155

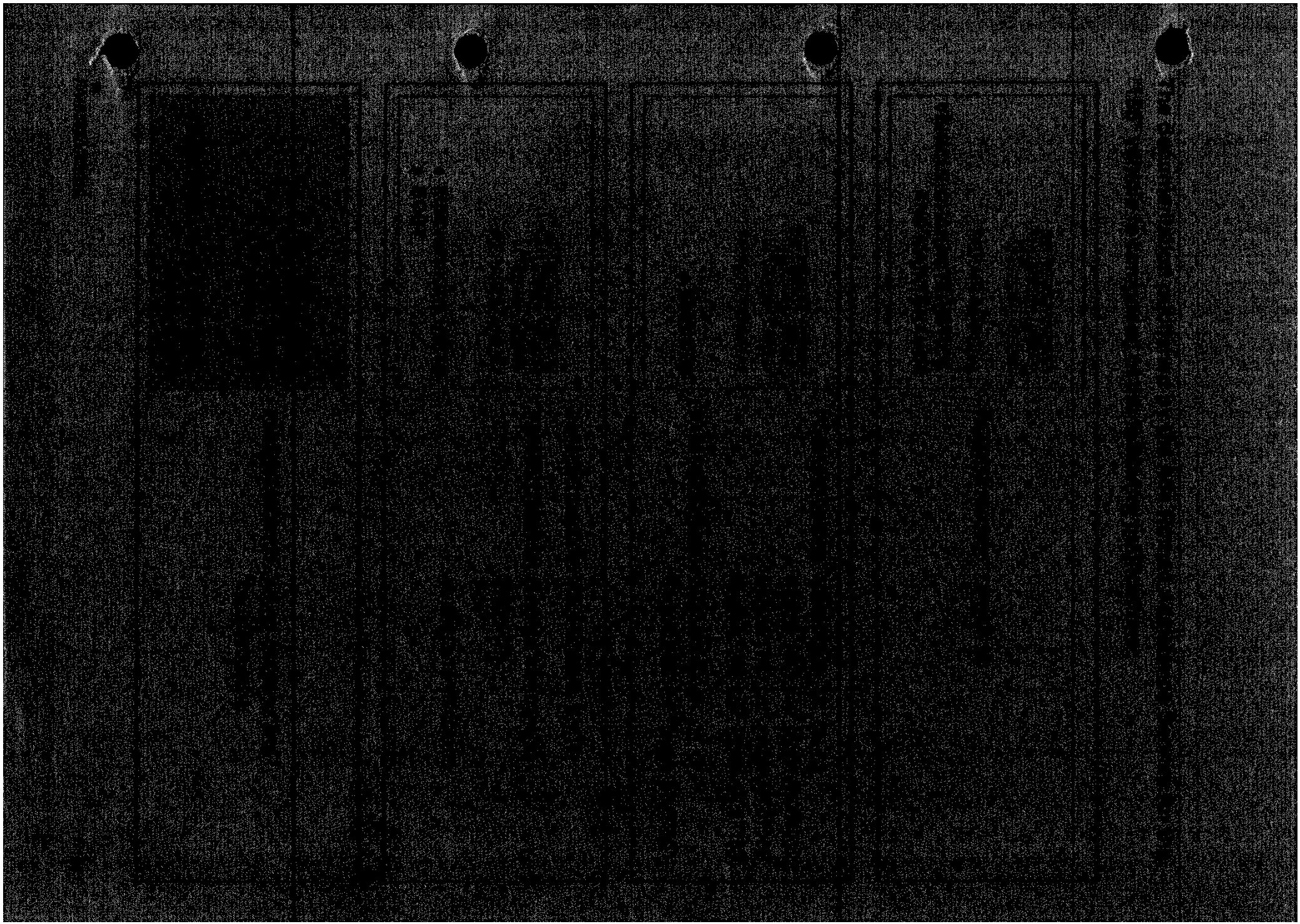
REPAIR MANUAL

ELECTRICAL & ELECTRONIC DIAGNOSIS

Alfa Romeo

PA4655E0000000

7-1991



PRESENTATION

This publication details the electrical system and electronic devices regarding the "**155**" vehicle for the models listed in the "vehicle identification" table.
The aim of this publication is to provide the Alfa Romeo Service staff with a tool which can be used to rapidly identify any faults and help to render the intervention both precise and efficient.

The manual gives the electrical diagrams and the descriptions of each function, the tables for the connectors and the location of the relative components.
Particular attention has been given to the fault diagnosis procedures which can be found at the end of each section.
These combine with the irreplaceable experience of the operator and help to correctly identify and rectify the fault starting from the malfunction which the operator himself has detected and carrying out a series of tests on the system affected by the fault.

More detailed information is given in the chapter "Introduction" which should in any case be carefully read before using the manual.

This manual is supplied together with the "155 - Repair Manual" relative to the mechanics of the vehicle and complementary to it.

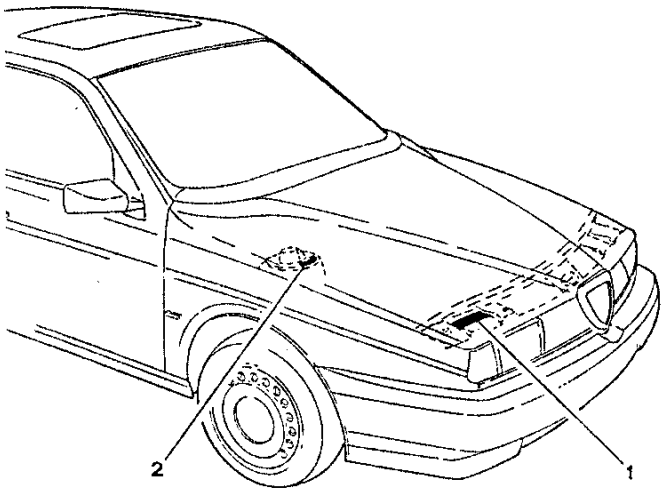
All the information contained in this manual is accurate to the date of publication.

Alfa Romeo reserves the right to carry out any modifications to its products considered necessary without warning, though the technical information and up-dates regarding this manual will be promptly published.

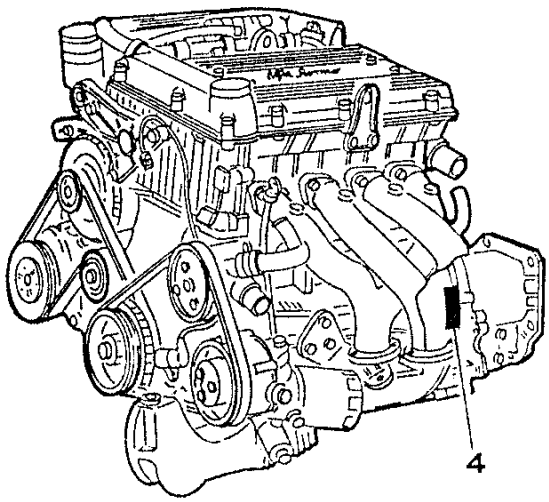
NOTA:
It should be pointed out that inside this manual the "155" vehicle may also be indicated with the "167" vehicle code.

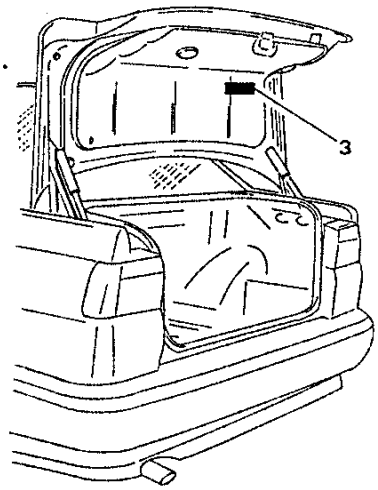
VEHICLE IDENTIFICATION

IDENTIFICATION LABELS

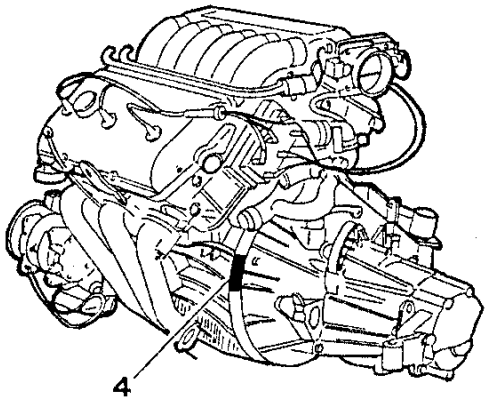


TWIN SPARK ENGINES





V6 ENGINE



1. Label carrying identification data
2. Body label
3. Body paint identification label
4. Engine label

MODEL IDENTIFICATION TABLE

Vehicle		**155**			
Model		**T.SPARK 1.8**	**T.SPARK 1.8**	**T.SPARK 2.0**	**V6**
Cubic capacity		1.749 cm^3	1.773 cm^3	1.995 cm^3	2.492 cm^3
Type		4-door sedan			
LH/RH Drive		LH + RH	LH + RH	LH + RH	LH + RH
Vehicle type n°	on identification label	167A4B	167A4A	167A2A	167A1
	on the upper part of the RH wing, engine compartment	167.000	167.000	167.000	167.000
Engine series n°		AR67103 from 000.001	AR67102 from 000.001	AR67202 from 000.001	AR67301 from 000.001

NOTE: the various models are indicated in the manual by the following symbols:
- "T.SPARK 1.8" and "T.SPARK 2.0" are indicated by "T.SPARK" or (T.S.)
- "V6" is indicated by "2.5 6V" or (6V).

GENERAL INDEX

This manual "155 Q4 - REPAIR MANUAL - ELECTRICAL & ELECTRONIC DIAGNOSIS" has been divided into sections each of which deals with a subject inherent to an installation, electrical or electronic system present on the vehicle.
NOTE: For sections here indicated with "*", it is necessary to refer to "155 - REPAIR MANUAL - ELECTRICAL & ELECTRONIC DIAGNOSIS"

The sections are divided and numbered thus:

ALPHABETICAL INDEX

NOTE: The symbol * indicates that this subject has not been dealt with in the present publication and can be found in the "155 - REPAIR MANUAL - ELECTRICAL & ELECTRONIC DIAGNOSIS"

MODEL IDENTIFICATION ('95 Versions)

Vehicle		**155**					
Model		**1.7 T. SPARK**			**1.8 T. SPARK**		**V6**
Cylinder displacement		1.749 cm^3			1.773 cm^3		2.492 cm^3
Trim level		4-door saloon					
Drive		LH + RH			LH + RH		LH + RH
Car model no.	on identification label	167A4H	167A4G □	167A4L □	167A4E	167A4M □	167A1E
	on upper part of RH side panel, engine compartment	167000			167000		167000
Engine type and serial no.		AR 67105 from (*)	AR 67103 from (*)	AR 67105 from (*)	AR 67102 from (*)	AR 67202 from (*)	AR 67303 from (*)

(*) Engine no. not available at time of going to press

(□) Only for certain markets.

INTRODUCTION

INDEX

INTRODUCTION

This manual contains all the necessary information regarding the electrical systems and circuits present on this vehicle.
Those instruments which are useful in diagnosing faults are given particular attention.
Each circuit is dealt with separately in a specific section in which the following can be found:

- wiring diagram;
- operation and description of the circuit;
- illustration showing the various components;
- pin-pointing the affected components;
- table giving the diagnosis of the most frequent faults with relative test procedures and corrective action (troubleshooting)

GENERAL PRECAUTIONS AND SAFETY MEASURES

Before carrying out any work on the electrical components, the following precautions should be noted and taken:

- Remove rings, wrist-watches or other metal objects.
- Disconnect one of the terminals of the battery each time an electrical component has to be removed.
- If a component needs replacing, only Alfa Romeo spare parts should be used.

When operating on the electrical system of the vehicle, never forceably pull wires or cables as these may then become detached from terminals or connectors.
Disconnect all the control units and electronic devices when arc- welding on the vehicle body.

AVOIDING ELECTRICAL ARCHING

Even if the voltage in the electrical system is only 12 V, the power of the battery can cause high voltage in the event of a short circuit causing arches or sparks which can cause fires or present a direct danger to the operator.

HIGH VOLTAGE

The system of electronic ignition generates a current of over 20,000 volts which could be very dangerous, especially to people suffering from heart problems.
Proceed with great care when operating on or near these components.

AVOIDING FIRES

Do not smoke while working near the battery or components containing fuel or other engine fluids.

HEAT SOURCES

When it is necessary to operate on components which are subject to heating during use, (e.g. halogen bulbs) or inside the engine compartment when the engine is still warm, particular care must be taken to avoid burns or damage to tools or components.

STRUCTURE OF THE MANUAL

This manual is subdivided into sections, each dealing with a single circuit. All the sections are identical in lay-out and are composed of five parts:

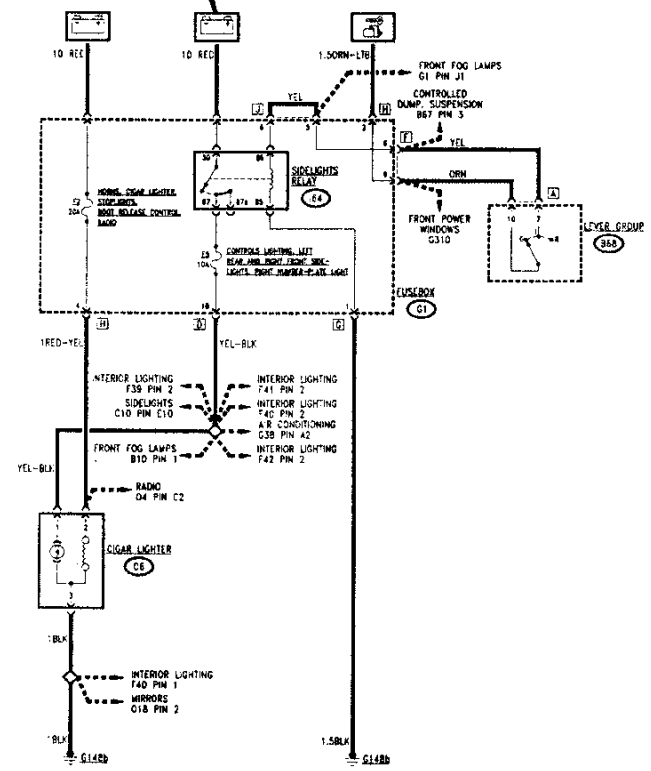
A wiring diagram;

B general description (description of the circuit and its operation) and functional description (analytical illustration of the wiring system);

troubleshooting table;

WIRING DIAGRAM

WIRING DIAGRAM



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GENERAL AND FUNCTIONAL DESCRIPTION

GENERAL DESCRIPTION

There are three ashtrays for the occupants of the vehicle, one in the centre of the dashboard for the front seats and two in the rear door panels for the rear seats.
The cigar lighter resistance is located in the front ashtray (illuminated inside when the sidelights are selected) and can be engaged by pressing it into its socket; after a few seconds is pops out ready for use.
This socket, of the standard type, can also be used for the connection of other instruments or apparatus (as long as they operate on a 12V supply).

The socket is continuously supplied and for this reason can be used at any time even when the ignition key is disengaged.

FUNCTIONAL DESCRIPTION

The socket for the cigar lighter resistance C6 is supplied directly by battery voltage through fuse F2 (20A) in fusebox G1, which protects the circuit.

The lamp lighting the front ashtray C6 is illuminated when the sidelights are selected; it is supplied, when the switch on the lever group B68 is selected, by the voltage from the sidelights relay 164 through fuse F5 (10A) located in fusebox G1.

TROUBLESHOOTING TABLE

Malfunction	Component		Test
	F2	C6	
Cigar lighter - power socket	•	•	A
Ashtray light		•	B

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TROUBLESHOOTING TABLE

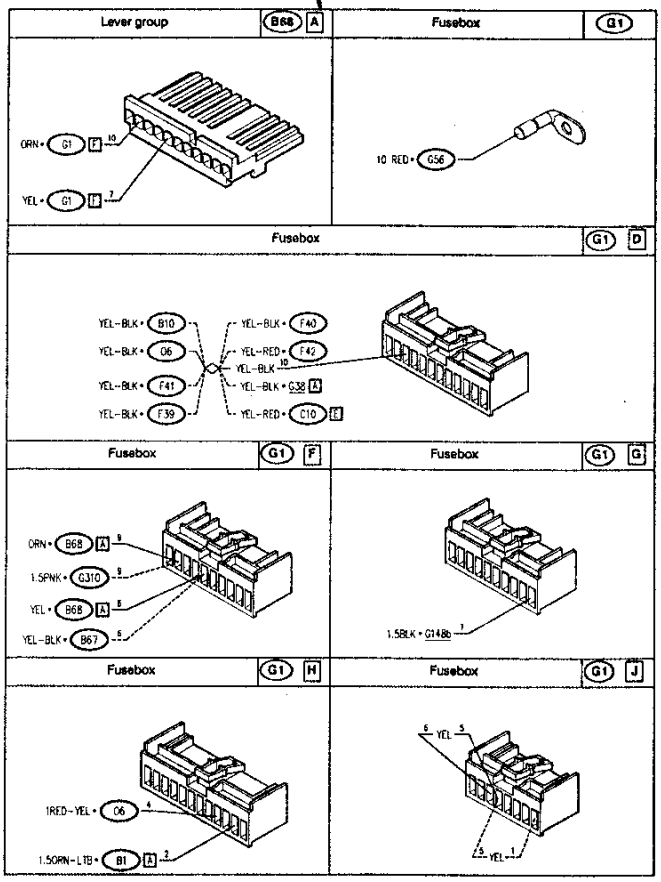
C illustrations showing components and connectors;

D schematic cable diagram (location of the components);

E tests for troubleshooting (see "TROUBLESHOOTING").

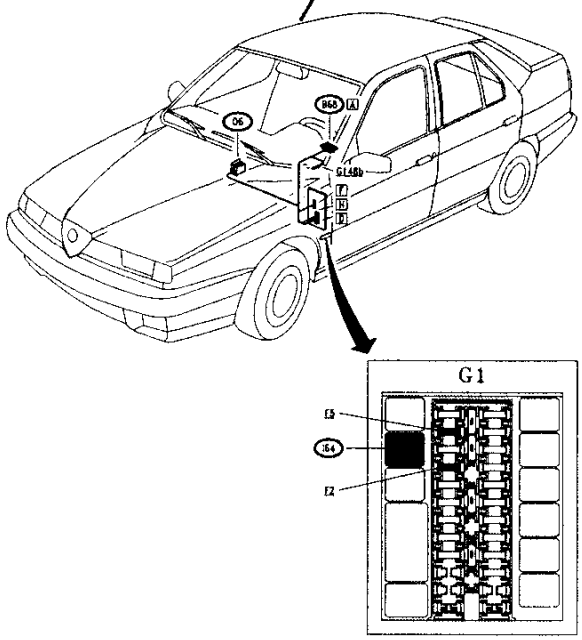
COMPONENTS AND CONNECTORS

COMPONENTS AND CONNECTORS



LOCATION OF COMPONENTS

LOCATION OF COMPONENTS



WIRING DIAGRAMS

The wiring diagrams are carried out in accordance with the operation of the circuit in order to make it easier to understand and therefore easier and quicker to identify a fault.

The lay-out follows the "flow" of current and signals, starting from the power source (always placed higher up or to the left on the more complex double page diagrams) passing the components and reaching ground located lower down.

The power supply is given schematically with symbols which vary depending on the position of the key in the ignition:


– Line under constant supply (directly connected to the battery)


– line supplied when the ignition key is in the "RUN" position (first position of the key)


– line supplied when the key is in the "STARTING" position (second position of the key which is disengaged when the key is released)


– line supplied when the key is in either the "RUN" or the "STARTING" position


– line supplied when the key is in the "PARKING" position (key rotated in the opposite direction and withdrawn after the relative button has been pushed).

A special section ("Power supply") deals in detail with the power supply to all the lines and the functioning of the ignition switch.

The fusebox is not represented in its entirely in the single charts and only the componets useful to the diagram under examination are given: a complete description of the fusebox is given in the specific section ("Fusebox").

All the components and connectors are represented in the diagrams by an alphanumeric code (e.g. A10). The initial letter of this code represents the type of component:

A STARTING - CHARGING
B MANUAL ELECTRICAL CONTROLS
C ON-BOARD INSTRUMENTS
E EXTERNAL LIGHTING
F INTERIOR LIGHTING
G FUSEBOX - CONNECTIONS - GROUNDS
H SWITCHES
I RELAYS
L SENDERS
M SOLENOIDS - SOLENOID VALVES
N ELECTRONIC DEVICES - INTERMITTENCES - TIMERS
O ANCILLARY EQUIPMENT
Q HEATING/VENTILATION - AIR CONDITIONING
R SAFETY DEVICES
S ELECTRONIC INJECTION
T DIAGNOSIS

A complete easy-to-read key is however located at the end of this publication.

The names of the components are given in the charts and the codes are circled, but, for reasons of space, the codes relative to the simple connectors (connections) are only underlined.

The components are always shown in their rest positions: for example the N.C. (normallly closed) contacts are shown closed, relays deactivated etc.

The outline of a component is hatched to indicated that in the chart in question only a part of the component is represented, for example the fuse box which, for the reasons given above, will always be shown hatched.

Arrows indicate references to other relevant diagrams:

- a continuous arrow indicates that the line crosses the indicated component;
- a hatched line indicates that a line starts from that point towards the component indicated; the indications are composed of the name of the chart which is to be referred to, the code pertaining to the components and relative pin to which it refers.

N.B. the lines shown which refer to other diagrams do not affect the circuit under examination, but must however be shown in order to avoid confusion (for example, two wires leaving the same pin), or to follow a signal which crosses other components which have nothing to do with the circuit in question (e.g. to supply or ground them).

The ground lines only show the grounding point (located in the lower part of the diagram) and other lines connected to them are not shown. To remedy this, a special section "Location of grounds" gives all the lines converg-

ing on a particular grounding point.
NOTE: these crossed references between the lines and the grounds make it possible to easily identify the faults in the event of a malfunction in more that one circuit at the same time: for example a faulty ground point will cause an anomaly to all the circuits which converge on it.
N.B.: the diagrams represent the vehicle in its most complete version (all the optional installed) and unless otherwise stated refer to all models.
The variations for the 2.5 6V model are indicated with a hatched line for the 1.8 T.SPARK and 2.0 T.SPARK models: the different lines are however identified by the symbols (6V) and (T.S)

CABLE IDENTIFICATION

Each cable shown in the diagrams is characterized by a code formed by numbers and letters: the numbers indicate cable cross-section in mm^2 (0.5 where not shown), while the letters indicate the colour according to the table given below:

CABLE IDENTIFICATION TABLE

COLOUR	IDENTIFICATION LETTER
Black	BLK
White	WHT
Light blue	LTB
Brown	BRN
Yellow	YEL
Red	RED
Green	GRN
Grey	GRY
Pink	PNK
Orange	ORN
Purple	PPL
Blue	BLU
Hazel brown	HZL

NOTE: for combinations the colours are simply coupled:

Examples:

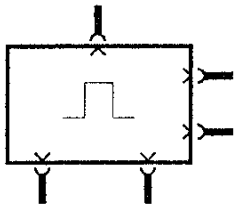
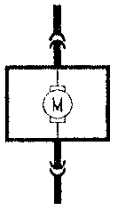
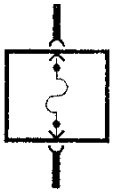
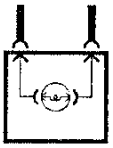
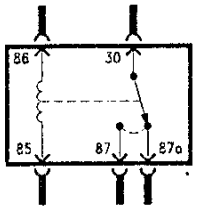
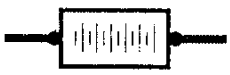
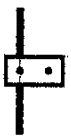
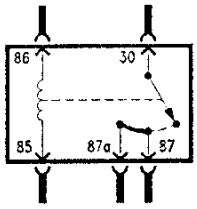
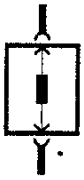
COLOUR	IDENTIFICATION LETTER
Light blue-white	LTB-WHT
Green-black	GRN-BLK
Blue-Red	BLU-RED

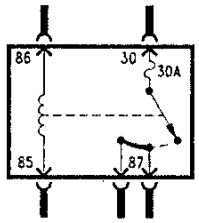
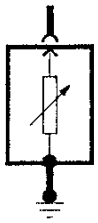
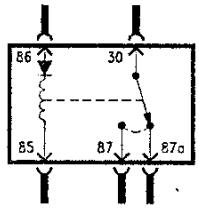
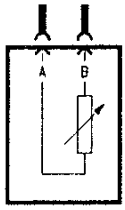
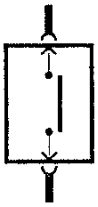
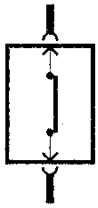
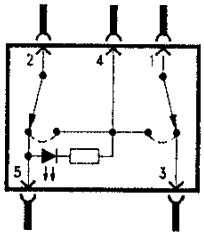
ELECTRICAL COMPONENTS

The electrical components are represented in the diagrams by the most frequently used and best-known international symbols.

The following table lists these symbols as they are shown in the diagrams.

COMPONENT SYMBOLOGY

SYMBOL	NAME	SYMBOL	NAME
	Connector		Instrument panel
	Ground point		Intermittence-timer
	Solder		Electric motor
	Fuse		
	Bulb		Relays
	Battery		
	Branch point		
	Solenoid		

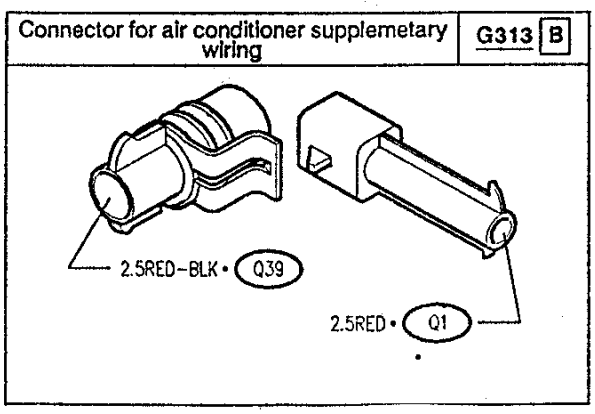
COMPONENT SYMBOLOGY			
SYMBOL	**NAME**	**SYMBOL**	**NAME**
	Relay with fuse		Sensors/ senders
	Relay with diode		
	Switches/ contacts		
			
			
			

DESCRIPTION

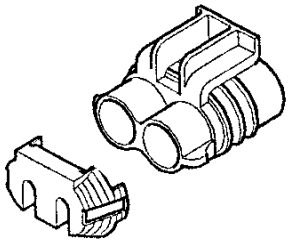
The first part (general description) describes the function of the circuit or system under examination and shows how it works: this is a condition which is necessary for each successive operation check and any troubleshooting found to be necessary.
The second part (functional description) shows the wiring diagram analytically, following the "flow" of the supply signals towards ground from the upper to the lower part.
The components are identified by the same alphanumerical codes used for the diagrams (and in the key at the end of this publication).
The components which need to be outlined and described from an electrical point of view (e.g. relays, contacts, fuses, connectors etc.) in order to be able to check the functioning in the succesive fault diagnosis are also briefly described.

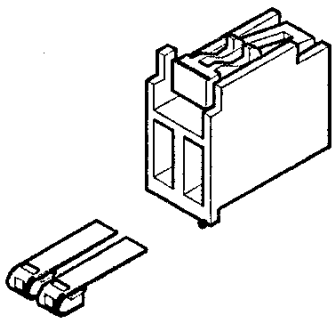
COMPONENTS AND CONNECTORS

A table lists all the components and connectors used in the wiring diagram of the section. For the intermediate connectors both parts are shown ("male" and "female").
Alongside the schematic diagram of the component can be found the representations of the cables indicated in the wiring diagram in question, indicating cross-section, colour and the component to which the cable is connected.



Some connectors are equipped with a secondary lock which prevents the terminals of the cables from becoming accidentally separated from the connector itself.
NOTE: ensure that the secondary lock is removed before removing the cable from the connector. When it is refitted, after connecting all the cables, replace the secondary lock.
The secondary lock may be one of a variety of different types depending on the connector to which it is fixed as shown in the following examples.





LOCATION OF COMPONENTS

A schematic diagram representing the silhouette of the vehicle makes it easy to find the various components of the circuit under examination, and to identify, where necessary, the route taken by the cables fixed to the body of the vehicle itself.

TROUBLESHOOTING TABLE

A TROUBLESHOOTING TABLE follows the descriptions. The possible (and most frequent) faults which can affect the circuit are listed in this table: for each of these, the components which may be affected and the test to be carried out from among those given below are indicated. In the example given below, the fault affecting function X involves components 1 and 5 and can be rapidly located by following test A.

Malfunction	Component					Test
	1	2	3	4	5	
X	●				●	A
Y		●	●	●		B

TROUBLESHOOTING

N.B. All the troubleshooting procedures given in this publication begin from the hypothetical situation that there is ONLY ONE FAULT in the system at any one time. In the unlikely event of simultaneous faults, it is necessary to unite more than one procedure.

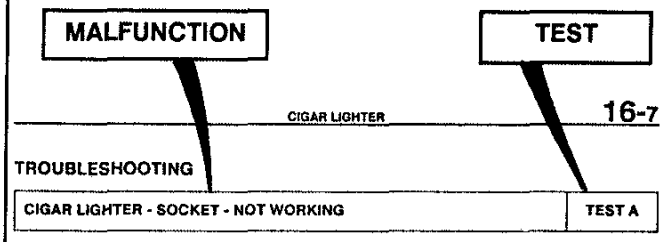
If more than one circuit or system is out of use at the same time there are at least two situations which can be easily recognized: the malfunction affects a fuse protecting the various lines (for this refer to the section "Fusebox") or a defect affecting the ground point where the different lines converge (for this, refer to the section "Location of grounds").

The troubleshooting tests are located at the end of each section.

Each test, identified by the type of malfunction is given a code letter.

NOTE: the malfunction is indicated and described exactly as the driver of the vehicle reports it or as discovered by the workshop staff operating the vehicle.

The tests are described in a three-column table as follows:



TEST PROCEDURE	RESULT	CORRECTIVE ACTION
A1 CHECK FUSE – Check for damage of fuse F2 in fusebox G1	OK ►	Carry out step A2
	~~OK~~ ►	Replace fuse (20A)
A2 CHECK VOLTAGE – Verify 12V between pins 2 and 3 of cigar lighter O6	OK ►	Replace cigar lighter O6
	~~OK~~ ►	Carry out step A4
A3 CHECK VOLTAGE – Verify 12V at pin 2 of O6	OK ►	Restore wiring between pin 3 of O6 and ground G146b, also across the solder (BLK)
	~~OK~~ ►	Restore wiring between pin H4 of G1 and pin 2 of O6 (RED- YEL)

PA4655E1000000 7-1991

1st column: "TEST PROCEDURE" :
this column indicates the steps to be carried out, numbered in sequence, to check the circuit and to search for the malfunction.
If the operation to be carried out is a simple one, or among those indicated in this section (see: "ELEMENTARY CHECKS RELATIVE TO ELECTRICAL LINES AND COMPONENTS") it is only indicated. If the component to be checked or the operation is more complex it will be accurately described and illustrated.

2nd column: "RESULT":
this column indicates two possible outcomes of the tests carried out for the step in question: "OK" or "not OK" which indicate the remedy to be followed.

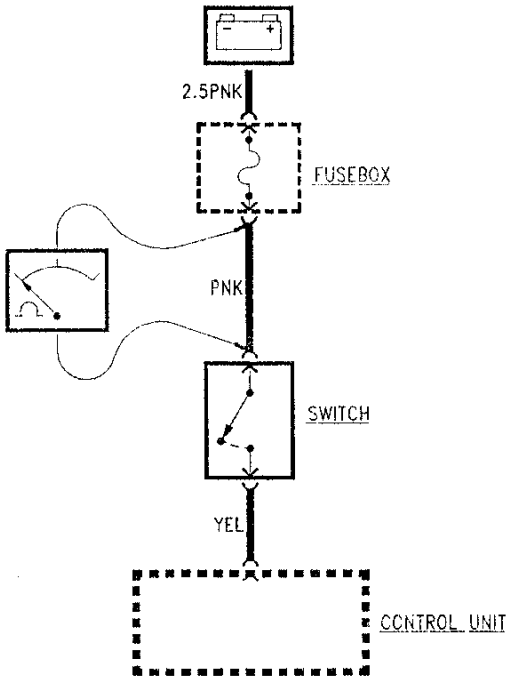
3rd column : "CORRECTIVE ACTION":
this column corresponds to the result of the checks carried out and gives are given the possible remedies which may be used to restore the correct operation of the vehicle, for example, replacing a component etc. Reference may be given to the next step to be carried out towards identifying the malfunction.
All the operations and checks given can be carried out with a simple Multimeter as shown below.
N.B. Special electronical equipment for fault diagnosis like the ALFA ROMEO TESTER can be used without taking into consideration the details mentioned above; the relative publications should though be consulted.

ELEMENTARY CHECKS RELATIVE TO ELECTRICAL LINES AND COMPONENTS

A series of elementary checks and tests are given below which refer to the lines and the most common components present in the electrical system of the vehicle.
It will be necessary to refer to these when the fault diagnosis pages indicate that the continuity, integrity, efficiency or correct functioning of a single component etc., should be checked.
All these tests can be caried out using a Multimeter fitted with a resistance scale (ohmmeter) or a voltage scale (voltmeter).
NOTE: before any readings are taken it is advisable to check that the terminals of the contact are free from rust or foreign particles (oil, dirt, etc...).

LINE CHECKS:

MEASURING ELECTRICAL CONTINUITY:
NOTE: above all ensure that the supply to the component under examination is disconnected!
This applies to all resistance measurements.
Set the Multimeter to measure ohms and set it so that 0 Ω can be read when the two prods of the instrument are touched together.
Place the two prods of the instrument at the ends of the component or cable being examined and read the resistance value: 0 Ω signifies electrical continuity in a cable, fuse etc.; ∞ (infinitive) signifies an interruption.
For certain components, for example resistances, sensors, electric motors etc., a specific value should be read corresponding to the impedance of the component itself.



MEASURING VOLTAGE:

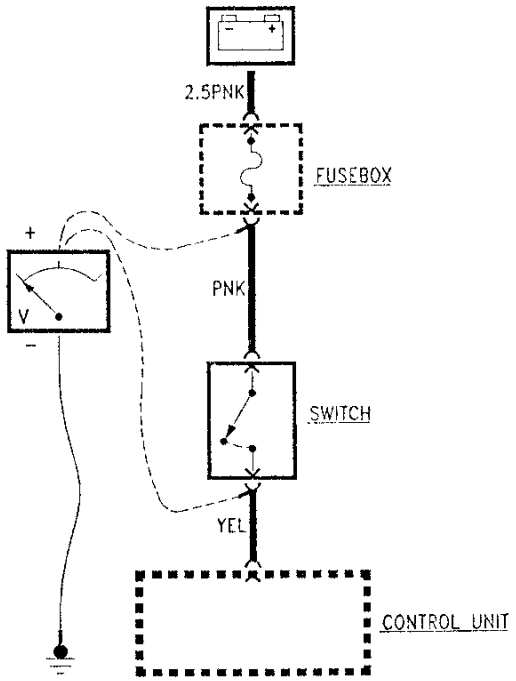
NOTE: before any readings are taken ensure that the component or line being examined is connected to the power supply as shown in the wiring diagram.

Set the Multimeter to measure volts.

Connect the negative prod of the Multimeter to ground (for example the battery ground).

Connect the positive prod to the point where you wish to know the voltage, and selecting the suitable scale, take a reading.

If the exact voltage at various points along a line or circuit is known, the affected part can then be located with rapidity.



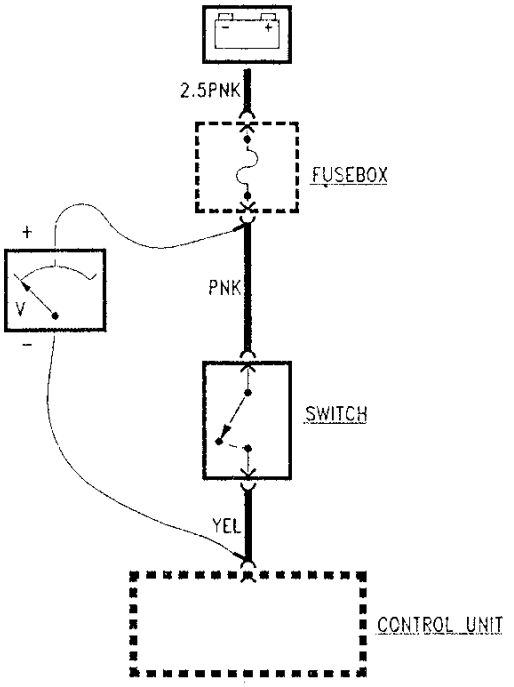
MEASURING VOLTAGE DROP:

NOTE: before any readings are taken, ensure that the relative components or lines are connected to the power supply as indicated in the wiring diagram.

Set the Multimeter to measure volts.

Connect the two prods of the voltmeter to the two points where you wish to know the difference in voltage, and, selecting a suitable scale, take a reading. The positive prod should be connected to the part nearest the power source.

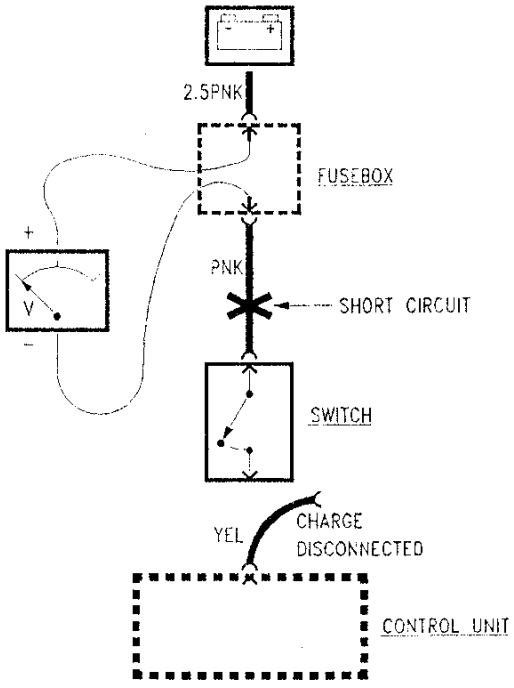
As the connectors and contacts are designed and constructed in such a way as to guarantee an infrequent loss of voltage, a value of 1 V indicates that there is a problem in the stretch being measured.



CHECKING FOR A SHORT CIRCUIT:

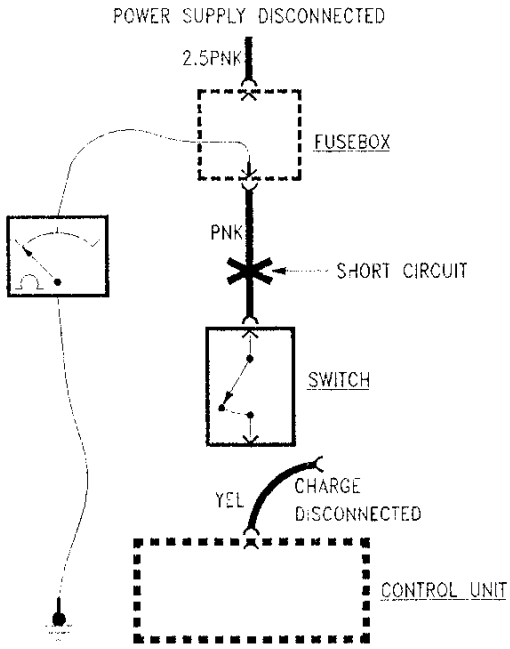
with voltmeter:

NOTE: before taking any readings ensure that the component or line being examined is connected to the power supply as indicated in the wiring diagram
Set the Multimeter to measure volts.
Remove the fuse of the relevant circuit (which will be burnt out) and disconnect the charge.
Connect the prods of the Multimeter to the terminals of the fuse; the positive prod should be connected to the part nearest to the power source.
If the voltmeter gives a reading indicating that voltage is present, part of the circuit will be short circuited to ground (bared, worn, pinched wire etc.). By moving the wiring in order to find a point where the reading is 0 V, the affected part can be identified.



with ohmmeter:

NOTE: above all ensure that the component has been disconnected from the power supply.
Set the Multimeter to measure ohms and set it so that when the prods are touched together a reading of 0 Ω can be taken.
Remove the fuse from the affected circuit (which will be burnt out) and disconnect the charge.
Connect the prod of the instrument to the terminal of the fuse nearest the charge and the other to a suitable ground point.
If the ohmmeter shows a resistance of 0 Ω, or is very low, part of the circuit will have been short circuited to ground (bared, worn, pinched wire etc.). If the resistance is ∞ (infinitive), then in that particular stretch the circuit is whole. The affected part can be easily found by moving the wiring to identify in which position the resistance value ceases to be ∞ (infinitive).

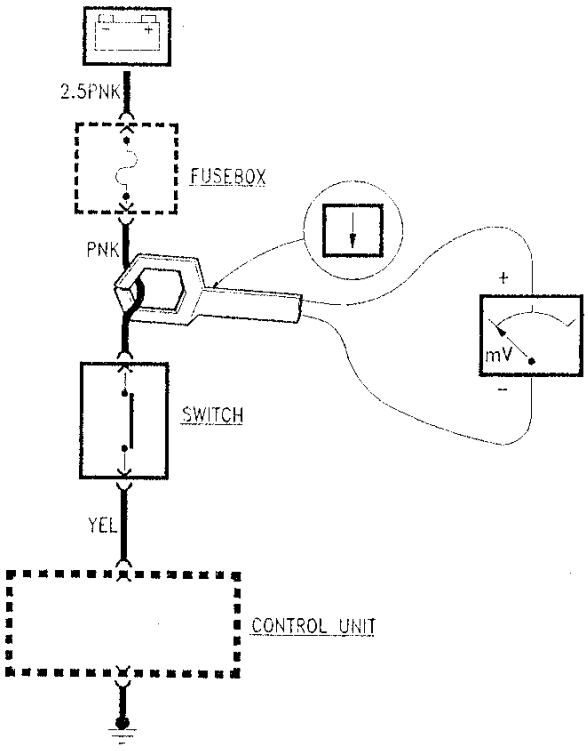


NOTE: measurements taken with a voltmeter are more accurate and if both options are possible the voltmeter should be chosen.

