system self-diagnosis: during this phase (few seconds), the AIR BAG indicator lamp should illuminate. After the self-diagnosis is completed, the lamp should go off.
Any failure to system is stored in a memory of control unit: the fault codes stored in the memory may be retrieved following the applicable procedure.

SELF-DIAGNOSIS-SAFETY PRECAUTIONS

During all troubleshooting and maintenance operations on air bag system, the following precautions should be strictly observed:

1. Disconnect battery when performing any duties on steering column and insulate the negative pole.

2. When performing maintenance operations on inflation system, disconnect air bag control unit from module on steering wheel (Connector A).

3. Inflation modules should never be subjected to a temperature above 80°C (176 °F).

4. Inflation modules, impact sensors and control units are unserviceable if dropped from height greater than two (2) feet.

5. Never tap impact sensors with mallet or similar tools.

6. When replacing a sensor, the replacement unit SHOULD be installed with directional arrow oriented.

CAUTION:
The impact sensors should be installed flat on chassis guide. Handle sensors with cave and secure in correct position. It is important that sensors and chassis mating surfaces are free from dust or other foreign matter.

7. To avoid damage, do not connect control unit to electrical system until its proper installation is checked.

8. To avoid airbag inflation during troubleshooting, never use electrically powered units (e.g. voltmeters, ohmeters) other then those described in this manual.

9. Do not energize the system until all components are connected: a failure code may appear.

10. Particular care should be taken when handling a new (unexploded) inflation module: the accidental bag inflation may project the module or any other close object.

WARNING:
When handling a new inflation module, keep bag and cover away from body: in case of accidental inflation the bag will expand freely, thus reducing possibility of injuries to personnel. For same reason, place unexploded inflation module on workbench (or other surface) with bag and cover upwards.

WARNING:
Observe all safety precautions when handling exploded modules. After air bag deployment, the air bag surface may contain deposits of sodium hydroxide, a by-product of gas generated during deployment. Sodium hydroxide is irritating to the skin. Use protective gloves and eyeglasses and wash hands thoroughly with lukewarm water and a mild soap.

NOTE
For further information on air bag system, refer to applicable laws (vehicle scrapping).

SELF-DIAGNOSIS-GENERAL INFORMATION

Code display

Connect pin 6B of air bag control unit R22 to ground. Set ignition key to "run" position for more than 5 sec.
The typical flashing series of AIR BAG warning lamp is the following:

Pause after starting	5.2 ± 0.2 sec.
Lamp on	400 ± 20 msec.
Lamp off	400 ± 20 msec.
Pause between digits	1.2 ± 0.1 sec.
Pause between codes	3.2 ± 0.2 sec.

When starting self-diagnosis, the code 12 appears for 3 times, thus informing operator that troubleshooting procedure is running.
Each failure code consists of two digits, and is displayed three times in sequence before the system shows the subsequent code.
If two or more failure codes are present at the same time, the system displays all codes in numerical order.
At end of each sequence, the system displays again code 12, thus allowing the sequence to be repeated.

Code reset

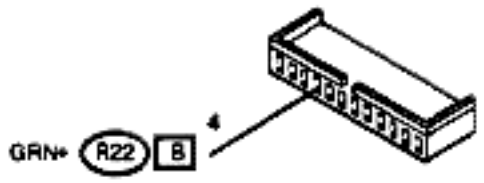
The code may be reset by operator as follows:

- While AIR BAG warning lamp is flashing (failure code display), disconnect pin 6B of control unit from ground for 3 ± 1 sec.
- Reconnect pin 6B of control unit to ground for 3 ± 1 sec.
- Disconnect pin 6B of control unit from ground definitively.
- Turn off ignition key.

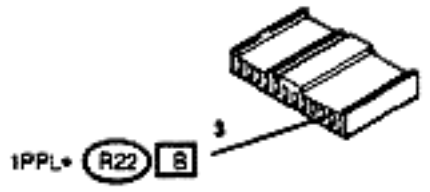
If codes 52, 53 or 54 are stored in memory (e.g. after an impact) or Eprom memory is failed, failure codes cannot be reset in any way. In such a case the AIR BAG warning

lamp on instrument panel is permanently illuminated, even if resetting procedure has been accomplished. The following table contains the troubleshooting for the airbag system where, starting from the flashing error code displayed by the AIR BAG warning lamp, the existing failure can be detected and the faulty components can be identified.

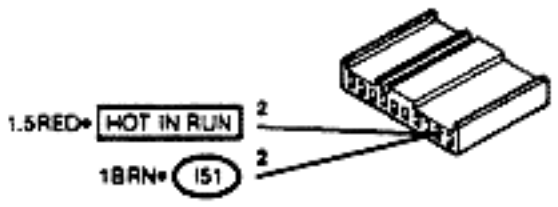
Instrument panel connector	C10 D



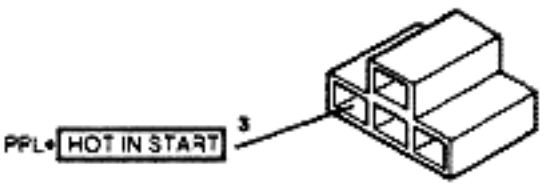
Fuse box	G1 D



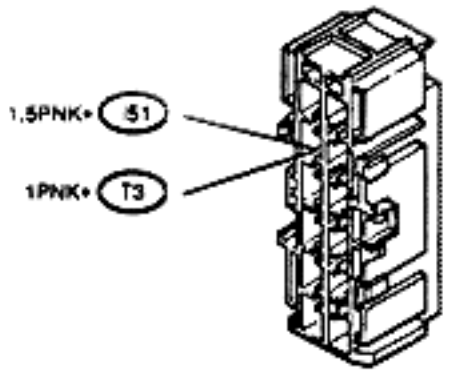
Fuse box	G1 I



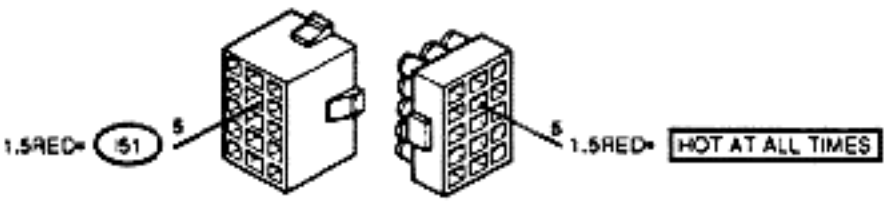
Fuse box	G1 O



Auxiliary fuse box	G2

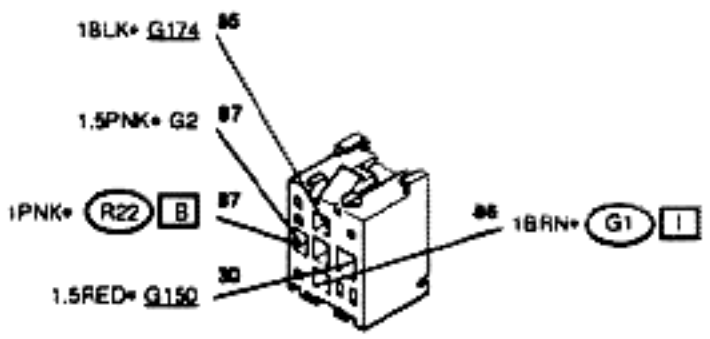


Connector, circuit board to engine compartment left side wiring	G150

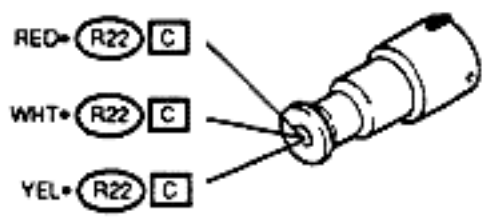


Steering wheel column support ground	G174

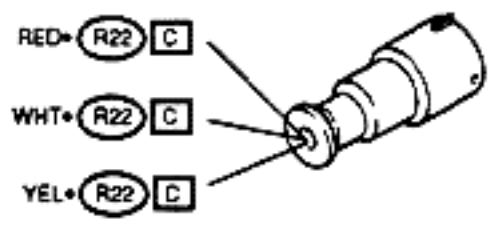
Electronic control units power supply relay	I51



Air Bag right front sensor	R20



Air Bag left front sensor	R21



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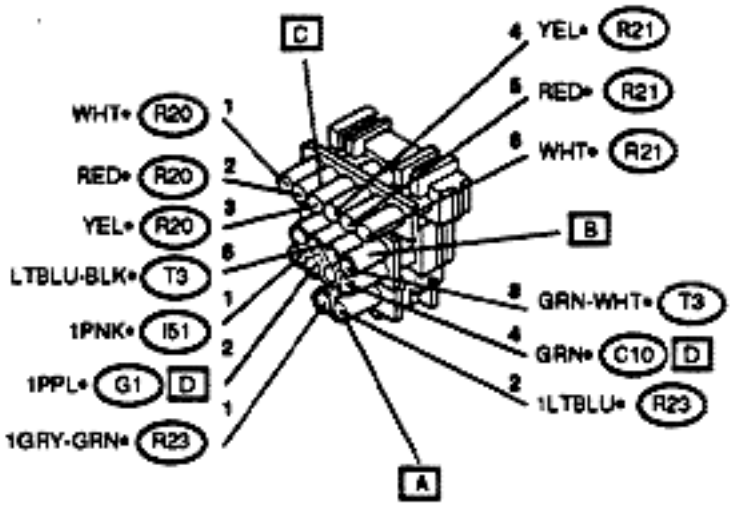
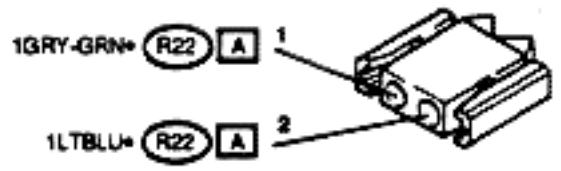
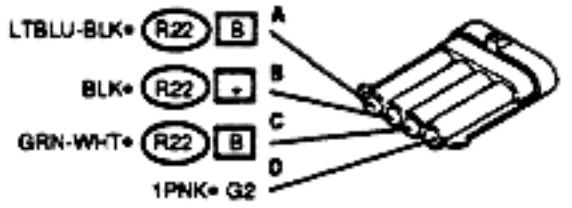
Air Bag control unit — R22

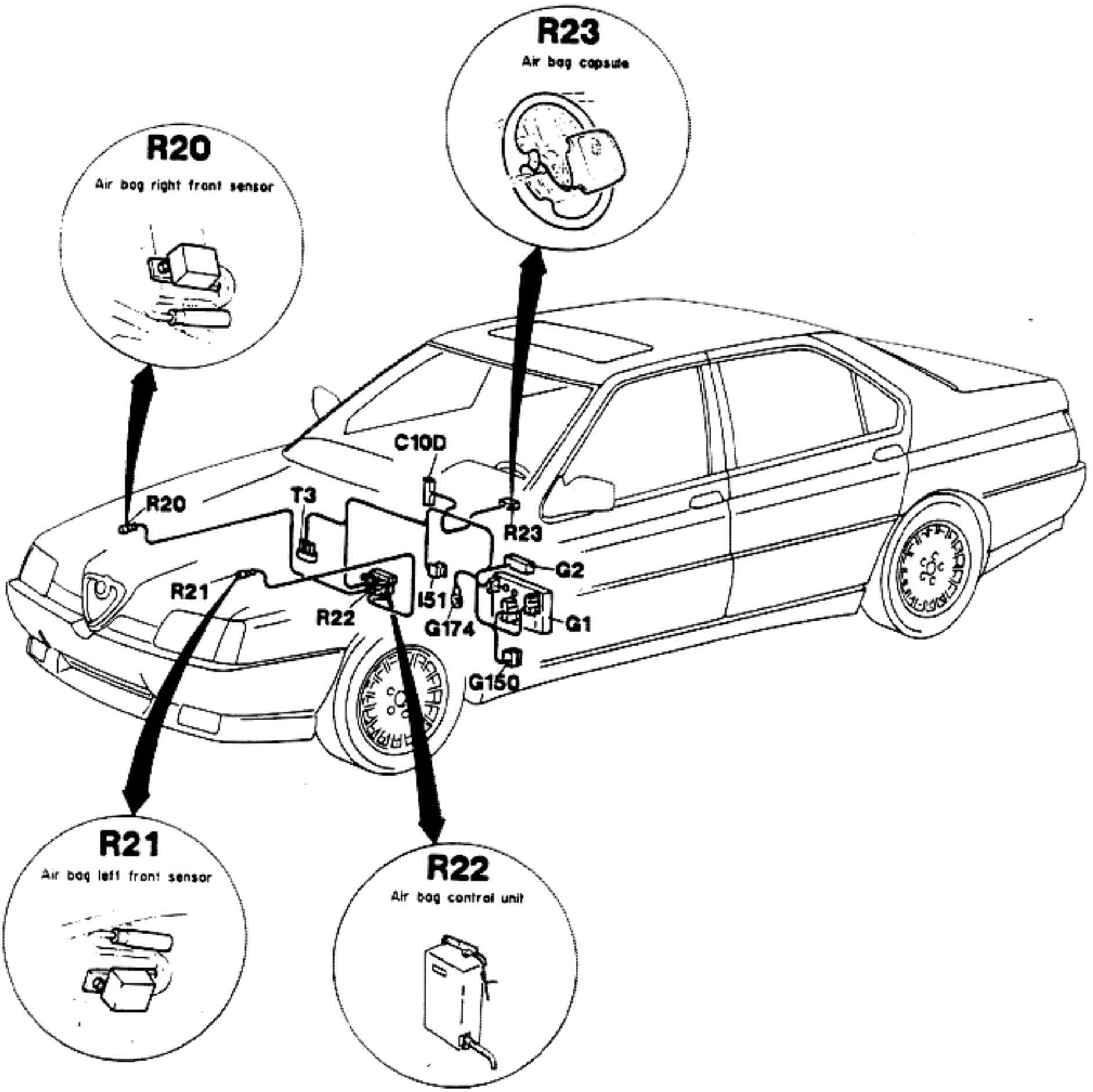


Air Bag capsule — R23



Air Bag diagnosis connector — T3





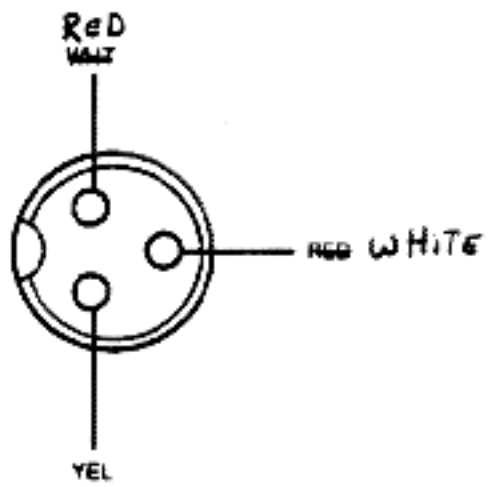
SELF-DIAGNOSIS - TROUBLESHOOTING TABLE

CODE	MALFUNCTION	TEST REFERENCE
14	- Forward L.H. sensor grounded the chassis.	A
15	- Open circuit on forward L.H. sensor.	B
16	- Failure to forward L.H. sensor.	C
24	- Forward R.H. sensor grounded to chassis.	D
25	- Open circuit on forward R.H. sensor.	E
26	- Failure to forward R.H. sensor.	F
31	- Current leakage to battery.	G
32	- Current shorted to battery voltage.	H
33	- Current leakage to ground.	I
34	- Current shorted to ground.	J
35	- Open circuit.	K
36	- Faulty squib.	L
41	- Short to ground/battery-warning lamp.	M
42	- Failure of Air Bag warning lamp.	M
51	- Faulty diagnostic unit.	N
52	- Firing sequence confirmation set.	O
53	- Firing current confirmation set.	O
54	- Squib current has flowed.	O

FORWARD L.H. SENSOR GROUNDED TO CHASSIS	TEST A CODE 14

TEST STEPS	RESULTS	REMEDY
A1 SENSOR INSTALLATION CHECK - Check that: • forward L.H. sensor **R21** is properly secured to chassis ground • installation point is clean to assure a good electric contact	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Install **sensor R21 properly**
A2 SENSOR CHECK - Check proper operation of sensor **R21** with an ohmmeter verifying the presence of the values indicated in the following table between sensor pins	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Replace **sensor R21**

CONNECT BETWEEN	VALUE (OHM)
~~RED~~ YEL and ground	Less than 1
~~RED~~ YEL and WHT	Approx. 10K
RED and YEL	Approx. 10K
WHT and ~~YEL~~ RED	Less than 1



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FORWARD L.H. SENSOR GROUNDED TO CHASSIS	TEST A CODE 14

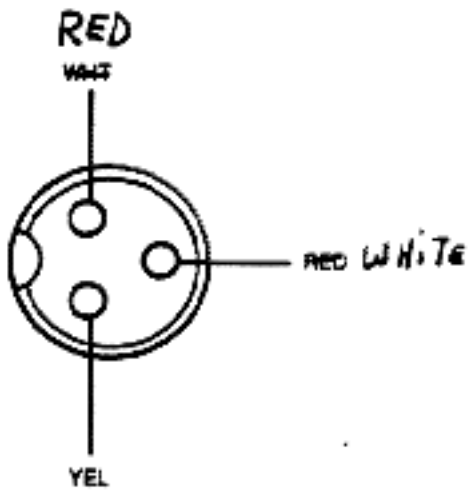
TEST STEPS		RESULTS	REMEDY
A3	GROUNDING CHECK		
- Check for presence of grounding between pin 5 of control unit **R22** and ground		OK ▶	Repair wiring between **pin 5 of connector C of control unit R22 and sensor R21**
		~~OK~~ ▶	Replace **control unit R22**

End of test A

OPEN CIRCUIT ON FORWARD L.H. SENSOR	TEST B CODE 15

TEST STEPS	RESULTS	REMEDY
B1 SENSOR INSTALLATION CHECK - Check that forward L.H. sensor **R21** is properly secured to chassis ground; check that installation point is clean to assure a good electric contact	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Install **sensor R21 properly**
B2 SENSOR CHECK - Check proper operation of sensor **R21** with an ohmmeter verifying the presence of the values indicated in the following table between sensor pins	OK ▶ ~~OK~~ ▶	Carry-out **step B3** Replace **sensor R21**

CONNECT BETWEEN	VALUE (OHM)
~~RED~~ YEL and ground	Less than 1
~~RED~~ YEL and WHT	Approx. 10K
RED and YEL	Approx. 10K
WHT and ~~YEL~~ RED	Less than 1



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OPEN CIRCUIT ON FORWARD L.H. SENSOR	TEST B CODE 15

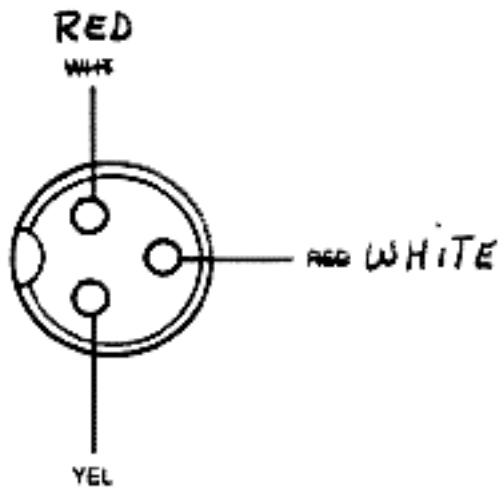
TEST STEPS		RESULTS	REMEDY
B3	CONTINUITY CHECK		
- Check for continuity between: • pin 4C of control unit **R22** and pin of sensor **R21** (YEL wire) • pin 5C of control unit **R22** and pin of sensor **R21** (RED wire) • pin 6C of control unit **R22** and pin of sensor **R21** (WHT wire)		OK ▶ ~~OK~~ ▶	Replace control unit **R22** Repair or replace wires, as necessary

End of test B

FAILURE TO FORWARD L.H. SENSOR — TEST C CODE 16

TEST STEPS	RESULTS	REMEDY
C1 SENSOR INSTALLATION CHECK - Check that forward L.H. sensor **R21** is properly secured to chassis ground, check that installation point is clean to assure a good electric contact	OK ▶	Carry-out **step C2**
	~~OK~~ ▶	**Install sensor R21 properly**
C2 SENSOR CHECK - Check proper operation of sensor **R21** with an ohmmeter verifying the presence of the values indicated in the following table between sensor pins	OK ▶	Replace **control unit R22**
	~~OK~~ ▶	Replace **sensor R21**

CONNECT BETWEEN	VALUE (OHM)
~~BLK~~ YEL and ground	Less than 1
~~BLK~~ YEL and WHT	Approx. 10K
RED and YEL	Approx. 10K
WHT and ~~YEL~~ RED	Less than 1

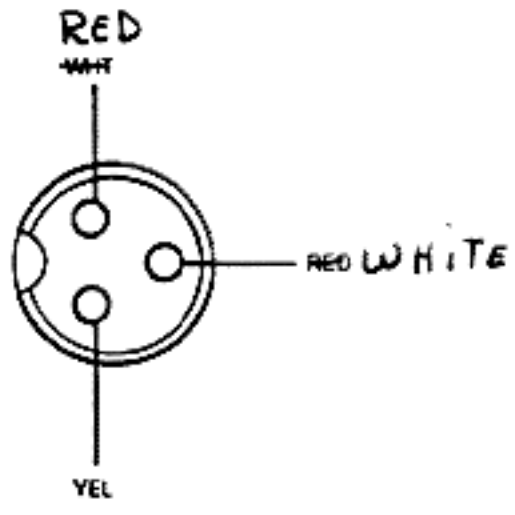


End of test C

FORWARD R.H. SENSOR GROUNDED TO CHASSIS	TEST D CODE 24

TEST STEPS	RESULTS	REMEDY
D1 SENSOR INSTALLATION CHECK - Check that forward R.H. sensor **R20** is properly secured to chassis ground, check that installation point is clean to assure a good electrical contact	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Install **sensor R20 properly**
D2 SENSOR CHECK - Check proper operation of sensor **R20** with an ohmmeter verifying the presence of the values indicated in the following table between sensor pins	OK ▶ ~~OK~~ ▶	Carry-out **step D3** Replace **sensor R20**

CONNECT BETWEEN	VALUE (OHM)
~~RED~~ YEL and ground	Less than 1
~~RED~~ YEL and WHT	Approx. 10K
RED and YEL	Approx. 10K
WHT and ~~YEL~~ RED	Less than 1



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FORWARD R.H. SENSOR GROUNDED TO CHASSIS	TEST D CODE 24

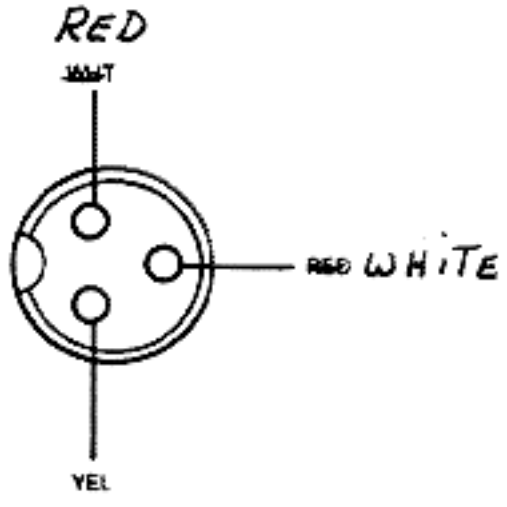
TEST STEPS		RESULTS	REMEDY
D3	GROUNDING CHECK		
- Check for presence of grounding between pin 2C of control unit **R22** and chassis ground		OK ▶	Repair wiring between **pin 2 of connector C of control unit R22 and sensor R20**
		OK ▶	Replace control unit **R22**

End of test D

OPEN CIRCUIT ON FORWARD R.H. SENSOR	TEST E CODE 25

TEST STEPS	RESULTS	REMEDY
E1 SENSOR INSTALLATION CHECK - Check that: • forward R.H. sensor **R20** is properly secured to chassis ground • installation point is clean to assure a good electric contact	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Install **sensor R21 properly**
E2 SENSOR CHECK - Check proper operation of sensor **R20** with an ohmmeter verifying the presence of the values indicated in the following table between sensor pins	OK ▶ ~~OK~~ ▶	Carry-out **step E3** Replace **sensor R20**

CONNECT BETWEEN	VALUE (OHM)
YEL ~~RED~~ and ground	Less than 1
YEL RED and WHT	Approx. 10K
RED and YEL	Approx. 10K
WHT and ~~YEL~~ RED	Less than 1



(Cont.d)

OPEN CIRCUIT ON FORWARD R.H. SENSOR	TEST E CODE 25

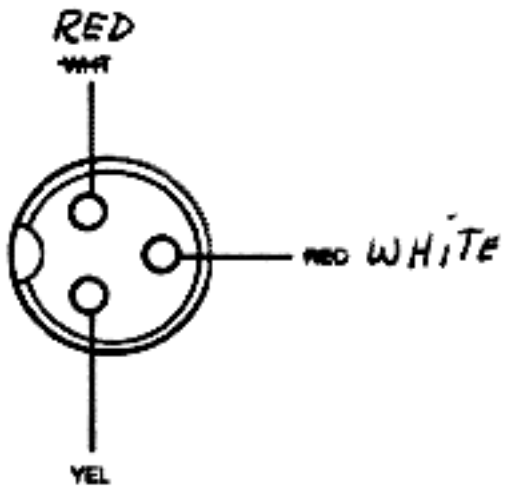
TEST STEPS		RESULTS	REMEDY
E3	CONTINUITY CHECK		
- Check for continuity between: • pin 3C of control unit **R22** and pin of sensor **R20** (YEL wire) • pin 2C of control unit **R22** and pin of sensor **R20** (RED wire) • pin 1C of control unit **R22** and pin of sensor **R20** (WHT wire)		OK ▶ ~~OK~~ ▶	Replace **control unit R22** Repair or replace **wires, as necessary**

End of test E

FAILURE TO FORWARD R.H. SENSOR	TEST F CODE 26

TEST STEPS	RESULTS	REMEDY
F1 SENSOR INSTALLATION CHECK - Check that: • forward R.H. sensor **R20** is properly secured to chassis ground • installation point is clean to assure a good electric contact	OK ▶ OK ▶	Carry-out **step F2** Install **sensor R21 properly**
F2 SENSOR CHECK - Check proper operation of sensor **R20** with an ohmmeter verifying the presence of the values indicated in the following table between sensor pins	OK ▶ OK ▶	Replace **control unit R22** Replace **sensor R20**

CONNECT BETWEEN	VALUE (OHM)
YEL RED and ground	Less than 1
YEL RED and WHT	Approx. 10K
RED and YEL	Approx. 10K
WHT and YEL RED	Less than 1



End of test F

CURRENT LEAKAGE TO BATTERY	TEST G CODE 31

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out this test, set ignition key to "parking" position, disconnect connector A of control unit **R22** and connect a 4ohms resistor between pins 1 and 2 of above mentioned connector. Reset memory of control unit **R22** disconnecting pin 6B from ground for 3 sec., reconnecting it for 3 sec. and disconnecting it definitively.		
G1 AIR BAG WARNING LAMP CHECK - Set ignition key to "run" position and check that AIR BAG warning lamp illuminates for 5 sec. and then extinguishes definitively	OK ▶ ~~OK~~ ▶	Carry-out **step G2** Carry-out **step G3**
G2 AIR BAG WARNING LAMP CHECK - Set ignition key to "parking" position. Restore connections, disconnect connector of air bag capsule **R23** on steering wheel and connect a 2 ohms resistor between connector pins (GRY-GRN and LT BLU wires). With ignition key to "run" position, check that warning lamp illuminates for 5 sec. and then extinguishes definitively.	OK ▶ ~~OK~~ ▶	Replace **module R23** Repair wiring between **control unit R22 and capsule R23**
G3 AIR BAG WARNING LAMP CHECK - Check that warning lamp illuminates for 5 sec., extinguishes for 1/2 sec. and than illuminates definitively	OK ▶ ~~OK~~ ▶	Repeat **memory reset procedure of control unit R22** Replace **control unit R22**

End of test G

CURRENT SHORTED TO BATTERY VOLTAGE	TEST H CODE 32

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out this test, set ignition key to "parking" position, disconnect connector A of control unit **R22** and connect a 4ohms resistor between pins 1 and 2 of above mentioned connector. Reset memory of control unit **R22** disconnecting pin 6B from ground for 3 sec., reconnecting it for 3 sec. and disconnecting it definitively.		
H1 AIR BAG WARNING LAMP CHECK - Set ignition key to "run" position and check that AIR BAG warning lamp illuminates for 5 sec. and then extinguishes definitively	OK ▶ ~~OK~~ ▶	Carry-out **step H2** Carry-out **step H3**
H2 AIR BAG WARNING LAMP CHECK - Set ignition key to "parking" position. Restore connections, disconnect connector of air bag capsule **R23** on steering wheel and connect a 2 ohms resistor between connector pins (GRY-GRN and LT BLU wires). With ignition key to "run" position, check that warning lamp illuminates for 5 sec. and then extinguishes definitively.	OK ▶ ~~OK~~ ▶	Replace **module R23** Repair wiring between **control unit R22 and capsule R23**
H3 AIR BAG WARNING LAMP CHECK - Check that warning lamp illuminates for 5 sec., extinguishes for 1/2 sec. and than illuminates definitively	OK ▶ ~~OK~~ ▶	Repeat **memory reset procedure of control unit R22** Replace **control unit R22**

End of test H

CURRENT LEAKAGE TO GROUND	TEST I CODE 32

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out this test, set ignition key to "parking" position, disconnect connector A of control unit **R22** and connect a **4ohms** resistor between pins 1 and 2 of above mentioned connector. Reset memory of control unit **R22** disconnecting pin 6B from ground for 3 sec., reconnecting it for 3 sec. and disconnecting it definitively.		
I1 AIR BAG WARNING LAMP CHECK - Set ignition key to "run" position and check that AIR BAG warning lamp illuminates for 5 sec. and then extinguishes definitively	OK ▶ ~~OK~~ ▶	Carry-out **step I2** Carry-out **step I3**
I2 AIR BAG WARNING LAMP CHECK - Set ignition key to "parking" position. Restore connections, disconnect connector of air bag capsule **R23** on steering wheel and connect a 2 ohms resistor between connector pins (GRY-GRN and LT BLU wires). With ignition key to "run" position, check that warning lamp illuminates for 5 sec. and then extinguishes definitively.	OK ▶ ~~OK~~ ▶	Replace **module R23** Repair wiring between **control unit R22 and capsule R23**
I3 AIR BAG WARNING LAMP CHECK - Check that warning lamp illuminates for 5 sec., extinguishes for 1/2 sec. and than illuminates definitively	OK ▶ ~~OK~~ ▶	Repeat **memory reset procedure of control unit R22** Replace **control unit R22**

End of test I

CURRENT SHORTED TO GROUND	TEST J CODE 34

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out this test, set ignition key to "parking" position, disconnect connector A of control unit **R22** and connect a 4ohms resistor between pins 1 and 2 of above mentioned connector. Reset memory of control unit **R22** disconnecting pin 6B from ground for 3 sec., reconnecting it for 3 sec. and disconnecting it definitively.		
J1 AIR BAG WARNING LAMP CHECK - Set ignition key to "run" position and check that AIR BAG warning lamp illuminates for 5 sec. and then extinguishes definitively	OK ▶ OK ▶	Carry-out **step J2** Carry-out **step J3**
J2 AIR BAG WARNING LAMP CHECK - Set ignition key to "parking" position. Restore connections, disconnect connector of air bag capsule **R23** on steering wheel and connect a 2 ohms resistor between connector pins (GRY-GRN and LT BLU wires). With ignition key to "run" position, check that warning lamp illuminates for 5 sec. and then extinguishes definitively.	OK ▶ OK ▶	Replace **module R23** Repair wiring between **control unit R22 and capsule R23**
J3 AIR BAG WARNING LAMP CHECK - Check that warning lamp illuminates for 5 sec., extinguishes for 1/2 sec. and than illuminates definitively	OK ▶ OK ▶	Repeat memory reset **procedure of control unit R22** Replace **control unit R22**

End of test J

OPEN CIRCUIT	TEST K CODE 35

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out this test, set ignition key to "parking" position, disconnect connector A of control unit **R22** and connect a 4ohms resistor between pins 1 and 2 of above mentioned connector. Reset memory of control unit **R22** disconnecting pin 6B from ground for 3 sec., reconnecting it for 3 sec. and disconnecting it definitively.		
K1 AIR BAG WARNING LAMP CHECK - Set ignition key to "run" position and check that AIR BAG warning lamp illuminates for 5 sec. and then extinguishes definitively	OK ▶ ~~OK~~ ▶	Carry-out **step K2** Carry-out **step K3**
K2 AIR BAG WARNING LAMP CHECK - Set ignition key to "parking" position. Restore connections, disconnect connector of air bag capsule **R23** on steering wheel and connect a 2 ohms resistor between connector pins (GRY-GRN and LT BLU wires). With ignition key to "run" position, check that warning lamp illuminates for 5 sec. and then extinguishes definitively.	OK ▶ ~~OK~~ ▶	Replace **module R23** Repair wiring between **control unit R22 and capsule R23**
K3 AIR BAG WARNING LAMP CHECK - Check that warning lamp illuminates for 5 sec., extinguishes for 1/2 sec. and than illuminates definitively	OK ▶ ~~OK~~ ▶	Repeat **memory reset procedure of control unit R22** Replace **control unit R22**

End of test K

FAULTY SQUIB	TEST L CODE 36

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out this test, set ignition key to "parking" position, disconnect connector A of control unit **R22** and connect a 4ohms resistor between pins 1 and 2 of above mentioned connector. Reset memory of control unit **R22** disconnecting pin 6B from ground for 3 sec., reconnecting it for 3 sec. and disconnecting it definitively.		
L1 AIR BAG WARNING LAMP CHECK - Set ignition key to "run" position and check that AIR BAG warning lamp illuminates for 5 sec. and then extinguishes definitively	OK ▶ OK ▶	Carry-out **step L2** Carry-out **step L3**
L2 AIR BAG WARNING LAMP CHECK - Set ignition key to "parking" position. Restore connections, disconnect connector of air bag capsule **R23** on steering wheel and connect a 2 ohms resistor between connector pins (GRY-GRN and LT BLU wires). With ignition key to "run" position, check that warning lamp illuminates for 5 sec. and then extinguishes definitively.	OK ▶ OK ▶	Replace **module R23** Repair wiring between **control unit R22 and capsule R23**
L3 AIR BAG WARNING LAMP CHECK - Check that warning lamp illuminates for 5 sec., extinguishes for 1/2 sec. and than illuminates definitively	OK ▶ OK ▶	Repeat **memory reset procedure of control unit R22** Replace **control unit R22**

End of test L

FAILURE OF AIR BAG WARNING LAMP	TEST M CODE 41-42

TEST STEPS	RESULTS	REMEDY
M1 WARNING LAMP ILLUMINATION CHECK - Set ignition key to "run" position and check that AIR BAG warning lamp on instrument panel illuminates steady	OK ▶ ~~OK~~ ▶	Carry-out **step M2** Carry-out **step M3**
M2 WARNING LAMP ILLUMINATION CHECK - Remove ignition key and disconnect connector B of air bag control unit **R22**. Set ignition key to "run" position and check again that warning lamp illuminates	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4 of connector B of control unit R22 and pin 4D of instrument panel C10** Replace **air bag control unit R22**
M3 WARNING LAMP ILLUMINATION CHECK - Remove ignition key then set to "run" position and check for presence of 0V (zero) at pin 4B of control unit **R22**	OK ▶ ~~OK~~ ▶	Carry-out **step M4** Replace **air bag control unit R22**
M4 GROUNDING CHECK - Remove ignition key then set to "run" position and check for presence of 0V (zero) at pin 4D of instrument panel **C10**	OK ▶ ~~OK~~ ▶	Replace **warning lamp on instrument panel C10** Repair wiring between **pin 4B of control unit R22 and pin 4D of instrument panel C10**

End of test M

FAULTY DIAGNOSTIC UNIT	TEST N CODE 51

TEST STEPS		RESULTS	REMEDY
N1	CONTROL UNIT CHECK		
- Set ignition key to "parking" position, reset failure code by pin 6B of control unit **R22** and check that only code 51 remains in memory		OK ▶	Replace control unit **R22**
		~~OK~~ ▶	Carry-out trouble-shooting procedure of displayed code

End of test N

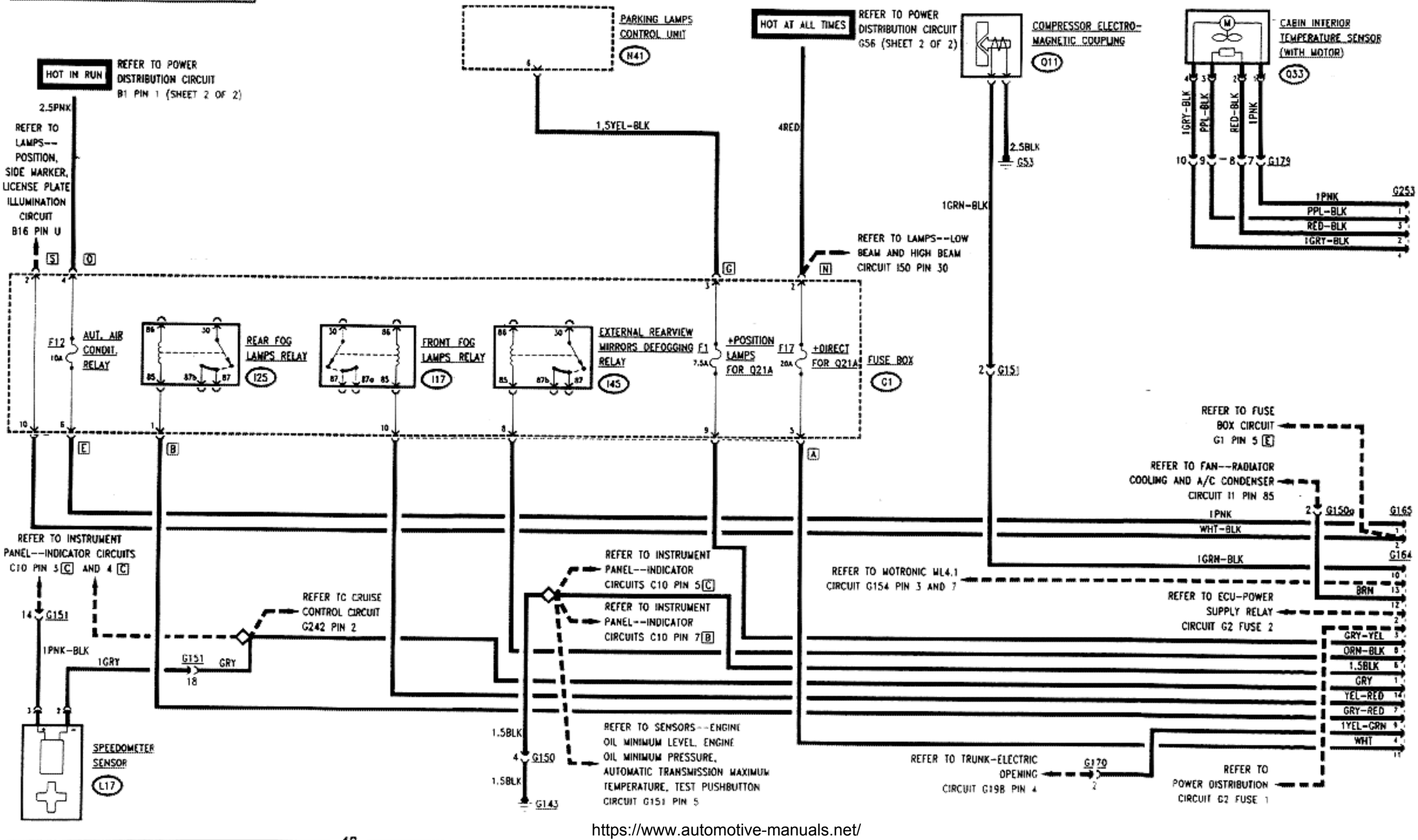
AIR BAG SYSTEM ACTIVATED	TEST O CODE 52-53-54

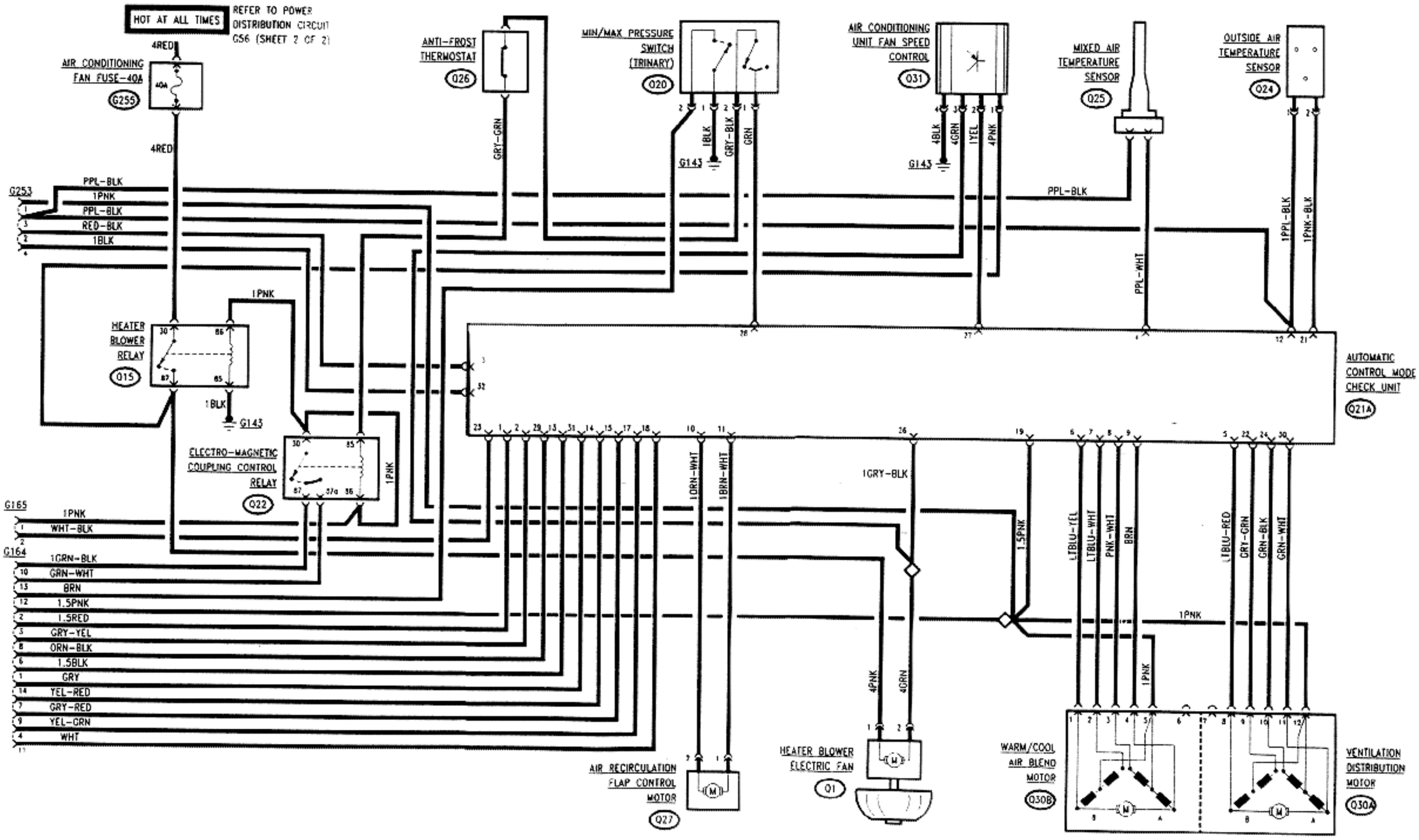
TEST STEPS		RESULTS	REMEDY
O1	AIR BAG CHECK		
- Check that after a crash system is activated		OK ▶	Recover car to **Alfa Romeo service station for restoring air bag system**
		~~OK~~ ▶	Carry-out **step O2**
O2	CODE CHECK		
- Reset failure code by pin 6B of control unit **R22** and check that codes other than 52-53-54 are in memory		OK ▶	Carry-out **trouble-shooting procedure of displayed codes**
		~~OK~~ ▶	Replace **control unit R22**

End of test O

AIR CONDITIONING SYSTEM

BASE AND L ONLY





S ONLY

HOT IN RUN — REFER TO POWER DISTRIBUTION CIRCUIT B1 PIN 1 (SHEET 2 OF 2)

2.5PNK

REFER TO LAMPS--POSITION, SIDE MARKER, LICENSE PLATE ILLUMINATION CIRCUIT 816 PIN U

PARKING LAMPS CONTROL UNIT (N41)

1.5YEL-BLK

HOT AT ALL TIMES — REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 2 OF 2)

4RED

REFER TO LAMPS--LOW BEAM AND HIGH BEAM CIRCUIT 150 PIN 30

COMPRESSOR ELECTRO-MAGNETIC COUPLING (Q11)

2.5BLK — G53

1GRN-BLK — 2 G151

CABIN INTERIOR TEMPERATURE SENSOR (WITH MOTOR) (Q33)

1GRY-BLK, PPL-BLK, RED-BLK, 1PNK — 10 9 8 7 G179

1PNK — PPL-BLK — RED-BLK — 1GRY-BLK — G253

F12 10A AUT. AIR CONDIT. RELAY

REAR FOG LAMPS RELAY (125)

FRONT FOG LAMPS RELAY (117)

EXTERNAL REARVIEW MIRRORS DEFOGGING RELAY (145)

F1 7.5A +POSITION LAMPS FOR Q21A

F17 20A +DIRECT FOR Q21A

FUSE BOX (G1)

REFER TO FUSE BOX CIRCUIT G1 PIN 5 [E]

REFER TO FAN--RADIATOR COOLING AND A/C CONDENSER CIRCUIT 11 PIN 85

2 G150a — 1PNK, WHT-BLK — G165

1GRN-BLK — G164

REFER TO MOTRONIC ML4.1 CIRCUIT G154 PIN 3 AND 7

BRN

REFER TO ECU--POWER SUPPLY RELAY CIRCUIT G2 FUSE 2

GRY-YEL, ORN-BLK, 1.5BLK, GRY, YEL-RED, GRY-RED, 1YEL-GRN, WHT

REFER TO TRUNK--ELECTRIC OPENING CIRCUIT G198 PIN 4 — G170

REFER TO POWER DISTRIBUTION CIRCUIT 32 FUSE 1

REFER TO CONTROLLED DAMPING SUSPENSION CIRCUIT G252c

REFER TO CRUISE CONTROL CIRCUIT G242 PIN2

GRY, PNK-BLK — 18 — 14 G151 — 1GRY, 1PNK-BLK

SPEEDOMETER SENSOR (L17)

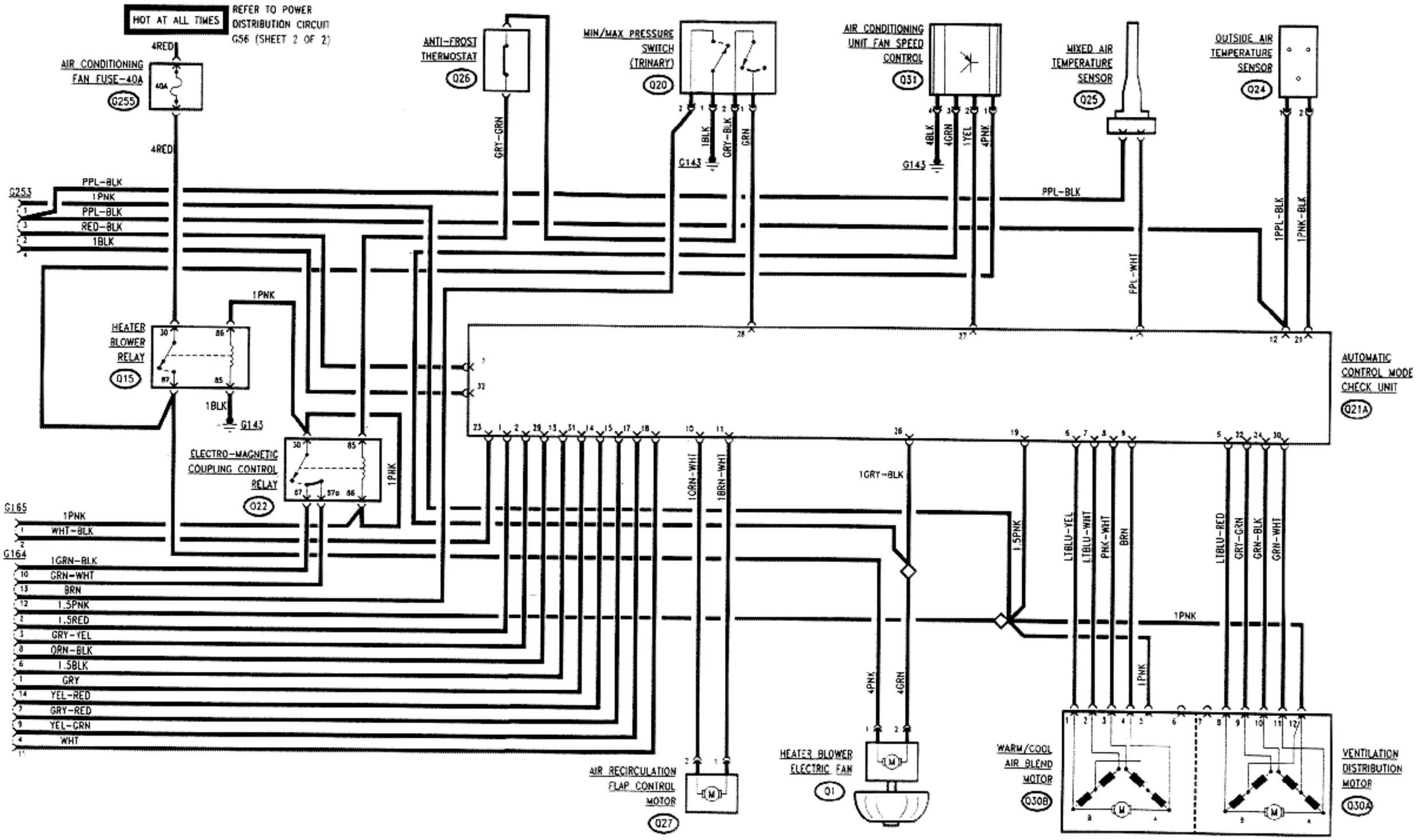
INSTRUMENT PANEL (C10)

REFER TO INSTRUMENT PANEL--INDICATOR CIRCUITS C10 PIN 5 [C]

REFER TO INSTRUMENT PANEL--INDICATOR CIRCUITS C10 PIN 7 [B]

1.5BLK — 4 G150 — 1.5BLK — G143

REFER TO SENSORS--ENGINE OIL MINIMUM LEVEL, ENGINE OIL MINIMUM PRESSURE TEST PUSHBUTTON CIRCUIT G151 PIN 5



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GENERAL

The automatic air conditioning system, whose operation is controlled by an electronic control unit, maintains a constant temperature selected on the display, independently from the environmental and driving conditions.
The air conditioning system can be operated manually or automatically.
In both cases the system is monitored automatically, and is able to reach, very fast, the desired internal conditions.
The system includes some sensors that send electric signals, related to measured variables, to the control unit which after an appropriate process, sends to the actuators the command signals needed to keep the internal temperature to the desired value. The system automatically selects and changes air distribution and fan speed according to the internal and external temperature.
The system is provided with a memory that maintains the temperatures and the functions selected before the engine is turned off.
At each subsequent engine start, the previously selected characteristics are already set.
The display, located in the air conditioning lower left section reads the external temperature.
If the car is driven at a speed lower than 19 MPH, the display reads the temperature shown before undergoing this speed.
When the car overcomes the speed of 19 MPH, the display reads again the real external temperature.

WARNING:
The road pavement temperature may be lower than the air temperature sensed by the sensor, thus during cold season, it is possible to have an icy road while the display reads a temperature greater than 0°C.

Selecting the automatic mode, the system operates automatically and the driver selects only the desired internal temperature.
The time needed to reach the selected temperature depends on several parameters, among them the difference between the internal and external temperatures and the number of passengers.
It is necessary to wait for some time, always variable, before obtaining the desired internal conditions.
It is advisable not to push the keys to change air distribution or fan speed till the system has reached the normal operation, indicated by a decrease in fan speed.
With high external temperature, to reduce the time for the transient phase untill the selected condition is obtained, the system does not allow any external air inlet, and operates under recycle mode. The selection of fan speed or of the air distribution, automatically controlled by the system, can be changed by pressing one of the pushbuttons for the fan speed or air distribution.
Anyway, the temperature control is still accomplished automatically.
To return to the previous operation and to automatic operation, it is necessary to push the AUTO button.

NOTES

- At low external temperatures, the air conditioning automatically stops.
- To allow the air conditioning to operate at the best conditions, it is advisable to fully close window and sun roof. If the vehicle has been exposed for a long time to sunlight and the interior is very hot, after switching on the air conditioning system, it is necessary to open the windows to recycle internal air.
- To make sure the system is operating correctly, it is advisable to regularly clean the air conditioning condenser.

By the pushbuttons of the air conditioning system it is possible to:

- Switch off conditioner (ECON pushbutton).
- Select the desired temperature (▲ and ▼ pushbuttons).
- Manually very fan speed (pushbuttons 1, 2, 3, 4).
- Switch off the system (OFF pushbutton).
- Select the system automatic mode (AUTO pushbutton).

- Send the air flow where desired.

- Send the air flow toward the windshield for defogging.

- Switch on the rear window defogging.

- Close the external air inlet to obtain an internal air recirculation.

The control unit which monitors the system is equipped with a special self-test program. This program detects any malfunction within the system and shows it on the display used to select the desired temperature.
To start the self-test program, push simultaneously the automatic operation (AUTO) and the air flow toward down buttons ( ).
The self-test program lasts for 20 sec. then it displays the system malfunctions.
Pressing each time the button ( ), the display shows the malfunction according to an appropriate code.

FUNCTIONAL DESCRIPTION

The air conditioning system is monitored by the automatic control mode check unit **Q21A**.
The control unit **Q21A** is powered on pins 1, 18 and 19 through appropriate protection fuses.
The battery voltage (12V), present also when with the ignition key is set to "park", is connected to:

- **Q21A** unit (pin 18) through fuse **F17**+DIRECT FOR **Q21A** of the fuse box **G1**.

- **Q21A** unit (pin 1) through fuse **F1**+POSITION LAMP FOR **Q21A** of the fuse box **G1**.

The voltage (12V) present when the ignition key is set to "run" is connected to:

- **Q21A** (pin 19) unit by means of electronic control units power supply relay **I51**.

- Heater blower relay **Q15** and electro-magnetic coupling control relay **Q22** through fuse **F12** AUTOMATIC AIR CONDITIONING RELAY.

With position lamps on, the parking lamps control unit **N41** connects to **Q21A** unit pin 2 the voltage (12V) needed to illuminate the serigrafs located on the air conditioning control panel.
This line is protected by fuse **F1**+POSITION LAMPS FOR **Q21A** of the fuse box **G1**.
Pin 5E of fuse box **G1** connects 12V to **Q21A** unit pin 23, through a rheostat used to change the intensity of the control panel indicator lamps.
Q21A unit, through pins 29, 14 and 15, energizes respectively:

- The external rearview mirrors defogging relay **I45** (see rear window defogging circuit).

- The front fog lamps relay **I17** (see fog head and rear lamps circuit).

- The rear fog lamps relay **I25** (see fog head and rear lamps circuit).

Q21A unit sends to Motronic control unit **S11**, through the electro-magnetic coupling control relay **Q22** contacts, a signal of air conditioning system activation, to allow the engine idle speed to compensate for the new power request due to air conditioning system operation.
Relay **Q22** is energized by control unit **Q21A** when the coolant fluid pressure is at minimum. If the pressure becomes greater than the maximum value, **Q21A** unit removes power from coupling **Q11**.
The relay **Q22** energizing power is controlled by the anti-frost thermostat **Q26** which removes power in case presence of ice is detected on the evaporating valves.
The speed sensor sends to **Q21A** unit a signal corresponding to car speed so as to disconnect the outside air temperature sensor **Q24** when the speed decreases below 19 MPH. The cabin interior temperature sensor (with motor) **Q33** is powered through the supplementary fuse box **G2** (see electronic control units power relay circuit).
The signals, corresponding to the internal temperature, are sent by the sensor **Q33** to **Q21A** unit pins 3 and 12 and to mixed air temperature sensor **Q25**.
To improve and to keep real the internal temperature sensing, the air is taken from the cabin and blowed on the

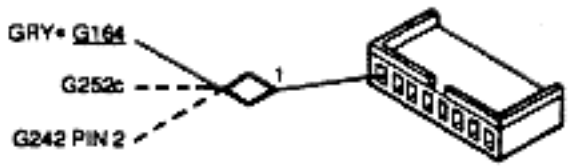
sensor by a small fan controlled by **Q21A** unit (pin 32). **Q21A** unit receives from the outside air temperature sensor **Q24** a signal corresponding to the external temperature (pin 12 and 21) and uses this information to adjust the temperature of the air sent to the cabin in accordance to the value selected on the control panel.
To adjust the mixing and distribution of the air within the automatic air conditioning, **Q21A** unit controls the ventilation distribution motor **Q30A** (pins 30, 24, 22, 5) and warm/cool air blend motor **Q30B** (pins 6, 7, 8, 9).
By pin 27 the control unit controls air conditioning unit fan speed control **Q31**.
The command to **Q31** is provided according to external temperature, internal temperature and temperature selected on the display.
12V power reaches **Q31** regulator through heater blower relay **Q15** contacts. This line is protected by fuse **G255** AIR CONDITIONING FAN.
Relay **Q15** is energized by a 12V power line protected by fuse **F12** automatic AIR CONDITIONING RELAY of the fuse box **G1**.
Speed control **Q31**, powered in this way, adjusts the speed of the fan **Q1**, also powered by a contact of **Q15**. **Q21A** unit sends, through pin 26, a speed regulation signal to the heater blower electric fan **Q1** and to the speed control **Q31**.
Pressing the recycle button on the control panel, a signal from **Q21A** unit controls the recycle door position.
In this way it is possible to introduce in the mixing system air taken from the cabin and then cooled and demisted by the air conditioning circuit. The control signal from control unit on pins 10 and 11 sent to the air recirculation flap control motor **Q27** is able to move door to "recycle" or "external air" positions without intermediate positions.
On the system control panel is located the trunk opening pushbutton; when it is pressed, the unit **Q21A** grounds its output pin 17 activating the corresponding function. For more details see the related circuit.

SELF-TEST CIRCUIT - GENERAL INFORMATION

The self-test program is activated, with ignition key to position "run", by simultaneous pressing of button AUTO and button , and releasing button AUTO first and button successively.
The self-test program starts showing bars on the display "desired internal temperature", lasting for 20 sec., and then, if malfunctions are detected, the display will show their quantity.
At this point, press button for the times corresponding to malfunctions number. Each time the button is pressed, the display shows a code that identifies the type of malfunction and the affected component.
The code is composed of two digits; the first number or letter identifies the faulty component (i.e. number 2 identifies the external air sensor) while the second letter identifies the malfunction type (i.e. C indicates short).
After the self-test, press again button to proceed with the system operation.

Instrument panel	C10 A

S ONLY



Instrument panel	C10 C

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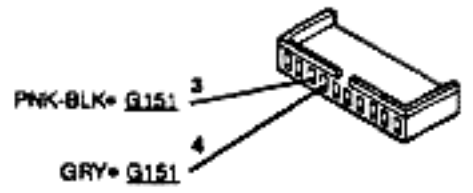
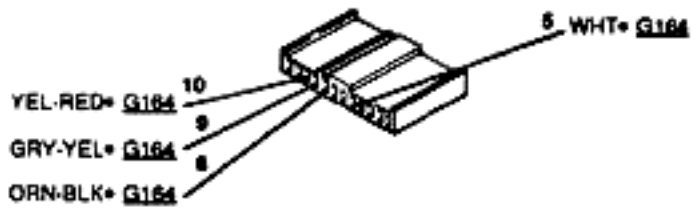
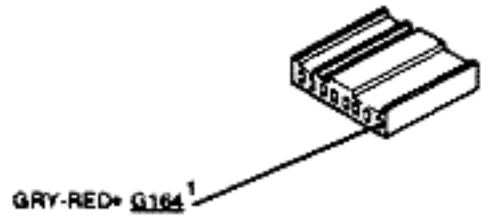


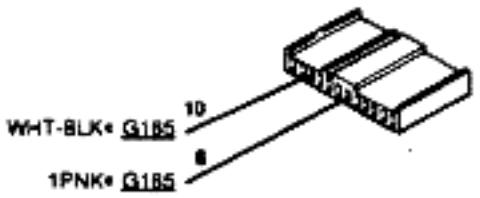
Fuse box	G1 A



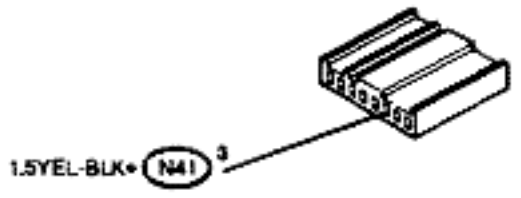
Fuse box	G1 B



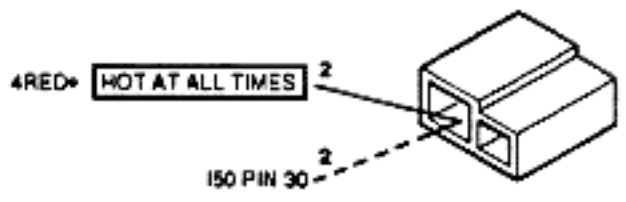
Fuse box	G1 E



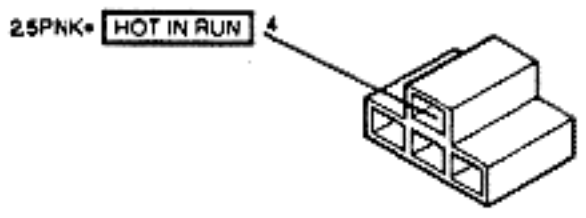
Fuse box	G1 G



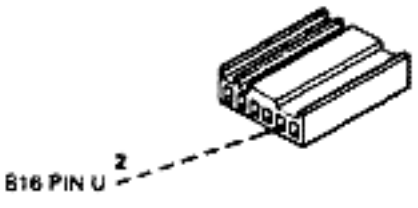
Fuse box	G1 N



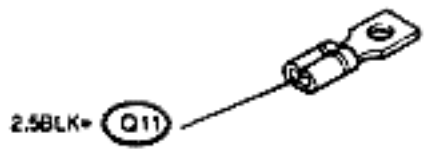
Fuse box	G1 O



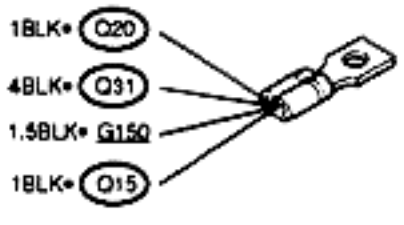
Fuse box	G1 S



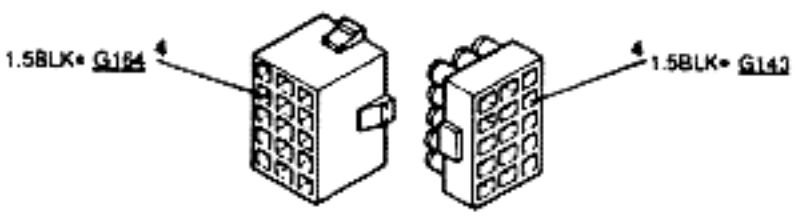
Engine compartment ground connection	G53



Central bulkhead ground	G143

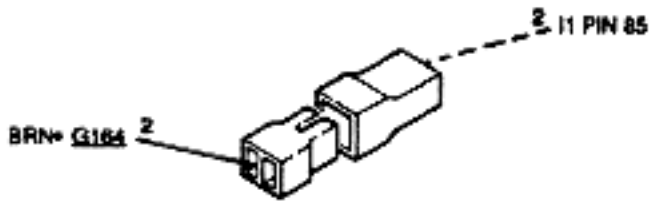


Connector, circuit board to engine compartment left side wiring	G150



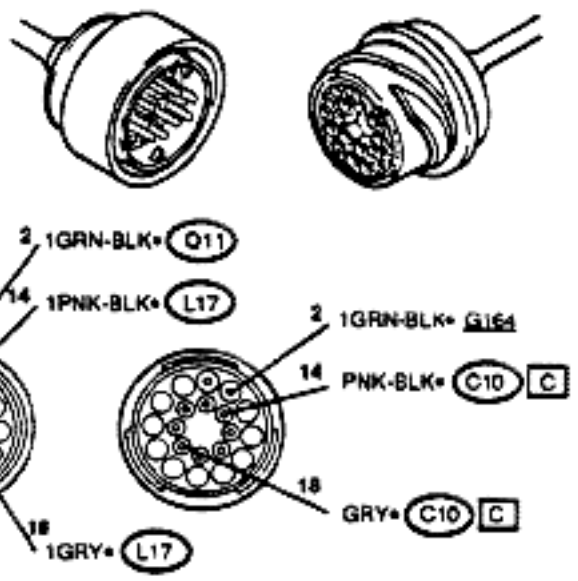
(Cont.d)

Connector, circuit board to engine compartment left side wiring — G150a



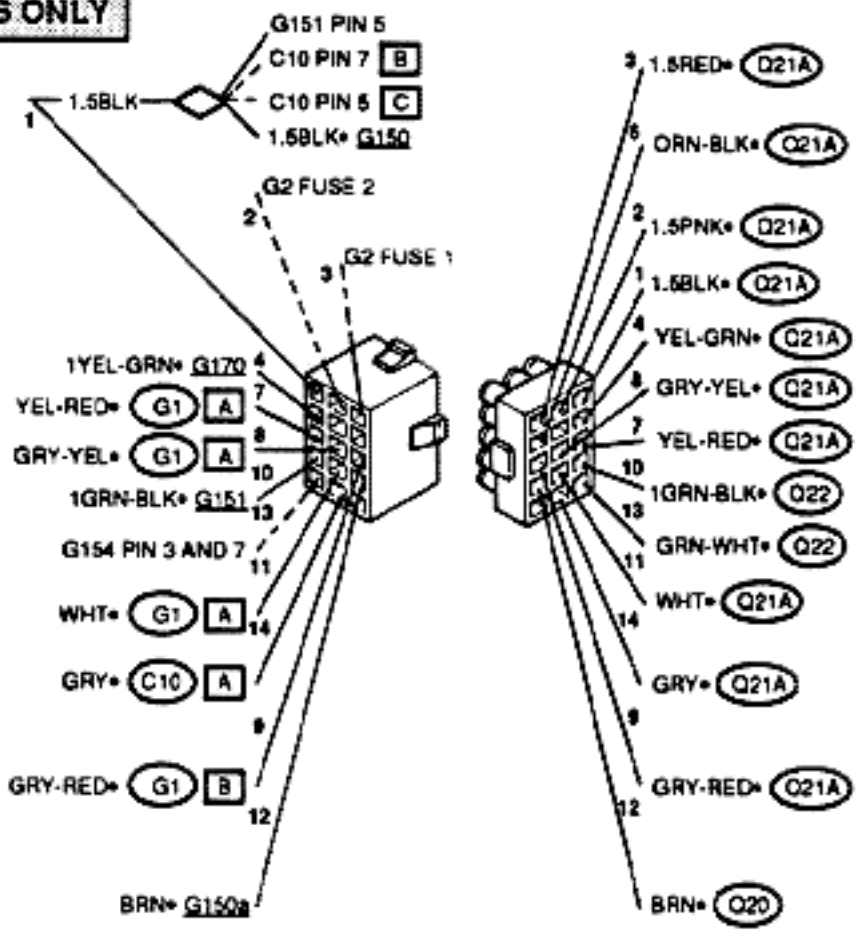
Connector, circuit board to engine utilities wiring — G151

S ONLY



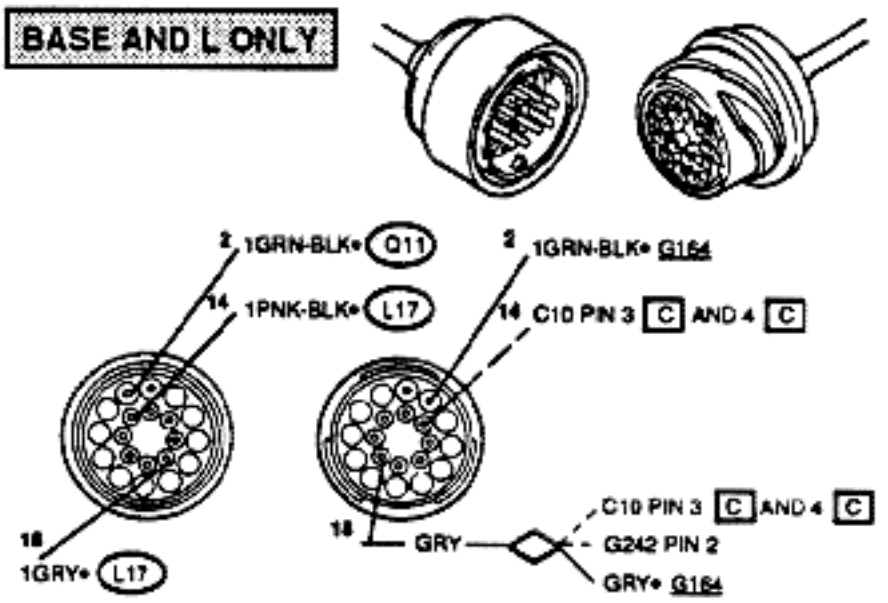
Connector, circuit board to air conditioning wiring — G164

S ONLY



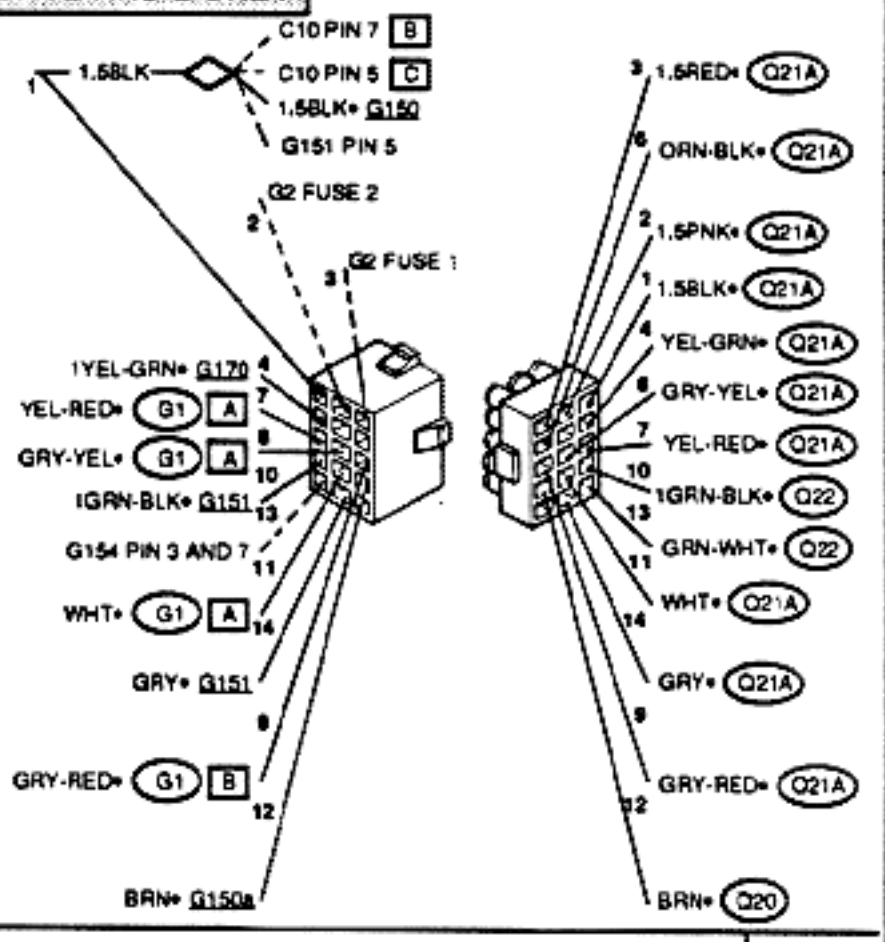
Connector, circuit board to engine utilities wiring — G151

BASE AND L ONLY

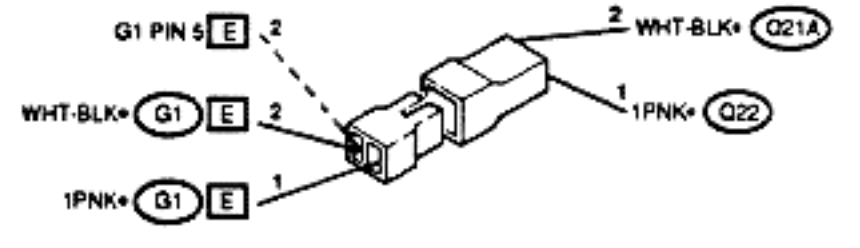


Connector, circuit board to air conditioning wiring — G164

BASE AND L ONLY

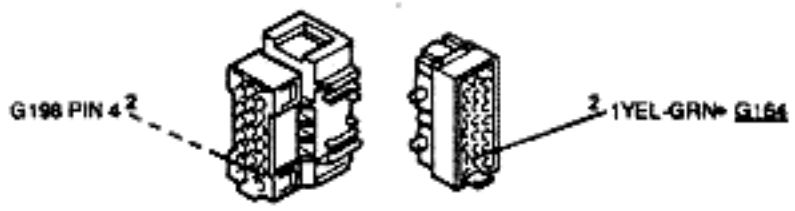


Connector, door utilities to air conditioning wiring — G165

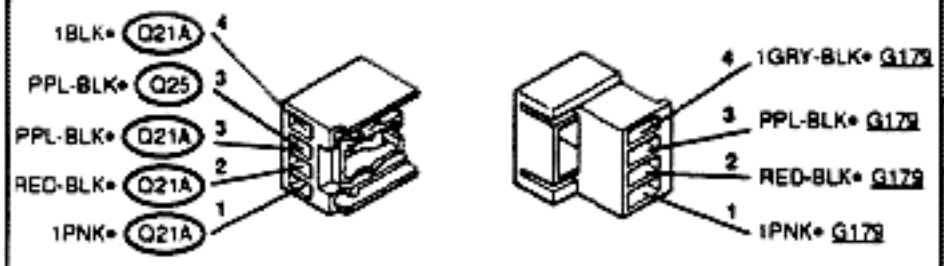


(Cont.d)

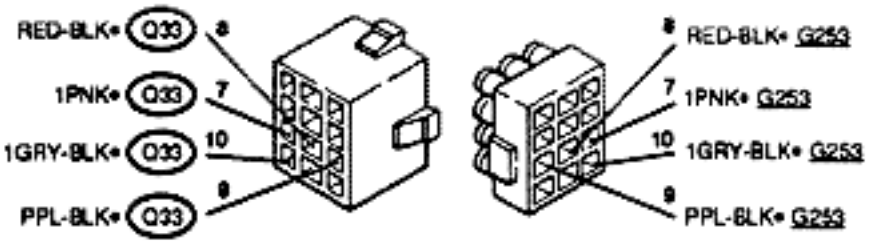
Connector, circuit board to right rear wiring — G170



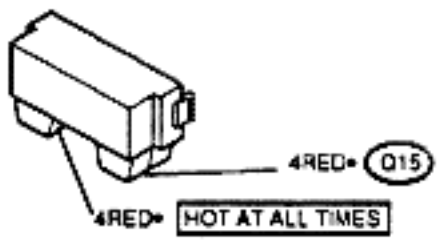
Left rear wiring connector - Air conditioning wiring — G253



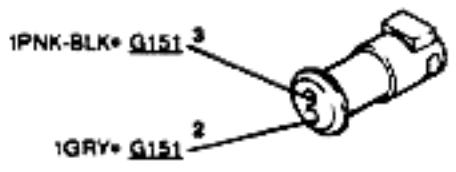
Connector, left rear wiring to dome lamp wiring — G179



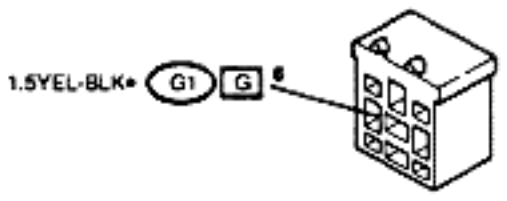
Air conditioning fan fuse - 40A — G255



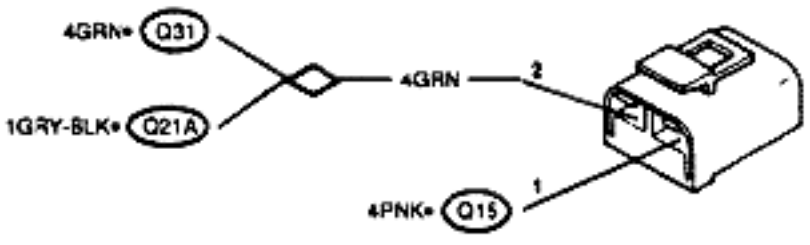
Speedometer sensor — L17



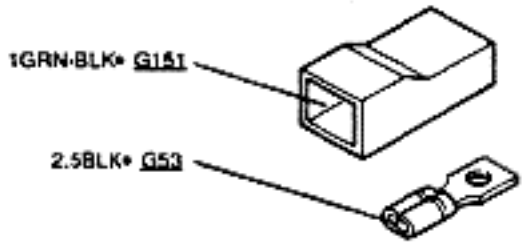
Parking lamps control unit — N41



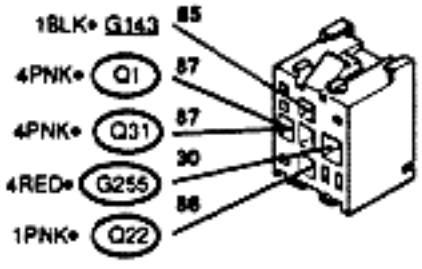
Heater blower electric fan — Q1



Compressor electro-magnetic coupling — Q11



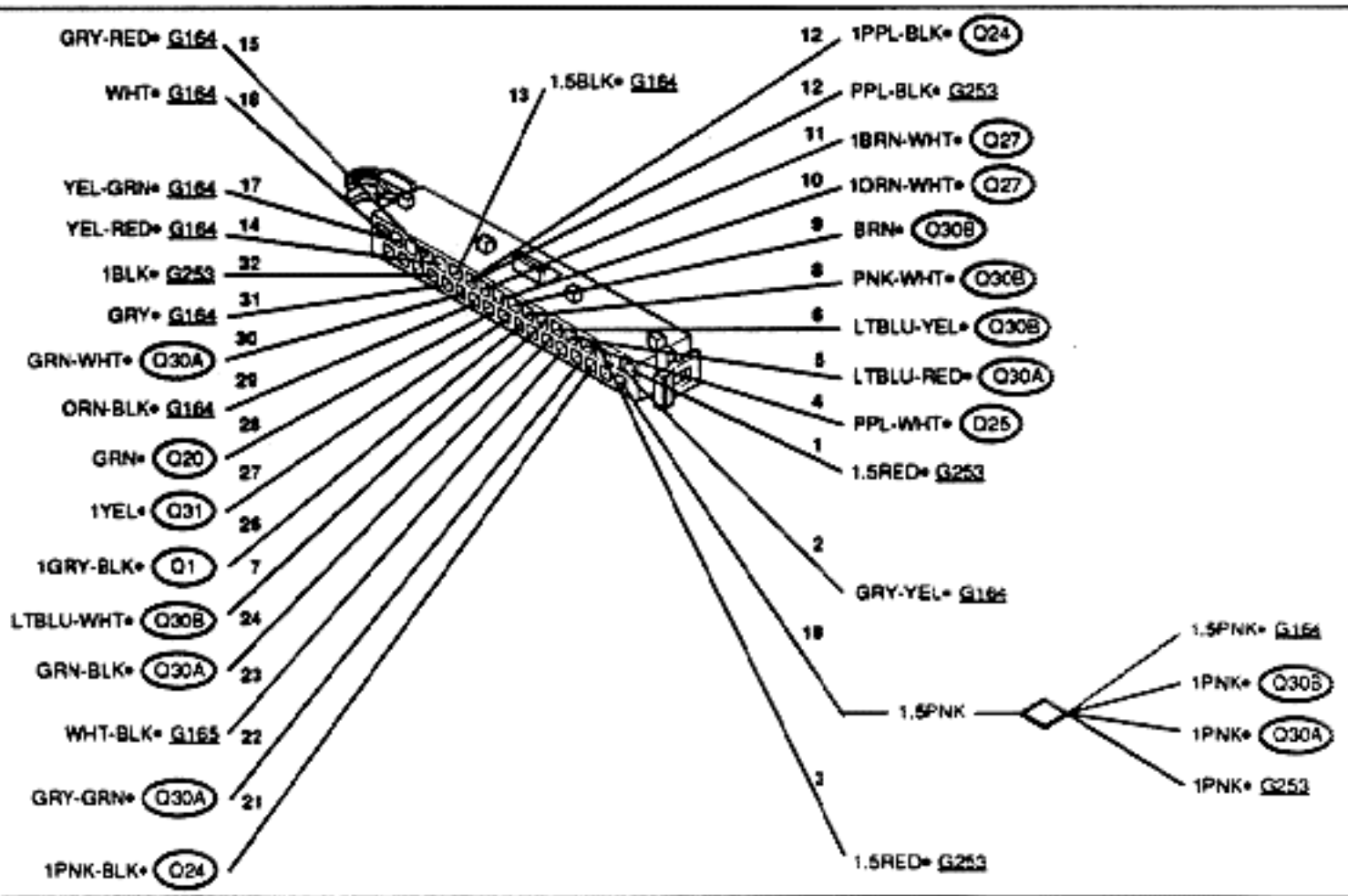
Air conditioning electric fan relay — Q15



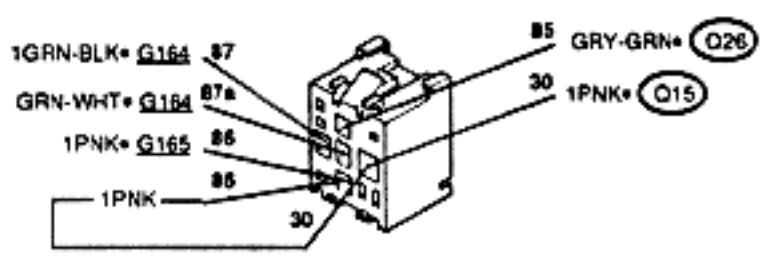
Min/max pressure switch (trinary) — Q20

(Cont.d)

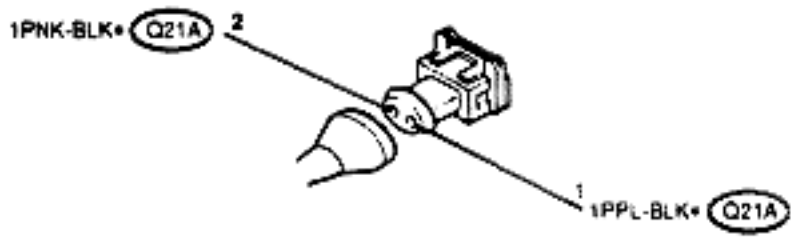
Automatic control mode check unit — Q21A



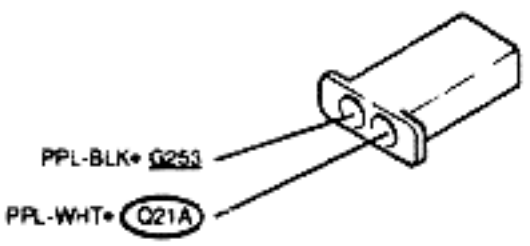
Electro-magnetic coupling control relay — Q22



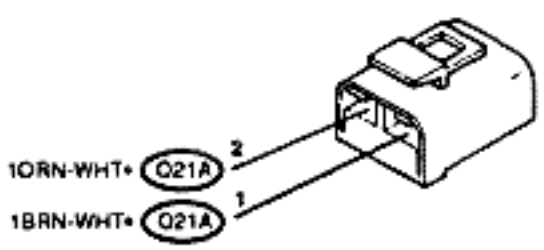
Outside air temperature sensor — Q24



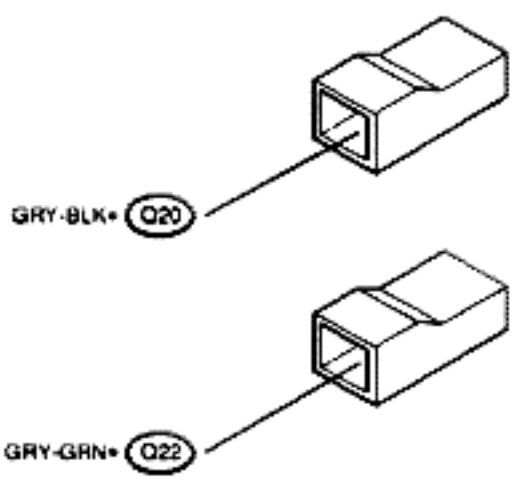
Mixed air temperature sensor — Q25



Air recirculation flap control motor — Q27

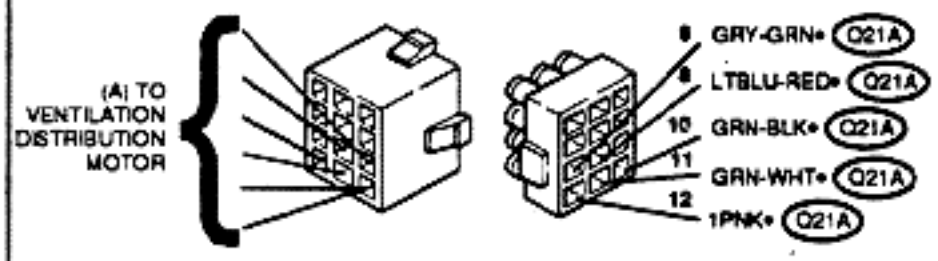


Anti-frost thermostat — Q26

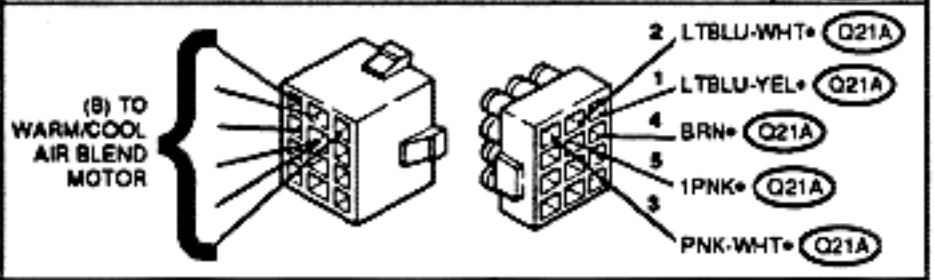


(Cont.d)

Ventilation distribution motor — Q30A



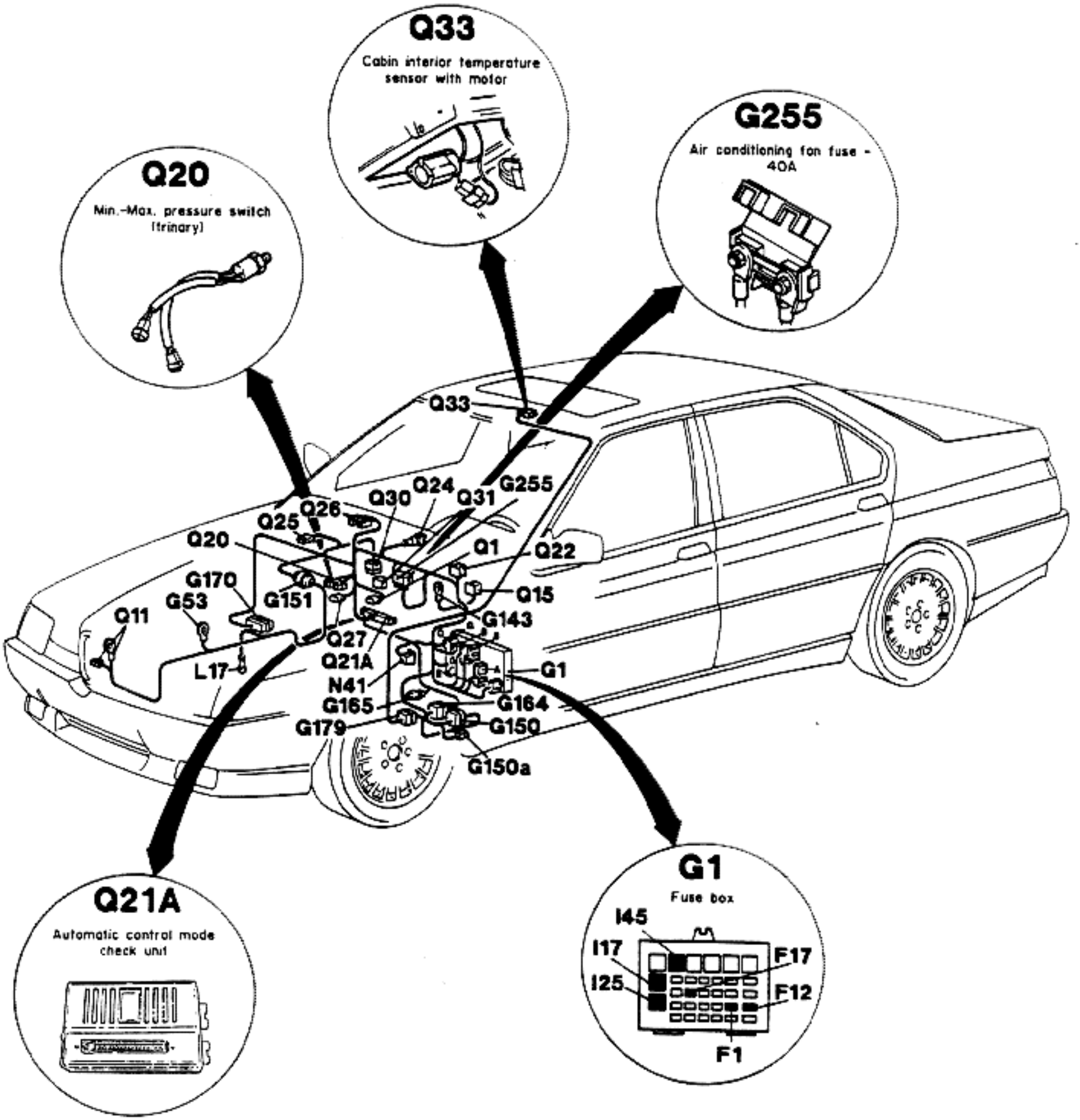
Warm/cool air blend motor — Q30B



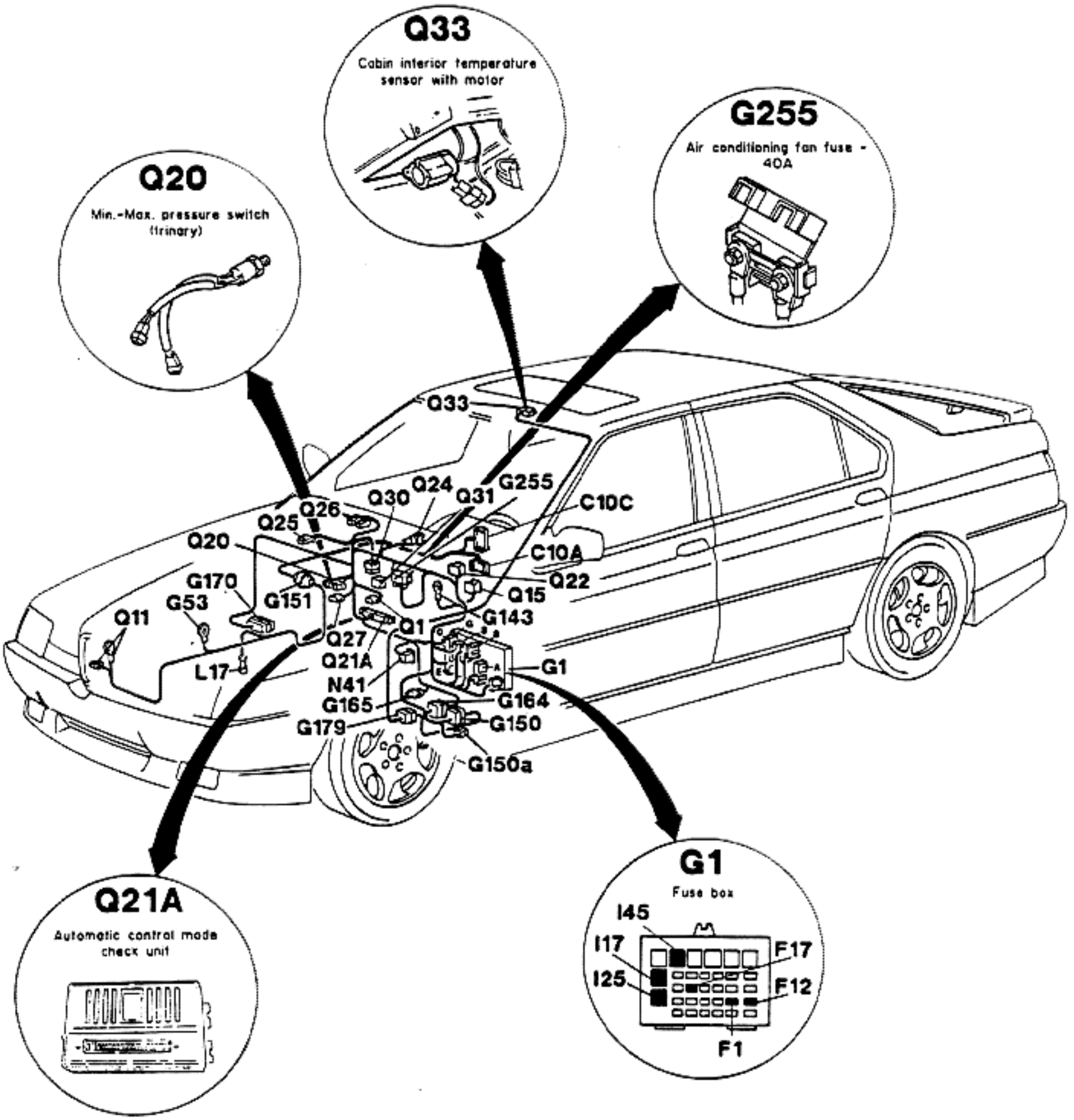
Air conditioning unit fan speed control — Q31

Cabin interior temperature sensor (with motor) — Q33

BASE AND L ONLY



S ONLY



ON BOARD SELF-TEST - TROUBLESHOOTING TABLE

CODE	MALFUNCTION	TEST REFERENCE
1U	- Open circuit on cabin air temperature sensor.	A
1C	- Cabin air temperature sensor shorted to ground.	B
2U	- Open circuit on external air temperature sensor.	C
2C	- External air sensor shorted to ground.	D
3U	- Open circuit on mixed air temperature sensor.	E
3C	- Mixed air sensor shorted to ground.	F
5U	- Open circuit on air mixing door motor.	G
5C	- Air mixing door motor shorted to ground.	H
6U	- Open circuit on air distribution door motor.	I
6C	- Air distribution door motor shorted to ground.	J
7U	- Condition of open circuit on recirculation door motor.	K
7C	- Recirculation door motor shorted to ground.	L
8U	- Open or short circuit between speed regulator and electric fan.	M
8C	- Faulty speed regulator. - Short between speed regulator and control unit.	N
EU	- Faulty control unit.	Replace control unit Q21A
NOTE: If the air conditioning system is inoperative and no signal appears on the display, carry-out TEST O - AUTOMATIC AIR CONDITIONING INOPERATIVE.		O

OPEN CIRCUIT ON CABIN INTERIOR TEMPERATURE SENSOR	TEST A CODE 1U

TEST STEPS	RESULTS	REMEDY
A1 CONTINUITY CHECK - Check for continuity between pin 3 of control unit **Q21A** connector and pin 2 of connector **G253**	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Repair or replace **cables, as required**
A2 CONTINUITY CHECK - Check for continuity between pin 2 of connector **G253** and pin 8 of connector **G179**	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Repair or replace **cables, as required**
A3 CONTINUITY CHECK - Check for continuity between pin 8 of connector **G179** and pin 2 of cabin interior temperature sensor **Q33**	OK ▶ ~~OK~~ ▶	Replace **sensor Q33** Repair or replace **cables, as required**

End of test A

CABIN INTERIOR TEMPERATURE SENSOR SHORTED TO GROUND	TEST B CODE 1C

TEST STEPS	RESULTS	REMEDY
B1 GROUNDING CHECK - Check for absence short circuit between pins 3 and 12 of control unit **Q21A**	OK ▶ ~~OK~~ ▶	Replace **control unit Q21A** Carry-out **step B2**
B2 GROUNDING CHECK - Check for absence of short circuit between pins 2 and 3 of connector **G253**	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 2 and 3 of G253 and pins 3 and 12 of control unit Q21A** Carry-out **step B3**
B3 GROUNDING CHECK - Check for absence short circuit between pins 8 and 9 of connector **G179**	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 8 and 9 of connector G179 and pins 2 and 3 of G253** Carry-out **step B4**
B4 GROUNDING CHECK - Check for absence short circuit exists between pins 2 and 3 of cabin interior temperature sensor **Q33**	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 2 and 3 of sensor Q33 pins 8 and 9 of G179** Replace **sensor Q33**

End of test B

OPEN CIRCUIT OF OUTSIDE AIR TEMPERATURE SENSOR	TEST C CODE 2U

TEST STEPS		RESULTS	REMEDY
C1	CONTINUITY CHECK		
- Check for continuity between: • pin 21 of control unit **Q21A**, and pin 2 of outside air temperature sensor **Q24** • pin 12 of control unit **Q21A** and pin 1 of outside air temperature sensor **Q24**		OK ▶ ~~OK~~ ▶	Replace **sensor Q24** Repair or replace **cables, as required**

End of test C

OUTSIDE AIR TEMPERATURE SENSOR SHORTED TO GROUND	TEST D CODE 2C

TEST STEPS	RESULTS	REMEDY
D1 GROUNDING CHECK - Check for absence of short circuit between pins 12 and 21 of control unit **Q21A**	OK ▶ ~~OK~~ ▶	Replace control unit **Q21A** Carry-out step D2
D2 GROUNDING CHECK - Check for absence of short circuit between pins 1 and 2 of outside air temperature sensor **Q24**	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 1 and 2 of sensor Q24 and pins 12 and 21 of control unit Q21A** Replace **sensor Q24**

End of test D

OPEN CIRCUIT ON MIXED ON AIR TEMPERATURE SENSOR	TEST E CODE 3U

TEST STEPS	RESULTS	REMEDY
E1 CONTINUITY CHECK - Check for continuity between pin 12 of automatic control mode check unit **Q21A** connector and pin 3 of connector **G253**	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Repair or replace **cables, as required**
E2 CONTINUITY CHECK - Check for continuity between pin 3 of connector **G253** and mixed air temperature sensor **Q25** (PPL-BLK wire)	OK ▶ ~~OK~~ ▶	Carry-out **step E3** Repair or replace **cables, as required**
E3 CONTINUITY CHECK - Check for continuity between mixed air temperature sensor **Q25** (PPL-BLK, wire) and pin 9 of connector **G179**	OK ▶ ~~OK~~ ▶	Carry-out **step E4** Repair or replace **cables, as required**
E4 CONTINUITY CHECK - Check for continuity between pin 9 of connector **G179** and pin 3 of cabin interior temperature sensor **Q33**	OK ▶ ~~OK~~ ▶	Carry-out **step E5** Repair or replace **cables, as required**

(Cont.d)

OPEN CIRCUIT ON MIXED ON AIR TEMPERATURE SENSOR	TEST E CODE 3U

TEST STEPS		RESULTS	REMEDY
E5	CONTINUITY CHECK		
- Check for continuity between pin 4 of control unit **Q21 A** connector and mixed air temperature sensor **Q25** (PPL-WHT, wire)		OK ▶	Replace **sensor Q25**
		~~OK~~ ▶	Repair or replace **cables, as required**

End of test E

MIXED AIR TEMPERATURE SENSOR SHORTED TO GROUND	TEST F CODE 3C

TEST STEPS	RESULTS	REMEDY
F1 OPEN CIRCUIT CHECK - Check for open circuit between pins 4 and 12 of control unit **Q21A** connector	OK ▶ ~~OK~~ ▶	Replace **control unit Q21A** Carry-out **step F2**
F2 OPEN CIRCUIT CHECK - Check for open circuit between mixed air temperature sensor **Q25** terminal and pin 3 of connector **G253**	OK ▶ ~~OK~~ ▶	Repair connection between **pin 3 of connector G253 and pin 12 of control unit Q21A** Replace **sensor Q25**

End of test F

OPEN CIRCUIT ON AIR BLEND MOTOR	TEST G CODE 5U

TEST STEPS	RESULTS	REMEDY
G1 12V CHECK		
- With ignition key set to "run", check for presence of 12V on pin 5 of warm/cool air blend motor **Q30B**	OK ▶	Carry-out **step G2**
	~~OK~~ ▶	Carry-out **step G3**
G2 CONTINUITY CHECK		
- Check for continuity between pins: • 1 of warm/cool air blend motor **Q30B** and 6 of control unit **Q21A** connector • 2 of warm/cool air blend motor **Q30B** and 7 of control unit **Q21A** connector • 3 of warm/cool air blend motor **Q30B** and 8 of control unit **Q21A** connector • 4 of warm/cool air blend motor **Q30B** and 9 of control unit **Q21A** connector	OK ▶	Replace **motor Q30B**
	~~OK~~ ▶	Repair or replace **cables, as required**
G3 12V CHECK		
- With ignition key set to "run", check for presence of 12V on pin 2 of connector **G164**	OK ▶	Repair connection between **pin 2 of G164 and pin 5 of motor Q30B**
	~~OK~~ ▶	Malfunction of **electronic control units power relay, refer to applicable troubleshooting**

End of test G

AIR BLEND MOTOR SHORTED TO GROUND	TEST H CODE 5C

TEST STEPS	RESULTS	REMEDY
H1 OPEN CIRCUIT CHECK - Check for open circuit between pins: • 6 and 7 of control unit **Q21A** connector • 6 and 8 of control unit **Q21A** connector • 6 and 9 of control unit **Q21A** connector • 7 and 8 of control unit **Q21A** connector • 7 and 9 of control unit **Q21A** connector • 8 and 9 of control unit **Q21A** connector	OK ▶ ~~OK~~ ▶	Replace **control unit Q21A** Carry-out **step H2**
H2 OPEN CIRCUIT CHECK - Check for open circuit between pins: • 1 and 2 of air blend motor **Q30B** connector • 1 and 3 of air blend motor **Q30B** connector • 1 and 4 of air blend motor **Q30B** connector • 2 and 3 of air blend motor **Q30B** connector • 2 and 4 of air blend motor **Q30B** connector • 3 and 4 of air blend motor **Q30B** connector	OK ▶ ~~OK~~ ▶	Repair or replace **cables, as required** Replace **motor Q30B**

End of test H

OPEN CIRCUIT ON VENTILATION DISTRIBUTION MOTOR	TEST I CODE 6U

TEST STEPS		RESULTS	REMEDY
I1	12V CHECK		
- With ignition key set to "run", check for presence of 12V on pin 12 of ventilation distribution motor **Q30A**		OK ▶	Carry-out **step I2**
		OK ▶	Carry-out **step I3**
I2	CONTINUITY CHECK		
- Check for continuity between pins: • 8 of pin ventilation distribution motor **Q30A** and 5 of control unit **Q21A** • 9 of ventilation distribution motor **Q30A** and 22 of control unit **Q21A** • 10 of ventilation distribution motor **Q30A** and 24 of control unit **Q21A** • 11 of ventilation distribution motor **Q30A** and 30 of control unit **Q21A**		OK ▶ OK ▶	Replace **motor Q30A** Repair or replace **cables, as required**
I3	12V CHECK		
- With ignition key set to "run", check for presence of 12V between pin 2 of connector **G164** and ground		OK ▶ OK ▶	Repair wiring between **pin 2 of G164 and pin 12 of motor Q30A** Malfunction of **electronic control units power relay, refer to applicable trouble-shooting**

End of test I

VENTILATION DISTRIBUTION MOTOR SHORTED TO GROUND	TEST J CODE 6C

TEST STEPS	RESULTS	REMEDY
J1 OPEN CIRCUIT CHECK - Check for open circuit between pins: • 5 and 22 of control unit **Q21A** connector • 5 and 24 of control unit **Q21A** connector • 5 and 30 of control unit **Q21A** connector • 22 and 24 of control unit **Q21A** connector • 22 and 30 of control unit **Q21A** connector • 24 and 30 of control unit **Q21A** connector	OK ▶ OK ▶	Replace **control unit Q21A** Carry-out **step J2**
J2 OPEN CIRCUIT CHECK - Check for open circuit between pins: • 8 and pin 9 of ventilation distribution motor **Q30A** connector • 8 and 10 of ventilation distribution motor **Q30A** connector • 8 and 11 of ventilation distribution motor **Q30A** connector • 9 and 10 of ventilation distribution motor **Q30A** connector • 9 and 11 of ventilation distribution motor **Q30A** connector • 10 and 11 of ventilation distribution motor **Q30A** connector	OK ▶ OK ▶	Repair or replace **cables, as required** Replace **motor Q30A**

End of test J

OPEN CIRCUIT ON AIR RECIRCULATION FLAP CONTROL MOTOR	TEST K CODE 7U

TEST STEPS		RESULTS	REMEDY
K1	CONTINUITY CHECK		
- Check for continuity between pins: • 11 of control unit **Q21A** connector and pin 1 of air recirculation flap control motor **Q27** • 10 of control unit **Q21A** connector and pin 2 of air recirculation flap control motor **Q27**		OK ▶ ~~OK~~ ▶	Replace motor **Q27** Repair or replace **cables, as required**

End of test K

AIR RECIRCULATION FLAP CONTROL MOTOR SHORTED TO GROUND	TEST L CODE 7C

TEST STEPS	RESULTS	REMEDY
L1 OPEN CIRCUIT CHECK - Check for open circuit between pins 11 and 10 of control unit **Q21A** connector	OK ▶ ~~OK~~ ▶	Replace **control unit Q21A** Carry-out **step L2**
L2 OPEN CIRCUIT CHECK - Check for open circuit between pins 1 and 2 of air recirculation flap control motor **Q27**	OK ▶ ~~OK~~ ▶	Replace **motor Q27** Repair or replace **cables, as required**

End of test L

OPEN OR SHORT CIRCUIT BETWEEN SPEED CONTROL AND ELECTRIC FAN	TEST M CODE 8U

TEST STEPS	RESULTS	REMEDY
M1 FUSE CHECK - Check for integrity of **G255**	OK ▶ ~~OK~~ ▶	Carry-out **step M2** Replace **fuse G255**
M2 FUSE CHECKE - Check fuse **F12** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step M3** Replace **fuse F12**
M3 VOLTAGE CHECK - With ignition key set to "run", check for presence of 12V between pin 1 of fan speed control **Q31** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step M4** Carry-out **step M7**
M4 VOLTAGE CHECK - With ignition key set to "run", check for presence of 12V between pin 1 of electric fan **Q1** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step M5** Carry-out **step M7**

(Cont.d)

OPEN OR SHORT CIRCUIT BETWEEN SPEED CONTROL AND ELECTRIC FAN	TEST M CODE 8U

TEST STEPS	RESULTS	REMEDY
M5 CONTINUITY CHECK		
- Check for continuity between pins: • 4 of fan speed control **Q31** and ground point **G143** • 3 of fan speed control **Q31**, and pin 2 of electric fan **Q1** • 3 of fan speed control **Q31** and pin 26 of control unit **Q21A** connector • 2 of fan speed control **Q31** and pin 27 of control unit **Q21A** connector	OK ▶ ~~OK~~ ▶	Carry-out **step M6** Repair or replace **cables, as required**
M6 OPEN CIRCUIT CHECK		
- Check for open circuit between pins: • 3 of fan speed control **Q31** and ground • 2 of fan speed control **Q31** and ground	OK ▶ ~~OK~~ ▶	Replace fan speed control **Q31** and/or **fan Q1** Repair or replace **cables, as required**
M7 VOLTAGE CHECK		
- Check for presence of 12V between pin 87 of relay **Q15** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 87 of relay Q15 and pin 1 of control Q31, or between pin 87 of relay Q15 and pin 1 of fan Q1** Carry-out **step M8**

(Cont.d)

OPEN OR SHORT CIRCUIT BETWEEN SPEED CONTROL AND ELECTRIC FAN	TEST M CODE 8V

TEST STEPS	RESULTS	REMEDY
M8 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay **Q15** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step M10** Carry-out **step M9**
M9 VOLTAGE CHECK - Check for presence of 12V between pin of fuse **G255** (RED wire) and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 30 of relay Q15 and fuse G255** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
M10 VOLTAGE CHECK - Check for presence of 12V between pin 86 of relay **Q15** and ground	OK ▶ ~~OK~~ ▶	Carry-out step **M11** Carry-out step **M12**
M11 RELAY CHECK - Check relay **Q15** for proper operation	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 85 of relay Q15 and ground point G143** Replace **relay Q15**

(Cont.d)

OPEN OR SHORT CIRCUIT BETWEEN SPEED CONTROL AND ELECTRIC FAN	**TEST M CODE 8U**

TEST STEPS	RESULTS	REMEDY
M12 VOLTAGE CHECK - Check for presence of 12V on pins 30 and 86 of electro-magnetic coupling control relay **Q22**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 86 and 30 of relay Q22 and pin 86 of relay Q15** Carry-out **step M13**
M13 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 1 of connector **G165** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of G165 and pin 86 and 30 of relay Q22** Carry-out **step M14**
M14 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 4O of fuse box **G1** and ground -	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of G165 and pin 6E of fuse box G1** Failure **of the power distribution, circuit, refer to the relevant circuit of sheet 2 of 2**

End of test M

FAULTY SPEED CONTROL OR SHORT BETWEEN SPEED CONTROL AND CONTROL UNIT	TEST N CODE 8C

TEST STEPS	RESULTS	REMEDY
N1 OPEN CIRCUIT CHECK		
- Check for open circuit between pin 27 and ground on control unit **Q21A**	OK ▶	Replace control unit **Q21A**
	OK ▶	Carry-out step N2
N2 OPEN CIRCUIT CHECK		
- Check for open circuit toward ground on pin 2 of fan speed control **Q31**	OK ▶	Repair wiring between **pin 2 of control Q31 and pin 27 of control unit Q21A**
	OK ▶	Replace fan speed control Q31

End of test N

AUTOMATIC AIR CONDITIONING SYSTEM INOPERATIVE	TEST O

TEST STEPS	RESULTS	REMEDY
O1 FUSES CHECK - Check for integrity of fuses **F12** and **F17**	OK ▶ ~~OK~~ ▶	Carry-out **step O2** Replace **fuses**
O2 VOLTAGE CHECK - Check for presence of 12V between pin 11 of connector **G164** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step O4** Carry-out **step O3**
O3 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 11 of G164 and pin 5A of fuse box G1** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
O4 VOLTAGE CHECK - Check for presence of 12V between pin 18 of control unit **Q21A** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step O5** Repair wiring between **pin 11 of G164 and pin 18 of control unit Q21A**

(Cont.d)

AUTOMATIC AIR CONDITIONING SYSTEM INOPERATIVE	TEST O

TEST STEPS	RESULTS	REMEDY
O5 VOLTAGE CHECK - Check for presence of 12V between pin 1 of connector **G165** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step O7** Carry-out **step O6**
O6 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of G165 and pin 6E of fuse box G1** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
O7 VOLTAGE CHECK - Check for presence of 12V between pin 86 of electro-magnetic coupling control relay **Q22** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step O8** Repair wiring between **pin 1 of G165 and pin 86 of relay Q22**
O8 GROUNDING CHECK - Check for presence of 0V (zero) on pin 13 of control unit **Q21A**	OK ▶ ~~OK~~ ▶	Carry-out **step O10** Carry-out **step O9**

(Cont.d)

AUTOMATIC AIR CONDITIONING SYSTEM INOPERATIVE	TEST O

TEST STEPS	RESULTS	REMEDY
O9 GROUNDING CHECK		
- Check for presence of 0V (zero) on pin 1 of **G164**	OK ▶	Repair wiring between **pin 1 of G164 and pin 13 of control unit Q21A**
	~~OK~~ ▶	Repair wiring between **pin 1 of G164, pin 4 of G150 and ground point G143**
O10 GROUNDING CHECK		
- Ensure no ice is present on evaporator and check for presence of 0V (zero) on pin 85 of relay **Q22**	OK ▶	Carry-out **step O11**
	~~OK~~ ▶	Carry-out **step O17**
O11 VOLTAGE CHECK		
- Check for presence of 12V between pin 30 of relay **Q22** and ground	OK ▶	Carry-out **step O12**
	~~OK~~ ▶	Repair wiring between **pins 86 and 30 of relay Q22**
O12 VOLTAGE CHECK		
- Check for presence of 12V between pin 87 of relay **Q22** and ground	OK ▶	Carry-out **step O13**
	~~OK~~ ▶	Replace **relay Q22**

(Cont.d)

AUTOMATIC AIR CONDITIONING SYSTEM INOPERATIVE	TEST O

TEST STEPS	RESULTS	REMEDY
O13 VOLTAGE CHECK - Check for presence of 12V between pin 10 of connector **G164** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step O14** Repair wiring between **pin 87 of relay Q22 and pin 10 of G164**
O14 VOLTAGE CHECK - Check for presence of 12V between pin 2 of connector **G151** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step O15** Repair wiring between **pin 10 of G164 and pin 2 of G151**
O15 VOLTAGE CHECK - Check for presence of 12V between pin of compressor electro-magnetic coupling **Q11** (GRN-BLK wire) and ground	OK ▶ ~~OK~~ ▶	Carry-out **step O16** Repair wiring between **pin 2 of G151 and coupling Q11 (GRN-BLK wire)**
O16 VOLTAGE CHECK - Check for presence of 0V (zero) on coupling **Q11** (BLK wire)	OK ▶ ~~OK~~ ▶	Replace **coupling Q11** Repair wiring between **coupling Q11 and ground G174 (BLK wire)**

(Cont.d)

AUTOMATIC AIR CONDITIONING SYSTEM INOPERATIVE	TEST O

TEST STEPS	RESULTS	REMEDY
O17 VOLTAGE CHECK - Check, with conditions as stated in test step O8, for presence of 0V (zero) on anti-frost thermostat **Q26** (GRY-GRN wire)	OK ▶ ~~OK~~ ▶	Repair wiring between **thermostat Q26 (GRY-GRN wire) and pin 85 of relay Q22** Carry-out **step O18**
O18 GROUNDING CHECK - Check,with conditions as stated in test step O10, for presence of 0V (zero) on thermostat **Q26** (GRY-BLK wire)	OK ▶ ~~OK~~ ▶	Replace **thermostat Q26** Carry-out **step O19**
O19 GROUNDING CHECK - With pressure between min. and max. value, check for presence of 0V (zero) on pin 2 of switch **Q20** (GRY-BLK wire)	OK ▶ ~~OK~~ ▶	Repair wiring between **thermostat Q26 and pin 2 (GRY-BLK wire) of switch Q20** Carry-out **step O20**
O20 GROUNDING CHECK - With conditions indicated in test step O11, check for presence of 0V (zero) on pin 1 of **switch Q20** (GRN wire)	OK ▶ ~~OK~~ ▶	Replace **switch Q20** Carry-out **step O21**

(Cont.d)

AUTOMATIC AIR CONDITIONING SYSTEM INOPERATIVE	TEST O

TEST STEPS		RESULTS	REMEDY
O21	GROUNDING CHECK		
- With conditions indicated in test step O11, check for presence of 0V (zero) on pin 28 control unit **Q21A**		OK ▶ OK ▶	Repair wiring between **pin 1 (GRN wire) of witch Q20 and pin 28 of control unit Q21A** Replace **control unit Q21A**

End of Test O

ALARM - - ELECTRONIC ANTI-THEFT SYSTEM

HOT IN RUN
HOT IN START

REFER TO POWER DISTRIBUTION CIRCUIT B1 PIN 2 (SHEET 2 OF 2)

HOT AT ALL TIMES

REFER TO POWER DISTRIBUTION CIRCUIT A1 (SHEET 1 OF 2)

HOT IN START

REFER TO POWER DISTRIBUTION CIRCUIT B1 PIN 4 (SHEET 2 OF 2)

1.5BRN

FUSE BOX G1 PIN 2 [1]

1BRN

ELECTRONIC CONTROL UNITS POWER SUPPLY RELAY I51 PIN 86

1BRN

REFER TO ABS BRAKE SYSTEM CIRCUIT G124 PIN 4

2 G241

1BRN

1.5RED

15A

ANTI-THEFT SYSTEM FUSE (G258)

1WHT-RED

2

ANTI-THEFT SYSTEM LED (D31)

1

1WHT-BLK

1.5RED

1.5RED 1.5RED

PPL

1 G241c

PPL

REFER TO LAMPS--MISCELLANEOUS DOME CIRCUIT G170 PIN 8

4 G241

WHT

GRY-BLK

G248

GRY-BLK

REAR CARGO LAMP F5

GRY-BLK

5 G198

GRY-BLK

8 5 12 14 3 7

ANTI-THEFT CONTROL UNIT (N45)

4 19 21 16 18 13 1 15 17 2 9 10

1RED 1BRN 1RED-BLK 1GRN

BRN-WHT PPL-WHT 1LTBLU 1LTBLU-BLK 1LTBLU-YEL 1LTBLU-RED PPL-BLK

GRY-GRN

3 4 5 2 1

1 2 G249

3 1 G241

G245

G256

2 G241a

5 G241

GRY-GRN

SYREN (O11)

REFER TO LOCKS--POWER DOOR CIRCUIT B20 PIN 2 AND 1

REFER TO LAMPS--TURN SIGNAL AND HAZARD WARNING CIRCUIT E25 PIN 2[A] 2[B]

REFER TO STARTING AND CHARGING CIRCUIT I10 PIN 86

REFER TO LAMPS--TURN SIGNAL AND HAZARD WARNING CIRCUIT G1 PIN 2[A]

REFER TO LAMPS--TURN SIGNAL AND HAZARD WARNING CIRCUIT G1 PIN 1[A]

REFER TO LAMPS--TURN SIGNAL AND HAZARD WARNING CIRCUIT E26 PIN 2[A] 2[B]

ENGINE COMPARTMENT ANTI-THEFT SYSTEM SWITCH (H44)

TRUNK ILLUMINATION SWITCH (H24)

REFER TO LAMPS--BRAKE CIRCUIT E28 PIN 1 (S ONLY)

1BLK

TRUNK OPENING SOLENOID M12 PIN 2

2.5BLK

STOP LAMPS SWITCH RELAY I69 PIN 85

1BLK

2 G198

1BLK

2.5BLK

1BLK

G186 G143 G186 G186

GENERAL

The vehicle is equipped with a remote control electronic anti-theft system. The remote control also actuates the centralized door lock/unlock system.
The anti-theft system consists of an electronic unit, a syren located in the right side of trunk, and a remote control used to activate/deactivate the system.
The syren is powered by a dedicated battery and is provided with an ON/OFF key.
Activation of the anti-theft system is indicated by flashing of a led on the central console, actuation of the centralized door lock and illumination for a few seconds of the turn signal lamps. Activation of the anti-theft system also locks the engine ignition circuit.
Deactivation of the anti-theft system is indicated by illumination of the turn signal lamps, centralized unlocking of door and switching off of led on the central console.
The system is protected by free fuse **G258** (15A) ANTI-THEFT SYSTEM.

OPERATIONAL DESCRIPTION

The 12V power supply line is connected directly to the anti-theft system syren **O11**, to pins 5 and 12 of the anti-theft control unit **N45** through the free fuse **G258**, and to led **D31** on the central console.
Activation of the anti-theft system is obtained by directing the remote control towards the vehicle and pressing the control push button; the remote control is provided with and indicator light which illuminates any time the control pushbutton is pressed.
The control unit **N45** provides the following functions when the anti-theft system is activated:

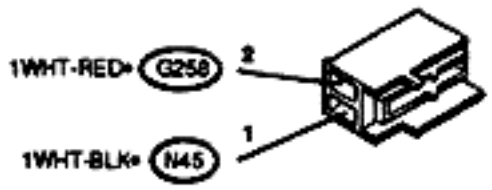
- Flashing of led **D31** (pin 8 of control unit).
- Actuation of centralized door lock (pins 16 and 18).
- Flashing of the four turn signal lamps (pins 1, 3, 15 and 17).
- Engagement of engine ignition circuit lock (pin 2).

When the anti-theft system is activated, opening of doors, engine hood or trunk lid is sensed by the control unit **N45**, with consequent activation of siren **O11**. Information about opening of doors, engine hood and trunk lid is trasmitted to the control unit by dedicated switches.
When a door is opened, the corresponding switch opens and supplies a "door open" input to pin 3 of control unit **N45**. When the engine hood or the trunk lid are opened, the corresponding switches **H44** and **H24** close, and connect to ground pins 10 or 7 of the control unit **N45**.
With the ignition key inserted, the battery power is supplied to pin 14 of control unit **N45**, thus allowing inhibition of the receiver to prevent accidental activations.

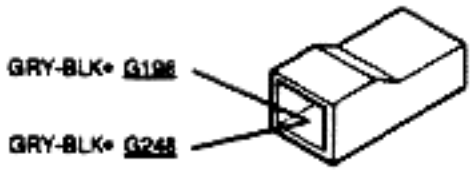
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT						
	(G258) FUSE	(H24) SWITCH	(H44) SWITCH	(D31) LED	(O11) SYREN	(N45) CONTROL UNIT	REMOTE CONTROL
ANTI-THEFT ACTIVATION/DE-ACTIVATION MODES INOPERATIVE	●					●	●
ANTI-THEFT ACTIVATION MODE INOPERATIVE						●	
SYREN INOPERATIVE		●	●	●	●	●	

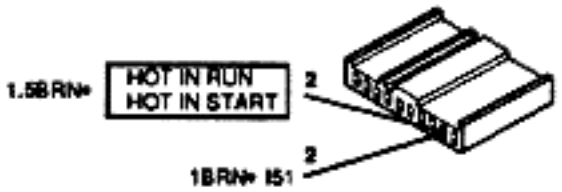
Anti-theft system led	D31



Rear cargo lamp	F5

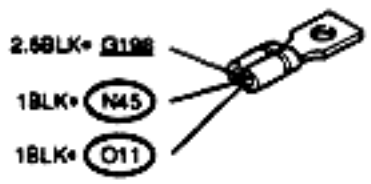


Fuse box	G1 I

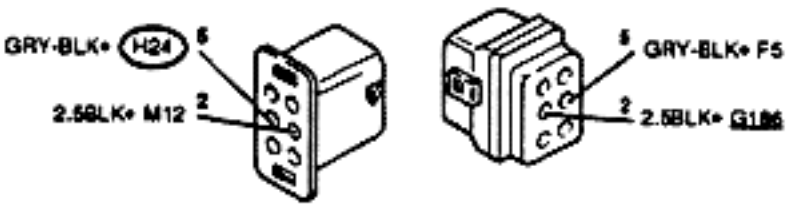


Central bulkhead ground	G143

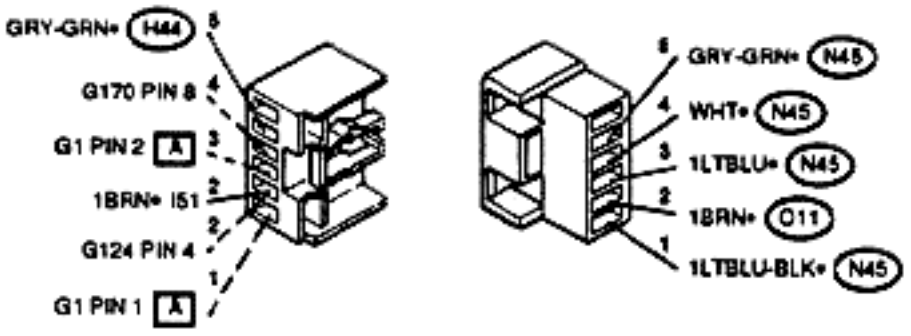
Trunk right side ground	G186



Connector, right rear wiring to trunk lock wiring	G198

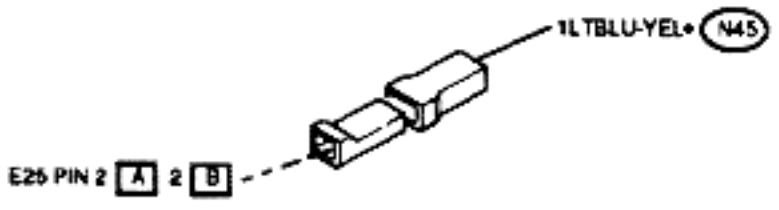


Board wiring to anti-theft system wiring connector	G241

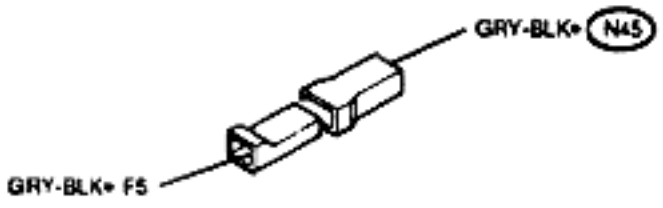


Board wiring to anti-theft system wiring connector	G241a

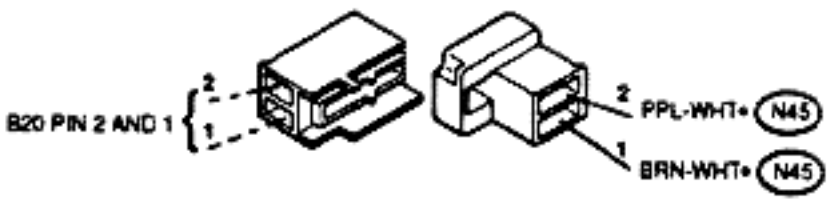
Right rear wiring connector, anti-theft system	G245



Anti-theft system wiring connector right rear wiring	G248

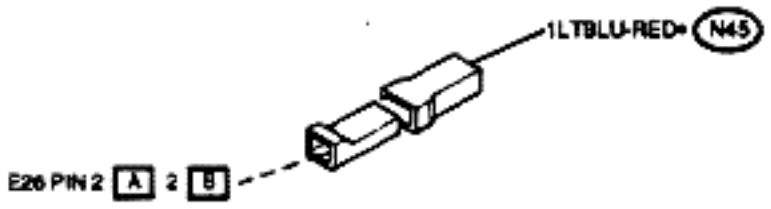


Anti-theft system wiring connector - console wiring	G249

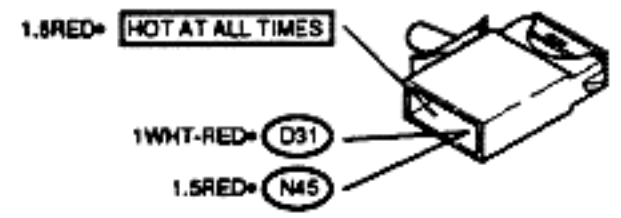


(Cont.d)

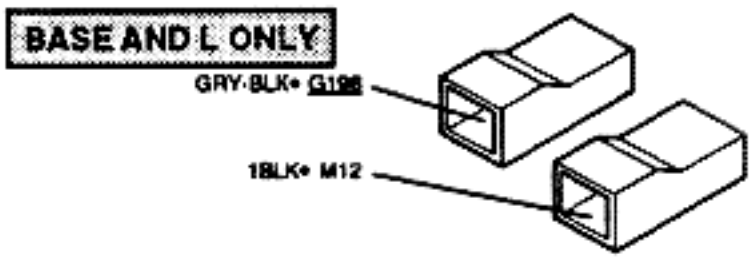
Left rear wiring connector, anti-theft system	G256



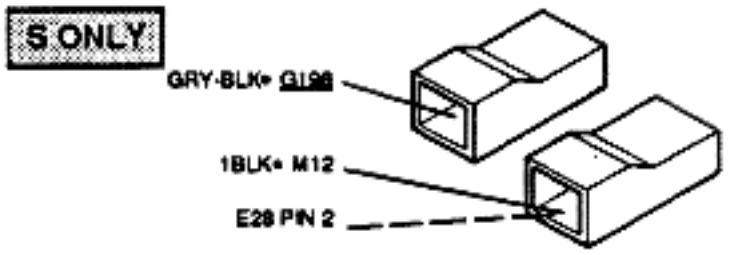
Anti-theft system fuse	G258



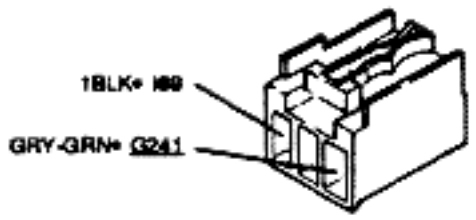
Trunk illumination switch	H24



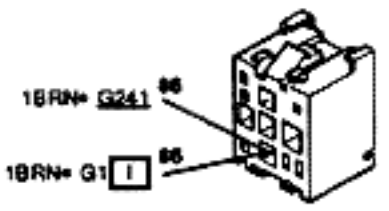
Trunk illumination switch	H24



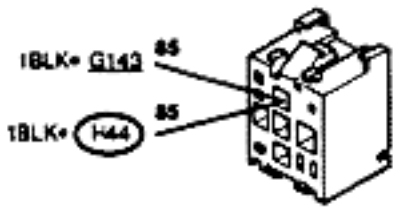
Engine compartment anti-theft system switch	H44



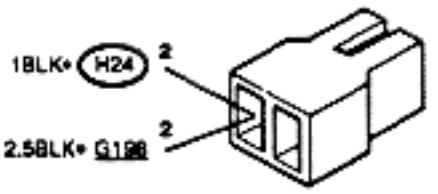
Electronic control units power supply relay	I51



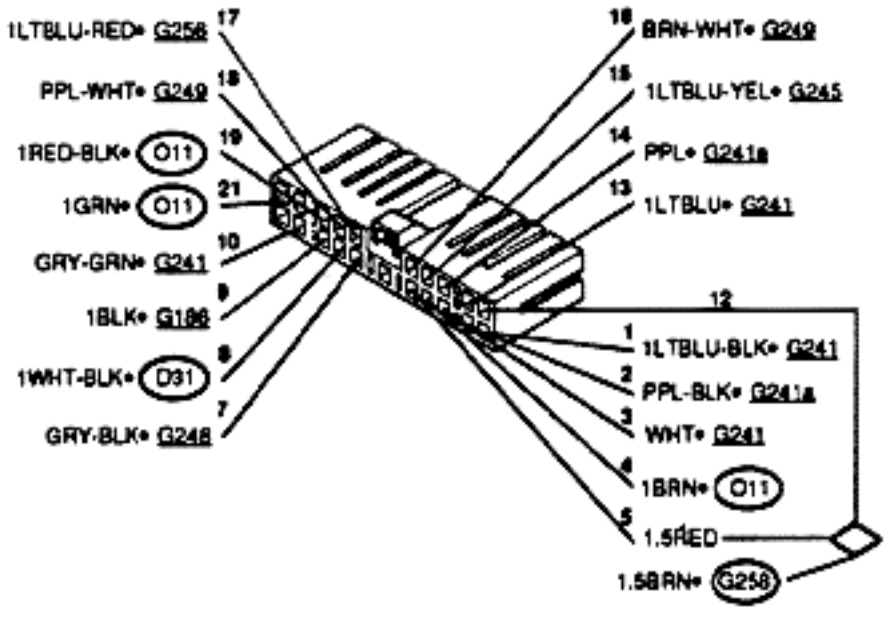
Stop lamps switch relay	I69



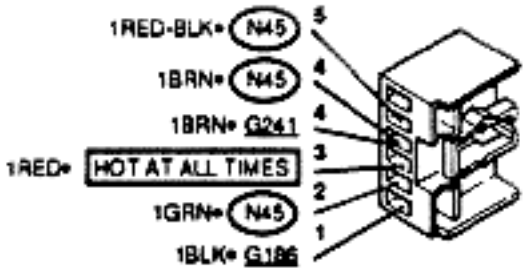
Trunk opening solenoid	M12

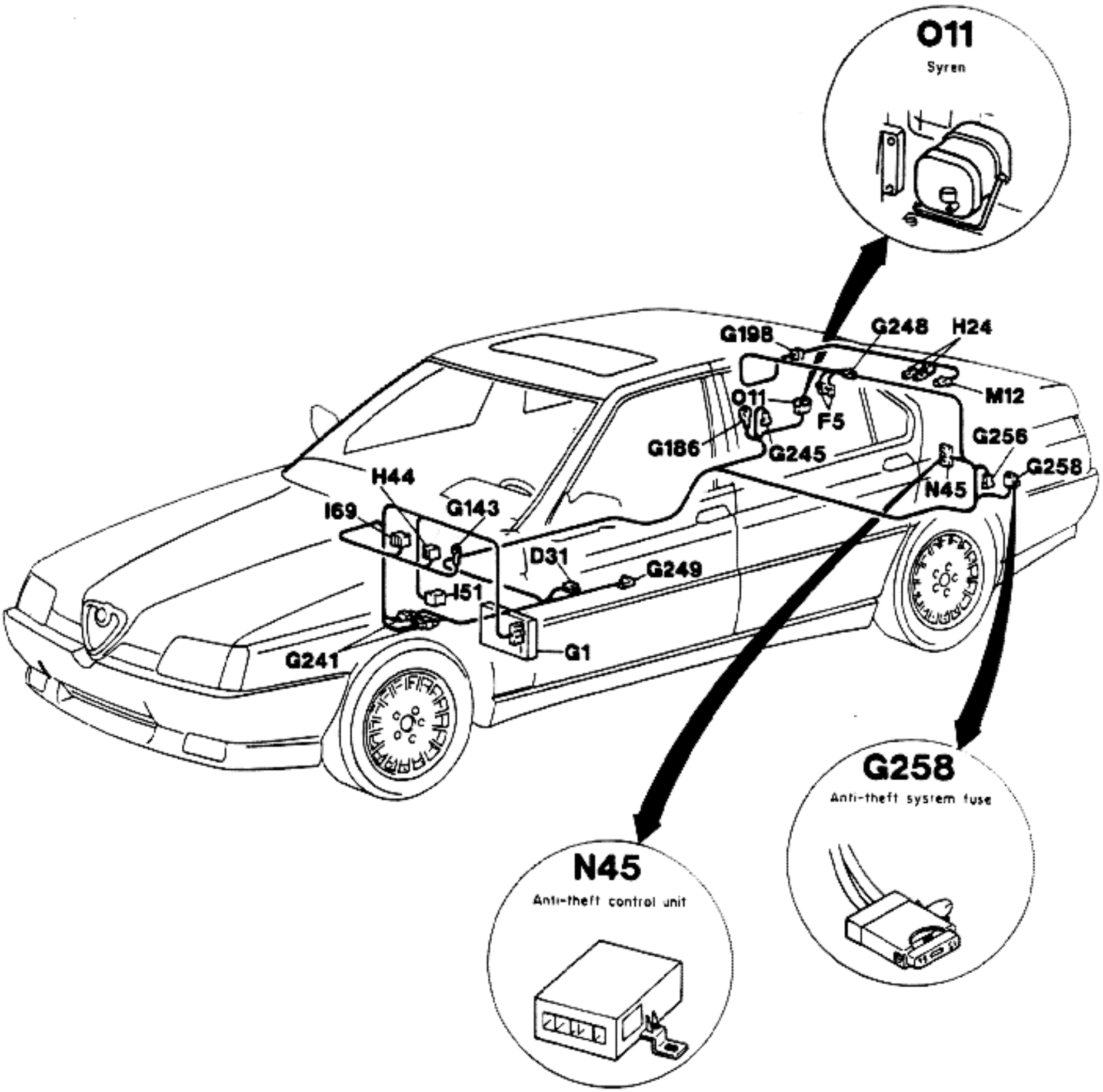


Anti-theft control unit	N45



Syren	O11





ANTI-THEFT ACTIVATION/DE-ACTIVATION MODES INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
NOTE: In case the operation of remote control requires to approach the vehicle excessively, replace the remote control batteries. In any case, replacement of batteries every 12 months is recommended.		
A1 FUSE CHECK - Check free fuse **G258** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **free fuse G258**
A2 REMOTE CONTROL BATTERIES CHECK - Actuate the remote control pushbutton and check that led on remote control illuminates	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Replace **remote control batteries**
A3 CONTROL UNIT CHECK - Check for presence of 12V between pins 5 and 12 of control unit **N45** and ground	OK ▶ ~~OK~~ ▶	Replace **control unit N45** Carry-out **step A4**
A4 VOLTAGE CHECK - Check for presence of 12V between pin of free fuse **G258** (RED wire) and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 1 of 2**

(Cont.d)

ANTI-THEFT ACTIVATION/DE-ACTIVATION MODES INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A5	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 9 of control unit **N45**		OK ▶	Repair wiring between **pins 5, 12 of control unit N45 and pin of free fuse G258**
		~~OK~~ ▶	Repair wiring between **pin 9 of control unit N45 and ground point G186**

End of test A

ANTI-THEFT ACTIVATION MODE INOPERATIVE	TEST B

TEST STEPS		RESULTS	REMEDY
B1	SIMULTANEOUS ILLUMINATION OF TURN SIGNAL LAMPS CHECK		
- Check that the four turn signal lamps illuminate simultaneously		OK ▶	Carry-out **step B11**
		~~OK~~ ▶	Carry-out **step B2**
B2	TURN SIGNAL LAMPS CHECK		
- Check that all the four turn signal lamps remain off		OK ▶	Replace **control unit N45**
		~~OK~~ ▶	Carry-out **step B3, B5 or B7 or B9**
B3	LEFT FRONT TURN SIGNAL LAMP CHECK		
- Actuate the multiple switch as required to turn on the left front turn signal lamp, and check the lamp turns on		OK ▶	Carry-out **step B4**
		~~OK~~ ▶	Replace **bulb**
B4	CONTINUITY CHECK		
- Check for continuity between pin 1 of control unit **N45**, pin 1 of connector **G241** and pin 1A of fuse box **G1**		OK ▶	Replace **control unit N45**
		~~OK~~ ▶	Replace or repair **wires, as necessary**

(Cont.d)

ANTI-THEFT ACTIVATION MODE INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B5 RIGHT FRONT TURN SIGNAL LAMP CHECK - Actuate the multiple switch as required to turn on the right front turn signal lamp, and check the lamp turns on	OK ▶ ~~OK~~ ▶	Carry-out **step B5** Replace **bulb**
B6 CONTINUITY CHECK - Check for continuity between pin 13 of control unit **N45**, pin 3 of connector **G241** and pin 2A of fuse box **G1**	OK ▶ ~~OK~~ ▶	Replace **control unit N45** Replace or repair **wires, as necessary**
B7 LEFT REAR TURN SIGNAL LAMP CHECK - Actuate the multiple switch as required to turn on the left rear turn signal lamp, and check the lamp turns on	OK ▶ ~~OK~~ ▶	Carry-out **step B8** Replace **bulb**
B8 CONTINUITY CHECK - Check for continuity between pin 17 of control unit **N45**, connector **G256** and pins 2A and 2B of tail lamp **E26**	OK ▶ ~~OK~~ ▶	Replace **control unit N45** Replace or repair **wires, as necessary**

(Cont.d)

ANTI-THEFT ACTIVATION MODE INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B9 RIGHT REAR TURN SIGNAL LAMP CHECK - Actuate the multiple switch as required to turn on the right rear turn signal lamp, and check the lamp turns on	OK ▶ ~~OK~~ ▶	Carry-out **step B10** Replace **bulb**
B10 CONTINUITY CHECK - Check for continuity between pin 15 of control unit **N45**, connector **G245** and pins 2A and 2B of tail lamp **E25**	OK ▶ ~~OK~~ ▶	Replace **control unit N45** Replace or repair **wires, as necessary**
B11 DOOR LOCK CHECK - Check locking of all the four doors	OK ▶ ~~OK~~ ▶	Carry-out **step B13** Carry-out **step B12**
B12 VOLTAGE CHECK - Check for presence of 12V between pins 16 and 18 of control unit **N45**	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 16 and 18 of control unit N45, pins 1 and 2 of connector G249 and pins 2 and 1 of switch B20** Replace **control unit N45**

(Cont.d)

ANTI-THEFT ACTIVATION MODE INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B13 LED CHECK - Check flashing of led on the central console	OK ▶ ~~OK~~ ▶	Carry-out **step B16** Carry-out **step B14**
B14 ELECTRONIC UNIT CHECK - Check for presence at pin 8 of control unit **N45** of a signal switching from 0V (zero) to open circuit conditions, and vice versa	OK ▶ ~~OK~~ ▶	Carry-out **step B15** Replace **control unit N45**
B15 TTL SIGNAL CHECK - Check for presence of TTL signal to terminals of led **D31**	OK ▶ ~~OK~~ ▶	Replace **led D31** .Repair wiring between **pin 2 of led D31 (anode) and fuse G258, and between pin1 of led D31 (cathode) and pin 8 control unit N45**
B16 ENGINE IGNITION INHIBITION CHECK - With anti-theft system activated, check that engine can not be started	OK ▶ ~~OK~~ ▶	Carry-out **step B19** Carry-out **step B17**

(Cont.d)

ANTI-THEFT ACTIVATION MODE INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B17 CONTROL UNIT CHECK - With anti-theft system activated, check for presence of 0V (zero) at pin 2 of control unit **N45**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of control unit N45, pin 2 of connector G241a and pin 86 of relay I10** Carry-out **step B18**
B18 VOLTAGE CHECK - With the ignition key set to "start" position, check for presence of 12V between pin 14 of control unit **N45** and ground	OK ▶ ~~OK~~ ▶	Replace **control unit N45** Carry-out **step B19**
B19 VOLTAGE CHECK - With the ignition key set to "start" position, check for presence of 12V between pin 1 of connector **G241a** and ground	OK ▶ ~~OK~~ ▶	Repair wiring beween **pin 1 of G241a and pin 14 of control unit N45** Failure of the power **distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test B

SYREN INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 SYREN CHECK - Check syren activation by disconnecting one of the battery terminals	OK ▶ ~~OK~~ ▶	Carry-out **step C4** Carry-out **step C2**
C2 VOLTAGE CHECK - Re-connect battery terminal and, with the ignition key set to "run" or to "start" position, check for presence of 12V between pin 4 of syren **O11** and ground	OK ▶ ~~OK~~ ▶	Replace **syren battery and/or siren O11** Carry-out **step C3**
C3 VOLTAGE CHECK - With the ignition key set to "run" or to "start" position, check for preence of 12V between pin 2 of G241 and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of connector G241 and pin 4 of syren O11** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
C4 SYREN CHECK - Check that syren does not activate when the trunk lid, engine hood and doors are opened	OK ▶ ~~OK~~ ▶	Carry-out **step C5** Carry-out **step C7**

(Cont.d)

SYREN INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C5 VOLTAGE CHECK - Check for presence of 12V between pins 1 and 2 of syren **O11**	OK ▶ ~~OK~~ ▶	Replace **syren O11** Carry-out **step C6**
C6 VOLTAGE CHECK - Check for presence of 12V between pin 21 control unit **N45** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 21 of control unit N45 and pin 2 of syren O11, and between pin 1 of syren O11 and ground point G186** Replace **control unit N45**
C7 DOOR SYREN ACTIVATION CHECK - Check syren activation by opening of either door	OK ▶ ~~OK~~ ▶	Carry-out **step C9** Carry-out **step C8**
C8 GROUNDING CHECK - Check for presence of 0V (zero) at pin 3 of control unit **N45**	OK ▶ ~~OK~~ ▶	Replace **control unit N45** Repair wiring between **pin 3 of control unit N45, pin 4 of connector G241 and pin 8 of connector G170**

(Cont.d)

SYREN INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C9 HOOD SYREN ACTIVATION CHECK - Check syren activation by opening the engine hood	OK ▶ ~~OK~~ ▶	Carry-out **step C12** Carry-out **step C10**
C10 GROUNDING CHECK - Check for presence of 0V (zero) at pin 10 of control unit **N45**	OK ▶ ~~OK~~ ▶	Replace **control unit N45** Carry-out **step C11**
C11 GROUNDING CHECK - Check for presence of 0V (zero) at pin 5 of connector **G241**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 5 of connector G241 and pin 10 of control unit N45** Carry-out **step C12**

(Cont.d)

SYREN INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C12 SWITCH CHECK - Check anti-theft system switch **H44** in the engine compartment for proper operation	OK ▶ OK ▶	Repair wiring between **switch H44 (GRY-GRN wire)** and **pin 5 of connector G241** and between **switch H44 (BLK wire)** and **ground point G143** Replace **switch H44**
C13 TRUNK LID SYREN ACTIVATION CHECK - Check syren activation by opening the trunk lid	OK ▶ OK ▶	Carry-out **step C3** Carry-out **step C14**
C14 GROUNDING CHECK - Check for presence of 0V (zero) at pin 7 of control unit **N45**	OK ▶ OK ▶	Replace **control unit N45** Carry-out **step C15**

(Cont.d)

SYREN INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C15 GROUNDING CHECK		
- Check for presence of 0V (zero) at connector **G248**	OK ▶	Repair wiring between **connector G248 and pin 7 of control unit N45**
	~~OK~~ ▶	Carry-out **step C16**
C16 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 5 of connector **G198**	OK ▶	Repair wiring between **connector G198 and G248**
	~~OK~~ ▶	Carry-out **step C17**
C17 SWITCH CHECK		
- Check that trunk illumination switch **H24** is operational	OK ▶	Repair wiring between **switch H24 and pin 5 of connector G198, and between switch H24, pin 2 of connector G198 and ground point G186**
	~~OK~~ ▶	Replace **switch H24**

End of test C

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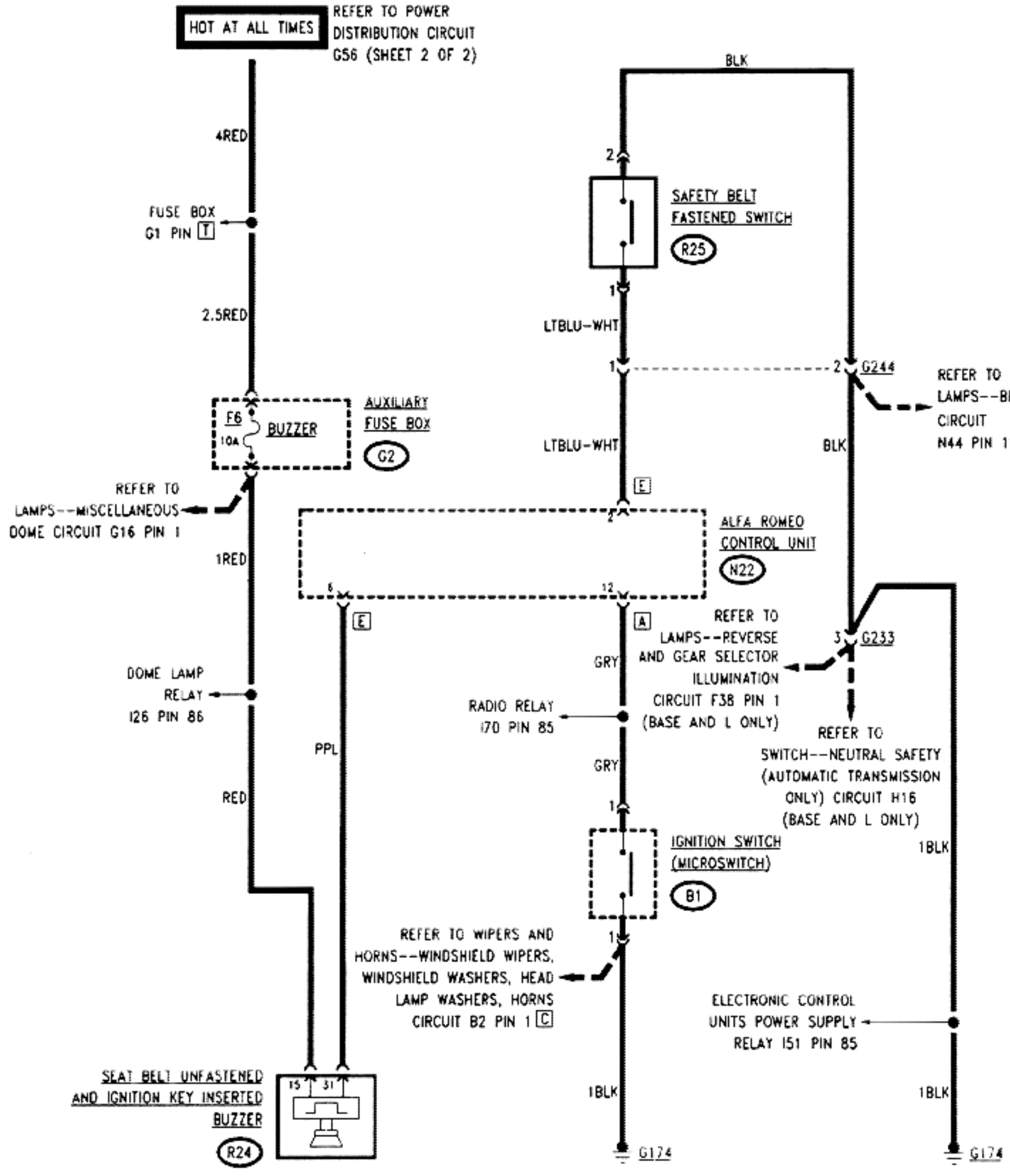
BUZZER



GENERAL

The vehicle is equipped with an acoustic warning buzzer which turns on automatically whenever the left front seat belt is not properly fastened, or the ignition key is left in the ignition switch when the door is open.
Automatic activation of the buzzer is controlled by the Alfa Romeo Control unit. The system is protected by the fuse **F6** (10A) BUZZER in the auxiliary fuse box **G2**.

OPERATIONAL DESCRIPTION

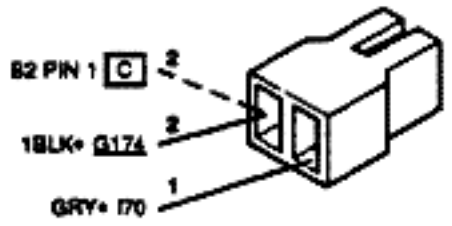
Battery power (12V) is constantly provided to buzzer **R24** through the fuse **F6** in the auxiliary fuse box **G2**.

Activation of the buzzer is controlled by the Alfa Romeo Control unit **N22**.
The safety belt fastened switch **R25** on the seat belt anchor is open when the seat belt is fastened; when the seat belt is unfastened, pin 2E of control unit **N22** is connected to ground.
Whenever the ignition key is left in the ignition switch after the engine has been turned off, the microswitch **B1** closes and connects to ground the pin 12A of the control unit **N22**.
When pins 2E or 12A of the Alfa Romeo Control unit **N22** are connected to ground, the control unit **N22** connects to ground the output signal pin 6E, thus actuating the buzzer **R24**.

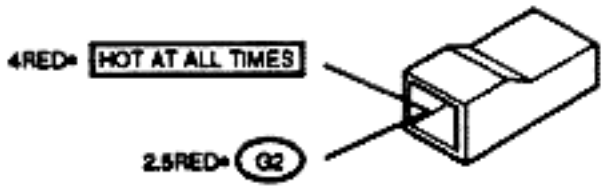
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT				
	F6 FUSE	(B1) IGNITION SWITCH	(R25) SEAT BELT MICROSWITCH	(R24) BUZZER	(N22) CONTROL UNIT
BUZZER INOPERATIVE (SAFETY BELT NOT FASTENED)	●			●	●
BUZZER INOPERATIVE (IGNITION KEY INSERTED AND DOOR OPEN)	●	●		●	●
BUZZER CONTINUOUSLY ACTUATED			●		●

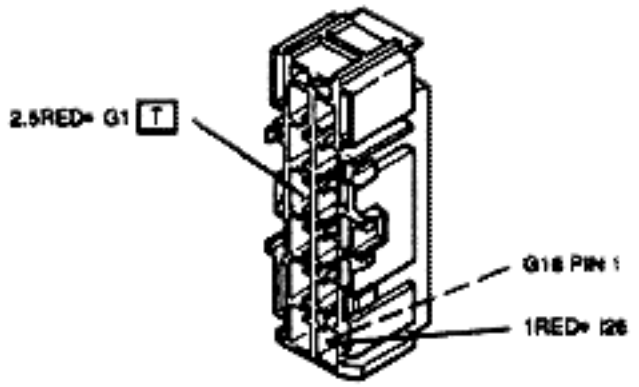
Ignition switch	B1



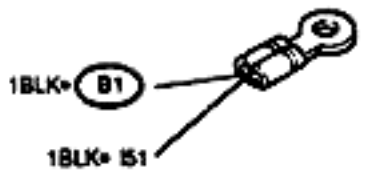
Fuse box	G1 T



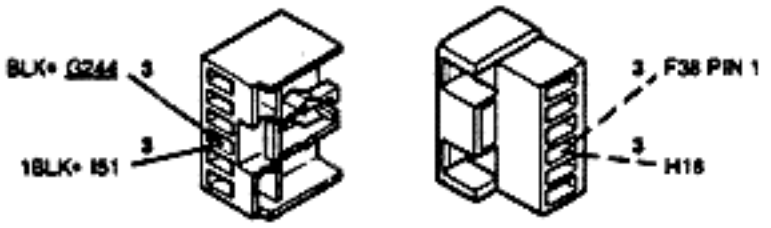
Auxiliary fuse box	G2



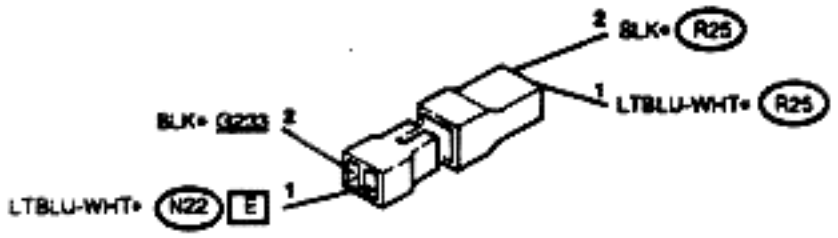
Steering wheel column support ground	G174



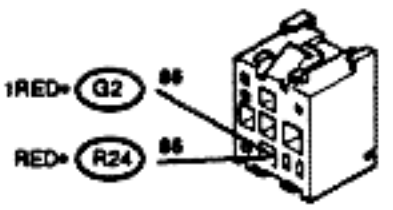
Connector circuit board to automatic gear lever wiring	G233



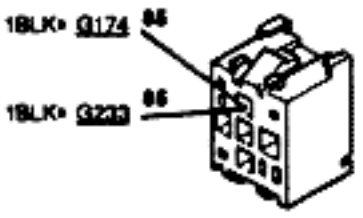
Board wiring to aft console wiring two-way connector	G244



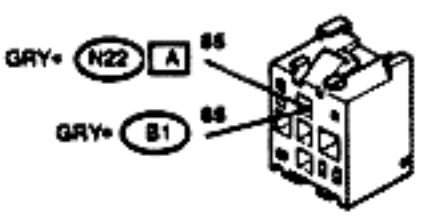
Dome lamp relay	I26



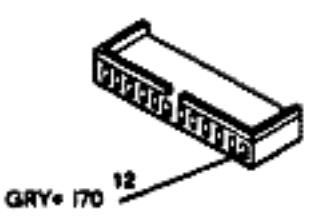
Electronic control units power supply relay	I51



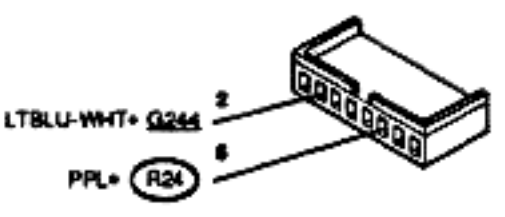
Radio relay	I70



Alfa Romeo control unit	N22 A

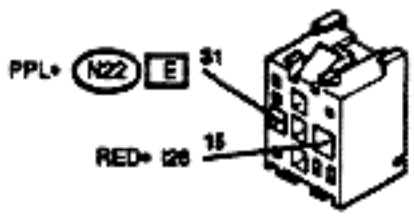


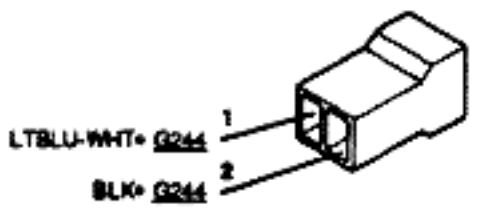
Alfa Romeo control unit	N22 E

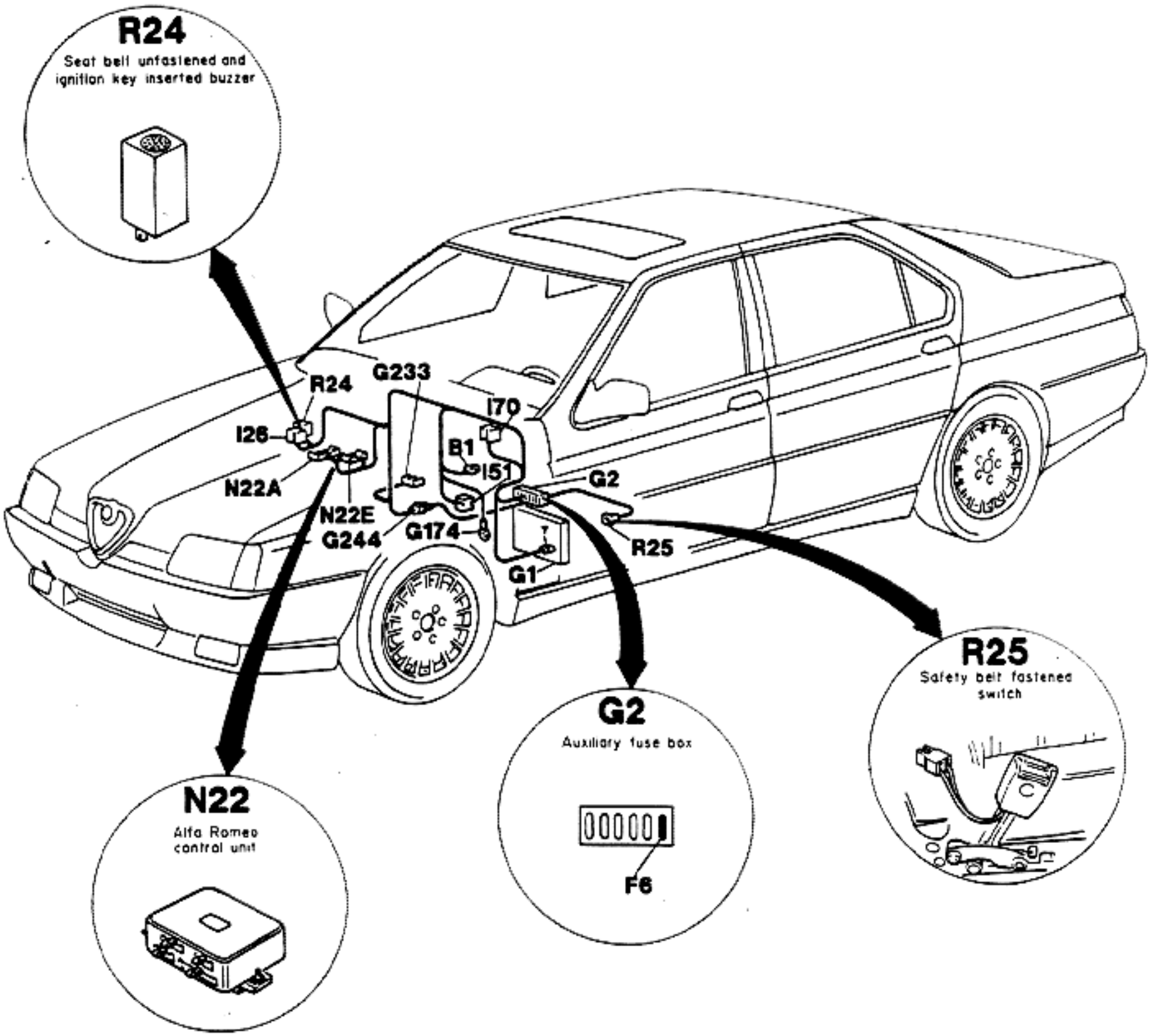


(Cont.d)

Seat belt unfastened and ignition key inserted buzzer	R24	Safety belt fastened switch	R25







BUZZER INOPERATIVE (SAFETY BELT NOT FASTENED)	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F6** in auxiliary fuse box **G2** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F6**
A2 IGNITION KEY ACTUATED BUZZER CHECK - Start engine, turn off engine and leave the ignition key inserted in the ignition switch the door open; check that buzzer is operational	OK ▶ ~~OK~~ ▶	Replace **safety belt fastened switch R25** Carry-out **step A3**
A3 CONTROL UNIT CHECK - With seat belt not fastened, or ignition key inserted, and the door open, check for presence of 0V (zero) at pin 6E of Alfa Romeo control unit **N22**	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Replace **control unit N22**
A4 BUZZER CHECK - Check for presence of 12V between pins **15** and **31** of buzzer **R24**	OK ▶ ~~OK~~ ▶	Replace **buzzer R24** Carry-out **step A5**

(Cont.d)

BUZZER INOPERATIVE (SAFETY BELT NOT FASTENED)	TEST A

TEST STEPS		RESULTS	REMEDY
A5	VOLTAGE CHECK		
- Check for presence of 12V between pin of auxiliary fuse box G2 (RED wire)		OK ▶	Repair wiring between **pin 15 of buzzer R24 and fuse F6, and between pin 31 of buzzer R24 and pin 6E of control unit N22**
		~~OK~~ ▶	**Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test A

BUZZER INOPERATIVE (IGNITION KEY INSERTED AND DOOR OPEN)	TEST B

TEST STEPS	RESULTS	REMEDY
B1 FUSE CHECK - Check fuse **F6** in auxiliary fuse box **G2** for integrity	OK ▶	Carry-out **step B2**
	~~OK~~ ▶	Replace **fuse F6**
B2 SAFETY BELT ACTUATED BUZZER CHECK - Start engine, do not fasten safety belt and check that buzzer is operational	OK ▶	Replace **microswitch in ignition switch B1**
	~~OK~~ ▶	Carry-out **step B3**
B3 CONTROL UNIT CHECK - With safety belt not fastened, or ignition key inserted, and the door open, check for presence of 0V (zero) at pin 6E of Alfa Romeo control unit **N22**	OK ▶	Carry-out **step B4**
	~~OK~~ ▶	Replace **control unit N22**
B4 BUZZER CHECK - Check for presence of 12V between pins 15 and 31 of buzzer **R24**	OK ▶	Replace **buzzer R24**
	~~OK~~ ▶	Carry-out **step A5**

End of test B

BUZZER CONTINUOUSLY ACTUATED	TEST C

TEST STEPS	RESULTS	REMEDY
C1 GENERAL CHECK - Make sure ignition key has been removed from ignition switch **B1**, and safety belt is properly fastened	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Remove **ignition key from ignition switch, and/or fasten safety belt properly, and close the door after the engine has been shut off**
C2 GROUNDING CHECK - With safety belt fastened, check for presence of 0V (zero) at pin 2E of Alfa Romeo control unit **N22**	OK ▶ ~~OK~~ ▶	Carry-out **step C3** Carry-out **step C4**
C3 CONTROL UNIT CHECK - Check that circuit is open at pin 12A of Alfa Romeo control unit **N22**	OK ▶ ~~OK~~ ▶	Replace **control unit N22** Replace **microswitch in ignition switch B1**
C4 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2 of safety belt fastened switch **R25**	OK ▶ ~~OK~~ ▶	Carry-out **step C5** Carry-out **step C7**

(Cont.d)

BUZZER CONTINUOUSLY ACTUATED	TEST C

TEST STEPS	RESULTS	REMEDY
C5 SWITCH CHECK - With safety belt fastened check for presence of 0V (zero) at pin 1 of safety belt fastened switch **R25**	OK ▶ ~~OK~~ ▶	Carry-out **step C6** Replace **switch R25**
C6 GROUNDING CHECK - With safety belt fastened, check for presence of 0V (zero) at pin 1 of connector **G244**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of connector G244 and pin 2E of control unit N22** Repair wiring between **pin 1 of connector G244 and pin 1 of switch R25**
C7 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2 of connector **G244**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of connector G244 and pin 2 of switch R25** Repair wiring between **pin 2 of connector G244, pin 3 of connector G233 and ground point G174**

End of test C

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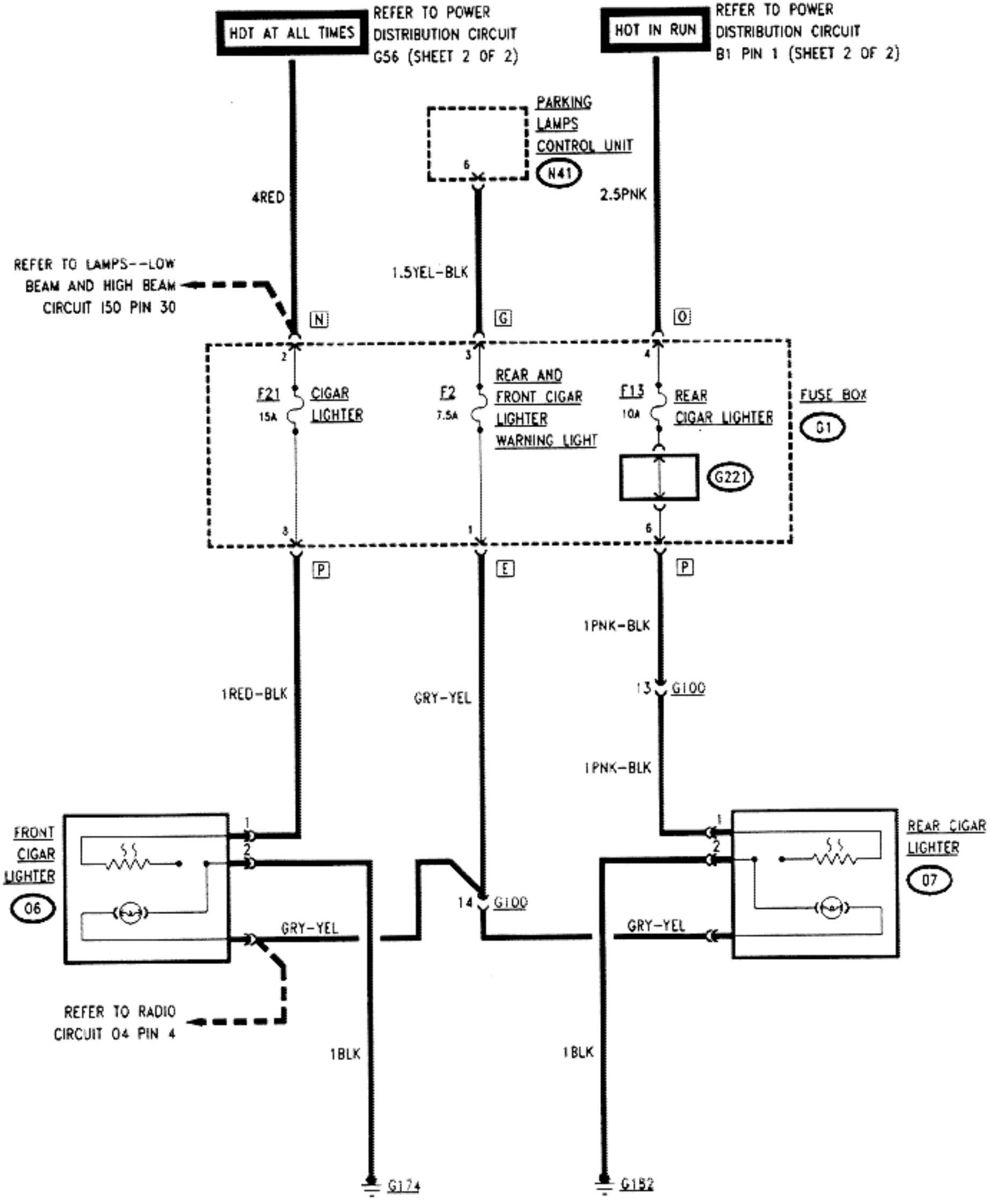
CIGARETTE LIGHTERS - - FRONT AND REAR



GENERAL

The car is provided with two cigar lighters respectively located inside the front and rear ashtrays.
The cigar lighters are illuminated when the parking lights are turned on.
To actuate the lighters, push the center of the lighter: after a few seconds the lighter will pop out, ready for use.
The system is protected by three fuses in the fuse box **G1**, as follows:

- **F21** fuse (15A) FRONT LIGHTER.
- **F13** fuse (10A) REAR LIGHTER.
- **F2** fuse (7.5A) FRONT AND REAR LIGHTER INDICATOR LAMPS.

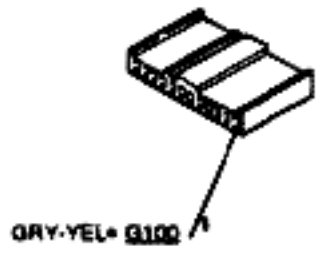
OPERATIONAL DESCRIPTION

12V from the battery is applied to one of the two terminals of front lighter **O6** throught the fuse **F21**.
The rear lighter **O7** is energized throught the fuse F13 only when the ignition key is set to "run".
Both **O6** and **O7** lighters are provided with an indicator light which is actuated by the parking lights control unit **N41** when the position lamps are turned on.
The circuit of the indicator lights is protected by the fuse **F2.**
The second terminal of the front and rear lighters is connected respectively to the ground points **G174** and **G182** by means of jumpers.
Pressing the center of the lighter which is intended for use, connects to ground the respective jumper, this allowing warming of the lighter.

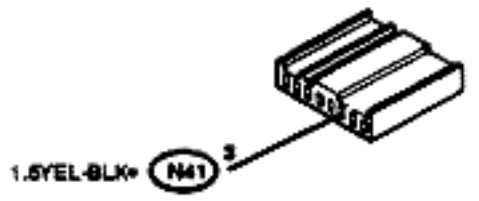
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT					
	F2 FUSE	F13 FUSE	F21 FUSE	O6 LIGHTER	O7 LIGHTER	N41 CONTROL UNIT
FRONT LIGHTER INOPERATIVE			●	●		
REAR LIGHTER INOPERATIVE		●			●	
LIGHTERS ILLUMINATION INOPERATVE	●					●

Fuse box G1 E

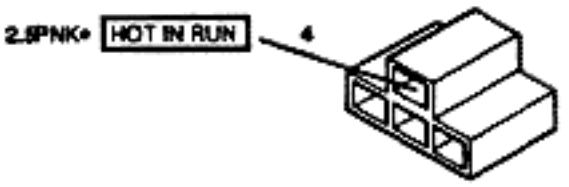


Fuse box G1 G

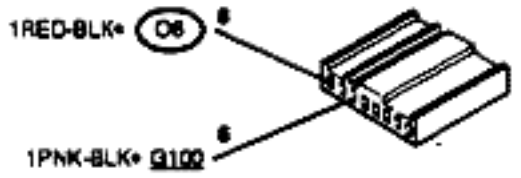


Fuse box G1 N

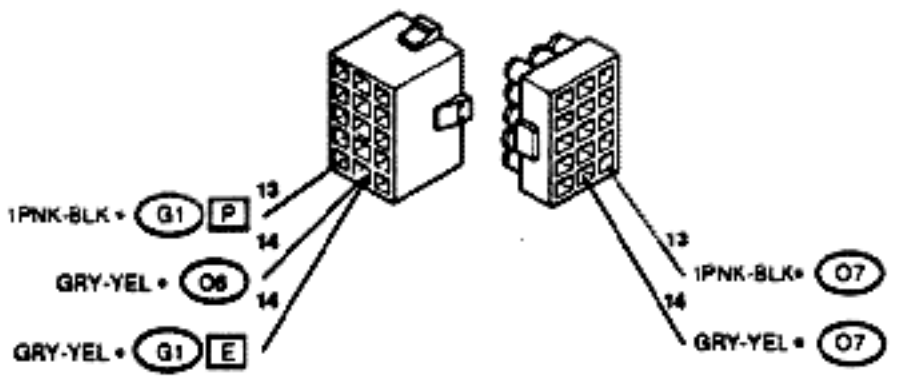
Fuse box G1 O



Fuse box G1 P



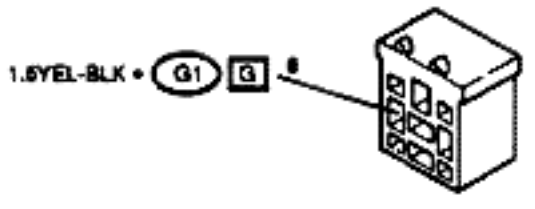
Connector, doors to center console wiring G100



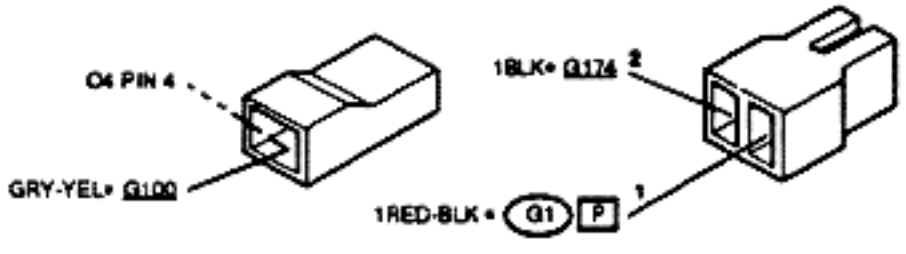
Steering wheel column support ground G174

Center console ground G182

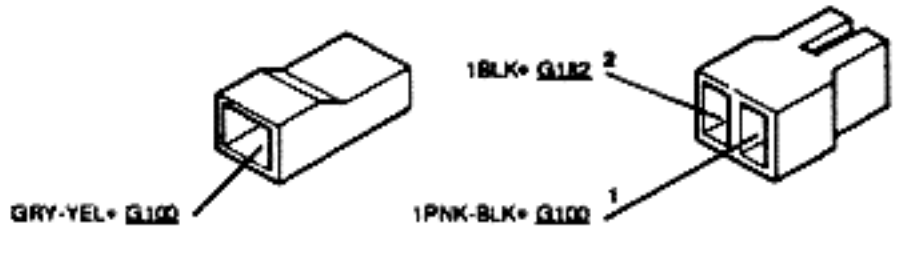
Parking lamps control unit N41

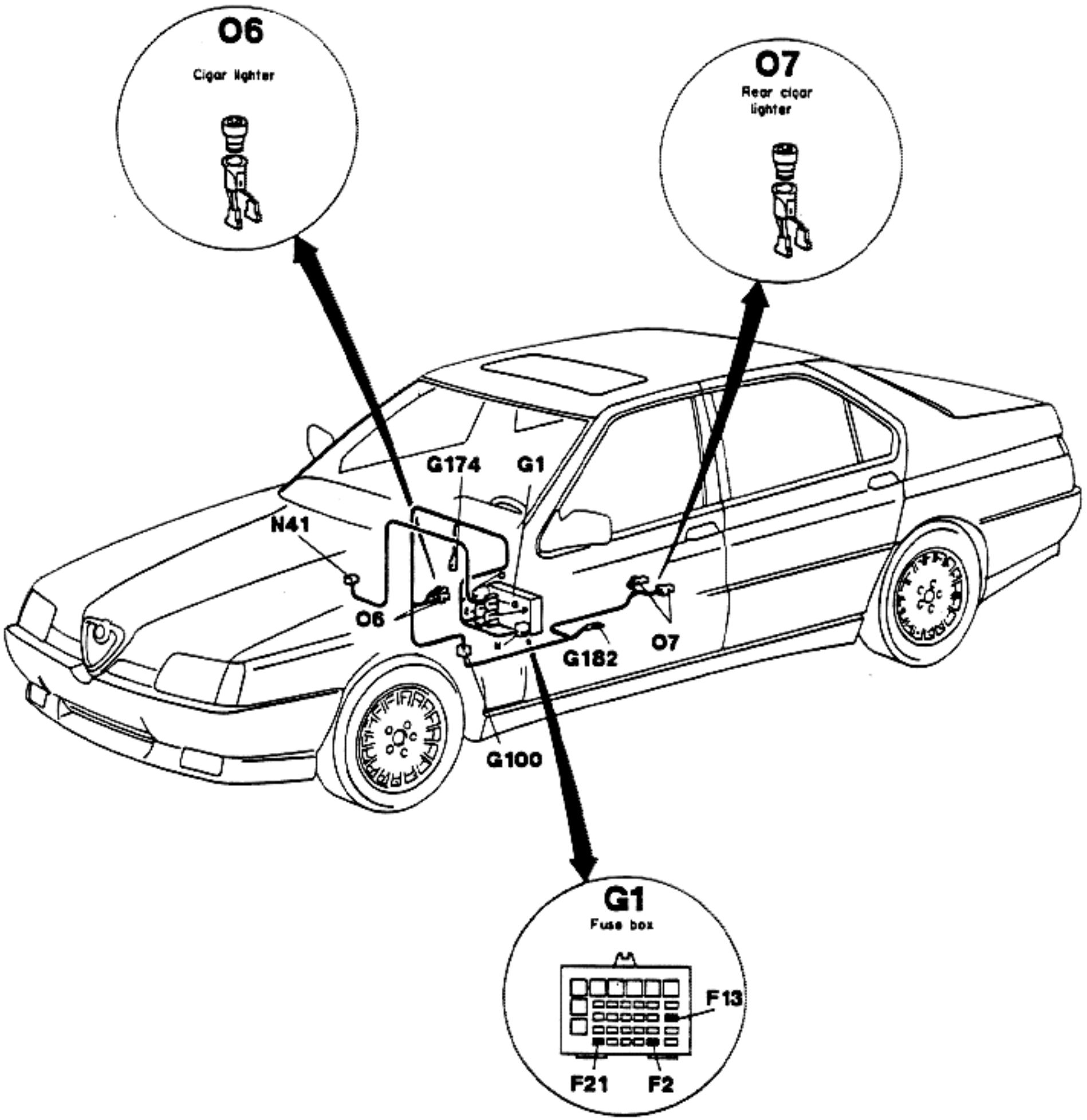


Front cigar lighter O6



Rear cigar lighter O7





FRONT LIGHTER INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F21** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F21**
A2 VOLTAGE CHECK - Check for presence of 12V between pins 1 and 2 of front lighter **O6**	OK ▶ ~~OK~~ ▶	Replace **lighter O6** Carry-out **step A3**
A3 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of lighter O6 and pin 8P of fuse box G1, and/or between pin 2 of lighter O6 and ground point G174** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test A

REAR LIGHTER INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B1 FUSE CHECK - Check fuse **F13** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **fuse F13**
B2 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pins 1 and 2 of lighter **O7**	OK ▶ ~~OK~~ ▶	Replace **lighter O7** Carry-out **step B3**
B3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2 of lighter **O7** with the lighter activated	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Repair wiring between **pin 2 of lighter O7 and ground point G182**
B4 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 13 of connector **G100** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 13 of connector G100 and pin 1 of lighter O7** Carry-out **step B5**

(Cont.d)

REAR LIGHTER INOPERATIVE	TEST B

TEST STEPS		RESULTS	REMEDY
B5	VOLTAGE CHECK		
- With the ignition key set to "run" check for presence of 12V between pin 4O of fuse box G1 and ground		OK ▶	Repair wiring between pin 6P of fuse box G1 and pin 13 of connector G160
		OK ▶	Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2

End of test B

LIGHTERS ILLUMINATION INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 FUSE CHECK - Check fuse **F2** in fuse box G1 for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Replace **fuse F2**
C2 BOTH LIGHTERS ILLUMINATION CIRCUIT CHECK - With the position lamps on, check illumination of both lighters is inoperative	OK ▶ ~~OK~~ ▶	Carry-out **step C3** Carry-out **step C5**
C3 CONTROL UNIT CHECK - With the position lamps on, check for presence of 12V at pin 6 of parking lights control unit **N41**	OK ▶ ~~OK~~ ▶	Carry-out **step C4** Failure of the position lamps circuit; refer to the corresponding troubleshooting procedure
C4 CONTINUITY CHECK - Check continuity between pin 3G of fuse box **G1** and pin 6 of control unit **N41**	OK ▶ ~~OK~~ ▶	Repair wiring, between **pin 14 of connector G100 and pin 1E of fuse box G1** Repair or replace wiring as necessary

(Cont.d)

LIGHTER ILLUMINATION INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C5 FRONT LIGHTER CHECK - With the position lamps on, check if illumination of front lighter only is inoperative	OK ▶ ~~OK~~ ▶	Carry-out **step C6** Carry-out **step C8**
C6 LAMP INSTALLATION CHECK - Check that front lighter lamp is properly installed in the lighter and check bulb integrity	OK ▶ ~~OK~~ ▶	Carry-out **step C7** Install the **lamp properly and/or replace bulb**
C7 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2 of lighter **O6**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 14 of connector G100 and lighter O6 (GRY-YEL wire)** Repair wiring between **ground point G174 and pin 2 of lighter O6**
C8 LAMP CHECK - Check that rear lighter lamp is properly installed in the lighter and check bulb integrity	OK ▶ ~~OK~~ ▶	Carry-out **step C8** Install the **lamp properly and/or replace bulb**

(Cont.d)

LIGHTERS ILLUMINATION INOPERATIVE	TEST C

TEST STEPS		RESULTS	REMEDY
C9	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 2 of lighter O7		OK ▶	Repair wiring between **pin 14 of connector G100 and lighter O7 (GRY-YEL wire)**
		~~OK~~ ▶	Repair wiring between **ground point G182 and pin 2 of lighter O7**

End of test C

CONTROLLED DAMPING SUSPENSIONS
(S only)

REFER TO POWER DISTRIBUTION CIRCUIT B1 PIN 1 (SHEET 2 OF 2)

HOT IN RUN

HOT AT ALL TIME

REFER TO POWER DISTRIBUTION CIRCUIT A1 (SHEET 1 OF 2)

ACCELEROMETER N47

SUSPENSION CONTROL SYSTEM DIAGNOSIS CONNECTOR T5

STEERING WHEEL RUTATION ANGLE SENSOR L40

SUSPENSION SYSTEM CONTROL PANEL B67

POSITION LIGHTS/HAZARD LIGHTS/FUEL FILLER LID PUSHBUTTON PANEL B66

FUSE BOX G1

20A SUSPENSION CONTROL SYSTEM RELAY I71

REFER TO SENSORS--ENGINE OIL MINIMUM LEVEL, ENGINE OIL MINIMUM PRESSURE, AUTOMATIC TRANSMISSION MAXIMUM TEMPERATURE, TEST PUSHBUTTON CIRCUIT B60 PIN 1

REAR WINDOW LIFTS RELAY I13 PIN 85

PARKING LAMPS CONTROL UNIT N41 PIN 1

MULTIPLE SWITCH UNIT FRAME B68

SUSPENSION SYSTEM ELETRONIC CONTROL UNIT N46

REFER TO AIR CONDITIONING SYSTEM CIRCUIT G164 PIN14

REFER TO CRUISE CONTROL CIRCUIT G242 PIN2

ENGINE THROTTLE MICROSWITCH FOR SUSPENSION SYSTEM H47

GEAR BOX SWICTH FOR SUSPENSION CONTROL SYSTEM H46

OIL MICROSWICTH FOR SUSPENSION CONTROL SYSTEM L41

2200 ohms

FRONT LEFT SHOCK ABSORBER SOLENOID VALVE M18

REAR LEFT SHOCK ABSORBER SOLENOID VALVE M20

FRONT RIGHT SHOCK ABSORBER SOLENOID VALVE M17

REAR RIGHT SHOCK ABSORBER SOLENOID VALVE M19

SPEEDOMETER SENSOR L17

INSTRUMENT PANEL C10

GENERAL

The controlled damping suspension system is capable to change the shock absorbers damping at any moment, in real time, on all the four wheels.
This system, electronically monitored, modifies the shock absorbers damping characteristics according to the driving and road pavement conditions.
This feature provides, at any instant, maximum comfort, roadholding power and safety.
The controlled damping suspensions are capable to operate in two different logics: **"AUTO"** or **"SPORT"**, selected by two pushbuttons located on the center console switchboard.
These two logics operate in accordance with two shock absorber conditions: they may operate with soft or rigid adjustments.
If the **"AUTO"** function is selected, the electronic system adjusts, the shock absorbers in real time, changing from soft to rigid or viceversa automatically, according to information received by several sensors which read, at any moment, the different driving conditions.
If the **"SPORT"** function is selected, the shock absorbers adjustment is alwaysset for a sport driving condition, with an increase in roadholding power against comfort.

System operation - "AUTO" mode

The monitored parameter is the vertical acceleration that is determined by road oscillations, steering angle and rate at which these variations occur, by the exceeding of a fixed value in the brakes hydraulic system pressure and by throttle opening when 1st and 2nd gear are selected.
The AUTO logic foresees two operation fields depending on vehicle speed.
1) Till the speed of 4 Km/h (2.5 MPH) the shock absorbers adjustment is rigid to allow monoeuvres without excessive springing on rough roads.
2) The system changes automatically the adjustment from soft to rigid when one of the following conditions is met:

- sudden changes of direction due to obstacles on the road or very sharp turns; these conditions are sensed by the "Steering wheel angle and steering wheel rate of rotation" sensor;
- Bumps and road asperities generating oscillations of the body; these conditions are sensed by the "accelerometer" sensor;
- Vehicle braking with brake system pressure higher than 20 bar (290 psi); this condition is sensed by "braking pressure" sensor;
- Sudden speed-up using 1st and 2nd gear; this condition is sensed by the "engine throttle" sensor and by the "gearbox" sensor for speeds lower than 50 Km/h (31 MPH).

FUNCTIONAL DESCRIPTION

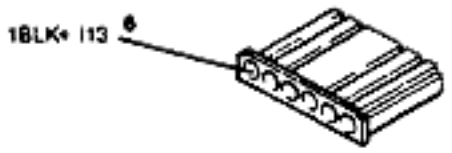
The damping suspension system is controlled by the relevant control unit **N46**.
The control unit **N46** is supplied at pins 3C (ignition key in "run" position) through fuse **F14**.
The unit receives information sent by the various sensors thus correlating and processing it according to a logic preestablished by the manufacturer. After processing, the control unit sends control pulses which are directed to the shock absorber solenoid valves **M17/18/19/20**.
The vehicle's vertical acceleration is measured by the accelerometer **N47** which sends ACCH and ACCL signals to pins 4B and 10C of the control unit.
The steering wheel rotation speed is detected by sensor **L40** sending STR2, STR1, STR2 signals to pins 1A, 6A, 11A, of the control unit.
The control unit detects the pressure on the brake pedal through pressure switch **L41** at pin 6C, whilst the unit measures at pin 2B the gearbox (swich **H46**) and the accelerator pedal positions (switch **H47**).
The tachymetric signal, detected by sensor **L17** is sent to pin 4A of the control unit.
The selection between AUTO and SPORT operation is carried out by acting on two push-buttons arranged on the relevant panel **B67**; the selected condition is signalled at pins 12A and 8A of the control unit **N46**.

SELF-DIAGNOSIS

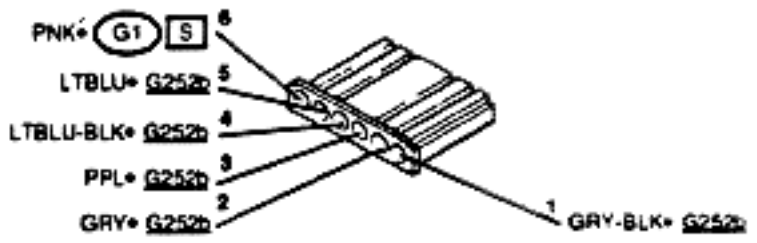
With the engine running, the control unit performs a constant self-diagnosis check on the system, the vehicle being either stationary or in motion..
In both cases a red warning light, located on the push-

button panel B67, lights up to signal whatever faulty condition may occur in the system; the system switches automatically to set the shock absorbers in hard position. Said condition is kept until the malfunction is eliminated.
The troubleshooting described in this section is based on a series of checks, upon lighting up of the warning light, to be carried out on the vehicle.
A test is finally described at the end of the section in case one or more warning ights on the push-button panel do not light up.