MEASURING CURRENT

It will somtimes be necessary to take reading of the current absorption, in which case the Multimeter will not suffice. It is therefore necessary to use another instrument, for example a snap on ammeter, operating as follows:

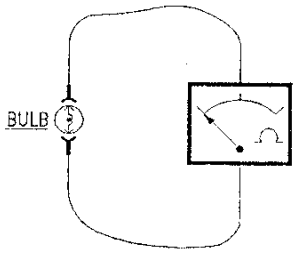
- insert the lead of which the current is to be measured into the pincers, suitably connected to the multimeter set to measure volts (mV);
- **NOTE:** ensure that the flow of current (from positive towards ground) is the same as indicated on the pincers;
- take a reading in mV which coincides with the value of the current in A.



TESTING COMPONENTS:

BULBS:

NOTE: a bulb is characterized by two values, voltage and wattage rating. The resistance of the bulb is lower as its pwattage increases. Example: a headlight bulb (12V-45W) will have a resistance which is much lower than an instrument panel warning light bulb (12V-3W).
To check whether a bulb is damaged or not, remove it and connect the prods of a Multimeter, set to measure ohms, to the terminals of the lamp itself. A finite resistance value (quite large as indicated above) idicates that the bulb is working while a resistance value of ∞ (infinite) signifies that the filament of the bulb is interrupted.

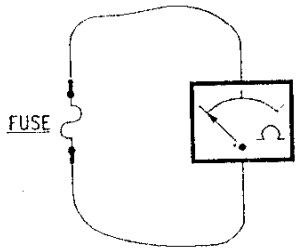


N.B. An easier way to check whether a bulb is damaged or not without removing it, is to connect a 12 V power source to the terminal connected to the vehicle's power supply and see if the bulb lights up.

FUSES:

A fuse is an electrical conductor the cross section of which is such that if the load passing through the cable exceeds a certain value, called fuse amperage, it will blow and interrupt the circuit.
If it is not possible to visibly see whether the filament is intact or not, it can be checked by connecting the prods of a Multimeter, set to measure ohms, to the terminals of the fuse: a zero value (0 Ω) indicates that the fuse is

undamaged while a resistance value of ∞ (infinitive) means that the filament has "blown".



RELAYS:

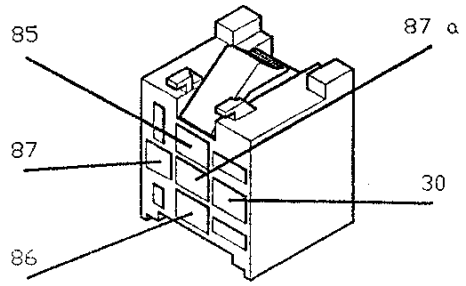
In its simplest form, a relay is composed of a coil and a contact. When voltage is applied to the ends of the coil the contact closes.

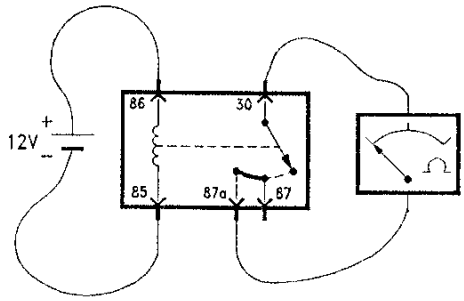
Normally the ends of the coil are identified as pins 85 and 86, while the terminals of the contact are pin 30 (from the power supply) and pin 87 towards the charge. There may also be two output pins towards the charge: 87 and 87a when the contact closes at the same time on both, and 87 and 87b when they close separately.

The contact can also be a switch and close itself on one pin (87a) at the same time as opening the other (87).

(For the different types of relay refer to the symbology table relative to the previous components).

To check a relay, connect pins 85 and 86 to a 12 V power source (the coil does not have a polarity and therefore the two pins are interchangeable) and using a Multimeter set to read ohms, measure the coil: when it is "excited" (between the ends of the coil there will be a difference in voltage of 12 V) the Multimeter should measure the continuity (0 Ω) between pin 30 and pin 87 (or 87a 0 87b); when the coil is not excited, the Multimeter should show an open circuit (resistance ∞ -infinitive-).





In a relay switch, the check will consist of the passage from continuity to open circuit on one pin and vice-versa on the other.

One of the most common malfunctions affecting the relays is the "locking" of the contact. This can be immediately identified as the ohm signal does not vary when activating or deactivating the coil (always 0 Ω or always ∞).

NOTE: some relays have a built in fuse: this though must be checked separately before checking the relay.

In other relays a resistance is placed in parallel to the activated circuit, in others a diode protects the excitation; in these cases the method of checking the operation of the relay does not differ from the method given above.

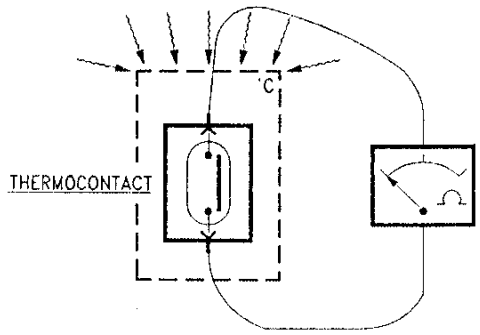
THERMOCONTACTS:

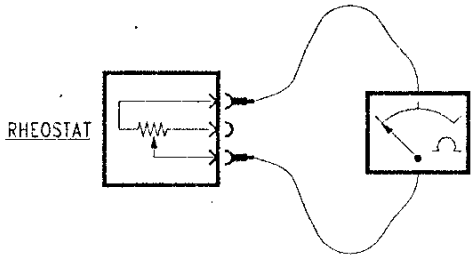
The thermal contacts change their state (circuit closed or open) when a certain temperature is reached.

NOTE: they can be N.C. (normally closed) or N.O. (normally open): in the diagrams they are shown at their rest position.

To check a thermocontact, remove it from the vehicle and connect the terminals to the Multimeter set to measure ohms.

Using suitable equipment (containers which can be heated and cooled) check that at the setting temperature of each thermocontact, the resistance passes from 0 Ω to ∞ or vice-versa.





SENSORS:

These are components of varying types which are in general similar to contacts (N.O. or N.C.), changing their state when a certain measured physical value varies (e.g. temperature, see thermocontacts, or pressure etc.). For these components, the same rules apply as for checking the thermocontacts.
Other sensors measure specific values and emit a signal which is proportional to these values: as each occasion arises, these will be indicated in the electrical charge diagram which if followed, makes it possible to identify the correct voltage or resistance values to be checked by the Multimeter.

RHEOSTATS:

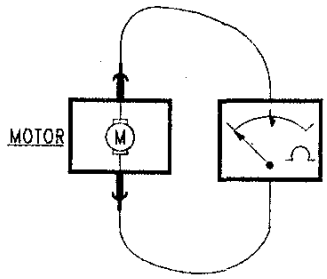
Rheoststs are variable resistances: when voltage (12 V) is applied to the main terminals, the output signal from the third terminal is varied by mechanical action (e.g. rotating a regulating wheel).
To check the correct operation, connect one of the prods of a Multimeter set to measure ohms, to one of the main terminals and the other to the third terminal. By acting on the regulation wheel for example, the resistance should vary.

THERMOSTATS/PRESSOSTATS:

These are instruments which emit a signal which is directly proportional to the temperature/pressure which they measure. From a diagramatic point of view they are rheostats of which the resistance varies with the readings taken.
To check these devices therefore, follow the indications given for the rheostats although suitable equipment will be necessary to enable the temperature or pressure to be changed.

ELECTRIC MOTORS/SOLENOIDS:

The eletric motors and solenoids are mechenisms which are essentially composed of electrical windings and for this reason checking the operation of these components consists of verifying if electrical continuity has reached the windings or not; therefore operate using the Multimeter as indicated above.
It is also possible to check a component when it is installed in the vehicle: disconnect it and check the operation (for example the rotation of the motor) by connecting a 12 V power source to the terminals.
N.B. inverting the polarity (positive and ground) of an electric motor the direction of rotation of the motor is changed: particular attention must therefore be paid that the two terminals are connected correctly.



NOTE: for these mechanisms it is possible for faults to be caused by mechanical and not electrical problems. In this case other volumes of "REPAIR MANUAL" should be consulted.

GROUND POINTS:

A ground point is not correctly connected if oxidation is present, if it is not securely fixed to the body, if the cables reaching it are bared or damaged.
To check whether the ground point is really at "zero potential" connect it to the prod of a multimeter set to measure ohms. Connecting the other prod to the negative pole of the battery a resistance value of 0 Ω should be measured. If this is not the case, carefully inspect the ground as it is damaged.

SOLDERS:

Numerous solders between wires are present in the wiring of the vehicle. These are carried out using the ultrasound technique which makes them extremely reliable and safe.

If it becomes necessary to check a solder, simply check the continuity between the various wires which converge on it. If this proves unsuccessful suitably restore the wiring.

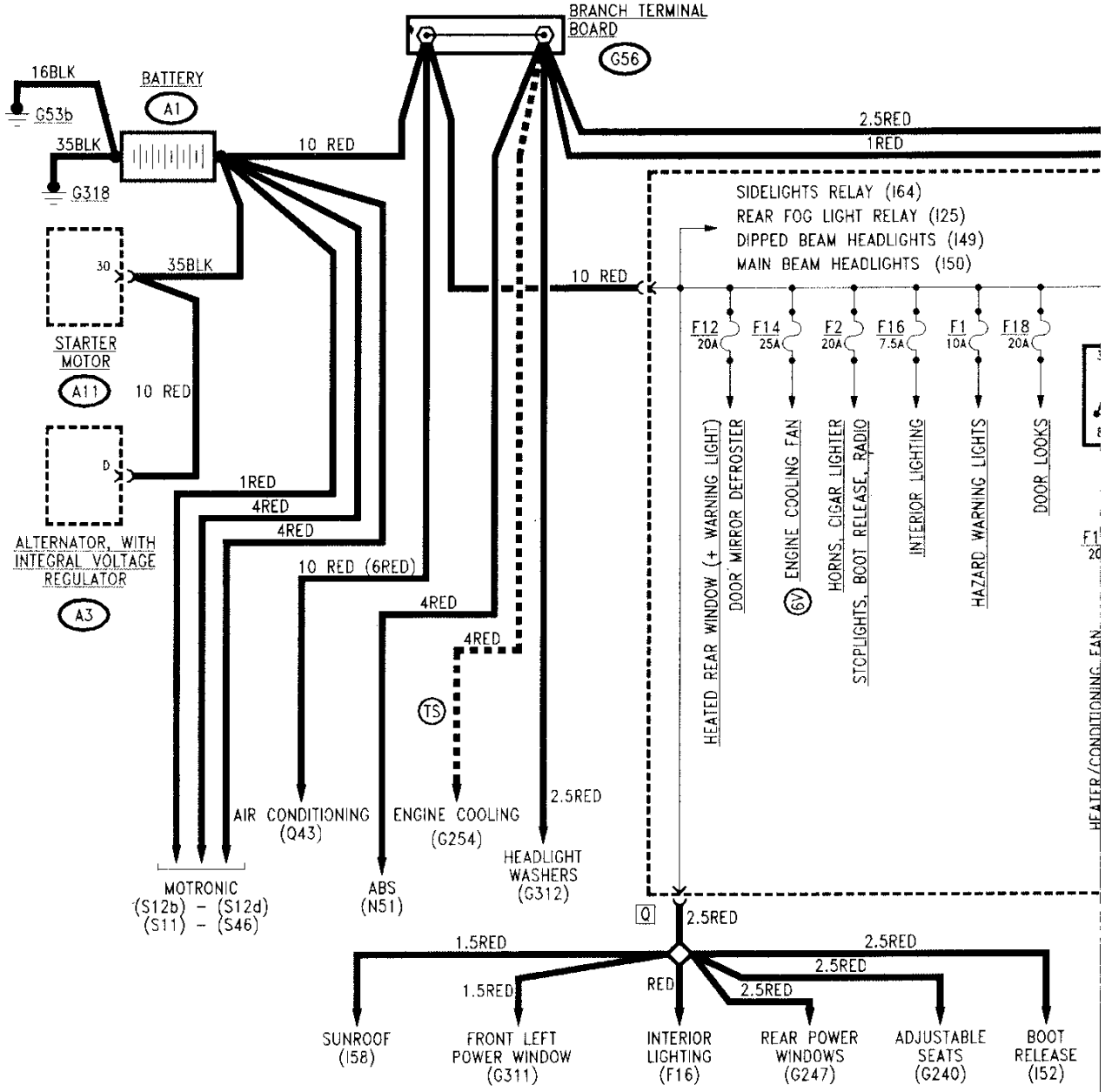
CONTROL UNITS AND GENERAL ELECTRONIC DEVICES:

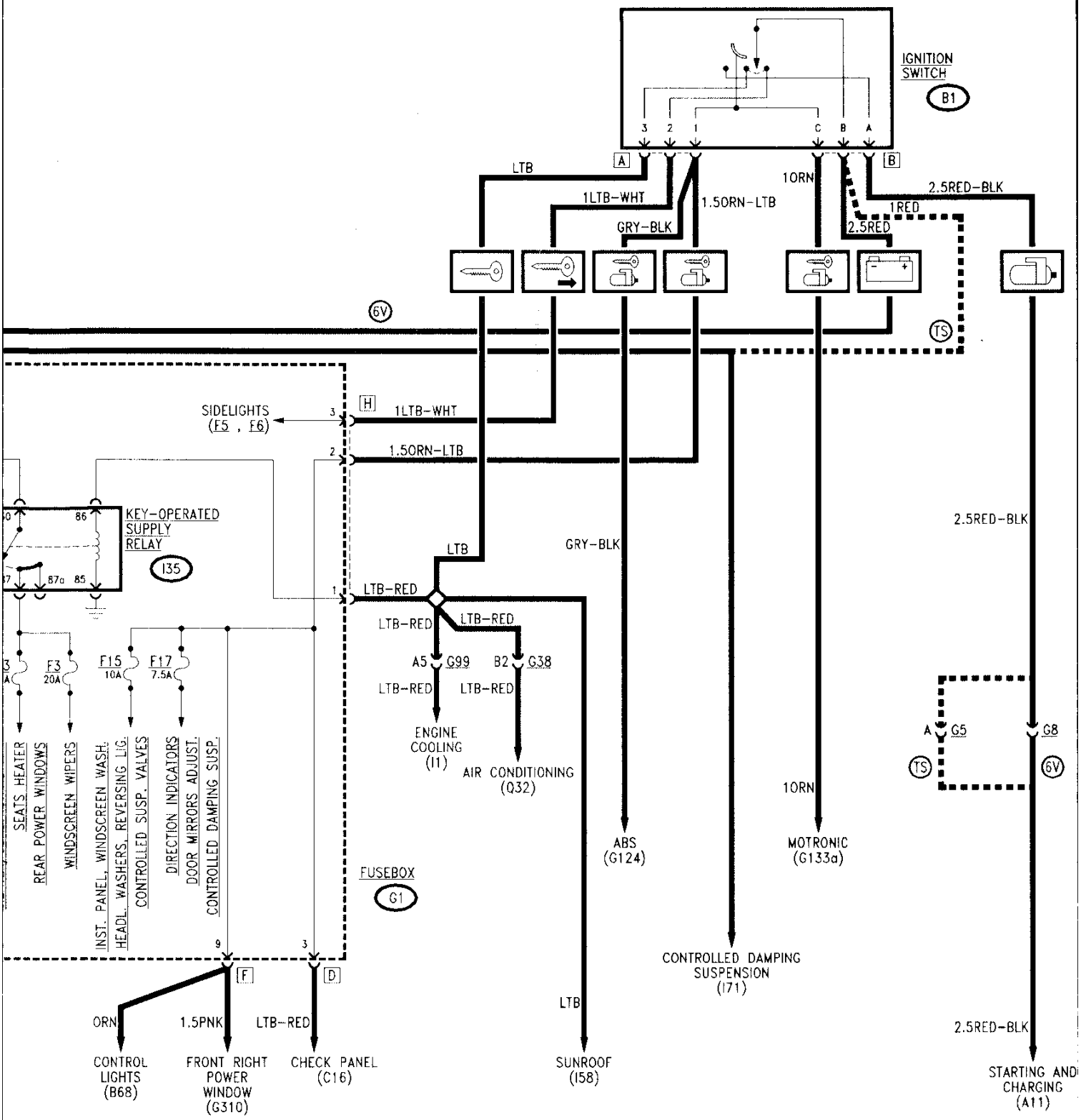
These components cannot be dealt with in a general context and therefore reference must be made to the single fault diagnosis procedures where the specific checks are given. These are however electrical checks regarding voltage or resistance which can be carried out with a Multimeter.
You are reminded that it is not possible to work on these electrical components internally, therefore if they are found to be faulty they should be replaced.

POWER SUPPLY

IDEX

WIRING DIAGRAM




IGNITION SWITCH
B1
3 2 1 C B A
A
B
LTB
1LTB-WHT
1.5ORN-LTB
GRY-BLK
1ORN
2.5RED-BLK
1RED
2.5RED
6V
TS
SIDELIGHTS (F5 , F6)
H
1LTB-WHT
1.5ORN-LTB
KEY-OPERATED SUPPLY RELAY
I35
LTB
LTB-RED
LTB-RED
LTB-RED
A5 G99
B2 G38
LTB-RED
LTB-RED
ENGINE COOLING (I1)
AIR CONDITIONING (Q32)
GRY-BLK
2.5RED-BLK
F3 20A
F15 10A
F17 7.5A
SEATS HEATER
REAR POWER WINDOWS
WINDSCREEN WIPERS
INST. PANEL, WINDSCREEN WASH. HEADL. WASHERS, REVERSING LIG.
CONTROLLED SUSP. VALVES
DIRECTION INDICATORS
DOOR MIRRORS ADJUST.
CONTROLLED DAMPING SUSP.
FUSEBOX
G1
ABS (G124)
1ORN
MOTRONIC (G133a)
A G5
G8
TS
6V
CONTROLLED DAMPING SUSPENSION (I71)
ORN
1.5PNK
LTB-RED
LTB
2.5RED-BLK
CONTROL LIGHTS (B68)
FRONT RIGHT POWER WINDOW (G310)
CHECK PANEL (C16)
SUNROOF (I58)
STARTING AND CHARGING (A11)

GENERAL DESCRIPTION

General lay-out

All the systems and electrical installations are supplied by the battery **A1** with 12V current.
The lines through which the voltage from the battery is distributed to the devices relative to the various functions and systems are shown in the wiring diagrams.
In this general diagram, all the lines are shown as they leave the battery and branch terminal board **G56**,with reference being given to the specific diagrams for more detailed information.
Some circuits are continuously supplied, even when the vehicle is stationary and the ignition key withdrawn, as they are connected directly to the battery **A1**.
Other circuits are supplied when the key in the ignition switch **B1** is rotated to the various positions:

- inserting the key and rotating it to the first position, "RUN", supplies the numerous circuits which are termed "key- operated";
- the second position - "STARTING" -supplies the starter motor, and disconnects other circuits (those which absorb the greatest ammount of current) guaranteeing the maximum charge to the starter motor;
- withdrawing the key and rotating it in the opposite direction (and pressing the relevant button) engages the "PARKING" position which supplies the sidelights even when the key is removed.

These different systems of supply are shown schematically in the wiring diagrams using the following symbols:

 – constantly supplied line

 – line supplied with key in the "STARTING" position

 – line supplied with the key in the "RUN" position

 – line supplied with key engaged (in both of the previous positions)

 – line supplied with key in the "PARKING" position

NOTE: This general diagram permits an easy identification of the circuits supplied by the same line: this facilitates troubleshooting and malfunction diagnosis in the event of problems affecting more than one system.

FUNCTIONAL DESCRIPTION

Voltage coming from the battery **A1** is divided among various lines in the branch terminal board **G56**, from where numerous cables leave, directly supplying some systems (protected by special "wander" fuses) and the fusebox **G1**; inside the fusebox the power supply is sepárated to the various circuits, protected by the relative fuses.

The line for recharging the battery, coming from the alernator **A3** crosses the starter motor **A11**.

The ignition switch **B1** is also supplied via the terminal board **G56** at pin B of connector B.

The line coming from pin A of connector B corresponds to the "STARTING" position and supplies the starter motor **A11**.

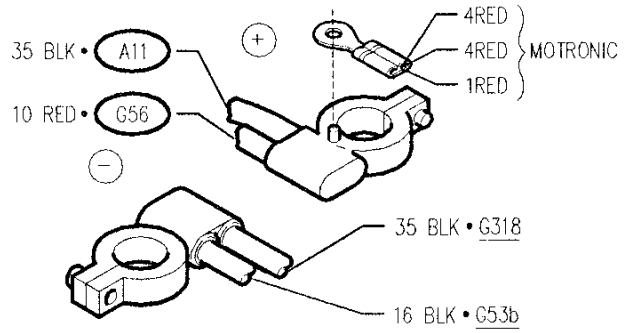
The two lines leaving pin 3 of connector A - "RUN" position - via the fusebox **G1**, supply the "key-operated" circuits which are disengaged when the key is in the "STARTING" position.

The three lines leaving pin 1 of connector A and from pin C of connector B supply the the key operated circuits (either directly or via the fusebox **G1** and particularly relay **I35**) which remain engaged even in the "STARTING" position.

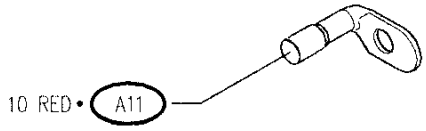
The line leaving pin 2 of connector A corresponds to the "PARKING" position and supplies thew sidelights circuit inside fusebox **G1**.

COMPONENTS AND CONNECTORS

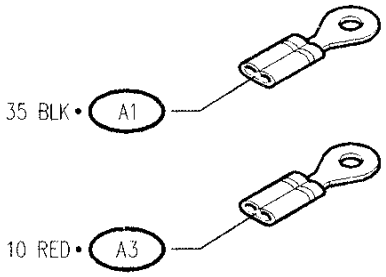
Battery (A1)



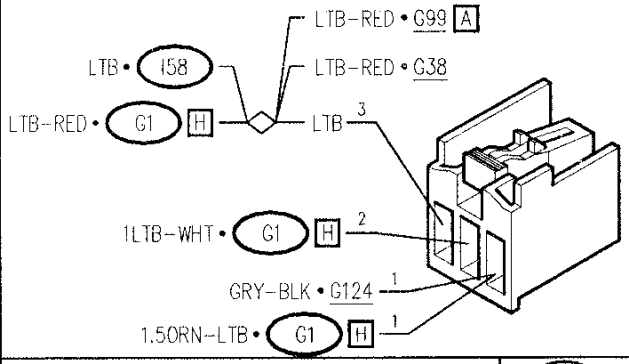
Alternator, with integral voltage regulator (A3)



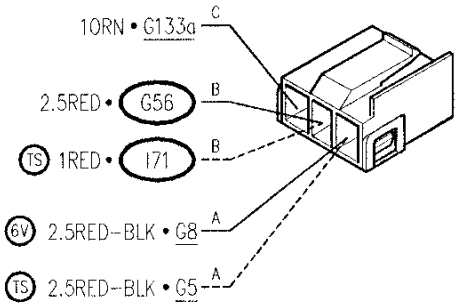
Starter motor (A11)



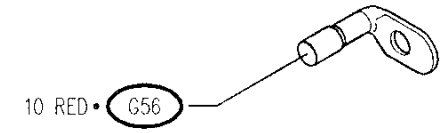
Ignition switch (B1) A



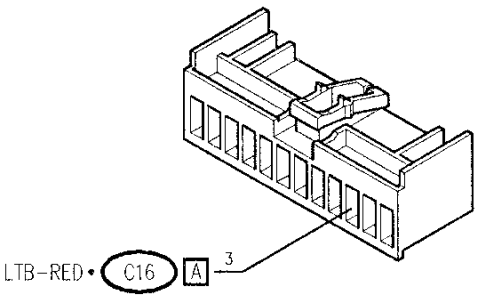
Ignition switch (B1) B



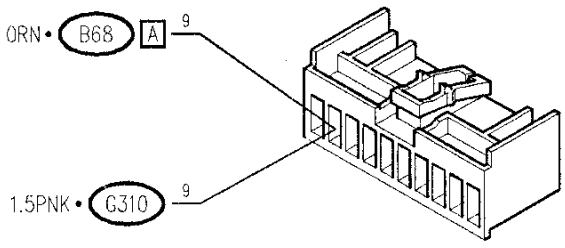
Fusebox (G1)



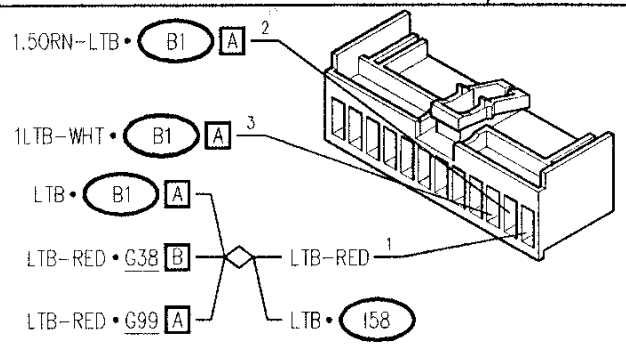
Fusebox (G1) D



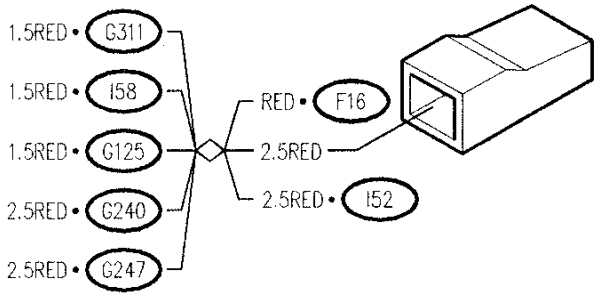
Fusebox (G1) F



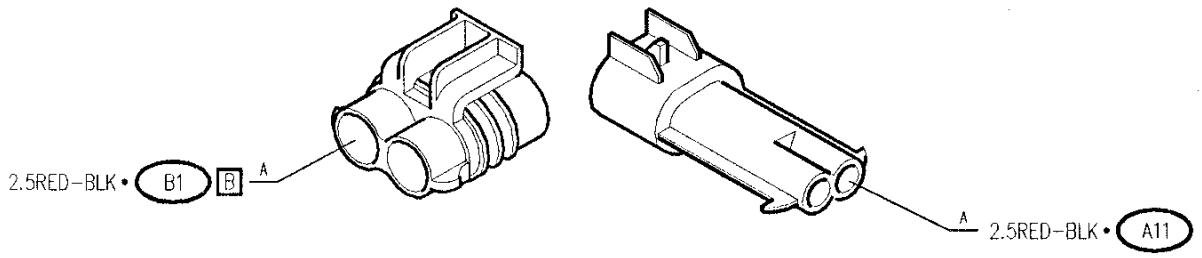
Fusebox	G1 H



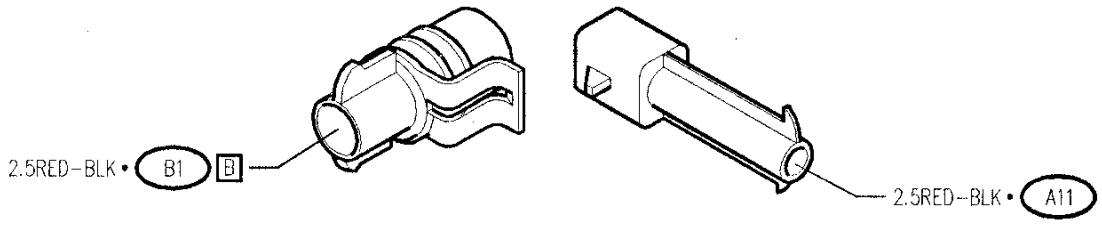
Fusebox	G1 Q



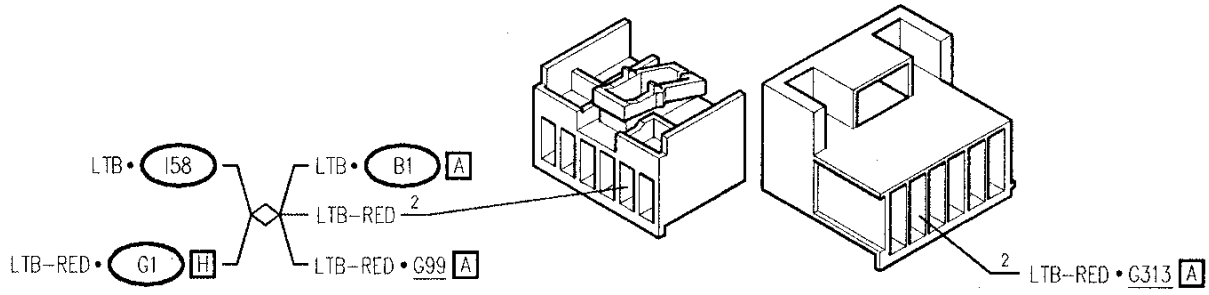
Multiple connector	G5



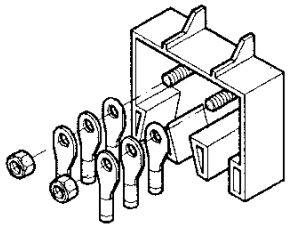
Single connector	G8

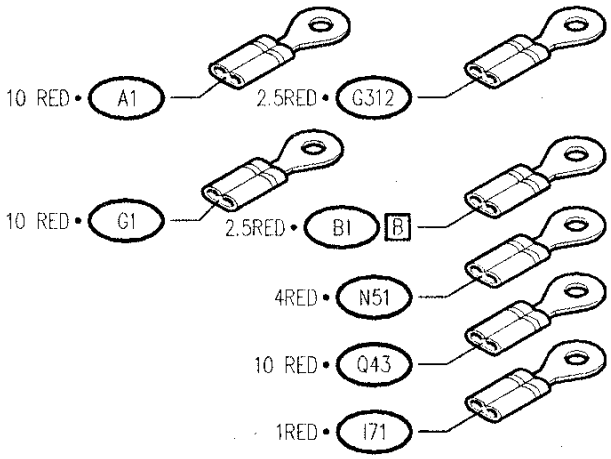


Connector for air conditioner wiring	G38 B

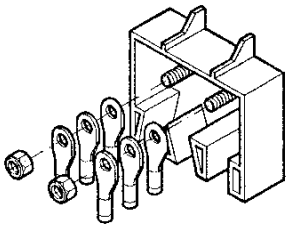


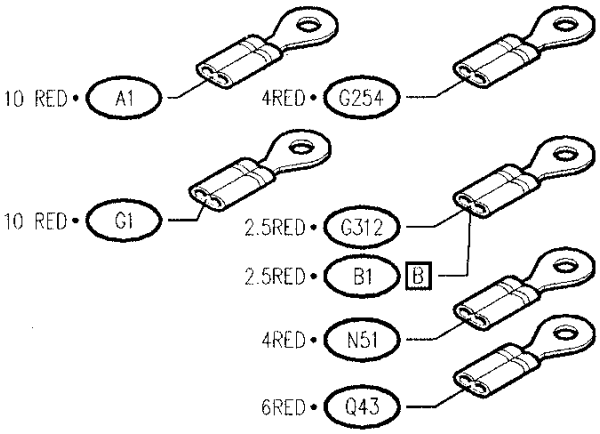
Branch terminal board 6V	G56



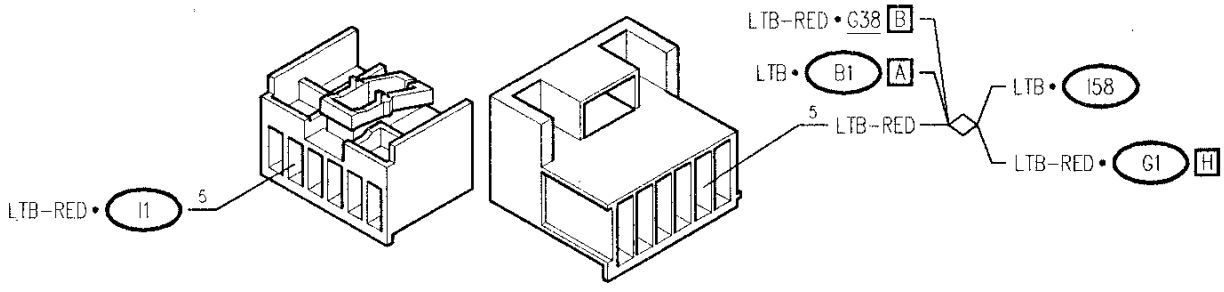


Branch terminal board TS	G56

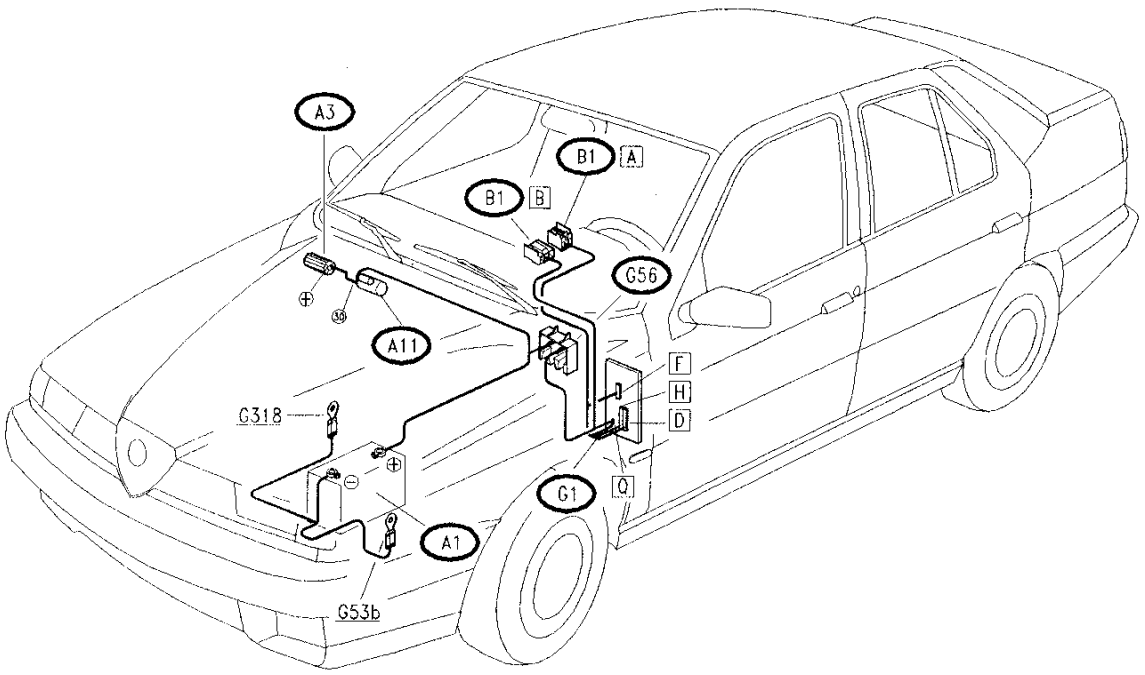




Dashboard/engine connection	G99 A

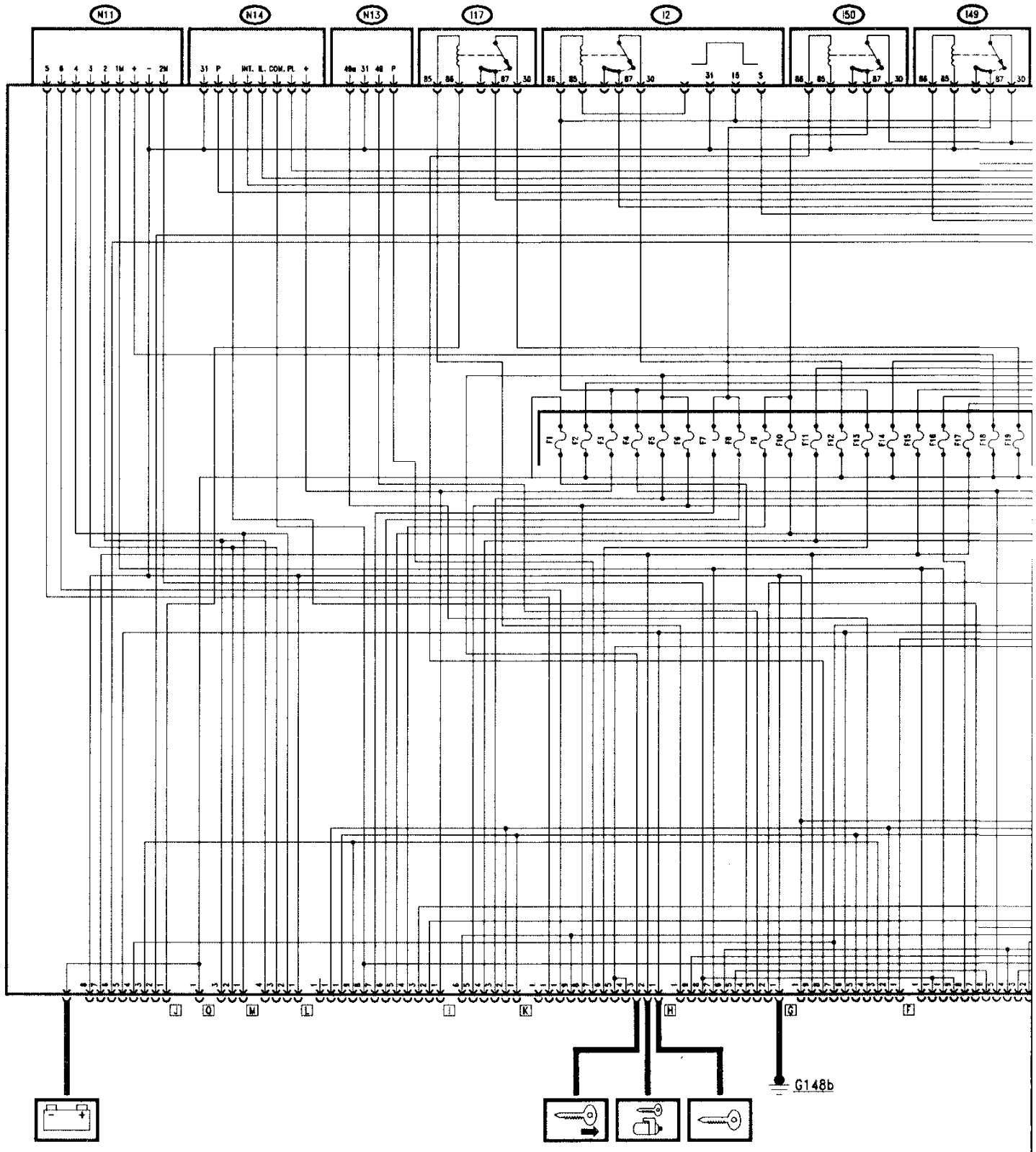


LOCATION OF COMPONENTS



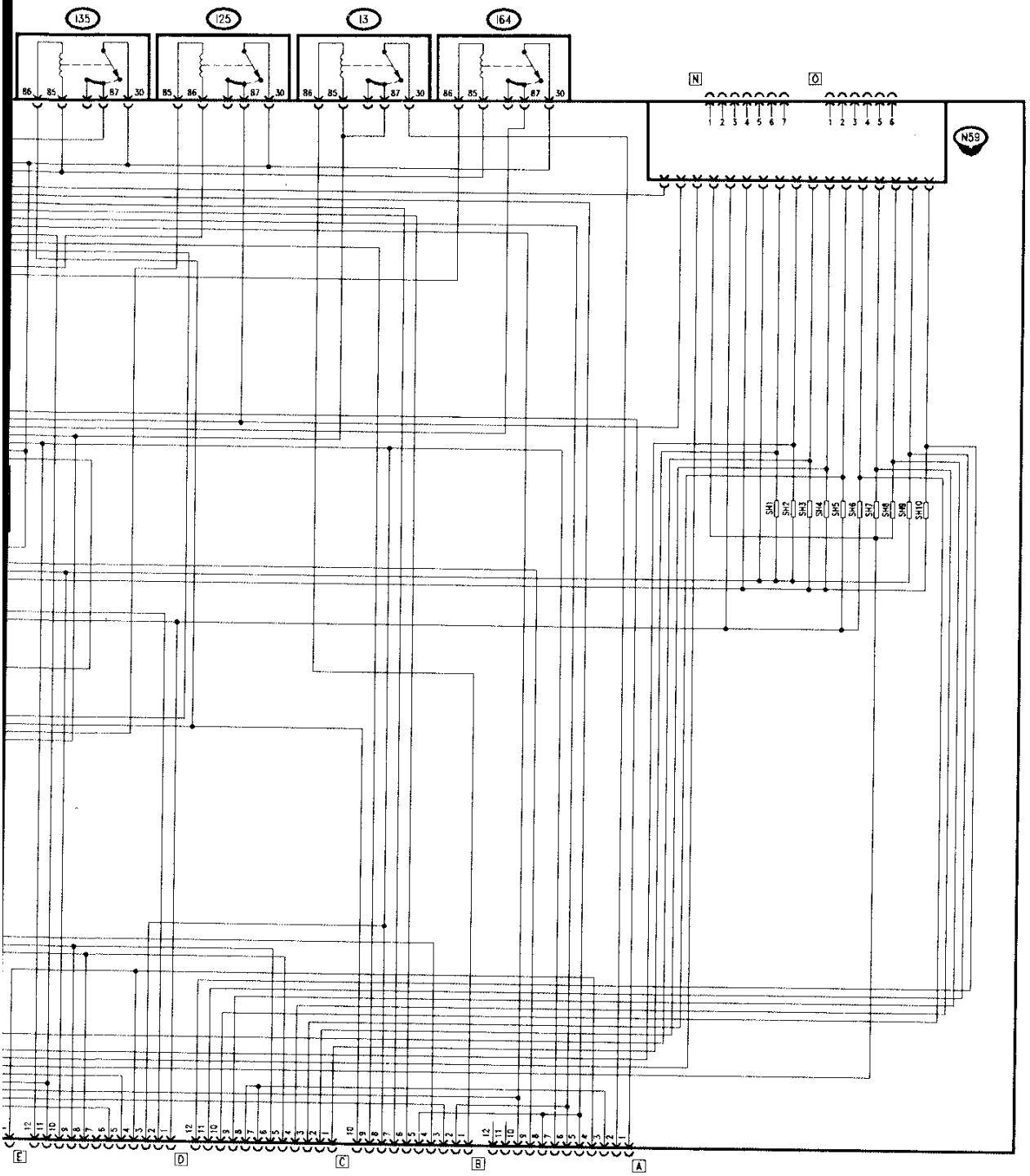
FUSEBOX

INDEX


N11
N14
N13
117
12
150
149
G148b

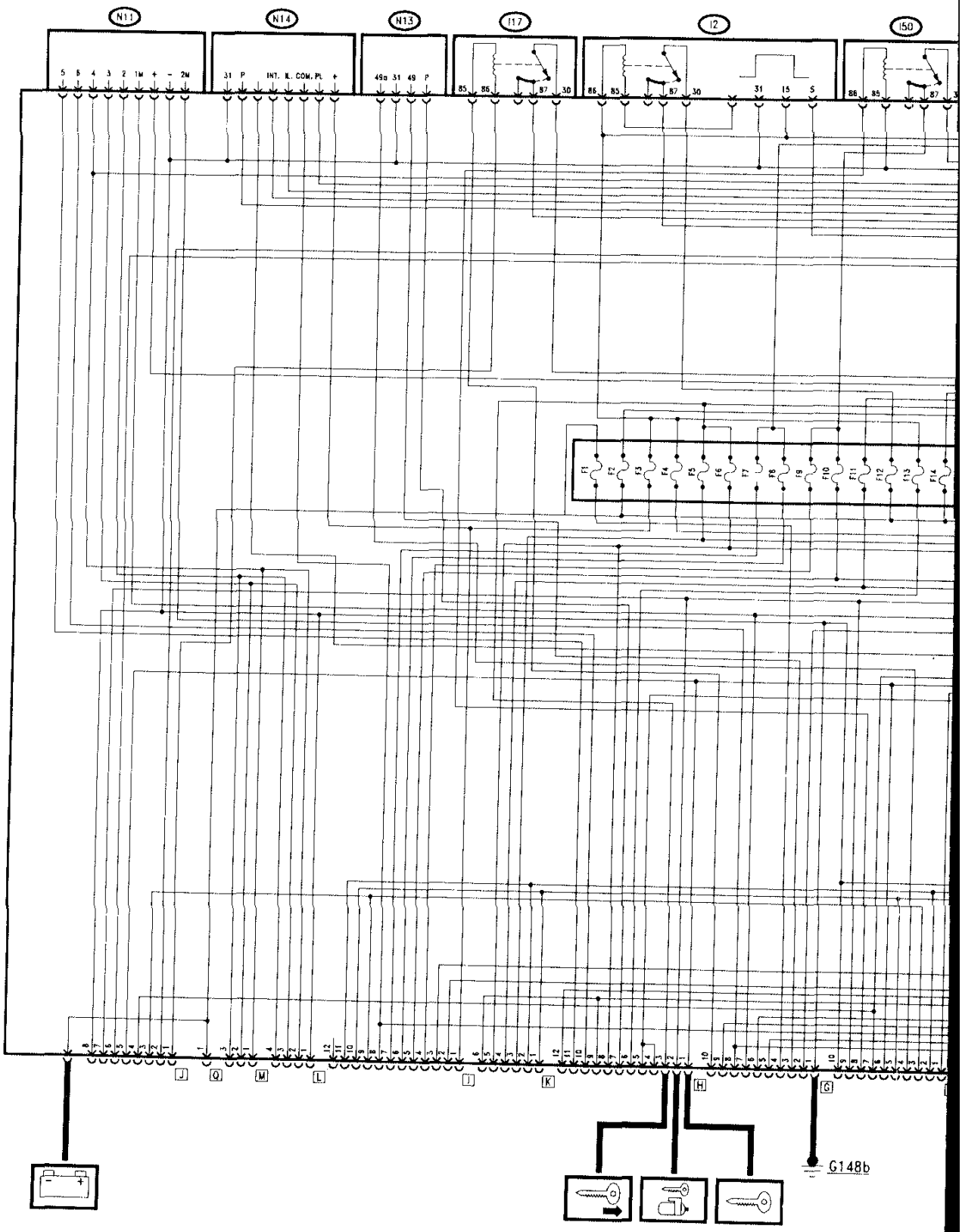
IRING DIAGRAM

odels with Check Panel



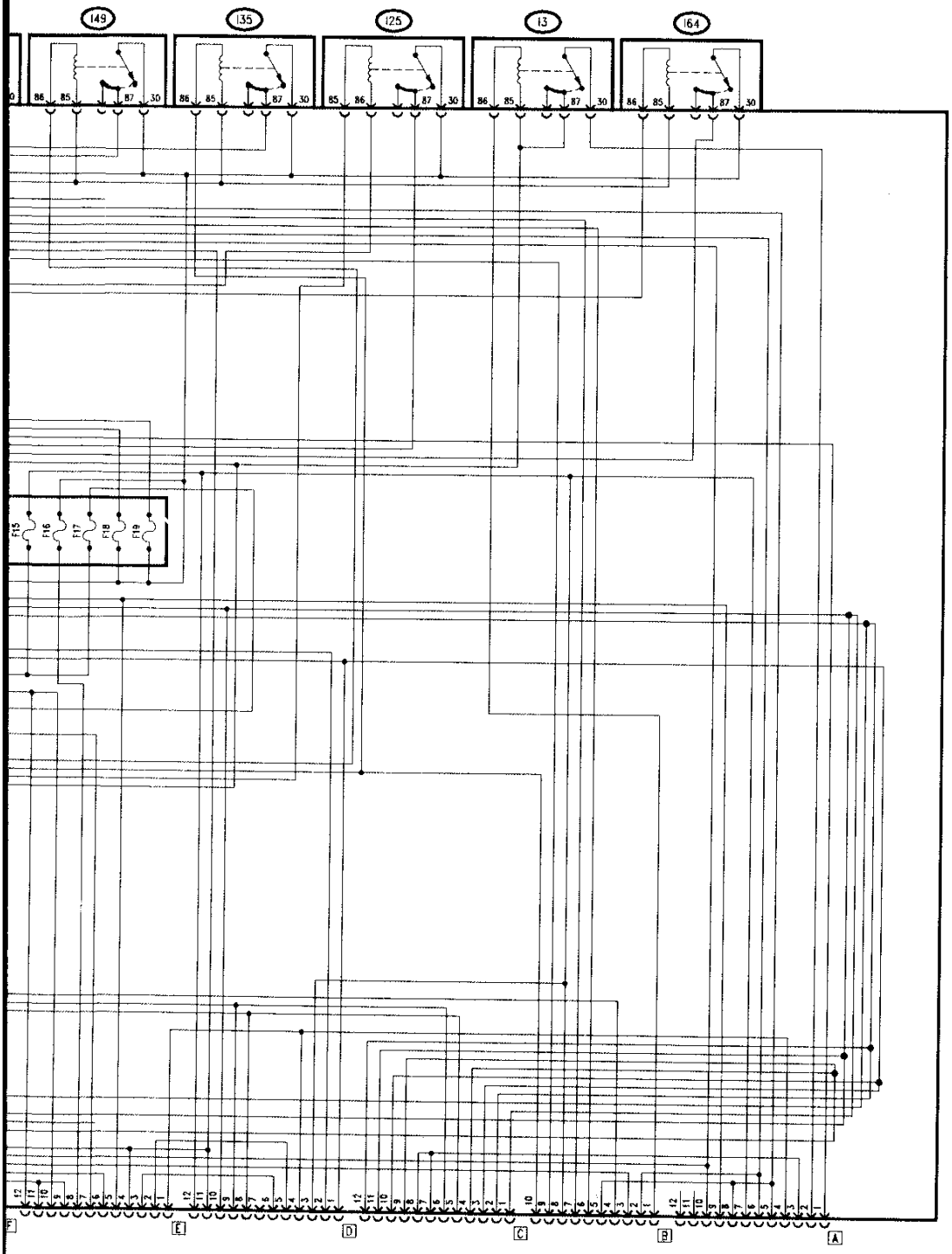
WIRING DIAGRAM

Models without Check Panel



PA4655E1000000

7-1991


149
135
125
13
164
86
85
87
30
F15
F16
F17
F18
F19
F
E
D
C
B
A

GENERAL DESCRIPTION

Internal lay-out

This section describes the printed circuit connecting the inner parts of the fusebox **G1**.

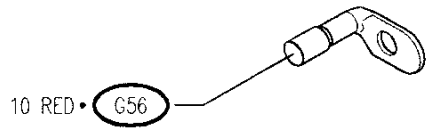
N.B. Two distinct wiring diagrams are given, one for the models equipped with the Check Panel and the other for those without Check Panel.

In the various diagrams relative to the single systems and circuits only the lines relevant to the case under examination are shown: this chart on the other hand gives an overall view of the entire fusebox **G1**.
Numerous relays and other devices are housed in the fusebox indicated here with their relative codes, as are fuses (**F1**,...., **F19**).
The Check Panel control unit **N59** is installed on the fuse box on models equipped with the Check Panel. On some lines connected to this, shunts have been installed (indicated by SH).

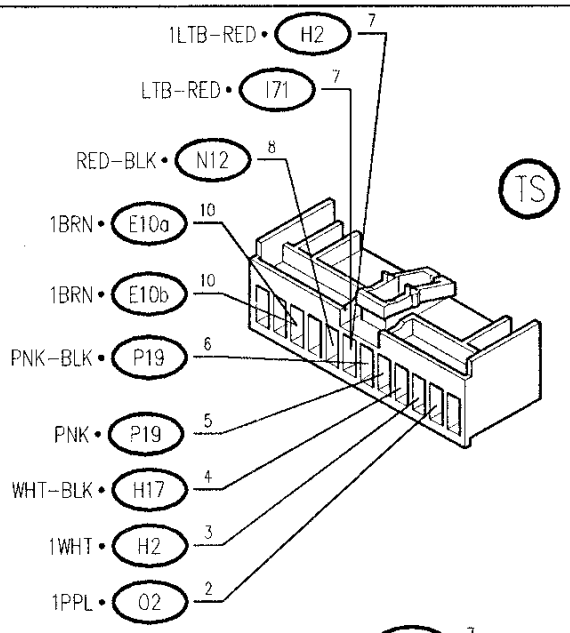
NOTE: not all the pins in output from the fusebox **G1** are connected for all vehicle models: some lines therefore may be found to be redundant although they will be present on the printed circuit.
Alongside the schematic diagram of the connectors a **list of output signals** from the various pins is given. This makes the job of identifying faults easier to accomplish.

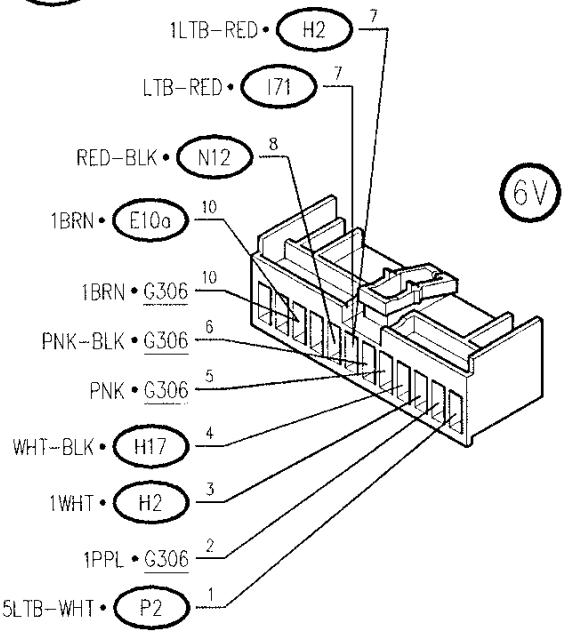
NOTE: the letters N.C. indicate pins connected inside the fusebox but not used for the present versions of the vehicle.

SUPPLY TO FUSEBOX	
PIN	**CIRCUITS**
-	Terminal board



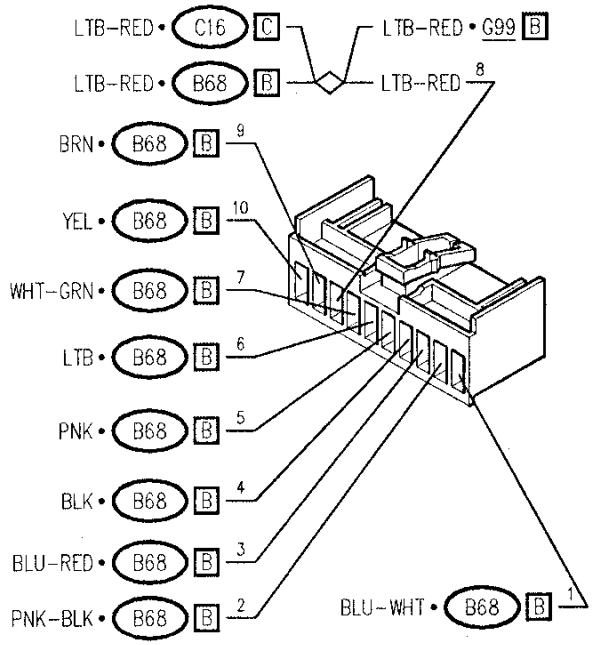
CONNECTOR A	
PIN	**CIRCUITS**
1	Electric engine cooling fan (6V)
2	Horns
3	Reversing lights
4	Brake fluid level sensor
5	Windscreen washer pump
6	Windscreen washer pump
7	Reverse gear supply, controlled suspension solenoid valve
8	Headlight washer control
9	N.C.
10	Front foglamps
11	N.C.
12	N.C.





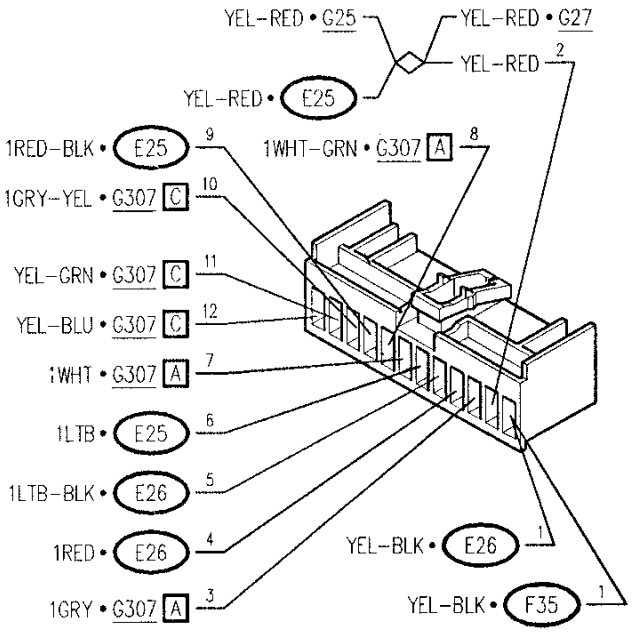
CONNECTOR B

PIN	CIRCUITS
1	Horn control
2	Windscreen washer control
3	Windscreen wiper control
4	Ground
5	Windscreen washer control
6	Windscreen wiper intermittence control
7	N.C.
8	Supply to windscreen washer pump, instrument panel rheostat, Check, illumination, air conditioning compressor control relay
9	Heated rear window control
10	Lever group lighting



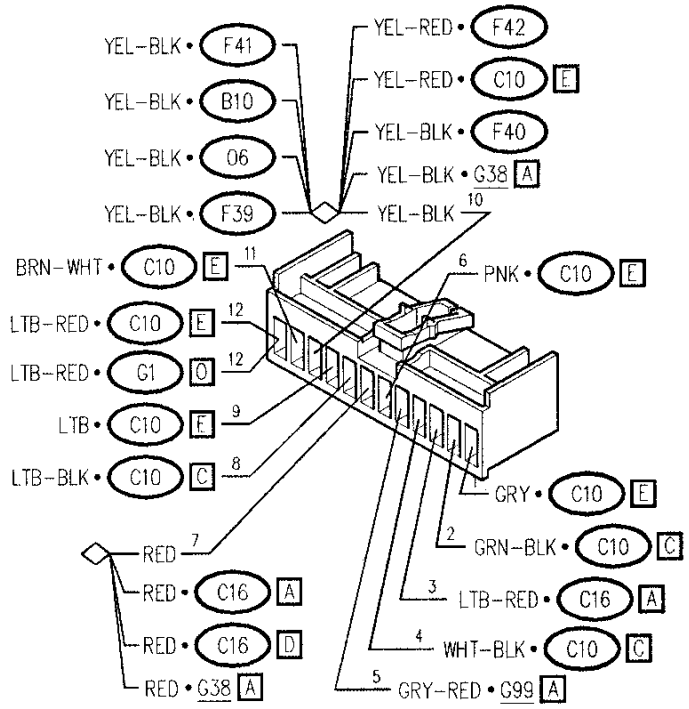
CONNECTOR C

PIN	CIRCUITS
1	Rear sidelights
2	Rear right-hand sidelights
3	LH rear foglamp
4	LH stoplight
5	Rear left-hand direction indicator
6	Rear right-hand direction indicator
7	LH reversing light
8	RH reversing light
9	RH stoplight
10	RH rear foglamp
11	RH numberplate light
12	LH numberplate light



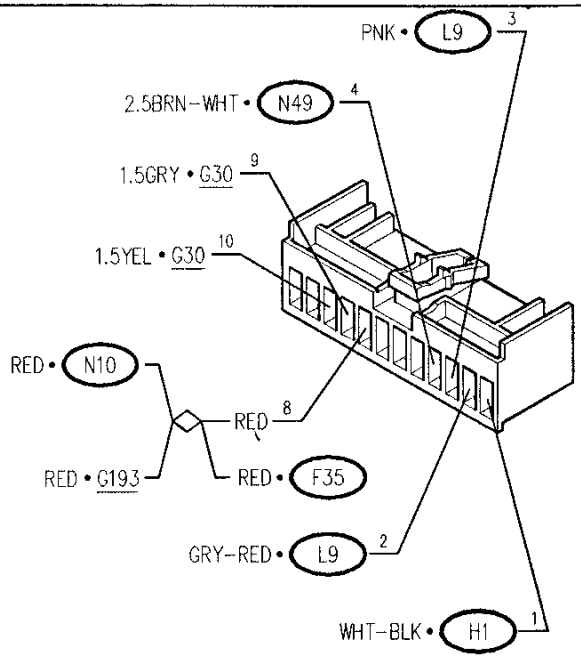
CONNECTOR D

PIN	CIRCUITS
1	Reversing light warning lamp
2	Dipped beam warning lamp
3	Clock
4	Handbrake warning lamp
5	Fuel level indicator
6	Fuel level indicator
7	Supply to clock, Check, heating/ventilation controls
8	LH direction indicators warning lamp
9	RH direction indicators warning lamp
10	Sidelights warning lamp and supply to interior lights
11	Heated rear window warning lamp
12	Supply to instrument panel



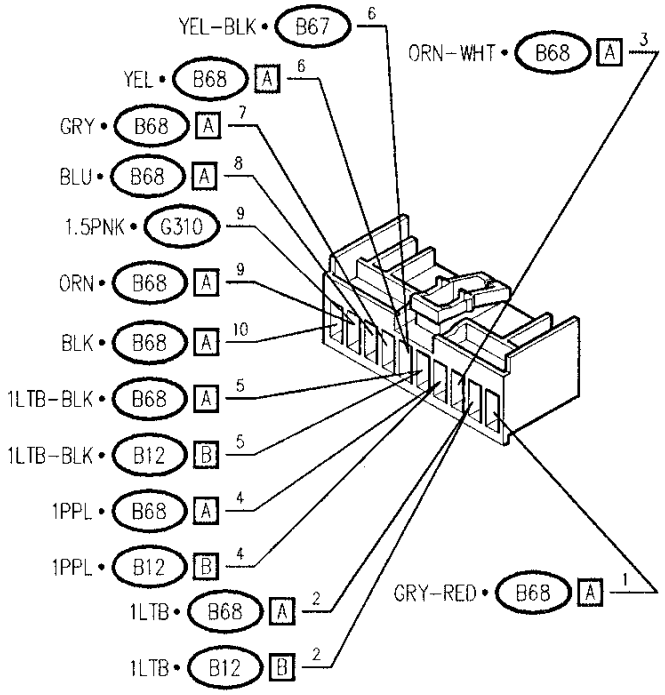
CONNECTOR E

PIN	CIRCUITS
1	Handbrake sensor
2	Fuel level sender
3	Fuel level sender
4	Heated rear window
5	N.C.
6	N.C.
7	N.C.
8	Supply to interior lighting
9	LH door locking control
10	LH door unlocking control
11	N.C.
12	N.C.



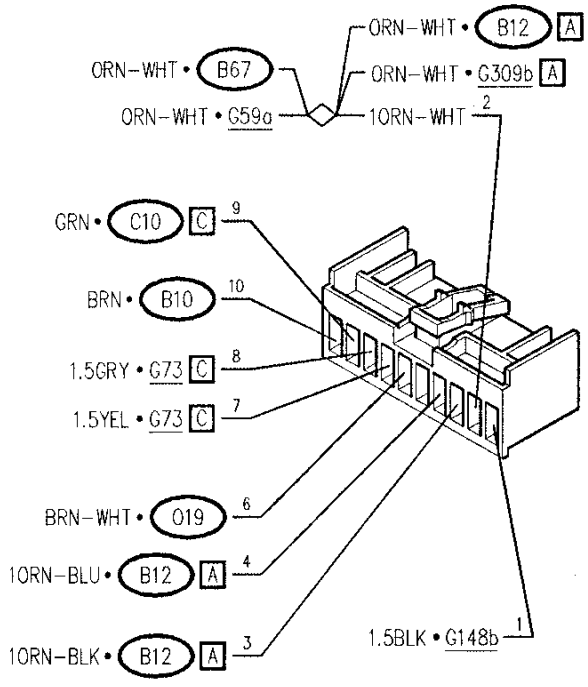
CONNECTOR F

PIN	CIRCUITS
1	Rear foglamp control
2	RH direction indicators control
3	Rear foglamp permit
4	Supply to direction indicators
5	LH direction indicators control
6	Sidelights control
7	Dipped beam control
8	Main-beam switch
9	Supply to sidelights control, front power windows
10	Ground



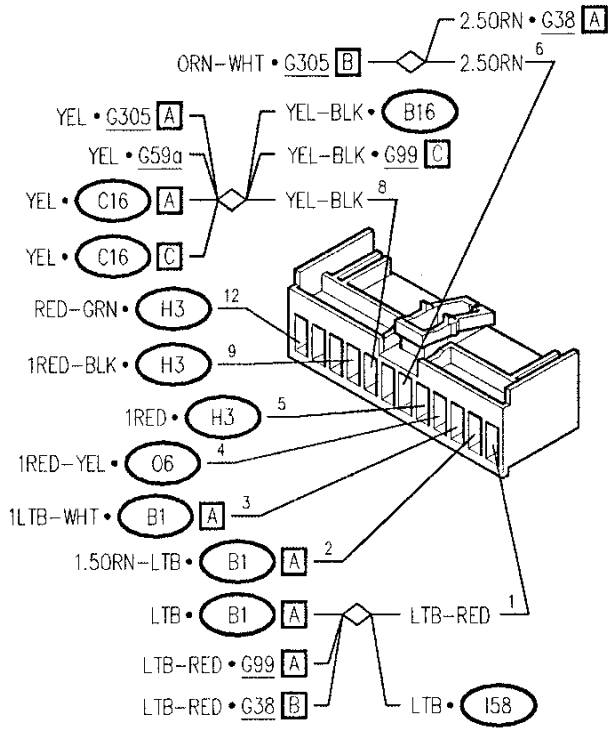
CONNECTOR G

PIN	CIRCUITS
1	GENERAL GROUND
2	Supply to hazard warning lamps, door mirror adjustment, controlled damping suspension
3	Supply to direction indicator and hazard warning light intermittence
4	Supply to hazard warning lights
5	N.C.
6	LH door mirror heater
7	RH door unlocking control
8	RH door locking control
9	Front foglamp warning lamp
10	Front foglamp control



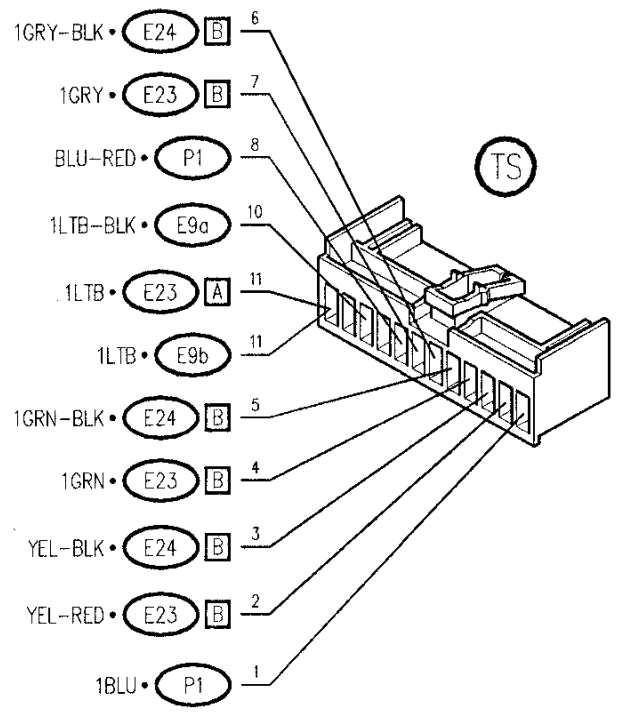
CONNECTOR H

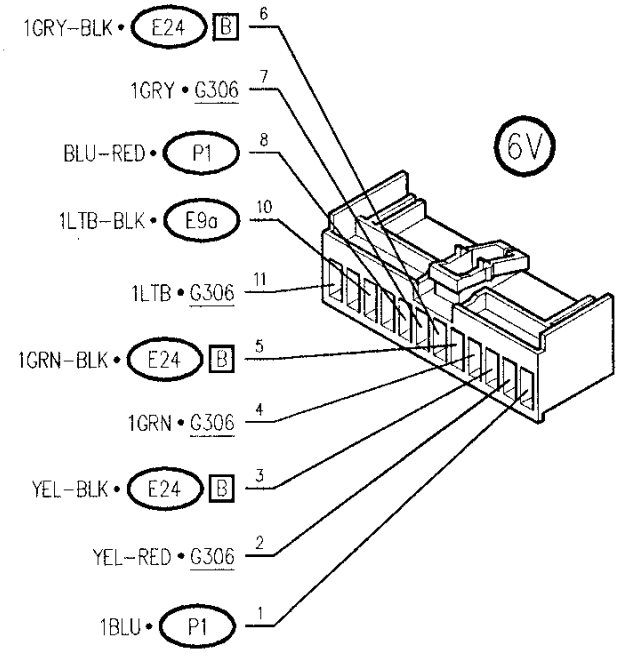
PIN	CIRCUITS
1	"KEY-OPERATED" supply (excluding starting)
2	"KEY-OPERATED" supply
3	"KEY-OPERATED" supply (Parking)
4	Supply to cigar lighter and radio
5	Supply to stoplights, boot release
6	Heater, rear power windows, adjustable and heated seats, heater-ventilator
7	N.C.
8	Dashboard lighting, regulation of headlight alignment
9	Stoplight control
10	N.C.
11	N.C.
12	Stoplight control (check)



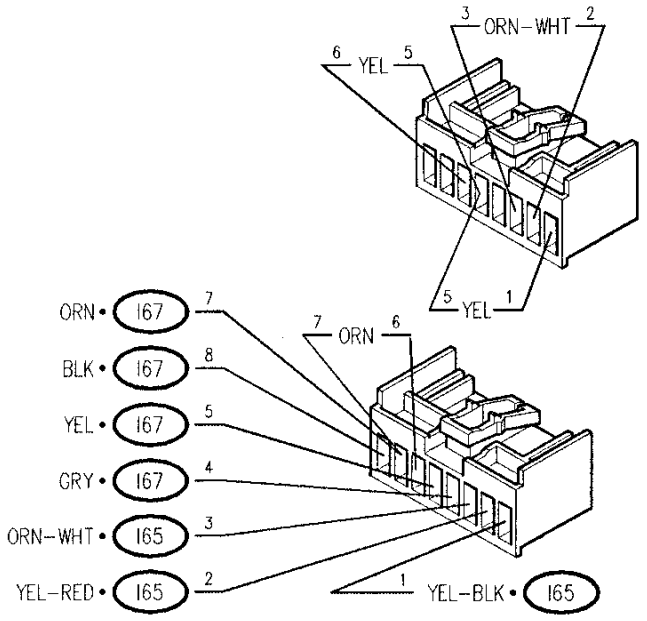
CONNECTOR I

PIN	CIRCUITS
1	Supply to windscreen wipers
2	Front right sidelight
3	Front left sidelight
4	RH main-beam headlight
5	LH main-beam headlight
6	LH dipped beam headlight
7	RH dipped beam headlight
8	Windscreen wiper control
9	N.C.
10	Front left direction indicator
11	Front right direction indicator
12	N.C.





CONNECTOR J	
PIN	**CIRCUITS**
1	Front foglamp relay permit
2	Rear foglamp relay permit
3	Rear foglamp control
4	Dipped beam control
5	Sidelights control
6	Sidelights relay permit
7	"Day-light" control
8	Ground



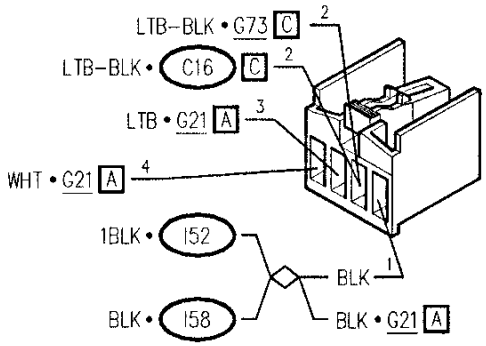
Variation for models with "Day-light"

CONNECTOR K	
PIN	**CIRCUITS**
1	LH direction indicator
2	RH direction indicator
3	LH sidelight
4	Rear foglamp
5	RH sidelight
6	Stoplights

Connector K: provision for trailer lights

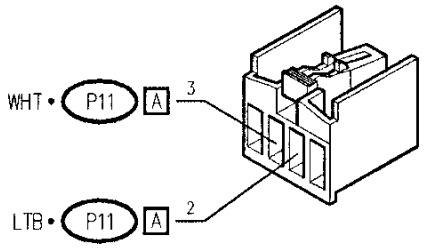
CONNECTOR L

PIN	CIRCUITS
1	Ground
2	Door lock/unlock permit
3	RH door lock control
4	RH door unlock control



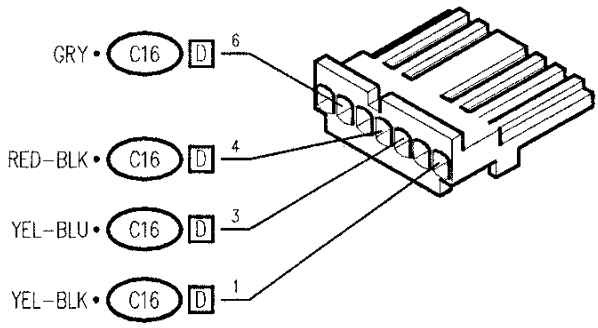
CONNECTOR M

PIN	CIRCUITS
1	N.C.
2	LH door lock control
3	LH door unlock control

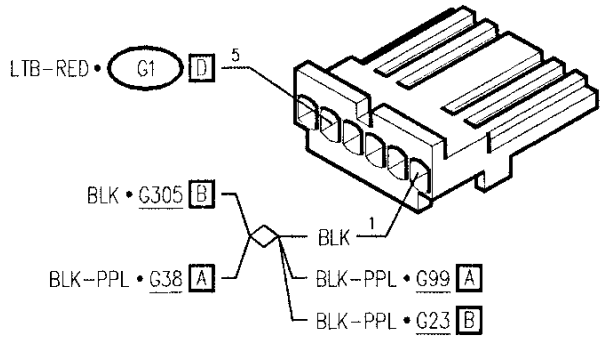


CONNECTOR N (Check)

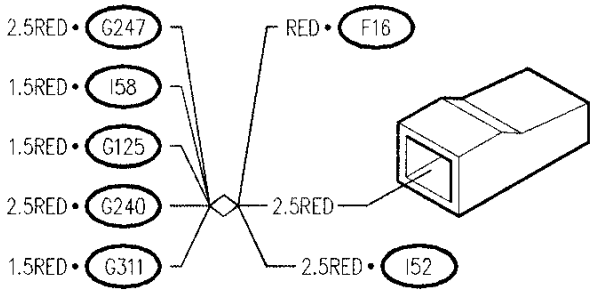
PIN	CIRCUITS
1	Sidelights malfunction led
2	N.C.
3	Numberplate malfunction led
4	Stoplight malfunction led
5	N.C.
6	Rear foglamp malfunction led
7	N.C.



CONNECTOR O (Check)	
PIN	**CIRCUITS**
1	Ground Check
2	N.C.
3	N.C.
4	N.C.
5	Supply Check
6	N.C.



CONNECTOR Q	
PIN	**CIRCUITS**
-	Supply to sunroof, front left power window, key light, rear power windows, seats, boot release

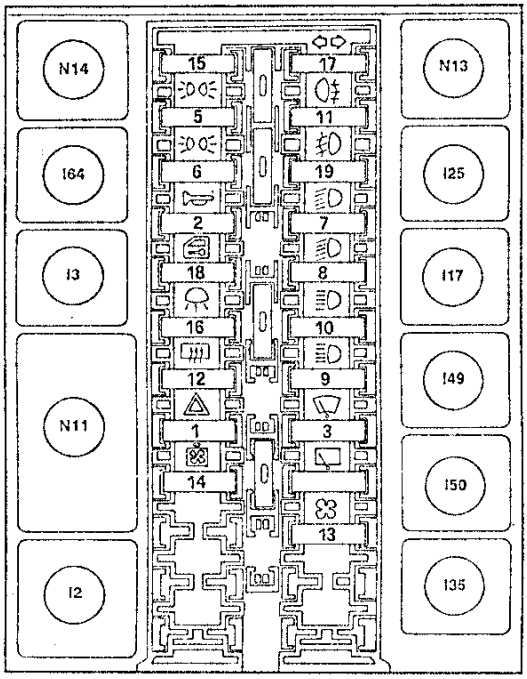


The list of fuses contained in fusebox **G1** is also given along with the relative amps and indications regarding the circuits protected:

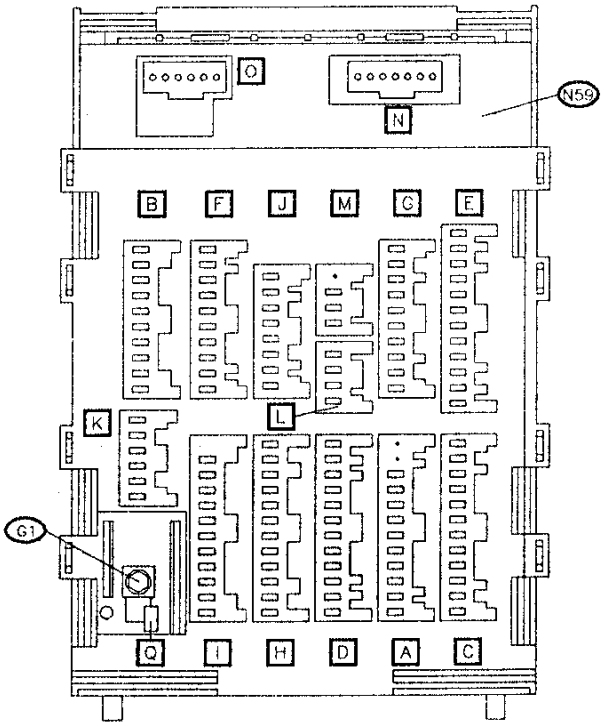
N. FUSIBILE	AMPERAGGIO	CIRCUITS PROTETTI
1	10A	Hazard warning lights
2	20A	Horns, Cigar lighters, Stoplights, Boot release, Radio,
3	20A	Windscreen wipers
4	--	N.C.
5	10A	Control lighting, Rear left and front right sidelights, RH numberplate light
6	10A	Control lighting, Rear right and front left sidelights, LH numberplate light
7	10A	RH dipped beam headlight
8	10A	LH dipped beam headlight
9	10A	RH main-beam headlight
10	10A	LH main-beam headlight (+ warning lamp)
11	7.5A	Rear foglamp (+ warning lamp)
12	30A	Heated rear window (+ warning lamp), Door mirror defrosters
13	20A	Heating/air conditioning fan, Seat warming, Rear power windows
14	20A	Engine cooling fan (6V)
15	10A	Dashboard, Windscreen washers, Headlight washers, Reversing lights, Controlled damping suspension solenoid valves
16	7.5A	Interior lights
17	7.5A	Direction indicators, Door mirror adjustment, Controlled damping suspension
18	20A	Door locks
19	20A	Front foglamps (+ warning lamp)

Two schematic diagrams are given below illustrating the location of the fuses, relays and the position of the connectors:

LOCATION OF FUSES AND RELAYS



REAR VIEW, CONNECTORS SIDE



LOCATION OF GROUNDS

INDEX

GENERAL DESCRIPTION

The following diagrams show the different grounds present on the vehicle and the connecting cables for each. Each cable shows the circuit to which it refers and the component which is grounded by that line.

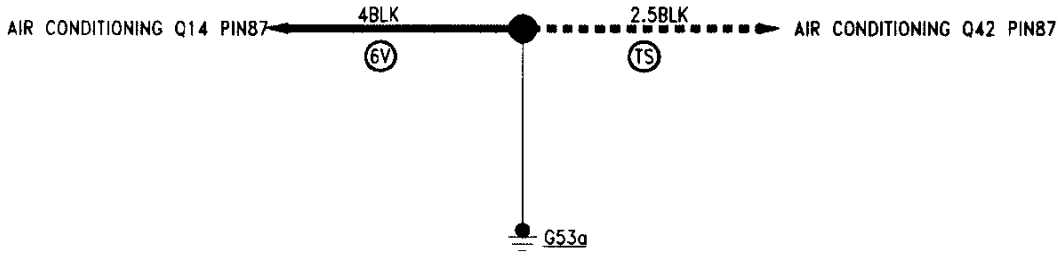
The grounds shown are:

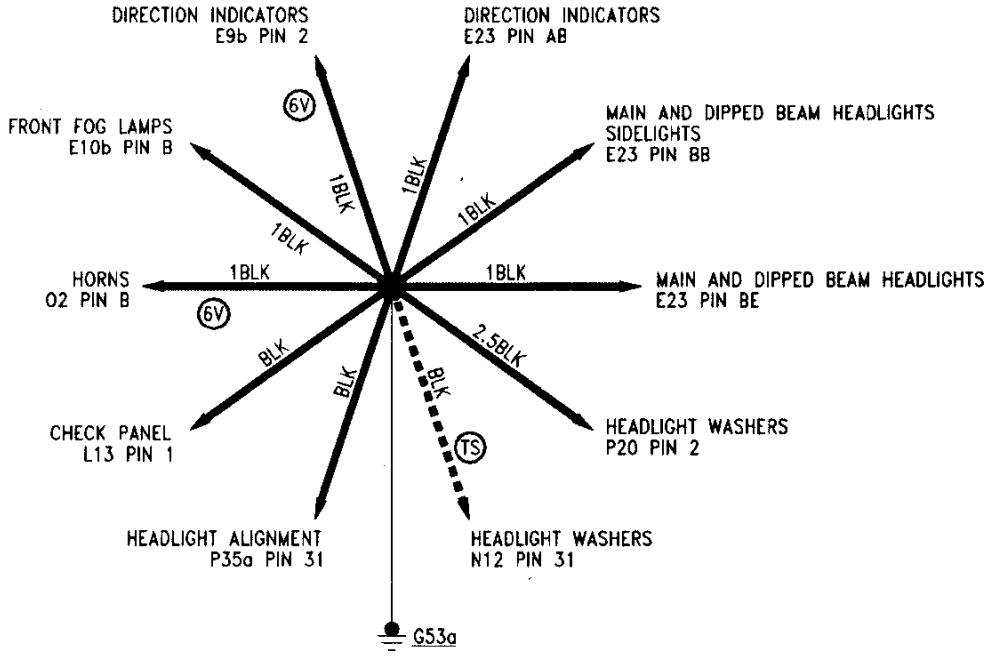
- **G53a** RH engine compartment ground
- **G53b** LH engine compartment ground
- **G63a** RH side rear ground
- **G63b** LH side rear ground
- **G66** Motronic wiring ground
- **G148a** Ground on RH side under dashboard
- **G148b** Ground on LH side under dashboard
- **G318** Ground on gearbox
- **Q36** Heater-ventilation system ground

NOTE: The use of these diagrams makes it easy to identify those circuits which are connected to ground by the same line; this facilitates troubleshooting in the event of problems affecting more than one system.