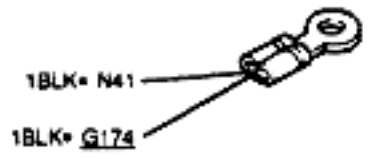
Position lights/hazard lights/fuel filler lid pushbutton panel	B66



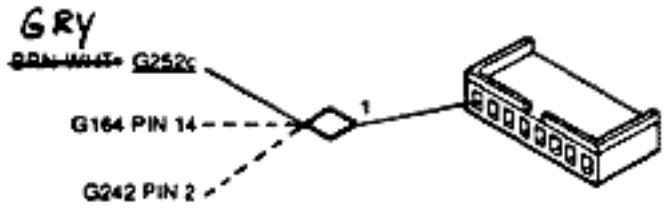
Suspension system control panel	B67



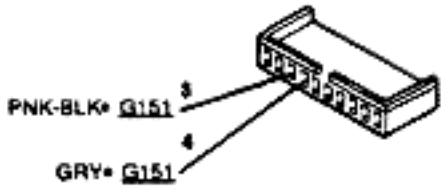
Multiple switch unit	B68 g



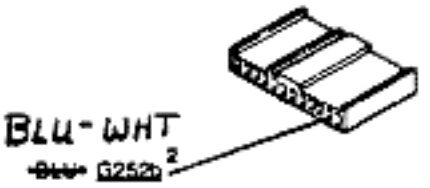
Instrument panel	C10 A



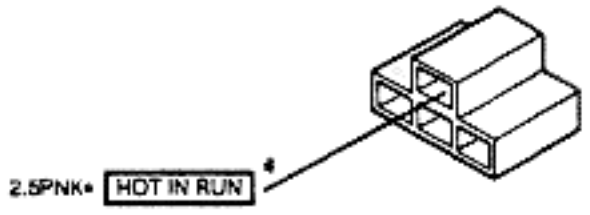
Instrument panel	C10 C



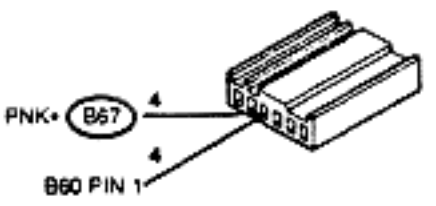
Fuse box	G1 D



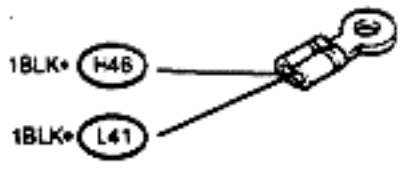
Fuse box	G1 O



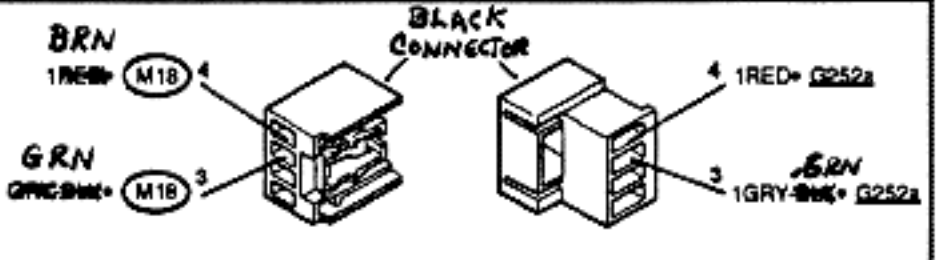
Fuse box	G1 S



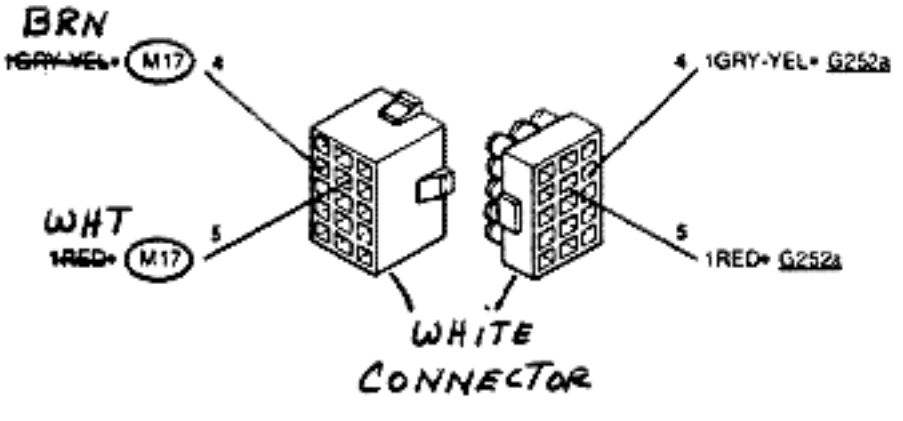
Engine compartment ground connection	G53



Connector, circuit board to engine compartment left side wiring	G150a

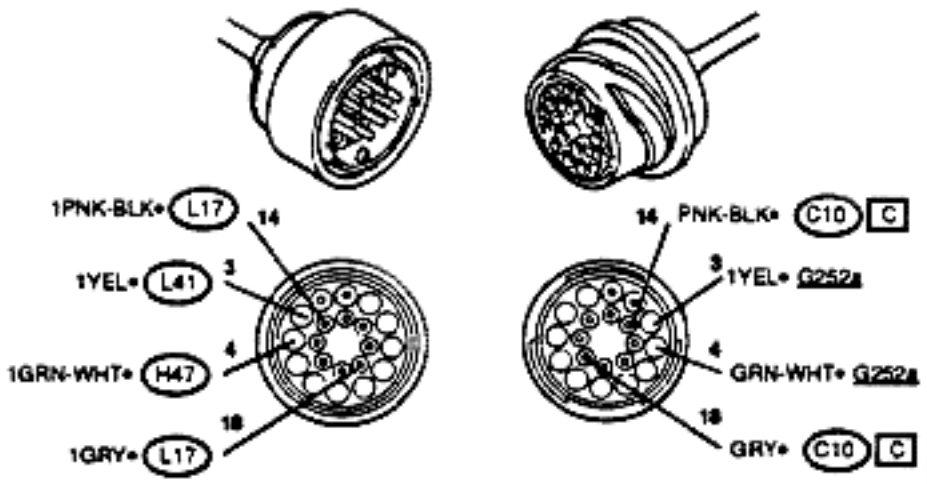


Connector, circuit board to engine compartment right side wiring	G149

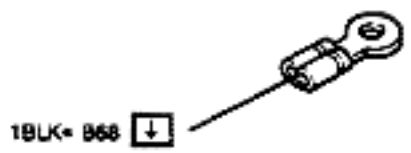


(Cont.d)

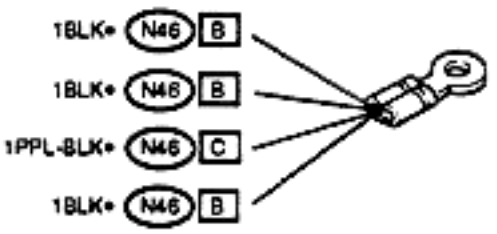
Connector, circuit board to engine utilities wiring — G151



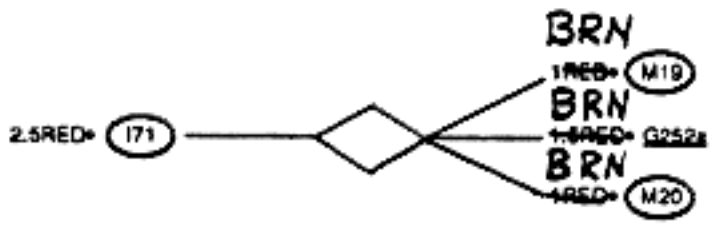
Steering wheel column support ground — G174



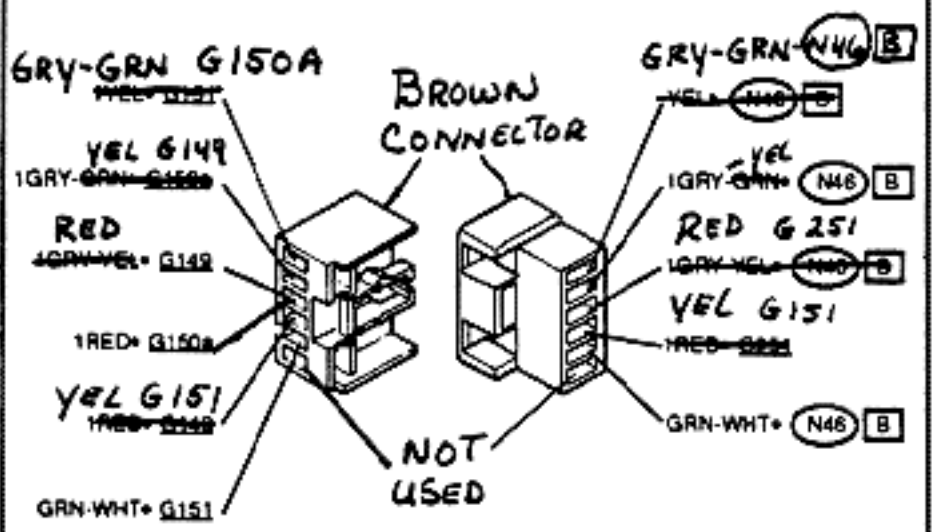
Trunk right side ground — G186



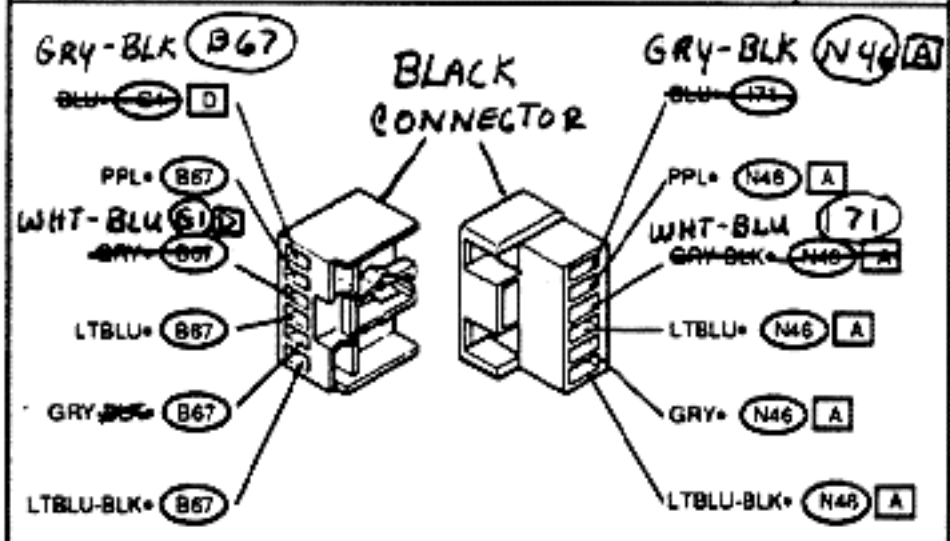
Suspension control system connector — G251



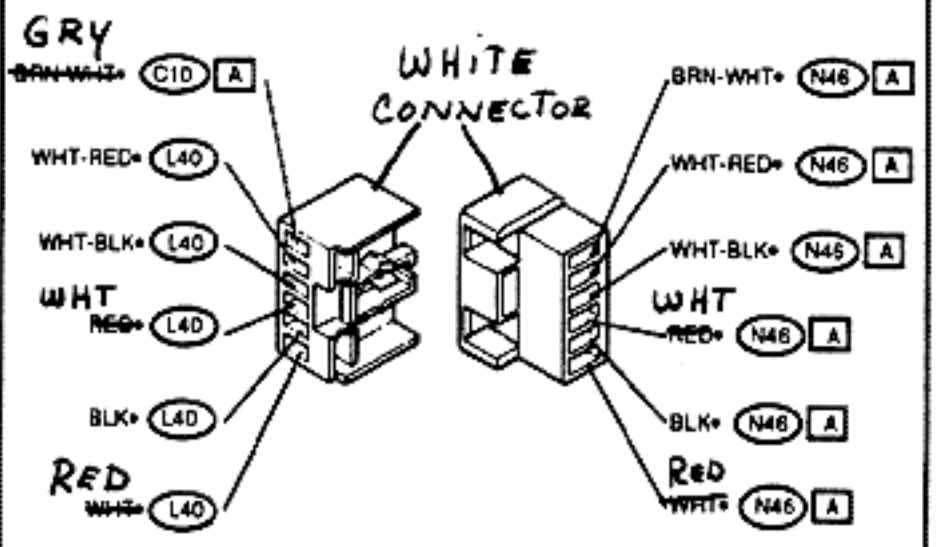
Connector, terminal board wiring - rear right wiring for suspension control system — G252a



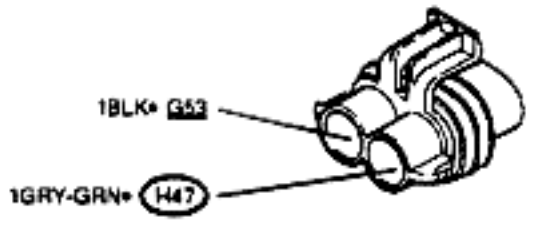
Connector, terminal board wiring - rear right wiring for suspension control system — G252b



Connector, terminal board wiring - rear right wiring for suspension control system — G252c

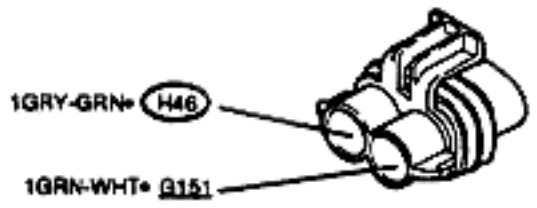


Gear box switch for suspension control system — H46

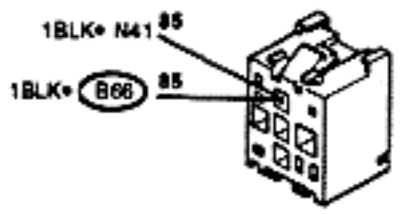


(Cont.d)

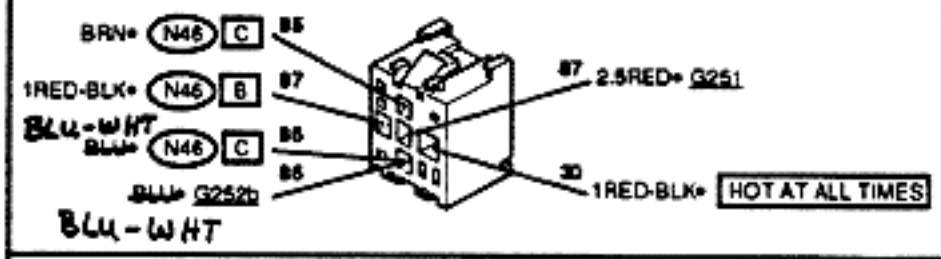
Engine throttle microswitch for suspension system	H47



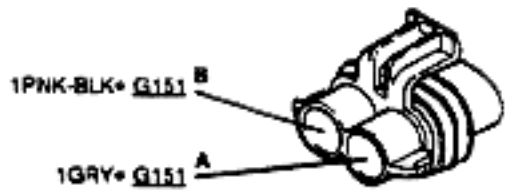
Rear window lifts relay	I13



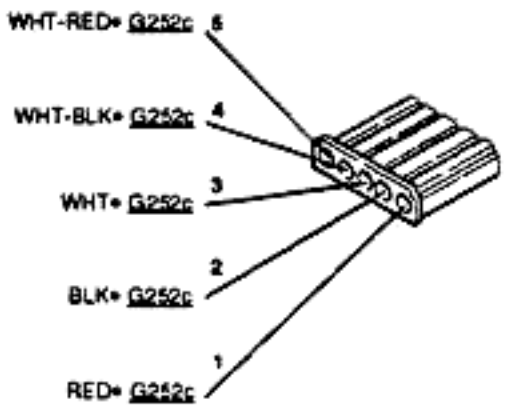
20A suspension control system relay	I71



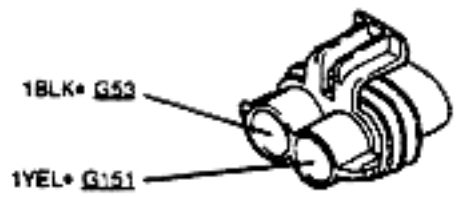
Speedometer sensor	L17



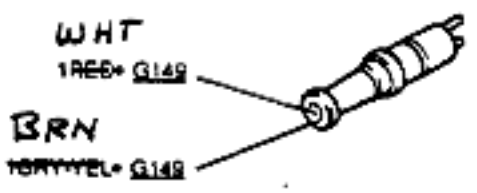
Steering wheel rotation angle sensor	L40



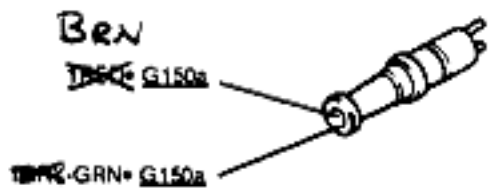
Oil microswitch for suspension control system	L41



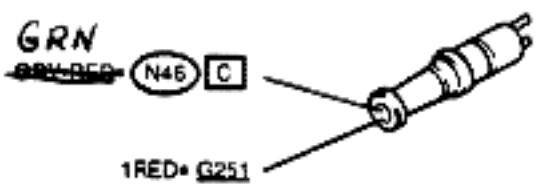
Front right shock absorber solenoid valve	M17



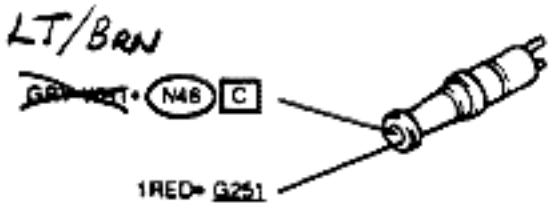
Front left shock absorber solenoid valve	M18



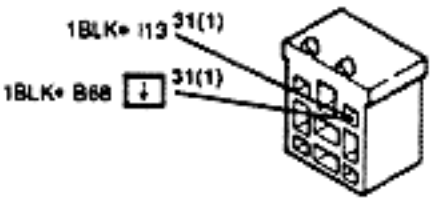
Rear right shock absorber solenoid valve	M19



Rear left shock absorber solenoid valve	M20

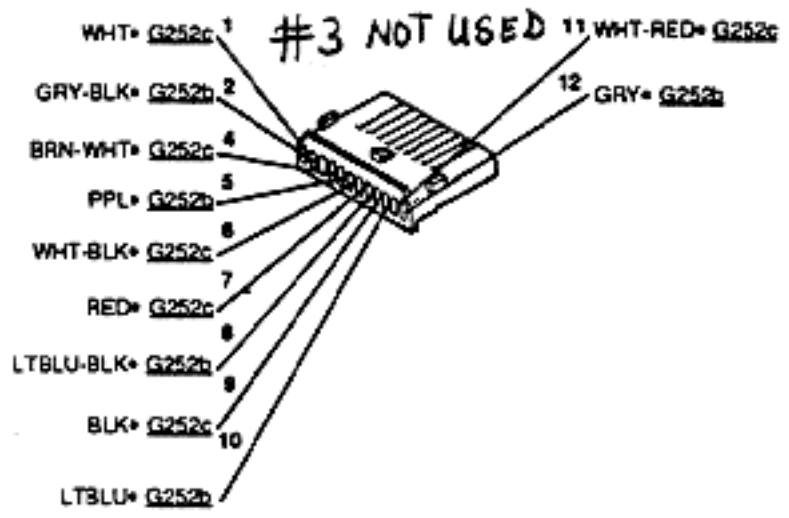


Parking lamps control unit	N41

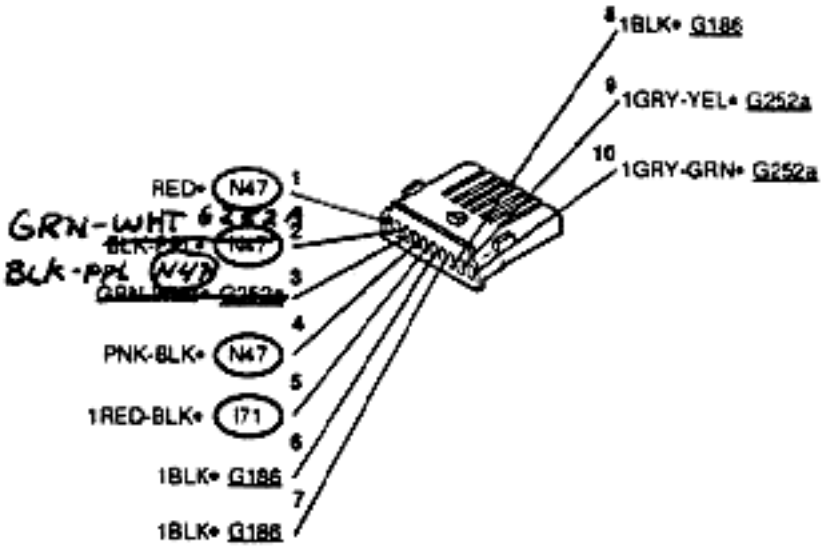


(Cont.d)

Suspension system electronic control unit — N46 A

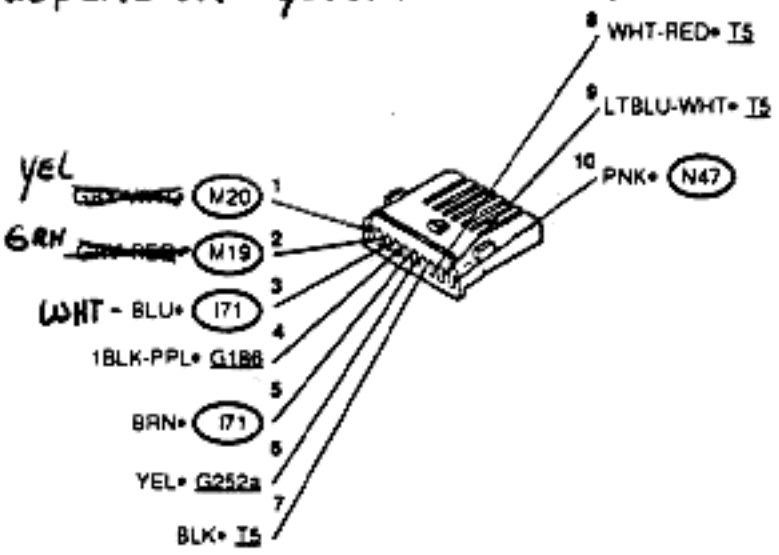


Suspension system electronic control unit — N46 B

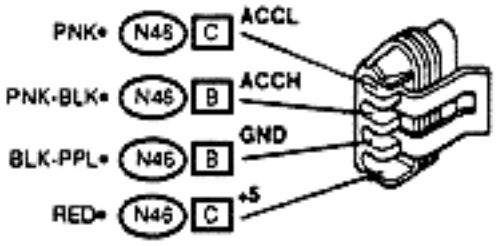


~~Connector, left rear wiring to left rear door wiring~~ — N46 C

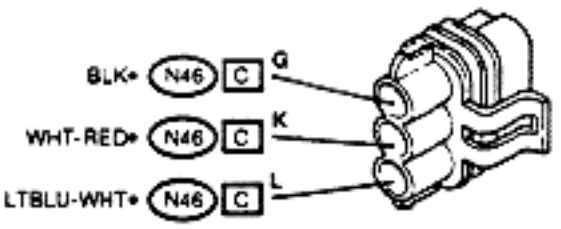
Suspension system electronic control unit

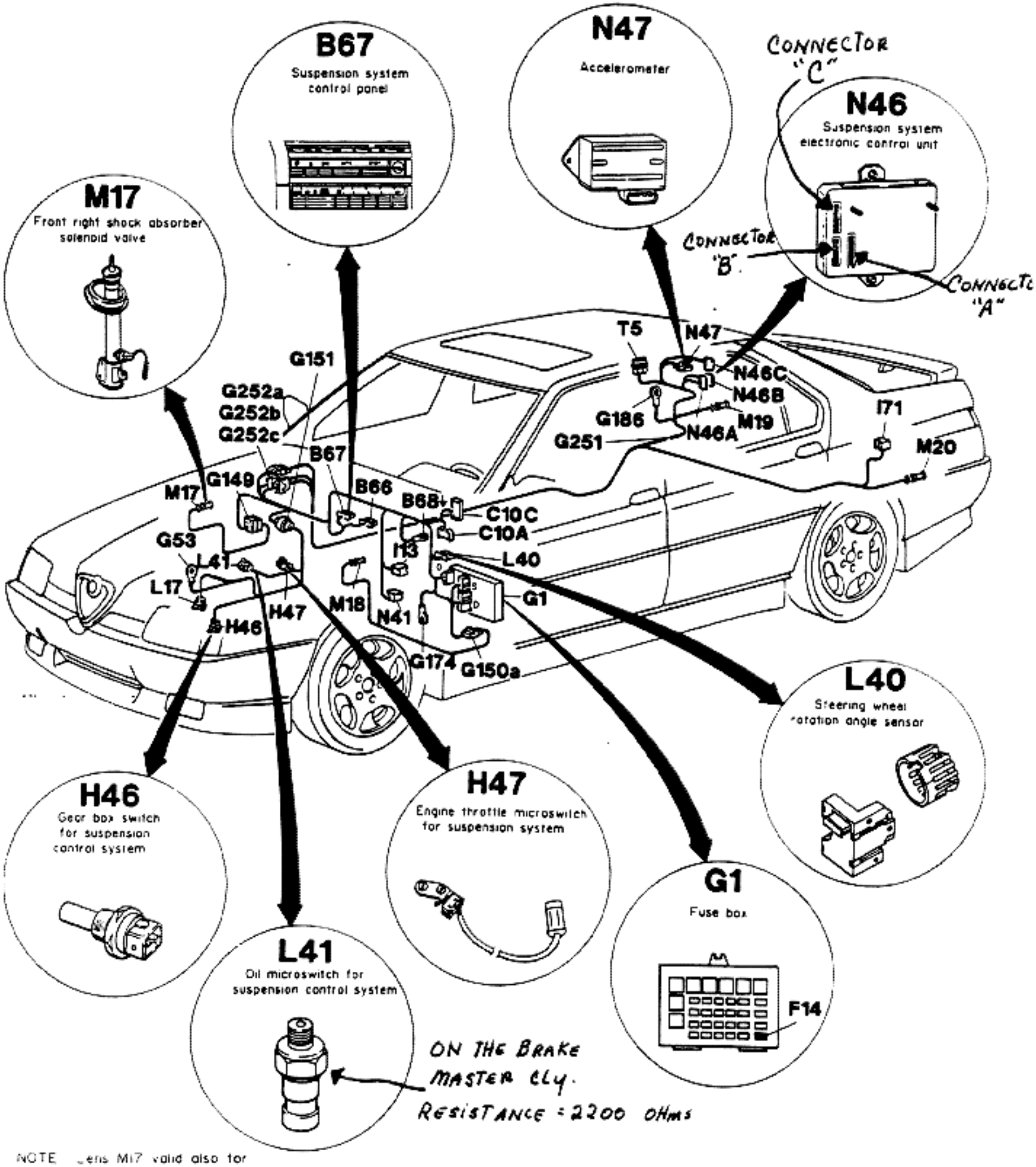


Accelerometer — N47



Suspension control system diagnosis connector — T5





NOTE Lens M17 valid also for M18, M19, M20

CHECK OF SHOCK ABSORBER CONTROL RELAY - SOLENOID VALVE - CONTROL UNIT SUPPLY	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse of relay I71 for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse of relay I71**
A2 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay I71 and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 1 of 2**
A3 RELAY CHECK - Check relay I71 for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Replace **relay I71**
A4 SOLENOID VALVE CHECK - Check for 3 - 3.3 Ohm resistance at pins of M17, M18, M19, M20, solenoid valves	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Replace **defective solenoid valve**

(Cont.d)

CHECK OF SHOCK ABSORBER CONTROL RELAY - SOLENOID VALVE - CONTROL UNIT SUPPLY	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK		
- With the key set to "run" position, check for presence of 12V between pin 86 of relay **I71** and ground	OK ▶	Carry-out step **A6**
	~~OK~~ ▶	Repair wiring between **pin 86 of relay I71 and pin 2D of fuse box G1, through connector G252b**
A6 VOLTAGE CHECK		
- With the key set to "run" position, check for presence of 12V between pin 3C of control unit **N46** and ground	OK ▶	Carry-out **step A7**
	~~OK~~ ▶	Repair wiring between **pin 3C of control unit N46 and pin 86 of relay I71**
A7 GROUNDING CHECK		
- Check for presence of 0V at pins 4C, 6B, 7B, 8B of control unit **N46**	OK ▶	Carry-out **step A8**
	~~OK~~ ▶	Repair wiring between **pins 4C, 6B, 7B, 8B of control unit N46 and ground G186**
A8 CONTINUITY CHECK		
- Check for contiynuity between pin 87 of relay **I71** and pin 5B of control unit **N46**	OK ▶	Carry-out step **A9**
	~~OK~~ ▶	Repair or replace **cables, as required**

(Cont.d)

CHECK OF SHOCK ABSORBER CONTROL RELAY - SOLENOID VALVE - CONTROL UNIT SUPPLY	TEST A

TEST STEPS	RESULTS	REMEDY
A9 CONTINUITY CHECK - Check for continuity between pin 85 of relay **I71** and pin 5C of control unit **N46**	OK ▶ ~~OK~~ ▶	Carry-out **step A10** Repair or replace **cables, as required**
A10 CONTINUITY CHECK - Check for continuity between pin 87 of relay **I71** and crimping connection **G251**	OK ▶ ~~OK~~ ▶	Carry-out **step A11** Repair or replace **cables, as required**
A11 CONTINUITY CHECK - Check for continuity between crimping connection **G251** and connector **G252a** (red wire)	OK ▶ ~~OK~~ ▶	Carry-out **step A12** Repair or replace **cables, as required**
A12 CONTINUITY CHECK - Check for continuity between connector **G252a** (red wire) and pin 4 of connector **G150a**	OK ▶ ~~OK~~ ▶	Carry-out **step A13** Repair or replace **cables, as required**

(Cont.d)

CHECK OF SHOCK ABSORBER CONTROL RELAY - SOLENOID VALVE - CONTROL UNIT SUPPLY	TEST A

TEST STEPS	RESULTS	REMEDY
A13 CONTINUITY CHECK - Check for continuity between pin 4 of connector **G150a** and solenoid valve **M18** (red wire)	OK ▶ ~~OK~~ ▶	Carry-out **step A14** Repair or replace **cables, as required**
A14 CONTINUITY CHECK - Check for continuity between connector **G252a** (red wire) and pin 5 of connector **G149**	OK ▶ ~~OK~~ ▶	Carry-out **step A15** Repair or replace **cables, as required**
A15 CONTINUITY CHECK - Check for continuity between pin 5 of connector **G149** and solenoid valve **M17**	OK ▶ ~~OK~~ ▶	Carry-out **step A16** Repair or replace **cables, as required**
A16 CONTINUITY CHECK - Check for continuity between pin10B of control unit **N46** and connector **G252a** (GRY-GRN wire)	OK ▶ ~~OK~~ ▶	Carry-out **step A17** Repair or replace **cables, as required**

(Cont.d)

CHECK OF SHOCK ABSORBER CONTROL RELAY - SOLENOID VALVE - CONTROL UNIT SUPPLY	TEST A

TEST STEPS	RESULTS	REMEDY
A17 CONTINUITY CHECK - Check for continuity between connector **G252a** (GRY - GRN wire) and pin 3 of connector **G150a**	OK ▶ ~~OK~~ ▶	Carry-out **step A18** Repair or replace **cables, as required**
A18 CONTINUITY CHECK - Check for continuity between pin 3 of connector **G150a** and solenoid valve **M18** (GRY-GRN wire)	OK ▶ ~~OK~~ ▶	Carry-out **step A19** Repair or replace **cables, as required**
A19 CONTINUITY CHECK - Check for continuity between pin 9B of control unit **N46** and connector **G252a** (GRY-YEL wire)	OK ▶ ~~OK~~ ▶	Carry-out **step A20** Repair or replace **cables, as required**
A20 CONTINUITY CHECK - Check for continuity between connector **G252a** (GRY - GRN wire) and pin 4 of connector **G149**	OK ▶ ~~OK~~ ▶	Carry-out **step A21** Repair or replace **cables, as required**

(Cont.d)

CHECK OF SHOCK ABSORBER CONTROL RELAY - SOLENOID VALVE - CONTROL UNIT SUPPLY	TEST A

TEST STEPS	RESULTS	REMEDY
A21 CONTINUITY CHECK - Check for continuity between pin 4 of connector **G149** and solenoid valve **M17**	OK ▶ ~~OK~~ ▶	Carry-out **step A22** Repair or replace **cables, as required**
A22 CONTINUITY CHECK - Check for continuity between crimping connection **G251** and solenoid valve **M20** (RED wire)	OK ▶ ~~OK~~ ▶	Carry-out **step A23** Repair or replace **cables, as required**
A23 CONTINUITY CHECK - Check for continuity between crimping connection **G251** and solenoid valve **M19** (RED wire)	OK ▶ ~~OK~~ ▶	Carry-out **step A24** Repair or replace **cables, as required**
A24 CONTINUITY CHECK - Check for continuity between pin 1C of control unit **N46** and solenoid valve **M20** (GRY-WHT wire)	OK ▶ ~~OK~~ ▶	Carry-out **step A25** Repair or replace **cables, as required**

(Cont.d)

CHECK OF SHOCK ABSORBER CONTROL RELAY - SOLENOID VALVE - CONTROL UNIT SUPPLY	TEST A

TEST STEPS		RESULTS	REMEDY
A25	CONTINUITY CHECK		
- Check for continuity between pin 2C of control unit **N46** and solenoid valve **M19** (GRY-RED wire)		OK ▶	Carry-out **TEST B**
		OK ▶	Repair or replace **cables, as required**

End of test A

CHECKING THE ACCELEROMETER	TEST B

TEST STEPS	RESULTS	REMEDY
B1 SIGNAL ACCH CHECK - Detach the accelerometer from the control unit and place it vertically on boot floor, keeping the connector plugged. - Set ignition key to "run". - Apply tester prods to pin 4B of control unit **N46** and ground. - Drop a 3/4" steel ball from a 60 cm (1.9686 ft) height on accelerometer center. - Read on tester a variation ranging from 1.1 to 5V (dc).	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Carry-out **step B3**
B2 SIGNAL ACCL CHECK - Apply tester prods to pin 10C of control unit **N46** and ground, and repeat test described in step B1.	OK ▶ ~~OK~~ ▶	Carry-out **TEST C** Carry-out **step B3**
B3 ACCELEROMETER SUPPLY CHECK - With the key set to "run" position, check for a voltage higher than 5V between pins A and B of accelerometer **N47**	OK ▶ ~~OK~~ ▶	Carry-out **step B5** Carry-out **step B4**

(Cont.d)

CHECKING THE ACCELEROMETER	TEST B

TEST STEPS	RESULTS	REMEDY
B4 ACCELEROMETER SUPPLY CHECK - With the key set to "run", check for a voltage higher than 5V between pins 1B and 3B of control unit **N46**	OK ▶ ~~OK~~ ▶	Restore wiring between **pins A and B of accelerometer N47 and pins 1B and 3B of control unit N46** Carry-out **step B6**
B5 CONTINUITY CHECK - Check for continuity between: • pin C of accelerometer **N47** and pin 4B of control unit **N46** • pin D of accelerometer **N47** and pin 10C of control unit **N46**	OK ▶ ~~OK~~ ▶	Replace **accelerometer N47** Repair or replace **cables, as required**
B6 ACCELEROMETER SUPPLY CHECK - Unplug the connector from accelerometer **N47**. The key being set to "run", check for a voltage higher than 5V between pins A and B of accelerometer **N47** connector.	OK ▶ ~~OK~~ ▶	Replace **accelerometer N47** Carry out **step B7**
B7 CONTINUITY CHECK - Check for continuity between: • pin A of accelerometer **N47** and pin 1B of control unit **N46** • pin B of accelerometer **N47** and pin 3B of control unit **N46**	OK ▶ ~~OK~~ ▶	Replace **control unit N46** Repair or replace **cables, as required**

End of test B

CHECKING THE STEERING ANGLE SENSOR	TEST C

TEST STEPS	RESULTS	REMEDY
NOTE: Before testing, check for steering angle sensor correct alignment, has described in **Group 21 of SERVICE MANUAL.**		
C1 SIGNAL STRZ CHECK - With ignition key set to "run", perfectly align front wheels and check for 0V at pin 1A of control unit **N46**. Steer rightwards and lefwards ans check for voltage variations	OK ▶ ~~OK~~ ▶	Carry out **step C2** Carry-out **step C4**
C2 SIGNAL STR1 CHECK - With ignition key set to "run", perfectly align front wheels and check for a voltage ranging from 3V to 5V at pin 6 of control unit **N46**. Steer and check a voltage variation from previous value to 0V and viceversa each 18° rotation of steering wheel	OK ▶ ~~OK~~ ▶	Carry out **step C3** Carry out **step C8**
C3 SIGNAL STR2 CHECK - With ignition key set to "run", perfectly align front wheels and check for 0V at pin 11A of control unit **N46**. Steer and check a voltage variation from 0V to 3 - 5V and viceversa each 18° rotation of steering wheel	OK ▶ ~~OK~~ ▶	Carry out **TEST D** Carry out **step C9**
C4 SENSOR SUPPLY CHECK - With ignition key set to "run", check for approx. 5V at pins 1 and 2 of sensor **L40**	OK ▶ ~~OK~~ ▶	Carry out **step C7** Carry out **step C5**

(Cont.d)

CHECKING THE STEERING ANGLE SENSOR	TEST C

TEST STEPS	RESULTS	REMEDY
C5 SENSOR SUPPLY CHECK - With ignition key set to "run", check for approx. 5V at pins 9A and 7A of control unit **N46**	OK ▶ OK ▶	Restore wiring between **pins 1 and 2 of sensor L40 and pins 7A and 9A of control unit N46 through connector G252c** Carry-out **step C6**
C6 SENSOR SUPPLY CHECK - Unplug connector from sensor **L40** and, with ignition key set to "run", check for approx. 5V at pins 2 and 7 of sensor **L40** connector	OK ▶ OK ▶	Replace **sensor L40** Carry-out **step C10**
C7 CONTINUITY CHECK - Check for continuity between pin 3 of sensor **L40** and pin 1A of control unit **N46**, through connector **G252c**	OK ▶ OK ▶	Replace **sensor L40** Repair or replace **cables, as required**
C8 CONTINUITY CHECK - Check for continuity between pin 4 of sensor **L40** and pin 6A of control unit **N46**, through connector **G252c**	OK ▶ OK ▶	Replace **sensor L40** Repair or replace **cables, as required**

(Cont.d)

CHECKING THE STEERING ANGLE SENSOR	TEST C

TEST STEPS	RESULTS	REMEDY
C9 CONTINUITY CHECK - Check for continuity between pin 5 of sensor **L40** and pin 11A of control unit **N46**, through connector **G252c**	OK ▶	Replace **sensor** L40
	~~OK~~ ▶	Repair or replace **cables, as required**
C10 CONTINUITY CHECK - Check for continuity between: • pin 1 of sensor **L40** and pin 7A of control unit **N46**, through connector **G252c** • pin 2 of sensor **L40** and pin 9A of control unit **N46**, through connector **G252c**	OK ▶	Replace **control unit N46**
	~~OK~~ ▶	Repair or replace **cables, as required**

End of test C

CHECKING THE CONTROL PUSH-BUTTONS OF SHOCK-ABSORBER CONTROL SYSTEM — TEST D

TEST STEPS	RESULTS	REMEDY
D1 AUTO SIGNAL CHECK - Keeping AUTO pushbutton pressed, check for 0V at pin 8A of control unit **N46**	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Carry-out **step D3**
D2 SPORT SIGNAL CHECK - Keeping SPORT pushbutton pressed, check for 0V at pin 12A of control unit **N46**	OK ▶ ~~OK~~ ▶	Carry-out **TEST E** Carry-out **step D4**
D3 GROUNDING CHECK - Check for presence of ground at pin 6 of pushbutton panel **B66**	OK ▶ ~~OK~~ ▶	Carry-out **step D5** Restore connection between **pin 6 of push-button panel B66 and ground G174**
D4 CONTINUITY CHECK - Check for continuity between pin 1 of pushbutton panel **B67** and pin 12A of control unit **N46**	OK ▶ ~~OK~~ ▶	Replace **pushbutton panel B67** Repair or replace **cables, as required**

(Cont.d)

CHECKING THE ENGINE THROTTLE MICROSWITCH AND SWITCH ON GEARBOX — TEST E

TEST STEPS	RESULTS	REMEDY
NOTE: Before testing, check for correct opening regulation of engine throttle microswitch as described in **Group 21 of SERVICE MANUAL.**		
E1 CORRECT OPERATION CHECK - With ignition key set to "parking", check for open circuit at pin 2B of control unit **N46**	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Carry-out **step E3**
E2 CORRECT OPERATION CHECK - Set shift lever to 1st or 2nd speed, press on the accelerator and checks for presence of ground at pin 2B of control unit **N46**	OK ▶ ~~OK~~ ▶	Carry-out **TEST F** Carry-out **step E3**
E3 ENGINE THROTTLE MICROSWITCH CHECK - Apply multimeter prods to pins of microswitch **H47** and check for open circuit presence	OK ▶ ~~OK~~ ▶	Carry-out **step E4** Replace **microswitch H47**
E4 ENGINE THROTTLE MICROSWITCH CHECK - Press on accelerator pedal and check for presence of shortcircuit on microswitch **H47**	OK ▶ ~~OK~~ ▶	Carry-out **step E5** Replace **microswitch H47**

(Cont.d)

CHECKING THE CONTROL PUSH-BUTTONS OF SHOCK-ABSORBER CONTROL SYSTEM	TEST D

TEST STEPS		RESULTS	REMEDY
D5	CONTINUITY CHECK		
- Check for continuity between pin 4 of pushbutton panel **B67** and pin 8A of control unit **N46**		OK ▶	Replace pushbutton panel **B67**
		~~OK~~ ▶	Repair or replace **cables, as required**

End of test D

CHECKING THE ENGINE THROTTLE MICROSWITCH AND SWITCH ON GEARBOX	TEST E

TEST STEPS	RESULTS	REMEDY
E5 MICROSWITCH CHECK ON GEARBOX - Set shift lever to 1st or 2nd speed. Apply multimeter prods to pins of microswitch **H46** and check for open circuit presence	OK ▶ ~~OK~~ ▶	Carry-out **step E6** Replace **microswitch H46**
E6 MICROSWITCH CHECK ON GEARBOX - Set shift lever to 3rd, 4th, 5th or reverse speed. Apply multimeter prods to pins of microswitch **H46** and check for presence of a shortcircuit	OK ▶ ~~OK~~ ▶	Carry-out **step E7** Replace **microswitch H45**
E7 CONTINUITY CHECK - Check for continuity between microswitch **H46** (BLK wire) and ground **G53**	OK ▶ ~~OK~~ ▶	Carry-out **step E8** Repair or replace **cables, as required**
E8 CONTINUITY CHECK - Check for continuity between microswitch **H46** (GRY-BLK wire) and microswitch **H47** (GRY-BLK wire)	OK ▶ ~~OK~~ ▶	Carry-out **step E9** Repair or replace **cables, as required**

(Cont.d)

CHECKING THE ENGINE THROTTLE MICROSWITCH AND SWITCH ON GEARBOX	TEST E

TEST STEPS	RESULTS	REMEDY
E9 CONTINUITY CHECK - Check for continuity between microswitch **H47** (GRN-WHT wire) and pin 4 of connector **G151**	OK ▶ ~~OK~~ ▶	Carry-out **step E10** Repair or replace **cables, as required**
E10 CONTINUITY CHECK - Check for continuity between pin 4 of connector **G151** and connector **G252a** (GRN-WHT wire)	OK ▶ ~~OK~~ ▶	Carry-out **step E11** Repair or replace **cables, as required**
E11 CONTINUITY CHECK - Check for continuity between connector **G252a** (GRN-WHT wire) and pin 2B of control unit **N46**	OK ▶ ~~OK~~ ▶	Carry-out **TEST F** Repair or replace **cables, as required**

End of test E

CHECKING OIL MICROSWITCH	TEST F

TEST STEPS	RESULTS	REMEDY
F1 OIL MICROSWITCH CHECK - Apply multimeter prods to microswitch **L41** pins and read a resistance of about ~~1200~~ 2200 Ohm	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Replace **microswitch L41**
F2 OIL MICROSWITCH CHECK - Press on brake pedal and check for presence of short circuit between microswitch **L41** pins	OK ▶ ~~OK~~ ▶	Carry-out **step F3** Replace **microswitch L41**
F3 GROUNDING CHECK - Check for presence of ground on microswitch **L41** (BLK wire)	OK ▶ ~~OK~~ ▶	Carry-out **step F4** Restore connection between **microswitch L41 (BLK wire) and ground G53**
F4 CONTINUITY CHECK - Check for continuity between microswitch **L41** (YEL wire) and pin 3 of connector **G151**	OK ▶ ~~OK~~ ▶	Carry-out **step F5** Repair or replace **cables, as required**

(Cont.d)

CHECKING OIL MICROSWITCH	TEST F

TEST STEPS		RESULTS	REMEDY
F5	CONTINUITY CHECK		
- Check for continuity between pin 3 of connector **G151** and connector **G252a** (YEL wire)		OK ▶	Carry-out **step F6**
		~~OK~~ ▶	Repair or replace **cables, as required**
F6	CONTINUITY CHECK		
- Check for continuity between connector **G252a** (YEL wire) and pin 6C of control unit **N46**		OK ▶	Carry-out **TEST G**
		~~OK~~ ▶	Repair or replace **cables, as required**

End of test F

CHECKING THE SPEEDOMETER SENSOR	TEST G

TEST STEPS		RESULTS	REMEDY
G1	SENSOR SUPPLY CHECK		
- With ignition key set to "run", check for presence of 12V between pin 3C of instrument panel **C10** and ground		OK ▶	Carry-out **step G2**
		~~OK~~ ▶	Check **Instrument panel C10 supply by carrying out TEST A described in the section INSTRUMENT PANEL**
G2	SENSOR SUPPLY CHECK		
- With ignition key set to "run", check for presence of 12V between pin 3 of sensor **L17** and ground		OK ▶	Carry-out **step G3**
		~~OK~~ ▶	Restore wiring between **pin 3 of sensor L17, pin 14 of connector G151, and pin 3C of instrument panel C10**
G3	SPEEDOMETER SIGNAL CHECK		
- Place the vehicle on a lift platform so that the front wheels turn freely. - Start the engine and engage 1st speed. Have engine running at about 2000 rpm. - Check for approx 5V at pin 4C of instrument panel **C10**		OK ▶	Carry-out **step G5**
		~~OK~~ ▶	Carry-out **step G4**

(Cont.d)

CHECKING THE SPEEDOMETER SENSOR	TEST G

TEST STEPS	RESULTS	REMEDY
G4 SPEEDOMETER SIGNAL CHECK - In the same condition as in step G3, check for presence of approx 5V between pin 2 of sensor **L17** and ground	OK ▶ ~~OK~~ ▶	Restore wiring among **pin 2 of sensor L17, pin 18 of connector G151 and pin 4C of instrument panel C10** Replace **sensor L17**
G5 SPEEDOMETER SIGNAL CHECK - In the same condition as in step G3, check for presence of approx 5V between pin 1A of instrument panel **C10** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step G6** Replace **instrument panel C10**
G6 SPEEDOMETER SIGNAL CHECK - In the same condition as in step G3, check for presence of approx 5V between pin 4A of control unit **N46** - and ground	OK ▶ ~~OK~~ ▶	Replace **control unit N46** Restore wiring among **pin 4A of control unit N46, connector G252c (BRN-WHT wire) and pin 1A of instrument panel C10**

End of test G

ONE OR MORE WARNING LAMPS INOPERATIVE	TEST H

TEST STEPS	RESULTS	REMEDY
H1 FUSE CHECK - Check for fuse **F14** integrity	OK ▶ ~~OK~~ ▶	Carry-out **step H2** Replace **fuse F14**
H2 12V CHECK - Check for presence of 12V between pins 4S of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step H4** Carry-out **step H3**
H3 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Replace **fuse box G1** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
H4 12V CHECK - Check for presence of 12Vbetween pin 6 of pushbutton panel **B67** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step H5** Restore wiring between **pin 6 of pushbutton panel B67 and pin 4S of fuse box G1**

(Cont.d)

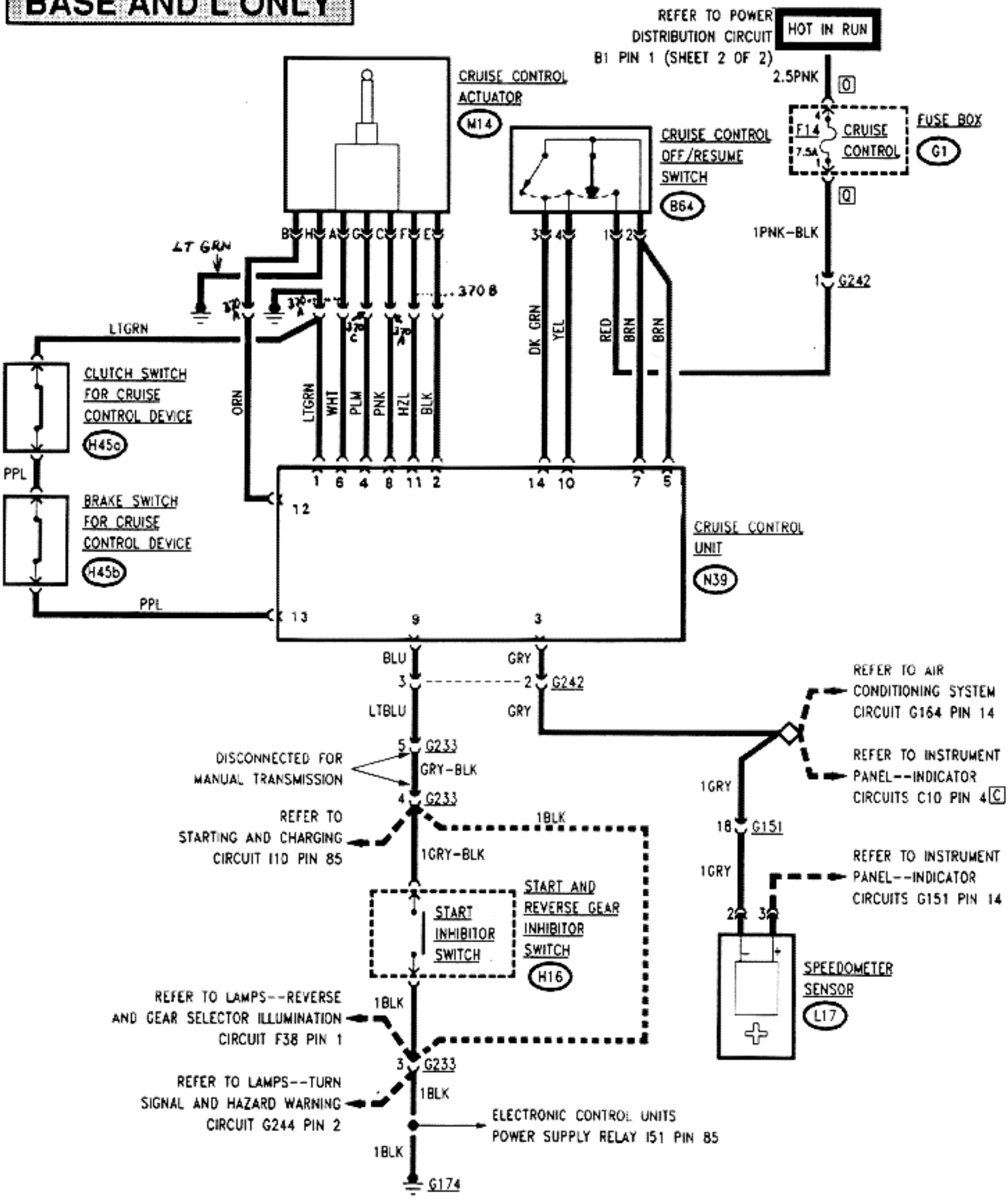
ONE OR MORE WARNING LAMPS INOPERATIVE	TEST H

TEST STEPS	RESULTS	REMEDY
H5 WARNING LAMPS CHECK - Check leds of pushbutton panel **B67** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step H6** Replace **defective leds**
H6 CONTINUITY CHECK - Check for continuity between: • pin 2 of push-button panel **B67** and pin 2A of control unit **N46**, through connector **G252b**. • pin 3 of push-button panel **B67** and pin 5A of control unit **N46**, through connector **G252b** • pin 5 of push-button panel **B67** and pin 10A of control unit **N46**, through connector **G252b**	OK ▶ ~~OK~~ ▶	Replace **push-button panel B67 or control unit N46** Repair or replace **cables, as required**

End of test H

CRUISE CONTROL

BASE AND L ONLY



GENERAL (BASE and L only)

The CRUISE CONTROL is an electro-pneumatic device which allows the vehicle to automatically maintain a constant speed, independently from road characteristics. The cruise control system is operated by a switch located near steering wheel. For safety purpose, the system cannot be engaged if the speed is lower than 35 mph. The system is provided with two switches:

- three-position pushbution switch ON/OFF/RESUME-ACCEL.

- pushbutton switch SET/COAST.

When the switch is set to OFF position, the system is disengaged. To activate the system, move the switch to ON position. When the required speed is reached, depress SET/COAST.
In such operating mode, the vehicle maintains automatically a constant speed, regardless of road and traffic conditions.
The CRUISE CONTROL system will be disengaged if either the brake pedal (vehicles equipped with automatic gear) or clutch pedal (vehicles equipped with manual gear) is depressed. To resume the previously selected speed, it is necessary to move ON/OFF/RESUME-ACCEL switch to RESUME-ACCEL, and then release it.

NOTE

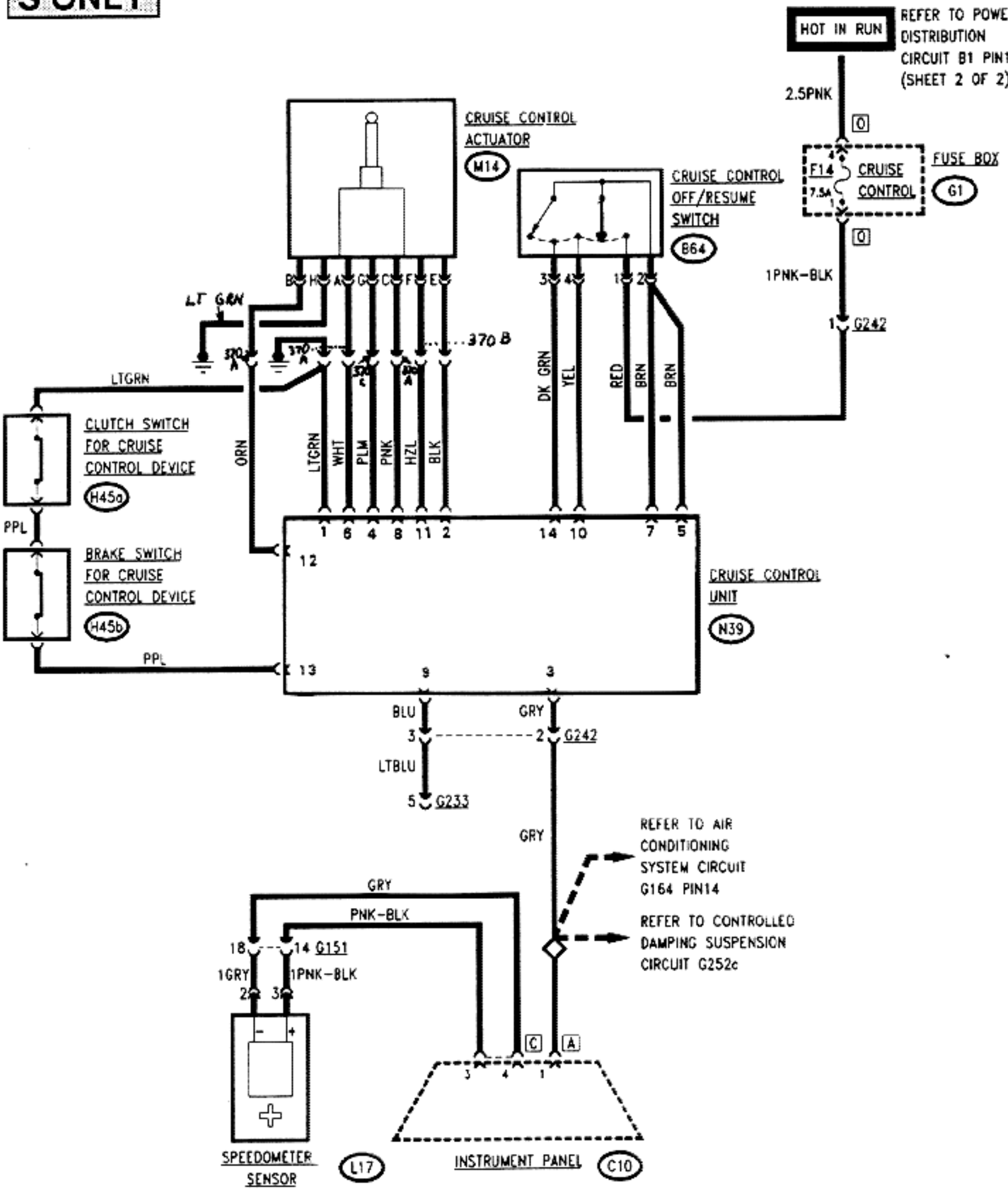
On vehicles equipped with automatic transmission, the system is automatically disengaged if transmission lever is inadvertently set to N and P positions.

During trip it is possible to increase or reduce the selected speed as for the following procedures:
to increase speed, accelerate until the new required speed is reached, then depress SET/COAST pushbutton, or set switch to RESUME-ACCEL position then release it: the speed increases of 1 mph approximately per each impulse.
If the switch is maintained depressed, the speed increases continuously until switch is released.
To decrease speed, depress SET/COAST pushbutton until the new desired speed reached then release it.
The system is powered when ignition key is in "run" position, and is protected by fuse **F14** (7.5A) CRUISE CONTROL in fuse box **G1**.

FUNCTIONAL DESCRIPTION

The 12V current is supplied, through fuse **F14** in fuse box **G1**, to cruise control switch **B64**, which powers the electronic control unit regardless of its position.
The cruise control unit **N39** manages cruise control actuator **M14** depending onswitches position.
The cruise control unit **N39** continuously controls the speed by means of speedometer control **L17**, and consequently manages actuator **M14**.
If either brake pedal (vehicles equipped with automatic gear) or clutch pedal (vehicles equipped with manual gear) is depressed, the relevant switch **H45** opens and cruise control unit **N39** disengages the system.
On vehicles equipped with automatic gear, if the gear lever is inadvertently moved to P or N position, the start and reverse gear inhibitor switch **H16** closes and cruise control unit **N39** disengages the system.

S ONLY



GENERAL (S only)

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- three-position pushbutton switch ON/OFF/RESUME-ACCEL.

- pushbutton switch SET/COAST.

When the switch is set to OFF position, the system is disengaged. To activate the system, move the switch to ON position. When the required speed is reached, depress SET/COAST.
In such operating mode, the vehicle maintains automatically a constant speed, regardless of road and traffic conditions.
The CRUISE CONTROL system will be disengaged if either the brake pedal (vehicles equipped with automatic gear) or clutch pedal (vehicles equipped with manual gear) is depressed. To resume the previously selected speed, it is necessary to move ON/OFF/RESUME-ACCEL switch to RESUME-ACCEL, and then release it.
During trip it is possible to increase or reduce the selected speed as for the following procedures:
to increase speed, accelerate until the new required speed is reached, then depress SET/COAST pushbutton, or set switch to RESUME-ACCEL position then release it: the speed increases of 1 mph approximately per each impulse.
If the switch is maintained depressed, the speed increases continuously until switch is released.
To decrease speed, depress SET/COAST pushbutton until the new desired speed reached then release it.
The system is powered when ignition key is in "run" position, and is protected by fuse **F14** (7.5A) CRUISE CONTROL in fuse box **G1**.

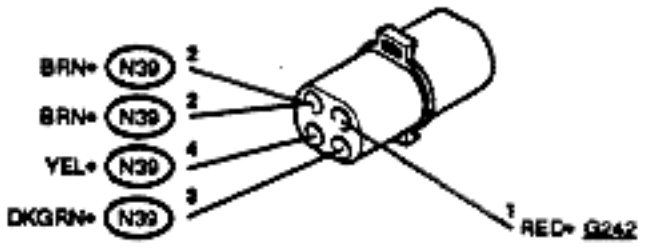
FUNCTIONAL DESCRIPTION

The 12V current is supplied, through fuse **F14** in fuse box **G1**, to cruise control switch **B64**, which powers the electronic control unit regardless of its position.
The cruise control unit **N39** manages cruise control actuator **M14** depending on switches position.
The cruise control unit **N39** continuously controls the speed by means of speedometer control **L17**, and consequently manages actuator **M14**.
If either brake pedal (vehicles equipped with automatic gear) or clutch pedal (vehicles equipped with manual gear) is depressed, the relevant switch **H45** opens and cruise control unit **N39** disengages the system.

TROUBLESHOOTING TABLE

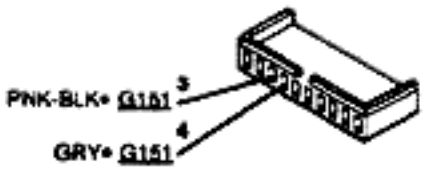
FAULT TYPE	FAILED COMPONENT				
	F14 FUSE	B64 SWITCH	L17 SENSOR	M14 ACTUATOR	N39 CONTROL UNIT
SYSTEM INOPERATVE	●	●			
RES-ACCEL CONTROL INOPERATIVE		●			●
SYSTEM FAILS TO DE-ACTIVATE WHEN BRAKE PEDAL (OR CLUTCH PEDAL ON CARS EQUIPPED WITH MANUAL TRANSMISSION) IS DEPRESSED					●
SET/COAST CONTROL INOPERATIVE		●			●
RELIEF SERVO-VALVE INOPERATIVE				●	●
COMPENSATING SERVO-VALVE INOPERATIVE				●	●
LOSS OF SPEEDOMETER SIGNAL			●		

Cruise control OFF/RESUME switch — B64

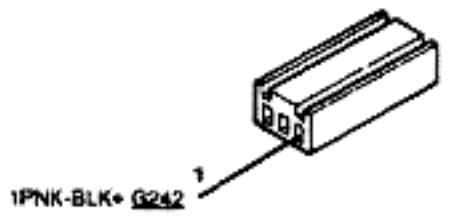


Instrument panel — C10 C

S ONLY

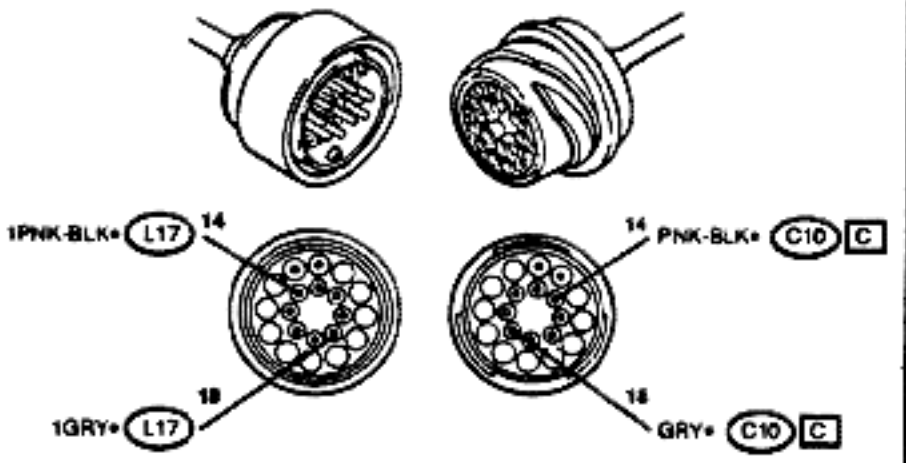


Fuse box — G1 Q



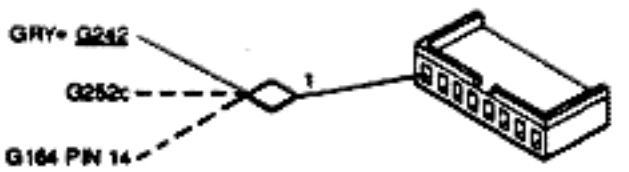
Connector, circuit board to engine utilities wiring — G151

S ONLY

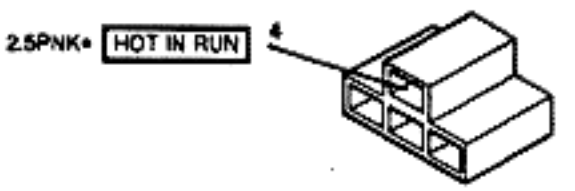


Instrument panel — C10 A

S ONLY

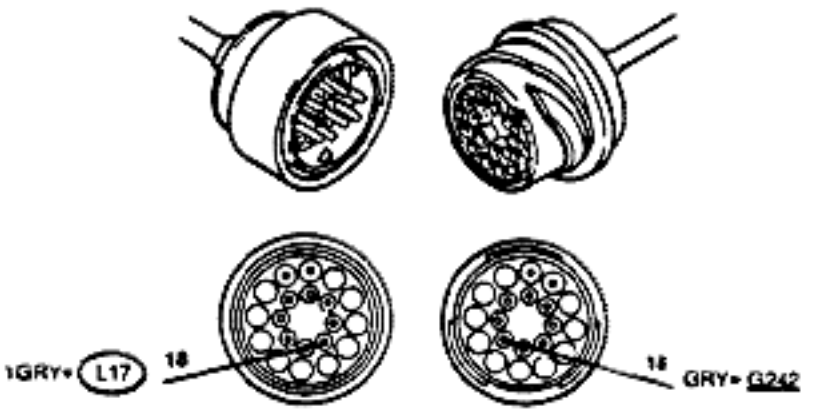


Fuse box — G1 O



Connector, circuit board to engine utilities wiring — G151

BASE AND L ONLY



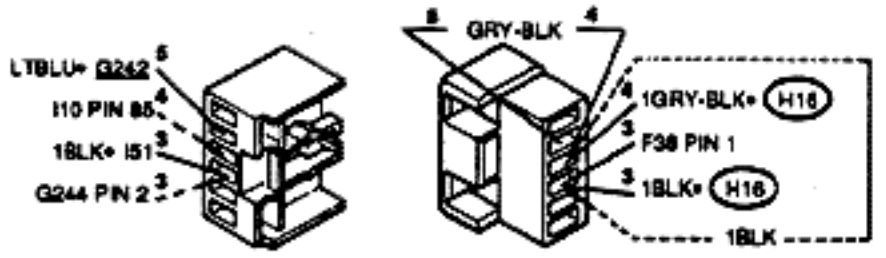
Steering wheel column support ground — G174

BASE AND L ONLY

(Cont.d)

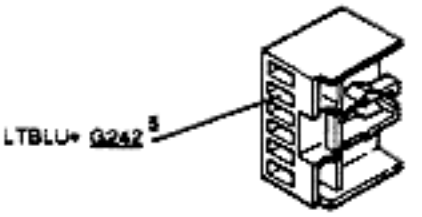
Connector, circuit board to automatic gear lever wiring	G233

BASE AND L ONLY



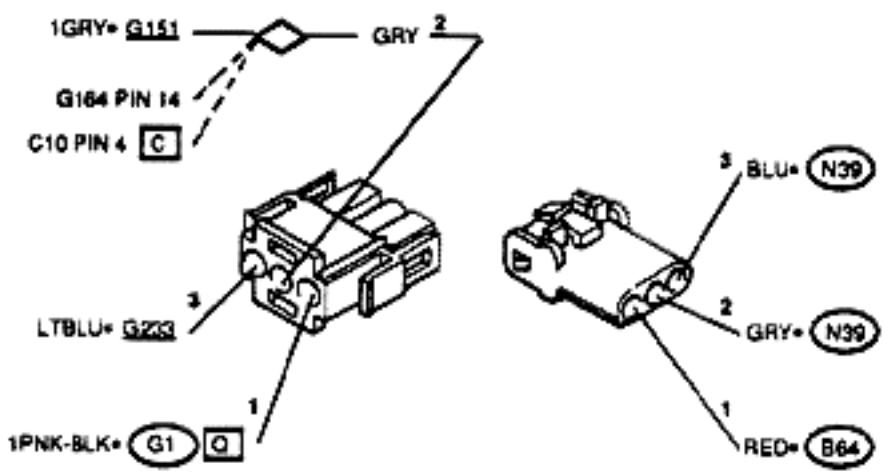
Connector, circuit board to automatic gear lever wiring	G233

S ONLY



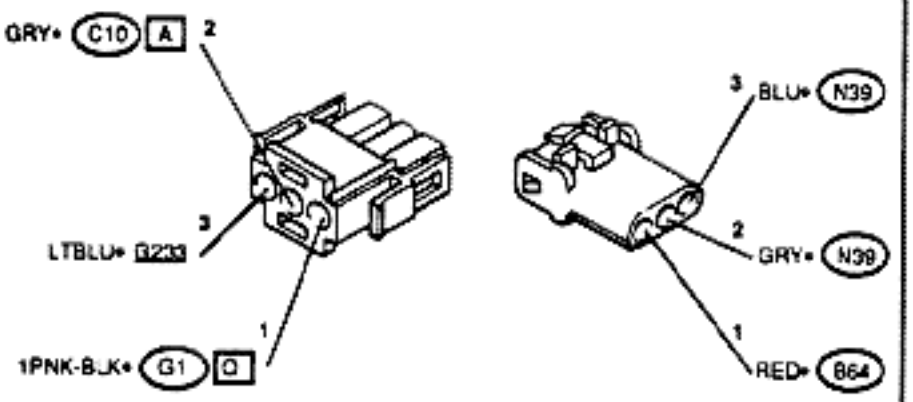
Board wiring to cruise control wiring connector	G242

BASE AND L ONLY

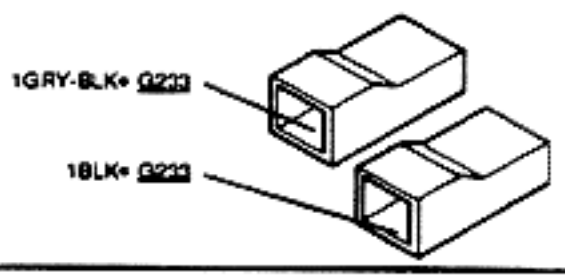


Board wiring to cruise control wiring connector	G242

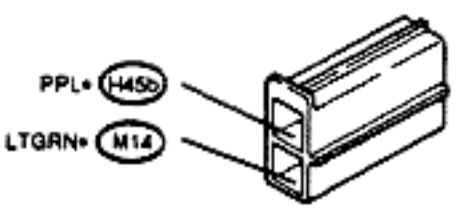
S ONLY



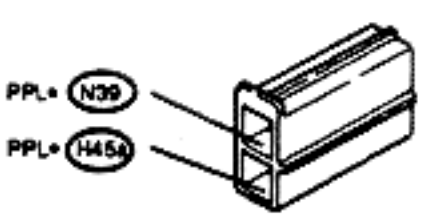
Start inhibitor switch	H16



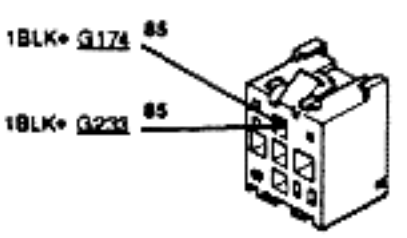
Clutch switch for cruise control device	H45a



Brake switch for cruise control device	H45b



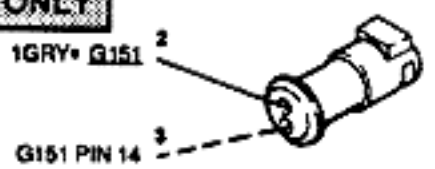
Electronic control units power supply relay	I51



(Cont.d)

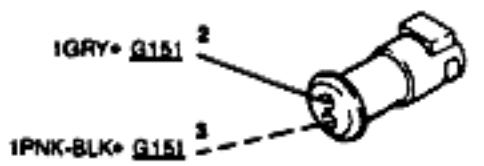
Speedometer sensor — L17

BASE AND L ONLY

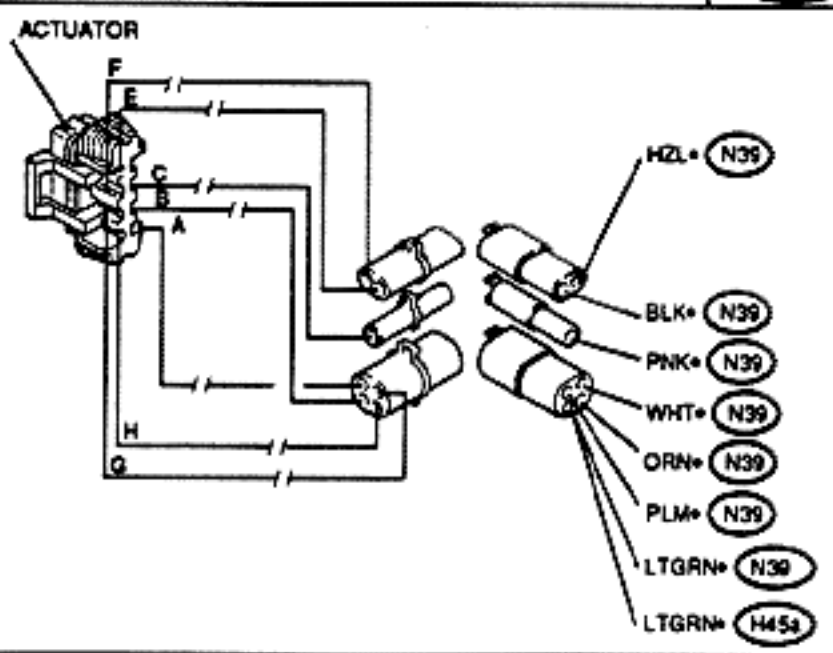


Speedometer sensor — L17

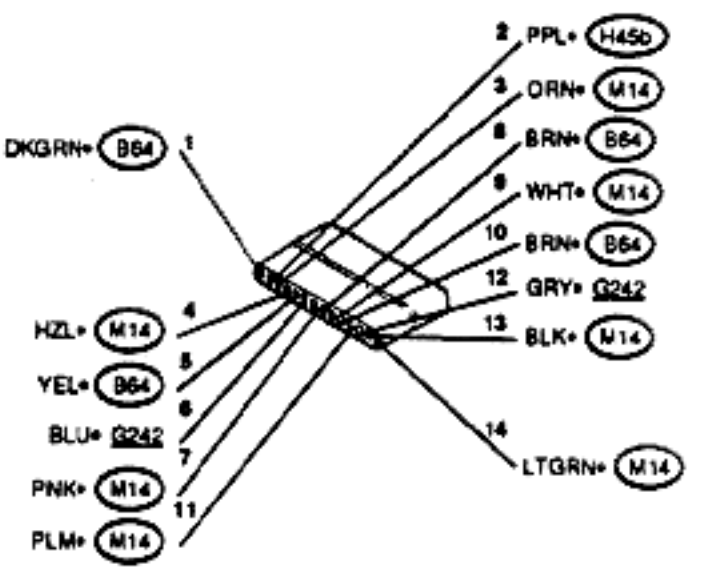
S ONLY



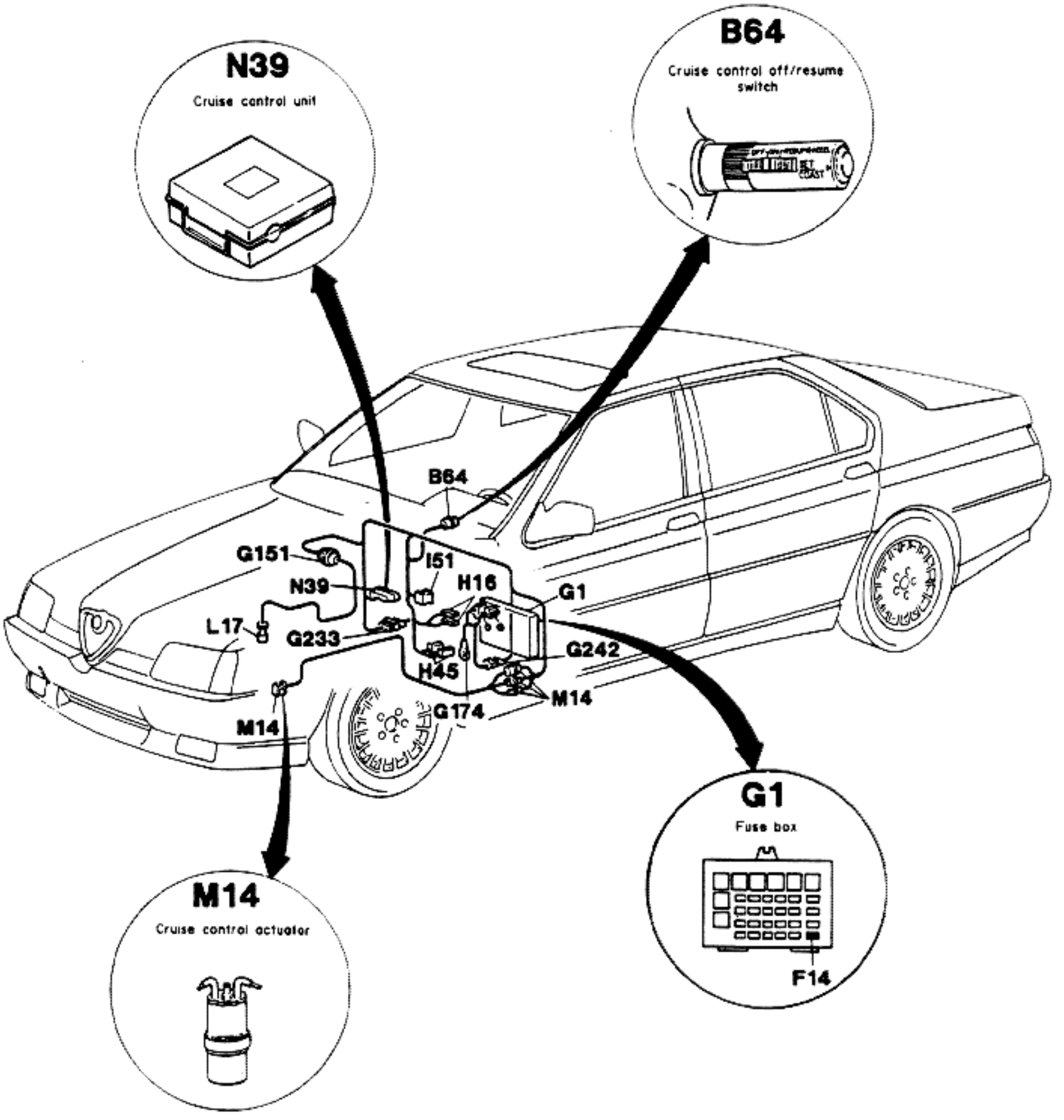
Cruise control actuator — M14



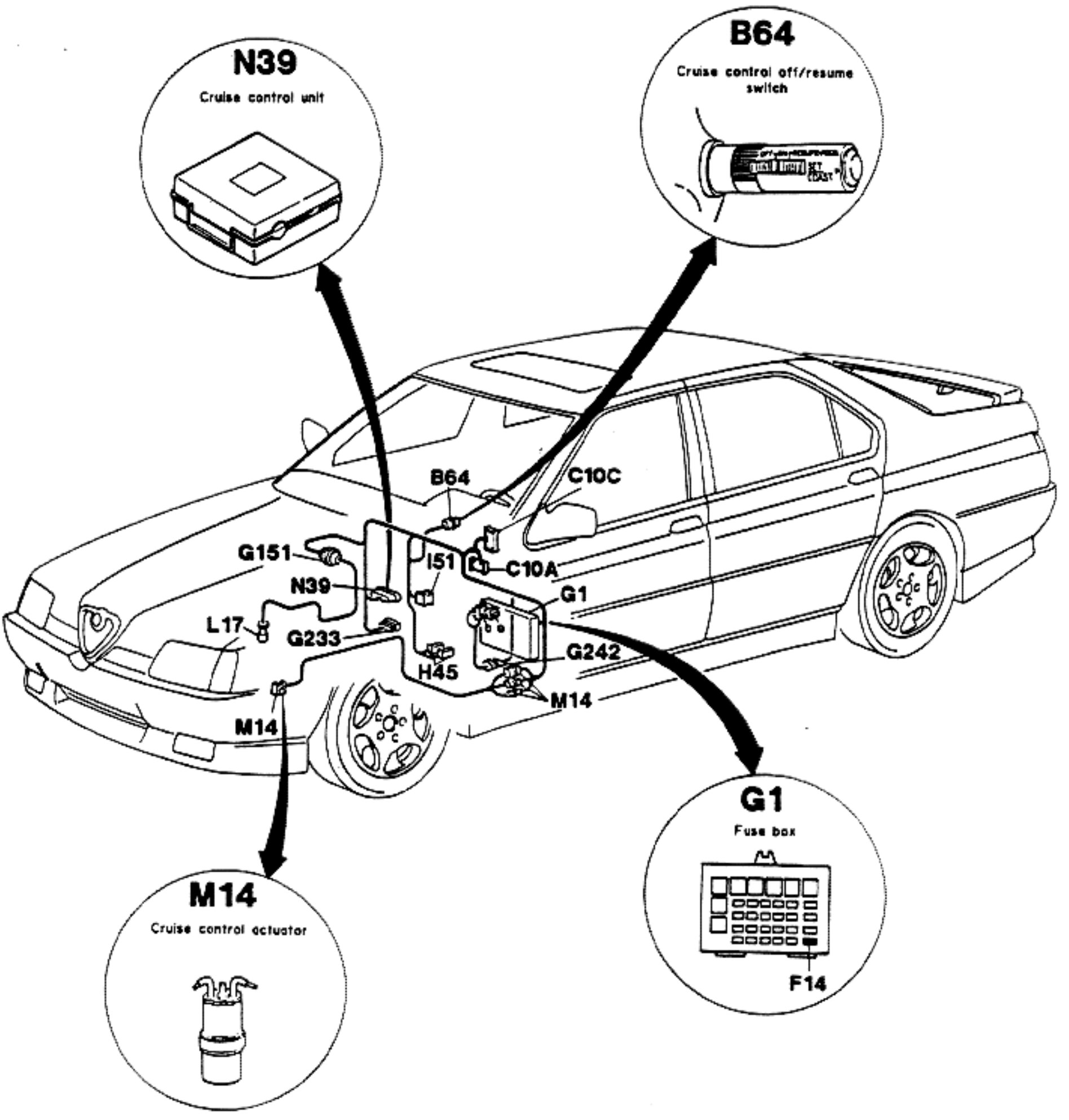
Cruise control unit — N39



BASE AND L ONLY



S ONLY



#1 - Cruise Control - Volt Test - ECU Connected - Car Static

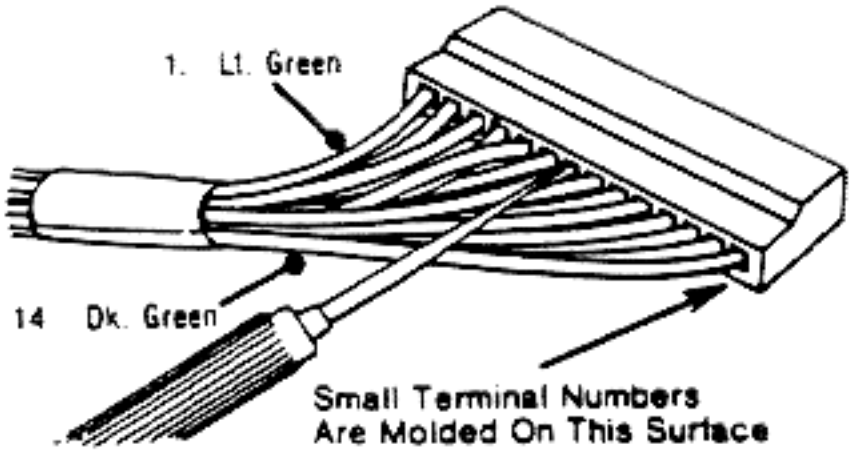
Note: Probe the wires at the cruise control connector from the back of the connector only, as pictured below. Probing the wires from the front can damage the terminal contacts.

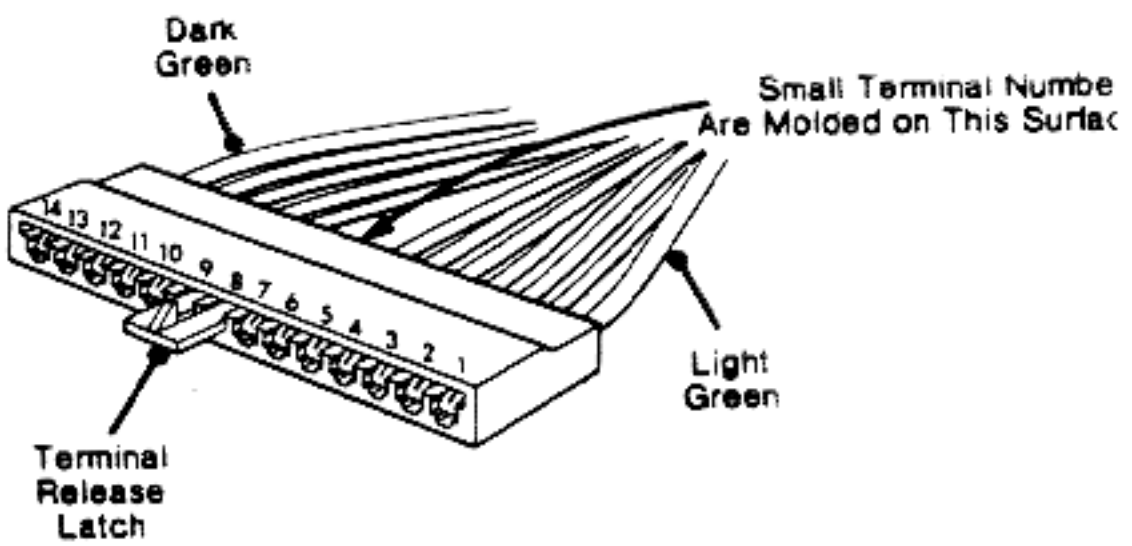
MEASUREMENTS IN THIS SECTION ARE TAKEN WITH THE ECU CONNECTED - CAR STATIONARY

Pin 3 - Gray Wire - Speedo Input	Read 5 volts w/key "on".	Record reading ____
Pin 1 - Light Green - ECU Ground	Read 0 volts w/key "off".	Record reading ____

Pin 5 - Brown Wire - Power Feed	Measurement between these two points should read 12 volts / cruise "on".	Record reading ____
Pin 1 - Light Green - ECU Ground	0 volts cruise "off".	Record reading ____

Pin 7 - Brown Wire - Power Feed	Measurement between these two points should read 12 volts / cruise "on".	Record reading ____
Pin 1 - Light Green - ECU Ground	0 volts cruise "off".	Record reading ____





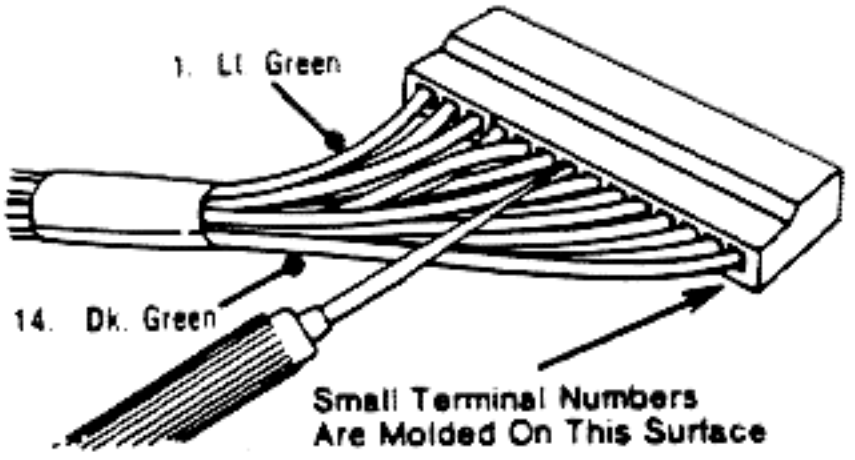
(Cont.d)

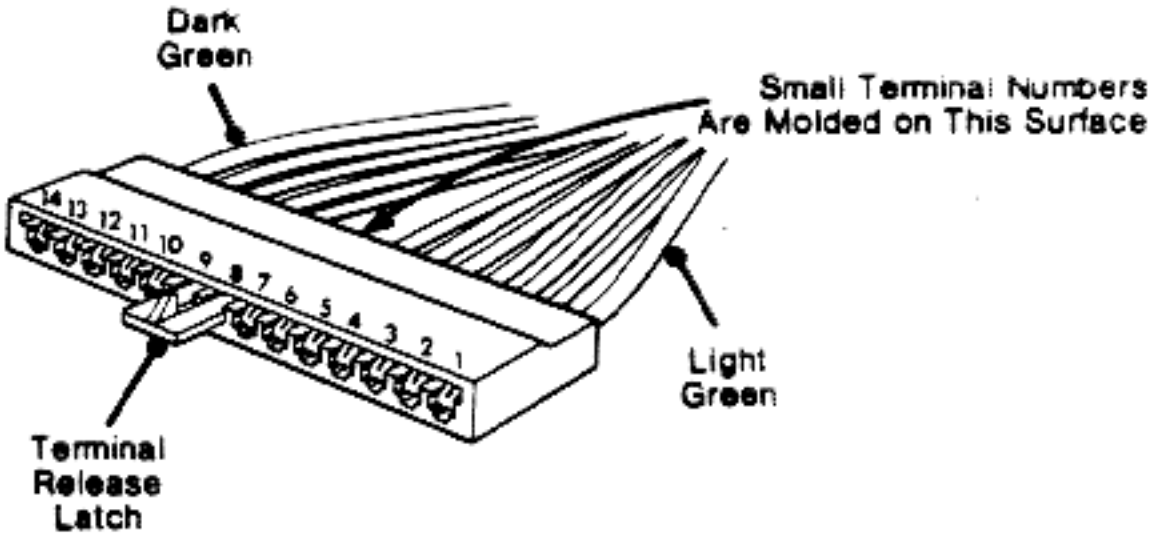
#2 - Cruise Control - Volt Test - ECU Connected - In Motion

Note: Probe the wires at the cruise control connector from the back of the connector only, as pictured below. Probing the wires from the front can damage the terminal contacts.

MEASUREMENTS IN THIS SECTION ARE TAKEN WITH THE ECU CONNECTED AND THE CAR IN MOTION - CRUISE ON & SET BUTTON PRESSED

Pin 4 - Plum Wire - Charge Valve Pin 1 - Light Green - ECU Ground	In motion - cruise "on" - Set button activated - Read a fluctuating signal any where between 0.1 & 12 volts. Record readings _____
Pin 6 - White Wire - Vent Valve Pin 1 - Light Green - ECU Ground	In motion - cruise "on" - Set button activated - Read a fluctuating signal any where between 9 & 12 volts. Record readings _____
Pin 8 - Pink Wire - Dump Valve Pin 1 - Light Green - ECU Ground	In motion - cruise "on" - Set button activated - Read 12 volts. In motion - cruise "off" - Read 0 volts. Record readings here - "on" _____ & "off"



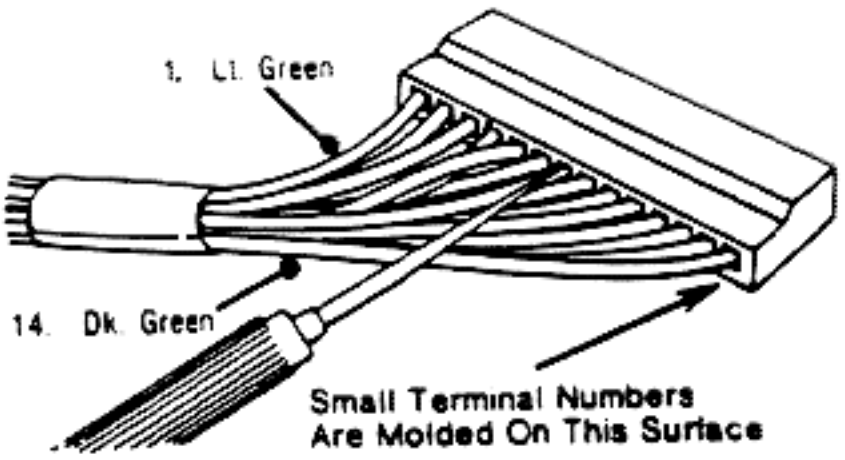


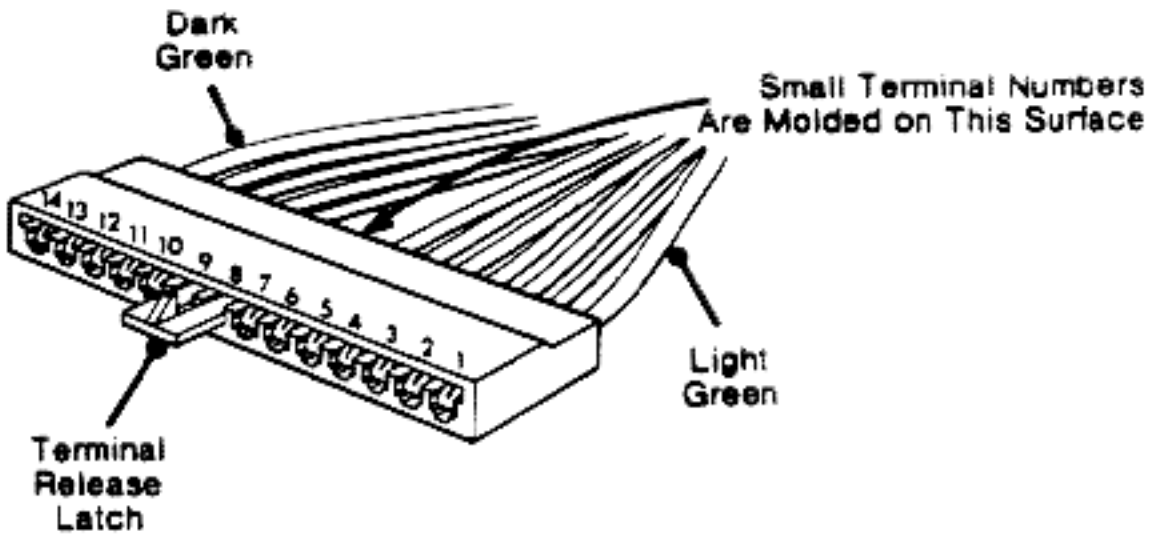
#3 - Cruise Control - Volt Test - ECU Disconnected - Car Static

Note: Probe the wires at the cruise control connector from the back of the connector only, as pictured below. Probing the wires from the front can damage the terminal contacts.

MEASUREMENTS IN THIS SECTION ARE TAKEN WITH THE ECU DISCONNECTED - CAR STATIONARY

Pin 9 - Blue Wire - In Gear Input Sw. Pin 1 - Light Green - ECU Ground	Auto. Trans. only - Read 12 volts in R, D, 3,2 or 1 with the key "ON", Cruise "OFF". Record reading _____
Pin 10 - Yellow Wire - Trigger Input Pin 1 - Light Green - ECU Ground	Cruise switch "on" or "off" - Read 0 Volts Record reading _____ Resume/accel switch "on" or set button pressed - Read 12 volts. Record reading _____
Pin 14 - Green Wire - Set Signal Pin 1 - Light Green - ECU Ground	Cruise "off" - 0 volts. Record reading _____ Cruise "on" - 12 volts. Record reading _____ Cruise "on"/ Set Button pressed - 0 volts. Record reading _____ Cruise "on"/ Resume/Accel Button pressed - 12 volts. Record reading _____



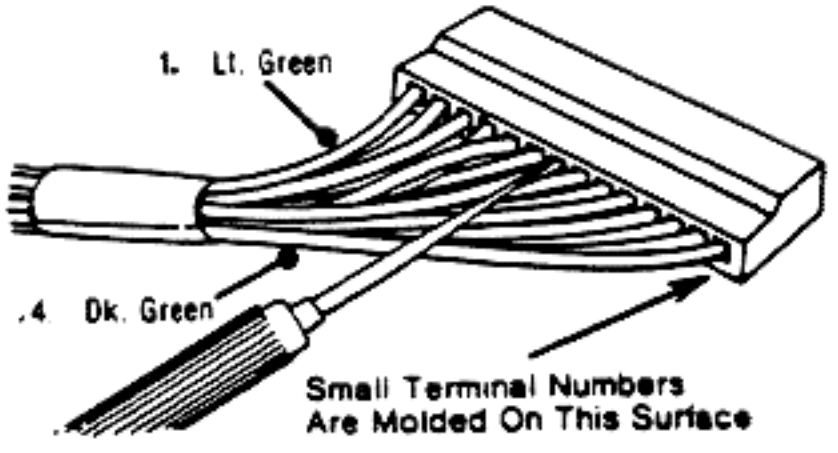


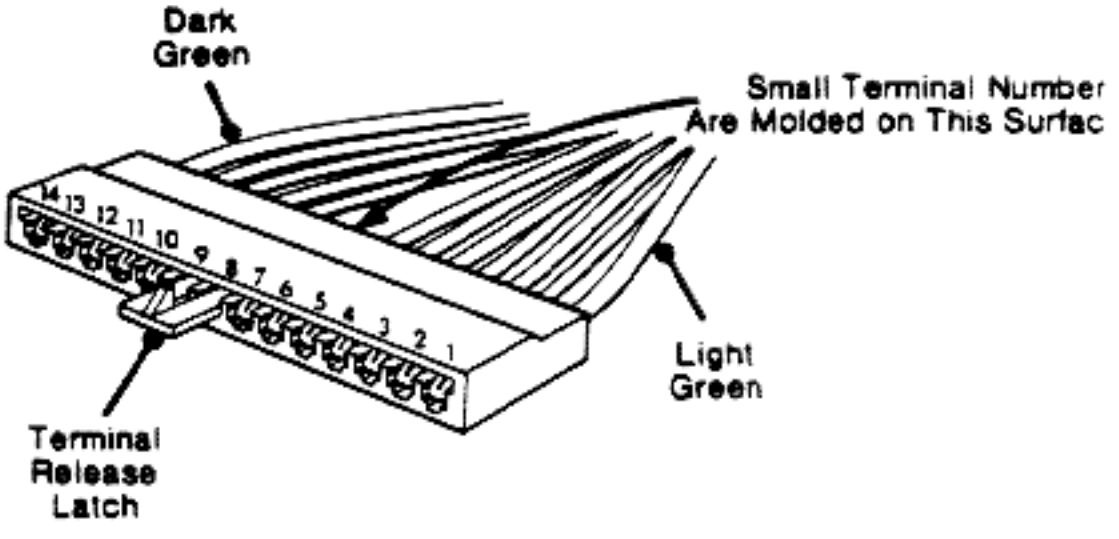
#4 - Cruise Control - Ohm Meter Tests - ECU Disconnected

Note: Probe the wires at the cruise control connector from the back of the connector only, as pictured below. Probing the wires from the front can damage the terminal contacts.

MEASUREMENTS IN THIS SECTION ARE TAKEN WITH THE ECU DISCONNECTED KEY OFF - USE OHM METER SET TO APPROPRIATE SCALE

Pin 1 - Light Green - ECU Ground Any Suitable Clean Chassis Ground	Measurement between these two points should read less than 2 Ohms. Record reading _____
Pin 2 - Black Wire - Throttle Feedback Pin 11 - Tan Wire - Throttle Feedback	Measurement between these two points should indicate approximately 500 Ohms. Record reading _____
Pin 4 - Plum Wire - Charge Valve Pin 12 - Orange Wire - Valve Common	Measurement between these two points should indicate approximately 50 Ohms. Record reading _____
Pin 6 - White Wire - Vent Valve Pin 12 - Orange Wire - Valve Common	Measurement between these two points should indicate approximately 50 Ohms. Record reading _____
Pin 8 - Pink Wire - Dump Valve Pin 1 - Light Green - ECU Ground	Measurement between these two points should indicate approximately 50 Ohms. Record reading _____
Pin 9 - Blue Wire - In Gear Input Sw. Pin 1 - Light Green - ECU Ground	5 Speed - Open circuit. Record reading _____ Auto. Trans. - Open circuit, in gear and closed circuit in Park or Neutral. Record reading _____
Pin 13 - Purple Wire - Brake / Clutch Pin 1 - Light Green - ECU Ground	Read less than 2 Ohms pedal(s) not depressed and open circuit when pedal(s) is depressed. Record reading _____





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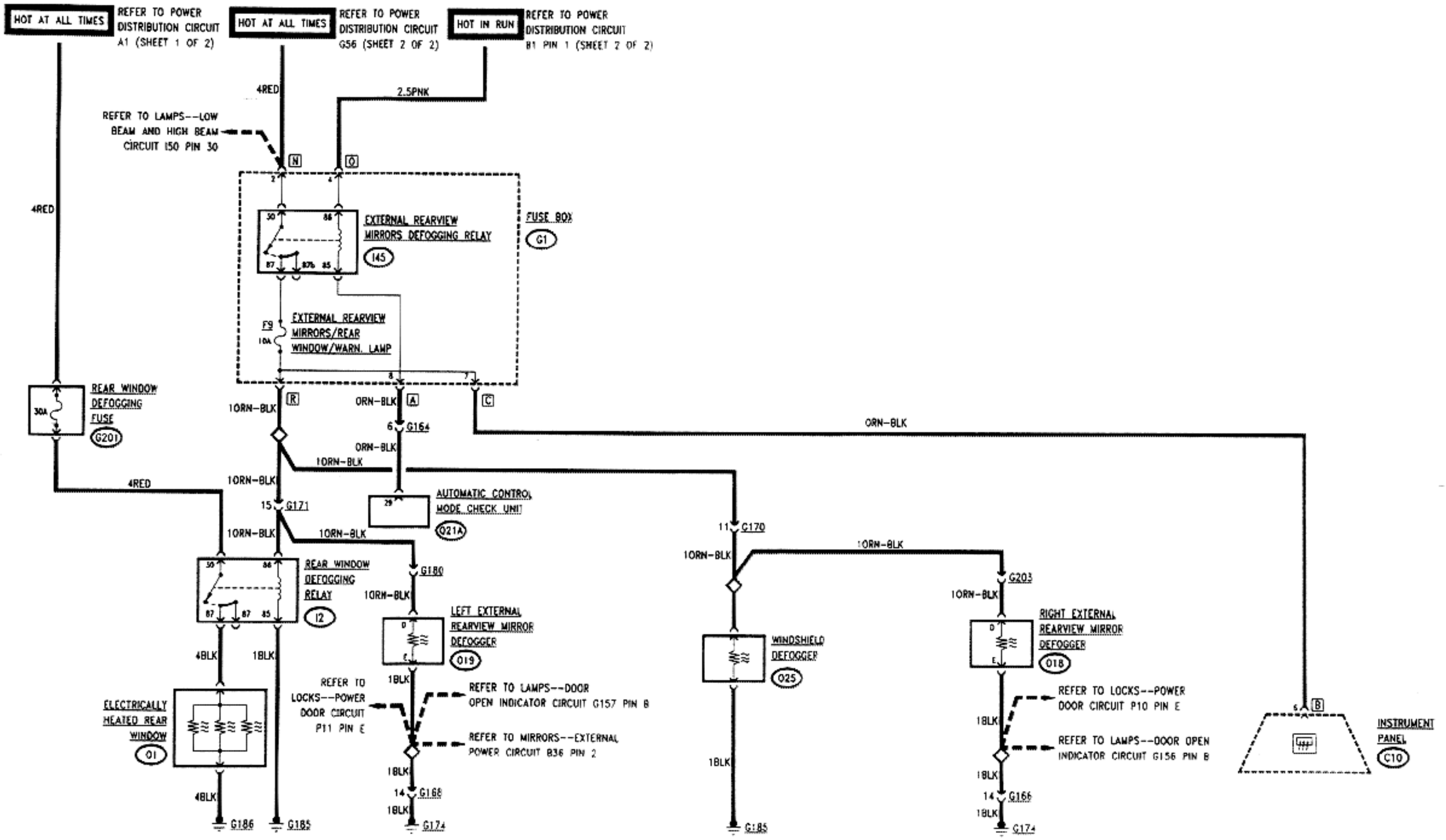
DEFOGGER - - REAR WINDOW, FRONT WINDSHIELD, EXTERNAL MIRRORS



GENERAL

The rear window, the windshield and the external rearview mirrors incorporate an electric conductor that, when energized, heats the surrounding surface with heat produced by the circuit resistance, thus providing defogging of the affected surface.
Defogging of the rear window, windshield and mirrors can be activated manually or automatically.
In the manual mode, defogging is activated by pressing the relevant switch on the air conditioning control panel: the system will remain activated for a period of ~~10~~ 20 minutes.
Subsequent pressure on the switch will re-activate the system for further ~~5~~ 10 minutes only if the previous ~~10~~ 20 minutes period is expired; otherwise, pressure on the switch turns defogging off. Energization of the defogging system is indicated by the illumination of an indicator lamp on the instrument panel.
In the automatic mode, defogging of the rear window, windshield and mirrors activates when the outside ambient temperature decreases below a pre-set value.
The defogging system is protected by fuses, as follows:

- **F9** fuse (10A) EXTERNAL REARVIEW MIRRORS/ REAR WINDOW/LAMP in the fuse box **G1**.
- **G201** free fuse (30A) REAR WINDOW DEFOGGING.

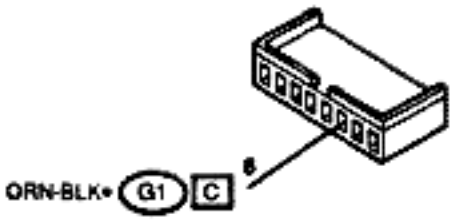
OPERATIONAL DESCRIPTION

The external rearview mirrors defogging relay **I45** in the fuse box **G1** is connected to the 12V battery power when the ignition key is set to "run".
The relay **I45** energizes when the automatic control mode check unit **Q21A** closes the circuit to ground.
This condition is met by pressing the defogging switch on the air condition switch board, or automatically when the outside ambient temperature decreases below a pre-set value.
12V from the battery are applied to fuse **F9** through the relay contacts, and then to the indicator lamp on the instrument panel, to the left and right mirrors defogger **O19** and **O18**, and to the windshield defogger **O25**.
Furthermore, the 12V power from fuse **F9** is supplied to the coil of the rear window defogger relay **I2**.
Energization of relay **I2** supplies electric power to the electrically heated rear window **O1** through the free fuse **G201** and the relay contacts.

TROUBLESHOOTING TABLE

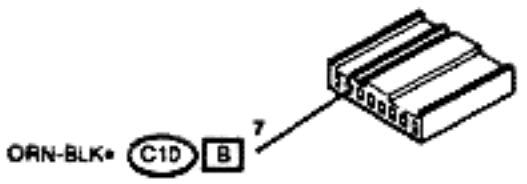
FAULT TYPE	FAILED COMPONENT								
	F9 FUSE	G201 FUSE	I2 RELAY	I45 RELAY	O1 DEFOGGER	O18 DEFOGGER	O19 DEFOGGER	O25 DEFOGGER	Q21A CONTROL UNIT
ALL DEFOGGERS INOPERATIVE	●			●					●
REAR WINDOW DEFOGGER INOPERATIVE		●	●		●				
LEFT REARVIEW MIRROR DEFOGGER INOPERATIVE							●		
RIGHT REARVIEW MIRROR DEFOGGER INOPERATIVE						●			
WINDSHIELD DEFOGGER INOPERATIVE								●	

Instrument panel	C10 B

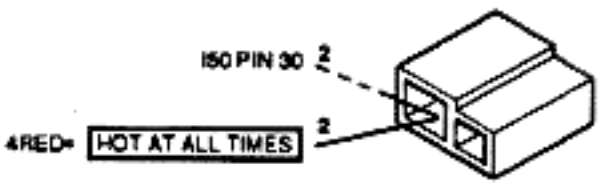


Fuse box	G1 A

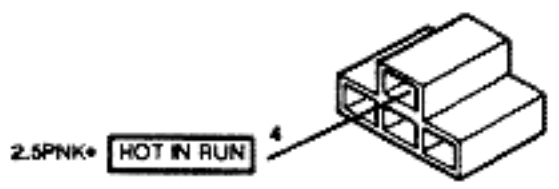
Fuse box	G1 C



Fuse box	G1 N

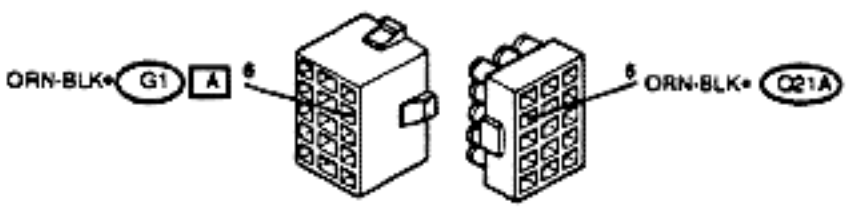


Fuse box	G1 O

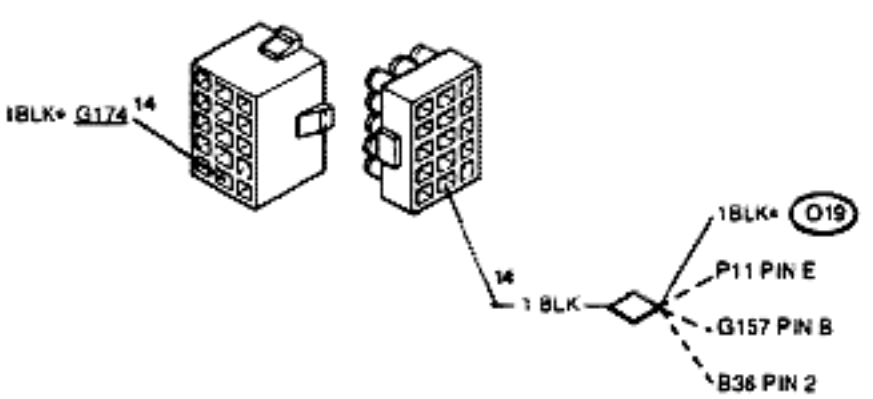


Fuse box	G1 R

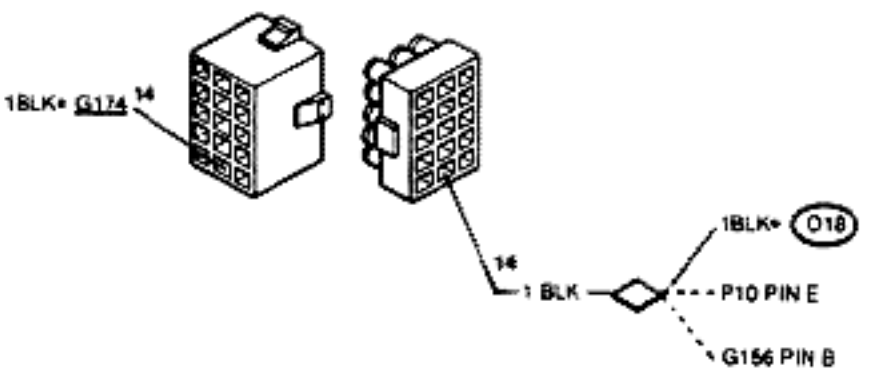
Connector, circuit board to air conditioning wiring	G164



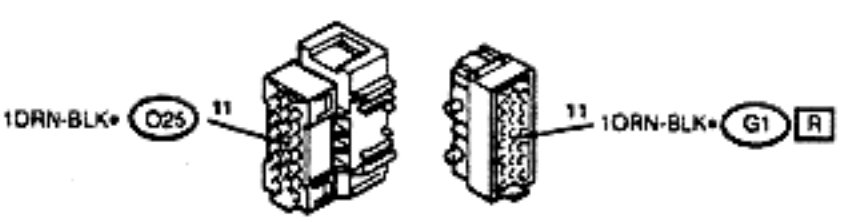
Connector, front doors to left front door wiring	G168



Connector, front doors to right front door wiring	G166



Connector, circuit board to right rear wiring	G170



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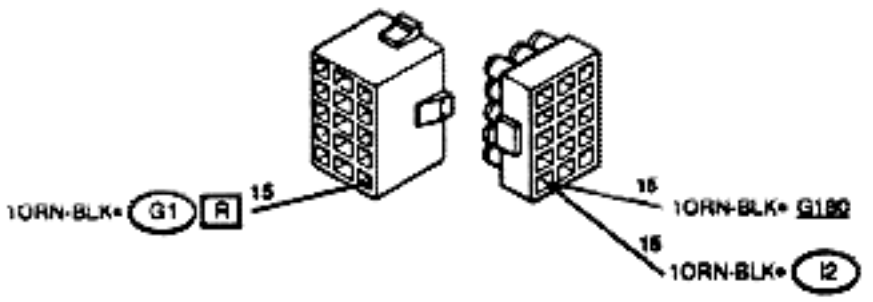
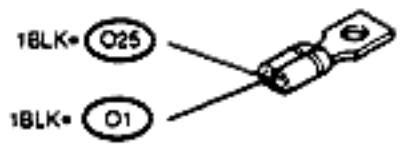
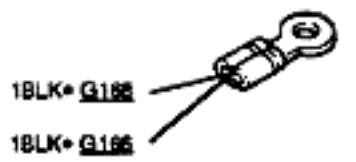
Connector, circuit board to left rear wiring	G171



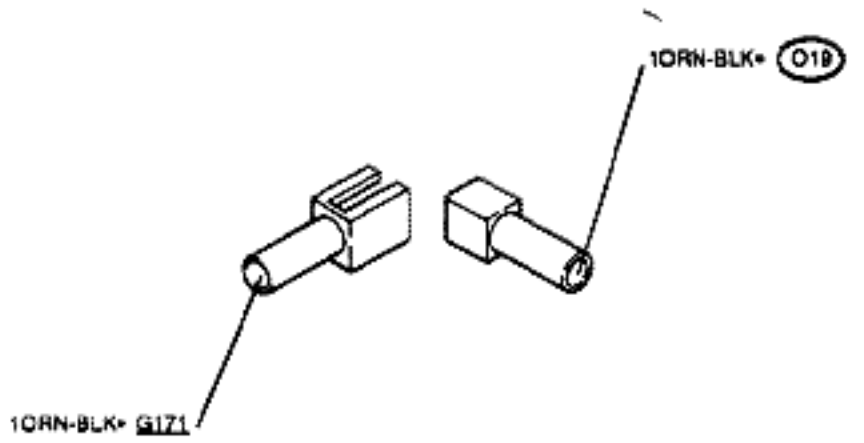
Trunk left side ground	G185



Steering wheel column support ground	G174

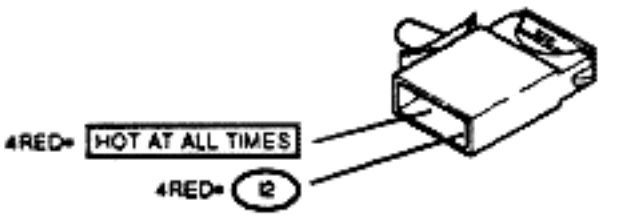


Connector, left rear wiring to front doors	G180

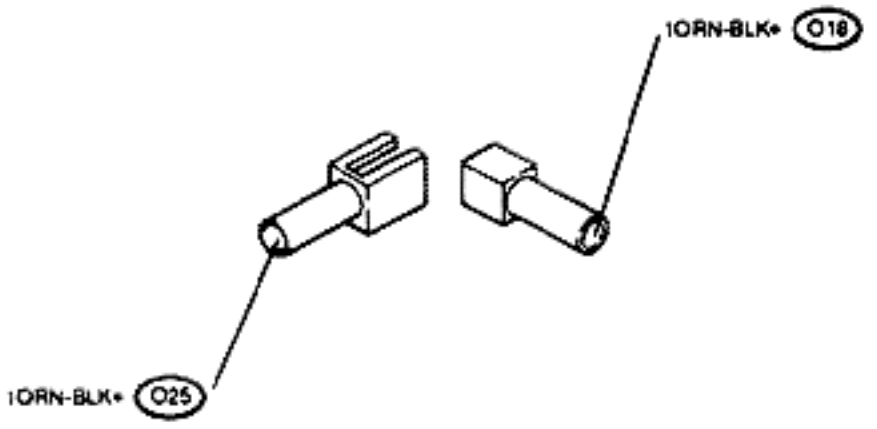


Trunk right side ground	G186

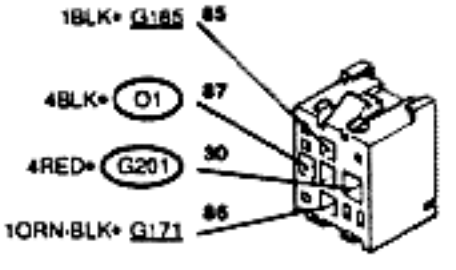
Rear window defogging fuse	G201



Connector, right rear wiring to front door wiring	G203

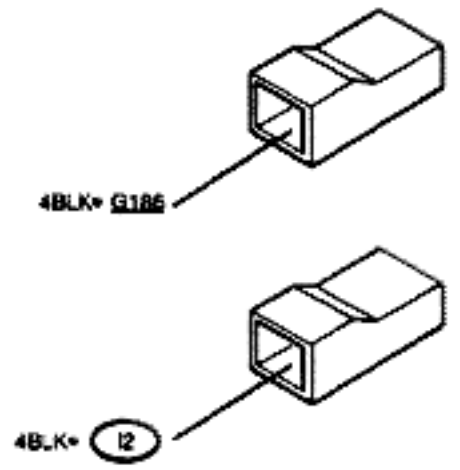


Rear window defogging relay	I2

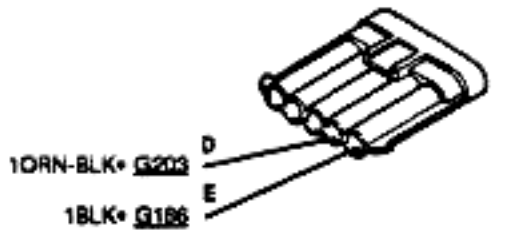


(Cont.d)

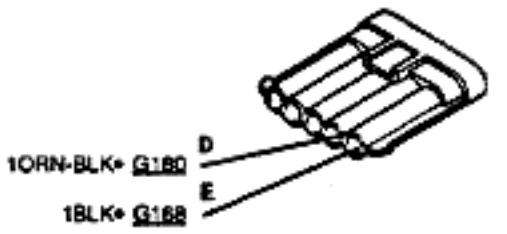
Electrically heated rear window — 01



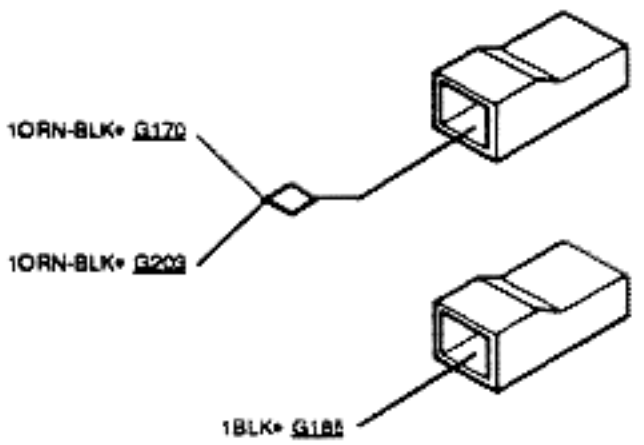
Right external rearview mirrors defogger — 018



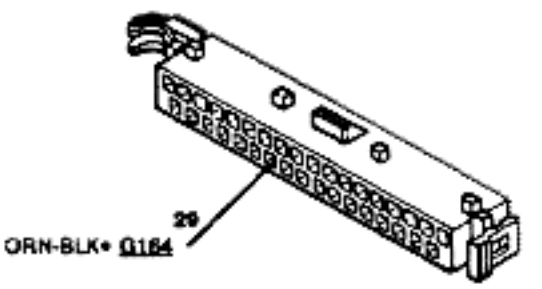
Left external rearview mirrors defogger — 019

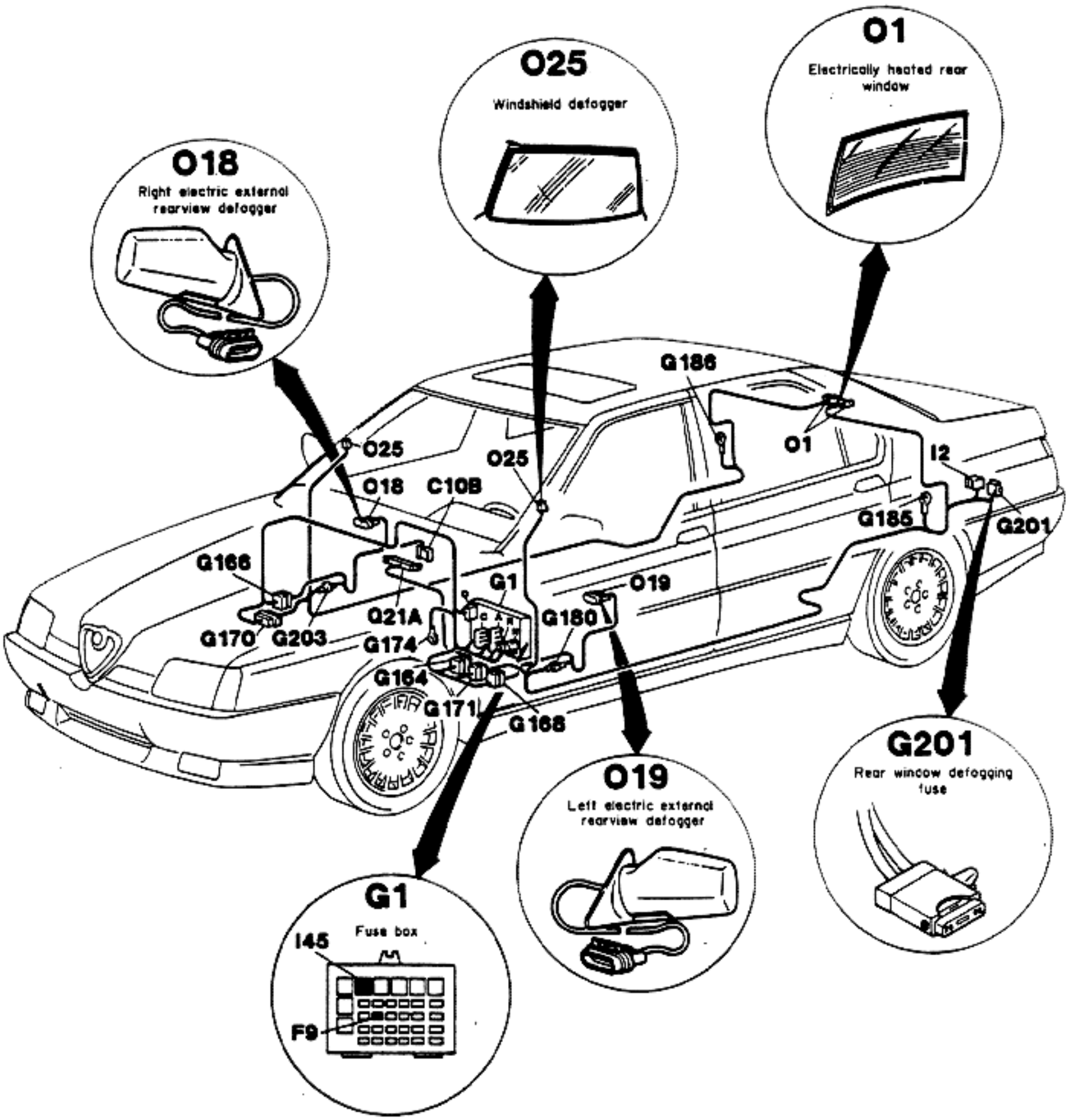


Windshield defogger — 025



Automatic control mode check unit — Q21A





ALL DEFOGGERS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F9** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F9**
A2 INDICATOR LAMP ILLUMINATION CHECK - With the ignition key set to "run" press defogging switch and check illumination of indicator lamp on the instrument panel	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Carry-out **step A3**
A3 CONTROL UNIT CHECK - Check that pin 29 of control unit **Q21A** is connected to ground in either of the following conditions: • the defogging switch on the air conditioning switch board has been actuated • when the outside temperature is below a certain value	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Failure of the air conditioning control panel. Refer to the air conditioning system troubleshooting
A4 GROUNDING CHECK - Check for presence of 0V (zero) at pin 8A of fuse box **G1**	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Repair wiring between **pin 29 of control unit Q21A, pin 6 of connector G164 and pin 8A of fuse box G1**

(Cont.d)

ALL DEFOGGERS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box G1 and ground	OK ▶ ~~OK~~ ▶	Carry-out step A6 Failure of the power distribution circuit, refer to relevant circuit of sheet 2 of 2
A6 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 4O of fuse box G1 and ground	OK ▶ ~~OK~~ ▶	Carry-out step A7 Failure of the power distribution circuit, refer to relevant circuit of sheet 2 of 2
A7 RELAY CHECK - Check relay I45 for proper operation	OK ▶ ~~OK~~ ▶	Repair wiring between pin 15 of connector G171 and connector R of fuse box G1 Replace relay I45

End of test A

REAR WINDOW DEFOGGER INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B1 FUSE CHECK - Check free fuse **G201** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **fuse G201**
B2 VOLTAGE CHECK - Check for presence of 12V between pin of fuse **G201** (RED wire) and ground	OK ▶ ~~OK~~ ▶	Carry-out **step B3** **Failure of the power distribution circuit, refer to relevant circuit of sheet 1 of 2**
B3 VOLTAGE CHECK - With the ignition key set to "run" and defogging switch actuated check for presence of 12V at pins 30 and 86 of relay **I2**	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Repair or replace **wires, as necessary**
B4 RELAY CONTROL - Check relay **I2** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step B5** Replace **relay I2**

(Cont.d)

REAR WINDOW DEFOGGER INOPERATIVE	TEST B

TEST STEPS		RESULTS	REMEDY
B5	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 85 of relay **I2**		OK ▶	Carry-out **step B6**
		~~OK~~ ▶	Repair wiring between **pin 85 of relay I2 and ground point G185**
B6	VOLTAGE CHECK		
- With the ignition key set to "run" and defogging switch actuated check for presence of 12V at terminals of rear window **O1**		OK ▶	Replace **rear window O1**
		~~OK~~ ▶	Repair wiring between **pin of rear window O1 and ground point G186 (BLK wire), and between pin of rear window O1 and pin 87 of relay I2 (BLK wire)**

End of test B

LEFT REARVIEW MIRROR DEFOGGER INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 VOLTAGE CHECK - With the ignition key set to "run" and the defogging switch actuated check for presence of 12V at connector **G180**	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Repair wiring between **connector G180 and pin 15 of connector G171**
C2 GROUNDING CHECK - Check for presence of 0V (zero) at pin 14 of connector **G168**	OK ▶ ~~OK~~ ▶	Carry-out **step C3** Repair wiring between **pin 14 of connector G168 and ground point G174**
C3 DEFOGGER CHECK - With the ignition key set to "run" and the defogging switch actuated check for presence of 12V between pins D and E of defogger **O19**	OK ▶ ~~OK~~ ▶	Replace **defogger O19** Repair wiring between **pin D of defogger O19 and connector G180, and between pin E of defogger O19 and pin 14 of connector G168**

End of test C

RIGHT REARVIEW MIRROR DEFOGGER INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D1 WINDSHIELD DEFOGGER CHECK		
- Check if windshield defogger **O25** is operative	OK ▶	Repair wiring between **pin 11 of connector G170 and G203**
	~~OK~~ ▶	Carry-out **step D2**
D2 VOLTAGE CHECK		
- With the ignition key set to "run" and the defogging switch actuated check for presence of 12V at connector **G203**	OK ▶	Carry-out **step D3**
	~~OK~~ ▶	Repair wiring between **windshield defogger O25 and connector G203**
D3 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 14 of connector **G166**	OK ▶	Carry-out **step D4**
	~~OK~~ ▶	Repair wiring between **ground point G174 and pin 14 of connector G166**

(Cont.d)

RIGHT REARVIEW MIRROR DEFOGGER INOPERATIVE	TEST D

TEST STEPS		RESULTS	REMEDY
D4	DEFOGGER CHECK		
- With the ignition key set to "run" and the defogging switch actuated check for presence of 12V between pins D and E of defogger O18		OK ▶	Replace defogger O18
		~~OK~~ ▶	Repair wiring between pin D of defogger O18 and connector G203, and between pin E of defogger O18 and pin 14 of connector G166

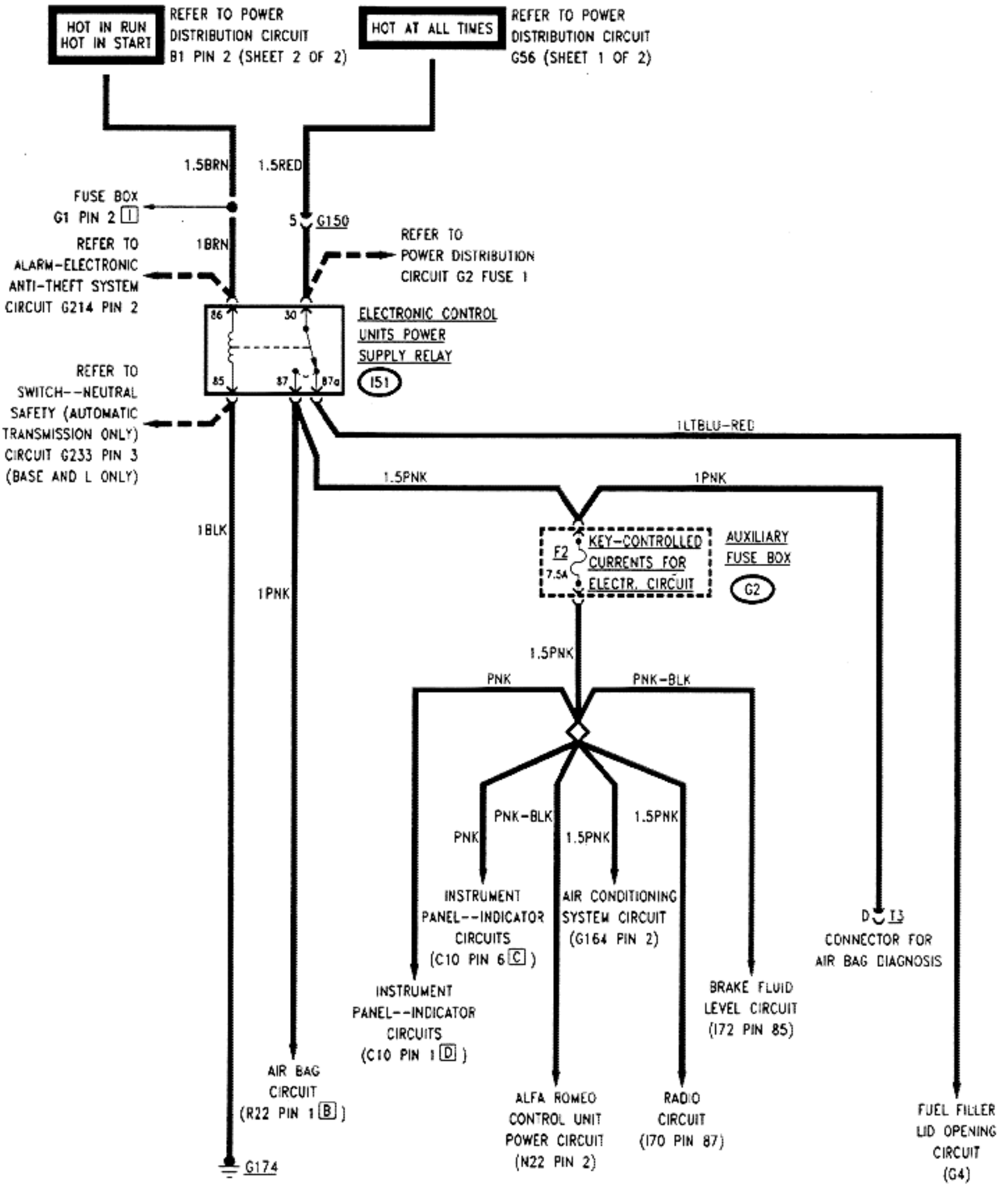
End of test D

WINDSHIELD DEFOGGER INOPERATIVE	TEST E

TEST STEPS		RESULTS	REMEDY
E1	R.H. MIRROR DEFOGGER CHECK		
- Check that the right external rearview mirror defogger **O18** is inoperative		OK ▶	Repair wiring between **windshield defogger O25 and pin 11 of connector G170**
		~~OK~~ ▶	Carry-out **step E2**
E2	GROUNDING CHECK		
- Check for presence of 0V at black wire of windshield defogger **O25**		OK ▶	Replace **windshield defogger O25**
		~~OK~~ ▶	Repair wiring between **pin of defogger O25 and ground point G185**

End of test E

ECU - - POWER SUPPLY RELAY



GENERAL

Part of the vehicle's electrical circuits is powered by the battery (12V) through the electronic control units power supply relay **I51**.
The relay is energized when the ignition key is either in "start" or "run" positions.
Circuits powered by the above mentioned relay are as follows:

- Fuel door - - Electric opening.
- Air bag.
- Instrument panel - - Indicator circuits.
- Instrument panel - - Alfa Romeo control ECU interface
- Sensors - - Brake fluid level.
- Air conditioning system.

The last four of the above mentioned circuits are protected by the fuse **F2** (7.5A) KEY - CONTROLLED CURRENTS FOR ELECTRIC CIRCUIT in the auxiliary fuse box **G2**.

OPERATIONAL DESCRIPTION

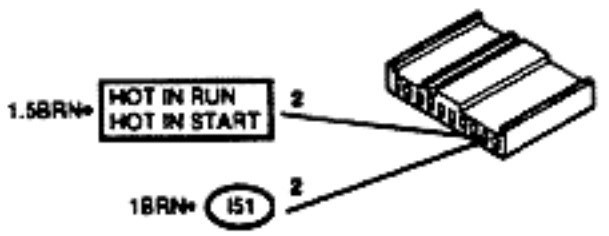
The battery power (12V) available when the ignition key is set to "start" or "run" position energizes the electronic control unit power supply relay **I51**.
Energization of relay **I51** permits energization (12V) of the Air Bag and fuel filler lid opening circuits.
In addition, 12V are simultaneously supplied to the following circuits through the fuse **F2** in the auxiliary fuse box **G2**.

- Instrument panel - - Indicator circuits.
- Instrument panel - - Alfa Romeo control ECU interface
- Sensors - - Brake fluid level circuit.
- Air conditioning system circuit.

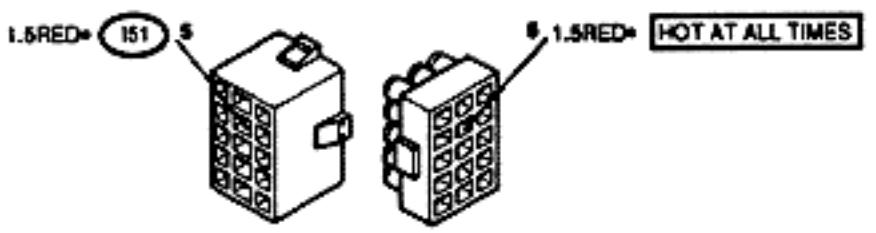
NOTE

An adequate knowledge of all the circuits powered by the same line will facilitate the troubleshooting when a failure affects all the relevant circuits simultaneously.

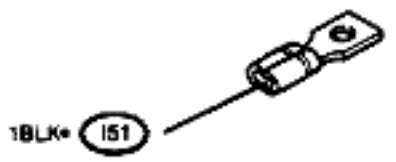
Fuse box — G1 [I]



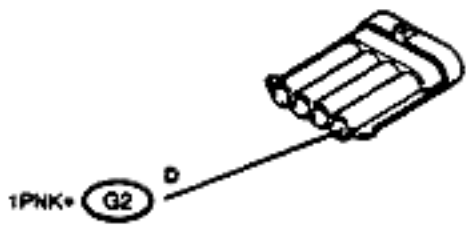
Connector, circuit board to engine compartment left side wiring — G150



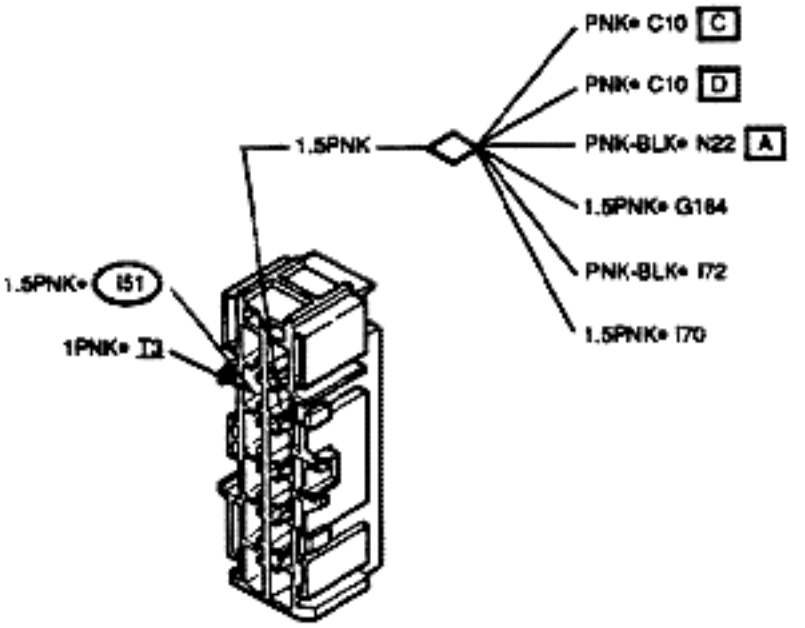
Steering wheel column support ground — G174



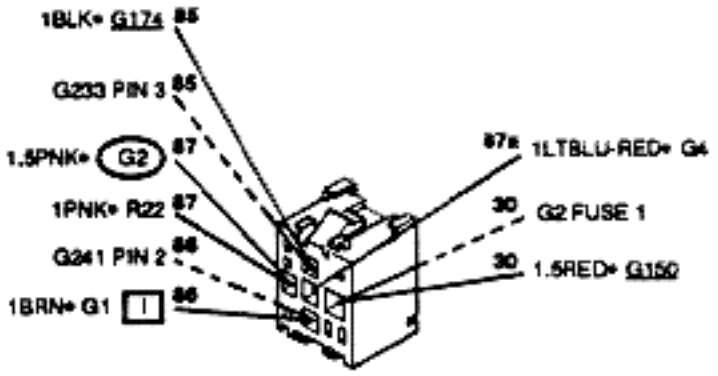
Air Bag diagnosis connector — I3

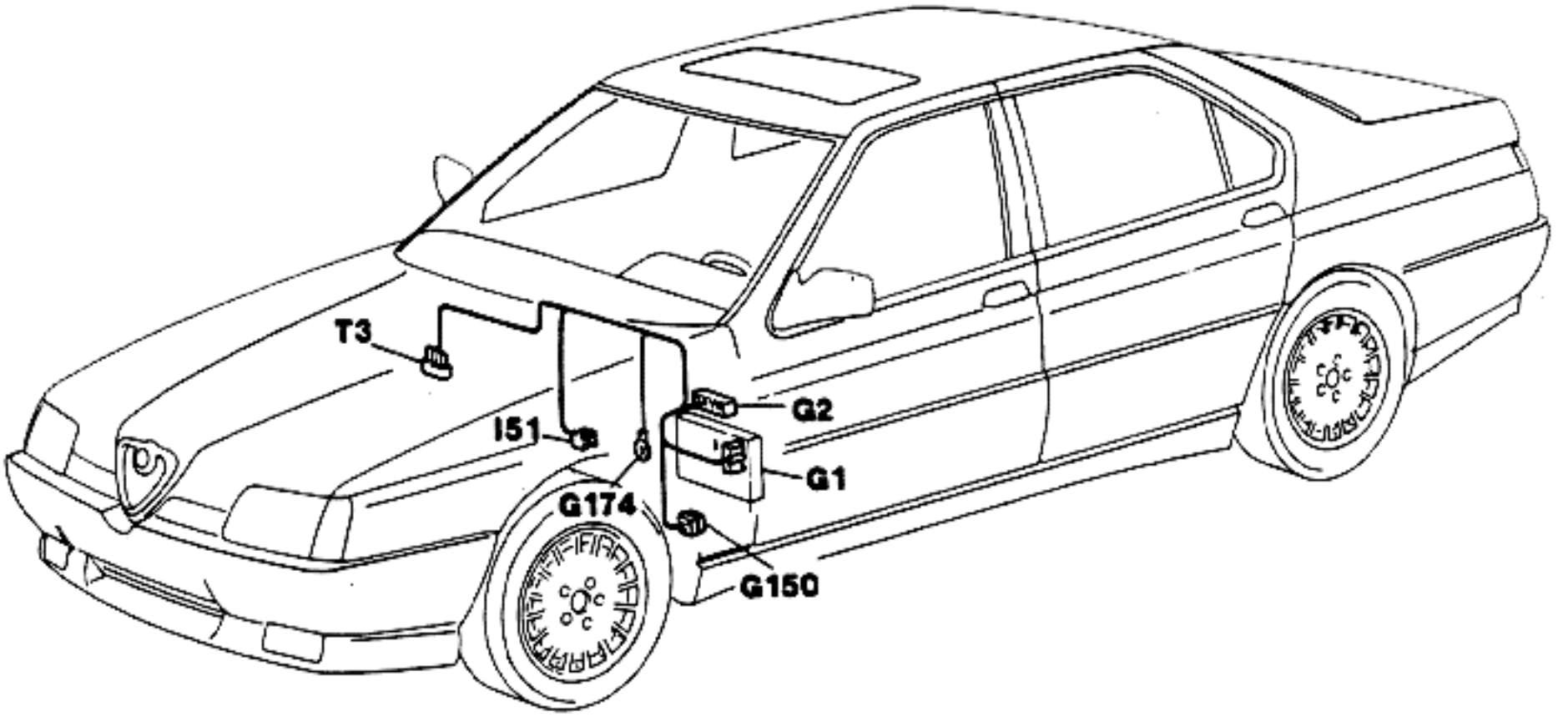


Auxiliary fuse box — G2



Electronic control units power supply relay — I51





FAILURE OF ELECTRONIC CONTROL UNITS POWER SUPPLY RELAY CIRCUIT	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F2** in auxiliary fuse box **G2** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F2**
A2 FUEL FILLER LID OPENING CHECK - Check the fuel filler lid power opening for correct operation	OK ▶ ~~OK~~ ▶	Repair wiring between **fuse F2 of auxiliaty fuse box G2 and pin 87 of relay I51** Carry-out **step A3**
A3 VOLTAGE CHECK - Check for presence of 12V between pin 30 of electronic control units power supply relay **I51**	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Carry-out **step A4**
A4 VOLTAGE CHECK - Check for presence of 12V between pin 5 of connector **G150** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 30 of relay I51 and pins of connector G150** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 1 of 2**

(Cont.d)

FAILURE OF ELECTRONIC CONTROL UNITS POWER SUPPLY RELAY CIRCUIT	TEST A

TEST STEPS		RESULTS	REMEDY
A5	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 85 of relay **I51**		OK ▶	Carry-out **step A6**
		~~OK~~ ▶	Repair wiring between **pin 85 of relay I51 and ground point G174**
A6	VOLTAGE CHECK		
- With ignition key set to "run" or "start", check for presence of 12V between pin 86 of relay **I51**		OK ▶	Replace **relay I51**
		~~OK~~ ▶	**Failure of the power distribution circuit refer to the relevant circuit of sheet 2 of 2**

End of test A

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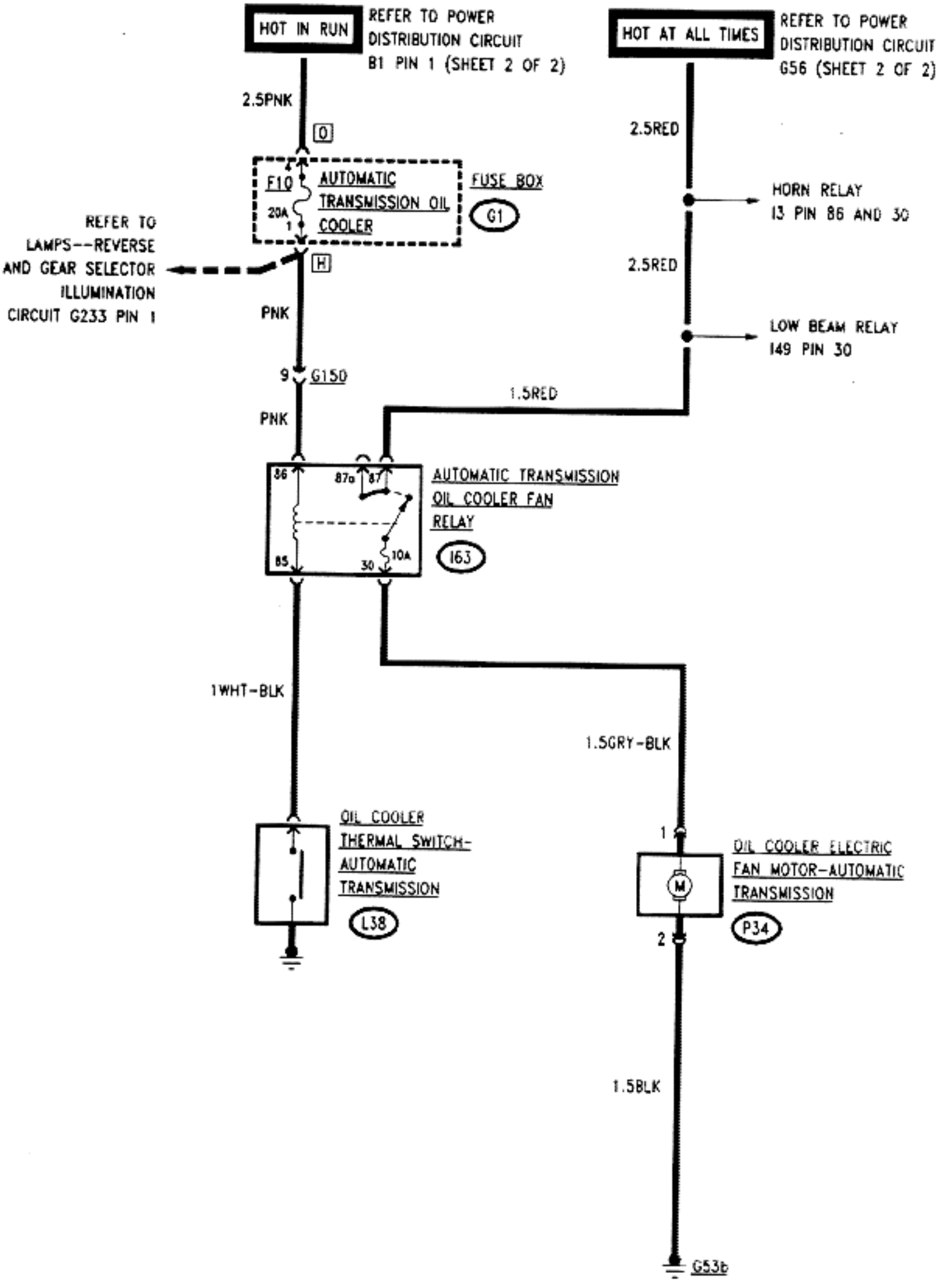
FAN - - AUTOMATIC TRANSMISSION OIL COOLER



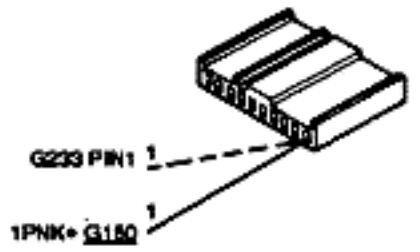
GENERAL

The automatic transmission is equipped with an electric fan for the cooling of the oil.
The fan operation is automatic when the oil temperature reaches 118° ± 4° C (244.4 ± 7.2° F).
The circuit is protected by the fuse **F10** (20A) AUTOMATIC TRANSMISSION OIL COOLER in the fuse box **G1**.

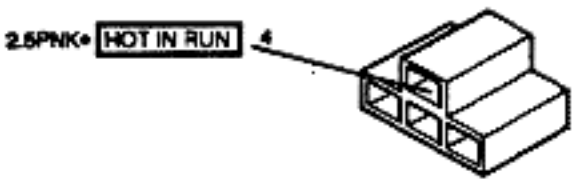
OPERATIONAL DESCRIPTION

When the ignition key is set to "run" 12V from the battery are applied to pin 86 of the automatic transmission oil cooler fan relay **I63** through fuse **F10** in the fuse box **G1**.
The ground section of relay **I63** is then connected to ground through the oil cooler thermal switch-automatic transmission **L38**
When the oil temperature increases to a pre-determined value about 118°C (244.4° F) the thermal contact closes and energizes the oil cooler fan relay **I63**.
When the relay **I63** is energized, 12V from the battery are applied to the fan motor **P34**.
High oil temperature is indicated on the instrument panel by illumination of the relevant indicator lamp.
Illumination of the indicator lamp is controlled by the Alfa Romeo Control unit **N22** when the automatic transmission oil cooler thermal switch contacts close because of high oil temperature.
Thermal switch **L38** opens the circuit after the oil temperature has decreased below 110°C (230° F).

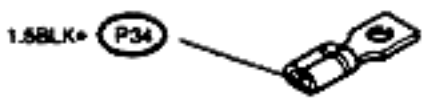
Fuse box	G1 H



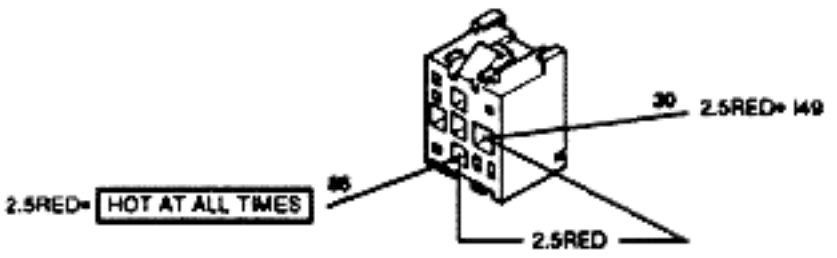
Fuse box	G1 O



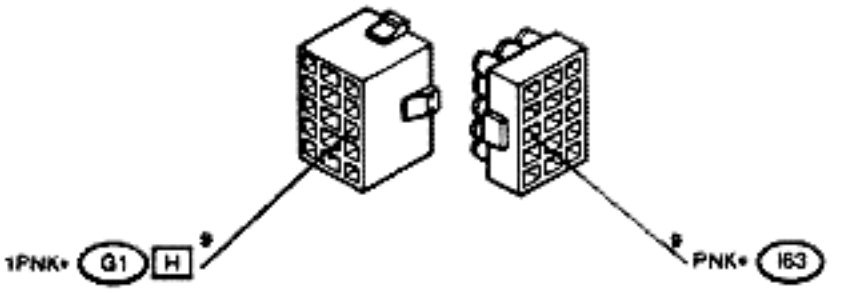
Engine compartment left side ground connector	G53b



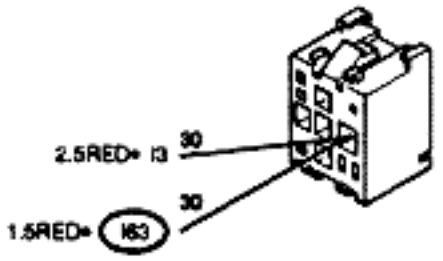
Horn relay	I3



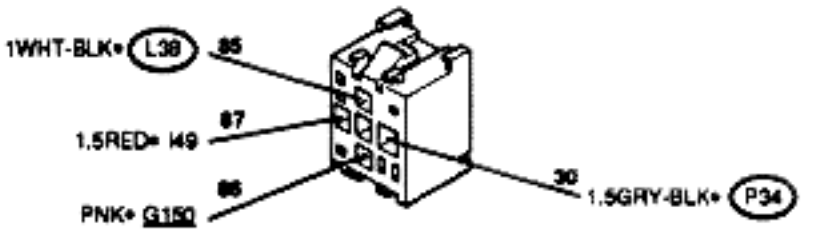
Connector, circuit board to engine compartment left side wiring	G150



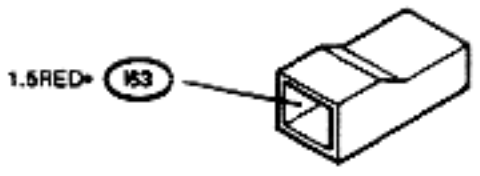
Low beam lamps relay (left)	I49



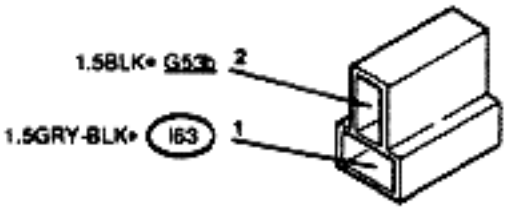
Automatic transmission oil cooler fan relay	I63

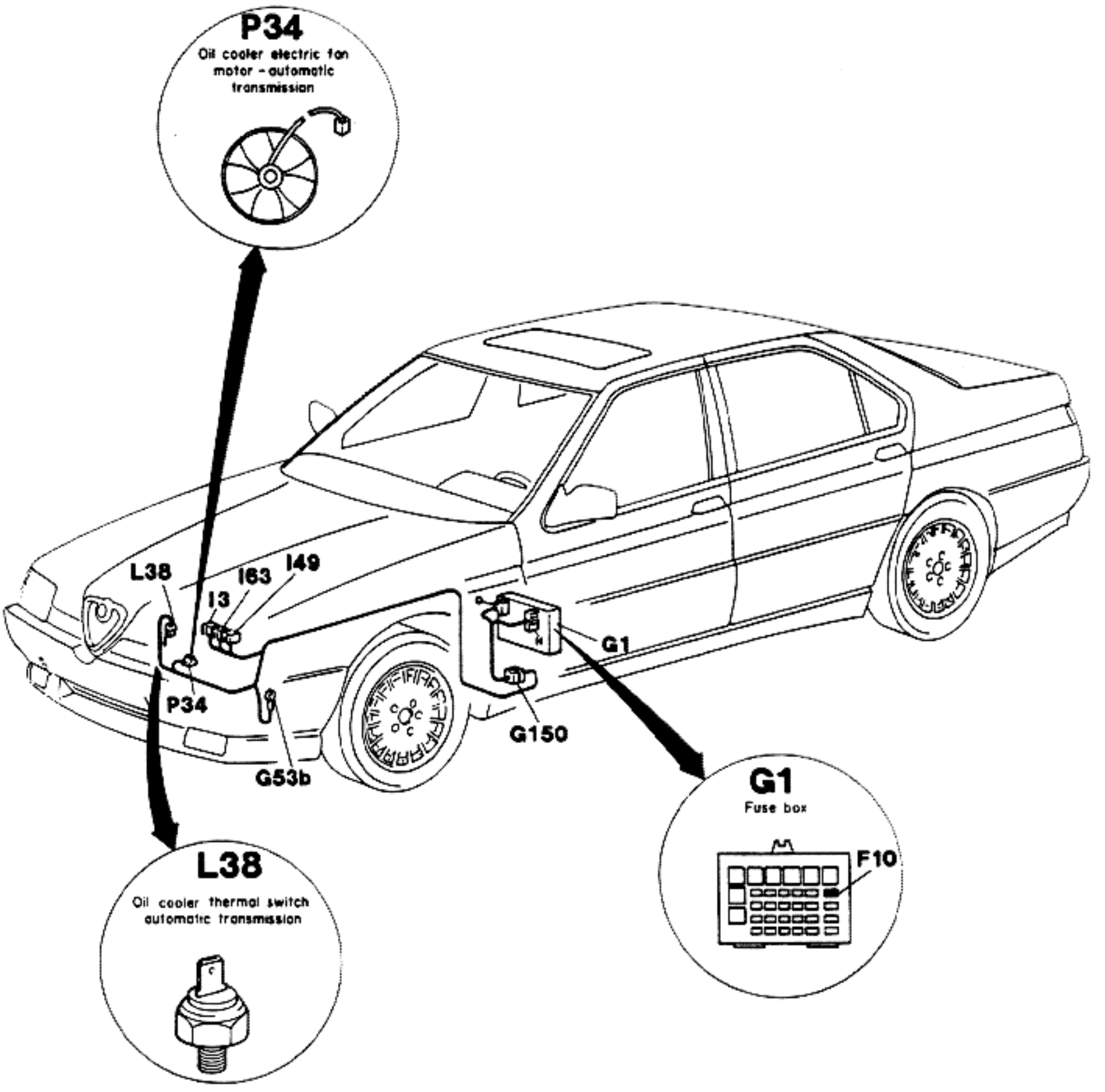


Oil cooler thermal switch-automatic transmission	L38



Oil cooler electric fan motor-automatic transmission	P34





AUTOMATIC TRANSMISSION OIL COOLING FAN INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F10** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F10**
A2 FUSE CHECK - Check fuse of relay **I63** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Replace **fuse of relay I63**
A3 THERMAL CONTACT CHECK - Short circuit fan thermal switch **L38** and verifiy that cooling fan **P34** is actuated	OK ▶ ~~OK~~ ▶	Replace **thermal switch L38** Carry-out **step A4**
A4 VOLTAGE CHECK - With the ignition key set to "run" and automatic transmission oil overheated (about 118±4°C) (244.4±7.2°F) check for presence of 12V between pins 1 and 2 of cooling fan **P34**	OK ▶ ~~OK~~ ▶	Replace **cooling fan P34** Carry-out **step A5**

(Cont.d)

AUTOMATIC TRANSMISSION OIL COOLING FAN INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 2 of cooling fan **P34** (BLK wire)	OK ▶	Carry-out **step A6**
	~~OK~~ ▶	Repair wiring between **ground point G53b and pin 2 of cooling fan P34**
A6 RELAY CHECK		
- Check automatic transmission oil cooler fan relay **I63** for proper operation	OK ▶	Carry-out **step A7**
	~~OK~~ ▶	Replace **relay I63**
A7 VOLTAGE CHECK		
- With the ignition key set to "run" check for presence of 12V between pin 86 of relay **I63** and ground	OK ▶	Carry-out **step A9**
	~~OK~~ ▶	Carry-out **step A8**
A8 VOLTAGE CHECK		
- With the ignition key set to "run" check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶	Repair wiring between **pin 1H of fuse box G1, pin 9 of coneector G150 and pin 86 of relay I63**
	~~OK~~ ▶	Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

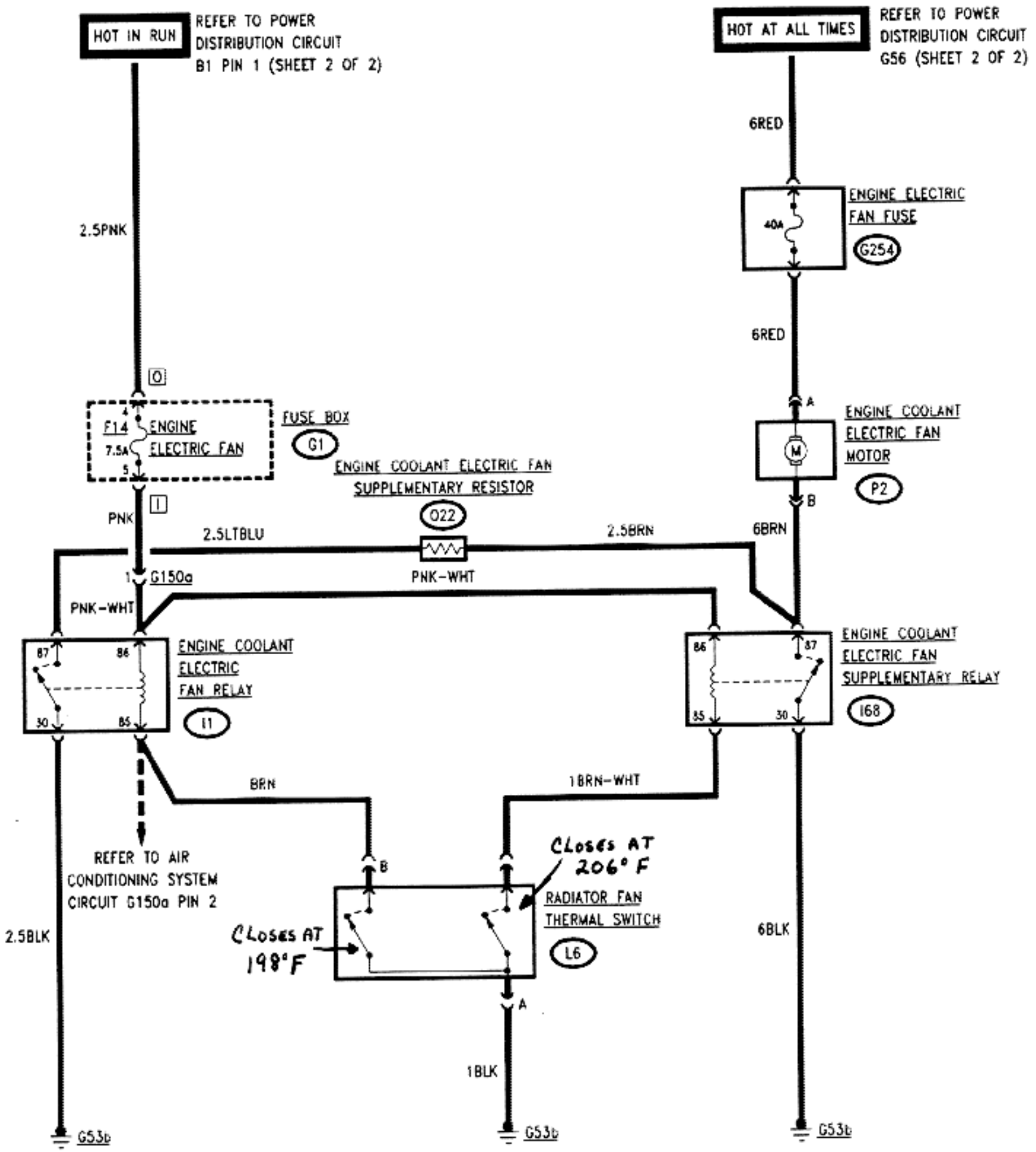
(Cont.d)

AUTOMATIC TRANSMISSION OIL COOLING FAN INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A9 CONTINUITY CHECK		
- Check for presence of continuity between pin 85 of relay **I63** and thermal switch L38 (WHT-BLK wire)	OK ▶	Carry-out **step A10**
	~~OK~~ ▶	Repair or replace **wires, as necessary**
A10 VOLTAGE CHECK		
- Check for presence of 12V between pin 87 of relay **I63** and ground	OK ▶	Repair wiring between **pin 30 of relay I63 and pin 1 of cooling fan P34**
	~~OK~~ ▶	Failure **of the distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test A

FAN - - RADIATOR COOLING AND A/C CONDENSER



GENERAL

The engine cooling is obtained by means of a suitable coolant.
The coolant temperature is controlled by an electric fan energized by closing of a thermal switch when the coolant temperature reaches a pre-set value ~ 92 ± 10°C (198° ± 18°F).
The electric fan is located behind the radiator and in front the air conditioning condenser, this provides cooling for both engine coolant and air conditioning freon.
The system is protected by two fuses as follows:

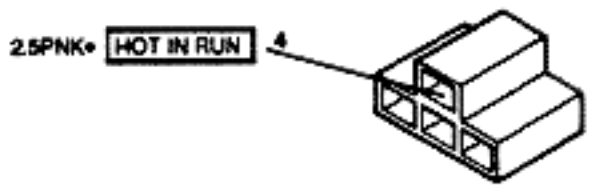
- **F14** fuse (7.5A) ENGINE ELECTRIC FAN, located in the fuse box **G1**.

- Free fuse **G254** (40A) ENGINE ELECTRIC FAN.

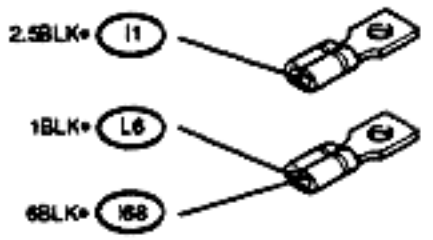
OPERATIONAL DESCRIPTION

12V from the battery are applied to the engine coolant electric fan motor **P2** through the engine electric fan, 40A, free fuse **G254**.
With the start key set to "run", the voltage reaches the coil of the electric fan relays **I1** and **I68** through the electric fan fuse **F14** located in the fuse box **G1**.
When the engine coolant reaches a pre-set temperature 92 °±10°C (198° ± 18°F), the radiator fan thermal switch **L6** closes, and allows energizing of the relevant relay **I1**.
With the electric fan relay **I1** energized, the electric fan motor **P2** is grounded through the engine coolant fan supplementary resistor **O22** and becomes operative.
In the event the coolant temperature continues to increase, the supplementary thermal switch **L6** closes, and grounds the supplementary relay **I68**.
Energizing of the relay causes the closure of a contact which cuts-off the supplementary resistor **O22**, and allows the operation of the electric fan at a higher speed.
The electric fan motor **P2** can also be energized throught the air conditioning system when necessary to cool the freon in the condenser (refer to the Automatic air conditioning circuit).

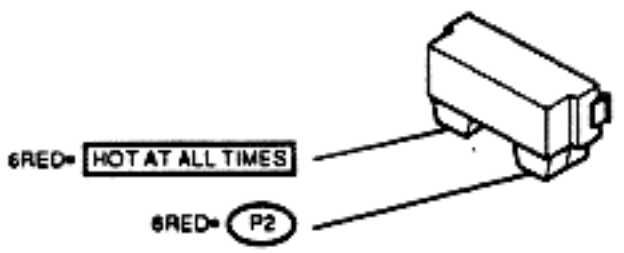
Fuse box G1 O



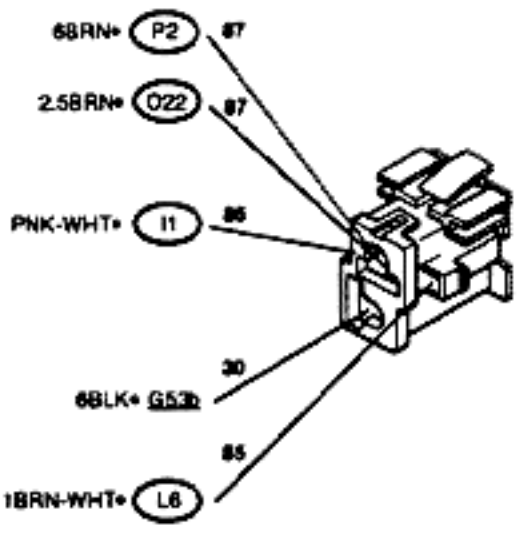
Engine compartment left side ground connection G53b



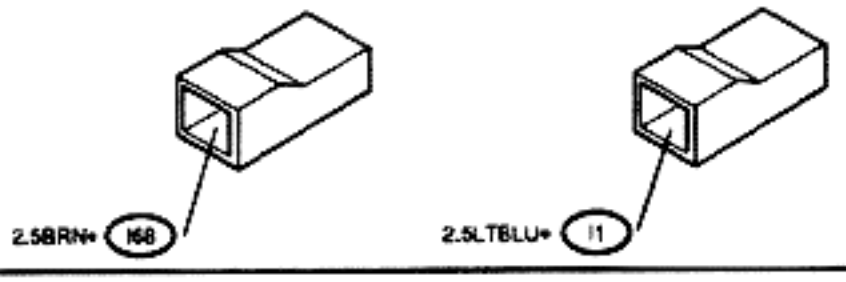
Engine electric fan fuse G254



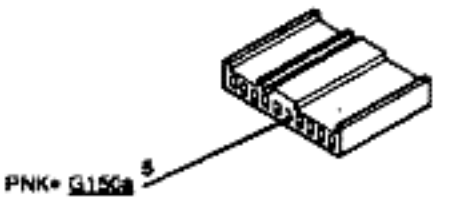
Engine coolant fan supplementary relay I68



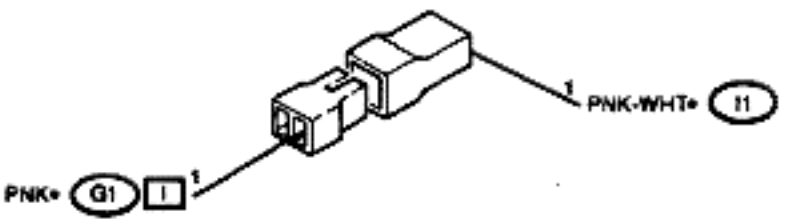
Engine coolant fan supplementary resistor O22



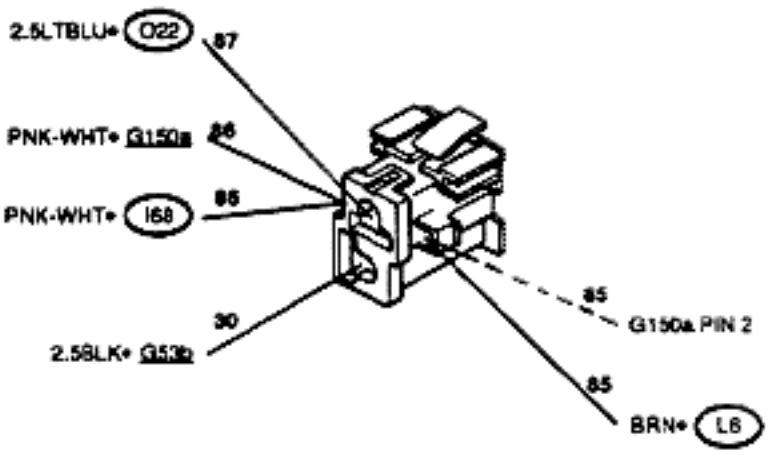
Fuse box G1 I



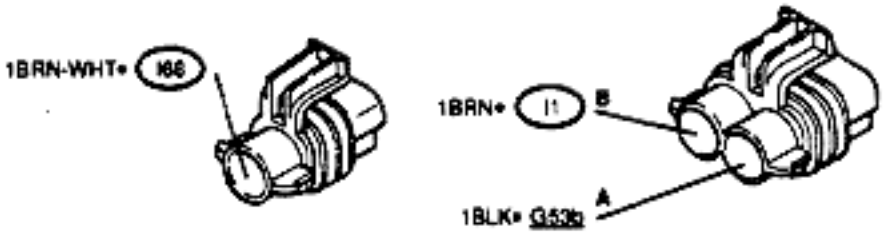
Connector, circuit board to engine compartment left side wiring G150a



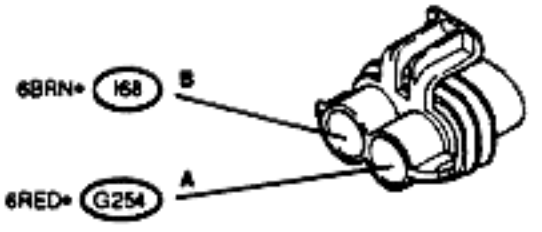
Engine coolant electric fan relay I1

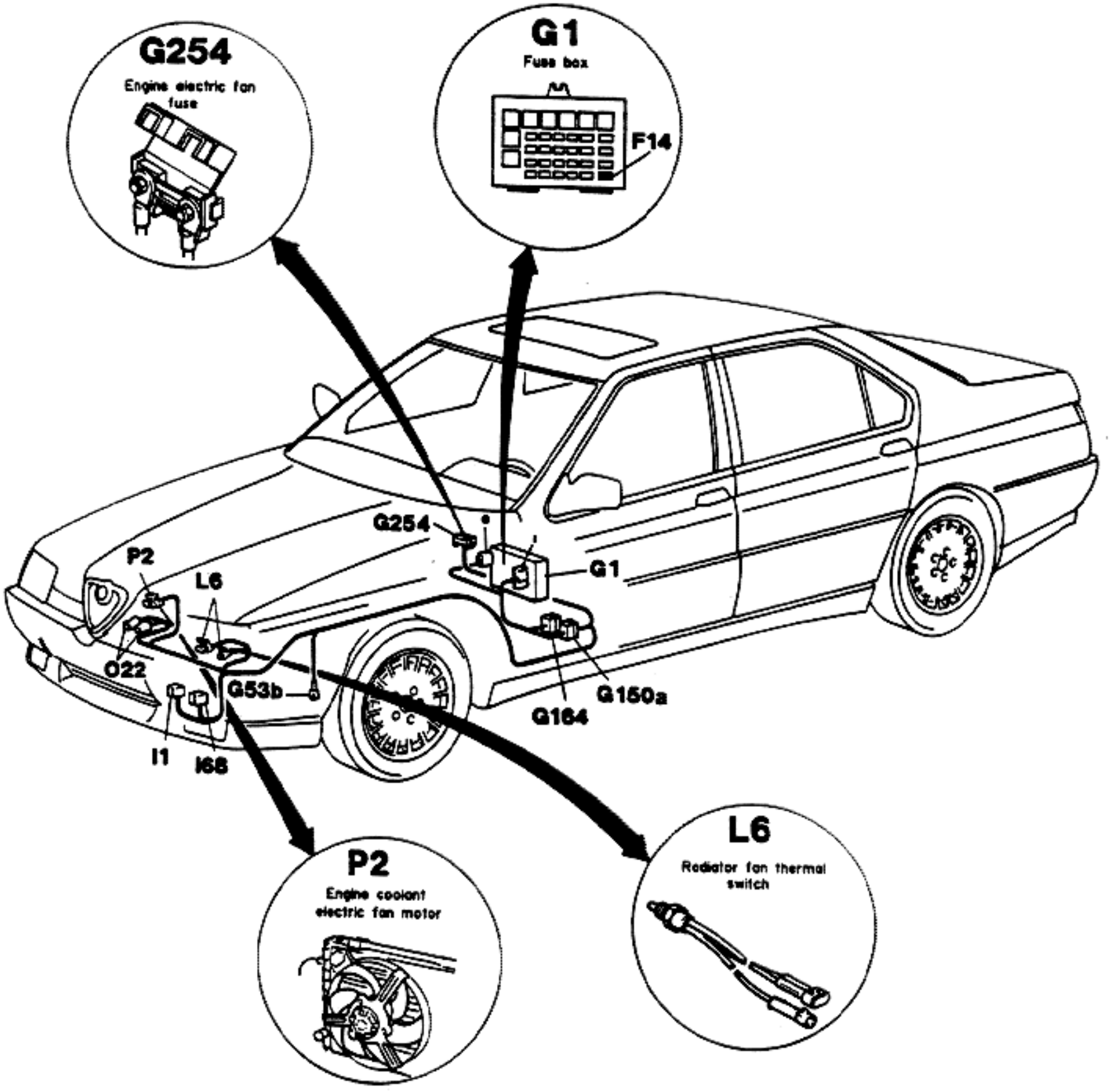


Radiator fan thermal switch L6



Engine coolant electric fan motor P2





ENGINE COOLANT ELECTRIC FAN INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check the engine electric fan fuse **F14** in the fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F14**
A2 FUSE CHECK - Check the engine electric fan fuse **G254** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Replace **fuse G254**
A3 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pins 86 of relays **I1** and **I68** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Carry-out **step A4**
A4 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 1 of connector **G150a** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of G150a and pins 86 of relays I1 and I68** Carry-out **step A5**

(Cont.d)

ENGINE COOLANT ELECTRIC FAN INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK		
- With the ignition key set to "run",checkfor presence of 12V between pin 40 of fusebox **G1** and ground.	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of G150a and pin 5l of fusebox G1** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A6 GROUNDING CHECK		
- With thermal switch pressed, check for presence of 0V at pins 85 of relays I1 and I68.	OK ▶ ~~OK~~ ▶	Carry-out **step A7** Carry-out **step A9**
A7 GROUNDING CHECK		
- Check for presence of ~~0V~~ 12V at pin 87 of relay I1.	OK ▶ ~~OK~~ ▶	Carry-out **step A11** Carry-out **step A8**
A8 GROUNDING CHECK		
- Check for presence of 0V at pin 30 of relay I1	OK ▶ ~~OK~~ ▶	Replace **relay I1** Repair wiring between **pin 30 of relay I1 and ground point G53b**

(Cont.d)

ENGINE COOLANT ELECTRIC FAN INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A9 CONTINUITY CHECK - Check continuity between pins of thermal switch and pins 85 of relays **I1** and **I68**.	OK ▶ ~~OK~~ ▶	Carry-out **step A10** Repair or replace **wiring, as necessary**
A10 GROUNDING CHECK - Check for presence of 0V at pin A of thermal switch **L6**	OK ▶ ~~OK~~ ▶	Replace **thermal switch L6** Repair wiring between **pin A of thermal switch and ground point G53b**
A11 CONTINUITY CHECK - Check that circuit between pins 87 of relays **I1** and **I68** is not open (R = 0,23 ohm)	OK ▶ ~~OK~~ ▶	Carry-out **step A13** Carry-out **step A12**
A12 CONTINUITY CHECK - Check continuity between pins of supplementary resistor and pins 87 of relays **I1** and **I68**	OK ▶ ~~OK~~ ▶	Replace **supplementary resistor O22** Repair or replace **wiring, as necessary**

(Cont.d)

ENGINE COOLANT ELECTRIC FAN INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A13 VOLTAGE CHECK - Check for presence of 12V between pins A and B of electric fan motor **P2**	OK ▶ ~~OK~~ ▶	Replace **electric fan motor P2.** Carry-out **step A14**
A14 VOLTAGE CHECK - Check for presence of 12V between pin A of electric fan motor **P2** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A16** Carry-out **step A15**
A15 VOLTAGE CHECK - Check for presence of 12V between pin of fuse **G254** (RED wire) and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin A of motor and pin of fuse G254 (RED wire)** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A16 GROUNDING CHECK - With the ignition key set to "run" and the thermal switch pressed, check for presence of 0V at pin 87 of relay **I68**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 87 of relay I68 and pin B of motor P2** Carry-out **step A17**

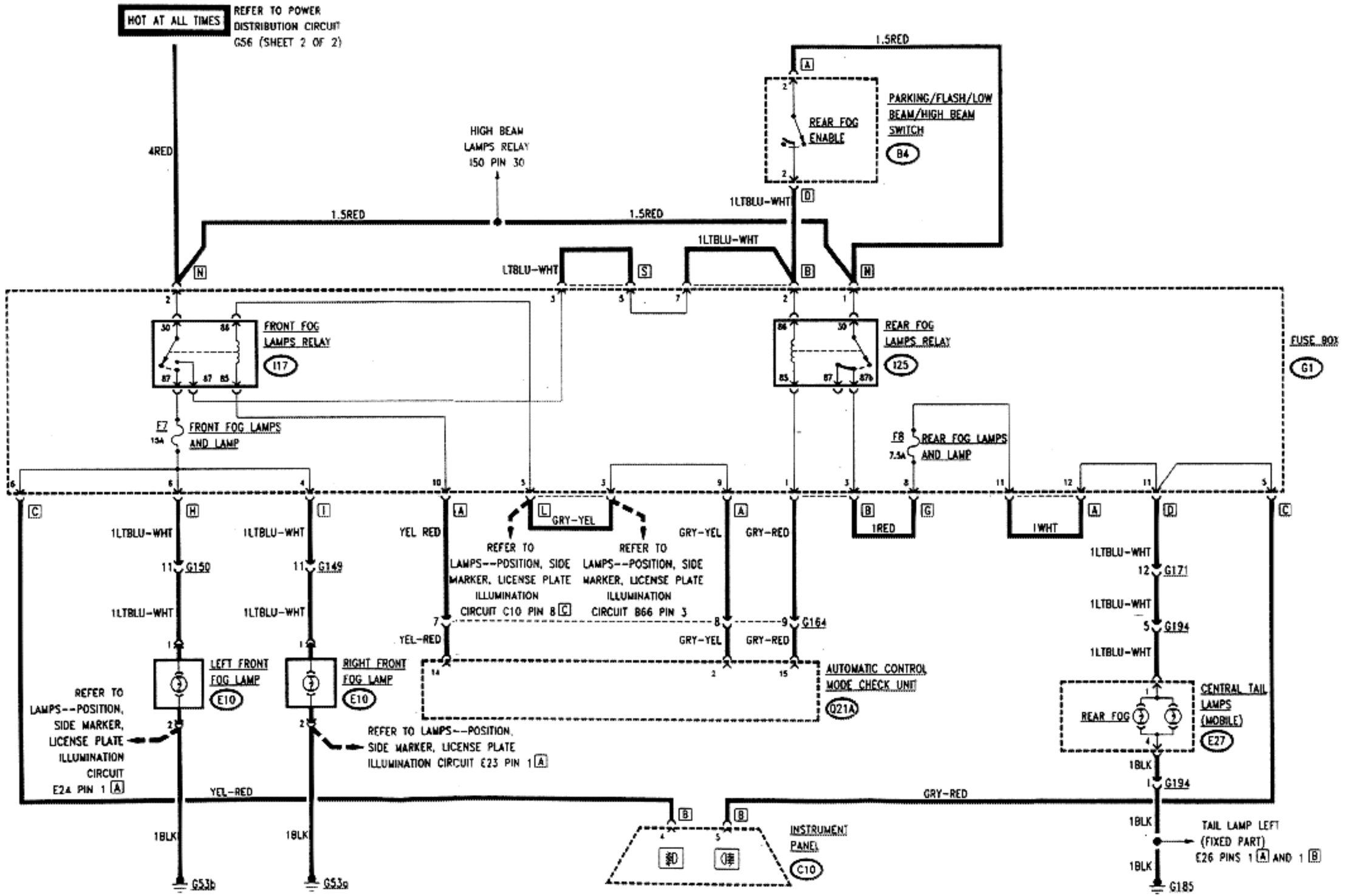
(Cont.d)

ENGINE COOLANT ELECTRIC FAN INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A17	GROUNDING CHECK		
- Check for presence of 0V at pin 30 of relay I68		OK ▶	Replace **relay I68**
		~~OK~~ ▶	Repair wiring between **pin 30 of I68 and ground point G53b**

End of test A

FOGLAMPS - - FRONT AND REAR



GENERAL

Actuation of the front and rear fog lamps only after the low beam lamps have been switched on. Refer to low beam lamps chapter for further details.
Switching on of the front and/or rear fog lamps is indicated by the illumination of the corresponding warning lamps on the instrument panel.
The system is protected by two fuses in the fuse box **G1**, as follows:

- Fuse **F7** (15A) FRONT FOG LAMPS AND LAMP.

- Fuse **F8** (7.5A) REAR FOG LAMPS AND LAMP.

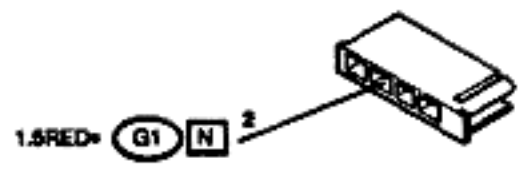
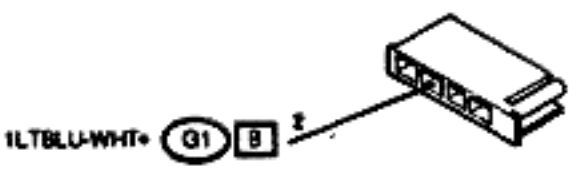
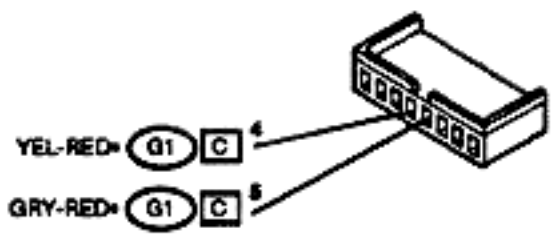
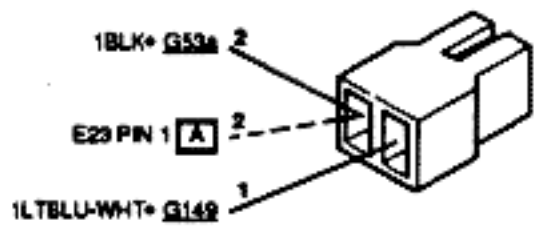
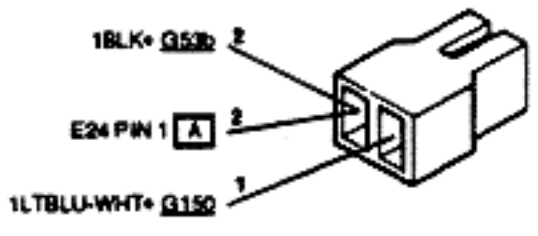
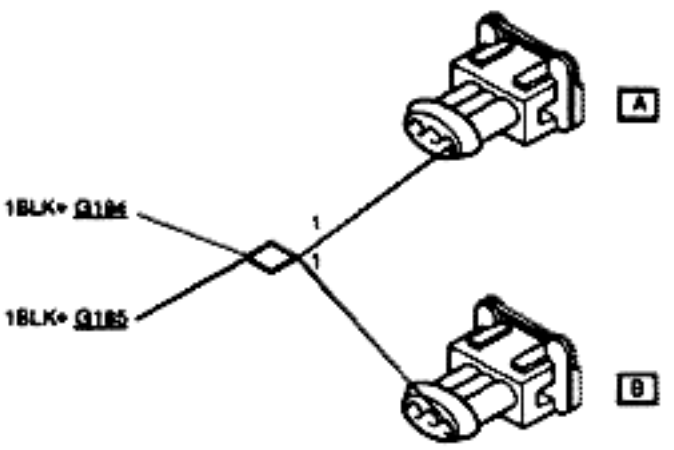
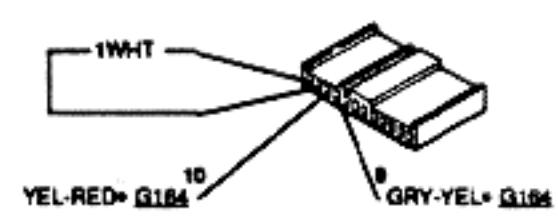
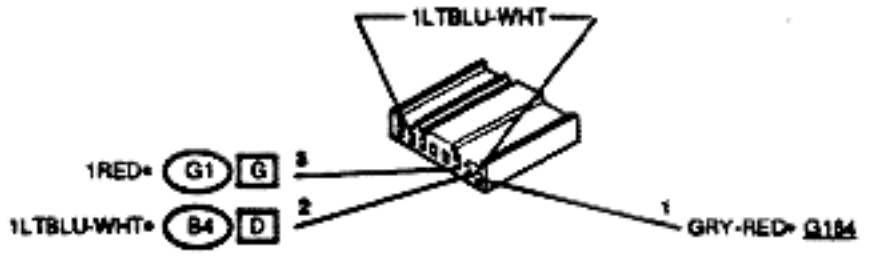
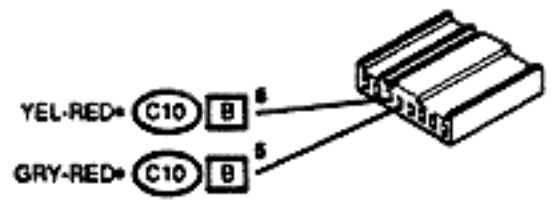
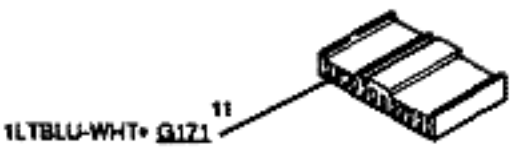
OPERATIONAL DESCRIPTION

12V from the battery is applied to the multiple switch **B4** and to common contact of front fog lamps relay **I17**.
When the multiple switch **B4** is set to this low beam lamps position, the electric power reaches the coil of rear fog lamps relay **I25**.
Energization of front fog lamps relay **I17**, activated by the switch on the air conditioning control unit **Q21A**, energizes the corresponding line protected by fuse **F7** in fuse box **G1**.
Therefore, electric power is applied to left and right front fog lamp **E10**, connected in parallel, and the lamps are turned on.
Energization of rear fog lamps relay **I25**, activated by the automatic control mode check unit **Q21A**, energizes the corresponding line protected by fuse **F8** in fuse box **G1**.
Therefore, electric power is applied to terminals of central tail lamp **E27**, and the lamps are turned on.
Two lines derived from the front and rear fog lamps lines are connected to the instrument panel **C10**. In this way, the corresponding warning lamps on the instrument panel will illuminate any time the front and/or rear fog lamps are switched on.

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT										
	E7 FUSE	E8 FUSE	C10 FRONT FOG LAMP	C10 FRONT FOG LAMP	E10 R.H. FRONT FOG LAMP	E10 L.H. FRONT FOG LAMP	E27 REAR CENTER LAMP	B4 MULTIPLE SWITCH	117 RELAY	125 RELAY	Q21A CONTROL UNIT
BOTH FRONT AND REAR FOG LAMPS INOPERATIVE								●			
BOTH FRONT FOG LAMPS INOPERATIVE	●								●		●
LEFT FRONT FOG LAMP INOPERATIVE						●					
RIGHT FRONT FOG LAMP INOPERATIVE					●						
FRONT FOG LAMPS WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE				●							
REAR FOG LAMP INOPERATIVE		●					●			●	●
REAR FOG LAMP WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE			●								

NOTE: Before carrying-out any troubleshooting check the integrity of warning lamp on instrument panel by pressing the test button.

Parking/Flash/Low beam/High beam switch B4 A	Parking/Flash/Low beam/High beam switch B4 D
	
Instrument panel C10 B	**Right front fog lamp E10**
	
Left front fog lamp E10	**Tail lamp, left (fixed part) E26**
	
Central tail lamps (mobile) E27	
	
Fuse box G1 A	**Fuse box G1 B**
	
Fuse box G1 C	**Fuse box G1 D**
	

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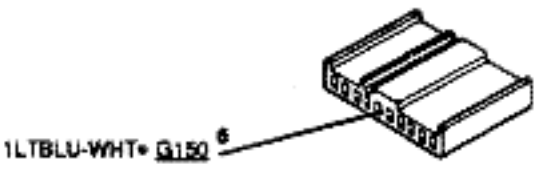
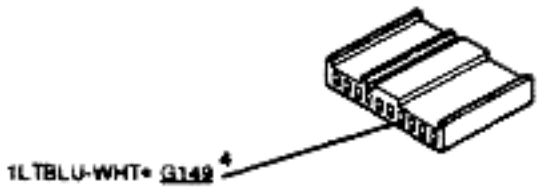
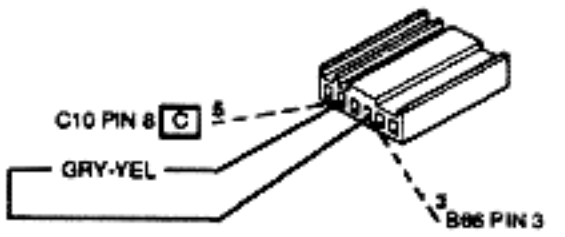
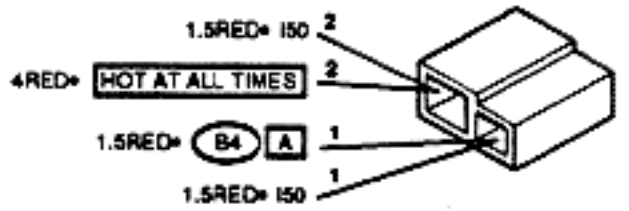
Fuse box	G1 G
	

Fuse box	G1 H
	

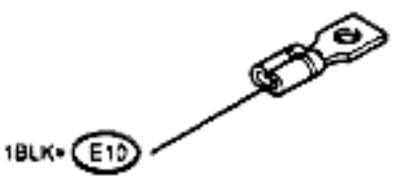
Fuse box	G1 I
	

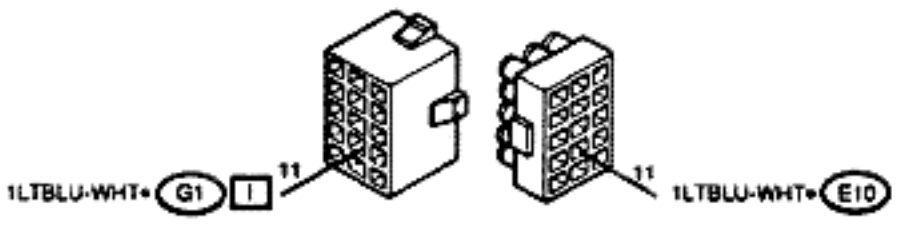
Fuse box	G1 L
	

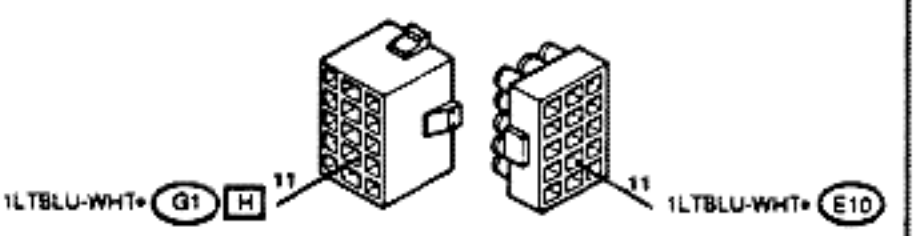
Fuse box	G1 N
	

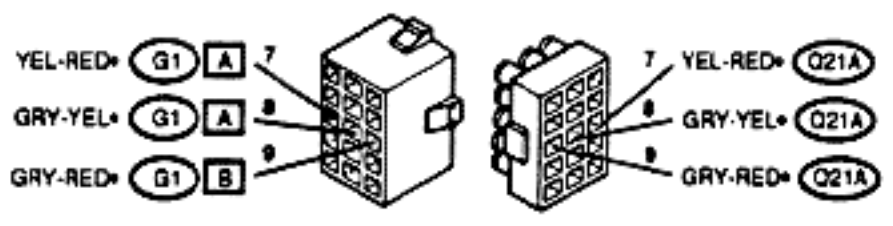
Fuse box	G1 S
	

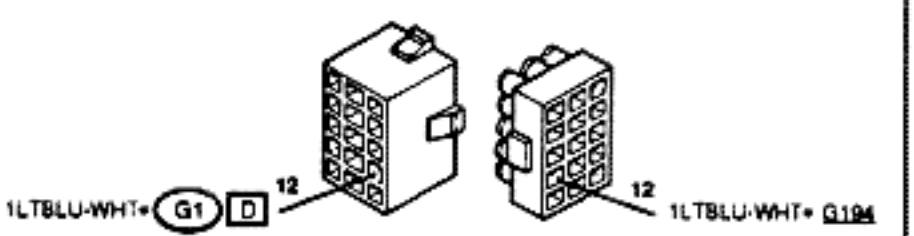
Engine compartment right side ground connection	G53a
	

Engine compartment left side ground connection	G53b
	

Connector, circuit board to engine compartment right side wiring	G149
	

Connector, circuit board to engine compartment left side wiring	G150
	

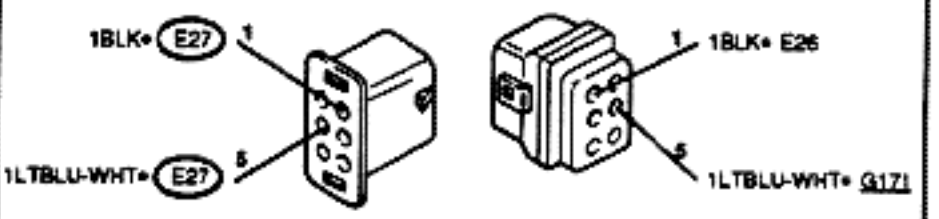
Connector, circuit board to air conditioning wiring	G164
	

Connector, circuit board to left rear wiring	G171
	

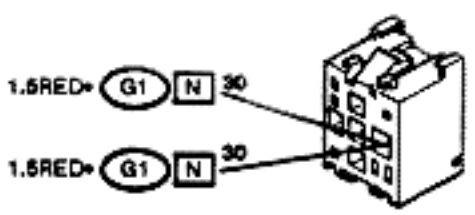
(Cont.d)

Trunk left side ground	G185

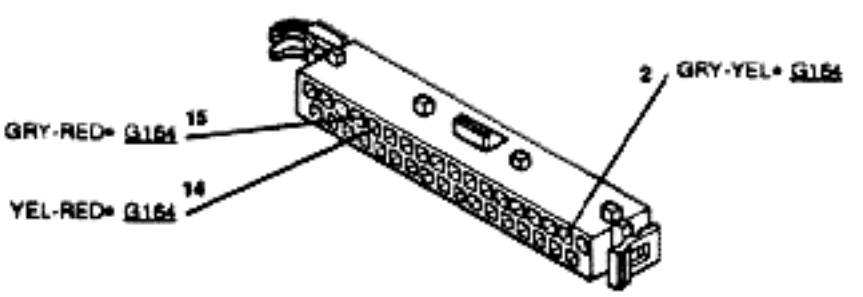
Connector, left rear wiring to rear central lamp wiring	G194

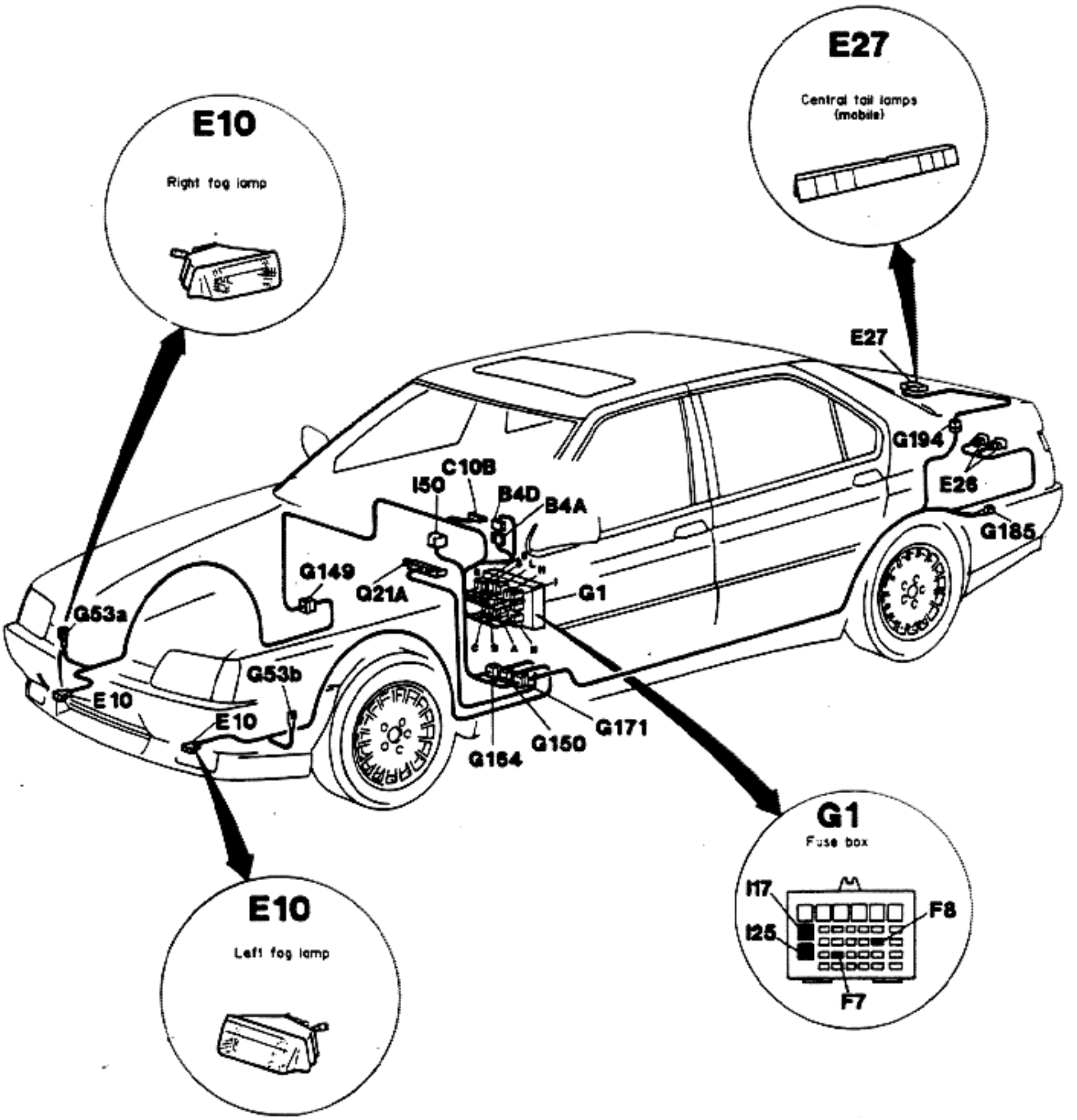


High beam lamps relay	I50



Automatic control mode check unit	Q21A





BOTH FRONT AND REAR FOG LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 MULTIPLE SWITCH CHECK - Check for continuity between pins 2A and 2D of multiple switch **B4** when the switch is actuated	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace multiple **switch B4**
A2 VOLTAGE CHECK - Check for presence of 12V between pin 2A of multiple switch **B4** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A3**
A3 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 2N, 1N of fuse box and pin 2A of multiple switch B4** Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2
A4 VOLTAGE CHECK - Check for presence of 12V between pin 2B of fuse box **G1** and ground when the switch is actuated	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Repair wiring between **pin 2B of fuse box G1 and pin 2D of multiple switch B4**

(Cont.d)

BOTH FRONT AND REAR FOG LAMPS INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A5	CONTINUITY CHECK		
- Check for continuity between pins 7B and 3S of fuse box G1		OK ▶	Repair wiring between **pins 2B and 7B of fuse box G1**
		~~OK~~ ▶	Repair or replace **wires, as necessary**

End of test A

BOTH FRONT FOG LAMPS INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B1 FUSE CHECK		
- Check fuse **F7** in fuse box **G1** for integrity	OK ▶	Carry-out **step B2**
	~~OK~~ ▶	Replace **fuse F7**
B2 VOLTAGE CHECK		
- Check for presence of 12V between pins 10A and 9A of fuse box **G1**	OK ▶	Replace **relay I17**
	~~OK~~ ▶	Carry-out **step B3**
B3 VOLTAGE CHECK		
- Check for presence of 12V between pins 14 and 2 of automatic control mode check unit **Q21A**	OK ▶	Repair wiring between **pin 10A of fuse box G1, pin 7 of connector G164 and pin14 of control unit Q21A or between pin 9A of fuse box G1, pin 8 of connector G164 and pin2 of control unit**
	~~OK~~ ▶	Failure of the **air conditioning system; refer to the relevant troubleshooting procedure**

End of test B

LEFT FRONT FOG LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 LAMP CHECK - Check left front fog lamp **E10** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Replace **left front fog lamp E10**
C2 VOLTAGE CHECK - Check for presence of 12V between pin 11 of connector **G150** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step C3** Repair wiring between **pin 11 of connector G150 and pin 6H of fuse box G1**
C3 VOLTAGE CHECK - Check for presence of 12V between pin 1 of left front fog lamp **E10** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of lamp E10 and ground point G53b** Repair wiring between **pin 1 of lamp E10 and pin 11 of connector G150**

End of test C

RIGHT FRONT FOG LAMP INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D1 LAMP CHECK - Check right front fog lamp **E10** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Replace **right front fog lamp E10**
D2 VOLTAGE CHECK - Check for presence of 12V between pin 11 of connector **G149** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D3** Repair wiring between **pin 11 of connector G149 and pin 4I of fuse box G1**
D3 VOLTAGE CHECK - Check for presence of 12V between pin 1 of right front fog lamp **E10** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of lamp E10 and ground point G53a** Repair wiring between **pin 1 of lamp E10 and pin 11 of connector G149**

End of test D

FRONT FOG LAMPS WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out any troubleshooting check the integrity of warning lamp on instrument panel by pressing the test button.		
E1 VOLTAGE CHECK		
- Check for presence of 12V at pin 4B of instrument panel **C10**	OK ▶	Replace Instrument **panel C10**
	~~OK~~ ▶	Repair wiring between **pin 4B of Instrument panel C10 and pin 6C of fuse box G1**

End of test E

REAR FOG LAMP INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
NOTE: The central tail lamps **E27** includes two bulbs connected in parallel.		
F1 FUSE CHECK - Check fuse **F8** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Replace **fuse F8**
F2 WARNING LAMP CHECK - Check if the rear fog lamp warning lamp on instrument panel illuminates	OK ▶ ~~OK~~ ▶	Carry-out **step F3** Carry-out **step F6**
F3 VOLTAGE CHECK - Check for presence of 12V between pins 5 and 1 of connector **G194**	OK ▶ ~~OK~~ ▶	Carry-out **step F4** Carry-out **step F5**
F4 VOLTAGE CHECK - Check for presence of 12V between pins 1 and 4 of central tail lamps **E27**	OK ▶ ~~OK~~ ▶	Replace **rear fog lamp of central tail lamps E27** Repair wiring between **pins 1 and 4 of central tail lamps E27, and pins 5 and 1 of connector G194 respectively**

(Cont.d)

REAR FOG LAMP INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F5 VOLTAGE CHECK		
- Check for presence of 12V between pin 12 of connector **G171** and ground	OK ▶	Repair wiring between **pin 1 of connector G194 and ground point G185 and/or pin 5 of connector G194 and pin 12 of connector G171**
	~~OK~~ ▶	Repair wiring between **pin 12 of connector G171 and pin 1D of fuse box G1**
F6 RELAY CHECK		
- Check rear fog lamps relay **I25** for integrity	OK ▶	Carry-out **step F7**
	~~OK~~ ▶	Replace **relay I25**
F7 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 15 of automatic control mode check unit **Q21A**	OK ▶	Carry-out **step F8**
	~~OK~~ ▶	Failure of the **air conditioning system circuit. Refer to the applicable troubleshooting procedure**

(Cont.d)

REAR FOG LAMP INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F8 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 1B of fuse box G1	OK ▶	Carry-out step F9
	~~OK~~ ▶	Repair wiring between pin 1B of fuse box, pin 9 of connector G164 and pin 15 of control unit Q21A
F9 VOLTAGE CHECK		
- Check for presence of 12V between pin 11A of fuse box G1 and ground	OK ▶	Repair wiring between pin 11A, 12A and 11D of fuse box G1
	~~OK~~ ▶	Repair wiring between pin 11A, 8G and 3B of fuse box

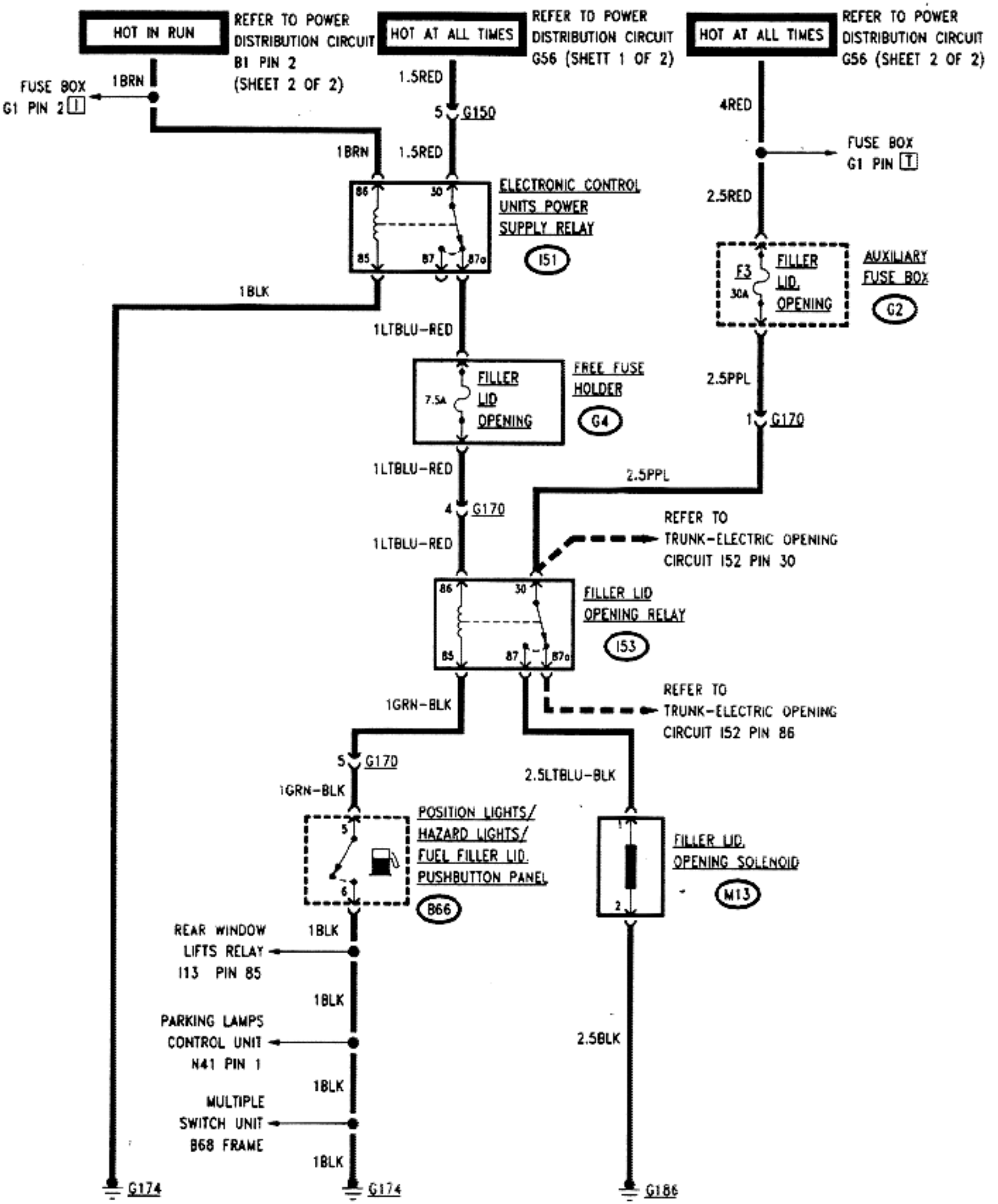
End of test F

REAR FOG LAMP WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE	TEST G

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out any troubleshooting check the integrity of warning lamp on instrument panel by pressing the test button.		
G1 VOLTAGE CHECK - Check for presence of 12V at pin 5B of instrument panel **C10**	OK ▶ OK ▶	Replace **instrument panel C10** Repair wiring between **pin 5B of instrument panel C10 and pin 5C of fuse box G1**

End of test G

FUEL DOOR - - ELECTRIC OPENING



GENERAL

The fuel filler lid can be electrically opened by means of a switch on the pushbutton panel .
For safety reasons, opening of the fuel filler lid can be actuated only after the start key has been set to off.
The system is protected by two fuses, as follows.