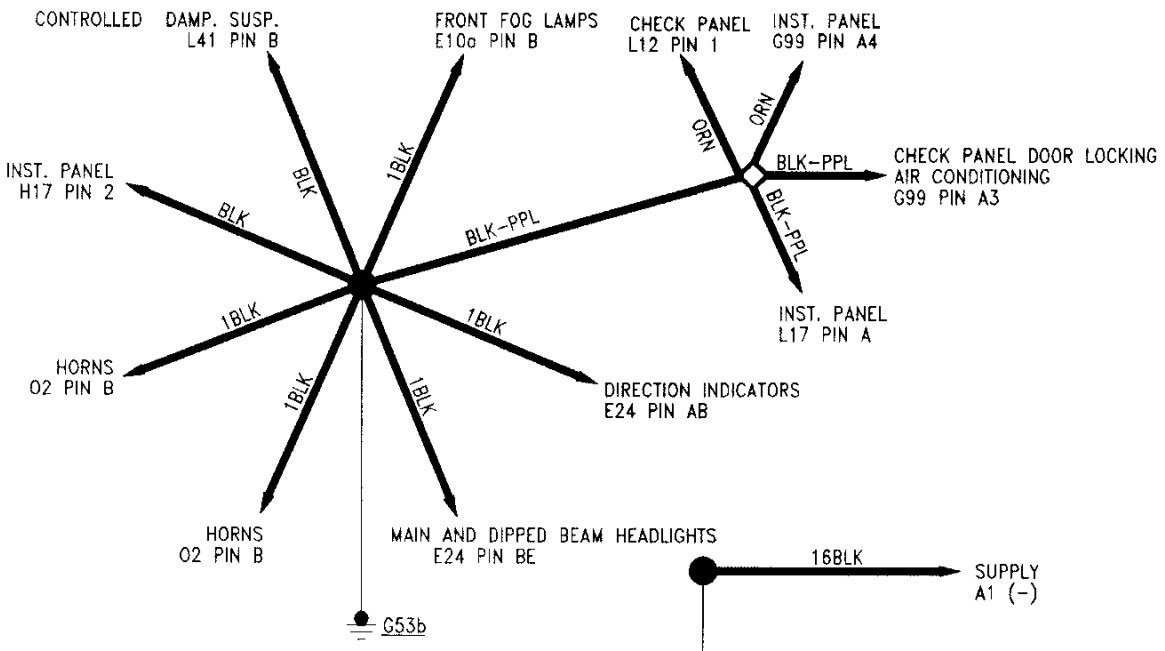
ELECTRIC DIAGRAMS

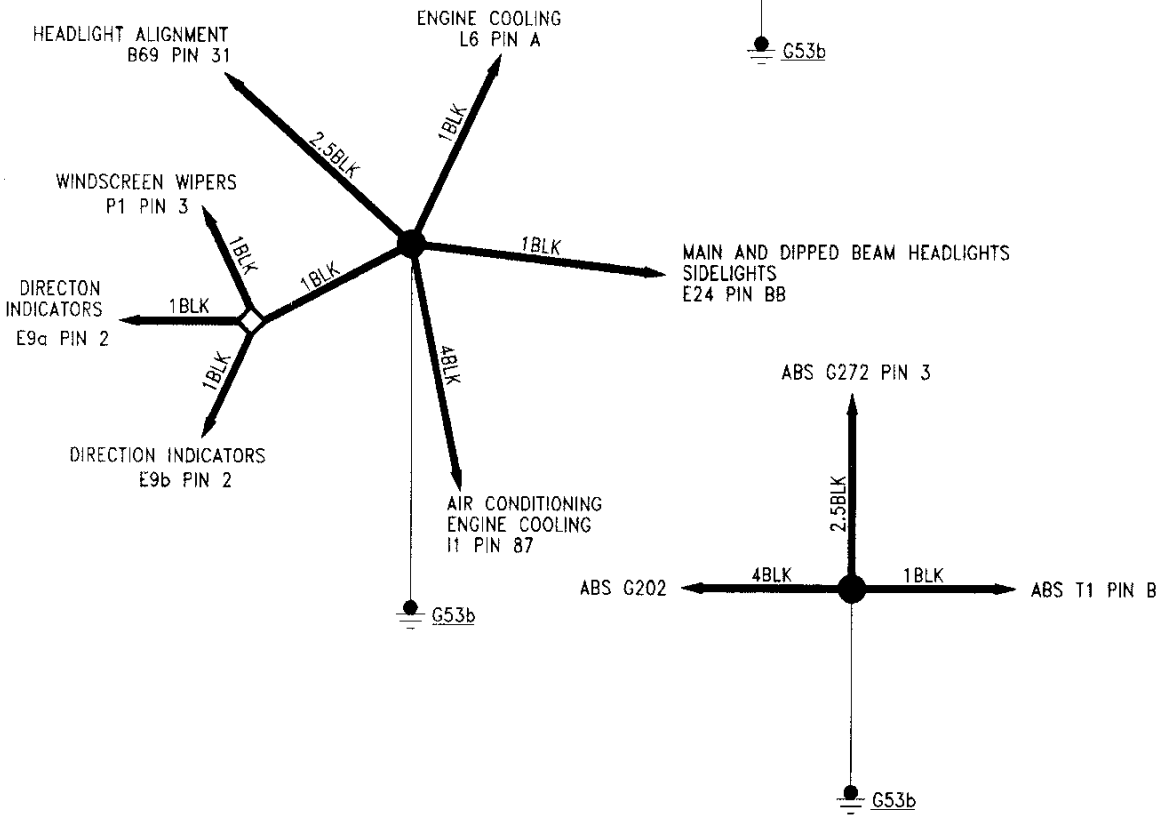
G53a



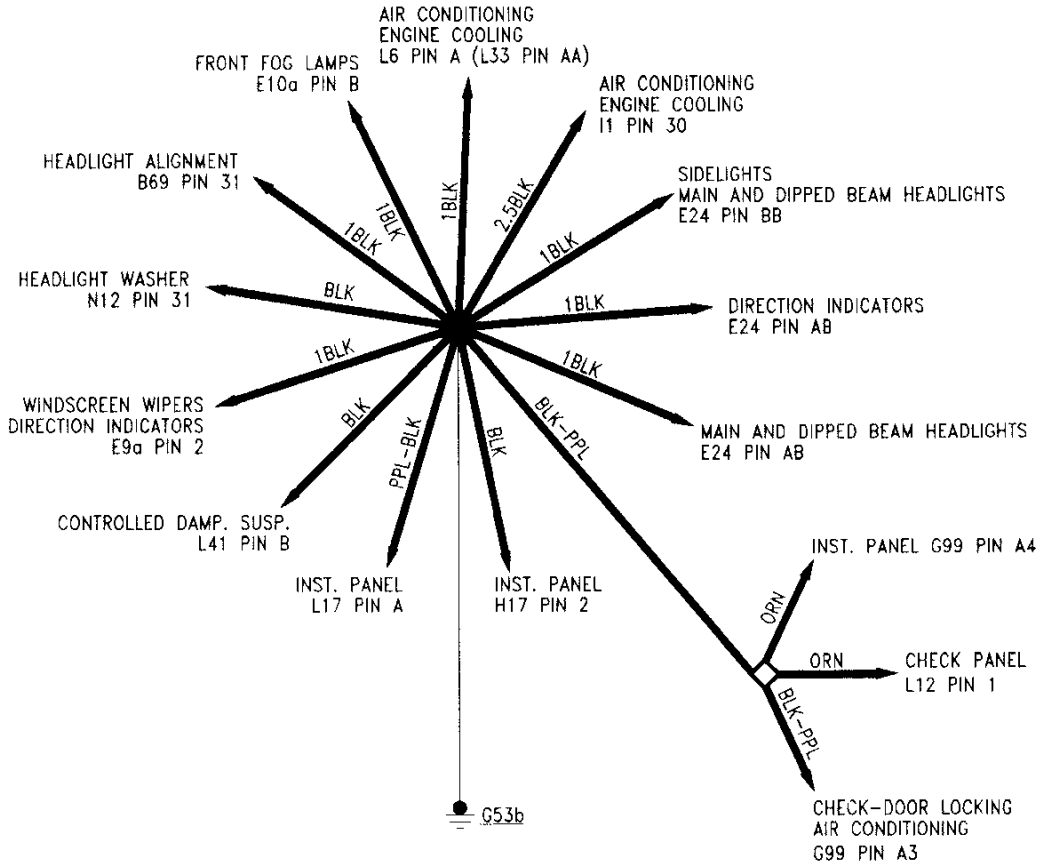


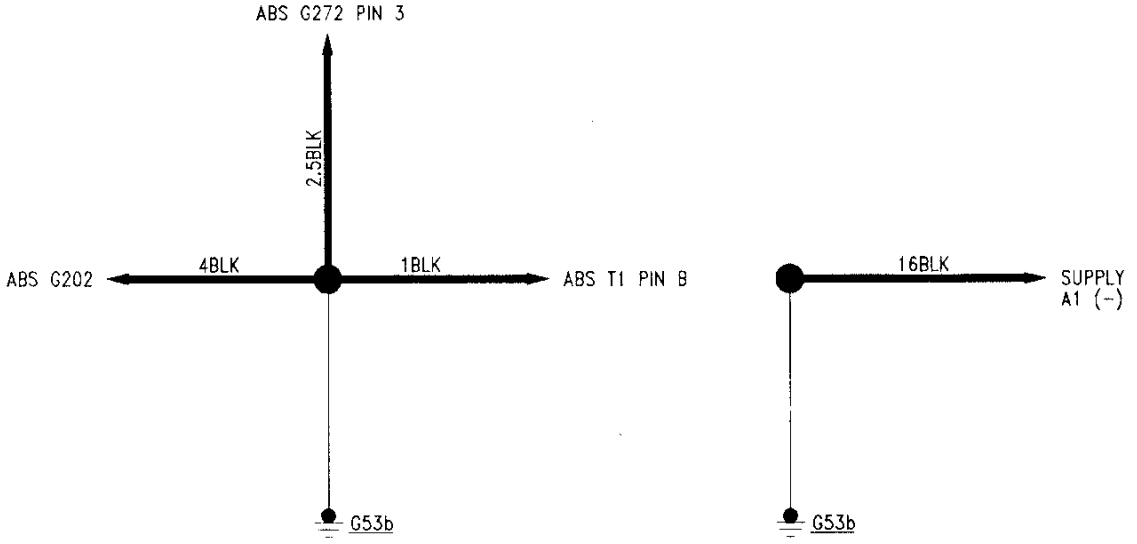
G53b TS


CONTROLLED DAMP. SUSP.
L41 PIN B
FRONT FOG LAMPS
E10a PIN B
CHECK PANEL
L12 PIN 1
INST. PANEL
G99 PIN A4
ORN
ORN
BLK-PPL
CHECK PANEL DOOR LOCKING
AIR CONDITIONING
G99 PIN A3
BLK-PPL
INST. PANEL
L17 PIN A
INST. PANEL
H17 PIN 2
BLK
BLK
1BLK
BLK-PPL
1BLK
1BLK
HORNS
O2 PIN B
1BLK
1BLK
DIRECTION INDICATORS
E24 PIN AB
HORNS
O2 PIN B
MAIN AND DIPPED BEAM HEADLIGHTS
E24 PIN BE
G53b
16BLK
SUPPLY
A1 (-)
G53b

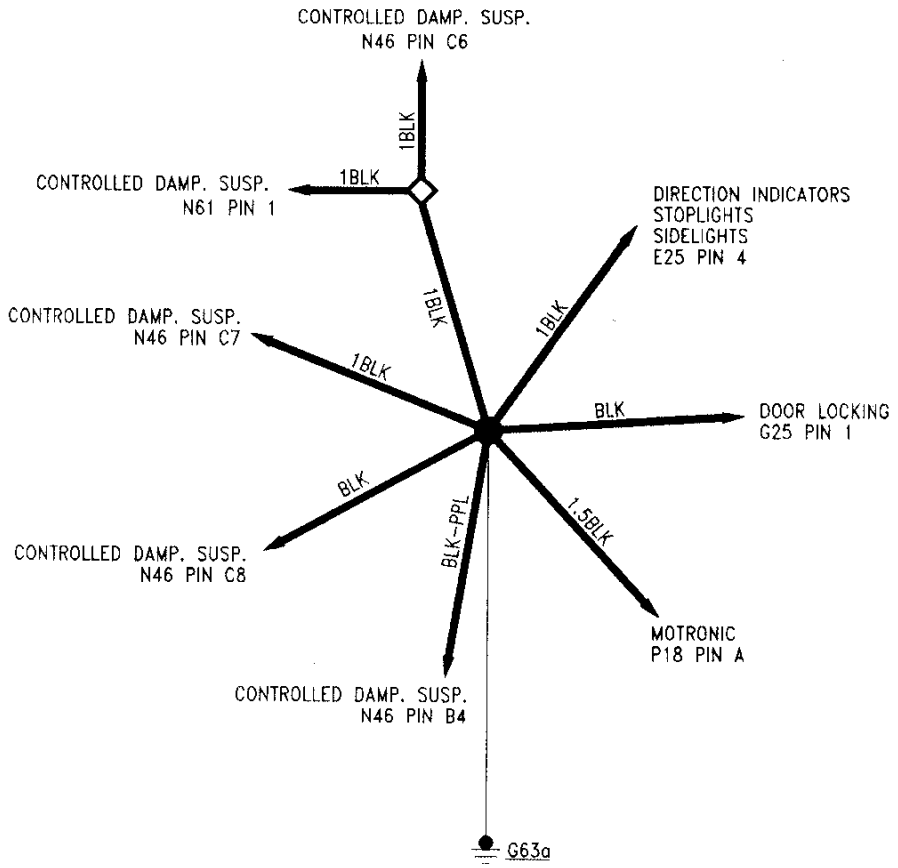

HEADLIGHT ALIGNMENT
B69 PIN 31
ENGINE COOLING
L6 PIN A
2.5BLK
1BLK
WINDSCREEN WIPERS
P1 PIN 3
1BLK
1BLK
1BLK
MAIN AND DIPPED BEAM HEADLIGHTS
SIDELIGHTS
E24 PIN BB
DIRECTON
INDICATORS
E9a PIN 2
1BLK
1BLK
4BLK
DIRECTION INDICATORS
E9b PIN 2
AIR CONDITIONING
ENGINE COOLING
I1 PIN 87
G53b
ABS G272 PIN 3
2.5BLK
ABS G202
4BLK
1BLK
ABS T1 PIN B
G53b

G53b 6V

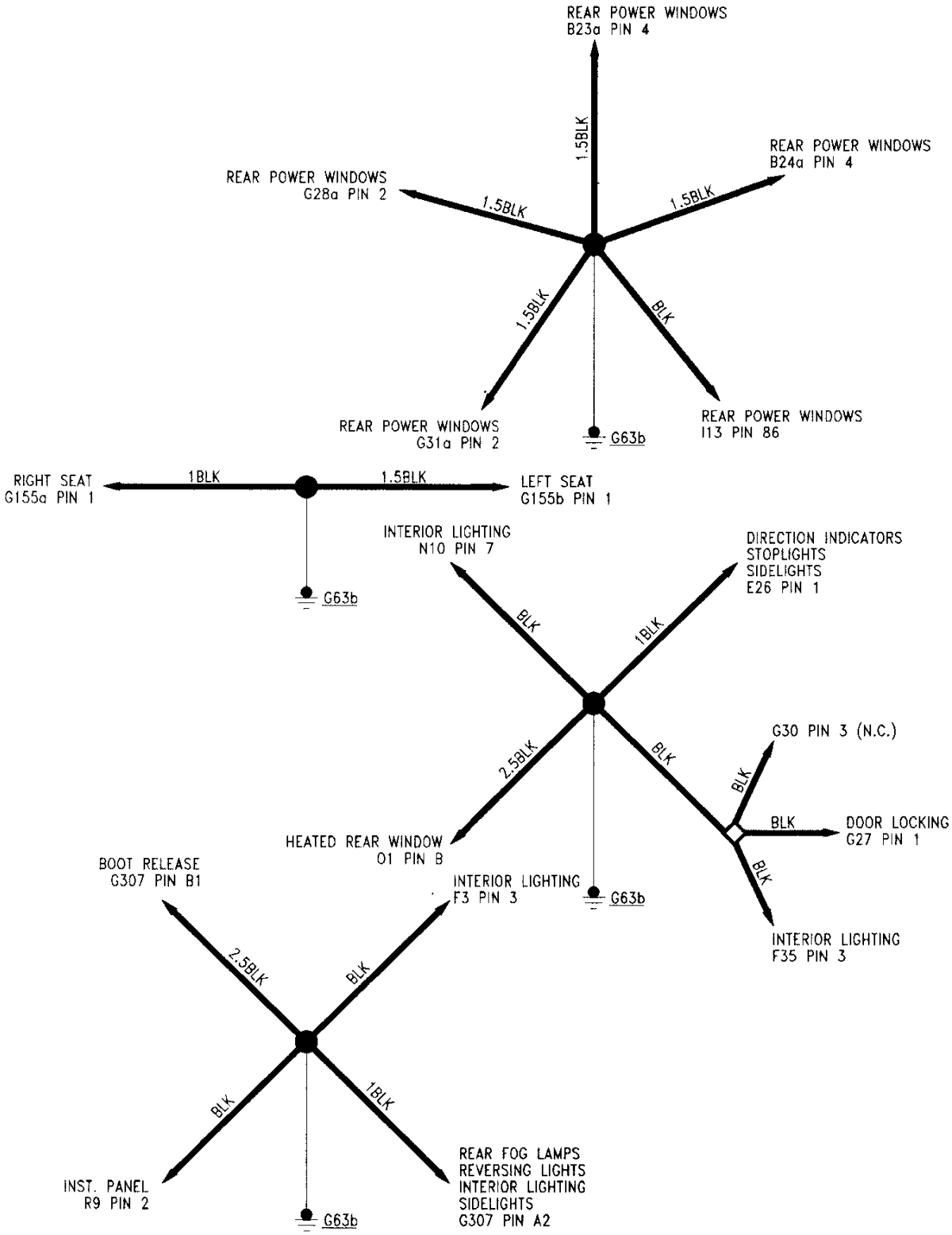

AIR CONDITIONING
ENGINE COOLING
L6 PIN A (L33 PIN AA)
FRONT FOG LAMPS
E10a PIN B
AIR CONDITIONING
ENGINE COOLING
I1 PIN 30
HEADLIGHT ALIGNMENT
B69 PIN 31
SIDELIGHTS
MAIN AND DIPPED BEAM HEADLIGHTS
E24 PIN BB
HEADLIGHT WASHER
N12 PIN 31
DIRECTION INDICATORS
E24 PIN AB
WINDSCREEN WIPERS
DIRECTION INDICATORS
E9a PIN 2
MAIN AND DIPPED BEAM HEADLIGHTS
E24 PIN AB
CONTROLLED DAMP. SUSP.
L41 PIN B
INST. PANEL
L17 PIN A
INST. PANEL
H17 PIN 2
INST. PANEL G99 PIN A4
CHECK PANEL
L12 PIN 1
CHECK-DOOR LOCKING
AIR CONDITIONING
G99 PIN A3
G53b
1BLK
2.5BLK
1BLK
1BLK
1BLK
BLK
1BLK
1BLK
BLK
PPL-BLK
BLK
BLK-PPL
ORN
ORN
BLK-PPL


ABS G272 PIN 3
2.5BLK
ABS G202
4BLK
1BLK
ABS T1 PIN B
G53b
16BLK
SUPPLY
A1 (-)
G53b

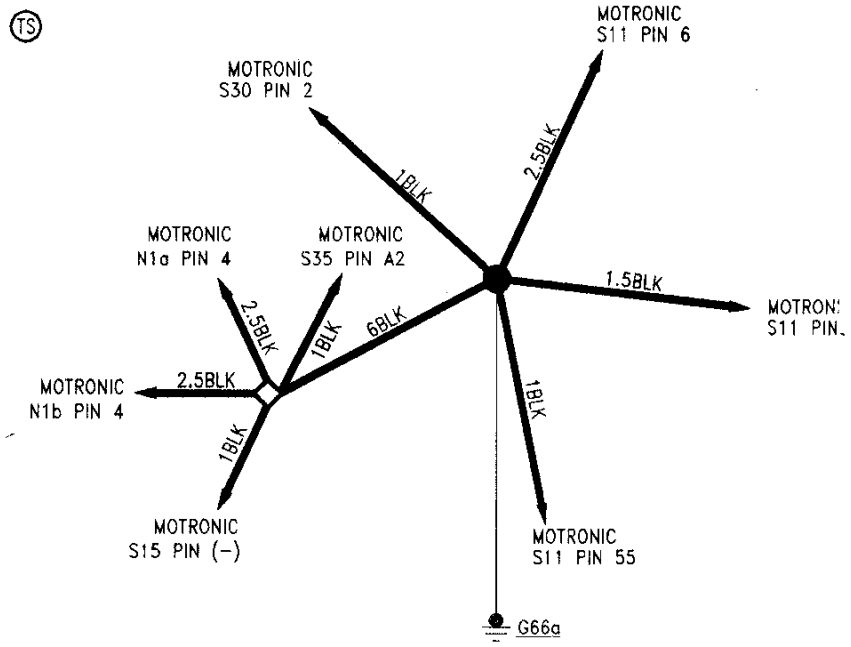
G63a

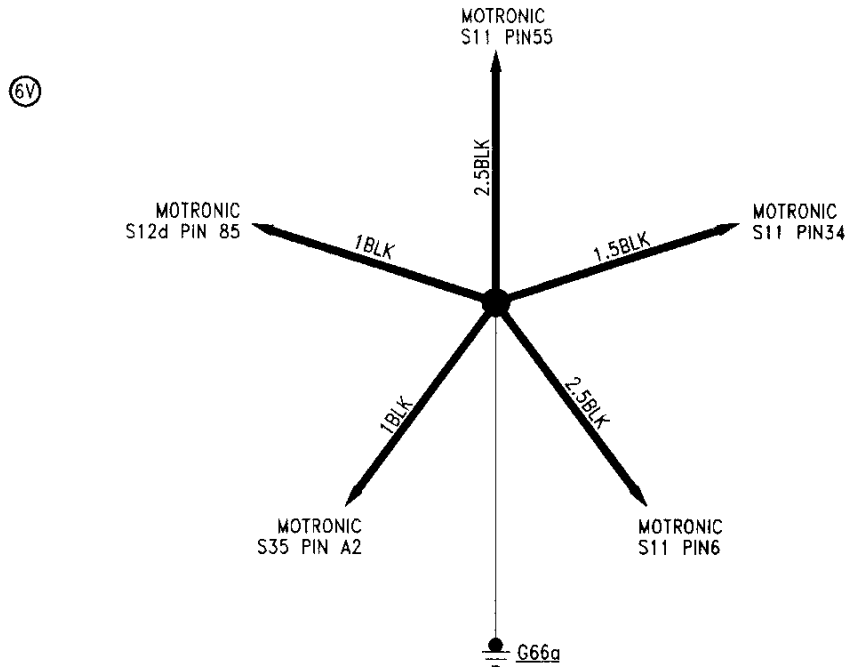

CONTROLLED DAMP. SUSP.
N46 PIN C6
1BLK
CONTROLLED DAMP. SUSP.
N61 PIN 1
1BLK
DIRECTION INDICATORS
STOPLIGHTS
SIDELIGHTS
E25 PIN 4
1BLK
1BLK
CONTROLLED DAMP. SUSP.
N46 PIN C7
1BLK
BLK
DOOR LOCKING
G25 PIN 1
BLK
CONTROLLED DAMP. SUSP.
N46 PIN C8
BLK-PPL
1.5BLK
MOTRONIC
P18 PIN A
CONTROLLED DAMP. SUSP.
N46 PIN B4
G63a

G63b


REAR POWER WINDOWS
B23a PIN 4
1.5BLK
REAR POWER WINDOWS
B24a PIN 4
REAR POWER WINDOWS
G28a PIN 2
1.5BLK
1.5BLK
1.5BLK
BLK
REAR POWER WINDOWS
G31a PIN 2
G63b
REAR POWER WINDOWS
I13 PIN 86
RIGHT SEAT
G155a PIN 1
1BLK
1.5BLK
LEFT SEAT
G155b PIN 1
G63b
INTERIOR LIGHTING
N10 PIN 7
DIRECTION INDICATORS
STOPLIGHTS
SIDELIGHTS
E26 PIN 1
BLK
1BLK
2.5BLK
BLK
G30 PIN 3 (N.C.)
BLK
BLK
DOOR LOCKING
G27 PIN 1
HEATED REAR WINDOW
01 PIN B
BLK
INTERIOR LIGHTING
F3 PIN 3
G63b
INTERIOR LIGHTING
F35 PIN 3
BOOT RELEASE
G307 PIN B1
2.5BLK
BLK
BLK
1BLK
INST. PANEL
R9 PIN 2
G63b
REAR FOG LAMPS
REVERSING LIGHTS
INTERIOR LIGHTING
SIDELIGHTS
G307 PIN A2

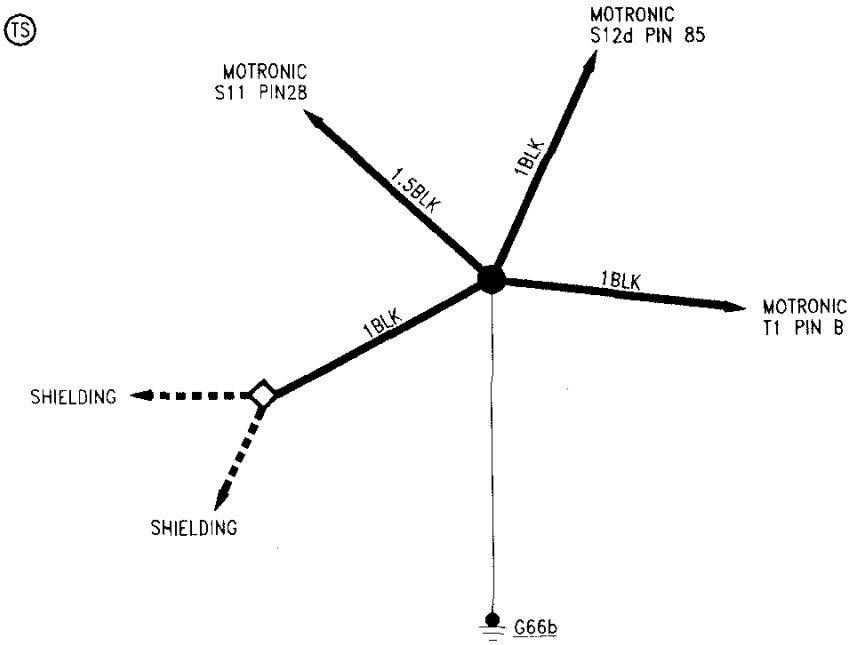
G66a


TS
MOTRONIC S11 PIN 6
MOTRONIC S30 PIN 2
1BLK
2.5BLK
MOTRONIC N1a PIN 4
MOTRONIC S35 PIN A2
1.5BLK
MOTRON
S11 PIN
2.5BLK
1BLK
6BLK
MOTRONIC N1b PIN 4
2.5BLK
1BLK
MOTRONIC S15 PIN (-)
MOTRONIC S11 PIN 55
G66a

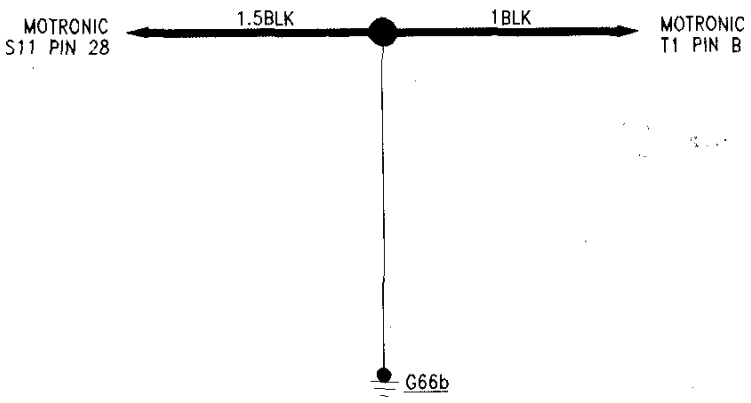

6V
MOTRONIC S11 PIN55
2.5BLK
MOTRONIC S12d PIN 85
1BLK
1.5BLK
MOTRONIC S11 PIN34
1BLK
2.5BLK
MOTRONIC S35 PIN A2
MOTRONIC S11 PIN6
G66a

G66b

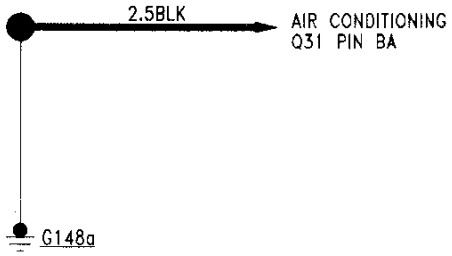
(TS)


MOTRONIC
S12d PIN 85
MOTRONIC
S11 PIN28
1.5BLK
1BLK
1BLK
MOTRONIC
T1 PIN B
1BLK
SHIELDING
SHIELDING
G66b

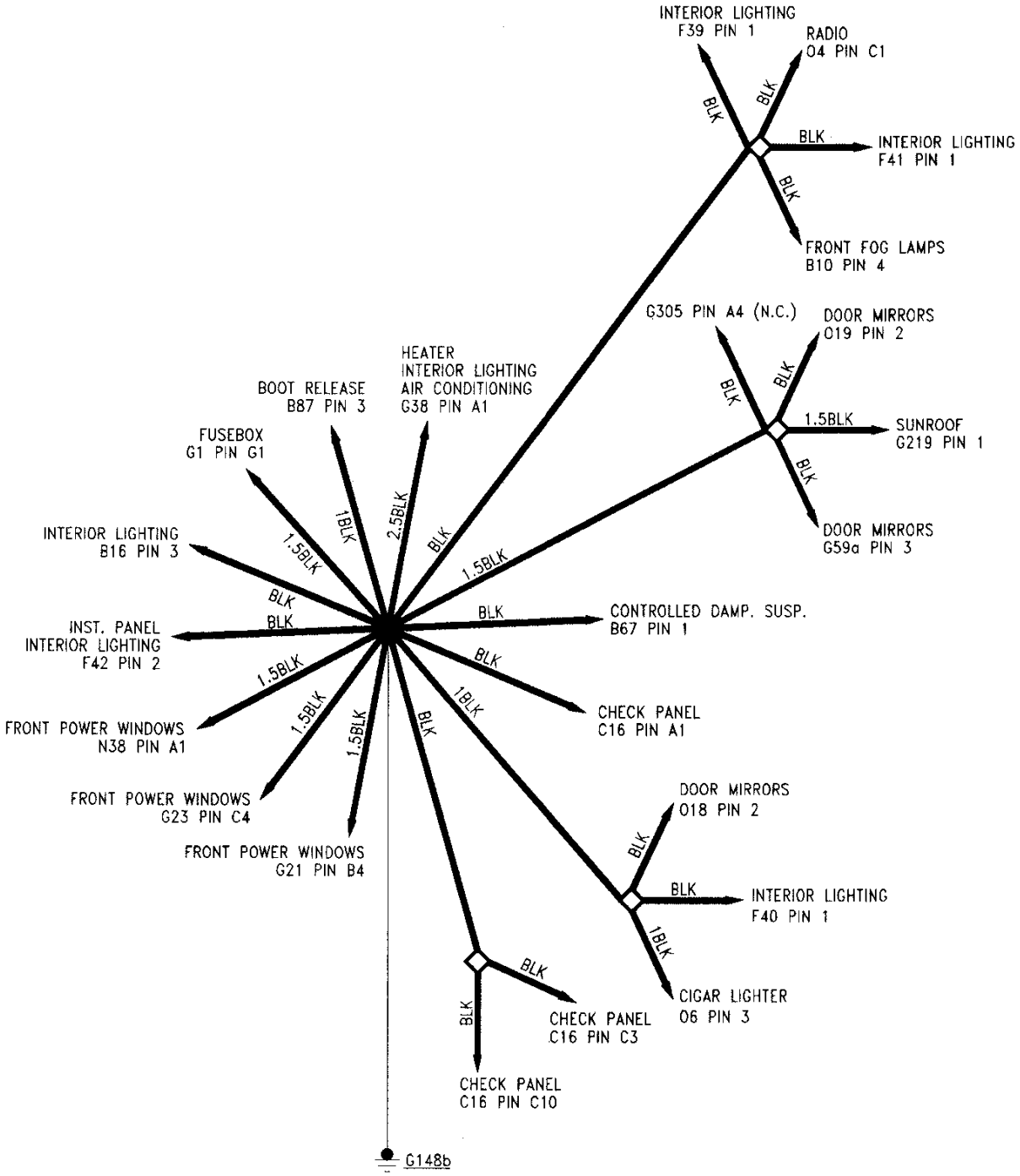
(6V)


MOTRONIC
S11 PIN 28
1.5BLK
1BLK
MOTRONIC
T1 PIN B
G66b

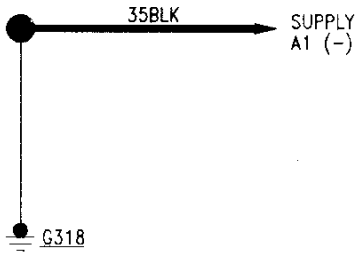
G148a



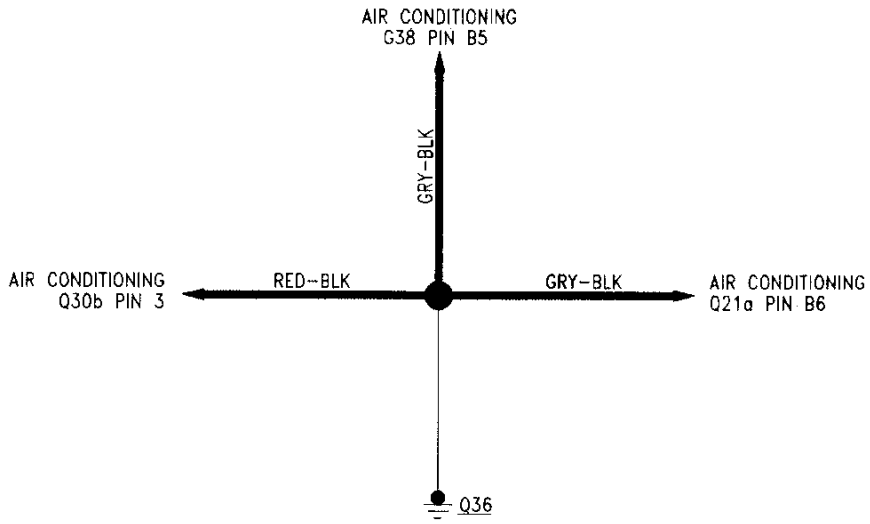
G148b

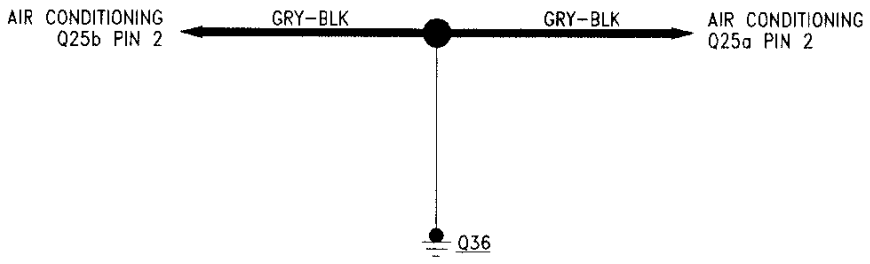

INTERIOR LIGHTING
F39 PIN 1
RADIO
O4 PIN C1
BLK
BLK
BLK
INTERIOR LIGHTING
F41 PIN 1
BLK
FRONT FOG LAMPS
B10 PIN 4
G305 PIN A4 (N.C.)
DOOR MIRRORS
O19 PIN 2
BLK
BLK
1.5BLK
SUNROOF
G219 PIN 1
BLK
DOOR MIRRORS
G59a PIN 3
HEATER
INTERIOR LIGHTING
AIR CONDITIONING
G38 PIN A1
BOOT RELEASE
B87 PIN 3
FUSEBOX
G1 PIN G1
INTERIOR LIGHTING
B16 PIN 3
INST. PANEL
INTERIOR LIGHTING
F42 PIN 2
FRONT POWER WINDOWS
N38 PIN A1
FRONT POWER WINDOWS
G23 PIN C4
FRONT POWER WINDOWS
G21 PIN B4
1BLK
1.5BLK
2.5BLK
BLK
1.5BLK
BLK
BLK
BLK
1.5BLK
1.5BLK
1.5BLK
BLK
CONTROLLED DAMP. SUSP.
B67 PIN 1
BLK
CHECK PANEL
C16 PIN A1
1BLK
DOOR MIRRORS
O18 PIN 2
BLK
BLK
INTERIOR LIGHTING
F40 PIN 1
1BLK
CIGAR LIGHTER
O6 PIN 3
BLK
BLK
CHECK PANEL
C16 PIN C3
BLK
CHECK PANEL
C16 PIN C10
G148b

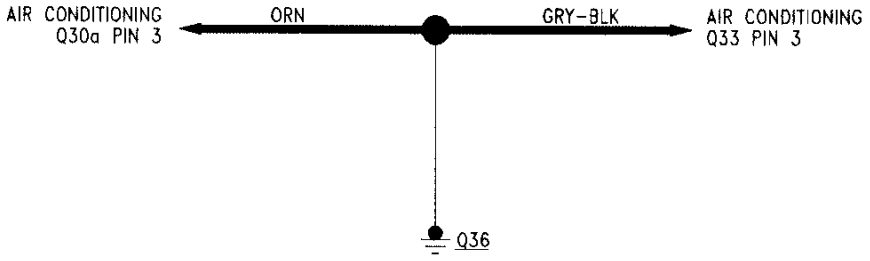
G318



Q36

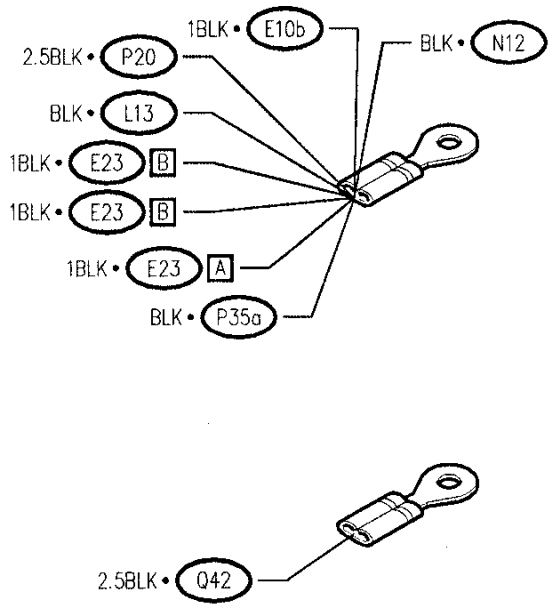

AIR CONDITIONING
G38 PIN B5
GRY-BLK
AIR CONDITIONING
Q30b PIN 3
RED-BLK
GRY-BLK
AIR CONDITIONING
Q21a PIN B6
Q36


AIR CONDITIONING
Q25b PIN 2
GRY-BLK
GRY-BLK
AIR CONDITIONING
Q25a PIN 2
Q36

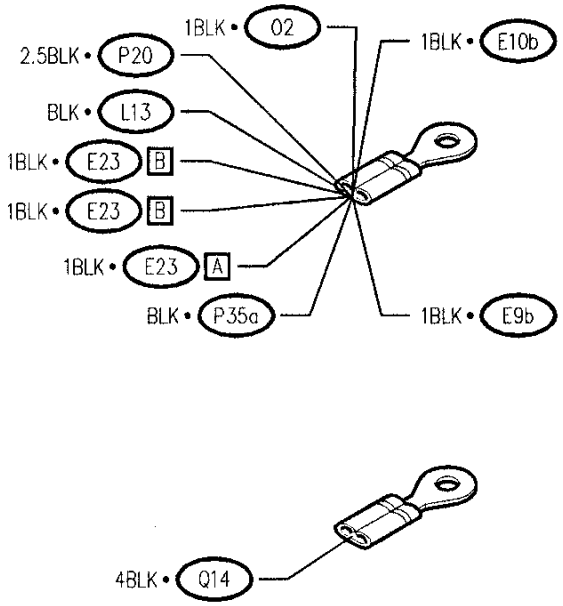

AIR CONDITIONING
Q30a PIN 3
ORN
GRY-BLK
AIR CONDITIONING
Q33 PIN 3
Q36

COMPONENTS AND CONNECTORS

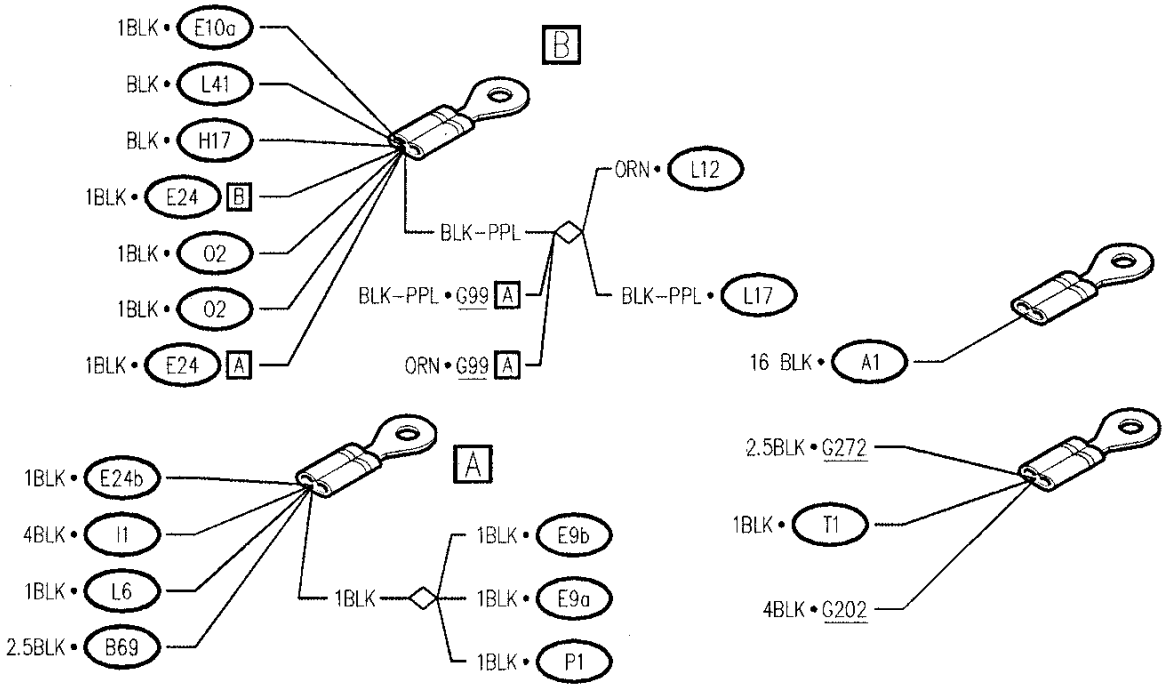
Engine compartment ground - right side TS	G53a