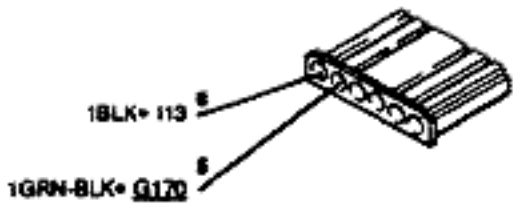
- Free fuse **G4** (7.5A) FILLER LID OPENING.

- **F3** fuse (30A) FILLER LID OPENING (in the auxiliary fuse box **G2**).

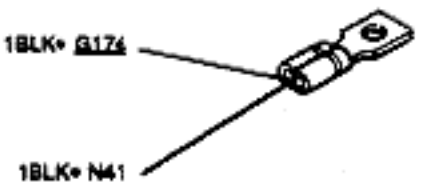
OPERATIONAL DESCRIPTION

The electronic control units power supply relay **I51** is de-energized when the start key is removed. When the relay **I51** is energised the fuel filler lid opening circuit is open.
12V from the battery are applied to fuel filler lid opening relay **I53** through the de-energized relay **I51** and the system free fuse. Pressing the fuel filler lid control switch on the pushbutton panel **B66** connects to ground the remaining terminal of relay **I53**, thus energizing the relay.
When the relay **I53** is energized, 12V are applied to solenoid **M13** through the fuse **F3** and the contacts of relay **I53**, thus actuating opening of the fuel filler lid.

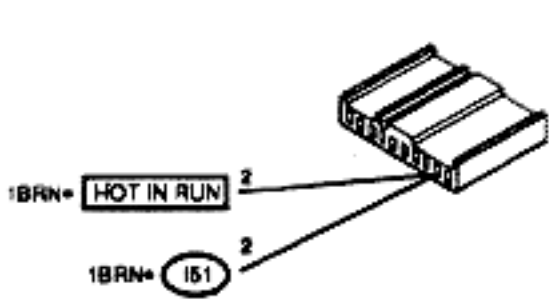
Position lights/hazard lights/fuel filler lid pushbutton panel	B66



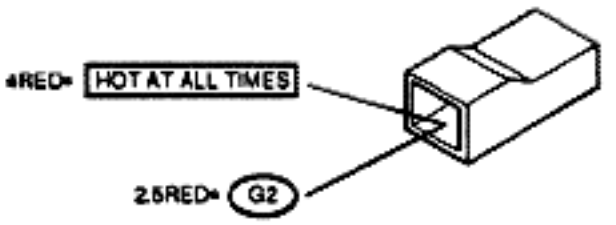
Multiple switch unit	B68



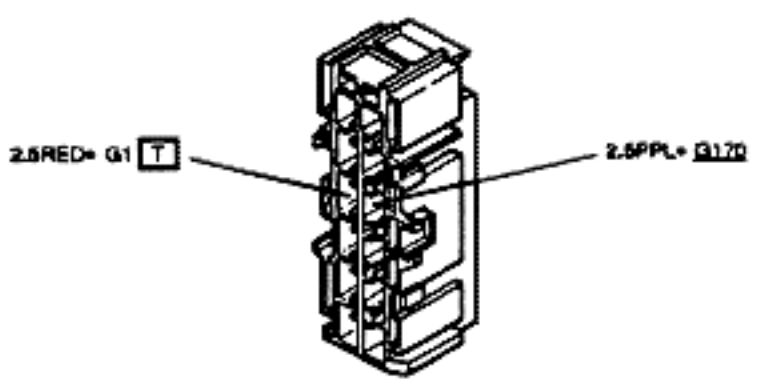
Fuse box	G1 I



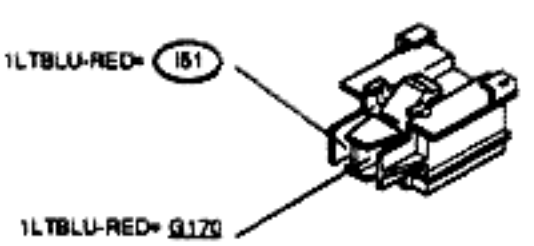
Fuse box	G1 T



Auxiliary fuse box	G2



Free fuse holder	G4



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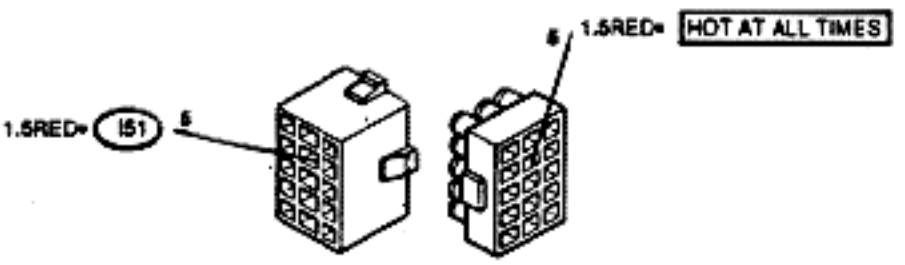
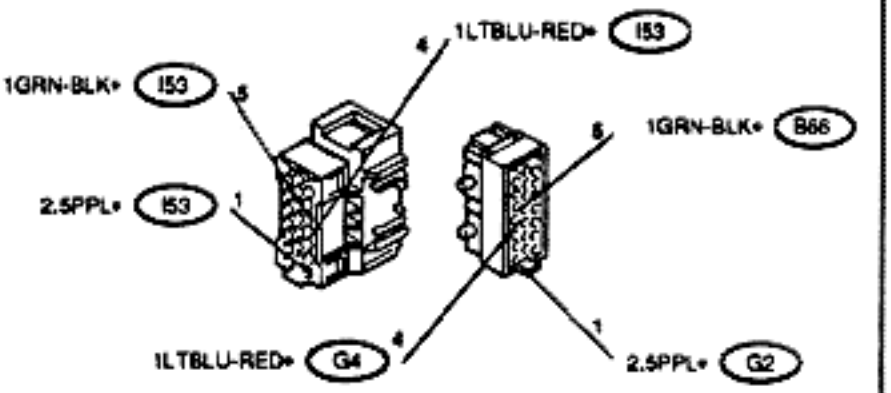
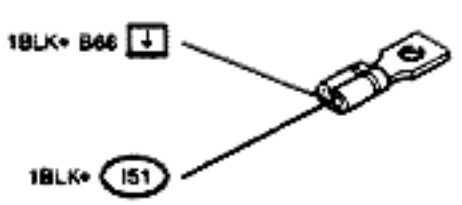
Connector, circuit board to engine compartment left side wiring	G150



Connector, circuit board to right rear wiring	G170

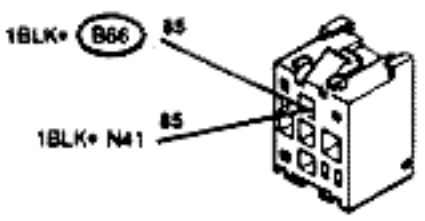


Steering wheel column support ground	G174

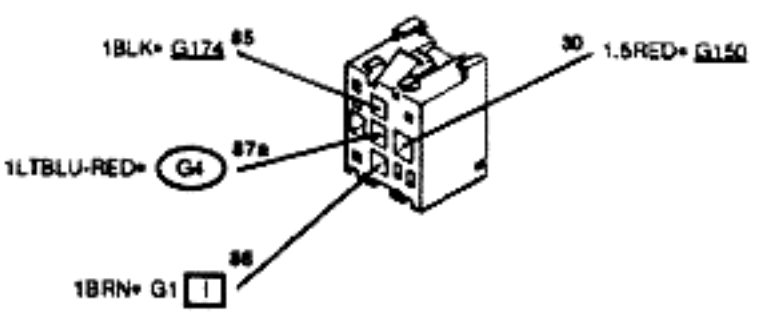


Trunk right side ground	G186

Horn relay	I13

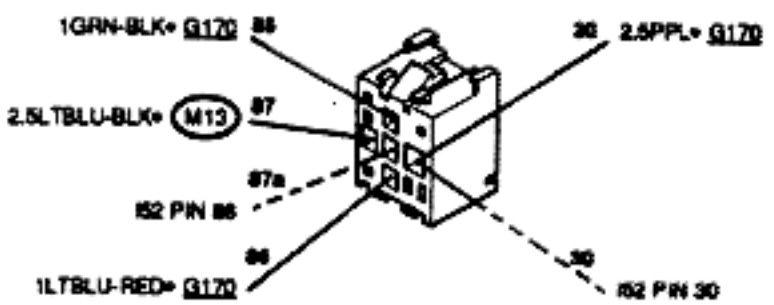


Electronic control units power supply relay	I51

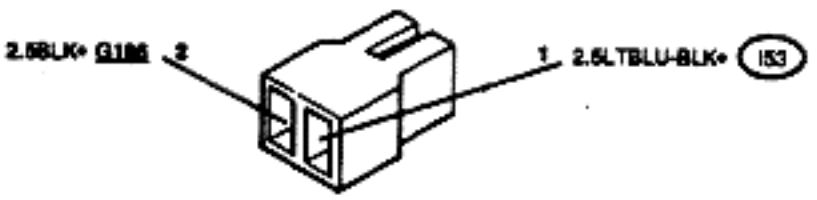


(Cont.d)

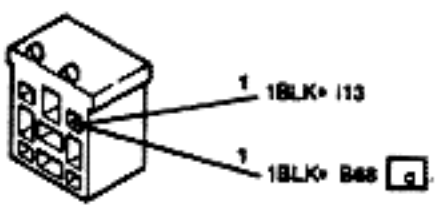
Filler lid opening relay	I53



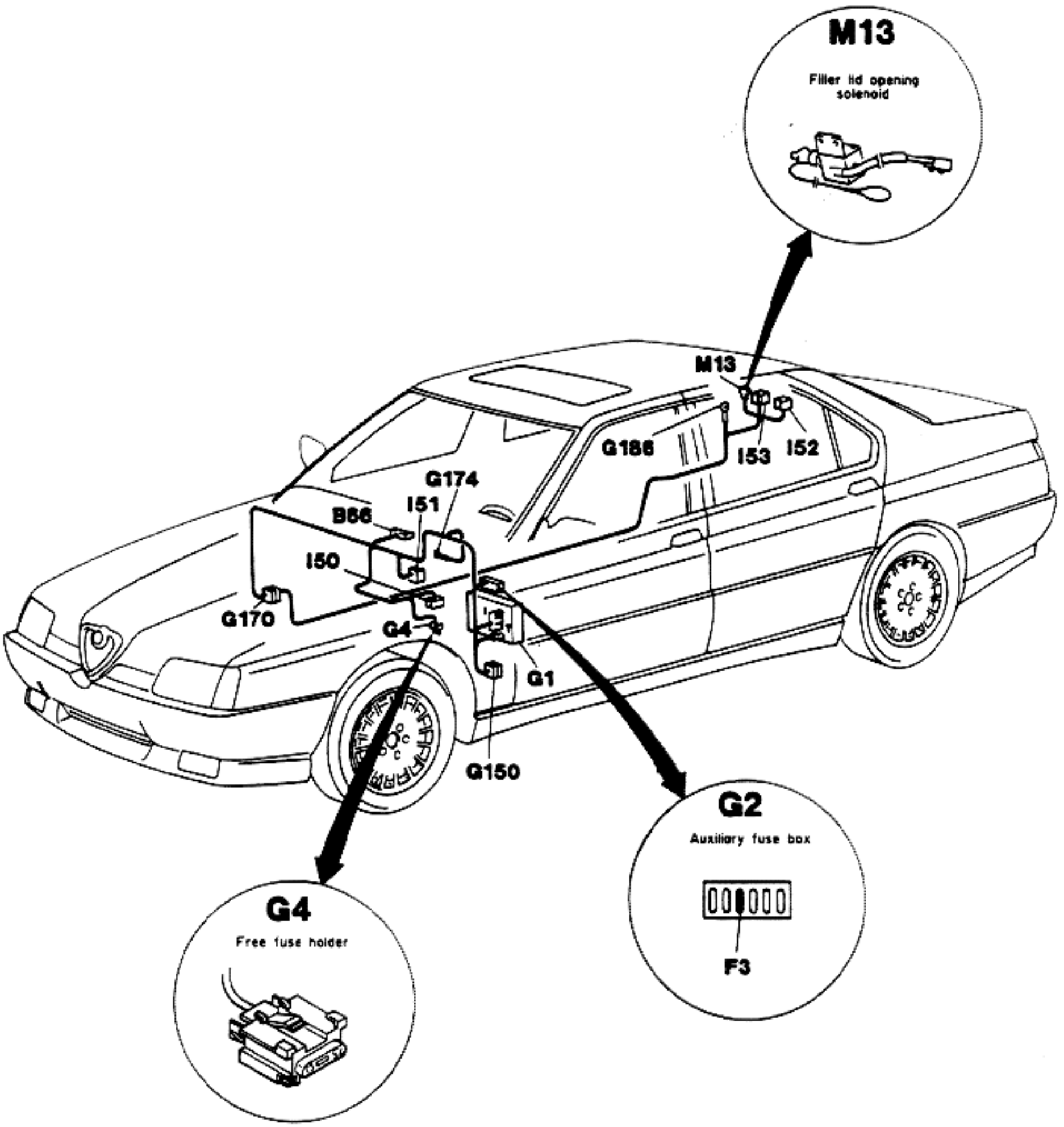
Filler lid opening solenoid	M13



Parking lamps control unit	N41



FUEL DOOR - - ELECTRIC OPENING



FUEL FILLER LID ELECTRIC OPENING INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check free fuse **G4** for integrity	OK ▶ OK ▶	Carry-out **step A2** Replace **free fuse G4**
A2 FUSE CHECK - Check fuse **F3** in the auxiliary fuse box **G2** for continuity	OK ▶ OK ▶	Carry-out **step A3** Replace **fuse F3**
A3 TRUNK OPENING CHECK - Check that trunk opening can be electrically actuated	OK ▶ OK ▶	Carry-out **step A5** Carry-out **step A4**
A4 VOLTAGE CHECK - Check for presence of 12V between pin of auxiliary fuse box **G2** (RED wire) and ground	OK ▶ OK ▶	Repair wiring between **fuse F3 in fuse box G2, pin 1 of connector G170 and pin 30 of relay I53** Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2

(Cont.d)

FUEL FILLER LID ELECTRIC OPENING INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V at free fuse **G4**	OK ▶ ~~OK~~ ▶	Carry-out **step A10** Carry-out **step A6**
A6 RELAY CHECK - Check relay **I51** for integrity and proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step A7** Replace relay I51
A7 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 86 of relay I51 and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A8** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A8 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay I51 and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 85 of I51 and ground point G174** Carry-out **step A9**

(Cont.d)

FUEL FILLER LID ELECTRIC OPENING INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A9 VOLTAGE CHECK - Check for presence of 12V between pin 5 of connector G150 and ground	OK ▶ ~~OK~~ ▶	Repair wiring between pin 5 of G150 and pin 30 of relay I51 Falure of the power distribution circuit, refer to the relevant circuit of sheet 1 of 2
A10 SOLENOID CHECK - With the ignition key set to "run" check for presence of 12V at terminals of solenoid M13 when the fuel filler lid control switch is actuated	OK ▶ ~~OK~~ ▶	Replace solenoid M13 Carry-out step A11
A11 RELAY CHECK - Check relay I53 for integrity and proper operation	OK ▶ ~~OK~~ ▶	Carry-out step A12 Replace relay I53

(Cont.d)

FUEL FILLER LID ELECTRIC OPENING INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A12	CONTINUITY CHECK		
- With the ignition key set to "run" check for presence of 12V between: • pin 4 of connector G170 and ground • pin 86 of relay I53 and ground - With the fuel filler lid pushbutton panel B66 actuated, check for presence of 0V (zero) at: • pin 5 of connector G170 • pins 5 and 6 of position lamps, hazard lamps and fuel filler lid pushbutton panel B66		OK ▶ OK ▶	Replace pushbutton panel B66 Repair or replace wiring, as necessary

End of test A

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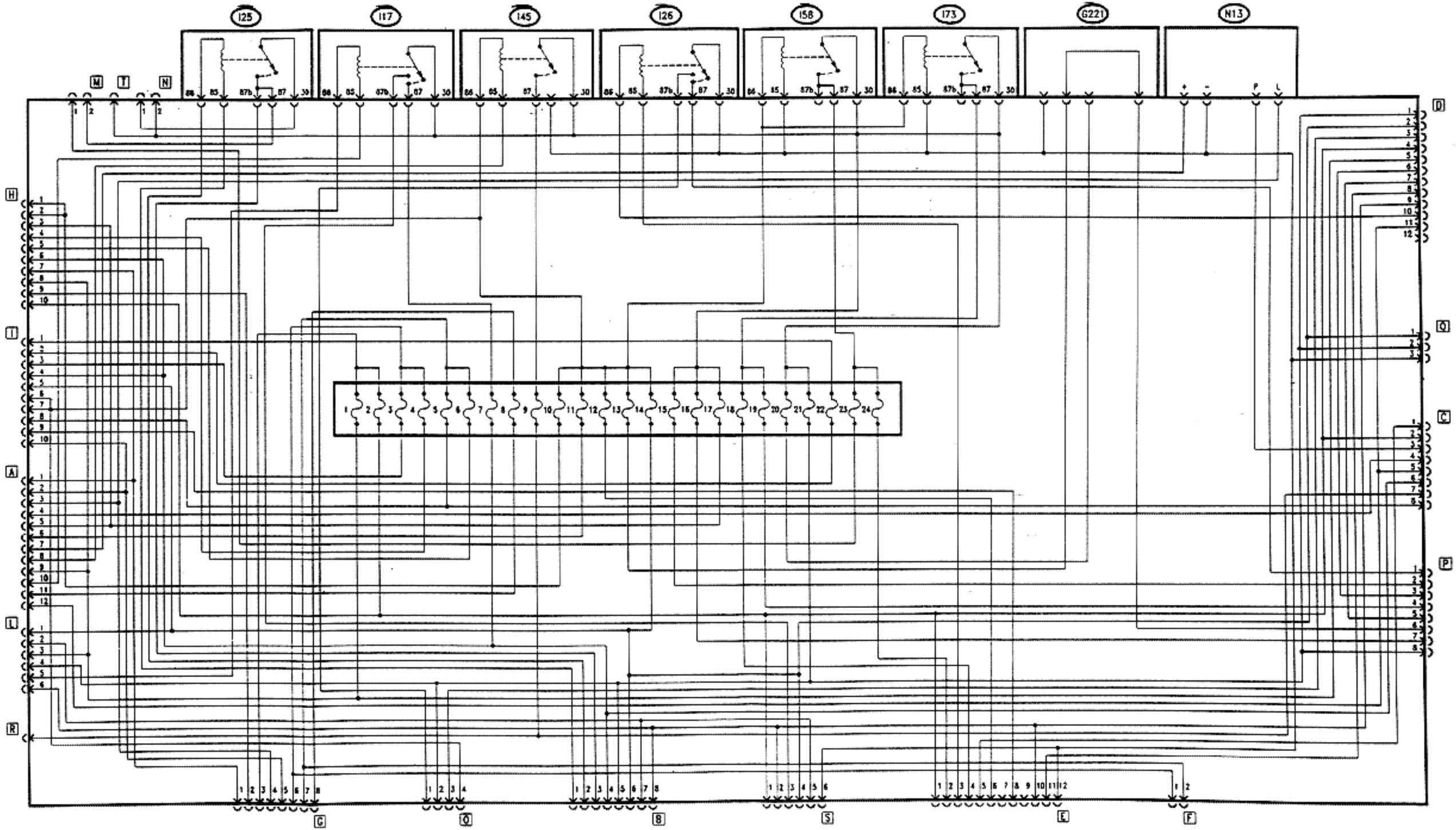
FUSE BOX



GENERAL

This wiring diagram illustrates the fuse box printed circuit. The fuse box has never been entirely illustrated in the various sections of this manual; therefore refer to this wiring diagram for a complete view of this component. Enclosed is a table listing all the signals. An adequate knowledge of signals which are expected to be present at pins of the fuse box makes trouble-shooting failures affecting the system easy.

BASE AND L ONLY

CONNECTOR A	
1	HAZARD LAMPS RELAY
2	HAZARD LAMPS RELAY
3	HAZARD LAMPS RELAY
4	HAZARD LAMPS RELAY
5	+30 X RELAY
6	+15
7	+ INTERMITTANCE
8	REAR WINDOW DEFOGGING SWITCH
9	POSITION LAMPS
10	FRONT FOG LAMPS SWITCH
11	JUMPER FOR REAR FOG WARN. LAMPS
12	JUMPER FOR REAR FOG WARN. LAMPS

CONNECTOR B	
1	REAR FOG SWITCH
2	JUMPER AT 7 FOR MULTIPLE SWITCH
3	+ REAR FOG
4	SPARE
5	SPARE
6	SPARE
7	JUMPER AT 2
8	CURRENT UNDER REHOST

CONNECTOR C	
1	CURRENT UNDER REHOST
2	POSITION LAMPS WARNING LAMP
3	+ HAZARD LAMPS WARNING LAMP
4	- HAZARD LAMPS WARNING LAMP
5	REAR FOG LAMP WARNING LAMP
6	FRONT FOG LAMPS WARNING LAMP
7	REAR WINDOW WARNING LAMP
8	HEAD LAMPS WARNING LAMP

CONNECTOR D	
1	SPARE
2	SPARE
3	+50
4	+ POSITION LAMP
5	+ POSITION LAMP
6	CHECK FOR STOP LAMPS
7	STOP SWITCH
8	PARKING BRAKE
9	SPARE
10	DOME LAMP DELAYED TIMER
11	REAR FOG LAMP
12	SPARE

CONNECTOR E	
1	+ POSITION LAMPS
2	SPARE
3	DOME LAMPS RELAY ENERGIZED
4	RIGH FRONT WINDOW LIFT
5	- CURRENT UNDER REHOST
6	AIR CONDITIONING RELAY
7	SPARE
8	SPARE
9	SPARE
10	- CURRENT UNDER REHOST
11	PARKING BRAKE WARNING LAMP
12	GROUND

CONNECTOR F	
1	SPARE
2	SPARE

CONNECTOR G	
1	TURN SIGNAL LAMPS
2	HORNS
3	POSITION LAMPS
4	TURN SIGNAL LAMPS
5	TURN SIGNAL LAMPS
6	LOW BEAM LAMPS
7	HIGH BEAM LAMPS
8	REAR FOG LAMPS

CONNECTOR H	
1	REAR BACK-UP SWITCH
2	+15
3	HEAD LAMPS WASHER TIMER
4	LEFT LOW BEAM LAMP
5	LEFT HIGH BEAM LAMP
6	FRONT FOG LAMPS
7	LEFT TURN SIGNAL LAMPS
8	SPARE
9	HORNS
10	POSITION LAMPS

CONNECTOR I	
1	FUEL PUMP
2	FUEL PUMP
3	RIGHT LOW BEAM LAMP
4	FRONT FOG LAMPS
5	INHIBITOR ELECTRIC FAN RELAY
6	SPARE
7	SPARE
8	RIGHT LOW BEAM LAMP
9	SPARE
10	RIGHT TURN SIGNAL LAMP

CONNECTOR L	
1	SPARE
2	SPARE
3	JUMPER AT 5 (+POSITION LAMPS)
4	SPARE
5	JUMPER AT 3 (+POSITION LAMPS)
6	SPARE

CONNECTOR M	
1	SUN ROOF, FRONT HEATED SEATS
2	SPARE

CONNECTOR N	
1	EXTERNAL JUMP
2	+ BATTERY

CONNECTOR O	
1	- DOME LAMPS
2	+30
3	+50
4	+15

CONNECTOR P	
1	- DOME LAMPS
2	+ STOP SWITCH
3	STOP LAMPS
4	LEFT FRONT WINDOW LIFTS
5	CHECK FOR STOP SWITCH
6	REAR CIGAR LIGHTERS
7	ELECTRIC DOOR LOCK/UNLOCK SYSTEM
8	FRONT CIGAR LIGHTERS

BASE AND L ONLY

CONNECTOR Q	
1	+15
2	+30
3	GROUND

CONNECTOR R	
1	DEFROSTERS

CONNECTOR S	
1	+ DIMMER SWITCH
2	- DIMMER SWITCH
3	JUMPER AT 5 (+FRONT FOG LAMPS)
4	+15
5	JUMPER AT 3
6	-

CONNECTOR T	
1	+ BATTERY

LEGEND RELAYS

RELE'	UNDER-FUSE SERVICE
G221	WINDOWS LIFT SHORTING BOX CONNECTOR
I17	FRONT FOG LAMPS RELAY
I25	REAR FOG LAMPS RELAY
I26	DOME LAMP RELAY
N13	HAZARD LAMPS RELAY
I45	EXTERNAL REARVIEW MIRRORS DEFOGGING RELAY
I58	SUN ROOF/SEAT RELAY
I73	DOOR LOCK/FRONT ELECTRIC WINDOW LIFT RELAY

LEGEND FUSEL

No.	VAL.	UNDER-FUSE SERVICE
1	7,5	RIGHT FRONT AND LEFT REAR POSITION LAMPS LICENSE PLATE, UNDERHOOD
2	7,5	LEFT FRONT AND RIGHT REAR POSITION LAMPS, TRUNK, DOME AND PANEL SWITCH, COURTESY LIGHT
3	10	RIGHT LOW LAMP (RELAY ENERGIZED)
4	10	LEFT LOW LAMP (RELAY ENERGIZED), WARNING LAMP
5	10	RIGHT HIGH LAMP AND WARNING LAMP
6	10	LEFT HIGH LAMP
7	15	FRONT FOG LAMPS AND WARNING LAMP
8	7,5	REAR FOG LAMPS AND WARNING LAMP
9	10	REAR WINDOW, WINDSHIELD, EXERNAL MIRRORS DEFOGGING, RELAY COIL, WARNING LAMP
10	20	BACK-UP LAMPS, WINDSHIELD WASHER
11	7,5	TURN SIGNAL LAMPS, POSITION LAMPS
12	10	AIR CONDITIONING RELAY
13	10	REAR CIGAR LIGHTERS
14	7,5	ELECTRIC FAN MOTOR RELAY COIL, TEST INSTRUMENT, CRUISE CONTROL
15	15	STOP LAMPS
16	10	ELECTRIC DOOR LOCK/UNLOCK SYSTEM
17	20	HEAD LAMPS WASHER, HAZARD LAMPS
18	30	RIGHT FRONT WINDOW LIFT
19	30	LEFT FRONT WINDOW LIFT
20	30	SPARE
21	15	FRONT DOME LAMP, GLOVEBOX LAMP, FUSE BOX LAMP, FRONT CIGAR LIGHTERS
22	15	MOTOR RELAY POWER
23	20	SUN ROOF, HEAD SEAT
24	25	SPARE

S ONLY

CONNECTOR A	
1	HAZARD LAMPS RELAY
2	HAZARD LAMPS RELAY
3	HAZARD LAMPS RELAY
4	HAZARD LAMPS RELAY
5	+30 X RELAY
6	+15
7	+ INTERMITTANCE
8	REAR WINDOW DEFOGGING SWITCH
9	POSITION LAMPS
10	FRONT FOG LAMPS SWITCH
11	JUMPER FOR REAR FOG WARN. LAMPS
12	JUMPER FOR REAR FOG WARN. LAMPS

CONNECTOR B	
1	REAR FOG SWITCH
2	JUMPER AT 7 FOR MULTIPLE SWITCH
3	+ REAR FOG
4	SPARE
5	SPARE
6	SPARE
7	JUMPER AT 2
8	CURRENT UNDER REHOST

CONNECTOR C	
1	CURRENT UNDER REHOST
2	POSITION LAMPS WARNING LAMP
3	+ HAZARD LAMPS WARNING LAMP
4	- HAZARD LAMPS WARNING LAMP
5	REAR FOG LAMP WARNING LAMP
6	FRONT FOG LAMPS WARNING LAMP
7	REAR WINDOW WARNING LAMP
8	HEAD LAMPS WARNING LAMP

CONNECTOR D	
1	SPARE
2	CONTROLLED DAMPING SUSPENSION
3	+50
4	+ POSITION LAMP
5	+ POSITION LAMP
6	CHECK FOR STOP LAMPS
7	STOP SWITCH
8	PARKING BRAKE
9	SPARE
10	DOME LAMP DELAYED TIMER
11	REAR FOG LAMP
12	SPARE

CONNECTOR E	
1	+ POSITION LAMPS
2	SPARE
3	DOME LAMPS RELAY ENERGIZED
4	RIGH FRONT WINDOW LIFT
5	- CURRENT UNDER REHOST
6	AIR CONDITIONING RELAY
7	SPARE
8	SPARE
9	SPARE
10	- CURRENT UNDER REHOST
11	PARKING BRAKE WARNING LAMP
12	GROUND

CONNECTOR F	
1	SPARE
2	SPARE

CONNECTOR G	
1	TURN SIGNAL LAMPS
2	HORNS
3	POSITION LAMPS
4	TURN SIGNAL LAMPS
5	TURN SIGNAL LAMPS
6	LOW BEAM LAMPS
7	HIGH BEAM LAMPS
8	REAR FOG LAMPS

CONNECTOR H	
1	REAR BACK-UP SWITCH
2	+15
3	HEAD LAMPS WASHER TIMER
4	LEFT LOW BEAM LAMP
5	LEFT HIGH BEAM LAMP
6	FRONT FOG LAMPS
7	LEFT TURN SIGNAL LAMPS
8	SPARE
9	HORNS
10	POSITION LAMPS

CONNECTOR I	
1	FUEL PUMP
2	FUEL PUMP -
3	RIGHT LOW BEAM LAMP
4	FRONT FOG LAMPS
5	INHIBITOR ELECTRIC FAN RELAY
6	SPARE
7	SPARE
8	RIGHT LOW BEAM LAMP
9	SPARE
10	RIGHT TURN SIGNAL LAMP

CONNECTOR L	
1	SPARE
2	SPARE
3	JUMPER AT 5 (+POSITION LAMPS)
4	SPARE
5	JUMPER AT 3 (+POSITION LAMPS)
6	SPARE

CONNECTOR M	
1	SUN ROOF, FRONT HEATED SEATS
2	SPARE

CONNECTOR N	
1	EXTERNAL JUMP
2	+ BATTERY

CONNECTOR O	
1	- DOME LAMPS
2	+30
3	+50
4	+15

CONNECTOR P	
1	- DOME LAMPS
2	+ STOP SWITCH
3	STOP LAMPS
4	LEFT FRONT WINDOW LIFTS
5	CHECK FOR STOP SWITCH
6	REAR CIGAR LIGHTERS
7	ELECTRIC DOOR LOCK/UNLOCK SYSTEM
8	FRONT CIGAR LIGHTERS

S ONLY

CONNECTOR Q	
1	+15
2	+30
3	GROUND

CONNECTOR R	
1	DEFROSTERS

CONNECTOR S	
1	+ DIMMER SWITCH
2	– DIMMER SWITCH
3	JUMPER AT 5 (+FRONT FOG LAMPS)
4	+15
5	JUMPER AT 3
6	–

CONNECTOR T	
1	+ BATTERY

LEGEND RELAYS

RELE'	UNDER-FUSE SERVICE
G221	WINDOWS LIFT SHORTING BOX CONNECTOR
I17	FRONT FOG LAMPS RELAY
I25	REAR FOG LAMPS RELAY
I26	DOME LAMP RELAY
N13	HAZARD LAMPS RELAY
I45	EXTERNAL REARVIEW MIRRORS DEFOGGING RELAY
I58	SUN ROOF/SEAT RELAY
I73	DOOR LOCK/FRONT ELECTRIC WINDOW LIFT RELAY

LEGEND FUSEL

No.	VAL.	UNDER-FUSE SERVICE
1	7,5	RIGHT FRONT AND LEFT REAR POSITION LAMPS LICENSE PLATE, UNDERHOOD
2	7,5	LEFT FRONT AND RIGHT REAR POSITION LAMPS, TRUNK, DOME AND PANEL SWITCH, COURTESY LIGHT
3	10	RIGHT LOW LAMP (RELAY ENERGIZED)
4	10	LEFT LOW LAMP (RELAY ENERGIZED), WARNING LAMP
5	10	RIGHT HIGH LAMP AND WARNING LAMP
6	10	LEFT HIGH LAMP
7	15	FRONT FOG LAMPS AND WARNING LAMP
8	7,5	REAR FOG LAMPS AND WARNING LAMP
9	10	REAR WINDOW, WINDSHIELD, EXTERNAL MIRRORS DEFOGGING, RELAY COIL, WARNING LAMP
10	20	BACK-UP LAMPS, WINDSHIELD WASHER
11	7,5	TURN SIGNAL LAMPS, POSITION LAMPS
12	10	AIR CONDITIONING RELAY
13	10	REAR CIGAR LIGHTERS
14	7,5	ELECTRIC FAN MOTOR RELAY COIL, TEST INSTRUMENT, CRUISE CONTROL, CONTROLLED DAMPING SUSPENSION
15	15	STOP LAMPS
16	10	ELECTRIC DOOR LOCK/UNLOCK SYSTEM
17	20	HEAD LAMPS WASHER, HAZARD LAMPS
18	30	RIGHT FRONT WINDOW LIFT
19	30	LEFT FRONT WINDOW LIFT
20	30	SPARE
21	15	FRONT DOME LAMP, GLOVEBOX LAMP, FUSE BOX LAMP, FRONT CIGAR LIGHTERS
22	15	MOTOR RELAY POWER
23	20	SUN ROOF, HEAD SEAT
24	25	SPARE

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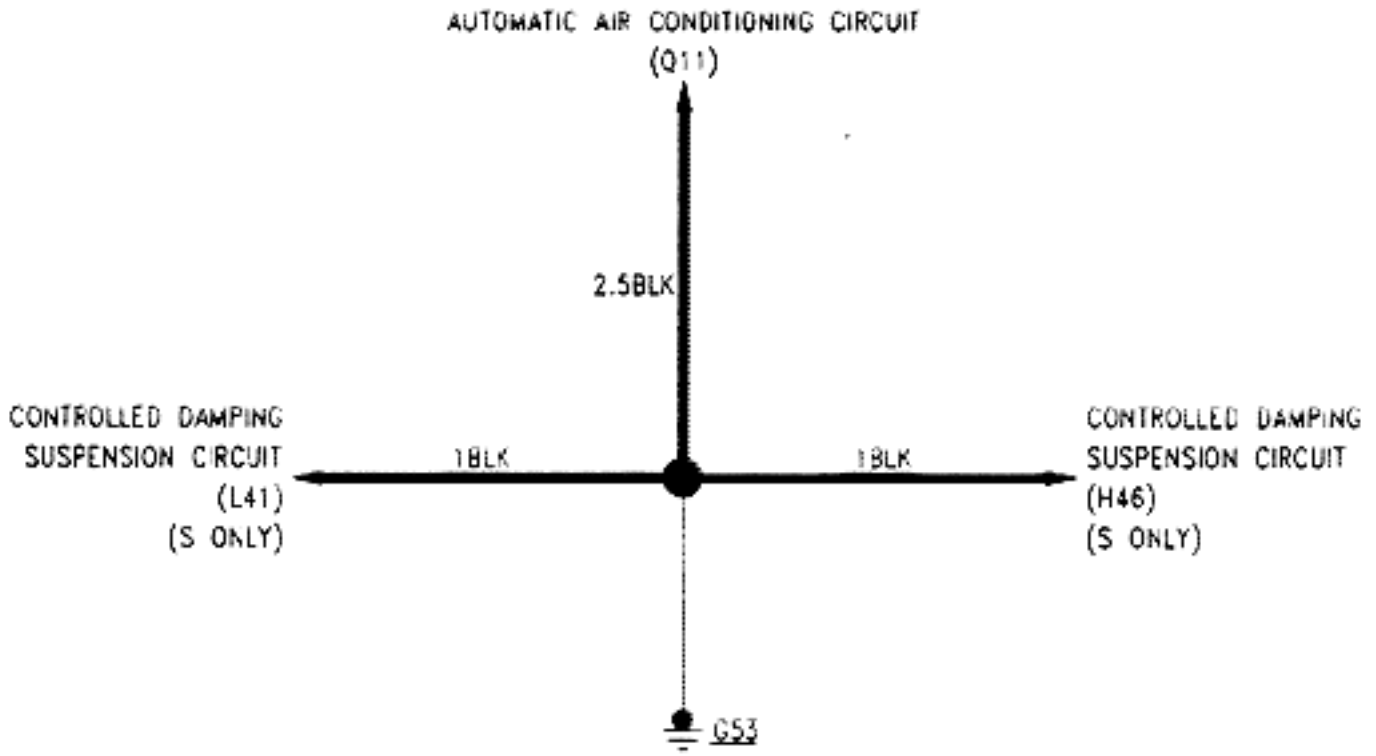
GROUNDS



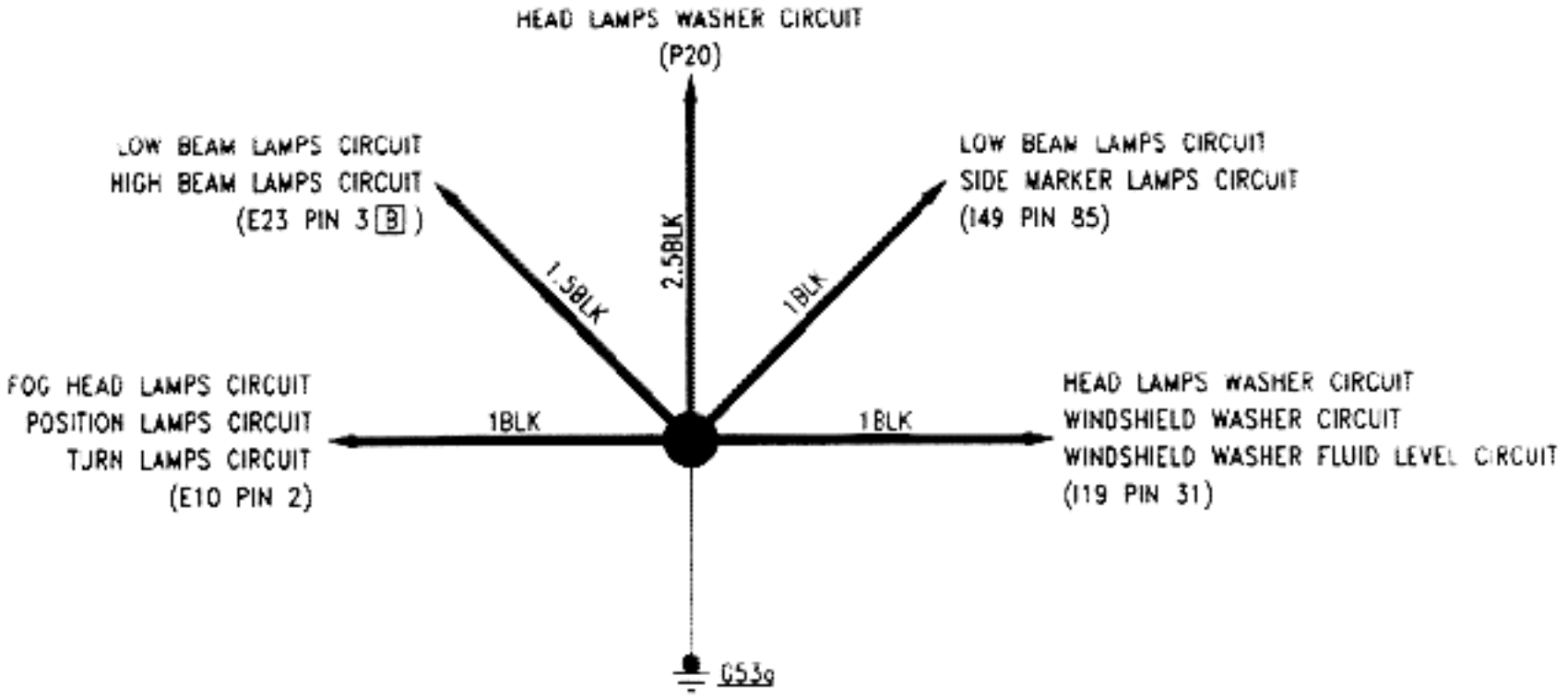
GENERAL

The ground point G53 on the right side of engine compartment allows to ground the following circuits by means of a direct mechanical connection to the vehicle's frame:

- Automatic air conditioning.
- Controlled damping suspension (only).

NOTE

An adequate knowledge of all the circuits grounded by the same ground point facilitates the troubleshooting when a failure affects all the above mentioned circuits simultaneously.



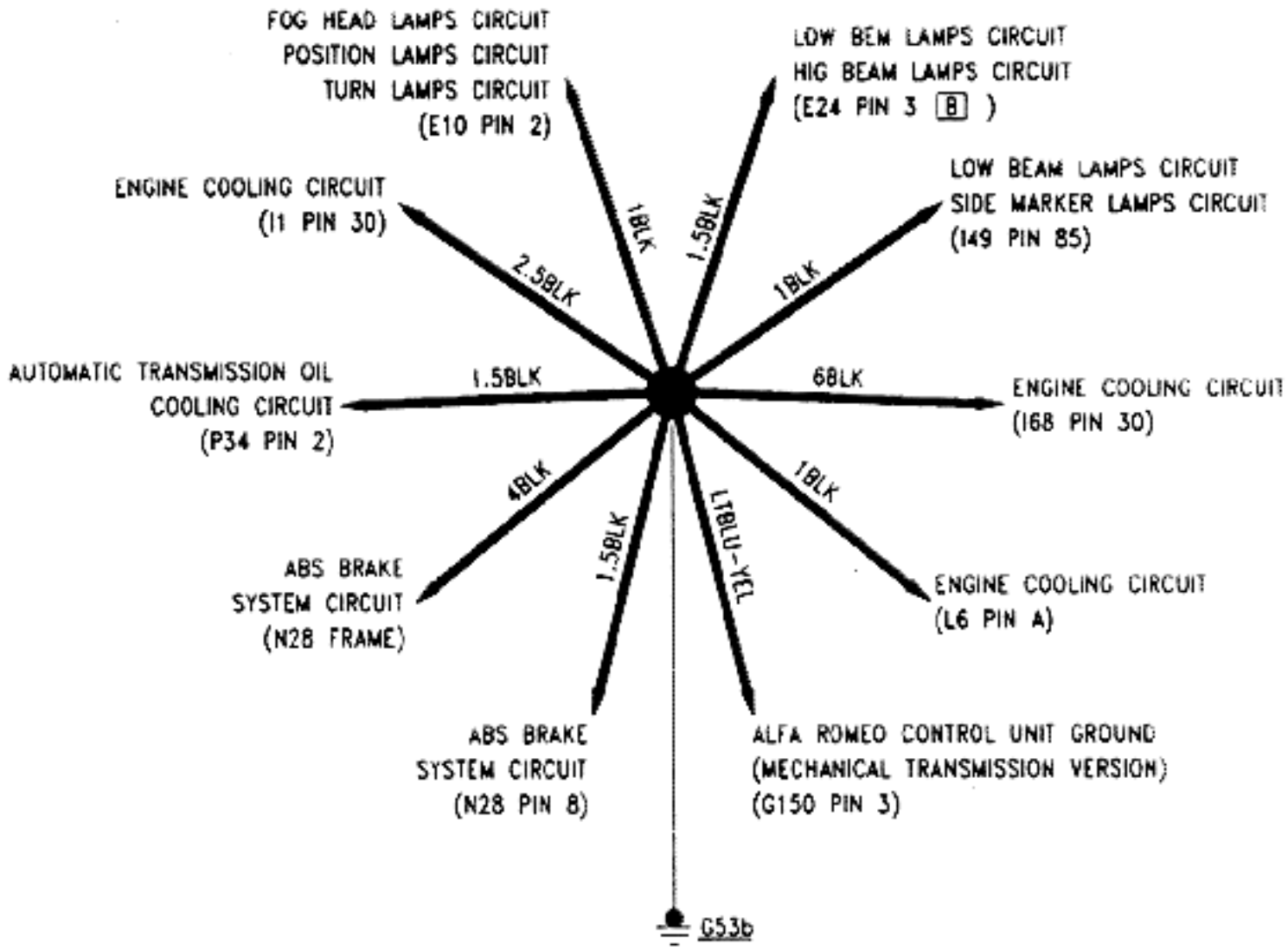
GENERAL

The ground point **G53a**, on the right side of engine compartment, allows to ground the following circuits by means of a direct mechanical connection to the vehicle's frame:

- Position and side marker lamps.
- Low-High beam lamps.
- Turn signal lamps.
- Fog head lamps.
- Windshield/head lamps washer.
- Windshield washer fluid level.

NOTE

An adequate knowledge of all the circuits grounded by the same ground point facilitates the troubleshooting when a failure affects all the above mentioned circuits simultaneously.



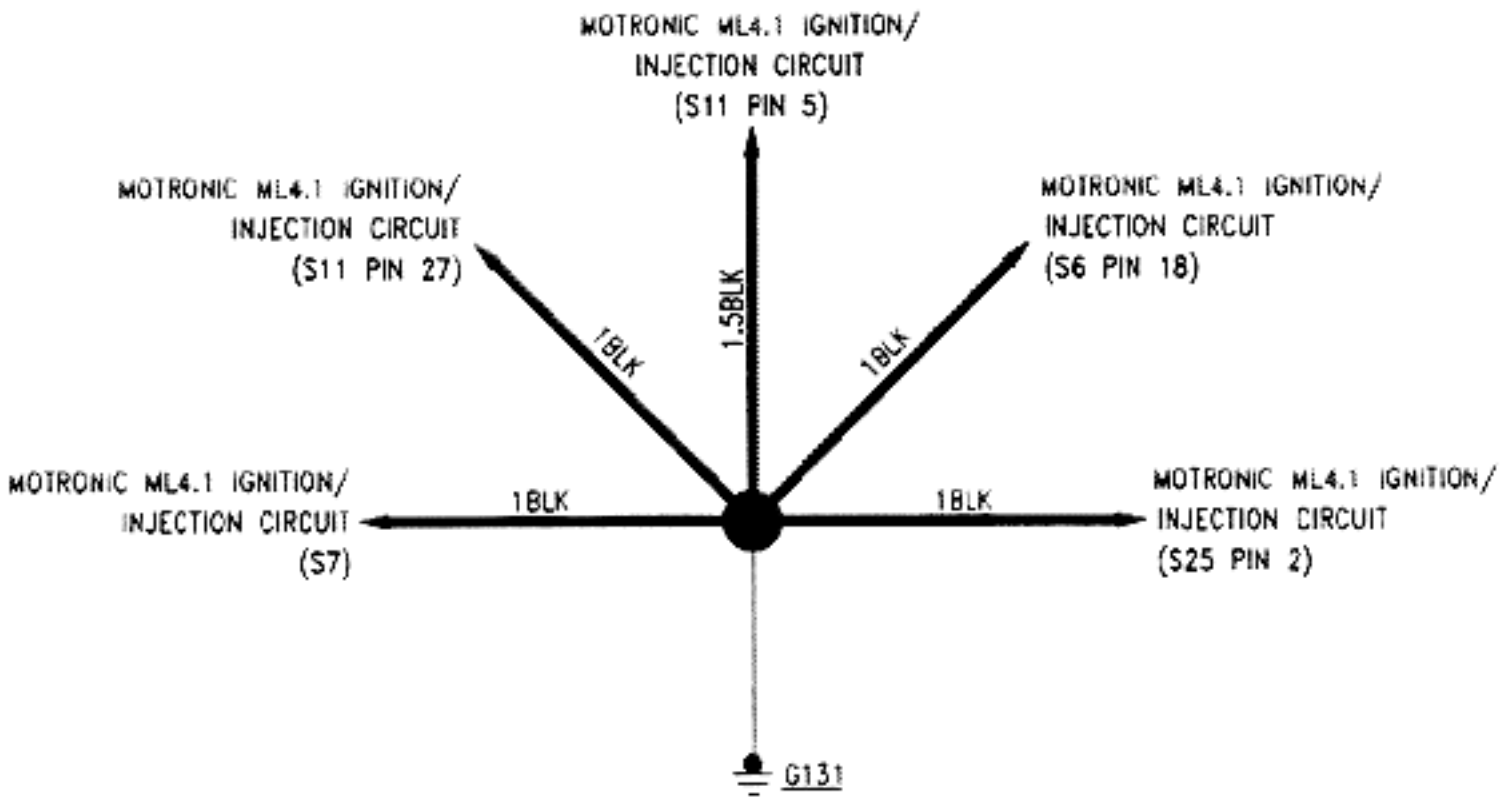
GENERAL

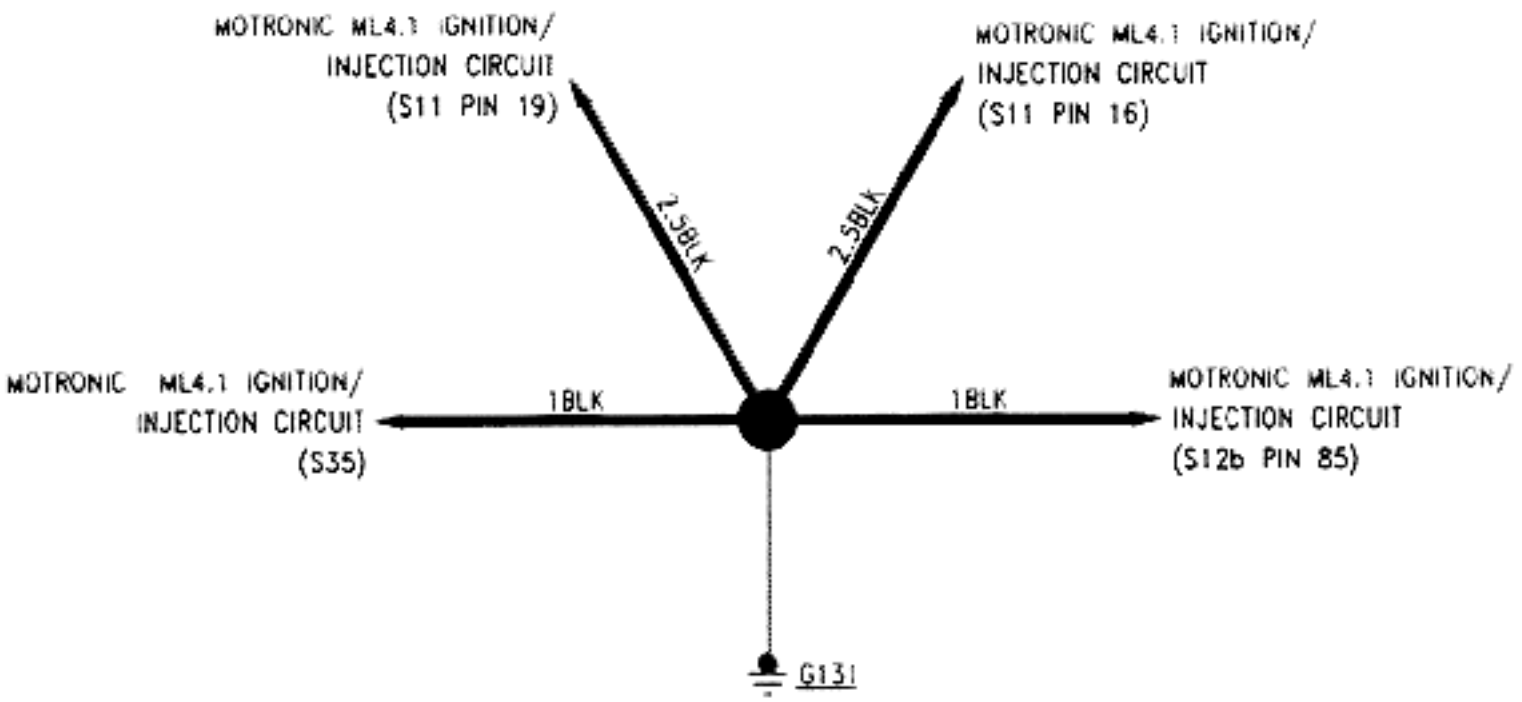
The ground point G53b, on the left side of engine compartment, allows to ground the following circuits by means of a direct mechanical connection to the vehicle's frame:

- Position and side marker lamps.
- Low-High beam lamps.
- Turn signal lamps.
- Fog head lamps.
- Alfa Romeo Control unit power circuit.
- Engine cooling.
- Automatic transmission oil cooling (BASE and L only).
- ABS brake system.

NOTE

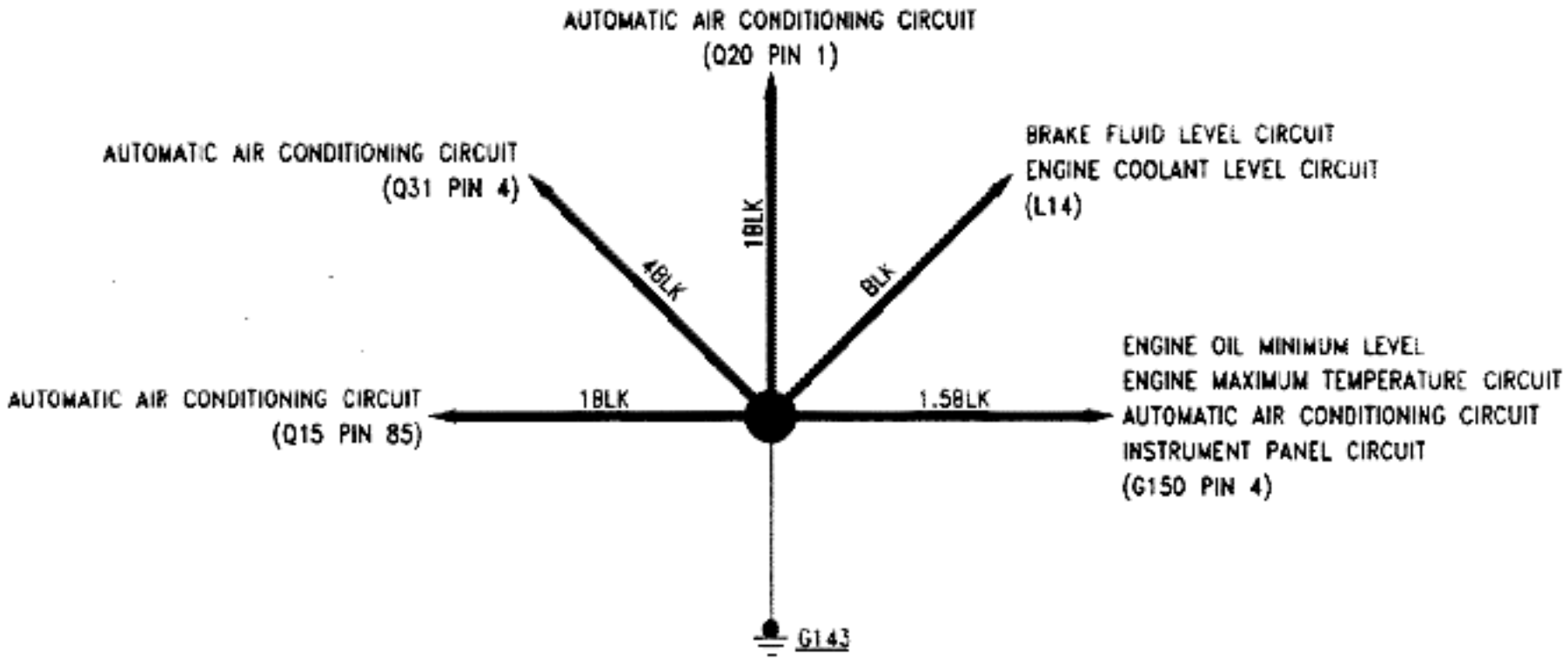
An adequate knowledge of all the circuits grounded by the same ground point facilitates the troubleshooting when a failure affects all the above mentioned circuits simultaneously.

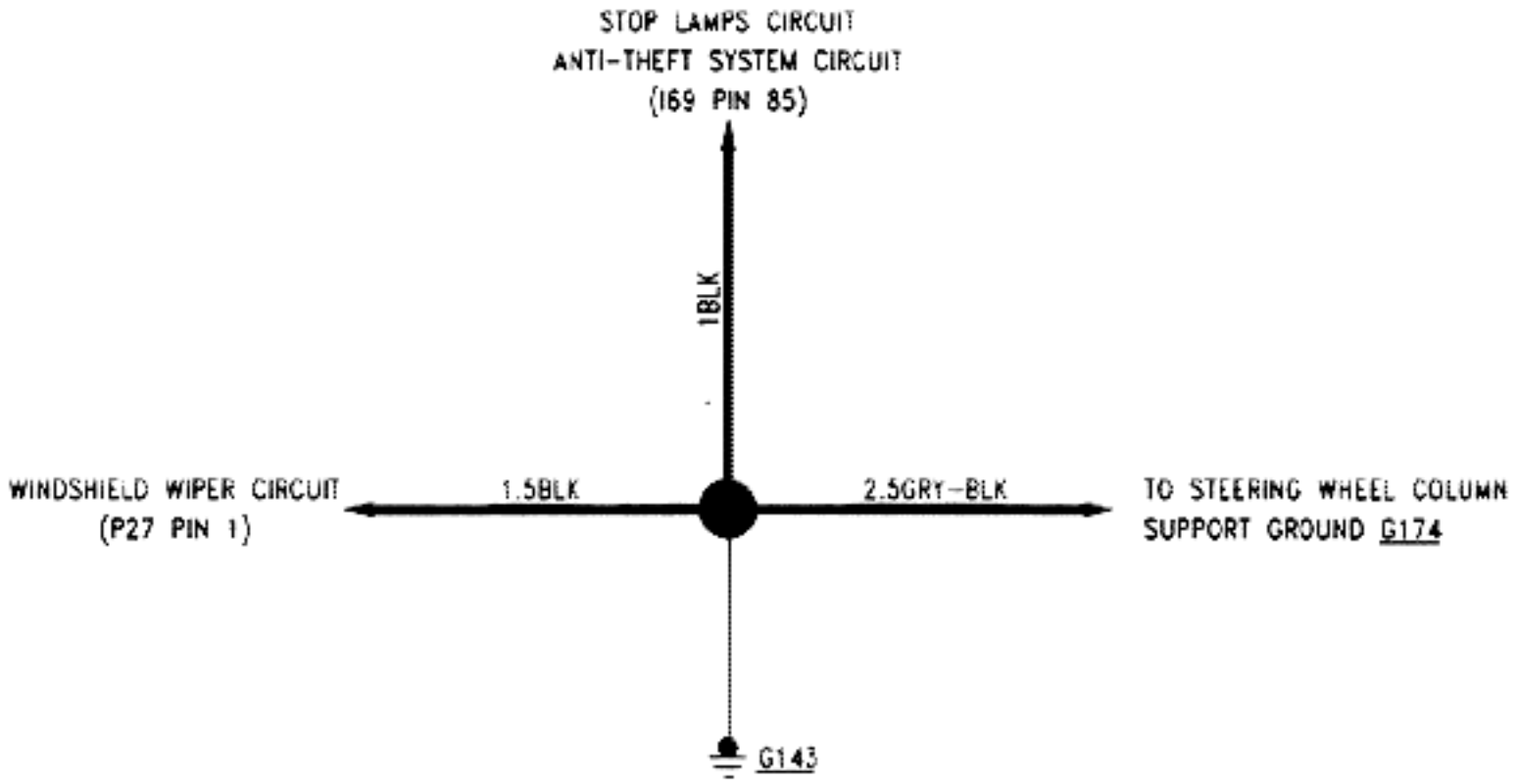




GENERAL

The ground point **G131** is located on the upper cover and allows the Motronic ML4.1 ignition/injection circuits to be grounded.





GENERAL

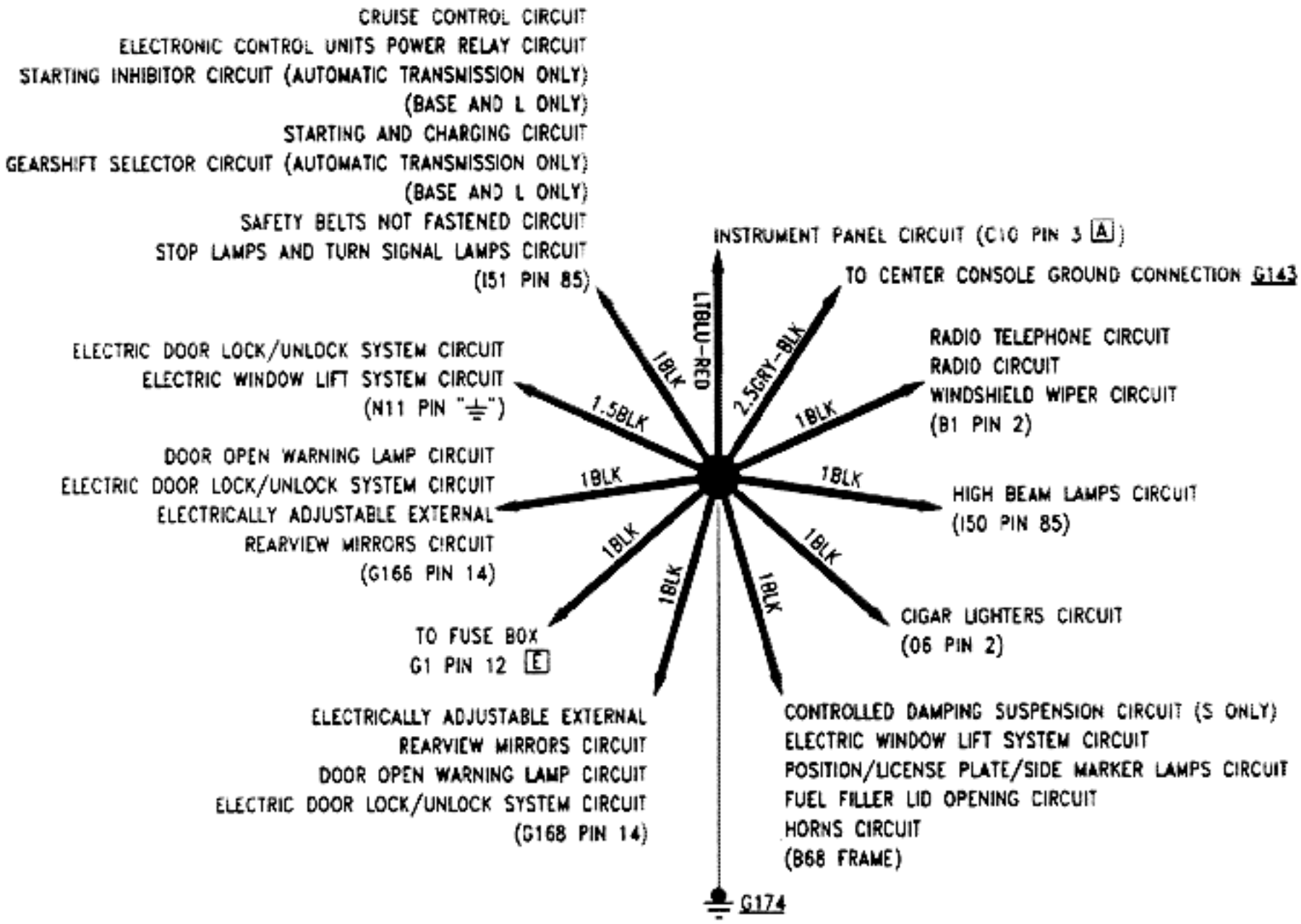
The ground point **G143**, in the center utilities well, allows to ground the following circuits by means of a direct mechanical connection to the vehicle's frame:

- Stop lamps.
- Windshield wiper.
- Instrument panel.
- Engine coolant level.
- Brake fluid level.
- Automatic air conditioning.
- Anti-theft.

Furthermore, the ground point **G143** is connected to ground point **G174** on the steering wheel column.

NOTE

An adequate knowledge of all the circuits grounded by the same ground point facilitates the troubleshooting when a failure affects all the relevant circuits simultaneously.



GENERAL

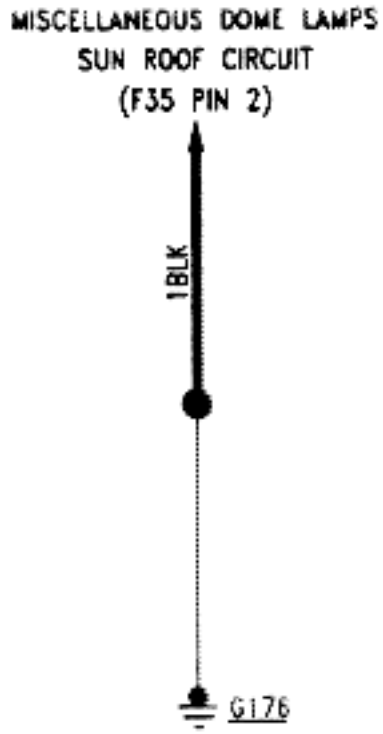
The ground point **G174**, on the steering wheel column, allows to ground the following circuits by means of a direct mechanical connection to the vehicle's frame:

- Electronic control units power relay.
- Fuse box.
- Starting inhibitor (automatic transmission only) (BASE and L only).
- Cruise control.
- High beam lamps.
- Turn signal lamps.
- Stop lamps.
- Gearshift selector (automatic transmission only) (BASE and L only).
- Windshield wiper.
- Instrument panel.
- Door open warning lamps.
- Safety belts not fastened.
- Electric window lift system.
- Electrically adjustable external rearview mirrors.
- Electric door lock/unlock system.
- Cigar lighters.
- Radio.
- Horns.
- Position/license plate/side marker.
- Fuel filler lid opening.

Furthermore, the ground point **G174** is connected to ground point **G143** of the center utilities well.

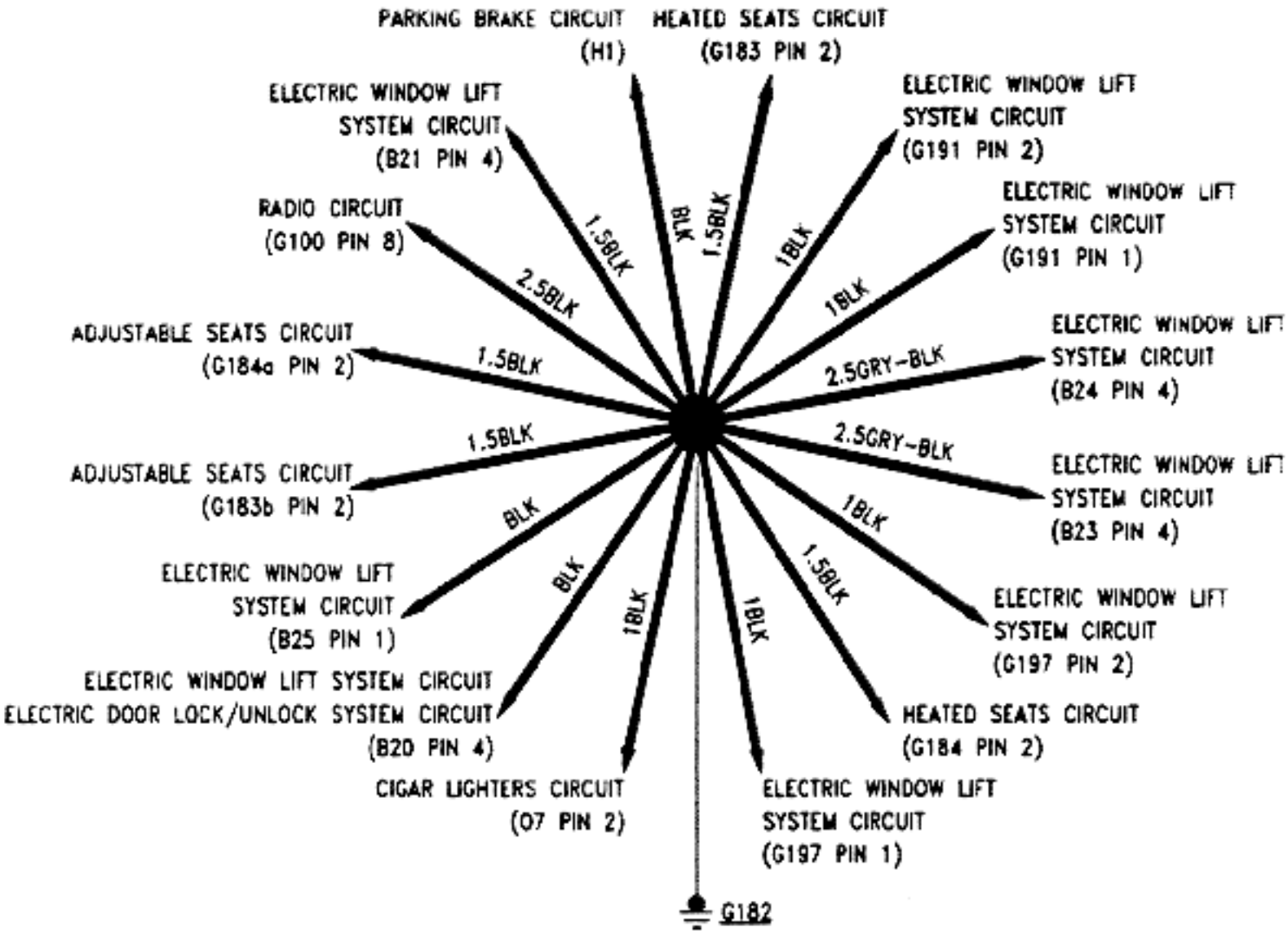
NOTE

An adequate knowledge of all the circuits grounded by the same ground point facilitates the troubleshooting when a failure affects all the relevant circuits simultaneously.



GENERAL

The ground point G176 is located on the roof panels, and allows to ground the sun roof circuit by means of a direct mechanical connection to the vehicle's frame.



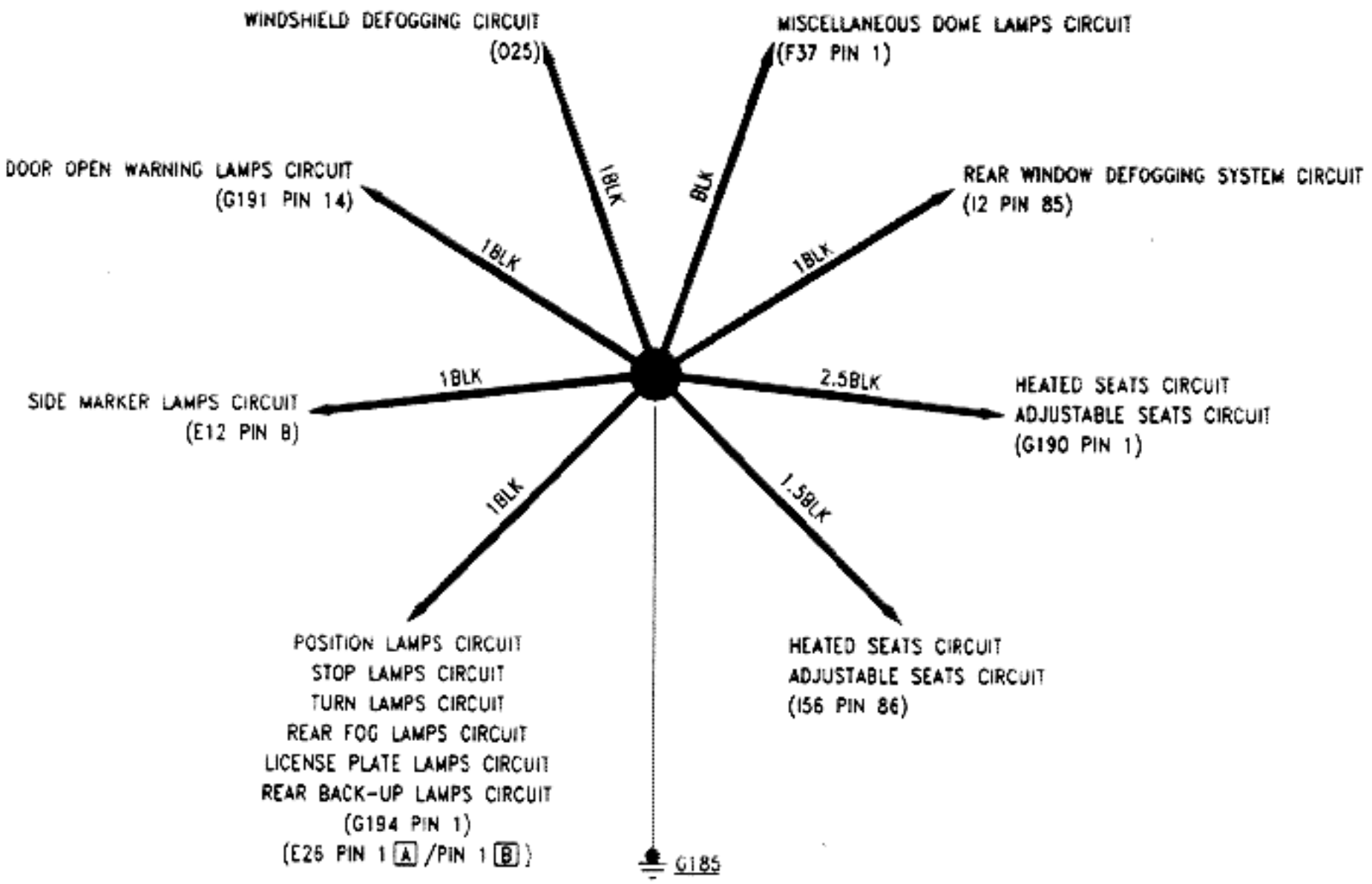
GENERAL

The ground point G182, in the center console area, allows to ground the following circuits by means of a direct mechanical connection to the vehicle's frame:

- Parking brake.
- Electric window lift system.
- Electric door lock/unlock system.
- Adjustable seats.
- Heated seats.
- Cigar lighters.
- Radio.

NOTE

An adequate knowledge of all the circuits grounded by the same ground point facilitates the troubleshooting when a failure affects all the relevant circuits simultaneously.



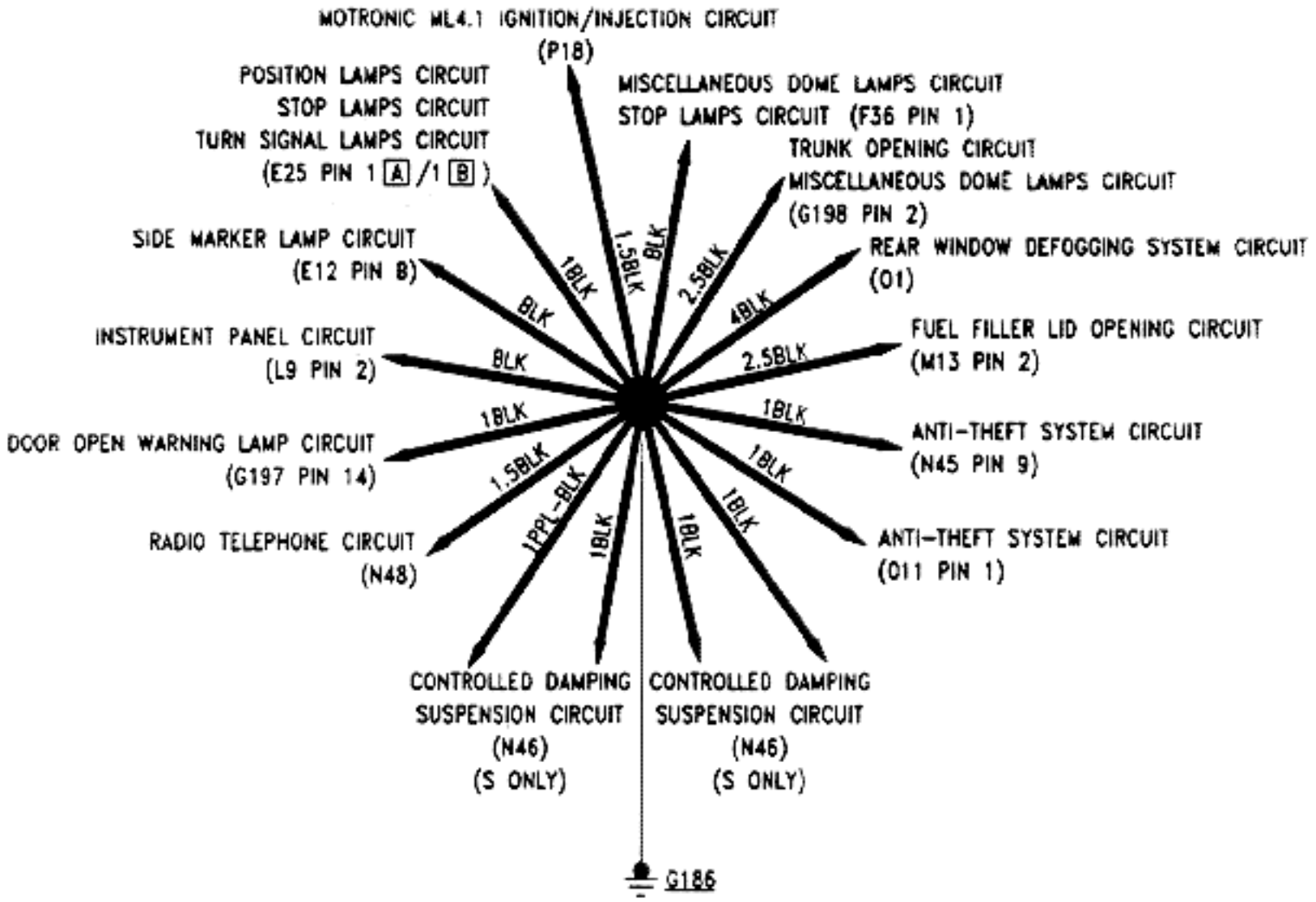
GENERAL

The ground point G185, on the left side of trunk, allows to ground the following circuits by means of a direct mechanical connection to the vehicle's frame:

- Position/license plate/side marker lamps.
- Turn signal lamps.
- Rear fog lamps.
- Stop lamps.
- Miscellaneous dome lamps.
- Door open warning lamps.
- Windshield and rear window defogging system.
- Adjustable seats.
- Heated seats.
- Rear back-up lamps.

NOTE

An adequate knowledge of all the circuits grounded by the same ground point facilitates the troubleshooting when a failure affects all the above mentioned circuits simultaneously.



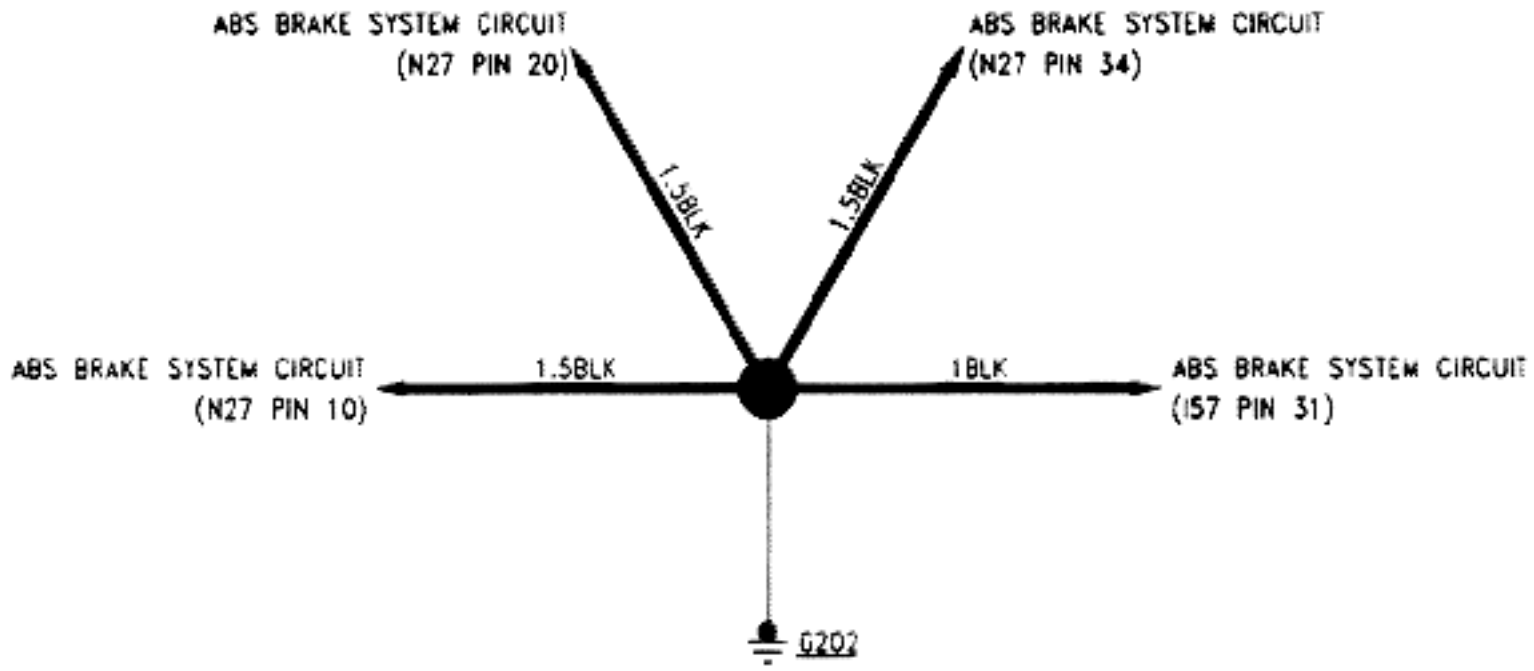
GENERAL

The ground point **G186**, on the right side of trunk, allows to ground the following circuits by means of a direct mechanical connection to the vehicle's frame:

- Motronic ML4.1 ignition/injection (fuel pump P18).
- Position/side marker lamps.
- Turn signal lamps.
- Miscellaneous dome lamps.
- Instrument panel (fuel quantity transmitter L9).
- Door open warning lamps.
- Rear window defogging system.
- Trunk opening.
- Fuel filler lid opening.
- Anti-theft.
- Radio Telephone.
- Controlled damping suspension (S only).

NOTE

An adequate knowledge of all the circuits grounded by the same ground point facilitates the troubleshooting when a failure affects all the above mentioned circuits simultaneously.



GENERAL

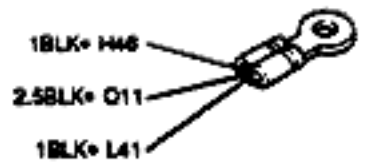
The ground point G202 is located on the L.H. fender in the engine compartment and allows ABS brake system circuit to be grounded.

Engine compartment ground connection	G53

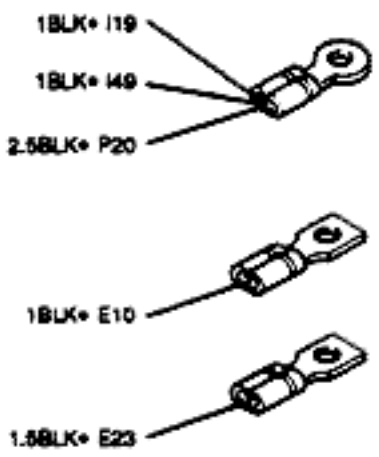
BASE AND L ONLY

Engine compartment ground connection	G53

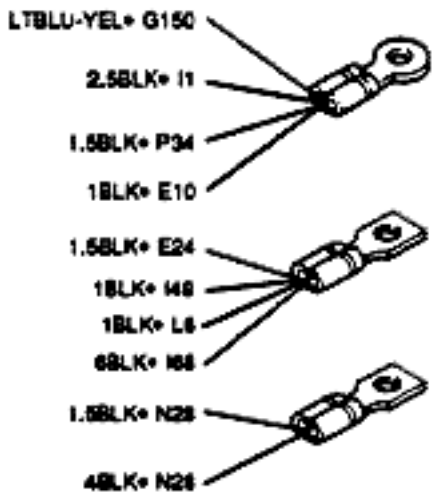
S ONLY



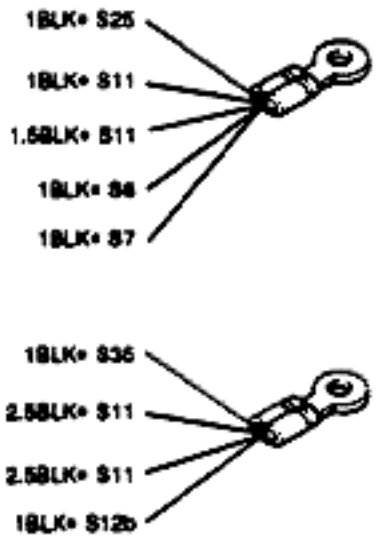
Engine compartment right side ground connection	G53a



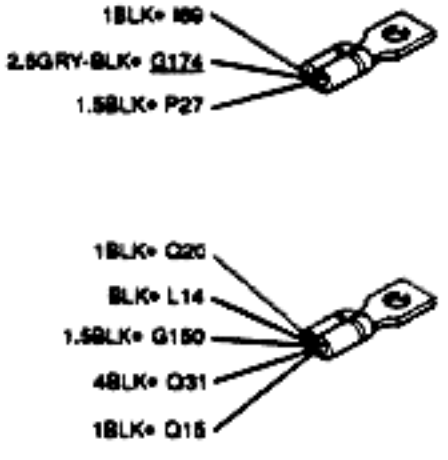
Engine compartment left side ground connection	G53b



Upper cover ground connection	G131



Central bulkhead ground	G143



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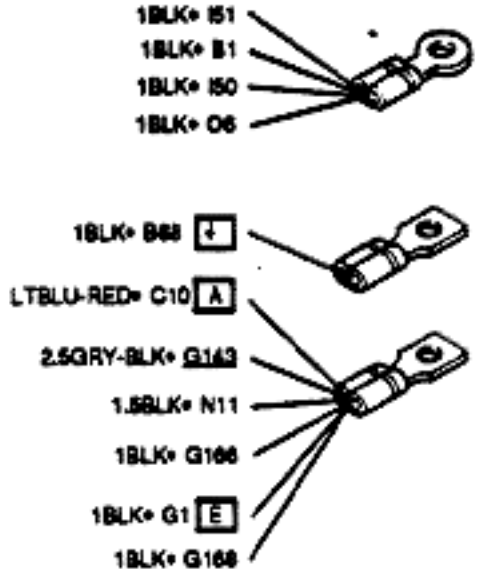
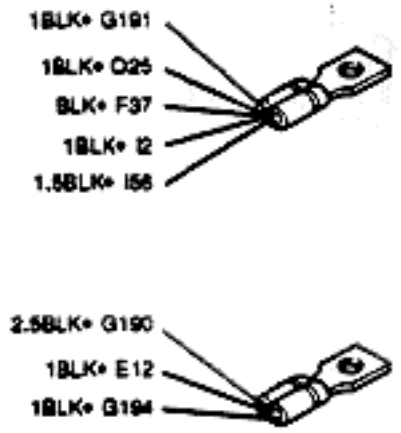
Steering wheel column support ground — G174

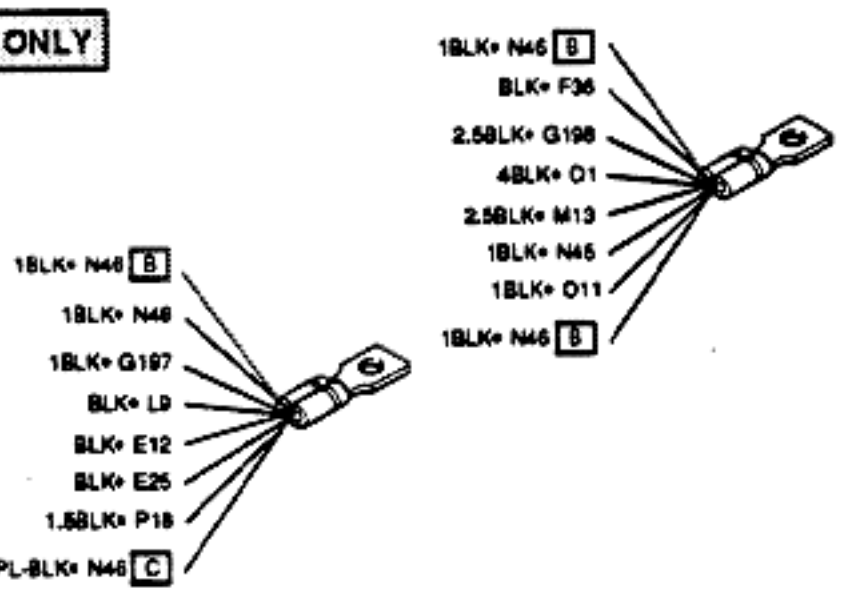


Trunk left side ground — G185



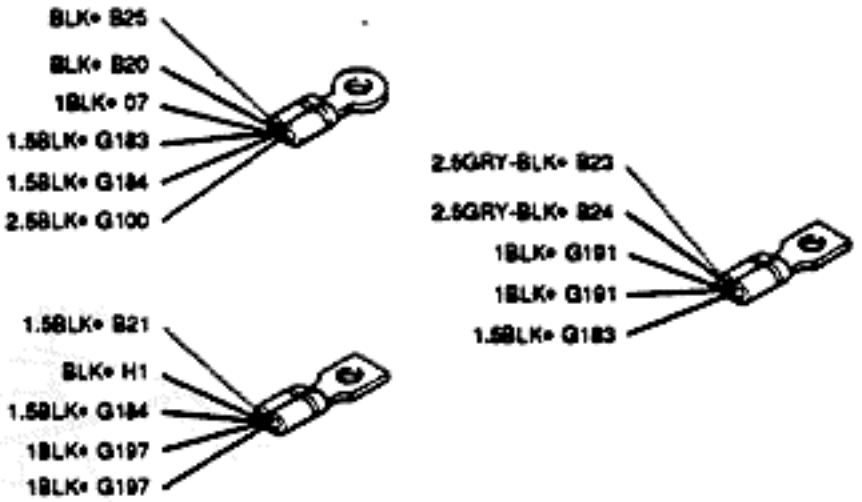
Trunk right side ground — G186

S ONLY



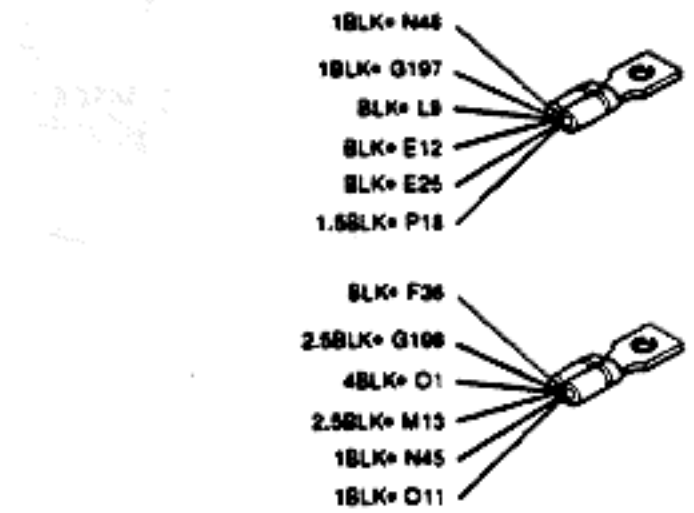
Dome ground — G176

Center console ground — G182

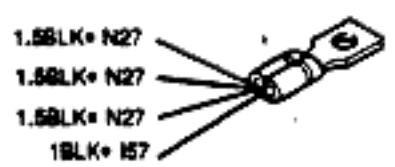


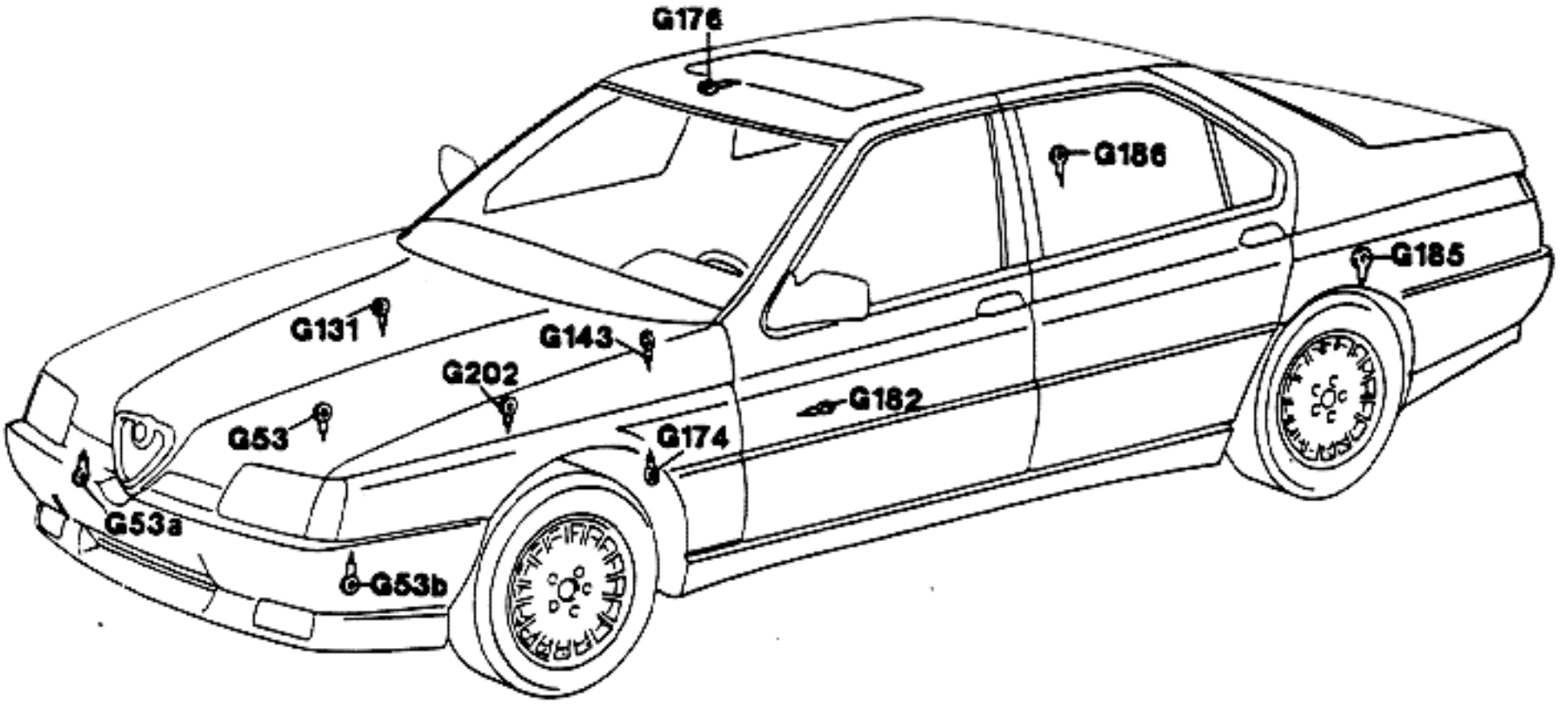
Trunk right side ground — G186

BASE AND L ONLY

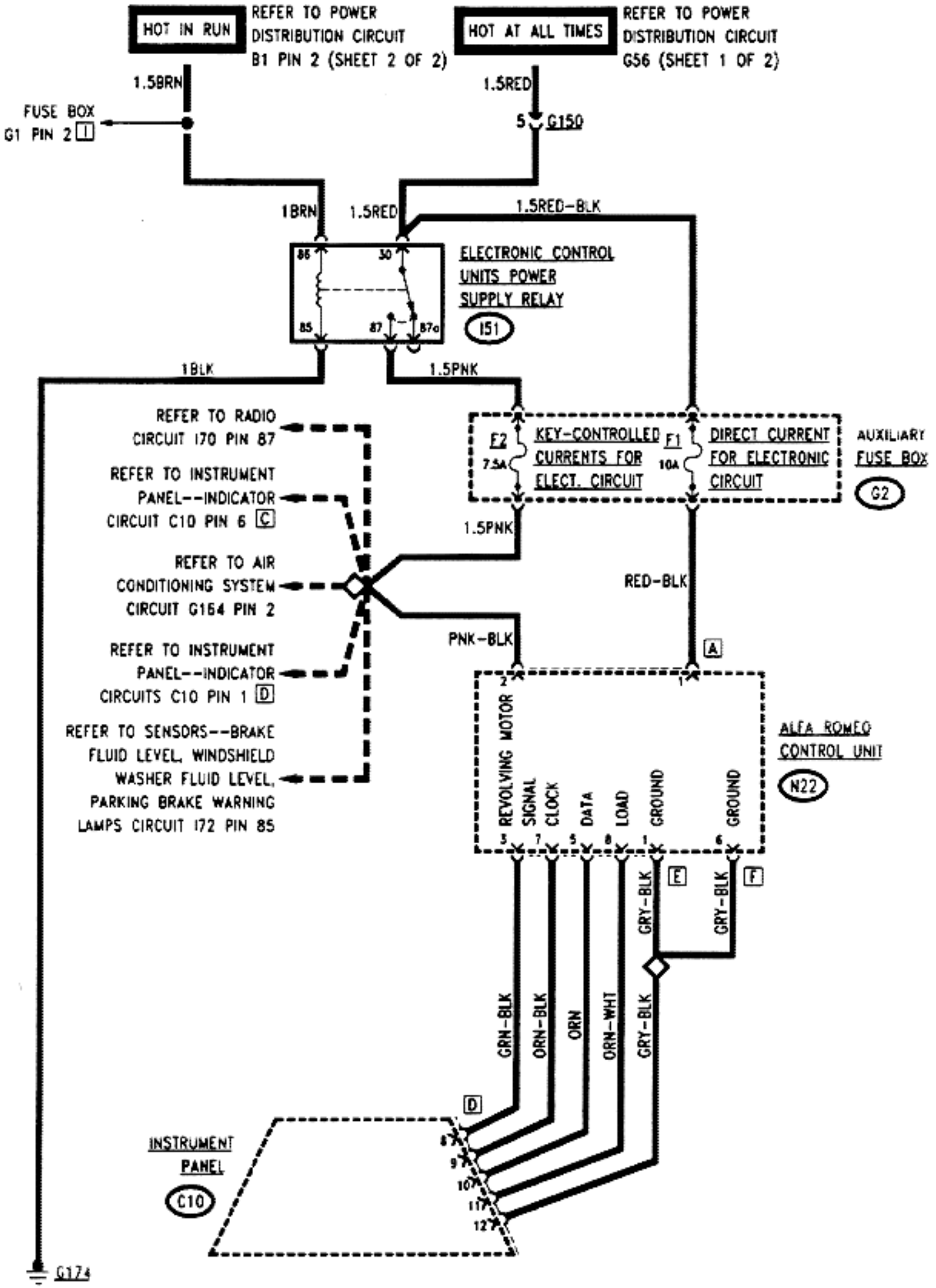


ABS system ground connection — G202





INSTRUMENT PANEL - - ALFA ROMEO CONTROL ECU INTERFACE



GENERAL

The Alfa Romeo Control unit is provided with two power supply lines: one line is directly powered by the battery, and the second line is powered when the ignition key is set to "run" position.
The first power supply line is protected by the fuse **F1** (10A) DIRECT CURRENT FOR ELECTRONIC CIRCUIT while the second line is protected by the fuse **F2** (7.5A) KEY - CONTROLLED CURRENTS FOR ELECTRONICS CIRCUIT.
The Alfa Romeo Control unit also acts as an interface unit between the instrument panel and some circuits of the vehicle for the illumination of the relevant warning lamps.

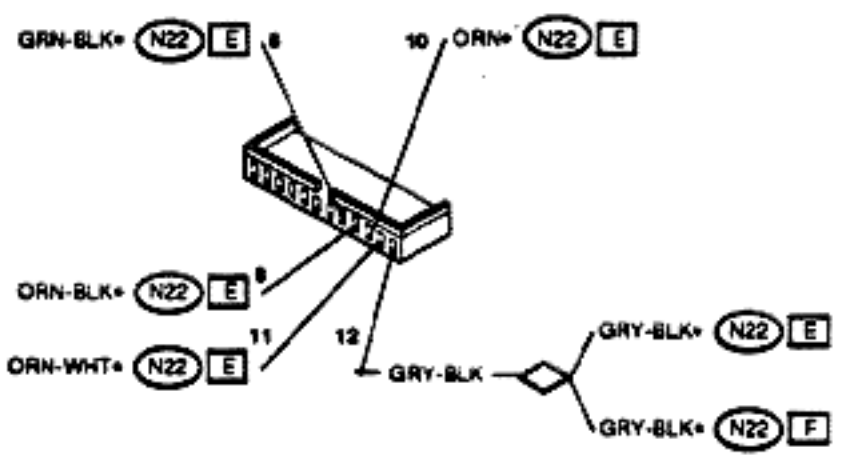
OPERATIONAL DESCRIPTION

The battery power (12V) is applied to pin 1A of the Alfa Romeo Control unit **N22**; this line is protected by the fuse **F1**.
With the ignition key set to "run", the electronic control units power supply relay **I51** applies the electronics monitored power supply to pin 2A of the control unit **N22**; this line is protected by the fuse **F2**.
The control unit **N22** (pins 3E, 7E, 5E, 8E, 1E and 6F) provides the input signals for the illumination of the following warning lamps through the connection with the instrument panel **C10**:

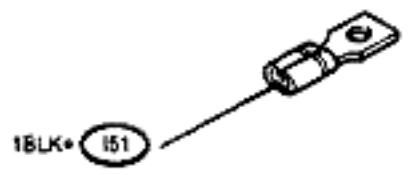
- Serigraphs of switches and controls of the vehicle.
- Left rear door open.
- Left front door open.
- Right rear door open.
- Right front door open.
- Parking brake engaged.
- Seat belt unfastened.
- Brake pad wear.
- Defective stop lamps.
- Engine coolant maximum temperature.
- Brake fluid level.
- Engine oil level.
- Engine coolant level.
- Utilities fluid level.
- Engine oil minimum pressure.
- Automatic gear oil maximum temperature (automatic transmission only).

Furthermore, the control unit **N22** supplies the instrument panel **C10** with input signals for the engine tachometer, and performs the test of the warning lamps under its control.
For further information relevant to the correct operation, of the above mentioned warning lamps refer to the specific chapter of the affected circuit.

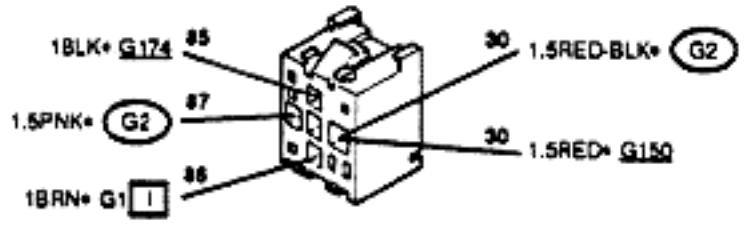
Instrument panel — C10 D



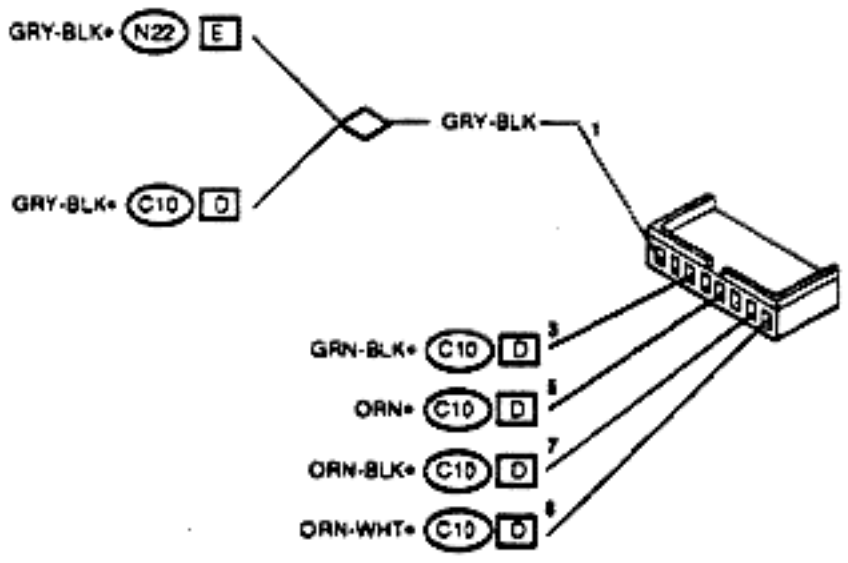
Steering wheel column support ground — G174



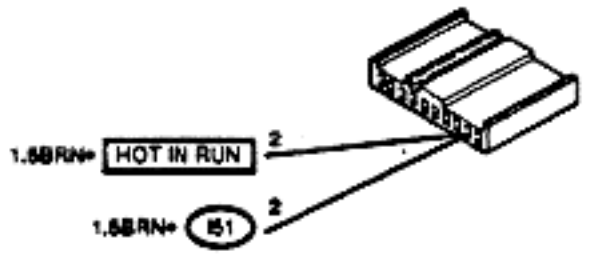
Electronic control units power supply relay — I51



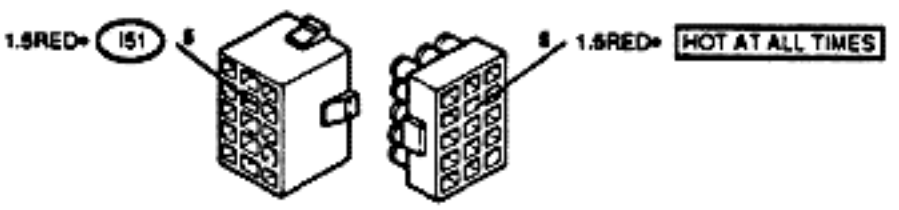
Alfa Romeo control unit — N22 E



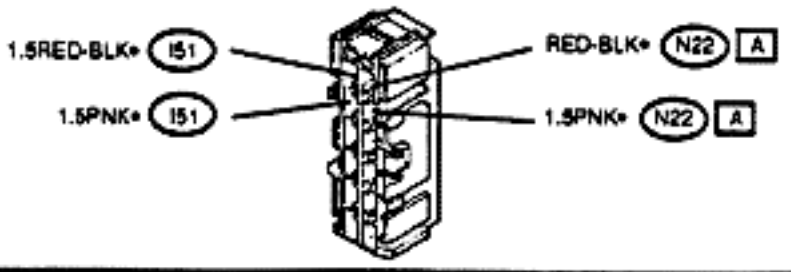
Fuse box — G1 I



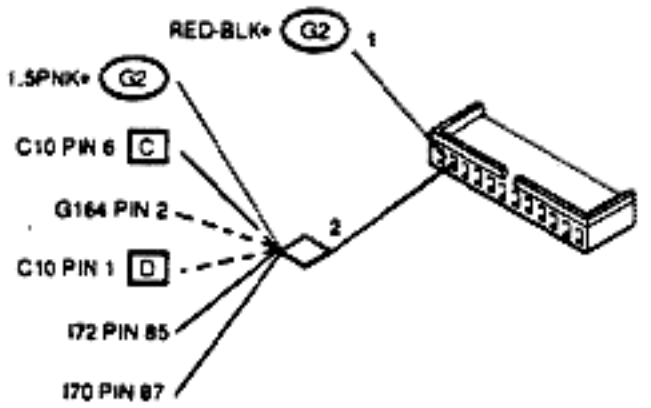
Connector, circuit board to engine compartment left side wiring — G150



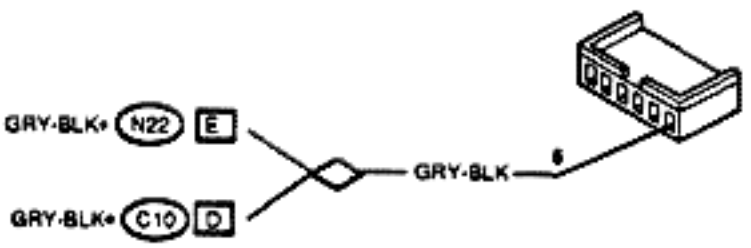
Auxiliary fuse box — G2

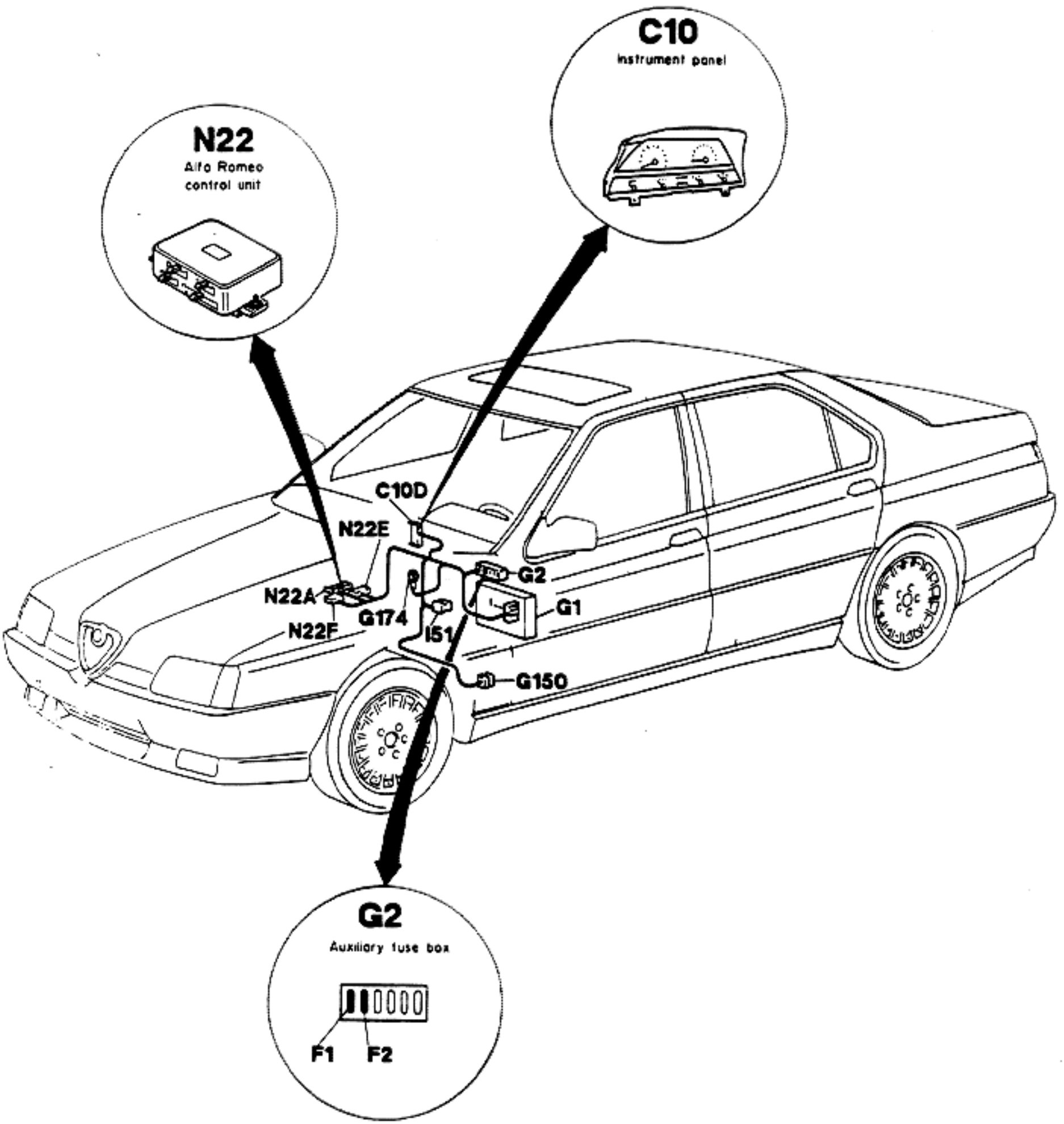


Alfa Romeo control unit — N22 A



Alfa Romeo control unit — N22 F





WARNING LAMPS MANAGED BY CONTROL UNIT N22 FAIL TO ILLUMINATE ON INSTRUMENT	TEST A

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, ascertain the integrity of the warning lamp on instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
A1 FUSE CHECK - Check fuse **F1** in auxiliary fuse box **G2** for integrity	OK ▶ OK ▶	Carry-out **step A2** Replace **fuse F1**
A2 FUSE CHECK - Check fuse **F2** in auxiliary fuse box **G2** for integrity	OK ▶ OK ▶	Carry-out **step A3** Replace **fuse F2**
A3 WARNING LAMP iLLUMINATION CHECK - Set the ignition key to "run" and check that the remaining warning lamps illuminate on the instrument panel	OK ▶ OK ▶	Carry-out **step A4** Carry-out **step A9**

(Cont.d)

WARNING LAMPS MANAGED BY CONTROL UNIT N22 FAIL TO ILLUMINATE ON INSTRUMENT	TEST A

TEST STEPS	RESULTS	REMEDY
A4 VOLTAGE CHECK - Check for presence of 12V between fuse F1 in auxiliary fuse box G2 (RED-BLK wire) and ground	OK ▶ OK ▶	Carry-out step A6 Carry-out step A5
A5 VOLTAGE CHECK - Check for presence of 12V between pin 30 of electronic control units power supply relay I51 and ground	OK ▶ OK ▶	Repair wiring between pin 30 of relay I51 and auxiliary fuse box G2 (RED-BLK wire) Carry-out step A5
A6 VOLTAGE CHECK - Check for presence of 12V between pin 5 of connector G150 and ground	OK ▶ OK ▶	Repair wiring between pin 30 of relay I51 and pin 5 of connector G150 Failure of the power distribution circuit, refer to the relevant circuit of sheet 1 of 2

(Cont.d)

WARNING LAMPS MANAGED BY CONTROL UNIT N22 FAIL TO ILLUMINATE ON INSTRUMENT	TEST A

TEST STEPS	RESULTS	REMEDY
A7 VOLTAGE CHECK - Check for presence of 12V between pin 1A of Alfa Romeo Control unit **N22** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A8** Repair wiring between **pin 1A of control unit N22 and auxiliary fuse box G2 (RED-BLK wire)**
A8 VOLTAGE CHECK - Check for continuity between pins: • 3E of control unit **N22** and 8D of instrument panel **C10** • 7E of control unit **N22** and 9D of instrument panel **C10** • 5E of control unit **N22** and 10D of instrument panel **C10** • 8E of control unit **N22** and 11D of instrument panel **C10** • 1E and 6F of control unit **N22** and12D of instrument panel **C10**	OK ▶ ~~OK~~ ▶	Replace **control unit N22 and/or instrument panel C10** Repair or replace **wires, as necessary**
A9 VOLTAGE CHECK - Check for presence of 12V between pin 2A of control unit **N22** and ground	OK ▶ ~~OK~~ ▶	Failure **of the instrument panel circuit; refer to the applicable troubleshooting procedure** Carry-out **step A10**

(Cont.d)

WARNING LAMPS MANAGED BY CONTROL UNIT N22 FAIL TO ILLUMINATE ON INSTRUMENT	TEST A

TEST STEPS	RESULTS	REMEDY
A10 VOLTAGE CHECK - Check for presence of 12V between fuse **F2** in auxiliary fuse box **G2** (PNK wire) and ground	OK ▶ OK ▶	Repair wiring between **pin 2A of control unit N22 and auxiliary fuse box G2 (PNK-BLK and PNK wires)** Carry-out **step A11**
A11 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 87 of relay **I51** and ground	OK ▶ OK ▶	Repair wiring between **pin 87 of relay I51 and auxiliary fuse box G2 (PNK wire)** Carry-out **step A12**
A12 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 86 of relay **I51** and ground	OK ▶ OK ▶	Carry-out **step A13** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

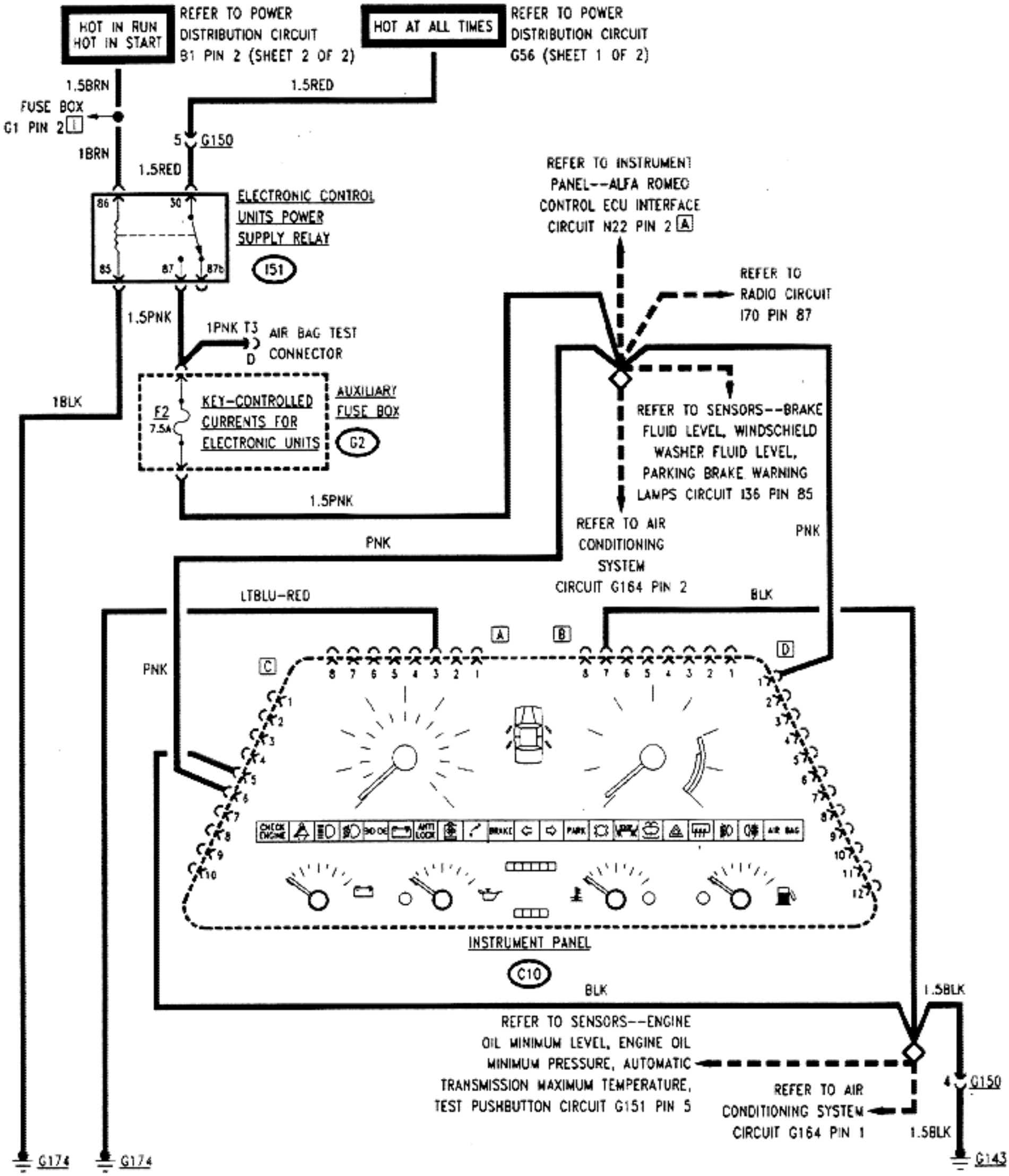
(Cont.d)

WARNING LAMPS MANAGED BY CONTROL UNIT N22 FAIL TO ILLUMINATE ON INSTRUMENT	TEST A

TEST STEPS		RESULTS	REMEDY
A13	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 85 of relay I51		OK ▶	Replace relay I51
		~~OK~~ ▶	Repair wiring between pin 85 of relay I51 and ground point G174

End of test A

INSTRUMENT PANEL - - INDICATOR CIRCUITS



GENERAL

NOTE

- Due to its dimensions the intrument panel layout has been subdivided into 6 diagrams, with the relevant description attached.
- The troubleshooting described at the end of the subjet only concerns those circuit components which have not been already taken into consideration in other subjects. Exemple:
  "Low beam lamps inoperative" has not been dealt with, as already part of the subject "Low beam/High beam lamps".

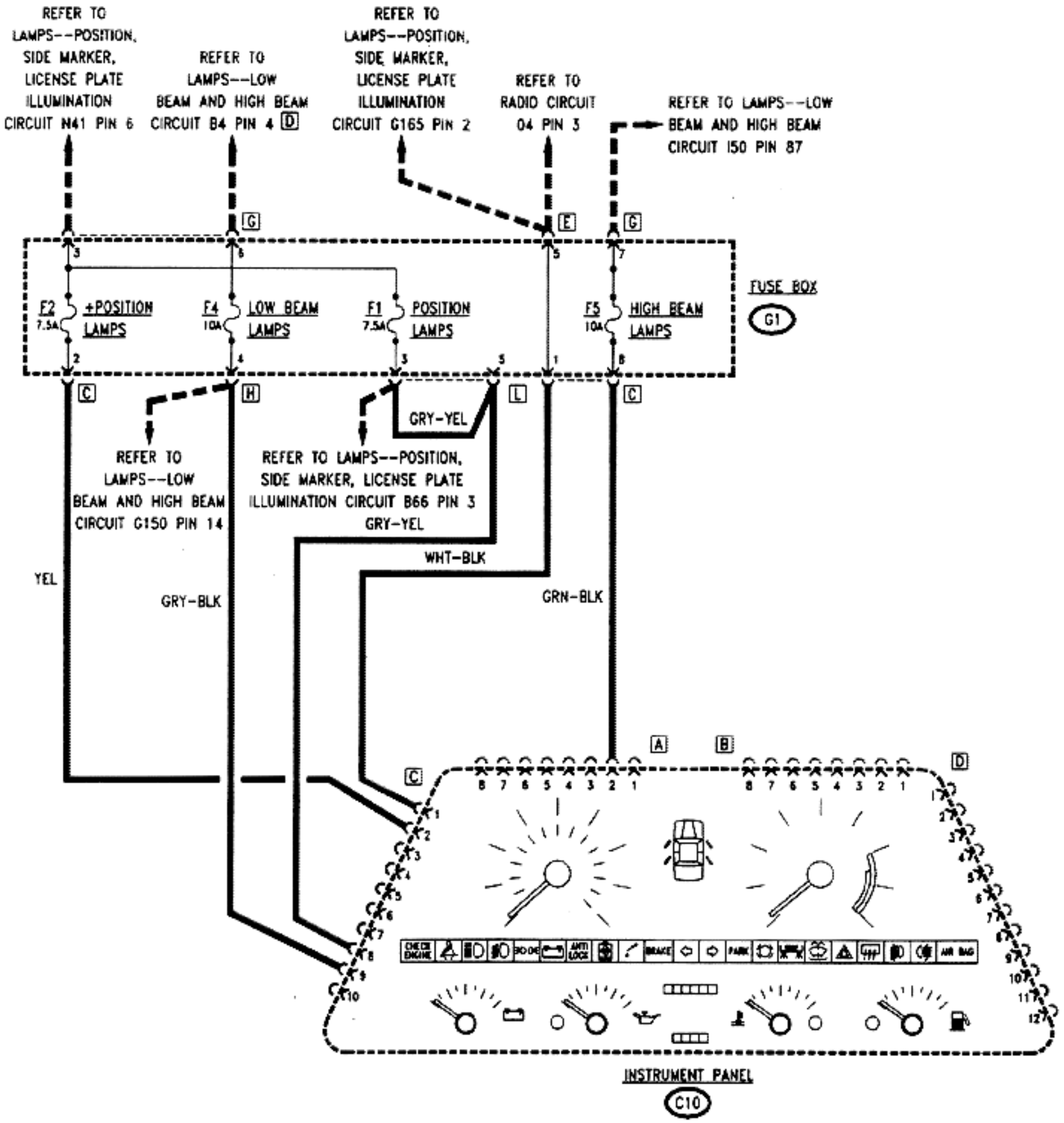
The instrument panel displays all the ordinary information relevant to the status of indicators and of some of the sensors installed on the car.
Furthermore, the interface with the Alfa Romeo Control unit provides a means of monitoring the status of the sensors connected to the car warnings.
Where necessary, the power supply circuit of the instrument panel indicators has been protected by suitable fuses.
The instrument panel is energized when the ignition key is set to "run"; this circuit is protected by the **F2** fuse (7.5A) in the fuse box **G2.**

OPERATIONAL DESCRIPTION - INSTRUMENT PANEL POWER SUPPLY

12V from the battery are applied to the electronic control units power supply relay **I51.**
Energization of relay **I51** supplies 12V power directly to the Air Bag diagnosis circuit and, through the fuse **F2** in the auxiliary fuse box **G2**, to pins 1D and 6C of the instrument panel **C10**. This voltage is used as common power supply for a group of indicators.
12V through fuse **F2** is also supplied to:

- Alfa Romeo Control unit, for the monitoring of the warning systems.
- Relay **I36** for the brake fluid tank.
- Automatic air conditioning system.

The wiring diagram also shows the various ground points of the instrument panel.
Ground point **G174** is connected to pin 3A of the instrument panel, and is used as ground reference for the voltmeter used to display the battery charging.
Ground point **G143** is connected to pins 7B and 5C of the instrument panel, and is used as common ground point for a group of indicators.
As detailed above, the indicators and warnings are activated by the energizing the relevant circuit.



OPERATIONAL DESCRIPTION - POSITION, LOW BEAM AND HIGH BEAM LAMPS INDICATORS

The wiring diagram shows the functional flow of the power supply lines for the positon, low bearm and high beam lamp indicators.

Position Lamps

When the parking lamps switch is actuated, pin 3G of fuse box G1 is energized.

12V are applied to pins 8C and 2C of the instrument panel through fuses F1 and F2; this will cause illumination of the position lamps indicator and of the instrument panel lighting.

Lighting intensity can be dimmed by means of a rheostat; the power supply line from the rheostat is connected to pin 1C of the instrument panel.

Low Beam Head lamps

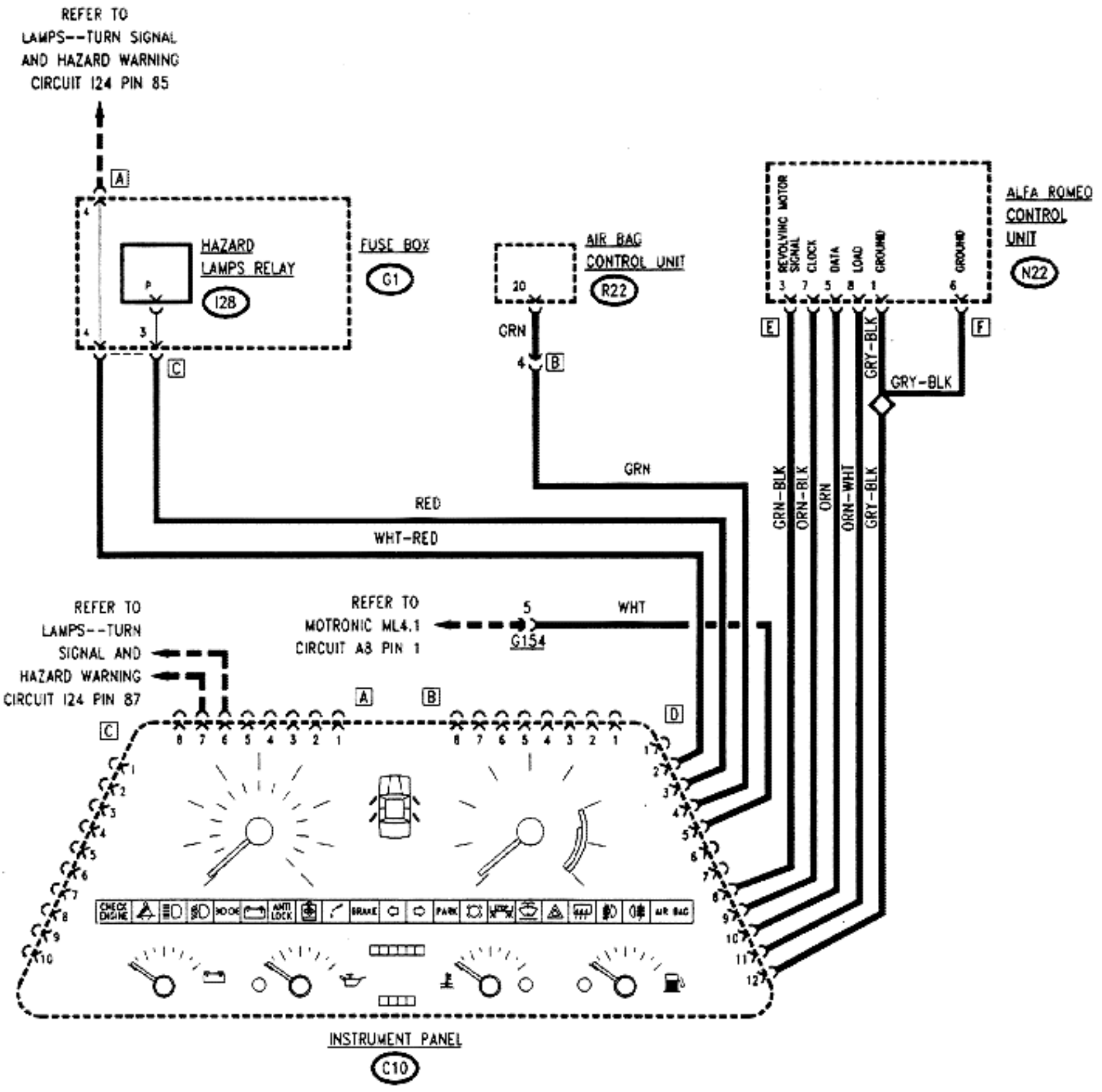
When the low beam head lamps switch is actuated, pin 6G of fuse box G1 is energized.

12V are applied to low beam headlamps circuit and to pin 9C of the instrument panel through fuse F4; this will cause illumination of the relevant indicator.

High Beam Head lamps

When the high beam head lamps switch is actuated, pin 7G of fuse box G1 is energized.

12V are applied to pin 2A of the instrument panel through fuse F5; this will cause illumination of the relevant indicator.



OPERATIONAL DESCRIPTION - TURN SIGNAL/HAZARD WARNING LAMPS, AIR BAG, ENGINE TACHOMETER AND ALFA ROMEO CONTROL UNIT INDICATORS

The schematic diagram shows the functional path of the control lines for the tachometer, for the illumination of the instrument panel indicator lights relevant to the direction/emergency lamps, for the Air Bag circuit and for the vehicle sensors and alarms monitored by the Alfa Romeo Control unit.

Engine Tachometer

The engine tachometer input signals are derived from the Motronic control unit and directed to pin 5D of the instrument panel, and then to the tachometer through an interface unit.

The frequency of signal applied to pin 5D is function of the engine R.P.M. detected by the Motronic control unit, and this provides indication of the engine R.P.M. on the tachometer.

Turn Signal/Hazard Warning Lamps Indicator

Actuation of the turn signal lamps control levev applies an intermittent 12V signal to pins 6A or 7A, as determined by the selection of the control switch (left turn or right turn): this will cause flickering of the relevant indicator on the instrument panel.

Actuation of the hazard warning lamps switch applies an intermittent 12V signal at pin 3D of the instrument panel, which is then supplied to pin 2D; this will cause flickering of the relevant indicator on the instrument panel.

Air Bag Indicator

Proper function of the Air Bag system is continuously monitory by the relevant control unit R22, during both the starting phase and during the run.

During the starting phase, the air bag control unit connects to ground pin 4D of the instrument panel for a few seconds, causing illumination of the air bag indicator on the instrument panel; after this period, the control unit disables the indicator.

During the run phase, in the event of any malfunction of the system, the air bag control unit will cause flickering of the air bag indicator on the instrument panel at a determined error code.

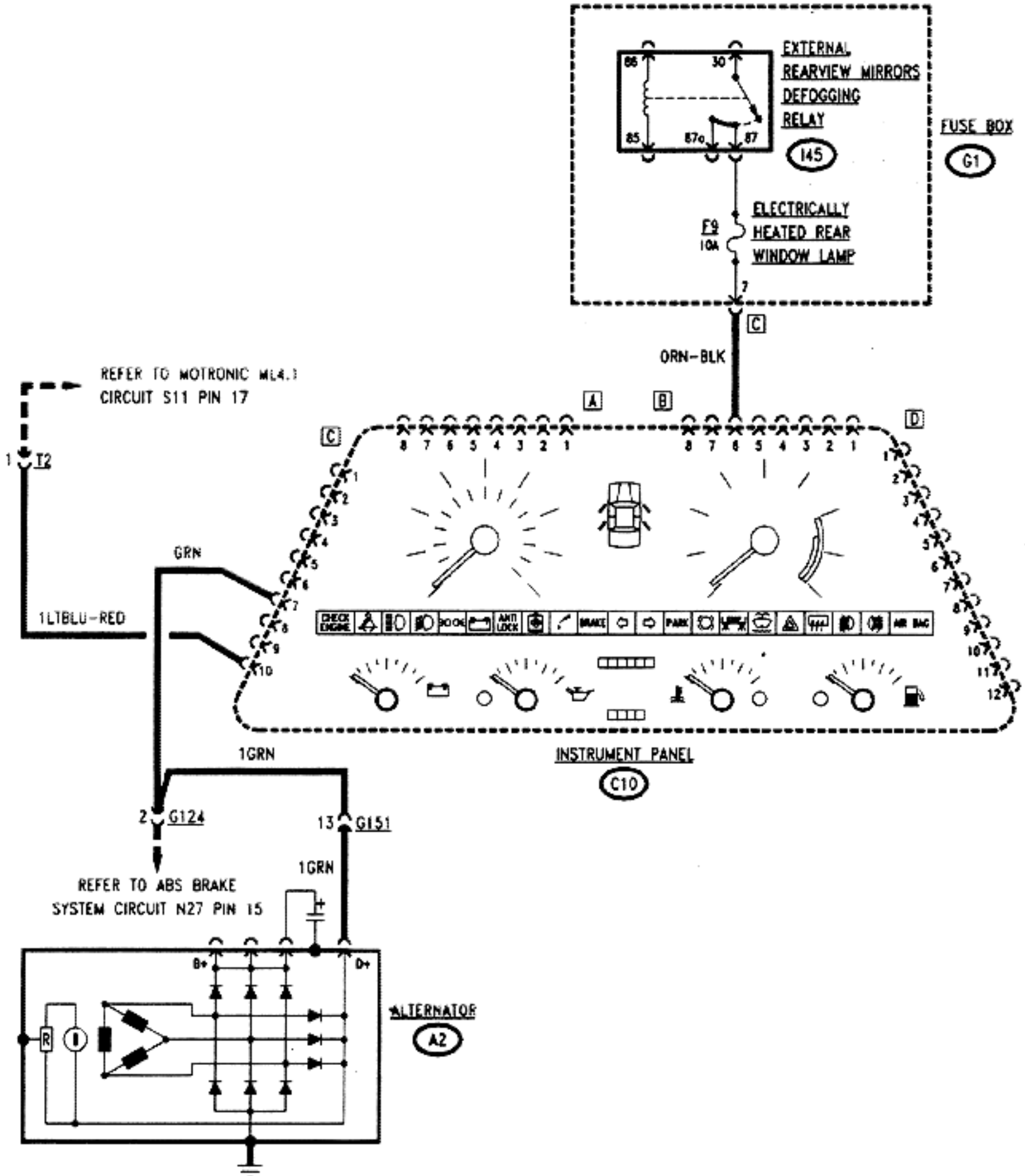
For further details refer to the relevant troubleshooting procedure.

Alfa Romeo Control Unit Indicators

The Alfa Romeo Control unit monitors the primary parameters relevant to several circuits and utilities of the car. The control unit interfaces with pins 8D 12D of the instrument panel through the CLOCK, DATA and LOAD signals and their ground reference. These signals are decoded by an interface unit located inside the instrument panel, and monitor the illumination of the corresponding indicators.

The functions monitored by the Alfa Romeo Control unit, and displayed by an indicator lamp, are as follows:

- Door open (L.H., R.H. front and rear doors), and relevant ideograph.
- Parking brake on.
- Safety belts unfastened.
- Brake pads wear.
- Failed stop lamps.
- Coolant maximum temperature.
- Automatic transmission oil maximum temperature.
- Minimun oil pressure.
- Brake fluid level.
- Engine oil level.
- Cooling system fluid level.
- Windshield washer fluid level.



OPERATIONAL DESCRIPTION - REAR WINDOW DEFOGGER, A.C. GENERATOR AND CHECK ENGINE INDICATORS

The wiring diagram shows the functional flow of pilot lines of the rear window defogger, alternator and engine diagnosis indicators on the instrument panel.

Rear Window Defogger

When the rear window defogger is actuated (either manually or automatically by the air conditioning system), 12V are applied to pin 6B of the instrument panel through the contacts of relay I45 and fuse F9 in the fuse box G1; this will cause illumination of the rear window defogger indicator on the instrument panel.

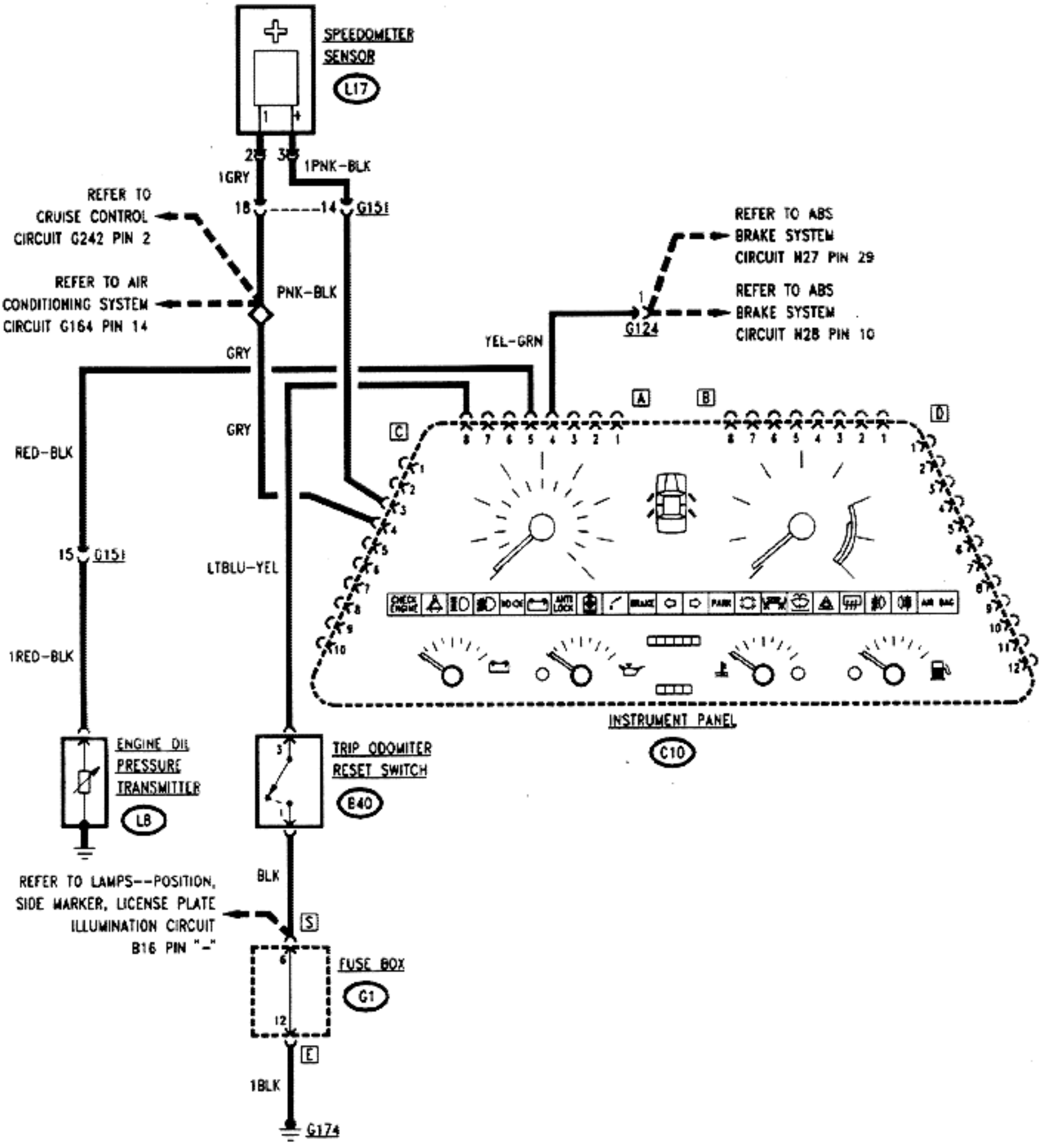
Alternator

With the ignition key set to "run" position, the alternator A2 connects to ground pin 7C of the instrument panel; this will cause illumination of the corresponding indicator.
During car traveling, the alternator charges the battery, and the indicator is turned off.
Illumination of the indicator when travelling indicates a failure to the battery charge circuit.

Check Engine

The Motronic control unit S11 is provided with a self-diagnostic system.
In the event of a system malfunction, the control unit S11 provides, at the operator's command, flickering of the CHECK ENGINE indicator lamp on the instrument panel.
Reading of the flickering error code allows quick troubleshooting of the failed system.
For further details refer to the relevant troubleshooting procedure.

BASE AND L ONLY



OPERATIONAL DESCRIPTION - A.B.S. INDICATOR, OIL PRESSURE INDICATOR, SPEEDOMETER SENSOR AND ODOMITER RESET SWITCH

A.B.S. System Indicator

The A.B.S. control unit **N27** includes a self- diagnostic system which controls illumination of the ABS indicator on the instrument panel when the ignition key is set to "run".

During normal system operation the control units disables the indicator lamps a few seconds after the engine starts.

In the event of failure of the A.B.S. system, the control unit holds the A.B.S.indicator lamp on after the engine starts, or turns it on during travel.

Engine Oil Pressure

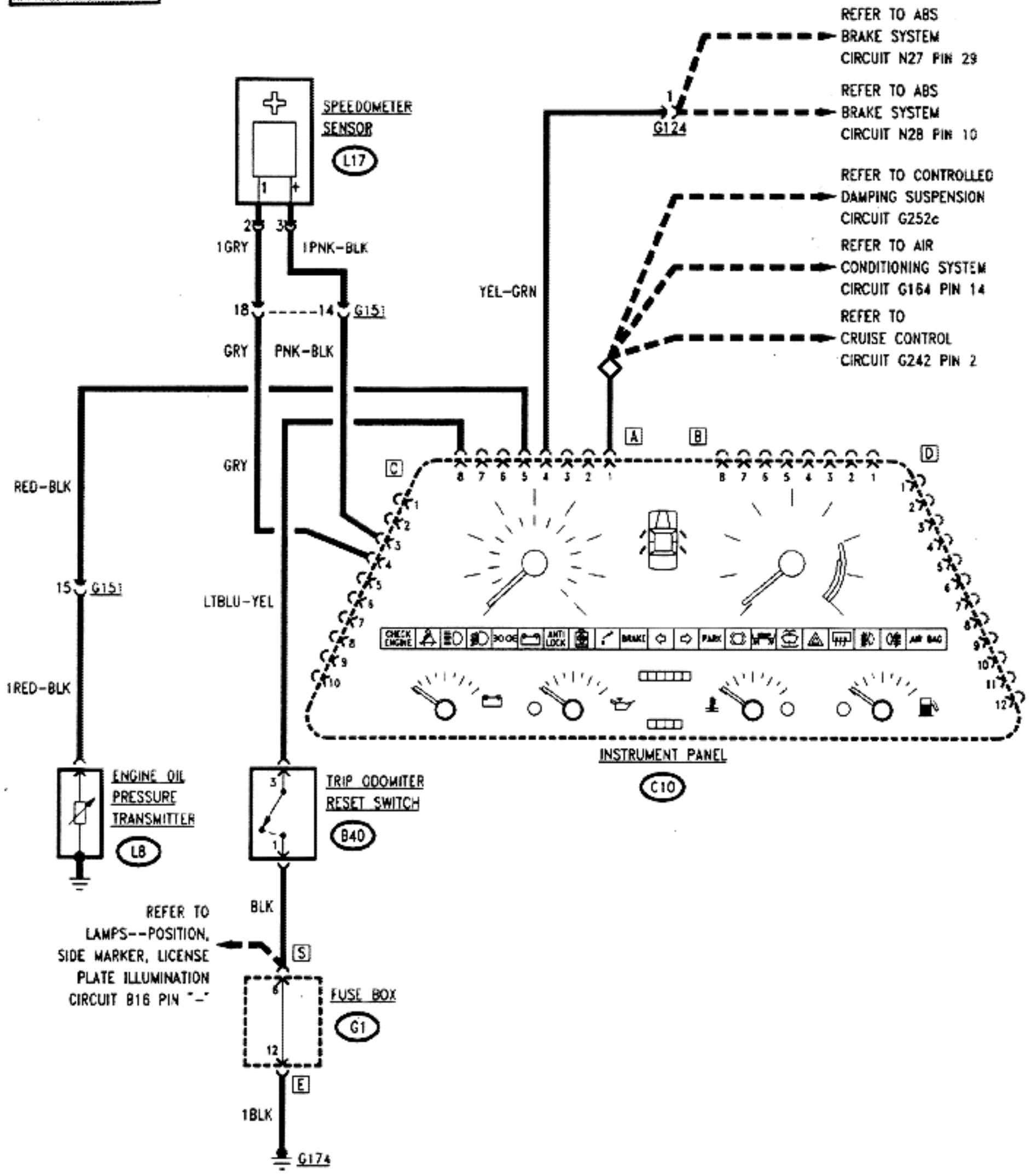
The engine oil pressure is continuously displayed by an analog gauge on the instrument panel. The engine oil pressure transmitter **L8**, located on the engine block, senses the oil pressure and supplies a proportional electric signal to pin 5A of the instrument panel.

Speedometer Sensor

The car speed and mileage covered during travel are detected by the sensor **L17** connected to the gear box. The sensor supplies an electric signal to both the speedometer and odometer through a specific interface unit.

Resetting of the trip odomiter is obtained electrically by means of the resetting switch **B40**. Pressing on the switch **B40** connects the ground point **G174** to pin 8A through the fuse box **G1**, thus resetting the trip odometer.

S ONLY



OPERATIONAL DESCRIPTION - A.B.S. INDICATOR, OIL PRESSURE INDICATOR, SPEEDOMETER SENSOR AND ODOMITER RESET SWITCH

A.B.S. System Indicator

The A.B.S. control unit **N27** includes a self- diagnosis system which controls illumination of the ABS indicator on the instrument panel when the ignition key is set to "run".

During normal system operation the control units disables the indicator lamps a few seconds after engine starting.

In the event of failure of the A.B.S. system, the control unit holds the A.B.S.indicator lamp on after the enging starting, or turns it on during travel.

Engine Oil Pressure

The engine oil pressure is continuously displayed by an analogue indicator on the instrument panel. The engine oil pressure transmitter **L8**, located on the engine case, senses the oil pressure and supplies a proportional electric signal to pin 5A of the instrument panel.

Speedometer Sensor

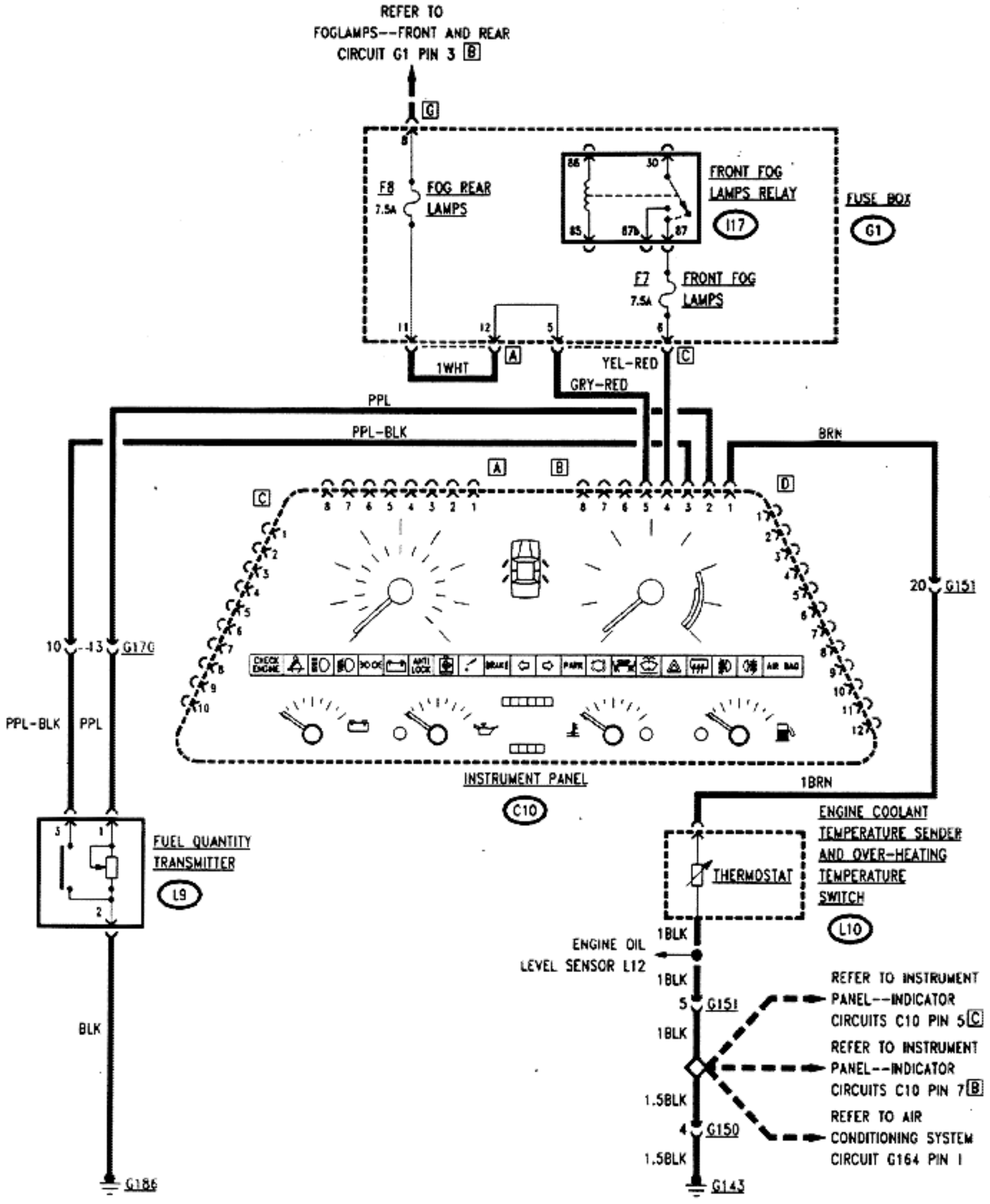
The car speed and mileage covered during travel are detected by the sensor **L17** connected to the gear box.

The sensor **L17** supplies an electric original to both the speedometer and odometer through a specific interface unit.

The speedometer signal, outcoming from dash board pin 1A, is used by the following circuits:

- Controlled damping suspension
- Automatic air conditioning
- Cruise control

Resetting of trip odomiter is obtained electrically by means of the resetting switch **B40**. Pressure on the switch **B40** connects the ground point **G174** to pin 8A through the fuse box **G1**, thus resetting the trip odometer.



OPERATIONAL DESCRIPTION - FOG HEAD LAMPS, REAR FOG LAMPS, FUEL LEVEL AND ENGINE COOLANT TEMPERATURE INDICATORS

Front Fog Lamps Indicator

Positioning the fog lamps switch to on, the relay I17 energizes connecting, thru fuse **F7** on the fuse box **G1**, 12V to pin 4B of the instrument panel. Inside the instrument panel the 12V provides for illumination of the relevant indicator lamp.

Rear Fog Lamps Indicator

When the rear fog lamps control switch is actuated 12V are applied to pin 5B of the instrument panel through the fuse **F8** in the fuse box **G1**; this will cause illumination of the corresponding indicator lamp on the instrument panel.

Fuel Level Gauge

The fuel level is continuosly displayed by an analogue indicator on the instrument panel.

The fuel quantity transmitter **L9** located inside the fuel tank senses the fuel level and transmits a proportional electric signal to pin 2B of the instrument panel.

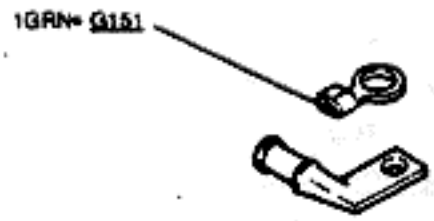
The low fuel indicator lamp illuminates when remaining fuel in the tank is about 9.2 l. (2.43 gals). Illumination of the indicator lamp is controlled by the closure of contacts of transmitter **L9** (pin 3B of the instrument panel).

Engine Coolant Temperature Gauge

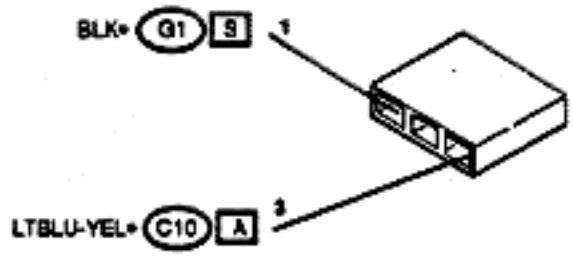
The temperature of the engine coolant is continuosly displayed by an analog gauge on the instrument panel.

The coolant temperature is sensed by the sender **L10**, which transmits a proportional electric signal to pin 1B of the instrument panel.

Alternator — A2

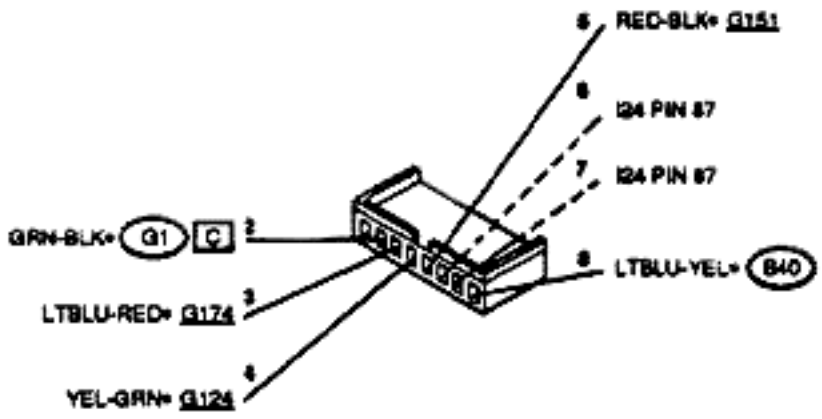


Trip speedometer reset switch — B40



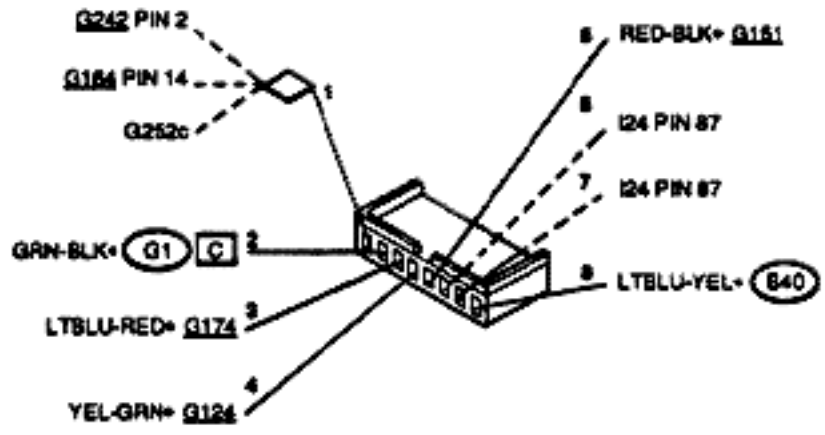
Instrument panel — C10 A

BASE AND L ONLY

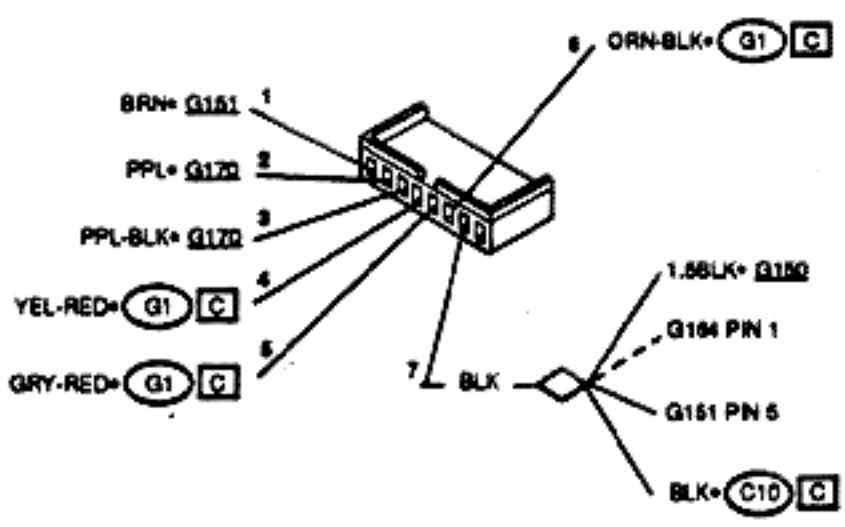


Instrument panel — C10 A

S ONLY

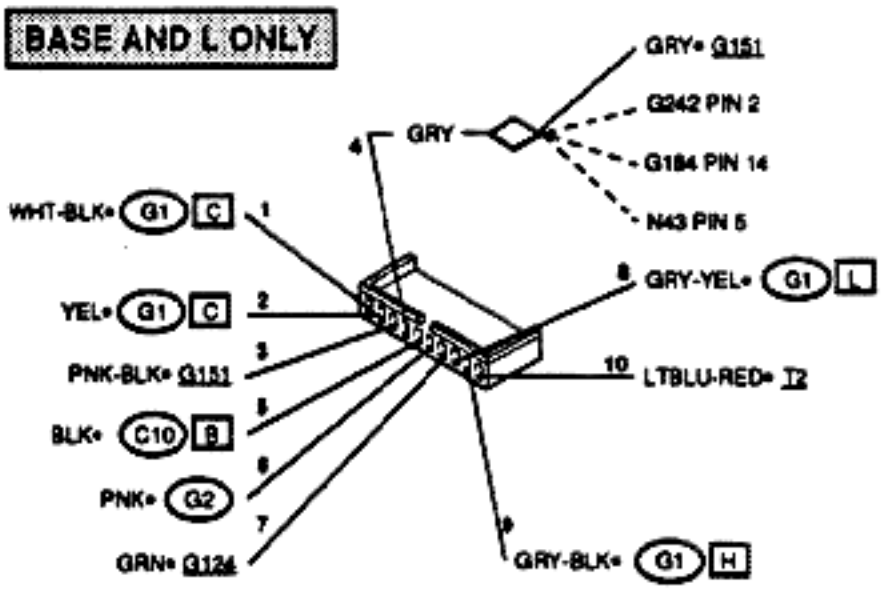


Instrument panel — C10 B



Instrument panel — C10 C

BASE AND L ONLY



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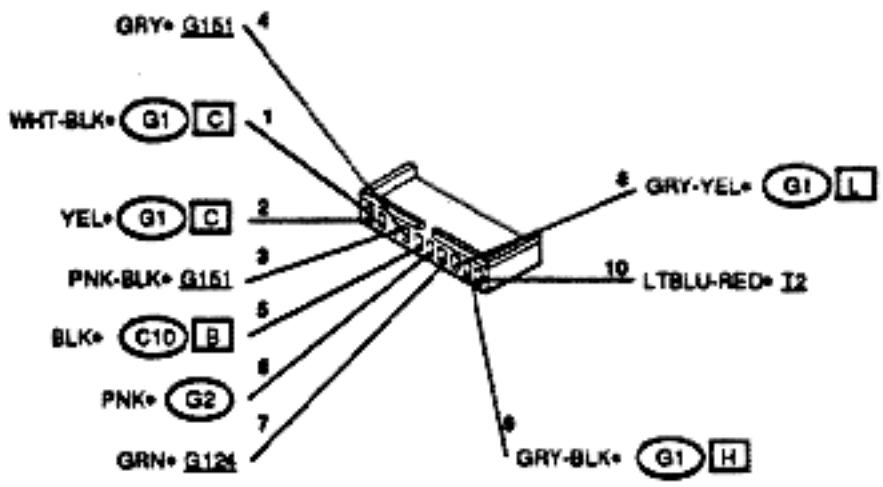
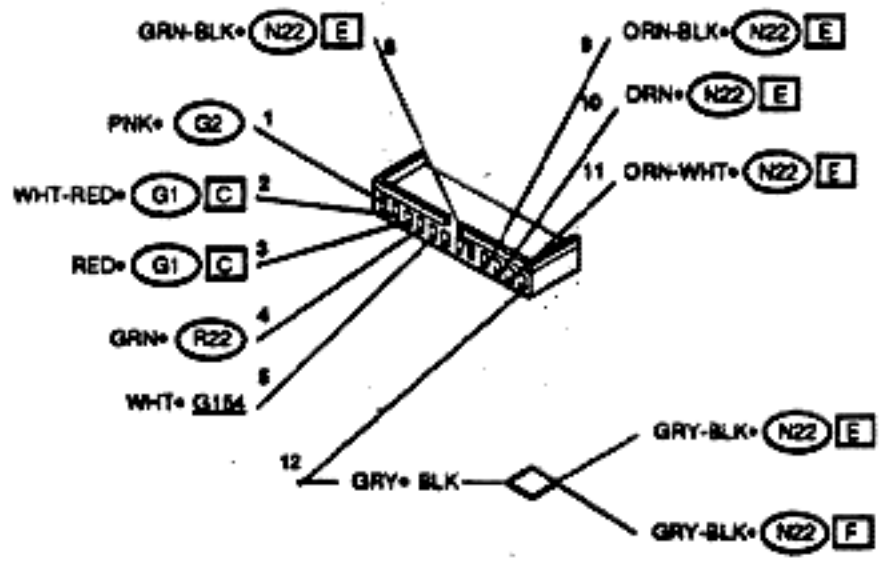
Instrument panel — C10 C

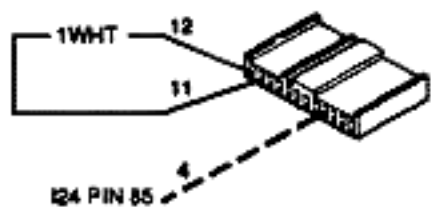
S ONLY



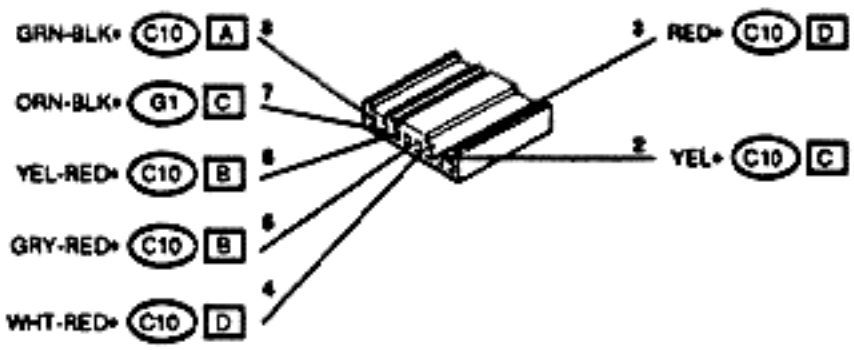
Instrument panel — C10 D



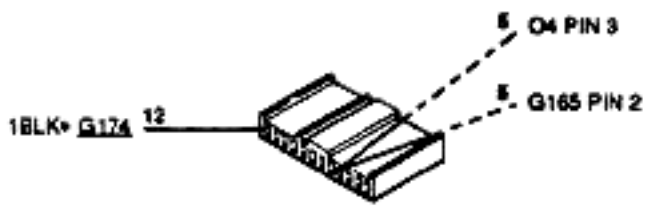
Fuse box — G1 A



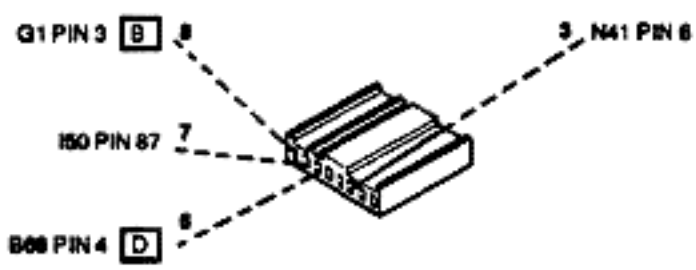
Fuse box — G1 C



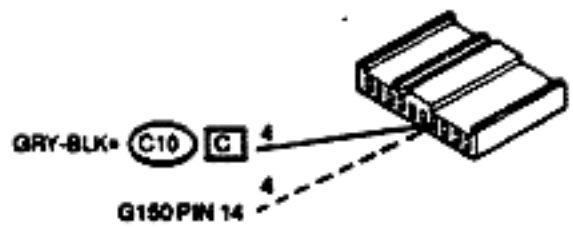
Fuse box — G1 E



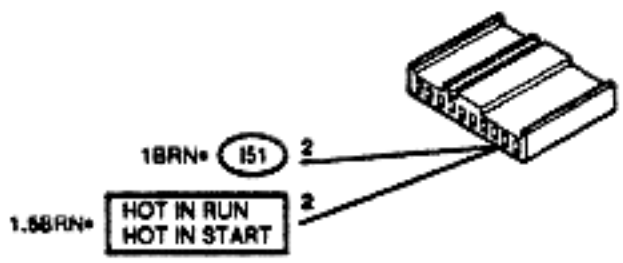
Fuse box — G1 G



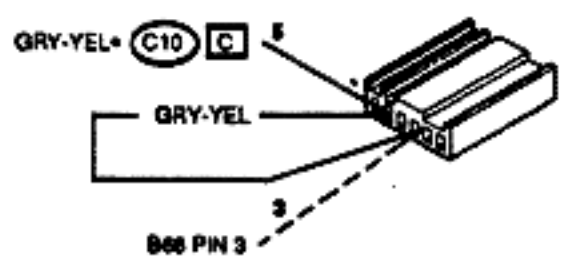
Fuse box — G1 H



Fuse box — G1 I



Fuse box — G1 L



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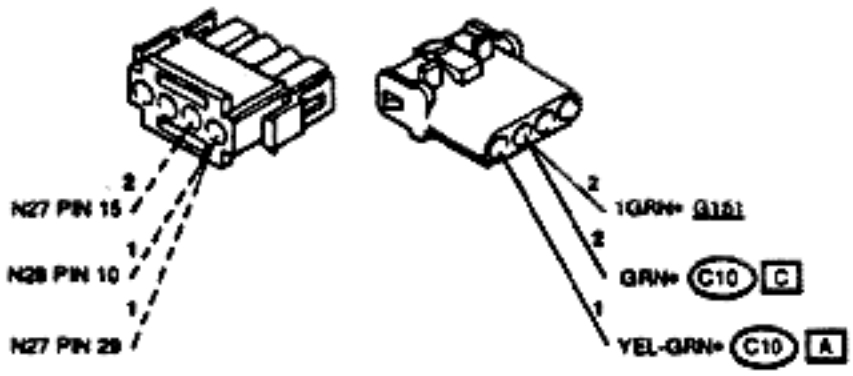
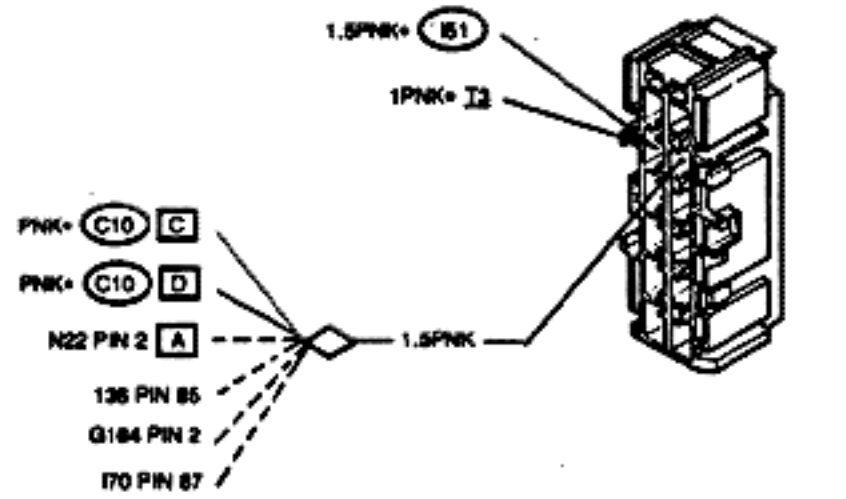
Fuse box — G1 S

ABS system connector — G124

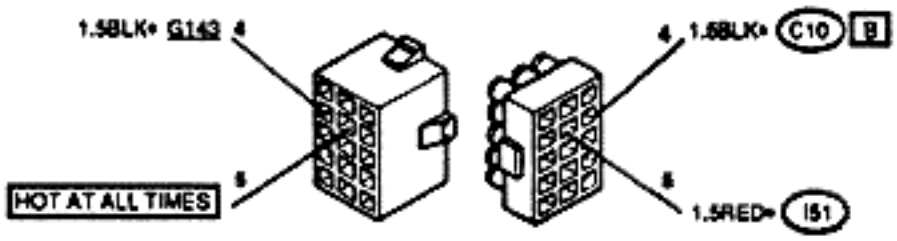


Auxiliary fuse box — G2

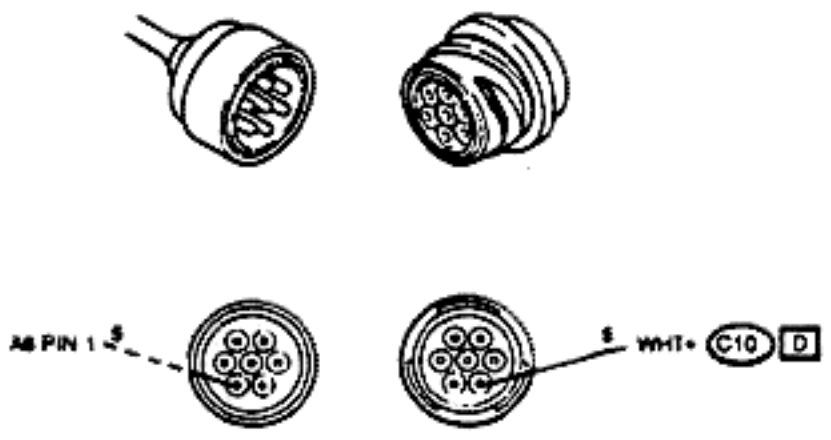


Central bulkhead ground — G143

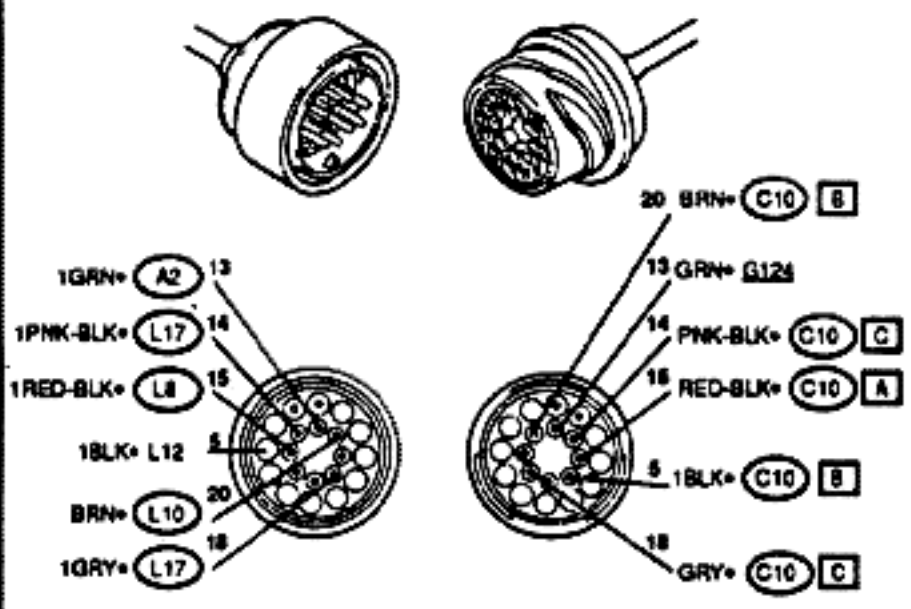
Connector, circuit board to engine compartment left side wiring — G150



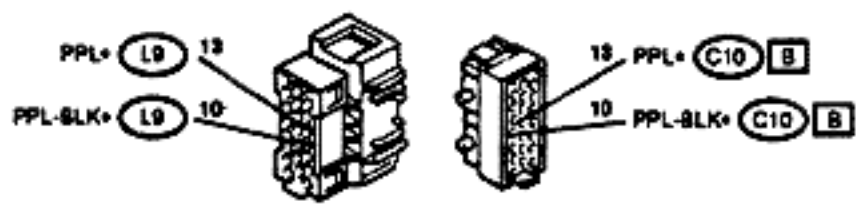
Connector, engine wiring to circuit board — G154



Connector, circuit board to engine utilities wiring — G151



Connector, circuit board to right rear wiring — G170



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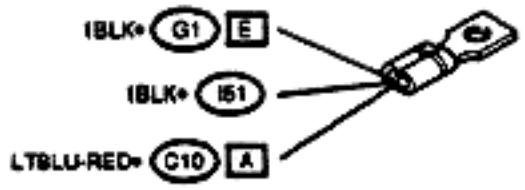
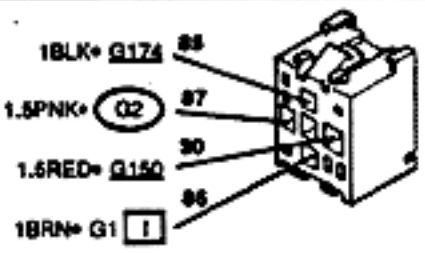
Steering wheel column support ground	G174

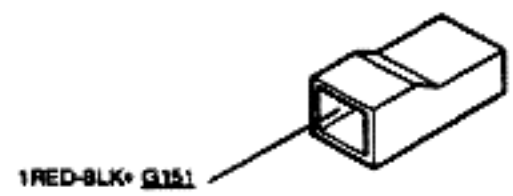


Trunk right side ground	G186

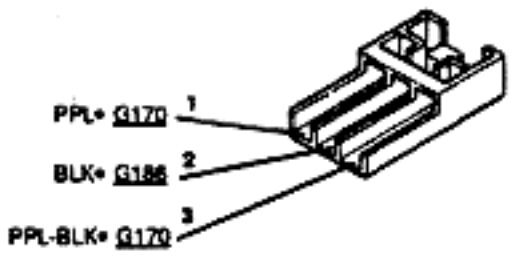
Electronic control units power supply relay	I51



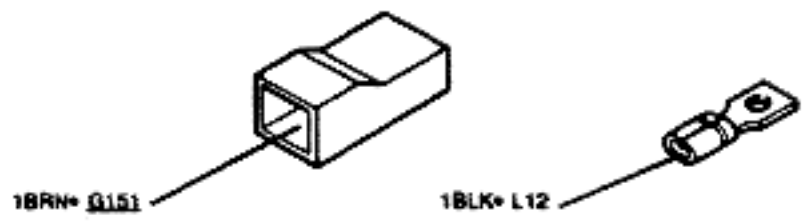
Engine oil pressure transmitter	L8



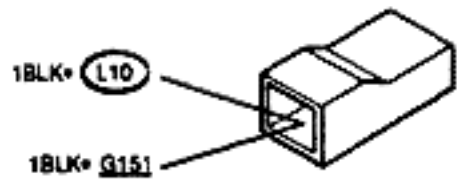
Fuel quantity transmitter	L9



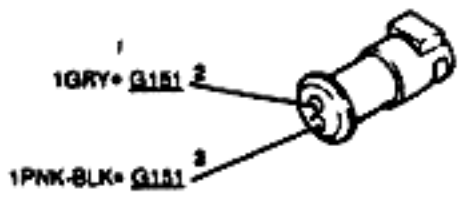
Engine coolant temperature bulb and high temperature switch	L10



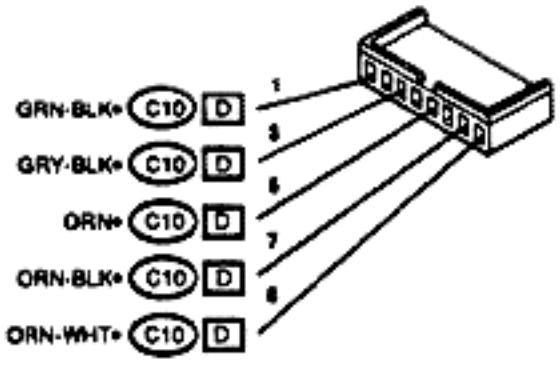
Engine oil level sensor	L12



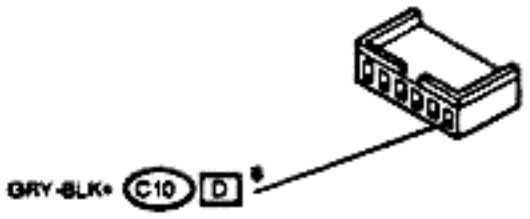
Speedometer sensor	L17



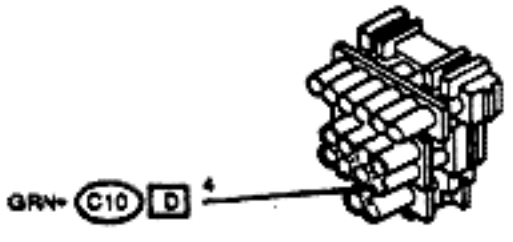
Alfa Romeo control unit	N22 E



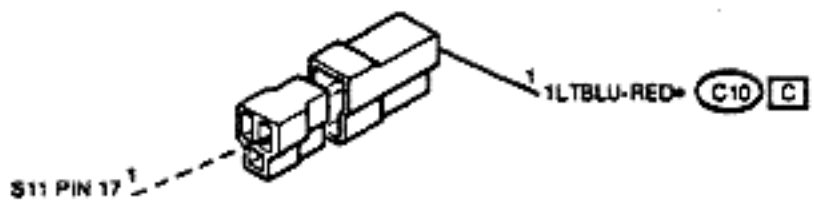
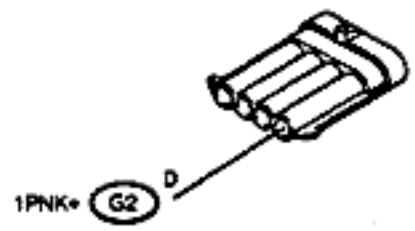
Alfa Romeo control unit	N22 F

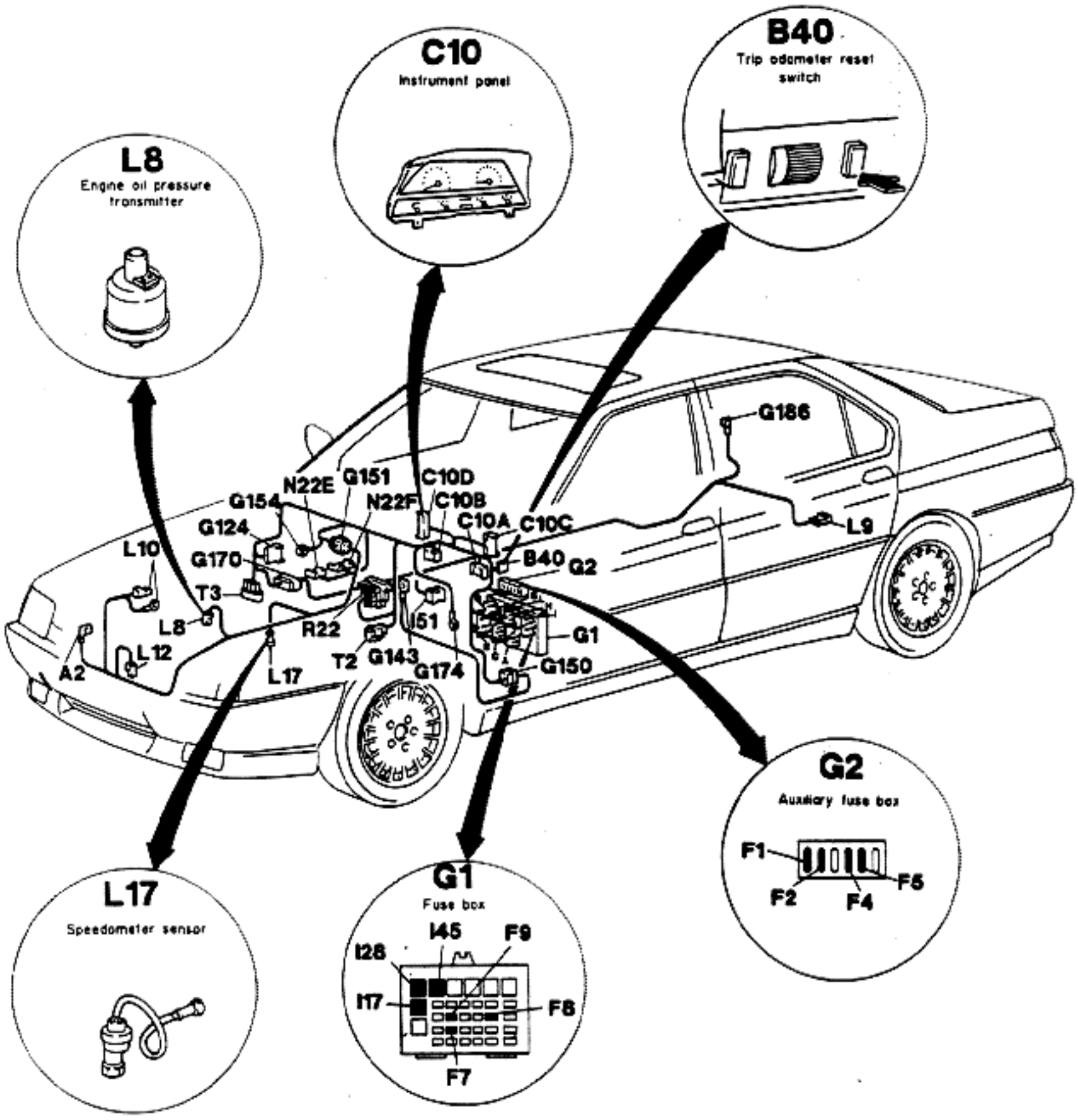


Air bag control unit	R22



(Cont.d)

«Blinking code» diagnosis connector	T2	Air bag test connector	T3
			



ALL INDICATOR LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying out troubleshooting procedure, check warning lamps for integrity on the dash-board by pressing test push-button.		
A1 FUSE CHECK - Check fuse **F2** in auxiliary fuse box **G2** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F2**
A2 VOLTAGE CHECK - With the ignition key set to "run" or "start" check for presence of 12V between fuse **F2** in the auxiliary fuse box **G2** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Carry-out **step A5**
A3 VOLTAGE CHECK - With the ignition key set to "run" or "start" check for presence of 12V between pins 6C and 1D of instru-ment panel and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Repair wiring between **fuse F2 of auxiliary fuse box G2 and pins 6C and 1D of in-strument panel**

(Cont.d)

ALL INDICATOR LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A4 GROUNDING CHECK - Check that pins 3A, 7B and 5C of instrument panel are connected to ground	OK ▶ ~~OK~~ ▶	Replace **instrument panel C10** Repair wiring between **ground points G143 pin 4 of connector G150 and pin 7B, 5C and between grond point G174 and pin 3A of instrument panel**
A5 RELAY CHECK - Check electronic control units power supply relay **I51** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Replace **relay I51**
A6 VOLTAGE CHECK - Check for presence of 12V between pin 5 of connector **G150** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A7** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 1 of 2**

(Cont.d)

ALL INDICATOR LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A7 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay I51 and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A8** Repair wiring between **pin 30 of relay I51 and pin 5 of G150**
A8 VOLTAGE CHECK - With the ignition key set to "run" or "start" check for presence of 12V between pin 86 of relay I51 and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 85 of I51 and ground point G174** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test A

SPEEDOMETER INOPERATIVE (BASE and L only)	TEST B

TEST STEPS	RESULTS	REMEDY
B1 SENSOR CHECK - Check that sensor **L17** is operational as follows: • apply + 12V to pin 3 of sensor **L17** (PNK-BLK wire) and connect to ground the sensor case • insert shaft of an electric motor into sensor **L17**, then drive sensor **L17** to various speeds • check pin 2 of sensor **L17** (GRY wire) for presence of a signal with frequency variable in conjunction with drive motor RPM changes	OK ▶ OK ▶	Carry-out **step B2** Replace **sensor L17**
B2 VOLTAGE CHECK - Check for presence of continuity between: • pin 2 of sensor **L17** and pin 18 at connector **G151** (GRY wire) • pin 18 of connector **G151** and pin 4C of instrument panel **C10** • pin 3 of sensor **L17** and 14 of connector **G151** (PNK-BLK wire) • pin 14 of connector **G151** and pin 3C of instrument panel **C10**	OK ▶ OK ▶	Replace **instrument panel C10** Repair or replace **wires, as necessary**

End of test B

SPEEDOMETER INOPERATIVE (S only)	TEST B

TEST STEPS	RESULTS	REMEDY
B1 SENSOR SUPPLY CHECK - With ignition key set to "run", check for presence of 12V at pin 3C of instrument panel **C10**	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Check **Instrument panel C10 supply by carrying out TEST A**
B2 SENSOR SUPPLY CHECK - With ignition key set to "run", check for presence of 12V at pin 3 of sensor **L17**	OK ▶ ~~OK~~ ▶	Carry-out **step B3** Restore wiring between **pin 3 of sensor L17, pin 14 of connector G151, and pin 3C of instrument panel C10**
B3 SPEEDOMETER SIGNAL CHECK - Place the vehicle on a lift platform so that the front wheels turn freely. - Start the engine and engage 1st speed. Have engine running at about 2000 rpm. - Check for approx 5V at pin 4C of instrument panel **C10**	OK ▶ ~~OK~~ ▶	Replace **Instrument panel C10** Carry-out **step B4**

(Cont.d)

SPEEDOMETER INOPERATIVE (S only)	TEST B

TEST STEPS		RESULTS	REMEDY
B4	SPEEDOMETER SIGNAL CHECK		
- In the same condition as in step B3, check for presence of approx 5V at pin 2 of sensor **L17**		OK ▶	Restore wiring among **pin 2 of sensor L17, pin 18 of connector G151 and pin 4C of instrument panel C10**
		OK ▶	Replace **sensor L17**

End of test B

TRIP ODOMITER RESETTING INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 GROUNDING CHECK - Check for presence of 0V (zero) between pin 12E of fuse box G1 and ground with the reset switch activated	OK ▶ NOT OK ▶	Carry-out **step C2** Repair wiring between **pin 12E of fuse box G1 and ground point G174**
C2 SWITCH CHECK - Press the switch and check for continuity between terminals 3 and 1 of switch **B40**	OK ▶ NOT OK ▶	Carry-out **step C3** Replace **switch B40**
C3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 1 of switch **B40**	OK ▶ NOT OK ▶	Carry-out **step C4** Repair wiring between **pin 1 of switch B40 and pin 6S of fuse box G1**
C4 GROUNDING CHECK - Press the switch **B40** and check for presence of 0V (zero) at pin 8A of instrument panel **C10**	OK ▶ NOT OK ▶	Replace **instrument panel C10** Repair wiring between **pin 8A of instrument panel C10 and pin 3 of switch B40**

End of test C

ENGINE OIL PRESSURE GAUGE INOPERATIVE	TEST D

TEST STEPS		RESULTS	REMEDY
D1	VARIABLE RESISTANCE SIGNAL CHECK		
- Start and accelerate engine, then check pin 15 of connector G151 for presence of a variable resistance signal proportional to the engine oil pressure, as shown in the table below: OIL PRESSURE kg/cmq. / RESISTANCE Ohms 0.0 — 290 to 320 0.4 — 270 to 300 4.0 — 103 to 133 8.0 — 0 to 25		OK ▶ ~~OK~~ ▶	Carry-out step D2 Carry-out step D3
D2	GROUNDING CHECK		
- Repeat test as per step E1 on pin 5A instrument panel C10		OK ▶ ~~OK~~ ▶	Replace Instrument panel C10 Repair wiring between pin 5A of instrument panel C10 and pin 15 of connector G151

(Cont.d)

ENGINE OIL PRESSURE GAUGE INOPERATIVE	TEST D

TEST STEPS		RESULTS	REMEDY
D3	PRESSURE TRANSMITTER CHECK		
- Check for presence of a variable resistance signal between terminals of transmitter **L8** (RED-BLK and ground wires). The signal must be proportional to the engine oil pressure as shown in the table at test step E1		OK ▶	Repair wiring between **trasmitter L8 (RED-BLK wire) and pin 15 of connector G151 and between trasmitter L8 and ground**
		~~OK~~ ▶	Replace transmitter **L8**

End of test D

ENGINE COOLANT TEMPERATURE GAUGE INOPERATIVE — TEST E

TEST STEPS	RESULTS	REMEDY
E1 TEMPERATURE TRANSMITTER CHECK		
- Check functionality of engine coolant temperature transmitter **L10** as follows: • ensure the engine is cool, then start the engine • check between terminals of transmitter **L10** (BRN and BLK wires) for a resistance variable according to temperature of engine coolant as shown in the table below:	OK ▶ OK ▶	Carry-out **step E2** Replace **transmitter L10**
E2 GROUNDING CHECK		
- Check for presence of 0V (zero) at terminal of transmitter **L10** (BLK wire)	OK ▶ OK ▶	Carry-out **step E3** Repair wiring between **transmitter L10 (BLK wire) and ground point G53**

TEMPERATURE °C	RESISTANCE Ohms
40	900 to 1400
60	470 to 600
80	235 to 300
90	175 to 215
100	135 to 165
120	80 to 100

(Cont.d)

ENGINE COOLANT TEMPERATURE GAUGE INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E3 CONTINUITY CHECK		
- Repeat test as per step B1 on pin 20 of connector **G151**	OK ▶	Carry-out **step E4**
	OK ▶	Repair wiring between **transmitter L10 (BRN wire) and pin 20 of connector G151**
E4 CONTINUITY CHECK		
- Repeat test as per step B1 on pin 1B insturment panel **C10**	OK ▶	Replace **instrument panel C10**
	OK ▶	Repair wiring between **pin 20 of connector G151 and pin 1B of instrument panel C10**

End of test E

FUEL LEVEL INDICATOR INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F1 FUEL QUANTITY TRANSMITTER CHECK - Check that fuel quantity transmitter **L9** is operational as follows: • dip transmitter **L9** slowly into a container filled with fuel and check for presence of a variable resistance signal between pins 1 and 2 (PPL and BLK wires) of probe. The signal must be proportional to level of immersion of transmitter **L9** into fuel	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Replace **transmitter L9**
F2 CONTINUITY CHECK - Repeat check as per test step F1 with transmitter **L9** connected to the car harness. Check for presence of a variable resistance signal between pin 13 of connector **G170** and pin 2 of transmitter **L9**	OK ▶ ~~OK~~ ▶	Carry-out **step F3** Repair wiring between **pin 1 of transmitter L9 (PPL wire) and pin 13 of connector G170**
F3 CONTINUITY CHECK - Repeat check as per test step F1 with transmitter **L9** connected to the car harness. Check for presence of a variable resistance signal between pin 2B of instrument panel **C10** and pin 2 of transmitter **L9**	OK ▶ ~~OK~~ ▶	Carry-out **step F4** Repair wiring between **pin 2B of instrument panel C10 and pin 13 of connector G170**
F4 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2 of transmitter **L9**	OK ▶ ~~OK~~ ▶	Replace **instrument panel C10** Repair wiring between **pin 2 of transmitter L9 and ground point G186**

End of test F

FUEL LEVEL INDICATOR LAMP INOPERATIVE	TEST G

TEST STEPS	RESULTS	REMEDY
G1 FUEL PROBE CHECK		
- Check that fuel quantity transmitter **L9** is operational as follows: • ensure the fuel level is below 9.2 litres (2.43 gals) then verify that circuit between pin 2 and 3 of transmitter **L9** is closed (BLK and PPL-BLK wires)	OK ▶ ~~OK~~ ▶	Carry-out **step G2** Replace **transmitter L9**
G2 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 2 of transmitter **L9** (BLK wire)	OK ▶ ~~OK~~ ▶	Carry-out **step G3** Repair wiring between **pin 2 of transmitter L9 and ground point G186**
G3 GROUNDING CHECK		
- Establish operating conditions as per test step G1, then check for presence of 0V (zero) at pin 10 of connector **G170**	OK ▶ ~~OK~~ ▶	Carry-out **step G4** Repair wiring between **pin 10 of connector G170 and pin 3 of transmitter L9**

(Cont.d)

FUEL LEVEL INDICATOR LAMP INOPERATIVE	TEST G

TEST STEPS		RESULTS	REMEDY
G4	GROUNDING CHECK		
- Establish operating conditions as per test step G1, then check for presence of 0V (zero) at pin 3B of instrument panel **C10**		OK ▶	Replace **instrument panel C10**
		~~OK~~ ▶	Repair wiring between **pin 3B of instrument panel C10 and pin 10 of connector G170**

End of test G

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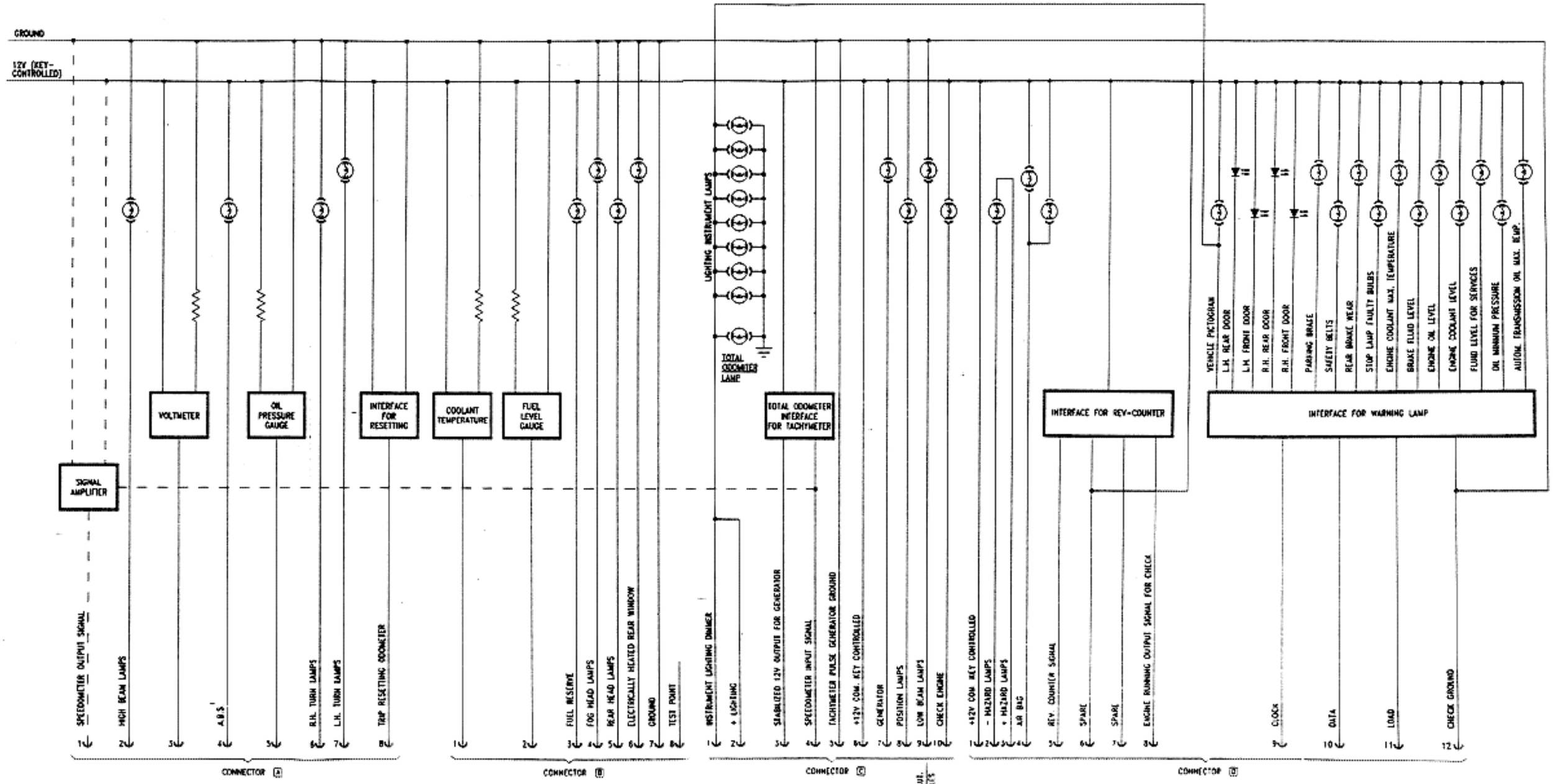
INSTRUMENT PANEL - -

INTERNAL WIRING

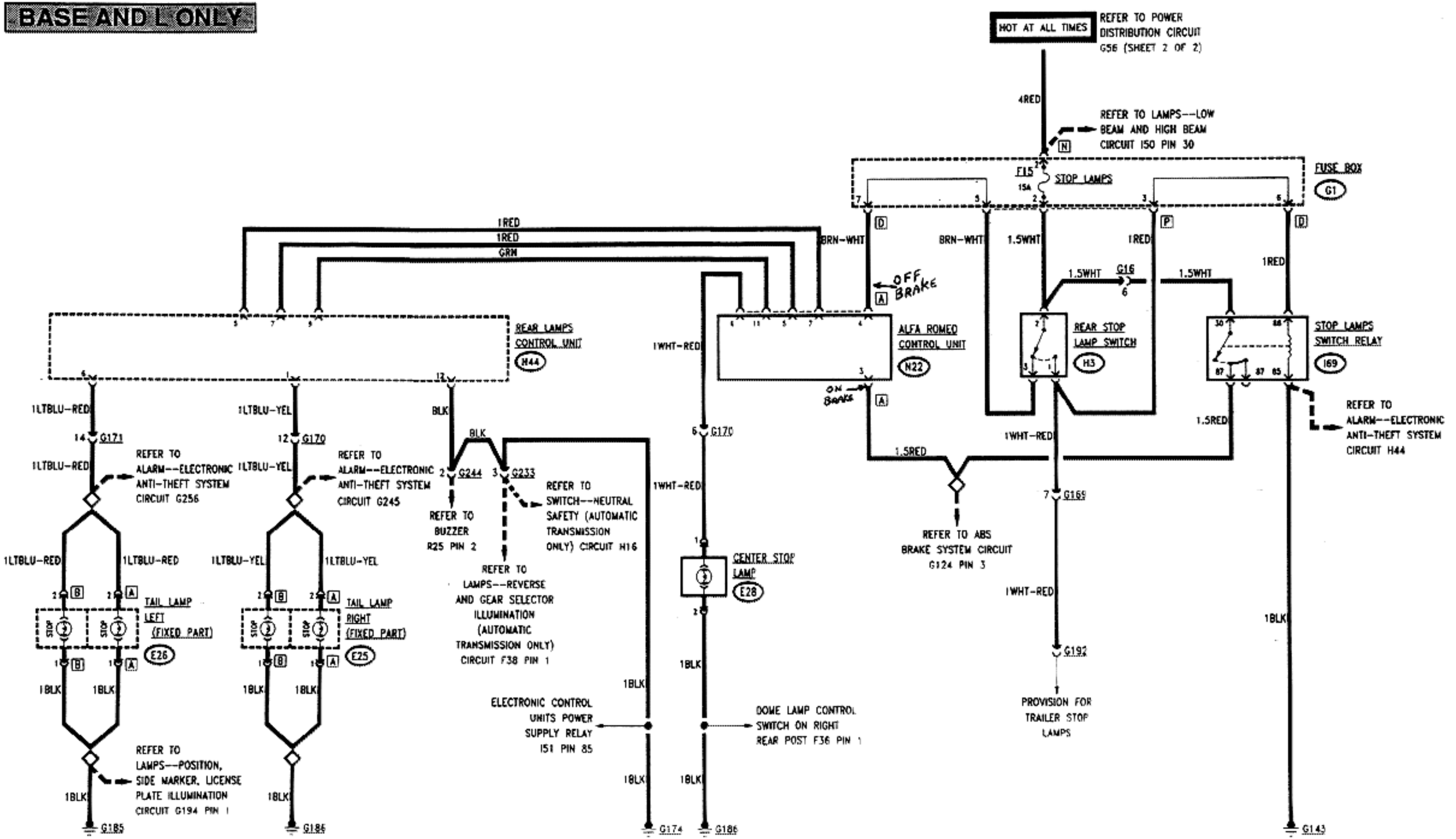


GENERAL

This wiring diagram illustrates the instrument panel wiring. The instrument panel wiring diagram has never been entirely illustrated in the various sections of this manual; therefore, refer to this wiring diagram for a complete view of this component. An adequate knowledge of this wiring diagram will allow you to quickly identify defective bulbs.

LAMPS - - BRAKE

BASE AND L ONLY



S ONLY

HOT AT ALL TIMES

REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 2 OF 2)

4RED

REFER TO LAMPS--LOW BEAM AND HIGH BEAM CIRCUIT 150 PIN 30

F15 15A STOP LAMPS

FUSE BOX G1

1RED
1RED
GRN

BRN-WHT

OFF BRAKE

BRN-WHT

1.5WHT

1RED

1.5WHT G16

1.5WHT

1RED

REAR LAMPS CONTROL UNIT N44

1WHT-RED

ALFA ROMEO CONTROL UNIT N22

REAR STOP LAMP SWITCH H3

STOP LAMPS SWITCH RELAY 169

ON BRAKE

1LTBLU-RED

14 G171

1LTBLU-RED

REFER TO ALARM--ELECTRONIC ANTI-THEFT SYSTEM CIRCUIT C256

1LTBLU-YEL

12 G170

1LTBLU-YEL

REFER TO ALARM--ELECTRONIC ANTI-THEFT SYSTEM CIRCUIT G245

8LK

BLK

2 G244

REFER TO BUZZER CIRCUIT R25 PIN 2

3 G233

1BLK

4 G233

REFER TO STARTING AND CHARGING 110 PIN 85

6 G170

1WHT-RED

6 G198

1WHT-RED

1 CENTER STOP LAMP E28

2

1BLK

TRUNK ILLUMINATION SWITCH H24

1BLK

TRUNK OPENING SOLENOID M12 PIN 2

2.5BLK

2 G198

2.5BLK

1.5RED

1WHT-RED

1.5RED

REFER TO ABS BRAKE SYSTEM CIRCUIT G124 PIN 3

7 G169

1WHT-RED

G192

PROVISION FOR TRAILER STOP LAMPS

1BLK

REFER TO ALARM--ELECTRONIC ANTI-THEFT SYSTEM CIRCUIT H44

1LTBLU-RED 1LTBLU-RED

TAIL LAMP LEFT (FIXED PART) E26

1BLK 1BLK

REFER TO LAMPS--POSITION, SIDE MARKER, LICENSE PLATE ILLUMINATION CIRCUIT G194 PIN 1

1BLK

G185

1LTBLU-YEL 1LTBLU-YEL

TAIL LAMP RIGHT (FIXED PART) E25

1BLK 1BLK

1BLK

G186

ELECTRONIC CONTROL UNITS POWER SUPPLY RELAY 151 PIN 85

1BLK

G174

G186

G143

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GENERAL

Actuation of the stop lamps is not depending upon insertion of the ignition key. Pressing brake pedal, the three rear stop lamps are powered simultaneously (two lateral and one central). The vehicle is equipped with a stop lamps failure detector circuit.
Should one or all stop lamps be burned out the related warning lamp illuminates on the instrument panel (for further details refer to Alfa Romeo Control unit power circuit and instrument panel interface).
The stop lamps power supply line is protected by fuse **F15** (15A) in fuse box **G1**.
Moreover, the vehicle is provisioned with an appropriate circuit for the actuation of a trailer stop lamps, if used.

OPERATIONAL DESCRIPTION

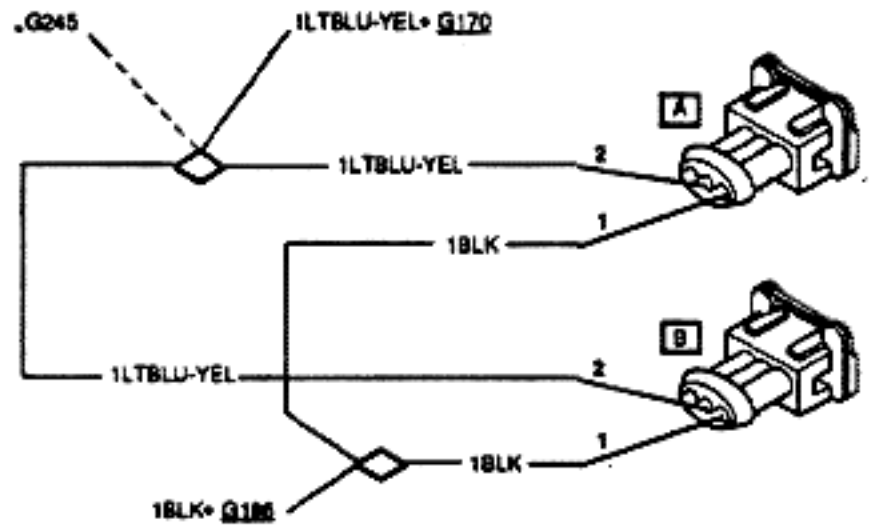
Battery voltage is sent to rear stop lamp switch **H3**. This line is protected by a stop lamps fuse **F15** (15A) in fuse box **G1**.
During rest conditions, the Alfa Romeo control unit **N22** receives power (12V) at pin 4A. Pressing on the brake pedal, the rear stop lamp switch **H3** is actuated.
With brake pedal pressed the switch **H3** connects 12V to stop lamps switch relay **I69** coil and to connector **G192** for the trailer stop lamps, if used, through the fuse box **G1**.
The Alfa Romeo control unit **N22**, through stop lamps switch relay **I69**, receives 12V on pin 3A; simultaneously power is removed from line on pin 4A.
In these conditions, the control unit **N22** gives an output power (pin 6A) to turn on the 3rd center stop lamp **E28** and to rear lamps control unit **N44**.
The control unit **N44** turns on, by means of 12V, the tail lamp left (fixed part) **E26** (pin 6) and tail lamp right (fixed part) **E25** (pin 1).
Furthermore, the control unit **N44**, in case the turn signal lamps are activated, inhibits the check that the Alfa Romeo Control unit **N22** is performing on the stop lamps circuit by means of the signal present on pin 9.

TROUBLESHOOTING TABLE

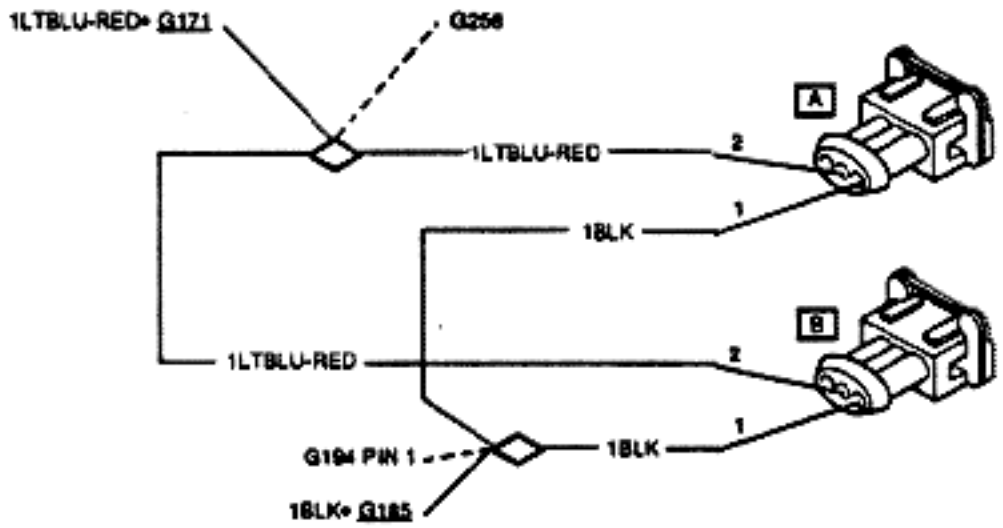
FAULT TYPE	FAILED COMPONENT								
	F15 FUSE	C10 STOP WARN. LAMP	E25 R.H. REAR STOP LAMP	E26 L.H. REAR STOP LAMP	E28 3rd STOP LAMPS	H3 SWITCH	I69 RELAY	N22 CONTROL UNIT	N44 CONTROL UNIT
ALL STOP LAMPS INOPERATIVE	●					●	●	●	
CENTER STOP LAMP INOPERATIVE					●			●	
L.H. AND R.H. STOP LAMPS INOPERATIVE								●	●
L.H. STOP LAMP INOPERATIVE				●					●
R.H. STOP LAMP INOPERATIVE			●						●
STOP LAMP WARNING LAMP INOPERATIVE ON INSTRUMENT PANEL (WITH BURNED OUT STOP LAMPS)		●							●

NOTE: Before attempting any troubleshooting ascertain the integrity of the affected warning lamp on the instrument panel by pressing the test button.

Tail lamp, right (fixed part) — E25

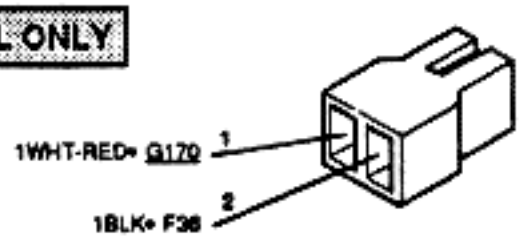


Tail lamp, left (fixed part) — E26



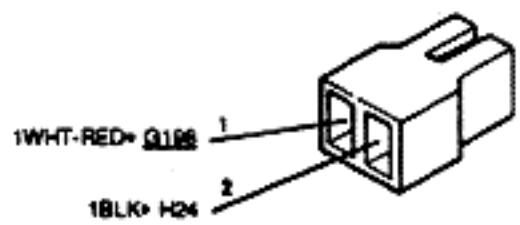
Center stop lamp — E28

BASE AND L ONLY



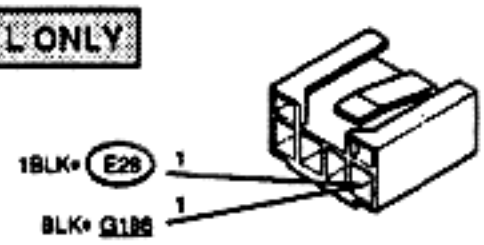
Center stop lamp — E28

S ONLY

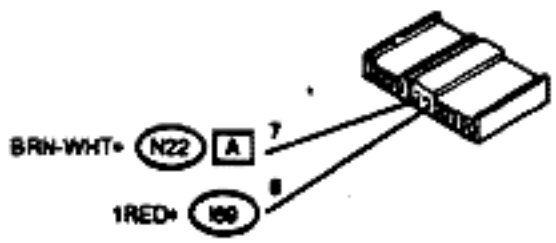


Dome lamp, control switch on right rear post — F36

BASE AND L ONLY



Fuse box — G1 D



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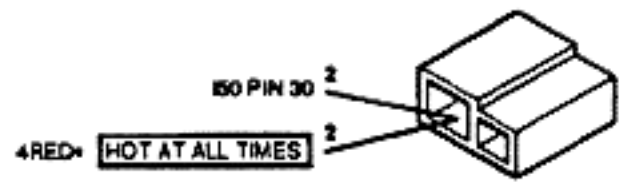
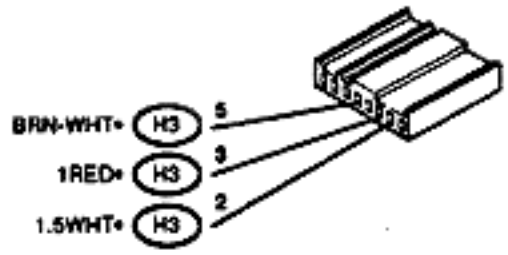
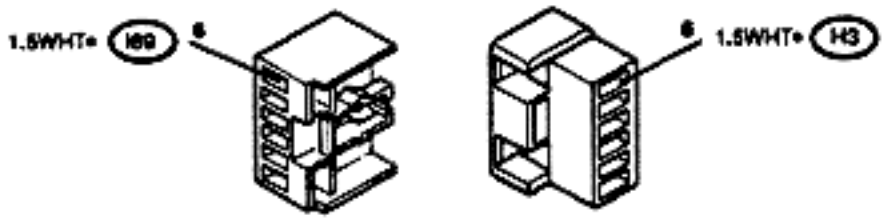
Fuse box	G1 N



Fuse box	G1 P

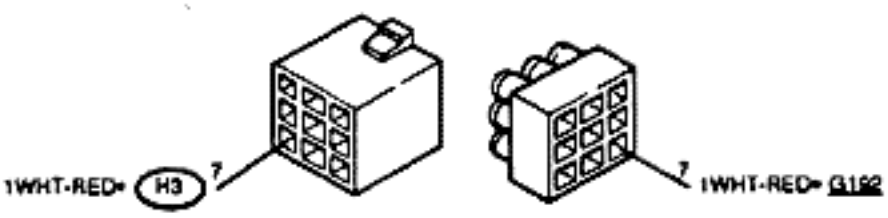


Six pin connector circuit board to doors wiring	G16



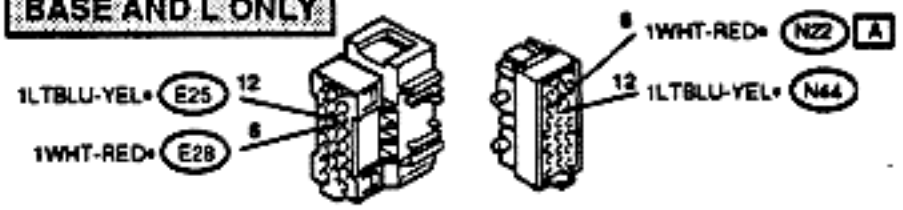
Central bulkhead ground	G143

Connector, front doors to left rear wiring	G169



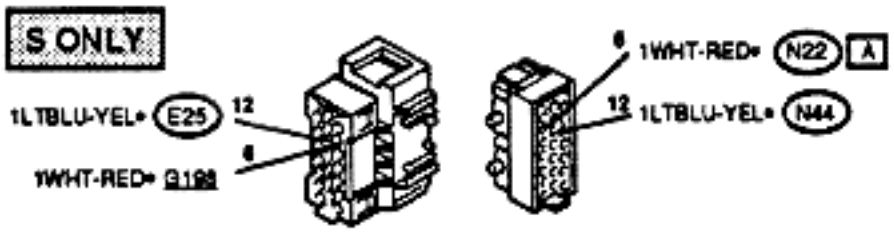
Connector, circuit board to right rear wiring	G170

BASE AND L ONLY

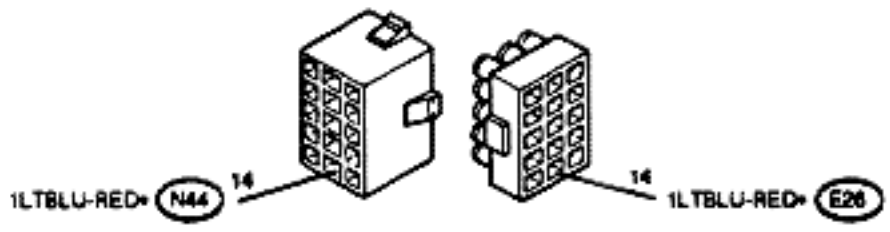


Connector, circuit board to right rear wiring	G170

S ONLY

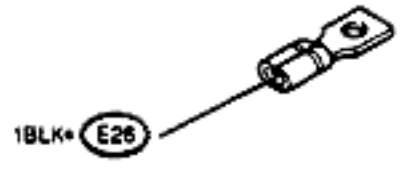


Connector, circuit board to left rear wiring	G171



Steering wheel column support ground	G174

Trunk left side ground	G185

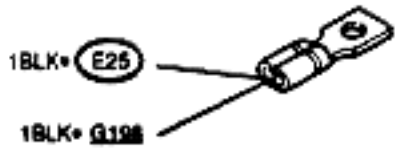


Trunk right side ground	G186

BASE AND L ONLY

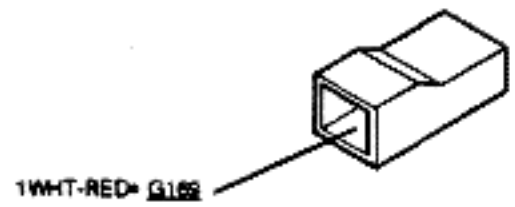
Trunk right side ground	G186

S ONLY



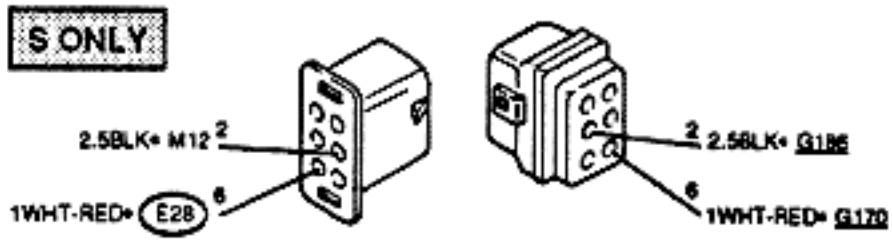
(Cont.d)

Connector, provision for trailer stop lamps	G192



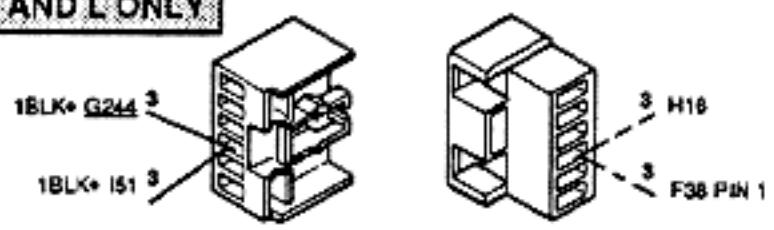
Connector, right rear wiring to trunk lock wiring	G198

S ONLY



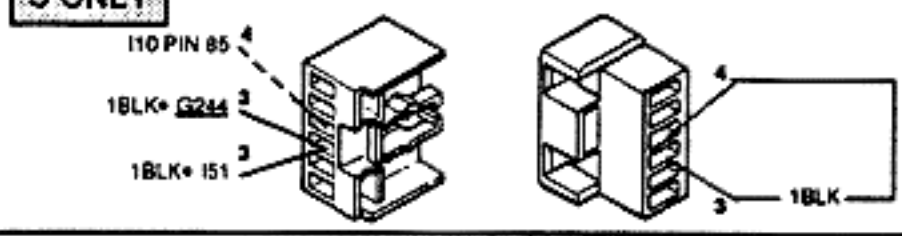
Connector, circuit board to automatic lever wiring	G233

BASE AND L ONLY

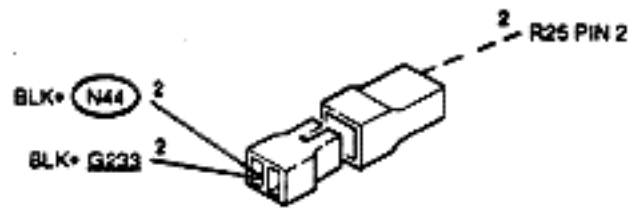


Connector, circuit board to automatic lever wiring	G233

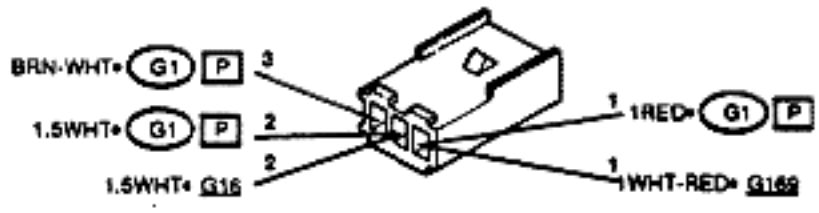
S ONLY



Board wiring to aft console wiring two-way connector	G244

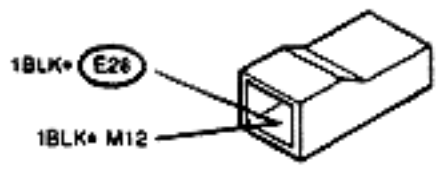


Rear stop lamp switch	H3

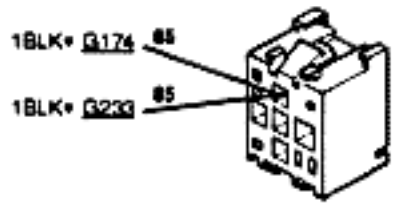


Electronic control units power supply relay	H24

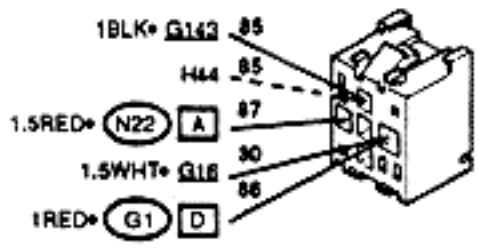
S ONLY



Electronic control units power supply relay	I51

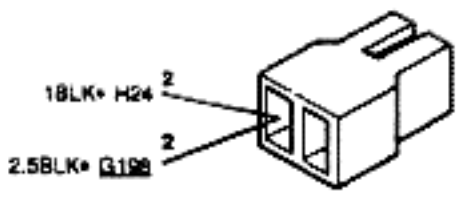


Stop lamps switch relay	I69



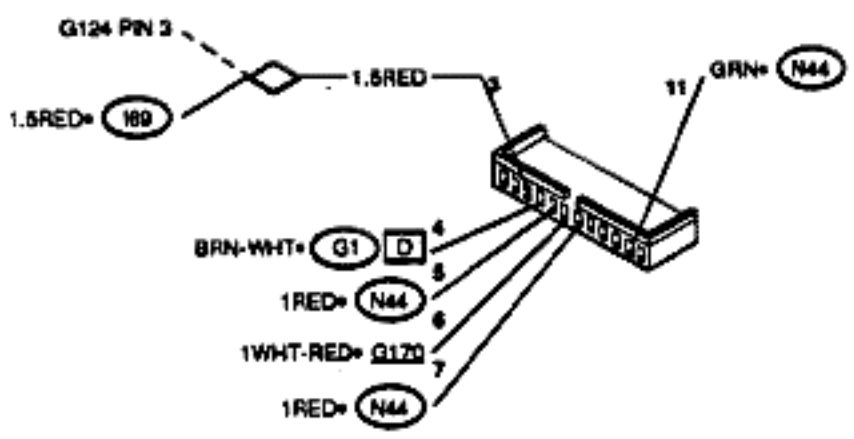
Trunk opening solenoid	M12

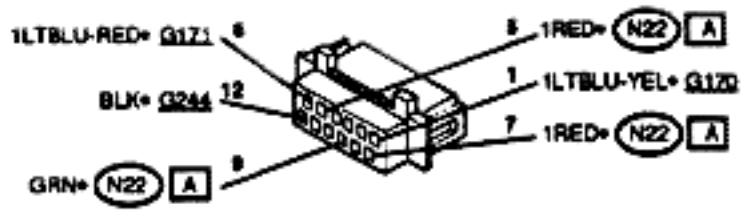
S ONLY



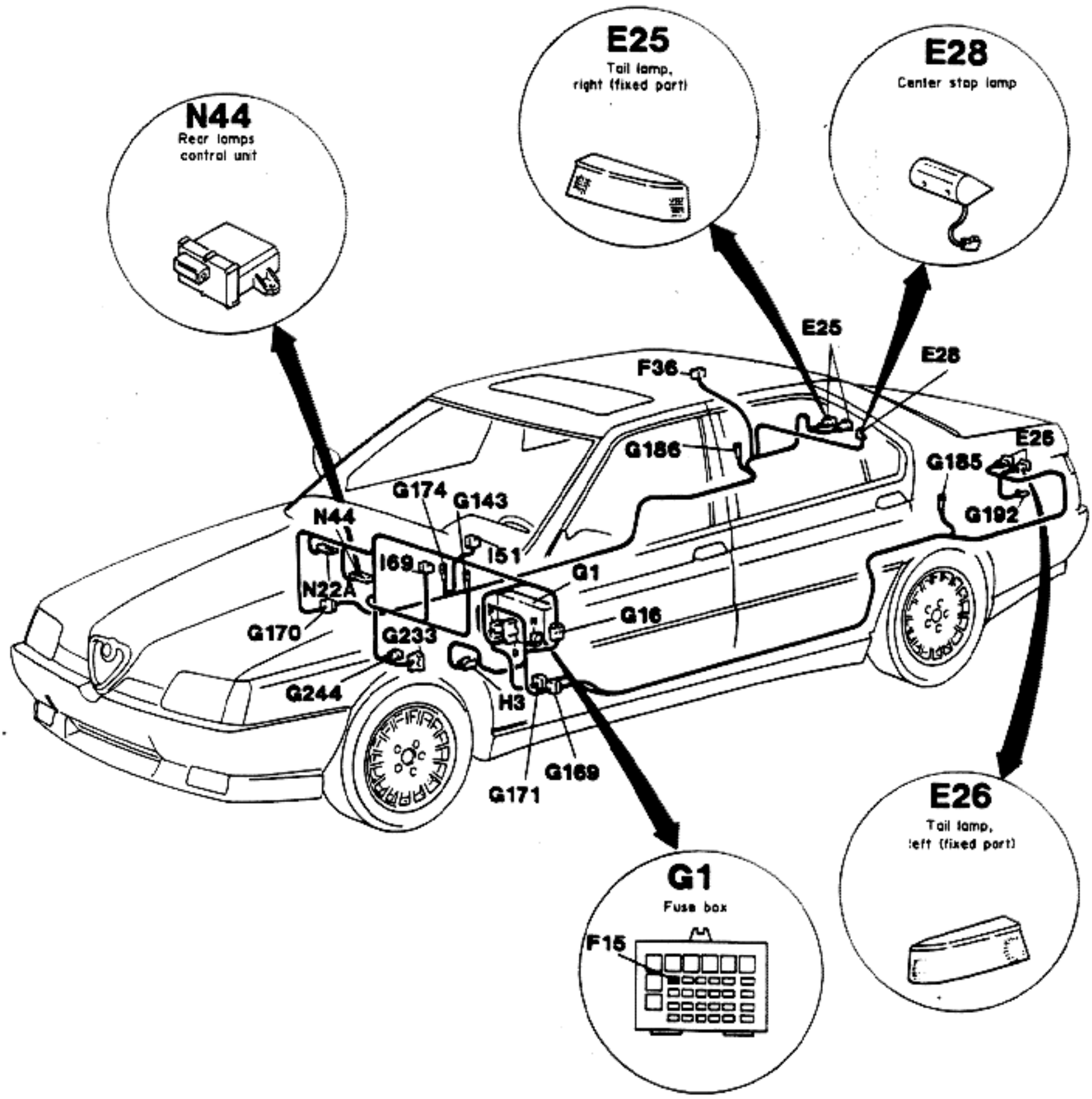
(Cont.d)

Alfa Romeo Control unit	N22 A	Rear lamps control unit	N44

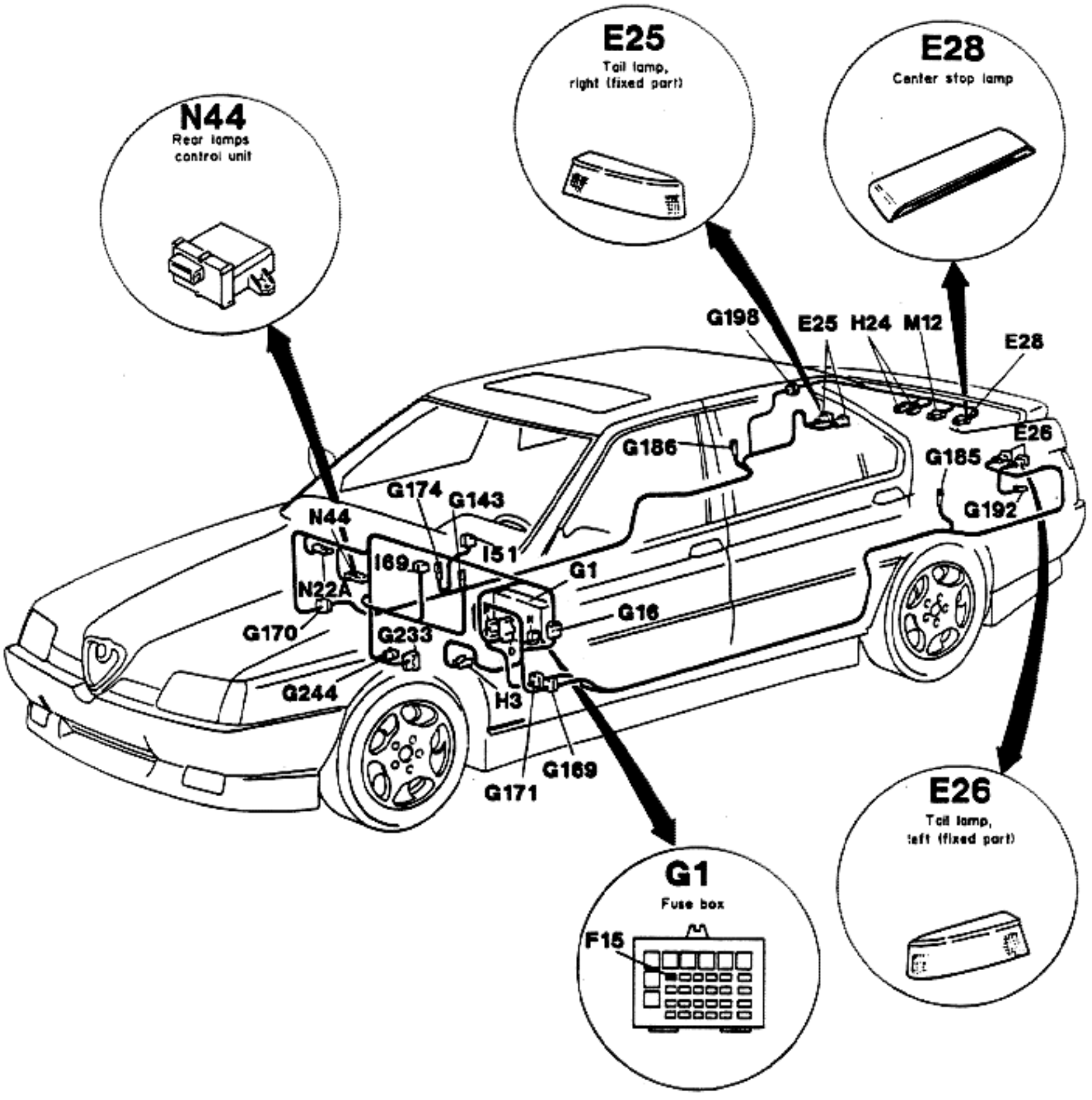




BASE AND L ONLY



S ONLY



ALL STOP LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F15** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F15**
A2 VOLTAGE CHECK - Check for presence of 12V between pin 2 of rear stop lamp switch **H3** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A3**
A3 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of switch H3 and pin 2P of fuse box G1** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A4 SWITCH CHECK - With brake pedal pressed, check for presence of 12V between pin 1 of rear stop lamp switch **H3** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Replace **switch H3**

(Cont.d)

ALL STOP LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - With brake pedal pressed, check for presence of 12V between pin 3P of fuse box G1 and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Repair wiring between **pin 1 of switch H3 and pin 3P of fuse box G1**
A6 GROUNDING CHECK - Check for presence 0V (zero) at pin 85 of stop lamps switch relay I69	OK ▶ ~~OK~~ ▶	Carry-out **step A7** Repair wiring between **pin 85 of relay I69 and ground point G143**
A7 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay I69 and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A8** Repair wiring between **pin 2 of switch H3, pin 6 of connector G16 and pin 30 of relay I69**
A8 RELAY CHECK - Check relay I69 for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step A9** Replace **relay I69**

(Cont.d)

ALL STOP LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A9 VOLTAGE CHECK		
- Check for presence of 12V between pin 86 of relay I69 and ground	OK ▶	Carry-out step A10
	~~OK~~ ▶	Repair wiring between pin 86 of relay I69 and pin 6D of fuse box G1
A10 VOLTAGE CHECK		
- Check for presence of 12V between pin 3A of Alfa Romeo Control unit N22 and ground	OK ▶	Replace control unit N22
	~~OK~~ ▶	Repair wiring between pin 3A of control unit N22 and pin 87 of relay I69

End of test A

CENTER STOP LAMP INOPERATIVE	TEST B

TEST STEPS		RESULTS	REMEDY
B1	BULB CHECK		
- Check bulb of center stop lamp **E28** for integrity		OK ▶	Carry-out **step B2**
		~~OK~~ ▶	Replace **bulb E28**
B2	VOLTAGE CHECK		
- Check for presence of 12V between pin 6A of Alfa Romeo Control unit **N22** and ground		OK ▶	For BASE and L version carry-out **step B3**. For S version carry-out **step B4**
		~~OK~~ ▶	Replace **control unit N22**
B3	VOLTAGE CHECK		
- Check for presence of 12V between pin 1 of center stop lamp **E28** and ground		OK ▶	Repair wiring between **pin 2 of center stop lamp E28 and ground point G186**
		~~OK~~ ▶	Repair wiring between **pin 1 of lamp E28, pin 6 of connector G170 and pin 6A of control unit N22**

(Cont.d)

CENTER STOP LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B4 VOLTAGE CHECK		
- With brake pedal pressed, check for presence of 12V between pin 1 of center stop lamp **E28** and ground	OK ▶	Carry-out **step B5**
	~~OK~~ ▶	Repair wiring between **pin 1 of lamp E28, pin 6 of G198, pin 6 of connector G170 and pin 6 of control unit**
B5 GROUNDING CHECK		
- Check for presence of 0V (zero) between pin 2 of connector **G198** and ground	OK ▶	Repair wiring between **pin 2 of connector G198 and pin 2 of center stop lamp E28**
	~~OK~~ ▶	Repair wiring between **pin 2 of connector G198 and ground point G186**

End of test B

LH AND RH STOP LAMPS INOPERATIVE — TEST C

TEST STEPS	RESULTS	REMEDY
C1 VOLTAGE CHECK - With brake pedal pressed check for presence of 12V at pins 5 and 7 of rear lamps control unit **N44**	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Carry-out **step C3**
C2 GROUNDING CHECK - Check for presence of 0V (zero) at pin 12 of rear lamps control unit **N44**	OK ▶ ~~OK~~ ▶	Replace **control unit N44** Repair wiring between **pin 2 of connector G244 and pin 12 of control unit N44**
C3 CONTINUITY CHECK - Check for continuity between: • pin 7 of Alfa Romeo Control unit **N22** and pin 5 of rear lamps control unit **N44** • pin 5 of Alfa Romeo Control unit **N22** and pin 7 of rear lamps control unit **N44**	OK ▶ ~~OK~~ ▶	Replace **control unit N22** Repair or replace **wires, as necessary**

End of test C

LH STOP LAMP INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
NOTE: In case only one of the stop lamps does not illuminate, check for integrity of bulb and/or check for continuity of relevant wires.		
D1 VOLTAGE CHECK - Check for presence of 12V between pin 6 of rear lamps control unit **N44** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Replace **control unit N44**
D2 VOLTAGE CHECK - With brake pedal pressed, check for presence of 12V between pins 2B and 2A of tail lamp left and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D3** Repair wiring between **pins 2A and 2B of tail lamp left, pin 14 of connector G171 and pin 6 of control unit N44**
D3 GROUNDING CHECK - Check for presence of 0V (zero) at pins 1B and 1A of tail lamp left	OK ▶ ~~OK~~ ▶	Replace **bulbs E26** Repair wiring between **pins 1B and 1A of tail lamp left and ground point G185**

End of test D

RH STOP LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
NOTE: In case only one of the stop lamps does not illuminate, check for integrity of bulb and/or check for continuity of relevant wires.		
E1 VOLTAGE CHECK - Check for presence of 12V between pin 1 of rear lamps control unit **N44** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Replace **control unit N44**
E2 VOLTAGE CHECK - With brake pedal pressed, check for presence of 12V between pins 2B and 2A of tail lamp right and ground	OK ▶ ~~OK~~ ▶	Carry-out **step E3** Repair wiring between **pins 2A and 2B of tail lamp left, pin 12 of connector G170 and pin 1 of control unit N44**
E3 GROUNDING CHECK - Check for presence of 0V (zero) at pins 1B and 1A of tail lamp right	OK ▶ ~~OK~~ ▶	Replace **bulbs E25** Repair wiring between **pins 1B and 1A of tail lamp right and ground point G186**

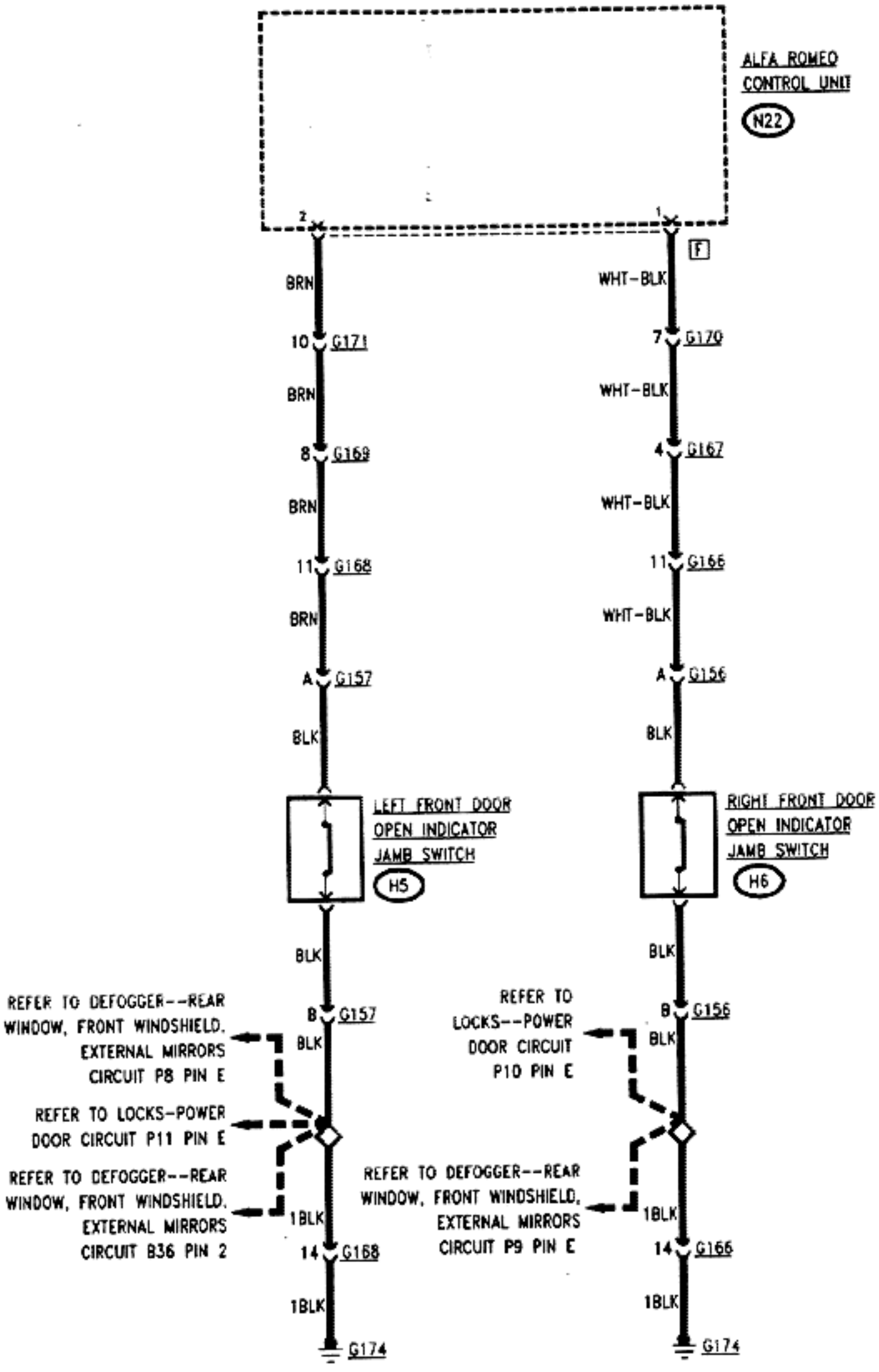
End of test E

STOP LAMP WARNING LAMP INOPERATIVE ON INSTRUMENT PANEL (WITH BURNED OUT STOP LAMPS)	TEST F

TEST STEPS	RESULTS	REMEDY
NOTE: In case only the center stop lamp bulb is burned out, and the warning lamp does not illuminate, replace the Alfa Romeo Control unit **N22**.		
F1 WARNING LAMP CHECK - Check warning lamp on instrument panel for integrity by pressing test pushbutton	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Replace **instrument panel warning lamp**
F2 CONTROL UNIT CHECK - Check for presence of open circuit on pins 5A, 6A and 7A of Alfa Romeo Control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** **Replace rear lamps control unit N44**

End of test F

LAMPS - - DOOR OPEN INDICATOR



GENERAL

Opening of front and/or rear doors is indicated by illumination of the relevant indicators on the instrument panel. Switches located on the doors provide door open/closed inputs to the control unit.
The Alfa Romeo Control Unit monitors the activation of the warning lamp relevant to the door that has been opened.
The door open condition is also monitored by the anti-theft, door lock/unlock and courtesy lamp circuits; refer to pertinent chapters for further information.

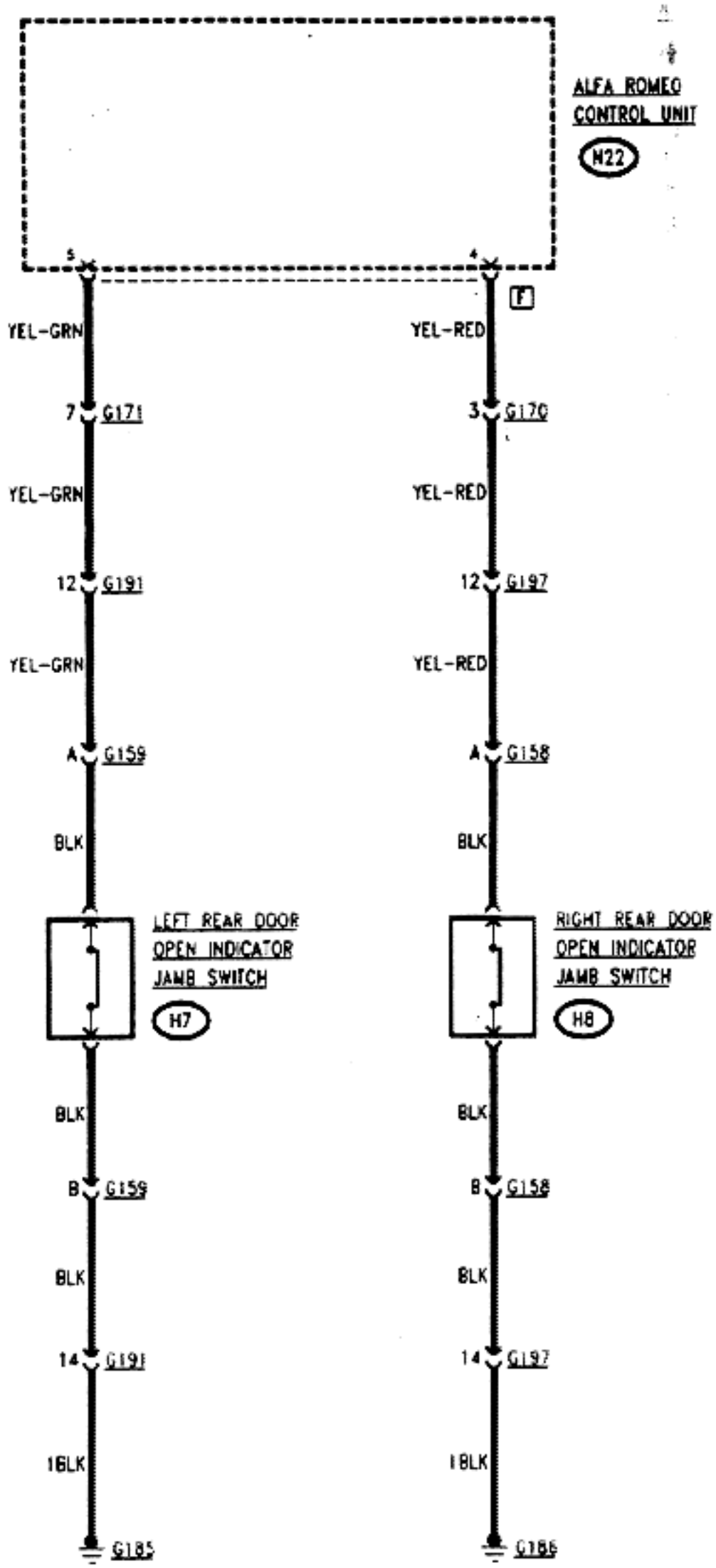
OPERATIONAL DESCRIPTION - FRONT DOOR OPEN WARNING LAMPS

The left front door open indicator jamb switch **H5** opens when the relevant door is opened, thus disconnecting pin 2F of the Alfa Romeo Control unit **N22** from the ground point.
Under this condition, the control unit **N22** activates on the instrument panel the door open warning lamp corresponding to that door.
In the same way, the control unit **N22** monitors the opening of the right front door through the switch **H6**.

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT H5 DOOR SWITCH	FAILED COMPONENT H6 DOOR SWITCH	FAILED COMPONENT N22 CONTROL UNIT
LEFT FRONT DOOR OPEN WARNING LAMP INOPERATIVE			●
LEFT FRONT DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	●		●
RIGHT FRONT DOOR WARNING LAMP INOPERATIVE			●
RIGHT FRONT DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED		●	●

NOTE: Before attempting any troubleshooting, check the related warning lamp on the instrument panel by pressing the test button.



OPERATIONAL DESCRIPTION - REAR DOOR OPEN WARNING LAMPS

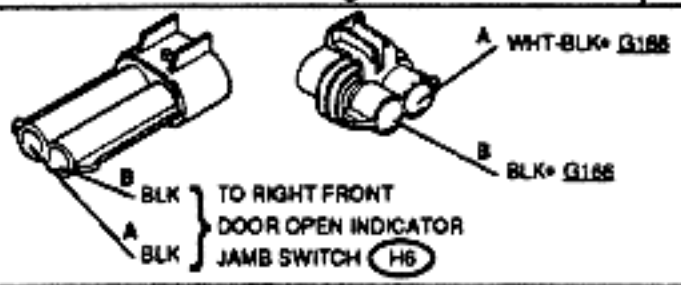
The left rear door open indicator jamb switch **H7** opens when the relevant door is opened, thus disconnecting pin 5F of the Alfa Romeo Control unit **N22** from the ground point.
Under this condition, the control unit **N22** activates on the instrument panel the door open warning lamp corresponding to that door.
In the same way, the control unit **N22** monitors the opening of the right rear door through the switch **H8**.

TROUBLESHOOTING TABLE

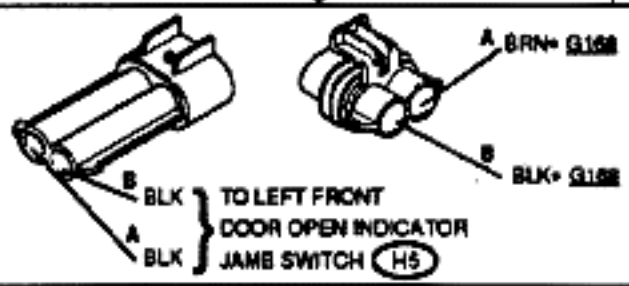
FAULT TYPE	FAILED COMPONENT: H7 DOOR SWITCH	H8 DOOR SWITCH	N22 CONTROL UNIT
LEFT REAR DOOR OPEN WARNING LAMP INOPERATIVE			●
LEFT REAR DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	●		●
RIGHT REAR DOOR OPEN WARNING LAMP INOPERATIVE			●
RIGHT REAR DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED		●	●

NOTE: Before attempting any troubleshooting, check the related warning lamp on the instrument panel by pressing the test button.

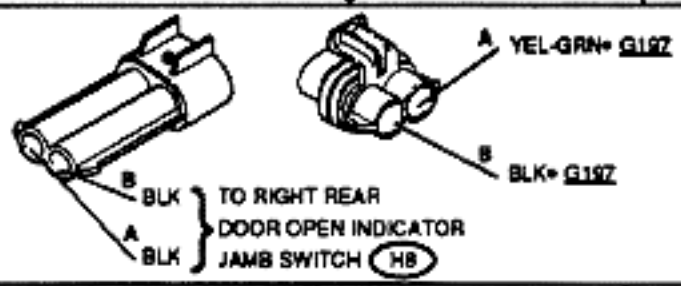
Connector, right front door to right front door sensor wiring — G156



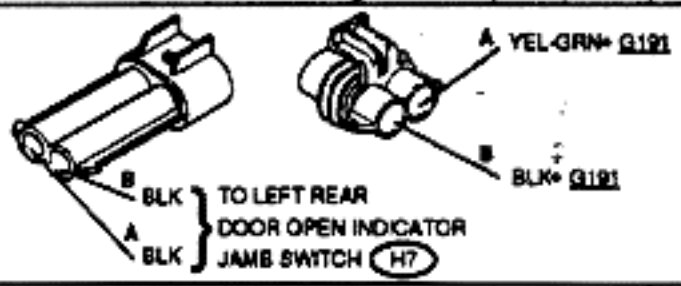
Connector, left front door to left front door sensor wiring — G157



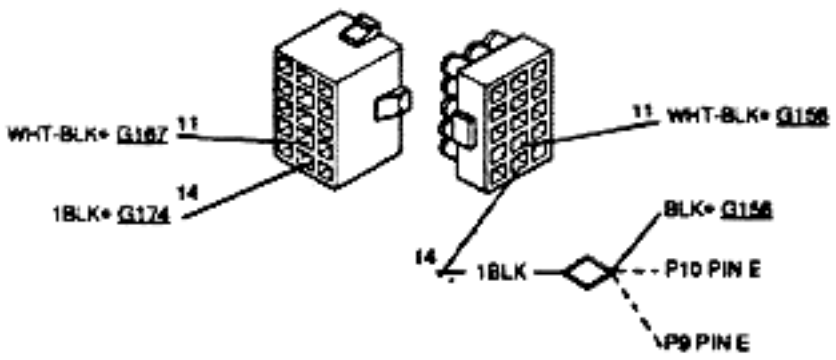
Connector, right rear door to right rear door sensor wiring — G158



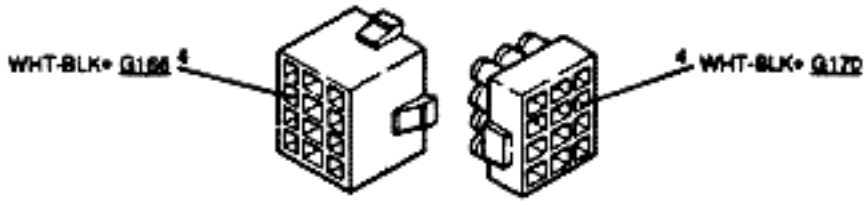
Connector, left rear door to left rear door sensor wiring — G159



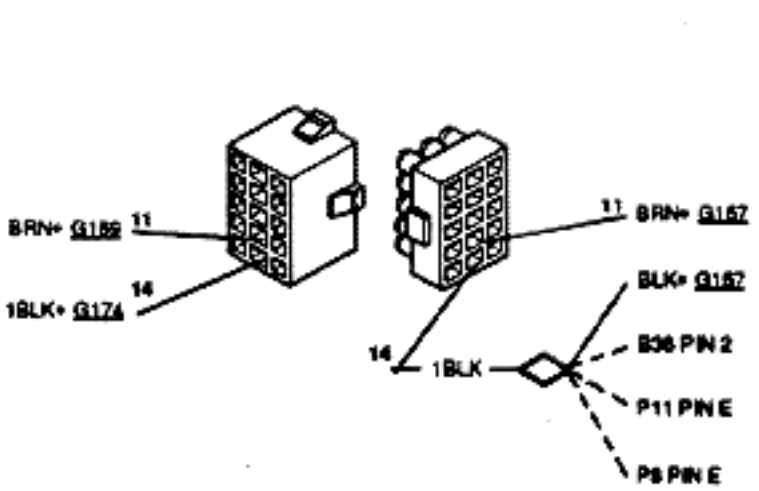
Connector, front doors to right front door wiring — G166



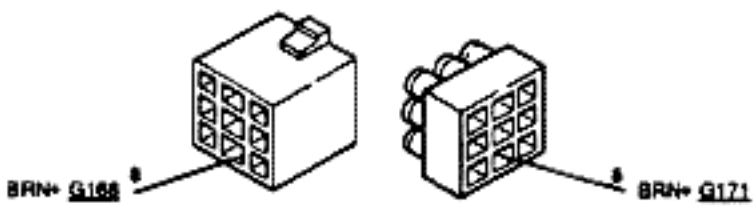
Connector, front doors to right rear wiring — G167



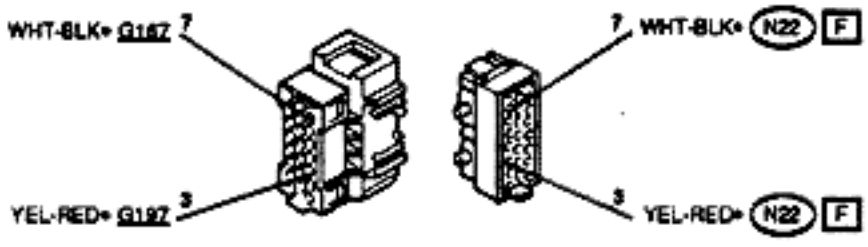
Connector, front doors to left front door wiring — G168



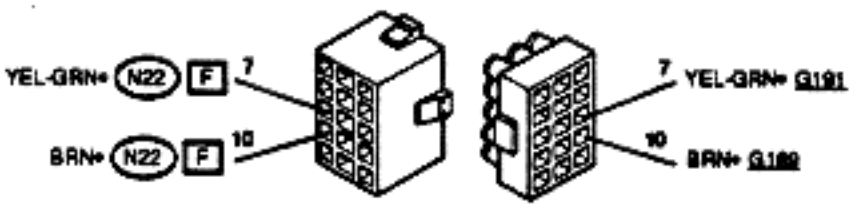
Connector, front doors to left rear wiring — G169



Connector, circuit board to right rear wiring — G170



Connector, circuit board to left rear wiring — G171



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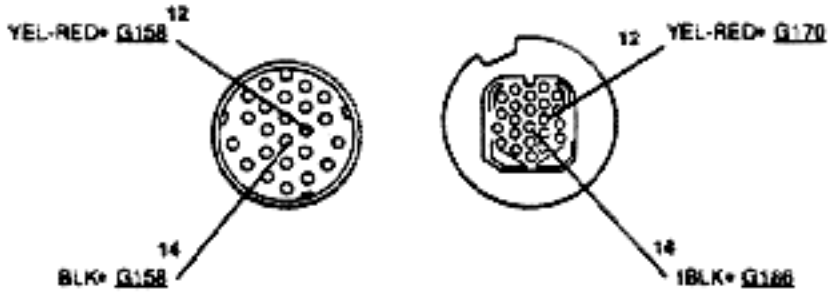
Steering wheel column support ground	G174

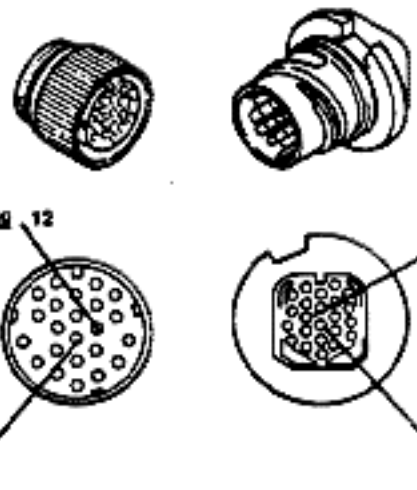
Trunk left side ground	G185

Trunk right side ground	G186

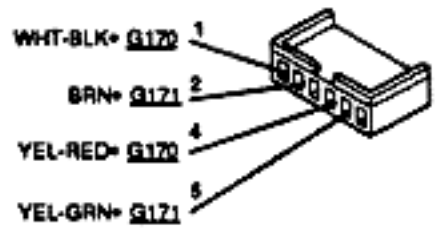
Connector, right rear wiring to right rear door wiring	G197

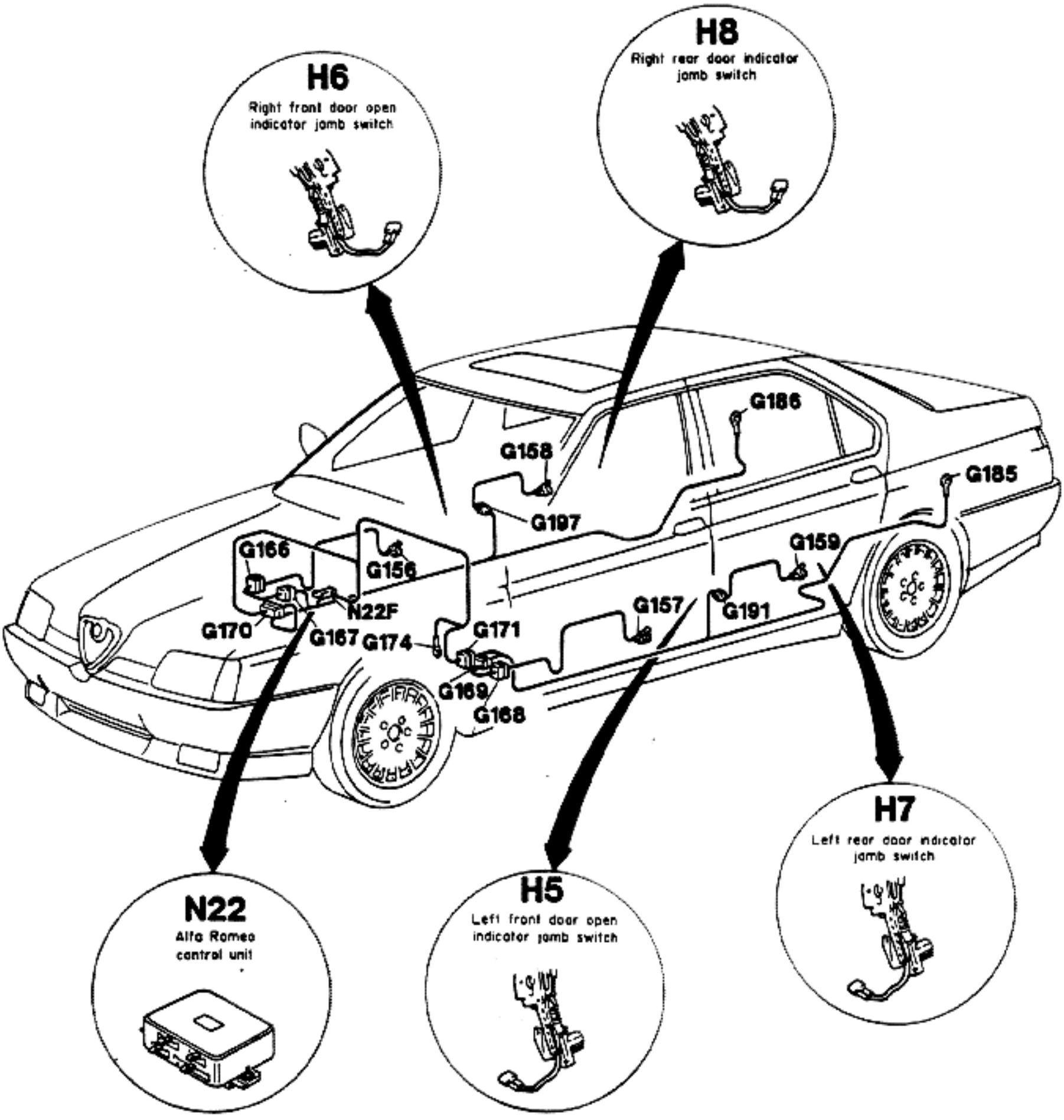


Connector, left rear wiring to left rear door wiring	G191



Alfa Romeo control unit	N22 F





LEFT FRONT DOOR OPEN WARNING LAMP INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, ascertain the integrity of the affected warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.			
A1	CONTROL UNIT CHECK		
- With left front door open, check that circuit is open at pin 2F of Alfa Romeo Control unit **N22**		OK ▶	**Failure of instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure**
		~~OK~~ ▶	**Replace switch H5**

End of test A

LEFT FRONT DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST B

TEST STEPS	RESULTS	REMEDY
B1 CONTROL UNIT CHECK		
- With left front door closed, check for presence of 0V (zero) at pin 2F of Alfa Romeo Control unit **N22**	OK ▶	**Failure of the Instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure**
	~~OK~~ ▶	Carry-out **step B2**
B2 GROUNDING CHECK		
- Check for presence of 0V (zero) at terminal of left front door open indicator jamb switch **H5** (BLK wire)	OK ▶	Carry-out **step B3**
	~~OK~~ ▶	Carry-out **step B6**
B3 DOOR SWITCH CHECK		
- Check that circuit is closed between terminals of switch **H5** when the left front door is closed	OK ▶	Carry-out **step B4**
	~~OK~~ ▶	Replace **switch H5**
B4 GROUNDING CHECK		
- With left front door closed, check for presence of 0V (zero) at pin A of connector **G157**	OK ▶	Carry-out **step B5**
	~~OK~~ ▶	**Repair wiring between pin A of connector G157 and switch H5 (BLK wire)**

(Cont.d)

LEFT FRONT DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST B

TEST STEPS	RESULTS	REMEDY
B5 GROUNDING CHECK - With left front door closed, check for presence of 0V (zero) at pin 11 of connector **G168**	OK ▶ ~~OK~~ ▶	Carry-out **step B6** Repair wiring between **pin 11 of connector G168 and pin A of connector G157**
B6 GROUNDING CHECK - With left front door closed, check for presence of 0V (zero) at pin 8 of connector **G169**	OK ▶ ~~OK~~ ▶	Carry-out step **B7** Repair wiring between **pin 8 of connector G169 and pin 11 of connector G168**
B7 GROUNDING CHECK - With left front door closed, check for presence of 0V (zero) at pin 10 of connector **G171**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 10 of connector G171 and pin 2F of control unit N22** Repair wiring between **pin 10 of connector G171 and pin 8 of connector G169**

(Cont.d)

LEFT FRONT DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST B

TEST STEPS		RESULTS	REMEDY
B8	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin B of connector **G157**		OK ▶	Repair wiring between **pin B of connector G157 and switch H5 (BLK wire)**
		~~OK~~ ▶	Repair wiring between **pin B of connector G157, pin 14 of connector G168 and ground point G174**

End of test B

RIGHT FRONT DOOR WARNING LAMP INOPERATIVE	TEST C

TEST STEPS		RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, ascertain the integrity of the affected warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.			
C1	CONTROL UNIT CHECK		
- With right front door open, check that circuit is open at pin 1F of Alfa Romeo Control unit **N22**		OK ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure**
		~~OK~~ ▶	Replace **switch H6**

End of test C

RIGHT FRONT DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST D

TEST STEPS	RESULTS	REMEDY
D1 CONTROL UNIT CHECK		
- With right front door closed, check for presence of 0V (zero) at pin 1F of Alfa Romeo Control unit **N22**	OK ▶	Failure of the **instrument panel - - Alfa Romeo Control ECU interface circuit**; refer to the applicable troubleshooting procedure
	~~OK~~ ▶	Carry-out **step D2**
D2 GROUNDING CHECK		
- Check for presence of 0V (zero) between terminal of right front door open indicator jamb switch **H6** (BLK wire) and ground	OK ▶	Carry-out **step D3**
	~~OK~~ ▶	Carry-out **step D8**
D3 DOOR SWITCH CHECK		
- Check that circuit is closed between terminals of switch **H6** when the right front door is closed	OK ▶	Carry-out **step D4**
	~~OK~~ ▶	Replace **switch H6**
D4 GROUNDING CHECK		
- With right front door closed, check for presence of 0V (zero) between pin A of connector **G156** and ground	OK ▶	Carry-out **step D5**
	~~OK~~ ▶	Repair wiring between **pin A of connector G156 and switch H6 (BLK wire)**

(Cont.d)

RIGHT FRONT DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST D

TEST STEPS	RESULTS	REMEDY
D5 GROUNDING CHECK - With right front door closed, check for presence of 0V (zero) at pin 11 of connector **G166**	OK ▶ ~~OK~~ ▶	Carry-out **step D6** Repair wiring between **pin 11 of connector G166 and pin A of connector G156**
D6 GROUNDING CHECK - With right front door closed, check for presence of 0V (zero) at pin 4 of connector **G167**	OK ▶ ~~OK~~ ▶	Carry-out **step D7** Repair wiring between **pin 4 of connector G167 and pin 11 of connector G166**
D7 GROUNDING CHECK - With right front door closed, check for presence of 0V (zero) at pin 7 of connector **G170**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 7 of connector G170 and pin 1F of control unit N22** Repair wiring between **pin 7 of connector G170 and pin 4 of connector G167**

(Cont.d)

RIGHT FRONT DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST D

TEST STEPS		RESULTS	REMEDY
D8	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin B of connector **G156**		OK ▶	Repair wiring between **pin B of connector G156 and switch H6 (BLK wire)**
		~~OK~~ ▶	Repair wiring between **pin B of connector G156, pin 14 of connector G166 and ground point G174**

End of test D

LEFT REAR DOOR OPEN WARNING LAMP INOPERATIVE	TEST E

TEST STEPS		RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, ascertain the integrity of the affected warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.			
E1	CONTROL UNIT CHECK		
- With left rear door open, check that circuit is open at pin 5F of Alfa Romeo Control unit **N22**		OK ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure**
		~~OK~~ ▶	Replace **switch H7**

End of test E

LEFT REAR DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST F

TEST STEPS		RESULTS	REMEDY
F1	CONTROL UNIT CHECK		
- With left rear door closed, check for presence of 0V (zero) at pin 5F of Alfa Romeo Control unit **N22**		OK ▶	Failure **of the Instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure**
		OK ▶	Carry-out **step F2**
F2	GROUNDING CHECK		
- Check for presence of 0V (zero) at terminal of left rear door open indicator jamb switch **H7** (BLK wire)		OK ▶	Carry-out **step F3**
		OK ▶	Carry-out **step F7**
F3	DOOR SWITCH CHECK		
- Check that circuit is closed between terminals of switch **H7** when the left rear door is closed		OK ▶	Carry-out **step F4**
		OK ▶	Replace **switch H7**
F4	GROUNDING CHECK		
- With left rear door closed, check for presence of 0V (zero) at pin A of connector **G159**		OK ▶	Carry-out **step F5**
		OK ▶	Repair wiring between **pin A of connector G159 and switch H7 (BLK wire)**

(Cont.d)

LEFT REAR DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST F

TEST STEPS	RESULTS	REMEDY
F5 GROUNDING CHECK - With left rear door closed, check for presence of 0V (zero) at pin 12 of connector **G191**	OK ▶ ~~OK~~ ▶	Carry-out **step F6** Repair wiring between **pin 12 of connector G191 and pin 7 of connector G171**
F6 GROUNDING CHECK - With left rear door closed, check for presence of 0V (zero) at pin 7 of connector **G171**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 7 of connector G171 and pin 5F of control unit N22** Repair wiring between **pin 7 of connector G171 and pin 12 of connector G191**
F7 GROUNDING CHECK - Check for presence of 0V (zero) at pin B of connector **G159**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin B of connector G159 and switch H7 (BLK wire)** Repair wiring between **pin B of connector G159, pin 14 of connector G191 and ground point G185**

End of test F

RIGHT REAR DOOR OPEN WARNING LAMP INOPERATIVE — TEST G

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, ascertain the integrity of the affected warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
G1 CONTROL UNIT CHECK - With right rear door open, check that circuit is open at pin 4F of Alfa Romeo Control unit **N22**	OK ▶ OK ▶	Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure Replace switch H8

End of test G

RIGHT REAR DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST H

TEST STEPS	RESULTS	REMEDY
H1 GROUNDING CHECK - With right rear door closed, check for presence of 0V (zero) at pin 12 of connector **G197**	OK ▶ ~~OK~~ ▶	Carry-out **step H2** Carry-out **step H3**
H2 GROUNDING CHECK - With right rear door closed, check for presence of 0V (zero) at pin 4F of Alfa Romeo Control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit refer to the applicable troubleshooting procedure** Repair wiring between **pin 12 of G197, pin 3 of G170 and pin 4F of N22**
H3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 14 of connector **G197**	OK ▶ ~~OK~~ ▶	Carry-out **step H4** Repair wiring between **pin 14 of connector G197 and ground point G186**

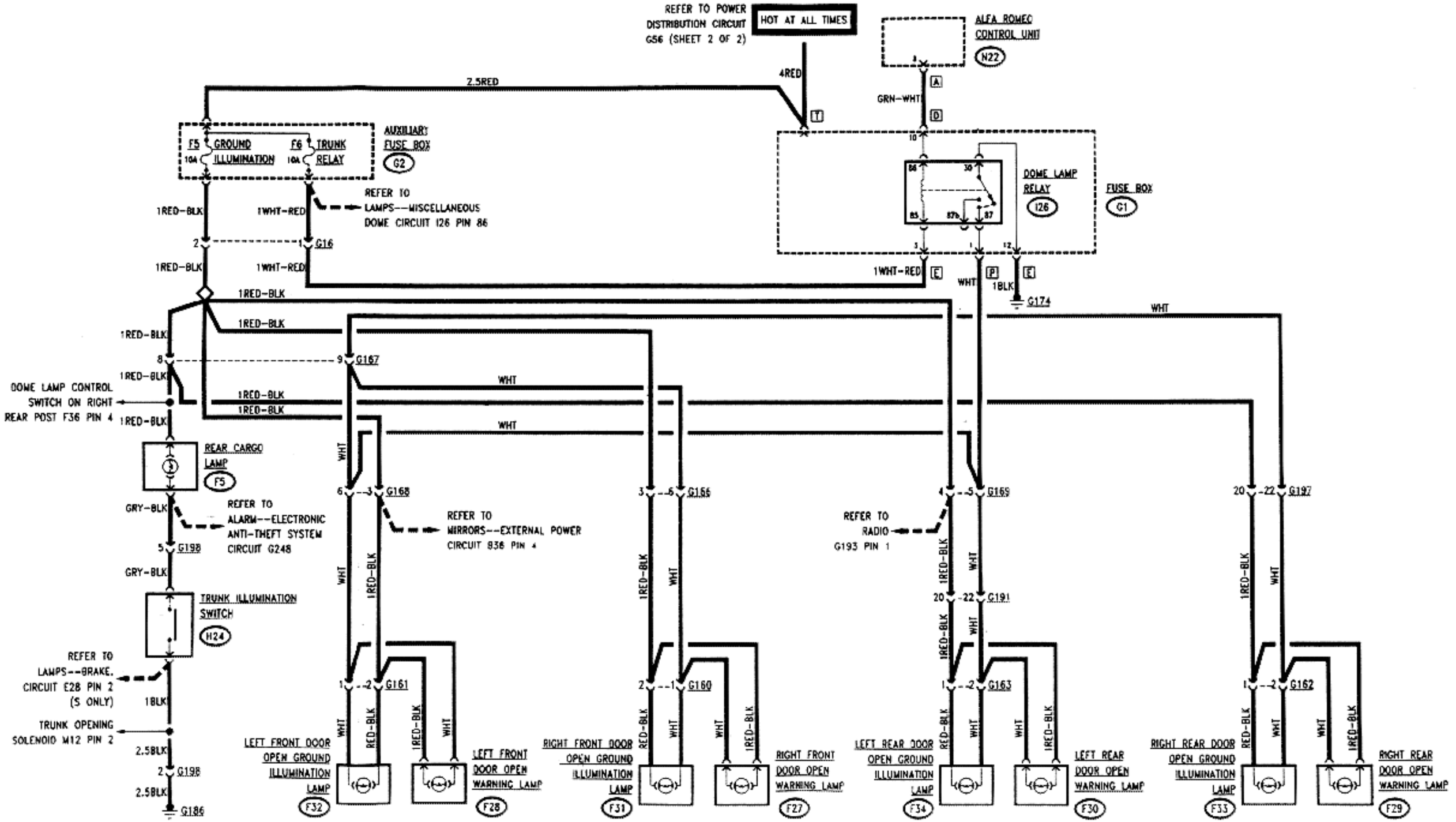
(Cont.d)

RIGHT REAR DOOR OPEN WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST H

TEST STEPS	RESULTS	REMEDY
H4 GROUNDING CHECK - Check for presence of 0V (zero) at pin B of connector **G158**	OK ▶ ~~OK~~ ▶	Carry-out **step H5** Repair wiring between **pin B of G158 and pin 14 of G197**
H5 GROUNDING CHECK - Check for presence of 0V (zero) at terminal of right rear door open indicator jamb switch **H8** (BLK wire)	OK ▶ ~~OK~~ ▶	Carry-out **step H6** Repair wiring between **pin B of G158 and terminal of switch H8**
H6 DOOR SWITCH CHECK - Check that circuit is closed between terminals of switch **H8** when the right rear door is closed	OK ▶ ~~OK~~ ▶	Carry-out **step H7** Replace **switch H8**
H7 GROUNDING CHECK - With right rear door closed, check for presence of 0V (zero) at pin A of connector **G158**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin A of G158 and pin 12 of G197** Repair wiring between **pin A of G158 and terminal of switch H8 (BLK wire)**

End of test H

LAMPS - - GROUND ILLUMINATION, DOOR OPEN, TRUNK LIGHTING



GENERAL

The vehicle is provided with front and rear door open indicator lamps located on the instrument panel.
Moreover, each door is provided with a ground illumination lamp.
The door open warning lamps are activated by the domes relay under control of the Alfa Romeo control unit, which is connected to the door open sensors (refer to the Alfa Romeo control unit circuit).
The trunk is provided with a dome lamp, that is actuated by closure of a switch.
The circuit relevant to the ground illumination lamps and to the trunk lighting is protected by fuses in the auxiliary fuse box **G2**, as follows:

- fuse **F5** (10A) GROUND ILLUMINATION.
- fuse **F6** (10A) TRUNK RELAY.

OPERATIONAL DESCRIPTION

The battery power (12V) is supplied to the dome lamp relay **I26** through the auxiliary fuse box **G2**. The relay power supply line is protected by the trunk relay fuse **F6**.
When any of the four doors of the vehicle is opened, the Alfa Romeo control unit energizes the relay **I26**.

Closure of relay **I26** contacts connects to ground the door open warning lamps and the ground illumination lamps.
Power (12V) is supplied to the above mentioned lamps through the ground illumination fuse **F5** in the auxiliary fuse box **G2**.
The lamps activated by the energization of relay **I26** are:

- Left front door open warning lamp **F28**.
- Right front door open warning lamp **F27**.
- Left rear door open warning lamp **F30**.
- Right rear door open warning lamp **F29**.
- Left front door open ground illumination lamp **F32**.
- Right front door open ground illumination lamp **F31**.
- Left rear door open ground illumination lamp **F34**.
- Right rear door open ground illumination lamp **F33**.

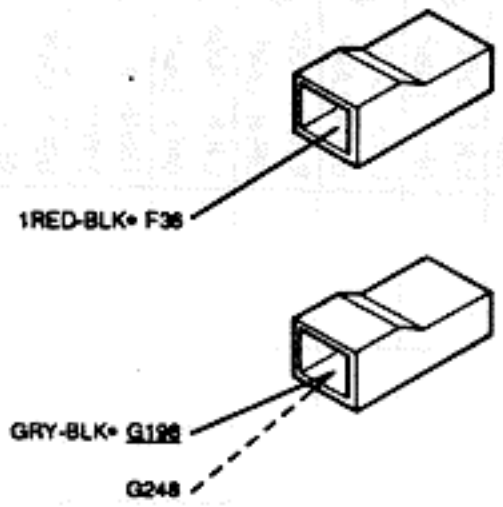
Power (12V) is also supplied to the rear cargo lamp **F5** through the fuse **F5** in the auxiliary fuse box **G2**.
Opening of the trunk lid closes the trunk illumination switch **H24**, thus switching on the rear cargo lamp **F5**.

TROUBLESHOOTING TABLE

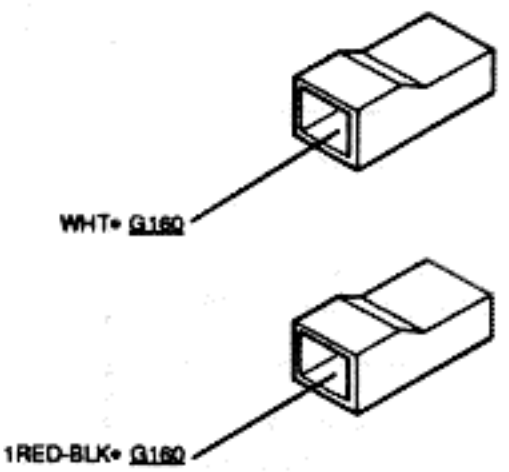
FAULT TYPE	FAILED COMPONENT														
	E5 FUSE	E6 FUSE	F5 TRUNK DOME	F27 R.H. FRONT LAMP	F28 L.H. FRONT LAMP	F29 R.H. REAR LAMP	F30 L.H. REAR LAMP	F31 R.H.F. DOOR OPEN LAMP	F32 L.H.F. DOOR OPEN LAMP	F33 R.H.R. DOOR OPEN LAMP	F34 L.H.R. DOOR OPEN LAMP	H24 TRUNK ILL. SWITCH	I26 DOME LAMP RELAY	N22 CONTROL UNIT
DOOR OPEN INDICATOR LAMPS AND GROUND ILLUMINATION LAMPS INOPERATIVE	●	●											●	
LEFT FRONT DOOR OPEN INDICATOR LAMP AND GROUND ILLUMINATION LAMP INOPERATIVE					●				●					
LEFT FRONT DOOR OPEN INDICATOR LAMP INOPERATIVE					●									
LEFT FRONT DOOR GROUND ILLUMINATION LAMP INOPERATIVE									●					
RIGHT FRONT DOOR OPEN INDICATOR LAMP AND GROUND ILLUMINATION				●				●						
RIGHT FRONT DOOR OPEN INDICATOR LAMP INOPERATIVE				●										
RIGHT FRONT DOOR GROUND ILLUMINATION LAMP INOPERATIVE								●						
LEFT REAR DOOR OPEN INDICATOR LAMP AND GROUND ILLUMINATION INOPERATIVE							●				●			

FAULT TYPE	FAILED COMPONENT													
	F5 FUSE	F6 FUSE	(F5) TRUNK DOME	(F27) R.H. FRONT LAMP	(F28) L.H. FRONT LAMP	(F29) R.H. REAR LAMP	(F30) L.H. REAR LAMP	(F31) R.H.F. DOOR OPEN LAMP	(F32) L.H.F. DOOR OPEN LAMP	(F33) R.H.R. DOOR OPEN LAMP	(F34) L.H.R. DOOR OPEN LAMP	(H24) TRUNK ILL. SWITCH	(126) DOME LAMP RELAY	(N22) CONTROL UNIT
LEFT FRONT DOOR OPEN INDICATOR LAMP INOPERATIVE							●							
LEFT FRONT DOOR GROUND ILLUMINATION LAMP UNOPERATIVE											●			
RIGHT REAR DOOR OPEN INDICATOR LAMP AND GROUND ILLUMINATION LAMP INOPERATIVE						●				●				
RIGHT REAR DOOR OPEN INDICATOR LAMP INOPERATIVE						●								
RIGHT REAR DOOR GROUND ILLUMINATION LAMP INOPERATIVE										●				
TRUNK DOME INOPERATIVE	●		●									●		

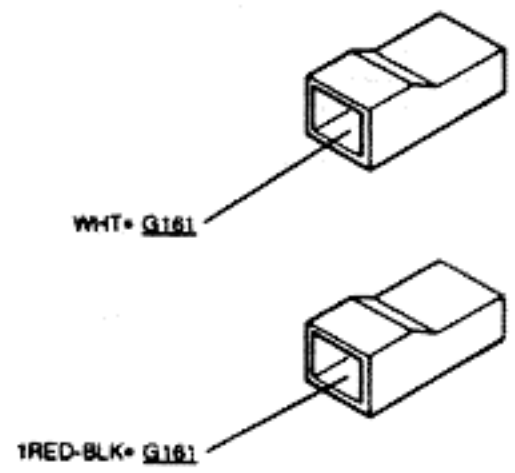
Rear cargo lamp — F5



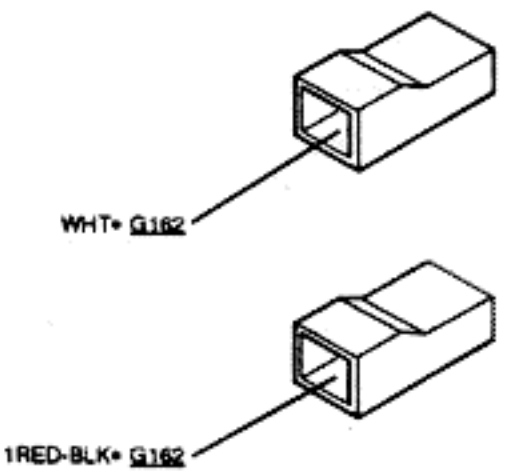
Right front door open warning lamp — F27



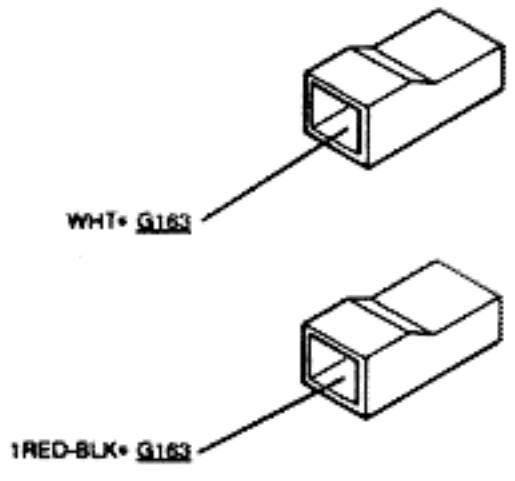
Left front door open warning lamp — F28



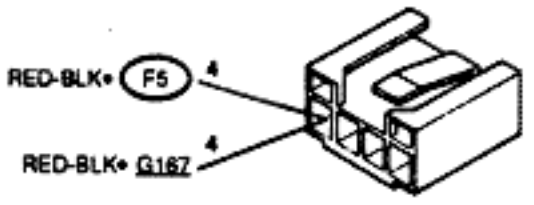
Right rear door open warning lamp — F29



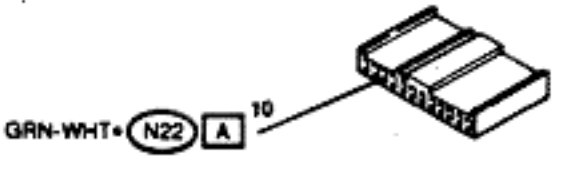
Left rear door open warning lamp — F30



Dome lamp, control switch on right rear post — F36

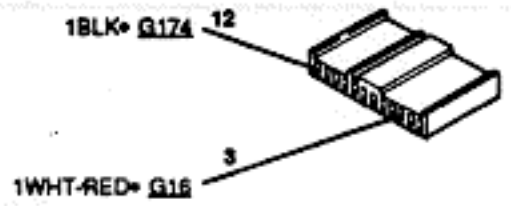


Fuse box — G1 D

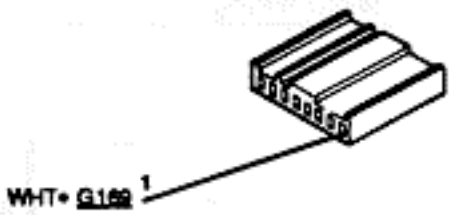


(Cont.d)

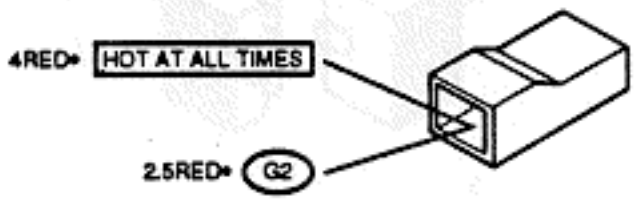
Fuse box (G1 E)



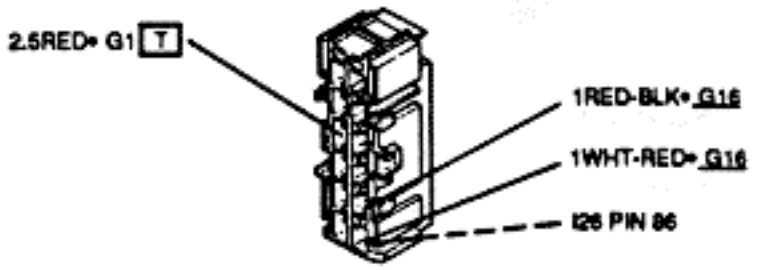
Fuse box (G1 P)



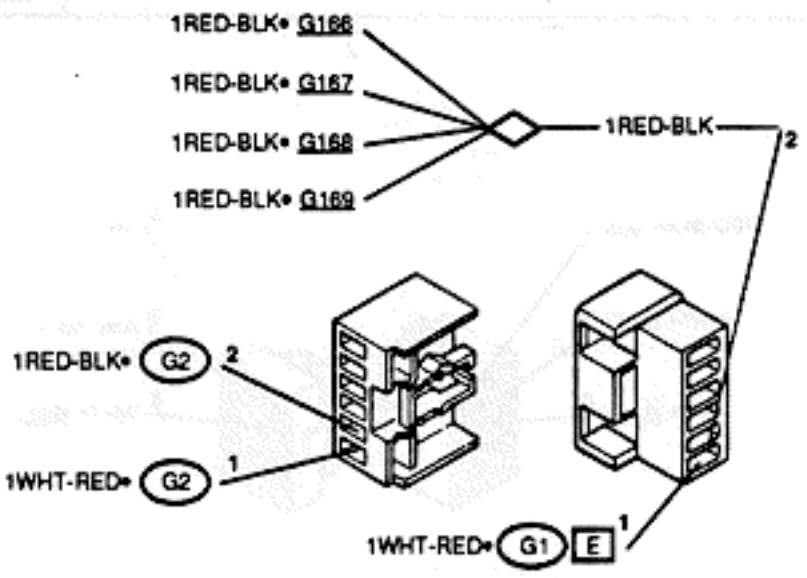
Fuse box (G1 T)



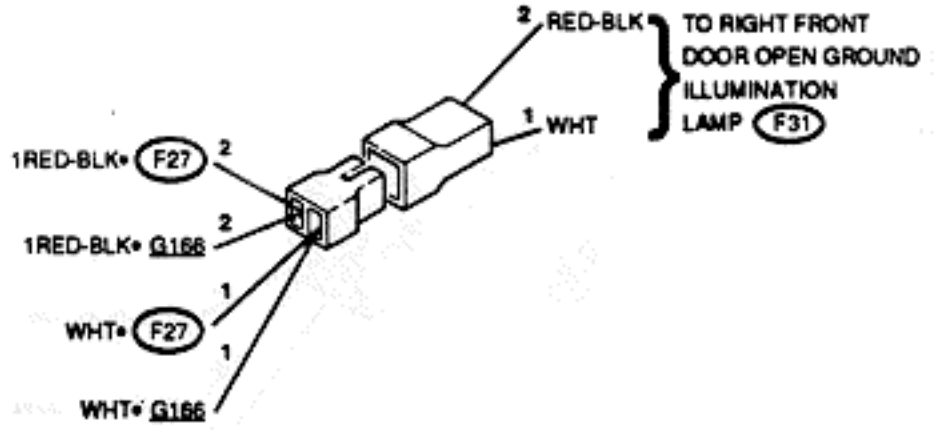
Auxiliary fuse box (G2)



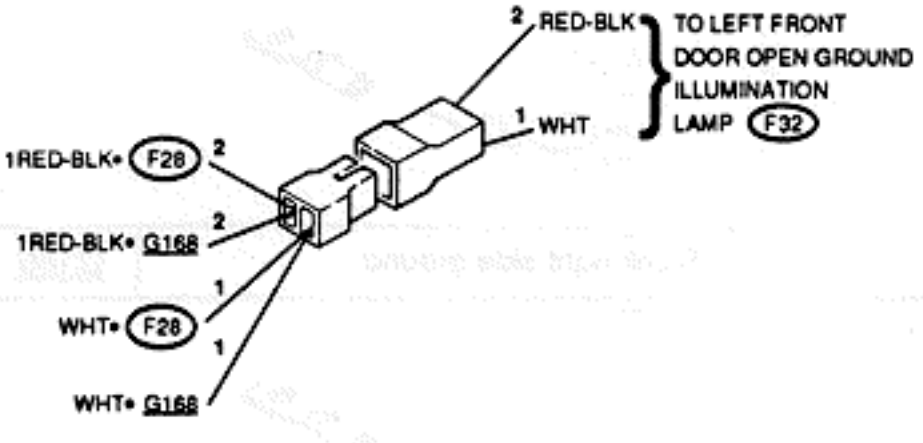
Six pin connector circuit board to doors wiring (G16)



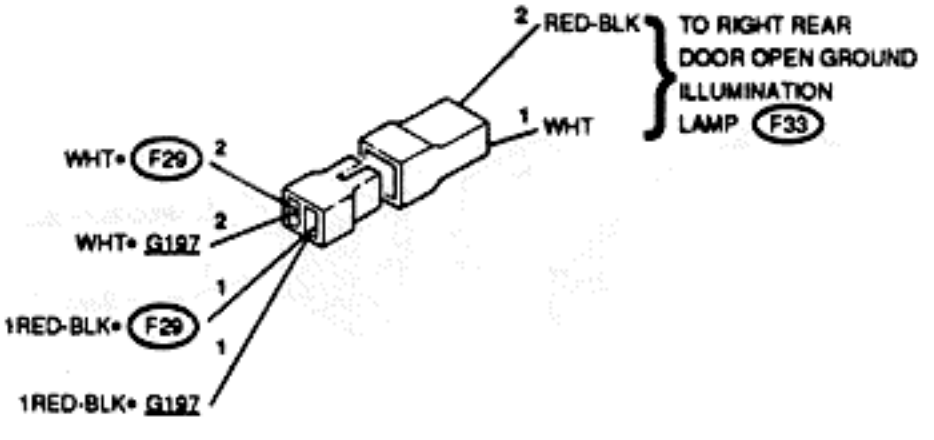
Connector, right front door to ground illumination lamp wiring (G160)



Connector, left front door to ground illumination lamp wiring (G161)



Connector, right rear door to ground illumination lamp wiring (G162)



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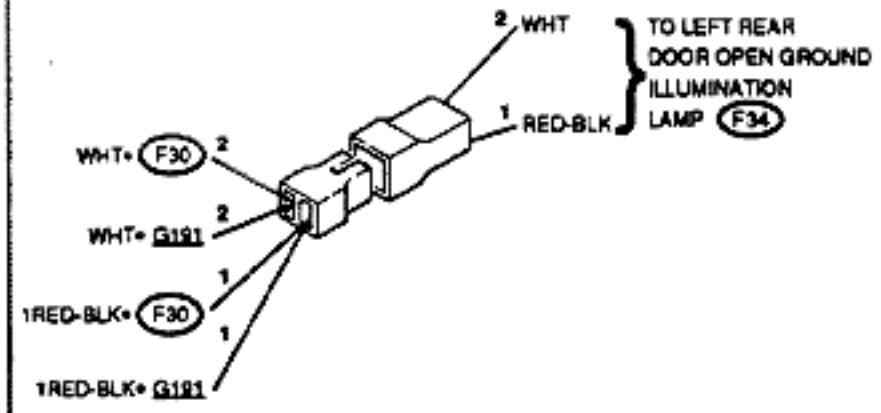
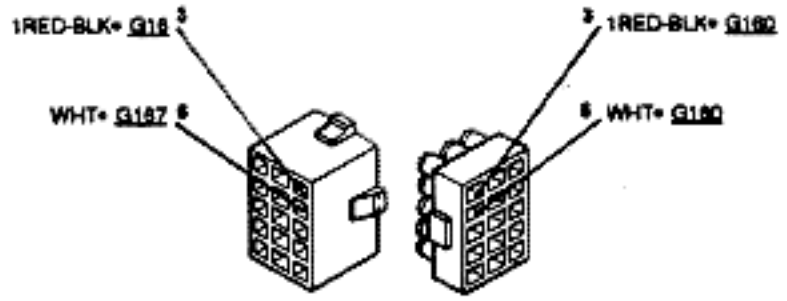
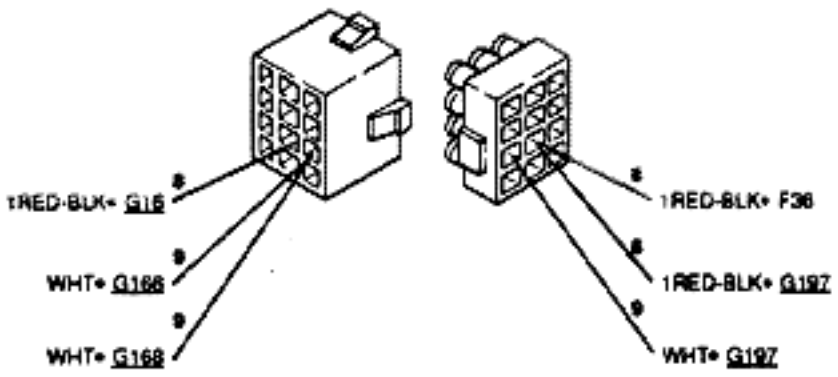
Connector, left rear door to ground illumination lamp wiring — G163



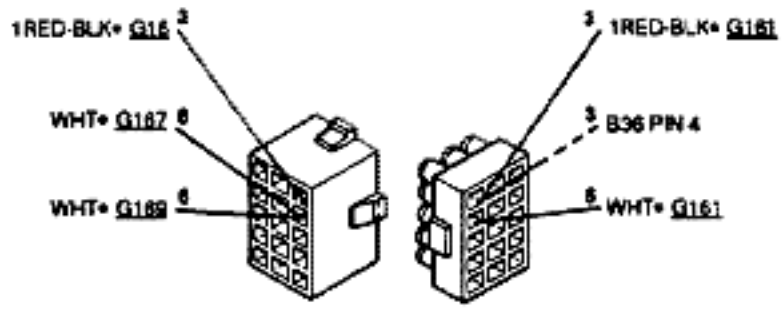
Connector, front doors to right front door wiring — G166



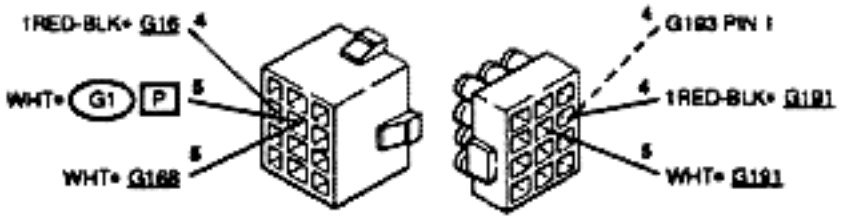
Connector, front doors to right rear wiring — G167



Connector, front doors to left front door wiring — G168



Connector, front doors to left rear wiring — G169

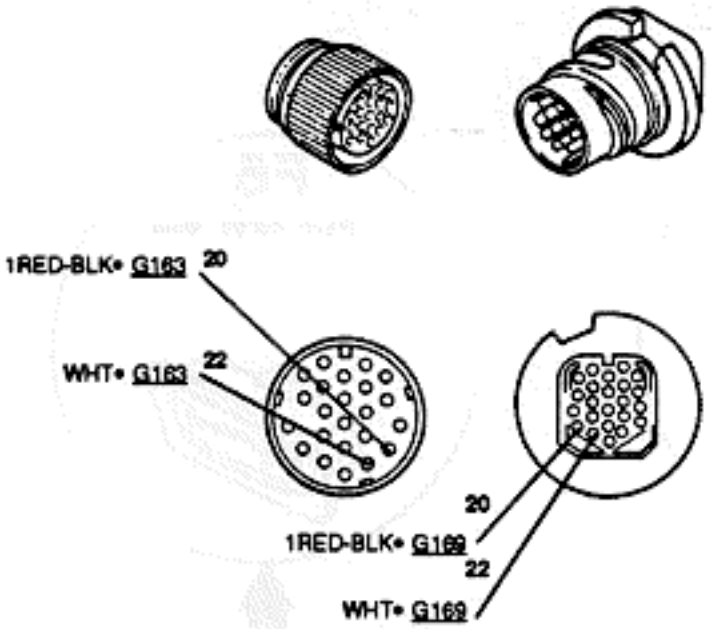


Steering wheel column support ground — G174

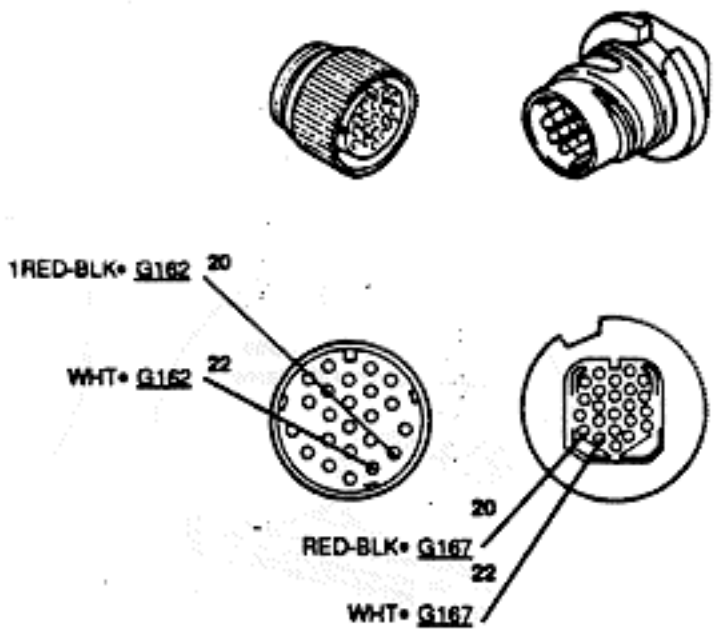
Trunk right side ground — G186

(Cont.d)

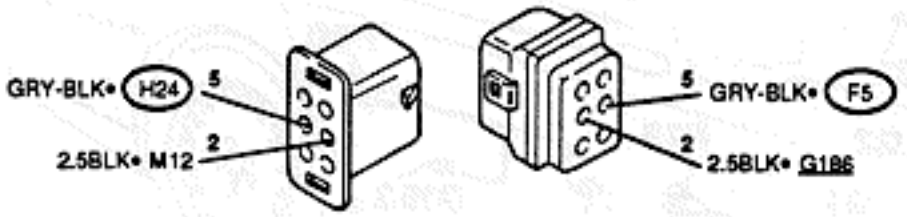
Connector, left rear wiring to left rear door wiring — G191



Connector, right rear wiring to right rear door wiring — G197

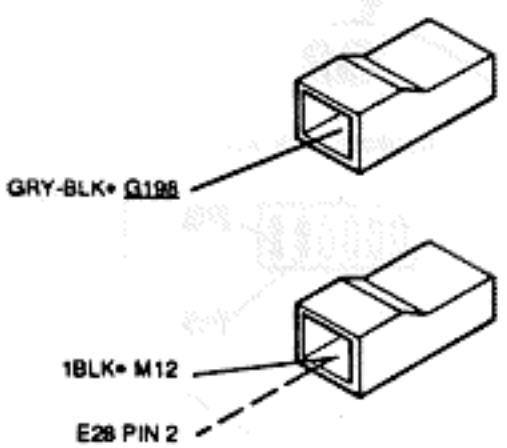


Connector, right rear wiring to trunk lock wiring — G198



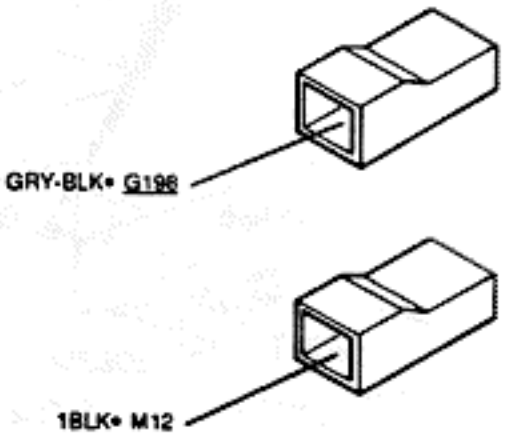
Trunk illumination switch — H24

S ONLY

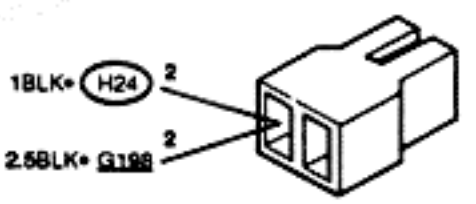


Trunk illumination switch — H24

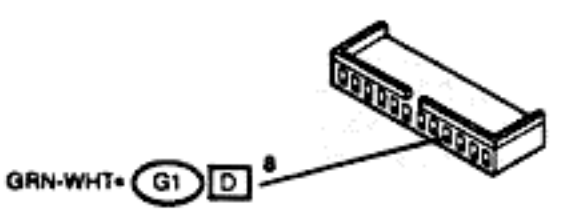
BASE AND L ONLY

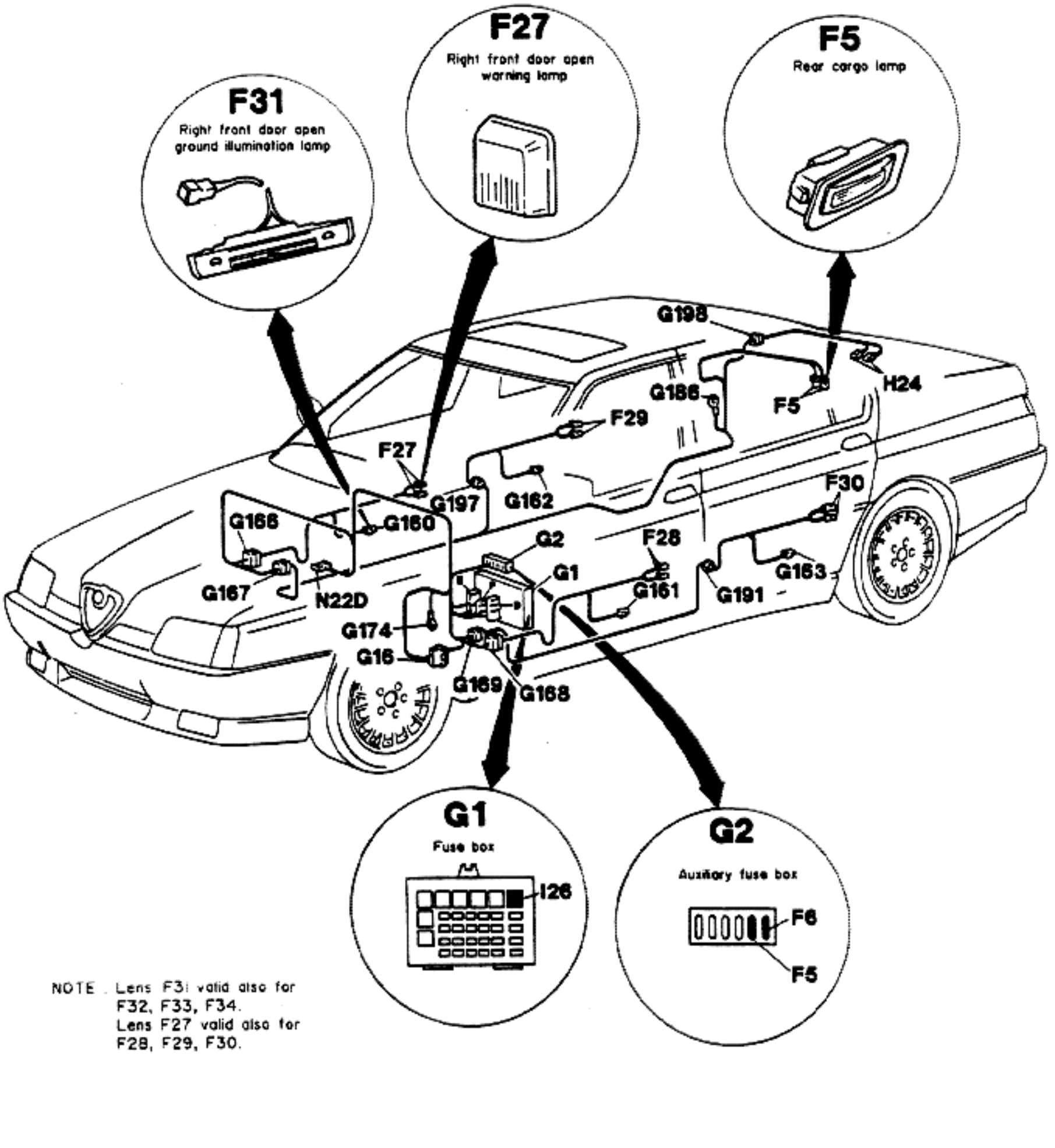


Trunk opening solenoid — M12



Alfa Romeo control unit — N22 A





NOTE . Lens F31 valid also for F32, F33, F34.
Lens F27 valid also for F28, F29, F30.

DOOR OPEN INDICATOR LAMPS AND GROUND ILLUMINATION LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
NOTE: In case also the trunk dome is inoperative, replace the ground illumination fuse **F5** in auxiliary fuse box **G2**, and/or repair wiring between pin 2 of connector **G16** and auxiliary fuse box **G2** (RED-BLK wire).		
A1 FUSE CHECK - Check trunk relay **F6** in auxiliary fuse box **G2** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F6**
A2 VOLTAGE CHECK - Check for presence of 12V between pin 3E of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A3**
A3 VOLTAGE CHECK - Check for presence of 12V between pin 1 of connector **G16** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of connector G16 and pin 3E of fuse box G1** Repair wiring between **pin 1 of connector G16 and auxiliary fuse box G2 (WHT-RED wire)**

(Cont.d)

DOOR OPEN INDICATOR LAMPS AND GROUND ILLUMINATION LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A4 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 10D of fuse box **G1**	OK ▶	Carry-out **step A6**
	~~OK~~ ▶	Carry-out **step A5**
A5 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 8A of Alfa Romeo control unit **N22**	OK ▶	Repair wiring between **pin 8A of control unit N22 and pin 10D of fuse box G1**
	~~OK~~ ▶	Failure of the **Alfa Romeo control unit; refer to the applicable troubleshooting procedure**
A6 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 12E of fuse box **G1**	OK ▶	Carry-out **step A7**
	~~OK~~ ▶	Repair wiring between **pin 12E of fuse box G1 and ground point G174**

(Cont.d)

DOOR OPEN INDICATOR LAMPS AND GROUND ILLUMINATION LAMPS INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A7	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 1P of fuse box G1		OK ▶	Replace wiring between pin 1P of fuse box G1 and pin 5 of connector G169
		~~OK~~ ▶	Replace relay I26

End of test A

LEFT FRONT DOOR OPEN INDICATOR LAMP AND GROUND ILLUMINATION LAMP INOPERATIVE — TEST B

TEST STEPS	RESULTS	REMEDY
NOTE: In case the failure also affects the right front door open warning lamp **F27**, the right front door open ground illumination lamp **F31**, the right rear door open warning lamp **F29** and the right rear door open ground illumination lamp **F33**, repair wiring between pin 5 of connector **G169** and pin 6 of connector **G168**.		
B1 VOLTAGE CHECK - Check for presence of 12V between pin 3 of connector **G168** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Repair wiring between **pin 2 of connector G16 and pin 3 of connector G168**
B2 GROUNDING CHECK - Check for presence of 0V (zero) at pin 1 of connector **G161**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 3 of connector G168 and pin 2 of connector G161** Repair wiring between **pin 6 of connector G168 and pin 1 of connector G161**

End of test B

LEFT FRONT DOOR OPEN INDICATOR LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 LAMP CHECK		
- Check left front door open warning lamp **F28** for integrity	OK ▶	Carry-out **step C2**
	~~OK~~ ▶	Replace **lamp F28**
C2 VOLTAGE CHECK		
- Check for presence of 12V between terminal of lamp **F28** (RED-BLK wire) and ground	OK ▶	Repair wiring between **pin 1 of connector G161 and lamp F28 (WHT wire)**
	~~OK~~ ▶	Repair wiring between **pin 2 of connector G161 and lamp F28 (RED-BLK wire)**

End of test C

LEFT FRONT DOOR GROUND ILLUMINATION LAMP INOPERATIVE	TEST D

TEST STEPS		RESULTS	REMEDY
D1	LAMP CHECK		
- Check left front door open ground illumination lamp F32 for integrity		OK ▶	Carry-out step D2
		~~OK~~ ▶	Replace lamp F32
D2	VOLTAGE CHECK		
- Check for presence of 12V between terminal of lamp F32 (RED-BLK wire) and ground		OK ▶	Repair wiring between pin 1 of connector G161 and lamp F32 (WHT wire)
		~~OK~~ ▶	Repair wiring between pin 2 of connector G161 and lamp F32 (RED-BLK wire)

End of test D

RIGHT FRONT DOOR OPEN INDICATOR LAMP AND GROUND ILLUMINATION	TEST E

TEST STEPS	RESULTS	REMEDY
E1 VOLTAGE CHECK - Check for presence of 12V between pin 3 of connector G166 and ground	OK ▶ ~~OK~~ ▶	Carry-out step E2 Repair wiring between pin 2 of connector G16 and pin 3 of connector G166
E2 VOLTAGE CHECK - Check for presence of 12V between pin 2 of connector G160 and ground	OK ▶ ~~OK~~ ▶	Carry-out step E3 Repair wiring between pin 2 of connector G160 and pin 3 of connector G166
E3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 6 of connector G166	OK ▶ ~~OK~~ ▶	Repair wiring between pin 1 of connector G160 and pin 6 of connector G166 Repair wiring between pin 6 of connector G166 and pin 9 of connector G167

End of test E

RIGHT FRONT DOOR OPEN INDICATOR LAMP INOPERATIVE	TEST F

TEST STEPS		RESULTS	REMEDY
F1	LAMP CHECK		
- Check right front door open warning lamp **F27** for integrity		OK ▶	Carry-out **step F2**
		~~OK~~ ▶	Replace **lamp F27**
F2	VOLTAGE CHECK		
- Check for presence of 12V between terminal of lamp **F27** (RED-BLK wire) and ground		OK ▶	Repair wiring between **pin 1 of connector G160 and lamp F27 (WHT wire)**
		~~OK~~ ▶	Repair wiring between **pin 2 of connector G160 and lamp F27 (RED-BLK wire)**

End of test F

RIGHT FRONT DOOR GROUND ILLUMINATION LAMP INOPERATIVE	TEST G

TEST STEPS	RESULTS	REMEDY
G1 LAMP CHECK		
- Check right front door open ground illumination lamp **F31** for integrity	OK ▶	Carry-out **step G2**
	~~OK~~ ▶	Replace **lamp F31**
G2 VOLTAGE CHECK		
- Check for presence of 12V between terminal of lamp **F31** (RED-BLK wire) and ground	OK ▶	Repair wiring between **pin 1 of connector G160 and lamp F31 (WHT wire)**
	~~OK~~ ▶	Repair wiring between **pin 2 of connector G160 and lamp F31 (RED-BLK wire)**

End of test G

LEFT REAR DOOR OPEN INDICATOR LAMP AND GROUND ILLUMINATION INOPERATIVE — TEST H

TEST STEPS	RESULTS	REMEDY
H1 VOLTAGE CHECK - Check for presence of 12V between pin 4 of connector G169 and ground	OK ▶	Carry-out **step H2**
	~~OK~~ ▶	Repair wiring between **pin 2 of connector G16 and pin 4 of connector G169**
H2 VOLTAGE CHECK - Check for presence of 12V between pin 1 of connector G163 and ground	OK ▶	Carry-out **step H3**
	~~OK~~ ▶	Repair wiring between **pin 4 of connector G169, pin 20 of connector G191 and pin 1 of connector G163**
H3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 22 of connector G191	OK ▶	Repair wiring between **pin 22 of connector G191 and pin 2 of connector G163**
	~~OK~~ ▶	Repair wiring between **pin 5 of connector G169 and pin 22 of connector G191**

End of test H

LEFT REAR DOOR OPEN INDICATOR LAMP INOPERATIVE	TEST I

TEST STEPS		RESULTS	REMEDY
I1	LAMP CHECK		
- Check left rear door open warning lamp **F30** for integrity		OK ▶	Carry-out step I2
		~~OK~~ ▶	Replace lamp F30
I2	VOLTAGE CHECK		
- Check for presence of 12V between terminal of lamp **F30** (RED-BLK wire) and ground		OK ▶	Repair wiring between pin 2 of connector G163 and lamp F30 (WHT wire)
		~~OK~~ ▶	Repair wiring between pin 1 of connector G163 and lamp F30 (RED-BLK wire)

End of test I

LEFT FRONT DOOR GROUND ILLUMINATION LAMP INOPERATIVE — TEST J

TEST STEPS	RESULTS	REMEDY
J1 LAMP CHECK		
- Check left rear door open ground illumination lamp **F34** for integrity	OK ▶	Carry-out **step J2**
	~~OK~~ ▶	Replace **lamp F34**
J2 VOLTAGE CHECK		
- Check for presence of 12V between terminal of lamp **F34** (RED-BLK wire) and ground	OK ▶	Repair wiring between **pin 2 of connector G163 and lamp F34 (WHT wire)**
	~~OK~~ ▶	Repair wiring between **pin 1 of connector G163 and lamp F34 (RED-BLK wire)**

End of test J

RIGHT REAR DOOR OPEN INDICATOR LAMP AND GROUND ILLUMINATION LAMP INOPERATIVE	TEST K

TEST STEPS	RESULTS	REMEDY
NOTE: In case the failure also affects the right front door open warning lamp **F27** and the right front door open ground illumination lamp **F31**, repair wiring between pin 9 of connector **G167** and pin 6 of connector **G168**.		
K1 VOLTAGE CHECK - Check for presence of 12V between pin 20 of connector G197 and ground	OK ▶ OK ▶	Carry-out **step K2** Repair wiring between **pin 20 of connector G197 and pin 8 of connector G167**
K2 VOLTAGE CHECK - Check for presence of 12V between pin 1 of connector **G162** and ground	OK ▶ OK ▶	Carry-out **step K3** Repair wiring between **pin 1 of connector G162 and pin 20 of connector G197**
K3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 22 of connector **G197**	OK ▶ OK ▶	Repair wiring between **pin 2 of connector G162 and pin 22 of connector G197** Repair wiring between **pin 22 of connector G197 and pin 9 of connector G167**

End of test K

RIGHT REAR DOOR OPEN INDICATOR LAMP INOPERATIVE	TEST L

TEST STEPS		RESULTS	REMEDY
L1	LAMP CHECK		
- Check right rear door open warning lamp **F29** for integrity		OK ▶	Carry-out **step L2**
		~~OK~~ ▶	Replace **lamp F29**
L2	VOLTAGE CHECK		
- Check for presence of 12V between terminal of lamp **F29** (RED-BLK wire) and ground		OK ▶	Repair wiring between **pin 2 of connector G162 and lamp F29 (WHT wire)**
		~~OK~~ ▶	Repair wiring between **pin 1 of connector G162 and lamp F29 (RED-BLK wire)**

End of test L

RIGHT REAR DOOR GROUND ILLUMINATION LAMP INOPERATIVE	TEST M

TEST STEPS	RESULTS	REMEDY
M1 LAMP CHECK - Check right rear door open ground illumination lamp **F33** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step M2** Replace **lamp F33**
M2 VOLTAGE CHECK - Check for presence of 12V between terminal of lamp **F33** (RED-BLK wire) and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of connector G162 and lamp F33 (WHT wire)** Repair wiring between **pin 1 of connector G162 and lamp F33 (RED-BLK wire)**

End of test M

TRUNK DOME INOPERATIVE — TEST N

TEST STEPS	RESULTS	REMEDY
NOTE: In case the failure also affects the door open warning lamps, and the ground illumination lamps replace the ground illumination fuse **F5** in the auxiliary fuse box **G2**, and/or repair wiring between pin 2 of connector **G16** and auxiliary fuse box **G2** (RED-BLK wire).		
N1 LAMPS ACTUATION CHECK - Open right rear door and check that right rear door open warning lamp **F29** and ground illumination lamp **F33** illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step N2** Repair wiring between **pin 2 of connector G16 and pin 8 of connector G167**
N2 LAMP CHECK - Check trunk dome lamp **F5** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step N3** Replace **lamp F5**
N3 GROUNDING CHECK - With trunk lid open, check for presence of 0V (zero) at terminal of trunk illumination switch **H24** (BLK wire)	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 5 of connector G198 and switch H24 (GRY-BLK wire)** Carry-out **step N4**

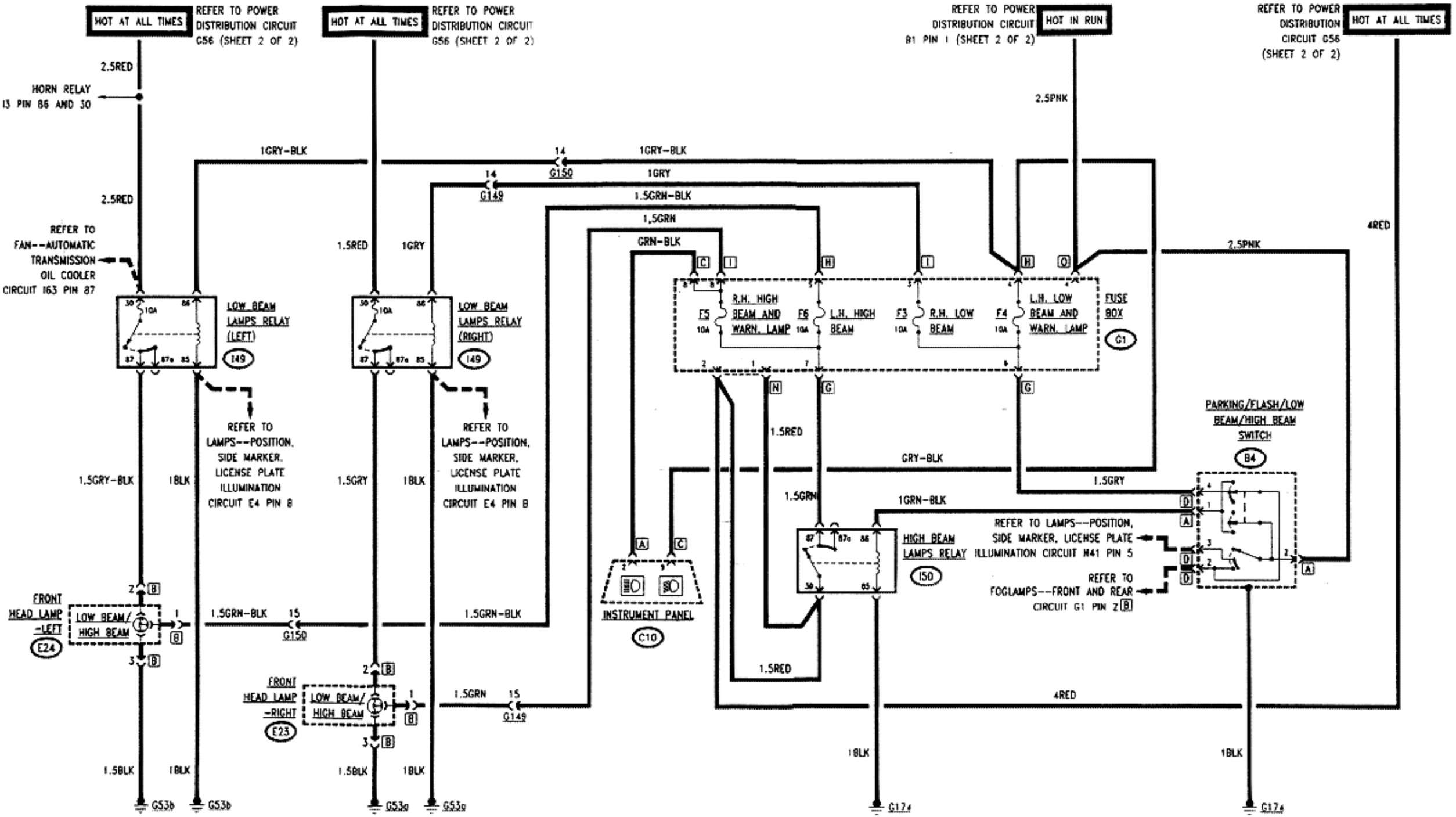
(Cont.d)

TRUNK DOME INOPERATIVE	TEST N

TEST STEPS	RESULTS	REMEDY
N4 SWITCH CHECK - Check that trunk illumination switch **H24** is operational by simulating trunk lid closure, and checking that circuit is open between terminals of switch **H24**	OK ▶ ~~OK~~ ▶	Carry-out **step N5** Replace **switch H24**
N5 GROUNDING CHECK - With trunk lid open, check for presence of 0V (zero) at pin 5 of connector **G198**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 5 of connector G198 and rear cargo lamp F5** Carry-out **step N6**
N6 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2 of connector **G198**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of connector G198 and switch H24 (BLK wire)** Repair wiring between **pin 2 of connector G198 and ground point G186**

End of test N

LAMPS - - LOW BEAM AND HIGH BEAM



GENERAL

The low beam and high beam lamps can be turned on only if the position lamps have been previously turned on (refer to the position lamps circuit for further details).
The low beam and high beam lamps are controlled by the PARKING/FLASH/LOW BEAM/HIGH BEAM switch **B4**.
The system is protected by four fuses in the fuse box **G1**, as follows:

- Fuse **F3** (10A) R.H. LOW BEAM.
- Fuse **F4** (10A) L.H. LOW BEAM AND WARN. LAMP.
- Fuse **F5** (10A) R.H. HIGH BEAM AND WARN. LAMP.
- Fuse **F6** (10A) L.H. HIGH BEAM.

OPERATIONAL DESCRIPTION

12V from the battery are applied to high beam lamps relay **I50** and to multiple switch **B4** (pin 2A).
The multiple switch **B4** controls illumination of various lamps, as determined by the setting of the switch.
With the position lamps on, and the low/high beam selector set to low beam, 12V are applied to fuses **F3** and **F4** through contacts of switch **B4**. Power supply from fuses **F3** and **F4** is also applied to the low beam indicator lamp on the instrument panel, and to the coil of low beam lamps relays **I49.**
12V from the battery are applied to the head lamp units **E23** and **E24** through the relay contacts, and the low beam lamps are turned on.

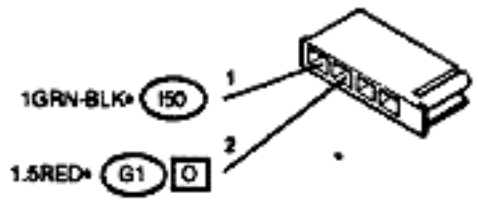
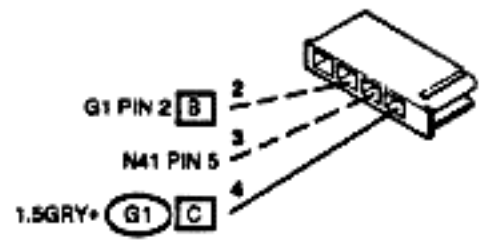
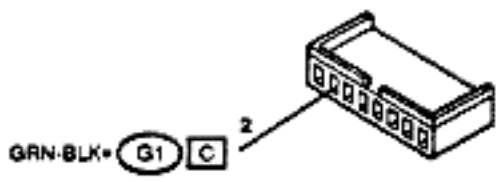
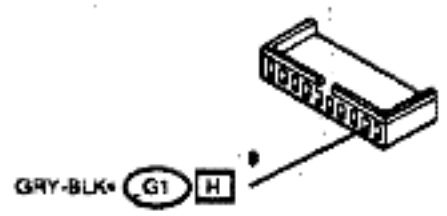
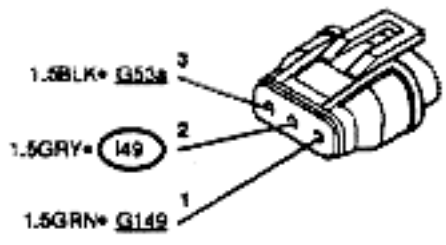
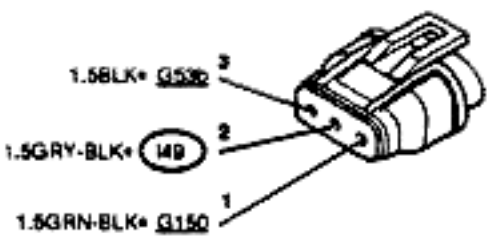
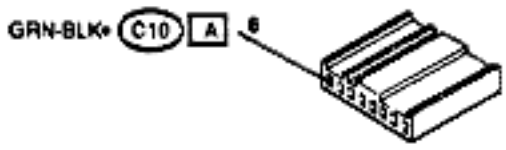
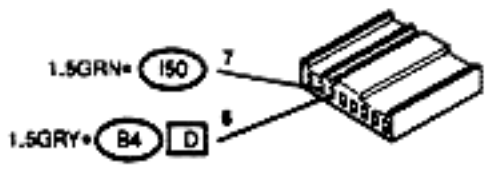
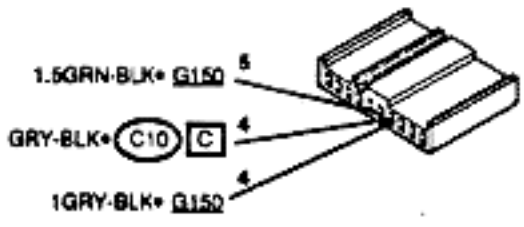
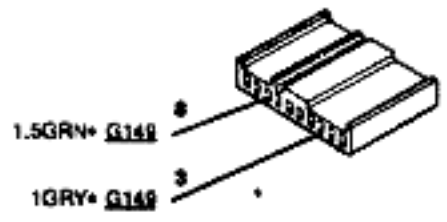
NOTE

The low beam lamps and circuit are also protected by the 10A fuses of the low beam lamps relays.

Pushing the low/high beam selector in the "high beam" position, 12V are applied to coil of high beam lamps relay **I50** through contacts of switch **B4**.
12V from the battery are applied to the head lamp units **E23** and **E24** through the relay **I50** contacts and fuses **F5** and **F6**, and the high beam lamps are turned on.
Fuse **F5** also energizes the high beam indicator lamp on the instrument panel.
The multiple switch **B4** is provided with additional momentary position contacts.
Pulling the low/high beam selector lever the flash contacts close, and momentarily energize the high beam lamp relay **I50**, with conseguent flashing of the relevant lamps.

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT											
	F3 FUSE	F4 FUSE	F5 FUSE	F6 FUSE	(149) RELAY FUSE SX	(149) RELAY FUSE DX	(E23) FRONT RIGHT OPTICAL UNIT	(E24) FRONT LEFT OPTICAL UNIT	(B4) MULTIPLE SWITCH	(149) RELAY SX	(149) RELAY DX	(150) RELAY
BOTH LOW BEAM LAMPS INOPERATIVE							●	●	●			
LEFT LOW BEAM LAMP INOPERATIVE		●			●			●		●		
RIGHT LOW BEAM LAMP INOPERATIVE	●					●	●				●	
BOTH HIGH BEAM LAMPS INOPERATIVE									●			●
LEFT HIGH BEAM LAMP INOPERATIVE				●				●				
RIGHT HIGH BEAM LAMP INOPERATIVE			●				●					

Parking/Flash/Low beam/High beam switch B4 A	Parking/Flash/Low beam/High beam switch B4 D
	
Instrument panel C10 A	**Instrument panel C10 C**
	
Front head lamp-right E23 B	**Front head lamp-left E24 B**
	
Fuse box G1 C	**Fuse box G1 G**
	
Fuse box G1 H	**Fuse box G1 I**
	

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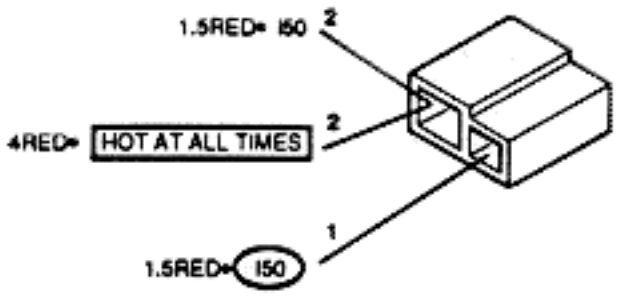
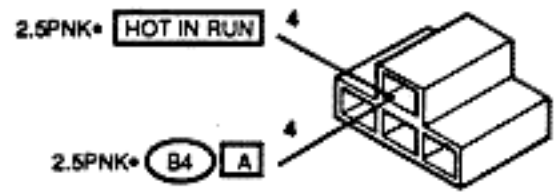
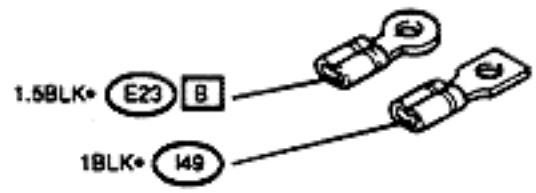
Fuse box	G1 N



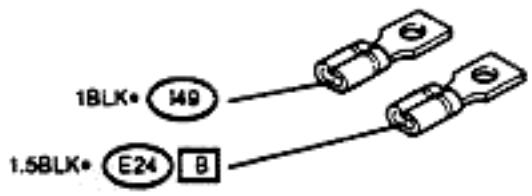
Fuse box	G1 O



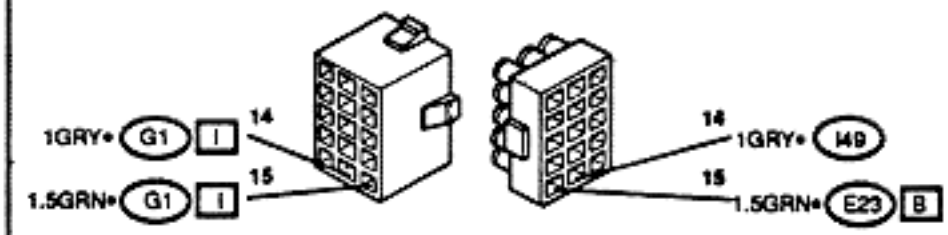
Engine compartment right side ground connection	G53a



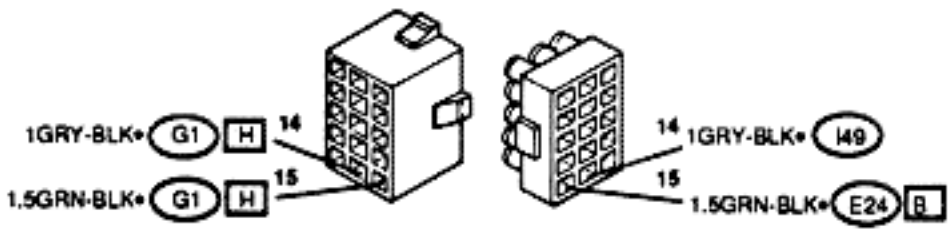
Engine compartment left side ground connection	G53b



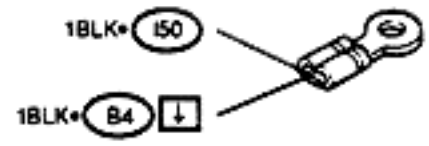
Connector, circuit board to engine compartment right side wiring	G149



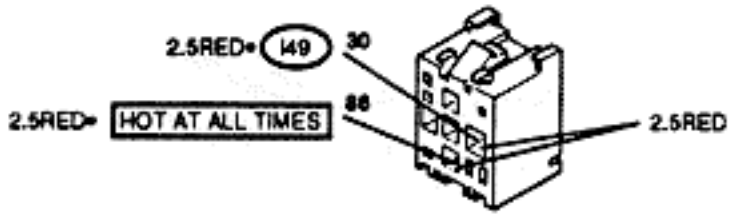
Connector, circuit board to engine compartment left side wiring	G150



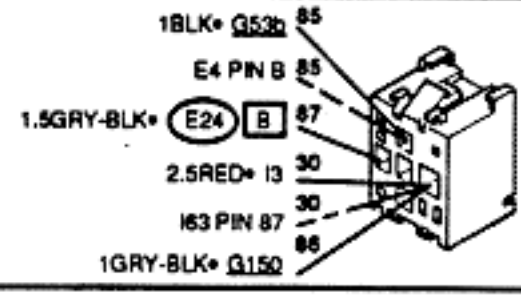
Steering wheel column support ground	G174



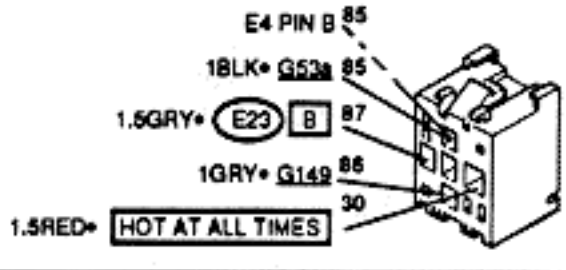
Horn relay	I3



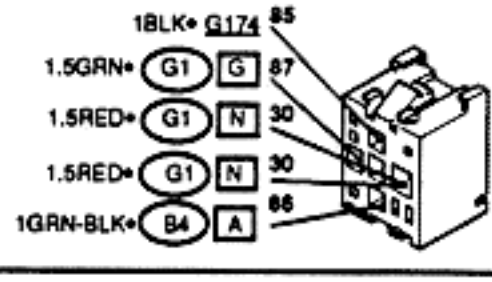
Low beam lamps relay (left)	I49

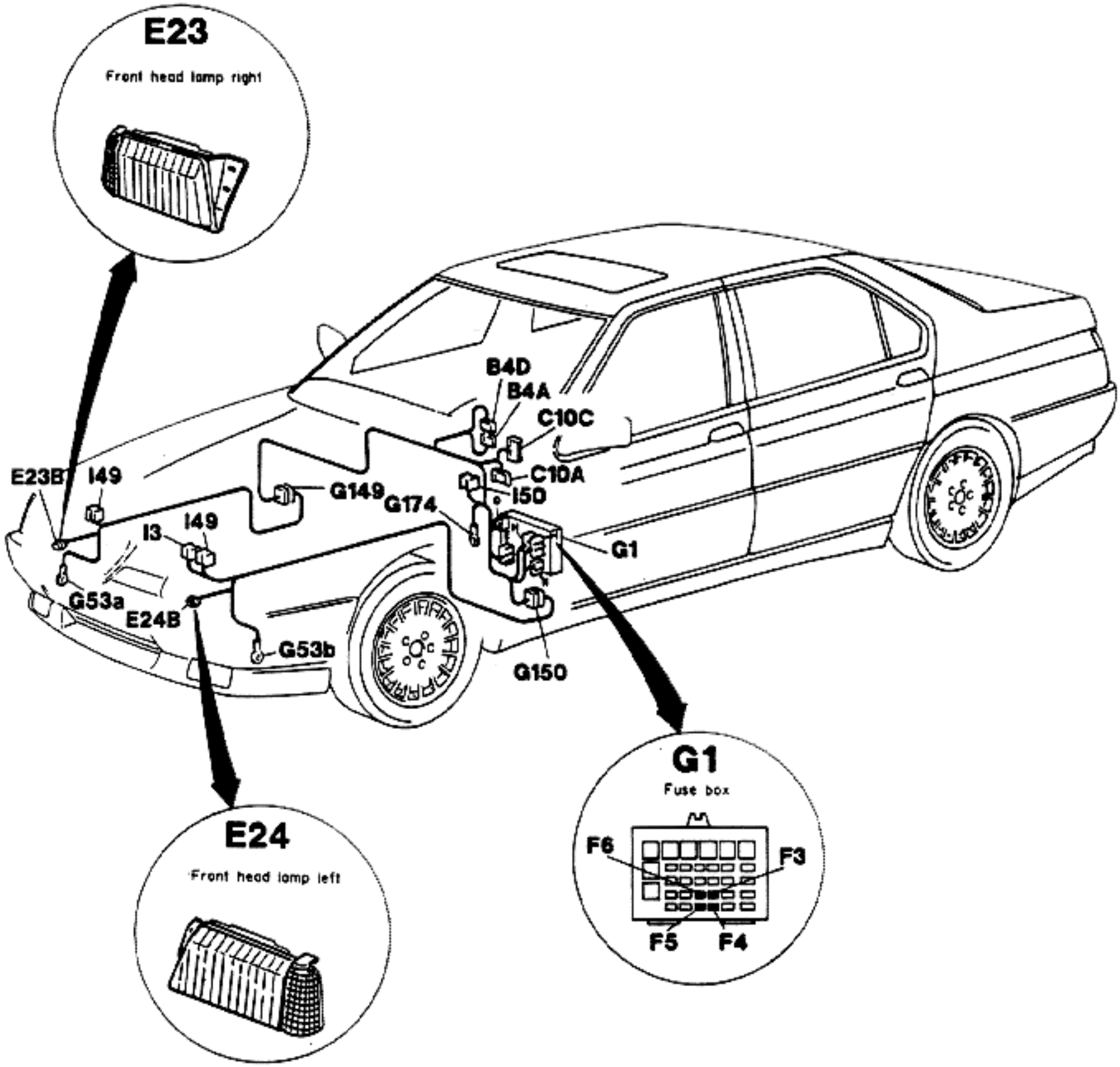


Low beam lamps relay (right)	I49



High beam lamps relay	I50





BOTH LOW BEAM LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 LAMPS CHECK - Check low beam lamps in head lamps **E23** and **E24** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **lamps E23 and/or E24**
A2 VOLTAGE CHECK - With the ignition switch to "run" and low beam lamps selected, check for presence of 12V between pin 4D of multiple switch **B4** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4D of multiple switch B4 and pin 6G of fuse box G1** Carry-out **step A3**
A3 MULTIPLE SWITCH CHECK - With low beam lamps selected check for continuity between pins 4D and 2A of multiple switch **B4**	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Replace **multiple switch B4**
A4 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 4O or fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2A of multiple switch B4 and pin 4O of fuse box G1** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test A

LEFT LOW BEAM LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out any troubleshooting procedure, check the integrity of warning lamp on intrument panel by pressing the test button.		
B1 FUSE CHECK - Check fuse **F4** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **fuse F4**
B2 RELAY FUSE CHECK - Check fuse of low beam lamps relay **I49** fuse for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step B3** Replace **relay I49 fuse**
B3 INDICATOR LAMP CHECK - Check if low beam indicator lamp on instrument panel is illuminated	OK ▶ ~~OK~~ ▶	Carry-out **step B5** Carry-out **step B4**
B4 VOLTAGE CHECK - Check for presence of 12V between pin 9C of instrument panel and ground	OK ▶ ~~OK~~ ▶	Replace **low beam indicator lamp on instrument panel C10** Repair wiring between **pin 4H of fuse box G1 and pin 9C of C10**

(Cont.d)

LEFT LOW BEAM LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B5 LAMP CHECK - Check low/high beam lamp in head lamp **E24** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step B6** Replace **lamp E24**
B6 HIGH BEAM LAMPS CHECK - With the ignition key set to "run" turn on and check if the high beam lamp in head lamp **E24** is operational	OK ▶ ~~OK~~ ▶	Carry-out **step B7** Repair wiring between **pin 3B of head lamp E24 and ground point G53b**
B7 VOLTAGE CHECK - With the ignition key set to "run"check for presence of 12V between pin 14 of connector **G150** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step B8** Repair wiring between **pin 14 of connector G150 and pin 4H of fuse box G1**
B8 RELAY CHECK - Check low beam lamps relay **I49** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step B9** Replace **relay I49**

(Cont.d)

LEFT LOW BEAM LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B9 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pins 85 and 86 of low beam lamps relay **I49** when switch **B4** is engagened	OK ▶ ~~OK~~ ▶	Carry-out **step B10** Repair wiring between **pin 86 of relay I49 and pin 14 of connector G150, and between pin 85 of relay I49 and ground point G53b**
B10 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay **I49** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2B of head lamp E24 and pin 87 of relay I49** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test B

RIGHT LOW BEAM LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 FUSE CHECK - Check fuse **F3** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Replace **fuse F3**
C2 RELAY FUSE CHECK - Check fuse of low beam lamps relay **I49** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step C3** Replace **relay I49 fuse**
C3 LAMP CHECK - Check low/high beam lamp in head lamp **E23** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step C4** Replace **lamp E23**
C4 HIGH BEAM LAMPS CHECK - Turn on and check if the high beam lamp in head lamp **E23** is operational	OK ▶ ~~OK~~ ▶	Carry-out **step C5** Repair wiring between **pin 3B of head lamp E23 and ground point G53a**

(Cont.d)

RIGHT LOW BEAM LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C5 VOLTAGE CHECK - With the ignition key set to "run", switch to "run" and low beam selected check for presence of 12V between pin 14 of connector **G149** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step C6** Repair wiring between **pin 14 of connector G149 and pin 31 of fuse box G1**
C6 RELAY CHECK - Check low beam lamps relay **I49** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step C7** Replace relay **I49**
C7 VOLTAGE CHECK - With the ignition key set to "run", switch to "run" and low beam selected check for presence of 12V between pins 85 and 86 of low beam lamps relay **I49**	OK ▶ ~~OK~~ ▶	Carry-out **step C8** Repair wiring between **pin 86 of relay I49 and pin 14 of connector G149, and between pin 85 of relay I49 and ground point G53a**

(Cont.d)

RIGHT LOW BEAM LAMP INOPERATIVE	TEST C

TEST STEPS		RESULTS	REMEDY
C8	VOLTAGE CHECK		
- Check for presence of 12V between pin 30 of relay I49 and ground		OK ▶	Repair wiring between **pin 2 of head lamp E23 and pin 87 of relay I49**
		~~OK~~ ▶	Failure of power distribution circuit, refer to the relevant circuit of sheet 2 of 2

End of test C

BOTH HIGH BEAM LAMPS INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D1 VOLTAGE CHECK - With the ignition key set to "run" and with high beam lamps selected check for presence of 12V between pin 1A of multiple switch **B4** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D3** Carry-out **step D2**
D2 MULTIPLE SWITCH CHECK - With high beam lamp selected check for continuity between pins 2A and 1A of multiple switch **B4**	OK ▶ ~~OK~~ ▶	Carry-out **step D3** Replace **multiple switch B4**
D3 VOLTAGE CHECK - With the ignition key set to "run" and high beam lamps selected check for presence of 12V between pins 85 and 86 of high beam lamps relay **I50**	OK ▶ ~~OK~~ ▶	Carry-out **step D4** Repair wiring between **pin 86 of relay I50 and pin 1A of multiple switch B4, and between pin 85 of relay I50 and ground point G174**
D4 RELAY CHECK - Check high beam lamps relay **I50** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step D5** Replace **relay I50**

(Cont.d)

BOTH HIGH BEAM LAMPS INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D5 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay **I50** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 87 of relay I50 and pin 7G of fuse box G1** Carry-out **step D6**
D6 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 30 of relay I50 and pin 2N of fuse box** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test D

LEFT HIGH BEAM LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E1 FUSE CHECK - Check fuse **F6** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Replace **fuse F6**
E2 LAMP CHECK - Check high beam lamp in head lamp **E24** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step E3** Replace **lamp E24**
E3 LOW BEAM LAMPS CHECK - Turn and check if the low beam lamp in head lamp **E24** is operational	OK ▶ ~~OK~~ ▶	Carry-out **step E4** Repair wiring between **pin 3B of head lamp E24 and ground point G53b**
E4 VOLTAGE CHECK - With the ignition key set to "run" and with high beam lamps selected check for presence of 12V between pin 15 of connector **G150** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 15 of connector G150 and pin 1B of head lamp E24** Repair wiring between **pin 15 of connector G150 and pin 5H of fuse box G1**

End of test E

RIGHT HIGH BEAM LAMP INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
NOTE: Before carrying-out any troubleshooting procedure, check the integrity of warning lamp on intrument panel by pressing the test button.		
F1 FUSE CHECK - Check fuse **F5** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Replace **fuse F5**
F2 INDICATOR LAMP CHECK - Check illumination of high beam indicator lamp on instrument panel	OK ▶ ~~OK~~ ▶	Carry-out **step F6** Carry-out **step F3**
F3 VOLTAGE CHECK - Check for presence of 12V between pin 2A of instrument panel and ground	OK ▶ ~~OK~~ ▶	Replace **high beam indicator lamp on instrument panel C10** Carry-out **step F4**
F4 LAMP CHECK - Check high beam lamp in head lamp **E23** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step F5** Replace lamp **E23**

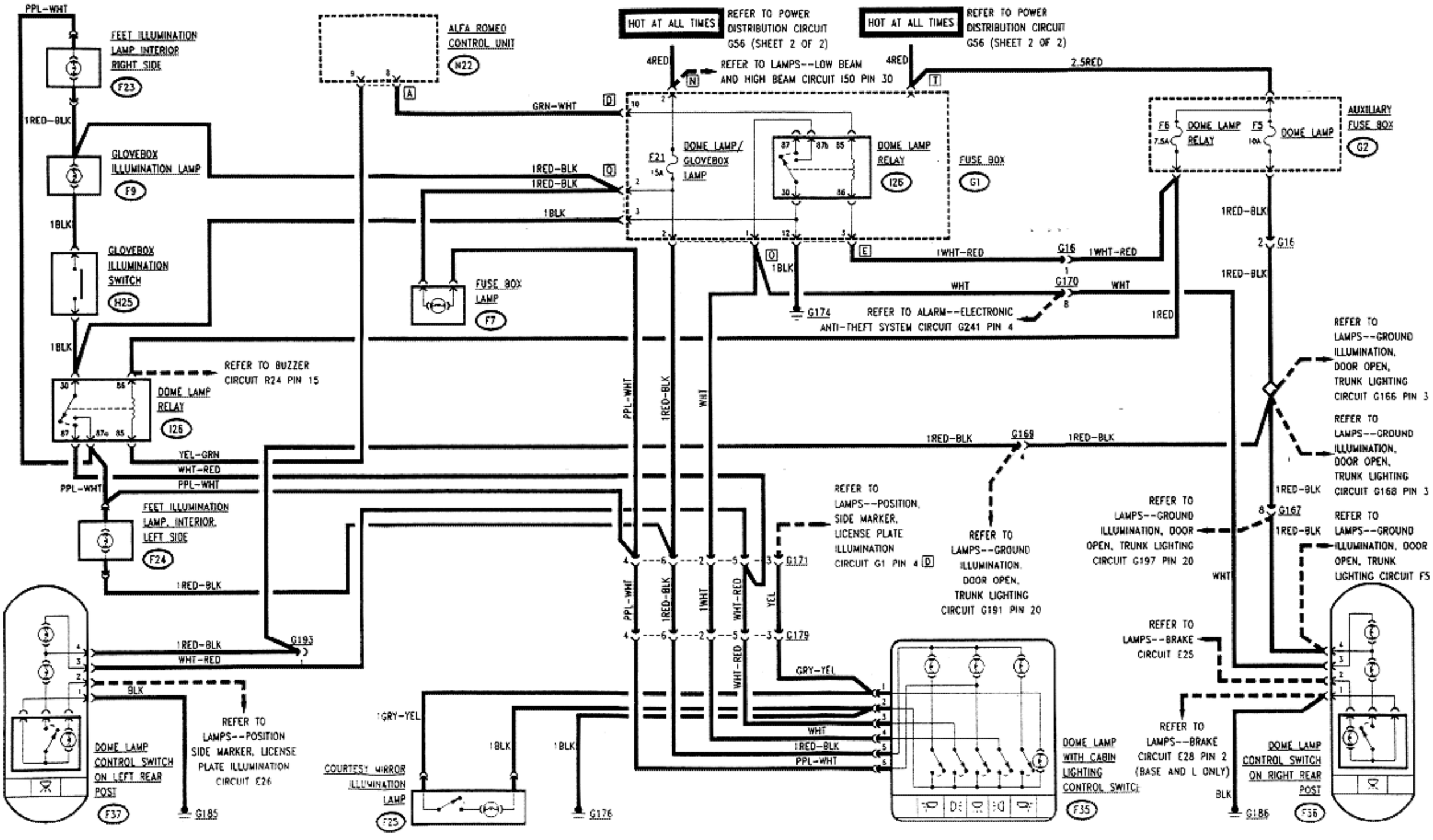
(Cont.d)

RIGHT HIGH BEAM LAMP INOPERATIVE	TEST F

TEST STEPS		RESULTS	REMEDY
F5	LOW BEAM LAMPS CHECK		
- Turn on and check if the low beam lamp in head lamp **E23** is operational		OK ▶	Carry-out **step F6**
		~~OK~~ ▶	Repair wiring between **pin 3B of head lamp E23 and ground point G53a**
F6	VOLTAGE CHECK		
- With the ignition key set to "run" and with high beam lamps selected check for presence of 12V between pin 15 of connector **G149** and ground		OK ▶	Repair wiring between **15 of connector G149 and pin 1B of head lamp E23**
		~~OK~~ ▶	Repair wiring between **pin 15 of connector G149 and pin 8I of fuse box G1**

End of test F

LAMPS - - MISCELLANEOUS DOME



GENERAL

NOTA

This subject refers to vehicles without sun roof. Should this optional be installed we suggest the user to consult the final section which includes all technical information concerning different dome lamps for vehicles equipped with sun roof.

The vehicle is equipped of timed interior lamps whose illumination is controlled by any one of the four doors; in this way, access to the vehicle is made easy, even in bad light conditions.
When a door is opened, the center dome lamp, both dome lamps, on rear right and left posts, and the fuse box illuminate automatically.
For better comfort, the above lamps remain on for a few seconds after the door has been closed.
The rear post domes and the dome lamp control switch are equipped with spot that are switched on by their relevant switch.
Some courtesy lamps are installed on the vehicle to illuminate the controls; those lamps illuminate upon activation of position lamps:

- glovebox lamp, switched on by opening the glovebox lid.

- dome lamp control switch and rear post domes, switched on automatically upon activation of position lamps.

- courtesy mirror on the sun visor, switched on by its own push button.

The system is protected by three fuses, as follows:

- fuse **F21** (15A) DOME LAMP/GLOVEBOX LAMP in fuse box **G1**.

- fuse **F5** (10A) DOME LAMP in auxiliary fuse box **G2**.

- fuse **F6** (7.5A) DOME LAMP RELAY in the auxiliary fuse box **G2**.

OPERATIONAL DESCRIPTION

Lamps actuation by the relevant pushbutton.

Battery voltage (12V) always present is sent to the two spot on the dome lamp with cabin lighting control switch **F35** through fuse **F21** of fuse box **G1**. In the same way, 12V through fuse **F5** of auxiliary fuse box **G2** is sent to dome lamp control switchs **F36** and **F37** on the right and left rear post. Pushing the pushbutton, the relevant spot illuminates.

Time lighting upon door opening.

Opening any of the doors, the Alfa Romeo Control unit **N22** sets and maintains for some seconds pins 8A and 9A to a low logic level thus providing a ground path to dome lamp relay **I26** on the fuse box **G1** and to dome lamp relay **I26**. Both relays are always connected to a positive voltage through fuse **F6** in the auxiliary fuse box **G2**, thus they are held energized only for the time controlled by the control unit **N22**. The dome lamp relay **I26**, once energized, transfers a ground connection to dome lamp with cabin lighting control switch **F35** to right and left feet illuminations **F23** and **F24**, to dome lamp control switch on left rear post **F37** and to fuse box lamp **F7**, thus lighting them all. The dome lamp relay **I26** in the fuse box **G1**, when energized, transfers a ground to dome lamp control switch on right rear post **F36**, thus lighting it.

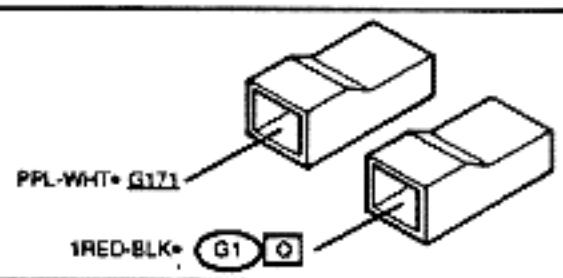
Lighting monitored by the position lamps.

The wiring diagram shows the path of the lines that control the courtesy mirror illumination lamps, whose lighting is depending on position lamps.
With position lamp turned on, the dome lamp with cabin lighting control switch **F35**, rear left and right dome lamps **F36** and **F37** are illuminated. From the dome lamp **F35** it is possible to control lighting of rear left and right dome lamps **F36** and **F37**. When the position lamps are turned on, it is possible, by the appropriate pushbutton, to turn on the courtesy mirror illumination lamp **F25**; furthermore, opening the glovebox, the switch **H25** closes, thus turning on the lamp within the box it self.

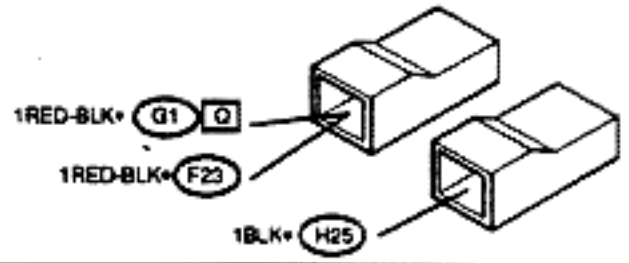
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT																
	F5 FUSE	F6 FUSE	F21 TRUNK DOME	F7 FUSE LAMP BULB	F9 BULB	F23 DOME LAMP BULB	F24 DOME LAMP BULB	F25 DOME LAMP	F35/36/37 DOME PUSHB.	F35/36/37 SPOT PUSHB.	F35/36/37 CONTR. LAMP	F35/36/37 SPOT LAMP	F35/36/37 DOME LAMP	H25 SWITCH	126 RELAY	126 RELAY (G1)	126 CONTROL UNIT
DOME MAP LAMP CONTROL SWITCH INOPERATIVE (PUSHBUTTON ACTUATED)			●							●		●					
LEFT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	●									●		●					
RIGHT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	●									●		●					
LEFT REAR POST DOME LAMP INOPERATIVE (DOME LAMP CONTROL SWITCH PUSHBUTTON ACTUATED)	●								●				●				
RIGHT REAR POST DOME LAMP INOPERATIVE (DOME LAMP CONTROL SWITCH PUSHBUTTON ACTUATED)	●								●				●				
GLOVEBOX LAMP INOPERATIVE			●		●									●			
MALFUNCTION OF TIMED LAMPS		●		●		●	●						●		●	●	●
CONTROLS LIGHTING INOPERATIVE (POSITION LAMPS ON)								●			●						

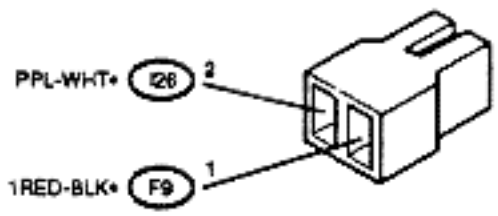
Fuse box lamp — F7



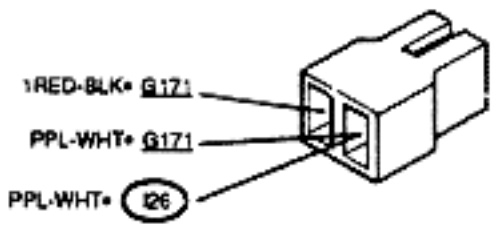
Glovebox illumination lamp — F9



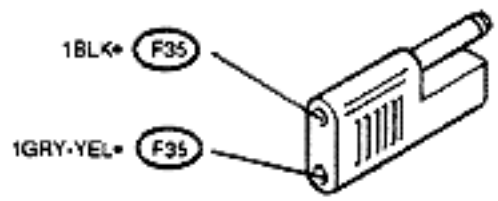
Feet illumination lamp, interior, right side — F23



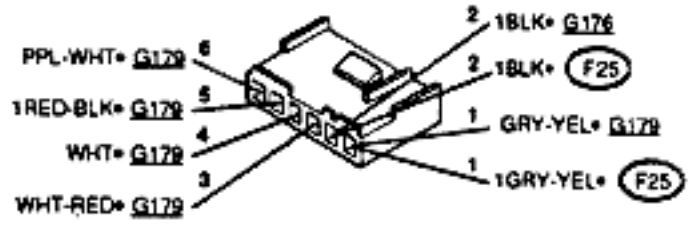
Feet illumination lamp, interior, left side — F24



Courtesy mirror illumination lamp — F25

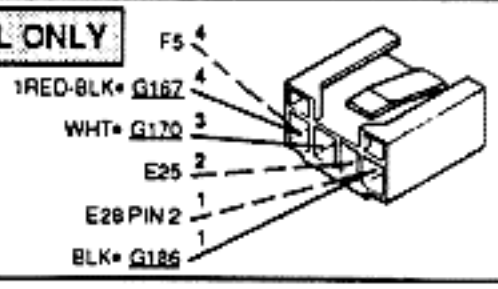


Dome lamp with cabin lighting control switch — F35



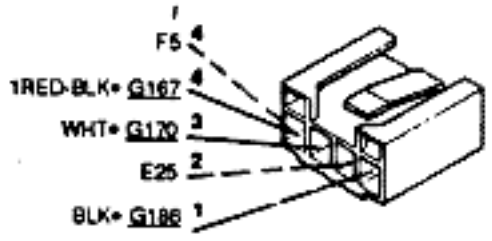
Dome lamp, control switch on right rear post — F36

BASE AND L ONLY

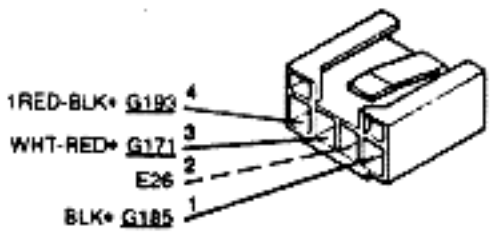


Dome lamp, control switch on right rear post — F36

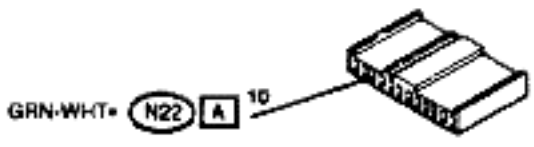
S ONLY



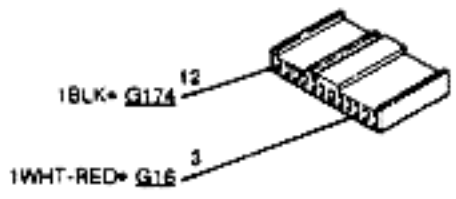
Dome lamp, control switch on left rear post — F37



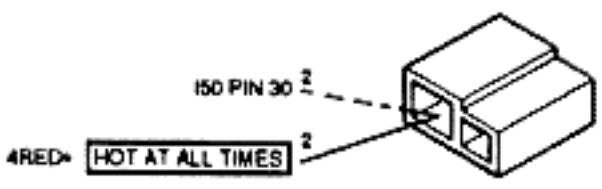
Fuse box — G1 D



Fuse box — G1 E



Fuse box — G1 N



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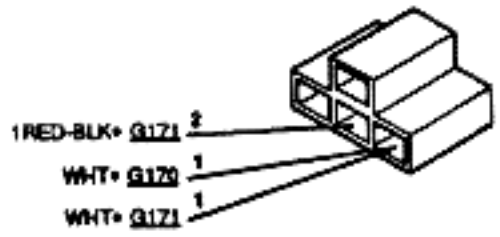
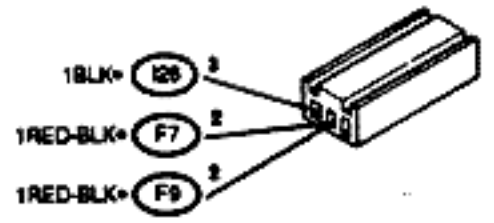
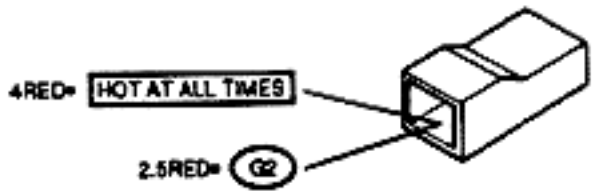
Fuse box G1 O



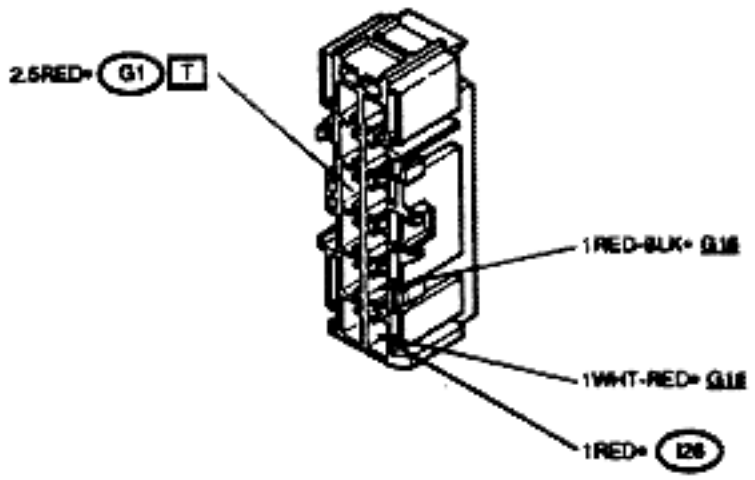
Fuse box G1 Q



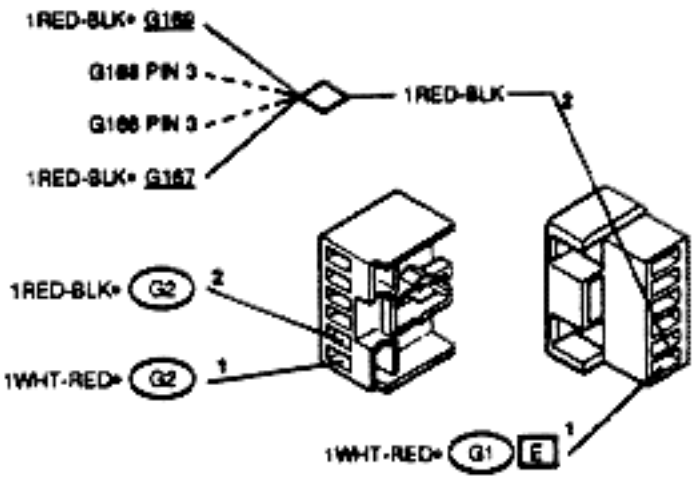
Fuse box G1 T



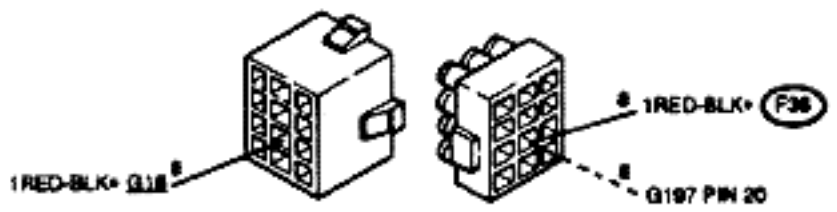
Auxiliary fuse box G2



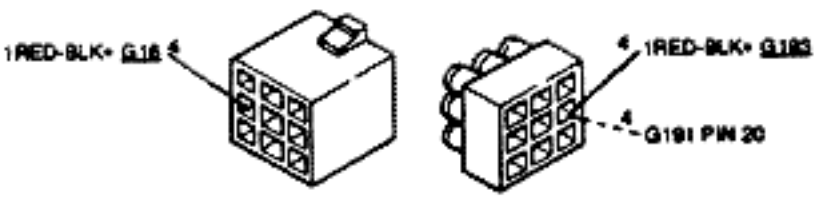
Six pin connector circuit board to doors wiring G16



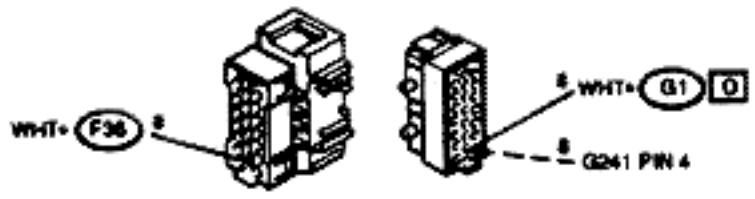
Connector, front doors to right rear wiring G167



Connector, front door to left rear wiring G169



Connector, circuit board to right rear wiring G170



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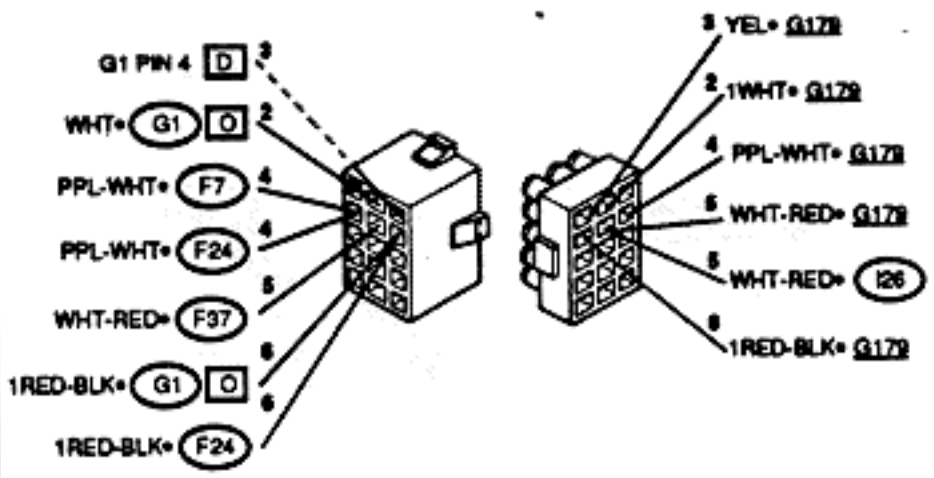
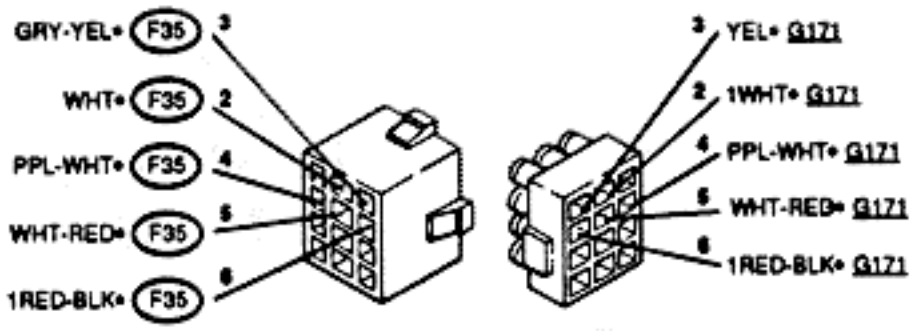
Connector, circuit board to left rear wiring — G171



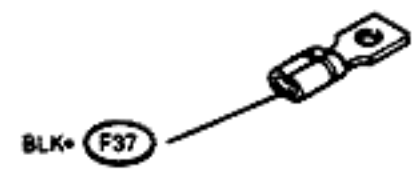
Steering wheel column support ground — G174

Dome ground — G176

Connector, left rear wiring to dome lamp wiring — G179

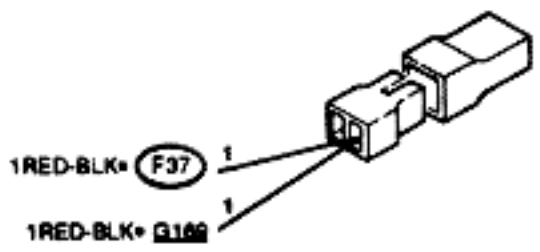


Trunk left side ground — G185

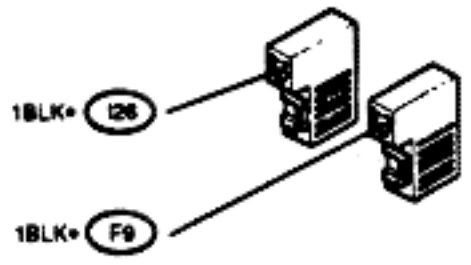


Trunk right side ground — G186

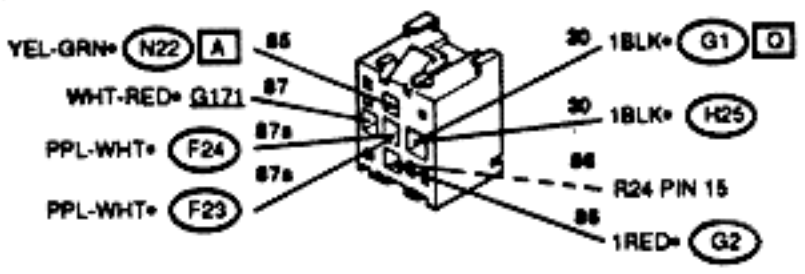
Connector, provision for radio antenna — G193



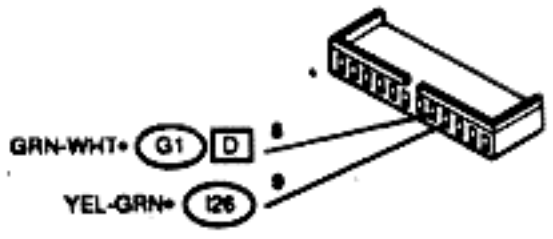
Glovebox illumination switch — H25

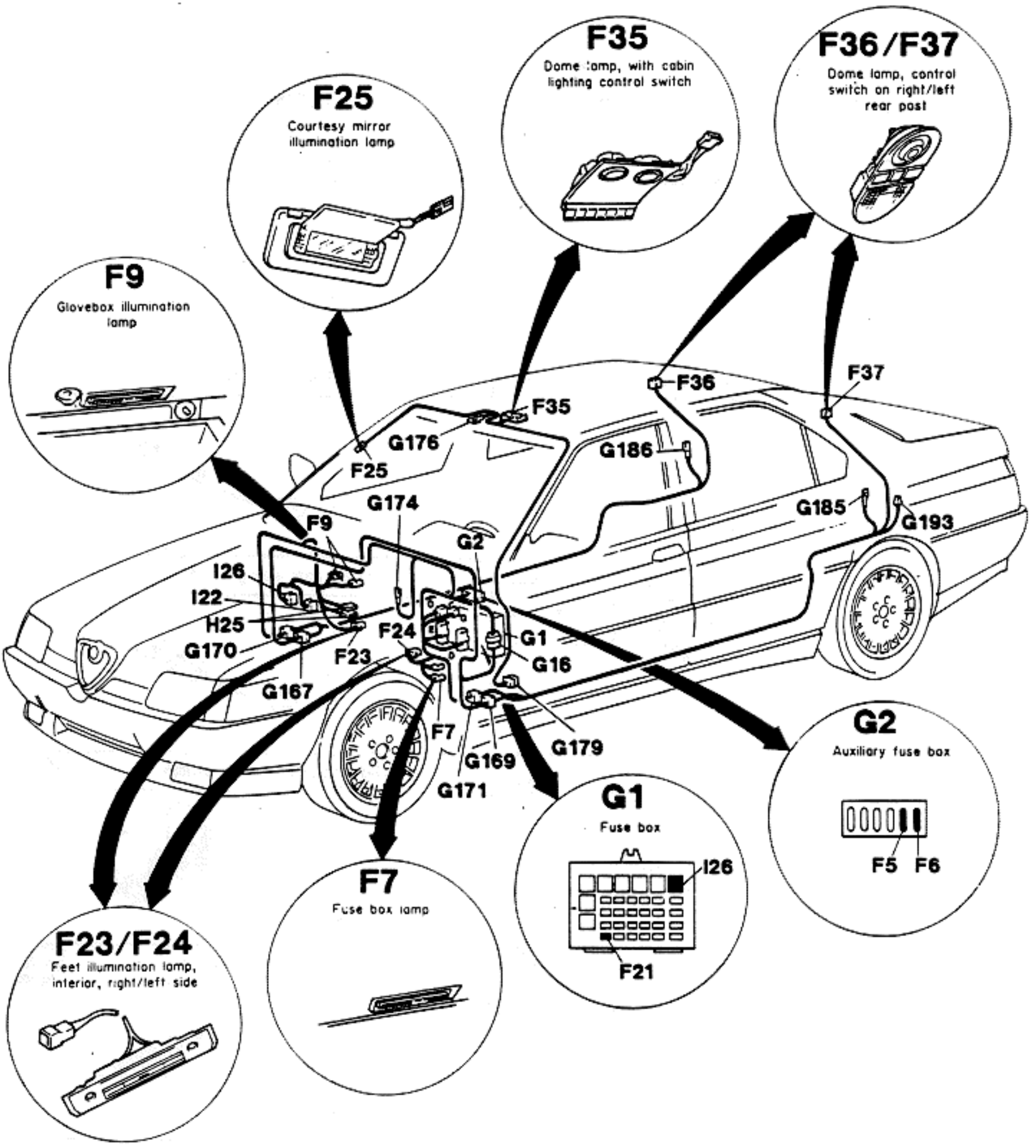


Dome lamp relay — I26



Alfa Romeo control unit — N22 A





DOME MAP LAMP CONTROL SWITCH INOPERATIVE (PUSHBUTTON ACTUATED)	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F21** on fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F21**
A2 MAP LAMP CHECK - Check that both spot of dome lamp **F35** and dome lamp **F35** can not be turned on	OK ▶ ~~OK~~ ▶	Repair wiring between **ground point G176 and pin 2 of dome lamp F35** Carry-out **step A3**
A3 TIMED LAMP CHECK - Check that the timed lamp of dome lamp **F35** is inoperative	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A7**
A4 VOLTAGE CHECK - Check for presence of 12V betweent pin 6 of connector **G171** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Carry-out **step A5**

(Cont.d)

DOME MAP LAMP CONTROL SWITCH INOPERATIVE (PUSHBUTTON ACTUATED)	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 6 of connector G171 and pin 2O of fuse box G1** Failure of **power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A6 VOLTAGE CHECK - Check for presence of 12V between pin 6 of connector **G179** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 6 of G179 and pin 5 of dome lamps F35** Repair wiring between **pin 6 of connector G17 9 and pin 6 of connector G171**
A7 LH MAP LAMP INOPERATIVE CHECK - Check that only the LH spot of dome lamp **F35** does not illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step A8** Carry-out **step A9**

(Cont.d)

DOME MAP LAMP CONTROL SWITCH INOPERATIVE (PUSHBUTTON ACTUATED)	TEST A

TEST STEPS		RESULTS	REMEDY
A8	BULB CHECK		
- Check for integrity of LH spot bulb of dome lamp **F35**		OK ▶	**Replace pushbutton of LH spot on dome lamp F35**
		~~OK~~ ▶	**Replace bulb**
A9	BULB CHECK		
- Check for integrity of RH spot bulb of dome lamp **F35**		OK ▶	**Replace pushbutton of RH spot on dome lamp F35**
		~~OK~~ ▶	**Replace bulb**

End of test A

LEFT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	TEST B

TEST STEPS	RESULTS	REMEDY
B1 FUSE CHECK - Check for integrity of fuse **F5** in auxiliary fuse box **G2**	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **fuse F5**
B2 REAR RH SPOT CHECK - Check illumination of rear RH post dome lamp	OK ▶ ~~OK~~ ▶	Carry-out **step B3** Carry-out **step B5**
B3 CONTROLS LIGHTINGS CHECK - Switch on position lamps and check for lighting of controls on rear LH post dome lamp	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Repair wiring between **pin 1 of dome lamp F37 and ground point G185**
B4 BULB CHECK - Check for integrity of bulb in rear LH post dome spot	OK ▶ ~~OK~~ ▶	Replace **pushbutton on dome lamp F37** Replace **bulb on dome lamp F37**

(Cont.d)

LEFT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	TEST B

TEST STEPS	RESULTS	REMEDY
B5 VOLTAGE CHECK - Check for presence of 12V between pin 4 of connector **G169** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step B7** Carry-out **step B6**
B6 VOLTAGE CHECK - Check for presence of 12V between pin 2 of connector **G16** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4 of connector G169 and pin 2 of connector G16** Repair wiring between **pin 2 of connector G16 and fuse box G2 (RED-BLK wire)**
B7 VOLTAGE CHECK - Check for presence of 12V between pin 1 of connector **G193** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of connector G193 and pin 4 of dome lamp F37** Repair wiring between **pin 1 of G193 and pin 4 of G169**

End of test B

RIGHT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	TEST C

TEST STEPS	RESULTS	REMEDY
C1 FUSE CHECK - Check for integrity of fuse F5 in auxiliary fuse box G2	OK ▶ ~~OK~~ ▶	Carry-out step C2 Replace fuse F5
C2 REAR LH MAP LAMP CHECK - Check illumination of rear LH post dome spot	OK ▶ ~~OK~~ ▶	Carry-out step C3 Carry-out step C5
C3 CONTROLS LIGHTING CHECK - Switch on position lamps and check for lighting of controls on rear RH post dome lamp	OK ▶ ~~OK~~ ▶	Carry-out step C4 Repair wiring between pin 1 of dome lamp F36 and ground point G186
C4 BULB CHECK - Check for integrity of bulb in rear RH post dome spot	OK ▶ ~~OK~~ ▶	Replace pushbutton on dome lamp F36 Replace bulb on dome lamp F36

(Cont.d)

RIGHT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	TEST C

TEST STEPS	RESULTS	REMEDY
C5 VOLTAGE CHECK - Check for presence of 12V between pin 8 of connector **G167** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 8 of connector G167 and pin 4 of dome F36** Carry-out **step C6**
C6 VOLTAGE CHECK - Check for presence of 12V between pin 2 of connector **G16** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 8 of connector G167 and pin 2 of connector G16** Repair wiring between **pin 2 of connector G16 and fuse box G2 (RED-BLK wire)**

End of test C

LEFT REAR POST DOME LAMP INOPERATIVE (DOME LAMP CONTROL SWITCH PUSHBUTTON ACTUATED)	TEST D

TEST STEPS	RESULTS	REMEDY
D1 FUSE CHECK - Checkfuse **F5** in auxiliary fuse box **G2** for integrity	OK ▶ OK ▶	Carry-out **step D2** Replace **fuse F5**
D2 DOME SPOT CHECK - Check that spot lamps of dome lamp **F35** can not be switched on	OK ▶ OK ▶	Repair wiring between **ground point G175 and pin 2 of dome lamp F35** Carry-out **step D3**
D3 TIMED LAMPS CHECK - Check that opening either door, the rear **LH** post dome lamp illuminates for a few seconds	OK ▶ OK ▶	Carry-out **step D4** Carry-out **step D6**
D4 GROUNDING CHECK - Check that, pushing the pushbutton on dome lamp **F35**, the rear LH post dome turns on, and that pin 3 of dome lamp **F35** is connected to ground	OK ▶ OK ▶	Carry-out **step D5** Replace **pushbutton on dome F35**

(Cont.d)

LEFT REAR POST DOME LAMP INOPERATIVE (DOME LAMP CONTROL SWITCH PUSHBUTTON ACTUATED)	TEST D

TEST STEPS	RESULTS	REMEDY
D5 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 5 of connector **G179**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 5 of connector G179 and pin 5 of connector G171** Repair wiring between **pin 5 of connector G179 and pin 3 of dome lamp F35**
D6 BULB CHECK		
- Check bulb of rear LH post dome lamp for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step D7** Replace **bulb**
D7 VOLTAGE CHECK		
- Check for presence of 12V between pin 4 of connector **G169** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D9** Carry-out **step D8**

(Cont.d)

LEFT REAR POST DOME LAMP INOPERATIVE (DOME LAMP CONTROL SWITCH PUSHBUTTON ACTUATED)	TEST D

TEST STEPS	RESULTS	REMEDY
D8 VOLTAGE CHECK - Check for presence of 12V between pin 2 of connector **G16** and ground	OK ▶ OK ▶	**Repair wiring between pin 4 of connector G169 and pin 2 of connector G16** **Repair wiring between pin 2 of connector G16 and auxiliary fuse box G2 (RED-BLK wire)**
D9 VOLTAGE CHECK - Check for presence of 12V between pin 1 of connector **G193** and ground	OK ▶ OK ▶	**Repair wiring between pin 1 of connector G193 and pin 4 of dome lamp F37** **Repair wiring between pin 1 of connector G193 and pin 4 of conector G169**

End of test D

RIGHT REAR POST DOME LAMP INOPERATIVE (DOME LAMP CONTROL SWITCH PUSHBUTTON ACTUATED)	TEST E

TEST STEPS.		RESULTS	REMEDY
E1	FUSE CHECK		
- Check fuse **F5** in auxiliary fuse box **G2** for integrity		OK ▶	Carry-out **step E2**
		OK ▶	Replace **fuse F5**
E2	CENTER DOME MAP LAMP CHECK		
- Check that both spot of dome lamp **F35** can not be switched on		OK ▶	Repair wiring between **ground point G176 and pin 2 of dome lamp F35**
		OK ▶	Carry-out **step E3**
E3	TIMED LAMP CHECK		
- Check that, opening either door, the rear RH post dome lamp illuminates for a few seconds		OK ▶	Carry-out **step E4**
		OK ▶	Carry-out **step E6**
E4	GROUNDING CHECK		
- Check that, pushing the pushbutton on dome lamp **F35**, the rear RH post dome turns on and that pin 4 of dome lamp **F35** is connected to ground		OK ▶	Carry-out **step E5**
		OK ▶	Replace **pushbutton on dome lamp F35**

(Cont.d)

RIGHT REAR POST DOME LAMP INOPERATIVE (DOME LAMP CONTROL SWITCH PUSHBUTTON ACTUATED)	TEST E

TEST STEPS	RESULTS	REMEDY
E5 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 2 of connector **G179**	OK ▶	Repair wiring between **pin 2 of connector G179 and pin 10 of fuse box G1 (through pin 2 of connector G171)**
	~~OK~~ ▶	Repair wiring between **pin 2 of connector G179 and pin 4 of dome lamp F35**
E6 BULB CHECK		
- Check bulb in rear RH post dome for integrity	OK ▶	Carry-out **step E7**
	~~OK~~ ▶	Replace **bulb**
E7 VOLTAGE CHECK		
- Check for presence of 12V between pin 2 of connector **G16** and ground	OK ▶	Carry-out **step E8**
	~~OK~~ ▶	Repair wiring between **pin 2 of connector G16 and fuse box G2 (RED-BLK wire)**

(Cont.d)

RIGHT REAR POST DOME LAMP INOPERATIVE (DOME LAMP CONTROL SWITCH PUSHBUTTON ACTUATED)	TEST E

TEST STEPS	RESULTS	REMEDY
E8 VOLTAGE CHECK		
- Check for presence of 12V between pin 8 of connector **G167** and ground	OK ▶	Carry-out **step E9**
	~~OK~~ ▶	Repair wiring between **pin 8 of connector G167 and pin 2 of connector G16**
E9 VOLTAGE CHECK		
- Check for presence of 12V between pin 4 of dome lamp **F36** and ground	OK ▶	Carry-out **step E10**
	~~OK~~ ▶	Repair wiring between **pin 4 of dome lamp F36 and pin 8 of connector G167**
E10 GROUNDING CHECK		
- Check that pin 8 of connector **G170** is connected to ground	OK ▶	Repair wiring between **pin 8 of connector G170 and pin 3 of dome lamp F36**
	~~OK~~ ▶	Repair wiring between **pin 8 of connector G170 and pin 10 of fuse box G1**

End of test E

GLOVEBOX LAMP INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F1 FUSE CHECK - Check fuse **F21** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Replace **fuse F21**
F2 TIMED LAMPS CHECK - Check that, opening either door, both LH and RH lamps below instrument panel illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step F3** Carry-out **step F6**
F3 BULB CHECK - Check bulb of glovebox lamp **F9**	OK ▶ ~~OK~~ ▶	Carry-out **step F4** Replace **bulb**
* F4 SWITCH CHECK - Check for proper operation of switch **H25** (open circuit with glovebox closed, closed circuit with glovebox open)	OK ▶ ~~OK~~ ▶	Carry-out **step F5** Replace **switch H25**

(Cont.d)

GLOVEBOX LAMP INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F5 CONTINUITY CHECK - Check for continuity between pin 30 of dome lamp relay **I26** and glovebox illumination switch **H25**	OK ▶ ~~OK~~ ▶	Repair wiring between **switch H25 and lamp F9** Repair or replace **wires, as necessary**
F6 CONTINUITY CHECK - Check for continuity between glovebox illumination lamp **F9** and pin 2Q of fuse box **G1**	OK ▶ ~~OK~~ ▶	Carry-out **step F7** Repair or replace **wires, as necessary**
F7 GROUNDING CHECK - Check for presence of 0V (zero) at pin 12E of fuse box **G1**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 3Q of fuse box G1 and pin 30 of relay I26** Repair wiring between **pin 12E of fuse box G1 and ground point G174**

End of test F

MALFUNCTION OF TIMED LAMPS	TEST G

TEST STEPS	RESULTS	REMEDY
G1 FUSE CHECK - Check fuse **F6** in auxiliary fuse box **G2** for integrity	OK ▶ OK ▶	Carry-out **step G2** Replace **fuse F6**
G2 ALL TIMED LAMPS INOPERATIVE CHECK - Check that none of the lamps comes on, opening either door	OK ▶ OK ▶	Replace **Alfa Romeo Control unit N22** Carry-out **step G3**
G3 ONE OR MORE TIMED LAMPS INOPERATIVE CHECK - Check for failed illumination of dome lamp **F35**, of rear LH dome lamp **F37**, of fuse box illumination lamp **F7** and of RH and LH feet illumination lamps **F23** and **F24**	OK ▶ OK ▶	Carry-out **step G4** Carry-out **step G7**
G4 RELAY CHECK - Check relay **I26** for proper operation	OK ▶ OK ▶	Carry-out **step G5** Replace **relay I26**

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST G

TEST STEPS	RESULTS	REMEDY
G5 VOLTAGE CHECK - Check for presence of 12V between pin 86 of dome lamp relay I26 and ground	OK ▶ ~~OK~~ ▶	Carry-out **step G6** Repair wiring between **pin 86 of relay I26 and fuse box G2 (RED wire)**
G6 GROUNDING CHECK - Check for presence of 0V (zero) at pin 85 of dome lamp relay **I26**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 30 of relay I26 and pin 3A of fuse box G1** Repair wiring between **pin 85 of relay I26 and pin 9A of control unit N22**
G7 REAR RH DOME CHECK - Check that rear RH dome lamp only fails to illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step G8** Carry-out **step G12**
G8 BULB CHECK - Check for integrity of rear RH dome lamp bulb	OK ▶ ~~OK~~ ▶	Carry-out **step G9** Replace bulb

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST G

TEST STEPS	RESULTS	REMEDY
G9 VOLTAGE CHECK - Check for presence of 12V between pin 86 of dome lamp relay **I26** in fuse box **G1** and ground	OK ▶ OK ▶	Carry-out **step G10** Repair wiring between **fuse box G2, pin 1 of connector G16 and pin 3E of fuse box G1**
G10 GROUNDING CHECK - Check for presence of 0V (zero) at pin 85 of relay **I26** in fuse box **G1**	OK ▶ OK ▶	Carry-out **step G11** Repair wiring between **pin 10D of fuse box G1 and pin 8A of control unit N22**
G11 CONTINUITY CHECK - Check for presence continuity between: • pin 1O of fuse box **G1** and pin 8 of connector **G170** • pin 8 of connector **G170** and pin 3 of dome lamp control switch on right rear post **F36** • pin 2 of connector **G16** and pin 8 of connector **G167** • pin 8 of connector **G167** and pin 4 of dome lamp control switch on right rear post **F36**	OK ▶ OK ▶	Replace **relay I26 of fuse box G1** Repair or replace **wires, as necessary**
G12 CENTER DOME CHECK - Check that the dome lamp **F35** only fails to illuminate	▶ ▶	Carry-out **step G13** Carry-out **step G14**

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST G

TEST STEPS	RESULTS	REMEDY
G13 BULB CHECK		
- Check bulb of dome lamp **F35** for integrity	OK ▶	Repair wiring between pin 6 of dome lamp F35, pin 4 of connector G179 and pin 4 of connector G171
	~~OK~~ ▶	Replace bulb
G14 FUSE BOX ILLUMINATION CHECK		
- Check that fuse box lamp **F7** only fails to illuminate	OK ▶	Carry-out step G15
	~~OK~~ ▶	Carry-out step G16
G15 BULB CHECK		
- Check fuse box lamp **F7** for integrity of bulb	OK ▶	Repair wiring between lamp F7 and pin 2Q of fuse box G1 (RED-BLK wire), and between lamp F7 and pin 4 of connector G171 (PPL-WHT wire)
	~~OK~~ ▶	Replace bulb of lamp F7

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST G

TEST STEPS	RESULTS	REMEDY
G16 BULB CHECK - Check that rear LH dome lamp only fails to illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step G17** Carry-out **step G18**
G17 LH FEET ILLUMINATION LAMP CHECK - Check for integrity of bulb of dome lamp **F37**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 3 of dome lamp F37, pin 5 of connector G171, and pin 87 of relay I26** Replace bulb of RH **rear dome F37**
G18 BULB CHECK - Check that the LH feet illumination lamp interior left side **F24** only fails to illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step G19** Carry-out **step G20**
G19 BULB CHECK - Check for integrity of bulb of LH feet illumination lamp interior left side **F24**	OK ▶ ~~OK~~ ▶	Repair wiring between **lamp interior left side F24 and pin 6 of G171 (RED-BLK wire)** Replace **bulb of lamp F24**

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST G

TEST STEPS		RESULTS	REMEDY
G20	BULB CHECK		
- Check for integrity of bulb of RH feet illumination lamp interior right side F23		OK ▶	Repair wiring between lamp F23 and pin 87a of relay I26 (PPL-WHT wire) and between lamp F23 and glovebox illumination lamp F9 (RED-BLK wire)
		OK ▶	Replace bulb of lamp F23

End of test G

CONTROLS LIGHTING INOPERATIVE (POSITION LAMPS ON)	TEST H

TEST STEPS	RESULTS	REMEDY
H1 ALL LAMPS INOPERATIVE CHECK		
- Check that, with position lamps switched on, the following lamps do not illuminate: controls illumination of dome lamp **F35**, rear RH and LH post lamp and courtesy mirror illumination lamp **F25** on sun visor (upon actuation of related pushbutton)	OK ▶	Failure of **position lamps circuit; refer to the applicable troubleshooting procedure**
	~~OK~~ ▶	Carry-out **step H2**
H2 DOME LAMP CHECK		
- Check that only the dome lamp **F35** controls lighting fails to illuminate	OK ▶	Carry-out **step H3**
	~~OK~~ ▶	Carry-out **step H4**
H3 BULB CHECK		
- Check for integrity of bulb of controls illumination of dome lamp **F35**	OK ▶	Repair wiring between **pin 1 of dome lamp F35 and pin 4D of fuse box G1 through pin 3 of connectors of G171 and G179**
	~~OK~~ ▶	Replace **bulb of dome lamp F35**

(Cont.d)

CONTROLS LIGHTING INOPERATIVE (POSITION LAMPS ON)	TEST H

TEST STEPS		RESULTS	REMEDY
H4	COURTESY MIRROR ILLUMINATION LAMP CHECK		
- Check that fault simultaneously affects dome lamp **F35** and courtesy mirror illumination lamp **F25**		OK ▶	Repair wiring between **pin 1 of dome lamp F35 and pin 3 of connector G179, pin 3 of connector G171 and pin 4D of fuse box G1**
		~~OK~~ ▶	Carry-out **step H5**
H5	COURTESY MIRROR LAMP CHECK		
- Check that the courtesy mirror illumination lamp only fails to illuminate		OK ▶	Carry-out **step H6**
		~~OK~~ ▶	Carry-out **step H8**
H6	BULB CHECK		
- Check for integrity of bulb of dome lamp **F25**		OK ▶	Carry-out **step H7**
		~~OK~~ ▶	Replace **bulb of dome lamp F25**

(Cont.d)

CONTROLS LIGHTING INOPERATIVE (POSITION LAMPS ON)	TEST H

TEST STEPS	RESULTS	REMEDY
H7 SWITCH CHECK		
- Check control switch of courtesy mirror illumination lamp **F25** for proper operation	OK ▶	Repair wiring between **dome lamp F35 (pins 1 and 2) and courtesy mirror illumination lamp F25 (GRY-YEL and BLK wires)**
	~~OK~~ ▶	Replace **switch of courtesy mirror illumination lamp F25**
H8 REAR LH POST DOME LAMP CHECK		
- Check that the dome lamp control switch on left rear post **F37** only fails to illuminate	OK ▶	Carry-out **step H9**
	~~OK~~ ▶	Carry-out **step H10**
H9 BULB CHECK		
- Check bulb of dome lamp control switch on left rear post **F37** controls lighting for integrity	OK ▶	Repair wiring between **pin 2 of LH post dome lamp F37 and left tail lamp unit E26**
	~~OK~~ ▶	Replace **bulb of dome lamp F37**

(Cont.d)

CONTROLS LIGHTING INOPERATIVE (POSITION LAMPS ON)	TEST H

TEST STEPS		RESULTS	REMEDY
H10	BULB CHECK		
- Check bulb of dome lamp control switch on right rear post **F36** controls lighting for integrity		OK ▶	Repair wiring between **pin 2 of RH post dome lamp F36 and pin 2 of right tail lamp unit E28**
		~~OK~~ ▶	Replace **bulb of dome lamp F36**

End of test H

PPL-WHT

FEET ILLUMINATION LAMP INTERIOR RIGHT SIDE (F23)

1RED-BLK

GLOVEBOX ILLUMINATION LAMP (F9)

1BLK

GLOVEBOX ILLUMINATION SWITCH (H25)

1BLK

REFER TO BUZZER CIRCUIT R24 PIN 15

DOME LAMP RELAY (126)

YEL-GRN

WHT-RED

PPL-WHT

PPL-WHT

FEET ILLUMINATION LAMP INTERIOR, LEFT SIDE (F24)

1RED-BLK

ALFA ROMEO CONTROL UNIT (N22)

GRN-WHT

HOT AT ALL TIMES

REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 2 OF 2)

4RED

REFER TO LAMPS--LOW BEAM AND HIGH BEAM CIRCUIT 150 PIN 30

1RED-BLK

1BLK

F21 15A DOME LAMP/ GLOVEBOX LAMP

DOME LAMP RELAY (126)

FUSE BOX (G1)

HOT AT ALL TIMES

REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 2 OF 2)

4RED

2.5RED

F6 10A DOME LAMP RELAY

F5 10A DOME LAMP

AUXILIARY FUSE BOX (G2)

1WHT-RED

G16

1WHT-RED

1BLK

WHT

G170

REFER TO ALARM--ELECTRONIC ANTI-THEFT SYSTEM CIRCUIT G241 PIN 4

G174

1RED

1RED-BLK

WHT

1RED-BLK

1RED-BLK

2 G16

REFER TO LAMPS--GROUND ILLUMINATION, DOOR OPEN, TRUNK LIGHTING CIRCUIT G166 PIN 3

REFER TO LAMPS--GROUND ILLUMINATION, DOOR OPEN, TRUNK LIGHTING CIRCUIT G168 PIN 3

G169

1RED-BLK

REFER TO LAMPS--GROUND ILLUMINATION, DOOR OPEN, TRUNK LIGHTING CIRCUIT G191 PIN 20

REFER TO LAMPS--GROUND ILLUMINATION, DOOR OPEN, TRUNK LIGHTING CIRCUIT G197 PIN 20

1RED-BLK

8 G167

1RED-BLK

REFER TO LAMPS--GROUND ILLUMINATION, DOOR OPEN, TRUNK LIGHTING CIRCUIT F5

WHT

PPL-WHT

1RED-BLK

1WHT

WHT-RED

YEL

G171

G179

REFER TO LAMPS--POSITION, SIDE MARKER, LICENSE PLATE ILLUMINATION CIRCUIT G1 PIN 4 [D]

PPL-WHT

FUSE BOX LAMP (F7)

REFER TO LAMPS--BRAKE CIRCUIT E25 PIN 3[A] AND 3[B]

1RED-BLK

WHT-RED

BLK

REFER TO LAMPS--POSITION, SIDE MARKER, LICENSE PLATE ILLUMINATION CIRCUIT E26

G185

DOME LAMP CONTROL SWITCH ON LEFT REAR POST (F37)

DOME LAMP WITH CABIN LIGHTING CONTROL SWITCH (F35)

PPL-WHT

1RED-BLK

WHT-RED

1BLK

GRY-YEL

G176

REFER TO LAMPS--POSITION, SIDE MARKER, LICENSE PLATE, ILLUMINATION CIRCUIT E28 PIN 2 (BASE AND L ONLY)

BLK

G186

DOME LAMP CONTROL SWITCH ON RIGHT REAR POST (F36)

GENERAL

The vehicle is equipped of timed interior lamps whose illumination is controlled by any one of the four doors; in this way, access to the vehicle is made easy, even in bad light conditions.
When a door is opened, the center dome lamp with relevant spot lamp, both dome lamps, on rear right and left posts, and the fuse box illuminate automatically.
For better comfort, the above lamps remain on for a few seconds after the door has been closed.
The rear post domes and the dome lamp control switch are equipped with spot lamps that are switched on by their relevant switch. Except for lamps on central dome lamp, which can also be actuated by door opening, as already mentioned above.
Some courtesy lamps are installed on the vehicle to illuminate the controls; those lamps illuminate upon activation of position lamps:

glovebox lamp, switched on by opening the glovebox lid.