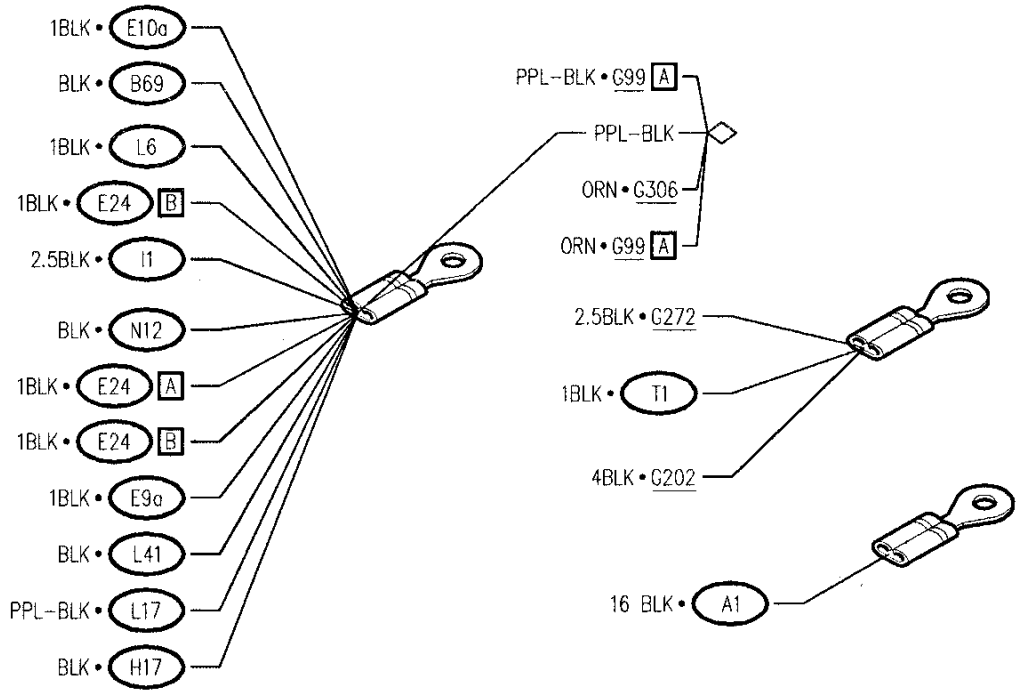
Engine compartment ground - right side 6V	G53a



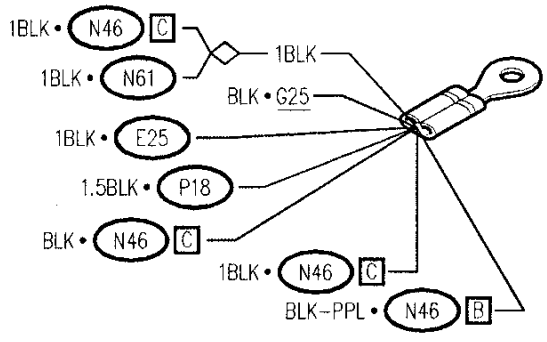
Engine compartment ground - left side TS	G53b



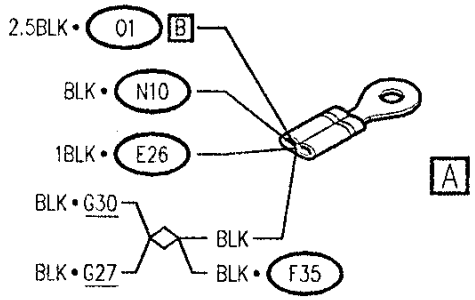
Engine compartment ground - left side 6V	G53b

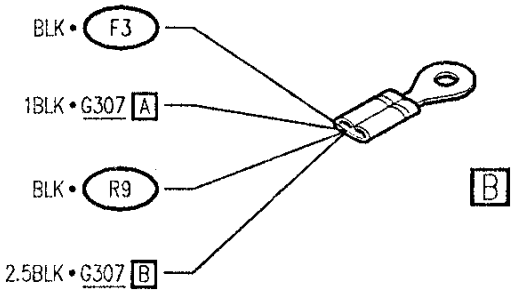


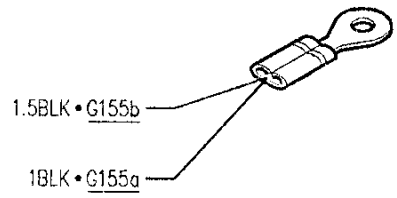
Rear right ground	G63a

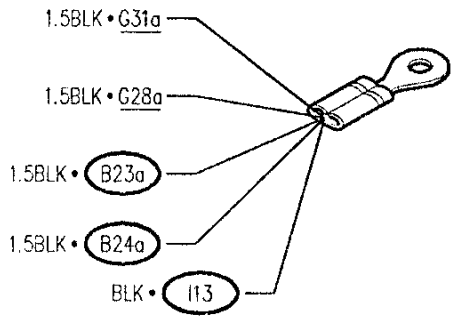


Rear left ground — G63b

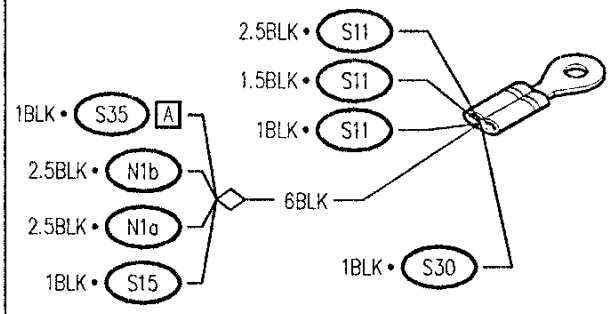




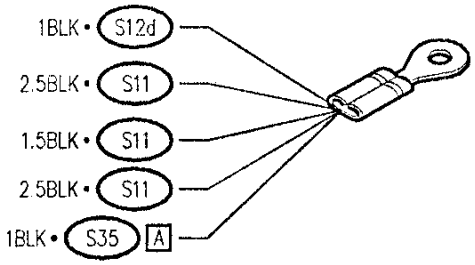




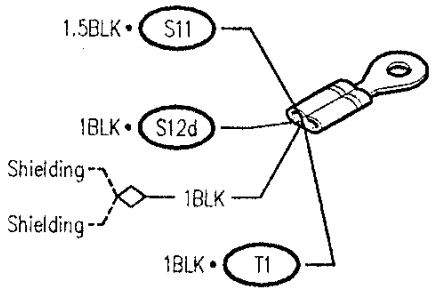
Motronic wiring ground TS — G66a



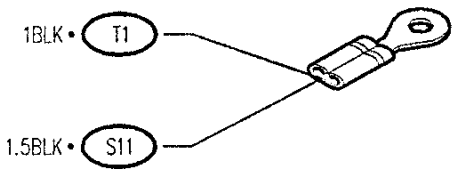
Motronic wiring ground 6V — G66a



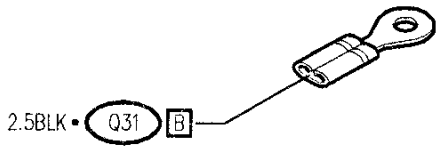
Motronic wiring ground TS — G66b



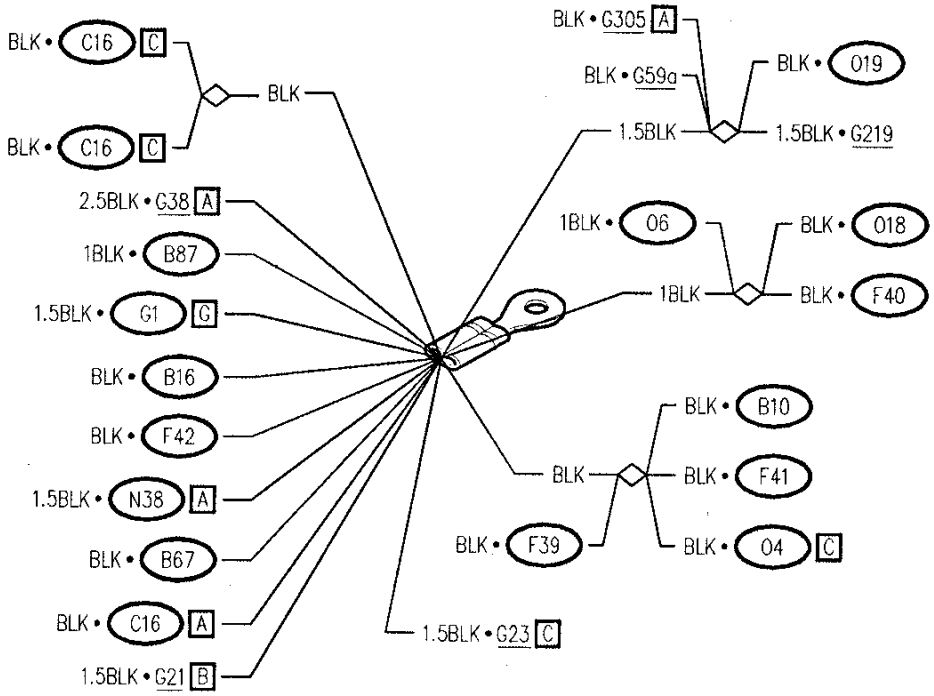
Motronic wiring ground 6V — G66b



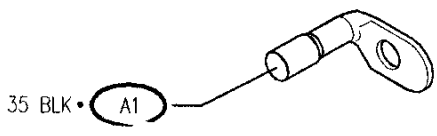
Under-dashboard ground - right side — G148a



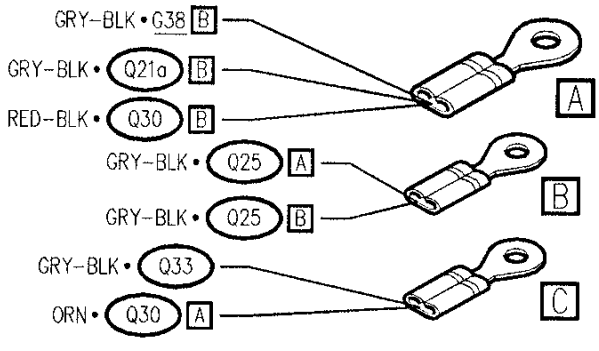
Under-dashboard ground - left side — G148b



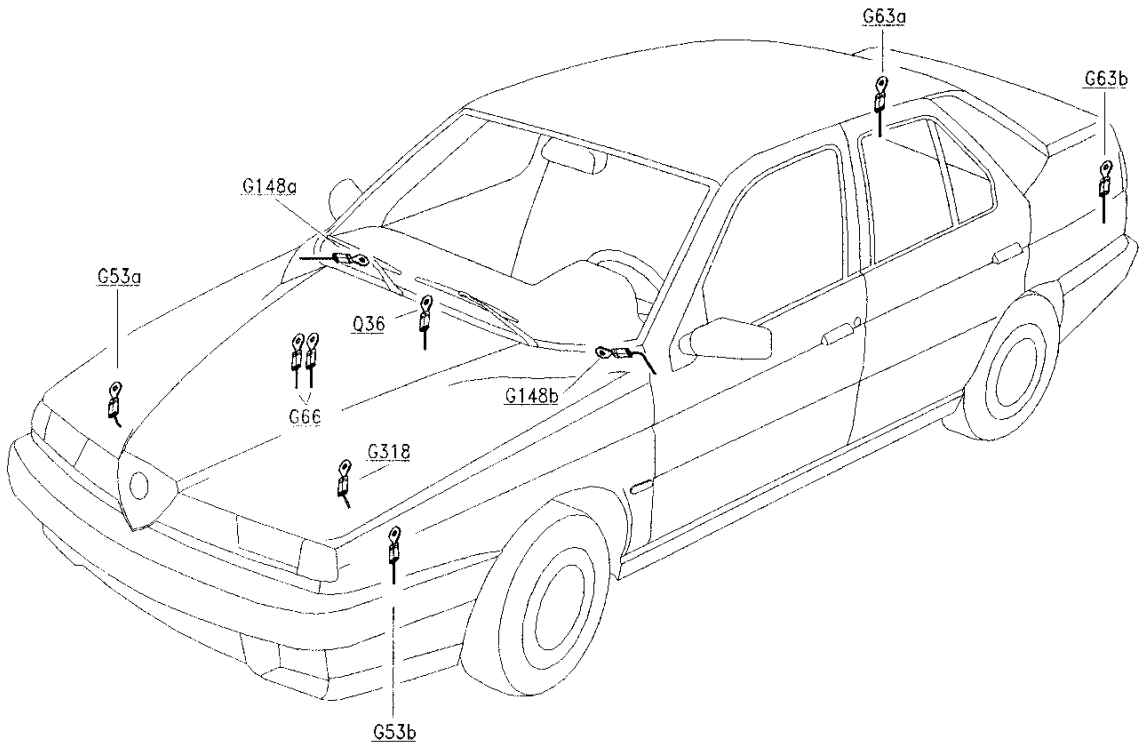
Ground on gearbox — G318



Air conditioning system ground — Q36

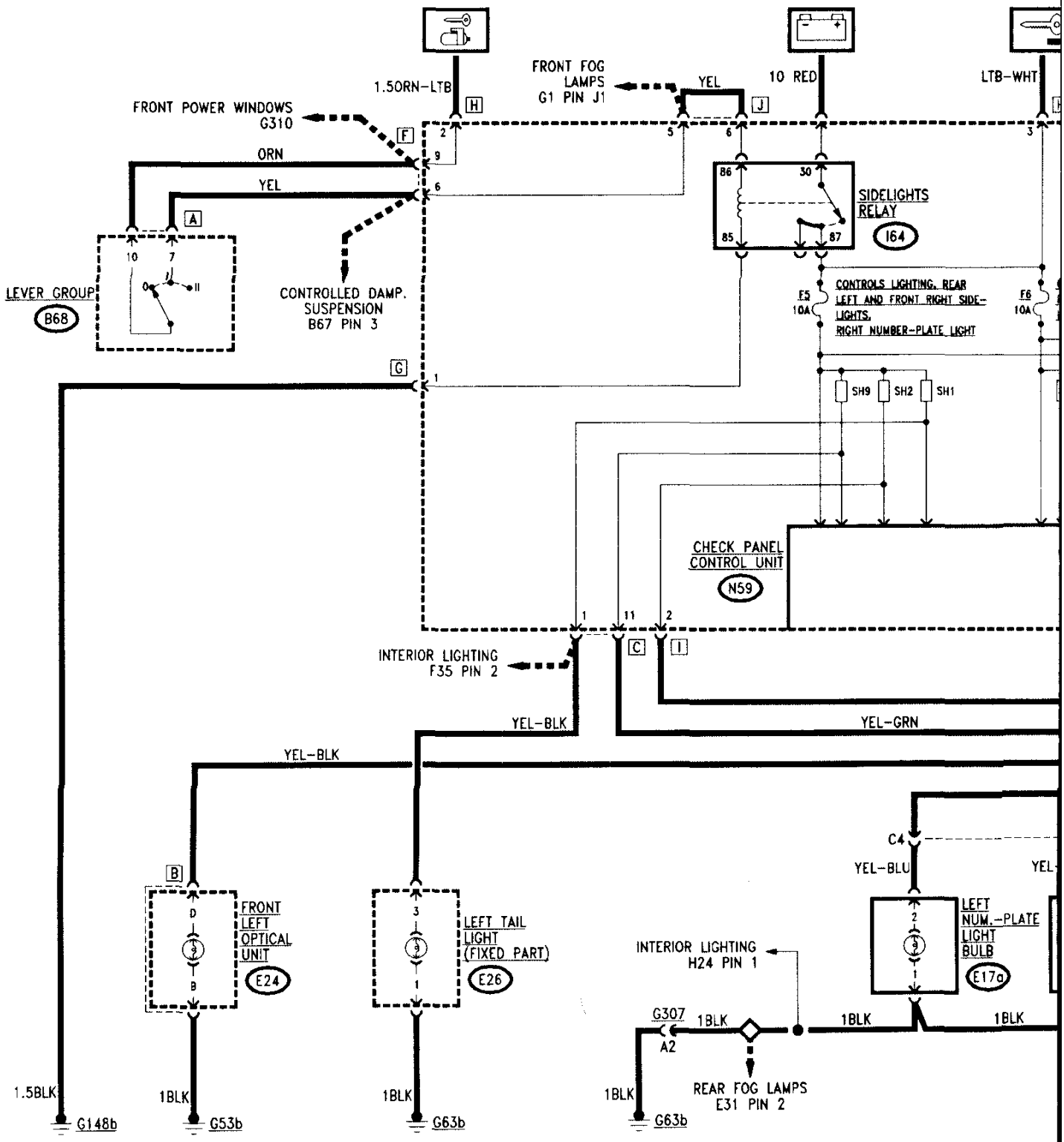


LOCATION OF COMPONENTS

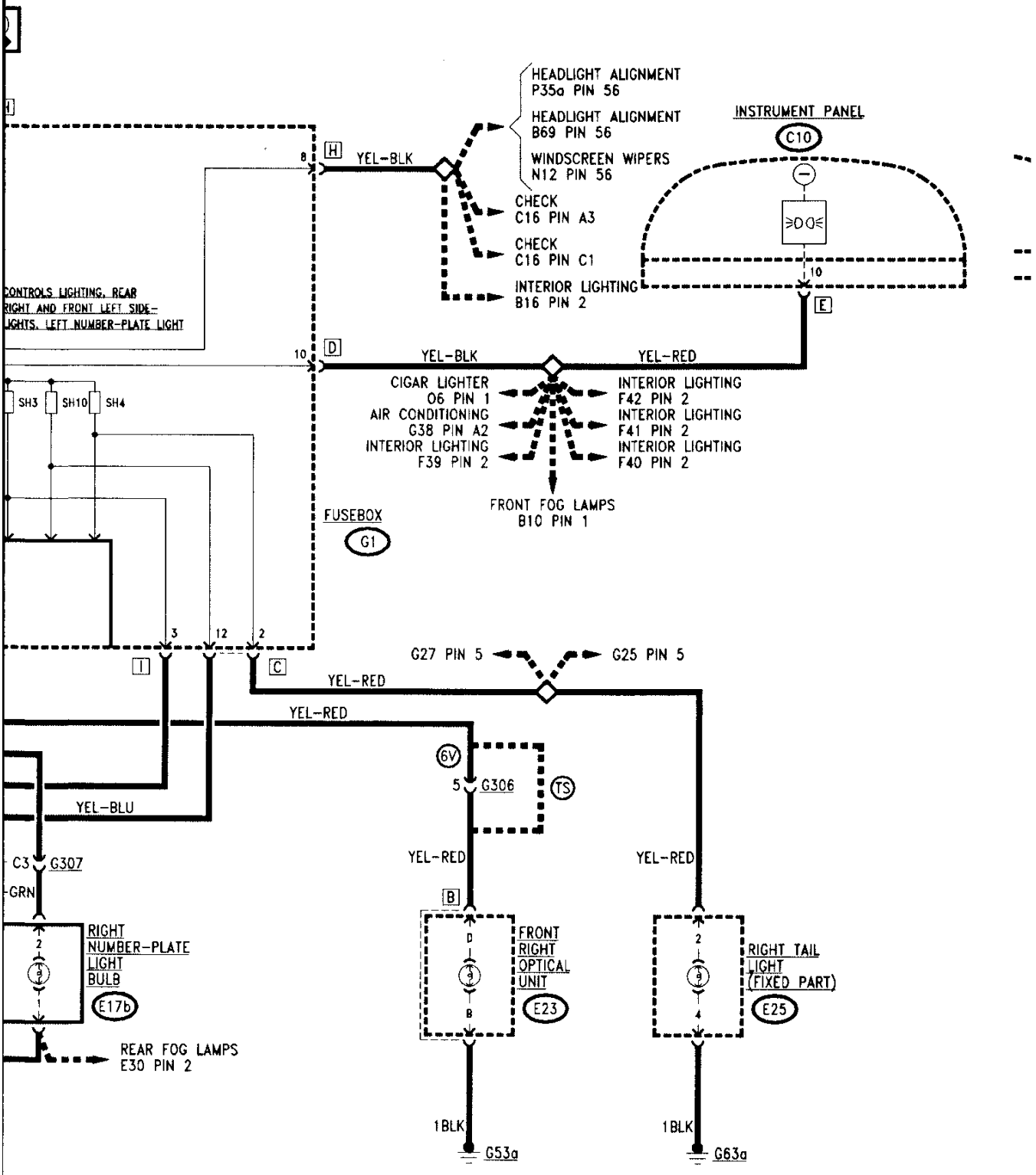


SIDELIGHTS

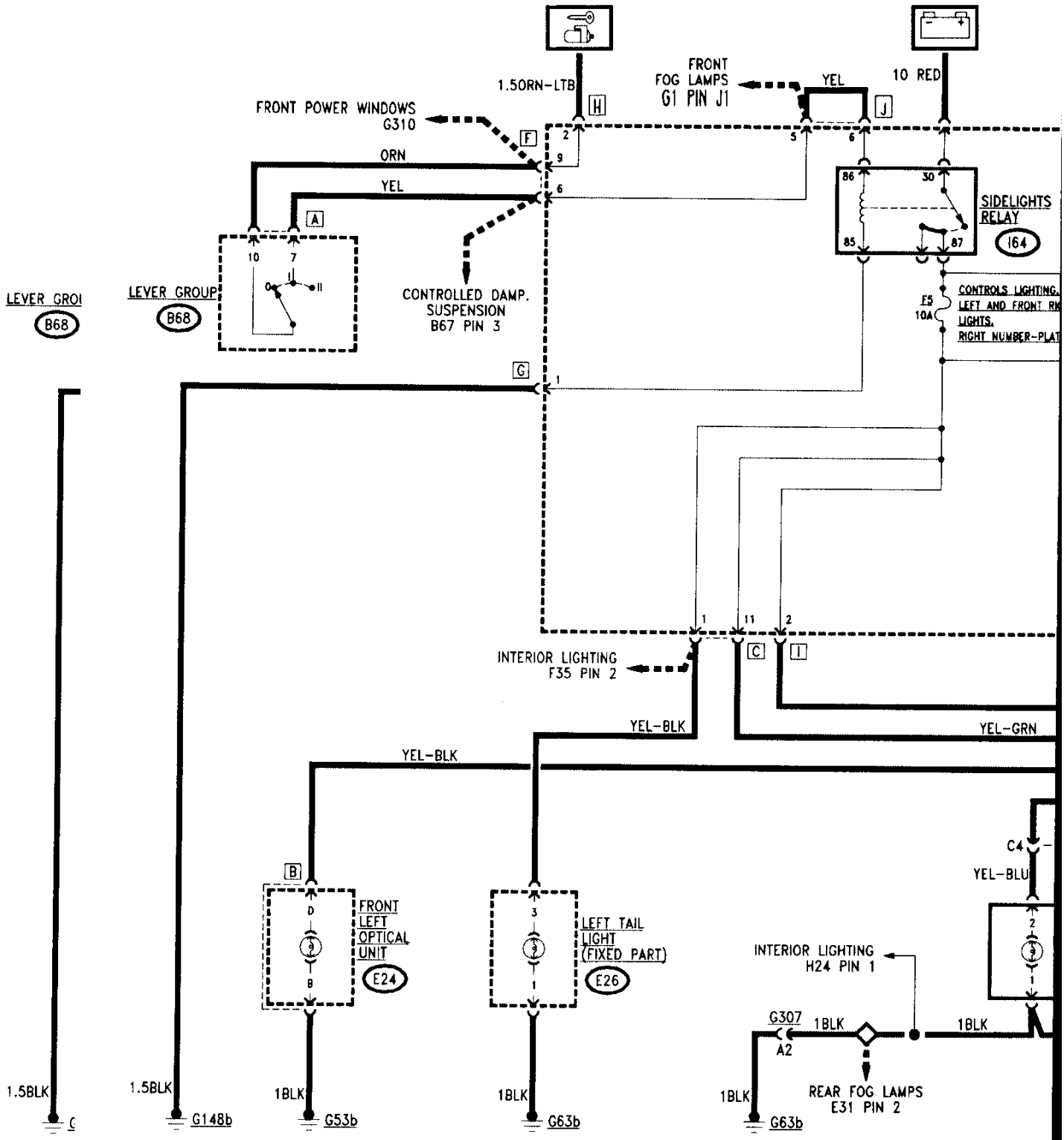
INDEX

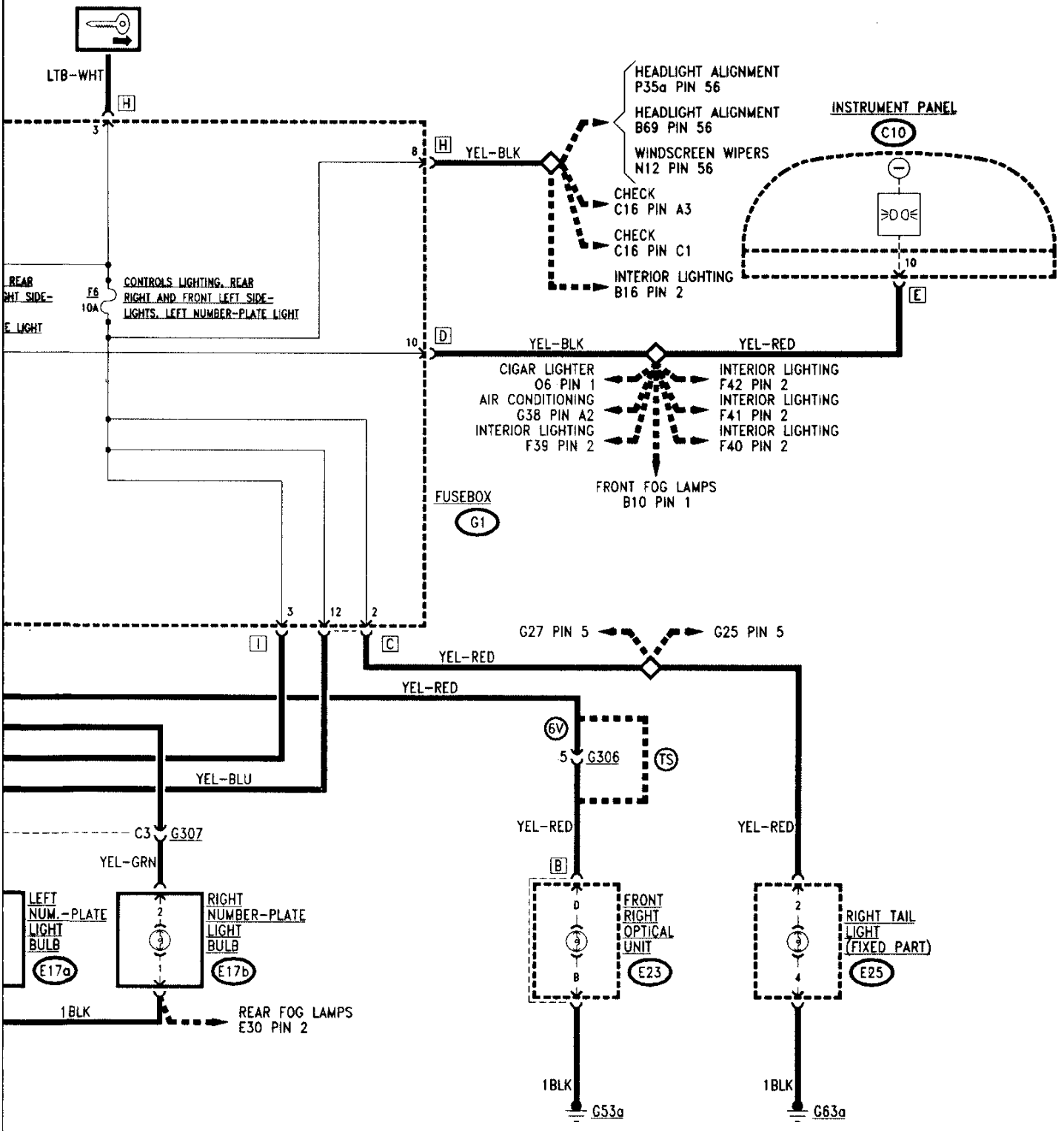

1.5ORN-LTB
FRONT FOG LAMPS G1 PIN J1
YEL
10 RED
LTB-WHT
FRONT POWER WINDOWS G310
ORN
YEL
SIDELIGHTS RELAY
164
LEVER GROUP
B68
CONTROLLED DAMP. SUSPENSION B67 PIN 3
F5 10A
CONTROLS LIGHTING, REAR LEFT AND FRONT RIGHT SIDE-LIGHTS, RIGHT NUMBER-PLATE LIGHT
F6 10A
SH9
SH2
SH1
CHECK PANEL CONTROL UNIT
N59
INTERIOR LIGHTING F35 PIN 2
YEL-BLK
YEL-GRN
YEL-BLK
C4
YEL-BLU
FRONT LEFT OPTICAL UNIT
E24
LEFT TAIL LIGHT (FIXED PART)
E26
LEFT NUM.-PLATE LIGHT BULB
E17a
INTERIOR LIGHTING H24 PIN 1
G307
A2
1BLK
REAR FOG LAMPS E31 PIN 2
1.5BLK
G148b
G53b
G63b
G63b

IRING DIAGRAM
ersion with Check Panel)



WIRING DIAGRAM
(Version without Check Panel)




LTB-WHT
H
3
8
H
YEL-BLK
HEADLIGHT ALIGNMENT
P35a PIN 56
HEADLIGHT ALIGNMENT
B69 PIN 56
WINDSCREEN WIPERS
N12 PIN 56
CHECK
C16 PIN A3
CHECK
C16 PIN C1
INTERIOR LIGHTING
B16 PIN 2
INSTRUMENT PANEL
C10
10
E
F6
10A
CONTROLS LIGHTING, REAR
RIGHT AND FRONT LEFT SIDE-
LIGHTS, LEFT NUMBER-PLATE LIGHT
10
D
YEL-BLK
YEL-RED
CIGAR LIGHTER
O6 PIN 1
AIR CONDITIONING
G38 PIN A2
INTERIOR LIGHTING
F39 PIN 2
INTERIOR LIGHTING
F42 PIN 2
INTERIOR LIGHTING
F41 PIN 2
INTERIOR LIGHTING
F40 PIN 2
FRONT FOG LAMPS
B10 PIN 1
FUSEBOX
G1
3
12
2
I
C
G27 PIN 5
G25 PIN 5
YEL-RED
YEL-RED
YEL-BLU
6V
5
G306
TS
C3
G307
YEL-GRN
YEL-RED
YEL-RED
B
LEFT
NUM.-PLATE
LIGHT
BULB
E17a
RIGHT
NUMBER-PLATE
LIGHT
BULB
E17b
FRONT
RIGHT
OPTICAL
UNIT
E23
RIGHT TAIL
LIGHT
(FIXED PART)
E25
1BLK
REAR FOG LAMPS
E30 PIN 2
1BLK
G53a
1BLK
G63a

GENERAL DESCRIPTION

N.B. Two distinct wiring diagrams are given, one for the models equipped with the Check Panel and one for models without this device.

The sidelights are illuminated when the switch on the lever group is rotated to the first position, and only when the ignition key is engaged: this prevents the battery from being drained if the lights are inadvertently left on when the vehicle is left.

They can also be illuminated though, by slightly withdrawing the ignition key and rotating it in the opposite direction, and holding down the special button: key in the "PARKING" position (see also "Power Supply")

When the sidelights are illuminated, the numberplate lights and numerous interior lights for the illumination of the passenger compartment, instruments and controls are also illuminated (see "Interior Lighting").

A warning lamp on the instrument panel signals that the sidelights are on.

For safety reasons the circuit is protected by two fuses employed in the "crossed" system: one for the front right and rear left lights and the other for the front left and rear right lights.

The correct operation of the sidelights and numberplate lights is - for some versions - verified by the Check Panel device which signals any malfunction affecting these important circuits (see "Check Panel").

NOTE: In some countries the versions are equipped with "Day- light" (sidelights are always on when the ignition key is rotated and a different system of logic is employed regarding the illumination of the dipped beam headlights and rear and front fog-lamps). In this case the present section should be considered as complementary to the "Day-light" section which should therefore be consulted first.

FUNCTIONAL DESCRIPTION

The sidelights circuit is activated by relay **I64** located in fusebox **G1**.

Moving the switch on the lever group **B68** to position "I" when the ignition key is engaged, the coil of relay **I64** is supplied and the circuit is closed which sends supply to the sidelights; this circuit is protected by two fuses in fusebox **G1: F5** (10A) for the front right and rear left lights and **F6** (10A) for the front left and rear right lights. In this way the front sidelights **E23** (right) and **E24** (left) are supplied along with the rear lights **E25** (right) and **E26** (left) and the numberplate lights **E17**.

The line supplying fuse **F5** sends a signal to the instrument panel **C10** to illuminate the relative warning lamp.

As the sidelights are controlled by the Check Panel device, signals (both direct and by "SH" shunt) are emitted from the circuit supplying the lights themselves and are received by the control unit **N59** which can then check the line load (for greater detail see "Check Panel").

With the ignition key at the "PARKING" position, all the sidelights are illuminated as the fuses **F5** and **F6** in fusebox **G1** are supplied directly, by-passing the relay **I64**.

NOTE: Selecting the sidelights supplies numerous other circuits with "consensus" signals (circuits which operate only when when the sidelights are illuminated) or by supply lines in the real sense of the term (for example by illuminating the ideograms of the various buttons and controls...).

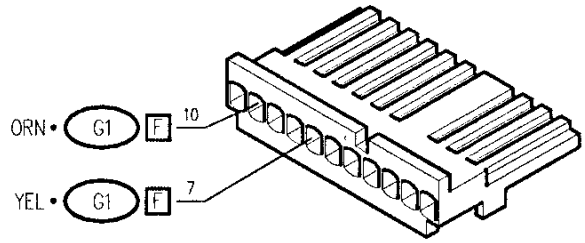
These lines are described and illustrated in the diagrams relative to the components to which they refer, or in the section "Interior Lighting").

TROUBLESHOOTING TABLE

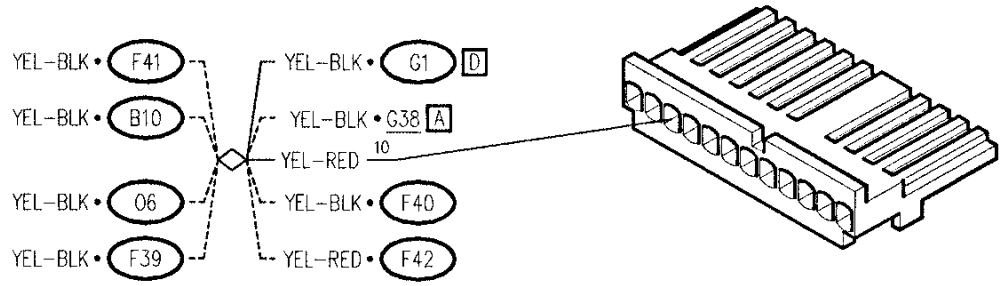
Malfunction	Component											Test
	(I64)	(B68)	F5	F6	(E23)	(E24)	(E25)	(E26)	(E17a)	(E17b)	(C10)	
All sidelights	•	•										A
Front right			•		•							B
Front left				•		•						C
Rear right				•			•					D
Rear left			•					•				E
Right numberplate			•							•		F
Left numberplate				•					•			G
Sidelights warning lamp											•	H

COMPONENTS AND CONNECTORS

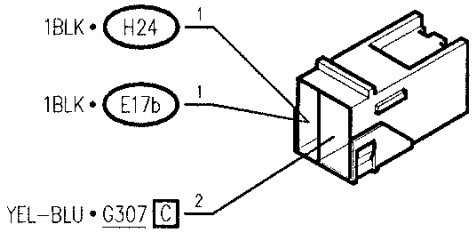
Lever group — B68 A



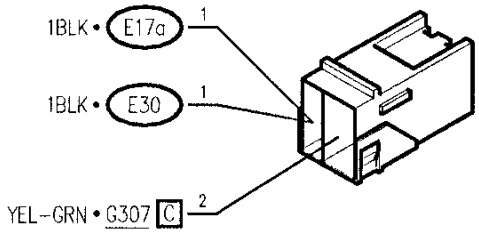
Instrument panel — C10 E



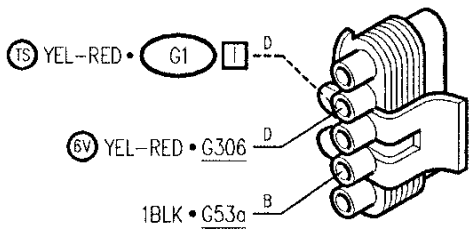
Left numberplate light bulb — E17a



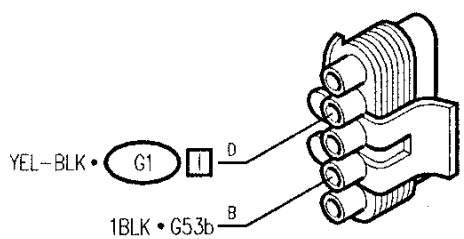
Right numberplate light bulb — E17b

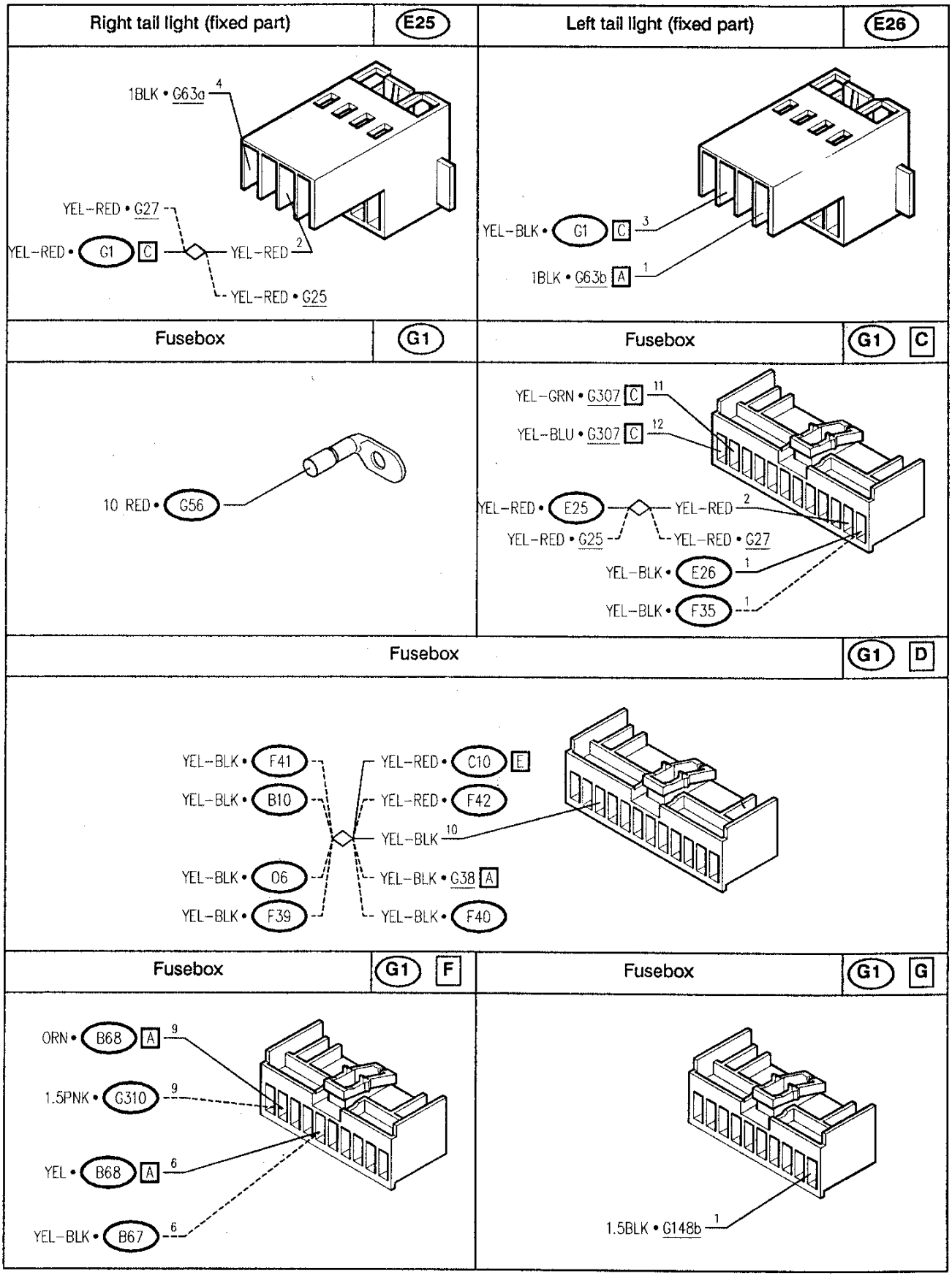


Front right optical unit — E23 B

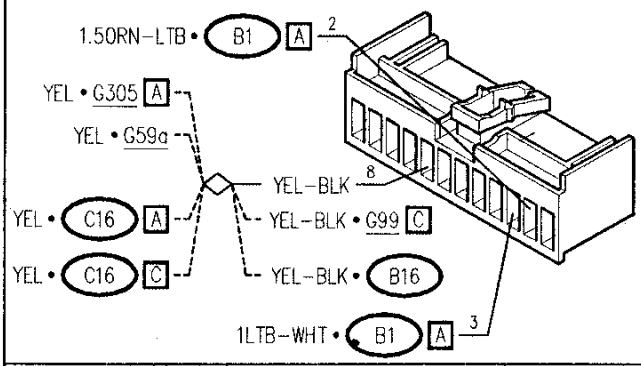


Front left optical unit — E24 B

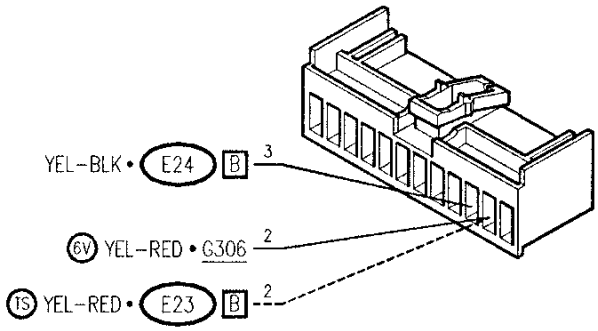



Right tail light (fixed part) E25
1BLK • G63a 4
YEL-RED • G27
YEL-RED • G1 C
YEL-RED 2
YEL-RED • G25
Left tail light (fixed part) E26
YEL-BLK • G1 C 3
1BLK • G63b A 1
Fusebox G1
10 RED • G56
Fusebox G1 C
YEL-GRN • G307 C 11
YEL-BLU • G307 C 12
YEL-RED • E25
YEL-RED 2
YEL-RED • G25
YEL-RED • G27
YEL-BLK • E26 1
YEL-BLK • F35 1
Fusebox G1 D
YEL-BLK • F41
YEL-BLK • B10
YEL-BLK • 06
YEL-BLK • F39
YEL-RED • C10 E
YEL-RED • F42
YEL-BLK 10
YEL-BLK • G38 A
YEL-BLK • F40
Fusebox G1 F
ORN • B68 A 9
1.5PNK • G310 9
YEL • B68 A 6
YEL-BLK • B67 6
Fusebox G1 G
1.5BLK • G148b 1