- dome lamp control switch and rear post domes, switched on automatically upon activation of position lamps.

- sun roof pushbutton.

The system is protected by three fuses, as follows:

- fuse **F21** (15A) DOME LAMP/GLOVEBOX LAMP in fuse box **G1**.

- fuse **F5** (10A) DOME LAMP in auxiliary fuse box **G2**.

- fuse **F6** (10A) DOME LAMP RELAY in the auxiliary fuse box **G2**.

OPERATIONAL DESCRIPTION

Lamps actuation by the relevant pushbutton.
Battery voltage (12V) always present is sent to the spot on the dome lamp with cabin lighting control switch **F35** through fuse **F21** of fuse box **G1**. In the same way, 12V through fuse **F5** of auxiliary fuse box **G2** is sent to dome lamp control switchs **F36** and **F37** on the right and left rear post. Pushing the pushbutton, the relevant spot illuminates.

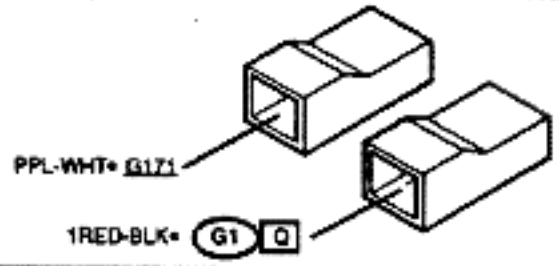
Time lighting upon door opening.
Opening any of the doors, the Alfa Romeo Control unit **N22** sets and maintains for some seconds pins 8A and 9A to a low logic level thus providing a ground path to dome lamp relay **I26** on the fuse box **G1** and to dome lamp relay **I26**. Both relays are always connected to a positive voltage through fuse **F6** in the auxiliary fuse box **G2**, thus they are held energized only for the time controlled by the control unit **N22**. The dome lamp relay **I26**, once energized, transfers a ground connection to dome lamp with cabin lighting control switch **F35** to right and left feet illuminations **F23** and **F24**, to dome lamp control switch on left rear post **F37** and to fuse box lamp **F7**, thus lighting them all. The dome lamp relay **I26** in the fuse box **G1**, when energized, transfers a ground to dome lamp control switch on right rear post **F36**, thus lighting it.

Lighting monitored by the position lamps.
The wiring diagram shows the path of the lines that control the courtesy mirror illumination lamps, whose lighting is depending on position lamps.
With position lamp turned on, the dome lamp with cabin lighting control switch **F35**, rear left and right dome lamps **F36** and **F37** and sun roof pushbutton are illuminated.
From the dome lamp **F35** it is possible to control lighting of rear left and right dome lamps **F36** and **F37**. When the position lamps are turned on, opening the glovebox, the switch **H25** closes, thus turning on the lamp within the box it self.

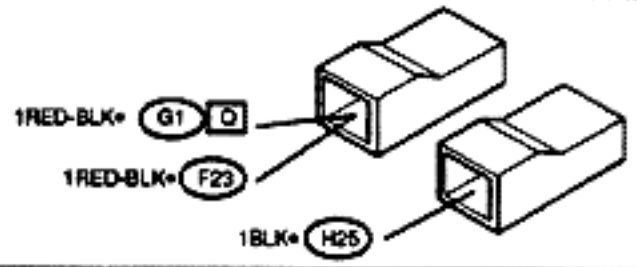
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT: E5 FUSE	E6 FUSE	F21 TRUNK DOME	F7 FUSE LAMP BULB	F9 BULB	F23 DOME LAMP BULB	F24 DOME LAMP BULB	(35/36/37) DOME PUSHB.	(35/36/37) SPOT PUSHB.	(35/36/37) CONTR. LAMP	(35/36/37) SPOT LAMP	(35/36/37) DOME LAMP	H25 SWITCH	126 RELAY	126 RELAY (G1)	126 CONTROL UNIT
DOME MAP LAMP CONTROL SWITCH INOPERATIVE (PUSHBUTTON ACTUATED)			•						•		•					
LEFT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	•								•		•					
RIGHT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	•								•		•					
DOME LAMPS ON REAR RIGHT AND LEFT POSTS INOPERATIVE (BY PUSHBUTTON ACTUATION ON CENTER DOME LAMP)	•							•				•				
GLOVEBOX LAMP INOPERATIVE			•		•								•			
MALFUNCTION OF TIMED LAMPS		•		•		•	•					•		•	•	•
CONTROLS LIGHTING INOPERATIVE • (POSITION LAMPS ON)										•						

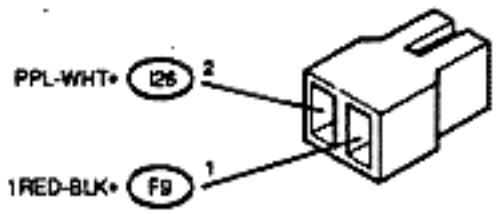
Fuse box lamp — F7



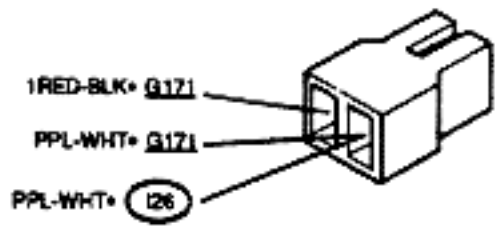
Glovebox illumination lamp — F9



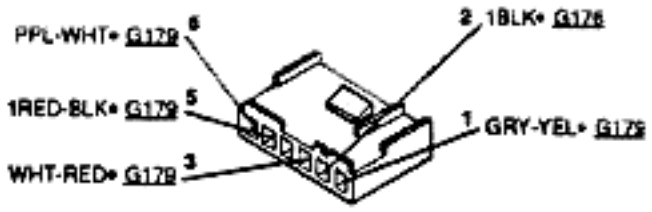
Feet illumination lamp, interior, right side — F23



Feet illumination lamp, interior, left side — F24

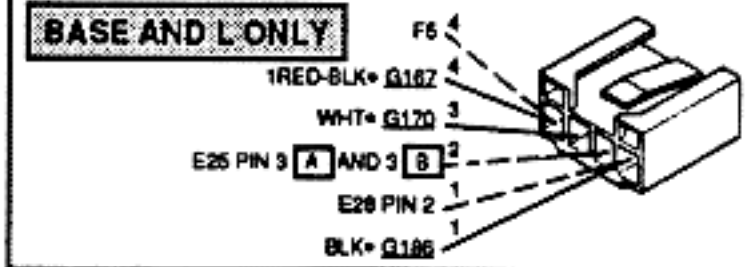


Dome lamp with cabin lighting control switch — F35



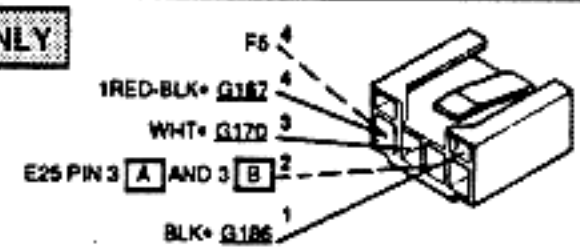
Dome lamp, control switch on right rear post — F36

BASE AND L ONLY

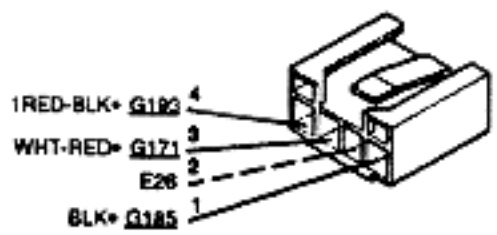


Dome lamp, control switch on right rear post — F36

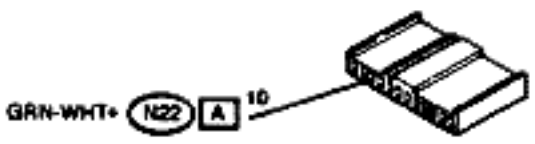
S ONLY



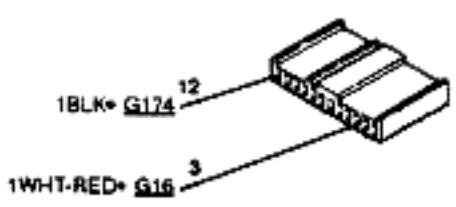
Dome lamp, control switch on left rear post — F37



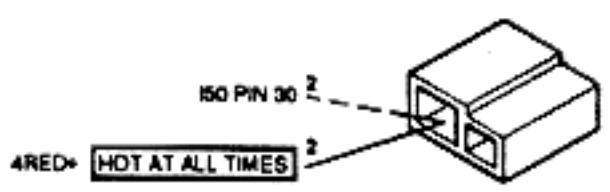
Fuse box — G1 D



Fuse box — G1 E



Fuse box — G1 N



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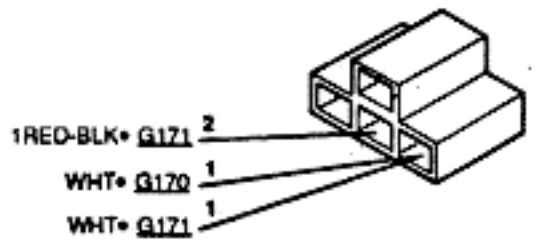
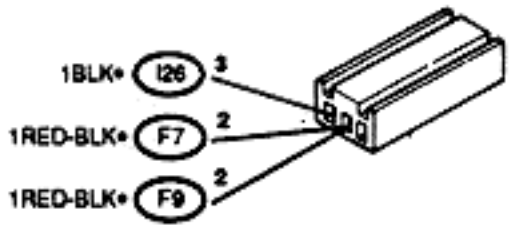
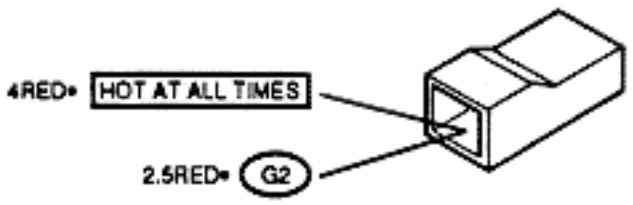
Fuse box — G1 O



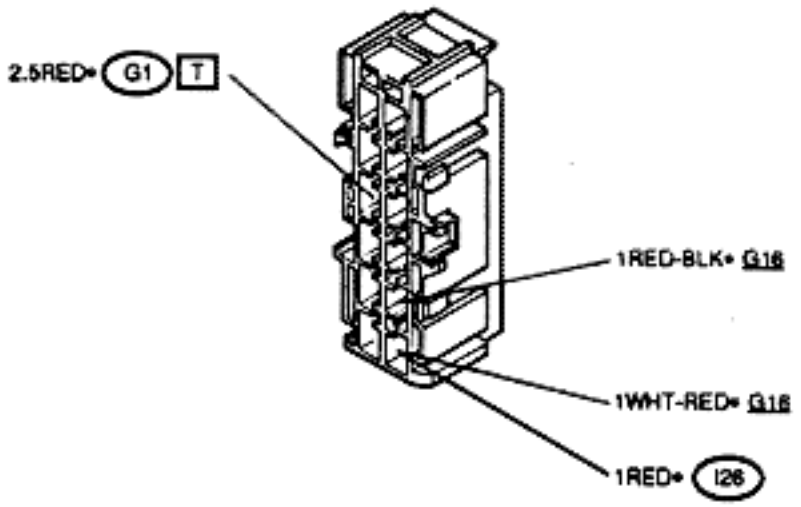
Fuse box — G1 Q



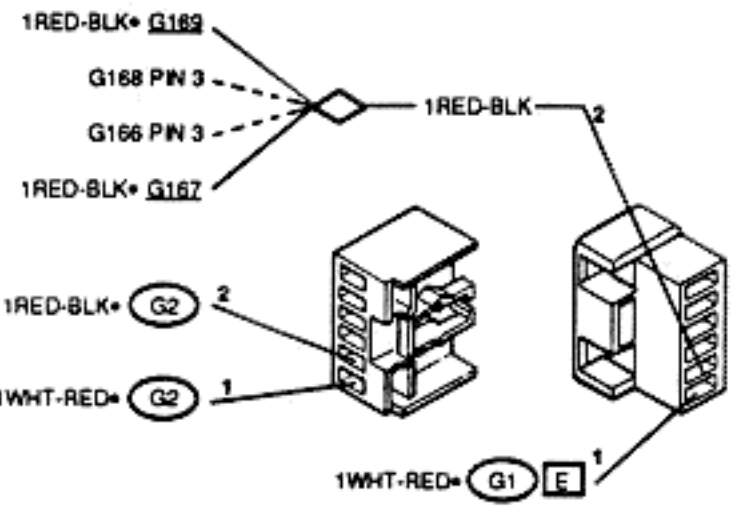
Fuse box — G1 T



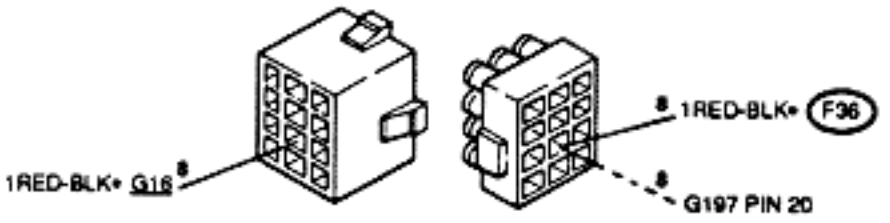
Auxiliary fuse box — G2



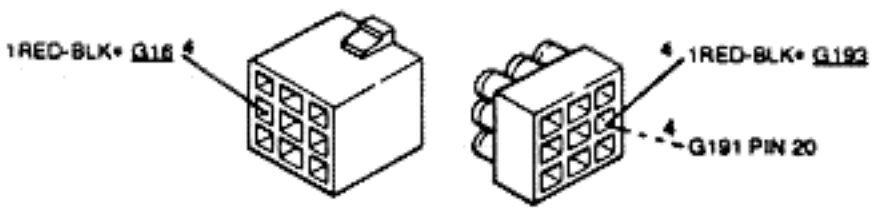
Six pin connector circuit board to doors wiring — G16



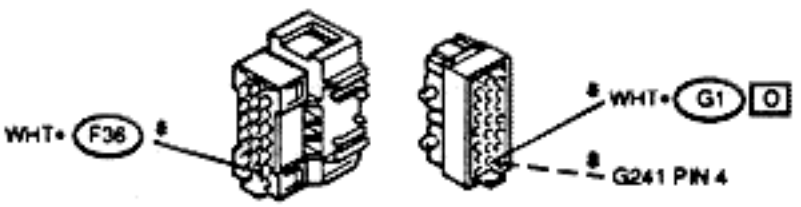
Connector, front doors to right rear wiring — G167



Connector, front door to left rear wiring — G169



Connector, circuit board to right rear wiring — G170



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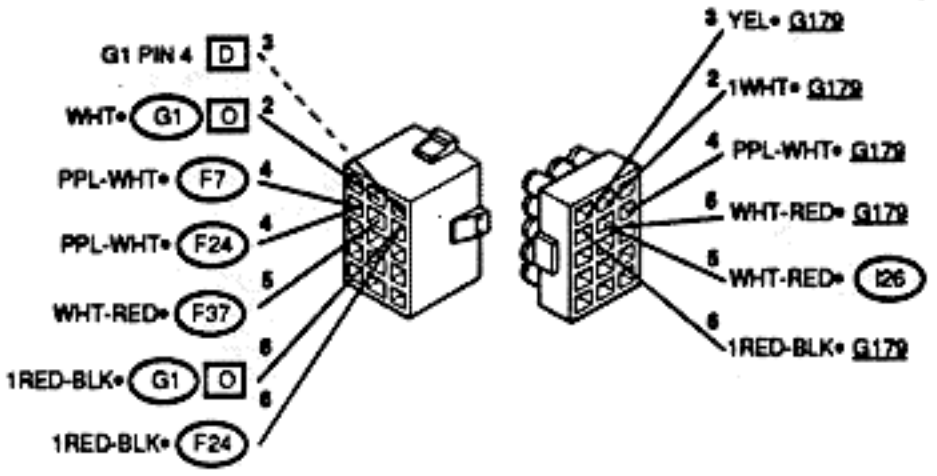
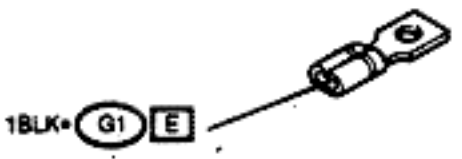
Connector, circuit board to left rear wiring — G171

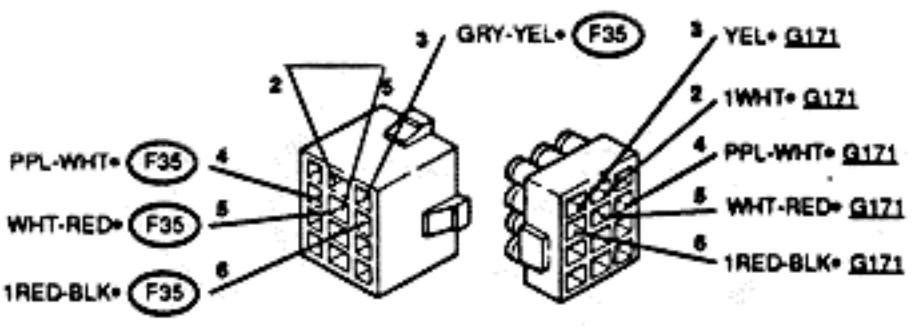


Steering wheel column support ground — G174



Dome ground — G176

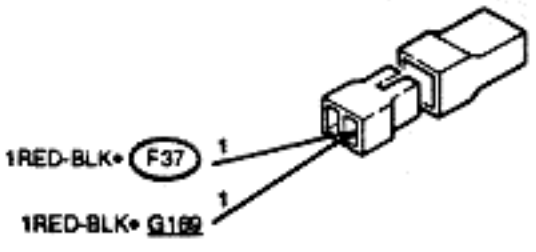
Connector, left rear wiring to dome lamp wiring — G179



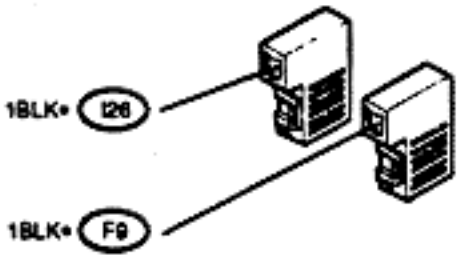
Trunk left side ground — G185

Trunk right side ground — G186

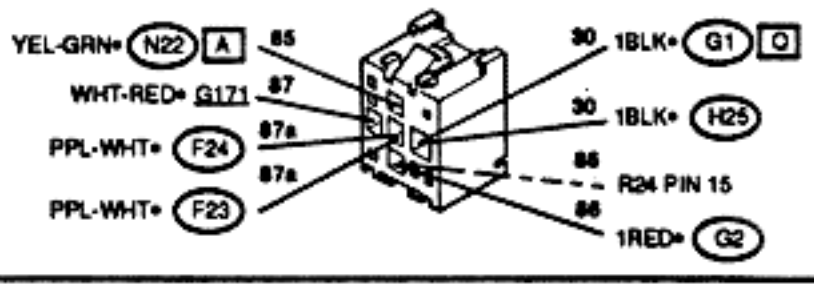
Connector, provision for radio antenna — G193



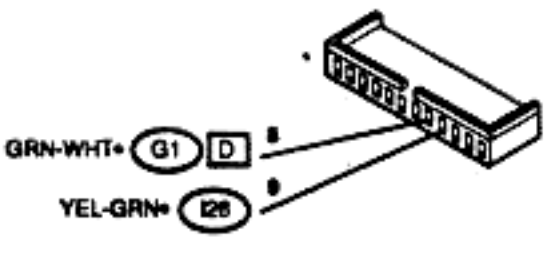
Glovebox illumination switch — H25

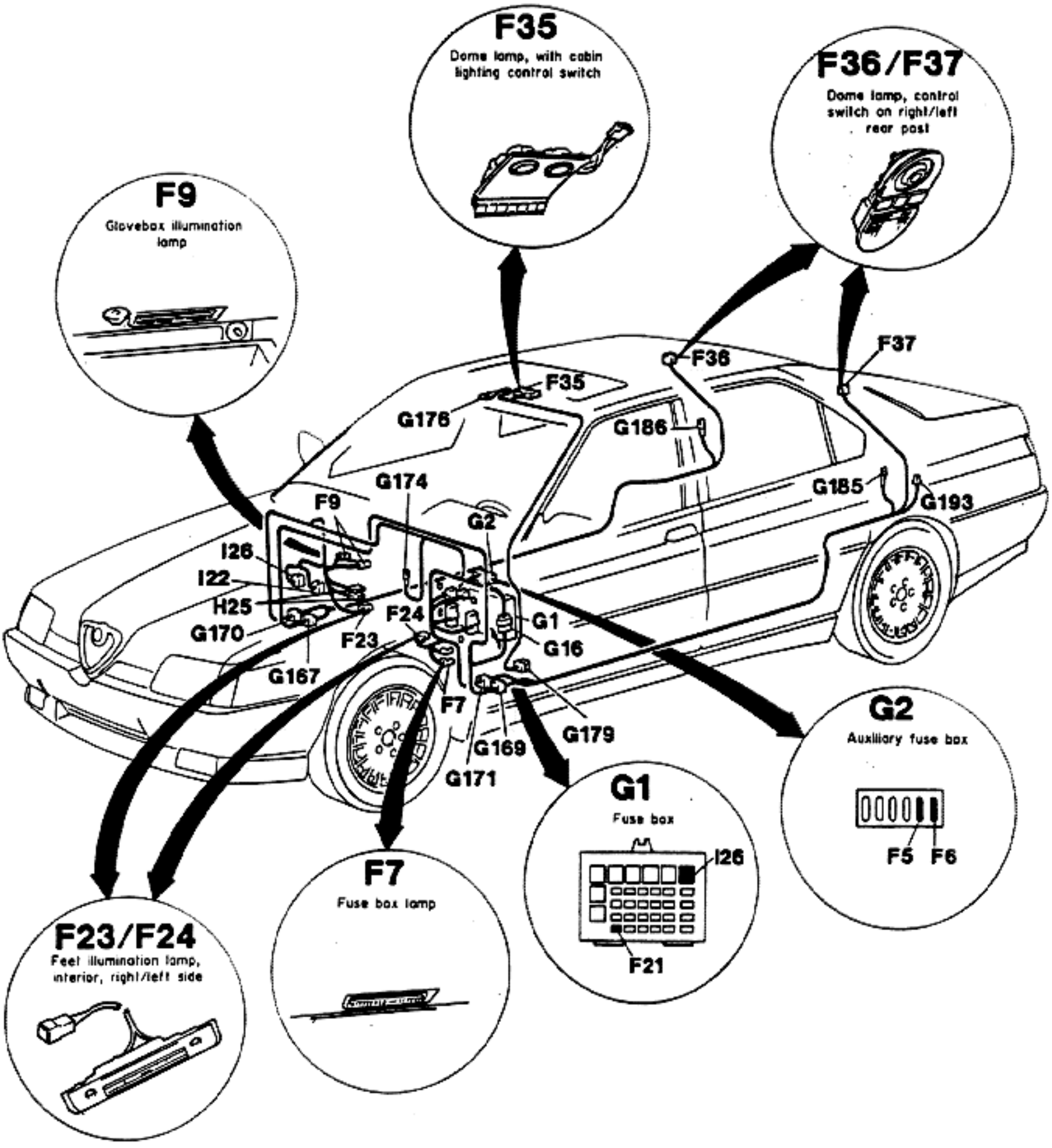


Dome lamp relay — I26



Alfa Romeo control unit — N22 A





DOME MAP LAMP CONTROL SWITCH INOPERATIVE (PUSHBUTTON ACTUATED)	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F21** on fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F21**
A2 SPOT LAMP CHECK - Check that both spot lamp of dome lamp **F35** and dome lamp **F35** can not be turned on	OK ▶ ~~OK~~ ▶	Repair wiring between **ground point G176 and pin 2 of dome lamp F35** Carry-out **step A3**
A3 TIMED LAMP CHECK - Check that the timed lamp of dome lamp **F35** is inoperative	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A7**
A4 VOLTAGE CHECK - Check for presence of 12V between pin 6 of connector **G171** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Carry-out **step A5**

(Cont.d)

DOME MAP LAMP CONTROL SWITCH INOPERATIVE (PUSHBUTTON ACTUATED)	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ OK ▶	Repair wiring between **pin 6 of connector G171 and pin 20 of fuse box G1** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A6 VOLTAGE CHECK - Check for presence of 12V between pin 6 of connector **G179** and ground	OK ▶ OK ▶	Repair wiring between **ground point G176 and pin 2 of dome lamp F35** Repair wiring between **pin 6 of connector G179 and pin 6 of connector G171**
A7 BULB CHECK - Check for integrity of **spot bulb of dome lamp F35**	OK ▶ OK ▶	Replace **pushbutton of spot on dome lamp F35** Replace **bulb**

End of test A

LEFT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	TEST B

TEST STEPS	RESULTS	REMEDY
B1 FUSE CHECK - Check for integrity of fuse **F5** in auxiliary fuse box **G2**	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **fuse F5**
B2 REAR RH SPOT CHECK - Check illumination of rear RH post dome lamp	OK ▶ ~~OK~~ ▶	Carry-out **step B3** Carry-out **step B5**
B3 CONTROLS LIGHTINGS CHECK - Switch on position lamps and check for lighting of controls on rear LH post dome lamp	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Repair wiring between **pin 1 of dome lamp F37 and ground point G185**
B4 BULB CHECK - Check for integrity of bulb in rear LH post dome spot	OK ▶ ~~OK~~ ▶	Replace **pushbutton on dome lamp F37** Replace **bulb on dome lamp F37**

(Cont.d)

LEFT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	TEST B

TEST STEPS	RESULTS	REMEDY
B5 VOLTAGE CHECK - Check for presence of 12V between pin 4 of connector **G169** and ground	OK ▶ ~~OK~~ ▶	Carry-out step B7 Carry-out step B6
B6 VOLTAGE CHECK - Check for presence of 12V between pin 2 of connector **G16** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4 of connector G169 and pin 2 of connector G16** Repair wiring between **pin 2 of connector G16 and fuse box G2 (RED-BLK wire)**
B7 VOLTAGE CHECK - Check for presence of 12V between pin 1 of connector **G193** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of connector G193 and pin 4 of dome lamp F37** Repair wiring between **pin 1 of G193 and pin 4 of G169**

End of test B

RIGHT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	TEST C

TEST STEPS	RESULTS	REMEDY
C1 FUSE CHECK - Check for integrity of fuse **F5** in auxiliary fuse box **G2**	OK ▶ OK ▶	Carry-out **step C2** Replace **fuse F5**
C2 REAR LH MAP LAMP CHECK - Check illumination of rear LH post dome spot	OK ▶ OK ▶	Carry-out **step C3** Carry-out **step C5**
C3 CONTROLS LIGHTING CHECK - Switch on position lamps and check for lighting of controls on rear RH post dome lamp	OK ▶ OK ▶	Carry-out **step C4** Repair wiring between **pin 1 of dome lamp F36 and ground point G186**
C4 BULB CHECK - Check for integrity of bulb in rear RH post dome spot	OK ▶ OK ▶	Replace **pushbutton on dome lamp F36** Replace **bulb on dome lamp F36**

(Cont.d)

RIGHT REAR POST DOME SPOT INOPERATIVE (PUSHBUTTON ACTUATED)	TEST C

TEST STEPS	RESULTS	REMEDY
C5 VOLTAGE CHECK - Check for presence of 12V between pin 8 of connector **G167** and ground	OK ▶	Repair wiring between **pin 8 of connector G167 and pin 4 of dome F36**
	~~OK~~ ▶	Carry-out **step C6**
C6 VOLTAGE CHECK - Check for presence of 12V between pin 2 of connector **G16** and ground	OK ▶	Repair wiring between **pin 8 of connector G167 and pin 2 of connector G16**
	~~OK~~ ▶	Repair wiring between **pin 2 of connector G16 and fuse box G2 (RED-BLK wire)**

End of test C

DOME LAMPS ON REAR RIGHT AND LEFT POSTS INOPERATIVE (BY PUSHBUTTON ACTUATION ON CENTER DOME LAMP)	TEST D

TEST STEPS	RESULTS	REMEDY
D1 FUSE CHECK - Check fuse **F5** in auxiliary fuse box **G2** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Replace **fuse F5**
D2 CENTER DOME LAMP AND SPOT LAMP CHECK - Check that also the center dome lamp and relevant spot lamp do not illuminate	OK ▶ ~~OK~~ ▶	Repair wiring between **ground G176 and pin 2 of dome lamp F35** Carry-out **step D3**
D3 DOME LAMP CHECK ON REAR POSTS - Check that, by pressing the pushbutton on center dome lamp, none of dome lamps **F37** and **F36** illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step D4** Carry-out **step D7**
D4 GROUNDING CHECK - Check for presence of 0V at pin 3 of center dome lamp, by pressing the pushbutton for rear post dome lamp	OK ▶ ~~OK~~ ▶	Carry-out **step D5** Replace **pushbutton on dome lamp F35**

(Cont.d)

DOME LAMPS ON REAR RIGHT AND LEFT POSTS INOPERATIVE (BY PUSHBUTTON ACTUATION ON CENTER DOME LAMP)	TEST D

TEST STEPS	RESULTS	REMEDY
D5 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2 of connector G179	OK ▶ ~~OK~~ ▶	Carry-out step D6 Repair wiring between pin 3 of dome lamp F35 and pin 2 of G179
D6 VOLTAGE CHECK - Check for presence of 12V between pin 2 of G16 and ground	OK ▶ ~~OK~~ ▶	Repair wiring between pin 2 of G16 and pins 4 and 8 of connectors G169 and G167 respectively Repair wiring between pin 2 of G16 and auxiliary fuse box G2 (RED-BLK wire)
D7 REAR LEFT DOME LAMP CHECK - Check that only left dome lamp F37 is inoperative	OK ▶ ~~OK~~ ▶	Carry-out step D8 Carry-out step D14
D8 TIMED LAMP CHECK - Check that, by opening either doors, the dome lamp on rear left post illuminates	OK ▶ ~~OK~~ ▶	Carry-out step D9 Carry-out step D11

(Cont.d)

DOME LAMPS ON REAR RIGHT AND LEFT POSTS INOPERATIVE (BY PUSHBUTTON ACTUATION ON CENTER DOME LAMP)	TEST D

TEST STEPS		RESULTS	REMEDY
D9	GROUNDING CHECK		
- Check for presence of 0V at pin 5 of connector **G179**		OK ▶	Carry-out **step D10**
		~~OK~~ ▶	Repair wiring between **pin 2 of G179 and pin 5 of G179**
D10	GROUNDING CHECK		
- Check for presence of 0V at pin 5 of connector **G171**		OK ▶	Repair wiring between **pin 5 of G171 and pin 3 of dome lamp F37**
		~~OK~~ ▶	Repair wiring between **pin 5 of G171 and pin 5 of G179**
D11	BULB CHECK		
- Check the bulb of dome lamp on rear left post for integrity		OK ▶	Carry-out **step D12**
		~~OK~~ ▶	Replace **bulb**
D12	VOLTAGE CHECK		
- Check for presence of 12V between pin 4 of connector **G169** and ground		OK ▶	Carry-out **step D13**
		~~OK~~ ▶	Repair wiring between **pin 4 of G169 and pin 2 of G16**

(Cont.d)

DOME LAMPS ON REAR RIGHT AND LEFT POSTS INOPERATIVE (BY PUSHBUTTON ACTUATION ON CENTER DOME LAMP)	TEST D

TEST STEPS	RESULTS	REMEDY
D13 VOLTAGE CHECK - Check for presence of 12V between pin 1 of **G193** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of G193 and pin 4 of dome lamp F37** Repair wiring between **pin 1 of G193 and pin 4 of G169**
D14 BULB CHECK - Check the bulb of dome lamp on rear right post **F36** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step D15** Replace **the bulb**
D15 TIMED LAMP CHECK - Check that, by opening either doors, the dome lamp on rear right post illuminates	OK ▶ ~~OK~~ ▶	Carry-out **step D16** Carry-out **step D17**
D16 GROUNDING CHECK - Check for presence of 0V at pin 2 of connector **G171**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of G171 and pin 10 of fuse box G1** Repair wiring between **pin 2 of G171 and pin 2 of G179**

(Cont.d)

DOME LAMPS ON REAR RIGHT AND LEFT POSTS INOPERATIVE (BY PUSHBUTTON ACTUATION ON CENTER DOME LAMP)	**TEST D**

TEST STEPS	RESULTS	REMEDY
D17 VOLTAGE CHECK - Check for presence of 12V between pin 8 of connector **G167** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D18** Repair wiring between **pin 8 of G167 and pin 2 of G16**
D18 VOLTAGE CHECK - Check for presence of 12V between pin 4 of dome lamp on rear right post **F36** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D19** Repair wiring between **pin 8 of G167 and pin 4 of dome lamp F36**
D19 GROUNDING CHECK - Check for presence of 0V at pin 8 of connector **G170**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 8 of G170 and pin 3 of dome lamp F36** Repair wiring between **pin 8 of G170 and pin 10 of fuse box G1**

End of test D

GLOVEBOX LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E1 FUSE CHECK - Check fuse **F21** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Replace **fuse F21**
E2 TIMED LAMPS CHECK - Check that, opening either door, both LH and RH lamps below instrument panel illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step E3** Carry-out **step E6**
E3 BULB CHECK - Check bulb of glovebox lamp **F9**	OK ▶ ~~OK~~ ▶	Carry-out **step E4** Replace **bulb**
E4 SWITCH CHECK - Check for proper operation of switch **H25** (open circuit with glovebox closed, closed circuit with glovebox open)	OK ▶ ~~OK~~ ▶	Carry-out **step E5** Replace **switch H25**

(Cont.d)

GLOVEBOX LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E5 CONTINUITY CHECK - Check for continuity between pin 30 of dome lamp relay I26 and glovebox illumination switch H25	OK ▶ ~~OK~~ ▶	Repair wiring between switch H25 and lamp F9 Repair or replace wires, as necessary
E6 CONTINUITY CHECK - Check for continuity between glovebox illumination lamp F9 and pin 2Q of fuse box G1	OK ▶ ~~OK~~ ▶	Carry-out step E7 Repair or replace wires, as necessary
E7 GROUNDING CHECK - Check for presence of 0V (zero) at pin 12E of fuse box G1	OK ▶ ~~OK~~ ▶	Repair wiring between pin 3Q of fuse box G1 and pin 30 of relay I26 Repair wiring between pin 12E of fuse box G1 and ground point G174

End of test E

MALFUNCTION OF TIMED LAMPS	TEST F

TEST STEPS	RESULTS	REMEDY
F1 FUSE CHECK		
- Check fuse **F6** in auxiliary fuse box **G2** for integrity	OK ▶	Carry-out **step F2**
	~~OK~~ ▶	Replace **fuse F6**
F2 ALL TIMED LAMPS INOPERATIVE CHECK		
- Check that none of the lamps comes on, opening either door	OK ▶	Replace **Alfa Romeo Control unit N22**
	~~OK~~ ▶	Carry-out **step F3**
F3 ONE OR MORE TIMED LAMPS INOPERATIVE CHECK		
- Check for failed illumination of dome lamp **F35**, of rear LH dome lamp **F37**, of fuse box illumination lamp **F7** and of RH and LH feet illumination lamps **F23** and **F24**	OK ▶	Carry-out **step F4**
	~~OK~~ ▶	Carry-out **step F7**
F4 RELAY CHECK		
- Check relay **I26** for proper operation	OK ▶	Carry-out **step F5**
	~~OK~~ ▶	Replace **relay I26**

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST F

TEST STEPS	RESULTS	REMEDY
F5 VOLTAGE CHECK - Check for presence of 12V between pin 86 of dome lamp relay **I26** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step F6** Repair wiring between **pin 86 of relay I26 and fuse box G2 (RED wire)**
F6 GROUNDING CHECK - Check for presence of 0V (zero) at pin 85 of dome lamp relay **I26**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 30 of relay I26 and pin 3A of fuse box G1** Repair wiring between **pin 85 of relay I26 and pin 9A of control unit N22**
F7 REAR RH DOME CHECK - Check that rear RH dome lamp only fails to illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step F8** Carry-out **step F12**
F8 BULB CHECK - Check for integrity of rear RH dome lamp bulb	OK ▶ ~~OK~~ ▶	Carry-out **step F9** Replace **bulb**

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST F

TEST STEPS	RESULTS	REMEDY
F9 VOLTAGE CHECK - Check for presence of 12V between pin 86 of dome lamp relay **I26** in fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step F10** Repair wiring between **fuse box G2, pin 1 of connector G16 and pin 3E of fuse box G1**
F10 GROUNDING CHECK - Check for presence of 0V (zero) at pin 85 of relay **I26** in fuse box **G1**	OK ▶ ~~OK~~ ▶	Carry-out **step F11** Repair wiring between **pin 10D of fuse box G1 and pin 8A of control unit N22**
F11 CONTINUITY CHECK - Check for continuity between: • pin 10 of fuse box **G1** and pin 8 of connector **G170** • pin 8 of connector **G170** and pin 3 of rear right dome lamp **F36** • pin 2 of connector **G16** and pin 8 of connector **G167** • pin 8 of connector **G167** and pin 4 of rear right dome lamp **F36**	OK ▶ ~~OK~~ ▶	Replace **relay I26 of fuse box G1** Repair or replace **wires, as necessary**

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST F

TEST STEPS	RESULTS	REMEDY
F12 CHECK ON CENTER DOME LAMP AND RELEVANT SPOT LAMP INOPERATIVE		
- Check that neither center dome lamp nor spot lamp illuminate	OK ▶	Carry-out **step F13**
	~~OK~~ ▶	Carry-out **step F16**
F13 GROUNDING CHECK		
- Check for presence of 0V at pin 4 of connector **G179**	OK ▶	Carry-out **step F14**
	~~OK~~ ▶	Repair wiring between **pin 4 of G179 and pin 4 of G171**
F14 GROUNDING CHECK		
- Check for presence of 0V at pin 6 of center dome lamp **F35**	OK ▶	Carry-out **step F15**
	~~OK~~ ▶	Repair wiring between **pin 6 of dome lamp F35 and pin 4 of G179**
F15 VOLTAGE CHECK		
- Check for presence of 12V between pin 6 of **G179** and ground	OK ▶	Repair wiring between **pin 6 of G179 and pin 5 of dome lamp F35**
	~~OK~~ ▶	Repair wiring between **pin 6 of G179 and pin 6 of G171**

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST F

TEST STEPS	RESULTS	REMEDY
F16 CENTER DOME LAMP CHECK - Check that only center dome lamp **F35** fails to illuminate	OK ▶ ~~OK~~ ▶	Replace **bulb of center dome lamp** Carry-out **step F17**
F17 CENTER DOME LAMP SPOT LAMP CHECK - Check that only center dome lamp spot lamp fails to illuminate	OK ▶ ~~OK~~ ▶	Replace **bulb of spot lamp** Carry-out **step F18**
F18 FUSE BOX ILLUMINATION CHECK - Check that fuse box lamp **F7** only fails to illuminate	OK ▶ ~~OK~~ ▶	Carry-out **step F19** Carry-out **step F20**
F19 BULB CHECK - Check fuse box lamp **F7** for integrity of bulb	OK ▶ ~~OK~~ ▶	Repair wiring between **lamp F7 and pin 2Q of fuse box G1 (RED-BLK wire), and between lamp F7 and pin 4 of connector G171 (PPL-WHT wire)** Repair **bulb of lamp F7**

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST F

TEST STEPS		RESULTS	REMEDY
F20	BULB CHECK		
- Check that rear LH dome lamp only fails to illuminate		OK ▶	Carry-out **step F21**
		~~OK~~ ▶	Carry-out **step F22**
F21	LH FEET ILLUMINATION LAMP CHECK		
- Check for integrity of bulb of dome lamp **F37**		OK ▶	Repair wiring between **pin 3 of dome lamp F37, pin 5 of connector G171, and pin 87 of relay I26**
		~~OK~~ ▶	Replace **bulb of RH rear dome F37**
F22	BULB CHECK		
- Check that the LH feet illumination lamp interior left side **F24** only fails to illuminate		OK ▶	Carry-out **step F23**
		~~OK~~ ▶	Carry-out **step F24**
F23	BULB CHECK		
- Check for integrity of bulb of LH feet illumination lamp interior left side **F24**		OK ▶	Repair wiring between **lamp interior left side F24 and pin 6 of G171 (RED-BLK wire)**
		~~OK~~ ▶	Replace **bulb of lamp F24**

(Cont.d)

MALFUNCTION OF TIMED LAMPS	TEST F

TEST STEPS		RESULTS	REMEDY
F24	BULB CHECK		
- Check for integrity of bulb of RH feet illumination lamp interior right side **F23**		OK ▶	Repair wiring between lamp **F23** and pin **87a** of relay **I26** (PPL-WHT wire) and between lamp **F23** and glovebox illumination lamp **F9** (RED-BLK wire)
		~~OK~~ ▶	Replace bulb of lamp **F23**

End of test F

CONTROLS LIGHTING INOPERATIVE (POSITION LAMPS ON)	TEST G

TEST STEPS	RESULTS	REMEDY
G1 ALL LAMPS INOPERATIVE CHECK - Check that, with position lamps switched on, the following lamps do not illuminate: controls illumination of dome lamp **F35**, rear RH and LH post lamp	OK ▶ ~~OK~~ ▶	Failure of position lamps circuit; refer to the applicable troubleshooting procedure Carry-out step G2
G2 DOME LAMP CHECK - Check that only the dome lamp **F35** controls lighting fails to illuminate	OK ▶ ~~OK~~ ▶	Carry-out step G3 Carry-out step G4
G3 BULB CHECK - Check for integrity of bulb of controls illuminaton of dome lamp **F35**	OK ▶ ~~OK~~ ▶	Repair wiring between pin 1 of dome lamp F35 and pin 4D of fuse box G1 through pin 3 of connectors G171 and G179 Replace bulb of dome lamp F35
G4 REAR LH POST DOME LAMP CHECK - Check that the dome lamp control switch on left rear post **F37** only fails to illuminate	OK ▶ ~~OK~~ ▶	Carry-out step G5 Carry-out step G6

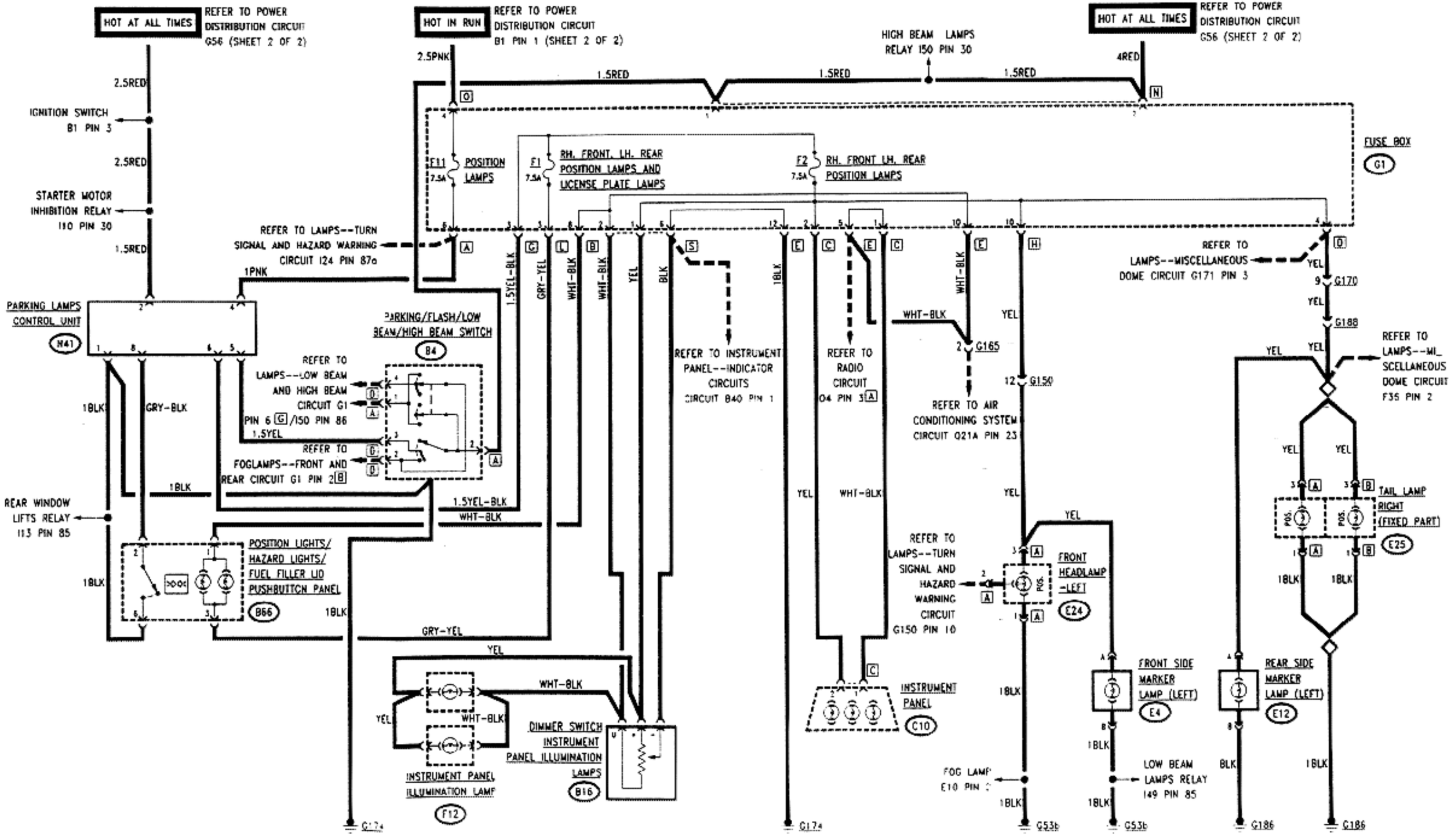
(Cont.d)

CONTROLS LIGHTING INOPERATIVE (POSITION LAMPS ON)	TEST G

TEST STEPS	RESULTS	REMEDY
G5 BULB CHECK - Check bulb of dome lamp control switch on left rear post **F37** controls lighting for integrity	OK ▶	Repair wiring between **pin 2 of LH post dome lamp F37 and left tail lamp unit E26**
	~~OK~~ ▶	Replace **bulb of dome lamp F37**
G6 BULB CHECK - Check bulb of dome lamp control switch on right rear post **F36** controls lighting for integrity	OK ▶	Repair wiring between **pin 2 of RH post dome lamp F36 and pin 2 of right tail lamp unit E28**
	~~OK~~ ▶	Replace **bulb of dome lamp F36**

End of test G

LAMPS - - POSITION, SIDE MARKER, LICENSE PLATE ILLUMINATION



GENERAL

The position, license and side marker lamps can be activated by the relevant button on the pushbutton panel **B66**. When the vehicle is running, activation is controlled by the multiple switch. When the ignition key is set to park position, the lamps can be activated by pressing the relevant button on the pushbutton panel **B66**.
When either switch is activated, simultaneous illumination of the four position lamps (two on the front and two on the rear), four side marker lamps (two on the front and two on the rear) and of the two license lamps is obtained. Furthermore, the instrument panel and pushbutton panel lighting will turn on as well as all different silk-screen printings of the vehicle; lighting of the instrument panel and pushbutton panel can be dimmed through a rehostat, to allow proper reading of instruments and controls regardless of the exterior lighting.
Rotation of the rehostat completely upwards will turn off the instrument panel lighting. The system is protected by three fuses in the fuse box **G1**, as follows:

- Fuse **F1** (7.5A) R.H. FRONT, L.H. REAR POSITION LAMPS and LICENSE PLATE LAMPS.
- Fuse **F2** (7.5A) R.H. FRONT L.H. REAR POSITION LAMPS.
- Fuse **F11** (7.5A) POSITION LAMPS.

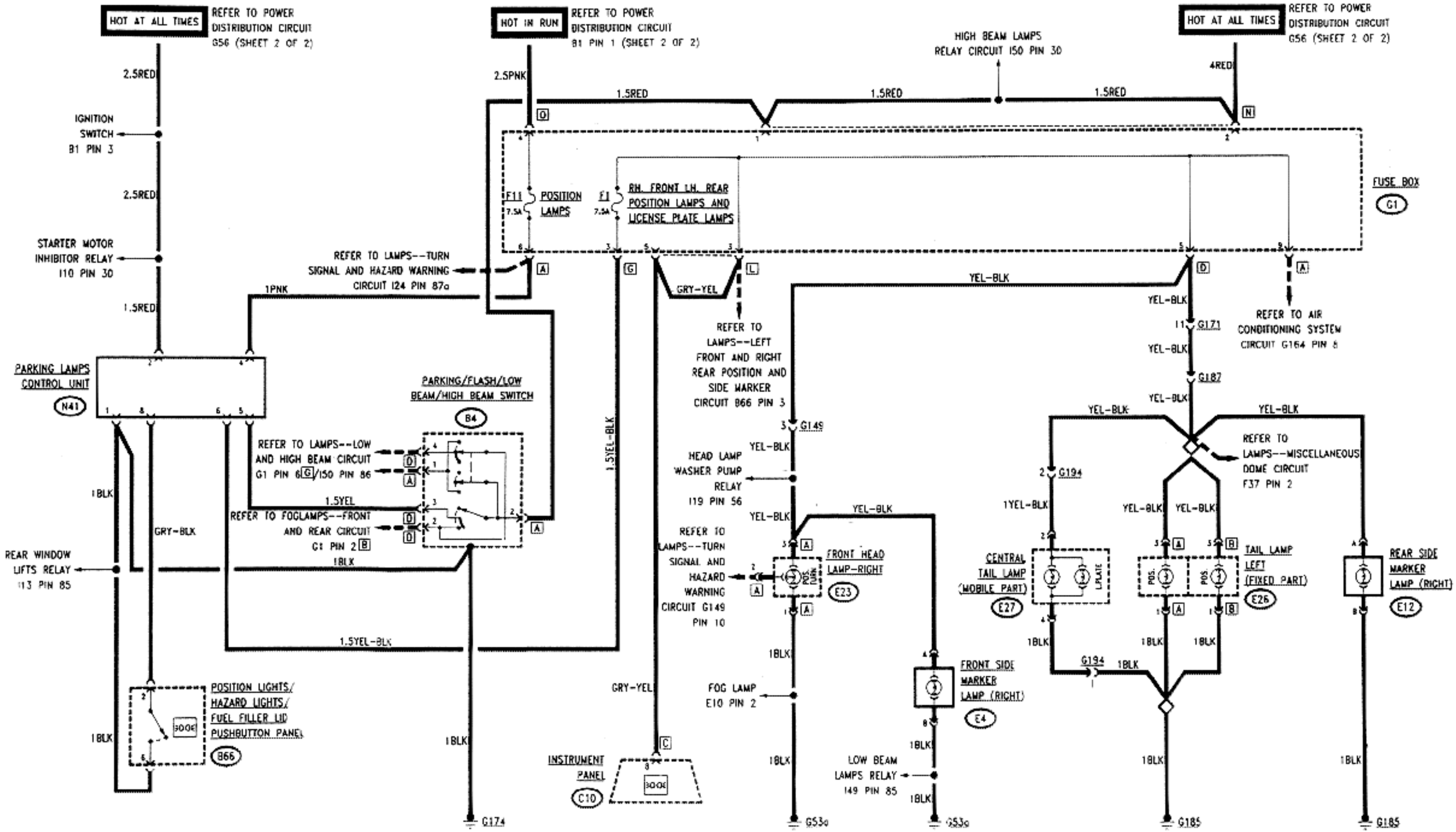
OPERATIONAL DESCRIPTION - LEFT FRONT AND RIGHT REAR POSITION AND SIDE MARKER LAMPS

With the ignition key set to "run" position, the battery power is supplied to the parking lamps control unit **N41** through the fuse **F11** in fuse box **G1**; furthermore, 12V are applied to the multiple switch **B4** after "bridging" on fuse box **G1**.
Control unit **N41** activates illumination of the position lamps (12V at pin 6) when either the multiple switch or the relevant pushbutton on the pushbutton panel is actuated. Electric power output from pin 6 of control unit **N41** is applied to fuses **F1** and **F2** of fuse box **G1**. Fuse **F1** protects the pushbutton panel lighting power supply lines. Fuse **F2** protects the power supply lines of position lamps in the front head lamp left **E24** and tail lamp right (fixed part) **E25**, of front side marker lamp **E4** and rear side marker lamp **E12** and of instrument panel **C10** lighting.
The power supply line protected by fuse **F2** is also connected to dimmer switch **B16** dimming the instrument panel illumination lamp **F12** and pushbutton panel **B66**. Instrument panel illumination lamp **F12** and pushbutton panel **B66** can be turned off by rotating dimmer switch **B16** completely upwards.

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT										
	F2 FUSE	F11 FUSE	F12 INSTR. PANEL LIGHTING	E4 L.H. FRONT SIDE MARKER	E12 R.H. REAR SIDE MARKER	E24 L.H. HEAD LAMP UNIT	E25 L.H. TAIL LAMP UNIT	B4 MULTIPLE SWITCH	B16 DIMMER SWITCH	B66 PUSHBUTTON PANEL LIGHT	N41 CONTROL UNIT
ALL LAMPS INOPERATIVE WITH CONTROL SWITCH ACTUATED		•									•
LEFT FRONT POSITION AND SIDE MARKER LAMPS INOPERATIVE	•			•		•					
RIGHT REAR SIDE MARKER LAMP INOPERATIVE	•				•		•				
PUSHBUTTON PANEL LIGHTING INOPERATIVE			•					•		•	•
INSTRUMENT PANEL LIGHTING INOPERATIVE			•						•		

NOTE: Before carrying-out any troubleshooting check the integrity of warning lamp on instrument panel by pressing the test button.



OPERATIONAL DESCRIPTION - RIGHT FRONT AND LEFT REAR POSITION LAMPS AND SIDE MARKER LAMPS, LICENSE PLATE LAMP

With the ignition key set to "run" position, the battery power is supplied to the parking lamps control unit **N41** through the fuse **F11** in fuse box **G1**; furthermore, 12V are applied to the multiple switch **B4** after "bridging" on fuse box **G1**.

Control unit **N41** activates illumination of the position lamps (12V at pin 6) when either the multiple switch or the relevant pushbutton on the pushbutton panel is actuated. Electric power output from pin 6 of control unit **N41** is applied to fuse **F1** of fuse box **G1**.

Fuse **F1** protects the power supply lines of position lamps in the front head lamp right **E23** and tail lamp left **E26**, of license plate lamp in central tail lamp **E27**, and of front side marker lamp **E4** and rear side marker lamp **E12**.

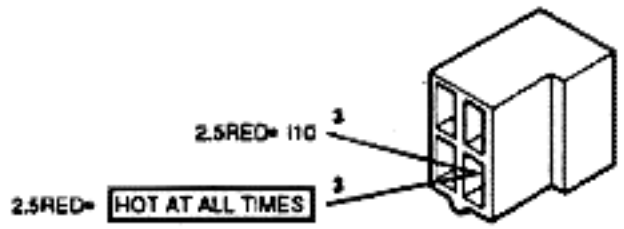
The power supply line protected by fuse **F1** is also connected to a circuit that monitors the illumination of position lamps indicator on the instrument panel **C10** and serigraphs on the automatic air conditioning controls.

TROUBLESHOOTING TABLE

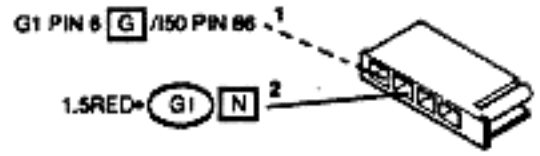
FAULT TYPE	FAILED COMPONENT						
	FUSE F1	R.H. FRONT SIDE MARKER E4	L.H. REAR SIDE MARKER E12	R.H. HEAD LAMP UNIT E23	L.H. TAIL LAMP UNIT E26	LICENSE LAMP E27	INST. PANEL INDICATOR C10
RIGHT FRONT POSITION AND SIDE MARKER LAMPS INOPERATIVE	●	●		●			
LEFT REAR POSITION AND SIDE MARKER LAMPS, AND LICENSE PLATE LAMP INOPERATIVE	●		●		●	●	
POSITION LAMPS INDICATOR ON INSTRUMENT PANEL INOPERATIVE	●						●

NOTE: Before carrying-out any troubleshooting check the integrity of warning lamp on instrument panel by pressing the test button.

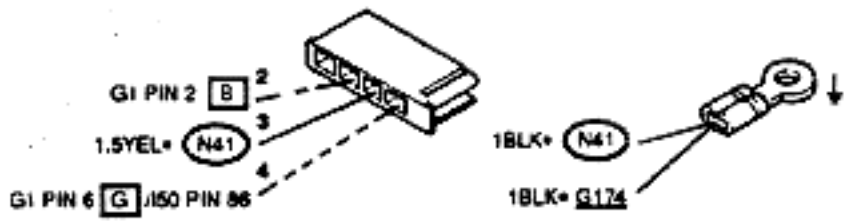
Ignition/switch	B1



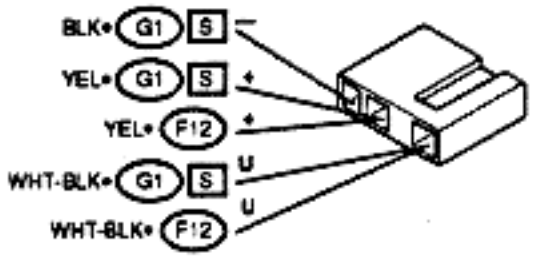
Parking/Flash/Low beam/High beam switch	B4 A



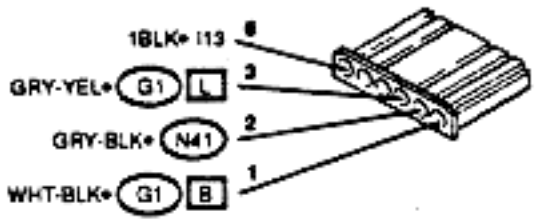
Parking/Flash/Low beam/High beam switch	B4 D



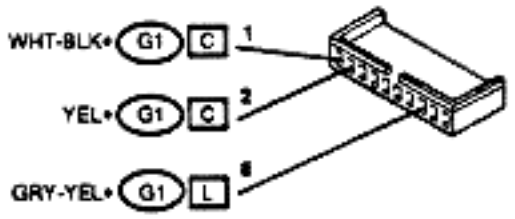
Dimmer switch, instrument panel illumination lamps	B16



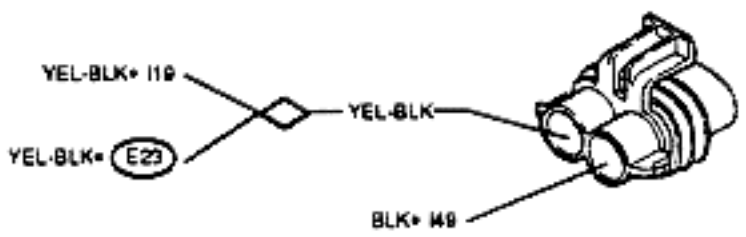
Position lights/Hazard lights/Fuel filler lid pushbutton panel	B66



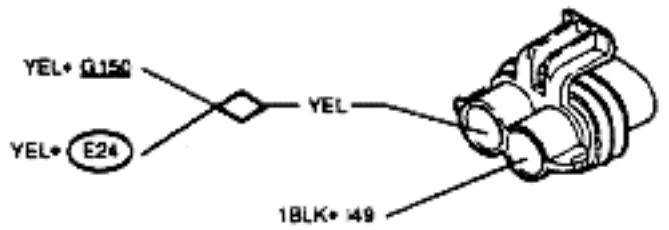
Instrument panel	C10 C



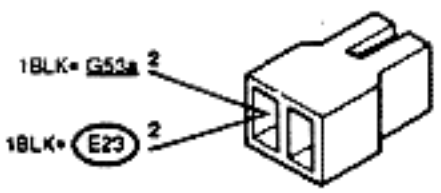
Front side marker lamp (right)	E4



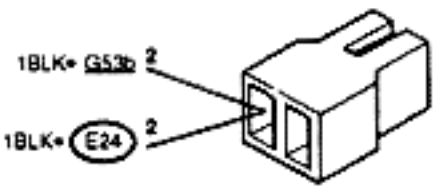
Front side marker lamp (left)	E4



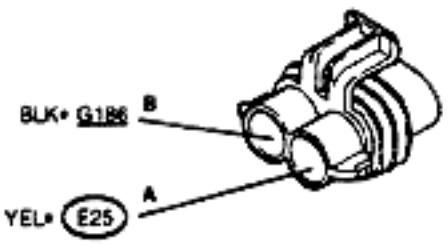
Right front fog lamp	E10



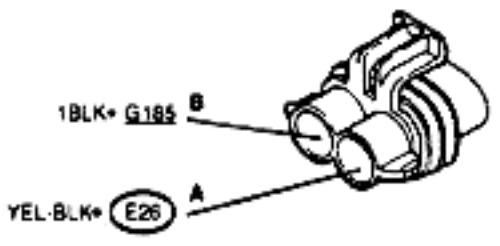
Left front fog lamp	E10



Rear side marker lamp (right)	E12



Rear side marker lamp (left)	E12



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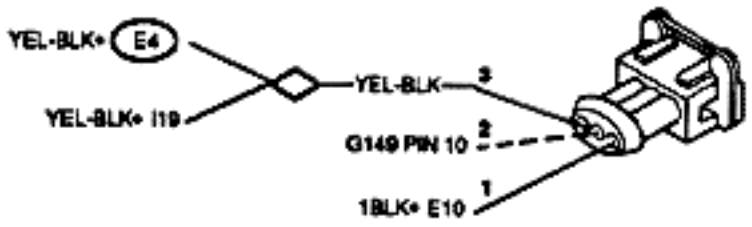
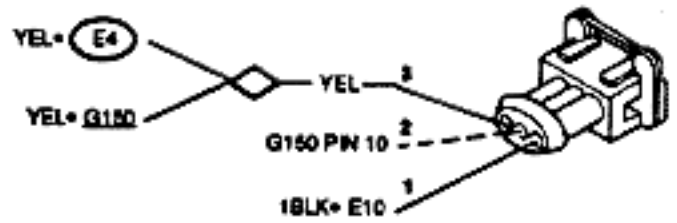
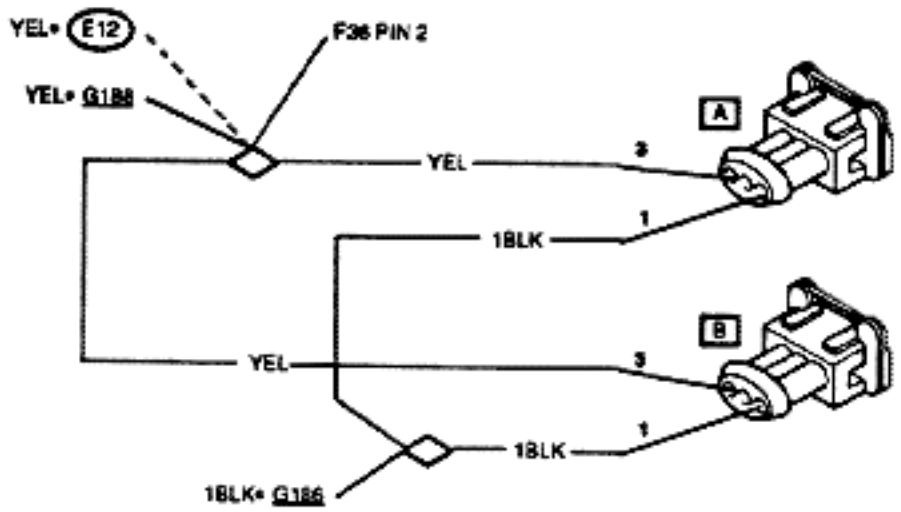
Front head lamp - right — E23 A



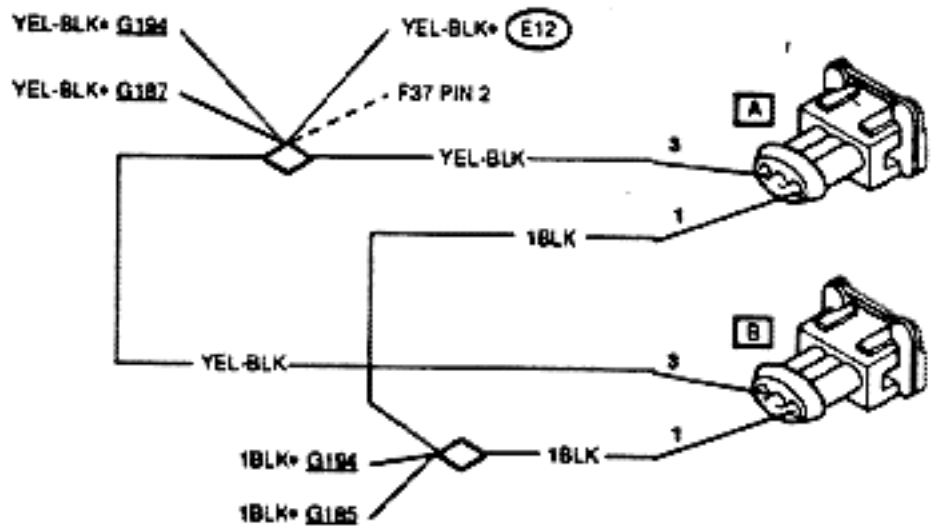
Front head lamp - left — E24 A



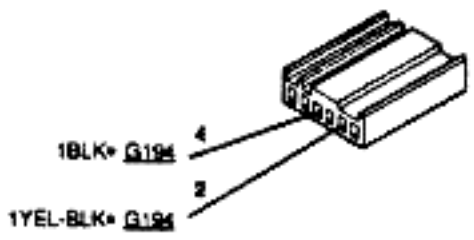
Tail lamp, right (fixed part) — E25



Tail lamp, left (fixed part) — E26



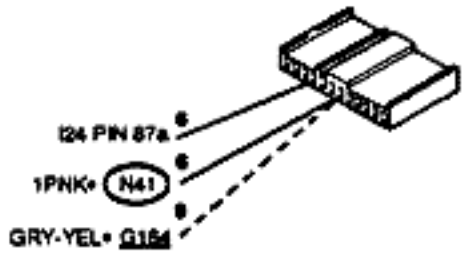
Central tail lamps (mobile) — E27



Instrument panel illumination lamp — F12

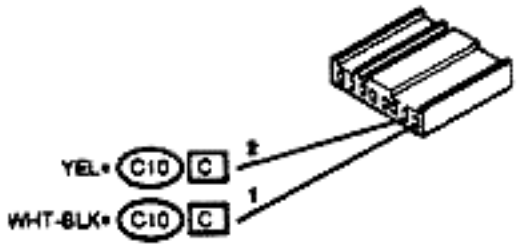
(Cont.d)

Fuse box	G1 A



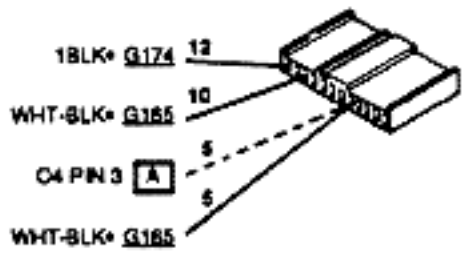
Fuse box	G1 B

Fuse box	G1 C

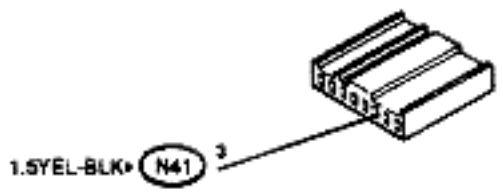


Fuse box	G1 D

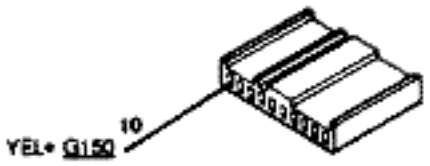
Fuse box	G1 E



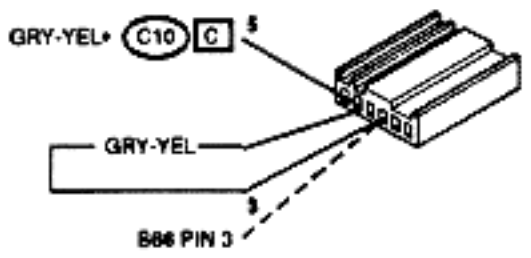
Fuse box	G1 G



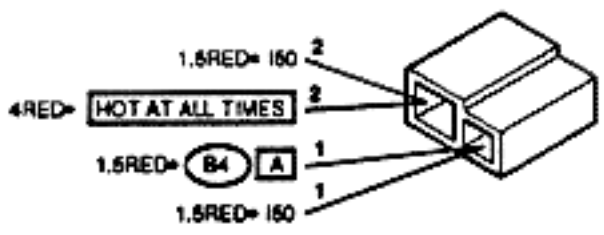
Fuse box	G1 H



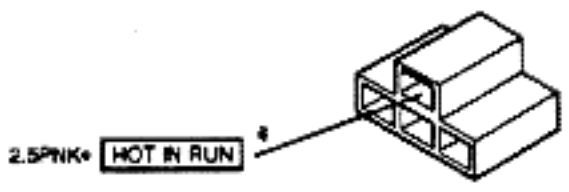
Fuse box	G1 L



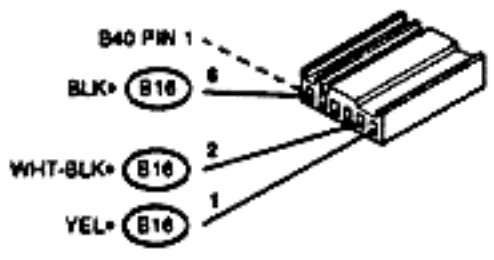
Fuse box	G1 N



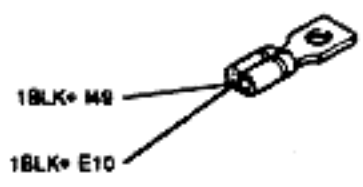
Fuse box	G1 O



Fuse box	G1 S

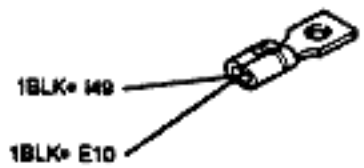


Engine compartment right side ground connection	G53a

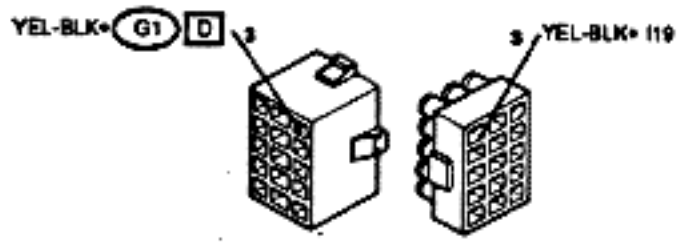


(Cont.d)

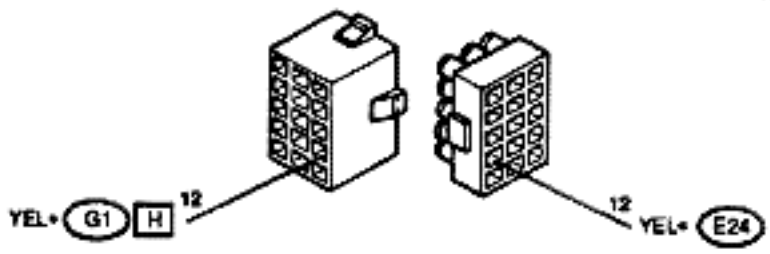
Engine compartment left side ground connection	G53b



Connector, circuit board to engine compartment right side wiring	G149

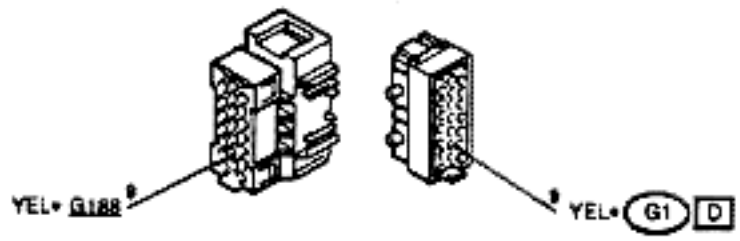


Connector, circuit board to engine compartment left side wiring	G150

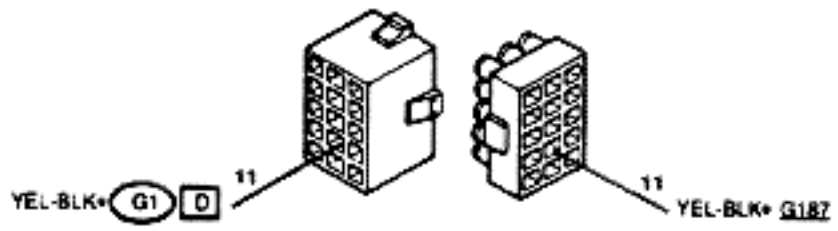


Connector, door utilities to air conditioning wiring	G165

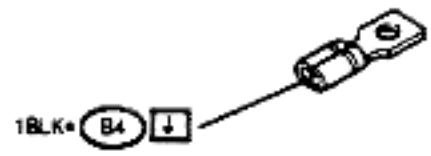
Connector, circuit board to right rear wiring	G170



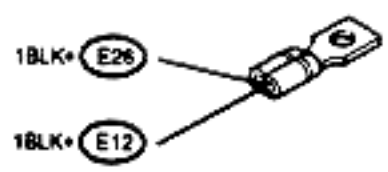
Connector, circuit board to left rear wiring	G171



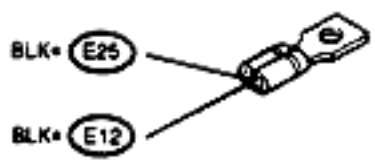
Steering wheel column support ground	G174



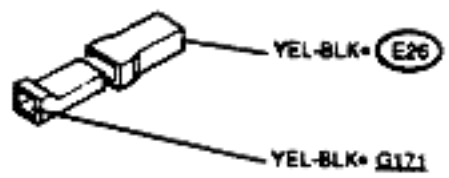
Trunk left side ground	G185



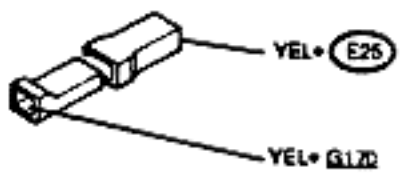
Trunk right side ground	G186



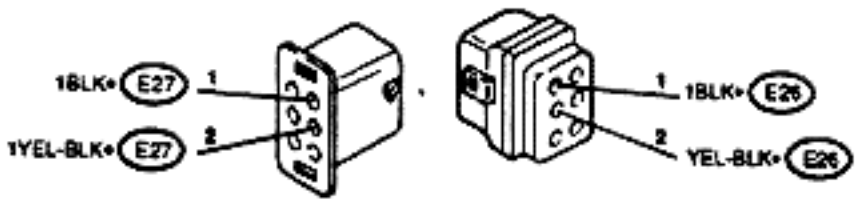
Splice in left rear wiring	G187



Splice in right rear wiring	G188

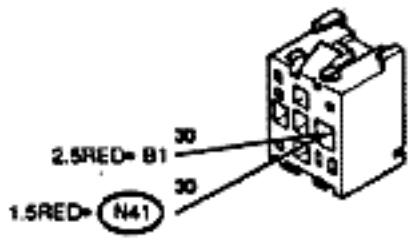


Connector, left rear wiring to rear central lamp wiring	G194

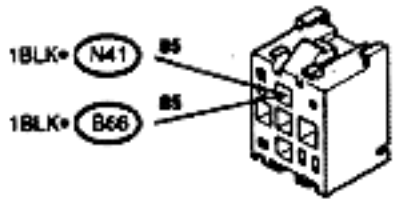


(Cont.d)

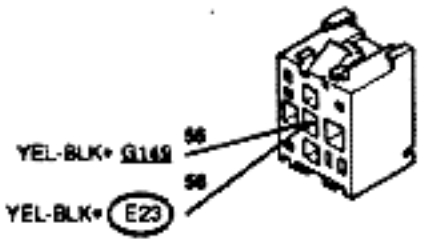
Starter motor inhibitor relay	I10



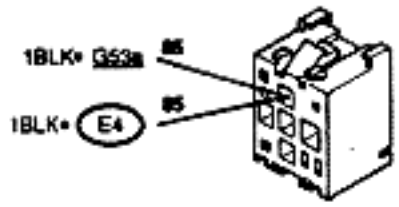
Rear window lifts relay	I13



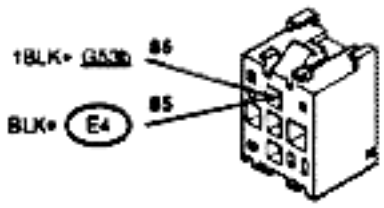
Head lamps washer pump relay	I19



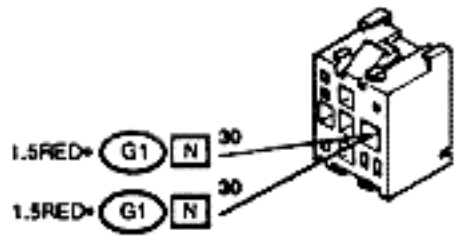
Low beam lamps relay (right)	I49



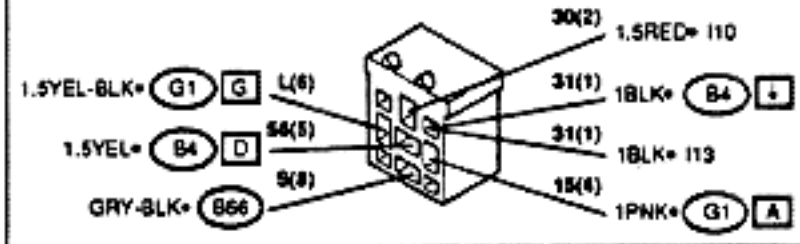
Low beam lamps relay (left)	I49

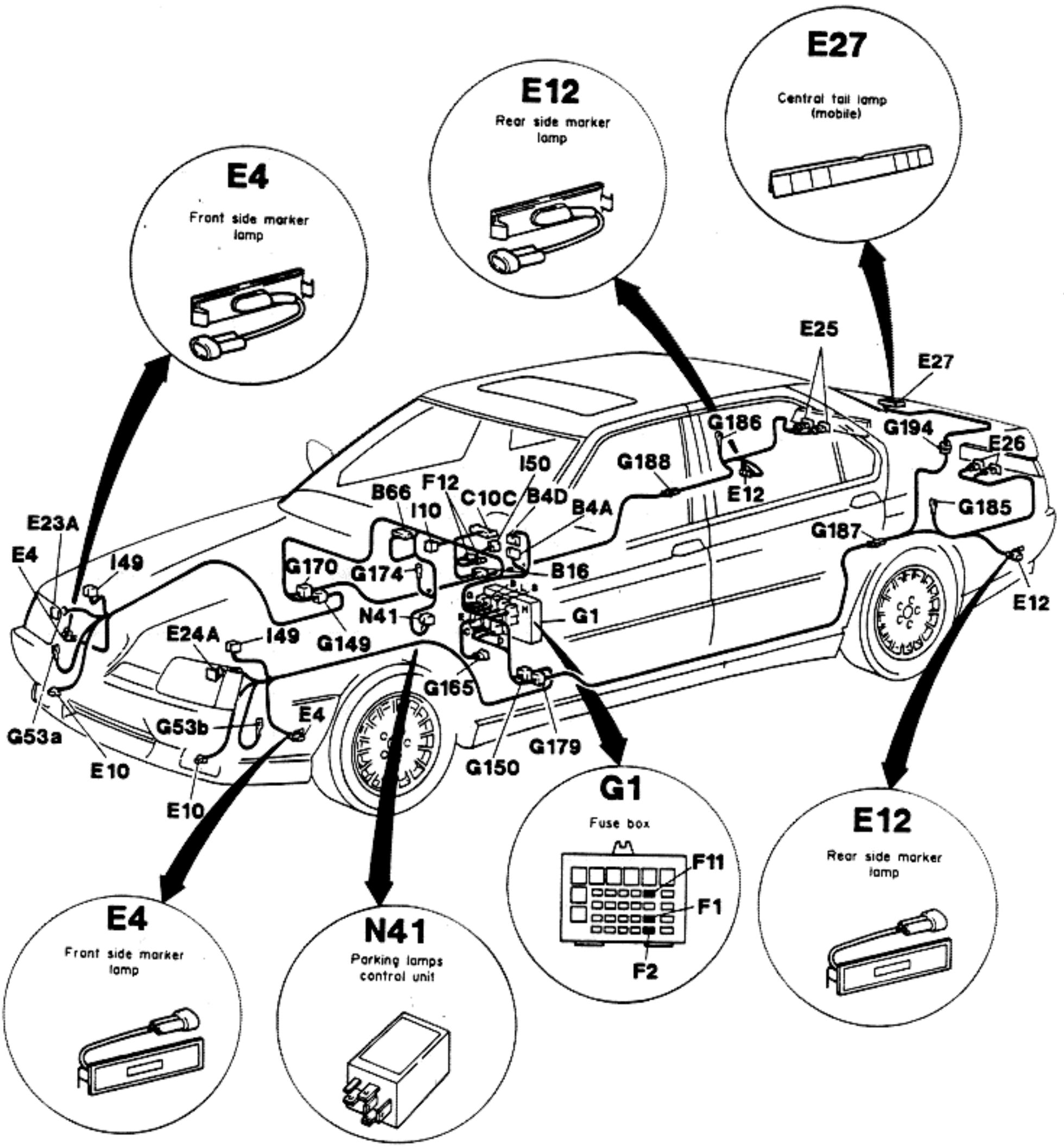


High beam lamps relay	I50



Parking lamps control unit	N41





ALL LAMPS INOPERATIVE WITH CONTROL SWITCH ACTUATED	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F11** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F11**
A2 PUSHBUTTON PANEL CONTROL SWITCH CHECK - With the vehicle stopped, check if position lamps can be turned on by means of button on pushbutton panel **B66**	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Carry-out **step A6**
A3 VOLTAGE CHECK - Check for presence of 12V between pin 2A of multiple switch **B4** and ground	OK ▶ ~~OK~~ ▶	Carry out **step A5** Carry out **step A4**
A4 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2N, pin 1N of G1 and pin 2A of multiple switch B4** **Failure of power distribution circuit refer to the relevant circuit of sheet 2 of 2**

(Cont.d)

ALL LAMPS INOPERATIVE WITH CONTROL SWITCH ACTUATED	TEST A

TEST STEPS	RESULTS	REMEDY
A5 MULTIPLE SWITCH CHECK - With multiple switch **B4** activated to parking light position, check for presence of 12V between pin 3D and ground	OK ▶ OK ▶	Repair wiring between **pin 3D of multiple switch B4 and pin 5 of control unit N41** Replace **multiple switch B4**
A6 PUSHBUTTON PANEL CONTROL SWITCH CHECK - With the ignition switch set to "run" check for presence of 12V between pin 4 of parking lamps control unit N41 and ground	OK ▶ OK ▶	Carry-out **step A8** Carry out **step A7**
A7 VOLTAGE CHECK - With the ignition switch set to "run" check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶ OK ▶	Repair wiring between **pin 4 of control unit N41 and pin 6A of fuse box G1** Failure **of power distribution circuit refer to the relevant circuit of sheet 2 of 2**

(Cont.d)

ALL LAMPS INOPERATIVE WITH CONTROL SWITCH ACTUATED	TEST A

TEST STEPS	RESULTS	REMEDY
A8 VOLTAGE CHECK		
- Check for presence of 12V between pin 6 of parking lamps control unit **N41** and ground	OK ▶	Repair wiring between **pin 3G of fuse box G1 and pin 6 of control unit N41**
	OK ▶	Carry out **step A9**
A9 CONTROL UNIT CHECK		
- Check for presence of 12V between pin 2 of control unit N41 and ground	OK ▶	Replace **control unit N41**
	OK ▶	Failure **of power distribution circuit refer to the relevant circuit of sheet 2 of 2**

End of test A

LEFT FRONT POSITION AND SIDE MARKER LAMPS INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
NOTES: - In case the failure affects only one of the four position or side marker lamps, or the license plate lamp only, check integrity of the affected lamp and/or check for continuity of the related connecting wires and/or the ground connection. - In case the failure simultaneously affects the left front and right rear position lamps, left front and right rear side marker lamps, instrument panel lighting, position lamps indicator on instrument panel and pushbutton panel lighting, replace fuse **F2** in fuse box **G1**.		
B1 CONTINUITY CHECK - Check for continuity between pin 10H of fuse box **G1** and pin 12 of connector **G150**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 12 of connector G150 and pin 3A of head lamp E24** Repair wiring between **pin 12 of connector G150 and pin 10H of fuse box G1**

End of test B

RIGHT FRONT POSITION AND SIDE MARKER LAMPS INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
NOTES: - In case the failure affects only one of the four position or side marker lamps, or the license plate lamp only, check integrity of the affected lamp and/or check for continuity of the related connecting wires and/or the ground connection. - In case the failure simultaneously affects the right front and left rear position lamps, right front and left rear side marker lamps, license plate lamp and position lamps indicator on instrument panel replace fuse **F1** in fuse box **G1**.		
C1 CONTINUITY CHECK - Check for continuity between pin 5D of fuse box G1 and pin 3 of connector **G149**	OK ▶	Repair wiring between **pin 3 of connector G149 and pin 3A of head lamp E23**
	~~OK~~ ▶	Repair wiring between **pin 3 of connector G149 and pin 5D of fuse box G1**

End of test C

LEFT REAR POSITION AND SIDE MARKER LAMPS, AND LICENSE PLATE LAMP INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY

NOTES: - In case the failure affects only one of the four position or side marker lamps, or the license plate lamp only, check integrity of the affected lamp and/or check for continuity of the related connecting wires and/or the ground connection.

- In case the failure simultaneously affects the right front and left rear position lamps, right front and left rear side marker lamps, license plate lamp and position lamps indicator on instrument panel, replace fuse **F1** in fuse box **G1**.

- Central tail lamp **E27**, tail lamp right **E25**, tail lamp left **E26**, instrument panel illumination lamp **F12** and pushbutton panel **B66** include each two bulbs connected in parallel. Bulbs replacement should be necessary in case only one of the two bulbs does not switch on.

D1	CONTINUITY CHECK		
- Check for continuity between pin 5D of fuse box **G1** and pin 11 of connector **G171**		OK ▶	Repair wiring between **pin 11 of connector G171 and connector G187 (YEL-BLK wire)**
		OK ▶	Repair wiring between **pin 11 of connector G171 and pin 5D of fuse box G1**

End of test D

RIGHT REAR SIDE MARKER LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY

NOTES: - In case the failure affects only one of the four position or side marker lamps, or the license plate lamp only check integrity of the affected lamp and/or check for continuity of the related connecting wires and/or the ground connection.

- In case the failure simultaneously affects the left front and right rear position lamps, left front and right rear side marker lamps, instrument panel, lighting position lamps indicator on instrument panel and pushbutton panel, replace fuse **F2** in fuse box **G1**.

- Central tail lamp **E27**, tail lamp right **E25**, left tail lamp unit **E26**, instrument panel illumination lamp **F12** and pushbutton panel **B66** include each two bulbs connected in parallel. Bulbs replacement should be necessary in case only one of the two bulbs does not switch on.

E1	CONTINUITY CHECK		
- Check for continuity between pin 4D of fuse box **G1**, pin 9 of connector **G170**, and connector **G188**		OK ▶	Repair wiring **towards ground point G186**
		~~OK~~ ▶	Repair or replace **wires, as necessary**

End of test E

POSITION LAMPS INDICATOR ON INSTRUMENT PANEL INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY

NOTES: - Before carrying-out any troubleshooting, check the integrity of warning lamp on instrument panel by pressing the test button.

- In case the failure simultaneously affects the right front and left rear position lamps, right front and left rear side marker lamps, license plate lamp and position lamps indicator on instrument panel, replace fuse **F1** in fuse box **G1**.

F1	VOLTAGE CHECK		
- Check for presence of 12V between pin 8C of instrument panel **C10** and ground		OK ▶	Replace **Instrument panel C10**
		~~OK~~ ▶	Repair wiring between **pin 8C of instrument panel C10, pin 5L and pin 3L of fuse box G1**

End of test F

PUSHBUTTON PANEL LIGHTING INOPERATIVE	TEST G

TEST STEPS	RESULTS	REMEDY
NOTE: Lighting of pushbutton panel **B66** includes two bulbs connected in parallel. In case of uneven lighting of pushbutton panel, it is necessary to replace only the burned out bulb.		
G1 INSTRUMENT PANEL LIGHTING CHECK - Check illumination of instrument panel and lamp **F12**.	OK ▶ ~~OK~~ ▶	Carry-out **step G2** Carry out **TEST H**
G2 VOLTAGE CHECK - Check for presence of 12V between pin 3 of pushbutton panel **B66** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step G3** Repair wiring between **pin 3 of pushbutton panel B66 and pin 3L of fuse box G1**
.**G3** REHOSTAT OUTPUT CHECK - Check for presence at pin 1 of pushbutton panel of a voltage depending on setting of dimmer switch **B16**	OK ▶ ~~OK~~ ▶	Replace **pushbutton panel bulbs** Repair wiring between **pin 1 of pushbutton panel B66 and pins 8B and 2S of fuse box G1**

End of test G

INSTRUMENT PANEL LIGHTING INOPERATIVE	TEST H

TEST STEPS	RESULTS	REMEDY
NOTE: Lighting of instrument panel includes eight bulbs connected in parallel. In case of uneven lighting of instrument panel, it is necessary to replace only the burned out lamp(s).		
H1 PUSHBUTTON PANEL LIGHTING CHECK - Check illumination of pushbutton panel **B66**	OK ▶ ~~OK~~ ▶	Carry-out **step H4** Carry out **step H2**
H2 VOLTAGE CHECK - Check for presence of 12V between pin "+" of dimmer switch **B16** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step H3** Replace wiring between **pin "+" of B16 and pin 1S of G1**
H3 GROUNDING CHECK - Check for presence of 0V at pin "-" of dimmer switch **B16**	OK ▶ ~~OK~~ ▶	Replace **dimmer switch B16** Replace wiring between **pin "-" of B16, pin 12E and ground point G174**

(Cont.d)

INSTRUMENT PANEL LIGHTING INOPERATIVE	TEST H

TEST STEPS	RESULTS	REMEDY
H4 VOLTAGE CHECK		
- Check for presence of 12V between pin 2C of instrument panel and ground	OK ▶	Carry-out **step H5**
	OK ▶	Repair wiring between **pin 2C of instrument panel and pin 2C of fuse box G1**
H5 DIMMER SWITCH OUTPUT CHECK		
- Check for presence at pin 1C of instrument panel **C10** of a voltage depending on setting of dimmer switch **B16**	OK ▶	Replace **instrument panel**
	OK ▶	Carry out **step H6**
H6 DIMMER SWITCH OUTPUT CHECK		
- Check for presence at pin 5E of fuse box **G1** of a voltage depending on setting of dimmer switch **B16**	OK ▶	Repair wiring between **pin 1C of fuse box G1 and pin 1C of instrument panel**
	OK ▶	Repair wiring between **pin 10E of fuse box G1, pin 2 of connector G165 and pin 5E of fuse box G1**

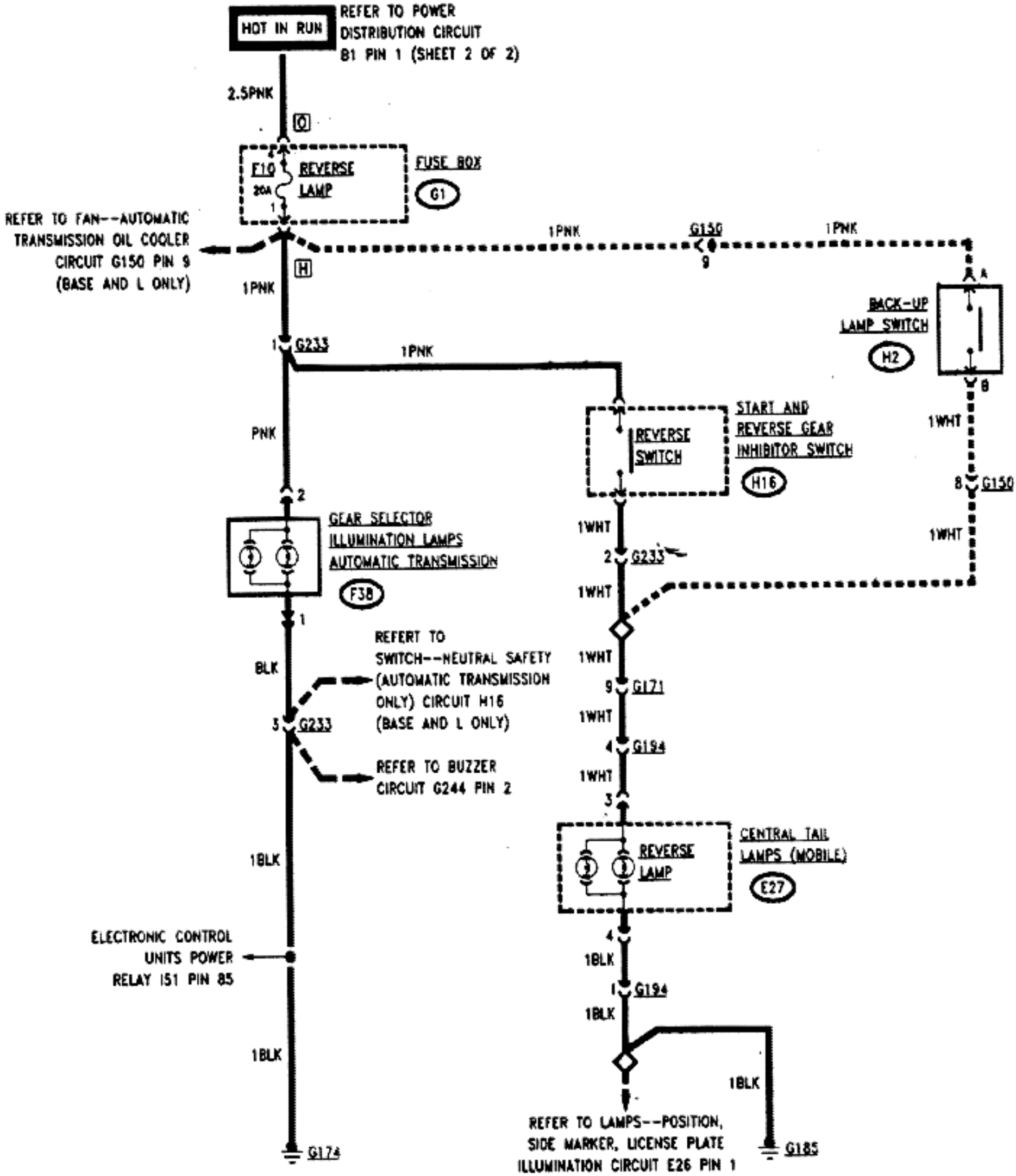
End of test H

TEST PUSHBUTTON AND RHEOSTAT SERIGRAPHS LIGHTING INOPERATIVE	TEST I

TEST STEPS		RESULTS	REMEDY
NOTE: Lighting of tet button and rheostat serigraphs includes two bulbs connected in parallel. In case of uneven lighting of serigraphs, it is necessary to replace only the burned out lamp.			
I1	PUSHBUTTON PANEL AND INSTRUMENT PANEL LIGHTING CHECK		
- Check operation of pushbutton panel **B66** and instrument panel lighting		OK ▶	Carry-out **step I2**
		~~OK~~ ▶	Replace **dimmer switch B16**
I2	RHEOSTAT OUTPUT CHECK		
- Check for presence at terminals of lamps **F12** (WHT-BLK and YEL wires) of a voltage depending on setting of dimmer switch **B16**		OK ▶	Replace **lamps F12**
		~~OK~~ ▶	Replace wiring **between lamps F12 (WHT-BLK and YEL wires) and dimmer switch B16 (pins + and V)**

End of test I

LAMPS - - REVERSE AND GEAR SELECTOR ILLUMINATION



GENERAL

To facilitate driving, the gear selector is illuminated by appropriate lighting. The vehicle is equipped with back-up lamps, located in the central rear lamp unit. The lights are turned on when reverse gear is selected.
This selection can be accomplished, either on cars equipped with manual or automatic transmission, by setting the lever to the appropriate position. Below the transmission (automatic or manual) is installed the back-up lamp switch that controls the illumination of the related lights of the central rear lamp unit.
The schematic diagram shows the gear selector illumination lamps that is installed on vehicles equipped with automatic transmission. The system is protected, in both cases, by fuse **F10** (20A) REVERSE LAMP in the fuse box **G1**.

FUNCTIONAL DESCRIPTION

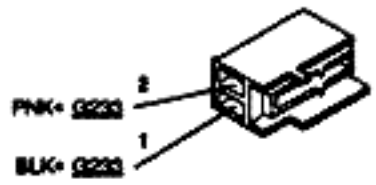
Battery voltage (12V), present when the ignition key is set to "run", through fuse **F10** of fuse box **G1**, lights up of gear selector illumination lamps automatic transmission **F38**.
The same voltage reaches the back-up lamp in central tail lamps **E27** lighting it up, by means of appropriate switches.
These switches are different dependently of gear installed on the vehicle.
On vehicles equipped with automatic transmission, the back-up lamp illuminates by the back-up lamp switch and switch **H16**.
On vehicles equipped with manual transmission, the back-up lamp illuminates by the back-up lamp switch **H2**.

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT			
	F10 FUSE	E27 BACK-UP LAMP	F38 BULB	H16 SWITCH -
GEAR SELECTOR ILLUMINATION INOPERATIVE (AUTOMATIC TRANSMISSION)	●		●	
BACK-UP LAMP INOPERATIVE	●	●		●

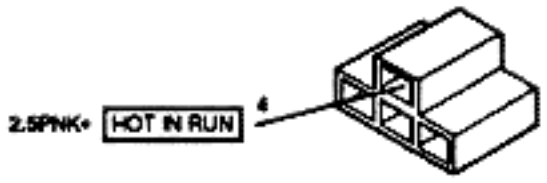
Central tail lamps (mobile)	E27

Gear selector illumination lamps automatic transmission	F38

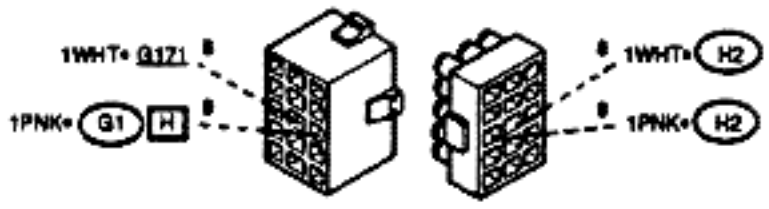


Fuse box	G1 H

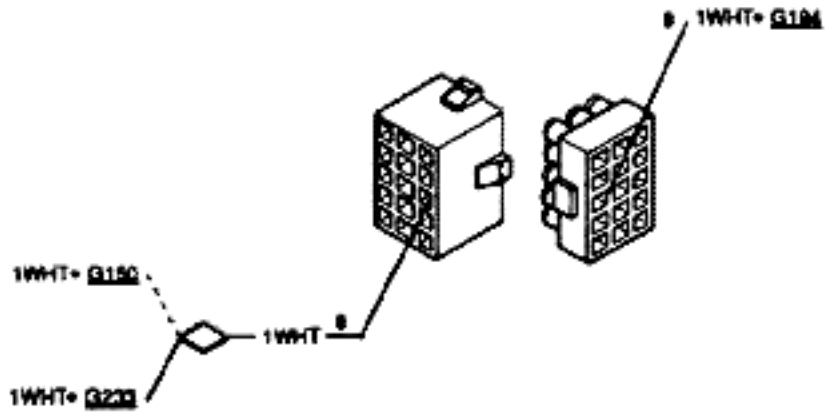
Fuse box	G1 O



Connector, circuit board to engine compartment left side wiring	G150



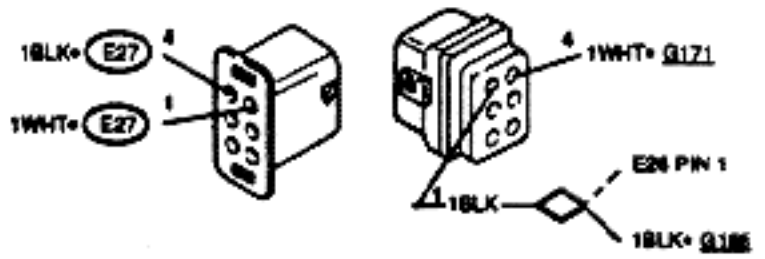
Connector, circuit board to left rear wiring	G171



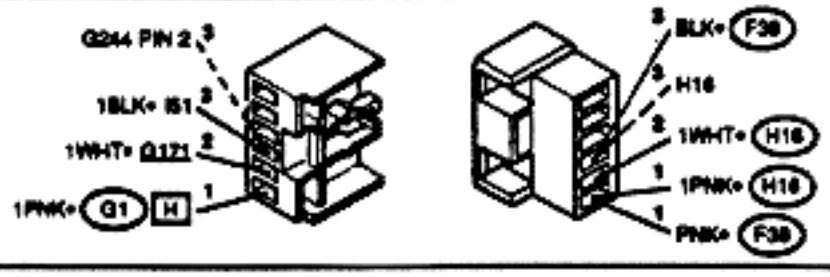
Steering wheel column support ground	G174

Trunk left side ground	G185

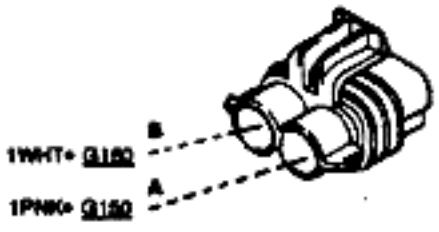
Connector, left rear wiring to rear central lamp wiring	G194



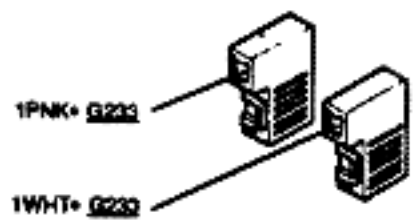
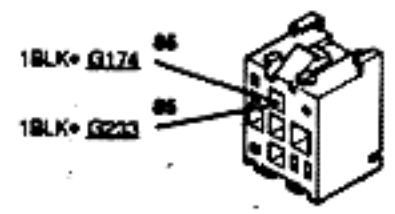
Connector, circuit board to automatic gear lever wiring	G233

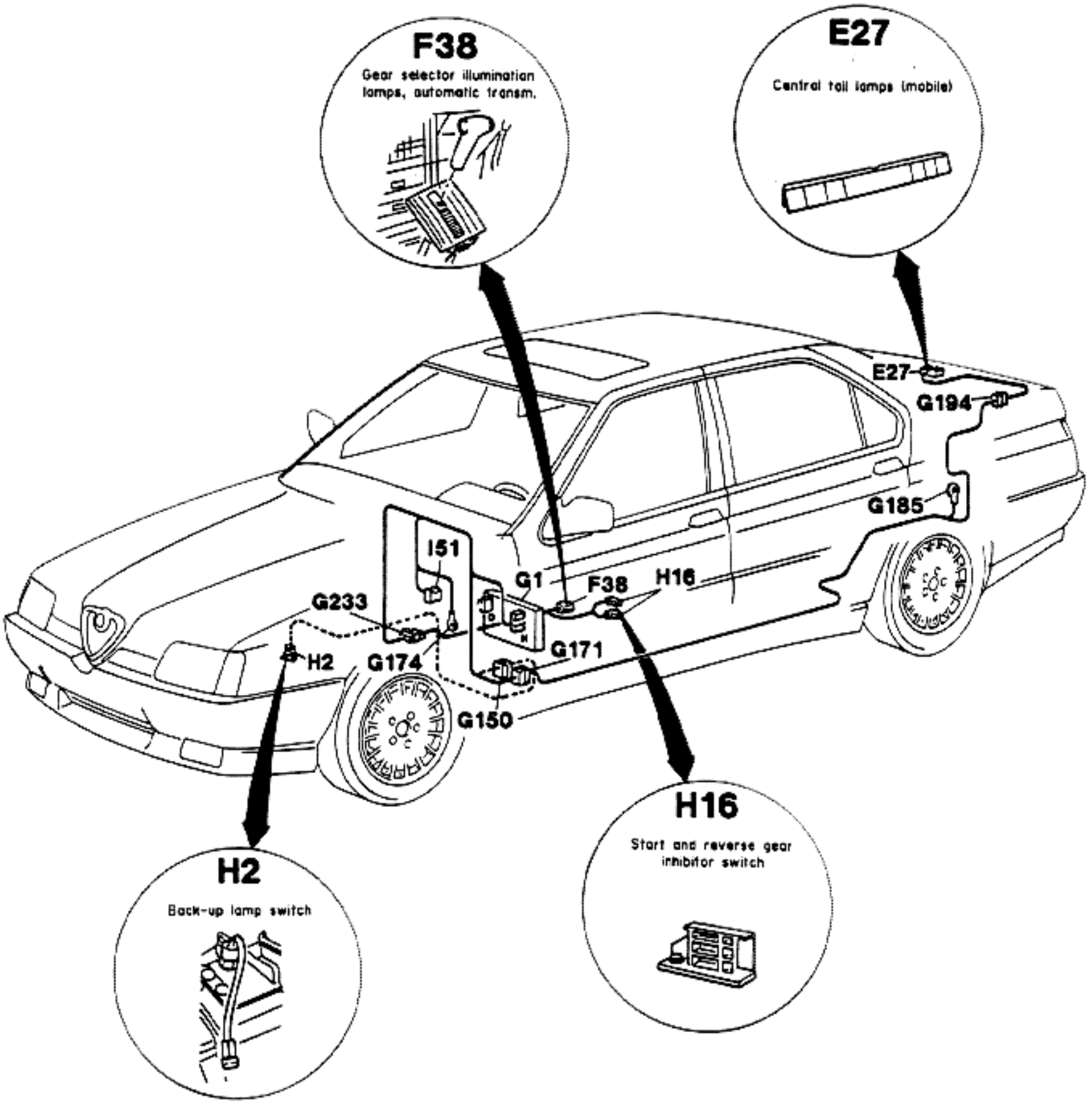


Back-up lamp switch	H2



(Cont.d)

Start and reverse gear inhibitor switch	H16	Electronic control units power supply relay	I51
			



GEAR SELECTOR ILLUMINATION INOPERATIVE (AUTOMATIC TRANSMISSION)	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check for integrity of fuse **F10** in fuse box **G1**	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F10**
A2 BACK-UP LAMP CHECK - With ignition key set to "run", select "R" position and check for lighting of the back up lamp in the central tail lamps **E27**	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A3**
A3 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of connector G233 and pin 1M of fuse box G1** Failure of the power **distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A4 GROUNDING CHECK - Check for presence of 0V (zero) on pin 3 of connector **G233**	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Repair wiring between **pin 3 of connector G233 and ground point G174**

(Cont.d)

GEAR SELECTOR ILLUMINATION INOPERATIVE (AUTOMATIC TRANSMISSION)	TEST A

TEST STEPS		RESULTS	REMEDY
A5	LAMP CHECK		
- Check for integrity of gear selector illumination lamps automatic transmission **F38**		OK ▶	Repair wiring between **pins 1 and 3 of connector G233, and then between pins 1 and 2 of lamp F38**
		~~OK~~ ▶	Replace **lamps F38**

End of test A

BACK-UP LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
NOTE: The back-up lamp included in the central tail lamps **E27** is composed of two bulbs; it is essential to replace only the one burned out.		
B1 FUSE CHECK - Check for integrity of fuse **F10** in fuse box **G1**	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **fuse F10**
B2 AUTOMATIC TRANSMISSION LAMP ILLUMINATION CHECK - With ignition key set to "run" check that the manual or automatic transmission illumination lamp is on	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Carry-out **step A3**
B3 VOLTAGE CHECK - With ignition key set to "run" check for presence of 12V between pins 1 and 4 of connector **G194**	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Carry-out **step B5**

(Cont.d)

BACK-UP LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B4 LAMPS CHECK - Check for integrity of back-up lamps in central tail lamps **E27**	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 3 and 4 of lamp E27 and then between pin 4 and 1 of G194** Replace **back-up lamp E27**
B5 GROUNDING CHECK - Check for presence of 0V (zero) on pin 1 of **G194**	OK ▶ ~~OK~~ ▶	Carry-out **step B6** Repair wiring between **pin 1 of G194 and ground point G185**
B6 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 9 of connector **G171** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 9 of connector G171 and pin 4 of G194** Carry-out **step B7**
B7 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 2 of connector **G233** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 9 of G171 and pin 2 of G233** Carry-out **step B8**

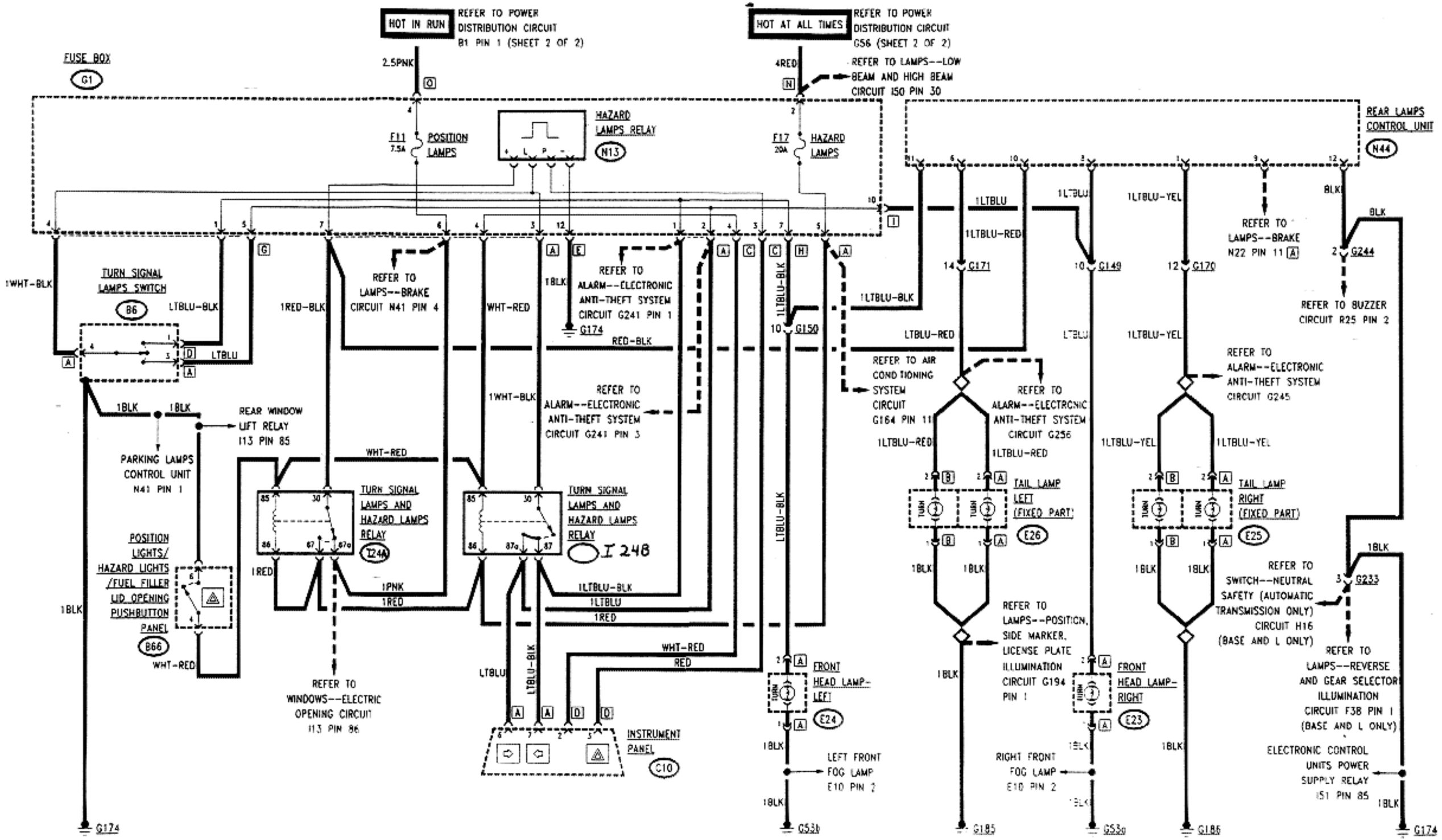
(Cont.d)

BACK-UP LAMP INOPERATIVE	TEST B

TEST STEPS		RESULTS	REMEDY
B8	SWITCH CHECK		
- With the ignition key set to "run", check for mechanical operation of start and reverse gear inhibitor switch H16 (closed circuit between PNK, and WHT wires with reverse gear selected)		OK ▶	Repair wiring between **pin 2 of G233 and switch H16 (WHT wire) and between pin 1 of G233 and switch H16 (PNK wire)**
		~~OK~~ ▶	Replace **switch H16**

End of test B

LAMPS - - TURN SIGNAL AND HAZARD WARNING



GENERAL

Actuation of turn signal lamps is dependent on setting of ignition key to "run" position, and on actuation of the L.H. section of the multiple switch.
Moving the L.H. section of the multiple switch upwards actuates the right turn signal lamps, while moving the multiple switch downwards actuates the left turn signal lamps; a corresponding warning lamp on the instrument panel is also switched on any time the turn signal lamps are actuated.
Once a turn signal lamp is actuated, the multiple switch locks in the selected position until the steering wheel returns it to its rest position.
While overtaking another vehicle, momentary actuation of turn signal lamps can be obtained by slightly moving the multiple switch (without engaging the lock) and holding it in position as long as required.
Hazard lamps actuation is obtained by means of a switch, and is not dependent on setting of the ignition key.
Actuation of the control switch turns on the four turn signal lamps simultaneously and the corresponding warning lamp on the instrument panel.
The circuit is protected by two fuses in the fuse box **G1**, as follows:

- fuse **F11** (7.5A) POSITION LAMPS.

- fuse **F17** (20A) HAZARD LAMPS.

OPERATIONAL DESCRIPTION

The battery power (12V) available when the ignition key is set to "run" position is applied to fuse **F11** in fuse box **G1**.
Fuse **F11** protects the turn signal lamps intermittence circuit power supply line.
The power (12V) is applied to contacts of turn signal lamps and hazard lamps relay **I24**, which powers the emergency lamps relay **N13** in fuse box **G1**.
When the left (or right) turn signal lamps are actuated by means of the multiple switch, the front head lamp left **E24** (or right **E23**) receives from fuse box **G1** an intermittent signal for the actuation of the turn signal lamps.
The same signal is supplied to pin 11 (or pin 8) of the rear lamps control unit **N44**; the control unit **N44** will then supply through its pin 6 (or pin 1) an intermittent signal for the actuation of the turn signal lamp in the tail lamp, left (fixed part) **E26** (or right **E25**). Actuation of the left (or right) turn signal lamps is indicated by intermittent illumination of the relevant warning lamp on instrument panel **C10**.
The hazard lamps are actuated by pressing the relevant pushbutton on the pushbutton panel **B66** (position lamps, hazard signal lamps and fuel filler lid opening).
The 12V power (available at all times) is supplied to relays **I24** and **I246** through fuse **F17** in fuse box **G1**.
Actuation of the hazard lamps switch on pushbutton panel **B66** energizes the relays **I24** and **I246** and the 12V powers the hazard lamps relay **N13** in fuse box **G1**.
The intermittent signal is directed from the turn signal lamp and hazard lamps relay **I246** to the front head lamp left **E24** (pin 7H of fuse box **G1**) for the actuation of the front hazard lamps, and to the rear lamps control unit **N44** (pins 11 and 8).
The control unit **N44** transfers the intermittent signal to tail lamp, left (fixed part) **E26** (pin 6) and to the tail lamp right (fixed part) **E25** (pin 1) for the actuation of the rear hazard lamps.
Furthermore, when the turn signal lamps are turned on, the control unit **N44** inhibits the check performed by the Alfa Romeo Control unit **N22** on the stop lamps circuit through the signal activated on pin 9.
Actuation of the hazard lamps is indicated by intermittent illumination of the relevant warning lamp on instrument panel **C10**.

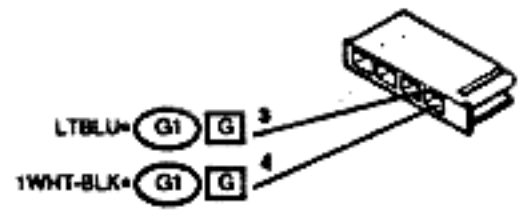
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT															
	F11 FUSE	F17 FUSE	C10 INST. PANEL WARN. LAMP	C10 R.T. SIGNAL WARN. LAMP	C10 L.T. SIGNAL WARN. LAMP	E23 R.H.F. TURN SIGNAL LAMP	E24 L.H.F. TURN SIGNAL LAMP	E25 R.H.R. TURN SIGNAL LAMP	E26 R.H.R. TURN SIGNAL LAMP	B6 MULTIPLE SWITCH	B66 PUSHBUTTON PANEL	I24 RELAY	2498 RELAY	N13 RELAY	N44 CONTROL UNIT
ALL TURN SIGNAL LAMPS INOPERATIVE	●											●		●	
BOTH LEFT TURN SIGNAL LAMPS INOPERATIVE										●					
BOTH RIGHT TURN SIGNAL LAMPS INOPERATIVE										●					
LEFT FRONT TURN SIGNAL LAMP ONLY INOPERATIVE							●								
RIGHT FRONT TURN SIGNAL LAMP ONLY INOPERATIVE						●									
BOTH REAR TURN SIGNAL LAMPS INOPERATIVE															●
LEFT REAR TURN SIGNAL LAMP ONLY INOPERATIVE									●						●
RIGHT REAR TURN SIGNAL LAMP ONLY INOPERATIVE								●							●

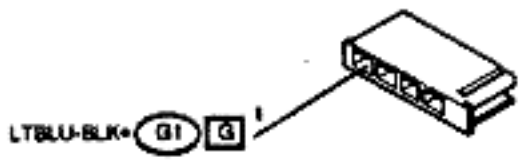
FAULT TYPE	FAILED COMPONENT														
	F11 FUSE	F17 FUSE	C10 INST. PANEL WARN. LAMP	C10 R.T. SIGNAL WARN. LAMP	C10 L.T. SIGNAL WARN. LAMP	E23 R.H.F. TURN SIGNAL LAMP	E24 L.H.F. TURN SIGNAL LAMP	E25 R.H.R. TURN SIGNAL LAMP	E26 R.H.R. TURN SIGNAL LAMP	B6 MULTIPLE SWITCH	B66 PUSHBUTTON PANEL	I24 RELAY	I249 RELAY	N13 RELAY	N44 CONTROL UNIT
LEFT TURN SIGNAL LAMPS WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE					●										
RIGHT TURN SIGNAL LAMPS WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE				●											
ALL HAZARD LAMPS INOPERATIVE		●									●	●	●	●	
LEFT FRONT HAZARD LAMP INOPERATIVE							●								
RIGHT FRONT HAZARD LAMP INOPERATIVE						●									
BOTH REAR HAZARD LAMPS INOPERATIVE															●
LEFT REAR HAZARD LAMP INOPERATIVE								●							●
RIGHT REAR HAZARD LAMP INOPERATIVE															●
LAMP ON INSTRUMENT PANEL INOPERATIVE			●												

NOTE: Before attempting any troubleshooting ascertain the integrity of the affected warning lamp on the instrument panel by pressing the test button.

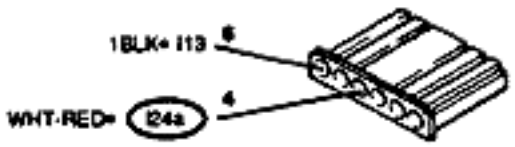
Turn signal lamps switch	B6 A



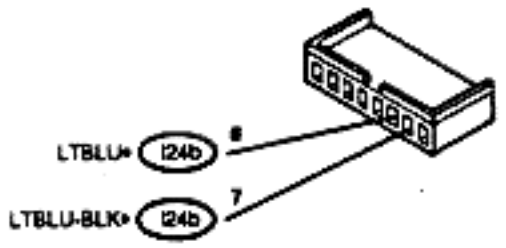
Turn signal lamps switch	B6 D



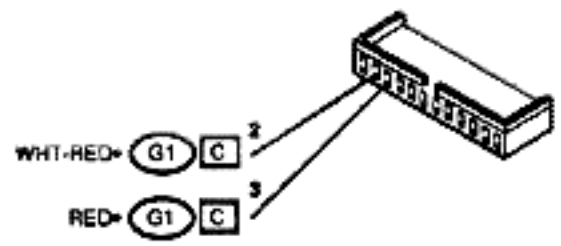
Position lights/Hazard lights/Fuel filler lid pushbutton panel	B66



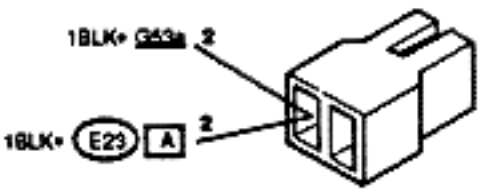
Instrument panel	C10 A



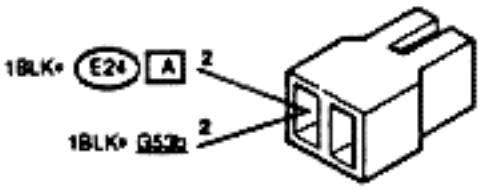
Instrument panel	C10 D



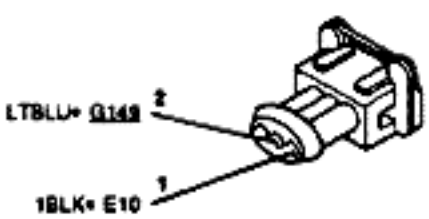
Right front fog lamp	E10



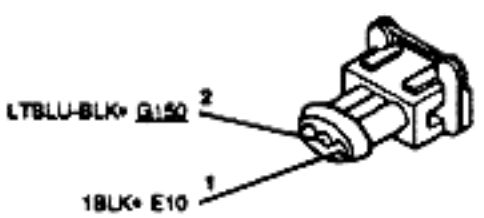
Left front fog lamp	E10



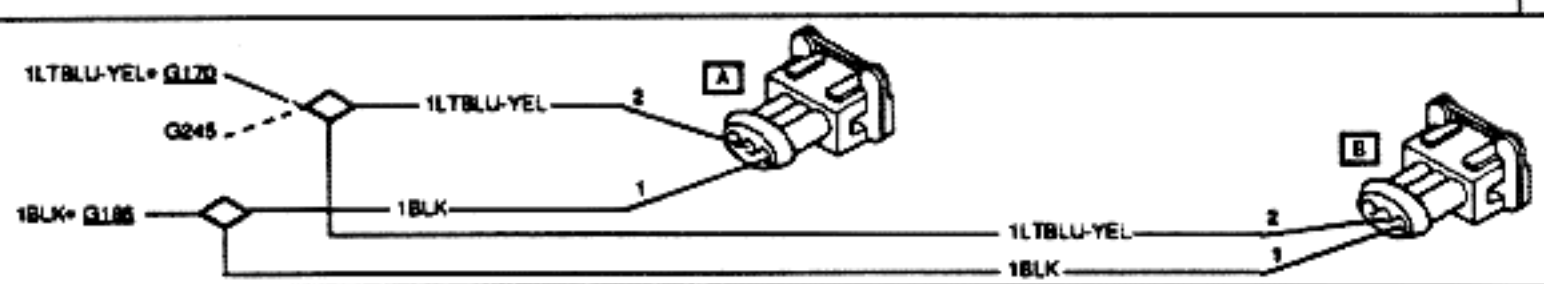
Front head lamp - right	E23 A



Front head lamp - left	E24 A



Tail lamp, right (lixed part)	E25



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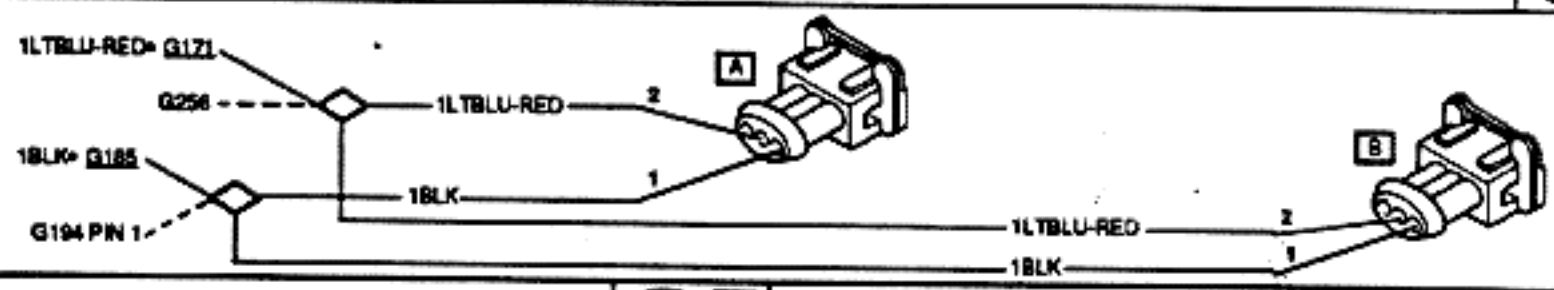
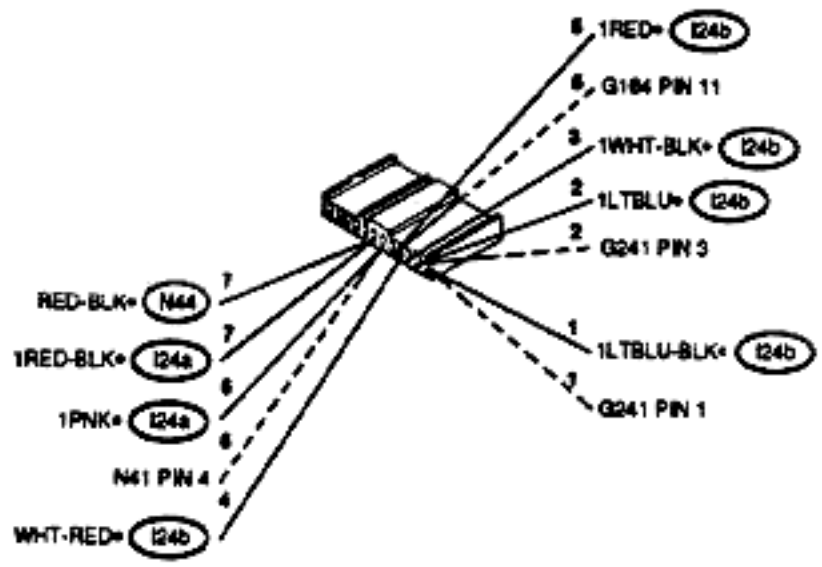
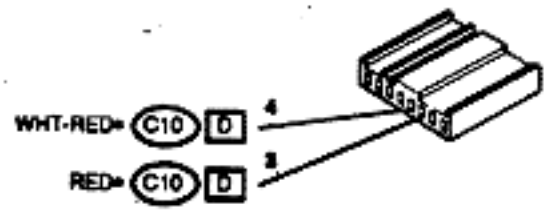
Tail lamp, left (fixed part) — E26



Fuse box — G1 A

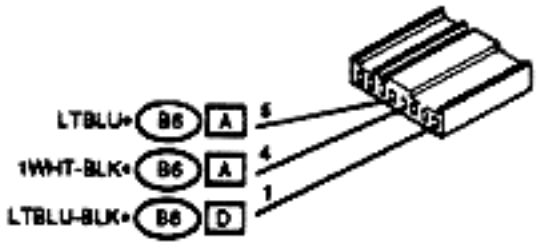


Fuse box — G1 C



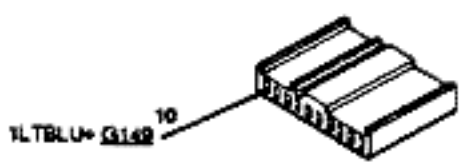
Fuse box — G1 E

Fuse box — G1 G

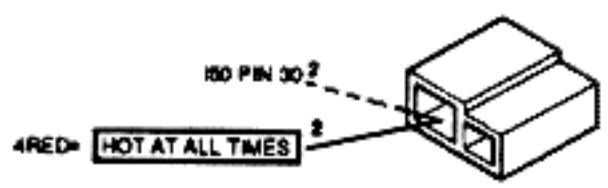


Fuse box — G1 H

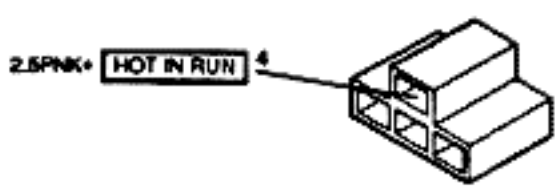
Fuse box — G1 I



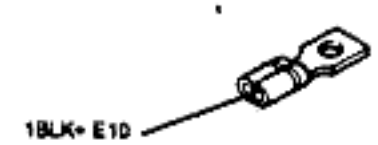
Fuse box — G1 N



Fuse box — G1 O



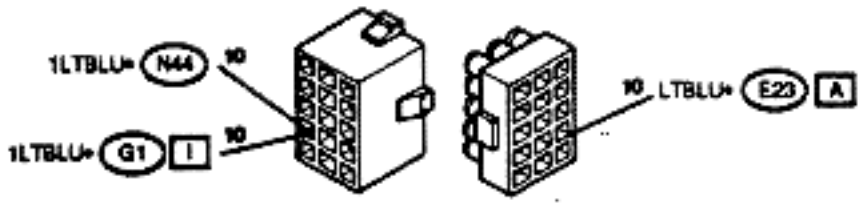
Engine compartment right side ground connection — G53a



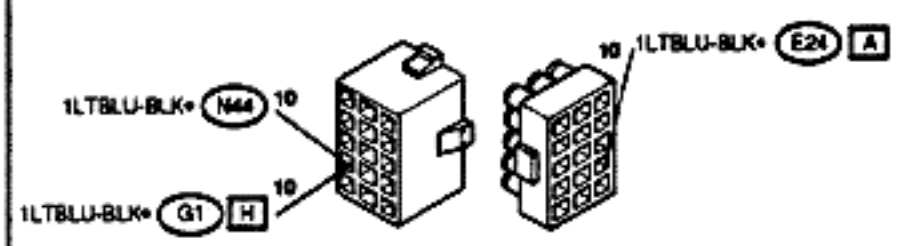
(Cont.d)

Engine compartment left side ground connection	G53b

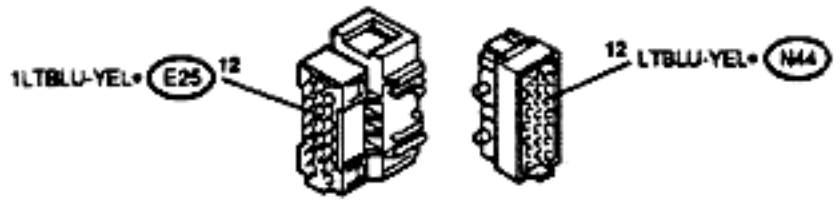
Connector, circuit board to engine compartment right side wiring	G149



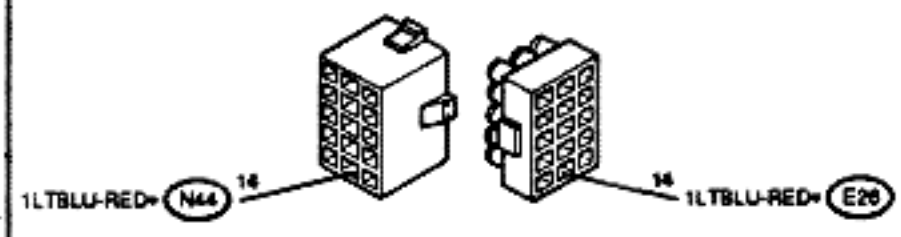
Connector, circuit board to engine compartment left side wiring	G150



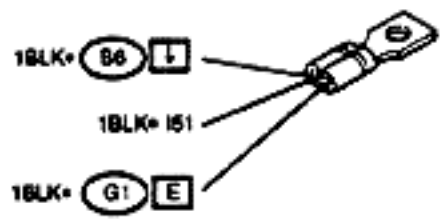
Connector, circuit board to right rear wiring	G170



Connector, circuit board to left rear wiring	G171



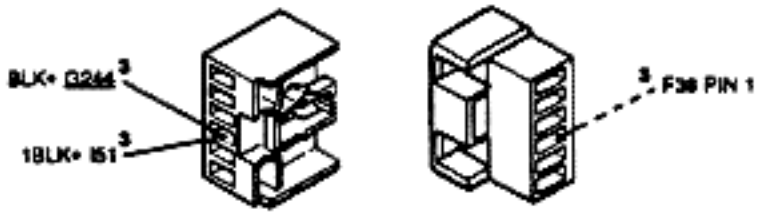
Steering wheel column support ground	G174



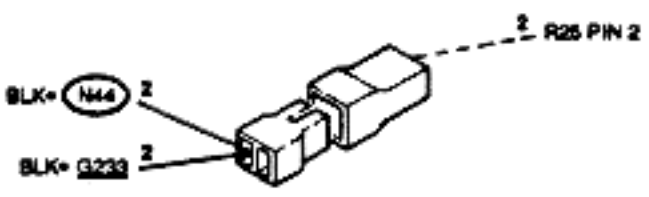
Trunk left side ground	G185

Trunk right side ground	G186

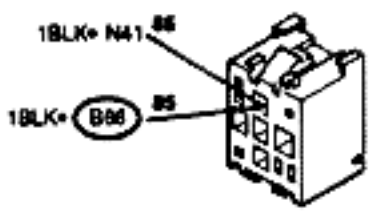
Connector, circuit board to automatic	G233



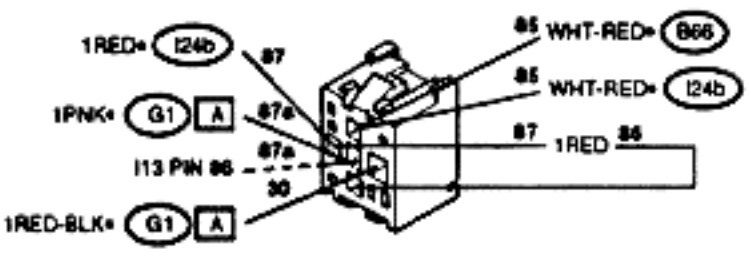
Board wiring to aft console wiring two-way connector	G244



Rear window lifts relay	I13



Turn signal lamps and hazard lamps relay	I24



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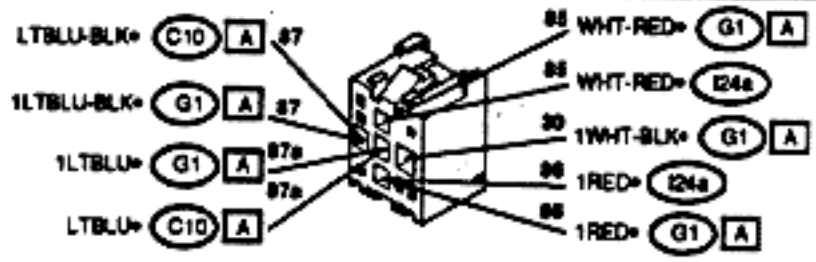
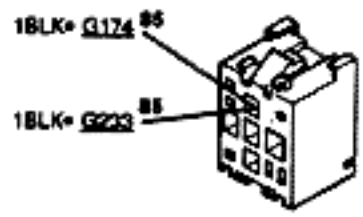
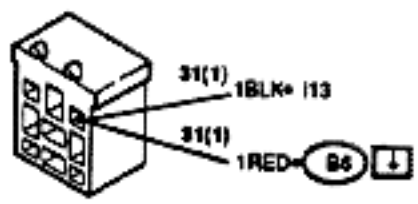
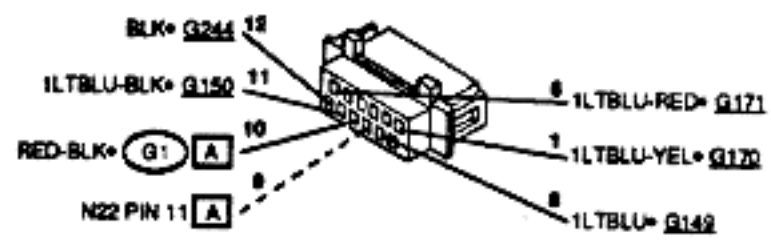
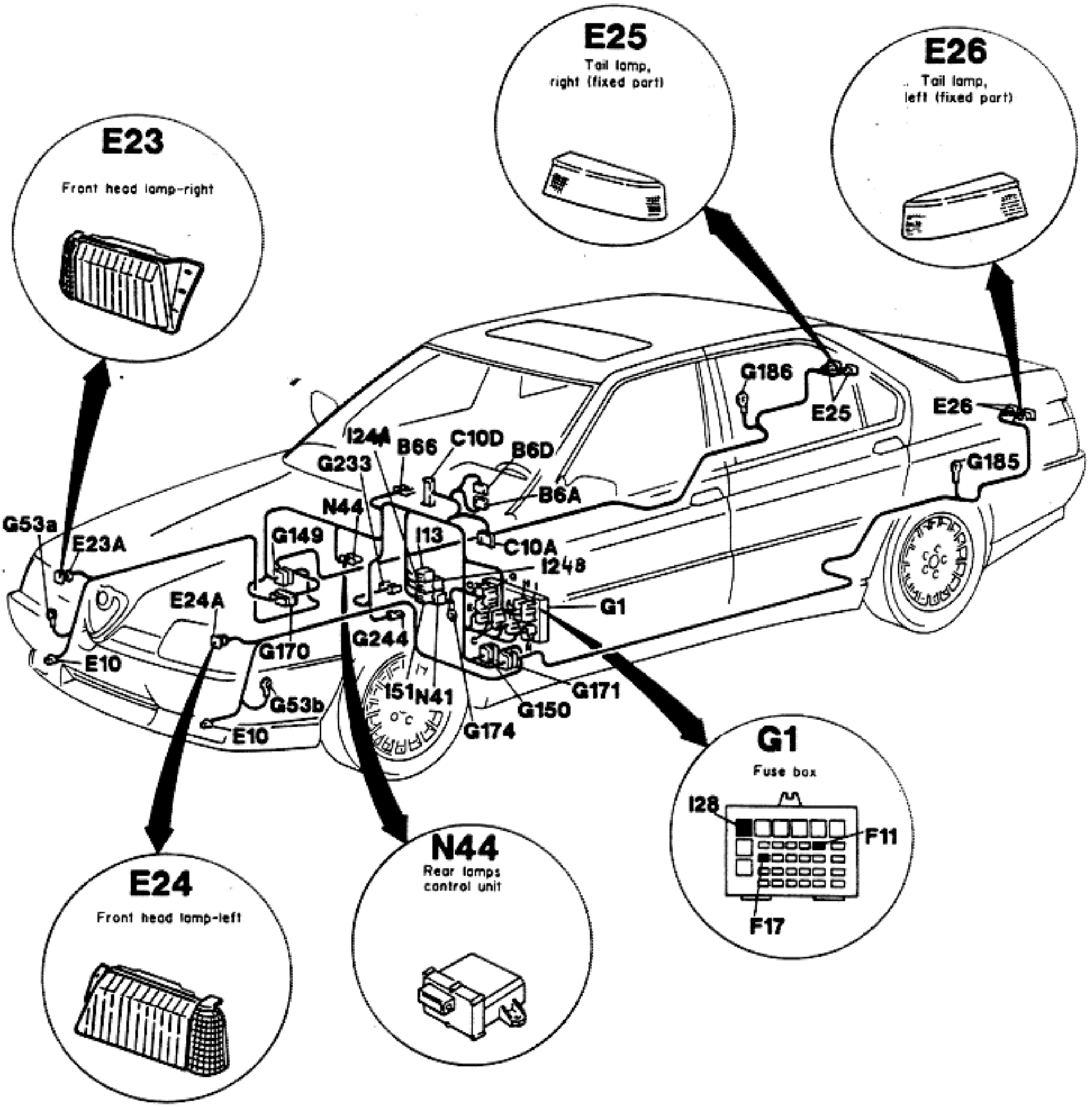
Turn signal lamps and hazard lamps relay	I248	Electronic control units power supply relay	I51
			
Parking lamps conl unit	**N41**	**Rear lamps control unit**	**N44**
			



ALL TURN SIGNAL LAMPS INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A1	FUSE CHECK		
- Check fuse **F11** in fuse box **G1** for integrity		OK ▶	Carry-out **step A2**
		OK ▶	Replace **fuse F11**
A2	VOLTAGE CHECK		
- With the ignition key set to "run", check for presence of 12V between pin 4O of fuse box **G1** and ground		OK ▶	Carry-out **step A3**
		OK ▶	Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A3	VOLTAGE CHECK		
- With ignition key set to "run", check for presence of 12V between pin 87 of turn signal lamps and hazard lamps relay **I24** and ground		OK ▶	Carry-out **step A4**
		OK ▶	Repair wiring between **pin 87a of relay I24 and pin 6A of fuse box G1**
A4	RELAY CHECK		
- Check relay **I24** for proper operation		OK ▶	Carry-out **step A5**
		OK ▶	Replace **relay I24**

(Cont.d)

ALL TURN SIGNAL LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - Check for presence of 12V between pin 7A of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Carry - out **step A6** Repair wiring between **pin 30 of relay I24 and pin 7A of fuse box G1**
A6 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 4G of fuse box **G1**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4G of fuse box G1 and pin 4A of switch B6** Replace relay **N13** in **fuse box G1**

End of test A

BOTH LEFT TURN SIGNAL LAMPS INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting ascertain the integrity of the warning lamp on instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
B1 VOLTAGE CHECK - Check that left turn signal lamps warning lamp illuminates on instrument panel	OK ▶ OK ▶	Repair wiring between **pin 10 of connector G150 and pin 7H of fuse box G1** Carry-out step B2
B2 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 1D of switch **B6**	OK ▶ OK ▶	Repair wiring between **pin 1D of switch B6 and pin 1G of fuse box G1** Replace **switch B6**

End of test B

BOTH RIGHT TURN SIGNAL LAMPS INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting ascertain the integrity of the warning lamp on instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
C1 WARNING LAMP CHECK - Check that right turn signal lamps warning lamp illuminates on instrument panel	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 10 of connector G149 and pin 10l of fuse box G1** Carry-out **step C2**
C2 INTERMITTENT SIGNAL CHECK - **Check for presence of intermittent signal at pin 3A of switch B6**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 3A of switch B6 and pin 5G of fuse box G1** Replace **switch B6**

End of test C

LEFT FRONT TURN SIGNAL LAMP ONLY INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D1 LAMP CHECK		
- Check bulb in front head lamp left **E24** for integrity	OK ▶	Carry-out **step D2**
	~~OK~~ ▶	Replace **bulb in front head lamp left E24**
D2 INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin 2A of front head lamp left **E24**	OK ▶	Repair wiring between **pin 1A of front head lamp left E24 and ground point G53b**
	~~OK~~ ▶	Repair wiring between **pin 2A of front head lamp left E24 and pin 10 of connector G150**

End of test D

RIGHT FRONT TURN SIGNAL LAMP ONLY INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E1 LAMP CHECK		
- Check bulb in front head lamp right **E23** for integrity	OK ▶	Carry-out **step E2**
	~~OK~~ ▶	**Replace bulb in front head lamp right E23**
E2 INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin 2A of front head lamp right **E23**	OK ▶	Repair wiring between **pin 1A of front head lamp right E23 and ground point G53a**
	~~OK~~ ▶	Repair wiring between **pin 2A of front head lamp right E23 and pin 10 of connector G149**

End of test E

BOTH REAR TURN SIGNAL LAMPS INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F1 VOLTAGE CHECK - Check for presence of 12V between pin 10 of rear lamps control unit **N44** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Repair wiring between **pin 10 of control unit N44 and pin 7A of fuse box G1**
F2 CONTROL UNIT CHECK - Check for presence of 0V (zero) at pin 12 of control unit **N44**	OK ▶ ~~OK~~ ▶	Replace **control unit N44** Repair wiring between **pin 2 of connector G244, pin 3 of connector G233 and ground point G174**

End of test F

LEFT REAR TURN SIGNAL LAMP ONLY INOPERATIVE — TEST G

TEST STEPS	RESULTS	REMEDY
NOTE: In case the failure affects only one of the two stop lamps, check the integrity of the affected lamp and/or check the continuity of the two relevant connecting wires.		
G1 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 11 of rear lamps control unit **N44**	OK ▶ ~~OK~~ ▶	Carry-out **step G2** Repair wiring between **pin 10 of connector G150 and pin 11 of control unit N44**
G2 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 6 of control unit **N44**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 14 of connector G171 and pin 6 of control unit N44** Replace **control unit N44**

End of test G

RIGHT REAR TURN SIGNAL LAMP ONLY INOPERATIVE	TEST H

TEST STEPS	RESULTS	REMEDY
NOTE: In case the failure affects only one of the two stop lamps, check the integrity of the affected lamp and/or check the continuity of the two relevant connecting wires.		
H1 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 8 of rear lamps control unit **N44**	OK ▶ OK ▶	Carry-out **step H2** Repair wiring between **pin 10 of connector G149 and pin 8 of control unit N44**
H2 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 1 of control unit **N44**	OK ▶ OK ▶	Repair wiring between **pin 12 of connector G170 and pin 1 of control unit N44** Replace **control unit N44**

End of test H

LEFT TURN SIGNAL LAMPS WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE	TEST I

TEST STEPS		RESULTS	REMEDY
I1	INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin 87 of turn signal lamps and hazard lamps relay I24		OK ▶	Carry-out **step I2**
		OK ▶	Repair wiring between **pin 87 of relay I24 and pin 1A of fuse box G1**
I2	INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin 7A of instrument panel **C10**		OK ▶	Replace **lamp on instrument panel C10**
		OK ▶	Repair wiring between **pin 7A of instrument panel C10 and pin 87 of relay I24**

End of test I

RIGHT TURN SIGNAL LAMPS WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE	TEST J

TEST STEPS		RESULTS	REMEDY
J1	INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin 87a of turn signal lamps and hazard lamps relay I248		OK ▶	Carry-out step J2
		~~OK~~ ▶	Repair wiring between pin 87a of relay I248 and pin 2A of fuse box G1
J2	INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin 6A of instrument panel C10		OK ▶	Replace lamp on instrument panel C10
		~~OK~~ ▶	Repair wiring between pin 6A of instrument panel C10 and pin 87a of relay I248

End of test J

ALL HAZARD LAMPS INOPERATIVE	TEST K

TEST STEPS	RESULTS	REMEDY
K1 FUSE CHECK - Check fuse **F17** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step K2** Replace **fuse F17**
K2 GROUNDING CHECK - Check for presence of 0V (zero) at pin 6 of pushbutton panel **B66**	OK ▶ ~~OK~~ ▶	Carry-out **step K3** Repair wiring between **pin 6 of pushbutton panel B66 and ground point G174**
K3 SWITCH CHECK - With hazard lamp switch actuated, check for presence of 0V (zero) at pin 4 of pushbutton panel **B66**	OK ▶ ~~OK~~ ▶	Carry-out **step K4** Replace **pushbutton panel B66**
K4 GROUNDING CHECK - With hazard lamp switch actuated, check for presence of 0V (zero) at pin 85 of relays **I24/A** and **I24/B**	OK ▶ ~~OK~~ ▶	Carry-out **step K5** Repair wiring between **pin 4 of pushbutton panel B66 and pin 85 of relays I24/A and I24/B**

(Cont.d)

ALL HAZARD LAMPS INOPERATIVE	TEST K

TEST STEPS	RESULTS	REMEDY
K5 VOLTAGE CHECK - Check for presence of 12V between pin 86 of relay **I24A** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step K7** Carry-out **step K6**
K6 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 86 and 87 of relay I24 pin 86 of relay I28 and pin 5A of fuse box G1** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
K7 RELAY CHECK - Check relay **I24** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step K8** Replace **relay I24**
K8 VOLTAGE CHECK - Check for presence of 12V between pin 7A of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step K9** Repair wiring between **pin 30 of relay I24 and pin 7A of fuse box G1**

(Cont.d)

ALL HAZARD LAMPS INOPERATIVE	TEST K

TEST STEPS	RESULTS	REMEDY
K9 INTERMITTANCE CHECK		
- Check that hazard lamps relay **N13** in fuse box **G1** is operational by verifying the presence of intermittent signal at pin 3A of fuse box **G1**	OK ▶	Carry-out **step K10**
	~~OK~~ ▶	Replace **relay N13**
K10 INTERMITTENCE SIGNAL CHECK		
- Check for presence of intermittent signal at pin 30 of relay **I24 B**	OK ▶	Replace **relay I24 B**
	~~OK~~ ▶	Repair wiring between **pin 30 of relay I24 B and pin 3A of fuse box G1**

End of test K

LEFT FRONT HAZARD LAMP INOPERATIVE	TEST L

TEST STEPS	RESULTS	REMEDY
L1 LAMP CHECK		
- Check bulb in front head lamp left **E24** for integrity	OK ▶	Carry-out **step L2**
	~~OK~~ ▶	Replace **bulb in front head lamp left E24**
L2 INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin 1A of fuse box **G1**	OK ▶	Carry-out **step L3**
	~~OK~~ ▶	Repair wiring between **pin 87 of relay I28 and pin 1A of fuse box G1**
L3 INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin **10** of connector **G150**	OK ▶	Carry-out **step L4**
	~~OK~~ ▶	Repair wiring between **pin 10 of connector G150 and pin 7H of fuse box G1**

(Cont.d)

LEFT FRONT HAZARD LAMP INOPERATIVE	TEST L

TEST STEPS		RESULTS	REMEDY
L4	INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin 2A of front head lamp left **E24**		OK ▶	Repair wiring between **pin 1A of front head lamp left E24 and ground point G53b**
		OK ▶	Repair wiring between **pin 2A of front head lamp left E24 and pin 10 of connector G150**

End of test L

RIGHT FRONT HAZARD LAMP INOPERATIVE	TEST M

TEST STEPS	RESULTS	REMEDY
M1 LAMP CHECK - Check bulb in front head lamp right **E23** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step M2** Replace **bulb in front head lamp right E23**
M2 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 2A of fuse box **G1**	OK ▶ ~~OK~~ ▶	Carry-out **step M3** Repair wiring between **pin 87a of relay I2 and pin 2A of fuse box G1**
M3 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 10 of connector **G149**	OK ▶ ~~OK~~ ▶	Carry-out **step M4** Repair wiring between **pin 10 of connector G149 and pin 10l of fuse box G1**

(Cont.d)

RIGHT FRONT HAZARD LAMP INOPERATIVE	TEST M

TEST STEPS		RESULTS	REMEDY
M4	INTERMITTENT SIGNAL CHECK		
- Check for presence of intermittent signal at pin 2A of front head lamp right **E23**		OK ▶	Repair wiring between **pin 1A of front head lamp right E23 and ground point G53a**
		OK ▶	Repair wiring between **pin 2A of front head lamp right E23 and pin 10 of connector G149**

End of test M

BOTH REAR HAZARD LAMPS INOPERATIVE	TEST N

TEST STEPS		RESULTS	REMEDY
N1	VOLTAGE CHECK		
- Check for presence of 12V between pin 10 of rear lamps control unit **N44** and ground		OK ▶	Carry-out **step N2**
		~~OK~~ ▶	Repair wiring between **pin 10 of control unit N44 and pin 7A of fuse box G1**
N2	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 12 of control unit **N44**		OK ▶	Replace **control unit N44**
		~~OK~~ ▶	Repair wiring between **pin 12 of control unit N44, pin 2 of connector G244, pin 3 of connector G233 and ground point G174**

End of test N

LEFT REAR HAZARD LAMP INOPERATIVE	TEST O

TEST STEPS	RESULTS	REMEDY
NOTE: In case the failure affects only one of the two stop lamps, check the integrity of the affected lamp and/or check the continuity of the two relevant connecting wires.		
O1 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 11 of rear lamps control unit **N44**	OK ▶ ~~OK~~ ▶	Carry-out **step O2** Repair wiring between **pin 10 of connector G150 and pin 11 of control unit N44**
O2 CONTROL UNIT CHECK - Check for presence of intermittent signal at pin 6 of control unit **N44**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 14 of connector G171 and pin 6 of control unit N44** Replace **control unit N44**

End of test O

RIGHT REAR HAZARD LAMP INOPERATIVE	TEST P

TEST STEPS	RESULTS	REMEDY
NOTE: In case the failure affects only one of the two stop lamps, check the integrity of the affected lamp and/or check the continuity of the two relevant connecting wires.		
P1 INTERMITTENT SIGNAL CHECK - Check for presence of intermittent signal at pin 8 of rear lamps control unit **N44**	OK ▶ ~~OK~~ ▶	Carry-out **step P2** Repair wiring between **pin 10 of connector G149 and pin 8 of control unit N44**
P2 CONTROL UNIT CHECK - Check for presence of intermittent signal at pin 1 of control unit **N44**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 12 of connector G170 and pin 1 of control unit N44** Replace **control unit N44**

End of test P

HAZARD LAMPS WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE	TEST Q

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, ascertain the integrity of the warning lamp on instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
Q1 VOLTAGE CHECK - Check for presence of 12V between pin 3D of instrument panel **C10** and ground	OK ▶ OK ▶	Carry-out **step Q2** Repair wiring between **pin 3D of instrument panel C10 and pin 3C of fuse box G1**
Q2 GROUNDING CHECK - Check for presence of 0V (zero) at pin **4A** of fuse box **G1**	OK ▶ OK ▶	Carry-out **step Q3** Repair wiring between **pin 85 of relay I24** and **pin 4A of fuse box G1**
Q3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2D of instrument panel **C10**	OK ▶ OK ▶	Replace **instrument panel C10** Repair wiring between **pin 2D of instrument panel C10 and pin 4C of fuse box G1**

End of test Q

LOCKS - - POWER DOOR

HOT IN RUN

REFER TO POWER DISTRIBUTION CIRCUIT 81 PIN 1 (SHEET 2 OF 2)

2.5PNK

HOT AT ALL TIMES

REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 2 OF 2)

4RED

REFER TO LAMPS--LOW BEAM AND HIGH BEAM CIRCUIT 150 PIN 30

FUSE BOX G1

DOOR LOCK/ FRONT ELECTRIC WINDOW LIFT RELAY (173)

F16 10A DOOR LOCK CONTROL UNIT

F18 25A DOOR LOCK SWITCH

1.5LTBLU-BLK

BRN-WHT

PPL-WHT

DOOR LOCK CONTROL UNIT (N11)

1.5PNK-BLK

G100

REFER TO WINDOWS--ELECTRIC OPENING CIRCUIT B21 PIN 3 AND 5 B53 PIN 5

1.5PNK-BLK

PNK

DOOR LOCK INTERNAL SWITCH (820)

REFER TO WINDOWS--ELECTRIC OPENING CIRCUIT B53 PIN 4

BRN-WHT G100

PPL-WHT

REFER TO ALARM--ELECTRONIC ANTI-THEFT SYSTEM CIRCUIT N45 PIN 2

REFER TO ALARM--ELECTRONIC ANTI-THEFT SYSTEM CIRCUIT N45 PIN 1

18BLK

BLK

G174

G182

1RED

1LTBLU

BRN-WHT

BRN

PPL

1RED

1LTBLU

1RED

1RED

PPL-WHT

1LTBLU

1RED

G169

G167

G191

G197

LEFT REAR DOOR LOCKING MOTOR (P13)

RIGHT REAR DOOR LOCKING MOTOR (P12)

G168

LEFT FRONT DOOR LOCKING MOTOR (P11)

G166

RIGHT FRONT DOOR LOCKING MOTOR (P10)

1.5BLK

REFER TO WINDOWS--ELECTRIC OPENING CIRCUIT N38 PIN A2

18BLK

REFER TO LAMPS--DOOR OPEN INDICATOR CIRCUIT G157 PIN B

REFER TO DEFOGGER--REAR WINDOW, FRONT WINDSHIELD, EXTERNAL MIRRORS CIRCUIT 019 PIN E

REFER TO MIRRORS--EXTERNAL POWER CIRCUIT 836 PIN 2

18BLK

G168

18BLK

G174

REFER TO LAMPS--DOOR OPEN INDICATOR CIRCUIT G156 PIN B

REFER TO DEFOGGER--REAR WINDOW, FRONT WINDSHIELD, EXTERNAL MIRRORS CIRCUIT 018 PIN E

18BLK

G166

18BLK

G174

GENERAL

The car doors can be automatically locked/unlocked from the exterior by means of the lock of either front door, or from the interior.
Acting from the interior, the electric door lock system can be operated in two different ways: by means of the switch located on the central console (with the ignition key set to "run" position only) or by means of the pushbutton located on both front doors (when the doors are closed). The locking/unlocking of the two rear doors is obtained by acting on the pushbutton of the affected door only.
With the ignition key set to the "run" position, improper locking of either door is indicated by the illumination of the relevant warning lamp on the instrument panel.
The system is protected by two fuses in the fuse box G1 as follows:

- **F16** fuse (10A) DOOR LOCK CONTROL UNIT.
- **F18** fuse (25A) DOOR LOCK SWITCH.

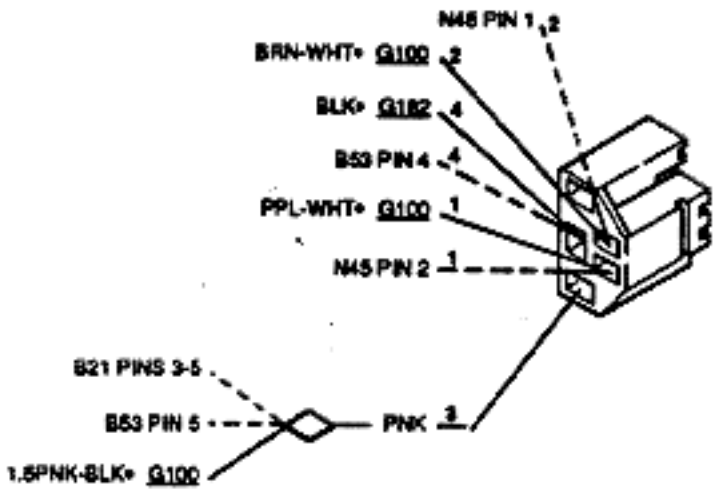
OPERATIONAL DESCRIPTION

12V from the battery is applied to the door lock control unit **N11** throught the **F16** fuse in the fuse box **G1**; moreover, the 12V supplied when the ignition key is in the "run" position, energize the relay **I73** located in the fuse box **G1**. The relay, when energized, supplies 12V to the integral light switch **B20** through the fuse **F18.**
By pressing the switch **B20** in either direction, a 12V pulse is applied between pins 4 and 5 of the door lock control unit **N11** (e.g. positive at pin 4).
In the above condition the control unit locks the doors by means of motors **P10**, **P11**, **P12** and **P13.**
If the switch **B20** is pressed in the opposite direction the polarity of voltage applied to pins 4 and 5 of the control unit is reversed: in this condition the control unit unlocks the doors by reversing the operation of motors **P10**, **P11**, **P12** and **P13**.
The front door motors **P10** and **P11** are provided with a contactor that can be operated by means of the door lock or by means of a switch located on the interior side of the door.
Operation of either system on the front doors connects to ground the control unit **N11** at pin 2 or at pin 3 which in turn actuates the electric door lock/unlock system.
The two front doors can be individually locked/unlocked by acting on the relevant switches located on the inner side of the doors.
Inproper locking, or an open door, is indicated on the instrument panel by the illumination of the corresponding warning light of the Alfa Romeo Control control unit, treated in another chapter.

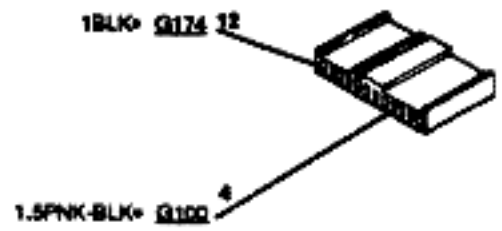
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT								
	F16 FUSE	F18 FUSE	B20 SWITCH	173 RELAY	P10 MOTOR	P11 MOTOR	P12 MOTOR	P13 MOTOR	N11 CONTROL UNIT
INTERIOR AND EXTERNAL LOCK/UNLOCK SYSTEM INOPERATIVE	●								●
INTERIOR LOCK/UNLOCK SYSTEM INOPERATIVE		●	●	●					●
EXTERIOR LOCK/UNLOCK SYSTEM INOPERATIVE					●	●			●
LEFT REAR DOOR LOCK/UNLOCK SYSTEM INOPERATIVE								●	
RIGHT REAR DOOR LOCK/UNLOCK SYSTEM INOPERATIVE							●		

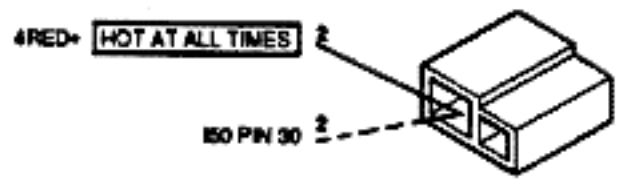
Door lock internal switch — B20



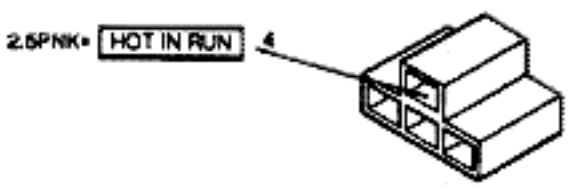
Fuse box — G1 E



Fuse box — G1 N

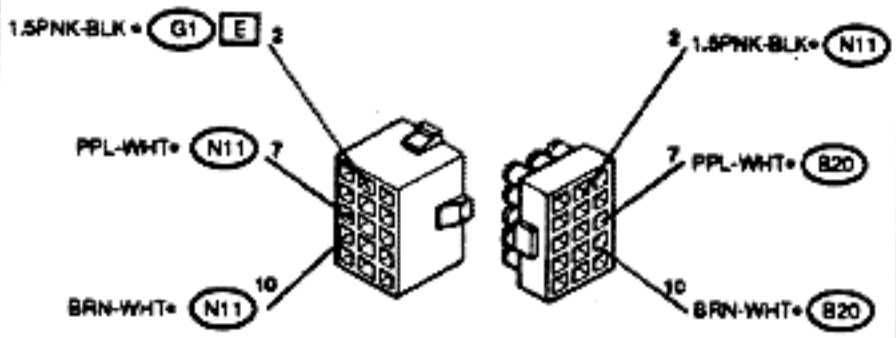


Fuse box — G1 O

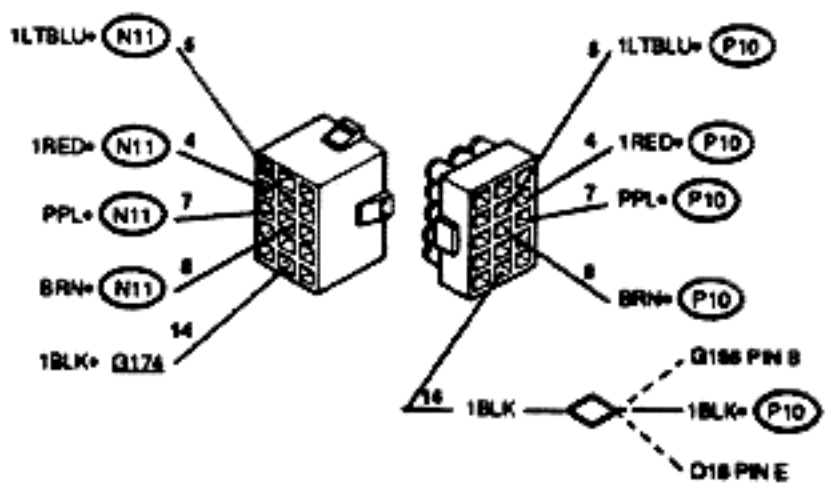


Fuse box — G1 P

Connector, doors to center console wiring — G100

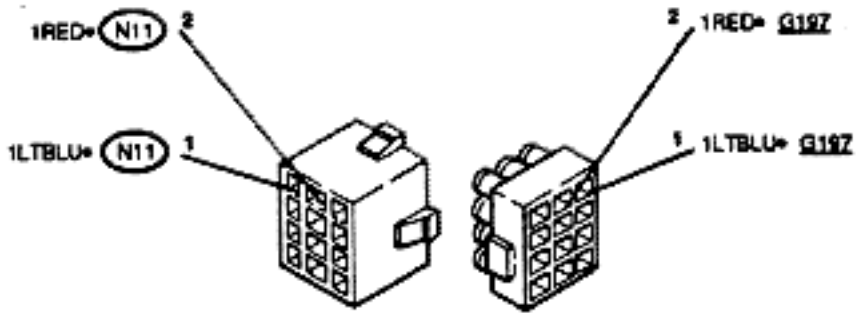


Connector, front doors to right front door wiring — G166

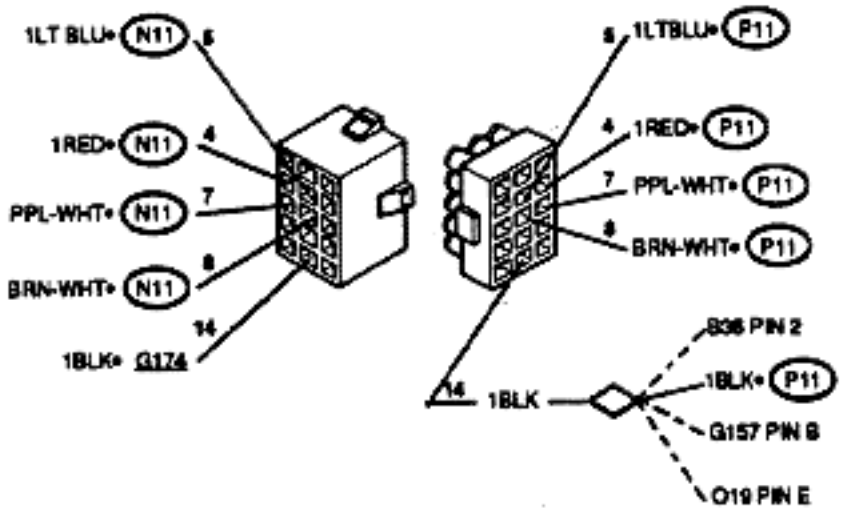


(Cont.d)

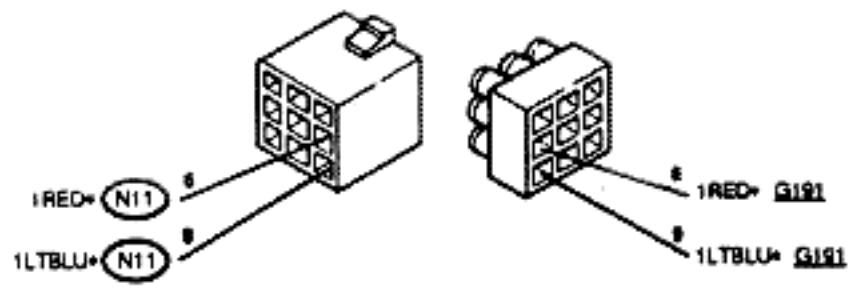
Connector, front doors to right rear wiring	G167



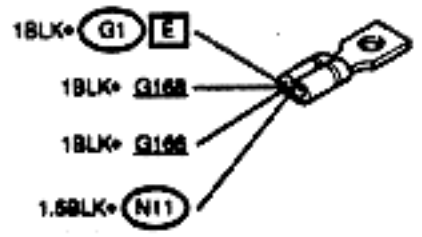
Connector, front doors to left front door wiring	G168



Connector, front doors to left rear wiring	G169

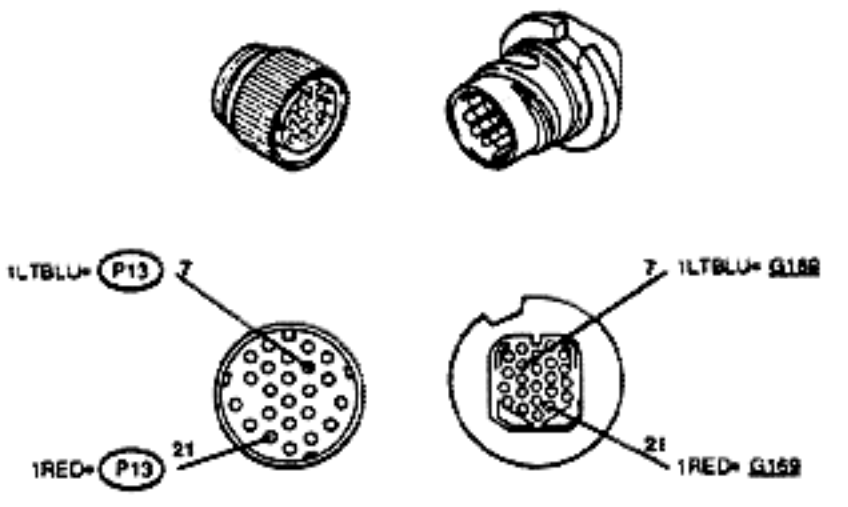


Steering wheel column support ground	G174

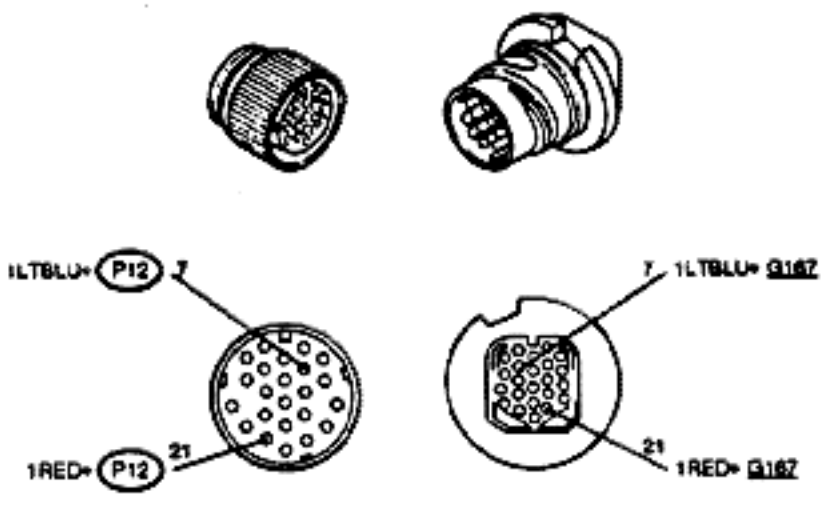


Center console ground	G174

Connector, left rear wiring to left rear door wiring	G191



Connector, rightrear wiring to right rear door wiring	G197



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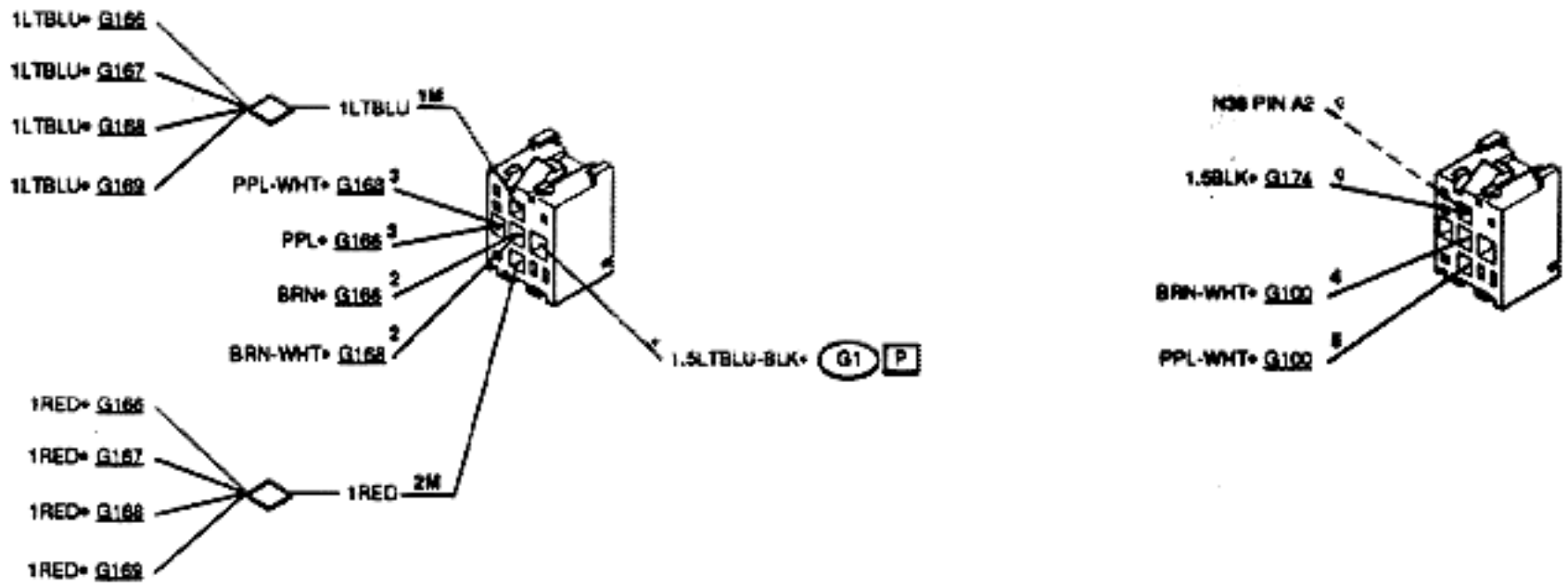
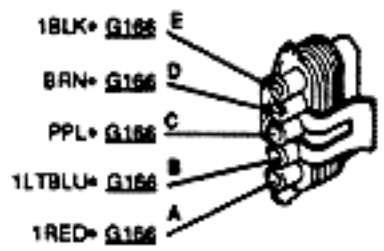
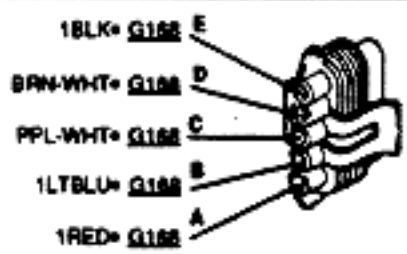
Dor lock control unit — N11



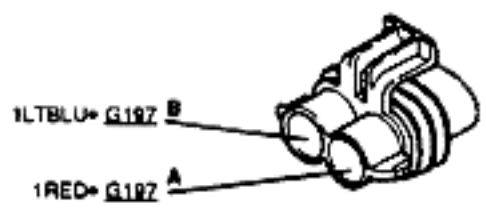
Right front door locking motor — P10



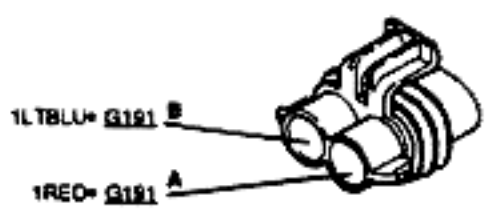
Left front door locking motor — P11

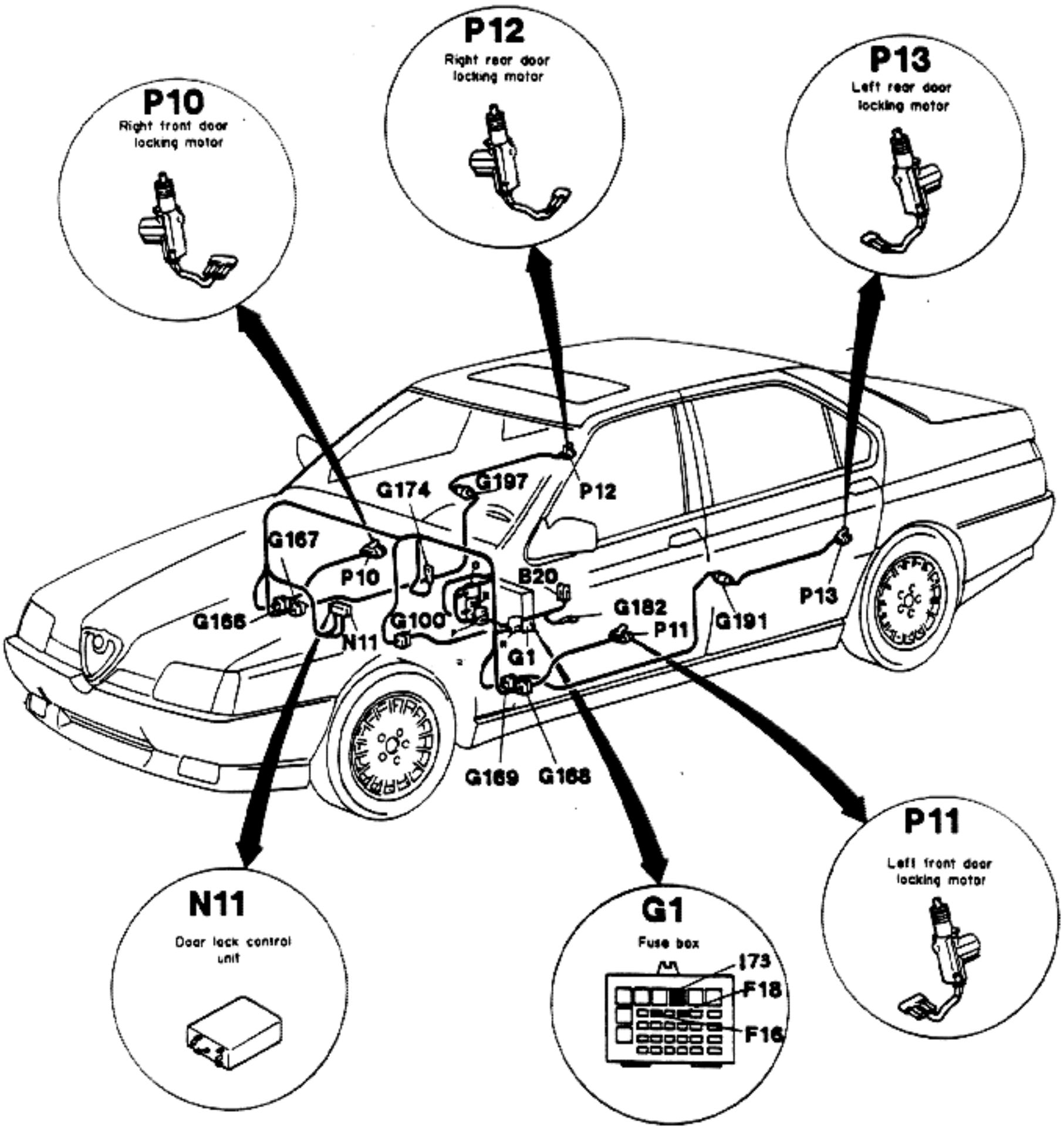


Right rear door locking motor — P12



Left rear door locking motor — P13





INTERIOR AND EXTERIOR LOCK/UNLOCK SYSTEM INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check **F16** fuse in the fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F16**
A2 CONTROL UNIT POWER CHECK - Check for presence of 12V between pins "+" and " ↓ " of control unit **N11**	OK ▶ ~~OK~~ ▶	Replace **control unit N11** Carry-out **step A3**
A3 GROUNDING CHECK - Check for presence of 0V (zero) at pin " ↓ " of control unit **N11**	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Repair wiring between **pin " ↓ " of control unit N11 and ground point G174**
A4 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin "+" of control unit N11 and pin 7P of fuse box G1** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test A

INTERIOR LOCK/UNLOCK SYSTEM INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B1 FUSE CHECK - Check **F18** fuse in the fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **fuse F18**
B2 VOLTAGE CHECK - With the ignition key to "run" position check for presence of 12V between pin 4E of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step B6** Carry-out **step B3**
B3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 12E of fuse box **G1**	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Repair wiring between **pin 12E of fuse box G1 and ground point G174**
B4 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step B5** **Failure of power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

(Cont.d)

INTERIOR LOCK/UNLOCK SYSTEM INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B5 VOLTAGE CHECK - Check for presence of 12V between pin 2N of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Replace **relay I73** Failure **of power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
B6 VOLTAGE CHECK - With the start key to "run" position check for presence of 12V between pin 3 of switch **B20** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step B7** Repair wiring between **pin 3 of switch B20, pin 2 of G100 and pin 4E of fuse box G1**
B7 GROUNDING CHECK - Check for presence of 0V (zero) at pin 4 of switch **B20**	OK ▶ ~~OK~~ ▶	Carry-out **step B8** Repair wiring between **pin 4 of switch B20 and ground point G182**
B8 CONTROL UNIT CHECK - With the ignition key to "run" position, check that by pressing switch **B20** in both directions 12V are applied between pins 4 and 5 of control unit **N11** and ground; the voltage polarity depends on the setting of switch **B20**	OK ▶ ~~OK~~ ▶	Replace **control unit N11** Carry-out **step B9**

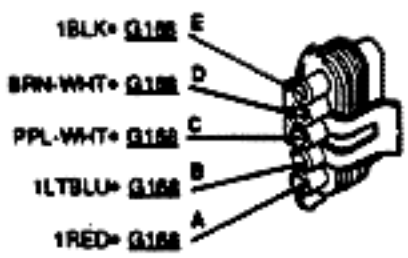
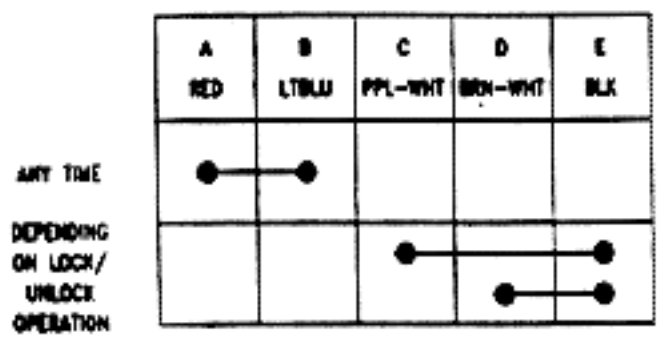
(Cont.d)

INTERIOR LOCK/UNLOCK SYSTEM INOPERATIVE	TEST B

TEST STEPS		RESULTS	REMEDY
B9	SWITCH CHECK		
- With the ignition key to "run" position check that when switch B20 is actuated, 12V are applied between pins 2 and 1 of the switch and ground; the voltage polarity depends on the setting of switch		OK ▶	Repair wiring at pins 7 and 10 of connector G100 to switch B20 and/or control unit N11
		~~OK~~ ▶	Replace switch B20

End of test B

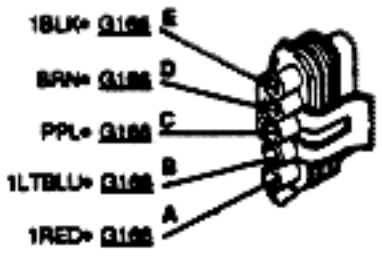
EXTERIOR LOCK/UNLOCK SYSTEM INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 BOTH DOORS FAILED SYSTEM CHECK - Check that system of both L.H. and R.H. doors has failed	OK ▶ ~~OK~~ ▶	Replace control unit N11 Carry-out step C2
C2 L.H. DOOR FAILED SYSTEM CHECK - Check that failure is present at the left door only	OK ▶ ~~OK~~ ▶	Carry-out step C3 Carry-out step C6
C3 MOTOR CHECK - Depending on the locking or unlocking operation of the system check for continuity between pins of motor P11 as indicated in the table below:  	OK ▶ ~~OK~~ ▶	Carry-out step C4 Replace motor P11

	A RED	B LTBLU	C PPL-WHT	D BRN-WHT	E BLK
ANY TIME	●	●			
DEPENDING ON LOCK/ UNLOCK OPERATION			●	●	●
				●	●

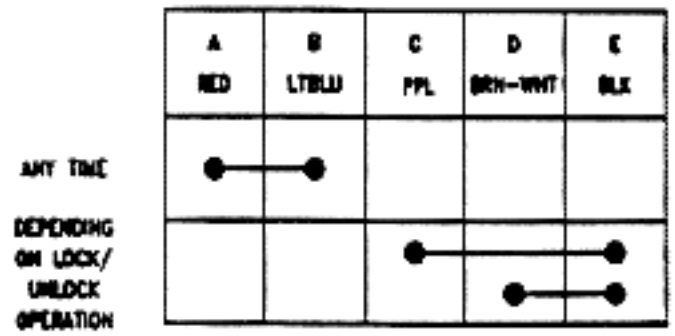
(Cont.d)

EXTERIOR LOCK/UNLOCK SYSTEM INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C4 GROUNDING CHECK - Check that pin E of motor **P11** is connected to ground	OK ▶ ~~OK~~ ▶	Carry-out **step C5** **Repair wiring between ground point G174, pin 14 of G168 connector and pin E of motor P11**
C5 GROUNDING CHECK - Depending on the locking or unlocking operation of the system, check that pins 7 and 8 of connector **G168** are connected to ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 7 and 6 of connector G168 and pins 2 and 3 of control unit N11** Repair wiring between **pins 7 and 8 of connector G168 and pins C and D of motor P11**
C6 MOTOR CHECK - Depending on the locking or unlocking operation of the system check for continuity between pins of motor **P10** as indicated in the table on the next page 	OK ▶ ~~OK~~ ▶	Carry-out **step C7** Replace **motor P10**

(Cont.d)

EXTERIOR LOCK/UNLOCK SYSTEM INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
		
C7 GROUNDING CHECK - Check that pin E of motor **P10** is connected to ground	OK ▶	Carry-out **step C8**
	OK ▶	Repair wiring between **ground point G174 and pin E of motor P10**
C8 GROUNDING CHECK - Depending on the locking or unlocking operation of the system, check that pin 7 and 8 of connector G166 are connected to ground	OK ▶	Repair wiring between **pins 7 and 8 of connector G166 and pins 2 and 3 of control unit N11**
	OK ▶	Repair wiring between **pins 7 and 8 of connector G166 and pins C and D of motor P10**

End of test C

LEFT REAR DOOR LOCK/UNLOCK SYSTEM INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D1 MOTOR CHECK - Check left rear motor **P13** for integrity verifying that circuit between pins A and B of motor is not open	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Replace **motor P13**
D2 VOLTAGE CHECK - Check for presence of 12V between pins 9 and 6 of connector **G169** with system activated	OK ▶ ~~OK~~ ▶	Carry-out **step D3** Repair wiring between **pin 9 and 6 of connector G169 and pins 1M and 2M of control unit N11**
D3 VOLTAGE CHECK - Check for presence of 12V between pins 7 and 21 of connector **G191** with system activated	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 7 and 21 of connector G191 and pins 9 and 6 of connector G169** Repair wiring between **pins B and A of motor P13 and pins 7 and 21 of connector G191**

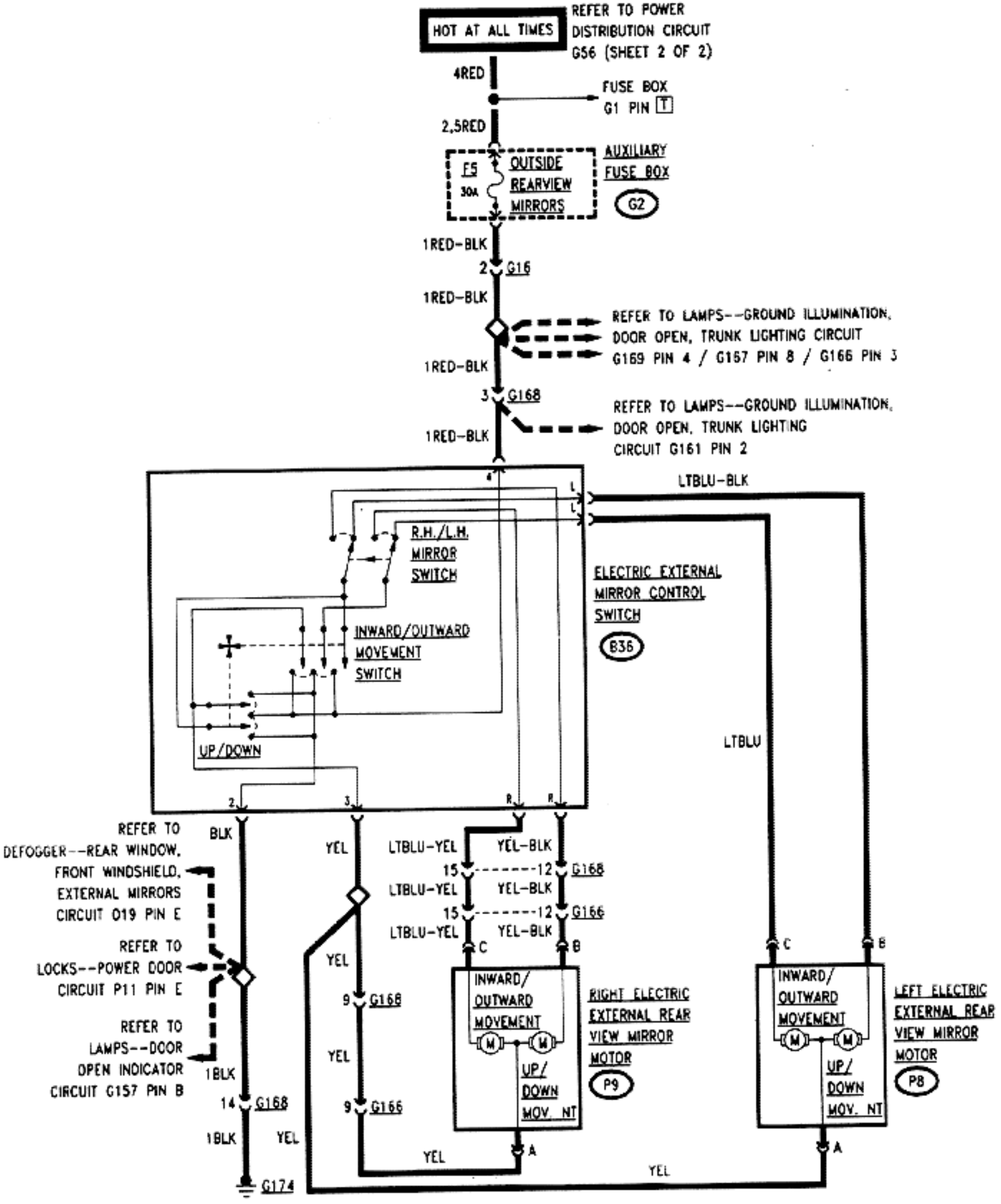
End of test D

RIGHT REAR DOOR LOCK/UNLOCK SYSTEM INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E1 MOTOR CHECK - Check right rear motor **P12** for integrity verifying that circuit between pins A and B of motor is not open	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Replace **motor P12**
E2 VOLTAGE CHECK - Check for presence of 12V between pins 1 and 2 of connector **G167** with system activated	OK ▶ ~~OK~~ ▶	Carry-out **step E3** Repair wiring between **pins 1 and 2 of connector G167 and pins 1M and 2M of control unit N11**
E3 VOLTAGE CHECK - Check for presence of 12V between pins 7 and 21 of connector **G197** with system activated	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 7 and 21 of connector G197 and pins 1 and 2 of connector G167** Repair wiring between **pins B and A of motor P12 and pins 7 and 21 of connector G197**

End of test E

MIRRORS - - EXTERNAL POWER



GENERAL

Adjustment of the external rearview mirrors is electrically operated by means of switches located on the left front door trim panel. These switches consist of:

- Left/right mirror selector.

- Four positions selector which controls the movement of the selected mirror in the four possible directions.

The system is protected by the fuse **F5** (30A)OUTISDE REARVIEW MIRRORS located in the auxiliary fuse box **G2**.

OPERATIONAL DESCRIPTION

12V from the battery are applied to the electric external mirror control switch **B36** through the fuse **F5**.
A section of this switch controls the selection of the left or right mirror.
The second section of this switch allows the adjustment of the selected mirror in four possible directions by means of the four positions selector.
The following description refers to the left mirror; operation of the right mirror is identical, except for the setting of the Left/Right mirror selector.

- Outward rotation. Pressing the four position selector toward left, 12V from the battery are applied to pin A, while the ground is connected to pin C of the left external rearview mirror motor **P8**: the mirror rotates outwards.

- Inward rotation. Pressing the four position selector toward right, 12V from the battery are applied to pin C, while the ground is connected to pin A of the left external rearview mirror motor **P8**: the mirror rotates inwards.

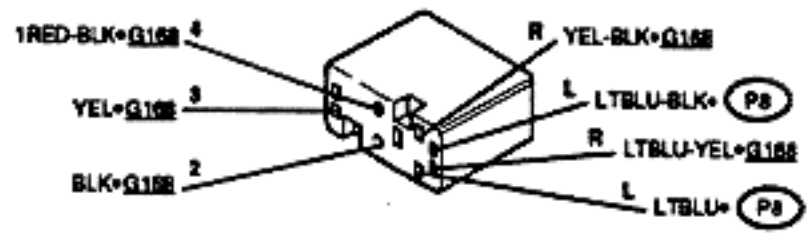
- Upward rotation. Pressing the four position selector upwards, the ground is connected to pin A, while 12V from the battery are applied to pin B of the left external rearview mirror motor **P8**: the mirror rotates upwards.

- Downward rotation. Pressing the four position selector downwards, 12V from the battery are applied to pin A, while the ground is connected to pin B of the left external rearview mirror motor **P8**: the mirror rotates downwards.