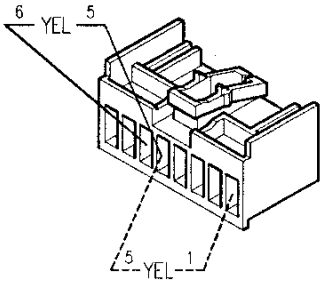
Fusebox	G1 H



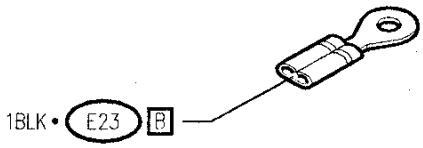
Fusebox	G1 I



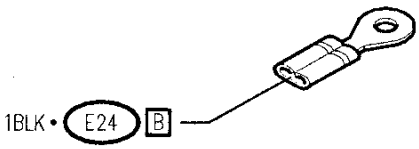
Fusebox	G1 J



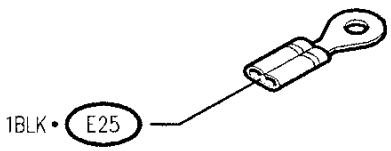
Engine compartment ground - right side	G53a



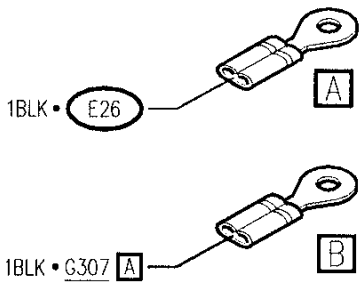
Engine compartment ground - left side	G53b



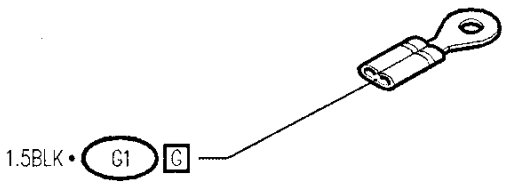
Rear right ground	G63a



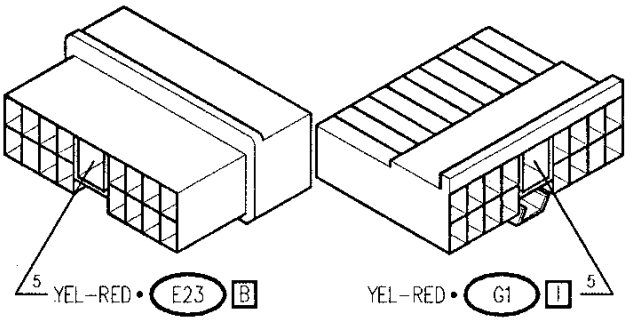
Rear left ground	G63b



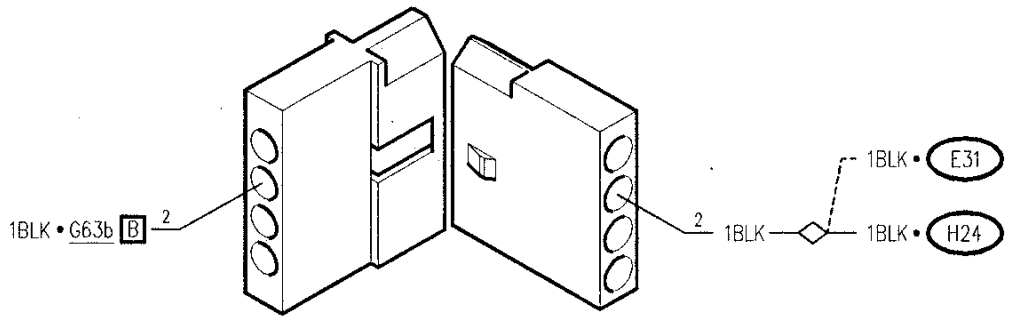
Under-dashboard ground - left side	G148b



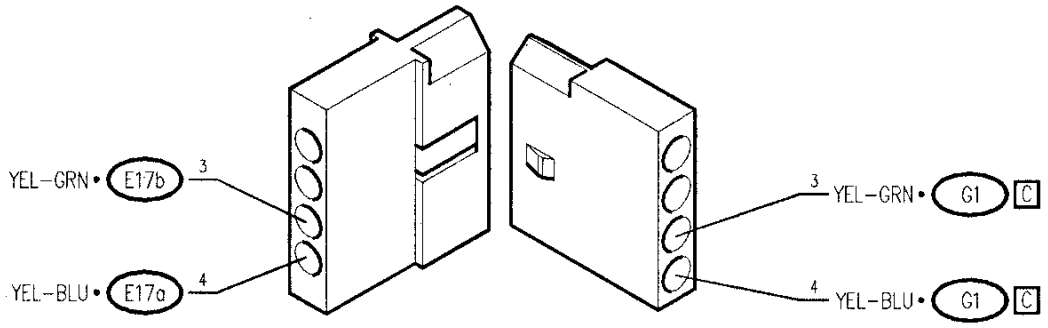
Engine wiring/right engine wiring connection	G306



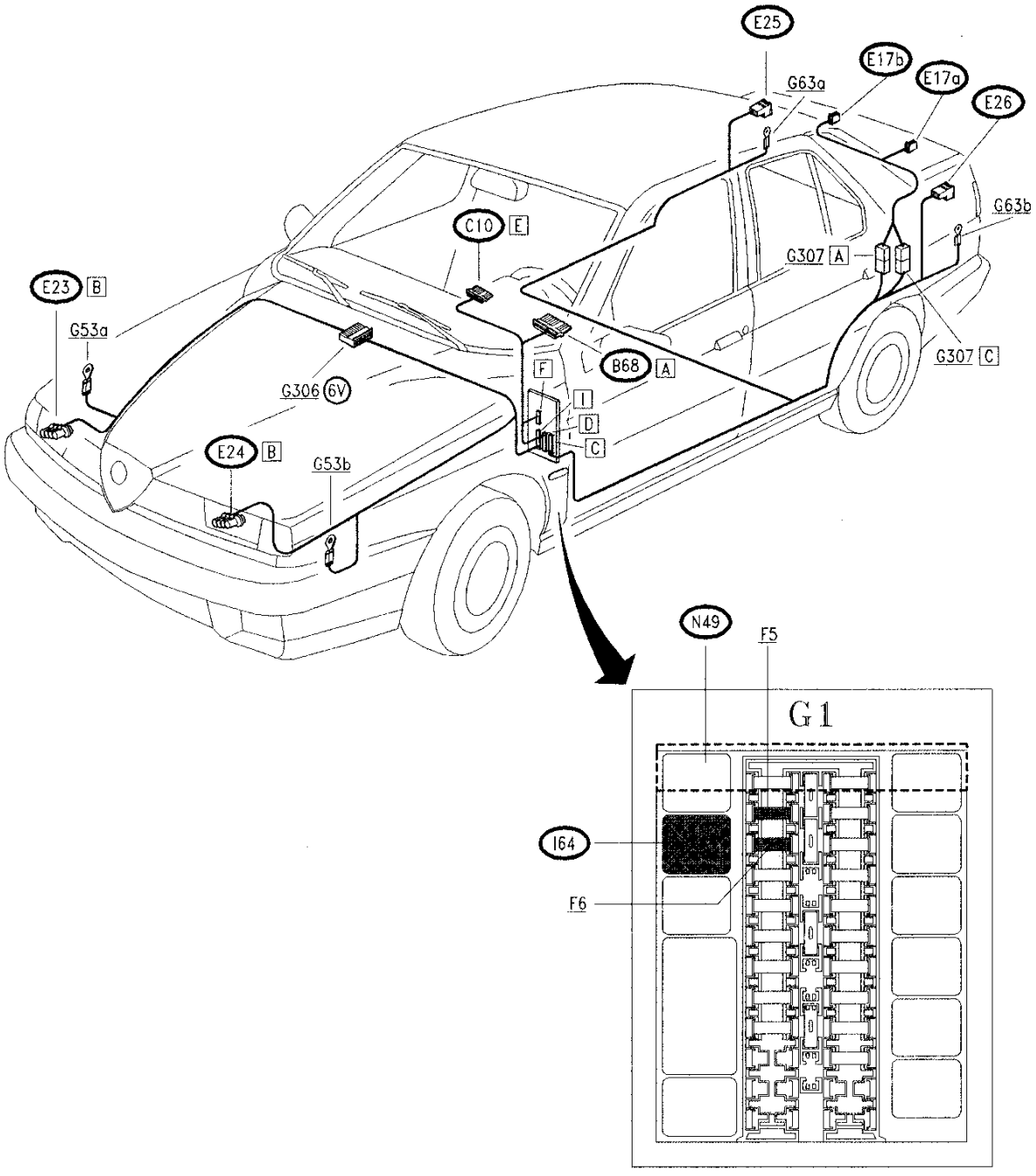
Rear wiring/luggage compartment wiring connection	G307 A



Rear wiring/luggage compartment wiring connection	G307 C



LOCATION OF COMPONENTS



TROUBLESHOOTING

NONE OF SIDELIGHTS WORKING	TEST A

NOTE: for versions equipped with the Check Panel device, refer to section: "Check Panel - Numberplate lights and sidelights check" before carrying out the following tests.

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
A1 CHECK VOLTAGE – Rotate the ignition key in the opposite direction, placing the sidelights in the "PARKING" mode: verify 12V at pin H3 of **G1**	OK →	Carry out **step A2**
	~~OK~~ →	Restore wiring between pin H3 of **G1** and the ignition switch (LTB-WHT)
A2 CHECK RELAY – Check for correct functioning of sidelights relay **I64**, located in **G1**	OK →	Carry out **step A3**
	~~OK~~ →	Replace relay **I64**
A3 CHECK VOLTAGE – Rotate the key and verify 12V at pin A10 of lever group **B68**	OK →	Carry out **step A4**
	~~OK~~ →	Restore wiring between pin F9 of **G1** and pin A10 of lever group **B68** (ORN)

(continues)

NONE OF SIDELIGHTS WORKING	TEST A

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
A4 CHECK LEVER GROUP – Check for correct functioning of lever group: • with sidelights on, check continuity between pin A7 and pin A10 of lever group **B68**	OK ➡ ~~OK~~ ➡	Carry out **step A5** Replace lever group **B68**, left part
A5 CHECK VOLTAGE – With ignition key rotated and sidelights on, verify 12V at pin F6 of **G1**	OK ➡ ~~OK~~ ➡	Carry out **step A6** Restore wiring between pin F6 of **G1** and pin A7 of lever group **B68** (YEL)
A6 CHECK VOLTAGE – With ignition key rotated and sidelights on, verify 12V at pin J6 of **G1**	OK ➡ ~~OK~~ ➡	Carry out **the successive tests** Restore wiring between pins J6 and J5 of **G1** (YEL)

FRONT RIGHT LIGHTS NOT WORKING	TEST B

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
B1 CHECK FUSE – Check for damage of fuse **F5** in fusebox **G1**	OK ➡	Carry out **step B2**
	OK ➡	Replace fuse (10A)
B2 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V between pin BD and BB of right-hand light assembly **E23**	OK ➡	Carry out **step B3**
	OK ➡	Carry out **step B4**
B3 CHECK BULB – Check for damage of sidelights bulb, located in light assembly **E23**	OK ➡	Check and if necessary replace the complete light assembly **E23**
	OK ➡	Replace bulb
B4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin BD of light assembly **E23**	OK ➡	Restore wiring between pin BB of **E23** and ground **G53a** (BLK)
	OK ➡	Restore wiring between: -(TS) pin I2 of **G1** and pin BD of **E23** (YEL-RED) -(6V) pin I2 of **G1** and pin 5 of **G306**, and between pin 5 of **G306** and pin BD of **E23** (YEL-RED)

FRONT LEFT LIGHTS NOT WORKING	TEST C

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
C1 CHECK FUSE – Check for damage of fuse **F6** in fusebox **G1**	OK ➡	Carry out **step C2**
	~~OK~~ ➡	Replace fuse (10A)
C2 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V between pin BD and BB of left light assembly **E24**	OK ➡	Carry out **step C3**
	~~OK~~ ➡	Carry out **step C4**
C3 CHECK BULB – Check for damage of sidelights bulb, located in light assembly **E24**	OK ➡	Check and if necessary replace the complete light assembly **E24**
	~~OK~~ ➡	Replace bulb
C4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin BD of light assembly **E24**	OK ➡	Restore wiring between pin BB of **E24** and ground **G53b** (BLK)
	~~OK~~ ➡	Restore wiring between pin I3 of **G1** and pin BD of **E24** (YEL-BLK)

REAR RIGHT-HAND LIGHT NOT WORKING	TEST D

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
D1 CHECK FUSE – Check for damage of fuse **F6** in fusebox **G1**	OK ➡	Carry out **step D2**
	~~OK~~ ➡	Replace fuse (10A)
D2 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V between pins 2 and 4 of rear right-hand light assembly **E25**	OK ➡	Carry out **step D3**
	~~OK~~ ➡	Carry out **step D4**
D3 CHECK BULB – Check for damage of sidelights bulb, located in light assembly **E25**	OK ➡	Check and if necessary replace the complete light assembly **E25**
	~~OK~~ ➡	Replace bulb
D4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin 2 of light assembly **E25**	OK ➡	Restore wiring between pin 4 of **E25** and ground **G63a** (BLK)
	~~OK~~ ➡	Restore wiring between pin C2 of **G1** and pin 2 of **E25**, also across the solder (YEL-RED)

REAR LEFT-HAND LIGHT NOT WORKING	TEST E

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
E1 CHECK FUSE – Check for damage of fuse **F5** in fusebox **G1**	OK ➡	Carry out **step E2**
	~~OK~~ ➡	Replace fuse (10A)
E2 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V between pins 3 and 1 of rear left light assembly **E26**	OK ➡	Carry out **step E3**
	~~OK~~ ➡	Carry out **step E4**
E3 CHECK BULB – Check for damage of sidelights bulb, located in light assembly **E26**	OK ➡	Check and if necessary replace the complete light assembly **E26**
	~~OK~~ ➡	Replace bulb
E4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin 3 of light assembly **E26**	OK ➡	Restore wiring between pin 1 of **E26** and ground **G63b** (BLK)
	~~OK~~ ➡	Restore wiring between pin C1 of **G1** and pin 3 of **E26** (YEL-BLK)

RIGHT-HAND NUMBERPLATE LIGHT NOT WORKING	TEST F

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
F1 CHECK FUSE – Check for damage of fuse **F5** in fusebox **G1**	OK ➡	Carry out **step F2**
	~~OK~~ ➡	Replace fuse (10A)
F2 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V between pin 1 and 2 of right-hand numberplate light **E17b**	OK ➡	Carry out **step F3**
	~~OK~~ ➡	Carry out **step F4**
F3 CHECK BULB – Check for damage of numberplate light bulb **E17b**	OK ➡	Check and if necessary replace the complete numberplate lighting assembly
	~~OK~~ ➡	Replace bulb
F4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin 2 of light **E17b**	OK ➡	**N.B.** : in this case the left-hand numberplate will also not be working, see **test G**. Restore wiring between pin 1 of **E17b** and ground **G63b**, across light **E17a**, switch **H24**, solder and pin A2 of connector **G307** (BLK)
	~~OK~~ ➡	Restore wiring between pin C11 of **G1** and pin 2 of **E17b**, across pin C3 of connector **G307** (YEL-GRN)

LEFT-HAND NUMBERPLATE LIGHT NOT WORKING	TEST G

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
G1 CHECK FUSE – Check for damage of fuse **F6** in fusebox **G1**	OK ➡ OK ➡	Carry out **step G2** Replace fuse (10A)
G2 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V between pin 1 and 2 of left-hand numberplate light **E17a**	OK ➡ OK ➡	Carry out **step G3** Carry out **step G4**
G3 CHECK BULB – Check for damage of numberplate light bulb **E17a**	OK ➡ OK ➡	Check and if necessary replace the complete numberplate lighting assembly Replace bulb
G4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin 2 of light **E17a**	OK ➡ OK ➡	Restore wiring between pin 1 of **E17a** and ground **G63b**, across, switch **H24**, solder and pin A2 of connector **G307** (BLK) Restore wiring between pin C12 of **G1** and pin 2 of **E17a**, across pin C4 of connector **G307** (YEL-BLU)

SIDELIGHTS WARNING LAMP ON INSTRUMENT PANEL NOT WORKING	TEST H

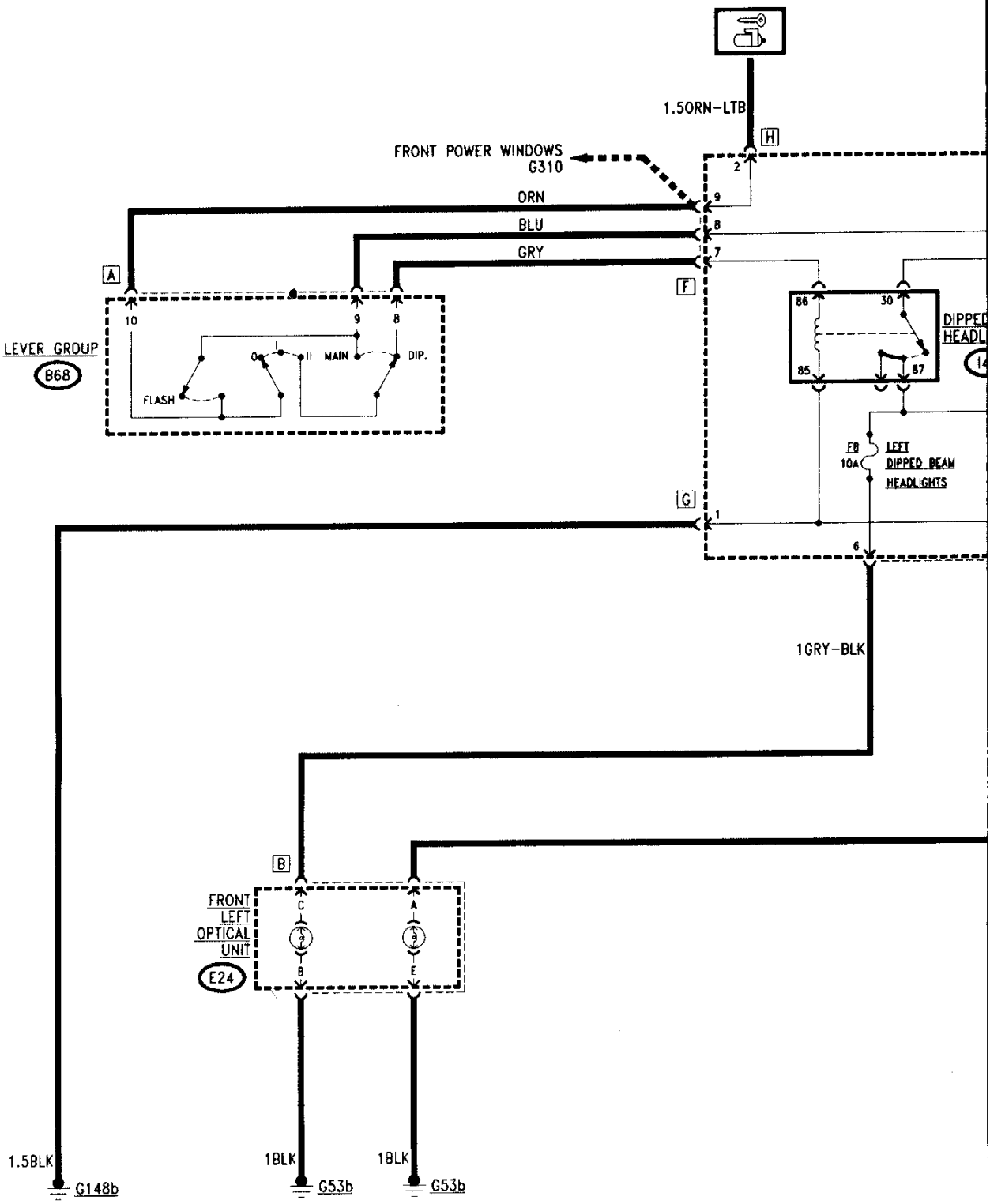
Note: The sidelights are however, working correctly

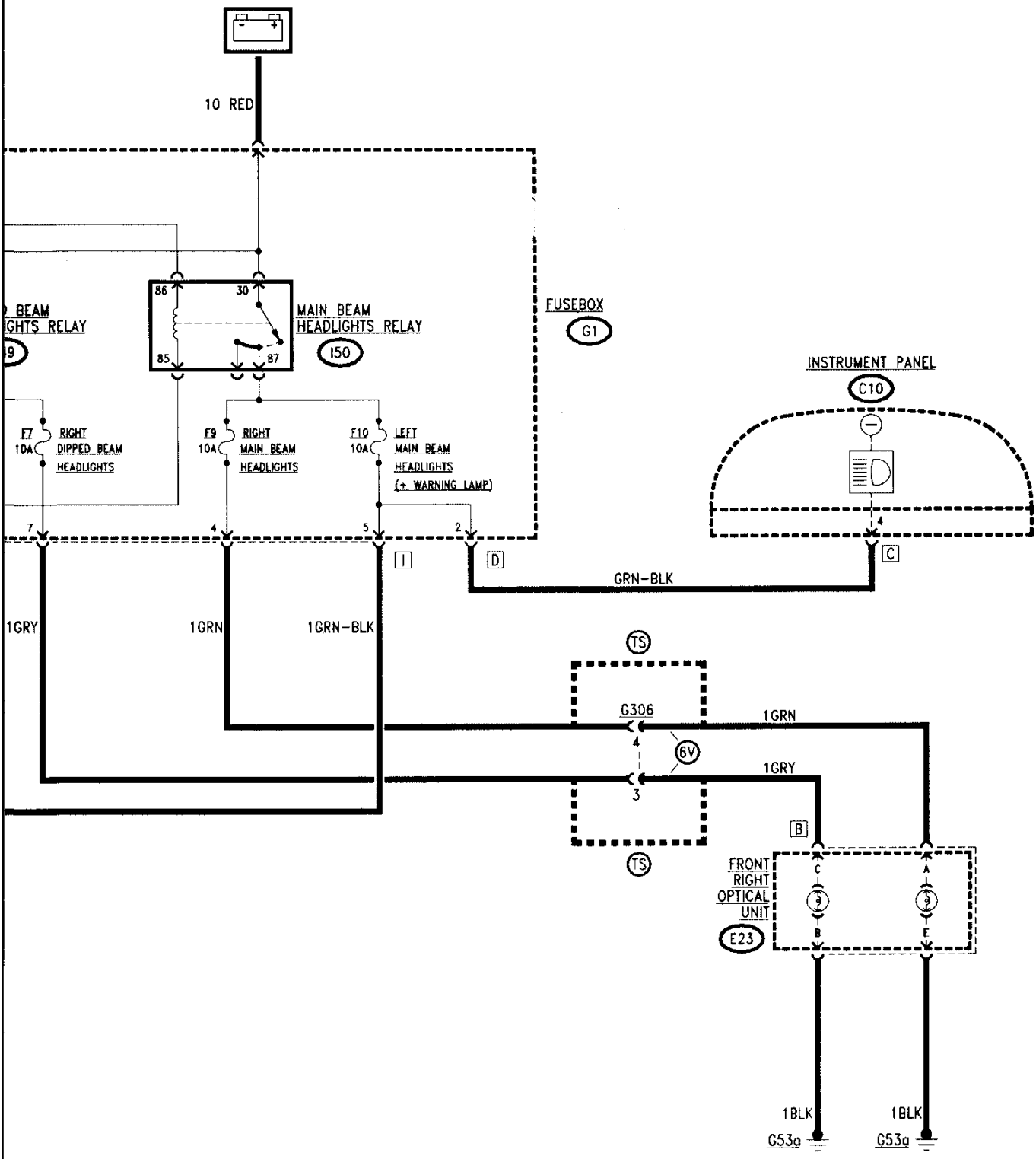
TEST PROCEDURE	RESULT	CORRECTIVE ACTION
H1 CHECK VOLTAGE – With ignition key rotated and sidelights on, verify 12V at pin E10 of instrument panel **C10**	OK ➡	Carry out **step H2**
	~~OK~~ ➡	Restore wiring between pin D10 of **G1** and pin E10 of **C10**, also across the solder (YEL-BLK and YEL-RED)
H2 CHECK WARNING LIGHT BULB – Check for damage of sidelights warning lamp, located on the instrument panel **C10**	OK ➡	Check and if necessary replace the complete instrument panel **C10**
	~~OK~~ ➡	Replace warning light bulb

MAIN AND DIPPED BEAM HEADLIGHTS

IDEX

WIRING DIAGRAM




10 RED
86
30
85
87
MAIN BEAM
HEADLIGHTS RELAY
150
FUSEBOX
G1
INSTRUMENT PANEL
C10
F7
10A
RIGHT
DIPPED BEAM
HEADLIGHTS
F9
10A
RIGHT
MAIN BEAM
HEADLIGHTS
F10
10A
LEFT
MAIN BEAM
HEADLIGHTS
(+ WARNING LAMP)
7
4
5
2
I
D
C
GRN-BLK
1GRY
1GRN
1GRN-BLK
TS
G306
4
6V
3
1GRN
1GRY
TS
B
FRONT
RIGHT
OPTICAL
UNIT
E23
C
A
B
E
1BLK
G53a
1BLK
G53a

GENERAL DESCRIPTION

The vehicle is equipped with two lamps for the dipped beam and two for main-beam.

Dipped beam is selected by rotating the switch located on the lever group one position on from the sidelights position. From this position the main-beam can be permanently selected by acting on the main/dipped beam switch; lightly pulling the lever activates the mainbeam "flashing" function which will continue to flash for as long as the lever is pulled.

A warning lamp on the dashboard signals the selction of the main-beam.

For safety reasons each light is protected by two fuses, one for the right-hand lamp and the other for the left.

NOTE: some versions are equipped with an elecrically operated device which regulates the alignment of the headlights (see "Adjusting headlight alignment") however a manual device permits a rapid and simple adjustment of the beam to the loading conditions of the vehicle.

FUNCTIONAL DESCRIPTION

The circuit of the dipped beam headlights is activated by relay **I49** located in fusebox **G1**.
Moving the lever group switch **B68** to position II - one position on from the sidelights position - and with the swith at the dipped beam position, the coil of relay **I49** is "turn key" supplied closing the circuit supplying the lamps **E24** (left) and **E23** (right). Each circuit is protected by a fuse in box **G1**: **F7** (10A) for the right-hand lamp and **F10** (10A) for the left.

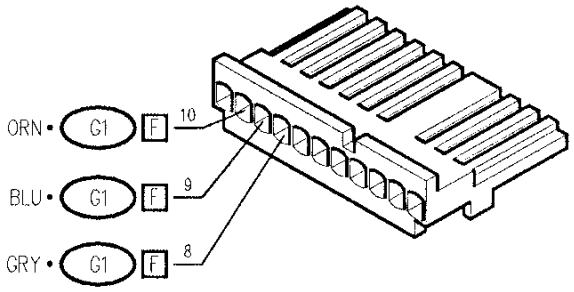
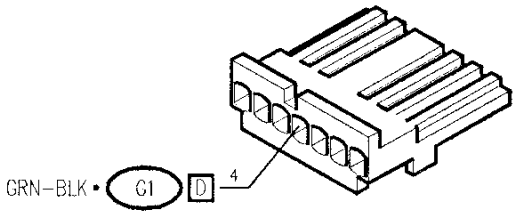
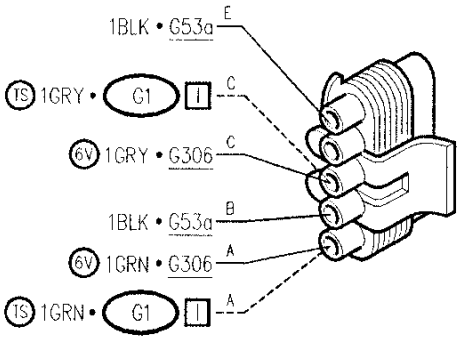
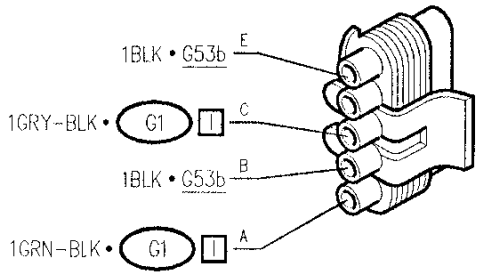
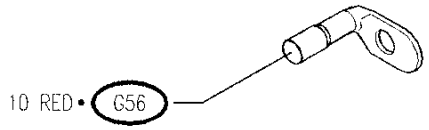
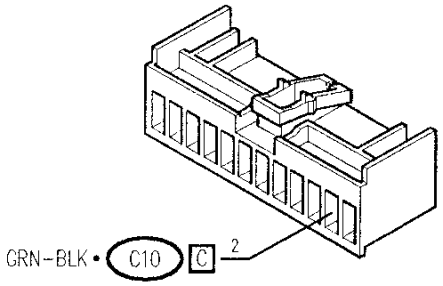
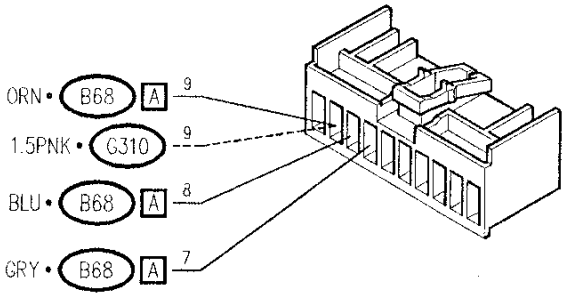
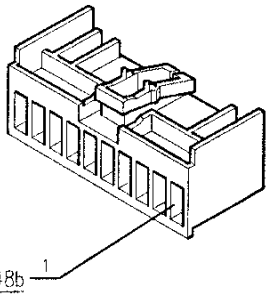
The main-beam circuit is activated by relay **I50** located in fusebox **G1**.
Moving the switch to the main-beam position, with the switch on the lever group **B68** to position II. or by closing the "flashing" contact, the coil of relay **I50** is "turn key" supplied and closes the circuit which supplies the lamps **E24** (left) and **E23** (right). Each circuit is protected by a fuse in fusebox **G1**: **F9** (10A) for the right-hand lamp and **F10** (10A) for the left.

The supply line of the left lamp also sends a signal to the instrument panel **C10** which illuminates the "main-beam on" warning lamp.

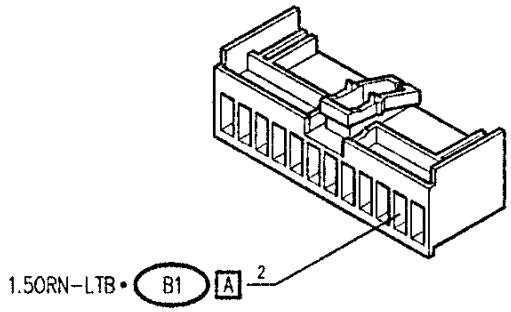
TROUBLESHOOTING TABLE

Malfunction	Component										Test
	I49	I50	F7	F8	F9	F10	B68	E23	E24	C10	
Both dipped beam lamps	•						•				A
RH dipped beam lamp			•					•			B
LH dipped beam lamp				•					•		C
Both main beam lamps		•					•				D
RH main beam lamp					•			•			E
LH main beam lamp						•			•		F
Main beam warning lamp										•	G

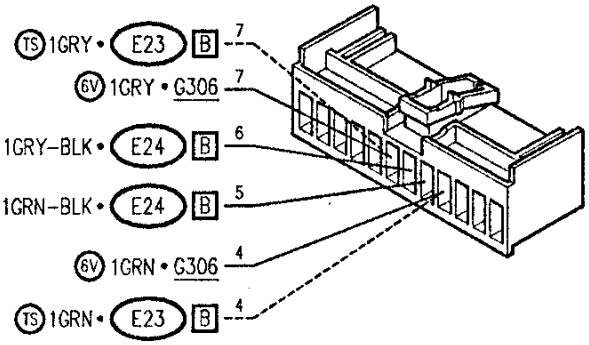
COMPONENTS AND CONNECTORS

Lever group	B68 A	Instrument panel	C10 C
			
Front right optical unit	**E23 B**	**Front left optical unit**	**E24 B**
			
Fusebox	**G1**	**Fusebox**	**G1 D**
			
Fusebox	**G1 F**	**Fusebox**	**G1 G**
			

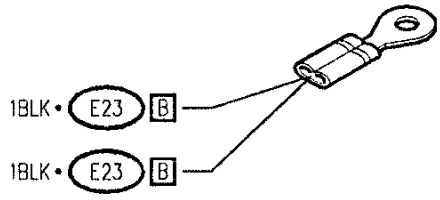
Fusebox	G1 H



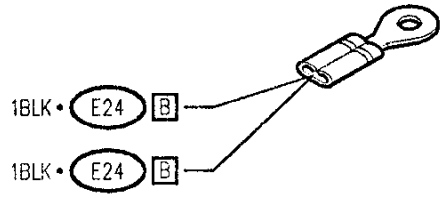
Fusebox	G1 I



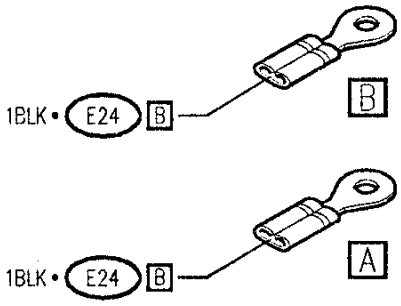
Engine compartment ground-right side	G53a



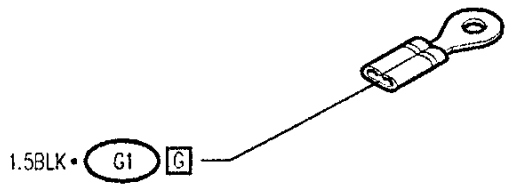
Engine compartment ground-left side 6V	G53b



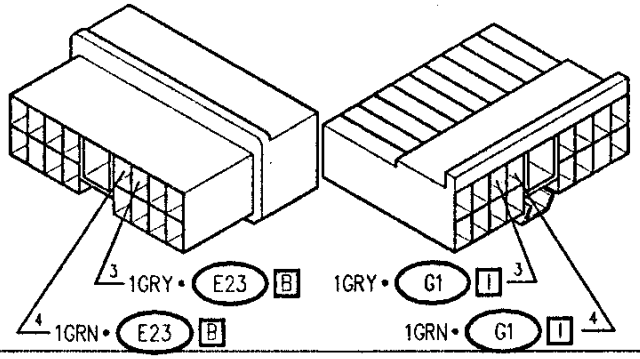
Engine compartment ground-left side TS	G53b



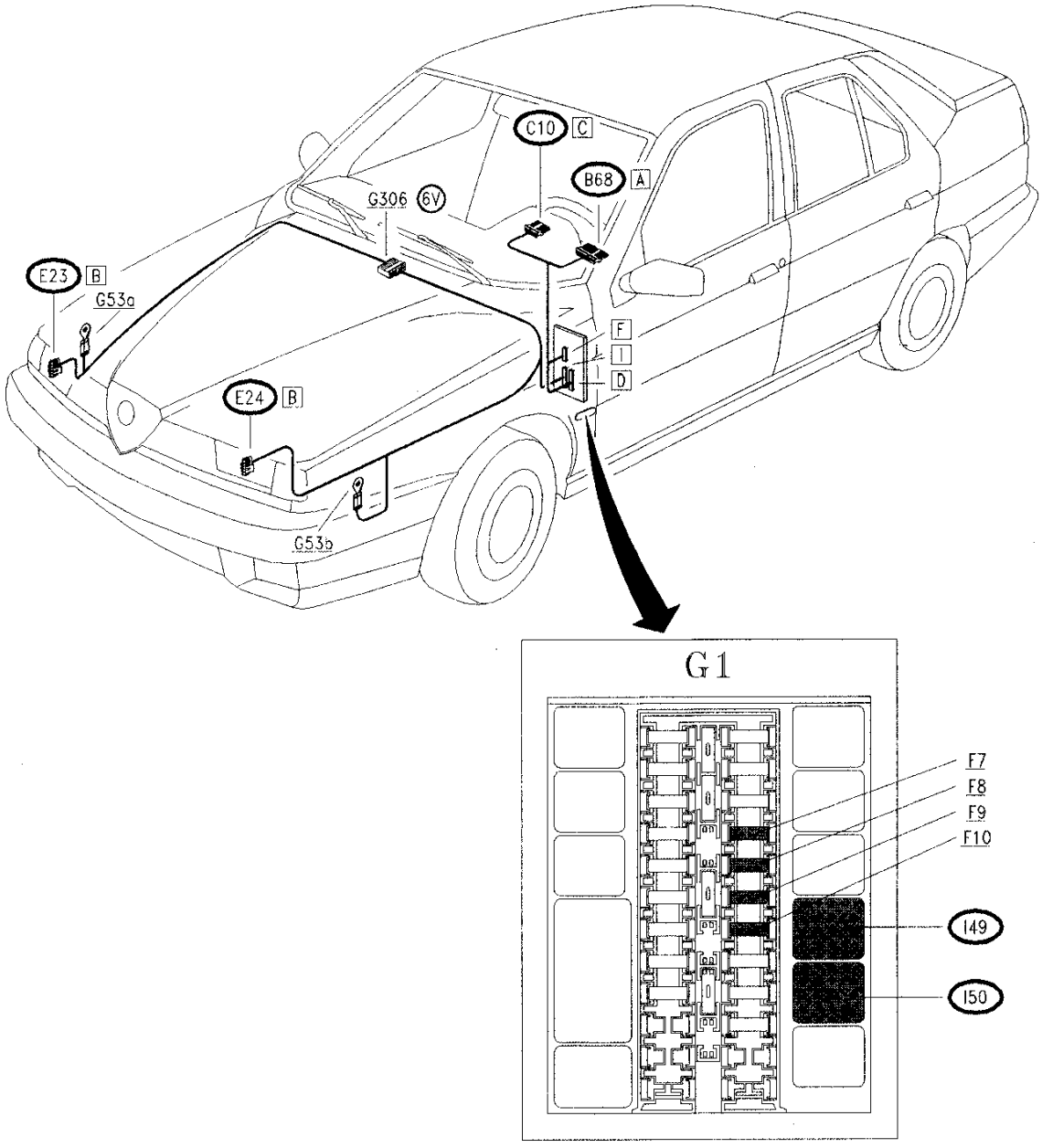
Under-dashboard ground-left side	G148b



Engine wiring/right engine wiring connection	G306



LOCATION OF COMPONENTS



TROUBLESHOOTING

NEITHER OF DIPPED BEAM LAMPS WORKING	TEST A

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
A1 CHECK RELAY – Check correct functioning of dipped beam relay **I49,** located in **G1**	OK ➡	Carry out **step A2**
	~~OK~~ ➡	Replace relay **I49**
A2 CHECK VOLTAGE – Rotate the ignition key and verify 12V at pin A10 of lever group **B68**	OK ➡	Carry out **step A3**
	~~OK~~ ➡	Restore wiring between pin F9 of **G1** and pin A10 of lever group **B68** (ORN)
A3 CHECK LEVER GROUP – Check correct functioning of lever group: • with dipped beam selected, verify continuity between pin A8 and pin A10 of lever group **B68**	OK ➡	Carry out **step A4**
	~~OK~~ ➡	Replace lever group **B68,** left part
A4 CHECK VOLTAGE – With key rotated and dipped beam selected, verify 12V at pin F7 of **G1**	OK ➡	Carry out **tests B and C**
	~~OK~~ ➡	Restore wiring between pin F7 of **G1** and pin A8 of lever group **B68** (GRY)

RIGHT-HAND DIPPED BEAM LAMP NOT WORKING	TEST B

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
B1 CHECK FUSE – Check for damage of fuse **F7** in fusebox **G1**	OK ➡	Carry out **step B2**
	OK ➡	Replace fuse (10A)
B2 CHECK VOLTAGE – With key rotated and lights on, verify 12V between pin BC and BB of right-hand headlight assembly **E23**	OK ➡	Carry out **step B3**
	OK ➡	Carry out **step B4**
B3 CHECK BULB – Check for damage of right-hand dipped beam lamp, located in headlight assembly **E23**	OK ➡	Check and if necessary replace the entire headlight assembly **E23**
	OK ➡	Replace bulb
B4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin BC of headlight assembly **E23**	OK ➡	Restore wiring between pin BB of **E23** and ground **G53a** (BLK)
	OK ➡	Restore wiring between: - (TS) pin I7 of **G1** and pin BC of **E23** (GRY) - (6V) pin I7 of **G1** and pin 3 of **G306**, and between pin 3 of **G306** and pin BC of **E23** (GRY)

LEFT-HAND DIPPED BEAM LAMP NOT WORKING	TEST C

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
C1 CHECK FUSE – Check for damage of fuse **F8** in fusebox **G1**	OK →	Carry out **step C2**
	~~OK~~ →	Replace fuse (10A)
C2 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V between pin BC and BB of left-hand headlight assembly **E24**	OK →	Carry out **step C3**
	~~OK~~ →	Carry out **step C4**
C3 CHECK BULB – Check for damage of left-hand dipped beam lamp, located in headlight assembly **E24**	OK →	Check and if necessary replace the entire headlight assembly **E24**
	~~OK~~ →	Replace bulb
C4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin BC of headlight assembly **E24**	OK →	Restore wiring between pin BB of **E24** and ground **G53b** (BLK)
	~~OK~~ →	Restore wiring between pin I6 of **G1** and pin BC of **E24** (GRY-BLK)

NONE OF THE MAIN-BEAM LAMPS WORKING	TEST D

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
D1 CHECK RELAY – Check correct functioning of main-beam relay **I50** located in **G1**	OK ➡	Carry out **step D2**
	OK ➡	Replace relay **I50**
D2 CHECK VOLTAGE – Rotate the ignition key and verify 12V at pin A10 of lever group **B68**	OK ➡	Carry out **step D3**
	OK ➡	Restore wiring between pin F9 of **G1** and pin A10 of lever group **B68** (ORN)
D3 CHECK LEVER GROUP – Check correct functioning of lever group: • with main-beam selected or operating the "flashing" device, check continuity between pin A9 and pin A10 of lever group **B68**	OK ➡	Carry out **step D4**
	OK ➡	Replace lever group **B68**, left part
D4 CHECK VOLTAGE – With ignition key rotated and main-beam selected, verify 12V at pin F8 ofl **G1**	OK ➡	Carry out **tests E and F**
	OK ➡	Restore wiring between pin F8 of **G1** and pin A9 of lever group **B68** (BLU).

RIGHT-HAND MAIN-BEAM LAMP NOT WORKING	TEST E

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
E1 CHECK FUSE – Check for damage of fuse **F9** in fusebox **G1**	OK ➡	Carry out **step E2**
	OK ➡	Replace fuse (10A)
E2 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V between pin BA and BE of right-hand headlight assembly **E23**	OK ➡	Carry out **step E3**
	OK ➡	Carry out **step E4**
E3 CHECK BULB – Check for damage of right-hand main-beam bulb, located in headlight assembly **E23**	OK ➡	Check and if necessary replace the complete headlight assembly **E23**
	OK ➡	Replace the bulb
E4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin BA of headlight assembly **E23**	OK ➡	Restore wiring between pin BE of **E23** and ground **G53a** (BLK)
	OK ➡	Restore wiring between: - (TS) pin I4 of **G1** and pin BA of **E23** (GRN) - (6V) pin I4 of **G1** and pin 4 of **G306**, and between pin 4 of **G306** and pin BA of **E23** (GRN)

LEFT-HAND MAIN-BEAM LAMP NOT WORKING	TEST F

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
F1 CHECK FUSE – Check for damage of fuse **F10** in fusebox **G1**	OK ➡	Carry out **step F2**
	OK ➡	Replace fuse (10A)
F2 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V between pin BA and BE of left-hand headlight assembly **E24**	OK ➡	Carry out **step F3**
	OK ➡	Carry out **step F4**
F3 CHECK BULB – Check for damage of left-hand main-beam bulb, located in the headlight assembly **E24**	OK ➡	Check and if necessary replace the complete headlight assembly **E24**
	OK ➡	Replace the bulb
F4 CHECK VOLTAGE – With ignition key rotated and lights on, verify 12V at pin BA of headlight assembly **E24**	OK ➡	Restore wiring between pin BE of **E24** and ground **G53b** (BLK)
	OK ➡	Restore wiring between pin I5 of **G1** and pin BA of **E24** (GRN-BLK)

HEADLIGHTS WARNING LAMP ON INSTRUMENT PANEL NOT WORKING	TEST G

NOTA: the dipped beam headlights however are functioning correctly

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
G1 CHECK VOLTAGE – With ignition key rotated and main-beam selected, verify 12V at pin C4 of instrument panel **C10**	OK →	Carry out **step G2**
	OK →	Restore wiring between pin D2 of **G1** and pin C4 of **C10** (GRN-BLK)
G2 CHECK WARNING LIGHT BULB – Check for damage of main-beam warning lamp, located in the instrument panel **C10**	OK →	Check and if necessary replace the complete instrument panel **C10**
	OK →	Replace the warning lamp

ADJUSTING HEADLIGHT ALIGNMENT

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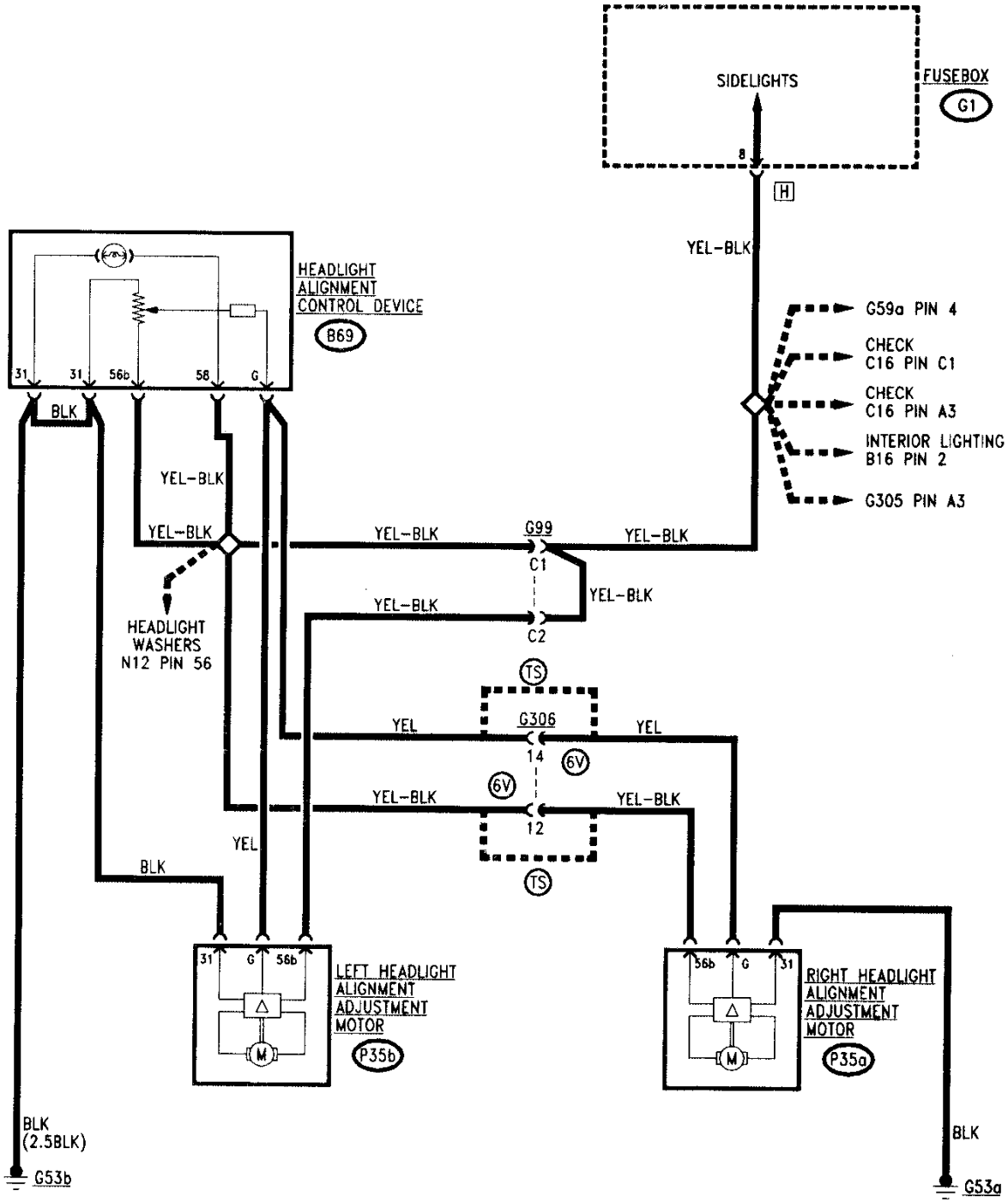
WIRING DIAGRAM



GENERAL DESCRIPTION

On some versions it is possible to adjust the orientation of the headlight beam to the weight load directly from the driver's seat.
In this way the problem of incorrect headlight direction is avoided and the delicate task of direct adjustment of the lamps simplified (this is not substituted by the electric mechanism, but only integrated with it). For further details see "REPAIR MANUAL - BODY", Group 40.

The adjustment device consists of a motor mounted on each of the two lamps which tilts them in order to raise the beam when the vehicle is fully loaded and lower it when when the load is lightened.
The driver acts directly on the system by rotating a handle located on the dashboard which allows four positions to be chosen ("0" = vehicle unloaded; "3" = vehicle with full load of passengers and luggage).

The system can be operated only when the sidelights are on:if they are not selected it is completely disactivated.

NOTE: for safety reasons the system is designed so that in the event of a malfunction, it cannot be moved to a higher position than it already is.

FUNCTIONAL DESCRIPTION

The headlight alignment control device **B69** is supplied through pin 56b by a line originating from the sidelights circuit; this line is live only when the lights are on.
The same supply (pin 58) illuminates the lamp located inside the device **B69** itself which illuminates the ideogram identifying the function.
The 31 pins of the device **B69** are grounded, while the adjustment signal obtained by acting on the four-position selection wheel originates from pin G. This signal varies the output voltage through a potentiometer (100% voltage at position "0" with voltage decreasing for the successive positions).

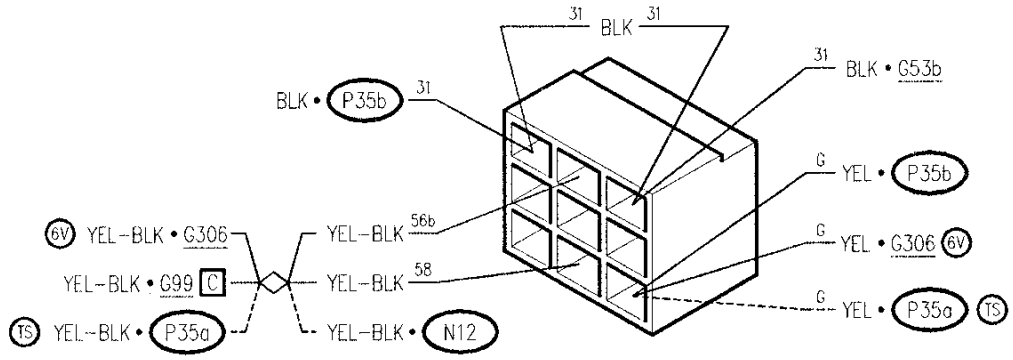
Motors **P35a** and **P35b** are formed by a motor in the strict sense of the word, controled by a transducer which establishes the movement on the basis of the voltage of the adjustment signal reaching pins G from the device **B69**.
The transducers are supplied at pins 56b, by the same line which supplies the device **B69**; the 31 pins are grounded.

TROUBLESHOOTING TABLE

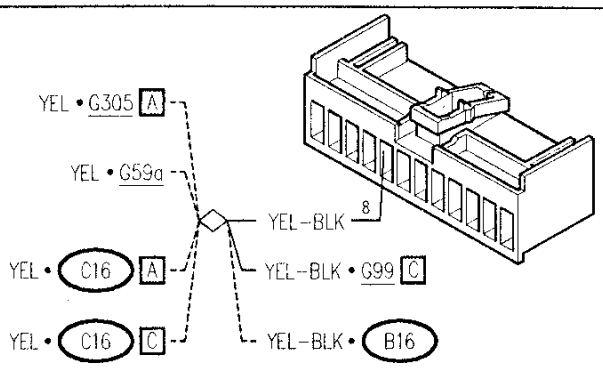
Malfunction	Component			Test
	B69	P35a	P35b	
Adjustment not working	•			A
RT headlight		•		B
LT headlight			•	C

COMPONENTS AND CONNECTORS

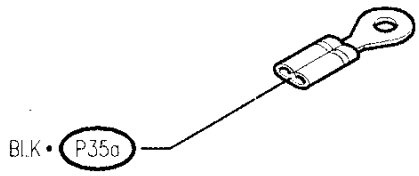
Headlight alignment control device — B69



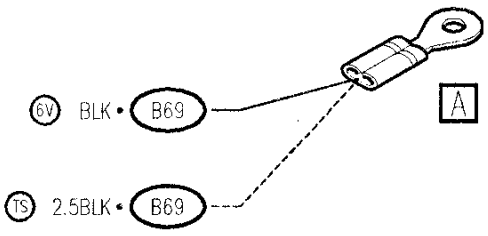
Fusebox — G1 H



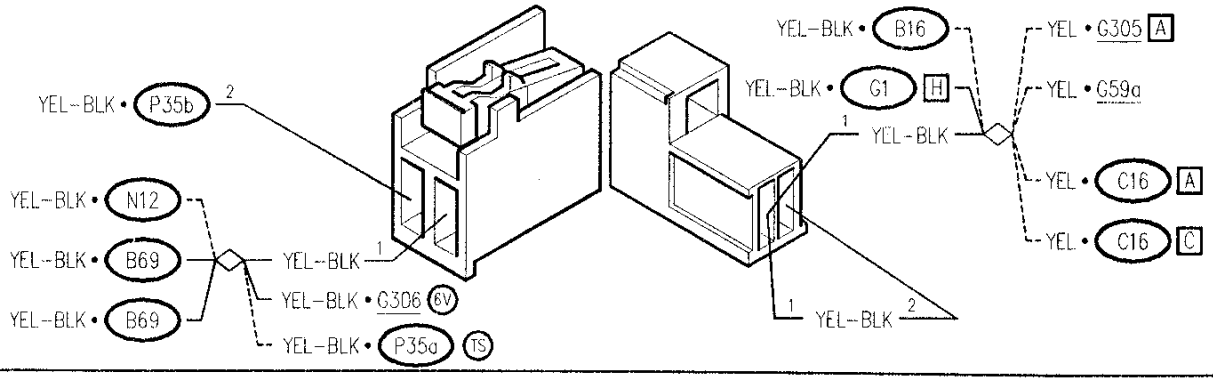
Engine compartment ground-right side — G53a



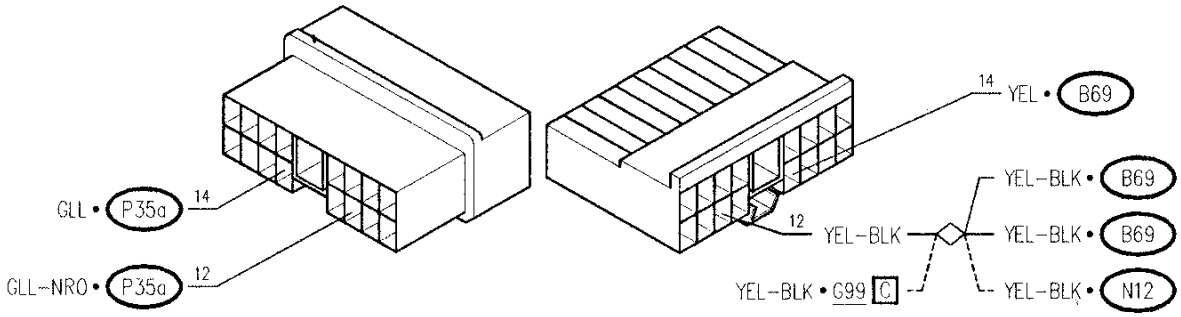
Engine compartment ground-left side — G53b



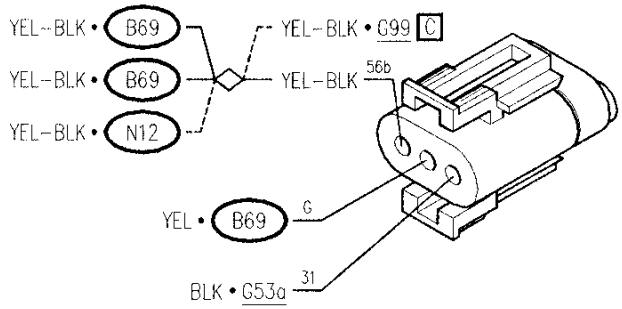
Dashboard/engine connection — G99 C

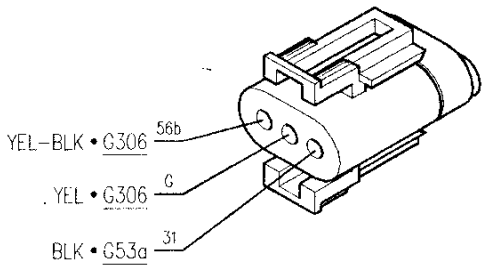


Engine wiring/right engine wiring connection	G306

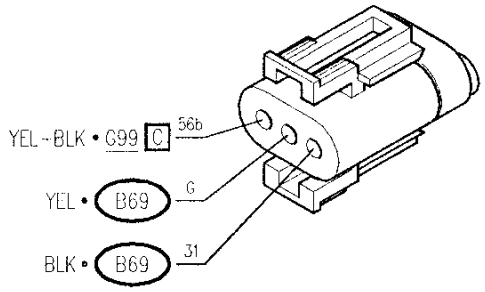


Right headlight alignment adjustment motor TS	P35a	Right headlight alignment adjustment motor 6V	P35a

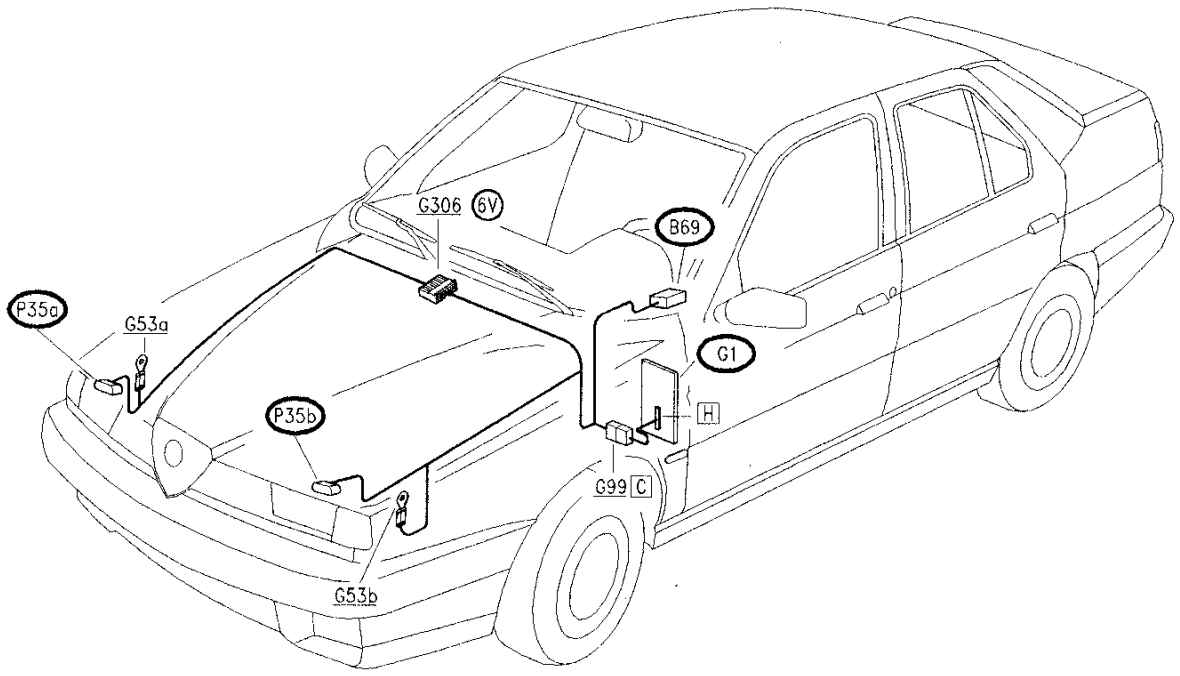




Left headlight alignment adjustment motor	P35b



LOCATION OF COMPONENTS



TROUBLESHOOTING

HEADLIGHT ADJUSTMENT NOT WORKING (BOTH HEADLIGHTS)	TEST A

NOTE: Check that the sidelights are working correctly; if not, refer to section "Sidelights"

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
A1 CHECK VOLTAGE – With sidelights on, verify 12V between pins 56b and 31 of the headlight alignment control device **B69**	OK ➔ ~~OK~~ ➔	Carry out **step A4** Carry out **step A2**
A2 CHECK GROUND – Verify 0V at pin 31 of device **B69**	OK ➔ ~~OK~~ ➔	Carry out **step A3** Restore wiring between pin 31 of **B69** and ground **G53b** (BLK)
A3 CHECK CONTINUITY – Check continuity between pin 56b of **B69** and pin H8 of **G1**	OK ➔ ~~OK~~ ➔	Carry out **step A4** Restore wiring between pin 56b of **B69** and pin H8 of **G1**, across pin C1 of connector **G99** and the two solders (YEL-BLK)
A4 CHECK CONTROL DEVICE – Check for correct functioning of the headlight alignment control device **B69**: • with sidelights on, act on the handle and check that the voltage between pin 56b and pin G of **B69** varies as a consequence	OK ➔ ~~OK~~ ➔	Carry out **tests B and C** Replace the device **B69**

HEADLIGHT ADJUSTMENT NOT WORKING (RIGHT-HAND HEADLIGHT)	TEST B

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
B1 CHECK VOLTAGE – With sidelights on, verify 12V between pins 56b and 31 of the right- hand headlight alignment motor **P35a**	OK ➡	Carry out **step B2**
	~~OK~~ ➡	Carry out **step B3**
B2 CHECK CONTINUITY – Check continuity between pin G of the motor **P35a** and pin G of the device **B69**	OK ➡	Replace the motor **P35a**
	~~OK~~ ➡	Restore wiring: -(TS) between pin G of **B69** and pin G of **P35a** (YEL) -(6V) between pin G of **B69** and pin 14 of **G306**, and between pin 14 of **G306** and pin G of **P35a** (YEL)
B3 CHECK VOLTAGE – With sidelights on, verify 12V at 56b of **P35a**	OK ➡	Restore wiring between pin 31 of **P35a** and ground **G53a** (BLK)
	~~OK~~ ➡	Restore wiring: -(TS) between pin 56b of **B69** and pin 56b of **P35a** across the solder (YEL-BLK) -(6V) between pin 56b of **B69** and pin 12 of **G306** across the solder and between pin 12 of **G306** and pin G of **P35a** (YEL-BLK)

HEADLIGHT ADJUSTMENT NOT WORKING (LEFT-HAND HEADLAMP)	TEST C

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
C1 CHECK VOLTAGE – With sidelights on, verify 12V between pins 56b and 31 of the left- hand headlight alignment motor **P35b**	OK ➡	Carry out **step C2**
	~~OK~~ ➡	Carry out **step C3**
C2 CHECK CONTINUITY – check continuity between pin G of the motor **P35b** and pin G of the device **B69**	OK ➡	Replace the motor **P35b**
	~~OK~~ ➡	Restore wiring between pin G of **B69** and pin G of **P35b** (YEL)
C3 CHECK VOLTAGE – With sidelights on, verify 12V at 56b of **P35b**	OK ➡	Restore wiring between pin 31 of **P35b** and ground **G53b**, across pin 31 of device **B69** (BLK)
	~~OK~~ ➡	Restore wiring between pin 56b of **P35b** and pin H8 of **G1**, across pins C2 and C1 of connector **G99** and the solder (YEL- BLK)

REAR AND FRONT FOG-LAMPS

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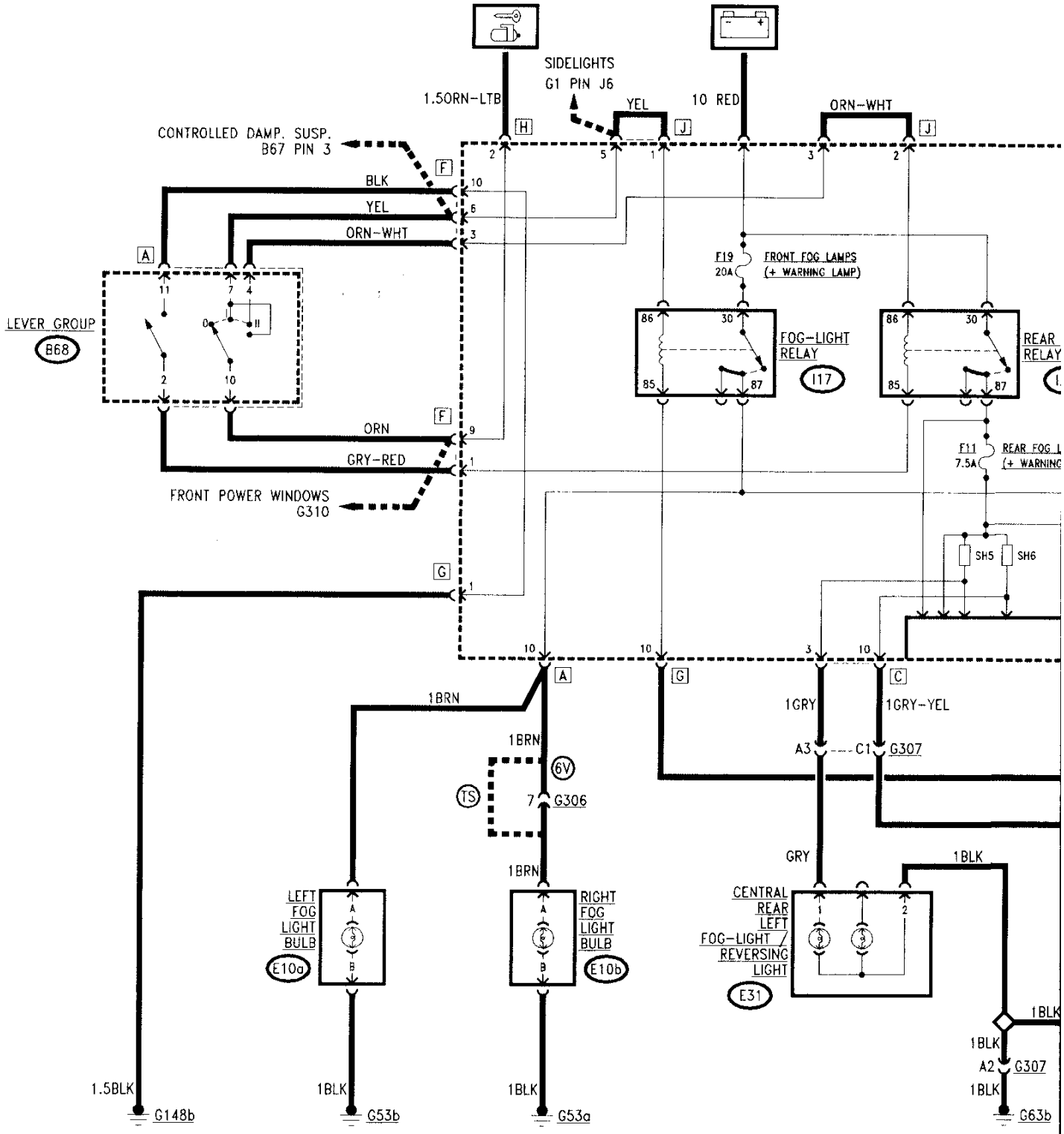
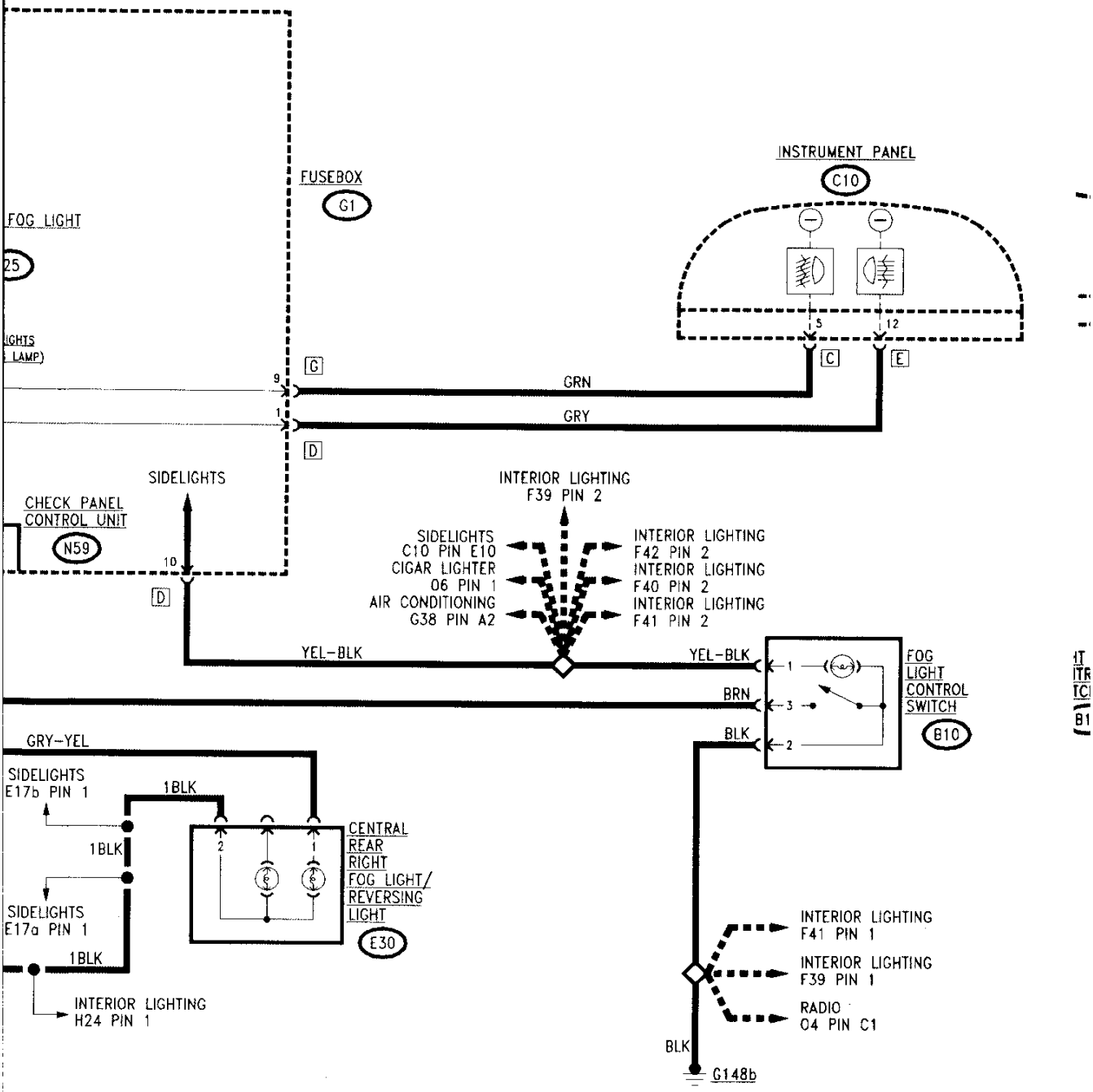
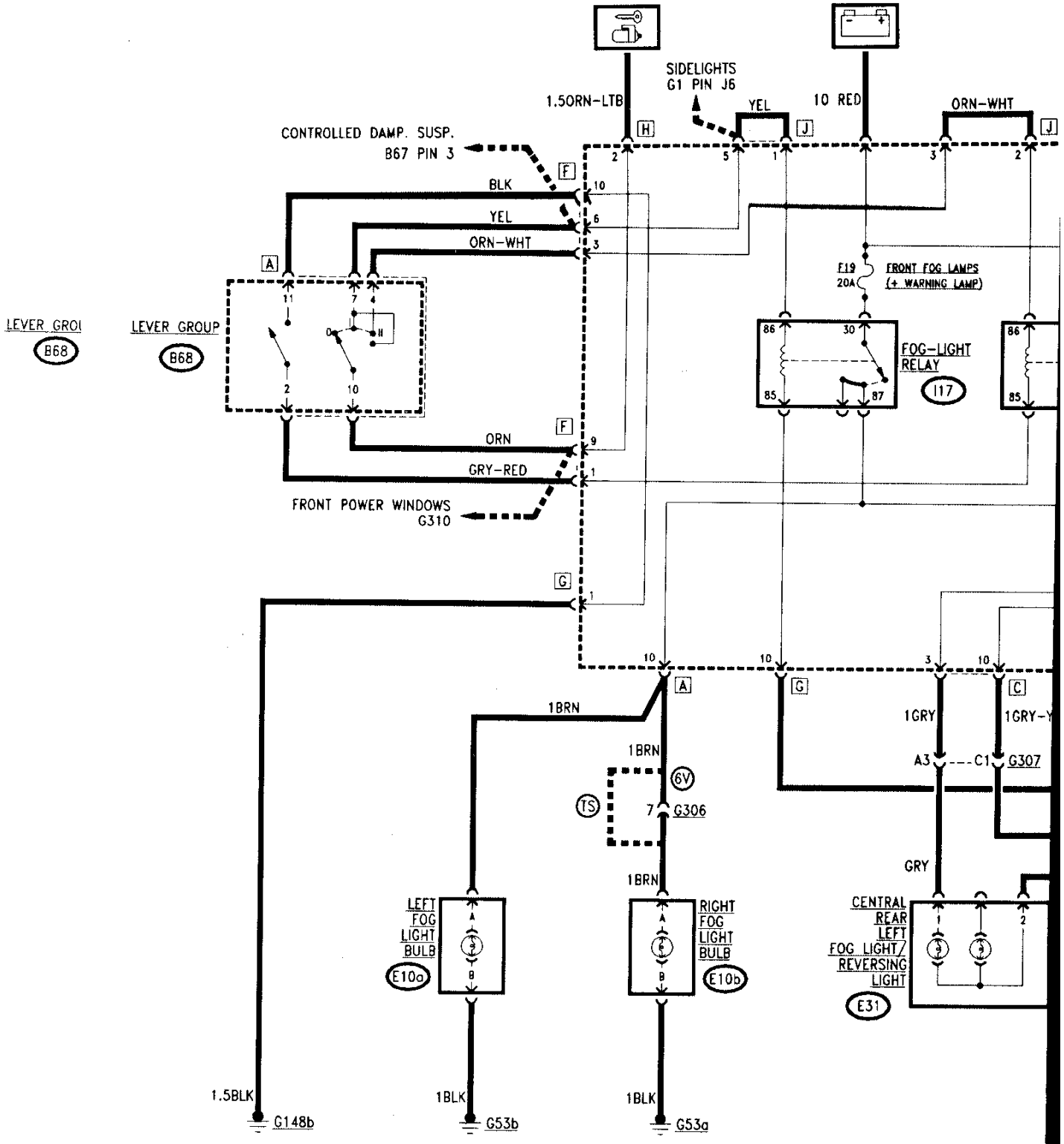
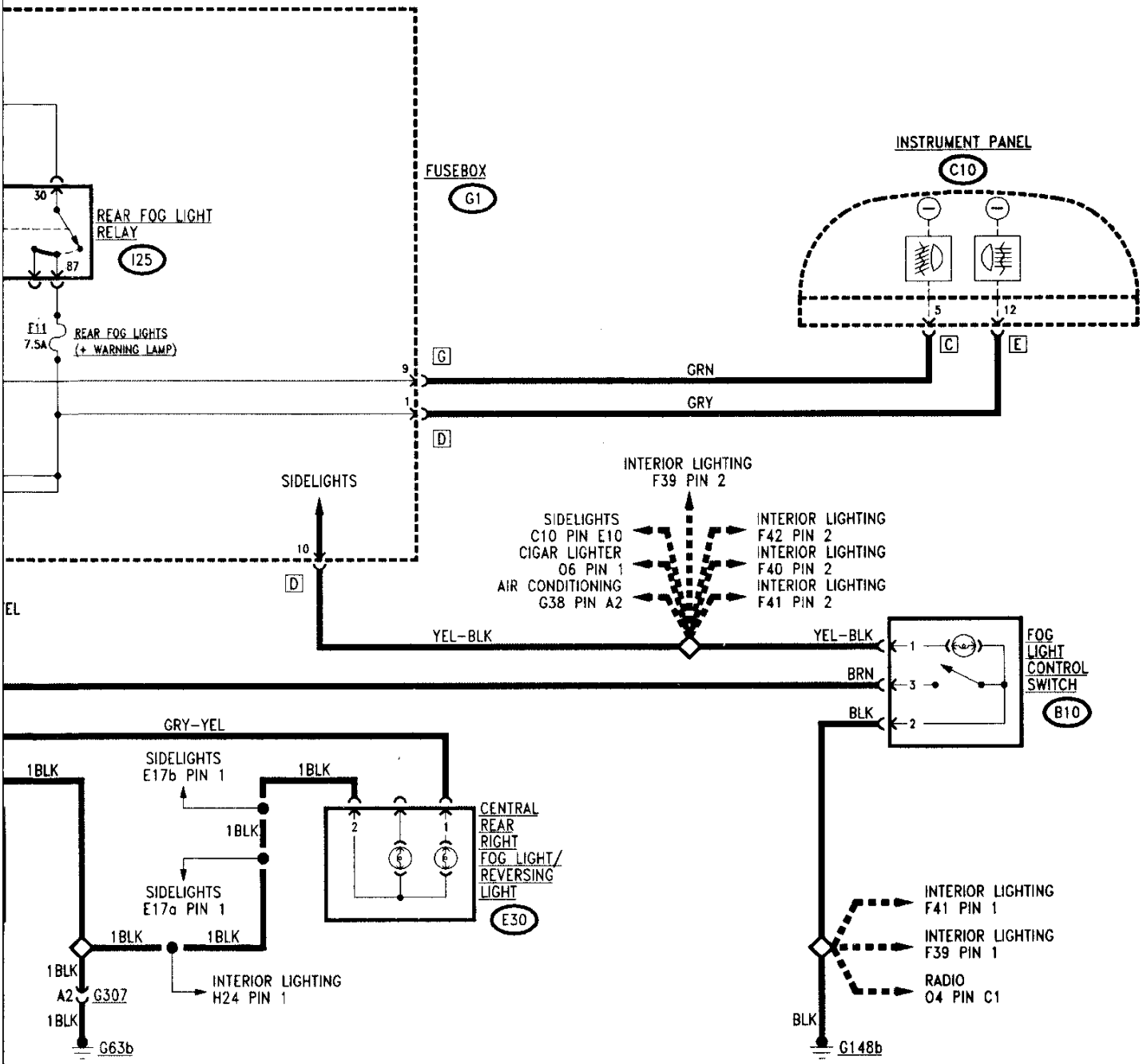

SIDELIGHTS
G1 PIN J6
1.5ORN-LTB
YEL
10 RED
ORN-WHT
CONTROLLED DAMP. SUSP.
B67 PIN 3
BLK
YEL
ORN-WHT
F19
20A
FRONT FOG LAMPS
(+ WARNING LAMP)
LEVER GROUP
B68
FOG-LIGHT
RELAY
I17
REAR
RELAY
F11
7.5A
REAR FOG L
(+ WARNING
ORN
GRY-RED
FRONT POWER WINDOWS
G310
SH5
SH6
1BRN
1GRY
1GRY-YEL
A3
C1
G307
6V
TS
7
G306
GRY
1BLK
LEFT
FOG
LIGHT
BULB
E10a
RIGHT
FOG
LIGHT
BULB
E10b
CENTRAL
REAR
LEFT
FOG-LIGHT /
REVERSING
LIGHT
E31
1.5BLK
G148b
1BLK
G53b
1BLK
G53a
1BLK
A2
G307
1BLK
G63b

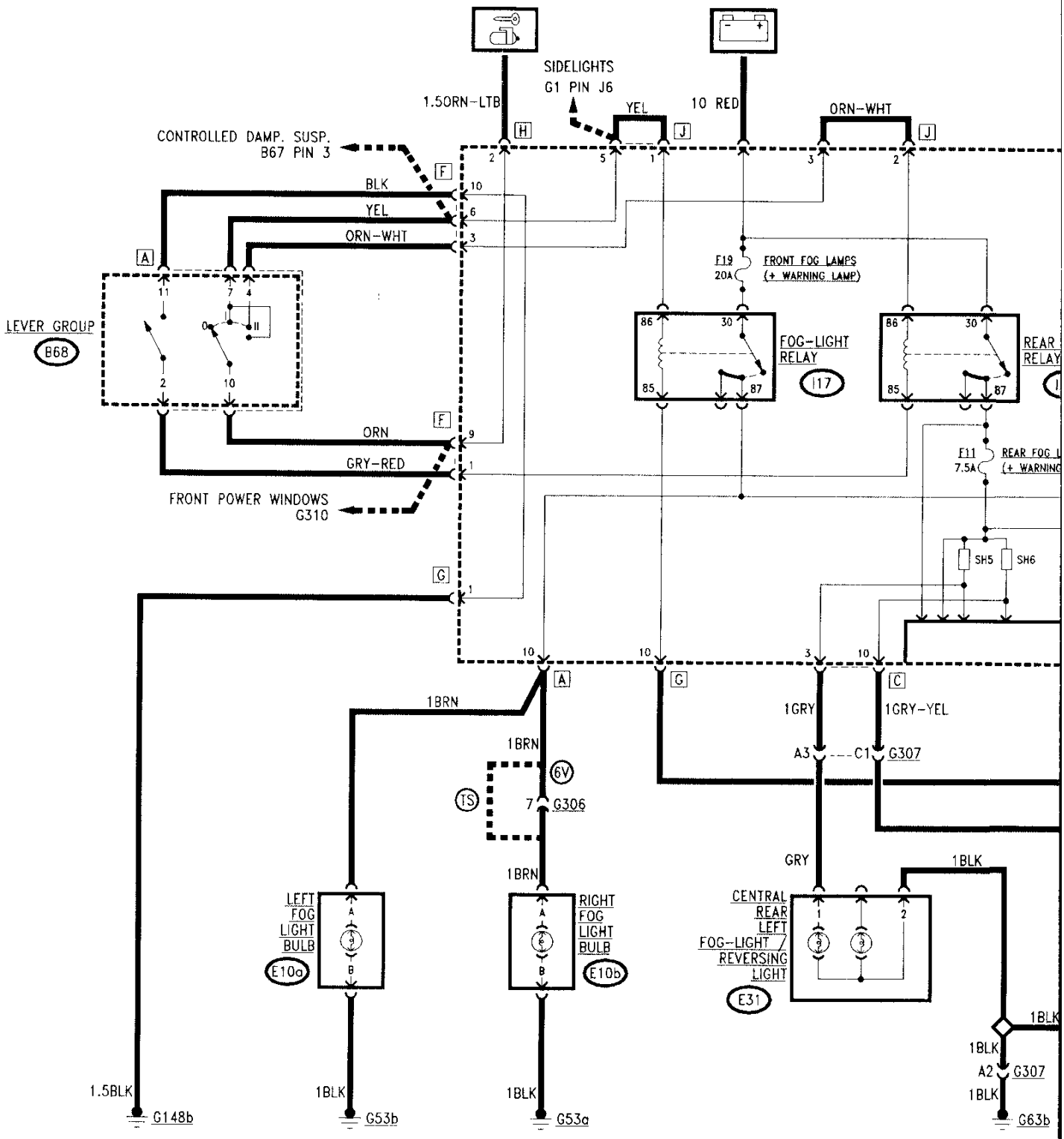
IRING DIAGRAM
ersion with Check Panel)