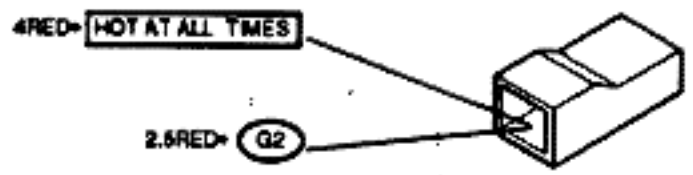
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT			
	F5 FUSE	B36 DUAL SWITCH	P8 MOTOR	P9 MOTOR
BOTH EXTERNAL REARVIEW MIRRORS ADJUSTMENT INOPERATIVE	●	●		
LEFT EXTERNAL REARVIEW MIRROR ADJUSTMENT INOPERATIVE		●	●	
RIGHT EXTERNAL REARVIEW MIRROR ADJUSTMENT INOPERATIVE		●		●

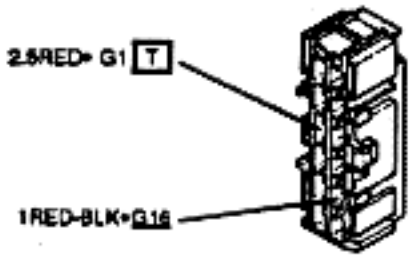
Electric external mirror control switch — B36



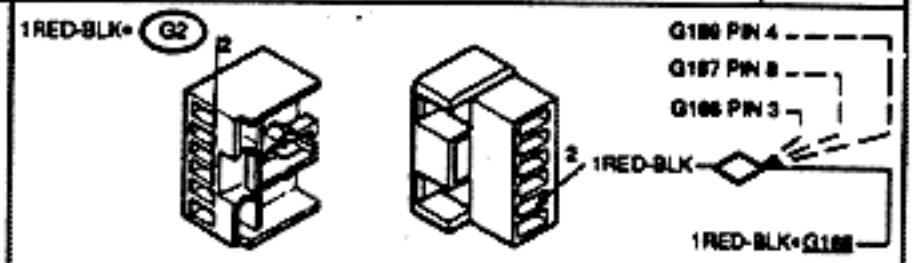
Fuse box — G1 T



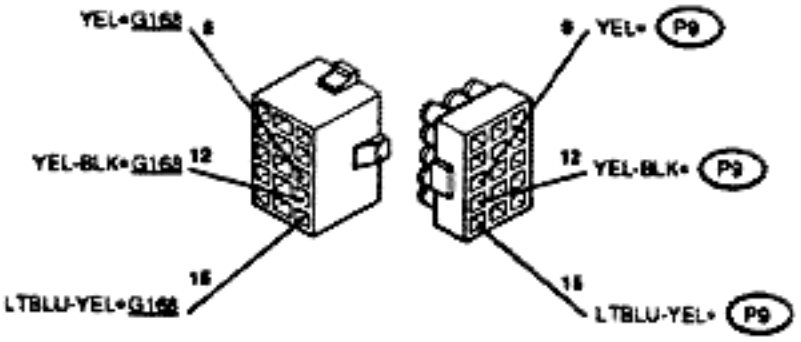
Auxiliary fuse box — G2



Six pin connector circuit board to doors wiring — G16

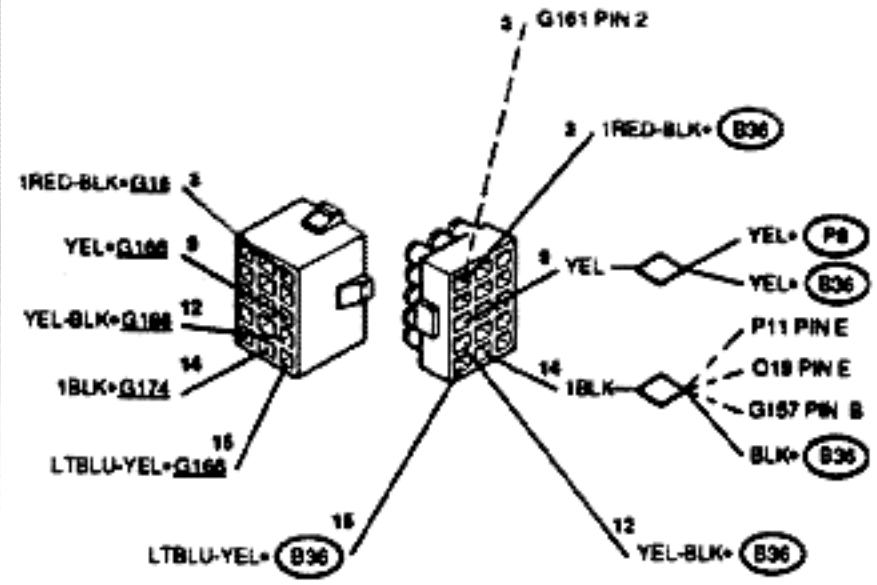


Connector, front doors to right front door wiring — G166

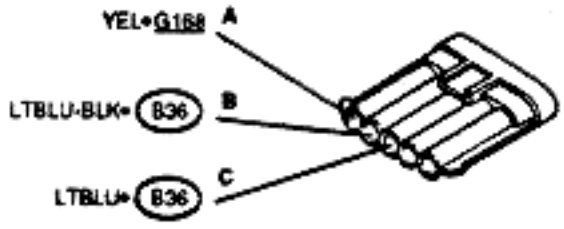


Steering wheel column support ground — G174

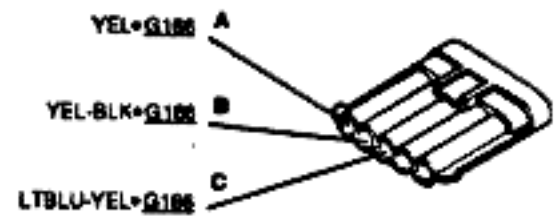
Connector, front doors to left front door wiring — G168

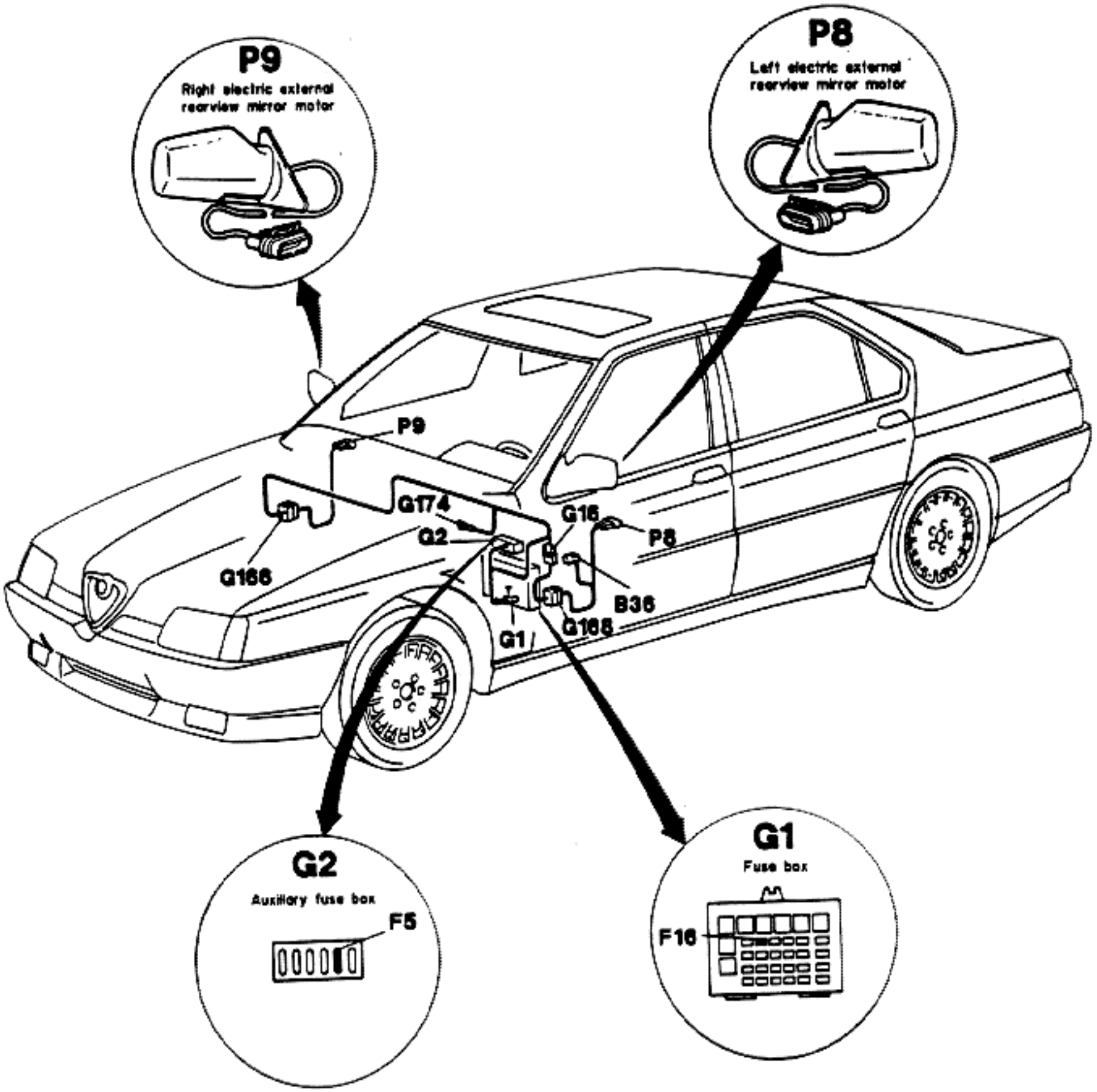


Left electric external rearview mirror motor — P8



Right electric external rearview mirror motor — P9





BOTH EXTERNAL REARVIEW MIRRORS ADJUSTMENT INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse F5 in the auxiliary fuse box G2 for integrity	OK ▶ OK ▶	Carry-out step A2 Replace fuse F5
A2 DOOR OPEN INDICATOR CHECK - Check for failed illumination of the door open indicator, opening either door	OK ▶ OK ▶	Carry-out step A3 Carry-out step A5
A3 VOLTAGE CHECK - Check for presence of 12V between pin 2 of connector G16 and ground	OK ▶ OK ▶	Repair wiring between pin 2 of connector G16 and pin 3 of connector G168 Carry-out step A4
A4 VOLTAGE CHECK - Check for presence of 12V between pin f auxiliary fuse box G2 (RED wire) and ground	OK ▶ OK ▶	Repair wiring between pin 2 of connector G16 and pin of auxiliary fuse box G2 Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2

(Cont.d)

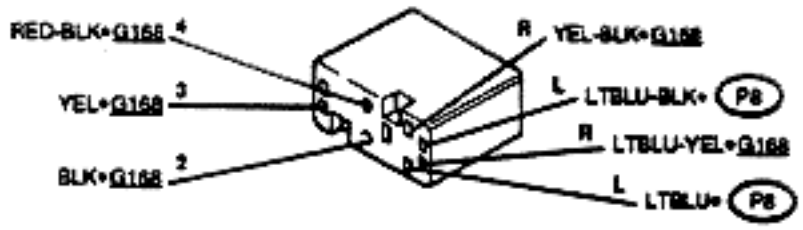
BOTH EXTERNAL REARVIEW MIRRORS ADJUSTMENT INOPERATIVE	TEST A

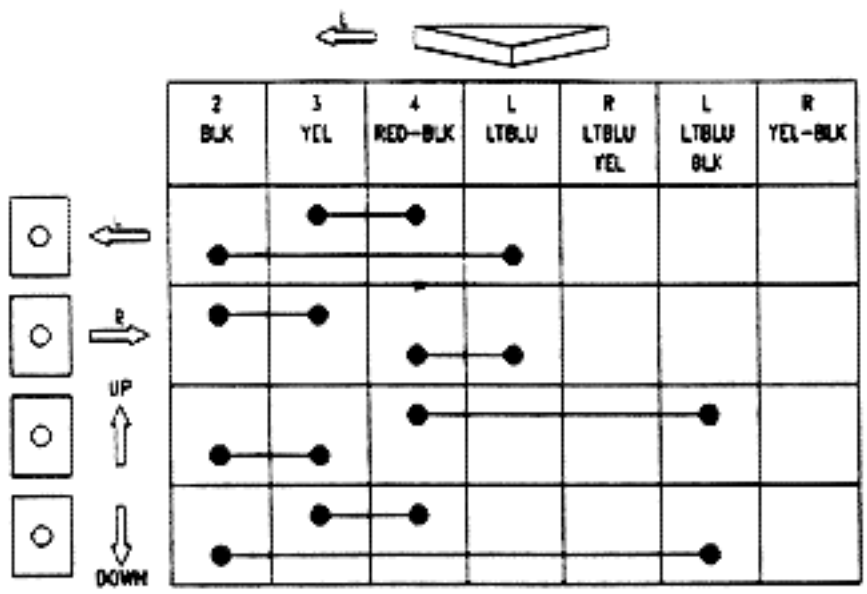
TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - Check for presence of 12V between pins 4 and 2 of switch **B36**	OK ▶	Replace **switch B36**
	~~OK~~ ▶	Carry-out **step A6**
A6 VOLTAGE CHECK - Check for presence of 12V between pin 3 of connector **G168** and ground	OK ▶	Repair wiring between **pin 3 of connector G168 and pin 4 of switch B36**
	~~OK~~ ▶	Carry-out **step A7**
A7 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2 of switch **B36**	OK ▶	Repair wiring between **pin 3 of switch B36, and pin 9 of connector G168**
	~~OK~~ ▶	Repair wiring between **pin 2 of switch B36, pin 14 of connector G168 and ground point G174**

End of test A

LEFT EXTERNAL REARVIEW MIRROR ADJUSTMENT INOPERATIVE	TEST B

TEST STEPS		RESULTS	REMEDY
B1	SWITCH CHECK		
- With left mirror selected, and depending on the direction selected, check for continuity between pins of switch **B36** as indicated in the table below:		OK ▶	Carry-out **step B2**
		~~OK~~ ▶	Replace **switch B36**





(Cont.d)

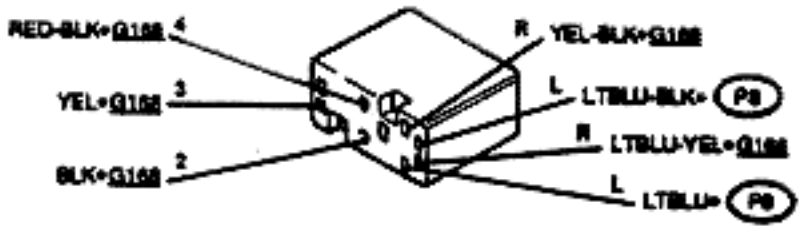
LEFT EXTERNAL REARVIEW MIRROR ADJUSTMENT INOPERATIVE	TEST B

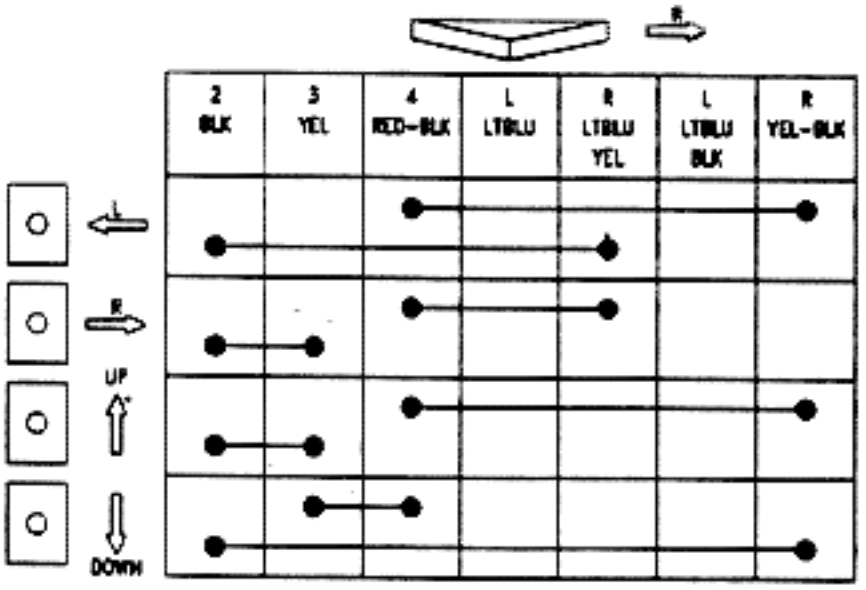
TEST STEPS	RESULTS	REMEDY
B2 VOLTAGE CHECK - Press switch **B36** as required to rotate the mirror upwards or downwards; check for presence of 12 V between pins A and B of motor **P8** (polarity of the voltage is related to the selected rotation)	OK ▶ ~~OK~~ ▶	Replace motor **P8** Carry-out **step B3**
B3 VOLTAGE CHECK - Press switch **B36** as required to rotate the mirror inwards or outwards; check for presence of 12V between pins A and C of motor **P8** (polarity of the voltage is related to the selected rotation)	OK ▶ ~~OK~~ ▶	Replace motor **P8** Repair wiring between: • Pin L (LT BLU-BLK wire) at switch B36 and pin B of motor P8 • Pin L (LT BLU wire) of switch B36 and pin C of motor P8

End of test B

RIGHT EXTERNAL REARVIEW MIRROR ADJUSTMENT INOPERATIVE	TEST C

TEST STEPS		RESULTS	REMEDY
C1	SWITCH CHECK		
- With right mirror selected, and depending on the direction selected, check for continuity between pins of switch B36 as indicated in the table below:		OK ▶	Carry-out step C2
		OK ▶	Replace switch B36





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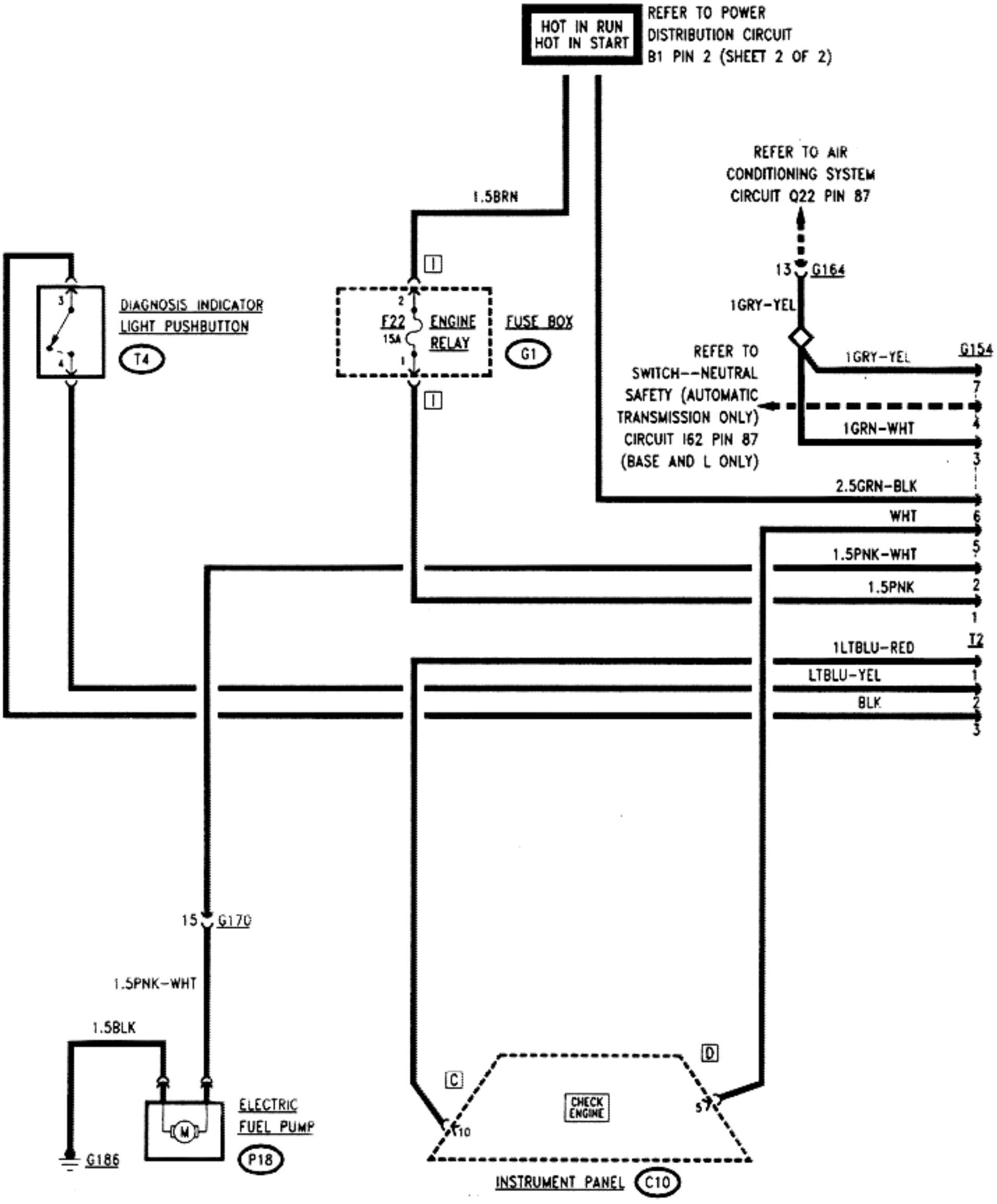
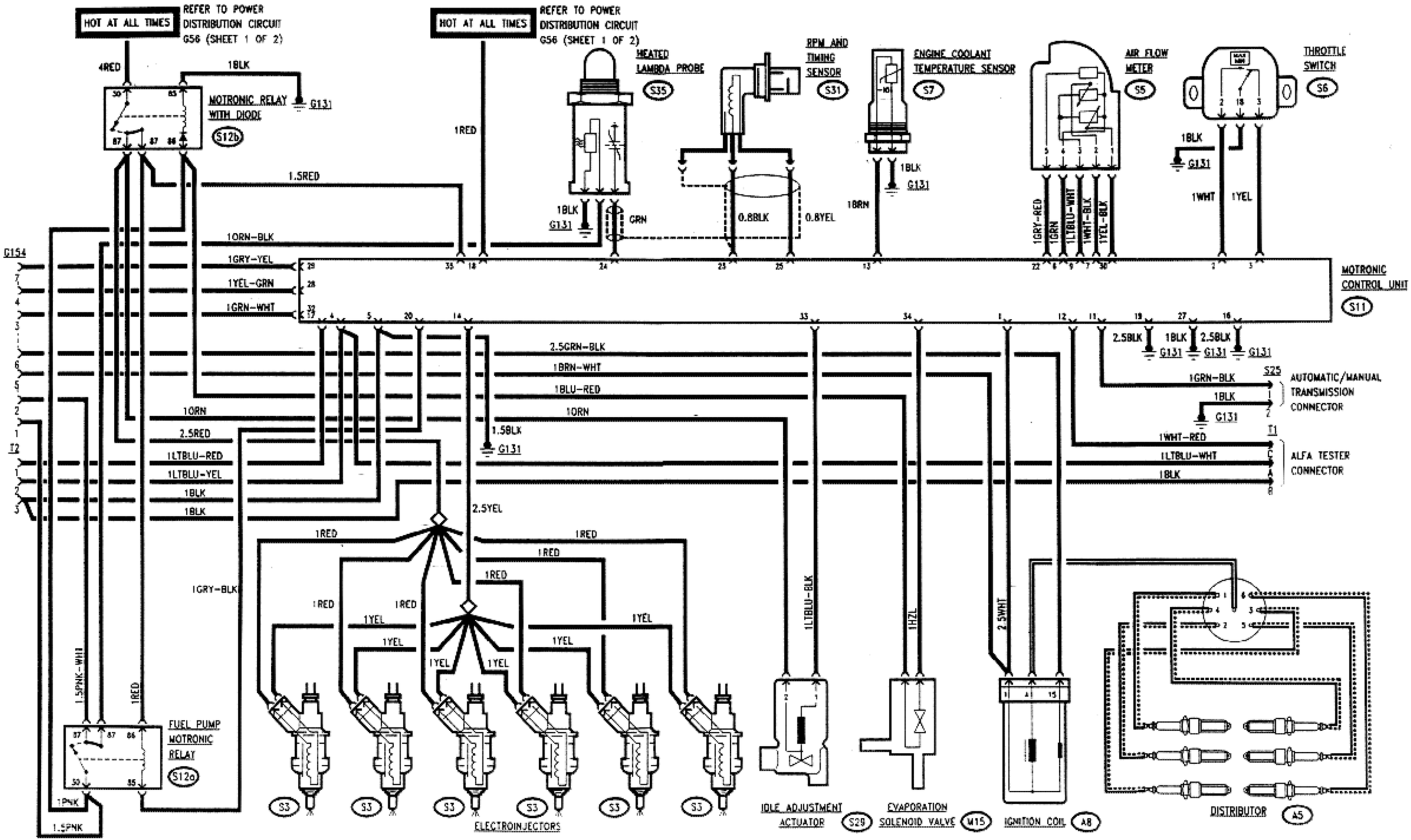
RIGHT EXTERNAL REARVIEW MIRROR ADJUSTMENT INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C2 VOLTAGE CHECK - Press switch **B36** as required to rotate the mirror upwards or downwards; check for presence of 12V between pins A and B of motor **P9** (polarity of the voltage is related to the selected rotation)	OK ▶ ~~OK~~ ▶	Replace **motor P9** Carry-out **step C3**
C3 VOLTAGE CHECK - Press switch **B36** as required to rotate the mirror inwards or outwards; check for presence of 12V between pins A and C of motor **P9** (polarity of the voltage is related to the selected rotation)	OK ▶ ~~OK~~ ▶	Replace **motor P9** Carry-out **step C4**
C4 CONTINUITY CHECK - Check for continuity between: • pin R (YEL-BLK wire) of switch **B36** and pin 12 of connector **G168** • pin 12 of connector **G168** and pin 12 of connector **G166** • pin 12 of connector **G166** and pin B of motor **P9** • pin A of motor **P9** and pin 9 of connector **G166** • pin 9 of connector **G166** and pin 9 of connector **G168** • pin R (LT BLU-YEL wire) of switch **B36** and pin 15 of connector **G168** • pin 15 of connector **G168** and pin 15 of connector **G166** • pin 15 of connector **G166** and pin C of motor **P9**	OK ▶ ~~OK~~ ▶	Replace **motor P9** Repair or replace **wires, as necessary**

End of test C

MOTRONIC ML4.1





GENERAL

The Motronic ML4.1 system electronically performs the check of the ignition and injection system to optimize both the vehicle performances and fuel economy.
The system is monitored by a control unit with self-diagnosis capability that allows storing of any malfunction that should occur during operation.
The Motronic ML4.1 system functions are as follows:

- Injection time setting.
- Spark lead setting.
- Cold start monitoring.
- Enrichment monitoring during acceleration.
- Fuel cut-off during release phase.
- Constant idle speed setting.
- Maximum RPM Control.
- Self-diagnosis.
- Heated Lambda probe control.
- Evaporation solenoid valve.
- Control unit auxiliary functions.

Injection time setting

The Motronic control unit provides an extremely fast and precise operation of electronic injectors; the injection time is optimized on the basis of battery voltage and engine temperature.
Further adjustments are performed whenever any possibility of spark pinging exists, or when the intake air quantity is less than the scheduled quantity.

Spark lead setting

Spark lead is obtained by the control unit schedule, and calculated on the basis of engine RPM and load.
The calculated value is optimized in relation to the intake air and engine temperatures.
In case the calculated value is noticeably different from the scheduled value, the control unit increases the injection time.

Cold start monitoring

During the cold start phase, the control unit monitors the spark lead and the injection time.
The spark lead is controlled on the basis of engine RPM and temperature, and its maximum value is obtained at a temperature of -30°C (-22°F).
The injection time is stored in the control unit and is corrected for the intake air temperature, engine temperature, battery voltage and engine RPM.
When the pre-set engine RPM's are reached (function of engine temperature), the control unit returns the injection control to the normal condition.

Enrichment monitoring during acceleration

Following an acceleration demand, the control unit adjusts the injection system for the new operating condition, thus increasing the injection of fuel so that the required engine RPM are quickly reached.
While approaching to the required RPM, the fuel injection increase is gradually eliminated.

Fuel cut-off during release phase

With a closed throttle recognition, and engine speed above 1080 RPM, the fuel injection is de-activated.
When the injection is off, the engine RPM begin to decrease to a rate depending on vehicle operating conditions.
Before reaching the idle setting, the RPM decrease dynamic is verified, and if found above a certain value, the fuel supply is partially re-activated on the basis of a logic that will smoothly bring the engine to idle speed.
Once this condition is reached, the normal idling functions are re-activated, and fuel cut-off will be restored only if the fuel cut-off threshold is overcome, to avoid jerking operation of the engine.
Fuel supply and cut-off re-activation thresholds vary as a function of engine temperature.

Constant idle speed setting

Constant idle speed setting is controlled during all the operating phases by means of the monowinding constant idle speed actuator.
During engine idling, the actuator will bring the actual RPM to normal RPM acting on the throttle by-pass valve.
Besides of idle speed control, the actuator also acts as an

additional air chamber and control for the actuation of the air conditioning system.
Idle speed adjustment is also obtained through the adjustment of spark lead, since its response is faster.

Maximum RPM control

When the maximum RPM are exceeded (6300 RPM), the fuel injection is cut-off to prevent engine overload.

Self-Diagnosis

The electronic injection and ignition control unit includes a sophisticated self-diagnosis device.
Whenever a system malfunction is detected, the control unit alerts the driver by turning on the CHECK ENGINE warning lamp on the instrument panel.

NOTE

Sporadic illumination of the warning lamp indicates a sporadic malfunction, and does not affect normal operation of vehicle.

Heated Lambda probe control

Proper air-fuel ratio is obtained by means of the heated lambda probe, that supplies the control unit with informations concerning the combustion of the air-fuel mixture.
To obtain the optimum air-fuel mixture, the engine intake air quantity must equal the theoric quantity which should be necessary to fire the injected fuel completely (λ factor = 1).
The heated lambda probe, which is in contact with the exhaust gases, generates an electric signal whose voltage is proportional to the concentration of oxigen present in the gases.
The voltage is characterized by a sudden change when the mixture composition moves from $\lambda = 1$ value.
When a low voltage signal is received, the control unit senses the mixture is too poor, and provides to slightly increase the injected fuel; when a high voltage signal is received, the control unit senses the mixture is too rich, and therefore decreases the quantity of fuel injected.
The lambda probe changes the injection times so that the signal voltage will remain within two reference voltages, and therefore the engine operates with a λ factor very close to the theoric factor.

Evaporation solenoid valve

The control unit opens the evaporator emission solenoid valve only when the engine is under load; the valve is closed when the engine is cold or at idle speed.
Opening of the evaporator emission solenoid valve allows the fuel vapors to flow from the fuel vapor filter to the engine for further use.

Control unit auxiliary functions

Control unit auxiliary functions are as follows:

- Idle speed setting with air conditioning system.
- Self-diagnosis system-flashing error code.
- Manual or automatic gear identification.

OPERATIONAL DESCRIPTION

The engine is provided with a Motronic ML4.1 injection system controlled, adjusted and monitored by the Motronic control unit **S11**.
The control unit **S11** has a program memory which controls the fuel injection time and correct spark lead as a function of engine RPM and load, intake air temperature and engine coolant temperature.
The control unit **S11** is powered directly on pins 18 and 35 by the Motronic relay with diode **S12b**, which is energized when the ignition key is set to "run" position.
The relay **S12b** power supply line is protected by fuse **F22**-ENGINE RELAY in fuse box **G1**.
The Motronic control unit **S11** includes a self-diagnosis system.
Pressing the diagnosis indicator light pushbutton **T4**, the control unit turns on the CHECK ENGINE warning lamp on instrument panel **C10**.
The warning lamp flashes at a codified error code which allows identification of the failure.
Refer to the troubleshooting table for further details.
The control unit **S11** activates the electric fuel pump **P18** through the fuel pump motronic relay **S12a**.
The relay **S12a** is energized when the outlet pin 20 of the control unit **S11** is connected to ground.
On the basis of its own program and of information received by the various sensors, the control unit **S11** calculates and monitors the opening time of electro-injectors **S3** (pin 14).
Information on engine speed is supplied to pins 23 and 25 of the control unit **S11** by the RPM and timing sensor

S31.The sensor is of the inductive type, and is operated by the variation of the magnetic field caused by the passage of teeth of a toothed pulley (impulse emitting wheel) on crankshaft.
The throttle switch S6 supplies to pins 2 and 3 of control unit **S11** information regarding the acceleration throttle angle, and therefore about the engine load.
The switch includes two microswitches. One microswitch (idle speed) supplies a signal for throttle angles between 0° (fully closed) and 1°; the second microswitch (maximum speed) supplies signals for throttle angles above 60°.
The engine coolant temperature sensor **S7** is of the NTC type (Negative Temperature Coefficient), and supplies engine temperature information to control unit **S11**.
The air flow meter **S5** measures the air flow, and supplies the control unit **S11** with a signal that permits exact metering of fuel.
The signal is generated by a potentiometer which transmits to control unit **S11** a voltage corresponding to the oscillating throttle angle.
A temperature sensor (NTC) inside the meter **S5** senses the intake air temperature.
Electro-injectors **S3** are controlled in parallel by the control unit S11 through pin 14 and by the Motronic relay with diode **S12b** on the basis of all the parameters received from the control unit.
In case the throttle is fully closed, or slightly open, the control unit **S11** is capable of controlling an air flow through the idle adjustment actuator **S29** which acts as a by-pass line of the throttle body.
The idle adjustment actuator **S29** is monitored by a portion of the control unit **S11** program, and is used to determine the exact amount of air necessary to maintain an ideal idle speed in any operating condition of the engine.
The ignition system is integrated in the control unit **S11**, and allows adjustment of spark lead by means of a stored program.
The starting output signal from the control unit **S11** (pin 1) is supplied directly to the ignition coil **A8** which activates the distributor **A5** and supplies required signal for the engine tachometer on instrument panel **C10** (pin 5D).
The evaporation solenoid valve **M15**, powered with 12V, is opened by control unit **S11** (pin 31).
The valve opening is actuated only when the ignition key is set to "run" position and only when the engine is loaded; The evaporation solenoid valve **M15** is closed when the engine is cold or at idle speed.
The heated lambda probe **S35**, in contact with exhaust gases, generates an electric signal whose voltage is dependent on oxigen concentration in the exhaust gases. The signal voltage is characterized by a sudden change when the mixture composition moves away from the optimum value.
When the probe **S35** signal voltage is low, the control unit senses the mixture is poor, and provides to slightly increase the injected fuel.
When the signal voltage is high, the control unit senses the mixture is rich, and therefore decreases the quantity of injected fuel.
The heated lambda probe **S35** is heated by a resistor powered through the Motronic relay with diode **S12b** only when the ignition key is to "run" position.
When the air conditioning system is actuated, 12V power is applied to pins 29 and 32 of Motronic control unit **S11**.
The control unit **S11** is therefore capable of adjusting the idle speed for the new power request due to activation of the air conditioning.
The control unit is capable to identify through pin 11 if the vehicle is equipped with manual or automatic transmission.
When a 0V condition is present at pin 11, the control unit **S11** senses the transmission is manual; on the opposite, when pin 11 is free, the control unit **S11** senses the transmission is automatic.
When the automatic transmission is in "Drive" position, or in any other transmission speed, the 12V power is applied to pin 28 in order to adapt the engine operating conditions for a smooth starting of the vehicle into movement.

SELF-DIAGNOSIS - GENERAL INFORMATION

The diagnosis procedure is divided in two groups:
A = Display of errors stored by the control unit.
B = Monitoring of some engine actuators and devices.
The button provided on the steering column performs three separate functions, depending on duration of pressure on the button; these functions are as follows:
T1 = Pressure duration between 2.5 and 5 seconds.
T2 = Pressure duration between 5 and 10 seconds.
T3 = Pressure duration over 10 seconds.
To select procedure A press the pushbutton for duration T1 after the ignition key has been turned to "run" position.
To select procedure B press the pushbutton first, then rotate the ignition key to position 1 and hold the pushbutton pressed for duration T1.

Procedure A

Press pushbutton for duration T1 after the ignition key has been turned to "run" position: the CHECK ENGINE warning lamp performs a long flashing (about 2.5 seconds).
Following this flashing, series of short flashings is performed (about 0.5 seconds); record the number of flashings since this is the first digit of the error code (consisting of four digits) which will allow identification of the malfunction. Each series of short flashings is separated by a long flashing.
By pressing again the pushbutton for a period T1 will display the second digit of the error code, and so on until all the five defects that can be stored in the control unit memory are displayed. If the pushbutton is not pressed, the system will repeat the last sequence of flashings, thus allowing to check the recorded code.
When all malfunctions have been displayed, the warning lamp performs a series of long flashings.
If the code of the first series of flashings is 4-4-4-4, that means the control unit has stored no errors.
Pressing the pushbutton for duration T2, the warning lamp will repeat the flashings from the beginning.
The control unit memory can be reset in any of the following modes:

- Disconnecting the battery (-) lead for at least 10 seconds.
- Pressing the pushbutton for duration T3 after the display of errors is finished, in other words when the warning lamp performs long flashings.

In any case, if the malfunction is no longer present, the control unit is automatically reset after 50 engine starts.

Procedure B

Press and hold the pushbutton and turn the ignition key to "run" position.
Subsequently, hold pushbutton pressed for duration T1 after the ignition Key has been turned, but with engine not running.
A few seconds after the pushbutton has been released, the electro-injectors will begin to operate, while the CHECK ENGINE warning lamp will indicate which actuator has been activated by means of a four digits code in accordance with methodology described for procedure A.
The sequence of activated actuators is as follows:

- Electro-injectors.
- Idle adjustment actuator.
- Evaporation solelenoid valve.

Pressing the pushbutton for duration T2 you will return to the beginning of procedure with actuation of the electro-injectors.
Pressing the pushbutton for duration T3 the activation of actuators is completed.
The codes of the above mentioned procedures are as follows:

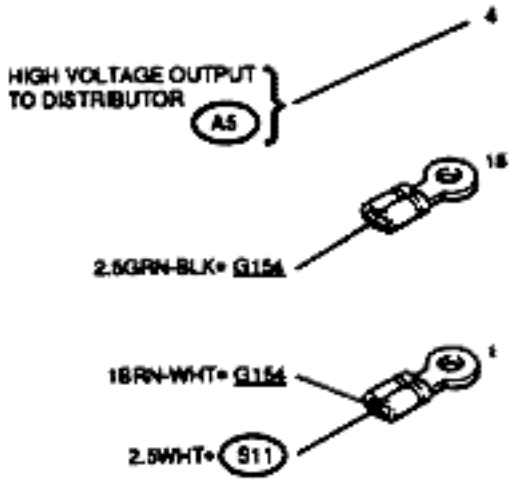
- 1-4-1-1: Electro-injectors actuation test activated: continuous control at the frequency of 10 Hz.
- 1-4-1-2: Idle adjustment actuator activation test: continuous control for 1 second at idle position and 1 second at maximum speed.
- 1-4-1-3: evaporation solenoid valve actuation test: continuous control at the frequency of 0.5 Hz.

If operator performing the check has a device which is capable to interface with the control unit on a "SIX pole" line, two other codes can be obtained, as follows:

- 1-2-6-5: shortcircuit towards ground of final stage of CHECK ENGINE error warning lamp.
  Shortcircuit towards battery positive of final stage of CHECK ENGINE error warning lamp.
- 1-5-5-5: inability of the control unit to receive control inputs and to emit control outputs to the CHECK ENGINE warning lamp.

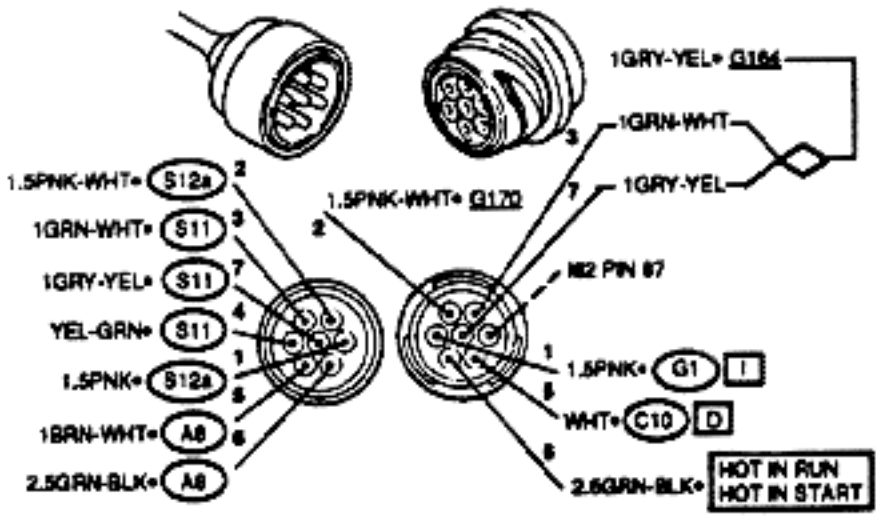
The following table contains the troubleshooting for the Motronic ML4.1 system where, starting from the flashing error code displayed by the CHECK ENGINE warning lamp, the existing failure can be detected, and the faulty components can be identified.

Ignition coil — A8

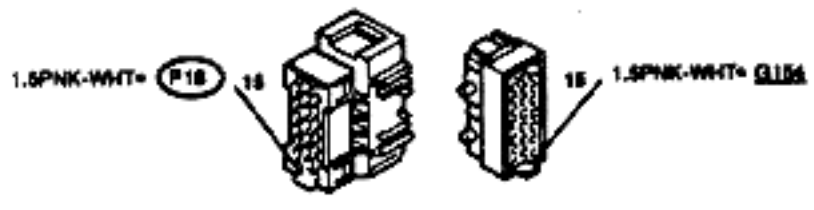


Fuse box — G1 I

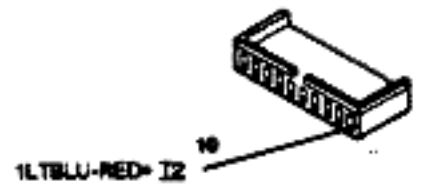
Connector, engine wiring to circuit board — G154



Connector, circuit board to right rear wiring — G170

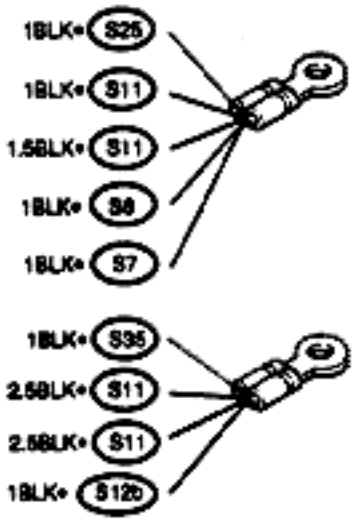


Instrument panel — C10 C

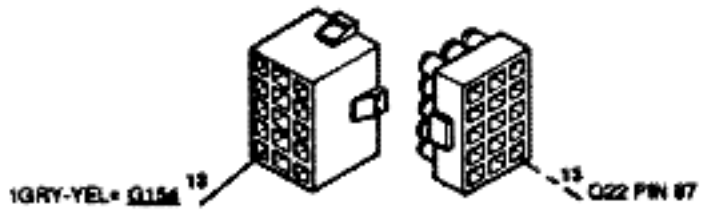


Instrument panel — C10 D

Upper cover ground connection — G131



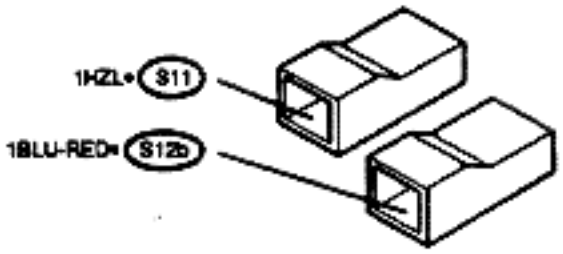
Connector, circuit board to air conditioning wiring — G164



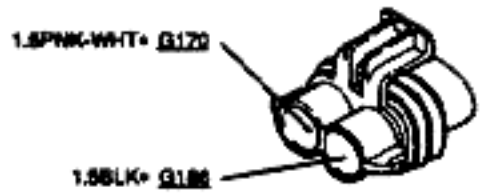
Trunk right side ground — G186

(Cont.d)

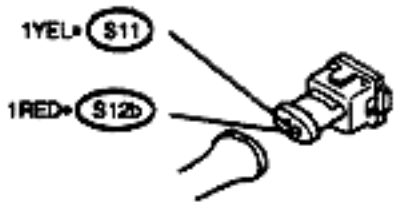
Evaporation solenoid valve — M15



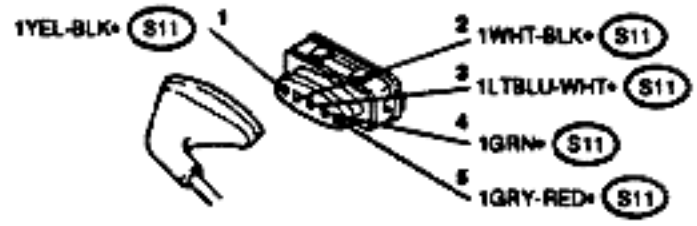
Electric fuel pump — P18



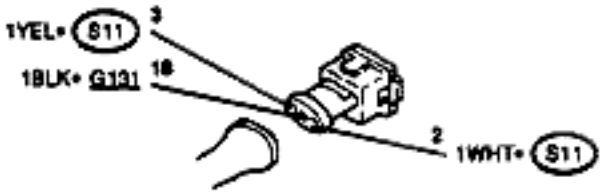
Electroinjectors — S3



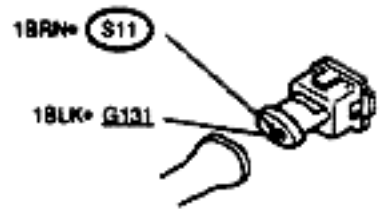
Air flow meter — S5



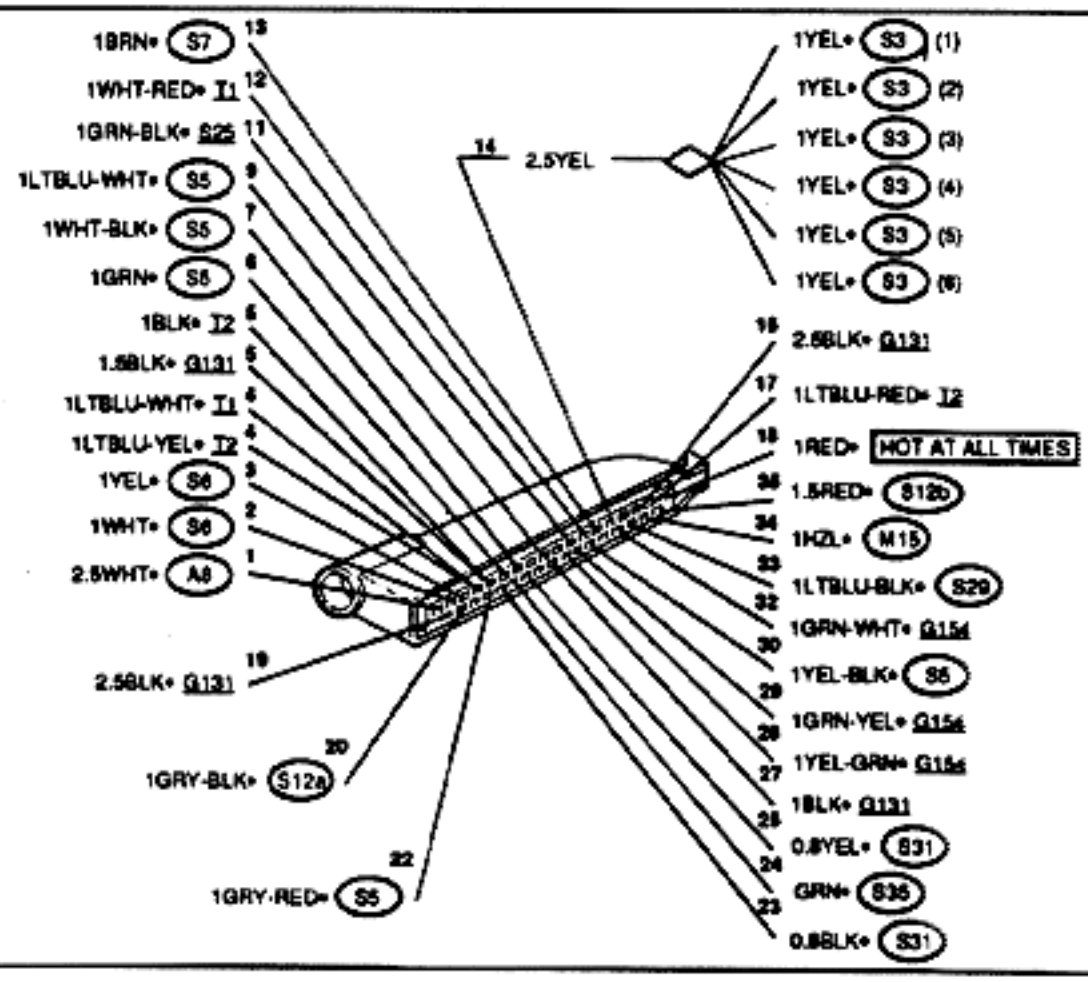
Throttle switch — S6



Engine coolant temperature sensor — S7

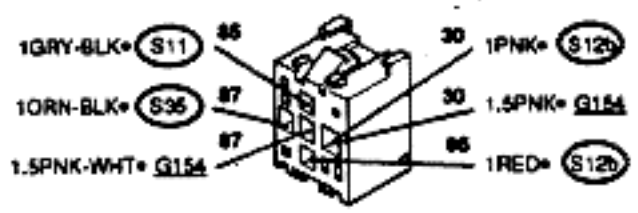


Motronic control unit — S11

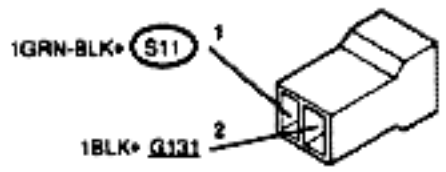


(Cont.d)

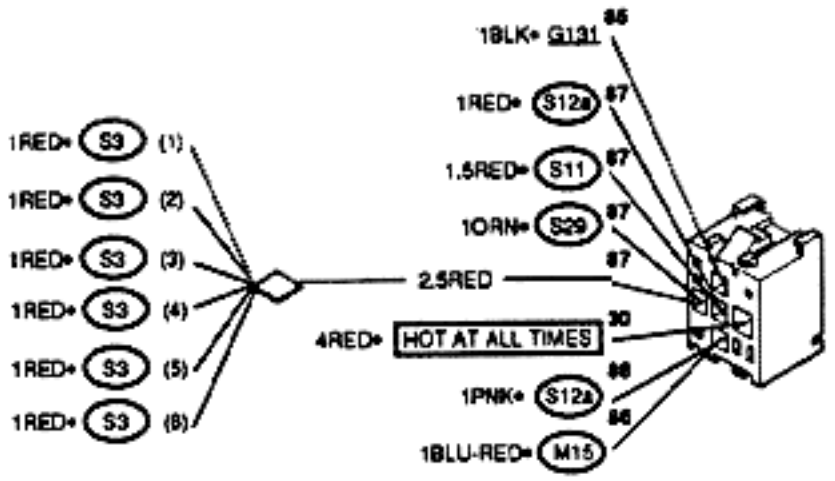
Fuel pump Motronic relay — S12a



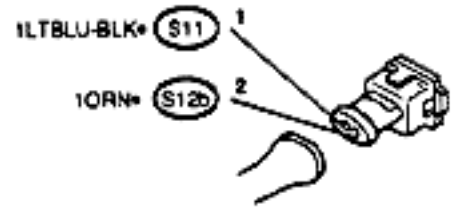
Automatic/Manual transmission connector — S25



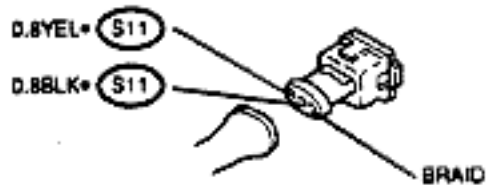
Motronic relay with diode — S12b



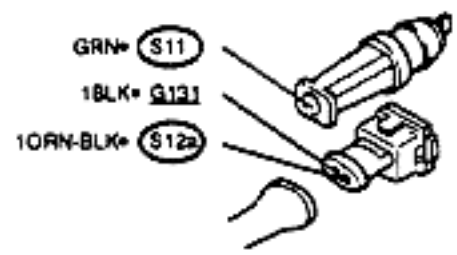
Idle adjustment actuator — S29



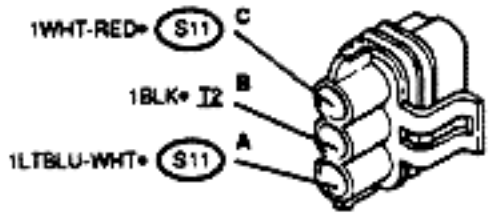
RPM and timing sensor — S31



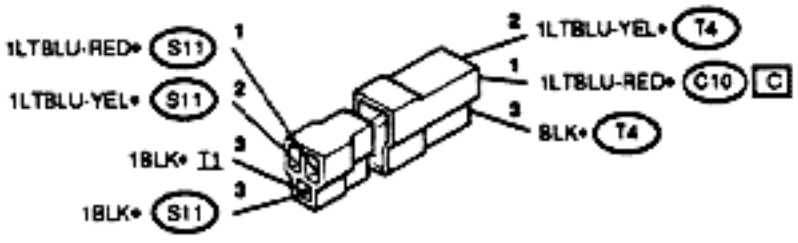
Heated Lambda probe — S35



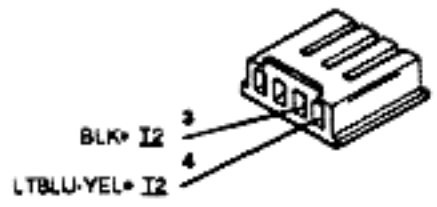
ALFA TESTER connector — I1

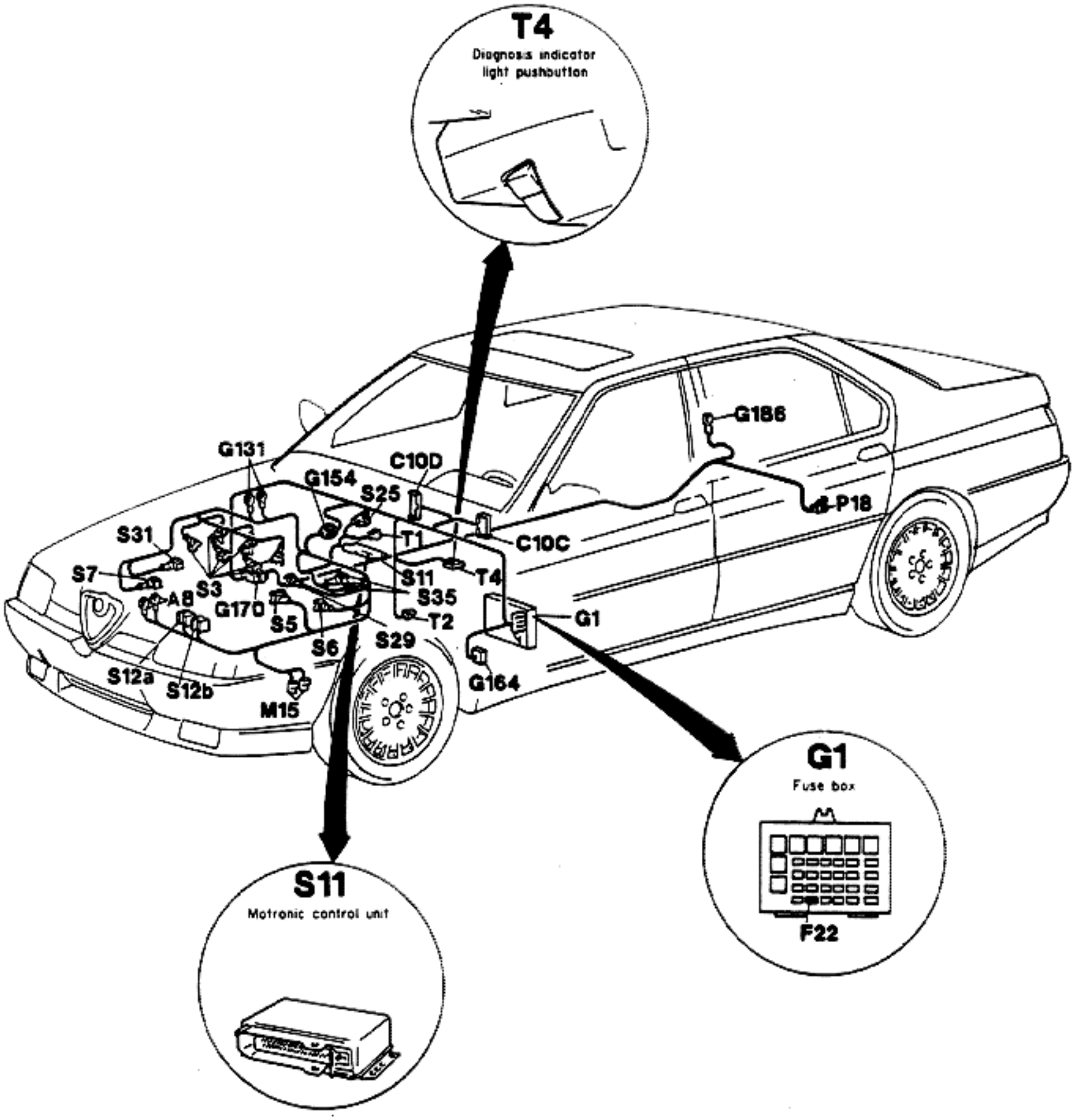


"Blinking code" diagnosis connector — I2



Diagnosis indicator light pushbutton — T4





SELF-DIAGNOSIS - TROUBLESHOOTING TABLE

CODE	MALFUNCTION	TEST REFERENCE
4-4-4-4	- NO malfunction displayed-malfunctions memory clear.	
1-2-1-1	- Abnormal battery voltage (<10V or >16V).	A
1-2-1-2	- Shortcircuit to ground of minimum throttle opening switch. Check conditions: • Engine speed >1000 RPM. • Engine temperature >80.2°C (176.36°F). • Engine load >2.5 msec. • Malfunction duration >5 sec.	B
1-2-1-3	- Shortcircuit to ground of maximum throttle opening switch. Check conditions: • Min. throttle opening switch pressed. • Engine load <3 msec.	C
1-2-1-4	- Temperature sensed by engine coolant temperature sensor above 140.3°C (284.54°F), or shortcircuit to battery positive pole. - Temperature sensed by engine temperature sensor below -35.4°C (-95.72°F), or circuit interrupted. Check conditions: • Air temperature >-20°C (-68°F).	D
1-2-2-1	- Air flow meter indications not appropriate to engine RPM and position of idle adjustment switch. - Shortcircuit to battery positive pole of air flow meter. - Shortcircuit to ground of air flow meter. - Circuit interrupted.	E
1-2-2-2	- Shortcircuit to ground of the final stage of the idle adjustment actuator, or circuit interrupted.	F

(Cont.d)

SELF-DIAGNOSIS - TROUBLESHOOTING TABLE

CODE	MALFUNCTION	TEST REFERENCE
	- Shortcircuit to battery positive pole of the final stage of idle adjustment actuator.	
1-2-2-3	- The heated lambda probe regulator inner adjuster reaches the minimum or the maximum value of correction.	G
1-2-2-4	- The heated lambda probe transmits to the control unit a tension >1.009V or <0.0928V. - The heated lambda probe malfunction persists for more than 2.5 sec. after the following conditions verify: • Engine temperature <74.6°C (66.28°F) for at least 3 minutes. • Engine load > 4 msec for at least 5 seconds.	H
1-2-2-5	- Temperature displayed by intake air flow meter above 140.3°C (284.54°F). - Temperature displayed by intake air flow meter below - 35.4°C (95.72°F). Check conditions: • At least 180 seconds after engine start. • Minimum throttle opening switch pressed for at least 30 seconds after 180 seconds from engine start.	I
1-2-4-3	- Fuel pump relay final stage shortcircuited to ground, or circuit interrupted. - Fuel pump motronic relay final stage shortcircuited to battery positive pole. Check conditions: • The malfunction is identified only if conditions that require pump operation exist (starting phase, or engine running).	J

(Cont.d)

SELF-DIAGNOSIS - TROUBLESHOOTING TABLE

CODE	MALFUNCTION	TEST REFERENCE
	NOTE The above malfunction can be identified only when another actuator is malfunctioning.	
1-2-4-4	- Evaporation solenoid valve final stage shortcircuited to ground, or circuit interrupted. - Evaporation solenoid valve final stage short circuited to battery positive pole. Check conditions: • The malfunction is identified only during actuation of evaporation solenoid valve (sudden acceleration while standing, or engine under loads).	K
1-2-5-1	- RAM/EPROM memory of control unit is not operating normally.	Replace **Motronic control unit S11**
None	- CHECK ENGINE warning lamp inoperative. - CHECK ENGINE warning lamp continuously illuminated.	L

BATTERY FAILURE	TEST A CODE 1-2-1-1

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F22** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F22**
A2 VOLTAGE CHECK - Check battery terminals for presence of a voltage of 11.5V to 13V	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Recharge **battery and/or check for possible power leakaget**
A3 VOLTAGE CHECK - Check for presence of a voltage of 11.5 to 13V between pins 18 and 5 of Motronic control unit **S11**	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Replace or repair **wires, as necessary**
A4 VOLTAGE CHECK - Check for presence of a voltage of 11.5V to 13V at pin 35 of control unit **S11**	OK ▶ ~~OK~~ ▶	Replace **control unit S11** Carry-out **step A5**

(Cont.d)

BATTERY FAILURE	TEST A CODE 1-2-1-1

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - Check for presence of a voltage of 11.5V to 13V at pin B7 of Motronic relay with diode **S12b**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 87 of relay S12b and pin 35 of control unit S11** Carry-out **step A6**
A6 VOLTAGE CHECK - Check for presence of a voltage of 11.5V to 13V at pin 86 of relay **S12b**	OK ▶ ~~OK~~ ▶	Carry-out **step A7** Carry-out **step A9**
A7 GROUNDING CHECK - Check for presence of 0V (zero) at pin 85 of relay **S12b**	OK ▶ ~~OK~~ ▶	Carry-out **step A8** Repair wiring between **pin 85 of relay S12b and ground point G131**
A8 VOLTAGE CHECK - Check for presence of 11.5V to 13V between pin 30 of relay **S12b** and ground	OK ▶ ~~OK~~ ▶	Replace **relay S12b** Failure of **power distribution circuit, refer to the relevant circuit of sheet 1 of 2**

(Cont.d)

BATTERY FAILURE	TEST A CODE 1-2-1-1

TEST STEPS	RESULTS	REMEDY
A9 VOLTAGE CHECK		
- Check for presence of a voltage of 11.5V to 13V at pin 1 of connector **G154**	OK ▶	Repair wiring between **pin 1 of connector G154 and pin 86 of relay S12b through pin 30 of relay S12a**
	~~OK~~ ▶	Carry-out **step A10**
A10 VOLTAGE CHECK		
- Check for presence of 11.5V to 13V between pin 2I of fuse box G1 and ground	OK ▶	Repair wiring between **pin 1 of connector G154 and pin 1I of fuse box G1**
	~~OK~~ ▶	**Failure of power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test A

MINIMUM THROTTLE OPENING SWITCH FAILURE	TEST B CODE 1-2-1-2

TEST STEPS	RESULTS	REMEDY
B1 SWITCH CHECK - With accelerator pedal released, check for presence of shortcircuit between pins 2 and 18 of accelerator throttle switch S6; with accelerator pedal fully pressed, check for presence of open circuit	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Adjust **position of switch S6, or replace switch**
B2 GROUNDING CHECK - Check for presence of 0V (zero) at pin 18 of accelerator throttle switch **S6**	OK ▶ ~~OK~~ ▶	Carry-out **step B3** Repair wiring between **pin 18 of switch S6 and ground point G131**
B3 CONNECTIONS CHECK - Perform checks stated at test step B1 between pin 2 and ground point of Motronic control unit **S11**	OK ▶ ~~OK~~ ▶	Replace **control unit S11** Repair wiring between **pin 18 of switch S6 and pin 2 of control unit S11**

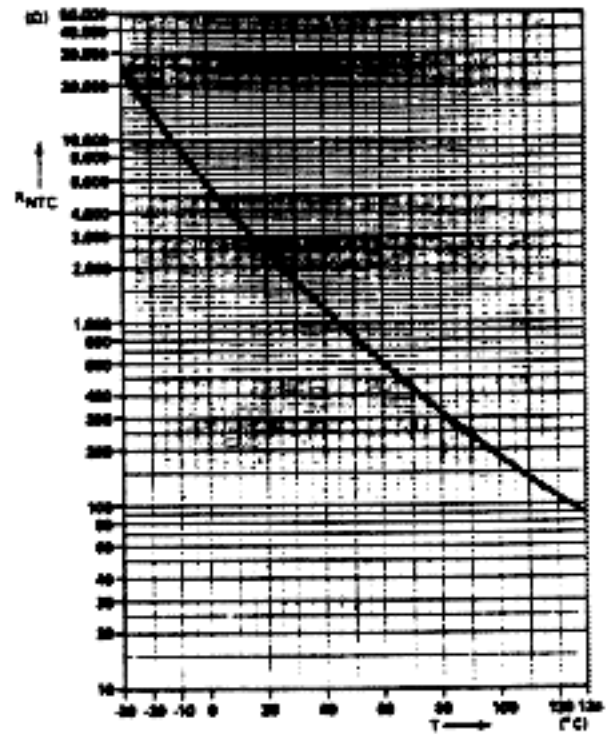
End of test B

MAXIMUM THROTTLE OPENING SWITCH FAILURE	TEST C CODE 1-2-1-3

TEST STEPS	RESULTS	REMEDY
C1 SWITCH CHECK - With accelerator pedal released, check for presence of shortcircuit between pins 3 and 18 of accelerator throttle switch **S6**; with accelerator pedal fully pressed, check for presence of open circuit	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Adjust **position of switch S6, or replace switch**
C2 GROUNDING CHECK - Check for presence of 0V (zero) at pin 18 of accelerator throttle switch **S6**	OK ▶ ~~OK~~ ▶	Carry-out **step C3** Repair wiring between **pin 18 of switch S6 and ground point G131**
C3 CONNECTIONS CHECK - Perform checks stated at test step C1 between pin 3 and ground point of Motronic control unit **S11**	OK ▶ ~~OK~~ ▶	Replace **control unit S11** Repair wiring between **pin 18 of switch S6 and pin 3 of control unit S11**

End of test C

ENGINE TEMPERATURE SENSOR FAILURE	TEST D CODE 1-2-1-4

TEST STEPS		RESULTS	REMEDY
D1	SENSOR CHECK		
- Check for presence at terminals of engine coolant temperature sensor **S7** of a resistance depending on temperature of engine as shown in diagram below  		OK ▶ OK ▶	Carry-out **step D2** Replace **sensor S7**
D2	CONTINUITY CHECK		
- Check continuity between pin 13 of Motronic control unit **S11** and sensor **S7** (BRN wire), and between ground point **G131** and sensor **S7** (BLK wire)		OK ▶ OK ▶	Replace **control unit S11** Repair or replace **wires, as necessary**

End of test D

AIR FLOW METER FAILURE	TEST E CODE 1-2-2-1

TEST STEPS		RESULTS	REMEDY
E1	METER CHECK		
- Check that meter **S5** is operational performing the following tests: • Check for presence of a resistance of about 400Ω between pins 3 and 4 of air flow meter **S5** • Check for presence of a resistance of about 5Ω between pins 2 and 4 of air flow meter **S5** • Operate manually the air flow meter throttle and check that resistance varies in a continuous mode (without sudden variations)		OK ▶ ~~OK~~ ▶	Carry-out **step E2** Replace **meter S5**
E2	CONTINUITY CHECK		
- Check for continuity between pins 2, 3 and 4 of meter S5 and pins 7,9 and 6 respectively of Motronic control unit **S11**		OK ▶ ~~OK~~ ▶	Replace **control unit S11** Repair or replace **wires, as necessary**

End of test E

IDLE SPEED SETTING ACTUATOR FAILURE	TEST F CODE 1-2-2-2

TEST STEPS	RESULTS	REMEDY
F1 VOLTAGE CHECK - Check for presence of 12V between pins 2 and 1 of idle adjustment setting actuator **S29**	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Carry-out **step F3**
F2 CONTINUITY CHECK - Check for continuity between pin 1 of actuator **S29** and pin 33 of Motronic control unit **S11**	OK ▶ ~~OK~~ ▶	Replace **control unit S11** Repair or replace **wires, as necessary**
F3 CONTINUITY CHECK - Check for continuity between pin 87 of Motronic relay with diode **S12b** and pin 2 of actuator **S29**	OK ▶ ~~OK~~ ▶	Replace **actuator S29** Repair or replace **wires, as necessary**

End of test F

LAMBDA PROBE INNER ADJUSTER FAILURE	TEST G CODE 1-2-2-3

TEST STEPS	RESULTS	REMEDY
G1 DUCT CHECK - Check air duct for leaks	OK ▶	Carry-out **step G2**
	~~OK~~ ▶	Replace **air duct or repair any leaks**
G2 FILTER CHECK - Check air filter for integrity	OK ▶	Carry-out **step G3**
	~~OK~~ ▶	Replace **air filter**
G3 SPARK PLUGS CHECK - Check distributor **A5** spark plugs for integrity	OK ▶	Carry-out **step G4**
	~~OK~~ ▶	Replace **defective spark plug (s)**
G4 INJECTORS CHECK - Check electroinjectors for integrity by means of flashing code **1-4-1-1** as indicated in paragraph "Self-Diagnosis - General Information"	OK ▶	Carry-out **step G5**
	~~OK~~ ▶	Replace **any defective electroinjectors**

(Cont.d)

LAMBDA PROBE INNER ADJUSTER FAILURE	TEST G CODE 1-2-2-3

TEST STEPS		RESULTS	REMEDY
G5	PRESSURE CHECK		
- Check that fuel pressure is 284 thru 323 KPa		OK ▶	Carry-out step G6
		~~OK~~ ▶	Failure of the fuel system pressure; refer to the relevant troubleshooting procedure (Group 04)
G6	COIL CHECK		
- Check for coil secondary winding integrity (H.V. cable)		OK ▶	Replace control unit S11
		~~OK~~ ▶	Replace H.V. cable

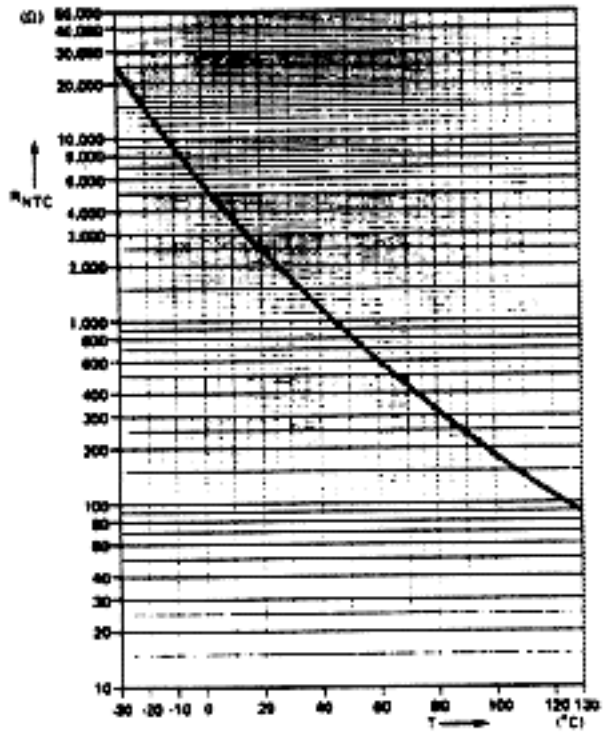
End of test G

LAMBDA PROBE FAILURE	TEST H CODE 1-2-2-4

TEST STEPS		RESULTS	REMEDY
H1	HEATED LAMBDA PROBE CHECK		
- Start engine and wait until normal operating conditions are established; check for presence of a voltage of 0.1V to 1V at terminal of heated lambda probe **S35** (GRN wire)		OK ▶ ~~OK~~ ▶	Carry-out **step H2** **Replace heated lambda probe S35**
H2	CONTINUITY CHECK		
- Repeat test step H1 check on pin 24 of Motronic control unit **S11**		OK ▶ ~~OK~~ ▶	Replace **control unit S11** Repair wiring between **probe S35 and pin 24 of control unit S11, and between probe S35 and ground point G131 (BLK wire)**

End of test H

ENGINE TEMPERATURE SENSOR FAILURE — TEST I CODE 1-2-2-5

TEST STEPS		RESULTS	REMEDY
I1	SENSOR CHECK		
- Check for presence between terminals 5 and 4 of air flow meter S5 of a resistance depending on air temperature as shown in diagram below 		OK ▶	Carry-out step I2
		~~OK~~ ▶	Replacet air flow meter S5
I2	CONTINUITY CHECK		
- Repeat test step I1 between pins 22 and 6 of Motronic control unit S11		OK ▶	Replace control unit S11
		~~OK~~ ▶	Repair or replace wires, as necessary

End of test I

FUEL PUMP RELAY CONTROL FINAL STAGE FAILURE	TEST J CODE 1-2-4-3

TEST STEPS	RESULTS	REMEDY
J1 VOLTAGE CHECK - Check for presence of 12V between pin 86 of fuel pump Motronic relay **S12a** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step J2** **Repair wiring between pin 86 of relay S12a and pin 87 of relay S12b**
J2 GROUNDING CHECK - Check for presence of 0V (zero) at pin 20 of Motronic control unit **S11**	OK ▶ ~~OK~~ ▶	**Repair wiring between pin 20 of control unit S11 and pin 85 of relay S12a** **Replace control unit S11**

End of test J

EVAPORATOR EMISSION SOLENOID VALVE FAILURE	TEST K CODE 1-2-4-4

TEST STEPS	RESULTS	REMEDY
K1 CONTROL UNIT CHECK - With engine warm, accelerate with slight pulses and check for presence of 0V (zero) at pin 34 of control unit **S11** at each pulse of accelerator pedal	OK ▶ ~~OK~~ ▶	Carry-out **step K2** Replace **control unit S11**
K2 GROUNDING CHECK - Check for presence of 0V (zero) at pin 1 (HZL wire) of evaporation solenoid valve **M15** under conditions stated at test step K1	OK ▶ ~~OK~~ ▶	Carry-out **step K3** Repair wiring between **pin 34 of control unit S11 and pin of evaporation solenoid valve M15 (HZL wire)**
K3 VOLTAGE CHECK - Check for presence of 12V between pin of evaporation solenoid valve **M15** (BLU-RED wire) and ground	OK ▶ ~~OK~~ ▶	Replace **evaporation solenoid valve M15** Repair wiring between **pin of evaporation solenoid valve M15 and pin 86 of relay S12b (BLU-RED wire)**

End of test K

CHECK ENGINE WARNING LAMP FAILURE	TEST L

TEST STEPS	RESULTS	REMEDY
L1 WARN. LAMP ILLUMINATION CHECK - Turn ignition key to "run" position and check that CHECK ENGINE warning lamp illuminates togheter with all other warning lamps on instrument panel, and then extinguishes	OK ▶ ~~OK~~ ▶	Carry-out **step L2** CHECK ENGINE warning lamp remains off. Carry-out **step L3**
L2 SELF-DIAGNOSIS CHECK - With CHECK ENGINE warning lamp on with steady light, press pushbutton located on steering column to perform self-diagnosis procedure (refer to paragraph Self-Diagnosis). Check flashing of warning lamp	OK ▶ ~~OK~~ ▶	**Carry-out trouble-shooting procedure relevant to flashing code displayed** CHECK ENGINE warning lamp steady on; replace **control unit S11**
L3 SIGNAL CHECK - Check that a variable frequency square wave signal is present at pin 10C of instrument panel **C10** when pushbutton **T4** is pressed	OK ▶ ~~OK~~ ▶	Replace **lamp on instrument panel C10** Carry-out **step L4**
L4 BUTTON CHECK - Check that pushbutton **T4** is operational verifying the presence of shortcircuit between pins 3 and 4 of pushbutton (LT BLU-YEL and BLK wires)	OK ▶ ~~OK~~ ▶	Carry-out **step L5** Replace **pushbutton T4**

(Cont.d)

CHECK ENGINE WARNING LAMP FAILURE	TEST L

TEST STEPS	RESULTS	REMEDY
L5 CONTINUITY CHECK - Press pushbutton **T4** and check for presence of closed circuit condition between pins 2 and 3 of connector **T2**	OK ▶ ~~OK~~ ▶	Carry-out **step L6** Repair wiring between **pins 2 and 3 of connector T2 and pins 4 and 3 respectively of pushbutton T4**
L6 CONTINUITY CHECK - Press pushbutton **T4** and check for presence of shortcircuit between pins 4 and 5 of Motronic control unit **S11**	OK ▶ ~~OK~~ ▶	Carry-out **step L7** Repair wiring between **pins 4 and 5 of control unit S11 and pins 2 and 3 of connector T2**
L7 GROUNDING CHECK - Check for presence of 0V (zero) at pin 5 of Motronic control unit **S11**	OK ▶ ~~OK~~ ▶	Carry-out **step L8** Repair wiring between **pin 5 of control unit S11 and ground point G131**

(Cont.d)

CHECK ENGINE WARNING LAMP FAILURE	TEST L

TEST STEPS	RESULTS	REMEDY
L8 CONTROL UNIT CHECK - Press pushbutton **T4** and check for presence of a square wave signal at pin 17 of motronic control unit **S11**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 17 of control unit S11, pin 1 of connector T2 and pin 10C of instrument panel C10** Replace **control unit S11**
L9 CONTROL UNIT CHECK - Check for presence of any error code	OK ▶ ~~OK~~ ▶	Perform **trouble-shooting procedure of displayed code** Replace **control unit S11**

End of test L

LOSS OF ENGINE POWER WHEN AIR CONDITIONING ACTUATED	TEST M

TEST STEPS	RESULTS	REMEDY
M1 VOLTAGE CHECK - Check for presence of 12V at pins 29 and 32 of Motronic control unit **S11**, when the air conditioning is actuated	OK ▶ ~~OK~~ ▶	Replace **control unit S11** Carry-out **step M2**
M2 VOLTAGE CHECK - Check for presence of 12V at pins 3 and 7 of connector **G154**, when the air conditioning is actuated	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 3 and 7 of connector G154 and pins 32 and 29 of control unit S11** Carry-out **step M3**
M3 VOLTAGE CHECK - Check for presence of 12V at pin 13 of connector **G164**, when the air conditioning is actuated	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 13 of connector G164 and pins 3 and 7 of connector G154** Carry-out **step M4**

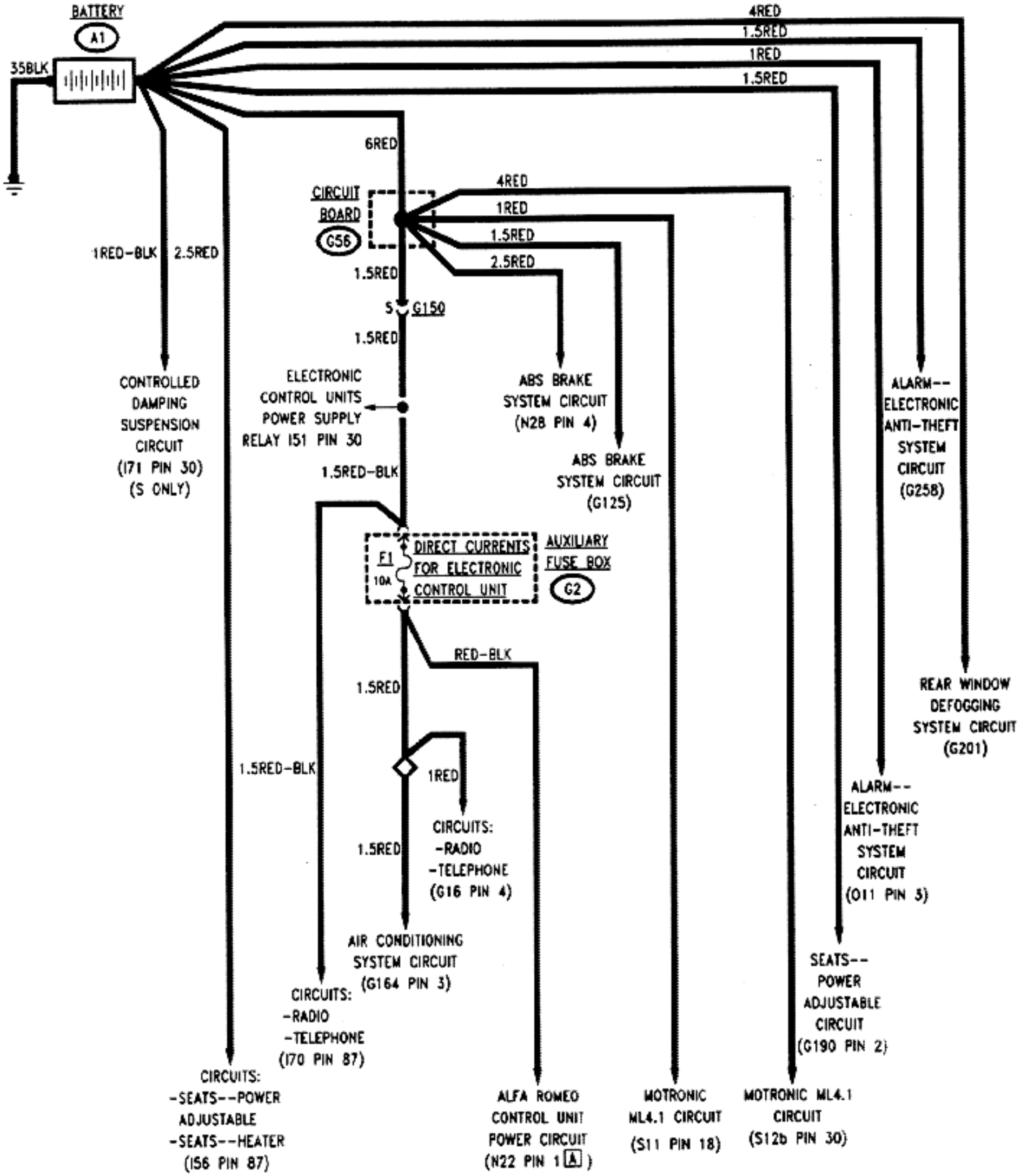
(Cont.d)

LOSS OF ENGINE POWER WHEN AIR CONDITIONING ACTUATED	TEST M

TEST STEPS		RESULTS	REMEDY
M4	VOLTAGE CHECK		
- Check for presence of 12V at pin 87 of electro-magnetic coupling control relay Q22, when the air conditioning is actuated		OK ▶	Repair wiring between pin 87 of relay Q22 and pin 13 of connector G164
		~~OK~~ ▶	Failure of the air conditioning system; refer to the applicable troubleshooting procedure

End of test M

POWER DISTRIBUTION



GENERAL

The vehicle electrical system is powered by a maintenance-free 12V battery.
The battery power is distributed by cables of suitable cross section and colors, which supply the whole electrical system.
Some of the circuits are continuously powered, even when the vehicle is stopped.
Some of the circuits are controlled by the ignition key, therefore they can be operated only after the ignition key has been inserted in the ignition switch, and turned.
From an initial analysis of the wiring diagram, it can be noted that the various electrical systems of the vehicle are powered in different ways.
Four different types of power supply are present:

- HOT AT ALL TIMES: circuits directly connected to the battery.

- HOT AT START: circuits powered after the ignition key has been turned to "start" position (line activated at pin 4 of the ignition switch **B1**).

- HOT AT START OR RUN: circuits powered when the ignition key is either in "start" and "run" positions (line activated at pin 2 of the ignition switch **B1**).

- HOT IN RUN: circuits powered only when the ignition key is rotated to "run" position (line activated at pin 1 of the ignition switch **B1**).

Due to the considerable complexity of the function the wiring diagram has been subdivided into two sheets (sheet 1 of 2 and sheet 2 of 2).

OPERATIONAL DESCRIPTION (Sheet 1 of 2)

The battery power (12V) is directly supplied to:

- Alarm - - Electronic anti-theft system.

- Seats - - Power adjustable circuit.

- Seats - - Heater circuit.

- Defogger - - Rear window, circuit.

- Controlled damping suspensions circuit (S only).

The battery power (12V) is also supplied to the remaining electrical circuits of the vehicle through the circuit board **G56**.
The following components and circuits are powered directly by circuit board **G56**:

- Motronic ML4.1 circuit.

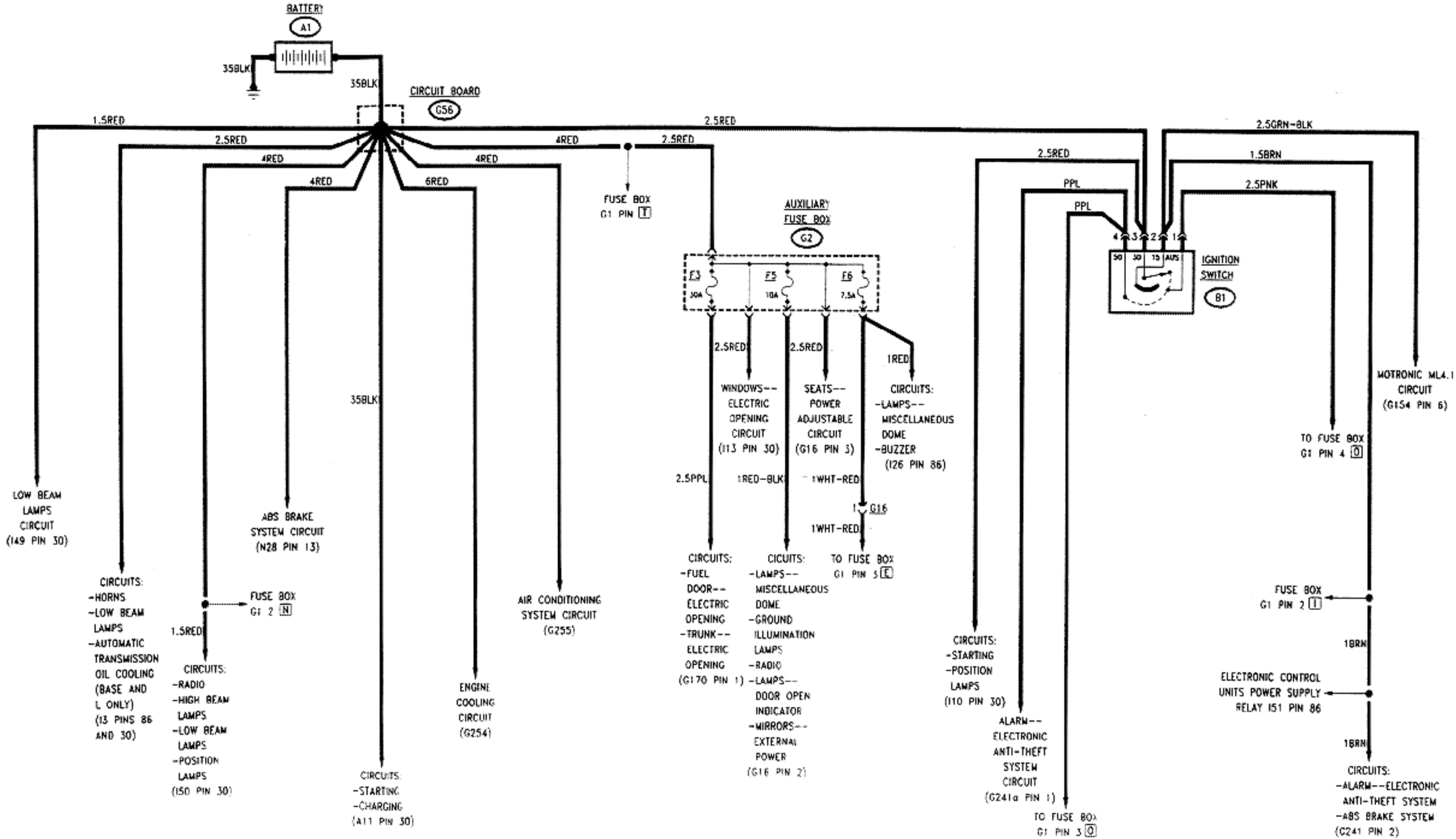
- Seats - - Power adjustable circuit.

- Instrument panel - - Alfa Romeo control ECU (interface through fuse **F1** in auxiliary fuse box **G2**).

- Air conditioning system circuit (through fuse **F1** in auxiliary fuse box **G2**).

- ABS brake system.

- Radio circuit (both directly and through fuse **F1** in auxiliary fuse box **G2**).



OPERATIONAL DESCRIPTION (Sheet 2 of 2)

Battery power (12V) is supplied directly to the following electrical circuits of the vehicle through the circuit board **G56**.

- Horns circuits.
- Fuse box **G1** (pins 3E, 2N and T).
- Starting and charging circuit.
- Lamps - - Position circuit.
- Lamps - - Low and High beam lamps circuit.
- Lamps - - Ground illumination door open warning lamp circuits (through fuse **F5** in auxiliary fuse box **G2**).
- Lamps - - Miscellaneous dome circuit (through fuses **F5** and **F6** in auxiliary fuse box **G2**).
- Safety belts not fastened/Ignition - key in buzzer circuit (through fuse **F6** in auxiliary fuse box **G2**).
- Fan - - Radiator cooling and A/C condenser circuit.
- Fan - - Automatic transmission oil cooler circuit.
- Windows - - Electric opening circuit.
- Mirrors - - External power circuit (through fuse **F5** in auxiliary fuse box **G2**).
- Seats - -Power adjustable circuit.
- Trunk electric opening circuit (through fuse **F3** in auxiliary fuse box **G2**).
- Fuel door - - Electric opening circuit (through fuse **F3** in auxiliary fuse box **G2**).
- Air conditioning system circuit.
- ABS brake system.
- Radio circuit (both directly and through fuse **F5** in auxiliary fuse box **G2**).

The battery power (12V) is also supplied to the following circuits if not inhibited by the ignition switch **B1**:

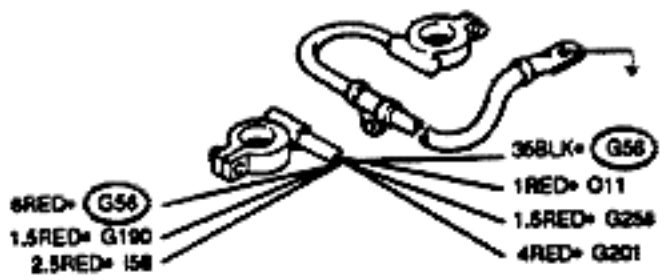
- Alarm - - Electronic anti-theft system.
- ABS brake system.
- Motronic ML4.1 circuit.
- ECU - - Power supply relay circuit.
- Fuse box **G1** (pins 2I, 3O and 4O).

NOTE

An adequate knowledge of all the circuits powered by the same line facilitates the troubleshooting when a failure affects all the relevant circuits simultaneously.

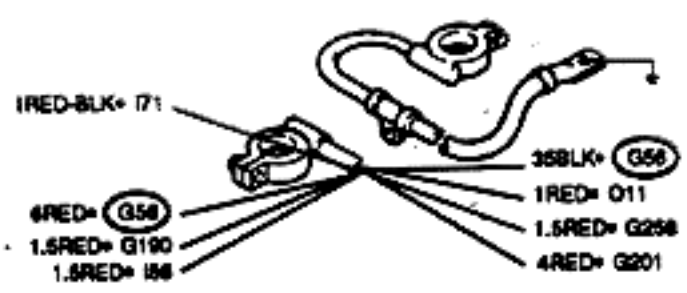
Battery — A1

BASE AND L ONLY

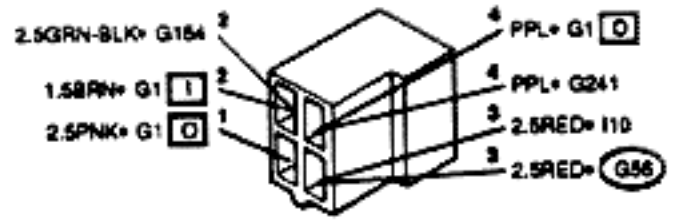


Battery — A1

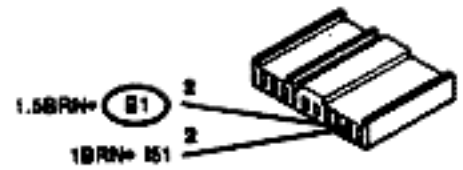
S ONLY



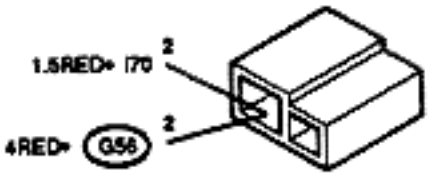
Ignition switch — B1



Fuse box — G1 I

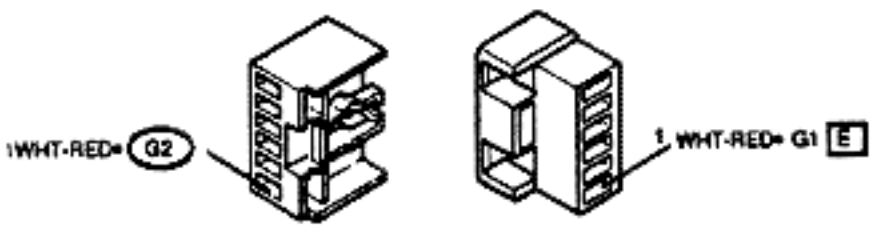


Fuse box — G1 N

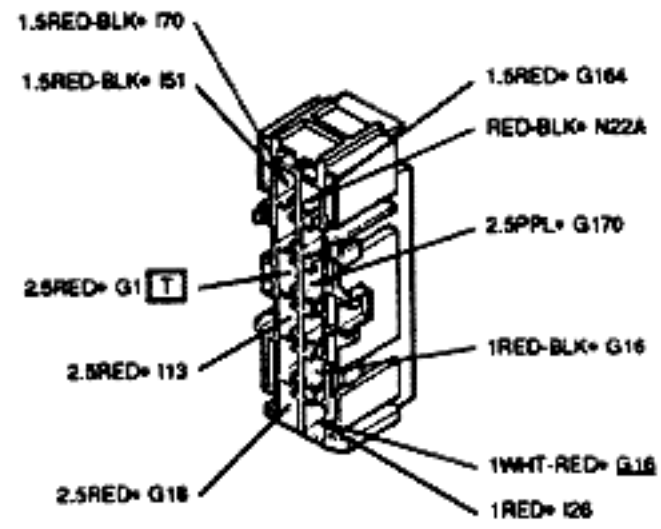


Fuse box — G1 T

Six pin connector circuit board to doors wiring — G16

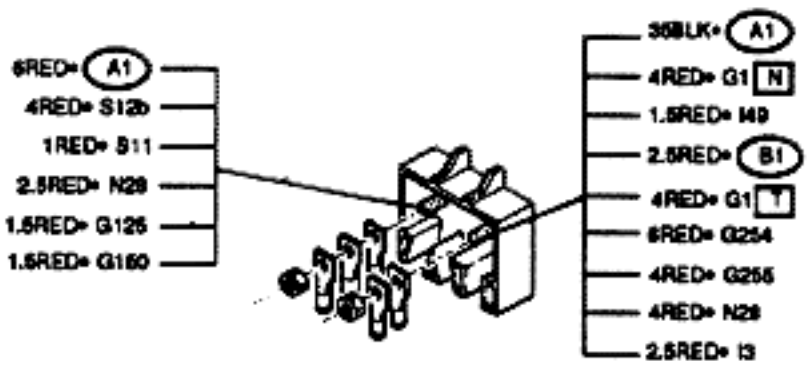


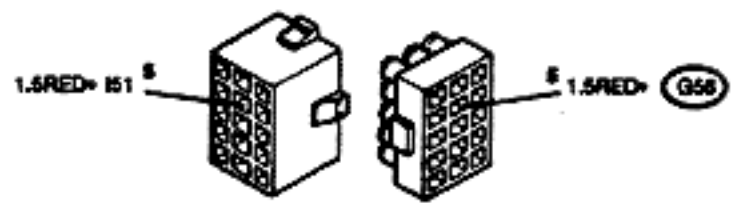
Auxiliary fuse box — G2



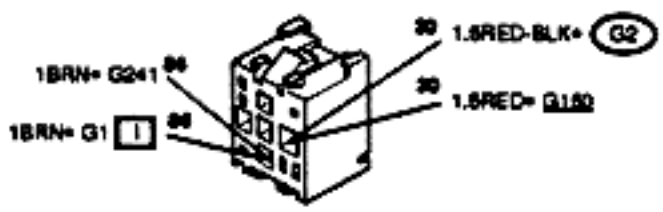
(Cont.d)

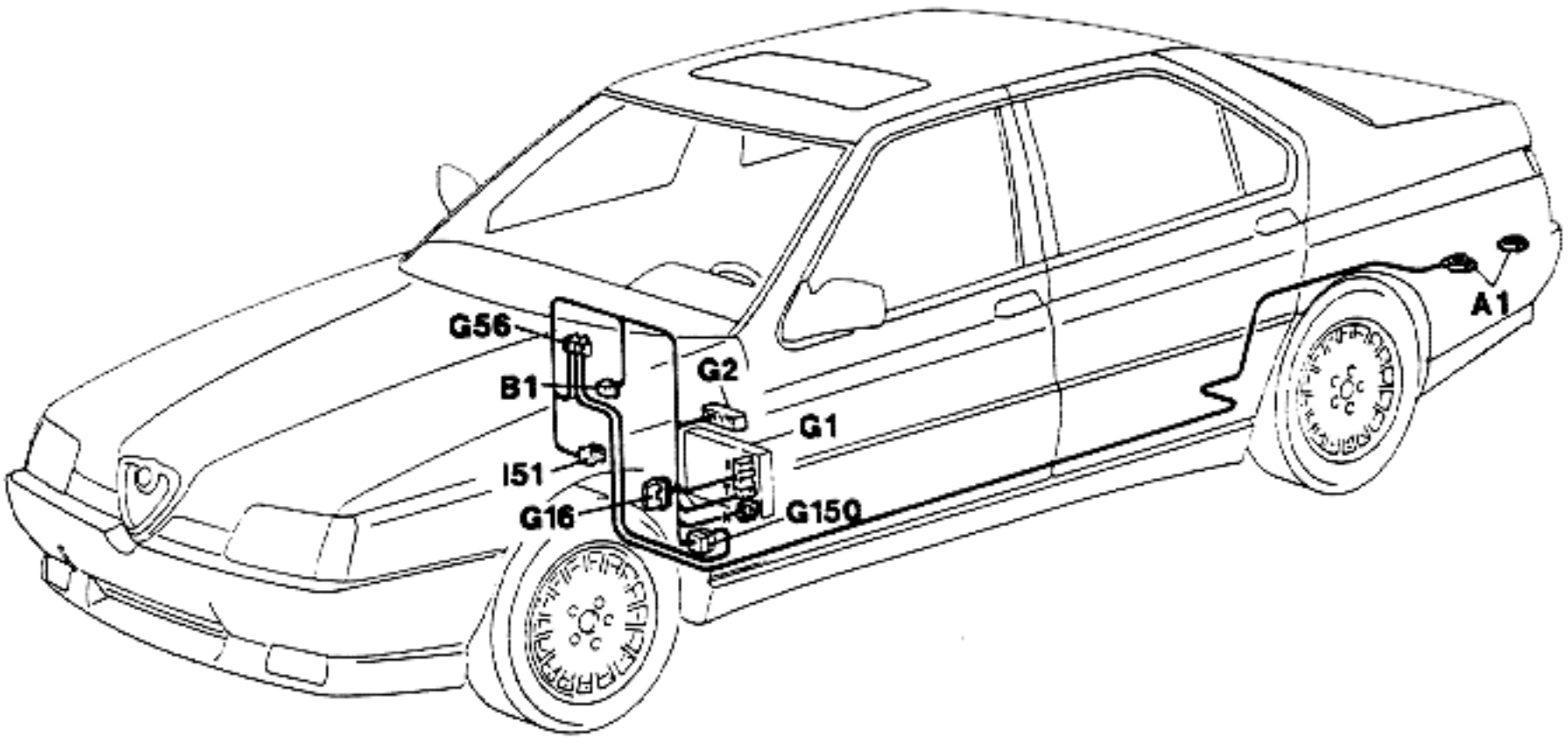
Circuit board	G56	Connector, circuit board to engine compartment left side wiring	G150





Electronic control units power supply relay	I51





RADIO

HOT AT ALL TIMES — REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 2 OF 2)

4RED

FUSE BOX G1 CONNECTOR [Y]

2.5RED

F5 10A POWER ANTENNA

1RED-BLK

2 G16

1RED-BLK

REFER TO LAMPS--GROUND ILLUMINATION. DOOR OPEN, TRUNK LIGHTING CIRCUIT G167 PIN 8/G166 PIN 3/G168 PIN 3

1RED-BLK

4 G169

REFER TO LAMPS--GROUND ILLUMINATION. DOOR OPEN, TRUNK LIGHTING CIRCUIT G191 PIN 20

1RED-BLK G193 1 — POWER ANTENNA 03 — G193 2 — YEL-RED — G169 1 — YEL-RED — B

REFER TO LAMPS--MISCELLANEOUS DOME CIRCUIT F37 PIN 4

N57

YEL-RED

F1 10A KEY-CONTROLLED CURRENTS FOR ELECTRONIC UNITS — AUXILIARY FUSE BOX G2

1.5RED-BLK

REFER TO INSTRUMENT PANEL--ALFA ROMEO CONTROL ECU INTERFACE CIRCUIT N22 PIN 1 [A]

1.5RED

REFER TO AIR CONDITIONING SYSTEM CIRCUIT G164 PIN 3

1RED

HOT AT ALL TIMES — REFER TO POWER DISTRIBUTION CIRCUIT G56 (SHEET 1 OF 2)

1.5RED

5 G150

1.5RED

1.5RED-BLK

18RN

ELECTRONIC CONTROL UNITS POWER SUPPLY RELAY (151)

AIR BAG TEST T3 CONNECTOR 1PNK D

1.5PNK

18LK

F2 7.5A KEY-CONTROLLED CURRENT FOR ELECTRONIC UNITS — AUXILIARY FUSE BOX G2

G174

REFER TO INSTRUMENT PANEL--INDICATOR CIRCUITS C10 PIN 1 [C]

REFER TO INSTRUMENT PANEL--INDICATOR CIRCUITS C10 PIN 6 [C]

REFER TO INSTRUMENT PANEL--ALFA ROMEO CONTROL ECU INTERFACE CIRCUIT N22 PIN 2 [A]

REFER TO AIR CONDITIONING SYSTEM CIRCUIT G164 PIN 2

REFER TO SENSORS--BRAKE FLUID LEVEL, WINDSHIELD WASHER FLUID LEVEL, PARKING BRAKE WARNING LAMPS CIRCUIT 172 PIN 85

1.5PNK

REFER TO BUZZER CIRCUIT N22 PIN 12 [A]

RADIO RELAY (170)

1WHT

15A RADIO RADIO-TELEPHONE FUSE (G239)

REFER TO TELEPHONE CIRCUIT G170 PIN 16

1LTBLU-RED

YEL-RED G15 YEL-RED

1RED

5 G16

1LTBLU-RED

IGNITION SWITCH (MICROSWITCH) (B1)

GRY

REFER TO WIPERS AND HORNS--WINDSHIELD WIPERS, WINDSHIELD WASHERS, HEADLAMP WASHERS, HORNS, B2 PIN 1 [C]

1BLK

G174

HOT IN RUN HOT IN START — REFER TO POWER DISTRIBUTION CIRCUIT B1 PIN 2 (SHEET 2 OF 2)

1.5BRN

REFER TO LAMPS--POSITION, SIDE MARKER, LICENSE PLATE ILLUMINATION CIRCUIT N41 PIN 6

G

F2 7.5A RADIO LIGHTING — FUSE BOX G1

REFER TO LAMPS--POSITION, SIDE MARKER, LICENSE PLATE ILLUMINATION CIRCUIT G165 PIN 2

GRY-YEL

E

REFER TO CIGARETTE LIGHTERS--FRONT AND REAR CIRCUIT 07

14 G100

GRY-YEL

FRONT CIGARETTE LIGHTERS 06

WHT-BLK

GRY-YEL

A

RADIO (04)

1GRY-BLK 10 2.5GRY-BLK — 1GRY 13 2.5GRY G166 G218 — RH FRONT

1GRN-BLK 10 2.5GRN-BLK — 1GRN 13 2.5GRN G168 G217 — LH FRONT

1YEL-BLK 11 2.5YEL-BLK — 1GRY-YEL 10 2.5GRY-YEL G196 — RH REAR

1LTBLU-BLK 3 2.5LTBLU-BLK — 1YEL-GRN 12 2.5YEL-GRN G167 G195 — LH REAR

2.5BLK

8 G100

2.5BLK

G182

GENERAL

The radio system consists of an autoreverse cassette radio with digital display, four two-way loudspeakers and an automatic power antenna.
The radio is installed at the center of the central console.
The front loudspeakers are installed on the front door side panels, and the rear loudspeakers are installed on sides of the rear window shelf tray.
The radio can be used only when the ignition key is set to "run".
Use of the radio when the engine is not running is allowed by turning the ignition key to "run" and then back to "parking", without removing it from the ignition switch.
When the radio is off the clock function is displayed, while when the radio is on, the display indicates the tune frequency.
The system is protected by four fuses as follows:

- Fuse **F1** (7.5A) KEY-CONTROLLED CURRENTS FOR ELECTRONIC UNITS in auxiliary fuse box **G2**.
- Fuse **F2** (7.5A) RADIO LIGHTING in fuse box **G1**.
- Free fuse **F5** (10A) POWER ANTENNA in supplementary fuse box **G2**.
- Free fuse **G239** (15A) RADIO, TELEPHONE.
- Fuse **F2** (7.5A) KEY-CONTROLLED CURRENTS FOR ELECTRONIC UNITS in auxiliary fuse box **G2**.

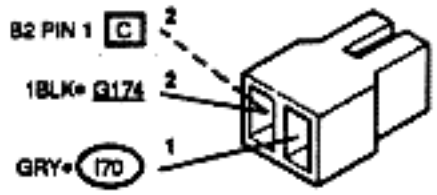
OPERATIONAL DESCRIPTION

The battery power (12V) is applied to the radio relay **I51** and to the electronic circuits protection fuses **F1** and **F2** in the auxiliary fuse box **G2**.
Energization of relay **I70** is enabled by ignition switch (microswitch) **B1**.
The ignition switch (microswitch) **B1** is closed when the ignition key is set to "run", or to "parking" after selection of "run" position. When the relay **I51** is energized, the battery power is applied to the radio **O4**, through the fuse **F2**, relay **I70** and the telephone free fuse **G239**.
The radio **O4** is powered by the supply lines protected by fuses **F1** and **F2** in the auxiliary fuse box **G2** and free fuse **G239** with reference to ground point **G182**.
The radio **O4** is connected to the right and left front loudspeakers (pins 5A/3D and 6A/4B respectively), to the right and left rear loudspeakers (pins 1B/5B and 2B/6B respectively), to the electric antenna (pin 7B) and to the headset (pin 6B/5B) and ground point **G182**.
The electric antenna is protected by **F5** fuse in auxiliary fuse box **G2**.
The radio serigraphs are illuminated when the position lamps are on; this line is activated by the parking lamps control unit **N41**, and is protected by fuse **F2** in the fuse box **G1**.
Pin 3 of the radio is connected to the rehostat, thus allowing dimming of the radio **O4** controls lighting.

TROUBLESHOOTING TABLE

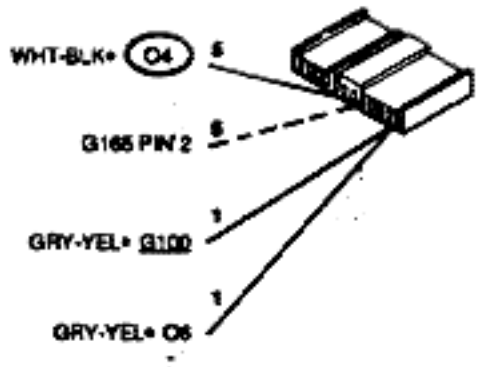
FAULT TYPE	FAILED COMPONENT											
	F1 FUSE	F2 FUSE (G1)	F3 FUSE	G239 FUSE	I51 RELAY	O3 ANTENNA	O4 RADIO	LOUDSPEAKER L.H. FRONT	LOUDSPEAKER R.H. FRONT	LOUDSPEAKER L.H. REAR	LOUDSPEAKER R.H. REAR	N41 CONTROL UNIT
RADIO INOPERATIVE	●	●		●	●		●					
LEFT FRONT LOUDSPEAKER INOPERATIVE								●				
RIGHT FRONT LOUDSPEAKER INOPERATIVE									●			
LEFT REAR LOUDSPEAKER INOPERATIVE										●		
RIGHT REAR LOUDSPEAKER INOPERATIVE											●	
RADIO LIGHTING INOPERATIVE (POSITION LAMPS ON)		●										●
POWER ANTENNA INOPERATIVE			●			●						

Ignition switch	B1



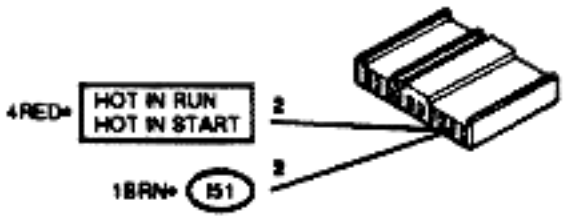
Fuse box	G1 E

Fuse box	G1 E

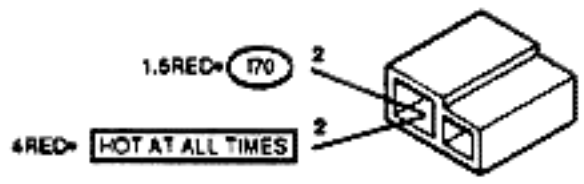


Fuse box	G1 G

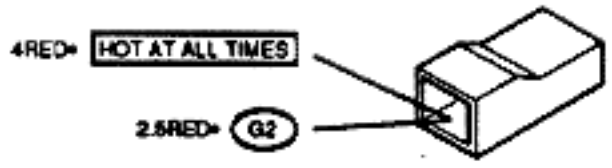
Fuse box	G1 I



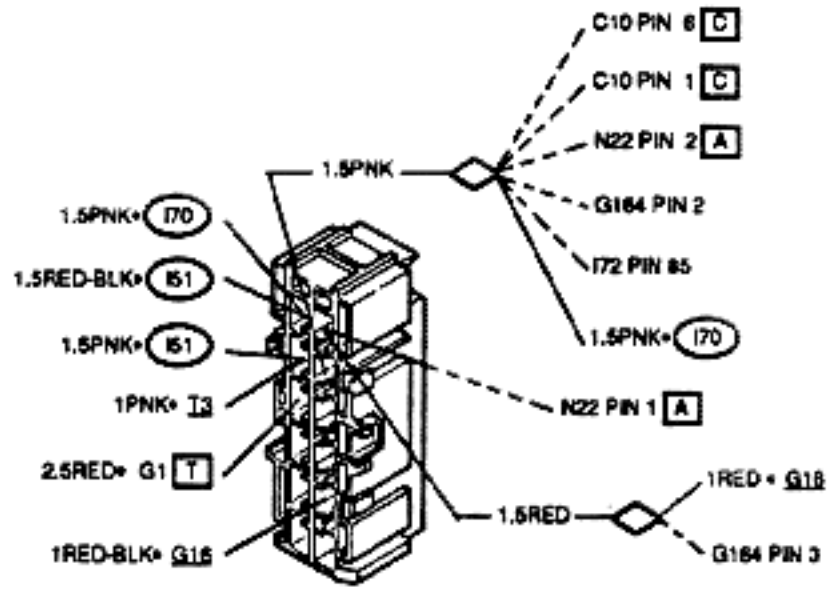
Fuse box	G1 N



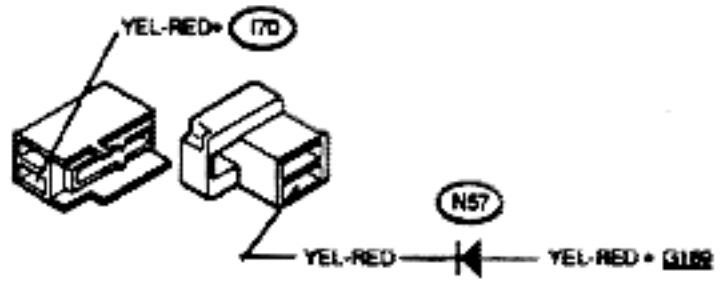
Fuse box	G1 T



Auxiliary fuse box	G2

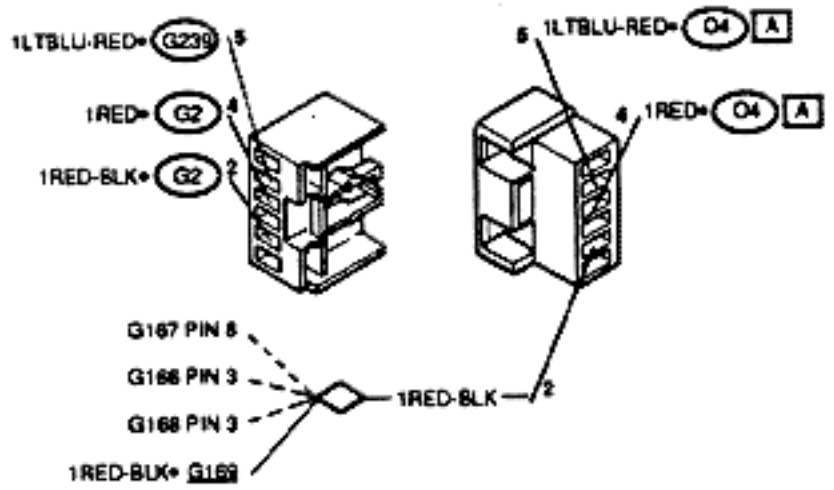


Two pin connector circuit board to doors wiring	G15

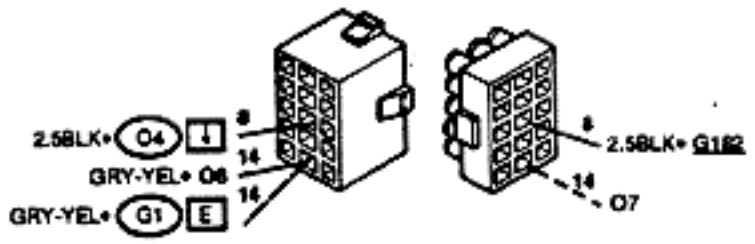


(Cont.d)

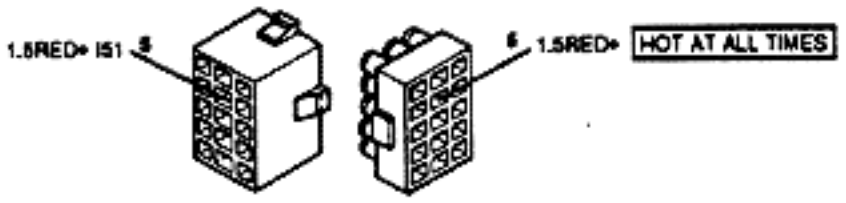
Six pin connector circuit board to doors wiring — G16



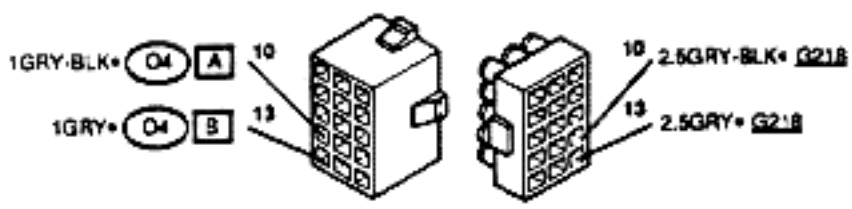
Connector, doors to center console wiring — G100



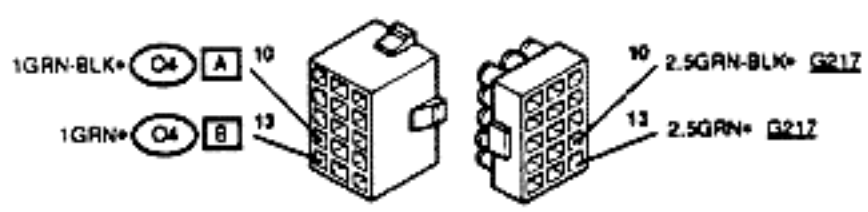
Connector, circuit board to engine compartment left side wiring — G150



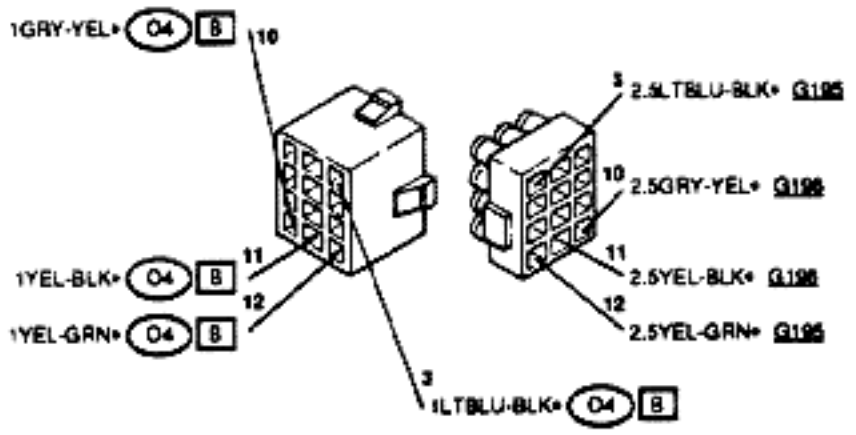
Connector, front doors to right front door wiring — G166



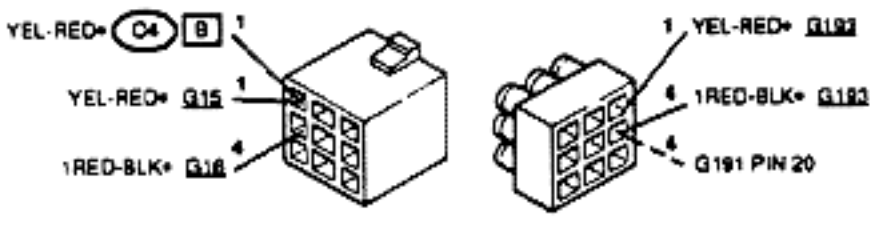
Connector, front doors to left front door wiring — G168



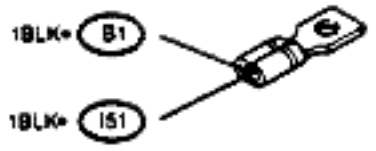
Connector, front doors to right rear wiring — G167



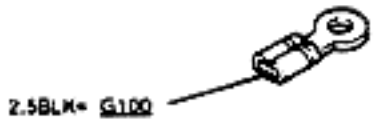
Connector, front doors to left rear wiring — G169



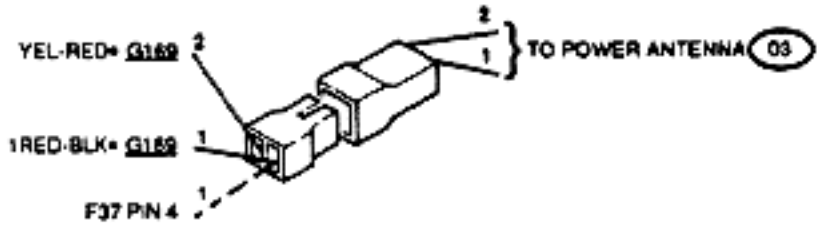
Steering wheel column support ground — G174



Center console ground — G182

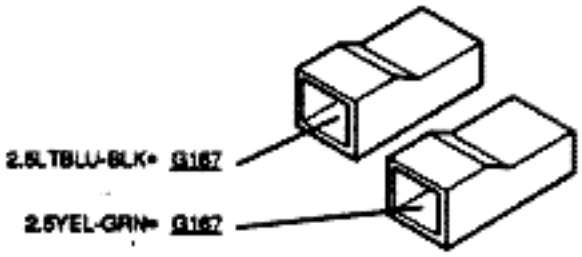


Connector, provision for radio antenna — G193

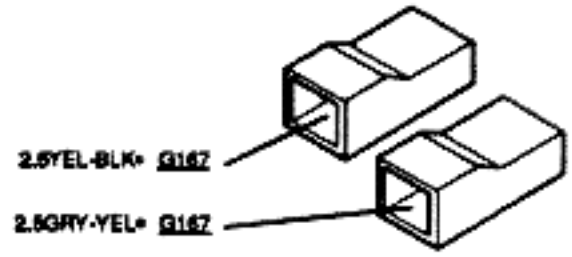


(Cont.d)

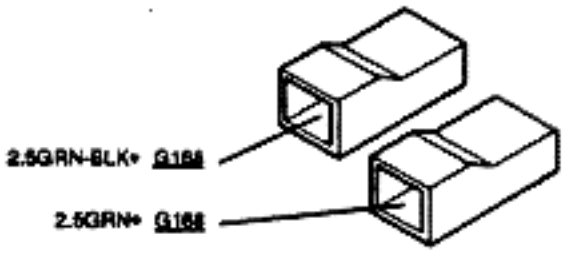
Connector, provision for left rear loudspeaker — G195



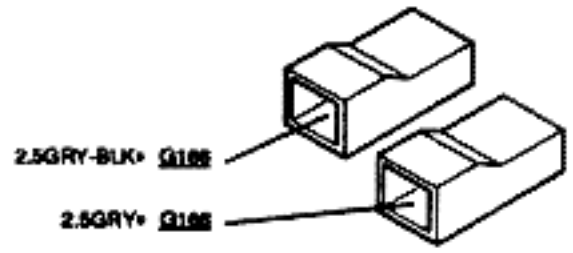
Connector, provision for right rear loudspeaker — G196



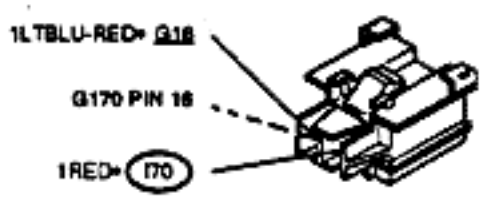
Connector, provision for left front loudspeaker — G217



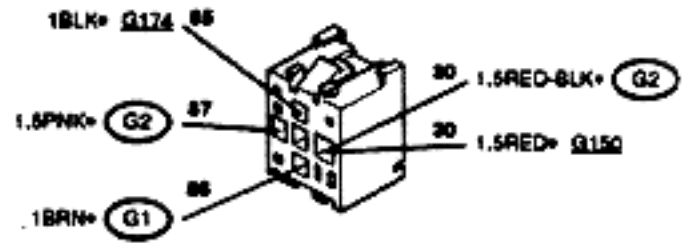
Connector, provision for right front loudspeaker — G218



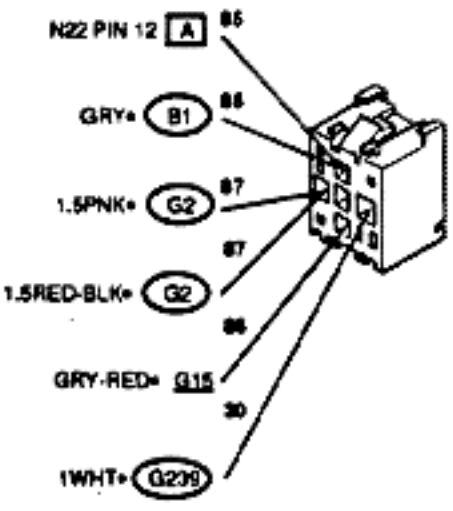
Radio, Radio-Telephone fuse — G239



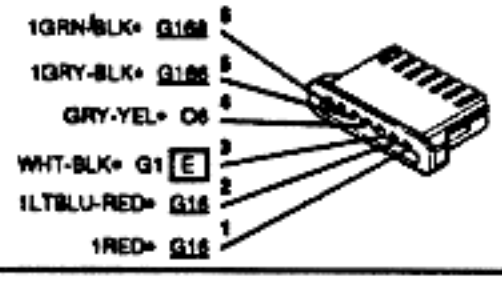
Electronic control units power supply relay — I51



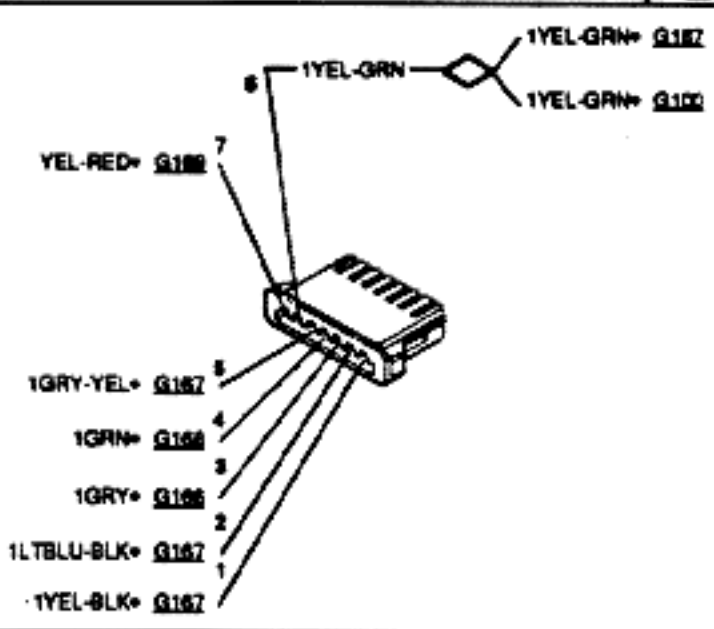
Radio relay — I70



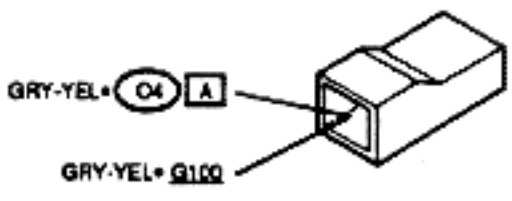
Radio — O4 A

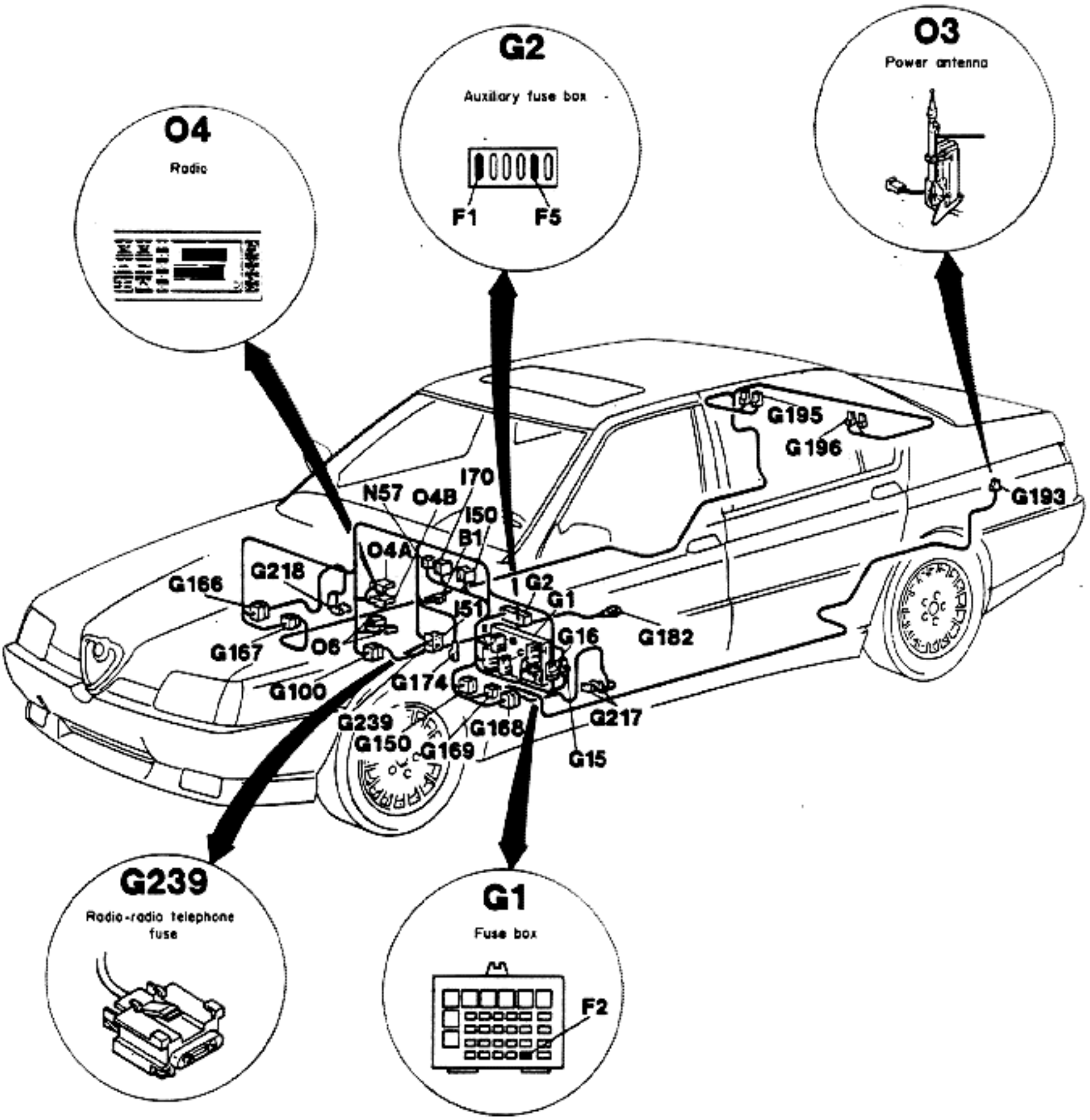


Radio — O4 B



Cigar lighter — O6





RADIO INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuses **F1** and **F2** in auxiliary fuse box **G2** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F1 and/ or fuse F2**
A2 VOLTAGE CHECK - Check free fuse **G239** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Replace **fuse G239**
A3 VOLTAGE CHECK - Check for presence of 12V between pin 1A of radio **O4** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Carry-out **step A4**
A4 VOLTAGE CHECK - Check for presence of 12V between pin of **F1** in auxiliary fuse box **G2** (RED-BLK wire) and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin of F1, pin 4 of G16 and pin 1A of radio O4** Carry-out **step A5**

(Cont.d)

RADIO INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - Check for presence of 12V between pin 5 of connector **G150** and ground	OK ▶ OK ▶	Repair wiring between **pin5 of G150 and pin 30 of relay I51** Failure of the power distribution circuit, refer to the relevant circuit of sheet 1 of 2
A6 GROUNDING CHECK - Check that the radio is connected to ground	OK ▶ OK ▶	Carry-out **step A7** Repair wiring between **between radio case, pin 8 of connector G100 and ground point G182**
A7 VOLTAGE CHECK - With the ignition key set to "run" or "start", check for presence of 12V between pin 2A of radio **O4** and ground	OK ▶ OK ▶	Replace **radio O4** Carry-out **step A8**
A8 VOLTAGE CHECK - With the ignition key set to "run" or "start", check for presence of 12V between pin of free fuse **G239** and ground	OK ▶ OK ▶	Repair wiring between **pin of fuse G239, pin 5 of G16 and pin 2 of radio O4** Carry-out **step A9**

(Cont.d)

RADIO INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A9 VOLTAGE CHECK - With the ignition key set to "run" or "start", check for presence of 12V between pin 86 of relay I51 and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A11** Carry-out **step A10**
A10 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 2I of fuse box G1 and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2I of fuse box and pin 86 of relay I51** Failure of **power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A11 GROUNDING CHECK - Check for presence of 0V (zero) at pin 85 of relay **I51**	OK ▶ ~~OK~~ ▶	Carry-out **step A12** Repair wiring between **pin 85 of I51 and ground point G174**
A12 RELAY CHECK - Check relay **I51** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step A13** Replace **relay I51**

(Cont.d)

RADIO INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A13 VOLTAGE CHECK - With the ignition key set to "run" or "start", check for presence of 12V between pin 87 of relay I51 and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A14** Carry-out **step A5**
A14 VOLTAGE CHECK - With the ignition key set to "run" or "start", check for presence of 12V between pin 87 of relay I70 and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 30 of relay I70 and pin of free fuse G239 (WMT wire)** Repair wiring between **pin 87 of I70 and F2 in auxiliary fuse box G2 and between pin of F2 and pin 87 of relay I51**

End of test A

LEFT FRONT LOUDSPEAKER INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B1 LOUDSPEAKER CHECK		
- Set multimeter scale to "Ω x 1" reading, then connect in parallel the multimeter prods to left front loudspeaker, thus causing a very short discharge	OK ▶	Carry-out step B2
	~~OK~~ ▶	Replace left front loudspeaker
B2 CONTINUITY CHECK		
- Check for continuity between terminals of left front loudspeaker (connector **G217**) and pins 10 and 13 of connector **G168**	OK ▶	Repair wiring between pins 10 and 13 of connector G168 and pins 6A and 4B of radio O4
	~~OK~~ ▶	Replace or repair wires, as necessary

End of test B

RIGHT FRONT LOUDSPEAKER INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 LOUDSPEAKER CHECK		
- Set multimeter scale to "Ω x 1" reading, then connect in parallel the multimeter prods to right front loudspeaker, thus causing a very short discharge	OK ▶	Carry-out **step C2**
	~~OK~~ ▶	Replace right front **loudspeaker**
C2 CONTINUITY CHECK		
- Check for continuity between terminals of right front loudspeaker (connector **G218**) and pins 10 and 13 of connector **G166**	OK ▶	Repair wiring between **pins 10 and 13 of connector G166 and pins 5A and 3B of radio 04**
	~~OK~~ ▶	Replace or repair **wires, as necessary**

End of test C

LEFT REAR LOUDSPEAKER INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D1 LOUDSPEAKER CHECK - Set multimeter scale to "Ω x 1" reading, then connect in parallel the multimeter prods to left rear loudspeaker, thus causing a very short discharge	OK ▶ ~~OK~~ ▶	Carry-out step D2 Replace left rear loudspeaker
D2 CONTINUITY CHECK - Check for continuity between terminals of left rear loudspeaker (connector G195) and pins 3 and 12 of connector G167	OK ▶ ~~OK~~ ▶	Repair wiring between pins 3 and 12 of connector G167 and pins 2B and 6B of radio O4 Replace or repair wires, as necessary

End of test D

RIGHT REAR LOUDSPEAKER INOPERATIVE	TEST E

TEST STEPS		RESULTS	REMEDY
E1	LOUDSPEAKER CHECK		
- Set multimeter scale to "Ω x 1" reading, then connect in parallel the multimeter prods to right rear loudspeaker, thus causing a very short discharge		OK ▶	Carry-out **step E2**
		~~OK~~ ▶	Replace **right rear loudspeaker**
E2	CONTINUITY CHECK		
- Check for continuity between terminals of right rear loudspeaker (connector **G196**) and pins 10 and 11 of connector **G167**		OK ▶	Repair wiring between **pins 10 and 11 of connector G167 and pins 5B and 1B of radio 04**
		~~OK~~ ▶	Replace or repair **wires, as necessary**

End of test E

RADIO LIGHTING INOPERATIVE (POSITION LAMPS ON)	TEST F

TEST STEPS		RESULTS	REMEDY
F1	FUSE CHECK		
- Check fuse **F2** in fuse box **G1** for integrity		OK ▶	Carry-out **step F2**
		OK ▶	Replace **fuse F2**
F2	LIGHT DIMMING CHECK		
- Check that lighting is present, but dimming through the rehostat is inoperative		OK ▶	**Failure of dimming circuit; refer to the lamps - - position troubleshooting procedure**
		OK ▶	Carry-out **step F3**
F3	PARKING LAMPS CHECK		
- Check illumination of position lamps		OK ▶	Carry-out **step F4**
		OK ▶	**Failure of position lamps circuit; refer to relevant trouble-shooting procedure**

(Cont.d)

RADIO LIGHTING INOPERATIVE (POSITION LAMPS ON)	TEST F

TEST STEPS		RESULTS	REMEDY
F4	VOLTAGE CHECK		
- Check for presence of 12V between pin 3G of fuse box G1 and ground		OK ▶	Repair wiring between **pin 1E of fuse box G1, pin 14 of connector G100 and pin 4A of radio O4**
		OK ▶	Repair wiring between **pin 3G of fuse box G1 and pin 6 of position lamps control unit N41**

End of test F

POWER ANTENNA INOPERATIVE	TEST G

TEST STEPS	RESULTS	REMEDY
G1 FUSE CHECK - Check fuse **F5** in auxiliary fuse box **G2** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step G2** Replace **fuse F5**
G2 VOLTAGE CHECK - Check for presence of 12V between pin of fuse **F5** in auxiliary fuse box **G2** (RED wire)	OK ▶ ~~OK~~ ▶	Carry-out **step G3** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
G3 VOLTAGE CHECK - Check for presence of 12V between pin 1 of connector **G193** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step G6** Carry-out **step G4**
G4 VOLTAGE CHECK - Check for presence of 12V between pin 4 of connector **G169** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4 of G169 and pin 1 of G193** Carry-out **step G5**

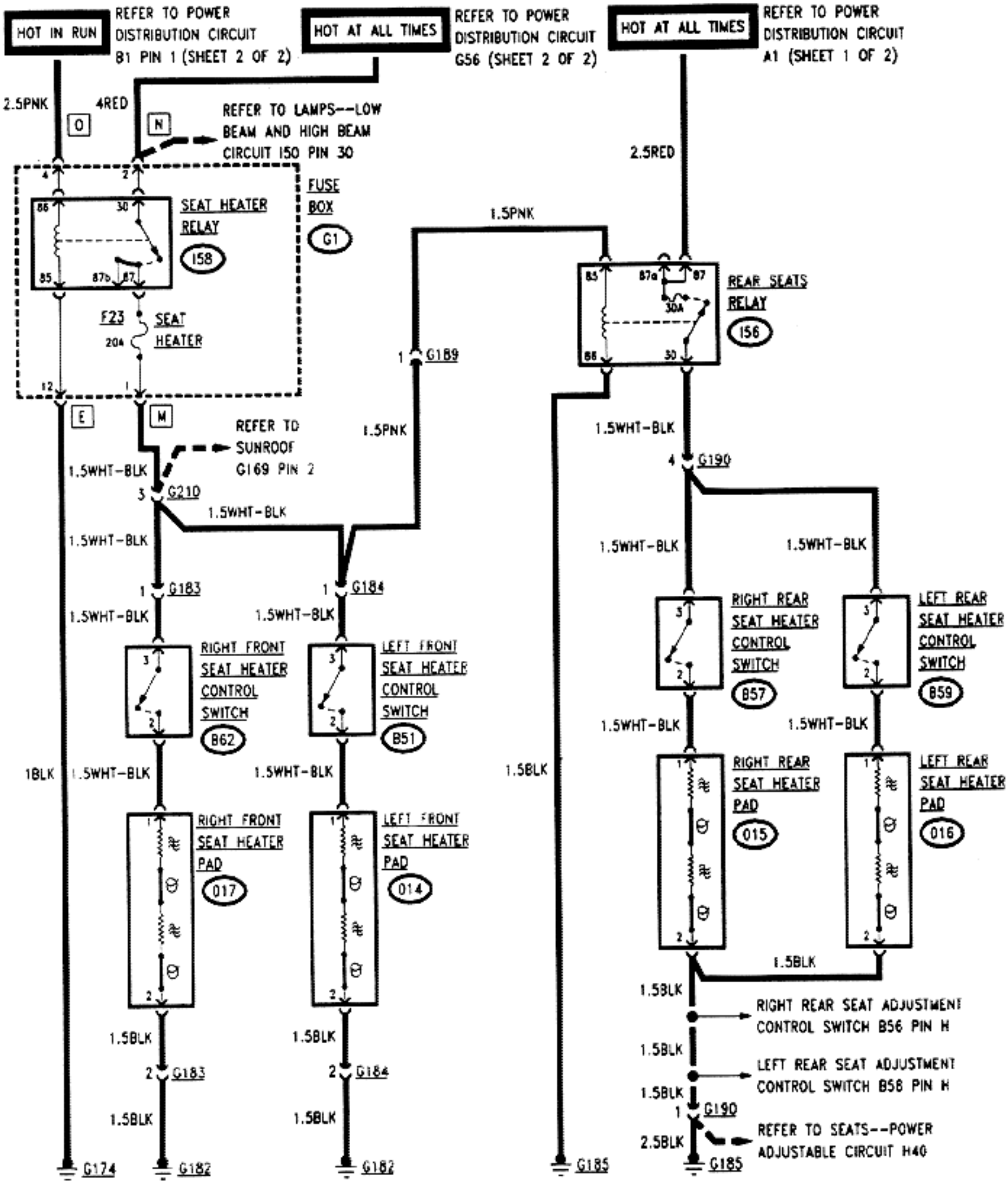
(Cont.d)

POWER ANTENNA INOPERATIVE	TEST G

TEST STEPS	RESULTS	REMEDY
G5 VOLTAGE CHECK		
- Check for presence of 12V between pin 2 of connector **G16** and ground	OK ▶	Repair wiring between **pin 2 G10 and pin 4 of G169**
	~~OK~~ ▶	Repair wiring between **pin 2 of G16 and pin of fuse F5 in auxiliary fuse box**
G6 POWER ANTENNA CHECK		
- With the ignition key set to "run" or "start" and with radio power switch ON, check for presence of 12V between pin 2 of connector **G193** and ground	OK ▶	Replace **power antenna O3**
	~~OK~~ ▶	Repair wiring between **pin 2 of G193 and pin 1 of G169**

End of test G

SEATS - - HEATER



GENERAL

Both front and rear seats are electrically heated by heat pads.
The heat pads are energized by means of four control switches, two located on front seat side panels (**B51** and **B62**) and two located on the rear central console (**B57** and **B59**).
The heat pads are connected to thermal breakers which automatically open the circuit when the temperatue reaches approximately 30°±5°C (86°±9°F). When the temperature decreases below 15°C (59°F) the thermal breakers close and allow the seat heat pads to warn-up.
The system is protected by two fuses as follows:

- **F23** fuse (20A) SEAT HEATER in the fuse box **G1**.
- Relay **I56** fuse (30A).

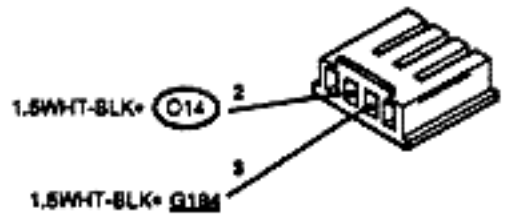
OPERATIONAL DESCRIPTION

The relay **I58** is energized when the ignition key is set to "run" position.
12V from the battery is applied to the fuse **F23** through the relay contacts, and the the control switches **B51** and **B62** and the coil of relay **I56.**
By pressing either **B51** or **B62** control switches the voltage reaches the corresponding front seat heater pad **O14** or **O17**, thus allowing heating of the affected seat.
Operation of the rear seats heating system is similar to that of the front seats.
The control switches **B57** and **B59** are operative after the relay **I56** has been energized.
By pressing either control switch, the voltage reaches the corresponding rear seat heater pad **O15** or **O16**, thus allowing heating of the affected seat.

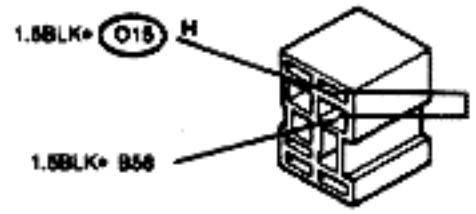
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT											
	F23 FUSE	(156) RELAY FUSE	(851) SWITCH	(857) SWITCH	(859) SWITCH	(862) SWITCH	(156) RELAY	(158) RELAY	(014) HEAT PAD	(015) HEAT PAD	(016) HEAT PAD	(017) HEAT PAD
HEATING OF ALL SEATS INOPERATIVE	●							●				
LEFT FRONT SEAT HEATING INOPERATIVE			●						●			
RIGHT FRONT SEAT HEATING INOPERATIVE						●						●
HEATING OF BOTH REAR SEATS INOPERATIVE		●					●					
LEFT REAR SEAT HEATING INOPERATIVE					●						●	
RIGHT REAR SEAT HEATING INOPERATIVE				●						●		

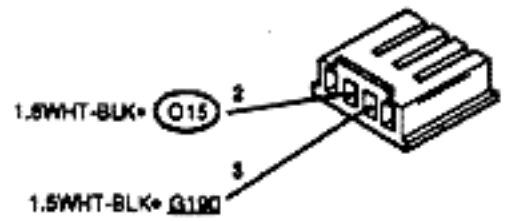
Left front seat heater control switch	B51



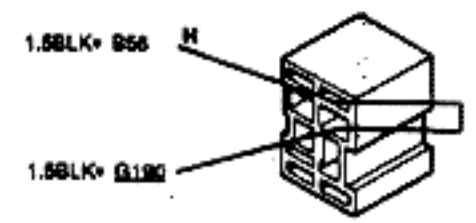
Right rear seat adjustment control switch	B56



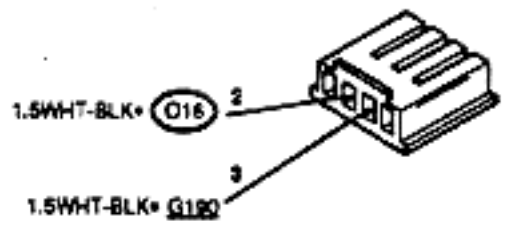
Right rear seat heater control switch	B57



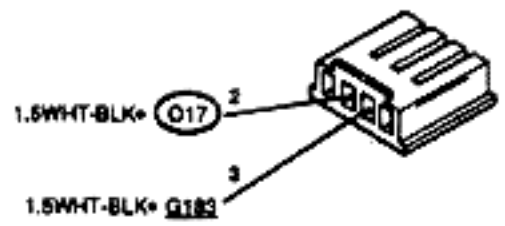
Left rear seat adjustment central switch	B58



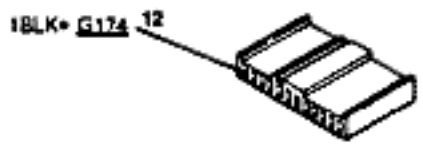
Left rear seat heater control switch	B59



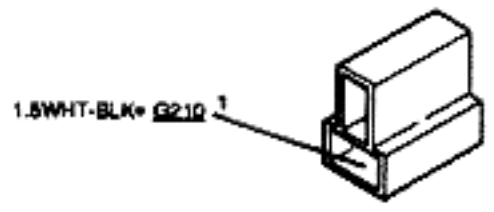
Right front seat heater control switch	B62



Fuse box	G1 E

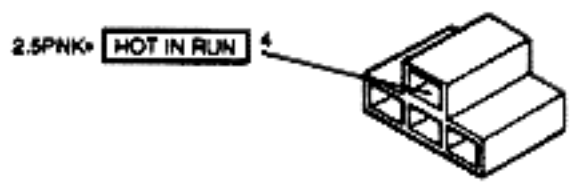


Fuse box	G1 M

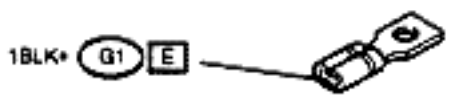


Fuse box	G1 N

Fuse box	G1 O



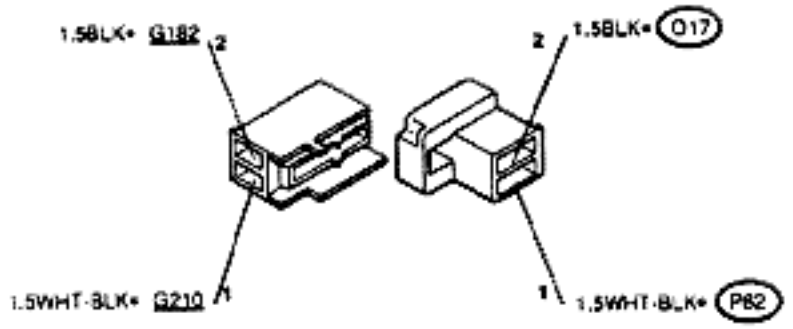
Steering wheel column support ground	G174



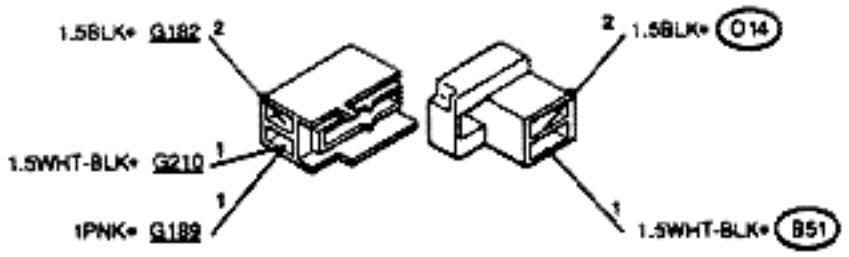
Center console ground	G182

(Cont.d)

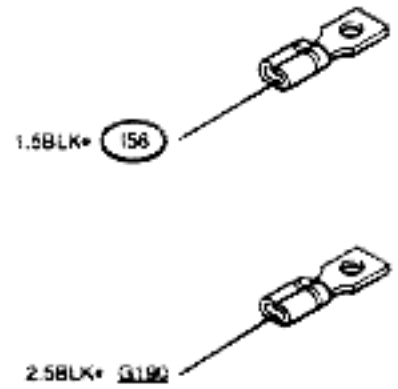
Connector rear center console to front right seat wiring	G183



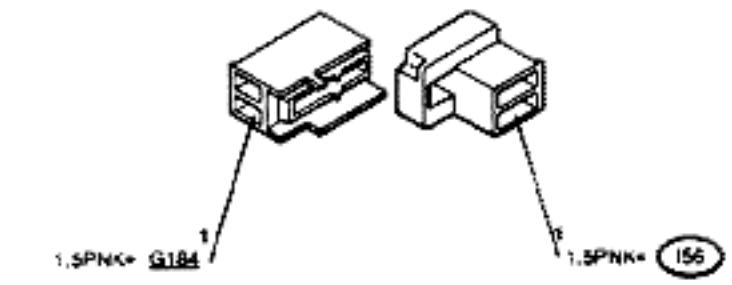
Connector, rear center console to front left seat wiring	G184



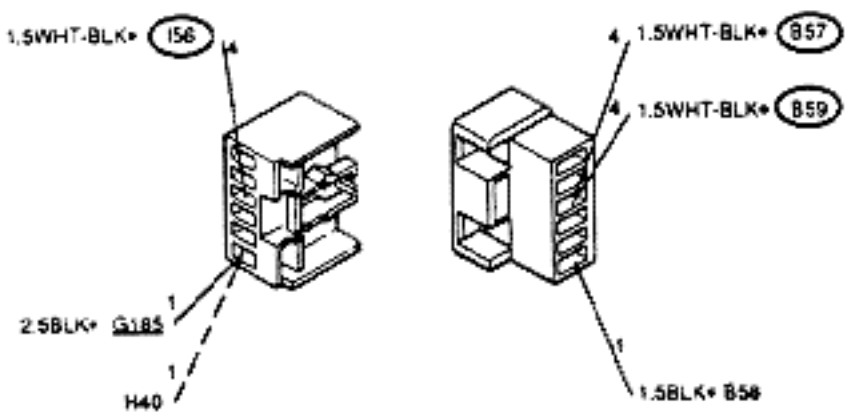
Trunk left side ground	G185



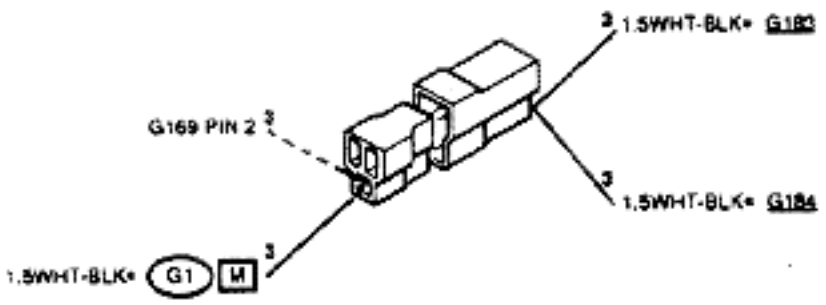
Connector, rear seats to rear console wiring	G189



Connector to rear seats wiring	G190

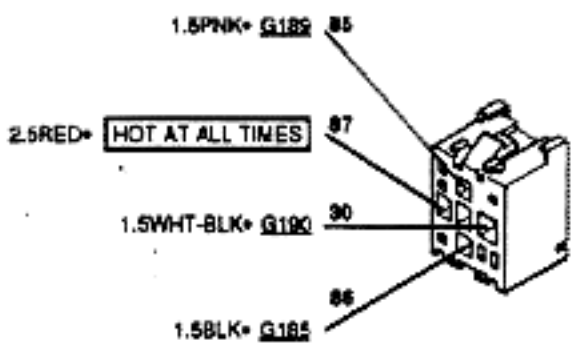


Connector doors wiring to rear console wiring	G210

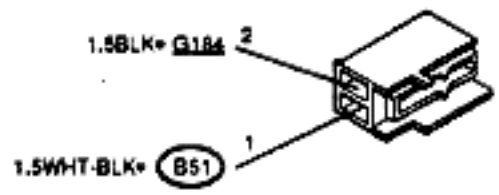


(Cont.d)

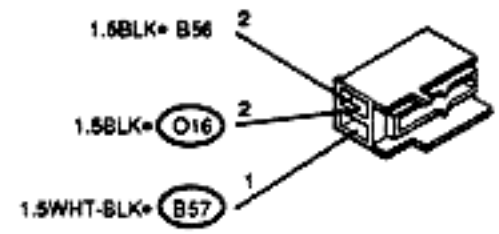
Rear seats relay — I56



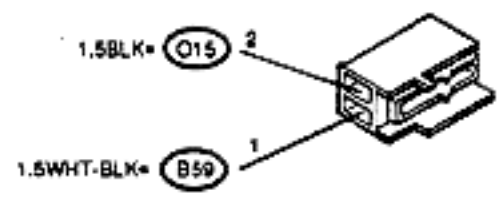
Left front seat heater pad — O14



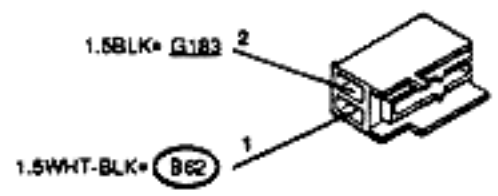
Right rear seat heater pad — O15

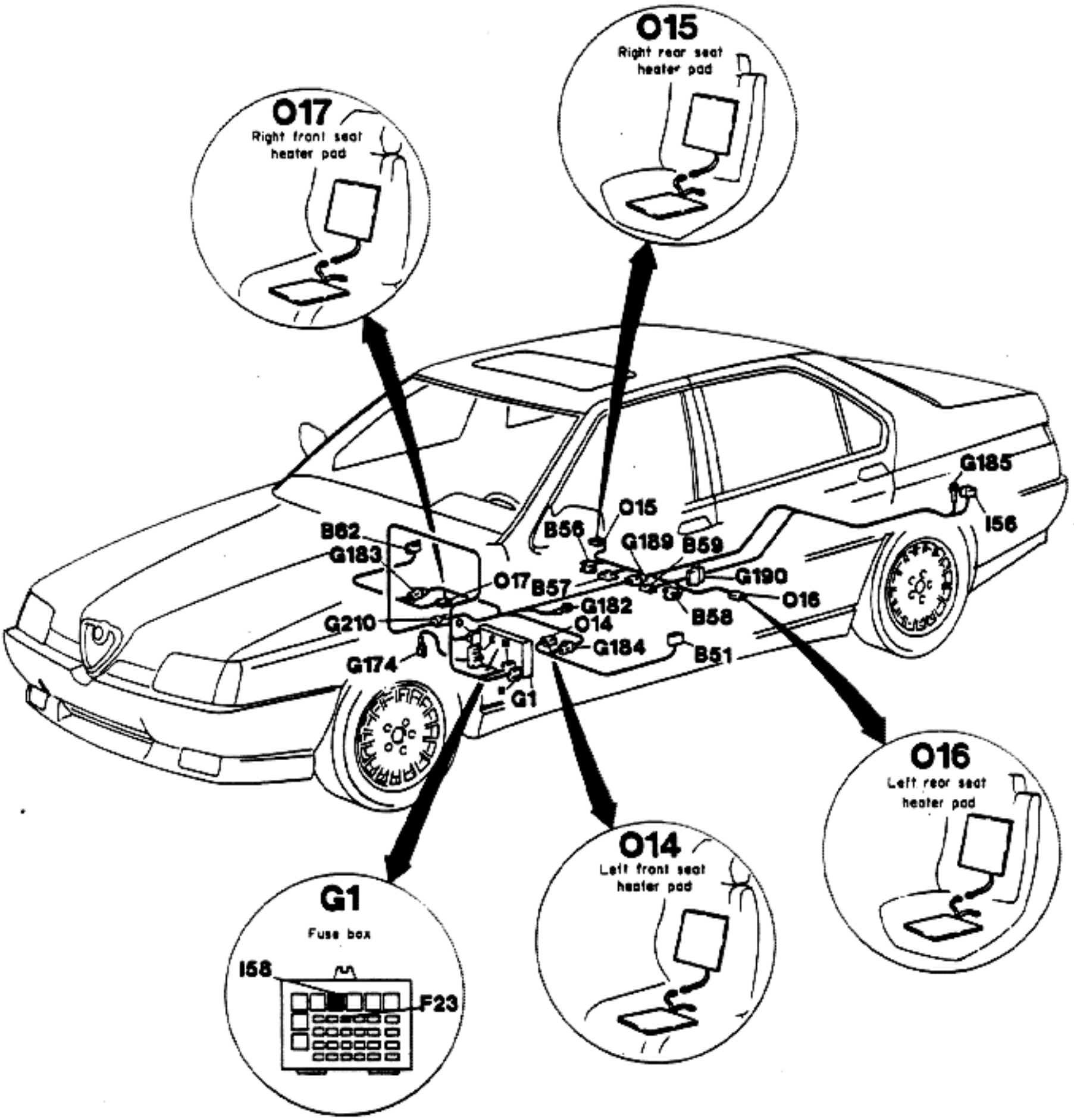


Left rear seat heater pad — O16



Right front seat heater pad — O17





HEATING OF ALL SEATS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F23** in fuse box **G1** for integrity	OK ▶ OK ▶	Carry-out **step A2** Replace **fuse F23**
A2 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 1M of fuse box **G1** and ground	OK ▶ OK ▶	Repair wiring between **pin 1M of fuse box G1 and pin 3 of connector G210** Carry-out **step A3**
A3 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶ OK ▶	Carry-out **step A4** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A4 GROUNDING CHECK - Check for presencee of 12V between pin 2N of fuse box **G1** and ground	OK ▶ OK ▶	Carry-out **step A5** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

(Cont.d)

HEATING OF ALL SEATS INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A5	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 12E of fuse box G1		OK ▶	Replace relay I58
		OK ▶	Repair wiring between pin 12E of fuse box G1 and ground point G174

End of test A

RIGHT FRONT SEAT HEATING INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 3 of switch **B62** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Repair wiring between **pin 3 of switch B62, pin 1 of connector G183 and pin 3 of connector G210**
C2 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 2 of switch **B62** and ground when the switch is actuated	OK ▶ ~~OK~~ ▶	Carry-out **step C3** Replace **switch B62**
C3 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 1 of heater pad **O17** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step C4** Repair wiring between **pin 2 of switch B62 and pin 1 of heater pad O17**
C4 GROUNDING CHECK - Check for presence of 0V (zero) at pin 2 of heater pad **O17**	OK ▶ ~~OK~~ ▶	Replace **heater pad O17** Repair wiring between **pin 2 of heater pad O17, pin 2 of connector G183 and ground point G182**

End of test C

HEATING OF BOTH REAR SEATS INOPERATIVE — TEST D

TEST STEPS	RESULTS	REMEDY
NOTE: If failure of both rear seats heating is associated to failure of left front seat heating, repair wiring between pin 3 of connector **G210** and pin 1 of connector **G184.**		
D1 FUSE CHECK - Check fuse of relay **I56** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Replace **relay fuse**
D2 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 85 of relay **I56** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D3** Carry-out **step D7**
D3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 86 of relay **I56**	OK ▶ ~~OK~~ ▶	Carry-out **step D4** Restore continuity between **ground point G185 and pin 86 of relay I56**
D4 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 30 of relay **I56** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D6** Carry-out **step D5**

(Cont.d)

HEATING OF BOTH REAR SEATS INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D5 VOLTAGE CHECK - Check for presence of 12V between pin 87 of relay I56 and ground	OK ▶ ~~OK~~ ▶	Replace relay I56 Failure of the power distribution circuit, refer to the relevant circuit of sheet 1 of 2
D6 VOLTAGE CHECK - With the ignition key set to the "run" position check for presence of 12V between pin 4 of connector G190 and ground	OK ▶ ~~OK~~ ▶	Repair wiring between ground point G185, pin 1 of connector G109 and pin 2 of heater pad O15 Repair wiring between pin 4 of connector G190 and pin 30 of relay I56
D7 VOLTAGE CHECK - With the ignition key set to the "run" position check for presence of 12V between pin 1 of connector G189 and ground	OK ▶ ~~OK~~ ▶	Repair wiring between pin 1 of connector G189 and pin 85 of relay I56 Repair wiring between pin 1 of connector G184 and pin 1 of connector G189

End of test D

LEFT REAR SEAT HEATING INOPERATIVE — TEST E

TEST STEPS	RESULTS	REMEDY
E1 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 3 of switch **B59** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Repair wiring between **pin 3 of switch B59 and pin 4 of connector G190**
E2 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 2 of switch **B59** and ground when the switch is actuated	OK ▶ ~~OK~~ ▶	Carry-out **step E3** Replace **switch B59**
E3 VOLTAGE CHECK - With the ignition key set to "run" and the switch activated **B59**, check for presence of 12V between pin 1 of heater pad **O16** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step E4** Repair wiring between **pin 2 of switch B59 and pin 1 of heater pad O16**
E4 GROUNDING CHECK - With the ignition key set to "run" and the switch activated **B59**, check for presence of 0V (zero) between pin 2 of heater pad **O16** and ground	OK ▶ ~~OK~~ ▶	Replace **heater pad O16** Repair wiring between **pin 2 of heater pad O16 and pin 2 of heater pad O15**

End of test E

RIGHT REAR SEAT HEATING INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F1 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 3 of switch **B57** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Repair wiring between **pin 3 of switch B57 and pin 4 of connector G190**
F2 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 2 of switch **B57** and ground when the switch is actuated	OK ▶ ~~OK~~ ▶	Carry-out **step F3** Replace **switch B57**
F3 VOLTAGE CHECK - With the ignition key set to "run" and the switch activated **B57**, check for presence of 12V between pin 1 of heater pad **O15** and ground	OK ▶ ~~OK~~ ▶	Replace **heater pad O15** Repair wiring between **pin 2 of switch B57 and pin 1 of heater pad O15**

End of test F

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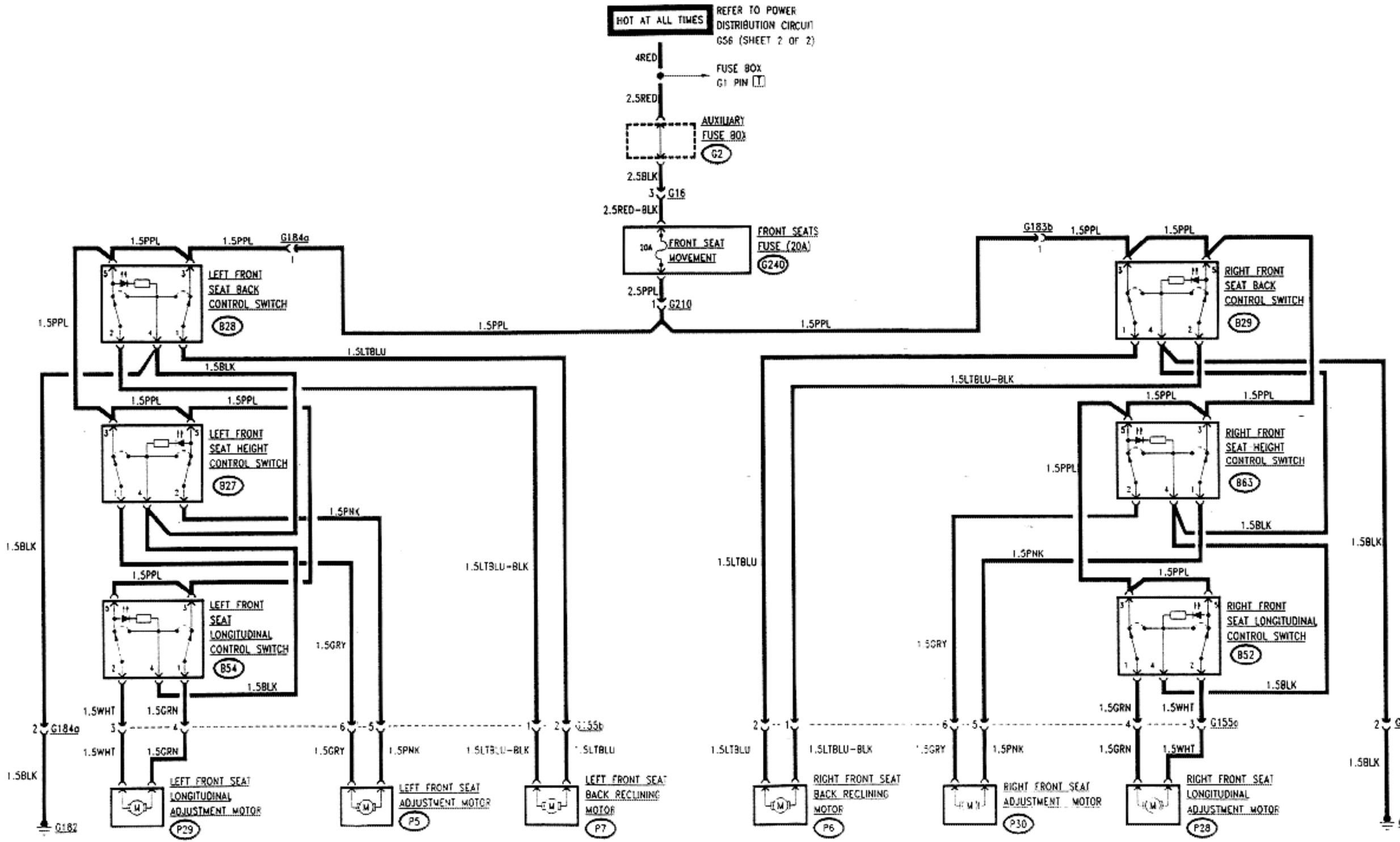
SEATS - - POWER ADJUSTABLE



GENERAL

Both front and rear seats can be electrically adjusted, even whenthe ignition key is in the "off" position. Adjustment is controlled by means of switches.
Adjustment of the front seats is obtained by three integral light buttons on the seat side panel.

- Longitudinal adjustment (fore and aft).
- Vertical adjustment (up and down).
- Backrest adjustment.

Longitudinal adjustment of rear seats is obtained by the buttons on the rear central console. To facilitate access to the rear seats, opening of either rear door automatically retracts the rear seats to the most rear position.
The front seats circuit is protected by free fuse **G240** (20A) FRONT SEATS FUSE, while the rear seats circuit is protected by the free fuse **G246** (20A).

OPERATIONAL DESCRIPTION - POWER ADJUSTABLE FRONT SEATS

The battery power (12V), available even when the ignition key is set to "off", is applied to connector **G210** through the free fuse **G240**.
12V from connector **G210** is supplied to the six control switches (three switches for each seat) through suitable bridges.
Pressing the fore or aft control switch **B54** in one direction, 12V with reference to ground point **G182** are supplied with a certain polarity to corresponding motor **P29**, with consequent fore or aft movement of left front seat.
Pressing the switch **B54** in the opposite direction reverses the polarity of power supplied to motor **P29**, with consequent movement of the seat in the opposite direction.
Remaining power adjustments of the right and left front seats are obtained in the same mode.

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT												
	G240 FUSE	B29 SWITCH	B63 SWITCH	B52 SWITCH	B28 SWITCH	B27 SWITCH	B54 SWITCH	P6 MOTOR	P30 MOTOR	P28 MOTOR	P7 MOTOR	P5 MOTOR	P29 MOTOR
BOTH FRONT SEATS INOPERATIVE	●												
LEFT FRONT SEAT LONGITUDINAL ADJUSTMENT INOPERATIVE							●						●
LEFT FRONT SEAT VERTICAL ADJUSTMENT INOPERATIVE						●						●	
LEFT FRONT SEAT BACKREST ADJUSTMENT INOPERATIVE					●						●		
RIGHT FRONT SEAT LONGITUDINAL ADJUSTMENT INOPERATIVE				●						●			
RIGHT FRONT SEAT VERTICAL ADJUSTMENT INOPERATIVE			●						●				
RIGHT FRONT SEAT BACKREST ADJUSTMENT INOPERATIVE		●						●					

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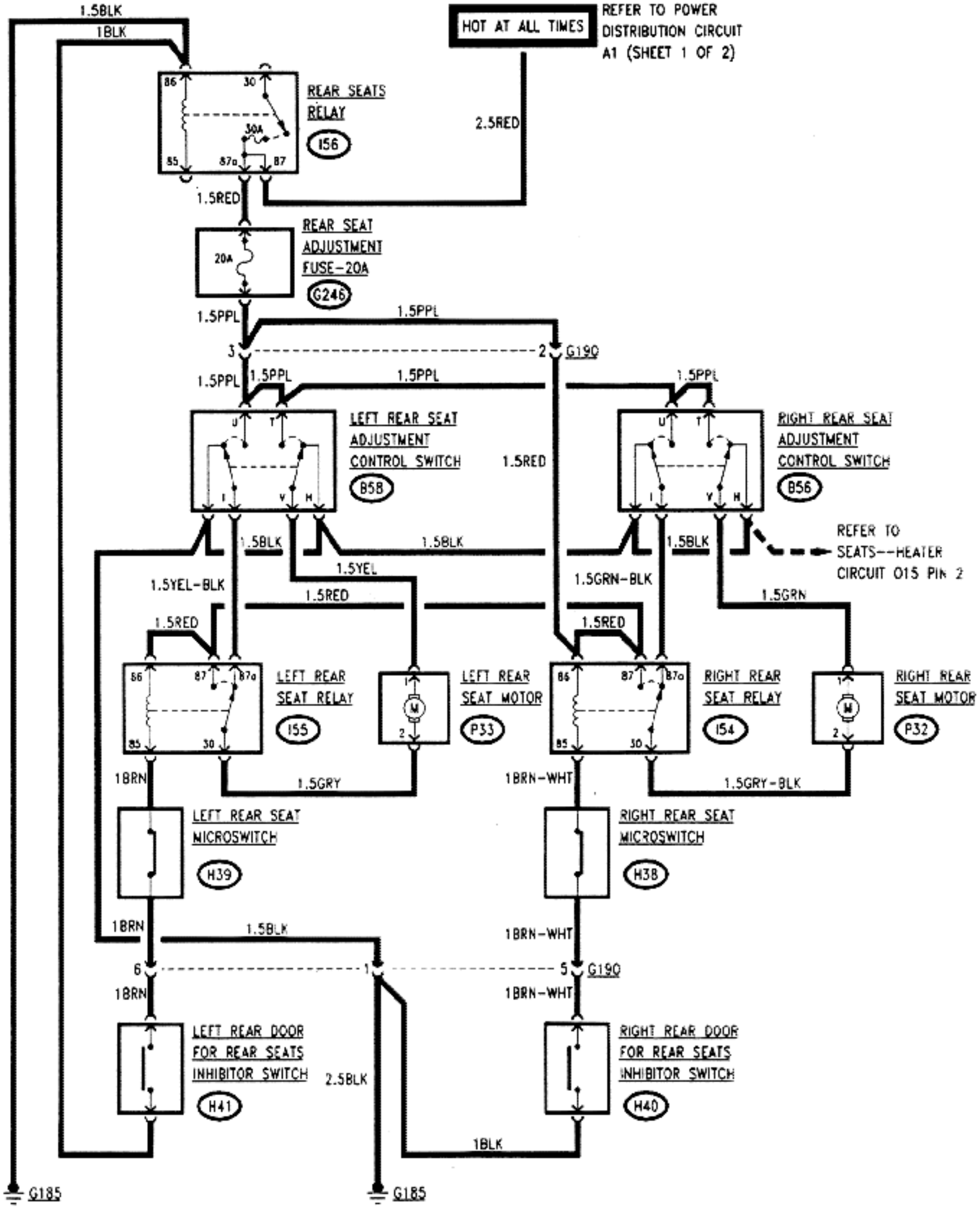


OPERATIONAL DESCRIPTION - ADJUSTABLE REAR SEATS

The battery power (12V), available even when the ignition key is set to the "off", is applied to coil of right and left rear seat relays **I54** and **I55**; furthermore, power is applied to rear seat adjustment control switches **B56** and **B58** through free fuse **G246**.

Pressing the left rear seat adjustment control switch **B58** in one direction, 12V with reference to ground point **G185** are supplied with a certain polarity to the motor **P33**, with consequent fore or aft movement of the corresponding seat.

Pressing the switch **B58** in the opposite direction reverses the polarity of power supplied to the motor **P33**, with consequent movement of the seat in the opposite direction.

Opening of the left rear door closes the switches normally open **H41**, thus providing the ground to relay **I55**.

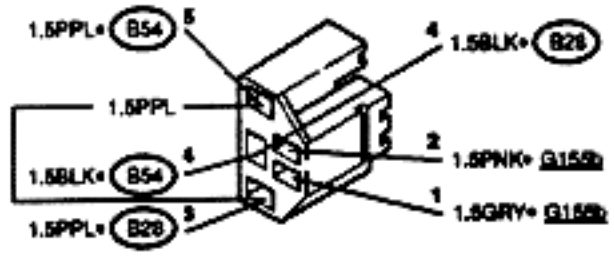
When the relay **I55** is energized, 12V are applied to motor **P33** with polarity such as that the seat retracts to the most rear position.

When the seat reaches the end of its travel, the stop microswitch normally closed **H39** opens and switches off the motor. Adjustment of the right rear seat is obtained in the same mode.

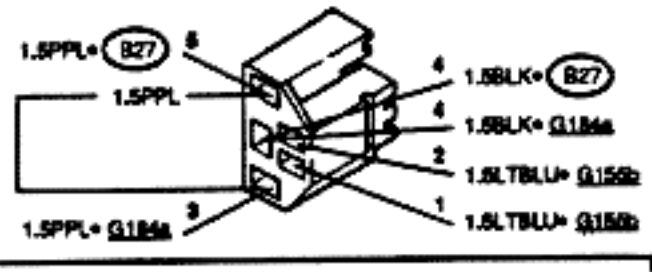
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT: G246 FUSE	H38 MICROSWITCH	H39 MICROSWITCH	H40 SWITCH	H41 SWITCH	B56 SWITCH	B58 SWITCH	I54 RELAY	I55 RELAY	P32 MOTOR	P33 MOTOR
BOTH REAR SEATS ADJUSTMENT INOPERATIVE	●										
LEFT REAR SEAT ADJUSTMENT INOPERATIVE							●				●
RIGHT REAR SEAT ADJUSTMENT INOPERATIVE						●				●	
LEFT REAR SEAT AUTOMATIC RETRACTION INOPERATVE			●		●				●		●
RIGHT REAR SEAT AUTOMATIC RETRACTION INOPERATVE		●		●				●		●	

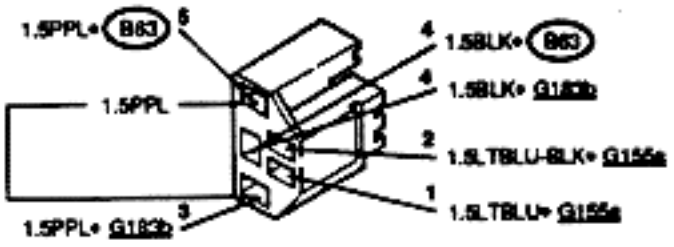
Left front seat height control switch — B27



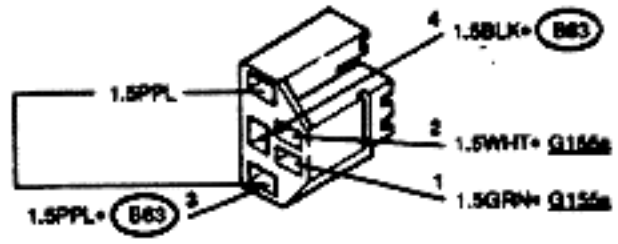
Left front seat back control switch — B28



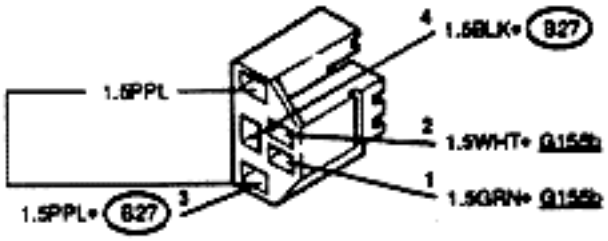
Right front seat back control switch — B29



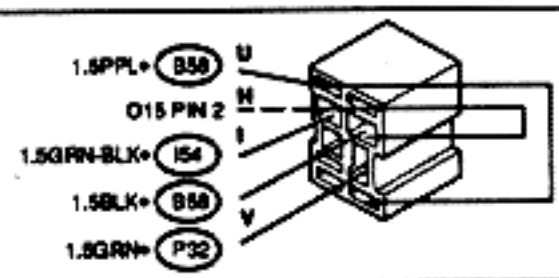
Right front seat longitudinal control switch — B52



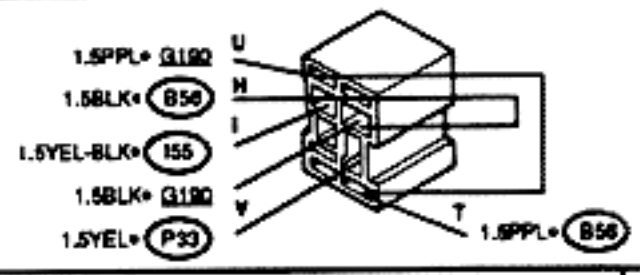
Left front seat longitudinal control switch — B54



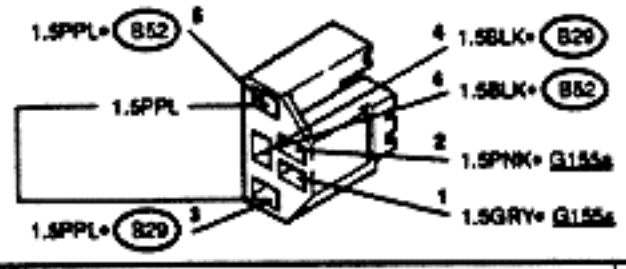
Right rear seat adjustment control switch — B55



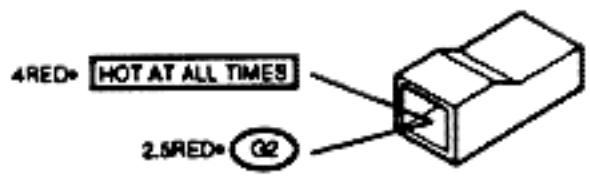
Left rear seat adjustment control switch — B58



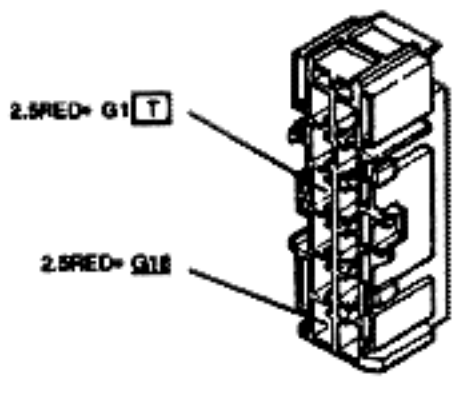
Right front seat height control switch — B63



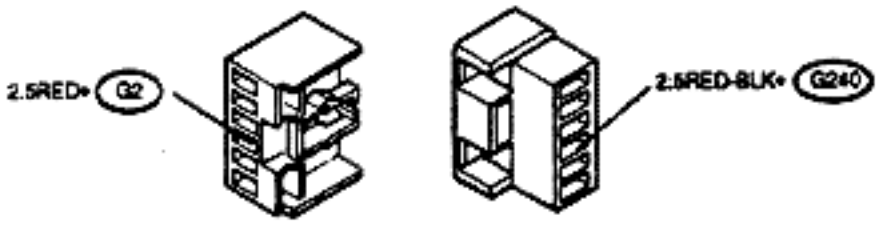
Fuse box — G1 T



Auxiliary fuse box — G2

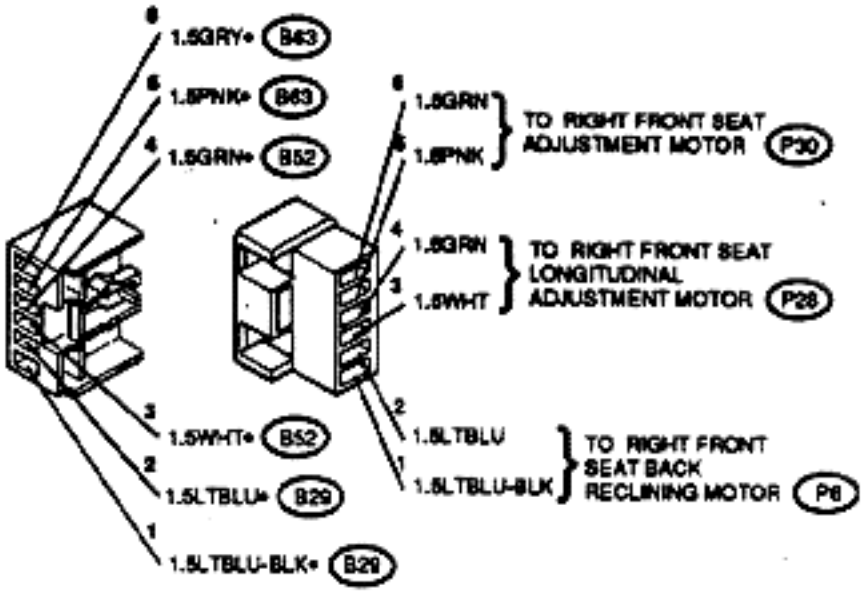


Six pin connector circuit board to doors wiring — G16

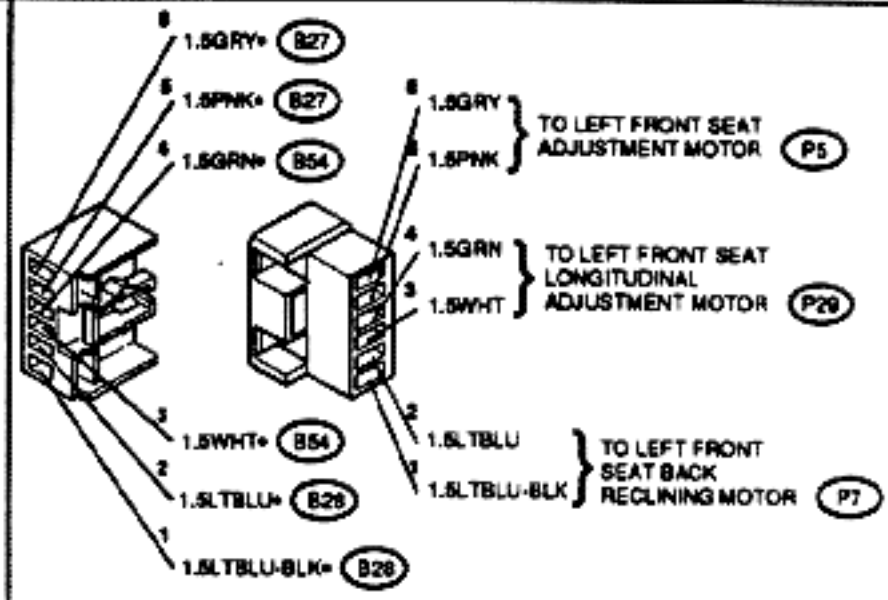


(Cont.d)

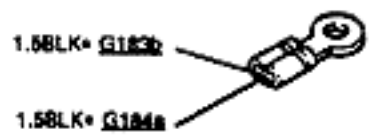
Connector, right hand seats adjustment wiring	G155a



Connector, left hand seats adjustment wiring	G155b



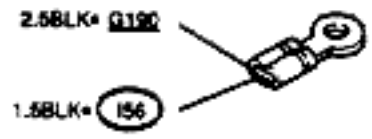
Center console ground	G182



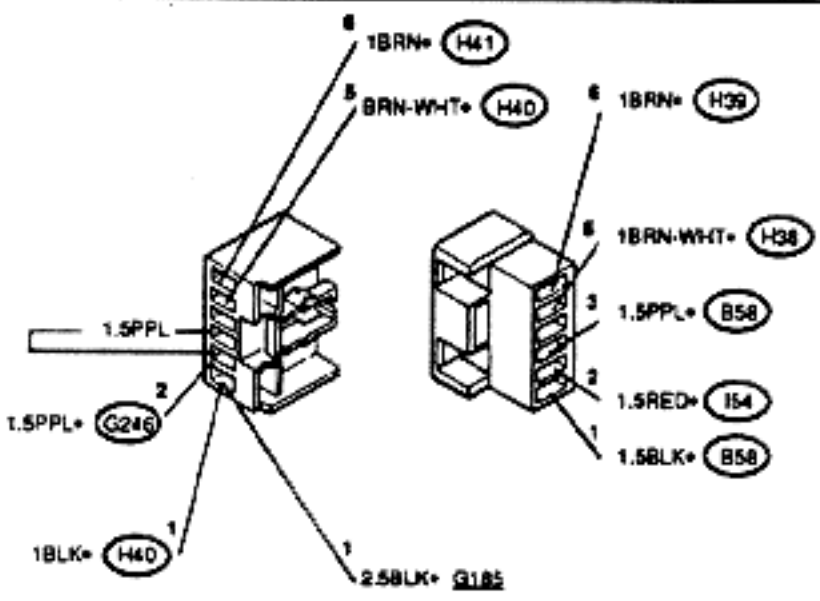
Connector, rear center console to front right seat wiring	G183b

Connector, rear center console to front left seat wiring	G184a

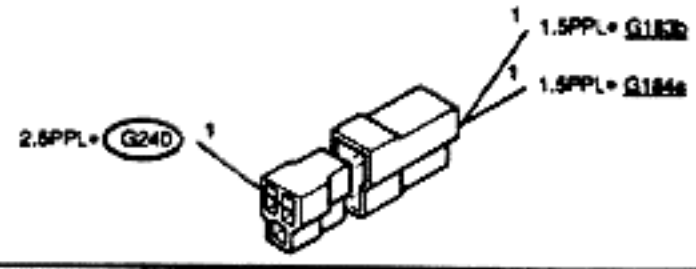
Trunk left side ground	G185



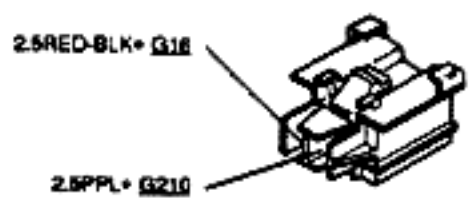
Connector, rear seats wiring	G190



Connector, doors wiring to rear console wiring	G210

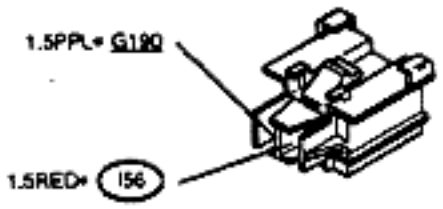


Front seats fuse (20 Amp.)	G240

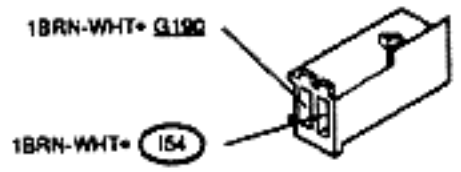


(Cont.d)

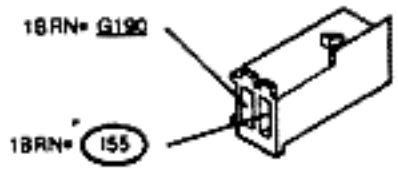
Rear seat adjustment fuse - 20A (G246)



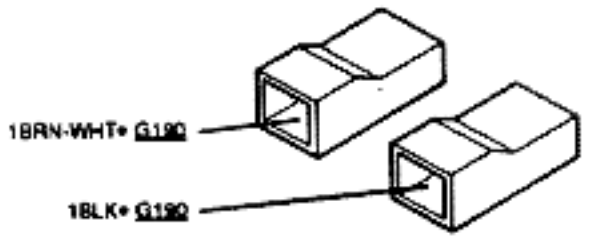
Right rear seat microswitch (H38)



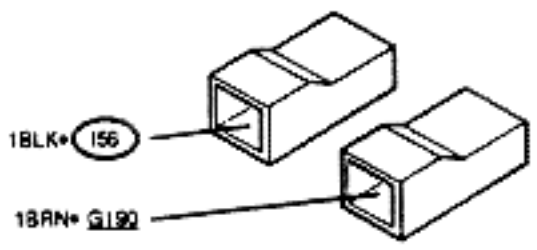
Left rear seat microswitch (H39)



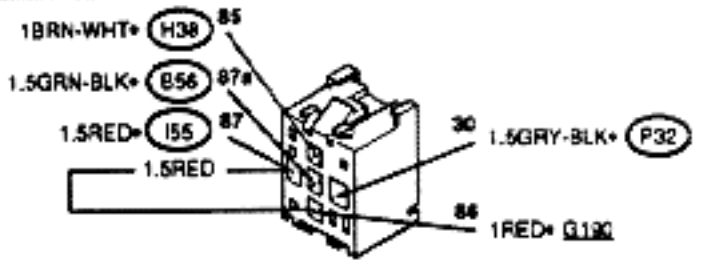
Right rear door for rear seats inhibitor switch (H40)



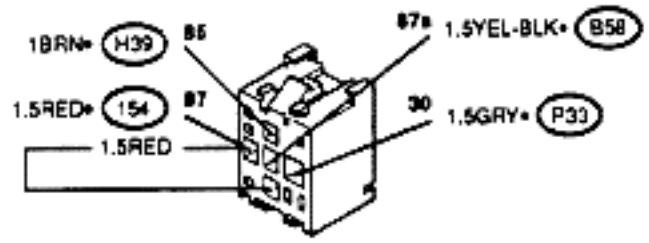
Left rear door for rear seats inhibitor switch (H41)



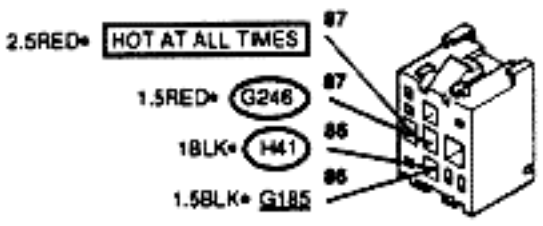
Right rear seat relay (I54)



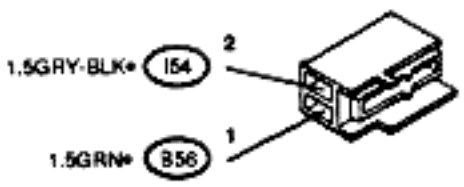
Left rear seat relay (I55)



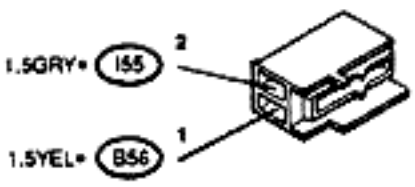
Rear seats relay (I56)

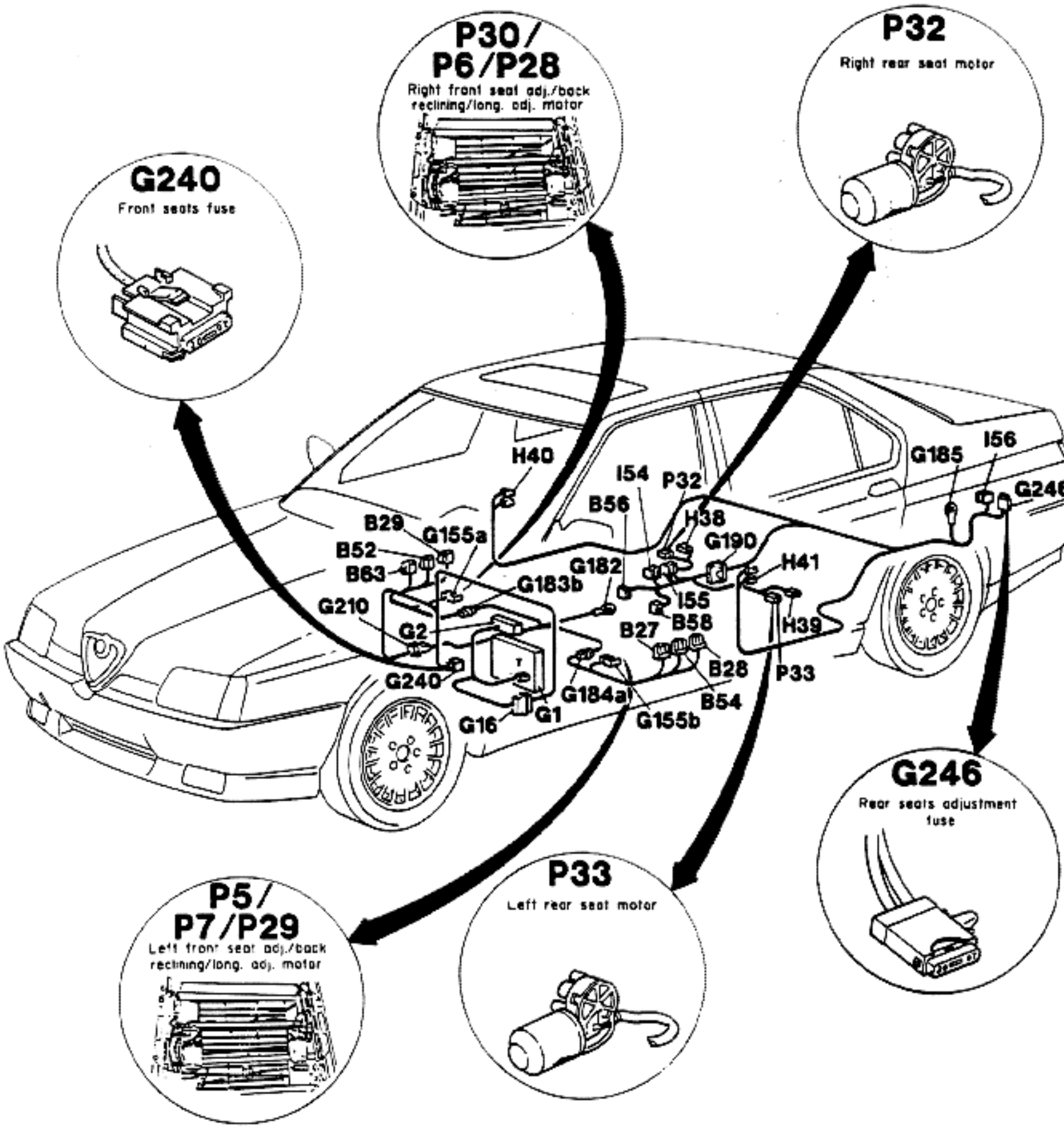


Right rear seat motor (P32)



Left rear seat motor (P33)





BOTH FRONT SEATS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check free fuse **G240** for integrity	OK ▶ OK ▶	Carry-out **step A2** Replace **free fuse G240**
A2 CONTINUITY CHECK - Check for continuity between pins of auxiliary fuse box	OK ▶ OK ▶	Carry-out **step A3** Repair **wiring**
A3 VOLTAGE CHECK - Check for presence of 12V between pin of auxiliary fuse box (RED wire) and ground	OK ▶ OK ▶	Carry-out **step A4** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A4 VOLTAGE CHECK - Check for presence of 12V between pin 3 of connector G16 and ground	OK ▶ OK ▶	Repair wiring between **pin 3 of G16 and pin of free fuse G240, and between pin of G240 and pin 1 of G210** Repair wiring between **pin of G240 and pin 3 of G16**

End of test A

LEFT FRONT SEAT LONGITUDINAL ADJUSTMENT INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B1 ADJUSTMENTS CHECK - Check if left front seat vertical and backrest adjustments are operational	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Carry-out **step B7**
B2 VOLTAGE CHECK - Check for presence of 12V between pins 3 and 5 and ground of switch **B54**	OK ▶ ~~OK~~ ▶	Carry-out **step B3** Repair wiring between **switch B54 (pins 3 and 5) and pin 5 of switch B27**
B3 GROUNDING CHECK - Check that pin 4 of switch **B54** has 0V to ground with the switch activated	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Repair wiring between **pin 4 of switch B54 and pin 4 of switch B27**
B4 SWITCH CHECK - Check switch **B54** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step B5** Replace **switch B54**

(Cont.d)

LEFT FRONT SEAT LONGITUDINAL ADJUSTMENT INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B5 MOTOR CHECK - Press switch **B54** in both directions and check for presence of 12V at terminals of **motor P29**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Replace **motor P29** Carry-out **step B6**
B6 VOLTAGE CHECK - Press switch **B54** in both directions and check for presence of 12V between pins 3 and 4 of connector **G155b**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 3 and 4 of connector G155b and pin of motor P29** Repair wiring between **switch B54 (pins 1 and 2) and connector G155b (pins 3 and 4)**
B7 VOLTAGE CHECK - Check for presence of 12V between pin 3 and 5 to ground of left front seat back control switch **B28**	OK ▶ ~~OK~~ ▶	Repair wiring between **ground point G182, pin 2 of connector G184a and pin 4 of switch B28** Repair wiring between **pin 1 of connector G210, pin 1 of connector G184a and pins 3 and 5 of switch B28**

End of test B

LEFT FRONT SEAT VERTICAL ADJUSTMENT INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 ADJUSTMENTS CHECK - Check if left front seat longitudinal and backrest adjustments are operational	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Carry-out **step C7**
C2 VOLTAGE CHECK - Check for presence of 12V between pins 3 and 5 and ground of switch **B27**	OK ▶ ~~OK~~ ▶	Carry-out **step C3** Repair wiring between **switch B27 (pins 3 and 5) and pin 5 of switch B28**
C3 GROUNDING CHECK - Check that pin 4 of switch **B27** has 0V to ground with the switch activated	OK ▶ ~~OK~~ ▶	Carry-out **step C4** Repair wiring between **pin 4 of switch B27 and pin 4 of switch B28**
C4 SWITCH CHECK - Check switch **B27** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step C5** Replace **switch B27**

(Cont.d)

LEFT FRONT SEAT VERTICAL ADJUSTMENT INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C5 MOTOR CHECK - Press switch **B27** in both directions and check for presence of 12V at terminals of motor **P5**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Replace motor P5 Carry-out step C6
C6 VOLTAGE CHECK - Press switch **B27** in both directions and check for presence of 12V between pins 5 and 6 of **G155b** connector; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 5 and and 6 of connector G155b; and motor P5** Repair wiring between **switch B27 (pins 1 and 2) and connector G155b (pins 5 and 6)**
C7 VOLTAGE CHECK - Check for presense of 12V between pins 3 and 5 and ground of control switch **B28**	OK ▶ ~~OK~~ ▶	Repair wiring between **ground point G182, pin 2 of connector G184a and pin 4 of switch B28** Repair wiring between **pin 1 of connector G210, pin 1 of connector G184a and pins 3 and 5 of switch B28**

End of test C

LEFT FRONT SEAT BACKREST ADJUSTMENT INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D1 ADJUSTMENTS CHECK - Check if left front seat longitudinal and vertical adjustments are operational	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Carry-out **step D5**
D2 SWITCH CHECK - Check switch **B28** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step D3** Replace **switch B28**
D3 MOTOR CHECK - Press switch **B28** in both directions and check for presence of 12V at terminals of motor **P7**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Replace **motor P7** Carry-out **step D4**
D4 VOLTAGE CHECK - Press switch **B28** in both directions and check for presence of 12V between pins 1 and 2 of connector **G155b**; polarity is dependent on direction pressure on the switch	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 1 and 2 of connector G155b and motor P7** Repair wiring between **switch B28 (pins 1 and 2) and connector G155b (pins 1 and 2)**

(Cont.d)

LEFT FRONT SEAT BACKREST ADJUSTMENT INOPERATIVE	TEST D

TEST STEPS		RESULTS	REMEDY
D5	VOLTAGE CHECK		
- Check for presence of 12V between pins 3 and 5 and ground of control switch **B28**		OK ▶	Repair wiring between **ground point G182, pin 2 of connector G184a and pin 4 of switch B28**
		~~OK~~ ▶	Repair wiring between **pin 1 of connector G210, pin 1 of connector G184a and pins 3 and 5 of switch B28**

End of test D

RIGHT FRONT SEAT LONGITUDINAL ADJUSTMENT INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E1 ADJUSTMENTS CHECK - Check if right front seat vertical and backrest adjustments are operational	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Carry-out **step E7**
E2 VOLTAGE CHECK - Check for presence of 12V between pins 3 and 5 and ground of switch **B52**	OK ▶ ~~OK~~ ▶	Carry-out **step E3** Repair wiring between **switch B52 (pins 3 and 5) and switch B63 (pins 5 and 3)**
E3 GROUNDING CHECK - Check that pin 4 of switch **B52** has 0V to ground with the switch	OK ▶ ~~OK~~ ▶	Carry-out **step E4** Repair wiring between **pin 4 of switch B52 and pin 4 of switch B63**
E4 SWITCH CHECK - Check switch **B52** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step E5** Replace **switch B52**

(Cont.d)

RIGHT FRONT SEAT LONGITUDINAL ADJUSTMENT INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E5 MOTOR CHECK - Press switch **B52** in both directions and check for presence of 12V at terminals of motor **P28**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Replace **motor P28** Carry-out **step E6**
E6 MOTOR CHECK - Press switch **B52** in both directions and check for presence of 12V between pins 3 and 4 of connector **G155a**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 3 and 4 of connector G155a and motor P28** Repair wiring between **switch B52 (pin 1 and 2) and connector G155a (pins 3 and 4)**
E7 MOTOR CHECK - Check for presence of 12V between pins 3 and 5 and ground of control switch **B29**	OK ▶ ~~OK~~ ▶	Repair wiring between **ground point G182, pin 2 of connector G183b and pin 4 of switch B29** Repair wiring between **pin 1 of connector G210, pin 1 of connector G183b and pins 3 and 5 of switch B29**

End of test E

RIGHT FRONT SEAT VERTICAL ADJUSTMENT INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F1 ADJUSTMENTS CHECK - Check if right front seat longitudinal and backrest adjustments are operational	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Carry-out **step F7**
F2 VOLTAGE CHECK - Check for presence of 12V between pins 3 and 5 and ground of switch **B63**	OK ▶ ~~OK~~ ▶	Carry-out **step F3** Repair wiring between **switch B63 (pins 3 and 5) and pin 5 of control switch B29**
F3 GROUNDING CHECK - Check that pin 4 of switch **B63** is connected to ground	OK ▶ ~~OK~~ ▶	Carry-out **step F4** Repair wiring between **pin 4 of switch B63 and pin 4 of control switch B29**
F4 SWITCH CHECK - Check switch **B63** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step F5** Replace **switch B63**

(Cont.d)

RIGHT FRONT SEAT VERTICAL ADJUSTMENT INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F5 MOTOR CHECK - Press switch **B63** in both directions and check for presence of 12V at terminals of motor **P30**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Replace **motor P30** Carry-out **step F6**
F6 VOLTAGE CHECK - Press switch **B63** in both directions and check for presence 12V between pins 5 and 6 of connector **G155a**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 5 and 6 of connector G155a and motor P30** Repair wiring between **switch B63 (pins 1 and 2) and connector G155a (pins 5 and 6)**
F7 VOLTAGE CHECK - Check for presence of 12V between pins 3 and 5 and ground of control switch **B29**	OK ▶ ~~OK~~ ▶	Repair wiring between **ground point G182, pin 2 of connector G183b and pin 4 of switch B29** Repair wiring between **pin 1 of connector G210, pin 1 of connector G183b and pins 3 and 5 of switch B29**

End of test F

RIGHT FRONT SEAT BACKREST ADJUSTMENT INOPERATIVE	TEST G

TEST STEPS	RESULTS	REMEDY
G1 ADJUSTMENTS CHECK - Check if right front seat longitudinal and vertical adjustments are operational	OK ▶ ~~OK~~ ▶	Carry-out **step G2** Carry-out **step G5**
G2 SWITCH CHECK - Check switch **B29** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step G3** Replace **switch B29**
G3 MOTOR CHECK - Press switch **B29** in both directions and check for presence of 12V at terminals of motor **P6**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Replace **motor P6** Carry-out **step G4**
G4 VOLTAGE CHECK - Press switch **B29** in both directions and check for presence 12V between pins 1 and 2 of connector **G155a**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Repair wiring between **pins 1 and 2 of connector G155a and motor P6** Repair wiring between **switch B29 (pins 1 and 2) and connector G155a (pins 1 and 2)**

(Cont.d)

RIGHT FRONT SEAT BACKREST ADJUSTMENT INOPERATIVE	TEST G

TEST STEPS		RESULTS	REMEDY
G5	VOLTAGE CHECK		
- Check for presence of 12V between pins 3 and 5 and ground of control switch B29		OK ▶	Repair wiring between **ground point G182, pin 2 of connector G183b and pin 4 of switch B29**
		OK ▶	Repair wiring between **pin 1 of connector G210, pin 1 of connector G183b and pins 3 and 5 of switch B29**

End of test G

BOTH REAR SEATS ADJUSTMENT INOPERATIVE	TEST H

TEST STEPS	RESULTS	REMEDY
H1 FUSE CHECK - Check free fuse **G246** for integrity	OK ▶ OK ▶	Carry-out **step H2** Replace free fuse **G246**
H2 VOLTAGE CHECK - Check for presence of 12V between pins U and T and ground of switch **B58**	OK ▶ OK ▶	Repair wiring between **ground point G185, pin 1 of connector G190 and switch B58** Carry-out **step H3**
H3 RELAY CHECK - Check relay **I56** for correct connection with the wiring	OK ▶ OK ▶	Repair wiring between **fuse G246, G190 (pin 3) and pin "U" and "T" of switch B58 (PPL wire) and between pin 87a of relay I56 and fuse G246** Restore proper connection of relay I56

End of test H

LEFT REAR SEAT ADJUSTMENT INOPERATIVE	TEST I

TEST STEPS	RESULTS	REMEDY
I1 AUTOMATIC RETRACTION CHECK - Open left rear door and check that left rear seat automatically retracts to the most rear position	OK ▶ ~~OK~~ ▶	Carry-out **step I2** Carry-out **step I3**
I2 SWITCH CHECK - Check integrity switch **B58**	OK ▶ ~~OK~~ ▶	Repair wiring between **switch B58 (YEL wire) and pin 1 of motor P33** Replace **switch B58**
I3 MOTOR CHECK - Press switch **B58** in both directions and check for presence of 12V between pins 1 and 2 of motor **P33**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Replace **motor P33** Repair wiring between **pin 2 of motor P33 and pin 30 of relay I55**

End of test I

RIGHT REAR SEAT ADJUSTMENT INOPERATIVE	TEST J

TEST STEPS	RESULTS	REMEDY
J1 AUTOMATIC RETRACTION CHECK - Open right rear door and check that right rear seat automatically retracts to the most rear position	OK ▶ ~~OK~~ ▶	Carry-out **step J2** Carry-out **step J3**
J2 SWITCH CHECK - Check integrity switch **B56**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin v of switch B56 (GRN wire) and pin 1 of motor P32** Replace **switch B56**
J3 MOTOR CHECK - Press switch **B56** in both directions and check for presence of 12V between pins 1 and 2 of motor **P32**; polarity is dependent on direction of pressure on the switch	OK ▶ ~~OK~~ ▶	Replace **motor P32** Repair wiring between **pin 2 of motor P32 and pin 30 of relay I54**

End of test J

LEFT REAR SEAT AUTOMATIC RETRACTION INOPERATIVE	TEST K

TEST STEPS	RESULTS	REMEDY
NOTE: The rear seats automatic retraction circuit includes a seat microswitch that checks the seat end of travel. If, when the rear door is opened the seat retracts to the end of travel, but the actuating motor does not de-energize, replace left rear seat microswitch **H39**.		
K1 ADJUSTMENTS CHECK - Check that left rear seat adjustment is operational when switch **B58** is actuated	OK ▶ ~~OK~~ ▶	Carry-out **step K2** Carry-out **step K6**
K2 SWITCH CHECK - Open left rear door and check that circuit between terminals of switch **H41** is closed	OK ▶ ~~OK~~ ▶	Carry-out **step K3** Replace **switch H41**
K3 GROUNDING CHECK - Check that ground is connected to: • terminals of switch **H41** • pin 6 of connector **G190** • terminals of microswitch **H39**	OK ▶ ~~OK~~ ▶	Carry-out **step K4** Replace or repair **wires, as necessary**
K4 RELAY CHECK - Check relay **I55** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step K5** Replace **relay I55**

(Cont.d)

LEFT REAR SEAT AUTOMATIC RETRACTION INOPERATIVE	TEST K

TEST STEPS		RESULTS	REMEDY
K5	RIGHT REAR SEAT AUTOM. RETRACTION CHECK		
- Open right rear door and check that right rear seat automatically retracts		OK ▶	Repair wiring between **pins 86 and 87 of relay I54 and pins 86 and 87 of relay I55**
		~~OK~~ ▶	Repair wiring between **pin 3, pin 2 of connector G190 and pins 86 and 87 of relay I54**
K6	MOTOR CHECK		
- Open left rear door, then check for presence of 12V between pins 2 and 1 of motor **P33** (positive at pin 2)		OK ▶	Replace **motor P33**
		~~OK~~ ▶	Repair wiring between **pin 2 of motor P33 and pin 30 of relay I55**

End of test K

RIGHT REAR SEAT AUTOMATIC RETRACTION INOPERATIVE	TEST L

TEST STEPS	RESULTS	REMEDY
NOTE: The rear seats automatic retraction circuit includes a seat microswitch that checks the seat end of travel. If, when the rear door is opened the seat retracts to the end of travel, but the actuating motor does not de-energize, replace right rear seat microswitch **H38**.		
L1 ADJUSTMENTS CHECK - Check that right rear seat adjustment is operational when switch **B56** is actuated	OK ▶ ~~OK~~ ▶	Carry-out **step L2** Carry-out **step L5**
L2 SWITCH CHECK - Open right rear door and check that circuit between terminals of switch **H40** is closed	OK ▶ ~~OK~~ ▶	Carry-out **step L3** Replace **switch H40**
L3 GROUNDING CHECK - When switch **H40** e **H38** are actuated check that ground **G185** is connected to: • pin 1 of connector **G190** • terminals of switch **H40** • pin 5 of connector **G190** • terminals of microswitch **H38**	OK ▶ ~~OK~~ ▶	Carry-out **step L4** Replace or repair **wires, as necessary**

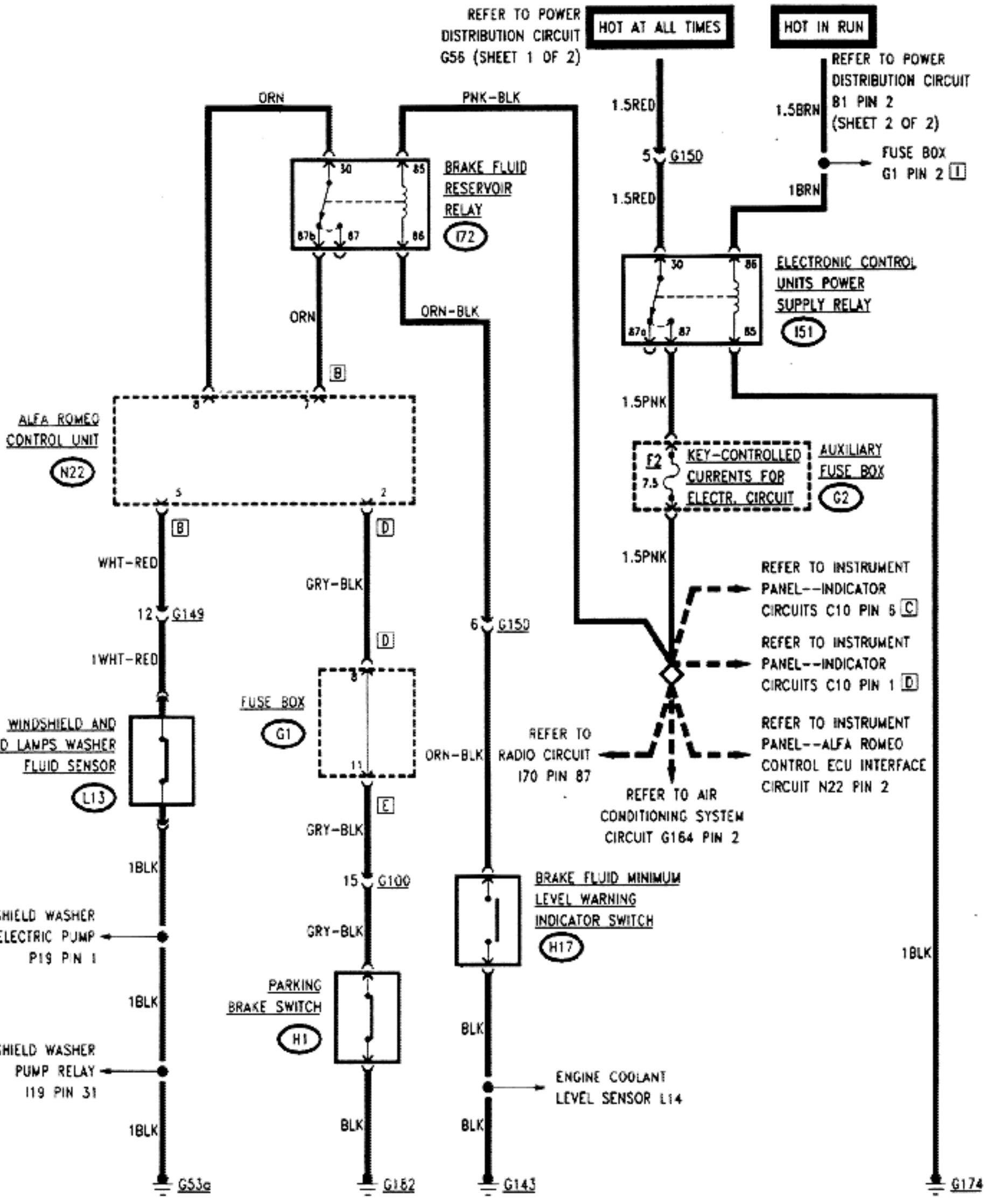
(Cont.d)

RIGHT REAR SEAT AUTOMATIC RETRACTION INOPERATIVE	TEST L

TEST STEPS		RESULTS	REMEDY
L4	RIGHT REAR SEAT AUTOM. RETRACTION CHECK		
- Open right rear door and check that right rear seat automatically retracts		OK ▶	Replace relay I54
		OK ▶	Repair wiring between pins 3 and 2 of connector G190 and pins 86 and 87 of relay I54
L5	MOTOR CHECK		
- Open right rear door, then check for presence of 12V between pins 2 and 1 of motor **P32** (positive at pin 2)		OK ▶	Replace motor P32
		OK ▶	Repair wiring between pin 2 of motor P32 and pin 30 of relay I54

End of test L

SENSORS - - BRAKE AND WINDSHIELD WASHER FLUID LEVELS, PARKING BRAKE WARNING LAMPS



GENERAL

The brake fluid level, windshield washer fluid level and parking brake engagement are monitored by an electronic control unit which, in case of a malfunction, alerts the user by switching on the related warning lamps on the instrument panel.The power supply line is protected by the fuse **F2** (7.5A) KEY-CONTROLLED CURRENTS FOR ELECTR. CIRCUIT in the auxiliary fuse box **G2**.
For further information refer to the instrument panel circuits chapter.

OPERATIONAL DESCRIPTION

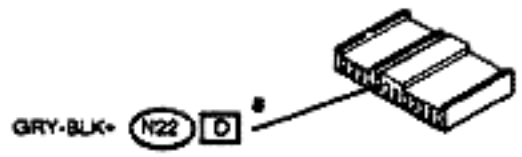
When the level of the windshield washer fluid decreases below the minimum, the windshield and headlamps washer fluid sensor **L13** opens, thus disconnecting the Alfa Romeo Control unit **N22** from its ground point.
The control unit **N22** alerts the user of the low fluid level by switching on the related warning lamp on the instrument panel (refer to the instrument panel circuits chapter).
When the parking brake is engaged, the parking brake switch **H1** opens, thus disconnecting the control unit **N22** from its ground point. The control unit **N22** alerts the user that parking brake is engaged by switching on the related warning lamp on the instrument panel (refer to the instrument panel circuits chapter).
The brake fluid minimum level warning indicator switch **H17** consists of a contact which is open when the level of brake fluid is sufficient.
When the level of brake fluid becomes insufficent, the switch **H17** closes, and energizes the brake fluid and reservoir relay **I73**
Energization of relay **I36** disconnects the 12V power supply from pin 7A of control unit **N22**, which in turn alerts the user of the malfunction by switching on the related warning lamp on the instrument panel (refer to the instrument panel circuits chapter).
The 12V power for the energization of relay **I36** is supplied by the electronic control units power supply relay **I51**, provided the ignition key is set to "run" position.

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT						
	E2 FUSE	H1 SWITCH	H17 SWITCH	L13 SENSOR	151 RELAY	172 RELAY	N22 CONTROL UNIT
BRAKE FLUID LEVEL WARNING LAMP INOPERATIVE	●		●		●	●	●
BRAKE FLUID LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED			●			●	●
MINIMUM WINDSHIELD WASHER FLUID LEVEL WARNING LAMP INOPERATIVE				●			●
MINIMUM FLUID LEVEL/WINDSHIELD WASHER FLUID LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED				●			●
PARKING BRAKE ENGAGED WARNING LAMP INOPERATIVE		●					●
PARKING BRAKE ENGAGED WARNING LAMP CONTINUOUSLY ILLUMINATED		●					●

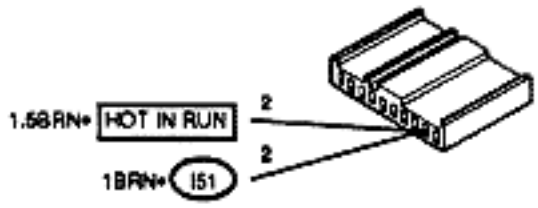
NOTE: Before attempting any troubleshooting, ascertain the integrity of the affected warning lamp on the instrument panel by pressing the test button.

Fuse box	G1 D



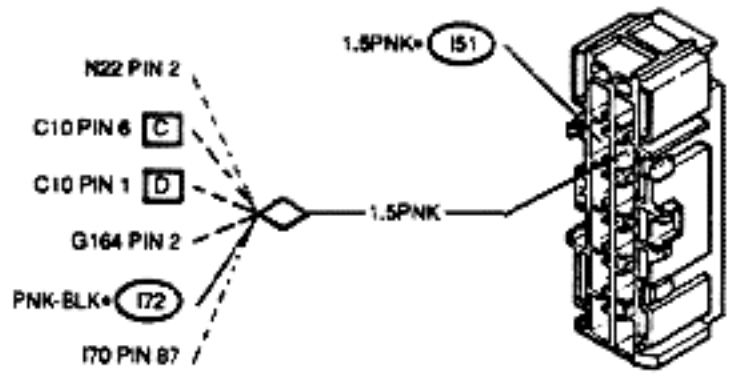
Fuse box	G1 E

Fuse box	G1 I

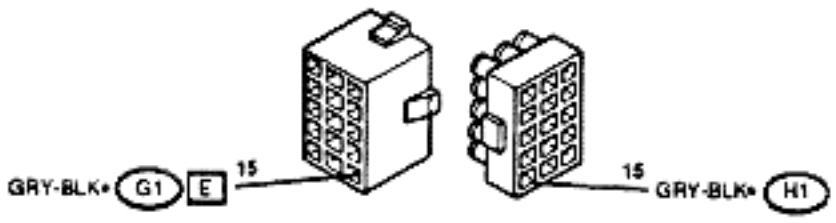


Engine compartment right side ground connection	G53a

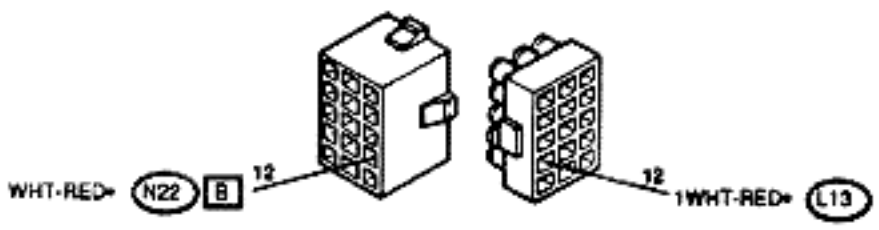
Auxiliary fuse box	G2



Connector, doors to center console wiring	G100

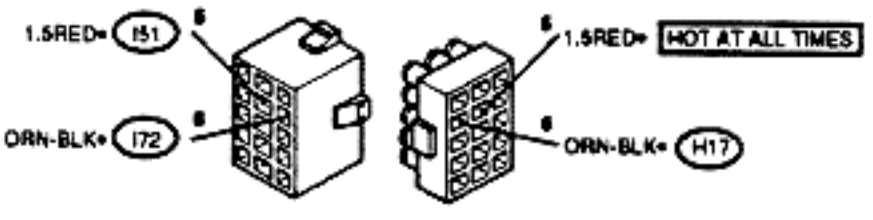


Connector, circuit board to engine compartment right side wiring	G149

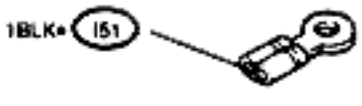


Central bulkead ground	G143

Connector, circuit board to engine compartment left side wiring	G150

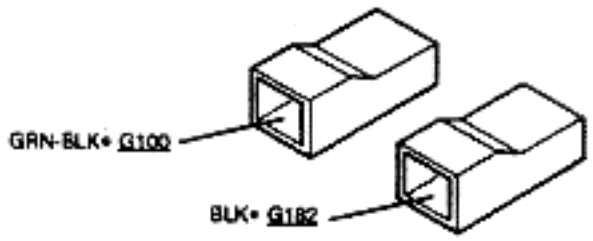


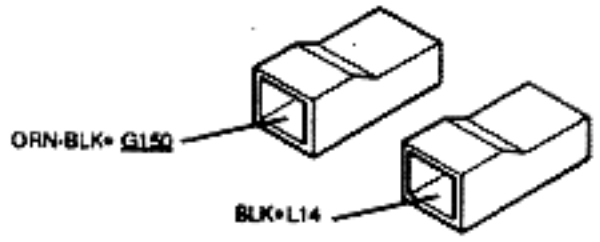
Steering wheel column support ground	G174

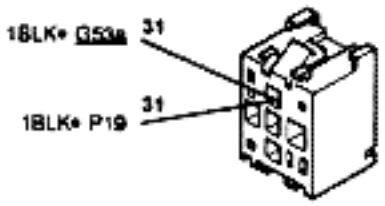


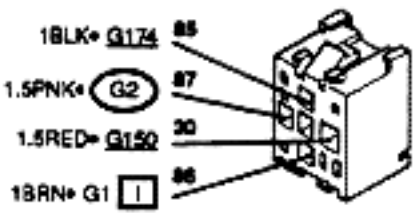
Center console ground	G182

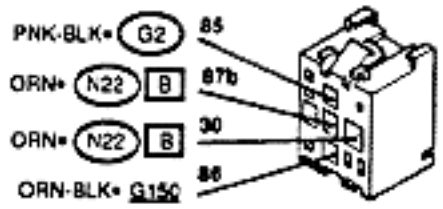
(Cont.d)

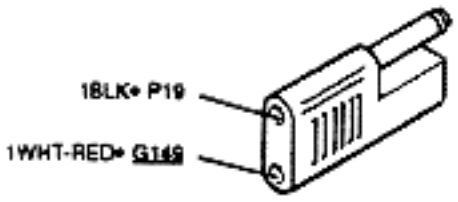
Parking brake switch	H1
	

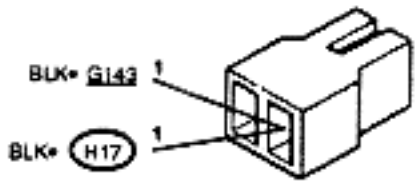
Brake fluid minimum level warning indicator switch	H17
	

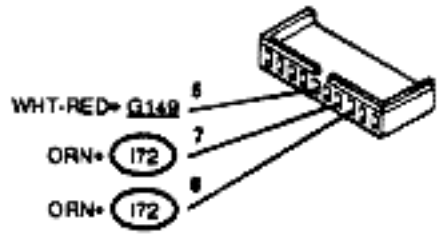
Head lamps washer pump relay	I19
	

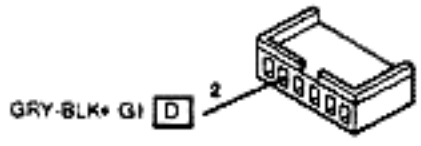
Electronic control units power supply relay	I51
	

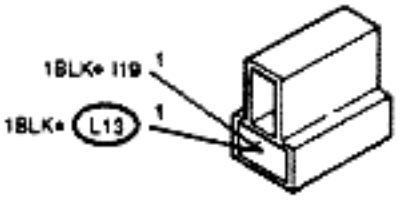
Brake fluid reservoir relay	I72
	

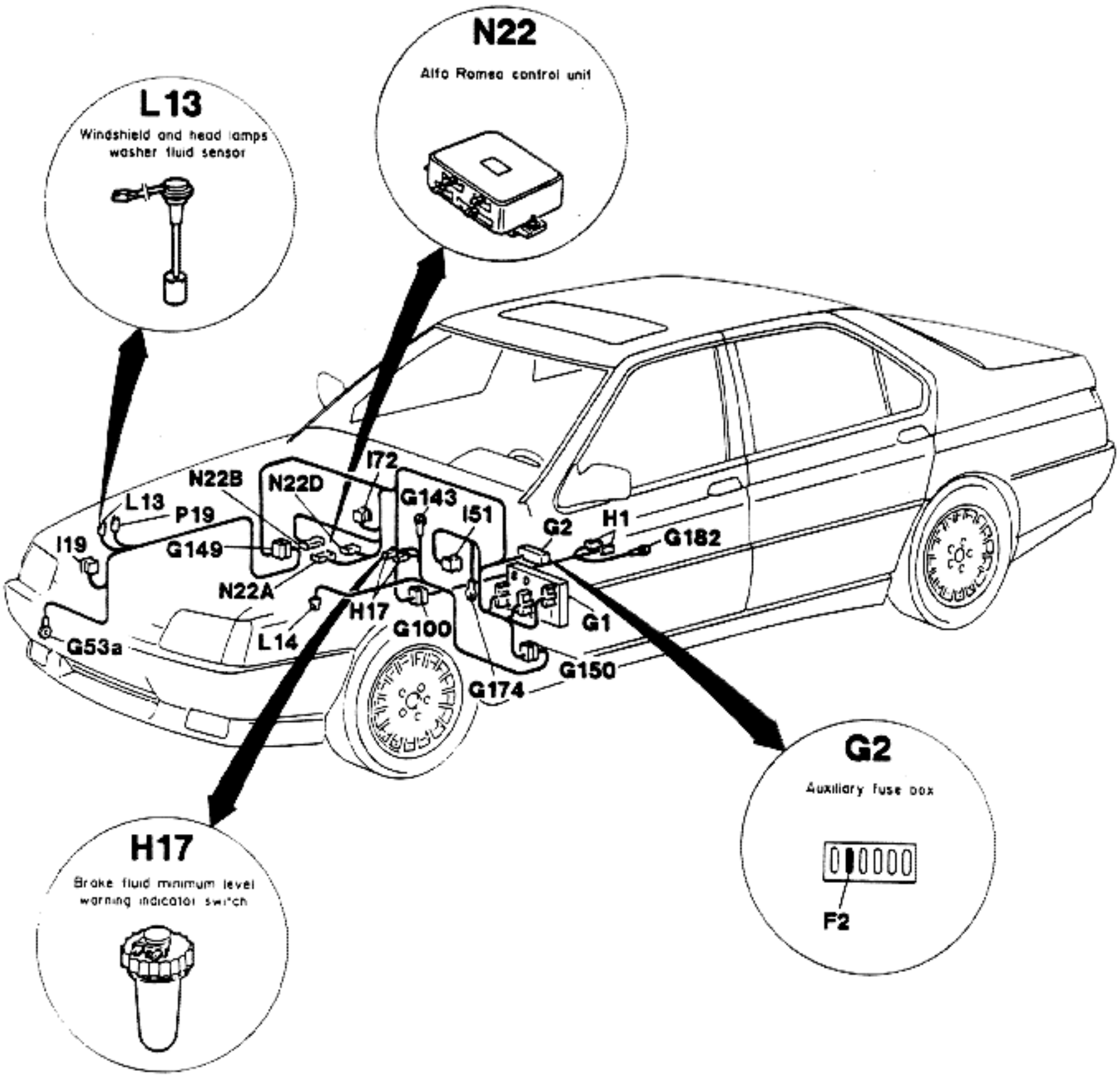
Windshield and head lamps washer fluid sensor	L13
	

Engine coolant level sensor	L14
	

Alfa Romeo control unit	N22 B
	

Alfa Romeo control unit	N22 D
	

Windshield washer electric pump	P19
	



BRAKE FLUID LEVEL WARNING LAMP INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, check the related warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
A1 FUSE CHECK - Check fuse **F2** in auxiliary fuse box **G2** for integrity	OK ▶ OK ▶	Carry-out **step A2** Replace **fuse F2**
A2 VOLTAGE CHECK - Check for presence of 12V between pin 87 of electronic control units power supply relay **I51** and ground	OK ▶ OK ▶	Carry-out **step A7** Carry-out **step A3**
A3 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay **I51** and ground	OK ▶ OK ▶	Carry-out **step A5** Carry-out **step A4**

(Cont.d)

BRAKE FLUID LEVEL WARNING LAMP INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A4 VOLTAGE CHECK - Check for presence of 12V between pin 5 of connector **G150** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 5 of connector G150 and pin 30 of relay I51** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 1 of 2**
A5 GROUNDING CHECK - Check for presence of 0V (zero) between pin 85 of relay **I51** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Repair wiring between **pin 85 of relay I51 and ground point G174**
A6 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 86 of relay **I51** and ground	OK ▶ ~~OK~~ ▶	Replace **relay I51** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

(Cont.d)

BRAKE FLUID LEVEL WARNING LAMP INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A7 VOLTAGE CHECK - Check for presence of 12V between auxiliary fuse box G2 (PNK wire) and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A8** Repair wiring between **auxiliary fuse box G2 pin (PNK wire) and pin 87 of relay I51**
A8 VOLTAGE CHECK - Check for presence of 12V betweent pin 85 of brake fluid level reservoir relay **I72** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A9** Repair wiring between **pin 85 of relay I72 and auxiliary fuse box G2 (PNK-BLK wire)**
A9 GROUNDING CHECK - With brake fluid level below minimum, check for presence of 0V (zero) at pin 86 of relay **I72**	OK ▶ ~~OK~~ ▶	Carry-out **step A10** Carry-out **step A11**

(Cont.d)

BRAKE FLUID LEVEL WARNING LAMP INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A10 CONTINUITY CHECK - With brake fluid level below minimum, check that circuit is open between pins 7B and 8B of Alfa Romeo Control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** Replace relay **I72**
A11 GROUNDING CHECK - Check for presence of 0V (zero) at pin 6 of connector **G150** with brake fluid level below minimum	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 6 of connector G150 and pin 86 of relay I36** Carry-out **step A12**
A12 GROUNDING CHECK - Check for presence of 0V at terminal of brake fluid minimum level warning indicator switch **H17** (ORN-BLK wire) under conditions stated at test step A8	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 6 of connector G150 and terminal of switch H17 (ORN-BLK wire)** Carry-out **step A13**

(Cont.d)

BRAKE FLUID LEVEL WARNING LAMP INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A13	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin of switch H17 (BLK wire)		OK ▶	Replace switch H17
		~~OK~~ ▶	Repair wiring between terminal of switch H17 (BLK wire) and ground point G143

End of test A

BRAKE FLUID LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST B

TEST STEPS	RESULTS	REMEDY
B1 BRAKE FLUID LEVEL CHECK - Check level of brake fluid	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Top-up **brake fluid**
B2 CONTROL UNIT CHECK - Check that circuit is closed between pins 7B and 8B of Alfa Romeo Control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable trouble-shooting procedure** Carry-out **step B3**
B3 OPEN CIRCUIT CHECK - Check that circuit is open at pin 86 of relay **I72**	OK ▶ ~~OK~~ ▶	Replace **relay I72** Replace **switch H17**

End of test B

MINIMUM WINDSHIELD WASHER FLUID LEVEL WARNING LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, check the related warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
C1 CONTROL UNIT CHECK - With windshield washer fluid level below minimum, check that circuit is open at pin 5B of Alfa Romeo Control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable trouble-shooting procedure** Replace **windshield and head lamps washer fluid sensor L13**

End of test C

MINIMUM FLUID LEVEL/WINDSHIELD WASHER FLUID LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST D

TEST STEPS	RESULTS	REMEDY
D1 FLUID LEVEL CHECK - Check level of windshield washer fluid	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Top-up **windshield washer fluid**
D2 SENSOR CHECK - With sufficent windshield washer fluid, check that circuit is closed between terminals of windshield and head lamps washer fluid sensor **L13**	OK ▶ ~~OK~~ ▶	Carry-out **step D3** Replace **sensor L13**
D3 GROUNDING CHECK - Check for presence of 0V (zero) between terminal of sensor **L13** (BLK wire) and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D4** Repair wiring between **terminal of sensor L13 (BLK wire) and ground point G53a**

(Cont.d)

MINIMUM FLUID LEVEL/WINDSHIELD WASHER FLUID LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST D

TEST STEPS		RESULTS	REMEDY
D4	CONTROL UNIT CHECK		
- With sufficient windshield washer fluid, check for presence of 0V (zero) at pin 5B of Alfa Romeo Control unit N22		OK ▶	Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable trouble-shooting procedure
		OK ▶	Carry-out step D5
D5	GROUNDING CHECK		
- With sufficient windshield washer fluid, check for presence of 0V (zero) at pin 12 of connector G149		OK ▶	Repair wiring between pin 12 of connector G149 and pin 5B of control unit N22
		OK ▶	Repair wiring between pin 12 of connector G149 and terminal of sensor L13 (WHT-RED wire)

End of test D

PARKING BRAKE ENGAGED WARNING LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, check the related warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
E1 CONTROL UNIT CHECK - With parking brake engaged, check that circuit is open at pin 2D of Alfa Romeo Control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of the Instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable trouble-shooting procedure** Carry-out **step E2**
E2 CONTINUITY CHECK - With parking brake engaged, check that circuit is open at pin 11E of fuse box **G1**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 11E, 8D of fuse box G1 and pin 2D of control unit** Carry-out **step E3**
E3 CONTINUITY CHECK - With parking brake engaged, check that circuit is open at terminal of switch **H1** (GRY-BLK)	OK ▶ ~~OK~~ ▶	Repair wiring between **terminal of switch H1 pin 15 of connector G100 and 11E of G1** Carry-out **step E4**

(Cont.d)

PARKING BRAKE ENGAGED WARNING LAMP INOPERATIVE	TEST E

TEST STEPS		RESULTS	REMEDY
E4	GRUNDING CHECK		
- Check for presence of 0V (zero) between terminal of switch **H1** and ground		OK ▶	Replace **parking brake switch H1**
		~~OK~~ ▶	Repair wiring between **terminal H1 and ground point G182**

End of test E

PARKING BRAKE ENGAGED WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST F

TEST STEPS	RESULTS	REMEDY
F1 PARKING BRAKE CHECK - Check that parking brake is disengaged	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Disengage **parking brake**
F2 PARKING BRAKE SWITCH CHECK - Check that circuit is closed between terminals of parking brake switch **H1**	OK ▶ ~~OK~~ ▶	Carry-out **step F3** Replace **switch H1**
F3 GROUNDING CHECK - Check for presence of 0V (zero) at terminal of switch **H1** (BLK wire)	OK ▶ ~~OK~~ ▶	Carry-out **step F4** Repair wiring between **terminal of switch H1 (BLK wire) and ground point G182**

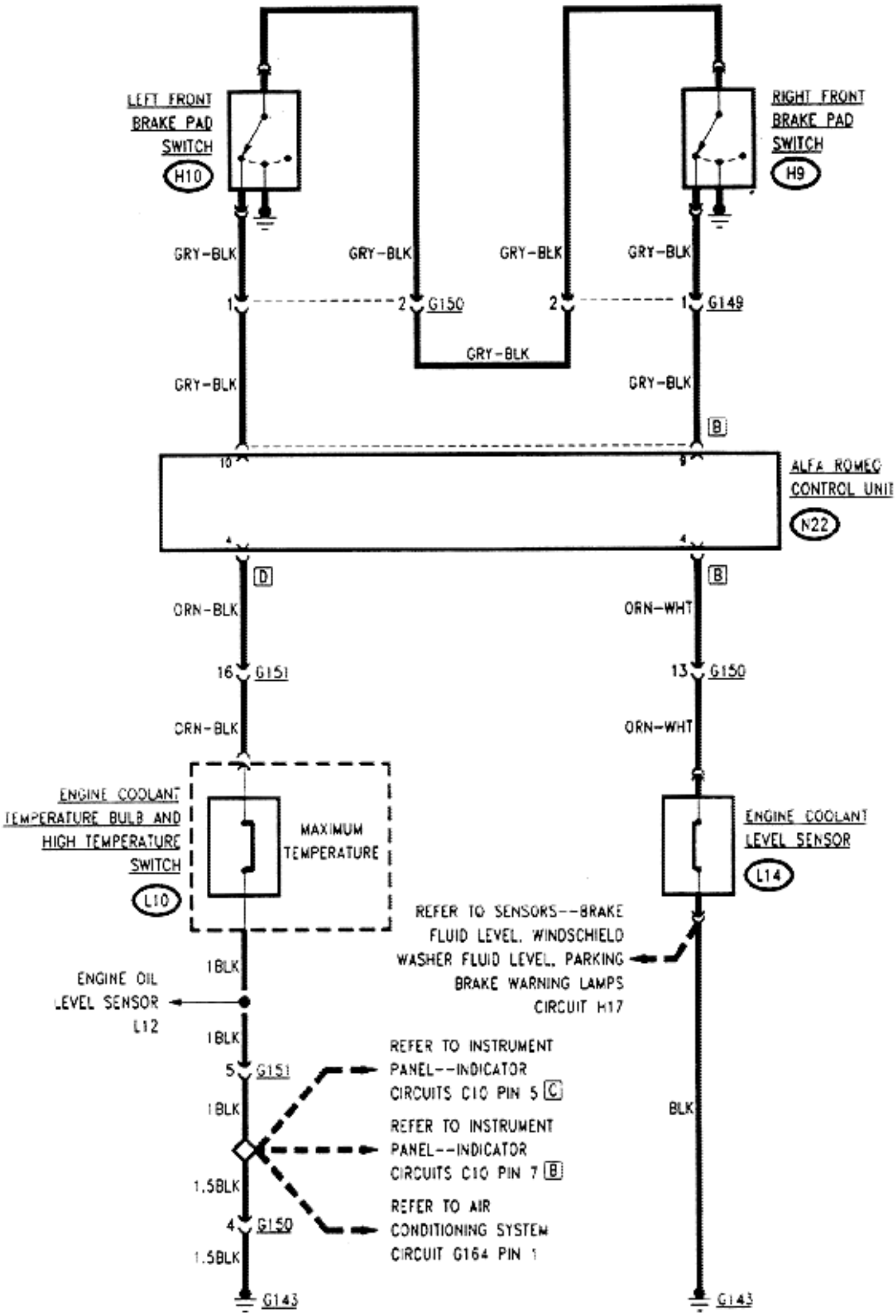
(Cont.d)

PARKING BRAKE ENGAGED WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST F

TEST STEPS	RESULTS	REMEDY
F4 CONTROL UNIT CHECK - Check for presence of 0V (zero) at pin 2D of Alfa Romeo Control unit **N22**	OK ▶	Failure **of the instrument panel -- Alfa Romeo Control ECU interface circuit; refer to the applicable trouble-shooting procedure**
	~~OK~~ ▶	Carry-out **step F5**
F5 GROUNDING CHECK - Check for presence of 0V (zero) at pin 11E of fuse box **G1**	OK ▶	Repair wiring between **pin 8D of fuse box G1 and pin 2D of control unit N22**
	~~OK~~ ▶	Carry-out **step F6**
F6 GROUNDING CHECK - Check for presence of 0V (zero) at pin 15 of connector **G100**	OK ▶	Repair wiring between **pin 11E of fuse box G1 and pin 15 of connector G100**
	~~OK~~ ▶	Repair wiring between **pin 15 of connector G100 and terminal of switch H1 (GRY-BLK wire)**

End of test F

SENSORS - - BRAKE PAD WEAR, ENGINE COOLANT LEVEL, MAXIMUM COOLANT TEMPERATURE



GENERAL

The front brake pads wear and the level and temperature of the engine coolant are continuously monitored by an electronic control unit that, in case of a malfunction, alerts the user by turning on the appropriate warning lamp on the instrument panel.

OPERATIONAL DESCRIPTION

The right and left front brake pads switches **H9** and **H10** connect to ground pins 9B and 10B of the Alfa Romeo control unit **N22** whenever the corresponding brake pads are slightly worn, and the brake pedal is actuated.
Severe wear of the brake pads causes opening of contacts of switches **H9** and/or **H10**, with consequent opening of circuit to pins 9B and 10B of control unit **N22**.
The level of engine coolant is monitored by the control unit **N22** through the level sensor **L14**.
The engine coolant level sensor **L14** contacts open when the engine coolant level decreases below the minimum, and disconnect pin 4B of control unit **N22** from the ground point.
The wiring diagram also shows the engine coolant temperature bulb and high temperature switch **L10**, that opens and disconnect from ground point the pin 4D of the control unit **N22** when the engine coolant temperature reaches the critical value of 115±3°C (239±5.4°F).
The switch **L10** will close when the engine coolant temperature decreases below 102°C (183.6°F).
The control unit **N22** will turn on the corresponding warning lamp on the instrument panel whenever any of the above mentioned failures occurs.

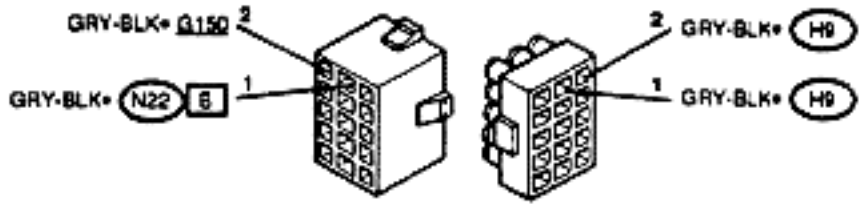
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT				
	H9 SWITCH	H10 SWITCH	L10 SWITCH	L14 SENSOR	N22 CONTROL UNIT
BRAKE PADS WEAR WARNING LAMP INOPERATIVE	●	●			●
BRAKE PADS WEAR WARNING LAMP CONTINUOUSLY ILLUMINATED	●	●			●
ENGINE COOLANT LEVEL WARNING LAMP INOPERATIVE				●	●
ENGINE COOLANT LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED TEST				●	●
ENGINE COOLANT MAXIMUM TEMPERATURE WARNING LAMP INOPERATIVE			●		●
ENGINE COOLANT MAXIMUM TEMPERATURE WARNING LAMP CONTINUOUSLY ILLUMINATED TEST			●		●

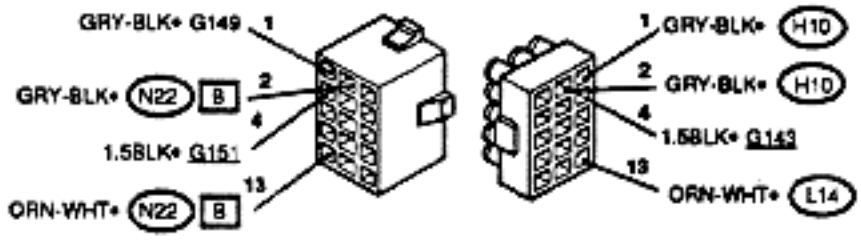
NOTE: Before attempting any trouble shooting, check the related warning lamp on the instrument panel by pressing the test button.

Central bulkhead ground — G143

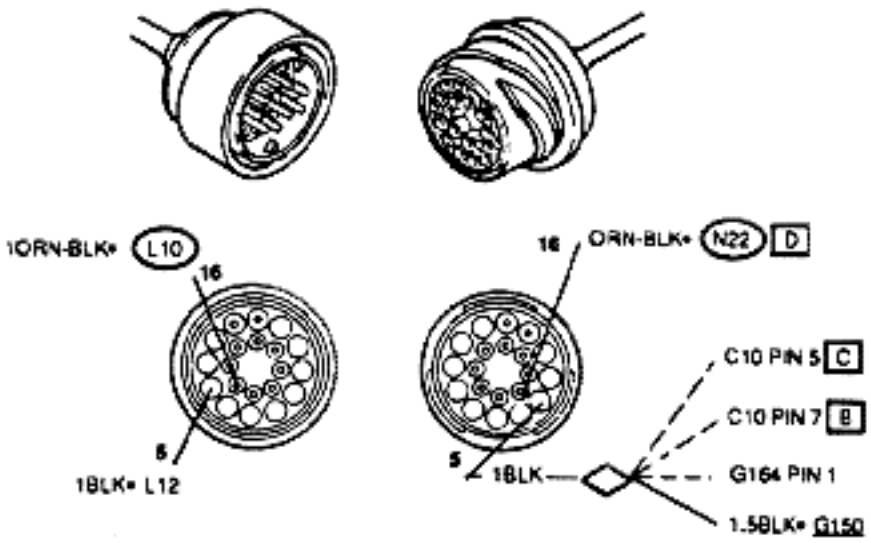
Connector, circuit board to engine compartment right side wiring — G149



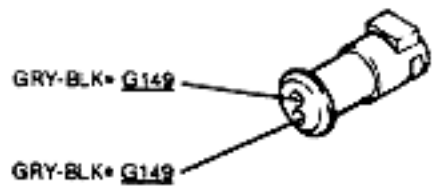
Connector, circuit board to engine compartment left side wiring — G150



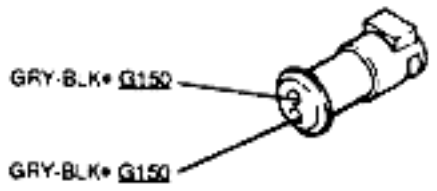
Connector, circuit board to engine utilities wiring — G151



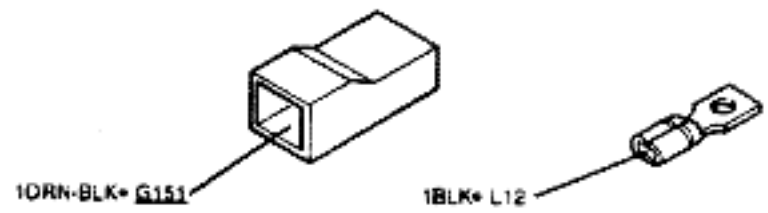
Right front brake pad switch — H9



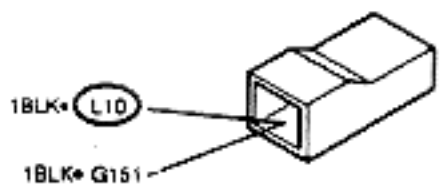
Left front brake pad switch — H10



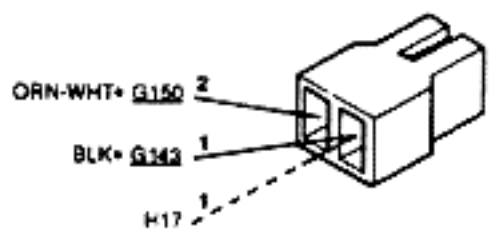
Engine coolant temperature bulb and high temperature switch — L10



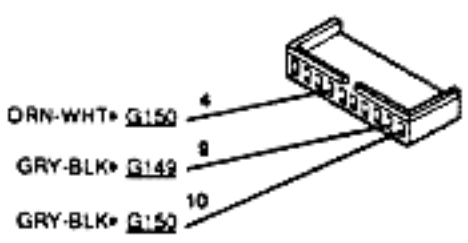
Engine oil level sensor — L12



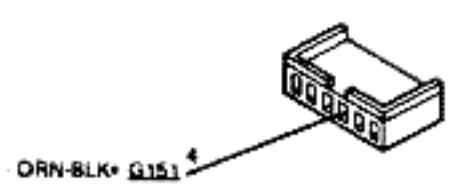
Engine coolant level sensor — L14

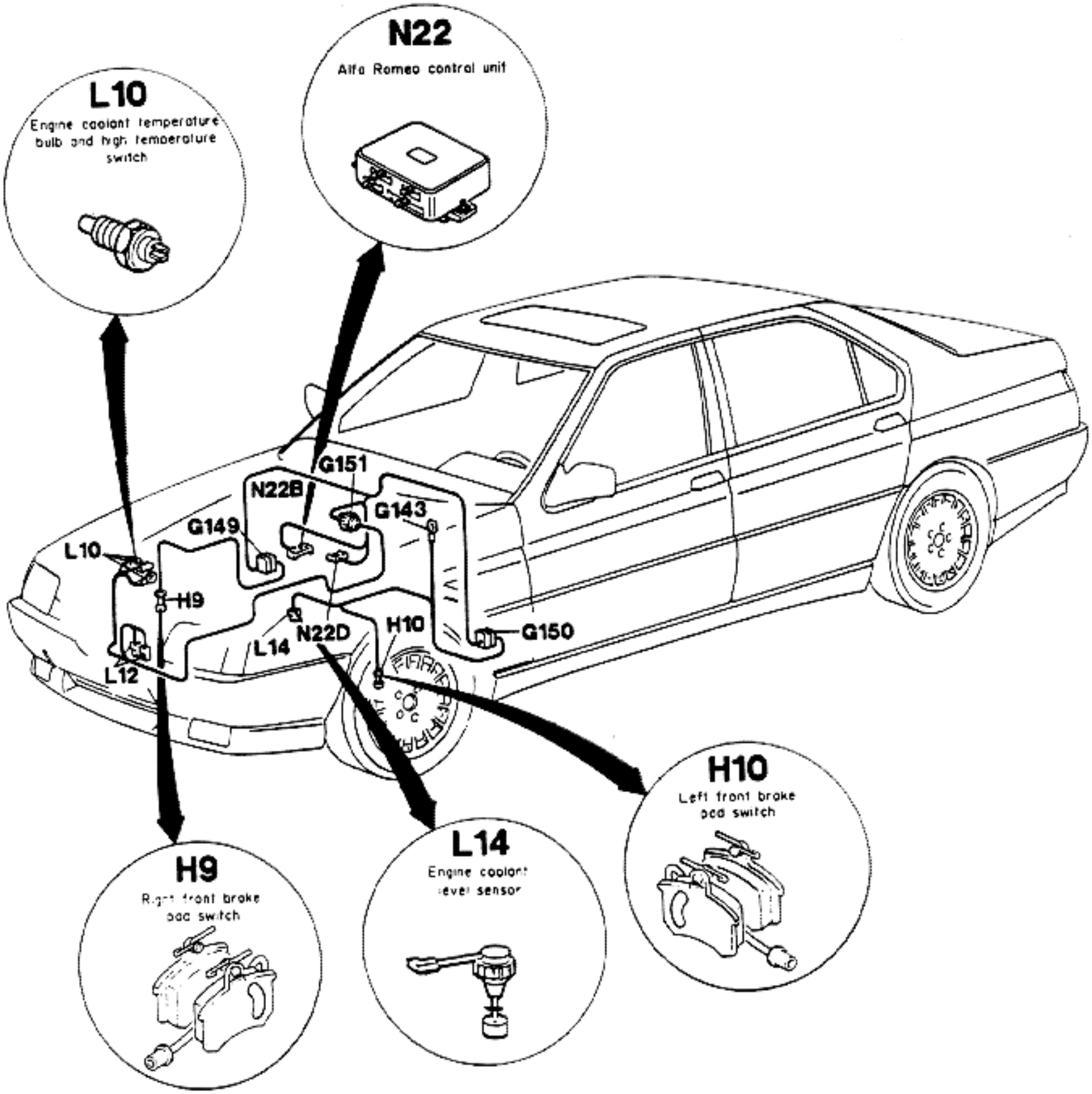


Alfa Romeo control unit — N22 B



Alfa Romeo control unit — N22 D





BRAKE PADS WEAR WARNING LAMP INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting check the related warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
A1 BRAKE PADS WEAR CHECK - Check that brake pads (front right or front left) are just slightly worn (severe wear is not acceptable)	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Carry-out **step A4**
A2 GROUNDING CHECK - Check that terminal of brake pad switch **H9** and/or **H10** is connected to ground (wires connecting to pin 1 of connector **G149** and/or pin 1 of connector **G150**)	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Replace **brake pad switch H9 (or H10)**
A3 CONTROL UNIT CHECK - Press and hold brake pedal and check for presence of 0V (zero) at pins 9B and/or 10B of Alfa Romeo control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** Repair wiring between **switch H9 (or H10), pin 1 of connector G149 (or pin 1 of connector G150) and pin 9B (or pin 10B) of control unit N22**

(Cont.d)

BRAKE PADS WEAR WARNING LAMP INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A4 SWITCH CHECK - With left front brake pad seriously worn, check for open circuit condition between terminals of left front brake pad switch **H10**	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Replace **brake pads**
A5 CONTROL UNIT CHECK - With right front brake pad seriously worn, check for open circuit condition between terminals of right front brake pad switch **H9**	OK ▶ ~~OK~~ ▶	Failure **of Instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** Replace **brake pads**

End of test A

BRAKE PADS WEAR WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST B

TEST STEPS	RESULTS	REMEDY
B1 BRAKE PADS WEAR CHECK - Check wear of both right and left front brake pads	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **brake pads**
B2 SWITCH CHECK - Check that circuit is closed between terminals of left front brake pad switch **H10**	OK ▶ ~~OK~~ ▶	Carry-out **step B3** Replace **switch H10**
B3 SWITCH CHECK - Check that circuit is closed between terminals of right front brake pad switch **H9**	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Replace **switch H9**
B4 CONTROL UNIT CHECK - Check that circuit is closed between pins 9B and 10B of Alfa Romeo control unit **N22**	OK ▶ ~~OK~~ ▶	Failure **of Instrument panel - - Alfa Romeo Control ECU Interface circuit; refer to the applicable troubleshooting procedure** Carry-out **step B5**

(Cont.d)

BRAKE PADS WEAR WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST B

TEST STEPS		RESULTS	REMEDY
B5	CONTINUITY CHECK		
- Check that circuit is closed between pin 10B of Alfa Romeo control unit **N22**, pin 1 of connector **G150** and terminal of left front brake pad switch **H10** (GRY-BLK wire)		OK ▶	Carry-out **step B6**
		~~OK~~ ▶	Repair or replace **wires, as necessary**
B6	CONTINUITY CHECK		
- Check that circuit is closed between terminal of left front brake pad switch **H10** (GRY-BLK wire), pin 2 of connector **G150**, pin 2 of connector **G149** and terminal of right front brake pad switch **H9** (GRY-BLK wire)		OK ▶	Repair wiring between **terminal of switch H9, pin 1 of connector G149 and pin 9B of control unit N22**
		~~OK~~ ▶	Repairs or replace **wire, as necessary**

End of test B

ENGINE COOLANT LEVEL WARNING LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, check the related warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
C1 CONTROL UNIT CHECK - With the engine coolant level below the minimum, check that circuit is open at pin 4B of Alfa Romeo control unit **N22**	OK ▶ ~~OK~~ ▶	Failure of **Instrument panel - - Alfa Romeo Control ECU** interface circuit; refer to the applicable troubleshooting procedure Carry-out **step C2**
C2 CONTINUITY CHECK - With the engine coolant level below the minimum check that circuit is open at terminal of sensor **L14** (ORN-WHT wire)	OK ▶ ~~OK~~ ▶	Repair wiring between **terminal of sensor L14, pin 13 of connector G150 and pin 4B of control unit** Carry-out **step C3**
C3 GROUNDING CHECK - Check that terminal of sensor **L14** (BLK wire) is connect to ground	OK ▶ ~~OK~~ ▶	Replace **sensor L14** Repair wiring between **sensor L14 and ground point G143 (BLK wire)**

End of test C

ENGINE COOLANT LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED TEST	TEST D

TEST STEPS	RESULTS	REMEDY
D1 COOLANT LEVEL CHECK - Check level of engine coolant	OK ▶ OK ▶	Carry-out **step D2** Top-up **engine coolant**
D2 SENSOR CHECK - With engine coolant level within limits, check that circuit is closed between terminals of engine coolant level sensor **L14**	OK ▶ OK ▶	Carry-out **step D3** Replace **sensor L14**
D3 CONTROL UNIT CHECK - With engine coolant level within limits, check for presence of 0V (zero) at pin 4B of Alfa Romeo control unit **N22**	OK ▶ OK ▶	Failure **of Instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** Carry-out **step D4**
D4 GROUNDING CHECK - Check that terminal of sensor **L14** is connected to ground (BLK wire)	OK ▶ OK ▶	Carry-out **step D5** Repair wiring between **sensor L14 and ground point G143 (BLK wire)**

(Cont.d)

ENGINE COOLANT LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED TEST	TEST D

TEST STEPS		RESULTS	REMEDY
D5	GROUNDING CHECK		
- With engine coolant level within limits, check for presence of 0V (zero) at pin 13 of connector **G150**		OK ▶	Repair wiring between **pin 13 of connector G150 and pin 4B of control unit N22**
		OK ▶	Repair wiring between **pin 13 of connector G150 and terminal of sensor L14 (ORN-WHT wire)**

End of test D

ENGINE COOLANT MAX. TEMPERATURE WARNING LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, check the related warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
E1 TRANSMITTER CHECK		
- Check that engine coolant temperature bulb and high temperature switch **L10** is operational as follows: • Remove switch **L10** and dip it into a suitable container filled with water • Bring water to boil, and check that contacts of switch **L10** open (open circuit between BLK and ORN-BLK wires) when the water reaches the temperature of 115°C	OK ▶ ~~OK~~ ▶	Failure **of instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** Replace **switch L10**

End of test E

ENGINE COOLANT MAX. TEMPERATURE WARNING LAMP CONTINUOUSLY ILLUMINATED TEST	TEST F

TEST STEPS	RESULTS	REMEDY
F1 COOLANT TEMPERATURE CHECK		
- Check engine coolant temperature by reading the engine coolant temperature gauge on instrument panel ~115°C (239°F)	OK ▶	Failure of the engine cooling system; refer to the "ENGINE" troubleshooting procedure (Group 01)
	~~OK~~ ▶	Carry-out step F2
F2 CONTROL UNIT CHECK		
- Check for presence of 0V (zero) at pin 4D of Alfa Romeo control unit N22	OK ▶	Failure of Instrument panel - - Alfa Romeo Control ECU Interface interface system; refer to the applicable troubleshooting procedure
	~~OK~~ ▶	Carry-out step F3
F3 VOLTAGE CHECK		
- Check that circuit is closed between terminals of engine coolant temperature gauge and of engine coolant temperature bulb and high temperature switch L10 (ORN-BLK and BLK wires)	OK ▶	Carry-out step F4
	~~OK~~ ▶	Replace switch L10

(Cont.d)

ENGINE COOLANT MAX. TEMPERATURE WARNING LAMP CONTINUOUSLY ILLUMINATED TEST	TEST F

TEST STEPS	RESULTS	REMEDY
F4 GROUNDING CHECK - Check that terminal of switch **L10** is connected to ground (BLK wire)	OK ▶ ~~OK~~ ▶	Carry-out **step F5** Carry-out **step F6**
F5 GROUNDING CHECK - Check for presence of 0V (zero)at pin 16 of connector **G151**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 16 of connector G151 and pin 4D of control unit N22** Repair wiring between **pin 16 of connector G151 and terminal of switch L10 (ORN-BLK wire)**
F6 GROUNDING CHECK - Check thet pin 5 of connector **G151** is connected to ground (BLK wire)	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 5 of connector G151 and terminal of switch L10** Carry-out **step F7**

(Cont.d)

ENGINE COOLANT MAX. TEMPERATURE WARNING LAMP CONTINUOUSLY ILLUMINATED TEST	TEST F

TEST STEPS		RESULTS	REMEDY
F7	GROUNDING CHECK		
- Check that pin 4 of connector **G150** is connected to ground (BLK wire)		OK ▶	Repair wiring between **pin 4 of connector G150 and pin 5 of connector G151**
		~~OK~~ ▶	Repair wiring between **pin 4 of connector G150 and ground point G143**

End of test F

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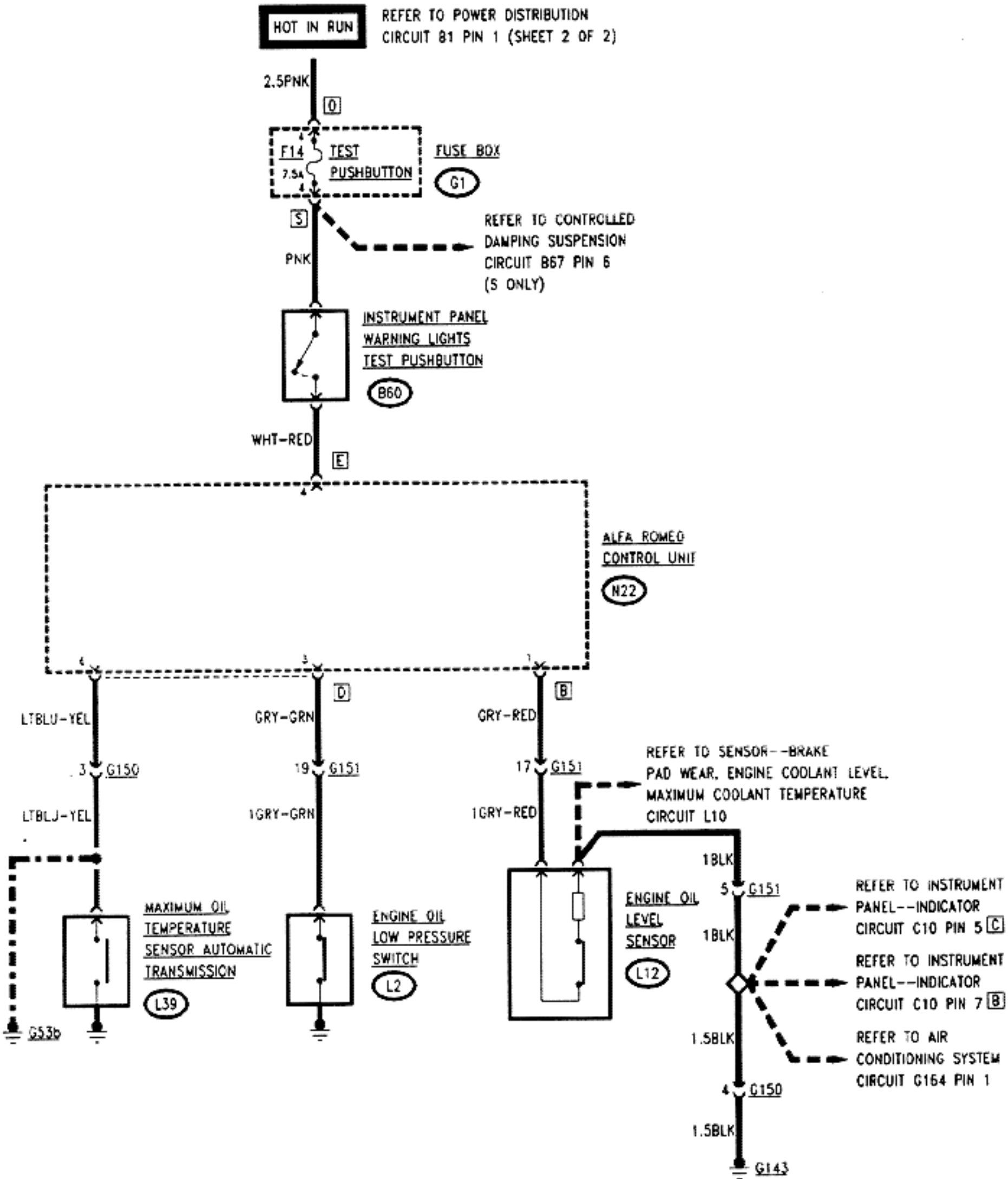
SENSORS - - ENGINE OIL MINIMUM LEVEL, ENGINE OIL MINIMUM PRESSURE, AUTOMATIC TRANSMISSION MAXIMUM TEMPERATURE, TEST PUSHBUTTON



GENERAL

The engine oil minimum level and minimum pressure and the automatic transmission oil temperature are continuously monitored by the Alfa Romeo control unit.
In the event of a failure, the control unit alerts the user by illumination on the instrument panel of the warning lamp relevant to the affected system.
The Alfa Romeo control unit monitors the warning lamps on the instrument panel, as listed below:

- Minimum level and minimum engine oil pressure.
- Automatic transmission oil temperature.
- Brake pads wear.
- Minimum level and maximum engine coolant temperature.
- Brake fluid level.
- Windshield washer fluid level.
- Parking brake engaged.
- Door open.
- Acoustic warning relevant to seat belt unfastened and/or ignition key inserted.

The integrity of all the warning lamps on the instrument panel is verified by pressing the test pushbutton.
The system is protected by the fuse **F14** (7.5A) TEST PUSHBUTTON in the fuse box **G1**.

OPERATIONAL DESCRIPTION

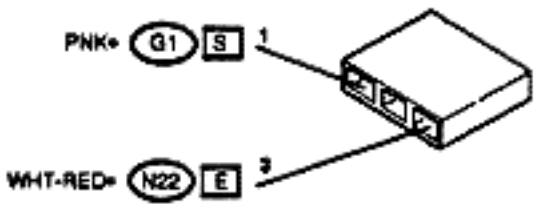
The engine oil level is detected by the engine oil level sensor **L12**, consisting of a bimetallic plate and a resistor connected in series and wound around the plate.
When the engine oil level is too low, the heat of the bimetallic plate can not be dissipated, the contact opens and pin 1B of the Alfa Romeo control unit **N22** is no longer connected to ground; as a consequence, the control unit turns on the relevant warning lamp on the instrument panel, thus alerting of the abnormal operating condition.
The check of the engine oil level is performed only when the ignition key is rotated from position "parking" to position "run", and the eventual abnormal condition warning is then stored.
To clear the warning of this abnormal condition, it is necessary to top-up the engine oil level and repeat the check procedure by returning the ignition key to "parking" position, and then back to "run" position.
In case the engine oil pressure decreases to the minimum limit, the contacts of the engine oil low pressure switch **L2** open, thus opening the circuit to pin 3D of the control unit **N22**.
Fot the BASE and L version the maximum temperature of the automatic transmission oil is sensed by a sensor **L39** that closes the circuit to pin 6D of the control unit **N22**, thus connecting pin 6D to ground when the automatic transmission oil temperature reaches 130°C (266°F) (the contacts re-open when the oil temperature decreases to about 120°C (248°F)).
The wiring diagram also shows the test pushbutton, used to check the integrity of all the warning lamps on the instrument panel. By pressing the pushbutton **B60**, the 12V power available when the ignition key is set to "run" position, and protected by fuse **F14** in the fuse box **G1**, is applied to pin 4E of the control unit **N22**.
The control unit **N22** will provide for simultaneous illumination of all the warning lamps, and activation of the acoustic warnings of the vehicle.

TROUBLESHOOTING TABLE

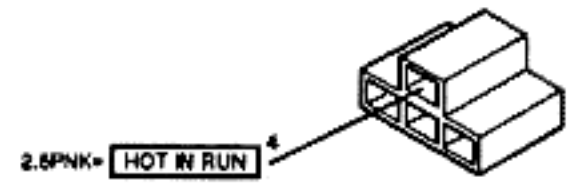
FAULT TYPE	FAILED COMPONENT					
	F14 FUSE	(860) TEST BUTTON	(L2) SENSOR	(L12) SENSOR	(L39) SENSOR (BASE AND L ONLY)	(N22) CONTROL UNIT
ENGINE OIL LEVEL WARNING LAMP INOPERATIVE						●
ENGINE OIL LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED				●		●
MINIMUM ENGINE OIL PRESSURE WARNING LAMP INOPERATIVE			●			●
MINIMUM ENGINE OIL PRESSURE WARNING LAMP CONTINUOUSLY ILLUMINATED			●			●
AUTOMATIC TRANSMISSION OIL MAXIMUM TEMPERATURE WARNING LAMP INOPERATIVE					●	●
AUTOMATIC TRANSMISSION OIL MAXIMUM TEMPERATURE WARNING LAMP CONTINUOUSLY ILLUMINATED					●	●
ALL WARNING LAMPS INOPERATIVE ON INSTRUMENT PANEL WHEN TEST PUSHBUTTON IS ACTUATED	●	●				●

NOTE: Before attempting any troubleshooting ascertain the integrity of the affected warning lamp on the instrument panel by pressing the test button.

Instrument panel warning lights test pushbutton	B60

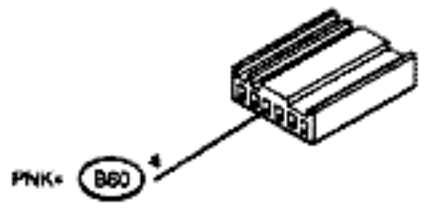


Fuse box	G1 O



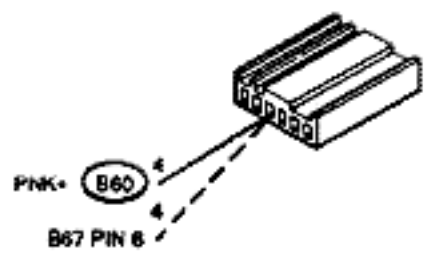
Fuse box	G1 S

BASE AND L ONLY



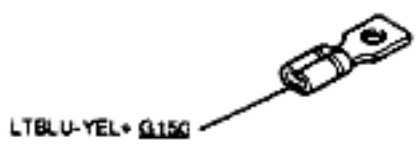
Fuse box	G1 S

S ONLY



Engine compartment left side ground connection	G53b

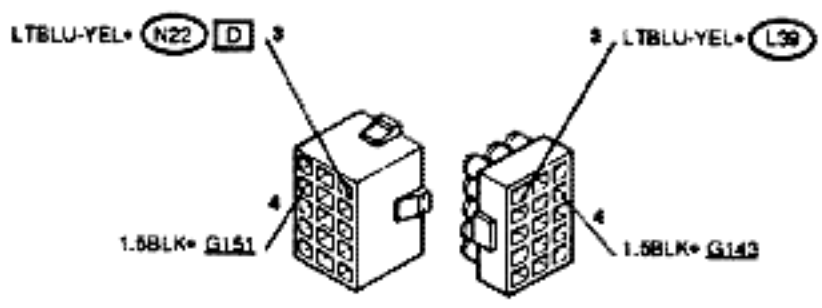
S ONLY



Central bulkhead ground	G143

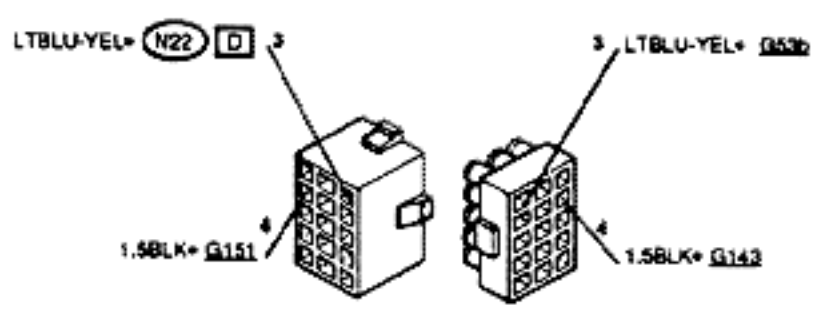
Connector, circuit board to engine compartment left side wiring	G150

BASE AND L ONLY



Connector, circuit board to engine compartment left side wiring	G150

S ONLY



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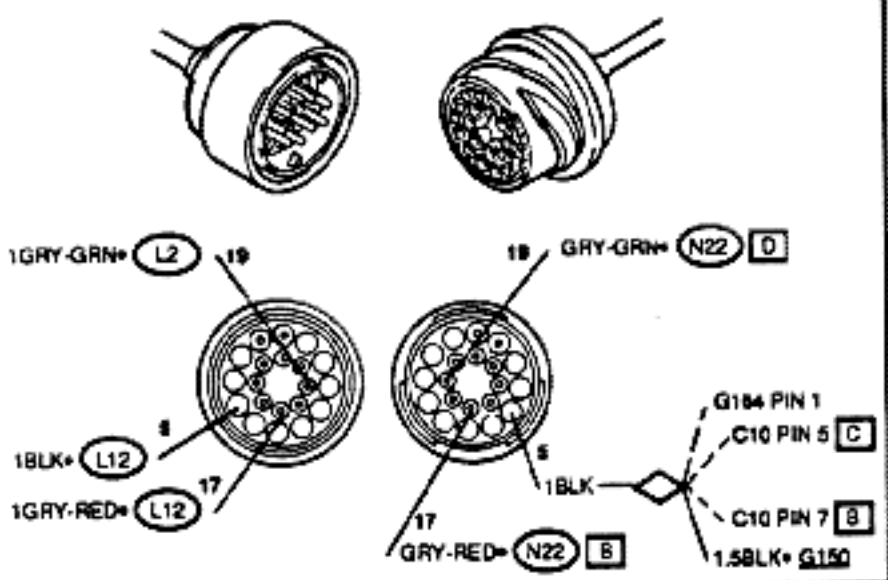
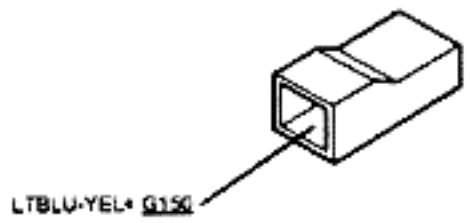
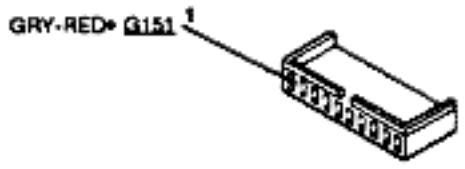
Connector, circuit board to engine utilities wiring — G151



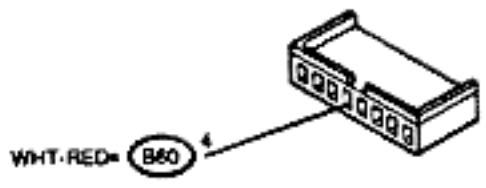
Maximum oil temperature sensor, automatic transmission — L39



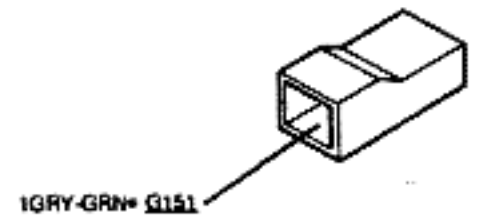
Alfa Romeo control unit — N22 B



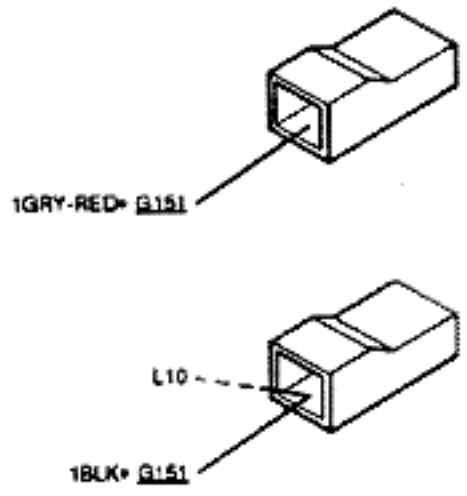
Alfa Romeo control unit — N22 E



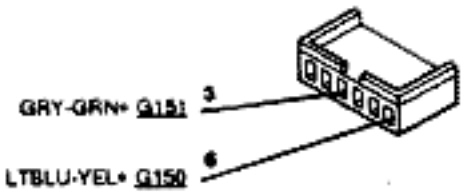
Engine oil low pressure switch — L2



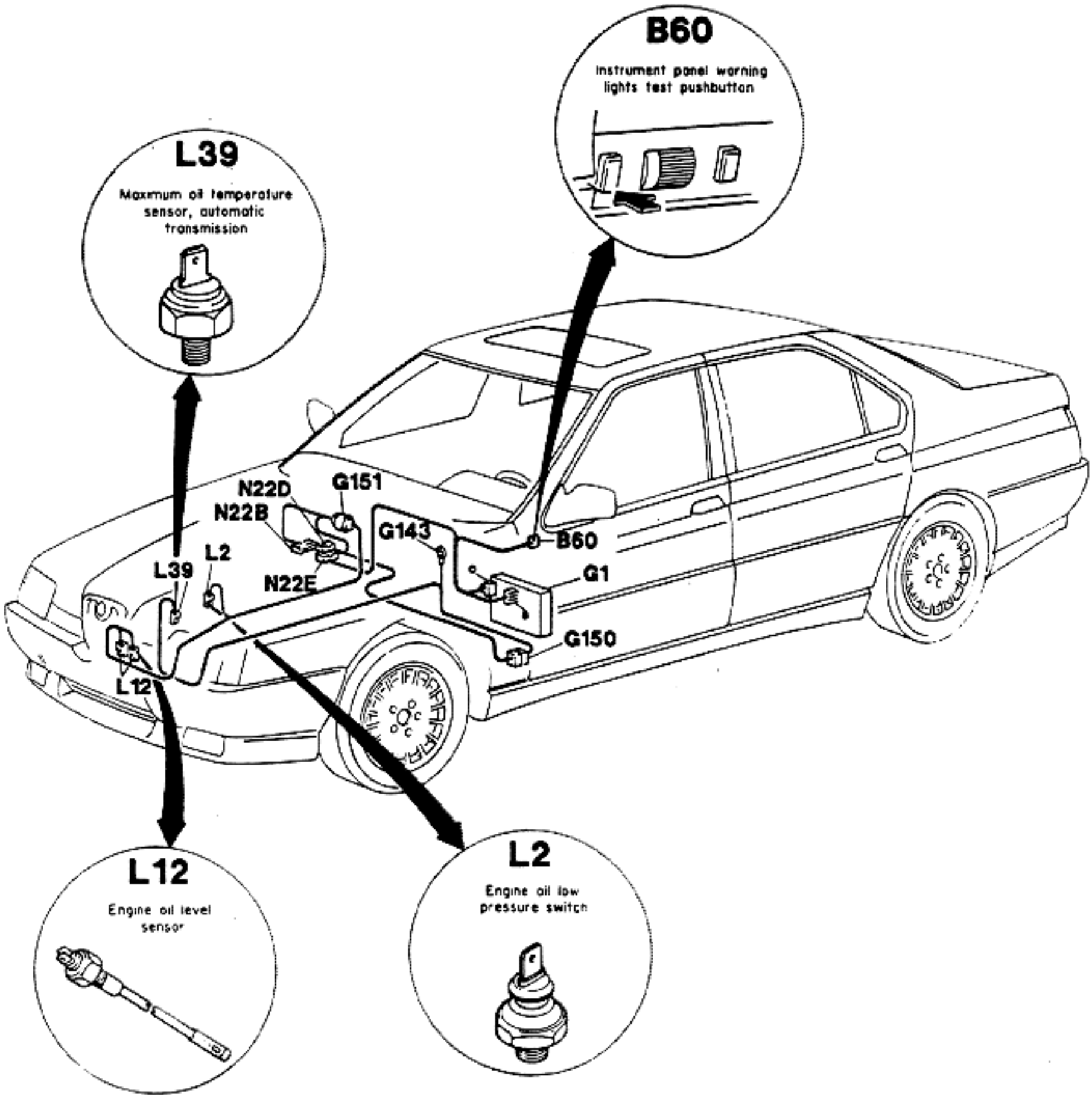
Engine oil level sensor — L12



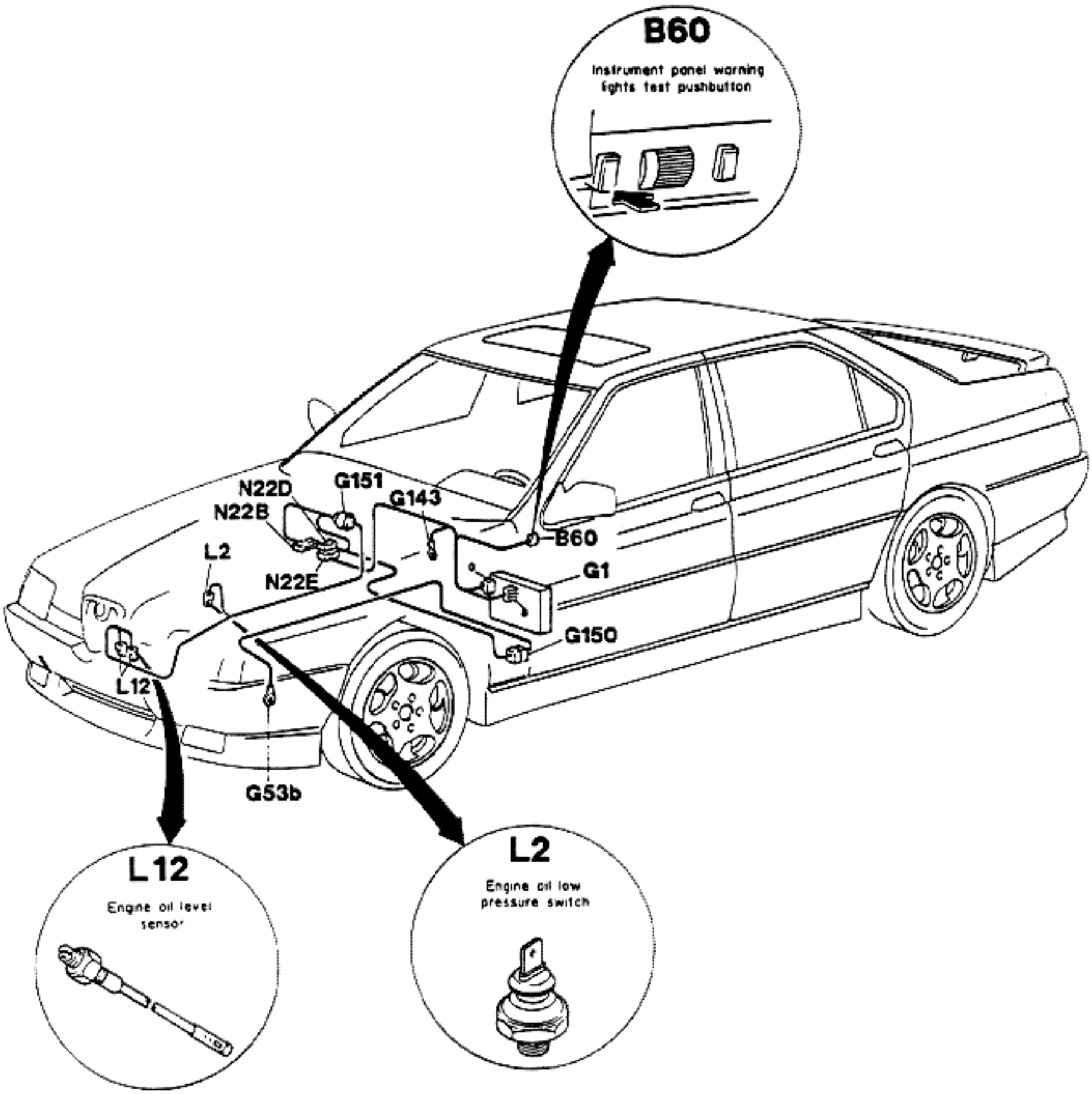
Alfa Romeo control unit — N22 D



BASE AND L ONLY



S ONLY



ENGINE OIL LEVEL WARNING LAMP INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting ascertain the integrity of the warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
A1 CONTROL UNIT CHECK		
- With the engine oil level below the minimum, check for presence of open circuit at pin 1B of Alfa Romeo Control unit **N22**	OK ▶	**Failure of the Instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure**
	~~OK~~ ▶	**Replace sensor L12**

End of test A

ENGINE OIL LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST B

TEST STEPS	RESULTS	REMEDY
B1 CONTROL UNIT CHECK - With the engine oil level above the minimum, check for presence of 0V (zero) at pin 1B of Alfa Romeo Control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** Carry-out **step B2**
B2 GROUNDING CHECK - Check for presence of 0V (zero) at terminal of engine oil level sensor **L12** (BLK wire)	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Carry-out **step B3**
B3 GROUNDING CHECK - Check for presence of 0V (zero) at pin 4 of connector **G150**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4 of G150, pin 5 of G151 and pin of L12 (BLK wire)** Repair wiring between **pin 4 of G150 and ground point G143**

(Cont.d)

ENGINE OIL LEVEL WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST B

TEST STEPS		RESULTS	REMEDY
B4	CONTINUITY CHECK		
- Check for continuity between: • Terminal of engine oil level sensor **L12** and pin 17 of connector **G151** (GRY-RED wire) • Pin 17 of connector **G151** and pin 1B of control unit **N22**		OK ▶ ~~OK~~ ▶	Replace **sensor L12** Repair or replace **wires, as necessary**

End of test B

MINIMUM ENGINE OIL PRESSURE WARNING LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting ascertain the integrity of the warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
C1 CONTROL UNIT CHECK - With the engine oil pressure to minimum, check for presence of open circuit at pin 3D of Alfa Romeo Control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** Replace **switch L2**

End of test C

MINIMUM ENGINE OIL PRESSURE WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST D

TEST STEPS	RESULTS	REMEDY
D1 OIL PRESSURE CHECK - Start the engine, wait a few seconds and check that the engine oil pressure gauge does not indicate insufficent pressure	OK ▶ ~~OK~~ ▶	Carry-out **step D2** and top-up oil, if necessary **Check engine oil level and for presence of leaks from the engine; refer to SERVICE MANUAL-ENGINE-TROUBLESHOOTING PROCEDURE (Group 01)**
D2 CONTROL UNIT CHECK - Check for presence of 0V (zero) at pin 3D of Alfa Romeo Control unit **N22**	OK ▶ ~~OK~~ ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** Carry-out **step D3**
D3 SENSOR CHECK - Check for presence of closed circuit condition between terminals of engine oil low pressure switch **L2** contacts	OK ▶ ~~OK~~ ▶	Carry-out **step D4** Replace **switch L2**

(Cont.d)

MINIMUM ENGINE OIL PRESSURE WARNING LAMP CONTINUOUSLY ILLUMINATED	TEST D

TEST STEPS		RESULTS	REMEDY
D4	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 19 of connector **G151**		OK ▶	Repair wiring between **pin 19 of connector G151 and pin 3D of control unit N22**
		~~OK~~ ▶	Carry-out **step D5**
D5	GROUNDING CHECK		
- Check for presence of 0V (zero) at terminal of switch **L2** (GRY-GRN wire)		OK ▶	Repair wiring between **pin 19 of connector G151 and terminal of switch L2 (GRY-GRN wire)**
		~~OK~~ ▶	Repair wiring between **terminal of switch L2 and ground point**

End of test D

AUTOMATIC TRANSMISSION OIL MAXIMUM TEMPERATURE WARNING LAMP INOPERATIVE (BASE and L only)	TEST E

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting ascertain the integrity of the warning lamp on the instrument panel by pressing the test button: replace the affected lamp if it does not illuminate.		
E1 SENSOR CHECK - Check integrity of maximum oil temperature sensor automatic transmission **L39** verifying the presence of short circuit between sensor terminals when temperature is above 118°C (≅ 244°F)	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Replace **sensor L39**
E2 CONTINUITY CHECK - Check for continuity between: • Sensor **L39** (LT BLU-YEL wire) and pin 3 of connector **G150** • Pin 3 of connector **G150** and pin 6D of Alfa Romeo Control unit **N22** • Sensor **L39** and ground point	OK ▶ ~~OK~~ ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure** Repair or replace **wires, as necessary**

End of test E

AUTOMATIC TRANSMISSION OIL MAXIMUM TEMPERATURE WARNING LAMP CONTINUOUSLY ILLUMINATED (BASE and L only)	TEST F

TEST STEPS		RESULTS	REMEDY
F1	SENSOR CHECK		
- Park the vehicle, wait until the automatic transmission oil has cooled off, then check for presence of open circuit condition at pin 6D of Alfa Romeo Control unit N22		OK ▶	Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure
		OK ▶	Replace max. oil temperature sensor automatic transmission L39

End of test F

ALL WARNING LAMPS INOPERATIVE ON INSTRUMENT PANEL WHEN TEST PUSHBUTTON IS ACTUATED	TEST G

TEST STEPS	RESULTS	REMEDY
G1 FUSE CHECK - Check fuse **F14** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step G2** Replace **fuse F14**
G2 WARNING LAMPS ILLUMINATION CHECK - Check that failure affects all the warning lamps simultaneously	OK ▶ ~~OK~~ ▶	Carry-out **step G3** Replace **the affected warning lamp**
G3 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between terminal of instrument panel warning lights test pushbutton **B60** (PNK wire) and ground	OK ▶ ~~OK~~ ▶	Carry-out **step G5** Carry-out **step G4**
G4 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4S of fuse box G1 and test pushbutton B60 (PNK wire)** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

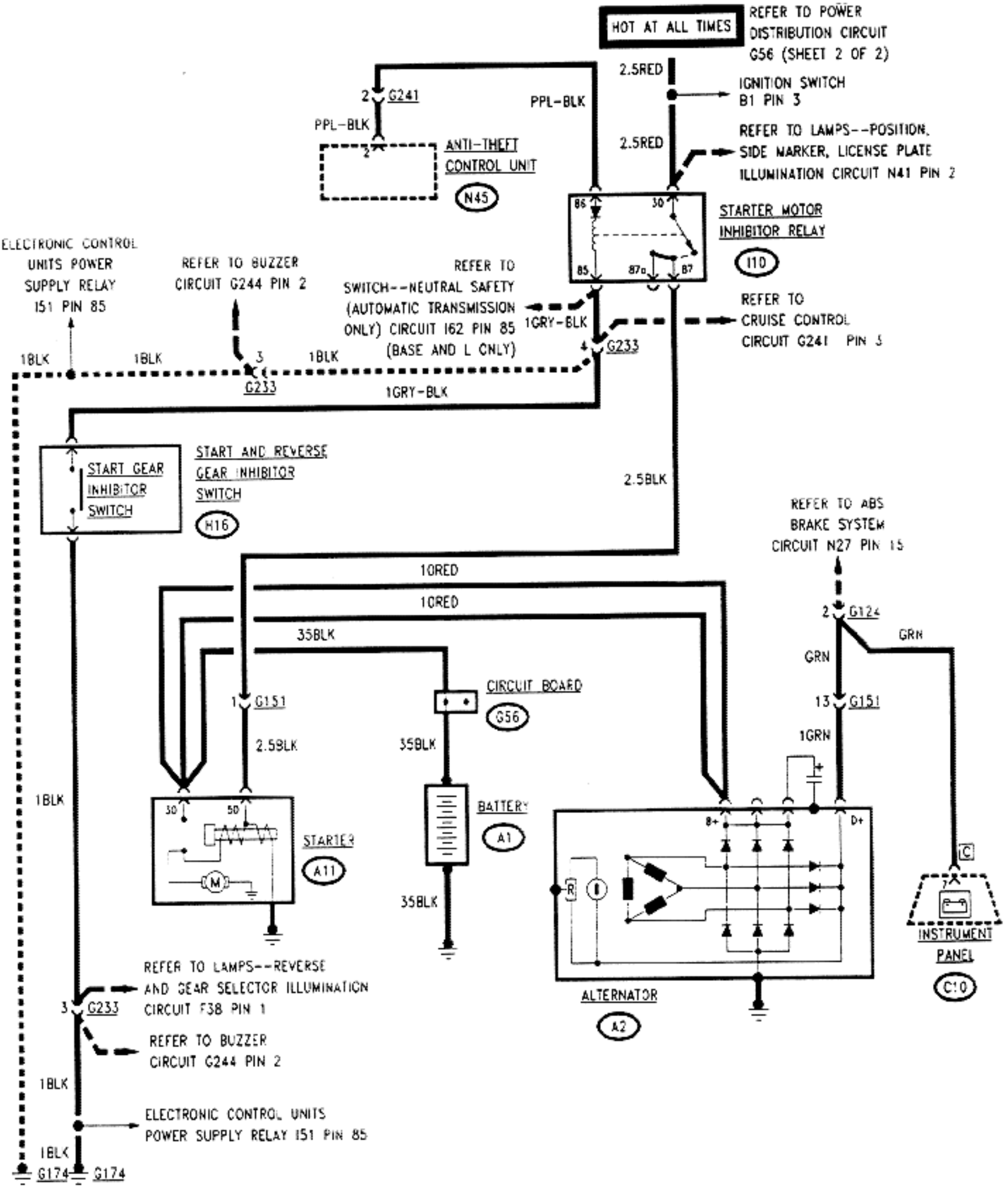
(Cont.d)

ALL WARNING LAMPS INOPERATIVE ON INSTRUMENT PANEL WHEN TEST PUSHBUTTON IS ACTUATED	TEST G

TEST STEPS	RESULTS	REMEDY
G5 TEST PUSHBUTTON CHECK		
- With the ignition key set to "run" and press test push button **B60**, check for presence of 12V between push button terminal (WHT-RED wire) and ground	OK ▶	Carry-out **step G6**
	~~OK~~ ▶	Replace **pushbutton B60**
G6 CONTROL UNIT CHECK		
- With the ignition key set to "run" and press test pushbutton **B60** , check for presence of 12V between pin 4E of Alfa Romeo Control unit **N22** and ground	OK ▶	**Failure of the instrument panel - - Alfa Romeo Control ECU interface circuit; refer to the applicable troubleshooting procedure**
	~~OK~~ ▶	Repair wiring between **pin 4E of control unit N22 and test pushbutton B60 (WHT-RED wire)**

End of test G

STARTING AND CHARGING



GENERAL

The starting and charging circuit is mainly composed of the battery (12V), of the starting motor and of the alternator.
When the ignition key is rotated, 12 Volts, upon control of the anti-theft control unit, are connected to the control solenoid coil.
The control solenoid coil attracts and closes the starting contact. In this way, a circuit is completed for the 12V power to the starter, with consequent operation of the motor.
During run, the alternator recharges the battery to which it is paralleled.
The instrument panel is provided with an indicator lamp that informs the driver of the battery charge status.
In case the vehicle is equipped with automatic transmission, the starting operation is enabled by the inhibitor relay which allows starting only when the transmission selector is set to positions N or P.

OPERATIONAL DESCRIPTION

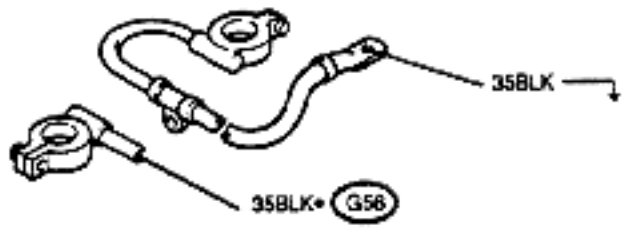
The starter motor inhibitor relay **I10** connects, when energized, the battery power (12V) to the starter motor solenoid.
The relay energization is monitored by the anti-theft control unit; in this way, starting cannot be accomplished if the antitheft system is activated.
Furthermore, as a safety precaution, on vehicles equipped with automatic transmission, the relay energization and the engine starting is inhibited by the inhibitor switch **H16**, which closes only if the transmission selector is set to P or N.
12V power connected to the starter **A11** (pin 50) enables the solenoid to energize, thus closing the contact allowing the motor to rotate. During drive the alternator **A2**, through the circuit board **G56**, recharges the battery **A1**.
In the case the alternator is not rotating, or it is unable to recharge the battery, the relevant warning lamp illuminates on the instrument panel **C10**.

TROUBLESHOOTING TABLE

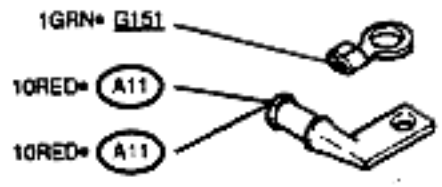
FAULT TYPE	FAILED COMPONENT						
	(H16) SWITCH	(C10) ALTERNATOR WARN. LAMP	(I10) RELAY	(A1) BATTERY	(A2) ALTERNATOR	(A11) STARTER	(N45) CONTROL UNIT
ENGINE FAILS TO START	●		●	●	●	●	●
ALTERNATOR WARNING LAMP INOPERATIVE ON INSTRUMENT PANEL		●			●		

NOTES: - A missed start might be caused by the ignition switch **B1**; for better understanding refer to power distribution schematic diagram.
- Before attempting any troubleshooting ascertain the integrity of the affected warning lamps on the instrument panel by pressing the test button.

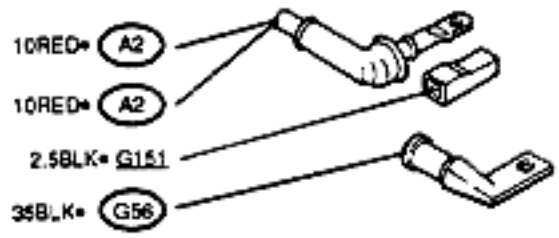
Battery — A1



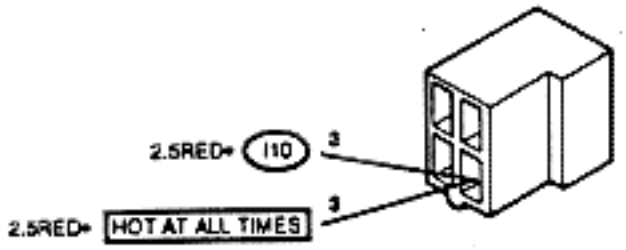
Alternator — A2



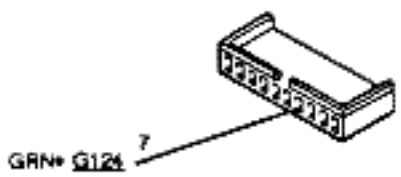
Starter — A11



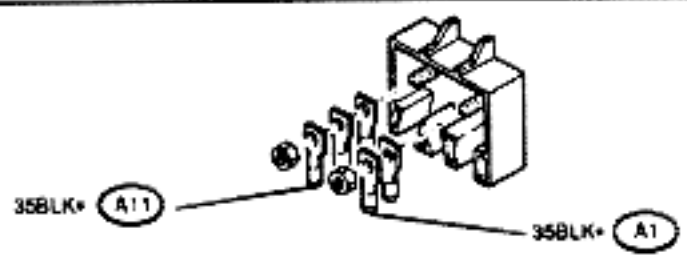
Ignition switch — B1



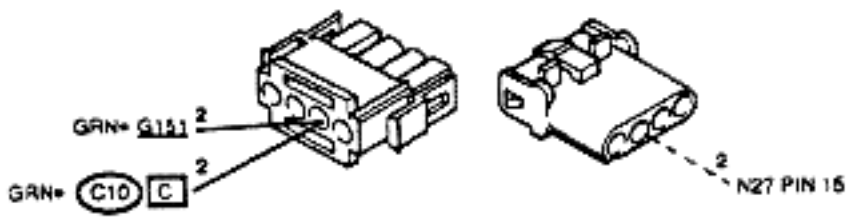
Instrument panel — C10 C



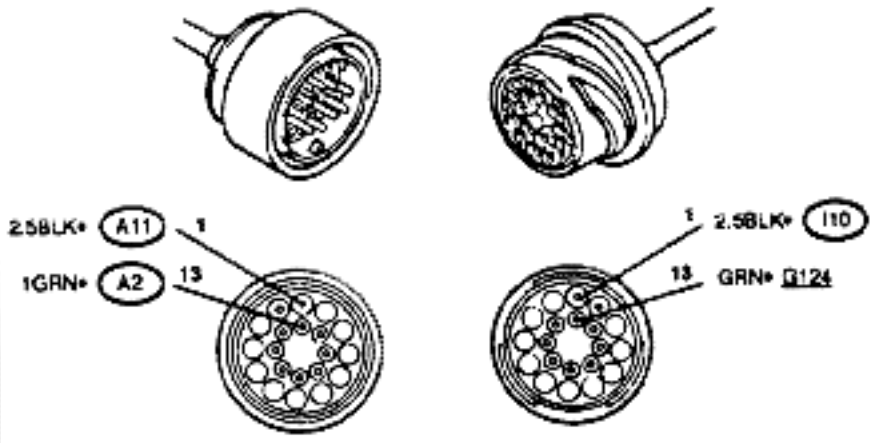
Circuit board — G56



ABS system connector — G124

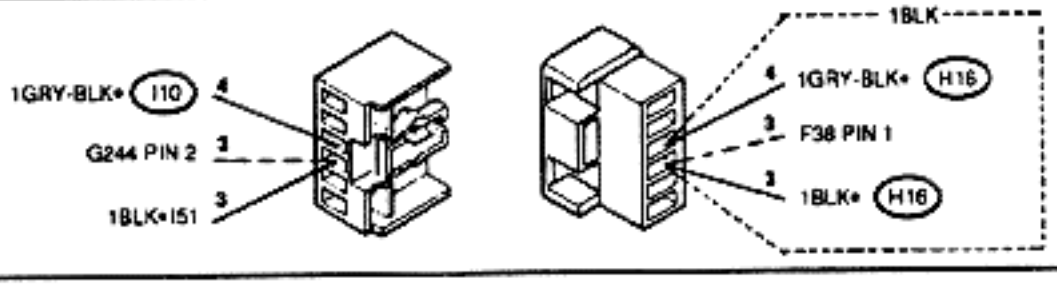


Connector, circuit board to engine utilities — G151



Steering wheel column support ground — G174

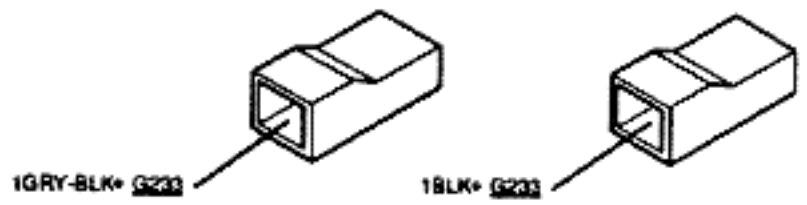
Connector, circuit board to automatic gear lever wiring — G233



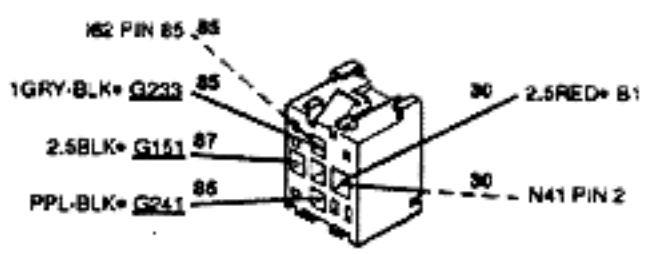
(Cont.d)

Board wiring to antitheft system wiring connector	G241

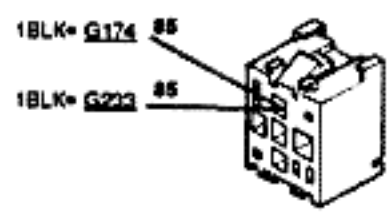
Start and reverse gear inhibitor switch	H16



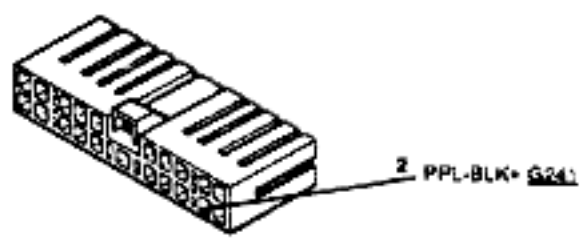
Starter motor inhibitor relay	I10

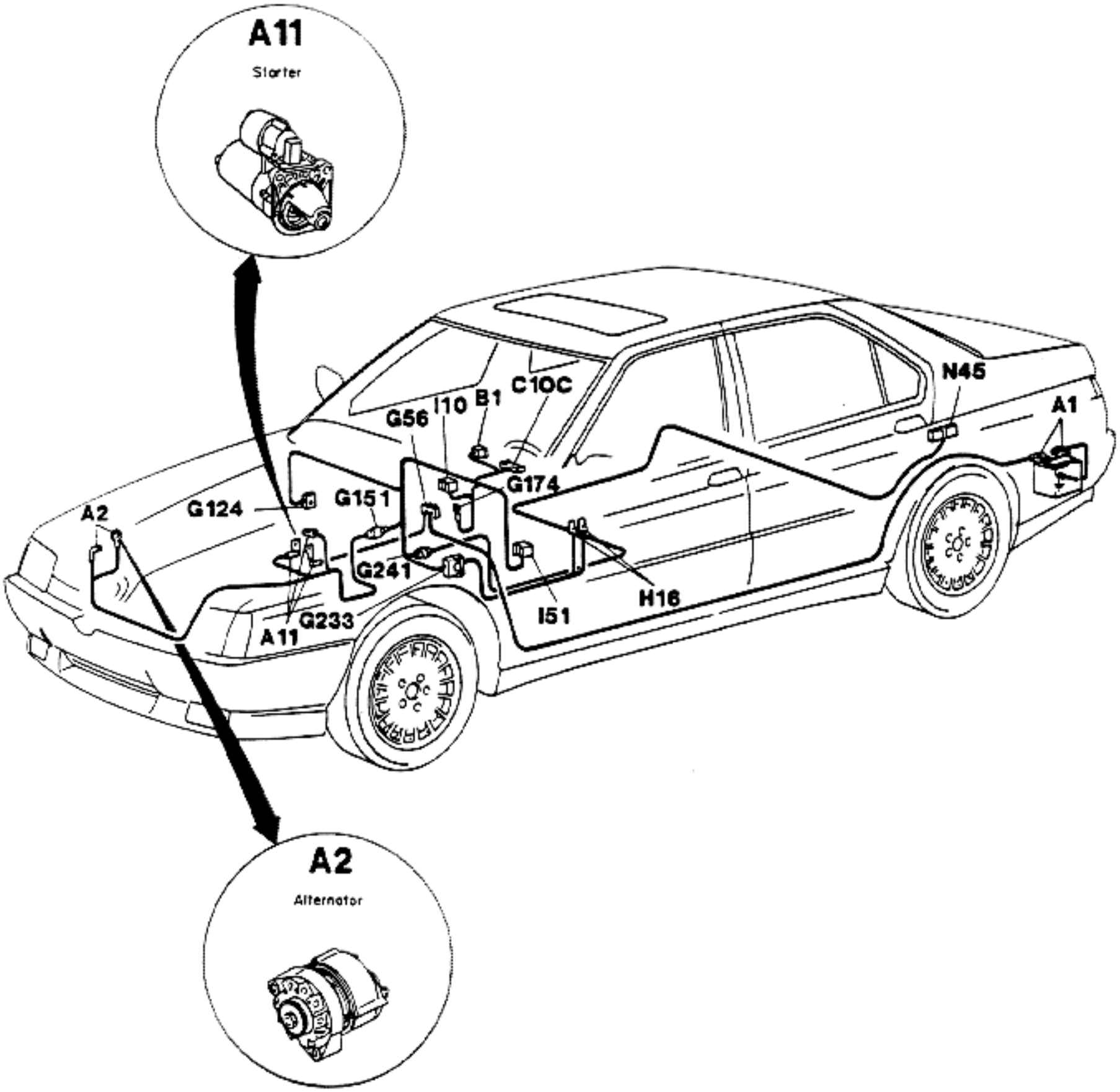


Electronic control units control relay	I51



Anti-theft control unit	N45





ENGINE FAILS TO START	TEST A

TEST STEPS		RESULTS	REMEDY
A1	BATTERY CHECK		
- Visually check battery and connecting leads for conditions; check for presence of 12V on the battery leads		OK ▶	Carry-out **step A2**
		~~OK~~ ▶	Repair wiring, recharge and/or replace **battery A1**
NOTE: A battery malfunction might be dependent on an excessive charging from the alternator. In this case it is necessary to replace the voltage regulator on alternator **A2**.			
A2	VOLTAGE CHECK		
- Check for presence of 12V between circuit board **G56** and ground		OK ▶	Carry-out **step A3**
		~~OK~~ ▶	Repair wiring between **battery "+" lead and circuit board G56**
A3	ALTERNATOR BELT CHECK		
- Check that belt does not show abrasion, wear, fraying; check for correct tension		OK ▶	Carry-out **step A4**
		~~OK~~ ▶	Replace **alternator A2**

(Cont.d)

ENGINE FAILS TO START	TEST A

TEST STEPS	RESULTS	REMEDY
A4 VOLTAGE CHECK - Check for presence of 12V between pin 30 of starter **A11** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Repair wiring between **circuit board G56 and pin 30 of starter A11**
A5 VOLTAGE CHECK - Check for presence of 12V between pin 50 of starter **A11** and ground	OK ▶ ~~OK~~ ▶	Replace **starter A11** Carry-out **step A6**
A6 VOLTAGE CHECK - With anti-theft system deactivated and ignition key set to run, check for presence of 12V between pin 2 of anti-theft control unit **N45** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A7** Failure of **the circuit, Alarm - - electronic anti-theft system refer to the relevant troubleshooting procedure**
A7 VOLTAGE CHECK - With ignition key set to "start", check for presence of 12V between pin 86 of starter motor inhibitor relay **I10** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A8** Carry-out **step A11**

(Cont.d)

ENGINE FAILS TO START	TEST A

TEST STEPS	RESULTS	REMEDY
A8 GROUNDING CHECK - Check for presence of 0V (zero) at pin 85 of starter motor inhibition relay **I10**	OK ▶ ~~OK~~ ▶	Carry-out **step A9** Carry-out **step A12 (automatic transmission) or step A14 (manual transmission)**
A9 RELAY CHECK - Check starter motor inhibition relay **I10** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step A10** Replace **relay I10**
A10 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay **I10** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 87a of relay I10, pin 1 of connector G151 and pin 50 of starter A11** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

(Cont.d)

ENGINE FAILS TO START	TEST A

TEST STEPS		RESULTS	REMEDY
A11	VOLTAGE CHECK		
- Check for presence of 12V between pin 2 of connector **G241** and ground		OK ▶	Repair wiring between **pin 2 of connector G241 and pin 86 of relay I10**
		~~OK~~ ▶	Repair wiring between **pin 2 of connector G241 and pin 2 of anti-theft control unit N45**
A12	CONTINUITY CHECK (AUTOMATIC TRANSMISSION ONLY)		
- With transmission set to **P** or **N**, check for shorted connection between pins 3 and 4 of connector **G233**		OK ▶	Repair wiring between **G233 (pin 4) and relay I10 (pin 85), and between G233 (pin 3) and ground point G174)**
		~~OK~~ ▶	Carry-out **step A13**
A13	SWITCH CHECK (AUTOMATIC TRANSMISSION ONLY)		
- With gear set to P or N, check for shorted connection between terminals of start and reserve gear inhibitor switch **H16** (GRY-BLK and BLK wires)		OK ▶	Repair wiring between **switch H16 (GRY-BLK and BLK wires) and G233 (pins 3 and 4)**
		~~OK~~ ▶	Replace **swith H16**

(Cont.d)

ENGINE FAILS TO START	TEST A

TEST STEPS		RESULTS	REMEDY
A14	GROUNDING CHECK (MANUAL TRANSMISSION ONLY)		
- Check for presence of OV (zero) at pin 3 of connector **G233**		OK ▶	Repair wiring between **pin 3 of connector G233 and pin 85 of relay I10**
		~~OK~~ ▶	Repair wiring between **pin 3 of connector G233 and ground point G174**

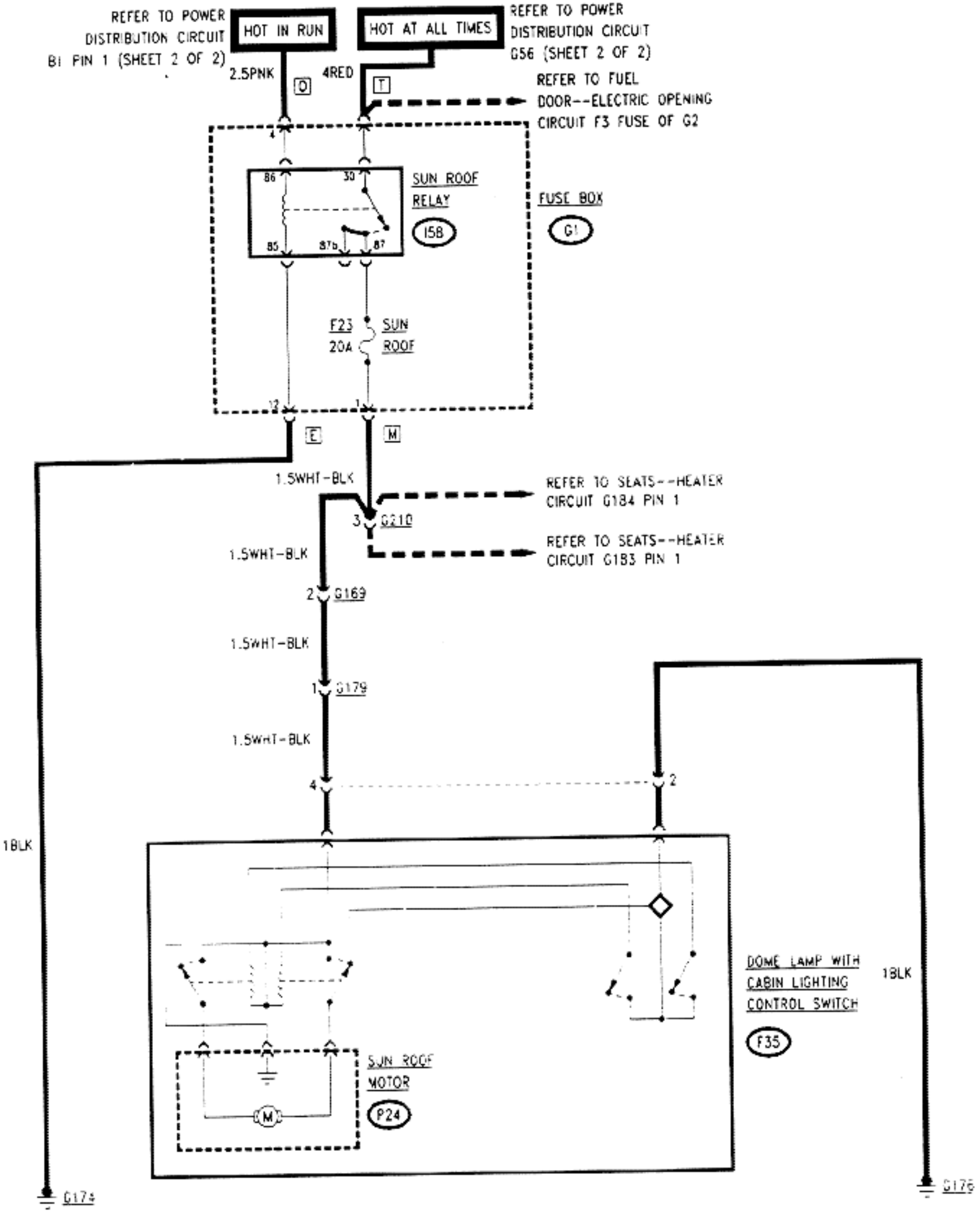
End of test A

ALTENATOR WARNING LAMP INOPERATIVE ON INSTRUMENT PANEL	TEST B

TEST STEPS	RESULTS	REMEDY
NOTE: Before attempting any troubleshooting, ascertain the integrity of the warning lamp on instrument panel by pressing test button: replace the affected lamp if it does not illuminate.		
B1 ALTERNATOR CONTROL - With engine running, check for presence of 12V between pin D of alternator **A2** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Overhaul or replace **alternator A2**
B2 VOLTAGE CHECK - Check for presence of 12V between pin 7C of instrument panel **C10** and ground	OK ▶ ~~OK~~ ▶	Replace **Instrument panel C10** Carry-out **step B3**
B3 VOLTAGE CHECK - Check for presence of 12V betweent pin 13 of connector **G151** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 13 of G151, pin 2 of connector G124 and pin 7C of instrument panel C10** Repair wiring between **pin 13 of G151 and pin D+ of alternator A2**

End of test B

SUN ROOF



GENERAL

The sun roof can be electrically operated in two different modes.

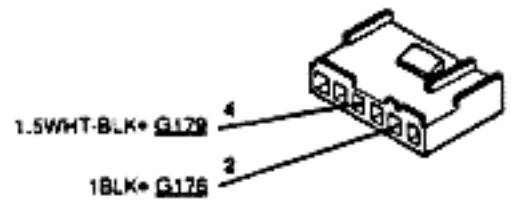
- Fully or partially open by sliding backwards.

- The rear edge can be raised (with the sun roof completely closed).

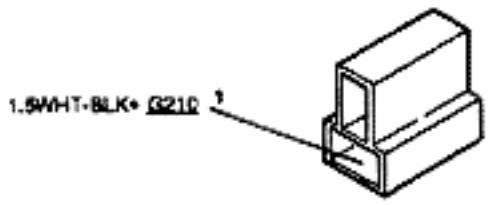
The sun roof is operated by means of two pushbuttons located on the central dome.
One switch controls opening of the sun roof, the other controls the closure, as well as raising of the rear edge of the sun roof.
The system is protected by the fuse **F23** (20A) SUN ROOF in the fuse box **G1**.

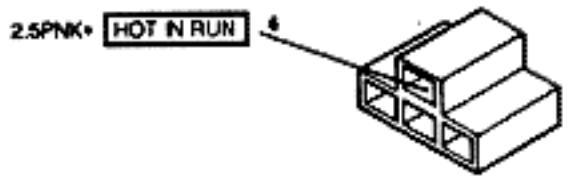
OPERATIONAL DESCRIPTION

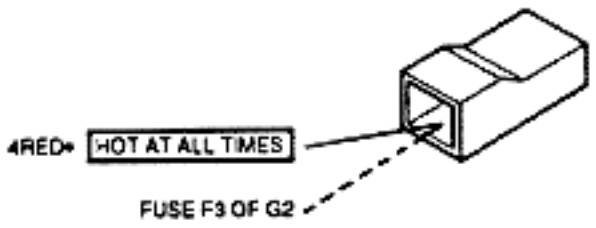
Relay **I58** is energized when the ignition key is set to "run".
12V from the battery is applied to the fuse **F23** through the relay contacts, and reach the contacts of the sun roof motor **P24** control relays.
Pressure on the "opening" pushbutton located on the central dome **F35** causes energization of one of the two relays, and consequent actuation of the sun roof motor **P24** in the opening direction.
Pressure on the "closure" pushbutton causes energization of the second relay and consequent reverse of the electrical polarity to the motor terminals: the motor will rotate in the "closure" direction.
When the sun roof is fully closed, pressure on the "closure" switch will raise the sun roof rear edge.

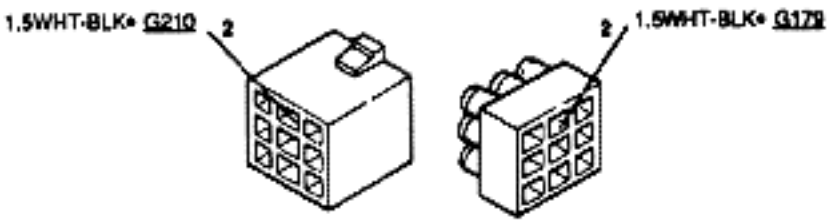
Dome lamp with cabin lighting control switch	F35
	

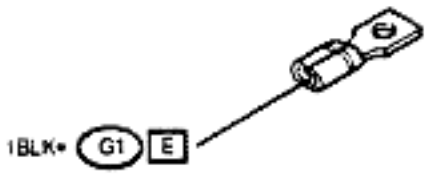
Fuse box	G1 E
	

Fuse box	G1 M
	

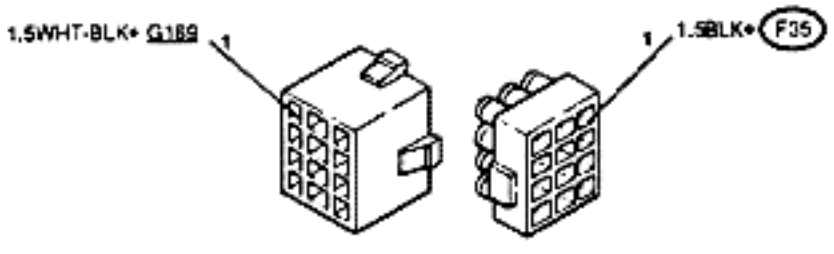
Fuse box	G1 O
	

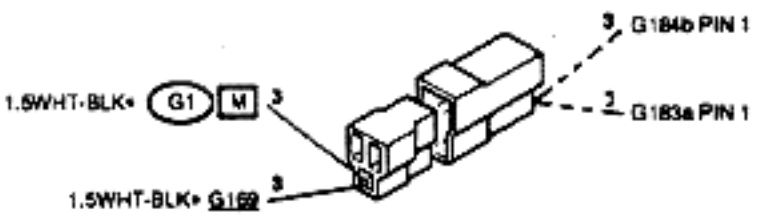
Fuse box	G1 T
	

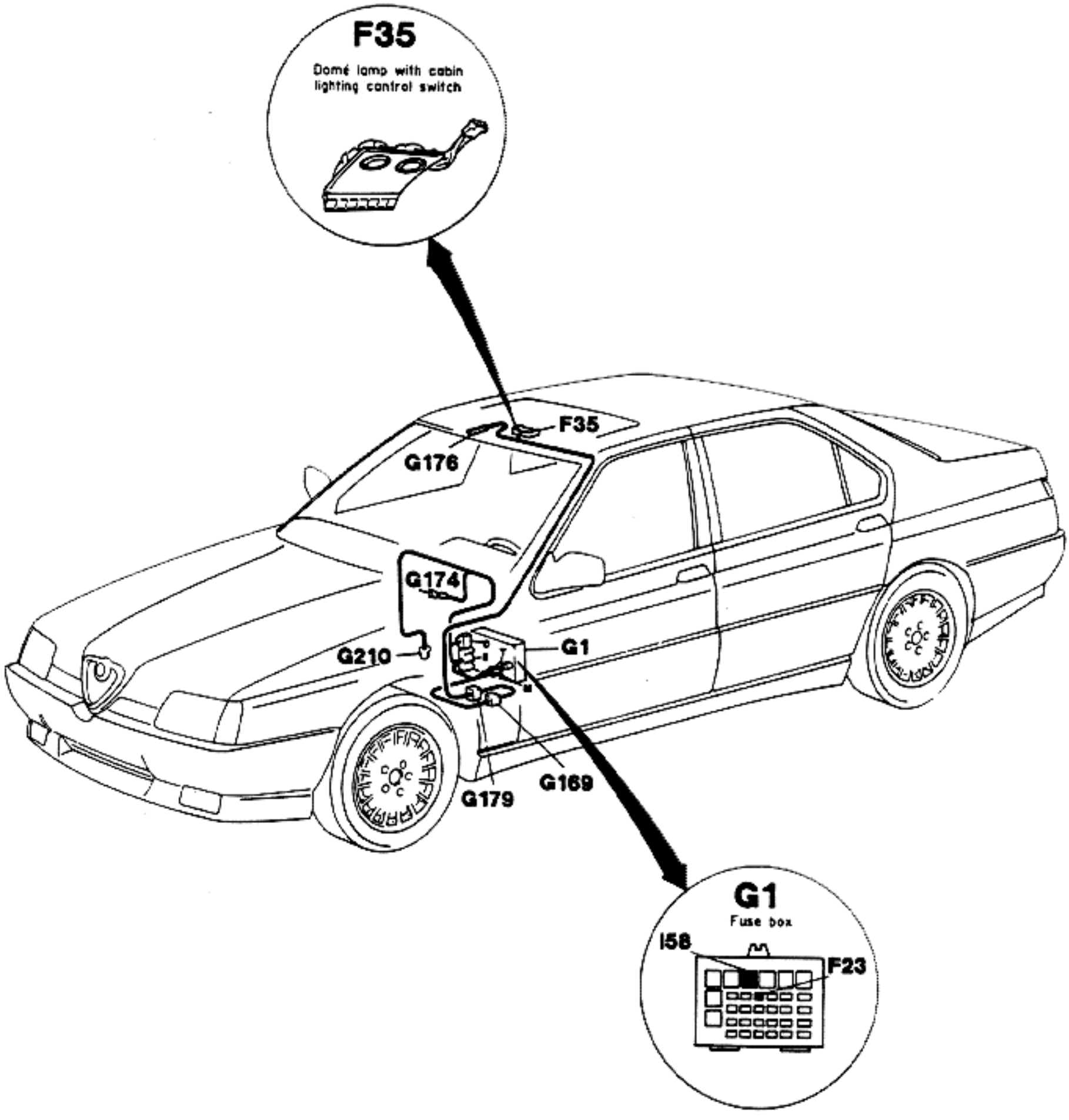
Connector, front doors to left rear wiring	G169
	

Steering wheel column support ground	G174
	

Dome ground	G176
	

Connector, left rear wiring to dome lamp wiring	G179
	

Connector, doors wiring to rear console wiring	G210
	



SUN ROOF INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F23** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F23**
A2 MOVEMENT CHECK - Check if the sun roof can be actuated in any mode	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Carry-out **step A4**
A3 MECHANICAL SEIZURE CHECK - Check for of foreign objects in the sun roof channels or on the roof tracks	OK ▶ ~~OK~~ ▶	Replace **sun roof motor P24** Remove **any obstruction**
A4 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin **1M** of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Carry-out **step A8**

(Cont.d)

SUN ROOF INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 CONTINUITY CHECK - Check for continuity between: • pin 1M of fuse box **G1** and pin 3 of connector **G210** • pin 3 of connector **G210** and pin 2 of connector **G169** • pin 2 of connector **G169** and pin 1 of connector **G179** • pin 1 of connector **G179** and pin 4 of dome connector and sun roof motor	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Repair or replace cables, as requid
A6 PUSHBUTTONS CHECK - Check for continuity between terminals of pushbuttons, when actuated	OK ▶ ~~OK~~ ▶	Carry-out **step A7** Replace the **affected pushbutton (s)**
A7 GROUNDING CHECK - Check for presence of 0V (zero) at pins 2 of dome connector and sun roof motor	OK ▶ ~~OK~~ ▶	Replace **motor P24** Repair wiring between **pin 2 of dome connector and ground point G176**

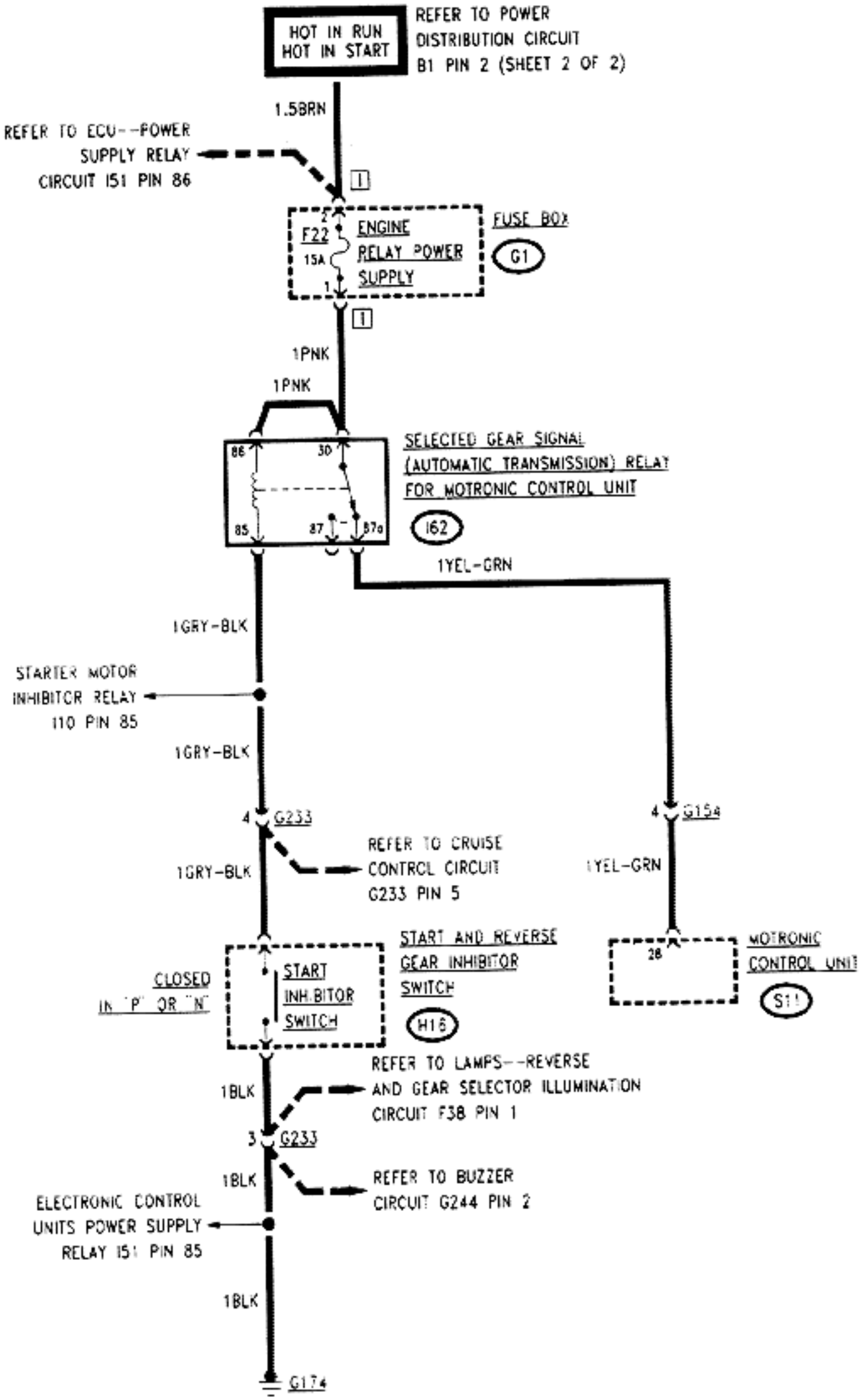
(Cont.d)

SUN ROOF INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A8 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 12E of fuse box **G1**	OK ▶	Carry-out **step A9**
	OK ▶	Repair wiring between **pin 12E of fuse box G1 and ground point G174**
A9 VOLTAGE CHECK		
- With the ignition key set to "run", check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶	Carry-out **step A10**
	OK ▶	Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A10 VOLTAGE CHECK		
- Check for presence of 12V between pin T of fuse box **G1** and ground	OK ▶	Replace **relay I58**
	OK ▶	Failure **of the power distribution circuit, refer to the relvant circuit of sheet 2 of 2**

End of test A

SWITCH - - NEUTRAL SAFETY (AUTOMATIC TRANSMISSION ONLY)



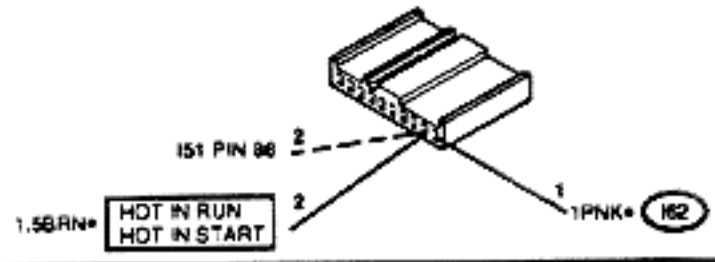
GENERAL

On cars equipped with automatic transmission, the engine can be started only when the selector lever is set to park (P) or to neutral (N) positions.
After the engine has been started, and the selection lever being operated in order to move the car, the Motronic control unit will monitor the engine operating condition to obtain a smooth engagement of the car into motion.
The system is protected by fuse **F22** (15A) ENGINE RELAY POWER SUPPLY in the fuse box **G1**.

OPERATIONAL DESCRIPTION

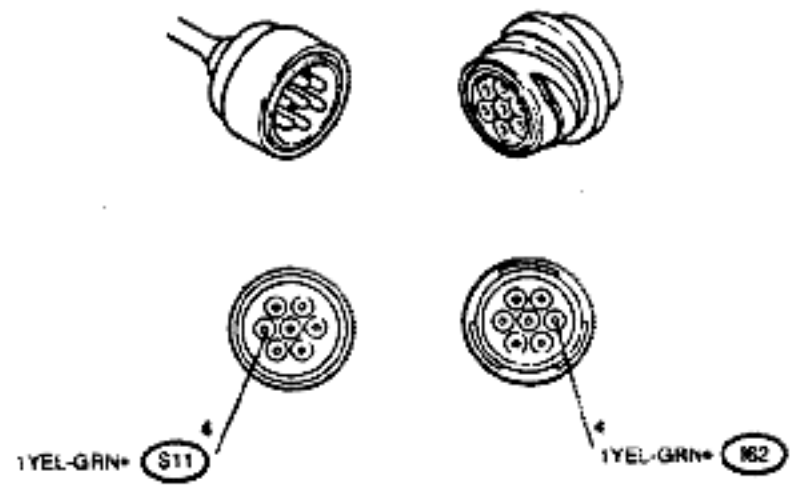
12V from the battery are available when the ignition key is set to "run" or to "start".
12V are applied to the coil of the selected gear signal (automatic transmission) relay **I62** (for Motronic control unit) through fuse **F22** in fuse box **G1**.
The ground section of the relay is connected to ground through the start inhibitor switch **H16**; the switch contacts are closed when the selector lever is positioned to P or N, and open when the selector lever is positioned to D, 1, 2, 3, or R.
When the selector lever is set to D, 1, 2, 3 or R the relay **I62** (for the Motronic control unit) is de-energized, and supplies 12V to the Motronic control unit **S11** (pin 28); therefore the Motronic control unit will monitor the engine operating condition to obtain a smooth engagement of the car into motion.

Fuse box	G1 I

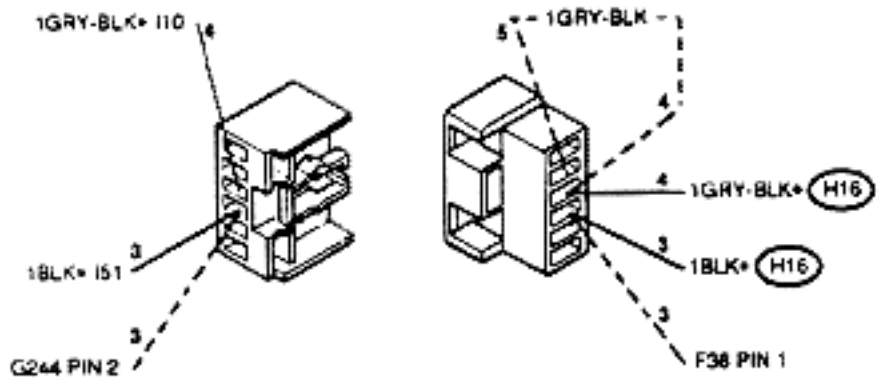


Steering wheel column support ground	G174

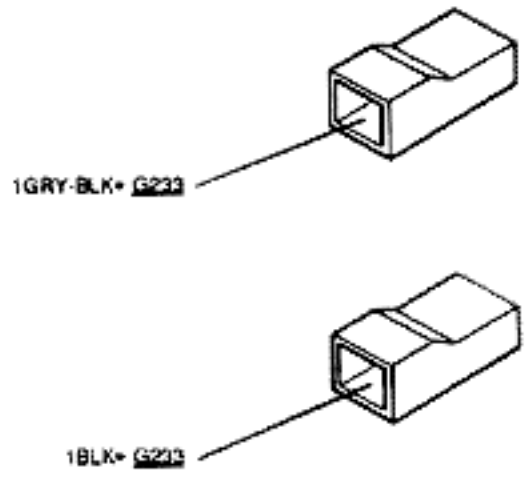
Connector, engine wiring to circuit board	G154



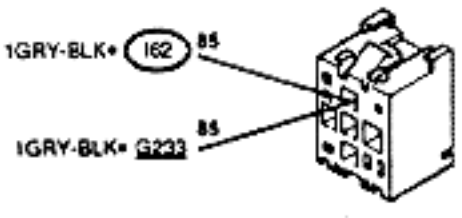
Connector, circuit board to automatic gear lever wiring	G233



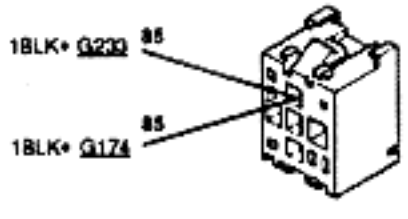
Start and reverse gear inhibition switch	H16



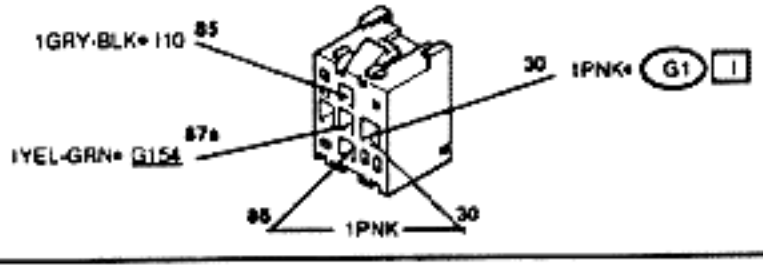
Starter motor inhibitor relay	I10



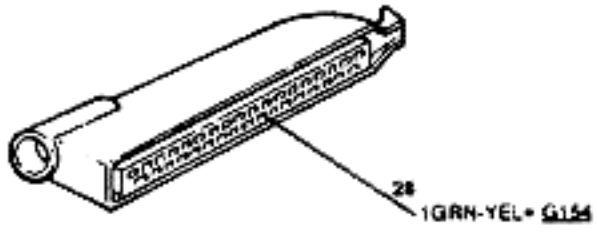
Electronic control units power supply relay	I51

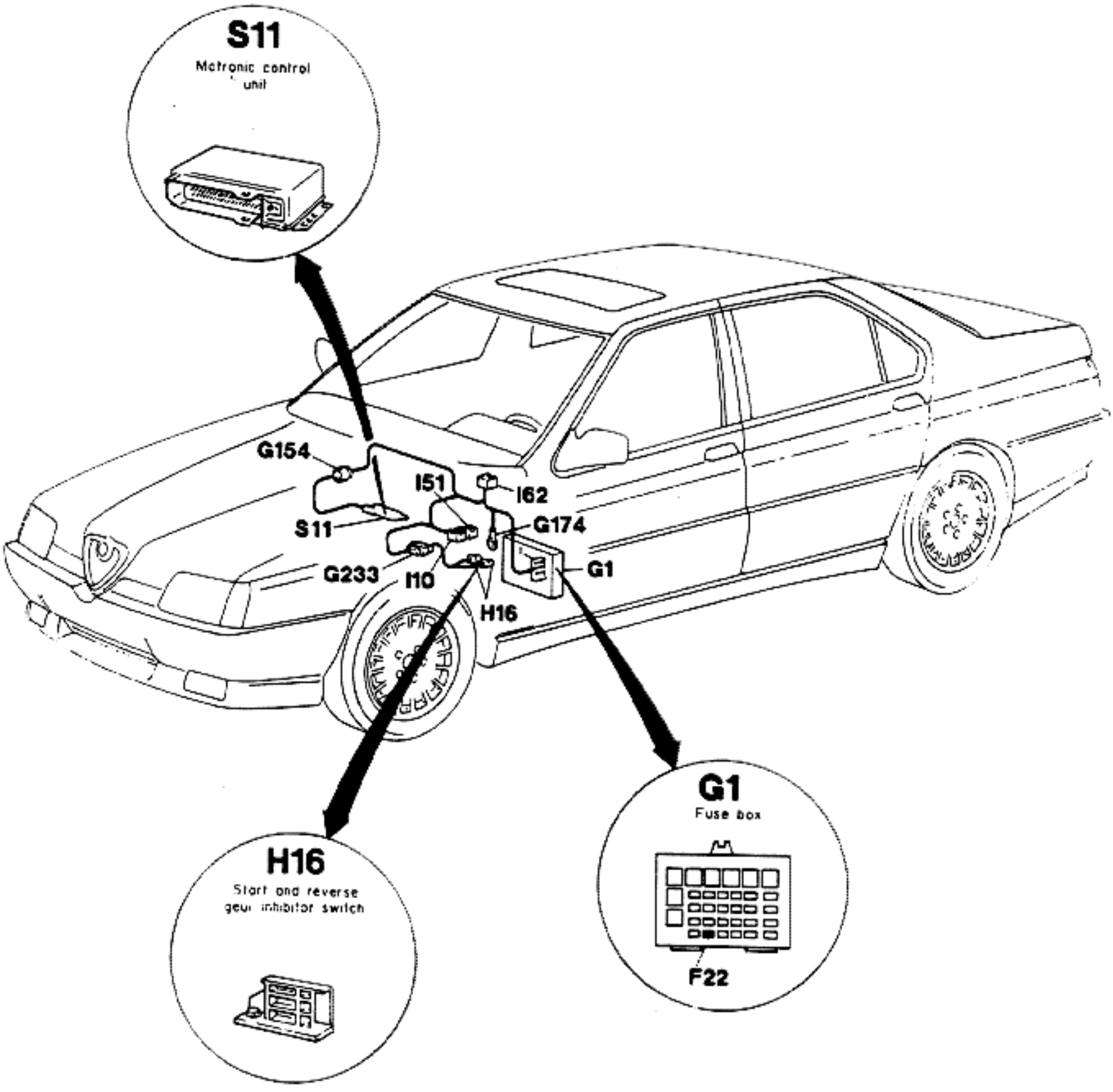


Selected gear signal (automatic transmission) relay for Motronic control unit	I62



Motronic control unit	S11





CAR DOES NOT RUN SMOOTHLY	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F22** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F22**
A2 VOLTAGE CHECK - With the ignition key set to "start" or to "run" check for presence of 12V between pin 86 of relay **I62** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A3**
A3 VOLTAGE CHECK - With the ignition key set to "run" or to "start" check for presence of 12V between pin 2I of fuse box and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 86, pin 30 of relay I62 and pin 1I of fuse box G1** Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2
A4 CONTROL UNIT CHECK - With the ignition key set to "start" or to "run" and with car in R, D, 1, 2, 3 check for presence of 12V between pin 28 of Motronic control unit **S11** and ground	OK ▶ ~~OK~~ ▶	Failure of Motronic circuit; **refer to the relevant troubleshooting procedure** Carry-out **step A5**

(Cont.d)

CAR DOES NOT RUN SMOOTHLY	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - With the ignition key set to "start" or to "run" and gear selector in R, D, 1, 2, 3 check for presence of 12V between pin 4 of connector **G154** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4 of connector G154 and pin 28 of control unit S11** Carry-out **step A6**
A6 VOLTAGE CHECK - With the ignition key set to "start" or to "run" check for presence of 12V at pin **87a** of selected gear signal (automatic transmission) relay **I62** (for Motronic control unit)	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 87a of relay I62 and pin 4 of connector G154** Carry-out **step A7**
A7 OPEN CIRCUIT CHECK - Check that an open circuit exists in R, D, 1, 2, 3 between pins 3 and 4 of connector **G233**	OK ▶ ~~OK~~ ▶	Replace **relay I62** Replace **inhibitor switch H16**

End of test A

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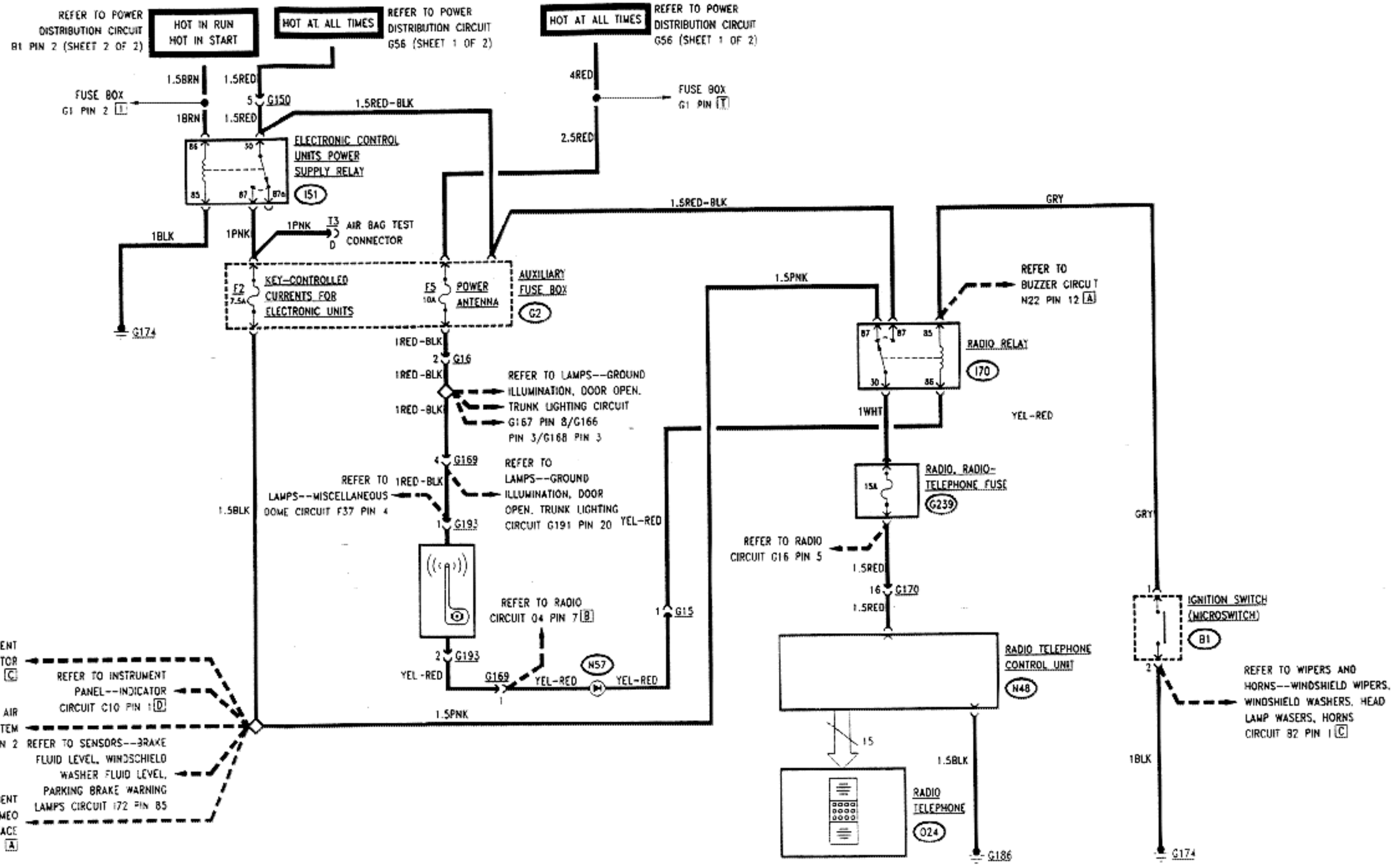
TELEPHONE



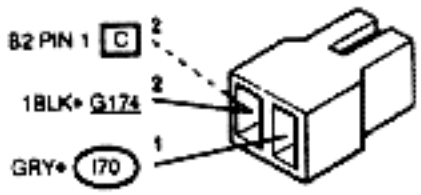
GENERAL

The vehicle is equipped with a radio telephone located inside the front seats armrest.
A cap on the armrest top side allows comfortable access to the radio telephone.
Use of radiotelephone is possible only when the ignition key is set to "run".
To use the radio telephone when the vehicle is stopped, first turn the ignition key to "run" position, then back to "parking" position and leave it inserted in the ignition switch.
The system is protected by the free fuse **G239** (15A) RADIO, RADIO-TELEPHONE, fuse **F2** (7,5A) KEY-CONTROLLED CURRENTS FOR ELECTRONIC UNITS and **F5** (10A) POWER ANTENNA in fuse box **G2**.

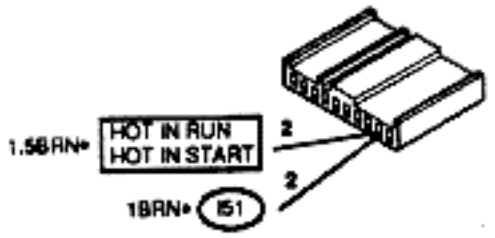
OPERATIONAL DESCRIPTION

12V from the battery are applied to the radio relay **I70**, which becomes energized when the ignition switch (microswitch) **B1** is closed by setting the ignition key to "run" position, or to "parking" position after setting of "run" position.
When relay **I51** is energized, the battery power is applied to the radio telephone control unit **N48** through the free fuse **G239**; the control unit **N48** is also connected to ground point **G186**.
The control unit **N48** monitors the operation of the radio telephone interfacing with a circuit realized with 15 conductors.

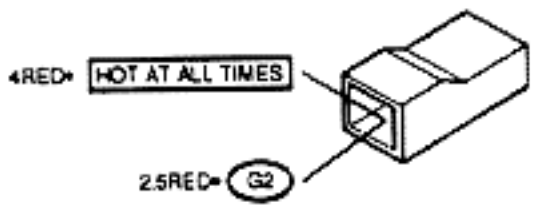
Ignition switch — B1



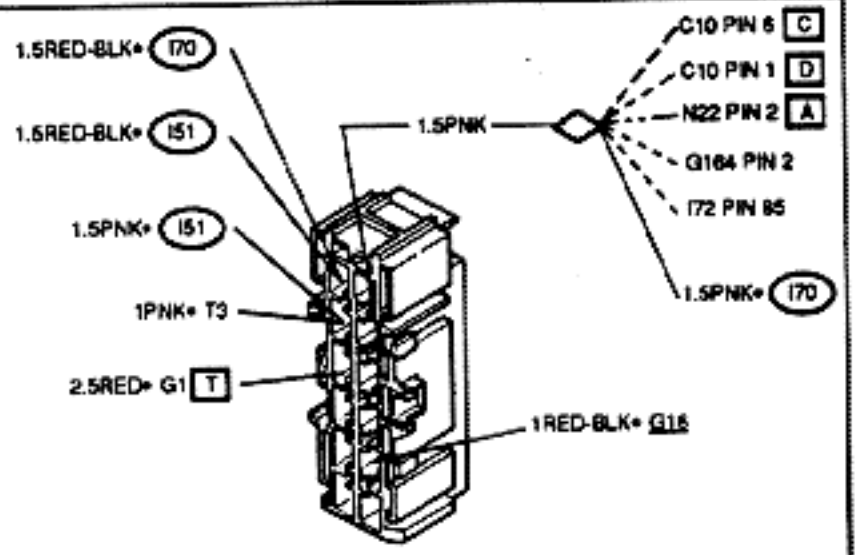
Fuse box — G1 I



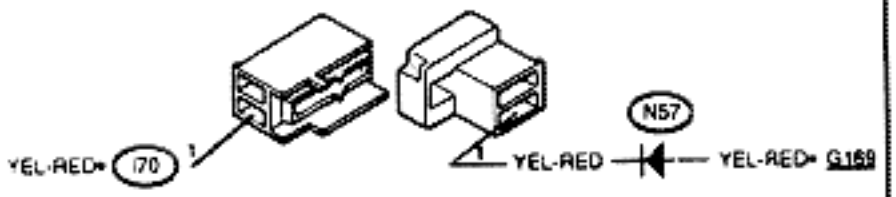
Fuse box — G1 T



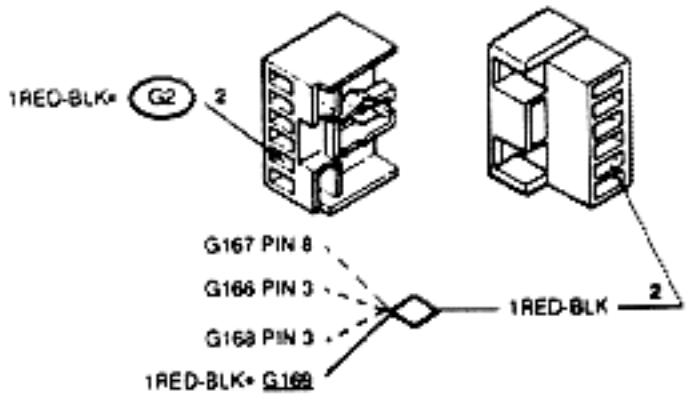
Auxiliary fuse box — G2



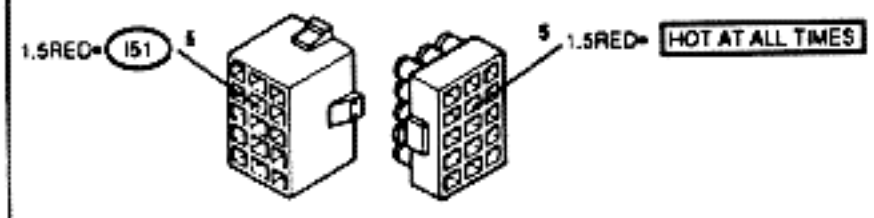
Two pin connector circuit board to doors wiring — G15



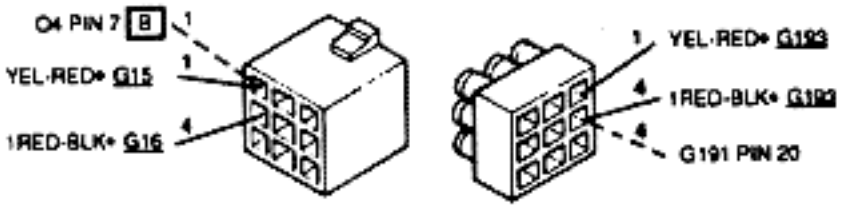
Six pin connector circuit board to doors wiring — G16



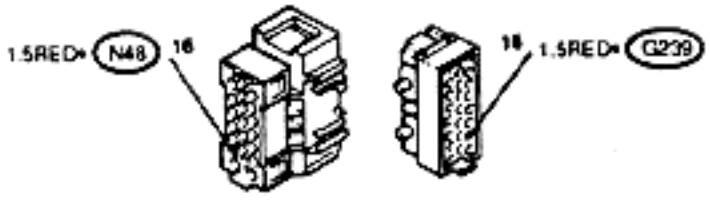
Connector, circuit board to engine compartment left side wiring — G150



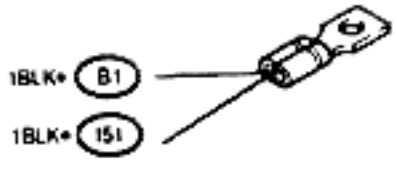
Connector, front doors to left rear wiring — G169



Connector, circuit board to right rear wiring — G170



Steering wheel column support ground — G174



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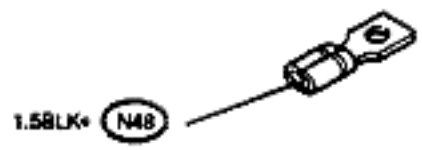
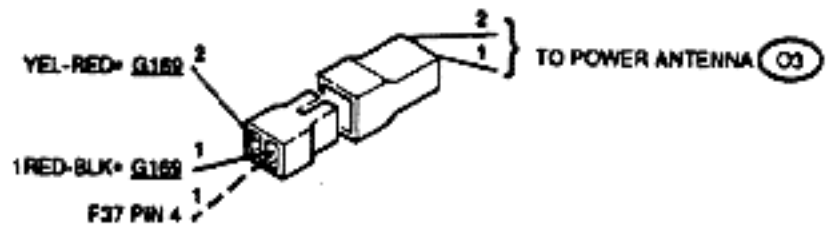
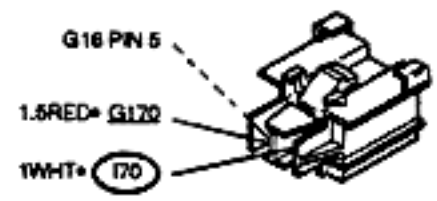
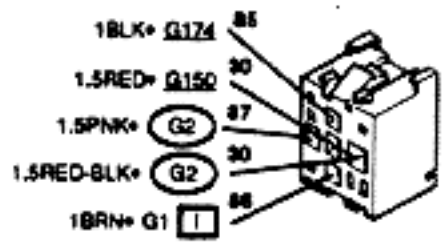
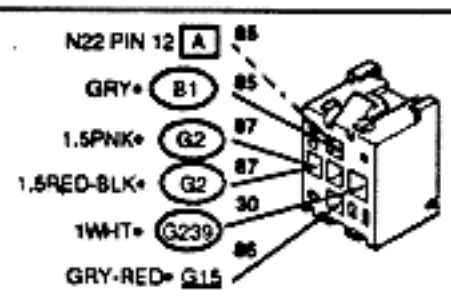
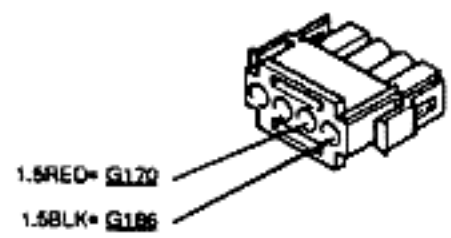
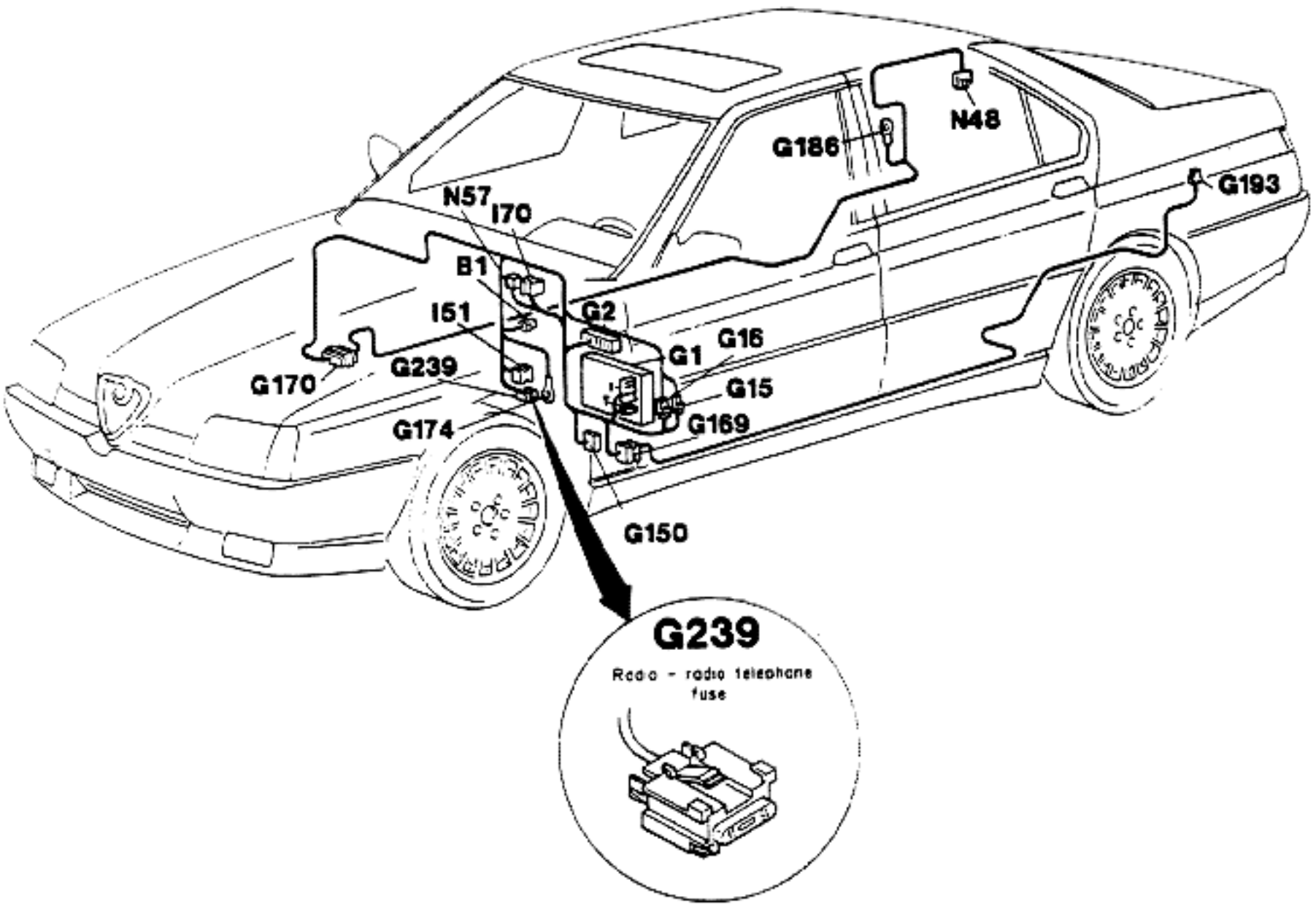
Trunk right side ground	G186	Connector, provision for radio antenna	G193
			
Radio, radio-telephone fuse	**G239**	**Electronic control units power supply relay**	**I51**
			
Radio relay	**I70**	**Radio telephone control unit**	**N48**
			



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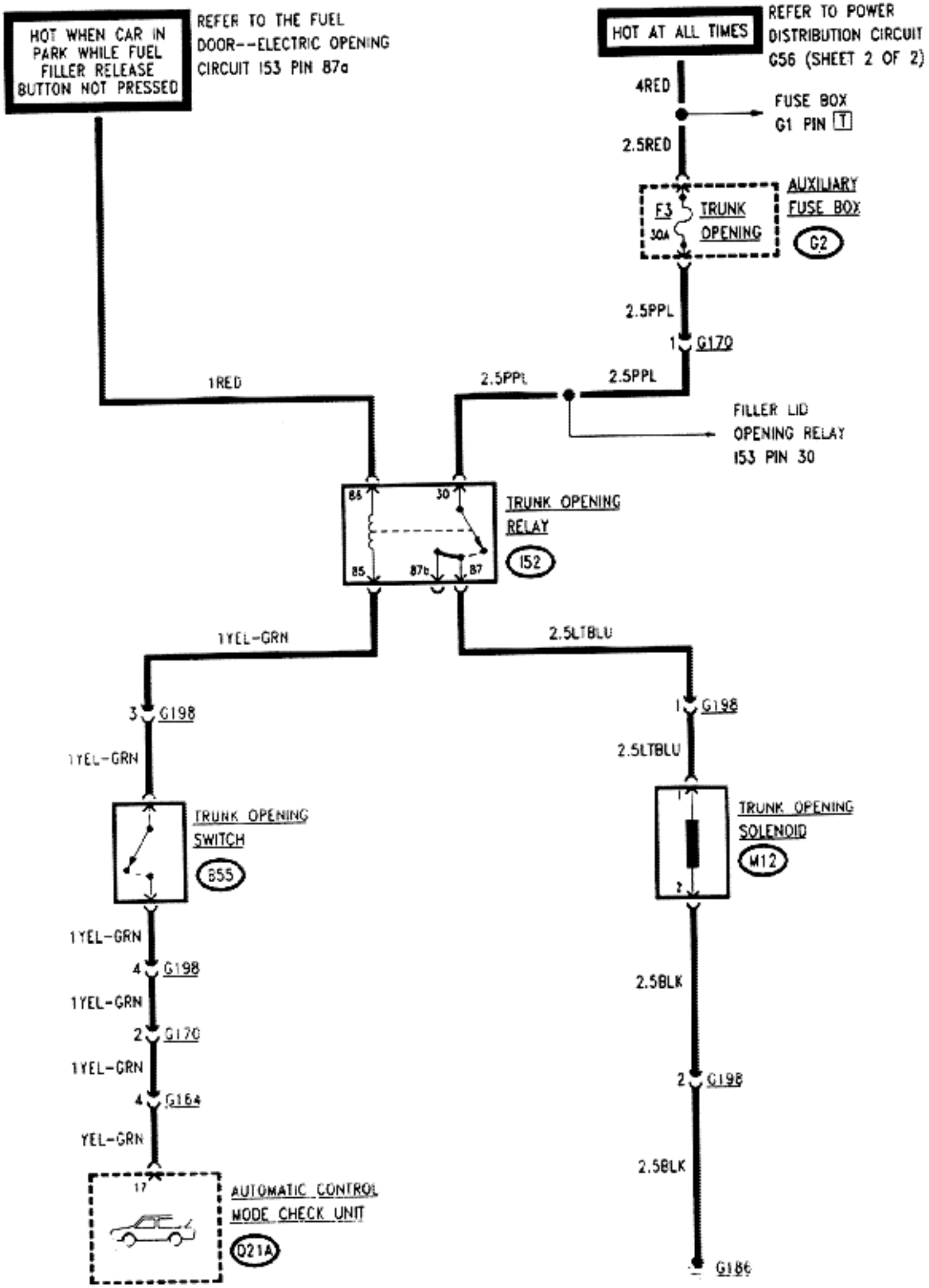
TRUNK - - ELECTRIC OPENING



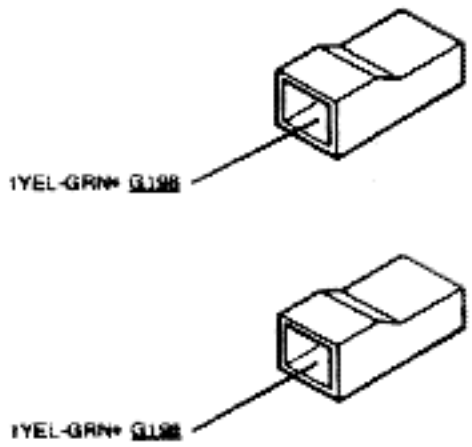
GENERAL

Trunk opening is electrically actuated by pressing a switch on the air conditioner panel.
For safety reasons, trunk opening can be actuated only when the vehicle has come to a complete stop.
The system is protected by the **F3** (30A) fuse TRUNK OPENING in the auxiliary fuse box **G2.**

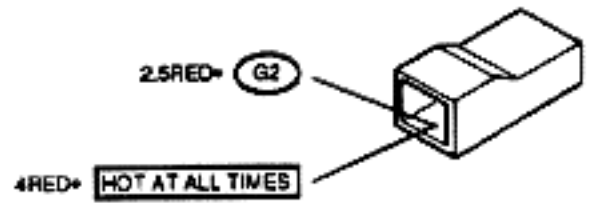
OPERATIONAL DESCRIPTION

The trunk opening relay **I52** is energized only when the start key is set to "parking", and the fuel filler lid opening is not activated and when the vehicle has come to a complete stop.
The relay coil is connected to ground by the automatic control mode check unit **Q21A** (detects "vehicle stationary" condition) through the switch **B55**, when actuated.
Contacts of switch **B55** are open when the trunk has been locked with the relevant key.
In this event the trunk opening can not be electrically actuated.
12V from the battery reach the trunk opening solenoid **M12** through the fuse **F3** and contacts of relay **I52**, thus providing automatic opening of the trunk lid.

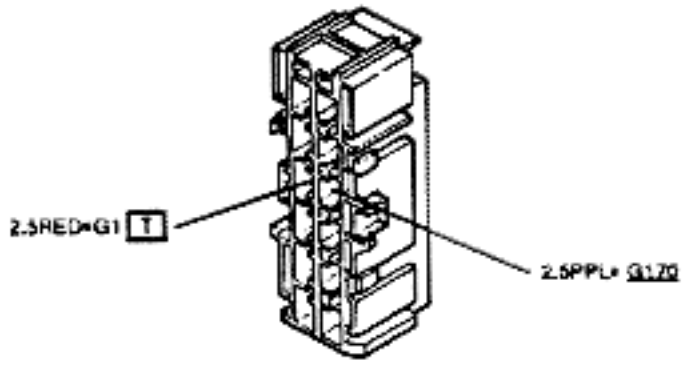
Trunk opening switch — B55



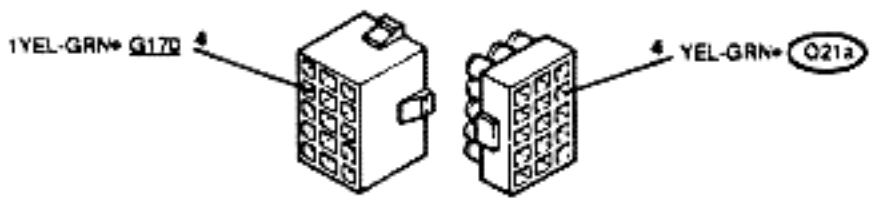
Fuse box — G1 T



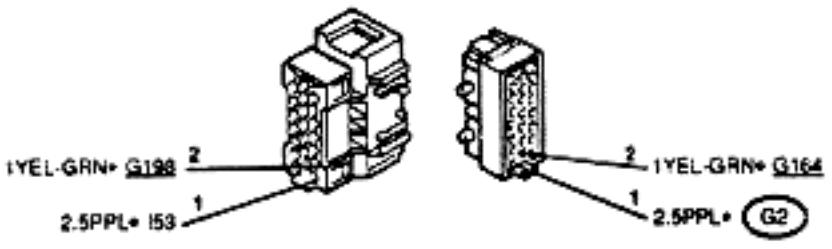
Auxiliary fuse box — G2



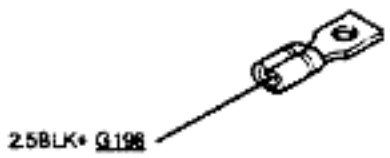
Connector, circuit board to air conditioning wiring — G164



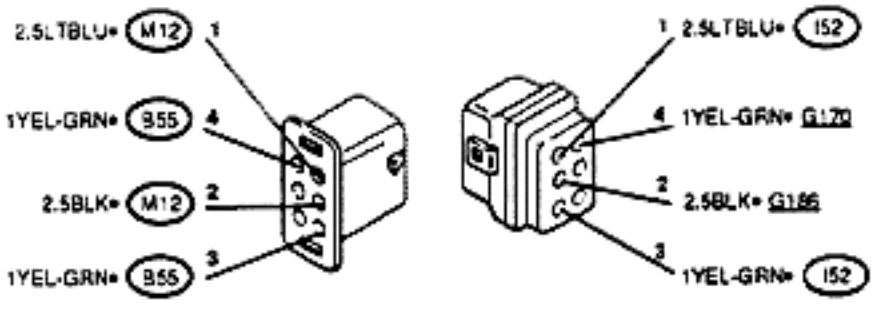
Connector, circuit board to right rear wiring — G170



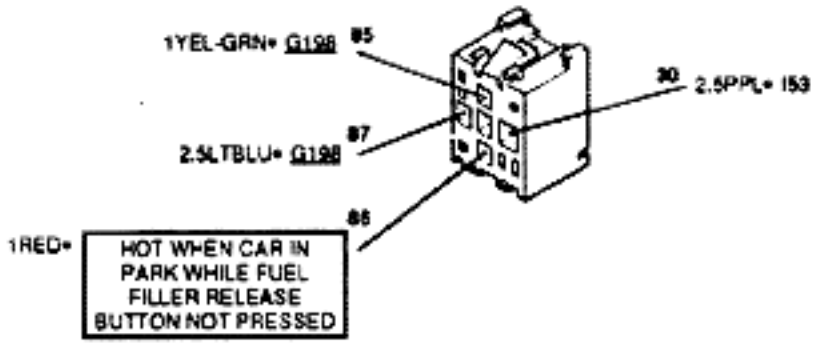
Trunk right side ground — G186



Connector, right rear wiring to trunk lock wiring — G198



Trunk opening relay — I52



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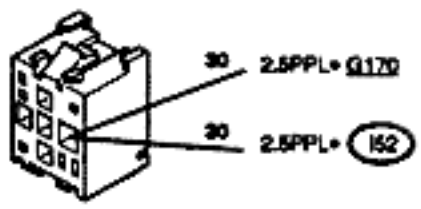
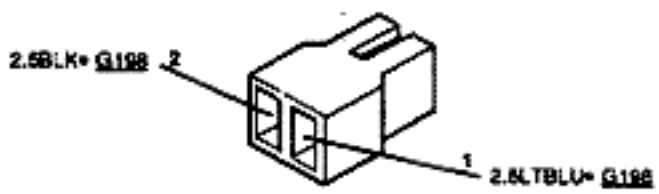
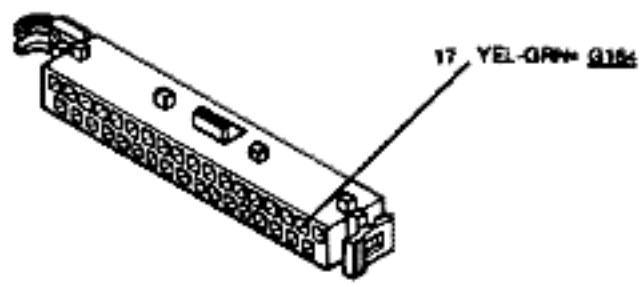
Filler lid opening relay	I53

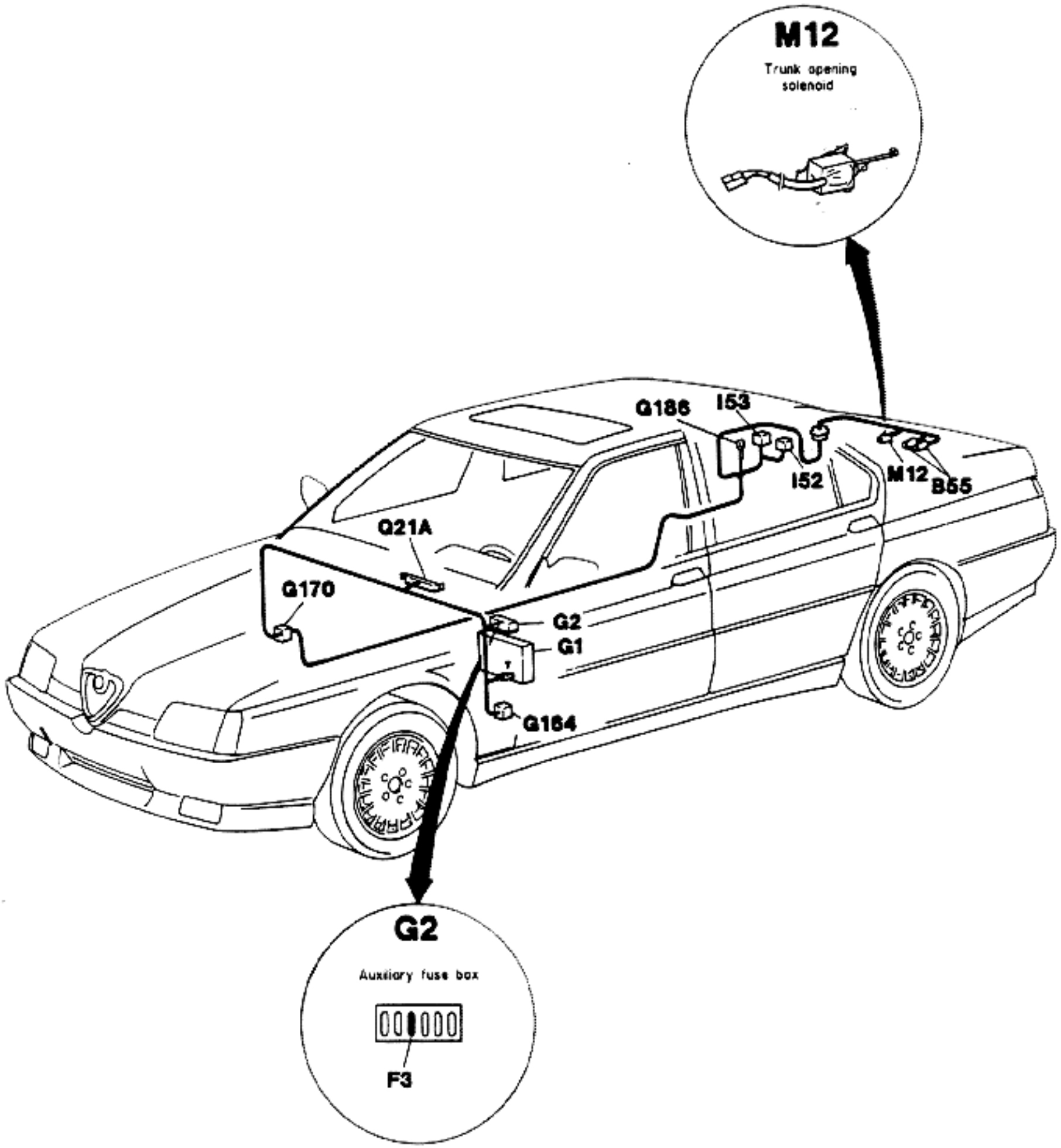


Trunk opening solenoid	M12



Automatic control mode check unit	Q21a





TRUNK ELECTRIC OPENING SYSTEM INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F3** in auxiliary fuse box **G2** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F3**
A2 FUEL FILLER LID OPENING CHECK - Check that fuel filler lid can be opened electrically	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A3**
A3 VOLTAGE CHECK - Check for presence of 12V between pin of auxiliary fuse box **G2** (RED wire) and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **fuse F3 of auxiliary fuse box G2, pin 1 of G170 and pin 30 of relay I52** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A4 CONTROL UNIT CHECK - Verify that pin 17 of control unit **Q21A** is connected to ground when the trunk opening control switch is actuated	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Replace **control unit Q21A**

(Cont.d)

TRUNK ELECTRIC OPENING SYSTEM INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 GROUNDING CHECK		
- Check for presence of 0V (zero) at: • pin 4 of connector **G164** • pin 2 of connector **G170** • pin 4 of connector **G198**	OK ▶ ~~OK~~ ▶	Carry-out **step A6** Repair wiring between **pin 17 of control unit Q21A and pin 4 of connector G198**
A6 CONTROL SWITCH CHECK		
- Check that the circuit is closed between pins of switch **B55** when actuated	OK ▶ ~~OK~~ ▶	Carry-out **step A7** Replace **switch B55**
A7 GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 85 of relay **I52**	OK ▶ ~~OK~~ ▶	Carry-out **step A8** Repair wiring between **pin of switch B55 (YEL-GRN wire), pin 3 of connector G198 and pin 85 of relay I52**
A8 VOLTAGE CHECK		
- With the ignition key set to "park", check for presence of 12 between pin 86 of relay **I52** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A9** Failure **of the fuel door - - electric circuit, refer to the relevant troubleshooting procedure**

(Cont.d)

TRUNK ELECTRIC OPENING SYSTEM INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A9 RELAY CHECK - Check relay **I52** for integrity and proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step A10** Replace **relay I52**
A10 SOLENOID CHECK - With the ignition key set to "park" and switch **B55** actuated, check for presence of 12V between terminals of solenoid **M12**	OK ▶ ~~OK~~ ▶	Replace **solenoid M12** Carry-out **step A11**
A11 CONTINUITY CHECK - Check for continuity between: • pin 1 of solenoid **M12** and pin 1 of connector **G198** • pin 1 of connector **G198** and pin 87 of relay **I52**	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2 of solenoid M12, pin 2 of connector G198 and ground point G186** Repair wiring between **pin 1 of solenoid M12, pin 1 of connector G198 and pin 87 of relay I52**

End of test A

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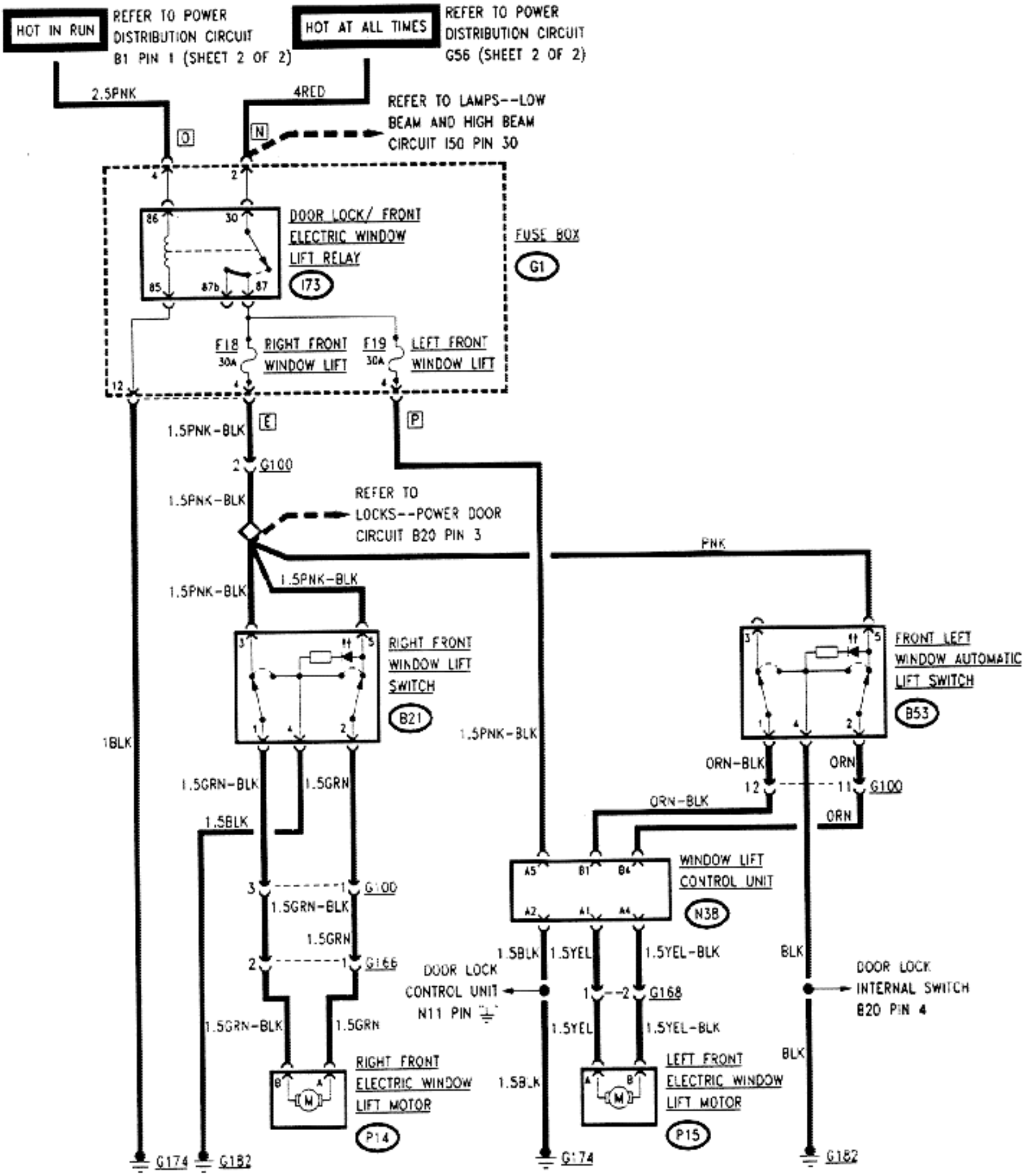
WINDOWS - - ELECTRIC OPENING



GENERAL

The front and rear door windows are electrically operated by means of four control switches located on the control console, and by two control switches located on the rear door panels.
A switch on the control console disables the operation of the rear windows.
The left front window can also be fully lowered by a pulse on the relevant control switch.
The electric window lift system is protected by fuses as follows:

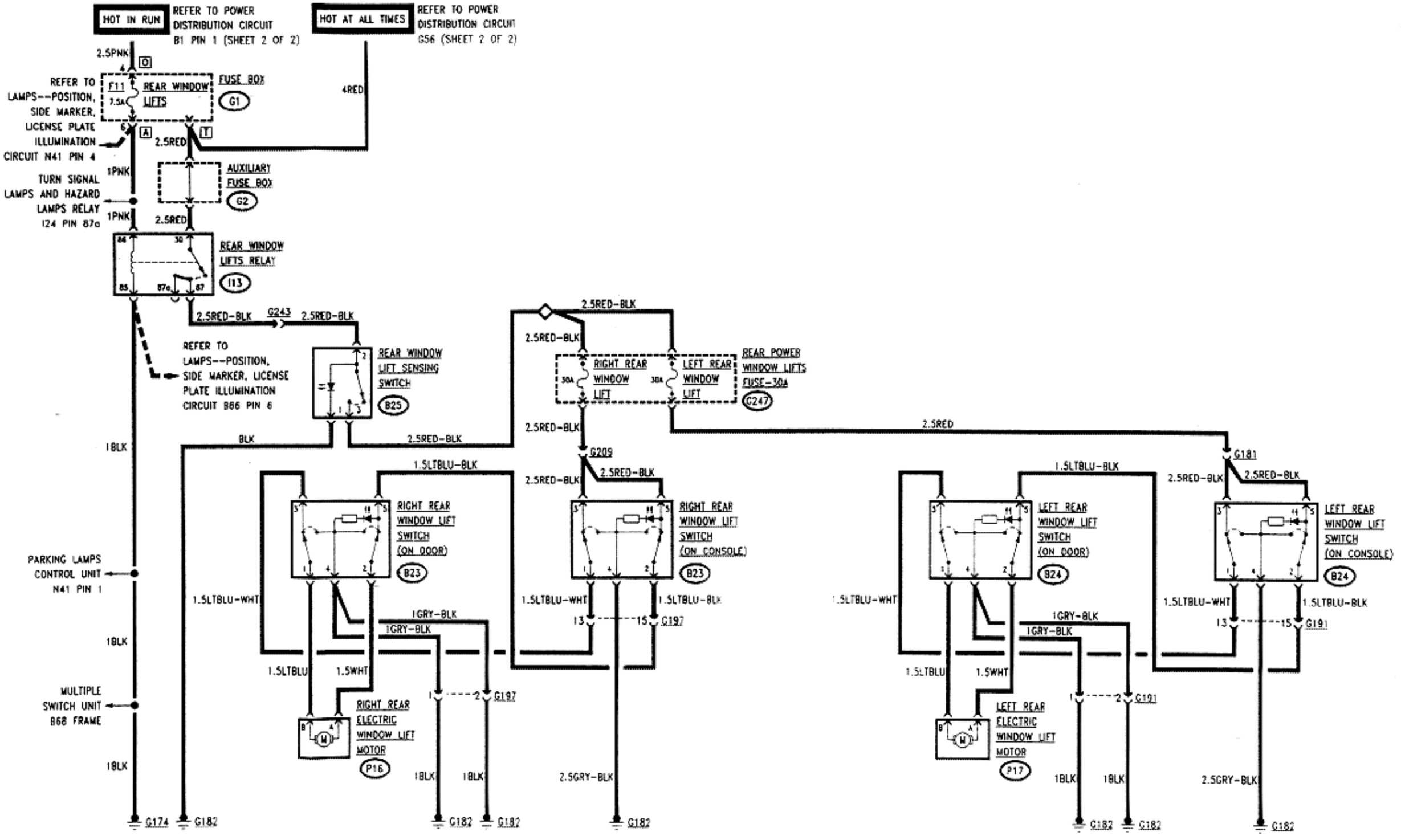
- **F11** fuse (7.5A) REAR WINDOW LIFTS, located in the fuse box **G1**.
- **F18** fuse (30A) R.H. FRONT WINDOW LIFT, located in the fuse box **G1.**
- **F19** fuse (30A) L.H. FRONT WINDOW LIFT, located in the fuse box **G1.**
- **G247** free fuse (30A) R.H. REAR WINDOW LIFT.
- **G247** free fuse (30A) L.H. REAR WINDOW LIFT.

OPERATIONAL DESCRIPTION - FRONT WINDOWS

The relay **I73** is energized when the ignition key is set to "run".
12V from the battery is applied to fuses **F18** and **F19** of the left and right front windows through the relay contacts.
The electric power is then supplied to control switches **B21** and **B53** through the fuse **F18**.
Pressing the switch **B21** in one direction, the corresponding motor **P14** is energized, with positive pole of the battery power at one of its two terminals; the motor will therefore rotate in one direction (e.g. lowering the window). Pressing the switch **B21** in the opposite direction, the positive pole of the battery power will be connected to the second motor terminal, and the motor **P14** sense of rotation will be reversed (e.g. lifting the window).
The operation of the left and right windows is similar, with the exception that the operation of motor **P15** of the left window is controled by the electric window lift control unit **N38**, which is powered through the fuse **F19** in the fuse box **G1**.
The control unit selects the window mode of operation on the base of input received from the switch **B53**(e.g. lifting, lowering or pulse lowering).

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT							
	F18 FUSE	F19 FUSE	B21 SWITCH CONSOLE	B53 SWITCH CONSOLE	I73 RELAY	P14 MOTOR	P15 MOTOR	N38 CONTROL UNIT
BOTH FRONT WINDOW LIFTS INOPERATIVE	●				●			
LEFT FRONT WINDOW LIFT INOPERATIVE		●		●			●	●
RIGHT FRONT WINDOW LIFT INOPERATIVE			●			●		



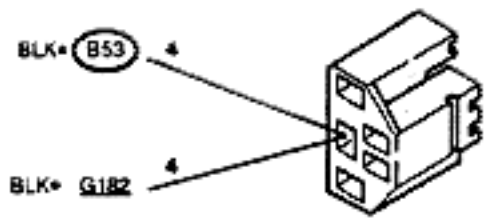
OPERATIONAL DESCRIPTION - REAR WINDOW

With the ignition key set to"run" 12V from the battery is applied to fuse **F11** in the fuse box **G1**, and then to the **I13** relay coil.
Closure of the relay contacts allows energization of the sensing switch **B25**, which enables the operation of switches **B23** and **B24** of the rear windows.
When the sensing switch contacts are closed, the electric power energizes the switches **B23** and **B24** (on console) through the two tree fuses **G247.**
Pressing either switch **B23** or **B24** in one direction, the corrisponding motor is energized and will rotate in the selected direction (e.g. lifting of the window).
Pressing the switch in the opposite direction will reverse the polarity of the electric power, and the motor will rotate in opposite direction (e.g. lowering of the window).
The same functions can also be activated by means of the control switches located on the rear doors.