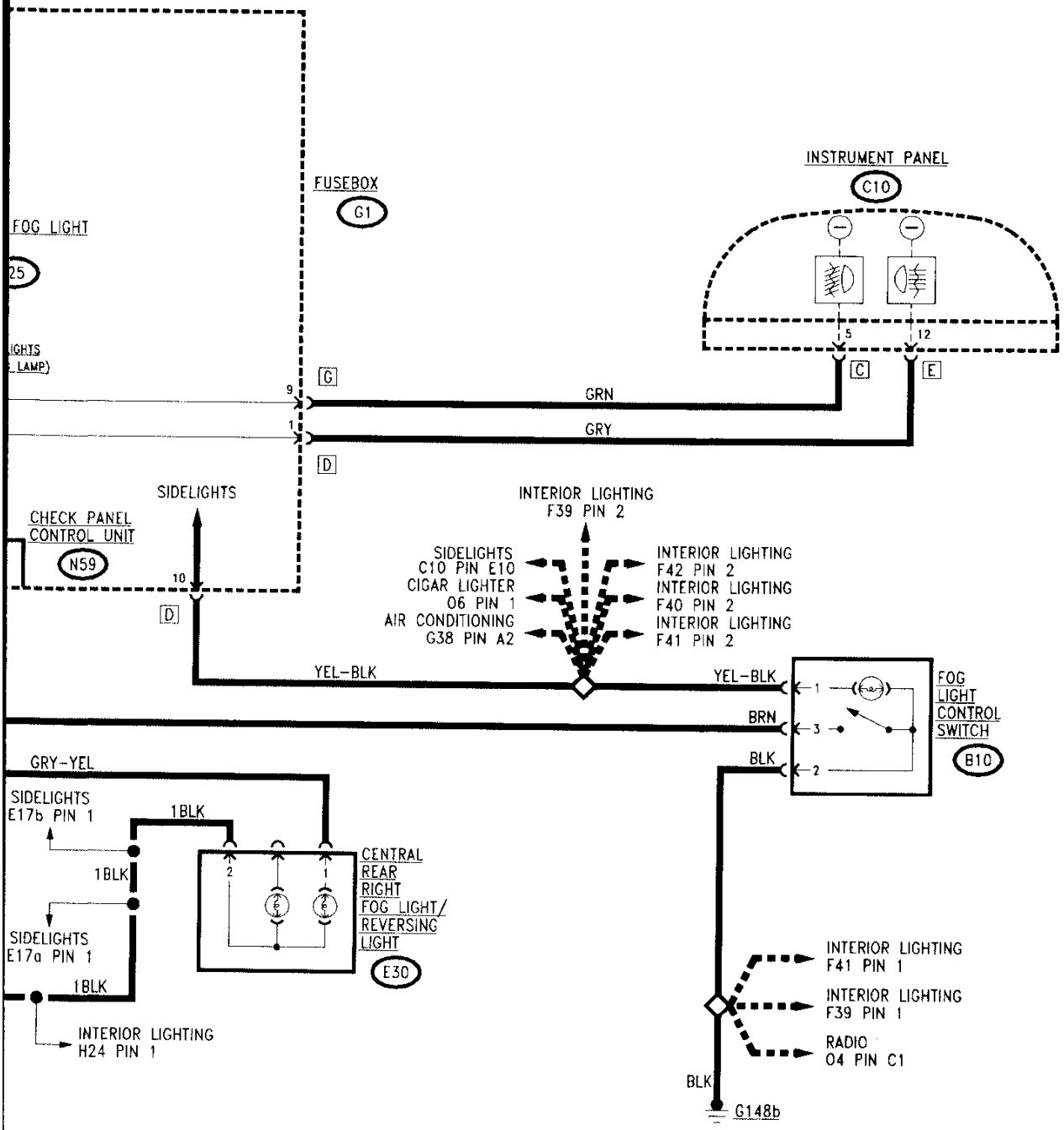
WIRING DIAGRAM
(Version without Check Panel)




INSTRUMENT PANEL
C10
FUSEBOX
G1
REAR FOG LIGHT RELAY
125
30
87
F11
7.5A
REAR FOG LIGHTS
(+ WARNING LAMP)
9
1
G
D
GRN
GRY
5
12
C
E
SIDELIGHTS
10
D
INTERIOR LIGHTING
F39 PIN 2
SIDELIGHTS
C10 PIN E10
CIGAR LIGHTER
O6 PIN 1
AIR CONDITIONING
G38 PIN A2
INTERIOR LIGHTING
F42 PIN 2
INTERIOR LIGHTING
F40 PIN 2
INTERIOR LIGHTING
F41 PIN 2
YEL-BLK
YEL-BLK
BRN
BLK
1
3
2
FOG LIGHT CONTROL SWITCH
B10
GRY-YEL
1BLK
SIDELIGHTS
E17b PIN 1
1BLK
1BLK
SIDELIGHTS
E17a PIN 1
2
1
CENTRAL REAR RIGHT FOG LIGHT/ REVERSING LIGHT
E30
1BLK
1BLK
1BLK
A2
G307
1BLK
G63b
INTERIOR LIGHTING
H24 PIN 1
INTERIOR LIGHTING
F41 PIN 1
INTERIOR LIGHTING
F39 PIN 1
RADIO
O4 PIN C1
BLK
G148b


SIDELIGHTS
G1 PIN J6
1.5ORN-LTB
YEL
10 RED
ORN-WHT
CONTROLLED DAMP. SUSP.
B67 PIN 3
BLK
YEL
ORN-WHT
LEVER GROUP
B68
F19
20A
FRONT FOG LAMPS
(+ WARNING LAMP)
FOG-LIGHT
RELAY
I17
REAR
RELAY
F11
7.5A
REAR FOG
(+ WARNING
SH5
SH6
ORN
GRY-RED
FRONT POWER WINDOWS
G310
1BRN
1BRN
6V
TS
7
G306
1GRY
1GRY-YEL
A3
C1
G307
GRY
1BLK
LEFT
FOG
LIGHT
BULB
E10a
RIGHT
FOG
LIGHT
BULB
E10b
CENTRAL
REAR
LEFT
FOG-LIGHT /
REVERSING
LIGHT
E31
1.5BLK
G148b
1BLK
G53b
1BLK
G53a
1BLK
A2
G307
1BLK
G63b

IRING DIAGRAM
ersion with Check Panel)



GENERAL DESCRIPTION

N.B. Two distinct wiring diagrams are given, one for the models equipped with the Check Panel and one for models without this device.

The vehicle is equipped with special halogen type fog-lamps and high

luminosity rear lights located in the central part of the rear light assembly, necessary under low visibility conditions.
The entire system ensures the greatest visibility possible both active and passive under any conditions.
The front fog-lamps are illuminated by acting on the switch located on the central console between the front seats; the rear fog-lamps by the control located on the lever group.
The front fog-lamps can be illuminated when the sidelights are on while the rear-fog-lamps only when the headlights are on dipped beam (they are also extinguished when these are turned out).
A warning light on the instrument panel signals that the front fog- lamps are on and another signals illumination of the rear fog-lamps.
Each of the two circuits is protected by a fuse.
The rear fog-lamps are controlled - for some versions - by the Check Panel device which immediately signals any possible malfunction (see "Check Panel").

NOTE
In some countries vehicles are equipped with "Day-light" (sidelights come on when the ignition key is turned and a different logic is followed regarding illumination of the dipped beam and front and rear fog-lamps). In this case the present section is complementary to the "Day- light" section which must therefore be consulted beforehand.

NOTE
In a few countries the vehicles are equipped with a single rear fog- lamp located on the left light assembly **E31**. The right light assembly **E30** and the relative wiring is not altered in comparison to other versions apart from the simple elimination of the rear fog-lamp. These specific light assemblies are identified with a green spot located on the inner part.

FUNCTIONAL DESCRIPTION

The circuit pertaining to the front fog-lamps is controlled by relay **I17** located in the fusebox **G1**.
By actioning switch **B10** when the sidelights are on (switch on the lever group **B68** at position "I"), a ground is sent which excites the coil of relay **I17** and in this way closes the circuit which supplies the two front fog-lamps **E10.**
Switch **B10** is illuminated when the sidelights are on. The circuit is protected by fuse F19 (20A) in box **G1**.
The supply line also sends a signal to the instrument panel **C10** to illuminate the relative warning lamp.

The circuit of the rear fog-lamps is controlled by relay **I25** located in fusebox **G1**.
With the switch on the lever group **B68**, when the headlights are on dipped beam (switch on the lever group at position "II"), voltage and ground are sent to the coil of relay **I25** in this way closing the circuit which supplys the voltage to the rear fog light **E31** (left) and **E30** (right).
The circuit is protected by fuse **F11** (7.5A) in box **G1**.
The supply line also sends a signal to the instrument panel **C10** to illuminate the relevant warning lamp.

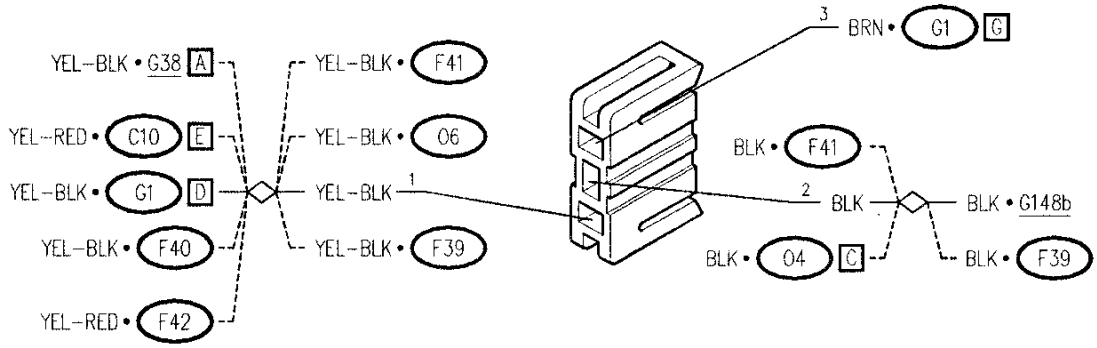
The rear fog-lamps are controlled by the Check Panel device and therefore signals are sent from the supply circuit (both direct and by "SH" shunt) to the control unit **N59** which checks the voltage of the line (for more details see (Check Panel").

TROUBLESHOOTING TABLE

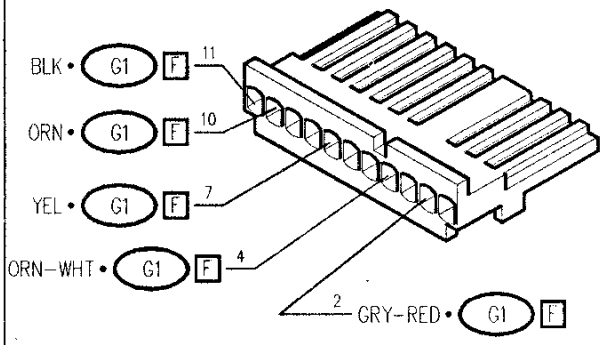
Malfunction	Component											Test
	(I25)	F11	(B68)	(E30)	(E31)	(I17)	F19	(B10)	(E10a)	(E10b)	(C10)	
Both rear fog-lamps	•	•	•									A
RH rear fog-lamp				•								B
LH rear fog-lamp					•							C
Rear fog-lamp warning light											•	D
Both front fog-lamps						•	•	•				E
RH front fog-lamp										•		F
LH front fog-lamp									•			G
Front fog-lamp warning light											•	H
Front fog-lamp switch illumination								•				I

COMPONENTS AND CONNECTORS

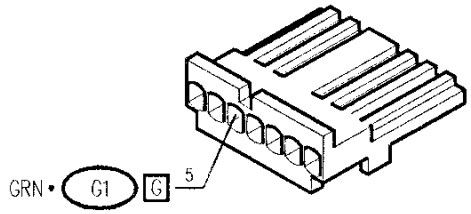
Fog light control switch — B10



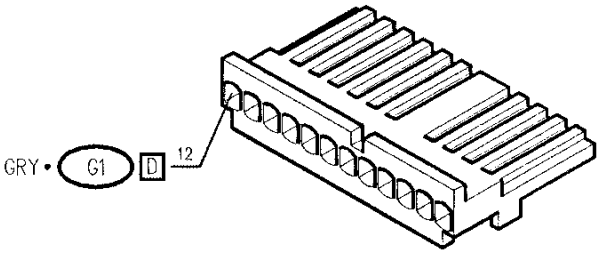
Lever group — B68 A



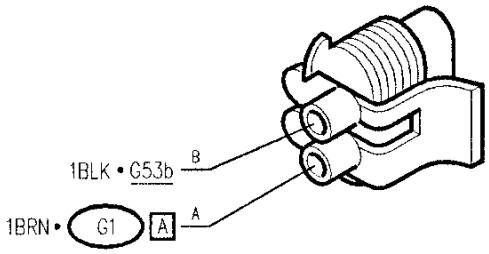
Instrument panel — C10 C



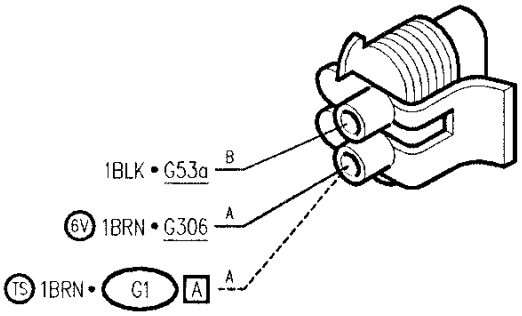
Instrument panel — C10 E



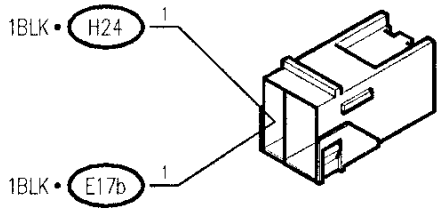
Left fog light bulb — E10a



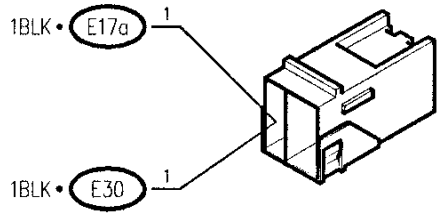
Right fog light bulb — E10b



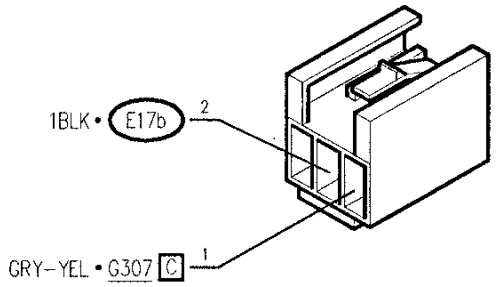
Left numberplate light bulb — E17a



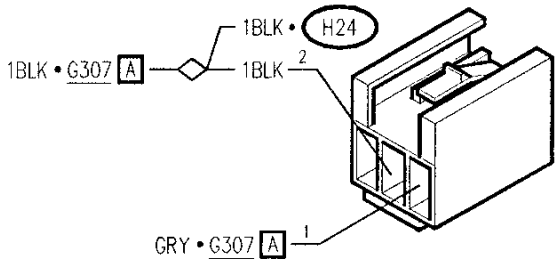
Right numberplate light bulb	E17b



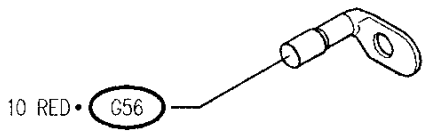
Central rear right fog-light/reversing light	E30



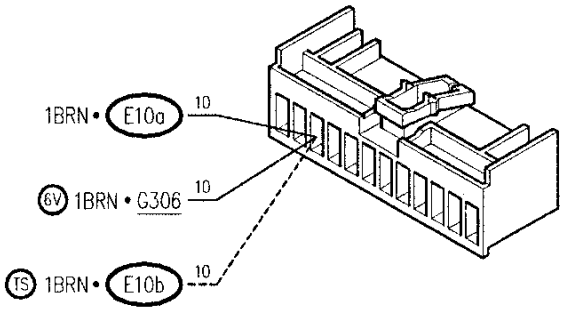
Central rear left fog-light/reversing light	E31



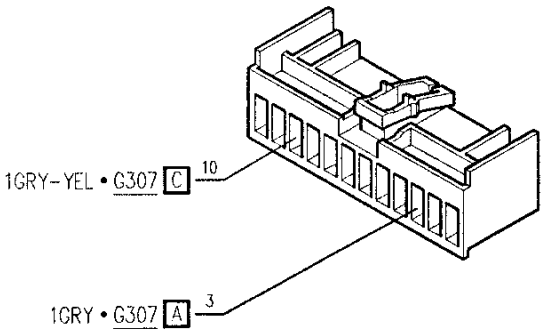
Fusebox	G1



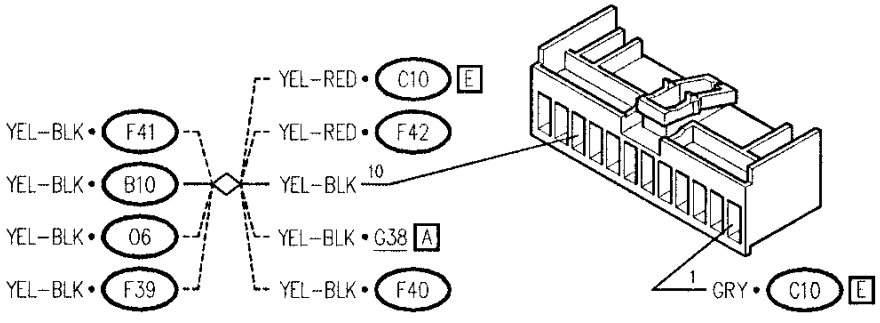
Fusebox	G1 A

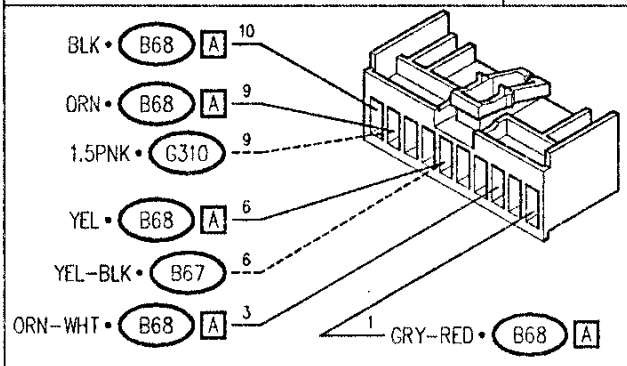
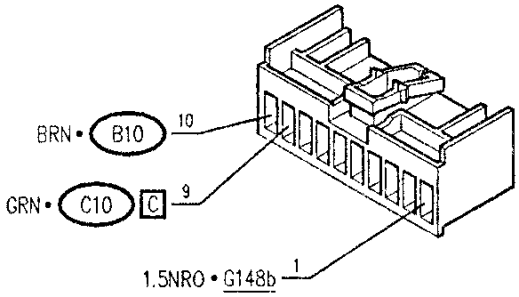
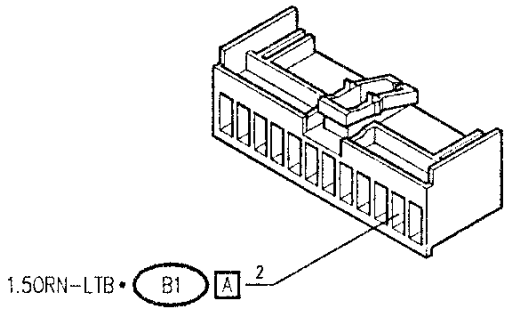
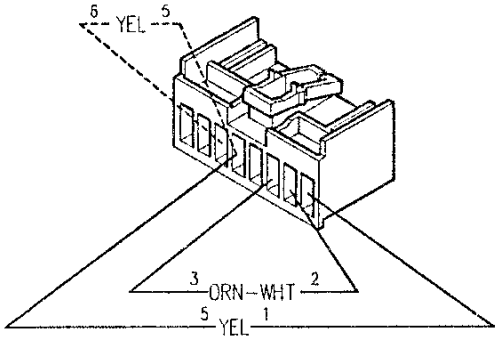
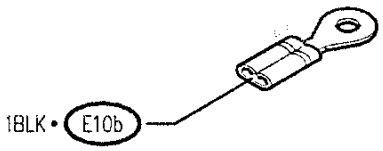
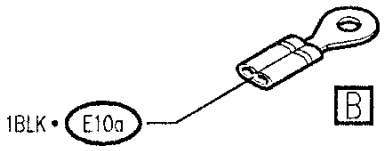
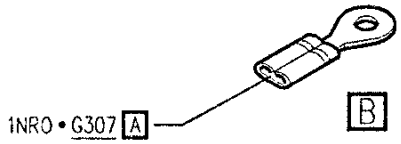
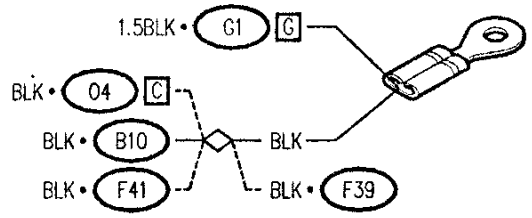


Fusebox	G1 C

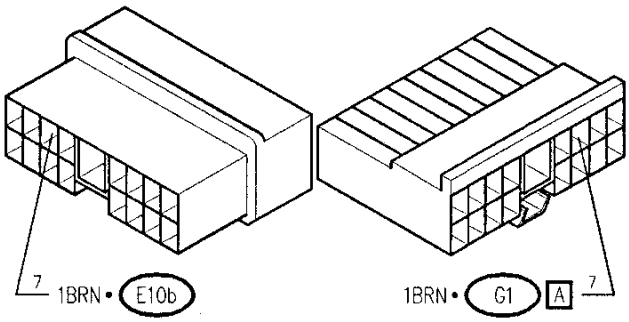


Fusebox	G1 D

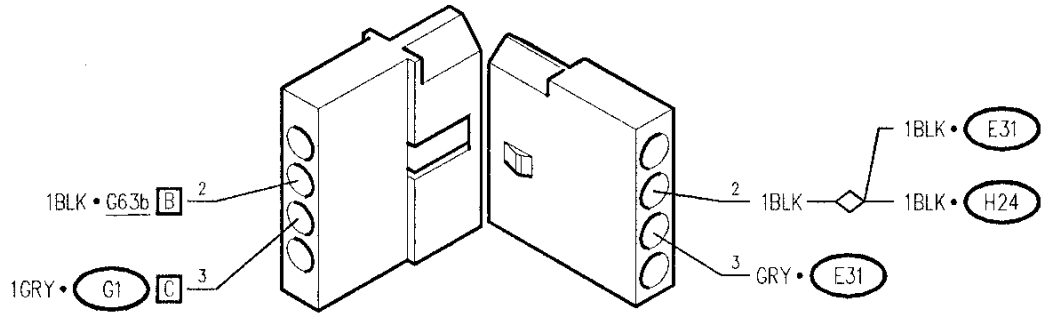


Fusebox G1 F	Fusebox G1 G
	
Fusebox G1 H	**Fusebox G1 J**
	
Engine compartment ground-right side G53a	**Engine compartment ground-left side G53b**
	
Rear left ground G63b	**Under-dashboard ground-left side G148b**
	

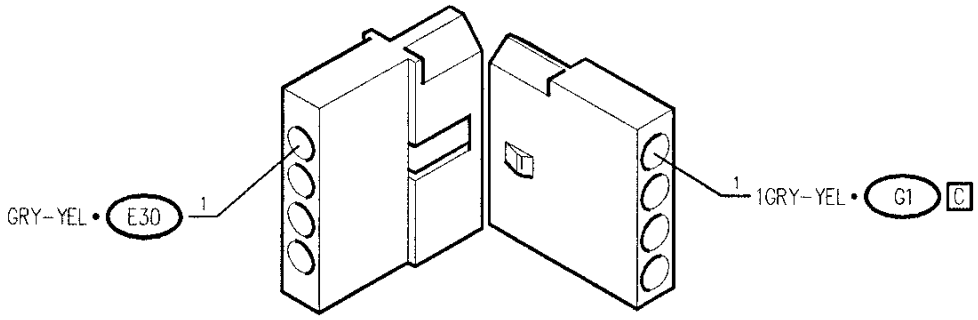
Engine wiring/right engine wiring connection	G306



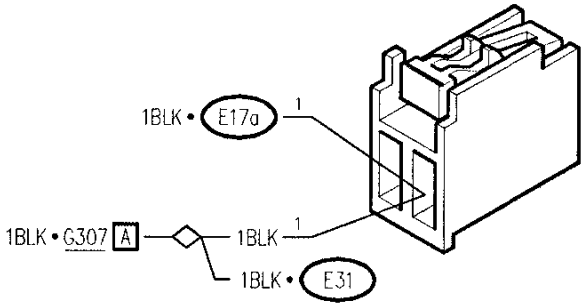
Rear wiring/luggage compartment wiring connection	G307 A



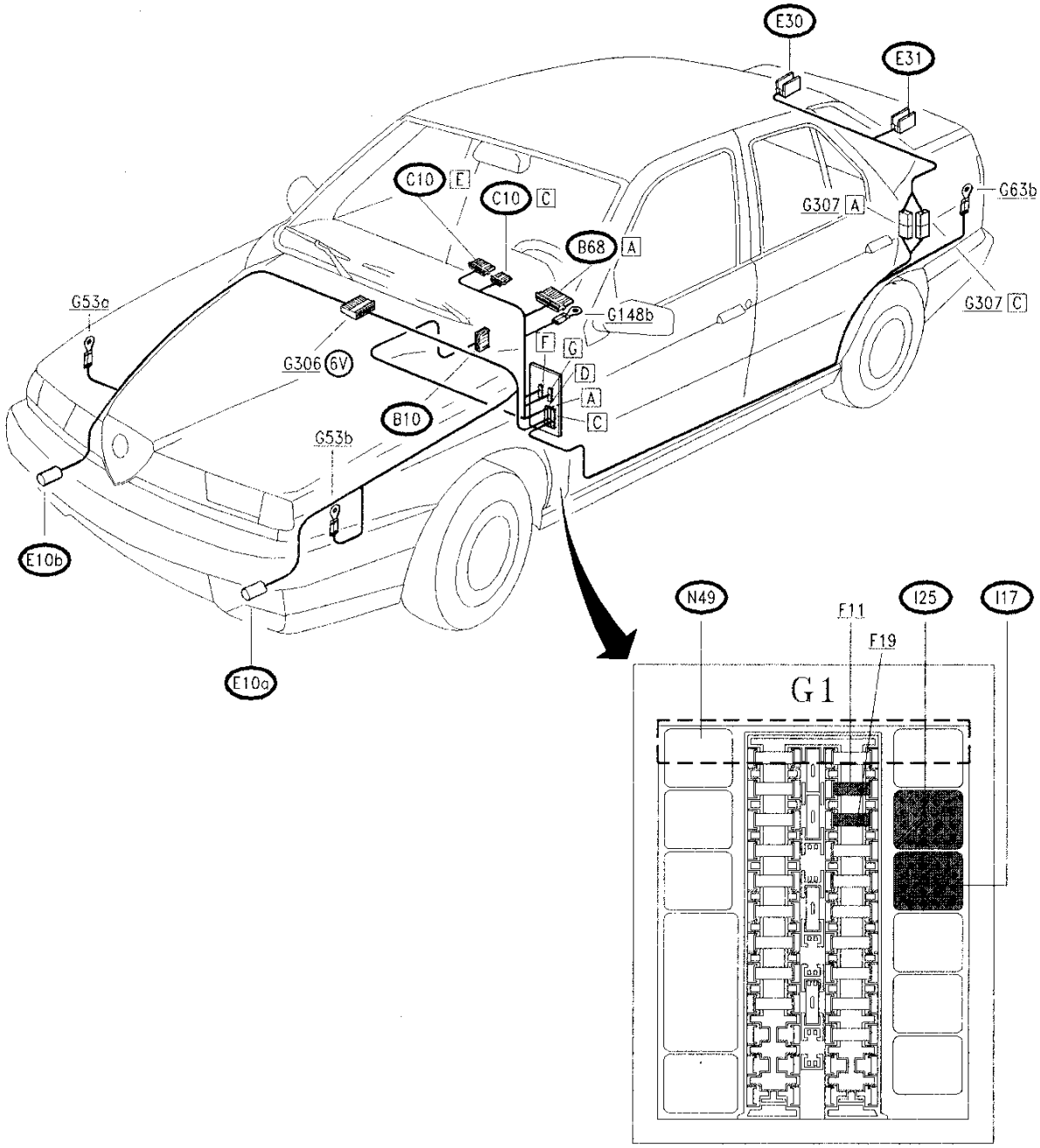
Rear wiring/luggage compartment wiring connection	G307 C



Luggage compartment lamp switch	H24



LOCATION OF COMPONENTS



TROUBLESHOOTING

NEITHER OF THE REAR FOG-LAMPS WORKING	TEST A

NOTE: in the event of a malfunction of the rear fog-lamps (tests A,B,C, and D), for versions equipped with the Check Panel, see the section: "Check Panel - Rear fog-lamps Check" before carrying out the following tests.

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
A1 CHECK FUSE – Check for damage of fuse **F11** in fusebox **G1**	OK ➡	Carry out **step A2**
	~~OK~~ ➡	Replace fuse (7.5A)
A2 CHECK RELAY – Check the correct functioning of the rear fog-lamps relay **I25**, located in **G1**	OK ➡	Carry out **step A3**
	~~OK~~ ➡	Replace relay **I25**
A3 CHECK VOLTAGE – Rotate the ignition key and verify 12V at pin A10 of the lever group **B68**	OK ➡	Carry out **step A4**
	~~OK~~ ➡	Restore wiring between pin F9 of **G1** and pin A10 of the lever group **B68** (ORN)

(continues)

NEITHER OF THE REAR FOG-LAMPS WORKING	TEST A

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
A4 CHECK LEVER GROUP – **NOTE:** The rear fog-lamps can be illuminated only when the sidelight switch is at position "II", dipped beam". Check the correct functioning of the lever group: • with the sidelights switch at the "II" position, check the continuity between pin A4 and pin A10 of the lever group **B68** • activating the rear fog-lamps function, check the continuity between pins A2 and A11 of lever group **B68**	OK ➡ ~~OK~~ ➡	Carry out **step A5** Replace lever group **B68**, left hand part
A5 CHECK VOLTAGE – With the key turned and the sidelights switch at position "II", verify 12V at pin F3 of **G1**	OK ➡ ~~OK~~ ➡	Carry out **step A6** Restore wiring between pin F3 of **G1** and pin A4 of the lever group **B68** (ORN-WHT)
A6 CHECK VOLTAGE – With the ignition key turned and sidelights at position "II", verify 12V at pin J2 of **G1**	OK ➡ ~~OK~~ ➡	Carry out **step A7** Restore wiring between pin J2 and J3 of **G1** (ORN-WHT)

(continues)

NEITHER OF THE REAR FOG-LAMPS WORKING	TEST A

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
A7	CHECK GROUND – Verify 0V at pin A11 of **B68**	OK ➡ ~~OK~~ ➡	Carry out **step A8** Restore wiring between pin F10 of **G1** and pin A11 of **B68** (BLK)
A8	CHECK GROUND – With rear fog-lamps illuminated verify 0V at pin F1 of **G1**	OK ➡ ~~OK~~ ➡	Carry out **step A9** Restore wiring between pin F1 of **G1** and pin A2 of **B68** (GRY-RED)
A9	CHECK GROUND – Verify 0V at pin A2 of connector **G307**	OK ➡ ~~OK~~ ➡	Carry out **tests B and C** Restore wiring between pin A2 of **G307** and ground **G63b** (BLK)

RIGHT REAR FOG-LAMP NOT WORKING	TEST B

NOTE: In some countries the right-hand rear fog-lamp is not fitted: see "General Description" in this section

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
B1 CHECK VOLTAGE – With rear fog-lamps illuminated, verify 12V between pin 2 and 1 of the central rear light assembly **E30**	OK ➡	Carry out **step B2**
	~~OK~~ ➡	Carry out **step B3**
B2 CHECK BULB – Check for damage of rear fog-lamps bulb in light assembly **E30** (outer bulb with red transparency)	OK ➡	Check and if necessary replace the entire light assembly **E30**
	~~OK~~ ➡	Replace bulb
B3 CHECK VOLTAGE – With the rear fog-lamps illuminated, verify 12V at pin 1 of **E30**	OK ➡	Restore wiring between pin 2 of **E30** and the weld, across lights **E17a** and **E17b** and switch **H24** (BLK)
	~~OK~~ ➡	Restore wiring between pin C10 of **G1** and pin 1 of **E30**, through pin C1 of connector **G307** (GRY-YEL)

LEFT REAR FOG-LAMP NOT WORKING	TEST C

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
C1 CHECK VOLTAGE – With rear fog-lamps on, verify 12V between pin 2 and 1 of rear central light assembly **E31**	OK ➡	Carry out **step C2**
	~~OK~~ ➡	Carry out **step C3**
C2 CHECK BULB – Check for damage of rear fog-lamp bulb in light assembly **E31** (outer bulb, with red transparency)	OK ➡	Check and if necessary replace the entire light assembly **E31**
	~~OK~~ ➡	Replace bulb
C3 CHECK VOLTAGE – With rear fog-lamps illuminated, verify 12V at pin 1 of **E31**	OK ➡	Restore wiring between pin 2 of **E31** and the solder (BLK)
	~~OK~~ ➡	Restore wiring between pin C3 of **G1** and pin 1 of **E31**, through pin A3 of connector **G307** (GRY)

REAR FOG-LAMP WARNING LIGHT ON INSTRUMENT PANEL NOT WORKING	TEST D

Note: The rear fog-lamps however are working correctly.

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
D1	CHECK VOLTAGE		
– With the ignition key turned and rear fog-lamps illuminated, verify 12V at pin E12 of the instrument panel **C10**		OK ➡	Carry out **step D2**
		~~OK~~ ➡	Restore wiring between pin D1 of **G1** and pin E12 of **C10** (GRY)
D2	CHECK WARNING LAMP		
– Check for damage of rear fog-lamps warning lamp, on the instrument panel **C10**		OK ➡	Check and if necessary replace the entire instrument panel **C10**
		~~OK~~ ➡	Replace the warning lamp

NEITHER OF THE FRONT FOG-LAMPS WORKING	TEST E

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
E1 CHECK FUSE – Check for damage of fuse **F19** in fusebox **G1**	OK ➡	Carry out **step E2**
	~~OK~~ ➡	Replace fuse (20A)
E2 CHECK RELAY – Check correct functioning of front fog-lamps relay **I17**, located in **G1**	OK ➡	Carry out **step E3**
	~~OK~~ ➡	Replace relay **I17**
E3 CHECK VOLTAGE – Rotate the ignition key and verify 12V at pin 10 of lever group **B68**.	OK ➡	Carry out **step E4**
	~~OK~~ ➡	Restore wiring between pin F9 of **G1** and pin A10 of lever group **B68** (ORN)

(continues)

NEITHER OF THE FRONT FOG-LAMPS WORKING	TEST E

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
E4 CHECK LEVER GROUP – **NOTE**: the front fog-lamps can only be illuminated when the sidelights switch is at position "I". Check correct functioning of the lever group: • with the sidelights switch at "I", check continuity between pin A7 and pin A10 of lever group **B68**	OK ➡ OK ➡	Carry out step **E5** Replace lever group **B68**, left part
E5 CHECK VOLTAGE – With the ignition key turned and sidelights switch at "I", verify 12V at pin F6 of **G1**	OK ➡ OK ➡	Carry out **step E6** Restore wiring between pin F6 of **G1** and pin A7 of lever group **B68** (YEL)
E6 CHECK VOLTAGE – With the ignition key turned and sidelights switch at "I", verify 12V at pin J1 of **G1**	OK ➡ OK ➡	Carry out **step E7** Restore wiring between pin J1 and J5 of **G1** (YEL)

(continues)

NEITHER OF THE FRONT FOG-LAMPS WORKING	TEST E

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
E7 CHECK GROUND – Verify 0V at pin 2 of front fog-light switch **B10**.	OK ➡	Carry out **step E8**
	~~OK~~ ➡	Restore wiring between pin 2 of **B10** and ground **G148b**, also across the solder (BLK)
E8 CHECK SWITCH – Check the correct functioning of the front fog-lamps switch **B10**: selecting the front fog-lamp function, check continuity between pin 2 and 3 of **B10**	OK ➡	Carry out **step E9**
	~~OK~~ ➡	Replace switch **B10**
E9 CHECK GROUND – With front fog-lamps on verify 0V at pin G10 of **G1**	OK ➡	Carry out **tests F and G**
	~~OK~~ ➡	Restore wiring between pin G10 of **G1** and pin 3 of **B68** (BRN)

RIGHT-HAND FRONT FOG-LAMP NOT WORKING	TEST F

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
F1 CHECK VOLTAGE – With front fog-lamps selected, verify 12V between pins A and B of of right-hand fog-lamp assembly **E10b**	OK ➡	Carry out **step F2**
	~~OK~~ ➡	Carry out **step F3**
F2 CHECK BULB – Check for damage of front fog-lamp bulb, located in light assembly **E10b**	OK ➡	Check and if necessary replace complete light assembly **E10b**
	~~OK~~ ➡	Replace bulb
F3 CHECK VOLTAGE – With front fog-lamps selected, verify 12V at pin A of **E10b**	OK ➡	Restore wiring between pin B of **E10b** and ground **G53a** (BLK)
	~~OK~~ ➡	Restore wiring between: -(TS) pin A10 of **G1** and pin A of **E10b** (BRN) -(6V) pin A10 of **G1** and pin 7 of **G306**, and between pin 7 of **G306** and pin A of **E10b** (BRN)

LEFT-HAND FRONT FOG-LAMP NOT WORKING	TEST G

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
G1 CHECK VOLTAGE – With front fog-lamps selected, verify 12V between pin A and B of left front fog-lamp assembly **E10a**	OK ➡	Carry out **step G2**
	~~OK~~ ➡	Carry out **step G3**
G2 CHECK BULB – Check for damage of front fog-lamps bulb, located in light assembly **E10a**	OK ➡	Check and if necessary replace complete light assembly **E10a**
	~~OK~~ ➡	Replace bulb
G3 CHECK VOLTAGE – With front fog-lamps selected, verify 12V at pin A of **E10a**	OK ➡	Restore wiring between pin B of **E10a** and ground **G53b** (BLK)
	~~OK~~ ➡	Restore wiring between pin A10 of **G1** and pin A of **E10a** (BRN)

REAR FOG-LAMP WARNING LAMP ON INSTRUMENT PANEL NOT WORKING	TEST H

Note: The rear fog-lamps however are working correctly

TEST PROCEDURE		RESULT	CORRECTIVE ACTION
H1	CHECK VOLTAGE		
– With the ignition key turned and front fog lamps selected, verify 12V at pin C5 of instrument panel **C10**		OK ➡	Carry out step **H2**
		OK ➡	Restore wiring between pin G9 of **G1** and pin C5 of **C10** (GRN)
H2	CHECK WARNING LIGHT BULB		
– Check for damage of front fog-lamp warning lamp, located on the instrument panel **C10**		OK ➡	Check and if necessary replace complete instrument panel **C10**
		OK ➡	Replace warning lamp

LIGHT IN FRONT FOG-LAMP SWITCH NOT WORKING	TEST I

Note: if the front fog-lamps are not working, first see **test E**

TEST PROCEDURE	RESULT	CORRECTIVE ACTION
I1 CHECK VOLTAGE – With sidelights on, verify 12V at pin D10 of **G1**	OK →	Carry out **step I2**
	~~OK~~ →	Check sidelights circuit (see "Sidelights")
I2 CHECK VOLTAGE – With sidelights on, verify 12V between pins 1 and 2 of switch **B10**	OK →	Carry out **step I3**
	~~OK~~ →	Carry out **step I4**
I3 CHECK BULB – Check for damage of bulb inside switch **B10**	OK →	Check and if necessary replace complete switch **B10**
	~~OK~~ →	Replace bulb
I4 CHECK VOLTAGE – With sidelights on, verify 12V at pin 1 of **B10**	OK →	Restore wiring between pin 2 of **B10** and ground **G148b** across solder (BLK)
	~~OK~~ →	Restore wiring between pin 1 of **B10** and pin D10 of **G1**, also across the solder (YEL-BLK)