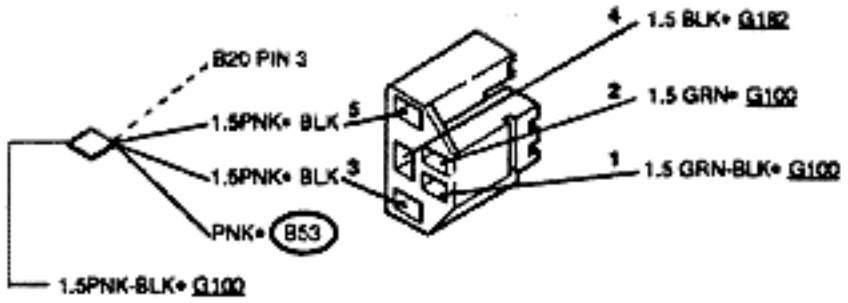
TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT									
	F11 FUSE	G247 FUSE	B23 DOOR SWITCH	B23 CONSOLE SWITCH	B24 DOOR SWITCH	B24 CONSOLE SWITCH	B25 SENSING SWITCH	I13 RELAY	P16 MOTOR	P17 MOTOR
BOTH REAR WINDOW LIFTS INOPERATIVE	•						•	•		
LEFT REAR WINDOW LIFT INOPERATIVE		•			•	•				•
RIGHT REAR WINDOW LIFT INOPERATIVE		•	•	•					•	

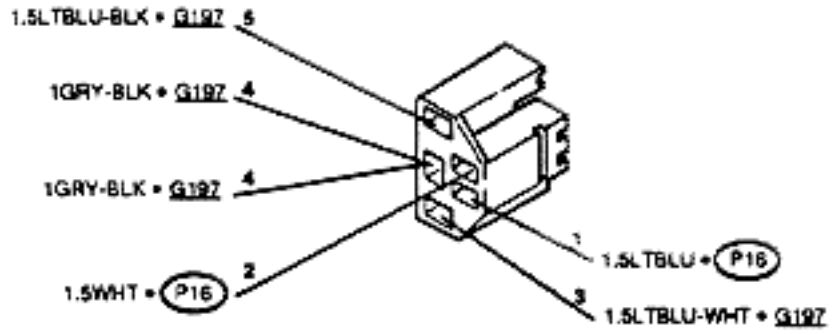
Door lock internal switch	B20



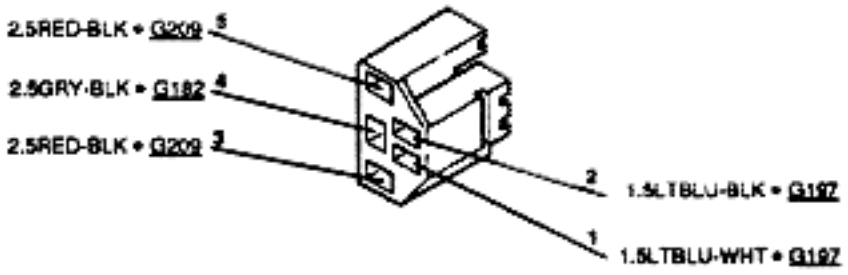
Right front window lift switch	B21



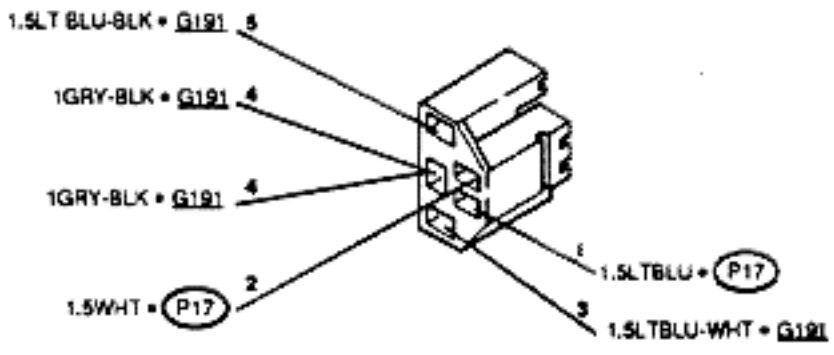
Right rear window lift switch (on door)	B23



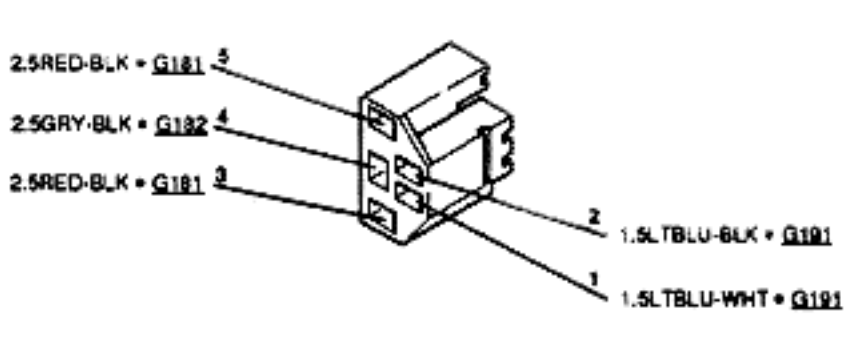
Right rear window lift switch (on console)	B23



Left rear window lift switch (on door)	B24

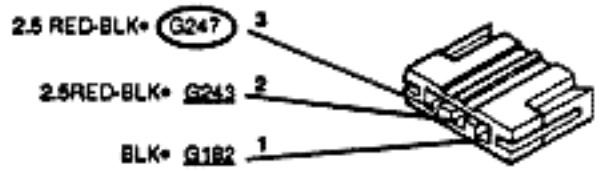


Left rear window lift switch (on console)	B24

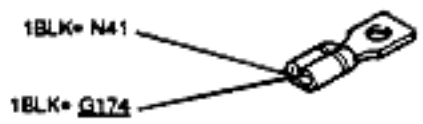


(Cont.d)

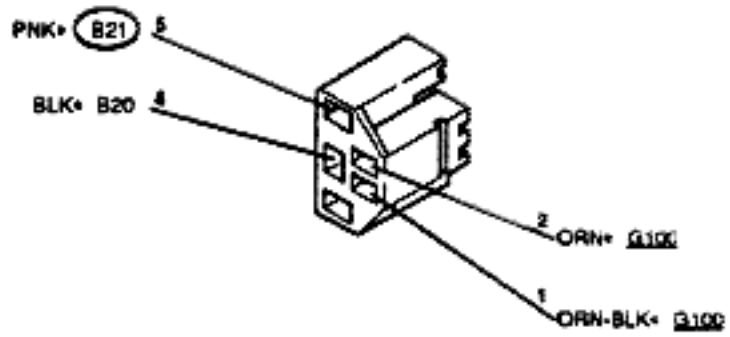
Rear window lifts sensing switch — B25



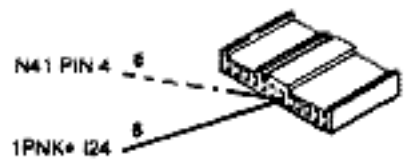
Multiple switch unit — B68 ↓



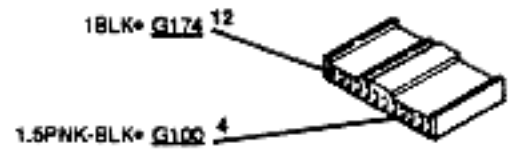
Front left window automatic lift switch — B53



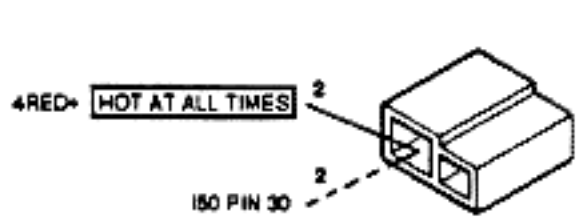
Fuse box — G1 A



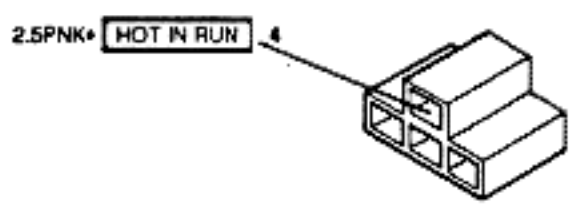
Fuse box — G1 E



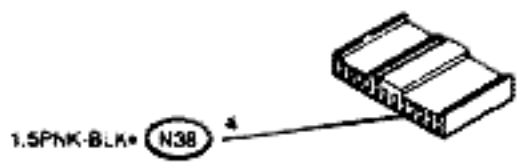
Fuse box — G1 N



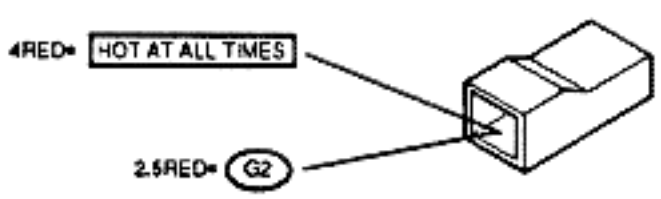
Fuse box — G1 O



Fuse box — G1 P

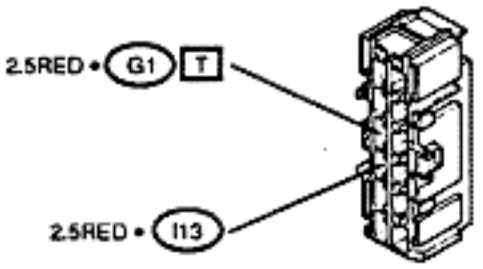


Fuse box — G1 T

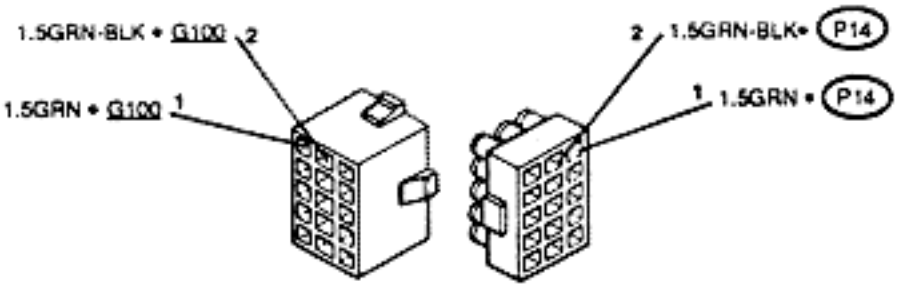


(Cont.d)

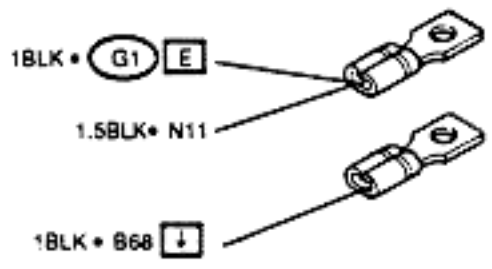
Auxiliary fuse box — G2



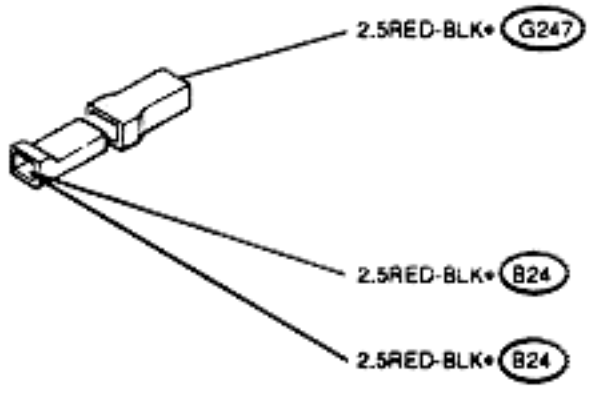
Connector, front doors to right front door wiring — G166



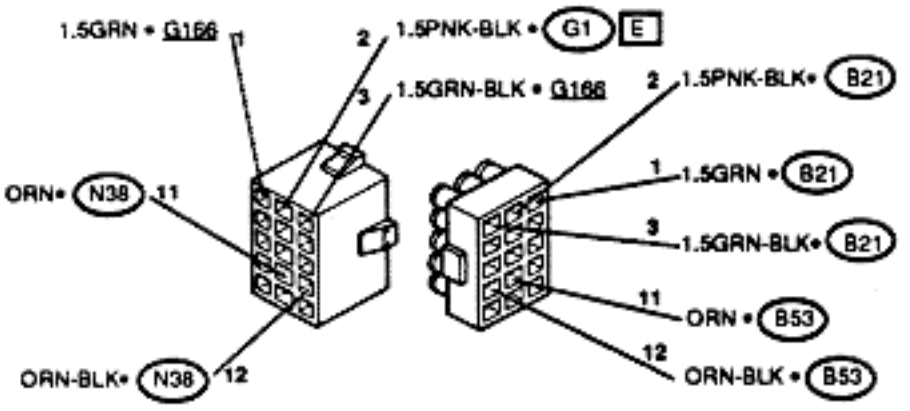
Steering wheel column support ground — G174



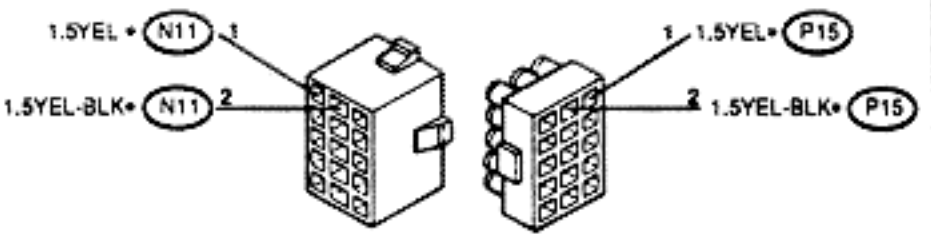
Connector, left rear wiring to rear center console — G181



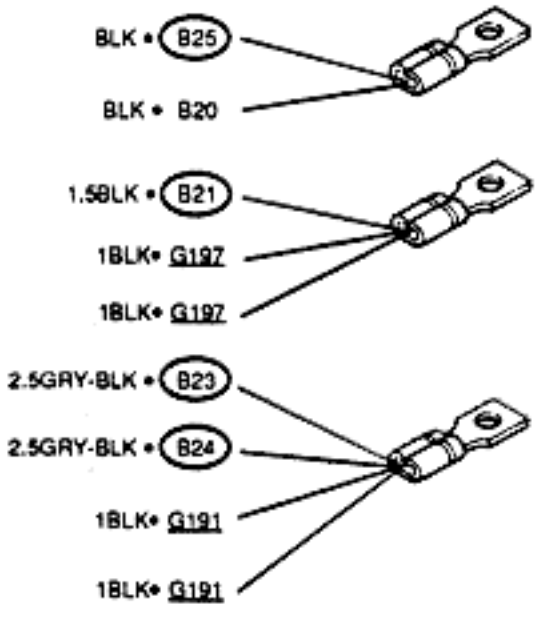
Connector, doors to center console wiring — G100



Connector, front doors to left front door wiring — G168

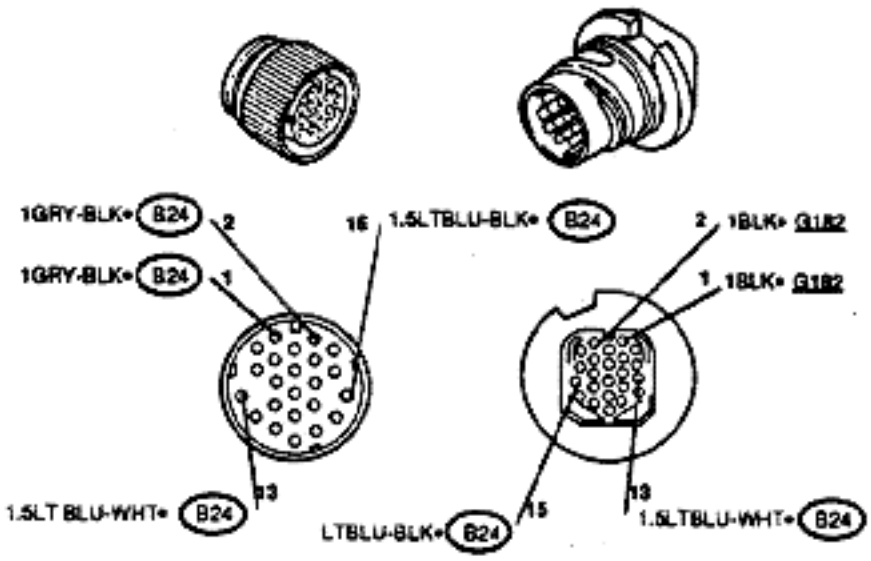


Center console ground — G182

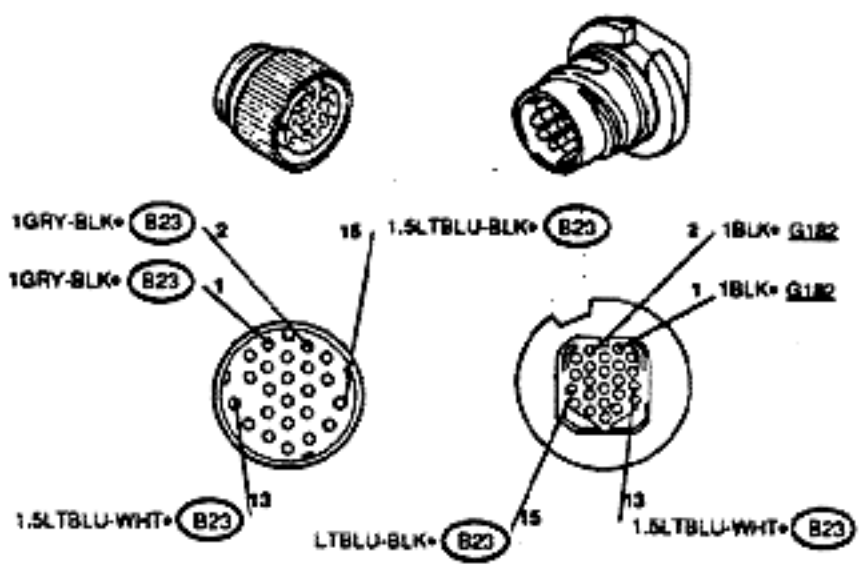


(Cont.d)

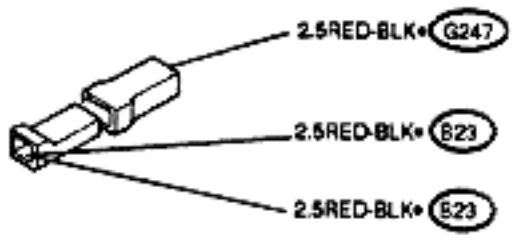
Connector, left rear wiring to left rear door wiring	G191



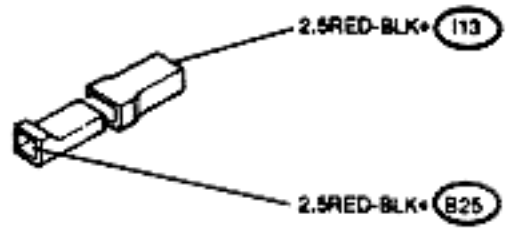
Connector, right rear wiring to right rear door wiring	G197



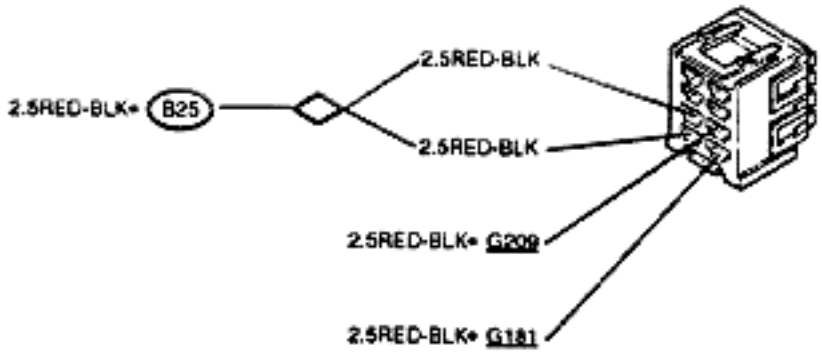
Connector, right rear wiring to rear console wiring	G209



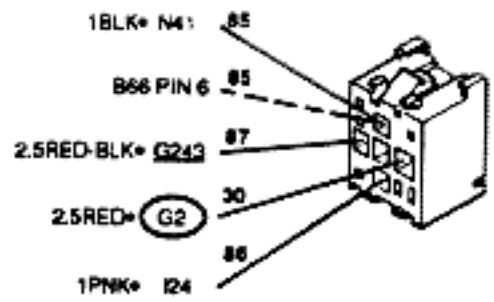
Board-wiring aft console wiring splice	G243



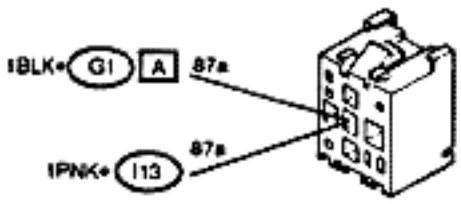
Rear power window lifts fuse 30A	G247



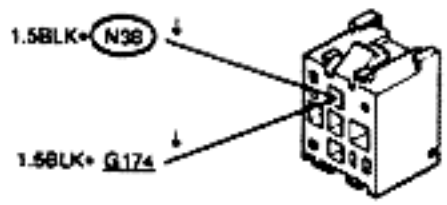
Rear window lifts relay	I13



Turn signal lamps and hazard lamps relay	I24

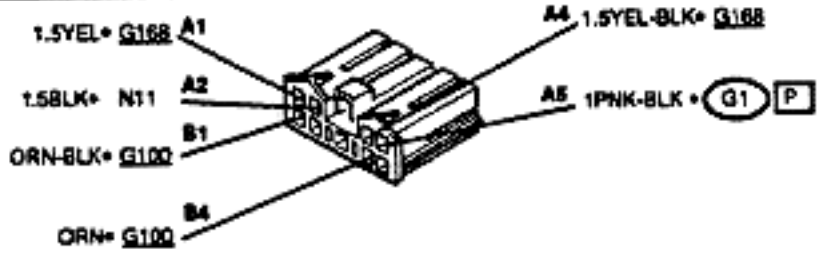


Door lock control unit	N11

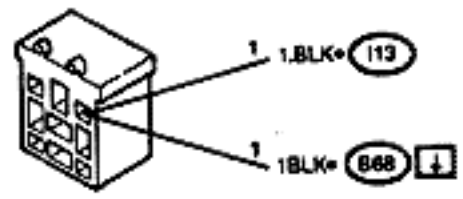


(Cont.d)

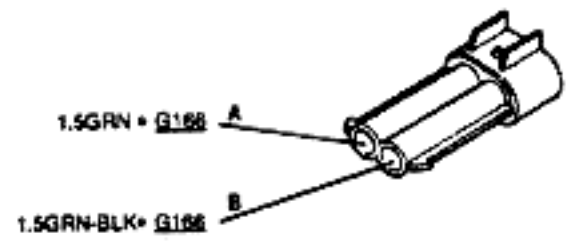
Window lift control unit	N38



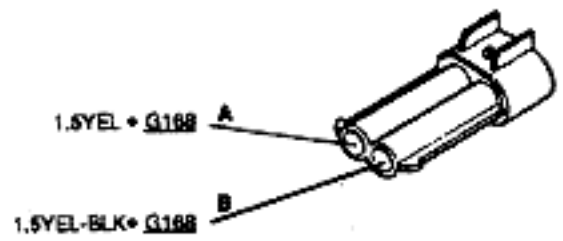
Parking lamps control unit	N41



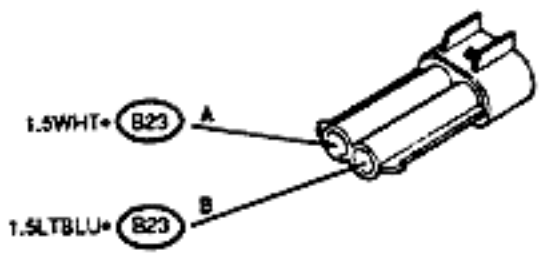
Right front electric window lift motor	P14



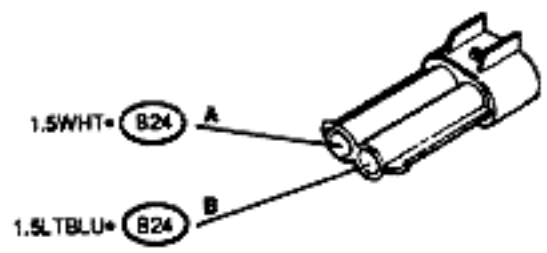
Left front electric window lift motor	P15

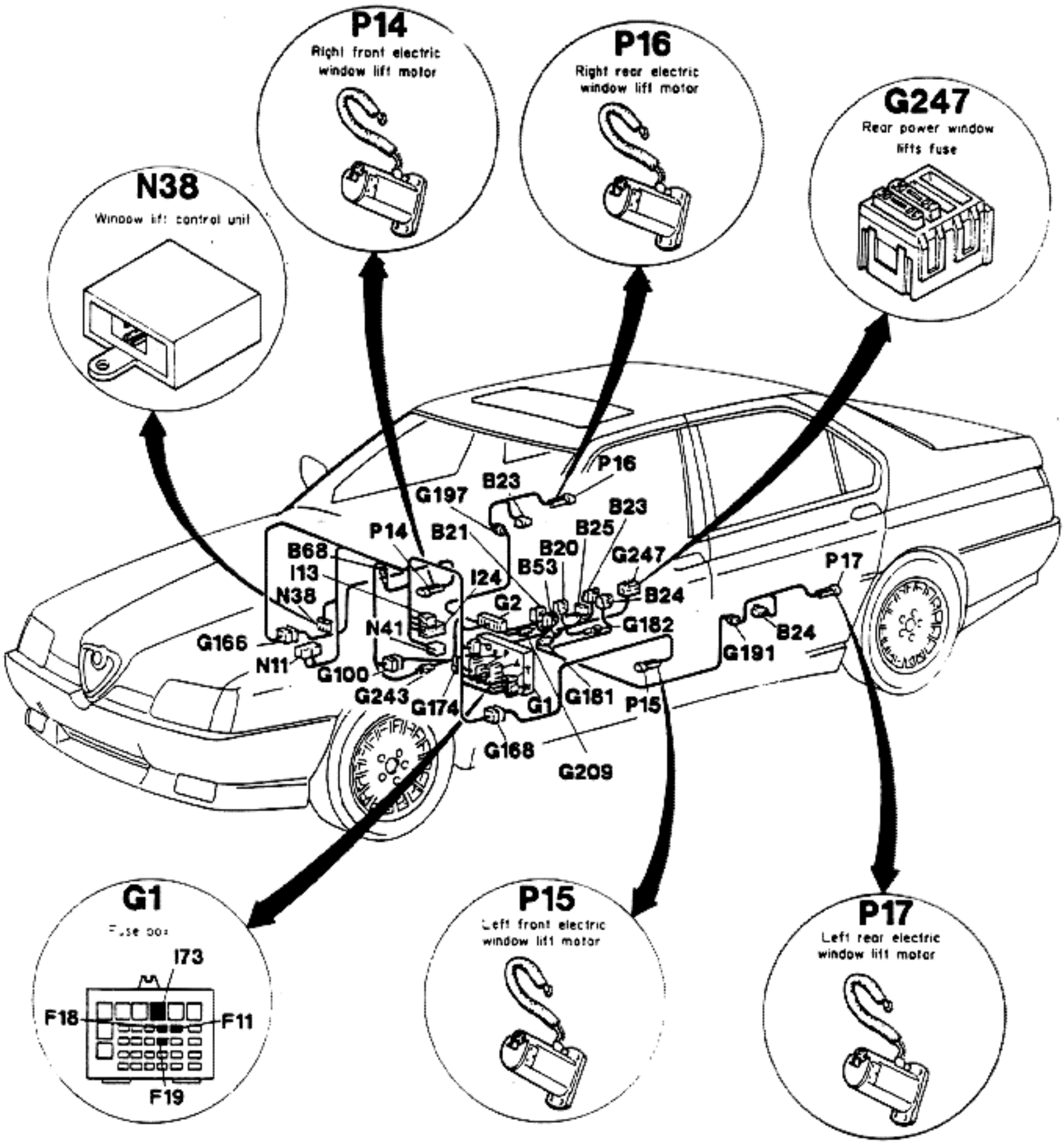


Right rear electric window lift motor	P16



Left rear electric window lift motor	P17





BOTH FRONT WINDOW LIFTS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F18** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F18**
A2 RELAY CHECK - Check relay **I73** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A3** Replace **relay I73**
A3 CONTINUITY CHECK - Check for presence of 0V (zero) at pin 12E of fuse box **G1**	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Repair wiring between **pin 12E of fuse box G1 and ground point G174**
A4 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

(Cont.d)

BOTH FRONT WINDOW LIFTS INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A5	VOLTAGE CHECK		
- Check for presence of 12V between pin 2T of fuse box G1 and ground		OK ▶	Repair wiring between pin 4E of fuse box G1 and pin 2 of connector
		OK ▶	Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2

End of test A

LEFT FRONT WINDOW LIFT INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
NOTE: **B53** is an integral light switch which illuminates any time the ignition key is set to "run". Replace the switch if it does not illuminate, even if its function is operative.		
B1 FUSE CHECK - Chech fuse **F19** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **fuse F19**
B2 CONTROL SWITCH CHECK - Check control switch **B53** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step B3** Replace **switch B53**
B3 VOLTAGE CHECK - With the ignition key set to "run" press and hold switch **B53** and check for presence of 12V at pins B1 and B4 of control unit **N38**	OK ▶ ~~OK~~ ▶	Carry-out **step B4** Repair wiring between **pins B1 of N38, pin 12 of connector G100 and pin 1 of B22**, repair wiring between **B4 of control unit N38, pin 11 of connector G100 and pin 2 of switch B22**

(Cont.d)

LEFT FRONT WINDOW LIFT INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B4 CONTROL UNIT CHECK - With the ignition key set to "run" press and hold switch **B53** and check for presence of 12V between pins A1 and A4 of control unit **N38**	OK ▶ ~~OK~~ ▶	Carry-out **step B5** Replace **control unit N38**
B5 VOLTAGE CHECK - Check for presence of 12V between pins 1 and 2 of connector **G168**	OK ▶ ~~OK~~ ▶	Carry-out **step B6** Repair wiring between **pin A1 of control unit N38 and pin 1 of connector G168**, repair wiring between **pin A4 of control unit N38 and pin 2 of connector G168**
B6 MOTOR CHECK - Check motor **P15** for proper operation	OK ▶ ~~OK~~ ▶	Repair wiring between **motor P15 and pins 1 and 2 of connector G168** Replace **motor P15**

End of test B

RIGHT FRONT WINDOW LIFT INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
NOTE: B21 is an integral light switch which illuminates any time the ignition key is set to "run". Replace the switch if it does not illuminate, even if its function is operative.		
C1 CONTROL SWITCH CHECK - Check switch **B21** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step C2** Replace **switch B21**
C2 VOLTAGE CHECK - Check for presence of 12V between: • pins 1 and 3 of connector **G100** and ground • pins 1 and 2 of connector **G166** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step C3** Repair or replace **wires, as necessary**
C3 MOTOR CHECK - Check motor **P14** for proper operation	OK ▶ ~~OK~~ ▶	Repair wiring between **motor P14 and pins 1 and 2 of connector G166** Replace **motor P14**

End of test C

BOTH REAR WINDOW LIFTS INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D1 FUSE CHECK - Check fuse **F11** in fuse box **G1** for integrity	OK ▶ OK ▶	Carry-out **step D2** Replace **fuse F11**
D2 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V, at pin 2 of switch **B25**	OK ▶ OK ▶	Carry-out **step D3** Carry-out **step D4**
D3 VOLTAGE CHECK - With the ignition key set to "run" press and hold switch **B25**; check for presence of 0V at pin 3 of switch **B25**	OK ▶ OK ▶	Repair wiring between **switch B25 and free fuse G247 (RED-BLK wire)** Replace **switch B25**
D4 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between connector **G243** and ground	OK ▶ OK ▶	Repair wiring between **pin 2 of switch B25 and connector G243 (RED-BLK wire)** Carry-out **step D5**

(Cont.d)

BOTH REAR WINDOW LIFTS INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D5 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 87 of relay I13 and ground	OK ▶ OK ▶	Repair wiring between **pin 87 of relay I13 and connector G243 (RED-BLK wire)** Carry-out **step D6**
D6 VOLTAGE CHECK - Check for presence of 12V between pin T of fuse box **G1** and ground	OK ▶ OK ▶	Carry-out **step D7** Faiure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
D7 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay **I13** and ground	OK ▶ OK ▶	Carry-out **step D8** Repair wiring between **pin 30 of I13 and pin T of fuse box G1**
D8 VOLTAGE CHECK - With the ignition key set to "run" check for presence of 12V between pin 86 of relay **I13** and ground	OK ▶ OK ▶	Carry-out **step D10** Carry-out **step D9**

(Cont.d)

BOTH REAR WINDOW LIFTS INOPERATIVE	TEST D

TEST STEPS		RESULTS	REMEDY
D9	VOLTAGE CHECK		
- With the ignition key set to "run" check for presence of 12V between pin 4O of fuse box G1 and ground		OK ▶	Repair wiring between pin 6A of fuse box G1 and pin 86 of relay I13
		OK ▶	Faiure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2
D10	GROUNDING CHECK		
- Check for presence of 0V (zero) at pin 85 of relay I13		OK ▶	Replace relay I13
		OK ▶	Repair wiring between pin 85 of I13 and ground point G174

End of test D

LEFT REAR WINDOW LIFT INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E1 FUSE CHECK		
- Check free fuse **G247** for integrity	OK ▶	Carry-out **step E2**
	OK ▶	Replace **fuse G247**
E2 VOLTAGE CHECK		
- With the ignition key set to "run" press and hold switch **B25**; check for presence of 12V between: • connector **G181** and ground • pins 3 and 5 of switch **B24** on central console	OK ▶	Carry-out **step E3**
	OK ▶	Repair or replace **wires, as necessary**
E3 SWITCH CHECK		
- Check switch **B24** on central console for proper operation	OK ▶	Carry-out **step E4**
	OK ▶	Replace **switch B24**
E4 VOLTAGE CHECK		
- With the ignition key set to "run" press and hold switch **B25**; check for presence of 12V between: • pins 13 and 15 of connector **G191** • pins 3 and 5 of switch **B24** on the left rear door	OK ▶	Carry-out **step E5**
	OK ▶	Repair or replace **wires, as necessary**

(Cont.d)

LEFT REAR WINDOW LIFT INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E5 SWITCH CHECK - Check switch **B24** on the left rear door for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step E6** Replace **switch B24**
E6 GROUNDING CHECK - Check for presence of 0V (zero) at: • between pin 4 of switch **B24** on central console and ground • between pin 4 of switch **B24** on left rear door and ground	OK ▶ ~~OK~~ ▶	Carry-out **step E7** Repair wiring between **ground point G182 and pin 4 of switch B24 on central console, between ground point G182 and pins 1 and 2 of connector G191 and between pins 1 and 2 of G191 and pin 4 of B24 on left rear door**
E7 MOTOR CHECK - With the ignition key set to "run" press and switch **B25** and either switch **B24**; check for presence of 12V between terminals of motor **P17**	OK ▶ ~~OK~~ ▶	Replace **motor P17** Repair or replace **wires, as necessary**

End of test E

RIGHT REAR WINDOW LIFT INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F1 FUSE CHECK - Check free fuse **G247** for integrity	OK ▶ OK ▶	Carry-out **step F2** Replace **fuse G247**
F2 VOLTAGE CHECK - With the ignition key set to "run" press and switch **B25**; check for presence of 12V between: • connector **G209** and ground • pins 3 and 5 of switch **B23** on central console	OK ▶ OK ▶	Carry-out **step F3** Repair or replace **wires, as necessary**
F3 SWITCH CHECK - Check switch **B23** on central console for proper operation	OK ▶ OK ▶	Carry-out **step F4** Replace **switch B23**
F4 VOLTAGE CHECK - With the ignition key set to "run" press and hold switch **B25**; check for presence of 12V between: • pins 13 and 15 of connector **G197** • pins 3 and 5 of switch **B23** on the right rear door	OK ▶ OK ▶	Carry-out **step F5** Repair or replace **wires, as necessary**

(Cont.d)

RIGHT REAR WINDOW LIFT INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F5 SWITCH CHECK - Check switch **B23** on the left rear door for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step** F6 Replace **switch B23**
F6 GROUNDING CHECK - Check for presence of 0V (zero) between: • pin 4 of switch **B23** on central console and ground • pin 4 of switch **B23** on right rear door and ground	OK ▶ ~~OK~~ ▶	Carry-out **step** F7 Repair wiring between **ground point G182 and pin 4 of switch B23 on central console, between ground point G182 and pins 1 and 2 of connector G197 and between pins 1 and 2 of G197 and pin 4 of B23 on right rear door**
F7 MOTOR CHECK - With the ignition key set to "run" press and switch **B25** and either switch **B23**; check for presence of 12V between terminals of motor **P16**	OK ▶ ~~OK~~ ▶	Replace **motor P16** Repair or replace **wires, as necessary**

End of test F

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GENERAL

The windshield wipers can be operated only with the ignition key set to "run".
Actuation of the windshield wipers is accomplished through the multiple switch lever located on the right of the steering wheel.
Three windshield wipers operating modes are available:

- position 1( ): intermittent operation.
- position 2( ): continuous operation, normal speed.
- position 3( ): continuous operation, high speed.

To operate the windshield washer pull towards the steering wheel the multiple switch lever located to the right of the steering wheel.
Actuation of the windshield washer with position lamps on automatically actuates the head lamps washer.

NOTE

In case of lack of washer fluid, do not actuate the electric pump to avoid damages.

The horns are actuated by pushing the switches located on the steering wheel
The system is protected by three fuses in the fuse box **G1**, as follows:

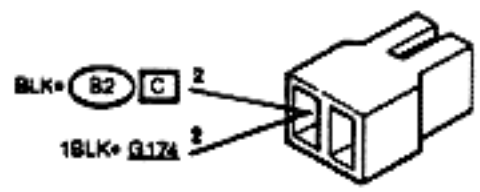
- fuse **F1** (7.5A) POSITION LAMPS.
- fuse **F10** (20A) WINDSHIELD WASHER/WIPER.
- fuse **F17** (20A) HEAD LAMPS WASHER.

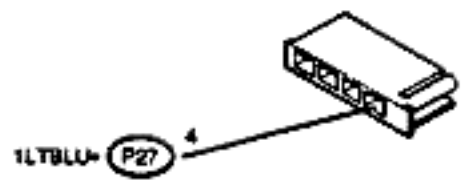
OPERATIONAL DESCRIPTION

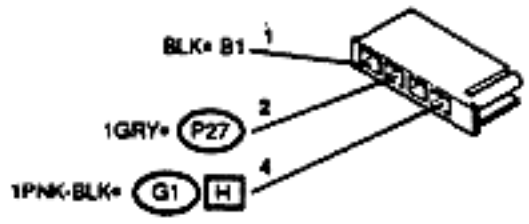
Battery power available when the ignition key is set to "run", is applied through the fuse **F10** (windshield wiper and washer) to the windshield wiper motor and control unit **P27**, and to the windshield wiper control **B2**.
Moving the windshield wiper control **B2** to position 1, power is applied to the windshield wiper motor and control unit **P27** through pin 1E of the windshield wiper control.
The motor **P27** actuates the wiper in the intermittent mode.
Moving the windshield wiper control **B2** to the position 2, power is applied to the control unit **P27** through pin 4B of the windshield wiper control.
In this case the motor **P27** actuates the wipers in the continuous mode normal speed.
Moving the multiple switch to the position 3, power is applied to the control unit **P27** through pin 2C of the multiple switch.
In this case the motor **P27** actuates the wiper in the continuous mode, high speed.
When the windshield washer is activated, 12V are applied, through pin 3C of multiple switch, to the head lamps washer pump relay **I19**, to the windshield washer electric pump **P19** and to pin 7 of the motor **P27** to momentarily operate the windshield wipers.
Energization of the relay **I19** applies 12V to the head lamps washer electric pump **P20** only if the position lamps are on.
The power line to pump **P20** is protected by the head lamps washer fuse **F17**.
Horn **O2** is actuated by pushing on a microswitch on the steering weel, which closes and connects to ground the horn relay **I3** coil, thus energizing the relay.
The relay **I3** contacts closure powers the horn **O2**.

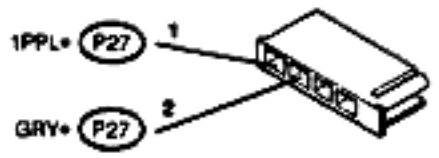
TROUBLESHOOTING TABLE

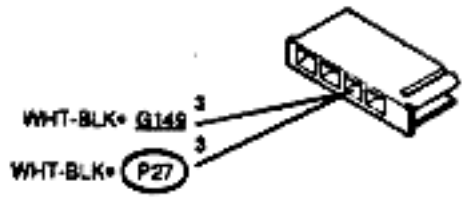
FAULT TYPE	FAILED COMPONENT											
	F1 FUSE	F10 FUSE	F17 FUSE	B2 SWITCH	B3 SWITCH	B5 SWITCH	(13) RELAY	(119) RELAY	(02) HORN	(P19) ELECTRIC PUMP	(P20) ELECTRIC PUMP	(P27) MOTOR
WINDSHIELD WIPERS INOPERATIVE		●										●
WINDSHIELD WIPERS INTERMITTENT MODE INOPERATIVE				●								●
WINDSHIELD WIPERS CONTINUOUS MODE (LOW SPEED) INOPERATIVE				●								●
WINDSHIELD WIPERS CONTINUOUS MODE (HIGH SPEED) INOPERATIVE				●								●
BOTH WINDSHIELD AND HEAD LAMPS WASHERS INOPERATIVE					●			●				
WINDSHIELD WIPERS INOPERATIVE WHEN WINDSHIELD WASHER IS ACTUATED					●							●
WINDSHIELD WASHER INOPERATIVE										●		
HEAD LAMPS WASHER INOPERATIVE	●		●					●			●	
HORN INOPERATIVE						●	●		●			

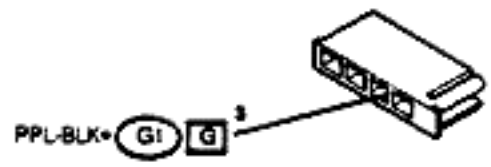
Ignition switch	B1
	

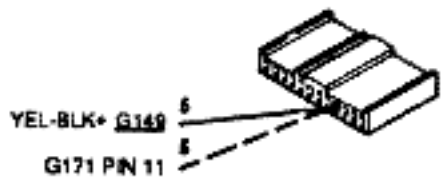
Windshield wiper control	B2 B
	

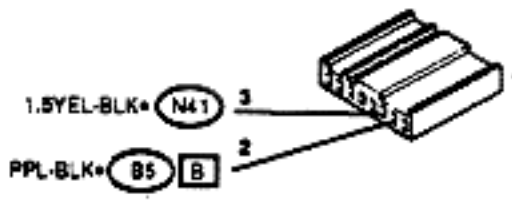
Windshield wiper control	B2 C
	

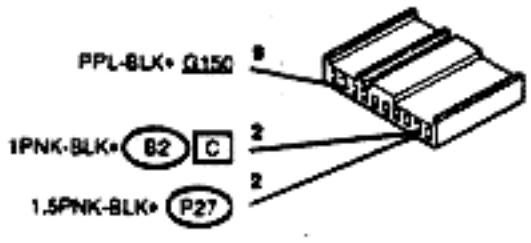
Windshield wiper control	B2 E
	

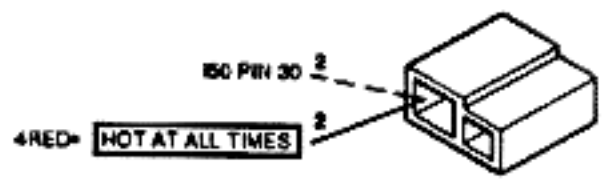
Head lamp washer/wiper and windshield washer pump control	B3 C
	

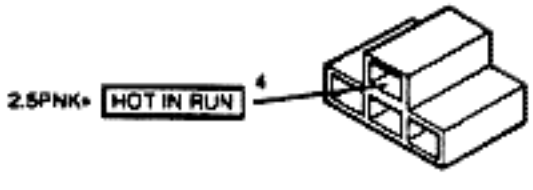
Horn control switch	B5 B
	

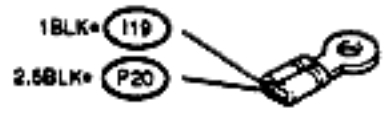
Fuse box	G1 D
	

Fuse box	G1 G
	

Fuse box	G1 H
	

Fuse box	G1 N
	

Fuse box	G1 O
	

Engine compartment right side ground connection	G53a
	

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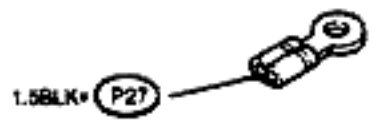
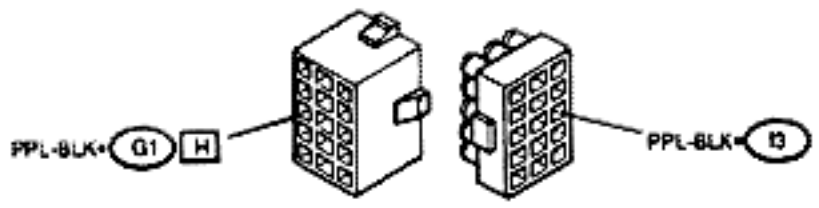
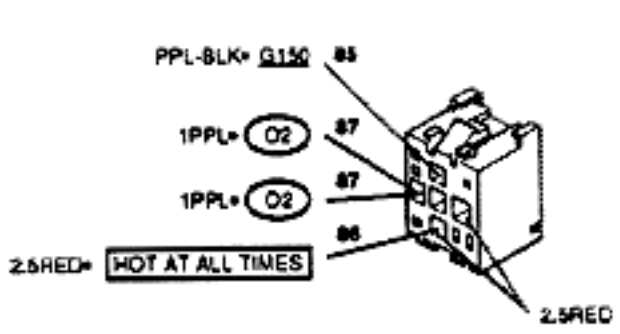
Central bulkhead ground	G143



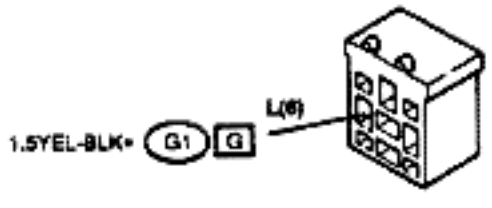
Connector, circuit board to engine compartment left side wiring	G150



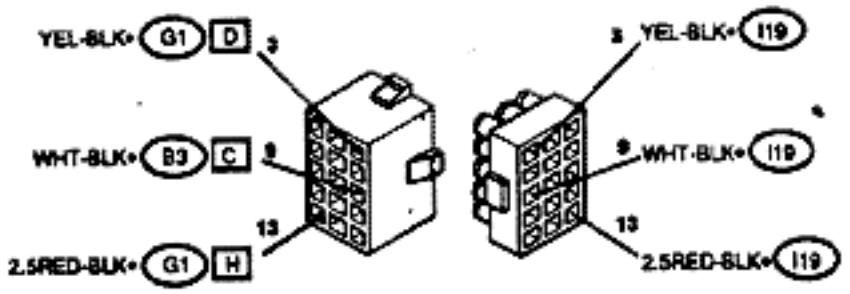
Horn relay	I3



Parking lamps control unit	N41

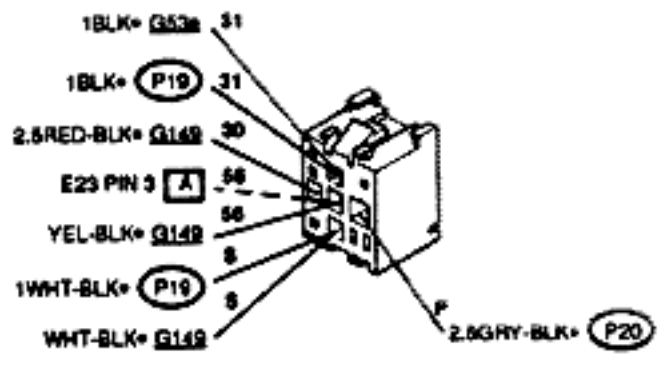


Connector, circuit board to engine compartment right side wiring	G149

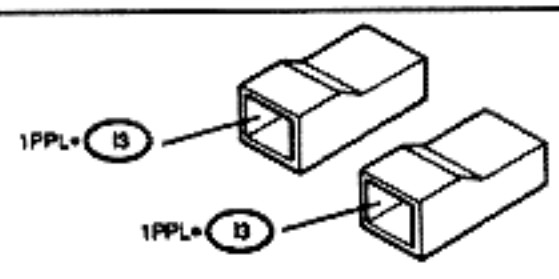


Steering wheel column support ground	G174

Head lamps washer pump relay	I19



Horn	O2



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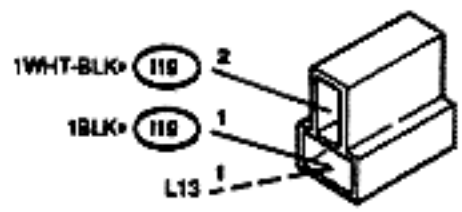
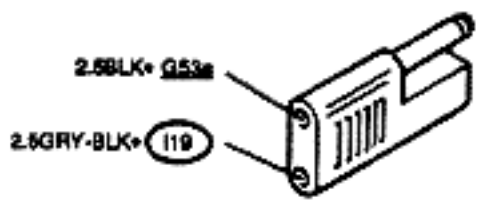
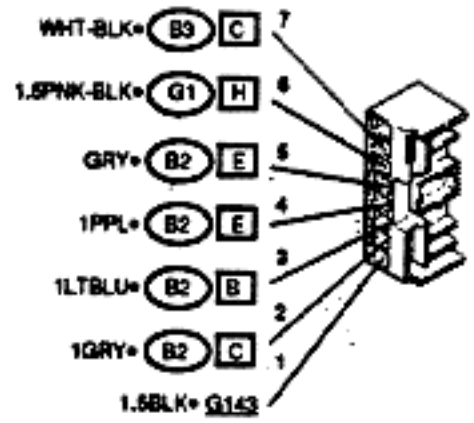
Windshield washer electric pump — P19

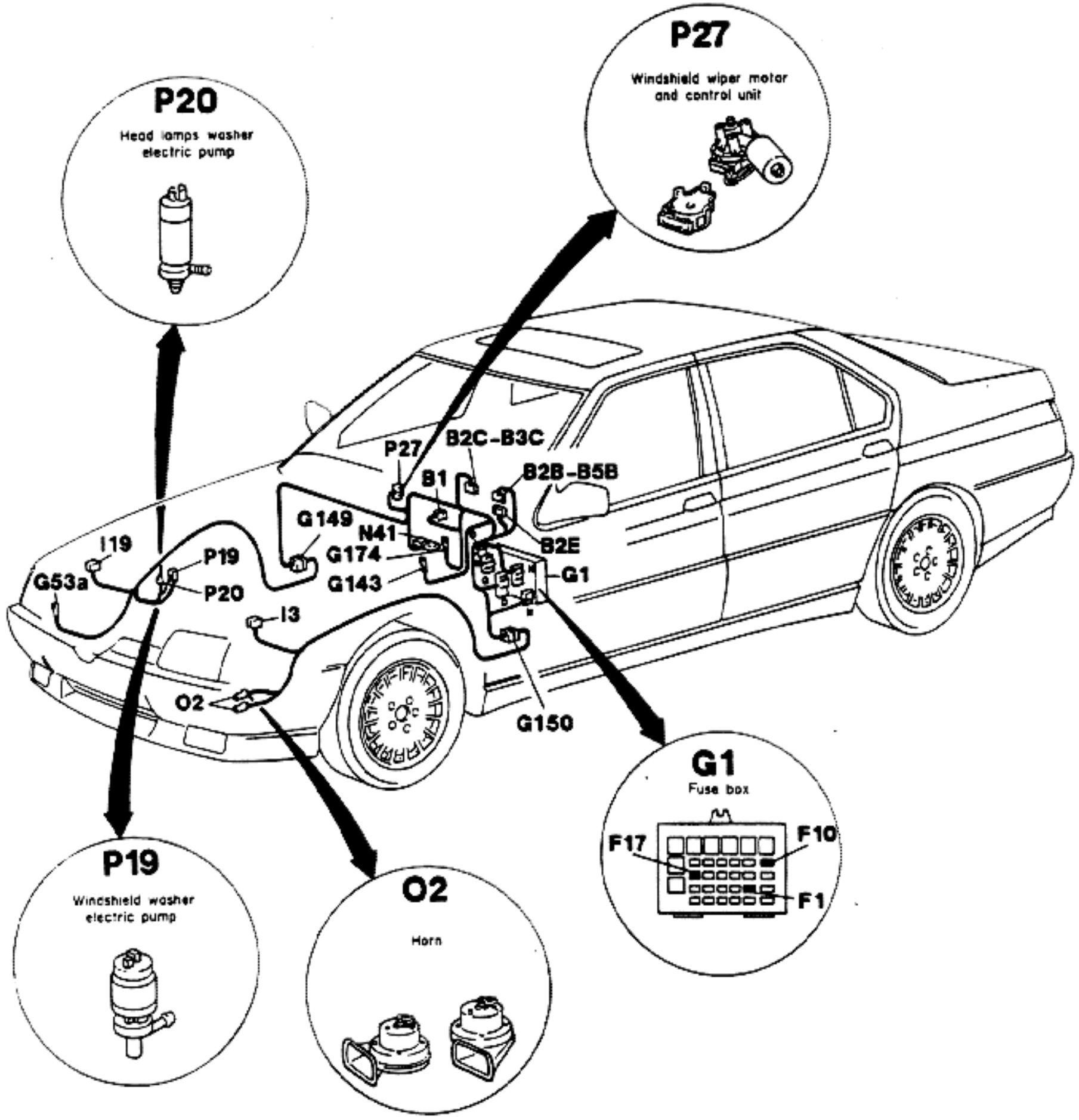


Head lamps washer electric pump — P20



Windshield wiper motor and control unit — P27





WINDSHIELD WIPERS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK - Check fuse **F10** in fuse box **G1** for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step A2** Replace **fuse F10**
A2 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 6 of motor and control unit **P27** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A4** Carry-out **step A3**
A3 VOLTAGE CHECK - With the ignition key set to "run", check for presence of 12V between pin 4O of fuse box **G1** and ground	OK ▶ ~~OK~~ ▶	Repiar wiring between **pin 2H of fuse box and pin 6 of motor P27** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A4 VOLTAGE CHECK - With ignition key set to "run", check for presence of 12V between pin 4C of windshield wiper control **B2** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step A5** Repair wiring between **pin 4C of windshield wiper control B2 and pin 2H of fuse box G1**

(Cont.d)

WINDSHIELD WIPERS INOPERATIVE	TEST A

TEST STEPS		RESULTS	REMEDY
A5	MOTOR CHECK		
- Check motor **P27** for proper operation		OK ▶	Replace **windshield wiper control B2**
		OK ▶	Replace **motor P27**

End of test A

WINDSHIELD WIPERS INTERMITTENT MODE INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B1 SIGNAL CHECK - With ignition key set to "run" and windshield wiper control **B2** to position 1 check for presence of a 12V intermittent signal at pin 1E of windshield wiper control **B2**	OK ▶ ~~OK~~ ▶	Carry-out **step B2** Replace **windshield wiper control B2**
B2 CONTINUITY CHECK - Check for continuity between pin 1E of windshield wiper control **B2** and pin 4 of motor **P27**	OK ▶ ~~OK~~ ▶	Replace **motor P27** Repair or replace **wires, as necessary**

End of test B

WINDSHIELD WIPERS CONTINUOUS MODE (LOW SPEED) INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C1 SIGNAL CHECK		
- With ignition key set to "run" and windshield wiper control **B2** set to position 2 check for presence of a 12V signal between pin 4B of windshield wiper control **B2** and ground	OK ▶	Carry-out **step C2**
	~~OK~~ ▶	Replace **windshield wiper control B2**
C2 CONTINUITY CHECK		
- Check for continuity between pin 4B of windshield wiper control **B2** and pin 3 of motor **P27**	OK ▶	Replace **motor P27**
	~~OK~~ ▶	Repair or replace **wires, as necessary**

End of test C

WINDSHIELD WIPERS CONTINUOUS MODE (HIGH SPEED) INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D1 SIGNAL CHECK - With ignition key set to "run" and windshield wiper control **B2** set to position 3 check for presence of a 12V signal between pin 2C of windshield wiper control **B2** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step D2** Replace **windshield wiper control B2**
D2 CONTINUITY CHECK - Check for continuity between pin 2C of windshield wiper control **B2** and pin 2 of motor **P27**	OK ▶ ~~OK~~ ▶	Replace **motor P27** Repair or replace **wires, as necessary**

End of test D

BOTH WINDSHIELD AND HEAD LAMPS WASHERS INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E1 MULTIPLE SWITCH CHECK - With ignition key set to "run", operate the windshield washer and check for presence of 12V between pin 3C of of head lamp washer/wiper and windshield washer pump control **B3** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step E2** Replace **pump control B3**
E2 VOLTAGE CHECK - With ignition key set to "run", operate the windshield washer and check for presence of 12V between pin 9 of connector **G149** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step E3** Repair wiring between **pin 3C of pump control B3 and pin 9 connector G149**
E3 VOLTAGE CHECK - With ignition key set to "run", operate the windshield washer and check for presence of 12V between pin S of the head lamps washer pump relay **I19** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step E4** Repair wiring between **pin S of relay I19 and pin 9 of connector G149**
E4 GROUNDING CHECK - Check for presence of 0V (zero) at pin 31 of relay **I19**	OK ▶ ~~OK~~ ▶	Replace **relay I19** Repair wiring between **pin 31 of relay I19 and ground point G53a**

End of test E

WINDSHIELD WIPERS INOPERATIVE WHEN WINDSHIELD WASHER IS ACTUATED	TEST F

TEST STEPS	RESULTS	REMEDY
F1 MULTIPLE SWITCH CHECK - With ignition key set to "run", operate the windshield washer and check for presence of 12V between pin 3C of pump control **B3** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step F2** Replace **pump control B3**
F2 VOLTAGE CHECK - With ignition key set to "run", operate the windshield and check for presence of 12V between pin 7 of motor **P27** and ground	OK ▶ ~~OK~~ ▶	Replace **motor P27** Repair wiring between **pin 3C of pump control B3 and pin 7 of motor P27**

End of test F

WINDSHIELD WASHER INOPERATIVE	TEST G

TEST STEPS	RESULTS	REMEDY
G1 VOLTAGE CHECK		
- With ignition key set to "run", operate the windshield washer and check for presence of 12V between pin 2 of windshield washer electric pump **P19** and ground	OK ▶	Carry-out **step G2**
	~~OK~~ ▶	Repair wiring between **pin S of relay I19 and pin 2 of electric pump P19**
G2 GROUNDING CHECK		
- With ignition key set to "run" check for presence of 0V (zero) at pin 1 of electric pump **P19**	OK ▶	Replace **electric pump P19**
	~~OK~~ ▶	Repair wiring between **pin 1 of electric pump P19 and pin 31 of relay I19**

End of test G

HEAD LAMPS WASHER INOPERATIVE	TEST H

TEST STEPS	RESULTS	REMEDY
H1 FUSE CHECK - Check fuse **F17** in fuse box **G1** for integrity	OK ▶ OK ▶	Carry-out **step H2** Replace **fuse F17**
H2 FUSE CHECK - Check fuse **F1** in fuse box **G1** for integrity	OK ▶ OK ▶	Carry-out **step H3** Replace **fuse F1**
H3 VOLTAGE CHECK - With position lamps on, check for presence of 12V between pin 6 of parking lamps control unit **N41** and ground	OK ▶ OK ▶	Carry-out **step H4** Failure **of the lamps - - position circuit, refer to the applicable troubleshooting procedure**
H4 VOLTAGE CHECK - With position lamps on, check for presence of 12V between pin 3G of fuse box **G1** and ground	OK ▶ OK ▶	Carry-out **step H5** Repair wiring between **pin 6 of control unit N41 and pin 3G of fuse box G1**

(Cont.d)

HEAD LAMPS WASHER INOPERATIVE	TEST H

TEST STEPS	RESULTS	REMEDY
H5 VOLTAGE CHECK - Check for presence of 12V between pin 30 of head lamps washer electric pump relay I19 and ground	OK ▶ OK ▶	Carry-out step H7 Carry-out step H6
H6 VOLTAGE CHECK - Check for presence of 12V between pin 2N of of fuse box G1 and ground	OK ▶ OK ▶	Repair wiring between pin 30 of relay I19, pin 13 of connector G149 and pin 3H of fuse box G1 Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2
H7 VOLTAGE CHECK - With the position lamps on, check for presence of 12V between pin 56 of head lamps washer pump relay I19 and ground	OK ▶ OK ▶	Carry-out step H8 Repair wiring between pin 56 of relay I19, pin 3 of connector G149 and pin 5D of fuse box G1

(Cont.d)

HEAD LAMPS WASHER INOPERATIVE	TEST H

TEST STEPS	RESULTS	REMEDY
H8 RELAY CHECK - With ignition key set to "run", check the operation of head lamps washer pump relay **I19** by actuating the multiple switch and checking for presence, at intervals, of a high level logic signal on pin P of relay **I19**	OK ▶ ~~OK~~ ▶	Carry-out **step H9** Replace **relay I19**
H9 VOLTAGE CHECK - With ignition key set to "run", operate the windshield washer and check for presence of 12V between pin of the head lamps washer electric pump **P20** (GRY-BLK wire) and ground	OK ▶ ~~OK~~ ▶	Carry-out **step H10** Repair wiring between **pin of pump P20 (GRY-BLK wire) and pin P of relay I19**
H10 GROUNDING CHECK - Check for presence of 0V (zero) at pin of pump **P20** (BLK wire)	OK ▶ ~~OK~~ ▶	Replace **pump P20** Repair wiring between **pin of pump P20 (BLK wire) and ground point G53a**

End of test H

HORN INOPERATIVE	TEST I

TEST STEPS	RESULTS	REMEDY
NOTE: In case only one of the horn O2 does not operate, verify its connection to ground, or replace the horn.		
I1 FUSE CHECK - Check horn relay I3 fuse for integrity	OK ▶ ~~OK~~ ▶	Carry-out **step** I2 Replace **relay** I3
I2 GROUNDING CHECK - Operating the horn, check for presence of 0V (zero) at pin 3B of horn control switch **B5**	OK ▶ ~~OK~~ ▶	Carry-out **step** I3 Replace **switch B5**
I3 GROUNDING CHECK - Operate the horn and check for presence of 0V (zero) at pin 2G of fuse box **G1**	OK ▶ ~~OK~~ ▶	Carry-out **step** I4 Repair wiring between **pin 2G of fuse box G1 and pin 3B of horn control switch B5**

(Cont.d)

HORN INOPERATIVE	TEST I

TEST STEPS	RESULTS	REMEDY
I4 GROUNDING CHECK - Operate the horn and check for presence of 0V (zero) at pin 85 of horn relay **I3**	OK ▶ ~~OK~~ ▶	Carry-out **step I5** Repair wiring between **pin 85 of relay I3, pin 7 of connector G150 and pin 9H of fuse box G1**
I5 RELAY CHECK - Check relay **I3** for proper operation	OK ▶ ~~OK~~ ▶	Carry-out **step I6** Replace relay **I3**
I6 VOLTAGE CHECK - Check for presence of 12V between pin 30 of relay **I3** and ground	OK ▶ ~~OK~~ ▶	Carry-out **step I8** Carry-out **step I7**
I7 VOLTAGE CHECK - Check for presence of 12V between pin 86 of relay **I3** and ground	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 30 and pin 86 of horn relay I3** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

(Cont.d)

HORN INOPERATIVE	TEST I

TEST STEPS		RESULTS	REMEDY
I8	VOLTAGE CHECK		
- Operate the horn and check for presence of 12V between horn **O2** (PPL wire) and ground		OK ▶	Replace horn O2
		~~OK~~ ▶	Repair wiring between **pin 87 of relay I3 and horn O2 (PPL wire)**

End of test I

ELECTRICAL SYSTEM

SUBJECT FOR CANADA VERSION ONLY

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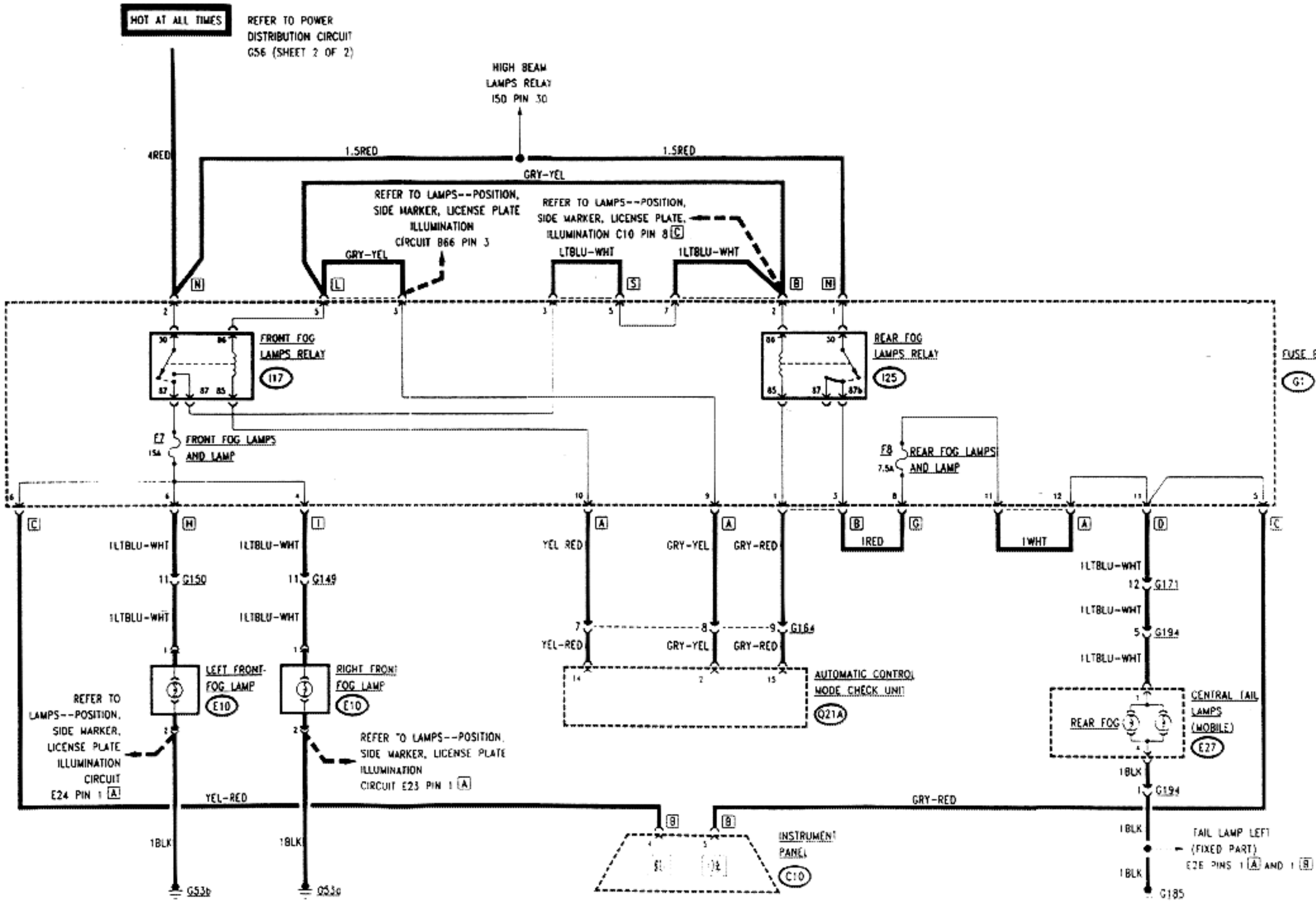
FOGLAMPS - - FRONT AND REAR



GENERAL

When the ignition key is in "run" position the front and rear foglamps can be turned on. Refer to low beam lamps chapter for further details.
Switching on of the front and/or rear fog lamps is indicated by the illumination of the corresponding warning lamps on the instrument panel.
The system is protected by two fuses in the fuse box **G1**, as follows:

- Fuse **F7** (15A) FRONT FOG LAMPS AND LAMP.

- Fuse **F8** (7.5A) REAR FOG LAMPS AND LAMP.

OPERATIONAL DESCRIPTION

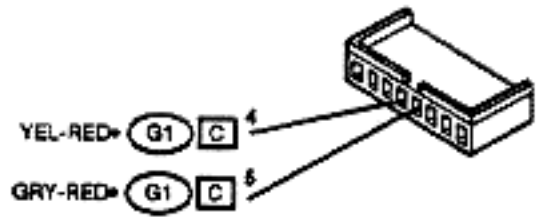
12V from the battery is applied to the fuse box **G1** and to common contact of front fog lamps relay **I17.**
The electric power reaches the coil of rear foglamps relay **I25.**
Energization of front foglamps relay **I17**, activated by the switch on the air conditioning control unit **Q21A**, energizes the corresponding line protected by fuse **F7** in fuse box **G1**.
Therefore, electric power is applied to left and right front foglamp **E10**, connected in parallel, and the lamps are turned on.
Energization of rear foglamps relay **I25**, activated by the automatic control mode check unit **Q21A**, energizes the corresponding line protected by fuse **F8** in fuse box **G1**.
Therefore, electric power is applied to terminals of central tail lamp **E27**, and the lamps are turned on.
Two lines derived from the front and rear fog lamps lines are connected to the instrument panel **C10**. In this way, the corresponding warning lamps on the instrument panel will illuminate any time the front and/or rear fog lamps are switched on.

TROUBLESHOOTING TABLE

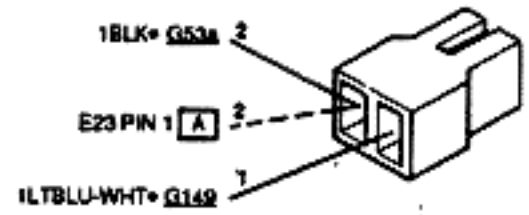
FAULT TYPE	FAILED COMPONENT										
	F7 FUSE	F8 FUSE	C10 FRONT FOG LAMP	C10 FRONT FOG LAMP	E10 R.H. FRONT FOG LAMP	E10 L.H. FRONT FOG LAMP	E27 REAR CENTER LAMP	117 RELAY	125 RELAY	Q21A CONTROL UNIT	G1 FUSE BOX
BOTH FRONT AND REAR FOG LAMPS INOPERATIVE										●	
BOTH FRONT FOG LAMPS INOPERATIVE	●				●	●		●		●	●
LEFT FRONT FOG LAMP INOPERATIVE	●					●		●			●
RIGHT FRONT FOG LAMP INOPERATIVE	●				●			●			●
REAR FOG LAMP INOPERATIVE		●					●		●	●	●
FRONT FOG LAMPS WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE	●			●							●
REAR FOG LAMP WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE		●	●								●

NOTE: Before carrying-out any troubleshooting, check the integrity of warning lamp on instrument panel by pressing the test button.

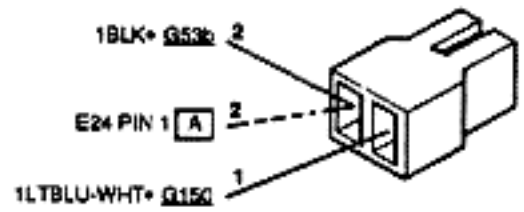
Instrument panel	C10 B



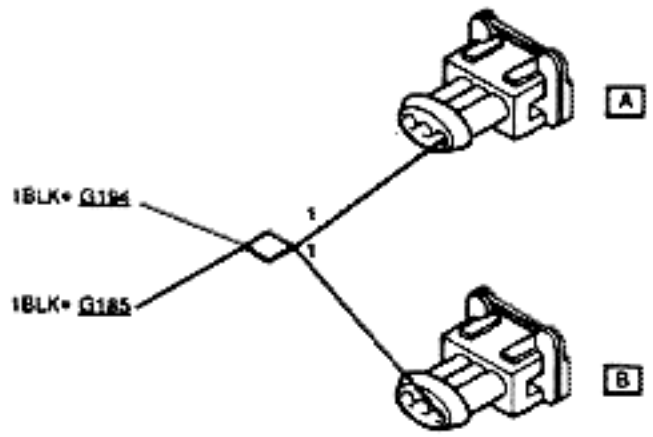
Right front fog lamp	E10



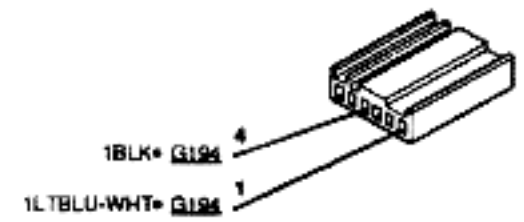
Left front fog lamp	E10



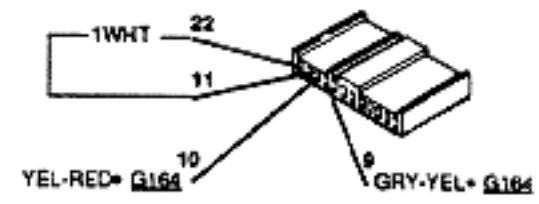
Tail lamp, left (fixed part)	E26



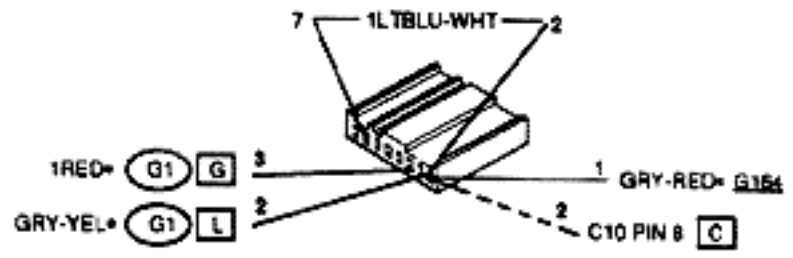
Central tail lamps (mobile)	E27



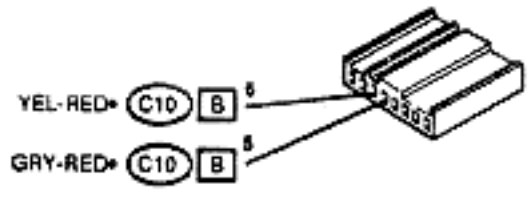
Fuse box	G1 A



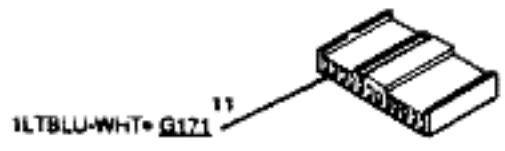
Fuse box	G1 B



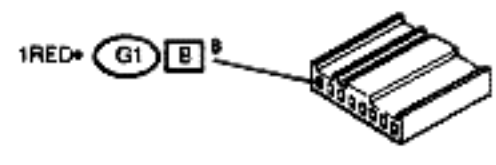
Fuse box	G1 C



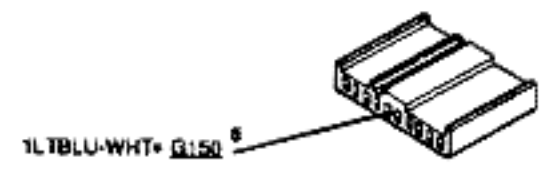
Fuse box	G1 D



Fuse box	G1 G



Fuse box	G1 H



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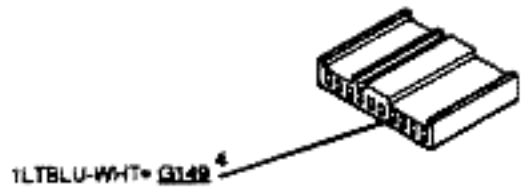
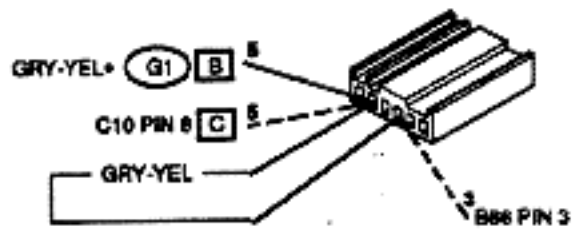
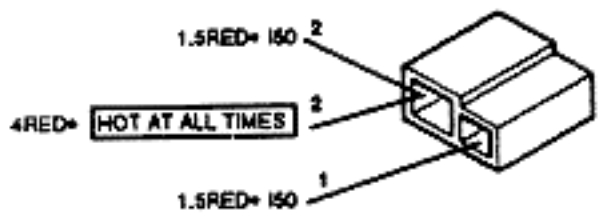
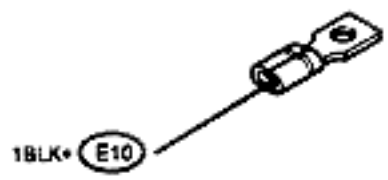
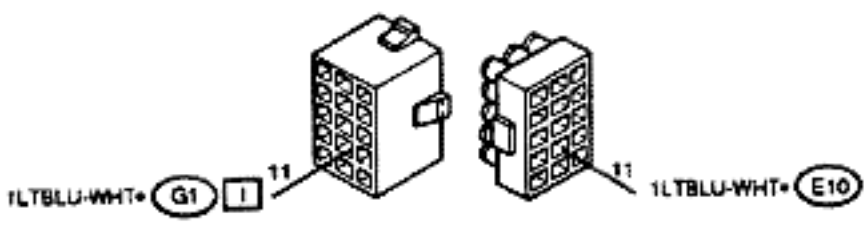
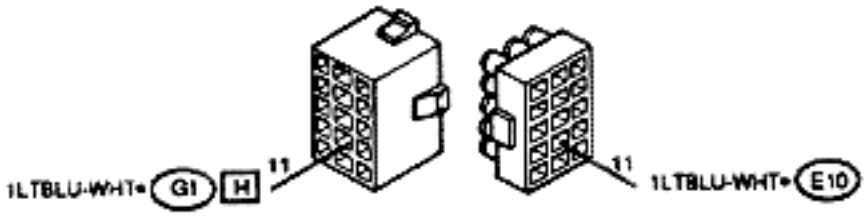
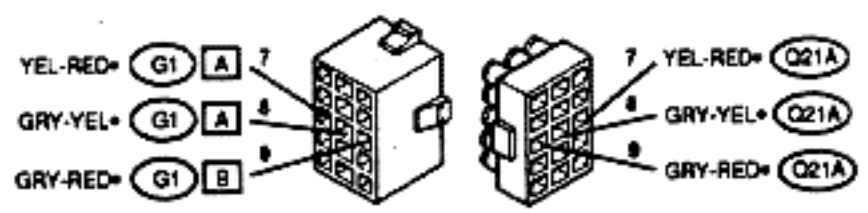
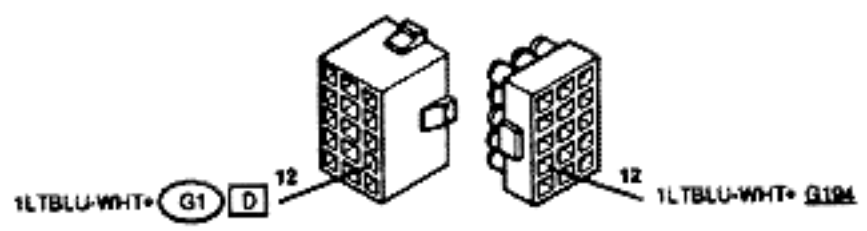
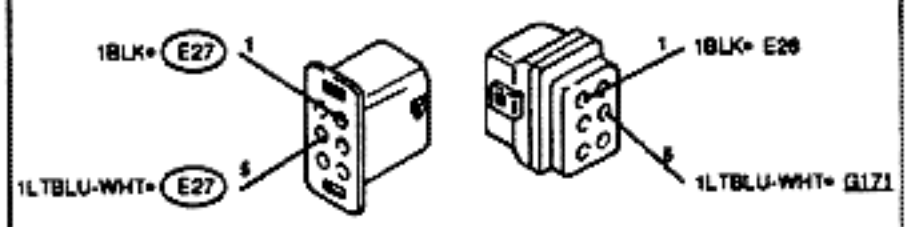
Fuse box G1 I	Fuse box G1 L
	
Fuse box G1 N	**Fuse box G1 S**
	
Engine compartment right side ground connection G53a	**Engine compartment left side ground connection G53b**
	
Connector, circuit board to engine compartment right side wiring G149	**Connector, circuit board to engine compartment left side wiring G150**
	
Connector, circuit board to air conditioning wiring G164	**Connector, circuit board to left rear wiring G171**
	
Trunk left side ground G185	**Connector, left rear wiring to rear central lamp wiring G194**
	

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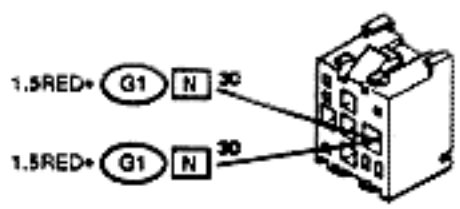
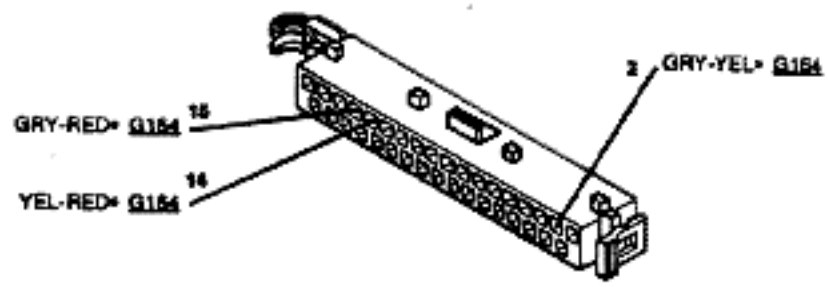
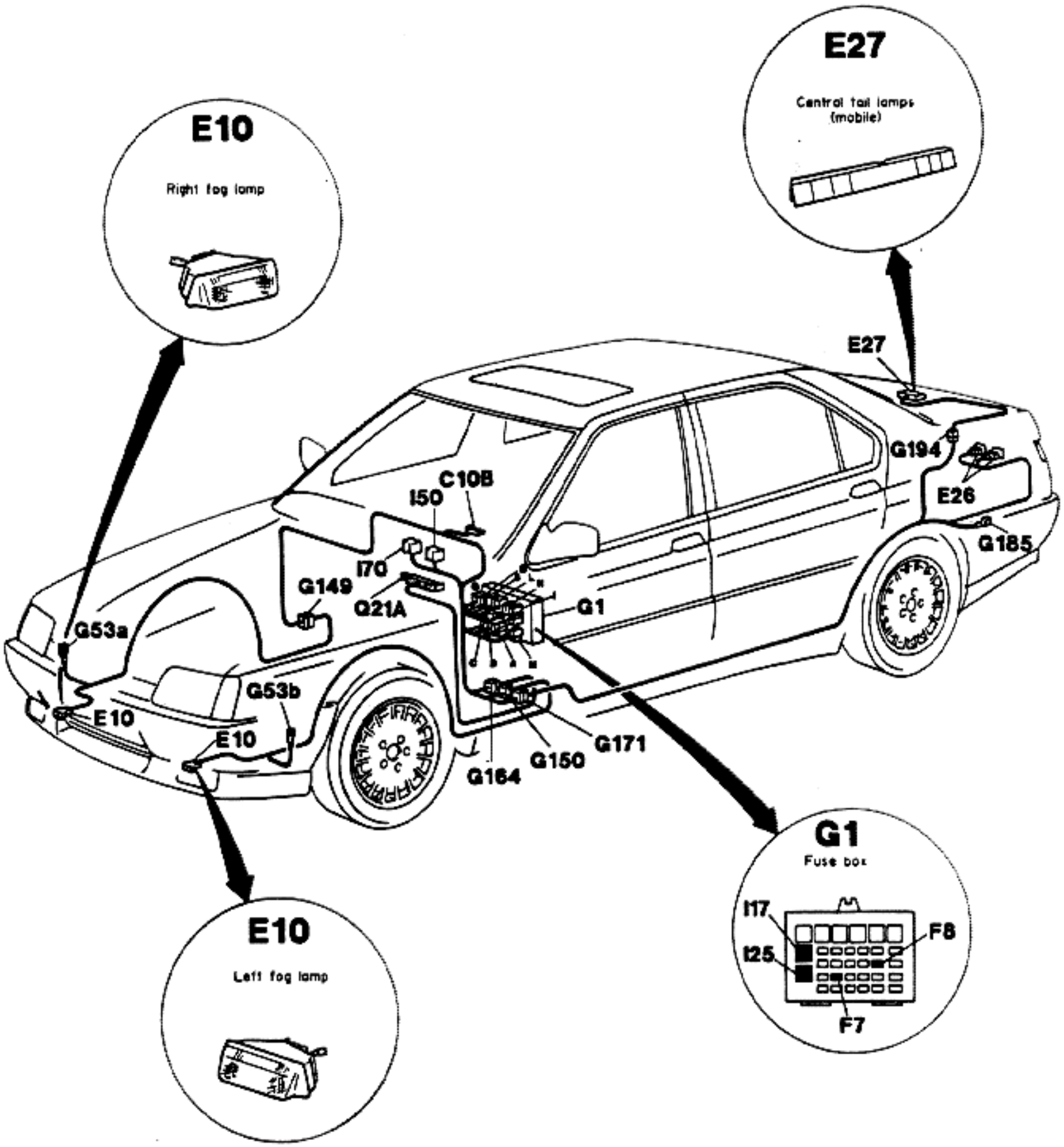
High beam lamps relay	I50	Automatic control mode check unit	Q21A







BOTH FRONT AND REAR FOG LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position.		
A1 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 3 L** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Failure of the lamps - - position, side marker, license plate illumination circuit, refer to the relevant troubleshooting** **Go to step A2**
A2 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 5L** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step A3** **Repair wiring between pin 5L of fuse box G1 and pin 3L of fuse box G1**
A3 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 2N** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Failure of the air conditioning system, refer to the relevant troubleshooting procedure** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

End of test A

BOTH FRONT FOG LAMPS INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position.		
B1 FUSE CHECK - Check fuse **F7** (15A) in fuse box **G1**	OK ▶ ~~OK~~ ▶	Go to **step B2** Replace **fuse F7**
B2 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 86** of relay **I17** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step B3** Repair wiring between **pin 5L of fuse box G1 and pin 86 of relay I17**
B3 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 85** of relay **I17** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step B4** Go to **step B5**
B4 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 30** of relay **I17** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Replace **relay I17** Repair wiring between **pin 2N of fuse box G1 and pin 30 of relay I17**

(Cont.d)

BOTH FRONT FOG LAMPS INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B5 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 7** of connector **G164** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 7 of connector G164 and pin 10A of fuse box G1** Go to **step B6**
B6 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 14** of automatic control mode check **Q21A** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 14 of control unit Q21A and pin 7 of connector G164** Go to **step B7**
B7 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 8** of connector **G164** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 8 of connector G164 and pin 9A of fuse box G1** Go to **step B8**

(Cont.d)

BOTH FRONT FOG LAMPS INOPERATIVE	TEST B

TEST STEPS		RESULTS	REMEDY
B8	VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 2** of automatic control mode check unit **Q21A** Meter reads 12V?		OK ▶	Repair wiring between **pin 2 of control unit Q21A and pin 8 of connector G164**
		~~OK~~ ▶	Failure of the air conditioning system, refer to the relevant troubleshooting procedure

End of test B

LEFT FRONT FOG LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position.		
C1 LAMP CHECK - Check left front fog lamp **E10**	OK ▶ ~~OK~~ ▶	Go to **step C2** Replace **left front fog lamp E10**
C2 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 11** of connector **G150** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step C3** Repair wiring between **pin 11 of connector G150 and pin 6H of fuse box G1**
C3 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 1** of left front fog lamp **E10** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step C4** Repair wiring between **pin 1 of left front fog lamp E10 and pin 11 of connector G150**

(Cont.d)

LEFT FRONT FOG LAMP INOPERATIVE	TEST C

TEST STEPS		RESULTS	REMEDY
C4	VOLTAGE CHECK		
- Move voltmeter (-) lead to ground **G53b** Meter reads 12V?		OK ▶	Repair wiring between **pin 2 of left front fog lamp E10 and ground G53b**
		~~OK~~ ▶	Repair **ground G53b**

End of test C

RIGHT FRONT FOG LAMP INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position.		
D1. LAMP CHECK - Check right front fog lamp **E10**	OK ▶ ~~OK~~ ▶	Go to **step D2** Replace **left front fog lamp E10**
D2 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 11** of connector **G149** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step D3** Repair wiring between **pin 11 of connector G150 and pin 4l of fuse box G1**
D3 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 1** of right front fog lamp **E10** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step D4** Repair wiring between **pin 1 of right front fog lamp E10 and pin 11 of connector G149**

(Cont.d)

RIGHT FRONT FOG LAMP INOPERATIVE	TEST D

TEST STEPS		RESULTS	REMEDY
D4	VOLTAGE CHECK		
- Move voltmeter (-) lead to ground **G53a** Meter reads 12V?		OK ▶	Repair wiring between **pin 2 of right front fog lamp E10 and ground G53a**
		~~OK~~ ▶	Repair **ground G53a**

End of test D

REAR FOG LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position. Before carrying out any troubleshooting, check the integrity of warning lamp on instrument panel by pressing the test button. The central tail lamp **E27** includes two bulbs connected in parallel. Replacement of a single bulb is allowed in case one of the two bulbs does not switch on		
E1 WARNING LAMP CHECK - Check if the rear fog lamp warning lamp on instrument panel illuminates	OK ▶ ~~OK~~ ▶	Go to **step E2** Go to **step E8**
E2 LAMP CHECK - Check central tail lamp **E27**	OK ▶ ~~OK~~ ▶	Go to **step E3** Replace **central tail lamp E27**
E3 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 12** of connector **G171** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step E4** Repair wiring between **pin 11D of fuse box G1 and pin 12 of connector G171**

(Cont.d)

REAR FOG LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E4 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 5** of connector **G194** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step E5** Repair wiring between **pin 12 of connector G171 and pin 5 of connector G194**
E5 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 1** of central tail lamp **E27** Meter reads 12V ?	OK ▶ ~~OK~~ ▶	Go to **step E6** Repair wiring between **pin 1 of central tail lamp and pin 5 of connector G194**
E6 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 1** of connector **G194** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4 of central tail lamp and pin 1 of connector G194** Go to **step E7**

(Cont.d)

REAR FOG LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E7 VOLTAGE CHECK - Move voltmeter (-) lead to ground **G185** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of connector G194 and ground G185** Repair **ground G185**
E8 FUSE CHECK - Check fuse **F8** (7.5 A) in fuse box **G1**	OK ▶ ~~OK~~ ▶	Go to **step E9** Replace **fuse F8**
E9 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 86** of relay **I25** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step E10** Repair wiring between **pin 86 of relay I25 and pin 2B of fuse box G1**
E10 VOLTAGE CHECK - **Move voltmeter (-) lead to pin 85 of relay I25** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step E13** Go to **step E11**

(Cont.d)

REAR FOG LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E11 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 15** of automatic control mode check unit **Q21A** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step E12** Failure **of the air conditioning sistem, refer to the relevant troubleshooting procedure**
E12 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 9** of connector **G164** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 9 of connector G164 and pin 1B of fuse box G1** Repair wiring between **pin 9 of connector G164 and pin 15 of control unit Q21A**
E13 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 1N** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step E14** Repair wiring between **pin 1N and 2N of fuse box G1**

(Cont.d)

REAR FOG LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
E14 VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 87b** of relay **I25** Meter reads 12V?	OK ▶	Go to **step E15**
	~~OK~~ ▶	Replace **relay I25**
E15 VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 8G** of fuse box **G1** Meter reads 12V?	OK ▶	Go to **step E16**
	~~OK~~ ▶	Repair wiring between **pin 8G and 3B of fuse box G1**
E16 VOLTAGE CHECK		
- Move voltmeter (-) lead to **pin 12A** of fuse box **G1** Meter reads 12V?	OK ▶	Repair wiring between **pin 12A and 11D of fuse box G1**
	~~OK~~ ▶	Repair wiring between **pin 11A and 12A of fuse box G1**

End of test E

FRONT FOG LAMPS WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position.		
F1 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 4B** of instrument panel **C10** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Replace **instrument panel C10** Go to **step F2**
F2 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 6C** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4B of instrument panel C10 and pin 6C of fuse box G1** Replace **fuse box G1**

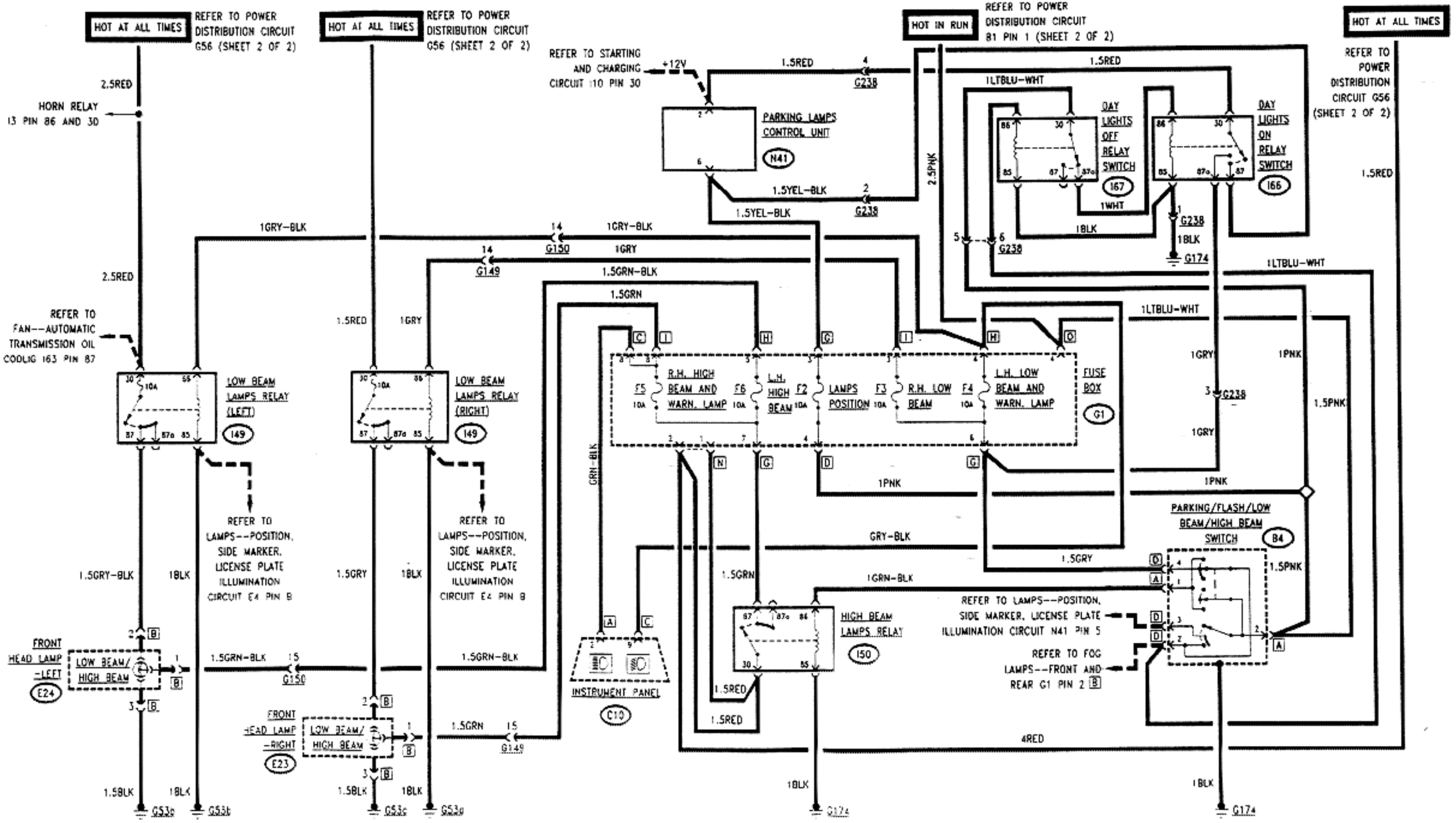
End of test F

REAR FOG LAMP WARNING LAMP ON INSTRUMENT PANEL INOPERATIVE	TEST G

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position. Before carrying out any troubleshooting check		
G1 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 5B** of instrument panel **C10** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Replace **instrument panel C10** Go to **step G2**
G2 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 5C** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 5B of instrument panel C10 and pin 5C of fuse box G1** Replace **fuse box G1**

End of test G

LAMPS - - LOW BEAM AND HIGH BEAM



GENERAL

When the ignition key is in "run" position the low beam lamps turned on and the high beam lamps can be turned on with the multiple switch **B4** (refer to the position lamps circuit for further details).
The low beam and high beam lamps are controlled by the PARKING/FLASH/LOW BEAM/HIGH BEAM switch **B4**.
The system is protected by five fuses in the fuse box **G1**, as follows:

- Fuse **F2** (7,5A) POSITION LAMPS.
- Fuse **F3** (10A) R.H. LOW BEAM.
- Fuse **F4** (10A) L.H. LOW BEAM AND WARN. LAMP.
- Fuse **F5** (10A) R.H. HIGH BEAM AND WARN. LAMP.
- Fuse F6 (10A) L.H. HIGH BEAM.

OPERATIONAL DESCRIPTION

12V from the battery are applied to high beam lamps relay **I50, I66, I67** and to multiple switch **B4** (pin 2A) when the ignition key is in "run" position.
The multiple switch **B4** controls illumination of various lamps, as determined by the setting of the switch.

With the ignition key in "run" position, and the low/high beam selector set to low beam, 12V are applied to fuses **F2, F3** and **F4** through contacts of switch **B4**.
Power supply from fuses **F3** and **F4** is also applied to the low beam indicator lamp on the instrument panel, and to the coil of low beam lamps relays **I49**. 12V from the battery are applied to the head lamp units **E23** and **E24** through the relay contacts, and the low beam lamps are turned on.

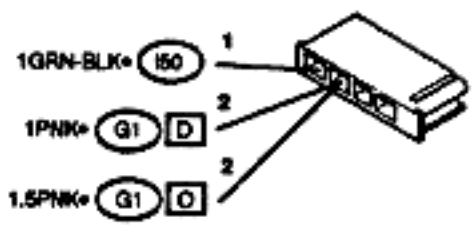
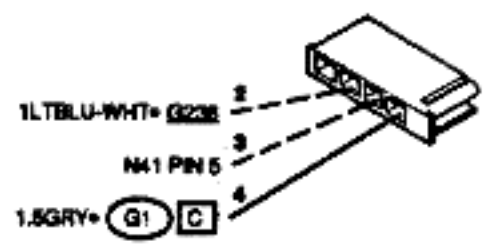
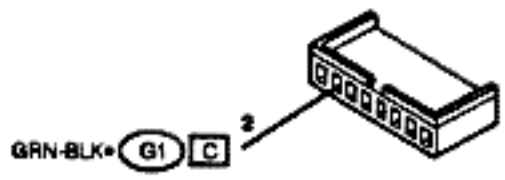
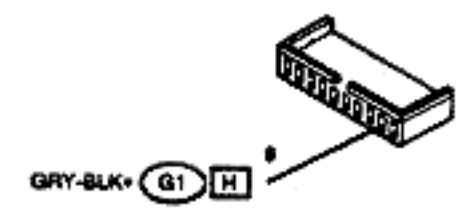
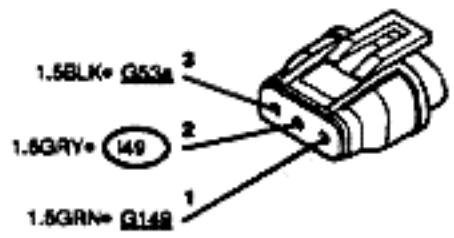
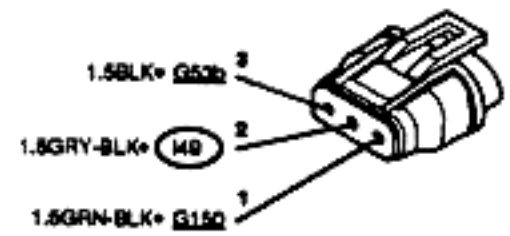
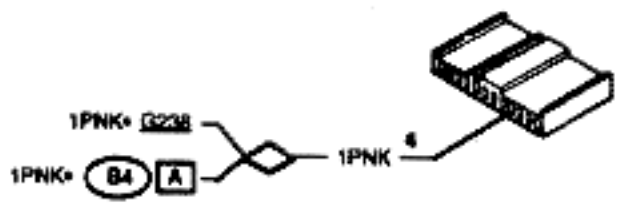
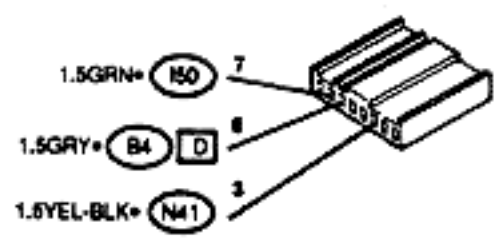
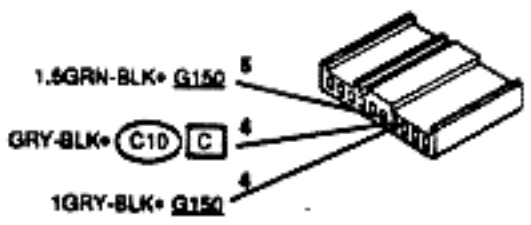
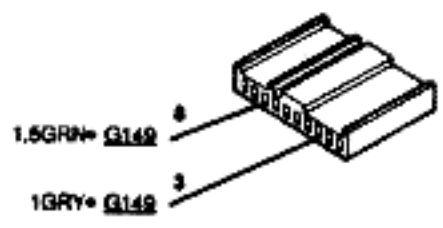
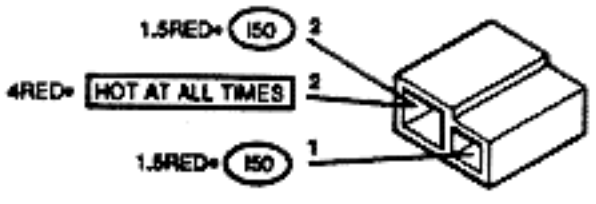
NOTE

The low beam lamps and circuit are also protected by the 10A fuses of the low beam lamps relays.

Pushing the low/high beam selector in the "high beam" position, 12V are applied to coil of high beam lamps relay **I50** through contacts of switch **B4**.
12V from the battery are applied to the head lamp units **E23** and **E24** through the relay **I50** contacts and fuses **F5** and **F6**, and the high beam lamps are turned on.
Fuse **F5** also energizes the high beam indicator lamp on the instrument panel.
The multiple switch **B4** is provided with additional momentary position contacts.
Pulling the low/high beam selector lever the flash contacts close, and momentarily energize the high beam lamp relay **I50**, with conseguent flashing of the relevant lamps.

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT														
	F2 FUSE	F3 FUSE	F4 FUSE	F5 FUSE	F6 FUSE	(149) RELAY FUSE SX	(149) RELAY FUSE DX	(E23) FRONT RIGHT OPTICAL UNIT	(E24) FRONT LEFT OPTICAL UNIT	(84) MULTIPLE SWITCH	(149) RELAY SX	(149) RELAY DX	(150) RELAY	(166) RELAY	(167) RELAY	(G1) FUSE BOX
BOTH LOW BEAM LAMPS INOPERATIVE	●							●	●					●	●	●
LEFT LOW BEAM LAMP INOPERATIVE			●			●			●		●					●
RIGHT LOW BEAM LAMP INOPERATIVE		●					●	●				●				●
BOTH HIGH BEAM LAMPS INOPERATIVE										●			●			●
LEFT HIGH BEAM LAMP INOPERATIVE					●				●							●
RIGHT HIGH BEAM LAMP INOPERATIVE				●				●								●

Parking/Flash/Low beam/High beam switch B4 A	Parking/Flash/Low beam/High beam switch B4 D
	
Instrument panel C10 A	**Instrument panel C10 C**
	
Front head lamp-right E23 B	**Front head lamp-left E24 B**
	
Fuse box G1 C	**Fuse box G1 D**
	
Fuse box G1 G	**Fuse box G1 H**
	
Fuse box G1 I	**Fuse box G1 N**
	

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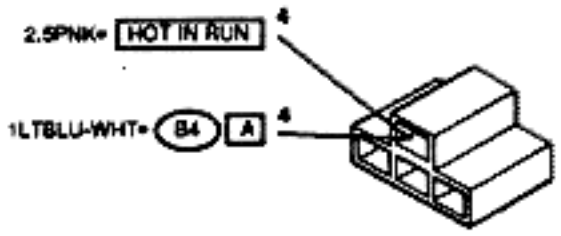
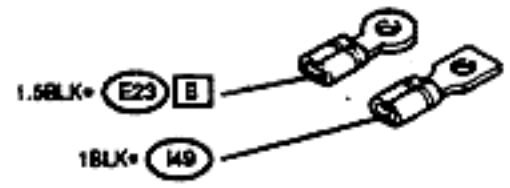
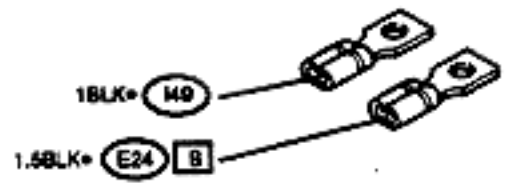
Fuse box	G10



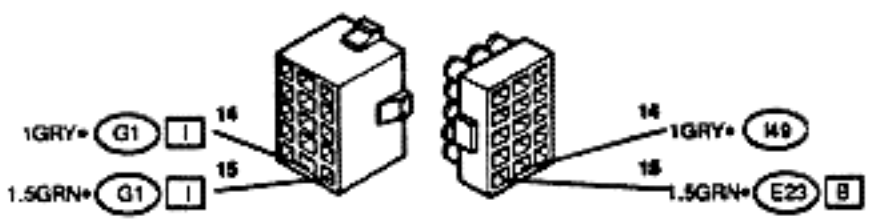
Engine compartment right side ground connection	G53a



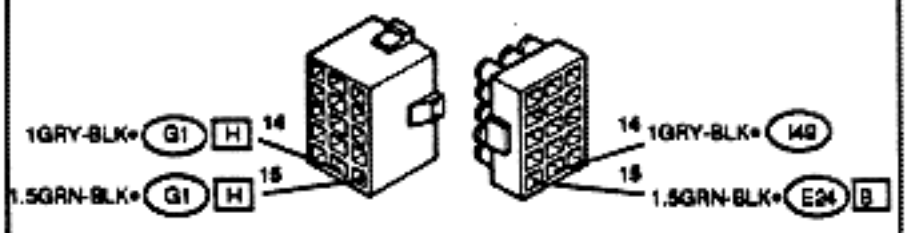
Engine compartment left side ground connection	G53b



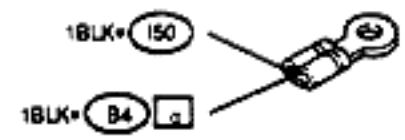
Connector, circuit board to engine compartment right side wiring	G149



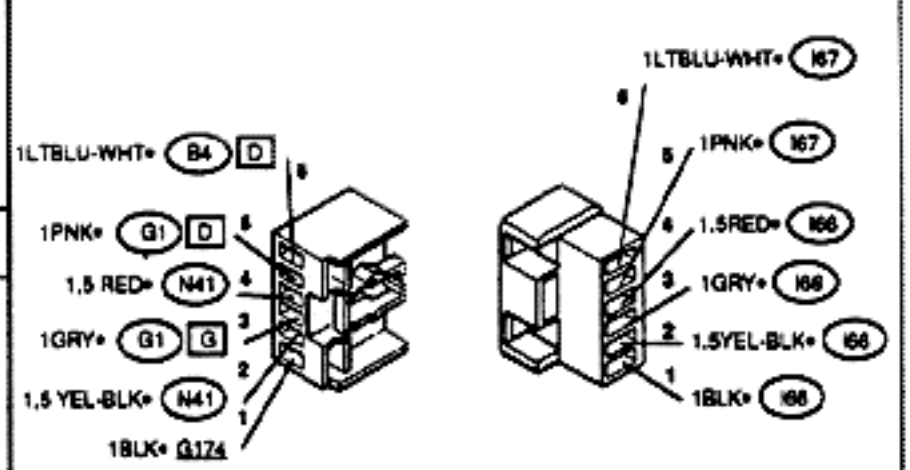
Connector, circuit board to engine compartment left side wiring	G150



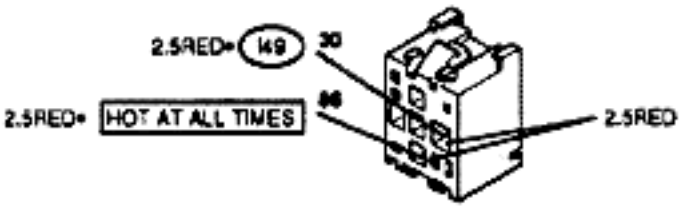
Steering wheel column support ground	G174



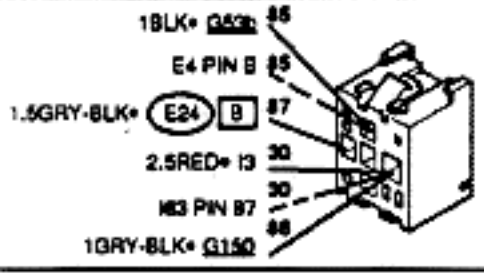
Terminal strip wiring connection with day lights wiring	G238



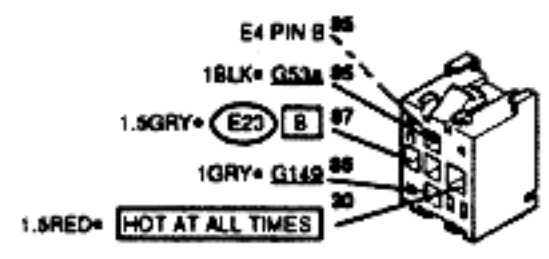
Horn relay	I3



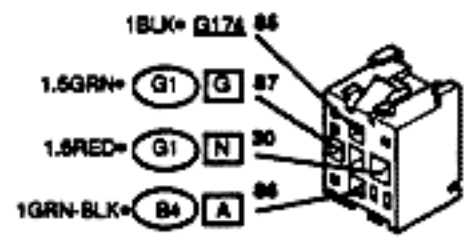
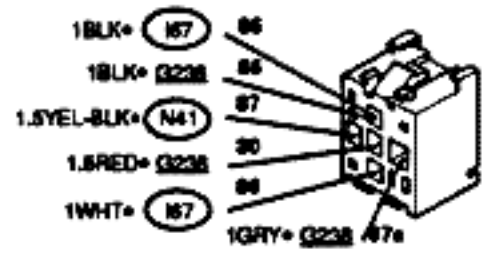
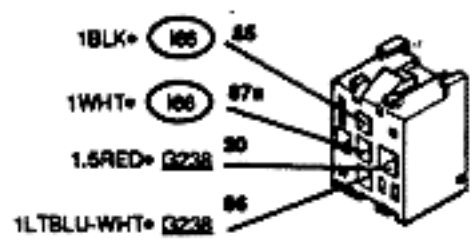
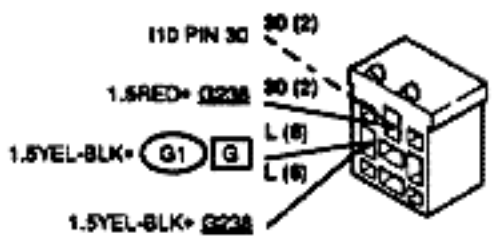
Low beam lamps relay (left)	I49

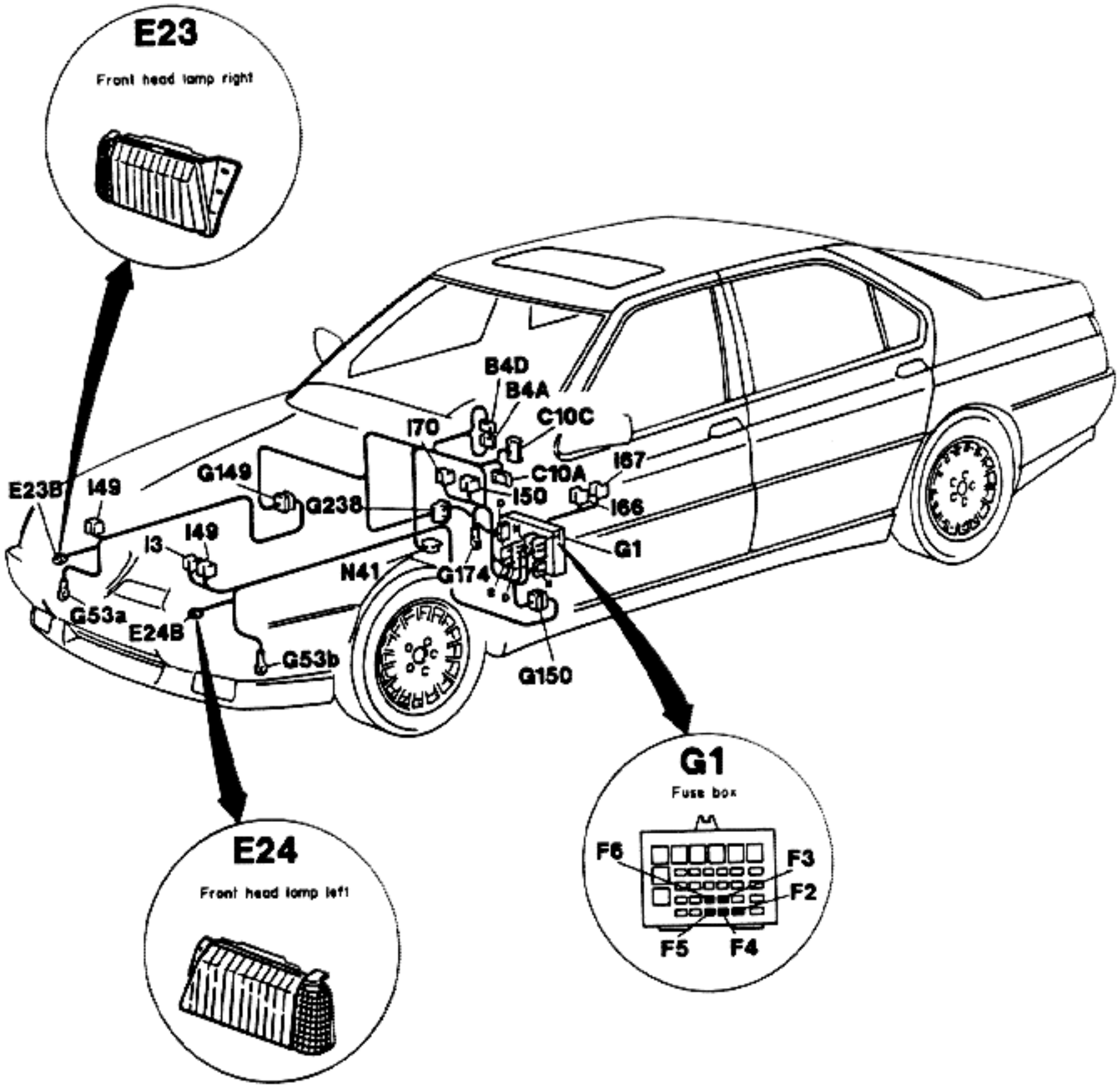


Low beam lamps relay (right)	I49



(Cont.d)

High beam lamps relay	I50	Day lights on relay switch	I66
			
Day lights off relay switch	**I67**	**Parking lamps control unit**	**N41**
			



BOTH LOW BEAM LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position.		
A1 FUSE CHECK - Check fuse **F2** (7.5A) in fuse box **G1**	OK ▶ ~~OK~~ ▶	Go to **step A2** Replace **fuse F2**
A2 VOLTAGE CHECK - Connect : • voltmeter (-) lead to known good ground • voltmeter (+) lead to pin **87a** of relay **I67** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step A7** Go to **step A3**
A3 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 30** of relay **I67** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Replace **relay I67** Go to **step A4**
A4 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 5** of connector **G238** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 5 of connector G238 and pin 30 of relay I67** Go to **step A5**

(Cont.d)

BOTH LOW BEAM LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - Move voltmeter (+) lead to **2A** of multiple switch **B4** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 2A of switch B4 and pin 5 of connector G238** Go to **step A6**
A6 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 4O** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4O of fuse box G1 and pin 2A of multiple switch B4** Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2
A7 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 86** of relay **I66** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step A8** Repair wiring between **pin 86 of relay I66 and pin 87a of relay I67**

(Cont.d)

BOTH LOW BEAM LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A8 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 85** of relay **I66** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step A11** Go to **step A9**
A9 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 1** of connector **G238** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of connector G238 and pin 85 of relay I66** Go to **step A10**
A10 VOLTAGE CHECK - Move voltmeter (-) lead to ground **G174** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of connector G238 and ground G174** Repair **ground G174**
A11 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 87** of relay **I66** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step A15** Go to **step A12**

(Cont.d)

BOTH LOW BEAM LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A12 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 6** of control unit **N41** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 6 of control unit N41 and pin 87 of relay I66** Go to **step A13**
A13 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 3G** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 3G of fuse box G1 and pin 6 of control unit N41** Go to **step A14**
A14 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 4D** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Replace **fuse box G1** Repair wiring between **pin 4D of fuse box G1 and pin 2A of multiple switch B4**
A15 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 30** of relay **I66** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step A17** Go to **step A16**

(Cont.d)

BOTH LOW BEAM LAMPS INOPERATIVE	TEST A

TEST STEPS	RESULTS	REMEDY
A16 VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 4** of connector **G238** Meter reads 12V?	OK ▶	Repair wiring between **pin 4 of connector G238 and pin 30 of relay I66**
	~~OK~~ ▶	Repair wiring between **pin 4 of connector G238 and pin 2 of control unit N41**
A17 VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 87a** of relay **I66** Meter reads 12V?	OK ▶	Go to **step A18**
	~~OK~~ ▶	Replace relay I66
A18 VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 3** of connector **G238** Meter reads 12V?	OK ▶	Repair wiring between **pin 3 of connector G238 and pin 6G of fuse box G1**
	~~OK~~ ▶	Repair wiring between **pin 3 of connector G238 and pin 87a of relay I66**

End of test A

LEFT LOW BEAM LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position. Before carrying-out any troubleshooting procedure, check the integrity of warning lamp on instrument panel by pressing the test button.		
B1 INDICATOR LAMP CHECK - Check if low beam indicator lamp on instrument panel is illuminated	OK ▶ ~~OK~~ ▶	**Go to step B4** **Go to step B2**
B2 FUSE CHECK - Check fuse **F4** (10A) in fuse box **G1**	OK ▶ ~~OK~~ ▶	**Go to step B3** **Replace fuse F4**
B3 VOLTAGE CHECK - Connect : • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 9C** of instrument panel **C10** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Replace low beam indicator lamp on instrument panel C10** Repair wiring between **pin 9C of instrument panel C10 and pin 4H of fuse box G1**

(Cont.d)

LEFT LOW BEAM LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B4 FUSE CHECK - Check fuse of low beam lamp relay **I49**	OK ▶ ~~OK~~ ▶	Go to step B5 Replace relay I49 fuse
B5 LAMP CHECK - Check low/high beam lamp in head lamp **E24**	OK ▶ ~~OK~~ ▶	Go to step B6 Replace lamp E24
B6 VOLTAGE CHECK - Connect : • voltmeter (-) lead to known good ground • voltmeter (+) lead to pin 14 of connector G150 Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to step B7 Repair wiring between pin 14 of connector G150 and pin 4H of fuse box G1
B7 VOLTAGE CHECK - Move voltmeter (+) lead to pin 86 of relay I49 Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to step B8 Repair wiring between pin 86 of relay I49 and pin 14 of connector G150

(Cont.d)

LEFT LOW BEAM LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B8 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 85 of relay I49** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step B10** **Go to step B9**
B9 GROUNDING CHECK - Move voltmeter (-) lead to **ground G53b** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **ground G53b and pin 85 of relay I49** Repair **ground G53b**
B10 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 30 of relay I49** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step B11** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
B11 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 87 of relay I49** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step B12** Replace **relay I49**

(Cont.d)

LEFT LOW BEAM LAMP INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
B12 VOLTAGE CHECK		
Move voltmeter (+) lead to **pin 2B of lamp E24** Meter reads 12V?	OK ▶	**Go to step B13**
	~~OK~~ ▶	Repair wiring between **pin 2B of lamp E24 and pin 87 of relay I49**
B13 GROUNDING CHECK		
- Move voltmeter (-) lead to ground **G53b** Meter reads 12V?	OK ▶	Repair wiring between **pin 3B of lamp E24 and ground G53b**
	~~OK~~ ▶	Repair **ground G53b**

End of test B

RIGHT LOW BEAM LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key set to "run" position.		
C1 FUSE CHECK - Check fuse **F3** (10A) in fuse box **G1**	OK ▶ ~~OK~~ ▶	Go to **step C2** Replace **fuse F3**
C2 RELAY FUSE CHECK - Check fuse of low beam lamp relay **I49**	OK ▶ ~~OK~~ ▶	Go to **step C3** Replace **relay I49 fuse**
C3 LAMP CHECK - Check low/high beam lamp in **head lamp E23** for integrity	OK ▶ ~~OK~~ ▶	Go to **step C4** Replace **lamp E23**
C4 VOLTAGE CHECK - Connect : • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 14** of connector **G149** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step C5** Repair wiring between **pin 14 of connector G149 and pin 3I of fuse box G1**

(Cont.d)

RIGHT LOW BEAM LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C5 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 86** of relay **I49** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step C6** Repair wiring between **pin 86 of relay I49 and pin 14 of connector G149**
C6 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 85** of relay **I49** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step C8** Go to **step C7**
C7 GROUNDING CHECK - Move voltmeter (-) lead to ground **G53a** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 85 of relay I49 and ground G53a** Repair **ground G53a**
C8 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 30** of relay **I49** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step C9** Failure **of power distribution circuit, refer to the relevant circuit of sheet 2 of 2**

(Cont.d)

RIGHT LOW BEAM LAMP INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
C9 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 87** of relay **I49** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step C10** Replace **relay I49**
C10 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 2B** of lamp **E23** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step C11** Repair wiring between **pin 2B of lamp E23 and pin 87 of relay I49**
C11 GROUNDING CHECK - Move voltmeter (-) lead to ground **G53a** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 3B of lamp E23 and ground G53a** Repair **ground G53a**

End of test C

BOTH HIGH BEAM LAMPS INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position and multiple switch to high beam for remainder of test D.		
D1 VOLTAGE CHECK - Connect : • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 86** of relay **I50** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step D6** Go to **step D2**
D2 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 1A** of multiple switch **B4** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1A of switch B4 and pin 86 of relay I50** Go to **step D3**
D3 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 2A** of multiple switch **B4** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step D4** Go to **step D5**
D4 GROUNDING CHECK - Move voltmeter (-) lead to ground **G174** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Replace **multiple switch B4** Repair **ground G174**

(Cont.d)

BOTH HIGH BEAM LAMPS INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D5 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 4O** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 4O of fuse box G1 and pin 2A of multiple switch B4** Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2
D6 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 85** of relay **I50** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step D8** Go to **step D7**
D7 GROUNDING CHECK - Move voltmeter (-) lead to ground **G174** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 85 of relay I50 and ground G174** Repair **ground G174**
D8 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 30** of relay **I50** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step D10** Go to **step D9**

(Cont.d)

BOTH HIGH BEAM LAMPS INOPERATIVE	TEST D

TEST STEPS	RESULTS	REMEDY
D9 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 2N** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 30 of relay I50 and pin 2N of fuse box G1** **Failure of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
D10 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 87** of relay **I50** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 87 of relay I50 and pin 7G of fuse box G1** Replace **relay I50**

End of test D

LEFT HIGH BEAM LAMP INOPERATIVE — TEST E

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position and low beam lamps selected to high beam for remainder of test E.		
E1 FUSE CHECK - Check fuse **F6** (10A) in fuse box **G1**	OK ▶ ~~OK~~ ▶	Go to **step E2** Replace **fuse F6**
E2 LAMP CHECK - Check high beam lamp in head lamp **E24** for integrity	OK ▶ ~~OK~~ ▶	Go to **step E3** Replace **lamp E24**
E3 VOLTAGE CHECK - Connect : • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 15** of connector **G150** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step E4** Repair wiring between **pin 15 of connector G150 and pin 5H of fuse box G1**
E4 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 1B** of lamp **E24** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step E5** Repair wiring between **pin 1B of lamp E24 and pin 15 of connector G150**

(Cont.d)

LEFT HIGH BEAM LAMP INOPERATIVE	TEST E

TEST STEPS		RESULTS	REMEDY
E5	GROUNDING CHECK		
- Move voltmeter (-) lead to ground **G53b** Meter reads 12V?		OK ▶	Repair wiring between **pin 3B of lamp E24 and ground G53b**
		~~OK~~ ▶	Repair **ground G53b**

End of test E

RIGHT HIGH BEAM LAMP INOPERATIVE — TEST F

TEST STEPS	RESULTS	REMEDY
NOTE: Turn ignition key to "run" position and low beam lamps selected to high beam for remainder of test F		
F1 INDICATOR LAMP CHECK - Check illumination of high beam indicator lamp on instrument panel **C10**	OK ▶ ~~OK~~ ▶	Go to **step F4** Go to **step F2**
F2 FUSE CHECK - Check fuse F5 (10A) in fuse box **G1**	OK ▶ ~~OK~~ ▶	Go to **step F3** Replace **fuse F5**
F3 VOLTAGE CHECK - Connect : • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 2A** of instrument panel **C10** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Replace **high beam lamp on instrument panel C10** Repair wiring between **pin 2A of instrument panel C10 and pin 8C of fuse box G1**
F4 LAMP CHECK - Check high beam lamp in head lamp **E23**	OK ▶ OK ▶	Go to **step F5** Replace lamp **E23**

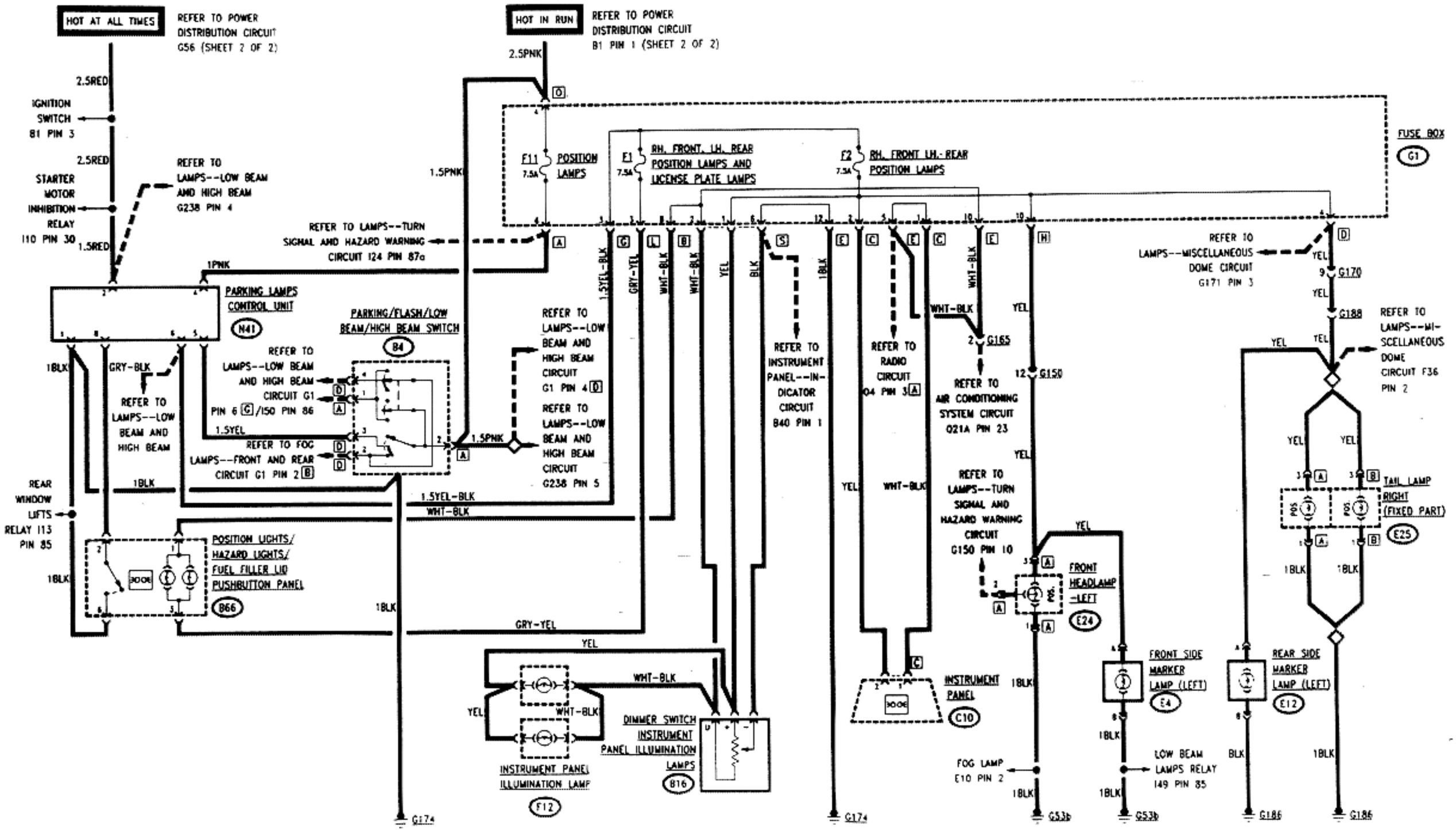
(Cont.d)

RIGHT HIGH BEAM LAMP INOPERATIVE	TEST F

TEST STEPS	RESULTS	REMEDY
F5 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 15** of connector **G149** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step F6** **Repair wiring between pin 15 of connector G149 and pin 8I of fuse box G1**
F6 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 1B** of lamp **E23** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step F7** **Repair wiring between pin 1B of lamp E23 and pin 15 of connector G150**
F7 GROUNDING CHECK - Move voltmeter (-) lead to ground **G53a** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Repair wiring between pin 3B of lamp E23 and ground G53a** **Repair ground G53a**

End of test F

LAMPS - - POSITION, SIDE MARKER, LICENSE PLATE ILLUMINATION



GENERAL

The position, license and side marker lamps can be activated by the air conditioning pushbutton panel, or through the multiple switch. When the vehicle is running, activation is controlled by the multiple switch. When the ignition key is set to park position, the lamps can be activated by pressing the relevant button on the air conditioning pushbutton panel. When either switch is activated, simultaneous illumination of the four position lamps (two on the front and two on the rear), four side marker lamps (two on the front and two on the rear) and of the two license lamps is obtained. Furthemore, the instrument panel and pushbutton panel lighting will turn on as well as all different silk-screen printings of the vehicle; lighting of the instrument panel and pushbutton panel can be dimmed through a reostat, to allow proper reading of instruments and controls regardless of exterior lighting. Rotation of the reostat completely upwards will turn off the instrument panel lighting. The sistem is protected by three fuses in the fuse box **G1**, as follows:

- Fuse **F1** (7.5A) R.H. FRONT, L.H. REAR POSITION LAMPS AND LICENSE PLATE LAMPS.
- Fuse **F2** (7.5A) R.H. FRONT L.H.REAR POSITION LAMPS.
- Fuse **F11** (7.5A) POSITION LAMPS

OPERATIONAL DESCRIPTION - LEFT FRONT AND RIGHT REAR POSITION AND SIDE MARKER LAMPS

With the ignition key set to "run" position, the battery power is supplied to the parking lamps control unit **N41** thrugh the fuse **F11** in fuse box **G1**; furthermore, 12V are applide to the multiple switch **B4** after "bridging" on fuse box **G1**.

Control unit **N41** activates illumination of the position lamps (12V at pin 6) when either the multiple switch or the relevant button on the pushbutton panel is actuated.

Electric poweroutput from pin 6 of control unit **N41** is applaied to fuses **F1** and **F2** of fuse box **G1**.

Fuse **F2** protects the power supply lines of position lampsin the front head lamp left **E24** and tail lamp right (fixed part) **E25**, of front side marker lamp **E4** and rear side marker lamp **E12** and of instrument panel **C10** lighting .

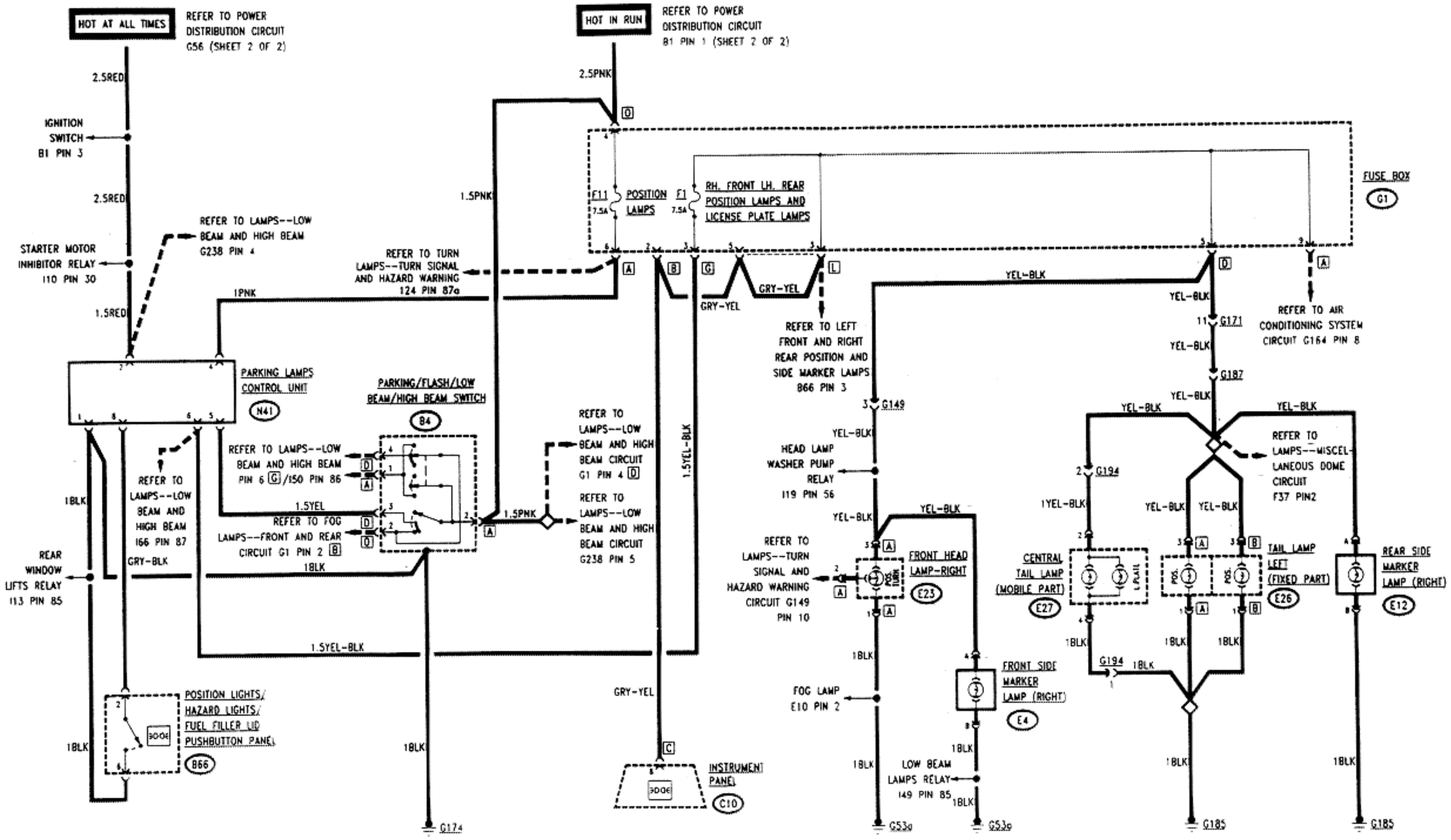
The power supply line protected by fuse **F2** is also connected to dimmer switch **B16** dimming the instrument panel illumination lamp **F12** and pushbutton panel **B66**.

Instrument panel illumination lamp **F12** and pushbutton panel **B66** can be turned off by rotating dimmer switch **B16** completely upwards.

TROUBLESHOOTING TABLE

FAULT TYPE	FAILED COMPONENT												
	F2 FUSE	F11 FUSE	(E4) L.H. FRONT SIDE MARKER	(E12) R.H. REAR SIDE MARKER	(E24) L.H. HEAD LAMP UNIT	(E25) L.H. TAIL LAMP UNIT	(F12) INSTR. PNL LIGHTING	(B4) MULTIPLE SWITCH	(B16) DIMMER SWITCH	(B66) PUSHBUTTON PANEL	(B66) PUSHBUTTON PANEL LIGHT	(N41) CONTROL UNIT	(G1) FUSE BOX
ALL LAMPS INOPERATIVE WITH CONTROL SWITCH ACTUATED		●						●		●		●	●
LEFT FRONT POSITION AND SIDE MARKER LAMPS INOPERATIVE	●		●		●			●		●			●
RIGHT REAR POSITION AND SIDE MARKER LAMPS INOPERATIVE	●			●		●		●		●			●
LEFT FRONT POSITION LAMP INOPERATIVE	●				●			●		●			●
LEFT FRONT SIDE MARKER LAMP INOPERATIVE	●		●					●		●			●
RIGHT REAR POSITION LAMP INOPERATIVE	●					●		●		●			●
PUSHBUTTON PANEL LIGHTING INOPERATIVE	●	●						●	●	●	●		●
INSTRUMENT PANEL LIGHTING INOPERATIVE	●	●					●		●				●
TEST PUSHBUTTON AND RHEOSTAT SERIGRAPHS LIGHTING INOPERATIVE	●						●	●	●	●			●

NOTE: Before carrying-out any troubleshooting, check the integrity of warning lamp on instrument panel by pressing the test button.



OPERATIONAL DESCRIPTION - RIGHT FRONT AND LEFT REAR POSITION LAMPS AND SIDE MARKER LAMPS, LICENSE PLATE LAMP

With the ignition key set to "run" position, the battery power is supplied to the parking lamps control unit **N41** thrugh the fuse **F11** in fuse box **G1**; furthermore, 12V are applide to the multiple switch **B4** after "bridging" on fuse box **G1**. Control unit **N41** activates illumination of the position lamps (12V at pin 6) when either the multiple switch or the relevant button on the pushbutton panel is actuated.

Electric poweroutput from pin 6 of control unit **N41** is applaied to fuses **F1** of fuse box **G1**.

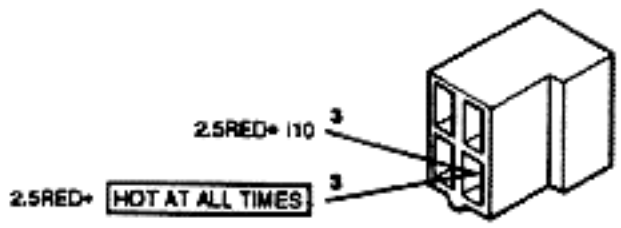
Fuse **F1** protects the power supply lines of position lamps in the front head lamp right **E23** and tail lamp left **E26**, of license plate lamp **E4** and rear side marker **E12** .

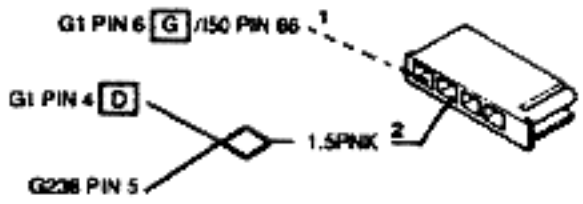
The power supply line protect ed by fuse **F1** is also connected to a circuit that monitors the illumination of position lamps indicator on the instrument panel **C10** and serigraphs on the automatic air conditioning controls.

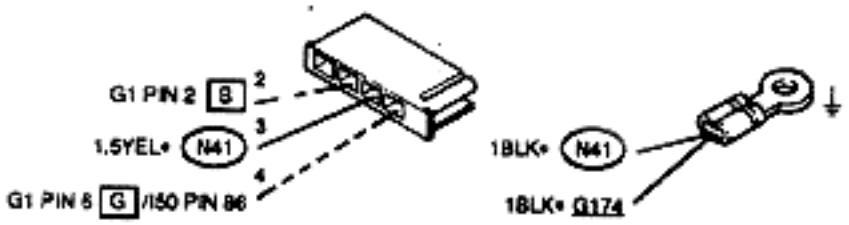
TROUBLESHOOTING TABLE

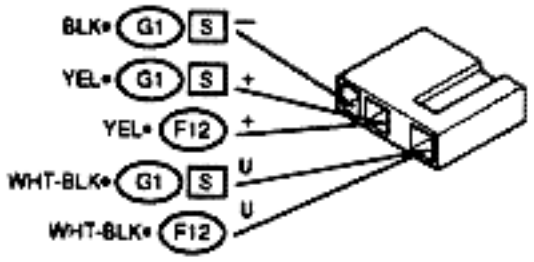
FAULT TYPE	FAILED COMPONENT										
	F1 FUSE	F11 FUSE	E4 R.H. FRONT SIDE MARKER	E12 L.H. REAR SIDE MARKER	E23 R.H. HEAD LAMP UNIT	E26 L.H. TAIL LAMP UNIT	E27 LICENSE LAMP	B4 MULTIPLE SWITCH	B66 PUSHBUTTON PANEL	C10 INSTR. PANEL INDICATOR	G1 FUSE BOX
RIGHT FRONT POSITION AND SIDE MARKER LAMPS INOPERATIVE	●	●	●		●			●	●		●
LEFT REAR POSITION AND SIDE MARKER LAMPS AND LICENSE PLATE LAMP INOPERATIVE	●	●		●		●	●	●	●		●
RIGHT FRONT POSITION LAMP INOPERATIVE	●				●			●	●		●
RIGHT FRONT SIDE MARKER LAMP INOPERATIVE	●		●					●	●		●
LICENSE PLATE LAMP INOPERATIVE	●						●	●	●		●
LEFT REAR POSITION LAMP INOPERATIVE	●							●	●		●
RIGHT REAR SIDE MARKER LAMP INOPERATIVE	●			●				●	●		●
POSITION LAMPS INDICATOR ON INSTRUMENT PANEL INOPERATIVE	●									●	●

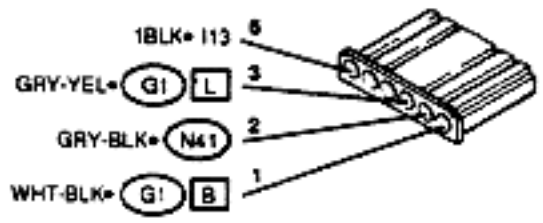
NOTE: Before carrying-out any troubleshooting, check the integrity of warning lamp on instrument panel by pressing the test button.

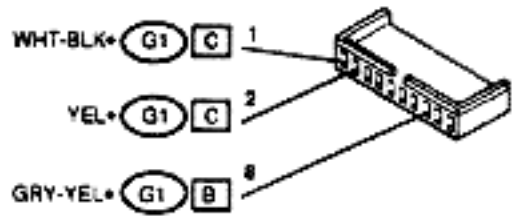
Ignition/switch	B1
	

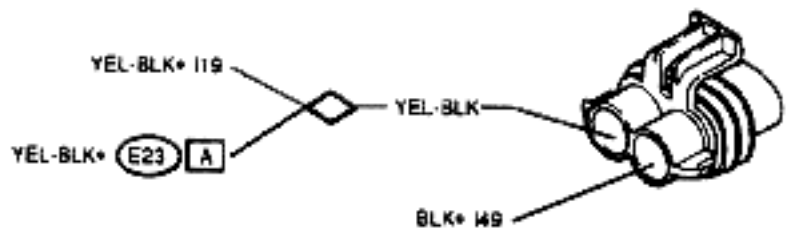
Parking/Flash/Low beam/High beam switch	B4 A
	

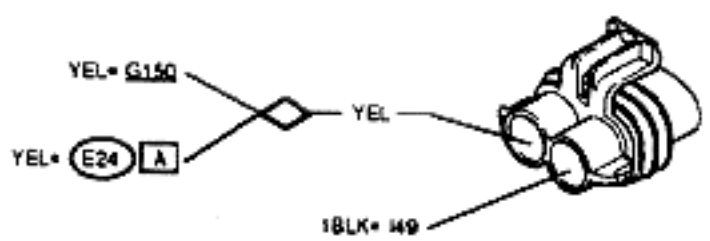
Parking/Flash/Low beam/High beam switch	B4 D
	

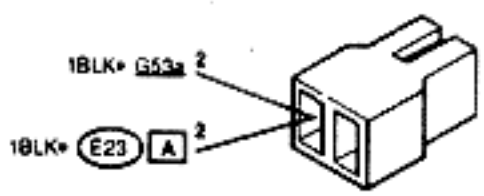
Dimmer switch, instrument panel illumination lamps	B16
	

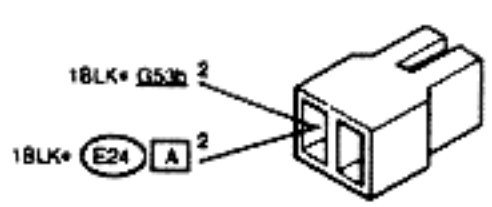
Position lights/Hazard lights/Fuel filler lid pushbutton panel	B66
	

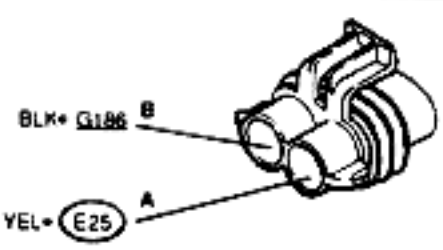
Instrument panel	C10 C
	

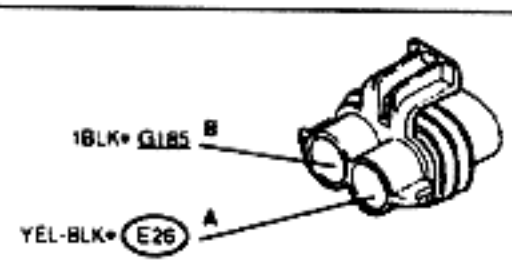
Front side marker lamp (right)	E4
	

Front side marker lamp (left)	E4
	

Right front fog lamp	E10
	

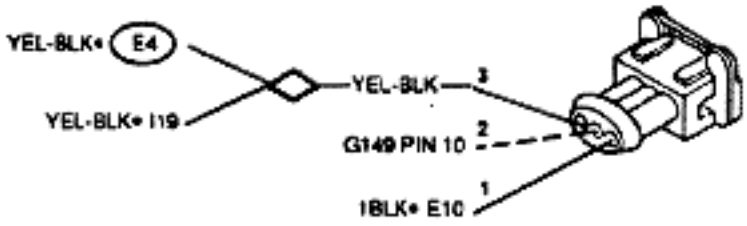
Left front fog lamp	E10
	

Rear side marker lamp (right)	E12
	

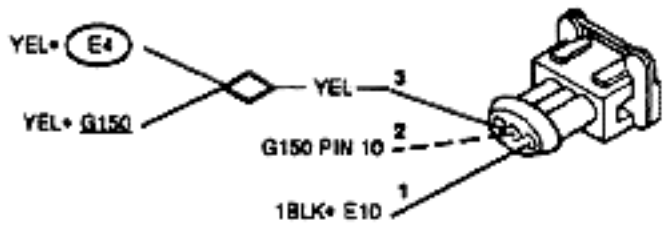
Rear side marker lamp (left)	E12
	

(Cont.d)

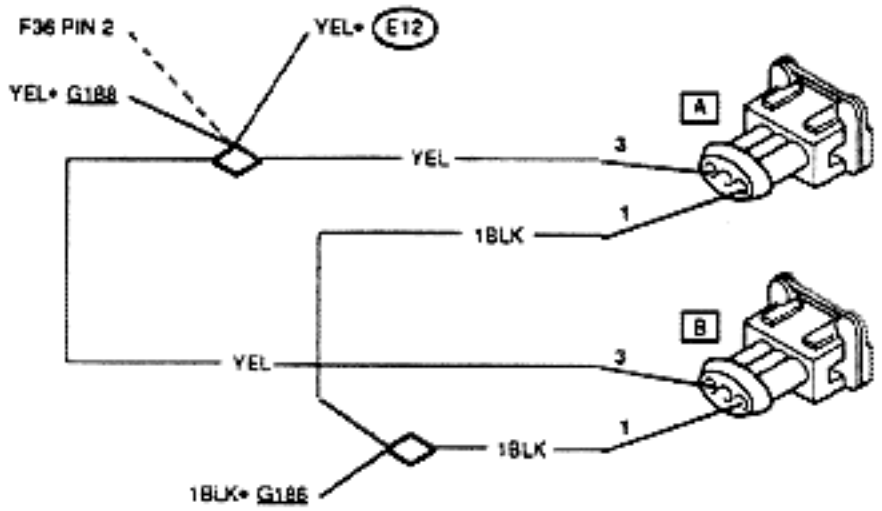
Front head lamp - right — E23 A



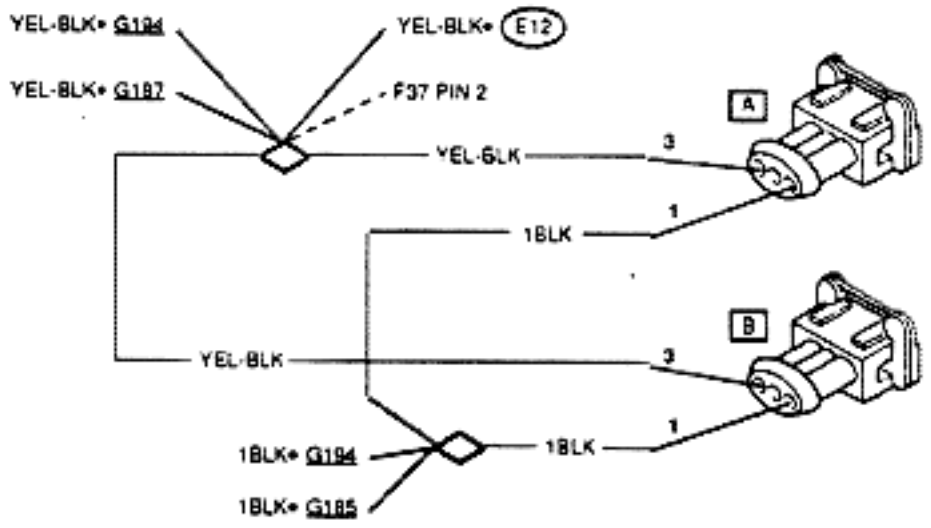
Front head lamp - left — E24 A



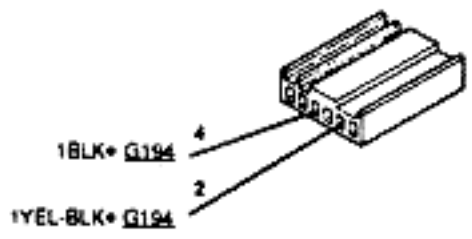
Tail lamp, right (fixed part) — E25



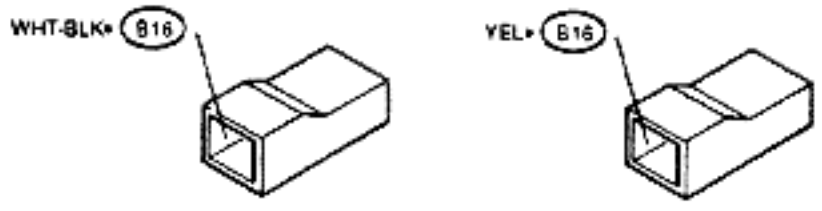
Tail lamp, left (fixed part) — E26



Central tail lamps (mobile) — E27



Instrument panel illumination lamp — F12



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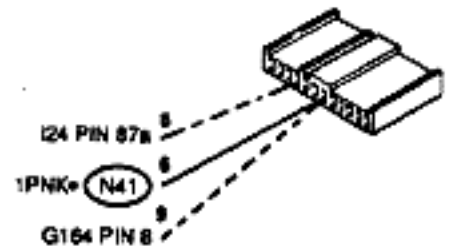
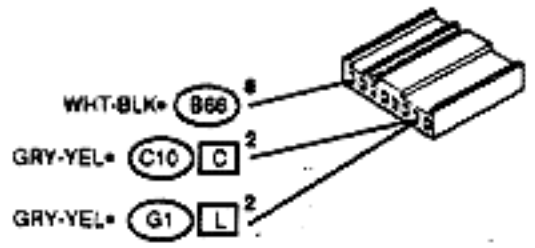
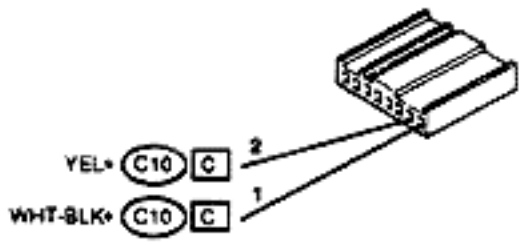
Fuse box G1 A



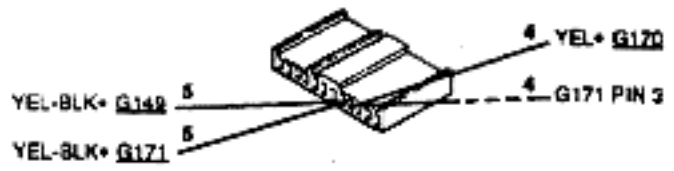
Fuse box G1 B



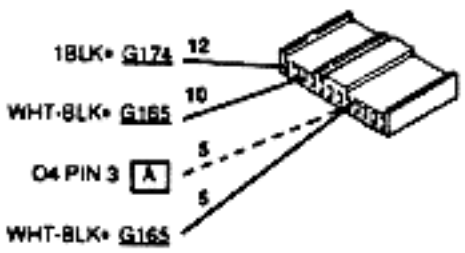
Fuse box G1 C



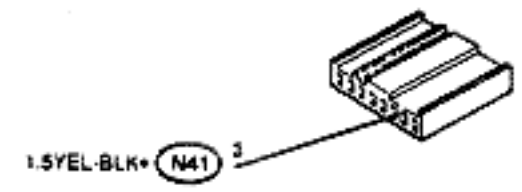
Fuse box G1 D



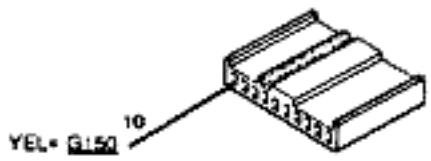
Fuse box G1 E



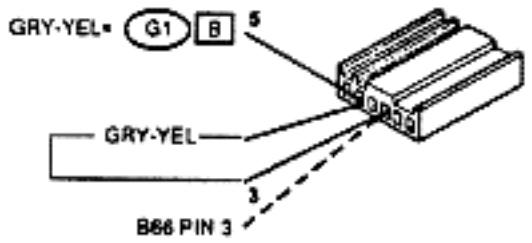
Fuse box G1 G



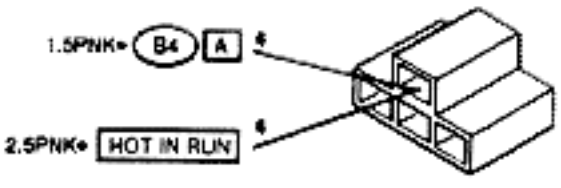
Fuse box G1 H



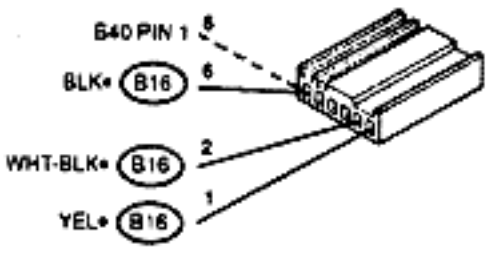
Fuse box G1 L



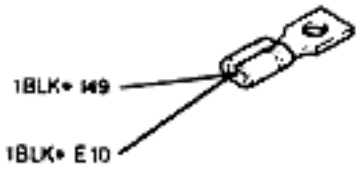
Fuse box G1 O



Fuse box G1 S

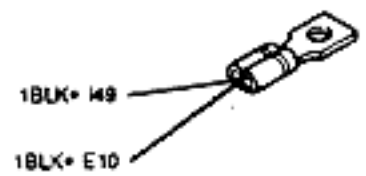


Engine compartment right side ground connection G53a

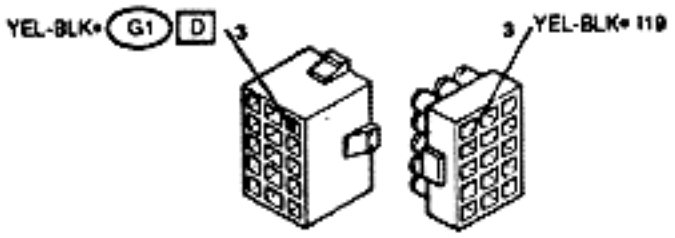


(Cont.d)

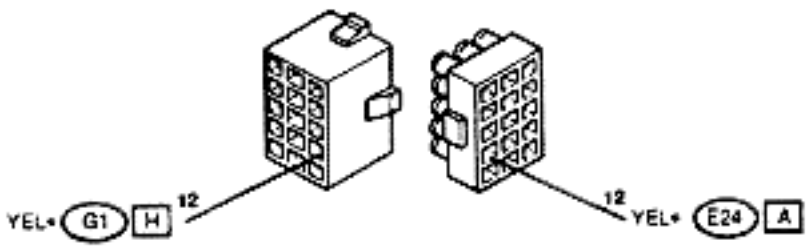
Engine compartment left side ground connection	G53b



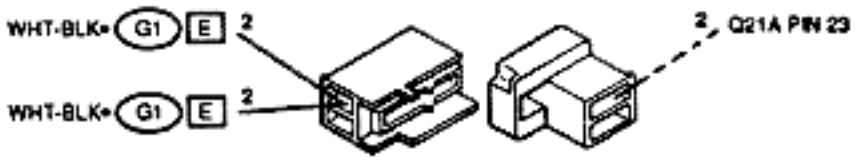
Connector, circuit board to engine compartment right side wiring	G149



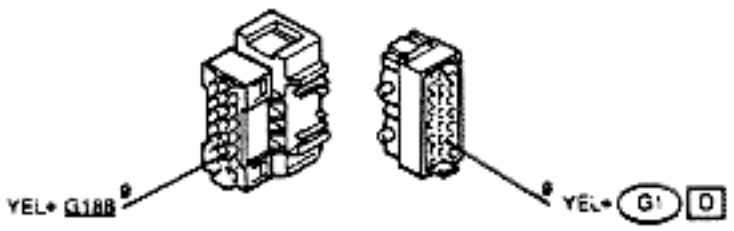
Connector, circuit board to engine compartment left side wiring	G150



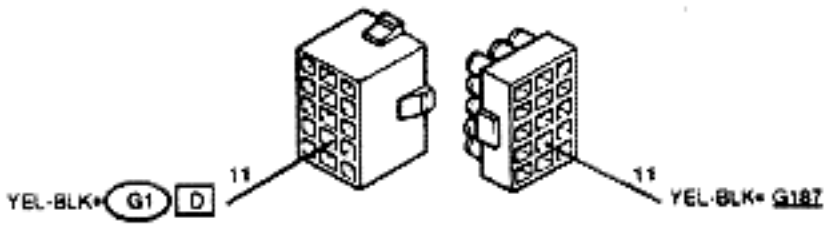
Connector, door utilities to air conditioning wiring	G165



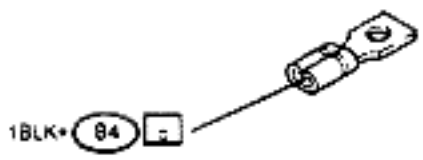
Connector, circuit board to right rear wiring	G170



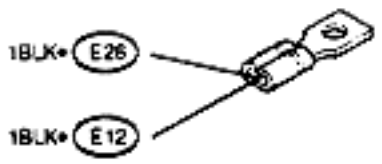
Connector, circuit board to left rear wiring	G171



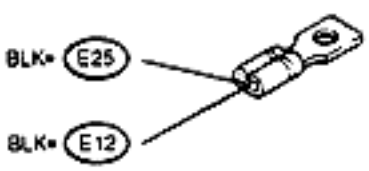
Steering wheel column support ground	G174



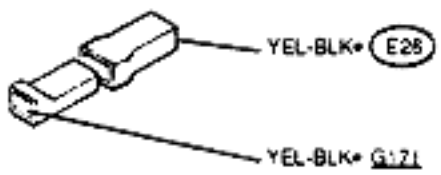
Trunk left side ground	G185



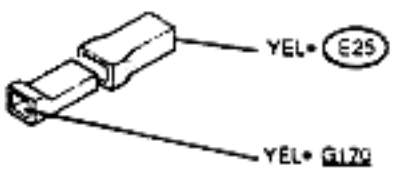
Trunk right side ground	G186



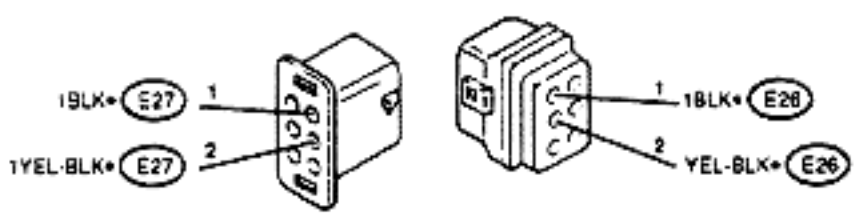
Splice in left rear wiring	G187



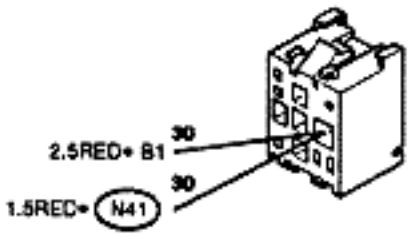
Splice in right rear wiring	G188

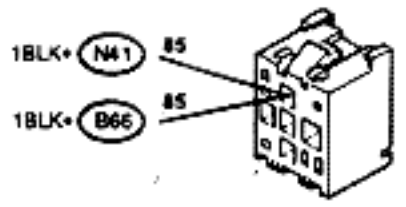


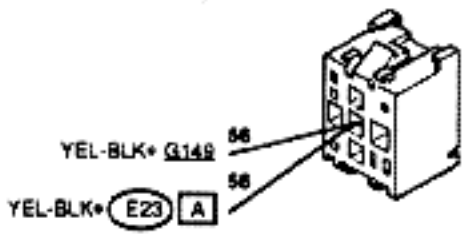
Connector, left rear wiring to rear central lamp wiring	G194

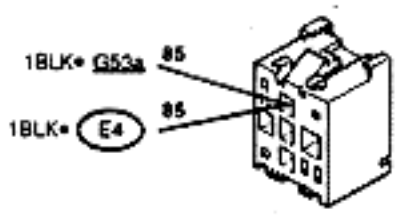


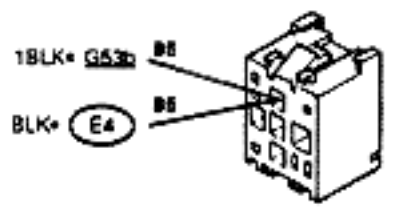
(Cont.d)

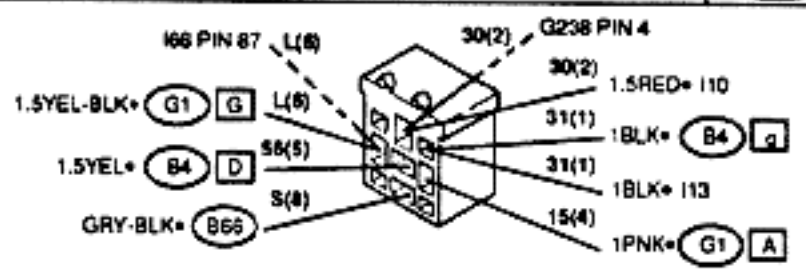
Starter motor inhibitor relay	I10
	

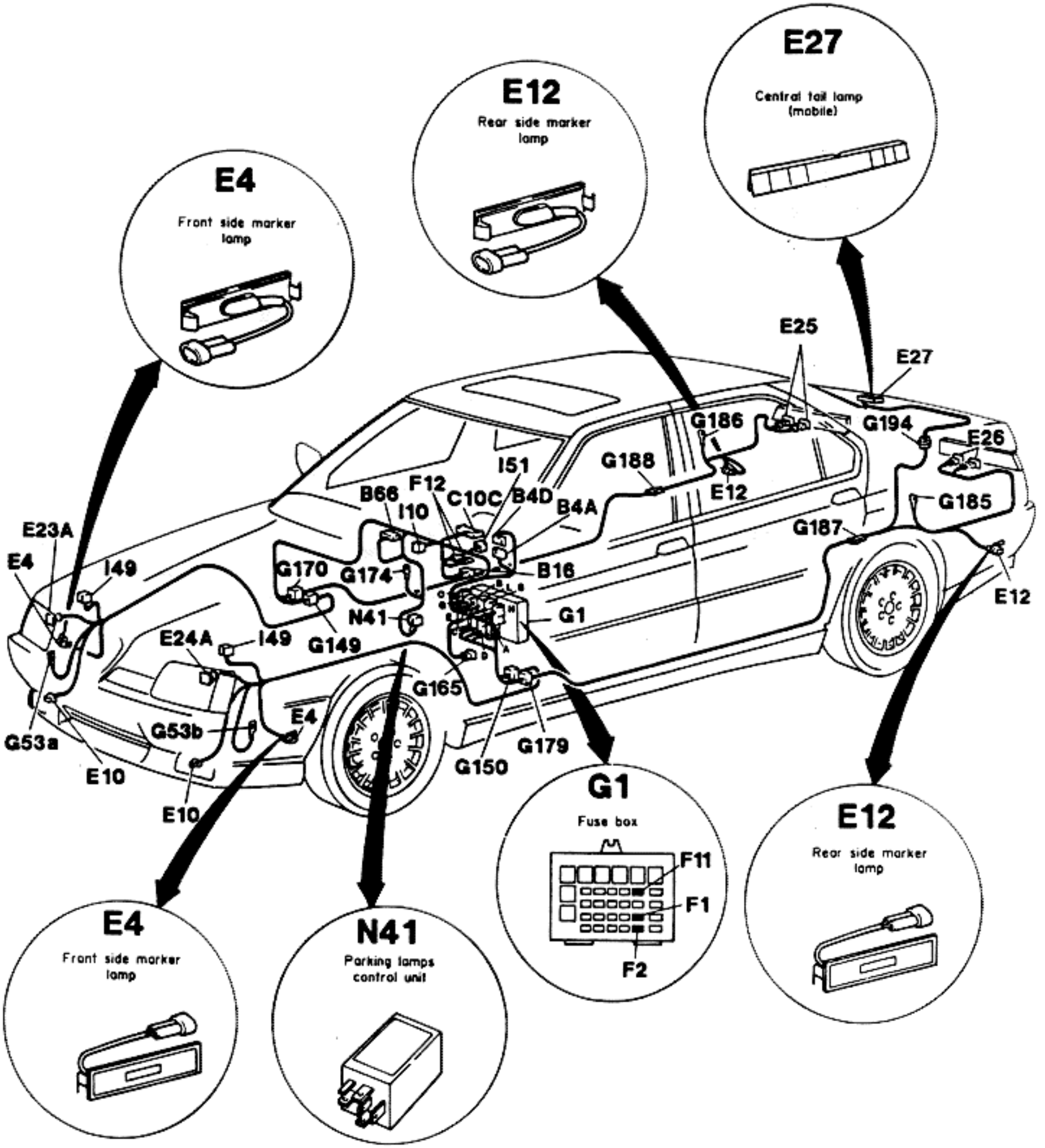
Rear window lifts relay	I13
	

Head lamps washer pump relay	I19
	

Low beam lamps relay (right)	I49
	

Low beam lamps relay (left)	I49
	

Parking lamps control unit	N41
	



ALL LAMPS INOPERATIVE WITH CONTROL SWITCH ACTUATED	TEST A

TEST STEPS	RESULTS	REMEDY
A1 FUSE CHECK		
- Check fuse **F11** (7.5A) in fuse box **G1**	OK ▶	**Go to step A2**
	~~OK~~ ▶	**Replace fuse F11**
A2 VOLTAGE CHECK		
- Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 2A** of multiple switch **B4** Meter reads 12V?	OK ▶	**Go to step A4**
	~~OK~~ ▶	**Go to step A3**
A3 VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 4O** of fuse box **G1** Meter reads 12V?	OK ▶	Repair wiring between **pin 4O of fuse box G1 and pin 2A of multiple switch B4**
	~~OK~~ ▶	Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A4 VOLTAGE CHECK		
- Move voltmeter (-) lead to **pin 2** of pushbutton panel **B66** Meter reads 12V?	OK ▶	**Go to step A8**
	~~OK~~ ▶	**Go to step A5**

(Cont.d)

ALL LAMPS INOPERATIVE WITH CONTROL SWITCH ACTUATED	TEST A

TEST STEPS	RESULTS	REMEDY
A5 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 6** of pushbutton panel **B66** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Replace **pushbutton panel B66** Go to **step A6**
A6 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 1** of control unit **N41** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 6 of pushbutton panel B66 and pin 1 of control unit N41** Go to **step A7**
A7 GROUNDING CHECK - Move voltmeter (-) lead to ground **G174** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **ground G174 and pin 1 of control unit N41** Repair **ground G174**
A8 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 8** of control unit **N41** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step A9** Repair wiring between **pin 2 of pushbutton panel B66 and pin 8 of control unit N41**

(Cont.d)

ALL LAMPS INOPERATIVE WITH CONTROL SWITCH ACTUATED	TEST A

TEST STEPS	RESULTS	REMEDY
A9 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 3D** of multiple switch **B4** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step A10** Replace **multiple switch B4**
A10 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 5** of control unit **N41** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step A11** Repair wiring between **pin 5 of control unit N41 and pin 3D of multiple switch B4**
A11 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 2** of control unit **N41** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step A12** Failure **of the power distribution circuit, refer to the relevant circuit of sheet 2 of 2**
A12 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 6** of control unit **N41** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 6 of control unit N41 and pin 3G of fuse box G1** Replace **control unit N41**

End of test A

BOTH FRONT FOG LAMPS INOPERATIVE	TEST B

TEST STEPS	RESULTS	REMEDY
NOTE: In case the failure simultaneously effects the left front and right rear position lamps, left front and right rear side marker lamps, instrument panel lighting, position lamps indicator on instrument panel and pushbutton panel lighting, replace fuse **F2** in fuse box **G1.**		
B1 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 12** of connector **G150** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 12 of connector G150 and pin 3A of lamp E24** Repair wiring between **pin 12 of connector G150 and pin 10H of fuse box G1**

End of test B

RIGHT FRONT POSITION AND SIDE MARKER LAMPS INOPERATIVE	TEST C

TEST STEPS	RESULTS	REMEDY
NOTE: In case the failure simultaneously effects the left front and right rear position lamps, left front and right rear side marker lamps, instrument panel lighting, position lamps indicator on instrument panel and pushbutton panel lighting, replace fuse **F1** in fuse box **G1.**		
C1 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 3** of connector **G149** Meter reads 12V?	OK ▶ OK ▶	Repair wiring between **pin 3 of connector G149 and pin 3A of lamp E23** Repair wiring between **pin3 of connector G149 and pin 5D of fuse box G1**

End of test C

LEFT REAR POSITION AND SIDE MARKER LAMPS, AND LICENSE PLATE LAMP INOPERATIVE — TEST D

TEST STEPS	RESULTS	REMEDY

NOTES: - In case the failure simultaneously affects the right front and left rear position lamps, right front and left rear side marker lamps, license plate lamp and position lamps indicator on instrument panel, replace fuse **F1** in fuse box **G1**.

- Central tail lamp **E27**, tail lamp right **E25**, tail lamp left **E26**, instrument panel illumination **F12** and pushbutton panel **B66** include each two bulbs connected in parallel. Bulbs replacement should be necessary in case only one of the two bulbs does not switch on.

D1	VOLTAGE CHECK		
- Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 11** of connector **G171** Meter reads 12V?		OK ▶	Go to **step D2**
		OK ▶	Repair wiring between **pin 5D of fuse box G1 and pin 11 of connector G171**
D2	VOLTAGE CHECK		
- Move voltmeter (+) lead to connector **G187** Meter reads 12V?		OK ▶	Repair wiring between **connector G187 and crimping connection**
		OK ▶	Repair wiring between **connector G187 and pin 11 of connector G171**

End of test D

RIGHT REAR POSITION AND SIDE MARKER LAMP INOPERATIVE	TEST E

TEST STEPS	RESULTS	REMEDY
NOTES: - In case the failure simultaneously affects the right front and right rear position lamps, lefit front and right rear side marker lamps, instrument panel, lighting position lamps indicator on instrument panel and pushbutton panel, replace fuse **F2** in fuse box **G1.** - Central tail lamp **E27**, tail lamp right **E25**, tail lamp left **E26**, instrument panel illumination **F12** and pushbutton panel **B66** include each two bulbs connected in parallel. Bulbs replacement should be necessary in case only one of the two bulbs does not switch on.		
E1 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 9** of connector **G170** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step E2** Repair wiring between **pin 4D of fuse box G1 and pin 9 of connector G170**
E2 VOLTAGE CHECK - Move voltmeter (+) lead to connector **G188** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **connector G188 and crimping connection** Repair wiring between **connector G188 and pin 9 of connector G170**

End of test E

LEFT FRONT POSITION LAMP INOPERATIVE	TEST F

TEST STEPS		RESULTS	REMEDY
F1	LAMP CHECK		
- Check left front position lamp in head lamp **E24**		OK ▶	Go to **step F2**
		~~OK~~ ▶	Replace **lamp E24**
F2	GROUNDING CHECK		
- Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 3A** of lamp **E24** Meter reads 12V?		OK ▶	Repair wiring between **pin 1A of lamp E24 and ground G53b**
		~~OK~~ ▶	Repair **ground G53b**

End of test F

LEFT FRONT POSITION LAMP INOPERATIVE	TEST G

TEST STEPS		RESULTS	REMEDY
G1	LAMP CHECK		
- Check left front side marker lamp **E4**		OK ▶	**Go to step G2**
		~~OK~~ ▶	**Replace lamp E4**
G2	GROUNDING CHECK		
- Connect: • voltmeter (-) lead to ground **G53b** • voltmeter (+) lead to **pin A** of lamp **E4** Meter reads 12V?		OK ▶	**Repair wiring between pin B of lamp E4 and ground G53b**
		~~OK~~ ▶	**Repair ground G53b**

End of test G

RIGHT FRONT POSITION LAMP INOPERATIVE — TEST H

TEST STEPS	RESULTS	REMEDY
H1 LAMP CHECK - Check right front position lamp in head lamp **E23**	OK ▶	Go to **step H2**
	~~OK~~ ▶	Replace lamp **E23**
H2 GROUNDING CHECK - Connect: • voltmeter (-) lead to ground **G53a** • voltmeter (+) lead to **pin 3A** of lamp **E23** Meter reads 12V?	OK ▶	Repair wiring between **pin 1A of lamp E23 and ground G53a**
	~~OK~~ ▶	Repair **ground G53a**

End of test H

RIGHT FRONT SIDE MARKER LAMP INOPERATIVE	TEST I

TEST STEPS		RESULTS	REMEDY
I1	LAMP CHECK		
- Check right front side marker lamp **E4**		OK ▶	Go to **step I2**
		~~OK~~ ▶	Replace lamp **E4**
I2	GROUNDING CHECK		
- Connect: • voltmeter (-) lead to ground **G53a** • voltmeter (+) lead to **pin A** of lamp **E4** Meter reads 12V?		OK ▶	Repair wiring between **pin B of lamp E4 and ground G53a**
		~~OK~~ ▶	Repair **ground G53a**

End of test I

LICENSE PLATE LAMP INOPERATIVE	TEST J

TEST STEPS	RESULTS	REMEDY
J1 LAMP CHECK - Check license plate lamp **E27**	OK ▶ ~~OK~~ ▶	Go to **step J2** Replace **lamp E27**
J2 VOLTAGE CHECK - Connect: • voltmeter (-) lead to know good ground • voltmeter (+) lead to **pin 2** of connector **G194** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step J3** Repair wiring between **pin 2 of connector G194 and crimping connection**
J3 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 2** of lamp **E27** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step J4** Repair wiring between **pin 2 of lamp E27 and pin 2 of connector G194**
J4 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 1** of connector **G194** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1 of G194 and pin 4 of lamp E27** Repair wiring between **pin 1 of G194 and crimping connection**

End of test J

LEFT REAR POSITION LAMP INOPERATIVE	TEST K

TEST STEPS	RESULTS	REMEDY
K1 LAMP CHECK		
- Check left rear position lamps **E26**	OK ▶	Go to **step K2**
	OK ▶	Replace lamps **E26**
K2 VOLTAGE CHECK		
- Connect: • voltmeter (-) lead to know good ground • voltmeter (+) lead to **pin 3A** of lamp **E26** Meter reads 12V?	OK ▶	Go to **step K3**
	OK ▶	Repair wiring between **pin 3A of lamp E26 and crimping connection**
K3 VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 3B** of lamp **E26** Meter reads 12V?	OK ▶	Go to **step K4**
	OK ▶	Repair wiring between **pin 3B of lamp E26 and crimping connection**
K4 VOLTAGE CHECK		
- Move voltmeter (-) lead to **pin 1A** of lamp **E26**	OK ▶	Repair wiring between **pin 1B of lamp E26 and crimping connection**
	OK ▶	Rapair wiring between **pin 1A of E26 and crimping connection**

End of test K

RIGHT REAR SIDE MARKER LAMP INOPERATIVE — TEST L

TEST STEPS	RESULTS	REMEDY
L1 LAMP CHECK		
- ChecK right rear side marker lamp **E12**	OK ▶	**Go to step L2**
	~~OK~~ ▶	**Replace lamp E12**
L2 VOLTAGE CHECK		
- Connect: • voltmeter (-) lead to know good ground • voltmeter (+) lead to **pin A** of lamp **E12** Meter reads 12V?	OK ▶	**Go to step L3**
	~~OK~~ ▶	Repair wiring between **pin A of lamp E12 and crimping connection**
L3 GROUNDING CHECK		
- Move voltmeter (-) lead to ground **G185** Meter reads 12V?	OK ▶	Repair wiring between **pin B of lamp E12 and ground G185**
	~~OK~~ ▶	Repair **ground G185**

End of test L

RIGHT REAR POSITION LAMP INOPERATIVE — TEST M

TEST STEPS	RESULTS	REMEDY
M1 LAMP CHECK - Check right rear position lamps **E25**	OK ▶ ~~OK~~ ▶	**Go to step M2** **Replace lamp E25**
M2 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 3A** of lamp **E25** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step M3** **Repair wiring between pin 3A of lamp E25 and crimping connection**
M3 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 3B** of lamp **E25** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step M4** **Repair wiring between pin 3B of E25 and crimping connection**
M4 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 1A** of lamp **E25** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Repair wiring between pin 1B of lamp E25 and crimping connection** **Repair wiring between pin 1A of lamp E25 and crimping connection**

End of test M

LEFT REAR SIDE MARKER LAMP INOPERATIVE — TEST N

TEST STEPS	RESULTS	REMEDY
N1 LAMP CHECK - Check left rear side marker lamp **E12**	OK ▶	Go to **step N2**
	~~OK~~ ▶	Replace lamp **E12**
N2 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin A** of lamp **E12** Meter reads 12V?	OK ▶	Go to **step N3**
	~~OK~~ ▶	Repair wiring between **pin A of lamp E12 and crimping connection**
N3 GROUNDING CHECK - Move voltmeter (-) lead to ground **G186** Meter reads 12V?	OK ▶	Repair wiring between **pin B of lamp E12 and ground G186**
	~~OK~~ ▶	Repair **ground G186**

End of test N

POSITION LAMPS INDICATOR ON INSTRUMENT PANEL INOPERATIVE	TEST O

TEST STEPS	RESULTS	REMEDY
NOTES: - Before carrying-out any troubleshooting, check the integrity of warning lamp on instrument panel by pressing the test button. - In case the failure simultaneously affects the right front and left rear position lamps, right front and left rear side marker lamps, license plate lamp and position lamps indicator on instrument panel, replace fuse **F1** (7.5A) in fuse box **G1**		
O1 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 8C** of instrument panel **C10** Meter reads 12V?	OK ▶ OK ▶	Replace **instument panel C10** Go to **step O2**
O2 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 2B** of fuse box **G1** Meter reads 12V?	OK ▶ OK ▶	Repair wiring between **pin 2B of fuse box G1 and pin 8C of instrument panel C10** Go to **step O3**
O3 VOLTAGE CHECK - Move voltmeter (+) lead to **pin 5L** of fuse box **G1** Meter reads 12V?	OK ▶ OK ▶	Repair wiring between **pin 5L of fuse box G1 and pin 2B of fuse box G1** Repair wiring between **pin 3L and pin 5L of fuse box G1**

End of test O

PUSHBUTTON PANEL LIGHTING INOPERATIVE — TEST P

TEST STEPS	RESULTS	REMEDY
NOTE: Lighting of pushbutton panel **B66** includes two bulbs connected in parallel. In case of uneven lighting of pushbutton panel, it is necessary to replace only the burned out bulb.		
P1 LAMP CHECK - Check pushbutton panel bulbs	OK ▶ ~~OK~~ ▶	**Go to step P2** **Replace pushbutton panel bulbs**
P2 INSTRUMENT PANEL LIGHTING CHECK - Check illumination of test pushbutton and instrument panel illumination lamp **F12** and of instrument panel lighting	OK ▶ ~~OK~~ ▶	**Go to step P3** **Replace dimmer switch B16**
P3 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 3** of pushbutton panel **B66** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step P4** **Repair wiring between pin 3 of pushbutton panel B66 and pin 3L of fuse box**
P4 VOLTAGE CHECK - Move voltmeter (+) lead to **pin +** of dimmer switch **B16** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step P5** Repair wiring between **pin 1S of fuse box G1 and pin + of dimmer switch B16**

(Cont. d)

PUSHBUTTON PANEL LIGHTING INOPERATIVE	TEST P

TEST STEPS	RESULTS	REMEDY
P5 VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 2S** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step P6** **Repair wiring between pin U of dimmer switch B16 and pin 2S of fuse box G1**
P6 VOLTAGE CHECK		
- Move voltmeter (+) lead to **pin 1** of pushbutton panel **B66** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step P7** Repair wiring between **pin 1 of pushbutton panel B66 and pin 8B of fuse box G1**
P7 VOLTAGE CHECK		
- Move voltmeter (-) lead to ground **G174** Meter reads 12V?	OK ▶ ~~OK~~ ▶	**Go to step P8** Repair **ground G174**
P8 VOLTAGE CHECK		
- Move voltmeter (-) lead to **pin 12E** of fuse box **G1** meter reads 12V,	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 6S of fuse box G1 and pin - of dimmer switch B16** Repair wiring between **pin 12E of fuse box G1 and ground G174**

End of test P

INSTRUMENT PANEL LIGHTING INOPERATIVE	TEST Q

TEST STEPS	RESULTS	REMEDY
NOTE: Lighting of pushbutton panel **B66** includes two bulbs connected in parallel. In case of uneven lighting of pushbutton panel, it is necessary to replace only the burned out lamp(s).		
Q1 PUSHBUTTON PANEL LIGHTING CHECK - Check illumination of pushbutton panel **B66**, of test pushbutton, and dimmer switch **B16**	OK ▶ ~~OK~~ ▶	Go to **step Q2** Replace **dimmer switch B16**
Q2 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to **pin 2C** of instrument panel **C10** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step Q3** Repair wiring between **pin 2C of instrument panel C10 and pin 2C of fuse box G1**
Q3 VOLTAGE CHECK - Move voltmeter (-) lead to **pin 1C** of instrument panel **C10** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Replace **instrument panel C10** Go to **step Q4**
Q4 VOLTAGE CHECK Move voltmeter (-) lead to **pin 5E** of fuse box **G1** Meter reads 12V?	OK ▶ ~~OK~~ ▶	Repair wiring between **pin 1C of fuse box G1 and pin 1C of instrument panel C10** Go to **step Q5**

(Cont. d)

INSTRUMENT PANEL LIGHTING INOPERATIVE	TEST Q

TEST STEPS		RESULTS	REMEDY
Q5	VOLTAGE CHECK		
- Move voltmeter (-) lead to **pin 2** of connector **G165** Meter reads 12V?		OK ▶	Repair wiring between **pin 5E of fuse box G1 and pin 2 of connector G165**
		OK ▶	Repair wiring between **pin 10E of fuse box G1 and pin 2 of connector G165**

End of test Q

TEST PUSHBUTTON AND RHEOSTAT SERIGRAPHS LIGHTING INOPERATIVE	TEST R

TEST STEPS	RESULTS	REMEDY
NOTE: Lighting of pushbutton panel **B66** and rheostat serigraphs includes two bulbs connected in parallel. In case of uneven lighting of serigraphs, it is necessary to replace only the burned out lamp.		
R1 LAMP CHECK - Check instrument panel illumination lamp	OK ▶ ~~OK~~ ▶	Go to **step R2** Replace lamp **F12**
R2 PUSHBUTTON PANEL LIGHTING CHECK - Checkoperation of pushbutton panel **B66** and instrument panel lighting	OK ▶ ~~OK~~ ▶	Go to **step R3** Replace **dimmer switch B16**
R3 VOLTAGE CHECK - Connect: • voltmeter (-) lead to known good ground • voltmeter (+) lead to lamp **F12A** yel wires Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step R4** Repair wiring between **pin + of dimmer switch B16 and lamp F12A yel wires**
R4 VOLTAGE CHECK - Move voltmeter (+) lead to lamp **F12B** yel wires Meter reads 12V?	OK ▶ ~~OK~~ ▶	Go to **step R5** Repair wiring between **lamp F12A yel wires and lamp F12B yel wires**

(Cont. d)

TEST PUSHBUTTON AND RHEOSTAT SERIGRAPHS INOPERATIVE	TEST R

TEST STEPS		RESULTS	REMEDY
R5	VOLTAGE CHECK		
- Move voltmeter (-) lead to lamp **F12B** wht-blk wires Meter reads 12V?		OK ▶	Repair wiring between **lamp F12A wht-blk wires and lamp F12B wht-blk wires**
		~~OK~~ ▶	Go to **step R6**
R6	VOLTAGE CHECK		
Move voltmeter (-) lead to **pin U** of dimmer switch**B16** Meter reads 12V?		OK ▶	Repair wiring between **pin U of dimmer switch B16 and lamp F12A wht-blk wires**
		~~OK~~ ▶	Replace **fuse box G1**

End of test R

KEY TO ELECTRICAL COMPONENTS

Code	Description	Reference
A	**STARTING-CHARGING**	
A1	Battery	05-3
A2	Alternator	05-6
A5	Distributor	05-14
A8	Ignition coil	05-14
A11	Starter	05-9
B	**MANUAL ELECTRIC CONTROLS**	
B1	Ignition switch	40-35
B2	Windshield wiper control	40-44
B3	Head lamp washer/Wiper and windshield washer pump control	40-44
B4	Parking/Flash/Low beam/High beam switch	40-44
B5	Horn control switch	23-6
B6	Turn signal lamps switch	40-44
B16	Dimmer switch, instrument panel illumination lamps	43-3
B20	Door lock internal switch	40-40
B21	Right front window lift switch	40-40
B23	Right rear window lift switch	40-40/40-41
B24	Left rear window lift switch	40-40/40-41
B25	Rear window lift sensing switch	40-40
B27	Left front seat height control switch	40-41
B28	Left front seat back control switch	40-41
B29	Right front seat back control switch	40-41
B36	Electric external mirror control switch	40-33
B40	Trip odometer reset switch	43-3
B51	Left front seat heater control switch	40-41
B52	Right front seat longitudinal control switch	40-41
B53	Front left window automatic lift switch	40-40
B54	Left front seat longitudinal control switch	40-41
B55	Trunk opening switch	56-6
B56	Right rear seat adjustment control switch	40-41
B57	Right rear seat heater control switch	40-41
B58	Left rear seat adjustment control switch	40-41
B59	Left rear seat heater control switch	40-41
B60	Instrument panel warning lights test pushbutton	43-3
B62	Right front seat heater control switch	40-41
B63	Right front seat height control switch	40-41
B64	Cruise control OFF/RESUME switch	40-32

Code	Description	Reference
B66	Position lights/hazard lights/fuel filler lid pushbutton panel	21-37
B67	Suspension system control panel	21-37
B68	Multiple switch unit	40-44
C	**INSTRUMENTS**	
C10	Instrument panel	43-2
D	**WARNINGS LAMPS**	
D31	Anti-theft system Led	40-40
E	**EXTERIOR LIGHTS**	
E4	Front side marker lamp	40-14
E10	Fog lamp	40-12
E12	Rear side marker lamp	40-14
E23	Front head lamp-right	40-11
E24	Front head lamp-left	40-11
E25	Tail lamp, right (fixed part)	40-13
E26	Tail lamp, left (fixed part)	40-13
E27	Central tail lamps (mobile part)	40-13
E28	Center stop lamp (BASE and L only)	40-13
E28	Center stop lamp (S only)	40-14
F	**INTERIOR LIGHTS**	
F5	Rear cargo lamp	40-17
F7	Fuse box lamp	40-16
F9	Glovebox illumination lamp	40-16
F12	Instrument panel illumination lamp	43-3
F23	Feet illumination lamp, interior, right side	40-17
F24	Feet illumination lamp, interior, left side	40-17
F25	Courtesy mirror illumination lamp	40-15
F27	Right front door open warning lamp	40-15
F28	Left front door open warning lamp	40-15
F29	Right rear door open warning lamp	40-15
F30	Left rear door open warning lamp	40-15
F31	Right front door open ground illumination lamp	40-15
F32	Left front door open ground illumination lamp	40-15
F33	Right rear door open ground illumination lamp	40-15
F34	Left rear door open ground illumination lamp	40-15
F35	Dome lamp with cabin lighting control switch	40-16

Code	Description	Reference
F36	Dome lamp, control switch on right rear post	40-17
F37	Dome lamp, control switch on left rear post	40-17
F38	Gear selector illumination lamps, automatic transmission	40-18
G	**FUSE BOX-CONNECTORS-GROUND CONNECTIONS**	
G1	Fuse box	
G2	Auxiliary fuse box	
G4	Free fuse holder	
G15	Two pin connector circuit board to doors wiring	
G16	Six pin connector circuit board to doors wiring	
G27	Left rear door wiring connector	
G53	Engine compartement ground connection	
G53a	Engine compartement right side ground connection	
G53b	Engine compartement left side ground connection	
G56	Circuit board	
G100	Connector, doors to center console wiring	
G124	ABS system connector	
G125	ABS system free fuse holder	
G131	Upper cover ground connection	
G143	Central bulkhead ground	
G149	Connector, circuit board to engine compartment right side wiring	
G150	Connector, circuit board to engine compartment left side wiring	
G151	Connector, circuit board to engine utilities wiring	
G154	Connector, engine wiring to circuit board	
G155a	Connector, right hand seats adjustment wiring	
G155b	Connector, left hand seats adjustment wiring	
G156	Connector, right front door to right front door sensor wiring	
G157	Connector, left front door to left front door sensor wiring	
G158	Connector, right rear door to right rear door sensor wiring	
G159	Connector, left rear door to left rear door sensor wiring	
G160	Connector, right front door to ground illumination lamp wiring	
G161	Connector, left front door to ground illumination lamp wiring	
G164	Connector, circuit board to air conditioning wiring	
G165	Connector, door utilities to air conditioning wiring	
G166	Connector, front doors to right front door wiring	
G167	Connector, front doors to right rear wiring	
G168	Connector, front doors to left front door wiring	
G169	Connector, front doors to left rear wiring	
G170	Connector, circuit board to right rear wiring	
G171	Connector, circuit board to left rear wiring	
G174	Steering wheel column support ground	
G176	Dome ground	

Code	Description
G177	Connector, doors utilities circuit board wiring
G179	Connector, left rear wiring to dome lamp wiring
G180	Connector, left rear wiring to front doors
G181	Connector, left rear wiring to rear center console
G182	Center console ground
G183	Connector, rear center console to front right seat wiring
G184	Connector, rear center console to front left seat wiring
G185	Trunk left side ground
G186	Trunk right side ground
G187	Splice in left rear wiring
G188	Splice in right rear wiring
G189	Connector, rear seats to rear console wiring
G190	Connector, rear seats wiring
G191	Connector, left rear wiring to left rear door wiring
G192	Connector, provision for trailer stop lamps
G193	Connector, provision for radio antenna
G194	Connector, left rear wiring to rear central lamp wiring
G195	Connector, provision for left rear londspeaker
G196	Connector, provision for right rear loudspeaker
G197	Connector, right rear wiring to right rear door wiring
G198	Connector, right rear wiring to trunk lock wiring
G199	Connector, right rear door
G200	Connector for radio headset junction box
G201	Rear window defogging fuse
G202	ABS system ground connection
G203	Connector, right rear wiring to front door wiring
G204	Front right sensor connection-ABS
G205	Front left sensor connection-ABS
G206	Rear right sensor connection-ABS
G207	Rear left sensor connection-ABS
G209	Connector, right rear wiring to rear console wiring
G210	Connector, doors wiring to rear console wiring
G217	Connector, provision for left front londspeaker
G218	Connector, provision for right front londspeaker
G221	Windows lift shorting box connector
G233	Connector, circuit board to automatic gear lever wiring
G238	Terminal strip wiring connection with day lights wiring
G239	Radio, Telephone fuse
G240	Front seats fuse (20 Amp.)
G241	Board wiring to anti-theft system wiring connector
G242	Board wiring to cruise control wiring connector
G243	Board wiring-aft console wiring splice
G244	Board wiring to aft console wiring two-way connector

Code	Description	Reference
G245	Rightrear wiring connector, Anti-theft system	
G246	Rear seat adjustment fuse-20A	
G247	Rear power window lifts fuse-30A	
G248	Anti-theft system wiring connector-Right rear wiring	
G249	Anti-theft system wiring connector-Console wiring	
G251	Suspension control system connector	
G252a	Connector, terminal board wiring-rear right wiring for suspension control system	
G252b	Connector, terminal board wiring-rear right wiring for suspension control system	
G252c	Connector, terminal board wiring-rear right wiring for suspension control system	
G253	Left rear wiring connector-Air conditioning wiring	
G254	Engine electric fan fuse	
G255	Air conditioning fan fuse-40A	
G256	Left rear wiring connector, Anti-theft system	
G258	Anti-theft system fuse-15A	
H	**SWITCHES**	
H1	Parking brake switch	40-19
H2	Back-up lamp switch	40-21
H3	Rear stop lamp switch	40-42/40-43
H5	Left front door open indicator jamb switch	40-29
H6	Right front door open indicator jamb switch	40-29
H7	Left rear door open indicator jamb switch	40-29
H8	Right rear door open indicator jamb switch	40-29
H9	Right front brake pad switch	22-13
H10	Left front brake pad switch	22-13
H16	Start and reverse gear inhibitor switch	40-21
H17	Brake fluid minimum level warning indicator switch	22-7
H24	Trunk illumination switch	40-30
H25	Glovebox illumination switch	40-16
H38	Right rear seat microswitch	66-13
H39	Left rear seat microswitch	66-13
H40	Right rear door for rear seats inhibitor switch	40-42
H41	Left rear door for rear seats inhibitor switch	40-42
H44	Engine compartment anti-theft system switch	40-43
H45a	Clutch switch for Cruise Control device	40-43
H45b	Brake switch for Cruise Control device	40-42/40-43
H46	Gear box switch for suspension control system	40-21
H47	Engine throttle microswitch for suspension system	01-14/04-28
I	**RELAYS**	
I1	Engine coolant electric fan relay	40-7

Code	Description	Reference
I2	Rear window defogging relay	40-10
I3	Horn relay	40-7
I10	Starter motor inhibitor relay	40-8
I13	Rear window lifts relay	40-8/40-9
I17	Front fog lamps relay	40-9
I19	Head lamps washer pump relay	40-7
I24	Turn signal lamps and hazard lamps relay	40-8
I25	Rear fog lamps relay	40-9
I26	Dome lamp relay	40-8/40-9
I28	Turn signal lamps and hazard lamps relay	40-8
I45	External rearview mirrors defogging relay	40-9
I49	Low beam lamps relay	40-7
I50	High beam lamps relay	40-8
I51	Electronic control units power supply relay	40-8
I52	Trunk opening relay	40-10
I53	Filler lid opening relay	40-10
I54	Right rear seat relay	40-9
I55	Left rear seat relay	40-9
I56	Rear seats relay	40-10
I57	ABS system electronic relay	22-35
I58	Sun roof/Seat heater relay	40-9
I62	Selected gear signal (automatic gear) relay for Motronic control unit	40-8
I63	Automatic transmission oil cooler fan relay	40-7
I66	Day lights on relay switch	40-9
I67	Day lights off relay switch	40-9
I68	Engine coolant fan supplementary relay	40-7
I69	Stop lamps switch relay	40-7
I70	Radio relay	40-8
I71	Suspension control system relay-20A	40-10
I72	Brake fluid reservoir relay	40-8
I73	Door lock/front electric window lift relay	40-9
L	**TRANSMITTERS**	
L2	Engine oil low pressure switch	01-14
L6	Radiator fan thermal switch	07-9
L8	Engine oil pressure transmitter	01-14
L9	Fuel quantity transmitter	40-18
L10	Engine coolant temperature sender and over-heating temperature switch	07-7
L12	Engine oil level sensor	01-87
L13	Windshield and head lamps washer fluid sensor	40-25
L14	Engine coolant level sensor	07-5
L17	Speedometer sensor	13-7

Code	Description	Reference
L28	Right front phonic wheel sensor	22-33
L29	Left front phonic wheel sensor	22-33
L30	Right rear phonic wheel sensor	22-33
L31	Left rear phonic wheel sensor	22-33
L38	Oil cooler thermal switch-automatic transmission	40-19
L39	Maximum oil temperature sensor, automatic transmission	40-19
L40	Steering wheel rotation angle sensor	21-34
L41	Oil microswitch for suspension control system	21-34
M	**SOLENOIDS-SOLENOID VALVES**	
M12	Trunk opening solenoid	40-30
M13	Filler lid opening solenoid	40-31
M14	Cruise control actuator	16-30
M15	Evaporation solenoid valve	04-21
M17	Front right shock absorber solenoid valve	21-31
M18	Front left shock absorber solenoid valve	21-31
M19	Rear right shock absorber solenoid valve	21-32
M20	Rear left shock absorber solenoid valve	21-32
N	**ELECTRONIC UNITS, INTERMITTANT RELAY, TIMERS**	
N11	Door lock control unit	43-5
N13	Hazard lamps relay	40-9
N22	Alfa Romeo control unit	43-5
N27	ABS control unit	43-6
N28	ABS brake fluid electric pump	22-33
N38	Window lift control unit	43-5
N39	Cruise control unit	43-7
N41	Parking lamps control unit	40-8
N44	Rear lamps control unit	43-8
N45	Anti-theft control unit	43-8
N46	Suspension system electronic control unit	21-33
N47	Accelerometer	21-33
N48	Radio Telephone control unit (pre-engineering)	– –
N57	Diode of protection relay autoradio	40-8
O	**AUXILIARY EQUIPMENT**	
O1	Electrically heated rear window	75-12
O2	Horn	40-30
O3	Power antenna	40-44
O4	Radio	40-34

Code	Description	Reference
O6	Front cigar lighter	40-31
O7	Rear cigar lighter	40-31
O11	Syren	40-34
O14	Left front seat heater pad	40-38
O15	Right rear seat heater pad	40-39
O16	Left rear seat heater pad	40-39
O17	Right front seat heater pad	40-38
O18	Right electric external rearview mirror defogger	40-33
O19	Left electric external rearview mirror defogger	40-33
O22	Engine coolant electric fan supplementary resistor	07-11
O24	Radio Telephone (pre-engineering)	--
O25	Windshield defogger	75-9
P	**ELECTRIC MOTORS**	
P2	Engine coolant electric fan motor	07-9
P5	Left front seat adjustment motor	40-37
P6	Right front seat back reclining motor	40-37
P7	Left front seat back reclining motor	40-37
P8	Left electric external rearview mirror motor	40-33
P9	Right electric external rearview mirror motor	40-33
P10	Right front door locking motor	40-29
P11	Left front door locking motor	40-29
P12	Right rear door locking motor	40-29
P13	Left rear door locking motor	40-29
P14	Right front electric window lift motor	40-27
P15	Left front electric window lift motor	40-27
P16	Right rear electric window lift motor	40-28
P17	Left rear electric window lift motor	40-28
P18	Electric fuel pump	04-14
P19	Windshield washer electric pump	40-25
P20	Head lamps washer electric pump	40-25
P24	Sun roof motor	40-36
P27	Windshield wiper motor and control unit	40-24
P28	Right front seat longitudinal adjustment motor	40-36
P29	Left front seat longitudinal adjustment motor	40-36
P30	Right front seat adjustment motor	40-37
P32	Right rear seat motor	40-39
P33	Left rear seat motor	40-39
P34	Oil cooler electric fan motor-automatic transmission	16-24

Code	Description	Reference
Q	**HEAT/VENT/AIR CONDITIONING**	
Q1	Heater blower electric fan	80-28
Q11	Compressor electro-magnetic coupling	80-22
Q15	Heater blower relay	40-7
Q20	Min-Max pressure switch (Trinary)	80-23
Q21A	Automatic control mode check unit	43-9
Q22	Electro-magnetic coupling control relay	40-8
Q24	Outside air temperature sensor	80-26
Q25	Mixed air temperature sensor	80-27
Q26	Anti-frost thermostat	80-24
Q27	Air recirculation flap control motor	80-25
Q29	Air conditioning system clinching point	80-27
Q30	Flap doors and air mixing control units	80-27
Q30A	Ventilation distribution motor	80-27
Q30B	Warm/cool air blend motor	80-27
Q31	Air conditioning unit fan speed control	80-24
Q33	Cabin interior temperature sensor (with motor)	40-21
R	**SAFETY DEVICES**	
R20	Air Bag right front sensor	40-23
R21	Air Bag left front sensor	40-23
R22	Air bag control unit	43-7
R23	Air bag capsule	00-20
R24	Seat belt unfastened and ignition key inserted buzzer	43-5
R25	Safety belt fastened switch	40-20
S	**ELECTRONIC FUEL INJECTION**	
S3	Electroinjectors	04-18
S5	Air flow meter	04-26
S6	Throttle switch	04-28
S7	Engine coolant temperature sensor	04-20
S11	Motronic control unit	43-6
S12a	Fuel pump Motronic relay	01-11
S12b	Motronic relay with diode	01-11
S25	Automatic/Manual transmission connector	43-6
S29	Idle adjustment actuator	04-29
S31	RPM and timing sensor	04-19
S35	Heated Lambda probe	04-40

Code	Description	Reference
T	**DIAGNOSIS**	
T1	ALFA TESTER connector	43-6
T2	"Blinking code" diagnosis connector	04-49
T3	Air bag test connector	66-22
T4	Diagnosis indicator light pushbutton	40-40
T5	Suspension control system diagnosis connector	43-9

Alfa Romeo

ASSISTENZA TECNICA

ALFA - LANCIA S.p.A.
V.le Alfa Romeo — 20020 - ARESE (Milano)

Public. PA4596 - 9/90

Printed in Italy